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A 212	Jul 10/2016
A 213	Jul 10/2016
A 214	Jul 10/2016
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	208	Nov 10/2015
53-10-01 REPAIR 4		
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	208	Nov 10/2015
53-10-03 IDENTIFICATION 1		
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O	2	Jul 10/2016
	3	Nov 10/2012
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53-10-03 ALLOWABLE DAMAGE 1		
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53-10-03 REPAIR 1		
	201	Nov 10/2012
	202	Nov 10/2012
53-10-04 IDENTIFICATION 1		
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O	2	Jul 10/2016
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53-10-04 ALLOWABLE DAMAGE GENERAL		
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53-10-04 REPAIR 1		
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53-10-07 IDENTIFICATION 1		
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O	2	Jul 10/2016
O	3	Jul 10/2016
	4	Nov 10/2012
	5	Nov 10/2012
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	7	Nov 10/2012
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	9	Nov 10/2012
O	10	Jul 10/2016
O	11	Jul 10/2016
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O	31	Jul 10/2016
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53-10-07 ALLOWABLE DAMAGE GENERAL		
	101	Jul 10/2014
	102	BLANK

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Subject/Page		Date
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	202	BLANK
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	1	Nov 10/2012
	2	BLANK
53-10-08 IDENTIFICATION 1		
	1	Nov 10/2012
	2	Mar 10/2016
	3	Mar 10/2016
	4	Mar 10/2016
	5	Nov 10/2012
	6	Mar 10/2016
53-10-08 IDENTIFICATION 2		
	1	Nov 10/2012
	2	Nov 10/2012
	3	Nov 10/2012
	4	Nov 10/2012
	5	Nov 10/2012
	6	BLANK
53-10-08 IDENTIFICATION 3		
	1	Nov 10/2012
O	2	Jul 10/2016
	3	Nov 10/2012
	4	Nov 10/2012
	5	Nov 10/2012
O	6	Jul 10/2016
	7	Nov 10/2012
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	11	Nov 10/2012
	12	Nov 10/2012
	13	Nov 10/2012
	14	Nov 10/2012
53-10-08 IDENTIFICATION 4		
	1	Nov 10/2012
	2	Nov 10/2012
	3	Nov 10/2012
	4	Nov 10/2012
53-10-08 ALLOWABLE DAMAGE 1		
	101	Nov 10/2012
	102	Nov 10/2012
	103	Nov 10/2012
	104	Nov 10/2012
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	107	Nov 10/2012
	108	Nov 10/2015
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53-10-08 ALLOWABLE DAMAGE 2		
	101	Nov 10/2012
	102	Nov 10/2012
	103	Nov 10/2012
	104	Nov 10/2012
	105	Nov 10/2012
	106	Nov 10/2015
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	108	Nov 10/2012
	109	Nov 10/2012
	110	Nov 10/2012
53-10-08 ALLOWABLE DAMAGE 2 (cont)		
	111	Nov 10/2012
	112	Nov 10/2013
53-10-08 REPAIR 1		
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	202	Nov 10/2012
	203	Nov 10/2012
	204	Nov 10/2012
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	207	Nov 10/2012
	208	Nov 10/2012
53-10-08 REPAIR 2		
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	203	Nov 10/2012
	204	Nov 10/2012
	205	Nov 10/2012
	206	BLANK
53-10-08 REPAIR 3		
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	202	Nov 10/2012
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	205	Nov 10/2012
	206	Nov 10/2012
	207	Nov 10/2012
	208	BLANK
53-10-08 REPAIR 4		
	201	Nov 10/2012
	202	Nov 10/2012
	203	Nov 10/2012
	204	Nov 10/2012
53-10-14 IDENTIFICATION 1		
	1	Nov 10/2012
	2	Nov 10/2012

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53-10-14 IDENTIFICATION 1 (cont)	
3	Nov 10/2012
4	Nov 10/2012
5	Nov 10/2012
6	Nov 10/2012
7	Nov 10/2012
8	Nov 10/2012
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53-10-14 ALLOWABLE DAMAGE 1	
101	Nov 10/2012
102	Nov 10/2012
103	Nov 10/2012
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110	Jul 10/2015
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53-10-14 REPAIR 1	
201	Jul 10/2015
202	Nov 10/2012
203	Nov 10/2012
204	Nov 10/2012
205	Jul 10/2015
206	Jul 10/2015
53-10-15 IDENTIFICATION 1	
1	Jul 10/2015
2	Jul 10/2015
3	Nov 10/2012

Subject/Page	Date
53-10-15 IDENTIFICATION 1 (cont)	
4	Nov 10/2012
5	Nov 10/2012
6	Nov 10/2012
O 7	Jul 10/2016
O 8	Jul 10/2016
O 9	Jul 10/2016
10	Mar 10/2015
11	Mar 10/2015
O 12	Jul 10/2016
13	Jul 10/2015
14	Jul 10/2015
15	Jul 10/2015
16	Jul 10/2015
17	Jul 10/2015
18	Jul 10/2015
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53-10-15 IDENTIFICATION 2	
1	Jul 10/2015
2	Jul 10/2015
3	Nov 10/2012
4	Mar 10/2013
O 5	Jul 10/2016
6	Nov 10/2012
7	Nov 10/2012
8	Nov 10/2012
9	Nov 10/2012
10	Jul 10/2015
11	Jul 10/2015
O 12	Jul 10/2016
13	Jul 10/2015
14	Jul 10/2015
53-10-15 IDENTIFICATION 3	
1	Nov 10/2012
2	Nov 10/2012
3	Nov 10/2012

Subject/Page	Date
53-10-15 IDENTIFICATION 3 (cont)	
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5	Nov 10/2012
6	BLANK
53-10-15 IDENTIFICATION 4	
1	Nov 10/2012
2	Nov 10/2012
3	Mar 10/2013
4	BLANK
53-10-15 ALLOWABLE DAMAGE 1	
101	Nov 10/2012
O 102	Jul 10/2016
O 103	Jul 10/2016
104	Jul 10/2015
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107	Jul 10/2015
108	Jul 10/2015
109	Jul 10/2015
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120	Jul 10/2015
121	Jul 10/2015
122	Jul 10/2015
123	Nov 10/2015
124	Jul 10/2015
125	Jul 10/2015
126	Jul 10/2015
127	Jul 10/2015

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53-10-15 ALLOWABLE DAMAGE 1 (cont)	
128	Jul 10/2015
129	Jul 10/2015
130	Jul 10/2015
131	Jul 10/2015
132	Jul 10/2015
133	Jul 10/2015
134	Jul 10/2015
53-10-15 ALLOWABLE DAMAGE 2	
101	Nov 10/2012
102	Jul 10/2015
O 103	Jul 10/2016
104	Jul 10/2015
105	Jul 10/2015
106	Jul 10/2015
107	Jul 10/2015
108	Jul 10/2015
109	Jul 10/2015
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124	Jul 10/2015
125	Jul 10/2015
126	Jul 10/2015
53-10-15 ALLOWABLE DAMAGE 3	
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102	Nov 10/2012
103	Nov 10/2012
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111	Nov 10/2012
112	BLANK
53-10-15 ALLOWABLE DAMAGE 4	
R 101	Jul 10/2016
O 102	Jul 10/2016
R 103	Jul 10/2016
R 104	Jul 10/2016
53-10-15 REPAIR 1	
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202	Nov 10/2012
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217	Jul 10/2015
218	Jul 10/2015
53-10-15 REPAIR 1 (cont)	
219	Jul 10/2015
220	Jul 10/2015
53-10-15 REPAIR 2	
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202	Nov 10/2012
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53-10-15 REPAIR 3	
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53-10-15 REPAIR 4	
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210	Nov 10/2012
53-10-15 REPAIR 5	
201	Nov 10/2015
202	Nov 10/2015

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53-10-15 REPAIR 5 (cont)	
203	Nov 10/2015
204	Nov 10/2015
205	Nov 10/2015
206	Nov 10/2015
207	Nov 10/2015
208	Nov 10/2015
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53-10-50 IDENTIFICATION GENERAL	
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53-10-50 ALLOWABLE DAMAGE GENERAL	
101	Nov 10/2012
102	BLANK
53-10-50 REPAIR GENERAL	
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53-10-51 IDENTIFICATION 1	
1	Jul 10/2015
O 2	Jul 10/2016
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7	Nov 10/2012
8	Nov 10/2012
O 9	Jul 10/2016
10	Nov 10/2012
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13	Jul 10/2015
14	Jul 10/2015
O 15	Jul 10/2016
16	Jul 10/2015
53-10-51 IDENTIFICATION 1 (cont)	
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18	Jul 10/2015
O 19	Jul 10/2016
20	Jul 10/2015
53-10-51 IDENTIFICATION 2	
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2	Nov 10/2012
3	Nov 10/2012
4	Nov 10/2012
5	Nov 10/2012
6	Jul 10/2014
7	Nov 10/2012
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12	Nov 10/2012
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14	Mar 10/2013
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R 16	Jul 10/2016
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53-10-51 ALLOWABLE DAMAGE 1	
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108	Nov 10/2012
53-10-51 ALLOWABLE DAMAGE 1 (cont)	
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110	Nov 10/2012
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53-10-51 REPAIR 1	
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209	Nov 10/2012
210	Nov 10/2012
211	Nov 10/2012
212	Nov 10/2012

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Subject/Page	Date
53-10-51 REPAIR 1 (cont)	
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53-10-51 REPAIR 2	
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53-10-51 REPAIR 3	
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53-10-51 REPAIR 6	
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53-10-51 REPAIR 6 (cont)	
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53-10-51 REPAIR 7 (cont)	
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53-10-51 REPAIR 8	
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53-10-51 REPAIR 9	
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205	Nov 10/2015
206	Jul 10/2014
207	Nov 10/2014
208	Jul 10/2014

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53-10-51 REPAIR 9 (cont)	
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210	Nov 10/2012
R 211	Jul 10/2016
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213	Nov 10/2012
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215	Jul 10/2014
216	Jul 10/2014
53-10-51 REPAIR 11	
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53-10-52 IDENTIFICATION 1	
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53-10-52 ALLOWABLE DAMAGE GENERAL	
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53-10-52 REPAIR GENERAL	
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53-10-54 IDENTIFICATION 2	
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53-10-54 ALLOWABLE DAMAGE 2	
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53-10-54 REPAIR 2	
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203	Nov 10/2012
204	Nov 10/2012

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53-10-54 REPAIR 2 (cont)	
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53-10-72 IDENTIFICATION 1	
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104	Nov 10/2014
105	Nov 10/2014
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202	Nov 10/2012
O 203	Jul 10/2016
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216	Nov 10/2014
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53-10-72 REPAIR GENERAL (cont)	
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53-10-72 REPAIR 1 (cont)	
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53-10-72 REPAIR 3	
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204	Nov 10/2012
205	Nov 10/2012
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53-10-72 REPAIR 4	
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203	Jul 10/2013
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205	Nov 10/2012
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53-10-72 REPAIR 5	
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202	Jul 10/2013
203	Nov 10/2012
204	Nov 10/2012
205	Nov 10/2012
206	BLANK
53-10-72 REPAIR 6	
201	Jul 10/2013
202	Jul 10/2013
203	Nov 10/2012
204	Nov 10/2012
205	Nov 10/2012

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204	Nov 10/2012
205	Nov 10/2012
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53-10-72 REPAIR 8	
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O 202	Jul 10/2016
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53-10-72 REPAIR 10	
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206	Nov 10/2012
207	Nov 10/2012
208	BLANK
53-10-72 REPAIR 11	
201	Jul 10/2013
202	Jul 10/2013
53-10-72 REPAIR 11 (cont)	
203	Nov 10/2012
204	Nov 10/2012
205	Nov 10/2012
206	Nov 10/2012
207	Nov 10/2012
208	Nov 10/2012
53-10-72 REPAIR 12	
201	Jul 10/2013
O 202	Jul 10/2016
203	Jul 10/2013
204	Nov 10/2012
205	Nov 10/2012
206	Nov 10/2012
207	Nov 10/2012
208	Nov 10/2012
209	Nov 10/2012
210	BLANK
53-10-72 REPAIR 13	
201	Jul 10/2013
202	Jul 10/2013
203	Nov 10/2012
204	Nov 10/2012
205	Nov 10/2012
206	Nov 10/2012
207	Nov 10/2012
208	BLANK
53-10-90 IDENTIFICATION 1	
1	Nov 10/2012
2	Nov 10/2013
3	Nov 10/2013
4	Nov 10/2012
53-10-90 ALLOWABLE DAMAGE 1	
101	Nov 10/2012
102	Nov 10/2012
103	Nov 10/2012
104	Nov 10/2015
53-10-90 ALLOWABLE DAMAGE 1 (cont)	
105	Nov 10/2015
106	Nov 10/2012
107	Nov 10/2012
108	Nov 10/2012
109	Nov 10/2012
110	Nov 10/2012
111	Nov 10/2012
112	BLANK
53-10-90 REPAIR 1	
201	Nov 10/2012
202	BLANK
53-30-01 IDENTIFICATION 1	
1	Nov 10/2012
2	Nov 10/2012
3	Nov 10/2012
4	Nov 10/2012
5	Nov 10/2012
R 6	Jul 10/2016
7	Nov 10/2012
8	Nov 10/2012
9	Jul 10/2013
10	Jul 10/2013
11	Jul 10/2013
12	BLANK
53-30-01 ALLOWABLE DAMAGE GENERAL	
101	Nov 10/2012
102	BLANK
53-30-01 REPAIR GENERAL	
R 201	Jul 10/2016
202	BLANK
53-30-03 IDENTIFICATION 1	
1	Mar 10/2016
O 2	Jul 10/2016
3	Nov 10/2012

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Subject/Page	Date
53-30-03 IDENTIFICATION 1 (cont)	
4	Nov 10/2012
5	Nov 10/2012
6	BLANK
53-30-03 ALLOWABLE DAMAGE 1	
101	Nov 10/2012
102	BLANK
53-30-03 REPAIR 1	
201	Nov 10/2012
202	Nov 10/2012
53-30-04 IDENTIFICATION 1	
1	Nov 10/2012
2	BLANK
53-30-04 ALLOWABLE DAMAGE 1	
101	Nov 10/2012
102	BLANK
53-30-04 REPAIR 1	
201	Nov 10/2012
202	BLANK
53-30-07 IDENTIFICATION 1	
1	Jul 10/2015
O 2	Jul 10/2016
3	Nov 10/2012
4	Nov 10/2012
5	Nov 10/2012
6	Nov 10/2012
7	Nov 10/2012
8	Jul 10/2015
O 9	Jul 10/2016
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53-30-07 ALLOWABLE DAMAGE GENERAL	
101	Nov 10/2012
102	BLANK
53-30-07 REPAIR GENERAL	
201	Nov 10/2012
202	BLANK
53-30-12 IDENTIFICATION GENERAL	
1	Nov 10/2012
2	BLANK
53-30-12 ALLOWABLE DAMAGE GENERAL	
101	Nov 10/2012
102	BLANK
53-30-12 REPAIR GENERAL	
201	Nov 10/2012
202	BLANK
53-30-13 IDENTIFICATION 1	
1	Nov 10/2012
2	Nov 10/2012
3	Nov 10/2012
4	Nov 10/2012
5	Nov 10/2012
6	Nov 10/2012
7	Nov 10/2012
8	Nov 10/2012
9	Mar 10/2013
O 10	Jul 10/2016
11	Nov 10/2012
12	Nov 10/2012
13	Nov 10/2012
14	Mar 10/2013
53-30-13 REPAIR 1	
201	Nov 10/2012
202	Jul 10/2014
53-30-15 IDENTIFICATION 1	
1	Jul 10/2015
O 2	Jul 10/2016
3	Nov 10/2013
4	Jul 10/2015
5	Jul 10/2015
6	Jul 10/2015
7	Nov 10/2013
53-30-15 IDENTIFICATION 1 (cont)	
O 8	Jul 10/2016
9	Nov 10/2013
10	Nov 10/2013
11	Nov 10/2013
12	Jul 10/2015
13	Jul 10/2015
14	Nov 10/2013
15	Nov 10/2013
16	Nov 10/2013
17	Nov 10/2013
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53-30-15 ALLOWABLE DAMAGE 1	
101	Nov 10/2012
102	Nov 10/2012
103	Nov 10/2012
104	Nov 10/2012
105	Nov 10/2012
106	Nov 10/2012
107	Jul 10/2013
108	Nov 10/2012
109	Nov 10/2012
110	Jul 10/2013
111	Nov 10/2012
112	Nov 10/2012
113	Nov 10/2012
114	Nov 10/2012
115	Nov 10/2015
116	Nov 10/2012
117	Nov 10/2012
118	Jul 10/2013
119	Nov 10/2012
120	Jul 10/2015
121	Jul 10/2015
122	Jul 10/2015
123	Jul 10/2015
124	Nov 10/2012

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53-30-15 ALLOWABLE DAMAGE 1 (cont)		
	125	Jul 10/2015
	126	Jul 10/2013
	127	Nov 10/2012
	128	Nov 10/2012
53-30-15 REPAIR 1		
	201	Jul 10/2015
	202	Nov 10/2015
	203	Nov 10/2015
	204	Jul 10/2015
	205	Jul 10/2015
	206	Jul 10/2015
	207	Jul 10/2015
	208	Jul 10/2015
	209	Jul 10/2015
	210	Jul 10/2015
	211	Jul 10/2015
	212	Jul 10/2015
	213	Jul 10/2015
	214	Jul 10/2015
	215	Jul 10/2015
	216	Jul 10/2015
	217	Jul 10/2015
	218	Jul 10/2015
53-30-30 IDENTIFICATION 1		
	1	Nov 10/2012
	2	Jul 10/2015
O	3	Jul 10/2016
	4	BLANK
53-30-30 ALLOWABLE DAMAGE 1		
	101	Jul 10/2015
	102	Nov 10/2012
	103	Nov 10/2015
	104	Nov 10/2012
	105	Nov 10/2012
	106	Nov 10/2012
53-30-30 ALLOWABLE DAMAGE 1 (cont)		
	107	Nov 10/2012
	108	BLANK
53-30-50 IDENTIFICATION GENERAL		
	1	Nov 10/2012
	2	BLANK
53-30-50 ALLOWABLE DAMAGE GENERAL		
	101	Nov 10/2012
	102	BLANK
53-30-50 REPAIR GENERAL		
	201	Nov 10/2012
	202	BLANK
53-30-51 IDENTIFICATION 1		
	1	Jul 10/2015
O	2	Jul 10/2016
	3	Nov 10/2012
	4	Nov 10/2012
	5	Nov 10/2012
	6	Nov 10/2012
	7	Nov 10/2012
	8	Nov 10/2012
	9	Nov 10/2012
	10	Nov 10/2012
	11	Nov 10/2012
	12	Mar 10/2013
	13	Nov 10/2012
	14	Nov 10/2012
	15	Nov 10/2012
	16	Nov 10/2012
	17	Nov 10/2012
	18	Nov 10/2012
	19	Nov 10/2012
	20	Nov 10/2012
	21	Nov 10/2012
	22	Nov 10/2012
53-30-51 IDENTIFICATION 1 (cont)		
	23	Nov 10/2012
	24	Nov 10/2012
	25	Nov 10/2012
	26	Nov 10/2012
	27	Nov 10/2012
	28	Nov 10/2012
	29	Nov 10/2012
	30	Nov 10/2012
	31	Nov 10/2012
	32	Mar 10/2013
	33	Nov 10/2012
	34	Nov 10/2012
	35	Nov 10/2012
	36	Nov 10/2012
	37	Nov 10/2012
	38	Nov 10/2012
53-30-51 IDENTIFICATION 2		
	1	Nov 10/2012
	2	Nov 10/2012
	3	Nov 10/2012
	4	BLANK
53-30-51 REPAIR 1		
	201	Nov 10/2012
	202	BLANK
53-30-51 REPAIR 2		
	201	Nov 10/2012
	202	Jul 10/2014
53-30-52 IDENTIFICATION 1		
	1	Nov 10/2012
	2	Nov 10/2012
	3	Nov 10/2012
	4	Nov 10/2012
53-30-52 ALLOWABLE DAMAGE GENERAL		
	101	Nov 10/2012
	102	BLANK

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Subject/Page		Date
53-30-52 REPAIR GENERAL		
	201	Nov 10/2012
	202	BLANK
53-30-53 IDENTIFICATION 1		
	1	Nov 10/2012
	2	Nov 10/2012
	3	Nov 10/2012
	4	BLANK
53-30-53 IDENTIFICATION 2		
	1	Nov 10/2012
O	2	Jul 10/2016
	3	Nov 10/2012
	4	Mar 10/2015
O	5	Jul 10/2016
	6	BLANK
53-30-53 ALLOWABLE DAMAGE GENERAL		
	101	Nov 10/2012
	102	BLANK
53-30-53 REPAIR GENERAL		
	201	Nov 10/2012
	202	BLANK
53-30-70 IDENTIFICATION 1		
	1	Nov 10/2012
	2	Nov 10/2012
	3	Nov 10/2012
O	4	Jul 10/2016
O	5	Jul 10/2016
	6	BLANK
53-30-70 ALLOWABLE DAMAGE 1		
	101	Nov 10/2012
	102	Nov 10/2012
	103	Nov 10/2012
	104	Nov 10/2012
	105	Mar 10/2013
	106	Nov 10/2015
	107	Mar 10/2013
53-30-70 ALLOWABLE DAMAGE 1 (cont)		
	108	Mar 10/2013
	109	Nov 10/2012
	110	Nov 10/2012
	111	Nov 10/2012
	112	Nov 10/2012
	113	Nov 10/2012
	114	Nov 10/2012
	115	Nov 10/2012
	116	BLANK
53-30-70 REPAIR 1		
	201	Nov 10/2012
	202	Nov 10/2012
	203	Nov 10/2012
	204	Mar 10/2013
	205	Nov 10/2012
	206	Nov 10/2012
	207	Mar 10/2013
	208	BLANK
53-30-71 IDENTIFICATION 1		
	1	Jul 10/2015
O	2	Jul 10/2016
	3	Nov 10/2012
	4	Jul 10/2015
O	5	Jul 10/2016
	6	Nov 10/2012
	7	Nov 10/2012
	8	BLANK
53-30-71 ALLOWABLE DAMAGE 1		
	101	Nov 10/2012
	102	Nov 10/2012
	103	Nov 10/2012
	104	Nov 10/2012
	105	Nov 10/2012
	106	Nov 10/2015
	107	Nov 10/2012
53-30-71 ALLOWABLE DAMAGE 1 (cont)		
	108	Nov 10/2012
	109	Nov 10/2012
	110	Nov 10/2012
	111	Nov 10/2012
	112	Nov 10/2012
	113	Nov 10/2012
	114	Nov 10/2012
	115	Nov 10/2012
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	117	Nov 10/2012
	118	Nov 10/2012
	119	Nov 10/2012
	120	Nov 10/2012
	121	Nov 10/2012
	122	BLANK
53-30-71 REPAIR 1		
	201	Nov 10/2012
	202	Nov 10/2012
	203	Nov 10/2012
	204	Nov 10/2012
	205	Nov 10/2012
	206	Nov 10/2012
53-30-71 REPAIR 2		
	201	Mar 10/2016
	202	Mar 10/2014
	203	Mar 10/2016
	204	Mar 10/2016
	205	Mar 10/2016
	206	Mar 10/2016
	207	Mar 10/2016
	208	Mar 10/2016
	209	Mar 10/2016
	210	Mar 10/2016
	211	Mar 10/2016
	212	Mar 10/2016

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53-30-71 REPAIR 2 (cont)		
	213	Mar 10/2016
	214	BLANK
53-40-01 IDENTIFICATION 1		
	1	Nov 10/2012
	2	Nov 10/2012
	3	Nov 10/2012
	4	Nov 10/2012
	5	Jul 10/2014
	6	Nov 10/2013
	7	Nov 10/2012
	8	Nov 10/2012
	9	Nov 10/2012
	10	Nov 10/2012
	11	Nov 10/2012
	12	BLANK
53-40-01 ALLOWABLE DAMAGE GENERAL		
	101	Nov 10/2012
	102	BLANK
53-40-01 REPAIR GENERAL		
	201	Nov 10/2012
	202	BLANK
53-40-03 IDENTIFICATION 1		
	1	Nov 10/2012
	2	Nov 10/2012
	3	Nov 10/2012
	4	BLANK
53-40-03 ALLOWABLE DAMAGE 1		
	101	Nov 10/2012
	102	BLANK
53-40-03 REPAIR 1		
	201	Jul 10/2013
	202	Jul 10/2013
53-40-04 IDENTIFICATION 1		
	1	Nov 10/2012
	2	Nov 10/2012
53-40-04 IDENTIFICATION 1 (cont)		
	3	Nov 10/2012
	4	BLANK
53-40-04 ALLOWABLE DAMAGE GENERAL		
	101	Nov 10/2012
	102	BLANK
53-40-04 REPAIR 1		
	201	Nov 10/2012
	202	Nov 10/2012
	203	Nov 10/2012
	204	BLANK
53-40-07 IDENTIFICATION 1		
	1	Jul 10/2015
O	2	Jul 10/2016
R	3	Jul 10/2016
	4	Nov 10/2012
	5	Nov 10/2012
O	6	Jul 10/2016
	7	Nov 10/2012
	8	Nov 10/2012
	9	Nov 10/2012
	10	Nov 10/2012
	11	Nov 10/2012
	12	BLANK
53-40-07 ALLOWABLE DAMAGE 1		
	101	Nov 10/2012
	102	Nov 10/2012
	103	Nov 10/2015
	104	Nov 10/2012
	105	Nov 10/2012
	106	Nov 10/2012
	107	Nov 10/2012
	108	BLANK
53-40-07 REPAIR GENERAL		
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	202	BLANK
53-40-08 IDENTIFICATION 1		
	1	Nov 10/2012
	2	Nov 10/2012
	3	Nov 10/2012
	4	Nov 10/2012
53-40-08 IDENTIFICATION 2		
	1	Nov 10/2012
	2	Nov 10/2012
	3	Nov 10/2012
	4	Nov 10/2012
53-40-08 IDENTIFICATION 3		
	1	Nov 10/2012
	2	Nov 10/2012
	3	Nov 10/2012
	4	Nov 10/2012
O	5	Jul 10/2016
	6	Nov 10/2012
53-40-08 ALLOWABLE DAMAGE 1		
	101	Nov 10/2012
	102	Nov 10/2012
	103	Nov 10/2012
	104	Nov 10/2012
	105	Nov 10/2015
	106	Nov 10/2012
	107	Nov 10/2012
	108	Nov 10/2012
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	111	Nov 10/2012
	112	Nov 10/2012
	113	Nov 10/2012
	114	Nov 10/2012
	115	Nov 10/2012
	116	BLANK
53-40-08 ALLOWABLE DAMAGE 2		
	101	Nov 10/2015
	102	Nov 10/2015

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53-40-08 ALLOWABLE DAMAGE 2 (cont)	
103	Nov 10/2015
104	Nov 10/2015
105	Nov 10/2015
106	Nov 10/2015
107	Nov 10/2015
108	Nov 10/2015
109	Nov 10/2015
110	Nov 10/2015
111	Nov 10/2015
112	Nov 10/2015
113	Nov 10/2015
114	Nov 10/2015
115	Nov 10/2015
116	Nov 10/2015
53-40-08 ALLOWABLE DAMAGE 3	
101	Nov 10/2015
102	Nov 10/2015
103	Nov 10/2015
104	Nov 10/2015
105	Nov 10/2015
106	Nov 10/2015
107	Nov 10/2015
108	Nov 10/2015
109	Mar 10/2016
110	Nov 10/2015
111	Nov 10/2015
112	Nov 10/2015
113	Nov 10/2015
114	Nov 10/2015
115	Nov 10/2015
116	Nov 10/2015
117	Nov 10/2015
118	Nov 10/2015
53-40-12 IDENTIFICATION GENERAL	
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53-40-12 ALLOWABLE DAMAGE GENERAL	
101	Nov 10/2012
102	BLANK
53-40-12 REPAIR GENERAL	
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202	BLANK
53-40-13 IDENTIFICATION 1	
1	Nov 10/2012
2	Mar 10/2014
3	Nov 10/2012
4	Mar 10/2014
5	Mar 10/2014
6	Jul 10/2015
O 7	Jul 10/2016
O 8	Jul 10/2016
53-40-14 IDENTIFICATION 1	
1	Jul 10/2015
O 2	Jul 10/2016
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4	Nov 10/2012
53-40-15 IDENTIFICATION 1	
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3	Nov 10/2012
4	Nov 10/2012
5	Nov 10/2012
6	Nov 10/2012
7	Nov 10/2012
8	Nov 10/2012
9	Nov 10/2012
10	Nov 10/2012
11	Nov 10/2012
53-40-15 IDENTIFICATION 1 (cont)	
12	Nov 10/2012
53-40-15 ALLOWABLE DAMAGE 1	
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102	Nov 10/2013
103	Nov 10/2015
104	Nov 10/2014
105	Nov 10/2014
106	Nov 10/2014
107	Nov 10/2014
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53-40-50 IDENTIFICATION GENERAL	
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53-40-50 ALLOWABLE DAMAGE GENERAL	
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53-40-50 REPAIR GENERAL	
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202	BLANK
53-40-51 IDENTIFICATION 1	
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4	Nov 10/2012
5	Nov 10/2012
6	Nov 10/2012
7	Nov 10/2012
8	Nov 10/2012
53-40-51 IDENTIFICATION 2	
1	Nov 10/2013
2	Nov 10/2013
3	Nov 10/2013
4	Nov 10/2012
5	Mar 10/2013

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53-40-51 IDENTIFICATION 2 (cont)	
O 6	Jul 10/2016
7	Nov 10/2012
8	Nov 10/2012
53-40-51 REPAIR 1	
201	Mar 10/2016
202	Mar 10/2016
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205	Mar 10/2016
206	Mar 10/2016
53-40-52 IDENTIFICATION 1	
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2	Nov 10/2012
53-40-52 ALLOWABLE DAMAGE GENERAL	
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53-40-52 REPAIR GENERAL	
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202	BLANK
53-40-70 IDENTIFICATION 1	
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2	Nov 10/2012
3	Nov 10/2014
O 4	Jul 10/2016
O 5	Jul 10/2016
O 6	Jul 10/2016
O 7	Jul 10/2016
O 8	Jul 10/2016
53-40-70 ALLOWABLE DAMAGE 1	
101	Nov 10/2012
102	Nov 10/2012
103	Nov 10/2012
104	Nov 10/2012
105	Mar 10/2013
106	Nov 10/2015
53-40-70 ALLOWABLE DAMAGE 1 (cont)	
107	Mar 10/2013
108	Mar 10/2013
109	Nov 10/2012
110	Nov 10/2012
111	Nov 10/2012
112	Nov 10/2012
113	Nov 10/2012
114	Nov 10/2012
115	Nov 10/2012
116	Nov 10/2012
117	Nov 10/2012
118	Nov 10/2012
53-40-70 REPAIR 1	
201	Nov 10/2012
202	Nov 10/2012
203	Nov 10/2012
204	Mar 10/2013
205	Mar 10/2013
206	Mar 10/2013
207	Mar 10/2013
208	BLANK
53-40-71 IDENTIFICATION 1	
1	Jul 10/2015
O 2	Jul 10/2016
3	Nov 10/2013
4	Nov 10/2013
5	Nov 10/2013
6	Nov 10/2013
O 7	Jul 10/2016
O 8	Jul 10/2016
53-40-71 ALLOWABLE DAMAGE 1	
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103	Nov 10/2013
104	Nov 10/2013
53-40-71 ALLOWABLE DAMAGE 1 (cont)	
105	Nov 10/2013
106	Nov 10/2015
O 107	Jul 10/2016
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109	Nov 10/2012
O 110	Jul 10/2016
111	Nov 10/2013
112	Nov 10/2012
113	Nov 10/2012
114	Nov 10/2012
115	Nov 10/2012
116	Nov 10/2012
117	Nov 10/2012
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122	Nov 10/2012
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125	Nov 10/2012
126	Nov 10/2012
127	Nov 10/2012
128	Nov 10/2012
53-40-71 REPAIR 1	
201	Jul 10/2015
202	Jul 10/2015
203	Jul 10/2015
204	Jul 10/2015
53-60-01 IDENTIFICATION 1	
1	Nov 10/2012
2	Jul 10/2015
R 3	Jul 10/2016
4	Nov 10/2012
5	Nov 10/2012

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53-60-01 IDENTIFICATION 1 (cont)	
6	Jul 10/2015
7	Jul 10/2015
8	Jul 10/2015
9	Jul 10/2015
10	Jul 10/2015
11	Jul 10/2015
R 12	Jul 10/2016
13	Jul 10/2015
14	Jul 10/2015
15	Jul 10/2015
16	Jul 10/2015
17	Jul 10/2015
18	Jul 10/2015
19	Jul 10/2015
20	Jul 10/2015
53-60-01 ALLOWABLE DAMAGE GENERAL	
R 101	Jul 10/2016
102	BLANK
53-60-01 REPAIR GENERAL	
R 201	Jul 10/2016
202	BLANK
53-60-03 IDENTIFICATION 1	
1	Nov 10/2012
2	Nov 10/2012
3	Nov 10/2012
4	Nov 10/2012
53-60-03 ALLOWABLE DAMAGE 1	
R 101	Jul 10/2016
102	BLANK
53-60-03 REPAIR 1	
R 201	Jul 10/2016
202	Jul 10/2015
53-60-04 IDENTIFICATION 1	
1	Nov 10/2012
2	BLANK
53-60-04 ALLOWABLE DAMAGE 1	
101	Nov 10/2012
102	BLANK
53-60-04 REPAIR 1	
201	Nov 10/2012
202	BLANK
53-60-07 IDENTIFICATION 1	
1	Nov 10/2012
2	Nov 10/2012
3	Jul 10/2015
4	Nov 10/2012
R 5	Jul 10/2016
O 6	Jul 10/2016
7	Jul 10/2015
8	Jul 10/2015
9	Jul 10/2015
10	Jul 10/2015
O 11	Jul 10/2016
12	Jul 10/2015
53-60-07 ALLOWABLE DAMAGE GENERAL	
R 101	Jul 10/2016
102	BLANK
53-60-07 REPAIR GENERAL	
R 201	Jul 10/2016
202	BLANK
53-60-12 IDENTIFICATION GENERAL	
1	Nov 10/2012
2	BLANK
53-60-12 ALLOWABLE DAMAGE GENERAL	
101	Nov 10/2012
102	BLANK
53-60-12 REPAIR GENERAL	
201	Nov 10/2012
202	BLANK
53-60-13 IDENTIFICATION 1	
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2	Nov 10/2012
3	Nov 10/2012
4	Nov 10/2012
5	Nov 10/2012
6	Nov 10/2012
7	Nov 10/2012
8	Nov 10/2012
53-60-15 IDENTIFICATION 1	
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O 2	Jul 10/2016
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5	Nov 10/2012
6	Nov 10/2012
7	Nov 10/2012
8	Jul 10/2015
9	Jul 10/2015
10	Nov 10/2012
11	Nov 10/2012
12	Nov 10/2012
13	Nov 10/2012
14	BLANK
53-60-15 ALLOWABLE DAMAGE 1	
101	Nov 10/2012
102	Nov 10/2012
103	Nov 10/2012
104	Nov 10/2012
105	Nov 10/2012
106	Nov 10/2012
107	Nov 10/2012
108	Nov 10/2012
109	Nov 10/2012
110	Nov 10/2012
111	Nov 10/2012
112	Nov 10/2012

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53-60-15 ALLOWABLE DAMAGE 1 (cont)	
113	Nov 10/2012
O 114	Jul 10/2016
115	Nov 10/2012
116	Nov 10/2012
117	Nov 10/2012
118	Nov 10/2012
119	Nov 10/2012
120	Jul 10/2015
121	Jul 10/2015
122	Jul 10/2015
123	Jul 10/2015
124	Jul 10/2015
125	Jul 10/2015
126	Nov 10/2013
127	Nov 10/2012
128	Nov 10/2012
129	Nov 10/2012
130	Nov 10/2012
53-60-15 REPAIR 1	
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204	Nov 10/2015
205	Nov 10/2015
206	Nov 10/2015
207	Nov 10/2015
208	Nov 10/2015
209	Nov 10/2015
210	Nov 10/2015
211	Nov 10/2015
212	Nov 10/2015
213	Nov 10/2015
214	Nov 10/2015
215	Nov 10/2015
216	Nov 10/2015
53-60-50 IDENTIFICATION GENERAL	
1	Nov 10/2012
2	BLANK
53-60-50 ALLOWABLE DAMAGE GENERAL	
101	Nov 10/2012
102	BLANK
53-60-50 REPAIR GENERAL	
201	Nov 10/2012
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53-60-51 IDENTIFICATION 1	
1	Jul 10/2015
O 2	Jul 10/2016
3	Nov 10/2012
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7	Nov 10/2012
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9	Nov 10/2012
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53-60-51 IDENTIFICATION 2	
1	Nov 10/2012
2	Nov 10/2012
3	Nov 10/2012
4	Nov 10/2012
53-60-51 ALLOWABLE DAMAGE 1	
R 101	Jul 10/2016
R 102	Jul 10/2016
A 103	Jul 10/2016
A 104	Jul 10/2016
A 105	Jul 10/2016
A 106	Jul 10/2016
53-60-51 REPAIR 1	
201	Nov 10/2012
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53-60-51 REPAIR 2	
201	Nov 10/2012
202	Nov 10/2012
203	Jul 10/2014
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53-60-52 IDENTIFICATION 1	
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2	Nov 10/2012
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102	BLANK
53-60-52 REPAIR GENERAL	
201	Nov 10/2012
202	BLANK
53-60-53 IDENTIFICATION 1	
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53-60-53 IDENTIFICATION 2	
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2	Nov 10/2012
3	Nov 10/2012
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53-60-53 ALLOWABLE DAMAGE GENERAL	
101	Nov 10/2012
102	BLANK
53-60-53 REPAIR GENERAL	
201	Nov 10/2012
202	BLANK
53-60-70 IDENTIFICATION 1	
1	Nov 10/2012
2	Nov 10/2012

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53-60-70 IDENTIFICATION 1 (cont)	
3	Nov 10/2012
O 4	Jul 10/2016
O 5	Jul 10/2016
O 6	Jul 10/2016
53-60-70 ALLOWABLE DAMAGE 1	
101	Nov 10/2012
102	Nov 10/2012
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105	Mar 10/2013
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53-60-70 REPAIR 1	
201	Nov 10/2012
202	Nov 10/2012
203	Nov 10/2012
204	Mar 10/2013
205	Mar 10/2013
206	Mar 10/2013
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208	BLANK

Subject/Page	Date
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1	Nov 10/2012
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4	Nov 10/2012
5	Nov 10/2012
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7	Jul 10/2015
O 8	Jul 10/2016
O 9	Jul 10/2016
10	Nov 10/2012
11	Nov 10/2012
12	Nov 10/2012
13	Nov 10/2012
14	Nov 10/2012
15	Nov 10/2012
16	BLANK
53-60-71 ALLOWABLE DAMAGE 1	
101	Nov 10/2012
102	Nov 10/2012
103	Nov 10/2012
104	Nov 10/2012
105	Nov 10/2012
106	Nov 10/2012
107	Nov 10/2012
108	Mar 10/2013
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110	Nov 10/2012
111	Nov 10/2012
112	Nov 10/2012
113	Nov 10/2012
114	Mar 10/2013
115	Mar 10/2013
116	Nov 10/2012
117	Nov 10/2012
118	Nov 10/2012
119	Nov 10/2012

Subject/Page	Date
53-60-71 ALLOWABLE DAMAGE 1 (cont)	
120	Nov 10/2012
121	Nov 10/2012
122	Nov 10/2012
123	Nov 10/2012
124	Nov 10/2012
125	Nov 10/2012
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53-60-71 REPAIR 1	
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205	Nov 10/2012
206	Nov 10/2012
207	Mar 10/2013
208	Mar 10/2013
209	Mar 10/2013
O 210	Jul 10/2016
53-60-71 REPAIR 2	
201	Nov 10/2014
202	Nov 10/2015
203	Nov 10/2012
204	Jul 10/2014
205	Jul 10/2014
206	Jul 10/2014
53-70-01 IDENTIFICATION 1	
1	Nov 10/2012
2	Nov 10/2012
3	Nov 10/2012

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Subject/Page	Date
53-70-01 IDENTIFICATION 1 (cont)	
4	Nov 10/2012
5	Nov 10/2012
6	Nov 10/2012
7	Nov 10/2012
8	Nov 10/2012
9	Nov 10/2012
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12	Nov 10/2012
13	Nov 10/2012
14	Nov 10/2012
53-70-01 ALLOWABLE DAMAGE GENERAL	
101	Nov 10/2012
102	BLANK
53-70-01 REPAIR GENERAL	
201	Nov 10/2012
202	BLANK
53-70-01 REPAIR 1	
201	Mar 10/2015
202	Mar 10/2015
203	Nov 10/2015
204	Mar 10/2015
205	Mar 10/2015
206	Mar 10/2015
207	Mar 10/2015
208	Mar 10/2015
209	Mar 10/2015
210	Mar 10/2015
53-70-03 IDENTIFICATION 1	
1	Jul 10/2015
O 2	Jul 10/2016
3	Nov 10/2012
4	Nov 10/2012
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6	BLANK
53-70-03 ALLOWABLE DAMAGE 1	
101	Nov 10/2012
102	BLANK
53-70-03 REPAIR 1	
201	Nov 10/2012
202	Nov 10/2012
53-70-04 IDENTIFICATION 1	
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2	BLANK
53-70-04 ALLOWABLE DAMAGE 1	
101	Nov 10/2012
102	BLANK
53-70-04 REPAIR 1	
201	Nov 10/2012
202	BLANK
53-70-07 IDENTIFICATION 1	
1	Nov 10/2012
2	Nov 10/2012
3	Nov 10/2012
4	Jul 10/2015
O 5	Jul 10/2016
6	Nov 10/2012
7	Nov 10/2012
8	Nov 10/2012
9	Nov 10/2012
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53-70-07 ALLOWABLE DAMAGE GENERAL	
101	Nov 10/2012
102	BLANK
53-70-07 REPAIR GENERAL	
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202	BLANK
53-70-15 IDENTIFICATION 1	
1	Jul 10/2015
2	Jul 10/2015
3	Jul 10/2015
53-70-15 IDENTIFICATION 1 (cont)	
4	Jul 10/2015
5	Jul 10/2015
O 6	Jul 10/2016
O 7	Jul 10/2016
8	Jul 10/2015
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53-70-15 ALLOWABLE DAMAGE 1	
101	Nov 10/2012
102	Jul 10/2015
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104	Jul 10/2015
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114	Jul 10/2015
O 115	Jul 10/2016
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122	Jul 10/2015
123	Jul 10/2015
124	Jul 10/2015
53-70-15 REPAIR 1	
201	Nov 10/2012
202	Nov 10/2012
203	Jul 10/2015

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Subject/Page	Date
53-70-15 REPAIR 1 (cont)	
204	Jul 10/2015
205	Jul 10/2015
206	Jul 10/2015
207	Jul 10/2015
208	Jul 10/2015
209	Jul 10/2015
210	Jul 10/2015
211	Jul 10/2015
212	Jul 10/2015
213	Jul 10/2015
214	Jul 10/2015
53-70-50 IDENTIFICATION GENERAL	
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53-70-50 ALLOWABLE DAMAGE GENERAL	
101	Nov 10/2012
102	BLANK
53-70-50 REPAIR GENERAL	
201	Nov 10/2012
202	BLANK
53-70-51 IDENTIFICATION 1	
1	Nov 10/2012
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3	Nov 10/2012
4	Nov 10/2012
5	Nov 10/2012
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10	Nov 10/2012
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53-70-51 IDENTIFICATION 2	
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2	Nov 10/2012
3	Nov 10/2012
4	BLANK
53-70-51 ALLOWABLE DAMAGE 1	
101	Mar 10/2013
102	Mar 10/2013
103	Mar 10/2013
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105	Mar 10/2013
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113	Mar 10/2013
114	Mar 10/2016
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117	Mar 10/2013
118	Mar 10/2013
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120	Mar 10/2013
121	Mar 10/2016
122	BLANK
53-70-51 REPAIR 1	
201	Nov 10/2012
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53-70-51 REPAIR 2	
201	Nov 10/2012
202	Jul 10/2014
53-70-51 REPAIR 3	
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202	Nov 10/2015
53-70-51 REPAIR 3 (cont)	
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53-70-51 REPAIR 4	
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220	Nov 10/2012
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222	Nov 10/2012
223	Nov 10/2012

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Subject/Page	Date
53-70-51 REPAIR 4 (cont)	
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53-70-51 REPAIR 5	
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202	Nov 10/2012
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219	Mar 10/2014
220	Jul 10/2013
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223	Jul 10/2013
224	Jul 10/2013
53-70-51 REPAIR 6	
201	Nov 10/2014
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203	Nov 10/2014
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205	Nov 10/2014
206	Nov 10/2014
207	Nov 10/2014
53-70-51 REPAIR 6 (cont)	
208	Nov 10/2014
209	Nov 10/2014
210	Nov 10/2014
53-70-52 IDENTIFICATION 1	
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2	Nov 10/2012
53-70-52 ALLOWABLE DAMAGE GENERAL	
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53-70-52 REPAIR GENERAL	
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53-70-53 IDENTIFICATION 1	
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53-70-53 IDENTIFICATION 2	
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2	Nov 10/2012
3	Nov 10/2012
4	Mar 10/2013
53-70-53 ALLOWABLE DAMAGE GENERAL	
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102	BLANK
53-70-53 REPAIR GENERAL	
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53-80-01 IDENTIFICATION 1	
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5	Nov 10/2012
6	Nov 10/2012
7	Nov 10/2012
53-80-01 IDENTIFICATION 1 (cont)	
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53-80-01 ALLOWABLE DAMAGE GENERAL	
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53-80-01 REPAIR GENERAL	
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53-80-01 REPAIR 1	
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202	Jul 10/2013
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204	Nov 10/2012
205	Nov 10/2012
206	Nov 10/2012
53-80-01 REPAIR 2	
201	Nov 10/2015
202	Nov 10/2015

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Subject/Page		Date
53-80-01 REPAIR 2 (cont)		
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	204	Nov 10/2015
	205	Nov 10/2015
	206	Nov 10/2015
	207	Nov 10/2015
	208	Nov 10/2015
	209	Nov 10/2015
	210	Nov 10/2015
53-80-03 IDENTIFICATION 1		
	1	Jul 10/2015
O	2	Jul 10/2016
	3	Nov 10/2012
	4	Nov 10/2012
	5	Nov 10/2012
	6	Nov 10/2012
	7	Nov 10/2012
	8	Nov 10/2012
53-80-03 ALLOWABLE DAMAGE 1		
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	102	BLANK
53-80-03 REPAIR 1		
	201	Nov 10/2012
	202	Nov 10/2012
53-80-04 IDENTIFICATION 1		
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	2	Nov 10/2012
	3	Nov 10/2012
	4	BLANK
53-80-04 ALLOWABLE DAMAGE GENERAL		
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	102	BLANK
53-80-04 REPAIR 1		
	201	Nov 10/2012
	202	Nov 10/2012
	203	Nov 10/2012
53-80-04 REPAIR 1 (cont)		
	204	BLANK
53-80-07 IDENTIFICATION 1		
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	2	Nov 10/2012
	3	Nov 10/2012
	4	Nov 10/2012
	5	Nov 10/2012
	6	Nov 10/2012
	7	Nov 10/2012
	8	Nov 10/2012
	9	Nov 10/2012
	10	Nov 10/2012
	11	Nov 10/2012
	12	Nov 10/2012
	13	Nov 10/2012
	14	BLANK
53-80-07 ALLOWABLE DAMAGE GENERAL		
	101	Nov 10/2012
	102	BLANK
53-80-07 REPAIR GENERAL		
	201	Nov 10/2012
	202	BLANK
53-80-08 IDENTIFICATION 1		
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	2	Nov 10/2012
	3	Nov 10/2012
	4	Nov 10/2012
	5	Nov 10/2012
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53-80-08 IDENTIFICATION 2		
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	2	Nov 10/2012
	3	Nov 10/2012
	4	Nov 10/2012
O	5	Jul 10/2016
53-80-08 IDENTIFICATION 2 (cont)		
O	6	Jul 10/2016
	7	Nov 10/2012
	8	Nov 10/2012
	9	Nov 10/2012
	10	Nov 10/2012
O	11	Jul 10/2016
	12	BLANK
53-80-08 IDENTIFICATION 3		
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	2	Nov 10/2012
	3	Nov 10/2012
	4	Nov 10/2012
O	5	Jul 10/2016
	6	Nov 10/2012
	7	Nov 10/2012
	8	Nov 10/2012
	9	Nov 10/2012
	10	Nov 10/2012
	11	Nov 10/2012
O	12	Jul 10/2016
53-80-08 IDENTIFICATION 4		
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	3	Nov 10/2012
	4	BLANK
53-80-08 IDENTIFICATION 5		
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	3	Nov 10/2012
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	5	Nov 10/2012
	6	Nov 10/2012
	7	Nov 10/2012
	8	Nov 10/2012

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102	Nov 10/2012
103	Nov 10/2012
104	Nov 10/2012
105	Nov 10/2012
106	Nov 10/2015
107	Mar 10/2014
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53-80-08 ALLOWABLE DAMAGE 4	
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105	Nov 10/2012
106	Nov 10/2012
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53-80-08 ALLOWABLE DAMAGE 4 (cont)	
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53-80-08 ALLOWABLE DAMAGE 5	
101	Nov 10/2012
102	Nov 10/2012
103	Nov 10/2012
104	Nov 10/2012
R 105	Jul 10/2016
106	Nov 10/2012
107	Nov 10/2012
108	Nov 10/2012
109	Nov 10/2012
110	Nov 10/2012
111	Nov 10/2012
112	Nov 10/2012
113	Nov 10/2012
114	BLANK
53-80-08 REPAIR 1	
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203	Nov 10/2015
O 204	Jul 10/2016
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206	Nov 10/2012
207	Nov 10/2012
208	Mar 10/2013
O 209	Jul 10/2016
210	BLANK
53-80-08 REPAIR 2	
201	Nov 10/2012
202	Nov 10/2012
203	Nov 10/2015
53-80-08 REPAIR 2 (cont)	
204	Nov 10/2012
205	Nov 10/2012
206	Nov 10/2012
53-80-08 REPAIR 3	
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224	BLANK
53-80-08 REPAIR 4	
201	Nov 10/2012
202	BLANK
53-80-08 REPAIR 5	
201	Nov 10/2012
202	BLANK

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53-80-08 REPAIR 7	
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202	Jul 10/2015
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207	Nov 10/2012
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211	Nov 10/2012
212	BLANK
53-80-08 REPAIR 8	
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202	Jul 10/2015
203	Jul 10/2015
204	Nov 10/2015
205	Jul 10/2015
206	Jul 10/2015
207	Nov 10/2012
208	Nov 10/2012
209	Nov 10/2012
210	Nov 10/2012
53-80-08 REPAIR 9	
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204	Nov 10/2015
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206	Jul 10/2015
207	Nov 10/2012
208	Nov 10/2012
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210	Nov 10/2012
211	Nov 10/2012
212	BLANK
53-80-08 REPAIR 10	
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202	Jul 10/2015
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204	Nov 10/2015
205	Jul 10/2015
206	Jul 10/2015
207	Nov 10/2012
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209	Nov 10/2012
210	Nov 10/2012
53-80-08 REPAIR 11	
201	Nov 10/2012
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204	Nov 10/2015
205	Jul 10/2015
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207	Nov 10/2012
208	Nov 10/2012
209	Nov 10/2012
210	Nov 10/2012
211	Nov 10/2012
212	BLANK
53-80-08 REPAIR 12	
201	Nov 10/2012
202	Jul 10/2015
203	Jul 10/2015
204	Nov 10/2015
205	Jul 10/2015
206	Jul 10/2015
207	Nov 10/2012
208	Nov 10/2012
209	Nov 10/2012
210	Nov 10/2012
211	Nov 10/2012
212	BLANK
53-80-08 REPAIR 13	
201	Mar 10/2015
202	Mar 10/2015
203	Mar 10/2015
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205	Nov 10/2015
O 206	Jul 10/2016
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208	Nov 10/2012
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O 6	Jul 10/2016
O 7	Jul 10/2016
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53-80-13 IDENTIFICATION 2	
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102	Nov 10/2012
103	Nov 10/2012
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105	Jul 10/2015
106	Jul 10/2015
107	Nov 10/2012

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106	Nov 10/2012
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108	Nov 10/2012
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111	Nov 10/2012
112	Nov 10/2012
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53-80-13 REPAIR 1	
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203	Nov 10/2012
204	Nov 10/2012
53-80-13 REPAIR 2	
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202	Nov 10/2012
203	Nov 10/2012
204	Nov 10/2012
53-80-30 IDENTIFICATION 1	
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53-80-70 IDENTIFICATION 1	
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5	Nov 10/2012
6	Mar 10/2016
7	Nov 10/2012
8	Mar 10/2016
53-80-70 IDENTIFICATION 3	
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GENERAL - FUSELAGE STATIONS

1. General

A. The fuselage station diagram gives you the reference system to find the different airplane components and major structural openings in relation to a datum plane. The datum plane is perpendicular to the centerline and is found 130.00 inches forward of the airplane nose. Refer to:

(1) Table 1/GENERAL for the reference drawings

(2) Fuselage Station Diagram, Figure 1/GENERAL for the fuselage station diagram

(3) Fuselage Cross-Section Diagram, Figure 2/GENERAL for the fuselage cross-section diagram.

Table 1:

REFERENCE DRAWINGS	
DRAWING NUMBER	**TITLE**
140A1540	Fuselage Centerline Diagram
----	Fuselage Cross-section Diagram

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Fuselage Station Diagram
Figure 1 (Sheet 1 of 6)

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SECTION 43

B

H29930 S0006587347_V3

Fuselage Station Diagram
Figure 1 (Sheet 2 of 6)

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H29931 S0006587351_V2

Fuselage Station Diagram
Figure 1 (Sheet 3 of 6)

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H29932 S0006587354_V2

Fuselage Station Diagram
Figure 1 (Sheet 4 of 6)

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W25081 S0006587356_V1

Fuselage Station Diagram
Figure 1 (Sheet 5 of 6)

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AIRPLANES WITH A FLAT AFT PRESSURE BULKHEAD

AIRPLANES WITH A DOME AFT PRESSURE BULKHEAD

U31895 S0000191551_V2

Fuselage Station Diagram
Figure 1 (Sheet 6 of 6)

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W25080 S0006587360_V1

Fuselage Cross-Section Diagram
Figure 2

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ALLOWABLE DAMAGE 1 - FUSELAGE SKIN

1. Applicability

A. Allowable Damage 1 gives the allowable damage and the airplane flight operation limits for the fuselage skins shown in Fuselage Skin, Figure 101/ALLOWABLE DAMAGE 1.

B. Allowable Damage 1 is not applicable to the skin locations that follow:

(1) In Section 43 between Stations 360-540 and between Stringers 24L-24R more than 3.0 in. (76.0 mm) from a door cutout.

(2) In Section 46 between Stations 727-887 and between Stringers 23L-23R more than 3.0 in. (76.0 mm) from a door cutout.

2. General

A. Refer to Allowable Damage Zones, Figure 102/ALLOWABLE DAMAGE 1 for the allowable damage zones.

B. Refer to Paragraph 4./ALLOWABLE DAMAGE 1 for the allowable damage limits.

C. If you find damage, airplane flight operation limits can be necessary. Refer to Paragraph 5./ALLOWABLE DAMAGE 1

D. Make sure the aerodynamic smoothness is satisfactory or there will be a decrease in the performance of the airplane. Refer to 51-10-01.

NOTE: The areas specified in Paragraph 4./ALLOWABLE DAMAGE 1 will be in a critical or non-critical aerodynamic area. Refer to Allowable Damage Zones, Figure 102/ALLOWABLE DAMAGE 1 for the different areas.

E. After you remove the damage on aluminum parts, do the steps that follow:

(1) Apply a chemical conversion coating to the reworked areas. Refer to 51-20-01.

(2) Apply two layers of BMS 10-11, Type I primer to the reworked areas. Refer to SOPM 20-41-02.

(3) Apply BMS 5-95 sealant to the mating surfaces before you assemble a lap joint. Refer to 51-20-05.

F. Fill the space between the edges of skin panels in the area forward of BS 663.75 with BMS 5-95 sealant. Refer to 51-20-05.

G. Refer to 51-30-03 for possible sources of the abrasive and other materials you can use to remove the damage.

H. Refer to 51-30-05 for possible sources of the equipment and tools you can use to remove the damage.

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L44107 S0006587365_V1

Fuselage Skin
Figure 101

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1 BS 1016 FOR AIRPLANES WITH A DOME AFT PRESSURE BULKHEAD.

2 BS 1042 FOR AIRPLANES WITH A FLAT AFT PRESSURE BULKHEAD.

U60218 S0000206706_V2

Allowable Damage Zones

Figure 102

3. References

Reference	Title
51-10-01	AERODYNAMIC SMOOTHNESS
51-10-01, GENERAL	Aerodynamic Smoothness Requirements
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-20-05	REPAIR SEALING
51-30-03	NON-METALLIC MATERIALS
51-30-05	EQUIPMENT AND TOOLS FOR REPAIRS
51-40-05, GENERAL	Fastener Hole Sizes
51-70-01	REPAIRS FOR MINOR DENTS IN METALLIC SHEET MATERIALS
53-00-01, REPAIR 13	MOVED - Repair of Lightning Strike Damage in Fuselage Skin

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(Continued)

Reference	Title
AMM 51-21-99 P/B 701	DECORATIVE EXTERIOR PAINT SYSTEM - CLEANING/PAINTING
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes

4. Allowable Damage Limits for the Fuselage Skin

NOTE: See Paragraph 4.D./ALLOWABLE DAMAGE 1 for allowable damage due to lightning strike to all zones of the fuselage skin and fasteners.

A. Zone 1 - (Pressurized Fuselage Crown Area)

(1) Cracks:

(a) Remove the damage as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 1, Details A and B .

(2) Nicks, Gouges, Scratches, and Corrosion:

(a) Remove the damage as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 1, Details A , B , C , D , E , F, S, T, and U .

1) You can remove the damage from the areas that follow:

a) The inner and outer surfaces of the solid skin, a bonded skin assembly, or a skin lap splice

b) The sealed surfaces of a skin lap splice.

2) The total depth of the damage removed at each location must be less than or equal to the percentage of the skin thickness at the damage location.

NOTE: When you calculate the depth of damage removal, use the skin thickness given in the applicable identification subject or engineering drawing.

a) When you remove damage on a solid skin, use the skin thickness at the damage location to calculate the percentage of damage removal.

b) When you remove damage on a bonded skin assembly, use the thickness of the skin layer from which you removed the damage to calculate the percentage of damage removal.

(b) If you remove corrosion damage that goes across the head of a countersink rivet, replace the rivet.

(c) If you remove a countersink rivet to remove the damage, install a new rivet of the same size and type as the initial rivets. Use an oversize rivet as necessary.

1) The countersink depth must not be more than 80 percent of the thickness of the solid skin.

2) The countersink depth must not be more than 80 percent of the total thickness of the bonded skin assembly.

3) You can replace the countersink rivet with a protruding head rivet. Refer to Table 101/ALLOWABLE DAMAGE 1 for the type and size of protruding head rivet to use.

NOTE: A mixture of 3/16 inch fasteners and 1/4 inch fasteners is not permitted in lap or butt splices. You are permitted to replace initial 3/16 inch fasteners with 7/32 inch oversize fasteners on lap and butt splices.

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Table 101:

REPAIR RIVETS	
INITIAL RIVET	**REPAIR RIVET**
BACR15GF5D	BACR15FT7D
BACR15GF6D	BACR15FT8D

(3) Dents:

(a) Dents in extra critical areas near the air data sensors must be reworked to initial contour as described in 51-10-01, GENERAL paragraph 5.

CAUTION: DO NOT FILL DENTS THAT ARE MORE THAN THE ALLOWABLE DAMAGE LIMITS. IF YOU DO NOT OBEY, THE RESULT CAN BE AN UNSATISFACTORY CONDITION THAT CAN CAUSE MORE DAMAGE TO THE AIRPLANE STRUCTURE.

(b) Other dents not near the air data sensors are permitted as given in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 1, Detail G and Table 102/ALLOWABLE DAMAGE 1.

1) A dent larger than the limits shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 1, Detail G is permitted if:

a) There are no loose or missing fasteners

b) There are no damaged fastener holes

c) There are no creases, gouges or cracks near the dent

d) You do not fill the dent

e) You make an inspection of the dent for corrosion and cracks at the flight cycle intervals as given in Table 102/ALLOWABLE DAMAGE 1.

f) The damage does not go across a stringer, frame, or intercostal

Table 102:

FUSELAGE DENT ALLOWABLE DAMAGE LIMITS		
DEPTH	**W/Y RATIO**	**CORRECTIVE ACTION**
Less than 0.125 in. (3.175 mm)	Greater than 30	Allowable Damage. No repair necessary.
Less than 0.125 in. (3.175 mm)	W/Y Ratio between 15 and 30 (15 < W/Y < 30)	Dent must be repaired permanently. However, you can delay the repair if you do all the steps that follow: 1. You initially do a Detailed Visual Inspection of the dent. 2. You do an HFEC inspection within 5,000 cycles. 3. You do a Detailed Visual Inspection every 4,000 cycles. 4. A permanent repair is made before 10,000 cycles.
Less than 0.125 in. (3.175 mm)	Less than 15	Dent must be repaired permanently. However, you can delay the repair if you do all the steps that follow: 1. You initially do a Detailed Visual Inspection of the dent. 2. You do an HFEC inspection within 5,000 cycles. 3. You do a Detailed Visual Inspection every 4,000 cycles. 4. A permanent repair is made before 10,000 cycles.
Depth between 0.125 in. (3.175 mm) and 0.25 in. (6.35 mm) (0.125 < Depth < 0.25)	W/Y Ratio between 15 and 30 (15 < W/Y < 30)	
Depth between 0.125 in. (3.175 mm) and 0.25 in. (6.35 mm) (0.125 < Depth < 0.25)	Greater than 30	Dent must be repaired permanently. However, you can delay the repair if you do all the steps that follow: 1. You initially do a Detailed Visual Inspection of the dent. 2. You do an HFEC inspection within 5,000 cycles. 3. You do a Detailed Visual Inspection every 4,000 cycles. 4. A permanent repair is made before 13,000 cycles.

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Table 102: (Continued)

FUSELAGE DENT ALLOWABLE DAMAGE LIMITS		
DEPTH	**W/Y RATIO**	**CORRECTIVE ACTION**
Greater than 0.125 in. (3.175 mm)	Less than 15	Dent must be repaired permanently. However, you can delay the repair if you do all the steps that follow: 1. You initially do a Detailed Visual Inspection of the dent. 2. You do an HFEC inspection within 500 cycles. 3. You do a Detailed Visual Inspection every 500 cycles. 4. A permanent repair is made before 5,000 cycles.
Greater than 0.25 in. (6.35 mm)	All	

NOTE: In order to use Table 102/ALLOWABLE DAMAGE 1, dent must meet these requirements.

Dents must:

- Be smooth and free of sharp creases, gouges or cracks.
- Be 10 in. (254 mm) or more from a cutout and 3 in. (76 mm) or more from a skin splice as measured from the nearest fastener hole centerline to the edge of the dent periphery.
- Not be common to a stringer, tear strap, frame or fastener.

Dents must not have:

- Broken, pulled or loose fasteners.
- Elongated fastener holes.
- Substructure damage.

(4) Holes and Punctures are not permitted.

(5) Wrinkles and Buckles are permitted as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 1, Detail H if the damage does not go in or through a fastener hole.

(6) Unbonded areas:

(a) Unbonded areas in the skin-to-bear strap bonds at the forward and aft entry and galley door surround structure are permitted.

1) You must apply BMS 3-23 corrosion inhibiting compound to an unbonded area that is at an edge.

(b) Unbonded areas in skin-to-doubler bonds are permitted as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 1, Detail I .

1) You must apply BMS 3-23 corrosion inhibiting compound to an unbonded area that is at an edge.

B. Zone 2 - (Pressurized Fuselage not in the Crown Area)

(1) Cracks:

(a) Remove the damage as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 1, Details A and B.

(b) Remove the damage as shown in Figure 103, Details P, Q, and R for the fuselage skin areas adjacent to the forward and aft cargo doors. Make sure to remove the damage with a surface finish of 63 Ra or better. For Figure 103, Detail Q, do a High Frequency Eddy Current (HFEC) inspection of the reworked area of the skin and the fastener holes that were removed to make sure there is no further damage. Refer to NDT Part 6, 51-00-00, Figure 16.

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1) Replace any fasteners in the damaged area with initial type drawing fasteners in a shifted transition fit hole. Use an interference between 0.0005 and 0.0045 inch. Refer to 51-40-05, GENERAL.

NOTE: Install a SRM approved hex drive bolt and nut to damaged areas along the aft edge of the door cutout as given in Figure 103, Detail P that is common to a frame outer chord fastener. Torque as given in BAC5004-2 if the surface sealant has been applied again between the frame chord and the adjacent skin surfaces.

(2) Nick, Gouges, Scratches, and Corrosion:

(a) Remove the damage as given in Figure 103, Details P, Q, and R for fuselage skin areas adjacent to the forward and aft cargo doors. Make sure to remove the damage with a surface finish of 63 Ra or better. For Figure 103, Detail Q, do a High Frequency Eddy Current (HFEC) inspection of the reworked area of the skin and the fastener holes that were removed to make sure there is no further damage. Refer to NDT Part 6, 51-00-00, Figure 16.

1) Replace any fasteners in the damaged area with initial type drawing fasteners in a shifted transition fit hole. Use an interference between 0.0005 and 0.0045 inch. Refer to 51-40-05, GENERAL.

NOTE: Install a SRM approved hex drive bolt and nut to damaged areas along the aft edge of the door cutout as given in Figure 103, Detail P that is common to a frame outer chord fastener. Torque as given in BAC5004-2 if the surface sealant has been applied again between the frame chord and the adjacent skin surfaces.

(b) Remove the damage as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 1, Details A , B , C , D , E, S, T, and U.

1) You can remove the damage from the areas that follow:

a) The inner and outer surfaces of the solid skin, a bonded skin assembly, or a skin lap splice.

b) The sealed surfaces of a skin lap splice.

2) The total depth of the damage removed at each location must be less than or equal to the percentage of the skin thickness at the damage location.

NOTE: When you calculate the depth of damage removal, use the thickness given in the applicable identification subject or engineering drawing.

a) When you remove damage on a solid skin, use the skin thickness at the damage location to calculate the percentage of damage removal.

b) When you remove damage on a bonded skin assembly, use the thickness of the skin layer from which you removed the damage to calculate the percentage of damage removal.

(c) If you remove corrosion damage that goes across the head of a countersink rivet, replace the rivet.

(d) If you remove a countersink rivet to remove the damage, install a new rivet of the same size and type as the initial rivets. Use an oversize rivet as necessary.

1) The countersink depth must not be more than 80 percent of the thickness of the solid skin.

2) The countersink depth must not be more than 80 percent of the total thickness of a bonded skin assembly.

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3) You can replace the countersink rivet with a protruding head rivet. Refer to Table 101/ALLOWABLE DAMAGE 1 for the type and size of protruding head rivet to use.

NOTE: Protruding head fasteners are not permitted near static ports or angle of attack sensors where external repairs are not permitted. Refer to 51-10-01. A mixture of 3/16 inch fasteners and 1/4 inch fasteners is not permitted in lap or butt splices. You are permitted to replace initial 3/16 inch fasteners with 7/32 inch oversize fasteners on lap and butt splices.

(3) Dents:

(a) Dents in extra critical areas near the air data sensors must be reworked to initial contour as described in 51-10-01, GENERAL paragraph 5.

CAUTION: DO NOT FILL DENTS THAT ARE MORE THAN THE ALLOWABLE DAMAGE LIMITS. IF YOU DO NOT OBEY, THE RESULT CAN BE AN UNSATISFACTORY CONDITION THAT CAN CAUSE MORE DAMAGE TO THE AIRPLANE STRUCTURE.

(b) Other dents not near the air data sensors are permitted as given in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 1, Detail G and Table 102/ALLOWABLE DAMAGE 1.

1) A dent larger than the limits shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 1, Detail G is permitted if:

a) There are no loose or missing fasteners

b) There are no damaged fastener holes

c) There are no creases, gouges, or cracks near the dent

d) The damage does not go across stringers, frames, or intercostals

e) You do not fill the dent.

f) You make an inspection of the dent for corrosion and cracks at the flight cycle intervals as given in Table 102/ALLOWABLE DAMAGE 1.

(4) Wrinkles and Buckles are permitted as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 1, Detail H if:

(a) They do not go in or through a fastener hole

(b) They do not cross stringers, intercostals or frame

(c) There are no cracks near the wrinkles or buckles

(d) They are not more than 0.15 inch in depth as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 1, Detail H

(e) There are no loose or damaged fasteners

(f) You make an inspection of the dent for corrosion and cracks at the flight cycle intervals that follow:

1) For airplanes that have completed Service Bulletin 737-21-1149, inspect each 2500 flight cycle interval or more frequently.

2) For airplanes that have not completed Service Bulletin 737-21-1149, inspect each 5000 flight cycle interval or more frequently.

(5) Holes and Punctures are not permitted.

(6) Unbonded areas:

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(a) Unbonded areas in the skin-to-bear strap bonds at the forward and aft entry and galley door surround structure are permitted.

1) You must apply BMS 3-23 corrosion inhibiting compound to an unbonded area that is at an edge.

(b) Unbonded areas in skin-to-doubler bonds are permitted as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 1, Detail I .

1) You must apply BMS 3-23 corrosion inhibiting compound to an unbonded area that is at an edge.

C. Zone 3 - (Non-pressurized Fuselage)

(1) Cracks:

(a) Remove the damage as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 1, Details A and B .

(2) Nicks, Gouges, Scratches, and Corrosion:

(a) Remove the damage as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 1, Details A , B , C , D , E, S, T, and U .

1) You can remove the damage from the areas that follow:

a) The inner and outer surfaces of the solid skin, a bonded skin assembly, or a skin lap splice

b) The sealed surfaces of a skin lap splice.

2) The total depth of the damage removed at each location must be less than or equal to the percentage of the skin thickness at the damage location.

NOTE: When you calculate the depth of damage removal, use the skin thickness given in the applicable identification subject or engineering drawing.

a) When you remove damage on a solid skin, use the skin thickness at the damage location to calculate the percentage of damage removal.

b) When you remove damage on a bonded skin assembly, use the thickness of the skin layer from which you removed the damage to calculate the percentage of damage removal.

(b) If you remove a countersink rivet to remove the damage, install a new rivet of the same size and type as the initial rivets. Use an oversize rivet as necessary.

1) The countersink depth must not be more than 80 percent of the thickness of the solid skin.

2) The countersink depth must not be more than 80 percent of the total thickness of a bonded skin assembly.

3) You can replace the countersink rivet with a protruding head rivet. Refer to Table 101/ALLOWABLE DAMAGE 1 for the type and size of protruding head rivet to use.

NOTE: A mixture of 3/16 inch fasteners and 1/4 inch fasteners is not permitted in lap or butt splices. You are permitted to replace initial 3/16 inch fasteners with 7/32 inch oversize fasteners on lap and butt splices.

(3) Dents

(a) Dents in extra critical areas near the air data sensors must be reworked to initial contour as described in 51-10-01, GENERAL paragraph 5.

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CAUTION: DO NOT FILL DENTS THAT ARE MORE THAN THE ALLOWABLE DAMAGE LIMITS. IF YOU DO NOT OBEY, THE RESULT CAN BE AN UNSATISFACTORY CONDITION THAT CAN CAUSE MORE DAMAGE TO THE AIRPLANE STRUCTURE.

(b) Other dents not near the air data sensors are permitted as given in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 1, Detail G and Table 102/ALLOWABLE DAMAGE 1.

1) A dent larger than the limits shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 1, Detail G is permitted if:

a) There are no loose or missing fasteners

b) There are no damaged fastener holes

c) There are no creases, gouges, or cracks near the dent

d) You do not fill the dent

(4) Holes and Punctures are permitted if:

(a) They are a maximum of 0.25 inch in diameter

(b) They are a minimum of 1.00 inch away from a fastener hole, an edge, or other damage

(c) They are a filled with a 2017-T3 or 2017-T4 aluminum protruding head rivet installed without sealant.

(5) Wrinkles or Buckles are permitted as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 1, Detail H if:

(a) The damage does not go in or through a fastener hole

(b) You make an inspection of the damage for corrosion and cracks at each 5000 flight cycle interval or more frequently.

(6) Unbonded areas in skin-to-doubler bonds are permitted as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 1, Detail I .

(a) You must apply BMS 3-23 corrosion inhibiting compound to an unbonded area that is at an edge.

Table 103:

BLENDING LIMITS FOR FIGURE 104				
BODY SECTION	**STRINGERS**	**SIDE OF THE FUSELAGE**	**BODY STATION**	**MAXIMUM DAMAGE DEPTH PERMITTED**
43	S-17 TO S-18 (For Airplanes That Have Completed Service Bulletin 737-21-1149)	L	STA 500E TO STA 500F	0.05T
43	S-21 TO S-22 (For Airplanes That Have Completed Service Bulletin 737-21-1149)	L	STA 500F TO STA 500G	0.05T
43	S-13 TO S-15	BOTH	STA 500H TO STA 500I	0.05T
43	S-13 TO S-17	R	STA 520 TO STA 540	0.05T
43	S-14 TO S-18	L	STA 520 TO STA 540	0.05T

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Table 103: (Continued)

BLENDING LIMITS FOR FIGURE 104				
BODY SECTION	STRINGERS	SIDE OF THE FUSELAGE	BODY STATION	MAXIMUM DAMAGE DEPTH PERMITTED
46	S-2 TO S-4 (For Airplanes That Have Not Completed Service Bulletin 737-21-1149)	L	STA 847 TO STA 887	0.05T
46	S-1 TO S-4 (For Airplanes That Have Completed Service Bulletin 737-21-1149)	BOTH	STA 847 TO STA 887	0.05T
46	S-3 TO S-4	L	STA 807 TO STA 847	0.05T
46	S-5 TO S-7 (For Airplanes That Have Not Completed Service Bulletin 737-21-1149)	L	STA 767 TO STA 807	0.05T
46	S-5 TO S-7 (For Airplanes That Have Completed Service Bulletin 737-21-1149)	BOTH	STA 727I TO STA 807	0.05T
46	S-6 TO S-7	L	STA 867 TO STA 887	0.05T
46	S-8 TO S-9 (For Airplanes That Have Not Completed Service Bulletin 737-21-1149)	L	STA 727H TO STA 727I	0.05T
46	S-7 TO S-9 (For Airplanes That Have Completed Service Bulletin 737-21-1149)	BOTH	STA 727H TO STA 727I	0.05T
46	S-8 TO S-9 (For Airplanes That Have Not Completed Service Bulletin 737-21-1149)	L	STA 727H TO STA 727J	0.05T
46	S-7 TO S-9 (For Airplanes That Have Completed Service Bulletin 737-21-1149)	R	STA 747 TO STA 767	0.05T
46	S-14 TO S-16	R	STA 827 TO STA 847	0.05T
46	S-17 TO S-19	BOTH	STA 727A TO STA 727B	0.05T

D. For allowable damage for heat damage due to lightning strike do as follows:

NOTE: These limits are applicable to all Zones of the aircraft.

(1) Do the following general inspections:

(a) Do a detail visual inspection of the damage with a minimum of 10X magnification in a 3 inch radius area around the damage to make sure there are no cracks.

(b) Do a general visual inspection of the skin within a 20 inch radius around the damage to make sure there are no cracks or corrosion.

(2) For lightning strike damage to the fuselage skin away from fasteners, you can operate the airplane for 350 flight cycles if you meet the following conditions:

(a) The lightning strike damage is equal to or less than 0.250 inch in diameter,

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(b) The distance between any two lightning strike damages is greater than 3 inches, and

(c) The lightning strike damage is a minimum of 1 inch away from an edge of a part or fasteners.

(d) No skin material is missing.

(3) For lightning strike damage to the fuselage at fasteners you can operate the airplane for up to 350 flight cycles if you meet the following conditions:

(a) The damage at a fastener is within the damage rating limits given in Figure 103, Details L, M, N, and O.

(b) You do a close visual inspection to the damage area to make sure there are no exposed countersink fasteners or further damage.

(c) You apply all initial production drawing finishes as necessary.

(4) You must do the repair given in 53-00-01, REPAIR 13 at or before 350 flight cycles for all lighting strike damages.

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REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER EDGE MARGINS DO NOT HAVE AN OVERLAP

A

REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER EDGE MARGINS HAVE AN OVERLAP

B

REMOVAL OF DAMAGED MATERIAL ON A SURFACE

C

Allowable Damage Limits
Figure 103 (Sheet 1 of 17)

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REMOVAL OF DAMAGE AROUND THE FASTENERS ON A SURFACE

D

B–B

L35655 S0006587374_V3

Allowable Damage Limits
Figure 103 (Sheet 2 of 17)

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NOTE: DAMAGE REMOVAL IS SHOWN ON THE OUTER SURFACE. DAMAGE REMOVAL IS PERMITTED ON THE OTHER SURFACES AS SHOWN IN FIGURE 104.

MATERIAL REMOVAL IS NOT PERMITTED IN THE 3RD ROW FROM THE EDGE ON LAP SPLICE.

BUTT SPLICE IS SIMILAR EXCEPT: MATERIAL REMOVAL IS NOT PERMITTED IN THE 2ND ROW OF A 2-ROW BUTT. MATERIAL REMOVAL IS NOT PERMITTED IN THE 3RD ROW OF A 3-ROW BUTT.

REMOVAL OF DAMAGE AROUND THE FASTENERS
OF AN EDGE OR A SURFACE AT A LAP SPLICE

E

NOTE: REFER TO TABLE 103

C-C

L35659 S0006587377_V3

Allowable Damage Limits
Figure 103 (Sheet 3 of 17)

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NOTE: MATERIAL REMOVAL NOT PERMITTED IN THE FIRST FASTENER ROW FROM THE EDGE OF THE TEAR STRAP TAB. DAMAGE REMOVAL IS SHOWN ON THE OUTER SURFACE.

1 THERE ARE TEAR STRAPS THAT HAVE FIVE FASTENERS ACROSS INSTEAD OF FOUR.

REMOVAL OF DAMAGE AROUND THE FASTENERS AT A TEAR STRAP TAB

F

L35663 S0006587380_V3

Allowable Damage Limits
Figure 103 (Sheet 4 of 17)

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DENT THAT IS PERMITTED

G

WRINKLES OR BUCKLES THAT ARE PERMITTED

H

F53469 S0006587382_V3

Allowable Damage Limits
Figure 103 (Sheet 5 of 17)

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NOTE: REFER TO DETAILS J AND K FOR THE DEFINITIONS OF THE LENGTH (L) AND THE UNBONDED AREA.

UNBONDED AREAS IN BONDED DOUBLERS

I

F53495 S0006587383_V3

Allowable Damage Limits
Figure 103 (Sheet 6 of 17)

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$$\text{PERCENT OF UNBONDED AREA IN LENGTH (L)} = \frac{\text{UNBONDED AREA}}{\text{W x L}} \text{ x } 100$$

ONE UNBONDED AREA

J

G42109 S0006587384_V1

Allowable Damage Limits
Figure 103 (Sheet 7 of 17)

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PERCENT OF UNBONDED AREA IN LENGTH L

$$= \frac{\text{AREA 1}}{W \times L_1} \times 100$$

$$= \frac{\text{AREA 2}}{W \times L_2} \times 100$$

$$= \frac{\text{AREA 3}}{W \times L_3} \times 100$$

$$= \frac{\text{AREA 1 + AREA 2}}{W \times L_4} \times 100$$

$$= \frac{\text{AREA 2 + AREA 3}}{W \times L_5} \times 100$$

$$= \frac{\text{AREA 1 + AREA 2 + AREA 3}}{W \times L_6} \times 100$$

THE PERCENT OF UNBONDED AREA IN ANY LENGTH (L1 THROUGH L6 IN THIS EXAMPLE) SHOULD BE BELOW THE CURVE.

MORE THAN ONE UNBONDED AREA

K

G42106 S0006587385_V1

Allowable Damage Limits
Figure 103 (Sheet 8 of 17)

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DAMAGE DESCRIPTION	LIGHTNING STRIKE DAMAGE RATING (LSDR)
EXPOSED COUNTERSINK (WHERE PART OF THE RIVET HEAD MATERIAL IS MISSING) OR MISSING FASTENER. FOR A MISSING FASTENER BEFORE ANY REVENUE FLIGHTS ACCOMPLISH SRM 53-00-01, REPAIR 13.	15
IF THERE ARE MORE THAN FIVE (5) CONSECUTIVE DAMAGED FASTENERS IN A ROW, • APPLIES TO LAP JOINT CRITICAL ROW, BUTT JOINT, SKIN/STRINGER ATTACHMENT	15
IF THERE ARE BETWEEN 3 AND 5 CONSECUTIVE DAMAGED FASTENERS, • APPLIES TO LAP JOINT CRITICAL ROW, BUTT JOINT, SKIN/STRINGER ATTACHMENT IF THERE ARE MORE THAN EIGHT (8) CONSECUTIVE DAMAGED FASTENERS, • APPLIES TO LAP JOINT NON-CRITICAL ROW	5
IF THERE ARE 1 TO 2 CONSECUTIVE DAMAGED FASTENERS, • APPLIES TO LAP JOINT CRITICAL ROW, BUTT JOINT, SKIN/STRINGER ATTACHMENT IF THERE ARE 1 TO 8 CONSECUTIVE DAMAGED FASTENERS, • APPLIES TO LAP JOINT NON-CRITICAL ROW	2

LIGHTNING STRIKE DAMAGE RATING (LSDR)
(SEE EXAMPLE IN DETAILS N AND O)

L

DETAIL LEVEL	MAXIMUM LSDR FOR 10 FLIGHT CYCLE REPAIR LIMIT	MAXIMUM LSDR FOR 350 FLIGHT CYCLE REPAIR LIMIT
SINGLE SKIN PANEL	10 OR MORE	9
AIRPLANE SECTION (SUCH AS 41 SECTION)	15 OR MORE	14

AIRPLANE ALLOWABLE DAMAGE LIMIT FOR LSDR
(LIGHTNING STRIKE DAMAGE RATING)
(SEE EXAMPLE IN DETAILS N AND O)

M

J74262 S0000178096_V2

Allowable Damage Limits
Figure 103 (Sheet 9 of 17)

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DAMAGE	SCORE (USE FROM DETAIL L)	REPAIR INTERVAL (USE FROM DETAIL M)
FOR: • LAP JOINT NON-CRITICAL ROW, 11 FASTENERS • BUTT JOINT, 2 FASTENERS	7	REPAIR IN 350 FLIGHT CYCLES OR LESS
FOR: • SKIN/STRINGER, 2 FASTENERS • LAP JOINT CRITICAL ROW, 5 FASTENERS • LAP JOINT NON-CRITICAL ROW, 4 FASTENERS	9	REPAIR IN 350 FLIGHT CYCLES OR LESS
FOR 1 MISSING FASTENER	15	BEFORE ANY REVENUE FLIGHTS ACCOMPLISH SRM 53-00-01, REPAIR 13
FOR: • LAP JOINT NON-CRITICAL ROW, 5 FASTENERS • LAP JOINT CRITICAL ROW, 3 FASTENERS • SKIN/STRINGER, 8 FASTENERS	22	REPAIR IN 10 FLIGHT CYCLES OR LESS

PANEL SECTION DAMAGE RATING
(SAMPLE CALCULATION)

N

J74327 S0000178097_V2

Allowable Damage Limits
Figure 103 (Sheet 10 of 17)

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DAMAGE	SCORE (USE FROM DETAIL L)	REPAIR INTERVAL (USE FROM DETAIL M)
FOR SECTION 41 - 2 PANELS • LAP JOINT NON-CRITICAL ROW, 7 FASTENERS • BUTT JOINT, 4 FASTENERS	7	REPAIR IN 350 FLIGHT CYCLES OR LESS
FOR SECTION 48, - 3 PANELS • SKIN/STRINGER, 5 FASTENERS • LAP JOINT CRITICAL ROW, 4 FASTENERS • LAP JOINT NON-CRITICAL ROW, 4 FASTENERS	12	REPAIR IN 350 FLIGHT CYCLES OR LESS
FOR SECTION 41 - 1 PANEL • 1 MISSING FASTENER	15	BEFORE ANY REVENUE FLIGHTS ACCOMPLISH SRM 53-00-01, REPAIR 13

MAJOR SECTION DAMAGE RATING
(SAMPLE CALCULATION)

DEFINITION OF CRITICAL FASTENER ROW

0

J75449 S0000178561_V2

Allowable Damage Limits
Figure 103 (Sheet 11 of 17)

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ALLOWABLE DAMAGE BLENDOUT AREA

FORWARD AND AFT CARGO DOOR CUTOUT BLENDOUT ZONES

P

480143 S0000143190_V6

Allowable Damage Limits
Figure 103 (Sheet 12 of 17)

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FASTENER SYMBOLS

-|- REFERENCE FASTENER LOCATION.

FUSELAGE SKIN ADJACENT TO THE FORWARD AND AFT CARGO DOOR CUTOUT

Q

480148 S0000143191_V4

Allowable Damage Limits
Figure 103 (Sheet 13 of 17)

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NOTES

- TRIM OUT THE DAMAGE AS SHOWN:
  - PERFORM A HIGH FREQUENCY EDDY CURRENT (HFEC) INSPECTION ALONG THE EDGE OF THE SKIN AND/OR BEARSTRAP TRIM.
  - IF NO DAMAGE IS FOUND PERFORM AN 0.04 INCH INSURANCE CUT ALONG THE EDGE OF THE TRIM.
  - THE EDGE FINISH SHOULD BE 63Ra OR BETTER. MAINTAIN THE DRAWING EDGE CONFIGURATION AS SHOWN IN G-G.
- THE SKIN, BEAR STRAP, OR BOTH MAY BE BLENDED OUT TO A MAXIMUM DEPTH OF 0.20 INCH (5.1 mm) USING A 1.0 INCH (25.4 mm) RADIUS, AS SHOWN.
- MAKE SURE THERE IS A MINIMUM EDGE MARGIN OF 2D (WHERE D = FASTENER DIAMETER) AT ALL LOCATIONS.

FASTENER SYMBOLS

REFERENCE FASTENER LOCATION.

FUSELAGE SKIN ADJACENT TO THE FORWARD AND AFT CARGO DOOR CUTOUT

R

480149 S0000143192_V3

Allowable Damage Limits
Figure 103 (Sheet 14 of 17)

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TYPICAL SKIN BUTT JOINT

A–A

CIRCUMFERENTIAL BUTT SPLICE LIMITS

S

U74175 S0000215077_V1

Allowable Damage Limits
Figure 103 (Sheet 15 of 17)

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NOTES

2 BETWEEN 0.10 AND 1.0 INCHES FROM OVERLAPPING SKIN EDGE, DAMAGE UP TO 2.0 INCHES IN LENGTH (L) CAN BE REMOVED AS SHOWN IN DETAIL C. DAMAGED MATERIAL REMOVAL BOUNDARY CAN EXTEND INTO THE 0.0 TO 0.10 INCHES ZONE FROM OVERLAPPING SKIN EDGE. CONTACT BOEING IF THE PROPER 20:1 BLEND RATIO CANNOT BE ACHIEVED. DAMAGED MATERIAL REMOVAL MUST BE A MINIMUM OF 40 INCHES FROM THE NEAREST ADJACENT DAMAGED MATERIAL REMOVAL OR REPAIR ALONG THE SAME LAP SPLICE. IF FILLET SEALING IS ADDED AFTER THE REMOVAL OF DAMAGED MATERIAL, THE FILLET SEAL MUST NOT COVER THE AREA OF THE ORIGINAL DAMAGE.

NOTE: KEEP ALL OTHER LIMITS AND CRITERIA AS GIVEN IN THIS ALLOWABLE DAMAGE SRM 53-00-01.

SKIN LAP JOINT

T

U74174 S0000215079_V1

Allowable Damage Limits
Figure 103 (Sheet 16 of 17)

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NOTES

3 WITHIN 0.10 INCH FROM THE EDGE OF DOUBLER, NO DAMAGE IS PERMITTED IN THE SKIN. CONTACT BOEING FOR ALLOWABLE DAMAGE MATERIAL REMOVAL LIMITS FOR THIS AREA.

4 BETWEEN 0.10 AND 1.0 INCHES FROM THE EDGE OF DOUBLER, DAMAGE UP TO 2.0 INCHES IN LENGTH (L) CAN BE REMOVED AS GIVEN IN DETAIL C. DAMAGED MATERIAL REMOVAL BOUNDARY CAN EXTEND INTO THE 0.0 TO 0.10 INCHES ZONE FROM THE DOUBLER EDGE. REMOVE DOUBLER IF NECESSARY TO ACHIEVE TAPER RATIO AS GIVEN IN DETAIL C. REINSTALL DOUBLER AND FASTENERS AS GIVEN IN APPROPRIATE SRM FIGURE OR CONTACT BOEING FOR ASSISTANCE. DAMAGED MATERIAL REMOVAL MUST BE A MINIMUM OF 40 INCHES FROM THE NEAREST AREA OF DAMAGED MATERIAL REMOVAL ADJACENT TO THE SAME DOUBLER. IF FILLET SEALING IS ADDED AFTER REMOVAL OF DAMAGED MATERIAL, THE FILLET SEAL MUST NOT COVER THE AREA OF THE ORIGINAL DAMAGE.

NOTE: KEEP ALL OTHER LIMITS AND CRITERIA AS GIVEN IN THIS ALLOWABLE DAMAGE SRM 53-00-01.

SKIN EXTERNAL DOUBLER

U

U74365 S0000215080_V1

Allowable Damage Limits
Figure 103 (Sheet 17 of 17)

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5. **Airplane Operation Limits**

A. If there is fuselage skin damage, airplane operation limits can be necessary.

(1) Find the applicable area in Damage Dimensions for the Fuselage Skin, Figure 104/ALLOWABLE DAMAGE 1 for the length and depth of the damage in all 20-inch by 20-inch square areas of the fuselage skin.

(a) The depth of the damage shown in Damage Dimensions for the Fuselage Skin, Figure 104/ALLOWABLE DAMAGE 1 is given as a percentage of the initial skin thickness.

1) When you calculate the damage depth, use the skin thickness given in the applicable engineering drawings. Do not include doublers. Include only the single layer of a bonded skin assembly from which material is removed.

(b) Damage Dimensions for the Fuselage Skin, Figure 104/ALLOWABLE DAMAGE 1, Detail A is applicable to damage in fuselage skin allowable damage Zone 1. Refer to Allowable Damage Zones, Figure 102/ALLOWABLE DAMAGE 1 for the definition of the fuselage skin zones.

(c) Damage Dimensions for the Fuselage Skin, Figure 104/ALLOWABLE DAMAGE 1, Detail B is applicable to damage in fuselage skin allowable Zones 2 and 3. Refer to Allowable Damage Zones, Figure 102/ALLOWABLE DAMAGE 1 for the definition of the fuselage skin zones.

(d) Damage Dimensions for the Fuselage Skin, Figure 104/ALLOWABLE DAMAGE 1 is applicable to:

1) Cracks

2) Nicks, Scratches, Gouges, and Corrosion

3) Holes and Punctures.

(e) Damage Dimensions for the Fuselage Skin, Figure 104/ALLOWABLE DAMAGE 1 is not applicable to:

1) Dents

2) Wrinkles or Buckles.

(2) Refer to Table 104/ALLOWABLE DAMAGE 1 to find the damage treatment and permitted airplane operations for the area you found in Damage Dimensions for the Fuselage Skin, Figure 104/ALLOWABLE DAMAGE 1.

Table 104:

PERMITTED AIRPLANE OPERATIONS		
FIGURE 104 CHART AREA	**DAMAGE TREATMENT**	**PERMITTED AIRPLANE OPERATIONS**
A	Clean up the damage as given in Figure 103	There are no airplane operation limits
B	Clean up the damage as given in Figure 103	Up to 50 revenue flight hours are permitted
	Do a permanent repair	There are no airplane operation limits

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Table 104: (Continued)

PERMITTED AIRPLANE OPERATIONS		
FIGURE 104 CHART AREA	**DAMAGE TREATMENT**	**PERMITTED AIRPLANE OPERATIONS**
C	Drill 0.25 inch diameter stop holes at the end of the cracks. Clean up other damage as given in Figure 103	A non-revenue flight to a repair station is permitted if the applicable regulatory authority gives approval before the flight. It is recommended that the proposed repair procedure be given to Boeing. The maximum cabin pressure differential is limited to 5.0 PSIG unless the skin is repaired. Cabin pressure limits are for skin damage to the pressurized fuselage skin only.
	Do an optional time-limited repair as given in SRM 53-00-01, Repair 5	Revenue flights are permitted as given in SRM 53-00-01, Repair 5
	Do a permanent repair	There are no airplane operation limits
D	Drill 0.25 inch diameter stop holes at the end of the cracks. Clean up other damage as given in Figure 103	A non-revenue flight to a repair station is permitted if the applicable regulatory authority gives approval before the flight. It is recommended that the proposed repair procedure be given to Boeing. The maximum cabin pressure differential is limited to 5.0 PSIG unless the skin is repaired. Cabin pressure limits are for skin damage to the pressurized fuselage skin only.
	Do a permanent repair	There are no airplane operation limits
E	Drill 0.25 inch diameter stop holes at the end of the cracks. Clean up other damage as given in Figure 103	A non-revenue flight to a repair station is permitted if the applicable regulatory authority gives approval before the flight. It is recommended that the proposed repair procedure be given to Boeing. The maximum cabin pressure differential is limited to zero PSIG. Cabin pressure limits are for skin damage to the pressurized fuselage skin only.
	Do a permanent repair	There are no airplane operation limits
F	Drill 0.25 inch diameter stop holes at the end of the cracks. Clean up other damage as given in Figure 103	Operation is not permitted before Boeing and the applicable regulatory authority give approval.
	Do a permanent repair	There are no airplane operation limits

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DAMAGE DIMENSIONS FOR FUSELAGE SKIN
ALLOWABLE DAMAGE ZONE 1

A

NOTES

1 SOME LOCATIONS HAVE A 5 PERCENT DAMAGE DEPTH. REFER TO TABLE 103

L35664 S0006587387_V3

Damage Dimensions for the Fuselage Skin
Figure 104 (Sheet 1 of 2)

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DAMAGE DIMENSIONS FOR FUSELAGE SKIN
ALLOWABLE DAMAGE ZONES 2 AND 3

B

F52843 S0006587390_V1

Damage Dimensions for the Fuselage Skin
Figure 104 (Sheet 2 of 2)

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ALLOWABLE DAMAGE 5 - FUSELAGE SKIN - LOWER SKIN

1. Applicability

A. ALLOWABLE DAMAGE 5 gives the allowable damage limits for the aluminum fuselage skins shown in Figure 101/Allowable Damage 5 and defined as:

(1) In Section 43 between Station 360–540 and between Stringers 24L–24R.

(2) In Section 46 between Station 727–887 and between Stringers 23L–23R.

B. ALLOWABLE DAMAGE 5 is not applicable:

(1) For skin located within 3.0 in. (76.0 mm) of the forward or aft cargo cutouts. Refer to ALLOWABLE DAMAGE 1.

(2) If airplane was modified per Service Bulletin 737-21-1149.

(3) For skin located within 1.0 in. (25.4 mm) of hex drive fasteners.

2. General

A. Refer to Paragraph 4./ALLOWABLE DAMAGE 5 for the allowable damage limits.

(1) Refer to NON-METALLIC MATERIALS, 51-30-03 for possible sources of abrasive and other materials you can use to remove the damage.

(2) Refer to EQUIPMENT AND TOOLS FOR REPAIRS, 51-30-05 for possible sources of equipment and tools you can use to remove the damage.

B. Make sure the aerodynamic smoothness is satisfactory or there will be a decrease in the performance of the airplane. Refer to AERODYNAMIC SMOOTHNESS, 51-10-01 and Figure 101/Allowable Damage 5.

NOTE: The fuselage lower skin contains both critical and non-critical aerodynamic areas.

C. After you remove the damage, do the steps that follow:

(1) Apply a chemical conversion coating to the reworked areas. Refer to PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS, 51-20-01

(2) Apply two layers of BMS 10-11, Type I primer to the reworked areas. Refer to SOPM 20-41-02.

(3) Apply BMS 5-95 sealant to the mating surfaces before you assemble a lap joint. Refer to REPAIR SEALING, 51-20-05.

D. In the critical aerodynamic areas fill the space between the edges of skin panels with BMS 5–95 sealant. Refer to Figure 101/Allowable Damage 5 for critical aerodynamic areas and AERODYNAMIC SMOOTHNESS, 51-10-01. Refer to REPAIR SEALING, 51-20-05 for sealant instructions.

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Fuselage Lower Skin Allowable Damage Locations
Figure 101 (Sheet 1 of 5)

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Fuselage Lower Skin Allowable Damage Locations
Figure 101 (Sheet 2 of 5)

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Fuselage Lower Skin Allowable Damage Locations
Figure 101 (Sheet 3 of 5)

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Fuselage Lower Skin Allowable Damage Locations
Figure 101 (Sheet 4 of 5)

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THERE IS NO ALLOWABLE DAMAGE PERMITTED WITHIN 3.0 INCHES (76 mm) OF THE CARGO DOOR CUTOUT.

FOR ALLOWABLE DAMAGE LIMITS REFER TO SRM 53-00-01 ALLOWABLE DAMAGE 1

CARGO DOOR CUTOUT BLENDOUT ZONES

A

2395334 S0000552998_V1

Fuselage Lower Skin Allowable Damage Locations
Figure 101 (Sheet 5 of 5)

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3. References

Reference	Title
51-10-01	AERODYNAMIC SMOOTHNESS
51-10-01, GENERAL	Aerodynamic Smoothness Requirements
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-20-05	REPAIR SEALING
51-30-03	NON-METALLIC MATERIALS
51-30-05	EQUIPMENT AND TOOLS FOR REPAIRS
51-40-08	COUNTERSINKING
53-00-01	FUSELAGE SKIN
53-00-01, REPAIR 5	External Time-limited Repair of a Small Hole
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes

4. Allowable Damage Limits

A. Fuselage Lower Skin

(1) Cracks:

(a) Remove the damage as shown in Figure 102/ALLOWABLE DAMAGE 5, Details A and B.

(2) Nicks, Gouges, Scratches, and Corrosion:

(a) Surface damage removal limits are given in Table 101/ALLOWABLE DAMAGE 5. Locations are given in Figure 101/Allowable Damage 5.

1) The total depth of the damage removed is calculated using the skin thickness given in the applicable identification subject or engineering drawing.

2) Remove the damage as shown in Figure 102/ALLOWABLE DAMAGE 5, Details A, B, C, D, E, F, and G.

Table 101: Surface Damage Removal Limits

Description	Location	Damage Limit (T = Skin Thickness)
Section 43 - General Lower Fuselage Skin Allowable Surface Damage Limit	Stations 360-540 Stringers 24L-24R	0.10T*[1]
Section 46 - General Lower Fuselage Skin Allowable Surface Damage Limit	Stations 727-887 Stringers 23L-23R	0.10T*[1]
Section 46 - Reduced Lower Fuselage Skin Allowable Surface Damage Limit	Stations 727C-727H BL 0 to Stringers 25L	0.05T
Section 46 - Reduced Lower Fuselage Skin Allowable Surface Damage Limit	Stations 727C-727F Stringers 27R-25R	0.05T
Forward and Aft Cargo Door Cutouts	Within 3.0. in. (76.0 mm) of the cutout	Refer to 53-00-01 Allowable Damage 1

*[1] Unless otherwise noted.

(b) For damage at rivet locations not at a lap joint, butt joint, or repair doubler:

1) The removal of damage is permitted around three fasteners in all groups of ten fasteners.

2) Remove the damage as given in Figure 102/ALLOWABLE DAMAGE 5, Detail D to a maximum depth as given in Table 101/ALLOWABLE DAMAGE 5.

3) If you remove corrosion damage that goes across the head of a countersink rivet, replace the rivet.

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4) If you remove a countersink rivet to remove the damage, install a new rivet of the same size and type as the initial rivets. Use an oversize rivet as necessary.

a) For solid skins, the countersink depth must not be more than 80 percent of the thickness of the solid skin.

b) You can replace the countersink rivet with a protruding head rivet. Refer to Table 102/ALLOWABLE DAMAGE 5 for the type and size of protruding head rivet to use. Install a countersink washer as per COUNTERSINKING, 51-40-08 as required.

NOTE: A mixture of 3/16 inch fasteners and 1/4 inch fasteners is not permitted in lap or butt splices. You are permitted to replace initial 3/16 inch fasteners with 7/32 inch oversize fasteners on lap and butt splices.

Table 102: Repair Rivets

Initial Rivet	Repair Rivet
BACR15GF5D	BACR15FT7D
BACR15GF6D	BACR15FT8D

(c) For damage at a lap joint, refer to Figure 102/ALLOWABLE DAMAGE 5, Detail E.

1) Damage is not permitted within 0.10 in. (2.54 mm) of the edge of a lap joint.

2) Between 0.10 in. (2.54 mm) and 1.0 in. (25.4 mm) away from the edge of a lap joint:

a) Damage up to 2.0 in. (50.8 mm) in length can be removed as shown in Detail C.

b) The taper from damage removal may extend within the 0.10 in. (2.54 mm) boundary of the edge of a lap joint.

c) Damage removal must be a minimum of 40 in. (1016 mm) from the nearest adjacent damage removal or repair along the same lap splice.

3) Damage removal is permitted at fastener locations on a lap splice:

a) Damage removal is not permitted in the critical row. The critical row is the furthest row from the outer skin edge of the lap joint.

b) Damage removal is permitted around three fasteners in all groups of eight. The critical row is not counted in any group of eight.

c) Remove the damage as shown in Figure 102/ALLOWABLE DAMAGE 5 Detail E to a maximum depth as given in Table 101/ALLOWABLE DAMAGE 5.

(d) For damage at a butt joint location, refer to Figure 102/ALLOWABLE DAMAGE 5, Detail F.

1) Damage removal is not permitted in the critical row. The critical row is the furthest row from the skin edge of the butt joint.

2) Damage removal around fasteners is permitted for up to three fasteners in a group of eight. For butt joints with three fastener rows, the third row furthest from the skin edge is not considered in any group of eight.

a) Damage removal limits are given in Table 101/ALLOWABLE DAMAGE 5.

b) Maintain a minimum of 0.50 in. (12.70 mm) radius contour at all blend edges as given in Figure 102 (Sheet 4).

3) Damage is not permitted on the butt splice strap.

(e) For damage on the outer surface within 1.0 in. (25.40 mm) of the edge of an repair doubler, refer to Figure 102/ALLOWABLE DAMAGE 5, Detail G.

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1) Damage is not permitted within 0.10 in. (2.54 mm) of the edge of a repair doubler. Refer to Figure 102/ALLOWABLE DAMAGE 5, Detail G.

2) Between 0.10 in. (2.54 mm) and 1.0 in. (25.4 mm) away from the edge of a repair doubler:

a) Damage up to 2.0 in. (50.8 mm) in length can be removed as shown in Figure 102/ALLOWABLE DAMAGE 5, Detail C .

b) Remove the doubler if necessary to achieve the taper ratio given in Detail C. Reinstall the doubler and fastener as given in original repair configuration.

c) Damaged material removal taper may extend within the 0.10 in. (2.54 mm) boundary.

d) Damage removal must be a minimum of 40 in. (1016 mm) from the nearest adjacent damage removal or repair along the same lap splice.

(3) Dents:

(a) Dents in extra critical areas near the air data sensors must be reworked to initial contour as described in 51-10-01, GENERAL, Paragraph 5.

(b) Other dents not near the air data sensors are permitted as given in Figure 102 (Sheet 6), Detail H and Table 103/ALLOWABLE DAMAGE 5.

1) A dent larger than the limits shown in Figure 102 (Sheet 6), Detail H is permitted if:

a) There are no loose or missing fasteners.

b) There are no damaged fastener holes.

c) There are no creases, gouges, or cracks near the dent.

d) The damage does not go across stringers, frames, or intercostals.

e) You do not fill the dent.

Table 103: FUSELAGE DENT ALLOWABLE DAMAGE LIMITS

DEPTH	W/Y RATIO	CORRECTIVE ACTION
Less than 0.125 in. (3.18 mm)	Greater than 30	Allowable damage. No repair necessary.
Less than 0.125 in. (3.18 mm)	W/Y Ratio between 15 and 30 (15 < W/Y < 30)	Dent must be repaired permanently. However, you can delay the repair if you do all the steps that follow: 1. You initially do a detailed visual inspection of the dent. 2. You do an HFEC inspection within 5,000 cycles. 3. You do a detailed visual inspection every 4,000 cycles. 4. A permanent repair is made before 10,000 cycles.
Less than 0.125 in. (3.18 mm)	Less than 15	Dent must be repaired permanently. However, you can delay the repair if you do all the steps that follow: 1. You initially do a detailed visual inspection of the dent. 2. You do an HFEC inspection within 5,000 cycles. 3. You do a detailed visual inspection every 4,000 cycles. 4. A permanent repair is made before 10,000 cycles.
Depth between 0.125 in. (3.18 mm) and 0.25 in. (6.35 mm) (0.125 < Depth < 0.25)	W/Y Ratio between 15 and 30 (15 < W/Y < 30)	
Depth between 0.125 in. (3.18 mm) and 0.25 in. (6.35 mm) (0.125 < Depth < 0.25)	Greater than 30	Dent must be repaired permanently. However, you can delay the repair if you do all the steps that follow: 1. You initially do a detailed visual inspection of the dent. 2. You do an HFEC inspection within 5,000 cycles. 3. You do a detailed visual inspection every 4,000 cycles. 4. A permanent repair is made before 13,000 cycles.

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Table 103: FUSELAGE DENT ALLOWABLE DAMAGE LIMITS (Continued)

DEPTH	W/Y RATIO	CORRECTIVE ACTION
Greater than 0.125 in. (3.18 mm)	Less than 15	Dent must be repaired permanently. However, you can delay the repair if you do all the steps that follow: 1. You initially do a detailed visual inspection of the dent. 2. You do an HFEC inspection within 500 cycles. 3. You do a detailed visual inspection every 500 cycles. 4. A permanent repair is made before 5,000 cycles.
Greater than 0.25 in. (6.35 mm)	All	

NOTE: In order to use Table 103/ALLOWABLE DAMAGE 5, dent must meet these requirements.

Dents must:

- Be smooth and free of sharp creases, gouges or cracks.
- Be 10 in. (254 mm) or more from a cutout and 3 in. (76 mm) or more from a skin splice as measured from the nearest fastener hole center line to the edge of the dent periphery.
- Not be common to a stringer, tear strap, frame or fastener.

Dents must not have:

- Broken, pulled or loose fasteners.
- Elongated fastener holes.
- Substructure damage.

(4) Holes and punctures are not permitted.

(5) Wrinkles and Buckles are not permitted.

(6) Lightning Strike:

(a) Do the following general inspections:

1) Do a detail visual inspection of the damage with a minimum of 10X magnification in a 3 in. (76 mm) radius area around the damage to make sure there are no cracks.

2) Do a general visual inspection of the skin within a 20 in. (508 mm) radius around the damage to make sure there are no cracks or corrosion.

(b) For lightning strike damage to the fuselage skin away from fasteners, you can operate the airplane for 350 flight cycles if you meet the following conditions:

1) The lightning strike damage is equal to or less than 0.25 in. (6.35 mm) in diameter.

2) The distance between any two lightning strike damages is greater than 3 in. (76 mm).

3) The lightning strike damage is a minimum of 1 in. (25 mm) away from an edge of a part of fasteners.

4) No skin material is missing.

(c) For lightning strike damage to the fuselage at fasteners you can operate the airplane for up to 350 flight cycles if you meet the following conditions:

1) The damage at a fastener is within the damage rating limits:

a) To determine the Lightning Strike Damage Rating (LSDR) for the damage, refer to Table 104/ALLOWABLE DAMAGE 5.

b) To determine the allowable damage limit using the LSDR's, refer to Table 105/ ALLOWABLE DAMAGE 5.

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c) For example calculations of the LSDR and allowable damage limits, refer to Table 106/ALLOWABLE DAMAGE 5.

2) You do a close visual inspection of the damage area to make sure there are no exposed countersink fasteners or additional damage.

3) You apply all initial production drawing finishes as necessary.

(d) You must do a repair as given in FUSELAGE SKIN, 53-00-01 at or before 350 flight cycles for lightning strike damages.

Table 104: Lightning Strike Damage Rating (LSDR)

Damage Description	Fastener Location	Lightning Strike Damage Rating (LSDR)
Exposed Countersink (rivet head material is missing)	All Fuselage Locations	15
Missing Fastener	All Fuselage Locations	Not permitted
Greater than five (5) consecutive damaged fasteners in a row	Lap joint critical row	15
	Butt joint	
	Stringer	
Between 3 and 5 consecutive damaged fasteners	Lap joint critical row	5
	Butt joint	
	Stringer	
Greater than 8 consecutive damaged fasteners	Lap joint non-critical row	5
Between 1 to 2 consecutive damaged fasteners	Lap joint critical row	2
	Butt joint	
	Stringer	
Between 1 to 8 consecutive damaged fasteners	Lap joint non-critical row	2

Table 105: Allowable Damage Limit using LSDR

Location	LSDR for 10 Flight Cycle Repair Limit	Maximum LSDR for 350 Flight Cycle Repair Limit
Single Skin Panel*[1]*[2]	10 or More	9 or Less
Airplane Section (such as Section 41)	15 or More	14 or Less

*[1] Location of the Section 43 Lower Skin Panel is between Station 360-540 and between Stringers 24L-24R.

*[2] Location of the Section 46 Lower Skin Panel is between Station 727–887 and between Stringers 23L-23R.

Table 106: Sample Calculations for Lightning Strike Allowable Damage Limits using LSDR

Damage	LSDR	Allowable Damage Repair Interval
For one skin panel section: 1. Lap joint non-critical row, 11 fasteners damaged 2. Butt joint, 2 fasteners damaged	7	Repair in 350 flight cycles or less
For one skin panel section: 1. Stringer, 2 fasteners damaged 2. Lap joint critical row, 5 fasteners damaged 3. Lap joint non-critical row, 4 fasteners damaged	9	Repair in 350 flight cycles or less
For one skin panel section: 1. One (1) missing fastener	Not Applicable	Repair the location before any revenue flight.

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Table 106: Sample Calculations for Lightning Strike Allowable Damage Limits using LSDR (Continued)

Damage	LSDR	Allowable Damage Repair Interval
For one skin panel section: 1. Lap joint non-critical row, 5 fasteners damaged 2. Lap joint critical row, 3 fasteners damaged 3. Stringer, 8 fasteners damaged	22	Repair in 10 flight cycles or less
For Section 43 in 2 skin panels: 1. Lap joint non-critical row, 7 fasteners damaged	2	Repair in 350 flight cycles or less
For Section 46 in 3 skin panels 1. Stringer, 5 fasteners damaged 2. Lap joint critical row, 4 fasteners damaged 3. Lap joint non-critical row, 4 fasteners damaged	12	Repair in 350 flight cycles or less
For Section 43 in 1 skin panel 1. One (1) missing fastener	Not Applicable	Repair the location before any revenue flight.

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REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER EDGE MARGINS DO NOT HAVE AN OVERLAP

A

REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER EDGE MARGINS HAVE AN OVERLAP

B

REMOVAL OF DAMAGED MATERIAL ON A SURFACE

C

A–A

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Allowable Damage Limits
Figure 102 (Sheet 1 of 6)

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REMOVAL OF DAMAGE AROUND THE FASTENERS ON A SURFACE

D

X = A MAXIMUM OF 0.10T OR 0.05T AS GIVEN IN TABLE 101

B–B

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Allowable Damage Limits
Figure 102 (Sheet 2 of 6)

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NOTES

DAMAGE REMOVAL IS SHOWN ON THE OUTER SURFACE.
DAMAGE REMOVAL TO INSIDE SURFACE IS SIMILAR.

1 MATERIAL REMOVAL IS NOT PERMITTED IN THE CRITICAL ROW. THE CRITICAL ROW IS THE FURTHEST ROW FROM THE LAP SPLICE EDGE ON THE OUTER SKIN

2 REMOVAL OF MATERIAL AROUND THREE FASTENERS IN ALL GROUPS OF EIGHT IS PERMITTED TO A MAXIMUM DEPTH OF X. THE THIRD ROW IS NOT CONSIDERED AS ANY GROUP OF EIGHT.

3 REMOVE THE FASTENERS BEFORE THE DAMAGE IS REMOVED. INSTALL THE FASTENERS AFTER THE REWORK IS DONE.

4 DAMAGE IS NOT PERMITTED ON THE SKIN WITHIN 0.10 INCH (2.54 MM) FROM THE EDGE OF THE LAP SLICE.

5 DAMAGE IS PERMITTED BETWEEN 0.10 INCH (2.54 MM) AND 1.0 INCH (25.4 MM) FROM THE EDGE OF THE LAP SPLICE.

6 THE TAPER FROM DAMAGE REMOVAL MAY EXTEND WITHIN THE 0.10 INCH (2.54 MM) BOUNDARY OF THE EDGE OF A LAP JOINT.

REMOVAL OF DAMAGE

E

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Allowable Damage Limits
Figure 102 (Sheet 3 of 6)

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NOTES

DAMAGE REMOVAL IS SHOWN ON THE OUTER SURFACE. DAMAGE REMOVAL IS PERMITTED ON THE OTHER SURFACES AS GIVEN IN PARAGRAPH 4.

1 MATERIAL REMOVAL IS NOT PERMITTED IN THE CRITICAL ROW. THE CRITICAL ROW IS THE FURTHEST ROW FROM THE SKIN EDGE OF THE BUTT JOINT.

2 REMOVAL OF MATERIAL AROUND THREE FASTENERS IN ALL GROUPS OF EIGHT IS PERMITTED TO A MAXIMUM DEPTH OF X. FOR BUTT JOINTS WITH THREE FASTENER ROWS, THE THIRD FASTENER ROW IS NOT CONSIDERED AS ANY GROUP OF EIGHT

3 REMOVE THE FASTENERS BEFORE THE DAMAGE IS REMOVED. INSTALL THE FASTENERS AFTER THE REWORK IS DONE.

REMOVAL OF DAMAGE AT A BUTT JOINT

F

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Allowable Damage Limits
Figure 102 (Sheet 4 of 6)

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L = MAXIMUM LENGTH OF DAMAGE PERMITTED WITHIN 0.10 INCH (2.54 mm) AND 1.0 INCH (25.4 mm) FROM THE EDGE OF THE DOUBLER.
= 2.0 INCHES (50.8 mm)

NOTES

DAMAGED MATERIAL REMOVAL MUST BE A MINIMUM OF 40 INCHES (1016 mm) FROM THE NEAREST ADJACENT DAMAGE REMOVAL ALONG THE SAME REPAIR DOUBLER.

1 DAMAGE IS NOT PERMITTED ON THE SKIN WITHIN 0.10 INCH (2.54 mm) FROM THE EDGE OF THE DOUBLER.

2 DAMAGE IS PERMITTED BETWEEN 0.10 INCH (2.54 mm) AND 1.0 INCH (25.4 mm) FROM THE EDGE OF THE DOUBLER.

3 THE TAPER FROM DAMAGE REMOVAL MAY EXTEND WITHIN THE 0.10 INCH (2.54 mm) BOUNDARY OF THE EDGE OF A LAP JOINT.

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Allowable Damage Limits
Figure 102 (Sheet 5 of 6)

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DENT THAT IS PERMITTED

H

DEFINITION OF CRITICAL FASTENER ROW

I

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Allowable Damage Limits
Figure 102 (Sheet 6 of 6)

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5. **Airplane Operation Limits**

A. If there is fuselage skin damage, airplane operation limits can be necessary.

(1) Find the applicable area in Figure 103/ALLOWABLE DAMAGE 5 for the length and depth of the damage in all 20-inch by 20-inch square areas of the fuselage skin.

(a) The depth of the damage shown in Figure 103/ALLOWABLE DAMAGE 5 is given as a percentage of the initial skin thickness.

1) When you calculate the damage depth, use the skin thickness given in the applicable engineering drawings. Do not include doublers. Include only the single layer of a bonded skin assembly from which material is removed.

(b) Figure 103/ALLOWABLE DAMAGE 5 is applicable to damage in the Fuselage Lower Skin. The Fuselage Lower Skin is defined as:

1) In Section 43 between Station 360–540 and between Stringers 24L–24R.

2) In Section 46 between Station 727–887 and between Stringers 23L–23R.

(c) Figure 103/ALLOWABLE DAMAGE 5 is applicable to:

1) Cracks

2) Nicks, Scratches, Gouges, and Corrosion

3) Holes and Punctures.

(d) Figure 103/ALLOWABLE DAMAGE 5 is not applicable to:

1) Dents

2) Wrinkles or Buckles.

(2) Refer to Table 107/ALLOWABLE DAMAGE 5 to find the damage treatment and permitted airplane operations for the area you found in Figure 103/ALLOWABLE DAMAGE 5.

Table 107:

PERMITTED AIRPLANE OPERATIONS		
FIGURE 103 CHART AREA	**DAMAGE TREATMENT**	**PERMITTED AIRPLANE OPERATIONS**
A	Clean up the damage as given in Figure 102/ ALLOWABLE DAMAGE 5	There are no airplane operation limits
B	Clean up the damage as given in Figure 102/ ALLOWABLE DAMAGE 5	Up to 50 revenue flight hours are permitted
	Do a permanent repair	There are no airplane operation limits
C	Drill 0.25 inch diameter stop holes at the end of the cracks. Clean up other damage as given in Figure 102/ ALLOWABLE DAMAGE 5	A non-revenue flight to a repair station is permitted if the applicable regulatory authority gives approval before the flight. It is recommended that the proposed repair procedure be given to Boeing. The maximum cabin pressure differential is limited to 5.0 PSIG unless the skin is repaired. Cabin pressure limits are for skin damage to the pressurized fuselage skin only.
	Do an optional time-limited repair as given in Figure 102/ALLOWABLE DAMAGE 5	Revenue flights are permitted as given in 53-00-01, REPAIR 5
	Do a permanent repair	There are no airplane operation limits

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Table 107: (Continued)

PERMITTED AIRPLANE OPERATIONS		
FIGURE 103 CHART AREA	**DAMAGE TREATMENT**	**PERMITTED AIRPLANE OPERATIONS**
D	Drill 0.25 inch diameter stop holes at the end of the cracks. Clean up other damage as given in Figure 102/ ALLOWABLE DAMAGE 5	A non-revenue flight to a repair station is permitted if the applicable regulatory authority gives approval before the flight. It is recommended that the proposed repair procedure be given to Boeing. The maximum cabin pressure differential is limited to 5.0 PSIG unless the skin is repaired. Cabin pressure limits are for skin damage to the pressurized fuselage skin only.
	Do a permanent repair	There are no airplane operation limits
E	Drill 0.25 inch diameter stop holes at the end of the cracks. Clean up other damage as given in Figure 102/ ALLOWABLE DAMAGE 5	A non-revenue flight to a repair station is permitted if the applicable regulatory authority gives approval before the flight. It is recommended that the proposed repair procedure be given to Boeing. The maximum cabin pressure differential is limited to zero PSIG. Cabin pressure limits are for skin damage to the pressurized fuselage skin only.
	Do a permanent repair	There are no airplane operation limits
F	Drill 0.25 inch diameter stop holes at the end of the cracks. Clean up other damage as given in Figure 102/ ALLOWABLE DAMAGE 5	Operation is not permitted before Boeing and the applicable regulatory authority give approval.
	Do a permanent repair	There are no airplane operation limits

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ALLOWABLE DAMAGE DIMENSIONS FOR FUSELAGE LOWER SKIN (IN SECTION 43 BETWEEN STATION 360-540 AND BETWEEN STRINGERS 24L-24R, AND IN SECTION 46 BETWEEN STATION 727-887 AND BETWEEN STRINGERS 23L-23R)

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Damage Dimensions for the Fuselage Skin
Figure 103

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REPAIR GENERAL - SERVICE BULLETIN REPAIR CHART

1. Service Bulletin Repair - Fuselage Skin

A. The following service bulletin contain repairs which are available for use where specific damage has been encountered. Usually, the Service Bulletin also covers preventive change data which operators are encouraged to use to eliminate the need for repair.

DAMAGED AREA	LINE NUMBER EFFECTIVITY	SB NUMBER
FUSELAGE - Skin - Inspection Of The Skin For Scribe Lines	1 THRU 2309	737-53A1289

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REPAIR 1 - EXTERNAL REPAIR OF FUSELAGE SKIN AT A STRINGER WITH SOLID RIVETS

1. Applicability

A. Repair 1 is applicable to fuselage skin damage at a stringer between frames where the stringer is not joggled.

B. Repair 1 is not applicable to damage:

(1) That goes to more than one stringer

(2) That goes to a frame

(3) At a skin splice

(4) At window belts

(5) At skin cutouts

(6) In major body joint bays.

C. Repair 1 is not applicable to damage at 10 in. (254 mm) or less away from the edge of an initial repair.

(1) If damage occurs in this area and the initial repair is not located in the area listed in Paragraph 1.B./REPAIR 1, remove the inital repair and make one repair that includes the two areas of damage.

D. Do not use Repair 1 near static ports or angle of attack sensors. Refer to 51-10-01 for areas near static ports and angle of attack sensors where external repairs are not permitted.

2. General

A. Repair 1 is a Category B Repair. Refer to 51-00-06 for the definitions of the different types of repairs. Refer to Paragraph 5./REPAIR 1 for the inspection requirements.

B. Repair 1 is:

(1) A replacement repair for Repair 2, which is an external repair with blind rivets

(2) An alternative repair to Repair 7, which is a flush repair.

3. References

Reference	Title
51-00-06	STRUCTURAL REPAIR DEFINITIONS
51-10-01	AERODYNAMIC SMOOTHNESS
51-10-02	INSPECTION AND REMOVAL OF DAMAGE
51-10-02, GENERAL	Inspection and Removal of Damage
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-20-05	REPAIR SEALING
51-40-02	FASTENER INSTALLATION AND REMOVAL
51-40-03, GENERAL	Fastener Substitution
51-40-05	FASTENER HOLE SIZES
51-40-06, GENERAL	Fastener Edge Margins
51-40-08	COUNTERSINKING
51-70-11	TYPICAL FORMED SECTION REPAIRS
AMM 51-21-00 P/B 701	INTERIOR AND EXTERIOR FINISHES - CLEANING/PAINTING
AMM 51-21-99 P/B 701	DECORATIVE EXTERIOR PAINT SYSTEM - CLEANING/PAINTING

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(Continued)

Reference	Title
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes
737 NDT Part 6, 53-30-00, Procedure 5	Inspection of External Fuselage Repairs
737 NDT Part 6, 53-30-00, Procedure 6	Subsurface Crack Inspection of Faying Surfaces

4. Repair Instructions

A. Remove the necessary fasteners in the area of the damaged skin as shown in Layout of the Repair Parts, Figure 201/REPAIR 1. Refer to 51-40-02.

B. Cut and remove the damaged part of the fuselage skin as shown in Layout of the Repair Parts, Figure 201/REPAIR 1. Refer to 51-10-02.

(1) Make the cut in the shape of a rectangle with the sides parallel or perpendicular to the stringer or frame.

(2) Make the corner radii of the cut a minimum of 0.50 in. (12.70 mm).

C. Make sure the skin around the cut is back to the initial contour.

D. Make sure you do a High Frequency Eddy Current Inspection (HFEC) of the fastener locations and the cutout for cracks. If you find no more damage, make an insurance cut of 0.040 in. (1.016 mm).

E. Make the repair parts.

(1) Make the part [1] doubler, part [2] filler, and, if necessary, the part [3] strap. Refer to Table 201/REPAIR 1.

(a) The part [3] strap is necessary only if the skin has an initial bonded or chem-milled stringer pad and the damage is between stringers S-10L and S-10R. The thickness of the strap should be between 1 and 1.2 times the thickness of the initial stringer pad. Use the procedure given in 51-70-11, Paragraph 3D to determine the number of fasteners in the strap. If necessary increase the number of fasteners for the strap to be at least one fastener row longer than the doubler on each side of the repair.

(2) Make the countersink washers for the initial fastener locations in the initial skin. Refer to 51-40-08.

F. Assemble the repair parts as shown in Layout of the Repair Parts, Figure 201/REPAIR 1.

G. Drill the necessary fastener holes. Refer to Table 202/REPAIR 1 for the fastener type, diameter, and spacing. Refer to 51-40-05 for the fastener hole dimensions.

(1) Use the same spacing as the initial fastener holes, except at chem-milled areas.

(a) The fastener edge must be a minimum of 0.44 in. (11.18 mm) from a chem-milled area.

Table 201:

REPAIR MATERIAL			
PART		QUANTITY	MATERIAL
[1]	Doubler	1	Use the same material and heat treat condition as the initial skin. Refer to Table 202 for the necessary thickness. Refer to Figure 201 to find the length and width.
[2]	Filler	1	Use the same material and heat treat condition as the initial skin. Use the same thickness as the initial skin or skin assembly below the stringer.
[3]	Strap	1	Use clad or bare 2024-T3 sheet.

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Table 202:

REPAIR FASTENER TYPE, DIAMETER, AND MINIMUM NUMBER OF ROWS AND SPACING *[1]					
INITIAL SKIN THICKNESS (INCHES)*[2]	PART [1] DOUBLER THICKNESS (INCHES)	FASTENER TYPE AND DIAMETER (PREFERRED ALTERNATIVE)	NECESSARY NUMBER OF FASTENER ROWS		FASTENER SPACING IN INCHES (mm)
			CIRCUMFERENTIAL	LONGITUDINAL	
0.040	0.063	BACR15BB5D BACR15CE5D (BACR15GF5D)	4	4	0.63 - 0.78 (16.00 - 19.81)
0.045	0.063	BACR15CE5D (BACR15GF5D)	4	4	0.63 - 0.78 (16.00 - 19.81)
0.050	0.063	BACR15CE6D (BACR15GF6D)	4	4	0.75 - 0.94 (19.05 - 23.88)
0.056	0.071	BACR15CE6D (BACR15GF6D)	4	4	0.75 - 0.94 (19.05 - 23.88)
0.063	0.071	BACR15CE6D (BACR15GF6D)	4	4	0.75 - 0.94 (19.05 - 23.88)
0.071	0.080	BACR15CE6D (BACR15GF6D)	4	4	0.75 - 0.94 (19.05 - 23.88)
0.080	0.090	BACR15CE6D (BACR15GF6D)	4	4	0.75 - 0.94 (19.05 - 23.88)
0.090	0.100	BACR15CE6D (BACR15GF6D)	4	4	0.75 - 0.94 (19.05 - 23.88)

*[1] Note: If this repair is used as a permanent repair to replace SRM 53-00-01, Repair 2 then oversize hole to the next 1/64 oversize from nominal. Refer to 51-40-05 for fastener hole sizes.

*[2] Do not use bonded doubler or chem pad-up thickness.

H. Disassemble the repair parts.

I. Remove all the nicks, scratches, burrs, and sharp edges from the repair parts and the bare surfaces of the initial parts.

J. Apply a chemical conversion coating to the repair parts and to the bare surfaces of the initial parts. Refer to 51-20-01

K. Install the countersink repair washers with BMS 5-95 sealant at the initial fastener locations. Refer to 51-40-08.

L. Apply two layers of BMS 10-11, Type I primer to the repair parts and the bare surfaces of the initial parts. Refer to SOPM 20-41-02.

M. Install the repair parts.

(1) Apply BMS 5-95 sealant to the mating surfaces. Refer to 51-20-05.

(2) Install the rivets without sealant.

N. Apply a fillet seal to the repair parts on the internal and external sides of the repair area with BMS 5-95 sealant. Refer to 51-20-05.

O. Apply a decorative finish if necessary. Refer to AMM PAGEBLOCK 51-21-99/701.

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NOTE

1 ALL REPAIR FASTENERS IN 0.040 OR 0.045 INCH SKINS MUST BE OVERDRIVEN TO 1.4D MINIMUM BUTT DIAMETER. INSTALL THE FASTENER AS GIVEN IN BAC 5004-1.

2 REFER TO SRM 51-40-06 FOR THE EDGE MARGIN.

3 THE MAXIMUM LENGTH OF THE DOUBLER FOR AIRPLANES THAT HAVE COMPLETED SB 737-21-1149.

4 THE MAXIMUM LENGTH OF THE DOUBLER FOR AIRPLANES THAT HAVE NOT COMPLETED SB 737-21-1149.

5 USE A MINIMUM OF 3 INITIAL FASTENER ROWS ON EACH SIDE OF THE DAMAGE COMMON TO THE STRINGER.

FASTENER SYMBOLS

┼ INITIAL FASTENER LOCATION. INSTALL A FASTENER THAT IS THE SAME TYPE AND UP TO 1/32 INCH IN DIAMETER LARGER THAN THE INITIAL FASTENER. REFER TO SRM 51-40-08 TO MAKE A 100 DEGREE HEAD WASHER, OR TO USE THE HEAD OF THE INITIAL MODIFIED HEAD RIVET AS A REPAIR WASHER.

✦ REPAIR FASTENER LOCATION. REFER TO TABLE 202 FOR THE FASTENER TYPE.

1934962 S0000365809_V3

Layout of the Repair Parts
Figure 201 (Sheet 1 of 4)

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M48209 S0006587399_V2

Layout of the Repair Parts
Figure 201 (Sheet 2 of 4)

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L87167 S0006587400_V3

Layout of the Repair Parts
Figure 201 (Sheet 3 of 4)

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REPAIR DOUBLER DOES NOT
OVERLAP THE STRINGER

C

REPAIR DOUBLER EXTENDS
BEYOND STRINGER

D

L35673 S0006587401_V2

Layout of the Repair Parts
Figure 201 (Sheet 4 of 4)

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REPAIR DOUBLER DOES NOT
OVERLAP THE STRINGER

REPAIR DOUBLER EXTENDS
BEYOND STRINGER

L35674 S0006587402_V2

Inspection Requirements
Figure 202

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5. **Inspection Requirements**

A. Refer to STRUCTURAL REPAIR DEFINITIONS, 51-00-06 for the repair categories and definitions. Refer to Figure 202/REPAIR 1 for the inspection requirements.

B. The inspections as given in Table 203/REPAIR 1 are applicable to airplanes that have completed Service Bulletin 737-21-1149. The inspection as given in Table 203/REPAIR 1 are not applicable to airplanes that have not completed Service Bulletin 737-21-1149.

Table 203:

CATEGORY B REPAIR INSPECTION REQUIREMENTS			
INSPECTION THRESHOLD	REPEAT INSPECTIONS		
	METHOD	INTERVAL	REFERENCE
22,500 flight cycles	External detailed visual (arrow 5)	4,000 flight cycles	
22,500 flight cycles	External LFEC inspect (arrow 6)	4,000 flight cycles	NDT Part 6, 53-30-00, Fig 5
22,500 flight cycles	Internal detailed visual (arrow 8)	24,000 flight cycles	
22,500 flight cycles	Internal HFEC inspect (arrow 7)	24,000 flight cycles	NDT Part 6, 53-30-00, Fig 6

NOTE: Refer to Figure 202 for the arrow inspection locations.

C. Where the repair doubler does not overlap the adjacent stringer perform the skin inspections that follow as given in Table 204/REPAIR 1 . The inspections given in Table 204/REPAIR 1 and Table 205/REPAIR 1 are applicable only to airplanes that have not completed Service Bulletin 737-21-1149.

NOTE: The inspection requirements given in Table 205/REPAIR 1 is an alternative to the inspection requirements given in Table 204/REPAIR 1.

Table 204:

CATEGORY B REPAIR INSPECTION REQUIREMENTS			
INSPECTION THRESHOLD	REPEAT INSPECTIONS		
	METHOD	INTERVAL	REFERENCE
50,000 flight cycles	External detailed visual (arrow 5)	4,000 flight cycles	
50,000 flight cycles	External LFEC inspect (arrow 6)	4,000 flight cycles	NDT Part 6, 53-30-00, Fig 5
50,000 flight cycles	Internal detailed visual (arrow 12)	36,000 flight cycles	
50,000 flight cycles	Internal HFEC inspect (arrow 7)	36,000 flight cycles	NDT Part 6, 53-30-00, Fig 6

NOTE: Refer to Figure 202 for the arrow inspection locations.

Table 205:

CATEGORY B REPAIR INSPECTION REQUIREMENTS			
INSPECTION THRESHOLD	REPEAT INSPECTIONS		
	METHOD	INTERVAL	REFERENCE
50,000 flight cycles	External detailed visual (arrow 5)	4,000 flight cycles	
50,000 flight cycles	External LFEC inspect (arrow 6)	8,000 flight cycles	NDT Part 6, 53-30-00, Fig 5
50,000 flight cycles	Internal detailed visual (arrow 12)	24,000 flight cycles	
50,000 flight cycles	Internal HFEC inspect (arrow 7)	24,000 flight cycles	NDT Part 6, 53-30-00, Fig 6

NOTE: Refer to Figure 202 for the arrow inspection locations.

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D. Where the repair doubler extends farther than the adjacent stringer, perform the skin inspections that follow as given in Table 206/REPAIR 1 and Table 208/REPAIR 1. The inspections given in Table 206/REPAIR 1, Table 207/REPAIR 1, and Table 208/REPAIR 1 are applicable only to airplanes that have not completed Service Bulletin 737-21-1149.

NOTE: The inspection requirements given in Table 207/REPAIR 1 is an alternative to the inspection requirements given in Table 206/REPAIR 1.

Table 206:

CATEGORY B REPAIR INSPECTION REQUIREMENTS			
INSPECTION THRESHOLD	REPEAT INSPECTIONS		
	METHOD	INTERVAL	REFERENCE
50,000 flight cycles	External LFEC inspect (arrow 8)	8,000 flight cycles	NDT Part 6, 51-00-00, Fig 4
50,000 flight cycles	Internal detailed visual (arrow 12)	24,000 flight cycles	
50,000 flight cycles	Internal HFEC inspect (arrow 9)	24,000 flight cycles	NDT Part 6, 51-00-00, Fig 4

NOTE: Refer to Figure 202 for the arrow inspection locations.

Table 207:

CATEGORY B REPAIR INSPECTIONS			
INSPECTION THRESHOLD	REPEAT INSPECTIONS		
	METHOD	INTERVAL	REFERENCE
50,000 flight cycles	External LFEC inspect (arrow 8)	4,000 flight cycles	NDT Part 6, 53-30-00, Fig 5
50,000 flight cycles	Internal detailed visual (arrow 12)	36,000 flight cycles	
50,000 flight cycles	Internal HFEC inspect (arrow 9)	36,000 flight cycles	NDT Part 6, 53-30-00, Fig 6

NOTE: Refer to Figure 202 for the arrow inspection locations.

E. Where the repair doubler extends farther than the adjacent stringer, also perform the skin inspections that follow as given in Table 208/REPAIR 1. The inspections given in Table 208/REPAIR 1 is applicable only to airplanes that have not completed Service Bulletin 737-21-1149.

Table 208:

CATEGORY B REPAIR INSPECTION REQUIREMENTS			
INSPECTION THRESHOLD	REPEAT INSPECTIONS		
	METHOD	INTERVAL	REFERENCE
50,000 flight cycles	External LFEC inspect (arrow 10)	36,000 flight cycles	NDT Part 6, 53-30-00, Fig 5
50,000 flight cycles	Detailed visual inspect (arrow 11)	4,000 flight cycles	

NOTE: Refer to Figure 202 for the arrow inspection locations.

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REPAIR 2 - EXTERNAL REPAIR OF FUSELAGE SKIN AT A STRINGER WITH BLIND RIVETS

1. Applicability

A. Repair 2 is applicable to fuselage skin damage at a stringer location between frames where the stringer is not joggled.

B. For airplanes with a dome aft pressure bulkhead, Repair 2 is applicable to fuselage skin damage between BS 259.5 and BS 1016 if:

(1) You do inspections of the repair as given in Paragraph 5

(2) You replace Repair 2 with Repair 1 as given in Paragraph 5

(3) You replace Repair 2 with Repair 1 before you reach the number of flight cycles as given in Figure 201 for the crown skin panel.

(a) For all other skin panels, Repair 2 limit is 20,000 flight cycles for airplanes that have not completed Service Bulletin 737-21-1149.

(b) For all other skin panels, Repair 2 limit is 9,800 flight cycles for airplanes that have completed Service Bulletin 737-21-1149.

C. For airplanes with a flat aft pressure bulkhead, Repair 2 is applicable to fuselage skin damage between BS 259.5 and BS 1042 if:

(1) You do inspections of the repair as given in Paragraph 5

(2) You replace Repair 2 with Repair 1 as given in Paragraph 5

(3) You replace Repair 2 with Repair 1 before you reach the number of flight cycles as given in Figure 201 for the crown skin panel.

(a) For all other skin panels, Repair 2 limit is 20,000 flight cycles for airplanes that have not completed Service Bulletin 737-21-1149.

(b) For all other skin panels, Repair 2 limit is 9,800 flight cycles for airplanes that have completed Service Bulletin 737-21-1149.

D. Repair 2 is not applicable to damage:

(1) That goes to more than one stringer

(2) That goes to a frame

(3) At skin splices

(4) At window belts

(5) At skin cutouts

(6) In major body joint bays.

E. Repair 2 is not applicable to damage at 10 in. (254 mm) or less away from the edge of an initial repair.

(1) If damage occurs in this area and the initial repair is not located in the area listed in Paragraph 1.D./REPAIR 2, remove the inital repair and make one repair that includes the two areas of damage.

F. Do not use Repair 2 near static ports and angle of attack sensors. Refer to 51-10-01 for areas near static ports and angle of attack sensors where external repairs are not permitted.

G. Repair 2 can be used only if you make sure that the blind rivets can be seated correctly in the internal structure.

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THE LIMIT FOR THE REPAIR IS 1,600 FLIGHT CYCLES. 1

THE LIMIT FOR THE REPAIR IS 3,700 FLIGHT CYCLES. 2

THE LIMIT FOR THE REPAIR IS 9,800 FLIGHT CYCLES. 1

THE LIMIT FOR THE REPAIR IS 20,000 FLIGHT CYCLES. 2

NOTES

- THIS REPAIR IS ONLY APPLICABLE FOR DAMAGE TO 1 STRINGER BAY.
- THE LIMIT FOR ALL OTHER AREAS IS 9,800 FLIGHT CYCLES. 1
- THE LIMIT FOR ALL OTHER AREAS IS 20,000 FLIGHT CYCLES. 2

1 FOR AIRPLANES THAT HAVE COMPLETED SERVICE BULLETIN 737-21-1149.
2 FOR AIRPLANES THAT HAVE NOT COMPLETED SERVICE BULLETIN 737-21-1149.

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Flight Cycle Limits for Crown Skin Panel
Figure 201

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2. General

A. Repair 2 is a Category C repair for airplanes that have not completed Service Bulletin 737-21-1149. Refer to 51-00-06 for the definitions of the different types of repairs.

B. Repair 2 is a Category C repair for airplanes that have completed Service Bulletin 737-21-1149. Refer to 51-00-06 for the definitions of the different types of repairs.

C. Repair 2 is an alternative to:

(1) Repair 1 which is an external repair with solid rivets for damage at a stringer

(2) Repair 7 which is a flush repair for damage at a stringer.

3. References

Reference	Title
51-00-06	STRUCTURAL REPAIR DEFINITIONS
51-10-01	AERODYNAMIC SMOOTHNESS
51-10-02	INSPECTION AND REMOVAL OF DAMAGE
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-20-05	REPAIR SEALING
51-40-02	FASTENER INSTALLATION AND REMOVAL
51-40-03, GENERAL	Fastener Substitution
51-40-05	FASTENER HOLE SIZES
51-40-06, GENERAL	Fastener Edge Margins
51-40-08	COUNTERSINKING
51-70-11, REPAIR GENERAL	Typical Formed Section Repair
AMM 51-21-99 P/B 701	DECORATIVE EXTERIOR PAINT SYSTEM - CLEANING/PAINTING
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes

4. Repair Instructions

A. Remove the necessary fasteners in the area of the damaged skin. Refer to 51-40-02.

B. Cut and remove the damaged part of the fuselage skin as shown in Layout of the Repair Parts, Figure 202/REPAIR 2. Refer to 51-10-02.

(1) Make the cut in the shape of a rectangle with the sides parallel or perpendicular to the stringer or frame.

(2) Make the corner radii of the cut a minimum of 0.50 in. (12.70 mm).

C. Put the skin around the cut back to the initial contour.

D. Make the repair parts.

(1) Make the part [1] doubler, part [2] filler, and, if necessary, the part [3] strap as given in Table 201/REPAIR 2.

(a) The part [3] strap is necessary only if the skin has an initial bonded or chem-milled stringer pad and the damage is between stringers S-10L and S-10R. The thickness of the strap should be between 1 and 1.2 times the thickness of the initial stringer pad. Use the procedure given in 51-70-11, REPAIR GENERAL, Paragraph 4.D. to determine the number of fasteners in the strap. If necessary increase the number of fasteners for the strap to be at least one fastener row longer than the doubler on each side of the repair.

(2) Make the countersink repair washers for the initial fastener locations in the initial skin. Refer to 51-40-08.

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E. Assemble the repair parts as shown in Layout of the Repair Parts, Figure 202/REPAIR 2.

F. Drill the necessary fastener holes. Refer to Table 202/REPAIR 2 for the fastener type, diameter, and spacing. Refer to 51-40-05 for the fastener hole dimensions.

(1) Use the same spacing as the initial fastener holes, except at chem-milled areas.

(a) The fastener edge must be a minimum of 0.44 in. (11.18 mm) from a chem-milled area.

Table 201:

REPAIR MATERIAL			
PART		QUANTITY	MATERIAL
[1]	Doubler	1	Use the same material and heat treat condition as the initial skin. Refer to Table 202 for the necessary thickness. Refer to Figure 202 to find the length and width.
[2]	Filler	1	Use the same material and heat treat condition as the initial skin. Use the same thickness as the initial skin or skin assembly below the stringer.
[3]	Strap	1	Use clad or bare 2024-T3 sheet that is 0.056 inch thick. As an alternative, you can make the part from a BAC1511-3770 2024-T3511 extrusion.

Table 202:

REPAIR FASTENER TYPE, DIAMETER, AND MINIMUM NUMBER OF ROWS AND SPACING					
INITIAL SKIN THICKNESS (INCHES)*[1]	PART [1] DOUBLER THICKNESS (INCHES)	FASTENER TYPE AND DIAMETER	NECESSARY NUMBER OF FASTENER ROWS		FASTENER SPACING IN INCHES (mm)
			CIRCUMFERENTIAL	LONGITUDINAL	
0.040	0.063	NAS1738E5	4	4	0.75 - 0.94 (19.05 - 23.88)
0.045	0.063	NAS1738E5	4	4	0.75 - 0.94 (19.05 - 23.88)
0.050	0.063	NAS1738E6	4	4	0.88 - 1.09 (22.35 - 27.69)
0.056	0.071	NAS1738E6	4	4	0.88 - 1.09 (22.35 - 27.69)
0.063	0.071	NAS1738E6	4	4	0.88 - 1.09 (22.35 - 27.69)
0.071	0.080	NAS1738E6	4	4	0.88 - 1.09 (22.35 - 27.69)
0.080	0.090	NAS1738E6	4	4	0.88 - 1.09 (22.35 - 27.69)
0.090	0.100	NAS1738E6	4	4	0.88 - 1.09 (22.35 - 27.69)

*[1] Do not use bonded doubler or chem pad-up thickness.

G. Disassemble the repair parts.

H. Remove all the nicks, scratches, burrs and sharp edges from the repair parts and the bare surfaces of the initial parts.

I. Apply a chemical conversion coating to the repair parts and the bare surfaces of the initial parts. Refer to 51-20-01.

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J. Install the countersink repair washers with BMS 5-95 adhesive at the initial fastener locations. Refer to 51-40-08.

K. Apply two layers of BMS 10-11, Type I primer to the repair parts and the bare surfaces of the initial parts. Refer to SOPM 20-41-02.

L. Install the repair parts. Refer to 51-20-05.

(1) Apply BMS 5-95 or sealant to the mating surfaces. Refer to 51-20-05.

(2) Install the fasteners without sealant.

(3) Apply a fillet seal to the repair parts on the exterior side of the repair area with BMS 5-95 sealant. Refer to 51-20-05.

(4) Apply the decorative finish if necessary. Refer to AMM PAGEBLOCK 51-21-99/701.

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NOTE

1 ALL REPAIR FASTENERS IN 0.040 OR 0.045 INCH SKINS MUST BE OVERDRIVEN TO 1.4D MINIMUM BUTT DIAMETER. INSTALL THE FASTENER AS GIVEN IN BAC 5004-1.

2 REFER TO SRM 51-40-06 FOR THE EDGE MARGIN.

3 THE MAXIMUM LENGTH OF THE DOUBLER FOR AIRPLANES THAT HAVE COMPLETED SB 737-21-1149.

4 THE MAXIMUM LENGTH OF THE DOUBLER FOR AIRPLANES THAT HAVE NOT COMPLETED SB 737-21-1149.

5 USE A MINIMUM OF 3 INITIAL FASTENER ROWS ON EACH SIDE OF THE DAMAGE COMMON TO THE STRINGER.

FASTENER SYMBOLS

┼ INITIAL FASTENER LOCATION. INSTALL A FASTENER THAT IS THE SAME TYPE AND UP TO 1/32 INCH IN DIAMETER LARGER THAN THE INITIAL FASTENER. REFER TO SRM 51-40-08 TO MAKE A 100 DEGREE HEAD WASHER, OR TO USE THE HEAD OF THE INITIAL MODIFIED HEAD RIVET AS A REPAIR WASHER.

✦ REPAIR FASTENER LOCATION. REFER TO TABLE 202 FOR THE FASTENER TYPE.

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Layout of the Repair Parts
Figure 202 (Sheet 1 of 2)

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A-A

B-B

[3] STRAP

A

L87164 S0006587414_V2

Layout of the Repair Parts
Figure 202 (Sheet 2 of 2)

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5. **Inspection Requirements and Replacement Instructions**

A. Do a detailed visual inspection of the repair doubler and fasteners every 1,300 flight cycles for airplanes that have not completed Service Bulletin 737-21-1149. Inspect the blind rivets carefully. Rivets that are loose or missing must be replaced.

B. Do a detailed visual inspection of the repair doubler and fasteners every 500 flight cycles for airplanes that have completed Service Bulletin 737-21-1149. Inspect the blind rivets carefully. Rivets that are loose or missing must be replaced.

C. Replace Repair 2 with Repair 1 no later than the flight cycle limits given in Flight Cycle Limits for Crown Skin Panel, Figure 201/REPAIR 2.

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REPAIR 3 - EXTERNAL REPAIR OF FUSELAGE SKIN BETWEEN STRINGERS WITH SOLID RIVETS

1. Applicability

A. Repair 3 is applicable to fuselage skin damage between stringers.

B. Repair 3 is not applicable to damage:

(1) That goes to a stringer

(2) That goes to a frame

(3) At a skin splice

(4) At window belts

(5) At skin cutouts

(6) In major body joint bays.

C. Do not use Repair 3 near static ports or angle of attack sensors. Refer to 51-10-01 for areas near static ports and angle of attack sensors where external repairs are not permitted.

2. General

A. Repair 3 is a Category B repair for airplanes that have not completed Service Bulletin 737–21–1149. Refer to 51-00-06 for the definitions of the different types of repairs.

B. Repair 3 is:

(1) A replacement for Repair 4 which is an external repair with blind rivets for damage between stringers

(2) An alternative for Repair 8 which is a flush repair for damage between stringers.

3. References

Reference	Title
51-00-06	STRUCTURAL REPAIR DEFINITIONS
51-10-01	AERODYNAMIC SMOOTHNESS
51-10-02	INSPECTION AND REMOVAL OF DAMAGE
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-20-05	REPAIR SEALING
51-40-02	FASTENER INSTALLATION AND REMOVAL
51-40-03, GENERAL	Fastener Substitution
51-40-05	FASTENER HOLE SIZES
51-40-06, GENERAL	Fastener Edge Margins
51-40-08	COUNTERSINKING
AMM 51-21-00/701	Interior And Exterior Finishes - Cleaning/Painting
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes
737 NDT Part 6, 53-30-00, Procedure 5	Inspection of External Fuselage Repairs
737 NDT Part 6, 53-30-00, Procedure 6	Subsurface Crack Inspection of Faying Surfaces

4. Repair Instructions

A. Remove the necessary fasteners in the area of the damaged skin. Refer to 51-40-02.

B. Cut and remove the damaged part of the fuselage skin as shown in Layout of the Repair Parts, Figure 201/REPAIR 3. Refer to 51-10-02.

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(1) Make the cut in the shape of a rectangle with the sides parallel or perpendicular to the stringer or frame.

(2) Make the corner radii of the cut a minimum of 0.50 inch.

C. Put the skin around the cut back to the initial contour. Make sure you do a high frequency eddy current inspection (HFEC) of the fastener locations and the cutout for cracks. If there is no more damage, do a 0.040 inch insurance cut around the cutout.

D. Make the repair parts.

(1) Make the part [1] doubler. Refer to Table 201/REPAIR 3.

Table 201:

REPAIR MATERIAL			
ITEM	**PART**	**QUANTITY**	**MATERIAL**
[1]	Doubler	1	Use the same material and heat treat condition as the initial skin. Refer to Table 202 for the necessary thickness. Refer to Figure 201 to find the length and width because of the necessary fastener spacing, number of rows, and edge margins

(2) Make the countersink washers for the initial fastener locations in the initial skin. Refer to 51-40-08.

E. Assemble the repair parts as shown in Layout of the Repair Parts, Figure 201/REPAIR 3.

F. Drill the necessary fastener holes. Refer to Table 202/REPAIR 3 for the fastener type, diameter, and spacing. Refer to 51-40-05 for the fastener hole dimensions.

G. Disassemble the repair parts.

H. Remove all the nicks, scratches, burrs, and sharp edges from the repair parts and the bare surfaces of the initial parts.

I. Apply a chemical conversion coating to the repair parts and to the bare surfaces of the initial parts. Refer to 51-20-01.

J. Install the countersink repair washers with BMS 5-95 sealant at the initial fastener locations. Refer to 51-40-08.

K. Apply two layers of BMS 10-11, Type I primer to the repair parts and the bare surfaces of the initial parts. Refer to SOPM 20-41-02.

L. Install the repair parts.

(1) Apply BMS 5-95 sealant to the mating surfaces. Refer to 51-20-05.

(2) Install the rivets without sealant.

M. Apply a fillet seal to the repair parts on the internal and external sides of the repair area with BMS 5-95 sealant. Refer to 51-20-05.

N. Apply a finish if necessary. Refer to AMM 51-21-00/701.

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Table 202:

REPAIR FASTENER TYPE, DIAMETER, AND MINIMUM NUMBER OF ROWS AND SPACING*[1]					
INITIAL SKIN THICKNESS (INCH)	PART [1] DOUBLER THICKNESS (INCH)	FASTENER TYPE AND DIAMETER PREFERRED (ALTERNATIVE)	NECESSARY NUMBER OF FASTENER ROWS		FASTENER SPACING (INCH)
			CIRCUMFERENTIAL	LONGITUDINAL	
0.040	0.063	BACR15CE5D (BACR15GF5D)	4	4	0.63 to 0.78 (16.00 TO 19.81 mm)
0.045	0.063	BACR15CE5D (BACR15GF5D)	4	4	0.63 to 0.78 (16.00 TO 19.81 mm)
0.050	0.063	BACR15CE6D (BACR15GF6D)	4	4	0.75 to 0.94 (19.05 TO 23.88 mm)
0.056	0.071	BACR15CE6D (BACR15GF6D)	4	4	0.75 to 0.94 (19.05 TO 23.88 mm)
0.063	0.071	BACR15CE6D (BACR15GF6D)	4	4	0.75 to 0.94 (19.05 TO 23.88 mm)
0.071	0.080	BACR15CE6D (BACR15GF6D)	4	4	0.75 to 0.94 (19.05 TO 23.88 mm)
0.080	0.090	BACR15CE6D (BACR15GF6D)	4	4	0.75 to 0.94 (19.05 TO 23.88 mm)
0.090	0.100	BACR15CE6D (BACR15GF6D)	4	4	0.75 to 0.94 (19.05 TO 23.88 mm)

*[1] Note: If this repair is being used as a permanent repair to replace SRM 53-00-01, Repair 4 then oversize the fasteners installed from SRM 53–00–01, Repair 4 by 0.03 inch and use the fastener spacing as given in SRM 53–00–01, Repair 4.

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M75927 S0006587420_V4

Layout of the Repair Parts
Figure 201 (Sheet 1 of 3)

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Layout of the Repair Parts
Figure 201 (Sheet 2 of 3)

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NOTES

- DO NOT END THE PART [1] DOUBLER ON A STRINGER. IT IS PERMITTED TO INSTALL THE PART [1] DOUBLER BETWEEN STRINGERS PROVIDED A MINIMUM OF 4 REPAIR FASTENER ROWS CAN BE INSTALLED AROUND THE DAMAGE.

1 ALL REPAIR FASTENERS IN 0.040 OR 0.045 INCH SKINS MUST BE OVERDRIVEN TO 1.4D MINIMUM BUTT DIAMETER. INSTALL THE FASTENER AS GIVEN IN BAC 5004-1.

2 REFER TO SRM 51-40-06 FOR THE EDGE MARGIN.

FASTENER SYMBOLS

REFERENCE FASTENER LOCATION.

INITIAL FASTENER LOCATION. INSTALL AN OVERSIZE FASTENER OF THE SAME TYPE AS THE INITIAL FASTENER, UP TO 1/32 INCH DIAMETER OVERSIZE LARGER THAN THE INITIAL FASTENER. INSTALL A COUNTERSINK REPAIR WASHER AS GIVEN IN SRM 51-40-08.

REPAIR FASTENER LOCATION. REFER TO TABLE 202 FOR THE FASTENER TYPE AND DIAMETER.

2237113 S0000499612_V1

Layout of the Repair Parts
Figure 201 (Sheet 3 of 3)

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5. **Inspection Instructions**

A. Refer to 51-00-06 for the definition of terms. Refer to Figure 202 (Sheet 1) for the inspection requirements.

B. For airplanes that have completed Service Bulletin 737-21-1149, do the inspections as given in Table 203/REPAIR 3

Table 203:

CATEGORY B REPAIR INSPECTION REQUIREMENTS			
INSPECTION THRESHOLD	REPEAT INSPECTIONS		
	METHOD	INTERVAL	REFERENCE
22,500 flight cycles	External LFEC inspect (arrow 8)	4,000 flight cycles	737 NDT Part 6, 53-30-00, Procedure 5
22,500 flight cycles	Internal HFEC inspect (arrow 9)	36,000 flight cycles	737 NDT Part 6, 53-30-00, Procedure 6
22,500 flight cycles	External LFEC inspect (arrow 10)	36,000 flight cycles	737 NDT Part 6, 53-30-00, Procedure 5
22,500 flight cycles	External detailed visual (arrow 5)	2,500 flight cycles	
22,500 flight cycles	Internal detailed visual (arrow 7)	36,000 flight cycles	

NOTE: Refer to Figure 202 for the arrow inspection locations. Arrow 7 is applicable to areas of the skin as defined in Figure 202.

C. For airplanes that have not completed Service Bulletin 737-21-1149 and where the repair doubler does not extend over the adjacent stringer, perform the skin inspections that follow as given in Table 204/REPAIR 3.

Table 204:

CATEGORY B REPAIR INSPECTION REQUIREMENTS			
INSPECTION THRESHOLD	REPEAT INSPECTIONS		
	METHOD	INTERVAL	REFERENCE
50,000 flight cycles	External LFEC inspect (arrow 4)	8,000 flight cycles	737 NDT Part 6, 53-30-00, Procedure 5
50,000 flight cycles	Internal HFEC inspect (arrow 6)	36,000 flight cycles	737 NDT Part 6, 53-30-00, Procedure 6
50,000 flight cycles	External Detailed visual (arrow 5)	4,500 flight cycles	
50,000 flight cycles	Internal detailed visual (arrow 7)	36,000 flight cycles	

NOTE: Refer to Figure 202 for the arrow inspection locations.

D. For airplane that have not completed Service Bulletin 737-21-1149 and where the repair doubler extends farther than the adjacent stringer, perform the skin inspections that follow as given in Table 205/REPAIR 3.

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Table 205:

CATEGORY B REPAIR INSPECTION REQUIREMENTS			
INSPECTION THRESHOLD	REPEAT INSPECTIONS		
	METHOD	INTERVAL	REFERENCE
50,000 flight cycles	External LFEC inspect (arrow 8)	7,000 flight cycles	737 NDT Part 6, 53-30-00, Procedure 5
50,000 flight cycles	Internal HFEC inspect (arrow 9)	36,000 flight cycles	737 NDT Part 6, 53-30-00, Procedure 6
50,000 flight cycles	External LFEC inspect (arrow 10)	36,000 flight cycles	737 NDT Part 6, 53-30-00, Procedure 5
50,000 flight cycles	External detailed visual (arrow 5)	4,000 flight cycles	
50,000 flight cycles	Internal detailed visual (arrow 7)	36,000 flight cycles	

NOTE: Refer to Figure 202 for the arrow inspection locations. Arrow 7 is applicable to areas of the skin as defined in Figure 202.

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REPAIR DOUBLER DOES NOT OVERLAP THE STRINGER

REPAIR DOUBLER EXTENDS BEYOND STRINGER

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Inspection Requirements
Figure 202

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REPAIR 4 - EXTERNAL REPAIR OF FUSELAGE SKIN BETWEEN STRINGERS WITH BLIND RIVETS

1. Applicability

A. Repair 4 is applicable to fuselage skin damage between stringers.

B. For airplanes with a dome aft pressure bulkhead, Repair 4 is applicable to fuselage skin damage from BS 259.5 and BS 1016 if:

(1) You do inspections of the repair as given in Paragraph 5

(2) You replace Repair 4 with Repair 3 as given in Paragraph 5

(3) You replace Repair 4 with Repair 3 before you reach the number of flight cycles as given in Figure 201 for the crown skin panel.

(a) For all other skin panels, the limit for Repair 4 is 20,000 flight cycles for airplanes that have not completed Service Bulletin 737-21-1149.

(b) For all other skin panels, the limit for Repair 4 is 9,800 flight cycles for airplanes that have completed Service Bulletin 737-21-1149.

C. For airplanes with a flat aft pressure bulkhead, Repair 4 is applicable to fuselage skin damage from BS 259.5 and BS 1042 if:

(1) You do inspections of the repair as given in Paragraph 5

(2) You replace Repair 4 with Repair 3 as given in Paragraph 5

(3) You replace Repair 4 with Repair 3 before you reach the number of flight cycles as given in Figure 201 for the crown skin panel.

(a) For all other skin panels, the limit for Repair 4 is 20,000 flight cycles for airplanes that have not completed Service Bulletin 737-21-1149.

(b) For all other skin panels, the limit for Repair 4 is 9,800 flight cycles for airplanes that have completed Service Bulletin 737-21-1149.

D. Repair 4 is not applicable to damage:

(1) That goes to a stringer

(2) That goes to a frame

(3) At skin splices

(4) At window belts

(5) At skin cutouts

(6) In major body joint bays.

E. Do not use Repair 4 near static ports and angle of attack sensors. Refer to 51-10-01 for areas near static ports and angle of attack sensors where external repairs are not permitted.

F. Repair 4 can be used only if you make sure that the blind rivets can be seated correctly in the internal structure.

2. General

A. Repair 4 is a Category C repair for airplanes that have not completed Service Bulletin 737-21-1149. Refer to 51-00-06 for the definitions of the different types of repairs.

B. Repair 4 is a Category C repair for airplanes that have completed Service Bulletin 737-21-1149. Refer to 51-00-06 for the definitions of the different types of repairs.

C. Repair 4 is an alternative to:

(1) Repair 3 which is an external repair with solid rivets for damage between stringers

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(2) Repair 8 which is a flush repair for damage between stringers.

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THE LIMIT FOR THE REPAIR IS 1,600 FLIGHT CYCLES. 1

THE LIMIT FOR THE REPAIR IS 3,700 FLIGHT CYCLES. 2

THE LIMIT FOR THE REPAIR IS 9,800 FLIGHT CYCLES. 1

THE LIMIT FOR THE REPAIR IS 20,000 FLIGHT CYCLES. 2

NOTES

- THIS REPAIR IS ONLY APPLICABLE FOR DAMAGE TO 1 STRINGER BAY.
- THE LIMIT FOR ALL OTHER AREAS IS 9,800 FLIGHT CYCLES. 1
- THE LIMIT FOR ALL OTHER AREAS IS 20,000 FLIGHT CYCLES. 2

1 FOR AIRPLANES THAT HAVE COMPLETED SERVICE BULLETIN 737-21-1149.
2 FOR AIRPLANES THAT HAVE NOT COMPLETED SERVICE BULLETIN 737-21-1149.

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Flight Cycle Limits for Crown Skin Panel
Figure 201

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3. References

Reference	Title
51-00-06	STRUCTURAL REPAIR DEFINITIONS
51-10-01	AERODYNAMIC SMOOTHNESS
51-10-02	INSPECTION AND REMOVAL OF DAMAGE
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-20-05	REPAIR SEALING
51-40-02	FASTENER INSTALLATION AND REMOVAL
51-40-03, GENERAL	Fastener Substitution
51-40-05	FASTENER HOLE SIZES
51-40-06, GENERAL	Fastener Edge Margins
51-40-08	COUNTERSINKING
AMM 51-21-99 P/B 701	DECORATIVE EXTERIOR PAINT SYSTEM - CLEANING/PAINTING
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes

4. Repair Instructions

A. Remove the necessary fasteners in the area of the damaged skin. Refer to 51-40-02.

B. Cut and remove the damaged part of the fuselage skin. Refer to 51-10-02.

(1) Make the cut in the shape of a rectangle with the sides parallel or perpendicular to the stringer or frame.

C. Put the skin around the cut back to the initial contour.

D. Make the repair parts.

(1) Make the part [1] doubler as given in Table 201/REPAIR 4.

Table 201:

REPAIR MATERIAL			
ITEM	**PART**	**QUANTITY**	**MATERIAL**
[1]	Doubler	1	Use the same material and heat treat condition as the initial skin. Refer to Table 202 for the necessary thickness. Refer to Figure 202 to find the length and width because of the necessary fastener spacing, number of rows, and edge margins

(2) Make the countersink repair washers for the initial fastener locations in the initial skin. Refer to 51-40-08.

E. Assemble the repair parts as shown in Layout of the Repair Parts, Figure 202/REPAIR 4.

F. Drill the necessary fastener holes. Refer to Table 202/REPAIR 4 for the fastener type, diameter, and spacing. Refer to 51-40-05 for the fastener hole dimensions.

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Table 202:

REPAIR FASTENER TYPE, DIAMETER, MINIMUM NUMBER OF ROWS AND SPACING					
INITIAL SKIN THICKNESS (INCH)	PART [1] DOUBLER THICKNESS (INCH)	FASTENER TYPE AND DIAMETER*[1]	NECESSARY NUMBER OF FASTENER ROWS		FASTENER SPACING (INCH) (mm)
			CIRCUMFERENTIAL	LONGITUDINAL	
0.040	0.063	NAS1738E5	4	4	0.75 - 0.94 (19.05 - 23.88)
0.045	0.063	NAS1738E5	4	4	0.75 TO 0.94 (19.05 - 23.88)
0.050	0.063	NAS1738E6	4	4	0.88 TO 1.09 (22.35 - 27.69)
0.056	0.071	NAS1738E6	4	4	0.88 TO 1.09 (22.35 - 27.69)
0.063	0.071	NAS1738E6	4	4	0.88 TO 1.09 (22.35 - 27.69)
0.071	0.080	NAS1738E6	4	4	0.88 TO 1.09 (22.35 - 27.69)
0.080	0.090	NAS1738E6	4	4	0.88 TO 1.09 (22.35 - 27.69)
0.090	0.100	NAS1738E6	4	4	0.88 TO 1.09 (22.35 - 27.69)

*[1] NOTE: Fasteners common to stringers or shear ties must be NAS1738E() of the same diameter as the initial rivet.

G. Disassemble the repair parts.

H. Remove all the nicks, scratches, burrs and sharp edges from the repair parts and the bare surfaces of the initial parts.

I. Apply a chemical conversion coating to the repair parts and the bare surfaces of the initial parts. Refer to 51-20-01.

J. Install the countersink repair washers with BMS 5-95 sealant at the initial fastener locations. Refer to 51-40-08.

K. Apply two layers of BMS 10-11, Type I primer to the repair parts and the bare surfaces of the initial parts. Refer to SOPM 20-41-02.

L. Install the repair parts. Refer to 51-20-05

(1) Apply BMS 5-95 or equivalent sealant to the mating surfaces. Refer to 51-20-05.

(2) Install the fasteners without sealant.

(3) Apply a fillet seal to the repair parts on the exterior side of the repair area with BMS 5-95 sealant. Refer to 51-20-05.

(4) Restore the aircraft exterior paint system in the repair area, as applicable. Refer to AMM PAGEBLOCK 51-21-99/701.

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NOTES

- DO NOT END THE PART [1] DOUBLER ON A STRINGER. IT IS PERMITTED TO INSTALL THE PART [1] DOUBLER BETWEEN STRINGERS PROVIDED A MINIMUM OF 4 REPAIR FASTENER ROWS CAN BE INSTALLED AROUND THE DAMAGE.

1 MAKE SURE THERE IS A MINIMUM OF 2.5D EDGE MARGIN.

2 REFER TO SRM 51-40-06 FOR THE EDGE MARGIN.

FASTENER SYMBOLS

REFERENCE FASTENER LOCATION.

REPAIR FASTENER LOCATION. REFER TO TABLE 202 FOR THE FASTENER TYPE AND DIAMETER.

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Layout of the Repair Parts
Figure 202 (Sheet 1 of 2)

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Layout of the Repair Parts
Figure 202 (Sheet 2 of 2)

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5. **Inspection and Replacement Instructions**

A. Do a detailed visual inspection of the repair doubler and fasteners every 1,300 flight cycles for airplanes that have not completed Service Bulletin 737-21-1149. Inspect the blind rivets carefully. Rivets that are loose or missing must be replaced. Remove and replace with permanent fasteners as shown in Figure 201.

B. Do a detailed visual inspection of the repair doubler and fasteners every 500 flight cycles for airplanes that have completed Service Bulletin 737-21-1149. Inspect the blind rivets carefully. Rivets that are loose or missing must be replaced. Remove and replace with permanent fasteners as shown in Figure 201.

C. Replace Repair 4 with Repair 3 no later that the flight cycle limits given in Figure 201.

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REPAIR 5 - EXTERNAL TIME-LIMITED REPAIR OF A SMALL HOLE

1. Applicability

A. Repair 5 is applicable to damage on the fuselage skin that:

(1) Can be drilled out to a maximum of 1.00 inch in diameter.

(2) Is in an area of constant thickness.

(3) Is in an area that is less than or equal to 0.125 inch thick.

B. Repair 5 is not applicable to the fuselage lower skin locations that follow:

(1) In Section 43 between Station 360 and 540 and between Stringers 24L and 24R.

(2) In Section 46 between Station 727 and 887 and between Stringers 23L and 23R

C. For airplanes with a dome aft pressure bulkhead, Repair 5 is applicable to the pressurized fuselage crown area between BS 259.5 and BS 1016 and between stringers S-10L and S-10R if:

(1) You do inspections of the repair as given in Paragraph 5./REPAIR 5.

(2) You replace Repair 5 with a permanent repair before 1000 flight cycles have occurred for airplanes that have not completed Service Bulletin 737-21-1149.

(3) You replace Repair 5 with a permanent repair before 400 flight cycles have occurred for airplanes that have completed Service Bulletin 737-21-1149.

D. For airplanes with a flat aft pressure bulkhead, Repair 5 is applicable to the pressurized fuselage crown area between BS 259.5 and BS 1042 and between stringers S-10L and S-10R if:

(1) You do inspections of the repair as given in Paragraph 5./REPAIR 5.

(2) You replace Repair 5 with a permanent repair before 1000 flight cycles have occurred for airplanes that have not completed Service Bulletin 737-21-1149.

(3) You replace Repair 5 with a permanent repair before 400 flight cycles have occurred for airplanes that have completed Service Bulletin 737-21-1149.

E. For airplanes with a dome aft pressure bulkhead, Repair 5 is applicable to the pressurized fuselage skin between BS 259.5 to BS 1016, minus the pressurized fuselage crown area if:

(1) You do inspections of the repair as given in Paragraph 5./REPAIR 5.

(2) You replace Repair 5 with a permanent repair before 2500 flight cycles have occurred.

F. For airplanes with a flat aft pressure bulkhead, Repair 5 is applicable to the pressurized fuselage skin between BS 259.5 to BS 1042, minus the pressurized fuselage crown area if:

(1) You do inspections of the repair as given in Paragraph 5./REPAIR 5.

(2) You replace Repair 5 with a permanent repair before 2500 flight cycles have occurred.

G. Repair 5 is not applicable for use near static ports or angle of attack sensors. Refer to 51-10-01 for areas near static ports or angle of attack sensors where an external repair is not permitted.

2. General

A. Repair 5 is a Category C repair. Refer to 51-00-06 for the repair categories and definitions. This category C repair has FAA approval if you do the supplemental inspections as given in Paragraph 5./REPAIR 5. This category C repair must be replaced at or before the flight cycle interval given in Paragraph 1.C./REPAIR 5 or Paragraph 1.D./REPAIR 5 or Paragraph 1.E./REPAIR 5 or Paragraph 1.F./REPAIR 5. This repair will not have an effect on the inspection program of Principal Structural Elements (PSE) as given in STRUCTURAL CLASSIFICATION, 51-00-04, Figure 2.

B. The center of the hole drilled to remove the damage must be a minimum of 4 hole diameters away from an edge, fastener location, or skin cutout.

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3. References

Reference	Title
51-00-04	STRUCTURAL CLASSIFICATION
51-00-06	STRUCTURAL REPAIR DEFINITIONS
51-10-01	AERODYNAMIC SMOOTHNESS
51-10-02	INSPECTION AND REMOVAL OF DAMAGE
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-20-05	REPAIR SEALING
51-40-02	FASTENER INSTALLATION AND REMOVAL
51-40-03	FASTENER SUBSTITUTION
51-40-05	FASTENER HOLE SIZES
AMM 51-21-99 P/B 701	DECORATIVE EXTERIOR PAINT SYSTEM - CLEANING/PAINTING
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes
SOPM 20-44-04	Application of Urethane Compatible Primer

4. Repair Instructions

A. Do an inspection of the repair area to find the amount of damage as given in 51-10-02.

B. Drill out the damage to a maximum of 1.00 inch in diameter. Refer to 51-10-02.

C. Make the repair parts.

(1) Refer to Table 201/REPAIR 5 for the material and the thickness of the repair parts.

(2) Refer to Layout of the Repair Parts, Figure 201/REPAIR 5 for the dimensions of the repair parts.

Table 201:

REPAIR MATERIAL			
ITEM	**PART**	**QUANTITY**	**MATERIAL**
[1]	Doubler	1	Use 2024-T3, -T4, or -T42 that is two times the thickness of the skin that was removed
[2]	Doubler	1	Use 2024-T3, -T4, or -T42 that is two times the thickness of the skin that was removed
[3]	Filler	1	Use 2024-T3, -T4 or -T42 that is the same thickness as the skin thickness that was removed

D. Assemble the repair parts as shown in Layout of the Repair Parts, Figure 201/REPAIR 5.

E. Drill the necessary fastener holes.

(1) Drill the holes to 0.2495 to 0.2505 inch diameter (close ream hole).

F. Disassemble the repair parts.

G. Remove all the nicks, scratches, gouges, burrs, sharp edges and corners from the repair parts and the skin.

H. Apply a chemical conversion coating to the repair parts and to the bare surfaces of the skin. Refer to 51-20-01.

I. Apply one layer of BMS 10-11, Type I primer to the repair parts and the bare surfaces of the fuselage skin. Refer to SOPM 20-41-02.

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J. If you do the Option 2 repair:

(1) Install a BACN10JP4A nutplate with BACR15BA3AD() or MS20426AD3() countersink rivets to the [2] doubler as shown in Layout of the Repair Parts, Figure 201/REPAIR 5.

(2) Refer to 51-40-02, 51-40-03, and 51-40-05.

K. Install the repair parts.

(1) Apply BMS 5-95 sealant to all the mating surfaces. Refer to 51-20-05.

(2) Install the pan head screw wet with sealant. Refer to 51-40-02.

L. Apply one layer of BMS 10-11, Type I primer to the fasteners. Refer to SOPM 20-44-04.

M. Apply a fillet seal to the repair area. Refer to 51-20-05.

N. Apply the decorative finish to the repair area if necessary. Refer to AMM PAGEBLOCK 51-21-99/701.

O. Apply a layer of BMS 3-23, corrosion inhibiting compound to all the internal structure in the repair area.

5. Inspection Instructions

A. Do a detailed visual inspection of the repair area at each 250 flight cycle interval until the permanent repair is installed.

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ALTERNATIVE 1

ALTERNATIVE 2

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Layout of the Repair Parts
Figure 201

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REPAIR 6 - FLUSH REPAIR OF A SMALL HOLE

1. Applicability

A. Repair 6 is applicable to damage that:

(1) Can be drilled out to a maximum of 1.00 inch in diameter

(2) Is in an area where the skin is a constant thickness

(3) Is between the stringers and the frames.

B. Repair 6 is not applicable to the fuselage lower skin locations that follow:

(1) In Section 43 between Station 360 and 540 and between Stringers 24L and 24R.

(2) In Section 46 between Station 727 and 887 and between Stringers 23L and 23R

C. The center of the hole drilled to remove the damage must be a minimum of 4 hole diameters away from a fastener location.

D. When protruding head fasteners are used, Repair 6 is not applicable for use near static ports or angle of attack sensors where external repairs are not permitted. Refer to 51-10-01.

(1) Protruding head fasteners are used when the skin thickness is 0.056 inch or less.

2. General

A. Repair 6 gives the instructions for a Category B Repair for airplanes that have not completed Service Bulletin 737-21-1149. Refer to 51-00-06 for the definitions of the different types of repairs. Refer to Paragraph 5./REPAIR 6 for the inspection requirements.

B. Repair 6 gives the instructions for a Category B repair for airplanes that have completed Service Bulletin 737-21-1149. Refer to 51-00-06 for the definitions of the different types of repairs. Refer to Paragraph 5./REPAIR 6 for the inspection requirements.

C. Repair 6 is a replacement repair for Repair 5 which is an external repair with blind rivets.

3. References

Reference	Title
51-00-06	STRUCTURAL REPAIR DEFINITIONS
51-00-06, GENERAL	Structural Repair Definitions
51-10-01	AERODYNAMIC SMOOTHNESS
51-10-02, GENERAL	Inspection and Removal of Damage
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-20-05	REPAIR SEALING
51-40-02, GENERAL	Fastener Installation and Removal
51-40-03, GENERAL	Fastener Substitution
51-40-05, GENERAL	Fastener Hole Sizes
51-40-06, GENERAL	Fastener Edge Margins
AMM 51-21-99 P/B 701	DECORATIVE EXTERIOR PAINT SYSTEM - CLEANING/PAINTING
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes

4. Repair Instructions

A. Drill out the damage up to a maximum of 1.00 inch in diameter as shown in Layout of the Repair Parts, Figure 201/REPAIR 6.

B. Make the repair parts:

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(1) Refer to Table 201/REPAIR 6 for the material and the thickness of the repair parts.

(2) Refer to Table 202/REPAIR 6 for the dimensions of the part [1] Doubler.

C. Assemble the repair parts as shown in Layout of the Repair Parts, Figure 201/REPAIR 6.

D. Drill the fastener holes. Refer to Table 202/REPAIR 6 for the fastener type, diameter, and spacing.

E. Disassemble the repair parts.

F. Remove all the nicks, scratches, gouges, burrs, from the initial and the repair parts.

G. Apply a chemical conversion coating to the repairs parts and the bare surfaces of the fuselage skin. Refer to 51-20-01.

Table 201:

REPAIR MATERIAL			
ITEM	PART	QUANTITY	MATERIAL
[1]	Doubler	1	Use 2024-T3 that is one standard aluminum sheet metal gage thicker than the initial skin
[2]	Filler	1	Use 2024-T3 that is the same thickness as the initial skin

Table 202:

NUMBER, TYPE, AND DIAMETER OF REPAIR FASTENERS						
INITIAL SKIN THICKNESS (INCH)	PART [1] DOUBLER DIAMETER	DIAMETER OF THE FASTENER LOCATION		NUMBER OF FASTENERS		FASTENER TYPE AND DIAMETER-PREFERRED (ALTERNATE)
	A (INCH)	B (INCH)	C (INCH)	B DIA	C DIA	
0.040	3.80	1.80	3.10	9	15	BACR15BB5D
0.045	3.80	1.80	3.10	9	15	BACR15BB5D
0.050	3.80	1.80	3.10	9	15	BACR15BB5D
0.056	4.30	2.00	3.50	8	14	BACR15BB6D
0.063	4.30	2.00	3.50	8	14	BACR15CE6D (OPTIONAL: BACR15GF6D, BACR15BB6D)
0.071	4.30	2.00	3.50	8	14	BACR15CE6D (OPTIONAL: BACR15GF6D, BACR15BB6D)
0.080	4.30	2.00	3.50	8	14	BACR15CE6D (OPTIONAL: BACR15GF6D, BACR15BB6D)

H. Apply two layers of BMS 10-11, Type I primer to the repair parts and the bare surfaces of the initial parts. Refer to SOPM 20-41-02.

I. Install the repair parts.

(1) Apply BMS 5-95 sealant to all the mating surfaces. Refer to 51-20-05.

(2) Install the rivets without sealant.

J. Seal the repair area. Refer to 51-20-05.

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(1) Apply a fillet seal to the part [1] doubler.

(2) Put the sealant into the space between the part [2] filler and the skin.

K. Apply the decorative finish to the repair area if necessary. Refer to AMM PAGEBLOCK 51-21-99/701.

L. Apply one layer of BMS 3-23, corrosion inhibiting compound to all the internal structure in the repair area.

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NOTE: REFER TO TABLE 202 FOR THE DIMENSIONS.

FASTENER SYMBOLS

REPAIR FASTENER LOCATION. REFER TO TABLE 202 FOR THE TYPE AND DIAMETER.

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Layout of the Repair Parts
Figure 201

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5. **Inspection Requirements**

A. For airplanes that have completed Service Bulletin 737-21-1149, do the inspection as given in Table 203/REPAIR 6.

Table 203:

CATEGORY B REPAIR INSPECTION REQUIREMENTS		
INSPECTION THRESHOLD	REPEAT INSPECTIONS	
	METHOD	INTERVAL
22,500 FLIGHT CYCLES	EXTERNAL DETAIL VISIUAL	1,200 FLIGHT CYCLES

B. For airplanes that have not completed Service Bulletin 737-21-1149, do the inspection as given in Table 204/REPAIR 6.

Table 204:

CATEGORY B REPAIR INSPECTION REQUIREMENTS		
INSPECTION THRESHOLD	REPEAT INSPECTIONS	
	METHOD	INTERVAL
50,000 FLIGHT CYCLES	EXTERNAL DETAIL VISIUAL	4,000 FLIGHT CYCLES
50,000 FLIGHT CYCLES	EXTERNAL MFEC INSPECT*[1]	8,000 FLIGHT CYCLES

*[1] Perform a Medium Frequency Eddy Current (MFEC) inspection of the external skin surface around each fastener that is in the outer fastener row of the repair. Refer to 737 NDT Part 6, 53–30–00 Figure 7.

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REPAIR 7 - FLUSH REPAIR OF CROWN SKIN AND BONDED DOUBLER AT A STRINGER

1. Applicability

A. Repair 7 is a flush repair that is applicable to damage:

(1) In a 0.040 inch or 0.050 inch thick crown skin that has a bonded "waffle" doubler

(2) At a stringer location.

B. Repair 7 is not applicable to damage:

(1) That goes to more than one stringer

(2) At a skin splice

(3) At window belts

(4) At skin cutouts

(5) In major body joint bays.

2. General

A. Repair 7 is a Category B Repair for airplanes that have not completed Service Bulletin 737-21-1149. Refer to 51-00-06 for the definitions of the different types of repairs. Refer to Paragraph 5./REPAIR 7 for the inspection requirements.

B. Repair 7 is a Category B repair for airplanes that have completed Service Bulletin 737-21-1149. Refer to 51-00-06 for the definitions of the different types of repairs. Refer to Paragraph 5./REPAIR 7 for the inspection requirements.

C. Repair 7 can be used to replace an external repair with a maximum damage area of 10 inches x 10 inches.

D. Repair 7 is:

(1) An alternative repair for Repair 1 which is an external repair with solid rivets, where applicable

(2) A replacement repair for Repair 2 which is an external repair with blind rivets, where applicable.

3. References

Reference	Title
51-00-06	STRUCTURAL REPAIR DEFINITIONS
51-00-06, GENERAL	Structural Repair Definitions
51-10-01, GENERAL	Aerodynamic Smoothness Requirements
51-10-02, GENERAL	Inspection and Removal of Damage
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-20-05	REPAIR SEALING
51-40-02, GENERAL	Fastener Installation and Removal
51-40-03, GENERAL	Fastener Substitution
51-40-05	FASTENER HOLE SIZES
51-40-06, GENERAL	Fastener Edge Margins
51-40-08	COUNTERSINKING
53-00-03	FUSELAGE STRINGERS
AMM 51-21-99 P/B 701	DECORATIVE EXTERIOR PAINT SYSTEM - CLEANING/PAINTING
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes

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(Continued)

Reference	Title
737 NDT Part 6, 51-00-00, Procedure 23	Aluminum Part Surface Inspection (Impedance Plane Display)

4. Repair Instructions

A. Get access to the damaged area.

(1) If Repair 7 will replace an external repair, remove the repair fasteners and the repair parts.

B. Remove the necessary fasteners in the area of the damaged skin.

C. Cut and remove the damaged part of the stringer.

D. Cut and remove the damaged part of the skin.

(1) Make the repair cutout in the shape of a rectangle with the edge parallel to the position of the stringer as shown in Layout of the Repair Parts, Figure 201/REPAIR 7.

(2) Make the corner radii of the cut a minimum of 0.50 inch.

E. Put the skin around the cut back to the initial contour.

F. Make the repair parts given in Table 201/REPAIR 7.

NOTE: Repair the stringer as given in 53-00-03.

G. Assemble the repair parts as shown in Layout of the Repair Parts, Figure 201/REPAIR 7.

H. Drill the necessary fastener holes. Refer to Layout of the Repair Parts, Figure 201/REPAIR 7 for the fastener type, diameter, and spacing. Refer to 51-40-05 for the fastener hole dimensions.

(1) If Repair 7 will replace an external repair, then:

(a) Use the same fastener holes as the external repair

(b) Use the same fastener spacing as the external repair if you drill more fastener holes.

Table 201:

REPAIR MATERIAL			
ITEM	PART	QUANTITY	MATERIAL
[1]	Doubler	1	Use clad 2024-T3. Use a thickness that is same thickness as the initial skin
[2]	Filler	1	Use clad 2024-T3 that is the same thickness as the initial doubler
[3]	Filler	1	Use clad 2024-T3 that is the same thickness as the initial skin

Table 202:

REPAIR FASTENER TYPE, DIAMETER, AND MINIMUM NUMBER OF ROWS AND SPACING					
INITIAL SKIN THICKNESS (INCH)	DOUBLER THICKNESS (INCH)	FASTENER TYPE AND DIAMETER	NECESSARY NUMBER OF FASTENER ROWS COMMON TO THE DOUBLER		FASTENER SPACING (INCH)
			CIRCUMFERENTIAL	LONGITUDINAL	
0.040	0.040	BACR15BB5D	4	4	0.78 TO 0.81
0.050	0.050	BACR15BB5D	4	4	0.78 TO 0.81

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Table 203:

REPAIR FASTENER TYPE, DIAMETER, AND MINIMUM NUMBER OF ROWS AND SPACING					
INITIAL SKIN THICKNESS (INCH)	FILLER THICKNESS (INCH)	FASTENER TYPE AND DIAMETER	NECESSARY NUMBER OF FASTENER ROWS COMMON TO THE FILLER		FASTENER SPACING (INCH)
			CIRCUMFERENTIAL	LONGITUDINAL	
0.040	0.040	BACR15BB5D	5	5	0.78 TO 0.81
0.050	0.050	BACR15BB5D	5	5	0.78 TO 0.81

I. Disassemble the repair parts.

J. Remove the nicks, scratches, gouges, burrs, and sharp edges from the initial and the repair parts.

K. Apply a chemical conversion coating to the repair parts and the bare surfaces of the initial parts. Refer to 51-20-01.

L. Install the countersink repair washers with BMS 5-95 sealant at the locations shown in Layout of the Repair Parts, Figure 201/REPAIR 7. Refer to 51-40-08.

M. Apply two layers of BMS 10-11, Type I primer to the repair parts, the bare surfaces of the initial parts and the internal surfaces of the repair area. Refer to SOPM 20-41-02.

N. Install the repair parts.

(1) Apply BMS 5-95 sealant to the mating surfaces. Refer to 51-20-05.

(2) Install the rivets without sealant.

O. Apply BMS 5-95 sealant to the repair as follows:

(1) Apply a fillet seal to the repair parts on the internal and external sides of the repair area. Refer to 51-20-05

(2) Put sealant into the space between the part [3] filler and the skin. Refer to 51-20-05.

P. Apply the decorative finish if necessary. Refer to AMM PAGEBLOCK 51-21-99/701.

Q. Apply a layer of BMS 3-23, corrosion inhibiting compound to all the interior structure of the repair area.

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Layout of the Repair Parts
Figure 201 (Sheet 1 of 2)

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NOTE: ALL REPAIR FASTENERS MUST BE OVERDRIVEN TO 1.4D MINIMUM BUTT DIAMETER. INSTALL THE FASTENER AS GIVEN IN BAC 5004-1

A

A-A

FASTENER SYMBOLS

┼ INITIAL FASTENER LOCATION. INSTALL THE FASTENER WHEN YOU DO THE SUBSEQUENT STRINGER REPAIR.

✦ REPAIR FASTENER LOCATION. REFER TO TABLES 202 AND 203 FOR THE FASTENER TYPE AND DIAMETER.

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Layout of the Repair Parts
Figure 201 (Sheet 2 of 2)

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5. **Inspection Requirements**

A. Refer to 51-00-06, GENERAL for the definition of terms.

B. For airplanes that have completed Service Bulletin 737-21-1149 do the inspection is given in Table 204/REPAIR 7 . The inspection requirements is given in Table 204/REPAIR 7 do not apply for airplanes that have not completed Service Bulletin 737-21-1149.

Table 204:

CATEGORY B REPAIR INSPECTION REQUIREMENTS		
INSPECTION THRESHOLD	REPEAT INSPECTIONS	
	METHOD *[1]	INTERVAL
22,500 FLIGHT CYCLES	EXTERNAL HFEC INSPECT*[2]	10,000 FLIGHT CYCLES

*[1] No fastener removal is required.

*[2] Inspect the fuselage skin around all fasteners through the repair parts. Refer to 737 NDT Part 6, 51-00-00, Procedure 23.

C. For airplanes that have not completed Service Bulletin 737-21-1149 do the inspection is given in Table 205/REPAIR 7. The inspection requirements as given in Table 205/REPAIR 7 do not apply for airplanes that have completed Service Bulletin 737-21-1149.

Table 205:

CATEGORY B REPAIR INSPECTION REQUIREMENTS		
INSPECTION THRESHOLD	REPEAT INSPECTIONS	
	METHOD *[1]	INTERVAL
50,000 FLIGHT CYCLES	EXTERNAL HFEC INSPECT*[2]	12,000 FLIGHT CYCLES

*[1] No fastener removal is required.

*[2] Inspect the fuselage skin around all fasteners through the repair parts. Refer to 737 NDT Part 6, 51-00-00, Procedure 23.

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REPAIR 8 - FLUSH REPAIR OF CONSTANT THICKNESS SKIN BETWEEN STRINGERS

1. Applicability

A. Repair 8 is a flush repair that is applicable to fuselage skin damage between stringers where the skin is a constant thickness.

B. Repair 8 is not applicable to the fuselage skin locations that follow:

(1) The lower skin between Stations 360 and 540 and between Stringers 24L and 24R.

(2) The lower skin between Stations 727 and 887 and between Stringers 23L and 23R.

C. Repair 8 is not applicable to damage:

(1) That goes to more than one stringer

(2) That goes to a frame

(3) At skin splices

(4) At window belts

(5) Closer than 20 inches (508 mm) to skin cutouts

(6) At major body joint bay

(7) At 10 inches (254 mm) or less away from the edge of an existing repair.

(a) If damage occurs in this area, then remove the existing repair and make one repair that includes the two areas of damage.

D. When protruding head fasteners are used, Repair 8 is not applicable near static ports or angle of attack sensors. External repairs are not permitted in these locations. Refer to 51-10-01.

2. General

A. Repair 8 is a Category B repair for airplanes that have not completed Service Bulletin 737-21-1149. Refer to 51-00-06 for the definitions of the different types of repairs.

B. Repair 8 is a Category B repair for airplanes that have completed Service Bulletin 737-21-1149. Refer to 51-00-06 for the definitions of the different types of repairs. Refer to Paragraph 5 for the Inspection Requirements.

C. Repair 8 can be used to replace an external repair.

D. Repair 8 is an alternative to:

(1) Repair 3 which is an external repair with solid rivets for damage between stringers

(2) Repair 4 which is an external repair with blind rivets for damage between stringers.

3. References

Reference	Title
51-00-06	STRUCTURAL REPAIR DEFINITIONS
51-10-01	AERODYNAMIC SMOOTHNESS
51-10-02, GENERAL	Inspection and Removal of Damage
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-20-05	REPAIR SEALING
51-40-02, GENERAL	Fastener Installation and Removal
51-40-03, GENERAL	Fastener Substitution
51-40-05	FASTENER HOLE SIZES
51-40-06, GENERAL	Fastener Edge Margins

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(Continued)

Reference	Title
51-40-08, GENERAL	Countersink Data and Procedures for Metal Structures
AMM 51-21-99 P/B 701	DECORATIVE EXTERIOR PAINT SYSTEM - CLEANING/PAINTING
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes
737 NDT Part 6, 51-00-00, Procedure 23	Aluminum Part Surface Inspection (Impedance Plane Display)
737 NDT Part 6, 51-00-00, Procedure 4	Surface Inspection of Aluminum Parts (Meter Display)
737 NDT Part 6, 51-00-00, Procedure 8	Inspection of Subsurface Cracks in Aluminum Structure
737 NDT Part 6, 51-00-00, Procedure 9	Inspection of Subsurface Cracks at Fastener Holes in Aluminum Structure

4. Repair Instructions

A. Get access to the damaged area.

(1) Remove the necessary fasteners in the area of the damaged skin. Refer to 51-40-02, GENERAL

(2) If Repair 8 will replace an external repair, remove the repair fasteners and the repair parts.

B. Cut and remove the damaged part of the fuselage skin, if necessary. Refer to 51-10-02, GENERAL.

(1) Make the cut in the shape of a rectangle with the sides parallel or perpendicular to the stringer or frame as shown in Layout of the Repair Parts, Figure 201/REPAIR 8.

(2) Make the corner radii of the cut a minimum of 0.50 inch.

C. Put the skin around the cut back to the initial contour.

D. Do a High Frequency Eddy Current (HFEC) inspection of the repair area to make sure that all of the damage is removed. Do a 0.040 inch (1.02 mm) insurance cut if no further damage is found. Refer to 737 NDT Part 6, 51-00-00, Procedure 4, 737 NDT Part 6, 51-00-00, Procedure 8 and 737 NDT Part 6, 51-00-00, Procedure 9.

E. Make the repair parts as given in Table 201.

F. Make the contour of the repair parts the same as the contour of the initial skin as necessary.

G. Assemble the repair parts as shown in Figure 201.

Table 201:

REPAIR MATERIAL			
ITEM	**PART**	**QUANTITY**	**MATERIAL**
[1]	Doubler	1	Use the same material and heat treat condition as the initial skin. Refer to Figure 201 to find the length, width, necessary fastener spacing, number of rows, and edge margins. Refer to Table 202 for the thickness.
[2]	Filler	1	Use the same material, heat treat and thickness as the initial skin.
[3]	Tapered Shim	As necessary	Use the same material and heat treat condition as the initial skin. Refer to Figure 201 and Table 202 for the thickness.

H. Drill the necessary fastener holes. Refer to Table 202 for the fastener type, diameter and spacing. Refer to 51-40-05 for the fastener hole dimensions.

(1) Do not countersink the fastener holes more than 76 percent of the initial skin thickness.

(a) This will prevent a knife-edge condition of the initial skin.

(2) If Repair 8 will replace an external repair, then:

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(a) Use the same fastener holes as the external repair

(b) Use the same fastener spacing as the external repair if you drill more fastener holes.

I. Disassemble the repair parts.

J. Remove all the nicks, scratches, burrs, and sharp edges from the repair parts and the bare surfaces of the initial parts.

K. Apply a chemical conversion coating to the repair parts and to the bare surfaces of the initial parts. Refer to 51-20-01.

L. Apply two layers of BMS 10-11, Type I primer to the repair parts and to the bare surfaces of the initial parts. Refer to SOPM 20-41-02.

M. Install the repair parts.

(1) Apply BMS 5-95 sealant to the mating surfaces. Refer to 51-20-05.

(2) Install the fasteners without sealant.

N. Apply a fillet seal to the repair. Refer to 51-20-05.

(1) Apply a fillet to the repair parts on the internal and external sides of the repair area with BMS 5-95 sealant.

(2) Put sealant into the space between the part [2] filler and the skin.

O. Apply a decorative finish if necessary. Refer to AMM PAGEBLOCK 51-21-99/701.

P. Apply a layer of BMS 3-23, corrosion inhibiting compound, to all the interior structure of the repair area.

Table 202:

REPAIR FASTENER TYPE, DIAMETER, AND MINIMUM NUMBER OF ROWS AND SPACING					
INITIAL SKIN THICKNESS (INCH)	PART [1] DOUBLER THICKNESS (INCH)	FASTENER TYPE AND DIAMETER PREFERRED (ALTERNATIVE)	NECESSARY NUMBER OF FASTENER ROWS		FASTENER SPACING (INCH) (mm)
			CIRCUMFEREN-TIAL	LONGITUDINAL	
0.040	0.045	BACR15BB5D	4	4	0.63 TO 0.78 (16.00 TO 19.81 mm)
0.045	0.050	BACR15BB5D	4	4	0.63 TO 0.78 (16.00 TO 19.81 mm)
0.050	0.056	BACR15BB6D	4	4	0.75 TO 0.94 (19.05 TO 23.88 mm)
0.056	0.063	BACR15BB6D	4	4	0.75 TO 0.94 (19.05 TO 23.88 mm)
0.063	0.071	BACR15GF7D	4	4	0.87 TO 1.0 (22.1 TO 25.4 mm)
0.071	0.080	BACR15GF7D	4	4	0.87 TO 1.0 (22.1 TO 25.4 mm)
0.080	0.090	BACR15GF7D	4	4	0.87 TO 1.0 (22.1 TO 25.4 mm)

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Table 202: (Continued)

REPAIR FASTENER TYPE, DIAMETER, AND MINIMUM NUMBER OF ROWS AND SPACING					
INITIAL SKIN THICKNESS (INCH)	PART [1] DOUBLER THICKNESS (INCH)	FASTENER TYPE AND DIAMETER PREFERRED (ALTERNATIVE)	NECESSARY NUMBER OF FASTENER ROWS		FASTENER SPACING (INCH) (mm)
			CIRCUMFEREN-TIAL	LONGITUDINAL	
0.090	0.100	BACR15CE8D (BACR15GF8D)	4	4	1.0 TO 1.2 (25.4 TO 30.5 mm)

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Layout of the Repair Parts
Figure 201 (Sheet 1 of 6)

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Layout of the Repair Parts
Figure 201 (Sheet 2 of 6)

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NOTE: FOR REPAIRS DONE TO ALL SKINS LESS THAN 0.063 INCH THICK, ALL REPAIR FASTENERS MUST BE OVERDRIVEN TO 1.4D MINIMUM BUTT DIAMETER. INSTALL THE FASTENER AS GIVEN IN BAC 5004-1.

C

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Layout of the Repair Parts
Figure 201 (Sheet 3 of 6)

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W13635 S0000136088_V1

Layout of the Repair Parts
Figure 201 (Sheet 4 of 6)

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W19127 S0000136089_V1

Layout of the Repair Parts
Figure 201 (Sheet 5 of 6)

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ROTATED 90° COUNTERCLOCKWISE
D-D

NOTES

1. REFER TO TABLE 202
2. REPAIR AS SHOWN DOES NOT EXTEND ACROSS A STRINGER.
3. REPAIR AS SHOWN DOES EXTEND ACROSS A STRINGER. THE REPAIR MUST INCLUDE ONE ADDITIONAL ROW OF FASTENERS BEYOND THE STRINGER AS SHOWN.
4. REFER TO SRM 51-40-06 FOR THE EDGE MARGIN. FOR A BACR15CE7D OR BACR15GF7D RIVET, THE EDGE MARGIN IS 0.50 ±0.05 INCH.
5. T = DOUBLER THICKNESS.
6. TAPER SHIM THICKNESS FROM T TO 0.02 / 0.01 INCH OVER SHIM LENGTH OF 50T.

FASTENER SYMBOLS

- REPAIR FASTENER LOCATION. REFER TO TABLE 202 FOR THE FASTENER TYPE AND DIAMETER.
- INITIAL FASTENER LOCATION. INSTALL THE SAME TYPE AND SIZE AS THE INITIAL FASTENER, UP TO 1/32 INCH OVERSIZE, IF NECESSARY.
- REFERENCE FASTENER LOCATION.

W13745 S0000136090_V1

Layout of the Repair Parts
Figure 201 (Sheet 6 of 6)

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5. **Inspection Requirements**

A. Refer to STRUCTURAL REPAIR DEFINITIONS, 51-00-06 for the repair categories and definitions.

B. The inspections given in Table 203/REPAIR 8 are applicable to airplanes that have not completed Service Bulletin 737-21-1149.

Table 203:

CATEGORY B REPAIR INSPECTION REQUIREMENTS		
INSPECTION THRESHOLD	REPEAT INSPECTIONS	
	METHOD *[1]	INTERVAL
50,000 flight cycles	External HFEC inspection *[2]	6,000 flight cycles

*[1] No fastener removal is required.

*[2] Inspect the fuselage skin around all fasteners through the repair parts. Refer to 737 NDT Part 6, 51-00-00, Procedure 23.

C. The inspections given in Table 204/REPAIR 8 are applicable to airplanes that have completed Service Bulletin 737-21-1149.

Table 204:

CATEGORY B REPAIR INSPECTION REQUIREMENTS		
INSPECTION THRESHOLD	REPEAT INSPECTIONS	
	METHOD *[1]	INTERVAL
22,500 flight cycles	External HFEC inspection *[2]	5,000 flight cycles

*[1] No fastener removal is required.

*[2] Inspect the fuselage skin around all fasteners through the repair parts. Refer to 737 NDT Part 6, 51-00-00, Procedure 23.

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REPAIR 9 - FLUSH REPAIR OF FUSELAGE SKIN BETWEEN STRINGERS

1. Applicability

A. Repair 9 is a flush repair that is applicable to fuselage skin damage between stringers at:

(1) Areas of bonded doublers

(2) Areas of chem-milled pads.

B. Repair 9 is not applicable to the fuselage skin locations that follow:

(1) The lower skin between Stations 360 and 540 and between Stringers 24L and 24R.

(2) The lower skin between Stations 727–887 and between Stringers 23L and 23R.

C. Repair 9 is not applicable to damage:

(1) That goes to more than one stringer or a frame

(2) At skin splices

(3) At window belts

(4) Closer than 20 inches (508 mm) to skin cutouts

(5) At major body joint bays

(6) At 10 inches (254 mm) or less away from the edge of an existing repair

(a) If damage occurs in this area, then remove the existing repair and make one repair that includes the two areas of damage.

D. When protruding head fasteners are used, Repair 9 is not applicable near static ports or angle of attack sensors. External repairs are not permitted in these locations. Refer to 51-10-01.

(1) Protruding head fasteners are used for a skin thickness of 0.056 inch or less.

2. General

A. Repair 9 is a Category B repair for airplanes that have not completed Service Bulletin 737-21-1149. Refer to 51-00-06 for the definitions of the different types of repairs.

B. Repair 9 is a Category B Repair for airplanes that have completed Service Bulletin 737-21-1149. Refer to 51-00-06 for the definitions of the different types of repairs. Refer to Paragraph 5 for the Inspection Requirements.

C. Repair 9 can be used to replace an external repair.

D. Repair 9 is an alternative to:

(1) Repair 3 which is an external repair with solid rivets for damage between stringers

(2) Repair 4 which is an external repair with blind rivets for damage between stringers.

3. References

Reference	Title
51-00-06	STRUCTURAL REPAIR DEFINITIONS
51-10-01	AERODYNAMIC SMOOTHNESS
51-10-02, GENERAL	Inspection and Removal of Damage
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-20-05	REPAIR SEALING
51-40-02, GENERAL	Fastener Installation and Removal
51-40-03, GENERAL	Fastener Substitution

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(Continued)

Reference	Title
51-40-05	FASTENER HOLE SIZES
51-40-06, GENERAL	Fastener Edge Margins
51-40-08, GENERAL	Countersink Data and Procedures for Metal Structures
AMM 51-21-99 P/B 701	DECORATIVE EXTERIOR PAINT SYSTEM - CLEANING/PAINTING
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes
737 NDT Part 6, 51-00-00, Procedure 23	Aluminum Part Surface Inspection (Impedance Plane Display)
737 NDT Part 6, 51-00-00, Procedure 4	Surface Inspection of Aluminum Parts (Meter Display)
737 NDT Part 6, 51-00-00, Procedure 8	Inspection of Subsurface Cracks in Aluminum Structure
737 NDT Part 6, 51-00-00, Procedure 9	Inspection of Subsurface Cracks at Fastener Holes in Aluminum Structure

4. Repair Instructions

A. Get access to the damaged area.

(1) Remove the necessary fasteners in the area of the damaged skin. Refer to 51-40-02, GENERAL.

(2) If Repair 9 will replace an external repair, remove the repair fasteners and the repair parts.

B. Cut and remove the damaged part of the fuselage skin, if necessary. Refer to 51-10-02, GENERAL.

(1) Make the cut in the shape of a rectangle with the sides parallel or perpendicular to the stringer or frame as shown in Layout of the Repair Parts, Figure 201/REPAIR 9.

(2) Make the corner radii of the cut a minimum of 0.50 inch.

C. Put the skin around the cut back to the initial contour.

D. Do a High Frequency Eddy Current (HFEC) inspection of the repair area to make sure that all of the damage is removed. Do a 0.040 inch (1.02 mm) insurance cut if no further damage is found. Refer to 737 NDT Part 6, 51-00-00, Procedure 4, 737 NDT Part 6, 51-00-00, Procedure 8 and 737 NDT Part 6, 51-00-00, Procedure 9.

E. Make the repair parts as given in Table 201.

F. Make the contour of the repair parts the same as the contour of the initial skin as necessary.

G. Assemble the repair parts as shown in Figure 201.

Table 201:

REPAIR MATERIAL			
ITEM	**PART**	**QUANTITY**	**MATERIAL**
[1]	Doubler	1	Use the same material and heat treat condition as the initial skin. Refer to Figure 201 to find the length, width, necessary fastener spacing, number of rows, and edge margins. Refer to Table 202 for the thickness.
[2]	Filler	1	Use the same material, heat treat and thickness as the initial skin.
[3]	Filler	1	Use the same material, heat treat and thickness as the initial skin.
[4]	Filler	1	Use the same material, heat treat and thickness as the initial skin.
[5]	Tapered Shim	As necessary	Use the same material, heat treat and thickness as the initial skin.

H. Drill the necessary fastener holes. Refer to Table 202 for the fastener type, diameter and spacing. Refer to 51-40-05 for the fastener hole dimensions.

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(1) Do not countersink the fastener holes more than 76 percent of the initial skin thickness.

(a) This will prevent a knife-edge condition of the initial skin.

(2) If Repair 9 will replace an external repair, then:

(a) Use the same fastener holes as the external repair.

(b) Use the same fastener spacing as the external repair if you drill more fastener holes.

I. Disassemble the repair parts.

J. Remove all the nicks, scratches, burrs, and sharp edges from the repair parts and the bare surfaces of the initial parts.

K. Apply a chemical conversion coating to the repair parts and the bare surfaces of the initial parts. Refer to 51-20-01.

L. Apply two layers of BMS 10-11, Type I primer to the repair parts and to the bare surfaces of the initial parts. Refer to SOPM 20-41-02.

M. Install the repair parts.

(1) Apply BMS 5-95 sealant to the mating surfaces. Refer to 51-20-05.

(2) Install the fasteners without sealant.

N. Apply a fillet seal to the repair. Refer to 51-20-05.

(1) Apply a fillet to the repair parts on the internal and external sides of the repair area with BMS 5-95 sealant.

(2) Put sealant into the space between the part [2] filler and the skin.

O. Apply a decorative finish if necessary. Refer to AMM PAGEBLOCK 51-21-99/701.

P. Apply a layer of BMS 3-23, corrosion inhibiting compound, to all the interior structure of the repair area.

Table 202:

REPAIR FASTENER TYPE, DIAMETER, AND MINIMUM NUMBER OF ROWS AND SPACING					
INITIAL SKIN THICKNESS (INCH)	PART [1] DOUBLER THICKNESS (INCH)	FASTENER TYPE AND DIAMETER PREFERRED (ALTERNATIVE)	NECESSARY NUMBER OF FASTENER ROWS		FASTENER SPACING (INCH) (mm)
			CIRCUMFEREN-TIAL	LONGITUDINAL	
0.040	0.045	BACR15BB5D	4	4	0.78 TO 0.81 (19.8 TO 20.6 mm)
0.045	0.050	BACR15BB5D	4	4	0.63 TO 0.78 (16.00 TO 19.81 mm)
0.050	0.056	BACR15BB6D	4	4	0.75 TO 0.94 (19.05 TO 23.88 mm)
0.056	0.063	BACR15BB6D	4	4	0.75 TO 0.94 (19.05 TO 23.88 mm)
0.063	0.071	BACR15GF7D	4	4	0.87 TO 1.0 (22.1 TO 25.4 mm)
0.071	0.080	BACR15GF7D	4	4	0.87 TO 1.0 (22.1 TO 25.4 mm)

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Table 202: (Continued)

REPAIR FASTENER TYPE, DIAMETER, AND MINIMUM NUMBER OF ROWS AND SPACING					
INITIAL SKIN THICKNESS (INCH)	PART [1] DOUBLER THICKNESS (INCH)	FASTENER TYPE AND DIAMETER PREFERRED (ALTERNATIVE)	NECESSARY NUMBER OF FASTENER ROWS		FASTENER SPACING (INCH) (mm)
			CIRCUMFEREN-TIAL	LONGITUDINAL	
0.080	0.090	BACR15GF7D	4	4	0.87 TO 1.0 (22.1 TO 25.4 mm)
0.090	0.100	BACR15CE8D (BACR15GF8D)	4	4	1.0 TO 1.2 (25.4 TO 30.5 mm)

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Layout of the Repair Parts
Figure 201 (Sheet 1 of 4)

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Layout of the Repair Parts
Figure 201 (Sheet 2 of 4)

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NOTE: FOR REPAIRS DONE TO ALL SKINS LESS THAN 0.063 INCH THICK, ALL REPAIR FASTENERS MUST BE OVERDRIVEN TO 1.4D MINIMUM BUTT DIAMETER. INSTALL THE FASTENER AS GIVEN IN BAC 5004-1.

C

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Layout of the Repair Parts
Figure 201 (Sheet 3 of 4)

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FASTENER SYMBOLS

REPAIR FASTENER LOCATION. REFER TO TABLE 202 FOR THE FASTENER TYPE AND DIAMETER.

INITIAL FASTENER LOCATION. INSTALL THE SAME TYPE AND SIZE AS THE INITIAL FASTENER, UP TO 1/32 INCH OVERSIZE, IF NECESSARY.

NOTES

1. REFER TO TABLE 202
2. REPAIR DOES NOT EXTEND ACROSS A STRINGER.
3. REPAIR DOES EXTEND ACROSS A STRINGER. REPAIR MUST INCLUDE ONE ADDITIONAL ROW OF FASTENERS AS SHOWN. REPAIR USE IS RESTRICTED TO 0.040 INCH INITIAL SKIN THICKNESS IN BOTH POCKETS WITH A 0.040 INCH BONDED DOUBLER.
4. REFER TO SRM 51-40-06 FOR THE EDGE MARGIN. FOR A BACR15CE7D OR BACR15GF7D RIVET, THE EDGE MARGIN IS 0.50 ±0.05 INCH.
5. T = DOUBLER THICKNESS.
6. TAPER SHIM THICKNESS FROM T TO $\frac{0.02}{0.01}$ INCH OVER SHIM LENGTH OF 50T.

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Layout of the Repair Parts
Figure 201 (Sheet 4 of 4)

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5. **Inspection Requirements**

A. Refer to STRUCTURAL REPAIR DEFINITIONS, 51-00-06 for the repair categories and definitions.

B. The inspections given in Table 203/REPAIR 9 are applicable to airplanes that have not completed Service Bulletin 737-21-1149.

Table 203:

CATEGORY B REPAIR INSPECTION REQUIREMENTS		
INSPECTION THRESHOLD	REPEAT INSPECTIONS	
	METHOD *[1]	INTERVAL
50,000 flight cycles	External HFEC inspection *[2]	6,000 flight cycles

*[1] No fastener removal is required.

*[2] Inspect the fuselage skin around all fasteners through the repair parts. Refer to 737 NDT Part 6, 51-00-00, Procedure 23.

C. The inspections given in Table 204/REPAIR 9 are applicable to airplanes that have completed Service Bulletin 737-21-1149.

Table 204:

CATEGORY B REPAIR INSPECTION REQUIREMENTS		
INSPECTION THRESHOLD	REPEAT INSPECTIONS	
	METHOD *[1]	INTERVAL
22,500 flight cycles	External HFEC inspection *[2]	5,000 flight cycles

*[1] No fastener removal is required.

*[2] Inspect the fuselage skin around all fasteners through the repair parts. Refer to 737 NDT Part 6, 51-00-00, Procedure 23.

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REPAIR 10 - DELETED

1. **Repair 10**

   A. Deleted. Do not use after March 10, 2016. Refer to SRM 53-00-01, REPAIR 35.

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REPAIR 11 - EXTERNAL REPAIR FOR DAMAGE AT A LOWER LOBE LAP SPLICE ADJACENT TO A CARGO DOOR

1. Applicability

A. Repair 11 is applicable to fuselage skin damage in the lower lobe lap splice at:

(1) Stringer S-23L and Stringer S-23R in fuselage section 46

(2) Stringer S-24L and Stringer S-24R in fuselage section 43

(3) The areas that are adjacent to the forward or aft cargo door cutout where the skin thickness is 0.090 inch.

B. Repair 11 is not applicable to damage:

(1) In major body joint bays

(2) At other lower lobe lap splice locations where the skin thickness is not 0.090 inch

(3) Nearer than 9.0 inches (22.8 cm) to the forward or aft cargo door cutouts.

2. General

A. Repair 11 is a Category B repair for airplanes that have not completed Service Bulletin 737-21-1149. Refer to 51-00-06 for the definitions of the different types of repairs.

(1) For airplanes that have not completed Service Bulletin 737-21-1149, you must do an inspection of the row of fasteners at the lap splice joint cutout at 34,000 flight cycles or sooner after you install the repair.

(a) Refer to Figure 201 for the location of this row.

(b) Refer to Paragraph 5.A. for the inspection instructions.

B. Repair 11 is a Category B repair for airplanes that have completed Service Bulletin 737-21-1149. Refer to 51-00-06 for the definitions of the different types of repairs. Refer to Paragraph 5.B. and Figure 202 for the inspection instructions.

(1) For airplanes that have completed Service Bulletin 737-21-1149, you must do an inspection of the row of fasteners at the lap splice joint cutout at 16,800 flight cycles (external) and 22,500 flight cycles (internal) or sooner after you install the repair.

(a) Refer to Figure 202 for the location of this row.

(b) Refer to Paragraph 5.B. for the inspection instructions.

C. Do not use Repair 11 near static ports and angle of attack sensors. Refer to 51-10-01 for areas near static ports and angle of attack sensors where external repairs are not permitted.

3. References

Reference	Title
51-00-06	STRUCTURAL REPAIR DEFINITIONS
51-10-01	AERODYNAMIC SMOOTHNESS
51-10-02	INSPECTION AND REMOVAL OF DAMAGE
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-20-05	REPAIR SEALING
51-40-02	FASTENER INSTALLATION AND REMOVAL
51-40-03, GENERAL	Fastener Substitution
51-40-05	FASTENER HOLE SIZES
51-40-06, GENERAL	Fastener Edge Margins

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(Continued)

Reference	Title
51-40-08	COUNTERSINKING
AMM 51-21-99 P/B 701	DECORATIVE EXTERIOR PAINT SYSTEM - CLEANING/PAINTING
SOPM 20-44-04	Application of Urethane Compatible Primer
737 NDT Part 6, 51-00-00	Structures - General

4. Repair Instructions

A. Remove the necessary fasteners in the area of the damaged skin. Refer to 51-40-02.

B. Cut and remove the damaged part of the fuselage skin. Refer to 51-10-02.

(1) Make the cut in the shape of a rectangle with the sides parallel or perpendicular to the stringer or frame.

(2) Make the corner radii of the cut a minimum of 0.50 inch.

C. Put the skin around the cut back to the initial contour.

(1) Make the contour of the repair parts the same as the contour of the initial skin as necessary.

D. Make the repair parts as given in Table 201. Refer to Layout of the Repair Parts, Figure 201/REPAIR 11 for the parts configurations.

(1) Make the countersink repair washers for the locations shown in Layout of the Repair Parts, Figure 201/REPAIR 11. Refer to 51-40-08.

E. Assemble the repair parts as shown in Layout of the Repair Parts, Figure 201/REPAIR 11.

Table 201:

REPAIR MATERIAL			
ITEM	PART	QUANTITY	MATERIAL
[1]	Doubler	1	Use the same material and heat treat condition as the initial skin. Use a thickness of 0.100 inch
[2]	Filler	1	Use the same material and heat treat as the initial skin. Use a thickness of 0.180 inch
[3]	Filler	1	Use the same material and heat treat as the initial skin. Use a thickness of 0.045 inch
[4]	Filler	1	Use the same material and heat treat as the initial skin. Use a thickness of 0.045 inch

F. Drill the necessary fastener holes. Refer to Table 202/REPAIR 11 and Figure 201 for the fastener type, size, and spacing. Refer to 51-40-05 for the fastener hole sizes.

NOTE: Do not drill fastener holes into a chem milled radius. Blend out of chem milled area is not permitted.

(1) Use the same spacing as the initial fastener holes.

(2) You are permitted to use a fastener that is 1/32 inch oversize and is the same type as given in Table 202/REPAIR 11.

G. Disassemble the repair parts.

H. Remove all the nicks, scratches, burrs and sharp edges from the repair parts and the bare surfaces of the initial parts.

(1) Make the surface texture roughness for all cut surfaces 125 microinches Ra or smoother.

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I. Apply a chemical conversion coating to the repair parts and the bare surfaces of the initial parts. Refer to 51-20-01.

Table 202:

REPAIR FASTENER TYPE AND DIAMETER		
RECOMMENDED	ALTERNATIVE	EDGE MARGIN (INCH)
BACR15FT6D	MS20470D6 or BACR15BB6D	0.40

J. Install the countersink repair washers with BMS 5-95 adhesive at the initial fastener locations. Refer to 51-40-08.

K. Apply two layers of BMS 10-79, Type II primer to the repair parts and the bare surfaces of the initial parts. Refer to SOPM 20-44-04.

L. Install the repair parts. Refer to 51-20-05.

(1) Apply BMS 5-95 sealant to the mating surfaces. Refer to 51-20-05.

(2) Install the fasteners without sealant.

(3) Apply a fillet seal to the repair parts on the exterior side of the repair area with BMS 5-95 sealant. Refer to 51-20-05.

(4) Apply the decorative finish if necessary. Refer to AMM PAGEBLOCK 51-21-99/701.

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Layout of the Repair Parts
Figure 201 (Sheet 1 of 3)

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A-A

B-B

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Layout of the Repair Parts
Figure 201 (Sheet 2 of 3)

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NOTE: ALL REPAIR FASTENERS MUST BE OVERDRIVEN TO 1.4D MINIMUM BUTT DIAMETER. INSTALL THE FASTENER AS GIVEN IN BAC 5004-1.

A

NOTES

1 FOR AIRPLANES THAT HAVE COMPLETED SERVICE BULLETIN 737-21-1149, DO AN INSPECTION OF THIS ROW OF FASTENERS AT 16,800 FLIGHT CYCLES OR SOONER. REFER TO PARAGRAPH 5 FOR THE INSTRUCTIONS.

FOR AIRPLANES THAT HAVE NOT COMPLETED SERVICE BULLETIN 737-21-1149, DO AN INSPECTION OF THIS ROW OF FASTENERS AT 34,000 FLIGHT CYCLES OR SOONER. REFER TO PARAGRAPH 5 FOR THE INSTRUCTIONS.

FASTENER SYMBOLS

INITIAL FASTENER LOCATION. YOU ARE PERMITTED TO USE A FASTENER THAT IS 1/32 INCH OVERSIZE AND IS THE SAME TYPE AS IN TABLE 202. USE COUNTERSINK REPAIR WASHERS IN THE MOST OUTBOARD INITIAL SKIN.

REPAIR FASTENER LOCATION. REFER TO TABLE 202 FOR THE FASTENER. USE A BACR15FT6D RIVET. AS AN ALTERNATIVE, USE AN MS20470D RIVET OR BACR15BB6D RIVET.

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Layout of the Repair Parts
Figure 201 (Sheet 3 of 3)

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NOTE: THE INSPECTION REQUIREMENTS APPLY TO AIRPLANES THAT HAVE COMPLETED SERVICE BULLETIN 737-21-1149.

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Inspection Requirements
Figure 202

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5. **Inspection Requirements**

A. For airplanes that have not completed Service Bulletin 737-21-1149, do one of the two inspections at 34,000 flight cycles after you install the repair. Refer to Figure 201 for the inspection location.

(1) Do a detailed visual inspection of the repair doubler.

(a) After you do the initial inspection, do the detailed visual inspection again at each 3800 flight cycles intervals.

(2) Do a high frequency eddy current inspection of the repair doubler. Refer to 737 NDT Part 6, 51-00-00, Figure 4 for the procedures.

(a) After you do the initial inspection, do the inspection again at each 35,000 flight cycles intervals.

B. For airplanes that have completed Service Bulletin 737-21-1149, do the inspections with the steps that follow (Refer to 51-00-06 for the different categories of repairs.):

(1) The threshold for the start of supplemental inspections is 16,800 flight cycles (external) and 22,500 flight cycles (internal) after the installation of this repair if all fastener holes in the repair are:

(a) New,

(b) Oversized, or

(c) Not changed from their initial condition.

(2) Do an external detailed visual inspection of the doubler, the filler, and the skins around the doubler at each subsequent 500 flight cycles.

(3) Do an external HFEC inspection around the rivet heads of two interior fastener rows at each subsequent 2,000 flight cycles (Refer to Figure 202).

(4) Do an internal detailed visual inspection of the repair area at each subsequent 1,600 flight cycles.

(5) Do an internal High Frequency Eddy Current (HFEC) inspection at each subsequent 1,600 flight cycles around the rivet heads of (Refer to Figure 202):

(a) The two outer rivet rows of the inner skin

(b) The outer rivet row of the outer skin.

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REPAIR 12 - EXTERNAL REPAIR FOR DAMAGE TO FUSELAGE SKIN AT A LOWER LOBE LAP SPLICE

1. Applicability

A. Repair 12 is applicable to fuselage skin damage in the lower lobe lap splice in these areas:

(1) Stringer S-23L and Stringer S-23R in fuselage Section 46

(2) Stringer S-24L and Stringer S-24R in fuselage Section 43.

B. Repair 12 is not applicable to damage:

(1) At skin cutouts

(2) In major body joint bays.

2. General

A. Repair 12 is a Category B repair for airplanes that have not completed Service Bulletin 737-21-1149. Refer to 51-00-06 for the definitions of the different types of repairs. Refer to Paragraph 5./REPAIR 12 for the Inspection Requirements.

B. Repair 12 is a Category B repair for airplanes that have completed Service Bulletin 737-21-1149. Refer to 51-00-06 for the definitions of the different types of repairs. Refer to Paragraph 5./REPAIR 12 for the Inspection Requirements.

C. Do not use Repair 12 near static ports and angle of attack sensors. Refer to 51-10-01 for areas near static ports and angle of attack sensors where external repairs are not permitted.

3. References

Reference	Title
51-00-06	STRUCTURAL REPAIR DEFINITIONS
51-10-01	AERODYNAMIC SMOOTHNESS
51-10-02	INSPECTION AND REMOVAL OF DAMAGE
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-20-05	REPAIR SEALING
51-40-02	FASTENER INSTALLATION AND REMOVAL
51-40-03, GENERAL	Fastener Substitution
51-40-05	FASTENER HOLE SIZES
51-40-06, GENERAL	Fastener Edge Margins
51-40-08	COUNTERSINKING
AMM 51-21-99 P/B 701	DECORATIVE EXTERIOR PAINT SYSTEM - CLEANING/PAINTING
SOPM 20-44-04	Application of Urethane Compatible Primer
737 NDT Part 6, 53-30-00, Procedure 7	Subsurface Cracks that Start at the Faying Surfaces of the Airplane Skins - Internal Inspection

4. Repair Instructions

A. Remove the necessary fasteners in the area of the damaged skin. Refer to 51-40-02.

B. Cut and remove the damaged part of the fuselage skin. Refer to 51-10-02.

(1) Make the cut in the shape of a rectangle with the sides parallel or perpendicular to the stringer or frame.

(2) Make the corner radii of the cut a minimum of 0.50 inch.

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C. Put the skin around the cut back to the initial contour.

(1) Make the contour of the repair parts the same as the contour of the initial skin as necessary.

D. Make the repair parts as given in Table 201. Refer to Layout of the Repair Parts, Figure 201/REPAIR 12 for the parts configurations.

(1) Make the countersink repair washers for the locations shown in Layout of the Repair Parts, Figure 201/REPAIR 12. Refer to 51-40-08.

Table 201:

REPAIR MATERIAL			
ITEM	**PART**	**QUANTITY**	**MATERIAL**
[1]	Doubler	1	Use the same material and heat treat condition as the initial skin. Use a thickness that is one standard aluminum sheet gage thicker than the initial skin with the larger thickness. Minimum gage is 0.063 inch. Form the doubler the same as the contour of the initial skin
[2]	Filler	1	Use the same material and heat treat as the initial skin. Use a thickness that is the same as the total thickness of the two skins of the splice
[3]	Filler	1	Use the same material and heat treat as the initial skin. Use a thickness that is equal to the thickness of the outer skin minus the thickness of the part [4] filler
[4]	Filler	1	Use the same material and heat treat as the initial skin. Use a thickness of 0.032 inch

E. Assemble the repair parts as shown in Layout of the Repair Parts, Figure 201/REPAIR 12.

F. Drill the necessary fastener holes. Refer to Table 202 and Figure 201 for the fastener type, size, and spacing. Refer to 51-40-05 for the fastener hole sizes.

NOTE: Do not drill fastener holes into a chem-milled radius. Blending of chem-milled area is not permitted.

Table 202:

REPAIR FASTENER TYPE AND DIAMETER		
RECOMMENDED	**ALTERNATIVE**	**EDGE MARGIN (INCH)**
BACR15BB6D	MS20470D6	0.40
BACR15CE6D	BACR15GF6D	0.44

(1) Use the same spacing as the initial fastener holes, except at chem- milled areas.

(a) The fastener spacing must be a minimum of 0.28 inch from a chem- milled area.

(2) You are permitted to use a fastener that is 1/32 inch oversize and is the same type as given in Table 202.

G. Disassemble the repair parts.

H. Remove all the nicks, scratches, burrs and sharp edges from the repair parts and the bare surfaces of the initial parts. Make the surface texture roughness for all cut surfaces 125 microinches Ra or smoother.

I. Apply a chemical conversion coating to the repair parts and the bare surfaces of the initial parts. Refer to 51-20-01.

J. Install the countersink repair washers with BMS 5-95 adhesive at the initial fastener locations. Refer to 51-40-08.

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K. Apply two layers of BMS 10-79, Type II primer to the repair parts and the bare surfaces of the initial parts. Refer to SOPM 20-44-04.

L. Install the repair parts. Refer to 51-20-05

(1) Apply BMS 5-95 sealant to the mating surfaces. Refer to 51-20-05.

(2) Install the fasteners without sealant.

(3) Apply a fillet seal to the repair parts on the exterior side of the repair area with BMS 5-95 sealant. Refer to 51-20-05.

(4) Apply the decorative finish if necessary. Refer to AMM PAGEBLOCK 51-21-99/701.

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Layout of the Repair Parts
Figure 201 (Sheet 1 of 3)

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A-A

B-B

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Layout of the Repair Parts
Figure 201 (Sheet 2 of 3)

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NOTE: ALL REPAIR FASTENERS MUST BE OVERDRIVEN TO 1.4D MINIMUM BUTT DIAMETER. INSTALL THE FASTENER AS GIVEN IN BAC 5004-1. ALSO APPLIES TO PROTRUDING HEAD FASTENERS

A

C-C

NOTES

1. SPACING UP TO 1.05 INCH IS PERMITTED TO AVOID THE CHEM-MILLED STEPS IF NECESSARY
2. SPACING UP TO 1.35 INCH IS PERMITTED TO AVOID THE CHEM-MILLED STEPS IF NECESSARYS
3. SPACE AS REQUIRED TO KEEP A STRAIGHT ROW OF FASTENERS

FASTENER SYMBOLS

- INITIAL FASTENER LOCATION. REFER TO TABLE 202 FOR THE FASTENER. YOU ARE PERMITTED TO USE A FASTENER THAT IS 1/32 INCH OVERSIZE AND IS THE SAME TYPE AS GIVEN IN TABLE 202. USE COUNTERSINK REPAIR WASHERS IN OUTBOARD INITIAL SKIN.
- REPAIR FASTENER LOCATION. REFER TO TABLE 202 FOR THE FASTENER.
- REPAIR FASTENER LOCATION. REFER TO TABLE 202. USE A BACR15BB6D RIVET. AS AN ALTERNATIVE, USE AN MS20470D6 RIVET.

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Layout of the Repair Parts
Figure 201 (Sheet 3 of 3)

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5. **Inspection Requirements**

A. Do the inspections with the steps that follow to airplanes that have completed Service Bulletin 737-21-1149 (Refer to 51-00-06 for the different categories of repairs.):

(1) The threshold for the start of supplemental inspections is 22,500 flight cycles for airplanes that have completed Service Bulletin 737-21-1149 after the installation of this repair if all fastener holes in the repair are:

(a) New,

(b) Oversized, or

(c) Not changed from their initial condition.

(2) Do an external detailed visual inspection of the doubler, the filler, and the skins around the doubler at each subsequent 4000 flight cycles.

(3) Do an internal detailed visual inspection of the repair area at each subsequent 11,500 flight cycles for airplanes that have completed Service Bulletin 737-21-1149.

(4) Do an internal High Frequency Eddy Current (HFEC) inspection. Refer to 737 NDT Part 6, 53-30-00, Procedure 7. Do the inspection at each subsequent 11,500 clight cycles for airplanes that have completed Service Bulletin 737-21-1149 around the rivet heads of (Refer to Figure 202):

(a) The two outer rivet rows of the inner skin

(b) The outer rivet row of the outer skin.

B. Inspections as given below are only applicable to airplanes that have not completed Service Bulletin 737-21-1149. The inspections as given below do not apply to airplanes that have completed Service Bulletin 737-21-1149. The threshold for the start of supplemental inspections is 50,000 total airplane flight cycles. Perform the following inspections at the specified repeat intervals:

(1) External Detailed Visual (DET) Inspections at 4,000 flight cycle intervals of the repair area for skin cracks at the outer perimeter row of fasteners common to the repair doubler and filler.

(2) Internal Detailed Visual (DET) Inspections at 15,000 flight cycle intervals of the repair area for skin cracks at the outer perimeter row of fasteners common to the repair doubler and filler.

(3) Internal High Frequency Eddy Current (HFEC) inspections at 15,000 flight cycle intervals around rivet heads of the two outer rivet rows of the inner skin and the outer row of the outer skin. Refer to 737 NDT Part 6, 53-30-00, Procedure 7.

(4) External Detailed Visual (DET) inspections of the entire repair doubler for cracks, loose or missing fasteners concurrently with the required DET inspections following the threshold.

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Inspection Requirements
Figure 202

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REPAIR 13 - MOVED - REPAIR OF LIGHTNING STRIKE DAMAGE IN FUSELAGE SKIN

1. General

A. This procedure has been divided into multiple repairs and moved.

(1) If you have lightning strike or small damage to the fuselage skin that is away from a production fastener location, refer to REPAIR 38.

(2) If you have lightning strike damage to a repair fastener that is away from a production fastener location and installed in the initial skin only, not through repair parts, refer to REPAIR 39.

(3) If you have lightning strike damage to a production fastener that does not damage the adjacent skin, refer to REPAIR 40.

(4) If you have lightning strike damage to a production fastener that does damage the skin at a stringer, longitudinal splice, circumferential splice, or frame location, refer to REPAIR 41.

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REPAIR 14 - FLUSH REPAIR OF A SMALL HOLE AWAY FROM A DOUBLER IN 0.040 INCH THICK SKIN

1. Applicability

A. Repair 14 is a flush repair that is applicable to damage that is:

(1) In 0.040 inch thick fuselage skin

(2) 1.00 inch or less in diameter

(3) 2.25 inches or more away from a doubler.

B. Repair 14 is not applicable to damage:

(1) In the lower fuselage skin in the locations that follow:

(a) In Section 43 between Station 360 and 540 and between Stringers 24L and 24R.

(b) In Section 46 between Station 727 and 887 and between Stringers 23L and 23R

2. General

A. Repair 14 is a Category B Repair for airplanes that have not completed Service Bulletin 737-21-1149. Refer to 51-00-06 for the definitions of the different types of repairs. Refer to Paragraph 5./REPAIR 14 for the inspection requirements.

B. Repair 14 is a Category B Repair for airplanes that have completed Service Bulletin 737-21-1149. Refer to 51-00-06 for the definitions of the different types of repairs. Refer to Paragraph 5./REPAIR 14 for the inspection requirements.

C. Repair 14 is an alternative to:

(1) Repair 5 which is an external repair for a small hole.

(2) Repair 6 which is a flush repair for a small hole between stringers.

3. References

Reference	Title
51-00-06	STRUCTURAL REPAIR DEFINITIONS
51-10-02	INSPECTION AND REMOVAL OF DAMAGE
51-10-02, GENERAL	Inspection and Removal of Damage
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-20-05	REPAIR SEALING
51-40-02, GENERAL	Fastener Installation and Removal
51-40-03, GENERAL	Fastener Substitution
51-40-05	FASTENER HOLE SIZES
51-40-06, GENERAL	Fastener Edge Margins
51-40-08, GENERAL	Countersink Data and Procedures for Metal Structures
AMM 51-21-99 P/B 701	DECORATIVE EXTERIOR PAINT SYSTEM - CLEANING/PAINTING
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes
737 NDT Part 6, 51-00-00, Procedure 23	Aluminum Part Surface Inspection (Impedance Plane Display)

4. Repair Instructions

A. Drill out the damage to a maximum of 1.00 inch in diameter. Refer to 51-10-02.

B. Make the repair parts.

(1) Refer to Table 201/REPAIR 14 for the material and the thickness of the repair parts.

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(2) Refer to Layout of the Repair Parts, Figure 201/REPAIR 14 for the dimensions of the repair parts.

(3) Make the contour of the repair parts the same as the contour of the initial skin as necessary.

Table 201:

REPAIR MATERIAL			
ITEM	**PART**	**QUANTITY**	**MATERIAL**
[1]	Doubler	1	Use the same material, heat treat and same thickness as the initial skin
[2]	Filler	1	Use the same material, heat treat and same thickness as the initial skin

C. Assemble the repair parts as shown in Layout of the Repair Parts, Figure 201/REPAIR 14.

D. Drill the necessary fastener holes. Refer to 51-40-05 for the fastener hole dimensions.

E. Disassemble the repair parts.

F. Remove all the nicks, scratches, burrs, and sharp edges from the repair parts and the bare surfaces of the initial parts.

G. Apply a chemical conversion coating to the repair parts and to the bare surfaces of the initial parts. Refer to 51-20-01.

H. Apply two layers of BMS 10-11, Type I primer to the repair parts and the bare surfaces of the initial parts. Refer to SOPM 20-41-02.

I. Install the repair parts.

(1) Apply BMS 5-95 sealant to the mating surfaces. Refer to 51-20-05.

(2) Install the fasteners without sealant.

J. Apply a fillet seal to the repair parts on the internal and external sides of the repair area with BMS 5-95 sealant. Refer to 51-20-05.

K. Apply a decorative finish if necessary. Refer to AMM PAGEBLOCK 51-21-99/701.

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NOTE: ALL REPAIR FASTENERS MUST BE OVERDRIVEN TO 1.4D MINIMUM BUTT DIAMETER. INSTALL THE FASTENER AS GIVEN IN BAC 5004-1

A

FASTENER SYMBOLS

REPAIR FASTENER LOCATION. INSTALL A BACR15CE4D() RIVET. AS AN ALTERNATIVE, INSTALL A BACR15GF4D RIVET.

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Layout of the Repair Parts
Figure 201

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5. **Inspection Requirements**

A. Refer to STRUCTURAL REPAIR DEFINITIONS, 51-00-06 for the repair categories and definitions.

B. Do the inspections as given in Table 202/REPAIR 14 for airplanes that have not completed Service Bulletin 737-21-1149.

Table 202:

CATEGORY B REPAIR INSPECTION REQUIREMENTS		
INSPECTION THRESHOLD	REPEAT INSPECTIONS	
	METHOD *[1]	INTERVAL
50,000 flight cycles	External Detailed Visual Inspection	2,600 flight cycles
	External HFEC Inspection *[2]	18,000 flight cycles
OR		
50,000 flight cycles	External Detailed Visual Inspection	1,900 flight cycles

*[1] No fastener removal is required.

*[2] Inspect the fuselage skin around all fasteners through the repair parts. Refer to 737 NDT Part 6, 51-00-00, Procedure 23.

C. Do the inspections as given in Table 203/REPAIR 14 for airplanes that have completed Service Bulletin 737-21-1149.

Table 203:

CATEGORY B REPAIR INSPECTION REQUIREMENTS		
INSPECTION THRESHOLD	REPEAT INSPECTIONS	
	METHOD *[1]	INTERVAL
22,500 flight cycles	External Detailed Visual Inspection	2,000 flight cycles
	External HFEC Inspection *[2]	14,000 flight cycles
OR		
22,500 flight cycles	External Detailed Visual Inspection	1,400 flight cycles

*[1] No fastener removal is required.

*[2] Inspect the fuselage skin around all fasteners through the repair parts. Refer to 737 NDT Part 6, 51-00-00, Procedure 23.

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REPAIR 15 - FLUSH REPAIR OF A SMALL HOLE NEAR A BONDED DOUBLER IN 0.040 INCH THICK SKIN

1. Applicability

A. Repair 15 is a flush repair that is applicable to damage in the fuselage skin:

(1) That is 0.040 inch thick

(2) That is 1.00 inch or less in diameter

(3) Where the edge of the damage is a minimum of 0.625 inch away from the doubler

(4) Where the damage is a maximum of 2.25 inches away from a doubler.

B. Repair 15 is not applicable to the crown skin panel between BS 540 and BS 727.

(1) For a repair to this 0.050 inch thick skin area, refer to Repair 10.

C. Repair 15 is not applicable to the fuselage lower skin locations that follow:

(1) In Section 43 between Station 360 and 540 and between Stringers 24L and 24R.

(2) In Section 46 between Station 727 and 887 and between Stringers 23L and 23R

2. General

A. Repair 15 is a Category B Repair. Refer to 51-00-06 for the definitions of the different types of repairs. Refer to Paragraph 5./REPAIR 15 for the inspection requirements.

B. Repair 15 is an alternative to:

(1) Repair 5, which is an external repair for a small hole.

3. References

Reference	Title
51-00-06	STRUCTURAL REPAIR DEFINITIONS
51-10-01, GENERAL	Aerodynamic Smoothness Requirements
51-10-02	INSPECTION AND REMOVAL OF DAMAGE
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-20-05	REPAIR SEALING
51-40-02, GENERAL	Fastener Installation and Removal
51-40-03, GENERAL	Fastener Substitution
51-40-05	FASTENER HOLE SIZES
51-40-06, GENERAL	Fastener Edge Margins
51-40-08, GENERAL	Countersink Data and Procedures for Metal Structures
AMM 51-21-99 P/B 701	DECORATIVE EXTERIOR PAINT SYSTEM - CLEANING/PAINTING
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes

4. Repair Instructions

A. Drill out the damage to a maximum of 1.00 inch in diameter. Refer to 51-10-02.

B. Make the repair parts.

(1) Refer to Table 201/REPAIR 15 for the material and the thickness of the repair parts.

(2) Refer to Layout of the Repair Parts for a Typical Fuselage Skin Section, Figure 201/REPAIR 15 for the dimensions of the repair parts.

(3) Make the contour of the repair parts the same as the contour of the initial skin, as necessary.

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Table 201:

REPAIR MATERIAL			
ITEM	**PART**	**QUANTITY**	**MATERIAL**
[1]	Filler	1	Use the same material, heat treat condition and thickness as the initial doubler
[2]	Filler	1	Use the same material, heat treat condition and thickness as the initial skin
[3]	Doubler	1	Use the same material, heat treat condition and thickness as the [3] doubler
[4]	Tapered Shim	4	Use the same material, heat treat condition and thickness as the [3] doubler. The length must not be less than 2.50 inches

C. Assemble the repair parts as shown in Layout of the Repair Parts for a Typical Fuselage Skin Section, Figure 201/REPAIR 15.

D. Drill the necessary fastener holes. Refer to 51-40-05 for the fastener hole dimensions.

E. Disassemble the repair parts.

F. Remove all the nicks, scratches, burrs, and sharp edges from the repair parts and the bare surfaces of the initial parts.

G. Apply a chemical conversion coating to the repair parts and to the bare surfaces of the initial parts. Refer to 51-20-01

H. Apply two layers of BMS 10-11, Type I primer to the repair parts and the bare surfaces of the initial parts. Refer to SOPM 20-41-02.

I. Install the repair parts.

(1) Apply BMS 5-95 sealant to the mating surfaces. Refer to 51-20-05.

(2) Install the rivets without sealant.

J. Apply a fillet seal to the repair parts on the internal and external sides of the repair area with BMS 5-95 sealant. Refer to 51-20-05.

K. Apply a decorative finish if necessary. Refer to AMM PAGEBLOCK 51-21-99/701.

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Layout of the Repair Parts for a Typical Fuselage Skin Section
Figure 201 (Sheet 1 of 2)

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A

NOTE: ALL REPAIR FASTENERS MUST BE OVERDRIVEN TO 1.4D MINIMUM BUTT DIAMETER. INSTALL THE FASTENER AS GIVEN IN BAC 5004-1

B

NOTE: THE STRINGER IS NOT SHOWN.

ROTATED 90° COUNTERCLOCKWISE

A-A

FASTENER SYMBOLS

- INITIAL FASTENER LOCATION. INSTALL A FASTENER THAT IS THE SAME TYPE AND DIAMETER AS THE INITIAL FASTENER. IF NECESSARY, INSTALL A FASTENER THAT IS UP TO 1/32 INCH DIAMETER OVERSIZE.
- REPAIR FASTENER LOCATION. INSTALL A BACR15CE4D RIVET. AS AN ALTERNATIVE, INSTALL A BACR15GF4D RIVET.
- REPAIR FASTENER LOCATION. INSTALL A BACR15CE5D RIVET. AS AN ALTERNATIVE, INSTALL A BACR15GF5D RIVET.

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Layout of the Repair Parts for a Typical Fuselage Skin Section
Figure 201 (Sheet 2 of 2)

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5. **Inspection Requirements**

A. Refer to STRUCTURAL REPAIR DEFINITIONS, 51-00-06 for the repair categories and definitions.

B. For airplanes that have not completed Service Bulletin 737-21-1149:

(1) Do an external detailed visual inspection of the skin at a threshold of 50,000 flight cycles or 15 years whichever comes first after installation of repair. Repeat the inspection at an interval of 8,000 flight cycles.

C. For airplanes that have completed Service Bulletin 737-21-1149:

(1) Do an external detailed visual inspection of the skin at a threshold of 22,500 flight cycles or 6 years whichever comes first after installation of repair. Repeat the inspection at an interval of 6,000 flight cycles.

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REPAIR 16 - FLUSH REPAIR OF 0.040 INCH THICK CROWN SKIN BETWEEN STRINGERS AND BONDED DOUBLERS

1. Applicability

A. Repair 16 is applicable to damage to 0.040 inch thick fuselage skin and bonded doublers between stringers 10L and 10R.

B. Repair 16 is not applicable to damage:

(1) That goes to a stringer

(2) That goes to a frame

(3) At a skin splice

(4) At window belts

(5) At skin cutouts

(6) In major body joint bays

(7) To the crown skin panel between BS 540 and BS 727.

(a) For a repair to the 0.050 inch thick skin in this area, refer to Repair 18.

2. General

A. Repair 16 is a Category B repair. Refer to 51-00-06 for the repair categories and definitions. Refer to Paragraph 5 for the inspection requirements.

B. Repair 16 is an alternative to:

(1) Repair 9 which is a flush repair for skin damage between stringers and bonded doublers.

3. References

Reference	Title
51-00-06	STRUCTURAL REPAIR DEFINITIONS
51-10-01, GENERAL	Aerodynamic Smoothness Requirements
51-10-02	INSPECTION AND REMOVAL OF DAMAGE
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-20-05	REPAIR SEALING
51-40-02	FASTENER INSTALLATION AND REMOVAL
51-40-03, GENERAL	Fastener Substitution
51-40-05	FASTENER HOLE SIZES
51-40-06, GENERAL	Fastener Edge Margins
51-40-08, GENERAL	Countersink Data and Procedures for Metal Structures
AMM 51-21-99 P/B 701	DECORATIVE EXTERIOR PAINT SYSTEM - CLEANING/PAINTING
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes

4. Repair Instructions

A. Remove the necessary fasteners in the area of the damaged skin. Refer to 51-40-02.

B. Cut and remove the damaged part of the fuselage skin. Refer to 51-10-02.

(1) Make the cut in the shape of a rectangle with the sides parallel or perpendicular to the stringer or frame.

(2) Make the corner radii of the cut a minimum of 1.00 inch.

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C. Put the skin around the cut back to the initial contour.

D. Make the repair parts.

(1) Refer to Table 201/REPAIR 16 for the material and the thickness of the repair parts.

(2) Refer to Layout of the Repair Parts for a Typical Fuselage Skin Section, Figure 201/REPAIR 16 for the dimensions of the repair parts.

E. Make the contour of the repair parts the same as the contour of the initial skin, as necessary.

Table 201:

REPAIR MATERIAL			
ITEM	**PART**	**QUANTITY**	**MATERIAL**
[1]	Filler	1	Use the same material, heat treat condition and thickness as the initial skin
[2]	Filler	1	Use the same material, heat treat condition and thickness as the initial skin
[3]	Doubler	1	Use the same material, heat treat condition and thickness as the initial skin
[4]	Tapered Shim	4	Use the same material, heat treat condition and thickness as the initial skin. The length must not be less than 2.50 inches

F. Assemble the repair parts as shown in Layout of the Repair Parts for a Typical Fuselage Skin Section, Figure 201/REPAIR 16.

G. Drill the necessary fastener holes. Refer to Layout of the Repair Parts for a Typical Fuselage Skin Section, Figure 201/REPAIR 16 for the fastener type, diameter, and spacing. Refer to 51-40-05 for the fastener hole dimensions.

H. Disassemble the repair parts.

I. Remove all the nicks, scratches, burrs, and sharp edges from the repair parts and the bare surfaces of the initial parts.

J. Apply a chemical conversion coating to the repair parts and to the bare surfaces of the initial parts. Refer to 51-20-01.

K. Apply two layers of BMS 10-11, Type I primer to the repair parts and the bare surfaces of the initial parts. Refer to SOPM 20-41-02.

L. Install the repair parts.

(1) Apply BMS 5-95 sealant to the mating surfaces. Refer to 51-20-05.

(2) Install the rivets without sealant.

M. Seal the repair area with BMS 5-95 sealant. Refer to 51-20-05.

(1) Apply a fillet seal to the repair parts on the internal of the repair area.

(2) Put sealant into the space between the skin and the part [1] filler.

N. Apply a decorative finish if necessary. Refer to AMM PAGEBLOCK 51-21-99/701.

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Layout of the Repair Parts for a Typical Fuselage Skin Section
Figure 201 (Sheet 1 of 2)

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NOTE: ALL REPAIR FASTENERS MUST BE OVERDRIVEN TO 1.4D MINIMUM BUTT DIAMETER. INSTALL THE FASTENER AS GIVEN IN BAC 5004-1.

A

NOTE: THE STRINGER IS NOT SHOWN.

ROTATED 90° COUNTERCLOCKWISE
A-A

FASTENER SYMBOLS

┼ INITIAL FASTENER LOCATION. INSTALL A FASTENER THAT IS THE SAME TYPE AND DIAMETER AS THE INITIAL FASTENER.

- IF THE BONDED "WAFFLE" DOUBLER IS DISBONDED, THEN THIS REPAIR IS NOT ACCEPTABLE

REPAIR FASTENER LOCATION. INSTALL A BACR15CE4D RIVET. AS AN ALTERNATIVE, INSTALL A BACR15GF4D RIVET.

REPAIR FASTENER LOCATION. INSTALL A BACR15CE5D RIVET. AS AN ALTERNATIVE, INSTALL A BACR15GF5D RIVET.

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Layout of the Repair Parts for a Typical Fuselage Skin Section
Figure 201 (Sheet 2 of 2)

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5. **Inspection Requirements**

A. For airplanes that have completed Service Bulletin 737-21-1149, do the inspection requirements as given in Table 202/REPAIR 16.

Table 202:

CATEGORY B REPAIR INSPECTION REQUIREMENTS		
INSPECTION THRESHOLD	REPEAT INSPECTIONS	
	METHOD	INTERVAL
22,500 flight cycles	External Detailed Visual	6,000 flight cycles

B. For airplanes that have not completed Service Bulletin 737-21-1149, do the inspection requirements as given in Table 203/REPAIR 16.

Table 203:

CATEGORY B REPAIR INSPECTION REQUIREMENTS		
INSPECTION THRESHOLD	REPEAT INSPECTIONS	
	METHOD	INTERVAL
50,000 flight cycles	External Detailed Visual	8,000 flight cycles

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REPAIR 17 - FLUSH REPAIR OF A SMALL HOLE IN 0.050 INCH THICK SKIN NEAR A BONDED DOUBLER

1. Applicability

A. Repair 17 is a flush repair that is applicable to damage in the crown skin:

(1) That is in 0.050 inch thick between BS 540 and BS 727

(2) That is 1.00 inch or less in diameter

(3) Where the edge of the damage is a minimum of 0.625 inches away from the doubler

(4) Where the damage is a maximum of 2.25 inches away from a doubler.

2. General

A. This is a Category B repair. Refer to 51-00-06 for the repair categories and definitions. Refer to Paragraph 5./REPAIR 17 for the inspection requirements.

B. Repair 17 is an alternative to:

(1) Repair 5 which is an external repair for a small hole.

3. References

Reference	Title
51-00-06	STRUCTURAL REPAIR DEFINITIONS
51-10-01, GENERAL	Aerodynamic Smoothness Requirements
51-10-02	INSPECTION AND REMOVAL OF DAMAGE
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-20-05	REPAIR SEALING
51-40-02, GENERAL	Fastener Installation and Removal
51-40-03, GENERAL	Fastener Substitution
51-40-05	FASTENER HOLE SIZES
51-40-06, GENERAL	Fastener Edge Margins
51-40-08, GENERAL	Countersink Data and Procedures for Metal Structures
AMM 51-21-99 P/B 701	DECORATIVE EXTERIOR PAINT SYSTEM - CLEANING/PAINTING
SOPM 20-44-04	Application of Urethane Compatible Primer

4. Repair Instructions

A. Drill out the damage to a maximum of 1.00 inch in diameter. Refer to 51-10-02.

B. Make the repair parts.

(1) Refer to Table 201/REPAIR 17 for the material and the thickness of the repair parts.

(2) Refer to Layout of the Repair Parts for a Typical Fuselage Skin Section, Figure 201/REPAIR 17 for the dimensions of the repair parts.

(3) Make the contour of the repair parts the same as the contour of the initial skin, as necessary.

Table 201:

REPAIR MATERIAL			
ITEM	PART	QUANTITY	MATERIAL
[1]	Filler	1	Use the same material, heat treat condition and thickness as the initial skin

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Table 201: (Continued)

REPAIR MATERIAL			
ITEM	**PART**	**QUANTITY**	**MATERIAL**
[2]	Filler	1	Use the same material, heat treat condition and thickness as the initial doubler
[3]	Doubler	1	Use the same material, heat treat condition and thickness as the initial skin
[4]	Tapered Filler	4	Use the same material, heat treat condition and thickness as the part [3] doubler. The length must not be less than 2.50 inches

C. Assemble the repair parts as shown in Layout of the Repair Parts for a Typical Fuselage Skin Section, Figure 201/REPAIR 17.

D. Drill the necessary fastener holes. Refer to 51-40-05 for the fastener hole dimensions.

E. Disassemble the repair parts.

F. Remove all the nicks, scratches, burrs, and sharp edges from the repair parts and the bare surfaces of the initial parts.

G. Apply a chemical conversion coating to the repair parts and to the bare surfaces of the initial parts. Refer to 51-20-01

H. Apply two layers of BMS 10-11, Type I primer to the repair parts and the bare surfaces of the initial parts. Refer to SOPM 20-44-04.

I. Install the repair parts.

(1) Apply BMS 5-95 sealant to the mating surfaces. Refer to 51-20-05.

(2) Install the rivets without sealant.

J. Apply a fillet seal to the repair parts on the internal and external sides of the repair area with BMS 5-95 sealant. Refer to 51-20-05.

K. Apply a decorative finish if necessary. Refer to AMM PAGEBLOCK 51-21-99/701.

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Layout of the Repair Parts for a Typical Fuselage Skin Section
Figure 201 (Sheet 1 of 2)

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NOTE: THE STRINGER IS NOT SHOWN.

ROTATED 90° COUNTERCLOCKWISE

A-A

A

NOTE: ALL REPAIR FASTENERS MUST BE OVERDRIVEN TO 1.4D MINIMUM BUTT DIAMETER. INSTALL THE FASTENER AS GIVEN IN BAC 5004-1

B

FASTENER SYMBOLS

- INITIAL FASTENER LOCATION. INSTALL A FASTENER THAT IS THE SAME TYPE AND DIAMETER AS THE INITIAL FASTENER. IF NECESSARY, INSTALL A FASTENER THAT IS UP TO 1/32 INCH DIAMETER OVERSIZE.
- REPAIR FASTENER LOCATION. INSTALL A BACR15CE4D RIVET. AS AN ALTERNATIVE, INSTALL A BACR15GF4D RIVET.
- REPAIR FASTENER LOCATION. INSTALL A BACR15CE5D RIVET. AS AN ALTERNATIVE, INSTALL A BACR15GF5D RIVET.

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Layout of the Repair Parts for a Typical Fuselage Skin Section
Figure 201 (Sheet 2 of 2)

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5. Inspection Requirements

A. This repair is a category B repair. Refer to 51-00-06 for the repair categories and definitions:

(1) For airplanes that have completed Service Bulletin 737-21-1149, the threshold for the start of supplemental inspections is 22,500 flight cycles after the installation of this repair.

(2) For airplanes that have not completed Service Bulletin 737-21-1149, the threshold for the start of supplemental inspections is 50,000 flight cycles after the installation of this repair.

(3) Do repetitive inspections every 16,000 flight cycles after the threshold has been reached. Do Mid Frequency Eddy Current (MFEC) inspection of the repair location from the exterior of the aircraft. Do MFEC inspection of fuselage skin and filler at all repair fastener locations. Also, do MFEC inspection of fuselage skin at the edge of the skin cutout. Refer to 737 NDT Part 6, 53-30-00, Figure 7.

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REPAIR 18 - DELETED

1. **Repair 18**

   A. Deleted. Do not use after March 10, 2016. Refer to SRM 53-00-01, REPAIR 35.

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REPAIR 19 - SMALL EXTERNAL REPAIR WITH BLIND FASTENERS

1. Applicability

A. Repair 19 is applicable to fuselage skin damage between BS 259.5 and BS 1016 if:

(1) You do inspections of the repair as given in Paragraph 5./REPAIR 19

(2) The damage can be drilled out to a maximum of 1.00 inch in diameter

(3) You replace Repair 19 with a permanent repair as given in Paragraph 5./REPAIR 19

(4) You replace Repair 19 with a permanent repair before you reach the number of flight cycles as given in Flight Cycle Limits for Crown Skin Panel, Figure 201/REPAIR 19 for the crown skin panel.

(a) For all other skin panels, the limit for Repair 19 is 20,000 flight cycles for airplanes that have not completed Service Bulletin 737-21-1149.

(b) For all other skin panels, the limit for Repair 19 is 9,800 flight cycles for airplanes that have completed Service Bulletin 737-21-1149.

B. Repair 19 is not applicable to the fuselage lower skin locations that follow:

(1) In Section 43 between Station 360 and 540 and between Stringers 24L and 24R.

(2) In Section 46 between Station 727 and 887 and between Stringers 23L and 23R

C. Repair 19 is not applicable to damage:

(1) That goes to a stringer

(2) That goes to a frame

(3) At skin splices

(4) At window belts

(5) At skin cutouts

(6) In major body joint bays.

D. The center of the hole drilled to remove the damage must be a minimum of 4 hole diameters away from:

(1) The edge of the skin

(2) An initial fastener location

(3) A cutout in the skin.

E. Do not use Repair 19 near static ports and angle-of-attack sensors. Refer to 51-10-01 for areas near static ports and angle-of-attack sensors where external repairs are not permitted.

F. Repair 19 can be used only if you make sure that the blind rivets can be installed flush against the internal structure.

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THE LIMIT FOR THE REPAIR IS 2,300 FLIGHT CYCLES. 1

THE LIMIT FOR THE REPAIR IS 7,300 FLIGHT CYCLES. 2

THE LIMIT FOR THE REPAIR IS 9,800 FLIGHT CYCLES. 1

THE LIMIT FOR THE REPAIR IS 20,000 FLIGHT CYCLES. 2

NOTES

- THIS REPAIR IS ONLY APPLICABLE FOR DAMAGE TO 1 STRINGER BAY.
- THE LIMIT FOR ALL OTHER AREAS IS 9,800 FLIGHT CYCLES. 1
- THE LIMIT FOR ALL OTHER AREAS IS 20,000 FLIGHT CYCLES. 2

1 FOR AIRPLANES THAT HAVE COMPLETED SERVICE BULLETIN 737-21-1149.

2 FOR AIRPLANES THAT HAVE NOT COMPLETED SERVICE BULLETIN 737-21-1149.

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Flight Cycle Limits for Crown Skin Panel
Figure 201

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2. General

A. Repair 19 is a Category C repair for airplanes that have not completed Service Bulletin 737-21-1149. Refer to 51-00-06 for the definitions of the different types of repairs.

B. Repair 19 is a Category C repair for airplanes that have completed Service Bulletin 737-21-1149. Refer to 51-00-06 for the definitions of the different types of repairs.

C. Repair 19 is an alternative to:

(1) Repair 4 which is an external repair with blind fasteners for damage between stringers.

(2) Repair 6 which is an internal repair with solid rivets for damage between stringers.

(3) Repair 20 which is an external repair with solid rivets and a replacement for Repair 19.

D. This Category C repair has FAA approval if you do the supplemental inspections as given in paragraph 5. You must replace this Category C repair with a permanent, or Category A repair no later than the flight cycle limits given in figure 201.

3. References

Reference	Title
51-00-06	STRUCTURAL REPAIR DEFINITIONS
51-10-01	AERODYNAMIC SMOOTHNESS
51-10-02	INSPECTION AND REMOVAL OF DAMAGE
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-20-05	REPAIR SEALING
51-40-02	FASTENER INSTALLATION AND REMOVAL
51-40-03, GENERAL	Fastener Substitution
51-40-05	FASTENER HOLE SIZES
51-40-06, GENERAL	Fastener Edge Margins
51-40-08	COUNTERSINKING
AMM 51-21-00/701	Interior And Exterior Finishes - Cleaning/Painting
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes

4. Repair Instructions

A. Remove the necessary fasteners in the area of the damaged skin. Refer to 51-40-02.

B. Drill out the damaged part of the skin up to a maximum of 1.00 inch in diameter as shown in Fuselage Skin - Small External Repair with Blind Fasteners, Figure 202/REPAIR 19. Refer to 51-10-02.

C. Put the skin around the hole back to the initial contour.

D. Make the part [1] doubler as shown in Figure 202/REPAIR 19.

(1) Refer to Table 201/REPAIR 19 and Table 202/REPAIR 19 for the necessary material and thickness of the part [1] doubler.

(2) Refer to Table 203/REPAIR 19 for the fasteners and dimensions of the part [1] doubler.

E. Make the countersink repair washers for the locations shown in Fuselage Skin - Small External Repair with Blind Fasteners, Figure 202/REPAIR 19 as necessary. Refer to 51-40-08.

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Table 201:

REPAIR MATERIAL			
ITEM	PART	QUANTITY	MATERIAL
[1]	Doubler	1	Use the same material and heat treat condition as the initial skin. Refer to Table 202 for the necessary thickness.

Table 202:

REPAIR PART THICKNESSES	
INITIAL SKIN THICKNESS (INCH)	PART [1] DOUBLER THICKNESS (INCH)
0.040	0.045 OR 0.050
0.045	0.050
0.050	0.056
0.056	0.063
0.063	0.071
0.071	0.080
0.080	0.090
0.090	0.100

Table 203:

REPAIR FASTENERS NUMBER, TYPE, AND DIAMETER						
INITIAL SKIN THICKNESS (INCH)	PART [1] DOUBLER DIAMETER	DIAMETER OF THE FASTENER LOCATION		NUMBER OF FASTENERS		FASTENER TYPE AND DIAMETER PREFERRED AND ALTERNATE
	A (INCH)	B (INCH)	C (INCH)	B DIA	C DIA	
0.040	3.80	1.80	3.10	9	15	NAS1738MW4 OR BACR15FR4MP()R
0.045	3.80	1.80	3.10	9	15	NAS1738MW4 OR BACR15FR4MP()R
0.050	3.80	1.80	3.10	9	15	NAS1738MW4 OR BACR15FR4MP()R
0.056	4.30	2.00	3.50	8	14	NAS1738MW5 OR BACR15FR5MP()R
0.063	4.30	2.00	3.50	8	14	NAS1738MW5 OR BACR15FR5MP()R
0.071	4.30	2.00	3.50	8	14	NAS1738MW5 OR BACR15FR5MP()R
0.080	4.30	2.00	3.50	8	14	NAS1738MW5 OR BACR15FR5MP()R
0.090	4.30	2.00	3.50	8	14	NAS1738MW5 OR BACR15FR5MP()R

F. Assemble the part [1] doubler as shown in Figure 202/REPAIR 19.

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G. Drill the fastener holes. Refer to Table 203/REPAIR 19 for the fastener type, diameter, and distance between fasteners. Refer to 51-40-05 for the fastener hole dimensions.

NOTE: Do not drill fastener holes into a chem-milled radius or edge of initial doubler as shown in Fastener Repair Locations and Bonded Doublers, Figure 203/REPAIR 19. The fastener centerline must be a minimum of 0.28 inch away from the edge of the chem-milled area.

H. Disassemble the part [1] doubler.

I. Remove all the nicks, scratches, burrs and sharp edges from the part [1] doubler and the bare surfaces of the initial parts.

J. Apply a chemical conversion coating to the part [1] doubler and the bare surfaces of the initial parts. Refer to 51-20-01.

K. Install the countersink repair washers with BMS 5-95 sealant at the initial fastener locations. Refer to 51-40-08.

L. Apply two layers of BMS 10-11, Type I primer to the part [1] doubler and the bare surfaces of the initial parts. Refer to SOPM 20-41-02.

M. Install the part [1] doubler. Refer to 51-20-05.

(1) Apply BMS 5-95 or sealant to the mating surfaces. Refer to 51-20-05.

(2) Install the fasteners without sealant.

(3) Apply a fillet seal to the part [1] doubler on the exterior side of the repair area with BMS 5-95 sealant. Refer to 51-20-05.

(4) Apply a fillet seal to the part [1] doubler on the interior side of the repair area with BMS 5-95 sealant. Refer to 51-20-05.

(5) Apply the decorative finish if necessary. Refer to AMM 51-21-00/701.

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NOTES

1 THE DISTANCE BETWEEN FASTENERS IN THE OUTER ROW IS THE SAME FOR ALL FASTENERS IN THAT ROW.

2 THE DISTANCE BETWEEN FASTENERS IN THE INNER ROW IS THE SAME FOR ALL FASTENERS IN THAT ROW.

FASTENER SYMBOLS

✦ REPAIR FASTENER LOCATION. REFER TO TABLE 203 FOR THE TYPE OF FASTENER AND THE DISTANCE BETWEEN FASTENERS. REFER TO SRM 51-40-00 THROUGH SRM 51-40-06 FOR THE FASTENER DATA.

2455505 S0000571273_V1

Fuselage Skin - Small External Repair with Blind Fasteners
Figure 202 (Sheet 1 of 2)

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2455506 S0000571274_V1

Fuselage Skin - Small External Repair with Blind Fasteners
Figure 202 (Sheet 2 of 2)

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NOTE: (D) IS THE DIAMETER OF THE REPAIR FASTENER. USE (D) TO CALCULATE EDGE MARGINS AND THE DISTANCE BETWEEN FASTENERS.

M25670 S0006587515_V1

Fastener Repair Locations and Bonded Doublers
Figure 203

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5. **Inspection and Replacement Instructions**

A. Do a detailed visual inspection of the repair every 2,500 flight cycles for airplanes that have not completed Service Bulletin 737-21-1149. Inspect the blind rivets carefully. Rivets that are loose or missing must be replaced.

B. Do a detailed visual inspection of the repair every 800 flight cycles for airplanes that have completed Service Bulletin 737-21-1149. Inspect the blind rivets carefully. Rivets that are loose or missing must be replaced.

C. Replace the Category C repair in Repair 19 with a permanent or Category A repair no later than the flight cycle limits given in Figure 201.

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REPAIR 20 - FUSELAGE SKIN - SMALL EXTERNAL REPAIR WITH SOLID FASTENERS

1. Applicability

A. Repair 20 is applicable to fuselage skin damage between BS 259.5 and BS 1016 if:

(1) The damage can be drilled out to a maximum of 1.00 inch in diameter

B. Repair 20 is not applicable to the fuselage lower skin locations that follow:

(1) In Section 43 between Station 360 and 540 and between Stringers 24L and 24R.

(2) In Section 46 between Station 727 and 887 and between Stringers 23L and 23R

C. Repair 20 is not applicable to damage:

(1) That goes to a stringer

(2) That goes to a frame

(3) At skin splices

(4) At window belts

(5) At skin cutouts

(6) In major body joint bays.

D. The center of the hole drilled to remove the damage must be a minimum of 4 hole diameters away from:

(1) The edge of the skin

(2) An initial fastener location

(3) A cutout in the skin.

E. Do not use Repair 20 near static ports and angle of attack sensors. Refer to 51-10-01 for areas near static ports and angle of attack sensors where external repairs are not permitted.

F. Repair 20 can be used only if you make sure that the rivets can be installed flush against the internal structure.

2. General

A. Repair 20 is a Category B repair. Refer to 51-00-06 for structural repair definition. Refer to Paragraph 5./REPAIR 20 for the inspection requirements.

B. Repair 20 is an alternative to:

(1) Repair 4 which is an external repair with blind fasteners for damage between stringers.

(2) Repair 6 which is an internal repair with solid rivets for damage between stringers.

(3) Repair 19 which is an external repair with blind rivets.

3. References

Reference	Title
51-00-06	STRUCTURAL REPAIR DEFINITIONS
51-10-01	AERODYNAMIC SMOOTHNESS
51-10-02	INSPECTION AND REMOVAL OF DAMAGE
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-20-05	REPAIR SEALING
51-40-02	FASTENER INSTALLATION AND REMOVAL
51-40-03, GENERAL	Fastener Substitution

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(Continued)

Reference	Title
51-40-05	FASTENER HOLE SIZES
51-40-06, GENERAL	Fastener Edge Margins
51-40-08	COUNTERSINKING
AMM 51-21-00/701	Interior And Exterior Finishes - Cleaning/Painting
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes
737 NDT Part 6, 51-00-00, Procedure 23	Aluminum Part Surface Inspection (Impedance Plane Display)

4. Repair Instructions

A. Remove the necessary fasteners in the area of the damaged skin. Refer to 51-40-02.

B. Drill out the damaged part of the skin up to a maximum of 1.00 inch in diameter as shown in Fuselage Skin - Small External Repair with Solid Fasteners, Figure 201/REPAIR 20. Refer to 51-10-02.

C. Put the skin around the hole back to the initial contour.

D. Make the part [1] doubler as shown in Fuselage Skin - Small External Repair with Solid Fasteners, Figure 201/REPAIR 20.

(1) Refer to Table 201/REPAIR 20 and Table 202/REPAIR 20 for the necessary material and thickness of the part [1] doubler.

(2) Refer to Table 203/REPAIR 20 for the fasteners and dimensions of the part [1] doubler.

E. Make the countersink repair washers for the locations shown in Fuselage Skin - Small External Repair with Solid Fasteners, Figure 201/REPAIR 20 as necessary. Refer to 51-40-08.

Table 201:

REPAIR MATERIAL			
ITEM	PART	QUANTITY	MATERIAL
[1]	Doubler	1	Use the same material and heat treat condition as the initial skin. Refer to Table 202 for the necessary thickness.

Table 202:

REPAIR PART THICKNESSES	
INITIAL SKIN THICKNESS (INCH)	PART [1] DOUBLER THICKNESS (INCH)
0.040	0.045 OR 0.050
0.045	0.050
0.050	0.056
0.056	0.063
0.063	0.071
0.071	0.080
0.080	0.090
0.090	0.100

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Table 203:

REPAIR FASTENERS NUMBER, TYPE, AND DIAMETER						
INITIAL SKIN THICKNESS (INCH)	PART [1] DOUBLER DIAMETER	DIAMETER OF THE FASTENER LOCATION		NUMBER OF FASTENERS		FASTENER TYPE AND DIAMETER PREFERRED AND ALTERNATE
	A (INCH)	B (INCH)	C (INCH)	B DIA	C DIA	
0.040	3.80	1.80	3.10	9	15	BACR15BB5D
0.045	3.80	1.80	3.10	9	15	BACR15BB5D
0.050	3.80	1.80	3.10	9	15	BACR15BB5D
0.056	4.30	2.00	3.50	8	14	BACR15BB6D
0.063	4.30	2.00	3.50	8	14	BACR15CE6D OR BACR15GF6D OR BACR15BB6D
0.071	4.30	2.00	3.50	8	14	BACR15CE6D OR BACR15GF6D OR BACR15BB6D
0.080	4.30	2.00	3.50	8	14	BACR15CE6D OR BACR15GF6D OR BACR15BB6D
0.090	4.30	2.00	3.50	8	14	BACR15CE6D OR BACR15GF6D OR BACR15BB6D

F. Assemble the part [1] doubler as shown in Fuselage Skin - Small External Repair with Solid Fasteners, Figure 201/REPAIR 20.

G. Drill the fastener holes. Refer to Table 203/REPAIR 20 for the fastener type, diameter, and distance between fasteners. Refer to 51-40-05 for the fastener hole dimensions.

NOTE: Do not drill fastener holes into a chem-milled radius or edge of initial doubler as shown in Fastener Repair Locations and Bonded Doublers, Figure 202/REPAIR 20. The fastener centerline must be a minimum of 0.28 inch away from the edge of the chem-milled area.

H. Disassemble the part [1] doubler.

I. Remove all the nicks, scratches, burrs and sharp edges from the part [1] doubler and the bare surfaces of the initial parts.

J. Apply a chemical conversion coating to the part [1] doubler and the bare surfaces of the initial parts. Refer to 51-20-01.

K. Install the countersink repair washers with BMS 5-95 sealant at the initial fastener locations. Refer to 51-40-08.

L. Apply two layers of BMS 10-11, Type I primer to the part [1] doubler and the bare surfaces of the initial parts. Refer to SOPM 20-41-02.

M. Install the part [1] doubler. Refer to 51-20-05.

(1) Apply BMS 5-95 or sealant to the mating surfaces. Refer to 51-20-05.

(2) Install the fasteners without sealant.

(3) Apply a fillet seal to the part [1] doubler on the exterior side of the repair area with BMS 5-95 sealant. Refer to 51-20-05.

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(4) Apply a fillet seal to the part [1] doubler on the interior side of the repair area with BMS 5-95 sealant. Refer to 51-20-05.

(5) Apply the decorative finish if necessary. Refer to AMM 51-21-00/701.

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NOTES

1 THE DISTANCE BETWEEN FASTENERS IN THE OUTER ROW IS THE SAME FOR ALL FASTENERS IN THAT ROW.

2 THE DISTANCE BETWEEN FASTENERS IN THE INNER ROW IS THE SAME FOR ALL FASTENERS IN THAT ROW.

FASTENER SYMBOLS

✦ REPAIR FASTENER LOCATION. REFER TO TABLE 203 FOR THE TYPE OF FASTENER AND THE DISTANCE BETWEEN FASTENERS. REFER TO SRM 51-40-00 THROUGH SRM 51-40-06 FOR THE FASTENER DATA.

M25672 S0006587520_V1

Fuselage Skin - Small External Repair with Solid Fasteners
Figure 201 (Sheet 1 of 2)

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M25679 S0006587521_V1

Fuselage Skin - Small External Repair with Solid Fasteners
Figure 201 (Sheet 2 of 2)

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NOTE: (D) IS THE DIAMETER OF THE REPAIR FASTENER. USE (D) TO CALCULATE EDGE MARGINS AND THE DISTANCE BETWEEN FASTENERS.

M25680 S0006587522_V1

Fastener Repair Locations and Bonded Doublers
Figure 202

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5. **Inspection Requirements**

A. For airplanes that have completed Service Bulletin 737-21-1149, do the inspection requirements as given in Table 204/REPAIR 20.

Table 204:

CATEGORY B REPAIR INSPECTION REQUIREMENTS		
INSPECTION THRESHOLD	REPEAT INSPECTIONS	
	METHOD *[1]	INTERVAL
22,500 flight cycles	Internal Detailed Visual Inspection	2800 flight cycles
22,500 flight cycles	Internal HFEC Inspection *[2]	8000 flight cycles

*[1] No fastener removal is required.

*[2] Inspect the fuselage skin around all fasteners through the repair parts. Refer to 737 NDT Part 6, 51-00-00, Procedure 23.

B. For airplanes that have not completed Service Bulletin 737-21-1149, do the inspection requirements as given in Table 205/REPAIR 20

Table 205:

CATEGORY B REPAIR INSPECTION REQUIREMENTS		
INSPECTION THRESHOLD	REPEAT INSPECTIONS	
	METHOD *[1]	INTERVAL
50,000 flight cycles	Internal Detailed Visual Inspection	6000 flight cycles
50,000 flight cycles	Internal HFEC Inspection *[2]	9000 flight cycles

*[1] No fastener removal is required.

*[2] Inspect the fuselage skin around all fasteners through the repair parts. Refer to 737 NDT Part 6, 51-00-00, Procedure 23.

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REPAIR 21 - FORWARD AND AFT CARGO DOOR SURROUND CORNER REPAIR

1. Applicability

A. Repair 21 is applicable to fuselage skin damage adjacent to the forward and aft cargo doors as shown in Figure 201/REPAIR 21.

B. Repair 21 is applicable to fuselage damage to the skin or to the skin and bearstrap.

2. General

A. Repair 21 gives instructions for a Category B Repair. Refer to 51-00-06, GENERAL for the definitions of the different types of repairs. Refer to Paragraph 5./REPAIR 21 for the inspection requirements.

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496209 S0000148676_V2

Forward and Aft Cargo Door Cutout Repair Zones
Figure 201

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3. References

Reference	Title
51-00-06	STRUCTURAL REPAIR DEFINITIONS
51-00-06, GENERAL	Structural Repair Definitions
51-10-01, GENERAL	Aerodynamic Smoothness Requirements
51-10-02, GENERAL	Inspection and Removal of Damage
51-20-01, GENERAL	Protective Treatment of Metallic and Composite Materials
51-20-05, GENERAL	Repair Sealing
51-20-13, GENERAL	Surface Roughness Finish Requirements
51-40-02, GENERAL	Fastener Installation and Removal
51-40-05, GENERAL	Fastener Hole Sizes
51-40-08, GENERAL	Countersink Data and Procedures for Metal Structures
51-70-01, REPAIR GENERAL	Procedures to Rework or Fill Allowable Dents on the External Aerodynamic Surfaces of Metallic Parts
AMM 51-21-00 P/B 701	INTERIOR AND EXTERIOR FINISHES - CLEANING/PAINTING
737 NDT Part 6, 51-00-00, Procedure 16	Aluminum Part Fastener Hole Inspection (Rotary Scanner)
737 NDT Part 6, 51-00-00, Procedure 4	Surface Inspection of Aluminum Parts (Meter Display)
737 NDT Part 6, 53-30-00, Procedure 5	Inspection of External Fuselage Repairs

4. Repair Instructions

A. Get access to the damaged area.

B. Remove the necessary fasteners in the area of the damaged skin as shown in Figure 202/REPAIR 21. Refer to 51-40-02, GENERAL.

C. Cut and remove the damaged part of the fuselage skin or the skin and bearstrap as shown in Figure 202/REPAIR 21. Refer to 51-10-02, GENERAL.

NOTE: Make sure you protect the bearstrap when you only remove skin damage.

(1) Make the corner radii of the cut a minimum of 0.75 inch (19.05 mm) at all trimmout locations.

(2) Make the cut in the shape of a rectangle with the sides parallel as shown in Figure 202/REPAIR 21.

(3) Put the skin around the cut back to the initial contour.

(4) Do a High Frequency Eddy Current (HFEC) inspection of the damage area and the fastener holes that were removed to make sure there is no further damage. Refer to 737 NDT Part 6, 51-00-00, Procedure 16. If no damage is found then do a 0.04 inch (1.02 mm) insurance cut along the edge of the trim.

(5) Make sure there is a minimum surface finish of 63 Ra at all trimmout locations. Refer to 51-20-13, GENERAL.

D. Make the repair parts as shown in Table 201. Do not terminate the repair parts on a stringer or frame fastener row.

Table 201:

REPAIR MATERIAL			
ITEM	**PART**	**QUANTITY**	**MATERIAL**
[1]	Inner Doubler	1	Use 2024-T3 clad sheet that has a thickness of 0.080 inch (2.03 mm).

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Table 201: (Continued)

REPAIR MATERIAL			
ITEM	PART	QUANTITY	MATERIAL
[2]	Doubler	1	Use 2024-T3 clad sheet that has a thickness of 0.080 inch (2.03 mm).
[3]	Outer Doubler	1	Use 2024-T3 clad sheet that has a thickness of 0.160 inch (4.06 mm).
[4]	Filler	1	Use 2024-T3 clad sheet that is the same thickness as the cutout material.
[5]	Filler	1 (If applicable)	Use 2024-T3 clad sheet with a thickness to limit the maximum gap to 0.01 inch (0.25 mm).

(1) Make the countersink repair washers for the initial fastener locations in the initial skin. Refer to 51-40-08, GENERAL.

E. Assemble the repair parts as shown in Figure 202/REPAIR 21.

F. Drill the necessary fastener holes. Refer to Figure 202/REPAIR 21 for the fastener type, size, diameter, and spacing. Refer to 51-40-05, GENERAL for the fastener hole dimensions.

(1) Do not countersink the fastener holes more than 76 percent of the initial doubler thickness. This will prevent a knife-edge condition of the initial doubler.

G. Disassemble the repair parts.

H. Remove all the nicks, scratches, burrs, and sharp edges from the repair parts and the bare surfaces of the initial parts.

I. Apply a chemical conversion coating to the repair parts and to the bare surfaces of the initial parts. Refer to 51-20-01, GENERAL.

J. Install the countersink repair washers with BMS 5-95 sealant at the initial fastener locations. Refer to 51-40-08, GENERAL.

K. Apply two layers of BMS 10-11, Type I primer to the repair parts and the bare surfaces of the initial parts. Refer to SOPM 20-41-02.

L. Install the repair parts.

(1) Apply BMS 5-95 sealant to the mating surfaces. Refer to 51-20-05, GENERAL.

(2) Install the hex drive bolts wet with BMS 5-95 sealant. Refer to 51-20-05, GENERAL.

(3) Make sure that there is a maximum 0.01 inch (0.25 mm) gap prior to fastener pullup.

M. Apply a fillet seal to the repair parts on the internal and external sides of the repair area with BMS 5-95 sealant. Refer to 51-20-05, GENERAL.

N. Apply a finish if necessary. Refer to AMM PAGEBLOCK 51-21-00/701.

O. Repair the threshold/scuff plate as given in Figure 203/REPAIR 21.

(1) If the threshold/scuff plates were removed to install the repair parts, repair the threshold/scuff plate as necessary and install as follows:

NOTE: The scuff plate is not a structural part. You can do your own repair procedure to repair or do correct installation of the scuff plate. Incorrect installation of the scuff plate could cause a pressure leak around the door edges.

(a) Cut the crest of the threshold/scuff plates as necessary to fit over the repair parts. Refer to Figure 203/REPAIR 21 for typical repair details.

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(b) Weld the threshold/scuff plates. Refer to BAC 5975 using base metal or ER 4043 material as given in AWS A5.10. Penetrant inspect the weld as given in BAC 5423. Radiographic inspection, post weld heat treat, or age hardening are not necessary.

(c) Sand the edges and outer surfaces, in a constant direction, with 120-grit abrasive.

(d) Apply one layer of BMS 10-11, Type I primer to the inner surfaces of the threshold/scuff plate. Refer to SOPM 20-41-02.

(e) Apply a coat of strippable parting agent to all faying surfaces of the threshold/scuff plates and fuselage skin/repair parts.

(f) Apply BMS 3-23, Type 2 corrosion inhibiting compound to the surfaces under the threshold where no parting agent was applied.

(g) Pack BMS 5-95 sealant into the threshold/scuff plates before installing. Refer to 51-20-05, GENERAL.

(h) Install the threshold/scuff plates with the same type fasteners as the initial fasteners. Make sure the fasteners have the corect grip length. Make sure that the sealant that squeezes out along the bottom of the threshold/scuff plates is a constant with no gaps. Remove any extra sealant.

NOTE: There can be cabin noise and air leaks which are not acceptable if there are sealant gaps along the bottom of the threshold/scuff plates.

(i) Make a ramp of fairing compound in the upper corners of the scuff plates to the doorway frame to give a smooth transition for the door seal. Refer to 51-70-01, REPAIR GENERAL for the fairing compounds. Protect the threshold with tape and sand the seal ramp smooth. Refer to Figure 203/REPAIR 21.

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NOTE: THIS REPAIR IS NOT APPLICABLE AT A LAP SPLICE.

CRITICAL FASTENER ROW MUST BE INSPECTED AS GIVEN IN PARAGRAPH 5 INSTRUCTIONS.

TYPICAL CARGO DOOR UPPER CORNER REPAIR IS SHOWN, OTHER LOCATIONS AS GIVEN IN FIGURE 201 ARE SIMILAR

496299 S0000148337_V3

Layout of the Repair Parts
Figure 202 (Sheet 1 of 5)

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Layout of the Repair Parts
Figure 202 (Sheet 2 of 5)

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Layout of the Repair Parts
Figure 202 (Sheet 3 of 5)

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1357039 S0000242328_V1

Layout of the Repair Parts
Figure 202 (Sheet 4 of 5)

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FASTENER SYMBOLS

REFERENCE FASTENER LOCATION.

INITIAL FASTENER LOCATIONS. INSTALL A BACB30NW6K()Y HEX-DRIVE BOLT WITH A BACC30R COLLAR IN TRANSITION FIT HOLES. INSTALL THE SAME INITIAL RIVET AT ALL INITIAL DOUBLE FLUSH RIVET LOCATIONS (A 1/32 INCH OVERSIZE FASTENER IS PERMITTED). INSTALL SRM APPROVED HEX DRIVE BOLTS AND NUTS COMMON TO THE FRAME OUTER CHORD ALONG THE AFT EDGE OF THE CUTOUT IN SHIFTED TRANSITION FIT HOLES. TORQUE AS GIVEN IN BAC5004-2 IF THE FAY SURFACE SEALANT HAS BEEN APPLIED AGAIN BETWEEN THE FRAME CHORD AND THE MATING SKIN. INSTALL HEX-DRIVE BOLTS WET WITH BMS 5-95 SEALANT.

REPAIR FASTENER LOCATIONS. INSTALL A BACB30NW6K()Y HEX-DRIVE BOLT WITH A BACC30R COLLAR IN TRANSITION FIT HOLES AT 4D-6D SPACING. INSTALL WET WITH BMS 5-95 SEALANT.

REPAIR FASTENER LOCATIONS. INSTALL A BACB30NW6K()Y HEX-DRIVE BOLT WITH A BACC30R COLLAR IN TRANSITION FIT HOLES AT 8D-10D SPACING. INSTALL WET WITH BMS 5-95 SEALANT.

COLDWORKED FASTENER HOLES. INSTALL THE SAME COUNTERSUNK RIVETS AS THE INITIAL FASTENERS. IF 0.030 INCH DIAMETER OVERSIZE RIVETS ARE NECESSARY, THEN COLDWORK THE HOLES AS GIVEN IN BAC 5973, CLASS I.

NOTES

- MAKE SURE THERE IS A MINIMUM EDGE MARGIN OF 2D (WHERE D = FASTENER DIAMETER) AT ALL LOCATIONS. MAKE SURE THE REPAIR PARTS DO NOT END ON A STRINGER OR A FRAME.

1 REFER TO SRM 51-40-06 FOR THE EDGE MARGIN FOR A 100 DEGREE HEAD HEX DRIVE BOLT.

2 MAKE SURE THERE ARE 6 FASTENER ROWS MINIMUM PAST THE TRIMOUT LOCATION IN THE [3] OUTER DOUBLER.

3 MAKE SURE THERE ARE 6 FASTENER ROWS MINIMUM PAST THE TRIMOUT LOCATION IN THE [3] OUTER DOUBLER.

4 DO NOT TERMINATE THE [3] OUTER DOUBLER, [2] DOUBLER OR [1] INNER DOUBLER ON THE LAP SPLICE. DO NOT TERMINATE THE DOUBLERS AT A COLDWORKED FASTENER HOLE LOCATION.

5 AT THE LOWER AFT CORNER THE [1] INNER DOUBLER WILL ONLY EXTEND PAST THE [2] DOUBLER BY ONE FASTENER ROW. REFER TO DETAIL III.

6 IT IS IMPORTANT TO KEEP THIS DIMENSION (+/-0.50 INCH) WHEN YOU ARE ADJACENT TO THE SECONDARY STATIC PORT. REFER TO DETAIL III.

496281 S0000148667_V3

Layout of the Repair Parts
Figure 202 (Sheet 5 of 5)

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THRESHOLD INSTALLATION (TYPICAL)

A-A

B-B

1354478 S0000242334_V1

Skin, Doubler, and Bear Strap at Door Cutouts
Figure 203 (Sheet 1 of 2)

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FAIRING COMPOUND APPLICATION

BEFORE APPLICATION OF FAIRING COMPOUND

FAIRING COMPOUND

AFTER APPLICATION OF FAIRING COMPOUND

C–C

1354480 S0000242336_V1

Skin, Doubler, and Bear Strap at Door Cutouts
Figure 203 (Sheet 2 of 2)

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5. **Inspection Requirements**

A. Do the inspections as shown in Figure 204/REPAIR 21 with the steps that follow (Refer to 51-00-06 for the different categories of repairs.):

NOTE: Remove the scuff plate as necessary to complete the Figure 204/REPAIR 21 inspection requirements.

(1) Do an external Low Frequency Eddy Current inspection (LFEC) for damage in the skin around the fasteners at each 3,500 flight cycle interval, or more frequently. Do a LFEC inspection of the external skin that is beneath the external doubler at fastener locations. Inspect around each fastener in the zone. Refer to 737 NDT Part 6, 53-30-00, Procedure 5. Refer to Figure 204/REPAIR 21.

(2) Do an internal High Frequency Eddy Current inspection (HFEC) of skin and doubler edges along door corner radius at each 3,500 flight cycle interval, or more frequently. Refer to 737 NDT Part 6, 51-00-00, Procedure 4. Refer to Figure 204/REPAIR 21.

(3) Detail visual inspection of the external doubler at each 3500 flight cycle interval, or more frequently.

(4) The conditions that follow determine the threshold for the start of supplemental inspections.

(a) The threshold is 50,000 flight cycles after the installation of this repair, if SB 737-21-1149 has not been incorporated, and if all fastener holes in the repair are:

1) New,

2) Oversized, or

3) Not changed from their initial condition.

(b) The threshold is 22,500 flight cycles after the installation of this repair, if SB 737-21-1149 has been incorporated, and if all fastener holes in the repair are:

1) New,

2) Oversized, or

3) Not changed from their initial condition.

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NOTE: THIS REPAIR IS NOT APPLICABLE AT A LAP SPLICE

ZONE 1 - LOW FREQUENCY EDDY CURRENT (LFEC) INSPECTION OF SKIN AT EACH 3500 FLIGHT CYCLE INTERVAL, OR MORE FREQUENTLY.

ZONE 2 - DETAIL VISUAL INSPECTION OF EXTERNAL DOUBLER AT EACH 3500 FLIGHT CYCLE INTERVAL, OR MORE FREQUENTLY

ZONE 3 - HIGH FREQUENCY EDDY CURRENT (HFEC) INSPECTION OF SKIN AND DOUBLER EDGES ALONG DOOR CORNER RADIUS AT EACH 3500 FLIGHT CYCLE INTERVAL, OR MORE FREQUENTLY.

CARGO DOOR CORNER REPAIR
SUPPLEMENTAL INSPECTION REQUIREMENTS

(ROTATED 90° CCW)
A-A

Repair Inspection Requirements
Figure 204 (Sheet 1 of 4)

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ZONE 1 - LOW FREQUENCY EDDY CURRENT (LFEC) INSPECTION OF SKIN AT EACH 3500 FLIGHT CYCLE INTERVAL, OR MORE FREQUENTLY.

ZONE 2 - DETAIL VISUAL INSPECTION OF EXTERNAL DOUBLER AT EACH 3500 FLIGHT CYCLE INTERVAL, OR MORE FREQUENTLY

ZONE 3 - HIGH FREQUENCY EDDY CURRENT (HFEC) INSPECTION OF SKIN AND DOUBLER EDGES ALONG DOOR CORNER RADIUS AT EACH 3500 FLIGHT CYCLE INTERVAL, OR MORE FREQUENTLY.

CARGO DOOR CORNER REPAIR SUPPLEMENTAL INSPECTION REQUIREMENTS

(ROTATED 90° CW)
A-A

Repair Inspection Requirements
Figure 204 (Sheet 2 of 4)

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DETAIL III
FORWARD CARGO DOOR, LOWER FORWARD CORNER INSPECTION REQUIREMENTS
1357106 S0000242341_V1

Repair Inspection Requirements
Figure 204 (Sheet 3 of 4)

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A–A

ZONE 1 - LOW FREQUENCY EDDY CURRENT (LFEC) INSPECTION OF THE SKIN AT EACH 3500 FLIGHT CYCLE INTERVAL, OR MORE FREQUENTLY.

ZONE 2 - DETAIL VISUAL INSPECTION OF THE EXTERNAL DOUBLER AT EACH 3500 FLIGHT CYCLE INTERVAL, OR MORE FREQUENTLY

ZONE 3 - HIGH FREQUENCY EDDY CURRENT (HFEC) INSPECTION OF THE SKIN AND THE DOUBLER EDGES, ALONG THE DOOR CORNER RADIUS AT EACH 3500 FLIGHT CYCLE INTERVAL, OR MORE FREQUENTLY.

Repair Inspection Requirements
Figure 204 (Sheet 4 of 4)

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REPAIR 22 - FORWARD AND AFT CARGO DOOR SURROUND EDGE BLENDOUT REPAIR

1. Applicability

A. Repair 22 is applicable to fuselage skin damage adjacent to the forward and aft cargo doors as shown in Figure 201/REPAIR 22.

2. General

A. Repair 22 gives instructions for a Category B repair. Refer to 51-00-06, GENERAL for the definitions of the different types of repairs. Refer to Paragraph 5./REPAIR 22 for the inspection requirements.

Forward and Aft Cargo Door Surround Blendout Repair Zones
Figure 201

3. References

Reference	Title
51-00-06	STRUCTURAL REPAIR DEFINITIONS
51-00-06, GENERAL	Structural Repair Definitions

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(Continued)

Reference	Title
51-10-01, GENERAL	Aerodynamic Smoothness Requirements
51-10-02, GENERAL	Inspection and Removal of Damage
51-20-01, GENERAL	Protective Treatment of Metallic and Composite Materials
51-20-05, GENERAL	Repair Sealing
51-20-13, GENERAL	Surface Roughness Finish Requirements
51-40-02, GENERAL	Fastener Installation and Removal
51-40-05, GENERAL	Fastener Hole Sizes
51-40-08, GENERAL	Countersink Data and Procedures for Metal Structures
51-70-01, REPAIR GENERAL	Procedures to Rework or Fill Allowable Dents on the External Aerodynamic Surfaces of Metallic Parts
51-70-01, REPAIR P/B REPAIR	REPAIRS FOR MINOR DENTS IN METALLIC SHEET MATERIALS
AMM 51-21-00 P/B 701	INTERIOR AND EXTERIOR FINISHES - CLEANING/PAINTING
737 NDT Part 6, 51-00-00, Procedure 4	Surface Inspection of Aluminum Parts (Meter Display)
737 NDT Part 6, 53-30-00, Procedure 5	Inspection of External Fuselage Repairs

4. Repair Instructions

A. Get access to the damaged area.

B. Remove the necessary fasteners in the area of the damaged skin as shown in Figure 202/REPAIR 22. Refer to 51-40-02, GENERAL.

C. Blend out the damaged part of the fuselage skin as shown in Figure 202/REPAIR 22. Refer to 51-10-02, GENERAL.

(1) Make sure there is a minimum surface finish of 63 Ra at all blendout locations. Refer to 51-20-13, GENERAL.

D. Do a High Frequency Eddy Current (HFEC) inspection of the damage area and the fastener holes that were removed to make sure there is no further damage. Refer to NDT part 6, 51-00-00, Figure 16.

E. Make the repair part as shown in Table 201.

Table 201:

REPAIR MATERIAL			
ITEM	**PART**	**QUANTITY**	**MATERIAL**
[1]	Doubler	1	Use 2024-T3 clad sheet that has a thickness of 0.080 inch (2.03 mm).
[2]	Filler	1(If applicable)	Use 2024-T3 clad sheet with a thickness to limit the gap to 0.01 inch (0.25 mm).

(1) Make the countersink repair washers for the initial fastener locations in the initial skin. Refer to 51-40-08, GENERAL

F. Assemble the repair parts as shown in Figure 202/REPAIR 22.

G. Drill the necessary fastener holes. Refer to Figure 202/REPAIR 22 for the fastener type, size, diameter, and spacing. Refer to 51-40-05, GENERAL for the fastener hole dimensions.

(1) Do not countersink the fastener holes more than 76 percent of the initial doubler thickness. This will prevent a knife-edge condition of the initial doubler.

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H. Disassemble the repair parts.

I. Remove all the nicks, scratches, burrs, and sharp edges from the repair parts and the bare surfaces of the initial skin.

J. Apply a chemical conversion coating to the repair parts and to the bare surfaces of the initial skin. Refer to 51-20-01, GENERAL.

K. Install the countersink repair washers with BMS 5-95 sealant at the initial fastener locations. Refer to 51-40-08, GENERAL.

L. Fill the blended area as given in REPAIRS FOR MINOR DENTS IN METALLIC SHEET MATERIALS, PAGEBLOCK 51-70-01, REPAIR.

M. Apply two layers of BMS 10-11, Type I primer to the repair parts and the bare surfaces of the initial skin. Refer to SOPM 20-41-02.

N. Install the repair parts.

(1) Apply BMS 5-95 sealant to the mating surfaces. Refer to 51-20-05, GENERAL.

(2) Install the hex drive bolts wet with BMS 5-95 sealant. Refer to 51-20-05, GENERAL.

(3) Make sure there is a maximum 0.01 inch (0.25 mm) gap prior to fastener pullup.

O. Apply a fillet seal to the repair parts on the internal and external sides of the repair area with BMS 5-95 sealant. Refer to 51-20-05, GENERAL.

P. Apply a finish if necessary. Refer to AMM PAGEBLOCK 51-21-00/701.

Q. Repair the threshold/scuff plate as given Figure 203/REPAIR 22.

(1) If the threshold/scuff plates were removed to install the repair parts, repair the threshold/scuff plate as necessary and install as follows:

NOTE: The scuff plate is not a structural part. You can do your own repair procedure to repair or do correct installation of the scuff plate. Incorrect installation of the scuff plate could cause a pressure leak around the door edges.

(a) Cut the crest of the threshold/scuff plates as necessary to fit over the repair parts. Refer to Figure 203/REPAIR 22 for typical repair details.

(b) Weld the threshold/scuff plates. Refer to BAC 5975 using base metal or ER 4043 material as given in AWS A5.10. Penetrant inspect the weld as given in BAC 5423. Radiographic inspection, post weld heat treat, or age hardening are not necessary.

(c) Sand the edges and outer surfaces, in a constant direction, with 120-grit abrasive.

(d) Apply one layer of BMS 10-11, Type I primer to the inner surfaces of the threshold/scuff plate. Refer to SOPM 20-41-02.

(e) Apply a coat of strippable parting agent to all faying surfaces of the threshold/scuff plates and fuselage skin/repair parts.

(f) Apply BMS 3-23, Type 2 corrosion inhibiting compound to the surfaces under the threshold where no parting agent was applied.

(g) Pack BMS 5-95 sealant into the threshold/scuff plates before installing. Refer to 51-20-05, GENERAL.

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(h) Install the threshold/scuff plates with the same type fasteners as the initial fasteners. Make sure the fasteners have the corect grip length. Make sure that the sealant that squeezes out along the bottom of the threshold/scuff plates is a constant with no gaps. Remove any extra sealant.

NOTE: There can be cabin noise and air leaks which are not acceptable if there are sealant gaps along the bottom of the threshold/scuff plates.

(i) Make a ramp of fairing compound in the upper corners of the scuff plates to the doorway frame to give a smooth transition for the door seal. Refer to 51-70-01, REPAIR GENERAL for the fairing compounds. Protect the threshold with tape and sand the seal ramp smooth. Refer to Figure 203/REPAIR 22.

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DETAIL I

A–A

NOTES

1. THIS REPAIR IS NOT APPLICABLE AT A LAP SPLICE (THE [1] DOUBLER MUST END ABOVE THE LAP SPLICE). FOR REPAIRS AT OR ADJACENT TO A LAP SPLICE REFER TO DETAILS II AND III.
2. IF THE REPAIR IS ALONG THE FORWARD EDGE OF THE FORWARD CARGO DOOR SURROUND SKIN, MAKE SURE THAT ALL OF THE REQUIREMENTS OF SRM 51-10-01 ARE SATISFIED.

497196 S0000148735_V3

Layout of the Repair Parts
Figure 202 (Sheet 1 of 5)

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AFT CARGO DOOR REPAIR AT A LAP SPLICE
DETAIL II

ROTATED 90° COUNTER CLOCKWISE
A-A

J21876 S0000170705_V3

Layout of the Repair Parts
Figure 202 (Sheet 2 of 5)

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DETAIL III
FORWARD CARGO DOOR REPAIR AT THE LAP SPLICE

1356221 S0000242457_V1

Layout of the Repair Parts
Figure 202 (Sheet 3 of 5)

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1356222 S0000242458_V1

Layout of the Repair Parts
Figure 202 (Sheet 4 of 5)

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FASTENER SYMBOLS

REFERENCE FASTENER LOCATION.

INITIAL FASTENER LOCATIONS. INSTALL A BACB30NW6K()Y HEX-DRIVE BOLT WITH A BACC30R COLLAR IN TRANSITION FIT HOLES. INSTALL THE SAME INITIAL RIVET AT ALL INITIAL DOUBLE FLUSH RIVET LOCATIONS (A 1/32 INCH OVERSIZE FASTENER IS PERMITTED). INSTALL SRM APPROVED HEX DRIVE BOLTS AND NUTS COMMON TO THE FRAME OUTER CHORD ALONG THE AFT EDGE OF THE CUTOUT IN SHIFTED TRANSITION FIT HOLES. TORQUE AS GIVEN IN BAC5004-2 IF THE FAY SURFACE SEALANT HAS BEEN APPLIED AGAIN BETWEEN THE FRAME CHORD AND THE MATING SKIN. INSTALL HEX-DRIVE BOLTS WET WITH BMS 5-95 SEALANT.

REPAIR FASTENER LOCATIONS. INSTALL A BACB30NW6K()Y HEX-DRIVE BOLT WITH A BACC30R COLLAR IN TRANSITION FIT HOLES AT 4D-6D SPACING. INSTALL WET WITH BMS 5-95 SEALANT.

REPAIR FASTENER LOCATIONS. INSTALL A BACB30NW6K()Y HEX-DRIVE BOLT WITH A BACC30R COLLAR IN TRANSITION FIT HOLES AT 8D-10D SPACING. INSTALL WET WITH BMS 5-95 SEALANT.

COLDWORKED FASTENER HOLES. INSTALL THE SAME COUNTERSUNK RIVETS AS THE INITIAL FASTENERS. IF 0.030 INCH DIAMETER OVERSIZE RIVETS ARE NECESSARY, THEN COLDWORK THE HOLES AS GIVEN IN BAC 5973, CLASS I.

NOTES

- MAKE SURE YOU BLEND THE SKIN TO A MAXIMUM 30:1 BLENDOUT AT ALL LOCATIONS.
- MAKE SURE THERE IS A MINIMUM EDGE MARGIN OF 2D (WHERE D = FASTENER DIAMETER) AT ALL LOCATIONS. MAKE SURE THE REPAIR PARTS DO NOT END ON A STRINGER OR A FRAME.

1 MAKE SURE THERE ARE 6 FASTENER ROWS MINIMUM ABOVE AND BELOW THE BLENDOUT LOCATION.

2 MAKE SURE THE SKIN BLENDOUT IS MORE THAN 20 PERCENT BUT LESS THAN 50 PERCENT OF THE INITIAL SKIN THICKNESS FOR ALL AFT CARGO DOOR LOCATIONS.

MAKE SURE THE SKIN BLENDOUT IS MORE THAN 30 PERCENT BUT LESS THAN 50 PERCENT OF THE INITIAL SKIN THICKNESS FOR ALL FORWARD CARGO DOOR LOCATIONS.

3 MAKE SURE THERE ARE 3 FASTENER ROWS MINIMUM BEYOND THE BLENDOUT.

4 DO NOT TERMINATE THE [1] DOUBLER ON THE LAP SPLICE.
DO NOT TERMINATE THE DOUBLER AT A COLDWORKED FASTENER HOLE LOCATION.

5 THE [1] DOUBLER MUST STOP A MINIMUM OF 3 FASTENER ROWS BEFORE THE TANGENT POINT OF THE CORNER RADIUS. IF THE [1] DOUBLER NEEDS TO BE EXTENDED TO GO AROUND THE CORNER, THEN REFER TO DETAIL III.

6 AT THE LOWER AFT CORNER THE [2] FILLER WILL ONLY EXTEND PAST THE [1] DOUBLER BY ONE FASTENER ROW. REFER TO DETAIL III.

7 IT IS IMPORTANT TO KEEP THIS DIMENSION (+/-0.50 INCH) WHEN YOR ARE ADJACENT TO THE SECONDARY STATIC PORT. REFER TO DETAIL III.

D49011 S0000158089_V3

Layout of the Repair Parts
Figure 202 (Sheet 5 of 5)

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THRESHOLD INSTALLATION (TYPICAL)

A-A

B-B

1354359 S0000242460_V1

Skin, Doubler, and Bear Strap Repair at Door Cutouts
Figure 203 (Sheet 1 of 2)

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FAIRING COMPOUND APPLICATION

BEFORE APPLICATION
OF FAIRING COMPOUND

FAIRING COMPOUND

AFTER APPLICATION
OF FAIRING COMPOUND

C–C

1354360 S0000242461_V1

Skin, Doubler, and Bear Strap Repair at Door Cutouts
Figure 203 (Sheet 2 of 2)

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5. **Inspection Requirements**

A. Do the inspections as shown in Figure 204/REPAIR 22 with the steps that follow (Refer to 51-00-06 for the different categories of repairs.):

(1) The conditions that follow determine the threshold for the start of supplemental inspections.

(a) The threshold is 50,000 flight cycles after the installation of this repair, if SB 737-21-1149 has not been incorporated, and if all fastener holes in the repair are:

1) New,

2) Oversized, or

3) Not changed from their initial condition.

(b) The threshold is 22,500 flight cycles after the installation of this repair, if SB 737-21-1149 has been incorporated, and if all fastener holes in the repair are:

1) New,

2) Oversized, or

3) Not changed from their initial condition.

(2) Do an external Low Frequency Eddy Current inspection (LFEC) for damage in the skin around the fasteners at each 3,500 flight cycle interval, or more frequently. Refer to 737 NDT Part 6, 53-30-00, Procedure 5.

(3) Do an internal High Frequency Eddy Current inspection (HFEC) for damage in the bearstrap along the frame chord along the length of the repair at each 3,500 flight cycle interval, or more frequently. Refer to 737 NDT Part 6, 51-00-00, Procedure 4.

(4) Do the inspections that follow for damage in the frame web at each 3,500 flight cycles, or more frequently.

(a) High Frequency Eddy Current (HFEC) inspect the frame web along the length of the repair. Refer to 737 NDT Part 6, 51-00-00, Procedure 4.

(b) Ultrasonic inspect the frame web under the door stop fittings if common with the repair. Refer to 737 NDT Part 4, 53-10-06.

NOTE: No airplane may be operated beyond the stated threshold until the applicable NDT inspection procedures are validated, published in the appropriate manual, and accepted by the FAA.

(5) Do the inspections that follow for damage in the bearstrap at each 3,500 flight cycles, or more frequently.

(a) High Frequency Eddy Current (HFEC) inspect the bearstrap around fasteners common to the repair. Refer to 737 NDT Part 6, 51-00-00, Procedure 4.

(b) Ultrasonic inspect the bearstrap under the door stop backup fitting if common with the repair. Refer to 737 NDT Part 4, 53-10-06.

NOTE: No airplane may be operated beyond the stated threshold until the applicable NDT inspection procedures are validated, published in the appropriate manual, and accepted by the FAA.

B. For repair doublers that go around the corner as shown in Figure 202/REPAIR 22 Detail III, accomplish the inspection requirements in Figure 204/REPAIR 22, Detail III. Do the external Low Frequency Eddy Current inspection (LFEC) as given in 737 NDT Part 6, 53-30-00, Procedure 5. Do the external High Frequency Eddy Current inspection (HFEC) inspection as given in 737 NDT Part 6, 51-00-00, Procedure 4.

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INSPECTION REQUIREMENTS	
1	LFEC INSPECTION AREA. DO A LOW FREQUENCY EDDY CURRENT (LFEC) INSPCTION FOR DAMAGE IN THE SKIN AROUND THE FASTENERS COMMON TO THE REPAIR DOUBLER. REFER TO THE SHADED AREA ▨ IN DETAIL I.
2	HFEC INSPECTION AREA. DO A HIGH FREQUENCY EDDY CURRENT (HFEC) INSPECTION FOR DAMAGE IN THE BEAR STRAP, ALONG THE FRAME CHORD, FOR THE LENGTH (L) OF THE REPAIR.
3	HFEC INSPECTION AREA. DO A HFEC INSPECTION FOR DAMAGE IN THE FRAME WEB FOR THE LENGTH (L) OF THE REPAIR. UT INSPECTION AREA. DO A ULTRASONIC TESTING (UT) INSPECTION OF THE FRAME WEB UNDER THE DOOR STOP FITTINGS, IF ADJACENT TO THE REPAIR.
4	DO A HFEC INSPECTION FOR DAMAGE IN THE BEAR STRAP AROUND THE FASTENERS COMMON TO THE REPAIR. UT INSPECTION AREA. DO A UT INSPECTION OF THE BEAR STRAP UNDER THE DOOR STOP BACKUP FITTING, IF ADJACENT TO THE REPAIR.

FASTENERS NOT SHOWN
A–A

1354973 S0000242449_V1

Repair Inspection Requirements
Figure 204 (Sheet 1 of 4)

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INSPECTION REQUIREMENTS	
1	LFEC INSPECTION AREA. DO A LOW FREQUENCY EDDY CURRENT (LFEC) INSPECTION FOR DAMAGE IN THE SKIN AROUND THE FASTENERS COMMON TO THE REPAIR DOUBLER. REFER TO THE SHADED AREA IN DETAIL II.
2	HFEC INSPECTION AREA. DO A HIGH FREQUENCY EDDY CURRENT (HFEC) INSPECTION FOR DAMAGE IN THE BEAR STRAP, ALONG THE FRAME CHORD, FOR THE LENGTH (L) OF THE REPAIR.
3	HFEC INSPECTION AREA. DO A HFEC INSPECTION FOR DAMAGE IN THE FRAME WEB FOR THE LENGTH (L) OF THE REPAIR. UT INSPECTION AREA. DO A ULTRASONIC TESTING (UT) INSPECTION OF THE FRAME WEB UNDER THE DOOR STOP FITTINGS, IF ADJACENT TO THE REPAIR.
4	DO A HFEC INSPECTION FOR DAMAGE IN THE BEAR STRAP AROUND THE FASTENERS COMMON TO THE REPAIR. UT INSPECTION AREA. DO A UT INSPECTION OF THE BEAR STRAP UNDER THE DOOR STOP BACKUP FITTING, IF ADJACENT TO THE REPAIR.

FASTENERS NOT SHOWN
A–A

1354984 S0000242451_V1

Repair Inspection Requirements
Figure 204 (Sheet 2 of 4)

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DETAIL III
FORWARD CARGO DOOR, LOWER FORWARD CORNER INSPECTION REQUIREMENTS

1356674 S0000242452_V1

Repair Inspection Requirements
Figure 204 (Sheet 3 of 4)

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A-A

ZONE 1 - LOW FREQUENCY EDDY CURRENT (LFEC) INSPECTION OF THE SKIN AT EACH 3500 FLIGHT CYCLE INTERVAL, OR MORE FREQUENTLY.

ZONE 2 - DETAIL VISUAL INSPECTION OF THE EXTERNAL DOUBLER AT EACH 3500 FLIGHT CYCLE INTERVAL, OR MORE FREQUENTLY

ZONE 3 - HIGH FREQUENCY EDDY CURRENT (HFEC) INSPECTION OF THE SKIN AND THE DOUBLER EDGES, ALONG THE DOOR CORNER RADIUS AT EACH 3500 FLIGHT CYCLE INTERVAL, OR MORE FREQUENTLY.

1356676 S0000242453_V1

Repair Inspection Requirements
Figure 204 (Sheet 4 of 4)

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REPAIR 23 - FORWARD AND AFT CARGO DOOR SURROUND EDGE REPAIR OF SKIN UP TO 2.5 INCHES DEPTH

1. Applicability

A. Repair 23 is applicable to fuselage skin damage adjacent to the forward and aft cargo doors as shown in Figure 201/REPAIR 23.

2. General

A. Repair 23 gives instructions for a Category B repair. Refer to 51-00-06, GENERAL for the definitions of the different types of repairs. Refer to Paragraph 5./REPAIR 23 for the inspection requirements.

Forward and Aft Cargo Door Surround Repair Zones
Figure 201

3. References

Reference	Title
51-00-06	STRUCTURAL REPAIR DEFINITIONS

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(Continued)

Reference	Title
51-00-06, GENERAL	Structural Repair Definitions
51-10-01, GENERAL	Aerodynamic Smoothness Requirements
51-10-02, GENERAL	Inspection and Removal of Damage
51-20-01, GENERAL	Protective Treatment of Metallic and Composite Materials
51-20-05, GENERAL	Repair Sealing
51-20-13, GENERAL	Surface Roughness Finish Requirements
51-40-02, GENERAL	Fastener Installation and Removal
51-40-05, GENERAL	Fastener Hole Sizes
51-40-08, GENERAL	Countersink Data and Procedures for Metal Structures
51-70-01, REPAIR GENERAL	Procedures to Rework or Fill Allowable Dents on the External Aerodynamic Surfaces of Metallic Parts
AMM 51-21-00 P/B 701	INTERIOR AND EXTERIOR FINISHES - CLEANING/PAINTING
737 NDT Part 6, 51-00-00, Procedure 4	Surface Inspection of Aluminum Parts (Meter Display)
737 NDT Part 6, 53-30-00, Procedure 5	Inspection of External Fuselage Repairs

4. Repair Instructions

A. Get access to the damaged area.

NOTE: This repair is for damage only to the skin.

B. Remove the necessary fasteners in the area of the damaged skin as shown in Figure 202/REPAIR 23. Refer to 51-40-02, GENERAL.

C. Cut and remove the damaged part of the fuselage skin as shown in Figure 202/REPAIR 23. Refer to 51-10-02, GENERAL.

NOTE: Make sure you protect the bearstrap when you only remove damage from the skin.

(1) Make the corner radii of the cut a minimum of 0.75 inch (19.05 mm) at all trimmout locations.

(2) Make the cut in the shape of a rectangle with the sides parallel as shown in Figure 202/REPAIR 23.

(3) Put the skin around the cut back to the initial contour.

(4) Do a High Frequency Eddy Current (HFEC) inspection of the damage area and the fastener holes that were removed to make sure there is no further damage. Refer to NDT Part 6, 51-00-00, Figure 16. If no damage is found then do a 0.040 inch (1.02 mm) insurance cut along the edge of the trim.

(5) Make sure there is a minimum surface finish of 63 Ra at all trimmout locations. Refer to 51-20-13, GENERAL.

D. Make the repair parts as shown in Table 201.

Table 201:

REPAIR MATERIAL			
ITEM	**PART**	**QUANTITY**	**MATERIAL**
[1]	Outer Doubler	1	Use 2024-T3 clad sheet that has a thickness of 0.080 inch (2.03 mm).
[2]	Inner Doubler	1	Use 2024-T3 clad sheet that has a thickness of 0.080 inch (2.03 mm).

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Table 201: (Continued)

REPAIR MATERIAL			
ITEM	PART	QUANTITY	MATERIAL
[3]	Filler	1	Use 2024-T3 clad sheet that is the same thickness as the initial skin.
[4]	Filler	1 (If applicable)	Use 2024-T3 clad sheet with a thickness to limit the gap to a maximum 0.01 inch (0.25 mm).

(1) Make the countersink repair washers for the initial fastener locations in the initial skin. Refer to 51-40-08, GENERAL

E. Assemble the repair parts as shown in Figure 202/REPAIR 23.

F. Drill the necessary fastener holes. Refer to Figure 202/REPAIR 23 for the fastener type, size, diameter, and spacing. Refer to 51-40-05, GENERAL for the fastener hole dimensions.

(1) Do not countersink the fastener holes more than 76 percent of the initial doubler thickness. This will prevent a knife-edge condition of the initial doubler.

G. Disassemble the repair parts.

H. Remove all the nicks, scratches, burrs, and sharp edges from the repair parts and the bare surfaces of the initial parts.

I. Apply a chemical conversion coating to the repair parts and to the bare surfaces of the initial parts. Refer to 51-20-01, GENERAL.

J. Install the countersink repair washers with BMS 5-95 sealant at the initial fastener locations. Refer to 51-40-08, GENERAL.

K. Apply two layers of BMS 10-11, Type I primer to the repair parts and the bare surfaces of the initial parts. Refer to SOPM 20-41-02.

L. Install the repair parts.

(1) Apply BMS 5-95 sealant to the mating surfaces. Refer to 51-20-05, GENERAL.

(2) Install the hex drive bolts wet with BMS 5-95 sealant. Refer to 51-20-05, GENERAL.

(3) Make sure there is a maximum 0.01 inch (0.25 mm) gap prior to fastener pullup.

M. Apply a fillet seal to the repair parts on the internal and external sides of the repair area with BMS 5-95 sealant. Refer to 51-20-05, GENERAL.

N. Apply a finish if necessary. Refer to AMM PAGEBLOCK 51-21-00/701.

O. Repair the threshold/scuff plate as given Figure 203/REPAIR 23.

(1) If the threshold/scuff plates were removed to install the repair parts, repair the threshold/scuff plate as necessary and install as follows:

NOTE: The scuff plate is not a structural part. You can do your own repair procedure to repair or do correct installation of the scuff plate. Incorrect installation of the scuff plate could cause a pressure leak around the door edges.

(a) Cut the crest of the threshold/scuff plates as necessary to fit over the repair parts. Refer to Figure 203/REPAIR 23 for typical repair details.

(b) Weld the threshold/scuff plates. Refer to BAC 5975 using base metal or ER 4043 material as given in AWS A5.10. Penetrant inspect the weld as given in BAC 5423. Radiographic inspection, post weld heat treat, or age hardening are not necessary.

(c) Sand the edges and outer surfaces, in a constant direction, with 120-grit abrasive.

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(d) Apply one layer of BMS 10-11, Type I primer to the inner surfaces of the threshold/scuff plate.

(e) Apply a coat of strippable parting agent to all faying surfaces of the threshold/scuff plates and fuselage skin/repair parts.

(f) Apply BMS 3-23, Type 2 corrosion inhibiting compound to the surfaces under the threshold where no parting agent was applied.

(g) Pack BMS 5-95 sealant into the threshold/scuff plates before installing.

(h) Install the threshold/scuff plates with the same type fasteners as the initial fasteners. Make sure the fasteners have the corect grip length. Make sure that the sealant that squeezes out along the bottom of the threshold/scuff plates is a constant with no gaps. Remove any extra sealant.

NOTE: There can be cabin noise and air leaks which are not acceptable if there are sealant gaps along the bottom of the threshold/scuff plates.

(i) Make a ramp of fairing compound in the upper corners of the scuff plates to the doorway frame to give a smooth transition for the door seal. Refer to 51-70-01, REPAIR GENERAL for the fairing compounds. Protect the threshold with tape and sand the seal ramp smooth. Refer Figure 203/REPAIR 23.

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DETAIL I

A-A

NOTES

1. THIS REPAIR IS NOT APPLICABLE AT A LAP SPLICE (THE [2] INNER DOUBLER MUST END ABOVE THE LAP SPLICE). FOR REPAIRS AT OR ADJACENT TO A LAP SPLICE REFER TO DETAILS II AND III.
2. IF THE REPAIR IS ALONG THE FORWARD EDGE OF THE FORWARD CARGO DOOR SURROUND SKIN, MAKE SURE THAT ALL OF THE REQUIREMENTS OF SRM 51-10-01 ARE SATISFIED.

497390 S0000148928_V3

Layout of the Repair Parts
Figure 202 (Sheet 1 of 5)

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AFT CARGO DOOR REPAIR AT A LAP SPLICE
DETAIL II

ROTATED 90° COUNTER CLOCKWISE
A-A

J21877 S0000170706_V3

Layout of the Repair Parts
Figure 202 (Sheet 2 of 5)

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DETAIL III
FORWARD CARGO DOOR REPAIR AT THE LAP SPLICE

1355894 S0000242241_V1

Layout of the Repair Parts
Figure 202 (Sheet 3 of 5)

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1355334 S0000242242_V1

Layout of the Repair Parts
Figure 202 (Sheet 4 of 5)

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FASTENER SYMBOLS

REFERENCE FASTENER LOCATION.

INITIAL FASTENER LOCATIONS. INSTALL A BACB30NW6K()Y HEX-DRIVE BOLT WITH A BACC30R COLLAR IN TRANSITION FIT HOLES. INSTALL THE SAME INITIAL RIVET AT ALL INITIAL DOUBLE FLUSH RIVET LOCATIONS (A 1/32 INCH OVERSIZE FASTENER IS PERMITTED). INSTALL SRM APPROVED HEX DRIVE BOLTS AND NUTS COMMON TO THE FRAME OUTER CHORD ALONG THE AFT EDGE OF THE CUTOUT IN SHIFTED TRANSITION FIT HOLES. TORQUE AS GIVEN IN BAC5004-2 IF THE FAY SURFACE SEALANT HAS BEEN APPLIED AGAIN BETWEEN THE FRAME CHORD AND THE MATING SKIN. INSTALL HEX-DRIVE BOLTS WET WITH BMS 5-95 SEALANT.

REPAIR FASTENER LOCATIONS. INSTALL A BACB30NW6K()Y HEX-DRIVE BOLT WITH A BACC30R COLLAR IN TRANSITION FIT HOLES AT 4D-6D SPACING. INSTALL WET WITH BMS 5-95 SEALANT.

REPAIR FASTENER LOCATIONS. INSTALL A BACB30NW6K()Y HEX-DRIVE BOLT WITH A BACC30R COLLAR IN TRANSITION FIT HOLES AT 8D-10D SPACING. INSTALL WET WITH BMS 5-95 SEALANT.

COLDWORKED FASTENER HOLES. INSTALL THE SAME COUNTERSUNK RIVETS AS THE INITIAL FASTENERS. IF 0.030 INCH DIAMETER OVERSIZE RIVETS ARE NECESSARY, THEN COLDWORK THE HOLES AS GIVEN IN BAC 5973, CLASS I.

NOTES

- MAKE SURE THERE IS A MINIMUM EDGE MARGIN OF 2D (WHERE D = FASTENER DIAMETER) AT ALL LOCATIONS. MAKE SURE THE REPAIR PARTS DO NOT END ON A STRINGER OR A FRAME.

1 REFER TO SRM 51-40-06 FOR THE EDGE MARGIN FOR A 100 DEGREE HEAD HEX DRIVE BOLT.

2 MAKE SURE THERE ARE 6 FASTENER ROWS MINIMUM ABOVE AND BELOW THE TRIMOUT LOCATION IN THE [1] OUTER DOUBLER.

3 MAKE SURE THERE ARE 3 FASTENER ROWS MINIMUM BEYOND THE TRIMOUT LOCATION IN THE [1] OUTER DOUBLER.

4 DO NOT TERMINATE THE [1] OUTER DOUBLER OR [2] INNER DOUBLER ON THE LAP SPLICE. DO NOT TERMINATE THE DOUBLERS AT A COLDWORKED FASTENER HOLE LOCATION.

5 THE [2] INNER DOUBLER MUST STOP A MINIMUM OF 3 FASTENER ROWS BEFORE THE TANGENT POINT OF THE CORNER RADIUS. IF THE [1] OUTER DOUBLER AND [2] INNER DOUBLER NEEDS TO BE EXTENDED TO GO AROUND THE CORNER, THEN REFER TO DETAIL III.

6 AT THE LOWER AFT CORNER THE [2] INNER DOUBLER WILL ONLY EXTEND PAST THE [1] OUTER DOUBLER BY ONE FASTENER ROW. REFER TO DETAIL III.

7 IT IS IMPORTANT TO KEEP THIS DIMENSION (+/-0.50 INCH) WHEN YOU ARE ADJACENT TO THE SECONDARY STATIC PORT. REFER TO DETAIL III.

D49010 S0000158090_V3

Layout of the Repair Parts
Figure 202 (Sheet 5 of 5)

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THRESHOLD INSTALLATION (TYPICAL)

A-A

B-B

1353615 S0000242267_V1

Skin, Doubler, and Bear Strap Repair at Door Cutouts
Figure 203 (Sheet 1 of 2)

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FAIRING COMPOUND APPLICATION

BEFORE APPLICATION OF FAIRING COMPOUND

FAIRING COMPOUND

AFTER APPLICATION OF FAIRING COMPOUND

C–C

1353629 S0000242268_V1

Skin, Doubler, and Bear Strap Repair at Door Cutouts
Figure 203 (Sheet 2 of 2)

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5. **Inspection Requirements**

A. Do the inspections as shown in Figure 204/REPAIR 23 with the steps that follow (Refer to 51-00-06 for the different categories of repairs.):

(1) The conditions that follow determine the threshold for the start of supplemental inspections.

(a) The threshold is 50,000 flight cycles after the installation of this repair, if SB 737-21-1149 has not been incorporated, and if all fastener holes in the repair are:

1) New,

2) Oversized, or

3) Not changed from their initial condition.

(b) The threshold is 22,500 flight cycles after the installation of this repair, if SB 737-21-1149 has been incorporated, and if all fastener holes in the repair are:

1) New,

2) Oversized, or

3) Not changed from their initial condition.

(2) Do an external Low Frequency Eddy Current inspection (LFEC) for damage in the skin around the fasteners at each 3,500 flight cycle interval, or more frequently. Refer to 737 NDT Part 6, 53-30-00, Procedure 5.

(3) Do an internal High Frequency Eddy Current inspection (HFEC) for damage in the bearstrap along the frame chord along the length of the repair at each 3,500 flight cycle interval, or more frequently. Refer to 737 NDT Part 6, 51-00-00, Procedure 4.

(4) Do the inspections that follow for damage in the frame web at each 3,500 flight cycles, or more frequently.

(a) High Frequency Eddy Current (HFEC) inspect the frame web along the length of the repair. Refer to 737 NDT Part 6, 51-00-00, Procedure 4.

(b) Ultrasonic inspect the frame web under the door stop fittings if common with the repair. Refer to 737 NDT Part 4, 53-10-06.

NOTE: No airplane may be operated beyond the stated threshold until the applicable NDT inspection procedures are validated, published in the appropriate manual, and accepted by the FAA.

(5) Do the inspections that follow for damage in the bearstrap at each 3,500 flight cycles, or more frequently.

(a) High Frequency Eddy Current (HFEC) inspect the bearstrap around fasteners common to the repair. Refer to 737 NDT Part 6, 51-00-00, Procedure 4.

(b) Ultrasonic inspect the bearstrap under the door stop backup fitting if common with the repair. Refer to 737 NDT Part 4, 53-10-06.

NOTE: No airplane may be operated beyond the stated threshold until the applicable NDT inspection procedures are validated, published in the appropriate manual, and accepted by the FAA.

B. For repair doublers that go around the corner as shown in Figure 202/REPAIR 23, Detail III, accomplish the inspection requirements in Figure 204/REPAIR 23, Detail III. Do the external Low Frequency Eddy Current inspection (LFEC) as given in 737 NDT Part 6, 53-30-00, Procedure 5. Do the external High Frequency Eddy Current inspection (HFEC) inspection as given in 737 NDT Part 6, 51-00-00, Procedure 4.

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NOT APPLICABLE AT A LAP SPLICE

DETAIL I

INSPECTION REQUIREMENTS	
1	LFEC INSPECTION AREA. DO A LOW FREQUENCY EDDY CURRENT (LFEC) INSPECTION FOR DAMAGE IN THE SKIN AROUND THE FASTENERS COMMON TO THE REPAIR DOUBLER. REFER TO THE SHADED AREA ▨ IN DETAIL I.
2	HFEC INSPECTION AREA. DO A HIGH FREQUENCY EDDY CURRENT (HFEC) INSPECTION FOR DAMAGE IN THE BEAR STRAP, ALONG THE FRAME CHORD, FOR THE LENGTH (L) OF THE REPAIR.
3	HFEC INSPECTION AREA. DO A HFEC INSPECTION FOR DAMAGE IN THE FRAME WEB FOR THE LENGTH (L) OF THE REPAIR. UT INSPECTION AREA. DO A ULTRASONIC TESTING (UT) INSPECTION OF THE FRAME WEB UNDER THE DOOR STOP FITTINGS, IF ADJACENT TO THE REPAIR.
4	DO A HFEC INSPECTION FOR DAMAGE IN THE BEAR STRAP AROUND THE FASTENERS COMMON TO THE REPAIR. UT INSPECTION AREA. DO A UT INSPECTION OF THE BEAR STRAP UNDER THE DOOR STOP BACKUP FITTING, IF ADJACENT TO THE REPAIR.

FASTENERS NOT SHOWN
A–A

1354890 S0000242244_V1

Repair Inspection Requirements
Figure 204 (Sheet 1 of 4)

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DETAIL II

INSPECTION REQUIREMENTS	
1	LFEC INSPECTION AREA. DO A LOW FREQUENCY EDDY CURRENT (LFEC) INSPECTION FOR DAMAGE IN THE SKIN AROUND THE FASTENERS COMMON TO THE REPAIR DOUBLER. REFER TO THE SHADED AREA ▨ IN DETAIL II.
2	HFEC INSPECTION AREA. DO A HIGH FREQUENCY EDDY CURRENT (HFEC) INSPECTION FOR DAMAGE IN THE BEAR STRAP, ALONG THE FRAME CHORD, FOR THE LENGTH (L) OF THE REPAIR.
3	HFEC INSPECTION AREA. DO A HFEC INSPECTION FOR DAMAGE IN THE FRAME WEB FOR THE LENGTH (L) OF THE REPAIR. UT INSPECTION AREA. DO A ULTRASONIC TESTING (UT) INSPECTION OF THE FRAME WEB UNDER THE DOOR STOP FITTINGS, IF ADJACENT TO THE REPAIR.
4	DO A HFEC INSPECTION FOR DAMAGE IN THE BEAR STRAP AROUND THE FASTENERS COMMON TO THE REPAIR. UT INSPECTION AREA. DO A UT INSPECTION OF THE BEAR STRAP UNDER THE DOOR STOP BACKUP FITTING, IF ADJACENT TO THE REPAIR.

FASTENERS NOT SHOWN
A-A

1354934 S0000242246_V1

Repair Inspection Requirements
Figure 204 (Sheet 2 of 4)

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DETAIL III
FORWARD CARGO DOOR, LOWER FORWARD CORNER INSPECTION REQUIREMENTS

1356079 S0000242288_V1

Repair Inspection Requirements
Figure 204 (Sheet 3 of 4)

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A-A

ZONE 1 - LOW FREQUENCY EDDY CURRENT (LFEC) INSPECTION OF THE SKIN AT EACH 3500 FLIGHT CYCLE INTERVAL, OR MORE FREQUENTLY.

ZONE 2 - DETAIL VISUAL INSPECTION OF THE EXTERNAL DOUBLER AT EACH 3500 FLIGHT CYCLE INTERVAL, OR MORE FREQUENTLY

ZONE 3 - HIGH FREQUENCY EDDY CURRENT (HFEC) INSPECTION OF THE SKIN AND THE DOUBLER EDGES, ALONG THE DOOR CORNER RADIUS AT EACH 3500 FLIGHT CYCLE INTERVAL, OR MORE FREQUENTLY.

1356102 S0000242289_V1

Repair Inspection Requirements
Figure 204 (Sheet 4 of 4)

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REPAIR 24 - FORWARD AND AFT CARGO DOOR SURROUND EDGE REPAIR OF SKIN AND BEARSTRAP UP TO A 1 INCH DEPTH

1. Applicability

A. Repair 24 is applicable to fuselage skin and bearstrap damage adjacent to the forward and aft cargo doors as shown in Figure 201/REPAIR 24.

2. General

A. Repair 24 gives instructions for a Category B repair. Refer to 51-00-06, GENERAL for the definitions of the different types of repairs. Refer to Paragraph 5./REPAIR 24 for the inspection requirements.

Forward and Aft Cargo Door Surround Repair Zones
Figure 201

3. References

Reference	Title
51-00-06	STRUCTURAL REPAIR DEFINITIONS

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(Continued)

Reference	Title
51-00-06, GENERAL	Structural Repair Definitions
51-10-01, GENERAL	Aerodynamic Smoothness Requirements
51-10-02, GENERAL	Inspection and Removal of Damage
51-20-01, GENERAL	Protective Treatment of Metallic and Composite Materials
51-20-05, GENERAL	Repair Sealing
51-20-13, GENERAL	Surface Roughness Finish Requirements
51-40-02, GENERAL	Fastener Installation and Removal
51-40-05, GENERAL	Fastener Hole Sizes
51-40-08, GENERAL	Countersink Data and Procedures for Metal Structures
51-70-01, REPAIR GENERAL	Procedures to Rework or Fill Allowable Dents on the External Aerodynamic Surfaces of Metallic Parts
AMM 51-21-00 P/B 701	INTERIOR AND EXTERIOR FINISHES - CLEANING/PAINTING
737 NDT Part 6, 51-00-00, Procedure 16	Aluminum Part Fastener Hole Inspection (Rotary Scanner)
737 NDT Part 6, 51-00-00, Procedure 23	Aluminum Part Surface Inspection (Impedance Plane Display)
737 NDT Part 6, 51-00-00, Procedure 4	Surface Inspection of Aluminum Parts (Meter Display)
737 NDT Part 6, 53-30-00, Procedure 5	Inspection of External Fuselage Repairs

4. Repair Instructions

A. Get access to the damage area.

B. Remove the necessary fasteners in the area of the damaged skin as shown in Figure 202/REPAIR 24. Refer to 51-40-02, GENERAL.

C. Cut and remove the damaged part of the fuselage skin and bearstrap as shown in Figure 202/REPAIR 24. Refer to 51-10-02, GENERAL.

(1) Make the corner radii of the cut a minimum of 0.75 inch (19.05 mm) at all trimmout locations.

(2) Make the cut in the shape of a rectangle with the sides parallel as shown in Figure 202/REPAIR 24.

(3) Put the skin around the cut back to the initial contour.

(4) Do a High Frequency Eddy Current (HFEC) inspection of the damaged area and the fastener holes that were removed to make sure there is no further damage. Refer to NDT Part 6, 51-00-00, Figure 16. If no damage is found then do a 0.04 inch (1.02 mm) insurance cut along the edge of the trim.

(5) Make sure there is a minimum surface finish of 63 Ra at all trimmout locations. Refer to 51-20-13, GENERAL.

D. Make the repair parts as shown in Table 201.

Table 201:

REPAIR MATERIAL			
ITEM	PART	QUANTITY	MATERIAL
[1]	Outer Doubler	1	Use 2024-T3 clad sheet that has a thickness of 0.160 inch (4.06 mm).
[2]	Inner Doubler	1	Use 2024-T3 clad sheet that has a thickness of 0.080 inch (2.03 mm).

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Table 201: (Continued)

REPAIR MATERIAL			
ITEM	**PART**	**QUANTITY**	**MATERIAL**
[3]	Filler	1	Use 2024-T3 clad sheet that is the same thickness as the initial skin and bearstrap.
[4]	Filler	1 (if applicable)	Use 2024-T3 clad sheet with a thickness to limit the maximum gap to 0.01 inch (0.25 mm).

(1) Make the countersink repair washers for the initial fastener locations in the initial skin. Refer to 51-40-08, GENERAL

E. Assemble the repair parts as shown in Figure 202/REPAIR 24.

F. Drill the necessary fastener holes. Refer to Figure 202/REPAIR 24 for the fastener type, size, diameter, and spacing. Refer to 51-40-05, GENERAL for the fastener hole dimensions.

(1) Do not countersink the fastener holes more than 76 percent of the initial doubler thickness. This will prevent a knife-edge condition of the initial doubler.

G. Disassemble the repair parts.

H. Remove all the nicks, scratches, burrs, and sharp edges from the repair parts and the bare surfaces of the initial parts.

I. Apply a chemical conversion coating to the repair parts and to the bare surfaces of the initial parts. Refer to 51-20-01, GENERAL.

J. Install the countersink repair washers with BMS 5-95 sealant at the initial fastener locations. Refer to 51-40-08, GENERAL.

K. Apply two layers of BMS 10-11, Type I primer to the repair parts and the bare surfaces of the initial parts. Refer to SOPM 20-41-02.

L. Install the repair parts.

(1) Apply BMS 5-95 sealant to the mating surfaces. Refer to 51-20-05, GENERAL.

(2) Install the hex drive bolts wet with BMS 5-95 sealant. Refer to 51-20-05, GENERAL.

(3) Make sure there is a maximum 0.01 inch (0.25 mm) gap prior to fastener pullup.

M. Apply a fillet seal to the repair parts on the internal and external sides of the repair area with BMS 5-95 sealant. Refer to 51-20-05, GENERAL.

N. Apply a finish if necessary. Refer to AMM PAGEBLOCK 51-21-00/701.

O. Repair the threshold/scuff plate as given Figure 203/REPAIR 24.

(1) If the threshold/scuff plates were removed to install the repair parts, repair the threshold/scuff plate as necessary and install as follows:

NOTE: The scuff plate is not a structural part. You can do your own repair procedure to repair or do correct installation of the scuff plate. Incorrect installation of the scuff plate could cause a pressure leak around the door edges.

(a) Cut the crest of the threshold/scuff plates as necessary to fit over the repair parts. Refer to Figure 203/REPAIR 24 for typical repair details.

(b) Weld the threshold/scuff plates. Refer to BAC 5975 using base metal or ER 4043 material as given in AWS A5.10. Penetrant inspect the weld as given in BAC 5423. Radiographic inspection, post weld heat treat, or age hardening are not necessary.

(c) Sand the edges and outer surfaces, in a constant direction, with 120-grit abrasive.

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(d) Apply one layer of BMS 10-11, Type I primer to the inner surfaces of the threshold/scuff plate. Refer tp SOPM 20-41-02.

(e) Apply a coat of strippable parting agent to all faying surfaces of the threshold/scuff plates and fuselage skin/repair parts.

(f) Apply BMS 3-23, Type 2 corrosion inhibiting compound to the surfaces under the threshold where no parting agent was applied.

(g) Pack BMS 5-95 sealant into the threshold/scuff plates before installing. Refer to 51-20-05, GENERAL.

(h) Install the threshold/scuff plates with the same type fasteners as the initial fasteners. Make sure the fasteners have the corect grip length. Make sure that the sealant that squeezes out along the bottom of the threshold/scuff plates is a constant with no gaps. Remove any extra sealant.

NOTE: There can be cabin noise and air leaks which are not acceptable if there are sealant gaps along the bottom of the threshold/scuff plates.

(i) Make a ramp of fairing compound in the upper corners of the scuff plates to the doorway frame to give a smooth transition for the door seal. Refer to 51-70-01, REPAIR GENERAL for the fairing compounds. Protect the threshold with tape and sand the seal ramp smooth. Refer to Figure 203/REPAIR 24.

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DETAIL I

A-A

NOTES

1. THIS REPAIR IS NOT APPLICABLE AT A LAP SPLICE (THE [2] INNER DOUBLER MUST END ABOVE THE LAP SPLICE). FOR REPAIRS AT OR ADJACENT TO A LAP SPLICE SEE DETAIL II (AFT DOOR ONLY) AND DETAIL III (FORWARD OR AFT DOOR).
2. IF THE REPAIR IS ALONG THE FORWARD EDGE OF THE FORWARD CARGO DOOR SURROUND SKIN, MAKE SURE THAT ALL OF THE REQUIREMENTS OF SRM 51-10-01 ARE SATISFIED.

FORWARD OR AFT CARGO DOOR

497441 S0000149275_V4

Layout of the Repair Parts
Figure 202 (Sheet 1 of 5)

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AFT CARGO DOOR REPAIR AT A LAP SPLICE
DETAIL II

ROTATED 90° COUNTER CLOCKWISE
A-A

J22076 S0000170735_V3

Layout of the Repair Parts
Figure 202 (Sheet 2 of 5)

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FORWARD CARGO DOOR REPAIR AT THE LAP SPLICE IS SHOWN,
OTHER LOCATIONS AS GIVEN IN FIGURE 201 ARE ALMOST THE SAME
DETAIL III

1357164 S0000242497_V2

Layout of the Repair Parts
Figure 202 (Sheet 3 of 5)

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1357166 S0000242498_V1

Layout of the Repair Parts
Figure 202 (Sheet 4 of 5)

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FASTENER SYMBOLS

REFERENCE FASTENER LOCATION.

INITIAL FASTENER LOCATIONS. INSTALL A BACB30NW6K()Y HEX-DRIVE BOLT WITH A BACC30R COLLAR IN TRANSITION FIT HOLES. INSTALL THE SAME INITIAL RIVET AT ALL INITIAL DOUBLE FLUSH RIVET LOCATIONS (A 1/32 INCH OVERSIZE FASTENER IS PERMITTED). INSTALL SRM APPROVED HEX DRIVE BOLTS AND NUTS COMMON TO THE FRAME OUTER CHORD ALONG THE AFT EDGE OF THE CUTOUT IN SHIFTED TRANSITION FIT HOLES. TORQUE AS GIVEN IN BAC5004-2 IF THE FAY SURFACE SEALANT HAS BEEN APPLIED AGAIN BETWEEN THE FRAME CHORD AND THE MATING SKIN. INSTALL HEX-DRIVE BOLTS WET WITH BMS 5-95 SEALANT.

REPAIR FASTENER LOCATIONS. INSTALL A BACB30NW6K()Y HEX-DRIVE BOLT WITH A BACC30R COLLAR IN TRANSITION FIT HOLES AT 4D-6D SPACING. INSTALL WET WITH BMS 5-95 SEALANT.

REPAIR FASTENER LOCATIONS. INSTALL A BACB30NW6K()Y HEX-DRIVE BOLT WITH A BACC30R COLLAR IN TRANSITION FIT HOLES AT 8D-10D SPACING. INSTALL WET WITH BMS 5-95 SEALANT.

COLDWORKED FASTENER HOLES. INSTALL THE SAME COUNTERSUNK RIVETS AS THE INITIAL FASTENERS. IF 0.030 INCH DIAMETER OVERSIZE RIVETS ARE NECESSARY, THEN COLDWORK THE HOLES AS GIVEN IN BAC 5973, CLASS I.

NOTES

- MAKE SURE THERE IS A MINIMUM EDGE MARGIN OF 2D (WHERE D = FASTENER DIAMETER) AT ALL LOCATIONS. MAKE SURE THE REPAIR PARTS DO NOT END ON A STRINGER OR A FRAME.

1 REFER TO SRM 51-40-06 FOR THE EDGE MARGIN FOR A 100 DEGREE HEAD HEX DRIVE BOLT.

2 MAKE SURE THERE ARE 6 FASTENER ROWS MINIMUM ABOVE AND BELOW THE TRIMOUT LOCATION IN THE [1] OUTER DOUBLER.

3 MAKE SURE THERE ARE 3 FASTENER ROWS MINIMUM BEYOND THE TRIMOUT LOCATION IN THE [1] OUTER DOUBLER.

4 DO NOT TERMINATE THE [1] OUTER DOUBLER OR [2] INNER DOUBLER ON THE LAP SPLICE. DO NOT TERMINATE THE DOUBLERS AT A COLDWORKED FASTENER HOLE LOCATION.

5 THE [2] INNER DOUBLER MUST STOP A MINIMUM OF 1 FASTENER ROW BEFORE THE TANGENT POINT OF THE CORNER RADIUS. IF THE [1] OUTER DOUBLER AND [2] INNER DOUBLER NEEDS TO BE EXTENDED TO GO AROUND THE CORNER, THEN REFER TO DETAIL III.

6 AT THE LOWER AFT CORNER THE [2] INNER DOUBLER WILL ONLY EXTEND PAST THE [1] OUTER DOUBLER BY ONE FASTENER ROW. REFER TO DETAIL III.

7 IT IS IMPORTANT TO KEEP THIS DIMENSION (+/-0.50 INCH) WHEN YOU ARE ADJACENT TO THE SECONDARY STATIC PORT. REFER TO DETAIL III.

D49007 S0000158091_V5

Layout of the Repair Parts
Figure 202 (Sheet 5 of 5)

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THRESHOLD INSTALLATION (TYPICAL)

A-A

B-B

1354787 S0000242484_V1

Skin, Doubler, and Bear Strap Repair at Door Cutouts
Figure 203 (Sheet 1 of 2)

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FAIRING COMPOUND APPLICATION

BEFORE APPLICATION OF FAIRING COMPOUND

FAIRING COMPOUND

AFTER APPLICATION OF FAIRING COMPOUND

C–C

1354788 S0000242485_V1

Skin, Doubler, and Bear Strap Repair at Door Cutouts
Figure 203 (Sheet 2 of 2)

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5. **Inspection Requirements**

A. Do the inspections as shown in Figure 204/REPAIR 24 with the steps that follow (Refer to 51-00-06 for the different categories of repairs.):

(1) The conditions that follow determine the threshold for the start of supplemental inspections.

(a) The threshold is 50,000 flight cycles after the installation of this repair, if SB 737-21-1149 has not been incorporated, and if all fastener holes in the repair are:

1) New,

2) Oversized, or

3) Not changed from their initial condition.

(b) The threshold is 22,500 flight cycles after the installation of this repair, if SB 737-21-1149 has been incorporated, and if all fastener holes in the repair are:

1) New,

2) Oversized, or

3) Not changed from their initial condition.

(2) Do an external for damage in the skin around the fasteners at each 3,500 flight cycle interval, or more frequently. Refer to 737 NDT Part 6, 53-30-00, Procedure 5.

(3) Do an internal HFEC for damage in the bearstrap along the frame chord along the length of the repair at each 3,500 flight cycle interval, or more frequently. Refer to 737 NDT Part 6, 51-00-00, Procedure 4.

(4) Do the inspections that follow for damage in the frame web at each 3,500 flight cycles, or more frequently.

(a) HFEC surface inspect the frame web along the length of the repair. Refer to 737 NDT Part 6, 51-00-00, Procedure 4 or 737 NDT Part 6, 51-00-00, Procedure 23.

(b) Remove the door stop fitting if adjacent to the repair and HFEC surface inspect under the fitting. Refer to 737 NDT Part 6, 51-00-00, Procedure 4 or 737 NDT Part 6, 51-00-00, Procedure 23.

(5) Do the inspections that follow for damage in the bearstrap at each 3,500 flight cycles, or more frequently.

(a) HFEC surface inspect the bearstrap around fasteners common to the repair. Refer to 737 NDT Part 6, 51-00-00, Procedure 4 or 737 NDT Part 6, 51-00-00, Procedure 23.

(b) HFEC open-hole inspect in the hole common to the door stop backup fitting if adjacent to the repair. Refer to 737 NDT Part 6, 51-00-00, Procedure 16.

B. For repair doublers that go around the corner in Figure 202/REPAIR 24, Detail III, accomplish the inspection requirements in Figure 204/REPAIR 24, Detail III. Do the external Low Frequency Eddy Current (LFEC) as given in 737 NDT Part 6, 53-30-00, Procedure 5. Do the external HFEC inspection as given in 737 NDT Part 6, 51-00-00, Procedure 4.

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DETAIL I

INSPECTION REQUIREMENTS	
1	LFEC INSPECTION AREA. DO A LOW FREQUENCY EDDY CURRENT (LFEC) INSPECTION FOR DAMAGE IN THE SKIN AROUND THE FASTENERS COMMON TO THE REPAIR DOUBLER. REFER TO THE SHADED AREA IN DETAIL I.
2	HFEC INSPECTION AREA. DO A HIGH FREQUENCY EDDY CURRENT (HFEC) INSPECTION FOR DAMAGE IN THE BEAR STRAP, ALONG THE FRAME CHORD, FOR THE LENGTH (L) OF THE REPAIR.
3	HFEC INSPECTION AREA. DO AN HFEC SURFACE INSPECTION FOR DAMAGE IN THE FRAME WEB FOR THE LENGTH (L) OF THE REPAIR. REFER TO 737 NDT PART 6, 51-00-00, PROCEDURE 4 OR PROCEDURE 23. REMOVE THE DOOR STOP FITTING IF ADJACENT TO THE REPAIR AND DO AN HFEC SURFACE INSPECTION UNDER THE FITTING. REFER TO 737 NDT PART 6, 51-00-00, PROCEDURE 4 OR PROCEDURE 23.
4	HFEC INSPECTION AREA. DO AN HFEC SURFACE INSPECTION FOR DAMAGE IN THE BEARSTRAP AROUND THE FASTENERS COMMON TO THE REPAIR. REFER TO 737 NDT PART 6, 51-00-00, PROCEDURE 4 OR PROCEDURE 23. DO AN HFEC OPEN HOLE INSPECTION IN THE HOLE COMMON TO THE BEARSTRAP AND DOOR STOP BACKUP FITTING IF ADJACENT TO THE REPAIR. REFER TO 737 NDT PART 6, 51-00-00, PROCEDURE 16.

FASTENERS NOT SHOWN
A-A

1355191 S0000242486_V2

Repair Inspection Requirements
Figure 204 (Sheet 1 of 4)

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DETAIL II

INSPECTION REQUIREMENTS	
1	LFEC INSPECTION AREA. DO A LOW FREQUENCY EDDY CURRENT (LFEC) INSPECTION FOR DAMAGE IN THE SKIN AROUND THE FASTENERS COMMON TO THE REPAIR DOUBLER. REFER TO THE SHADED AREA IN DETAIL I.
2	HFEC INSPECTION AREA. DO A HIGH FREQUENCY EDDY CURRENT (HFEC) INSPECTION FOR DAMAGE IN THE BEAR STRAP, ALONG THE FRAME CHORD, FOR THE LENGTH (L) OF THE REPAIR.
3	HFEC INSPECTION AREA. DO AN HFEC SURFACE INSPECTION FOR DAMAGE IN THE FRAME WEB FOR THE LENGTH (L) OF THE REPAIR. REFER TO 737 NDT PART 6, 51-00-00, PROCEDURE 4 OR PROCEDURE 23. REMOVE THE DOOR STOP FITTING IF ADJACENT TO THE REPAIR AND DO AN HFEC SURFACE INSPECTION UNDER THE FITTING. REFER TO 737 NDT PART 6, 51-00-00, PROCEDURE 4 OR PROCEDURE 23.
4	HFEC INSPECTION AREA. DO AN HFEC SURFACE INSPECTION FOR DAMAGE IN THE BEARSTRAP AROUND THE FASTENERS COMMON TO THE REPAIR. REFER TO 737 NDT PART 6, 51-00-00, PROCEDURE 4 OR PROCEDURE 23. DO AN HFEC OPEN HOLE INSPECTION IN THE HOLE COMMON TO THE BEARSTRAP AND DOOR STOP BACKUP FITTING IF ADJACENT TO THE REPAIR. REFER TO 737 NDT PART 6, 51-00-00, PROCEDURE 16.

FASTENERS NOT SHOWN
A-A

1355214 S0000242487_V2

Repair Inspection Requirements
Figure 204 (Sheet 2 of 4)

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FORWARD CARGO DOOR, LOWER FORWARD CORNER IS SHOWN,
OTHER LOCATIONS AS GIVEN IN FIGURE 201 ARE ALMOST THE SAME
DETAIL III

1357171 S0000242488_V2

Repair Inspection Requirements
Figure 204 (Sheet 3 of 4)

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A-A

ZONE 1 - LOW FREQUENCY EDDY CURRENT (LFEC) INSPECTION OF THE SKIN AT EACH 3500 FLIGHT CYCLE INTERVAL, OR MORE FREQUENTLY.

ZONE 2 - DETAIL VISUAL INSPECTION OF THE EXTERNAL DOUBLER AT EACH 3500 FLIGHT CYCLE INTERVAL, OR MORE FREQUENTLY

ZONE 3 - HIGH FREQUENCY EDDY CURRENT (HFEC) INSPECTION OF THE SKIN AND THE DOUBLER EDGES, ALONG THE DOOR CORNER RADIUS AT EACH 3500 FLIGHT CYCLE INTERVAL, OR MORE FREQUENTLY.

1357186 S0000242489_V1

Repair Inspection Requirements
Figure 204 (Sheet 4 of 4)

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REPAIR 25 - FORWARD AND AFT CARGO DOOR SURROUND EDGE REPAIR OF SKIN AND BEARSTRAP UP TO A 2.5 INCH DEPTH

1. Applicability

A. Repair 25 is applicable to fuselage skin and bearstrap damage adjacent to the forward and aft cargo doors as shown in Figure 201/REPAIR 25.

2. General

A. Repair 25 gives instructions for a Category B repair. Refer to 51-00-06, GENERAL for the definitions of the different types of repairs. Refer to Paragraph 5./REPAIR 25 for the inspection requirements.

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PERMITTED TRIMOUT REPAIR AREA
(CAUTION: IF THE REPAIR IS ALONG THE FORWARD EDGE OF THE FORWARD CARGO DOOR SURROUND SKIN, THEN THE REQUIRMENTS OF SRM 51-10-01 MUST BE SATISFIED. NO TRIMOUT IS PERMITTED IN THE LAP SPLICE. CONTACT BOEING.)

FORWARD AND AFT CARGO DOOR SURROUND REPAIR ZONES

497442 S0000149312_V2

Forward and Aft Cargo Door Surround Repair Zones
Figure 201

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3. References

Reference	Title
51-00-06	STRUCTURAL REPAIR DEFINITIONS
51-00-06, GENERAL	Structural Repair Definitions
51-10-01, GENERAL	Aerodynamic Smoothness Requirements
51-10-02, GENERAL	Inspection and Removal of Damage
51-20-01, GENERAL	Protective Treatment of Metallic and Composite Materials
51-20-05, GENERAL	Repair Sealing
51-20-13, GENERAL	Surface Roughness Finish Requirements
51-40-02, GENERAL	Fastener Installation and Removal
51-40-05, GENERAL	Fastener Hole Sizes
51-40-08, GENERAL	Countersink Data and Procedures for Metal Structures
51-70-01, REPAIR GENERAL	Procedures to Rework or Fill Allowable Dents on the External Aerodynamic Surfaces of Metallic Parts
AMM 51-21-00 P/B 701	INTERIOR AND EXTERIOR FINISHES - CLEANING/PAINTING
737 NDT Part 6, 51-00-00, Procedure 16	Aluminum Part Fastener Hole Inspection (Rotary Scanner)
737 NDT Part 6, 51-00-00, Procedure 23	Aluminum Part Surface Inspection (Impedance Plane Display)
737 NDT Part 6, 51-00-00, Procedure 4	Surface Inspection of Aluminum Parts (Meter Display)
737 NDT Part 6, 53-30-00, Procedure 5	Inspection of External Fuselage Repairs

4. Repair Instructions

A. Get access to the damaged area.

B. Remove the necessary fasteners in the area of the damaged skin as shown in Figure 202/REPAIR 25. Refer to 51-40-02, GENERAL.

C. Cut and remove the damaged part of the fuselage skin and bearstrap as shown in Figure 202/REPAIR 25. Refer to 51-10-02, GENERAL.

(1) Make the corner radii of the cut a minimum of 0.75 inch (19.05 mm) at all trimmout locations.

(2) Make the cut in the shape of a rectangle with the sides parallel as shown in Figure 202/REPAIR 25.

(3) Put the skin around the cut back to the initial contour.

(4) Do a HFEC inspection of the damage area and the fastener holes that were removed to make sure there is no further damage. Refer to NDT Part 6, 51-00-00, Figure 16. if no damage is found then do a 0.04 inch (1.02 mm) insurance cut along the edge of the trim.

(5) Make sure there is a minimum surface finish of 63 Ra at all trimmout locations. Refer to 51-20-13, GENERAL.

D. Make the repair parts as shown in Table 201.

Table 201:

REPAIR MATERIAL			
ITEM	**PART**	**QUANTITY**	**MATERIAL**
[1]	Inner Doubler	1	Use 2024-T3 clad sheet that has a thickness of 0.080 inch (2.03 mm).
[2]	Doubler	1	Use 2024-T3 clad sheet that has a thickness of 0.080 inch (2.03 mm).
[3]	Outer Doubler	1	Use 2024-T3 clad sheet that has a thickness of 0.160 inch (4.06 mm).

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Table 201: (Continued)

REPAIR MATERIAL			
ITEM	**PART**	**QUANTITY**	**MATERIAL**
[4]	Filler	1	Use 2024-T3 clad sheet that is the same thickness as the initial skin and bearstrap.
[5]	Filler	1 (If applicable)	Use 2024-T3 clad sheet with a thickness to limit the gap to a maximum 0.01 inch (0.25 mm).

(1) Make the countersink repair washers for the initial fastener locations in the initial skin. Refer to 51-40-08, GENERAL.

E. Assemble the repair parts as shown in Figure 202/REPAIR 25.

F. Drill the necessary fastener holes. Refer to Figure 202/REPAIR 25 for the fastener type, size, diameter, and spacing. Refer to 51-40-05, GENERAL for the fastener hole dimensions.

(1) Do not countersink the fastener holes more than 76 percent of the initial doubler thickness. This will prevent a knife-edge condition of the initial doubler.

G. Disassemble the repair parts.

H. Remove all the nicks, scratches, burrs, and sharp edges from the repair parts and the bare surfaces of the initial parts.

I. Apply a chemical conversion coating to the repair parts and to the bare surfaces of the initial parts. Refer to 51-20-01, GENERAL.

J. Install the countersink repair washers with BMS 5-95 sealant at the initial fastener locations. Refer to 51-40-08, GENERAL.

K. Apply two layers of BMS 10-11, Type I primer to the repair parts and the bare surfaces of the initial parts. Refer to SOPM 20-41-02.

L. Install the repair parts.

(1) Apply BMS 5-95 sealant to the mating surfaces. Refer to 51-20-05, GENERAL.

(2) Install the hex drive bolts wet with BMS 5-95 sealant. Refer to 51-20-05, GENERAL.

(3) Make sure there is a maximum 0.01 inch (0.25 mm) gap prior to fastener pull up.

M. Apply a fillet seal to the repair parts on the internal and external sides of the repair area with BMS 5-95 sealant. Refer to 51-20-05, GENERAL.

N. Apply a finish if necessary. Refer to AMM PAGEBLOCK 51-21-00/701.

O. Repair the threshold/scuff plate as given Figure 203/REPAIR 25.

(1) If the threshold/scuff plates were removed to install the repair parts, repair the threshold/scuff plate as necessary and install as follows:

NOTE: The scuff plate is not a structural part. You can do your own repair procedure to repair or do correct installation of the scuff plate. Incorrect installation of the scuff plate could cause a pressure leak around the door edges.

(a) Cut the crest of the threshold/scuff plates as necessary to fit over the repair parts. Refer to Figure 203/REPAIR 25 for typical repair details.

(b) Weld the threshold/scuff plates. Refer to BAC 5975 using base metal or ER 4043 material as given in AWS A5.10. Penetrant inspect the weld as given in BAC 5423. Radiographic inspection, post weld heat treat, or age hardening are not necessary.

(c) Sand the edges and outer surfaces, in a constant direction, with 120-grit abrasive.

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(d) Apply one layer of BMS 10-11, Type I primer to the inner surfaces of the threshold/scuff plate. Refer to SOPM 20-41-02.

(e) Apply a coat of strippable parting agent to all faying surfaces of the threshold/scuff plates and fuselage skin/repair parts.

(f) Apply BMS 3-23, Type 2 corrosion inhibiting compound to the surfaces under the threshold where no parting agent was applied.

(g) Pack BMS 5-95 sealant into the threshold/scuff plates before installing. Refer to 51-20-05, GENERAL.

(h) Install the threshold/scuff plates with the same type fasteners as the initial fasteners. Make sure the fasteners have the correct grip length. Make sure that the sealant that squeezes out along the bottom of the threshold/scuff plates is a constant with no gaps. Remove any extra sealant.

NOTE: There can be cabin noise and air leaks which are not acceptable if there are sealant gaps along the bottom of the threshold/scuff plates.

(i) Make a ramp of fairing compound in the upper corners of the scuff plates to the doorway frame to give a smooth transition for the door seal. Refer to 51-70-01, REPAIR GENERAL for the fairing compounds. Protect the threshold with tape and sand the seal ramp smooth. Refer to Figure 203/REPAIR 25.

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NOTES

1. THIS REPAIR IS NOT APPLICABLE AT A LAP SPLICE (THE [1] INNER DOUBLER MUST END ABOVE THE LAP SPLICE). FOR REPAIRS AT OR ADJACENT TO A LAP SPLICE REFER TO DETAILS II (AFT DOOR ONLY) AND DETAIL III (FORWARD OR AFT DOOR).
2. IF THE REPAIR IS ALONG THE FORWARD EDGE OF THE FORWARD CARGO DOOR SURROUND SKIN, MAKE SURE THAT ALL OF THE REQUIREMENTS OF SRM 51-10-01 ARE SATISFIED.

FORWARD CARGO DOOR EDGE IS SHOWN,
OTHER LOCATIONS AS GIVEN IN FIGURE 201 ARE ALMOST THE SAME

1357273 S0000242890_V2

Layout of the Repair Parts
Figure 202 (Sheet 1 of 5)

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Layout of the Repair Parts
Figure 202 (Sheet 2 of 5)

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(FORWARD CARGO DOOR REPAIR AT THE LAP SPLICE IS SHOWN, OTHER LOCATIONS AS GIVEN IN FIGURE 201 ARE ALMOST THE SAME)

DETAIL III

1357547 S0000242503_V2

Layout of the Repair Parts
Figure 202 (Sheet 3 of 5)

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A-A

B-B

C

VIEW IS ROTATED 90° CLOCKWISE

1357549 S0000242504_V1

Layout of the Repair Parts
Figure 202 (Sheet 4 of 5)

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FASTENER SYMBOLS

REFERENCE FASTENER LOCATION.

INITIAL FASTENER LOCATIONS. INSTALL A BACB30NW6K()Y HEX-DRIVE BOLT WITH A BACC30R COLLAR IN TRANSITION FIT HOLES. INSTALL THE SAME INITIAL RIVET AT ALL INITIAL DOUBLE FLUSH RIVET LOCATIONS (A 1/32 INCH OVERSIZE FASTENER IS PERMITTED). INSTALL SRM APPROVED HEX DRIVE BOLTS AND NUTS COMMON TO THE FRAME OUTER CHORD ALONG THE AFT EDGE OF THE CUTOUT IN SHIFTED TRANSITION FIT HOLES. TORQUE AS GIVEN IN BAC5004-2 IF THE FAY SURFACE SEALANT HAS BEEN APPLIED AGAIN BETWEEN THE FRAME CHORD AND THE MATING SKIN. INSTALL HEX-DRIVE BOLTS WET WITH BMS 5-95 SEALANT.

REPAIR FASTENER LOCATIONS. INSTALL A BACB30NW6K()Y HEX-DRIVE BOLT WITH A BACC30R COLLAR IN TRANSITION FIT HOLES AT 4D-6D SPACING. INSTALL WET WITH BMS 5-95 SEALANT.

REPAIR FASTENER LOCATIONS. INSTALL A BACB30NW6K()Y HEX-DRIVE BOLT WITH A BACC30R COLLAR IN TRANSITION FIT HOLES AT 8D-10D SPACING. INSTALL WET WITH BMS 5-95 SEALANT.

COLDWORKED FASTENER HOLES. INSTALL THE SAME COUNTERSUNK RIVETS AS THE INITIAL FASTENERS. IF 0.030 INCH DIAMETER OVERSIZE RIVETS ARE NECESSARY, THEN COLDWORK THE HOLES AS GIVEN IN BAC 5973, CLASS I.

NOTES

- MAKE SURE THERE IS A MINIMUM EDGE MARGIN OF 2D (WHERE D = FASTENER DIAMETER) AT ALL LOCATIONS. MAKE SURE THE REPAIR PARTS DO NOT END ON A STRINGER OR A FRAME.

1 REFER TO SRM 51-40-06 FOR THE EDGE MARGIN FOR A 100 DEGREE HEAD HEX DRIVE BOLT.

2 MAKE SURE THERE ARE 6 FASTENER ROWS MINIMUM ABOVE AND BELOW THE TRIMOUT LOCATION IN THE [3] OUTER DOUBLER.

3 MAKE SURE THERE ARE 3 FASTENER ROWS MINIMUM BEYOND THE TRIMOUT LOCATION IN THE [3] OUTER DOUBLER.

4 DO NOT TERMINATE THE [3] OUTER DOUBLER, [2] DOUBLER OR [1] INNER DOUBLER ON THE LAP SPLICE. DO NOT TERMINATE THE DOUBLERS AT A COLDWORKED FASTENER HOLE LOCATION.

5 THE [1] INNER DOUBLER MUST STOP A MINIMUM OF 1 FASTENER ROW BEFORE THE TANGENT POINT OF THE CORNER RADIUS. IF THE DOUBLERS NEED TO BE EXTENDED TO GO AROUND THE CORNER, THEN REFER TO DETAIL III.

6 AT THE LOWER AFT CORNER THE [1] INNER DOUBLER WILL ONLY EXTEND PAST THE [2] DOUBLER BY ONE FASTENER ROW. REFER TO DETAIL III.

7 IT IS IMPORTANT TO KEEP THIS DIMENSION (+/-0.50 INCH) WHEN YOU ARE ADJACENT TO THE SECONDARY STATIC PORT. REFER TO DETAIL III.

1357265 S0000242724_V2

Layout of the Repair Parts
Figure 202 (Sheet 5 of 5)

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THRESHOLD INSTALLATION (TYPICAL)

A-A

B-B

1357262 S0000242505_V1

Skin, Doubler, and Bear Strap at Door Cutouts
Figure 203 (Sheet 1 of 2)

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FAIRING COMPOUND APPLICATION

BEFORE APPLICATION
OF FAIRING COMPOUND

FAIRING COMPOUND

AFTER APPLICATION
OF FAIRING COMPOUND

C–C

1357263 S0000242506_V1

Skin, Doubler, and Bear Strap at Door Cutouts
Figure 203 (Sheet 2 of 2)

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5. **Inspection Requirements**

A. Do the inspections as shown in Figure 204/REPAIR 25 with the steps that follow (Refer to 51-00-06 for the different categories of repairs):

(1) The conditions that follow determine the threshold for the start of supplemental inspections.

(a) The threshold is 50,000 flight cycles after the installation of this repair, if SB 737-21-1149 has not been incorporated, and if all fastener holes in the repair are:

1) New,

2) Oversized, or

3) Not changed from their initial condition.

(b) The threshold is 22,500 flight cycles after the installation of this repair, if SB 737-21-1149 has been incorporated, and if all fastener holes in the repair are:

1) New,

2) Oversized, or

3) Not changed from their initial condition.

(2) Do an external Low Frequency Eddy Current inspection (LFEC) for damage in the skin around the fasteners at each 3,500 flight cycle interval, or more frequently. Refer to 737 NDT Part 6, 53-30-00, Procedure 5.

(3) Do an internal HFEC for damage in the bearstrap along the frame chord along the length of the repair at each 3,500 flight cycle interval, or more frequently. Refer to 737 NDT Part 6, 51-00-00, Procedure 4 or 737 NDT Part 6, 51-00-00, Procedure 23.

(4) Do the inspections that follow for damage in the frame web at each 3,500 flight cycles, or more frequently.

(a) HFEC surface inspect the frame web along the length of the repair. Refer to 737 NDT Part 6, 51-00-00, Procedure 4 or 737 NDT Part 6, 51-00-00, Procedure 23.

(b) Remove the door stop fitting if adjacent to the repair and HFEC surface inspect under the fitting. Refer to 737 NDT Part 6, 51-00-00, Procedure 4 or 737 NDT Part 6, 51-00-00, Procedure 23.

(5) Do the inspections that follow for damage in the bearstrap at each 3,500 flight cycles, or more frequently.

(a) HFEC surface inspect the bearstrap around fasteners common to the repair. Refer to 737 NDT Part 6, 51-00-00, Procedure 4 or 737 NDT Part 6, 51-00-00, Procedure 23.

(b) HFEC open-hole inspect in the hole common to the door stop backup fitting if adjacent to the repair. Refer to 737 NDT Part 6, 51-00-00, Procedure 16.

B. For repair doublers that go around the corner in Figure 202/REPAIR 25, Detail III, accomplish inspection requirements in Figure 204/REPAIR 25, Detail III.

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DETAIL I

INSPECTION REQUIREMENTS	
1	LFEC INSPECTION AREA. DO A LOW FREQUENCY EDDY CURRENT (LFEC) INSPECTION FOR DAMAGE IN THE SKIN AROUND THE FASTENERS COMMON TO THE REPAIR DOUBLER. REFER TO THE SHADED AREA ▨ IN DETAIL I.
2	HFEC INSPECTION AREA. DO A HIGH FREQUENCY EDDY CURRENT (HFEC) INSPECTION FOR DAMAGE IN THE BEAR STRAP, ALONG THE FRAME CHORD, FOR THE LENGTH (L) OF THE REPAIR.
3	HFEC INSPECTION AREA. DO AN HFEC SURFACE INSPECTION FOR DAMAGE IN THE FRAME WEB FOR THE LENGTH (L) OF THE REPAIR. REFER TO 737 NDT PART 6, 51-00-00, PROCEDURE 4 OR PROCEDURE 23. REMOVE THE DOOR STOP FITTING IF ADJACENT TO THE REPAIR AND DO AN HFEC SURFACE INSPECTION UNDER THE FITTING. REFER TO 737 NDT PART 6, 51-00-00, PROCEDURE 4 OR PROCEDURE 23.
4	HFEC INSPECTION AREA. DO AN HFEC SURFACE INSPECTION FOR DAMAGE IN THE BEARSTRAP AROUND THE FASTENERS COMMON TO THE REPAIR. REFER TO 737 NDT PART 6, 51-00-00, PROCEDURE 4 OR PROCEDURE 23. DO AN HFEC OPEN HOLE INSPECTION IN THE HOLE COMMON TO THE BEARSTRAP AND DOOR STOP BACKUP FITTING IF ADJACENT TO THE REPAIR. REFER TO 737 NDT PART 6, 51-00-00, PROCEDURE 16.

A-A

FORWARD CARGO DOOR EDGE REPAIR

1357472 S0000242499_V2

Repair Inspection Requirements
Figure 204 (Sheet 1 of 4)

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INSPECTION REQUIREMENTS	
1	LFEC INSPECTION AREA. DO A LOW FREQUENCY EDDY CURRENT (LFEC) INSPECTION FOR DAMAGE IN THE SKIN AROUND THE FASTENERS COMMON TO THE REPAIR DOUBLER. REFER TO THE SHADED AREA IN DETAIL I.
2	HFEC INSPECTION AREA. DO A HIGH FREQUENCY EDDY CURRENT (HFEC) INSPECTION FOR DAMAGE IN THE BEAR STRAP, ALONG THE FRAME CHORD, FOR THE LENGTH (L) OF THE REPAIR.
3	HFEC INSPECTION AREA. DO AN HFEC SURFACE INSPECTION FOR DAMAGE IN THE FRAME WEB FOR THE LENGTH (L) OF THE REPAIR. REFER TO 737 NDT PART 6, 51-00-00, PROCEDURE 4 OR PROCEDURE 23. REMOVE THE DOOR STOP FITTING IF ADJACENT TO THE REPAIR AND DO AN HFEC SURFACE INSPECTION UNDER THE FITTING. REFER TO 737 NDT PART 6, 51-00-00, PROCEDURE 4 OR PROCEDURE 23.
4	HFEC INSPECTION AREA. DO AN HFEC SURFACE INSPECTION FOR DAMAGE IN THE BEARSTRAP AROUND THE FASTENERS COMMON TO THE REPAIR. REFER TO 737 NDT PART 6, 51-00-00, PROCEDURE 4 OR PROCEDURE 23. DO AN HFEC OPEN HOLE INSPECTION IN THE HOLE COMMON TO THE BEARSTRAP AND DOOR STOP BACKUP FITTING IF ADJACENT TO THE REPAIR. REFER TO 737 NDT PART 6, 51-00-00, PROCEDURE 16.

AFT CARGO DOOR REPAIR AT A LAP SPLICE 1357418 S0000242500_V2

Repair Inspection Requirements
Figure 204 (Sheet 2 of 4)

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(FORWARD CARGO DOOR REPAIR AT THE LAP SPLICE IS SHOWN,
OTHER LOCATIONS AS GIVEN IN FIGURE 201 ARE ALMOST THE SAME)

DETAIL III

1357577 S0000242501_V2

Repair Inspection Requirements
Figure 204 (Sheet 3 of 4)

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A-A

ZONE 1 - LOW FREQUENCY EDDY CURRENT (LFEC) INSPECTION OF THE SKIN AT EACH 3500 FLIGHT CYCLE INTERVAL, OR MORE FREQUENTLY.

ZONE 2 - DETAIL VISUAL INSPECTION OF THE EXTERNAL DOUBLER AT EACH 3500 FLIGHT CYCLE INTERVAL, OR MORE FREQUENTLY

ZONE 3 - HIGH FREQUENCY EDDY CURRENT (HFEC) INSPECTION OF THE SKIN AND THE DOUBLER EDGES, ALONG THE DOOR CORNER RADIUS AT EACH 3500 FLIGHT CYCLE INTERVAL, OR MORE FREQUENTLY.

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Repair Inspection Requirements
Figure 204 (Sheet 4 of 4)

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REPAIR 28 - DELETED

1. **Repair 28**

   A. The data for Repair 28 has been moved to Repair 19.

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REPAIR 29 - DELETED

1. **Repair 29**

   A. The data for Repair 29 has been moved to Repair 20.

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REPAIR 35 - FUSELAGE SKIN GENERAL CROWN SKIN REPAIRS

1. Applicability

A. REPAIR 35 is applicable to general skin damage in the Crown Fuselage Skin:

(1) In Fuselage Section 41, crown skin between S-4L and S-4R.

(2) In Fuselage Section 43, crown skin between S-10L and S-10R.

(3) In Fuselage Section 46, crown skin between S-10L and S-10R.

B. REPAIR 35 is not applicable if the repair doubler extends:

(1) Into Fuselage Section 41 forward of STA 259.5.

(2) Into Fuselage Section 44.

(3) Into Fuselage Section 46, common to STA 867 between S-2L to S-2R with shear tie locations.

(4) Into Fuselage Section 47.

(5) Within 10.0 in. (254.0 mm) of a large door cutout or within 3.0 in. (76.2 mm) of an initial repair on the skin.

(6) Within 3.0 in. (76.2 mm) of a small skin cutout, lap splice or butt splice.

(7) Across more than two stringers.

(8) Across more than one frame.

(9) Into areas affected by Service Bulletin 737-53-1311.

C. REPAIR 35 is not applicable to damage:

(1) If there is an initial repair in the adjacent bay.

(2) If there is damage to the structure that is below the skin and doubler.

(3) Where the skin thickness is more than 0.09 in. (2.29 mm).

(4) In Fuselage Section 47 and 48.

(5) For airplanes with a flat aft pressure bulkhead.

(6) If the airplane was modified as given in Service Bulletin 737-53-1256.

(7) If the airplane was modified as given in Service Bulletin 737-21-1149.

2. General

A. This repair is a Category B repair. Refer to 51-00-06, GENERAL for the repair categories and definitions. Refer to Paragraph 5./REPAIR 35 for the inspection requirements.

B. The manager of the FAA Seattle ACO approves the incorporation of the inspection methods, compliance times and repeat intervals given in Paragraph 5, Inspection Requirements, as an AMOC to the inspections in the area of PSEs 53-10-08-1, 53-30-01-2, 53-30-01-4, 53-60-01-2 and 53-60-01-4 covered by this repair only, required by paragraphs (g) and (h) of AD 2013-19-23. All provisions of AD 2013-19-23 that are not specifically referenced in the above statement remain fully applicable and must be complied with accordingly. If operators choose this AMOC, then they must revise their FAA approved maintenance or inspection program to incorporate these alternative inspections.

C. The details shown in this repair figure are general repair procedures. The specific damage size, shape and location can be different for actual repairs. The intent of this repair is to give you general guidelines to permit you to design repairs for your specific damage. The dimensions and shape of the repair can be different than as shown. To make sure that your repair is structurally satisfactory, always obey the general repair rules as given in the instructions and the flag notes.

D. D = fastener diameter.

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E. Keep a 2D minimum fastener edge margin on all repair parts and initial parts.

F. All dimensions are in inches, unless they are shown differently.

G. Keep a minimum of 0.50 in. (12.70 mm) corner radius of all initial and repair parts, unless they are shown differently.

H. Keep a 5D to 6D fastener spacing, unless it is shown differently.

I. Make sure the cut edges of the repair and initial parts have a surface smoothness of 63 microinches Ra or smoother. Refer to 51-20-13, GENERAL.

J. Make sure the repair and initial parts have a surface smoothness of 125 microinches Ra or smoother. Refer to 51-20-13, GENERAL.

K. Make sure the aerodynamic smoothness is satisfactory or there will be a decrease in the performance of the airplane. Refer to 51-10-01, GENERAL.

3. References

Reference	Title
51-00-06, GENERAL	Structural Repair Definitions
51-10-01, GENERAL	Aerodynamic Smoothness Requirements
51-20-01, GENERAL	Protective Treatment of Metallic and Composite Materials
51-20-05, GENERAL	Repair Sealing
51-20-13, GENERAL	Surface Roughness Finish Requirements
51-30-01, GENERAL	Sheet Metal Materials
51-40-02, GENERAL	Fastener Installation and Removal
51-40-05, GENERAL	Fastener Hole Sizes
51-40-08, GENERAL	Countersink Data and Procedures for Metal Structures
AMM 51-21-00 P/B 701	INTERIOR AND EXTERIOR FINISHES - CLEANING/PAINTING
SOPM 20-44-04	Application of Urethane Compatible Primer
737 NDT Part 6, 51-00-00, Procedure 16	Aluminum Part Fastener Hole Inspection (Rotary Scanner)
737 NDT Part 6, 51-00-00, Procedure 23	Aluminum Part Surface Inspection (Impedance Plane Display)
737 NDT Part 6, 51-00-00, Procedure 4	Surface Inspection of Aluminum Parts (Meter Display)
737 NDT Part 6, 53-30-00, Procedure 5	Inspection of External Fuselage Repairs

4. Repair Instructions

A. Get access to the damaged area.

B. Remove the necessary fasteners. Refer to 51-40-02, GENERAL.

C. Carefully cut out the damaged area of the fuselage skin. Make the cut in the shape of a rectangle with the sides parallel or perpendicular to the stringer or frame. Refer to Figure 201/REPAIR 35.

D. Make sure the skin around the cut is back to the initial contour.

E. Make the corner radii of the cut a minimum of 0.50 inch

F. Do a High Frequency Eddy Current (HFEC) inspection along the cut edges top make sure that there is no more damage. Refer to 737 NDT Part 6, 51-00-00, Procedure 4. Do an HFEC hole probe inspection of all initial fastener holes in the repair area. Refer to 737 NDT Part 6, 51-00-00, Procedure 16. If more damage is found, remove the damage and do an inspection again.

G. Do inspections as follows:

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(1) Do a High Frequency Eddy Current (HFEC) inspecftion along the cut edges to make sure that there is no more damage. Refer to 737 NDT Part 6, 51-00-00, Procedure 23.

(2) Do an HFEC countersink inspection of all initial fastener holes in the repair area. Refer to 737 NDT Part 6, 51-00-00, Procedure 4.

(3) Do an HFEC hole probe inspection of all initial fastener holes in the repair area. Refer to 737 NDT Part 6, 51-00-00, Procedure 16. If more damage is found, remove the damage and do an inspection again.

H. Do a visual inspection of the area under the repair for signs of disbonding or corrosion of the bonded doubler. If damage is found, contact The Boeing Company

I. Do a visual inspection of the underlying structure in the area of the repair including stringers and frames and any adjacent structure. If damage is found, contact The Boeing Company.

J. If no damage is found then do a 0.04 in. (1.02 mm) insurance cut along the edge of the trim.

K. Do a detailed visual inspection of the repair area to make sure there is no other damage.

L. Make the repair parts. Refer to Table 201/REPAIR 35 and Figure 201/REPAIR 35.

Table 201: Repair Materials

PART		QUANTITY	MATERIAL
1	Doubler	1	0.040 in. (1.016 mm) thick clad sheet 2024-T3
2	Tripler	1	0.063 in. (1.600 mm) thick clad sheet 2024-T3
3	Filler	1	Clad 2024-T3 sheet with the same thickness as the thickest part of the cutout material.
4	Tearstrap Internal Doubler	1	0.050 in. (1.270 mm) thick clad sheet 2024-T3
5	Tapered Shim	As necessary	0.050 in. (1.270 mm) thick clad sheet 2024-T3. Make sure the taper is 50:1.

(1) Make sure the repair parts have the same contour as the initial skin. Refer to 51-30-01, GENERAL.

(2) The maximum size of Part 1 Doubler is 21.0 in. (533.4 mm) in the longitudinal direction and 20.5 in. (520.7 mm) in the circumferential direction.

(3) Make sure the Part 1 Doubler and Part 2 Tripler have the chamfer per Figure 202 (Sheet 1).

M. Assemble the repair parts and lay out the fastener pattern. Refer to Figure 201/REPAIR 35 and Figure 202/REPAIR 35. A maximum pull-up gap of 0.010 in. (0.254 mm) is permitted between the parts before the fasteners are installed. Install shims as necessary. Refer to 51-30-01, GENERAL.

N. Drill the fastener holes. Refer to 51-40-05, GENERAL, Figure 201/REPAIR 35 and Figure 202/REPAIR 35 for the fastener locations, type and size. You can oversize the initial fastener holes a maximum of 1/32 inch if necessary. Use care not to drill near the edge of the tearstrap when you drill new fastener holes. Tearstrap fastener holes should be drilled from the inner face of the skin panel.

NOTE: If you must drill a hole near a chem-milled or machined radius, move the location to prevent fastener interference with the radius.

O. Disassemble the repair parts.

P. Remove all nicks, scratches, burrs, and sharp edges from the repair parts and the bare surfaces of the initial parts.

Q. Apply a chemical conversion coating to the repair parts and to the bare surfaces of the initial parts. Refer to 51-20-01, GENERAL.

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R. Apply one layer of BMS 10-79, Type II or Type III primer to the repair parts and to the bare surfaces of the initial parts. Refer to SOPM 20-44-04.

S. Install the countersink repair washers with BMS 5-95 sealant at the initial fastener locations. Refer to 51-40-08, GENERAL.

T. Install the repair parts with BMS 5-95 sealant between the mating surfaces. Refer to 51-20-05, GENERAL.

U. Install the fasteners. Refer to 51-40-02, GENERAL and 51-40-05, GENERAL. Install rivets dry. Overdrive all rivets common to the repair parts. Refer to 51-40-02, GENERAL. Install hex-drive bolts wet with BMS 5-95 sealant in transition fit holes. It is permitted to install a 1/64 inch diameter oversize hex drive bolt, if necessary.

V. Apply a fillet seal and fill all gaps with BMS 5-95 sealant. Refer to 51-20-05, GENERAL.

W. Apply a decorative external finish. Refer to AMM PAGEBLOCK 51-21-00/701.

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Fuselage Skin General Crown Skin Repairs
Figure 201 (Sheet 1 of 7)

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Fuselage Skin General Crown Skin Repairs
Figure 201 (Sheet 2 of 7)

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Fuselage Skin General Crown Skin Repairs
Figure 201 (Sheet 3 of 7)

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Fuselage Skin General Crown Skin Repairs
Figure 201 (Sheet 4 of 7)

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Fuselage Skin General Crown Skin Repairs
Figure 201 (Sheet 5 of 7)

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TYPE 1 - 2.40 TO 3.38 INCH WIDE TEAR STRAP

F

TYPE 2 - 3.45 TO 3.54 INCH WIDE TEAR STRAP

F

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Fuselage Skin General Crown Skin Repairs
Figure 201 (Sheet 6 of 7)

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TYPE 3 - 3.80 TO 4.30 INCH WIDE TEAR STRAP

F

TYPE 4 - THE COMBINATION OF TWO DIFFERENT TEAR STRAP INTERNAL DOUBLER CONFIGURATIONS

F

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Fuselage Skin General Crown Skin Repairs
Figure 201 (Sheet 7 of 7)

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TYPICAL CHAMFERED EXTERNAL REPAIR PATCH

A

2259467 S0000506640_V1

Layout of the Repair Parts
Figure 202 (Sheet 1 of 3)

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NOTES

1 EXTEND THE PART 1 DOUBLER ONE FASTENER ROW BEYOND THE PART 2 TRIPLER. DO NOT START OR STOP THE OUTER ROW OF THE PART 1 DOUBLER FASTENERS IF THEY ARE IN THE SAME LOCATION AS THE INITIAL FASTENERS FOR THE BEARSTRAP.

2 EXTEND THE PART 2 TRIPLER A MINIMUM OF FOUR FASTENER ROWS BEYOND ALL SIDES OF THE CUTOUT.

3 IF THE PART 1 DOUBLER ENDS ON A STRINGER, A FRAME OR A TEARSTRAP, EXTEND THE PART 1 DOUBLER A MINIMUM OF TWO FASTENER ROWS BEYOND THE STRINGER, THE FRAME OR THE TEARSTRAP. 6

4 MAKE SURE THAT STRUCTURAL FILLERS ARE INSTALLED AT LOCATIONS WHERE THE CUTOUT IS COMMON TO A STRINGER OR A BONDED DOUBLER SKIN. EXTEND THE STRUCTURAL FILLER BY ONE FASTENER ROW BEYOND THE STRINGER OR A BONDED DOUBLER SKIN, IF THE CUTOUT SIZE PERMITS.

5 THE PART 1 DOUBLER MUST STOP A MINIMUM OF 0.5 INCH (12.7 mm) BEFORE A LONGITUDINAL CHEM-MILLED STEP EDGE. THIS WILL PERMIT YOU TO DO AN EXTERNAL INSPECTION OF THE CHEM-MILLED STEP. IF THE REPAIR STOPS LESS THAN 0.5 INCH (12.7 mm) BEFORE A LONGITUDINAL CHEM-MILLED STEP, EXTEND THE PART 1 DOUBLER A MINIMUM OF THREE FASTENER ROWS PAST THE LONGITUDINAL CHEM-MILLED STEP EDGE. 6

6 EXTEND THE PART 2 TRIPLER AS NECESSARY. DO NOT EXTEND THE PART 1 DOUBLER MORE THAN ONE FASTENER ROW BEYOND THE PART 2 TRIPLER.

7 EXTEND THE PART 4 TEARSTRAP INTERNAL DOUBLER A MINIMUM OF THREE FASTENER ROWS BEYOND THE PART 1 DOUBLER IN THE CIRCUMFERENTIAL DIRECTION. IF WIDTH OF THE TEAR STRAP IS MORE THAN 3.38 INCHES INSTALL A MINIMUM OF FOUR FASTENER ROWS. IF THE PART 4 TEARSTRAP INTERNAL DOUBLER ENDS ON A STRINGER, EXTEND THE PART 4 TEARSTRAP INTERNAL DOUBLER A MINIMUM OF THREE FASTENER ROWS BEYOND THE STRINGER. IF REPAIR CROSSES PRODUCTIONS TEAR STRAP, WITH VARIABLE WIDTH, USE TEAR STRAP INTERNAL DOUBLER CONFIGURATIONS ACCORDING TO WIDTH OF PRODUCTION TEAR STRAP. COMBINE TWO DIFFERENT CONFIGURATIONS OF TEAR STRAP INTERNAL DOUBLER, REFER TO TYPE 4.

FASTENER SYMBOLS

REFERENCE FASTENER LOCATION.

INITIAL FASTENER LOCATION. INSTALL BACR15CE6D RIVET. AS ALTERNATIVE INSTALL A BACR15GF6D RIVET. REFER TO SRM 51-40-08.

INITIAL FASTENER LOCATION. INSTALL BACR15CE6D RIVET. AS ALTERNATIVE INSTALL A BACR15GF6D RIVET. REFER TO SRM 51-40-08.

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Layout of the Repair Parts
Figure 202 (Sheet 2 of 3)

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FASTENER SYMBOLS (CONTINUED)

INITIAL FASTENER LOCATION. INSTALL A BACR15BB6D RIVET. INSTALL A COUNTERSINK REPAIR WASHER. REFER TO SRM 51-40-08.

REPAIR FASTENER LOCATION. INSTALL A BACR15CE6D RIVET. AS AN ALTERNATIVE INSTALL A BACR15GF6D RIVET.

REPAIR FASTENER LOCATION. INSTALL A BACR15BB6D RIVET.

REPAIR FASTENER LOCATION. INSTALL A BACR15CE6D RIVET. AS AN ALTERNATIVE INSTALL A BACR15GF6D RIVET. KEEP AN 8D TO 10D FASTENER SPACING.

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Layout of the Repair Parts
Figure 202 (Sheet 3 of 3)

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5. Inspection Requirements

A. Perform the inspections as given in Table 202/REPAIR 35.

Table 202: Repair Inspection Requirements

INSPECTION THRESHOLD	METHOD	INTERVAL	REFERENCE
50,000 flight cycles after airplane delivery	External LFEC*[1]	5,000 flight cycles	737 NDT Part 6, 53-30-00, Procedure 5
	Internal HFEC*[2]	11,000 flight cycles	737 NDT Part 6, 51-00-00, Procedure 4

*[1] Do an external LFEC inspection of the skin along the first outer row of fasteners of the Part 1 Doubler.

*[2] Do an internal HFEC inspection of the skin along the two outer rows of fasteners of the Part 1 Doubler if the outer row has 10D-12D fastener spacing.

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REPAIR 36 - FUSELAGE SKIN GENERAL SKIN REPAIRS NEAR OR AT A FRAME SHEAR TIE

1. Applicability

A. REPAIR 36 is applicable to the damaged fuselage skin near or at a frame shear tie.

B. REPAIR 36 is applicable to general skin damage:

(1) In Fuselage Section 41, between S-14L and S-24L, and between S-14R and S-24R.

(2) In Fuselage Section 43, between S-14L and S-24L, and between S-14R and S-24R.

(3) In Fuselage Section 46, between S-14L and S-23L, and between S-14R and S-23R.

C. REPAIR 36 is applicable to airplanes that have blended winglets.

D. REPAIR 36 is not applicable to airplanes that have Split Scimitar winglets.

E. REPAIR 36 is not applicable if the repair doubler extends:

(1) Within 10.0 in (254.0 mm) of a large door cutout or initial repair on the skin.

(2) Within 3.0 in. (76.2 mm) of a small skin cutout, lap splice/butt splice nearest fastener row.

(3) Into Fuselage Section 41 and 43 between S-24L and S-24R.

(4) Into Fuselage Section 44.

(5) Into Fuselage Section 46 and 47 between S-23L and S-23R.

(6) Into Fuselage Section 48 aft of STA 1016.

(7) More than 21.0 in. (533.4 mm) in the longitudinal direction and 20.5 in. (520.7 mm) in the circumferential direction.

(8) Across more than two stringers.

(9) Across more than one frame.

(10) Across the Dorsal Fin Attachment Fittings.

F. REPAIR 36 is not applicable to damage:

(1) Where the skin thickness is more than 0.09 in. (2.29 mm).

(2) If there is damage to the structure that is below the skin and doubler.

(3) For airplanes with a flat aft pressure bulkhead.

(4) If the airplane was modified as given in Service Bulletin 737-21-1149.

2. General

A. This repair is a Category B repair. Refer to 51-00-06, GENERAL for the repair categories and definitions. Refer to Paragraph 5./REPAIR 36 for the inspection requirements.

B. The details shown in this repair figure are general repair procedures. The specific damage size, shape and location can be different for actual repairs. The intent of this repair is to give you general guidelines to permit you to design repairs for your specific damage. The dimensions and shape of the repair can be different than as shown. To make sure that your repair is structurally satisfactory, always obey the general repair rules as given in the instructions and the flag notes.

C. D = fastener diameter.

D. Keep a 2D minimum fastener edge margin on all repair parts and initial parts. Keep a 2D + 0.040 in. (1.02 mm) minimum fastener edge margin on all initial fastener locations.

E. All dimensions are in inches, unless they are shown differently.

F. Keep a minimum of 0.50 in. (12.70 mm) external corner radius and 2.0 inches (50.8 mm) internal corner radius of all initial and repair parts, unless they are shown differently.

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G. Keep a 5D to 6D fastener spacing, unless it is shown differently.

H. Make sure the cut edges of the repair and initial parts have a surface smoothness of 63 microinches Ra or smoother. Refer to 51-20-13, GENERAL.

I. Make sure the repair and initial parts have a surface smoothness of 125 microinches Ra or smoother. Refer to 51-20-13, GENERAL.

J. Make sure the aerodynamic smoothness is satisfactory or there will be a decrease in the performance of the airplane. Refer to 51-10-01, GENERAL.

K. The manager of the FAA Seattle ACO approves the incorporation of the inspection methods, compliance times, and repeat intervals as given in Paragraph 5./REPAIR 36 as an AMOC to the inspections in the area of PSEs 53-30-02-1, 53-30-02-4, 53-60-02-1, 53-60-02-4, and 53-70-04-1 covered by this repair only, required by paragraphs (g) and (h) of AD 2013-19-23. All provisions of AD 2013-19-23 that are not specifically referenced in the above statement remain fully applicable and must be complied with accordingly. If operators choose this AMOC, then they must revise their FAA approved maintenance or inspection program to incorporate these new alternative inspections.

3. References

Reference	Title
51-00-06, GENERAL	Structural Repair Definitions
51-10-01, GENERAL	Aerodynamic Smoothness Requirements
51-20-01, GENERAL	Protective Treatment of Metallic and Composite Materials
51-20-05, GENERAL	Repair Sealing
51-20-13, GENERAL	Surface Roughness Finish Requirements
51-30-01, GENERAL	Sheet Metal Materials
51-40-02, GENERAL	Fastener Installation and Removal
51-40-03, GENERAL	Fastener Substitution
51-40-05, GENERAL	Fastener Hole Sizes
51-40-08, GENERAL	Countersink Data and Procedures for Metal Structures
AMM 51-21-00 P/B 701	INTERIOR AND EXTERIOR FINISHES - CLEANING/PAINTING
SOPM 20-44-04	Application of Urethane Compatible Primer
737 NDT Part 6, 51-00-00, Procedure 16	Aluminum Part Fastener Hole Inspection (Rotary Scanner)
737 NDT Part 6, 51-00-00, Procedure 23	Aluminum Part Surface Inspection (Impedance Plane Display)
737 NDT Part 6, 51-00-00, Procedure 4	Surface Inspection of Aluminum Parts (Meter Display)
737 NDT Part 6, 53-30-00, Procedure 5	Inspection of External Fuselage Repairs

4. Repair Instructions

A. Get access to the damaged area.

B. Remove the necessary fasteners. Refer to 51-40-02, GENERAL.

C. Carefully cut out the damaged area of the fuselage skin. Make the cut in the shape of a rectangle with the sides parallel and perpendicular to the stringer and frame. Refer to Figure 201/REPAIR 36.

D. Make sure the skin around the cut is back to the initial contour.

E. Do the inspections that follow:

(1) Do a High Frequency Eddy Current (HFEC) inspection along the cut edges to make sure that there is no further damage. Refer to737 NDT Part 6, 51-00-00, Procedure 23.

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(2) Do a High Frequency Eddy Current (HFEC) countersink inspection of all initial fastener holes in the repair area. Refer to 737 NDT Part 6, 51-00-00, Procedure 4.

(3) Do a High Frequency Eddy Current (HFEC) hole probe inspection of all initial fastener holes in the repair area. Refer to 737 NDT Part 6, 51-00-00, Procedure 16.

(4) If more damage is found, remove the damage do an inspection again.

F. If no damage is found then do a 0.04 in. (1.02 mm) insurance cut along the edge of the trim.

G. Visually inspect all underlying structures in the area of the repair including stringers and frames. If more damage is found, contact The Boeing Company.

H. Make the repair parts. Refer to Table 201/REPAIR 36 and Figure 201/REPAIR 36.

Table 201: Repair Materials

PART		QUANTITY	MATERIAL
1	Doubler	1	0.040 in. (1.016 mm) thick clad sheet 2024-T3
2	Tripler	1	0.063 in. (1.600 mm) thick clad sheet 2024-T3
3	Structural Filler	1	Clad 2024-T3 sheet with the same thickness as the thickest part of the cutout material.
4	Tapered Shim	Optional	0.040 in (1.0116 mm) thick and 0.063 in (1.600 mm) thick clad sheet 2024-T3. Use a taper ratio of 50:1.

(1) Make sure the repair parts have the same contour as the initial skin. Refer to 51-30-01, GENERAL.

(2) The maximum size of Part 1 Doubler is 20.0 in. (508.0 mm) in the longitudinal direction and 20.5 in. (520.7 mm) in the circumferential direction.

(3) Make sure that the Part 2 Tripler has a chamfer per Figure 202 (Sheet 1).

(4) Make sure that the aerodynamic smoothness of the repair skin is satisfactory. Refer to 51-10-01, GENERAL.

I. If the repair is common to the wing to body fairing area do as follows:

(1) Make sure you do not install fasteners in the critical row of the repair common to the initial nut plates.

(2) Install the same type nut plate fasteners as were removed for the wing to body fairing. Shim the fairing as necessary for the step up and step down, over the doubler and tripler to maintain a 50:1 taper to avoid a pre-load of the fairing.

(3) Install BMS 5-95 sealant between all other gaps, including the protruding fastener heads.

J. Assemble the repair parts and lay out the fastener pattern. Refer to Figure 201/REPAIR 36 and Figure 202/REPAIR 36. A maximum pull-up gap of 0.010 in. (0.254 mm) is permitted between the parts before the fasteners are installed. Install shims as necessary. Refer to 51-30-01, GENERAL.

K. Drill the fastener holes. Refer to 51-40-05, GENERAL, Figure 201/REPAIR 36 and Figure 202/REPAIR 36 for the fastener locations, type and size. You can oversize the initial fastener holes a maximum of 1/32 inch if necessary.

NOTE: If you must drill a hole near a chem-milled or machined radius, move the location to prevent the fastener interference with the radius.

L. Disassemble the repair parts.

M. Remove all nicks, scratches, burrs, and sharp edges from the repair parts and the bare surfaces of the initial parts.

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N. Apply a chemical conversion coating to the repair parts and to the bare surfaces of the initial parts. Refer to 51-20-01, GENERAL.

O. Apply one layer of BMS 10-79, Type II or Type III primer to the repair parts and to the bare surfaces of the initial parts. Refer to SOPM 20-44-04.

P. Install the countersink repair washers with BMS 5-95 sealant at the initial fastener locations. Refer to 51-40-08, GENERAL.

Q. Install the repair parts with BMS 5-95 sealant between the mating surfaces. Refer to 51-20-05, GENERAL.

R. Install the fasteners. Refer to 51-40-02, GENERAL and 51-40-05, GENERAL. Refer to Figure 201/REPAIR 36 and Table 202/REPAIR 36. Install rivets dry. Overdrive to a minimum 1.4D driven head all rivets common to the repair parts. Refer to 51-40-02, GENERAL. Install hex-drive bolts wet with BMS 5-95 sealant in transition fit holes.

Table 202: Repair Fasteners

INITIAL FASTENER	REPAIR FASTENER
BACR15GF( )D	BACR15BB( )D*[1]
BACR15CE( )D	BACR15BB( )D*[1]
BACB30VU( )K	BACB30NX()K()Xr*[1]*[2]
BACB30NW( )K	BACB30NX()K()X*[1]*[2]
BACB30YP( )K	BACB30NX()K()X*[1]*[2]

*[1] As an alternative you can use an equivalent fastener as given in 51-40-03, GENERAL.

*[2] Make sure to oversize on 1/64 inch from the production diameter.

S. Apply a fillet seal and fill all gaps with BMS 5-95 sealant. Refer to 51-20-05, GENERAL.

T. If the repair was installed below S-17R/L then apply a layer of BMS 3-23, corrosion inhibiting compound to all the internal structure in the repair area. Refer to 51-20-01, GENERAL.

U. Apply a decorative external finish. Refer to AMM PAGEBLOCK 51-21-00/701.

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Fuselage Skin General Skin Repairs near or at Frame Shear Tie
Figure 201 (Sheet 1 of 7)

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Fuselage Skin General Skin Repairs near or at Frame Shear Tie
Figure 201 (Sheet 2 of 7)

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Fuselage Skin General Skin Repairs near or at Frame Shear Tie
Figure 201 (Sheet 3 of 7)

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Fuselage Skin General Skin Repairs near or at Frame Shear Tie
Figure 201 (Sheet 4 of 7)

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Fuselage Skin General Skin Repairs near or at Frame Shear Tie
Figure 201 (Sheet 5 of 7)

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SKIN CUTOUT AT A FRAME SHEAR-TIE

F

SKIN CUTOUT AT A FRAME DOUBLER SHEAR-TIE

G

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Fuselage Skin General Skin Repairs near or at Frame Shear Tie
Figure 201 (Sheet 6 of 7)

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SKIN CUTOUT AT A FRAME DOUBLER SHEAR-TIE

H

2409673 S0000558248_V1

Fuselage Skin General Skin Repairs near or at Frame Shear Tie
Figure 201 (Sheet 7 of 7)

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TYPICAL CHAMFERED EXTERNAL REPAIR PATCH

A

NOTES

- MAKE SURE TO CHAMFER ALL EDGES OF THE EXTERNAL REPAIR PARTS THAT ARE 0.050 INCH (1.27 mm) OR THICKER.

1 EXTEND THE PART 1 DOUBLER ONE FASTENER ROW BEYOND THE PART 2 TRIPLER. DO NOT START OR STOP THE OUTER ROW OF THE PART 1 DOUBLER FASTENERS IF THEY ARE IN THE SAME LOCATION AS THE INITIAL FASTENERS FOR THE BEARSTRAP.

2 EXTEND THE PART 2 TRIPLER A MINIMUM OF FOUR FASTENER ROWS BEYOND ALL SIDES OF THE CUTOUT.

3 IF THE PART 1 DOUBLER ENDS ON A STRINGER, A FRAME OR A STRAP, EXTEND THE PART 1 DOUBLER A MINIMUM OF TWO FASTENER ROWS BEYOND THE STRINGER, THE FRAME OR THE STRAP. 6

4 ENSURE THAT STRUCTURAL FILLERS ARE INSTALLED AT LOCATIONS WHERE THE CUTOUT IS COMMON TO A STRINGER AND SHEAR-TIE. MAKE SURE THAT THE DAMAGE CUTOUT IS LARGE ENOUGH TO PERMIT TWO ROWS OF FASTENERS TO BE INSTALLED IN THE PART 3 (STRUCTURAL FILLER). SEE DETAIL F AND DETAIL G. IF THE STRUCTURAL FILLER HAS ONE PRODUCTION FASTENER COMMON TO IT THEN INSTALL A NEW FASTENER ON EACH SIDE OF THE PRODUCTION FASTENER COMMON TO THE STRUCTURAL FILLER. SEE DETAIL C AND H.

5 THE PART 1 DOUBLER MUST STOP A MINIMUM OF 0.5 INCH (12.7 mm) BEFORE A LONGITUDINAL CHEM-MILLED STEP EDGE. THIS WILL PERMIT YOU TO DO AN EXTERNAL INSPECTION OF THE CHEM-MILLED STEP. IF THE REPAIR STOPS LESS THAN 0.5 INCH (12.7 mm) BEFORE A LONGITUDINAL CHEM-MILLED STEP, EXTEND THE PART 1 DOUBLER A MINIMUM OF THREE FASTENER ROWS PAST THE LONGITUDINAL CHEM-MILLED STEP EDGE. 6

6 EXTEND THE PART 2 TRIPLER AS NECESSARY. DO NOT EXTEND THE PART 1 DOUBLER MORE THAN ONE FASTENER ROW BEYOND THE PART 2 TRIPLER.

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Layout of the Repair Parts
Figure 202 (Sheet 1 of 2)

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FASTENER SYMBOLS

REFERENCE FASTENER LOCATION.

INITIAL FASTENER LOCATION:

- AT PRODUCTION RIVET LOCATION, INSTALL A BACR15CE6D RIVET. AS ALTERNATIVE INSTALL A BACR15GF6D RIVET.
- AT PRODUCTION HI-LOK LOCATION, INSTALL THE SAME TYPE OF FASTENER. OVERSIZE ON 1/64 INCH FROM PRODUCTION DIAMETER. INSTALL A COUNTERSINK REPAIR WASHER. REFER TO SRM 51-40-08.

INITIAL FASTENER LOCATION:

- AT PRODUCTION RIVET LOCATION, INSTALL A BACR15CE6D RIVET. AS ALTERNATIVE INSTALL A BACR15GF6D RIVET.
- AT PRODUCTION HI-LOK LOCATION, INSTALL THE SAME TYPE OF FASTENER. OVERSIZE ON 1/64 INCH FROM PRODUCTION DIAMETER.

INITIAL FASTENER LOCATION. INSTALL A PROTRUDING HEAD REPAIR FASTENER, REFER TO TABLE 202 FOR THE FASTENER TYPE. INSTALL A COUNTERSINK REPAIR WASHER. REFER TO SRM 51-40-08.

REPAIR FASTENER LOCATION. INSTALL A BACR15CE6D RIVET. AS AN ALTERNATIVE INSTALL A BACR15GF6D RIVET.

REPAIR FASTENER LOCATION. INSTALL A BACR15BB6D RIVET.

REPAIR FASTENER LOCATION. INSTALL A BACR15CE6D RIVET. AS AN ALTERNATIVE INSTALL A BACR15GF6D RIVET. KEEP AN 8D TO 10D FASTENER SPACING.

2264531 S0000507631_V1

Layout of the Repair Parts
Figure 202 (Sheet 2 of 2)

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5. Inspection Requirements

A. Perform the inspections as given in Table 203/REPAIR 36.

Table 203: Repair Inspection Requirements

INSPECTION THRESHOLD	METHOD	INTERVAL	REFERENCE
50,000 flight cycles after airplane delivery	External LFEC*[1]	5,000 flight cycles	737 NDT Part 6, 53-30-00, Procedure 5

*[1] Do an external LFEC inspection of the skin along the first outer row of fasteners of the Part 1 Doubler and the Part 2 Tripler.

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REPAIR 38 - REPAIR OF LIGHTNING STRIKE AND SMALL DAMAGE IN THE FUSELAGE SKIN AWAY FROM A PRODUCTION FASTENER LOCATION

1. Applicability

A. This repair is applicable to lightning strike and small damage to the fuselage skin away from a production fastener location as shown in Figure 201/REPAIR 38.

B. You can use REPAIR 38 to repair damage if the repair rivet size is not more than the dimensions shown in Table 201/REPAIR 38.

C. You can use REPAIR 38 to blendout damage if the blendout length is not more than 0.5 inch.

D. This repair is only applicable if you meet the conditions that follow:

(1) The damage is:

(a) In an area where the skin thickness is constant.

(b) A minimum of 1.5 times the length of the damage away from a chem-milled radius.

(c) Not at a stringer, frame or in a location that already has a repair.

(d) Not at a circumferential splice or longitudinal splice, unless you meet the conditions in Paragraph 4.C./REPAIR 38.

(e) Not at a location modified as given in SB 737-53-1232.

(f) A minimum of 4D (D = The diameter of the largest hole in the area) away from other holes or fasteners.

(g) A minimum of 4D (D = The diameter of the largest hole in the area) away from an edge, unless you meet the conditions in Paragraph 4.C./REPAIR 38.

(2) For airplanes that have not completed SB 737-21-1149, there are no more than 5 repair fasteners, that are not installed through repair parts, in a bay. A bay is defined as the skin between adjacent frames and between adjacent stringers.

(3) For airplanes that have completed SB 737-21-1149, there is no more than 1 repair fastener, that is not installed through repair parts, in a bay.

E. If you have lightning strike damage to a repair fastener that is away from a production fastener location and installed in the initial skin only, not through repair parts, refer to REPAIR 39.

F. If you have lightning strike damage to a production fastener that does not damage the adjacent skin, refer to REPAIR 40.

G. If you have lightning strike damage to a production fastener that does damage the skin at a stringer, longitudinal splice, circumferential splice, or frame location, refer to REPAIR 41.

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Pressurized Fuselage Area
Figure 201

2. General

A. If there is a maximum of one repair fastener, that is not installed through repair parts, in the fuselage skin in a bay, this repair is a Category A repair.

B. If there are two or more repair fasteners in the fuselage skin in a bay, this repair and all previous repair fasteners are Category B repair fasteners. These repair fasteners must not be installed through repair parts. See Paragraph 5./REPAIR 38 for inspection instructions.

C. If you use blind rivets in this repair, this repair is a Category C repair. See Paragraph 5./REPAIR 38 for inspection instructions.

3. References

Reference	Title
51-10-01, GENERAL	Aerodynamic Smoothness Requirements
51-20-01, GENERAL	Protective Treatment of Metallic and Composite Materials
51-20-03, GENERAL	Heat Damage Analysis
51-40-02, GENERAL	Fastener Installation and Removal
51-40-08, GENERAL	Countersink Data and Procedures for Metal Structures
53-00-01	FUSELAGE SKIN
53-00-01, ALLOWABLE DAMAGE 1	Fuselage Skin
53-00-01, ALLOWABLE DAMAGE 5	Fuselage Skin - Lower Skin
AMM 51-21-00 P/B 701	INTERIOR AND EXTERIOR FINISHES - CLEANING/PAINTING
SOPM 20-20-02	Penetrant Methods of Inspection
SOPM 20-44-04	Application of Urethane Compatible Primer

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(Continued)

Reference	Title
737 NDT Part 6, 51-00-00, Procedure 1	Fastener Holes in Aluminum Parts (Meter Display)
737 NDT Part 6, 51-00-00, Procedure 16	Aluminum Part Fastener Hole Inspection (Rotary Scanner)
737 NDT Part 6, 51-00-00, Procedure 23	Aluminum Part Surface Inspection (Impedance Plane Display)
737 NDT Part 6, 51-00-00, Procedure 3	Investigation of Fire Damage on Aircraft Structure
737 NDT Part 6, 51-00-00, Procedure 4	Surface Inspection of Aluminum Parts (Meter Display)

4. Repair Instructions

A. Find the dimensions of the damage. For the lightning strikes that have visible damage more than 0.5 inch in length, do an inspection of the skin for heat damage. Refer to 51-20-03, GENERAL.

B. Remove the damage. Do one of the steps that follow. Refer to Figure 202/REPAIR 38 for a flow chart of the steps that follow:

(1) Blend out the damage with the steps given in Paragraph 4.C./REPAIR 38 if you meet the conditions given in Paragraph 4.C./REPAIR 38.

(2) Drill out the damage with the steps given in Paragraph 4.D./REPAIR 38 if the length of the damage is less than the maximum size limit in Table 201/REPAIR 38.

(3) If the damage is more than the limits given in Paragraph 4.C./REPAIR 38 and Table 201/REPAIR 38, find an alternative repair in the FUSELAGE SKIN, 53-00-01.

C. Blend out the damage. Maximum blendout length is 0.5 inch.

(1) Blend out the damage at the edge of a panel at a circumferential or longitudinal splice as given for nicks, gouges, scratches and corrosion in 53-00-01, ALLOWABLE DAMAGE 1, Figure 103, Details A and B, or 53-00-01, ALLOWABLE DAMAGE 5, Figure 102, Details A and B. Make sure that the blendout is in all permitted locations and the limits given in 53-00-01, ALLOWABLE DAMAGE 1, Figure 103, Details A and B, or 53-00-01, ALLOWABLE DAMAGE 5, Figure 102, Details A and B.

(2) Blend out the damage at all other locations as given for nicks, gouges, scratches and corrosion in 53-00-01, ALLOWABLE DAMAGE 1, or 53-00-01, ALLOWABLE DAMAGE 5. Make sure that the blendout is in all permitted locations and the limits given in 53-00-01, ALLOWABLE DAMAGE 1 or 53-00-01, ALLOWABLE DAMAGE 5.

(3) Do one of the inspections that follow to make sure there are no cracks:

(a) Do a HFEC inspection procedure on the surface for cracks. Refer to 737 NDT Part 6, 51-00-00, Procedure 4 or 737 NDT Part 6, 51-00-00, Procedure 23.

(b) As an alternative on the outer skin, you can do a penetrant inspection procedure for cracks. Refer to SOPM 20-20-02.

(c) As an alternative on the outer skin, you can do a detailed close visual inspection with a minimum 10X magnification for cracks.

NOTE: Additional inspections will be necessary after the repair is installed for this inspection. Refer to Paragraph 5.A./REPAIR 38.

(4) If the blend out was done per Paragraph 4.C.(2)/REPAIR 38 do an electrical conductivity test to make sure that there is no heat damage common to the blend out. Refer to 737 NDT Part 6, 51-00-00, Procedure 3. If heat damage is found, find an alternate repair in FUSELAGE SKIN, PAGEBLOCK 53-00-01, REPAIR.

(5) Apply a chemical conversion coating to the bare surfaces of the repair area. Refer to 51-20-01, GENERAL.

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(6) Apply a surface finish to the repair area as necessary. Refer to SOPM 20-44-04 for the application of BMS 10-79, Type II primer. Refer to AMM PAGEBLOCK 51-21-00/701 for the application of other finishes.

D. Drill out the damaged skin.

(1) The minimum repair fastener size permitted is 5/32 inch.

(2) The maximum repair fastener size permitted is given in Table 201/REPAIR 38.

Table 201: Maximum Repair Fastener Size Limit for Damage

LOCATION	MAXIMUM REPAIR FASTENER SIZE LIMIT
Fuselage Crown Skin in Section 44 and Section 46 between Stringers S-10L and S-10R	0.1875 inch
Fuselage Skin with a thickness less than 0.050 inch	
Fuselage Skin with a thickness of 0.050 inch or greater	0.3125 inch

(3) Do one of the inspections that follow to make sure that there are no cracks:

(a) Do an HFEC inspection procedure of the open fastener hole for cracks. Refer to 737 NDT Part 6, 51-00-00, Procedure 1 or 737 NDT Part 6, 51-00-00, Procedure 16.

(b) Do a Detailed Visual Inspection (DVI) with a minimum 10X magnification for cracks.

NOTE: Additional inspections will be necessary after the repair is installed for this inspection. Refer to Paragraph 5./REPAIR 38.

(4) Apply a chemical conversion coating to the bare surfaces of the repair area. Refer to 51-20-01, GENERAL.

(5) Install a solid or blind rivet. Refer to Figure 203/REPAIR 38.

(a) Do not use a protruding head fastener in the extra critical areas. These are areas near the static ports and angle attack sensors as given in 51-10-01, GENERAL.

(b) If the thickness of the damaged skin is less than 0.071 inch, you are not permitted to install a flush rivet. If you install a flush rivet:

1) Refer to 51-10-01, GENERAL for flushness or the rivet.

2) Countersink the hole. Refer to 51-40-08, GENERAL.

3) Do not microshave a BACR15CE, BACR15GF or BACR15DS rivet.

(c) For a Category A or B repair, install a protruding or flush head rivet made from 2117-T4 without sealant. Overdrive all rivets to a driven head as given in 51-40-02, GENERAL.

(d) For a Category C repair:

1) Install a NAS1398D( )A, NAS1738E( ) or a BACR15FR( )F( )R or as an option you are permitted to install a CR3213-( ) / CR3223-( ) protruding head blind rivets wet with BMS 5-95 sealant. As an alternative, install a NAS1399D( )A, NAS1739E( ) or a BACR15FP( )F( )R or as an option you are permitted to install a CR3214-( ) / CR3224-( ) flush head blind rivets wet with BMS 5-95 sealant. Install blind fasteners as given in 51-40-02, GENERAL.

2) Make sure that the rivet is seated correctly in the internal structure.

3) Do a DVI of the rivet.

4) The blind rivet must be replaced with an oversize solid rivet by the time-limit given in Paragraph 5./REPAIR 38.

(6) Apply a surface finish to the repair area as necessary. Refer to SOPM 20-44-04 and AMM PAGEBLOCK 51-21-00/701.

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1 REFER TO TABLE 201 FOR THE MAXIMUM REPAIR FASTENER SIZE LIMIT.

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Repair Procedure Flow Chart
Figure 202

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RECOMMENDED INSTALLATION

(DO NOT USE THE ALTERNATIVE INSTALLATION FOR AREAS NEAR STATIC PORTS AND ANGLE-OF-ATTACK SENSORS)

ALTERNATIVE INSTALLATION

SOLID 2117-T4 PROTRUDING HEAD RIVET

SOLID 2117-T4 FLUSH HEAD RIVET 2

SOLID RIVET INSTALLATION 1

A

NOTES

1 DO NOT COUNTERSINK A HOLE MORE THAN 70% OF THE SKIN THICKNESS

2 THE PARAGRAPH 4.D.5.B.3 SAID THAT: "DO NOT MICROSHAVE A BACR15CE, BACR15GF OR BACR15DS RIVET"; THEREFORE, IF YOU NEED TO MICROSHAVE THE RIVET HEAD, USE AN ALTERNATIVE SOLID 2117-T4 FLUSH HEAD RIVET PERMITTED AS SHOWN IN SRM 51-40-03, GENERAL. MAKE SURE THAT THERE IS NO KNIFE EDGE CONDITION IN SKIN AFTER YOU MICROSHAVE THE RIVET HEAD.

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Rivet Installation
Figure 203 (Sheet 1 of 2)

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NAS1398D()A
NAS1738E()
CR3213-()/CR3223-()
BACR15FR()F()R
PROTRUDING HEAD BLIND RIVET

NAS1399D()A
NAS1739E()
CR3214-()/CR3224-()
BACR15FP()F()R
FLUSH HEAD BLIND RIVET

BLIND RIVET INSTALLATION 1 2

B

1 IN AREAS NEAR STATIC PORTS AND ANGLE-OF-ATTACK SENSORS, RIVET HEADS MUST BE FLUSH WITH THE EXTERNAL SURFACE. BLIND RIVET HEADS CAN NOT BE MICROSHAVED. THUS, BLIND RIVETS CAN NOT BE USED IN AREAS NEAR STATIC PORTS AND ANGLE-OF-ATTACK SENSORS UNLESS THE HEAD CAN BE INSTALLED FLUSH WITH THE EXTERNAL SURFACE.

2 DO NOT COUNTERSINK A HOLE MORE THAN 70 PERCENT OF THE SKIN THICKNESS. FOR SKIN THICKNESSES WHICH REQUIRE A PROTRUDING HEAD FASTENER AND ARE LOCATED NEAR STATIC PORTS AND ANGLE-OF-ATTACK SENSORS, INSTALL A SOLID RIVET AS SHOWN IN DETAIL A.

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Rivet Installation
Figure 203 (Sheet 2 of 2)

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5. **Inspection Instructions**

A. If you blended the damage and did a detailed visual inspection only, do a detailed visual inspection with a minimum 10X magnification of the reworked skin every 500 flight cycles. Do the visual inspections until an HFEC or dye penetrant inspection for cracks can be done.

B. If you installed the solid fastener after a detailed visual inspection only was done as given in Paragraph 4.D.(3)(b)/REPAIR 38, then you must do a DVI, with a 10X magnification, of the skin every 500 flight cycles until you do as follows:

(1) Remove the solid fastener.

(2) Do an HFEC inspection of the open fastener hole for cracks as given in 737 NDT Part 6, 51-00-00, Procedure 1 or 737 NDT Part 6, 51-00-00, Procedure 16. If no cracks are found, drill the hole 1/16 inch oversize to the next larger size fastener diameter. The maximum permitted hole diameter is given in Table 201/REPAIR 38. Replace the rivet with a doubler repair, if the hole diameter exceeds the maximum permitted hole diameter.

(3) Install a new solid fastener.

C. If the repair is a Category B repair as given in Paragraph 2.B./REPAIR 38, then do the inspection as shown in Table 202/REPAIR 38.

Table 202: Category B Repair Inspection Requirements

INSPECTION THRESHOLD	REPEAT INSPECTIONS		
	METHOD	INTERVAL	REFERENCE
50,000 Flight Cycles after delivery	HFEC	2,000 Flight Cycles	737 NDT Part 6, 51-00-00, Procedure 4 or 737 NDT Part 6, 51-00-00, Procedure 23

D. If the repair is a Category C repair as given in Paragraph 2.C./REPAIR 38, then do the inspection as follows:

(1) Do a DVI of the blind rivets every 500 flight cycles.

(2) Replace blind rivets that are loose or missing with a Category A or B repair as given in Paragraph 4./REPAIR 38.

(3) Before 20,000 flight cycles after the repair installation, replace the blind rivets with solid rivets as follows:

(a) Remove the blind rivet.

(b) Do an HFEC inspection of the open fastener hole for cracks as given in 737 NDT Part 6, 51-00-00, Procedure 1 or 737 NDT Part 6, 51-00-00, Procedure 16. If no cracks are found, drill the hole 1/16 inch oversize to the next larger size fastener diameter. The maximum permitted hole diameter is given in Table 201/REPAIR 38. Replace the rivet with a doubler repair, if the hole diameter exceeds the maximum permitted hole diameter.

(c) Do a Category A or B repair as given in Paragraph 4./REPAIR 38.

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REPAIR 39 - REPAIR OF LIGHTNING STRIKE DAMAGE IN THE FUSELAGE SKIN AT A REPAIR FASTENER LOCATION AWAY FROM A PRODUCTION FASTENER LOCATION

1. Applicability

A. This repair is applicable to lightning strike damage to the fuselage skin at a repair fastener location away from a production fastener location and installed in the skin only, not through repair parts, as shown in Figure 201/REPAIR 39.

B. This repair is only applicable if you meet the conditions that follow:

(1) The damage is:

(a) In an area where the skin thickness is constant.

(b) A minimum of 1.5 times the length of the damage away from a chem-milled radius.

(c) Not at a circumferential splice, longitudinal splice, stringer, or a frame.

(d) Not at a location modified as given in SB 737-53-1232.

(e) A minimum of 4D (D = The diameter of the largest hole in the area) away from other holes, fasteners, or an edge.

(2) For airplanes that have not completed SB 737-21-1149, there are no more than a total of 5 repair fasteners, that are not installed in repair parts, in a bay. A bay is defined as the skin between adjacent frames and between adjacent stringers.

(3) For airplanes that have completed SB 737-21-1149, there are no more than a total of 1 repair fasteners, that are not installed in repair parts, in a bay.

C. If you have lightning strike damage to the fuselage skin that is away from a production fastener location, refer to REPAIR 38.

D. If you have lightning strike damage to a production fastener that does not damage the adjacent skin, refer to REPAIR 40.

E. If you have lightning strike damage to a production fastener that does damage the skin at a stringer, longitudinal splice, circumferential splice, or frame location, refer to REPAIR 41.

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Pressurized Fuselage Area
Figure 201

2. General

A. If there is a maximum of one repair fastener, that is not installed through repair parts, in the fuselage skin in a bay, this repair is a Category A. See Paragraph 4./REPAIR 39 for the repair instructions.

B. If there are two or more repair fasteners in the fuselage skin in a bay, this repair and all previous repair fasteners are Category B repair fasteners. The repair fasteners must not be installed through repair parts. See Paragraph 4./REPAIR 39 for the repair instructions. See Paragraph 6./REPAIR 39 for inspection instructions.

C. If you use blind rivets in the repair and the conditions that follow are met, this repair is a Category C repair. See Paragraph 5./REPAIR 39 for repair instructions. See Paragraph 6./REPAIR 39 for inspection instructions.

(1) The damaged fastener is a BACR15CE( )D or a BACR15GF( )D rivet.

(2) The damage is to the fastener only.

(3) The damaged fastener is not adjacent to a blind rivet.

(4) There is no initial repair on the skin within 10 inches of the lightning strike damage.

3. References

Reference	Title
51-10-01, GENERAL	Aerodynamic Smoothness Requirements
51-20-01, GENERAL	Protective Treatment of Metallic and Composite Materials
51-40-02, GENERAL	Fastener Installation and Removal
51-40-03, GENERAL	Fastener Substitution
51-40-06, GENERAL	Fastener Edge Margins

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(Continued)

Reference	Title
51-40-08, GENERAL	Countersink Data and Procedures for Metal Structures
AMM 51-21	INTERIOR AND EXTERIOR FINISHES
SOPM 20-44-04	Application of Urethane Compatible Primer
737 NDT Part 6, 51-00-00, Procedure 1	Fastener Holes in Aluminum Parts (Meter Display)
737 NDT Part 6, 51-00-00, Procedure 3	Investigation of Fire Damage on Aircraft Structure
737 NDT Part 6, 51-00-00, Procedure 4	Surface Inspection of Aluminum Parts (Meter Display)
737 NDT Part 6, 53-30-00, Procedure 3	Countersink Inspection of Aluminum Parts (Rotary Probe)

4. Category A or B Repair Instructions

A. Remove the damaged fastener. Refer to 51-40-02, GENERAL.

B. Do a visual inspection of the fastener location. If the visible damage is more than 0.5 inch in diameter, do an inspection for heat damage. Refer to 737 NDT Part 6, 51-00-00, Procedure 3.

C. Do an High Frequency Eddy Current (HFEC) inspection procedure of the open fastener hole for the limits of the damage.

D. Remove the damage. The maximum repair fastener size is given in Table 201/REPAIR 39.

Table 201: Maximum Repair Fastener Size Limit for Lightning Strike Damage

LOCATION	MAXIMUM REPAIR FASTENER SIZE LIMIT
Fuselage Crown Skin in Section 44 and Section 46 between Stringers S-10L and S-10R	0.1875 inch
Fuselage Skin with a thickness less than 0.050 inch	
Fuselage Skin with a thickness of 0.050 inch or greater	0.3125 inch

(1) If there is damage to the skin countersink, oversize the countersink in 1/64 inch increments until the damage is removed.

(a) Do not exceed a countersink depth of 70 percent of the skin thickness.

(2) If there is damage to more than the countersink of the skin, oversize the hole in 1/64th inch increments as necessary to remove the damage.

(3) Do an HFEC inspection procedure of the open fastener hole for damage. Refer to 737 NDT Part 6, 51-00-00, Procedure 1. For damage in the countersink only, refer to 737 NDT Part 6, 53-30-00, Procedure 3. If more damage is found, repeat the damage removal steps as given in Paragraph 4.D./REPAIR 39.

E. Oversize the hole by an additional 1/16 inch to make an insurance cut. The maximum hole size is given in Table 201/REPAIR 39. Make sure that the minimum edge margin is a minimum of 1.75D or as specified in 51-40-06, GENERAL, that which is larger.

F. Apply a chemical conversion coating to the bare surfaces of the repair. Refer to 51-20-01, GENERAL.

G. Install the repair fastener. Refer to Figure 202 (Sheet 1) for installation of rivets made out of 2117-T4.

(1) Do not use a protruding head fastener in the extra critical areas. These are areas near the static ports and angle attack sensors as given in 51-10-01, GENERAL.

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(2) Install the same fastener type as the initial fastener. An alternative fastener is permitted as given in 51-40-03, GENERAL. It is permitted to replace a countersink fastener with a protruding fastener with the same type as the initial fastener.

(a) If you install a protruding head fastener in an initial countersink hole, use a countersink repair washer. Refer to 51-40-08, GENERAL.

(b) If the repair fastener diameter is equal to or larger than 0.250 inch, then use a rivet made out of 2117-T4.

(c) Overdrive rivets to a driven head diameter as given in 51-40-02, GENERAL.

H. Apply a surface finish to the repair area as necessary. Refer to SOPM 20-44-04 and AMM SECTION 51-21.

5. Category C Repair Instructions

A. Remove the damaged fastener. Refer to 51-40-02, GENERAL.

B. Do a Detailed Visual Inspection (DVI) with a minimum 10X magnification to make sure that there is no hole damage.

C. If the countersink depth is less than 70 percent of the skin thickness install a NAS1398D( )A, NAS1738E( ) or a BACR15FR( )F( )R or as an option you are permitted to install a CR3213-( ) / CR3223-( ) protruding head blind rivets wet with BMS 5-95 sealant. As an alternative, install a NAS1399D( )A, NAS1739E( ) or a BACR15FP( )F( )R or as an option you are permitted to install a CR3214-( ) / CR3224-( ) flush head blind rivets wet with BMS 5-95 sealant. Refer to 51-40-08, GENERAL and Figure 202 (Sheet 2).

NOTE: Do not use a protruding head fastener in the extra critical areas. These are areas near the static ports and angle attack sensors as given in 51-10-01, GENERAL.

D. Do a DVI of the rivet with 10X magnification.

E. The blind rivet must be replaced with an oversize solid rivet by the time-limit given in Paragraph 6./ REPAIR 39.

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RECOMMENDED INSTALLATION

(DO NOT USE THE ALTERNATIVE INSTALLATION FOR AREAS NEAR STATIC PORTS AND ANGLE-OF-ATTACK SENSORS)

ALTERNATIVE INSTALLATION

SOLID 2117-T4 PROTRUDING HEAD RIVET

SOLID 2117-T4 FLUSH HEAD RIVET

SOLID RIVET INSTALLATION 1

A

NOTES

1 DO NOT COUNTERSINK A HOLE MORE THAN 70% OF THE SKIN THICKNESS

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Rivet Installation
Figure 202 (Sheet 1 of 2)

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NAS1398D()A
NAS1738E()
CR3213-() / CR3223-()
BACR15FR()F()R
PROTRUDING HEAD BLIND RIVET

NAS1399D()A
NAS1739E()
CR3214-() / CR3224-()
BACR15FP()F()R
FLUSH HEAD BLIND RIVET
BLIND RIVET INSTALLATION 1 2

B

1 IN AREAS NEAR STATIC PORTS AND ANGLE-OF-ATTACK SENSORS, RIVET HEADS MUST BE FLUSH WITH THE EXTERNAL SURFACE. BLIND RIVET HEADS CAN NOT BE MICROSHAVED. THUS, BLIND RIVETS CAN NOT BE USED IN AREAS NEAR STATIC PORTS AND ANGLE-OF-ATTACK SENSORS UNLESS THE HEAD CAN BE INSTALLED FLUSH WITH THE EXTERNAL SURFACE.

2 DO NOT COUNTERSINK A HOLE MORE THAN 70 PERCENT OF THE SKIN THICKNESS. FOR SKIN THICKNESSES WHICH REQUIRE A PROTRUDING HEAD FASTENER AND ARE LOCATED NEAR STATIC PORTS AND ANGLE-OF-ATTACK SENSORS, INSTALL A SOLID RIVET AS SHOWN IN DETAIL A.

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Rivet Installation
Figure 202 (Sheet 2 of 2)

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6. Inspection Instructions

A. For a Category B repair do the inspections as given in Table 202/REPAIR 39.

Table 202: Category B Repair Inspection Requirements

INSPECTION THRESHOLD	REPEAT INSPECTIONS		
	METHOD	INTERVAL	REFERENCE
50,000 Flight Cycles after delivery	HFEC	2,000 Flight Cycles	737 NDT Part 6, 51-00-00, Procedure 4

B. For a Category C repair:

(1) Do a DVI of the blind rivets every 500 flight cycles with 10X magnfiication.

(2) Replace blind rivets that are loose or missing with a solid rivet as given in Paragraph 4./REPAIR 39.

(3) Before 6,000 flight cycles after the repair installation, replace the blind rivets with solid rivets as follows:

(a) Remove the blind rivet.

(b) Do an HFEC inspection of the open fastener hole for cracks as given in 737 NDT Part 6, 51-00-00, Procedure 1. If no cracks are found, drill the hole 1/16 inch oversize to the next larger size fastener diameter. The maximum permitted hole diameter after you oversize is given in Table 201/REPAIR 39. Replace the rivet with a doubler repair, if the hole diameter exceeds the maximum permitted hole diameter.

(c) Do a Category A or B repair as given in Paragraph 4./REPAIR 39.

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REPAIR 40 - REPAIR OF LIGHTNING STRIKE DAMAGE TO A PRODUCTION FASTENER THAT DOES NOT DAMAGE THE ADJACENT FUSELAGE SKIN

1. Applicability

A. This repair is applicable to lightning strike damage to a production fastener in the fuselage skin as shown in Figure 201/REPAIR 40. This repair is not applicable if there is damage to the fuselage skin.

B. If you have lightning strike damage to the fuselage skin that is away from a production fastener location, refer to REPAIR 38.

C. If you have lightning strike damage to a repair fastener location that is away from a production fastener location and installed in the initial skin only, not through repair parts, refer to REPAIR 39.

D. If you have lightning strike damage to a production fastener that does damage the skin at a stringer, longitudinal splice, circumferential splice, or frame location, refer to REPAIR 41.

Pressurized Fuselage Area
Figure 201

2. General

A. If the damaged production fastener meets the condition that follows, this repair is a Category A repair. See Paragraph 4./REPAIR 40 for repair instructions.

(1) The damaged production fastener is replaced with a solid shank fastener with the same diameter as the initial fastener up to a maximum oversize of 1/32 inch.

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B. If you use blind rivets in the repair and meet the conditions of Paragraph 5./REPAIR 40, this repair is a Category C repair. See Paragraph 5./REPAIR 40 for repair and inspection instructions.

3. References

Reference	Title
51-10-01, GENERAL	Aerodynamic Smoothness Requirements
51-20-05, REPAIR 1	Wet Installation of Fasteners
51-40-02, GENERAL	Fastener Installation and Removal
51-40-03, GENERAL	Fastener Substitution
51-40-05, GENERAL	Fastener Hole Sizes
AMM 51-21	INTERIOR AND EXTERIOR FINISHES
SOPM 20-44-04	Application of Urethane Compatible Primer
737 NDT Part 6, 51-00-00, Procedure 1	Fastener Holes in Aluminum Parts (Meter Display)

4. Category A Repair Instructions

A. Remove the fastener. Refer to 51-40-02, GENERAL.

B. Do an High Frequency Eddy Current (HFEC) inspection procedure of the open fastener hole to make sure that there is no damage to the hole in the skin. Refer to 737 NDT Part 6, 51-00-00, Procedure 1.

C. Install a repair fastener.

(1) Do not use a protruding head fastener in the extra critical areas. These are areas near the static ports and angle attack sensors as given in 51-10-01, GENERAL.

(2) Install the same fastener type and diameter as the initial fastener up to a maximum of 1/32 inch oversize. An alternative fastener is permitted as given in 51-40-03, GENERAL.

(3) Install hex-drive bolts, in a transition fit hole, wet with BMS 5-95 sealant. Refer to 51-20-05, REPAIR 1 and 51-40-05, GENERAL.

(4) Overdrive all rivets to a driven head diameter as given in 51-40-02, GENERAL.

D. Apply a surface finish to the repair area as necessary. Refer to SOPM 20-44-04 and AMM SECTION 51-21.

5. Category C Repair Instructions

A. If the damaged fastener meets the applicability and all other relevant conditions listed for a Category C repair in SRM 53-00-01, Repair 41, then do as follows:

(1) Install a blind fastener as a Category C repair as given in the instructions in SRM 53-00-01, Repair 41.

(2) Inspect the blind fastener as given in the inspection instructions in SRM 53-00-01, Repair 41.

(3) Replace the blind fastener with a solid fastener as given in the requirements in SRM 53-00-01, Repair 41.

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REPAIR 41 - REPAIR OF LIGHTNING STRIKE DAMAGE TO THE FUSELAGE SKIN AT A PRODUCTION FASTENER LOCATION AT A STRINGER, FRAME, OR SPLICE

1. Applicability

A. This repair is applicable to lightning strike damage to the fuselage skin at a production fastener location at a stringer, frame, longitudinal splice, or circumferential splice as shown in Figure 201/REPAIR 41.

B. This repair is only applicable if you meet the conditions that follow:

NOTE: The repair fasteners specified below must not be installed through repair parts.

(1) The damage at a stringer is:

(a) Not in a location that currently has a repair.

(b) In an area where the skin thickness is constant.

(c) A minimum of 10 inches from a cutout.

(d) A maximum diameter of 0.3125 inch after an insurance cut.

(e) Not at a location modified as given in SB 737-53-1232.

(f) For airplanes that have not completed SB 737-21-1149, there no more than 5 repair fasteners on adjacent stringers between adjacent frames.

(g) For airplanes that have completed SB 737-21-1149, there are no more than 1 repair fastener on adjacent stringers between adjacent frames.

(h) Not at a frame or circumferential splice. For damage at a frame or circumferential splice, refer to Paragraph 1.B.(3)/REPAIR 41.

(2) The damage at a longitudinal splice is:

(a) Not in a location that currently has a repair.

(b) In an area where the skin thickness is constant.

(c) A minimum of 10 inches from a cutout.

(d) A maximum diameter of 0.3125 inch after an insurance cut.

(e) Not at a location modified as given in SB 737-53-1232 or SB 737-21-1149.

(f) No more than 1 repair fastener in 5 adjacent fasteners.

(3) The damage at a frame or circumferential splice is:

(a) At STA

1) 178 thru 520.

2) 540 thru 727 and below Stringers 10R thru 10L.

3) 727A thru 1156.

(b) Not in a location that currently has a repair.

(c) No more than 1 repair fastener in 5 adjacent fasteners.

(d) A minimum of 10 inches from a cutout.

(e) A maximum diameter of 0.3125 inch after an insurance cut.

(f) Not at a location modified as given in SB 737-53-1232 or SB 737-21-1149.

C. If you have lightning strike damage to the skin away from a production fastener location, refer to REPAIR 38.

D. If you have lightning strike damage to a repair fastener that is away from a production fastener location and installed in the initial skin only, not through repair parts, refer to REPAIR 39.

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E. If you have lightning strike damage to a production fastener location that does not damage the adjacent skin, refer to REPAIR 40.

Pressurized Fuselage Area
Figure 201

2. General

A. This repair is a Category A repair, if it meets the conditions that follow. See Paragraph 4./REPAIR 41 for repair instructions.

(1) A maximum of one repair fastener, that is not installed through repair parts, for each adjacent stringer section between adjacent frames.

B. If there is more than one repair fastener, that is not installed through repair parts, for each adjacent stringer section between adjacent frames, this repair is a Category B repair. See Paragraph 4./REPAIR 41 for repair instructions. See Paragraph 6./REPAIR 41 for inspection instructions.

C. If you use blind rivets in the repair and the conditions that follow are met, this repair is a Category C repair. See Paragraph 5./REPAIR 41 for repair instructions. See Paragraph 6./REPAIR 41 for inspection instructions.

(1) The damaged fastener is not within 10 inches of an initial repair on the skin.

(2) The damaged fastener is a BACR15CE( )D or a BACR15GF( )D rivet.

(3) You do not install a blind rivet adjacent to other blind rivets.

3. References

Reference	Title
51-10-01, GENERAL	Aerodynamic Smoothness Requirements
51-20-01, GENERAL	Protective Treatment of Metallic and Composite Materials
51-20-05, REPAIR 1	Wet Installation of Fasteners
51-40-02, GENERAL	Fastener Installation and Removal

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(Continued)

Reference	Title
51-40-03, GENERAL	Fastener Substitution
51-40-05, GENERAL	Fastener Hole Sizes
51-40-06, GENERAL	Fastener Edge Margins
51-40-08, GENERAL	Countersink Data and Procedures for Metal Structures
53-00-00, GENERAL	Fuselage Stations
AMM 51-21	INTERIOR AND EXTERIOR FINISHES
SOPM 20-44-04	Application of Urethane Compatible Primer
737 NDT Part 6, 51-00-00, Procedure 1	Fastener Holes in Aluminum Parts (Meter Display)
737 NDT Part 6, 51-00-00, Procedure 3	Investigation of Fire Damage on Aircraft Structure
737 NDT Part 6, 51-00-00, Procedure 4	Surface Inspection of Aluminum Parts (Meter Display)
737 NDT Part 6, 51-00-00, Procedure 8	Inspection of Subsurface Cracks in Aluminum Structure
737 NDT Part 6, 53-30-00, Procedure 3	Countersink Inspection of Aluminum Parts (Rotary Probe)

4. Category A or B Repair Instructions

A. Remove the fastener. Refer to 51-40-02, GENERAL.

B. Do a visual inspection of the fastener location. If the visible damage is more than 0.5 inch in diameter, do an inspection for heat damage. Refer to 737 NDT Part 6, 51-00-00, Procedure 3.

C. Do an High Frequency Eddy Current (HFEC) inspection procedure of the open fastener hole for the limits of the damage.

D. Remove the damage. A maximum hole size of 0.250 inch is permitted.

(1) If there is damage to the skin countersink, oversize the countersink in 1/64 inch increments until the damage is removed.

(a) Do not exceed a countersink depth of 70 percent of the skin thickness.

(b) If the damage is more than 70 percent of the skin thickness, oversize the hole in 1/64 inch increment until the damage is removed.

(2) Do an HFEC inspection procedure of the open fastener hole to make sure that there is no more damage. Refer to 737 NDT Part 6, 51-00-00, Procedure 1. For damage in the countersink only, refer to 737 NDT Part 6, 53-30-00, Procedure 3. If more damage is found, repeat the damage removal procedure as given in Paragraph 4.D./REPAIR 41.

E. Oversize the hole by an additional 1/16 inch to make an insurance cut. Make sure that the minimum edge margin is a minimum of 1.75D or as specified in 51-40-06, GENERAL, that which is larger.

F. Apply a chemical conversion coating to the bare surfaces of the repair. Refer to 51-20-01, GENERAL.

G. Install a repair fastener. Refer to Figure 202 (Sheet 1) for installation of rivets made out of 2117-T4.

(1) Do not use a protruding head fastener in the extra critical areas. These are areas near the static ports and angle attack sensors as given in 51-10-01, GENERAL.

(2) Install the same fastener type as the initial fastener. An alternative fastener is permitted as given in 51-40-03, GENERAL. It is permitted to replace a countersink fastener with a protruding fastener with the same type as the initial fastener.

(a) If you install a protruding head fastener in an initial countersink hole, use a countersink repair washer. Refer to 51-40-08, GENERAL.

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(b) If the repair rivet diameter is equal to or larger than 0.250 inch, then use a rivet made out of 2117-T4.

(c) Install hex-drive bolts, in a transition fit hole, wet with BMS 5-95 sealant. Refer to 51-20-05, REPAIR 1 and 51-40-05, GENERAL.

(d) Overdrive all rivets to a driven head diameter as given in 51-40-02, GENERAL.

H. Apply a surface finish to the repair area as necessary. Refer to SOPM 20-44-04 and AMM SECTION 51-21.

5. Category C Repair Instructions

A. Remove the damaged fastener. Refer to 51-40-02, GENERAL.

B. Do a Detailed Visual Inspection (DVI) to make sure that there is no hole damage.

C. If the countersink depth is less than 70 percent of the skin thickness, install a NAS1739E( ) or a BACR15FP( )F( )R flush head blind rivet. As an alternative flush head blind rivet, you are permitted to use a NAS1399D( )A rivet. As an alternative to the flush head blind rivet, install a NAS1738E( ) or a BACR15FR( )F( )R protruding head blind rivet with a countersink repair washer. As an alternative protruding head blind rivet, you are permitted to use a NAS1398D( )A rivet. As an option you are permitted to install a CR3213-( ) or CR3223-( ) protruding head blind rivet. As an option you are permitted to install a CR3214-( ) or CR3224-( ) flush head blind rivet. As an alternative to a blind rivet, install a BACB30VW( ) blind bolt with a countersink repair washer. As an alternative blind bolt, you are permitted to use a MS21141( ) or a MS90354( ) huck bolt. Install all fasteners wet with BMS 5-95 sealant. Refer to 51-40-08, GENERAL and Figure 202 (Sheet 2).

NOTE: Do not use a protruding head fastener in the extra critical areas. These are areas near the static ports and angle attack sensors as given in 51-10-01, GENERAL.

D. Do a DVI of the blind fastener.

E. The blind fastener must be replaced with an oversize solid rivet by the time-limit given in Paragraph 6./REPAIR 41.

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RECOMMENDED INSTALLATION

(DO NOT USE THE ALTERNATIVE INSTALLATION FOR AREAS NEAR STATIC PORTS AND ANGLE-OF-ATTACK SENSORS)

ALTERNATIVE INSTALLATION

SOLID 2117-T4 PROTRUDING HEAD RIVET

SOLID 2117-T4 FLUSH HEAD RIVET

SOLID RIVET INSTALLATION 1

A

NOTES

1 DO NOT COUNTERSINK A HOLE MORE THAN 70% OF THE SKIN THICKNESS

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Rivet Installation
Figure 202 (Sheet 1 of 2)

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NAS1398D()A
NAS1738E()
CR3213-() OR CR3223-()
BACR15FR()F()R
PROTRUDING HEAD BLIND RIVET

NAS1399D()A
NAS1739E()
CR3214-() OR CR3224-()
BACR15FP()F()R
FLUSH HEAD BLIND RIVET

BLIND RIVET INSTALLATION 1 2

B

1 IN AREAS NEAR STATIC PORTS AND ANGLE-OF-ATTACK SENSORS, RIVET HEADS MUST BE FLUSH WITH THE EXTERNAL SURFACE. BLIND RIVET HEADS CAN NOT BE MICROSHAVED. THUS, BLIND RIVETS CAN NOT BE USED IN AREAS NEAR STATIC PORTS AND ANGLE-OF-ATTACK SENSORS UNLESS THE HEAD CAN BE INSTALLED FLUSH WITH THE EXTERNAL SURFACE.

2 DO NOT COUNTERSINK A HOLE MORE THAN 70 PERCENT OF THE SKIN THICKNESS. FOR SKIN THICKNESSES WHICH REQUIRE A PROTRUDING HEAD FASTENER AND ARE LOCATED NEAR STATIC PORTS AND ANGLE-OF-ATTACK SENSORS, INSTALL A SOLID RIVET AS SHOWN IN DETAIL A.

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Rivet Installation
Figure 202 (Sheet 2 of 2)

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6. Inspection Instructions

A. For a Category B repair at:

(1) A stringer, do the inspection as given in Table 201/REPAIR 41

Table 201: Category B Repair Inspection Requirements for a Repair at a Stringer

INSPECTION THRESHOLD	REPEAT INSPECTIONS		
	METHOD	INTERVAL	REFERENCE
50,000 Flight Cycles after delivery	HFEC	2,000 Flight Cycles	737 NDT Part 6, 51-00-00, Procedure 4

(2) A longitudinal splice for aircraft with a dome pressure bulkhead installed, do the inspections as given in Table 202/REPAIR 41

Table 202: Category B Repair Inspection Requirements for a Repair at a Longitudinal Splice for Dome Pressure Bulkhead Aircraft

SPLICE LOCA-TIONS*[1]	INSPECTION THRESHOLD	REPEAT INSPECTIONS					
		UPPER FASTENER ROW			LOWER FASTENER ROW		
		METHOD	INTERVAL	REFERENCE	METHOD	INTERVAL	REFERENCE
S-4, all STA	50,000 Flight Cycles after delivery	External HFEC	16,000 Flight Cycles	737 NDT Part 6, 51-00-00, Procedure 4	External Low Frequency Eddy Current (LFEC)	10,000 Flight Cycles	737 NDT Part 6, 51-00-00, Procedure 8
S-10. all STA	50,000 Flight Cycles after delivery	External HFEC	10,000 Flight Cycles	737 NDT Part 6, 51-00-00, Procedure 4	External LFEC	13,000 Flight Cycles	737 NDT Part 6, 51-00-00, Procedure 8
S-14, all STA	50,000 Flight Cycles after delivery	External HFEC	11,000 Flight Cycles	737 NDT Part 6, 51-00-00, Procedure 4	External LFEC*[2]	14,000 Flight Cycles	737 NDT Part 6, 51-00-00, Procedure 8
					Internal General Visual Inspection (GVI)*[2]	4,000 Flight Cycles	
S-23, all STA	50,000 Flight Cycles after delivery	External LFEC*[2]	26,000 Flight Cycles	737 NDT Part 6, 51-00-00, Procedure 8	External HFEC	36,000 Flight Cycles	737 NDT Part 6, 51-00-00, Procedure 4
		Internal GVI*[2]	12,000 Flight Cycles				
S-24, all STA	50,000 Flight Cycles after delivery	External LFEC*[2]	26,000 Flight Cycles	737 NDT Part 6, 51-00-00, Procedure 8	External HFEC	36,000 Flight Cycles	737 NDT Part 6, 51-00-00, Procedure 4
		Internal GVI*[2]	12,000 Flight Cycles				

*[1] Refer to 53-00-00, GENERAL for stringer locations.

*[2] Both inspections must be performed

(3) A longitudinal splice for aircraft with a flat pressure bulkhead installed, do the inspections as given in Table 203/REPAIR 41

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Table 203: Category B Repair Inspection Requirements for a Repair at a Longitudinal Splice for Flat Pressure Bulkhead Aircraft

SPLICE LOCATIONS*[1]	INSPECTION THRESHOLD	REPEAT INSPECTIONS					
		UPPER FASTENER ROW			LOWER FASTENER ROW		
		METHOD	INTERVAL	REFERENCE	METHOD	INTERVAL	REFERENCE
S-4, all STA	50,000 Flight Cycles after delivery	External HFEC	16,000 Flight Cycles	737 NDT Part 6, 51-00-00, Procedure 4	External Low Frequency Eddy Current (LFEC)	10,000 Flight Cycles	737 NDT Part 6, 51-00-00, Procedure 8
S-9, all STA skins	50,000 Flight Cycles after delivery	External HFEC on the upper skin	36,000 Flight Cylces	737 NDT Part 6, 51-00-00, Procedure 4	External HFEC on the lower skin	36,000 Flight Cycles	737 NDT Part 6, 51-00-00, Procedure 4
S-9, all STA (splice strap)	50,000 Flight Cycles after delivery	External LFEC on the lower skin	36,000 Flight Cycles	737 NDT Part 6, 51-00-00, Procedure 8	External LFEC on the upper skin	36,000 Flight Cylces	737 NDT Part 6, 51-00-00, Procedure 8
S-10. all STA	50,000 Flight Cycles after delivery	External HFEC	10,000 Flight Cycles	737 NDT Part 6, 51-00-00, Procedure 4	External LFEC	13,000 Flight Cycles	737 NDT Part 6, 51-00-00, Procedure 8
S-14, all STA	50,000 Flight Cycles after delivery	External HFEC	11,000 Flight Cycles	737 NDT Part 6, 51-00-00, Procedure 4	External LFEC*[2]	14,000 Flight Cycles	737 NDT Part 6, 51-00-00, Procedure 8
					Internal General Visual Inspection (GVI)*[2]	4,000 Flight Cycles	
S-23, all STA	50,000 Flight Cycles after delivery	External LFEC*[2]	26,000 Flight Cycles	737 NDT Part 6, 51-00-00, Procedure 8	External HFEC	36,000 Flight Cycles	737 NDT Part 6, 51-00-00, Procedure 4
		Internal GVI*[2]	12,000 Flight Cycles				
S-24, all STA	50,000 Flight Cycles after delivery	External LFEC*[2]	26,000 Flight Cycles	737 NDT Part 6, 51-00-00, Procedure 8	External HFEC	36,000 Flight Cycles	737 NDT Part 6, 51-00-00, Procedure 4
		Internal GVI*[2]	12,000 Flight Cycles				

*[1] Refer to 53-00-00, GENERAL for stringer locations.

*[2] Both inspections must be performed.

(4) A frame or circumferential splice, do the inspections as given in Paragraph 6.A.(4)/REPAIR 41.

Table 204: Category B Repair Inspection Requirements for Frame and Circumferential Splice Locations

LOCATION	INSPECTION THRESHOLD	REPEAT INSPECTIONS		REFERENCE
STA		INSPECTION METHOD	REPEAT INSPECTION INTERVAL	
178 thru 360	50,000 Flight Cycles after delivery	External HFEC and External GVI on the fuselage skin	5,700 Flight Cycles	737 NDT Part 6, 51-00-00, Procedure 4
380 thru 520	50,000 Flight Cycles after delivery	External HFEC on the fuselage skin	2,800 Flight Cycles	737 NDT Part 6, 51-00-00, Procedure 4

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Table 204: Category B Repair Inspection Requirements for Frame and Circumferential Splice Locations (Continued)

LOCATION	INSPECTION THRESHOLD	REPEAT INSPECTIONS		REFERENCE
STA		INSPECTION METHOD	REPEAT INSPECTION INTERVAL	
540, Stringer 10L thru 10R	50,000 Flight Cycles after delivery	External HFEC on the fuselage skin and External LFEC on the splice strap	2,800 Flight Cycles	737 NDT Part 6, 51-00-00, Procedure 4 and 737 NDT Part 6, 51-00-00, Procedure 8
559 thru 706, Stringer 10L thru 10R	50,000 Flight Cycles after delivery	External HFEC on the fuselage skin	2,800 Flight Cycles	737 NDT Part 6, 51-00-00, Procedure 4
727, Stringer 10L thru 10R	50,000 Flight Cycles after delivery	External HFEC on the fuselage skin and External LFEC on the splice strap	2,800 Flight Cycles	737 NDT Part 6, 51-00-00, Procedure 4 and 737 NDT Part 6, 51-00-00, Procedure 8
727A thru 867	50,000 Flight Cycles after delivery	External HFEC on the fuselage skin	2,800 Flight Cycles	737 NDT Part 6, 51-00-00, Procedure 4
887	50,000 Flight Cycles after delivery	External HFEC on the fuselage skin and External LFEC on the splice strap	2,800 Flight Cycles	737 NDT Part 6, 51-00-00, Procedure 4 and 737 NDT Part 6, 51-00-00, Procedure 8
907 thru 1006*[1]	50,000 Flight Cycles after delivery	External HFEC on the fuselage skin	2,800 Flight Cycles	737 NDT Part 6, 51-00-00, Procedure 4
907 thru 1030*[2]		External HFEC on the fuselage skin		

*[1] For aircraft with a dome pressure bulkhead.

*[2] For aircraft with a flat pressure bulkhead.

B. For a Category C repair:

(1) Do a DVI of the blind fasteners every 500 flight cycles.

(2) Replace blind fasteners that are loose or missing with solid rivets as given in Paragraph 4./REPAIR 41.

(3) Before 6,000 flight cycles after the repair installation, replace the blind fasteners with solid rivets as follows:

(a) Remove the blind fastener.

(b) Do an HFEC inspection of the open fastener hole for cracks as given in 737 NDT Part 6, 51-00-00, Procedure 1. If no cracks are found, drill the hole 1/16 inch oversize to the next larger size fastener diameter. The maximum permitted hole diameter is 0.3125 inch after you oversize. Replace the blind fastener with a doubler repair, if the hole diameter exceeds the maximum permitted hole diameter.

(c) Do a Category A or B repair as given in Paragraph 4./REPAIR 41.

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ALLOWABLE DAMAGE 1 - FUSELAGE STRINGERS

1. Applicability

A. Allowable Damage 1 is applicable to damage to formed or extruded fuselage stringers.

2. General

A. Refer to Fuselage Stringer Locations, Figure 101/ALLOWABLE DAMAGE 1 for the damage of crown stringers and other stringers along the fuselage.

B. Refer to Stringer Types and Allowable Damage Zones, Figure 102/ALLOWABLE DAMAGE 1 for the definition of the different stringer types allowable damage zones.

C. Refer to Paragraph 4./ALLOWABLE DAMAGE 1 for the allowable damage limits.

D. Remove the damage as necessary.

(1) Refer to 51-10-02 for the inspection and the removal of the damage.

(2) Refer to 51-30-03 for possible sources of the abrasive and other materials you can use to remove the damage.

(3) Refer to 51-30-05 for possible sources of the equipment and tools you can use to remove the damage.

E. After you remove the damage, do as follows:

(1) Refer to 51-20-01. Apply a chemical conversion layer to the reworked area.

(2) Refer to SOPM 20-41-02. Apply one layer of BMS 10-11, Type I primer to the reworked area.

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SECTION THROUGH THE
CENTER OF THE FUSELAGE

F88212 S0006587528_V1

Fuselage Stringer Locations
Figure 101

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TYPICAL STRINGER
SECTION (FORMED)

TYPICAL CROWN
STRINGER SECTION (FORMED)

TYPICAL EXTRUDED
STRINGER SECTION

G82319 S0006587529_V1

Stringer Types and Allowable Damage Zones
Figure 102

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3. References

Reference	Title
51-10-02	INSPECTION AND REMOVAL OF DAMAGE
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-30-03	NON-METALLIC MATERIALS
51-30-05	EQUIPMENT AND TOOLS FOR REPAIRS
51-40-06, GENERAL	Fastener Edge Margins
AMM 51-21-00 P/B 701	INTERIOR AND EXTERIOR FINISHES - CLEANING/PAINTING
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes

4. Allowable Damage Limits

A. Formed Stringers

(1) Webs

(a) Cracks:

1) Remove the damage as shown in Allowable Damage Limits - Formed Stringer Section, Figure 103/ALLOWABLE DAMAGE 1, Detail A .

(b) Nicks, Scratches, Gouges, and Corrosion:

1) Remove the damage as shown in Allowable Damage Limits - Formed Stringer Section, Figure 103/ALLOWABLE DAMAGE 1, Detail A , B , and C .

(c) Dents are permitted as shown in Allowable Damage Limits - Formed Stringer Section, Figure 103/ALLOWABLE DAMAGE 1, Detail D .

(d) Holes and Punctures:

1) Damage is not permitted in the Crown Stringers.

2) Damage in other stringers is permitted if:

a) It is a maximum of 0.25 inch diameter

b) It is a minimum of 1.0 inch from other damage

c) It is a minimum of 0.50 inch from a hole, flange edge, or a radius

d) You install a 2117-T3 or 2117-T4 aluminum rivet without sealant.

- Install a protruding head rivet if there are no mating surfaces.
- Install a countersunk head rivet if there are mating surfaces. Make sure the depth of the countersink is not more than 67% of the material thickness.

NOTE: Do not join two parts when you install the rivet.

(2) Skin Attachment Flange

(a) Cracks:

1) Remove the damage as shown in Allowable Damage Limits - Formed Stringer Section, Figure 103/ALLOWABLE DAMAGE 1, Detail A .

(b) Nicks, Scratches, Gouges, and Corrosion:

1) Remove the damage as shown in Allowable Damage Limits - Formed Stringer Section, Figure 103/ALLOWABLE DAMAGE 1, Details A , B , and C .

(c) Dents are not permitted.

(d) Holes and Punctures are not permitted.

(3) Free Flange

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(a) Cracks:

1) Remove the damage as shown in Allowable Damage Limits - Formed Stringer Section, Figure 103/ALLOWABLE DAMAGE 1, Detail A .

(b) Nicks, Scratches, Gouges, and Corrosion:

1) Remove the damage as shown in Allowable Damage Limits - Formed Stringer Section, Figure 103/ALLOWABLE DAMAGE 1, Details A , B , and C .

(c) Dents are not permitted.

(d) Holes and Punctures:

1) Damage is not permitted in the Crown Stringers.

2) Damage in other stringers is permitted if:

a) It is a maximum of 0.25 inch diameter

b) It is a minimum of 1.0 inch from other damage

c) It is a minimum of 0.50 inch from a hole, flange edge, or a radius.

d) You install a 2117-T3 or 2117-T4 aluminum rivet without sealant.

- Install a protruding head rivet if there are no mating surfaces.
- Install a countersunk head rivet when there are mating surfaces. Make sure the depth of the countersink is not more than 67% of the material thickness.

NOTE: Do not join two parts when you install the rivet.

Table 101:

MAXIMUM DAMAGE DIMENSION AND MAXIMUM REMOVAL DEPTH				
BODY SECTION	**STRINGERS (LEFT AND RIGHT SIDES OF THE FUSELAGE)**	**BODY STATION**	**MAXIMUM TOTAL DAMAGE DIMENSION PERMITTED (D)**	**MAXIMUM DAMAGE DEPTH PERMITTED (X)**
41	S-1 to S-28	Sta 178 to Sta 360	No Limit	0.10T

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Table 101: (Continued)

MAXIMUM DAMAGE DIMENSION AND MAXIMUM REMOVAL DEPTH				
BODY SECTION	**STRINGERS (LEFT AND RIGHT SIDES OF THE FUSELAGE)**	**BODY STATION**	**MAXIMUM TOTAL DAMAGE DIMENSION PERMITTED (D)**	**MAXIMUM DAMAGE DEPTH PERMITTED (X)**
43	S-1 to S-7	Sta 360 to Sta 540	No Limit	0.10T
	S-8	Sta 360 to Sta 500	No Limit	0.10T
		Sta 500 to Sta 500B	10 inches	0.10T
		Sta 500B to Sta 540	No Limit	0.10T
	S-9	Sta 360 to Sta 500C	No Limit	0.10T
		Sta 500C to Sta 500G	10 inches	0.10T
		Sta 500G to Sta 540	No Limit	0.10T
	S-10	Sta 360 to Sta 500E	No Limit	0.10T
43		Sta 500E to Sta 500H	10 inches	0.10T
		Sta 500H to Sta 540	No Limit	0.10T
	S-11 to S-13	Sta 360 to Sta 540	No Limit	0.15T
	S-14 to S-15 (For Airplanes That Have Not Completed Service Bulletin 737-21-1149)	Sta 360 to Sta 500G	No Limit	0.15T
		Sta 500G to Sta 540	10 inches	0.10T
	S-14 (For Airplanes That Have Completed Service Bulletin 737-21-1149)	Sta 360 to Sta 500G	No Limit	0.15T
		Sta 500G to Sta 540	10 inches	0.10T
	S-15 (For Airplanes That Have Completed Service Bulletin 737-21-1149)	Sta 360 to Sta 500E	No Limit	0.15T
		Sta 500E to Sta 540	10 inches	0.10T
	S-16	Sta 360 to Sta 500D	No Limit	0.15T
		Sta 500D to Sta 540	10 inches	0.10T
	S-17 (Crease Beam)	Sta 360 to Sta 540	Refer to 53-30-13 for the allowable damage limits	

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Table 101: (Continued)

MAXIMUM DAMAGE DIMENSION AND MAXIMUM REMOVAL DEPTH				
BODY SECTION	STRINGERS (LEFT AND RIGHT SIDES OF THE FUSELAGE)	BODY STATION	MAXIMUM TOTAL DAMAGE DIMENSION PERMITTED (D)	MAXIMUM DAMAGE DEPTH PERMITTED (X)
43	S-18 (For Airplanes That Have Not Completed Service Bulletin 737-21-1149)	Sta 360 to Sta 500D	No Limit	0.15T
		Sta 500D to Sta 500G	10 inches	0.10T
		Sta 500G to Sta 540	No Limit	0.15T
	S-18 (For Airplanes That Have Completed Service Bulletin 737-21-1149)	Sta 360 to Sta 500D	No Limit	0.15T
		Sta 500D to Sta 500I	10 inches	0.10T
		Sta 500I to Sta 540	No Limit	0.15T
	S-19	Sta 360 to Sta 480	No Limit	0.15T
		Sta 480 to Sta 500B	10 inches	0.10T
		Sta 500B to Sta 500D	No Limit	0.15T
		Sta 500D to Sta 500I	10 inches	0.10T
		Sta 500I to Sta 540	No Limit	0.15T
	S-20 (For Airplanes That Have Not Completed Service Bulletin 737-21-1149)	Sta 360 to Sta 480	No Limit	0.15T
		Sta 480 to Sta 500B	10 inches	0.10T
		Sta 500B to Sta 500E	No Limit	0.15T
		Sta 500E to Sta 520	10 inches	0.10T
		Sta 520 to Sta 540	No Limit	0.15T
	S-20 (For Airplanes That Have Completed Service Bulletin 737-21-1149)	Sta 360 to Sta 480	No Limit	0.15T
		Sta 480 to Sta 520	10 inches	0.10T
		Sta 520 to Sta 540	No Limit	0.15T
	S-21 (For Airplanes That Have Not Completed Service Bulletin 737-21-1149)	Sta 360 to Sta 480	No Limit	0.15T
		Sta 480 to Sta 500B	10 inches	0.10T
		Sta 500B to Sta 500E	No Limit	0.15T
		Sta 500E to Sta 500H	10 inches	0.10T
		Sta 500H to Sta 540	No Limit	0.15T
	S-21 (For Airplanes That Have Completed Service Bulletin 737-21-1149)	Sta 360 to Sta 480	No Limit	0.15T
		Sta 480 to Sta 500B	10 inches	0.10T
		Sta 500B to Sta 500D	No Limit	0.15T
		Sta 500D to Sta 500H	10 inches	0.10T
		Sta 500H to Sta 540	No Limit	0.15T

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Table 101: (Continued)

MAXIMUM DAMAGE DIMENSION AND MAXIMUM REMOVAL DEPTH				
BODY SECTION	STRINGERS (LEFT AND RIGHT SIDES OF THE FUSELAGE)	BODY STATION	MAXIMUM TOTAL DAMAGE DIMENSION PERMITTED (D)	MAXIMUM DAMAGE DEPTH PERMITTED (X)
43	S-22	Sta 360 to Sta 500E	No Limit	0.15T
		Sta 500E to Sta 500H	10 inches	0.10T
		Sta 500H to Sta 540	No Limit	0.15T
	S-23 to S-24 (For Airplanes That Have Not Completed Service Bulletin 737-21-1149)	Sta 360 to Sta 540	No Limit	0.15T
	S-23 to S-24 (For Airplanes That Have Completed Service Bulletin 737-21-1149)	Sta 360 to Sta 500E	No Limit	0.15T
		Sta 500E to Sta 500G	10 inches	0.10T
		Sta 500G to Sta 540	No Limit	0.15T
	S-25 (For Airplanes That Have Not Completed Service Bulletin 737-21-1149)	Sta 360 to Sta 500	No Limit	0.15T
		Sta 500 to Sta 500B	10 inches	0.10T
		Sta 500B to Sta 540	No Limit	0.15T
	S-25 (For Airplanes That Have Completed Service Bulletin 737-21-1149)	Sta 360 to Sta 500	No Limit	0.15T
		Sta 500 to Sta 500F	10 inches	0.10T
		Sta 500F to Sta 540	No Limit	0.15T
	S-26 to S-27	Sta 360 to Sta 540	No Limit	0.15T
	S-28	Sta 360 to Sta 500H	No Limit	0.15T
	Keel Beam	Sta 500H to Sta 540	Refer to 53-30-12 for the allowable damage limits	
44	S-1 to S-10	Sta 540 to Sta 727	No Limit	0.10T
46	S-1 to S-2	Sta 727 to Sta 727J	No Limit	0.10T
		Sta 727J to Sta 887	10 inches	0.10T
	S-3	Sta 727 to Sta 787	No Limit	0.10T
		Sta 787 to Sta 887	10 inches	0.10T
	S-4	Sta 727 to Sta 767	No Limit	0.10T
		Sta 767 to Sta 827	10 inches	0.10T
		Sta 827 to Sta 887	No Limit	0.10T

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Table 101: (Continued)

MAXIMUM DAMAGE DIMENSION AND MAXIMUM REMOVAL DEPTH				
BODY SECTION	STRINGERS (LEFT AND RIGHT SIDES OF THE FUSELAGE)	BODY STATION	MAXIMUM TOTAL DAMAGE DIMENSION PERMITTED (D)	MAXIMUM DAMAGE DEPTH PERMITTED (X)
46	S-5 to S-8	Sta 727 to Sta 727G	No Limit	0.10T
		Sta 727G to Sta 887	10 inches	0.10T
	S-9 (For Airplanes That Have Not Completed Service Bulletin 737-21-1149)	Sta 727 to Sta 727G	No Limit	0.10T
		Sta 727G to Sta 747	10 inches	0.10T
		Sta 747 to Sta 867	No Limit	0.10T
		Sta 867 to Sta 887	10 inches	0.10T
	S-9 (For Airplanes That Have Completed Service Bulletin 737-21-1149)	Sta 727 to Sta 727G	No Limit	0.10T
		Sta 727G to Sta 767	10 inches	0.10T
		Sta 767 to Sta 867	No Limit	0.10T
		Sta 867 to Sta 887	10 inches	0.10T
	S-10	Sta 727 to Sta 887	No Limit	0.10T
	S-11 to S-13	Sta 727 to Sta 887	No limit	0.15T
	S-14 to S-15	Sta 727 to Sta 807	No Limit	0.15T
		Sta 807 to Sta 887	10 inches	0.10T
	S-16	Sta 727 to Sta 887	No Limit	0.15T
	S-17 (Crease Beam)	Sta 727 to Sta 887	Damage is not permitted	
	S-18	Sta 727 to Sta 727C	10 inches	0.10T
		Sta 727C to Sta 887	No Limit	0.15T
	S-19	Sta 727 to Sta 727B	Damage is not permitted	
		Sta 727B to Sta 887	No Limit	0.15T
	S-20 to S-21	Sta 727 to Sta 747	No Limit	0.15T
		Sta 747 to Sta 807	10 inches	0.10T
		Sta 807 to Sta 887	No Limit	0.15T

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Table 101: (Continued)

MAXIMUM DAMAGE DIMENSION AND MAXIMUM REMOVAL DEPTH				
BODY SECTION	STRINGERS (LEFT AND RIGHT SIDES OF THE FUSELAGE)	BODY STATION	MAXIMUM TOTAL DAMAGE DIMENSION PERMITTED (D)	MAXIMUM DAMAGE DEPTH PERMITTED (X)
46	S-22 to S-24	Sta 727 to Sta 887	No Limit	0.15T
	S-25	Sta 727 to Sta 727D	No Limit	0.15T
		Sta 727D to Sta 727G	10 inches	0.10T
		Sta 727G to Sta 887	No Limit	0.15T
	S-26 (For Airplanes That Have Not Completed Service Bulletin 737-21-1149)	Sta 727 to Sta 727F	No Limit	0.15T
		Sta 727F to Sta 727H	10 inches	0.10T
		Sta 727H to Sta 887	No Limit	0.15T
	S-26 (For Airplanes That Have Completed Service Bulletin 737-21-1149)	Sta 727 to Sta 727B	No Limit	0.15T
		Sta 727B to Sta 727H	10 inches	0.10T
		Sta 727H to Sta 887	No Limit	0.15T
	Keel Beam	Sta 727 to Sta 827	Refer to 53-60-12 for the allowable damage limits	
	S-27	Sta 827 to Sta 887	No Limit	0.15T
47	S-1 TO S-28	Sta 887 to 1016	No Limit	0.10T
48	S-1 to S2	Sta 1016 to Sta 1156	No limit	0.10T
	S-3	Sta 1016 to Sta 1040	10 inches	0.10T
		Sta 1040 to Sta 1156	No Limit	0.10T
	S-4 TO S-10	Sta 1016 to Sta 1156	No Limit	0.10T
	S-11 to S-14	Sta 1016 to Sta 1156	No Limit	0.15T
	S-15	Sta 1016 to Sta 1138	No Limit	0.10T
		Sta 1138 to Sta 1156	10 inches	0.10T
	S-16 TO S-27	Sta 1016 to Sta 1156	No Limit	0.15T

B. Extruded Stringers

(1) Skin Attachment Flange

(a) Cracks

1) Remove the damage as shown in Allowable Damage Limits - Extruded Stringer Section, Figure 104/ALLOWABLE DAMAGE 1, Detail A .

(b) Nicks, Scratches, Gouges, and Corrosion:

1) Remove the damage as shown in Allowable Damage Limits - Extruded Stringer Section, Figure 104/ALLOWABLE DAMAGE 1, Details A , D , and E .

(c) Dents are not permitted.

(d) Holes and Punctures are not permitted.

(2) Free Flange

(a) Cracks:

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1) Remove the damage as shown in Allowable Damage Limits - Extruded Stringer Section, Figure 104/ALLOWABLE DAMAGE 1, Details A , B , and C .

(b) Nicks, Scratches, Gouges, and Corrosion:

1) Remove the damage as shown in Allowable Damage Limits - Extruded Stringer Section, Figure 104/ALLOWABLE DAMAGE 1, Details A , B , C , D , and E .

(c) Dents are not permitted.

(d) Holes and Punctures are not permitted.

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REMOVAL OF DAMAGE ON AN EDGE

A

REMOVAL OF DAMAGED MATERIAL
ON A SURFACE

B

A–A

F88153 S0006587534_V1

Allowable Damage Limits - Formed Stringer Section
Figure 103 (Sheet 1 of 3)

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DAMAGE REMOVAL IN MORE THAN ONE AREA

D_1 = DIMENSION OF THE DAMAGE THAT IS REMOVED AT LOCATION 1

D_2 = DIMENSION OF THE DAMAGE THAT IS REMOVED AT LOCATION 2

D_3 = DIMENSION OF THE DAMAGE THAT IS REMOVED AT LOCATION 3

D_4 = DIMENSION OF THE DAMAGE THAT IS REMOVED AT LOCATION 4

D_T = TOTAL DIMENSION OF DAMAGE THAT IS REMOVED IN ONE FRAME BAY

$= D_1 + D_2 + D_3 + D_4$

DAMAGE REMOVAL IN ONE CONTINUOUS AREA FOR MORE THAN ONE FLANGE

D_1 = DIMENSION OF THE DAMAGE THAT IS REMOVED AT LOCATION 1 ON ONE STRINGER SURFACE

D_2 = DIMENSION OF THE DAMAGE THAT IS REMOVED AT LOCATION 2 ON A DIFFERENT STRINGER SURFACE

D_T = TOTAL DIMENSION OF DAMAGE THAT IS REMOVED IN ONE FRAME BAY

$= D_1 + D_2$

(REFER TO THE TABLE 101 FOR THE MAXIMUM TOTAL DAMAGE DIMENSION PERMITTED)

NOTE: YOU CAN HAVE MORE DAMAGE LOCATIONS THAN IS SHOWN IF YOU KEEP THE ALLOWABLE DAMAGE LIMITS.

REMOVAL OF DAMAGED MATERIAL ON A SURFACE

C

F88155 S0006587535_V1

Allowable Damage Limits - Formed Stringer Section
Figure 103 (Sheet 2 of 3)

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DENT THAT IS PERMITTED

D

G35093 S0006587536_V2

Allowable Damage Limits - Formed Stringer Section
Figure 103 (Sheet 3 of 3)

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REMOVAL OF DAMAGE ON AN EDGE

A

REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER EDGE MARGINS DO NOT HAVE AN OVERLAP

B

REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER EDGE MARGINS HAVE AN OVERLAP

C

2462560 S0000574319_V1

Allowable Damage Limits - Extruded Stringer Section
Figure 104 (Sheet 1 of 3)

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Y = WIDTH OF THE MATERIAL THAT IS REMOVED
= A MAXIMUM OF 10 PERCENT OF THE WIDTH OF THE FLANGE

REMOVAL OF DAMAGED MATERIAL ON A SURFACE
AT AN EDGE OF A MACHINED OR EXTRUDED PART

D

A–A

G61259 S0006587538_V1

Allowable Damage Limits - Extruded Stringer Section
Figure 104 (Sheet 2 of 3)

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G61264 S0006587539_V1

Allowable Damage Limits - Extruded Stringer Section
Figure 104 (Sheet 3 of 3)

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REPAIR GENERAL - FORMED FUSELAGE STRINGERS

1. Applicability

A. Repair General gives repair data for fuselage stringers made from formed hat sections, only if it is specified in the applicable SRM section.

2. General

A. Refer to Table 201/REPAIR GENERAL for an index of the different numbered repairs found in this subject.

Table 201:

REPAIR INDEX	
REPAIR NUMBER	**TITLE**
1	Repair for a Type I, Type II, or Type IV Fuselage Stringer with General Damage
2	Repair for a Type I, Type II, or Type IV Fuselage Stringer with Longitudinal Crack Damage in a Formed Corner of a Skin Attachment Flange
3	Repair for a Type III Fuselage Stringer with General Damage
4	Repair for a Type III Fuselage Stringer with Longitudinal Crack Damage in a Formed Corner of a Skin Attachment Flange

B. Refer to Stringer Type Identification, Figure 201/REPAIR GENERAL for the definition of the initial stringer types.

C. Refer to Stringer Repair Zones, Figure 202/REPAIR GENERAL for the definition of stringer repair zones.

D. On some stringers, channels are installed across the flanges of the stringer at locations between the frames. Keep the channels and install them again when a repair is made. Install the repair fasteners in the initial fastener locations of the channels.

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G21602 S0006587543_V1

Stringer Type Identification
Figure 201

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TYPE I, II, OR IV STRINGER

TYPE III STRINGER

G44331 S0006587544_V1

Stringer Repair Zones
Figure 202

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REPAIR 1 - REPAIR FOR A TYPE I, TYPE II, OR TYPE IV FUSELAGE STRINGER WITH GENERAL DAMAGE

1. Applicability

A. Refer to Repair General for the definition of the different types of stringers.

B. Repair 1 is applicable to Type I, Type II, or Type IV fuselage stringers with:

(1) Nicks, scratches, gouges, corrosions, dents, holes, punctures and edge damage.

C. Repair 1 is not applicable to:

(1) Damage that is less than 20 inches from an initial or repair stringer splice

(2) Longitudinal cracks in the formed corners

(a) Refer to Repair 2 for the repair of longitudinal crack damage.

(3) Type III fuselage stringers.

(a) Refer to Repair 3 for the repair of general damage.

(b) Refer to Repair 4 for the repair of longitudinal cracks.

(4) Areas of skin repairs containing a doubler.

2. General

A. This repair is a Category B repair for airplanes that have completed Service Bulletin 737-21-1149, and the repair is installed on the upper lobe stringers (S-13L to S-13R) from BS178 to BS1016 or on S-22L between BS520 and BS540. Refer to 51-00-06 for the repair categories and definitions. Refer to Paragraph 5./REPAIR 1 for the Inspection Requirements.

B. This repair is a Category B repair for airplanes that have not completed Service Bulletin 737-21-1149, and the repair is installed on the upper lobe stringers (S-13L to S-13R) from BS178 to BS1016. Refer to 51-00-06 for the repair categories and definitions. Refer to Paragraph 5./REPAIR 1 for the Inspection Requirements.

C. This repair is a Category A repair for all other stringer locations. The inspections given in the maintenance planning data (MPD) are sufficient to maintain the damage tolerance of the initial structure with this repair installed

D. The repair of a 0.040 inch, thick stringer is shown in Repair for Damage to a Free Flange, Figure 201/REPAIR 1, Repair for Damage to the Full Stringer Section, Figure 202/REPAIR 1, Repair for Damage to the Full Stringer Section (Alternative Method) , Figure 203/REPAIR 1, and Stringer Repair Locations for Damage Across Frame Stations, Figure 204/REPAIR 1.

E. Refer to Repair for Damage to a Free Flange, Figure 201/REPAIR 1 for the repair of damage to one free flange.

F. Refer to Repair for Damage to the Full Stringer Section, Figure 202/REPAIR 1 for the repair of damage:

(1) To both free flanges

(2) To vertical webs

(3) To the attachment flange

(4) In locations where full section repair or replacement is necessary.

G. Refer to Repair for Damage to the Full Stringer Section (Alternative Method) , Figure 203/REPAIR 1 for an alternative repair to Repair for Damage to the Full Stringer Section, Figure 202/REPAIR 1.

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H. Refer to Stringer Repair Locations for Damage Across Frame Stations, Figure 204/REPAIR 1, Splice Repair for Damage to the Full Stringer Section, Figure 205/REPAIR 1, and Splice Repair for Damage to the Full Stringer Section (Alternative Method), Figure 206/REPAIR 1 for the repair of damage that is across one or more frame stations.

(1) Do not put the repair parts in the area of an initial stringer clip.

3. References

Reference	Title
51-00-06	STRUCTURAL REPAIR DEFINITIONS
51-10-02, GENERAL	Inspection and Removal of Damage
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-20-05	REPAIR SEALING
51-30-01, GENERAL	Sheet Metal Materials
51-40-02	FASTENER INSTALLATION AND REMOVAL
51-40-03, GENERAL	Fastener Substitution
51-40-05, GENERAL	Fastener Hole Sizes
51-40-06, GENERAL	Fastener Edge Margins
AMM 51-21-00 P/B 701	INTERIOR AND EXTERIOR FINISHES - CLEANING/PAINTING
AMM 51-31-00 P/B 201	SEALS AND SEALING - MAINTENANCE PRACTICES
AMM 51-41-00	Airframe Drainage
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes
SOPM 20-44-04	Application of Urethane Compatible Primer
737 NDT Part 6, 51-00-00	Structures - General
737 NDT Part 6, 51-00-00, Procedure 4	Surface Inspection of Aluminum Parts (Meter Display)

4. Repair Instructions

A. Find the limits of the damage and remove the necessary fasteners in the area of the damaged stringer.

B. Cut and remove the damaged part of the stringer as shown in the applicable figure (Repair for Damage to a Free Flange, Figure 201/REPAIR 1, Repair for Damage to the Full Stringer Section, Figure 202/REPAIR 1, Repair for Damage to the Full Stringer Section (Alternative Method) , Figure 203/REPAIR 1, Splice Repair for Damage to the Full Stringer Section, Figure 205/REPAIR 1, or Splice Repair for Damage to the Full Stringer Section (Alternative Method), Figure 206/REPAIR 1).

(1) Make sure you do not damage the skin adjacent to the stringer or other adjacent parts.

C. Do a High Frequency Eddy Current (HFEC) inspection of the repair area to make sure that all of the damage is removed. Refer to 737 NDT Part 6, 51-00-00, Figure 4.

D. Make the repair parts.

(1) Calculate the lengths that are needed for the repair parts.

(a) Find the minimum number of fasteners that are needed as given in Table 201/REPAIR 1.

1) A BACR15GF()D fastener can be used as an alternative to a BACR15CE()D fastener.

2) An MS20470D() fastener can be used as an alternative to a BACR15FT()D fastener

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(b) Refer to the applicable figure (Repair for Damage to a Free Flange, Figure 201/REPAIR 1, Repair for Damage to the Full Stringer Section, Figure 202/REPAIR 1, Repair for Damage to the Full Stringer Section (Alternative Method) , Figure 203/REPAIR 1, Splice Repair for Damage to the Full Stringer Section, Figure 205/REPAIR 1, or Splice Repair for Damage to the Full Stringer Section (Alternative Method), Figure 206/REPAIR 1) for the fastener locations and edge margins.

(2) Refer to Table 202/REPAIR 1 for the repair part materials.

E. Assemble the repair parts as shown in the applicable figure (Repair for Damage to a Free Flange, Figure 201/REPAIR 1, Repair for Damage to the Full Stringer Section, Figure 202/REPAIR 1, Repair for Damage to the Full Stringer Section (Alternative Method) , Figure 203/REPAIR 1, Splice Repair for Damage to the Full Stringer Section, Figure 205/REPAIR 1, or Splice Repair for Damage to the Full Stringer Section (Alternative Method), Figure 206/REPAIR 1).

(1) Make sure that the space between the mating surfaces is less than 0.010 inch.

(2) If the space is more than 0.010 inch, install shims that have thickness less than 15 percent of the fastener diameter.

F. Drill the fastener holes.

(1) Refer to the applicable figure (Repair for Damage to a Free Flange, Figure 201/REPAIR 1, Repair for Damage to the Full Stringer Section, Figure 202/REPAIR 1, Repair for Damage to the Full Stringer Section (Alternative Method) , Figure 203/REPAIR 1, Splice Repair for Damage to the Full Stringer Section, Figure 205/REPAIR 1, or Splice Repair for Damage to the Full Stringer Section (Alternative Method), Figure 206/REPAIR 1) for the fastener locations.

(2) Refer to Table 201/REPAIR 1 for the minimum diameter and the number of fasteners you need.

G. Disassemble the repair parts.

H. Remove the nicks, scratches, gouges, burrs, and sharp edges from the initial and the repair parts.

I. Apply a chemical conversion layer to the repair parts and the bare surfaces of the initial parts. Refer to 51-20-01.

J. Apply one layer of BMS 10-11, Type I primer to the repair parts and the bare surfaces of the initial parts. Refer to SOPM 20-41-02.

Table 201:

MINIMUM DIAMETER AND NUMBER OF FASTENERS THAT ARE NEEDED ON EACH SIDE OF THE DAMAGE CUTOUT				
INITIAL STRINGER THICKNESS INCHES	FASTENERS			
	INITIAL BACR15CE()D or BACR15GF()D		REPAIR BACR15FT()D or MS20470D()	
	MINIMUM DIAMETER INCHES	MINIMUM NUMBER	MINIMUM DIAMETER INCHES	MINIMUM NUMBER IN EACH LONGITUDINAL
0.028	5/32	5	5/32	4
0.032	5/32	5	5/32	4
0.036	5/32	5	5/32	4
0.040	5/32	5	5/32	4
0.045	5/32	5	3/16	4
0.050	5/32	6	3/16	5
0.056	5/32	6	3/16	5

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Table 201: (Continued)

MINIMUM DIAMETER AND NUMBER OF FASTENERS THAT ARE NEEDED ON EACH SIDE OF THE DAMAGE CUTOUT				
INITIAL STRINGER THICKNESS INCHES	FASTENERS			
	INITIAL BACR15CE()D or BACR15GF()D		REPAIR BACR15FT()D or MS20470D()	
	MINIMUM DIAMETER INCHES	MINIMUM NUMBER	MINIMUM DIAMETER INCHES	MINIMUM NUMBER IN EACH LONGITUDINAL
0.063	5/32	7	3/16	6
0.071	5/32	7	3/16	6
0.080	5/32	8	3/16	7
0.090	5/32	8	3/16	7

Table 202:

REPAIR MATERIAL			
ITEM	PART NAME	QTY	MATERIAL
1	Hat section splice	1	7075-T6 bare or clad sheet and one of the options that follows: - Use the applicable repair section given in Table 203 (Type I) or Table 204 (Type II), or - Make the repair part as shown in Figure 207 and one gage thicker than the damaged section of the initial stringer section that was removed (This option is necessary for Type IV stringers or if no section is given in Table 203 or 204)
2	Channel	1	
3	Angle	1	
4	Shim (Tapered or not tapered)	As necessary	7075-T6 or 2024-T4 bare or clad sheet. Use a maximum shim thickness of 15 percent of the fastener diameter
5	Hat section filler	1	7075-T6 clad sheet that is the same gage as the damaged section of the initial stringer section that was removed
6	Filler	1	
7	Replacement Stringer Section	1	7075-T6 bare or clad sheet. Use the same gage as the damaged section that was remove (including tapers) of the fastener diameter

Table 203:

TYPE I STRINGER REPAIR SECTIONS				
DAMAGED SECTION OF THE INITIAL STRINGER		REPAIR SECTIONS		
SECTION	THICKNESS INCHES	HAT SECTION	ANGLE SECTION	C SECTION
BAC1498-155 or Type I Formed Sheet	0.028	69-78188-10	-	-
BAC1498-156 or Type I Formed Sheet	0.032	69-78188-11 or BAC1498-117	BAC1493-659	BAC1493-249
BAC1498-157 or Type I Formed Sheet	0.036	69-78188-12 or BAC1498-117	BAC1493-659	BAC1493-249
BAC1498-158 or Type I Formed Sheet	0.040	69-78188-13 or BAC1498-117	BAC1493-574	BAC1493-249

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Table 203: (Continued)

TYPE I STRINGER REPAIR SECTIONS				
DAMAGED SECTION OF THE INITIAL STRINGER		REPAIR SECTIONS		
SECTION	THICKNESS INCHES	HAT SECTION	ANGLE SECTION	C SECTION
BAC1498-159 or Type I Formed Sheet	0.045	69-78188-14 or BAC1498-116	BAC1493-574	BAC1493-249
BAC1498-160 or Type I Formed Sheet	0.050	69-78188-15	BAC1493-574	BAC1493-248
BAC1498-161 or Type I Formed sheet	0.056	69-78188-16	BAC1493-574	BAC1493-248
BAC1498-162 or Type I Formed Sheet	0.063	69-78188-17	-	BAC1493-715
BAC1498-163 or Type I Formed Sheet	0.071	69-78188-18	-	-

NOTE: If the C section BAC1493-715 is used, cut the flanges so that they are each only 1.00 inch long.

Table 204:

TYPE II STRINGER REPAIR SECTIONS				
DAMAGED SECTION OF THE INITIAL STRINGER		REPAIR SECTIONS		
SECTION	THICKNESS INCHES	HAT SECTION	ANGLE SECTION	C SECTION
BAC1498-138 or Type II Formed Sheet	0.032	69-78188-1	BAC1493-547	BAC1493-412
BAC1498-139 or Type II Formed Sheet	0.036	69-78188-1	BAC1493-547	BAC1493-412
BAC1498-140 or Type II Formed Sheet	0.040	69-78188-2	BAC1493-547	BAC1493-209
BAC1498-141 or Type II Formed Sheet	0.045	69-78188-3 or BAC1498-132	BAC1493-547	BAC1493-209
BAC1498-142 or Type II Formed Sheet	0.050	69-78188-4 or BAC1498-132	-	BAC1493-133
BAC1498-143 or Type II Formed Sheet	0.056	69-78188-5 or BAC1498-132	-	BAC1493-133
BAC1498-144 or Type II Formed Sheet	0.063	69-78188-6	-	BAC1493-246
BAC1498-145 or Type II Formed Sheet	0.071	69-78188-7	-	-
BAC1498-146 or Type II Formed Sheet	0.080	69-78188-8	-	-
BAC1498-147 or Type II Formed Sheet	0.090	69-78188-9	-	-

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K. Install the repair parts.

NOTE: On some airplanes, channel strips are installed across the flanges of the stringer, between frames. You must install these channel strips again after a repair is made. Install the repair fasteners in the initial fastener locations of the channel strips.

(1) Apply BMS 5-95 sealant to the mating surfaces. Refer to 51-20-05.

(2) Install the fasteners. Refer to 51-40-02.

(a) Install non-aluminum fasteners wet with BMS 5-95 sealant.

(3) Make sure that the stringer drainage holes are not blocked. Refer to AMM 51-41-00 for the stringer drainage hole locations.

L. Apply corrosion inhibiting compound to the reworked areas. Refer to 51-20-01 for materials and locations.

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NOTES

- THE REPAIR OF A 0.040 INCH THICK STRINGER IS SHOWN.

FASTENER SYMBOLS

REFERENCE FASTENER LOCATION.

REPAIR FASTENER LOCATION.

G34921 S0006587550_V1

Repair for Damage to a Free Flange
Figure 201 (Sheet 1 of 2)

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G21645 S0006587551_V1

Repair for Damage to a Free Flange
Figure 201 (Sheet 2 of 2)

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NOTES

- THE REPAIR OF A 0.040 INCH THICK STRINGER IS SHOWN.

FASTENER SYMBOLS

┼ INITIAL FASTENER LOCATION.

✦ REPAIR FASTENER LOCATION.

G34992 S0006587552_V1

Repair for Damage to the Full Stringer Section
Figure 202 (Sheet 1 of 3)

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PLAN VIEW

SIDE VIEW

G21666 S0006587553_V1

Repair for Damage to the Full Stringer Section
Figure 202 (Sheet 2 of 3)

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A–A

B–B

G35015 S0006587554_V1

Repair for Damage to the Full Stringer Section
Figure 202 (Sheet 3 of 3)

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NOTES

- THE REPAIR OF A 0.040 INCH THICK STRINGER IS SHOWN.

FASTENER SYMBOLS

┼ INITIAL FASTENER LOCATION.

✦ REPAIR FASTENER LOCATION.

G35086 S0006587555_V1

Repair for Damage to the Full Stringer Section (Alternative Method)
Figure 203 (Sheet 1 of 2)

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Repair for Damage to the Full Stringer Section (Alternative Method)
Figure 203 (Sheet 2 of 2)

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NOTE: REFER TO 205 FOR A REPAIR. REFER TO FIGURE 206 FOR AN ALTERNATIVE REPAIR TO FIGURE 205.

G21769 S0006587557_V1

Stringer Repair Locations for Damage Across Frame Stations
Figure 204

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NOTES

- THE REPAIR OF A 0.040 INCH THICK STRINGER IS SHOWN.

FASTENER SYMBOLS

┼ INITIAL FASTENER LOCATION.

✦ REPAIR FASTENER LOCATION.

G37346 S0006587558_V1

Splice Repair for Damage to the Full Stringer Section
Figure 205 (Sheet 1 of 2)

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Splice Repair for Damage to the Full Stringer Section
Figure 205 (Sheet 2 of 2)

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NOTES

- THE REPAIR OF A 0.040 INCH THICK STRINGER IS SHOWN.

FASTENER SYMBOLS

INITIAL FASTENER LOCATION.

REPAIR FASTENER LOCATION.

G37288 S0006587560_V1

Splice Repair for Damage to the Full Stringer Section (Alternative Method)
Figure 206 (Sheet 1 of 2)

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G48581 S0006587561_V1

Splice Repair for Damage to the Full Stringer Section (Alternative Method)
Figure 206 (Sheet 2 of 2)

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ANGLE FOR REPAIR OF
A TYPE I STRINGER

ANGLE FOR REPAIR OF
A TYPE II STRINGER

NOTE: A REPAIR PART CAN BE MADE FROM BARE OR CLAD 7075-O MATERIAL AND HEAT TREATED TO THE 7075-T6 CONDITION AFTER IT IS FORMED.

T = THE MATERIAL THICKNESS.

R = THE BEND RADIUS WHICH WILL ALLOW THE REPAIR PART TO FIT TO THE INITIAL STRINGER. REFER TO SRM 51-30-01 FOR THE MINIMUM BEND RADIUS.

G21622 S0006587562_V1

Repair Parts Necessary for Type I, II, and IV Stringers
Figure 207 (Sheet 1 of 2)

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CHANNEL FOR REPAIR OF
A TYPE I STRINGER

CHANNEL FOR REPAIR OF
A TYPE II STRINGER

CHANNEL FOR REPAIR OF
A TYPE IV STRINGER

G79909 S0006587563_V1

Repair Parts Necessary for Type I, II, and IV Stringers
Figure 207 (Sheet 2 of 2)

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5. **Inspection Instructions**

A. Airplanes that have completed Service Bulletin 737-21-1149, this repair is a Category B repair for upper lobe stringers (S-13L and above) from BS178 to BS1016 and for S-22L between BS520 and BS540. Refer to 51-00-06 for the repair categories and definitions. :

(1) Upper lobe stringers (S-13 and above):

(a) The threshold for the start of supplemental inspections is 22,500 flight cycles after the installation of this repair.

(b) Do repetitive inspections every 1,600 flight cycles after the threshold has been reached.

Do a detailed visual inspection of the stringer at the repair location, as well as all repair parts.

In addition, do detailed visual inspection of the fuselage skin adjacent to the stringer repair.

Do the skin inspection from the exterior of the aircraft.

(2) For S-22L between BS 520 and BS 540:

(a) The threshold for the start of supplemental inspections is 22,500 flight cycles after the installation of this repair.

(b) Do repetitive inspections every 3,700 flight cycles after the threshold has been reached.

Do a detailed visual inspection of the stringer at the repair location, as well as all repair parts.

In addition, do detailed visual inspection of the fuselage skin adjacent to the stringer repair.

Do the skin inspection from the exterior of the aircraft.

B. For airplanes that have not completed Service Bulletin 737-21-1149, this repair is a Category B repair for upper lobe stringers (S-13 and above) from BS 178 to BS 1016. Refer to 51-00-06 for the repair categories and definitions.

(1) Upper lobe stringers (S-13 and above):

(a) The threshold for the start of supplemental inspections is 50,000 flight cycles after the installation of this repair.

(b) Do repetitive inspections every 2,350 flight cycles after the threshold has been reached.

Do a detailed visual inspection of the stringer at the repair location, as well as all repair parts.

In addition, do detailed visual inspection of the fuselage skin adjacent to the stringer repair.

Do the skin inspection from the exterior of the aircraft.

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REPAIR 2 - REPAIR FOR A TYPE I, II OR IV FUSELAGE STRINGER WITH LONGITUDINAL CRACK DAMAGE IN A FORMED CORNER OF A SKIN ATTACHMENT FLANGE

1. Applicability

A. Refer to Repair General for the definition of the different types of stringers.

B. Repair 2 is applicable to Type I, Type II or, Type IV fuselage stringers with:

(1) Longitudinal cracks in the formed corners.

C. Repair 2 is not applicable to:

(1) Damage that is less than 20 inches, from an initial or repair stringer splice

(2) Nick, scratch, gouge, corrosion, dent, hole, puncture and edge damage

(a) Refer to Repair 1 for the repair of general damage.

(3) Type III fuselage stringers.

(a) Refer to Repair 3 for the repair of general damage.

(b) Refer to Repair 4 for the repair of longitudinal cracks.

(4) Areas of skin repairs containing a doubler.

2. General

A. This is a Category B repair for airplanes that have completed Service Bulletin 737-21-1149, and the repair is installed on the upper lobe stringers (S-13L to S-13R) from BS178 to BS1016 or on S-22L between BS520 and BS540. Refer to 51-00-06, GENERAL for the repair categories and definitions. Refer to Paragraph 5./REPAIR 2 for the inspection requirements.

This is a Category B repair for airplanes that have not completed Service Bulletin 737-21-1149, and the repair is installed on upper lobe stringers (S-13L to S-13R) from BS178 to BS1016. Refer to 51-00-06, GENERAL for the repair categories and definitions. Refer to Paragraph 5./REPAIR 2 for the inspection requirements.

This is a Category A repair for all other stringer locations. Refer to 51-00-06, GENERAL for the repair categories and definitions. The inspections given in the Maintenance Planning Data (MPD) are sufficient to maintain the damage tolerance of the initial structure with this repair installed.

B. Refer to Repair for Longitudinal Cracks in a Free Flange, Figure 201/REPAIR 2 for the repair of damage to one free flange.

C. Refer to Repair for Longitudinal Cracks in an Attachment Flange, Figure 202/REPAIR 2 for the repair of damage to the attachment flange.

(1) Do not locate the repair parts in the area of an initial stringer clip.

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NOTES

- THE REPAIR OF A 0.040 INCH THICK STRINGER IS SHOWN

FASTENER SYMBOLS

┼ INITIAL FASTENER LOCATION.

⊕ REPAIR FASTENER LOCATION.

G45462 S0006587565_V1

Repair for Longitudinal Cracks in a Free Flange
Figure 201 (Sheet 1 of 2)

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NOTE: D = DIAMETER OF THE FASTENER.

G21790 S0006587566_V1

Repair for Longitudinal Cracks in a Free Flange
Figure 201 (Sheet 2 of 2)

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NOTES

- THE REPAIR OF A 0.040 INCH THICK STRINGER IS SHOWN.

FASTENER SYMBOLS

┼ INITIAL FASTENER LOCATION.

✦ REPAIR FASTENER LOCATION.

G45467 S0006587567_V1

Repair for Longitudinal Cracks in an Attachment Flange
Figure 202 (Sheet 1 of 2)

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Repair for Longitudinal Cracks in an Attachment Flange
Figure 202 (Sheet 2 of 2)

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3. References

Reference	Title
51-00-06, GENERAL	Structural Repair Definitions
51-10-02	INSPECTION AND REMOVAL OF DAMAGE
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-20-05	REPAIR SEALING
51-30-01, GENERAL	Sheet Metal Materials
51-40-02	FASTENER INSTALLATION AND REMOVAL
51-40-03, GENERAL	Fastener Substitution
51-40-05, GENERAL	Fastener Hole Sizes
51-40-06, GENERAL	Fastener Edge Margins
AMM 51-21-00 P/B 701	INTERIOR AND EXTERIOR FINISHES - CLEANING/PAINTING
AMM 51-31-00 P/B 201	SEALS AND SEALING - MAINTENANCE PRACTICES
AMM 51-41-00	Airframe Drainage
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes
SOPM 20-44-04	Application of Urethane Compatible Primer

4. Repair Instructions

A. Find the limits of the damage and remove the necessary fasteners in the area of the damaged stringer.

B. Drill a stop hole at the ends of the crack if they do not end at a fastener hole. Refer to 51-10-02.

C. Do a High Frequency Eddy Current (HFEC) inspection of the repair area to make sure the crack does not continue past the stop hole. Refer to 51-10-02.

D. Make the repair parts.

(1) Calculate the lengths that are needed for the repair parts.

(a) Find the minimum number of fasteners that are needed as given in Table 201/REPAIR 2.

1) A BACR15GF() D fastener can be used as an alternative to a BACR15CE()D fastener.

2) An MS20470D() fastener can be used as an alternative to a BACR15FT()D fastener.

(b) Refer to the applicable figure (Repair for Longitudinal Cracks in a Free Flange, Figure 201/REPAIR 2 or Repair for Longitudinal Cracks in an Attachment Flange, Figure 202/REPAIR 2) for the fastener locations and edge margins.

Table 201:

MINIMUM DIAMETER AND NUMBER OF FASTENERS THAT ARE NEEDED ON EACH SIDE OF THE DAMAGE AREA				
INITIAL STRINGER THICKNESS INCHES	FASTENERS			
	INITIAL BACR15CE()D or BACR15GF()D		REPAIR BACR15FT()D or MS20470D()	
	MINIMUM DIAMETER INCHES	MINIMUM NUMBER	MINIMUM DIAMETER INCHES	MINIMUM NUMBER IN EACH LONGITUDINAL ROW
0.028	5/32	4	5/32	4

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Table 201: (Continued)

MINIMUM DIAMETER AND NUMBER OF FASTENERS THAT ARE NEEDED ON EACH SIDE OF THE DAMAGE AREA				
INITIAL STRINGER THICKNESS INCHES	FASTENERS			
	INITIAL BACR15CE()D or BACR15GF()D		REPAIR BACR15FT()D or MS20470D()	
	MINIMUM DIAMETER INCHES	MINIMUM NUMBER	MINIMUM DIAMETER INCHES	MINIMUM NUMBER IN EACH LONGITUDINAL ROW
0.032	5/32	4	5/32	4
0.036	5/32	4	5/32	4
0.040	5/32	4	5/32	4
0.045	5/32	5	5/32	5
0.050	5/32	5	3/16	5
0.056	5/32	5	3/16	5
0.063	5/32	5	3/16	5
0.071	5/32	5	3/16	5
0.080	5/32	5	3/16	5
0.090	5/32	5	3/16	5

(2) Refer to Table 202/REPAIR 2 for the repair part materials.

Table 202:

REPAIR MATERIAL			
ITEM	PART NAME	QTY	MATERIAL
1	Angle	1	7075-T6 bare or clad sheet and one of the options that follows: - Use the applicable repair section given in Table 203 (Type I) or Table 204 (Type II), or - Make the repair parts as shown in Figure 203 and one gage thicker than the damaged section of the initial stringer that was removed. (This option is necessary for Type IV stringers or if no section is given in Table 203 0r 204
2	Channel	1	
3	Shim (Tapered or not tapered)	As necessary	7075-T6 or 2024-T4 bare or clad sheet. Maximum shim thickness is 15 percent of the fastener diameter of the fastener diameter

Table 203:

TYPE I STRINGER REPAIR SECTIONS			
DAMAGED SECTION OF THE INITIAL STRINGER		REPAIR SECTIONS	
SECTION	THICKNESS (INCH)	ANGLE SECTION	C SECTION
BAC1498-155 or Type I Formed Sheet	0.028	-	-
BAC1498-156 or Type I Formed Sheet	0.032	BAC1493-659	BAC1493-249
BAC1498-157 or Type I Formed Sheet	0.036	BAC1493-659	BAC1493-249
BAC1498-158 or Type I Formed Sheet	0.040	BAC1493-574	BAC1493-249

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Table 203: (Continued)

TYPE I STRINGER REPAIR SECTIONS			
DAMAGED SECTION OF THE INITIAL STRINGER		REPAIR SECTIONS	
SECTION	THICKNESS (INCH)	ANGLE SECTION	C SECTION
BAC1498-159 or Type I Formed Sheet	0.045	BAC1493-574	BAC1493-249
BAC1498-160 or Type I Formed Sheet	0.050	BAC1493-574	BAC1493-248
BAC1498-161 or Type I Formed Sheet	0.056	BAC1493-574	BAC1493-248
BAC1498-162 or Type I Formed Sheet	0.063	-	BAC1493-715
BAC1498-163 or Type I Formed Sheet	0.071	-	-

NOTE: If the C section BAC1493-715 is used, cut the flanges so that they are each only 1.00 inch long.

Table 204:

TYPE II STRINGER REPAIR SECTIONS			
DAMAGED SECTION OF THE INITIAL STRINGER		REPAIR SECTIONS	
SECTION	THICKNESS INCHES	ANGLE SECTION	C SECTION
BAC1498-138 or Type II Formed Sheet	0.032	BAC1493-547	BAC1493-412
BAC1498-139 or Type II Formed Sheet	0.036	BAC1493-547	BAC1493-412
BAC1498-140 or Type II Formed Sheet	0.040	BAC1493-547	BAC1493-209
BAC1498-141 or Type II Formed Sheet	0.045	BAC1493-574	BAC1493-209
BAC1498-142 or Type II Formed Sheet	0.050	-	BAC1493-133
BAC1498-143 or Type II Formed Sheet	0.056	-	BAC1493-133
BAC1498-144 or Type II Formed Sheet	0.063	-	BAC1493-246
BAC1498-145 or Type II Formed Sheet	0.071	-	-
BAC1498-146 or Type II Formed Sheet	0.080	-	-
BAC1498-147 or Type II Formed Sheet	0.090	-	-

E. Assemble the repair parts as shown in the applicable figure (Repair for Longitudinal Cracks in a Free Flange, Figure 201/REPAIR 2 or Repair for Longitudinal Cracks in an Attachment Flange, Figure 202/REPAIR 2).

(1) Make sure that the space between the mating surfaces is less than 0.010 inch.

(2) If the space is more than 0.010 inch, install shims that have thickness less than 15 percent of the fastener diameter.

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F. Drill the fastener holes.

(1) Refer to the applicable figure (Repair for Longitudinal Cracks in a Free Flange, Figure 201/REPAIR 2 or Repair for Longitudinal Cracks in an Attachment Flange, Figure 202/REPAIR 2) for the fastener locations.

(2) Refer to Table 201/REPAIR 2 for the minimum diameter and the number of fasteners you need.

G. Disassemble the repair parts.

H. Remove the nicks, scratches, gouges, burrs, and sharp edges from the initial and the repair parts.

I. Apply a chemical conversion layer to the repair parts and the bare surfaces of the initial parts. Refer to 51-20-01.

J. Apply one layer of BMS 10-11, Type I primer to the repair parts and the bare surfaces of the initial parts. Refer to SOPM 20-41-02.

K. Install the repair parts.

NOTE: On some airplanes, channel strips are installed across the flanges of the stringer, between frames. You must install these channel strips again after a repair is made. Install the repair fasteners in the initial fastener locations of the channel strips.

(1) Apply BMS 5-95 sealant to the mating surfaces. Refer to 51-20-05.

(2) Install the fasteners. Refer to 51-40-02.

(a) Install non-aluminum fasteners wet with BMS 5-95 sealant.

(3) Make sure that the stringer drainage holes are not blocked. Refer to AMM 51-41-00 for the stringer drainage hole locations.

L. Apply corrosion inhibiting compound to the reworked areas. Refer to 51-20-01 for materials and locations.

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ANGLE FOR REPAIR
OF A TYPE I STRINGER

ANGLE FOR REPAIR
OF A TYPE II STRINGER

CHANNEL FOR REPAIR
OF A TYPE I STRINGER

CHANNEL FOR REPAIR
OF A TYPE II STRINGER

NOTE: A REPAIR PART CAN BE MADE FROM BARE OR CLAD 7075-O MATERIAL AND HEAT TREATED TO THE 7075-T6 CONDITION AFTER IT IS FORMED.

T = THE MATERIAL THICKNESS.

R = THE BEND RADIUS WHICH WILL ALLOW THE REPAIR PART TO FIT TO THE INITIAL STRINGER. REFER TO SRM 51-30-01 FOR THE MINIMUM BEND RADIUS.

G21779 S0006587573_V1

Repair Parts Necessary for Type I and II Stringers
Figure 203

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5. **Inspection Instructions**

A. For airplanes that have completed Service Bulletin 737-21-1149, a repair installed on upper lobe stringers (S-13 and above) from BS178 to BS1016 or on S-22L between BS520 and BS540, is a Category B repair. Refer to 51-00-06, GENERAL for the repair categories and definitions.

(1) For upper lobe stringers(S-13 and above):

(a) The threshold for the start of supplemental inspections is 22,500 flight cycles after the installation of this repair.

(b) Do repetitive inspections every 1,600 flight cycles after the threshold has been reached.

(c) Do a detailed visual inspection of the stringer at the repair location, as well as all repair parts. In addition, do a detailed visual inspection of the fuselage skin adjacent to the stringer repair. Do the skin inspection from the exterior of the aircraft.

(2) For S-22L between BS520 and BS540:

(a) The threshold for the start of supplemental inspections is 22,500 flight cycles after the installation of this repair.

(b) Do repetitive inspections every 3,700 flight cycles after the threshold has been reached.

(c) Do a detailed visual inspection of the stringer at the repair location, as well as all repair parts. In addition, do a detailed visual inspection of the fuselage skin adjacent to the stringer repair. Do the skin inspection from the exterior of the aircraft.

B. For airplanes that have not completed Service Bulletin 737-21-1149, a repair installed on upper lobe stringers (S-13 and above) from BS178 to BS1016 is a Category B repair. Refer to 51-00-06, GENERAL for the repair categories and definitions.

(1) For upper lobe stringers (S-13 and above) between BS178 and BS1016:

(a) The threshold for the start of supplemental inspections is 50,000 flight cycles after the installation of this repair.

(b) Do repetitive inspections every 2,350 flight cycles after the threshold has been reached.

(c) Do a detailed visual inspection of the stringer at the repair location, as well as all repair parts. In addition, do a detailed visual inspection of the fuselage skin adjacent to the stringer repair. Do the skin inspection from the exterior of the aircraft.

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REPAIR 3 - REPAIR FOR A TYPE III FUSELAGE STRINGER WITH GENERAL DAMAGE

1. Applicability

A. Refer to Repair General for the definition of the different types of stringers.

B. Repair 3 is applicable to Type III fuselage stringers with:

(1) Nick, scratch, gouge, corrosion, dent, hole, puncture and edge damage.

C. Repair 3 is not applicable to:

(1) Damage that is less than 20 inches from an initial or repair stringer splice

(2) Longitudinal cracks in the formed corners

(a) Refer to Repair 4 for the repair of longitudinal crack damage in Type III stringers.

(3) Type I or II fuselage stringers

(a) Refer to Repair 1 for the repair of general damage.

(b) Refer to Repair 2 for the repair of longitudinal cracks.

(4) Stringers above the overwing escape hatches at the locations that follow:

(a) At stringers S-8 and S-9, from BS 597 to BS 664 on the left and right sides of the airplane

(b) At stringers S10, from BS 664 to BS 727B on the left and right sides of the airplane.

(5) Areas of skin repairs containing a doubler.

2. General

A. This is a Category B repair. Refer to 51-00-06 for the repair categories and definitions. Refer to Paragraph 5./REPAIR 3 for the inspection requirements.

B. Refer to Repair for Damage to the Full Stringer Section, Figure 201/REPAIR 3 for the repair of damage:

(1) To one or both free flanges

(2) To vertical webs

(3) To the attachment flange

(4) In locations where full section repair or replacement is necessary.

C. Refer to Repair of Type III Crown Stringers That Go Across Frame Stations, Figure 202/REPAIR 3 and Splice Repair for Damage to the Full Stringer Section, Figure 203/REPAIR 3 for the repair of damage that is across one or more frame stations.

(1) Do not locate the repair parts in the area of an initial stringer clip.

3. References

Reference	Title
51-00-06	STRUCTURAL REPAIR DEFINITIONS
51-10-02, GENERAL	Inspection and Removal of Damage
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-20-05	REPAIR SEALING
51-30-01, GENERAL	Sheet Metal Materials
51-40-02	FASTENER INSTALLATION AND REMOVAL
51-40-03, GENERAL	Fastener Substitution
51-40-05, GENERAL	Fastener Hole Sizes

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(Continued)

Reference	Title
51-40-06, GENERAL	Fastener Edge Margins
AMM 51-21-00 P/B 701	INTERIOR AND EXTERIOR FINISHES - CLEANING/PAINTING
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes
SOPM 20-44-04	Application of Urethane Compatible Primer
737 NDT Part 6, 51-00-00	Structures - General
737 NDT Part 6, 51-00-00, Procedure 4	Surface Inspection of Aluminum Parts (Meter Display)

4. Repair Instructions

A. Find the limits of the damage and remove the necessary fasteners in the area of the damaged stringer.

B. Cut and remove the damaged part of the stringer as given in the applicable figure (Repair for Damage to the Full Stringer Section, Figure 201/REPAIR 3 or Splice Repair for Damage to the Full Stringer Section, Figure 203/REPAIR 3).

(1) Make sure you do not damage the skin adjacent to the stringer or other adjacent parts.

C. Do a High Frequency Eddy Current (HFEC) inspection of the repair area to make sure that all of the damage is removed. Refer to 737 NDT Part 6, 51-00-00, Figure 4 .

D. Make the repair parts.

(1) Calculate the lengths that are needed for the repair parts.

(a) Find the minimum number of fasteners that are needed as given in Table 201/REPAIR 3.

1) A BACR15GF()D Fastener can be used as an alternative to a BACR15CE()D fastener.

2) An MS20470D() fastener can be used as an alternative to a BACR15FT()D fastener

(b) Refer to the applicable figure (Repair for Damage to the Full Stringer Section, Figure 201/REPAIR 3 or Splice Repair for Damage to the Full Stringer Section, Figure 203/REPAIR 3) for the fastener locations and edge margins.

(2) Refer to Table 202/REPAIR 3 for the material of the repair parts.

E. Assemble the repair parts as shown in the applicable figure (Repair for Damage to the Full Stringer Section, Figure 201/REPAIR 3 or Splice Repair for Damage to the Full Stringer Section, Figure 203/REPAIR 3).

(1) Make sure that the space between the mating surfaces is less than 0.010 inch thick.

(2) If the space is more than 0.010 inch, install shims that have thickness less than 0.028 inch thick.

F. Drill the fastener holes.

(1) Refer to the applicable figure (Repair for Damage to the Full Stringer Section, Figure 201/REPAIR 3 or Splice Repair for Damage to the Full Stringer Section, Figure 203/REPAIR 3) for the fastener locations.

(2) Refer to Table 201/REPAIR 3 for the minimum diameter and the number of fasteners you need.

G. Disassemble the repair parts.

H. Remove the nicks, scratches, gouges, burrs, and sharp edges from the initial and the repair parts.

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I. Apply a chemical conversion layer to the repair parts and the bare surfaces of the initial parts. Refer to 51-20-01.

J. Apply one layer of BMS 10-11, Type I primer to the repair parts and the bare surfaces of the initial parts. Refer to SOPM 20-41-02.

K. Install the repair parts.

NOTE: On some airplanes, channel strips are installed across the flanges of the stringer, between frames. You must install these channel strips again after a repair is made. Install the repair fasteners in the initial fastener locations of the channel strips.

(1) Apply BMS 5-95 sealant to the mating surfaces on stringers S-4 and S-10, left and right sides of the airplane. Refer to 51-20-05.

(a) Do not apply sealant to the mating surfaces of the other crown stringers.

(2) Install the fasteners. Refer to 51-40-02.

(a) Install non-aluminum fasteners wet with BMS 5-95 sealant.

L. Apply corrosion inhibiting compound to the reworked areas. Refer to 51-20-01 for materials and locations.

Table 201:

MINIMUM DIAMETER AND NUMBER OF FASTENERS THAT ARE NEEDED ON EACH SIDE OF THE DAMAGE CUTOUT				
INITIAL STRINGER THICKNESS INCHES	FASTENERS			
	INITIAL BACR15CE()D OR BACR15GF()D		REPAIR BACR15FT()D OR MS20470D()	
	MINIMUM DIAMETER INCHES	MINIMUM NUMBER	MINIMUM DIAMETER INCHES	MINIMUM NUMBER IN EACH WEB
0.028	3/16	6	3/16	4
0.032	3/16	6	3/16	4
0.036	3/16	6	3/16	4
0.040	3/16	6	3/16	4
0.045	3/16	6	3/16	4
0.050	3/16	6	3/16	4
0.056	3/16	7	3/16	5
0.063	3/16	7	3/16	5
0.071	3/16	8	3/16	6

NOTE: All fasteners must be overdriven a minimum of 1.4D (D=Diameter of the rivet shank).

Table 202:

REPAIR MATERIAL			
ITEM	PART NAME	QTY	MATERIAL
1	Zee Section Splice	1	7075-T6 bare or clad sheet and one of the options that follows: - Use the applicable repair section given in Table 203, or - Make the repair part as shown in Figure 204 and one gage thicker than the damaged section of the initial stringer that was removed. (This option is necessary if no section is given in Table 203)
2	Zee Section Splice	1	

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Table 202: (Continued)

REPAIR MATERIAL			
ITEM	PART NAME	QTY	MATERIAL
3	Filler (Tapered or, not tapered)	As necessary	7075-T6 or 2024-T4 bare or clad sheet that has the same thickness as the damaged section of the initial stringer that was removed
4	Repair Stringer Section	1	7075-T6 bare or clad sheet. Use same gage as the damaged stringer that was removed (including tapers)

Table 203:

TYPE III STRINGER REPAIR SECTIONS		
DAMAGED SECTION OF THE INITIAL STRINGER		REPAIR SECTIONS
SECTION	THICKNESS INCHES	ZEE SECTION
BAC1498-150 or Type III Formed Sheet	0.028	69-78188-30 and 69-78188-31
BAC1498-151 or Type III Formed Sheet	0.032	69-78188-32 and 69-78188-33
BAC1498-152 or Type III Formed Sheet	0.036	69-78188-34 and 69-78188-35
BAC1498-153 or Type III Formed Sheet	0.040	69-78188-36 and 69-78188-37
BAC1498-154 or Type III Formed Sheet	0.045	69-78188-36 and 69-78188-37
BAC1498-164 or Type III Formed Sheet	0.050	69-78188-38 and 69-78188-39
BAC1498-165 or Type III Formed Sheet	0.056	Refer to Table 202
BAC1498-166 or Type III Formed Sheet	0.063	69-78188-108 and 69-78188-109
BAC1498-167 or Type III Formed Sheet	0.071	69-78188-108 and 69-78188-109

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NOTES

- THE REPAIR OF A 0.040 INCH THICK STRINGER IS SHOWN.

FASTENER SYMBOLS

INITIAL FASTENER LOCATION.

REPAIR FASTENER LOCATION.

G39997 S0006587575_V1

Repair for Damage to the Full Stringer Section
Figure 201 (Sheet 1 of 2)

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G21858 S0006587576_V1

Repair for Damage to the Full Stringer Section
Figure 201 (Sheet 2 of 2)

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Repair of Type III Crown Stringers That Go Across Frame Stations
Figure 202

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NOTES

- THE REPAIR OF A 0.040 INCH THICK STRINGER IS SHOWN.

FASTENER SYMBOLS

┼ INITIAL FASTENER LOCATION.

✦ REPAIR FASTENER LOCATION.

G41900 S0006587578_V1

Splice Repair for Damage to the Full Stringer Section
Figure 203 (Sheet 1 of 2)

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G47641 S0006587579_V1

Splice Repair for Damage to the Full Stringer Section
Figure 203 (Sheet 2 of 2)

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[1] ZEE SPLICE

A

[2] ZEE SPLICE

B

NOTE: A REPAIR PART CAN BE MADE FROM BARE OR CLAD 7075-O MATERIAL AND HEAT TREATED TO THE 7075-T6 CONDITION AFTER IT IS FORMED.

G21888 S0006587580_V1

Repair Parts Necessary for Type III Crown Stringers
Figure 204

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5. Inspection Instructions

A. This repair is a category B repair. Refer to 51-00-06 for the repair categories and definitions.

(1) For airplanes that have completed Service Bulletin 737-21-1149:

(a) The threshold for the start of supplemental inspections is 22,500 flight cycles after the installation of this repair.

(b) Do repetitive inspections every 1,600 flight cycles after the threshold has been reached.

(c) Do a detailed visual inspection of the stringer at the repair location, as well as all repair parts. In addition, do detailed visual inspection of the fuselage skin adjacent to the stringer repair. Do the skin inspection from the exterior of the aircraft.

(2) For airplanes not affected by Service Bulletin 737-21-1149:

(a) The threshold for the start of supplemental inspections is 50,000 flight cycles after the installation of this repair.

(b) Do repetitive inspections every 2,350 flight cycles after the threshold has been reached.

(c) Do a detailed visual inspection of the stringer at the repair location, as well as all repair parts. In addition, do a detailed visual inspection of the fuselage skin adjacent to the stringer repair. Do the skin inspection from the exterior of the aircraft.

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REPAIR 4 - REPAIR FOR A TYPE III FUSELAGE STRINGER WITH LONGITUDINAL CRACK DAMAGE IN A FORMED CORNER OF A SKIN ATTACHMENT FLANGE

1. Applicability

A. Refer to Repair General for the definition of the different types of stringers.

B. Repair 4 is applicable to Type III fuselage stringers with:

(1) Longitudinal cracks in the formed corners.

C. Repair 4 is not applicable to:

(1) Damage that is less than 20 inches from an initial or repair stringer splice

(2) Nick, scratch, gouge, corrosion, dent, hole, puncture and edge damage

(a) Refer to Repair 3 for the repair of general damage to Type III stringers.

(3) Type I or II fuselage stringers

(a) Refer to Repair 1 for the repair of general damage.

(b) Refer to Repair 2 for the repair of longitudinal cracks.

(4) Stringer S-9 above the overwing escape hatches on the left and right sides of the airplane, from BS 597 to BS 664.

(5) Areas of skin repairs containing a doubler.

2. General

A. This is a Category B repair. Refer to 51-00-06 for the repair categories and definitions. Refer to Paragraph 5./REPAIR 4 for the inspection requirements.

B. Refer to Repair of Longitudinally Cracked Type III Crown Stringers, Figure 201/REPAIR 4 for the repair of damage.

(1) Do not locate the repair parts in the area of an initial stringer clip.

3. References

Reference	Title
51-00-06	STRUCTURAL REPAIR DEFINITIONS
51-10-02	INSPECTION AND REMOVAL OF DAMAGE
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-20-05	REPAIR SEALING
51-30-01, GENERAL	Sheet Metal Materials
51-40-02	FASTENER INSTALLATION AND REMOVAL
51-40-03, GENERAL	Fastener Substitution
51-40-05, GENERAL	Fastener Hole Sizes
51-40-06, GENERAL	Fastener Edge Margins
AMM 51-21-00 P/B 701	INTERIOR AND EXTERIOR FINISHES - CLEANING/PAINTING
AMM 51-31-00 P/B 201	SEALS AND SEALING - MAINTENANCE PRACTICES
AMM 51-41	AIRFRAME DRAINAGE
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes
SOPM 20-44-04	Application of Urethane Compatible Primer

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4. **Repair Instructions**

A. Find the limits of the damage and remove the necessary fasteners in the area of the damaged stringer.

B. Drill a stop hole at the ends of the crack if they do not end in a fastener hole. Refer to 51-10-02.

C. Do a High Frequency Eddy Current (HFEC) inspection of the repair area to make sure the crack does not continue past the stop hole. Refer to 51-10-02.

D. Make the repair parts.

(1) Calculate the lengths that are needed for the repair parts.

(a) Find the minimum number of fasteners that are needed as given in Table 201/REPAIR 4.

1) A BACR15GF() D fastener can be used as an alternative to a BACR15CE()D fastener.

2) An MS20470D() fastener can be used as an alternative to a BACR15FT()D fastener.

(b) Refer to the Repair of Longitudinally Cracked Type III Crown Stringers, Figure 201/REPAIR 4 for the fastener locations and edge margins.

(2) Refer to Table 202/REPAIR 4 for the material of the repair parts.

E. Assemble the repair parts as shown in Repair of Longitudinally Cracked Type III Crown Stringers, Figure 201/REPAIR 4.

(1) Make sure that the space between the mating surfaces is less than 0.010 inch thick.

(2) If the space is more than 0.010 inch, install shims that have thickness less than 0.028 inch thick.

F. Drill the fastener holes.

(1) Refer to Repair of Longitudinally Cracked Type III Crown Stringers, Figure 201/REPAIR 4 for the fastener locations.

(2) Refer to Table 201/REPAIR 4 for the minimum diameter and the number of fasteners you need.

G. Disassemble the repair parts.

H. Remove the nicks, scratches, gouges, burrs, and sharp edges from the initial and the repair parts.

I. Apply a chemical conversion layer to the repair parts and the bare surfaces of the initial parts. Refer to 51-20-01.

J. Apply one layer of BMS 10-11, Type I primer to the repair parts and the bare surfaces of the initial parts. Refer to SOPM 20-41-02.

K. Install the repair parts.

NOTE: On some airplanes, channel strips are installed across the flanges of the stringer, between frames. You must install these channel strips again after a repair is made. Install the repair fasteners in the initial fastener locations of the channel strips.

(1) Apply BMS 5-95 sealant to the mating surfaces for a repair on stringers S-4 or S-10, on the left and right sides of the airplane. Refer to 51-20-05.

(a) Do not apply sealant to the mating surfaces of all other crown stringers.

(2) Install the fasteners. Refer to 51-40-02.

(a) Install non-aluminum fasteners wet with BMS 5-95 sealant.

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L. Apply corrosion inhibiting compound to the reworked areas. Refer to 51-20-01 for materials and locations.

Table 201:

MINIMUM DIAMETER AND NUMBER OF FASTENERS THAT ARE NEEDED ON EACH SIDE OF THE DAMAGE AREA				
INITIAL STRINGER THICKNESS INCHES	FASTENERS			
	INITIAL BACR15CE()D or BACR15GF()D		REPAIR BACR15FT()D or MS20470D()	
	MINIMUM DIAMETER INCHES	MINIMUM NUMBER	MINIMUM DIAMETER INCHES	MINIMUM NUMBER IN EACH WEB
0.028	3/16	5	3/16	3
0.032	3/16	5	3/16	3
0.036	3/16	5	3/16	3
0.040	3/16	5	3/16	3
0.045	3/16	5	3/16	3
0.050	3/16	5	3/16	3
0.056	3/16	5	3/16	3
0.063	3/16	5	3/16	3
0.071	3/16	5	3/16	3

NOTE: All fasteners must be overdriven a minimum of 1.4D (D = Diameter of the rivet shank).

Table 202:

REPAIR MATERIAL			
ITEM	PART NAME	QTY	MATERIAL
1	Channel	1	7075-T6 bare or clad sheet and one of the options that follows: - Use the applicable repair section given in Table 203, or - Make the repair part as shown in Figure 202 and one gage thicker than the damaged section of the initial stringer that was removed. (This option is necessary if no section is given in Table 203)

Table 203:

TYPE III STRINGER REPAIR SECTIONS		
DAMAGED SECTION OF THE INITIAL STRINGER		REPAIR SECTION
SECTION	THICKNESS INCHES	C SECTION
BAC1498-150 or Type III Formed Sheet	0.028	-----
BAC1498-151 or Type III Formed Sheet	0.032	BAC1493-249
BAC1498-152 or Type III Formed Sheet	0.036	BAC1493-249
BAC1498-153 or Type III Formed Sheet	0.040	BAC1493-249
BAC1498-154 or Type III Formed Sheet	0.045	BAC1493-249
BAC1498-164 or Type III Formed Sheet	0.050	BAC1493-248
BAC1498-165 or Type III Formed Sheet	0.056	BAC1493-248
BAC1498-166 or Type III Formed Sheet	0.063	BAC1493-247
BAC1498-167 or Type III Formed Sheet	0.071	-----

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NOTES

- THE REPAIR OF A 0.040 INCH THICK STRINGER IS SHOWN
- D = DIAMETER OF THE FASTENER

FASTENER SYMBOLS

┼ INITIAL FASTENER LOCATION.

✦ REPAIR FASTENER LOCATION.

G51121 S0006587585_V1

Repair of Longitudinally Cracked Type III Crown Stringers
Figure 201 (Sheet 1 of 2)

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G21827 S0006587586_V1

Repair of Longitudinally Cracked Type III Crown Stringers
Figure 201 (Sheet 2 of 2)

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NOTE: A REPAIR PART CAN BE MADE FROM BARE OR CLAD 7075-O MATERIAL AND HEAT TREATED TO THE 7075-T6 CONDITION AFTER IT IS FORMED.

T = THE MATERIAL THICKNESS.

R = THE BEND RADIUS WHICH WILL ALLOW THE REPAIR PART TO FIT TO THE INITIAL STRINGER. REFER TO SRM 51-30-01 FOR THE MINIMUM BEND RADIUS.

G21808 S0006587587_V1

Repair Part Necessary for Type III Crown Stringers
Figure 202

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5. **Inspection Instructions**

A. This repair is a category B repair. Refer to 51-00-06 for the repair categories and definitions.

(1) For airplanes that have completed Service Bulletin 737-21-1149:

(a) The threshold for the start of supplemental inspections is 22,500 flight cycles after the installation of this repair.

(b) Do repetitive inspections every 1,600 flight cycles after the threshold has been reached.

(c) Do a detailed visual inspection of the stringer at the repair location, as well as all repair parts. In addition, do detailed visual inspection of the fuselage skin adjacent to the stringer repair. Do the skin inspection from the exterior of the aircraft.

(2) For airplanes not affected by Service Bulletin 737-21-1149:

(a) The threshold for the start of supplemental inspections is 50,000 flight cycles after the installation of this repair.

(b) Do repetitive inspections every 2,350 flight cycles after the threshold has been reached.

(c) Do a detailed visual inspection of the stringer at the repair location, as well as all repair parts. In addition, do a detailed visual inspection of the fuselage skin adjacent to the stringer repair. Do the skin inspection from the exterior of the aircraft.

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ALLOWABLE DAMAGE 1 - FUSELAGE INTERCOSTALS

1. Applicability

A. This subject gives the allowable damage limits for fuselage intercostals.

B. This subject does not give allowable damage limits for intercostals in the door surround areas. Refer to the applicable chapter-section-subject for intercostals in the door surrounds.

2. General

A. Refer to Intercostal Type Identification, Figure 101/ALLOWABLE DAMAGE 1 for the definition of the different intercostal types.

B. Remove the parts as necessary to get access to the damaged area.

C. Refer to Paragraph 4./ALLOWABLE DAMAGE 1 for the allowable damage limits.

(1) Refer to Table 101/ALLOWABLE DAMAGE 1 for the allowable damage limits that is applicable to each type of structure.

Table 101:

PARAGRAPH REFERENCES FOR THE ALLOWABLE DAMAGE LIMITS		
TYPE OF STRUCTURE	**STRUCTURE PART**	**PARAGRAPH**
Built-up Intercostal	Extruded Chord	4.A
	Formed Chord	4.B
	Web or Web/Doubler Combination	4.B
	Flange	4.B
Formed Intercostal	Web	4.B
	Flange	4.B
Tee Intercostal		4.A
Machined Intercostal		4.C

D. Remove the damage as necessary.

(1) Refer to 51-10-02 for the inspection and removal of damage.

(2) Refer to 51-30-03 for possible sources of abrasives and other materials you can use to remove damage.

(3) Refer to 51-30-05 for possible sources of equipment and tools you can use to remove damage.

E. After you remove the damage, do the steps that follow:

(1) Apply a chemical conversion coating to the bare surfaces of the reworked areas. Refer to 51-20-01.

(2) Apply one layer of BMS 10-11, Type I primer to the surface of the reworked area. Refer to SOPM 20-41-02.

(3) Apply one layer of BMS 3-23, Type II corrosion inhibiting compound to the surface of the reworked area. Refer to 51-20-01.

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TYPICAL BUILT-UP INTERCOSTALS

TYPICAL FORMED INTERCOSTAL

TYPICAL TEE
INTERCOSTAL

NOTE: ALL PARTS ARE MADE OF ALUMINUM.

G58065 S0006587595_V1

Intercostal Type Identification
Figure 101 (Sheet 1 of 2)

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NOTE: ALL PARTS ARE MADE OF ALUMINUM.

TYPICAL MACHINED INTERCOSTAL

G58063 S0006587596_V1

Intercostal Type Identification
Figure 101 (Sheet 2 of 2)

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3. References

Reference	Title
51-10-02	INSPECTION AND REMOVAL OF DAMAGE
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-30-03	NON-METALLIC MATERIALS
51-30-05	EQUIPMENT AND TOOLS FOR REPAIRS
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes

4. Allowable Damage Limits

A. Tee Intercostal and Extruded Chord of a Built-up Intercostal

(1) Cracks:

(a) Remove the damage as shown in Figure 102, Details A , B , C , and D .

(2) Nicks, Gouges, Scratches, and Corrosion:

(a) You are permitted to do one of the procedures that follow:

1) Remove the damage as shown in Figure 102, Details A , B , C , D , E , and F .

2) Drill out the damage as given in Holes and Punctures for this type of structure. Refer to Paragraph 4.A.(4)/ALLOWABLE DAMAGE 1

(3) Dents are not permitted.

(4) Holes and Punctures:

(a) The damage is permitted if it is:

1) A maximum of 0.25 inch in diameter

2) A minimum of 1.0 inch away from a fastener hole or other damage

3) A minimum of 2D (D = largest damage dimension) from the edge of the part

4) Filled with a 2117-T3 or 2117-T4 protruding head rivet installed without sealant.

B. Formed Intercostal and Built-up Intercostal (This does not include the Extruded Chord)

(1) Cracks:

(a) Remove the damage as shown in Figure 102, Details A , B , and H .

(2) Nicks, Gouges, Scratches, and Corrosion:

(a) You are permitted to do one of the procedures that follow:

1) Remove the damage as shown in Figure 102, Details A , B , G , H , and I .

2) Drill out the damage as given in Holes and Punctures for this type of structure. Refer to Paragraph 4.B.(4)/ALLOWABLE DAMAGE 1

(3) Dents:

(a) The damage is permitted as shown in Figure 102, Detail J only for the web of the intercostal.

(4) Holes and Punctures:

(a) The damage is permitted if it is:

1) A maximum of 0.25 inch in diameter

2) A minimum of 1.0 inch away from a fastener hole or other damage

3) A minimum of 2D (D = largest damage dimension) from the edge of the part

4) A minimum of 1.5 inch away from the edge of a flanged hole

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5) Filled with a 2117-T3 or 2117-T4 protruding head rivet installed without sealant.

C. Machined Intercostal

(1) Cracks:

(a) Remove the damage as shown in Figure 102, Details A , B , and C .

(2) Nicks, Gouges, Scratches, and Corrosion:

(a) Remove the damage as shown in Figure 102, Details A , B , C , E , and I .

(3) Dents are not permitted.

(4) Holes and Punctures are not permitted.

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X = WIDTH OF THE MATERIAL THAT IS REMOVED
= 5 PERCENT OF THE FLANGE (OR WEB) WIDTH OR 0.05 INCH (1.27 mm), THAT WHICH IS LESS 1
= 10 PERCENT OF THE FLANGE (OR WEB) WIDTH OR 0.10 INCH (2.54 mm), THAT WHICH IS LESS 2

REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER EDGE MARGINS DO NOT HAVE AN OVERLAP

A

X = WIDTH OF THE MATERIAL THAT IS REMOVED
= 5 PERCENT OF THE FLANGE (OR WEB) WIDTH OR 0.05 INCH (1.27 mm), THAT WHICH IS LESS 1
= 10 PERCENT OF THE FLANGE (OR WEB) WIDTH OR 0.10 INCH (2.54 mm), THAT WHICH IS LESS 2

REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER EDGE MARGINS HAVE AN OVERLAP

B

1 FOR AIRPLANES THAT HAVE COMPLETED SERVICE BULLETIN 737-21-1149.
2 FOR AIRPLANES THAT HAVE NOT COMPLETED SERVICE BULLETIN 737-21-1149.

400599 S0000136815_V1

Intercostals Allowable Damage Limits
Figure 102 (Sheet 1 of 6)

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X = WIDTH OF THE MATERIAL REMOVED
= THE SMALLER VALUE OF 5 PERCENT OF THE FLANGE WIDTH OR 0.05 INCH (1.27 mm), THAT WHICH IS LESS 1
= THE SMALLER VALUE OF 10 PERCENT OF THE FLANGE WIDTH OR 0.10 INCH (2.54 mm), THAT WHICH IS LESS 2

REMOVAL OF DAMAGED MATERIAL AT AN EDGE OF A MACHINED OR EXTRUDED PART

C

X = THE WIDTH OF THE MATERIAL THAT IS REMOVED
= 5 PERCENT OF THE WIDTH OF THE FLANGE OR 0.05 INCH (1.27mm), THAT WHICH IS LESS 1
= 10 PERCENT OF THE WIDTH OF THE FLANGE OR 0.10 INCH (2.54mm), THAT WHICH IS LESS 2

REMOVAL OF DAMAGED MATERIAL ON AN EDGE

D

400600 S0000136816_V1

Intercostals Allowable Damage Limits
Figure 102 (Sheet 2 of 6)

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Y = WIDTH OF THE MATERIAL THAT IS REMOVED
= 5 PERCENT OF THE FLANGE WIDTH OR 0.05 INCH (1.27 mm), THAT WHICH IS LESS 1
= 10 PERCENT OF THE FLANGE WIDTH OR 0.10 INCH (2.54 mm), THAT WHICH IS LESS 2

REMOVAL OF DAMAGED MATERIAL
ON A SURFACE AT AN EDGE

E

400601 S0000136817_V1

Intercostals Allowable Damage Limits
Figure 102 (Sheet 3 of 6)

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Y = WIDTH OF THE MATERIAL THAT IS REMOVED
= 5 PERCENT OF THE FLANGE WIDTH OR 0.05 INCH (1.27 mm),
THAT WHICH IS LESS 1
= 10 PERCENT OF THE FLANGE WIDTH OR 0.10 INCH (2.54 mm),
THAT WHICH IS LESS 2

REMOVAL OF DAMAGED MATERIAL
ON A SURFACE AT AN EDGE

F

B–B

400602 S0000136818_V1

Intercostals Allowable Damage Limits
Figure 102 (Sheet 4 of 6)

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REMOVAL OF DAMAGED MATERIAL AT AN EDGE OF A FLANGED HOLE

G

X = DEPTH OF THE MATERIAL THAT IS REMOVED
= A MAXIMUM OF 0.05T 1
= A MAXIMUM OF 0.10T 2
Y = LENGTH OF THE MATERIAL THAT IS REMOVED
= THE SMALLER VALUE OF 50 PERCENT OF THE FLANGE HEIGHT OR 0.10 INCHES (2.54 mm)

C–C

X = WIDTH OF THE MATERIAL THAT IS REMOVED
= THE SMALLER VALUE OF 5 PERCENT OF THE FLANGE WIDTH OR 0.05 INCH (1.27 mm) 1
= THE SMALLER VALUE OF 10 PERCENT OF THE FLANGE WIDTH OR 0.10 INCH (2.54 mm) 2

REMOVAL OF DAMAGED MATERIAL AT AN EDGE

H

400603 S0000136819_V1

Intercostals Allowable Damage Limits
Figure 102 (Sheet 5 of 6)

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REMOVAL OF DAMAGED MATERIAL ON A SURFACE

I

DENT THAT IS PERMITTED

J

400604 S0000136820_V1

Intercostals Allowable Damage Limits
Figure 102 (Sheet 6 of 6)

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ALLOWABLE DAMAGE 1 - TYPICAL FUSELAGE FRAMES

1. Applicability

A. This subject gives the allowable damage limits for the fuselage frames in body sections 41, 43, 46, 47 and 48. Typical frame sections are shown in Allowable Damage - Typical Fuselage Frames, Figure 101/ALLOWABLE DAMAGE 1.

B. This subject is not applicable to what follows:

(1) Edge frames or auxiliary frames. Refer to the applicable SRM section for the door surround structure.

(2) Frame sections where the floor beams are attached

(3) Body Section 44 (STA 540 thru STA 727). Refer to 53-40-07.

2. General

A. Refer to Paragraph 4./ALLOWABLE DAMAGE 1 for the allowable damage limits.

B. Remove the damaged material as necessary.

(1) Make sure that the material to be removed is less than or equal to the allowable damage limits.

(2) Refer to 51-10-02 for the inspection and removal of damage.

(3) Refer to 51-30-03 for possible sources of abrasives and other materials you can use to remove damage.

(4) Refer to 51-30-05 for possible sources of the equipment and tools you can use to remove damage.

C. After you remove the damage, do the steps that follow:

(1) Apply a chemical conversion coating to the bare surfaces of the reworked areas. Refer to 51-20-01.

(2) Apply two layers of BMS 10-11, Type I primer to the bare surfaces of the reworked areas. Refer to SOPM 20-41-02.

(3) Apply corrosion inhibiting compounds, BMS 3-23, Type II, and BMS 3-26, Type II, to the reworked areas, as necessary. Refer to 51-20-01.

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TYPICAL BUILT-UP FRAME SECTIONS (ALUMINUM)

TYPICAL ZEE FRAME (ALUMINUM)

F53068 S0006587606_V1

Allowable Damage - Typical Fuselage Frames
Figure 101

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3. References

Reference	Title
51-10-02	INSPECTION AND REMOVAL OF DAMAGE
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-30-03	NON-METALLIC MATERIALS
51-30-05	EQUIPMENT AND TOOLS FOR REPAIRS
51-40-06, GENERAL	Fastener Edge Margins
53-40-07	FUSELAGE FRAMES - SECTION 44
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes

4. Allowable Damage Limits for Typical Fuselage Frames

A. Inner Chord

(1) Cracks are not permitted.

(2) Nicks, Gouges, Scratches and Corrosion:

(a) Remove damage as shown in Figure 102, Detail C .

(3) Dents are not permitted.

(4) Holes and Punctures are not permitted.

B. Failsafe Chord

(1) Cracks:

(a) Remove damage as shown in Figure 102, Details A and B .

(2) Nicks, Gouges, Scratches and Corrosion:

(a) Remove damage as shown in Figure 102, Details A , B , and C .

(3) Dents are not permitted.

(4) Holes and Punctures are not permitted.

C. Outer Chord and Shear Ties

(1) Cracks:

(a) Remove damage as shown in Figure 102, Details A , B , and D .

(2) Nicks, Gouges, Scratches and Corrosion:

(a) Remove damage as shown in Figure 102, Details A , B , C , and D .

(3) Dents are not permitted.

(4) Holes and Punctures are not permitted.

D. Webs (Does not include chord flanges, shear tie flanges or the area under those flanges)

(1) Cracks:

(a) Remove damage as shown in Figure 102, Details A , B , and E .

(2) Nicks, Gouges, Scratches and Corrosion:

(a) Remove damage as shown in Figure 102, Details A , B , C , and E .

(3) Dents:

(a) Refer to Figure 102, Detail G for damage that is permitted.

(4) Holes and Punctures:

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(a) Rework the damage as shown in Figure 102, Detail F .

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X = THE WIDTH OF THE MATERIAL REMOVED
= 0.05 INCH OR 5% OF FLANGE WIDTH, WHICHEVER IS LESS 1
= 0.10 INCH MAXIMUM 2

REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER EDGE MARGINS DO NOT HAVE AN OVERLAP

A

X = THE WIDTH OF THE MATERIAL REMOVED
= 0.05 INCH OR 5% OF FLANGE WIDTH, WHICH EVER IS LESS 1
= 0.10 INCH MAXIMUM 2

REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER EDGE MARGINS HAVE AN OVERLAP

B

THE DISTANCE OF THE DAMAGE FROM A HOLE, A FASTENER OR AN EDGE MUST BE 20X OR MORE. THE DISTANCE TO OTHER DAMAGE MUST BE 1.0 INCH OR MORE

REMOVAL OF DAMAGED MATERIAL ON A SURFACE

C

X = THE DEPTH OF THE MATERIAL REMOVED
= 0.05t MAXIMUM 1
= 0.10t MAXIMUM 2

A–A

1 FOR AIRPLANES THAT HAVE COMPLETED SERVICE BULLETIN 737-21-1149.

2 FOR AIRPLANES THAT HAVE NOT COMPLETED SERVICE BULLETIN 737-21-1149.

400605 S0000136361_V1

Allowable Damage Limits
Figure 102 (Sheet 1 of 4)

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REMOVAL OF DAMAGED MATERIAL ON AN EDGE

D

REMOVAL OF DAMAGED MATERIAL AT AN EDGE

E

400606 S0000136362_V1

Allowable Damage Limits
Figure 102 (Sheet 2 of 4)

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NOTE: DAMAGE C IS NOT LOCATED IN ZONE A AND SHOULD NOT BE INCLUDED TO CALCULATE THE CROSS-SECTIONAL AREA WHICH HAS BEEN REMOVED IN THE EXAMPLE GIVEN IN B-B.

CROSS-SECTIONAL AREA REMOVAL IN A WEB

F

EXAMPLE: THE CROSS-SECTIONAL AREA WHICH HAS BEEN REMOVED IS

td + XI ≤ 0.05th 1

td + XI ≤ 0.10th 2

NOTES

- THE CROSS-SECTIONAL AREA IN ZONE A MUST NOT DECRESE MORE THAN 5 PERCENT FROM THE INITIAL CROSS-SECTIONAL AREA MINUS THE FASTENER HOLES. 1
- THE CROSS-SECTIONAL AREA IN ZONE A MUST NOT DECREASE MORE THAN 10 PERCENT FROM THE INITIAL CROSS-SECTIONAL AREA MINUS THE FASTENER HOLES. 2

B-B

400607 S0000136363_V1

Allowable Damage Limits
Figure 102 (Sheet 3 of 4)

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DENT THAT IS PERMITTED

G

408507 S0000136364_V1

Allowable Damage Limits
Figure 102 (Sheet 4 of 4)

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REPAIR GENERAL - SERVICE BULLETIN REPAIR CHART

1. Service Bulletin Repair - Fuselage Frames

A. The following service bulletin contains repairs which are available for use where specific damage has been encountered. Usually, the Service Bulletin also covers preventive change data which operators are encouraged to use to eliminate the need for repair.

DAMAGED AREA	LINE NUMBER EFFECTIVITY	SB NUMBER
FUSELAGE - Frames - Inspection on frames between STA 360 and STA 907 at Stringer 8L and Stringer 8R	1 THRU 1679	737-25-1544

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REPAIR 1 - FUSELAGE ZEE FRAMES

1. Applicability

A. This repair is applicable to fuselage frames that are made from formed zee sections.

B. This repair is not applicable at the locations that follow:

(1) Edge frames or auxiliary frames (Refer to the applicable SRM section for the door surround structure)

(2) Frame sections where the floor beams are attached

(3) Frame sections that include doublers, other repair parts, or support structure for auxiliary fuel tanks.

2. General

A. Repair 1 gives instructions for a Category A repair. Refer to 51-00-06 to find the definitions of the different categories of repairs. The inspections given in the Maintenance Planning Data (MPD) are sufficient to maintain the damage tolerance of the initial structure with this repair installed.

B. D= Fastener Diameter

C. Keep minimum of 2D edge margin unless specified differently.

D. Form the repair parts in the annealed condition to match the contour of the frame. Then, heat treat part to T6.

E. Repair parts shall be bent as given in 51-30-01, GENERAL.

3. References

Reference	Title
51-00-06	STRUCTURAL REPAIR DEFINITIONS
51-10-02, GENERAL	Inspection and Removal of Damage
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-20-05	REPAIR SEALING
51-30-01, GENERAL	Sheet Metal Materials
51-40-02, GENERAL	Fastener Installation and Removal
51-40-03	FASTENER SUBSTITUTION
51-40-05	FASTENER HOLE SIZES
51-40-06	FASTENER EDGE MARGINS
51-50-02, GENERAL	Support of the Airplane for Repair
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes
SOPM 20-44-04	Application of Urethane Compatible Primer
737 NDT Part 6, 51-00-00	Structures - General
737 NDT Part 6, 51-00-00, Procedure 16	Aluminum Part Fastener Hole Inspection (Rotary Scanner)
737 NDT Part 6, 51-00-00, Procedure 4	Surface Inspection of Aluminum Parts (Meter Display)

4. Repair Instructions

A. Remove the necessary fasteners in the area of the damaged frame.

B. Cut and remove the damaged part of the frame as shown in Fuselage Zee Frame Repair, Figure 201/REPAIR 1.

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C. Do a high frequency eddy current (HFEC) inspection of the repair area to make sure that all of the damage is removed. Refer to 737 NDT Part 6, 51-00-00, Procedure 4 . Extend the cutout by 0.04 in. (1.02 mm) as an insurance cut.

D. Make the edges smooth with a surface finish of 125 microinches Ra.

E. Do an HFEC hole probe inspection of all initial fastener holes in the repair area. Refer to 737 NDT Part 6, 51-00-00, Procedure 16.

F. Make the repair parts. Refer to Table 201/REPAIR 1.

NOTE: The repair parts are available from the Boeing Spares Department. Boeing repair parts are made to certain lengths. Make sure the size of spare part is adequate to cover the repair area. The repair parts can also be made from aluminum sheet to dimensions as given in the production Drawing Number 69-78188.

Table 201:

REPAIR MATERIAL			
ITEM	**PART**	**QUANTITY**	**MATERIAL**
[1]	Channel	1	Use clad 7075-0 that is the same thickness as the initial frame. *[1]*[2] You can get the channel repair part, Boeing Drawing Number 69-78188, from the Boeing Spares Department.
[2]	Channel	1	Use clad 7075-0 that is the same thickness as the initial frame. *[1] You can get the channel repair part, Boeing Drawing Number 69-78188, from the Boeing Spares Department.
[3]	Filler	1	Use clad 7075-T6 that is the same thickness as the initial frame.

*[1] Form the repair parts in the annealed condition to match the contour of the frame. Then, heat treat part to T6.

*[2] Do not end on the holes common to stringer clip. If necessary, extend one row beyond the stringer clip.

G. Assemble the repair parts as shown in Fuselage Zee Frame Repair, Figure 201/REPAIR 1.

H. Make sure that gaps between mating surfaces of repair parts are not larger than 0.010 inch. If shims are necessary to close the gaps, make sure the shims are not more than 0.030 inch thick.

I. Drill the necessary fastener holes. Refer to Fuselage Zee Frame Repair, Figure 201/REPAIR 1 and Table 202/REPAIR 1. Refer to 51-40-05 for the fastener hole size. Refer to 51-40-03 and 51-40-06 for more fastener data.

Table 202:

MINIMUM NUMBER OF FASTENERS NECESSARY IN EACH ROW ON EACH SIDE OF THE DAMAGE COMMON TO [2] CHANNEL			
INITIAL ZEE SECTION	THICKNESS (INCHES)	FASTENER	QUANTITY
BAC1517-1470	0.040	BACR15BB5D	5
BAC1517-1491	0.040	BACR15BB5D	5
BAC1517-1147	0.045	BACR15BB5D	5
BAC1517-705	0.051	BACR15BB6D	5
BAC1517-1062	0.056	BACR15BB6D	5
BAC1517-706	0.064	BACR15BB6D	5

J. Disassemble the repair parts.

K. Remove the nicks, scratches, gouges, burrs, and sharp edges from the initial and the repair parts.

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L. Apply a chemical conversion coating to the repair parts and the bare surfaces of the initial parts. Refer to 51-20-01.

M. Apply two layers of BMS 10-11, Type I primer to the repair parts and the bare surfaces of the initial parts. Refer to SOPM 20-41-02.

N. Install the repair parts.

(1) Apply BMS 5-95 sealant to the mating surfaces. Refer to 51-20-05.

(2) Install the fasteners. Refer to Table 202/REPAIR 1 and 51-40-02, GENERAL.

NOTE: All fasteners used to attach the repair channels must be overdriven to 1.4D minimum driven head diameter. Install the fasteners as given in 51-40-02, GENERAL.

O. Apply corrosion inhibiting compound to the reworked areas, as necessary. Refer to 51-20-01.

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DAMAGE BETWEEN STRINGERS

A

F60406 S0006587616_V2

Fuselage Zee Frame Repair
Figure 201 (Sheet 1 of 2)

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DAMAGE AT A STRINGER

C–C

NOTES

- D = FASTENER DIAMETER

1 DO NOT END THE [1] CHANNEL ON THE HOLES COMMON TO STRINGER CLIP. IF NECESSARY, EXTEND THE [1] CHANNEL ONE ROW BEYOND THE STRINGER CLIP

FASTENER SYMBOLS

┼ INITIAL FASTENER LOCATION. USE A RIVET THAT IS THE SAME AS THE INITIAL RIVET IF IT IS NECESSARY TO REMOVE AND REPLACE THE STRINGER TIE.

✚ REPAIR FASTENER LOCATION. REFER TO TABLE 202 FOR FASTENER TYPE, SIZE AND QUANTITY.

F60434 S0006587617_V2

Fuselage Zee Frame Repair
Figure 201 (Sheet 2 of 2)

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REPAIR 2 - FUSELAGE CROWN FRAMES

1. Applicability

A. This repair is applicable to damaged frames that are made from formed zee sections, and located in the upper fuselage between stringers S-10L and S-10R. The damage to these frames must not be more in the vertical direction, than that shown in Figure 201. For damage that is more than that shown in Figure 201, refer to Repair 1.

B. This repair is not applicable at the locations that follow:

(1) Frame sections that include doublers or other repair parts.

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CROWN AREA OF FUSELAGE

NOTES

1 INSTALL FASTENERS ALONG THE FULL LENGTH OF THE REPAIR.

FASTENER SYMBOLS

INITIAL FASTENER LOCATION. USE A RIVET THAT IS THE SAME AS THE INITIAL RIVIT IF IT IS NECESSARY TO REMOVE AND REPLACE THE STRINGER TIE.

REPAIR FASTENER LOCATION. USE A BACR15BB6D RIVET AND REFER TO TABLE 202 FOR THE QUANTITY.

F60377 S0006587619_V1

Fuselage Crown Frame Repair
Figure 201 (Sheet 1 of 2)

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A–A

B–B

F60384 S0006587620_V1

Fuselage Crown Frame Repair
Figure 201 (Sheet 2 of 2)

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2. General

A. Repair 2 gives instructions for a Category A repair. Refer to 51-00-06 to find the definitions of the different categories of repairs. The inspections given in the Maintenance Planning Data (MPD) are sufficient to maintain the damage tolerance of the initial structure with this repair installed.

3. References

Reference	Title
51-00-06	STRUCTURAL REPAIR DEFINITIONS
51-10-02, GENERAL	Inspection and Removal of Damage
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-20-05	REPAIR SEALING
51-40-02, GENERAL	Fastener Installation and Removal
51-40-03	FASTENER SUBSTITUTION
51-40-05	FASTENER HOLE SIZES
51-40-06	FASTENER EDGE MARGINS
51-50-02, GENERAL	Support of the Airplane for Repair
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes
SOPM 20-44-04	Application of Urethane Compatible Primer
737 NDT Part 6, 51-00-00	Structures - General
737 NDT Part 6, 51-00-00, Procedure 4	Surface Inspection of Aluminum Parts (Meter Display)

4. Repair Instructions

A. Remove the necessary fasteners in the area of the damaged frame.

B. Cut and remove the damaged part of the frame as shown in Figure 201.

C. Do a high frequency eddy current (HFEC) inspection of the repair area to make sure that all of the damage is removed. Refer to 737 NDT Part 6, 51-00-00, Figure 4 .

D. Make the edges smooth with a surface finish of 125 microinches Ra.

Table 201:

REPAIR MATERIAL			
ITEM	**PART**	**QUANTITY**	**MATERIAL**
[1]	Channel	1	Use clad 7075-0 that is the one gage thicker than the initial frame. Heat treat the part to T6 after it is formed.
[2]	Filler	1	Use clad 7075-T6 that is the same thickness as the initial frame.

E. Make the repair parts given in Table 201/REPAIR 2 and shown in Figure 201.

F. Assemble the repair parts as shown in Figure 201.

G. Make sure that gaps between mating surfaces of repair parts are not larger than 0.010 inch. If shims are necessary to close the gaps, make sure the shims are not more than 0.030 inch thick.

H. Drill the necessary fastener holes. Refer to Figure 201 and Table 202. Refer to 51-40-05 for the fastener hole size. Refer to 51-40-03 and 51-40-06 for more fastener data.

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Table 202:

MINIMUM NUMBER OF FASTENERS NECESSARY IN ROWS W AND X ON EACH SIDE OF THE DAMAGE		
FRAME THICKNESS (INCHES)	ROW W	ROW X
0.040	4	4
0.045	4	4
0.051	4	4
0.056	4	4
0.063	4	4
0.072	5	5

I. Disassemble the repair parts.

J. Remove the nicks, scratches, gouges, burrs, and sharp edges from the initial and the repair parts.

K. Apply a chemical conversion coating to the repair parts and the bare surfaces of the initial parts. Refer to 51-20-01.

L. Apply one layer of BMS 10-11, Type I primer to the repair parts and the bare surfaces of the initial parts. Refer to SOPM 20-41-02.

M. Install the repair parts.

(1) Apply BMS 5-95 sealant to the mating surfaces. Refer to 51-20-05.

(2) Install the fasteners. Refer to Table 202/REPAIR 2 and SRM 51-40-02.

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IDENTIFICATION 1 - KEEL BEAM STRUCTURE

NOTE: REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

H25305 S0006587628_V1

Section 43, 44, and 46 Keel Beam Structure Location
Figure 1

Table 1:

REFERENCE DRAWINGS	
DRAWING NUMBER	**TITLE**
143A0060	Section 43/44 Lower Lobe Integration
143A7810	Keel Beam Installation, Section 43
143A7811	Chord Details - Keel Beam
143A7812	Splice Plate - Keel Beam
144A7100	Keel Beam Installation
144A7110	Keel Beam Assembly
144A7120	Side Panel Assembly - Keel Beam

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Table 1: (Continued)

REFERENCE DRAWINGS	
DRAWING NUMBER	**TITLE**
146A0061	Body Integration Installation - Section 44/46
146A7810	Keel Chord Installation
146A7812	Keel Chord - Channel Details, Section 46
146A7813	Keel Chord - Details, Section 46

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H25309 S0006587633_V1

Sections 43, 44, and 46 Keel Beam Structure Locations
Figure 2

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NOTE: REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

H25326 S0006587637_V1

Section 43 Keel Beam Lower Lobe Structure Identification
Figure 3

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Table 2:

LIST OF MATERIALS FOR FIGURE 3				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Inner Chord, Upper		BAC1506-4451 7150-T77511 extrusion as given in BMS 7-306. Refer to the engineering drawing for the machined areas and the grain direction	
[2]	Outer Chord, Lower		7050-T7541 plate as given in AMS 4050, Class A. Refer to the engineering drawing for the machined areas and the grain direction	
[3]	Engine Burst Bracket	0.050 (1.27)	7075-T62 clad sheet	
[4]	Splice Angle		BAC1503-101064 7075-T73511 extrusion	
[5]	Clip		BAC1503-101057 7075-T73511 extrusion	
[6]	Doubler	0.080 (2.03)	2024-T3 clad sheet	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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NOTE: REFER TO TABLE 3 FOR THE LIST OF MATERIALS.

G72350 S0006587640_V1

Section 44, and 46 Left Side Panel Keel Beam Structure Identification
Figure 4

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Table 3:

LIST OF MATERIALS FOR FIGURE 4				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Web	0.071 (1.80)	7075-T6 clad sheet	
[2]	Upper Chord		BAC1506-3701 7150-T77511 extrusion as given in BMS 7-306, Class A. Refer to the engineering drawing for the machined areas and the grain direction	
[3]	Strap	0.125 (3.18)	7075-T6 clad sheet	
[4]	Shear Clip		BAC1503-5814 7075-T73511 extrusion	
[5]	Shear Clip		BAC1503-100852 7075-T73511 extrusion	
[6]	Vertical Stiffener		7050-T7451 plate as given in AMS 4050. Refer to the engineering drawing for the machined areas and the grain direction	
[7]	Side Panel		7050-T7451 plate as given in AMS 4050. Refer to the engineering drawing for the machined areas and the grain direction	
[8]	Horizontal Stiffener		BAC1517-1851 7075-T6511 extrusion	
[9]	Horizontal Stiffener		BAC1517-1446 7075-T6511 extrusion	
[10]	Lower Chord Assembly			
	Lower Chord		7150-T77511 bar as given in BMS 7-306, Class A. Refer to the engineering drawing for the machined areas and the grain direction	
	Splice Plate (2)	0.375 (9.53)	7150-T77511 bar as given in BMS 7-306, Class A. Refer to the engineering drawing for the machined areas and the grain direction	
[11]	Attach Angle		7050-T7451 plate as given in AMS 4050, Class A. Refer to the engineering drawing for the machined areas and the grain direction	
[12]	Heat Shield	0.032 (0.81)	2024-T3 clad sheet	
[13]	Chord Assembly			
	External Chord		BAC1505-101365 7150-T77511 extrusion as given in BMS 7-306, Class A. Refer to the engineering drawing for the machined areas and the grain direction	
	Internal Chord		BAC1505-101365 7150-T77511 extrusion as given in BMS 7-306, Class A. Refer to the engineering drawing for the machined areas and the grain direction	
	Splice Plate (2)	0.500 (12.7)	7150-T77511 bar as given in BMS 7-306, Class A. Refer to the engineering drawing for the machined areas and the grain direction	
[14]	Keel Chord Stringer 27L		7050-T7451 plate as given in BMS 7-323, Type I. Refer to the engineering drawing for the machined areas and the grain direction	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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NOTE: REFER TO TABLE 4 FOR THE LIST OF MATERIALS.

G72611 S0006587642_V2

Sections 44, and 46 Right Side Panel Keel Beam Structure Identification
Figure 5

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Table 4:

LIST OF MATERIALS FOR FIGURE 5				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Web	0.071 (1.80)	7075-T6 clad sheet	
[2]	Upper Chord		7150-T77511 extrusion as given in BMS 7-306, Class A. Refer to the engineering drawing for the machined areas and the grain direction	
[3]	Lower Chord Assembly			
	Lower Chord		7150-T77511 bar as given in BMS 7-306, Class A. Refer to the engineering drawing for the machined areas and the grain direction	
	Splice Plate (2)	0.375 (9.53)	7150-T77511 bar as given in BMS 7-306, Class A. Refer to the engineering drawing for the machined areas and the grain direction	
[4]	Keel Chord Stringer 27L		7050-T7451 plate as given in BMS 7-323, Type I. Refer to the engineering drawing for the machined areas and the grain direction	
[5]	Side Panel		7050-T7451 plate as given in AMS 4050. Refer to the engineering drawing for the machined areas and the grain direction	
[6]	Horizontal Stiffener		BAC1517-1446 7075-T6511 extrusion	
[7]	Heat Shield	0.032 (0.81)	2024-T3 clad sheet	
[8]	Horizontal Stiffener		BAC1517-1851 7075-T6511 extrusion	
[9]	Vertical Stiffener		7050-T7541 plate as given in AMS 4050. Refer to the engineering drawing for the machined areas and the grain direction	
[10]	Attach Angle		7050-T7451 plate as given in AMS 4050, Class A. Refer to the engineering drawing for the machined areas and the grain direction	
[11]	Chord Assembly			
	External Chord		BAC1505-101365 7150-T77511 extrusion as given in BMS 7-306, Class A. Refer to the engineering drawing for the machined areas and the grain direction	
	Internal Chord		BAC1505-101365 7150-T77511 extrusion as given in BMS 7-306, Class A. Refer to the engineering drawing for the machined areas and the grain direction	
	Splice Plate (2)	0.500 (12.7)	7150-T77511 bar as given in BMS 7-306, Class A. Refer to the engineering drawing for the machined areas and the grain direction	
[12]	Strap	0.200 (5.08)	7075-T6 clad sheet	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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NOTE: REFER TO TABLE 5 FOR THE LIST OF MATERIALS.

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Section 44 Forward Center Section Keel Beam Structure Identification
Figure 6

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Table 5:

LIST OF MATERIALS FOR FIGURE 6				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Underwing Former		7050-T7451 plate as given in BMS 7-323, Type I. Refer to the engineering drawing for the machined areas and the grain direction	
[2]	Intercostal		7050-T7451 plate as given in AMS 4050, Class A. Refer to the engineering drawing for the machined areas and the grain direction	
[3]	Intercostal		BAC1505-101009 7075-T73511 extrusion	
[4]	Intercostal		BAC1505-100003 7075-T73511 extrusion	
[5]	Intercostal		BAC1503-100342 7075-T73511 extrusion	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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NOTE: REFER TO TABLE 6 FOR THE LIST OF MATERIALS.

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Section 44 Aft Center Section Keel Beam Structure Identification
Figure 7

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Table 6:

LIST OF MATERIALS FOR FIGURE 7				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Duct Cover	0.050 (0.13)	7075-T62 clad sheet	
[2]	Bracket	0.063 (1.6)	7075-T62 clad sheet	
[3]	Bracket	0.063 (1.60)	BAC1517-2838 2024-T3 clad sheet	
[4]	Support Bracket		AND10138-0505 7075-T73511 extrusion. (Optional: 7075-T7451 plate). Refer to the engineering drawing for the machined areas	
[5]	Former		7050-T7451 plate as given in AMS 4050, Class A. Refer to the engineering drawing for the machined areas and the grain direction	
[6]	Truss Web	0.140 (3.56)	7075-T6 sheet. Refer to the engineering drawing for the chem-milled areas	
[7]	Truss Web	0.125	7075-T6 sheet	
[8]	Attach Angle		7050-T7451 plate as given in AMS 4050, Class A. Refer to the engineering drawing for the machined areas and the grain direction	
[9]	Bulkhead Attach Fitting		7050-T7451 plate as given in AMS 4050, Class A. Refer to the engineering drawing for the machined areas and the grain direction	
[10]	Vertical Stiffeners		7050-T7451 plate as given in AMS 4050, Class A. Refer to the engineering drawing for the machined areas and the grain direction	
[11]	Support		7050-T7451 plate as given in AMS 4050, Class A. Refer to the engineering drawing for the machined areas and the grain direction	
[12]	Mounting Cover	0.050 (0.13)	7075-T62 clad sheet	
[13]	Support Bracket		BAC1517-1167 7075-T73511 extrusion. (Optional: 7075-T7451 plate as given in AMS 4050, Class A). Refer to the engineering drawing for the machined areas	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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IDENTIFICATION 1 - MAIN DECK FLOOR PANELS

NOTES

- A BASELINE FLOOR PANEL IS SHOWN.
- FOR EACH MAIN DECK FLOOR PANEL, REFER TO BOEING DRAWING 140A0342.

1 STA 1016 FOR AIRPLANES WITH A DOME AFT PRESSURE BULKHEAD.

2 STA 1042 FOR AIRPLANES WITH A FLAT AFT PRESSURE BULKHEAD.

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Main Deck Floor Panel Location

Figure 1

Table 1:

REFERENCE DRAWINGS	
DRAWING NUMBER	**TITLE**
140A0342	Fuselage Floor Panel Functional Collector
141A5800	Floor Panel Installation - Section 41
143A5800	Floor Panel Installation - Section 43
144A5800	Floor Panel Installation - Section 44
146A5800	Floor Panel Installation - Section 46
147A5800	Floor Panel Installation - Section 47

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SECTION 41

(USED ON AIRPLANE YJ945)
SECTION 41

H55899 S0006587745_V2

Section 41 Main Deck Floor Panel Identification
Figure 2

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Table 2:

PANEL LOCATION	PANEL FACESHEET AND CORE COMPOSITION		
	SINGLE DENSITY CORE		
	LOW	MEDIUM	HIGH
LOW TRAFFIC	FIBERGLASS FACED NON-METALLIC CORE AS GIVEN IN BMS 4-17, TYPE I		
UNDER SEATS LOW TRAFFIC	FIBERGLASS FACED ALUMINUM HONEYCOMB CORE AS GIVEN IN BMS 4-23, TYPE I		
HIGH TRAFFIC		FIBERGLASS FACED NON-METALLIC CORE AS GIVEN IN BMS 4-17, TYPE II	
AISLES AND ENTRIES		FIBERGLASS FACED ALUMINUM HONEYCOMB CORE AS GIVEN IN BMS 4-23, TYPE II	
GALLEYS			FIBERGLASS FACED NON-METALLIC CORE AS GIVEN IN BMS 4-17, TYPE VI

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Section 43 Main Deck Floor Panel Identification
Figure 3

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Table 3:

PANEL LOCATION	PANEL FACESHEET AND CORE COMPOSITION		
	SINGLE DENSITY CORE		
	LOW	MEDIUM	HIGH
LOW TRAFFIC	FIBERGLASS FACED NON-METALLIC CORE AS GIVEN IN BMS 4-17, TYPE I		
UNDER SEATS LOW TRAFFIC	FIBERGLASS FACED ALUMINUM HONEYCOMB CORE AS GIVEN IN BMS 4-23, TYPE I		
HIGH TRAFFIC		FIBERGLASS FACED NON-METALLIC CORE AS GIVEN IN BMS 4-17, TYPE II	
AISLES AND ENTRIES		FIBERGLASS FACED ALUMINUM HONEYCOMB CORE AS GIVEN IN BMS 4-23, TYPE II	
GALLEYS			FIBERGLASS FACED NON-METALLIC CORE AS GIVEN IN BMS 4-17, TYPE VI

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SECTION 44

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Section 44 Main Deck Floor Panel Identification
Figure 4

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Table 4:

PANEL LOCATION	PANEL FACESHEET AND CORE COMPOSITION		
	SINGLE DENSITY CORE		
	LOW	MEDIUM	HIGH
LOW TRAFFIC	FIBERGLASS FACED NON-METALLIC CORE AS GIVEN IN BMS 4-17, TYPE I		
UNDER SEATS LOW TRAFFIC	FIBERGLASS FACED ALUMINUM HONEYCOMB CORE AS GIVEN IN BMS 4-23, TYPE I		
AISLES AND ENTRIES		FIBERGLASS FACED NON-METALLIC CORE AS GIVEN IN BMS 4-17, TYPE III	
AISLES AND ENTRIES		FIBERGLASS FACED NON-METALLIC CORE AS GIVEN IN BMS 4-17, TYPE V	
AISLES AND ENTRIES		FIBERGLASS FACED ALUMINUM HONEYCOMB CORE AS GIVEN IN BMS 4-23, TYPE II	
GALLEYS			FIBERGLASS FACED NON-METALLIC CORE AS GIVEN IN BMS 4-17, TYPE VI

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H55817 S0006587767_V1

Section 46 Main Deck Floor Panel Identification
Figure 5

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Table 5:

PANEL LOCATION	PANEL FACESHEET AND CORE COMPOSITION		
	SINGLE DENSITY CORE		
	LOW	MEDIUM	HIGH
LOW TRAFFIC	FIBERGLASS FACED NON-METALLIC CORE AS GIVEN IN BMS 4-17, TYPE I		
UNDER SEATS LOW TRAFFIC	FIBERGLASS FACED ALUMINUM HONEYCOMB CORE AS GIVEN IN BMS 4-23, TYPE I		
HIGH TRAFFIC		FIBERGLASS FACED NON-METALLIC CORE AS GIVEN IN BMS 4-17, TYPE II	
AISLES AND ENTRIES		FIBERGLASS FACED ALUMINUM HONEYCOMB CORE AS GIVEN IN BMS 4-23, TYPE II	
GALLEYS			FIBERGLASS FACED NON-METALLIC CORE AS GIVEN IN BMS 4-17, TYPE VI

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AIRPLANES WITH A DOME AFT PRESSURE BULKHEAD AT STA 1016

AIRPLANES WITH A FLAT AFT PRESSURE BULKHEAD AT STA 1042

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Section 47 Main Deck Floor Panel Identification
Figure 6

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Table 6:

PANEL LOCATION	PANEL FACESHEET AND CORE COMPOSITION		
	SINGLE DENSITY CORE		
	LOW	MEDIUM	HIGH
LOW TRAFFIC	FIBERGLASS FACED NON-METALLIC CORE AS GIVEN IN BMS 4-17, TYPE I		
HIGH TRAFFIC		FIBERGLASS FACED NON-METALLIC CORE AS GIVEN IN BMS 4-17, TYPE II	
GALLEYS		FIBERGLASS FACED NON-METALLIC CORE AS GIVEN IN BMS 4-17, TYPE III	
GALLEYS			FIBERGLASS FACED NON-METALLIC CORE AS GIVEN IN BMS 4-17, TYPE VI

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ALLOWABLE DAMAGE 1 - MAIN DECK FLOOR PANELS

1. Applicability

A. Allowable Damage 1 is applicable to damage on the main deck floor panels as shown in Location of Main Deck Floor Panels, Figure 101/ALLOWABLE DAMAGE 1.

B. The allowable damage limits given are only applicable to the strength properties of the main deck floor panels. It is possible that the damage in a floor panel is less than the allowable damage limits, but the panel does not function satisfactorily. If the panel does not function satisfactorily, you can repair it to put it back to a serviceable condition.

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NOTES

1 STA 1016 FOR AIRPLANES WITH A DOME AFT PRESSURE BULKHEAD

2 STA 1042 FOR AIRPLANES WITH A FLAT AFT PRESSURE BULKHEAD

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Location of Main Deck Floor Panels
Figure 101

2. General

A. Do an inspection of the damaged area to find the length, width and depth of the damage. Boeing recommends that you use an instrumented Non-Destructive Test (NDT) procedure. Refer to NDT, Part 1, 51-01-02 for inspection procedures.

NOTE: Other inspection methods that have been examined and found to be satisfactory by the operator, can be used.

(1) Refer to Definitions of the Damage Size, Figure 102/ALLOWABLE DAMAGE 1, Details A , B , and C for the definitions of the length, width, and depth of damage.

(2) Refer to Definitions of the Facesheets, Figure 103/ALLOWABLE DAMAGE 1 for the definitions of the facesheets of the honeycomb core panels.

B. Remove all the contamination and water from the structure. Refer to 53-00-50 for the cleanup procedures.

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C. Refer to Paragraph 4./ALLOWABLE DAMAGE 1 for the allowable damage limits.

D. Seal the damaged areas with aluminum foil tape (speed tape).

SIZE DEFINITIONS FOR NICK, GOUGE, OR SCRATCH DAMAGE

A

SIZE DEFINITIONS FOR
DENT DAMAGE

B

SIZE DEFINITIONS FOR
EDGE DAMAGE

C

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Definitions of the Damage Size
Figure 102

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Definitions of the Facesheets
Figure 103

3. References

Reference	Title
53-00-50	FUSELAGE FLOOR PANELS
737 NDT Part 1, 51-01-02	NDT Examination of Composite Structure for Impact Damage

4. Allowable Damage Limits

A. Nicks, Gouges, and Scratches that do not cause damage to the fibers are permitted.

B. Nicks, Gouges, and Scratches that cause damage to the fibers are permitted if they are:

(1) A maximum of one ply in depth

NOTE: Use the limits for holes and punctures if the damage is more than one ply in depth.

(2) A maximum of 2.0 inches (50.8 mm) in length

(3) A maximum of 0.25 inch (6.35 mm) in width

(4) A minimum of 3.0 inches (76.2 mm) away from the edge of the panel, the edge of a panel cutout, the edge of other damage, or a galley fitting.

C. Dents are permitted if:

(1) They are a maximum of 4.0 square inches (25.8 square cm) in area

(2) They are a minimum of 3.0 inches (76.2 mm) away from the edge of the panel, the edge of a panel cutout, or a galley fitting

(3) They are a minimum distance away from other damage as shown in Damage Size and Spacing Limits, Figure 104/ALLOWABLE DAMAGE 1. Other damage does not include nicks, gouges, and scratches that:

(a) Do not cause damage to the fibers

(b) Are sealed as given in Paragraph 2.

(4) There is a maximum of one damage area in each 20 inch (508 mm) length of the panel.

D. Heel strike damage is permitted if:

(1) The damaged floor panels are either BMS 4-17 Type I or BMS 4-23 Type I

(2) They are a maximum of 2.0 in. (50.8 mm) in the forward and aft direction

(3) They are a maximum of 0.15 in. (3.81 mm) in depth

(4) They span the width of the passenger seat, but are a minimum of 1.0 in. (25.4 mm) from the edge of a panel or a cutout

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(5) They are a minimum distance away from other damage as shown in Figure 104/ALLOWABLE DAMAGE 1. Other damage does not include nicks, gouges, and scratches that:

(a) Do not cause damage to the fibers

(b) Are sealed as given in Paragraph 2.

(6) There is a maximum of one damage area in each 20.0 in. (508.0 mm) length of the panel.

E. Holes and Punctures:

(1) Damage is not permitted in the floor panels that are:

(a) Between STA 328 and STA 380, outboard of the outboard seat track, and on the left and right sides of the airplane

(2) Damage in other floor panels is permitted if:

(a) The damage is a maximum of 4.0 square inches (25.8 square cm) in area

(b) The damage is a minimum of 3.0 inches (76.2 mm) away from the edge of the panel, the edge of a panel cutout, or a galley fitting. area

(c) The damage is a minimum distance away from other damage as shown in Damage Size and Spacing Limits, Figure 104/ALLOWABLE DAMAGE 1. Other damage does not include nicks, gouges, and scratches that:

1) Do not cause damage to the fibers

2) Are sealed as given in Paragraph 2.

(d) There is a maximum of one damage area in each 20 inch (508 mm) length of the panel.

F. Delaminations are not permitted and require repair.

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NOTE: TO FIND DELAMINATION, YOU CAN USE NONDESTRUCTIVE INSPECTION PROCEDURES. REFER TO NDT PART 1, 51-01-02.

THE DIAMETER OF A DAMAGE AREA IS EITHER THE DIAMETER OF THE VISUAL DAMAGE OR THE DIAMETER OF THE DELAMINATION. USE THE DIAMETER OF THE LARGER DAMAGE.

D IS THE LARGER DIAMETER OF TWO ADJACENT DAMAGE AREAS.

d IS THE SMALLER DIAMETER OF TWO ADJACENT DAMAGE AREAS.

X IS THE DISTANCE BETWEEN TWO ADJACENT DAMAGE AREAS.

THE MINIMUM X THAT IS PERMITTED IS THE LARGER OF 0.75D OR 2d.

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Damage Size and Spacing Limits
Figure 104

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REPAIR GENERAL - COMPOSITE FLOOR PANELS

1. Applicability

A. This subject contains repair data for floor panels that are made of one layer of non-metallic or aluminum honeycomb core bonded between two facesheets in a sandwich construction. The facesheets are reinforced with carbon or glass fibers. The repair procedures for the floor panels made from carbon or glass fibers are the same.

NOTE: As an alternative to floor panel repairs you can replace a floor panel. Refer to Paragraph 4./REPAIR GENERAL for floor panel replacement materials.

2. General

A. Repair General gives the repair data that are the same for all of the floor panel repairs. Refer to Table 201/REPAIR GENERAL for an index of the different numbered repairs found in this subject.

Table 201:

REPAIR INDEX	
REPAIR NUMBER	**TITLE**
1	Repair of Damage to One Facesheet in Composite Floor Panels
2	Repair of Damage Less Than 1.0 Inch in Diameter to One Facesheet and the Core in Composite Floor Panels
3	Repair of Damage Less Than 10 Square Inches in Area to One Facesheet and the Core in Composite Floor Panels
4	Repair of Damage Less Than 4 Square Inches in Area to One Facesheet and the Core at an Edge or Corner in Composite Floor Panels
5	Repair of Damage Less Than 10 Square Inches in Area to One Facesheet and the Core at an Edge or Corner in Composite Floor Panels
6	Repair of Damage Less Than 10 Square Inches to Two Facesheets and the Core in Composite Floor Panels
7	Repair of Delamination Damage to a Facesheet in Composite Floor Panels
8	Repair of Delamination Damage Less Than 1 Inch by 1 Inch to a Facesheet at an Edge in Composite Floor Panels
9	Repair of Delamination Damage to One Facesheet at an Edge or Corner in Composite Floor Panels
10	Repair of Damage to the Core on an Edge in Composite Floor Panels
11	Repair of Frayed or Loosened Fibers Less Than 2 Inches in Length in Composite Floor Panels

B. Make sure that you do repairs in a clean location. Make sure that the air in the area has no oil, mist, exhaust fumes, gasses, soot, rain, dust, or other unwanted materials.

C. Prevent repair surface contamination. Do not touch the cleaned parts or the adhesives with your bare hands. Wear clean lint-free gloves when you work with these parts.

D. Refer to Table 202/REPAIR GENERAL for the materials used in these repairs.

E. Refer to Table 203/REPAIR GENERAL for the resin, adhesive, and potting compound data.

Table 202:

FLOOR PANEL REPAIR MATERIALS	
REPAIR MATERIALS	**BOEING SPECIFICATION**
Potting compound	BMS 5-28, Type 19
Repair fabric	BMS 9-3, Type H-2 or H-3, Classes 7, 9, 10, 11, 13 or 14
Laminating resin for the BMS 9-3 repair fabric	BMS 8-201, Type III or Type IV

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Table 202: (Continued)

FLOOR PANEL REPAIR MATERIALS	
REPAIR MATERIALS	**BOEING SPECIFICATION**
Pre-impregnated fiberglass fabric	LTM 23-1FR
Non-metallic honeycomb core for panels with low density Nomex cores	BMS-124, Type V, Grade 5.0, Class 4
Non-metallic honeycomb core for panels with high density Nomex cores	BMS-124, Type V, Grade 9.0, Class 4
Metallic honeycomb core for panels with low density aluminum cores	BMS 4-4, Type 3-20, Grade I, Class N
Metallic honeycomb core for panels with high density aluminum cores	BMS 4-4, Type 2-20, Grade I, Class N
Adhesive for the inserts	BMS 5-107, Class 1

Table 203:

RESIN, ADHESIVE, AND POTTING COMPOUND DATA				
RESIN TYPE	**COMPONENTS**	**PARTS BY WEIGHT**	**POT LIFE**	**CURE TIME AND TEMPERATURE**
BMS 5-28, Type 19 (Potting (compound)	Epocast 1619 Part A Epocast 1619 Part B	Refer to the manufacturer's data	60 minutes	7 days at 77°F (25°C) +/- 5°F or 5 hours at 125°F (52°C) +/- 5°F
BMS 5-107, Class 1 (Adhesive)	Redux 420 Part A Redux 420 Part B	Refer to the manufacturer's data	45 minutes	1 hour at 150° to 175°F (66° to 77°C)
BMS 5-107, Class 1 (Adhesive)	Epibond 420 Part A Epibond 420 Part B	Refer to the manufacturer's data	45 minutes	1 hour at 150° to 175°F (66° to 77°C)
BMS 8-201, Type III (Laminating resin)	Epocast 50-A1 Epocast 9816	Refer to the manufacturer's data	Refer to the manufacturer's data	Refer to Figure 210/REPAIR GENERAL
BMS 8-201, Type IV (Laminating resin)	Epocast 50-A1 Epocast 9816	Refer to the manufacturer's data	Refer to the manufacturer's data	Refer to Figure 210/REPAIR GENERAL

F. Keep the resin systems and potting compounds between 40°F (4°C) and 80°F (27°C) in sealed containers.

(1) Identify the material container with a label that contains the data that follows:

(a) Boeing Material Specification (BMS)

(b) Type

(c) Class

(d) Supplier name

(e) Batch number

(f) Date of preparation.

G. The definitions of terms related to these repairs are as follows:

(1) Bond Line: The adhesive that is between two parts after the cure.

(2) Core: Nomex or aluminum honeycomb structure that is bonded between two facesheets in a sandwich construction.

(3) Cure Cycle: The temperature, pressure, temperature increase rate and temperature decrease rate that is applied over a length of time to cure the resin, potting compound, or adhesive.

(4) Cure Temperature: The temperature that is applied to the bond assembly during the cure cycle.

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(5) Cure Time: The length of time that a part is at the cure temperature and under vacuum.

(6) Damage: A change to a surface that comes from corrosion, erosion, dents, gouges, scratches, punctures and holes.

(7) Delamination: A separation of a facesheet from the core in a sandwich construction.

(8) Edge Delamination: A separation of the parts along an edge.

(9) Facesheet: The outer skin that is bonded to the core in a sandwich construction

(10) Instrumented NDT: An inspection that uses approved instrumentation to find the type and size of internal defects or flaws in a material.

(11) Non-Destructive Test (NDT): An inspection procedure that does not cause damage to the part or the structure.

(12) Part Temperature: The actual temperature of the repair part that is measured by a pyrometer (thermocouples or other probe devices) during the cure cycle.

(13) Porosity: A cluster of small voids in the adhesive.

(14) Pot Life: The time that a resin system, potting compound, or adhesive can be applied.

(15) Room Temperature: Ambient temperature conditions. For Engineering functions, this temperature is 68°F (18°C) to 90°F (32°C).

(16) Void: An empty unoccupied space in a laminate. This is normally associated with resin starved areas.

3. References

Reference	Title
51-10-02	INSPECTION AND REMOVAL OF DAMAGE
51-30-03	NON-METALLIC MATERIALS
AMM 20-30-97 P/B 201	AIRPLANE STRUCTURE CLEANING SOLVENTS (Series 97) - MAINTENANCE PRACTICES
SOPM 20-30-03	General Cleaning Procedures
SOPM 20-30-97	Solvents For Final Cleaning Before Structural Bonding (Series 97)
737 NDT Part 1, 51-05-01	Tap Test Inspection of Honeycomb Sandwich Structure
737 NDT Part 2, 51-00-01	Water Detection in Honeycomb Structure
737 NDT Part 4, 51-00-05	Bondline Delamination Inspection in Honeycomb Structure
737 NDT Part 9, 51-00-02	Inspection for Water in Honeycomb with Liquid Crystal Sheets

4. Replacement Materials

A. Refer to Table 204/REPAIR GENERAL when you replace floor panels of these core materials:

(1) BMS 4-17 fiberglass faced nomex.

(2) BMS 4-23 fiberglass faced aluminum honeycomb.

Table 204: Permitted Replacement Material

INITIAL MATERIAL	REPLACEMENT MATERIAL				
	BMS 4-17 TYPE I	BMS 4-17 TYPE III	BMS 4-17 TYPE VI	BMS 4-23 TYPE I	BMS 4-23 TYPE II
BMS 4-17 TYPE I		*[1]	*[1]	*[1]	*[1]
BMS 4-17 TYPE II					
BMS 4-17 TYPE III			*[1]		*[1]
BMS 4-17 TYPE VI					

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Table 204: Permitted Replacement Material (Continued)

INITIAL MATERIAL	REPLACEMENT MATERIAL				
	BMS 4-17 TYPE I	BMS 4-17 TYPE III	BMS 4-17 TYPE VI	BMS 4-23 TYPE I	BMS 4-23 TYPE II
BMS 4-23 TYPE I		*[1]	*[1]		*[1]
BMS 4-23 TYPE II			*[1]		

*[1] These material replacements are structurally permitted. Some replacements can cause a weight increase.

NOTE: 1. Boeing recommends that you replace damaged two-density material with one-density material equivalent to the higher density of the initial material.

2. If you replace BMS 4-17 material with BMS 4-23 material in wet areas, corrosion can increase in those areas.

3. Tell Boeing before you use replacement materials other than those given in Table 204/REPAIR GENERAL.

5. Repair Procedures That Are the Same For the Different Repairs

A. Find the limits of the damage.

WARNING: DO NOT BREATHE THE FUMES OR ALLOW THE SOLVENTS TO TOUCH YOUR SKIN, EYES, OR CLOTHING. MAKE SURE THAT THE AIR SUPPLY TO THE AREA IS NOT BLOCKED. IF YOU DO NOT OBEY, INJURY TO PERSONS CAN OCCUR. DO NOT USE SOLVENTS IN AREAS WITH EQUIPMENT THAT CAN PRODUCE HEAT OR SPARKS. IF YOU DO NOT OBEY, AN EXPLOSION CAN OCCUR.

CAUTION: DO NOT USE CHEMICAL PAINT STRIPPERS TO CLEAN AWAY THE DAMAGE. THESE CHEMICALS CAN CAUSE DAMAGE TO THE RESIN SYSTEMS. IF YOU DO NOT OBEY, YOU CAN CAUSE THE REPAIR TO BE UNSATISFACTORY.

(1) Clean the damaged area with a soft cloth moist with methyl isobutyl ketone (MIBK), or acetone. Refer to SOPM 20-30-03 for the general cleaning procedures and 51-30-03 for a source of the solvents. Remove all the contamination.

(2) Do an inspection to find the amount of damage.

(a) Do a inspection of the floor panel for the entry of water, dirt, or other unwanted materials.

(b) Do an inspection for water as given in 737 NDT Part 2, 51-00-01.

(c) Do an inspection for delamination as given in 737 NDT Part 4, 51-00-05.

NOTE: If NDT equipment is not available, do a tap test as given in 737 NDT Part 1, 51-05-01.

B. Remove the damaged area of the facesheets.

WARNING: DO NOT USE EQUIPMENT THAT CAUSES AN ARC OR A SPARK IN AN AREA WHERE THE IGNITION OF THE VAPOR IS POSSIBLE. IF YOU DO NOT OBEY, AN EXPLOSION CAN OCCUR AND CAUSE INJURY. USE A VACUUM TABLE OR A PORTABLE VACUUM WHEN YOU REMOVE THE DAMAGED MATERIAL. DO NOT BREATHE THE DUST. WHEN YOU SAND THE PLY LAYERS, A FINE DUST IS MADE THAT CAN BE HAZARDOUS. THE DUST CAN CAUSE SKIN AND EYE IRRITATION OR RESPIRATORY PROBLEMS.

(1) Apply masking tape to the area that is 1.0 inch from the edge of where the largest repair ply will be applied. Refer to the applicable numbered repair figure.

(2) Remove the inserts that are in the damaged area.

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(3) Remove the damaged area of the facesheets in a smooth circular or oval shape with No. 180-grit or smaller abrasive paper. Be careful not to cause damage to the facesheet and core which are not damaged.

(4) Remove the finish inside the taped off area and make the surfaces rough with No. 240-grit or smaller abrasive paper. Be careful not to cause damage to the plies that are not damaged.

(5) If the initial core in the damage area will not be removed, then sand the adhesive that is over the core cells to open the core cells. Use No. 240-grit or smaller abrasive paper. It is not necessary to remove the adhesive fillets from the core.

(6) Remove the tape.

C. Remove the damaged area of the honeycomb core.

CAUTION: DO NOT REMOVE THE INITIAL ADHESIVE ON THE UNDAMAGED FACESHEET THAT REMAINS. IF YOU DO NOT OBEY, YOU CAN CAUSE AN UNSATISFACTORY BOND.

(1) Remove the damaged area of the core with a router. Refer to 51-10-02 for the instructions to use the router and template.

(2) Remove the core to the same dimensions as the hole in the damaged facesheet.

(3) Be careful not to cause damage to the other facesheet if it is not damaged.

(4) Do not remove the initial adhesive from the other facesheet if it is not damaged.

CAUTION: YOU MUST REMOVE THE WATER THAT HAS BEEN ABSORBED INTO THE PART BEFORE A HOT BONDED REPAIR IS MADE. IF YOU DO NOT OBEY, YOU CAN CAUSE THE REPAIR TO BE UNSATISFACTORY.

D. Remove all of the water and other unwanted material. The area of the damage cleanup must be fully dry.

(1) Remove all the water and other unwanted material that you can with a vacuum or with compressed air that is free from oil.

(2) Put a heat blanket below the damage area of the floor panel.

(3) An option to remove the water more quickly is to use a vacuum bag as shown in Water Removal From The Honeycomb Sandwich, Figure 201/REPAIR GENERAL and as follows:

(a) Put a layer of glass fabric or the equivalent (breather cloth) or a metal mesh screen over the area of the water contamination.

1) Use masking tape to hold the fabric or the screen in position.

2) Make sure the cloth or the screen is large enough to go below the vacuum line and gage. The vacuum line and gage must be located outside of the area of the water contamination.

(b) Put a thermocouple at the center of the area that has the water contamination as shown in Water Removal From The Honeycomb Sandwich, Figure 201/REPAIR GENERAL.

1) If the glass fabric breather cloth is used, put the thermocouple below the cloth.

2) If the metal mesh screen is used, put the thermocouple above the screen.

(c) Put a heat blanket on the surface of the facesheet that is not damaged or at the alternative location shown in Water Removal From The Honeycomb Sandwich, Figure 201/REPAIR GENERAL.

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(d) Put a thermocouple adjacent to the heat blanket (on the facesheet side), at the center of the area that has the water contamination.

(e) Put the bases for the vacuum line and the vacuum gage into position. Make sure they touch the breather cloth (or metal screen) but do not go over the area that has the water contamination.

(f) Apply the vacuum sealing compound to the damaged facesheet around the layup.

(g) Seal the location with the vacuum bag material.

(h) Install the vacuum line and the vacuum gage through the vacuum bag material and into the bases.

NOTE: Use a desiccant indicator in the vacuum line to verify that the water removal is complete.

(i) Apply a minimum vacuum of 22 inches mercury.

(4) Increase the temperature at a rate between 1°F and 5°F (0.5°C and 3°C) for each minute until the temperature is between 150°F (65°C) and 170°F (76°C).

(5) Hold the temperature between 150°F (65°C) and 170°F (76°C) for 1 hour minimum.

(6) Decrease the temperature at a maximum rate of 5°F (3°C) for each minute.

(7) Do Step (3) again if there is still water in the damage area.

NOTE: If the water cannot be removed, the material that has the contamination must be removed.

E. Clean the damage area.

WARNING: DO NOT BREATHE THE FUMES OR ALLOW THE SOLVENTS TO TOUCH YOUR SKIN, EYES, OR CLOTHING. MAKE SURE THAT THE AIR SUPPLY TO THE AREA IS NOT BLOCKED. IF YOU DO NOT OBEY, YOU CAN CAUSE SKIN IRRITATION OR INJURY. DO NOT USE SOLVENTS IN AREAS WITH EQUIPMENT THAT CAN PRODUCE HEAT OR SPARKS. IF YOU DO NOT OBEY, AN EXPLOSION CAN OCCUR.

CAUTION: DO NOT SOAK THE PARTS IN SOLVENT. DO NOT LET THE SOLVENT STAY ON THE PARTS FOR MORE THAN 60 SECONDS. IF YOU DO NOT OBEY, YOU CAN CAUSE DAMAGE TO THE FLOOR PANELS.

(1) Clean the repair area with a soft cloth moist with MIBK, or acetone. Refer to SOPM 20-30-03 for the general cleaning procedures and 51-30-03 for a source of the solvents.

(a) Clean the surface again until a new moist cloth is clean after it is used.

(b) Remove the solvent from the surface before it can dry.

(c) Remove the remaining solvent film before you continue the repair.

F. Make the repair parts.

(1) Find which numbered repair from Table 201/REPAIR GENERAL is necessary for the type and size of damage that was found. Refer to the specified numbered repair for the type of repair parts that are necessary.

WARNING: DO NOT USE EQUIPMENT THAT CAUSES AN ARC OR A SPARK IN AN AREA WHERE THE IGNITION OF THE FUMES IS POSSIBLE. IF YOU DO NOT OBEY, AN EXPLOSION CAN OCCUR AND CAUSE INJURIES.

(2) If repair plies are necessary, do as follows:

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(a) Make the repair plies from BMS 9-3, Type H-2 or H-3 glass fiber fabric or LTM 23-1FR prepreg fiberglass fabric. Refer to Table 202/REPAIR GENERAL.

(b) Impregnate the BMS 9-3 repair plies with BMS 8-201 resin as given in Paragraph 5.H./ REPAIR GENERAL

(3) If a repair core is necessary, do as follows:

(a) Make the repair core plug from honeycomb core material. Refer to the component identification section or the engineering drawing to find the type of honeycomb core.

(b) Cut the repair core to have the same perimeter dimension as the core you removed. Refer to 51-10-02 for the instructions to use the router and template.

NOTE: A maximum clearance of 0.125 inch is permitted between the repair core and the core hole.

(c) Cut the repair core to the thickness necessary to be a small distance higher than the outer surface of the initial facesheet.

(d) Clean the honeycomb repair core.

1) For the non-metallic core, soak the non-metallic repair core in isopropyl alcohol (IPA) for a maximum of 60 seconds.

NOTE: If the non-metallic core is still not clean, you can soak it again up to three more times for a maximum of 60 seconds each.

2) For the aluminum core, vapor degrease as given in SOPM 20-30-03.

a) Remove the solvent and dry the honeycomb core. Allow the core to drain on a cloth or use compressed air. Make sure that all the remaining solvent film is removed from all the sides of the core.

CAUTION: DO NOT TOUCH THE ADHESIVE FILM, FOAMING ADHESIVE, OR PREIMPREGNATED MATERIALS WITH YOUR BARE HANDS OR OTHER PARTS OF YOUR BODY. USE CLEAN LINT-FREE GLOVES WHEN YOU TOUCH THESE MATERIALS. THESE MATERIALS MUST HAVE NO CONTAMINATION. DO NOT FOLD, PULL, OR MAKE THE ADHESIVE FILM THIN. MAKE SURE THAT YOU REMOVE THE SEPARATOR SHEET FROM THE ADHESIVES AND PREIMPREGNATED MATERIALS BEFORE INSTALLATION. KEEP ALL THE SEPARATOR SHEETS UNTIL THE LAYUP IS COMPLETE. COUNT THE SHEETS TO MAKE SURE THAT ONE WAS NOT INCLUDED IN THE LAYUP. IF YOU DO NOT OBEY, THE REPAIR WILL BE UNSATISFACTORY.

G. Install the honeycomb repair core.

(1) Apply a layer of BMS 5-28, Type 19 potting compound on the sides of the initial core edges that will touch when the plug is installed.

NOTE: If the two sides of the floor panel are damaged, use a caul plate to support the repair. Use clamps, tape, or vacuum bag to hold the caul plate in position.

(2) If one surface of the repair core will touch an undamaged facesheet when the repair core is installed, do the step that follows:

(a) Apply a layer of BMS 5-28, Type 19 potting compound to the surface of the repair core that touches the undamaged facesheet.

(3) Align the ribbon direction of the core repair plug with that of the initial core.

(4) Carefully compress the repair core and put it into the core hole.

NOTE: Make sure that the core repair plug has a tight interference fit in the core hole.

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(5) Fill the core cells adjacent to the bond line with BMS 5-28, Type 19 potting compound.

H. Do the vacuum bag procedure or the alternate procedure to impregnate the BMS 9-3 repair plies with BMS 8-201, Type III or IV laminating resin.

(1) To impregnate the BMS 9-3 repair plies with the vacuum bag procedure, refer to Vacuum Bag Procedure to Impregnate the BMS 9-3 Repair Plies with BMS 8-201 Resin, Figure 202/REPAIR GENERAL and do the steps that follow.

(a) Cut two pieces of vacuum bag material. Make the bag material a minimum of 6 inches larger than the fabric that will be impregnated.

(b) Cut one piece of breather cloth that is two inches smaller than the vacuum bag material.

(c) Cut two pieces of solid parting film. Make them a minimum of 3 inches larger than the fabric.

1) Put one piece of vacuum bag material on a smooth surface. Hold the vacuum bag material in position with tape.

2) Apply vacuum sealing compound to the edge of the vacuum bag material.

3) Place the second piece of vacuum bag material over the first and seal one edge.

4) Install a vacuum probe and gage.

(d) Put one piece of the solid parting film on the first piece of vacuum bag material.

(e) Weigh the fabric to be impregnated.

1) Multiply the weight by 1.3. The result gives you the weight of the laminating resin necessary to impregnate the fabric.

NOTE: The resin-to-fiber content will be approximately 1 to 1 by weight after the parting film is separated.

(f) Mix the BMS 8-201 laminating resin as given in Table 203/REPAIR GENERAL. Weigh the laminating resin to find the correct amount necessary to impregnate the fabric.

(g) Put the fabric over the parting film. Make sure the fabric is smooth.

(h) Put the resin in the center of the fabric.

(i) Put the second piece of solid parting film above the fabric. Make sure the parting film is smooth.

(j) Put the breather cloth over the parting film.

(k) Seal the vacuum bag.

(l) Apply full vacuum to the vacuum bag.

(m) Sweep the resin from the center to the edge of the fabric. Make the resin and the fabric smooth. Keep all of the resin in the fabric.

(n) Release the vacuum from the vacuum bag.

(o) Remove the vacuum bag.

(p) Cut the repair plies. Do not remove the solid parting film.

(2) To impregnate the BMS 9-3 repair plies with the alternate procedure, refer to Alternate Procedure to Impregnate the BMS 9-3 Repair Plies with BMS 8-201 Resin, Figure 203/REPAIR GENERAL and do the steps that follow.

(a) Cut two pieces of solid parting film. Make them 3 inches larger than the fabric.

(b) Put one piece of solid parting film on a smooth surface. Hold it in position with tape.

(c) Weigh the fabric to be impregnated.

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1) Multiply the weight by 1.3. The result gives you the weight of the laminating resin necessary to impregnate the fabric.

NOTE: The resin-to-fiber content will be approximately 1 to 1 by weight after the parting film is separated.

(d) Mix the laminating resin as given in Table 203/REPAIR GENERAL. Weigh the laminating resin to find the correct amount necessary to impregnate the fabric.

(e) Put half of the resin in the center of the solid parting film.

(f) Put the fabric above the solid parting film and the laminating resin.

(g) Put the laminating resin that remains over the fabric in the center.

(h) Put the second piece of solid parting film above the fabric. Make sure that the parting film is smooth.

(i) Sweep the resin from the center to the edge of the fabric. Make the resin and the fabric smooth. Keep all of the resin in the fabric.

(j) Cut the repair plies. Do not remove the solid parting film at this time.

I. Apply the LTM 23-1FR prepreg fiberglass fabric.

(1) Cut the repair plies from a sheet of LTM 23-1FR perpreg fiberglass fabric.

(2) Remove parting film and apply plies onto the repair area. Prepreg may be warmed with a heat gun to 120°F (49°C) maximum to assist in placing of prepreg.

J. Apply the BMS 9-3 repair plies.

CAUTION: DO NOT TOUCH THE ADHESIVE FILM, FOAMING ADHESIVE, OR PREIMPREGNATED MATERIALS WITH YOUR BARE HANDS OR OTHER PARTS OF YOUR BODY. USE CLEAN LINT-FREE GLOVES WHEN YOU TOUCH THESE MATERIALS. THESE MATERIALS MUST HAVE NO CONTAMINATION. DO NOT FOLD, PULL, OR MAKE THE ADHESIVE FILM THIN. MAKE SURE THAT YOU REMOVE THE SEPARATOR SHEET FROM THE ADHESIVES AND PREIMPREGNATED MATERIALS BEFORE INSTALLATION. KEEP ALL THE SEPARATOR SHEETS UNTIL THE LAYUP IS COMPLETE. COUNT THE SHEETS TO MAKE SURE THAT ONE WAS NOT INCLUDED IN THE LAYUP. IF YOU DO NOT OBEY, THE REPAIR WILL BE UNSATISFACTORY.

(1) Remove the first piece of parting film.

(2) Put the ply on the repair. Make the ply smooth and free from wrinkles.

(3) Remove the second piece of parting film.

(4) Do steps (1) through (3) for each repair ply.

K. Assemble the vacuum bag system that will be used to cure the repair.

(1) Do steps (a) through (f) that follow and refer to Vacuum Bag Instructions for the Cure of the Repair with an Oven or Heat Lamp, Figure 204/REPAIR GENERAL if you will cure the repair at room temperature or at a temperature that is higher that room temperature with heat lamps or an oven.

(a) Put a layer of perforated parting film that is a minimum of 1.0 inch larger all around the repair area, above the repair area.

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(b) If you cure the repair at a temperature that is higher than room temperature, put the thermocouples at the locations shown in Vacuum Bag Instructions for the Cure of the Repair with an Oven or Heat Lamp, Figure 204/REPAIR GENERAL. Connect the thermocouples to the applicable recorders.

(c) Put a layer of dry peel ply or glass fabric cloth (BMS 9-3, Types D, H-2, or H-3 or the equivalent) above the perforated parting film. This will be the surface bleeder.

(d) Put a layer of solid parting film over the surface bleeder that is 0.5 inch less all around than the surface bleeder.

(e) Put one layer of glass fabric cloth (BMS 9-3, Types D, H-2, or H-3, Classes 8, 9, 10, 11, 12, or 13 or the equivalent) that is the same size as the surface bleeder above the repair area. This will be the breather cloth.

NOTE: Make sure the breather cloth touches the surface bleeder when you put the layup together.

(f) Seal the repair with the vacuum bag material.

1) Refer to Optional Procedures for the Vacuum Bag, Figure 205/REPAIR GENERAL for optional procedures you can use to seal the repair with the vacuum bag.

2) Put the bases for the vacuum line and the vacuum gage into position.

3) If necessary, apply the vacuum sealing compound around the layup.

4) Cut slits in the vacuum bag at the locations where the vacuum line and vacuum gage will be attached to the bases.

5) Install the vacuum line and the vacuum gage through the vacuum bag material and into the bases.

(2) Do steps (a) through (h) that follow and refer to Vacuum Bag Instructions for the Cure of the Repair Plies with a Heat Blanket, Figure 206/REPAIR GENERAL if you will cure the repair at a temperature that is higher that room temperature with a heat blanket.

(a) Put a layer of perforated parting film that is a minimum of 1.0 inch larger all around the repair area, above the repair area.

(b) Put the thermocouples at the locations shown in Vacuum Bag Instructions for the Cure of the Repair Plies with a Heat Blanket, Figure 206/REPAIR GENERAL. Connect the thermocouples to the applicable recorders.

(c) Put a layer of dry peel ply or glass fabric cloth (BMS 9-3, Types D, H-2, or H-3 or the equivalent) above the perforated parting film. This will be the surface bleeder. The surface bleeder should be a minimum of 2.0 inches larger all around than the heat blanket.

(d) Put a layer of solid parting film over the surface bleeder that is 0.5 inch less all around than the surface bleeder.

(e) Put a heat blanket above the solid parting film that is a minimum of 2.0 inches larger all around than the largest repair ply.

CAUTION: IT IS RECOMMENDED THAT YOU USE A MINIMUM OF ONE THERMOCOUPLE ON THE SIDE OF THE HEAT BLANKET THAT IS NEAREST TO THE REPAIR AREA. HEAT BLANKETS SOMETIMES BECOME DEFECTIVE AND CAN HEAT UP TOO QUICKLY OR GET TOO HOT. THE RESULT CAN BE AN UNSATISFACTORY REPAIR.

(f) Put one to four thermocouples on the side of the heat blanket that is nearest to the repair area.

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(g) Put four to six layers of glass fabric cloth (BMS 9-3, Types D, H-2, or H-3 or the equivalent) that are the same size as the surface bleeder above the repair area. These will be the breather cloths.

(h) Seal the repair with the vacuum bag material.

1) Refer to Optional Procedures for the Vacuum Bag, Figure 205/REPAIR GENERAL for optional procedures you can use to seal the repair with the vacuum bag.

2) Put the bases for the vacuum line and the vacuum gage into position.

3) If necessary, apply the vacuum sealing compound around the layup.

4) Cut slits in the vacuum bag at the locations where the vacuum line and vacuum gage will be attached to the bases.

5) Install the vacuum line and the vacuum gage through the vacuum bag material and into the bases.

L. Do a check of the vacuum bag for leaks.

NOTE: A vacuum bag which has a leak can cause porosity in the repair and bond failure.

(1) Apply a minimum vacuum of 22 inches of mercury.

(2) Remove the vacuum source.

(3) Monitor the vacuum gage. After 5 minutes, the total difference in vacuum must be less than 5 inches of mercury.

M. Apply the mechanical pressure for the cure.

(1) Use clamps, weights, sand bags, or hydraulic jacks to apply a pressure of 10 to 15 pounds per square inch.

NOTE: The pressure must be applied equally to all the areas of the repair.

(2) Put a layer of solid parting film between the repair and the clamps, weights, sand bags, or hydraulic jacks you use to apply the pressure.

N. Apply the vacuum pressure for the cure.

(1) Apply and keep a vacuum to a minimum of 22 inches of mercury in the vacuum bag during the cure cycle.

O. Apply the temperature for the cure.

(1) You can cure the repair materials at room temperature or at a temperature that is higher than room temperature.

(2) To cure the repair at a temperature that is higher than room temperature, apply the temperature with a heat lamp, oven or heat blanket.

(a) Refer to Distance and Temperature Data for the Cure of the Repair with a Heat Lamp, Figure 207/REPAIR GENERAL for distance to put a 250 watt heat lamp from the surface of the repair.

(3) Monitor the temperature with the thermocouples. Make sure that the temperature does not increase at a rate more than 7°F (4°C) for each minute.

P. Cure the BMS 5-28 potting compound.

(1) Cure the potting compound for 5 hours at 120° to 130°F (49° to 54°C) as shown in Cure Cycle for the BMS 5-28, Type 19 Potting Compound, Figure 208/REPAIR GENERAL.

(a) As an alternative, you can cure the potting compound 7 days at 72° to 82°F (22° to 28°C). Do not remove the pressure until the cure is completed.

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Q. Cure the LTM 23-1FR prepreg fiberglass fabric.

(1) Cure the LTM 23-1FR prepreg fiberglass fabric as shown in Figure 211/REPAIR GENERAL.

NOTE: Do not exceed 180°F (82°C).

R. Cure the BMS 8-201 resin.

(1) Cure the BMS 8-201 resin as shown in Cure Time and Temperature Data for the BMS 8-201 Resin, Figure 210/REPAIR GENERAL.

S. Install the inserts.

WARNING: DO NOT BREATHE THE FUMES OR ALLOW THE SOLVENTS TO TOUCH YOUR SKIN, EYES, OR CLOTHING. MAKE SURE THAT THE AIR SUPPLY TO THE AREA IS NOT BLOCKED. IF YOU DO NOT OBEY, YOU CAN CAUSE SKIN IRRITATION OR INJURY. DO NOT USE SOLVENTS IN AREAS WITH EQUIPMENT THAT CAN PRODUCE HEAT OR SPARKS. IF YOU DO NOT OBEY, AN EXPLOSION CAN OCCUR.

CAUTION: DO NOT TOUCH THE ADHESIVE FILM, FOAMING ADHESIVE, OR PREIMPREGNATED MATERIALS WITH YOUR BARE HANDS OR OTHER PARTS OF YOUR BODY. USE CLEAN LINT-FREE GLOVES WHEN YOU TOUCH THESE MATERIALS. THESE MATERIALS MUST HAVE NO CONTAMINATION. DO NOT FOLD, PULL, OR MAKE THE ADHESIVE FILM THIN. MAKE SURE THAT YOU REMOVE THE SEPARATOR SHEET FROM THE ADHESIVES AND PREIMPREGNATED MATERIALS BEFORE INSTALLATION. KEEP ALL THE SEPARATOR SHEETS UNTIL THE LAYUP IS COMPLETE. COUNT THE SHEETS TO MAKE SURE THAT ONE WAS NOT INCLUDED IN THE LAYUP. IF YOU DO NOT OBEY, THE REPAIR WILL BE UNSATISFACTORY.

(1) If a Shur-Lok SL5094A4, SL5111A3, or SL5182 insert was removed, do as follows.

(a) Find the location of the initial insert.

(b) Drill a hole at the location of the initial insert.

NOTE: Do not use liquid coolants or liquid lubricants when you drill the hole.

1) Drill a hole through the thickness of the floor panel. Refer to Table 205/REPAIR GENERAL for the diameter of the hole for the different inserts.

Table 205:

HOLE DIAMETERS FOR FLOOR PANEL INSERTS	
INSERT NUMBER	**HOLE DIAMETER (INCH)**
SL618-3CM	0.561 to 0.566
SL2334-3C2	0.562 to 0.565
SL5094A4	0.562 to 0.572
SL5111A3	0.440 to 0.447
SL5182A3	0.500 to 0.510

2) Do not damage the floor panel when you drill the hole.

3) Make sure there are no loose pieces of core or loose fibers in the hole.

(c) Make the surface near the hole rough. Make the rough area 0.05 to 0.10 inch larger than the head of the insert.

(d) Clean the repair area and the inserts as given in Paragraph 5.E./REPAIR GENERAL

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(e) Apply a layer of BMS 5-107, Class 1 adhesive (prepared as given in Table 203/REPAIR GENERAL) to the mating surfaces of the insert and floor panel.

(f) Assemble the inserts. Push the two parts of the insert together to get the dimensions shown in Installation of a Shur-Lok SI5094, SL5111, or SL5182 Insert, Figure 212/REPAIR GENERAL.

(g) Remove all of the adhesive from the inner bore of the insert before the adhesive is cured.

1) Adhesive fillets are permitted if they extend less than 0.015 inch from the outer surface of the insert flange. Refer to Cure Cycle for the BMS 5-107 Adhesive, Figure 213/REPAIR GENERAL.

(h) Cure the adhesive at 150° to 175°F (66° to 77°C) for 1 hour as shown in Cure Cycle for the BMS 5-107 Adhesive, Figure 213/REPAIR GENERAL.

1) Let the floor panel stay at room temperature for 12 hours before you install it.

(2) If a Shur-Lok SL618-3CM or SL2334-3C2 insert was removed, do as follows:

(a) Find the location of the initial insert.

(b) Drill a hole at the location of the initial insert.

NOTE: Do not use liquid coolants or liquid lubricants when you drill the hole.

1) Refer to Table 205/REPAIR GENERAL for the diameter of the hole for the different inserts.

2) Make the depth of the hole 0.04 inch more than the length of the insert.

3) Do not damage the floor panel when you drill the hole.

4) Do not permit the drill to touch the opposite facesheet.

5) Make sure there are no loose pieces of core or loose fibers in the hole.

(c) Clean the repair area and the inserts as given in Paragraph 5.E./REPAIR GENERAL

(d) Fill the hole 50 percent full with BMS 5-28, Type 19 potting compound prepared as given in Table 203/REPAIR GENERAL.

(e) Put the insert in the hole.

(f) Inject more potting compound into one hole in the alignment tab of the insert until the potting compound comes out of the other hole. Refer to Installation of a Shur-Lok SL2334 Insert, Figure 214/REPAIR GENERAL.

1) If there is too much potting compound, remove it with a gauze pad that is lightly moist with MIBK, or acetone.

(g) Cure the potting compound for 5 hours at 120° to 130°F (49° to 54°C) as shown in Cure Cycle for the BMS 5-28, Type 19 Potting Compound, Figure 208/REPAIR GENERAL.

1) As an alternative, you can cure the potting compound for 7 days at 72° to 82°F (22° to 28°C).

(h) Remove the alignment tab.

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NOTES

1 THIS LOCATION MAY BE USED FOR A SECOND HEAT BLANKET TO INCREASE THE RATE OF WATER REMOVAL.

2 THE VACUUM PROBE AND GAGE MUST TOUCH THE SURFACE OF THE BREATHER PLY.

3 USE A THERMOCOUPLE AT THIS LOCATION IF YOU USE A GLASS FABRIC BREATHER.

4 USE A THERMOCOUPLE AT THIS LOCATION IF YOU USE A METAL MESH SCREEN.

F87904 S0006587793_V1

Water Removal From The Honeycomb Sandwich
Figure 201

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F87905 S0006587794_V1

Vacuum Bag Procedure to Impregnate the BMS 9-3 Repair Plies with BMS 8-201 Resin
Figure 202 (Sheet 1 of 2)

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SECTION THROUGH THE LAYUP FOR CORE REPLACEMENT

F87906 S0006587795_V1

Vacuum Bag Procedure to Impregnate the BMS 9-3 Repair Plies with BMS 8-201 Resin
Figure 202 (Sheet 2 of 2)

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F87907 S0006587796_V1

Alternate Procedure to Impregnate the BMS 9-3 Repair Plies with BMS 8-201 Resin
Figure 203 (Sheet 1 of 2)

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SECTION THROUGH THE LAYUP FOR CORE REPLACEMENT

F87908 S0006587797_V1

Alternate Procedure to Impregnate the BMS 9-3 Repair Plies with BMS 8-201 Resin
Figure 203 (Sheet 2 of 2)

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NOTES

1 THE VACUUM PROBE AND GAGE MUST TOUCH THE SURFACE OF THE BREATHER PLY.

F87909 S0006587798_V1

Vacuum Bag Instructions for the Cure of the Repair with an Oven or Heat Lamp
Figure 204 (Sheet 1 of 2)

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SECTION THRU THE VACUUM BAG SYSTEM

F87911 S0006587799_V1

Vacuum Bag Instructions for the Cure of the Repair with an Oven or Heat Lamp
Figure 204 (Sheet 2 of 2)

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SATISFACTORY - VACUUM BAG SEALED TO ONE SIDE ONLY

SATISFACTORY - VACUUM BAG SEALED AROUND ALL OF THE PART

F87913 S0006587800_V1

Optional Procedures for the Vacuum Bag
Figure 205

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NOTES

1 THE VACUUM PROBE AND GAGE MUST TOUCH THE SURFACE OF THE BREATHER PLY.

F87914 S0006587801_V1

Vacuum Bag Instructions for the Cure of the Repair Plies with a Heat Blanket
Figure 206 (Sheet 1 of 2)

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SECTION THRU THE VACUUM BAG SYSTEM

F87915 S0006587802_V1

Vacuum Bag Instructions for the Cure of the Repair Plies with a Heat Blanket
Figure 206 (Sheet 2 of 2)

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HEAT LAMP
TEMPERATURE CURE 1

NOTES

- USE THERMOCOUPLES TO MONITOR THE TEMPERATURE.

1 THE DISTANCE IN INCHES OF A 250 WATT HEAT LAMP FROM THE SURFACE OF THE REPAIR VS THE TEMPERATURE AT THE SURFACE OF THE REPAIR.

F87916 S0006587803_V1

Distance and Temperature Data for the Cure of the Repair with a Heat Lamp
Figure 207

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F87917 S0006587804_V1

Cure Cycle for the BMS 5-28, Type 19 Potting Compound
Figure 208

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F87918 S0006587805_V1

Cure Cycle for the BMS 5-92 Adhesive
Figure 209

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CAUTION IF THE RESIN IS EXPOSED TO HUMIDITY DURING CURE, IT CAN ABSORB MOISTURE WHICH RETARDS THE CURE. COVERING THE LAYUP WITH PARTING FILM WILL PROTECT THE RESIN FROM HUMIDITY.

NOTES

- USE THERMOCOUPLES TO MONITOR THE TEMPERATURE.
- THE TIME BEFORE YOU DRILL HOLES, APPLY FINISHES, OR DO OTHER SUBSEQUENT PROCEDURES.

1 LINES ARE MINIMUM TIME AND TEMPERATURE REQUIRED FOR FULL CURE.

2 AFTER CURE, COOL PART TO 100° F BEFORE THE BAG AND TOOL ARE REMOVED.

F87919 S0006587806_V2

Cure Time and Temperature Data for the BMS 8-201 Resin
Figure 210

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NOTE: CURE TIME STARTS WHEN THE PART HAS REACHED THE DESIRED CURE TEMPERATURE.

CURE CYCLE FOR LTM23-1FR PREPREG FIBERGLASS FABRIC

2426504 S0000561236_V1

Cure Cycle for LTM 23-1FR Prepreg Fiberglass Fabric
Figure 211

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F87920 S0006587807_V1

Installation of a Shur-Lok Sl5094, SL5111, or SL5182 Insert
Figure 212

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F87921 S0006587809_V1

Cure Cycle for the BMS 5-107 Adhesive
Figure 213

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F87923 S0006587810_V1

Installation of a Shur-Lok SL2334 Insert
Figure 214

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REPAIR 1 - REPAIR OF DAMAGE TO ONE FACESHEET IN COMPOSITE FLOOR PANELS

1. Applicability

A. REPAIR 1 is applicable to damage to one facesheet of a floor panel.

B. Refer to REPAIR 7 for delamination damage to a facesheet.

C. Refer to REPAIR 8 for delamination damage to a facesheet that is less than 1 inch by 1 inch and is at an edge.

2. General

A. The materials necessary for this repair are given in Table 201/REPAIR 1.

(1) You can use LTM 23-1FR prepreg fiberglass fabric or BMS 9-3 repair fabric to repair the floor panel. The two repair materials are satisfactory.

Table 201:

FLOOR PANEL REPAIR MATERIALS	
REPAIR MATERIALS	**BOEING SPECIFICATION**
Potting compound	BMS 5-28, Type 19
Prepreg fiberglass fabric	LTM 23-1FR
Repair fabric	BMS 9-3, Type H-2 or H-3, Classes 7, 9, 10, 11, 13, or 14 if BMS 9-3 along with BMS 8-201, Type III or IV is used
Laminating resin for the BMS 9-3 repair fabric	BMS 8-201, Type III or IV
Adhesive for the inserts	BMS 5-107, Class 1

3. Repair Instructions

A. Find the limits of the damage. Refer to Paragraph 5.A./REPAIR GENERAL.

B. Remove the inserts in the damaged area.

C. Remove the damaged facesheet as shown in Removal of the Damage (LTM 23-1FR or BMS 9-3 along with BMS 8-201, Type III or IV), Figure 201/REPAIR 1. Refer to Paragraph 5.B./REPAIR GENERAL for the steps to remove the damage.

D. Remove loose pieces of the core. Do not remove the core that is attached.

E. Remove all of the water or other unwanted material as given in Paragraph 5.D./REPAIR GENERAL. The area of the damage cleanup must be fully dry.

F. Clean the repair area as given in Paragraph 5.E./REPAIR GENERAL.

G. If there are any exposed honeycomb core cells, fill them with BMS 5-28, Type 19 potting compound.

(1) Prepare the potting compound as given in Table 203/REPAIR GENERAL.

(2) Fill all open core cells until the level of the potting compound is higher than the outer surface of the facesheet.

CAUTION: DO NOT PERMIT THE SOLVENTS TO TOUCH THE UNCURED POTTING COMPOUND. IF YOU DO NOT OBEY, THE REPAIR WILL BE UNSATISFACTORY.

H. Cure the potting compound.

(1) Cure the potting compound as given in Paragraph 5.P./REPAIR GENERAL.

(2) If you cure the potting compound at a temperature that is higher than room temperature, apply the temperature as given in Paragraph 5.O./REPAIR GENERAL.

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(a) If you use a heat blanket to apply the temperature, put a layer of solid parting film between the floor panel and the heat blanket.

I. Sand the surface of the potting compound until it is smooth with the outer surface of the facesheet.

J. Clean the repair area as given in Paragraph 5.E./REPAIR GENERAL.

K. Prepare and apply the repair plies.

(1) If you use BMS 9-3 fabric as the repair ply material:

(a) Refer to Repair 1 - Layout of the Repair Parts - Fabric Repair (LTM 23-1FR or BMS 9-3 along with BMS 8-201, Type III or IV), Figure 202/REPAIR 1 for the layout of the repair parts.

(b) Impregnate the repair plies with BMS 8-201 resin as given in Paragraph 5.H./REPAIR GENERAL.

(c) Apply the repair plies as given in Paragraph 5.J./REPAIR GENERAL. Use the number of plies equal to the number of damaged plies to be replaced plus one more for overlap.

(2) If you use LTM 23-1FR prepreg fiberglass fabric as the repair ply material:

(a) Refer to Repair 1 - Layout of the Repair Parts - Fabric Repair (LTM 23-1FR or BMS 9-3 along with BMS 8-201, Type III or IV), Figure 202/REPAIR 1 for the layout of the repair parts.

(b) Apply the repair plies as given in Paragraph 5.I./REPAIR GENERAL. Use the number of plies equal to the number of damaged plies to be replaced plus one more ply for overlap.

L. Apply the pressure for the cure of the repair plies.

(1) If you use BMS 9-3 fabric as the repair ply material, you must apply vacuum pressure.

(a) Assemble the vacuum bag system as given in Paragraph 5.K./REPAIR GENERAL.

(b) Do a check of the vacuum bag for leaks as given in Paragraph 5.L./REPAIR GENERAL.

(c) Apply the vacuum pressure as given in Paragraph 5.N./REPAIR GENERAL.

(2) If you use LTM 23-1FR prepreg fiberglass fabric as the repair ply material, you must apply vacuum pressure.

(a) Assemble the vacuum bag system as given in Paragraph 5.K./REPAIR GENERAL.

(b) Do a check of the vacuum bag for leaks as given in Paragraph 5.L./REPAIR GENERAL.

(c) Apply the vacuum pressure as given in Paragraph 5.N./REPAIR GENERAL.

M. Cure the repair.

(1) If you use BMS 9-3 fabric as the repair ply material, do the steps that follow:

(a) Cure the BMS 8-201 resin as given in Paragraph 5.R./REPAIR GENERAL.

(b) If you cure the BMS 8-201 resin at a temperature that is higher than room temperature, apply the temperature as given in Paragraph 5.O./REPAIR GENERAL.

(2) If you use LTM 23-1FR prepreg fiberglass fabric as the repair ply material, do the steps that follow:

(a) Cure the LTM 23-1FR prepreg fiberglass fabric as given in Paragraph 5.Q./REPAIR GENERAL.

(b) If you cure the LTM 23-1FR prepreg fiberglass fabric at a temperature that is higher than room temperature, apply the temperature as given in Paragraph 5.O./REPAIR GENERAL.

N. Install the inserts, if they were removed, as given in Paragraph 5.S./REPAIR GENERAL.

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O. Apply the finish to the repair area. Use the same finish that was used on the initial floor panel.

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CIRCULAR SHAPE IS SHOWN, OVAL SHAPES ARE ALSO PERMITTED

SECTION THROUGH THE CENTER OF THE DAMAGE REMOVAL

F87850 S0006587813_V1

Removal of the Damage (LTM 23-1FR or BMS 9-3 along with BMS 8-201, Type III or IV)
Figure 201

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CIRCULAR SHAPE IS SHOWN, OVAL SHAPES ARE ALSO PERMITTED

F87851 S0006587814_V3

Repair 1 - Layout of the Repair Parts - Fabric Repair (LTM 23-1FR or BMS 9-3 along with BMS 8-201, Type III or IV)
Figure 202 (Sheet 1 of 2)

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SECTION THROUGH THE CENTER OF THE REPAIR

F87852 S0006587815_V3

Repair 1 - Layout of the Repair Parts - Fabric Repair (LTM 23-1FR or BMS 9-3 along with BMS 8-201, Type III or IV)
Figure 202 (Sheet 2 of 2)

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REPAIR 2 - REPAIR OF DAMAGE LESS THAN 1.0 INCH IN DIAMETER TO ONE FACESHEET AND THE CORE IN COMPOSITE FLOOR PANELS

1. Applicability

A. REPAIR 2 is applicable to damage to one facesheet and the core of a floor panel. The damage must be less than 1.0 inch in diameter.

B. Refer to REPAIR 3 for damage that is larger than 1.0 inch in diameter.

2. General

A. The materials necessary for this repair are given in Table 201/REPAIR 2.

(1) You can use BMS 9–3 repair fabric or LTM 23-1FR prepreg fiberglass fabric to repair the floor panel. The two repair materials are equally satisfactory.

Table 201:

FLOOR PANEL REPAIR MATERIALS	
REPAIR MATERIALS	**BOEING SPECIFICATION**
Potting compound	BMS 5-28, Type 19
Repair fabric	BMS 9-3, Type H-2 or H-3, Classes 7, 9, 10, 11, 13 or 14
Laminating resin for the BMS 9-3 repair fabric	BMS 8-201, Type III or Type IV
Prepreg fiberglass fabric	LTM 23-1FR
Adhesive for the inserts	BMS 5-107, Class 1

3. Repair Instructions

A. Find the limits of the damage. Refer to Paragraph 5.A./REPAIR GENERAL

B. Remove the inserts in the damaged area.

C. Remove the damage as shown in Removal of the Damage, Figure 201/REPAIR 2. Refer to Paragraph 5.B./REPAIR GENERAL and Paragraph 5.C./REPAIR GENERAL for the steps to remove the damage.

D. Remove the water or other unwanted material as given in Paragraph 5.D./REPAIR GENERAL. The area of the damage cleanup must be fully dry.

E. Clean the damaged area as given in Paragraph 5.E./REPAIR GENERAL

F. Fill the damage area with BMS 5-28, Type 19 potting compound.

(1) Prepare the potting compound as given in Table 203/REPAIR GENERAL.

(2) Fill the damage area until the level of the potting compound is higher than the outer surface of the facesheet.

CAUTION: DO NOT PERMIT THE SOLVENTS TO TOUCH THE UNCURED POTTING COMPOUND. IF YOU DO NOT OBEY, THE REPAIR WILL BE UNSATISFACTORY.

G. Cure the potting compound.

(1) Cure the potting compound as given in Paragraph 5.P./REPAIR GENERAL

(2) If you cure the potting compound at a temperature higher than room temperature, apply the temperature as given in Paragraph 5.O./REPAIR GENERAL

(a) If you use a heat blanket to apply the temperature, put a layer of solid parting film between the floor panel and the heat blanket.

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H. Sand the surface of the potting compound until it is smooth with the outer surface of the facesheet.

I. Clean the repair surface as given in Paragraph 5.E./REPAIR GENERAL

J. Prepare and apply the repair plies.

(1) If you use BMS 9-3 fabric as the repair ply material:

(a) Refer to Repair 2 - Layout of the Repair Parts - Glass Prepreg Fabric Repair, Figure 202/REPAIR 2 for the layout of the repair parts.

(b) Impregnate the repair plies with BMS 8-201 resin as given in Paragraph 5.H./REPAIR GENERAL

(c) Apply the repair plies as given in Paragraph 5.J./REPAIR GENERAL. Use the number of plies equal to the number of damaged plies to be replaced plus one more for overlap.

(2) If you use LTM 23-1FR prepreg fiberglass fabric as the repair ply material:

(a) Refer to Figure 202/REPAIR 2 for the layout of the repair parts.

(b) Apply the repair ply as given in Paragraph 5.I./REPAIR GENERAL. Use the number of plies equal to the number of damaged plies to be replaced plus one more ply for overlap.

K. Apply the pressure for the cure of the repair plies.

(1) If you use BMS 9-3 fabric as the repair ply material, you must apply vacuum pressure.

(a) Assemble the vacuum bag system as given in Paragraph 5.K./REPAIR GENERAL

(b) Do a check of the vacuum bag for leaks as given in Paragraph 5.L./REPAIR GENERAL

(c) Apply the vacuum pressure as given in Paragraph 5.N./REPAIR GENERAL

(2) If you use LTM 23-1FR prepreg fiberglass fabric as the repair ply material, you must apply vacuum pressure.

(a) Assemble the vacuum bag system as given inParagraph 5.K./REPAIR GENERAL.

(b) Do a check of the vacuum bag for leaks as given in Paragraph 5.L./REPAIR GENERAL.

(c) Apply the vacuum pressure as given in Paragraph 5.N./REPAIR GENERAL.

L. Cure the repair.

(1) If you use BMS 9-3 fabric as the repair ply material, do the steps that follow:

(a) Cure the BMS 8-201 resin as given in Paragraph 5.R./REPAIR GENERAL

(b) If you cure the BMS 8-201 resin at a temperature that is higher than room temperature, apply the temperature as given in Paragraph 5.O./REPAIR GENERAL

(2) If you use LTM 23-1FR prepreg fiberglass fabric as the repair ply material, do the steps that follow:

(a) Cure the LTM 23-1FR prepreg fiberglass fabric as given in Paragraph 5.Q./REPAIR GENERAL.

(b) If you cure the LTM 23-1FR prepreg fiberglass fabric at a temperature that is higher than room temperature, apply the temperature as given in Paragraph 5.O./REPAIR GENERAL.

M. Install the inserts, if they were removed, as given in Paragraph 5.S./REPAIR GENERAL.

N. Apply the finish to the repair area. Use the same finish that was used on the initial floor panel.

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SECTION THROUGH THE CENTER OF THE DAMAGE REMOVAL

F87856 S0006587820_V1

Removal of the Damage
Figure 201

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F87858 S0006587821_V2

Repair 2 - Layout of the Repair Parts - Glass Prepreg Fabric Repair
Figure 202 (Sheet 1 of 2)

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SECTION THROUGH THE CENTER OF THE REPAIR

F87859 S0006587822_V2

Repair 2 - Layout of the Repair Parts - Glass Prepreg Fabric Repair
Figure 202 (Sheet 2 of 2)

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REPAIR 3 - REPAIR OF DAMAGE LESS THAN 10 SQUARE INCHES IN AREA TO ONE FACESHEET AND THE CORE IN COMPOSITE FLOOR PANELS

1. Applicability

A. REPAIR 3 is applicable to damage to one facesheet and the core of a floor panel.

B. Refer to REPAIR 2 if the damage is less than 1.0 inch in diameter.

2. General

A. The materials necessary for this repair are given in Table 201/REPAIR 3.

(1) You can use LTM 23-1FR prepreg fiberglass fabric or BMS 9-3 repair fabric to repair the floor panel. The two repair materials are satisfactory.

Table 201:

FLOOR PANEL REPAIR MATERIALS	
REPAIR MATERIALS	**BOEING SPECIFICATION**
Potting compound	BMS 5-28, Type 19
Prepreg fiberglass fabric	LTM 23-1FR
Repair fabric	BMS 9-3, Type H-2 or H-3, Classes 7, 9, 10, 11, 13 or 14 if BMS 9-3 along with BMS 8-201, Type III or IV is used
Laminating resin for the BMS 9-3 repair fabric	BMS 8-201, Type III or IV
Non-metallic honeycomb core for panels with low density Nomex cores	BMS 8-214, Type V, Grade 5.0, Class 4
Non-metallic honeycomb core for panels with high density Nomex cores	BMS 8-124, Type V, Grade 9.0, Class 4
Metallic honeycomb core for panels with low density aluminum cores	BMS 4-4, Type 3-20, Grade I, Class N
Metallic honeycomb core for panels with high density aluminum cores	BMS 4-4, Type 2-20, Grade I, Class N
Adhesive for the inserts	BMS 5-107, Class 1

3. Repair Instructions

A. Find the limits of the damage. Refer to Paragraph 5.A./REPAIR GENERAL.

B. Remove the inserts in the damaged area.

C. Remove the damage as shown in Removal of the Damage (LTM 23-1FR or BMS 9-3 along with BMS 8-201, Type III or IV), Figure 201/REPAIR 3. Refer to Paragraph 5.B./REPAIR GENERAL and Paragraph 5.C./REPAIR GENERAL for the steps to remove the damage.

D. Remove the water or other unwanted material as given in Paragraph 5.D./REPAIR GENERAL. The area of the damage cleanup must be fully dry.

E. Clean the damaged area as given in Paragraph 5.E./REPAIR GENERAL.

F. Make, clean, and install the honeycomb core plug as given in Paragraph 5.F./REPAIR GENERAL and Paragraph 5.G./REPAIR GENERAL. Make the repair core plug level with the outer surface of the facesheet.

G. Apply the pressure for the cure of the honeycomb core plug.

(1) You can apply mechanical pressure or vacuum pressure.

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(a) If you apply mechanical pressure, apply the pressure as given in Paragraph 5.M./REPAIR GENERAL.

(b) If you apply vacuum pressure, do the steps that follow:

1) Assemble the vacuum bag system as given in Paragraph 5.K./REPAIR GENERAL.

2) Do a check of the vacuum bag for leaks as given in Paragraph 5.L./REPAIR GENERAL.

3) Apply the vacuum pressure as given in Paragraph 5.N./REPAIR GENERAL.

H. Cure the honeycomb core plug.

(1) Cure the BMS 5-28 potting compound as given in Paragraph 5.P./REPAIR GENERAL.

(2) If you cure the potting compound at a temperature that is higher than room temperature, apply the temperature as given in Paragraph 5.O./REPAIR GENERAL.

(a) If you use a heat blanket to apply the temperature, put a layer of solid parting film between the floor panel and the heat blanket.

I. Sand the honeycomb core plug to be level with the outer surface of the facesheet.

J. Prepare and apply the repair plies.

(1) If you use BMS 9-3 fabric as the repair ply material:

(a) Refer to Repair 3 - Layout of the Repair Parts - Fabric Repair (LTM 23-1FR or BMS 9-3 along with BMS 8-201, Type III or IV), Figure 202/REPAIR 3 for the layout of the repair parts.

(b) Impregnate the repair plies with BMS 8-201 resin as given in Paragraph 5.H./REPAIR GENERAL.

(c) Apply the repair plies as given in Paragraph 5.J./REPAIR GENERAL. Use the number of plies equal to the number of damaged plies to be replaced plus one more for overlap.

(2) If you use LTM 23-1FR prepreg fiberglass fabric as the repair ply material:

(a) Refer to Repair 3 - Layout of the Repair Parts - Fabric Repair (LTM 23-1FR or BMS 9-3 along with BMS 8-201, Type III or IV), Figure 202/REPAIR 3 for the layout of the repair parts.

(b) Apply the repair plies as given in Paragraph 5.I./REPAIR GENERAL. Use the number of plies equal to the number of damaged plies to be replaced plus one more ply for overlap.

K. Apply the pressure for the cure of the repair plies.

(1) If you use BMS 9-3 fabric as the repair ply material, you must apply vacuum pressure.

(a) Assemble the vacuum bag system as given in Paragraph 5.K./REPAIR GENERAL.

(b) Do a check of the vacuum bag for leaks as given in Paragraph 5.L./REPAIR GENERAL.

(c) Apply the vacuum pressure as given in Paragraph 5.N./REPAIR GENERAL.

(2) If you use LTM 23-1FR prepreg fiberglass fabric as the repair ply material, you must apply vacuum pressure.

(a) Assemble the vacuum bag system as given in Paragraph 5.K./REPAIR GENERAL.

(b) Do a check of the vacuum bag for leaks as given in Paragraph 5.L./REPAIR GENERAL.

(c) Apply the vacuum pressure as given in Paragraph 5.N./REPAIR GENERAL.

L. Cure the repair.

(1) If you use BMS 9-3 fabric as the repair ply material, do the steps that follow:

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(a) Cure the BMS 8-201 resin as given in Paragraph 5.R./REPAIR GENERAL.

(b) If you cure the BMS 8-201 resin at a temperature that is higher than room temperature, apply the temperature as given in Paragraph 5.O./REPAIR GENERAL.

(2) If you use LTM 23-1FR prepreg fiberglass fabric as the repair ply material, do the steps that follow:

(a) Cure the LTM 23-1FR prepreg fiberglass fabric as given in Paragraph 5.Q./REPAIR GENERAL.

(b) If you cure the LTM 23-1FR prepreg fiberglass fabric at a temperature that is higher than room temperature, apply the temperature as given in Paragraph 5.O./REPAIR GENERAL.

M. Install the inserts, if they were removed, as given in Paragraph 5.S./REPAIR GENERAL.

N. Apply the finish to the repair area. Use the same finish that was used on the initial floor panel.

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CIRCULAR SHAPE IS SHOWN, OVAL SHAPES ARE ALSO PERMITTED

SECTION THROUGH THE CENTER OF THE DAMAGE REMOVAL

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Removal of the Damage (LTM 23-1FR or BMS 9-3 along with BMS 8-201, Type III or IV)
Figure 201

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CIRCULAR SHAPE IS SHOWN, OVAL SHAPES ARE ALSO PERMITTED

F87863 S0006587828_V3

Repair 3 - Layout of the Repair Parts - Fabric Repair (LTM 23-1FR or BMS 9-3 along with BMS 8-201, Type III or IV)
Figure 202 (Sheet 1 of 2)

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SECTION THROUGH THE CENTER OF THE REPAIR WITH
THE CORE AND THE POTTING COMPOUND INSTALLED

F87865 S0006587829_V3

Repair 3 - Layout of the Repair Parts - Fabric Repair (LTM 23-1FR or BMS 9-3 along with BMS 8-201, Type III or IV)
Figure 202 (Sheet 2 of 2)

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REPAIR 4 - REPAIR OF DAMAGE LESS THAN 4 SQUARE INCHES IN AREA TO ONE FACESHEET AND THE CORE AT AN EDGE OR CORNER IN COMPOSITE FLOOR PANELS

1. Applicability

A. REPAIR 4 is applicable to damage to one facesheet and the core at an edge or corner of a floor panel. The damage must be less than 4 square inches in area.

B. Refer to REPAIR 5 if the damage is larger than 4 square inches in area.

2. General

A. The materials necessary for this repair are given in Table 201/REPAIR 4.

(1) You can use LTM 23-1FR prepreg fiberglass fabric or BMS 9-3 repair fabric to repair the floor panel. The two repair materials are satisfactory.

Table 201:

FLOOR PANEL REPAIR MATERIALS	
REPAIR MATERIALS	**BOEING SPECIFICATION**
Potting compound	BMS 5-28, Type 19
Prepreg fiberglass fabric	LTM 23-1FR
Repair fabric	BMS 9-3, Type H-2 or H-3, Classes 7, 9, 10, 11, 13, or 14 if BMS 9-3 along with BMS 8-201, Type III or IV is used
Laminating resin for the BMS 9-3 repair fabric	BMS 8-201, Type III or IV
Adhesive for the inserts	BMS 5-107, Class 1

3. Repair Instructions

A. Find the limits of the damage. Refer to Paragraph 5.A./REPAIR GENERAL.

B. Remove the inserts in the damaged area.

C. Remove the damage at an edge as shown in Removal of the Damage at an Edge (LTM 23-1FR or BMS 9-3 along with BMS 8-201, Type III or IV), Figure 201/REPAIR 4. Remove the damage at a corner as shown in Removal of the Damage at a Corner (LTM 23-1FR or BMS 9-3 along with BMS 8-201, Type III or IV), Figure 202/REPAIR 4. Refer to Paragraph 5.B./REPAIR GENERAL and Paragraph 5.C./REPAIR GENERAL for the steps to remove the damage.

D. Remove the water or other unwanted material as given in Paragraph 5.D./REPAIR GENERAL. The area of the damage cleanup must be fully dry.

E. Clean the damaged area as given in Paragraph 5.E./REPAIR GENERAL.

F. Fill the damaged area with BMS 5-28, Type 19 potting compound.

(1) Prepare the potting compound as given in Repair General, Table 203/REPAIR GENERAL.

(2) Make a barrier with wood or metal to keep the potting compound in the damage area. Refer to Procedure to Fill a Damage Area with Potting Compound at an Edge or Corner (LTM 23-1FR or BMS 9-3 along with BMS 8-201, Type III or IV), Figure 203/REPAIR 4. Do not remove the barrier until the potting compound is cured.

(3) Fill the area until the level of the potting compound is higher than the outer surface of the facesheet.

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CAUTION: DO NOT PERMIT THE SOLVENTS TO TOUCH THE UNCURED POTTING COMPOUND. IF YOU DO NOT OBEY, THE REPAIR WILL BE UNSATISFACTORY.

G. Cure the potting compound.

(1) Cure the potting compound as given in Paragraph 5.P./REPAIR GENERAL.

(2) If you cure the potting compound at a temperature that is higher than room temperature, apply the temperature as given in Paragraph 5.O./REPAIR GENERAL.

(a) If you use a heat blanket to apply the temperature, put a layer of solid parting film between the floor panel and the heat blanket.

H. Remove the potting compound barrier.

I. Sand the surface of the potting compound until it is smooth with the outer surface of the facesheet.

J. Clean the repair surface as given in Paragraph 5.E./REPAIR GENERAL.

K. Prepare and apply the repair plies.

(1) If you use BMS 9-3 fabric as the repair ply material:

(a) Refer to Repair 4 - Layout of the Repair Parts - Fabric Repair at an Edge (LTM 23-1FR or BMS 9-3 along with BMS 8-201, Type III or IV), Figure 204/REPAIR 4 and Repair 4 - Layout of the Repair Parts - Fabric Repair at a Corner (LTM 23-1FR or BMS 9-3 along with BMS 8-201, Type III or IV), Figure 205/REPAIR 4 for the layout of the repair parts.

(b) Impregnate the repair plies with BMS 8-201 resin as given in Paragraph 5.H./REPAIR GENERAL.

(c) Apply the repair plies as given in Paragraph 5.J./REPAIR GENERAL. Use the number of plies equal to the number of damaged plies to be replaced plus one more for overlap.

(2) If you use LTM 23-1FR prepreg fiberglass fabric as the repair ply material:

(a) Refer to Repair 4 - Layout of the Repair Parts - Fabric Repair at an Edge (LTM 23-1FR or BMS 9-3 along with BMS 8-201, Type III or IV), Figure 204/REPAIR 4 and Repair 4 - Layout of the Repair Parts - Fabric Repair at a Corner (LTM 23-1FR or BMS 9-3 along with BMS 8-201, Type III or IV), Figure 205/REPAIR 4 for the layout of the repair parts.

(b) Apply the repair plies as given in Paragraph 5.I./REPAIR GENERAL. Use the number of plies equal to the number of damaged plies to be replaced plus one more ply for overlap.

L. Apply the pressure for the cure of the repair plies.

(1) If you use BMS 9-3 fabric as the repair ply material, you must apply vacuum pressure.

(a) Assemble the vacuum bag system as given in Paragraph 5.K./REPAIR GENERAL.

(b) Do a check of the vacuum bag for leaks as given in Paragraph 5.L./REPAIR GENERAL.

(c) Apply the vacuum pressure as given in Paragraph 5.N./REPAIR GENERAL.

(2) If you use LTM 23-1FR prepreg fiberglass fabric as the repair ply material, you must apply vacuum pressure.

(a) Assemble the vacuum bag system as given in Paragraph 5.K./REPAIR GENERAL.

(b) Do a check of the vacuum bag for leaks as given in Paragraph 5.L./REPAIR GENERAL.

(c) Apply the vacuum pressure as given in Paragraph 5.N./REPAIR GENERAL.

M. Cure the repair.

(1) If you use BMS 9-3 fabric as the repair ply material, do the steps that follow:

(a) Cure the BMS 8-201 resin as given in Paragraph 5.R./REPAIR GENERAL.

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(b) If you cure the BMS 8-201 resin at a temperature that is higher than room temperature, apply the temperature as given in Paragraph 5.O./REPAIR GENERAL.

(2) If you use LTM 23-1FR prepreg fiberglass fabric as the repair ply material, do the steps that follow:

(a) Cure the LTM 23-1FR prepreg fiberglass fabric as given in Paragraph 5.Q./REPAIR GENERAL.

(b) If you cure the LTM 23-1FR prepreg fiberglass fabric at a temperature that is higher than room temperature, apply the temperature as given in Paragraph 5.O./REPAIR GENERAL.

N. Install the inserts, if they were removed, as given in Paragraph 5.S./REPAIR GENERAL.

O. Apply the finish to the repair area. Use the same finish that was used on the initial floor panel.

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CIRCULAR SHAPE IS SHOWN, OVAL SHAPES ARE ALSO PERMITTED

SECTION THROUGH THE CENTER OF THE DAMAGE REMOVAL

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Removal of the Damage at an Edge (LTM 23-1FR or BMS 9-3 along with BMS 8-201, Type III or IV)
Figure 201

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CIRCULAR SHAPE IS SHOWN, OVAL SHAPES ARE ALSO PERMITTED

SECTION THROUGH THE CENTER OF THE DAMAGE REMOVAL

F87870 S0006587835_V1

Removal of the Damage at a Corner (LTM 23-1FR or BMS 9-3 along with BMS 8-201, Type III or IV)
Figure 202

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F87871 S0006587836_V1

Procedure to Fill a Damage Area with Potting Compound at an Edge or Corner (LTM 23-1FR or BMS 9-3 along with BMS 8-201, Type III or IV)
Figure 203

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F87872 S0006587837_V3

Repair 4 - Layout of the Repair Parts - Fabric Repair at an Edge (LTM 23-1FR or BMS 9-3 along with BMS 8-201, Type III or IV)
Figure 204 (Sheet 1 of 2)

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SECTION THROUGH THE CENTER OF THE REPAIR

F87873 S0006587838_V3

Repair 4 - Layout of the Repair Parts - Fabric Repair at an Edge (LTM 23-1FR or BMS 9-3 along with BMS 8-201, Type III or IV)
Figure 204 (Sheet 2 of 2)

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CIRCULAR SHAPE IS SHOWN, OVAL SHAPES ARE ALSO PERMITTED

F87874 S0006587839_V3

Repair 4 - Layout of the Repair Parts - Fabric Repair at a Corner (LTM 23-1FR or BMS 9-3 along with BMS 8-201, Type III or IV)
Figure 205 (Sheet 1 of 2)

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SECTION THROUGH THE CENTER OF THE REPAIR

F87875 S0006587840_V3

Repair 4 - Layout of the Repair Parts - Fabric Repair at a Corner (LTM 23-1FR or BMS 9-3 along with BMS 8-201, Type III or IV)
Figure 205 (Sheet 2 of 2)

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REPAIR 5 - REPAIR OF DAMAGE LESS THAN 10 SQUARE INCHES IN AREA TO ONE FACESHEET AND THE CORE AT AN EDGE OR CORNER IN COMPOSITE FLOOR PANELS

1. Applicability

A. REPAIR 5 is applicable to damage to one facesheet and the core at an edge or corner of a floor panel.

B. Refer to REPAIR 4 if the damage is less than 4 square inches in area.

2. General

A. The materials necessary for this repair are given in Table 201/REPAIR 5.

(1) You can use LTM 23-1FR prepreg fiberglass fabric or BMS 9-3 repair fabric to repair the floor panel. The two repair materials are satisfactory.

Table 201:

FLOOR PANEL REPAIR MATERIALS	
REPAIR MATERIALS	**BOEING SPECIFICATION**
Potting compound	BMS 5-28, Type 19
Prepreg fiberglass fabric	LTM 23-1FR
Repair fabric	BMS 9-3, Type H-2 or H-3, Classes 7, 9, 10, 11, 13, or 14 if BMS 9-3 along with BMS 8-201, Type III or IV is used
Laminating resin for the BMS 9-3 repair fabric	BMS 8-201, Type III or IV
Non-metallic honeycomb core for panels with low density Nomex cores	BMS 8-124, Type V, Grade 5.0, Class 4
Non-metallic honeycomb core for panels with high density Nomex cores	BMS 124-, Type V, Grade 9.0, Class 4
Metallic honeycomb core for panels with low density aluminum cores	BMS 4-4, Type 3-20, Grade I, Class N
Metallic honeycomb core for panels with high density aluminum cores	BMS 4-4, Type 2-20, Grade I, Class N
Adhesive for the inserts	BMS 5-107, Class 1

3. Repair Instructions

A. Find the limits of the damage. Refer to Paragraph 5.A./REPAIR GENERAL.

B. Remove the inserts in the damaged area.

C. Remove the damage at an edge as shown in Removal of the Damage at an Edge (LTM 23-1FR or BMS 9-3 along with BMS 8-201, Type III or IV), Figure 201/REPAIR 5. Remove the damage at a corner as shown in Removal of the Damage at a Corner (LTM 23-1FR or BMS 9-3 along with BMS 8-201, Type III or IV), Figure 202/REPAIR 5. Refer to Paragraph 5.B./REPAIR GENERAL and Paragraph 5.C./REPAIR GENERAL for the steps to remove the damage.

D. Remove the water or other unwanted material as given in Paragraph 5.D./REPAIR GENERAL. The area of the damage cleanup must be fully dry.

E. Clean the damaged area as given in Paragraph 5.E./REPAIR GENERAL.

F. Make, clean, and install the honeycomb core plug as given in Paragraph 5.F./REPAIR GENERAL and Paragraph 5.G./REPAIR GENERAL.

G. Apply the pressure for the cure of the honeycomb core plug.

(1) You can apply mechanical pressure or vacuum pressure.

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(a) If you apply mechanical pressure, apply the pressure as given in Paragraph 5.M./REPAIR GENERAL.

(b) If you apply vacuum pressure, do the steps that follow:

1) Assemble the vacuum bag system as given in Paragraph 5.K./REPAIR GENERAL.

2) Do a check of the vacuum bag as given in Paragraph 5.L./REPAIR GENERAL.

3) Apply the vacuum pressure as given in Paragraph 5.N./REPAIR GENERAL.

H. Cure the honeycomb core plug.

(1) Cure the BMS 5-28 potting compound as given in Paragraph 5.P./REPAIR GENERAL.

(2) If you cure the potting compound at a temperature that is higher than room temperature, apply the temperature as given in Paragraph 5.O./REPAIR GENERAL.

I. Sand the honeycomb core plug to be level with the outer surface of the facesheet.

J. Prepare and apply the repair plies.

(1) If you use BMS 9-3 fabric as the repair ply material:

(a) Refer to Repair 5 - Layout of the Repair Parts - Fabric Repair at an Edge (LTM 23-1FR or BMS 9-3 along with BMS 8-201, Type III or IV), Figure 203/REPAIR 5 and Repair 5 - Layout of the Repair Parts - Fabric Repair at a Corner (LTM 23-1FR or BMS 9-3 along with BMS 8-201, Type III or IV), Figure 204/REPAIR 5 for the layout of the repair parts.

(b) Impregnate the repair plies with BMS 8-201 resin as given in Paragraph 5.H./REPAIR GENERAL.

(c) Apply the repair plies as given in Paragraph 5.J./REPAIR GENERAL. Use the number of plies equal to the number of damaged plies to be replaced plus one more for overlap.

(2) If you use LTM 23-1FR prepreg fiberglass fabric as the repair ply material:

(a) Refer to Repair 5 - Layout of the Repair Parts - Fabric Repair at an Edge (LTM 23-1FR or BMS 9-3 along with BMS 8-201, Type III or IV), Figure 203/REPAIR 5 and Repair 5 - Layout of the Repair Parts - Fabric Repair at a Corner (LTM 23-1FR or BMS 9-3 along with BMS 8-201, Type III or IV), Figure 204/REPAIR 5 for the layout of the repair parts.

(b) Apply the repair plies as given in Paragraph 5.I./REPAIR GENERAL. Use the number of plies equal to the number of damaged plies to be replaced plus one more for overlap.

K. Apply the pressure for the cure of the repair plies.

(1) If you use BMS 9-3 fabric as the repair ply material, you must apply vacuum pressure.

(a) Assemble the vacuum bag system as given in Paragraph 5.K./REPAIR GENERAL.

(b) Do a check of the vacuum bag for leaks as given in Paragraph 5.L./REPAIR GENERAL.

(c) Apply the vacuum pressure as given in Paragraph 5.N./REPAIR GENERAL.

(2) If you use LTM 23-1FR prepreg fiberglass fabric as the repair ply material, you must apply vacuum pressure.

(a) Assemble the vacuum bag system as given in Paragraph 5.K./REPAIR GENERAL.

(b) Do a check of the vacuum bag as given in Paragraph 5.L./REPAIR GENERAL.

(c) Apply the vacuum pressure as given in Paragraph 5.N./REPAIR GENERAL.

L. Cure the repair.

(1) If you use BMS 9-3 fabric as the repair ply material, do the steps that follow:

(a) Cure the BMS 8-201 resin as given in Paragraph 5.R./REPAIR GENERAL.

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(b) If you cure the BMS 8-201 resin at a temperature that is higher than room temperature, apply the temperature as given in Paragraph 5.O./REPAIR GENERAL.

(2) If you use LTM 23-1FR prepreg fiberglass fabric as the repair ply material, do the steps that follow:

(a) Cure the LTM 23-1FR prepreg fiberglass fabric as given in Paragraph 5.Q./REPAIR GENERAL.

(b) If you cure the LTM 23-1FR prepreg fiberglass fabric at a temperature that is higher than room temperature, apply the temperature as given in Paragraph 5.O./REPAIR GENERAL.

M. Install the inserts, if they were removed, as given in Paragraph 5.S./REPAIR GENERAL.

N. Apply the finish to the repair area. Use the same finish that was used on the initial floor panel.

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SECTION THROUGH THE CENTER OF THE DAMAGE REMOVAL

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Removal of the Damage at an Edge (LTM 23-1FR or BMS 9-3 along with BMS 8-201, Type III or IV)
Figure 201

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CIRCULAR SHAPE IS SHOWN, OVAL SHAPES ARE ALSO PERMITTED

SECTION THROUGH THE CENTER OF THE DAMAGE REMOVAL

F87882 S0006587848_V1

Removal of the Damage at a Corner (LTM 23-1FR or BMS 9-3 along with BMS 8-201, Type III or IV)
Figure 202

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F87883 S0006587849_V3

Repair 5 - Layout of the Repair Parts - Fabric Repair at an Edge (LTM 23-1FR or BMS 9-3 along with BMS 8-201, Type III or IV)
Figure 203 (Sheet 1 of 2)

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SECTION THROUGH THE CENTER OF THE REPAIR

F87884 S0006587850_V3

Repair 5 - Layout of the Repair Parts - Fabric Repair at an Edge (LTM 23-1FR or BMS 9-3 along with BMS 8-201, Type III or IV)
Figure 203 (Sheet 2 of 2)

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CIRCULAR SHAPE IS SHOWN, OVAL SHAPES ARE ALSO PERMITTED

F87885 S0006587851_V3

Repair 5 - Layout of the Repair Parts - Fabric Repair at a Corner (LTM 23-1FR or BMS 9-3 along with BMS 8-201, Type III or IV)
Figure 204 (Sheet 1 of 2)

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F87887 S0006587852_V3

Repair 5 - Layout of the Repair Parts - Fabric Repair at a Corner (LTM 23-1FR or BMS 9-3 along with BMS 8-201, Type III or IV)
Figure 204 (Sheet 2 of 2)

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REPAIR 6 - REPAIR OF DAMAGE LESS THAN 10 SQUARE INCHES IN AREA TO TWO FACESHEETS AND THE CORE IN COMPOSITE FLOOR PANELS

1. Applicability

A. REPAIR 6 is applicable to damage to the two facesheets and the honeycomb core of a floor panel.

2. General

A. The materials necessary for this repair are given in Table 201/REPAIR 6.

(1) You can use LTM 23-1FR prepreg fiberglass fabric or BMS 9-3 repair fabric to repair the floor panel. The two repair materials are satisfactory.

Table 201:

FLOOR PANEL REPAIR MATERIALS	
REPAIR MATERIALS	**BOEING SPECIFICATION**
Potting compound	BMS 5-28, Type 19
Prepreg fiberglass fabric	LTM 23-1FR
Repair fabric	BMS 9-3, Type H-2 or H-3, Classes 7, 9, 10, 11, 13, or 14 if BMS 9-3 along with BMS 8-201, Type III or IV is used
Laminating resin for the BMS 9-3 repair fabric	BMS 8-201, Type III or IV
Non-metallic honeycomb core for panels with low density Nomex cores	BMS 8-124, Type V, Grade 5.0, Class 4
Non-metallic honeycomb core for panels with high density Nomex cores	BMS 8-124, Type V, Grade 9.0, Class 4
Metallic honeycomb core for panels with low density aluminum cores	BMS 4-4, Type 3-20, Grade I, Class N
Metallic honeycomb core for panels with high density aluminum cores	BMS 4-4, Type 2-20, Grade I, Class N
Adhesive for the inserts	BMS 5-107, Class 1

3. Repair Instructions

A. Find the limits of the damage. Refer to Paragraph 5.A./REPAIR GENERAL.

B. Remove the inserts in the damaged area.

C. Remove the damage as shown in Removal of the Damage (BMS 9-3 along with BMS 8-201, Type III or IV or LTM 23-1FR), Figure 201/REPAIR 6. Refer to Paragraph 5.B./REPAIR GENERAL and Paragraph 5.C./REPAIR GENERAL for the steps to remove the damage.

D. Remove the water or other unwanted material as given in Paragraph 5.D./REPAIR GENERAL. The area of the damage cleanup must be fully dry.

E. Clean the damaged area as given in Paragraph 5.E./REPAIR GENERAL.

F. Make, clean, and install the honeycomb core plug as given in Paragraph 5.F./REPAIR GENERAL and Paragraph 5.G./REPAIR GENERAL. Do not cure the honeycomb core plug at this time.

G. Prepare and apply the repair plies to one surface of the panel. Use a caul plate on the opposite side of the panel to keep the core plug in position.

(1) If you use BMS 9-3 fabric as the repair ply material:

(a) Refer to Repair 6 - Layout of the Repair Parts - Fabric Repair (BMS 9-3 along with BMS 8-201, Type III or IV or LTM 23-1FR), Figure 202 REPAIR 6 for the layout of the repair parts.

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(b) Impregnate the repair plies with BMS 8-201 resin as given in Paragraph 5.H./REPAIR GENERAL.

(c) Apply the repair plies as given in Paragraph 5.J./REPAIR GENERAL. Use the number of plies equal to the number of damaged plies to be replaced plus one more for overlap.

(2) If you use LTM 23-1FR prepreg fiberglass fabric as the repair ply material:

(a) Refer to Repair 6 - Layout of the Repair Parts - Fabric Repair (BMS 9-3 along with BMS 8-201, Type III or IV or LTM 23-1FR), Figure 202/REPAIR 6 for the layout of the repair parts.

(b) Apply the repair plies as given in Paragraph 5.I./REPAIR GENERAL. Use the number of plies equal to the number of damaged plies to be replaced plus one more ply for overlap.

H. Apply the pressure for the cure of the repair plies and honeycomb repair plug.

(1) If you use BMS 9-3 fabric as the repair ply material, you must apply vacuum pressure.

(a) Assemble the vacuum bag system as given in Paragraph 5.K./REPAIR GENERAL.

(b) Do a check of the vacuum bag for leaks as given in Paragraph 5.L. REPAIR GENERAL.

(c) Apply the vacuum pressure as given in Paragraph 5.N./REPAIR GENERAL.

(2) If you use LTM 23-1FR prepreg fiberglass fabric as the repair ply material, you must apply vacuum pressure.

(a) Assemble the vacuum bag system as given in Paragraph 5.K./REPAIR GENERAL.

(b) Do a check of the vacuum bag for leaks as given in Paragraph 5.L./REPAIR GENERAL.

(c) Apply the vacuum pressure as given in Paragraph 5.N./REPAIR GENERAL.

I. Cure the repair.

(1) If you use BMS 9-3 fabric as the repair ply material, do the steps that follow:

(a) Cure the BMS 8-201 resin as given in Paragraph 5.R./REPAIR GENERAL.

(b) If you cure the BMS 8-201 resin at a temperature that is higher than room temperature, apply the temperature as given in Paragraph 5.O./REPAIR GENERAL.

(2) If you use LTM 23-1FR prepreg fiberglass fabric as the repair ply material, do the steps that follow:

(a) Cure the LTM 23-1FR prepreg fiberglass fabric as given in Paragraph 5.Q./REPAIR GENERAL.

(b) If you cure the LTM 23-1FR prepreg fiberglass fabric at a temperature that is higher than room temperature, apply the temperature as given in Paragraph 5.O./REPAIR GENERAL.

J. Sand the honeycomb core plug to be level with the outer surface of the facesheet.

K. Prepare and apply the repair plies to the opposite surface.

(1) If you use BMS 9-3 fabric as the repair ply material:

(a) Refer to Repair 6 - Layout of the Repair Parts - Fabric Repair (BMS 9-3 along with BMS 8-201, Type III or IV or LTM 23-1FR), Figure 202/REPAIR 6 for the layout of the repair parts.

(b) Impregnate the repair plies with BMS 8-201 resin as given in Paragraph 5.H./REPAIR GENERAL.

(c) Apply the repair plies as given in Paragraph 5.J./REPAIR GENERAL. Use the number of plies equal to the number of damaged plies to be replaced plus one more for overlap.

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(2) If you use LTM 23-1FR prepreg fiberglass fabric as the repair ply material:

(a) Refer to Repair 6 - Layout of the Repair Parts - Fabric Repair (BMS 9-3 along with BMS 8-201, Type III or IV or LTM 23-1FR), Figure 202/REPAIR 6 for the layout of the repair parts.

(b) Apply the repair plies as given in Paragraph 5.I./REPAIR GENERAL. Use the number of plies equal to the number of damaged plies to be replaced plus one more ply for overlap.

L. Apply the pressure for the cure of the repair plies.

(1) If you use BMS 9-3 fabric as the repair ply material, you must apply vacuum pressure.

(a) Assemble the vacuum bag system as given in Paragraph 5.K./REPAIR GENERAL.

(b) Do a check of the vacuum bag for leaks as given in Paragraph 5.L. REPAIR GENERAL.

(c) Apply the vacuum pressure as given in Paragraph 5.N./REPAIR GENERAL.

(2) If you use LTM 23-1FR prepreg fiberglass fabric as the repair ply material, you must apply vacuum pressure.

(a) Assemble the vacuum bag system as given in Paragraph 5.K./REPAIR GENERAL.

(b) Do a check of the vacuum bag for leaks as given in Paragraph 5.L./REPAIR GENERAL.

(c) Apply the vacuum pressure as given in Paragraph 5.N./REPAIR GENERAL.

M. Cure the repair.

(1) If you use BMS 9-3 fabric as the repair ply material, do the steps that follow:

(a) Cure the BMS 8-201 resin as given in Paragraph 5.R./REPAIR GENERAL.

(b) If you cure the BMS 8-201 resin at a temperature that is higher than room temperature, apply the temperature as given in Paragraph 5.O./REPAIR GENERAL.

(2) If you use LTM 23-1FR prepreg fiberglass fabric as the repair ply material, do the steps that follow:

(a) Cure the LTM 23-1FR prepreg fiberglass fabric as given in Paragraph 5.Q./REPAIR GENERAL.

(b) If you cure the LTM 23-1FR prepreg fiberglass fabric at a temperature that is higher than room temperature, apply the temperature as given in Paragraph 5.O./REPAIR GENERAL.

N. Install the inserts, if they were removed, as given in Paragraph 5.S./REPAIR GENERAL.

O. Apply the finish to the repair area. Use the same finish that was used on the initial floor panel.

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SECTION THROUGH THE CENTER OF THE DAMAGE REMOVAL

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Removal of the Damage (BMS 9-3 along with BMS 8-201, Type III or IV or LTM 23-1FR)
Figure 201

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CIRCULAR SHAPE IS SHOWN, OVAL SHAPES ARE ALSO PERMITTED

F87926 S0006587860_V3

Repair 6 - Layout of the Repair Parts - Fabric Repair (BMS 9-3 along with BMS 8-201, Type III or IV or LTM 23-1FR)
Figure 202 (Sheet 1 of 2)

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SECTION THROUGH THE CENTER OF THE REPAIR

F87927 S0006587861_V3

Repair 6 - Layout of the Repair Parts - Fabric Repair (BMS 9-3 along with BMS 8-201, Type III or IV or LTM 23-1FR)
Figure 202 (Sheet 2 of 2)

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REPAIR 7 - REPAIR OF DELAMINATION DAMAGE TO A FACESHEET IN COMPOSITE FLOOR PANELS

1. Applicability

A. REPAIR 7 is applicable to delamination damage to a facesheet of a floor panel.

B. Refer to REPAIR 1 for disbond damage.

C. Refer to REPAIR 8 for delamination damage on an edge.

2. General

A. The materials necessary for this repair are given in Table 201/REPAIR 7.

(1) You can use LTM 23-1FR prepreg fiberglass fabric or BMS 9-3 repair fabric to repair the floor panel. The two repair materials are satisfactory.

Table 201:

FLOOR PANEL REPAIR MATERIALS	
REPAIR MATERIALS	**BOEING SPECIFICATION**
Potting compound	BMS 5-28, Type 19
Prepreg fiberglass fabric	LTM 23-1FR
Repair fabric	BMS 9-3, Type H-2 or H-3, Classes 7, 9, 10, 11, 13, or 14 if BMS 9-3 along with BMS 8-201, Type III or IV is used
Laminating resin for the BMS 9-3 repair fabric	BMS 8-201, Type III or IV
Adhesive for the inserts	BMS 5-107, Class 1

3. Repair Instructions

A. Find the limits of the damage. Refer to Paragraph 5.A./REPAIR GENERAL.

B. Remove the inserts in the damaged area.

C. Remove only the delaminated facesheet plies as shown in Removal of the Damage (BMS 9-3 along with BMS 8-201, Type III or IV or LTM 23-1FR), Figure 201/ REPAIR 7. Refer to Paragraph 5.B./ REPAIR GENERAL for the steps to remove the damage.

D. Remove all of the water or other unwanted material as given in Paragraph 5.D./REPAIR GENERAL. The area of the damage cleanup must be fully dry.

E. Clean the repair area as given in Paragraph 5.E./REPAIR GENERAL.

F. Prepare and apply the repair plies.

(1) If you use BMS 9-3 fabric as the repair ply material:

(a) Refer to Repair 7 - Layout of the Repair Parts - (BMS 9-3 along with BMS 8-201, Type III or IV or LTM 23-1FR), Figure 202/REPAIR 7 for the layout of the repair parts.

(b) Impregnate the repair plies with BMS 8-201 resin as given in Paragraph 5.H./REPAIR GENERAL.

(c) Apply the repair plies as given in Paragraph 5.J./REPAIR GENERAL. Use the number of plies equal to the number of damaged plies to be replaced plus one more for overlap.

(2) If you use LTM 23-1FR prepreg fiberglass fabric as the repair ply material:

(a) Refer to Repair 7 - Layout of the Repair Parts - (BMS 9-3 along with BMS 8-201, Type III or IV or LTM 23-1FR), Figure 202/REPAIR 7 for the layout of the repair parts.

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(b) Apply the repair plies as given in Paragraph 5.I./REPAIR GENERAL. Use the number of plies equal to the number of damaged plies to be replaced plus one more ply for overlap.

G. Apply the pressure for the cure of the repair plies.

(1) If you use BMS 9-3 fabric as the repair ply material, you must apply vacuum pressure.

(a) Assemble the vacuum bag system as given in Paragraph 5.K./REPAIR GENERAL.

(b) Do a check of the vacuum bag for leaks as given in Paragraph 5.L. REPAIR GENERAL.

(c) Apply the vacuum pressure as given in Paragraph 5.N./REPAIR GENERAL.

(2) If you use LTM 23-1FR prepreg fiberglass fabric as the repair ply material, you must apply vacuum pressure.

(a) Assemble the vacuum bag system as given in Paragraph 5.K./REPAIR GENERAL.

(b) Do a check of the vacuum bag for leaks as given in Paragraph 5.L./REPAIR GENERAL.

(c) Apply the vacuum pressure as given in Paragraph 5.N./REPAIR GENERAL.

H. Cure the repair.

(1) If you use BMS 9-3 fabric as the repair ply material, do the steps that follow:

(a) Cure the BMS 8-201 resin as given in Paragraph 5.R./REPAIR GENERAL.

(b) If you cure the BMS 8-201 resin at a temperature that is higher than room temperature, apply the temperature as given in Paragraph 5.O./REPAIR GENERAL.

(2) If you use LTM 23-1FR prepreg fiberglass fabric as the repair ply material, do the steps that follow:

(a) Cure the LTM 23-1FR prepreg fiberglass fabric as given in Paragraph 5.Q./REPAIR GENERAL.

(b) If you cure the LTM 23-1FR prepreg fiberglass fabric at a temperature that is higher than room temperature, apply the temperature as given in Paragraph 5.O./REPAIR GENERAL.

I. Install the inserts, if they were removed, as given in Paragraph 5.S./REPAIR GENERAL.

J. Apply the finish to the repair area. Use the same finish that was used on the initial floor panel.

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CIRCULAR SHAPE IS SHOWN, OVAL SHAPES ARE ALSO PERMITTED

SECTION THROUGH THE CENTER OF THE DAMAGE REMOVAL

2427408 S0000561550_V1

Removal of the Damage (BMS 9-3 along with BMS 8-201, Type III or IV or LTM 23-1FR)
Figure 201

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CIRCULAR SHAPE IS SHOWN, OVAL SHAPES ARE ALSO PERMITTED

2427409 S0000561559_V2

Repair 7 - Layout of the Repair Parts - (BMS 9-3 along with BMS 8-201, Type III or IV or LTM 23-1FR)
Figure 202 (Sheet 1 of 2)

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SECTION THROUGH THE CENTER OF THE REPAIR

2427464 S0000561561_V2

Repair 7 - Layout of the Repair Parts - (BMS 9-3 along with BMS 8-201, Type III or IV or LTM 23-1FR)
Figure 202 (Sheet 2 of 2)

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REPAIR 8 - REPAIR OF DELAMINATION DAMAGE LESS THAN 1 INCH BY 1 INCH TO A FACESHEET AT AN EDGE IN COMPOSITE FLOOR PANELS

1. Applicability

A. REPAIR 8 is applicable to delamination damage to a facesheet of a floor panel. The delamination damage must be less than 1 inch by 1 inch.

B. Refer to REPAIR 9 if the damage is larger than 1 inch by 1 inch.

C. Refer to REPAIR 4 for disbond damage at an edge.

2. General

A. The material necessary for this repair is given in Table 201/REPAIR 8.

Table 201:

FLOOR PANEL REPAIR MATERIALS	
REPAIR MATERIALS	**BOEING SPECIFICATION**
Laminating resin	BMS 8-201, Type III or Type IV

3. Repair Instructions

A. Find the limits of the damage. Refer to Paragraph 5.A./REPAIR GENERAL

B. Remove the inserts in the damaged area.

C. Drill a 0.125 in. (3.175 mm) diameter hole at the edge of the damage away from the edge of the floor panel. Drill the hole only through the part of the facesheet that is delaminated. Do not drill through the full facesheet.

D. Clean the repair area as given in Paragraph 5.E./REPAIR GENERAL

E. Inject BMS 8-201, Type III or IV laminating resin in the hole until it comes out of the edge. Fill the hole with the resin as shown in Repair 8 - Procedure to Inject Laminating Resin at an Edge, Figure 201/REPAIR 8. Refer to Table 203/REPAIR GENERAL to prepare the laminating resin.

F. Apply the vacuum pressure for the cure.

(1) Assemble the vacuum bag system as given in Paragraph 5.K./REPAIR GENERAL

(2) Do a check of the vacuum bag for leaks as given in Paragraph 5.L./REPAIR GENERAL

(3) Apply the vacuum pressure as given in Paragraph 5.N./REPAIR GENERAL

G. Cure the repair.

(1) Cure the BMS 8-201 resin as given in Paragraph 5.R./REPAIR GENERAL

(2) If you cure the BMS 8-201 resin at a temperature that is higher than room temperature, apply the temperature as given in Paragraph 5.O./REPAIR GENERAL

H. Sand the cured resin smooth with the outer surface of the facesheet.

I. Install the inserts, if they were removed, as given in Paragraph 5.S./REPAIR GENERAL.

J. Apply the finish to the repair area. Use the same finish that was used on the initial floor panel.

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F87931 S0006587869_V2

Repair 8 - Procedure to Inject Laminating Resin at an Edge
Figure 201

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REPAIR 9 - REPAIR OF DELAMINATION DAMAGE TO ONE FACESHEET AT AN EDGE OR CORNER IN COMPOSITE FLOOR PANELS

1. Applicability

A. REPAIR 9 is applicable to delamination damage to one facesheet at an edge or corner of a floor panel.

B. Refer to REPAIR 8 if the delamination damage is less than 1 inch by 1 inch.

C. Refer to REPAIR 4 for disbond damage at an edge.

2. General

A. Refer to Paragraph 3 for the repair instructions if you use LTM 23-1FR. Refer to Paragraph 4 if you use BMS 9-3 along with BMS 8-201, Type III or IV.

B. The materials necessary for this repair are given in Table 201.

(1) You can use LTM 23-1FR Prepreg fiberglass fabric or BMS 9-3 repair fabric to repair the floor panel. The two repair materials are satisfactory.

Table 201:

FLOOR PANEL REPAIR MATERIALS	
REPAIR MATERIALS	**BOEING SPECIFICATION**
Prepreg fiberglass fabric	LTM 23-1FR
Adhesive for the inserts	BMS 5-107, Class 1
Potting compound	BMS 5-28, Type 19, if BMS 9-3 along with BMS 8-201, Type III or IV is used
Repair fabric	BMS 9-3, Type H-2 or H-3, Classes 7, 9, 10, 11, 13, or 14 if BMS 9-3 along with BMS 8-201, Type III or IV is used
Laminating resin for the BMS 9-3 repair fabric	BMS 8-201, Type III or IV

3. Repair Instructions for use of LTM 23-1FR

A. Find the limits of the damage. Refer to Paragraph 5.A./REPAIR GENERAL.

B. Remove the inserts in the damaged area.

C. Remove only the delaminated facesheet plies at an edge as shown in Removal of the Damage at an Edge (LTM 23-1FR), Figure 201/REPAIR 9. Remove only the delaminated facesheet plies at a corner as shown in Removal of the Damage at a Corner (LTM 23-1FR), Figure 202/REPAIR 9. Refer to Paragraph 5.B./REPAIR GENERAL for the steps to remove the damage.

D. Remove the water or other unwanted material as given in Paragraph 5.D./REPAIR GENERAL. The area of the damage cleanup must be fully dry.

E. Clean the damaged area as given in Paragraph 5.E./REPAIR GENERAL.

F. Prepare and apply the repair plies.

(1) Use LTM 23-1FR prepreg fiberglass fabric as the repair ply material:

(a) Refer to Repair 9 - Layout of the Repair Parts - Glass Prepreg Fabric Repair at an Edge (LTM 23-1FR), Figure 203/REPAIR 9 or Repair 9 - Layout of the Repair Parts - Glass Prepreg Fabric Repair at a Corner (LTM 23-1FR), Figure 204/REPAIR 9 for the layout of the repair parts.

(b) Apply the repair plies as given in Paragraph 5.I./REPAIR GENERAL. Use the number of plies equal to the number of damaged plies to be replaced plus one more ply for overlap.

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G. Apply the pressure for the cure of the repair plies.

(1) When using LTM 23-1FR prepreg fiberglass fabric as the repair ply material, you must apply vacuum pressure.

(a) Assemble the vacuum bag system as given in Paragraph 5.K./REPAIR GENERAL.

(b) Do a check of the vacuum bag system as given in Paragraph 5.L./REPAIR GENERAL.

(c) Apply the vacuum pressure as given in Paragraph 5.N./REPAIR GENERAL.

H. Cure the repair.

(1) When using LTM 23-1FR prepreg fiberglass fabric as the repair ply material, do the steps that follow:

(a) Cure the LTM 23-1FR prepreg fiberglass fabric as given in Paragraph 5.Q./REPAIR GENERAL.

(b) If you cure the LTM 23-1FR prepreg fiberglass fabric at a temperature that is higher than room temperature, apply the temperature as given in Paragraph 5.O./REPAIR GENERAL.

I. Install the inserts, if they were removed, as given in Paragraph 5.S./REPAIR GENERAL.

J. Apply the finish to the repair area. Use the same finish that was used on the initial floor panel.

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NOTE: NUMBER OF FACESHEETS REMOVED MAY VARY BASED ON DAMAGE.

CIRCULAR SHAPE IS SHOWN, OVAL SHAPES ARE ALSO PERMITTED

SECTION THROUGH THE CENTER OF THE DAMAGE REMOVAL

F87934 S0006587872_V2

Removal of the Damage at an Edge (LTM 23-1FR)
Figure 201

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NOTE: NUMBER OF FACESHEETS REMOVED MAY VARY BASED ON DAMAGE.

CIRCULAR SHAPE IS SHOWN, OVAL SHAPES ARE ALSO PERMITTED

SECTION THROUGH THE CENTER OF THE DAMAGE REMOVAL

F87935 S0006587873_V2

Removal of the Damage at a Corner (LTM 23-1FR)
Figure 202

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NOTE: NUMBER OF FACESHEETS REMOVED MAY VARY BASED ON DAMAGE.

CIRCULAR SHAPE IS SHOWN, OVAL SHAPES ARE ALSO PERMITTED

F87937 S0006587875_V2

Repair 9 - Layout of the Repair Parts - Glass Prepreg Fabric Repair at an Edge (LTM 23-1FR)
Figure 203 (Sheet 1 of 2)

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NOTE: NUMBER OF FACESHEETS REMOVED MAY VARY BASED ON DAMAGE.

SECTION THROUGH THE CENTER OF THE REPAIR

F87938 S0006587876_V2

Repair 9 - Layout of the Repair Parts - Glass Prepreg Fabric Repair at an Edge (LTM 23-1FR)
Figure 203 (Sheet 2 of 2)

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NOTE: NUMBER OF FACESHEETS REMOVED MAY VARY BASED ON DAMAGE.

CIRCULAR SHAPE IS SHOWN, OVAL SHAPES ARE ALSO PERMITTED

F87940 S0006587877_V2

Repair 9 - Layout of the Repair Parts - Glass Prepreg Fabric Repair at a Corner (LTM 23-1FR)
Figure 204 (Sheet 1 of 2)

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NOTE: NUMBER OF FACESHEETS REMOVED MAY VARY BASED ON DAMAGE.

SECTION THROUGH THE CENTER OF THE REPAIR

F87942 S0006587878_V2

Repair 9 - Layout of the Repair Parts - Glass Prepreg Fabric Repair at a Corner (LTM 23-1FR)
Figure 204 (Sheet 2 of 2)

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4. **Repair Instructions for use of BMS 9-3 along with BMS 8-201, Type III or IV**

A. Find the limits of the damage. Refer to Paragraph 5.A/REPAIR GENERAL.

B. Remove the inserts in the damaged area.

C. Remove the damaged facesheet at an edge as shown in Removal of the Damage at an Edge, Figure 205/REPAIR 9. Remove the damaged facesheet at a corner as shown in Removal of the Damage at a Corner, Figure 206/REPAIR 9. Refer to Paragraph 5.B./REPAIR GENERAL for the steps to remove the damage.

D. Remove the water or other unwanted material as given in Paragraph 5.D./REPAIR GENERAL. The area of the damage cleanup must be fully dry.

E. Clean the damaged area as given in Paragraph 5.E./REPAIR GENERAL.

F. Fill the open honeycomb core cells with BMS 5-28, Type 19 potting compound.

(1) Prepare the potting compound as given in Repair General, Table 203.

(2) Make a barrier with wood or metal to keep the potting compound in the damage area. Refer to Procedure to Fill a Damage Area with Potting Compound at an Edge or Corner, Figure 207/REPAIR 9. Do not remove the barrier until the potting compound is cured.

(3) Fill the open core cells until the level of the potting compound is higher than the outer surface of the facesheet.

CAUTION: DO NOT PERMIT THE SOLVENTS TO TOUCH THE UNCURED POTTING COMPOUND. IF YOU DO, THE REPAIR WILL BE UNSATISFACTORY.

G. Cure the potting compound.

(1) Cure the potting compound as given in Paragraph 5.P./REPAIR GENERAL.

(2) If you cure the potting compound at a temperature that is higher than room temperature, apply the temperature as given in Paragraph 5.O./REPAIR GENERAL.

(a) If you use a heat blanket to apply the temperature, put a layer of solid parting film between the floor panel and the heat blanket.

H. Remove the potting compound barrier.

I. Sand the surface of the potting compound until it is smooth with the outer surface of the facesheet.

J. Clean the damaged area as given in Paragraph 5.E./REPAIR GENERAL.

K. Prepare and apply the repair plies.

(1) If you use BMS 9-3 fabric as the repair ply material:

(a) Refer to Repair 9 - Layout of the Repair Parts - Glass Fabric Repair at an Edge, Figure 208/REPAIR 9 or Repair 9 - Layout of the Repair Parts - Glass Fabric Repair at a Corner, Figure 209/REPAIR 9 for the layout of the repair parts.

(b) Impregnate the repair plies with BMS 8-201 resin as given in Paragraph 5.H./REPAIR GENERAL.

(c) Apply the repair plies as given in Paragraph 5.J./REPAIR GENERAL.

L. Apply the pressure for the cure of the repair plies.

(1) When you use BMS 9-3 fabric as the repair ply material, you must apply vacuum pressure.

(a) Assemble the vacuum bag system as given in Paragraph 5.K./REPAIR GENERAL.

(b) Do a check of the vacuum bag system as given in Paragraph 5.L./REPAIR GENERAL.

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(c) Apply the vacuum pressure as given in Paragraph 5.N./REPAIR GENERAL.

M. Cure the repair.

(1) When you use BMS 9-3 fabric as the repair ply material, do the steps that follow:

(a) Cure the BMS 8-201 resin as given in Paragraph 5.R./REPAIR GENERAL.

(b) If you cure the BMS 8-201 resin at a temperature that is higher than room temperature, apply the temperature as given in Paragraph 5.O./REPAIR GENERAL.

N. Install the inserts, if they were removed, as given in Paragraph 5.S./REPAIR GENERAL.

O. Apply the finish to the repair area. Use the same finish that was used on the initial floor panel.

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CIRCULAR SHAPE IS SHOWN, OVAL SHAPES ARE ALSO PERMITTED

SECTION THROUGH THE CENTER OF THE DAMAGE REMOVAL

2472638 S0000579559_V1

Removal of the Damage at an Edge (BMS 9-3 along with BMS 8-201, Type III or IV)
Figure 205

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CIRCULAR SHAPE IS SHOWN, OVAL SHAPES ARE ALSO PERMITTED

SECTION THROUGH THE CENTER OF THE DAMAGE REMOVAL

2472637 S0000579558_V1

Removal of the Damage at a Corner (BMS 9-3 along with BMS 8-201, Type III or IV)
Figure 206

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2472643 S0000579562_V1

Procedure to Fill a Damage Area with Potting Compound at an Edge or Corner (BMS 9-3 along with BMS 8-201, Type III or IV)
Figure 207

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CIRCULAR SHAPE IS SHOWN, OVAL SHAPES ARE ALSO PERMITTED

2472678 S0000579627_V1

Repair 9 - Layout of the Repair Parts - Glass Fabric Repair at an Edge (BMS 9-3 along with BMS 8-201, Type III or IV)
Figure 208 (Sheet 1 of 2)

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SECTION THROUGH THE CENTER OF THE REPAIR

2472665 S0000579564_V1

Repair 9 - Layout of the Repair Parts - Glass Fabric Repair at an Edge (BMS 9-3 along with BMS 8-201, Type III or IV)
Figure 208 (Sheet 2 of 2)

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CIRCULAR SHAPE IS SHOWN, OVAL SHAPES ARE ALSO PERMITTED

2472644 S0000579565_V1

Repair 9 - Layout of the Repair Parts - Glass Fabric Repair at a Corner (BMS 9-3 along with BMS 8-201, Type III or IV)
Figure 209 (Sheet 1 of 2)

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SECTION THROUGH THE CENTER OF THE REPAIR

2472645 S0000579574_V1

Repair 9 - Layout of the Repair Parts - Glass Fabric Repair at a Corner (BMS 9-3 along with BMS 8-201, Type III or IV)
Figure 209 (Sheet 2 of 2)

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REPAIR 10 - REPAIR OF DAMAGE TO THE CORE ON AN EDGE IN COMPOSITE FLOOR PANELS

1. Applicability

A. Repair 10 is applicable to damage to the core at an edge of a floor panel.

2. General

A. The repair material necessary for this repair is given in Table 201/REPAIR 10.

Table 201:

FLOOR PANEL REPAIR MATERIALS	
REPAIR MATERIALS	**BOEING SPECIFICATION**
Potting compound	BMS 5-28, Type 19

3. Repair Instructions

A. Find the limits of the damage. Refer to Paragraph 5.A./REPAIR GENERAL

B. Remove the damaged core.

C. Remove the water or other unwanted material as given in Paragraph 5.D./REPAIR GENERAL The area of the damage cleanup must be fully dry.

D. Clean the repair area as given in Paragraph 5.E./REPAIR GENERAL

E. Fill the damaged core with BMS 5-28, Type 19 potting compound. Refer to Repair 10 - Procedure to Fill Core Damage on an Edge, Figure 201/REPAIR 10.

(1) Prepare the potting compound as given in Repair General, Table 203 .

(2) Fill the core until the level of the potting compound is higher than the initial edge of the floor panel.

CAUTION: DO NOT PERMIT THE SOLVENTS TO TOUCH THE UNCURED POTTING COMPOUND. IF YOU DO NOT OBEY, THE REPAIR WILL BE UNSATISFACTORY.

F. Cure the potting compound.

(1) Cure the potting compound as given in Paragraph 5.P./REPAIR GENERAL

(2) If you cure the potting compound at a temperature that is higher than room temperature, apply the temperature as given in Paragraph 5.O./REPAIR GENERAL

NOTE: We do not recommend the use of a heat blanket to apply the temperature for this repair.

G. Sand the surface of the potting compound until it is smooth with the initial edge of the floor panel.

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Repair 10 - Procedure to Fill Core Damage on an Edge
Figure 201

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REPAIR 11 - REPAIR OF FRAYED OR LOOSENED FIBERS LESS THAN 2 INCHES IN LENGTH IN COMPOSITE FLOOR PANELS

1. Applicability

A. REPAIR 11 is applicable to damage along the edge of a floor panel.

2. General

A. The repair material necessary for this repair is given in Table 201/REPAIR 11.

Table 201:

FLOOR PANEL REPAIR MATERIALS	
REPAIR MATERIALS	**BOEING SPECIFICATION**
Laminating resin	BMS 8-201, Type III or IV

3. Repair Instructions

A. Find the limits of the damage. Refer to Paragraph Paragraph 5.A./REPAIR GENERAL.

B. Remove the water or other unwanted material as given in Paragraph 5.D./REPAIR GENERAL. The area of the damage must be fully dry.

C. Clean the repair area as given in Paragraph 5.E./REPAIR GENERAL.

D. Sweep and saturate the loose fibers with BMS 8-201 resin.

E. Clamp the fibers flush in place and cure with BMS 8-201 resin as given in Paragraph 5.R./REPAIR GENERAL.

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REPAIR 1 - DAMAGE ON ONE FLANGE OF A TRANSVERSE FLOOR BEAM CHORD

1. Applicability

A. Repair 1 is applicable to damage on the flanges of the upper or lower chords of:

(1) The Transverse Floor Beams (I-sections) in Fuselage Sections 41, 43, 46, and 47. Refer to Transverse Floor Beam Location, Figure 201/REPAIR 1.

(2) The Transverse Floor Beams that are made from the 7075-T6511 or 7050-T76511 extrusions that follow:

(a) Fuselage Section 41: BAC1518-1208, BAC1518-1210, and BAC1518-1218

(b) Fuselage Section 43: BAC1518-1213 and BAC1518-1214

(c) Fuselage Section 46: BAC1518-1207

(d) Fuselage Section 47: BAC1518-1207, BAC1518-1211 and BAC1518-1212.

(3) Refer to Table 202/REPAIR 1 and Table 203/REPAIR 1 for the thicknesses of the chords of the different Transverse Floor Beams.

B. Repair 1 is not applicable to damage to the floor beam at STA 1030 on airplanes with a flat aft pressure bulkhead at STA 1042.

C. Repair 1 is not applicable to damage to the floor beam at a seat track location.

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NOTES

1 STA 1016 FOR AIRPLANES WITH A DOME AFT PRESSURE BULKHEAD.

2 STA 1042 FOR AIRPLANES WITH A FLAT AFT PRESSURE BULKHEAD.

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Transverse Floor Beam Location
Figure 201

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SECTION 43 TRANSVERSE FLOOR BEAMS ARE SHOWN,
SECTION 41, 46, AND 47 TRANSVERSE FLOOR BEAMS
ARE ALMOST THE SAME

H16823 S0006587909_V1

Transverse Floor Beams
Figure 202

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2. General

A. This repair gives instructions for a permanent repair of the upper or lower chord of a floor beam made from extruded aluminum. Refer to 51-00-06 for the definitions of the different types of repairs, if necessary.

B. Refer to the applicable identification subject for the location of the floor beam you want to repair. Refer to 53-10-51, 53-30-51, 53-60-51, or 53-70-51, as necessary.

3. References

Reference	Title
51-00-06	STRUCTURAL REPAIR DEFINITIONS
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-20-05	REPAIR SEALING
51-40-00, GENERAL	Fasteners
51-40-02, GENERAL	Fastener Installation and Removal
51-40-03, GENERAL	Fastener Substitution
51-40-05, GENERAL	Fastener Hole Sizes
51-40-06, GENERAL	Fastener Edge Margins
53-10-51	FUSELAGE FLOOR STRUCTURE - SECTION 41
53-10-51, IDENTIFICATION 2	Section 41 Passenger Compartment Floor Structure
53-30-51	FUSELAGE FLOOR STRUCTURE - SECTION 43
53-30-51, IDENTIFICATION 1	Section 43 Transverse Floor Beams
53-60-51	FUSELAGE FLOOR STRUCTURE - SECTION 46
53-60-51, IDENTIFICATION 1	Section 46 Floor Beams
53-70-51	FUSELAGE FLOOR STRUCTURE - SECTION 47
53-70-51, IDENTIFICATION 1	Section 47 Floor Structure
AMM 51-31-00 P/B 201	SEALS AND SEALING - MAINTENANCE PRACTICES
AMM 51-21-00	Interior and Exterior Finishes - Cleaning/Painting
AMM 51-21-00/701	Interior And Exterior Finishes - Cleaning/Painting
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes

4. Repair Instructions

A. Remove the structure that follows, as necessary:

(1) Remove the floor panels and adjacent structure to get access to the damaged floor beam.

(2) Remove the clip-on nuts for the floor panel fasteners in the area where the repair angles and strap will be installed.

B. Cut and remove the damaged parts of the floor beam.

(1) Cut the floor beam as shown in Transverse Floor Beam Upper or Lower Chord - Repair to One Flange, Figure 203/REPAIR 1.

NOTE: If a floor beam is tapered, then keep an edge margin of 1.7D (D = fastener diameter). If this is not possible, then cut the floor beam in a location that does not have a taper.

(2) The edge of the cut must not be less than 2 inches (50.8 mm) from:

(a) The center of a seat track

(b) The center of a cargo tie-down fitting.

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C. Make the repair parts. Refer to Transverse Floor Beam Upper or Lower Chord - Repair to One Flange, Figure 203/REPAIR 1 and Tables 201, 202, and 203.

NOTE: The repair parts:

- Can be made from aluminum extrusions to the dimensions given in the production drawing.
- Should be formed in the annealed condition, then heat treated as shown.

(1) Do not permit the repair parts to cause a blockage of the manufactured floor beam holes.

(2) If there is a blockage, make cutouts in the repair parts that align with the holes in the floor beam.

D. Assemble the repair parts.

E. Drill the fastener holes. Refer to Transverse Floor Beam Upper or Lower Chord - Repair to One Flange, Figure 203/REPAIR 1 and Table 204.

F. Disassemble the repair parts.

G. Remove all the nicks, scratches, and sharp edges from the repair parts and cut edges of the floor beam. Make the surface finish 125 microinch Ra or better.

H. Apply a chemical conversion coating to the repair parts and to the cut edges of the floor beam. Refer to 51-20-01.

I. Apply one of the two finishes that follows:

(1) Apply two layers of BMS 10-11, Type I primer to the repair parts and the bare surfaces of the floor beam. Refer to SOPM 20-41-02.

(2) Apply one layer of BMS 10-11, Type I primer and one layer of BMS 10-11, Type II enamel, color 702 white gloss, to the repair parts and the cut edges of the floor beam. Refer to SOPM 20-41-02 and AMM 51-21-00/701.

J. Install the repair parts.

(1) Apply BMS 5-95 sealant to the repair as follows (Refer to 51-20-05):

(a) Apply BMS 5-95 sealant to the mating surfaces.

(b) Install the fasteners wet with BMS 5-95 sealant. Refer to Transverse Floor Beam Upper or Lower Chord - Repair to One Flange, Figure 203/REPAIR 1 and Table 204 for the fasteners you can use.

(c) Fill all the spaces with BMS 5-95 sealant.

K. Apply one layer of BMS 3-23, Type II corrosion inhibiting compound followed by one layer of BMS 3-26 corrosion inhibiting compound to the surface of the repair area. Refer to 51-20-01.

(1) As an alternative, apply one layer of BMS 3-29 corrosion inhibiting compound. Refer to 51-20-01.

L. Install the adjacent structure that was removed.

M. Install the floor panels.

(1) Clean the fastener holes as given in 51-20-01.

(2) Apply a chemical conversion coating to the fastener holes as given in 51-20-01.

(3) Apply one layer of BMS 10-11, Type I primer to the fastener holes. Refer to AMM 51-21-00.

(4) Apply BMS 3-24 grease to the fastener holes.

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(5) Install the clip-on nuts at each fastener hole.

(a) Align the clip-on nuts and the floor panel fastener holes.

(6) Put the floor panels in position and install the fasteners wet with BMS 3-24 grease. Torque the fasteners to 20-25 lb-in (2.3-2.8 Nm).

Table 201:

REPAIR MATERIALS FOR TRANSVERSE FLOOR BEAM EXTRUSIONS			
ITEM	**PART**	**QUANTITY**	**MATERIAL**
[1]	Repair Angle	1	See Tables 202 and 203 for the material and thickness
[2]	Repair Angle	1	See Tables 202 and 203 for the material and thickness
[3]	Strap	1	See Table 203 for the material and thickness
[4]	Filler	1	Use 7075-T6 plate that is the same thickness as the flange of the initial chord as given in Table 202 and 203
[5]	Shim	As necessary at a stiffener	Use 7075-T6 clad sheet that is 0.150 inch thick

Table 202:

TRANSVERSE FLOOR BEAM DIMENSIONS			
FLOOR BEAM EXTRUSION	**CHORD THICKNESS IN INCHES**	**PART [1] REPAIR ANGLE - CHORD THICKNESS/MATERIAL**	**PART [2] REPAIR ANGLE - CHORD THICKNESS/MATERIAL**
BAC1518-1207 BAC1518-1210 BAC1518-1213 BAC1518-1214	0.125	0.071 / 7075-T6 PART [1] REPAIR ANGLE CAN BE MADE FROM BAC1490-2811 FORMED ANGLE, 7075-T6	0.080 / 7075-T6 PART [2] REPAIR ANGLE CAN BE MADE FROM BAC1490-2887 FORMED ANGLE, 7075-T6

Table 203:

TRANSVERSE FLOOR BEAM DIMENSIONS				
FLOOR BEAM EXTRUSION	**CHORD THICKNESS IN INCHES**	**PART [1] REPAIR ANGLE - CHORD THICKNESS/MATERIAL**	**PART [2] REPAIR ANGLE - CHORD THICKNESS/MATERIAL**	**PART [3] STRAP**
BAC1518-1208 BAC1518-1211 BAC1518-1212 BAC1518-1218	0.170 0.150 0.180 0.175	0.071 / 7075-T6 PART [1] REPAIR ANGLE CAN BE MADE FROM BAC1490-2811 FORMED ANGLE, 7075-T6	0.080 / 7075-T6 PART [2] REPAIR ANGLE CAN BE MADE FROM BAC1490-2887 FORMED ANGLE, 7075-T6	0.080 7075-T6

Table 204:

REPAIR FASTENERS		
INITIAL FASTENER	**REPAIR FASTENER TYPE**	**REPAIR FASTENER (FOR HOLE CLEANUP, USE A MAXIMUM OF 1/32 INCH OVERSIZE)**
5/32 INCH DIAMETER PROTRUDING HEAD RIVET	BACB30NX6K() hex drive bolt with a BACC30BH collar (Optional: BACB30FM6 hex drive bolt with a BACC30M collar)	BACB30NX6K()X hex drive bolt with a BACC30BH collar (Optional: BACB30FP6 hex drive bolt with a BACC30M collar)
3/16 INCH DIAMETER PROTRUDING HEAD RIVET	BACB30NX6K()X hex drive bolt with a BACC30BH collar (Optional: BACB30FP6 hex drive bolt with a BACC30M collar)	BACB30NX6K()Y hex drive bolt with a BACC30AC collar (Optional: BACB30KK6 hex drive bolt with a BACC30R collar)

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Table 204: (Continued)

REPAIR FASTENERS		
INITIAL FASTENER	**REPAIR FASTENER TYPE**	**REPAIR FASTENER (FOR HOLE CLEANUP, USE A MAXIMUM OF 1/32 INCH OVERSIZE)**
1/4 INCH DIAMETER PROTRUDING HEAD RIVET	BACB30MY8K()X hex drive bolt with a BACC30M collar (Optional: BACB30FP8 hex drive bolt with a BACC30M collar)	BACB30MY8K()Y hex drive bolt with a BACC30R collar (Optional: BACB30KK8 hex drive bolt with a BACC30R collar)
3/16 INCH DIAMETER HEX DRIVE BOLT OR LOCK BOLT	BACB30NX6K()X hex drive bolt with a BACC30BH collar (Optional: BACB30FP6 hex drive bolt with a BACC30M collar)	BACB30NX6K()Y hex drive bolt with a BACC30AC collar (Optional: BACB30KK6 hex drive bolt with a BACC30R collar)

NOTE: Use protruding head fasteners only in the floor beam web. Use flush head fasteners [BACB30NW6K()] in the floor beam chord.

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H16825 S0006587916_V1

Transverse Floor Beam Upper or Lower Chord - Repair to One Flange
Figure 203 (Sheet 1 of 3)

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B–B

H16828 S0006587917_V1

Transverse Floor Beam Upper or Lower Chord - Repair to One Flange
Figure 203 (Sheet 2 of 3)

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NOTES

- ALL DIMENSIONS ARE IN INCHES (mm).

1 USE A MINIMUM OF 4 REPAIR FASTENERS THROUGH THE HORIZONTAL FLANGE OF THE PART [2] ANGLE. THIS DOES NOT INCLUDE A FLOOR PANEL FASTENER.

2 USE A MINIMUM OF 2 REPAIR FASTENERS THROUGH THE HORIZONTAL AND VERTICAL FLANGES AT EACH END OF THE PART [1] SUPPORT ANGLE.

3 USE A MINIMUM OF 4 REPAIR FASTENERS THROUGH THE VERTICAL FLANGE OF THE PART [2] ANGLE. THIS DOES NOT INCLUDE FLOOR PANEL OR CARGO LINER FASTENERS.

4 DO NOT PERMIT THE REPAIR PARTS TO CAUSE A BLOCKAGE OF THE MANUFACTURED HOLES IN THE FLOOR BEAM WEB. IF THERE IS BLOCKAGE MAKE CUTOUTS IN THE REPAIR PARTS THAT ARE THE SAME SHAPE AS THE HOLES IN THE FLOOR BEAM.

5 USE A MINIMUM OF 3 FASTENERS THROUGH THE PART [3] STRAP.

6 KEEP A MINIMUM EDGE MARGIN OF 1.7D ON THE EDGES OF THE PARTS [1] AND [2] ANGLES AND THE PART [3] STRAP.

7 MAKE SURE THAT THE GAP BETWEEN THE PART [4] FILLER AND THE INTIAL CHORD IS NOT MORE THAN 0.010 INCH (0.12 mm) BEFORE FASTENER INSTALLATION.

FASTENER SYMBOLS

FLOOR PANEL OR CARGO LINER FASTENER LOCATION. INSTALL A BACN10FX() CLIP-ON NUT. INSTALL THE SAME TYPE AND SIZE OF FLOOR PANEL OR CARGO LINER FASTENER AS THE ONE THAT WAS REMOVED.

INITIAL FASTENER LOCATION. INSTALL A FASTENER AS GIVEN IN TABLE 204. USE THE DIAMETER NECESSARY TO KEEP TRANSITION FIT HOLES.

REPAIR FASTENER LOCATION. INSTALL A BACB30NW6K() (PREFERRED) OR A BACB30FN6 (ALTERNATIVE) HEX DRIVE BOLT WITH A BACC30M COLLAR.

REPAIR FASTENER LOCATION. INSTALL A BACB30MY6K() (PREFERRED) OR A BACB30FM6() (ALTERNATIVE) HEX DRIVE BOLT WITH A BACC30M COLLAR.

H16834 S0006587918_V2

Transverse Floor Beam Upper or Lower Chord - Repair to One Flange
Figure 203 (Sheet 3 of 3)

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ALLOWABLE DAMAGE 1 - SEAT TRACKS

1. Applicability

A. This subject gives the allowable damage limits for the passenger compartment seat tracks shown in Seat Track Locations, Figure 101/ALLOWABLE DAMAGE 1.

B. This subject gives the allowable damage limits for the cargo/ passenger compartment seat tracks shown in Seat Track Locations, Figure 101/ALLOWABLE DAMAGE 1.

2. General

WARNING: SMALL PARTICLES OF TITANIUM ARE FLAMMABLE. IN A SUFFICIENT CONCENTRATION, AN EXPLOSION CAN OCCUR. EXTINGUISH FIRES OF TITANIUM WITH FULLY DRY TALC, CALCIUM CARBONATE, SAND OR GRAPHITE. APPLY THE POWDER TO A DEPTH OF 1/2 INCH OR MORE ON THE AREA THAT IS ON FIRE. DO NOT USE FOAM, WATER, HALON, CARBON TETRACHLORIDE, OR CARBON DIOXIDE. WATER THAT TOUCHES MOLTEN TITANIUM CAN CAUSE A STEAM EXPLOSION.

A. Remove the damage as necessary.

(1) Refer to 51-10-02 for the inspection and removal of damage.

(2) Refer to 51-30-03 for possible sources of abrasive and other materials to remove damage.

(3) Refer to 51-30-05 for possible sources of equipment and tools to remove damage.

(4) Refer to SOPM 20-10-07 when you machine titanium seat tracks.

B. After you have removed the damage from a seat track made of aluminum, do the steps that follow:

(1) Apply a chemical conversion coating to the reworked areas. Refer to 51-20-01.

NOTE: The chemical conversion coating can put a stain on the floor covers that are adjacent to the seat tracks. Put a cover on the floor covers or remove the floor covers if necessary.

(2) Apply one layer of aluminized epoxy primer 463-6-4 (Catalyst X-306 and Thinner TL-52) to the reworked areas. Refer to SOPM 20-41-04.

C. After you have removed the damage from a seat track made of titanium, do the step that follows:

(1) Apply one layer of BMS 10-11, Type I primer to the reworked areas as shown in Areas of Finish Applications for Titanium Seat Tracks, Figure 102/ALLOWABLE DAMAGE 1. Refer to SOPM 20-40-02

NOTE: The primer can put a stain on the floor covers that are adjacent to the seat tracks. Put a cover on the floor covers or remove the floor covers if necessary.

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NOTES

- THERE ARE MANY SEAT TRACK CONFIGURATIONS FOR THIS AIRPLANE. THESE CONFIGURATIONS CAN BE DIFFERENT THAN THE ONE THAT IS SHOWN. REFER TO DRAWINGS 140A0345 (SECTION 41), 140A0346 (SECTION 43), 140A0402 (SECTION 44), 140A0350 (SECTION 46), AND 140A0355 (SECTION 47) TO SEE THE DIFFERENT CONFIGURATIONS.

F87864 S0006587952_V1

Seat Track Locations
Figure 101 (Sheet 1 of 6)

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F88044 S0006587954_V2

Seat Track Locations
Figure 101 (Sheet 2 of 6)

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F88115 S0006587956_V1

Seat Track Locations
Figure 101 (Sheet 3 of 6)

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F88122 S0006587958_V1

Seat Track Locations
Figure 101 (Sheet 4 of 6)

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SEAT TRACK CONFIGURATIONS

F

G77822 S0006587960_V1

Seat Track Locations
Figure 101 (Sheet 5 of 6)

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TYPE IV

PIVOT LINK ASSEMBLY
B–B

W85068 S0000130213_V1

Seat Track Locations
Figure 101 (Sheet 6 of 6)

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G22153 S0006587961_V1

Areas of Finish Applications for Titanium Seat Tracks
Figure 102

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3. References

Reference	Title
51-10-02	INSPECTION AND REMOVAL OF DAMAGE
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-30-03	NON-METALLIC MATERIALS
51-30-04, GENERAL	Dangerous Materials
51-30-05	EQUIPMENT AND TOOLS FOR REPAIRS
51-40-02, GENERAL	Fastener Installation and Removal
51-40-05	FASTENER HOLE SIZES
AMM 51-21-00 P/B 701	INTERIOR AND EXTERIOR FINISHES - CLEANING/PAINTING
AMM 51-21-31 P/B 701	CORROSION REMOVAL AND CONTROL - CLEANING/PAINTING
SOPM 20-10-07	Machining of Titanium
SOPM 20-31-04	Application of Interior Decorative Finishes
SOPM 20-40-02	Standard Overhaul Practices Manual
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes
SOPM 20-41-04	Application of Interior Decorative Finishes

4. Allowable Damage Limits for the Passenger and Cargo Compartment Seat Tracks

A. Crown

(1) Cracks are not permitted.

(2) Nick, Gouges, Scratches, and Corrosion:

(a) Remove the damage as shown in Seat Track Allowable Damage Details, Figure 103/ALLOWABLE DAMAGE 1, Details A , B , C , and D .

(3) Dents are not permitted.

(4) Holes and Punctures are not permitted.

B. Web

(1) Zone 1 - Refer to Seat Track Locations, Figure 101/ALLOWABLE DAMAGE 1, Detail F .

(a) Damage is not permitted.

(2) Zone 2 - Refer to Seat Track Locations, Figure 101/ALLOWABLE DAMAGE 1, Detail F .

(a) Cracks are not permitted.

(b) Nicks, Gouges, Scratches, and Corrosion:

1) You are permitted to do one of the procedures that follow:

a) Remove the damage as given in Seat Track Allowable Damage Details, Figure 103/ALLOWABLE DAMAGE 1, Details E and F .

b) Drill out the damage as given in Holes and Punctures for the web.

(c) Dents:

1) Remove the damage as shown in Seat Track Allowable Damage Details, Figure 103/ALLOWABLE DAMAGE 1, Detail G .

(d) Holes and Punctures are permitted as shown in Seat Track Allowable Damage Details, Figure 103/ALLOWABLE DAMAGE 1, Detail F if they are:

1) A minimum of 1.0 inch (25.4 mm) away from the edge of a fastener hole, material edge, or other damage

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2) A minimum of 0.20 inch (5.08 mm) away from a radius

3) Not more than 0.25 inch (6.35 mm) in diameter before they are drilled and filled with a 1/4 inch diameter or smaller rivet.

a) Use a 2117-T3 or 2117-T4 rivet. Install the rivet without sealant.

b) Drill the hole to the applicable size as given in 51-40-05.

C. Flange

(1) Cracks are not permitted.

(2) Nicks, Gouges, Scratches, and Corrosion

(a) You are permitted to do one of the procedures that follow:

1) Remove the damage as shown in Seat Track Allowable Damage Details, Figure 103/ALLOWABLE DAMAGE 1, Details E , H , I , J , K , and L .

2) Drill out the damage as given in Holes and Punctures for the flange.

(3) Dents are not permitted.

(4) Holes and Punctures are permitted if they are:

(a) A minimum of 1.0 inch (25.4 mm) away from the edge of a fastener hole, material edge, or other damage

(b) A minimum of 0.20 inch (5.08 mm) away from a radius

(c) Not more than 0.25 inch (6.35 mm) in diameter before they are drilled and filled with a 1/4 inch diameter or smaller rivet.

1) Use a 2117-T3 or 2117-T4 rivet. Install the rivet without sealant.

2) Drill the hole to the applicable size as given in 51-40-05.

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NOTE: DAMAGE REMOVAL IS SHOWN FOR A TYPE I SEAT TRACK. DAMAGE REMOVAL FROM THE CROWN OF TYPE II AND TYPE III SEAT TRACKS IS THE SAME.

DAMAGE CLEANUP

A

A–A

F88129 S0006587962_V1

Seat Track Allowable Damage Details
Figure 103 (Sheet 1 of 7)

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REMOVAL OF DAMAGE
ON AN EDGE

B

REMOVAL OF DAMAGE
ON AN EDGE

C

D

B–B

F88263 S0006587963_V1

Seat Track Allowable Damage Details
Figure 103 (Sheet 2 of 7)

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REMOVAL OF DAMAGED MATERIAL ON A SURFACE

E

C–C

F88393 S0006587964_V1

Seat Track Allowable Damage Details
Figure 103 (Sheet 3 of 7)

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NOTE: THE CROSS-SECTIONAL AREA OF THE DAMAGE WHICH HAS BEEN REMOVED ALONG ANY LINE A-B MUST NOT BE MORE THAN 10 PERCENT OF THE INITIAL NET WEB CROSS-SECTIONAL AREA.

CROSS-SECTIONAL AREA REMOVAL IN
A WEB OF A TYPE I SEAT TRACK

F

X = A MAXIMUM OF 0.25T

A_1 = INITIAL NET WEB CROSS-SECTIONAL AREA
= THE TOTAL CROSS-SECTIONAL AREA MINUS THE INITIAL HOLE CROSS-SECTIONAL AREA MADE BY BOEING, IF APPLICABLE
= TH

A_2 = CROSS-SECTIONAL AREA OF THE DAMAGE WHICH HAS BEEN REMOVED
= THE DEPTH OF THE DAMAGE REMOVED MULTIPLIED BY THE DIMENSION ACROSS THE DAMAGE REMOVED
= XI

$\left(\frac{A_2}{A_1}\right) \leq$ 10% MAXIMUM

SURFACE DAMAGE IS SHOWN,
HOLES AND PUNCTURES ARE ALMOST THE SAME

D-D
(VIEW IS ROTATED 90° CLOCKWISE)

G22409 S0006587965_V1

Seat Track Allowable Damage Details
Figure 103 (Sheet 4 of 7)

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DENT THAT IS PERMITTED

G

REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER EDGE MARGINS DO NOT HAVE AN OVERLAP

H

REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER EDGE MARGINS HAVE AN OVERLAP

I

F88270 S0006587966_V1

Seat Track Allowable Damage Details
Figure 103 (Sheet 5 of 7)

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Y = WIDTH OF THE MATERIAL THAT IS REMOVED
= A MAXIMUM OF 20 PERCENT OF THE WIDTH OF THE FLANGE

REMOVAL OF DAMAGED MATERIAL
ON A SURFACE AT AN EDGE

J

E-E

F88266 S0006587967_V1

Seat Track Allowable Damage Details
Figure 103 (Sheet 6 of 7)

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X = WIDTH OF THE MATERIAL THAT IS REMOVED
= A MAXIMUM OF 0.10 INCH (2.54 mm)

REMOVAL OF DAMAGED MATERIAL AT AN EDGE OF A METAL SKIN OR WEB

K

REMOVAL OF DAMAGE AROUND THE FASTENERS ON AN EDGE OR A SURFACE

L

F–F

G22413 S0006587968_V1

Seat Track Allowable Damage Details
Figure 103 (Sheet 7 of 7)

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REPAIR GENERAL - SEAT TRACKS

1. Applicability

A. Repair General gives common repair data for seat tracks.

2. General

A. Refer to Seat Track Repair Index, Figure 201/REPAIR GENERAL and Table 201 for an index of the different numbered repairs found in this subject.

Table 201:

REPAIR INDEX	
REPAIR NUMBER	**TITLE**
1	Sections 41 and 43 Titanium Seat Track Repair Between Floor Beams
2	Section 44 Seat Track Repair for BAC1520-2779 Aluminum Extrusion - Procedure 1
3	Section 44 Seat Track Repair for BAC1520-2779 Aluminum Extrusion - Procedure 2
4	Sections 43 and 47 Seat Track Repair for Titanium or BAC1520-2789 Aluminum Extrusion Between Floor Beams
5	Section 46 Seat Track Repair for BAC1520-2789 Aluminum Extrusion Between Floor Beams

B. Call the Boeing Spares Department if:

(1) The extrusion that is needed for the seat track repair is not available.

(2) You want a piece of repair extrusion cut from a seat track that has the same part number (stud holes are pre-drilled) as the seat track that was damaged.

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NOTE: REFER TO REPAIR GENERAL, PARAGRAPH 3.A. FOR THE HOLE PATTERN FOR THE SEAT TRACK REPAIR SECTIONS.

G02435 S0006587973_V3

Seat Track Repair Index
Figure 201

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3. **Repair Procedures That Are Common to the Different Repairs**

A. Hole Pattern for Seat Track Repair Sections

(1) Refer to Hole Pattern for Seat Track Repair Sections, Figure 202/REPAIR GENERAL for the hole pattern that is necessary for the seat track repair sections that are not pre-drilled.

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ROTATED 90° CLOCKWISE

A-A 4

G02464 S0006587975_V1

Hole Pattern for Seat Track Repair Sections
Figure 202 (Sheet 1 of 2)

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NOTES

- MACHINE THE CUT SURFACES TO A FINISH OF 125 MICROINCHES R_a MAXIMUM.

1 THE DISTANCE BETWEEN THE STUD HOLES AT 70°F ±10°F (21°C ±4.4°C) MUST EQUAL 1.00 INCH (25.40 mm) TIMES THE NUMBER OF HOLES PLUS OR MINUS:

- 0.005 INCH (0.127 mm) FOR TWO STUD HOLES THAT ARE 20 INCHES (508 mm) OR LESS FROM EACH OTHER (CENTERLINE TO CENTERLINE).
- 0.015 INCH (0.381 mm) FOR TWO STUD HOLES THAT ARE BETWEEN 20 INCHES (508 mm) AND 100 INCHES (2540 mm) FROM EACH OTHER (CENTERLINE TO CENTERLINE).
- 0.015 INCH (0.381 mm), PLUS 0.00015 INCH (0.00381 mm) FOR EACH INCH (25.4 mm) THAT IS NOT MORE THAN 100 INCHES (2540 mm), FOR TWO STUD HOLES THAT ARE NOT MORE THAN 100 INCHES (2540 mm) FROM EACH OTHER (CENTERLINE TO CENTERLINE).

2 THE 0.780 INCH (19.812 mm) DIAMETER HOLE MUST BE LOCATED TO THE CENTERLINE OF THE 0.430 INCH (10.922 mm) REFERENCE DIMENSION WITHIN ±0.005 INCH (+0.127 mm).

3 DEPTH DIMENSION FOR THE 0.780 INCH (19.81 mm) DIAMETER HOLE.

4 THE CROSS-SECTION OF THE BAC1520-2789 ALUMINUM SEAT TRACK IS SHOWN. THE DIMENSIONING FOR SEAT TRACK HOLES ALSO APPLIES TO THE TITANIUM AND BAC1520-2779 ALUMINUM SEAT TRACKS.

G02486 S0006587976_V2

Hole Pattern for Seat Track Repair Sections
Figure 202 (Sheet 2 of 2)

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REPAIR 1 - TITANIUM SEAT TRACK BETWEEN FLOOR BEAMS - SECTIONS 41 AND 43

1. Applicability

A. Repair 1 is applicable to:

(1) Titanium seat tracks in Sections 41 and 43 from STA 328 to STA 380 as shown in Section 41 Seat Track Location, Figure 201/REPAIR 1.

(2) Seat tracks where the upper horizontal flanges of the initial seat track section are a constant width.

(3) Seat tracks where the constant width section of the lower horizontal flange is not less than 4.40 inches (111.76 mm).

(a) For constant width sections of the lower horizontal flange that are less than 4.40 inches (111.76 mm), use Repair 4.

B. You can use Repair 1 to make a splice to the seat track between floor beams.

(1) You are permitted to use Repair 1 to replace part of a seat track. Use one of the procedures that follows:

(a) Do Repair 1 at each cut end of the initial seat track.

(b) Do Repair 1 at one cut end of the initial seat track. Make the length of the part [1] seat track the same as the initial length of the remaining seat track.

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G71601 S0006587979_V1

Section 41 Seat Track Location
Figure 201

2. General

WARNING: SMALL PARTICLES OF TITANIUM ARE FLAMMABLE. IN A SUFFICIENT CONCENTRATION, AN EXPLOSION CAN OCCUR. EXTINGUISH FIRES OF TITANIUM WITH FULLY DRY TALC, CALCIUM CARBONATE, SAND OR GRAPHITE. APPLY THE POWDER TO A DEPTH OF 1/2 INCH OR MORE ON THE AREA THAT IS ON FIRE. DO NOT USE FOAM, WATER, HALON, CARBON TETRACHLORIDE, OR CARBON DIOXIDE. WATER THAT TOUCHES MOLTEN TITANIUM CAN CAUSE A STEAM EXPLOSION.

A. Repair 1 gives instructions for a Category A repair. Refer to 51-00-06 to find the definitions of the different categories of repairs.

3. References

Reference	Title
51-00-06	STRUCTURAL REPAIR DEFINITIONS
51-10-02	INSPECTION AND REMOVAL OF DAMAGE
51-20-01, GENERAL	Protective Treatment of Metallic and Composite Materials
51-20-05	REPAIR SEALING
51-30-04, GENERAL	Dangerous Materials
51-40-00, GENERAL	Fasteners
51-40-02, GENERAL P/B GENERAL	FASTENER INSTALLATION AND REMOVAL
51-40-03, GENERAL	Fastener Substitution
51-40-05, GENERAL	Fastener Hole Sizes
51-40-06, GENERAL	Fastener Edge Margins

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(Continued)

Reference	Title
53-00-52	SEAT TRACKS
AMM 51-21-00 P/B 701	INTERIOR AND EXTERIOR FINISHES - CLEANING/PAINTING
AMM 51-21-31 P/B 701	CORROSION REMOVAL AND CONTROL - CLEANING/PAINTING
AMM 51-31-00 P/B 201	SEALS AND SEALING - MAINTENANCE PRACTICES
AMM 53-21-00/401	Passenger Cabin Floors - Removal/Installation
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes

4. Repair Instructions

A. Remove the floor panels in the area of the damaged seat tracks. Refer to AMM 53-21-00/401.

B. Cut and remove the damaged part of the seat track. Refer to 51-10-02 as necessary for the inspection and cleanup of damage.

(1) Make the cut at half the distance between floor beam centerlines as shown in Sections 41 and 43 Titanium Seat Track Repair Between Floor Beams, Figure 202/REPAIR 1, Detail A.

(a) Make the cut a minimum of 0.55 inch (13.97 mm) away from the initial fastener attach hole for the floor panel.

C. Make the repair parts. Refer to Table 201/REPAIR 1.

(1) The part [1] seat track is available from the Boeing Spares Department or it can be made from titanium plate or extruded bar to dimensions as given in the production drawing.

(a) Refer to 53-00-52, Repair General for the necessary hole pattern for the seat track.

Table 201:

REPAIR MATERIAL			
ITEM	PART	QUANTITY	MATERIAL
[1]	Seat Track	1	Use Ti-6Al-4V plate or extruded bar
[2]	Angle	2	Use Ti-6Al-4V plate or extruded bar
[3]	Strap	1	Use Ti-6Al-4V plate or extruded bar that is 0.080 inch (2.032 mm) thick
[4]	Strap	2	Use Ti-6Al-4V plate or extruded bar that is 0.080 inch (2.032 mm) thick

D. Assemble the repair parts.

E. Drill the fastener holes. Refer to Sections 41 and 43 Titanium Seat Track Repair Between Floor Beams, Figure 202/REPAIR 1.

F. Disassemble the repair parts.

G. Remove all the nicks, scratches, burrs, and sharp edges from the repair parts and the bare surfaces of the seat track. Refer to 51-10-02.

H. Apply a finish.

(1) Apply one layer of BMS 10-11, Type I primer as given in SOPM 20-41-02 to the areas that follow:

(a) The areas as shown in Sections 41 and 43 Titanium Seat Track Repair Between Floor Beams, Figure 202/REPAIR 1, Detail B for the part [1] seat track

(b) The part [2] angle, the part [3] strap, and the part [4] straps

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(c) The cut edges of the initial seat track

(d) The fastener attach holes in the initial seat track where floor panels were removed.

I. Install the repair parts.

(1) Install a countersink repair washer in the fastener hole if the initial seat track is attached to the floor beam through the crown.

(a) Install the countersink repair washer wet with BMS 5-95 sealant.

(2) Apply BMS 5-95 sealant to the mating surfaces of the repair parts. Refer to 51-20-05.

(3) Install the fasteners wet with BMS 5-95 sealant.

(4) Fill the space between the part [1] seat track and the initial seat track with BMS 5-95 sealant.

J. Apply one layer of BMS 3-23, Type II corrosion inhibiting compound to the surface of the repair area. Refer to 51-20-01, GENERAL.

K. Install the floor panels. Refer to AMM 53-21-00/401.

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Sections 41 and 43 Titanium Seat Track Repair Between Floor Beams
Figure 202 (Sheet 1 of 5)

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G77906 S0006587983_V1

Sections 41 and 43 Titanium Seat Track Repair Between Floor Beams
Figure 202 (Sheet 2 of 5)

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B–B

G78493 S0006587984_V1

Sections 41 and 43 Titanium Seat Track Repair Between Floor Beams
Figure 202 (Sheet 3 of 5)

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G72422 S0006587985_V1

Sections 41 and 43 Titanium Seat Track Repair Between Floor Beams
Figure 202 (Sheet 4 of 5)

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AREAS OF FINISH APPLICATIONS FOR TITANIUM SEAT TRACKS

B

NOTES

- ALL DIMENSIONS ARE IN INCHES.

1 IF THE LENGTH OF THE CONSTANT WIDTH SECTION OF THE LOWER HORIZONTAL FLANGE IS LESS THAN 4.40 INCHES (111.76 mm), USE REPAIR 4. IF NOT, MAKE THE LENGTH OF THE [3] AND [4] STRAPS THE SAME LENGTH AS THE CONSTANT WIDTH SECTION.

FASTENER SYMBOLS

INITIAL FASTENER LOCATION. USE THE SAME TYPE AND SIZE FASTENER AS THE INITIAL FASTENER.

REPAIR FASTENER LOCATION. INSTALL A BACB30NW8K HEX DRIVE BOLT WITH A BACC30M8 COLLAR.

REPAIR FASTENER LOCATION. INSTALL A BACB30MY6K HEX DRIVE BOLT WITH A BACC30M6 COLLAR.

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Sections 41 and 43 Titanium Seat Track Repair Between Floor Beams
Figure 202 (Sheet 5 of 5)

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REPAIR 2 - SECTION 44 SEAT TRACK REPAIR FOR BAC1520-2779 ALUMINUM EXTRUSION - PROCEDURE 1

1. Applicability

A. Repair 2 is applicable to seat tracks in Section 44 from STA 540 to STA 727B as shown in Seat Track Location, Figure 201/REPAIR 2.

B. You can use Repair 2 to make a splice to the seat track.

(1) You are permitted to use Repair 2 to replace part of a seat track. Use one of the procedures that follows:

(a) Do a repair at each cut end of the initial seat track. Use one of the two procedures that follows:

1) Do Repair 2 at each cut end.

2) Do Repair 2 at one cut end and Repair 3 at the other cut end.

(b) Do Repair 2 at one cut end of the initial seat track. Make the length of the part [1] seat track the same as the initial length of the remaining seat track.

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Seat Track Location
Figure 201

2. General

A. You are not permitted to attach a seat in the seat track hole at the repair cut line where the splice is made.

B. Repair 2 is an alternative to Repair 3:

(1) Repair 3 is a seat track repair that makes the cutout in the floor beam larger to permit you to install a repair fastener.

C. Repair 2 gives instructions for a Category A repair. Refer to 51-00-06 to find the definitions of the different categories of repairs.

3. References

Reference	Title
51-00-06	STRUCTURAL REPAIR DEFINITIONS

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(Continued)

Reference	Title
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-20-01, GENERAL	Protective Treatment of Metallic and Composite Materials
51-20-05	REPAIR SEALING
51-40-00, GENERAL	Fasteners
51-40-02, GENERAL P/B GENERAL	FASTENER INSTALLATION AND REMOVAL
51-40-03, GENERAL	Fastener Substitution
51-40-05, GENERAL	Fastener Hole Sizes
51-40-06, GENERAL	Fastener Edge Margins
53-00-52	SEAT TRACKS
AMM 51-21-00 P/B 701	INTERIOR AND EXTERIOR FINISHES - CLEANING/PAINTING
AMM 51-21-31 P/B 701	CORROSION REMOVAL AND CONTROL - CLEANING/PAINTING
AMM 51-31-00	SEALS AND SEALING
AMM 53-21-00/401	Passenger Cabin Floors - Removal/Installation
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes
SOPM 20-41-04	Application of Interior Decorative Finishes
SOPM 20-43-01	Chromic Acid Anodizing

4. Repair Instructions

A. Remove the floor panels in the area of the damaged seat tracks. Refer to AMM 53-21-00/401.

B. Cut and remove the damaged part of the seat track.

(1) Cut the seat track between the attach bolts as shown in Section 44 Seat Track Repair for BAC1520-2779 Aluminum Extrusion - Procedure 1, Figure 202/REPAIR 2, Details A and B .

C. Make the repair parts. Refer to Table 201/REPAIR 2.

(1) The part [1] seat track is available from the Boeing Spares Department or it can be made from aluminum extrusion to dimensions as given in the production drawing.

(a) Refer to 53-00-52, Repair General for the necessary hole pattern for the seat track.

(2) If there are two stud holes between seat track attach bolts, make parts [2] and [3]. Refer to Section 44 Seat Track Repair for BAC1520-2779 Aluminum Extrusion - Procedure 1, Figure 202/REPAIR 2, Detail A .

(3) If there are three stud holes between seat track attach bolts, make parts [4] and [5]. Refer to Section 44 Seat Track Repair for BAC1520-2779 Aluminum Extrusion - Procedure 1, Figure 202/REPAIR 2, Detail B .

Table 201:

REPAIR MATERIAL			
ITEM	PART	QUANTITY	MATERIAL
[1]	Seat Track	1	Use BAC1520-2779 7178-T6511 aluminum extrusion
[2]	Plate	1	Use 2024-T3 or T4 aluminum that is 0.14 inch (3.56 mm) thick
[3]	Plate	1	Use 2024-T3 or T4 aluminum that is 0.14 inch (3.56 mm) thick
[4]	Plate	1	Use 2024-T3 or T4 aluminum that is 0.14 inch (3.56 mm) thick
[5]	Plate	1	Use 2024-T3 or T4 aluminum that is 0.14 inch (3.56 mm) thick

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D. Assemble the repair parts.

E. Drill and countersink the fastener holes in the part [1] seat track. Refer to the initial seat track that was removed.

F. Disassemble the repair parts.

G. Remove all the nicks, scratches, burrs, and sharp edges from the repair parts and the bare surfaces of the seat track.

H. Apply a protective coating.

(1) Chromic acid anodize the part [1] seat track. Refer to SOPM 20-43-01.

(2) Apply a chemical conversion coating as given in 51-20-01 to the following:

(a) The part [2] thru part [5] plates, as necessary.

(b) The cut edges of the initial seat track.

I. Apply a finish.

(1) Apply one layer of aluminized epoxy primer 463-6-4 (Catalyst X-306 and Thinner TL-52) as given in SOPM 20-41-02 to the following:

(a) The part [1] seat track.

1) It is not necessary to apply the aluminized epoxy primer to the lower surface of the track lip.

(b) The part [2] thru part [5] plates, as necessary.

(c) The cut edges of the initial seat track.

J. Install the repair parts.

(1) Apply BMS 5-95 sealant to the mating surfaces of the repair parts. Refer to 51-20-05.

(2) Install the fasteners wet with BMS 5-95 sealant.

(3) Fill the space between the part [1] seat track and the initial seat track with BMS 5-95.

K. Apply one layer of BMS 3-23, Type II corrosion inhibiting compound to the surface of the repair area. Refer to 51-20-01, GENERAL.

L. Apply BMS 8-283 tape to the top of the upper chord of the floor beam that is adjacent to the seat track. Make sure that no spaces occur between the ends of the tape. Refer to AMM 53-21-00/401.

M. Install the floor panels. Refer to AMM 53-21-00/401.

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TWO STUD HOLES BETWEEN SEAT TRACK ATTACH BOLTS

A

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Section 44 Seat Track Repair for BAC1520-2779 Aluminum Extrusion - Procedure 1
Figure 202 (Sheet 1 of 4)

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THREE STUD HOLES BETWEEN SEAT TRACK ATTACH BOLTS

B

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Section 44 Seat Track Repair for BAC1520-2779 Aluminum Extrusion - Procedure 1
Figure 202 (Sheet 2 of 4)

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PART [2] PLATE

C

PART [3] PLATE

D

FASTENER SYMBOLS

┼ INITIAL FASTENER LOCATION. INSTALL A FASTENER THAT IS THE SAME TYPE AND DIAMETER AS THE INITIAL FASTENER.

✦ REPAIR FASTENER LOCATION. INSTALL A NAS602-5P SCREW. MAKE THE THREAD 0.28 INCH LONG BEFORE YOU INSTALL THE FASTENER.

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Section 44 Seat Track Repair for BAC1520-2779 Aluminum Extrusion - Procedure 1
Figure 202 (Sheet 3 of 4)

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PART [4] PLATE

E

PART [5] PLATE

F

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Section 44 Seat Track Repair for BAC1520-2779 Aluminum Extrusion - Procedure 1
Figure 202 (Sheet 4 of 4)

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REPAIR 3 - SECTION 44 SEAT TRACK REPAIR FOR BAC1520-2779 ALUMINUM EXTRUSION - PROCEDURE 2

1. Applicability

A. Repair 3 is applicable to seat tracks in Section 44 from STA 540 to STA 727B that are made of BAC1520-2779 aluminum extrusion. Refer to Seat Track Location, Figure 201/REPAIR 3.

B. You can use Repair 3 to make a splice to the seat track.

(1) You are permitted to use Repair 3 to replace part of a seat track. Use one of the procedures that follows:

(a) Do a repair at each cut end of the initial seat track. Use one of the two procedures that follows:

1) Do Repair 3 at each cut end.

2) Do Repair 3 at one cut end and Repair 2 at the other cut end.

(b) Do Repair 3 at one cut end of the initial seat track. Make the length of the part [1] seat track the same as the initial length of the remaining seat track.

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Seat Track Location
Figure 201

2. General

A. You are not permitted to attach a seat in the seat track holes adjacent to the repair cut line.

B. Repair 3 is an alternative to Repair 2:

(1) Repair 2 is a seat track repair that makes a splice with repair plates.

C. Repair 3 gives instructions for a Category A repair. Refer to 51-00-06 to find the definitions of the different categories of repairs.

3. References

Reference	Title
51-00-06	STRUCTURAL REPAIR DEFINITIONS
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-20-01, GENERAL	Protective Treatment of Metallic and Composite Materials

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(Continued)

Reference	Title
51-20-05	REPAIR SEALING
51-40-00, GENERAL	Fasteners
51-40-02, GENERAL P/B GENERAL	FASTENER INSTALLATION AND REMOVAL
51-40-03, GENERAL	Fastener Substitution
51-40-05, GENERAL	Fastener Hole Sizes
51-40-06, GENERAL	Fastener Edge Margins
51-40-08, GENERAL	Countersink Data and Procedures for Metal Structures
53-00-52	SEAT TRACKS
AMM 51-21-31 P/B 701	CORROSION REMOVAL AND CONTROL - CLEANING/PAINTING
AMM 51-31-00 P/B 201	SEALS AND SEALING - MAINTENANCE PRACTICES
AMM 53-21-00 P/B 401	PASSENGER CABIN FLOORS - REMOVAL/INSTALLATION
AMM 53-21-00/401	Passenger Cabin Floors - Removal/Installation
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes
SOPM 20-41-04	Application of Interior Decorative Finishes
SOPM 20-43-01	Chromic Acid Anodizing

4. Repair Instructions

A. Remove the floor panels in the area of the damaged seat tracks. Refer to AMM 53-21-00/401.

B. Cut and remove the damaged part of the seat track.

(1) Locate the seat track attach bolt in the undamaged section of the seat track that is adjacent to a seat track hole in the damaged section of the seat track.

(a) Cut the seat track at half the distance between the two seat track holes as shown in Section 44 Seat Track Repair for BAC1520-2779 Aluminum Extrusion - Procedure 2, Figure 202/REPAIR 3, Detail A .

C. Extend the cutout in the upper chord of the floor beam as shown in Section 44 Seat Track Repair for BAC1520-2779 Aluminum Extrusion - Procedure 2, Figure 202/REPAIR 3, Detail A to permit the installation of the repair fasteners.

D. Make the repair parts. Refer to Table 201/REPAIR 3.

(1) The part [1] seat track is available from the Boeing Spares Department or it can be made from aluminum extrusion to dimensions as given in the production drawing.

(a) Refer to 53-00-52, Repair General for the necessary hole pattern for the seat track.

Table 201:

REPAIR MATERIAL			
ITEM	PART	QUANTITY	MATERIAL
[1]	Seat Track	1	Use BAC1520-2779 7178-T6511 aluminum extrusion

E. Assemble the repair parts.

F. Drill the fastener holes. Refer to Section 44 Seat Track Repair for BAC1520-2779 Aluminum Extrusion - Procedure 2, Figure 202/REPAIR 3, Detail A .

(1) Drill the repair fastener hole location on the part [1] seat track that is adjacent to the cut. Do not countersink the hole.

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(2) Drill and countersink the remaining fastener holes in the part [1] seat track. Refer to the initial seat track that was removed.

G. Disassemble the repair parts.

H. Remove all the nicks, scratches, burrs, and sharp edges from the repair parts and the bare surfaces of the seat track.

I. Apply a protective coating.

(1) Chromic acid anodize the part [1] seat track. Refer to SOPM 20-43-01.

(2) Apply a chemical conversion coating as given in 51-20-01 to the following:

(a) The countersink repair washers, if they were used.

(b) The cut edges of the initial seat track.

J. Apply a finish.

(1) Apply one layer of aluminized epoxy primer 463-6-4 (Catalyst X-306 and Thinner TL-52) as given in SOPM 20-41-02 to the following:

(a) The part [1] seat track.

1) It is not necessary to apply the aluminized epoxy primer to the lower surface of the track lip.

(b) The countersink repair washers, if they were used.

(c) The cut edges of the initial seat track.

K. Install the repair parts.

(1) Apply BMS 5-95 sealant to the mating surfaces of the repair parts. Refer to 51-20-05.

(2) Install the fasteners wet with BMS 5-95 sealant.

(3) Fill the space between the part [1] seat track and the initial seat track with BMS 5-95.

L. Apply one layer of BMS 3-23, Type II corrosion inhibiting compound to the surface of the repair area. Refer to 51-20-01, GENERAL.

M. Apply BMS 8-283 tape to the top of the upper chord of the floor beam that is adjacent to the seat track. Make sure that there are no spaces between the ends of the tape. Refer to AMM 53-21-00/401.

N. Install the floor panels. Refer to AMM 53-21-00/401.

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Section 44 Seat Track Repair for BAC1520-2779 Aluminum Extrusion - Procedure 2
Figure 202 (Sheet 1 of 2)

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NOTES

1 IF THE CUTOUT THAT IS NECESSARY IS MORE THAN 0.90 INCH (22.86 mm), TELL THE BOEING COMPANY.

FASTENER SYMBOLS

INITIAL FASTENER LOCATION. INSTALL A FASTENER THAT IS THE SAME TYPE AND DIAMETER AS THE INITIAL FASTENER.

INITIAL FASTENER LOCATION. INSTALL A BACB30LM5 OR NAS6705-5 BOLT WITH A BACN11Z5CK OR NAS1805-5 NUT IN A TRANSITION FIT HOLE (0.309 INCH TO 0.313 INCH (7.849 mm TO 7.950 mm) DIAMETER). INSTALL A COUNTERSINK REPAIR WASHER. REFER TO SRM 51-40-08.

REPAIR FASTENER LOCATION. INSTALL A BACB30LM5 OR NAS6705-5 BOLT WITH A BACN11Z5CK OR NAS1805-5 NUT IN A TRANSITION FIT HOLE (0.309 INCH TO 0.313 INCH (7.849 mm TO 7.950 mm) DIAMETER).

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Section 44 Seat Track Repair for BAC1520-2779 Aluminum Extrusion - Procedure 2
Figure 202 (Sheet 2 of 2)

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REPAIR 4 - SECTION 43 AND 47 SEAT TRACK REPAIR FOR TITANIUM OR BAC1520-2789 ALUMINUM EXTRUSION BETWEEN FLOOR BEAMS

1. Applicability

A. Repair 4 is applicable to BAC1520-2789 aluminum seat tracks in Sections 43 and titanium seat tracks in Section 47 from STA 907 to STA 947.5. Refer to Seat Track Location, Figure 201/REPAIR 4.

B. For a repair that is necessary between:

(1) STA 380 and STA 400, put the splice between STA 400 and STA 420.

(2) STA 887 and STA 907, put the splice between STA 907 and STA 927.

C. You can use Repair 4 to make a splice to the seat track between floor beams.

(1) You are permitted to use Repair 4 to replace part of a seat track. Use one of the procedures that follows:

(a) Do Repair 4 at each cut end of the initial seat track.

(b) Do Repair 4 at one cut end of the initial seat track. Make the length of the part [1] seat track the same as the initial length of the remaining seat track.

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Seat Track Location
Figure 201

2. General

WARNING: SMALL PARTICLES OF TITANIUM ARE FLAMMABLE. IN A SUFFICIENT CONCENTRATION, AN EXPLOSION CAN OCCUR. EXTINGUISH FIRES OF TITANIUM WITH FULLY DRY TALC, CALCIUM CARBONATE, SAND OR GRAPHITE. APPLY THE POWDER TO A DEPTH OF 1/2 INCH OR MORE ON THE AREA THAT IS ON FIRE. DO NOT USE FOAM, WATER, HALON, CARBON TETRACHLORIDE, OR CARBON DIOXIDE. WATER THAT TOUCHES MOLTEN TITANIUM CAN CAUSE A STEAM EXPLOSION.

A. Repair 4 gives instructions for a Category A repair. Refer to 51-00-06 to find the definitions of the different categories of repairs.

3. References

Reference	Title
51-00-06	STRUCTURAL REPAIR DEFINITIONS

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(Continued)

Reference	Title
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-20-01, GENERAL	Protective Treatment of Metallic and Composite Materials
51-20-05	REPAIR SEALING
51-30-04, GENERAL	Dangerous Materials
51-40-00, GENERAL	Fasteners
51-40-02, GENERAL P/B GENERAL	FASTENER INSTALLATION AND REMOVAL
51-40-03, GENERAL	Fastener Substitution
51-40-05, GENERAL	Fastener Hole Sizes
51-40-06, GENERAL	Fastener Edge Margins
53-00-52	SEAT TRACKS
AMM 51-21-00 P/B 701	INTERIOR AND EXTERIOR FINISHES - CLEANING/PAINTING
AMM 51-21-31 P/B 701	CORROSION REMOVAL AND CONTROL - CLEANING/PAINTING
AMM 51-31-00 P/B 201	SEALS AND SEALING - MAINTENANCE PRACTICES
AMM 53-21-00/401	Passenger Cabin Floors - Removal/Installation
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes
SOPM 20-41-04	Application of Interior Decorative Finishes
SOPM 20-43-01	Chromic Acid Anodizing

4. Repair Instructions

A. Remove the floor panels in the area of the damaged seat tracks. Refer to AMM 53-21-00/401.

B. Cut and remove the damaged part of the seat track.

(1) Make the cut at half the distance between floor beam centerlines within ±2.0 in. (50.8 mm) as shown in Sections 43 and 47 Seat Track Repair for Titanium and BAC1520-2789 Aluminum Extrusions Between Floor Beams, Figure 202/REPAIR 4, Detail A and View B-B.

(a) Make the cut a minimum of 0.55 inch (13.97 mm) away from the initial fastener attach hole for the floor panel.

C. Make the repair parts. Refer to Table 201/REPAIR 4.

(1) The part [1] seat track is available from the Boeing Spares Department or it can be made from titanium plate or extruded bar or aluminum extrusion, as applicable, to dimensions as given in the production drawing.

(a) If you make the part [1] seat track, do the steps that follow:

1) Cut the web and the lower horizontal flanges of the part [1] seat track to the same contour as the initial seat track section for sections between floor beams where no splices will be made.

2) Cut off the lower horizontal flanges of the seat track sections between the floor beams where the splice will be made. Refer to Sections 43 and 47 Seat Track Repair for Titanium and BAC1520-2789 Aluminum Extrusions Between Floor Beams, Figure 202/REPAIR 4, Detail D .

3) Refer to 53-00-52, Repair General for the necessary hole pattern for the seat track.

(2) Refer to Sections 43 and 47 Seat Track Repair for Titanium and BAC1520-2789 Aluminum Extrusions Between Floor Beams, Figure 202/REPAIR 4 to cut the shape of the part [2] channel.

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Table 201:

REPAIR MATERIAL			
ITEM	**PART**	**QUANTITY**	**MATERIAL**
[1]	Seat Track	1	Use the same material as the initial seat track. Use Ti-6Al-4V plate or extruded bar or BAC1520-2789 7178- T6511 extrusion, as applicable
[2]	Channel	1	Use the same material as the initial seat track. Use a BAC1510-1304 extrusion made of Ti-6Al-4V plate or extruded bar or 7075-T6 extrusion, as applicable. It is optional to machine the top of the BAC1510-1304 extrusion from 0.60 inch (15.24 mm) to 0.40 inch (10.16 mm)

D. Cut off the web and the lower horizontal flanges of the initial seat track section between the floor beams where the splice will be made. Refer to Sections 43 and 47 Seat Track Repair for Titanium and BAC1520-2789 Aluminum Extrusions Between Floor Beams, Figure 202/REPAIR 4, Detail D .

E. Assemble the repair parts.

F. Drill the fastener holes. Refer to Sections 43 and 47 Seat Track Repair for Titanium and BAC1520-2789 Aluminum Extrusions Between Floor Beams, Figure 202/REPAIR 4.

G. Disassemble the repair parts.

H. Remove all the nicks, scratches, burrs, and sharp edges from the repair parts and the bare surfaces of the seat track.

I. Apply a protective coating.

(1) Chromic acid anodize the part [1] seat track that is made of aluminum. Refer to SOPM 20-43-01.

(a) Do not apply a protective coating to the part [1] seat track that is made of titanium.

(2) Apply a chemical conversion coating as given in 51-20-01 to the following:

(a) The part [2] channel.

(b) The cut edges of the initial seat track.

(c) The fastener attach holes in the initial aluminum seat track where floor panels were removed.

J. Apply a finish.

(1) If you have a seat track made of aluminum, do the steps that follow:

(a) Apply one layer of aluminized epoxy primer 463-6-4 (Catalyst X-306 and Thinner TL-52) as given in SOPM 20-41-04 to the following:

1) The part [1] seat track.

a) For the part [1] seat track, it is not necessary to apply the aluminized epoxy primer to the lower surface of the track lip.

2) The part [2] channel.

3) The cut edges of the initial seat track.

4) The fastener attach holes in the initial seat track where the floor panels were removed.

(2) If you have a seat track made of titanium, do the steps that follow:

(a) Apply one layer of BMS 10-11, Type I primer as given in SOPM 20-41-02 to the following:

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1) The areas as shown in Sections 43 and 47 Seat Track Repair for Titanium and BAC1520-2789 Aluminum Extrusions Between Floor Beams, Figure 202/REPAIR 4, Detail E .
2) The part [2] channel.
3) The cut edges of the initial seat track.
4) The fastener attach holes in the initial seat track where floor panels were removed.

K. Install the repair parts.

(1) Apply BMS 5-95 sealant to the mating surfaces of the repair parts. Refer to 51-20-05.

(2) Install the fasteners wet with BMS 5-95 sealant.

(3) Fill the space between the part [1] seat track and the initial seat track with BMS 5-95.

L. Apply one layer of BMS 3-23, Type II corrosion inhibiting compound to the surface of the repair area. Refer to 51-20-01, GENERAL.

M. Apply BMS 8-283 tape to the top of the upper horizontal flange of the aluminum seat track. Make sure that no spaces occur between the ends of the tape. Refer to AMM 53-21-00/401.

N. Install the floor panels. Refer to AMM 53-21-00/401.

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TYPICAL CROSS-SECTION OF THE SEAT
TRACK SPLICE BETWEEN FLOOR BEAMS

A-A

G06636 S0006588010_V2

Sections 43 and 47 Seat Track Repair for Titanium and BAC1520-2789 Aluminum Extrusions Between Floor Beams
Figure 202 (Sheet 1 of 5)

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B–B

C–C

G06730 S0006588011_V2

Sections 43 and 47 Seat Track Repair for Titanium and BAC1520-2789 Aluminum Extrusions Between Floor Beams
Figure 202 (Sheet 2 of 5)

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Sections 43 and 47 Seat Track Repair for Titanium and BAC1520-2789 Aluminum Extrusions Between Floor Beams
Figure 202 (Sheet 3 of 5)

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C

REMOVAL OF THE WEB AND LOWER HORIZONTAL FLANGES OF
REPAIR PART [1] SEAT TRACK AND THE INITIAL SEAT TRACK

D

G06767 S0006588013_V2

Sections 43 and 47 Seat Track Repair for Titanium and BAC1520-2789 Aluminum Extrusions Between Floor Beams
Figure 202 (Sheet 4 of 5)

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AREAS OF FINISH APPLICATIONS FOR TITANIUM SEAT TRACKS

E

FASTENER SYMBOLS

- INITIAL FASTENER LOCATION. INSTALL THE SAME TYPE AND THE SAME SIZE FASTENER AS THE INITIAL FASTENER.
- REPAIR FASTENER LOCATION. INSTALL A BACB30NY10K HEX-DRIVE BOLT WITH A BACC30BH10 COLLAR.

G91318 S0006588014_V2

Sections 43 and 47 Seat Track Repair for Titanium and BAC1520-2789 Aluminum Extrusions Between Floor Beams
Figure 202 (Sheet 5 of 5)

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REPAIR 5 - SECTION 46 SEAT TRACK REPAIR FOR BAC1520-2789 ALUMINUM EXTRUSION BETWEEN FLOOR BEAMS

1. Applicability

A. Repair 5 is applicable to BAC1520-2789 aluminum seat tracks in Section 46 from STA 727 to STA 887. Refer to Figure 201/REPAIR 5.

B. Repair 5 is applicable to BAC1520-2789 aluminum seat track locations that have an adjacent carry through angle (146A5360-1/-11) attached to the seat track.

C. You can use Repair 5 to make a splice to the seat track between floor beams.

(1) You are permitted to use Repair 5 to replace part of a seat track. Use one of the procedures that follows:

(a) Do Repair 5 at each cut end of the initial seat track.

(b) Do Repair 5 at one cut end of the initial seat track. Make the length of the part [1] seat track the same as the initial length of the remaining seat track.

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2384896 S0000547450_V1

Seat Track Location
Figure 201

2. General

A. Repair 5 gives instructions for a Category A repair. Refer to 51-00-06 for the definitions of the different categories of repairs.

B. D = fastener diameter.

C. Keep a 2D minimum fastener edge margin, unless it is shown differently.

D. All dimensions are in inches, unless they are shown differently.

3. References

Reference	Title
51-00-06	STRUCTURAL REPAIR DEFINITIONS
51-10-02, GENERAL	Inspection and Removal of Damage
51-20-01, GENERAL	Protective Treatment of Metallic and Composite Materials
51-20-05	REPAIR SEALING

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(Continued)

Reference	Title
51-40-01, GENERAL	Fasteners
51-40-02, GENERAL P/B GENERAL	FASTENER INSTALLATION AND REMOVAL
51-40-03, GENERAL	Fastener Substitution
51-40-05, GENERAL	Fastener Hole Sizes
51-40-06, GENERAL	Fastener Edge Margins
AMM 51-21-00 P/B 701	INTERIOR AND EXTERIOR FINISHES - CLEANING/PAINTING
AMM 51-21-31 P/B 701	CORROSION REMOVAL AND CONTROL - CLEANING/PAINTING
AMM 51-31-00 P/B 201	SEALS AND SEALING - MAINTENANCE PRACTICES
AMM 53-21-00-000-801	Passenger Cabin Floor Panel Removal (P/B 401)
AMM 53-21-00-400-801	Passenger Cabin Floor Panel Installation (P/B 401)
SOPM 20-41-04	Application of Interior Decorative Finishes
SOPM 20-43-01	Chromic Acid Anodizing

4. Repair Instructions

A. Remove the floor panels in the area of the damaged seat tracks. Refer to AMM TASK 53-21-00-000-801.

B. Remove the initial carry through angles that are attached to the damaged seat track extrusion. Make sure that you keep the carry through angles for re-installation. Refer to Figure 202/REPAIR 5.

C. Do a Detailed Visual Inspection (DVI) with a minimum 10X magnification to make sure that there is no damage on the initial carry through angles.

D. Cut and remove the damaged part of the seat track. Refer to Figure 202/REPAIR 5 and 51-10-02, GENERAL as necessary for the inspection and cleanup of damage.

(1) Make the cut at approximately half the distance between floor beam centerlines as shown in Figure 202/REPAIR 5.

(2) Make the cut a minimum of 0.55 in. (13.97 mm) away from the initial fastener attach hole for the floor panel.

(3) Make sure that there will be no interference between the initial carry through angle and the part [3] strap.

E. Make the repair parts. Refer to Table 201/REPAIR 5 and Figure 202/REPAIR 5.

(1) The part [1] seat track is available from the Boeing Spares Department or you can make it from aluminum extrusions to dimensions as given in the production drawing.

(a) If you make the part [1] seat track, do the steps that follow:

1) Cut the web and the lower horizontal flanges of the part [1] seat track to the same contour as the initial seat track section. It is not necessary to trim the upper horizontal flanges of the part [1] seat track to be the same dimension as the initial seat track extrusion.

2) Refer to REPAIR GENERAL for the necessary hole pattern for the seat track.

(2) Refer to Figure 202/REPAIR 5 for the shape of the part [2] angle, part [3] strap, part [4] strap and part [5] strap.

(3) Trim the part [3] strap to the same width as the lower horizontal flanges of the initial seat track and the part [1] seat track.

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Table 201:

REPAIR MATERIAL			
ITEM	PART	QUANTITY	MATERIAL
[1]	Seat Track	1	Use BAC1520-2789 7178-T6511 aluminum extrusion.
[2]	Angle	2	Use BAC1503-100122 7075-T6 aluminum angle extrusion.
[3]	Strap	1	Use 7075-T651 aluminum plate that is 0.30 in. (7.62 mm) thick.
[4]	Strap	1	Use 7075-T6 aluminum sheet that is 0.072 in. (1.829 mm) thick.
[5]	Strap	1	Use 7075-T6 aluminum sheet that is 0.072 in. (1.829 mm) thick.

F. Assemble the repair parts.

G. Drill the fastener holes. Make sure that you drill the fastener holes that attach the carry through angles that you removed on the part [1] seat track. Refer to Figure 202/REPAIR 5 and 51-40-05, GENERAL.

H. Disassemble the repair parts.

I. Remove all nicks, scratches, burrs, and sharp edges from the repair parts and the bare surfaces of the part [1] seat track. Refer to 51-10-02, GENERAL.

J. Apply a protective coating.

(1) Chromic acid anodize the part [1] seat track as given in SOPM 20-43-01.

(2) Apply a chemical conversion coating as given in 51-20-01, GENERAL to the following:

(a) The part [2] angles, part [3] strap, part [4] strap and part [5] strap.

(b) The cut edges of the initial seat track.

(c) The fastener attach holes in the initial seat track where the floor panels were removed.

K. Apply a finish.

(1) Apply one layer of aluminized epoxy primer 463-6-4 (Catalyst X-306 and Thinner TL-52) as given in SOPM 20-41-04 to the following:

(a) The part [1] seat track.

1) For the part [1] seat track, it is not necessary to apply the aluminized epoxy primer to the lower surface of the track lip.

(b) The part [2] angles.

(c) The part [3] strap, part [4] strap and part [5] strap.

(d) The cut edges of the initial seat track.

(e) The fastener attach holes in the initial seat track where the floor panels were removed.

L. Install the repair parts. Refer to Figure 202/REPAIR 5.

(1) Apply BMS 5-95 sealant to the mating surfaces of the repair parts. Refer to 51-20-05 and Figure 202/REPAIR 5.

(2) Install the fasteners wet with BMS 5-95 sealant. Refer to FASTENER INSTALLATION AND REMOVAL, PAGEBLOCK 51-40-02, GENERAL.

(3) Fill the space between the part [1] seat track and the initial seat track with BMS 5-95.

(4) Make sure that you re-install the carry through angles that you removed.

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M. Apply one layer of BMS 3-23, Type II corrosion inhibiting compound followed by one layer of BMS 3-26 corrosion inhibiting compound to the surface of the repair area. As an alternative, apply one layer of BMS 3-29 corrosion inhibiting compound. Refer 51-20-01, GENERAL.

N. Install the floor panels. Refer to AMM TASK 53-21-00-400-801.

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Section 46 Seat Track Repair for BAC1520-2789 Aluminum Extrusions Between Floor Beams
Figure 202 (Sheet 1 of 5)

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2342272 S0000533709_V1

Section 46 Seat Track Repair for BAC1520-2789 Aluminum Extrusions Between Floor Beams
Figure 202 (Sheet 2 of 5)

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B–B

2384674 S0000547396_V1

Section 46 Seat Track Repair for BAC1520-2789 Aluminum Extrusions Between Floor Beams
Figure 202 (Sheet 3 of 5)

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C-C

2384686 S0000547400_V1

Section 46 Seat Track Repair for BAC1520-2789 Aluminum Extrusions Between Floor Beams
Figure 202 (Sheet 4 of 5)

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D–D

NOTES

- ALL DIMENSIONS ARE IN INCHES (mm).

FASTENER SYMBOLS

- INITIAL FASTENER LOCATION. USE THE SAME TYPE AND SIZE FASTENER AS THE INITIAL FASTENER (UP TO 1/32-INCH DIAMETER OVERSIZE).
- REPAIR FASTENER LOCATION. INSTALL A BACB30FN6 HEX-DRIVE BOLT WITH A BACC30AG6 COLLAR.
- REPAIR FASTENER LOCATION. INSTALL A BACB30VT6K HEX-DRIVE BOLT WITH A BACC30BL COLLAR.
- INITIAL FASTENER LOCATION. INSTALL A BACB30VT6K HEX-DRIVE BOLT WITH A BACC30BL COLLAR.

2384688 S0000547401_V1

Section 46 Seat Track Repair for BAC1520-2789 Aluminum Extrusions Between Floor Beams
Figure 202 (Sheet 5 of 5)

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ALLOWABLE DAMAGE 1 - FORWARD AND AFT CARGO COMPARTMENT FLOOR PANELS

1. Applicability

A. This subject gives the allowable damage limits for the forward and aft cargo compartment floor panels shown in Forward and Aft Cargo Compartment Floor Panel Locations, Figure 101/ ALLOWABLE DAMAGE 1.

B. The allowable damage limits given are only applicable to the strength properties of the forward and aft cargo compartment floor panels. It is possible that the damage in a panel is less than the allowable damage limits, but the panel does not function satisfactorily. If the panel does not function satisfactorily, you can repair it to put it back to a serviceable condition.

C. The allowable damage limits for cracks and holes are only applicable if they are sealed as given in Paragraph 2.

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Forward and Aft Cargo Compartment Floor Panel Locations
Figure 101

2. General

A. Seal cracks and holes that go through the floor panel with BMS 5-146, Type I, Class 1, Grade A cargo liner joint sealing tape. As an alternative, you can make the seal with aluminum foil tape (speed tape).

3. Inspection Requirements

A. Do a visual inspection at 400 flight cycles maximum to make sure the sealing tape is in a satisfactory condition. Replace the tape if there are signs of deterioration.

B. Do a permanent repair at 4,000 flight cycles maximum from the time the tape was applied.

4. References

Reference	Title
51-30-03, GENERAL	Sources for Non-Metallic Repair Materials
51-40-02, GENERAL	Fastener Installation and Removal

5. Allowable Damage Limits for the Forward and Aft Cargo Compartment Floor Panels

A. Aluminum

(1) The total damage must not be more than 30 percent of the panel area.

(a) Cracks:

1) Cracks are permitted if they are:

a) A maximum of 3.0 inches (76.2 mm) in length.

b) Sealed as given in Paragraph 2.

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2) Stop drill a 0.25 inch (6.35 mm) hole at the ends of a crack. The stop hole must be a minimum of 1.0 inch (25.4 mm) from a fastener hole.

a) Install a 2117-T3 or 2117-T4 rivet. Install the rivet without sealant.

3) Cracks that are between three adjacent fastener holes are permitted at the end of the panel that is attached.

(b) Nicks, Gouges, Scratches, and Corrosion are permitted if they are:

1) A maximum of 3.0 inches (76.2 mm) in length.

(c) Dents are permitted if they are:

1) A maximum of 3.0 inches (76.2 mm) in diameter.

(d) Holes and Punctures are permitted if they are:

1) A maximum of 2.0 inches (50.8 mm) in diameter.

2) Sealed as given in Paragraph 2.

B. Fiberglass and Glare

(1) The total damage must not be more than 30 percent of the panel area.

(a) Cracks:

1) Cracks are permitted if they are:

a) A maximum of 3.0 inches (76.2 mm) in length.

b) Sealed as given in Paragraph 2.

2) Stop drill a 0.25 inch (6.35 mm) hole at the ends of a crack. The stop hole must be a minimum of 1.0 inch (25.4 mm) from a fastener hole.

3) Cracks that are between three adjacent fastener holes are permitted at the end of the panel that is attached.

(b) Nicks, Gouges, or Scratches are permitted if they are:

1) A maximum of 3.0 inches (76.2 mm) in length.

(c) Dents are permitted if they are:

1) A maximum of 3.0 inches (76.2 mm) in diameter.

(d) Holes and Punctures are permitted if they are:

1) A maximum of 2.0 inches (50.8 mm) in diameter.

2) Sealed as given in Paragraph 2.

(e) Delaminations are permitted if they are:

1) A maximum of 3.0 inches (76.2 mm) in diameter.

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ALLOWABLE DAMAGE 2 - FORWARD AND AFT CARGO COMPARTMENT FLOOR STRUCTURE

1. Applicability

A. This subject gives the allowable damage limits for the forward and aft cargo compartment floor structure as shown in Forward and Aft Cargo Compartment Floor Structure, Figure 101/ALLOWABLE DAMAGE 2.

2. General

A. Remove the parts as necessary to get access to the damaged area.

B. Refer to Typical Aluminum Cargo Compartment Floor Structure Sections, Figure 102/ALLOWABLE DAMAGE 2 for the definitions of the parts of the cargo compartment floor structure.

C. Refer to Paragraph 4./ALLOWABLE DAMAGE 2 for the allowable damage limits.

(1) Refer to Table 101/ALLOWABLE DAMAGE 2 for the allowable damage limits that is applicable to each type of structure.

Table 101:

PARAGRAPH REFERENCES FOR THE ALLOWABLE DAMAGE LIMITS	
TYPE OF STRUCTURE	**PARAGRAPH**
Sideplate - Channel or Support Zee	4.A
Cargo Track - Tie Down	4.B
Rail - Channel	4.A
Zee	4.A
Intercostal	4.C

D. Remove the damage as necessary.

(1) Refer to 51-10-02 for the inspection and removal of damage.

(2) Refer to 51-30-03 for possible sources of abrasives and other materials you can use to remove damage.

(3) Refer to 51-30-05 for possible sources of equipment and tools you can use to remove damage.

E. After you remove the damage, do the steps that follow:

(1) Apply a chemical conversion coating to the bare surfaces of the reworked areas. Refer to 51-20-01.

(2) Apply one layer of BMS 10-11, Type I primer to the surface of the reworked area. Refer to SOPM 20-41-02.

(3) Apply one layer of BMS 3-23, Type II corrosion inhibiting compound to the surface of the repair area. Refer to 51-20-01.

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SECTION 43 - TYPICAL CROSS-SECTION OF THE FORWARD
CARGO COMPARTMENT FLOOR STRUCTURE
A-A

G09791 S0006588033_V1

Forward and Aft Cargo Compartment Floor Structure
Figure 101 (Sheet 1 of 3)

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SECTION 46 - TYPICAL CROSS-SECTION OF THE AFT CARGO COMPARTMENT FLOOR STRUCTURE
B-B

G11304 S0006588034_V1

Forward and Aft Cargo Compartment Floor Structure
Figure 101 (Sheet 2 of 3)

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SECTION 47 - TYPICAL CROSS-SECTION OF THE AFT
CARGO COMPARTMENT FLOOR STRUCTURE
C-C

G11630 S0006588035_V2

Forward and Aft Cargo Compartment Floor Structure
Figure 101 (Sheet 3 of 3)

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SIDEPLATE - CHANNEL
OR SUPPORT ZEE

CARGO TRACK-TIE DOWN

RAIL - CHANNEL

ZEE

FORMED INTERCOSTAL (TYPICAL)

G12417 S0006588036_V1

Typical Aluminum Cargo Compartment Floor Structure Sections
Figure 102

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3. References

Reference	Title
51-10-02	INSPECTION AND REMOVAL OF DAMAGE
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-30-03	NON-METALLIC MATERIALS
51-30-05	EQUIPMENT AND TOOLS FOR REPAIRS
51-40-05	FASTENER HOLE SIZES
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes

4. Allowable Damage Limits

A. Sideplate - Channel or Support Zee, Rail - Channel, or Zee

(1) Cracks:

(a) Remove the damage as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 2, Details A , B , and C .

(2) Nicks, Gouges, Scratches, and Corrosion:

(a) Remove the damage as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 2, Details A , B , C , D , and E .

(3) Dents:

(a) Refer to Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 2, Detail F for the damage that is permitted.

(4) Holes and Punctures are permitted if they are:

(a) A minimum of 1.0 inch away from the edge of a fastener hole, other damage, or material edge.

(b) A minimum of 0.20 inch away from a radius.

(c) Not more than 0.25 inch in diameter before they are drilled and filled with a 1/4 inch diameter or smaller rivet.

1) Use a 2117-T3 or 2117-T4 rivet. Install the rivet without sealant.

2) Drill the holes to the applicable size as given in 51-40-05.

B. Cargo Track - Tie Down

(1) Cracks:

(a) Remove the damage as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 2, Details A , B , C , D , and E .

(2) Nicks, Gouges, Scratches, and Corrosion:

(a) Remove damage as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 2, Details G , H , I , J , and K .

(3) Dents:

(a) Dents are permitted in the web as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 2, Detail F .

(4) Holes and Punctures are permitted if they are:

(a) A minimum of 1.0 inch away from the edge of a fastener hole, other damage, or material edge.

(b) A minimum of 0.20 inch away from a radius.

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(c) Not more than 0.25 inch in diameter before they are drilled and filled with a 1/4 inch diameter or smaller rivet.

1) Use a 2117-T3 or 2117-T4 rivet. Install the rivet without sealant.

2) Drill the holes to the applicable size as given in 51-40-05.

C. Intercostal

(1) Web

(a) Cracks:

1) Remove the damage as shown in Allowable Damage Limits, Figure 103/ ALLOWABLE DAMAGE 2, Details A , B , and C .

(b) Nicks, Gouges, Scratches, and Corrosion:

1) Remove the damage as shown in Allowable Damage Limits, Figure 103/ ALLOWABLE DAMAGE 2, Details A , B , C , D , and E .

(c) Dents:

1) Refer to Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 2, Detail F for the damage that is permitted.

(d) Holes and Punctures are permitted if they are:

1) A minimum of 1.0 inch away from the edge of a fastener hole or other damage.

2) A minimum of 2D (D = the diameter of the damage) away from the edge of the part.

3) A minimum of 0.20 inch away from a radius.

4) Not more than 0.25 inch in diameter before they are drilled and filled with a 1/4 inch diameter or smaller rivet.

a) Use a 2117-T3 or 2117-T4 rivet. Install the rivet without sealant.

b) Drill the holes to the applicable size as given in 51-40-05.

(2) Flange

(a) Cracks:

1) Remove the damage as shown in Allowable Damage Limits, Figure 103/ ALLOWABLE DAMAGE 2, Details A , B , and C .

(b) Nicks, Gouges, Scratches, and Corrosion:

1) Remove the damage as shown in Allowable Damage Limits, Figure 103/ ALLOWABLE DAMAGE 2, Details A , B , C , D , and E .

2) Damage that does not go through the clad surface is permitted.

(c) Dents are not permitted.

(d) Holes and Punctures are permitted if they are:

1) A minimum of 1.0 inch away from the edge of a fastener hole or other damage.

2) A minimum of 2D (D = the diameter of the damage) away from the edge of the part.

3) A minimum of 0.20 inch away from a radius.

4) Not more than 0.25 inch in diameter before they are drilled and filled with a 1/4 inch diameter or smaller rivet.

a) Use a 2117-T3 or 2117-T4 rivet. Install the rivet without sealant.

b) Drill the holes to the applicable size as given in 51-40-05.

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SIDEPLATE, CARGO TRACK, RAIL
OR ZEE:
X = A MAXIMUM OF 0.10 INCH

INTERCOSTAL:
X = THE SMALLER VALUE OF
10 PERCENT OF THE FLANGE
OR WEB WIDTH, OR 0.10 INCH

REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER EDGE MARGINS DO NOT HAVE AN OVERLAP

A

SIDEPLATE, CARGO TRACK, RAIL
OR ZEE:
X = A MAXIMUM OF 0.10 INCH

INTERCOSTAL:
X = THE SMALLER VALUE OF
10 PERCENT OF THE FLANGE
OR WEB WIDTH, OR 0.10 INCH

REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER EDGE MARGINS HAVE AN OVERLAP

B

G09869 S0006588037_V1

Allowable Damage Limits
Figure 103 (Sheet 1 of 6)

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X = WIDTH OF THE MATERIAL THAT IS REMOVED

SIDEPLATE, CARGO TRACK, RAIL OR ZEE:
X = A MAXIMUM OF 10 PERCENT OF THE WIDTH OF THE FLANGE

INTERCOSTAL:
X = THE SMALLER VALUE OF 10 PERCENT OF THE FLANGE WIDTH OR 0.10 INCH

REMOVAL OF DAMAGED MATERIAL ON AN EDGE

C

REMOVAL OF DAMAGED MATERIAL ON A SURFACE

D

G09872 S0006588038_V1

Allowable Damage Limits
Figure 103 (Sheet 2 of 6)

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REMOVAL OF DAMAGE AROUND THE FASTENERS ON AN EDGE OR A SURFACE

E

B–B

DENT THAT IS PERMITTED

F

G09875 S0006588039_V3

Allowable Damage Limits
Figure 103 (Sheet 3 of 6)

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REMOVAL OF DAMAGED MATERIAL FROM THE CARGO TRACK

G

TYPICAL CROSS-SECTION BETWEEN FRAMES

C-C

TYPICAL CROSS-SECTION AT TIE DOWNS

D-D

NOTES

1 THIS DIMENSION IS FOR THE STUD HOLE ONLY AND IS NOT APPLICABLE TO THE LIP AREA.

2 0.25 INCH MAXIMUM ON EACH SIDE OF THE CENTERLINE OF A STUD HOLE.

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Allowable Damage Limits
Figure 103 (Sheet 4 of 6)

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CROSS-SECTION BETWEEN FRAMES

CROSS-SECTION AT FRAMES

REMOVAL OF DAMAGED MATERIAL AT TYPICAL SECTIONS
E-E

DAMAGE CLEANUP ON LIP

H

DAMAGE CLEANUP ON LIP

I

G09886 S0006588041_V1

Allowable Damage Limits
Figure 103 (Sheet 5 of 6)

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REMOVAL OF DAMAGED MATERIAL
FROM A STUD HOLE

J

F–F

G–G

REMOVAL OF DAMAGED MATERIAL AT
LOCATIONS WITH MORE THAN ONE TIE DOWN

K

G09889 S0006588042_V1

Allowable Damage Limits
Figure 103 (Sheet 6 of 6)

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REPAIR 1 - FORWARD AND AFT CARGO COMPARTMENT FLOOR PANELS

1. Applicability

A. Repair 1 is applicable to damage that is on the forward and aft cargo compartment floor panels as shown in Forward and Aft Cargo Compartment Floor Panel Locations, Figure 201/REPAIR 1.

2. General

A. A repair that has been used by the operator and found satisfactory is permitted.

G08834 S0006588045_V1

Forward and Aft Cargo Compartment Floor Panel Locations
Figure 201

3. References

Reference	Title
51-00-06, GENERAL	Structural Repair Definitions
51-30-05, GENERAL	Equipment and Tools For Repairs
51-40-02, GENERAL	Fastener Installation and Removal

4. Repair Instructions

A. A repair that has been used by the operator and found satisfactory is permitted..

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REPAIR 2 - CARGO COMPARTMENT FLOOR BEAM REPAIR BETWEEN ADJACENT FRAMES

1. Applicability

A. Repair 2 is applicable to:

(1) Channel and zee floor beams in the forward cargo compartment that have the cross-sections shown in Sections A-A and B-B.

(2) Rail floor beams in the aft cargo compartment that have the cross-section shown in Section A-A .

(3) A cargo compartment floor beam where the two cut ends of the repair section are made between adjacent floor beams.

2. General

A. Repair 2 gives instructions for a Category A repair. Refer to 51-00-06 to find the definitions of the different categories of repairs.

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CHANNEL OR RAIL FLOOR BEAM REPAIR

FASTENER SYMBOLS

- INITIAL FASTENER LOCATION. INSTALL THE SAME TYPE AND DIAMETER AS THE INITIAL FLOOR PANEL FASTENER.
- REPAIR FASTENER LOCATION. INSTALL A BACB30VT6K HEX DRIVE BOLT WITH A BACC30BL COLLAR.
- REPAIR FASTENER LOCATION. INSTALL A BACB30VU6K HEX DRIVE BOLT WITH A BACC30BL COLLAR.

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Cargo Floor Beam Repair Between Adjacent Frames
Figure 201 (Sheet 1 of 2)

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Cargo Floor Beam Repair Between Adjacent Frames
Figure 201 (Sheet 2 of 2)

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3. References

Reference	Title
51-00-06	STRUCTURAL REPAIR DEFINITIONS
51-10-02	INSPECTION AND REMOVAL OF DAMAGE
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-20-05	REPAIR SEALING
51-40-00, GENERAL	Fasteners
51-40-02, GENERAL P/B GENERAL	FASTENER INSTALLATION AND REMOVAL
51-40-03, GENERAL	Fastener Substitution
51-40-05, GENERAL	Fastener Hole Sizes
51-40-06, GENERAL	Fastener Edge Margins
AMM 51-31-00 P/B 201	SEALS AND SEALING - MAINTENANCE PRACTICES
AMM 51-21-00/701	Interior And Exterior Finishes - Cleaning/Painting
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes

4. Repair Instructions

A. Remove the floor panels in the area of the damaged cargo compartment floor beam.

B. Cut and remove the damaged part of the cargo compartment floor beam.

(1) Cut the cargo compartment floor beam between adjacent frames.

C. Remove the nutplates for the floor panel fasteners in the area where the repair angles will be installed, if necessary. Refer to Figure 201.

D. Make the repair parts. Refer to Table 201/REPAIR 2.

NOTE: The repair parts:

- Are available from the Boeing Spares Department.
- Can be made from aluminum extrusions to dimensions as given in the production drawing.

Table 201:

REPAIR MATERIAL			
ITEM	**PART**	**QUANTITY**	**MATERIAL**
[1]	Channel Filler	1	Use BAC1509-100146 7050-T76511 aluminum channel extrusion
[2]	Channel Splice	1	Make from BAC1510-1355 7050-T76511 aluminum channel extrusion. Machine the part to dimensions shown in Section A-A
[3]	Zee Filler	1	Use BAC1517-1167 7050-T76511 aluminum zee extrusion
[4]	Angle	1	Use 7075-0 aluminum sheet that is 0.080 inch thick. Heat treat to the T62 condition after you bend the part
[5]	Angle	1	Use 7075-0 aluminum sheet that is 0.071 inch thick. Heat treat to the T62 condition after you bend the part

E. Assemble the repair parts.

F. Drill the fastener holes.

G. Disassemble the repair parts.

H. Remove all the nicks, scratches, burrs, and sharp edges from the repair parts and the bare surfaces of the cargo compartment floor beam.

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I. Apply a chemical conversion coating to the repair parts and to the bare surfaces of the cargo compartment floor beam. Refer to 51-20-01.

J. Apply one layer of BMS 10-11, Type I primer to the repair parts and the bare surfaces of the cargo compartment floor beam. Refer to SOPM 20-41-02.

K. Install the nutplates on the part [2] channel splice or the part [4] angle, as applicable.

(1) Align the nutplate and the floor fastener hole.

L. Install the repair parts.

(1) Apply BMS 5-95 sealant as given in 51-20-05 to the repair as follows:

(a) Apply BMS 5-95 sealant to the mating surfaces.

(b) Install the fasteners wet with BMS 5-95 sealant.

(c) Fill all spaces with BMS 5-95 sealant.

(d) If the repair is performed over the joggle section of the cargo floor resulting in a gap between the repair and the lower leg of the support channel of less than 0.07 inch do as follows:

1) Fill the gap in by installing a shim and use BMS 5-95 sealant with no fasteners to help seal and hold the shim in place.

M. Apply the initial finish to the repair area. Refer to AMM 51-21-00/701.

N. Apply one layer of BMS 3-23, Type II corrosion inhibiting compound followed by one layer of BMS 3-26 corrosion inhibiting compound to the surface of the repair area. Refer to 51-10-02.

(1) As an alternative, apply one layer of BMS 3-29 corrosion inhibiting compound. Refer to 51-10-02.

O. Install the cargo compartment floor panels.

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REPAIR 3 - CARGO TRACK REPAIR BETWEEN FRAMES

1. Applicability

A. Repair 3 is applicable to:

(1) Cargo tracks in the forward and aft cargo compartments that have the cross-section shown in Cargo Track Repair Between Frames, Figure 201/REPAIR 3, Section A-A .

B. You can use Repair 3 to make a splice to the cargo track between frames.

(1) You are permitted to use Repair 3 to replace part of a cargo track. Use one of the procedures that follow:

(a) Do a repair at each cut end of the initial cargo track. Use one of the two procedures that follow:

1) Do Repair 3 at each cut end.

2) Do Repair 3 at one cut end and Repair 4 at the other cut end.

(b) Do Repair 3 at one cut end of the initial cargo track. Make the length of the part [1] track extrusion the same as the initial length of the remaining cargo track.

2. General

A. The repair that follows is an alternative to Repair 3:

(1) Repair 4 is a cargo track repair at a frame.

B. Repair 3 gives instructions for a Category A repair. Refer to 51-00-06 to find the definitions of the different categories of repairs.

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Cargo Track Repair Between Frames
Figure 201 (Sheet 1 of 2)

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A-A

FASTENER SYMBOLS

- INITIAL FASTENER LOCATION. INSTALL THE SAME TYPE AND DIAMETER AS THE INITIAL FLOOR PANEL FASTENER.
- REPAIR FASTENER LOCATION. INSTALL A BACB30VT6K HEX DRIVE BOLT WITH A BACC30BL COLLAR.
- REPAIR FASTENER LOCATION. INSTALL A BACB30VU6K HEX DRIVE BOLT WITH A BACC30BL COLLAR.

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Cargo Track Repair Between Frames
Figure 201 (Sheet 2 of 2)

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3. References

Reference	Title
51-00-06	STRUCTURAL REPAIR DEFINITIONS
51-10-02	INSPECTION AND REMOVAL OF DAMAGE
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-20-05	REPAIR SEALING
51-40-00, GENERAL	Fasteners
51-40-02, GENERAL	Fastener Installation and Removal
51-40-03, GENERAL	Fastener Substitution
51-40-05, GENERAL	Fastener Hole Sizes
51-40-06, GENERAL	Fastener Edge Margins
AMM 51-21-99 P/B 701	DECORATIVE EXTERIOR PAINT SYSTEM - CLEANING/PAINTING
AMM 51-31-00 P/B 201	SEALS AND SEALING - MAINTENANCE PRACTICES
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes

4. Repair Instructions

A. Remove the floor panels in the area of the damaged cargo track.

B. Cut and remove the damaged part of the track.

(1) Cut the track between floor panel fastener holes.

(2) Cut the track between frames. Do not make a cut through a cargo track tie down. Make sure that there is sufficient clearance from the cargo track tie down to install the repair parts.

C. Remove the nutplates for the floor panel fasteners in the area where the repair angle will be installed.

D. Remove the clip at each frame in the area of the repair, if necessary.

E. Make the repair parts. Refer to Table 201/REPAIR 3.

NOTE: The repair parts:

- Are available from the Boeing Spares Department.
- Can be made from aluminum extrusion to dimensions as given in the production drawing.

Table 201:

REPAIR MATERIAL			
ITEM	**PART**	**QUANTITY**	**MATERIAL**
[1]	Track Extrusion	1	Use BAC1520-1397 7050-T76511 track extrusion. You can get the track extrusion repair part from STA 755 to STA 887, Boeing Drawing Number 654A0004, from the Boeing Spares Department. Use part number 654A0004-36*[1] for the RBL 13.84 cargo track.
[2]	Track Splice	1	Use BAC1509-100688 7050-T76511 channel extrusion. As an alternative you can use Boeing Part number 146A7506-20*[1].

*[1] Part [1] Track Extrusion and Part [2] Track Splice are available in 654A0004-618, Track Assembly Kit.

F. Assemble the repair parts.

G. Drill the fastener holes.

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H. Disassemble the repair parts.

I. Remove all the nicks, scratches, burrs, and sharp edges from the repair parts and the bare surfaces of the cargo track.

J. Apply a chemical conversion coating to the repair parts and to the bare surfaces of the cargo track. Refer to 51-20-01.

K. Apply two layers of BMS 10-11, Type I primer to the repair parts and the bare surfaces of the cargo track. Refer to SOPM 20-41-02.

L. Install the nutplates on the part [2] track splice for the floor panel fasteners.

(1) Align the nutplate and the floor fastener hole.

M. Install the repair parts.

(1) Apply BMS 5-95 sealant as given in 51-20-05 to the repair as follows:

(a) Apply BMS 5-95 sealant to the mating surfaces.

(b) Install the fasteners wet with BMS 5-95 sealant.

(c) Apply BMS 5-95 sealant to the space between the initial cargo track and the part [1] track extrusion.

(d) Apply fillet seals to fasteners on the pressure side of the seal plane and along the edges of the repair parts.

(e) If the repair is performed over the joggle section of the cargo floor resulting in a gap between the repair and the lower leg of the support channel of less than 0.07 inch do as follows:

1) Fill the gap in by installing a shim and use BMS 5-95 sealant with no fasteners to help seal and hold the shim in place.

N. Apply the initial finish to the repair area. Refer to AMM PAGEBLOCK 51-21-99/701.

O. Apply one layer of BMS 3-23, Type II corrosion inhibiting compound followed by one layer of BMS 3-26 corrosion inhibiting compound to the surface of the repair area. Refer to 51-10-02.

(1) As an alternative, apply one layer of BMS 3-29 corrosion inhibiting compound. Refer to 51-10-02.

P. Install the clip at the frame if it was removed.

Q. Install the cargo floor panels.

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REPAIR 4 - CARGO COMPARTMENT FLOOR BEAM AND TRACK REPAIR AT A FRAME

1. Applicability

A. Repair 4 is applicable to:

(1) Channel floor beams and cargo tracks in the forward cargo compartment that have the cross-sections shown in Cargo Floor Beam and Track Repair at a Frame, Figure 201/REPAIR 4, Sections A-A and B-B.

(2) Rail floor beams and cargo tracks in the aft cargo compartment that have the cross-sections shown in Cargo Floor Beam and Track Repair at a Frame, Figure 201/REPAIR 4, Sections A-A and B-B.

B. You can use Repair 4 to make a splice to the cargo compartment floor beam or track at a frame.

(1) Cargo Floor Beam:

(a) You are permitted to use Repair 4 to replace part of a cargo compartment floor beam. Use one of the procedures that follow:

1) Do Repair 4 at each cut end of the initial cargo compartment floor beam.

2) Do Repair 4 at one cut end of the initial cargo compartment floor beam. Make the length of the part [1] channel extrusion the same as the initial length of the remaining cargo compartment floor beam.

(2) Cargo Track:

(a) You are permitted to use Repair 4 to replace part of a cargo track. Use one of the procedures that follow:

1) Do a repair at each cut end of the initial cargo track. Use one of the two procedures that follow:

a) Do Repair 4 at each cut end.

b) Do Repair 4 at one cut end and Repair 3 at the other cut end.

2) Do Repair 4 at one cut end of the initial cargo track. Make the length of the part [3] track extrusion the same as the initial length of the remaining cargo track.

C. Repair 4 is not applicable to a cargo track tie down at a frame.

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CHANNEL OR RAIL FLOOR BEAM REPAIR AT A FRAME
(TYPICAL FRAME SECTION)

FASTENER SYMBOLS

- INITIAL FASTENER LOCATION. INSTALL THE SAME TYPE AND DIAMETER AS THE INITIAL FASTENER.
- REPAIR FASTENER LOCATION. INSTALL A BACB30VT6K HEX DRIVE BOLT WITH A BACC30BL COLLAR.
- REPAIR FASTENER LOCATION. INSTALL A BACB30VU6K HEX DRIVE BOLT WITH A BACC30BL COLLAR.

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Cargo Floor Beam and Track Repair at a Frame
Figure 201 (Sheet 1 of 2)

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CARGO TRACK REPAIR AT A FRAME
(TYPICAL FRAME STATION)

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Cargo Floor Beam and Track Repair at a Frame
Figure 201 (Sheet 2 of 2)

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2. General

A. The repair that follows is an alternative to the cargo track repair of Repair 4:

(1) Repair 3 is a cargo track repair between frames.

B. Repair 4 gives instructions for a Category A repair. Refer to 51-00-06 to find the definitions of the different categories of repairs.

3. References

Reference	Title
51-00-06	STRUCTURAL REPAIR DEFINITIONS
51-10-02	INSPECTION AND REMOVAL OF DAMAGE
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-20-05	REPAIR SEALING
51-40-00, GENERAL	Fasteners
51-40-02, GENERAL	Fastener Installation and Removal
51-40-03, GENERAL	Fastener Substitution
51-40-05, GENERAL	Fastener Hole Sizes
51-40-06, GENERAL	Fastener Edge Margins
AMM 51-31-00 P/B 201	SEALS AND SEALING - MAINTENANCE PRACTICES
AMM 51-21-00/701	Interior And Exterior Finishes - Cleaning/Painting
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes

4. Repair Instructions

A. Remove the floor panels in the area of the damaged cargo compartment floor beam or track.

B. Cut and remove the damaged part of the cargo compartment floor beam or track.

(1) Cargo Floor Beam:

(a) Cut the cargo compartment floor beam as shown in Cargo Floor Beam and Track Repair at a Frame, Figure 201/REPAIR 4, Channel or Rail Floor Beam Repair at a Frame. Do not cut through the larger width of the flange that attaches to the frame.

(2) Cargo Track:

(a) Cut the cargo track as shown in Cargo Floor Beam and Track Repair at a Frame, Figure 201/REPAIR 4, Cargo Track Repair at a Frame. Do not cut through a cargo track tie down. Make sure that there is sufficient clearance from the cargo track tie down to install the repair parts.

C. Remove the clip at each frame in the area of the repair.

D. Make the repair parts. Refer to Table 201/REPAIR 4.

NOTE: The repair parts:

- Are available from the Boeing Spare Department.
- Can be made from aluminum extrusions to dimensions as given in the production drawing.

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Table 201:

REPAIR MATERIAL			
ITEM	**PART**	**QUANTITY**	**MATERIAL**
[1]	Channel Extrusion	1	Use BAC1509-100146 7050-T76511 aluminum channel extrusion.
[2]	Channel Splice	1	Make from BAC1510-1355 7050-T76511 aluminum channel extrusion. Machine the part to dimensions shown in Section A-A.
[3]	Track Extrusion	1	Use BAC1520-1397 7050-T76511 aluminum extrusion.
[4]	Track Splice	1	Use BAC1509-100688 7050-T76511 aluminum channel extrusion.

E. Assemble the repair parts.

F. Drill the fastener holes. Countersink the holes where necessary.

G. Disassemble the repair parts.

H. Remove all the nicks, scratches, burrs, and sharp edges from the repair parts and the bare surfaces of the cargo compartment floor beam or track.

I. Apply a chemical conversion coating to the repair parts and to the bare surfaces of the cargo compartment floor beam or track. Refer to 51-20-01.

J. Apply one layer of BMS 10-11, Type I primer to the repair parts and the bare surfaces of the cargo compartment floor beam or track. Refer to SOPM 20-41-02.

K. Install the repair parts.

(1) Apply BMS 5-95 sealant as given in 51-20-05 to the repair as follows:

(a) Apply BMS 5-95 sealant to the mating surfaces.

(b) Install the fasteners wet with BMS 5-95 sealant.

(c) Apply BMS 5-95 sealant to the space between the initial cargo floor beam or track and the repair extrusion.

L. Apply the initial finish to the repair area. Refer to AMM 51-21-00/701.

M. Apply one layer of BMS 3-23, Type II corrosion inhibiting compound followed by one layer of BMS 3-26 corrosion inhibiting compound to the surface of the repair area. Refer to 51-10-02.

(1) As an alternative, apply one layer of BMS 3-29 corrosion inhibiting compound. Refer to 51-10-02.

N. Install the clip at the frame.

O. Install the cargo floor panels.

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REPAIR 5 - CARGO COMPARTMENT SIDEPLATE REPAIR BETWEEN FLOOR PANEL SPLICES

1. Applicability

A. Repair 5 is applicable to the zee channel sideplates in the forward and aft cargo compartments shown in Cargo Compartment Sideplate Locations, Figure 201/REPAIR 5.

B. You can use Repair 5 to make a splice to the sideplate between floor panel splices.

(1) You are permitted to use Repair 5 to replace part of a sideplate. Use one of the procedures that follow:

(a) Do Repair 5 at each cut end.

(b) Do Repair 5 at one cut end and Repair 6 at the other cut end.

(2) Do Repair 5 at one cut end of the initial sideplate. Make the length of the part [1] zee channel sideplate the same as the initial length of the remaining sideplate.

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Cargo Compartment Sideplate Locations
Figure 201

2. General

A. Repair 5 gives instructions for a Category A repair. Refer to 51-00-06 to find the definitions of the different categories of repairs.

B. The repair that follows is an alternative to Repair 5:

(1) Repair 6 is a repair of the cargo compartment sideplate at a floor panel splice.

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LEFT SIDE IS SHOWN, RIGHT SIDE IS ALMOST THE SAME

NOTES

- ALL DIMENSIONS ARE IN INCHES

FASTENER SYMBOLS

- FLOOR PANEL ATTACH FASTENER LOCATION. INSTALL A BACS12ER3K10 SCREW.
- FLOOR PANEL ATTACH FASTENER LOCATION. INSTALL A BACN10JR3CFD NUTPLATE AND TWO BACR15BA3D RIVETS.
- REPAIR FASTENER LOCATION. INSTALL A BACR15CE5D RIVET.
- FRAME ATTACH REPAIR FASTENER LOCATION. INSTALL A MS20470D6 RIVET.
- REPAIR FASTENER LOCATION. INSTALL A BACR15FT5D RIVET.
- REPAIR FASTENER LOCATION. INSTALL A BACR15FT6D RIVET.

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Cargo Compartment Sideplate Repair Between Floor Panel Splices
Figure 202 (Sheet 1 of 2)

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NOTE: X = THE DISTANCE OF THE REPAIR FASTENER LOCATION FROM AN EDGE
= 1.62 INCH FOR THE FORWARD CARGO COMPARTMENT
= 0.74 INCH FOR THE AFT CARGO COMPARTMENT

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Cargo Compartment Sideplate Repair Between Floor Panel Splices
Figure 202 (Sheet 2 of 2)

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3. References

Reference	Title
51-00-06	STRUCTURAL REPAIR DEFINITIONS
51-10-02	INSPECTION AND REMOVAL OF DAMAGE
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-20-05	REPAIR SEALING
51-40-00, GENERAL	Fasteners
51-40-02, GENERAL	Fastener Installation and Removal
51-40-03, GENERAL	Fastener Substitution
51-40-05, GENERAL	Fastener Hole Sizes
51-40-06, GENERAL	Fastener Edge Margins
AMM 51-31-00 P/B 201	SEALS AND SEALING - MAINTENANCE PRACTICES
AMM 51-21-00/701	Interior And Exterior Finishes - Cleaning/Painting
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes

4. Repair Instructions

A. Remove the capstrips and floor panels in the area of the damaged sideplate.

B. Cut and remove the damaged part of the sideplate. Refer to 51-10-02 for the damage removal procedures.

(1) Refer to Cargo Compartment Sideplate Repair Between Floor Panel Splices, Figure 202/REPAIR 5 for a typical cutout.

C. Remove the floor panel nutplates.

D. Make the repair parts as shown in Cargo Compartment Sideplate Repair Between Floor Panel Splices, Figure 202/REPAIR 5. Refer to Table 201/REPAIR 5 for the repair parts.

NOTE: The repair parts:

- Are available from the Boeing Spares Department.
- Can be made from aluminum formed channels to dimensions as given in the production drawing.

Table 201:

REPAIR MATERIAL			
ITEM	**PART**	**QUANTITY**	**MATERIAL**
[1]	Zee Channel Sideplate	1	Forward Cargo Compartment: Use a BAC1496-444 7075-T6 clad formed channel, as applicable. Aft Cargo Compartment: Use a BAC1496-377 7075-T62 clad formed channel, as applicable.
[2]	Splice Sideplate	1	Forward Cargo Compartment: Use a BAC1496-444 7075-T6 clad formed channel, as applicable. Aft Cargo Compartment: Use a BAC1496-377 7075-T62 clad formed channel, as applicable.

E. Assemble the repair parts.

F. Drill the fastener holes.

G. Disassemble the repair parts.

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H. Remove all the nicks, scratches, burrs, and sharp edges from the repair parts and the bare surfaces of the initial sideplate.

I. Apply a chemical conversion coating to the repair parts and to the bare surfaces of the initial sideplate. Refer to 51-20-01.

J. Apply one layer of BMS 10-11, Type I primer to the repair parts and the bare surfaces of the initial sideplate. Refer to SOPM 20-41-02.

K. Install a nutplate to the part [2] splice sideplate at the floor panel attach fastener locations.

L. Install the repair parts.

(1) Apply BMS 5-95 sealant to the mating surfaces of the repair parts. Refer to 51-20-05.

(2) Install the non-aluminum fasteners wet with BMS 5-95 sealant.

(3) Fill the space between the part [1] zee channel sideplate and the initial sideplate with BMS 5-95.

M. Apply the initial finish to the repair area. Refer to AMM 51-21-00/701.

N. Apply one layer of BMS 3-23, Type II corrosion inhibiting compound to the repair area. Refer to 51-10-02.

O. Install the cargo floor panels and capstrips.

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REPAIR 6 - CARGO COMPARTMENT SIDEPLATE REPAIR AT A FLOOR PANEL SPLICE

1. Applicability

A. Repair 6 is applicable to the zee channel sideplates in the forward and aft cargo compartments shown in Cargo Compartment Sideplate Location, Figure 201/REPAIR 6.

B. You can use Repair 6 to make a splice to the sideplate at a floor panel splice.

(1) You are permitted to use Repair 6 to replace part of a sideplate. Use one of the procedures that follow:

(a) Do Repair 6 at each cut end.

(b) Do Repair 6 at one cut end and Repair 5 at the other cut end.

(2) Do Repair 6 at one cut end of the initial sideplate. Make the length of the part [1] zee channel sideplate the same as the initial length of the remaining sideplate.

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TYPICAL CROSS-SECTION OF THE FORWARD
CARGO COMPARTMENT FLOOR STRUCTURE

TYPICAL CROSS-SECTION OF THE AFT
CARGO COMPARTMENT FLOOR STRUCTURE

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Cargo Compartment Sideplate Location
Figure 201

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2. General

A. Repair 6 gives instructions for a Category A repair. Refer to 51-00-06 to find the definitions of the different categories of repairs.

B. The repair that follows is an alternative to Repair 6:

(1) Repair 5 is a repair of the cargo compartment sideplate between floor panel splices.

3. References

Reference	Title
51-00-06	STRUCTURAL REPAIR DEFINITIONS
51-10-02	INSPECTION AND REMOVAL OF DAMAGE
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-20-05	REPAIR SEALING
51-40-00, GENERAL	Fasteners
51-40-02, GENERAL	Fastener Installation and Removal
51-40-03, GENERAL	Fastener Substitution
51-40-05, GENERAL	Fastener Hole Sizes
51-40-06, GENERAL	Fastener Edge Margins
AMM 51-31-00 P/B 201	SEALS AND SEALING - MAINTENANCE PRACTICES
AMM 51-21-00/701	Interior And Exterior Finishes - Cleaning/Painting
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes

4. Repair Instructions

A. Remove the capstrips and floor panels in the area of the damaged sideplate.

B. Cut and remove the damaged part of the sideplate. Refer to 51-10-02 for the damage removal procedures.

(1) Refer to Forward Cargo Compartment Sideplate Repair at a Floor Panel Splice , Figure 202/REPAIR 6 for a typical cutout for the forward cargo compartment.

(2) Refer to Aft Cargo Compartment Sideplate Repair at a Floor Panel Splice, Figure 203/REPAIR 6 for a typical cutout for the aft cargo compartment.

C. Remove the floor panel nutplates.

D. Make the repair parts. Refer to Table 201/REPAIR 6 for the repair parts. Refer to Figure 202/REPAIR 6 for the forward cargo compartment and Figure 203/REPAIR 6 for the aft cargo compartment.

NOTE: The repair parts:

- Are available from the Boeing Spares Department.
- Can be made from aluminum formed channels to dimensions as given in the production drawing.

Table 201:

REPAIR MATERIAL			
ITEM	PART	QUANTITY	MATERIAL
[1]	Zee Channel Sideplate	1	Forward Cargo Compartment: Use a BAC1496-444 7075-T6 clad formed channel, as applicable

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Table 201: (Continued)

REPAIR MATERIAL			
ITEM	**PART**	**QUANTITY**	**MATERIAL**
			Aft Cargo Compartment: Use a BAC1496-377 7075-T62 clad formed channel, as applicable
[2]	Splice Sideplate	1	Forward Cargo Compartment: Use a BAC1496-444 7075-T6 clad formed channel, as applicable Aft Cargo Compartment: Use a BAC1496-377 7075-T62 clad formed channel, as applicable

E. Assemble the repair parts.

F. Drill the fastener holes.

G. Disassemble the repair parts.

H. Remove all the nicks, scratches, burrs, and sharp edges from the repair parts and the bare surfaces of the initial sideplate.

I. Apply a chemical conversion coating to the repair parts and to the bare surfaces of the initial sideplate. Refer to 51-20-01.

J. Apply one layer of BMS 10-11, Type I primer to the repair parts and the bare surfaces of the initial sideplate. Refer to SOPM 20-41-02.

K. Install a nutplate to the part [2] splice sideplate at the floor panel attach fastener locations.

L. Install the repair parts.

(1) Apply BMS 5-95 sealant to the mating surfaces of the repair parts. Refer to 51-20-05.

(2) Install the non-aluminum fasteners wet with BMS 5-95 sealant.

(3) Fill the space between the part [1] zee channel sideplate and the initial sideplate with BMS 5-95.

M. Apply the initial finish to the repair area. Refer to AMM 51-21-00/701.

N. Apply one layer of BMS 3-23, Type II corrosion inhibiting compound to the repair area. Refer to 51-10-02.

O. Install the cargo floor panels and capstrips.

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LEFT SIDE IS SHOWN, RIGHT SIDE IS ALMOST THE SAME

NOTES

- ALL DIMENSIONS ARE IN INCHES

1 KEEP A MINIMUM OF FIVE REPAIR FASTENERS THROUGH THE EDGES OF THE PART [2] SPLICE SIDEPLATE ON EACH SIDE OF THE SIDEPLATE CUT.

FASTENER SYMBOLS

- FLOOR PANEL ATTACH FASTENER LOCATION. INSTALL A BACS12ER3K10 SCREW.
- FLOOR PANEL ATTACH FASTENER LOCATION. INSTALL A BACN10JR3CFD NUTPLATE AND TWO BACR15BA3D RIVETS.
- REPAIR FASTENER LOCATION. INSTALL A BACR15CE5D RIVET.
- REPAIR FASTENER LOCATION. INSTALL A BACR15FT5D RIVET.

G29677 S0006588066_V2

Forward Cargo Compartment Sideplate Repair at a Floor Panel Splice
Figure 202 (Sheet 1 of 2)

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A–A

B–B

G29671 S0006588067_V2

Forward Cargo Compartment Sideplate Repair at a Floor Panel Splice
Figure 202 (Sheet 2 of 2)

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LEFT SIDE IS SHOWN, RIGHT SIDE IS ALMOST THE SAME

NOTES

- ALL DIMENSIONS ARE IN INCHES

1 KEEP A MINIMUM OF FIVE REPAIR FASTENERS THROUGH THE EDGES OF THE PART [2] SPLICE SIDEPLATE ON EACH SIDE OF THE SIDEPLATE CUT.

FASTENER SYMBOLS

┼ FLOOR PANEL ATTACH FASTENER LOCATION. INSTALL A BACS12ER3K10 SCREW.

■ FLOOR PANEL ATTACH FASTENER LOCATION. INSTALL A BACN10JR3CFD NUTPLATE AND TWO BACR15BA3D RIVETS.

● REPAIR FASTENER LOCATION. INSTALL A BACR15CE5D RIVET.

○ REPAIR FASTENER LOCATION. INSTALL A BACR15FT5D RIVET.

G29742 S0006588068_V2

Aft Cargo Compartment Sideplate Repair at a Floor Panel Splice
Figure 203 (Sheet 1 of 2)

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A–A

B–B

G29749 S0006588069_V2

Aft Cargo Compartment Sideplate Repair at a Floor Panel Splice
Figure 203 (Sheet 2 of 2)

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IDENTIFICATION 1 - STATIONS 178 TO 259.5

NOTES

- REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

1 FLIGHT DECK EYEBROW WINDOWS ARE ONLY COMMON TO LINE NUMBERS 1 THROUGH 1649

2 FLIGHT DECK EYEBROW PLUGS FOR LINE NUMBERS 1 THROUGH 1649 WITH SB 737-56-1017

F81001 S0006588074_V3

Section 41 Fuselage Skin Location
Figure 1

Table 1:

REFERENCE DRAWINGS	
DRAWING NUMBER	**TITLE**
001A4001	Fuselage Product Collector
140A4104	Functional Collector - Left Side Panel, Section 41
140A4105	Functional Collector - Lower Lobe, Section 41
140A4109	Functional Collector - Right Side Panel, Section 41
140A4111	Section 41 - Cab, Functional Collector
140A4113	Galley Door Panel, Section 41, Functional Collector
140A4114	Section 41 - Functional Collector, Crown
141A3310	Skin Installation - Galley Door Panel
141A3502	Skin Installation - Lower Lobe, Section 41
141A3702	Skin Installation - Side Panel, Section 41
141A3815	Crown Skin Installation - Cab
141A3910	Crown Panel Installation, Section 41

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NOTES

- REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

1 FLIGHT DECK EYEBROW WINDOWS ARE ONLY COMMON TO LINE NUMBERS 1 THROUGH 1649

2 FLIGHT DECK EYEBROW PLUGS FOR LINE NUMBERS 1 THROUGH 1649 WITH SB 737-56-1017

F81209 S0006588077_V3

Section 41 Fuselage Skin Identification
Figure 2

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Table 2:

LIST OF MATERIALS FOR FIGURE 2				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Skin	0.071 (1.8)	2024-T3 clad sheet as given in QQ-A-250/5. Refer to Figure 5 for the thicknesses of the chem-milled areas	
[2]	Skin	0.071 (1.8)	2024-T3 clad sheet as given in QQ-A-250/5. Refer to Figure 6 for the thicknesses of the chem-milled areas	
[3]	Skin	0.080 (2.03)	2024-T3 clad sheet as given in QQ-A-250/5. Refer to Figure 7 for the thicknesses of the chem-milled areas	
[4]	Skin	0.063 (1.6)	2024-T3 clad sheet as given in QQ-A-250/5. Refer to Figure 8 for the thicknesses of the chem-milled areas	
[5]	Skin	0.063 (1.6)	2024-T3 clad sheet as given in QQ-A-250/5. Refer to Figure 9 for the thicknesses of the chem-milled areas	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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NOTES

- REFER TO TABLE 3 FOR THE LIST OF MATERIALS.

1 FLIGHT DECK EYEBROW WINDOWS ARE ONLY COMMON TO LINE NUMBERS 1 THROUGH 1649

2 FLIGHT DECK EYEBROW PLUGS FOR LINE NUMBERS 1 THROUGH 1649 WITH SB 737-56-1017

F81355 S0006588080_V3

Section 41 Fuselage Skin Doubler, Tear Strap, Bear Strap, and Splice Strap Identification
Figure 3

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Table 3:

LIST OF MATERIALS FOR FIGURE 3				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Splice	0.050 (1.27)	2024-T3 clad sheet as given in QQ-A-250/5	
[2]	Doubler	0.080 (2.03)	2024-T42 clad sheet as given in QQ-A-250/5. Refer to Figure 10 for the chem-milled thicknesses	
[3]	Splice	0.063 (1.6)	2024-T3 clad sheet as given in QQ-A-250/5	
[4]	Doubler (3)	0.063 (1.6)	2024-T3 clad sheet as given in QQ-A-250/5	
[5]	Strap (2)		BAC1512-3355 2024-T3511 extrusion as given in QQ-A-200/3	
[6]	Doubler	0.040 (1.02)	2024-T42 clad sheet as given in QQ-A-250/5	
[7]	Bear Strap	0.080 (2.03)	2024-T3 clad sheet as given in QQ-A-250/5. Refer to Figure 11 for chem-milled thicknesses	
[8]	Mounting Plate (5)	0.250 (6.35)	2024-T351 plate as given in QQ-A-250/4	
[9]	Doubler	0.190 (4.83)	2024-T42 clad sheet as given in QQ-A-250/5	For cum line 1 thru 38
[9]	Doubler	0.190 (4.83)	2024-T3 clad sheet as given in QQ-A-250/5	For cum line 39 and on
[10]	Door	0.063 (1.6)	2024-T3 clad sheet as given in QQ-A-250/5	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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NOTES

- REFER TO TABLE 4 FOR THE LIST OF MATERIALS.

1 FLIGHT DECK EYEBROW WINDOWS ARE ONLY COMMON TO LINE NUMBERS 1 THROUGH 1649

2 FLIGHT DECK EYEBROW PLUGS FOR LINE NUMBERS 1 THROUGH 1649 WITH SB 737-56-1017

F81378 S0006588082_V3

Section 41 Fuselage Skin Doubler and Splice Identification Adjacent to the Cockpit Window Cutout
Figure 4

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Table 4:

LIST OF MATERIALS FOR FIGURE 4				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Splice	0.050 (1.27)	Ti-6Al-4V titanium sheet as given in MIL-T-9046, Code AB-1 annealed	
[2]	Doubler	0.032 (0.81)	2024-T3 clad sheet as given in QQ-A-250/5	
[3]	Doubler	0.025 (0.64)	X-750 nickel 625 as given in AMS 5542, annealed. Precipitation heat treated to condition II as given BAC 5616	
[4]	Doubler	0.045 (1.14)	X-750 nickel 625 as given in AMS 5542, annealed. Precipitation heat treated to condition II as given BAC 5616	
[5]	Doubler - Center	0.090 (2.29)	Ti-6Al-4V titanium sheet as given in MIL-T-9046, Code AB-1 annealed	
[6]	Doubler	0.050 (1.27)	Ti-6Al-4V titanium sheet as given in MIL-T-9046, Code AB-1 annealed	
[7]	Doubler	0.080 (2.03)	15-5PH CRES sheet as given in BMS 7-240, Type I, solution heat treated to 150-170 KSI as given in BAC 5619	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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NOTE: ALL DIMENSIONS SHOWN ARE THICKNESSES IN INCHES.

LEFT SIDE

VIEW IS ON INNER SURFACE OF SKIN

F81761 S0006588084_V1

Chem-Milled Areas of Figure 2, Item [1]
Figure 5

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NOTE: ALL DIMENSIONS SHOWN ARE THICKNESSES IN INCHES.

RIGHT SIDE

VIEW IS ON INNER SURFACE OF SKIN

F81538 S0006588086_V1

Chem-Milled Areas of Figure 2, Item [2]
Figure 6

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VIEW IS ON INNER SURFACE OF SKIN

LEFT SIDE IS SHOWN,
RIGHT SIDE IS OPPOSITE

F81832 S0006588088_V1

Chem-Milled Areas of Figure 2, Item [3]
Figure 7

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VIEW IS ON INNER SURFACE OF SKIN

RIGHT SIDE IS SHOWN,
LEFT SIDE IS OPPOSITE

F81847 S0006588090_V1

Chem-Milled Areas of Figure 2, Item [4]
Figure 8

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VIEW IS ON INNER SURFACE OF SKIN

RIGHT SIDE IS SHOWN,
LEFT SIDE IS OPPOSITE

NOTE:

1 FLIGHT DECK EYEBROW WINDOWS ARE ONLY COMMON TO LINE NUMBERS 1 THROUGH 1649

F81880 S0006588091_V2

Chem-Milled Areas of Figure 2, Item [5]
Figure 9

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F81890 S0006588092_V1

Chem-Milled Areas of Figure 3, Item [2]
Figure 10

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F81910 S0006588094_V1

Chem-Milled Areas of Figure 3, Item [7]
Figure 11

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IDENTIFICATION 2 - STATIONS 259.5 TO 360

NOTE: REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

F81970 S0006588097_V1

Section 41 Fuselage Skin Location
Figure 1

Table 1:

REFERENCE DRAWINGS	
DRAWING NUMBER	**TITLE**
001A4001	Fuselage Product Collector
140A4105	Functional Collector - Lower Lobe, Section 41
140A4111	Section 41-Cab Functional Collector
140A4112	Entry Door Panel, Section 41, Functional Collector
140A4113	Section 41 Galley Door Panel
140A4114	Section 41 - Functional Collector, Crown
141A3110	Skin Installation - Entry Door Panel
141A3111	Skin Bond Assembly - Entry Door Panel
141A3310	Skin Installation - Galley Door Panel
141A3311	Skin Bond Assembly - Galley Door Panel
141A3502	Skin Installation - Lower Lobe, Section 41
141A3910	Crown Panel Installation, Section 41

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NOTES

- REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

1 FLIGHT DECK EYEBROW WINDOWS ARE ONLY COMMON TO LINE NUMBERS 1 THROUGH 1649

2 FLIGHT DECK EYEBROW PLUGS FOR LINE NUMBERS 1 THRUGH 1649 WITH SB 737-56-1017

F81969 S0006588100_V3

Section 41 Fuselage Skin Identification
Figure 2

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Table 2:

LIST OF MATERIALS FOR FIGURE 2				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Skin	0.080 (2.03)	2024-T3 clad sheet as given in QQ-A-250/5. Refer to Figure 4 for the thicknesses of the chem-milled areas	
[2]	Skin Assembly -			
	Skin	0.040 (1.02)	2024-T3 clad sheet as given in QQ-A-250/5. Refer to Figure 5 for the thicknesses of the chem-milled areas	Line Numbers 7 thru 3591
	Doubler	0.040 (1.02)	2024-T3 clad sheet as given in QQ-A-250/5. Refer to Figure 5 for the shape	
[2]	Skin Assembly -			
	Skin	0.045 (1.14)	2024-T3 clad sheet as given in QQ-A-250/5. Refer to Figure 5 for the thicknesses of the chem-milled areas	Line Numbers 3592 and On
	Doubler	0.040 (1.02)	2024-T3 clad sheet as given in QQ-A-250/5. Refer to Figure 5 for the shape	
[3]	Bonded Skin Assembly			
	Upper Skin	0.100 (2.54)	2024-T3 clad sheet as given in QQ-A-250/5. Refer to Figure 6 for the thicknesses of the chem-milled areas	
	Lower Skin	0.100 (2.54)	2024-T3 clad sheet as given in QQ-A-250/5. Refer to Figure 7 for the thicknesses of the chem-milled areas	
	Bear Strap	0.100 (2.54)	2024-T3 as given in QQ-A-250/4	
[4]	Upper, Middle, and Lower Hinge Gap Cover Skins	0.100 (2.54)	2024-T3 clad sheet as given in QQ-A-250/5	
[5]	Bonded Skin Assembly -			
	Upper Skin	0.100 (2.54)	2024-T3 clad sheet as given in QQ-A-250/5. Refer to Figure 8 for the thicknesses of the chem-milled areas	
	Lower Skin	0.100 (2.54)	2024-T3 clad sheet as given in QQ-A-250/5. Refer to Figure 9 for the thicknesses of the chem-milled areas	
	Bear Strap	0.090 (2.23)	2024-T3 as given in QQ-A-250/4	
	Doubler	0.063 (1.60)	2024-T3 clad sheet as given in QQ-A-250/5	
[6]	Doubler	0.050 (1.27)	2024-T42 clad sheet as given in QQ-A-250/5	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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NOTES

- REFER TO TABLE 3 FOR THE LIST OF MATERIALS.

1 FLIGHT DECK EYEBROW WINDOWS ARE ONLY COMMON TO LINE NUMBERS 1 THROUGH 1649

2 FLIGHT DECK EYEBROW PLUGS FOR LINE NUMBERS 1 THROUGH 1649 WITH SB 737-56-1017

F82013 S0006588104_V3

Section 41 Fuselage Skin Doubler, Tripler, Bear Strap, and Splice Strap Identification
Figure 3

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Table 3:

LIST OF MATERIALS FOR FIGURE 3				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Bear Strap	0.080 (2.03)	2024-T3 clad sheet as given in QQ-A-250/5. Refer to Figure 10 for the thicknesses of the chem-milled areas	
[2]	Splice Strap	0.071 (1.80)	2024-T3 clad sheet as given in QQ-A-250/5	
[3]	Ring Doubler	0.050 (1.27)	2024-T3 clad sheet as given in QQ-A-250/5	
[4]	Doubler	0.080 (2.03)	2024-T42 clad sheet as given in QQ-A-250/5. Refer to Figure 11 for the thicknesses of the chem-milled areas	
[5]	Splice Strap	0.071 (1.80)	2024-T3 clad sheet as given in QQ-A-250/5	
[6]	Strap	0.071 (1.80)	2024-T3 clad sheet as given in QQ-A-250/5	
[7]	Strap	0.050 (1.27)	2024-T3 clad sheet as given in QQ-A-250/5	
[8]	Doubler	0.036 (0.91)	2024-T3 clad sheet as given in QQ-A-250/5	
[9]	Doubler	0.063 (1.60)	2024-T3 clad sheet as given in QQ-A-250/5	
[10]	Tripler	0.063 (1.60)	15-5PH CRES sheet as given in BMS 7-240, Type I, solution heat treated to 150 to 270 KSI	For airplanes with airstairs
[11]	Tripler	0.063 (1.60)	2024-T3 clad sheet as given in QQ-A-250/5	For airplanes without air- stairs

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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VIEW IS ON INNER SURFACE OF SKIN

F82141 S0006588108_V1

Chem-Milled Areas of Figure 2, Item [1]
Figure 4

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VIEW IS ON INNER SURFACE OF SKIN AND DOUBLER

F82142 S0006588110_V1

Chem-Milled Areas of Figure 2, Item [2]
Figure 5

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VIEW IS ON INNER SURFACE OF SKIN

F82161 S0006588112_V1

Chem-Milled Areas of Upper Skin Figure 2, Item [3]
Figure 6

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VIEW IS ON INNER SURFACE OF SKIN

F82280 S0006588114_V1

Chem-Milled Areas of Lower Skin, Figure 2, Item [3]
Figure 7

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F82371 S0006588116_V1

Chem-Milled Areas of Upper Skin, Figure 2, Item [5]
Figure 8

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F82421 S0006588117_V1

Chem-Milled Areas of Lower Skin, Figure 2, Item [5]
Figure 9

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VIEW IS ON INNER SURFACE OF SKIN

F82423 S0006588118_V1

Chem-Milled Areas of Figure 3, Item [1]
Figure 10

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F82424 S0006588119_V1

Chem-Milled Areas of Figure 3, Item [4]
Figure 11

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ALLOWABLE DAMAGE GENERAL - SECTION 41 FUSELAGE SKIN

NOTE:

1 FLIGHT DECK EYEBROW WINDOWS ARE ONLY COMMON TO LINE NUMBERS 1 THROUGH 1649

2 FLIGHT DECK EYEBROW PLUGS FOR LINE NUMBERS 1 THROUGH 1649 WITH SB 737-56-1017

F52492 S0006588123_V3

Section 41 Fuselage Skin Location
Figure 101

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NOTE:

1 FLIGHT DECK EYEBROW WINDOWS ARE ONLY COMMON TO LINE NUMBERS 1 THROUGH 1649

2 FLIGHT DECK EYEBROW PLUGS FOR LINE NUMBERS 1 THROUGH 1649 WITH SB 737-56-1017

F52504 S0006588126_V3

Section 41 Fuselage Skin Location
Figure 201

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REPAIR 1 - FUSELAGE SKIN REPAIR BETWEEN STA 251.6 AND STA 259.5, WL 200 AND WL 215

1. Applicability

A. Repair 1 is applicable to dent damage of the fuselage skin between fuselage STA 251.6 and STA 259.5, WL 200 and WL 215. Refer to Figure 201/REPAIR 1 for damage locations.

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2409958 S0000556476_V1

Damage Zone
Figure 201

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2. General

A. This repair is a Category B repair and supplemental inspections are required. Refer to Paragraph 5./REPAIR 1 for the inspection requirements. Incorporation of these inspection requirements into the airplane's maintenance program satisfies the damage tolerance assessment of this repair. Refer to 51-00-06, GENERAL for the definitions of the different types of repairs.

B. D = fastener diameter.

C. Keep a 2D minimum fastener edge margin. Refer to 51-40-06, GENERAL.

D. Keep a 5D to 6D fastener spacing, unless it is shown differently.

E. All dimensions are in inches, unless they are shown differently.

F. Keep a minimum of 0.50 in. (12.70 mm) external radius and 2.0 in. (50.8 mm) internal radius on initial and repair part corners, unless they are shown differently.

G. Make sure the cut edges of the repair and initial parts have a surface smoothness of 63 microinches Ra or smoother. Refer to 51-20-13, GENERAL.

H. Make sure the repair and initial parts have a surface smoothness of 125 microinches Ra or smoother. Refer to 51-20-13, GENERAL and 51-10-01, GENERAL.

3. References

Reference	Title
51-00-06, GENERAL	Structural Repair Definitions
51-10-01, GENERAL	Aerodynamic Smoothness Requirements
51-10-02, GENERAL	Inspection and Removal of Damage
51-20-01, GENERAL	Protective Treatment of Metallic and Composite Materials
51-20-05, GENERAL	Repair Sealing
51-20-13, GENERAL	Surface Roughness Finish Requirements
51-40-02, GENERAL	Fastener Installation and Removal
51-40-05, GENERAL	Fastener Hole Sizes
51-40-06, GENERAL	Fastener Edge Margins
51-40-08, GENERAL	Countersink Data and Procedures for Metal Structures
AMM 51-21-00 P/B 701	INTERIOR AND EXTERIOR FINISHES - CLEANING/PAINTING
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes
737 NDT Part 6, 51-00-00, Procedure 16	Aluminum Part Fastener Hole Inspection (Rotary Scanner)
737 NDT Part 6, 51-00-00, Procedure 23	Aluminum Part Surface Inspection (Impedance Plane Display)
737 NDT Part 6, 53-30-00, Procedure 5	Inspection of External Fuselage Repairs
737 NDT Part 6, 53-30-00, Procedure 6	Subsurface Crack Inspection of Faying Surfaces

4. Repair Instructions

A. Get access to the damaged area.

B. Remove the necessary fasteners in the repair area. Refer to 51-40-02, GENERAL.

C. Cut the skin to remove the damage part of the skin as shown in Figure 202/REPAIR 1. Refer to 51-10-02, GENERAL. Make the cut with the sides parallel or perpendicular to the stringer or frame.

D. Make sure the skin around the cut area is put back to its initial contour.

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E. Do a High Frequency Eddy Current (HFEC) inspection along the cut edges to make sure that there is no damage. Refer to 737 NDT Part 6, 51-00-00, Procedure 23. If there is no more damage, do a 0.04 in. (1.02 mm) insurance cut around the cutout.

F. Do an open hole HFEC inspection of all initial fastener holes in the repair area to make sure that there are no cracks. Refer to 737 NDT Part 6, 51-00-00, Procedure 16.

G. Do a detailed visual inspection of the underlying structure in the repair area to make sure that there is no other damage.

H. Make the repair parts.

(1) Make the Part 1 Doubler and Part 2 Tripler as shown in Figure 202/REPAIR 1. Refer to Table 201/REPAIR 1.

(2) Make the countersink repair washers for the initial fastener locations in the initial skin. Refer to 51-40-08, GENERAL.

Table 201: Repair Material

ITEM	PART	QUANTITY	MATERIAL
1	Doubler	1	0.063 in. (1.60 mm) thick, 2024-T3 clad sheet.
2	Tripler	1	0.063 in. (1.60 mm) thick, 2024-T3 clad sheet.

I. Assemble the repair parts. Refer to figure Figure 202/REPAIR 1.

J. Drill the necessary fastener holes. Refer to Figure 202/REPAIR 1 and 51-40-05, GENERAL for the fastener location, type, and size.

NOTE: Do not drill fastener holes into a chem-milled radius. Blending of chem-milled area is not permitted.

K. Disassemble the repair parts.

L. Remove all nicks, scratches, burrs, and sharp edges from the repair parts and the bare surfaces of the initial parts.

M. Apply a chemical conversion coating to the repair parts and to the bare surfaces of the initial parts. Refer to 51-20-01, GENERAL.

N. Apply two layers of BMS 10-11, Type I primer to the repair parts and the bare surfaces of the initial parts. Refer to SOPM 20-41-02.

O. Install the countersink repair washers with BMS 5-95 sealant at the initial fastener locations. Refer to 51-40-08, GENERAL.

P. Install the repair parts with BMS 5-95 sealant between the mating surfaces. Refer to 51-20-05, GENERAL.

Q. Fasteners that are not made of aluminum must be installed wet with BMS 5-95 sealant. Refer to 51-40-02, GENERAL.

R. Install the rivets without sealant, over-driven to a minimum 1.4D driven head. Refer to 51-40-02, GENERAL.

S. Apply a fillet seal to the repair parts on internal and external sides of the repair area with BMS 5-95 sealant. Refer to 51-20-05, GENERAL.

T. Apply a finish if necessary. Refer to AMM PAGEBLOCK 51-21-00/701.

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(LEFT SIDE IS SHOWN, RIGHT SIDE IS OPPOSITE)

FASTENER SYMBOLS

REFERENCE FASTENER LOCATION.

INITIAL FASTENER LOCATION. INSTALL A BACR15CE6D RIVET AT 5/32-INCH AND 6/32-INCH DIAMETER INITIAL RIVET LOCATIONS. INSTALL A BACB30FQ6A HEX-DRIVE BOLT WITH A BACC30M6 COLLAR AT 6/32-INCH DIAMETER INITIAL LOCK BOLT OR HEX-DRIVE BOLT LOCATIONS.

REPAIR FASTENER LOCATION. INSTALL A BACR15CE6D RIVET.

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Layout of the Repair Parts
Figure 202

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5. Inspection Instructions

A. Do the inspections as given in Table 202/REPAIR 1 and Figure 203/REPAIR 1.

Table 202: Inspection Table

CATEGORY B REPAIR INSPECTION REQUIREMENTS			
INSPECTION THRESHOLD	REPEAT INSPECTIONS		
	METHOD	INTERVAL	REFERENCE
50,000 flight cycles after airplane delivery	External LFEC Inspect (arrow 3) *[1]	7,000 flight cycles	737 NDT Part 6, 53-30-00, Procedure 5
	Internal HFEC Inspect (arrow 4) *[2]	36,000 flight cycles	737 NDT Part 6, 53-30-00, Procedure 6
	External LFEC Inspect (arrow 5) *[3]	36,000 flight cycles	737 NDT Part 6, 53-30-00, Procedure 5
	External detailed visual (arrow 1)	4,000 flight cycles	
	Internal detailed visual (arrow 2)	36,000 flight cycles	

*[1] Do an external LFEC inspection of the skin at the outer row of fasteners.

*[2] Do an internal HFEC inspection of the skin at the outer row of fasteners.

*[3] Do an external LFEC inspection of the skin at the outer row of fasteners at a stringer.

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Inspection Requirements
Figure 203

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REPAIR 2 - FUSELAGE SKIN REPAIR NEAR FUSELAGE STATION 188 AND STRINGER 24

1. **Data**

   A. Do Not Use after April 11, 2016.

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REPAIR 3 - FUSELAGE SKIN REPAIR AT STATION 259 AND STRINGER 17

1. Applicability

A. This repair is applicable to damage to the fuselage skin at the fuselage station 259 and stringer 17. Refer to Figure 201/REPAIR 3.

B. This repair is not applicable to areas near static ports and angle-of-attack sensors. Refer to 51-10-01, GENERAL for areas near static ports and angle-of-attack sensors where external repairs are not permitted.

2. General

A. This repair is a Category B repair and inspections as given in Paragraph 5./REPAIR 3 are necessary. Refer to 51-00-06, GENERAL for repair categories and definitions.

B. D = fastener diameter.

C. Keep a minimum of 2D fastener edge margin.

D. All dimensions are in inches unless they are shown differently.

E. Keep 2.0 in. (50.8 mm) minimum inner corner radius and 0.5 in. (12.7 mm) outer corner radius of all initial and repair parts, unless shown differently.

F. Keep a 4D to 5D fastener spacing, unless it is shown differently.

G. Make sure that the cut edges of the repair and initial parts have a surface smoothness of 63 microinches Ra or smoother. Refer to 51-20-13, GENERAL.

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2402204 S0000554963_V1

Section 41 Lower Section Frame and Stringer Location
Figure 201

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3. References

Reference	Title
51-00-06, GENERAL	Structural Repair Definitions
51-10-01, GENERAL	Aerodynamic Smoothness Requirements
51-20-01, GENERAL	Protective Treatment of Metallic and Composite Materials
51-20-05, GENERAL	Repair Sealing
51-20-13, GENERAL	Surface Roughness Finish Requirements
51-30-01, GENERAL	Sheet Metal Materials
51-40-02, GENERAL	Fastener Installation and Removal
51-40-05, GENERAL	Fastener Hole Sizes
51-40-08, GENERAL	Countersink Data and Procedures for Metal Structures
AMM 51-21-00	INTERIOR AND EXTERIOR FINISHES
SOPM 20-44-04	Application of Urethane Compatible Primer
737 NDT Part 6, 51-00-00, Procedure 16	Aluminum Part Fastener Hole Inspection (Rotary Scanner)
737 NDT Part 6, 51-00-00, Procedure 23	Aluminum Part Surface Inspection (Impedance Plane Display)
737 NDT Part 6, 51-00-00, Procedure 4	Surface Inspection of Aluminum Parts (Meter Display)
737 NDT Part 6, 53-30-00, Procedure 7	Subsurface Cracks that Start at the Faying Surfaces of the Airplane Skins - Internal Inspection

4. Repair Instructions

A. Get access to the damaged area.

B. Remove the necessary fasteners. Refer to 51-40-02, GENERAL.

C. Cut and remove the damaged part of the skin as shown in Figure 201/REPAIR 3. Make a cut with the sides parallel or perpendicular to the stringer or frame.

D. Do a High Frequency Eddy Current (HFEC) inspection along the cuts edges to make sure that there is no damage. Do a 0.040 in. (1.02 mm) insurance cut along the cutout edges of the fuselage skin if no further damage is found. Refer to 737 NDT Part 6, 51-00-00, Procedure 4 and 737 NDT Part 6, 51-00-00, Procedure 23.

E. Do an open hole HFEC inspection of all initial fastener holes in the repair area. Make sure that there are no cracks. Refer to 737 NDT Part 6, 51-00-00, Procedure 16.

F. Do a detailed visual inspection of the underlying structure in the repair area to make sure that there is no other damage.

G. Make the repair parts. Refer to Table 201/REPAIR 3 and Figure 202/REPAIR 3.

(1) Maintain the skin quality. Refer to 51-10-01, GENERAL.

(2) Make countersink repair washers for the initial fastener locations.

(3) Keep a minimum bend radius. Refer to 51-30-01, GENERAL.

(4) Surface waviness to be ±0.030 inch for repair part flatness.

(5) The Part 2 Doubler must include minimum three rows of fasteners above, below and forward of the skin cutout. Refer to Figure 202/REPAIR 3 Figure 202.

(6) If the Part 2 Doubler ends on a stringer or frame, extend the Part 2 Doubler a minimum one fastener row beyond the stringer or frame.

(7) Chamfer the Part 2 Doubler. Refer to 51-10-01, GENERAL.

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Table 201: Repair Materials

Part		Quantity	Material
[1]	Filler	1	0.071 in. (1.80 mm) 2024-T3 clad sheet
[2]	Doubler	1	0.071 in. (1.80 mm) 2024-T3 clad sheet
[3]	Tripler	1	0.071 in. (1.80 mm) 2024-T3 clad sheet

H. Assemble the repair parts. Refer to Figure 202/REPAIR 3.

I. Keep the pull-up clearance limit to a maximum of 0.010 in. (0.25 mm). Use a shim to fill all clearance that is more then 0.010 in. (0.25 mm) to a maximum of 0.030 in. (0.76 mm) before fastener installation.

J. Drill the fastener holes. Refer to 51-40-05, GENERAL and Figure 202/REPAIR 3 for the fastener locations, type and dimension.

NOTE: Do not drill fastener holes into chem-milled radius. Do not blend the chem-milled area this is not permitted. Make sure that no fasteners are in the radius of the chem-milled pockets.

K. Disassemble the repair parts.

L. Remove all nicks, scratches, burrs, and sharp edges from the repair parts and the bare surfaces of the initial parts.

M. Apply a chemical conversion coating to the repair parts and to the bare surfaces of the initial parts. Refer to 51-20-01, GENERAL.

N. Apply two layers of BMS 10-79 type II primer to the repair parts and to the bare surfaces. Refer to SOPM 20-44-04.

O. Install the countersunk repair washers with BMS 5–95 sealant at the initial fastener locations. Refer to 51-40-08, GENERAL.

P. Install the repair parts with BMS 5–95 sealant between the mating surfaces. Refer to 51-20-05, GENERAL.

Q. Install the fasteners without sealant. Install all rivets over-driven to a minimum 1.4 driven head. Refer to 51-40-02, GENERAL.

R. Apply a fillet seal to the repair parts from on the exterior side of the repair area and fill all gaps with BMS 5-95 sealant. Refer to 51-20-05, GENERAL.

S. Apply a decorative external finish if necessary. Refer to AMM SUBJECT 51-21-00.

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(LEFT SIDE IS SHOWN, RIGHT SIDE IS OPPOSITE)

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Skin Repair at Fuselage Station 259 and Stringer 17
Figure 202 (Sheet 1 of 2)

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A-A

FASTENER SYMBOLS

REFERENCE FASTENER LOCATION.

INITIAL FASTENER LOCATION. INSTALL THE SAME TYPE AND SIZE OF INITIAL FASTENERS. AN OVERSIZE OF 1/32 INCH FOR RIVETS AND 1/64 INCH FOR HEX-DRIVE BOLTS IS PERMITTED.

REPAIR FASTENER LOCATION. INSTALL A BACR15CE6D() OR A BACR15GF6D() RIVET.

2402712 S0000554964_V1

Skin Repair at Fuselage Station 259 and Stringer 17
Figure 202 (Sheet 2 of 2)

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5. **Inspection Requirements**

A. Refer to 51-00-06, GENERAL for definitions of terms.

B. At a threshold of 50,000 total airplane flight cycles and at the specified repeat intervals, perform the following structural inspections:

(1) External Detailed Visual (DET) Inspections at 4,000 flight cycles intervals of the repair area for the skin cracks. Do this at the outer perimeter row of the fasteners in the Doubler or Tripler and Filler areas.

(2) Internal Detailed Visual (DET) Inspections at 15,000 flight cycles intervals of the repair area for the skin cracks. Do this at the outer perimeter row of the fasteners in the Doubler or Tripler and Filler areas.

(3) External Low Frequency Eddy Current (LFEC) inspections at 15,000 flight cycles intervals around rivet heads. Do this on the two outer rivet rows of the inner skin and the outer row of the outer skin. Refer to 737 NDT Part 6, 53-30-00, Procedure 7 and Figure 203/REPAIR 3.

(4) External Detailed Visual (DET) inspections of all the repair Doubler and Tripler for cracks, loose or missing fasteners. Do this at the same time with the DET inspections following the threshold.

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Fuselage Skin Repair at Station 259 and Stringer 17 Inspection Frequency
Figure 203

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REPAIR 4 - MULTIPLE LIGHTNING STRIKE SKIN DAMAGE REPAIR NEAR FASTENERS AT FUSELAGE STATION 294.50 AND STRINGER 26

1. Applicability

A. Repair 4 is applicable to lightning strike damage to the skin on the right side of the fuselage at stringer 26, fuselage station 294.50. Refer to Figure 201/REPAIR 4.

B. This repair is not applicable if the damage is in a location that has an initial repair.

C. If you have lightning strike damage to the skin away from a fastener location, refer to 53-00-01, REPAIR 38.

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Skin Damage Near Fasteners at STA 294.50 Stringer 26
Figure 201

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2. General

A. This repair is a Category B repair and supplemental inspections as given in Paragraph 5./REPAIR 4 are necessary. Incorporation of these inspection requirements into the airplane's maintenance program satisfies the damage tolerance assessment of this repair. Refer to 51-00-06, GENERAL for repair categories and definitions.

B. D = fastener diameter.

C. Keep a 2D minimum fastener edge margin. Refer to 51-40-06, GENERAL.

D. All dimensions are in inches, unless they are shown differently.

E. Keep a minimum of 0.50 inch (12.70 mm) corner radius of all initial and repair parts, unless they are shown differently.

F. Keep a 0.75 in. (19.05 mm) to 1.00 in. (25.40 mm) fastener spacing, unless it is shown differently.

G. Make sure that the cut edges of the repair and initial parts have a surface smoothness of 63 microinches Ra or smoother. Refer to 51-20-13, GENERAL.

H. Make sure that the repair and initial parts have a surface smoothness of 125 microinches Ra or smoother. Refer to 51-20-13, GENERAL.

3. References

Reference	Title
51-00-06, GENERAL	Structural Repair Definitions
51-10-01, GENERAL	Aerodynamic Smoothness Requirements
51-10-02, GENERAL	Inspection and Removal of Damage
51-20-01, GENERAL	Protective Treatment of Metallic and Composite Materials
51-20-05, GENERAL	Repair Sealing
51-20-13, GENERAL	Surface Roughness Finish Requirements
51-40-02, GENERAL	Fastener Installation and Removal
51-40-05, GENERAL	Fastener Hole Sizes
51-40-06, GENERAL	Fastener Edge Margins
51-40-08, GENERAL	Countersink Data and Procedures for Metal Structures
53-00-01, REPAIR 38	Repair of Lightning Strike And Small Damage in the Fuselage Skin Away from a Production Fastener Location
AMM 51-21-00	INTERIOR AND EXTERIOR FINISHES
SOPM 20-44-04	Application of Urethane Compatible Primer
737 NDT Part 6, 51-00-00, Procedure 1	Fastener Holes in Aluminum Parts (Meter Display)
737 NDT Part 6, 51-00-00, Procedure 23	Aluminum Part Surface Inspection (Impedance Plane Display)
737 NDT Part 6, 51-00-00, Procedure 3	Investigation of Fire Damage on Aircraft Structure
737 NDT Part 6, 51-00-00, Procedure 4	Surface Inspection of Aluminum Parts (Meter Display)
737 NDT Part 6, 53-30-00, Procedure 5	Inspection of External Fuselage Repairs

4. Repair Instructions

A. Get access to the damaged area.

B. Remove the necessary fasteners in the repair area. Refer to 51-40-02, GENERAL.

C. Do a visual inspection of the fastener location. If the visible damage is more than 0.5 inch in diameter, do an inspection for heat damage. Refer to 737 NDT Part 6, 51-00-00, Procedure 3.

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D. Cut and remove the damaged part of the skin. Do not trim the bear strap. Refer to 51-10-02, GENERAL and 53-10-01 Repair 4, Figure 202. Make the cut with the sides parallel or perpendicular to the stringer or frame.

E. Do a High Frequency Eddy Current (HFEC) inspection along the cut edges to make sure that there is no more damage. Refer to 737 NDT Part 6, 51-00-00, Procedure 4 or 737 NDT Part 6, 51-00-00, Procedure 23. If no more damage is found, make an insurance cut of 0.04 in. (1.02 mm).

F. Do an open hole HFEC inspection of all initial fastener holes in the repair area to make sure that there are no cracks. Refer to 737 NDT Part 6, 51-00-00, Procedure 1.

G. Do a detailed visual inspection of the underlying structure in the repair area to make sure that there is no other damage.

H. Make the repair parts. Refer to Table 201/REPAIR 4 and Figure 202/REPAIR 4.

(1) Chamfer the Part 3 Doubler and Part 4 Tripler. Refer to 51-10-01, GENERAL.

(2) Make the contour of the Part 3 Doubler and Part 4 Tripler match the contour of the initial skin.

(3) Make countersink repair washers for the initial fastener locations. Refer to 51-40-08, GENERAL.

Table 201: Repair Materials

ITEM	PART	QUANTITY	MATERIAL
1	Structural Filler	1	0.071 in. (1.80 mm) thick, 2024-T3 clad sheet
2	Filler	1	0.080 in. (2.03 mm) thick, 2024-T3 clad sheet
3	Doubler	1	0.090 in. (2.29 mm) thick, 2024-T3 clad sheet
4	Tripler	1	0.071 in. (1.80 mm) thick, 2024-T3 clad sheet

I. Assemble the repair parts.

J. Keep the pull-up clearance limit to a maximum of 0.01 in. (0.25 mm). Use a shim to fill all clearance that is more than 0.01 in. (0.25 mm) to a maximum of 0.03 in. (0.76 mm) before fastener installation.

K. Drill the fastener holes. Refer to 51-40-05, GENERAL and Figure 202/REPAIR 4 for the fastener locations, type and size.

NOTE: Do not drill fastener holes into a chem-milled radius. Blending of chem-milled area is not permitted.

L. Disassemble the repair parts.

M. Remove all nicks, scratches, burrs, and sharp edges from the repair parts and the bare surfaces of the initial parts.

N. Apply a chemical conversion coating to the repair parts and to the bare surfaces of the initial parts. Refer to 51-20-01, GENERAL.

O. Apply two layers of BMS 10-79, Type II or Type III primer to the repair parts and to the bare surfaces of the initial parts. Refer to SOPM 20-44-04.

P. Install countersink repair washers with BMS 5-95 sealant at the initial fastener locations. Refer to 51-40-08, GENERAL.

Q. Install the repair parts with BMS 5-95 sealant between the mating surfaces. Refer to 51-20-05, GENERAL.

R. Install the fasteners. Install all rivets without sealant and over-driven to a minimum 1.4D driven head. Refer to 51-40-02, GENERAL. Fasteners not made of aluminum must be installed wet with BMS 5-95 sealant. Refer to 51-40-02, GENERAL and 51-20-05, GENERAL.

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S. Apply a fillet seal and fill all gaps with BMS 5-95 sealant. Refer to 51-20-05, GENERAL.

T. Apply a decorative external finish. Refer to AMM SUBJECT 51-21-00.

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FASTENER SYMBOLS

- REFERENCE FASTENER LOCATION.
- INITIAL FASTENER LOCATION. INSTALL THE SAME TYPE AND DIAMETER FASTENER AS THE INITIAL FASTENER (UP TO 1/32-INCH DIAMETER OVERSIZE FOR RIVETS AND 1/64-INCH OVERSIZE FOR HEX-DRIVE BOLTS IS PERMITTED).
- INITIAL FASTENER LOCATION. INSTALL A BACR15CE6D RIVET OR BACR15GF6D RIVET.
- REPAIR FASTENER LOCATION. INSTALL A BACR15CE6D RIVET OR BACR15GF6D RIVET.

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Lightning Strike Skin Damage Repair at STA 294.50, Stringer 26
Figure 202

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5. **Inspection Requirements**

A. Do the inspections as given in Table 202/REPAIR 4 and Figure 203/REPAIR 4.

Table 202: Inspection Table

CATEGORY B REPAIR INSPECTION REQUIREMENTS			
	REPEAT INSPECTIONS		
INSPECTION THRESHOLD	METHOD	INTERVAL	REFERENCE
50,000 flight cycles after airplane delivery	External Low Frequency Eddy Current (LFEC)*[1]	12,000 flight cycles	737 NDT Part 6, 53-30-00, Procedure 5
	Detailed visual*[2]	12,000 flight cycles	

*[1] Do the External LFEC inspections of the skin at the outer row of fasteners common to the Part 3 Doubler. Refer to Figure 203/REPAIR 4.

*[2] Do a detailed visual inspection of the Part 3 Doubler for cracks and loose or missing fasteners.

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Inspection Requirements
Figure 203

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IDENTIFICATION 1 - SECTION 41 FUSELAGE STRINGERS

NOTE: REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

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Section 41 Stringer Location
Figure 1

Table 1:

REFERENCE DRAWINGS	
DRAWING NUMBER	**TITLE**
001A4001	Fuselage Product Collector
140A4100	Section 41 - Integration Functional Collector
141A0742	Integration Installation - Stringer 4, STA 259-360
141A8240	Chord Installation - Entry Door Panel
140A4104	Functional Collector, Left Side Panel - Section 41
141A3702	Skin Installation, Side Panel, Section 41
140A4105	Functional Collector - Lower Lobe - Section 41

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Table 1: (Continued)

REFERENCE DRAWINGS	
DRAWING NUMBER	**TITLE**
141A3502	Skin Installation - Lower Lobe - Section 41
140A4109	Functional Collector, Right Side Panel - Section 41
141A3702	Skin Installation - Side Panel - Section 41
140A4112	Entry Door Panel - Section 41 - Functional Collector
141A1360	Frame Installation - Carriage Track Support
141A3120	Stringer Installation - Entry Door Panel
141A8110	Sill Installation - Lower Main, Forward Entry Door
140A4113	Functional Collector, Section 41 - Galley Door Panel
141A3320	Stringer Detail and Installation - Galley Door Panel
141A8440	Chord Detail and Installation - Galley Door Panel
140A4114	Section 41 - Functional Collector - Crown
141A3910	Crown Panel Installation - Section 41

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NOTES

- STATION LOCATIONS SHOWN ARE APPROXIMATE.
- REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

RIGHT SIDE VIEW
STRINGERS S-1R TO S-29

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Section 41 Stringer Identification
Figure 2 (Sheet 1 of 2)

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LEFT SIDE VIEW
STRINGERS S-1L TO S-27L

F80609 S0006588136_V1

Section 41 Stringer Identification
Figure 2 (Sheet 2 of 2)

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Table 2:

LIST OF MATERIALS FOR FIGURE 2				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Stringer		BAC1498-150 7075-T62 sheet as given in QQ-A-250/12	
[2]	Stringer		BAC1498-152 7075-T62 sheet as given in QQ-A-250/12	
[3]	Stringer		BAC1498-153 7075-T62 sheet as given in QQ-A-250/12	
[4]	Stringer		BAC1498-155 7075-T62 sheet as given in QQ-A-250/12	
[5]	Stringer		BAC1498-156 7075-T62 sheet as given in QQ-A-250/12	
[6]	Stringer		BAC1498-157 7075-T62 sheet as given in QQ-A-250/12	
[7]	Stringer		BAC1498-159 7075-T62 sheet as given in QQ-A-250/12	
[8]	Stringer		BAC1498-160 7075-T62 sheet as given in QQ-A-250/12	
[9]	Stringer		BAC1498-161 7075-T62 sheet as given in QQ-A-250/12	
[10]	Stringer		BAC1498-165 7075-T62 sheet as given in QQ-A-250/12	
[11]	Stringer		AND10134-1205 7075-T62 extrusion as given in QQ-A-200/11	
[12]	Stringer		BAC1506-1794 7075-T62 extrusion as given in QQ-A-200/11	
[13]	Stringer, machine tapered	0.071 (1.8)	7075-T62 sheet as given in QQ-A-250/12	
[14]	Stringer		AND10141-1602 7075-T62 extrusion as given in QQ-A-200/11	
[15]	Stringer, machine tapered	0.040 (1.0)	7075-T62 sheet as given in QQ-A-250/12	
[16]	Stringer, machine tapered	0.045 (1.1)	7075-T62 sheet as given in QQ-A-250/12	
[17]	Stringer, machine tapered	0.063 (1.6)	7075-T62 sheet as given in QQ-A-250/12	
[18]	Stringer, machine tapered	0.056 (1.4)	7075-T62 sheet as given in QQ-A-250/12	
[19]	Stringer, machine tapered	0.080 (2.0)	7075-T62 sheet as given in QQ-A-250/12	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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Section 41 Stringer Allowable Damage
Figure 101

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REPAIR 1 - SECTION 41 STRINGERS

1. Applicability

A. Repair 1 is applicable to damage to the stringers in fuselage Section 41 shown in Section 41 Stringer Repairs, Figure 201/REPAIR 1.

F81256 S0006588146_V1

Section 41 Stringer Repairs
Figure 201

2. General

A. The typical repairs given in 51-70-11 or 51-70-12 can be used when applicable if:

(1) There is sufficient clearance with the adjacent structure for the installation of repair parts.

B. Refer to the limits of the typical repairs given in 51-70-11 or 51-70-12 before you start a repair.

3. References

Reference	Title
51-70-11	TYPICAL FORMED SECTION REPAIRS
51-70-11, REPAIR GENERAL	Typical Formed Section Repair
51-70-12	EXTRUDED SECTION REPAIRS
51-70-12, REPAIR GENERAL	Typical Extruded Section Repairs
53-00-03, REPAIR 1	Repair for a Type I, Type II, or Type IV Fuselage Stringer with General Damage
53-00-03, REPAIR 2	Repair for a Type I, II or IV Fuselage Stringer with Longitudinal Crack Damage in a Formed Corner of a Skin Attachment Flange
53-00-03, REPAIR 3	Repair for a Type III Fuselage Stringer With General Damage
53-00-03, REPAIR 4	Repair for a Type III Fuselage Stringer With Longitudinal Crack Damage in a Formed Corner of a Skin Attachment Flange
53-00-03, REPAIR GENERAL	Formed Fuselage Stringers

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(Continued)

Reference	Title
53-10-03	FUSELAGE STRINGERS - SECTION 41
53-10-03, IDENTIFICATION 1	Section 41 Fuselage Stringers

4. Repair Instructions

A. Refer to Table 201/REPAIR 1 to find the applicable repairs to the section 41 fuselage stringers.

NOTE: If necessary, refer to 53-10-03, Identification 1 to find the material and the process that was used to make the part which you want to repair.

Table 201:

REPAIR REFERENCES FOR THE SECTION 41 FUSELAGE STRINGERS		
STRINGER	**LOCATION**	**REPAIR**
S-24L, S-24R	STA 178 to STA 259	Refer to SRM 51-70-12
S-17L, S-17R,	STA 178 to STA 360	
S-4L	STA 259 to STA 360	
S-13R, S-19R,	STA 259 to STA 290	
S-13L	STA 259 to STA 311	
All Other Stringers	STA 259 to STA 360	Refer to SRM 53-00-03

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IDENTIFICATION 1 - SECTION 41 FUSELAGE INTERCOSTALS

NOTES

- REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

1 FLIGHT DECK EYEBROW WINDOWS ARE ONLY COMMON TO LINE NUMBERS 1 THROUGH 1649

2 FLIGHT DECK EYEBROW PLUGS FOR LINE NUMBERS 1 THROUGH 1649 WITH SB 737-56-1017

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Section 41 Fuselage Intercostals
Figure 1

Table 1:

REFERENCE DRAWINGS	
DRAWING NUMBER	**TITLE**
140A4111	Section 41 - Cab, Functional Collector
141A1835	Intercostals Installation - Cab Crown
141A1830	Intercostal Installation - STA 235.80, Cab
140A4100	Section 41 - Integration Functional Collector
141A0741	Integration Installation - STA 259-294, Crown
141A0650	Integration Installation - Lower Lobe, Section 41
141A1350	Intercostal Installation - Carriage Track Support

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Table 1: (Continued)

REFERENCE DRAWINGS	
DRAWING NUMBER	**TITLE**
140A4100	Section 41 - Integration Functional Collector
141A0640	Integration Installation - Side Panel, Section 41

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G70590 S0006588155_V1

Section 41 Fuselage Intercostal Location
Figure 2

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NOTE: REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

LEFT SIDE IS SHOWN, RIGHT SIDE IS OPPOSITE
(EXCEPT AS NOTED)

G69760 S0006588157_V1

Section 41 Cab Fuselage Intercostal Identification
Figure 3

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Table 2:

LIST OF MATERIALS FOR FIGURE 3				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Crown Intercostal		7050-T7451 plate as given in AMS 4050	
[2]	Crown Intercostal	0.040 (1.016)	2024-T42 clad sheet as given in QQ-A-250/5	
[3]	Crown Intercostal		7050-T7451 plate as given in BMS 7-323, Type I (Grain direction controlled part)	
[4]	Crown Intercostal	0.040 (1.016)	7075-T62 clad sheet as given in QQ-A-250/13	
[5]	Intercostal Assembly			
	Tee Chord		BAC1505-100588 7075-T73 extrusion as given in QQ-A-200/11	
	Intercostal (2)		BAC1496-442 7075-T62 clad sheet as given in QQ-A-250/13	
	Bracket	0.063 (1.600)	6013-T4 sheet as given in AMS 4347	
[6]	Crown Intercostal Assembly at BL 0			
	Web		2024-T42 clad sheet as given in QQ-A-250/5	
	Outer Chord		BAC1505-100361 7075-T73511 extrusion as given in QQ-A-200/11	
[7]	Crown Intercostal Assembly at LBL 11.0			
	Web		7075-T62 clad sheet as given in QQ-A-250/13	
	Clevis		7075-T7451 plate as given in AMS 4050	
	Backup Fitting		7050-T7451 plate as given in AMS 4050	
	Angle		2024-T42 clad sheet as given in QQ-A-250/5	
[8]	Crown Intercostal Assembly at RBL 11.0			
	Web		2024-T42 clad sheet as given in QQ-A-250/5	
	Channel		2024-T42 clad sheet as given in QQ-A-250/5	
[9]	Intercostal	0.071 (1.803)	7075-T62 clad sheet as given in QQ-A-250/13	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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NOTE: REFER TO TABLE 3 FOR THE LIST OF MATERIALS.

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Section 41 Left Side Lower Lobe Intercostal Identification
Figure 4

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Table 3:

LIST OF MATERIALS FOR FIGURE 4				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Intercostal	0.063 (1.600)	7075-T62 clad sheet as given in QQ-A-250/13	
[2]	Intercostal	0.040 (1.02)	2024-T42 clad sheet as given in QQ-A-250/5	
[3]	Intercostal		7050-T7451 plate as given in BMS 7-323, Type I (Grain direction controlled part)	
[4]	Intercostal	0.040 (1.016)	7075-T62 clad sheet as given in QQ-A-250/13	
[5]	Intercostal - Web		BAC1496-443 7075-T62 formed clad sheet as given in QQ-A-250/13	
[6]	Intercostal	0.040 (1.016)	7075-T62 clad sheet as given in QQ-A-250/13	
[7]	Intercostal Assembly			
	Web	0.120 (3.048)	7075-T62 clad sheet as given in QQ-A-250/13	
	Stiffener		BAC1514-3158 7075-T73511 extrusion as given in QQ-A-200/11	
	Chord		AND10133-1201 7075-T6511 extrusion as given in QQ-A-200/11	
	Strap	0.125 (3.175)	2024-T42 clad sheet as given in QQ-A-250/5	
[8]	Intercostal Assembly			
	Web		BAC1496-439 7075-T62 formed clad sheet as given in QQ-Q-250/13	
	Gusset	0.050 (1.270)	7075-T6 clad sheet as given in QQ-A-250/13	
[9]	Intercostal Assembly			
	Web		BAC1496-439 7075-T62 formed clad sheet as given in QQ-Q-250/13	
	Strap	0.050 (1.270)	7075-T6 clad sheet as given in QQ-A-250/13	
[10]	Intercostal Assembly			
	Web		BAC1496-439 7075-T62 formed clad sheet as given in QQ-Q-250/13	
	Strap	0.050 (1.270)	7075-T6 clad sheet as given in QQ-A-250/13	
	Gusset (2)	0.050 (1.270)	7075-T6 clad sheet as given in QQ-A-250/13	
[11]	Intercostal	0.040 (1.016)	7075-T62 clad sheet as given in QQ-A-250/13	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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NOTE: REFER TO TABLE 4 FOR THE LIST OF MATERIALS.

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Section 41 Right Side Lower Lobe Intercostal Identification
Figure 5

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Table 4:

LIST OF MATERIALS FOR FIGURE 5				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Intercostal Assembly			
	Intercostal	0.050 (1.270)	7075-T62 clad sheet as given in QQ-A-250/13	
	Stiffener		BAC1490-2619 7075-T62 clad sheet as given in QQ-A-250/13	
[2]	Intercostal - Web		BAC1496-443 7075-T62 formed clad sheet as given in QQ-A-250/13	
[3]	Intercostal - Channel		BAC1493-328 7075-T62 formed clad sheet as given in QQ-A-250/13	
[4]	Intercostal - Stiffener	0.063 (1.600)	7075-T62 clad sheet as given in QQ-A-250/13	
[5]	Intercostal Assembly			
	Web	0.050 (1.270)	7075-T6 clad sheet as given in QQ-A-250/13	
	Chord		AND10133-1201 7075-T6511 extrusion as given in QQ-A-200/11	
	Filler	0.190 (4.826)	7075-T73 bare sheet as given in QQ-A-250/12	
	Strap	0.125 (3.175)	7075-T6 clad sheet as given in QQ-A-250/13	
[6]	Intercostal Assembly			
	Web		BAC1496-442 7075-T62 formed clad sheet as given in QQ-Q-250/13	
	Gusset	0.050 (1.270)	7075-T6 clad sheet as given in QQ-A-250/13	
[7]	Intercostal Assembly			
	Web		BAC1496-439 7075-T62 clad sheet as given in QQ-Q-250/13	
	Strap		7075-T6 clad sheet as given in QQ-A-250/13	
[8]	Intercostal Assembly			
	Web		BAC1496-439 7075-T62 formed clad sheet as given in QQ-A-250/13	
	Strap	0.050 (1.270)	7075-T6 clad sheet as given in QQ-A-250/13	
	Gusset (2)	0.050 (1.270)	7075-T6 clad sheet as given in QQ-A-250/13	
[9]	Intercostal		7075-T7351 plate as given in QQ-A-250/12	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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NOTE:

1 FLIGHT DECK EYEBROW WINDOWS ARE ONLY COMMON TO LINE NUMBERS 1 THROUGH 1649

2 FLIGHT DECK EYEBROW PLUGS FOR LINE NUMBERS 1 THROUGH 1649 WITH SB 737-56-1017

F82355 S0006588165_V3

Section 41 Fuselage Intercostal Locations
Figure 101

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REPAIR 1 - SECTION 41 FUSELAGE INTERCOSTALS

1. Applicability

A. Repair 1 is applicable to damage to the fuselage intercostals as shown in Section 41 Fuselage Intercostals, Figure 201/REPAIR 1

NOTE:

1 FLIGHT DECK EYEBROW WINDOWS ARE ONLY COMMON TO LINE NUMBERS 1 THROUGH 1649

1 FLIGHT DECK EYEBROW PLUGS FOR LINE NUMBERS 1 THROUGH 1649 WITH SB 737-56-1017

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Section 41 Fuselage Intercostals
Figure 201

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G78642 S0006588171_V2

Section 41 Fuselage Intercostal Location
Figure 202

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NOTE: REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

LEFT SIDE IS SHOWN, RIGHT SIDE IS OPPOSITE (EXCEPT AS NOTED)

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Section 41 Cab Fuselage Intercostal Structure
Figure 203

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G78697 S0006588174_V1

Section 41 Left Side Lower Lobe Intercostal Structure
Figure 204

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G78707 S0006588175_V1

Section 41 Right Side Lower Lobe Intercostal Structure
Figure 205

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2. General

A. The typical repairs given in 51-70-11, 51-70-12, and 51-70-13 can be used when applicable if:

(1) There is sufficient clearance with the adjacent structure for the installation of the repair parts.

B. Refer to the limits of the typical repairs given in 51-70-11, 51-70-12, and 51-70-13 before you start a repair.

3. References

Reference	Title
51-70-11	TYPICAL FORMED SECTION REPAIRS
51-70-11, REPAIR GENERAL	Typical Formed Section Repair
51-70-12	EXTRUDED SECTION REPAIRS
51-70-12, REPAIR GENERAL	Typical Extruded Section Repairs
51-70-13	TYPICAL WEB REPAIRS
53-10-04	FUSELAGE INTERCOSTALS - SECTION 41
53-10-04, ALLOWABLE DAMAGE GENERAL	Section 41 Fuselage Intercostals
53-10-04, IDENTIFICATION 1	Section 41 Fuselage Intercostals

4. Repair Instructions

A. Refer to Table 201/REPAIR 1 and Figures 202, 203, and 204 to find the applicable repair for the part you want to repair.

NOTE: If necessary, refer to 53-10-04, Identification 1 to find the material and the process that was used to make the part which you want to repair.

Table 201:

REPAIR REFERENCES FOR THE FUSELAGE INTERCOSTALS	
TYPE OF COMPONENT	**REPAIR**
Formed parts	Refer to SRM 51-70-11
Extruded parts	Refer to SRM 51-70-12
Webs (Sheet)	Refer to SRM 51-70-13
Straps, Gussets, and Fillers	There are no repairs for these parts in the Structural Repair Manual at this time. If the damage to the structure is more than the limits given in SRM 53-00-04, Allowable Damage 1, replace the damaged part
Crown Intercostals (except at BL 0, LBL 11.0, and RBL 11.0)	There are no repairs for these parts in the Structural Repair Manual at this time.
Machined Parts	There are no repairs for these parts in the Structural Repair Manual at this time. If the damage to the structure is more than the limits given in SRM 53-00-04, Allowable Damage 1, replace the damaged part

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IDENTIFICATION 1 - SECTION 41 FUSELAGE FRAMES

NOTES

- REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

1 NUMBERS 4 AND 5 FLIGHT DECK EYEBROW WINDOWS ARE ONLY COMMON TO LINE NUMBERS 1 THRU 1649.

2 FLIGHT DECK EYEBROW PLUGS FOR LINE NUMBERS 1 THROUGH 1649 WITH SB 737-56-1017

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Section 41 Frame Locations
Figure 1

Table 1:

REFERENCE DRAWINGS	
DRAWING NUMBER	**TITLE**
001A4001	Fuselage Product Collector
140A4100	Section 41 - Integration Functional Collector
140A4104	Functional Collector - Left Side Panel, Section 41
140A4105	Functional Collector - Lower Lobe, Section 41
140A4108	Miscellaneous Functional Collector - Section 41
140A4109	Functional Collector Right Side Panel, Section 41
140A4111	Section 41 - Cab, Functional Collector

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Table 1: (Continued)

REFERENCE DRAWINGS	
DRAWING NUMBER	**TITLE**
140A4112	Entry Door Panel, Section 41, Functional Collector
140A4113	Section 41 Galley Door Panel
140A9100	Section 41/43 Integration Functional Collector
140A9111	Integration - Section 41/43, Upper
141A0720	Integration - Door Panels
141A1110	Frame Installation - Station 277.00
141A1120	Frame Installation - Station 294.50, Door Panel
141A1130	Frame Installation - Station 312.00
141A1140	Frame Installation - Station 328.00
141A1150	Frame Installation - Station 344.00
141A1160	Frame Installation - Station 360.00
141A1240	Stub Frame Installation - Airstair Cutout, Forward Entry Door
141A1350	Intercostal Installation - Carriage Track Support
141A1360	Frame Installation - Carriage Track Support
141A1501	Frame Installation - Station 188, Lower Lobe
141A1502	Frame Installation - Station 196.5, Lower Lobe
141A1551	Frame Installation - Station 268.25
141A1552	Frame Installation - Station 285.62
141A1561	Frame Installation - Lower Lobe, Station 312
141A1701	Frame Installation - Side Panel, Station 188
141A1702	Frame Installation - Side Panel, Station 196.5
141A1703	Frame Installation - Side Panel, Station 203.8
141A1704	Frame Installation - Side Panel, Station 211.80
141A1705	Frame Installation - Side Panel, Station 219.80
141A1706	Frame Installation - Side Panel, Station 235.8
141A1707	Frame Installation - Side Panel, Station 243.7
141A1708	Frame Installation - Side Panel, Station 251.6
141A1810	Frame Assembly, Station 259.50, Cab
141A1815	Frame Installation, Cab - Station 203.8
141A8140	Sill Installation - Lower Airstair
141A8141	Sill Installation - Upper Airstair
141A8150	Frame Installation - Station 303.9, Entry Door Panel
141A8160	Frame Installation - Station 348.2, Entry Door Panel
141A8170	Frame Installation - Station 351.2, Entry Door Panel
141A8190	Intercostal Installation - Aft Doorstops, Entry Door Panel
141A8220	Reveals, Entry Door Panel
141A8350	Forward Edge Frame Assembly and Installation - Galley Door Panel
141A8360	Aft Edge Frame Installation - Galley Door Panel

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Table 1: (Continued)

REFERENCE DRAWINGS	
DRAWING NUMBER	**TITLE**
141A8363	Aft Door Frame D, Assembly and Installation - Galley Door Panel
141A8370	Stub Frame Assembly and Installation - Galley Door Panel

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LEFT SIDE IS SHOWN, RIGHT SIDE IS OPPOSITE

NOTES

- REFER TO TABLE 2 FOR THE LIST OF MATERIALS.
- REFER TO DETAILS A THRU Q FOR THE TYPICAL SECTION CUTS.

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Section 41 Cab Frame Identification
Figure 2 (Sheet 1 of 5)

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G29402 S0006588184_V1

Section 41 Cab Frame Identification
Figure 2 (Sheet 2 of 5)

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TYPICAL SECTION THROUGH
A FRAME FOR ITEM [8]

E

TYPICAL SECTION THROUGH
A FRAME FOR ITEM [10]

F

TYPICAL SECTION THROUGH
A FRAME FOR ITEM [12]

G

TYPICAL SECTION THROUGH
A FRAME FOR ITEM [13] INBOARD

H

TYPICAL SECTION THROUGH
A FRAME FOR ITEM [14] OUTBOARD

I

TYPICAL SECTION THROUGH
A FRAME FOR ITEM [15]

J

G28634 S0006588185_V1

Section 41 Cab Frame Identification
Figure 2 (Sheet 3 of 5)

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TYPICAL SECTION THROUGH
A FRAME FOR ITEM [16]

K

TYPICAL SECTION THROUGH
A FRAME FOR ITEM [17]

L

TYPICAL SECTION THROUGH
A FRAME FOR ITEM [18]

M

TYPICAL SECTION THROUGH
A FRAME FOR ITEM [19]

N

G29533 S0006588186_V1

Section 41 Cab Frame Identification
Figure 2 (Sheet 4 of 5)

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TYPICAL SECTION THROUGH
A FRAME FOR ITEM [20]

O

TYPICAL SECTION THROUGH
A FRAME FOR ITEM [21]

P

TYPICAL SECTION THROUGH
A FRAME FOR ITEM [22]

Q

G29799 S0006588187_V1

Section 41 Cab Frame Identification
Figure 2 (Sheet 5 of 5)

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Table 2:

LIST OF MATERIALS FOR FIGURE 2				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Frame Assembly			
	Web (Left and Right)	0.080 (2.03)	7075-T6 clad sheet as given in QQ-A-250/13. Refer to the production drawings for the chem-milled thicknesses	
	Doubler	0.050 (1.27)	7075-T6 clad sheet as given in QQ-A-250/13	
	Upper Outer Chord		BAC1506-1743 2024-T42 extrusion as given in QQ-A-200/3	
	Lower Outer Chord (Left and Right)		BAC1506-1743 2024-T42 extrusion as given in QQ-A-200/3	
	Inner Chord		BAC1505-100542 2024-T42 extrusion as given in QQ-A-200/3	
[2]	Splice Plate	0.050 (1.27)	7075-T6 clad sheet as given QQ-A-250/13	
[3]	Aft Splice	0.080 (2.03)	2024-T42 clad sheet as given in QQ-A-250/5	
[4]	Frame Assembly			
	Outer Chord		BAC1514-2812 7075-T73511 extrusion as given in QQ-A-200/11	
	Inner Chord		AND10134-1407 7075-T6511 extrusion as given in QQ-A-200/11	
	Web	0.100 (2.54)	7075-T6 clad sheet as given in QQ-A-200/13	
[5]	Frame, Machined		7075-T73 die forging as given in BMS 7-186. Refer to the production drawings for the machined thicknesses	
[6]	Frame, Machined		Ti-6Al-4V titanium die forging as given in BMS 7-247. Refer to the production drawings for the machined thicknesses	
[7]	Frame, A-J		7050-T7451 plate as given in BMS 7-323. (Grain Direction controlled part)	
[8]	Frame, W-X		7050-T7451 plate as given in AMS 4050. (Grain Direction controlled part)	
[9]	Splice Strap	0.250 (6.35)	7075-T7351 plate as given in QQ-A-250/12	
[10]	Frame, M-X		7050-T7451 plate as given in AMS 4050. (Grain Direction controlled part)	
[11]	Splice Strap	0.150 (3.81)	7075-T7351 plate as given in QQ-A-250/12	
[12]	Frame Assembly, N-J			
	Outer Chord		7050-T7451 plate as given in BMS 7-323, Type 1. (Grain direction controlled part)	
	Inner Chord		7050-T7451 plate as given in BMS 7-323, Type 1. (Grain direction controlled part)	
[13]	Frame		7075-T73 precision forging as given in BMS 7-186	
[14]	Frame Support	0.080 (2.03)	2024-T42 clad sheet as given in QQ-A-250/5	
[15]	Frame Assembly			

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Table 2: (Continued)

LIST OF MATERIALS FOR FIGURE 2				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
	Web	0.071 (1.8)	7075-T6 clad sheet as given in QQ-A-250/13. Refer to the production drawings for the chem-milled thicknesses	
	Inner Chord, Lower		BAC1503-2729 2024-T42 extrusion as given in QQ-A-200/3	
	Inner Chord, Upper		AND10134-1206 2024-T42 extrusion as given in QQ-A-200/3	
	Outer Chord		BAC1506-4250 2024-T42 extrusion as given in QQ-A-200/3	
[16]	Frame Assembly			
	Outer Chord		BAC1506-1308 2024-T42 extrusion as given in QQ-A-200/3	
	Inner Chord		AND10134-1204 7075-T62 extrusion as given in QQ-A-200/11	
	Web	0.040 (1.02)	7075-T6 clad sheet as given in QQ-A-250/13. Refer to the production drawings for the chem-milled thicknesses	
[17]	Frame Assembly			
	Web	0.045 (1.14)	7075-T6 clad sheet as given in QQ-A-250/13. Refer to the production drawings for the chem-milled thicknesses	
	Outer Chord		BAC1506-916 2024-T42 extrusion as given in QQ-A-200/3	
	Inner Chord		BAC1514-329 7050-T7451 plate as given in AMS 4050. (Optional: 7075-T73 extrusion as given in QQ-A-200/11)	
[18]	Frame Assembly			
	Web	0.050 (1.27)	7075-T6 clad sheet as given in QQ-A-250/13. Refer to the production drawings for the chem-milled thicknesses	
	Outer Chord		BAC1506-1565 2024-T42 extrusion as given in QQ-A-200/3	
	Inner Chord		BAC1503-100228 7075-T62 extrusion as given in QQ-A-200/11	
[19]	Frame Assembly			
	Web	0.050 (1.27)	7075-T6 clad sheet as given in QQ-A-250/13. Refer to the production drawings for the chem-milled thicknesses	
	Outer Chord		BAC1506-1565 2024-T42 extrusion as given in QQ-A-200/3	
	Inner Chord		BAC1514-1244 7075-T73 extrusion as given in QQ-A-200/11	
[20]	Frame Assembly			
	Web	0.063 (1.6)	2024-T3 clad sheet as given in QQ-A-250/5. Refer to the production drawings for the chem-milled thicknesses	

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Table 2: (Continued)

LIST OF MATERIALS FOR FIGURE 2				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
	Outer Chord		BAC1506-3359 2024-T42 extrusion as given in QQ-A-200/3	
	Inner Chord (Left Side)		AND10133-1001 2024-T42 extrusion as given in QQ-A-200/3	
	Inner Chord (Right Side)		BAC1503-100179 2024-T42 extrusion as given in QQ-A-200/3	
[21]	Frame Assembly			
	Web	0.050 (1.27)	2024-T3 clad sheet as given in QQ-A-250/5. Refer to the production drawings for the chem-milled thicknesses	
	Outer Chord		BAC1506-2354 2024-T42 extrusion as given in QQ-A-200/3	
	Inner Chord		BAC1503-100018 2024-T42 extrusion as given in QQ-A-200/3	
[22]	Frame Assembly			
	Web	0.045 (1.14)	2024-T3 clad sheet as given in QQ-A-250/5. Refer to the production drawings for the chem-milled thicknesses	
	Outer Chord		BAC1506-4377 2024-T42 extrusion as given in QQ-A-200/3	
	Inner Chord		BAC1514-2819 2024-T42 extrusion as given in QQ-A-200/3	
[23]	Fitting Assembly			
	Tee Fitting		BAC1505-101085 7075-T73511 extrusion as given in QQ-A-200/11	
	Strap (4)		BAC1512-3377 7075-T73511 extrusion as given in QQ-A-200/11	
	Nose Fitting (2)		Precision forging 7050-T74 as given in BMS 7-214	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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NOTES:

- REFER TO TABLE 3 FOR THE LIST OF MATERIALS.
- REFER TO DETAILS A THRU E FOR TYPICAL SECTION CUTS.

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Entry Door Panel Frame Identification
Figure 3 (Sheet 1 of 2)

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Entry Door Panel Frame Identification
Figure 3 (Sheet 2 of 2)

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Table 3:

LIST OF MATERIALS FOR FIGURE 3				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Frame Assembly (S-2L to S-14L)			
	Splice	0.080 (2.03)	7075-T6 clad sheet as given in QQ-A-250/13	
	Frame		BAC1517-705 7075-T62 clad sheet as given in QQ-A-250/13	
	Splice		BAC1493-512 2024-T3 clad sheet as given in QQ-A-250/5	
[2]	Frame Assembly (S-14L to S-24L)			
	Failsafe Chord		BAC1490-2804 7075-T62 clad sheet as given in QQ-A-250/13	
	Web	0.040 (1.02)	7075-T6 clad sheet as given in QQ-A-250/13	
	Inner Chord		BAC1503-5828 7075-T73 extrusion as given in QQ-A-200/11	
[3]	Frame Assembly (S-2L to S-14L)			
	Frame		BAC1517-705 7075-T62 clad sheet as given in QQ-A-250/13	
[4]	Frame Assembly (S-14L to S-25L)			
	Fitting		7050-T7451 plate as given in BMS 7-323, Type I. (Grain direction controlled part)	
	Failsafe Chord		BAC1514-3229 7075-T73 extrusion as given in QQ-A-200/11	
	Web	0.125 (3.18)	7075-T6 clad sheet as given in QQ-A-250/13. Refer to the production drawings for the chem-milled thicknesses	
	Inner Chord		BAC1505-101418 7075-T73 extrusion as given in QQ-A-200/11	
[5]	Frame Assembly			
	Upper Chord		BAC1517-705 7075-T62 clad sheet as given in QQ-A-250/13	
[6]	Frame Assembly			
	Web		BAC1517-705 7075-T62 clad sheet as given in QQ-A-250/13	
[7]	Frame Assembly			
	Frame		BAC1517-705 7075-T62 clad sheet as given in QQ-A-250/13	
[8]	Frame Assembly			
	Doubler (2)	0.050 (1.27)	7075-T62 clad sheet as given in QQ-A-250/13	
	Web (2)	0.050 (1.27)	7075-T62 clad sheet as given in QQ-A-250/13	
	Splice	0.050 (1.27)	7075-T62 clad sheet as given in QQ-A-250/13	
	Failsafe Chord		BAC1490-2568 7075-T62 sheet as given in QQ-A-250/12	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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LEFT SIDE IS SHOWN, RIGHT SIDE IS OPPOSITE

NOTES

- REFER TO TABLE 4 FOR THE LIST OF MATERIALS.
- REFER TO DETAILS A THRU G FOR TYPICAL SECTION CUTS.

G28962 S0006588196_V1

Forward Lower Lobe Frame Identification
Figure 4 (Sheet 1 of 3)

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TYPICAL SECTION THROUGH
A FRAME FOR ITEM [1]

A

TYPICAL SECTION THROUGH
A FRAME FOR ITEM [2]

B

TYPICAL SECTION THROUGH
A FRAME FOR ITEM [3]

C

TYPICAL SECTION THROUGH
A FRAME FOR ITEM [4]

D

G29899 S0006588197_V1

Forward Lower Lobe Frame Identification
Figure 4 (Sheet 2 of 3)

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TYPICAL SECTION THROUGH
A FRAME FOR ITEM [5]

E

TYPICAL SECTION THROUGH
A FRAME FOR ITEM [6]

F

TYPICAL SECTION THROUGH
A FRAME FOR ITEM [7]

G

G29927 S0006588198_V1

Forward Lower Lobe Frame Identification
Figure 4 (Sheet 3 of 3)

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Table 4:

LIST OF MATERIALS FOR FIGURE 4				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Frame Assembly			
	Web	0.020 (0.51)	7075-T6 clad sheet as given in QQ-A-250/13	
	Inner Chord		BAC1503-2729 2024-T42 extrusion as given in QQ-A-200/3	
	Outer Chord		BAC1489-92 7075-T62 clad sheet as given in QQ-A-250/13	
[2]	Frame Assembly			
	Web	0.020 (0.51)	7075-T6 clad sheet as given in QQ-A-250/13	
	Outer Chord		BAC1489-172 2024-T42 clad sheet as given in QQ-A-250/5	
	Inner Chord		BAC1503-2729 2024-T42 extrusion as given in QQ-A-200/3	
[3]	Frame Assembly			
	Web	0.045 (1.14)	2024-T3 clad sheet as given in QQ-A-250/5. Refer to the production drawings for the chem-milled thicknesses	
	Inner Chord		BAC1514-2819 2024-T42 extrusion as given in QQ-A-200/3	
	Outer Chord		BAC1506-4377 2024-T42 extrusion as given in QQ-A-200/3	
[4]	Frame Assembly			
	Web	0.050 (1.27)	7075-T6 clad sheet as given in QQ-A-250/13. Refer to the production drawings for the chem-milled thicknesses	
	Inner Chord		BAC1503-100228 7075-T62 extrusion as given in QQ-A-200/11	
	Outer Chord		BAC1506-1565 2024-T42 extrusion as given in QQ-A-200/3	
[5]	Frame Assembly			
	Web	0.032 (0.81)	7075-T6 clad sheet as given in QQ-A-250/13. Refer to the production drawings for the chem-milled thicknesses	
	Inner Chord		BAC1505-100274 7075-T62 extrusion as given in QQ-A-200/11	
	Outer Chord		BAC1506-1989 2024-T42 extrusion as given in QQ-A-200/3	
[6]	Frame Assembly			
	Web	0.063 (1.6)	2024-T3 clad sheet as given in QQ-A-250/5. Refer to the production drawings for the chem-milled thicknesses	
	Inner Chord (Left Side)		AND10133-1001 2024-T42 extrusion as given in QQ-A-200/3	
	Inner Chord (Right Side)		BAC1503-100179 2024-T42 extrusion as given in QQ-A-200/3	

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Table 4: (Continued)

LIST OF MATERIALS FOR FIGURE 4				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
	Outer Chord		BAC1506-3359 2024-T42 extrusion as given in QQ-A-200/3	
[7]	Frame Assembly			
	Web	0.050 (1.27)	2024-T3 clad sheet as given in QQ-A-250/5. Refer to the production drawings for the chem-milled thicknesses	
	Inner Chord		BAC1503-100018 2024-T42 extrusion as given in QQ-A-200/3	
	Outer Chord		BAC1506-2354 2024-T42 extrusion as given in QQ-A-200/3	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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NOTES:

- REFER TO TABLE 5 FOR THE LIST OF MATERIALS.
- REFER TO DETAILS A THRU C FOR TYPICAL SECTION CUTS.

G28991 S0006588200_V1

Aft Lower Lobe Left Side Frame Identification
Figure 5 (Sheet 1 of 2)

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TYPICAL SECTION THROUGH
A FRAME FOR ITEM [1]
A

TYPICAL SECTION THROUGH
A FRAME FOR ITEM [2]
B

TYPICAL SECTION THROUGH
A FRAME FOR ITEM [3]
C

G32931 S0006588202_V1

Aft Lower Lobe Left Side Frame Identification
Figure 5 (Sheet 2 of 2)

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Table 5:

LIST OF MATERIALS FOR FIGURE 5				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Frame Assembly			
	Web	0.040 (1.02)	7075-T6 clad sheet as given in QQ-A-250/13	
	Inner Chord		BAC1503-5828 7075-T73 extrusion as given in QQ-A-200/11	
	Failsafe Chord		BAC1490-2804 7075-T62 clad sheet as given in QQ-A-250/13	
[2]	Frame Assembly			
	Web	0.040 (1.02)	7075-T62 clad sheet as given in QQ-A-250/13	
	Failsafe Chord		BAC1490-2818 7075-T62 clad sheet as given in QQ-A-250/13	
[3]	Frame Assembly			
	Doubler (2)	0.050 (1.27)	7075-T62 clad sheet as given in QQ-A-250/13	
	Web (2)	0.050 (1.27)	7075-T62 clad sheet as given in QQ-A-250/13	
	Failsafe Chord		BAC1490-2568 7075-T62 clad sheet as given in QQ-A-250/12	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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NOTES:

- REFER TO TABLE 6 FOR THE LIST OF MATERIALS.
- REFER TO DETAILS A AND H FOR TYPICAL SECTION CUTS.

G29179 S0006588205_V1

Galley Door Panel Frame Identification
Figure 6 (Sheet 1 of 3)

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TYPICAL FRAME SPLICE
BETWEEN STRINGERS S-4R
AND S-5R FOR ITEM [3]

A

TYPICAL SECTION THROUGH A
FRAME SPLICE FOR ITEM [3]

B

G32945 S0006588207_V1

Galley Door Panel Frame Identification
Figure 6 (Sheet 2 of 3)

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TYPICAL SECTION THROUGH A FRAME SPLICE FOR ITEM [1]

C

TYPICAL SECTION THROUGH A FRAME SPLICE FOR ITEM [2]

D

TYPICAL SECTION THROUGH A FRAME SPLICE FOR ITEM [3]

E

TYPICAL SECTION THROUGH A FRAME SPLICE FOR ITEM [4]

F

TYPICAL SECTION THROUGH A FRAME SPLICE FOR ITEM [6]

G

TYPICAL SECTION THROUGH A FRAME SPLICE FOR ITEM [7]

H

G33061 S0006588209_V1

Galley Door Panel Frame Identification
Figure 6 (Sheet 3 of 3)

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Table 6:

LIST OF MATERIALS FOR FIGURE 6				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Frame Assembly			
	Frame		BAC1517-705 7075-T62 clad sheet as given in QQ-A-250/13	
[2]	Frame Assembly			
	Doubler (2)	0.050 (1.27)	7075-T62 clad sheet as given in QQ-A-250/13	
	Web (2)	0.050 (1.27)	7075-T62 clad sheet as given in QQ-A-250/13	
	Failsafe Chord		BAC1490-2568 7075-T62 clad sheet as given in QQ-A-250/12	
[3]	Frame Assembly			
	Web	0.050 (1.27)	7075-T62 clad sheet as given in QQ-A-250/13	
	Failsafe Chord		BAC1489-97 7075-T62 clad sheet as given in QQ-A-250/13	
	Splice	0.056 (1.42)	7075-T62 clad sheet as given in QQ-A-250/13	
	Splice	0.045 (1.14)	7075-T62 clad sheet as given in QQ-A-250/13	
[4]	Frame Assembly			
	Doubler	0.050 (1.27)	7075-T6 clad sheet as given in QQ-A-250/13	
	Failsafe Chord		BAC1489-376 7075-T62 clad sheet as given in QQ-A-250/13	
	Web	0.050 (1.27)	7075-T62 clad sheet as given in QQ-A-250/13	
	Inner Chord		BAC1503-100144 2024-T42 extrusion as given in QQ-A-200/3	
[5]	Frame Assembly			
	Upper Chord		BAC1517-705 7075-T62 clad sheet as given in QQ-A-250/13	
[6]	Frame			
	Web		BAC1517-705 7075-T62 clad sheet as given in QQ-A-250/13	
[7]	Frame Assembly			
	Failsafe chord		BAC1490-2844 7075-T62 clad sheet as given in QQ-A-250/13	
	Web	0.050 (1.27)	7075-T6 clad sheet as given in QQ-A-250/13	
	Inner Chord		BAC1503-5828 7075-T73 extrusion as given in QQ-A-200/11	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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NOTES

- REFER TO TABLE 7 FOR THE LIST OF MATERIALS.
- REFER TO DETAILS A THRU G FOR TYPICAL SECTION CUTS.

G29246 S0006588211_V1

Aft Lower Lobe Right Side Frame Identification
Figure 7 (Sheet 1 of 3)

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TYPICAL FRAME SPLICE
BETWEEN STRINGER S-25R AND
S-26R FOR ITEM [1]

A

TYPICAL SECTION THROUGH
A FRAME SPLICE FOR ITEM [1]

A-A

TYPICAL SECTION THROUGH
A FRAME FOR ITEM [1]

B

TYPICAL SECTION THROUGH
A FRAME FOR ITEM [2]

C

G34462 S0006588212_V1

Aft Lower Lobe Right Side Frame Identification
Figure 7 (Sheet 2 of 3)

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TYPICAL SECTION THROUGH
A FRAME FOR ITEM [3]

D

TYPICAL SECTION THROUGH
A FRAME FOR ITEM [4]

E

TYPICAL SECTION THROUGH
A FRAME FOR ITEM [5]

F

TYPICAL SECTION THROUGH
A FRAME FOR ITEM [6]

G

G34533 S0006588213_V1

Aft Lower Lobe Right Side Frame Identification
Figure 7 (Sheet 3 of 3)

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Table 7:

LIST OF MATERIALS FOR FIGURE 7				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Frame Assembly			
	Doubler (2)	0.050 (1.27)	7075-T62 clad sheet as given in QQ-A-250/13	
	Web (2)	0.050 (1.27)	7075-T62 clad sheet as given in QQ-A-250/13	
	Failsafe Chord		BAC1490-2568 7075-T62 clad sheet as given in QQ-A-250/12	
	Splice	0.050 (1.27)	7075-T62 clad sheet as given in QQ-A-250/13	
[2]	Frame Assembly			
	Failsafe Chord		BAC1489-97 7075-T62 clad sheet as given in QQ-A-250/13	
	Failsafe Chord		BAC1489-376 7075-T62 clad sheet as given in QQ-A-250/13	
	Web	0.050 (1.27)	7075-T62 clad sheet as given in QQ-A-250/13	
[3]	Frame Assembly			
	Failsafe Chord		BAC1489-376 7075-T62 clad sheet as given in QQ-A-250/13	
	Doubler	0.050 (1.27)	7075-T6 clad sheet as given in QQ-A-250/13	
	Web	0.050 (1.27)	7075-T62 clad sheet as given in QQ-A-250/13	
	Inner Chord		BAC1503-100144 2024-T42 extrusion as given in QQ-A-200/3	
[4]	Frame Assembly			
	Web	0.050 (1.27)	7075-T62 clad sheet as given in QQ-A-250/13	
	Failsafe Chord		BAC1490-2551 7075-T62 clad sheet as given in QQ-A-250/13	
	Tee		BAC1505-101147 7075-T73511 extrusion as given in QQ-A-200/11.	
	Web	0.063 (1.6)	7075-T6 clad sheet as given in QQ-A-250/13.	
	Inner Chord		BAC1503-100607 7075-T62 extrusion as given in QQ-A-200/11	
[5]	Frame Assembly			
	Failsafe Chord		BAC1490-2780 7075-T62 clad sheet as given in QQ-A-250/13	
	Web	0.050 (1.27)	7075-T62 clad sheet as given in QQ-A-250/13	
	Inner Chord		AND10134-1204 7075-T62 extrusion as given in QQ-A-200/11	
[6]	Frame Assembly			
	Failsafe Chord		BAC1490-2844 7075-T62 clad sheet as given in QQ-A-250/13	
	Web	0.050 (1.27)	7075-T6 clad sheet as given in QQ-A-250/13	
	Inner Chord		BAC1503-5828 7075-T73 extrusion	
[7]	Frame Assembly			

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Table 7: (Continued)

LIST OF MATERIALS FOR FIGURE 7				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
	Doubler	0.040 (1.02)	7075-T6 clad sheet as given in QQ-A-250/13	
	Doubler	0.140 (3.56)	7075-T6 clad sheet as given in QQ-A-250/13	
	Failsafe Chord		BAC1514-850 7075-T62 extrusion	
	Web	0.100 (2.54)	7075-T6 clad sheet as given in QQ-A-250/13. Refer to the production drawings for the chem-milled thicknesses	
	Inner Chord		BAC1505-101418 7075-T73 extrusion as given in QQ-A-200/11	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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NOTES

1. NUMBERS 4 AND 5 FLIGHT DECK EYEBROW WINDOWS ARE ONLY COMMON TO LINE NUMBERS 1 THRU 1649
2. FLIGHT DECK EYEBROW PLUGS FOR LINE NUMBERS 1 THROUGH 1649 WITH SB 737-56-1017

F55287 S0006588217_V4

Section 41 Fuselage Frame Location
Figure 101

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REFER TO SRM 53-00-07 FOR THE
REPAIRS THAT ARE APPLICABLE TO
THE FUSELAGE FRAMES IN SECTION 41

NOTES

1 NUMBERS 4 AND 5 FLIGHT DECK EYEBROW WINDOWS ARE ONLY COMMON TO LINE NUMBERS 1 THRU 1649

2 FLIGHT DECK EYEBROW PLUGS FOR LINE NUMBERS 1 THROUGH 1649 WITH SB 737-56-1017

F55289 S0006588221_V3

Section 41 Fuselage Frame Location
Figure 201

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IDENTIFICATION GENERAL - SECTION 41 BULKHEADS

NOTES

1 NUMBERS 4 AND 5 FLIGHT DECK EYEBROW WINDOWS ARE ONLY COMMON TO LINE NUMBERS 1 THRU 1649

2 FLIGHT DECK EYEBROW PLUGS FOR LINE NUMBERS 1 THROUGH 1649 WITH SB 737-56-1017

G48845 S0006588226_V3

Section 41 Bulkhead Location
Figure 1

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IDENTIFICATION 1 - STATION 178 FORWARD PRESSURE BULKHEAD

NOTE: REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

F83483 S0006588228_V1

Section 41 Bulkhead Location
Figure 1

Table 1:

REFERENCE DRAWINGS	
DRAWING NUMBER	**TITLE**
140A4102	Station 178 Bulkhead Functional Collector
141A2100	Bulkhead Installation - Station 178
141A2171	Chord - Pressure Bulkhead, STA 178
141A2172	Web - Pressure Bulkhead, STA 178
141A2174	Details - Pressure Bulkhead, STA 178
141A2175	Details - Pressure Bulkhead, STA 178
141A2182	Details - Pressure Bulkhead, STA 178

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NOTES

- REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

1 REFER TO THE LIST OF MATERIALS FOR THE WEB THICKNESS.

2466930 S0000574810_V1

Station 178 Bulkhead Identification
Figure 2 (Sheet 1 of 2)

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2467087 S0000574824_V1

Station 178 Bulkhead Identification
Figure 2 (Sheet 2 of 2)

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Table 2:

LIST OF MATERIALS FOR FIGURE 2				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Beam, Vertical		7050-T7451 plate	
[2]	Web	0.190 (4.83)	2024-T3 sheet as given in QQ-A-250/4. Refer to Figure 4 for the thicknesses of the chem-milled areas	For Line Number 21 to 273
[3]	Stiffener		BAC1506-1885 2024-T3511 extrusion as given in QQ-A-200/3	
[4]	Channel		7050-T7451 plate as given in AMS 4050	
[5]	Intercostal		7050-T7451 plate as given in AMS 4050	
[6]	Stiffener		7050-T7451 plate as given in AMS 4050	
[7]	Chord		7075-T73 aluminum precision forging	For Line Number 1 to 5540
			7050-T7451 plate	For Line Number 5541 and on
[8]	Intercostal Web	0.025 (0.64)	Clad 7075-T6 sheet as given in QQ-A-250/13	
[9]	Splice		BAC1514-3063 7075-T73511 extrusion as given in QQ-A-200/11	
[10]	Doubler	0.040 (1.02)	Clad 2024-T3 sheet as given in QQ-A-250/5	
[11]	Web	0.250 (6.35)	2024-T351 plate as given in QQ-A-250/4. Refer to Figure 3 for the thicknesses of the chem-milled areas	For Line Number 1 to 20
[12]	Web	0.190 (4.83)	Clad 2024-T3 sheet as given in QQ-A-250/5. Refer to Figure 4 for the thicknesses of the chem-milled areas	For Line Number 274 and on

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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NOTE: ALL DIMENSIONS ARE IN INCHES.

VIEW LOOKING AFT

F85839 S0006588235_V2

Chem-Milled Areas for Figure 2, Item [11]
Figure 3

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NOTE: ALL DIMENSIONS ARE IN INCHES.

VIEW LOOKING AFT

2472796 S0000579669_V1

Chem-Milled Areas for Figure 2, Items [2] and [12]
Figure 4

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IDENTIFICATION 2 - STATION 227.8 NOSE WHEEL WELL FORWARD BULKHEAD

NOTES

- REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

1 NUMBERS 4 AND 5 FLIGHT DECK EYEBROW WINDOWS ARE ONLY COMMON TO LINE NUMBERS 1 THRU 1649

2 FLIGHT DECK EYEBROW PLUGS FOR LINE NUMBERS 1 THROUGH 1649 WITH SB 737-56-1017

G49765 S0006588238_V3

Section 41 Nose Wheel Well Bulkhead Location
Figure 1

Table 1:

REFERENCE DRAWINGS	
DRAWING NUMBER	**TITLE**
001A4001	Fuselage Product Collector
140A4101	Nose Wheel Well - Functional Collector
141A7410	Forward Bulkhead Inst - Nose Wheel Well
141A7411	Sheet Metal Details - FWD Bulkhead, Nose Wheel Well
141A7413	Web, NWW Forward Bulkhead
141A7414	Stiffener Details - FWD Bulkhead, Nose Wheel Well
141A7415	Chords - FWD Bulkhead, Nose Wheel Well

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NOTES

- REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

G53893 S0006588240_V1

Station 227.80 Bulkhead Identification
Figure 2 (Sheet 1 of 2)

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G52784 S0006588241_V1

Station 227.80 Bulkhead Identification
Figure 2 (Sheet 2 of 2)

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Table 2:

LIST OF MATERIALS FOR FIGURE 2				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Chord, Outer		BAC 1514-4272 7075-T73 extrusion as given in QQ-A-200/11	
[2]	Web	0.112 (2.844)	2024-T3 clad sheet as given in QQ-A-250/5. Refer to Figure 3 for chem-milled areas	
[3]	Chord, Inner		BAC 1514-2848 7075-T73 extrusion as given in QQ-A-200/11	
[4]	Angle		BAC1503-101035 7075-T73511 extrusion as given in QQ-A-200/11	
[5]	Stiffener		BAC1514-3017 7075-T73511 extrusion as given in QQ-A-200/11	
[6]	Stiffener		BAC1503-100413 7075-T6511 extrusion as given in QQ-A-200/11	
[7]	Chord		BAC1506-1532 2024-T42 extrusion as given in QQ-A-200/3	
[8]	Angle		BAC1503-101033 2024-T35111 extrusion as given in QQ-A-200/11. (Optional extrusion: AND10133-2004 as given in QQ-A-200/11)	
[9]	Tee		BAC1505-101668 7075-T73511 extrusion as given in QQ-A-200/11	
[10]	Stiffener		BAC1514-3017 7075-T73511 extrusion as given in QQ-A-200/11	
[11]	Angle		BAC1503-101034 7075-T73511 extrusion as given in QQ-A-200/11	
[12]	Stiffener		BAC1505-100164 7075-T6511 extrusion as given in QQ-A-200/11	
[13]	Stiffener		BAC1506-2079 7075-T6511 extrusion as given in QQ-A-200/11	
[14]	Stiffener		AND10137-2201 7075-T6511 extrusion as given in QQ-A-200/11	
[15]	Angle		BAC1503-2842 7075-T6511 extrusion as given in QQ-A-200/11	
[16]	Intercostal		BAC1505-100886 7075-T6511 extrusion as given in QQ-A-200/11	
[17]	Stiffener		BAC1503-101031 7075-T73511 extrusion as given in QQ-A-200/11	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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NOTE: ALL DIMENSIONS ARE IN INCHES.

G53916 S0006588243_V1

Chem-Milled Areas for Figure 2, Item 2
Figure 3

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IDENTIFICATION 3 - STATION 259.50 BULKHEAD STRUCTURE

NOTE: REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

K25937 S0006588245_V1

Station 259.5 Bulkhead Structure Location
Figure 1

Table 1:

REFERENCE DRAWINGS	
DRAWING NUMBER	**TITLE**
001A4001	Fuselage Product Collector
140A4101	Nose Wheel Well Functional Collector
140A4111	Section 41 Cabin, Functional Collector
141A1810	Frame Installation - STA 259.50, Cabin
141A7430	MID Bulkhead Installation - Nose Wheel Well
141A7431	Details - BHD STA 259.50, Nose Wheel Well
141A7433	Web - Nose Wheel Well MID Bulkhead

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Table 1: (Continued)

REFERENCE DRAWINGS	
DRAWING NUMBER	**TITLE**
141A7434	Stiffener Details - MID Bulkhead - Nose Wheel Well
141A7435	Details - MID Bulkhead - Nose Wheel Well

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NOTES

- REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

G54593 S0006588247_V2

Station 259.50 Bulkhead Identification
Figure 2 (Sheet 1 of 2)

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NOTES

- REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

G54382 S0006588248_V2

Station 259.50 Bulkhead Identification
Figure 2 (Sheet 2 of 2)

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Table 2:

LIST OF MATERIALS FOR FIGURE 2				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Strap	0.080 (2.032)	2024-T3 sheet as given in QQ-A-250/4	
[2]	Chord		AND10133-1403 2024-T42 extrusion as given in QQ-A-200/3	
[3]	Stiffener		BAC1503-100096 7075-T6511 extrusion as given in QQ-A-200/11	
[4]	Stiffener		BAC1503-100171 7075-T6511 extrusion as given in QQ-A-200/11	
[5]	Stiffener		BAC1503-100123 7075-T6511 extrusion as given in QQ-A-200/11	
[6]	Bracket	0.040 (1.016)	6013-T6 sheet as given in AMS 4347	
[7]	Bracket		BAC1503-100126 7075-T6511 extrusion as given in QQ-A-200/11	
[8]	Channel		BAC1498-261 7075-T62 sheet as given in QQ-A-250/13	
[9]	Chord		BAC1506-2061 2024-T42 extrusion as given in QQ-A-200/3	
[10]	Angle		AND10133-1002 7075-T6511 extrusion as given in QQ-A-200/11	
[11]	Stiffener		BAC1503-100123 7075-T6511 extrusion as given in QQ-A-200/11	
[12]	Angle		AND10134-2003 7075-T6511 extrusion as given in QQ-A-200/11	
[13]	Stiffener		AND10133-0701 7075-T6511 extrusion as given in QQ-A-200/11	
[14]	Stiffener		AND10134-1205 7075-T6511 extrusion as given in QQ-A-200/11	
[15]	Stiffener		AND10133-1002 7075-T6511 extrusion as given in QQ-A-200/11	
[16]	Stiffener		BAC1503-8257 7075-T6511 extrusion as given in QQ-A-200/11	
[17]	Tee		BAC1505-101676 7075-T3511 extrusion as given in QQ-A-200/11	
[18]	Stiffener		BAC1493-467 7075-T62 sheet as given in QQ-A-250/2	
[19]	Stiffener		BAC1503-100146 7075-T6511 extrusion as given in QQ-A-200/11	
[20]	Web	0.125 (3.175)	7075-T6 sheet as given in QQ-A-200/11. Refer to Figure 3 for the chem-milled thicknesses.	
[21]	Stiffener		BAC1514-3130 7075-T73511 extrusion as given in QQ-A-200/11	
[22]	Tee		BAC1505-100164 7075-T6511 extrusion as given in QQ-A-200/11	
[23]	Angle		BAC1503-101045 7075-T3511 extrusion as given in QQ-A-200/11	

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Table 2: (Continued)

LIST OF MATERIALS FOR FIGURE 2				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[24]	Stiffener		BAC1490-269 2024-T42 clad sheet as given in QQ-A-250/5	
[25]	Stiffener	1.5 (38.1)	7050-T7451 plate as given in AMS 4050	
[26]	Stiffener		BAC1503-101027 7075-T73511 sheet as given in QQ-A-250/5	
[27]	Stiffener		AND10135-1401 7075-T6511 extrusion as given in QQ-A-200/11	
[28]	Stiffener		BAC1504-8257 7075-T6511 extrusion as given in QQ-A-200/11	
[29]	Stiffener		AND10135-1401 7075-T6511 extrusion as given in QQ-A-200/11	
[30]	Angle		AND10135-1401 7075-T6511 extrusion as given in QQ-A-200/11	
[31]	Chord, Floor Beam		BAC1506-4412 2024-T3511 extrusion as given in QQ-A-200/3	
[32]	Chord, Fail Safe		BAC1498-364 2024-T42 sheet as given in QQ-A-250/4	
[33]	Web	0.125 (3.175)	7075-T6 sheet as given in QQ-A-250/12	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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NOTE: ALL DIMENSIONS ARE IN INCHES.

G55090 S0006588250_V1

Chem-Milled Areas for Figure 2, Item 20
Figure 3 (Sheet 1 of 2)

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G54640 S0006588251_V1

Chem-Milled Areas for Figure 2, Item 20
Figure 3 (Sheet 2 of 2)

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UPPER BULKHEAD - SPLICES
VIEW LOOKING AFT

K25939 S0006588252_V1

Station 259.50 Upper Bulkhead Structure
Figure 4

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Table 3:

LIST OF MATERIALS FOR FIGURE 4				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Doubler	0.080 (2.03)	2024-T42 clad sheet as given in AMS 5542	
[2]	Splice - STA 259.50 (2)	0.050 (1.3)	2024-T3 clad sheet as given in QQ-A-250/5	
[3]	Splice - No. 3 Window (2)	0.050 (1.3)	Ti-6Al-4V titanium sheet as given in MIL-T-9046, Code AB-1 in the annealed condition	
[4]	Splice - STA 259.50 (2)	0.050 (1.3)	2024-T3 clad sheet as given in QQ-A-250/5	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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UPPER BULKHEAD
VIEW LOOKING AFT

K25944 S0006588254_V1

Station 259.50 Upper Bulkhead Structure - Forward Side
Figure 5

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Table 4:

LIST OF MATERIALS FOR FIGURE 5				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Forward Fitting, Point J		BAC1514-2782 7075-T73511 extrusion as given in QQ-A-200/11	
[2]	Outer Chord, Upper		BAC1506-1743 2024-T42 extrusion as given in QQ-A-200/3	
[3]	Support Angle, N-P (2)		BAC1514-3259 7075-T7351 plate as given in QQ-A-250/12 (Optional: 7075-T7351 bar as given in QQ-A-225/9 or 7075-T73511 extrusion as given in QQ-A-200/11)	
[4]	Stiffener C-E-G Sill (2)		BAC1503-100095 7075-T73511 extruded bar as given in QQ-A-200/11 (Optional: 7075-T6511 extrusion as given in QQ-A-200/11, or BAC1514-447 7075-T73511 extruded bar as given in QQ-A-200/11)	
[5]	Stiffener C-E-G Sill (2)		BAC1514-2911 7075-T73511 extrusion as given in QQ-A-200/11	
[6]	Outer Chord - Lower Left (2)		BAC1506-1743 2024-T42 extrusion as given in QQ-A-200/3)	
[7]	Support Angle - F-H Sill (2)		BC1514-3246 7075-T73511 extrusion as given in QQ-A-200/11	
[8]	Support Angle - WL235.8 (2)		BAC1503-100176 7075-T73511 extruded bar as given in QQ-A-200/11	
[9]	Support Angle - Q-R Sill (2)		BAC1514-3247 7075-T73511 extruded bar as given in QQ-A-200/11 (Optional: 7075-T73511 extrusion as given in QQ-A-200/11)	
[10]	Web, STA 259.5 Left	0.080 (2.03)	7075-T6 clad sheet as given in QQ-A-250/13	
[11]	Inner Chord		BAC1505-100542 2024-T42 extrusion as given in QQ-A-200/3	
[12]	Web, STA 259.5 Right	0.080 (2.03)	7075-T6 clad sheet as given in QQ-A-250/13	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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UPPER BULKHEAD
VIEW LOOKING FORWARD

K25966 S0006588256_V1

Station 259.50 Upper Bulkhead Structure - Rear Side
Figure 6

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Table 5:

LIST OF MATERIALS FOR FIGURE 6				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Aft Fitting - Point J		BAC1505-101477 7075-T73511 extrusion as given in QQ-A-200/11	
[2]	Support Angle (2)		BAC1503-100131 7075-T73511 extrusion as given in QQ-A-200/11	
[3]	Stiffener (3)		BAC1504-8206 7075-T6511 extrusion as given in QQ-A-200/11	
[4]	Angle (2)		BAC1490-2541 2024-T3 clad sheet as given in QQ-A-250/5	
[5]	Stiffener (9)		BAC1504-8196 7075-T73511 extruded bar as given in QQ-A-200/11 (Optional: 7075-T6511 extrusion as given in QQ-A-200/11)	
[6]	Stiffener (5)		AND10135-1005 7075-T6511 extrusion as given in QQ-A-200/11	
[7]	Aft Splice (2)	0.080 (2.03)	2024-T42 clad sheet as given in QQ-A-250/5	
[8]	Support Angle, S-13 (2)		AND10133-1201 7075-T6511 as given in QQ-A-200/11	
[9]	Stiffener, C-E-G Sill (2)		BAC1503-100095 7075-T73511 extruded bar as given in QQ-A-200/11 (Optional: 7075-T6511 extrusion as given in QQ-A-200/11, or BAC1514-447 7075-T73511 extruded bar as as given in QQ-A-200/11)	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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IDENTIFICATION 4 - STATION 294.5 NOSE WHEEL WELL AFT BULKHEAD

NOTES

- REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

1 NUMBERS 4 AND 5 FLIGHT DECK EYEBROW WINDOWS ARE ONLY COMMON TO LINE NUMBERS 1 THRU 1649

2 FLIGHT DECK EYEBROW PLUGS FOR LINE NUMBERS 1 THROUGH 1649 WITH SB 737-56-1017

G52470 S0006588259_V3

Section 41 Nose Wheel Well Bulkhead Location
Figure 1

Table 1:

REFERENCE DRAWINGS	
DRAWING NUMBER	**TITLE**
001A4001	Fuselage Product Collector
140A4101	Nose Wheel Well - Functional Collector
141A7450	Aft Bulkhead Inst - STA 294.5, Nose Wheel Well
141A7451	Stiffener - Sheet Metal, Nose Wheel Well
141A7453	Web - Aft Bulkhead, Nose Wheel Well
141A7454	Stiffener - Aft Bulkhead, Nose Wheel Well
141A7455	Chord - Aft Bulkhead, Nose Wheel Well

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NOTE: REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

G52556 S0006588261_V1

Station 294.50 Bulkhead Identification
Figure 2

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Table 2:

LIST OF MATERIALS FOR FIGURE 2				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Stiffener		BAC1514-330 7050-T73511 extrusion as given in QQ-A-200/11	
[2]	Stiffener		BAC1506-4291 7050-T6511 extrusion as given in QQ-A-200/11	
[3]	Stiffener		BAC1505-100269 7050-T73511 extrusion as given in QQ-A-200/11	
[4]	Chord, Upper		7050-T7451 plate as given in AMS 4050	
[5]	Stiffener		AND10133-1401 7050-T6511 extrusion as given in QQ-A-200/11	
[6]	Stiffener	0.080 (2.03)	7075-T62 clad sheet as given in QQ-A-250/13	
[7]	Stiffener	0.063 (1.60)	7075-T62 clad sheet as given in QQ-A-250/13	
[8]	Stiffener		BAC1506-4291 7050-T6511 extrusion as given in QQ-A-200/11	
[9]	Channel		BAC1493-318 2024-T42 clad sheet as given in QQ-A-250/5	
[10]	Chord, Lower		BAC1506-4293 2024-T42 extrusion as given in QQ-A-250/3	
[11]	Channel		BAC1493-892 2024-T42 clad sheet as given in QQ-A-250/5	
[12]	Web	0.160 (4.06)	2024-T3 sheet as given in QQ-A-250/4. Refer to Figure 3 for the chem-milled thicknesses	
[13]	Bracket		BAC1503-100898 7075-T37511 extrusion as given in QQ-A-250/11	
[14]	Bracket		BAC1503-100969 7075-T6511 extrusion as given in QQ-A-200/11	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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NOTE: ALL DIMENSIONS ARE IN INCHES.

F92437 S0006588263_V1

Machined Areas of Figure 2, Item [12]
Figure 3

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ALLOWABLE DAMAGE 1 - STATION 178 PRESSURE BULKHEAD

1. Applicability

A. This subject gives the allowable damage limits for the Station 178 pressure bulkhead shown in Station 178 Pressure Bulkhead Location, Figure 101/ALLOWABLE DAMAGE 1.

2. General

A. Remove the parts as necessary to get access to the damaged area.

B. Refer to Paragraph 4./ALLOWABLE DAMAGE 1 for the allowable damage limits.

(1) Refer to Table 101/ALLOWABLE DAMAGE 1 for the allowable damage limits that is applicable to each type of structure.

Table 101:

PARAGRAPH REFERENCES FOR THE ALLOWABLE DAMAGE LIMITS		
TYPE OF STRUCTURE	STRUCTURAL PART	PARAGRAPH
Chords (Forged), Inter- costals, and Angles		4.A
Stiffeners and Seal Retainers		4.B
Channels, Brackets, Gus- sets, Brackets, and Clips		4.C
Webs		4.D
Vertical Beams (Machined)	Integral Chord Flanges	4.E.(1)
Vertical Beams (Machined)	Integral Webs	4.E.(2)
Vertical Beams (Machined)	Integral Stiffeners	4.B

C. Remove the damage as necessary.

(1) Refer to 51-10-02 for the inspection and removal of damage.

(2) Refer to 51-30-03 for possible sources of abrasives and other materials you can use to remove damage.

(3) Refer to 51-30-05 for possible sources of equipment and tools you can use to remove damage.

D. After you remove the damage, do the steps that follow:

(1) Apply a chemical conversion coating to the bare surfaces of the reworked areas. Refer to 51-20-01.

(2) Apply one layer of BMS 10-11, Type I primer to the surface of the reworked area. Refer to SOPM 20-41-02.

(3) Apply one layer of BMS 3-23, Type II corrosion inhibiting compound to the surface of the repair area. Refer to 51-20-01.

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G88404 S0006588267_V2

Station 178 Pressure Bulkhead Location
Figure 101

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NOTE: ALL PARTS ARE MADE OF ALUMINUM.

G88502 S0006588268_V1

Station 178 Pressure Bulkhead Structure
Figure 102 (Sheet 1 of 2)

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Station 178 Pressure Bulkhead Structure
Figure 102 (Sheet 2 of 2)

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NOTE: ALL BEAMS ARE MADE OF MACHINED ALUMINUM. STIFFENERS, CHORD FLANGES AND WEBS ARE INTEGRAL TO THE BEAM.

G89127 S0006588270_V1

Station 178 Pressure Bulkhead Vertical Beam Allowable Damage Zones
Figure 103 (Sheet 1 of 3)

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NOTE: ALL BEAMS ARE MADE OF MACHINED ALUMINUM. STIFFENERS, CHORD FLANGES AND WEBS ARE INTEGRAL TO THE BEAM.

G89128 S0006588271_V1

Station 178 Pressure Bulkhead Vertical Beam Allowable Damage Zones
Figure 103 (Sheet 2 of 3)

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LBL 24 VERTICAL BEAM

RBL 24 VERTICAL BEAM

G89129 S0006588272_V1

Station 178 Pressure Bulkhead Vertical Beam Allowable Damage Zones
Figure 103 (Sheet 3 of 3)

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3. References

Reference	Title
51-10-02	INSPECTION AND REMOVAL OF DAMAGE
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-30-03	NON-METALLIC MATERIALS
51-30-05	EQUIPMENT AND TOOLS FOR REPAIRS
51-40-02, GENERAL	Fastener Installation and Removal
51-40-05, GENERAL	Fastener Hole Sizes
53-10-90, ALLOWABLE DAMAGE 1	Nose Landing Gear Support Structure Fittings
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes

4. Allowable Damage Limits

A. Chords (Forged), Intercostals, and Angles

(1) Cracks:

(a) Remove cracks as shown in Figure 104, Details A , B , and E .

(2) Nicks, Gouges, Scratches, and Corrosion:

(a) Remove the damage as shown in Figure 104, Details A , B , C , D , E , and F .

(3) Dents are not permitted.

(4) Holes and Punctures are not permitted.

B. Stiffeners and Seal Retainers

(1) Cracks:

(a) Remove cracks as shown in Figure 104, Details A , B , and E .

(2) Nicks, Gouges, Scratches, and Corrosion:

(a) Remove the damage as shown in Figure 104, Details A , B , C , D , and E .

(3) Dents are not permitted.

(4) Holes and Punctures are permitted as shown in Figure 104, Detail G .

C. Channels, Brackets, Gussets, Supports, and Clips - Machined or Formed

(1) Cracks:

(a) Remove cracks as shown in Figure 104, Details A , B , and E .

(2) Nicks, Gouges, Scratches, and Corrosion:

(a) Remove the damage as shown in Figure 104, Details A , B , C , D , and E .

(3) Dents are not permitted

(4) Holes and Punctures are permitted if they are:

(a) A minimum of 1.00 inch (25.4 mm) away from the edge of a fastener hole, other damage, or material edge

(b) A maximum of 0.25 inch (6.4 mm) in diameter after the cleanup.

1) Fill the hole with 2117-T3 or 2117-T4 rivet.

2) Install the rivet without sealant.

D. Webs

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(1) Cracks:

(a) Remove cracks as shown in Figure 104, Details A , B , and H .

(2) Nicks, Gouges, Scratches, and Corrosion:

(a) Remove the damage as shown in Figure 104, Details A , B , C , D , and H .

(3) Dents are permitted as shown in Figure 104, Detail I .

(4) Holes and Punctures are permitted if they are:

(a) A minimum of 1.00 inch (25.4 mm) away from the edge of a fastener hole, other damage, or material edge

(b) A maximum of 0.25 inch (6.4 mm) in diameter after the cleanup.

1) Fill the hole with 2117-T3 or 2117-T4 rivet.

2) Install the rivet without sealant.

E. Vertical Beam (Machined)

(1) Integral Chord Flanges

(a) Cracks:

1) Remove the damage as shown in Figure 104, Details A , B , and J .

(b) Nicks, Gouges, Scratches, and Corrosion:

1) Remove the damage as shown in Figure 104, Details A , B , C , D , E , and J .

(c) Dents are not permitted.

(d) Holes and Punctures are not permitted.

(2) Integral Webs

(a) Cracks:

1) Remove the damage as shown in Figure 104, Details A , B , H , K , and L .

(b) Nicks, Gouges, Scratches, and Corrosion:

1) Remove the damage as shown in Figure 104, Details A , B , C , D , H , K , and J .

(c) Dents are not permitted.

(d) Holes and Punctures are not permitted.

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X = WIDTH OF THE MATERIAL THAT IS REMOVED
= 0.05 INCH (1.25 mm) OR 5% OF WIDTH OF FLANGE, WHICHEVER IS MINIMUM 1
= A MAXIMUM OF 0.10 INCH (2.5 mm) 2

REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER EDGE MARGINS DO NOT HAVE AN OVERLAP

A

X = WIDTH OF THE MATERIAL THAT IS REMOVED
= 0.05 INCH (1.25 mm) OR 5% OF WIDTH OF FLANGE, WHICHEVER IS MINIMUM 1
= A MAXIMUM OF 0.10 INCH (2.5 mm) 2

REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER EDGE MARGINS HAVE AN OVERLAP

B

REMOVAL OF DAMAGED MATERIAL ON A SURFACE

C

X = DEPTH OF THE MATERIAL THAT IS REMOVED
= A MAXIMUM OF 0.05T 1
= A MAXIMUM OF 0.10T 2

A–A

1 FOR AIRPLANES THAT HAVE COMPLETED SERVICE BULLETIN 737-21-1149.
2 FOR AIRPLANES THAT HAVE NOT COMPLETED SERVICE BULLETIN 737-21-1149.

400608 S0000136682_V1

Allowable Damage Limits
Figure 104 (Sheet 1 of 10)

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REMOVAL OF DAMAGE AROUND THE FASTENERS ON AN EDGE OF A SURFACE

X = WIDTH OF THE MATERIAL THAT IS REMOVED
= 0.025 INCH (0.65 mm) OR 2.5% OF FLANGE WIDTH, WHICHEVER IS SMALLER FOR FLANGES OF THE MACHINED BEAM 1
= 0.05 INCH (1.25 mm) OR 5% OF FLANGE WIDTH, WHICHEVER IS SMALLER FOR FLANGES OF THE FORMED PART 1
= 0.10 INCH (2.55 mm) OR 10% OF FLANGE WIDTH, WHICHEVER IS SMALLER FOR ALL OTHER STRUCTURE 1
= A MAXIMUM OF 0.05 INCH (1.3 mm) FOR FLANGES OF THE MACHINED BEAM 2
= A MAXIMUM OF 0.10 INCH (2.5 mm) FOR FLANGES OF THE FORMED PART 2
= A MAXIMUM OF 0.20 INCH (5.1 mm) FOR ALL OTHER STRUCTURE 2

REMOVAL OF DAMAGED MATERIAL ON AN EDGE OF A FLANGE

E

400609 S0000136683_V1

Allowable Damage Limits
Figure 104 (Sheet 2 of 10)

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Y = WIDTH OF THE MATERIAL THAT IS REMOVED
≤ 5 PERCENT OF FLANGE WIDTH 1
≤ 10 PERCENT OF FLANGE WIDTH 2

REMOVAL OF DAMAGED MATERIAL ON A SURFACE
AT AN EDGE OF A THICK FLANGE
(MORE THAN 0.10 INCH (2.5 mm) IN THICKNESS)

F

400610 S0000136684_V1

Allowable Damage Limits
Figure 104 (Sheet 3 of 10)

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NOTE: HOLE DAMAGE IS NOT PERMITTED IN THE FASTENED FLANGES.

HOLES AND PUNCTURES IN A FREE FLANGE

G

X = WIDTH OF THE MATERIAL THAT IS REMOVED
= A MAXIMUM OF 0.05 INCH (1.27 mm) 1
= A MAXIMUM OF 0.10 INCH (2.5 mm) 2

REMOVAL OF DAMAGED MATERIAL AT AN EDGE OF A WEB

H

400611 S0000136685_V1

Allowable Damage Limits
Figure 104 (Sheet 4 of 10)

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DENT THAT IS PERMITTED

I

415399 S0000136686_V1

Allowable Damage Limits
Figure 104 (Sheet 5 of 10)

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NOTE: REFER TO FIGURE 103 FOR ZONE IDENTIFICATION

REMOVAL OF DAMAGED MATERIAL FROM VERTICAL BEAMS

J

400612 S0000136687_V1

Allowable Damage Limits
Figure 104 (Sheet 6 of 10)

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NOTE: REFER TO TABLE A FOR THE MAXIMUM LIMIT DIMENSIONS AND FOR THE MAXIMUM AREA THAT CAN BE REMOVED FROM THE FLANGE.

D = DIAMETER OF THE INITIAL HOLE

H = HEIGHT OF THE WEB

$\frac{H}{10}$ = MAXIMUM DIAMETER OF THE DAMAGE [THE MAXIMUM DIAMETER MUST NOT BE MORE THAN 0.75 INCH (19.1 mm)]

T = THICKNESS OF THE WEB

A_1 = INITIAL AREA OF THE WEB
= THE TOTAL CROSS-SECTIONAL AREA MINUS THE CROSS-SECTIONAL AREA OF THE INITIAL HOLES (AS MANUFACTURED BY BOEING)
$= HT - DT + W_1t_1 + W_2t_2$

A_2 = CROSS-SECTIONAL AREA OF THE DAMAGE THAT IS REMOVED AT LOCATION 2

A_3 = CROSS-SECTIONAL AREA OF THE DAMAGE THAT IS REMOVED AT LOCATION 3

A_4 = CROSS-SECTIONAL AREA OF THE DAMAGE THAT IS REMOVED AT LOCATION 4

$\left(\frac{A_2 + A_3 + A_4}{A_1}\right) \times 100$ = PERCENT OF CROSS-SECTIONAL AREA REMOVED
= 5 PERCENT MAXIMUM 1
= 10 PERCENT MAXIMUM 2

THE TOTAL CROSS-SECTIONAL AREA REMOVED IN ALL ZONES A-B (2.00 INCHES (50.8 mm) ON EACH SIDE OF A LINE A-B) MUST NOT BE MORE THAN 5 PERCENT OF THE INITIAL AREA OF THE WEB. 1

THE TOTAL CROSS-SECTIONAL AREA REMOVED IN ALL ZONES A-B (2.00 INCHES (50.8 mm) ON EACH SIDE OF A LINE A-B) MUST NOT BE MORE THAN 10 PERCENT OF THE INITIAL AREA OF THE WEB. 2

D-D

400613 S0000136688_V1

Allowable Damage Limits
Figure 104 (Sheet 7 of 10)

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NOTE: REFER TO TABLE A FOR THE MAXIMUM LIMIT DIMENSIONS.

D = DIAMETER OF THE INITIAL HOLE

H = HEIGHT OF THE WEB

$\frac{H}{10}$ = MAXIMUM DIAMETER OF THE DAMAGE [THE MAXIMUM DIAMETER MUST NOT BE MORE THAN 0.75 INCH (19.1 mm)]

T = THICKNESS OF THE WEB

A_1 = INITIAL AREA OF THE WEB
= THE TOTAL CROSS-SECTIONAL AREA MINUS THE CROSS-SECTIONAL AREA OF THE INITIAL HOLES (AS MANUFACTURED BY BOEING)
= $HT - DT + W_1t_1 + W_2t_2$

A_2 = CROSS-SECTIONAL AREA OF THE DAMAGE THAT IS REMOVED AT LOCATION 2 (Lt_1)

L = 0.10 INCH (2.55 mm) OR XX% OF THE INITIAL FLANGE AREA (Lt_1), THAT WHICH IS LESS. REFER TO TABLE A. 1

L = 0.20 INCH (5.1 mm) OR XX% OF THE INITIAL FLANGE AREA (Lt_1), THAT WHICH IS LESS. REFER TO TABLE A. 2

$\left(\frac{A_2}{A_1}\right)$ X 100 = PERCENT OF CROSS-SECTIONAL AREA REMOVED
= 5 PERCENT MAXIMUM 1

$\left(\frac{A_2}{A_1}\right)$ X 100 = PERCENT OF CROSS-SECTIONAL AREA REMOVED
= 10 PERCENT MAXIMUM 2

THE TOTAL CROSS-SECTIONAL AREA REMOVED IN ALL ZONES A-B (2.00 INCHES (50.8 mm) ON EACH SIDE OF A LINE A-B) MUST NOT BE MORE THAN 5 PERCENT OF THE INITIAL AREA OF THE WEB. 1

THE TOTAL CROSS-SECTIONAL AREA REMOVED IN ALL ZONES A-B (2.00 INCHES (50.8 mm) ON EACH SIDE OF A LINE A-B) MUST NOT BE MORE THAN 10 PERCENT OF THE INITIAL AREA OF THE WEB. 2

E-E

400614 S0000136689_V1

Allowable Damage Limits
Figure 104 (Sheet 8 of 10)

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MAXIMUM LIMIT DIMENSIONS FOR VERTICAL BEAM FLANGES			
ZONE LOCATION	BL LOCATION	MAXIMUM DEPTH OF EDGE TRIM REMOVAL	MAXIMUM LOSS OF CROSS-SECTIONAL AREA
1	5.7	N/A	1 PERCENT OF THE INITIAL FLANGE AREA 1
1	5.7	N/A	5 PERCENT OF THE INITIAL FLANGE AREA 2
2	5.7	0.20 INCH	10 PERCENT OF THE INITIAL FLANGE AREA 1
2	5.7	0.20 INCH	15 PERCENT OF THE INITIAL FLANGE AREA 2
3	17.0	N/A	3 PERCENT OF THE INITIAL FLANGE AREA 1
3	17.0	N/A	8 PERCENT OF THE INITIAL FLANGE AREA 2
4	17.0	0.20 INCH	9 PERCENT OF THE INITIAL FLANGE AREA 1
4	17.0	0.20 INCH	14 PERCENT OF THE INITIAL FLANGE AREA 2
—	24.0	0.20 INCH	10 PERCENT OF THE INITIAL FLANGE AREA 1
—	24.0	0.20 INCH	15 PERCENT OF THE INITIAL FLANGE AREA 2

TABLE A

400615 S0000136690_V1

Allowable Damage Limits
Figure 104 (Sheet 9 of 10)

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REMOVAL OF DAMAGED MATERIAL AT THE EDGE OF A HOLE

K

X = WIDTH OF THE MATERIAL REMOVED
= A MAXIMUM OF 5 PERCENT OF THE WIDTH OF THE FLANGE 1
= A MAXIMUM OF 10 PERCENT OF THE WIDTH OF THE FLANGE 2

REMOVAL OF DAMAGED MATERIAL AT AN EDGE

L

400616 S0000136691_V1

Allowable Damage Limits
Figure 104 (Sheet 10 of 10)

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ALLOWABLE DAMAGE 2 - STATION 227.80 NOSE WHEEL WELL BULKHEAD

1. Applicability

A. This subject gives the allowable damage limits for the Station 227.80 Nose Wheel Well Bulkhead shown in Section 41 Nose Wheel Well Bulkhead Location, Figure 101/ALLOWABLE DAMAGE 2.

2. General

A. Remove the parts as necessary to get access to the damaged area.

B. Refer to Paragraph 4./ALLOWABLE DAMAGE 2 for the allowable damage limits.

(1) Refer to Table 101/ALLOWABLE DAMAGE 2 for the allowable damage limits that is applicable to each type of structure.

Table 101:

PARAGRAPH REFERENCES FOR THE ALLOWABLE DAMAGE LIMITS	
TYPE OF STRUCTURE	**PARAGRAPH**
Chords, Brackets, Angles, Seal Retainers, Extruded Intercos- tals, and Stiffeners	4.A
Formed Intercostals and Clips	4.B
Webs	4.C

C. Remove the damage as necessary.

(1) Refer to 51-10-02 for the inspection and removal of damage.

(2) Refer to 51-30-03 for possible sources of abrasives and other materials you can use to remove damage.

(3) Refer to 51-30-05 for possible sources of equipment and tools you can use to remove damage.

D. After you remove the damage, do the steps that follow:

(1) Apply a chemical conversion coating to the bare surfaces of the reworked areas. Refer to 51-20-01.

(2) Apply one layer of BMS 10-11, Type I primer to the surface of the reworked area. Refer to SOPM 20-41-02.

(3) Apply one layer of BMS 3-23, Type II corrosion inhibiting compound to the surface of the repair area. Refer to 51-20-01.

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G88483 S0006588285_V4

Section 41 Nose Wheel Well Bulkhead Location
Figure 101

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VIEW LOOKING FORWARD

NOTES

- ALL PARTS IDENTIFIED ARE MADE OF ALUMINUM.
- ALL PARTS ARE EXTRUDED UNLESS OTHERWISE SPECIFIED.

G88579 S0006588286_V1

Station 227.80 Bulkhead Structure
Figure 102 (Sheet 1 of 3)

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G88617 S0006588287_V1

Station 227.80 Bulkhead Structure
Figure 102 (Sheet 2 of 3)

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Station 227.80 Bulkhead Structure
Figure 102 (Sheet 3 of 3)

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3. References

Reference	Title
51-10-02	INSPECTION AND REMOVAL OF DAMAGE
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-30-03	NON-METALLIC MATERIALS
51-30-05	EQUIPMENT AND TOOLS FOR REPAIRS
51-40-02, GENERAL	Fastener Installation and Removal
51-40-05, GENERAL	Fastener Hole Sizes
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes

4. Allowable Damage Limits

A. Chords, Brackets, Angles, Seal Retainers, Extruded Intercostals, and Stiffeners

(1) Cracks:

(a) Remove the damage as shown in Figure 103, Details A , B , E and J .

(b) Only one damage area is permitted at a cross-section.

(2) Nicks, Gouges, Scratches, and Corrosion:

(a) Remove the damage as shown in Figure 103, Details A , B , C , D , E , F and J .

(b) Only one damage area is permitted at a cross-section.

(3) Dents are not permitted

(4) Holes and Punctures are permitted if they are:

(a) A minimum of 1.00 inch (25.4 mm) away from the edge of a fastener hole, other damage, or material edge.

(b) A maximum of 0.25 inch (6.4 mm) in diameter after cleanup.

1) Fill the hole with a 2117-T3 or 2117-T4 rivet.

2) Install the rivet without sealant.

(5) No damage on the WL 187.0 horizontal chord is permitted in Zone 1, which is between the vertical stiffeners at LBL 8.45 and RBL 8.45.

B. Intercostals, Stiffeners and Clips

(1) Cracks:

(a) Remove the damage as shown in Figure 103, Details A , B , and E .

(b) Only one damage area is permitted at a cross-section which includes an initial hole.

(2) Nicks, Gouges, Scratches, and Corrosion:

(a) Remove the damage as shown in Figure 103, Details A , B , C , D , E and F .

(b) Only one damage area is permitted at a cross-section which includes an initial hole.

(3) Dents are not permitted

(4) Holes and Punctures are permitted in the free flange as shown in Figure 103, Detail G .

C. Webs

(1) Cracks:

(a) Remove the damage as shown in Figure 103, Details A , B , and H .

(2) Nicks, Gouges, Scratches, and Corrosion:

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(a) Remove the damage as shown in Figure 103, Details A , B , D , and H .

(b) Remove the damage as shown in Figure 103, Detail C .

NOTE: For airplanes that have completed Service Bulletin 737-21-1149, the damage removed from several locations should not be more than 20 percent of the surface area of the web.

For airplanes that have not completed Service Bulletin 737-21-1149, the damage removed from several locations should not be more than 25 percent of the surface area of the web.

(3) Dents are permitted as shown in Figure 103, Detail I if:

(a) They do not extend across attached structures

(b) They do not have an "oil-can" condition.

(4) Holes and Punctures are permitted if they are:

(a) A maximum of 0.25 inch (6.4 mm) in diameter after cleanup

1) Fill the hole with 2117-T3 or 2117-T4 rivet.

2) Install the rivet without sealant.

(b) A minimum of 1.00 inch (25.4 mm) away from the edge of a fastener hole, other damage, or material edge.

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X = WIDTH OF THE MATERIAL THAT IS REMOVED
= 0.05 INCH (1.25 mm) OR 5% OF WIDTH OF FLANGE (OR WEB), WHICHEVER IS LESS 1
= A MAXIMUM OF 0.10 INCH (2.5 mm) 2

REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER EDGE MARGINS DO NOT HAVE AN OVERLAP

A

X = WIDTH OF THE MATERIAL THAT IS REMOVED
= 0.05 INCH (1.25 mm) OR 5% OF WIDTH OF FLANGE (OR WEB), WHICHEVER IS LESS 1
= A MAXIMUM OF 0.10 INCH (2.5 mm) 2

REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER EDGE MARGINS HAVE AN OVERLAP

B

REMOVAL OF DAMAGED MATERIAL ON A SURFACE

C

X = DEPTH OF THE MATERIAL THAT IS REMOVED
= A MAXIMUM OF 0.05T 1
= A MAXIMUM OF 0.10T 2

A–A

1 FOR AIRPLANES THAT HAVE COMPLETED SERVICE BULLETIN 737-21-1149.

2 FOR AIRPLANES THAT HAVE NOT COMPLETED SERVICE BULLETIN 737-21-1149.

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Allowable Damage Limits
Figure 103 (Sheet 1 of 5)

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Allowable Damage Limits
Figure 103 (Sheet 2 of 5)

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Y = WIDTH OF THE MATERIAL THAT IS REMOVED
≤ 5 PERCENT OF THE FLANGE 1
≤ 10 PERCENT OF THE FLANGE 2

REMOVAL OF DAMAGED MATERIAL ON A SURFACE AT AN EDGE OF A MACHINED OR EXTRUDED PART

F

C–C

400619 S0000136706_V1

Allowable Damage Limits
Figure 103 (Sheet 3 of 5)

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NOTE: HOLE DAMAGE IS NOT PERMITTED IN THE FASTENED FLANGES.

HOLES AND PUNCTURES IN A FREE FLANGE

G

X = WIDTH OF THE MATERIAL THAT IS REMOVED
= A MAXIMUM OF 0.05 INCH (1.25 mm) 1
= A MAXIMUM OF 0.10 INCH (2.5 mm) 2

REMOVAL OF DAMAGED MATERIAL AT AN EDGE OF A WEB

H

400620 S0000136707_V1

Allowable Damage Limits
Figure 103 (Sheet 4 of 5)

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DENT THAT IS PERMITTED

I

X = THE WIDTH OF THE MATERIAL THAT IS REMOVED
= 0.05 INCH (1.25 mm) OR 5% OF FLANGE WIDTH, WHICHEVER IS SMALLER 1
= A MAXIMUM OF 0.10 INCH (2.5 mm) 2

REMOVAL OF DAMAGED MATERIAL ON AN EDGE

J

400621 S0000136708_V2

Allowable Damage Limits
Figure 103 (Sheet 5 of 5)

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REPAIR 1 - STATION 178 FORWARD PRESSURE BULKHEAD

1. Applicability

A. Repair 1 is applicable to damage to the structure of the station 178 forward pressure bulkhead shown in Station 178 Pressure Bulkhead Location, Figure 201/REPAIR 1, Station 178 Pressure Bulkhead Structure, Figure 202/REPAIR 1, and Station 178 Pressure Bulkhead Vertical Beams, Figure 203/REPAIR 1.

H13515 S0006588296_V1

Station 178 Pressure Bulkhead Location
Figure 201

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NOTES

- ALL PARTS ARE MADE OF ALUMINUM.

1 REFER TO PARAGRAPH 4.A TO FIND THE APPLICABLE REPAIR FOR THIS PART.

2 THERE ARE NO REPAIRS FOR THIS PART IN THE STRUCTURAL REPAIR MANUAL AT THIS TIME. IF THE DAMAGE TO THE PART IS MORE THAN THE ALLOWABLE DAMAGE LIMITS GIVEN IN SRM 53-10-08, ALLOWABLE DAMAGE 1, REPLACE THE DAMAGED PART.

3 THERE ARE NO REPAIRS FOR THIS PART IN THE STRUCTURAL REPAIR MANUAL AT THIS TIME.

H13873 S0006588297_V2

Station 178 Pressure Bulkhead Structure
Figure 202 (Sheet 1 of 3)

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H14855 S0006588298_V1

Station 178 Pressure Bulkhead Structure
Figure 202 (Sheet 2 of 3)

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H14870 S0006588299_V1

Station 178 Pressure Bulkhead Structure
Figure 202 (Sheet 3 of 3)

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LBL 5.7 VERTICAL BEAM RBL 5.7 VERTICAL BEAM

NOTES

- ALL PARTS ARE MADE OF ALUMINUM.

1 REFER TO PARAGRAPH 4.A TO FIND THE APPLICABLE REPAIR FOR THIS PART.

2 THERE ARE NO REPAIRS FOR THIS PART IN THE STRUCTURAL REPAIR MANUAL AT THIS TIME.

H13878 S0006588300_V2

Station 178 Pressure Bulkhead Vertical Beams
Figure 203 (Sheet 1 of 3)

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H13902 S0006588301_V1

Station 178 Pressure Bulkhead Vertical Beams
Figure 203 (Sheet 2 of 3)

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H13903 S0006588302_V1

Station 178 Pressure Bulkhead Vertical Beams
Figure 203 (Sheet 3 of 3)

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2. General

A. The typical repairs given in 51-70-11, 51-70-12, and 51-70-13 can be used when applicable if:

(1) There is sufficient clearance with the adjacent structure for the installation of the repair parts.

B. Refer to the limits of the typical repairs given in 51-70-11, 51-70-12, and 51-70-13 before you start a repair.

3. References

Reference	Title
51-70-11	TYPICAL FORMED SECTION REPAIRS
51-70-11, REPAIR GENERAL	Typical Formed Section Repair
51-70-12	EXTRUDED SECTION REPAIRS
51-70-12, REPAIR GENERAL	Typical Extruded Section Repairs
51-70-13	TYPICAL WEB REPAIRS
53-10-08	FUSELAGE BULKHEADS - SECTION 41
53-10-08, ALLOWABLE DAMAGE 1	Station 178 Pressure Bulkhead
53-10-08, IDENTIFICATION 1	Station 178 Forward Pressure Bulkhead

4. Repair Instructions

A. Refer to Table 201/REPAIR 1 to find the applicable repair for a component of the station 178 forward pressure bulkhead shown in Station 178 Pressure Bulkhead Location, Figure 201/REPAIR 1, Station 178 Pressure Bulkhead Structure, Figure 202/REPAIR 1, and Station 178 Pressure Bulkhead Vertical Beams, Figure 203/REPAIR 1.

NOTE: If necessary, refer to 53-10-08, Identification 1 to find the material and the process that was used to make the part which you want to repair.

Table 201:

REPAIR REFERENCES FOR THE STRUCTURE OF THE STATION 178 FORWARD PRESSURE BULKHEAD	
TYPE OF COMPONENT	**REPAIR**
Formed parts	Refer to SRM 51-70-11
Extruded parts	Refer to SRM 51-70-12
Forged parts	Refer to SRM 51-70-12
Machined parts	Refer to SRM 51-70-12
Webs	Refer to SRM 51-70-13

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REPAIR 2 - STATION 227.80 NOSE WHEEL WELL FORWARD BULKHEAD

1. Applicability

A. Repair 2 is applicable to damage to the structure of the station 227.80 bulkhead shown in Station 227.80 Nose Wheel Well Forward Bulkhead Location, Figure 201/REPAIR 2 and Station 227.80 Bulkhead Structure, Figure 202/REPAIR 2.

H14022 S0006588305_V1

Station 227.80 Nose Wheel Well Forward Bulkhead Location
Figure 201

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VIEW LOOKING FORWARD

NOTES

- ALL PARTS IDENTIFIED ARE MADE OF ALUMINUM.
- ALL PARTS ARE EXTRUDED UNLESS OTHERWISE SPECIFIED.

1 REFER TO PARAGRAPH 4.A TO FIND THE APPLICABLE REPAIR FOR THIS PART.

2 THERE ARE NO REPAIRS FOR THIS PART IN THE STRUCTURAL REPAIR MANUAL AT THIS TIME. A REPAIR FOR THIS PART. IF THE DAMAGE TO THE PART IS MORE THAN THE ALLOWABLE DAMAGE LIMITS GIVEN IN SRM 53-10-08, ALLOWABLE DAMAGE 2, REPLACE THE DAMAGED PART.

H14034 S0006588306_V2

Station 227.80 Bulkhead Structure
Figure 202 (Sheet 1 of 3)

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H14049 S0006588307_V1

Station 227.80 Bulkhead Structure
Figure 202 (Sheet 2 of 3)

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H14071 S0006588308_V1

Station 227.80 Bulkhead Structure
Figure 202 (Sheet 3 of 3)

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2. General

A. The typical repairs given in 51-70-11, 51-70-12, and 51-70-13 can be used when applicable if:

(1) There is sufficient clearance with the adjacent structure for the installation of the repair parts.

B. Refer to the limits of the typical repairs given in 51-70-11, 51-70-12, and 51-70-13 before you start a repair.

3. References

Reference	Title
51-70-11	TYPICAL FORMED SECTION REPAIRS
51-70-11, REPAIR GENERAL	Typical Formed Section Repair
51-70-12	EXTRUDED SECTION REPAIRS
51-70-12, REPAIR GENERAL	Typical Extruded Section Repairs
51-70-13	TYPICAL WEB REPAIRS
53-10-08	FUSELAGE BULKHEADS - SECTION 41
53-10-08, ALLOWABLE DAMAGE 2	Station 227.80 Nose Wheel Well Bulkhead
53-10-08, IDENTIFICATION 2	Station 227.8 Nose Wheel Well Forward Bulkhead

4. Repair Instructions

A. Refer to Table 201/REPAIR 2 to find the applicable repair for a component of the station 227.80 bulkhead shown in Station 227.80 Nose Wheel Well Forward Bulkhead Location, Figure 201/REPAIR 2 and Station 227.80 Bulkhead Structure, Figure 202/REPAIR 2.

NOTE: If necessary, refer to 53-10-08, Identification 2 to find the material and the process that was used to make the part which you want to repair.

Table 201:

REPAIR REFERENCES FOR THE STRUCTURE OF THE STATION 227.80 BULKHEAD	
TYPE OF COMPONENT	**REPAIR**
Formed parts	Refer to SRM 51-70-11
Extruded parts	Refer to SRM 51-70-12
Webs	Refer to SRM 51-70-13

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REPAIR 3 - STATION 259.50 NOSE WHEEL WELL MIDDLE BULKHEAD

1. Applicability

A. Repair 3 is applicable to damage to the structure of the station 259.50 bulkhead shown in Station 259.5 Nose Wheel Well Middle Bulkhead Location, Figure 201/REPAIR 3 and Station 259.50 Bulkhead Structure, Figure 202/REPAIR 3.

H13641 S0006588311_V1

Station 259.5 Nose Wheel Well Middle Bulkhead Location
Figure 201

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LOWER BULKHEAD

VIEW LOOKING AFT

NOTES

1 REFER TO PARAGRAPH 4.A TO FIND THE APPLICABLE REPAIR FOR THIS PART.

2 THERE ARE NO REPAIRS FOR THIS PART IN THE STRUCTURAL REPAIR MANUAL AT THIS TIME.

3 REFER TO SRM 53-00-01 FOR THE REPAIR.

H13644 S0006588312_V2

Station 259.50 Bulkhead Structure
Figure 202 (Sheet 1 of 5)

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LOWER BULKHEAD

VIEW LOOKING FORWARD

H13653 S0006588313_V1

Station 259.50 Bulkhead Structure
Figure 202 (Sheet 2 of 5)

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UPPER BULKHEAD

VIEW LOOKING FORWARD

H13662 S0006588314_V1

Station 259.50 Bulkhead Structure
Figure 202 (Sheet 3 of 5)

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UPPER BULKHEAD

VIEW LOOKING AFT

H13658 S0006588315_V1

Station 259.50 Bulkhead Structure
Figure 202 (Sheet 4 of 5)

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UPPER BULKHEAD - SPLICES

VIEW LOOKING AFT

H13665 S0006588316_V1

Station 259.50 Bulkhead Structure
Figure 202 (Sheet 5 of 5)

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2. General

A. The typical repairs given in 51-70-11, 51-70-12, and 51-70-13 can be used when applicable if:

(1) There is sufficient clearance with the adjacent structure for the installation of the repair parts.

B. Refer to the limits of the typical repairs given in 51-70-11, 51-70-12, and 51-70-13 before you start a repair.

3. References

Reference	Title
51-70-11	TYPICAL FORMED SECTION REPAIRS
51-70-11, REPAIR GENERAL	Typical Formed Section Repair
51-70-12	EXTRUDED SECTION REPAIRS
51-70-12, REPAIR GENERAL	Typical Extruded Section Repairs
51-70-13	TYPICAL WEB REPAIRS
53-00-07, REPAIR 1	Fuselage Zee Frames
53-10-08	FUSELAGE BULKHEADS - SECTION 41
53-10-08, IDENTIFICATION 3	Station 259.50 Bulkhead Structure

4. Repair Instructions

A. Refer to Table 201/REPAIR 3 to find the applicable repair for a component of the station 259.50 bulkhead shown in Station 259.5 Nose Wheel Well Middle Bulkhead Location, Figure 201/REPAIR 3 and Station 259.50 Bulkhead Structure, Figure 202/REPAIR 3.

NOTE: If necessary, refer to 53-10-08, Identification 3 to find the material and the process that was used to make the part which you want to repair.

Table 201:

REPAIR REFERENCES FOR THE STRUCTURE OF THE STATION 259.50 BULKHEAD	
TYPE OF COMPONENT	**REPAIR**
Formed parts	Refer to SRM 51-70-11
Extruded parts	Refer to SRM 51-70-12
Machined parts	Refer to SRM 51-70-12
Webs	Refer to SRM 51-70-13

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REPAIR 4 - STATION 294.50 NOSE WHEEL WELL AFT BULKHEAD

1. Applicability

A. Repair 4 is applicable to damage to the structure of the station 294.50 bulkhead shown in Station 294.5 Nose Wheel Well aft Bulkhead Location, Figure 201/REPAIR 4 and Station 294.50 Bulkhead Structure, Figure 202/REPAIR 4.

H13590 S0006588319_V1

Station 294.5 Nose Wheel Well aft Bulkhead Location
Figure 201

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NOTES

- ALL PARTS ARE MADE OF ALUMINUM

1 REFER TO PARAGRAPH 4.A TO FIND THE APPLICABLE REPAIR FOR THIS PART.

2 THERE ARE NO REPAIRS FOR THIS PART IN THE STRUCTURAL REPAIR MANUAL AT THIS TIME. IF THE DAMAGE TO THE PART IS MORE THAN THE ALLOWABLE DAMAGE LIMITS GIVEN IN SRM 53-10-08, ALLOWABLE DAMAGE 4, REPLACE THE DAMAGED PART.

3 THERE ARE NO REPAIRS FOR THIS PART IN THE STRUCTURAL REPAIR MANUAL AT THIS TIME.

H13594 S0006588320_V2

Station 294.50 Bulkhead Structure
Figure 202 (Sheet 1 of 2)

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A–A

B–B

H13619 S0006588321_V1

Station 294.50 Bulkhead Structure
Figure 202 (Sheet 2 of 2)

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2. General

A. The typical repairs given in 51-70-11, 51-70-12, and 51-70-13 can be used when applicable if:

(1) There is sufficient clearance with the adjacent structure for the installation of the repair parts.

B. Refer to the limits of the typical repairs given in 51-70-11, 51-70-12, and 51-70-13 before you start a repair.

3. References

Reference	Title
51-70-11	TYPICAL FORMED SECTION REPAIRS
51-70-11, REPAIR GENERAL	Typical Formed Section Repair
51-70-12	EXTRUDED SECTION REPAIRS
51-70-12, REPAIR GENERAL	Typical Extruded Section Repairs
51-70-13	TYPICAL WEB REPAIRS
53-10-08	FUSELAGE BULKHEADS - SECTION 41
53-10-08, IDENTIFICATION 4	Station 294.5 Nose Wheel Well Aft Bulkhead

4. Repair Instructions

A. Refer to Table 201/REPAIR 4 to find the applicable repair for a component of the station 294.50 bulkhead shown in Station 294.5 Nose Wheel Well aft Bulkhead Location, Figure 201/REPAIR 4 and Station 294.50 Bulkhead Structure, Figure 202/REPAIR 4.

NOTE: If necessary, refer to 53-10-08, Identification 4 to find the material and the process that was used to make the part which you want to repair.

Table 201:

REPAIR REFERENCES FOR THE STRUCTURE OF THE STATION 294.50 BULKHEAD	
TYPE OF COMPONENT	**REPAIR**
Formed parts	Refer to SRM 51-70-11
Extruded and Machined parts	Refer to SRM 51-70-12
Webs	Refer to SRM 51-70-13

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IDENTIFICATION 1 - SECTION 41 LANDING GEAR SUPPORT STRUCTURE LOCATION

NOTES

- REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

1 NUMBERS 4 AND 5 FLIGHT DECK EYEBROW WINDOWS ARE ONLY COMMON TO LINE NUMBERS 1 THRU 1649

2 FLIGHT DECK EYEBROW PLUGS FOR LINE NUMBERS 1 THROUGH 1649 WITH SB 737-56-1017

G11295 S0006588326_V3

Section 41 Landing Gear Support Structure Location
Figure 1

Table 1:

REFERENCE DRAWINGS	
DRAWING NUMBER	**TITLE**
141A7500	Side Panel Installation - Nose Wheel Well
141A7600	Top Panel Installation - Nose Wheel Well
141A7650	Nose Landing Gear Retract Actuator Support Installation

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NOTE: REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

LEFT SIDE IS SHOWN, RIGHT SIDE IS OPPOSITE

G10716 S0006588328_V1

Section 41 Landing Gear Support Structure - Side Panel (Pressurized Side) Identification
Figure 2

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Table 2:

LIST OF MATERIALS FOR FIGURE 2				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Angle		BAC1503-100777 7075-T73511 extrusion as given in QQ-A-200/11	
[2]	Vertical Beam		BAC1506-4376 7075-T73511 extrusion as given in QQ-A-200/11	
[3]	Vertical Beam		BAC1518-1187 2024-T3511 extrusion as given in QQ-A-200/3	
[4]	Vertical Beam		BAC1506-4375 7075-T73511 extrusion as given in QQ-A-200/11	
[5]	Angle		BAC1503-100658 7075-T73511 extrusion as given in QQ-A-200/11	
[6]	Tee		BAC1505-100037 7075-T73511 extrusion as given in QQ-A-200/11	
[7]	Tee		BAC1505-100690 7075-T73511 extrusion as given in QQ-A-200/11	
[8]	Vertical Beam		BAC1518-1187 7075-T73511 extrusion as given in QQ-A-200/11	
[9]	Angle		BAC1503-100777 7075-T73511 extrusion as given in QQ-A-200/11	
[10]	Intercostal	0.050 (12.7)	7075-T62 clad sheet as given in QQ-A-250/13	
[11]	Vertical Beam		BAC1506-4375 7075-T73511 extrusion as given in QQ-A-200/11	
[12]	Vertical Beam		BAC1517-486 7075-T62 clad sheet as given in QQ-A-250/13	
[13]	Web	0.125 (3.18)	2024-T3 clad sheet as given in QQ-A-250/5. Refer to Figure 5 for the thicknesses of the chem-milled areas	
[14]	Vertical Beam		BAC1506-1779 7075-T73511 extrusion as given in QQ-A-200/11	
[15]	Hinge Bracket Support		7075-T73 die forging as given in BMS 7-186	
[16]	Tee		BAC1505-100037 7075-T73511 extrusion as given in QQ-A-200/11	
[17]	Stiffener		AND10133-1202 7075-T73511 extrusion as given in QQ-A-200/11	
[18]	Forward Chord		BAC1503-4162 7075-T73511 extrusion as given in QQ-A-200/11	
[19]	Vertical Beam		BAC1518-403 7075-T73511 extrusion as given in QQ-A-200/11	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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NOTE: REFER TO TABLE 3 FOR THE LIST OF MATERIALS.

LEFT SIDE IS SHOWN, RIGHT SIDE IS OPPOSITE

G11278 S0006588330_V1

Section 41 Landing Gear Support Structure - Top Panel, and Side Panel (Unpressurized Sides)
Identification
Figure 3

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Table 3:

LIST OF MATERIALS FOR FIGURE 3				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Web	0.100 (2.54)	2024-T3 clad sheet as given in QQ-A-250/5. Refer to Figure 6 for the thicknesses of the chem-milled areas	
[2]	Channel		AND10137-2004 7075-T73511 extrusion as given in QQ-A-200/11	
[3]	Doubler	0.063 (1.60)	2024-T42 clad sheet as given in QQ-A-250/5.	
[4]	Clip		BAC1489-118 7075-T62 clad sheet as given in QQ-A-250/13	
[5]	Stiffener		BAC1506-4340 7075-T73511 extrusion as given in QQ-A-200/11	
[6]	Stiffener		AND10134-1206 7075-T73511 extrusion as given in QQ-A-200/11	
[7]	Upper Chord		BAC1506-4310 2024-T3511 extrusion as given in QQ-A-200/3	
[8]	Web	0.140 (3.56)	2024-T3 clad sheet as given in QQ-A-250/5 that is machined or chem-milled as given in BAC 5772, Type II to (+ or -) 0.0100 inch in the pocket areas	
[9]	Web	0.125 (3.18)	2024-T3 clad sheet as given in QQ-A-250/5. Refer to Figure 7 for the thicknesses of the chem-milled areas	
[10]	Lower Chord		BAC1506-4309 7075-T73511 extrusion as given in QQ-A-200/11	
[11]	Web	0.125 (3.18)	2024-T3 clad sheet as given in QQ-A-250/5. Refer to Figure 5 for the thicknesses of the chem-milled areas	
[12]	Lower Chord	0.125 (3.18)	7075-T62 clad sheet as given in QQ-A-250/13	
[13]	Strap	0.100 (2.54)	2024-T3 clad as given in QQ-A-250/5	
[14]	Tee		BAC1505-10124 2024-T3511 extrusion as given in QQ-A-200/3	
[15]	Canted Tee		BAC1505-101666 7075-T73511 extrusion as given in QQ-A-200/11	
[16]	Strap	0.125 (3.18)	2024-T3 clad as given in QQ-A-250/5	
[17]	Seal Retainer		BAC1520-1372 6061-T42 as given in QQ-A-200/8	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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NOTE: REFER TO TABLE 4 FOR THE LIST OF MATERIALS.

G10548 S0006588332_V1

Section 41 Landing Gear Support Structure - Top Panel (Pressurized Side) Identification
Figure 4

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Table 4:

LIST OF MATERIALS FOR FIGURE 4				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Web	0.125 (3.18)	2024-T3 clad sheet as given in QQ-A-250/5. Refer to Figure 7 for the thicknesses of the chem-milled areas	
[2]	Stiffener		BAC1509-100678 7075-T73511 extruded bar, ultrasonic inspected as given in BAC 5439, Class A. (Optional: 7075-T73511 extru- sion as given in QQ-A-200/11)	
[3]	Horizontal Beam		BAC1518-1222 2024-T3511 extrusion as given in QQ-A-200/3	
[4]	Stiffener		BAC1503-101043 7075-T73511 extrusion as given in QQ-A-200/11	
[5]	Stiffener		BAC1517-2792 7075-T73511 extruded bar, ultrasonic inspected as given in BAC 5439, Class A. (Optional: 7075-T73511 extru- sion as given in QQ-A-200/11)	
[6]	Horizontal Beam		BAC1518-1221 2024-T3511 extrusion as given in QQ-A-200/3	
[7]	Stiffener		BAC1506-4447 7075-T73511 extrusion as given in QQ-A-200/11	
[8]	Stiffener		AND10136-3001 7075-T73 extrusion as given in QQ-A-200/11	
[9]	Filler	0.125 (3.18)	2024-T3 clad sheet as given in QQ-A-250/5	
[10]	Web	0.100 (2.54)	2024-T3 clad sheet as given in QQ-A-250/5. Refer to Figure 6 for the thicknesses of the chem-milled areas	
[11]	Horizontal Beam		AND10137-2202 7075-T6511 extrusion as given in QQ-A-200/11	
[12]	Stiffener		BAC1505-100037 7075-T73511 extrusion as given in QQ-A-200/11	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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LEFT SIDE IS SHOWN, RIGHT SIDE IS OPPOSITE (EXCEPT AS SHOWN)

G11371 S0006588334_V1

Chem-Milled Areas of Figure 2, Item [13] and Figure 3, Item [11]
Figure 5

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Chem-Milled Areas of Figure 3, Item [1] and Figure 4, Item [10]
Figure 6

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Chem-Milled Areas of Figure 3, Item [9] and Figure 4, Item [1]
Figure 7

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ALLOWABLE DAMAGE 1 - SECTION 41 LANDING GEAR SUPPORT STRUCTURE LOCATION

1. Applicability

A. This subject gives the allowable damage limits for the landing gear support structure shown in Section 41 Landing Gear Support Structure Location, Figure 101/ALLOWABLE DAMAGE 1.

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NOTES

1. NUMBERS 4 AND 5 FLIGHT DECK EYEBROW WINDOWS ARE ONLY COMMON TO LINE NUMBERS 1 THRU 1649
2. FLIGHT DECK EYEBROW PLUGS FOR LINE NUMBERS 1 THROUGH 1649 WITH SB 737-56-1017

G12537 S0006588339_V3

Section 41 Landing Gear Support Structure Location
Figure 101 (Sheet 1 of 4)

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LEFT SIDE IS SHOWN, RIGHT SIDE IS OPPOSITE

SIDE PANEL (PRESSURIZED SIDE)

A

G12549 S0006588340_V1

Section 41 Landing Gear Support Structure Location
Figure 101 (Sheet 2 of 4)

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LEFT SIDE IS SHOWN, RIGHT SIDE IS OPPOSITE

VIEW LOOKING UP INSIDE THE LANDING GEAR SUPPORT STRUCTURE

TOP AND SIDE PANELS (UNPRESSURIZED SIDE)

B

G12747 S0006588341_V1

Section 41 Landing Gear Support Structure Location
Figure 101 (Sheet 3 of 4)

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G12773 S0006588342_V1

Section 41 Landing Gear Support Structure Location
Figure 101 (Sheet 4 of 4)

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2. General

A. Remove the damaged material as necessary.

(1) Refer to 51-10-02 for the inspection and removal of damage.

(2) Refer to 51-30-03 for possible sources of the abrasive and other materials you need to remove the damage.

(3) Refer to 51-30-05 for possible sources of the equipment and tools you need to remove the damage.

B. Apply a chemical conversion coating to the bare surfaces of the reworked areas. Refer to 51-20-01.

C. Apply one layer of BMS 10-11, Type I, primer to the reworked areas. Refer to SOPM 20-41-02.

D. The above procedures do not apply to dent damage.

(1) Dents can have an "oil can condition". An "oil can condition" is a deflection that occurs in the webs of the side and top panels of the landing gear support structure when the cabin goes through the pressurization/depressurization cycle.

(2) An "oil can condition" at a dent is not permitted.

3. References

Reference	Title
51-10-02	INSPECTION AND REMOVAL OF DAMAGE
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-20-06	SHOT PEENING
51-30-03	NON-METALLIC MATERIALS
51-30-05	EQUIPMENT AND TOOLS FOR REPAIRS
51-40-06, GENERAL	Fastener Edge Margins
53-10-90, ALLOWABLE DAMAGE 1	Nose Landing Gear Support Structure Fittings
AMM 51-21-99 P/B 701	DECORATIVE EXTERIOR PAINT SYSTEM - CLEANING/PAINTING
SOPM 20-10-03	SHOT PEENING
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes

4. Allowable Damage Limits

A. Side Panels (Pressurized Side)

(1) Hinge Bracket Supports

(a) Cracks are not permitted.

(b) Nicks, Gouges, Scratches, and Corrosion:

1) Remove the damage as shown in Allowable Damage Limits, Figure 102/ ALLOWABLE DAMAGE 1, Details A , B , C , E , F , and K .

WARNING: MAKE SURE THAT YOU WEAR EYE PROTECTION WHEN YOU USE THE FLAP PEEN WHEEL. IF YOU DO NOT OBEY, AN INJURY CAN OCCUR.

2) Flap peen or shot peen the surfaces if you remove the damage from the hinge bracket supports.

a) Refer to 51-20-06 for shot peen intensity and shot number.

b) Refer to SOPM 20-10-03 for flap peen and shot peen procedures.

(c) Dents are not permitted.

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(d) Holes and Punctures are not permitted.

(2) Angles, Stiffeners, and Forward Chords

(a) Cracks are not permitted.

(b) Nicks, Gouges, Scratches, and Corrosion:

1) Remove the damage as shown in Allowable Damage Limits, Figure 102/ ALLOWABLE DAMAGE 1, Details A , B , C , E , F , and K .

(c) Dents are not permitted.

(d) Holes and Punctures are not permitted.

(3) Tees

(a) Cracks are not permitted.

(b) Nicks, Gouges, Scratches, and Corrosion:

1) Remove the damage as shown in Allowable Damage Limits, Figure 102/ ALLOWABLE DAMAGE 1, Details A , B , C , E , F , and I .

(c) Dents are not permitted.

(d) Holes and Punctures are not permitted.

(4) Webs

(a) Cracks are not permitted.

(b) Nicks, Gouges, Scratches, and Corrosion:

1) Remove the damage as shown in Allowable Damage Limits, Figure 102/ ALLOWABLE DAMAGE 1, Details A , B , C , E , and H .

2) Damage that does not go through the clad surface is permitted.

(c) Dents are permitted as shown in Allowable Damage Limits, Figure 102/ALLOWABLE DAMAGE 1, Detail D if:

1) They do not extend across an attached structure

2) There is not an "oil can condition".

(d) Holes and Punctures are permitted if they are:

1) A maximum diameter of 0.25 inch

2) A minimum of 1.00 inch away from the edge of a hole, other damage, part edge, or chem-milled radius

3) They are filled with a 2117-T3 or 2117-T4 aluminum protruding head rivet. Install the rivet without sealant.

(5) Extruded Vertical Beams

(a) Cracks are not permitted.

(b) Nicks, Gouges, Scratches, and Corrosion:

1) Remove the damage as shown in Allowable Damage Limits, Figure 102/ ALLOWABLE DAMAGE 1, Details A , B , C , E , F , and K .

(c) Dents are not permitted.

(d) Holes and Punctures are not permitted.

(6) Formed Vertical Beams

(a) Cracks are not permitted.

(b) Nicks, Gouges, Scratches, and Corrosion:

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1) Remove the damage as shown in Allowable Damage Limits, Figure 102/ ALLOWABLE DAMAGE 1, Details A , B , C , E , and G .

(c) Dents are not permitted.

(d) Holes and Punctures are not permitted.

(7) Intercostals

(a) Cracks are not permitted.

(b) Nicks, Gouges, Scratches, and Corrosion:

1) Remove the damage as shown in Allowable Damage Limits, Figure 102/ ALLOWABLE DAMAGE 1, Details A , B , C , E , and H .

(c) Dents are not permitted.

(d) Holes and Punctures are permitted in the free flange as shown in Allowable Damage Limits, Figure 102/ALLOWABLE DAMAGE 1, Detail J .

(e) In web areas, Holes and Punctures are permitted if they are:

1) A maximum diameter of 0.25 inch

2) A minimum of 1.00 inch away from the edge of a hole, other damage, or part edge

3) They are filled with a 2117-T3 or 2117-T4 aluminum protruding head rivet. Install the rivet without sealant.

B. Top and Side Panels (Unpressurized Sides)

(1) Channels and Extruded Chords

(a) Cracks are not permitted.

(b) Nicks, Gouges, Scratches, and Corrosion:

1) Remove the damage as shown in Allowable Damage Limits, Figure 102/ ALLOWABLE DAMAGE 1, Details A , B , C , E , F , and K .

(c) Dents are not permitted.

(d) Holes and Punctures are not permitted.

(2) Tees

(a) Cracks are not permitted.

(b) Nicks, Gouges, Scratches, and Corrosion:

1) Remove the damage as shown in Allowable Damage Limits, Figure 102/ ALLOWABLE DAMAGE 1, Details A , B , C , E , F , and I .

(c) Dents are not permitted.

(d) Holes and Punctures are not permitted.

(3) Stiffeners

(a) Cracks are not permitted.

(b) Nicks, Gouges, Scratches, and Corrosion:

1) Remove the damage as shown in Allowable Damage Limits, Figure 102/ ALLOWABLE DAMAGE 1, Details A , B , C , E , F , and K .

(c) Dents are not permitted.

(d) Holes and Punctures are permitted only in the free flange as shown in Allowable Damage Limits, Figure 102/ALLOWABLE DAMAGE 1, Detail J .

(4) Formed Chords, Seal Retainers, and Clips

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(a) Cracks are not permitted.

(b) Nicks, Gouges, Scratches, and Corrosion:

1) Remove the damage as shown in Allowable Damage Limits, Figure 102/ ALLOWABLE DAMAGE 1, Details A , B , C , E , and G .

(c) Dents are not permitted.

(d) Holes and Punctures are permitted only in the free flange as shown in Allowable Damage Limits, Figure 102/ALLOWABLE DAMAGE 1, Detail J .

(5) Doublers, Webs, and Straps

(a) Cracks are not permitted.

(b) Nicks, Gouges, Scratches, and Corrosion:

1) Remove the damage as shown in Allowable Damage Limits, Figure 102/ ALLOWABLE DAMAGE 1, Details A , B , C , E , and H .

2) Damage that does not go through the clad surface is permitted.

(c) Dents are permitted as shown in Allowable Damage Limits, Figure 102/ALLOWABLE DAMAGE 1, Detail D if:

1) They do not extend across an attached structure

2) There is not an "oil can condition".

(d) Holes and Punctures are permitted if they are:

1) A maximum diameter of 0.25 inch

2) A minimum of 1.00 inch away from the edge of a hole, other damage, part edge, or chem-milled radius of a web

3) They are filled with a 2117-T3 or 2117-T4 aluminum protruding head rivet. Install the rivet without sealant.

C. Top Panel (Pressurized Side)

(1) Horizontal Beams

(a) Cracks are not permitted.

(b) Nicks, Gouges, Scratches, and Corrosion:

1) Remove the damage as shown in Allowable Damage Limits, Figure 102/ ALLOWABLE DAMAGE 1, Details A , B , C , E , F , and K .

(c) Dents are not permitted.

(d) Holes and Punctures are not permitted.

(2) Stiffeners

(a) Cracks are not permitted.

(b) Nicks, Gouges, Scratches, and Corrosion:

1) Remove the damage as shown in Allowable Damage Limits, Figure 102/ ALLOWABLE DAMAGE 1, Details A , B , C , E , F , and K .

(c) Dents are not permitted.

(d) Holes and Punctures are permitted in the free flange as shown in Allowable Damage Limits, Figure 102/ALLOWABLE DAMAGE 1, Detail J .

(3) Webs

(a) Cracks are not permitted.

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(b) Nicks, Gouges, Scratches, and Corrosion:

1) Remove the damage as shown in Allowable Damage Limits, Figure 102/ ALLOWABLE DAMAGE 1, Details A , B , C , E , and H .

2) Damage that does not go through the clad surface is permitted.

(c) Dents are permitted as shown in Allowable Damage Limits, Figure 102/ALLOWABLE DAMAGE 1, Detail D if:

1) They do not extend across an attached structure

2) There is not an "oil can condition".

(d) Holes and Punctures are permitted if they are:

1) A maximum diameter of 0.25 inch

2) A minimum of 1.00 inch away from the edge of a hole, other damage, part edge, or chem-milled radius

3) They are filled with a 2117-T3 or 2117-T4 aluminum protruding head rivet. Install the rivet without sealant.

D. Top and Side Access Panels (Unpressurized side)

(1) Nicks, Gouges, Scratches, and Corrosion

(a) Remove the damage by blending as given in INSPECTION AND REMOVAL OF DAMAGE, 51-10-02 up to a maximum 10% of the nominal thickness.

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X = WIDTH OF THE MATERIAL THAT IS REMOVED
= 0.10 INCH OR 5% OF FLANGE WIDTH, WHICHEVER IS LESS 1
= A MAXIMUM OF 0.15 INCH 2

REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER EDGE MARGINS DO NOT HAVE AN OVERLAP

A

X = WIDTH OF THE MATERIAL THAT IS REMOVED
= 0.10 INCH OR 5% OF FLANGE WIDTH, WHICHEVER IS LESS 1
= A MAXIMUM OF 0.15 INCH 2

REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER EDGE MARGINS HAVE AN OVERLAP

B

REMOVAL OF DAMAGED MATERIAL ON A SURFACE

C

X = DEPTH OF THE MATERIAL THAT IS REMOVED
= A MAXIMUM OF 0.05T 1
= A MAXIMUM OF 0.10T 2

A–A

1 FOR AIRPLANES THAT HAVE COMPLETED SERVICE BULLETIN 737-21-1149.
2 FOR AIRPLANES THAT HAVE NOT COMPLETED SERVICE BULLETIN 737-21-1149.

400622 S0000137843_V1

Allowable Damage Limits
Figure 102 (Sheet 1 of 6)

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DENT AWAY FROM AN EDGE IS SHOWN, DENT AT AN EDGE IS SIMILAR

DENT THAT IS PERMITTED

D

REMOVAL OF DAMAGE AROUND THE FASTENERS ON AN EDGE OR A SURFACE

E

B–B

400623 S0000137844_V2

Allowable Damage Limits
Figure 102 (Sheet 2 of 6)

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Y = WIDTH OF THE MATERIAL THAT IS REMOVED
= A MAXIMUM OF 5 PERCENT OF THE WIDTH OF THE FLANGE 1
= A MAXIMUM OF 10 PERCENT OF THE WIDTH OF THE FLANGE 2

REMOVAL OF DAMAGED MATERIAL
ON A SURFACE AT AN EDGE

F

400624 S0000137845_V1

Allowable Damage Limits
Figure 102 (Sheet 3 of 6)

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X = WIDTH OF THE MATERIAL THAT IS REMOVED
= A MAXIMUM OF 5 PERCENT OF THE WIDTH OF THE FLANGE 1
= A MAXIMUM OF 10 PERCENT OF THE WIDTH OF THE FLANGE 2

REMOVAL OF DAMAGED MATERIAL ON AN EDGE

G

X = WIDTH OF THE MATERIAL THAT IS REMOVED
= A MAXIMUM OF 0.10 INCH 1
= A MAXIMUM OF 0.15 INCH 2

REMOVAL OF DAMAGED MATERIAL AT AN EDGE OF A METAL SKIN OR WEB

H

400625 S0000137846_V1

Allowable Damage Limits
Figure 102 (Sheet 4 of 6)

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X = THE WIDTH OF THE MATERIAL THAT IS REMOVED
= A MAXIMUM OF 5 PERCENT OF THE WIDTH OF THE FLANGE 1
= A MAXIMUM OF 10 PERCENT OF THE WIDTH OF THE FLANGE 2

REMOVAL OF DAMAGED MATERIAL ON AN EDGE

I

A MAXIMUM OF 4 HOLES FOR DAMAGE REMOVAL ARE PERMITTED IN A 6.0 INCH LENGTH OF FLANGE. THE MAXIMUM SIZE OF EACH HOLE IS 0.25 INCH. FILL THE HOLES WITH 2117-T3 OR 2117-T4 ALUMINUM PROTRUDING HEAD RIVETS

NOTE: NO HOLE DAMAGE ALLOWED IN FASTENED FLANGES.

HOLES AND PUNCTURES IN A FREE FLANGE

J

400626 S0000137847_V1

Allowable Damage Limits
Figure 102 (Sheet 5 of 6)

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X = WIDTH OF THE MATERIAL REMOVED
= A MAXIMUM OF 5 PERCENT OF THE WIDTH OF THE FLANGE 1
= A MAXIMUM OF 10 PERCENT OF THE WIDTH OF THE FLANGE 2

REMOVAL OF DAMAGED MATERIAL AT AN EDGE

K

400627 S0000137848_V1

Allowable Damage Limits
Figure 102 (Sheet 6 of 6)

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REPAIR 1 - SECTION 41 LANDING GEAR SUPPORT STRUCTURE LOCATION

1. **Applicability**

   A. Repair 1 is applicable to damage to the Section 41 landing gear support structure shown in Section 41 Landing Gear Support Structure Location (Pressurized Side), Figure 201/REPAIR 1.

1 EYEBROW WINDOWS ARE ONLY COMMON TO LINE NUMBERS 1 THROUGH 1649

2 FLIGHT DECK EYEBROW PLUGS FOR LINE NUMBERS 1 THROUGH 1649 WITH SB 737-56-1017

G12451 S0006588351_V3

Section 41 Landing Gear Support Structure Location (Pressurized Side)
Figure 201 (Sheet 1 of 4)

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LEFT SIDE IS SHOWN, RIGHT SIDE IS OPPOSITE

SIDE PANEL (PRESSURIZED SIDE)

A

G12489 S0006588352_V1

Section 41 Landing Gear Support Structure Location (Pressurized Side)
Figure 201 (Sheet 2 of 4)

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LEFT SIDE IS SHOWN, RIGHT SIDE IS OPPOSITE

VIEW LOOKING UP INSIDE THE LANDING GEAR SUPPORT STRUCTURE

TOP AND SIDE PANELS (UNPRESSURIZED SIDES)

B

G12495 S0006588353_V1

Section 41 Landing Gear Support Structure Location (Pressurized Side)
Figure 201 (Sheet 3 of 4)

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TOP PANEL (PRESSURIZED SIDE)

C

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Section 41 Landing Gear Support Structure Location (Pressurized Side)
Figure 201 (Sheet 4 of 4)

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2. General

A. The typical repairs given in 51-70-11, 51-70-12, and 51-70-13 can be used when applicable if there is sufficient clearance with the adjacent structure for the installation of the repair parts.

B. Some of the typical repairs given in 51-70-11, 51-70-12, and 51-70-13 must not be used in some areas, as given in the typical repair figures. Refer to 51-70-11, 51-70-12, and 51-70-13.

NOTE: The typical repairs are not applicable if there are nutplates in the repair area.

C. Refer to the limits of the typical repairs given in 51-70-11, 51-70-12, and 51-70-13 before you start a repair.

3. References

Reference	Title
51-10-02	INSPECTION AND REMOVAL OF DAMAGE
51-10-04, GENERAL	Detailed Inspection Procedures - Metallic Materials
51-70-11	TYPICAL FORMED SECTION REPAIRS
51-70-11, REPAIR GENERAL	Typical Formed Section Repair
51-70-12	EXTRUDED SECTION REPAIRS
51-70-12, REPAIR GENERAL	Typical Extruded Section Repairs
51-70-13	TYPICAL WEB REPAIRS
53-10-90, REPAIR 1	Nose Landing Gear Support Fitting Structure

4. Repair Instructions

A. Side Panels (Pressurized Side)

(1) Refer to Table 201/REPAIR 1 to find the applicable repair for a component of the side panels (pressurized side) of the Section 41 landing gear support structure shown in Section 41 Landing Gear Support Structure Location (Pressurized Side), Figure 201/REPAIR 1.

B. Top and Side Panels (Unpressurized Sides)

(1) Refer to Table 202/REPAIR 1 to find the applicable repair for a component of the top and side panels (unpressurized sides) of the Section 41 landing gear support structure shown in Section 41 Landing Gear Support Structure Location (Pressurized Side), Figure 201/REPAIR 1.

C. Top Panel (Pressurized Side)

(1) Refer to Table 203/REPAIR 1 to find the applicable repair for a component of the top panel (pressurized side) of the Section 41 landing gear support structure shown in Section 41 Landing Gear Support Structure Location (Pressurized Side), Figure 201/REPAIR 1.

D. Top and Side Access Panels (Unpressurized)

(1) Remove all damage by blending as given in INSPECTION AND REMOVAL OF DAMAGE, 51-10-02 up to a maximum 10% of the nominal thickness.

(2) High Frequency Eddy Current Inspect (HFEC) as given in 51-10-04, GENERAL, Paragraph 4.B.(1)(a) to verify there is no further damage.

(3) Maintain a 20:1 blend depth ratio or better. Do not exceed current blend depths.

(4) Use a 10X magnification and a bright light. Make sure all damage has been removed.

(5) Verify the surface texture roughness for all blended areas is 63 microinches RA or smoother.

(6) Apply BMS 3-35 or equivalent corrosion inhibiting compound to the repair areas.

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(7) Refinish as given in the SRM.

(8) Use ultrasonic inspection techniques as given in 51-10-04, GENERAL, Paragraph 4.B.(1)(b) to find the remaining thickness.

Table 201:

REPAIR REFERENCES FOR THE SECTION 41 LANDING GEAR SUPPORT STRUCTURE - SIDE PANELS (PRESSURIZED SIDE)	
COMPONENT	**REPAIR**
Angles	Refer to SRM 51-70-12
Forward Chords	Refer to SRM 51-70-12
Hinge Bracket Supports	There are no repairs for these parts in the Structural Repair Manual at this time.
Intercostals	Refer to SRM 51-70-11
Stiffeners	Refer to SRM 51-70-12
Tees	Refer to SRM 51-70-12
Vertical Beams	Refer to SRM 51-70-12
Webs	Refer to SRM 51-70-13

Table 202:

REPAIR REFERENCES FOR THE SECTION 41 LANDING GEAR SUPPORT STRUCTURE - TOP AND SIDE PANELS (UNPRESSURIZED SIDES)	
COMPONENT	**REPAIR**
Channels	Refer to SRM 51-70-12
Clips	Refer to SRM 51-70-11
Doublers	Refer to SRM 51-70-11
Extruded Chords	Refer to SRM 51-70-12
Formed Chords	Refer to SRM 51-70-11
Seal Retainers	Refer to SRM 51-70-12
Stiffeners	Refer to SRM 51-70-12
Straps	Refer to SRM 51-70-11
Tees	Refer to SRM 51-70-12
Webs	Refer to SRM 51-70-13

Table 203:

REPAIR REFERENCES FOR THE SECTION 41 LANDING GEAR SUPPORT STRUCTURE - TOP PANEL (PRESSURIZED SIDE)	
COMPONENT	**REPAIR**
Horizontal Beams	Refer to SRM 51-70-12
Stiffeners	Refer to SRM 51-70-12
Webs	Refer to SRM 51-70-13

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IDENTIFICATION 1 - FORWARD ENTRY AND AIRSTAIR DOOR SURROUND STRUCTURE

NOTE: REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

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Forward Entry and Airstair Door Surround Structure
Figure 1

Table 1:

REFERENCE DRAWINGS	
DRAWING NUMBER	**TITLE**
001A4001	Fuselage Product Collector
140A4100	Section 41 - Integration Functional Collector
140A4108	Miscellaneous Functional Collector - Section 41
140A4112	Entry Door Panel, Section 41, Functional Collector
141A0742	Integration Installation -Integration Functional Collector
141A8110	Sill Installation - Lower Main, Forward Entry Door
141A8120	Sill Installation - Upper Main, Entry Door Panel
141A8130	Sill Assembly - Upper Auxiliary, Entry Door Panel
141A8140	Sill Installation - Lower Airstair
141A8141	Sill Installation - Upper Airstair
141A8150	Frame Installation - Station 303.9, Entry Door Panel
141A8160	Frame Installation - Station 348.2, Entry Door Panel
141A8230	Scuff Plate Installation - Entry Door Panel

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Forward Entry and Airstair Door Surround Structure Locations
Figure 2

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FORWARD ENTRY DOOR SURROUND STRUCTURE

NOTES

- REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

G12295 S0006588365_V1

Section 41 Entry Door and Airstair Door Surround Structure Identification
Figure 3 (Sheet 1 of 3)

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SECTION 41 ENTRY DOOR FRAME INTERCOSTALS
(FORWARD DOOR FRAME)

A

G20674 S0006588366_V1

Section 41 Entry Door and Airstair Door Surround Structure Identification
Figure 3 (Sheet 2 of 3)

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SECTION 41 ENTRY DOOR FRAME INTERCOSTALS
(AFT DOOR FRAME)

B

G20726 S0006588367_V1

Section 41 Entry Door and Airstair Door Surround Structure Identification
Figure 3 (Sheet 3 of 3)

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Table 2:

LIST OF MATERIALS FOR FIGURE 3				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Outer Chord (2)	0.063 (1.6)	7075-T62 clad sheet as given in QQ-A-250/13	
[2]	Web (2)	0.040 (1.02)	7075-T62 clad sheet as given in QQ-A-250/13	
[3]	Web (2)	0.025 (0.64)	7075-T62 clad sheet as given in QQ-A-250/13	
[4]	Stiffener Installation			
	Web	0.063 (1.6)	7075-T62 clad sheet as given in QQ-A-250/13	
	Web	0.032 (0.81)	7075-T62 clad sheet as given in QQ-A-250/13	
	Angle		BAC1514-633 7075-T73511 extrusion as given in QQ-A-200/11	
	Angle (2)		BAC1489-360 7075-T62 clad sheet as given in QQ-A-250/13	
[5]	Forward Door Frame			
	Outer Chord		BAC1514-3228 2024-T42 extrusion as given in QQ-A-200/3. Refer to the production drawings for the machined thicknesses	
	Inner Chord		BAC1506-4331 2024-T42 extrusion as given in QQ-A-200/3. Refer to the production drawings for the machined thicknesses	
[6]	Aft Upper Door Frame			
	Outer Chord		BAC1517-2767 2024-T42 extrusion as given in QQ-A-200/3. Refer to the production drawings for the machined thicknesses	
[7]	Aft Lower Door Frame			
	Inner Chord		BAC1514-3227 2024-T42 extrusion as given in QQ-A-200/3. Refer to the production drawings for the machined thicknesses	
	Doubler	0.050 (1.27)	7075-T62 clad sheet as given in QQ-A-250/13	
	Angle, Splice	0.080 (2.03)	2024-T42 clad sheet as given in QQ-A-250/5	
[8]	Outer Chord		7050-T7451 plate as given in BMS 7-323, Type I	
[9]	Outer Chord		BAC1506-4292 7075-T62 extrusion as given in QQ-A-200/11	
[10]	Outer Chord, Upper Airstair		BAC1505-100881 2024-T42 extrusion as given in QQ-A-200/3 (Optional: AND10136-3006)	
[11]	Outer Chord, Lower Airstair		BAC1506-4448 2024-T42 extrusion as given in QQ-A-200/3	
[12]	Upper Airstair Sill			
	Angle	0.125 (3.18)	7075-T62 clad sheet as given in QQ-A-250/13	
	Web	0.080 (2.03)	7075-T6 clad sheet as given in QQ-A-250/13	
	Web	0.160 (4.06)	7075-T6 clad sheet as given in QQ-A-250/13	
[13]	Tee		BAC1506-994 7075-T6511 extrusion as given in QQ-A-200/11	

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Table 2: (Continued)

LIST OF MATERIALS FOR FIGURE 3				
ITEM	DESCRIPTION	T*[1]	MATERIAL	EFFECTIVITY
[14]	Tee		BAC1506-525 7075-T6511 as given in QQ-A-200/11 (Optional: BAC1505-101212 7075-T73511)	
[15]	Intercostal (2)		BAC1514-1291 7050-T7451 plate as given in AMS 4050 (Optional: 7075-T73511 extrusion as given in QQ-A-200/11)	
[16]	Intercostal (2)	0.056 (1.42)	7075-T62 clad sheet as given in QQ-A-250/13	
[17]	Upper Airstair Sill Angle Web Web	0.090 (2.29) 0.050 (1.27) 0.056 (1.42)	7075-T62 clad sheet as given in QQ-A-250/13 7075-T62 clad sheet as given in QQ-A-250/13 7075-T62 clad sheet as given in QQ-A-250/13	YC001-YC099, YC101-YC299, YC301-YC395, YC401-YC499, YC501-YC699, YC701-YC899, YC901-YC930 ONLY
	Bracket (2)	0.056 (1.42)	7075-T62 clad sheet as given in QQ-A-250/13	
[18]	Frame Assembly Web (2) Chord, Lower Inner (2)	0.040 (1.02)	7075-T6 clad sheet as given in QQ-A-250/13 BAC1490-2712 2024-T42 clad sheet as given in QQ-A-250/5	YC001-YC099, YC301-YC380, YC501-YC699, YC731-YC750, YC781-YC899 ONLY
	Chord, Upper Inner (2)		BAC1490-2530 2024-T42 clad sheet as given in QQ-A-250/5	
	Failsafe Chord - Aft and Forward		BAC1490-2759 7075-T62 clad sheet as given in QQ-A-250/13	
[19]	Intercostal (2)		7050-T7451 plate as given in BMS 7-323. (Grain direction controlled part) Refer to the production drawings fir the machined thicknesses. (Optional: 7075-T73 forging as given in BMS 7-186. Refer to the production drawings for the chem-mill thicknesses)	
[20]	Strap	0.160 (4.06)	2024-T3 sheet as given in QQ-A-250/4	
[21]	Hinge Box, Upper and Lower		7050-T7451 plate as given in BMS 7-186. (Grain direction controlled part) Refer to the production drawings for the machined thicknesses	
[22]	Strap	0.125 (3.18)	7075-T6 sheet as given in QQ-A-250/12	
[23]	Doorstop (8)		7050-T7451 plate as given in AMS 4050. (Grain direction controlled part) Refer to the production drawings for the machined thicknesses. (Optional: 7075-T73 forging as given in BMS 7-186. Refer to the production drawings for the chem-mill thicknesses)	
[24]	Strap (2)	0.220 (5.59)	2024-T3 sheet as given in QQ-A-250/4	
[25]	Web (2)	0.071 (1.8)	7075-T62 clad sheet as given in QQ-A-250/13	
[26]	Channel		BAC1498-162 7075-T62 clad sheet as given in QQ-A-250/13	
[27]	Strap	0.090 (2.29)	2024-T3 sheet as given in QQ-A-250/4	
[28]	Intercostal		7050-T7451 machined plate as given in BMS 7-323. (Grain direction controlled part) (Optional: 7075-T73 precision forging as given in BMS 7-186)	

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Table 2: (Continued)

LIST OF MATERIALS FOR FIGURE 3				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[29]	Intercostal		7050-T7451 machined plate as given in BMS 7-323. (Grain direction controlled part)	
[30]	Channel		BAC1493-439 7075-T62 clad sheet as given in QQ-A-250/13	
[31]	Channel		BAC1493-904 7075-T62 clad sheet as given in QQ-A-250/13	
[32]	Intercostal Assembly Angle		AND10133-1401 7075-T62 extrusion as given in QQ-A-200/11	YC101-YC299, YC381-YC395, YC401-YC499, YC701-YC730, YC751-YC780, YC901-YC930 ONLY
	Intercostal	0.063 (1.6)	7075-T62 clad sheet as given in QQ-A-250/13	
[33]	Web	0.036 (0.91)	7075-T62 clad sheet as given in QQ-A-250/13	YC101-YC299, YC381-YC395, YC401-YC499, YC701-YC730, YC751-YC780, YC901-YC930 ONLY
[34]	Angle		BAC1490-2642 7075-T62 clad sheet as given in QQ-A-250/13	YC101-YC299, YC381-YC395, YC401-YC499, YC701-YC730, YC751-YC780, YC901-YC930 ONLY
[35]	Tee		BAC1505-100415 7075-T6511 extrusion as given in QQ-A-200/11	YC101-YC299, YC381-YC395, YC401-YC499, YC701-YC730, YC751-YC780, YC901-YC930 ONLY
[36]	Intercostal	0.063 (1.6)	7075-T62 clad sheet as given in QQ-A-250/13	YC101-YC299, YC381-YC395, YC401-YC499, YC701-YC730, YC751-YC780, YC901-YC930 ONLY
[37]	Intercostal	0.050 (1.27)	7075-T62 clad sheet as given in QQ-A-250/13	YC101-YC299, YC381-YC395, YC401-YC499, YC701-YC730, YC751-YC780, YC901-YC930 ONLY
[38]	Intercostal Assembly Angle		AND10133-1401 7075-T62 extrusion as given in QQ-A-200/11	YC101-YC299, YC381-YC395, YC401-YC499, YC701-YC730, YC751-YC780, YC901-YC930 ONLY
	Intercostal	0.050 (1.27)	7075-T62 clad sheet as given in QQ-A-250/13	

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Table 2: (Continued)

LIST OF MATERIALS FOR FIGURE 3				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[39]	Tracks, Forward and Aft		BAC1520-1410 7075-T6 sheet as given in QQ-A-277	YC101-YC299, YC381-YC395, YC401-YC499, YC701-YC730, YC751-YC780, YC901-YC930 ONLY

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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NOTE: REFER TO TABLE 3 FOR THE LIST OF MATERIALS.

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Upper Main and Upper Auxiliary Sill Identification
Figure 4

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Table 3:

LIST OF MATERIALS FOR FIGURE 4				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Upper Auxiliary Sill			
	Web	0.050 (1.27)	7075-T62 clad sheet as given in QQ-A-250/13	
	Strap	0.063 (1.6)	7075-T6 clad sheet as given in QQ-A-250/13	
	Web (2)	0.040 (1.02)	7075-T62 clad sheet as given in QQ-A-250/13	
	Web	0.045 (1.14)	7075-T62 clad sheet as given in QQ-A-250/13	
	Strap (2)	0.063 (1.6)	2024-T3 clad sheet as given in QQ-A-250/5	
	Tee		BAC1505-26400 7075-T6511 extrusion as given in QQ-A-200/11	
	Tee		BAC1505-100813 7075-T73511 extrusion as given in QQ-A-200/11	
	Angle (2)		BAC1490-62 7075-T62 clad sheet as given in QQ-A-250/13	
	Angle		BAC1490-2529 7075-T62 clad sheet as given in QQ-A-250/13	
[2]	Upper Main Sill (STA 277 to STA 348.20)			
	Angle	0.050 (1.27)	7075-T62 clad sheet as given in QQ-A-250/13	
	Strap	0.125 (3.18)	Ti-6Al-4V sheet annealed as given in MIL-T-9046, Code AB-1 annealed	
	Web	0.040 (1.02)	7075-T6 clad sheet as given in QQ-A-250/13	
	Angle, Inner Chord		AND10133-0701 7075-T6511 extrusion as given in QQ-A-200/11	
	Web	0.050 (1.27)	7075-T6 clad sheet as given in QQ-A-250/13	
	Angle, Inner Chord		BAC1503-100096 7075-T6511 extrusion as given in QQ-A-200/11	
	Web	0.063 (1.6)	7075-T6 clad sheet as given in QQ-A-250/13. Refer to the production drawings for the chem-mill thicknesses	
	Angle, Inner Chord		BAC1503-2732 7075-T62 extrusion as given in QQ-A-200/11	
[3]	Outer Chord		BAC1503-100028 2024-T42 extrusion as given in QQ-A-200/3	
[4]	Outer Chord		BAC1503-100096 2024-T3511 extrusion as given in QQ-A-200/3	
[5]	Outer Chord		AND10133-0701 2024-T3511 extrusion as given in QQ-A-200/3	
[6]	Web Assembly (STA 277 to STA 294.5)			
	Web	0.050 (1.27)	7075-T62 clad sheet as given in QQ-A-250/13	
[7]	Sill (STA 348.2 to STA 380)			
	Channel	0.071 (1.8)	7075-T62 clad sheet as given in QQ-A-250/13	

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Table 3: (Continued)

LIST OF MATERIALS FOR FIGURE 4				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
	Strap	0.125 (3.18)	Ti-6Al-4V sheet as given in MIL-T-9046, Code AB-1, annealed	
[8]	Web Assembly (STA 348.20 to STA 360)			
	Web	0.071 (1.8)	7075-T62 clad sheet as given in QQ-A-250/13	
[9]	Web Assembly (STA 360 to STA 380)			
	Web	0.050 (1.27)	7075-T62 clad sheet as given in QQ-A-250/13	
[10]	Chord (STA 259.5 to (STA 360)		BAC1517-2786 7075-T62 extrusion as given in QQ-A-200/11	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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NOTE: REFER TO TABLE 4 FOR THE LIST OF MATERIALS.

G12343 S0006588371_V2

Lower Main Sill and Scuff Plate Identification
Figure 5 (Sheet 1 of 2)

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2360272 S0000539248_V1

Lower Main Sill and Scuff Plate Identification
Figure 5 (Sheet 2 of 2)

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Table 4:

LIST OF MATERIALS FOR FIGURE 5				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Angle	0.100 (2.54)	7075-T62 clad sheet as given in QQ-A-250/13	
[2]	Angle (2)		BAC1504-2583 7075-T6511 extrusion as given in QQ-A-200/11	
[3]	Angle		BAC1514-1530 2024-T3511 extrusion as given in QQ-A-200/3	
[4]	Chord		BAC1506-4521 7075-T62 extrusion as given in QQ-A-200/11	
[5]	Sill (STA 351.2 to STA 360)			
	Web	0.250 (6.35)	7075-T651 plate as given in QQ-A-250/12	
[6]	Sill (STA 303.9 to STA 351.2)			
	Web	0.090 (2.29)	7075-T6 clad sheet as given in QQ-A-250/13	
	Inner Chord	0.090 (2.29)	7075-T62 clad sheet as given in QQ-A-250/13	
	Chord	0.050 (1.27)	7075-T62 clad sheet as given in QQ-A-250/13	
	Angle	0.080 (2.03)	7075-T62 clad sheet as given in QQ-A-250/13	
[7]	Sill (STA 294.5 to STA 303.9)			
	Web	0.100 (2.54)	7075-T6 clad sheet as given in QQ-A-250/13	
	Angle		BAC1514-1204 7075-T73511 extrusion as given in QQ-A-200/11	
[8]	Sill (STA 377 to STA 294.5)			
	Web	0.050 (1.27)	7075-T62 clad sheet as given in QQ-A-250/13	
	Angle		AND10134-0702 7075-T6511 extrusion as given in QQ-A-200/11	
	Angle		BAC1514-3130 7075-T6511 extrusion as given in QQ-A-200/11	
[9]	Outer Chord		BAC1506-588 2024-T42 extrusion as given in QQ-A-200/3	
[10]	Scuff Plate (2)	0.063 (1.6)	Ti-6Al-4V titanium sheet as given in AMS-T-9046, Code AB-1, in the annealed condition	
[11]	Center Scuff Plate	0.050 (1.27)	Ti-6Al-4V titanium sheet as given in AMS-T-9046, Code AB-1, in the annealed condition	
[12]	Angle (4)	0.040 (1.02)	2024-T3 clad sheet as given in QQ-A-250/5	
[13]	Strap	0.050 (1.27)	2024-T3 clad sheet as given in QQ-A-250/5	
[14]	Angle (2)	0.040 (1.02)	2024-T42 clad sheet as given in QQ-A-250/5	
[15]	Angle	0.063 (1.6)	2024-T42 clad sheet as given in QQ-A-250/5	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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NOTE: REFER TO TABLE 5 FOR THE LIST OF MATERIALS.

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Lower Auxiliary Sill Identification
Figure 6

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Table 5:

LIST OF MATERIALS FOR FIGURE 6				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Intercostal Assembly			
	Intercostal	0.063 (1.6)	7075-T62 clad sheet as given in QQ-A-250/13	
	Intercostal	0.050 (1.27)	7075-T62 clad sheet as given in QQ-A-250/13	
	Angle	0.063 (1.6)	7075-T62 clad sheet as given in QQ-A-250/13	
[2]	Outer Chord		BAC1514-1732 7075-T73 extrusion as given in QQ-A-200/11	
[3]	Strap (2)	0.090 (2.29)	2024-T3 clad sheet as given in QQ-A-250/5	
[4]	Strap	0.112 (2.84)	2024-T3 clad sheet as given in QQ-A-250/5	
[5]	Sill (STA 344 to STA 360 and STA 294.5 to STA 312)			
	Web	0.045 (1.14)	7075-T62 clad sheet as given in QQ-A-250/13	
[6]	Sill (STA 330.2 to STA 344)			
	Web	0.063 (1.6)	7075-T62 clad sheet as given in QQ-A-250/13	
	Web		BAC1490-2788 7075-T62 clad sheet as given in QQ-A-250/13	
[7]	Sill (STA 325.28 to STA 330.62)			
	Web	0.063 (1.6)	7075-T62 clad sheet as given in QQ-A-250/13	
[8]	Tee		BAC1506-4035 7075-T73511 extrusion as given in QQ-A-200/11	
[9]	Tee		BAC1505-100164 7075-T6511 extrusion as given in QQ-A-200/11	
[10]	Tee		BAC1505-101184 7075-T6511 extrusion as given in QQ-A-200/11	
[11]	Sill (STA 312 to STA 325.38)			
	Web	0.063 (1.6)	7075-T62 clad sheet as given in QQ-A-250/13	
	Web		BAC1490-2788 7075-T62 clad sheet as given in QQ-A-250/13	
	Angle		BAC1490-2549 7075-T62 clad sheet as given in QQ-A-250/13	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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NOTE: REFER TO TABLE 6 FOR THE LIST OF MATERIALS.

G20886 S0006588376_V1

Section 41 Entry Door Without Airstairs
Figure 7

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Table 6:

LIST OF MATERIALS FOR FIGURE 7				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Stub Frame (5)		BAC1517-2796 7075-T62 clad sheet as given in QQ-A-250/13	YC001-YC099, YC301-YC380, YC501-YC699, YC731-YC750, YC781-YC899, YC931-YC940 ONLY
[2]	Frame Assembly Web Chord, Lower Inner	0.040 (1.02)	7075-T6 clad sheet as given in QQ-A-250/13 BAC1490-2712 2024-T42 clad sheet as given in QQ-A-250/5	YC001-YC099, YC301-YC380, YC501-YC699, YC731-YC750, YC781-YC899, YC931-YC940 ONLY
	Chord, Upper Inner		BAC1490-2530 2024-T42 clad sheet as given in QQ-A-250/5	
	Failsafe Chord - Aft		BAC1490-2759 7075-T62 clad sheet as given in QQ-A-250/13	
[3]	Track		BAC1520-1377 7075-T6511 extrusion as given in QQ-A-200/11. (Optional: 7050-T7451 plate as given in AMS 4050)	YC101-YC299, YC401-YC499, YC701-YC730, YC751-YC780, YC901-YC930 ONLY

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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IDENTIFICATION 2 - FORWARD GALLEY DOOR SURROUND STRUCTURE

Forward Galley Door Surround Structure
Figure 1

Table 1:

REFERENCE DRAWINGS	
DRAWING NUMBER	**TITLE**
001A4001	Fuselage Product Collector
140A4100	Section 41 - Integration Functional Collector
140A4113	Section 41 Galley Door Panel
141A1310	Intercostal DA&I - Stringer 23, Door Panels
141A8310	Sill Assembly & Installation - Lower Main, Galley Door Panel
141A8320	Sill Installation - Upper Main, Galley Door Panel
141A8350	Forward Edge Frame A&I - Galley Door Panel
141A8370	Stub Frame A&I - Galley Door Panel
141A8380	Installation - Forward Door Intercostals, Galley Door Panel
141A8390	Installation - Aft Door Intercostals, Galley Door Panel
141A8430	Scuff Plate Installation - Galley Door Panel

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G12849 S0006588381_V2

Forward Galley Door Surround Structure Location
Figure 2

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NOTE: REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

G12912 S0006588382_V2

Forward Galley Door Surround Structure Identification
Figure 3

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Table 2:

LIST OF MATERIALS FOR FIGURE 3				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Intercostal Assembly			
	Intercostal	0.063 (1.6)	7075-T62 clad sheet as given in QQ-A-250/13	
	Intercostal	0.050 (1.27)	7075-T62 clad sheet as given in QQ-A-250/13	
	Angle	0.063 (1.6)	7075-T62 clad sheet as given in QQ-A-250/13	
[2]	Stiffener Installation			
	Angle		BAC1514-633 7075-T73511 extrusion as given in QQ-A-200/11	
	Angle		BAC1489-360 7075-T62 Clad sheet as given in QQ-A-250/13	
	Web	0.063 (1.6)	7075-T62 clad sheet as given in QQ-A-250/13	
[3]	Intercostal Assembly			
	Intercostal (2)	0.063 (1.6)	7075-T62 clad sheet as given in QQ-A-250/13	
[4]	Forward Edge Frame Assembly			
	Inner Chord		BAC1514-3194 7075-T62 extrusion as given in QQ-A-200/11	
	Stiffener	0.450 (11.43)	7075-T651 plate as given in QQ-A-250/12. Refer to the production drawings for the machined thicknesses	
	Angle		BAC1514-3208 7075-T73511 extrusion as given in QQ-A-200/11	
[5]	Forward Edge Frame			
	Outer Chord		BAC1514-3193 2024-T42 extrusion as given in QQ-A-200/3. Refer to the production drawings for the machined thicknesses	
[6]	Aft Edge Frame			
	Outer Chord		BAC1514-3193 2024-T42 extrusion as given in QQ-A-200/3. Refer to the production drawings for the machined thicknesses (Optional: BAC1510-1258)	
	Strap	0.350 (8.89)	7075-T651 plate as given in QQ-A-250/12. Refer to the production drawings for the machined thicknesses	
	J-web		BAC1503-100244 7075-T62 extrusion as given in QQ-A-200/11. Refer to the production drawings for the machined thicknesses	
[7]	Stub Frame (2)	0.050 (1.27)	7075-T62 clad sheet as given in QQ-A-250/13	
[8]	Intercostal Assembly			
	Intercostal		7050-T7451 plate as given in AMS 4050. (Grain direction controlled part) (Optional: 7075-T73 die forging as given in BMS 7-186. Refer to the production drawings for the chem-mill thicknesses)	
	Strap	0.190 (4.83)	2024-T3 sheet as given in QQ-A-250/4	
[9]	Intercostal Assembly			

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Table 2: (Continued)

LIST OF MATERIALS FOR FIGURE 3				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
	Intercostal		7050-T7451 plate as given in AMS 4050. (Grain direction controlled part) (Optional: 7075-T73 die forging as given in BMS 7-186. Refer to the production drawings for the chem-mill thicknesses)	
	Strap	0.310 (7.87)	2024-T3 plate as given in QQ-A-250/4	
[10]	Intercostal Assembly			
	Intercostal		7050-T7451 plate as given in AMS 4050. (Grain direction controlled part) (Optional: 7075-T73 die forging as given in BMS 7-186. Refer to the production drawings for the chem-mill thicknesses)	
	Strap	0.140 (3.56)	2024-T3 sheet as given in QQ-A-250/4	
[11]	Intercostal Assembly			
	Intercostal		7050-T7451 plate as given in AMS 4050. Grain direction controlled part) (Optional: 7075-T73 die forging as given in BMS 7-186. Refer to the production drawings for the chem-mill thicknesses)	
	Strap	0.160 (4.06)	2024-T3 sheet as given in QQ-A-250/4	
[12]	Intercostal Assembly			
	Intercostal		7050-T7451 plate as given in AMS 4050. (Grain direction controlled part) (Optional: 7075-T73 die forging as given in BMS 7-186. Refer to the production drawings for the chem-mill thicknesses)	
	Strap	0.250 (6.35)	2024-T3 plate as given in QQ-A-250/4	
[13]	Intercostal		7075-T73 die forging as given in BMS 7-186. Refer to the production drawings for the chem-mill thicknesses	
[14]	Chord		AND10134-1205 7075-T62 extrusion as given in QQ-A-200/11	
[15]	Chord		BAC1506-4292 7075-T62 extrusion as given in QQ-A-200/11	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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NOTE: REFER TO TABLE 3 FOR THE LIST OF MATERIALS.

G12922 S0006588384_V1

Upper Main Auxiliary Sill Structure Identification
Figure 4

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Table 3:

LIST OF MATERIALS FOR FIGURE 4				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Sill (STA 344 to STA 328)			
	Web	0.056 (1.42)	7075-T62 clad sheet as given in QQ-A-250/13	
[2]	Sill (STA 312 to STA 328 and STA 294.5 to STA 312)			
	Web	0.032 (0.81)	7075-T62 clad sheet as given in QQ-A-250/13	
[3]	Sill (STA 277 to STA 294.5)			
	Web	0.063 (1.6)	7075-T62 clad sheet as given in QQ-A-250/13	
	Strap	0.063 (1.6)	2024-T3 clad sheet as given in QQ-A-250/5	
[4]	Chord		BAC1503-100613 7075-T62 extrusion as given in QQ-A-200/11	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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NOTE: REFER TO TABLE 4 FOR THE LIST OF MATERIALS.

G12934 S0006588386_V1

Upper Main Sill Structure Identification
Figure 5

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Table 4:

LIST OF MATERIALS FOR FIGURE 5				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Strap	0.160 (4.6)	2024-T3 sheet as given in QQ-A-250/4	
[2]	Strap	0.100 (2.54)	2024-T3 sheet as given in QQ-A-250/4	
[3]	Web (STA 344 to STA 360, STA 277 to STA 291.5, and STA 259.5 to 277) STA 277)	0.040 (1.02)	7075-T62 clad sheet as given in QQ-A-250/13	
[4]	Web (STA 332.1 to STA 344)	0.050 (1.27)	7075-T62 clad sheet as given in QQ-A-250/13	
[5]	Web (STA 291.5 to STA 332.1)	0.063 (1.6)	7075-T62 clad sheet as given in QQ-A-250/13	
[6]	Chord		BAC1503-100195 2024-T62 extrusion as given in QQ-A-200/3	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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NOTE: REFER TO TABLE 5 FOR THE LIST OF MATERIALS.

G12946 S0006588388_V2

Lower Main Sill Structure Identification
Figure 6

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Table 5:

LIST OF MATERIALS FOR FIGURE 6				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Strap, Outer Chord	0.400 (10.16)	2024-T351 plate as given in QQ-A-250/4. This is a grain direction controlled part	
[2]	Strap, Inner Chord	0.200 (5.08)	7075-T6 sheet as given in QQ-A-250/12	
[3]	Web Assembly (STA 277 to STA 291.5)			
	Web	0.090 (2.29)	7075-T6 Clad sheet as given in QQ-A-250/13. Refer to the production drawings for the chem-mill thicknesses	
	Angle		BAC1490-2630 7075-T62 clad sheet as given in QQ-A-250/13	
	Channel	0.045 (1.14)	7075-T62 clad sheet as given in QQ-A-250/13	
[4]	Web (STA 332.1 to STA 344)	0.063 (1.6)	7075-T62 clad sheet as given in QQ-A-250/13	
[5]	Web Assembly (STA 291.5 to STA 332.1)			
	Web (2)	0.063 (1.6)	7075-T6 clad sheet as given in QQ-A-250/13. Refer to the production drawings for the chem-mill thicknesses	
	Web	0.040 (1.02)	7075-T6 clad sheet as given in QQ-A-250/13. Refer to the production drawings for the chem-mill thicknesses	
	Angle		BAC1490-2735 7075-T62 clad sheet as given in QQ-A-250/13	
	Angle		BAC1490-2630 7075-T62 clad sheet as given in QQ-A-250/13	
[6]	Chord Assembly (STA 259.5 to STA 360)			
	Inner Chord	0.080 (2.03)	7075-T62 clad sheet as given in QQ-A-250/13	
	Angle		BAC1514-3290 7075-T62 extrusion as given in QQ-A-200/11	
[7]	Web (STA 259.5 to STA 277)	0.071 (1.8)	7075-T6 clad sheet as given in QQ-A-250/13. Refer to the production drawings for the chem-mill thicknesses	
[8]	Chord (STA 259.5 to STA 360)		BAC1506-2633 2024-T42 extrusion as given in QQ-A-200/3	
[9]	Web (STA 344 to STA 360)	0.090 (2.29)	7075-T6 clad sheet as given in QQ-A-250/13. Refer to the production drawings for the chem-mill thicknesses	
[10]	Scuff Plate Assembly			
	Scuff Plate	0.040 (1.01)	Ti-6Al-4V titanium sheet as given in MIL-T-9046, Code AB-1, in the annealed condition	
	Stop Plate (2)	0.050 (1.27)	301 CRES Sheet as given in AMS 5519, condition hard, surface condition 2D	
[11]	Lower Corner Reveal (2)		Aluminum Alloy Casting, A357.0 T61 as given in AMS 4219	
[12]	Filler, Aft	0.25 (6.35)	7075-T7351 Bare Plate as given in QQ-A-250/12	

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Table 5: (Continued)

LIST OF MATERIALS FOR FIGURE 6				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[13]	Filler, Forward	0.20 (5.08)	7075-T73 Bare Sheet as given in QQ-A-250/12	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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NOTE: REFER TO TABLE 6 FOR THE LIST OF MATERIALS.

G12949 S0006588391_V1

Lower Auxiliary Sill Structure Identification
Figure 7

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Table 6:

LIST OF MATERIALS FOR FIGURE 7				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Web (STA 344 to STA 360)	0.040 (1.02)	7075-T62 clad sheet as given in QQ-A-250/13	
[2]	Strap	0.125 (3.18)	7075-T6 sheet as given in QQ-A-250/13	
[3]	Strap (2)	0.080 (2.03)	7075-T6 clad sheet as given in QQ-A-250/13	
[4]	Web Assembly (STA 328 to STA 344)			
	Web	0.056 (1.42)	7075-T62 clad sheet as given in QQ-A-250/13	
	Angle		AND10134-0501 7075-T73511 extrusion as given in QQ-A-200/11	
[5]	Web Assembly (STA 312 to STA 328 and STA 294.5 to STA 312)			
	Web	0.050 (1.27)	7075-T62 clad sheet as given in QQ-A-250/13	
	Angle		AND10134-0501 7075-T73511 extrusion as given in QQ-A-200/11	
[6]	Web Assembly (STA 277 to STA 294.5)			
	Web	0.063 (1.6)	7075-T62 clad sheet as given in QQ-A-250/13	
	Angle		AND10134-1201 7075-T73511 extrusion as given in QQ-A-200/11	
[7]	Web (STA 259.5 to STA 277)	0.045 (1.14)	7075-T62 clad sheet as given in QQ-A-250/13	
[8]	Chord (STA 259.5 to STA 360)		BAC1503-100144 7075-T73 extrusion as given in QQ-A-200/11	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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IDENTIFICATION 3 - FORWARD BAY AND ELECTRONIC BAY ACCESS DOORS SURROUND STRUCTURE

NOTE: REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

G12957 S0006588394_V1

Forward Bay and Electronic Bay Access Door Surround Structures Location
Figure 1

Table 1:

REFERENCE DRAWINGS	
DRAWING NUMBER	**TITLE**
001A4001	Fuselage Product Collector
140A4105	Functional Collector - Lower Lobe, Section 41
141A8501	Intercostal Installation-Forward Access Section 41
141A8505	Surround Assemblies - Lower Lobe Access, Section 41
141A8511	Surround Installation - Electronic Bay Access, Section 41

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NOTE: REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

FORWARD BAY ACCESS DOOR SURROUND STRUCTURE

G13757 S0006588396_V1

Forward Bay Access Door Surround Structure Identification
Figure 2

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Table 2:

LIST OF MATERIALS FOR FIGURE 2				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Web	0.063 (1.6)	7075-T6 clad sheet as given in QQ-A-250/13. Refer to the production drawings for the chem-mill thicknesses	
[2]	Outer Chord		BAC1506-1744 2024-T42 extrusion as given in QQ-A-200/3	
[3]	Inner Chord		BAC1503-100055 7075-T62 extrusion as given in QQ-A-200/11	
[4]	Web	0.032 (0.81)	7075-T6 clad sheet as given in QQ-A-250/13. Refer to the production drawings for the chem-mill thicknesses	
[5]	Outer Chord		BAC1506-1989 2024-T42 extrusion as given in QQ-A-200/3	
[6]	Inner Chord		BAC1505-100274 7075-T62 extrusion as given in QQ-A-200/11	
[7]	Outer Chord (2)		BAC1505-100482 2024-T42 extrusion as given in QQ-A-200/3 (Optional: 7050-T7451 plate as given in BMS 7-323)	
[8]	Web (2)	0.025 (0.64)	7075-T6 clad sheet as given in QQ-A-250/13	
[9]	Stiffener (2)		BAC1514-3158 7075-T73511 extrusion as given in QQ-A-200/11	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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NOTE: REFER TO TABLE 3 FOR THE LIST OF MATERIALS.

ELECTRONIC BAY ACCESS DOOR SURROUND STRUCTURE

G13858 S0006588398_V1

Electronic Bay Access Door Surround Structure Identification
Figure 3

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Table 3:

LIST OF MATERIALS FOR FIGURE 3				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Web	0.040 (1.02)	7075-T6 clad sheet as given in QQ-A-250/13	
[2]	Outer Chord		BAC1506-921 2024-T42 extrusion as given in QQ-A-200/3	
[3]	Inner Chord		BAC1503-100913 7075-T62 extrusion as given in QQ-A-200/11	
[4]	Web	0.040 (1.02)	2024-T3 clad sheet as given in QQ-A-250/5	
[5]	Outer Chord		BAC1505-101176 2024-T42 extrusion as given in QQ-A-200/3	
[6]	Inner Chord		AND10133-1201 7075-T62 extrusion as given in QQ-A-200/11	
[7]	Intercostal (3) Assembly Web Chord	 0.032 (0.81)	 7075-T6 clad sheet as given in QQ-A-250/13 BAC1514-3158 7075-T73511 extrusion as given in QQ-A-200/11	
[8]	Intercostal Web (2)	0.040 (1.02)	7075-T6 clad sheet as given in QQ-A-250/13	
[9]	Intercostal Assembly Web Chord	 0.071 (1.8)	 7075-T6 clad sheet as given in QQ-A-250/13 BAC1514-3158 7075-T73511 extrusion as given in QQ-A-200/11	
[10]	Lower Chord		BAC1506-4301 7075-T62 extrusion as given in QQ-A-200/11	
[11]	Lower Chord		BAC1506-1743 7075-T62 extrusion as given in QQ-A-200/11	
[12]	Failsafe Chord (2)		BAC1490-2569 7075-T62 clad sheet as given in QQ-A-250/13	
[13]	Failsafe Chord (2)		BAC1490-2807 7075-T62 clad sheet as given in QQ-A-250/13	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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IDENTIFICATION 4 - ELECTRICAL GROUND POWER RECEPTACLE SURROUND STRUCTURE

1665037 S0000298275_V1

Electrical Ground Power Receptacle Surround Structure Location
Figure 1

REFERENCE DRAWINGS	
DRAWING NUMBER	TITLE
141A3702	Skin Installation -Side Panel, Section 41
141A0640	Intergration Installation -Side Panel, Section 41

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NOTE: REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

1664999 S0000298281_V1

Electrical Ground Power Receptacle Surround Structure Identification
Figure 2

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LIST OF MATERIALS FOR FIGURE 2				
ITEM	DESCRIPTION	T*[*1]	MATERIAL	EFFECTIVITY
[1]	Doubler	0.040 (1.02)	2024-T42 clad sheet as given in QQ-A-250/5.	
[2]	Stiffener	2.00 (50.8)	7050-T7451 Plate. Ultrasonic Inspect as given in BAC5439 Class A.	
[3]	Intercostal	1.75 (44.45)	7075-T7351 Plate as given in QQ-A-250/1, ultrasonic inspect as given in BAC5439 Class A.	
[4]	Stiffener		BAC1508-311 7075-T73511 Extrusion as given in QQ-A-200/11, ultrasonic inspect as given in BAC5439 Class A. (Optional: 7075-T73511 Extruded Bar)	
[5]	Rubbing Block	0.031 (0.79)	Phenolic Resin, Laminated Thermosetting Sheet as given in ASTMD709, Type V, Grade N-1.	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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ALLOWABLE DAMAGE 1 - FORWARD ENTRY AND AIRSTAIR DOOR SURROUND STRUCTURE

1. Applicability

A. This subject gives the allowable damage limits for the door surround structure as shown in Figure 101/ALLOWABLE DAMAGE 1.

Table 101:

PARAGRAPH REFERENCES FOR THE ALLOWABLE DAMAGE LIMITS		
TYPE OF STRUCTURE	**PART NAME**	**PARAGRAPH**
UPPER MAIN AUXILIARY SILL	OUTER CHORDS	4.A
	TEE CLIPS	4.B
	ANGLES	4.C
	WEBS	4.D
	DOUBLER	4.D
	STRAPS	4.E
	CHANNELS	4.H
UPPER MAIN SILL	OUTER CHORD	4.A
	INNER CHORD ANGLES	4.B
	ANGLES	4.C
	WEBS	4.D
	DOUBLER	4.D
	STRAPS	4.E
AFT LOWER FRAME CHORD	FRAME CHORD	4.A
	SPLICE ANGLE	4.C
	FRAME DOUBLER	4.D
	SPLICE STRAP	4.E
AFT DOOR FRAME INTERCOSTAL	INTERCOSTAL	4.G
	CHANNEL	4.H
FORWARD DOOR FRAME INTERCOSTAL	STRAP	4.E
	INTERCOSTAL	4.G
STIFFENER INSTALLATION AT S-13	OUTER CHORD	4.A
	ANGLE	4.B
	ANGLES	4.C
	WEBS	4.D
LOWER AUXILIARY SILL	OUTER CHORD	4.A
	TEES	4.B
	WEBS	4.D
	STRAPS	4.E
	INTERCOSTAL	4.F

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Table 101: (Continued)

PARAGRAPH REFERENCES FOR THE ALLOWABLE DAMAGE LIMITS		
TYPE OF STRUCTURE	PART NAME	PARAGRAPH
LOWER MAIN SILL	OUTER CHORD	4.A
	ANGLES CLIP	4.B
	ANGLE	4.B
	INNER CHORD	4.C
	CHORD	4.C
	ANGLE	4.C
	SHEAR CLIP	4.C
	WEB	4.D
	CHANNEL	4.H
	BULB ANGLE	4.J
	SCUFF PLATE	4.K
INTERCOSTAL ASSEMBLY	ANGLE	4.B
	DOUBLER	4.D
	INTERCOSTAL	4.F
CARRIAGE TRACK SUPPORT	CHORDS	4.C
	FAIL SAFE CHORDS	4.C
	WEBS	4.D
	DOUBLERS	4.D
UPPER AIRSTAIR SILL	TEE CLIPS	4.B
	CHANNEL CLIP	4.B
	ANGLE	4.C
	WEB	4.D
	J-WEB	4.D
LOWER AIRSTAIR SILL	INNER CHORD	4.B
	TEE CLIPS	4.B
	CLIP	4.B
	ANGLES	4.C
	WEBS	4.D
LOWER AUXILIARY AIRSTAIR SILL	TEE CLIPS	4.B
	CHANNEL CLIP	4.B
	CLIPS	4.B
	ANGLES	4.C
	WEBS	4.D
	STRAPS	4.E

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Table 101: (Continued)

PARAGRAPH REFERENCES FOR THE ALLOWABLE DAMAGE LIMITS		
TYPE OF STRUCTURE	PART NAME	PARAGRAPH
OTHER STRUCTURES	TRACKS	4.A
	TEES	4.B
	OUTER CHORDS	4.C
	INTERCOSTAL	4.F
	STUB FRAMES	4.I

2. General

WARNING: SMALL PARTICLES OF TITANIUM ARE FLAMMABLE. IN A SUFFICIENT CONCENTRATION, AN EXPLOSION CAN OCCUR. EXTINGUISH FIRES OF TITANIUM WITH FULLY DRY TALC, CALCIUM CARBONATE, SAND OR GRAPHITE. APPLY THE POWDER TO A DEPTH OF 1/2 INCH OR MORE ON TOP OF THE AREA THAT IS ON FIRE. DO NOT USE FOAM, WATER, HALON, CARBON TETRACHLORIDE, OR CARBON DIOXIDE. WATER THAT TOUCHES MOLTEN TITANIUM CAN CAUSE A STEAM EXPLOSION.

A. Remove the damaged material as necessary.

(1) Refer to 51-10-02 for the inspection and removal of damage.

(2) Refer to 51-30-03 for possible sources of the abrasive and other materials you need to remove the damage.

(3) Refer to 51-30-05 for possible sources of the equipment and tools you need to remove the damage.

(4) Refer to SOPM 20-10-07 when you machine titanium straps.

B. Apply a chemical conversion coating to the bare surfaces of the reworked area. Refer to 51-20-01

C. Apply one layer of BMS 10-11, Type I, primer to the bare surfaces of the reworked area. Refer to SOPM 20-41-02.

D. After you have removed the damage from the titanium strap, do the step that follows:

(1) Apply one layer of BMS 10-11, Type I primer to the reworked area. Refer to SOPM 20-40-02.

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G79880 S0006588402_V2

Forward Entry and Airstair Door Surround Structure
Figure 101

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G23931 S0006588404_V2

Forward Entry and Airstair Door Surround Structure Locations
Figure 102

BOEING PROPRIETARY - Copyright © Unpublished Work - See title page for details

NOTE: ALL PARTS ARE MADE OF ALUMINUM EXCEPT AS NOTED.

G24028 S0006588405_V1

Upper Main Sill and Upper Auxiliary Sill Structure
Figure 103 (Sheet 1 of 3)

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NOTE: ALL PARTS ARE MADE OF ALUMINUM.

UPPER AUXILIARY SILL

A

G24956 S0006588406_V1

Upper Main Sill and Upper Auxiliary Sill Structure
Figure 103 (Sheet 2 of 3)

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NOTE: ALL PARTS ARE MADE OF ALUMINUM EXCEPT AS NOTED.

UPPER MAIN SILL

B

G29880 S0006588407_V1

Upper Main Sill and Upper Auxiliary Sill Structure
Figure 103 (Sheet 3 of 3)

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NOTE: ALL PARTS ARE MADE OF ALUMINUM.

G24015 S0006588408_V1

Forward Entry Door Surround Structure Between the Upper and Lower Sills
Figure 104 (Sheet 1 of 4)

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NOTE: ALL PARTS ARE MADE OF ALUMINUM.

AFT LOWER FRAME CHORD

A

G24854 S0006588409_V1

Forward Entry Door Surround Structure Between the Upper and Lower Sills
Figure 104 (Sheet 2 of 4)

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NOTE: ALL PARTS ARE MADE OF ALUMINUM.

AFT DOOR FRAME INTERCOSTAL (TYPICAL)

B

NOTE: ALL PARTS ARE MADE OF ALUMINUM.

FORWARD DOOR FRAME INTERCOSTALS (TYPICAL)

C

G24677 S0006588410_V1

Forward Entry Door Surround Structure Between the Upper and Lower Sills
Figure 104 (Sheet 3 of 4)

BOEING PROPRIETARY - Copyright © Unpublished Work - See title page for details

NOTE: ALL PARTS ARE MADE OF ALUMINUM.

STIFFENER INSTALLATION AT STRINGER 13

D

A–A

G24897 S0006588411_V1

Forward Entry Door Surround Structure Between the Upper and Lower Sills
Figure 104 (Sheet 4 of 4)

BOEING PROPRIETARY - Copyright © Unpublished Work - See title page for details

NOTE: ALL PARTS ARE MADE OF ALUMINUM.

G24126 S0006588412_V2

Lower Sill Structure and Scuff Plate
Figure 105 (Sheet 1 of 3)

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NOTE: ALL PARTS ARE MADE OF ALUMINUM.

LOWER MAIN SILL

A

(ROTATED 90° COUNTERCLOCKWISE)
A-A

G25850 S0006588413_V2

Lower Sill Structure and Scuff Plate
Figure 105 (Sheet 2 of 3)

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SCUFF PLATE

B

B–B

2324935 S0000527875_V1

Lower Sill Structure and Scuff Plate
Figure 105 (Sheet 3 of 3)

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NOTE: ALL PARTS ARE MADE OF ALUMINUM.

G24096 S0006588414_V1

Door Surround Structure With Airstairs
Figure 106 (Sheet 1 of 3)

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NOTE: ALL PARTS ARE MADE OF ALUMINUM.

INTERCOSTAL ASSEMBLY (TYPICAL)

A

G24567 S0006588415_V1

Door Surround Structure With Airstairs
Figure 106 (Sheet 2 of 3)

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NOTE: ALL PARTS ARE MADE OF ALUMINUM.

CARRIAGE TRACK SUPPORT

B

G24686 S0006588416_V1

Door Surround Structure With Airstairs
Figure 106 (Sheet 3 of 3)

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NOTE: ALL PARTS ARE MADE OF ALUMINUM.

G24134 S0006588417_V1

Door Surround Structure Without Airstairs
Figure 107 (Sheet 1 of 4)

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UPPER AIRSTAIR SILL

A

G78691 S0006588418_V1

Door Surround Structure Without Airstairs
Figure 107 (Sheet 2 of 4)

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LOWER AIRSTAIR SILL

B

G78693 S0006588419_V1

Door Surround Structure Without Airstairs
Figure 107 (Sheet 3 of 4)

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LOWER AUXILIARY AIRSTAIR SILL

C

G78695 S0006588420_V1

Door Surround Structure Without Airstairs
Figure 107 (Sheet 4 of 4)

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3. References

Reference	Title
51-10-02	INSPECTION AND REMOVAL OF DAMAGE
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-30-03	NON-METALLIC MATERIALS
51-30-05	EQUIPMENT AND TOOLS FOR REPAIRS
SOPM 20-10-07	Machining of Titanium
SOPM 20-40-02	Standard Overhaul Practices Manual
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes

4. Allowable Damage Limits

A. Chords and Tracks - Extruded

(1) Cracks:

(a) Remove damage as shown in Figure 108, Details A , B , and C .

(2) Nicks, Gouges, Scratches, and Corrosion:

(a) Remove damage as shown in Figure 108, Details A , B , C , D , E and H .

(3) Dents are not permitted.

(4) Holes and Punctures are not permitted.

B. Inner Chord Angles, Angles, Angle Clip, Stiffener, Tee Clips, Tees, Channel Clip - Extruded

(1) Cracks:

(a) Remove damage as shown in Figure 108, Details A , B , C , and F .

(2) Nicks, Gouges, Scratches, and Corrosion:

(a) Remove damage as shown in Figure 108, Details A, B, C, D, E, and F.

(3) Dents are not permitted.

(4) Holes and Punctures are not permitted.

C. Fail Safe Chords, Chords, Inner Chord, Angles, Splice Angle, Shear Clip - Formed

(1) Cracks:

(a) Remove the damage as shown in Figure 108, Details A , B , and G .

(2) Nicks, Gouges, Scratches, and Corrosion:

(a) Remove the damage as shown in Figure 108, Details A , B , D , G , and H .

(3) Dents are permitted as shown in Figure 108, Detail I .

(4) Holes and Punctures are not permitted.

D. Webs and Doublers

(1) Cracks:

(a) Remove the damage as shown in Figure 108, Details A , B , and K .

(2) Nicks, Gouges, Scratches, and Corrosion:

(a) Remove the damage as shown in Figure 108, Details A , B , D , H and K .

(3) Dents are permitted as shown in Figure 108, Detail I .

(4) Holes and Punctures:

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(a) The damage is permitted as shown in Figure 108, Detail J if it is:

1) A maximum of 0.25 inch in diameter

2) A minimum of 4D (D= the diameter of the damage) away from a hole, or other damage and 2D minimum from the edge part

3) Filled with a 2117-T3 or 2117-T4 aluminum rivet installed without sealant.

E. Straps

(1) Cracks:

(a) Remove the damage as shown in Figure 108, Details A , B , L , and M .

(2) Nicks, Gouges, Scratches, and Corrosion:

(a) Remove the damage as shown in Figure 108, Details A , B , D , H , L , and M .

(3) Dents are not permitted.

(4) Holes and Punctures are not permitted.

F. Intercostals - Formed

(1) Cracks:

(a) Remove the damage as shown in Figure 108, Details A , B , and G .

(2) Nicks, Gouges, Scratches, and Corrosion:

(a) Remove the damage as shown in Figure 108, Details A , B , D , G , and H .

(3) Dents are permitted as shown in Figure 108, Detail I .

(4) Holes and Punctures:

(a) The damage is permitted as shown in Figure 108, Detail J if it is:

1) A maximum of 0.25 inch in diameter

2) A minimum of 4D (D= the diameter of the damage) away from a hole, or other damage and a 2D minimum from the edge part

3) Filled with a 2117-T3 or 2117-T4 aluminum rivet installed without sealant.

G. Intercostals - Machined

(1) Cracks:

(a) Remove the damage as shown in Figure 108, Details A , B , and C .

(2) Nicks, Gouges, Scratches, and Corrosion:

(a) Remove the damage as shown in Figure 108, Details A , B , C , D , E , and H .

(3) Dents are not permitted.

(4) Holes and Punctures are not permitted.

H. Channels - Formed

(1) Cracks:

(a) Remove the damage as shown in Figure 108, Details A , B , and G .

(2) Nicks, Gouges, Scratches, and Corrosion:

(a) Remove the damage as shown in Figure 108, Details A , B , D , G and H .

(3) Dents are permitted as shown in Figure 108, Detail I .

(4) Holes and Punctures:

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(a) The damage is permitted as shown in Figure 108, Detail J if it is:

1) A maximum of 0.25 inch in diameter

2) A minimum of 4D (D= the diameter of the damage) away from a hole, or other damage and 2D minimum from the edge part

3) Filled with a 2117-T3 or 2117-T4 aluminum rivet installed without sealant.

I. Stub Frames - Formed

(1) Cracks:

(a) Remove the damage as permitted in Figure 108, Details A , B , and H .

(2) Nicks, Gouges, Scratches, and Corrosion:

(a) Remove the damage as shown in Figure 108, Details A , B , D , G , H , and K .

(3) Dents are permitted as shown in Figure 108, Detail I .

(4) Holes and Punctures:

(a) The damage is permitted as shown in Figure 108, Detail J if it is:

1) A maximum of 0.25 inch in diameter

2) A minimum of 4D (D= the diameter of the damage) away from a hole, or other damage and 2D minimum from the edge part

3) Filled with a 2117-T3 or 2117-T4 aluminum rivet installed without sealant.

J. Bulb Angle - Extruded

(1) Cracks are not permitted.

(2) Nicks, Gouges, Scratches, and Corrosion:

(a) Remove the damage as shown in Figure 108, Details A , B , C , D , E , and N .

(3) Dents are not permitted.

(4) Holes and Punctures are not permitted.

K. Scuff Plate

(1) Cracks:

(a) Remove the damage as shown in Figure 108, Details A, B, C and K.

(2) Nicks, Gouges, Scratches, and Corrosion:

(a) Remove the damage as shown in Figure 108, Details A, B, C, D, E, H, and K.

(3) Dents are permitted as shown in Figure 108, Detail I.

(4) Holes and Punctures are permitted if they are:

(a) A maximum of 0.25 inch in diameter

(b) A maximum of 4D (D= the diameter of the damage) away from a hole, the edge part, or other damage

(c) Filled with a 2117-T3 or 2117-T4 aluminum rivet installed without sealant.

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X = WIDTH OF THE MATERIAL THAT IS REMOVED
= A MAXIMUM OF 0.05 INCH OR 5 PERCENT OF THE FLANGE (OR WEB) WIDTH, THAT WHICH IS LESS 1
= A MAXIMUM OF 0.10 INCH 2

REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER EDGE MARGINS DO NOT HAVE AN OVERLAP

A

X = WIDTH OF THE MATERIAL THAT IS REMOVED
= A MAXIMUM OF 0.05 INCH OR 5 PERCENT OF THE FLANGE (OR WEB) WIDTH, THAT WHICH IS LESS 1
= A MAXIMUM OF 0.10 INCH 2

REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER EDGE MARGINS HAVE AN OVERLAP

B

X = WIDTH OF THE MATERIAL REMOVED
= A MAXIMUM OF 0.05 INCH OR 5 PERCENT OF THE FLANGE WIDTH, THAT WHICH IS LESS 1
= A MAXIMUM OF 0.10 INCH 2

REMOVAL OF DAMAGED MATERIAL AT AN EDGE OF A MACHINED OR EXTRUDED PART

C

1 FOR AIRPLANES THAT HAVE COMPLETED SERVICE BULLETIN 737-21-1149.
2 FOR AIRPLANES THAT HAVE NOT COMPLETED SERVICE BULLETIN 737-21-1149.

400628 S0000136112_V1

Allowable Damage Limits
Figure 108 (Sheet 1 of 9)

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REMOVAL OF DAMAGED MATERIAL
ON A SURFACE

D

A–A

400629 S0000136113_V1

Allowable Damage Limits
Figure 108 (Sheet 2 of 9)

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Y = WIDTH OF THE MATERIAL THAT IS REMOVED

REMOVAL OF DAMAGED MATERIAL ON A SURFACE AT AN EDGE OF A MACHINED OR EXTRUDED PART

E

400630 S0000136114_V2

Allowable Damage Limits
Figure 108 (Sheet 3 of 9)

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X = THE WIDTH OF THE MATERIAL THAT IS REMOVED
= A MAXIMUM OF 0.05 INCH OR 5 PERCENT OF THE WIDTH OF THE FLANGE, THAT WHICH IS LESS 1
= A MAXIMUM OF 0.10 INCH 2

REMOVAL OF DAMAGED MATERIAL ON AN EDGE

F

X = WIDTH OF THE MATERIAL THAT IS REMOVED
= A MAXIMUM OF 0.05 INCH OR 5 PERCENT OF THE WIDTH OF THE FLANGE, THAT WHICH IS LESS 1
= A MAXIMUM OF 0.10 INCH 2

REMOVAL OF DAMAGED MATERIAL ON AN EDGE OF A FORMED PART

G

400631 S0000136115_V1

Allowable Damage Limits
Figure 108 (Sheet 4 of 9)

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REMOVAL OF DAMAGE AROUND THE FASTENERS ON AN EDGE OF A SURFACE

H

DENT THAT IS PERMITTED

I

400632 S0000136116_V2

Allowable Damage Limits
Figure 108 (Sheet 5 of 9)

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NOTE: HOLE DAMAGE IS NOT PERMITTED IN THE FASTENED FLANGES.

HOLES AND PUNCTURES IN A FREE FLANGE

J

X = WIDTH OF THE MATERIAL THAT IS REMOVED
= A MAXIMUM OF 0.05 INCH 1
= A MAXIMUM OF 0.10 INCH 2

REMOVAL OF DAMAGED MATERIAL AT AN EDGE OF A WEB

K

400633 S0000136117_V1

Allowable Damage Limits
Figure 108 (Sheet 6 of 9)

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X = WIDTH OF THE MATERIAL REMOVED
= A MAXIMUM OF 0.05 INCH OR 5 PERCENT OF THE STRAP WIDTH, THAT WHICH IS LESS 1
= A MAXIMUM OF 0.10 INCH 2

REMOVAL OF DAMAGED MATERIAL AT AN EDGE OF A STRAP

L

Y = WIDTH OF THE MATERIAL THAT IS REMOVED
= A MAXIMUM OF 0.05 INCH OR 5 PERCENT OF THE STRAP WIDTH,THAT WHICH IS LESS 1
= A MAXIMUM OF 0.10 INCH 2

X = A MAXIMUM OF 0.05T 1
= A MAXIMUM OF 0.10T 2

REMOVAL OF DAMAGED MATERIAL ON A SURFACE AT AN EDGE OF A STRAP

M

400634 S0000136118_V1

Allowable Damage Limits
Figure 108 (Sheet 7 of 9)

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D–D

Y = WIDTH OF THE MATERIAL REMOVED

= A MAXIMUM OF 5 PERCENT OF THE THICKNESS OF THE BULB 1

= A MAXIMUM OF 10 PERCENT OF THE THICKNESS OF THE BULB 2

REMOVAL OF DAMAGED MATERIAL ON A SURFACE AT AN EDGE OF A BULBED EXTRUSION

N

400635 S0000136119_V1

Allowable Damage Limits
Figure 108 (Sheet 8 of 9)

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E-E

400636 S0000136120_V1

Allowable Damage Limits
Figure 108 (Sheet 9 of 9)

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ALLOWABLE DAMAGE 2 - FORWARD GALLEY DOOR SURROUND STRUCTURE

1. Applicability

A. This subject gives the allowable damage limits for the forward galley door surround structure shown in Forward Galley Door Surround Structure, Figure 101/ALLOWABLE DAMAGE 2.

G23985 S0006588431_V1

Forward Galley Door Surround Structure
Figure 101

2. General

A. Remove the damaged material as necessary.

(1) Refer to 51-10-02 for the inspection and removal of damage.

(2) Refer to 51-30-03 for possible sources of the abrasive and other materials you can use to remove the damage.

(3) Refer to 51-30-05 for possible sources of the equipment and tools you can use to remove the damage.

B. Apply a chemical conversion coating to the bare surfaces of the reworked area. Refer to 51-20-01

C. Apply one layer of BMS 10-11, Type I, primer to the bare surfaces of the reworked area. Refer to SOPM 20-41-02.

(1) Apply one layer of BMS 10-11, Type I primer to the reworked area. Refer to SOPM 20-40-02.

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Table 101:

PARAGRAPH REFERENCES FOR THE ALLOWABLE DAMAGE LIMITS		
TYPE OF STRUCTURE	**PART NAME**	**PARAGRAPH**
UPPER MAIN AUXILIARY SILL	CHORD	4.A
	WEBS	4.B
	STRAPS	4.D
	CLIPS	4.E
UPPER MAIN SILL	CHORD	4.A
	WEBS	4.B
	CLIPS	4.C
	STRAPS	4.D
	CLIPS	4.E
LOWER MAIN SILL	CHORD	4.A
	WEBS	4.B
	TEE CLIPS	4.C
	ZEE STIFFENERS	4.C
	STIFFENERS	4.C
	ANGLE	4.C
	CHANNEL	4.C
	INNER CHORD STRAP	4.D
	OUTER CHORD STRAP	4.D
	CHANNELS	4.E
	ANGLES	4.E
	INNER CHORD	4.E
	SCUFF PLATE	4.H
LOWER AUXILIARY SILL	CHORD	4.A
	WEBS	4.B
	CLIPS	4.C
	ANGLES	4.C
	STRAPS	4.D
INTERCOSTAL ASSEMBLY AT STRINGER S-23	STRAP	4.D
	ANGLE	4.E
	INTERCOSTALS	4.E
INTERCOSTAL ASSEMBLY S-22	INTERCOSTALS	4.E
BUILT-UP INTERCOSTAL ASSEMBLY	STRAP	4.D
	INTERCOSTAL	4.F
STIFFENER INSTALLATION AT STRINGER S-13	CHORD	4.A
	WEB	4.B
	ANGLE	4.C
	ANGLES	4.E

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Table 101: (Continued)

PARAGRAPH REFERENCES FOR THE ALLOWABLE DAMAGE LIMITS		
TYPE OF STRUCTURE	**PART NAME**	**PARAGRAPH**
FORWARD EDGE FRAME	INNER CHORD	4.A
	ANGLE	4.C
	STIFFENER	4.E
AFT EDGE FRAME	OUTER CHORD	4.A
	INNER CHORD	4.A
	J-WEB	4.B
	STRAP FILLER	4.D
OTHER STRUCTURES	CHORDS	4.A
	INTERCOSTALS	4.F
	STUB FRAMES	4.G

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NOTE: ALL PARTS ARE MADE OF ALUMINUM.

FORWARD GALLEY DOOR SURROUND STRUCTURE

G24025 S0006588433_V3

Forward Galley Door Surround Structure Locations
Figure 102 (Sheet 1 of 12)

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NOTE: ALL PARTS ARE MADE OF ALUMINUM.

UPPER MAIN AUXILIARY SILL STRUCTURE

A

G26831 S0006588434_V1

Forward Galley Door Surround Structure Locations
Figure 102 (Sheet 2 of 12)

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NOTE: ALL PARTS ARE MADE OF ALUMINUM.

UPPER MAIN SILL STRUCTURE

B

G26846 S0006588435_V1

Forward Galley Door Surround Structure Locations
Figure 102 (Sheet 3 of 12)

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Forward Galley Door Surround Structure Locations
Figure 102 (Sheet 4 of 12)

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NOTE: ALL PARTS ARE MADE OF ALUMINUM.

LOWER AUXILIARY SILL STRUCTURE

D

G26866 S0006588437_V1

Forward Galley Door Surround Structure Locations
Figure 102 (Sheet 5 of 12)

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NOTE: ALL PARTS ARE MADE OF ALUMINUM.

INTERCOSTAL ASSEMBLY AT STRINGER 23

E

G34037 S0006588438_V1

Forward Galley Door Surround Structure Locations
Figure 102 (Sheet 6 of 12)

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NOTE: ALL PARTS ARE MADE OF ALUMINUM.

INTERCOSTAL ASSEMBLY AT STRINGER 22

F

G34043 S0006588439_V1

Forward Galley Door Surround Structure Locations
Figure 102 (Sheet 7 of 12)

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NOTE: ALL PARTS ARE MADE OF ALUMINUM.

INTERCOSTAL ASSEMBLY

G

A–A

G26875 S0006588440_V1

Forward Galley Door Surround Structure Locations
Figure 102 (Sheet 8 of 12)

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NOTE: ALL PARTS ARE MADE OF ALUMINUM.

STIFFENER INSTALLATION AT STRINGER 13

H

G34127 S0006588441_V1

Forward Galley Door Surround Structure Locations
Figure 102 (Sheet 9 of 12)

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NOTE: ALL PARTS ARE MADE OF ALUMINUM.

FORWARD EDGE FRAME

I

G33726 S0006588442_V1

Forward Galley Door Surround Structure Locations
Figure 102 (Sheet 10 of 12)

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NOTE: ALL PARTS ARE MADE OF ALUMINUM.

AFT EDGE FRAME

J

A-A

G26850 S0006588443_V1

Forward Galley Door Surround Structure Locations
Figure 102 (Sheet 11 of 12)

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SCUFF PLATE STRUCTURE

K

A–A

2400638 S0000553517_V1

Forward Galley Door Surround Structure Locations
Figure 102 (Sheet 12 of 12)

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3. References

Reference	Title
51-10-02	INSPECTION AND REMOVAL OF DAMAGE
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-20-06, GENERAL	Shot Peening
51-30-03	NON-METALLIC MATERIALS
51-30-05	EQUIPMENT AND TOOLS FOR REPAIRS
AMM 51-21-00 P/B 701	INTERIOR AND EXTERIOR FINISHES - CLEANING/PAINTING
SOPM 20-20-02	Penetrant Methods of Inspection
SOPM 20-40-02	Standard Overhaul Practices Manual
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes

4. Allowable Damage Limits

A. Outer Chords, Inner Chords, and Chords - Extruded

(1) Cracks:

(a) Remove damage as shown in Figure 103, Details A , B , and C .

(2) Nicks, Gouges, Scratches, and Corrosion:

(a) Remove damage as shown in Figure 103, Details A , B , C , D and E .

(3) Dents are not permitted.

(4) Holes and punctures are not permitted.

B. Webs

(1) Cracks:

(a) Remove the damage as shown in Figure 103, Details A , B , and F .

(2) Nicks, Gouges, Scratches, and Corrosion:

(a) Remove the damage as shown in Figure 103, Details A , B , D , F , and G .

(3) Dents are permitted as shown in Figure 103, Detail H .

(4) Holes and punctures are permitted if they are:

(a) A maximum of 0.25 inch in diameter

(b) A minimum of 4D (D= the diameter of the damage) away from a hole, the edge part, or other damage

(c) Filled with a 2117-T3 or 2117-T4 aluminum rivet installed without sealant.

C. Stiffeners, Angles, Clips, Zee Stiffeners, Tee Clips, and Channels - Extruded

(1) Cracks:

(a) Remove edge crack and surface cracks as shown in Figure 103, Details A , B , C , and I .

(2) Nicks, Gouges, Scratches, and Corrosion:

(a) Remove the damage as shown in Figure 103, Details A , B , C , D , E , and I .

(3) Dents are not permitted.

(4) Holes and punctures are not permitted.

D. Straps and Strap-Filler

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(1) Cracks:

(a) Remove damage as shown in Figure 103, Details A , B , J , and K .

(2) Nicks, Gouges, Scratches, and Corrosion:

(a) Remove damage as shown in Figure 103, Details A , B , D , J , and K .

(3) Dents are not permitted.

(4) Holes and punctures are not permitted.

E. Intercostals, Inner Chords, Stiffener, Angles, Clips, and Channels - Formed

(1) Cracks:

(a) Remove damage as shown in Figure 103, Details A , B , and L .

(2) Nicks, Gouges, Scratches, and Corrosion:

(a) Remove damage as shown in Figure 103, Details A , B , D , G , and L .

(3) Dents are permitted as shown in Figure 103, Detail H .

(4) Holes and punctures are permitted if they are:

(a) A maximum of 0.25 inch in diameter

(b) A minimum of 4D (D= the diameter of the damage) away from a hole, the edge part, or other damage

(c) Filled with a 2117-T3 or 2117-T4 aluminum rivet installed without sealant.

F. Intercostals - Machined Forging

(1) Cracks:

(a) Remove damage as shown in Figure 103, Details A , B , and C .

(2) Nicks, Gouges, Scratches, and Corrosion:

(a) Remove damage as shown in Figure 103, Details A , B , C , D , and E .

(3) Dents are not permitted.

(4) Holes and punctures are not permitted.

G. Stub Frames

(1) Cracks:

(a) Remove the damage as shown in Figure 103, Details A , B , and L .

(2) Nicks, Gouges, Scratches, and Corrosion:

(a) Remove the damage as shown in Figure 103, Details A , B , D , G , and L .

(3) Dents are permitted as shown in Figure 103, Detail H .

(4) Holes and punctures are permitted in:

(a) The free flange as shown in Figure 103, Detail M .

1) The webs if they are:

a) A maximum of 0.25 inch in diameter

b) A minimum of 4D (D= the diameter of the damage) away from a hole, the edge part, or other damage

c) Filled with a 2117-T3 or 2117-T4 aluminum rivet installed without sealant.

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H. Scuff Plate

(1) Cracks:

(a) Remove the damage as shown in Figure 103, Details A, B, C and F.

(2) Nicks, Gouges, Scratches and Corrosion:

(a) Remove the damage as shown in Figure 103, Details A, B, C, D, E, F and G.

(3) Dents are permitted as shown in Figure 103, Detail H.

(4) Holes and punctures are permitted if they are:

(a) A maximum of 0.25 inch in diameter

(b) A minimum of 4D (D= the diameter of the damage) away from a hole, the edge part, or other damage

(c) Filled with a 2117-T3 or 2117-T4 aluminum rivet installed without sealant.

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X = WIDTH OF THE MATERIAL THAT IS REMOVED
= A MAXIMUM OF 0.05 INCH OR 5 PERCENT OF THE FLANGE (OR WEB) WIDTH, THAT WHICH IS LESS 1
= A MAXIMUM OF 0.10 INCH 2

REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER EDGE MARGINS DO NOT HAVE AN OVERLAP

A

X = WIDTH OF THE MATERIAL THAT IS REMOVED
= A MAXIMUM OF 0.05 INCH OR 5 PERCENT OF THE FLANGE (OR WEB) WIDTH, THAT WHICH IS LESS 1
= A MAXIMUM OF 0.10 INCH 2

REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER EDGE MARGINS HAVE AN OVERLAP

B

TAPER TO A MINIMUM OF 20X. THE DISTANCE OF THE DAMAGE FROM A HOLE, A FASTENER, AN EDGE, OR OTHER DAMAGE MUST BE 20X OR MORE

X = WIDTH OF THE MATERIAL REMOVED
= A MAXIMUM OF 0.05 INCH OR 5 PERCENT OF THE FLANGE WIDTH, THAT WHICH IS LESS 1
= A MAXIMUM OF 0.10 INCH 2

REMOVAL OF DAMAGED MATERIAL AT AN EDGE OF A MACHINED PART OR AN EXTRUDED PART

C

1 FOR AIRPLANES THAT HAVE COMPLETED SERVICE BULLETIN 737-21-1149.
2 FOR AIRPLANES THAT HAVE NOT COMPLETED SERVICE BULLETIN 737-21-1149.

400637 S0000136383_V1

Allowable Damage Limits
Figure 103 (Sheet 1 of 8)

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REMOVAL OF DAMAGED MATERIAL
ON A SURFACE

D

A–A

W33101 S0000136384_V1

Allowable Damage Limits
Figure 103 (Sheet 2 of 8)

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Y = WIDTH OF THE MATERIAL THAT IS REMOVED
= A MAXIMUM OF 5 PERCENT OF THE WIDTH OF THE FLANGE
OR 0.05 INCH, THAT WHICH IS LESS 1
= A MAXIMUM OF 10 PERCENT OF THE WIDTH OF THE FLANGE 2

REMOVAL OF DAMAGED MATERIAL ON A SURFACE
AT AN EDGE OF A MACHINED OR EXTRUDED PART

E

B–B

400639 S0000136385_V1

Allowable Damage Limits
Figure 103 (Sheet 3 of 8)

BOEING PROPRIETARY - Copyright © Unpublished Work - See title page for details

X = WIDTH OF THE MATERIAL THAT IS REMOVED
= A MAXIMUM OF 0.05 INCH 1
= A MAXIMUM OF 0.10 INCH 2

REMOVAL OF DAMAGED MATERIAL AT AN EDGE OF A WEB

F

REMOVAL OF DAMAGE AROUND THE FASTENERS ON AN EDGE OR A SURFACE

G

400640 S0000136386_V1

Allowable Damage Limits
Figure 103 (Sheet 4 of 8)

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DENT THAT IS PERMITTED

H

X = THE WIDTH OF THE MATERIAL THAT IS REMOVED
= A MAXIMUM OF 0.05 INCH OR 5 PERCENT OF THE WIDTH OF THE FLANGE, THAT WHICH IS LESS 1
= A MAXIMUM OF 0.10 INCH 2

REMOVAL OF DAMAGED MATERIAL ON AN EDGE

I

400642 S0000136387_V2

Allowable Damage Limits
Figure 103 (Sheet 5 of 8)

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X = WIDTH OF THE MATERIAL REMOVED
= A MAXIMUM OF 0.05 INCH OR 5 PERCENT OF THE STRAP WIDTH, THAT WHICH IS LESS 1
= A MAXIMUM OF 0.10 INCH 2

REMOVAL OF DAMAGED MATERIAL AT AN EDGE OF A STRAP

J

400643 S0000136388_V1

Allowable Damage Limits
Figure 103 (Sheet 6 of 8)

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Y = WIDTH OF THE MATERIAL THAT IS REMOVED
= A MAXIMUM OF 0.05 INCH OR 5 PERCENT OF THE STRAP WIDTH, THAT WHICH IS LESS 1
= A MAXIMUM OF 0.10 INCH 2

REMOVAL OF DAMAGED MATERIAL ON
A SURFACE AT AN EDGE OF A STRAP

K

400644 S0000136389_V1

Allowable Damage Limits
Figure 103 (Sheet 7 of 8)

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Y = WIDTH OF THE MATERIAL THAT IS REMOVED
= A MAXIMUM OF 0.05 INCH OR 5 PERCENT OF THE FLANGE WIDTH, THAT WHICH IS LESS 1
= A MAXIMUM OF 0.10 INCH 2

REMOVAL OF DAMAGED MATERIAL ON AN EDGE OF A FORMED PART

L

A MAXIMUM OF 4 HOLES FOR DAMAGE REMOVAL ARE PERMITTED IN A 6.0 INCH LENGTH OF FLANGE. THE MAXIMUM SIZE OF EACH HOLE IS 0.25 INCH. FILL THE HOLES WITH 2117-T3 OR 2117-T4 ALUMINUM HEAD RIVETS INSTALLED WITHOUT SEALANT

NOTE: HOLE DAMAGE IS NOT PERMITTED IN THE FASTENED FLANGES.

HOLES AND PUNCTURES IN A FREE FLANGE

M

400645 S0000136390_V1

Allowable Damage Limits
Figure 103 (Sheet 8 of 8)

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ALLOWABLE DAMAGE 3 - ACCESS DOORS SURROUND STRUCTURE

1. Applicability

A. This subject gives the allowable damage limits for the doors surround structure as shown in Access Door Surround Structure Locations, Figure 101/ALLOWABLE DAMAGE 3.

Access Door Surround Structure Locations
Figure 101

2. General

A. Remove the damaged material as necessary.

(1) Refer to 51-10-02 for the inspection and removal of damage.

(2) Refer to 51-30-03 for possible sources of the abrasive and other materials you can use to remove the damage.

(3) Refer to 51-30-05 for possible sources of the equipment and tools you can use to remove the damage.

(4) Make the edges of the blendouts and holes smooth to a finish of 125 microinches Ra or smoother.

B. Apply a chemical conversion coating to the bare surfaces of the reworked area. Refer to 51-20-01

C. Apply one layer of BMS 10-11, Type I, primer to the bare surfaces of the reworked area. Refer to SOPM 20-41-02.

Table 101:

PARAGRAPH REFERENCES FOR THE ALLOWABLE DAMAGE LIMITS		
TYPE OF STRUCTURE	**PART NAME**	**PARAGRAPH**
FORWARD ACCESS DOOR SURROUND STRUCTURE	OUTER CHORDS	4.A.(1)
	INNER CHORDS	4.A.(1)
	STIFFENERS	4.A.(1)
	WEBS	4.A.(2)
EQUIPMENT ACCESS DOOR SURROUND STRUCTURE	OUTER CHORDS	4.B.(1)
	INNER CHORDS	4.B.(1)
	CHORDS	4.B.(1)
	LOWER CHORDS	4.B.(2)
	FAIL SAFE CHORDS	4.B.(3)
	WEBS	4.B.(4)
	INTERCOSTAL WEBS	4.B.(4)

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NOTE: ALL PARTS ARE MADE OF ALUMINUM.

G24232 S0006588455_V1

Forward Access Door Surround Structure
Figure 102

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NOTE: ALL PARTS ARE MADE OF ALUMINUM.

G24238 S0006588456_V1

Equipment Access Door Surround Structure
Figure 103

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3. References

Reference	Title
51-10-02	INSPECTION AND REMOVAL OF DAMAGE
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-20-06, GENERAL	Shot Peening
51-30-03	NON-METALLIC MATERIALS
51-30-05	EQUIPMENT AND TOOLS FOR REPAIRS
AMM 51-21-00 P/B 701	INTERIOR AND EXTERIOR FINISHES - CLEANING/PAINTING
SOPM 20-20-02	Penetrant Methods of Inspection
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes

4. Allowable Damage Limits

A. Forward Access Door Surround Structure

(1) Chords and Stiffeners

(a) Cracks:

1) Remove the damage as shown in Figure 104, Details A , B , and C .

(b) Nicks, Gouges, Scratches, and Corrosion:

1) Remove the damage as shown in Figure 104, Details A , B , C , D , and E .

(c) Dents are not permitted.

(d) Holes and Punctures are not permitted.

(2) Webs

(a) Cracks:

1) Remove the damage as shown in Figure 104, Details A , B , and F .

(b) Nicks, Gouges, Scratches, and Corrosion:

1) Remove the damage as shown in Figure 104, Details A , B , D , F , and G .

(c) Dents are permitted as shown in Figure 104, Detail H .

(d) Holes and Punctures are permitted if they are:

1) A maximum of 0.25 inch in diameter

2) A minimum of 4D (D= the diameter of the damage) away from a hole, the edge part, or other damage

3) Filled with a 2117-T3 or 2117-T4 aluminum rivet installed without sealant.

B. Equipment Access Door Surround Structure

(1) Outer Chords, Inner Chords, and Chords

(a) Cracks:

1) Remove the damage as shown in Figure 104, Details A , B , and C .

(b) Nicks, Gouges, Scratches, and Corrosion:

1) Remove the damage as shown in Figure 104, Details A , B , C , D and E .

(c) Dents are not permitted.

(d) Holes and Punctures are not permitted.

(2) Lower Chords

(a) Cracks:

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1) Remove the damage as shown in Figure 104, Details A , B , and I .

(b) Nicks, Gouges, Scratches, and Corrosion:

1) Remove the damage as shown in Figure 104, Details A , B , D , E , and I .

(c) Dents are not permitted.

(d) Holes and Punctures are not permitted.

(3) Fail Safe Chords

(a) Cracks:

1) Remove the damage as shown in Figure 104, Details A , B , and J .

(b) Nicks, Gouges, Scratches, and Corrosion:

1) Remove the damage as shown in Figure 104, Details A , B , D and J .

(c) Dents are not permitted.

(d) Holes and Punctures are not permitted.

(4) Webs, Intercostal Webs

(a) Cracks:

1) Remove the damage as shown in Figure 104, Details A , B , and F .

(b) Nicks, Gouges, Scratches, and Corrosion:

1) Remove the damage as shown in Figure 104, Details A , B , D , F and G .

(c) Dents are permitted as shown in Figure 104, Detail H .

(d) Holes and Punctures are permitted if they are:

1) A maximum of 0.25 inch in diameter

2) A minimum of 4D (D= the diameter of the damage) away from the hole, the edge part, or other damage

3) Filled with a 2117-T3 or 2117-T4 aluminum rivet installed without sealant.

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X = WIDTH OF THE MATERIAL THAT IS REMOVED
= A MAXIMUM OF 0.10 INCH [1]
= A MAXIMUM OF 0.20 INCH [2]

REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER EDGE MARGINS DO NOT HAVE AN OVERLAP

A

X = WIDTH OF THE MATERIAL THAT IS REMOVED
= A MAXIMUM OF 0.10 INCH [1]
= A MAXIMUM OF 0.20 INCH [2]

REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER EDGE MARGINS HAVE AN OVERLAP

B

X = WIDTH OF THE MATERIAL REMOVED
= A MAXIMUM OF 5 PERCENT OF THE WIDTH OF THE FLANGE [1]
= A MAXIMUM OF 10 PERCENT OF THE WIDTH OF THE FLANGE [2]

REMOVAL OF DAMAGED MATERIAL AT AN EDGE OF AN EXTRUDED PART

C

NOTES

[1] FOR AIRPLANES THAT HAVE COMPLETED SERVICE BULLETIN 737-21-1149.

[2] FOR AIRPLANES THAT HAVE NOT COMPLETED SERVICE BULLETIN 737-21-1149.

400646 S0000136149_V1

Allowable Damage Limits
Figure 104 (Sheet 1 of 6)

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REMOVAL OF DAMAGED MATERIAL
ON A SURFACE

D

A–A

400647 S0000136150_V1

Allowable Damage Limits
Figure 104 (Sheet 2 of 6)

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Y = WIDTH OF THE MATERIAL THAT IS REMOVED
= A MAXIMUM OF 5 PERCENT OF THE WIDTH OF THE FLANGE 1
= A MAXIMUM OF 10 PERCENT OF THE WIDTH OF THE FLANGE 2

REMOVAL OF DAMAGED MATERIAL ON A SURFACE
AT AN EDGE OF AN EXTRUDED PART

E

B–B

400648 S0000136151_V1

Allowable Damage Limits
Figure 104 (Sheet 3 of 6)

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X = WIDTH OF THE MATERIAL THAT IS REMOVED
= A MAXIMUM OF 0.05 INCH 1
= A MAXIMUM OF 0.10 INCH 2

REMOVAL OF DAMAGED MATERIAL AT AN EDGE OF A WEB

F

REMOVAL OF DAMAGE AROUND THE FASTENERS ON AN EDGE OR A SURFACE

G

400649 S0000136152_V1

Allowable Damage Limits
Figure 104 (Sheet 4 of 6)

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DENT THAT IS PERMITTED

H

X = THE WIDTH OF THE MATERIAL THAT IS REMOVED.
= A MAXIMUM OF 5 PERCENT OF THE WIDTH OF THE FLANGE 1
= A MAXIMUM OF 10 PERCENT OF THE WIDTH OF THE FLANGE 2

REMOVAL OF DAMAGED MATERIAL ON AN EDGE

I

400650 S0000136153_V2

Allowable Damage Limits
Figure 104 (Sheet 5 of 6)

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X = WIDTH OF THE MATERIAL THAT IS REMOVED.
= A MAXIMUM OF 0.10 INCH OR 10 PERCENT OF THE FLANGE WIDTH, THAT WHICH IS LESS 1
= A MAXIMUM OF 0.20 INCH 2

REMOVAL OF DAMAGED MATERIAL ON AN EDGE OF A FORMED PART

J

400651 S0000136154_V1

Allowable Damage Limits
Figure 104 (Sheet 6 of 6)

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ALLOWABLE DAMAGE 4 - ELECTRICAL GROUND POWER RECEPTACLE SURROUND DOUBLER

1. Applicability

A. This subject gives the allowable damage limits for the Electrical Ground Power Receptacle (EGPR) surround doubler only as shown in Figure 101/ALLOWABLE DAMAGE 4.

B. This repair is applicable to airplane line unit 1 thru 2891.

1665247 S0000303734_V1

Electrical Ground Power Receptacle Surround Doubler Location
Figure 101

2. General

A. Trim out the damaged area of the EGPR doubler as shown in Figure 102/ALLOWABLE DAMAGE 4. Make sure that you do not damage the EGPR stiffener or the intercostal while you trim the damage.

(1) Refer to 51-10-02 for the inspection and removal of damage.

(2) Refer to 51-30-03 for possible sources of the abrasive and other materials you can use to remove the damage.

(3) Refer to 51-30-05 for possible sources of the equipment and tools you can use to remove the damage.

(4) Make the inner corner radius of the trim out a minimum of 1.00 in. (25.40 mm).

(5) Make the outer radius of the trim out a minimum of 0.50 in. (12.70 mm).

(6) Make sure the cut edges of the trim out have a surface smoothness of 63 microinches (1.6 micrometers) Ra or smoother. Refer to 51-20-13, GENERAL.

(7) Keep a 2D minimum edge margin from initial fastener locations.

(8) Do a 10x visual inspection of the trim out area. Make sure that the damage does not extend under the skin. Make sure that there is no disbond between the EGPR doubler and the skin.

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(9) Do a High Frequency Eddy Current (HFEC) inspection of the trim out edge to make sure that there are no cracks. If you find no cracks, make a 0.040 in. (1.02 mm) insurance cut of the trim out area. Do not make the insurance cut along the initial edge of the skin..

B. Do a Non-Destructive Test (NDT) inspection of the interior structure to make sure that there is no damage.

C. Apply a chemical conversion coating to the bare surfaces of the reworked area. Refer to 51-20-01

D. Apply one layer of BMS 10-11, Type I, primer to the bare surfaces of the reworked area. Refer to SOPM 20-41-02.

3. References

Reference	Title
51-10-02	INSPECTION AND REMOVAL OF DAMAGE
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-20-13, GENERAL	Surface Roughness Finish Requirements
51-30-03	NON-METALLIC MATERIALS
51-30-05	EQUIPMENT AND TOOLS FOR REPAIRS
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes

4. Allowable Damage Limits

A. EGPR Surround Structure:

(1) Doubler

(a) Remove the damage as shown in Paragraph 2.A./ALLOWABLE DAMAGE 4 and Figure 102/ALLOWABLE DAMAGE 4.

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VIEW LOOKING INBOARD
RIGHT SIDE IS SHOWN

1665251 S0000304429_V2

Allowable Damage Limits
Figure 102 (Sheet 1 of 2)

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NOTE: MAKE SURE THAT YOU DO NOT DAMAGE THE EGPR STIFFENER OR THE INTERCOSTALS WHILE YOU TRIM THE DAMAGE

A

1665255 S0000304430_V2

Allowable Damage Limits
Figure 102 (Sheet 2 of 2)

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REPAIR 1 - FORWARD ENTRY AND AIRSTAIR DOOR SURROUND STRUCTURE

1. Applicability

A. Repair 1 is applicable to damage to the Forward Entry and Airstair Doors Surround Structures as shown in Forward Entry and Airstair Door Surround Structure, Figure 201/REPAIR 1.

G36607 S0006588465_V1

Forward Entry and Airstair Door Surround Structure
Figure 201

2. General

A. The typical repairs given in 51-70-11, 51-70-12, and 51-70-13 can be used when applicable if there is sufficient clearance with the adjacent structure for the installation of the repair parts.

B. Some of the typical repairs given in 51-70-11, 51-70-12, and 51-70-13 must not be used in some areas as given in the typical repair figures. Refer to 51-70-11, 51-70-12, and 51-70-13.

C. Refer to the limits of the typical repairs given in 51-70-11, 51-70-12, and 51-70-13 before you start a repair.

3. References

Reference	Title
51-70-11	TYPICAL FORMED SECTION REPAIRS
51-70-11, REPAIR GENERAL	Typical Formed Section Repair
51-70-12	EXTRUDED SECTION REPAIRS
51-70-12, REPAIR GENERAL	Typical Extruded Section Repairs
51-70-13	TYPICAL WEB REPAIRS
53-10-15	FUSELAGE DOOR SURROUND STRUCTURE - SECTION 41
53-10-15, ALLOWABLE DAMAGE 1	Forward Entry and Airstair Door Surround Structure
53-10-15, IDENTIFICATION 1	Forward Entry and Airstair Door Surround Structure

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4. Repair Instructions

A. Refer to Forward Entry and Airstair Door Surround Structure, Figure 201/REPAIR 1 through Door Surround Structure Without Airstairs, Figure 207/REPAIR 1, and Table 201 to find the applicable repair for the part you want to repair.

NOTE: If necessary, refer to 53-10-15, Identification 1 to find the material and the process that was used to make the part which you want to repair.

Table 201:

REPAIR REFERENCES FOR THE DOOR SURROUND STRUCTURES	
TYPE OF COMPONENT	**REPAIR**
Formed parts	Refer to SRM 51-70-11
Extruded parts	Refer to SRM 51-70-12
Webs	Refer to SRM 51-70-13
Straps, Doublers, Lower Frame Chord, Splice Angle	There are no repairs for these parts in the Structural Repair Manual at this time. If the damage to the structure is more than the limits given in SRM 53-10-15, Allowable Damage 1, replace the damaged part.
Machined Intercostals	There are no repairs for these parts in the Structural Repair Manual at this time.

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G36606 S0006588467_V2

Forward Entry and Airstair Door Surround Structure Locations
Figure 202

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NOTE: ALL PARTS ARE MADE OF ALUMINUM EXCEPT AS NOTED.

G36612 S0006588468_V1

Upper Main Sill and Upper Main Auxiliary Sill Structure
Figure 203 (Sheet 1 of 3)

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NOTE: ALL PARTS ARE MADE OF ALUMINUM.

UPPER MAIN AUXILIARY SILL

A

G36613 S0006588469_V1

Upper Main Sill and Upper Main Auxiliary Sill Structure
Figure 203 (Sheet 2 of 3)

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NOTE: ALL PARTS ARE MADE OF ALUMINUM EXCEPT AS NOTED.

UPPER MAIN SILL

B

G37415 S0006588470_V1

Upper Main Sill and Upper Main Auxiliary Sill Structure
Figure 203 (Sheet 3 of 3)

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NOTE: ALL PARTS ARE MADE OF ALUMINUM.

G37416 S0006588471_V1

Forward Entry Door Surround Structure Between the Upper and Lower Sills
Figure 204 (Sheet 1 of 4)

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NOTE: ALL PARTS ARE MADE OF ALUMINUM.

AFT LOWER FRAME CHORD

A

G37417 S0006588472_V1

Forward Entry Door Surround Structure Between the Upper and Lower Sills
Figure 204 (Sheet 2 of 4)

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NOTE: ALL PARTS ARE MADE OF ALUMINUM.

AFT DOOR FRAME INTERCOSTAL (TYPICAL)

B

NOTE: ALL PARTS ARE MADE OF ALUMINUM.

FORWARD DOOR FRAME INTERCOSTALS (TYPICAL)

C

G37418 S0006588473_V1

Forward Entry Door Surround Structure Between the Upper and Lower Sills
Figure 204 (Sheet 3 of 4)

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NOTE: ALL PARTS ARE MADE OF ALUMINUM.

STIFFENER INSTALLATION AT STRINGER 13

D

A–A

G37419 S0006588474_V1

Forward Entry Door Surround Structure Between the Upper and Lower Sills
Figure 204 (Sheet 4 of 4)

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NOTE: ALL PARTS ARE MADE OF ALUMINUM.

G37421 S0006588475_V2

Lower Sill Structure and Scuff Plate
Figure 205 (Sheet 1 of 3)

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NOTE: ALL PARTS ARE MADE OF ALUMINUM.

LOWER MAIN SILL

A

(ROTATED 90° COUNTERCLOCKWISE)
A–A

G37422 S0006588476_V2

Lower Sill Structure and Scuff Plate
Figure 205 (Sheet 2 of 3)

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SCUFF PLATE

B

B–B

2324723 S0000526894_V1

Lower Sill Structure and Scuff Plate
Figure 205 (Sheet 3 of 3)

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NOTE: ALL PARTS ARE MADE OF ALUMINUM.

G37423 S0006588477_V1

Door Surround Structure With Airstairs
Figure 206 (Sheet 1 of 3)

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NOTE: ALL PARTS ARE MADE OF ALUMINUM.

INTERCOSTAL ASSEMBLY (TYPICAL)

A

G37424 S0006588478_V1

Door Surround Structure With Airstairs
Figure 206 (Sheet 2 of 3)

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NOTE: ALL PARTS ARE MADE OF ALUMINUM.

CARRIAGE TRACK SUPPORT

B

G37425 S0006588479_V1

Door Surround Structure With Airstairs
Figure 206 (Sheet 3 of 3)

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NOTE: ALL PARTS ARE MADE OF ALUMINUM.

G37426 S0006588480_V1

Door Surround Structure Without Airstairs
Figure 207 (Sheet 1 of 4)

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UPPER AIRSTAIR SILL

A

G79985 S0006588481_V1

Door Surround Structure Without Airstairs
Figure 207 (Sheet 2 of 4)

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LOWER AIRSTAIR SILL

B

G79988 S0006588482_V1

Door Surround Structure Without Airstairs
Figure 207 (Sheet 3 of 4)

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LOWER AUXILIARY AIRSTAIR SILL

C

G79989 S0006588483_V1

Door Surround Structure Without Airstairs
Figure 207 (Sheet 4 of 4)

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REPAIR 2 - SECTION 41 FORWARD GALLEY DOOR SURROUND STRUCTURE

1. Applicability

A. Repair 2 is applicable to damage to the forward galley door surround structure shown in Forward Galley Door Surround Structure Locations, Figure 201/REPAIR 2.

2. General

A. The typical repairs given in 51-70-11, 51-70-12, and 51-70-13 can be used when applicable if there is sufficient clearance with the adjacent structure for the installation of the repair parts.

B. Some of the typical repairs given in 51-70-11, 51-70-12, and 51-70-13 must not be used in some areas as given in the typical repair figures. Refer to 51-70-11, 51-70-12, and 51-70-13.

C. Refer to the limits of the typical repairs given in 51-70-11, 51-70-12, and 51-70-13 before you start a repair.

G36813 S0006588485_V1

Forward Galley Door Surround Structure Locations
Figure 201

3. References

Reference	Title
51-70-11	TYPICAL FORMED SECTION REPAIRS
51-70-11, REPAIR GENERAL	Typical Formed Section Repair
51-70-12	EXTRUDED SECTION REPAIRS
51-70-12, REPAIR GENERAL	Typical Extruded Section Repairs
51-70-13	TYPICAL WEB REPAIRS
53-10-15	FUSELAGE DOOR SURROUND STRUCTURE - SECTION 41
53-10-15, ALLOWABLE DAMAGE 2	Forward Galley Door Surround Structure

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4. Repair Instructions

A. Refer to Forward Galley Door Surround Structure Locations, Figure 201/REPAIR 2 and Forward Galley Door Surround Structure, Figure 202/REPAIR 2, and Table 201 to find the applicable repair for the part you want to repair.

NOTE: If necessary, refer to 53-10-15, Identification 2 to find the material and the process that was used to make the part which you want to repair.

Table 201:

REPAIR REFERENCES FOR THE DOOR SURROUND STRUCTURES	
TYPE OF COMPONENT	**REPAIR**
Formed parts	Refer to SRM 51-70-11
Extruded parts	Refer to SRM 51-70-12
Webs	Refer to SRM 51-70-13
Straps	There are no repairs for these parts in the Structural Repair Manual at this time. If the damage to the struc- ture is more than the limits given in SRM 53-10-15, Allow- able Damage 2, replace the damaged part
Machined Tapered Strap Filler Machined Tapered Stiffener	There are no repairs for these parts in the Structural Repair Manual at this time

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NOTE: ALL PARTS ARE MADE OF ALUMINUM.

G36823 S0006588487_V3

Forward Galley Door Surround Structure
Figure 202 (Sheet 1 of 12)

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NOTE: ALL PARTS ARE MADE OF ALUMINUM.

UPPER MAIN AUXILIARY SILL STRUCTURE

A

G36824 S0006588488_V1

Forward Galley Door Surround Structure
Figure 202 (Sheet 2 of 12)

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NOTE: ALL PARTS ARE MADE OF ALUMINUM.

UPPER MAIN SILL STRUCTURE

B

G36825 S0006588489_V1

Forward Galley Door Surround Structure
Figure 202 (Sheet 3 of 12)

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Forward Galley Door Surround Structure
Figure 202 (Sheet 4 of 12)

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NOTE: ALL PARTS ARE MADE OF ALUMINUM.

LOWER AUXILIARY SILL STRUCTURE

D

A–A B–B

G36828 S0006588491_V1

Forward Galley Door Surround Structure
Figure 202 (Sheet 5 of 12)

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NOTE: ALL PARTS ARE MADE OF ALUMINUM.

INTERCOSTAL ASSEMBLY AT STRINGER 23

E

G36829 S0006588492_V1

Forward Galley Door Surround Structure
Figure 202 (Sheet 6 of 12)

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NOTE: ALL PARTS ARE MADE OF ALUMINUM.

INTERCOSTAL ASSEMBLY AT STRINGER 22

F

G36830 S0006588493_V1

Forward Galley Door Surround Structure
Figure 202 (Sheet 7 of 12)

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NOTE: ALL PARTS ARE MADE OF ALUMINUM.

INTERCOSTAL ASSEMBLY

G

A–A

G36831 S0006588494_V1

Forward Galley Door Surround Structure
Figure 202 (Sheet 8 of 12)

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NOTE: ALL PARTS ARE MADE OF ALUMINUM.

STIFFENER INSTALLATION AT STRINGER 13

H

G36833 S0006588495_V1

Forward Galley Door Surround Structure
Figure 202 (Sheet 9 of 12)

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NOTE: ALL PARTS ARE MADE OF ALUMINUM.

FORWARD EDGE FRAME

I

G36834 S0006588496_V1

Forward Galley Door Surround Structure
Figure 202 (Sheet 10 of 12)

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NOTE: ALL PARTS ARE MADE OF ALUMINUM.

AFT EDGE FRAME

J

A-A

G36835 S0006588497_V1

Forward Galley Door Surround Structure
Figure 202 (Sheet 11 of 12)

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2303163 S0000522703_V1

Forward Galley Door Surround Structure
Figure 202 (Sheet 12 of 12)

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REPAIR 3 - SECTION 41 ACCESS DOORS SURROUND STRUCTURE

1. Applicability

A. Repair 3 is applicable to damage to the Access Doors Surround Structures as shown in Access Door Surround Structure Locations, Figure 201/REPAIR 3.

2. General

A. The typical repairs given in 51-70-11, 51-70-12, and 51-70-13 can be used when applicable if there is sufficient clearance with the adjacent structure for the installation of the repair parts.

B. Some of the typical repairs given in 51-70-11, 51-70-12, and 51-70-13 must not be used in some areas, as given in the typical repair figures. Refer to 51-70-11, 51-70-12, and 51-70-13.

C. Refer to the limits of the typical repairs given in 51-70-11, 51-70-12, and 51-70-13 before you start a repair.

Access Door Surround Structure Locations
Figure 201

3. References

Reference	Title
51-70-11	TYPICAL FORMED SECTION REPAIRS
51-70-12	EXTRUDED SECTION REPAIRS
51-70-13	TYPICAL WEB REPAIRS
53-10-15	FUSELAGE DOOR SURROUND STRUCTURE - SECTION 41

4. Repair Instructions

A. Refer to Access Door Surround Structure Locations, Figure 201/REPAIR 3 through Equipment Access Door Surround Structure Repairs, Figure 203/REPAIR 3, and Table 201 to find the applicable repair for the part you want to repair.

NOTE: If necessary, refer to 53-10-15, Identification 3 to find the material and the process that was used to make the part which you want to repair.

Table 201:

REPAIR REFERENCES FOR THE DOOR SURROUND STRUCTURES	
TYPE OF COMPONENT	**REPAIR**
Formed parts	Refer to SRM 51-70-11
Extruded parts	Refer to SRM 51-70-12
Webs	Refer to SRM 51-70-13

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NOTE: ALL PARTS ARE MADE OF ALUMINUM.

G29916 S0006588501_V1

Forward Access Door Surround Structure Repairs
Figure 202

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NOTE: ALL PARTS ARE MADE OF ALUMINUM.

G29918 S0006588502_V1

Equipment Access Door Surround Structure Repairs
Figure 203

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REPAIR 4 - ELECTRICAL GROUND POWER RECEPTACLE SURROUND DOUBLER

1. Applicability

A. Repair 4 is applicable to crack damage of the Electrical Ground Power Receptacle (EGPR) surround doubler only. Refer to Figure 201/REPAIR 4 for damage locations. Contact The Boeing Company if you find damage to the skin, frame or stiffener in the location of the EGPR.

B. Repair 4 is only applicable to airplanes that have the BS 235.8 frame outer chord configuration as shown in Figure 201/REPAIR 4.

C. Repair 4 is applicable to two zones of damage on the doubler only as shown in Figure 201/REPAIR 4. Each zone of damage is one repair.

(1) Refer to Figure 203/REPAIR 4 for repair in Zone 1.

(2) Refer to Figure 204/REPAIR 4 for repair in Zone 2.

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1665277 S0000301476_V1

Electrical Ground Power Receptacle Surround Doubler Damage Zones
Figure 201

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2. General

A. This is a Category A repair. The inspections given in the maintenance planning data (MPD) are sufficient to maintain the damage tolerance of the initial structure with this repair installed. Refer to 51-00-06, GENERAL for repair categories and definitions.

3. References

Reference	Title
51-00-06, GENERAL	Structural Repair Definitions
51-10-02, GENERAL	Inspection and Removal of Damage
51-20-01, GENERAL	Protective Treatment of Metallic and Composite Materials
51-20-05	REPAIR SEALING
51-20-13, GENERAL	Surface Roughness Finish Requirements
AMM 51-21-00	INTERIOR AND EXTERIOR FINISHES
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes

4. Repair Instructions

A. Get access to the damaged area:

(1) Remove the EGPR access door.

B. Remove the initial rubbing block and the laminated shim. Keep the rubbing block. Discard the laminated shim.

C. Trim out the damaged area of the EGPR doubler. Refer to Figure 203/REPAIR 4 for the Zone 1 repair or Figure 204/REPAIR 4 for the Zone 2 repair. Refer to 51-10-02, GENERAL.

(1) Make sure that you do not damage the frame chord in Zone 1 or the EGPR stiffener in Zone 2 when you do the trim out.

(2) Make the inner corner a 1.00 in. (25.40 mm) minimum radius on the trim out.

(3) Make the outer corner a 0.50 in. (12.70 mm) minimum radius on the trim out.

(4) Make sure that the cut edges of the trim out have a surface smoothness of 63 microinches (1.6 micrometers) Ra or smoother. Refer to 51-20-13, GENERAL.

(5) Keep a 2D minimum edge margin from initial fastener locations.

(6) Do a 10x visual inspection of the trim out area. Make sure that the damage does not extend under the Skin. Make sure that there is no disbond between the EGPR doubler and the skin.

(7) Do a High Frequency Eddy Current (HFEC) inspection of the trim out edge to make sure that there are no cracks. If you find no cracks, make a 0.040 in. (1.02 mm) insurance cut of the trim out area. Do not make the insurance cut along the initial edge of the skin.

D. Do a Non-Destructive Test (NDT) inspection of the interior structure to make sure that there is no damage.

E. Make the repair parts. Refer to Table 201/REPAIR 4 and Figure 203/REPAIR 4 for a Zone 1 repair or Figure 204/REPAIR 4 for a Zone 2 repair, as applicable.

(1) Make sure that all the fasteners in the repair parts will have a 2D minimum fastener edge margin.

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Table 201: Repair Materials

ITEM	PART	Quantity	Material
[1]	Doubler	1	Use 0.050 in. (1.27 mm) thick 7075-T6 Clad sheet (optional: 2024-T3 Clad sheet).
[2]	Doubler	1	Use 0.050 in. (1.27 mm) thick 7075-T6 Clad sheet (optional: 2024-T3 Clad sheet).
[3]	Filler	1	Use 0.040 in. (1.02 mm) thick 2024-T3 Clad sheet.

F. Make sure that the cut edges of the repair parts have a smoothness of 63 microinches (1.6 micrometers) Ra or smoother. Refer to 51-20-13, GENERAL.

G. Assemble the repair parts.

(1) Refer to Figure 203/REPAIR 4 for the Zone 1 repair or Figure 204/REPAIR 4 for the Zone 2 repair, as applicable.

H. Drill the necessary fastener holes.

(1) Refer to Figure 203/REPAIR 4 for the Zone 1 repair or Figure 204/REPAIR 4 for the Zone 2 repair, as applicable, for the type and size of fastener.

I. Disassemble the repair parts.

J. Remove all nicks, scratches, gouges, burrs, sharp edges from the repair parts and the repaired surfaces of the initial structure.

K. Apply a chemical conversion coating to the repair parts and the bare sufaces of the initial structure. Refer to 51-20-01, GENERAL.

L. Apply two layers of BMS 10-11, Type I primer to the bare surfaces of the repair parts and the trim out in the initial structure, as applicable. Refer to SOPM 20-41-02.

M. Install the repair parts.

(1) Refer to Figure 203/REPAIR 4 for the Zone 1 repair or Figure 204/REPAIR 4 for the Zone 2 repair, as applicable.

(2) When you install the repair parts, a maximum 0.010 in. (0.25 mm) pull down is acceptable.

(3) Re-install the initial rubbing block at the initial fastener locations. Use the same type and size fasteners as the initial fasteners. You can over size the fastener a maximum of 1/32 inch as required.

(4) Install the repair parts wet with BMS 5-95 sealant. Refer to 51-20-05.

(5) Fill any gaps between the new parts and initial structure with BMS 5-95 sealant. Refer to 51-20-05.

N. Apply a finish to the external surface of the repair. Refer to AMM SUBJECT 51-21-00.

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NOTES

- ALL DIMENSIONS ARE IN INCHES (mm).
- D = THE DIAMETER OF THE FASTENER.

FASTENER SYMBOLS

REFERENCE FASTENER LOCATION.

REPAIR FASTENER LOCATION. INSTALL A BACR15CE5D RIVET OR BACR15GF5D RIVET.

INITIAL FASTENER LOCATION. INSTALL A FASTENER OF THE SAME TYPE AND SIZE AS THE INITIAL FASTENER.

1665291 S0000304193_V2

Electrical Ground Power Receptacle Surround Doubler Repair Notes and Fastener Symbols
Figure 202

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VIEW LOOKING INBOARD
RIGHT SIDE IS SHOWN

1665295 S0000301479_V1

Electrical Ground Power Receptacle Surround Doubler Zone 1 Repair
Figure 203 (Sheet 1 of 3)

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A–A

B–B

1665305 S0000301496_V1

Electrical Ground Power Receptacle Surround Doubler Zone 1 Repair
Figure 203 (Sheet 2 of 3)

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1665316 S0000304196_V1

Electrical Ground Power Receptacle Surround Doubler Zone 1 Repair
Figure 203 (Sheet 3 of 3)

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NOTE: ALL CORNER RADIUS 0.100 INCH (2.54 mm) EXCEPT WHERE GIVEN.

VIEW LOOKING INBOARD
RIGHT SIDE IS SHOWN

1665323 S0000301480_V1

Electrical Ground Power Receptacle Surround Doubler Zone 2 Repair
Figure 204 (Sheet 1 of 2)

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NOTES

1 MAXIMUM CUT DEPTH 0.500 INCH (12.7mm)

1665325 S0000301497_V1

Electrical Ground Power Receptacle Surround Doubler Zone 2 Repair
Figure 204 (Sheet 2 of 2)

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REPAIR 5 - FUSELAGE SKIN REPAIR OF THE ELECTRICAL GROUND POWER RECEPTACLE DOUBLER AND FUSELAGE SKIN

1. Applicability

A. Repair 5 is applicable to crack and bending damage of the Electrical Ground Power Receptacle (EGPR) doubler, fuselage skin, EGPR forward intercostals and EGPR stiffener only. Refer to Figure 201/REPAIR 5 for damage locations. Contact The Boeing Company if you find damage that extends to fuselage station 227.7.

B. Repair 5 is applicable to the zone shown in Figure 201/REPAIR 5.

2418659 S0000558625_V1

Electrical Ground Power Receptacle Surround Damage Zones
Figure 201 (Sheet 1 of 2)

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Electrical Ground Power Receptacle Surround Damage Zones
Figure 201 (Sheet 2 of 2)

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2. General

A. This repair is a Category B repair and supplemental inspections are necessary. Incorporation of these inspection requirements into the airplane's maintenance program satisfies the damage tolerance assessment of this repair. Refer to 51-00-06, GENERAL for repair categories and definitions. Refer to Paragraph 5./REPAIR 5 for the inspection requirements.

B. D = fastener diameter.

C. Keep a 2D minimum fastener edge margin.

D. All dimensions are in inches unless they are shown differently.

E. Keep a minimum of 0.50 in. (12.70 mm) corner radius of all initial and repair parts, unless they are shown differently.

F. Keep a 4D to 6D fastener spacing, unless it is shown differently.

G. Make sure that the cut edges of the repair and initial parts have a surface smoothness of 63 microinches Ra or smoother. Refer to 51-20-13, GENERAL.

3. References

Reference	Title
51-00-06, GENERAL	Structural Repair Definitions
51-10-01, GENERAL	Aerodynamic Smoothness Requirements
51-10-02, GENERAL	Inspection and Removal of Damage
51-20-01, GENERAL	Protective Treatment of Metallic and Composite Materials
51-20-05, GENERAL	Repair Sealing
51-20-13, GENERAL	Surface Roughness Finish Requirements
51-30-01, GENERAL	Sheet Metal Materials
51-40-02, GENERAL	Fastener Installation and Removal
51-40-05, GENERAL	Fastener Hole Sizes
51-40-08, GENERAL	Countersink Data and Procedures for Metal Structures
AMM 51-21-00	INTERIOR AND EXTERIOR FINISHES
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes
737 NDT Part 6, 51-00-00, Procedure 16	Aluminum Part Fastener Hole Inspection (Rotary Scanner)
737 NDT Part 6, 51-00-00, Procedure 23	Aluminum Part Surface Inspection (Impedance Plane Display)
737 NDT Part 6, 51-00-00, Procedure 4	Surface Inspection of Aluminum Parts (Meter Display)

4. Repair Instructions

A. Get access to the damaged area. Remove the EGPR access door.

B. Remove the intercostal and EGPR stiffeners if necessary. If the intercostal or EGPR stiffeners are damaged, then replace with new parts.

C. Cut and remove the damaged area of the EGPR doubler and skin. Refer to 51-10-02, GENERAL and Figure 202/REPAIR 5.

NOTE: Make sure you do not damage the frame chord or the EGPR stiffener when you cut out the damaged area.

D. Do a High Frequency Eddy Current (HFEC) inspection along the cut edges to make sure that there are no cracks. Refer to 737 NDT Part 6, 51-00-00, Procedure 4 or 737 NDT Part 6, 51-00-00, Procedure 23. If no more damage is found, make an insurance cut of 0.040 in. (1.02 mm).

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E. Do an open hole HFEC inspection of all initial fastener holes in the repair area to make sure that there are no cracks. Refer to 737 NDT Part 6, 51-00-00, Procedure 16.

F. If there is oil canning of the lower section of the EGPR doubler, cut out the damage and install a filler. Refer to 53–10–15, REPAIR 4.

G. Do a detailed visual inspection of the underlying structure in the repair area to make sure that there are no cracks, deformation or other damage. If damage is found, do an HFEC inspection of the deformed structure for cracks. Refer to 737 NDT Part 6, 51-00-00, Procedure 4. If cracks or additional damage is found, contact The Boeing Company.

H. Make the repair parts. Refer to Table 201/REPAIR 5 and Figure 202/REPAIR 5.

(1) Make sure that the aerodynamic smoothness is satisfactory. Refer to 51-10-01, GENERAL.

(2) Keep the minimum bend radius for the material as given in 51-30-01, GENERAL. The thickness of the material after forming must be a minimum of 95 percent of the initial thickness.

(3) Surface waviness limit must be ± 0.030 in. (0.76 mm) for the repair.

(4) Make the Part 2 Doubler and Part 1 Tripler as given in Figure 202/REPAIR 5.

(5) Chamfer the edges of the Part 2 Doubler and Part 1 Tripler as given in 51-10-01 Figure 2/General, Detail A.

(6) Make countersink repair washers for the initial fastener locations. Refer to 51-40-08, GENERAL.

Table 201: Repair Materials

ITEM	PART	QUANTITY	MATERIAL
1	Tripler	1	0.063 in. (1.60 mm) thick, 2024-T3 clad sheet.
2	Doubler	1	0.063 in. (1.60 mm) thick, 2024-T3 clad sheet.
3	Skin Filler	1	0.071 in. (1.80 mm) thick, 2024-T3 clad sheet.
4	Doubler Filler	1	0.040 in. (1.02 mm) thick, 2024-T3 clad sheet.

I. Assemble the repair parts. Refer to Figure 202/REPAIR 5.

NOTE: Make sure the installation of the Part 2 Doubler and Part 1 Tripler does not prevent normal operation of the EGPR door.

J. Keep the pull-up clearance limit to a maximum of 0.010 in. (0.25 mm). Use a shim to fill all clearance that is more than 0.010 in. (0.25 mm) to a maximum of 0.030 in. (0.76 mm) before fastener installation. Refer to 51-30-01, GENERAL for shim installation.

K. Drill the fastener holes. Refer to 51-40-05, GENERAL and Figure 202/REPAIR 5 for fastener locations, type, and size.

NOTE: Do not drill fastener holes into a chem-milled radius, pocket or step.

L. Disassemble the repair parts.

M. Remove nicks, scratches, burrs and sharp edges from the repair parts and the bare surfaces of the initial parts.

N. Apply a chemical conversion coating to the repair parts and the bare surfaces of the initial parts. Refer to 51-20-01, GENERAL.

O. Apply two layers of BMS-11, Type I primer to the repair parts and bare surfaces of the initial parts. Refer to SOPM 20-41-02.

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P. Install the countersink repair washers with BMS 5-95 sealant at the initial fastener locations. Refer to 51-40-08, GENERAL.

Q. Install the repair parts with BMS 5-95 fay sealant between the mating surfaces. Refer to 51-20-05, GENERAL.

R. Install the fasteners. Install all rivets without sealant and over-driven to a minimum 1.4D driven head. Fasteners not made of aluminum must be installed wet with BMS 5-95 sealant. Refer to 51-40-02, GENERAL and 51-40-05, GENERAL.

S. Apply a fillet seal to the repair parts on the exterior side of the repair area and fill all gaps with BMS 5-95 sealant. Refer to 51-20-05, GENERAL.

T. Apply a finish to the external surface of the repair. Refer to AMM SUBJECT 51-21-00.

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EGPR SURROUND SIDE SKIN REPAIR
AT STA 219.80 AND 235.80

2419058 S0000557302_V1

Electrical Ground Power Receptacle Surround Doubler and Skin Repair
Figure 202 (Sheet 1 of 2)

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A–A

FASTENER SYMBOLS

REFERENCE FASTENER LOCATION.

INITIAL FASTENER LOCATION. INSTALL THE SAME TYPE AND DIAMETER FASTENER AS THE INITIAL FASTENER (UP TO 1/32-INCH DIAMETER OVERSIZE FOR RIVETS AND 1/64 INCH DIAMETER OVERSIZE FOR HEX-DRIVE BOLTS IS PERMITTED).

REPAIR FASTENER LOCATION. INSTALL A BACR15CE6D RIVET OR BACR15GF6D RIVET.

2419078 S0000558626_V1

Electrical Ground Power Receptacle Surround Doubler and Skin Repair
Figure 202 (Sheet 2 of 2)

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5. **Inspection Requirements**

A. At a threshold of 50,000 flight cycles after airplane delivery and at the specified repeat intervals, do the following structural inspections for skin cracks. Refer to Figure 203/REPAIR 5.

(1) Do an external Low Frequency Eddy Current (LFEC) inspection at 6,000 flight cycles at the outer perimeter row of fasteners common to the Part 2 Doubler and the areas shown around the Fillers.

(2) Do an external High Frequency Eddy Current (HFEC) inspection at 6,000 flight cycles at the skin edge along the door cut out.

(3) Do an external Detailed Visual Inspection of the Part 2 Doubler for cracks, loose or missing fasteners with the required LFEC and HFEC inspections and following the threshold.

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2423004 S0000560496_V1

Inspection Requirements
Figure 203

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K86654 S0006588506_V1

Section 41 Passenger Compartment Floor Panel Location
Figure 1

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F48027 S0006588509_V1

Section 41 Passenger Compartment Floor Panel Location
Figure 101

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F48045 S0006588512_V1

Section 41 Passenger Compartment Floor Panel Location
Figure 201

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IDENTIFICATION 1 - SECTION 41 FLOOR STRUCTURE

NOTE: REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

G39244 S0006588516_V1

Section 41 Floor Structure Location
Figure 1

Table 1:

REFERENCE DRAWINGS	
DRAWING NUMBER	**TITLE**
001A4001	Fuselage Product Collector
140A4103	Crew Floor Functional Collector
141A0640	Integration Installation-Side Panel, Section 41
141A5100	Integration Installation - Crew Floor, Section 41
141A5110	Integration Installation - Crew Floor
141A5120	Floor Web Installation - Crew Floor
141A5130	Door Installation - Crew Floor

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Table 1: (Continued)

REFERENCE DRAWINGS	
DRAWING NUMBER	**TITLE**
141A5140	Small Assembly - Crew Floor, Section 41
141A5160	Beam Installation - Crew Floor, BL 3.6
141A5170	Beam Installation - Crew Floor, BL 15.33
141A5180	Beam Installation - Crew Floor, BL 24.67

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G39254 S0006588518_V1

Section 41 Floor Structure Crew Area Floor Beam Locations
Figure 2

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LEFT SIDE IS SHOWN,
RIGHT SIDE IS OPPOSITE
EXCEPT AS NOTED

NOTES

- REFER TO TABLE 2 FOR THE LIST OF MATERIALS.
- REFER TO DRAWING NUMBER 141A5180

G39270 S0006588519_V1

Section 41 Floor Structure BL 24.67 Crew Area Floor Beam Identification
Figure 3

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Table 2:

LIST OF MATERIALS FOR FIGURE 3				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Chord, Upper		7050-T7451 plate as given in AMS 4050	
[2]	Chord, Lower		AND10136-2005 7075-T62 extrusion as given in QQ-A-200/11	
[3]	Web	0.050 (1.27)	7075-T6 sheet as given in QQ-A-250/12	
[4]	Web	0.032 (0.81)	7075-T62 clad sheet as given in QQ-A-250/13	Left side only
[5]	Stiffener		BAC1493-137 clad sheet as given in QQ-A-250/13	
[6]	Web	0.032 (0.81)	7075-T6 clad sheet as given in QQ-A-250/13	
[7]	Stiffener		AND10134-1003 7075-T6511 extrusion as given in QQ-A-200/11	Left side only
[8]	Stiffener		BAC1493-476 7075-T62 clad sheet as given in QQ-A-250/13	
[9]	Stiffener		BAC1506-4257 7075-T73511 extrusion as given in QQ-A-200/11 (Optional: BAC1505-100470 7075-T76511 extrusion as given in QQ-A-200/15) Refer to the Boeing production drawing for the chem-milled or machined thicknesses	
[10]	Stiffener		BAC1505-100470 7075-T76511 extrusion as given in QQ-A-200/11	
[11]	Stiffener (2)		BAC1514-3132 7075-T73511 extrusion as given in QQ-A-200/11 (Optional: 7075-T73511 extruded bar as given in QQ-A-200/11) Refer to the Boeing production drawing for the machined thicknesses	
[12]	Stiffener		BAC1514-633 7075-T73511 extrusion as given in QQ-A-200/11 (Optional: BAC1514-3134)	Left side only
[13]	Stiffener		BAC1505-100052 7075-T6511 extrusion as given in QQ-A-200/11	
[14]	Stiffener		BAC1514-3132 7075-T73511 extrusion as given in QQ-A-200/11	
[15]	Angle		BAC1490-40 7075-T62 clad sheet as given in QQ-A-250/13	Left side only
[16]	Channel		BAC1493-361 7075-T62 clad sheet as given in QQ-A-250/13	Left side only
[17]	Angle, Clip		BAC1514-3132 7075-T73511 extrusion as given in QQ-A-200/11 (Optional: 7075-T73511 extruded bar as given in QQ-A-200/11) Refer to the Boeing production drawing for the machined thicknesses	
[18]	Stiffener		AND10134-0702 7075-T6511 extrusion as given in QQ-A-200/11	Right side only
[19]	Stiffener		AND10134-1406 7075-T62 extrusion as given in QQ-A-200/11	Right side only

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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LEFT SIDE IS SHOWN
OUTBOARD SIDE

LEFT SIDE IS SHOWN
INBOARD SIDE

NOTES

- REFER TO TABLE 3 FOR THE LIST OF MATERIALS.
- REFER TO DRAWING NUMBER 141A5170

G39413 S0006588521_V1

Section 41 Floor Structure BL 15.33 Crew Area Floor Beam Identification
Figure 4 (Sheet 1 of 2)

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RIGHT SIDE
INBOARD SIDE

RIGHT SIDE
OUTBOARD SIDE

NOTE: REFER TO DRAWING NUMBER 141A5170

G39522 S0006588522_V1

Section 41 Floor Structure BL 15.33 Crew Area Floor Beam Identification
Figure 4 (Sheet 2 of 2)

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Table 3:

LIST OF MATERIALS FOR FIGURE 4				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Upper Chord		7075-T7451 plate as given in AMS 4050 (Grain direction controlled part)	
[2]	Lower Chord		AND10136-2005 7075-T62 extrusion as given in QQ-A-200/11	
[3]	Web	0.025 (0.64)	7075-T6 clad sheet as given in QQ-A-250/13	
[4]	Web	0.063 (1.6)	7075-T62 clad sheet as given in QQ-A-250/13	
[5]	Web	0.063 (1.6)	7075-T6 sheet as given in QQ-A-250/12. Refer to the Boeing production drawing for the chem-milled thicknesses	
[6]	Channel	0.050 (1.27)	7075-T62 clad sheet as given in QQ-A-250/13	
[7]	Channel	0.090 (2.29)	7075-T62 clad sheet as given in QQ-A-250/13	
[8]	Web Assembly Web Angle, Panel	 0.050 (1.27)	 7075-T62 clad sheet as given in QQ-A-250/13 AND10134-1205 7075-T6511 extrusion as given in QQ-A-200/11	
[9]	Angle, Panel		AND10134-1205 7075-T6511 extrusion as given in QQ-A-200/11	
[10]	Angle, Panel		BAC1514-3136 7075-T73511 extrusion as given in QQ-A-200/11	
[11]	Angle, Support		AND10133-1001 7075-T6511 extrusion as given in QQ-A-200/11	Left side only
[12]	Stiffener-Tee (2)		BAC1506-4260 7075-T73511 extrusion as given in QQ-A-200/11 (Optional: BAC1505-100269 7075-T76511 extrusion as given in QQ-A-200/15)	Right side has 1 each
[13]	Stiffener, Channel		BAC1493-466 7075-T62 clad sheet as given in QQ-A-250/13	Right side only
[14]	Stiffener, Angle (2)		BAC1514-3132 7075-T73511 extrusion as given in QQ-A-200/11 (Optional: BAC1514-3249)	
[15]	Channel Doubler		BAC1493-114 7075-T62 clad sheet as given in QQ-A-250/13	Left side only
[16]	Stiffener, Angle		BAC1490-2776 7075-T62 clad sheet as given in QQ-A-250/13	Left side only
[17]	Stiffener, Channel		BAC1493-604 7075-T62 clad sheet as given in QQ-A-250/13	Left side only
[18]	Stiffener, Channel	0.090 (2.29)	7075-T62 clad sheet as given in QQ-A-250/13	
[19]	Stiffener, Channel	0.071 (1.8)	7075-T62 clad sheet as given in QQ-A-250/13	Left side only
[20]	Stiffener, Tee		BAC1506-4258 7075-T73511 extrusion as given in QQ-A-200/11	Right side only

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Table 3: (Continued)

LIST OF MATERIALS FOR FIGURE 4				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[21]	Stiffener, Channel		BAC1493-308 7075-T62 clad sheet as given in QQ-A-250/13	Right side only YC008-YC050, YC054-YC070, YC074-YC099, YC103-YC110, YC112-YC120, YC122-YC199, YC201-YC299, YC303-YC320, YC331-YC380, YC382-YC399, YC405-YC499, YC507-YC570, YC573-YC599, YC603-YC699, YC701-YC799, YC801-YC899, YC901-YC999, YD001-YD999 ONLY
[22]	Stiffener, Tee		BAC1506-4258 7075-T73511 extrusion as given in QQ-A-200/11 (Optional: BAC1505-100470 7075-T76511 extrusion as given in QQ-A-200/15)	Right side only YC008-YC050, YC054-YC070, YC074-YC099, YC103-YC110, YC112-YC120, YC122-YC199, YC201-YC299, YC303-YC320, YC331-YC380, YC382-YC399, YC405-YC499, YC507-YC570, YC573-YC599, YC603-YC699, YC701-YC799, YC801-YC899, YC901-YC999, YD001-YD999 ONLY

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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LEFT SIDE IS SHOWN,
RIGHT SIDE IS OPPOSITE
EXCEPT AS NOTED

NOTE: REFER TO TABLE 4 FOR THE LIST OF MATERIALS.

G39526 S0006588524_V1

Section 41 Floor Structure BL 3.6 Beam Identification
Figure 5

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Table 4:

LIST OF MATERIALS FOR FIGURE 5				
ITEM	DESCRIPTION	T*[1]	MATERIAL	EFFECTIVITY
[1]	Chord, Upper		BAC1514-3137 7075-T73511 extrusion as given in QQ-A-200/11	
[2]	Web	0.040 (1.02)	7075-T62 clad sheet as given in QQ-A-250/13	
[3]	Support, Angle		BAC1490-2867 7075-T62 clad sheet as given in QQ-A-250/13	
[4]	Stiffener		BAC1514-3132 7075-T73511 extrusion as given in QQ-A-200/11	
[5]	Strap		BAC1512-3337 7075-T6511 extrusion as given in QQ-A-200/11	
[6]	Support, Angle		BAC1514-3133 7075-T73511 extrusion as given in QQ-A-200/11	Left side only

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

NOTE: REFER TO TABLE 5 FOR THE LIST OF MATERIALS.

G39527 S0006588526_V1

Section 41 Floor Structure Crew Area Floor Beam Identification
Figure 6

Table 5:

LIST OF MATERIALS FOR FIGURE 6				
ITEM	DESCRIPTION	T*[1]	MATERIAL	EFFECTIVITY
[1]	Beam, Channel (2)	0.050 (1.27)	7075-T62 clad sheet as given in QQ-A-250/13	
[2]	Beam, Channel (3)	0.063 (1.6)	7075-T62 clad sheet as given in QQ-A-250/13	
[3]	Beam (2)		7050-T7451 plate as given in AMS 4050 (Grain direction controlled part)	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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NOTES

- REFER TO TABLE 6 FOR THE LIST OF MATERIALS.

G39533 S0006588528_V1

Section 41 Floor Structure Forward Crew Area Integration Identification
Figure 7 (Sheet 1 of 2)

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G39636 S0006588529_V1

Section 41 Floor Structure Forward Crew Area Integration Identification
Figure 7 (Sheet 2 of 2)

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Table 6:

LIST OF MATERIALS FOR FIGURE 7				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Strap	0.080 (2.03)	2024-T3 clad sheet as given in QQ-A-250/5	
[2]	Angle (2)		BAC1514-3204 7075-T73511 extrusion as given in QQ-A-200/11	
[3]	Stiffener (2)		BAC1514-3196 7075-T73511 extrusion as given in QQ-A-200/11	
[4]	Angle (2)		BAC1514-3201 7075-T73511 extrusion as given in QQ-A-200/11	
[5]	Angle (2)		BAC1514-3200 7075-T73511 extrusion as given in QQ-A-200/11	
[6]	Angle (2)		BAC1514-3206 7075-T73511 extrusion as given in QQ-A-200/11	
[7]	Stiffener-Channel (2)		7050-T7451 plate as given in AMS 4050	
[8]	Angle-Support		AND10134-1403 7075-T6511 extrusion as given in QQ-A-200/11	
[9]	Stiffener (2)		BAC1503-100748 7075-T73511 extrusion as given in QQ-A-200/11	
[10]	Beam (2)		BAC1506-4393 7075-T73511 extrusion as given in QQ-A-200/11 (Optional: 7050-T7451 plate)	
[11]	Channel (2)		BAC1509-100112 2024-T3511 extrusion as given in QQ-A-200/3	
[12]	Angle		BAC1504-8256 7075-T6511 extrusion as given in QQ-A-200/11	
[13]	Channel (2)		BAC1493-875 2024-T42 clad sheet as given in QQ-A-250/5	
[14]	Channel (2)		BAC1510-1347 7075-T73511 extrusion as given in QQ-A-200/11	
[15]	J-Beam (2)		BAC1506-4326 7075-T73511 extrusion as given in QQ-A-200/11	
[16]	Angle-Support (2)		AND10134-2006 7075-T6511 extrusion as given in QQ-A-200/11	
[17]	Channel (2)		BAC1493-460 2024-T42 clad sheet as given in QQ-A-250/5	
[18]	Integration Assembly			
	Channel, Floor (2)		7050-T7451 plate as given in AMS 4050. (Grain direction controlled part)	
	Strap (2)	0.250 (6.35)	7050-T7451 plate as given in AMS 4050	
[19]	Web-Floor	0.071 (1.8)	2024-T3 sheet as given in QQ-A-250/4. Refer to Figure 9 for chem-milled thicknesses	
[20]	Shear Tie (2)	0.071 (1.8)	2024-T3 clad sheet as given in QQ-A-250/5	
[21]	Shear Tie (8)	0.040 (1.02)	2024-T3 clad sheet as given in QQ-A-250/5	
[22]	Shear Tie (2)	0.040 (1.02)	2024-T42 clad sheet as given in QQ-A-250/5	
[23]	Shear Tie Assembly (4)			
	Shear Tie	0.040 (1.02)	2024-T3 clad sheet as given in QQ-A-250/5	

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Table 6: (Continued)

LIST OF MATERIALS FOR FIGURE 7				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
	Ring Doubler	0.040 (1.02)	2024-T3 clad sheet as given in QQ-A-250/5	
[24]	Shear Tie Assembly (2)			
	Shear Tie	0.040 (1.02)	2024-T42 clad sheet as given in QQ-A-250/5	
	Doubler	0.040 (1.02)	2024-T3 clad sheet as given in QQ-A-250/5	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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NOTES

- REFER TO TABLE 7 FOR THE LIST OF MATERIALS.

G39687 S0006588531_V1

Section 41 Floor Structure Aft Crew Area Integration Identification
Figure 8 (Sheet 1 of 2)

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G39689 S0006588532_V1

Section 41 Floor Structure Aft Crew Area Integration Identification
Figure 8 (Sheet 2 of 2)

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Table 7:

LIST OF MATERIALS FOR FIGURE 8				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Strap	0.056 (1.42)	2024-T3 clad sheet as given in QQ-A-250/5	
[2]	Angle		BAC1514-3249 7075-T73511 extrusion as given in QQ-A-200/11	
[3]	Angle-Support		BAC1514-3205 7075-T73511 extrusion as given in QQ-A-200/11	
[4]	Channel (2)		BAC1493-875 2024-T42 clad sheet as given in QQ-A-250/5	
[5]	Channel		BAC1509-100669 7075-T73511 extrusion as given in QQ-A-200/11	
[6]	Channel (2)		AND10137-1011 7075-T6511 extrusion as given in QQ-A-200/11	
[7]	Channel		AND10137-1107 7075-T6511 extrusion as given in QQ-A-200/11	
[8]	Beam		BAC1506-4495 7075-T73511 extrusion as given in QQ-A-200/11 (Optional: 7050-T7451 plate as given in AMS 4050)	
[9]	Angle (2)		AND10133-1401 7075-T6511 extrusion as given in QQ-A-200/11	
[10]	J-Beam (2)		BAC1506-4494 7075-T73511 extrusion as given in QQ-A-200/11 (Optional: 7050-T7451 plate as given in AMS 4050)	
[11]	Beam		BAC1506-4392 7075-T73511 extrusion as given in QQ-A-200/11 (Optional: 7050-T7451 plate as given in AMS 4050)	
[12]	Z-Beam		BAC1517-2785 7075-T73511 extrusion as given in QQ-A-200/11	
[13]	Stiffener		BAC1506-4389 7075-T73511 extrusion as given in QQ-A-200/11 (Optional: 7050-T7451 plate as given in AMS 4050)	
[14]	Stiffener (2)		BAC1514-3201 7075-T73511 extrusion as given in QQ-A-200/11	
[15]	Channel (2)		BAC1493-876 2024-T42 clad sheet as given in QQ-A-250/5	
[16]	Angle		BAC1514-3248 7075-T73511 extrusion as given in QQ-A-200/11 (Optional: 7050-T7451 plate as given in AMS 4050)	
[17]	Channel (2)		BAC1493-494 2024-T42 clad sheet as given in QQ-A-250/5	
[18]	J-Beam Assembly Stiffener J-Beam		 BAC1490-2715 7075-T62 clad sheet as given in QQ-A-250/13 BAC1506-4323 7075-T73511 extrusion as given in QQ-A-200/11 (Optional: 7050-T7451 plate as given in AMS 4050)	
[19]	Web-Floor	0.071 (1.8)	2024-T3 sheet as given in QQ-A-250/4. Refer to Figure 9 for chem-milled thicknesses	

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Table 7: (Continued)

LIST OF MATERIALS FOR FIGURE 8				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[20]	Shear Tie Assembly (2)			
	Shear Tie	0.040 (1.02)	2024-T42 clad sheet as given in QQ-A-250/5	
	Doubler	0.040 (1.02)	2024-T3 clad sheet as given in QQ-A-250/5	
[21]	Shear Tie (4)	0.040 (1.02)	2024-T3 clad sheet as given in QQ-A-250/5	
[22]	J-Beam (2)		BAC1506-4394 7075-T73511 extrusion as given in QQ-A-200/11 (Optional: 7050-T7451 plate as given in AMS 4050)	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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G39934 S0006588534_V1

Chem-milled Thicknesses for Item [19]
Figure 9

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IDENTIFICATION 2 - SECTION 41 PASSENGER COMPARTMENT FLOOR STRUCTURE

NOTES

- REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.
- THE FLOOR STRUCTURE SHOWN IN THIS FIGURE IS THE BASIC CONFIGURATION. REFER TO BOEING DRAWINGS FOR OPTIONAL FLOOR STRUCTURE.

G35186 S0006588536_V1

Section 41 Floor Structure
Figure 1

Table 1:

REFERENCE DRAWINGS	
DRAWING NUMBER	**TITLE**
001A4001	Fuselage Product Collector
141A5210	Floor Step Assembly and Installation, Station 259-277
141A5400	Stabilization Installation Section 41

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NOTE: REFER TO FIGURE 4 FOR THE STABILIZATION STRUCTURE.

G35208 S0006588538_V2

Section 41 Floor Structure Locations
Figure 2

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NOTE: REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

G35209 S0006588540_V1

Section 41 Floor Step Identification
Figure 3

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Table 2:

LIST OF MATERIALS FOR FIGURE 3				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Support Channel	0.040 (1.02)	7075-T62 clad sheet as given in QQ-A-250/13	
[2]	Support Channel		BAC1493-581 7075-T62 clad sheet as given in QQ-A-250/13	
[3]	Web	0.050 (12.7)	7075-T62 clad sheet as given in QQ-A-250/13	
[4]	Lateral Intercostal		BAC1520-2760 7075-T73511 extrusion as given in QQ-A-200/11	
[5]	Tee Chord (2)		BAC1505-101183 7075-T73511 extrusion as given in QQ-A-200/11	
[6]	Intercostal (5)		7050-T7451 plate as given in AMS 4050	
[7]	Hardpoint Chord		7050-T7451 plate as given in AMS 4050	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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NOTES

- REFER TO TABLE 3 FOR THE LIST OF MATERIALS.
- REFER TO DRAWING NUMBER 141A5410

G35477 S0006588542_V1

Section 41 Floor Stabilization Structure Identification
Figure 4

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Table 3:

LIST OF MATERIALS FOR FIGURE 4				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Intercostal		7050-T7451 plate as given in AMS 4050 (Grain direction controlled part)	
[2]	Stiffener		BAC1503-100046 7075-T6511 extrusion as given in QQ-A-200/11	
[3]	Intercostal	0.040 (1.02)	7075-T62 clad sheet as given in QQ-A-250/13 7050-T7451 plate as given in AMS 4050 (Grain direction controlled part)	Line Number 1 to 5176 Line Number 5177 and on
[4]	Stabilizer Strap		BAC1513-433 7075-T6511 extrusion as given in QQ-A-200/11	
[5]	Stabilizer Strap		BAC1513-295 7075-T6511 extrusion as given in QQ-A-200/11	
[6]	Stiffener		BAC1503-100096 7075-T6511 extrusion as given in QQ-A-200/11	
[7]	Stiffener		BAC1514-3195 7075-T73511 extrusion as given in QQ-A-200/11	
[8]	Panel Break		BAC1505-100403 7050-T6511 extrusion as given in AMS 4340	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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NOTE: REFER TO TABLE 4 FOR THE LIST OF MATERIALS.

G36069 S0006588547_V1

Section 41 Floor Beam Identification at Station 277
Figure 5

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Table 4:

LIST OF MATERIALS FOR FIGURE 5				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Chord, Angle		BAC1503-101054 7050-T76511 extrusion as given in AMS 4340	
[2]	Web	0.120 (3.05)	7075-T6 clad sheet as given in QQ-A-250/13. Refer to Figure 11 for the chem-milled thicknesses	
[3]	Chord, Angle		BAC1503-101053 7075-T62 extrusion as given in QQ-A-200/11	
[4]	Doubler (3)	0.040 (1.02)	7075-T6 clad sheet as given in QQ-A-250/13	
[5]	Stiffener		BAC1514-3206 7075-T73511 extrusion as given in QQ-A-200/11	
[6]	Stiffener		AND10134-0601 7075-T6511 extrusion as given in QQ-A-200/11	
[7]	Stiffener		BAC1505-101640 7075-T73511 extrusion as given in QQ-A-200/11	
[8]	Stiffener		BAC1505-100592 7075-T6511 extrusion as given in QQ-A-200/11	
[9]	Stiffener		BAC1503-100259 7075-T73511 extrusion as given in QQ-A-200/11 (Optional: 7075-T6511)	
[10]	Stiffener		BAC1514-867 7075-T73511 extrusion as given in QQ-A-200/11 (Optional: BAC1503-100238 7075-T6511 extrusion as given in QQ-A-200/11)	
[11]	Stiffener		BAC1503-100413 7075-T6511 extrusion as given in QQ-A-200/11	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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NOTE: REFER TO TABLE 5 FOR THE LIST OF MATERIALS.

G37613 S0006588549_V1

Station 294.5 Floor Beam Identification
Figure 6

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Table 5:

LIST OF MATERIALS FOR FIGURE 6				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Chord, Upper		BAC1503-101052 7050-T76511 extrusion as given in AMS 4340	
[2]	Web	0.110 (2.8)	7075-T6 clad sheet as given in QQ-A-250/13. Refer to Figure 12 for the chem-milled thicknesses	
[3]	Angle		BAC1490-2816 7075-T6 formed angle as given in QQ-A-200/11	
[4]	Chord, Lower		BAC1503-101051 7075-T62 extrusion as given in QQ-A-200/11 (Optional: 7050-T7451 plate as given in AMS 4050)	
[5]	Stiffener		BAC1503-100917 7075-T6511 extrusion as given in QQ-A-200/11	
[6]	Stiffener		BAC1514-1081 7075-T73511 extrusion as given in QQ-A-200/11 (Optional: 7050-T7451 plate as given in AMS 4050)	
[7]	Stiffener		BAC1503-100380 7075-T73511 extrusion as given in QQ-A-200/11	
[8]	Stiffener		BAC1505-100323 7075-T73511 extrusion as given in QQ-A-200/11	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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NOTE: REFER TO TABLE 6 FOR THE LIST OF MATERIALS.

G37626 S0006588552_V1

Section 41 Floor Beam Identification AT Station 312
Figure 7

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Table 6:

LIST OF MATERIALS FOR FIGURE 7				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Lower Chord		BAC1505-100952 7075-T62 extrusion as given in QQ-A-200/11	
[2]	Beam, Transverse		BAC1518-1210 7050-T76511 extrusion as given in AMS 4340	
[3]	Splice Angle		BAC1503-3373 7075-T62 extrusion as given in QQ-A-200/11	
[4}	Splice Angle		BAC1503-100310 7075-T62 extrusion as given in QQ-A-200/11 (Optional: BAC1503-100691 7075-T6511 extrusion as given in QQ-A-200/11)	
[5]	Stiffener		AND10136-1503 7075-T6511 extrusion as given in QQ-A-200/11	
[6]	Stiffener		BAC1503-100096 7075-T6511 extrusion as given in QQ-A-200/11	
[7]	Stiffener		BAC1503-100917 7075-T6511 extrusion as given in QQ-A-200/11	
[8]	Stiffener		BAC1503-100917 7075-T73511 extrusion as given in QQ-A-200/11	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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NOTE: REFER TO TABLE 7 FOR THE LIST OF MATERIALS.

G37637 S0006588556_V1

Section 41 Floor Beam Identification at Station 328
Figure 8

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Table 7:

LIST OF MATERIALS FOR FIGURE 8				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Beam, Transverse		BAC1518-1210 7050-T76511 extrusion as given in AMS 4340	
[2]	Lower Chord		BAC1505-100445 7075-T73 extrusion as given in QQ-A-200/11 (Optional: 7050-T7451 plate as given in AMS 4050)	
[3]	Splice Angle		BAC1503-100691 7075-T73 extrusion as given in QQ-A-200/11 (Optional: 7050-T7451 plate as given in AMS 4050)	
[4]	Splice Angle		BAC1503-3373 7075-T73 extrusion as given in QQ-A-200/11 (Optional: 7050-T7451 plate as given in AMS 4050)	
[5]	Stiffener		BAC1505-101579 7075-T6511 extrusion as given in QQ-A-200/11	
[6]	Stiffener (5)		BAC1503-100096 7075-T6511 extrusion as given in QQ-A-200/11	
[7]	Stiffener (2)		BAC1503-100305 7075-T6511 extrusion as given in QQ-A-200/11	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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NOTE: REFER TO TABLE 8 FOR THE LIST OF MATERIALS.

G37642 S0006588560_V1

Section 41 Floor Beam Identification at Station 344
Figure 9

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Table 8:

LIST OF MATERIALS FOR FIGURE 9				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Transverse Beam		BAC1518-1218 7050-T76511 extrusion as given in AMS 4340. Refer to Figure 13 for the chem-milled thicknesses	
[2]	Chord		7050-T7451 plate as given in AMS 4050 (Grain direction controlled part)	
[3]	Splice		BAC1514-90 7050-T76511 extrusion as given in AMS 4340	
[4]	Splice		BAC1503-100369 7050-T76511 extrusion as given in AMS 4340 (Optional: BAC1503-100370 7075-T6511 extrusion as given in QQ-A-200/11)	
[5]	Stiffener		BAC1503-100096 7075-T6511 extrusion as given in QQ-A-200/11	
[6]	Stiffener		BAC1503-100031 7075-T6511 extrusion as given in QQ-A-200/11	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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NOTE: REFER TO TABLE 9 FOR THE LIST OF MATERIALS.

G37643 S0006588564_V1

Section 41 Floor Beam Identification at Station 360
Figure 10

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Table 9:

LIST OF MATERIALS FOR FIGURE 10				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Beam, Transverse		BAC1518-1208 7050-T76511 extrusion as given in AMS 4340	
[2]	Doubler	0.063 (1.6)	7075-T6 clad sheet as given in QQ-A-250/13	
[3]	Doubler	0.050 (1.27)	7075-T6 clad sheet as given in QQ-A-250/13	
[4]	Stiffener		BAC1503-100187 7075-T6511 extrusion as given in QQ-A-200/11	
[5]	Stiffener	0.071 (1.8)	7075-T62 clad sheet as given in QQ-A-250/13	
[6]	Stiffener		AND10133-0702 7075-T6511 extrusion as given in QQ-A-200/11	
[7]	Stiffener		AND10136-2002 7075-T6511 extrusion as given in QQ-A-200/11	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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NOTE: ALL DIMENSIONS SHOWN ARE THICKNESSES IN INCHES.

VIEW LOOKING FORWARD

G37644 S0006588568_V1

Chem-milled Thicknesses for Figure 5, Item [2]
Figure 11

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NOTE: ALL DIMENSIONS SHOWN ARE THICKNESSES IN INCHES.

VIEW LOOKING FORWARD

G37646 S0006588569_V1

Chem-milled Thicknesses for Figure 6, Item [2]
Figure 12

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NOTE: ALL DIMENSIONS SHOWN ARE THICKNESSES IN INCHES.

VIEW LOOKING FORWARD

G37651 S0006588570_V1

Chem-milled Thicknesses for Figure 9, Item [1]
Figure 13

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ALLOWABLE DAMAGE 1 - SECTION 41 FLOOR STRUCTURE

1. Applicability

A. This subject gives the allowable damage limits for the Section 41 floor structure shown in Section 41 Floor Structure Location, Figure 101/ALLOWABLE DAMAGE 1.

B. No damage is permitted at the following areas:

(1) Floor beam upper chord at the web access hole.

(2) Floor beam upper chord under the seat track attachment.

(3) Floor beam to fuselage frame joint.

(4) Floor beam upper chord under intercostals for galley hard mount/attachments.

C. Only the basic configuration of the floor structure is shown. Refer to Boeing drawings for optional structure.

Table 101:

PARAGRAPH REFERENCES FOR THE ALLOWABLE DAMAGE LIMITS				
TYPE OF STRUCTURE		FIGURE	GROUP	PARAGRAPH
ANGLE ASSEMBLIES, ANGLES, SUPPORT ANGLES, CHANNELS, ANGLE SUPPORTS, J-BEAMS, CHANNEL ASSEMBLIES, CLIP ANGLES, STIFFENERS, TEE STIFFENERS, STIFFENER ASSEMBLIES, BULKHEAD ANGLES, PANEL ANGLES, TEE CLIPS, AND ANGLE STIFFENERS (EXTRUDED)		102, 103, and 104	1	4.A
ANGLES, ANGLE SUPPORTS, CHANNELS, STIFFENERS, CHANNEL ASSEMBLIES, ANGLE STIFFENERS, INTERCOSTALS, CHANNEL STIFFENERS, CHANNEL BEAMS, BRACKETS, SUPPORT CHANNELS, CHANNEL DOUBLERS, AND INTERCOSTAL ASSEMBLIES (FORMED)		102, 103, and 104	2	4.B
UPPER CHORDS, TEE CHORDS, LATERAL INTERCOSTALS, AND LOWER CHORDS (EXTRUDED)		102, 103, and 104	3	4.C
UPPER CHORDS, HARDPOINT CHORD, AND ANCHOR BEAMS (MACHINED)		102, 103, ad 104	4	4.D
BEAM, J-BEAM, CHANNEL ASSEMBLIES, INTERCOSTALS, CHANNEL STIFFENERS, ANGLE STIFFENERS, STIFFENERS, ANGLES, SPLICE ANGLES, AND INTERCOSTAL ASSEMBLIES (MACHINED)		102, 103, and 104	5	4.E
PANEL BREAKS AND FLAT FILLERS (EXTRUDED)		104	6	4.F
STRAPS AND STABILIZER STRAPS (EXTRUDED)		102, 103, and 104	7	4.G
TRANSVERSE BEAMS AT STA 312 THRU STA 360 (EXTRUDED)		104	8	4.H
UPPER CHORDS AND LOWER CHORDS - STA 277 THRU STA 360 (EXTRUDED AND MACHINED)		104	9	4.I
FLOOR WEB IN THE CREW AREA, AFT FLOOR WEB, AND REMOVABLE PANELS (BARE SHEET, CLAD SHEET)		102 and 103	10	4.J
WEBS, BULKHEAD WEBS, WEB ASSEMBLIES, SHEAR TIES, SHEAR ASSEMBLIES, AND CHANNEL DOUBLERS (FORMED, BARE SHEET, CLAD SHEET)		102, 103, and 104	11	4.K

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G16126 S0006588574_V1

Section 41 Floor Structure Location
Figure 101

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NOTES

- ALL PARTS IDENTIFIED ARE MADE OF ALUMINUM.
- REFER TO TABLE 101 FOR THE ALLOWABLE DAMAGE LIMITS.

1 THE CHANNEL ASSEMBLY IS MADE FROM A FORMED CHANNEL AND AN EXTRUDED CLIP.

2 NO DAMAGE IS PERMITTED TO THE UPPER CHORD BETWEEN STA 178 AND STA 201.

3 NO DAMAGE IS PERMITTED TO THE UPPER CHORD AT THE SEAT RAIL ATTACH POINT, STA 226.5.

G17538 S0006588575_V1

Section 41 Floor Structure - Crew Area Floor Beams
Figure 102 (Sheet 1 of 5)

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LEFT SIDE IS SHOWN,
RIGHT SIDE IS ALMOST THE SAME

BEAM INSTALLATION AT BL 24.67

A

G17793 S0006588576_V1

Section 41 Floor Structure - Crew Area Floor Beams
Figure 102 (Sheet 2 of 5)

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OUTBOARD SIDE OF BEAM

LEFT SIDE IS SHOWN, RIGHT SIDE IS ALMOST THE SAME

BEAM INSTALLATION AT BL 15.33

B

G18659 S0006588577_V1

Section 41 Floor Structure - Crew Area Floor Beams
Figure 102 (Sheet 3 of 5)

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INBOARD SIDE OF BEAM

LEFT SIDE IS SHOWN, RIGHT SIDE IS ALMOST THE SAME

BEAM INSTALLATION AT BL 15.33

C

G18041 S0006588578_V1

Section 41 Floor Structure - Crew Area Floor Beams
Figure 102 (Sheet 4 of 5)

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LEFT SIDE IS SHOWN,
RIGHT SIDE IS OPPOSITE

BEAM INSTALLATION AT BL 3.6

D

INTERCOSTAL

E

H20392 S0006588579_V1

Section 41 Floor Structure - Crew Area Floor Beams
Figure 102 (Sheet 5 of 5)

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NOTES

- ALL PARTS IDENTIFIED ARE MADE OF ALUMINUM.
- REFER TO TABLE 101 FOR THE ALLOWABLE DAMAGE LIMITS.

1 THE CHANNEL ASSEMBLY IS MADE FROM A FORMED CHANNEL AND AN EXTRUDED CLIP.

G19305 S0006588580_V1

Section 41 Floor Structure - Integration Components in the Crew Area
Figure 103 (Sheet 1 of 3)

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G23354 S0006588581_V1

Section 41 Floor Structure - Integration Components in the Crew Area
Figure 103 (Sheet 2 of 3)

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G23523 S0006588582_V1

Section 41 Floor Structure - Integration Components in the Crew Area
Figure 103 (Sheet 3 of 3)

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NOTES

- ALL PARTS IDENTIFIED ARE MADE OF ALUMINUM.
- REFER TO TABLE 101 FOR THE ALLOWABLE DAMAGE LIMITS.
- NO DAMAGE IS PERMITTED TO THE UPPER CHORD AT THE SEAT RAIL ATTACH POINTS.

G23927 S0006588583_V2

Section 41 Floor Structure - Station 270 thru Station 360
Figure 104 (Sheet 1 of 4)

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FLOOR STEP ASSEMBLY

A

G24007 S0006588585_V1

Section 41 Floor Structure - Station 270 thru Station 360
Figure 104 (Sheet 2 of 4)

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Section 41 Floor Structure - Station 270 thru Station 360
Figure 104 (Sheet 3 of 4)

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G24144 S0006588587_V1

Section 41 Floor Structure - Station 270 thru Station 360
Figure 104 (Sheet 4 of 4)

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2. General

A. Remove the damaged material as necessary.

(1) Refer to 51-10-02 for the inspection and removal of damage.

(2) Refer to 51-30-03 for possible sources of the abrasive and other materials you can use to remove the damage.

(3) Refer to 51-30-05 for possible sources of the equipment and tools you can use to remove the damage.

B. Apply a chemical conversion coating to the bare surfaces of the reworked areas. Refer to 51-20-01.

C. Apply one of the two finishes to the reworked areas:

(1) Apply two layers of BMS 10-11, Type I, primer. Refer to SOPM 20-41-02 and AMM 51-21-00/701.

(2) Apply one layer of BMS 10-11, Type I, primer and one layer of BMS 10-11, Type II, enamel. Refer to SOPM 20-41-02 and AMM 51-21-00/701.

3. References

Reference	Title
51-10-02	INSPECTION AND REMOVAL OF DAMAGE
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-30-03	NON-METALLIC MATERIALS
51-30-05	EQUIPMENT AND TOOLS FOR REPAIRS
AMM 51-21-00/701	Interior And Exterior Finishes - Cleaning/Painting
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes

4. Allowable Damage Limits

A. Group 1 Parts: Angle Assemblies, Angles, Support Angles, Channels, Angle Supports, J-Beams, Channel Assemblies, Clip Angles, Stiffeners, Tee Stiffeners, Stiffener Assemblies, Bulkhead Angles, Panel Angles, Tee Clips, and Angle Stiffeners - Extruded

(1) Cracks:

(a) Remove the damage as shown in Allowable Damage Limits, Figure 105/ALLOWABLE DAMAGE 1, Details A , B , G , and H .

(2) Nicks, Gouges, Scratches, and Corrosion:

(a) Remove the damage as shown in Allowable Damage Limits, Figure 105/ALLOWABLE DAMAGE 1, Details A , B , C , E , F , G , and H .

(3) Dents are permitted as shown in Allowable Damage Limits, Figure 105/ALLOWABLE DAMAGE 1, Detail D .

(4) Holes and Punctures:

(a) Remove the damage as shown in Allowable Damage Limits, Figure 105/ALLOWABLE DAMAGE 1, Details I and J .

1) Detail J is permitted only for beam stiffeners.

B. Group 2 Parts: Angles, Angle Supports, Channels, Stiffeners, Channel Assemblies, Angle Stiffeners, Intercostals, Channel Stiffeners, Channel Beams, Brackets, Support Channels, Channel Doublers, and Intercostal Assemblies - Formed

(1) Cracks:

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(a) Remove the damage as shown in Allowable Damage Limits, Figure 105/ALLOWABLE DAMAGE 1, Details A , B , K and N .

(2) Nicks, Gouges, Scratches, and Corrosion:

(a) Remove the damage as shown in Allowable Damage Limits, Figure 105/ALLOWABLE DAMAGE 1, Details A , B , C , E , K , and N .

(3) Dents are permitted as shown in Allowable Damage Limits, Figure 105/ALLOWABLE DAMAGE 1, Detail D .

(4) Holes and Punctures:

(a) Remove the damage as shown in Allowable Damage Limits, Figure 105/ALLOWABLE DAMAGE 1, Details I and J .

1) Detail J is permitted only for beam stiffeners.

C. Group 3 Parts: Upper Chords, Tee Chords, Lateral Intercostals, and Lower Chords - Extruded

(1) Cracks:

(a) Remove the damage as shown in Allowable Damage Limits, Figure 105/ALLOWABLE DAMAGE 1, Details A , B , G , and H .

(2) Nicks, Gouges, Scratches, and Corrosion:

(a) Remove the damage as shown in Allowable Damage Limits, Figure 105/ALLOWABLE DAMAGE 1, Details A , B , C , E , F , G , and H .

(3) Dents are not permitted.

(4) Holes and Punctures are not permitted.

D. Group 4 Parts: Upper Chords, Hardpoint Chord, and Anchor Beams - Machined

(1) Cracks:

(a) Remove the damage as shown in Allowable Damage Limits, Figure 105/ALLOWABLE DAMAGE 1, Details A , B , G , and H .

(2) Nicks, Gouges, Scratches, and Corrosion:

(a) Remove the damage as shown in Allowable Damage Limits, Figure 105/ALLOWABLE DAMAGE 1, Details A , B , C , E , F , G , and H .

(3) Dents are not permitted.

(4) Holes and Punctures are not permitted.

E. Group 5 Parts: Beam, J-Beam, Channel Assemblies, Intercostals, Channel Stiffeners, Angle Stiffeners, Stiffeners, Angles, Splice Angles, and Intercostal Assemblies - Machined

(1) Cracks:

(a) Remove the damage as shown in Allowable Damage Limits, Figure 105/ALLOWABLE DAMAGE 1, Details A , B , G , and H .

(2) Nicks, Gouges, Scratches, and Corrosion:

(a) Remove the damage as shown in Allowable Damage Limits, Figure 105/ALLOWABLE DAMAGE 1, Details A , B , C , E , F , G , and H .

(3) Dents are permitted as shown in Allowable Damage Limits, Figure 105/ALLOWABLE DAMAGE 1, Detail D .

(4) Holes and Punctures:

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(a) Remove the damage as shown in Allowable Damage Limits, Figure 105/ALLOWABLE DAMAGE 1, Details I and J .

1) Detail J is permitted only for beam stiffeners.

F. Group 6 Parts: Panel Breaks and Flat Fillers - Extruded

(1) Cracks:

(a) Remove the damage as shown in Allowable Damage Limits, Figure 105/ALLOWABLE DAMAGE 1, Details A , B , and L .

(2) Nicks, Gouges, Scratches, and Corrosion:

(a) Remove the damage as shown in Allowable Damage Limits, Figure 105/ALLOWABLE DAMAGE 1, Details A , B , C , E , and L .

(3) Dents are permitted as shown in Allowable Damage Limits, Figure 105/ALLOWABLE DAMAGE 1, Detail D .

(4) Holes and Punctures are permitted if they are:

(a) A maximum of 0.25 inch in diameter

(b) A minimum of 4D (D = the diameter of the damage) away from a hole, other damage, or the part edge

(c) Filled with a 2117-T3 or 2117-T4 aluminum rivet installed without sealant.

G. Group 7 Parts: Straps and Extruded Stabilizer Straps - Extruded

(1) Cracks:

(a) Remove the damage as shown in Allowable Damage Limits, Figure 105/ALLOWABLE DAMAGE 1, Details A , B , and L .

(2) Nicks, Gouges, Scratches, and Corrosion:

(a) Remove the damage as shown in Allowable Damage Limits, Figure 105/ALLOWABLE DAMAGE 1, Details A , B , C , E , and L .

(3) Dents are not permitted.

(4) Holes and Punctures are not permitted.

H. Group 8 Parts: Transverse Beams between STA 312 and STA 360 - Extruded

(1) Web area:

(a) Cracks:

1) Remove the damage as shown in Allowable Damage Limits, Figure 105/ALLOWABLE DAMAGE 1, Details A , B , and L .

(b) Nicks, Gouges, Scratches, and Corrosion:

1) Remove the damage as shown in Allowable Damage Limits, Figure 105/ALLOWABLE DAMAGE 1, Details A , B , C , L , and O .

(c) Dents are not permitted.

(d) Holes and Punctures are permitted as shown in Allowable Damage Limits, Figure 105/ALLOWABLE DAMAGE 1, Detail O .

(2) Flange areas:

(a) Cracks:

1) Remove the damage as shown in Allowable Damage Limits, Figure 105/ALLOWABLE DAMAGE 1, Details A , B , G , and H .

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(b) Nicks, Gouges, Scratches, and Corrosion:

1) Remove the damage as shown in Allowable Damage Limits, Figure 105/ALLOWABLE DAMAGE 1, Details A , B , C , E , F , G , H , and O .

(c) Dents are not permitted.

(d) Holes and Punctures are not permitted.

I. Group 9 Parts: Upper Chords and Lower Chords between STA 277 and STA 360 - Extruded and Machined

(1) Cracks:

(a) Remove the damage as shown in Allowable Damage Limits, Figure 105/ALLOWABLE DAMAGE 1, Details A , B , G , and H .

(2) Nicks, Gouges, Scratches, and Corrosion:

(a) Remove the damage as shown in Allowable Damage Limits, Figure 105/ALLOWABLE DAMAGE 1, Details A , B , C , E , F , G , H , and P .

(3) Dents are not permitted.

(4) Holes and Punctures are not permitted.

J. Group 10 Parts: Floor Web in the Crew Area, Aft Floor Web, and the Removable Panels - Formed Bare and Clad Sheet

(1) Cracks:

(a) Remove the damage as shown in Allowable Damage Limits, Figure 105/ALLOWABLE DAMAGE 1, Details A , B , and L .

(2) Nicks, Gouges, Scratches, and Corrosion:

(a) Remove the damage as shown in Allowable Damage Limits, Figure 105/ALLOWABLE DAMAGE 1, Details A , B , C , E , and L .

(3) Dents are permitted as shown in Allowable Damage Limits, Figure 105/ALLOWABLE DAMAGE 1, Detail D .

(4) Holes and Punctures are permitted if they are:

(a) A maximum of 0.25 inch in diameter

(b) A minimum of 4D (D = the diameter of the damage) away from a hole, other damage, or the part edge

(c) Filled with a 2117-T3 or 2117-T4 aluminum rivet installed without sealant.

K. Group 11 Parts: Webs, Bulkhead Webs, Web Assemblies, Shear Ties, Shear Assemblies and Channel Doublers - Formed Bare and Clad Sheet

(1) Cracks:

(a) Remove the damage as shown in Allowable Damage Limits, Figure 105/ALLOWABLE DAMAGE 1, Details A , B , and L .

(2) Nicks, Gouges, Scratches, and Corrosion:

(a) Remove the damage as shown in Allowable Damage Limits, Figure 105/ALLOWABLE DAMAGE 1, Details A , B , C , E , L , M , and N .

(3) Dents are permitted as shown in Allowable Damage Limits, Figure 105/ALLOWABLE DAMAGE 1, Detail D .

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(4) Holes and Punctures are permitted as shown in Allowable Damage Limits, Figure 105/ ALLOWABLE DAMAGE 1, Detail M , i if they are:

(a) A maximum of 0.25 inch in diameter

(b) A minimum of 4D (D = the diameter of the damage) away from a hole, other damage, or the part edge

(c) Filled with a 2117-T3 or 2117-T4 aluminum rivet installed without sealant.

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X = WIDTH OF THE MATERIAL
THAT IS REMOVED
= A MAXIMUM OF 10 PERCENT OF THE WIDTH OF
THE FLANGE FOR STA 312 THRU 360
= A MAXIMUM OF 15 PERCENT OF THE WIDTH OF
THE UPPER FLANGE FOR STA 277 AND 294.5

REMOVAL OF DAMAGED MATERIAL AT
EDGES WHERE THE FASTENER EDGE
MARGINS DO NOT HAVE AN OVERLAP

(A) 1

X = WIDTH OF THE MATERIAL
THAT IS REMOVED
= A MAXIMUM OF 10 PERCENT OF THE
WIDTH OF THE FLANGE FOR STA 312
THRU 360
= A MAXIMUM OF 15 PERCENT OF THE
WIDTH OF THE UPPER FLANGE FOR STA
277 AND 294.5

REMOVAL OF DAMAGED MATERIAL AT
EDGES WHERE THE FASTENER EDGE
MARGINS HAVE AN OVERLAP

(B) 1

REMOVAL OF DAMAGED MATERIAL
ON A SURFACE

(C)

X = DEPTH OF THE MATERIAL THAT IS
REMOVED
= A MAXIMUM OF 10 PERCENT OF THE
DEPTH FOR STA 312 THRU 360
= A MAXIMUM OF 15 PERCENT OF THE
DEPTH FOR STA 277 AND 294.5

A–A

NOTES

1 THIS DETAIL IS NOT PERMITTED FOR THE LOWER CHORDS ON FLOOR BEAMS AT THE FOLLOWING LOCATIONS:

- STA 277.0, FROM BL 0.0 THRU RBL 51.0
- STA 294.5, FROM BL 0.0 THRU RBL 31.6
- STA 328.0, FROM LBL 45.5 THRU BL 0.0

2213989 S0000493905_V1

Allowable Damage Limits
Figure 105 (Sheet 1 of 11)

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NOTE: DENTS CAN NOT EXTEND ACROSS ATTACHED STRUCTURE. DENTS ARE PERMITTED IN FREE FLANGES ONLY FOR PARTS OTHER THAN WEBS AND SHEAR TIES.

DENT THAT IS PERMITTED

D

REMOVAL OF DAMAGE AROUND THE FASTENERS ON AN EDGE OR A SURFACE

E

B–B

G29811 S0006588589_V2

Allowable Damage Limits
Figure 105 (Sheet 2 of 11)

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Y = WIDTH OF THE MATERIAL THAT IS REMOVED
= A MAXIMUM OF 10 PERCENT OF THE WIDTH OF THE FLANGE

NOTE: AN ANGLE IS SHOWN, BUT THE DETAIL CAN ALSO BE APPLICABLE TO A TEE SECTION.

REMOVAL OF DAMAGED MATERIAL
ON A SURFACE AT AN EDGE

F

C–C

G29816 S0006588590_V1

Allowable Damage Limits
Figure 105 (Sheet 3 of 11)

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X = THE WIDTH OF THE MATERIAL THAT IS REMOVED
= A MAXIMUM OF 10 PERCENT OF THE WIDTH OF THE UPPER FLANGE EXCEPT
= A MAXIMUM OF 15 PERCENT OF THE WIDTH OF THE STA 277
AND STA 294.5 BEAMS UPPER CHORD UPPER FLANGE

REMOVAL OF DAMAGED MATERIAL ON AN EDGE

G 1

X = WIDTH OF THE MATERIAL REMOVED
= A MAXIMUM OF 10 PERCENT OF THE WIDTH OF THE FLANGE

REMOVAL OF DAMAGED MATERIAL AT AN EDGE

H 1

G29817 S0006588592_V2

Allowable Damage Limits
Figure 105 (Sheet 4 of 11)

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D = THE DIAMETER OF THE HOLE
W = THE WIDTH OF THE FLANGE

NOTE: HOLES ARE NOT PERMITTED IN A FLANGE RADIUS.

HOLES THAT ARE PERMITTED FOR THE REMOVAL OF DAMAGED MATERIAL IN A FLANGE

I

D = THE DIAMETER OF THE HOLE
W = THE WIDTH OF THE STIFFENER FLANGE

HOLES THAT ARE PERMITTED TO REMOVE DAMAGED MATERIAL FROM THE FREE FLANGES OF THE WEB STIFFENERS

J

G29853 S0006588593_V1

Allowable Damage Limits
Figure 105 (Sheet 5 of 11)

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X = WIDTH OF THE MATERIAL THAT IS REMOVED
= A MAXIMUM OF 10 PERCENT OF THE WIDTH OF THE FLANGE

REMOVAL OF DAMAGED MATERIAL ON AN EDGE

K

X = WIDTH OF THE MATERIAL THAT IS REMOVED
= A MAXIMUM OF 0.20 INCH

REMOVAL OF DAMAGED MATERIAL AT AN EDGE OF A METAL SKIN OR WEB

L

G29857 S0006588594_V1

Allowable Damage Limits
Figure 105 (Sheet 6 of 11)

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REMOVAL OF DAMAGED MATERIAL FROM A WEB OR DOUBLER

M

G29972 S0006588595_V1

Allowable Damage Limits
Figure 105 (Sheet 7 of 11)

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D = DIAMETER OF THE HOLE

H = HEIGHT OF THE WEB

T = THICKNESS OF THE WEB AS GIVEN BY THE NOMINAL THICKNESS ON THE PRODUCTION DRAWING

A_1 = INITIAL AREA OF THE WEB
= THE TOTAL CROSS-SECTIONAL AREA MINUS THE CROSS-SECTIONAL AREA OF THE INITIAL HOLES (AS MANUFACTURED BY BOEING)
$= HT - D_1T - D_2T - D_4T$

A_2 = CROSS-SECTIONAL AREA OF THE DAMAGE THAT IS REMOVED AT LOCATION 2

A_3 = CROSS-SECTIONAL AREA OF THE DAMAGE THAT IS REMOVED AT LOCATION 3

$\left(\frac{A_2 + A_3}{A_1}\right) \times 100$ = PERCENT OF CROSS-SECTIONAL AREA REMOVED
= 10 PERCENT MAXIMUM

THE TOTAL CROSS-SECTIONAL AREA REMOVED IN ALL ZONES A-B (2.00 INCHES ON EACH SIDE OF A LINE A-B) MUST NOT BE MORE THAN 10 PERCENT OF THE INITIAL AREA OF THE WEB.

(ROTATED 90° CLOCKWISE)
D-D

G29984 S0006588596_V1

Allowable Damage Limits
Figure 105 (Sheet 8 of 11)

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REMOVAL OF DAMAGED MATERIAL AT AN EDGE OF A FLANGED HOLE

N

REMOVAL OF DAMAGED MATERIAL FROM EXTRUDED FLOOR BEAMS

O

G29998 S0006588597_V1

Allowable Damage Limits
Figure 105 (Sheet 9 of 11)

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D = DIAMETER OF THE INITIAL HOLE

H = HEIGHT OF THE WEB

$\frac{H}{10}$ = MAXIMUM DIAMETER OF THE DAMAGE (THE MAXIMUM DIAMETER MUST NOT BE MORE THAN 0.75 INCH)

T = THICKNESS OF THE WEB AS GIVEN BY THE NOMINAL THICKNESS ON THE PRODUCTION DRAWING

A_1 = INITIAL AREA OF THE WEB
= THE TOTAL CROSS-SECTIONAL AREA MINUS THE CROSS-SECTIONAL AREA OF THE INITIAL HOLES (AS MANUFACTURED BY BOEING)
= HT - DT

A_2 = CROSS-SECTIONAL AREA OF THE DAMAGE THAT IS REMOVED AT LOCATION 2

A_3 = CROSS-SECTIONAL AREA OF THE DAMAGE THAT IS REMOVED AT LOCATION 3

$\left(\frac{A_2 + A_3}{A_1}\right) \times 100$ = PERCENT OF CROSS-SECTIONAL AREA REMOVED
= 10 PERCENT MAXIMUM

THE TOTAL CROSS-SECTIONAL AREA REMOVED IN ALL ZONES A-B (2.00 INCHES ON EACH SIDE OF A LINE A-B) MUST NOT BE MORE THAN 10 PERCENT OF THE INITIAL AREA OF THE WEB.

(ROTATED 90° CLOCKWISE)
F-F

G30020 S0006588599_V1

Allowable Damage Limits
Figure 105 (Sheet 10 of 11)

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REMOVAL OF DAMAGE FROM A FLOOR BEAM UPPER FLANGE
STATION 277 THRU STATION 360

P

NOTES

- UPPER FLANGE IS SHOWN. THE DAMAGE LIMITS ARE 0.10T FOR THE LOWER FLANGE.
- ONLY ONE DAMAGE LOCATION IS PERMITTED BETWEEN TWO LOWER STABILIZER STRAPS.
- USE FILLERS AS NECESSARY WHERE THE FLOOR BEAM IS ATTACHED TO ADJACENT STRUCTURE. THE MAXIMUM GAP BEFORE FASTENERS ARE INSTALLED IS 0.01 INCH.

G30028 S0006588600_V2

Allowable Damage Limits
Figure 105 (Sheet 11 of 11)

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REPAIR 1 - SECTION 41 FLOOR STRUCTURE

1. Applicability

A. Repair 1 is applicable to damage to all the parts of the section 41 floor structure identified in Section 41 Floor Structure Location, Figure 201/REPAIR 1 thru Section 41 Floor Structure - Station 270 thru Station 360, Figure 204/REPAIR 1.

B. Repair 1 is not applicable to damage to the floor webs, shear ties, and removable panel. Refer to 53-10-51, Repair 2 for the repair of the floor webs, shear ties, and removable panel.

G32819 S0006588605_V1

Section 41 Floor Structure Location
Figure 201

2. General

A. The typical repairs given in 51-70-11, 51-70-12, and 51-70-13 can be used when applicable if there is sufficient clearance with the adjacent structure for the installation of the repair parts.

B. Some of the typical repairs given in 51-70-11, 51-70-12, and 51-70-13 must not be used in some areas, as given in the typical repair figures. Refer to 51-70-11, 51-70-12, and 51-70-13.

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C. Refer to the limits of the typical repairs given in 51-70-11, 51-70-12, and 51-70-13 before you start a repair.

3. References

Reference	Title
51-70-11	TYPICAL FORMED SECTION REPAIRS
51-70-12	EXTRUDED SECTION REPAIRS
51-70-13	TYPICAL WEB REPAIRS
53-10-51	FUSELAGE FLOOR STRUCTURE - SECTION 41

4. Repair Instructions

A. Refer to Section 41 Floor Structure Location, Figure 201/REPAIR 1 thru Section 41 Floor Structure - Station 270 thru Station 360, Figure 204/REPAIR 1 and Table 201 to find the applicable repair for the part you want to repair.

NOTE: If necessary, refer to 53-10-51, Identification 1 to find the material and the process that was used to make the part which you want to repair.

Table 201:

REPAIR REFERENCES FOR THE SECTION 41 FLOOR STRUCTURE	
TYPE OF COMPONENT	**REPAIR**
Formed parts	Refer to SRM 51-70-11
Extruded parts	Refer to SRM 51-70-12
Machined parts	Refer to SRM 51-70-12
Webs	Refer to SRM 51-70-13

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NOTES

- ALL PARTS IDENTIFIED ARE MADE OF ALUMINUM.

1 THERE ARE NO REPAIRS OF THE UPPER CHORD BETWEEN STA 178 AND STA 201 IN THE STRUCTURAL REPAIR MANUAL AT THIS TIME.

2 ONLY THE FLANGES OF THE BEAM CAN BE REPAIRED AS GIVEN IN SRM 51-70-12. FOR THE REPAIR OF THE WEB OF THE BEAM YOU MUST CONTACT THE BOEING COMPANY.

G32822 S0006588607_V2

Section 41 Floor Structure - Crew Area Floor Beams
Figure 202 (Sheet 1 of 4)

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LEFT SIDE IS SHOWN,
RIGHT SIDE IS ALMOST THE SAME

BEAM INSTALLATION AT BL 24.67

A

G32823 S0006588608_V1

Section 41 Floor Structure - Crew Area Floor Beams
Figure 202 (Sheet 2 of 4)

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OUTBOARD SIDE OF BEAM

INBOARD SIDE OF BEAM

LEFT SIDE IS SHOWN, RIGHT SIDE IS ALMOST THE SAME

BEAM INSTALLATION AT BL 15.33

B

G32825 S0006588609_V1

Section 41 Floor Structure - Crew Area Floor Beams
Figure 202 (Sheet 3 of 4)

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LEFT SIDE IS SHOWN,
RIGHT SIDE IS OPPOSITE

BEAM INSTALLATION AT BL 3.6

C

INTERCOSTAL

D

G32826 S0006588610_V1

Section 41 Floor Structure - Crew Area Floor Beams
Figure 202 (Sheet 4 of 4)

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NOTES

- ALL PARTS IDENTIFIED ARE MADE OF ALUMINUM.

G32831 S0006588611_V1

Section 41 Floor Structure - Integration Components in the Crew Area
Figure 203 (Sheet 1 of 3)

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Section 41 Floor Structure - Integration Components in the Crew Area
Figure 203 (Sheet 2 of 3)

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G32879 S0006588613_V1

Section 41 Floor Structure - Integration Components in the Crew Area
Figure 203 (Sheet 3 of 3)

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NOTES

- ALL PARTS IDENTIFIED ARE MADE OF ALUMINUM.

G32881 S0006588614_V1

Section 41 Floor Structure - Station 270 thru Station 360
Figure 204 (Sheet 1 of 4)

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FLOOR STEP ASSEMBLY

A

G32882 S0006588616_V1

Section 41 Floor Structure - Station 270 thru Station 360
Figure 204 (Sheet 2 of 4)

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G32883 S0006588617_V1

Section 41 Floor Structure - Station 270 thru Station 360
Figure 204 (Sheet 3 of 4)

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G32885 S0006588618_V1

Section 41 Floor Structure - Station 270 thru Station 360
Figure 204 (Sheet 4 of 4)

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REPAIR 2 - SECTION 41 FLOOR WEBS

1. Applicability

A. Repair 2 is applicable to damage to the structures that follow, from Sta 178 to Sta 270 (Refer to Section 41 Floor Web - Location, Figure 201/REPAIR 2):

(1) The forward floor web

(2) The aft floor web

(3) The removable panel.

2. General

A. Repair 2 is a Category A repair. Refer to 51-00-06 to find the definitions of the different categories of repairs.

B. Make sure that you do not cause damage to the adjacent structure or components in the repair area when you install a repair.

G38031 S0006588620_V1

Section 41 Floor Web - Location
Figure 201 (Sheet 1 of 2)

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G38123 S0006588621_V1

Section 41 Floor Web - Location
Figure 201 (Sheet 2 of 2)

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3. References

Reference	Title
51-00-06	STRUCTURAL REPAIR DEFINITIONS
51-10-02	INSPECTION AND REMOVAL OF DAMAGE
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-20-05	REPAIR SEALING
51-40-02, GENERAL	Fastener Installation and Removal
51-40-03, GENERAL	Fastener Substitution
51-40-05	FASTENER HOLE SIZES
51-40-06, GENERAL	Fastener Edge Margins
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes

4. Repair Instructions

A. For crack damage, do one of the steps that follow:

(1) Drill a stop hole at the ends of all cracks that do not end at fastener holes and continue with step 4.C. Refer to 51-10-02 for the procedures to drill a stop hole.

(2) Cut and remove the crack as shown in Section 41 Floor Web - Repair for Damage That is Cut Out, Figure 202/REPAIR 2 or Section 41 Floor Web - Crack Damage That is Stop Drilled, Figure 203/REPAIR 2. Refer to 51-10-02 for the procedures to remove the damage.

(a) Make sure there is a minimum of two rows of repair fasteners around the edges of the cutout.

(b) Make the cut in the shape of a rectangle.

(c) Put the web that is around the damage cutout back to the initial contour.

(d) Continue with step 4.C.

B. For areas of damage other than cracks, do as follows:

(1) Cut and remove the damaged part of the floor web as shown in Section 41 Floor Web - Repair for Damage That is Cut Out, Figure 202/REPAIR 2 or Section 41 Floor Web - Crack Damage That is Stop Drilled, Figure 203/REPAIR 2. Refer to 51-10-02 for the procedures to remove the damage.

(a) Make sure there is a minimum of two rows of repair fasteners around the edges of the cutout.

(b) Make the cut in the shape of a rectangle.

(c) Put the web that is around the damage cutout back to the initial contour.

(d) Continue with step 4.C.

C. Make the repair parts as shown in Section 41 Floor Web - Repair for Damage That is Cut Out, Figure 202/REPAIR 2 or Section 41 Floor Web - Crack Damage That is Stop Drilled, Figure 203/REPAIR 2 and given in Table 201/REPAIR 2.

NOTE: Make the repair part [2] Filler to fit the web cutout and keep a gap of 0.000 to 0.100 inch (0.0 mm to 2.54 mm) all around.

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Table 201:

REPAIR MATERIAL			
ITEM	**PART**	**QUANTITY**	**MATERIAL**
[1]	Repair Plate	1	Use 2024-T3 clad sheet. Refer to Table 202 for the necessary thicknesses of the material
[2]	Filler (for damage that is cut out)	1	Use 2024-T3 clad sheet that is the same thickness as the initial web (minus the depth of the chem-milled pocket, if applicable)
[3]	Shim (as (applicable for chem- milled area)	As necessary	Use 2024-T3 clad sheet that is the same thickness as the depth of the applicable chem-milled pocket
[4]	Repair Plate	1	Use 2024-T3 clad sheet. Refer to Table 202 for the necessary thicknesses of the material

Table 202:

REPAIR PART THICKNESSES AND REPAIR FASTENER DIAMETERS FOR INITIAL WEB OR PANEL THICKNESSES		
INITIAL WEB OR PANEL THICKNESSES [MEASURED AT THE THICKEST PART OF THE WEB OR PANEL IN THE REPAIR AREA IN INCHES (mm)]	**ITEM [1] and [4] REPAIR PLATE THICKNESS IN INCHES (mm)**	**REPAIR FASTENER DIAMETER IN INCHES**
0.040 (1.02)	0.050 (1.27)	5/32
0.060 (1.52)	0.071 (1.80)	5/32
0.071 (1.80)	0.080 (2.03)	5/32

D. Assemble the repair parts as shown in Section 41 Floor Web - Repair for Damage That is Cut Out, Figure 202/REPAIR 2 or Section 41 Floor Web - Crack Damage That is Stop Drilled, Figure 203/REPAIR 2.

E. Drill the fastener holes. Refer to 51-40-05 for the fastener hole sizes.

F. Disassemble the repair parts.

G. Remove the nicks, scratches, gouges, and sharp edges from the repair parts and the initial web.

H. Apply a chemical conversion coating to the repair parts and bare surfaces of the initial web. Refer to 51-20-01.

I. Apply two layers of BMS 10-11, Type I primer to the repair parts and the bare surfaces of the initial web. Refer to SOPM 20-41-02.

J. Install the repair parts with BMS 5-95 sealant between the mating surfaces. Refer to 51-20-05.

K. Install the fasteners without sealant.

L. Fill the space between the part [2] Filler and the initial web with BMS 5-95 sealant, if applicable. Refer to 51-20-05.

M. Apply a layer of BMS 3-23 Corrosion Inhibiting Compound (CIC) to the area as necessary. Refer to 51-20-01.

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REPAIR ON THE BOTTOM SIDE OF THE CREW FLOOR IN A CHEM-MILLED AREA IS SHOWN

NOTES

- THE EDGE OF THE [3] SHIM MUST NOT TOUCH THE CHEM-MILLED RADIUS.

FASTENER SYMBOLS

REPAIR FASTENER LOCATION. INSTALL A BACR15FT5D() RIVET.

REPAIR FASTENER LOCATION. INSTALL A BACR15FT5D() RIVET WHEN THE CRACK DAMAGE IS STOP-DRILLED OR CUT OUT.

G38237 S0006588624_V1

Section 41 Floor Web - Repair for Damage That is Cut Out
Figure 202 (Sheet 1 of 2)

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A-A

A

G38360 S0006588625_V1

Section 41 Floor Web - Repair for Damage That is Cut Out
Figure 202 (Sheet 2 of 2)

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REPAIR ON THE UPPER SIDE OF THE CREW FLOOR IN CHEM-MILLED AREA SHOWN

FASTENER SYMBOLS

⊕ REPAIR FASTENER LOCATION. INSTALL A BACR15FT5D() RIVET.

⊕ REPAIR FASTENER LOCATION. INSTALL A BACR15FT5D() RIVET WHEN THE CRACK DAMAGE IS STOP-DRILLED OR CUT OUT.

G38286 S0006588626_V1

Section 41 Floor Web - Crack Damage That is Stop Drilled
Figure 203 (Sheet 1 of 2)

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G38388 S0006588627_V1

Section 41 Floor Web - Crack Damage That is Stop Drilled
Figure 203 (Sheet 2 of 2)

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REPAIR 3 - SECTION 41 FLOOR STRUCTURE STABILIZER STRAP

1. Applicability

A. Repair 3 is applicable to crack damage in the stabilizer straps shown in Section 41 Floor Structure - Stabilizer Strap Locations, Figure 201/REPAIR 3.

G43213 S0006588629_V1

Section 41 Floor Structure - Stabilizer Strap Locations
Figure 201

2. General

A. Repair 3 gives instructions for a Category A repair. Refer to 51-00-06 to find the definitions of the different categories of repairs.

B. Refer to 51-30-05 for possible sources of the equipment and tools you need to remove the damage.

3. References

Reference	Title
51-00-06	STRUCTURAL REPAIR DEFINITIONS

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(Continued)

Reference	Title
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-20-05	REPAIR SEALING
51-30-05	EQUIPMENT AND TOOLS FOR REPAIRS
51-40-00, GENERAL P/B GENERAL	FASTENERS
51-40-02	FASTENER INSTALLATION AND REMOVAL
51-40-03, GENERAL	Fastener Substitution
51-40-05	FASTENER HOLE SIZES
51-40-06, GENERAL	Fastener Edge Margins
AMM 51-21-99 P/B 701	DECORATIVE EXTERIOR PAINT SYSTEM - CLEANING/PAINTING
AMM 51-31-00 P/B 201	SEALS AND SEALING - MAINTENANCE PRACTICES
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes

4. Repair Instructions

A. Find the applicable repair as shown in Section 41 Floor Structure - Stabilizer Strap Repairs, Figure 202/REPAIR 3. Typical repair locations are shown for a given extrusion of a strap.

B. Drill a stop hole at the ends of all cracks in straps that do not end at fastener holes. Refer to Section 41 Floor Structure - Stabilizer Strap Crack Repair at Station 312 and RBL 31.6, Figure 203/REPAIR 3 thru Section 41 Floor Structure - Stabilizer Strap Crack Repair at Station 360 and RBL 45.5, Figure 207/REPAIR 3 and SRM 51-10-02 for the procedures to drill a stop hole.

C. Remove the initial fasteners as necessary for the repair. Refer to 51-40-02.

D. Make the repair parts as shown in Section 41 Floor Structure - Stabilizer Strap Crack Repair at Station 312 and RBL 31.6, Figure 203/REPAIR 3 thru Section 41 Floor Structure - Stabilizer Strap Crack Repair at Station 360 and RBL 45.5, Figure 207/REPAIR 3. Refer to Table 201/REPAIR 3 for the repair material.

Table 201:

REPAIR MATERIAL			
ITEM	**PART**	**QUANTITY**	**MATERIAL**
[1]	Doubler	1	Use clad or bare 7075-T6 that is 0.063 inch (1.600 mm) thick. The use of clad material is recommended. Width: 2.0 inches (50.8 mm) for BAC1513-295 extrusions and 3.0 inches (76.2 mm) for BAC1513-433 extrusions. Length: As necessary
[2]	Filler	1	Use clad or bare 7075-T6 that is 0.075 inch (1.905 mm) thick. The use of clad material is recommended. This filler can be made of one 0.025 inch (0.635 mm) thick filler and one 0.050 inch (1.270 mm) thick filler for a total thickness of 0.075 inch (1.905 mm). Length: As necessary
[3]	Filler	1	Use clad or bare 7075-T6 that is 0.025 inch (0.635 mm) thick. The use of clad material is recommended. Length: As necessary. Note: This filler is only necessary for the repair shown in Figure 207

E. Assemble the repair parts as shown in Section 41 Floor Structure - Stabilizer Strap Crack Repair at Station 312 and RBL 31.6, Figure 203/REPAIR 3 thru Section 41 Floor Structure - Stabilizer Strap Crack Repair at Station 360 and RBL 45.5, Figure 207/REPAIR 3.

F. Drill the fastener holes. Refer to 51-40-05 for the fastener hole dimensions.

G. Remove the repair parts.

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H. Remove the nicks, scratches, gouges, burrs, and sharp edges from the repair parts and the bare surfaces of the strap.

I. Apply a chemical conversion coating to the repair parts and bare surfaces of the strap. Refer to 51-20-01 for the chemical conversion coating procedures.

J. Apply two layers of BMS 10-11, Type I, primer to the area of the repair. Refer to SOPM 20-41-02 for the procedures to apply the primer.

(1) Apply the primer to the repair parts.

(2) Apply the primer to the bare surfaces of the strap.

K. Install the repair parts with BMS 5-95 sealant between the mating surfaces. Refer to 51-20-05 for the procedures to apply the sealant.

L. Install the fasteners.

(1) Install the hex drive fasteners at the repair and initial locations wet with BMS 5-95 sealant in transition fit holes.

(2) Install the rivets at the initial locations, as necessary, without sealant.

M. Apply the decorative finish to the repair area as given in AMM PAGEBLOCK 51-21-99/701.

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TOP VIEW

BASELINE FLOOR STRUCTURE

G45058 S0006588631_V1

Section 41 Floor Structure - Stabilizer Strap Repairs
Figure 202

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FASTENER SYMBOLS

REFERENCE FASTENER LOCATION

INITIAL FASTENER LOCATION. INSTALL A FASTENER THAT IS THE SAME TYPE AND DIAMETER (UP TO 1/32 INCH DIAMETER OVERSIZE FOR RIVETS AND 1/64 INCH DIAMETER OVERSIZE FOR HEX DRIVE BOLTS) AS THE INITIAL FASTENER.

REPAIR FASTENER LOCATION. INSTALL A BACB30VT6K() HEX DRIVE BOLT. REFER TO SRM 51-40-00 THROUGH 51-40-06 FOR THE FASTENER DATA.

G45613 S0006588632_V1

Section 41 Floor Structure - Stabilizer Strap Crack Repair at Station 312 and RBL 31.6
Figure 203 (Sheet 1 of 2)

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A–A

B–B

G44090 S0006588633_V1

Section 41 Floor Structure - Stabilizer Strap Crack Repair at Station 312 and RBL 31.6
Figure 203 (Sheet 2 of 2)

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FASTENER SYMBOLS

┼ INITIAL FASTENER LOCATION. INSTALL A FASTENER THAT IS THE SAME TYPE AND DIAMETER (UP TO 1/32 INCH DIAMETER OVERSIZE FOR RIVETS AND 1/64 INCH DIAMETER OVERSIZE FOR HEX DRIVE BOLTS) AS THE INITIAL FASTENER.

✦ REPAIR FASTENER LOCATION. INSTALL A BACB30VT6K() HEX DRIVE BOLT. REFER TO SRM 51-40-00 THROUGH 51-40-06 FOR THE FASTENER DATA.

G44145 S0006588634_V1

Section 41 Floor Structure - Stabilizer Strap Crack Repair at Station 328 and RBL 31.6
Figure 204 (Sheet 1 of 2)

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G44188 S0006588635_V1

Section 41 Floor Structure - Stabilizer Strap Crack Repair at Station 328 and RBL 31.6
Figure 204 (Sheet 2 of 2)

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FASTENER SYMBOLS

INITIAL FASTENER LOCATION. INSTALL A BACB30VT6K() HEX DRIVE BOLT UP TO 1/64 INCH DIAMETER OVERSIZE.

REPAIR FASTENER LOCATION. INSTALL A BACB30VT6K() HEX DRIVE BOLT. REFER TO SRM 51-40-00 THROUGH 51-40-06 FOR THE FASTENER DATA.

G44424 S0006588636_V1

Section 41 Floor Structure - Stabilizer Strap Crack Repair at Station 312 and RBL 45.5
Figure 205 (Sheet 1 of 2)

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G44430 S0006588637_V1

Section 41 Floor Structure - Stabilizer Strap Crack Repair at Station 312 and RBL 45.5
Figure 205 (Sheet 2 of 2)

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FASTENER SYMBOLS

┼ INITIAL FASTENER LOCATION. INSTALL A FASTENER THAT IS THE SAME TYPE AND DIAMETER (UP TO 1/32 INCH DIAMETER OVERSIZE FOR RIVETS AND 1/64 INCH DIAMETER OVERSIZE FOR HEX DRIVE BOLTS) AS THE INITIAL FASTENER.

✦ REPAIR FASTENER LOCATION. INSTALL A BACB30VT6K() HEX DRIVE BOLT. REFER TO SRM 51-40-00 THROUGH 51-40-06 FOR THE FASTENER DATA.

G44473 S0006588638_V1

Section 41 Floor Structure - Stabilizer Strap Crack Repair at Station 328 and RBL 45.5
Figure 206 (Sheet 1 of 2)

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G44476 S0006588639_V1

Section 41 Floor Structure - Stabilizer Strap Crack Repair at Station 328 and RBL 45.5
Figure 206 (Sheet 2 of 2)

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FASTENER SYMBOLS

INITIAL FASTENER LOCATION. INSTALL A FASTENER THAT IS THE SAME TYPE AND DIAMETER (UP TO 1/32 INCH DIAMETER OVERSIZE FOR RIVETS AND 1/64 INCH DIAMETER OVERSIZE FOR HEX DRIVE BOLTS) AS THE INITIAL FASTENER.

REPAIR FASTENER LOCATION. INSTALL A BACB30VT6K() HEX DRIVE BOLT. REFER TO SRM 51-40-00 THROUGH 51-40-06 FOR THE FASTENER DATA.

G44877 S0006588640_V1

Section 41 Floor Structure - Stabilizer Strap Crack Repair at Station 360 and RBL 45.5
Figure 207 (Sheet 1 of 2)

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A–A

NOTE: SECTION B–B IS NOT TO SCALE.

B–B

G44907 S0006588641_V1

Section 41 Floor Structure - Stabilizer Strap Crack Repair at Station 360 and RBL 45.5
Figure 207 (Sheet 2 of 2)

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REPAIR 6 - SECTION 41 - DAMAGE ON THE UPPER FLANGE OF A FLOOR INTERCOSTAL (MACHINED)

1. Applicability

A. This repair is applicable to damage on the upper flange of:

(1) The floor intercostals in Fuselage Section 41. Refer to Figure 201/REPAIR 6 for the floor intercostal locations.

(2) The floor intercostals that are machined parts.

(3) The floor intercostals that have the same cross-section shown in Figure 202/REPAIR 6, Detail A, Section A-A.

B. This repair is not applicable if the cracks go into the flange radius, web or stiffener of the floor intercostal. Contact the Boeing Company for an alternative repair.

2. General

A. This repair gives instructions for a permanent repair. Refer to STRUCTURAL REPAIR DEFINITIONS, 51-00-06 to find the definitions of the different categories of repairs.

3. References

Reference	Title
51-00-06	STRUCTURAL REPAIR DEFINITIONS
51-10-02	INSPECTION AND REMOVAL OF DAMAGE
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-20-05	REPAIR SEALING
51-20-13	SURFACE ROUGHNESS FINISH REQUIREMENTS
51-30-01	SHEET METAL MATERIALS
51-40-02	FASTENER INSTALLATION AND REMOVAL
51-40-05	FASTENER HOLE SIZES
51-40-06	FASTENER EDGE MARGINS
AMM 51-21-00	INTERIOR AND EXTERIOR FINISHES
SOPM 20-20-02	Penetrant Methods of Inspection
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes
737 NDT Part 6, 51-00-00, Procedure 4	Surface Inspection of Aluminum Parts (Meter Display)

4. Repair Instructions

A. Get access to the damaged area, as necessary.

(1) Remove the floor panels and necessary adjacent structure to get access to the damaged floor intercostal.

(2) Remove the necessary fasteners in the damaged area. Keep a record of the floor panel fastener location.

B. Do a visual inspection of the damaged area. Refer to INSPECTION AND REMOVAL OF DAMAGE, 51-10-02 for the inspection procedure.

C. Cut and remove the damage. Refer to Figure 202/REPAIR 6, Detail B and INSPECTION AND REMOVAL OF DAMAGE, 51-10-02 for the removal of the damage procedure.

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D. Do a High Frequency Eddy Current (HFEC) Inspection of the repair area to make sure that there is no more damage. Refer to 737 NDT Part 6, 51-00-00, Procedure 4. If you find more damage, do steps E thru F, Paragraph 4./REPAIR 6 again.

NOTE: As an alternative, you can do a penetrant inspection of the repair area. Refer to SOPM 20-20-02.

E. Make the edges of the cut smooth to a finish of 63 microinches (1.6 micrometers) Ra or smoother. Refer to SURFACE ROUGHNESS FINISH REQUIREMENTS, 51-20-13.

F. Apply a chemical conversion coating to the bare surfaces of the floor intercostal. Refer to PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS, 51-20-01.

G. Make the repair parts. Refer to Table 201/REPAIR 6 and SHEET METAL MATERIALS, 51-30-01.

(1) Make the part [1] filler to replace the removed material of the floor intercostal. Refer to Figure 203/REPAIR 6, Details A, B, C, D or E, as applicable.

(2) Make the part [2] filler to fill the space between the upper flange of the floor intercostal and the part [4] angle, if necessary. Refer to Figure 204/REPAIR 6, Detail A.

(3) Make the part [3] angle:

(a) If there is one repair area on the upper flange, as shown in Figure 203/REPAIR 6, Details A, B or D and Figure 204/REPAIR 6, Detail B, as applicable

(b) If there are two repair areas on the upper flange, as shown in Figure 203/REPAIR 6, Details C or E and Figure 204/REPAIR 6, Detail B, as applicable.

(4) Make the part [4] angle, if the removed area is in a position far from a vertical stiffener of the floor intercostal. Refer to Figure 203/REPAIR 6, Detail B or C, as applicable.

(5) Make the part [5] filler to fill a chem-milled area, if necessary. Refer to Figure 204/REPAIR 6, Detail D.

(6) Make the part [6] fitting or the part [7] fitting, as applicable if the removed area is in a position near a vertical stiffener of the floor intercostal. Refer to Figure 204/REPAIR 6, Detail E or Detail F, as applicable.

Table 201: Repair Material

ITEM	PART	QUANTITY	MATERIAL
[1]	Filler	As necessary	Use clad 7075-T6 sheet. Thickness is the same as the thickness of the removed material.
[2]	Filler	1	Use clad 7075-T6 sheet, thickness as necessary. Refer to Figure 204/REPAIR 6, Detail A for dimensions.
[3]	Angle	1	Use 7075-T6511 extrusion. Refer to Figure 204/REPAIR 6, Detail B for dimensions.
[4]	Angle	1	Use 7075-T73511 extrusion. Refer to Figure Figure 204/REPAIR 6, Detail C for dimensions.
[5]	Filler	As necessary	Use clad 7075-T6 sheet, thickness as necessary. Refer to Figure 204/REPAIR 6, Detail D for dimensions.
[6]	Fitting	1	Use 7075-T7351 plate, or 7075-T6511 extrusion. Refer to Figure 204/REPAIR 6, Detail E for dimensions.
[7]	Fitting	1	Use 7075-T7351 plate, or 7075-T6511 extrusion. Refer to Figure 204/REPAIR 6, Detail F for dimensions.

H. Assemble the repair parts as shown in Figure 203/REPAIR 6, Details A, B, C, D, E, and F as applicable. A maximum of 0.010 in. (0.25 mm) pull gap is left before the repair parts installation.

I. Drill necessary fastener holes.

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(1) Do not drill fastener holes through the chem-milled or fillet radius.

(2) Refer to Figure 203/REPAIR 6 Details A, B, C, D, or E, as applicable, for the type and size of fasteners.

(3) Refer to FASTENER HOLE SIZES, 51-40-05 for the fastener hole sizes.

(4) Refer to FASTENER EDGE MARGINS, 51-40-06 for the fastener edge margins.

J. Disassemble the repair parts.

K. Remove all nicks, scratches, gouges, burrs, sharp edges from the repair parts and repaired surfaces of the initial parts.

L. Apply a chemical conversion coating to the repair parts. Refer to PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS, 51-20-01.

M. Apply two layers of BMS 10-11, Type I primer to the bare surfaces of the repair parts and the floor intercostals. Refer to SOPM 20-41-02.

N. Install the repair part(s) as shown in Figure 203/REPAIR 6 Details A, B, C, D, E, and F as applicable.

(1) Apply BMS 5-95 sealant to the mating surfaces. Refer to REPAIR SEALING, 51-20-05.

(2) Refer to FASTENER INSTALLATION AND REMOVAL, 51-40-02 for the fastener installation.

(3) Install hex drive bolts wet with BMS 5-95 sealant. Install the rivets without sealant. Refer to FASTENER HOLE SIZES, 51-40-05.

O. Apply a fillet seal and fill all gaps with BMS 5-95 sealant. Refer to REPAIR SEALING, 51-20-05.

P. Apply one layer of BMS 10-11, Type I primer to the fastener head in the repair area. Refer to SOPM 20-41-02.

Q. Apply one layer of BMS 3-23, Type II corrosion inhibiting compound followed by one layer of BMS 3-26 corrosion inhibiting compound to the repair area. Refer to PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS, 51-20-01.

(1) As an alternative, apply one layer of BMS 3-29 corrosion inhibiting compound. Refer to PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS, 51-20-01.

R. Install the adjacent structure that you removed.

S. Install the floor panels.

(1) Clean the fastener holes as given in PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS, 51-20-01.

(2) Apply a chemical conversion coating to the fastener holes as given in PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS, 51-20-01.

(3) Apply one layer of BMS 10-11, Type I primer to the fastener holes. Refer to AMM SUBJECT 51-21-00.

(4) Apply BMS 3-24 grease to the fastener holes.

(5) Install the clip-on nuts or nutplates at each fastener hole, as applicable.

(6) Align the clip-on nuts or nutplates and the floor panel fastener holes, as applicable.

T. Put the floor panels in position and install the fasteners wet with BMS 3-24 grease. Torque the fasteners from 20 in-lb (2.3 N·m) to 25 in-lb (2.8 N·m).

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1336955 S0000240411_V1

Floor Intercostal Location
Figure 201

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TYPICAL INTERCOSTAL

A

A–A

1336956 S0000240412_V1

Removal of the Damage
Figure 202 (Sheet 1 of 2)

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TYPICAL REMOVAL OF THE DAMAGE

B

B–B

1336957 S0000240419_V1

Removal of the Damage
Figure 202 (Sheet 2 of 2)

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NOTE: THE REPAIR OF 0.060 INCH THICK UPPER FLANGE INTERCOSTAL IS SHOWN.

TYPICAL REPAIR TO ONE SIDE OF THE INTERCOSTAL UPPER FLANGE WITH REPAIR FITTING

A

A-A

1336958 S0000240421_V1

Floor Intercostal Repair
Figure 203 (Sheet 1 of 11)

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B–B

1336959 S0000240425_V1

Floor Intercostal Repair
Figure 203 (Sheet 2 of 11)

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NOTE: THE REPAIR OF 0.060 INCH THICK UPPER FLANGE INTERCOSTAL IS SHOWN.

TYPICAL REPAIR TO ONE SIDE OF THE INTERCOSTAL UPPER FLANGE WITH REPAIR ANGLE

1336960 S0000240427_V1

Floor Intercostal Repair
Figure 203 (Sheet 3 of 11)

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D–D

NOTE: MAKE CUT IN THE PART [3] ANGLE IF NECESSARY

E–E
(VIEW IS ROTATED 180°)

1336961 S0000240429_V1

Floor Intercostal Repair
Figure 203 (Sheet 4 of 11)

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NOTE: THE REPAIR OF 0.060 INCH THICK UPPER FLANGE INTERCOSTAL IS SHOWN

TYPICAL REPAIR TO BOTH SIDE OF THE INTERCOSTAL UPPER FLANGE

C

F-F

1336962 S0000240431_V1

Floor Intercostal Repair
Figure 203 (Sheet 5 of 11)

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G–G

H–H

1336963 S0000240432_V1

Floor Intercostal Repair
Figure 203 (Sheet 6 of 11)

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NOTE: MAKE CUT IN THE PART [3] IF NECESSARY

I-I
(VIEW IS ROTATED 180°)

1336964 S0000240433_V1

Floor Intercostal Repair
Figure 203 (Sheet 7 of 11)

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NOTE: THE REPAIR OF 0.070 INCH THICK UPPER FLANGE INTERCOSTAL IS SHOWN.

TYPICAL REPAIR TO ONE SIDE OF THE INTERCOSTAL UPPER FLANGE WITH FITTING

1336965 S0000240434_V1

Floor Intercostal Repair
Figure 203 (Sheet 8 of 11)

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NOTE: THE REPAIR OF 0.070 INCH THICK UPPER FLANGE INTERCOSTAL IS SHOWN

TYPICAL REPAIR TO BOTH SIDE OF THE INTERCOSTAL UPPER FLANGE

E

L-L

1336967 S0000240437_V1

Floor Intercostal Repair
Figure 203 (Sheet 9 of 11)

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K-K

1336966 S0000240436_V1

Floor Intercostal Repair
Figure 203 (Sheet 10 of 11)

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M–M

NOTES

- ALL DIMENSIONS ARE IN INCHES (mm).

1 USE A MINIMUM ONE REPAIR FASTENER THROUGH THE ENDS OF EACH FLANGE OF THE PART [3] ANGLE.

2 MAKE SURE THAT THE GAP BETWEEN THE PART [1] FILLER AND THE INITIAL CHORD IS NOT MORE THAN 0.010 INCH (0.12 mm) BEFORE FASTENER INSTALLATION.

3 USE A MINIMUM OF 3 REPAIR FASTENERS FROM THE CUT LINE.

4 FILL ALL GAPS WITH BMS 5-95 SEALANT.

FASTENER SYMBOLS

FLOOR PANEL FASTENER LOCATION. INSTALL A BACN10JR3CFD NUTPLATE WITH A BACR15BA3AD()C RIVETS WHERE BACN10VR()CG CLIP-ON NUT CAN NOT BE INSTALLED.

REPAIR FASTENER LOCATION. INSTALL A BACR15BA3AD()C RIVETS.

REPAIR FASTENER LOCATION. INSTALL A BACB30NW6K()X HEX DRIVE BOLT WITH A BACC30M COLLAR.

REPAIR FASTENER LOCATION. INSTALL A BACB30NW6K() HEX DRIVE BOLT WITH A BACC30M COLLAR.

REPAIR FASTENER LOCATION. INSTALL A BACB30MY6K() HEX DRIVE BOLT WITH A BACC30M COLLAR.

1336968 S0000240439_V1

Floor Intercostal Repair
Figure 203 (Sheet 11 of 11)

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1336969 S0000240443_V1

Repair Parts for Floor Intercostal Repair
Figure 204 (Sheet 1 of 10)

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PART [3] ANGLE

B

C–C

1336970 S0000240444_V1

Repair Parts for Floor Intercostal Repair
Figure 204 (Sheet 2 of 10)

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D–D

E–E

1336971 S0000240445_V1

Repair Parts for Floor Intercostal Repair
Figure 204 (Sheet 3 of 10)

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1336972 S0000240447_V1

Repair Parts for Floor Intercostal Repair
Figure 204 (Sheet 4 of 10)

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REPAIR PART [5] FILLER

D

G–G

1336974 S0000240450_V1

Repair Parts for Floor Intercostal Repair
Figure 204 (Sheet 5 of 10)

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Repair Parts for Floor Intercostal Repair
Figure 204 (Sheet 6 of 10)

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I–I

J–J

1336976 S0000240458_V1

Repair Parts for Floor Intercostal Repair
Figure 204 (Sheet 7 of 10)

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REPAIR PART [7] FITTING

F

K–K

1336977 S0000240460_V1

Repair Parts for Floor Intercostal Repair
Figure 204 (Sheet 8 of 10)

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1336978 S0000240464_V1

Repair Parts for Floor Intercostal Repair
Figure 204 (Sheet 9 of 10)

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NOTES

- D = DIAMETER OF THE FASTENER.

1 MAKE SURE THAT LENGTH OF THE REPAIR PARTS, AS NECESSARY, KEEPS 4D-5D DISTANCE BETWEEN FASTENERS AND 2D EDGE MARGIN.

2 MAKE THE THICKNESS OF THE PART [2] FILLER AS NECESSARY TO FILL THE SPACE BETWEEN THE UPPER FLANGE OF THE FLOOR INTERCOSTAL AND PART [4] ANGLE.

3 USE THE THICKNESS OF THE PART [3] ANGLE EQUAL TO THE THICKNESS OF THE UPPER FLANGE OF THE INITIAL INTERCOSTAL.

4 SEE FIGURE 203 FOR LENGTH OF THE VERTICAL FLANGE OF THE PART [3] ANGLE.

5 MAKE THE LENGTH OF THE PART [5] FILLER AS NECESSARY TO FILL THE SPACE BETWEEN THE FLOOR INTERCOSTAL AND PART [4] ANGLE OR PART [6] FITTING.

1336979 S0000240466_V1

Repair Parts for Floor Intercostal Repair
Figure 204 (Sheet 10 of 10)

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REPAIR 7 - SECTION 41 - DAMAGE ON THE UPPER CHORD OF THE FLOOR BEAM AT STA 328

1. Applicability

A. This repair is applicable to damage on the two flanges of the upper chord of the floor beam at STA 328.

B. This repair is applicable to both the Right Hand (RH) and Left Hand (LH) side of the floor beam. Repairs to the RH side are shown. Repairs to the LH side are opposite except where shown.

2. General

A. This repair is a Category A repair. The inspections given in the Maintenance Planning Data (MPD) are sufficient to maintain damage tolerance of the initial structure with this repair installed. Refer to STRUCTURAL REPAIR DEFINITIONS, 51-00-06 for the definitions of the different categories of repairs.

B. This repair has three alternatives:

Alternative 1 : Use this typical repair if you find damage on the upper chord along the full length of the Floor Beam. Refer to Figure 204/REPAIR 7

Alternative 2 : Use this typical repair if you find damage on the upper chord along half the length of the Floor Beam. Refer to Figure 205/REPAIR 7

Alternative 3 : Use this typical repair if you find damage on the upper chord at the end of the Floor Beam. Refer to Figure 206/REPAIR 7.

C. Do not install splice parts in locations directly adjacent to the galley or lavatory fittings.

D. You are not permitted to make changes to the intercostals that have galley or lavatory hardpoint fittings attached. If it is necessary to change these structures, contact the Boeing Company for further instructions.

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1703885 S0000287502_V1

Section 41 - Location of the Floor Beam at STA 328
Figure 201

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3. References

Reference	Title
51-00-06	STRUCTURAL REPAIR DEFINITIONS
51-10-02	INSPECTION AND REMOVAL OF DAMAGE
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-20-05	REPAIR SEALING
51-20-13	SURFACE ROUGHNESS FINISH REQUIREMENTS
51-30-01	SHEET METAL MATERIALS
51-30-01, GENERAL	Sheet Metal Materials
51-40-02	FASTENER INSTALLATION AND REMOVAL
51-40-03, GENERAL	Fastener Substitution
51-40-05	FASTENER HOLE SIZES
51-40-06	FASTENER EDGE MARGINS
SOPM 20-10-03	SHOT PEENING
SOPM 20-20-02	Penetrant Methods of Inspection
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes

4. Repair Instructions

A. Get access to the repair area, as necessary.

(1) Remove the adjacent structure to get access to the damaged floor beam.

(2) Remove the necessary fasteners in the repair area.

B. Find the limits of the damage.

(1) Refer to Figure 204/REPAIR 7 if you find damage along more than half the length of the floor beam, or on both sides of BL 0.

(2) Refer to Figure 205/REPAIR 7 if you find damage along less than half the length of the floor beam only.

(3) Refer to Figure 206/REPAIR 7 if you find damage at one or both of the ends of the floor beam only.

C. Cut and remove the damaged flanges of the upper chord of the floor beam. Refer to Figure 203/REPAIR 7 and INSPECTION AND REMOVAL OF DAMAGE, 51-10-02.

(1) At the initial fastener locations keep a minimum 2.0 D edge margin.

(2) Do a detailed visual inspection of the cut edge to make sure that there is no damage caused by corrosion.

(3) Do one of the steps that follow:

(a) Shot peen or flap peen the cut edge with 200% coverage. Refer to SOPM 20-10-03. This will improve the corrosion resistance of the cut edge.

(b) Do not shot peen or flap peen the cut edge. Go to Paragraph 4.D./REPAIR 7.

D. Remove the initial rivet that plugs the tooling hole in the web of the initial floor beam.

(1) Countersink the tooling hole to a depth of 0.020 in. (0.51 mm) to 0.025 in. (0.64 mm).

(2) Double flush plug the initial tooling hole with a BACR15CE()AD rivet.

(3) Microshave the rivet flush.

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E. Trim the top edge of any initial stiffeners that are in-line with the repair splice angles. Refer to Figure 204 (Sheet 6) or Figure 205 (Sheet 4) or Figure 206 (Sheet 5) and Figure 206 (Sheet 6) as applicable.

(1) Keep a minimum of 1.75D edge margin from fastener holes.

(2) Make the edges of the cut smooth to a finish of 63 microinches (1.6 micrometers) Ra or smoother. Refer to SURFACE ROUGHNESS FINISH REQUIREMENTS, 51-20-13.

(3) Do one of the steps that follow:

(a) Shot peen or flap peen the cut edge with 200% coverage. Refer to SOPM 20-10-03. This will improve the corrosion resistance of the cut edge.

(b) Do not shot peen or flap peen the cut edge. Go to Paragraph 4.F./REPAIR 7.

F. For alternatives 1 and 2, trim out the flange from the top two fasteners of the machined intercostal attached to the floor beam at BL 24.82. Refer to Figure 204 (Sheet 9), and INSPECTION AND REMOVAL OF DAMAGE, 51-10-02.

(1) Keep a minimum 0.250 radius on the intercostal web.

(2) Make the edges of the cut smooth to a finish of 63 microinches (1.6 micrometers) Ra or smoother. Refer to SURFACE ROUGHNESS FINISH REQUIREMENTS, 51-20-13.

(3) Do one of the steps that follow:

(a) Shot peen or flap peen the cut edge with 200% coverage. Refer to SOPM 20-10-03. This will improve the corrosion resistance of the cut edge.

(b) Do not shot peen or flap peen the cut edge. Go to Paragraph 4.G./REPAIR 7.

G. Apply a chemical conversion coating to the bare surfaces of the floor beam, stiffeners and intercostals. Refer to PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS, 51-20-01.

H. Make the repair parts. Refer to Table 201/REPAIR 7 and Figure 204/REPAIR 7 or Figure 205/REPAIR 7 or Figure 206/REPAIR 7 as applicable, and SHEET METAL MATERIALS, 51-30-01.

(1) When you make the Part (1) T-Chord, you are permitted to use an optional “T” shaped extrusion as long as:

(a) The material for the extrusion is 7050-T76511 or 7075-T6511.

(b) The horizontal flange is 0.125 in. (3.18 mm) thick, the vertical flange is 0.100 in. (2.54 mm) thick, and the corner radius is 0.125 in. (3.18 mm).

(c) The horizontal flange is a minimum of 2.30 in. (58.42 mm) wide to provide the necessary edge margin to the floor panel attach fasteners.

(d) You make sure that the vertical flange has 2D minimum edge margin and 4D to 6D fastener distance at all new fastener locations.

(e) You make sure that there are no cracks in the new upper chord. Use the dye penetrant inspection as given in SOPM 20-20-02.

(f) Do one of the steps that follow:

1) Shot peen or flap peen the cut edge with 200% coverage. Refer to SOPM 20-10-03. This will improve the corrosion resistance of the cut edge.

2) Do not shot peen or flap peen the cut edge. Go to Paragraph 4.H.(2)/REPAIR 7.

(2) If it is necessary to machine the new T-chord then use the dye penetrant inspection as given in SOPM 20-20-02. Do one of the steps that follow:

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(a) Shot peen or flap peen the cut edge with 100% coverage. Refer to SOPM 20-10-03. This will improve the corrosion resistance of the cut edge.

(b) Do not shot peen or flap peen the cut edge. Go to Paragraph 4.H.(3)/REPAIR 7.

(3) Make structural shims as necessary at the floor beam and pulley brackets. Refer to 51-30-01, GENERAL.

Table 201: REPAIR MATERIAL

ITEM	PART	QUANTITY	MATERIAL
[1]	T-Chord	As necessary	Use BAC1505-100224 7050-T76511 (optional: 7075-T6511) extrusion.
[2]	Angle	2	Use 7075-T0 clad sheet. Thickness is 0.071 in. (1.80 mm). Heat treat to T62 after you form it. Maintain the minimum bend radius. (Optional: BAC 1490-2811 7075-T6 clad formed angle or an equivalent 0.071 in. (1.80 mm) 7075-T6 clad formed angle).
[3]	Angle	2	Use 7075-T0 clad sheet. Thickness is 0.080 in. (2.03 mm). Heat treat to T62 after you form it. Maintain the minimum bend radius. (Optional: BAC 1490-2900 7075-T6 clad formed angle or an equivalent 0.080 in. (2.03 mm) 7075-T6 clad formed angle).
[4]	Shim	As necessary	2024-T3 Bare sheet as given in AMS-QQ-A-250/4 (Optional: 7075-T6 clad sheet)
[5]	Angle	1	Use 7075-T6 clad sheet. Thickness is 0.080 in. (2.03 mm). Maintain the minimum bend radius. (Optional:BAC 1490-2651 7075-T6 clad formed angle or an equivalent 0.080 in. (2.03 mm) 7075-T6 clad formed angle).
[6]	Filler	4	Use 7075-T6 clad sheet. Thickness is 0.020 in. (0.51 mm)/0.032 in. (0.81 mm).

I. Assemble the repair parts. Install the Part [1] T-chord on the aft side of the floor beam. Make sure that the distance between mating surfaces of the repair parts is not larger than 0.010 in. (0.25 mm).

(1) Refer to Figure 204/REPAIR 7 or Figure 205/REPAIR 7 or Figure 206/REPAIR 7 as applicable.

J. Drill the necessary fastener holes.

(1) Refer to Figure 204/REPAIR 7 or Figure 205/REPAIR 7 or Figure 206/REPAIR 7 as applicable, for the type and size of fasteners.

(2) Refer to FASTENER HOLE SIZES, 51-40-05 for the fastener hole sizes.

(3) Refer to FASTENER EDGE MARGINS, 51-40-06 for the fastener edge margins.

K. Disassemble the repair parts.

L. Remove all nicks, scratches, gouges, burrs, and sharp edges from the repair parts and repaired surfaces of the initial parts.

M. Apply a chemical conversion coating to the repair parts and the machined surfaces of the initial parts. Refer to PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS, 51-20-01.

N. Apply two layers of BMS 10-11, Type I primer to the repair parts and the machined surfaces of the initial parts. Refer to SOPM 20-41-02.

O. Install the repair parts.

(1) Refer to Figure 204/REPAIR 7 or Figure 205/REPAIR 7 or Figure 206/REPAIR 7 as applicable.

(2) Apply BMS 5-95 sealant to the mating surfaces. Refer to REPAIR SEALING, 51-20-05.

(3) Install hex drive bolts wet with BMS 5-95 sealant into transition fit holes. Install the rivets without sealant. Refer to FASTENER INSTALLATION AND REMOVAL, 51-40-02 for the fastener installation. Refer to REPAIR SEALING, 51-20-05.

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(4) When you install the repair parts, use fillers if the space between parts is 0.010 in. (0.25 mm) or more before fastener pull-up.

P. Apply a fillet seal and fill all internal gaps with BMS 5-95 sealant. Refer to REPAIR SEALING, 51-20-05.

Q. Apply one layer of BMS 10-11, Type I primer to the fastener heads in the repair area. Refer to SOPM 20-41-02.

R. Apply a corrosion inhibiting compound in accordance with PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS, 51-20-01 or an operator approved procedure.

S. Install the adjacent structure that you removed.

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NOTES

- ALL DIMENSIONS ARE IN INCHES (mm).
- D = THE DIAMETER OF THE FASTENER.

1 THERE MUST BE A MINIMUM OF FOUR REPAIR FASTENERS IN THE HORIZONTAL FLANGE OF THE PART [3] ANGLE. THIS DOES NOT INCLUDE A FLOOR PANEL FASTENER.

2 THERE MUST BE A MINIMUM OF TWO REPAIR FASTENERS IN THE HORIZONTAL FLANGE OF THE PART [2] ANGLE EXTENDED BEYOND THE PART (3) ANGLE.

3 IF YOU MUST MAKE THE FASTENER HOLE LARGER, INSTALL A MAXIMUM 1/32ND INCH LARGER FASTENER OF THE SAME TYPE AS THE INITIAL FASTENER. THE HOLE MUST BE A TRANSITION FIT HOLE. INSTALL THE FASTENER WET WITH BMS 5-95.

FASTENER SYMBOLS

REFERENCE FASTENER LOCATION.

FLOOR PANEL FASTENER LOCATION.

INITIAL FASTENER LOCATION. INSTALL A BACB30MY8K()X OR BACB30FP8A() HEX DRIVE BOLT WITH A BACC30M COLLAR. 3

REPAIR FASTENER LOCATION. INSTALL A BACB30NW6K() OR BACB30FN6A() HEX DRIVE BOLT WITH A BACC30M COLLAR.

REPAIR FASTENER LOCATION. INSTALL A BACB30MY6K() OR BACB30FM6A() HEX DRIVE BOLT WITH A BACC30M COLLAR.

INITIAL FASTENER LOCATION. INSTALL A BACB30MY6K()Y HEX DRIVE BOLT WITH A BACC30M COLLAR. 3

INITIAL FASTENER LOCATION. INSTALL A BACB30MY6K()X HEX DRIVE BOLT WITH A BACC30M COLLAR. 3

PULLEY BRACKET FASTENER LOCATION. INSTALL A FASTENER OF THE SAME TYPE AND SIZE AS THE INITIAL FASTENER. 3

1703897 S0000295287_V1

Notes and Fastener Symbols
Figure 202

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1703931 S0000295288_V1

Removal of the Damage
Figure 203

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1779054 S0000317184_V1

Repair Alternative 1
Figure 204 (Sheet 1 of 10)

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VIEW IN THE FORWARD DIRECTION

A

VIEW IN THE FORWARD DIRECTION

B

1779059 S0000317188_V1

Repair Alternative 1
Figure 204 (Sheet 2 of 10)

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1779060 S0000317189_V1

Repair Alternative 1
Figure 204 (Sheet 3 of 10)

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VIEW IN THE FORWARD DIRECTION
SPLICE OF THE PART [1] T-CHORD

C

1779064 S0000317190_V1

Repair Alternative 1
Figure 204 (Sheet 4 of 10)

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PULLEY BRACKETS ARE NOT SHOWN FOR CLARITY
C-C

1779065 S0000317193_V1

Repair Alternative 1
Figure 204 (Sheet 5 of 10)

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1779066 S0000317196_V1

Repair Alternative 1
Figure 204 (Sheet 6 of 10)

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VIEW IN THE FORWARD DIRECTION

D

VIEW IN THE FORWARD DIRECTION

E

1703914 S0000309867_V2

Repair Alternative 1
Figure 204 (Sheet 7 of 10)

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E-E

1779067 S0000317202_V1

Repair Alternative 1
Figure 204 (Sheet 8 of 10)

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1703919 S0000309868_V1

Repair Alternative 1
Figure 204 (Sheet 9 of 10)

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1703920 S0000309869_V1

Repair Alternative 1
Figure 204 (Sheet 10 of 10)

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1703907 S0000295289_V1

Repair Alternative 2
Figure 205 (Sheet 1 of 5)

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SPLICE OF THE PART [1] T-CHORD AND THE FLOOR BEAM AT RBL 1.60

A

1703909 S0000304891_V1

Repair Alternative 2
Figure 205 (Sheet 2 of 5)

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(PULLEY BRACKETS ARE NOT SHOWN FOR CLARITY)
A-A

1703910 S0000309864_V1

Repair Alternative 2
Figure 205 (Sheet 3 of 5)

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B–B

1703912 S0000309865_V1

Repair Alternative 2
Figure 205 (Sheet 4 of 5)

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ANGLES PART [2] AND PART [3] NOT SHOWN FOR CLARITY

B

1703922 S0000309870_V1

Repair Alternative 2
Figure 205 (Sheet 5 of 5)

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1703923 S0000304890_V1

Repair Alternative 3
Figure 206 (Sheet 1 of 7)

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SPLICE OF THE PART [1] T-CHORD AND THE FLOOR BEAM AT RBL 40.00

A

(PULLEY BRACKETS ARE NOT SHOWN FOR CLARITY)

A-A

1703924 S0000309871_V1

Repair Alternative 3
Figure 206 (Sheet 2 of 7)

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1703926 S0000309873_V1

Repair Alternative 3
Figure 206 (Sheet 3 of 7)

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SPLICE OF THE PART [1] T-CHORD AND
THE FLOOR BEAM AT LBL 38.88

B

(PULLEY BRACKETS ARE NOT SHOWN FOR CLARITY)

D-D

1779717 S0000318009_V1

Repair Alternative 3
Figure 206 (Sheet 4 of 7)

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E-E

1779719 S0000318010_V1

Repair Alternative 3
Figure 206 (Sheet 5 of 7)

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1779731 S0000318011_V1

Repair Alternative 3
Figure 206 (Sheet 6 of 7)

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ANGLES PART [2] AND PART [3] NOT SHOWN FOR CLARITY

C

1703927 S0000309875_V1

Repair Alternative 3
Figure 206 (Sheet 7 of 7)

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REPAIR 8 - SECTION 41 - SMALL CORROSION DAMAGE ON THE UPPER CHORD OF THE FLOOR BEAM AT STA 328 AND STA 344

1. Applicability

A. This repair is applicable to small corrosion damage on either of the two flanges of the upper chord of the floor beam at STA 328 and STA 344. Refer to Table 201/REPAIR 8 for the depth of corrosion damage permitted at each floor beam.

Table 201: Small Corrosion Damage Depth Permitted

FLOOR BEAM STA	DEPTH OF DAMAGE PERMITTED
328	0.035 in. (0.889 mm)
344	0.035 in. (0.889 mm)

2. General

A. This repair is a Category A repair. The inspections given in the Maintenance Planning Data (MPD) are sufficient to maintain damage tolerance of the initial structure with this repair installed. Refer to STRUCTURAL REPAIR DEFINITIONS, 51-00-06 for the definitions of the different categories of repairs.

B. This repair has three alternatives:

Alternative 1: Use this repair if there is only damage on one flange of the upper chord, and you can install a strap on the lower surface of the flange. Refer to Figure 203/REPAIR 8.

Alternative 2: Use this repair if there is only damage on one flange of the upper chord, and you will install a strap on the upper surface of the flange. Use this repair if you do not have clearance between the adjacent structure and the lower surface of the flange. Refer to Figure 204/REPAIR 8.

Alternative 3: Use this repair if there is damage on both of the flanges of the upper chord. For this alternative, you must install a strap on the upper surface of the flange. Refer to Figure 205/REPAIR 8

C. You are not permitted to make changes to any structure adjacent to the floor beam.

D. The gap on all parts must be 0.010 in. (0.254 mm) or less.

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1849356 S0000326187_V1

Section 41 Floor Structure Locations
Figure 201 (Sheet 1 of 2)

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TYPICAL DAMAGE

B

1849460 S0000304639_V1

Section 41 Floor Structure Locations
Figure 201 (Sheet 2 of 2)

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3. References

Reference	Title
51-00-06	STRUCTURAL REPAIR DEFINITIONS
51-20-01, GENERAL	Protective Treatment of Metallic and Composite Materials
51-30-01	SHEET METAL MATERIALS
51-40-02	FASTENER INSTALLATION AND REMOVAL
51-40-05	FASTENER HOLE SIZES
51-70-01	REPAIRS FOR MINOR DENTS IN METALLIC SHEET MATERIALS
53-10-51, ALLOWABLE DAMAGE 1	Section 41 Floor Structure
SOPM 20-10-03	SHOT PEENING
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes

4. Repair Instructions

A. Get access to the damaged area.

B. Remove the corrosion damage with a minimum 20:1 blend ratio. Refer to 53-10-51, ALLOWABLE DAMAGE 1.

NOTE: Use 10X magnification to examine the damage area to make sure that you removed all the corrosion.

NOTE: If there is corrosion near the edge of a seat track, make sure that the corrosion does not extend under the seat track.

(1) Make the blend area smooth to a finish of 63 microinches Ra or smoother.

(2) Do one of the steps that follow:

(a) Shot peen or flap peen the blend area with 200% coverage. Refer to SOPM 20-10-03. This will improve the corrosion resistance of the blend area.

(b) Do not shot peen or flap peen the blend area. Go to the next step.

C. Do a detailed visual inspection of the damaged area. Look for loose or missing fasteners, cracks, worn areas, and other corrosion in the damaged area. Inspect the top and bottom surfaces of the upper chord in the damaged area.

NOTE: If you find other damage that is not corrosion damage less than 0.035 in. (0.889 mm) in depth, contact The Boeing Company before you use this repair.

D. Make the repair parts.

(1) Make the part [1] strap, or the part [2] strap as applicable. See Figure 203/REPAIR 8, Figure 204/REPAIR 8 or Figure 205/REPAIR 8.

(2) If you install the repair on the upper surface of the upper chord, make the part [3] tapered filler and part [4] filler as necessary. See Figure 204/REPAIR 8 or Figure 205/REPAIR 8.

NOTE: If a tapered filler interferes with a seat track, do not use a tapered filler on that side of the strap. Extend the length of the strap to be adjacent with the seat track.

Repair Materials

ITEM	PART	QUANTITY	MATERIAL
[1]	Strap	1 (if necessary)	Use 0.100 in. (2.540 mm) thick 7075–T6 clad sheet
[2]	Strap	1 (if necessary)	Use 0.100 in. (2.540 mm) thick 7075–T6 clad sheet

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(Continued)

ITEM	PART	QUANTITY	MATERIAL
[3]	Tapered Filler	(As necessary)	Use 0.100 in. (2.540 mm) thick 7075–T6 clad sheet (as neccessary)
[4]	Filler	(As necessary)	Use 0.100 in. (2.540 mm) thick 7075–T6 clad sheet (as neccessary)

E. Assemble the repair parts.

F. Make the fastener holes.

NOTE: Keep a minimum edge distance of 2D on repair fasteners.

NOTE: Pickup any initial floor panel fastener holes in your fastener pattern.

G. Disassemble the repair parts.

H. Remove all nicks, scratches, gouges, burrs, and sharp edges from the repair parts and the initial parts.

I. Make the surface roughness 63 microinches Ra, or smoother, for all cut edges.

J. Apply a chemical conversion coating to the repair parts and to the bare surfaces of the initial parts. Refer to 51-20-01, GENERAL.

K. Apply 2 coats of BMS 10-11, Type I primer to the repair parts and to the bare surfaces of the initial parts. Refer to SOPM 20-41-02.

L. Fill the blend area. Refer to Paragraph 4.B of REPAIRS FOR MINOR DENTS IN METALLIC SHEET MATERIALS, 51-70-01.

M. Install the repair parts. Refer to Figure 203/REPAIR 8 or Figure 205/REPAIR 8 as necessary.

N. Shim all gaps that are more than 0.01 in. (0.25 mm) before you install the fasteners. Refer to SHEET METAL MATERIALS, 51-30-01.

O. Install the fasteners. Refer to FASTENER INSTALLATION AND REMOVAL, 51-40-02.

(1) Install all hex drive bolts in transition fit holes wet with BMS 5-95 sealant.

(2) At initial hole locations, you are permitted to oversize a maximum of 1/32 in. (1 mm) if necessary. Refer to FASTENER HOLE SIZES, 51-40-05.

P. Replace the items that you removed for access.

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NOTES

- ALL DIMENSIONS ARE IN INCHES (mm).
- D = THE DIAMETER OF THE FASTENER.
- THE FLOOR BEAM CONFIGURATION CAN BE DIFFERENT THAN THE FIGURES.

1 KEEP A MINIMUM OF FOUR REPAIR FASTENERS BETWEEN THE EDGE OF THE STRAP AND THE EDGE OF THE BLEND AREA. DO NOT COUNT INITIAL FLOOR PANEL FASTENERS AS A PART OF THE FOUR.

2 THE BLEND MUST HAVE A MINIMUM RATIO OF 20:1.

3 STRAIGHT TAPER THE [3] TAPERED FILLER FROM THE INITIAL THICKNESS TO 0.020 INCH (0.508 MM). USE A MINIMUM RATIO OF 50:1.

FASTENER SYMBOLS

REFERENCE FASTENER LOCATION.

REPAIR FASTENER LOCATION. INSTALL A BACB30FN6K( ) OR A BACB30NW6K( ) HEX DRIVE BOLT WITH A BACC30M6 COLLAR.

FLOOR PANEL OR CARGO LINER FASTENER LOCATION. INSTALL A BACN10JR3CFD OR A BACN10JZ3B2CDM NUTPLATE WITH BACR15BA3AD( ) RIVETS IF A BACN10VR( )CG CLIP-ON NUT CANNOT BE INSTALLED.

1849425 S0000328568_V1

Notes and Fastener Symbols
Figure 202

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TOP VIEW

VIEW IN THE FORWARD DIRECTION
A–A

1849461 S0000327984_V1

Corrosion Damage on the Upper Chord of the Floor Beam at STA 328 and STA 344, Alternative 1
Figure 203 (Sheet 1 of 2)

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1849435 S0000328495_V1

Corrosion Damage on the Upper Chord of the Floor Beam at STA 328 and STA 344, Alternative 1
Figure 203 (Sheet 2 of 2)

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1849455 S0000327985_V1

Corrosion Damage on the Upper Chord of the Floor Beam at STA 328 and STA 344, Alternative 2
Figure 204 (Sheet 1 of 2)

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1849462 S0000328496_V1

Corrosion Damage on the Upper Chord of the Floor Beam at STA 328 and STA 344, Alternative 2
Figure 204 (Sheet 2 of 2)

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TOP VIEW

VIEW IN THE FORWARD DIRECTION
A-A

1849468 S0000327991_V1

Corrosion Damage on the Upper Chord of the Floor Beam at STA 328 and STA 344, Alternative 3
Figure 205 (Sheet 1 of 2)

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SECTION B-B

1849458 S0000328497_V1

Corrosion Damage on the Upper Chord of the Floor Beam at STA 328 and STA 344, Alternative 3
Figure 205 (Sheet 2 of 2)

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REPAIR 9 - SECTION 41 - CORROSION DAMAGE ON THE UPPER CHORD OF THE FLOOR BEAM AT STA 344, DEPTH BETWEEN 0.035 INCH AND 0.060 INCH

1. Applicability

A. This repair is applicable to corrosion damage on the upper flanges of the floor beam at STA 344. Refer to Figure 201/REPAIR 9 for the STA 344 floor beam location.

B. This repair is applicable to floor beam locations at the machined intercostals and panel break listed in Figure 201/REPAIR 9 and Table 201/REPAIR 9.

C. This repair is applicable only if the depth of the corrosion damage is greater than 0.035 in. (0.889 mm) and less than 0.060 in. (1.524 mm).

D. This repair is not applicable for locations less than 1.0 in. (25.4 mm) away from seat track locations. Refer to Figure 202/REPAIR 9 or Drawing Number 141A5300 for seat track configuration.

E. This repair is not applicable to intercostals that have galley or lavatory hardpoint fittings attached. If it is necessary to change these structures, contact The Boeing Company for instructions.

2. General

A. This repair is a Category A repair. The inspections given in the Maintenance Planning Data (MPD) are sufficient to maintain damage tolerance of the initial structure with this repair installed. Refer to 51-00-06, GENERAL for the definitions of the different categories of repairs.

B. Use Figure 201/REPAIR 9 and Table 201/REPAIR 9 as a reference for machined intercostal installations, drawings, locations, and repair configurations. Contact The Boeing Company if you find damage on the intercostal not listed in this repair.

Table 201: Machined Intercostal Reference Data

INTERCOSTAL INSTALLATION		MACHINED INTERCOSTAL		LOCATION		REPAIR DETAIL
PART NUMBER	DRAWING SHEET NUMBER*[1]	PART NUMBER	DRAWING SHEET NUMBER*[2]	RBL	LBL	
141A5400-27	32	141A5410-23	23	0.0	0.0	Figure 207
141A5400-7	13	141A5410-24	24	11.10		Figure 208
141A5400-53	61	141A5410–112	99	11.10		Figure 206
141A5400-6	12	141A5410-22	22		11.10	Figure 208
141A5400-37	43	141A5410-22	22		11.10	Figure 208
141A5400-42	46	141A5410-22	22		11.10	Figure 208
141A5400-24	29	141A5410-17	17		11.10	Figure 209*[3]
141A5400–25	30	141A5410–19	19	24.82		Figure 208
141A5400–26	31	141A5410–21	21		26.75	Figure 207
141A5400-28	33	141A5410-25	25	31.60		Figure 207
141A5400-52	60	141A5410-111	98	31.60		Figure 205

*[1] Refers to Drawing Number 141A5400.

*[2] Refers to Drawing Number 141A5410.

*[3] Panel break between BS 328 and BS 344.

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C. The pull-down on all parts must be 0.010 in. (0.254 mm) or less. Shim all spaces that are more than 0.01 in. (0.25 mm) and less than 0.040 in. (1.016 mm) before you install the fasteners. Refer to 51-30-01, GENERAL. If the spaces are 0.040 in. (1.016 mm) or more, contact The Boeing Company.

D. All dimensions are in inches (mm).

E. D = The diameter of the fastener.

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Location of the Floor Beam at Sta 344
Figure 201

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2244590 S0000498432_V1

Seat Track Locations
Figure 202

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3. References

Reference	Title
51-00-06, GENERAL	Structural Repair Definitions
51-10-02, GENERAL	Inspection and Removal of Damage
51-10-04, GENERAL	Detailed Inspection Procedures - Metallic Materials
51-20-01, GENERAL	Protective Treatment of Metallic and Composite Materials
51-20-05, GENERAL	Repair Sealing
51-20-13, GENERAL	Surface Roughness Finish Requirements
51-30-01, GENERAL	Sheet Metal Materials
51-40-02, GENERAL	Fastener Installation and Removal
51-40-05, GENERAL	Fastener Hole Sizes
SOPM 20-10-03	SHOT PEENING
SOPM 20-20-02	Penetrant Methods of Inspection
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes
737 NDT Part 6, 51-00-00, Procedure 4	Surface Inspection of Aluminum Parts (Meter Display)

4. Repair Instructions

A. Get access to the damaged area.

B. Do a detailed visual inspection of the damaged area. Look for loose or missing fasteners, cracks, worn areas, and other corrosion in the damaged area. Inspect the top and bottom surfaces of the upper chord in the damaged area. Refer to 51-10-04, GENERAL.

C. Remove the corrosion damage with a minimum 20:1 blend ratio. Refer to 51-10-02, GENERAL.

D. Make the blend area smooth to a finish of 125 microinches Ra or smoother. Refer to 51-20-13, GENERAL.

E. Do a High Frequency Eddy Current (HFEC) Surface Inspection of the repair area to make sure that there is no more damage. Refer to 737 NDT Part 6, 51-00-00, Procedure 4.

F. Remove an additional 0.002 in. (0.051 mm) of material. Refer to 51-10-02, GENERAL.

G. Make the blend area smooth to a finish of 125 microinches Ra or smoother. Refer to 51-20-13, GENERAL.

H. Shot peen or flap peen the blend area with 200% coverage. This will improve the corrosion resistance of the blended surface. Refer to SOPM 20-10-03.

I. At a machined intercostal between STA 328 and STA 360 in the repair area:

(1) See Figure 201/REPAIR 9 for the location of the machined intercostals.

NOTE: The locations of the intercostals can be different from those shown in the Figure 201/REPAIR 9. Check your airplane configuration with the respective Boeing drawing number to find correct intercostal configuration.

(2) Remove the machined intercostal.

(3) Do a 10X magnification detailed inspection of the intercostal. Look for cracks, worn areas, or corrosion damage.

(4) Trim the top corner of the intercostal to remove the material that is in the repair area. Keep a trim radius of 0.25 in. (6.35 mm). Refer to Figure 210/REPAIR 9.

(5) Use 10X magnification to examine the trim area. Make sure that there is no damage.

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(6) Make the blend area smooth to a finish of 125 microinches Ra or smoother. Refer to 51-20-13, GENERAL.

(7) Shot peen or flap peen the edges you cut with 200% coverage. This will improve the corrosion resistance of the cut edge. Refer to SOPM 20-10-03.

J. Make the repair parts. Refer to Table 202/REPAIR 9.

(1) Make the Part [7] Repair Angle(s) as necessary. See Table 201/REPAIR 9 and find the applicable figure number, then measure the vertical flange dimension from the repair layout.

(a) Find the number of Part [7] Repair Angles that are necessary. Refer to Figure 203/REPAIR 9.

1) If the blend area is less than 1.0 in. (25.4 mm) in width on a single flange, then one Part [7] Repair Angle is necessary. Refer to Figure 203/REPAIR 9, Detail A.

2) If the blend area is greater than 1.0 in. (25.4 mm) in width, or if material is removed from both flanges, then two Part [7] Repair Angles are necessary. Refer to Figure 203/REPAIR 9, Detail B or Detail C.

(b) Maintain a minimum four repair fastener rows beyond the blend out area common to horizontal flange of Part [7] Repair Angle. Do not count the floor panel attachment as a repair fastener.

(c) Make the Part [7] Repair Angle(s) from sheet aluminum:

1) Form the repair parts in the “O” condition.

2) Keep the minimum bend radius for the material. Refer to 51-30-01, GENERAL.

3) Do a Dye-Penetrant Inspection or a Fluorescent Penetrant Inspection of the formed Part [7] Repair Angle(s). Make sure that there are no cracks. Refer to SOPM 20-20-02.

4) Heat treat the formed Part [7] Repair Angle(s) to the -T62 temper. Refer to 51-30-01, GENERAL.

(2) If you cut an intercostal in Paragraph 4.I./REPAIR 9, then make Part [6] Repair Fitting, Part [1] through Part [5] Fillers, Part [8] Filler, or Part [9] Structural Filler as necessary. Find the applicable drawing number from Table 201/REPAIR 9.

(a) Determine the Part [6] Repair Fitting dimensions.

1) Refer to Figure 211/REPAIR 9 for example dimensions.

2) Make the Part [6] Repair Fitting one gauge thicker than the intercostal flange.

3) Maintain the grain direction for the Part [6] Repair Fitting. Refer to Figure 211/REPAIR 9 for grain directions.

(b) Do a Dye-Penetrant or Fluorescent Penetrant Inspection of the Part [6] Repair Fitting. Make sure that there are no cracks. Refer to SOPM 20-20-02.

(c) Shot peen or flap peen the Part [6] Repair Fitting with 200% coverage. Refer to SOPM 20-10-03.

(d) Use a radius filler as necessary so that the fastener heads will not touch the bend radius.

(3) Make the cut and machined surfaces of the repair parts smooth to a finish of 125 microinches Ra or smoother.

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Table 202: Repair Materials

ITEM	PART	QUANTITY	MATERIAL
[1]	Filler	1 (If necessary)	Size to match the gap as shown in Figure 205/REPAIR 9 to Figure 208/REPAIR 9. Use 7050-T7451 bare plate or 7075-T6 clad sheet.
[2]	Filler	1 (If necessary)	Size to match the gap as shown in Figure 205/REPAIR 9 to Figure 208/REPAIR 9. Use 7050-T7451 bare plate or 7075-T6 clad sheet.
[3]	Filler	1 (If necessary)	Size to match to the space between the intercostal vertical flange and Part [6] Repair Fitting. Use 7050-T7451 bare plate or 7075-T6 clad sheet.
[4]	Filler	1 (If necessary)	Size to match to the space between the Part [6] Repair Fitting and the intercostal web chem-mill step. Use 7050-T7451 bare plate or 7075-T6 clad sheet.
[5]	Filler	1 (If necessary)	Use 0.10 in. (2.54 mm) thick 7075-T6 clad sheet.
[6]	Repair Fitting	1	Use 7050-T7451 bare plate per AMS 4050.
[7]	Repair Angle	As necessary	Use 0.10 in. (2.54 mm) thick 7075-O clad sheet.
[8]	Filler	1 (If necessary)	Size to match the gap between Part [7] Repair Angle and floor beam web. Use 7075-T6 clad sheet.
[9]	Structural Filler	1 (if necessary)	Size to match the gap between panel break and floor beam upper chord. Use 7075-T6 clad sheet.

K. Assemble the repair parts.

NOTE: Make sure that the repair parts do not block or cover any initial holes in the floor beam. Make cutouts in the repair parts to match the initial holes in the floor beam.

L. Drill the fastener holes. Refer to 51-40-05, GENERAL.

(1) Keep a 2D edge margin.

(2) Maintain a 4D to 6D fastener spacing.

(3) Do not drill fastener holes into a chem-milled radius.

M. Disassemble the repair parts.

N. Remove the nicks, scratches, gouges, burrs, and sharp edges from the repair parts and the initial parts.

O. Apply a chemical conversion coating to the repair parts and to the bare surfaces of the initial parts. Refer to 51-20-01, GENERAL.

P. Apply two layers of BMS 10-11, Type I primer to the repair parts and to the bare surfaces of the initial parts. Refer to SOPM 20-41-02.

Q. Assemble the repair parts with BMS 5-95 sealant between the mating surfaces. Refer to 51-20-05, GENERAL.

R. Install the fasteners. Refer to 51-40-02, GENERAL.

(1) Install all hex drive bolts in transition fit holes wet with BMS 5-95 sealant.

(2) At countersink fastener location, do not countersink the fastener holes more than 80 percent of the initial material thickness. Refer to 51-40-05, GENERAL.

(3) If it is necessary to install larger fasteners than shown in this repair, contact The Boeing Company.

S. If you removed an intercostal, install it again. At initial fastener hole locations, install the same type and diameter fastener as the one you removed. Refer to the applicable figures.

T. Apply a fillet seal and fill all internal spaces with BMS 5-95 sealant. Refer to 51-20-05, GENERAL.

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U. Apply a layer of BMS 10-11, Type I primer to the repair area. Refer to SOPM 20-41-02.

V. Apply a layer of BMS 3-23, Type II corrosion inhibiting compound to the repair area. Refer to 51-20-01, GENERAL.

W. Install the adjacent structure that you removed for access to the floor beam.

X. Install the items you removed for access.

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2244588 S0000500423_V1

Repair Angle Configurations
Figure 203

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NOTES

- ALL DIMENSIONS ARE IN INCHES (mm).
- D = THE DIAMETER OF THE FASTENER.
- THE FLOOR BEAM CONFIGURATION CAN BE DIFFERENT THAN THE CONFIGURATION SHOWN IN THIS REPAIR PROCEDURE.

1 KEEP A MINIMUM OF FOUR FASTENERS BETWEEN THE END OF THE ANGLE AND THE EDGE OF THE BLEND AREA.

2 KEEP A MINIMUM OF FIVE FASTENERS BETWEEN THE END OF THE ANGLE AND THE EDGE OF THE BLEND AREA.

3 THE BLEND MUST HAVE A MINIMUM RATIO OF 20:1.

4 IF THE CUTOUT IS NOT NECESSARY FOR YOUR CONFIGURATION, DO NOT MAKE THE CUTOUT.

5 IF THERE IS INTERFERENCE BETWEEN THE VERTICAL STIFFENER AND THE REPAIR AREA, YOU CAN CUT THE STIFFENER. KEEP A DISTANCE OF 0.004 INCH TO 0.010 INCH BETWEEN THE REPAIR ANGLE AND THE CUT EDGE OF THE STIFFENER.

6 MEASURE FOR REPAIR LAYOUT.

7 MAKE SURE THAT THE THICKNESS IS ONE GAGE THICKER THAN THE INTERCOSTAL FLANGE.

1665571 S0000303608_V2

Sta 344 Moderate Corrosion Damage Repair, Depth Between 0.035 inch and 0.060 inch
Figure 204 (Sheet 1 of 2)

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FASTENER SYMBOLS

REFERENCE FASTENER LOCATION.

REPAIR FASTENER LOCATION. INSTALL A BACB30FM6A() OR A BACB30MY6K() HEX DRIVE BOLT WITH A BACC30M6 COLLAR.

REPAIR FASTENER LOCATION. INSTALL A BACB30FN6A() OR A BACB30NW6K() HEX DRIVE BOLT WITH A BACC30M6 COLLAR.

FLOOR PANEL OR CARGO LINER FASTENER LOCATION. INSTALL A BACN10VR()3C6 CLIP-ON NUT. IF A CLIP-ON NUT CANNOT BE INSTALLED, INSTALL A BACN10JRCFD OR A BACN10JZ3B2CDM NUTPLATE WITH BACR15BA3AD() RIVETS. INSTALL THROUGH THE LOWER MOST REPAIR PART ONLY.

REPAIR FASTENER LOCATION. INSTALL A BACB30MY5K() HEX DRIVE BOLT WITH A BACC30M5 COLLAR.

INITIAL FASTENER LOCATION. INSTALL A BACB30NX6K()X HEX DRIVE BOLT WITH A BACC30X COLLAR OR A BACB30FP6A HEX DRIVE BOLT WITH A BACC30M COLLAR. IF NECESSARY, INSTALL A BACB30NX6K()Y HEX DRIVE BOLT WITH A BACC30AC COLLAR OR A BACB30KK6A HEX DRIVE BOLT WITH A BACC30R COLLAR.

INITIAL FASTENER LOCATION. INSTALL A BACB30NW6K()X HEX DRIVE BOLT WITH A BACC30M COLLAR OR A BACB30FQ6A HEX DRIVE BOLT WITH A BACC30M COLLAR. IF NECESSARY, INSTALL A BACB30NW6K()Y HEX DRIVE BOLT WITH A BACC30R COLLAR OR A BACB30KF6A HEX DRIVE BOLT WITH A BACC30R COLLAR.

REPAIR FASTENER LOCATION. INSTALL A BACR15CE5D RIVET. MAINTAIN 8-10D SPACING AND 2D MINIMUM EDGE MARGIN. INSTALL THRU THE PART [5] FILLER AND PANEL BREAK ONLY.

REPAIR FASTENER LOCATION. INSTALL A BACR15BB5D RIVET. MAINTAIN A MINIMUM 2D EDGE MARGIN.

2338479 S0000532991_V1

Sta 344 Moderate Corrosion Damage Repair, Depth Between 0.035 inch and 0.060 inch
Figure 204 (Sheet 2 of 2)

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VIEW IN THE FORWARD DIRECTION
DAMAGE AT BL 31.60

A–A

1665787 S0000303621_V2

Sta 344 RBL 31.60 Repair Installation
Figure 205 (Sheet 1 of 2)

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2241034 S0000500436_V1

Sta 344 RBL 31.60 Repair Installation
Figure 205 (Sheet 2 of 2)

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VIEW IN THE FORWARD DIRECTION DAMAGE AT RBL 11.10

2240357 S0000500428_V1

Sta 344 RBL 11.10 Repair Installation
Figure 206 (Sheet 1 of 2)

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B–B

2240417 S0000500432_V1

Sta 344 RBL 11.10 Repair Installation
Figure 206 (Sheet 2 of 2)

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VIEW IN THE FORWARD DIRECTION DAMAGE AT
BL 0.0, LBL 26.75 OR RBL 31.60

Sta 344 BL 0.0, LBL 26.75 or RBL 31.60 Repair Installation
Figure 207 (Sheet 1 of 2)

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2241068 S0000500431_V1

Sta 344 BL 0.0, LBL 26.75 or RBL 31.60 Repair Installation
Figure 207 (Sheet 2 of 2)

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VIEW IN THE FORWARD DIRECTION DAMAGE AT
LBL 11.10, RBL 11.10 OR RBL 24.82

Sta 344 LBL 11.10, RBL 11.10 or RBL 24.82 Repair Installation
Figure 208 (Sheet 1 of 2)

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B–B

2240296 S0000500427_V1

Sta 344 LBL 11.10, RBL 11.10 or RBL 24.82 Repair Installation
Figure 208 (Sheet 2 of 2)

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PANEL BREAK ALTERATION BETWEEN BS 344 AND BS 328 AT LBL 11.10

2240993 S0000500437_V1

Panel Break Alteration
Figure 209

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INTERCOSTAL TRIMMING

1668573 S0000304641_V2

Machined Intercostal Trimming Between Sta 328 and Sta 360
Figure 210

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[6] REPAIR FITTING

A

L = LONGITUDINAL GRAIN DIRECTION
LT = LONG TRANSVERSE GRAIN DIRECTION
ST = SHORT TRANSVERSE GRAIN DIRECTION

1668714 S0000304640_V3

Example of Part [6] Repair Fitting
Figure 211

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VIEW IN THE FORWARD DIRECTION

A–A

2259747 S0000500434_V1

Repair Installation at No Intercostal
Figure 212 (Sheet 1 of 3)

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B–B

1727780 S0000306264_V2

Repair Installation at No Intercostal
Figure 212 (Sheet 2 of 3)

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1665375 S0000303622_V2

Repair Installation at No Intercostal
Figure 212 (Sheet 3 of 3)

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REPAIR 10 - SECTION 41 - CORROSION DAMAGE ON THE UPPER CHORD OF THE FLOOR BEAM AT STA 344, DEPTH GREATER THAN 0.060 INCHES

1. Applicability

A. This repair is applicable to corrosion damage on the upper chord of the floor beam at STA 344.

B. This repair is applicable only if the depth of the corrosion damage is greater than 0.060 in. (1.524 mm).

2. General

A. This repair is a Category A repair. The inspections given in the Maintenance Planning Data (MPD) are sufficient to maintain damage tolerance of the initial structure with this repair installed. Refer to STRUCTURAL REPAIR DEFINITIONS, 51-00-06 for the definitions of the different categories of repairs.

B. You are not permitted to make changes to the intercostals that have galley or lavatory hardpoint fittings attached. If it is necessary to change these structures, contact The Boeing Company for instructions.

C. The pull-down on all parts must be 0.010 in. (0.254 mm) or less.

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Location of the Floor Beam at Sta 344
Figure 201

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3. References

Reference	Title
51-00-06	STRUCTURAL REPAIR DEFINITIONS
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-20-05	REPAIR SEALING
51-20-06	SHOT PEENING
51-30-01	SHEET METAL MATERIALS
51-40-02, GENERAL P/B GENERAL	FASTENER INSTALLATION AND REMOVAL
51-40-05	FASTENER HOLE SIZES
SOPM 20-10-03	SHOT PEENING
SOPM 20-20-02	Penetrant Methods of Inspection
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes

4. Repair Instructions

A. Get access to the damaged area.

B. Cut the initial upper chord of the Sta 344 floor beam to remove the corrosion damage.

NOTE: Use 10X magnification to examine the damage area to make sure that you removed all the corrosion.

(1) Make the cut in the vertical chord immediately below the corner radius. See Figure 204/REPAIR 10.

NOTE: Make sure you do not cause damage to the vertical chord of the floor beam when you remove the upper chord.

(2) Keep a minimum 2.0D edge margin at all initial fastener locations.

(3) Do one of the steps that follow:

(a) Shot peen or flap peen the edge you cut with 200% coverage. Refer to SOPM 20-10-03. This will improve the corrosion resistance of the edge you cut.

(b) Do not shot peen or flap peen the cut edge. Go to the next step.

C. Do a detailed visual inspection of the damaged area. Look for loose or missing fasteners, cracks, worn areas, and other corrosion in the damaged area. Inspect the top and bottom surfaces of the upper chord in the damaged area.

D. If there is a machined intercostal between Sta 344 and Sta 360 in the repair area:

(1) Remove the intercostal.

(2) Do a detailed visual inspection of the intercostal. Look for cracks, worn areas, and corrosion damage.

(3) Do a trim on the top forward corner of the intercostal to remove the material that is in the repair area. See Figure 205/REPAIR 10.

(4) Use 10X magnification to examine the trim area. Make sure that there is no damage.

(5) Do one of the steps that follow:

(a) Shot peen or flap peen the edges you cut with 200% coverage. Refer to SOPM 20-10-03. This will improve the corrosion resistance of the edges you cut.

(b) Do not shot peen or flap peen the edges you cut. Go to the next step.

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(6) See Figure 201/REPAIR 10 for the location of the machined intercostals.

NOTE: The locations of the intercostals can be different from those shown in the figure.

NOTE: Do not trim any intercostals between Sta 328 and Sta 344. If you need to modify this structure, contact The Boeing Company for further repair instructions.

E. Make the repair parts.

(1) Make the part [1] repair tee from a 7050-T6511 AND10136-3006 extrusion or from a 7075–T6511 AND10136–3006 extrusion.

NOTE: The Boeing Company recommends that you use 7050–T6511 instead of 7075–T6511. Repair parts in this area that are made of 7075-T6511 will corrode in the future.

(a) Do a dye-penetrant inspection of the part [1] repair tee. Make sure that there are no cracks in the extrusion. Refer to SOPM 20-20-02.

(b) Shot peen or flap peen the part [1] repair tee with 200% coverage. Refer to SOPM 20-10-03.

(2) After you make the part [4] and part [5] angles:

(a) Do a Dye-Penetrant Inspection or a Fluorescent Penetrant Inspection of the angles. Make sure that there are no cracks. Refer to SOPM 20-20-02.

(b) Heat treat the formed angles from the -0 temper to the -T62 temper.

(3) If you cut an intercostal in Paragraph 4.D./REPAIR 10, then make the part [6] angle fitting, the part [7] filler, and the part [8] filler. See Figure 205/REPAIR 10.

(a) Do a Dye-Penetrant or Fluorescent Penetrant Inspection of the part [6] angle fitting. Make sure that there are no cracks. Refer to SOPM 20-20-02.

(b) Shot peen or flap peen the part [6] angle fitting with 200% coverage. Refer to SHOT PEENING, 51-20-06 and SOPM 20-10-03.

(4) Make all cut and machined surfaces of the repair parts smooth to a finish of 63 microinches Ra or smoother.

NOTE: Do not do this for edges that you have shot peened or flap peened.

Repair Materials

ITEM	PART	QUANTITY	MATERIAL
[1]	Repair Tee	1	Use an AND10136–3006 extrusion made from 7050–T6511 or 7075–T6511.
[2]	Strap	1	Use 0.125 in. (3.175 mm) thick 7075-T6 clad sheet.
[3]	Strap	1	Use 0.125 in. (3.175 mm) thick 7075-T6 clad sheet.
[4]	Angle	1	Use 0.125 in. (3.175 mm) thick 7075-0 clad sheet.
[5]	Angle	1	Use 0.125 in. (3.175 mm) thick 7075-0 clad sheet.
[6]	Angle Fitting	(As necessary)	Use 7050–T7451 or 7075–T7351, or 7075–T6511 clad plate.
[7]	Filler	(As necessary)	Use 0.016 in. (0.406 mm) or 0.020 in. (0.508 mm) thick 7075-T6 clad sheet.

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(Continued)

ITEM	PART	QUANTITY	MATERIAL
[8]	Filler	(As necessary)	Use 0.180 in. (4.57 mm) thick 7075–T6511 clad plate.
[9]	Filler	(As necessary)	2024–T3 Bare sheet (7075-T6 sheet optional)
[10]	Filler	(As necessary)	2024–T3 Bare sheet (7075-T6 sheet optional)
[11]	Filler	(As necessary)	Use 0.070 in. (1.78 mm) thick 7075–T6 clad sheet

F. Assemble the repair parts.

NOTE: Make sure that the repair parts do not block or cover any initial holes in the floor beam. Make cutouts in the repair parts to match the initial holes in the floor beam.

G. Drill the fastener holes.

NOTE: Make sure that all repair fastener holes have a 2D minimum fastener edge margin.

H. Disassemble the repair parts.

I. Remove all nicks, scratches, gouges, burrs, and sharp edges from the repair parts and the initial parts.

J. Apply a chemical conversion coating to the repair parts and to the bare surfaces of the initial parts. Refer to PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS, 51-20-01.

K. Apply 2 coats of BMS 10-11, Type I primer to the repair parts and to the bare surfaces of the initial parts. Refer to SOPM 20-41-02.

L. Install the repair parts. Refer to Figure 204/REPAIR 10 and Figure 205/REPAIR 10 as necessary.

M. Shim all gaps that are more than 0.01 in. (0.25 mm) before you install the fasteners. Refer to SHEET METAL MATERIALS, 51-30-01.

N. Install the fasteners. Refer to FASTENER INSTALLATION AND REMOVAL, PAGEBLOCK 51-40-02, GENERAL.

(1) Install all hex drive bolts in transition fit holes wet with BMS 5-95 sealant.

(2) At initial hole locations, you are permitted to oversize a maximum of 1/32 in. (1 mm) if necessary. Refer to FASTENER HOLE SIZES, 51-40-05.

O. If you removed an intercostal, install it again. For initial fasteners, use the same type and size of fastener as you initially removed. Refer to Figure 205/REPAIR 10

P. Apply a fillet seal and fill all internal gaps with BMS 5–95 sealant. Refer to REPAIR SEALING, 51-20-05.

Q. Apply 1 layer of BMS 10–11, Type I primer to each fastener head in the repair area. Refer to SOPM 20-41-02.

R. Replace the adjacent structure that you removed for access to the floor beam.

S. Replace the structure that you removed for access to the floor beam.

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NOTES

- ALL DIMENSIONS ARE IN INCHES (mm).
- D = THE DIAMETER OF THE FASTENER.
- THE FLOOR BEAM CONFIGURATION CAN BE DIFFERENT THAN THE CONFIGURATION SHOWN IN THIS REPAIR PROCEDURE.

1 KEEP A MINIMUM OF TWO ROWS OF FASTENERS BETWEEN THE EDGE OF THE [1] TEE AND THE [5] ANGLE.

2 KEEP A MINIMUM OF TWO ROWS OF FASTENERS BETWEEN THE EDGE OF THE [3] STRAP AND THE [2] STRAP.

3 KEEP A MINIMUM OF TWO ROWS OF FASTENERS BETWEEN THE EDGE OF THE [5] ANGLE AND THE [4] ANGLE.

4 KEEP A MINIMUM OF FIVE ROWS OF FASTENERS BETWEEN THE EDGE OF THE REMOVED AREA AND THE EDGE OF THE [3] STRAP.

5 KEEP A MINIMUM OF FIVE ROWS OF FASTENERS BETWEEN THE EDGE OF THE REMOVED AREA AND THE EDGE OF THE [4] ANGLE.

6 IF THE CUTOUT IS NOT NECESSARY FOR YOUR CONFIGURATION, DO NOT MAKE THE CUTOUT.

7 IF THERE IS INTERFERENCE BETWEEN A VERTICAL STIFFENER AND THE REPAIR AREA, YOU CAN CUT THE STIFFENER. KEEP A DISTANCE OF 0.004 INCH TO 0.010 INCH BETWEEN THE REPAIR ANGLE AND THE CUT EDGE OF THE STIFFENER.

8 IF THERE IS INTERFERENCE BETWEEN A VERTICAL STIFFENER AND THE REPAIR AREA, MACHINE THE REPAIR TEE TO KEEP A 2D EDGE MARGIN FOR ALL STIFFENER FASTENERS.

9 KEEP A 2D EDGE MARGIN WITH THE CUT EDGE OF THE INTERCOSTAL. KEEP A MINIMUM DISTANCE OF 0.06 INCH (1.52 mm) BETWEEN THE EDGE OF THE FASTENER HOLE AND THE CHEM MILL RADIUS. CAUTION: DO NOT INSTALL FASTENERS ON THE CHEM MILL RADIUS.

10 TRIM OUT WITH 0.67 INCH (17.14 mm) IS NOT NECESSARY IF THERE IS NO INTERFERENCE BETWEEN THE INTERCOSTAL REPAIR AND CABLE.

1665282 S0000304140_V2

Notes and Fastener Symbols
Figure 202 (Sheet 1 of 2)

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FASTENER SYMBOLS

REFERENCE FASTENER LOCATION.

REPAIR FASTENER LOCATION. INSTALL A BACB30FM6K( ) OR A BACB30MY6K( ) HEX DRIVE BOLT WITH A BACC30M6 COLLAR.

FLOOR PANEL OR CARGO LINER FASTENER LOCATION. INSTALL A BACN10VR()C6 CLIP-ON NUT. IF A CLIP-ON NUT CANNOT BE INSTALLED, INSTALL A BACN10JR3CFD OR A BACN10JZ3B2CDM NUTPLATE WITH BACR15BA3AD() RIVETS. INSTALL THROUGH THE LOWER MOST REPAIR PART ONLY.

REPAIR FASTENER LOCATION. INSTALL A BACB30FNGK( ) OR A BACB30NW6K( ) HEX DRIVE BOLT WITH A BACC30M6 COLLAR.

INITIAL FASTENER LOCATION. INSTALL A BACB30MY()K()X HEX DRIVE BOLT WITH A BACC30M COLLAR.

INITIAL FASTENER LOCATION. INSTALL THE SAME TYPE AND DIAMETER FASTENER AS THE INITIAL FASTENER. (UP TO 1/32 INCH OVERSIZE)

REPAIR FASTENER LOCATION. INSTALL A BACB30MY5K() HEX DRIVE BOLT WITH A BACC30M COLLAR.

INITIAL FASTENER LOCATION. INSTALL A BACB30MY6K()X HEX DRIVE BOLT WITH A BACC30M COLLAR.

REPAIR FASTENER LOCATION. INSTALL A BACB30NW6K() HEX DRIVE BOLT WITH A BACC30M COLLAR.

1849040 S0000325969_V1

Notes and Fastener Symbols
Figure 202 (Sheet 2 of 2)

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1665171 S0000304311_V1

Machined Replacement Tee
Figure 203 (Sheet 1 of 2)

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GEOMETRY OF THE PART [1]
REPAIR TEE

1904887 S0000351661_V1

Machined Replacement Tee
Figure 203 (Sheet 2 of 2)

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THE AREA WHERE MATERIAL IS REMOVED BECAUSE OF DAMAGE.

1664713 S0000304310_V1

Damage Removal and Repair
Figure 204 (Sheet 1 of 5)

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1665131 S0000304352_V2

Damage Removal and Repair
Figure 204 (Sheet 2 of 5)

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SECTION A-A

SECTION B-B

1664769 S0000304353_V1

Damage Removal and Repair
Figure 204 (Sheet 3 of 5)

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SECTION C-C

1757058 S0000284592_V1

Damage Removal and Repair
Figure 204 (Sheet 4 of 5)

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1664814 S0000304625_V1

Damage Removal and Repair
Figure 204 (Sheet 5 of 5)

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1692914 S0000306847_V4

Intercostal Between Sta 344 and Sta 360 Angle Fitting Installation
Figure 205 (Sheet 1 of 2)

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Intercostal Between Sta 344 and Sta 360 Angle Fitting Installation
Figure 205 (Sheet 2 of 2)

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REPAIR 11 - SECTION 41 - DAMAGE ON THE UPPER CHORD OF THE FLOOR BEAM AT STA 328, DEPTH BETWEEN 0.035 INCH AND 0.060 INCH

1. Applicability

A. This repair is applicable to corrosion damage on either flange of the upper chord of the floor beam at Sta 328. Refer to Figure 201/REPAIR 11 for the Sta 328 floor beam location.

B. This repair is applicable to floor beam locations at the machined intercostals listed in Table 201/REPAIR 11.

C. This repair is applicable if the depth of the damage is greater than 0.035 in. (0.889 mm) and less than 0.060 in. (1.524 mm).

D. This repair is not applicable for locations less than 1.0 in. (25.4 mm) away from seat track locations. Refer to 53-00-52, ALLOWABLE DAMAGE 1 or Drawing Number 141A5300 for seat track configuration. Refer to Figure 202/REPAIR 11 for repair applicability locations.

E. This repair is not applicable to intercostals that have galley or lavatory hardpoint fittings attached. If it is necessary to change these structures, contact The Boeing Company for instructions.

2. General

A. This repair is a Category A repair. The inspections given in the Maintenance Planning Data (MPD) are sufficient to maintain damage tolerance of the initial structure with this repair installed. Refer to STRUCTURAL REPAIR DEFINITIONS, 51-00-06 for the definitions of the different categories of repairs.

B. Use Table 201/REPAIR 11 as a reference for machined intercostal installations, drawings, locations, and repair configurations.

Table 201: Machined Intercostal Reference Data

Intercostal Installation		Machined Intercostal		Location		Angle Fitting
Part Number	Drawing Sheet Number*[1]	Part Number	Drawing Sheet Number*[2]	RBL	LBL	
141A5400-36	42	141A5410-46	38	16.00		Alternative 1*[3]
141A5400-36	42	141A5410-56	45		25.67	Alternative 1*[3]
141A5400-41	47	141A5410-46	38	16.00		Alternative 1*[3]
141A5400-41	47	141A5410-56	45		25.67	Alternative 1*[3]
141A5400-44	49	141A5410-69	58	26.52		Alternative 3*[5]
141A5400-44	49	141A5410-73	60	40.00		Alternative 3*[5]
141A5400-45	50	141A5410-86	76		26.4	Alternative 1*[3]
141A5400-45	50	141A5410-83	73	15.93		Alternative 1*[3]
141A5400-49	56	141A5410-105	91		26.4	Alternative 1*[3]
141A5400-49	56	141A5410-83	73	15.93		Alternative 1*[3]
141A5400-51	58	141A5410-108	94	40.00		Alternative 3*[5]
141A5400-51	58	141A5410-69	58	26.52		Alternative 3*[5]
141A5400-25	30	141A5410-19	19	24.82		Alternative 1*[3]
141A5400-55	63	141A5410-114	101	24.82		Alternative 2*[4]

*[1] Refers to Drawing Number 141A5400.

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*[2] Refers to Drawing Number 141A5410.

*[3] Refer to Figure 205/REPAIR 11 for example installation and fitting.

*[4] Refer to Figure 206/REPAIR 11 for example installation and fitting.

*[5] Refer to Figure 207/REPAIR 11 for example installation and fitting.

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2101268 S0000444935_V1

Location of the Floor Beam at Sta 328
Figure 201

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2119465 S0000452363_V1

Seat Track Locations
Figure 202

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3. References

Reference	Title
51-00-06	STRUCTURAL REPAIR DEFINITIONS
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-20-05	REPAIR SEALING
51-30-01	SHEET METAL MATERIALS
51-40-02	FASTENER INSTALLATION AND REMOVAL
51-70-01	REPAIRS FOR MINOR DENTS IN METALLIC SHEET MATERIALS
53-00-52, ALLOWABLE DAMAGE 1	Seat Tracks
53-10-51, ALLOWABLE DAMAGE 1	Section 41 Floor Structure
SOPM 20-10-03	SHOT PEENING
THE BOEING COMPANY SOPM 20-20-02	Penetrant Methods of Inspection
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes
737 NDT Part 6, 51-00-00, Procedure 4	Surface Inspection of Aluminum Parts (Meter Display)

4. Repair Instructions

A. Get access to the damaged area.

B. Remove the damage with a minimum 20:1 blend ratio. Refer to 53-10-51, ALLOWABLE DAMAGE 1.

(1) Do a High Frequency Eddy Current (HFEC) Inspection of the repair area to make sure that there is no more damage. Refer to 737 NDT Part 6, 51-00-00, Procedure 4.

(2) Make the blend area smooth to a finish of 125 microinches Ra or smoother.

(3) Shot peen or flap peen the blend area with 200% coverage. Refer to SOPM 20-10-03. This will improve the corrosion resistance of the cut edge.

C. Determine the number of repair angles required. Refer to Figure 203/REPAIR 11.

(1) If the blend area is less than 1.0 in. (25.4 mm) in width on a single flange, then one repair angle is required. Refer to Figure 203/REPAIR 11, view A

(2) If the blend area is greater than 1.0 in. (25.4 mm) in width, or if material is removed from both flanges, then two repair angles are required. Refer to Figure 203/REPAIR 11, views B and C.

D. Do a detailed visual inspection of the damaged area. Look for loose or missing fasteners, cracks, worn areas, and other corrosion in the damaged area. Inspect the top and bottom surfaces of the upper chord in the damaged area.

E. If there is a machined intercostal between Sta 312 and Sta 328, or between Sta 328 and Sta 344 in the repair area:

(1) See Figure 201/REPAIR 11 and Table 201/REPAIR 11 for the typical locations of the machined intercostals.

NOTE: The locations of the intercostals may be different from those shown in Figure 201/REPAIR 11.

(2) Remove the machined intercostal.

(3) Do a 10X magnification inspection of the intercostal. Look for cracks, worn areas, or corrosion damage.

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(4) Do a trim on the top corner of the intercostal adjacent to Sta 328 to remove the material that is in the repair area. Maintain a trim radius of 0.25 in. (6.35 mm). Refer to Figure 205 (Sheet 1), Figure 206 (Sheet 1), or Figure 207 (Sheet 1).

(5) Use 10X magnification to examine the trim area. Make sure that there is no damage.

(6) Shot peen or flap peen the blend area with 200% coverage. Refer to SOPM 20-10-03. This will improve the corrosion resistance of the cut edge.

F. Make the repair parts.

(1) Make the part [1] angle and the part [2] angle as necessary. See Figure 204/REPAIR 11.

(a) If you make the repair angles from extrusions:

1) Chamfer the corners of the extrusions to avoid interference with the chord radius of the floor beam.

2) Shot peen or flap peen all cut edges with 200% coverage. Refer to SOPM 20-10-03.

(b) If you make the repair parts from sheet aluminum:

1) Form the repair parts in the “0” condition.

2) Keep the minimum bend radius for the material. Refer to SHEET METAL MATERIALS, 51-30-01.

3) Do a Dye-Penetrant Inspection or a Fluorescent Penetrant Inspection of the formed angles. Make sure that there are no cracks. Refer to THE BOEING COMPANY SOPM 20-20-02

4) Heat treat the formed angle(s) to a T62 temper.

(2) If you cut an intercostal, then make the part [3] angle fitting. Make the part [4] filler and the part [5] filler as necessary.

(a) Determine the [3] angle fitting dimensions.

1) Refer to Figure 205/REPAIR 11, Figure 206/REPAIR 11, or Figure 207/REPAIR 11 for example dimensions.

2) Make the angle fitting one gauge thicker than the intercostal flange.

3) Maintain 4 fasteners on each of the vertical and horizontal flanges of the angle fitting.

4) Keep a 2D edge margin with the cut edge of the intercostal.

5) Maintain a 4D to 6D fastener spacing on the intercostal flanges.

6) Maintain the grain direction for the [3] angle fitting. Refer to Figure 205 (Sheet 2), Figure 206 (Sheet 2), or Figure 207 (Sheet 2).

(b) Do a Dye Penetrant Inspection or a Fluorescent Penetrant Inspections of the part [3] angle fitting. Make sure that there are no cracks. Refer to THE BOEING COMPANY SOPM 20-20-02.

(c) Shot peen or flap peen the part [3] angle fitting with 200% coverage. Refer to SOPM 20-10-03.

(d) Use a radius filler as necessary so that the fastener heads will not touch the bend radius.

(3) Make the cut and machined surfaces of the repair parts smooth to a finish of 125 microinches Ra or smoother.

NOTE: Do not do this for edges that are already shot peened or flap peened.

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Table 202: Repair Parts

ITEM	PART	QUANTITY	MATERIAL
[1]	Angle	1	Use 0.080 in. (2.032 mm) 7075-T0 clad sheet, heat treat to T62 after forming. Optional: 0.080 in. (2.032 mm) 7075–T6511 extrusion.
[2]	Angle	1	Use 0.080 in. (2.032 mm) 7075-T0 clad sheet, heat treat to T62 after forming. Optional: 0.080 in. (2.032 mm) 7075–T6511 extrusion.
[3]	Angle Fitting	1 (If necessary)	Use 1.0 in. (25.4 mm) thick (ST direction) 7050–T7451 or 7075–T7351*[1]
[4]	Filler	1 (If necessary)	Use 0.020 in. (0.51 mm) or 0.016 in. (0.406 mm) thick 7075–T6 clad sheet.
[5]	Filler	1 (If necessary)	Thickness as required. Use 7075-T6 clad or bare sheet as necessary.
[6]	Filler	1 (If necessary)	Use 0.080 in. (2.032 mm) thick 7075–T6 clad sheet.

*[1] Length and width may vary depending on intercostal. Ensure dimensions and correct grain direction before manufacturing the angle fitting.

G. Assemble the repair parts.

NOTE: Make sure that the repair parts do not block or cover any initial holes in the floor beam. Make cutouts in the repair parts to match the initial holes in the floor beam.

H. Drill the fastener holes.

I. Disassemble the repair parts.

J. Remove all nicks, scratches, gouges, burrs, and sharp edges from the repair parts and the initial parts.

K. Apply a chemical conversion coating to the repair parts and to the bare surfaces of the initial parts. Refer to PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS, 51-20-01.

L. Apply 2 coats of BMS 10-11, Type I primer to the repair parts and to the bare surfaces of the initial parts. Refer to SOPM 20-41-02.

M. Install the repair parts. Refer to Figure 204/REPAIR 11, Figure 205/REPAIR 11, Figure 206/REPAIR 11, and Figure 207/REPAIR 11 as necessary.

N. Shim all gaps that are more than 0.010 in. (0.254 mm) before you install the fasteners. Refer to SHEET METAL MATERIALS, 51-30-01.

O. Install the fasteners. Refer to FASTENER INSTALLATION AND REMOVAL, 51-40-02.

(1) Install all hex drive bolts in transition fit holes wet with BMS 5-95 sealant.

(2) At initial hole locations, you are permitted to oversize a maximum of 1/32 in. (1 mm) as necessary.

P. If you removed an intercostal, reinstall it.

Q. Apply a fillet seal and fill all internal gaps with BMS 5-95 sealant. Refer to REPAIR SEALING, 51-20-05

R. Apply 1 layer of BMS 10-11, Type I primer to each fastener head in the repair area. Refer to SOPM 20-41-02.

S. Fill the blend area with BMS 5–95 sealant. Refer to REPAIRS FOR MINOR DENTS IN METALLIC SHEET MATERIALS, 51-70-01.

T. Replace the adjacent structure that you removed for access to the floor beam.

U. Replace the items you removed for access.

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2119404 S0000452466_V1

Repair Angle Conditions
Figure 203

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NOTES

- ALL DIMENSIONS ARE IN INCHES (mm).
- D = THE DIAMETER OF THE FASTENER.
- THE FLOOR BEAM CONFIGURATION CAN BE DIFFERENT THAN THE CONFIGURATION SHOWN IN THIS REPAIR PROCEDURE.

1 KEEP A MINIMUM OF FOUR FASTENERS BETWEEN THE EDGE OF THE ANGLE AND THE EDGE OF THE BLEND AREA.

2 KEEP A MINIMUM OF FIVE FASTENERS BETWEEN THE EDGE OF THE ANGLE AND THE EDGE OF THE BLEND AREA.

3 THE BLEND MUST HAVE A MINIMUM RATIO OF 20:1.

4 THE REPAIR PARTS MUST NOT CAUSE A BLOCKAGE OF ANY FLOOR BEAM HOLES. MAKE THE CUTOUTS IN THE REPAIR PARTS TO ALIGN WITH HOLES IN THE FLOOR BEAM OR INTERCOSTAL WEB.

5 IF THERE IS INTERFERENCE BETWEEN THE VERTICAL STIFFENER AND THE REPAIR AREA, YOU CAN TRIM THE STIFFENER. KEEP A DISTANCE OF 0.004 INCH TO 0.010 INCH BETWEEN THE REPAIR ANGLE AND THE CUT EDGE OF THE STIFFENER. MAINTAIN 1.7D OR GREATER EDGE MARGIN.

6 KEEP A 2D EDGE MARGIN WITH THE CUT EDGE OF THE INTERCOSTAL. KEEP A MINIMUM DISTANCE OF 0.06 INCH (1.52 mm) BETWEEN THE EDGE OF THE FASTENER HOLE AND THE CHEM MILL RADIUS. CAUTION: DO NOT INSTALL FASTENERS ON THE CHEM MILL RADIUS.

FASTENER SYMBOLS

REFERENCE FASTENER LOCATION.

REPAIR FASTENER LOCATION. INSTALL A BACB30FM6A() OR A BACB30VT6K() HEX DRIVE BOLT WITH A BACC30M6 COLLAR OR A BACC30BL COLLAR, RESPECTIVELY (OR EQUIVALENT)

REPAIR FASTENER LOCATION. INSTALL A BACB30FN6K() OR A BACB30NW6K() HEX DRIVE BOLT WITH A BACC30M6 COLLAR OR A BACC30BL COLLAR, RESPECTIVELY (OR EQUIVALENT)

FLOOR PANEL FASTENER LOCATION. INSTALL A BACN11AL() OR A BACN10VR()CG CLIP-ON NUTPLATE. IF A CLIP-ON NUTPLATE CAN NOT BE INSTALLED. INSTALL A BACN10JR3CFD OR BACN10JZB2CDM NUTPLATE WITH BACN10VR()CG OR BACN15BA3AD() FASTENERS. BACN10VR()CG CAN NOT BE INSTALLED WHERE THE MATERIAL STACKUP IS GREATER THAN 0.270 INCH (6.89 mm)

INITIAL FASTENER LOCATION. INSTALL A BACB30NX()K()X HEX DRIVE BOLT WITH A BACC30X COLLAR (OR EQUIVALENT).

INITIAL FASTENER LOCATION. INSTALL A BACB30NW6K()X HEX DRIVE BOLT WITH A BACC30M COLLAR (OR EQUIVALENT).

REPAIR FASTENER LOCATION. INSTALL A BACB30NW6K() HEX DRIVE BOLT WITH A BACC30BL COLLAR (OR EQUIVALENT).

2101269 S0000445163_V1

Sta 328 Moderate Damage Repair, Depth Between 0.035 inch and 0.060 inch
Figure 204 (Sheet 1 of 4)

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2101270 S0000445164_V1

Sta 328 Moderate Damage Repair, Depth Between 0.035 inch and 0.060 inch
Figure 204 (Sheet 2 of 4)

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2101272 S0000445167_V1

Sta 328 Moderate Damage Repair, Depth Between 0.035 inch and 0.060 inch
Figure 204 (Sheet 3 of 4)

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B–B

2101271 S0000445165_V1

Sta 328 Moderate Damage Repair, Depth Between 0.035 inch and 0.060 inch
Figure 204 (Sheet 4 of 4)

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TYPICAL ANGLE FITTING REPAIR

2121126 S0000456300_V1

Angle Fitting - Alternative 1
Figure 205 (Sheet 1 of 2)

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2121155 S0000456304_V1

Angle Fitting - Alternative 1
Figure 205 (Sheet 2 of 2)

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TYPICAL ANGLE FITTING REPAIR

2121218 S0000456305_V1

Angle Fitting Installation - Alternative 2
Figure 206 (Sheet 1 of 2)

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2121226 S0000456307_V1

Angle Fitting Installation - Alternative 2
Figure 206 (Sheet 2 of 2)

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TYPICAL ANGLE FITTING REPAIR

2121243 S0000456308_V1

Angle Fitting Installation - Alternative 3
Figure 207 (Sheet 1 of 2)

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2121244 S0000456309_V1

Angle Fitting Installation - Alternative 3
Figure 207 (Sheet 2 of 2)

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IDENTIFICATION 1 - SECTION 41 SEAT TRACKS

NOTE: REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

F87449 S0006588649_V1

Section 41 Seat Track Location
Figure 1

Table 1:

REFERENCE DRAWINGS	
DRAWING NUMBER	**TITLE**
140A0345	Section 41 to Section 43 Floor Integration Functional Collector
141A5300	Seat Track Installation - Section 41

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NOTE: REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

THERE ARE MANY SEAT TRACK CONFIGURATIONS FOR THIS AIRPLANE. THESE CONFIGURATIONS CAN BE DIFFERENT THAN THE ONE THAT IS SHOWN. REFER TO DRAWING 140A0345 TO SEE THE DIFFERENT CONFIGURATIONS.

F87450 S0006588652_V1

Section 41 Seat Track Identification

Figure 2

Table 2:

LIST OF MATERIALS FOR FIGURE 2				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Seat Track (4)		BAC1674-9 Ti-6Al-4V extruded bar as given in AMS 4935 (Optional: Ti-6Al-4V plate as given in MIL-T-9046, Code AB-1, condition A)	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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F96989 S0006588658_V1

Section 41 Seat Track Allowable Damage
Figure 101

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L11730 S0006588664_V1

Section 41 Seat Track Repairs
Figure 201

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IDENTIFICATION 1 - FORWARD EQUIPMENT BAY FLOOR PANELS

G37512 S0006588669_V1

Forward Equipment Bay Floor Panel Location
Figure 1

Table 1:

REFERENCE DRAWINGS	
DRAWING NUMBER	**TITLE**
284A0012	Electrical/Electronics Equipment Installation Collector - Final Assembly, Functional Product Collector
284A0813	Panel Installation - Floor, E/E Compartment

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G37585 S0006588671_V1

Forward Equipment Bay Floor Panel Identification
Figure 2

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Table 2:

LIST OF MATERIALS FOR FIGURE 2				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Panel Assembly		Glass Fiber Reinforced Plastic (GFRP) honeycomb sandwich	
	Panel	0.400 (10.16)	Fiberglass-faced non-metallic core as given in BMS 4-17, Type III, Grade A or B	
	Roll Tape	0.062 (1.57)	Flexible Foam Tape as given in BMS 8-283, Type I	
[2]	Panel Assembly	0.063 (1.6)	2024-T3 sheet as given in QQ-A-250/4	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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IDENTIFICATION 2 - FORWARD EQUIPMENT BAY FLOOR PANEL SUPPORT STRUCTURE

G38461 S0006588674_V1

Forward Equipment Bay Floor Panel Support Structure Location
Figure 1

Table 1:

REFERENCE DRAWINGS	
DRAWING NUMBER	**TITLE**
284A0001	Electrical/Electronics Equipment Installation Collector - Body, Functional Product Collector
284A0839	Support Installation - Floor, E/E Compartment
284A2839	Support Assembly - Floor, E/E Compartment

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G38467 S0006588676_V1

Forward Equipment Bay Floor Panel Support Structure Identification
Figure 2

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FLOOR PANEL SUPPORT STRUCTURE-
UPPER RIGHT SIDE

G40034 S0006588677_V1

Forward Equipment Bay Floor Panel Support Structure - Upper Right Side Identification
Figure 3

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Table 2:

LIST OF MATERIALS FOR FIGURE 3				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Stiffener	0.063 (1.60)	6013-T6 sheet as given in AMS 4347	
[2]	Angle (7)		BAC1503-100918 7075-T6511 extrusion as given in QQ-A-200/11	
[3]	Channel (3)		BAC1509-100689 7075-T6511 extrusion as given in QQ-A-200/11	
[4]	Channel		BAC1493-625 7075-T6 formed channel as given in QQ-A-250/12	
[5]	Panel	0.063 (1.60)	6013-T6 formed sheet as given in AMS 4347	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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LOWER FLOOR PANEL SUPPORT STRUCTURE

G40040 S0006588679_V1

Forward Equipment Bay Lower Floor Panel Support Structure Identification
Figure 4

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Table 3:

LIST OF MATERIALS FOR FIGURE 4				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Angle		AND10134-1204 7075-T6511 extrusion as given in QQ-A-200/11	
[2]	Tee		AND10136-2006 7075-T6511 extrusion as given in QQ-A-200/11	
[3]	Stiffener	0.063 (1.60)	6013-T6 sheet as given in AMS 4347	
[4]	Bracket	0.063 (1.60)	7075-T6 formed sheet as given in QQ-A-250/12	
[5]	Angle (3)		BAC1503-100918 7075-T6511 extrusion as given in QQ-A-200/11	
[6]	Channel		BAC1509-100689 7075-T6511 extrusion as given in QQ-A-200/11	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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FLOOR PANEL SUPPORT STRUCTURE -
UPPER LEFT SIDE

G40055 S0006588681_V1

Forward Equipment Bay Floor Panel Support Structure - Upper Left Side Identification
Figure 5

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Table 4:

LIST OF MATERIALS FOR FIGURE 5				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Stiffener (4)	0.063 (1.60)	6013-T6 sheet as given in AMS 4347	
[2]	Bracket	0.063 (1.60)	6013-T6 formed sheet as given in AMS 4347	
[3]	Angle		BAC1514-725 7075-T6511 extrusion as given in QQ-A-250/11	
[4]	Panel	0.063 (1.60)	6013-T6 formed sheet as given in AMS 4347	
[5]	Channel		BAC1493-533 7075-T6 formed channel as given in QQ-A-250/12	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

G40067 S0006588683_V1

Forward Equipment Bay Forward Floor Panel Support Structure Identification
Figure 6

Table 5:

LIST OF MATERIALS FOR FIGURE 6				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Stiffener (3)	0.063 (1.60)	6013-T6 sheet as given in AMS 4347	
[2]	Bracket (2)	0.063 (1.60)	6013-T6 formed sheet as given in AMS 4347	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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ALLOWABLE DAMAGE 1 - FORWARD EQUIPMENT BAY FLOOR PANELS

1. Applicability

A. This subject gives the allowable damage limits for the forward equipment bay floor panels shown in Forward Equipment Bay Floor Panel Location, Figure 101/ALLOWABLE DAMAGE 1.

B. The allowable damage limits given are only applicable to the functional properties of the forward equipment bay floor panels. If the panel does not function satisfactorily, you can repair it to put it back to a serviceable condition.

G40078 S0006588687_V1

Forward Equipment Bay Floor Panel Location
Figure 101 (Sheet 1 of 2)

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TYPICAL FLOOR PANEL CONFIGURATION

A

G40082 S0006588688_V1

Forward Equipment Bay Floor Panel Location
Figure 101 (Sheet 2 of 2)

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2. General

A. Seal cracks and holes that go through the floor panel with BMS 5-146, Type I, Class 1, Grade A cargo liner joint sealing tape. As an alternative, you can make the seal with aluminum foil tape (speed tape).

3. Inspection Requirements

A. Do a visual inspection at 400 flight cycles maximum to make sure the sealing tape is in a satisfactory condition. Replace the tape if there are signs of deterioration.

B. Do a permanent repair at 4,000 flight cycles maximum from the time the tape was applied.

4. References

Reference	Title
51-10-02, GENERAL	Inspection and Removal of Damage
51-20-01, GENERAL	Protective Treatment of Metallic and Composite Materials
51-30-03, GENERAL	Sources for Non-Metallic Repair Materials
51-30-05, GENERAL	Equipment and Tools For Repairs
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes

5. Allowable Damage Limits

A. Composite (GFRP Honeycomb Sandwich) Floor Panels

(1) The total damage must not be more than 30 percent of the panel area for airplanes that have not completed Service Bulletin 737-21-1149.

(2) The total damage must not be more than 25 percent of the panel area for airplanes that have completed Service Bulletin 737-21-1149.

(a) Cracks:

1) Cracks are permitted if they are:

a) A maximum of 3.0 inches (76.2 mm) in length

b) Sealed as given in Paragraph 2.

2) Cracks that are between three adjacent fastener holes are permitted at the end of the panel that is attached.

(b) Nicks, Gouges, or Scratches are permitted if they are:

1) A maximum of 3.0 inches (76.2 mm) in length.

(c) Dents are permitted if they are:

1) A maximum of 3.0 inches (76.2 mm) in diameter.

(d) Holes and Punctures are permitted if they are:

1) A maximum of 2.0 inches (50.8 mm) in diameter

2) Sealed as given in Paragraph 2.

(e) Delaminations are permitted if they are:

1) A maximum of 3.0 inches (76.2 mm) in diameter.

B. Aluminum

(1) The total damage must not be more than 30 percent of the panel area for airplanes that have not completed Service Bulletin 737-21-1149.

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(2) The total damage must not be more than 25 percent of the panel area for airplanes that have completed Service Bulletin 737-21-1149.

(a) Cracks:

1) Cracks are permitted if they are:

a) A maximum of 3.0 inches (76.2 mm) in length

b) Sealed as given in Paragraph 2.

2) Stop drill a 0.25 inch (6.35 mm) hole at the ends of a crack. The stop hole must be a minimum of 1.0 inch (25.4 mm) from a fastener hole.

a) Install a 2117-T3 or 2117-T4 rivet. Install the rivet without sealant.

3) Cracks that are between three adjacent fastener holes are permitted at the end of the panel that is attached.

(b) Nicks, Gouges, Scratches, and Corrosion are permitted if they are:

1) A maximum of 3.0 inches (76.2 mm) in length.

(c) Dents are permitted if they are:

1) A maximum of 3.0 inches (76.2 mm) in diameter.

(d) Holes and Punctures are permitted if they are:

1) A maximum of 2.0 inches (50.8 mm) in diameter

2) Sealed as given in Paragraph 2.

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ALLOWABLE DAMAGE 2 - FORWARD EQUIPMENT BAY FLOOR PANEL SUPPORT STRUCTURE

1. Applicability

A. This subject gives the allowable damage limits for the forward equipment bay floor panel support structure shown in Forward Equipment Bay Floor Panel Support Structure Location, Figure 101/ ALLOWABLE DAMAGE 2.

G40106 S0006588690_V1

Forward Equipment Bay Floor Panel Support Structure Location
Figure 101

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G41377 S0006588691_V1

Forward Equipment Bay Floor Panel Support Structure
Figure 102 (Sheet 1 of 5)

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FLOOR PANEL SUPPORT STRUCTURE -
UPPER RIGHT SIDE

A

G40115 S0006588692_V1

Forward Equipment Bay Floor Panel Support Structure
Figure 102 (Sheet 2 of 5)

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LOWER FLOOR PANEL SUPPORT STRUCTURE

B

G40117 S0006588693_V1

Forward Equipment Bay Floor Panel Support Structure
Figure 102 (Sheet 3 of 5)

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FLOOR PANEL SUPPORT STRUCTURE -
UPPER LEFT SIDE

C

G40119 S0006588694_V1

Forward Equipment Bay Floor Panel Support Structure
Figure 102 (Sheet 4 of 5)

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FORWARD FLOOR PANEL SUPPORT STRUCTURE

D

G40121 S0006588695_V1

Forward Equipment Bay Floor Panel Support Structure
Figure 102 (Sheet 5 of 5)

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2. General

A. Remove the parts as necessary to get access to the damaged area.

B. Refer to Paragraph 4./ALLOWABLE DAMAGE 2 for the allowable damage limits.

(1) Refer to Table 101/ALLOWABLE DAMAGE 2 for the allowable damage limits that is applicable to each type of structure.

Table 101:

PARAGRAPH REFERENCES FOR THE ALLOWABLE DAMAGE LIMITS	
TYPE OF STRUCTURE	**PARAGRAPH**
Stiffener (sheet)	4.A
Channel (extrusion)	4.B
Channel (formed)	4.C
Angle (extrusion)	4.B
Panel (formed)	4.C
Bracket (formed)	4.C
Tee (extrusion)	4.B

C. Remove the damage as necessary.

(1) Refer to 51-10-02 for the inspection and removal of damage.

(2) Refer to 51-30-03 for possible sources of abrasives and other materials you can use to remove damage.

(3) Refer to 51-30-05 for possible sources of equipment and tools you can use to remove damage.

D. After you remove the damage, do the steps that follow:

(1) Apply a chemical conversion coating to the bare surfaces of the reworked areas. Refer to 51-20-01.

(2) Apply two layers of BMS 10-11, Type I primer to the surface of the reworked area. Refer to SOPM 20-41-02.

(3) Apply one layer of BMS 3-23, Type II corrosion inhibiting compound to the surface of the repair area. Refer to 51-20-01.

3. References

Reference	Title
51-10-02	INSPECTION AND REMOVAL OF DAMAGE
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-30-03	NON-METALLIC MATERIALS
51-30-05	EQUIPMENT AND TOOLS FOR REPAIRS
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes

4. Allowable Damage Limits

A. Stiffeners

(1) Cracks:

(a) Remove the damage as shown in Figure 103, Details A , B , and D .

(2) Nicks, Gouges, Scratches, and Corrosion:

(a) Remove the damage as shown in Figure 103, Details A , B , C , and D .

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(3) Dents are not permitted.

(4) Holes and Punctures:

(a) The damage is permitted if it is:

1) A maximum of 0.25 inch (5.35 mm) in diameter

2) A minimum of 4D (D = the diameter of the damage) away from a fastener hole, the edge of the part, or other damage

3) Filled with a 2117-T3 or 2117-T4 protruding head rivet.

a) Install the rivet without sealant.

B. Channels, Angles, and Tees (Extrusions)

(1) Cracks:

(a) Remove the damage as shown in Figure 103, Details A , B , G , and H .

(2) Nicks, Gouges, Scratches, and Corrosion:

(a) Remove the damage as shown in Figure 103, Details A , B , C , E , F , G , and H .

(3) Dents are not permitted.

(4) Holes and Punctures:

(a) The damage is permitted if it is:

1) A maximum of 0.25 inch (6.35 mm) in diameter

2) A minimum of 4D (D = the diameter of the damage) away from a fastener hole, the edge of the part, or other damage

3) Filled with a 2117-T3 or 2117-T4 protruding head rivet.

a) Install the rivet without sealant.

C. Channels, Panels, and Brackets (Formed)

(1) Cracks:

(a) Remove the damage as shown in Figure 103, Details A , B , and D .

(2) Nicks, Gouges, Scratches, and Corrosion:

(a) Remove the damage as shown in Figure 103, Details A , B , C , D , and E .

(3) Dents:

(a) Refer to Figure 103, Detail I for the damage that is permitted.

(4) Holes and Punctures:

(a) The damage is permitted if it is:

1) A maximum of 0.25 inch (6.35 mm) in diameter

2) A minimum of 4D (D = the diameter of the damage) away from a fastener hole, the edge of the part, or other damage

3) Filled with a 2117-T3 or 2117-T4 protruding head rivet.

a) Install the rivet without sealant.

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X = WIDTH OF THE MATERIAL THAT IS REMOVED
= 0.05 INCH (1.27 mm) OR 5 PERCENT OF THE FLANGE (OR WEB) WIDTH, THAT WHICH IS LESS 1
= A MAXIMUM OF 0.10 INCH (2.54 mm) 2

REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER EDGE MARGINS DO NOT HAVE AN OVERLAP

A

X = WIDTH OF THE MATERIAL THAT IS REMOVED
= 0.05 INCH (1.27 mm) OR 5 PERCENT OF THE FLANGE (OR WEB) WIDTH, THAT WHICH IS LESS 1
= A MAXIMUM OF 0.10 INCH (2.54 mm) 2

REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER EDGE MARGINS HAVE AN OVERLAP

B

REMOVAL OF DAMAGED MATERIAL ON A SURFACE

C

X = DEPTH OF THE MATERIAL THAT IS REMOVED
= A MAXIMUM OF 0.05T 1
= A MAXIMUM OF 0.10T 2

A–A

1 FOR AIRPLANES THAT HAVE COMPLETED SERVICE BULLETIN 737-21-1149.

2 FOR AIRPLANES THAT HAVE NOT COMPLETED SERVICE BULLETIN 737-21-1149

400652 S0000136667_V1

FWD Equip Bay Floor Panel Support Structure Allowable Damage Details
Figure 103 (Sheet 1 of 6)

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X = WIDTH OF THE MATERIAL THAT IS REMOVED

= 0.05 INCH (1.27 mm) OR 5% OF THE WIDTH OF FLANGE, THAT WHICH IS LESS 1

= A MAXIMUM OF 0.10 INCH (2.54 mm) 2

REMOVAL OF DAMAGED MATERIAL AT AN EDGE

D

400653 S0000136668_V1

FWD Equip Bay Floor Panel Support Structure Allowable Damage Details
Figure 103 (Sheet 2 of 6)

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Y = WIDTH OF THE MATERIAL THAT IS REMOVED

= A MAXIMUM OF 5 PERCENT OF THE WIDTH OF THE FLANGE 1

= A MAXIMUM OF 10 PERCENT OF THE WIDTH OF THE FLANGE 2

REMOVAL OF DAMAGED MATERIAL
ON A SURFACE AT AN EDGE

E

B–B

400654 S0000136669_V1

FWD Equip Bay Floor Panel Support Structure Allowable Damage Details
Figure 103 (Sheet 3 of 6)

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Y = WIDTH OF THE MATERIAL THAT IS REMOVED
= A MAXIMUM OF 5 PERCENT OF THE WIDTH OF THE FLANGE 1
= A MAXIMUM OF 10 PERCENT OF THE WIDTH OF THE FLANGE 2

REMOVAL OF DAMAGED MATERIAL
ON A SURFACE AT AN EDGE

F

C–C

400655 S0000136670_V1

FWD Equip Bay Floor Panel Support Structure Allowable Damage Details
Figure 103 (Sheet 4 of 6)

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Y = WIDTH OF THE MATERIAL REMOVED
= A MAXIMUM OF 5 PERCENT OF THE WIDTH OF THE FLANGE 1
= A MAXIMUM OF 10 PERCENT OF THE WIDTH OF THE FLANGE 2

REMOVAL OF DAMAGED MATERIAL AT AN EDGE

G

X = THE WIDTH OF THE MATERIAL THAT IS REMOVED
= A MAXIMUM OF 5 PERCENT OF THE WIDTH OF THE FLANGE 1
= A MAXIMUM OF 10 PERCENT OF THE WIDTH OF THE FLANGE 2

REMOVAL OF DAMAGED MATERIAL ON AN EDGE

H

400656 S0000136671_V1

FWD Equip Bay Floor Panel Support Structure Allowable Damage Details
Figure 103 (Sheet 5 of 6)

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DENT THAT IS PERMITTED

I

412226 S0000136672_V1

FWD Equip Bay Floor Panel Support Structure Allowable Damage Details
Figure 103 (Sheet 6 of 6)

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REPAIR 1 - FORWARD EQUIPMENT BAY FLOOR PANELS

1. Applicability

A. Repair 1 is applicable to damage to the forward equipment bay floor panels shown in Forward Equipment Bay Floor Panel Location, Figure 201/REPAIR 1.

G40129 S0006588705_V1

Forward Equipment Bay Floor Panel Location
Figure 201 (Sheet 1 of 2)

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TYPICAL FLOOR PANEL CONFIGURATION

A

G41404 S0006588706_V1

Forward Equipment Bay Floor Panel Location
Figure 201 (Sheet 2 of 2)

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2. References

Reference	Title
53-00-50, REPAIR GENERAL	Composite Floor Panels
53-10-54, ALLOWABLE DAMAGE 1	Forward Equipment Bay Floor Panels

3. Repair Instructions

A. Refer to Table 201/REPAIR 1 to find the applicable repair for the part you want to repair.

Table 201:

REPAIR REFERENCES FOR THE FORWARD EQUIPMENT BAY FLOOR PANELS	
COMPONENT	**REPAIR**
Panel (Composite)	Refer to SRM 53-00-50
Panel (Aluminum)	There are no repairs for these parts in the Structural Repair Manual at this time. If the damage to the structure is more than the limits given in SRM 53-10-54, Allowable Damage 1, replace the damaged part.

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REPAIR 2 - FORWARD EQUIPMENT BAY FLOOR PANEL SUPPORT STRUCTURE

1. Applicability

A. Repair 2 is applicable to damage to the forward equipment bay floor panel support structure shown in Forward Equipment Bay Floor Panel Support Structure Location, Figure 201/REPAIR 2.

G40130 S0006588709_V1

Forward Equipment Bay Floor Panel Support Structure Location
Figure 201

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G41405 S0006588710_V1

Forward Equipment Bay Floor Panel Support Structure
Figure 202 (Sheet 1 of 5)

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FLOOR PANEL SUPPORT STRUCTURE -
UPPER RIGHT SIDE

A

G41407 S0006588711_V1

Forward Equipment Bay Floor Panel Support Structure
Figure 202 (Sheet 2 of 5)

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G41410 S0006588712_V1

Forward Equipment Bay Floor Panel Support Structure
Figure 202 (Sheet 3 of 5)

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FLOOR PANEL SUPPORT STRUCTURE -
UPPER LEFT SIDE

C

G41411 S0006588713_V1

Forward Equipment Bay Floor Panel Support Structure
Figure 202 (Sheet 4 of 5)

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FORWARD FLOOR PANEL SUPPORT STRUCTURE

D

G41412 S0006588714_V1

Forward Equipment Bay Floor Panel Support Structure
Figure 202 (Sheet 5 of 5)

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2. General

A. The typical repairs given in 51-70-11 and 51-70-12 can be used when applicable if:

(1) There is sufficient clearance with the adjacent structure for the installation of the repair parts.

B. Refer to the limits of the typical repairs given in 51-70-11 and 51-70-12 before you start a repair.

3. References

Reference	Title
51-70-11	TYPICAL FORMED SECTION REPAIRS
51-70-12	EXTRUDED SECTION REPAIRS
53-10-54	FORWARD EQUIPMENT BAY FLOOR PANEL SUPPORT STRUCTURE

4. Repair Instructions

A. Refer to Table 201/REPAIR 2 to find the applicable repair for the part you want to repair.

NOTE: If necessary, refer to 53-10-54, Identification 2 to find the material and the process that was used to make the part which you want to repair.

Table 201:

REPAIR REFERENCES FOR THE FORWARD EQUIPMENT BAY FLOOR PANEL SUPPORT STRUCTURE	
TYPE OF COMPONENT	**REPAIR**
Stiffeners (sheet)	There are no repairs for these parts in the Structural Repair Manual at this time. If the damage to the structure is more than the limits given in SRM 53-10-54, Allowable Damage 2, replace the damaged part
Formed parts	Refer to SRM 51-70-11
Extruded parts	Refer to SRM 51-70-12

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IDENTIFICATION 1 - NOSE RADOME

NOTE: REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

F98230 S0006588719_V1

Nose Radome location
Figure 1

Table 1:

REFERENCE DRAWINGS	
DRAWING NUMBER	**TITLE**
284A0801	Radome Installation - X-Band, Weather Radar
284A0802	Rod Installation - Radome Support
284A1801	Radome Assembly - X-Band, Weather Radar
284A3801	Details/CFA - Nose Radome
1001002	Nordam Nose Radome Installation (Vendor drawing)
1001737	Nordam Nose Radome Assembly (Vendor drawing)

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F98293 S0006588721_V1

Nose Radome Identification
Figure 2

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Table 2:

LIST OF MATERIALS FOR FIGURE 2				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Nose Radome Assembly		Supplied by: Heath Techna Precision Structures, Inc. 19819 84th Ave. Kent, Washington 98064–9704	For airplanes with line numbers: 5, 10,11, 13, 14, 16 thru 19, 22, 23, 25 thru 28, 31, 33, 35, 36.
[1]	Nose Radome Assembly		Plastic Glass Fabric Reinforced Epoxy Sandwich	For all airplanes except line numbers: 5, 10,11, 13, 14, 16 thru 19, 22, 23, 25 thru 28, 31, 33, 35, 36.
	Skin		4 plies fiberglass prepreg as given in BMS 8–79, Class 3. Type 1581, Grade B	
	Core		Nomex flex-core HRH/F50–5.0	
	Core		Fiberglass honeycomb core as given in 8–124, Class 1,Type 1, Grade 4.0	
	Core		Fiberglass honeycomb core as given in 8–124, Class 1, Type 1, Grade 4.0	For airplanes with line numbers 824 and on.
[2]	Reinforcing Angle		BAC1503-100097 7075-0 Extrusion as given in QQ-A-227 Heat treat to T6 condition.	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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Nose Radome Identification
Figure 3

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Table 3:

LIST OF MATERIALS FOR FIGURE 3				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Nose Radome Assembly		Supplied by: The Nordam Group 5101 Blue Mound Road Fort Worth, Texas 76106	
[2]	Reinforcing Angle			

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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ALLOWABLE DAMAGE 1 - NOSE RADOME

1. Applicability

A. Allowable Damage 1 gives the allowable damage limits for the nose radome shown in Nose Radome Location, Figure 101/ALLOWABLE DAMAGE 1.

F98815 S0006588727_V1

Nose Radome Location
Figure 101

2. General

A. Do an inspection of the damaged area to find the length, width and depth of the damage. Boeing recommends that you use an instrumented Non-Destructive Test (NDT) procedure. Refer to 737 NDT Part 1, 51-01-02 for inspection procedures.

NOTE: Other inspection methods that have been approved and found to be satisfactory by the operator, can be used.

(1) Refer to Definitions of the Damage Dimensions, Figure 102/ALLOWABLE DAMAGE 1, Details A , B , and C for the definitions of the length, width, and depth of the damage.

(2) Refer to Definitions of the Facesheets, Figure 103/ALLOWABLE DAMAGE 1 for the definitions of the facesheets.

B. Refer to AMM 53-52-03/801 for allowable damage limits and temporary repair instructions for the lightning diverter strips. Refer to AMM 53-52-03/201 for the inspection, check, removal, and installation of the lightning diverter strips.

C. Refer to AMM 53-52-31/401 for the removal and installation of the Glide Slope Director Bar.

D. Remove all contamination and water from the structure. Refer to 51-30-05 and 51-70-04 for the tools and the cleanup procedures.

E. Refer to Paragraph 4./ALLOWABLE DAMAGE 1 for the allowable damage limits that are applicable to the radome.

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F. Seal all damaged areas that are not more than one ply deep (and that meet the allowable damage limits given in Paragraph 4./ALLOWABLE DAMAGE 1) with one of the two methods that follow:

(1) Make a temporary seal.

(a) Apply Scotchbrand 853, Permacel P280 or the equivalent tape.

(b) Keep a record of the location.

(c) Make sure that the tape is in satisfactory condition after each interval of 400 flight hours, or more frequently.

(d) Seal the damage permanently at or before 5000 flight hours from the time the seal was made.

(2) Make a permanent seal.

(a) Apply BMS 8-201, BMS 8-207 or BMS 8-301 epoxy resin to the area as given 51-70-08.

(b) Apply the finish as given is AMM 53-52-00/701

G. Seal all damaged areas that are more than one ply deep (and that agree with the allowable damage limits given in Paragraph 4./ALLOWABLE DAMAGE 1) as follows:

(1) Use a vacuum and heat to remove moisture from the solid laminate, honeycomb cells, or foam core. Refer to 51-70-04.

(2) Make a temporary seal with Scotchbrand 853, Permacel P280 or the equivalent tape.

(3) Keep a record of the location.

(4) Repair the damage at or before 400 flight hours from the time the seal was made.

H. Make sure the aerodynamic smoothness is satisfactory. Refer to 51-10-01.

I. The definition of the words "other damage" as used in the allowable damage limits, does not include nicks, gouges, and scratches that do not cause fiber damage and are sealed.

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SIZE DEFINITIONS FOR NICK, GOUGE, OR SCRATCH DAMAGE

A

SIZE DEFINITIONS FOR
DENT DAMAGE

B

SIZE DEFINITIONS FOR
EDGE DAMAGE

C

NOTE: A HONEYCOMB STRUCTURE IS SHOWN. THE DEFINITIONS ALSO APPLY TO FOAM CORE STRUCTURE.

F98823 S0006588728_V1

Definitions of the Damage Dimensions
Figure 102

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NOTE: A HONEYCOMB CORE IS SHOWN. THE DEFINITIONS ALSO APPLY TO FOAM CORE STRUCTURE.

F98822 S0006588729_V1

Definitions of the Facesheets
Figure 103

3. References

Reference	Title
51-10-01	AERODYNAMIC SMOOTHNESS
51-10-02, GENERAL	Inspection and Removal of Damage
51-30-03, GENERAL	Sources for Non-Metallic Repair Materials
51-30-05	EQUIPMENT AND TOOLS FOR REPAIRS
51-70-04	REPAIR PROCEDURES FOR WET LAYUP MATERIALS
51-70-08	RESIN SWEEP-FAIR PROCEDURES
AMM 53-52-00 P/B 601	NOSE RADOME - INSPECTION/CHECK
AMM 53-52-00 P/B 701	NOSE RADOME - CLEANING/PAINTING
AMM 53-52-00/701	Nose Radome - Cleaning and Painting
AMM 53-52-03/201	Lightning Diverter Strips - Maintenance Practices
AMM 53-52-31/401	Director Bar - Glide Slope Antenna - Removal/Installation
737 NDT Part 1, 51-01-02	NDT Examination of Composite Structure for Impact Damage

4. Allowable Damage Limits for the Nose Radome

A. Nicks, Gouges and Scratches that do not cause damage to the glass fibers are permitted.

B. Nicks, Gouges and Scratches that cause damage to the glass fibers are permitted if they are:

(1) A maximum of 1.0 square inch in area

(2) A minimum of 10.0 inches away from the edge of other damage

(3) A minimum of 2.0 inches away from the edge of the radome or an edge fastener.

C. Dents that do not cause damage to the glass fibers are permitted if they are:

(1) A maximum of 1.0 square inch in area

(2) A minimum of 10.0 inches away from the edge of other damage

(3) A minimum of 2.0 inches away from the edge of the radome or an edge fastener.

D. Delaminations are permitted if they are:

(1) A maximum of 1.0 square inch in area

(2) A minimum of 10.0 inches away from the edge of other damage

(3) A minimum of 2.0 inches away from the edge of the radome or an edge fastener.

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E. Holes and Punctures are permitted if they are:

(1) A maximum of 1.0 square inch in area

(2) A minimum of 10.0 inches away from the edge of other damage

(3) A minimum of 2.0 inches away from the edge of the radome or an edge fastener.

F. Edge damage is permitted if it is:

(1) A maximum of 1.00 inch in width

(2) A maximum of 0.25 inch in depth.

G. Edge Erosion is permitted as shown in Cleanup and Sealing of Edge Erosion, Figure 104/ ALLOWABLE DAMAGE 1.

F98819 S0006588730_V1

Cleanup and Sealing of Edge Erosion
Figure 104

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REPAIR GENERAL - NOSE RADOME

1. Applicability

A. This repair section is applicable and approved for the repair of radomes as delivered or approved by Boeing for use on this model airplane. Do not use this repair for radomes with the part numbers that follow:

- 1001002-1,
- 1001002-2,
- 1001002-8.

B. Repairs that are made from this repair section are not approved for radomes that have been modified, rebuilt or re-ringed using processes and materials that have not been approved by Boeing for use on this model airplane.

C. This subject gives the general repair data for damage:

(1) To the nose radome that is made of honeycomb core structure or foam core structure.

(2) That is more than the allowable damage limits given by Allowable Damage 1. Refer to Allowable Damage 1 for the type and dimension of damage that is permitted.

2. General

A. When you do a radome repair, do the general steps that follow:

(1) Do an inspection to find the limits of the damage.

(2) Make a decision on a repair option for:

(a) The maximum length and depth of the damage that is removed

(b) The number of damage locations or other repairs on the radome

(c) The type of layup materials you use.

(3) Repair the damage with one of the applicable repair options.

(4) On the inside of the radome, keep a record of damage and the extent of the repairs that are made.

B. For 3-ply honeycomb core radomes, a test for the electrical transmission efficiency is not necessary for most of the repairs given in this subject.

NOTE: Predictive wind shear requires a Class C radome as given in Document No. RTCA/DO-213 (Minimum Operational Performance Standards (MOPS) for Nose-Mounted Radomes). If you do not test the radome for electrical transmission efficiency, the radome will not meet the requirements for predictive wind shear.

(1) If predictive wind shear is a requirement, an electrical transmission efficiency test is necessary after you complete Repair 1.

(a) If predictive wind shear is not a requirement then a test is not necessary, the radome is a Class D radome.

(2) A test is not necessary when you do Repairs 2 thru 13.

(a) After this repair is complete, the nose radome is classified as a Class D radome.

C. For 4-ply honeycomb core radomes and foam core radomes, a test for the electrical transmission efficiency is not necessary for all of the repairs given in this subject.

NOTE: After you do a repair, these radomes are classified as Class C radomes. You can do a test to find if the radome has better electrical transmission efficiency.

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D. The radome that is repaired and has primer, decorative paint, rain erosion protection applied and the lightning diverter strips installed must have the transmission efficiency requirements that follow:

NOTE: Thicknesses of paint which are more than 0.010 inch can decrease the necessary radome electrical transmission efficiency. A radome wall that has been repaired should be put back to its initial thickness. If this is not done, radome transmission efficiency will be decreased. For repaired radomes on airplanes that have Predictive Wind Shear (PWS), and that are finished with CAAPCO erosion and p-static protection (Caapcoat B-274 as specified in BAC5880 and Caapcoat AS-P108), do a transmission efficiency test. The efficiency test must show the radome to be Class C or better.

(1) The average transmission efficiency for a continuous scan of the antenna in the radome window area must not be less than:

(a) 84 percent for Class C radomes

(b) 80 percent for Class D radomes.

NOTE: The radome window area is between ± 80 degrees azimuth and ± 20 degrees elevation.

(2) The minimum transmission efficiency at a point in the radome window must not be less than:

(a) 78 percent for Class C radomes

(b) 75 percent for Class D radomes.

E. If you need to know the class of a repaired radome, measure the electrical transmission efficiency as given in Paragraph 2.4.7.1. of Document No. RTCA/DO-213 (Minimum Operational Performance Standards (MOPS) for Nose-Mounted Radomes). You can get a copy of this document from: RTCA, Incorporated 1140 Connecticut Avenue, Northwest, Suite 1020 Washington, D.C. 20036-4001 U.S.A. Telephone: 202-833-9339 Facsimile (FAX): 202-833-9434

F. Refer to AMM 53-52-03/201 to replace the lightning diverter strip.

G. Refer to AMM 53-52-31/401 to replace the glide slope director element.

H. Make sure that you do the repairs in a clean location. Make sure that the air in the area has no oil, mist, exhaust fumes, gases, soot, rain, dust, or other unwanted materials.

I. Prevent repair surface contamination. Do not touch the cleaned parts, the repair fabric, or the adhesives with your bare hands. Wear clean lint-free gloves when you work with these parts.

J. When you repair a large area, make sure you use the applicable tool fixtures to prevent distortion of the radome.

K. Refer to Table 201/REPAIR GENERAL for the materials used in these repairs.

L. Refer to Table 202/REPAIR GENERAL for the resin, adhesive, and potting compound data.

Table 201:

NOSE RADOME REPAIR MATERIALS	
REPAIR MATERIALS	**BOEING SPECIFICATION**
Potting compound	BMS 5-28, Type 15, 16, 17, 18, 19, or 20
Repair fabric for repairs with wet layup materials	BMS 9-3, Type H-2 or H-3,
Laminating resin for the BMS 9-3 repair fabric	BMS 8-301, Class 1 or Class 2
Repair fabric for repairs with preimpregnated layup materials	BMS 8-79, Style 1581 or Style 7781
Film adhesive	BMS 5-129, Type 2, Grade 5 As an alternative, use BMS 5-129 Type 4, Grade 5

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Table 201: (Continued)

NOSE RADOME REPAIR MATERIALS	
REPAIR MATERIALS	**BOEING SPECIFICATION**
Honeycomb or foam repair core	For the honeycomb core, use HRH-10/F50-5 flex core. For the foam core, use CMN-2000 Class 3 or 4 foam core material

Table 202:

RESIN, ADHESIVE, AND POTTING COMPOUND DATA				
RESIN TYPE	**COMPONENTS**	**PARTS BY WEIGHT**	**POT LIFE**	**CURE TIME AND TEMPERATURE**
BMS 5-28, Type 15 (Potting (compound)	Epocast 1615 Part A Epocast 1615 Part B	Refer to the manufacturer's data	10 to 30 minutes	7 days at 77°F (25°C) ±5°F or 5 hours at 125°F (52°C) ±5°F
BMS 5-28, Type 16 (Potting (compound)	Epocast 1616 Part A Epocast 1616 Part B	Refer to the manufacturer's data	20 to 40 minutes	7 days at 77°F (25°C) ±5°F or 5 hours at 125°F (52°C) ±5°F
BMS 5-28, Type 17 (Potting (compound)	Epocast 1617 Part A Epocast 1617 Part B or Magnobond 91 Part A Magnobond 91 Part B	Refer to the manufacturer's data	60 to 90 minutes	7 days at 77°F (25°C) ±5°F or 5 hours at 125°F (52°C) ±5°F
BMS 5-28, Type 18, Class 1 (Potting compound)	FR 7176 Part A FR 7176 Part B or Magnobond 92-1 Part Magnobond 92-1 Part or Epocast 1618 Part A Epocast 1618 Part B	Refer to the manufacturer's data	12 to 25 minutes	7 days at 77°F (25°C) ±5°F or 5 hours at 125°F (52°C) ±5°F
BMS 5-28, Type 19 (Potting (compound)	Epocast 1619 Part A Epocast 1619 Part B	Refer to the manufacturer's data	20 to 40 minutes	7 days at 77°F (25°C) ±5°F or 5 hours at 125°F (52°C) ±5°F
BMS 5-28, Type 20 (Potting (compound)	Epocast 1620 Part A Epocast 1620 Part B or FR 7174 Part A FR 7174 Part B	Refer to the manufacturer's data	20 to 70 minutes	7 days at 77°F (25°C) ±5°F or 5 hours at 125°F (52°C) ±5°F
BMS 8-301, Class 1 (Laminating resin)	EA 9390 Part A - Resin Part B - Hardener	Refer to the manufacturer's data	120 minutes	Refer to Figure 213
BMS 8-301, Class 2 (Laminating resin)	EY 3804 Part A - Resin Part B - Hardener	Refer to the manufacturer's data	45 minutes	Refer to Figure 212
Resin Mix 1	BMS 8-301, Class 1 Mixed with milled glass fibers	Refer to the manufacturer's data for the BMS 8-301	120 minutes	Refer to Figure 213
Resin Mix 2	BMS 8-301, Class 2 Mixed with milled glass fibers	Refer to the manufacturer's data for the BMS 8-301	45 minutes	Refer to Figure 212

M. Keep the resin systems and potting compounds between 40°F (4°C) and 80°F (27°C) in sealed containers.

(1) Identify the material container with a label that contains the data that follows:

(a) Boeing Material Specification (BMS)

(b) Type

(c) Class

(d) Supplier name

(e) Batch number

(f) Date of preparation.

N. The definitions of terms related to these repairs are as follows:

(1) Bond Line: The adhesive that is between two parts after the cure.

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(2) Core: Honeycomb or foam structure that is bonded between two facesheets in a sandwich construction.

(3) Cure Cycle: The temperature, pressure, temperature increase rate and temperature decrease rate that is applied over a length of time to cure the resin, potting compound, or adhesive.

(4) Cure Temperature: The temperature that is applied to the bond assembly during the cure cycle.

(5) Cure Time: The length of time that a part is at the cure temperature and under vacuum.

(6) Damage: A change to a surface that comes from corrosion, erosion, dents, gouges, scratches, punctures and holes.

(7) Delamination: A separation of a facesheet from the core in a sandwich construction.

(8) Edge Delamination: A separation of the parts along an edge.

(9) Facesheet: The outer skin that is bonded to the core in a sandwich construction.

(10) Instrumented NDI: An inspection that uses approved instrumentation to find the type and size of internal defects or flaws in a material.

(11) Nondestructive Inspection (NDI): An inspection procedure that does not cause damage to the part or the structure.

(12) Part Temperature: The actual temperature of the repair part that is measured by a pyrometer (thermocouples or other probe devices) during the cure cycle.

(13) Porosity: A cluster of small voids in the adhesive.

(14) Pot Life: The time that a resin system, potting compound, or adhesive can be applied.

(15) Room Temperature: Ambient temperature conditions. For Engineering functions, this temperature is 68°F (18°C) to 90°F (32°C).

(16) Void: An empty space in a laminate. This is normally associated with resin starved areas.

3. References

Reference	Title
51-00-06	STRUCTURAL REPAIR DEFINITIONS
51-10-02	INSPECTION AND REMOVAL OF DAMAGE
51-30-03	NON-METALLIC MATERIALS
51-30-05, GENERAL	Equipment and Tools For Repairs
51-70-04, REPAIR GENERAL	Repair Procedures for Wet Layup Materials
51-70-05, REPAIR GENERAL	Repair Procedures for Pre-impregnated Materials
51-70-08	RESIN SWEEP-FAIR PROCEDURES
53-10-72, ALLOWABLE DAMAGE 1	Nose Radome
AMM 51-21-71 P/B 701	CONDUCTIVE COATING FOR EXTERNAL SURFACES - CLEANING/ PAINTING
AMM 53-52-00/401	Nose Radome - Removal/Installation
AMM 53-52-00/601	Nose Radome
AMM 53-52-00/701	Nose Radome - Cleaning and Painting
AMM 53-52-03/201	Lightning Diverter Strips - Maintenance Practices
AMM 53-52-31/401	Director Bar - Glide Slope Antenna - Removal/Installation
RTCA /DO-213	Minimum Operational Performance Standards (MOPS) for Nose-Mounted Radomes
SOPM 20-30-03	General Cleaning Procedures
737 NDT Part 1, 51-05-01	Tap Test Inspection of Honeycomb Sandwich Structure

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(Continued)

Reference	Title
737 NDT Part 2, 51-00-01	Water Detection in Honeycomb Structure
737 NDT Part 4, 51-00-05	Bondline Delamination Inspection in Honeycomb Structure
737 NDT Part 6, 53-50-00, Procedure 1	Measurement of the Radome Thickness

4. Make a Decision on the Applicable Repair Option

A. Find the limits of the damage.

(1) Remove the radome from the airplane as given in AMM 53-52-00/401, if necessary.

(2) Remove the lightning diverter strips as given in AMM 53-52-03/201, if necessary.

(3) Remove the glide slope director element as given in AMM 53-52-31/401, if necessary.

WARNING: DO NOT BREATHE THE FUMES OR ALLOW THE SOLVENTS TO TOUCH YOUR SKIN, EYES, OR CLOTHING. MAKE SURE THAT THE AIR SUPPLY TO THE AREA IS NOT BLOCKED. IF YOU DO NOT OBEY, INJURY TO PERSONS CAN OCCUR. DO NOT USE SOLVENTS IN AREAS WITH EQUIPMENT THAT CAN PRODUCE HEAT OR SPARKS. IF YOU DO NOT OBEY, AN EXPLOSION CAN OCCUR.

CAUTION: DO NOT USE CHEMICAL PAINT STRIPPERS TO REMOVE THE PAINT IN THE DAMAGED AREAS. THESE CHEMICALS CAN CAUSE DAMAGE TO THE RESIN SYSTEMS. IF YOU DO NOT OBEY, YOU CAN CAUSE THE REPAIR TO BE UNSATISFACTORY.

(4) Clean the damaged area with a soft cloth moist with methyl isobutyl ketone (MIBK) or acetone. Refer to SOPM 20-30-03 for the general cleaning procedures and 51-30-03 for possible sources of the solvents. Remove all the contamination.

(5) Do a visual inspection of the radome for:

(a) The length, width, and depth of the external damage

(b) The entry of oil, fuel, dirt or other unwanted materials

(c) Damage to the lightning diverter strips and the glide slope director element.

(6) Do an inspection for water as given in 737 NDT Part 2, 51-00-01 or with the use of a moisture meter such as Moisture Meter A8-AF (or the equivalent) as given in AMM 53-52-00/601. You can order the Moisture Meter A8-AF from: Aqua Measure Instrument Company 1712 Earhart Court P.O. Box 369 La Verne, California, USA 91750 (909)-392-5833

(7) Do an inspection for ply-to-ply delaminations and ply-to-core disbond with instrumented NDI equipment as given in 737 NDT Part 4, 51-00-05.

NOTE: If NDI equipment is not available, do a tap test as given in 737 NDT Part 1, 51-05-01.

B. Make a decision on which repair option to use with the flow chart shown in Flow Chart of the Available Repair Options, Figure 201/REPAIR GENERAL and with the data that follows:

NOTE: When you do a time-limited repair, you must inspect the repair at specified intervals and replace the repair with a permanent repair by a specified time. Refer to the numbered repair option for the inspection intervals, inspection procedures, and time limits. Refer to 51-00-06 for the different types of repairs.

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(1) Do the repair given in Repair 1 if there is only water contamination in the radome and the three conditions that follow are true:

NOTE: We recommend that you use Repair 2 or 3 to remove the water contamination. These repairs use repair plies that are the same total thickness as the initial facesheet. Repair 1 is not recommended because it adds thickness to the initial facesheet.

(a) The water contamination is in an area that has a maximum diameter of 20.0 inches (508 mm).

(b) The water contamination is in an area that is 4 inches (101.6 mm) away from other repairs.

(c) There is no visible damage or delamination that is more than what is permitted in Allowable Damage 1.

(2) If there is water contamination that is more than the limits given in Paragraph 4.B.(1)/REPAIR GENERAL, do the steps that follow:

(a) Refer to Flow Chart of the Available Repair Options, Figure 201/REPAIR GENERAL for the repair options that are applicable to damage that is a maximum depth of one facesheet.

(3) If there is damage that is more than the limits given in Allowable Damage 1, do the steps that follow:

(a) Refer to Table 203/REPAIR GENERAL for the repair options that are applicable to damage that is a maximum depth of one facesheet.

(b) Refer to Table 204/REPAIR GENERAL for the repair options that are applicable to damage that is a maximum depth of one facesheet and the core.

(c) Refer to Table 205/REPAIR GENERAL for the repair options that are applicable to damage that is to the two facesheets and the core.

Table 203:

REPAIR OPTIONS FOR DAMAGE TO A MAXIMUM DEPTH OF ONE FACESHEET				
TYPE OF LAYUP MATERIALS	**CURE TEMPERATURE OF THE REPAIR MATERIALS**	**REPAIR OPTION**	**MAXIMUM DIAMETER OF THE DAMAGE CLEANUP (INCHES)**	**REPAIR TYPES AND LIMITS ON THE NUMBER OF REPAIRS**
Preimpreg- nated	250°F (121°C)	REPAIR 2	No limit	Permanent repair. There is no limit on the number of repairs of this type
Wet	Room temperature	REPAIR 3	0 to 15	Time-limited repair. Only one repair of this type is permitted
	150°F (66°C)	REPAIR 4	0 to 4	Permanent repair. There is no limit on the number of repairs of this type
			4 to 30	Permanent repair if only one repair of this type is made. All repairs of this type are time-limited if two or more repairs of this type are made
			30 to 50	Time-limited repair. Only one repair of this type is permitted
	200°F (93°C)	REPAIR 5	No limit	Permanent repair. There is no limit on the number of repairs of this type

NOTE: Note: The dimensions given in the table are measured along the contour of the radome.All repairs must be a minimum of 3.0 inches (76.2 mm) away from other repairs. Refer to SRM 51-00-06 for the definitions of the different types of repairs.

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Table 204:

REPAIR OPTIONS FOR DAMAGE TO A MAXIMUM DEPTH OF ONE FACESHEET AND THE CORE				
TYPE OF LAYUP MATERIALS	**CURE TEMPERATURE OF THE REPAIR MATERIALS**	**REPAIR OPTION**	**MAXIMUM DIAMETER OF THE DAMAGE CLEANUP (INCHES)**	**REPAIR TYPES AND LIMITS ON THE NUMBER OF REPAIRS**
Preimpreg- nated	250°F (121°C)	REPAIR 6	No limit	Permanent repair. There is no limit on the number of repairs of this type
Wet	Room temperature	REPAIR 7	0 to 15	Time-limited repair. Only one repair of this type is permitted
	150°F (66°C)	REPAIR 8	0 to 4	Permanent repair. There is no limit on the number of repairs of this type
			4 to 25	Permanent repair if only one repair of this type is made. All repairs of this type are time-limited if two or more repairs of this type are made
			25 TO 40	Time-limited repair. Only one repair of this type is permitted
	200°F (93°C)	REPAIR 9	No limit	Permanent repair. There is no limit on the number of repairs of this type

NOTE: The dimensions given in the table are measured along the contour of the radome. All repairs must be a minimum of 3.0 inches (76.2 mm) away from other repairs. Refer to SRM 51-00-06 for the definitions of the different types of repairs.

Table 205:

REPAIR OPTIONS FOR DAMAGE TO THE TWO FACESHEETS AND THE CORE				
TYPE OF LAYUP MATERIALS	**CURE TEMPERATURE OF THE REPAIR MATERIALS**	**REPAIR OPTION**	**MAXIMUM DIAMETER OF THE DAMAGE CLEANUP (INCHES)**	**REPAIR TYPES AND LIMITS ON THE NUMBER OF REPAIRS**
Preimpreg- nated	250°F (121°C)	REPAIR 10	No limit	Permanent repair. There is no limit on the number of repairs of this type
Wet	Room temperature	REPAIR 11	0 to 15	Time-limited repair. Three repairs of this type are permitted
	150°F (66°C)	REPAIR 12	0 to 10	Permanent repair if only one repair of this type is made. All repairs of this type are time-limited if two or more repairs of this type are made
			10 to 20	Time-limited repair. Two repairs of this type are permitted
	200°F (93°C)	REPAIR 13	No limit	Permanent repair. There is no limit on the number of repairs of this type

NOTE: The dimensions given in the table are measured along the contour of the radome. All repairs must be a minimum of 3.0 inches (76.2 mm) away from other repairs. Refer to SRM 51-00-06 for the definitions of the different types of repairs.

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NOTES

1 OTHER CONDITIONS:

- THE DAMAGE MUST NOT BE MORE THAN THE LIMITS GIVEN IN ALLOWABLE DAMAGE 1.
- THE EDGE OF THE DAMAGE AREA MUST BE A MINIMUM OF 4.0 INCHES (101.6 mm) FROM OTHER REPAIRS.

2 THIS REPAIR HAS LIMITS ON THE DIMENSION OF THE DAMAGE AND THE NUMBER OF DAMAGE AREAS. REFER TO THE APPLICABLE TABLE AS GIVEN IN PARAGRAPH 4 OR THE NUMBERED REPAIR FOR THE LIMITS.

F87477 S0006588738_V1

Flow Chart of the Available Repair Options
Figure 201 (Sheet 1 of 2)

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F87481 S0006588739_V2

Flow Chart of the Available Repair Options
Figure 201 (Sheet 2 of 2)

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5. **Repair Procedures That Are the Same For the Different Repairs**

A. Remove the damaged area of the facesheets.

WARNING: DO NOT USE EQUIPMENT THAT CAUSES AN ARC OR A SPARK IN AN AREA WHERE THE IGNITION OF THE VAPOR IS POSSIBLE. IF YOU DO NOT OBEY, AN EXPLOSION CAN OCCUR AND CAUSE INJURY. USE A VACUUM TABLE OR A PORTABLE VACUUM WHEN YOU REMOVE THE DAMAGED MATERIAL. DO NOT BREATHE THE DUST. WHEN YOU SAND THE PLY LAYERS, A FINE DUST IS MADE THAT CAN BE HAZARDOUS. THE DUST CAN CAUSE SKIN AND EYE IRRITATION OR RESPIRATORY PROBLEMS.

(1) Tape off the area that is 1.0 inch from the edge of where the largest repair ply will be applied. Refer to the applicable repair figure.

(2) Remove the damaged area of the facesheets in a smooth circular or oval shape with 180-grit or smaller abrasive paper. Be careful not to cause damage to the facesheet and core which are not damaged.

(3) Remove the finish inside the taped off area and make the surfaces rough with 240-grit or smaller abrasive paper. Be careful not to cause damage to the plies that are not damaged.

(4) If the initial core in the damaged area will not be removed, then sand the adhesive:

(a) That is over the honeycomb core cells to open the core cells.

(b) That is on the foam core to open the surface of the core to the air.

(c) Use 240-grit or smaller abrasive paper. It is not necessary to remove the adhesive fillets from the core.

(5) Remove the tape.

B. Remove the damaged area of the core.

(1) You can remove the core with a router. Refer to 51-10-02 for the instructions to use the router and template.

(2) Remove the core to the same dimensions as the hole in the facesheet.

(3) Remove the full depth of the core.

(4) Do not damage the opposite side initial facesheet if it is not damaged.

(5) Do not remove the initial adhesive from the opposite side initial facesheet if the facesheet is not damaged.

C. Make the necessary taper.

(1) Tape off the area that is 1.0 inch (25.4 mm) from the edge of where the largest repair ply will be applied. Refer to the applicable repair figure.

(2) Remove the finish inside the taped off area and make the surfaces rough with 240-grit or smaller abrasive paper. Be careful not to cause damage to the plies that are not damaged.

(3) Make an even taper from the edge of the facesheet where the damage was removed as shown in Taper Sand that is Necessary for the Repair, Figure 202/REPAIR GENERAL.

(a) Use 180-grit sandpaper.

(b) Make the taper as given in the applicable repair option.

(4) Remove the tape.

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CAUTION: YOU MUST REMOVE THE WATER THAT HAS BEEN ABSORBED INTO THE PART BEFORE A REPAIR IS MADE. IF YOU DO NOT OBEY, YOU CAN CAUSE THE REPAIR TO BE UNSATISFACTORY.

D. Remove all of the water and other unwanted material. The area of the damage cleanup must be fully dry.

(1) Remove all the water and other unwanted material that you can with a vacuum or with compressed air that is free from oil.

(2) An option to remove the water more quickly is to use a vacuum bag as shown in Water Removal Procedure, Figure 203/REPAIR GENERAL and as follows:

(a) Put a layer of glass fabric or the equivalent (breather cloth) or a metal mesh screen over the area of the water contamination.

1) Use masking tape to hold the fabric or the screen in position.

2) Make sure the cloth or the screen is large enough to go below the vacuum line and gage. The vacuum line and gage must be located outside of the area of the water contamination.

(b) Put a thermocouple at the center of the area that has the water contamination as shown in Water Removal Procedure, Figure 203/REPAIR GENERAL.

1) If the glass fabric breather cloth is used, put the thermocouple below the cloth.

2) If you use the metal mesh screen, put the thermocouple above the screen.

(c) Put a heat blanket on the surface of the facesheet that is not damaged or at the alternative location shown in Water Removal Procedure, Figure 203/REPAIR GENERAL.

(d) Put a thermocouple adjacent to the heat blanket (on the facesheet side), at the center of the area that has the water contamination.

(e) Put the bases for the vacuum line and the vacuum gage into position. Make sure they touch the breather cloth (or metal screen) but do not go over the area that has the water contamination.

(f) Apply the vacuum sealing compound to the damaged facesheet around the layup.

(g) Seal the location with the vacuum bag material.

(h) Install the vacuum line and the vacuum gage through the vacuum bag material and into the bases.

NOTE: Use a desiccant indicator in the vacuum line to verify that the water removal is complete.

(i) Apply a minimum vacuum of 22 inches mercury.

(3) Increase the temperature at a rate between 1°F and 5°F (0.5°C and 3°C) for each minute until the temperature is between 150°F (65°C) and 170°F (76°C).

(4) Hold the temperature between 150°F (65°C) and 170°F (76°C) for a minimum of 1 hour.

(5) Decrease the temperature at a maximum rate of 5°F (3°C) for each minute.

(6) Do Step (3) again if there still is water in the damage area.

NOTE: If the water cannot be removed, the material that has the contamination must be removed.

E. Clean the repair area or repair core.

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WARNING: DO NOT BREATHE THE FUMES OR ALLOW THE SOLVENTS TO TOUCH YOUR SKIN, EYES, OR CLOTHING. MAKE SURE THAT THE AIR SUPPLY TO THE AREA IS NOT BLOCKED. IF YOU DO NOT OBEY, YOU CAN CAUSE SKIN IRRITATION OR INJURY. DO NOT USE SOLVENTS IN AREAS WITH EQUIPMENT THAT CAN PRODUCE HEAT OR SPARKS. IF YOU DO NOT OBEY, AN EXPLOSION CAN OCCUR.

CAUTION: DO NOT SOAK THE PARTS IN TRICHLOROETHANE SOLVENT. DO NOT LET THE SOLVENT STAY ON THE PARTS FOR MORE THAN 60 SECONDS. IF YOU DO NOT OBEY, YOU CAN CAUSE DAMAGE TO THE PARTS.

(1) Clean the repair area of the honeycomb structure with a soft cloth moist with MIBK or acetone. Refer to SOPM 20-30-03 for the general cleaning procedures and 51-30-03 for possible sources of the solvents.

(a) Clean the repair area of the honeycomb core only as follows:

1) Clean the surface again until a new moist cloth is clean after it is used.

2) Remove the solvent from the surface before it can dry.

3) Remove the remaining solvent film before you continue the repair.

(b) Clean the repair area of the foam core as follows:

1) Lightly sand the foam core and remove the unwanted material with clean compressed air.

F. Make the repair parts.

(1) Find which repair option from Flow Chart of the Available Repair Options, Figure 201/REPAIR GENERAL is necessary for the type and size of damage that was found. Refer to the specified repair option for the type of repair parts that are necessary.

WARNING: DO NOT USE EQUIPMENT THAT CAUSES AN ARC OR A SPARK IN AN AREA WHERE THE IGNITION OF THE FUMES IS POSSIBLE. IF YOU DO NOT OBEY, AN EXPLOSION CAN OCCUR AND CAUSE INJURIES.

CAUTION: DO NOT TOUCH THE ADHESIVE FILM, FOAMING ADHESIVE, OR PREIMPREGNATED MATERIALS WITH YOUR BARE HANDS OR OTHER PARTS OF YOUR BODY. USE CLEAN LINT-FREE GLOVES WHEN YOU TOUCH THESE MATERIALS. THESE MATERIALS MUST HAVE NO CONTAMINATION. DO NOT FOLD, PULL, OR MAKE THE ADHESIVE FILM THIN. MAKE SURE THAT YOU REMOVE THE SEPARATOR SHEET FROM THE ADHESIVES AND PREIMPREGNATED MATERIALS BEFORE INSTALLATION. KEEP ALL THE SEPARATOR SHEETS UNTIL THE LAYUP IS COMPLETE. COUNT THE SHEETS TO MAKE SURE THAT ONE WAS NOT INCLUDED IN THE LAYUP. IF YOU DO NOT OBEY, THE REPAIR WILL BE UNSATISFACTORY.

(2) If wet layup repair plies are necessary, do as follows:

(a) Make the repair plies from BMS 9-3, Type H-2 or H-3 glass fiber fabric. Refer to Table 201/REPAIR GENERAL.

(b) Impregnate the BMS 9-3 repair plies with BMS 8-301 resin as given in Paragraph 5.I./REPAIR GENERAL

(3) If preimpregnated repair plies are necessary, do as follows:

(a) Make the repair plies from BMS 8-79, Style 1581 or Style 7781 glass fiber fabric. Refer to Table 201/REPAIR GENERAL.

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(4) If a repair core is necessary, do as follows:

(a) Make the repair core from the same material as the initial core.

1) Refer to the radome identification section or the engineering drawings to find the initial core material.

(b) Cut the repair core to have the same perimeter dimension as the core you removed. Refer to 51-10-02 for the instructions to use the router and template.

NOTE: A maximum clearance of 0.125 inch (3.18 mm) is permitted between the repair core and the core hole for honeycomb structure.

(c) Cut the repair core to the thickness necessary to be a small distance higher than the outer surface of the initial facesheet.

1) If the repair is in a highly contoured area of a radome made of foam core, you must do one of the two steps that follows:

a) Order preformed core from: The Nordam Group 5101 Blue Mound Road Fort Worth, TX 76106

b) Make the contour of the foam core the same as the contour of the repair area on the nose radome.

- Vacuum bag the core to an area on the radome or use another radome for the correct contour.
- Apply heat with a heat gun or heat lamp at a temperature of 225°F ±5°F for 20 ±5 minutes.
- After you apply the heat, keep the vacuum in place until the temperature is below 140°F.
- Remove the vacuum.

(d) Clean the repair core.

1) Soak a honeycomb repair core in isopropyl alcohol (IPA), MIBK, or acetone for a maximum of 60 seconds.

NOTE: If the core still is not clean, you can soak it again up to three more times for a maximum of 60 seconds each.

2) Wipe foam repair core with isopropyl alcohol (IPA) or MIBK.

G. Make a plaster support.

(1) The plaster support gives the repair the same contour as the initial contour of the radome.

(2) Use a plaster support if you:

(a) Make a large repair

(b) Make a repair to the two facesheets.

(3) Make the plaster support have the same contour as side of the radome you repair first. We recommend that you repair the internal side of the radome first.

(4) Make the plaster support with the steps that follow:

(a) Fill the hole made by the damage removal with a wooden block.

NOTE: You can also make the plaster support from the same area of an undamaged radome.

(b) Apply parting film over the repair area on the facesheet that you use to make the plaster support.

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(c) Build a barrier around the repair area to give the plaster a minimum thickness of 1.0 inch (25.4 mm).

(d) Pour a mixture of plaster and water into the barrier.

(e) When the plaster becomes hard:

1) Remove the radome from the plaster support

2) Let the plaster dry in a circulating air oven at 120°F (49°C) for approximately 24 hours.

(5) Apply a mold release coating to the plaster support before you apply the repair materials.

(6) When you do a repair, you can hold the plaster support in position with the vacuum bag, clamps, or tape.

CAUTION: DO NOT TOUCH THE RESIN MATERIALS WITH YOUR BARE HANDS. USE CLEAN RUBBER GLOVES WHEN YOU USE THESE MATERIALS. KEEP THE MATERIALS FREE FROM CONTAMINATION. IF YOU DO NOT OBEY, YOU CAN CAUSE THE REPAIR TO BE UNSATISFACTORY.

H. Install the repair core.

NOTE: Make sure that the core repair plug has a tight interference fit in the core hole after you apply the adhesive or potting compound.

(1) Install the repair core with the steps that follow if you use preimpregnated layup materials:

(a) Cut pieces of BMS 5-129 film adhesive as necessary to make one layer around the repair core.

1) As an alternative, you can use BMS 5-28, Type 15, 16, 17, 18, 19, or 20 potting compound. Apply it to the sides of the initial core edges that will touch when the repair core is installed. Refer to Table 202/REPAIR GENERAL.

(b) Remove the separator sheet from one side of the adhesive.

(c) Wind the adhesive around the repair core.

(d) Remove the separator sheet from the second side of the adhesive.

(e) If the repair core is a honeycomb structure, align the core ribbon direction with that of the initial core.

(f) Carefully put the repair core into the core hole.

(2) Install the repair core with the steps that follow if you use wet layup materials:

(a) Apply a layer of BMS 5-28, Type 15, 16, 17, 18, 19, or 20 potting compound on the sides of the initial core edges that will touch when the repair core is installed. Refer to Table 202/REPAIR GENERAL.

1) As an alternative, you can use a layer of BMS 8-301 resin.

(b) If the repair core is a honeycomb structure, align the ribbon direction with that of the initial core.

(c) Carefully compress the repair core and put it into the core hole.

I. Do the vacuum bag procedure or the alternate procedure to impregnate the BMS 9-3 repair plies with BMS 8-301, Class 1 or 2 laminating resin.

(1) To impregnate the BMS 9-3 repair plies with the vacuum bag procedure, refer to Vacuum Bag Procedure to Impregnate the BMS 9-3 Repair Plies with BMS 8-301 Resin, Figure 204/REPAIR GENERAL and do the steps that follow.

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(a) Cut two pieces of vacuum bag material. Make the bag material a minimum of 6 inches (152.4 mm) larger than the fabric that will be impregnated.

(b) Cut one piece of breather cloth that is two inches (50.8 mm) smaller than the vacuum bag material.

(c) Cut two pieces of solid parting film. Make them a minimum of 3 inches (76.2 mm) larger than the fabric.

1) Put one piece of vacuum bag material on a smooth surface. Hold the vacuum bag material in position with tape.

2) Apply vacuum sealing compound to the edge of the vacuum bag material.

3) Place the second piece of vacuum bag material over the first and seal one edge.

4) Install a vacuum probe and gage.

(d) Put one piece of the solid parting film on the first piece of vacuum bag material.

(e) Weigh the fabric to be impregnated. Multiply the weight by 1.3. The result gives you the laminating resin necessary to impregnate the fabric.

(f) Mix the BMS 8-301 laminating resin as given in Table 202/REPAIR GENERAL. Weigh the laminating resin to find the correct amount necessary to impregnate the fabric.

NOTE: The resin-to-fiber content will be approximately 1 to 1 by weight after the parting film is separated.

(g) Put the fabric over the parting film. Make sure the fabric is smooth.

(h) Put the resin in the center of the fabric.

(i) Put the second piece of solid parting film above the fabric. Make sure the parting film is smooth.

(j) Put the breather cloth over the parting film.

(k) Seal the vacuum bag.

(l) Apply full vacuum to the vacuum bag.

(m) Sweep the resin from the center to the edge of the fabric. Make the resin and the fabric smooth. Keep all of the resin in the fabric.

(n) Release the vacuum from the vacuum bag.

(o) Remove the vacuum bag.

(p) Cut the repair plies. Do not remove the solid parting film.

(2) To impregnate the BMS 9-3 repair plies with the alternate procedure, refer to Alternate Procedure to Impregnate the BMS 9-3 Repair Plies with BMS 8-301 Resin, Figure 205/REPAIR GENERAL and do the steps that follow.

(a) Cut two pieces of solid parting film. Make them 3 inches (76.2 mm) larger than the fabric.

(b) Put one piece of solid parting film on a smooth surface. Hold it in position with tape.

(c) Weigh the fabric to be impregnated. Multiply the weight by 1.3. The result gives you the laminating resin necessary to impregnate the fabric.

NOTE: The resin-to-fiber content will be approximately 1 to 1 by weight after the parting film is separated.

(d) Mix the BMS 8-301 laminating resin as given in Table 202/REPAIR GENERAL. Weigh the laminating resin to find the correct amount necessary to impregnate the fabric.

(e) Put half of the resin in the center of the solid parting film.

(f) Put the fabric above the solid parting film and the laminating resin.

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(g) Put the laminating resin that remains over the fabric in the center.

(h) Put the second piece of solid parting film above the fabric. Make sure that the parting film is smooth.

(i) Sweep the resin from the center to the edge of the fabric. Make the resin and the fabric smooth. Keep all of the resin in the fabric.

(j) Cut the repair plies. Do not remove the solid parting film at this time.

J. Apply the repair plies or film adhesive.

CAUTION: MAKE SURE THAT YOU DO THIS PROCEDURE IN A CLEAN AREA. DO NOT PERMIT THE CONTAMINATION OF THE REPAIR PARTS. IF YOU DO NOT OBEY, YOU CAN CAUSE AN UNSATISFACTORY REPAIR. REMOVE THE PARTING FILM FROM THE IMPREGNATED MATERIALS OR ADHESIVE BEFORE YOU LAY UP AND CURE THE REPAIR. IF YOU DO NOT OBEY, THE REPAIR WILL BE UNSATISFACTORY.

(1) Remove the first piece of parting film.

(2) Put the ply on the repair. Make the ply smooth and free from wrinkles.

(3) Remove the second piece of parting film.

(4) Do steps (1) through (3) for each repair ply or layer of adhesive.

K. Assemble the vacuum bag system that will be used to cure the repair.

(1) Do steps (a) through (g) that follow if you will cure the repair at room temperature or at a temperature that is higher than room temperature with an oven, heat lamps or autoclave.

NOTE: Room temperature is between 68° to 90°F (20° to 32°C).

(a) Refer to Vacuum Bag Instructions for the Cure of the Honeycomb Repair Core with an Oven Heat Lamp, or Autoclave, Figure 206/REPAIR GENERAL for the vacuum bag system to use when you cure the repair core separately. Refer to Vacuum Bag Instructions for the Cure of the Repair Plies with an Oven, Heat Lamp, or Autoclave, Figure 207/REPAIR GENERAL for the vacuum bag system to use when you cure the repair plies.

(b) Put a layer of perforated parting film above the repair area that is a minimum of 1.0 inch (25.4 mm) larger all around than the repair area.

(c) If you cure the repair at a temperature that is higher than room temperature, put the thermocouples at the locations shown in Vacuum Bag Instructions for the Cure of the Honeycomb Repair Core with an Oven Heat Lamp, or Autoclave, Figure 206/REPAIR GENERAL and Vacuum Bag Instructions for the Cure of the Repair Plies with an Oven, Heat Lamp, or Autoclave, Figure 207/REPAIR GENERAL. Connect the thermocouples to the applicable recorders.

(d) Put a layer of dry peel ply or glass fabric cloth (BMS 9-3, Types D, H-2, or H-3 or the equivalent) above the perforated parting film. This will be the surface bleeder.

(e) Put a layer of solid parting film over the surface bleeder that is 0.5 inch (12.7 mm) less all around than the surface bleeder.

(f) Put one layer of glass fabric cloth (BMS 9-3, Types D, H-2, or H-3, Classes 8, 9, 10, 11, 12, or 13 or the equivalent) that is the same size as the surface bleeder above the repair area. This will be the breather cloth.

NOTE: Make sure the breather cloth touches the surface bleeder when you put the layup together.

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(g) Seal the repair with the vacuum bag material.

1) Put the bases for the vacuum line and the vacuum gage into position.

2) If necessary, apply the vacuum sealing compound around the layup.

3) Cut slits in the vacuum bag at the locations where the vacuum line and vacuum gage will be attached to the bases.

4) Install the vacuum line and the vacuum gage through the vacuum bag material and into the bases.

(2) Do steps (a) through (i) that follow if you will cure the repair at a temperature that is higher than room temperature with a heat blanket.

NOTE: Room temperature is between 68° to 90°F (20° to 32°C).

(a) Refer to Vacuum Bag Instructions for the Cure of the Honeycomb Repair Core with a Heat Blanket, Figure 208/REPAIR GENERAL for the vacuum bag system to use when you cure the repair core separately. Refer to Vacuum Bag Instructions for the Cure of the Repair Plies with a Heat Blanket, Figure 209/REPAIR GENERAL for the vacuum bag system to use when you cure the repair plies.

(b) Put a layer of perforated parting film above the repair area that is a minimum of 1.0 inch (25.4 mm) larger all around than the repair area.

(c) Put the thermocouples at the locations shown in Vacuum Bag Instructions for the Cure of the Honeycomb Repair Core with a Heat Blanket, Figure 208/REPAIR GENERAL and Vacuum Bag Instructions for the Cure of the Repair Plies with a Heat Blanket, Figure 209/REPAIR GENERAL. Connect the thermocouples to the applicable recorders

(d) Put a layer of dry peel ply or glass fabric cloth (BMS 9-3, Types D, H-2, or H-3 or the equivalent) above the perforated parting film. This will be the surface bleeder. The surface bleeder should be a minimum of 2.0 inches larger all around than the heat blanket.

(e) Put a layer of solid parting film over the surface bleeder that is 0.5 inch (12.7 mm) less all around than the surface bleeder.

(f) Put a heat blanket above the solid parting film that is a minimum of 2.0 inches (50.8 mm) larger all around than the largest repair ply.

CAUTION: IT IS RECOMMENDED THAT YOU USE A MINIMUM OF ONE THERMOCOUPLE ON THE SIDE OF THE HEAT BLANKET THAT IS NEAREST TO THE REPAIR AREA. HEAT BLANKETS SOMETIMES BECOME DEFECTIVE AND CAN HEAT UP TOO QUICKLY OR GET TOO HOT. THE RESULT CAN BE AN UNSATISFACTORY REPAIR.

(g) Put one to four thermocouples on the side of the heat blanket that is nearest to the repair area.

(h) Put four to six layers of glass fabric cloth (BMS 9-3, Types D, H-2, or H-3 or the equivalent) that are the same size as the surface bleeder above the repair area. These will be the breather cloths.

(i) Seal the repair with the vacuum bag material.

1) Put the bases for the vacuum line and the vacuum gage into position.

2) If necessary, apply the vacuum sealing compound around the layup.

3) Cut slits in the vacuum bag at the locations where the vacuum line and vacuum gage will be attached to the bases.

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4) Install the vacuum line and the vacuum gage through the vacuum bag material and into the bases.

L. Do a check of the vacuum bag for leaks.

NOTE: A vacuum bag which has a leak can cause porosity in the repair and bond failure.

(1) Apply a minimum vacuum of 22 inches of mercury.

(2) Remove the vacuum source.

(3) Monitor the vacuum gage. After 5 minutes, the total difference in vacuum must be less than 5 inches of mercury.

M. Apply the vacuum pressure for the cure.

(1) Apply and keep a vacuum to a minimum of 22 inches of mercury in the vacuum bag during the cure of the repair.

N. Cure the potting compound.

(1) Cure the potting compound for 5 hours at 120° to 130°F (49° to 54°C) as shown in Cure Cycle for the BMS 5-28, Type 15,16,17,18,19, and 20 Potting Compound, Figure 210/REPAIR GENERAL.

(a) The potting compound must remain at room temperature for a minimum of 1 hour before you apply the temperature.

NOTE: Room temperature is between 68° to 90°F (20° to 32°C).

(2) As an alternative, you can cure the potting compound 7 days (168 hours) at 72° to 82°F (22° to 28°C).

O. Cure the repair fabric.

CAUTION: CURE THE REPAIR AT THE TEMPERATURE GIVEN BY THE REPAIR OPTIONS. IF YOU DO NOT OBEY, THE REPAIR CAN BE UNSATISFACTORY.

(1) Cure the repair at room temperature.

NOTE: Room temperature is between 68° to 90°F (20° to 32°C).

(a) If there is no potting compound in the repair that is not cured, cure the repair fabric at room temperature for 5 days (120 hours).

(b) If there is potting compound in the repair that is not cured, then cure the repair at 72° to 82°F (22° to 28°C) for 7 days (168 hours).

(2) If you cure the repair fabric at a temperature that is higher than room temperature, do the steps that follow:

NOTE: Room temperature is between 68° to 90°F (20° to 32°C).

(a) Apply the temperature with a heat lamp, oven, heat blanket or autoclave.

1) Refer to Distance and Temperature Data for the Cure of the Repair with a Heat Lamp, Figure 211/REPAIR GENERAL for distance to put a 250 watt heat lamp from the surface of the repair.

2) Monitor the temperature with the thermocouples. Make sure that the temperature does not increase at a rate more than 8°F (4.4°C) for each minute.

(b) For wet layup materials cured 150°F (66°C), refer to Cure Cycles for BMS 8-301, Class 2 Laminating Resin, Figure 212/REPAIR GENERAL for the cure time and temperature.

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(c) For wet layup materials cured at 200°F (93°C), refer to Cure Cycles for BMS 8-301, Class 1 Laminating Resin, Figure 213/REPAIR GENERAL for the cure time and temperature.

(d) For preimpregnated layup materials cured at 250°F (121°C), refer to Cure Cycles for BMS 8-79 Preimpregnated Layup Materials, Figure 214/REPAIR GENERAL for the cure time and temperature.

P. Put the radome back to the initial condition.

(1) Seal the fibers that may be open to the air as given in 51-70-08. This includes the areas on the inner facesheet if the Tedlar moisture barrier was removed.

(2) Measure the thickness of the radome before the finish is applied, as given in 737 NDT Part 6, 53-50-00, Procedure 1.

(3) Apply the finish to the exterior surface. Refer to AMM 53-52-00/701.

(4) Measure the thickness of the radome again after the finish has been applied as given in 737 NDT Part 6, 53-50-00, Procedure 1.

(5) Make sure the thickness of the finish that was applied is not more than what is given in AMM 53-52-00/701.

(a) Subtract the thickness that was measured before the finish was applied from the thickness that was measured after the finish was applied.

(6) If the thickness of the finish is more than what is given in AMM 53-52-00/701, do one of the steps that follow:

(a) Remove the finish and do the Steps 5.P.(2) through 5.P.(5) again.

(b) Do a test for electrical transmission efficiency to see if it is satisfactory. If it is not satisfactory, remove the finish and do the Steps 5.P.(2) through 5.P.(5) again.

(7) Install the glide slope director element as given in AMM 53-52-31/401, if it was removed.

(8) Install the lightning diverter strips as given in AMM 53-52-03/201, if they were removed.

(9) Make a record of the type and location of the damage that occurred and the repair that was made.

(10) Install the radome as given in AMM 53-52-00/401, if it was removed.

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CIRCULAR SHAPE IS SHOWN, OVAL SHAPES ARE ALSO PERMITTED

SECTION THROUGH THE CENTER OF THE REPAIR

NOTES

- REFER TO THE APPLICABLE REPAIR OPTION FOR THE NECESSARY TAPER.
- THE HONEYCOMB CORE IS SHOWN. THIS REPAIR IS ALSO APPLICABLE TO NOSE RADOME STRUCTURE WITH FOAM CORE.

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Taper Sand that is Necessary for the Repair
Figure 202

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NOTES

- THE HONEYCOMB CORE IS SHOWN. THIS REPAIR IS ALSO APPLICABLE TO NOSE RADOME STRUCTURE WITH FOAM CORE.

1 THE VACUUM PROBE AND GAGE MUST TOUCH THE SURFACE OF THE BREATHER PLY OR METAL MESH SCREEN.

F86751 S0006588741_V1

Water Removal Procedure
Figure 203

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F87484 S0006588742_V1

Vacuum Bag Procedure to Impregnate the BMS 9-3 Repair Plies with BMS 8-301 Resin
Figure 204 (Sheet 1 of 2)

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SECTION THROUGH THE LAYUP

F87485 S0006588743_V1

Vacuum Bag Procedure to Impregnate the BMS 9-3 Repair Plies with BMS 8-301 Resin
Figure 204 (Sheet 2 of 2)

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F87486 S0006588744_V1

Alternate Procedure to Impregnate the BMS 9-3 Repair Plies with BMS 8-301 Resin
Figure 205 (Sheet 1 of 2)

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SECTION THROUGH THE LAYUP FOR CORE REPLACEMENT

F87487 S0006588745_V1

Alternate Procedure to Impregnate the BMS 9-3 Repair Plies with BMS 8-301 Resin
Figure 205 (Sheet 2 of 2)

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NOTES

- THE HONEYCOMB CORE IS SHOWN. THIS REPAIR IS ALSO APPLICABLE TO NOSE RADOME STRUCTURE WITH FOAM CORE.

1 THE VACUUM PROBE AND GAGE MUST TOUCH THE SURFACE OF THE BREATHER PLY.

F86803 S0006588746_V1

Vacuum Bag Instructions for the Cure of the Honeycomb Repair Core with an Oven Heat Lamp, or Autoclave
Figure 206 (Sheet 1 of 2)

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SECTION THRU THE VACUUM BAG SYSTEM

F86928 S0006588747_V1

Vacuum Bag Instructions for the Cure of the Honeycomb Repair Core with an Oven Heat Lamp, or Autoclave
Figure 206 (Sheet 2 of 2)

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NOTES

- THE HONEYCOMB CORE IS SHOWN. THIS REPAIR IS ALSO APPLICABLE TO NOSE RADOME STRUCTURE WITH FOAM CORE.

1 THE VACUUM PROBE AND GAGE MUST TOUCH THE SURFACE OF THE BREATHER PLY.

F86935 S0006588748_V1

Vacuum Bag Instructions for the Cure of the Repair Plies with an Oven, Heat Lamp, or Autoclave
Figure 207 (Sheet 1 of 2)

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SECTION THRU THE VACUUM BAG SYSTEM

F86944 S0006588749_V1

Vacuum Bag Instructions for the Cure of the Repair Plies with an Oven, Heat Lamp, or Autoclave
Figure 207 (Sheet 2 of 2)

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NOTES

- THE HONEYCOMB CORE IS SHOWN. THIS REPAIR IS ALSO APPLICABLE TO NOSE RADOME STRUCTURE WITH FOAM CORE.

1 THE VACUUM PROBE AND GAGE MUST TOUCH THE SURFACE OF THE BREATHER PLY.

F86969 S0006588750_V1

Vacuum Bag Instructions for the Cure of the Honeycomb Repair Core with a Heat Blanket
Figure 208 (Sheet 1 of 2)

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SECTION THRU THE VACUUM BAG SYSTEM

F86972 S0006588751_V1

Vacuum Bag Instructions for the Cure of the Honeycomb Repair Core with a Heat Blanket
Figure 208 (Sheet 2 of 2)

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NOTES

- THE HONEYCOMB CORE IS SHOWN. THIS REPAIR IS ALSO APPLICABLE TO NOSE RADOME STRUCTURE WITH FOAM CORE.

1 THE VACUUM PROBE AND GAGE MUST TOUCH THE SURFACE OF THE BREATHER PLY.

F86921 S0006588752_V1

Vacuum Bag Instructions for the Cure of the Repair Plies with a Heat Blanket
Figure 209 (Sheet 1 of 2)

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SECTION THRU THE VACUUM BAG SYSTEM

F86975 S0006588753_V1

Vacuum Bag Instructions for the Cure of the Repair Plies with a Heat Blanket
Figure 209 (Sheet 2 of 2)

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NOTES

1 ROOM TEMPERATURE IS BETWEEN 68° TO 90° F (20° TO 32° C)

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Cure Cycle for the BMS 5-28, Type 15,16,17,18,19, and 20 Potting Compound
Figure 210

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HEAT LAMP
TEMPERATURE CURE 1

NOTES

- USE THERMOCOUPLES TO MONITOR THE TEMPERATURE.

1 THE DISTANCE IN INCHES OF A 250 WATT HEAT LAMP FROM THE SURFACE OF THE REPAIR VS THE TEMPERATURE AT THE SURFACE OF THE REPAIR.

F87489 S0006588755_V1

Distance and Temperature Data for the Cure of the Repair with a Heat Lamp
Figure 211

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150 °F (66 °C) AUTOCLAVE OR OVEN CURE CYCLE

NOTES

- FOR THE OVEN, HEAT LAMP, OR HEAT BLANKET CURE, KEEP A MINIMUM VACUUM OF 22 INCHES OF MERCURY DURING THE FULL CURE CYCLE.

F87491 S0006588756_V2

Cure Cycles for BMS 8-301, Class 2 Laminating Resin
Figure 212 (Sheet 1 of 2)

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150 °F (66 °C) HEAT LAMP OR HEAT BLANKET CURE CYCLE

F87494 S0006588757_V2

Cure Cycles for BMS 8-301, Class 2 Laminating Resin
Figure 212 (Sheet 2 of 2)

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200 °F (93 °C) AUTOCLAVE OR OVEN CURE CYCLE

NOTES

- FOR THE OVEN, HEAT LAMP, OR HEAT BLANKET CURE, KEEP A MINIMUM OF 22 INCHES OF MERCURY DURING THE FULL CURE CYCLE.

F87496 S0006588758_V2

Cure Cycles for BMS 8-301, Class 1 Laminating Resin
Figure 213 (Sheet 1 of 2)

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200 °F (93 °C) HEAT LAMP OR HEAT BLANKET CURE CYCLE

F87497 S0006588759_V2

Cure Cycles for BMS 8-301, Class 1 Laminating Resin
Figure 213 (Sheet 2 of 2)

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250 °F (121 °C) AUTOCLAVE OR OVEN CURE CYCLE

NOTES

- FOR THE OVEN HEAT LAMP, OR HEAT BLANKET CURE, KEEP A MINIMUM VACUUM OF 22 INCHES OF MERCURY DURING THE FULL CURE CYCLE.

F87499 S0006588760_V1

Cure Cycles for BMS 8-79 Preimpregnated Layup Materials
Figure 214 (Sheet 1 of 2)

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250 °F (121 °C) HEAT LAMP OR HEAT BLANKET CURE CYCLE

F87500 S0006588761_V1

Cure Cycles for BMS 8-79 Preimpregnated Layup Materials
Figure 214 (Sheet 2 of 2)

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REPAIR 1 - REPAIR FOR WATER CONTAMINATION - WET AND PREIMPREGNATED LAYUP MATERIALS

1. Applicability

A. Repair 1 is applicable to water contamination in nose radomes made of honeycomb core structure or foam core structure that is:

(1) In an area that has no visible damage or delaminations that are more than the allowable damage limits

(2) In an area that is a maximum diameter of 20.0 inches (508.0 mm)

(3) In an area that is 4 inches (101.6 mm) or more away from other repairs

(4) In the core areas of the radome.

B. Repair 1 gives the instructions to drill holes into the inner facesheet of the radome to remove water contamination from an area.

(1) After the water is removed, a repair ply that is 1 inch (25.4 mm) larger all around than the contamination area is added.

(2) This repair ply makes the facesheet in the repair area thicker than the initial facesheet. The added thickness causes a decrease in the electrical transmission efficiency of the radome.

C. Repairs 2, 3, 4, and 5 are recommended alternatives to Repair 1.

(1) Repairs 2, 3, 4, and 5 permit you to remove a facesheet in the area that has water contamination. After you remove the water, the facesheet is repaired without the added thickness necessary in Repair 1.

D. The total maximum area of the added repair ply or plies that is permitted on the radome is 380 inches^2 (2451.6 cm^2)

(1) A test for electrical transmission efficiency is necessary if the total area of the repair ply is more than 21.2 inches^2 (136.7 cm^2). Refer to Repair General, Paragraph 2

(2) A test for electrical transmission efficiency is not necessary if the total area of the repair ply is less than or equal to 21.2 inches^2 (136.7 cm^2).

(3) The area of the repair ply that is under a lightning diverter strip can be removed from the total area calculation.

2. General

A. Before you do Repair 1, refer to Paragraph 4./REPAIR GENERAL to:

(1) Find the limits of the damage

(2) Make a decision on the applicable repair option.

B. The repair materials that are necessary for this repair are given in Table 201/REPAIR 1.

(1) You can use wet layup materials or preimpregnated layup materials to repair the nose radome. The two types of repair materials are equally satisfactory.

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Table 201:

NOSE RADOME REPAIR MATERIALS		
MATERIAL DESCRIPTION	**BOEING SPECIFICATION**	**USE IN THE REPAIR**
REPAIR FABRIC	BMS 9-3, Type H-2 or H-3,	Repair with wet layup materials
LAMINATING RESIN	BMS 8-301, Class 1 or Class 2	
REPAIR FABRIC	BMS 8-79, Style 1581 or Style 7781	Repair with preimpregnated layup materials
ADHESIVE FILM	BMS 5-129, Type 2, Grade 5 (As an alternative, you can use BMS 5-129, Type 4 Grade 5)	
POTTING COMPOUND	BMS 5-28, Type 18, 19, or 20	Repair at a location where the lightning diverter is attached. These materials are used with the wet layup or preimpregnated layup repair materials
NUT	BACN10YR3CD	
WASHER	NAS1149E0363P(NAS1149D0363J as alternative)	
SCREW	NAS514P-8P	

3. **Repair Instructions**

A. Put masking tape on the inner facesheet. Put the tape a minimum of 2 inches (50.8 mm) larger all around than the edges of the area that has water contamination.

B. Remove the Tedlar moisture barrier from the inner facesheet in the area that has water contamination plus 1 inch (25.4 mm) more all around.

(1) Use 240-grit or smaller Scotch-Brite abrasive.

(2) Do not damage to the fibers of the inner facesheet.

C. Drill a 1/16 inch diameter hole approximately in the center of each core cell that contains water contamination.

NOTE: Use care when you drill the hole. Do not cause damage to the outer facesheet or the core.

(1) Refer to Removal of the Water Contamination, Figure 201/REPAIR 1, Detail A for an example of water contamination that is not at a lightning diverter strip attach location.

(2) Refer to Removal of the Water Contamination, Figure 201/REPAIR 1, Detail B for an example of water contamination that is at a lightning diverter strip attach location.

D. Remove all the water or other unwanted materials as given in Paragraph 5.D./REPAIR GENERAL

E. Clean the repair area as given in Paragraph 5.E./REPAIR GENERAL

F. If the repair is at a location where the lightning diverter is attached, fill the insert hole with BMS 5-28, Type 18, 19, or 20 potting compound.

(1) Prepare the potting compound as given in Repair General, Table 202 .

(2) Fill the hole until the level of the potting compound is higher than the outer surface of the facesheet.

(3) Cure the potting compound as given in Paragraph 5.N./REPAIR GENERAL

(4) Sand the surface of the potting compound until it is smooth with the outer surface of the facesheet.

(5) Clean the repair area as given in Paragraph 5.E./REPAIR GENERAL

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G. Prepare and apply the repair ply.

(1) If you use preimpregnated layup materials, do the steps that follow:

(a) Refer to Table 201/REPAIR 1 for the repair materials.

(b) Refer to Layout of the Repair - Wet Layup Materials, Figure 202/REPAIR 1 for the layout of the repair parts.

(c) Cut one ply of repair fabric and film adhesive to the necessary shape and size.

(d) Apply the film adhesive and repair plies as given in Paragraph 5.J./REPAIR GENERAL

(2) If you use wet layup materials, do the steps that follow:

(a) Refer to Table 201/REPAIR 1 for the repair materials.

(b) Refer to Layout of the Repair - Preimpregnated Layup Materials, Figure 203/REPAIR 1 for the layout of the repair parts.

(c) Cut one ply of repair fabric to the necessary shape and size. Refer to Table 201/REPAIR 1 for the repair materials.

(d) Impregnate the repair ply with BMS 8-301 resin as given in Paragraph 5.I./REPAIR GENERAL

1) Use BMS 8-301, Class 2 laminating resin if you cure the repair fabric at room temperature or at 150°F (66°C).

2) Use BMS 8-301, Class 1 laminating resin if you cure the repair fabric at 200°F (93°C).

(e) Apply the repair plies as given in Paragraph 5.J./REPAIR GENERAL

H. Assemble the vacuum bag system as Paragraph 5.K./REPAIR GENERAL

I. Do a check of the vacuum bag for leaks as Paragraph 5.L./REPAIR GENERAL

J. Apply the pressure to the layup as given in Paragraph 5.M./REPAIR GENERAL

K. Cure the repair as given in Paragraph 5./REPAIR GENERAL0.

L. If necessary, install the lightning diverter strip as shown in Installation of the Attachment Parts for the Repair at a Lightning Diverter Strip, Figure 204/REPAIR 1.

M. Apply the finish to the repair area and put the radome back to the initial condition as given in Paragraph 5.P./REPAIR GENERAL

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WATER CONTAMINATION THAT IS NOT AT A
LIGHTNING DIVERTER STRIP ATTACH LOCATION

A

A–A

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Removal of the Water Contamination
Figure 201 (Sheet 1 of 2)

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WATER CONTAMINATION THAT IS AT A
LIGHTNING DIVERTER STRIP INSERT LOCATION

B

B–B

F79363 S0006588765_V1

Removal of the Water Contamination
Figure 201 (Sheet 2 of 2)

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WATER CONTAMINATION THAT IS NOT AT A
LIGHTNING DIVERTER STRIP INSERT LOCATION

A

F79378 S0006588766_V1

Layout of the Repair - Wet Layup Materials
Figure 202 (Sheet 1 of 2)

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WATER CONTAMINATION THAT IS AT A
LIGHTNING DIVERTER STRIP INSERT LOCATION

B

B-B

F79387 S0006588767_V1

Layout of the Repair - Wet Layup Materials
Figure 202 (Sheet 2 of 2)

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Layout of the Repair - Preimpregnated Layup Materials
Figure 203 (Sheet 1 of 2)

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Layout of the Repair - Preimpregnated Layup Materials
Figure 203 (Sheet 2 of 2)

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Installation of the Attachment Parts for the Repair at a Lightning Diverter Strip
Figure 204 (Sheet 1 of 2)

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SECTION THROUGH THE RADOME BEFORE THE REPAIR

SECTION THROUGH THE RADOME WITH THE COMPLETED REPAIR

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Installation of the Attachment Parts for the Repair at a Lightning Diverter Strip
Figure 204 (Sheet 2 of 2)

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REPAIR 2 - REPAIR WITH PREIMPREGNATED LAYUP MATERIALS FOR DAMAGE TO ONE FACESHEET - 250°F (121°C) CURE

1. Applicability

A. Repair 2 is applicable to:

(1) Nose radomes made of honeycomb core structure or foam core structure

(2) Damage to one facesheet of the nose dome

(3) Damage that is away from the edgeband of the radome.

B. Repair 2:

(1) Has no limits on the dimensions of the damage cleanup or the number of repair areas

(2) Uses preimpregnated layup materials that are cured at 250°F (121°C).

2. General

A. Before you do Repair 2, refer to Paragraph 4./REPAIR GENERAL to:

(1) Find the limits of the damage

(2) Make a decision on the applicable repair option.

B. Repair 2 is a permanent repair. Refer to 51-00-06 for the definitions of the different types of repairs.

C. The materials necessary for Repair 2 are given in Table 201/REPAIR 2.

Table 201:

RADOME REPAIR MATERIALS	
REPAIR MATERIALS	**BOEING SPECIFICATION**
Repair fabric	BMS 8-79, Style 1581 or Style 7781
Film Adhesive	BMS 5-129, Type 2, Grade 5 (As an alternative, use BMS 5-129, Type 4, Grade 5)

3. References

Reference	Title
51-00-06	STRUCTURAL REPAIR DEFINITIONS

4. Repair Instructions

A. Remove the damaged facesheet as given in Paragraph 5.A./REPAIR GENERAL

B. If necessary, make a plaster support as given in Paragraph 5.G./REPAIR GENERAL, to give the repair the same contour as the radome.

NOTE: Make sure you apply a mold release coating to the plaster support before you apply the repair materials.

C. Make the taper as given in Paragraph 5.C./REPAIR GENERAL Refer to Taper Sand that is Necessary for the Repair, Figure 201/REPAIR 2 for the necessary taper for each ply of the initial facesheet.

D. Remove all of the water or other unwanted material as given in Paragraph 5.D./REPAIR GENERAL The damaged area must be fully dry.

E. Clean the damaged area as given in Paragraph 5.E./REPAIR GENERAL

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F. Prepare the repair fabric as given in Paragraph 5.F./REPAIR GENERAL and Paragraph 5.I./REPAIR GENERAL Refer to Layout of the Repair Materials, Figure 202/REPAIR 2 for the layout of the repair parts.

G. Cut one layer of film adhesive cut to the same dimensions as the largest repair ply.

H. Apply the film adhesive and the fabric repair plies as given in Paragraph 5.J./REPAIR GENERAL

I. Install the vacuum bag system as given in Paragraph 5.K./REPAIR GENERAL

J. Do a check of the vacuum bag for leaks as given in Paragraph 5.L./REPAIR GENERAL

K. Apply the pressure for the cure as given in Paragraph 5.M./REPAIR GENERAL

L. Cure the repair at 250°F (121°C) as given in Paragraph 5.O./REPAIR GENERAL

M. Apply the finish to the repair area as given in Paragraph 5.P./REPAIR GENERAL

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CIRCULAR SHAPE IS SHOWN, OVAL SHAPES ARE ALSO PERMITTED

SECTION THROUGH THE CENTER OF THE REPAIR

NOTES

- THE HONEYCOMB CORE IS SHOWN. THIS REPAIR IS ALSO APPLICABLE TO NOSE RADOME STRUCTURE WITH FOAM CORE.

H29702 S0006588774_V1

Taper Sand that is Necessary for the Repair
Figure 201

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NOTES

- THE HONEYCOMB CORE IS SHOWN. THIS REPAIR IS ALSO APPLICABLE TO NOSE RADOME STRUCTURE WITH FOAM CORE.

F79442 S0006588775_V1

Layout of the Repair Materials
Figure 202 (Sheet 1 of 2)

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SECTION THROUGH THE CENTER OF THE REPAIR

F79444 S0006588776_V1

Layout of the Repair Materials
Figure 202 (Sheet 2 of 2)

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REPAIR 3 - REPAIR WITH WET LAYUP MATERIALS FOR DAMAGE TO ONE FACESHEET - ROOM TEMPERATURE CURE

1. Applicability

A. Repair 3 is applicable to:

(1) Nose radomes made of honeycomb core structure or foam core structure

(2) Damage to one facesheet of the nose radome

(3) Damage that is away from the edgeband of the radome.

B. Repair 3 is applicable to damage cleanup that is 15 inches (381.0 mm) or less in diameter

(1) Repair 4 or Repair 5 are alternatives to Repair 3 if the damage cleanup is larger than 15 inches (381.0 mm) in diameter.

C. Repair 3 is applicable to only one damage area on the nose radome.

(1) Repair 4 or Repair 5 are alternatives to Repair 3 if the there is more than one damage area.

D. Repair 3 uses wet layup materials that are cured at room temperature.

2. General

A. Before you do Repair 3, refer to Paragraph 4./REPAIR GENERAL to:

(1) Find the limits of the damage

(2) Make a decision on the applicable repair option.

B. Repair 3 is a time-limited repair. Refer to 51-00-06 for the definitions of the different types of repairs.

C. When you do Repair 3, you must:

(1) Inspect the repair as given in Paragraph 5./REPAIR 3

(2) Replace the repair with a permanent repair as given in Paragraph 5./REPAIR 3

D. The materials necessary for Repair 3 are given in Table 201/REPAIR 3.

Table 201:

RADOME REPAIR MATERIALS	
REPAIR MATERIALS	**BOEING SPECIFICATION**
Repair fabric	BMS 9-3, Type H-2 or Type H-3, Classes 7, 9, 10, 11, 13 , or 14
Laminating resin	BMS 8-301, Class 2

3. References

Reference	Title
51-00-06	STRUCTURAL REPAIR DEFINITIONS
737 NDT Part 1, 51-05-01	Tap Test Inspection of Honeycomb Sandwich Structure

4. Repair Instructions

A. Remove the damaged facesheet as given in Paragraph 5.A./REPAIR GENERAL

B. If necessary, make a plaster support as given in Paragraph 5.G./REPAIR GENERAL, to give the repair the same contour as the radome.

NOTE: Make sure you apply a mold release coating to the plaster support before you apply the repair materials.

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C. Make the taper as given in Paragraph 5.C./REPAIR GENERAL Refer to Taper Sand that is Necessary for the Repair, Figure 201/REPAIR 3 for the necessary taper for each ply of the initial facesheet.

D. Remove all of the water or other unwanted material as given in Paragraph 5.D./REPAIR GENERAL The damaged area must be fully dry.

E. Clean the damaged area as given in Paragraph 5.E./REPAIR GENERAL

F. Prepare the repair fabric as given in Paragraph 5.F./REPAIR GENERAL and Paragraph 5.I./REPAIR GENERAL Refer to Layout of the Repair Materials, Figure 202/REPAIR 3 for the layout of the repair parts.

G. Apply the fabric repair plies as given in Paragraph 5.J./REPAIR GENERAL

H. Install the vacuum bag system as given in Paragraph 5.K./REPAIR GENERAL

I. Do a check of the vacuum bag for leaks as given in Paragraph 5.L./REPAIR GENERAL

J. Apply the pressure for the cure as given in Paragraph 5.M./REPAIR GENERAL

K. Cure the repair at room temperature as given in Paragraph 5.O./REPAIR GENERAL

L. Apply the finish to the repair area as given in Paragraph 5.P./REPAIR GENERAL

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CIRCULAR SHAPE IS SHOWN, OVAL SHAPES ARE ALSO PERMITTED

SECTION THROUGH THE CENTER OF THE REPAIR

NOTES

- THE HONEYCOMB CORE IS SHOWN. THIS REPAIR IS ALSO APPLICABLE TO NOSE RADOME STRUCTURE WITH FOAM CORE.

F79452 S0006588779_V1

Taper Sand that is Necessary for the Repair
Figure 201

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NOTES

- THE HONEYCOMB CORE IS SHOWN. THIS REPAIR IS ALSO APPLICABLE TO NOSE RADOME STRUCTURE WITH FOAM CORE.

F79454 S0006588780_V1

Layout of the Repair Materials
Figure 202 (Sheet 1 of 2)

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SECTION THROUGH THE CENTER OF THE REPAIR

F79456 S0006588781_V1

Layout of the Repair Materials
Figure 202 (Sheet 2 of 2)

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5. **Inspection and Replacement Instructions**

A. Do a visual inspection and a tap test inspection of the repair every 400 flight cycles or more frequently.

(1) Do the tap test inspection as given in 737 NDT Part 1, 51-05-01.

B. Replace Repair 3 with a permanent repair no more than 4000 flight cycles after installation.

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REPAIR 4 - REPAIR WITH WET LAYUP MATERIALS FOR DAMAGE TO ONE FACESHEET - 150°F (66°C) CURE

1. Applicability

A. Repair 4 is applicable to:

(1) Nose radomes made of honeycomb core structure or foam core structure

(2) Damage to one facesheet of the nose radome

(3) Damage that is away from the edgeband of the radome.

B. Repair 4 uses wet layup materials that are cured at 150°F (66°C).

C. Refer to Table 201/REPAIR 4 for the limits applicable to Repair 4 for the diameter of the damage cleanup and the number of repair areas.

2. General

A. Before you do Repair 4, refer to Paragraph 4./REPAIR GENERAL to:

(1) Find the limits of the damage

(2) Make a decision on the applicable repair option.

B. Repair 4 gives instructions for permament and time-limited repairs. Refer to 51-00-06 for the definitions of the different types of repairs.

C. When you do a time-limited repair as given in Table 201/REPAIR 4, do the steps that follow:

(1) Inspect the repair as given in Paragraph 5./REPAIR 4

(2) Replace the repair with a permanent repair as given in Paragraph 5./REPAIR 4

D. The repair that follows is an alternative to Repair 4:

(1) Repair 5 is a permanent repair with no limits on the diameter of the damage cleanup and the number of repair areas.

Table 201:

REPAIR LIMITS FOR REPAIR 4		
REPAIR TYPE	**MAXIMUM DIAMETER OF THE DAMAGE CLEANUP IN INCHES (MM)**	**LIMIT ON THE NUMBER OF REPAIRS**
Permanent	4.0 (101.6)	There is no limit on the number of repairs of this type
Permanent	30.0 (762.0)	Only one repair of this type is permitted
Time-Limited	30.0 (762.0)	There is no limit on the number of repairs of this type
Time-Limited	50.0 (1270.0)	Only one repair of this type is permitted

E. The materials necessary for Repair 4 are given in Table 202/REPAIR 4.

Table 202:

RADOME REPAIR MATERIALS	
REPAIR MATERIALS	**BOEING SPECIFICATION**
Repair fabric	BMS 9-3, Type H-2 or Type H-3, Classes 7, 9, 10, 11, 13 , or 14
Laminating resin	BMS 8-301, Class 2

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3. References

Reference	Title
51-00-06	STRUCTURAL REPAIR DEFINITIONS
737 NDT Part 1, 51-05-01	Tap Test Inspection of Honeycomb Sandwich Structure

4. Repair Instructions

A. Remove the damaged facesheet as given in Paragraph 5.A./REPAIR GENERAL

B. If necessary, make a plaster support as given in Paragraph 5.G./REPAIR GENERAL, to give the repair the same contour as the radome.

NOTE: Make sure you apply a mold release coating to the plaster support before you apply the repair materials.

C. Make the taper as given in Paragraph 5.C./REPAIR GENERAL Refer to Taper Sand that is Necessary for the Repair, Figure 201/REPAIR 4 for the necessary taper for each ply of the initial facesheet.

D. Remove all of the water or other unwanted material as given in Paragraph 5.D./REPAIR GENERAL The damaged area must be fully dry.

E. Clean the damaged area as given in Paragraph 5.E./REPAIR GENERAL

F. Prepare the repair fabric as given in Paragraph 5.F./REPAIR GENERAL and Paragraph 5.I./REPAIR GENERAL Refer to Layout of the Repair Materials, Figure 202/REPAIR 4 for the layout of the repair parts.

G. Apply the fabric repair plies as given in Paragraph 5.J./REPAIR GENERAL

H. Install the vacuum bag system as given in Paragraph 5.K./REPAIR GENERAL

I. Do a check of the vacuum bag for leaks as given in Paragraph 5.L./REPAIR GENERAL

J. Apply the pressure for the cure as given in Paragraph 5.M./REPAIR GENERAL

K. Cure the repair at 150°F (66°C) as given in Paragraph 5.O./REPAIR GENERAL

L. Apply the finish to the repair area as given in Paragraph 5.P./REPAIR GENERAL

5. Inspection and Replacement Instructions

A. If Repair 4 is a time-limited repair as given in Table 201/REPAIR 4, do the steps that follow:

(1) Do a visual inspection and a tap test inspection of the repair every 400 flight cycles or more frequently.

(a) Do the tap test inspection as given in 737 NDT Part 1, 51-05-01.

(2) Replace Repair 4 with a permanent repair no more than 4000 flight cycles after installation.

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CIRCULAR SHAPE IS SHOWN, OVAL SHAPES ARE ALSO PERMITTED

SECTION THROUGH THE CENTER OF THE REPAIR

NOTES

- THE HONEYCOMB CORE IS SHOWN. THIS REPAIR IS ALSO APPLICABLE TO NOSE RADOME STRUCTURE WITH FOAM CORE.

F79459 S0006588785_V1

Taper Sand that is Necessary for the Repair
Figure 201

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NOTES

- THE HONEYCOMB CORE IS SHOWN. THIS REPAIR IS ALSO APPLICABLE TO NOSE RADOME STRUCTURE WITH FOAM CORE.

F79460 S0006588786_V1

Layout of the Repair Materials
Figure 202 (Sheet 1 of 2)

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SECTION THROUGH THE CENTER OF THE REPAIR

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Layout of the Repair Materials
Figure 202 (Sheet 2 of 2)

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REPAIR 5 - REPAIR WITH WET LAYUP MATERIALS FOR DAMAGE TO ONE FACESHEET - 200°F (93°C) CURE

1. Applicability

A. Repair 5 is applicable to:

(1) Nose radomes made of honeycomb core structure or foam core structure

(2) Damage to one facesheet of the nose radome

(3) Damage that is away from the edgeband of the radome.

B. Repair 5:

(1) Has no limits on the dimensions of the damage cleanup or the number of repair areas

(2) Uses wet layup materials that are cured at 200°F (93°C).

2. General

A. Before you do Repair 5, refer to Paragraph 4./REPAIR GENERAL to:

(1) Find the limits of the damage

(2) Make a decision on the applicable repair option.

B. Repair 5 gives instructions for a permanent repair. Refer to 51-00-06 for the definitions of the different types of repairs.

C. The materials necessary for Repair 5 are given in Table 201/REPAIR 5.

Table 201:

RADOME REPAIR MATERIALS	
REPAIR MATERIALS	**BOEING SPECIFICATION**
Repair fabric	BMS 9-3, Type H-2 or Type H-3, Classes 7, 9, 10, 11, 13 , or 14
Laminating resin	BMS 8-301, Class 1

3. References

Reference	Title
51-00-06	STRUCTURAL REPAIR DEFINITIONS

4. Repair Instructions

A. Remove the damaged facesheet as given in Paragraph 5.A./REPAIR GENERAL

B. If necessary, make a plaster support as given in Paragraph 5.G./REPAIR GENERAL, to give the repair the same contour as the radome.

NOTE: Make sure you apply a mold release coating to the plaster support before you apply the repair materials.

C. Make the taper as given in Paragraph 5.C./REPAIR GENERAL Refer to Taper Sand that is Necessary for the Repair, Figure 201/REPAIR 5 for the necessary taper for each ply of the initial facesheet.

D. Remove all of the water or other unwanted material as given in Paragraph 5.D./REPAIR GENERAL The damaged area must be fully dry.

E. Clean the damaged area as given in Paragraph 5.E./REPAIR GENERAL

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F. Prepare the repair fabric as given in Paragraph 5.F./REPAIR GENERAL and Paragraph 5.I./REPAIR GENERAL Refer to Layout of the Repair Materials, Figure 202/REPAIR 5 for the layout of the repair parts.

G. Apply the fabric repair plies as given in Paragraph 5.J./REPAIR GENERAL

H. Install the vacuum bag system as given in Paragraph 5.K./REPAIR GENERAL

I. Do a check of the vacuum bag for leaks as given in Paragraph 5.L./REPAIR GENERAL

J. Apply the pressure for the cure as given in Paragraph 5.M./REPAIR GENERAL

K. Cure the repair at 200°F (93°C) as given in Paragraph 5.O./REPAIR GENERAL

L. Apply the finish to the repair area as given in Paragraph 5.P./REPAIR GENERAL

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CIRCULAR SHAPE IS SHOWN, OVAL SHAPES ARE ALSO PERMITTED

SECTION THROUGH THE CENTER OF THE REPAIR

NOTES

- THE HONEYCOMB CORE IS SHOWN. THIS REPAIR IS ALSO APPLICABLE TO NOSE RADOME STRUCTURE WITH FOAM CORE.

F79464 S0006588790_V1

Taper Sand that is Necessary for the Repair
Figure 201

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NOTES

- THE HONEYCOMB CORE IS SHOWN. THIS REPAIR IS ALSO APPLICABLE TO NOSE RADOME STRUCTURE WITH FOAM CORE.

F79466 S0006588791_V2

Layout of the Repair Materials
Figure 202 (Sheet 1 of 2)

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SECTION THROUGH THE CENTER OF THE REPAIR

F79467 S0006588792_V2

Layout of the Repair Materials
Figure 202 (Sheet 2 of 2)

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REPAIR 6 - REPAIR WITH PREIMPREGNATED LAYUP MATERIAL FOR DAMAGE TO ONE FACESHEET AND THE CORE - 250°F (121°C) CURE

1. Applicability

A. Repair 6 is applicable to:

(1) Nose radomes made of honeycomb core structure or foam core structure

(2) Damage to one facesheet and the core of the nose radome

(3) Damage that is away from the edgeband of the radome.

B. Repair 6:

(1) Has no limits on the dimensions of the damage cleanup or the number of repair areas

(2) Uses preimpregnated layup materials that are cured at 250°F (121°C).

2. General

A. Before you do Repair 6, refer to Paragraph 4./REPAIR GENERAL to:

(1) Find the limits of the damage

(2) Make a decision on the applicable repair option.

B. Repair 6 is a permanent repair. Refer to 51-00-06 for the definitions of the different types of repairs.

C. The materials necessary for Repair 6 are given in Table 201/REPAIR 6.

Table 201:

RADOME REPAIR MATERIALS	
REPAIR MATERIALS	**BOEING SPECIFICATION**
Repair fabric	BMS 8-79, Style 1581 or Style 7781
Film Adhesive	BMS 5-129, Type 2, Grade 5 As an alternative, use BMS 5-129 Type 4, Grade 5
Potting Compound	BMS 5-28, Type 15, 16, 17, 18, 19, or 20. Use as an alternative to BMS 5-129, Type 2 Grade 5 film adhesive where the edges of the repair core touches the initial core
Honeycomb or foam repair core	For the honeycomb core, use HRH-10/F50-5 flex core. For the foam core, use CMN-2000, Class 4 foam core material

3. References

Reference	Title
51-00-06	STRUCTURAL REPAIR DEFINITIONS

4. Repair Instructions

A. Remove the damaged facesheet and core as given in Paragraph 5.A./REPAIR GENERAL and Paragraph 5.B./REPAIR GENERAL

B. If necessary, make a plaster support as given in Paragraph 5.G./REPAIR GENERAL, to give the repair the same contour as the radome.

NOTE: Make sure you apply a mold release coating to the plaster support before you apply the repair materials.

C. Make the taper as given in Paragraph 5.C./REPAIR GENERAL Refer to Taper Sand that is Necessary for the Repair, Figure 201/REPAIR 6 for the necessary taper for each ply of the initial facesheet.

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D. Remove all of the water or other unwanted material as given in Paragraph 5.D./REPAIR GENERAL The damaged area must be fully dry.

E. Clean the damaged area as given in Paragraph 5.E./REPAIR GENERAL

F. Make the repair core as given in Paragraph 5.G./REPAIR GENERAL

G. Clean the repair core as given in Paragraph 5.E./REPAIR GENERAL

H. Apply one layer of film adhesive to the area below the repair core as given in Paragraph 5.J./REPAIR GENERAL

I. Install the repair core as given in Paragraph 5.H./REPAIR GENERAL

J. Install the vacuum bag system as given in Paragraph 5.K./REPAIR GENERAL

K. Do a check of the vacuum bag for leaks as given in Paragraph 5.L./REPAIR GENERAL

L. Apply the pressure for the cure as given in Paragraph 5.M./REPAIR GENERAL

M. Cure the potting compound as given in Paragraph 5.N./REPAIR GENERAL

N. Sand the repair core to be smooth with the outer surface of the facesheet.

O. Clean the repair area as given in Paragraph 5.E./REPAIR GENERAL

P. Prepare the repair fabric as given in Paragraph 5.F./REPAIR GENERAL and Paragraph 5.I./REPAIR GENERAL Refer to Layout of the Repair Materials, Figure 202/REPAIR 6 for the layout of the repair parts.

Q. Cut one layer of film adhesive cut to the same dimensions as the largest repair ply.

R. Apply the film adhesive and the fabric repair plies as given in Paragraph 5.J./REPAIR GENERAL

S. Install the vacuum bag system as given in Paragraph 5.K./REPAIR GENERAL

T. Do a check of the vacuum bag for leaks as given in Paragraph 5.L./REPAIR GENERAL

U. Apply the pressure for the cure as given in Paragraph 5.M./REPAIR GENERAL

V. Cure the repair at 250°F (121°C) as given in Paragraph 5.O./REPAIR GENERAL Make sure the temperature meets the cure requirements on both sides of the radome.

W. Apply the finish to the repair area as given in Paragraph 5.P./REPAIR GENERAL

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CIRCULAR SHAPE IS SHOWN, OVAL SHAPES ARE ALSO PERMITTED

SECTION THROUGH THE CENTER OF THE REPAIR

NOTES

- THE HONEYCOMB CORE IS SHOWN. THIS REPAIR IS ALSO APPLICABLE TO NOSE RADOME STRUCTURE WITH FOAM CORE.

F79468 S0006588795_V1

Taper Sand that is Necessary for the Repair
Figure 201

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NOTES

- THE HONEYCOMB CORE IS SHOWN. THIS REPAIR IS ALSO APPLICABLE TO NOSE RADOME STRUCTURE WITH FOAM CORE.

F79469 S0006588796_V1

Layout of the Repair Materials
Figure 202 (Sheet 1 of 2)

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SECTION THROUGH THE CENTER OF THE REPAIR

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Layout of the Repair Materials
Figure 202 (Sheet 2 of 2)

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REPAIR 7 - REPAIR WITH WET LAYUP MATERIALS FOR DAMAGE TO ONE FACESHEET AND THE CORE - ROOM TEMPERATURE CURE

1. Applicability

A. Repair 7 is applicable to:

(1) Nose radomes made of honeycomb core structure or foam core structure

(2) Damage to one facesheet of the nose radome

(3) Damage that is away from the edgeband of the radome.

B. Repair 7 is applicable to damage cleanup that is 15 inches (381.0 mm) or less in diameter.

(1) Repair 8 or Repair 9 are alternatives to Repair 7 if the damage cleanup is larger than 15 inches (381.0 mm) in diameter.

C. Repair 7 is applicable to only one damage area on the radome.

(1) Repair 8 or Repair 9 are alternatives to Repair 7 if there is more than one damage area.

D. Repair 7 uses wet layup materials that are cured at room temperature.

2. General

A. Before you do Repair 7, refer to Paragraph 4./REPAIR GENERAL to:

(1) Find the limits of the damage

(2) Make a decision on the applicable repair option.

B. Repair 7 is a time-limited repair. Refer to 51-00-06 for the definitions of the different types of repairs.

C. When you do Repair 7, you must:

(1) Inspect the repair as given in Paragraph 5./REPAIR 7

(2) Replace the repair with a permanent repair as given in Paragraph 5./REPAIR 7

D. The materials necessary for Repair 7 are given in Table 201/REPAIR 7.

Table 201:

RADOME REPAIR MATERIALS	
REPAIR MATERIALS	**BOEING SPECIFICATION**
Potting compound	BMS 5-28, Type 15, 16, 17, 18, 19, or 20
Repair fabric	BMS 9-3, Type H-2 or Type H-3, Classes 7, 9, 10, 11, 13 , or 14
Laminating resin	BMS 8-301, Class 2
Resin Mix 2	BMS 8-301, Class 2 mixed with milled glass fibers. Use as an alternative to the potting compound on the edges of the repair core which touch the initial core. Use as an alternative to the repair ply used to bond the repair core to the surface of an undamaged facesheet
Honeycomb or foam repair core	For the honeycomb core, use HRH-10/F50-5 flex core. For the foam core, use CMN-2000, Class 4 foam core material

3. References

Reference	Title
51-00-06	STRUCTURAL REPAIR DEFINITIONS
737 NDT Part 1, 51-05-01	Tap Test Inspection of Honeycomb Sandwich Structure

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4. **Repair Instructions**

A. Remove the damaged facesheet and core as given in Paragraph 5.A./REPAIR GENERAL and Paragraph 5.B./REPAIR GENERAL

B. If necessary, make a plaster support as given in Paragraph 5.G./REPAIR GENERAL, to give the repair the same contour as the radome.

NOTE: Make sure you apply a mold release coating to the plaster support before you apply the repair materials.

C. Make the taper as given in Paragraph 5.C./REPAIR GENERAL Refer to Taper Sand that is Necessary for the Repair, Figure 201/REPAIR 7 for the necessary taper for each ply of the initial facesheet.

D. Remove all of the water or other unwanted material as given in Paragraph 5.D./REPAIR GENERAL The damaged area must be fully dry.

E. Clean the damaged area as given in Paragraph 5.E./REPAIR GENERAL

F. Make the repair core as given in Paragraph 5.F./REPAIR GENERAL

G. Clean the repair core as given in Paragraph 5.E./REPAIR GENERAL

H. Prepare the repair fabric as given in Paragraph 5.F./REPAIR GENERAL and Paragraph 5.I./REPAIR GENERAL Refer to Layout of the Repair Materials, Figure 202/REPAIR 7 for the layout of the repair parts.

I. Apply one ply of repair fabric to the area below the repair core as given in Paragraph 5.J./REPAIR GENERAL

J. Install the repair core as given in Paragraph 5.H./REPAIR GENERAL

K. Install the vacuum bag system as given in Paragraph 5.K./REPAIR GENERAL

L. Do a check of the vacuum bag for leaks as given in Paragraph 5.L./REPAIR GENERAL

M. Apply the pressure for the cure as given in Paragraph 5.M./REPAIR GENERAL

N. Cure the potting compound as given in Paragraph 5.N./REPAIR GENERAL

O. Sand the repair core to be smooth with the outer surface of the facesheet.

P. Clean the repair area as given in Paragraph 5.E./REPAIR GENERAL

Q. Apply the fabric repair plies as given in Paragraph 5.J./REPAIR GENERAL

R. Install the vacuum bag system as given in Paragraph 5.K./REPAIR GENERAL

S. Do a check of the vacuum bag for leaks as given in Paragraph 5.L./REPAIR GENERAL

T. Apply the pressure for the cure as given in Paragraph 5.M./REPAIR GENERAL

U. Cure the repair at room temperature as given in Paragraph 5.O./REPAIR GENERAL

V. Apply the finish to the repair area as given in Paragraph 5.P./REPAIR GENERAL

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CIRCULAR SHAPE IS SHOWN, OVAL SHAPES ARE ALSO PERMITTED

SECTION THROUGH THE CENTER OF THE REPAIR

NOTES

- THE HONEYCOMB CORE IS SHOWN. THIS REPAIR IS ALSO APPLICABLE TO NOSE RADOME STRUCTURE WITH FOAM CORE.

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Taper Sand that is Necessary for the Repair
Figure 201

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NOTES

- THE HONEYCOMB CORE IS SHOWN. THIS REPAIR IS ALSO APPLICABLE TO NOSE RADOME STRUCTURE WITH FOAM CORE.

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Layout of the Repair Materials
Figure 202 (Sheet 1 of 2)

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Layout of the Repair Materials
Figure 202 (Sheet 2 of 2)

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5. **Inspection and Replacement Instructions**

A. Do a visual inspection and a tap test inspection of the repair every 400 flight cycles or more frequently.

(1) Do the tap test inspection as given in 737 NDT Part 1, 51-05-01.

B. Replace Repair 7 with a permanent repair no more than 4000 flight cycles after installation.

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REPAIR 8 - REPAIR WITH WET LAYUP MATERIALS FOR DAMAGE TO ONE FACESHEET AND THE CORE - 150°F (66°C) CURE

1. Applicability

A. Repair 8 is applicable to:

(1) Nose radomes made of honeycomb core structure or foam core structure

(2) Damage to one facesheet of the nose radome

(3) Damage that is away from the edgeband of the radome.

B. Repair 8 uses wet layup materials that are cured at 150°F (66°C).

C. Refer to Table 201/REPAIR 8 for the limits on Repair 8 for the diameter of the damage cleanup and the number of repair areas.

Table 201:

REPAIR LIMITS FOR REPAIR 8		
REPAIR TYPE	MAXIMUM DIAMETER OF THE DAMAGE CLEANUP	LIMIT ON THE NUMBER OF REPAIRS
PERMANENT	4.0 in. (101.6 mm)	There is no limit on the number of repairs of this type.
PERMANENT	25.0 in. (635.0 mm)	Only one repair of this type is permitted.
TIME-LIMITED	25.0 in. (635.0 mm)	There is no limit on the number of repairs of this type.
TIME-LIMITED	40.0 in. (1016.0 mm)	Only one repair of this type is permitted.

2. General

A. Before you do Repair 8, refer to Paragraph 4./REPAIR GENERAL to:

(1) Find the limits of the damage

(2) Make a decision on the applicable repair option.

B. Repair 8 gives instructions for permanent and time-limited repairs. Refer to 51-00-06 for the definitions of the different types of repairs.

C. When you do a time-limited repair you must:

(1) Inspect the repair as given in Paragraph 5./REPAIR 8

(2) Replace the repair with a permanent repair as given in Paragraph 5./REPAIR 8

D. The repair that follows is an alternative to Repair 8.

(1) Repair 9 is a permanent repair with no limits on the diameter of the damage cleanup and the number of damage areas.

E. The materials necessary for Repair 8 are given in Table 202/REPAIR 8.

Table 202:

RADOME REPAIR MATERIALS	
REPAIR MATERIALS	BOEING SPECIFICATION
Potting compound	BMS 5-28, Type 15, 16, 17, 18, 19, or 20
Repair fabric	BMS 9-3, Type H-2 or Type H-3, Classes 7, 9, 10, 11, 13 , or 14
Laminating resin	BMS 8-301, Class 2

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Table 202: (Continued)

RADOME REPAIR MATERIALS	
REPAIR MATERIALS	**BOEING SPECIFICATION**
Resin Mix 2	BMS 8-301, Class 2 mixed with milled glass fibers. Use as an alternative to the potting compound on the edges of the repair core which touch the initial core. Use as an alternative to the repair ply used to bond the repair core to the surface of an undamaged facesheet
Honeycomb or foam repair core	For the honeycomb core, use HRH-10/F50-5 flex core. For the foam core, use CMN-2000, Class 4 foam core material

3. References

Reference	Title
51-00-06	STRUCTURAL REPAIR DEFINITIONS
737 NDT Part 1, 51-05-01	Tap Test Inspection of Honeycomb Sandwich Structure

4. Repair Instructions

A. Remove the damaged facesheet and core as given in Paragraph 5.A./REPAIR GENERAL and Paragraph 5.B./REPAIR GENERAL

B. If necessary, make a plaster support as given in Paragraph 5.G./REPAIR GENERAL, to give the repair the same contour as the radome.

NOTE: Make sure you apply a mold release coating to the plaster support before you apply the repair materials.

C. Make the taper as given in Paragraph 5.C./REPAIR GENERAL Refer to Taper Sand that is Necessary for the Repair, Figure 201/REPAIR 8 for the necessary taper for each ply of the initial facesheet.

D. Remove all of the water or other unwanted material as given in Paragraph 5.D./REPAIR GENERAL The damaged area must be fully dry.

E. Clean the damaged area as given in Paragraph 5.E./REPAIR GENERAL

F. Make the repair core as given in Paragraph 5.F./REPAIR GENERAL

G. Clean the repair core as given in Paragraph 5.E./REPAIR GENERAL

H. Prepare the repair fabric as given in Paragraph 5.F./REPAIR GENERAL and Paragraph 5.I./REPAIR GENERAL Refer to Layout of the Repair Materials, Figure 202/REPAIR 8 for the layout of the repair parts.

I. Apply one ply of repair fabric to the area below the repair core as given in Paragraph 5.J./REPAIR GENERAL

J. Install the repair core as given in Paragraph 5.H./REPAIR GENERAL

K. Install the vacuum bag system as given in Paragraph 5.K./REPAIR GENERAL

L. Do a check of the vacuum bag for leaks as given in Paragraph 5.L./REPAIR GENERAL

M. Apply the pressure for the cure as given in Paragraph 5.M./REPAIR GENERAL

N. Cure the potting compound as given in Paragraph 5.N./REPAIR GENERAL

O. Sand the repair core to be smooth with the outer surface of the facesheet.

P. Clean the repair area as given in Paragraph 5.E./REPAIR GENERAL

Q. Apply the fabric repair plies as given in Paragraph 5.J./REPAIR GENERAL

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R. Install the vacuum bag system as given in Paragraph 5.K./REPAIR GENERAL

S. Do a check of the vacuum bag for leaks as given in Paragraph 5.L./REPAIR GENERAL

T. Apply the pressure for the cure as given in Paragraph 5.M./REPAIR GENERAL

U. Cure the repair at 150°F (66°C) as given in Paragraph 5.O./REPAIR GENERAL Make sure the temperature meets the cure requirements on both sides of the radome.

V. Apply the finish to the repair area as given in Paragraph 5.P./REPAIR GENERAL

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CIRCULAR SHAPE IS SHOWN, OVAL SHAPES ARE ALSO PERMITTED

SECTION THROUGH THE CENTER OF THE REPAIR

NOTES

- THE HONEYCOMB CORE IS SHOWN. THIS REPAIR IS ALSO APPLICABLE TO NOSE RADOME STRUCTURE WITH FOAM CORE.

F79474 S0006588806_V1

Taper Sand that is Necessary for the Repair
Figure 201

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NOTES

- THE HONEYCOMB CORE IS SHOWN. THIS REPAIR IS ALSO APPLICABLE TO NOSE RADOME STRUCTURE WITH FOAM CORE.

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Layout of the Repair Materials
Figure 202 (Sheet 1 of 2)

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SECTION THROUGH THE CENTER OF THE REPAIR

F79476 S0006588808_V1

Layout of the Repair Materials
Figure 202 (Sheet 2 of 2)

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5. **Inspection and Replacement Instructions**

A. If Repair 8 is a time-limited repair as given in Table 201/REPAIR 8, do the steps that follow:

(1) Do a visual inspection and a tap test inspection of the repair every 400 flight cycles or more frequently.

(a) Do the tap test inspection as given in 737 NDT Part 1, 51-05-01.

(2) Replace Repair 8 with a permanent repair no more than 4000 flight cycles after installation.

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REPAIR 9 - REPAIR WITH WET LAYUP MATERIALS FOR DAMAGE TO ONE FACESHEET AND THE CORE - 200°F (93°C) CURE

1. Applicability

A. Repair 9 is applicable to:

(1) Nose radomes made of honeycomb core structure or foam core structure

(2) Damage to one facesheet of the nose radome

(3) Damage that is away from the edgeband of the radome.

B. Repair 9:

(1) Has no limits on the dimensions of the damage cleanup or the number of repair areas

(2) Uses wet layup materials that are cured at 200°F (93°C).

2. General

A. Before you do Repair 9, refer to Paragraph 4./REPAIR GENERAL to:

(1) Find the limits of the damage

(2) Make a decision on the applicable repair option.

B. Repair 9 gives instructions for a permanent repair. Refer to 51-00-06 for the definitions of the different types of repairs.

C. The materials necessary for Repair 9 are given in Table 201/REPAIR 9.

Table 201:

RADOME REPAIR MATERIALS	
REPAIR MATERIALS	**BOEING SPECIFICATION**
Potting compound	BMS 5-28, Type 15, 16, 17, 18, 19, or 20
Repair fabric	BMS 9-3, Type H-2 or Type H-3, Classes 7, 9, 10, 11, 13, or 14
Laminating resin	BMS 8-301, Class 1
Resin Mix 1	BMS 8-301, Class 1 mixed with milled glass fibers. Use as an alternative to the potting compound on the edges of the repair core which touch the initial core. Use as an alternative to the repair ply used to bond the repair core to the surface of an undamaged facesheet
Honeycomb or foam repair core	For the honeycomb core, use HRH-10/F50-5 flex core. For the foam core, use CMN-2000, Class 4 foam core material

3. References

Reference	Title
51-00-06	STRUCTURAL REPAIR DEFINITIONS

4. Repair Instructions

A. Remove the damaged facesheet and the core as given in Paragraph 5.A./REPAIR GENERAL and Paragraph 5.B./REPAIR GENERAL

B. If necessary, make a plaster support as given in Paragraph 5.G./REPAIR GENERAL, to give the repair the same contour as the radome.

NOTE: Make sure you apply a mold release coating to the plaster support before you apply the repair materials.

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C. Make the taper as given in Paragraph 5.C./REPAIR GENERAL Refer to Taper Sand that is Necessary for the Repair, Figure 201/REPAIR 9 for the necessary taper for each ply of the initial facesheet.

D. Remove all of the water or other unwanted material as given in Paragraph 5.D./REPAIR GENERAL The damaged area must be fully dry.

E. Clean the damaged area as given in Paragraph 5.E./REPAIR GENERAL

F. Make the repair core as given in Paragraph 5.F./REPAIR GENERAL

G. Clean the repair core as given in Paragraph 5.E./REPAIR GENERAL

H. Prepare the repair fabric as given in Paragraph 5.F./REPAIR GENERAL and Paragraph 5.I./REPAIR GENERAL Refer to Layout of the Repair Materials, Figure 202/REPAIR 9 for the layout of the repair parts.

I. Apply one ply of repair fabric to the area below the repair core as given in Paragraph 5.J./REPAIR GENERAL

J. Install the repair core as given in Paragraph 5.H./REPAIR GENERAL

K. Install the vacuum bag system as given in Paragraph 5.K./REPAIR GENERAL

L. Do a check of the vacuum bag for leaks as given in Paragraph 5.L./REPAIR GENERAL

M. Apply the pressure for the cure as given in Paragraph 5.M./REPAIR GENERAL

N. Cure the potting compound as given in Paragraph 5.N./REPAIR GENERAL

O. Sand the repair core to be smooth with the outer surface of the facesheet.

P. Clean the repair area as given in Paragraph 5.E./REPAIR GENERAL

Q. Apply the fabric repair plies as given in Paragraph 5.J./REPAIR GENERAL

R. Install the vacuum bag system as given in Paragraph 5.K./REPAIR GENERAL

S. Do a check of the vacuum bag for leaks as given in Paragraph 5.L./REPAIR GENERAL

T. Apply the pressure for the cure as given in Paragraph 5.M./REPAIR GENERAL

U. Cure the repair at 200°F (93°C) as given in Paragraph 5.O./REPAIR GENERAL Make sure the temperature meets the cure requirements on both sides of the radome.

V. Apply the finish to the repair area as given in Paragraph 5.P./REPAIR GENERAL

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CIRCULAR SHAPE IS SHOWN, OVAL SHAPES ARE ALSO PERMITTED

SECTION THROUGH THE CENTER OF THE REPAIR

NOTES

- THE HONEYCOMB CORE IS SHOWN. THIS REPAIR IS ALSO APPLICABLE TO NOSE RADOME STRUCTURE WITH FOAM CORE.

F79478 S0006588811_V1

Taper Sand that is Necessary for the Repair
Figure 201

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NOTES

- THE HONEYCOMB CORE IS SHOWN. THIS REPAIR IS ALSO APPLICABLE TO NOSE RADOME STRUCTURE WITH FOAM CORE.

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Layout of the Repair Materials
Figure 202 (Sheet 1 of 2)

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Layout of the Repair Materials
Figure 202 (Sheet 2 of 2)

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REPAIR 10 - REPAIR WITH PREIMPREGNATED LAYUP MATERIALS FOR DAMAGE TO TWO FACESHEETS AND THE CORE - 250°F (121°C) CURE

1. Applicability

A. Repair 10 is applicable to:

(1) Nose radomes made of honeycomb core structure or foam core structure

(2) Damage to two facesheets and the core of the nose radome

(3) Damage that is away from the edgeband of the radome.

B. Repair 10:

(1) Has no limits on the dimensions of the damage cleanup or the number of repair areas

(2) Uses preimpregnated layup materials that are cured at 250°F (121°C).

2. General

A. Before you do Repair 10, refer to Paragraph 4./REPAIR GENERAL to:

(1) Find the limits of the damage

(2) Make a decision on the applicable repair option.

B. Repair 10 is a permanent repair. Refer to 51-00-06 for the definitions of the different types of repairs.

C. The materials necessary for Repair 10 are given in Table 201/REPAIR 10.

Table 201:

RADOME REPAIR MATERIALS	
REPAIR MATERIALS	**BOEING SPECIFICATION**
Repair fabric	BMS 8-79, Style 1581 or Style 7781
Film Adhesive	BMS 5-129, Type 2, Grade 5 As an alternative, use BMS 5-129, Type 4, Grade 5
Potting Compound	BMS 5-28, Type 15, 16, 17, 18, 19, or 20. Use as an alternative to BMS 5-129, Type 2 Grade 5 film adhesive where the edges of the repair core touches the initial core
Honeycomb or foam repair core	For the honeycomb core, use HRH-10/F50-5 flex core. For the foam core, use CMN-2000, Class 4 foam core material

3. References

Reference	Title
51-00-06	STRUCTURAL REPAIR DEFINITIONS

4. Repair Instructions

A. Remove the damaged facesheets and core as given in Paragraph 5.A./REPAIR GENERAL and Paragraph 5.B./REPAIR GENERAL

B. If necessary, make a plaster support as given in Paragraph 5.G./REPAIR GENERAL, to give the repair the same contour as the radome.

NOTE: Make sure you apply a mold release coating to the plaster support before you apply the repair materials.

C. Make the taper as given in Paragraph 5.C./REPAIR GENERAL Refer to Taper Sand that is Necessary for the Repair, Figure 201/REPAIR 10 for the necessary taper for each ply of the initial facesheet.

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D. Remove all of the water or other unwanted material as given in Paragraph 5.D./REPAIR GENERAL The damaged area must be fully dry.

E. Clean the damaged area as given in Paragraph 5.E./REPAIR GENERAL

F. Make the repair core as given in Paragraph 5.H./REPAIR GENERAL

G. Clean the repair core as given in Paragraph 5.E./REPAIR GENERAL

H. Install the repair core as given in Paragraph 5.H./REPAIR GENERAL

I. Prepare the repair fabric as given in Paragraph 5.F./REPAIR GENERAL and Paragraph 5.I./REPAIR GENERAL Refer to Layout of the Repair Materials, Figure 202/REPAIR 10 for the layout of the repair parts.

J. Cut one layer of film adhesive cut to the same dimensions as the largest repair ply.

K. Apply the film adhesive and the fabric repair plies to one surface of the radome as given in Paragraph 5.J./REPAIR GENERAL

L. Install the vacuum bag system as given in Paragraph 5.K./REPAIR GENERAL

M. Do a check of the vacuum bag for leaks as given in Paragraph 5.L./REPAIR GENERAL

N. Apply the pressure for the cure as given in Paragraph 5.M./REPAIR GENERAL

O. Cure the repair at 250°F (121°C) as given in Paragraph 5.O./REPAIR GENERAL Make sure the temperature meets the cure requirements on both sides of the radome.

P. Sand the repair core to be smooth with the initial core surface.

Q. Clean the repair area as given in Paragraph 5.E./REPAIR GENERAL

R. Cut one layer of film adhesive cut to the same dimensions as the largest repair ply.

S. Apply the film adhesive and the fabric repair plies the opposite surface of the radome as given in Paragraph 5.J./REPAIR GENERAL

T. Install the vacuum bag system as given in Paragraph 5.K./REPAIR GENERAL

U. Do a check of the vacuum bag for leaks as given in Paragraph 5.L./REPAIR GENERAL

V. Apply the pressure for the cure as given in Paragraph 5.M./REPAIR GENERAL

W. Cure the repair at 250°F (121°C) as given in Paragraph 5.O./REPAIR GENERAL Make sure the temperature meets the cure requirements on both sides of the radome.

X. Apply the finish to the repair area as given in Paragraph 5.P./REPAIR GENERAL

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NOTES

- THE HONEYCOMB CORE IS SHOWN. THIS REPAIR IS ALSO APPLICABLE TO NOSE RADOME STRUCTURE WITH FOAM CORE.

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Taper Sand that is Necessary for the Repair
Figure 201 (Sheet 1 of 2)

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F79482 S0006588817_V1

Taper Sand that is Necessary for the Repair
Figure 201 (Sheet 2 of 2)

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NOTES

- THE HONEYCOMB CORE IS SHOWN. THIS REPAIR IS ALSO APPLICABLE TO NOSE RADOME STRUCTURE WITH FOAM CORE.

1 AS AN ALTERNATIVE, USE BMS 5-129, TYPE 4, GRADE 5 ADHESIVE FILM.

2 AS AN ALTERNATIVE, USE BMS 5-28, TYPE 15, 16, 17, 18, 19, OR 20 POTTING COMPOUND.

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Layout of the Repair Materials
Figure 202 (Sheet 1 of 3)

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Layout of the Repair Materials
Figure 202 (Sheet 2 of 3)

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SECTION THROUGH THE CENTER OF THE REPAIR F79485 S0006588820_V1

Layout of the Repair Materials
Figure 202 (Sheet 3 of 3)

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REPAIR 11 - REPAIR WITH WET LAYUP MATERIAL FOR DAMAGE TO TWO FACESHEETS AND THE CORE - ROOM TEMPERATURE CURE

1. Applicability

A. Repair 11 is applicable to:

(1) Nose radomes made of honeycomb core structure or foam core structure

(2) Damage to two facesheets and the core of the nose radome

(3) Damage that is away from the edgeband of the radome.

B. Repair 11 is applicable to damage cleanup that is 10.0 in. (254.0 mm) or less in diameter.

(1) Repair 12 and Repair 13 are alternatives to Repair 11 if the damage cleanup is larger than 10.0 in. (254.0 mm) in diameter.

C. Repair 11 is applicable to only one damage area on the radome.

(1) Repair 12 and Repair 13 are alternatives to Repair 11 if there is more than one damage area.

D. Repair 11 uses wet layup materials that are cured at room temperature.

2. General

A. Before you do Repair 11, refer to Paragraph 4./REPAIR GENERAL to:

(1) Find the limits of the damage

(2) Make a decision on the applicable repair option.

B. Repair 11 is a time-limited repair. Refer to 51-00-06 for the definitions of the different types of repairs.

C. When you do Repair 11, you must:

(1) Inspect the repair as given in Paragraph 5./REPAIR 11

(2) Replace the time-limited repair with a permanent repair as given in Paragraph 5./REPAIR 11

D. The materials necessary for Repair 11 are given in Table 201/REPAIR 11.

Table 201:

RADOME REPAIR MATERIALS	
REPAIR MATERIALS	**BOEING SPECIFICATION**
Potting compound	BMS 5-28, Type 15, 16, 17, 18, 19, or 20
Repair fabric	BMS 9-3, Type H-2 or Type H-3, Classes 7, 9, 10, 11, 13 , or 14
Laminating resin	BMS 8-301, Class 2
Resin Mix 2	BMS 8-301, Class 2 mixed with milled glass fibers. Use as an alternative to the potting compound on the edges of the repair core which touch the initial core. Use as an alternative to the repair ply used to bond the repair core to the surface of an undamaged facesheet
Honeycomb or foam repair core	For the honeycomb core, use HRH-10/F50-5 flex core. For the foam core, use CMN-2000, Class 4 foam core material

3. References

Reference	Title
51-00-06	STRUCTURAL REPAIR DEFINITIONS
737 NDT Part 1, 51-05-01	Tap Test Inspection of Honeycomb Sandwich Structure

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4. **Repair Instructions**

A. Remove the damaged facesheet and core as given in Paragraph 5.A./REPAIR GENERAL and Paragraph 5.B./REPAIR GENERAL

B. Make the taper as given in Paragraph 5.C./REPAIR GENERAL Refer to Taper Sand that is Necessary for the Repair, Figure 201/REPAIR 11 for the necessary taper for each ply of the initial facesheet.

C. Remove all of the water or other unwanted material as given in Paragraph 5.D./REPAIR GENERAL The damaged area must be fully dry.

D. Clean the damaged area as given in Paragraph 5.E./REPAIR GENERAL

E. If necessary, make a plaster support as given in Paragraph 5.G./REPAIR GENERAL, to give the repair the same contour as the radome.

NOTE: Make sure you apply a mold release coating to the plaster support before you apply the repair materials.

F. Make the repair core as given in Paragraph 5.F./REPAIR GENERAL

G. Clean the repair core as given in Paragraph 5.E./REPAIR GENERAL

H. Install the repair core as given in Paragraph 5.H./REPAIR GENERAL

I. Prepare the repair fabric as given in Paragraph 5.F./REPAIR GENERAL and Paragraph 5.I./REPAIR GENERAL Refer to Layout of the Repair Materials, Figure 202/REPAIR 11 for the layout of the repair parts.

J. Apply the fabric repair plies to one surface of the radome as given in Paragraph 5.J./REPAIR GENERAL

K. Install the vacuum bag system as given in Paragraph 5.K./REPAIR GENERAL

L. Do a check of the vacuum bag for leaks as given in Paragraph 5.L./REPAIR GENERAL

M. Apply the pressure for the cure as given in Paragraph 5.M./REPAIR GENERAL

N. Cure the repair at room temperature as given in Paragraph 5.O./REPAIR GENERAL

O. Sand the repair core to be smooth with the initial core surface.

P. Clean the repair area as given in Paragraph 5.E./REPAIR GENERAL

Q. Apply the fabric repair plies to the opposite surface of the radome as given in Paragraph 5.J./REPAIR GENERAL

R. Install the vacuum bag system as given in Paragraph 5.K./REPAIR GENERAL

S. Do a check of the vacuum bag for leaks as given in Paragraph 5.L./REPAIR GENERAL

T. Apply the pressure for the cure as given in Paragraph 5.M./REPAIR GENERAL

U. Cure the repair at room temperature as given in Paragraph 5.O./REPAIR GENERAL

V. Apply the finish to the repair area as given in Paragraph 5.P./REPAIR GENERAL

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NOTES

- THE HONEYCOMB CORE IS SHOWN. THIS REPAIR IS ALSO APPLICABLE TO NOSE RADOME STRUCTURE WITH FOAM CORE.

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Taper Sand that is Necessary for the Repair
Figure 201 (Sheet 1 of 2)

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SECTION THROUGH THE CENTER OF THE DAMAGED AREA

F79487 S0006588824_V1

Taper Sand that is Necessary for the Repair
Figure 201 (Sheet 2 of 2)

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NOTES

- THE HONEYCOMB CORE IS SHOWN. THIS REPAIR IS ALSO APPLICABLE TO NOSE RADOME STRUCTURE WITH FOAM CORE.

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Layout of the Repair Materials
Figure 202 (Sheet 1 of 3)

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Layout of the Repair Materials
Figure 202 (Sheet 2 of 3)

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Layout of the Repair Materials
Figure 202 (Sheet 3 of 3)

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5. **Inspection and Replacement Instructions**

A. Do a visual inspection and a tap test inspection of the repair every 400 flight cycles or more frequently.

(1) Do the tap test inspection as given in 737 NDT Part 1, 51-05-01.

B. Replace Repair 11 with a permanent repair no more than 4000 flight cycles after installation.

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REPAIR 12 - REPAIR WITH WET LAYUP MATERIALS FOR DAMAGE TO TWO FACESHEETS AND THE CORE - 150°F (66°C) CURE

1. Applicability

A. Repair 12 is applicable to:

(1) Nose radomes made of honeycomb core structure or foam core structure

(2) Damage to two facesheets of the nose radome

(3) Damage that is away from the edgeband of the radome.

B. Refer to Table 201/REPAIR 12 for the limits on Repair 12 for the diameter of the damage cleanup and the number of repair areas.

C. Repair 12 uses wet layup materials that are cured at 150°F (66°C).

2. General

A. Before you do Repair 12, refer to Paragraph 4./REPAIR GENERAL to:

(1) Find the limits of the damage

(2) Make a decision on the applicable repair option.

B. Repair 12 gives instructions for permanent and time-limited repairs. Refer to 51-00-06 for the definitions of the different categories of repairs.

C. When you do a time-limited repair you must:

(1) Inspect the repair as given in Paragraph 5./REPAIR 12

(2) Replace the repair with a permanent repair as given in Paragraph 5./REPAIR 12

D. The repair that follows is an alternative to Repair 12.

(1) Repair 13 is a permanent repair with no limits on the diameter of the damage cleanup and the number of damage areas.

Table 201:

REPAIR LIMITS FOR REPAIR 12		
REPAIR TYPE	MAXIMUM DIAMETER OF THE DAMAGE CLEANUP *[1]	LIMIT ON THE NUMBER OF REPAIRS
PERMANENT	10.0 in. (254.0 mm)	Only one repair if this type is permitted.
TIME-LIMITED	10.0 in. (254.0 mm)	There is no limit on the number of repairs of this type.
TIME-LIMITED	20.0 in. (508.0 mm)	Only one repair of this type is permitted.

*[1] The damage diameter is defined as the larger of either skin.

E. The materials necessary for Repair 12 are given in Table 202/REPAIR 12.

Table 202:

RADOME REPAIR MATERIALS	
REPAIR MATERIALS	BOEING SPECIFICATION
Potting compound	BMS 5-28, Type 15, 16, 17, 18, 19, or 20
Repair fabric	BMS 9-3, Type H-2 or Type H-3, Classes 7, 9, 10, 11, 13 , or 14
Laminating resin	BMS 8-301, Class 2

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Table 202: (Continued)

RADOME REPAIR MATERIALS	
REPAIR MATERIALS	**BOEING SPECIFICATION**
Resin Mix 2	BMS 8-301, Class 2 mixed with milled glass fibers. Use as an to the potting compound on the edges of the repair core which touch the initial core. Use as an alternative to the repair ply used to bond the repair core to the surface of an undamaged facesheet
Honeycomb or foam repair core	For the honeycomb core, use HRH-10/F50-5 flex core. For the foam core, use CMN-2000, Class 4 foam core material

3. References

Reference	Title
51-00-06	STRUCTURAL REPAIR DEFINITIONS
737 NDT Part 1, 51-05-01	Tap Test Inspection of Honeycomb Sandwich Structure

4. Repair Instructions

A. Remove the damaged facesheets and core as given in Paragraph 5.A./REPAIR GENERAL and Paragraph 5.B./REPAIR GENERAL

B. If necessary, make a plaster support as given in Paragraph 5.G./REPAIR GENERAL, to give the repair the same contour as the radome.

NOTE: Make sure you apply a mold release coating to the plaster support before you apply the repair materials.

C. Make the taper as given in Paragraph 5.C./REPAIR GENERAL Refer to Taper Sand that is Necessary for the Repair, Figure 201/REPAIR 12 for the necessary taper for each ply of the initial facesheet.

D. Remove all of the water or other unwanted material as given in Paragraph 5.D./REPAIR GENERAL The damaged area must be fully dry.

E. Clean the damaged area as given in Paragraph 5.E./REPAIR GENERAL

F. Make the repair core as given in Paragraph 5.F./REPAIR GENERAL

G. Clean the repair core as given in Paragraph 5.E./REPAIR GENERAL

H. Install the repair core as given in Paragraph 5.H./REPAIR GENERAL

I. Prepare the repair fabric as given in Paragraph 5.F./REPAIR GENERAL and Paragraph 5.I./REPAIR GENERAL Refer to Layout of the Repair Materials, Figure 202/REPAIR 12 for the layout of the repair parts.

J. Apply the fabric repair plies to one surface as given in Paragraph 5.J./REPAIR GENERAL

K. Install the vacuum bag system as given in Paragraph 5.K./REPAIR GENERAL

L. Do a check of the vacuum bag for leaks as given in Paragraph 5.L./REPAIR GENERAL

M. Apply the pressure for the cure as given in Paragraph 5.M./REPAIR GENERAL

N. Cure the repair at 150°F (66°C) as given in Paragraph 5.O./REPAIR GENERAL Make sure the temperature meets the cure requirements on both sides of the radome.

O. Sand the repair core to be smooth with the initial core surface.

P. Clean the repair area as given in Paragraph 5.E./REPAIR GENERAL

Q. Apply the fabric repair plies to the opposite surface as given in Paragraph 5.J./REPAIR GENERAL

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R. Install the vacuum bag system as given in Paragraph 5.K./REPAIR GENERAL

S. Do a check of the vacuum bag for leaks as given in Paragraph 5.L./REPAIR GENERAL

T. Apply the pressure for the cure as given in Paragraph 5.M./REPAIR GENERAL

U. Cure the repair at 150°F (66°C) as given in Paragraph 5.O./REPAIR GENERAL Make sure the temperature meets the cure requirements on both sides of the radome.

V. Apply the finish to the repair area as given in Paragraph 5.P./REPAIR GENERAL

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NOTES

- THE HONEYCOMB CORE IS SHOWN. THIS REPAIR IS ALSO APPLICABLE TO NOSE RADOME STRUCTURE WITH FOAM CORE.

F79555 S0006588831_V1

Taper Sand that is Necessary for the Repair
Figure 201 (Sheet 1 of 2)

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SECTION THROUGH THE CENTER OF THE DAMAGED AREA

F79556 S0006588832_V1

Taper Sand that is Necessary for the Repair
Figure 201 (Sheet 2 of 2)

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NOTES

- THE HONEYCOMB CORE IS SHOWN. THIS REPAIR IS ALSO APPLICABLE TO NOSE RADOME STRUCTURE WITH FOAM CORE.

F79560 S0006588833_V1

Layout of the Repair Materials
Figure 202 (Sheet 1 of 3)

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F79563 S0006588834_V1

Layout of the Repair Materials
Figure 202 (Sheet 2 of 3)

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SECTION THROUGH THE CENTER OF THE REPAIR

F79565 S0006588835_V1

Layout of the Repair Materials
Figure 202 (Sheet 3 of 3)

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5. **Inspection and Replacement Instructions**

A. If Repair 12 is a time-limited repair as given in Table 201/REPAIR 12, do the steps that follow:

(1) Do a visual inspection and a tap test inspection of the repair every 400 flight cycles or more frequently.

(a) Do the tap test inspection as given in 737 NDT Part 1, 51-05-01.

(2) Replace Repair 12 with a permanent repair no more than 4000 flight cycles after installation.

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REPAIR 13 - REPAIR WITH WET LAYUP MATERIALS FOR DAMAGE TO TWO FACESHEETS AND THE CORE - 200°F (93°C) CURE

1. Applicability

A. Repair 13 is applicable to:

(1) Nose radomes made of honeycomb core structure or foam core structure

(2) Damage to two facesheets and the core of the nose radome

(3) Damage that is away from the edgeband of the radome.

B. Repair 13:

(1) Has no limits on the dimensions of the damage cleanup or the number of repair areas

(2) Uses wet layup materials that are cured at 200°F (93°C).

2. General

A. Before you do Repair 13, refer to Paragraph 4./REPAIR GENERAL to:

(1) Find the limits of the damage

(2) Make a decision on the applicable repair option.

B. Repair 13 gives instructions for a permanent repair. Refer to 51-00-06 for the definitions of the different types of repairs.

C. The materials necessary for Repair 13 are given in Table 201/REPAIR 13.

Table 201:

RADOME REPAIR MATERIALS	
REPAIR MATERIALS	**BOEING SPECIFICATION**
Potting compound	BMS 5-28, Type 15, 16, 17, 18, 19, or 20
Repair fabric	BMS 9-3, Type H-2 or Type H-3, Classes 7, 9, 10, 11, 13, or 14
Laminating resin	BMS 8-301, Class 1
Resin Mix 1	BMS 8-301, Class 1 mixed with milled glass fibers. Use as an alternative to the potting compound on the edges of the repair core which touches the initial core. Use as an alternative to the repair ply used to bond the repair core to the surface of an undamaged facesheet
Honeycomb or foam repair core	For the honeycomb core, use HRH-10/F50-5 flex core. For the foam core, use CMN-2000, Class 4 foam core material

3. References

Reference	Title
51-00-06	STRUCTURAL REPAIR DEFINITIONS

4. Repair Instructions

A. Remove the damaged facesheets and the core as given in Paragraph 5.A./REPAIR GENERAL and Paragraph 5.B./REPAIR GENERAL

B. If necessary, make a plaster support as given in Paragraph 5.G./REPAIR GENERAL, to give the repair the same contour as the radome.

NOTE: Make sure you apply a mold release coating to the plaster support before you apply the repair materials.

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C. Make the taper as given in Paragraph 5.C./REPAIR GENERAL Refer to Taper Sand that is Necessary for the Repair, Figure 201/REPAIR 13 for the necessary taper for each ply of the initial facesheet.

D. Remove all of the water or other unwanted material as given in Paragraph 5.D./REPAIR GENERAL The damaged area must be fully dry.

E. Clean the damaged area as given in Paragraph 5.E./REPAIR GENERAL

F. Make the repair core as given in Paragraph 5.F./REPAIR GENERAL

G. Clean the repair core as given in Paragraph 5.E./REPAIR GENERAL

H. Install the repair core as given in Paragraph 5.H./REPAIR GENERAL

I. Prepare the repair fabric as given in Paragraph 5.F./REPAIR GENERAL and Paragraph 5.I./REPAIR GENERAL Refer to Layout of the Repair Materials, Figure 202/REPAIR 13 for the layout of the repair parts.

J. Apply the fabric repair plies to one surface as given in Paragraph 5.J./REPAIR GENERAL

K. Install the vacuum bag system as given in Paragraph 5.K./REPAIR GENERAL

L. Do a check of the vacuum bag for leaks as given in Paragraph 5.L./REPAIR GENERAL

M. Apply the pressure for the cure as given in Paragraph 5.M./REPAIR GENERAL

N. Cure the repair at 200°F (93°C) as given in Paragraph 5.O./REPAIR GENERAL Make sure the temperature meets the cure requirements on both sides of the radome.

O. Sand the repair core to be smooth with the outer surface of the facesheet.

P. Clean the repair area as given in Paragraph 5.E./REPAIR GENERAL

Q. Apply the fabric repair plies to the opposite surface as given in Paragraph 5.J./REPAIR GENERAL

R. Install the vacuum bag system as given in Paragraph 5.K./REPAIR GENERAL

S. Do a check of the vacuum bag for leaks as given in Paragraph 5.L./REPAIR GENERAL

T. Apply the pressure for the cure as given in Paragraph 5.M./REPAIR GENERAL

U. Cure the repair at 200°F (93°C) as given in Paragraph 5.O./REPAIR GENERAL Make sure the temperature meets the cure requirements on both sides of the radome.

V. Apply the finish to the repair area as given in Paragraph 5.P./REPAIR GENERAL

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NOTES

- THE HONEYCOMB CORE IS SHOWN. THIS REPAIR IS ALSO APPLICABLE TO NOSE RADOME STRUCTURE WITH FOAM CORE.

F79566 S0006588838_V1

Taper Sand that is Necessary for the Repair
Figure 201 (Sheet 1 of 2)

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SECTION THROUGH THE CENTER OF THE DAMAGED AREA

F79568 S0006588839_V1

Taper Sand that is Necessary for the Repair
Figure 201 (Sheet 2 of 2)

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NOTES

- THE HONEYCOMB CORE IS SHOWN. THIS REPAIR IS ALSO APPLICABLE TO NOSE RADOME STRUCTURE WITH FOAM CORE.

F79571 S0006588840_V2

Layout of the Repair Materials
Figure 202 (Sheet 1 of 3)

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F79575 S0006588841_V2

Layout of the Repair Materials
Figure 202 (Sheet 2 of 3)

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Layout of the Repair Materials
Figure 202 (Sheet 3 of 3)

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IDENTIFICATION 1 - SECTION 41 LANDING GEAR SUPPORT STRUCTURE FITTINGS

NOTES

- REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

1 NUMBERS 4 AND 5 FLIGHT DECK EYEBROW WINDOWS ARE ONLY COMMON TO LINE NUMBERS 1 THRU 1649

2 FLIGHT DECK EYEBROW PLUGS FOR LINE NUMBERS 1 THROUGH 1649 WITH SB 737-56-1017

G28211 S0006588846_V3

Section 41 Landing Gear Support Structure Fittings Location
Figure 1

Table 1:

REFERENCE DRAWINGS	
DRAWING NUMBER	**TITLE**
140A4101	Functional Collector - Nose Wheel Well
141A7500	Side Panel Installation - Nose Wheel Well
141A7600	Top Panel Installation - Nose Wheel Well

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LEFT SIDE IS SHOWN, RIGHT SIDE IS OPPOSITE

SIDE PANEL (PRESSURIZED SIDE)

NOTES

- REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

G28213 S0006588848_V2

Section 41 Landing Gear Support Structure Fittings Identification
Figure 2 (Sheet 1 of 2)

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LEFT SIDE IS SHOWN, RIGHT SIDE IS OPPOSITE

VIEW LOOKING UP INSIDE THE LANDING GEAR SUPPORT STRUCTURE

TOP AND SIDE PANELS (UNPRESSURIZED SIDES)

A

G28214 S0006588849_V2

Section 41 Landing Gear Support Structure Fittings Identification
Figure 2 (Sheet 2 of 2)

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Table 2:

LIST OF MATERIALS FOR FIGURE 2				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Drag Brace Outboard Fitting		7050-T7451 plate as given in AMS 4050. Refer to the engineering drawings for the grain direction and the machined thicknesses	
[2]	Outboard Trunnion Fitting		7075-T73 precision forging as given in BMS 7-186. Refer to the engineering drawings for the grain direction and the machined thicknesses	
[3]	Nose Gear Door Operator Support Fitting		7075-T73 die forging as given in BMS 7-186. Refer to the engineering drawings for the grain direction and the machined thicknesses	
[4]	Nose Landing Gear Retract Actuator Fitting		15-5 PH CRES die forging as given in AMS 5659, Type I, solution treated. Heat treat to 150-170 KSI. Refer to production drawings for the grain direction and the machined thicknesses	
[5]	Drag Brace Beam Fitting		7050-T7451 plate as given in AMS 4050. Refer to the engineering drawings for the grain direction and the machined thicknesses	
[6]	Inboard Trunnion Fitting		7050-T7451 plate as given in AMS 4050. Refer to the engineering drawings for the grain direction and the machined thicknesses	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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ALLOWABLE DAMAGE 1 - NOSE LANDING GEAR SUPPORT STRUCTURE FITTINGS

1. Applicability

A. This subject gives the allowable damage limits for the Nose Landing Gear support structure fittings shown in Section 41 Landing Gear Support Structure Fittings Location, Figure 101/ALLOWABLE DAMAGE 1.

NOTES

1 NUMBERS 4 AND 5 FLIGHT DECK EYEBROW WINDOWS ARE ONLY COMMON TO LINE NUMBERS 1 THRU 1649

2 FLIGHT DECK EYEBROW PLUGS FOR LINE NUMBERS 1 THROUGH 1649 WITH SB 737-56-1017

G37286 S0006588853_V3

Section 41 Landing Gear Support Structure Fittings Location
Figure 101 (Sheet 1 of 3)

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LEFT SIDE IS SHOWN, RIGHT SIDE IS OPPOSITE

SIDE PANEL (PRESSURIZED SIDE)

A

G37297 S0006588854_V1

Section 41 Landing Gear Support Structure Fittings Location
Figure 101 (Sheet 2 of 3)

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LEFT SIDE IS SHOWN, RIGHT SIDE IS OPPOSITE

VIEW LOOKING UP INSIDE THE LANDING GEAR SUPPORT STRUCTURE

TOP AND SIDE PANELS (UNPRESSURIZED SIDES)

B

G37310 S0006588855_V1

Section 41 Landing Gear Support Structure Fittings Location
Figure 101 (Sheet 3 of 3)

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2. General

A. Do the steps that follow if you have damage to the aluminum or Corrosion Resistant Steel (CRES) parts:

(1) Do a detailed close visual inspection of the damaged area to find the length, width, and depth of the damage.

(a) For aluminum parts, the methods that follow are permitted as an alternative to the detailed close visual inspection:

1) Dye penetrant inspection. Refer to SOPM 20-20-02.

2) High Frequency Eddy Current (HFEC) inspection. Refer to 737 NDT Part 6, 51-00-00, Figure 4 .

(b) For CRES parts a magnetic particle inspection is permitted as an alternative to the detailed close visual inspection. Refer to SOPM 20-20-01.

(2) Remove the damage as necessary. Refer to 51-10-02 for the investigation and cleanup procedures.

(3) Refer to 51-30-03 for possible sources of nonmetallic materials you can use to remove the damage.

(4) Refer to 51-30-05 for possible sources of equipment and tools you can use to remove the damage.

B. After you have removed the damage, do the steps that follow:

(1) Apply a chemical conversion coating to the reworked areas of the aluminum. Refer to 51-20-01.

(2) Apply a cadmium plating to the reworked areas of the CRES parts. Refer to SOPM 20-42-05, Type 2, Class 2.

(3) Apply one layer of BMS 10-11, Type I primer to the reworked areas of the following parts:

- Drag Brace Beam Fitting
- Drag Brace Outboard Fitting
- Inboard Trunnion Fitting
- Nose Landing Gear Retract Actuator Support Fitting. Refer to SOPM 20-41-02.

(4) Apply two layers of BMS 10-11, Type I primer to the reworked areas of the following parts:

- Nose Gear Door Operator Support Fitting
- Outboard Trunnion Fitting. Refer to SOPM 20-41-02.

3. References

Reference	Title
51-10-02	INSPECTION AND REMOVAL OF DAMAGE
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-20-06	SHOT PEENING
51-30-03	NON-METALLIC MATERIALS
51-30-05	EQUIPMENT AND TOOLS FOR REPAIRS
SOPM 20-10-03	SHOT PEENING
SOPM 20-20-01	Magnetic Particle Inspection
SOPM 20-20-02	Penetrant Methods of Inspection
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes

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(Continued)

Reference	Title
SOPM 20-42-05	Bright Cadmium Plating
737 NDT Part 6, 51-00-00	Structures - General
737 NDT Part 6, 51-00-00, Procedure 4	Surface Inspection of Aluminum Parts (Meter Display)

4. **Allowable Damage Limits**

A. Drag Brace Fittings and Trunnion Fittings (Aluminum)

(1) Cracks:

(a) Remove the damage as shown in Section 41 Landing Gear Support Structure Fittings Allowable Damage Limits, Figure 102/ALLOWABLE DAMAGE 1, Details A , B , and C .

(2) Nicks, Gouges, Scratches, and Corrosion:

(a) Remove the damage as shown in Section 41 Landing Gear Support Structure Fittings Allowable Damage Limits, Figure 102/ALLOWABLE DAMAGE 1, Details A , B , C , D , and E .

(3) Dents are not permitted.

(4) Holes and Punctures are not permitted.

B. Nose Gear Door Operator Support Fitting (Aluminum)

(1) Cracks:

(a) Remove the damage as shown in Section 41 Landing Gear Support Structure Fittings Allowable Damage Limits, Figure 102/ALLOWABLE DAMAGE 1, Details A , B , and C .

(2) Nicks, Gouges, Scratches, and Corrosion:

(a) Remove the damage as shown in Section 41 Landing Gear Support Structure Fittings Allowable Damage Limits, Figure 102/ALLOWABLE DAMAGE 1, Details A , B , C , D , and E .

(3) Dents are not permitted.

(4) Holes and Punctures are not permitted.

WARNING: MAKE SURE THAT YOU WEAR EYE PROTECTION WHEN YOU USE THE FLAP PEEN WHEEL. IF YOU DO NOT OBEY, AN INJURY CAN OCCUR.

(5) Flap peen or shot peen the surfaces of the parts where the damage has been removed, but not the inner surfaces of the lug bores.

(a) Refer to 51-20-06 for the shot peen intensity and shot number.

(b) Refer to SOPM 20-10-03 for the flap peen and shot peen procedures.

C. Nose Landing Gear Retract Actuator Support Fitting (CRES)

(1) Cracks:

(a) Remove the damage as shown in Section 41 Landing Gear Support Structure Fittings Allowable Damage Limits, Figure 102/ALLOWABLE DAMAGE 1, Details A , B , and C .

(2) Nicks, Gouges, Scratches, and Corrosion:

(a) Remove the damage as shown in Section 41 Landing Gear Support Structure Fittings Allowable Damage Limits, Figure 102/ALLOWABLE DAMAGE 1, Details A , B , C , D , and F .

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(3) Dents are not permitted.

(4) Holes and Punctures are not permitted.

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REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER EDGE MARGINS DO NOT HAVE AN OVERLAP

A

REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER EDGE MARGINS HAVE AN OVERLAP

B

G37383 S0006588856_V1

Section 41 Landing Gear Support Structure Fittings Allowable Damage Limits
Figure 102 (Sheet 1 of 5)

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X = WIDTH OF THE MATERIAL REMOVED
= A MAXIMUM OF 10 PERCENT OF THE WIDTH OF THE FLANGE

REMOVAL OF DAMAGED MATERIAL AT AN EDGE

C

REMOVAL OF DAMAGED MATERIAL ON A SURFACE

D

G37384 S0006588857_V1

Section 41 Landing Gear Support Structure Fittings Allowable Damage Limits
Figure 102 (Sheet 2 of 5)

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G37399 S0006588858_V1

Section 41 Landing Gear Support Structure Fittings Allowable Damage Limits
Figure 102 (Sheet 3 of 5)

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B–B

NOTE: DAMAGED SEALANT IS NOT PERMITTED. IF THE SEALANT IS DAMAGED, LOOK FOR MIGRATION OR ROTATION OF THE BUSHING. IF THERE IS NO MIGRATION, ROTATION, OR CORROSION, REMOVE THE DAMAGED SEALANT AND APPLY A NEW FILLET SEAL.

G37570 S0006588859_V1

Section 41 Landing Gear Support Structure Fittings Allowable Damage Limits
Figure 102 (Sheet 4 of 5)

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REMOVAL OF SURFACE AND EDGE DAMAGE FROM A LUG THAT HAS A BEARING

F

G37387 S0006588860_V2

Section 41 Landing Gear Support Structure Fittings Allowable Damage Limits
Figure 102 (Sheet 5 of 5)

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REPAIR 1 - NOSE LANDING GEAR SUPPORT FITTING STRUCTURE

1. **Repair 1**

   A. This data has been removed.

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IDENTIFICATION 1 - SECTION 43 FUSELAGE SKIN

NOTE: REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

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Section 43 Fuselage Skin Location
Figure 1

Table 1:

REFERENCE DRAWINGS	
DRAWING NUMBER	**TITLE**
140A4310	Functional Collector - Section 43, Upper Lobe
140A4320	Section 43, Lower Lobe - Functional Product Collector
143A3110	Skin Installation - S-4L to S-4R, STA 360 to 540
143A3130	Skin Installation - S-4 to S-10, STA 360 to 540
143A3150	Skin Installation - S-10 to S-14, STA 360 to 540
143A3210	Skin Installation - STA 360 to 540, S-14L to S-24L
143A3230	Skin Installation - Section 43, Lower Lobe, S-24L to S-24R
143A3250	Skin Installation - STA 360 to 540, S-14R to S-24R

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NOTE: REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

G70293 S0006589035_V1

Section 43 Fuselage Skin Identification
Figure 2

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Table 2:

LIST OF MATERIALS FOR FIGURE 2				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Skin Assembly			
	Skin	0.040 (1.02)	2024-T3 clad sheet as given in QQ-A-250/5	Line Number 7 to 3591
	Skin	0.045 (1.14)	2024-T3 clad sheet as given in QQ-A-250/5	Line Number 3592 and On
	Doubler	0.040 (1.02)	2024-T3 clad sheet as given in QQ-A-250/5. Refer to Figure 4 for the thicknesses of the chem-milled areas	
[2]	Skin Assembly			
	Skin	0.040 (1.02)	2024-T3 clad sheet as given in QQ-A-250/5	Line Number 7 to 3591
	Skin	0.045 (1.14)	2024-T3 clad sheet as given in QQ-A-250/5	Line Number 3592 and On
	Doubler	0.040 (1.02)	2024-T3 clad sheet as given in QQ-A-250/5. Refer to Figure 5 for the thicknesses of the chem-milled areas	
[3]	Skin	0.080 (2.03)	2024-T3 clad sheet as given in QQ-A-250/5. Refer to Figure 6 for the thicknesses of the chem-milled areas	
[3]	Skin	0.140 (3.56)	2024-T3 clad sheet as given in QQ-A-250/5. Refer to Figure 6 for the thicknesses of the chem-milled areas	
[4]	Skin	0.090 (2.29)	2024-T3 clad sheet as given in QQ-A-250/5. Refer to Figure 7 for the thicknesses of the chem-milled areas	
[5]	Skin	0.090 (2.29)	2024-T3 clad sheet as given in QQ-A-250/5. Refer to Figure 8 for the thicknesses of the chem-milled areas	
[6]	Skin	0.090 (2.03)	2024-T3 clad sheet as given in QQ-A-250/5. Refer to Figure 9 for the thicknesses of the chem-milled areas	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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NOTE: REFER TO TABLE 3 FOR THE LIST OF MATERIALS.

G70598 S0006589042_V1

Section 43 Fuselage Skin Doubler, Bear Strap, and Splice Strap Identification
Figure 3

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Table 3:

LIST OF MATERIALS FOR FIGURE 3				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Bear Strap	0.110 (2.79)	2024-T3 sheet as given in QQ-A-250/4.	
[2]	Doubler	0.050 (1.27)	2024-T3 clad sheet as given in QQ-A-250/5	
[3]	Doubler (3)	0.071 (1.8)	2024-T3 clad sheet as given in QQ-A-250/5	
[4]	Doubler (2)	0.150 (3.81)	7075-T73 sheet as given in QQ-A-250/12	
[5]	Doubler (20)	0.032 (0.81)	2024-T3 clad sheet as given in QQ-A-250/5	
[6]	Doubler (2)	0.090 (2.29)	2024-T3 clad sheet as given in QQ-A-250/5	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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NOTE: CHEM-MILLED DOUBLER THICKNESS IS 0.023 INCH. THE SKIN IS NOT CHEM-MILLED.

1 THESE CHEM MILLS ARE NOT APPLICABLE FOR AIRPLANES WITH THE IRIDIUM SATCOM ANTENNA.

VIEW IS ON THE INNER SURFACE OF THE SKIN

G70890 S0006589055_V3

Chem-Milled Areas of Figure 2, Item [1]
Figure 4

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NOTE: CHEM-MILLED DOUBLER THICKNESS IS 0.023 INCH. THE SKIN IS NOT CHEM-MILLED.

VIEW IS ON THE INNER SURFACE OF THE SKIN

RIGHT SIDE IS SHOWN

NOTE: CHEM-MILLED DOUBLER THICKNESS IS 0.023 INCH. THE SKIN IS NOT CHEM-MILLED.

VIEW IS ON THE INNER SURFACE OF THE SKIN

LEFT SIDE IS SHOWN

G71055 S0006589062_V2

Chem-Milled Areas of Figure 2, Item [2]
Figure 5

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VIEW IS ON THE INNER SURFACE OF THE SKIN

RIGHT SIDE IS SHOWN

VIEW IS ON THE INNER SURFACE OF THE SKIN

LEFT SIDE IS SHOWN

A

(TYPICAL)

B

(TYPICAL)

NOTES

- ALL DIMENSIONS SHOWN ARE THICKNESSES OF THE SKIN IN INCHES.

G71214 S0006589069_V2

Chem-Milled Areas of Figure 2, Item [3]
Figure 6

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NOTE: ALL DIMENSIONS SHOWN ARE THICKNESSES OF THE SKIN IN INCHES.

VIEW IS ON THE INNER SURFACE OF THE SKIN G71322 S0006589074_V1

Chem-Milled Areas of Figure 2, Item [4]
Figure 7

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NOTE: ALL DIMENSIONS SHOWN ARE THICKNESSES OF THE SKIN IN INCHES.

VIEW IS ON THE INNER SURFACE OF THE SKIN

G71626 S0006589080_V1

Chem-Milled Areas of Figure 2, Item [5]
Figure 8

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NOTE: ALL DIMENSIONS SHOWN ARE THICKNESSES OF THE SKIN IN INCHES.

VIEW IS ON THE INNER SURFACE OF THE SKIN

G71744 S0006589085_V2

Chem-Milled Areas of Figure 2, Item [6]
Figure 9

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ALLOWABLE DAMAGE GENERAL - SECTION 43 FUSELAGE SKIN

NOTE: REFER TO SRM 53-30-70 FOR THE FAIRING SKIN ALLOWABLE DAMAGE.

2178070 S0000480855_V1

Section 43 Fuselage Skin Location
Figure 101

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NOTE: REFER TO SRM 53-30-70 FOR THE FAIRING SKIN REPAIR.

CONTACT THE BOEING COMPANY IF THE REPAIR IS LESS THAN 10.0 INCHES AWAY FROM THE IRIDIUM SATCOM ANTENNA INSTALLATION.

L07096 S0006589100_V9

Section 43 Fuselage Skin Location
Figure 201

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IDENTIFICATION 1 - SECTION 43 FUSELAGE STRINGERS

NOTE: REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

G80020 S0006589106_V2

Section 43 Stringer Identification
Figure 1

Table 1:

REFERENCE DRAWINGS	
DRAWING NUMBER	**TITLE**
140A4310	Functional Collector, Section 43 Upper Lobe
143A3110	Skin Installation, S-4L to S-4R, STA 360 to STA 540
143A3120	Stringer Details, S-3L to S-3R
143A3130	Skin Installation, S-4 to S-10, STA 360 to STA 540
143A3140	Stringer Details, S-4 to S-10
143A3150	Skin Installation, S-10 to S-13, STA 360 to STA 540
143A3160	Stringer Details, S11 to S-13

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Table 1: (Continued)

REFERENCE DRAWINGS	
DRAWING NUMBER	**TITLE**
140A4320	Functional Collector, Section 43, Lower Lobe
143A3210	Skin Installation, Section 43 Lower Lobe, S-14L to S-23L
143A3221	Stringer Details, S-14L to S-23L
143A3230	Skin Installation, Section 43, Lower Lobe, S-24L to S-24R
143A3241	Stringer Details, S-24L to S-24R
143A3250	Skin Panel Installation, S-14R to S-23R
143A3261	Stringer Details, S-14R to S-23R

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LEFT SIDE IS SHOWN

NOTE: REFER TO TABLE 2 FOR STRINGER ITEM NUMBER MATERIAL IDENTIFICATION.

G80168 S0006589112_V1

Section 43 Stringer Identification STA 360 to 540
Figure 2

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RIGHT SIDE IS SHOWN

NOTE: REFER TO TABLE 2 FOR THE STRINGER ITEM NUMBER MATERIAL IDENTIFICATION.

G82537 S0006589119_V1

Section 43 Stringer Identification STA 360 to 540
Figure 3

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Table 2:

LIST OF MATERIALS FOR FIGURE 2 and 3				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Stringer		BAC1517-1485 7075-T6511 extrusion as given in QQ-A-200/11	
[2]	Stringer, tapered	0.045 (1.14)	7075-T62 sheet as given in QQ-A-250/12	
[3]	Stringer, tapered	0.050 (1.27)	7075-T62 sheet as given in QQ-A-250/12	
[4]	Stringer, tapered	0.056 (1.42)	7075-T62 sheet as given in QQ-A-250/12	
[5]	Stringer, tapered	0.063 (1.6)	7075-T62 sheet as given in QQ-A-250/12	
[6]	Stringer, tapered	0.071 (1.8)	7075-T62 sheet as given in QQ-A-250/12	
[7]	Stringer, tapered	0.080 (2.03)	7075-T62 sheet as given in QQ-A-250/12	
[8]	Stringer	---	BAC1498-139 7075-T62 sheet as given in QQ-A-250/12	
[9]	Stringer	---	BAC1498-141 7075-T62 sheet as given in QQ-A-250/12	
[10]	Stringer	---	BAC1498-152 7075-T62 sheet as given in QQ-A-250/12	
[11]	Stringer, tapered	0.060 (1.52)	7075-T62 sheet as given in QQ-A-250/12	
[12]	Stringer	---	BAC1498-156 7075-T62 sheet as given in QQ-A-250/12	
[13]	Stringer, tapered	0.042 (1.07)	7075-T62 sheet as given in QQ-A-250/12	
[14]	Stringer	---	BAC1498-158 7075-T62 sheet as given in QQ-A-250/12	
[15]	Stringer, tapered	0.036 (0.91)	7075-T62 sheet as given in QQ-A-250/12	
[16]	Stringer	---	BAC1498-161 7075-T62 sheet as given in QQ-A-250/12	
[17]	Stringer, tapered	0.090 (2.29)	7075-T62 sheet as given in QQ-A-250/12	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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ALLOWABLE DAMAGE 1 - SECTION 43 FUSELAGE STRINGERS

L07108 S0006589129_V1

Section 43 Stringer Allowable Damage
Figure 101

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REPAIR 1 - SECTION 43 FUSELAGE STRINGERS

1. Applicability

A. Repair 1 is applicable to damaged stringers in body Section 43 shown in Section 43 Stringer Repair, Figure 201/REPAIR 1.

H23792 S0006589134_V1

Section 43 Stringer Repair
Figure 201

2. General

A. The typical repairs given in 51-70-12 can be used when applicable if:

(1) There is sufficient clearance with the adjacent structure for the installation of repair parts.

B. Refer to the limits of the typical repairs given in 51-70-12 before you start a repair.

3. References

Reference	Title
51-70-12	EXTRUDED SECTION REPAIRS
53-00-03, REPAIR 1	Repair for a Type I, Type II, or Type IV Fuselage Stringer with General Damage
53-00-03, REPAIR 2	Repair for a Type I, II or IV Fuselage Stringer with Longitudinal Crack Damage in a Formed Corner of a Skin Attachment Flange
53-00-03, REPAIR 3	Repair for a Type III Fuselage Stringer With General Damage
53-00-03, REPAIR 4	Repair for a Type III Fuselage Stringer With Longitudinal Crack Damage in a Formed Corner of a Skin Attachment Flange
53-00-03, REPAIR GENERAL	Formed Fuselage Stringers
53-30-03	FUSELAGE STRINGERS - SECTION 43
53-30-03, IDENTIFICATION 1	Section 43 Fuselage Stringers

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4. Repair Instructions

A. Refer to Table 201 to find the applicable repairs to the section 43 fuselage stringers.

NOTE: If necessary, refer to 53-30-03, Identification 1 to find the material and the process that was used to make the part which you want to repair.

Table 201:

REPAIR REFERENCES FOR THE SECTION 43 FUSELAGE STRINGERS		
STRINGER	**LOCATION**	**REPAIR**
S-11L, S-11R, S-13L, S-13R	STA 360 to STA 540	Refer to SRM 51-70-12
All other stringers	STA 360 to STA 540	Refer to SRM 53-00-03
S-17L, S-17R	STA 360 to STA 540	Refer to SRM 53-30-13

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IDENTIFICATION 1 - SECTION 43 FUSELAGE INTERCOSTALS

G71759 S0006589140_V1

Section 43 Fuselage Intercostal Identification
Figure 1

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ALLOWABLE DAMAGE 1 - SECTION 43 FUSELAGE INTERCOSTALS

G68858 S0006589147_V1

Section 43 Fuselage Intercostal Allowable Damage
Figure 101

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G68861 S0006589150_V1

Section 43 Fuselage Intercostal Repair
Figure 201

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IDENTIFICATION 1 - SECTION 43 FUSELAGE FRAMES

NOTE: REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

H85054 S0006589155_V1

Section 43 Fuselage Frame Location
Figure 1

Table 1:

REFERENCE DRAWINGS	
DRAWING NUMBER	**TITLE**
001A4001	Fuselage Product Collector
140A4310	Functional Collector - Section 43, Upper Lobe
140A4320	Section 43 Lower Lobe Functional Product collector
143A1110	Sta 380 Frame Upper Lobe
143A1111	Sta 400 Frame Upper Lobe
143A1112	Sta 420 Frame Upper Lobe
143A1113	Sta 440 Frame Upper Lobe
143A1114	Sta 460 Frame Upper Lobe
143A1120	Sta 480 Frame Upper Lobe
143A1121	Sta 500 Frame Upper Lobe
143A1122	Sta 500A Frame Upper Lobe
143A1123	Sta 500B Frame Upper Lobe
143A1124	Sta 500C Frame Upper Lobe
143A1125	Sta 500D Frame Upper Lobe
143A1130	Sta 500E Frame Upper Lobe
143A1131	Sta 500F Frame Upper Lobe
143A1132	Sta 500G Frame Upper Lobe

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Table 1: (Continued)

REFERENCE DRAWINGS	
DRAWING NUMBER	**TITLE**
143A1133	Sta 500H Frame Upper Lobe
143A1134	Sta 500I Frame Upper Lobe
143A1115	Sta 520 Frame Upper Lobe
143A1210	Sta 380 Frame Lower Lobe
143A1211	Sta 400 Frame Lower Lobe
143A1212	Sta 420 Frame Lower Lobe
143A1213	Sta 440 Frame Lower Lobe
143A1214	Sta 460 Frame Lower Lobe
143A1220	Sta 480 Frame Lower Lobe
143A1221	Sta 500 Frame Lower Lobe
143A1222	Sta 500A Frame Lower Lobe
143A1223	Sta 500B Frame Lower Lobe
143A1224	Sta 500C Frame Lower Lobe
143A1225	Sta 500D Frame Lower Lobe
143A1230	Sta 500E Frame Lower Lobe
143A1231	Sta 500F Frame Lower Lobe
143A1232	Sta 500G Frame Lower Lobe
143A1233	Sta 500H Frame Lower Lobe
143A1234	Sta 500I Frame Lower Lobe
143A1215	Sta 520 Frame Lower Lobe

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NOTES

- REFER TO TABLE 2 FOR THE LIST OF MATERIALS.
- REFER TO DETAIL A FOR A TYPICAL SECTION VIEWS OF ITEMS [1] AND [2].

H85066 S0006589160_V1

Upper Lobe Frames - Section 43 Identification
Figure 2 (Sheet 1 of 2)

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H11765 S0006589164_V1

Upper Lobe Frames - Section 43 Identification
Figure 2 (Sheet 2 of 2)

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Table 2:

LIST OF MATERIALS FOR FIGURE 2				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Frame		BAC1517-1062 7075-T62 clad formed section	
[2]	Frame Assembly			
	Doubler	0.020 (0.51)	7075-T6 clad sheet	
	Frame		BAC1517-705 7075-T62 clad formed section	
[3]	Frame		BAC1517-2158 7075-T62 clad formed section	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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NOTES

- REFER TO TABLE 3 FOR THE LIST OF MATERIALS.
- REFER TO DETAIL A FOR A TYPICAL CROSS SECTION OF ITEM [4].

H84930 S0006589168_V1

Lower Lobe Frames - Section 43 Identification
Figure 3 (Sheet 1 of 2)

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H11781 S0006589172_V1

Lower Lobe Frames - Section 43 Identification
Figure 3 (Sheet 2 of 2)

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Table 3:

LIST OF MATERIALS FOR FIGURE 3				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Frame Assembly (Left and Right)			
	Frame (2)	0.050 (1.27)	7075-T62 clad sheet	
	Failsafe Chord		BAC1503-100985 7075-T62 extrusion	
	Splice Plate (Right only)	0.050 (1.27)	7075-T62 clad sheet	
	Doubler (Center only)	0.032 (0.81)	7075-T62 clad sheet	
	Doubler	0.040 (1.02)	7075-T62 clad sheet	
[2]	Frame Assembly (Left and Right)			
	Frame	0.050 (1.27)	7075-T62 clad sheet	
	Failsafe Chord		BAC1503-100985 7075-T62 extrusion	
	Splice Plate (Right only)	0.050 (1.27)	7075-T62 clad sheet	
	Doubler (Center only)	0.032 (0.81)	7075-T62 clad sheet	
	Doubler (2)	0.040 (1.02)	7075-T62 clad sheet	
[3]	Frame Assembly (Left and Right)			
	Frame (2)	0.050 (1.27)	7075-T62 clad sheet	
	Failsafe Chord		BAC1505-101091 7075-T62 extrusion	
	Splice Plate (Right only)	0.050 (1.27)	7075-T62 clad sheet	
	Doubler (2)	0.040 (1.02)	7075-T62 clad sheet	
[4]	Frame Assembly (Left only)			
	Frame	0.050 (1.27)	7075-T62 clad sheet	
	Failsafe Chord		BAC1503-100985 7075-T62 extrusion	
	Doubler	0.040 (1.02)	7075-T62 clad sheet	
[5]	Frame Assembly (Left and Right)			
	Frame (2)	0.050 (1.27)	7075-T62 clad sheet	
	Failsafe Chord		BAC1503-100985 7075-T62 extrusion	
	Splice (Right only)	0.050 (1.27)	7075-T62 clad sheet	
	Doubler	0.040 (1.02)	7075-T62 clad sheet	
[6]	Frame Assembly (Left and Right)			
	Frame (2)	0.050 (1.27)	7075-T62 clad sheet	
	Failsafe Chord		BAC1503-101091 7075-T62 extrusion	
	Splice Plate (Right only)	0.050 (1.27)	7075-T62 clad sheet	
	Doubler	0.032 (0.81)	7075-T62 clad sheet	
	Doubler	0.040 (1.02)	7075-T62 clad sheet	

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Table 3: (Continued)

LIST OF MATERIALS FOR FIGURE 3				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[7]	Frame Assembly (Left and Right)			
	Frame	0.050 (1.27)	7075-T62 clad sheet	
	Failsafe Chord		BAC1503-101091 7075-T62 extrusion	
	Splice Plate (Right only)	0.050 (1.27)	7075-T62 clad sheet	
	Doubler	0.040 (1.02)	7075-T62 clad sheet	
	Channel (Left only)		BAC1493-937 2024-T42 clad sheet	
[8]	Frame Assembly (Left and Right)			
	Frame	0.050 (1.27)	7075-T62 clad sheet	
	Failsafe Chord		BAC1503-100985 7075-T62 extrusion	
	Splice (Right only)	0.050 (1.27)	7075-T62 clad sheet	
	Doubler	0.040 (1.02)	7075-T62 clad sheet	
	Doubler	0.020 (0.51)	7075-T62 clad sheet	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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L07120 S0006589178_V1

Section 43 Fuselage Frame Location
Figure 101

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L07313 S0006589183_V1

Section 43 Fuselage Frame Location
Figure 201

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H51679 S0006589195_V1

Section 43 Keel Beam Structure Identification
Figure 1

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Section 43 Keel Beam Structure Allowable Damage
Figure 101

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L29684 S0006589207_V1

Section 43 Keel Beam Structure Repair
Figure 201

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IDENTIFICATION 1 - SECTION 43 CREASE BEAM STRUCTURE

NOTE: REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

L82838 S0006589214_V1

Section 43 Crease Beam and Splice Location
Figure 1

Table 1:

REFERENCE DRAWINGS	
DRAWING NUMBER	**TITLE**
140A0345	Floor to Body Integration Collector, Section 41 to 43
140A0347	Floor to Body Integration Collector, Section 43
140A4406	Final Installation Functional Collector, Section 44
143A5900	Crease Beam Assembly/Installation, Section 43
143A5911	Chords - Crease Beam, Section 43
143A5912	Clip - Crease Beam
143A5913	Crease Beam Shear Webs, Section 43
287A4011	Bracket/CFA, Wire Bundle Support - Upper Lobe

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H84200 S0006589219_V1

Section 43 Crease Beam and Splice Identification
Figure 2 (Sheet 1 of 2)

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H84206 S0006589220_V1

Section 43 Crease Beam and Splice Identification
Figure 2 (Sheet 2 of 2)

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NOTES

- REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

LEFT SIDE CREASE BEAM IS SHOWN
FOR AIRPLANE LINE NUMBERS 1 THRU 1195

H84351 S0006589226_V2

Section 43 Crease Beam Identification
Figure 3 (Sheet 1 of 5)

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NOTES

- REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

LEFT SIDE CREASE BEAM IS SHOWN
FOR AIRPLANE LINE NUMBERS 1196 AND ON

D78793 S0000165173_V1

Section 43 Crease Beam Identification
Figure 3 (Sheet 2 of 5)

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COMB ASSEMBLY
(DOES NOT INCLUDE OUTER CHORD)
A-A

TYPICAL WEB ASSEMBLY
B-B

H84548 S0006589231_V2

Section 43 Crease Beam Identification
Figure 3 (Sheet 3 of 5)

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NOTES

- REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

RIGHT SIDE CREASE BEAM IS SHOWN
FOR AIRPLANE LINE NUMBERS 1 THRU 1195

H84554 S0006589238_V2

Section 43 Crease Beam Identification
Figure 3 (Sheet 4 of 5)

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NOTES

- REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

RIGHT SIDE CREASE BEAM IS SHOWN
FOR AIRPLANE LINE NUMBERS 1196 AND ON

D78645 S0000164708_V1

Section 43 Crease Beam Identification
Figure 3 (Sheet 5 of 5)

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Table 2:

LIST OF MATERIALS FOR FIGURE 3				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Angle (Left-2 locations) (Right-1 location)		AND10134-0601 7075-T6511 extrusion as given in QQ-A-200/11	
[2]	Shear Web (Left-2 locations) (Right-1 location)	0.250 (6.35)	7050-T7451 plate as given in AMS 4050	
[3]	Inner Chord (3 locations)		BAC1515-531 7075-T6511 extrusion as given in QQ-A-200/11	
[4]	Shear Web (Left-14 locations) (Right-11 locations)	0.036 (0.91)	7075-T62 clad sheet as given in QQ-A-250/13	
[5]	Shear Web	0.045 (1.14)	7075-T62 clad sheet as given in QQ-A-250/13	
[6]	Strap	0.071 (1.8)	2024-T3 clad sheet as given in QQ-A-250/5	Left side only
[7]	Strap (15 locations)	0.063 (1.6)	7075-T6 clad sheet as given in QQ-A-250/13	Cum Line 001 thru 1195
[8]	Outer Chord (2 locations)		7050-T7451 machined plate as given in AMS 4050 (Grain direction controlled part)	Cum Line 001 thru 1195
[9]	Splice Angle		BAC1514-1709 7075-T73511 extrusion as given in QQ-A-200/11 (Optional: 7050-T7451 plate as given in AMS 4050)	Cum Line 001 thru 1195
[10]	Splice Angle (2 locations)		BAC1503-101027 7075-T73511 extrusion as given in QQ-A-200/11 (Optional: 7050-T7451 plate as given in AMS 4050)	Cum Line 001 thru 1195
[11]	Splice Angle (3-locations)		7050-T7451 plate as given in AMS 4050	Cum Line 001 thru 1195
[12]	Splice Strap (Left-3 locations) (Right-2 locations)	0.063 (1.6)	7075-T6 clad sheet as given in QQ-A-250/13	
[13]	Bracket	0.050 (1.27)	6013-T6 sheet as given in AMS 4347	
[14]	Bracket	0.063 (1.6)	6013-T6 sheet as given in AMS 4347	Left side only
[15]	Shear Web (4 locations)	0.040 (1.02)	7075-T62 clad sheet as given in QQ-A-250/13	Right side only
[16]	Shear Web	0.050 (1.27)	7075-T62 clad sheet as given in QQ-A-250/13	Right side only
[17]	Splice Angle	0.080 (2.03)	7075-T62 clad sheet as given in QQ-A-250/13	Right side only
[18]	Shear Web	0.056 (1.42)	7075-T62 clad sheet as given in QQ-A-250/13	Right side only
[19]	Shear Web	0.032 (0.81)	7075-T62 clad sheet as given in QQ-A-250/13	Right side only
[20]	Outer Chord		7050-T7451 machined plate as given in AMS 4050 (Grain direction controlled part)	Cum Line 001 thru 1195
[21]	Outer Chord, one piece, (LH)		BAC1506-2260 7075-T73511 extrusion as given in QQ-A-200/11, or BAC1506-4626 7075-T73511 extrusion as given in QQ-A-200/11, or 7050-T7451 machined plate as given in AMS 4050 (Grain direction controlled part)	Cum Line 1196 and on
[22]	Outer Chord, AFT		7050-T7451 machined plate as given in AMS 4050 (Grain direction controlled part)	Cum Line 001 thru 1195
[23]	Outer Chord, FWD, (RH)		BAC1506-2260 7075-T73511 extrusion as given in QQ-A-200/11, or BAC1506-4626 7075-T73511 extrusion as given in QQ-A-200/11, or 7050-T7451 machined plate as given in AMS 4050 (Grain direction controlled part)	Cum Line 1196 and on

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Table 2: (Continued)

LIST OF MATERIALS FOR FIGURE 3				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[24]	Outer Chord, AFT, (RH)		BAC1506-2260 7075-T73511 extrusion as given in QQ-A-200/11, or BAC1506-4626 7075-T73511 extrusion as given in QQ-A-200/11, or 7050-T7451 machined plate as given in AMS 4050 (Grain direction controlled part)	Cum Line 1196 and on

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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NOTE: REFER TO TABLE 3 FOR THE LIST OF MATERIALS.

H84679 S0006589243_V1

Left Side Section 41 to 43 Crease Beam Splice Identification
Figure 4

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NOTE: REFER TO TABLE 3 FOR THE LIST OF MATERIALS.

G44849 S0006589247_V1

Right Side Section 41 to 43 Crease Beam Splice Identification
Figure 5

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NOTE: REFER TO TABLE 3 FOR THE LIST OF MATERIALS.

G45182 S0006589248_V1

Section 43 to 44 Crease Beam Splice Identifications
Figure 6

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Table 3:

LIST OF MATERIALS FOR FIGURES 4, 5, and 6				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Splice Angle		7050-T7451 plate as given in AMS 4050 (Grain direction controlled part)	
[2]	Splice Angle		BAC1514-1709 7075-T73511 extrusion as given in QQ-A-200/11 (Optional: 7050-T7451 plate as given in AMS 4050)	
[3]	Channel		AND10137-1002 7075-T62 extrusion as given in QQ-A-200/11	
[4]	Splice Strap		BAC1511-3749 7075-T6511 extrusion as given in QQ-A-200/11	
[5]	Angle	0.050 (1.3)	7075-T62 clad sheet as given in QQ-A-250/13	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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REPAIR 1 - SECTION 43 CREASE BEAM STRUCTURE

1. Applicability

A. Repair 1 is applicable to damage to the crease beam structure as shown in Section 43 Crease Beam Structure Location, Figure 201/REPAIR 1.

K25910 S0006589277_V1

Section 43 Crease Beam Structure Location
Figure 201

2. General

A. The typical repairs given in 51-70-12 can be used, when applicable, if there is sufficient clearance between the adjacent structure and the repair parts.

B. Refer to the limits of the typical repairs given in 51-70-12 before you start a repair.

3. References

Reference	Title
51-70-12	EXTRUDED SECTION REPAIRS

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(Continued)

Reference	Title
51-70-12, REPAIR 1	Typical Extruded Sections - 0.080 Inch or Less in Thickness
51-70-12, REPAIR 2	Typical Repairs for Thick Extruded Sections
51-70-12, REPAIR GENERAL	Typical Extruded Section Repairs
53-30-13	SECTION 43 CREASE BEAM STRUCTURE
53-30-13, IDENTIFICATION 1	Section 43 Crease Beam Structure

4. Repair Instructions

A. Section 43 Crease Beam Structure

(1) Refer to Table 201/REPAIR 1 to find the applicable repairs for the crease beam structure in fuselage Section 43.

NOTE: If necessary, refer to 53-30-13, Identification 1 to find the material and the process that was used to make the part which you want to repair.

Table 201:

REPAIR REFERENCES FOR THE SECTION 43 CREASE BEAM STRUCTURE	
COMPONENT	**REPAIR**
Chords	Refer to SRM 51-70-12
Shear Webs	There are no repairs for these parts in the Structural Repair Manual at this time.
Straps, Brackets, Formed Angles, Machined Splice Angles, and Clips	There are no repairs for these parts in the Structural Repair Manual at this time.

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IDENTIFICATION 1 - SECTION 43 FORWARD CARGO DOOR SURROUND STRUCTURE

NOTE: REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

G13263 S0006589282_V1

Section 43 Forward Cargo Door Surround Structure Locator
Figure 1

Table 1:

REFERENCE DRAWINGS	
DRAWING NUMBER	**TITLE**
001A4001	Fuselage Product Collector
140A4320	Section 43 Lower Lobe Functional Product Collector
140A4330	Functional Collector - Forward Cargo Door Surround
140A4331	Section 43 Integration Functional Collector
143A0080	Sill Integration - Lower Main, Forward Cargo Door Surround
143A0081	Sill Integration - Upper Main, Forward Cargo Door Surround
143A0082	Integration Installation - Station 440, Forward Cargo Door Surround

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Table 1: (Continued)

REFERENCE DRAWINGS	
DRAWING NUMBER	**TITLE**
143A0083	Integration Installation - Station 492.4, Forward Cargo Door Surround
143A8100	Sill Installation - Upper Auxiliary, Forward Cargo Door Surround
143A8110	Sill Installation - Upper Main, Forward Cargo Door Surround
143A8120	Sill Installation - Lower Main, Forward Cargo Door Surround
143A8121	Web Assembly - Lower Main Sill, Forward Cargo Door Surround
143A8130	Sill Installation - Lower Auxiliary, Forward Cargo Door Surround
143A8200	Frame Assembly/Installation - Station 440, Forward Cargo Door Surround
143A8201	Frame Assembly/Installation - Station 492.4, Forward Cargo Door Surround
143A8320	Forward Intercostal Installation - Forward Cargo Door Surround
143A8321	Aft Intercostal Installation - Forward Cargo Door Surround, Section 43
143A8330	Scuff Plate Installation - Lower Main Sill, Forward Cargo Door Surround

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2233513 S0000389906_V1

Forward Cargo Door Surround Structure
Figure 2

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NOTES

- REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

1 REFER TO SRM 53-30-15 ALLOWABLE DAMAGE 1

G99458 S0006589288_V3

Forward Cargo Door Surround Structure Identification
Figure 3 (Sheet 1 of 3)

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G99533 S0006589292_V3

Forward Cargo Door Surround Structure Identification
Figure 3 (Sheet 2 of 3)

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Forward Cargo Door Surround Structure Identification
Figure 3 (Sheet 3 of 3)

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Table 2:

LIST OF MATERIALS FOR FIGURE 3				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Edge Frame		7050-T7451 plate as given in AMS 4050. (Grain direction controlled part)	
[2]	Strap, Fail Safe		BAC1512-365 2024-T3511 extrusion as given in QQ-A-200/3	
[3]	Strap, Fail Safe		BAC1512–3464 2024–T3511 extrusion as given in QQ-A-200/3	Line Number 7 thru 184
			BAC1512–485 2024–T3511 extrusion as given in QQ-A-200/3	Line Number 186 and on
[4]	Strap, Fail Safe		BAC1520-2799 7075-T73511 extrusion as given in QQ-A-200/11	
[5]	Chord, Fail Safe		BAC1514-3146 7075-T6511 extrusion as given in QQ-A-200/11	
[6]	Web (6)	0.050 (1.27)	7075-T62 clad sheet as given in QQ-A-250/13	
[7]	Web (2)	0.040 (1.02)	7075-T62 clad sheet as given in QQ-A-250/13	
[8]	Support Fitting		7050-T7451 bare plate as given in BMS 7-323, Type I (Grain direction controlled part)	
[9]	Channel Splice (2)		BAC1493-873 7075-T62 clad sheet as given in QQ-A-250/13	
[10]	Reveal Strip (2)	0.050 (1.27)	6013-T4 sheet as given in AMS 4347. Heat Treat T6	
[11]	Stringer Clip		BAC1493-852 7075-T62 clad sheet as given in QQ-A-250/13	
[12]	Stringer Clip		BAC1493-852 7075-T62 clad sheet as given in QQ-A-250/13	Line Number 1 thru 353, 751 and on
			BAC1518–550 extrusion as given in QQ-A-200/11	Line Number 355 thru 750
[13]	Stringer Clip		BAC1493-856 7075-T62 clad sheet as given in QQ-A-250/13	
[14]	Stringer Clip		BAC1493-854 7075-T62 clad sheet as given in QQ-A-250/13	
[15]	Gusset (10)	0.050 (1.27)	7075-T6 clad sheet as given in QQ-A-250/13	
[16]	Stringer Clip		BAC1503-100136 7075-T73511 extrusion as given in QQ-A-200/11	
[17]	Roller Stop Fitting		17-4PH forging as given in AMS 5643. Heat treat 180-220 KSI as given in BAC 5619	
[18]	Web (4)	0.056 (1.42)	7075-T62 clad sheet as given in QQ-A-250/13	
[19]	Clip		AND10134-1005 7075-T73511 extrusion as given in QQ-A-200/11	
[20]	Door Stop Fitting		7075-T73 forging as given in BMS 7-186	
[21]	Support Tee		BAC1505–100978 7075–T73511 extrusion as given in QQ-A-200/11	
[22]	Stringer Clip		BAC1493–867 7075–T62 clad sheet as given in QQ-A-250/3	

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Table 2: (Continued)

LIST OF MATERIALS FOR FIGURE 3				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[23]	Clip		AND10134-1003 7075-T73511 extrusion as given in QQ-A-200/11	
[24]	Strap - Fail Safe		BAC1512–485 2024–T3511 extrusion as given in QQ-A-200/3	
[25]	Stringer Clip		BAC1493-852 7075-T62 clad sheet as given in QQ-A-250/13	Line Number 1 thru 353, 619 and on
			BAC1518–550 extrusion as given in QQ-A-200/11	Line Number 355 thru 618
[26]	Chord, Fail Safe		BAC1514–3146 7075–O extrusion as given in QQ-A-200/11. Heat treat T-62.	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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NOTE: REFER TO TABLE 3 FOR THE LIST OF MATERIALS.

UPPER MAIN SILL

G14439 S0006589299_V1

Forward Cargo Door Upper Main Sill Structure Identification
Figure 4

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Table 3:

LIST OF MATERIALS FOR FIGURE 4				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Web Assembly (STA 420 to STA 500A)			
	Web	0.050 (1.27)	7075-T62 clad sheet as given in QQ-A-250/13	
	Inboard Chord		BAC1510-1341 7075-T6511 as given in QQ-A-200/11	
	Outboard Chord (STA 420 to STA 500A)		BAC1505-101651 7075-T73511 as given in QQ-A-200/11	
	Doubler	0.063 (1.6)	7075-T6 clad sheet as given in QQ-A-250/13	
	Stiffener		BAC1503-101018 7075-T73511 extrusion as given in QQ-A-200/11	
[2]	Web Assembly (STA 420 to STA 440 and STA 500 to STA 500A)			
	Web (2)	0.045 (1.14)	7075-T62 clad sheet as given in QQ-A-250/13	
	Stiffener (2)		BAC1503-101018 7075-T73511 extrusion as given in QQ-A-200/11	
[3]	Web (STA 492.4 to STA 500)	0.050 (1.27)	7075-T62 clad sheet as given in QQ-A-250/13	
[4]	Strap	0.090 (2.29)	2024-T3 clad sheet as given in QQ-A-250/5	
[5]	Strap	0.125 (3.18)	2024-T3 clad sheet as given in QQ-A-250/5	
[6]	Reveal	0.050 (1.27)	2024-T42 clad sheet as given in QQ-A-250/5	
[7]	Clip (4)		BAC1503-100937 7075-T73511 extrusion as given in QQ-A-200/11	
[8]	Clip		BAC1517-2789 7075-T73511 extrusion as given in QQ-A-200/11	
[9]	Clip		BAC1517-2788 7075-T73511 extrusion as given in QQ-A-200/11	
[10]	Clip (2)	0.071 (1.8)	7075-T62 clad sheet as given in QQ-A-250/13	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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NOTES

- REFER TO TABLE 4 FOR THE LIST OF MATERIALS.

G14503 S0006589302_V1

Forward Cargo Door Lower Main Sill Structure
Figure 5

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Table 4:

LIST OF MATERIALS FOR FIGURE 5				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Web Assembly			
	Web	0.056 (1.42)	7075-T62 clad sheet as given in QQ-A-250/13	
	Chord		BAC1503-101639 7075-T6511 extrusion as given in QQ-A-200/11	
	Clip		BAC1503-100137 7075-T73511 extrusion as given in QQ-A-200/11	
	Stiffener (3)		BAC1503-100096 7075-T73511 extrusion as given in QQ-A-200/11	
[2]	Web Assembly (3)			
	Web	0.045 (1.14)	7075-T62 clad sheet as given in QQ-A-250/13	
	Stiffener		BAC1503-100096 7075-T73511 extrusion as given in QQ-A-200/11	
[3]	Web	0.045 (1.14)	7075-T62 clad sheet as given in QQ-A-250/13	
[4]	Rib (2)		BAC1514-1798 7075-T73511 extrusion as given in QQ-A-200/11	
[5]	Clip (12)		BAC1514-3129 7075-T73511 extrusion as given in QQ-A-200/11	
[6]	Clip (2)	0.071 (1.8)	7075-T62 clad sheet as given in QQ-A-250/13	
[7]	Strap (STA 420 to STA 500A)		BAC1514-1525 7075-T73511 extrusion as given in QQ-A-200/11	
[8]	Strap (STA 440)		BAC1511-10025 7075-T73511 extrusion as given in QQ-A-200/11 (Optional: BAC1511-3754)	
	Strap (STA 492.4)		BAC1511-10028 7075-T73511 extrusion as given in QQ-A-200/11. (Optional: BAC1511-3754)	
[9]	Scuff Plate Assembly (2)			
	Scuff Plate		A356-T61 investment casting as given in AMS 4218	
	Scuff Plate	0.063 (1.6)	6061-T6 sheet as given in QQ-A-250/11	
[10]	Scuff Plate (2)	0.040 (1.02)	Titanium sheet as given in SAE-AMS-T-9046A, Code CP-1, Condition A	
[11]	Tee (4)		BAC1505-100261 2024-T3511 extrusion as given in QQ-A-200/3	
[12]	Shield (2)	0.032 (0.81)	7075-T62 clad sheet as given in QQ-A-250/13	
[13]	Clip (2)		BAC1514-3127 7075-T73511 extrusion as given in QQ-A-200/11	
[14]	Clip		BAC1517-2729 7075-T73511 extrusion as given in QQ-A-200/11	
[15]	Clip		BAC1514-3130 7075-T73511 extrusion as given in QQ-A-200/11	
[16]	Clip		BAC1514-3128 7075-T73511 extrusion as given in QQ-A-200/11	
[17]	Clip		BAC1517-2728 7075-T73511 extrusion as given in QQ-A-200/11	

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*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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NOTE: REFER TO TABLE 5 FOR THE LIST OF MATERIALS.

UPPER AUXILIARY SILL STRUCTURE

G68822 S0006589306_V1

Forward Cargo Door Upper Auxiliary Sill Structure
Figure 6

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Table 5:

LIST OF MATERIALS FOR FIGURE 6				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Web (2)	0.056 (1.42)	7075-T62 clad sheet as given in QQ-A-250/13	
[2]	Stringer Clip		BAC1493-852 7075-T62 clad sheet as given in QQ-A-250/13	
[3]	Gusset (2)	0.056 (1.42)	7075-T6 clad sheet as given in QQ-A-250/13	
[4]	Clip		BAC1514-3164 7075-T73511 extrusion as given in QQ-A-200/11	
[5]	Clip		BAC1510-1332 7075-T73511 extrusion as given in QQ-A-200/11. (Optional: 7050-T7451 as given in AMS 4050)	
[6]	Clip		BAC1510-1363 7075-T73511 extrusion as given in QQ-A-200/11	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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NOTE: REFER TO TABLE 6 FOR THE LIST OF MATERIALS.

G68843 S0006589308_V1

Forward Cargo Door Lower Auxiliary Sill Structure
Figure 7

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Table 6:

LIST OF MATERIALS FOR FIGURE 7				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Web (3)	0.036 (0.91)	7075-T62 clad sheet as given in QQ-A-250/13	
[2]	Web (2)	0.050 (1.27)	7075-T62 clad sheet as given in QQ-A-250/13	
[3]	Channel	0.063 (1.6)	7075-T62 clad sheet as given in QQ-A-250/13	
[4]	Strap (3)	0.063 (1.6)	2024-T3 clad sheet as given in QQ-A-250/5	
[5]	Strap	0.080 (2.03)	2024-T3 clad sheet as given in QQ-A-250/5	
[6]	Clip (5)		AND10134-1204 7075-T73511 extrusion as given in QQ-A-200/11	
[7]	Clip (5)		BAC1510-1338 7075-T73511 extrusion as given in QQ-A-200/11	
[8]	Clip (4)		BAC1503-100397 7075-T73511 extrusion as given in QQ-A-200/11	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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ALLOWABLE DAMAGE 1 - FORWARD CARGO DOOR SURROUND STRUCTURE

1. Applicability

A. This subject gives the allowable damage limits for the Door Surround Structure as shown in Section 43 - Forward Cargo Door Surround Structure, Figure 101/ALLOWABLE DAMAGE 1.

G17894 S0006589313_V1

Section 43 - Forward Cargo Door Surround Structure
Figure 101

2. General

A. Remove the damaged material as necessary.

(1) Refer to 51-10-02 for the inspection and removal of damage.

(2) Refer to 51-30-03 for possible sources of the abrasive and other materials you can use to remove the damage.

(3) Refer to 51-30-05 for possible sources of the equipment and tools you can use to remove the damage.

B. Apply a chemical conversion coating to the bare surfaces of the reworked area. Refer to 51-20-01

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C. Apply one layer of BMS 10-11, Type I, primer to the bare surfaces of the reworked area. Refer to SOPM 20-41-02.

Table 101:

PARAGRAPH REFERENCES FOR THE ALLOWABLE DAMAGE LIMITS		
TYPE OF STRUCTURE	**PART NAME**	**PARAGRAPH**
EDGE FRAME INNER CHORD, INNER STRAP FAIL SAFE STRAP, AND WEB BETWEEN STOP #2 AND STRINGER-17	INNER CHORD	4.A.(1)
	WEB (STOP #2 TO S-18)	4.A.(2)
	FAIL SAFE STRAPS	4.A.(3)
EDGE FRAME EXCLUDING ABOVE	INNER AND OUTER CHORDS	4.B.(1)
	WEB	4.B.(2)
	FAIL SAFE STRAPS	4.B.(3)
	FAIL SAFE CHORD, STIFFENERS, SHEAR TIES AND CLIPS	4.B.(4)
INTERCOSTALS AND STOP BACK-UP, DOOR STOPS AND LATCH FITTINGS	INTERCOSTAL CHORDS	4.C.(1)
	INTERCOSTAL WEBS	4.C.(2)
	STOP BACK-UP FITTINGS	4.C.(3)
	DOOR STOPS	4.C.(4)
	LATCH FITTINGS	4.C.(5)
UPPER MAIN SILL BETWEEN STA 460 AND STA 500	INNER AND OUTER CHORDS	4.D.(1)
	WEBS	4.D.(2)
	INNER STRAP	4.D.(3)
	STIFFENERS AND CLIPS	4.D.(4)
UPPER MAIN SILL EXCLUDING ABOVE	INNER AND OUTER CHORDS	4.E.(1)
	WEBS	4.E.(2)
	STRAPS	4.E.(3)
	STIFFENERS AND CLIPS	4.E.(4)
LOWER MAIN SILL STRAP INNER STRAP AT FOUR FASTENERS EITHER SIDE OF STA 440 AND STA 492.4	INNER STRAP	4.F.(1)
LOWER MAIN SILL EXCLUDING ABOVE	INNER AND OUTER CHORDS	4.G.(1)
	WEB	4.G.(2)
	STRAPS	4.G.(3)
	STIFFENERS, RIBS, AND CLIPS	4.G.(4)
	SCUFF PLATES	4.G.(5)
UPPER AND LOWER AUXILIARY SILL EXCLUDING STRINGERS	WEBS	4.H.(1)
	STRAPS (GUSSETS)	4.H.(2)
	STIFFENERS AND CLIPS	4.H.(3)

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G17907 S0006589315_V1

Section 43 - Forward Cargo Door Surround Structure - Allowable Damage
Figure 102 (Sheet 1 of 12)

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UPPER MAIN SILL

B

TYPICAL SECTION
A-A

G21283 S0006589316_V1

Section 43 - Forward Cargo Door Surround Structure - Allowable Damage
Figure 102 (Sheet 2 of 12)

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UPPER AUXILIARY SILL STRUCTURE

C

G65168 S0006589317_V1

Section 43 - Forward Cargo Door Surround Structure - Allowable Damage
Figure 102 (Sheet 3 of 12)

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AFT DOOR FRAME INTERCOSTALS

D

G65262 S0006589318_V1

Section 43 - Forward Cargo Door Surround Structure - Allowable Damage
Figure 102 (Sheet 4 of 12)

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(VIEW IN THE AFT DIRECTION)
EDGE FRAME AT STA 492.4

E

G25355 S0006589319_V2

Section 43 - Forward Cargo Door Surround Structure - Allowable Damage
Figure 102 (Sheet 5 of 12)

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VIEW IS ROTATED 77.4°
CLOCKWISE
TYPICAL SECTION
B-B

VIEW IS ROTATED 70.7°
CLOCKWISE
TYPICAL SECTION
C-C

VIEW IS ROTATED 45.5°
CLOCKWISE
TYPICAL SECTION
D-D

VIEW IS ROTATED 34.5°
CLOCKWISE
TYPICAL SECTION
E-E

G25392 S0006589320_V1

Section 43 - Forward Cargo Door Surround Structure - Allowable Damage
Figure 102 (Sheet 6 of 12)

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FORWARD CARGO DOOR SCUFF PLATE

F

G65511 S0006589321_V1

Section 43 - Forward Cargo Door Surround Structure - Allowable Damage
Figure 102 (Sheet 7 of 12)

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(VIEW IN THE FORWARD DIRECTION)
EDGE FRAME AT STA 440.0

G

G21091 S0006589322_V2

Section 43 - Forward Cargo Door Surround Structure - Allowable Damage
Figure 102 (Sheet 8 of 12)

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Section 43 - Forward Cargo Door Surround Structure - Allowable Damage
Figure 102 (Sheet 9 of 12)

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LOWER AUXILIARY SILL

H

G65869 S0006589324_V1

Section 43 - Forward Cargo Door Surround Structure - Allowable Damage
Figure 102 (Sheet 10 of 12)

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G22110 S0006589325_V1

Section 43 - Forward Cargo Door Surround Structure - Allowable Damage
Figure 102 (Sheet 11 of 12)

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FORWARD INTERCOSTALS

J

K

G72845 S0006589326_V1

Section 43 - Forward Cargo Door Surround Structure - Allowable Damage
Figure 102 (Sheet 12 of 12)

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3. References

Reference	Title
51-10-02	INSPECTION AND REMOVAL OF DAMAGE
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-20-06, GENERAL	Shot Peening
51-30-03	NON-METALLIC MATERIALS
51-30-05	EQUIPMENT AND TOOLS FOR REPAIRS
AMM 51-21-00 P/B 701	INTERIOR AND EXTERIOR FINISHES - CLEANING/PAINTING
SOPM 20-20-02	Penetrant Methods of Inspection
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes

4. Allowable Damage Limits

A. Edge Frame - Stop #2 to Stringer S-17

(1) Inner Chord - Stop #2 to Stringer S-17

(a) Cracks are not permitted.

(b) Nicks, Gouges, Scratches, and Corrosion are not permitted.

(c) Dents are not permitted.

(d) Holes and Punctures are not permitted.

(2) Webs - Stop #2 to Stringer S-18

(a) Cracks are not permitted.

(b) Nicks, Gouges, Scratches, and Corrosion are not permitted.

(c) Dents are not permitted.

(d) Holes and Punctures are not permitted.

(3) Fail Safe Straps - Stop #2 to Stringer S-17

(a) Cracks are not permitted.

(b) Nicks, Gouges, Scratches, and Corrosion are not permitted.

(c) Dents are not permitted.

(d) Holes and Punctures are not permitted.

B. Edge Frame locations other than (A) above

(1) Inner and Outer Chords

(a) Cracks:

1) Remove the damage as shown in Figure 103, Details A , B , and C

(b) Nicks, Gouges, Scratches, and Corrosion:

1) Remove the damage as shown in Figure 103, Details A , B , C , D , and E .

(c) Dents are not permitted.

(d) Holes and Punctures are not permitted.

(2) Webs

(a) Cracks: Removed damage area is to be less than 0.25 inch in length.

1) Remove the damage area as shown in Figure 103, Details A , B , and F .

(b) Nicks, Gouges, Scratches, and Corrosion: Removed damage area is to be less than 0.25 inch in length.

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1) Remove the damage area as shown in Figure 103, Details A , B , D , F , and G .

(c) Dents are permitted as shown in Figure 103, Detail H .

(d) Repair of Holes and Punctures are permitted if they are:

1) A maximum of 0.25 inch in diameter

2) A minimum of 4D (D = the diameter of the damage) away from a fastener hole, the part edge, or other damage

3) They are filled with a 2117-T3 or 2117-T4 aluminum rivet installed without sealant.

(3) Fail Safe Straps

(a) Cracks:

1) Remove the damage as shown in Figure 103, Details A , B , I , and J .

(b) Nicks, Gouges, Scratches, and Corrosion:

1) Remove the damage as shown in Figure 103, Details A , B , D , G , I , and J .

(c) Dents are not permitted.

(d) Holes and Punctures are not permitted.

(4) Fail Safe Chord, Stiffeners, Shear Ties, and Clips

(a) Cracks:

1) Remove the damage as shown in Figure 103, Details A , B , and C .

(b) Nicks, Gouges, Scratches, and Corrosion:

1) Remove the damage as shown in Figure 103, Details A , B , C , D , and E .

(c) Dents are not permitted.

(d) Holes and Punctures are not permitted.

C. Intercostals and Stop Back-up Fittings, Door Stops, and Latch Fittings

(1) Intercostal Chords

(a) Cracks:

1) Remove the damage as shown in Figure 103, Details A , B , C , I , and J .

(b) Nicks, Gouges, Scratches, and Corrosion:

1) Remove the damage as shown in Figure 103, Details A , B , C , D , E , G , I , and J .

(c) Dents are permitted as shown in Figure 103, Detail H .

(d) Holes and Punctures are not permitted.

(2) Intercostal Webs

(a) Cracks:

1) Remove the damage as shown in Figure 103, Details A , B , and F .

(b) Nicks, Gouges, Scratches, and Corrosion:

1) Remove the damage as shown in Figure 103, Details A , B , D , F , and G .

(c) Dents are permitted as shown in Figure 103, Detail H .

(d) Holes and Punctures are permitted if they are:

1) A maximum of 0.25 inch in diameter

2) A minimum of 4D (D = the diameter of the damage) away from a fastener hole, the part edge, or other damage

3) They are filled with a 2117-T3 or 2117-T4 aluminum rivet installed without sealant.

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(3) Stop Back-up Fittings

(a) Cracks are not permitted between the Stop fasteners and the first row of fasteners common to the intercostals. For other crack locations:

1) Remove the damage as shown in Figure 103, Details, A, B, C, and K.

(b) Nicks, Gouges, Scratches, and Corrosion are not permitted between the Stop fasteners and the first row of fasteners common to the intercostals. For other locations:

1) Remove the damage as shown in Figure 103, Details A , B , C , D , E , and K .

(c) Dents are not permitted except for the Tee inboard flange under the cargo net anchor plates. Dents are permitted as shown in Figure 103, Detail H .

(d) Holes and Punctures are not permitted except for the Tee inboard flange under the cargo net anchor plates if they are:

1) A maximum of 0.25 inch in diameter

2) A minimum of 4D (D = the diameter of the damage) away from a fastener hole, the part edge, or other damage

3) They are filled with a 2117-T3 or 2117-T4 aluminum rivet installed without sealant.

(4) Door Stops

(a) Cracks are not permitted.

(b) Nicks, Gouges, Scratches, and Corrosion are not permitted.

(c) Dents are not permitted.

(d) Holes and Punctures are not permitted.

(5) Latch Fittings

(a) Cracks are not permitted.

(b) Nicks, Gouges, Scratches, and Corrosion are not permitted on the lug region. For other locations:

1) Remove the damage as shown in Figure 103, Details A , B , C , E , and I .

(c) Dents are not permitted.

(d) Holes and Punctures are not permitted.

D. Upper Main Sill - Between Sta 460 and Sta 500

(1) Inner and Outer Chords

(a) Cracks are not permitted.

(b) Nicks, Gouges, Scratches, and Corrosion are not permitted.

(c) Dents are not permitted.

(d) Holes and Punctures are not permitted.

(2) Webs

(a) Cracks are not permitted.

(b) Nicks, Gouges, Scratches, and Corrosion are not permitted.

(c) Dents are not permitted.

(d) Holes and Punctures are not permitted.

(3) Inner Strap

(a) Cracks are not permitted.

(b) Nicks, Gouges, Scratches, and Corrosion are not permitted.

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(c) Dents are not permitted.

(d) Holes and Punctures are not permitted.

(4) Stiffeners and Clips

(a) Cracks are not permitted except on the free flange.

1) Remove the damage as shown in Figure 103, Details A , B , and C .

(b) Nicks, Gouges, Scratches, and Corrosion are not permitted except on the free flange.

1) Remove the damage as shown in Figure 103, Details A , B , C , D , and E .

(c) Dents are not permitted.

(d) Holes and Punctures are not permitted.

E. Upper Main Sill other than (D) above

(1) Inner and Outer Chords

(a) Cracks:

1) Remove the damage as shown in Figure 103, Details A , B , C , and K .

(b) Nicks, Gouges, Scratches, and Corrosion are not permitted.

1) Remove the damage as shown in Figure 103, Details A , B , C , D , E , and K .

(c) Dents are not permitted.

(d) Holes and Punctures are not permitted.

(2) Webs

(a) Cracks:

1) Remove the damage as shown in Figure 103, Details A , B , and F .

(b) Nicks, Gouges, Scratches, and Corrosion:

1) Remove the damage as shown in Figure 103, Details A , B , D , F , and G .

(c) Dents are permitted as shown in Figure 103, Detail H .

(d) Holes and Punctures are permitted if they are:

1) A maximum of 0.25 inch in diameter

2) A minimum of 4D (D = the diameter of the damage) away from a fastener hole, the part edge, or other damage

3) They are filled with a 2117-T3 or 2117-T4 aluminum rivet installed without sealant.

(3) Straps

(a) Cracks:

1) Remove the damage as shown in Figure 103, Details A , B , I , and J .

(b) Nicks, Gouges, Scratches, and Corrosion:

1) Remove the damage as shown in Figure 103, Details A , B , D , G , I , and J .

(c) Dents are not permitted.

(d) Holes and Punctures are not permitted.

(4) Stiffeners and Clips

(a) Cracks:

1) Remove the damage as shown in Figure 103, Details A , B , and C .

(b) Nicks, Gouges, Scratches, and Corrosion:

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1) Remove the damage as shown in Figure 103, Details A , B , C , D , and E .

(c) Dents are permitted only in the free flanges as shown in Figure 103, Detail H .

(d) Holes and Punctures are permitted if they are:

1) A maximum of 0.25 inch in diameter

2) A minimum of 4D (D = the diameter of the damage) away from a fastener hole, the part edge, or other damage

3) They are filled with a 2117-T3 or 2117-T4 aluminum rivet installed without sealant.

F. Lower Main Sill Inner Strap - Within four fasteners either side of Sta 440 and Sta 492.4

(1) Inner Strap

(a) Cracks are not permitted.

(b) Nicks, Gouges, Scratches, and Corrosion are not permitted.

(c) Dents are not permitted.

(d) Holes and Punctures are not permitted.

G. Lower Main Sill other than (F) above

(1) Inner and Outer Chords

(a) Cracks:

1) Remove the damage as shown in Figure 103, Details A , B , and C .

(b) Nicks, Gouges, Scratches, and Corrosion:

1) Remove the damage as shown in Figure 103, Details A , B , C , D , and E .

(c) Dents are not permitted.

(d) Holes and Punctures are not permitted.

(2) Web

(a) Cracks:

1) Remove the damage as shown in Figure 103, Details A , B , and F .

(b) Nicks, Gouges, Scratches, and Corrosion:

1) Remove the damage as shown in Figure 103, Details A , B , D , F , and G .

(c) Dents are permitted as shown in Figure 103, Detail H .

(d) Holes and Punctures are permitted if they are:

1) A maximum of 0.25 inch in diameter

2) A minimum of 4D (D = the diameter of the damage) away from a fastener hole, the part edge, or other damage

3) They are filled with a 2117-T3 or 2117-T4 aluminum rivet installed without sealant.

(3) Straps

(a) Cracks:

1) Remove the damage as shown in Figure 103, Details A , B , I , and J .

(b) Nicks, Gouges, Scratches, and Corrosion:

1) Remove the damage as shown in Figure 103, Details A , B , D , G , I , and J .

(c) Dents are not permitted.

(d) Holes and Punctures are not permitted.

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(4) Stiffeners Ribs, and Clips

(a) Cracks:

1) Remove the damage as shown in Figure 103, Details A , B , and C .

(b) Nicks, Gouges, Scratches, and Corrosion:

1) Remove the damage as shown in Figure 103, Details A , B , C , D , and E .

(c) Dents are permitted only in the free flanges as shown in Figure 103, Detail H .

(d) Holes and Punctures are permitted if they are:

1) A maximum of 0.25 inch in diameter

2) A minimum of 4D (D = the diameter of the damage) away from a fastener hole, the part edge, or other damage

3) They are filled with a 2117-T3 or 2117-T4 aluminum rivet installed without sealant.

(5) Scuff Plates

(a) Cracks:

1) Remove the damage as shown in Figure 103, Details A , B , C , and F .

(b) Nicks, Gouges, Scratches, and Corrosion:

1) Remove the damage as shown in Figure 103, Details A , B , C , D , E , F , and G .

(c) Dents are permitted as shown in Figure 103, Detail H. Dents larger than the limits shown in Figure 103, Detail H, that cannot be repaired immediately are permitted if:

1) There are no loose or missing fasteners.

2) There are no damaged fastener holes.

3) There are no creases, gouges, or cracks near the dent.

4) You do not fill the dent.

5) You do a detail visual inspection of the dent for corrosion and cracks after each 1500 flight cycles, or more frequently.

6) You do a detail visual inspection of the underlying structure and there is no damage that is more than the permitted damage limits.

(d) Holes and Punctures are permitted if they are:

1) A maximum of 0.25 inch in diameter

2) A minimum of 4D (D = the diameter of the damage) away from a fastener hole, the part edge, or other damage

3) They are filled with a 2117-T3 or 2117-T4 aluminum rivet installed without sealant.

H. Lower and Upper Auxiliary Sill - Excluding Stringers

(1) Webs

(a) Cracks:

1) Remove the damage as shown in Figure 103, Details A , B , and F .

(b) Nicks, Gouges, Scratches, and Corrosion:

1) Remove the damage as shown in Figure 103, Details A , B , D , F , and G .

(c) Dents are permitted as shown in Figure 103, Detail H .

(d) Holes and Punctures are permitted if they are:

1) A maximum of 0.25 inch in diameter

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2) A minimum of 4D (D= the diameter of the damage) away from a fastener hole, the part edge, or other damage

3) They are filled with a 2117-T3 or 2117-T4 aluminum rivet installed without sealant.

(2) Straps (Gussets)

(a) Cracks:

1) Remove the damage as shown in Figure 103, Details A , B , I , and J .

(b) Nicks, Gouges, Scratches, and Corrosion:

1) Remove the damage as shown in Figure 103, Details A , B , D , G , I , and J .

(c) Dents are not permitted.

(d) Holes and Punctures are not permitted.

(3) Stiffeners and Clips

(a) Cracks:

1) Remove the damage as shown in Figure 103, Details A , B , and C .

(b) Nicks, Gouges, Scratches, and Corrosion:

1) Remove the damage as shown in Figure 103, Details A , B , C , D , and E .

(c) Dents are permitted as shown in Figure 103, Detail H .

(d) Holes and Punctures are permitted if they are:

1) A maximum of 0.25 inch in diameter

2) A minimum of 4D (D = the diameter of the damage) away from a fastener hole, the part edge, or other damage

3) They are filled with a 2117-T3 or 2117-T4 aluminum rivet installed without sealant.

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X = WIDTH OF THE MATERIAL THAT IS REMOVED
≤ 0.10 INCH OR 5 PERCENT OF THE FLANGE WIDTH, WHICHEVER IS LESS 1
≤ 0.20 INCH OR 10 PERCENT OF THE FLANGE WIDTH, WHICHEVER IS LESS 2

REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER EDGE MARGINS DO NOT HAVE AN OVERLAP

A

X = WIDTH OF THE MATERIAL THAT IS REMOVED
≤ 0.10 INCH OR 5 PERCENT OF THE FLANGE WIDTH, WHICHEVER IS LESS 1
≤ 0.20 INCH OR 10 PERCENT OF THE FLANGE WIDTH, WHICHEVER IS LESS 2

REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER EDGE MARGINS HAVE AN OVERLAP

B

X = WIDTH OF THE MATERIAL REMOVED
≤ 5 PERCENT OF THE WIDTH OF THE FLANGE 1
≤ 10 PERCENT OF THE WIDTH OF THE FLANGE 2

REMOVAL OF DAMAGED MATERIAL AT A FLANGE EDGE

C

NOTES

1 FOR AIRPLANES THAT HAVE COMPLETED SERVICE BULLETIN 737-21-1149.

2 FOR AIRPLANES THAT HAVE NOT COMPLETED SERVICE BULLETIN 737-21-1149.

3 FOR SCUFF PLATES

400663 S0000136612_V2

Allowable Damage Limits
Figure 103 (Sheet 1 of 7)

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REMOVAL OF DAMAGED MATERIAL
ON A SURFACE

D

A–A

400664 S0000136613_V2

Allowable Damage Limits
Figure 103 (Sheet 2 of 7)

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Y = WIDTH OF THE MATERIAL THAT IS REMOVED
≤ 5 PERCENT OF THE WIDTH OF THE FLANGE 1
≤ 10 PERCENT OF THE WIDTH OF THE FLANGE 2

REMOVAL OF DAMAGED MATERIAL ON A SURFACE
AT A FLANGE EDGE OF A MACHINED OR EXTRUDED PART

E

B–B

400665 S0000136614_V1

Allowable Damage Limits
Figure 103 (Sheet 3 of 7)

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X = WIDTH OF THE MATERIAL THAT IS REMOVED
= A MAXIMUM OF 0.05 INCH 1
= A MAXIMUM OF 0.10 INCH 2

REMOVAL OF DAMAGED MATERIAL AT AN EDGE OF A WEB

F

REMOVAL OF DAMAGE AROUND THE FASTENERS ON AN EDGE OR A SURFACE

G

400666 S0000136616_V2

Allowable Damage Limits
Figure 103 (Sheet 4 of 7)

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DENT THAT IS PERMITTED

H

X = WIDTH OF THE MATERIAL REMOVED
≤ 5 PERCENT OF THE WIDTH OF THE STRAP 1
≤ 10 PERCENT OF THE WIDTH OF THE STRAP 2

REMOVAL OF DAMAGED MATERIAL AT A STRAP EDGE

I

400667 S0000136618_V2

Allowable Damage Limits
Figure 103 (Sheet 5 of 7)

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Y = WIDTH OF THE MATERIAL THAT IS REMOVED
≤ 5 PERCENT OF THE WIDTH OF THE STRAP 1
≤ 10 PERCENT OF THE WIDTH OF THE STRAP 2

REMOVAL OF DAMAGED MATERIAL ON A SURFACE
AT AN EDGE OF A MACHINED OR EXTRUDED STRAP

J

D–D

400668 S0000136619_V1

Allowable Damage Limits
Figure 103 (Sheet 6 of 7)

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X = THE WIDTH OF THE MATERIAL THAT IS REMOVED
≤ 5 PERCENT OF THE WIDTH OF THE STRAP 1
≤ 10 PERCENT OF THE WIDTH OF THE STRAP 2

REMOVAL OF DAMAGED MATERIAL ON A FLANGE EDGE

K

400669 S0000136621_V1

Allowable Damage Limits
Figure 103 (Sheet 7 of 7)

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REPAIR 1 - SECTION 43 FORWARD CARGO DOOR SURROUND STRUCTURE

1. Applicability

A. Repair 1 is applicable to damage to the Forward Cargo Door Surround Structures shown in Section 43 - Forward Cargo Door Surround Structure, Figure 201/REPAIR 1.

G28488 S0006589336_V1

Section 43 - Forward Cargo Door Surround Structure
Figure 201

2. General

A. The typical repairs given in 51-70-11, 51-70-12, and 51-70-13 can be used when applicable if there is sufficient clearance with the adjacent structure for the installation of the repair parts.

B. Some of the typical repairs given in 51-70-11, 51-70-12, and 51-70-13 must not be used in some areas, as given in the typical repair figures. Refer to 51-70-11, 51-70-12, and 51-70-13.

C. Refer to the limits of the typical repairs given in 51-70-11, 51-70-12, and 51-70-13 before you start a repair.

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D. Repair 1 gives instructions for a permanent repair. Refer to 51-00-06, GENERAL for the definitions of the different types of repairs.

3. References

Reference	Title
51-00-06	STRUCTURAL REPAIR DEFINITIONS
51-00-06, GENERAL	Structural Repair Definitions
51-20-01, GENERAL	Protective Treatment of Metallic and Composite Materials
51-20-05, GENERAL	Repair Sealing
51-40-02, GENERAL P/B GENERAL	FASTENER INSTALLATION AND REMOVAL
51-70-01, REPAIR GENERAL	Procedures to Rework or Fill Allowable Dents on the External Aerodynamic Surfaces of Metallic Parts
51-70-11	TYPICAL FORMED SECTION REPAIRS
51-70-11, REPAIR GENERAL	Typical Formed Section Repair
51-70-12	EXTRUDED SECTION REPAIRS
51-70-12, REPAIR GENERAL	Typical Extruded Section Repairs
51-70-13	TYPICAL WEB REPAIRS
53-30-15	FUSELAGE DOOR SURROUND STRUCTURE - SECTION 43
53-30-15, ALLOWABLE DAMAGE 1	Forward Cargo Door Surround Structure
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes

4. Repair Instructions

A. Refer to Section 43 - Forward Cargo Door Surround Structure, Figure 201/REPAIR 1 and Section 43 - Forward Cargo Door Surround Structure - Repairs, Figure 202/REPAIR 1, and Table 201 to find the applicable repair for the part you want to repair.

NOTE: If necessary, refer to 53-30-15, Identification 1 to find the material and the process that was used to make the part which you want to repair.

Table 201:

REPAIR REFERENCES FOR THE DOOR SURROUND STRUCTURE	
TYPE OF COMPONENT	**REPAIR**
Formed parts	Refer to SRM 51-70-11
Extruded parts	Refer to SRM 51-70-12
Webs	Refer to SRM 51-70-13
Straps, Doublers, Forgings, and Castings	There are no repairs for these parts in the Structural Repair Manual at this time. If the damage to the structure is more than the limits given in SRM 53-30-15, Allowable Damage, replace the damaged part
Scuff Plate	Refer to Paragraph 4.B./REPAIR 1

B. Repair the scuff plate as given in Figure 203/REPAIR 1 and as follows:

NOTE: The scuff plate is not a structural part. You can do your own repair procedure to repair or do correct installation of the scuff plate. Incorrect installation of the scuff plate could cause a pressure leak around the door edges.

(1) Cut the crest of the scuff plates as necessary to fit. Refer to Figure 203/REPAIR 1 for typical repair details.

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(2) Weld the scuff plates. Refer to BAC 5975 using base metal or ER 4043 material as given in AWS A5.10. Penetrant inspect the weld as given in BAC 5423. Radiographic inspection, post weld heat treat, or age hardening are not necessary.

(3) Sand the edges and outer surfaces, in a constant direction, with 120-grit abrasive.

(4) Apply one layer of BMS 10-11, Type I primer to the inner surfaces of the scuff plate. Refer to SOPM 20-41-02.

(5) Apply a layer of parting agent to all mating surfaces of the scuff plates and fuselage skin/repair parts. Refer to 51-20-05, GENERAL.

(6) Apply BMS 3-23, Type II corrosion inhibiting compound to the surfaces below the scuff plates where no parting agent was applied. Refer to 51-20-01, GENERAL.

(7) Pack BMS 5-95 sealant into the scuff plates before installing. Refer to 51-20-05, GENERAL.

(8) Install the scuff plates with the same type fasteners as the initial fasteners. Make sure that the fasteners have the correct grip length. Refer to FASTENER INSTALLATION AND REMOVAL, PAGEBLOCK 51-40-02, GENERAL. Make sure that the sealant that squeezes out along the bottom of the scuff plates is a constant with no gaps. Remove sealant that is more than necessary.

NOTE: There can be cabin noise and air leaks which are not acceptable if there are sealant gaps along the bottom of the scuff plates.

(9) Make a ramp of fairing compound in the upper corners of the scuff plates to the doorway frame to give a smooth transition for the door seal. Refer to 51-70-01, REPAIR GENERAL for the fairing compounds. Protect the scuff plate with tape. Sand the seal ramp smooth. Refer to Figure 203/REPAIR 1.

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G28489 S0006589338_V1

Section 43 - Forward Cargo Door Surround Structure - Repairs
Figure 202 (Sheet 1 of 12)

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UPPER MAIN SILL

TYPICAL SECTION
A–A

G28490 S0006589339_V1

Section 43 - Forward Cargo Door Surround Structure - Repairs
Figure 202 (Sheet 2 of 12)

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UPPER AUXILIARY SILL STRUCTURE

C

G28491 S0006589340_V1

Section 43 - Forward Cargo Door Surround Structure - Repairs
Figure 202 (Sheet 3 of 12)

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AFT DOOR FRAME INTERCOSTALS

D

G28492 S0006589341_V1

Section 43 - Forward Cargo Door Surround Structure - Repairs
Figure 202 (Sheet 4 of 12)

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VIEW IS LOOKING AFT
EDGE FRAME AT STA 492.4

E

G28493 S0006589342_V1

Section 43 - Forward Cargo Door Surround Structure - Repairs
Figure 202 (Sheet 5 of 12)

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VIEW IS ROTATED 77.4°
CLOCKWISE
TYPICAL SECTION
B-B

VIEW IS ROTATED 70.7°
CLOCKWISE
TYPICAL SECTION
C-C

VIEW IS ROTATED 45.5°
CLOCKWISE
TYPICAL SECTION
D-D

VIEW IS ROTATED 34.5°
CLOCKWISE
TYPICAL SECTION
E-E

G28494 S0006589343_V1

Section 43 - Forward Cargo Door Surround Structure - Repairs
Figure 202 (Sheet 6 of 12)

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NOTE: REFER TO FIGURE 203 FOR THE SCUFF PLATE REPAIR.

FORWARD CARGO DOOR SCUFF PLATE

F

G28495 S0006589344_V2

Section 43 - Forward Cargo Door Surround Structure - Repairs
Figure 202 (Sheet 7 of 12)

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VIEW IS LOOKING FORWARD
EDGE FRAME AT STA 440.0

G

G73998 S0006589345_V1

Section 43 - Forward Cargo Door Surround Structure - Repairs
Figure 202 (Sheet 8 of 12)

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Section 43 - Forward Cargo Door Surround Structure - Repairs
Figure 202 (Sheet 9 of 12)

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LOWER AUXILIARY SILL

H

G74000 S0006589347_V1

Section 43 - Forward Cargo Door Surround Structure - Repairs
Figure 202 (Sheet 10 of 12)

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G74001 S0006589348_V1

Section 43 - Forward Cargo Door Surround Structure - Repairs
Figure 202 (Sheet 11 of 12)

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FORWARD INTERCOSTALS

J

K

G74002 S0006589349_V1

Section 43 - Forward Cargo Door Surround Structure - Repairs
Figure 202 (Sheet 12 of 12)

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SCUFF PLATE REPAIR (TYPICAL)

A-A

B-B

2422440 S0000560286_V1

Section 43 - Forward Cargo Door Surround Structure - Scuff Plate Repair
Figure 203 (Sheet 1 of 2)

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FAIRING COMPOUND APPLICATION

BEFORE APPLICATION OF FAIRING COMPOUND

FAIRING COMPOUND

AFTER APPLICATION OF FAIRING COMPOUND

C–C

2422442 S0000560287_V1

Section 43 - Forward Cargo Door Surround Structure - Scuff Plate Repair
Figure 203 (Sheet 2 of 2)

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5. **Inspection Requirements**

A. Refer to STRUCTURAL REPAIR DEFINITIONS, 51-00-06 for the repair categories and definitions.

B. For airplanes that have not completed Service Bulletin 737-21-1149, at a threshold of 50,000 total airplane flight cycles and at the specified repeat intervals, do one of the inspections that follow:

(1) External detailed visual (DET) inspection of the repair area. Repeat the inspection every 4,000 flight cycles after the threshold has been reached.

(2) Internal detailed visual (DET) inspection of the repair area. Repeat the inspection every 18,000 flight cycles after the threshold has been reached.

C. For airplanes that have completed Service Bulletin 737-21-1149, general chord repairs are not permitted between Door Stop No. 2 and S-17R. If there is damage in this area, contact The Boeing Company for a specific repair or replace the part.

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IDENTIFICATION 1 - SECTION 43 AUXILIARY STRUCTURE

NOTE: REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

H39294 S0006589354_V1

Section 43 Auxiliary Structure Location
Figure 1

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Table 1:

REFERENCE DRAWINGS	
DRAWING NUMBER	**TITLE**
140A4310	Functional Collector - Section 43, Upper Lobe
143A3110	Skin Installation - S-4L to S-4R, STA 360 to 540
143A3180	Provisions Installation - TCAS Antenna
284A0012	Electrical/Electronics Equipment Installation Collector - Final Assembly, Functional Product Collector

NOTE: REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

H39512 S0006589360_V1

Section 43 Auxiliary Structure Identification
Figure 2

Table 2:

LIST OF MATERIALS FOR FIGURE 2				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Tripler, GPS	0.040 (1.02)	2024-T3 clad sheet	

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Table 2: (Continued)

LIST OF MATERIALS FOR FIGURE 2				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[2]	Adapter Installation			
	Adapter, TCAS	0.025 (0.64)	2024-T42 clad sheet	
	Spacer, TCAS	0.400 (10.16)	Molded amorphous nylon as given in BMS 8-323, Type II, Class 4, Form B, Grade 30	
[3]	Tripler, TCAS	0.036 (0.91)	2024-T3 clad sheet	
[4]	Channel, ATC		BAC1498-242 7075-T62 clad sheet	
[5]	Tripler, ATC	0.020 (0.51)	2024-T3 clad sheet	
[6]	Channel		BAC1500-6267 7075-T62 clad sheet	YC071-YC099, YC461-YC470, YC781-YC799, YD041-YD099 only
[7]	Intercostal Assembly			YC001 to YC070 only
	Intercostal	0.050 (1.27)	7075-T62 clad sheet	
	Clevis	0.750 (19.05)	7075-T7351 plate	
	Channel	0.040 (1.02)	7075-T6 clad sheet	
[8]	Intercostal Assembly Intercostal	0.071 (1.8)	7075-T62 clad sheet	YC071-YC099, YC781-YC799 ONLY
	Clevis	0.800 (20.32)	7075-T651	
	Channel	0.050 (1.27)	7075-T62 clad sheet	
	Strap	0.080 (2.03)	7075-T62 clad sheet	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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ALLOWABLE DAMAGE 1 - SECTION 43 AUXILIARY STRUCTURE

1. Applicability

A. This subject gives the allowable damage limits for the auxiliary structure in Section 43 shown in Section 43 Auxiliary Structure Location, Figure 101/ALLOWABLE DAMAGE 1.

B. The allowable damage limits given are only applicable to the strength properties of the auxiliary structure. It is possible that the damage in a structure is less than the allowable damage limits, but the structure does not function satisfactorily. If the structure does not function satisfactorily, you can repair it to a serviceable condition as given in Repair 1, or replace the part.

H44225 S0006589366_V1

Section 43 Auxiliary Structure Location
Figure 101

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H44241 S0006589370_V1

Section 43 Auxiliary Structure Allowable Damage
Figure 102

2. **General**

A. Refer to Paragraph 4./ALLOWABLE DAMAGE 1 for the allowable damage limits.

B. Remove the damage as necessary.

(1) Refer to 51-10-02 for the inspection and removal of damage.

(2) Refer to 51-30-03 for possible sources of the abrasive and other materials you can use to remove the damage.

(3) Refer to 51-30-05 for possible sources of the equipment and tools you can use to remove the damage.

C. After you remove the damage, do the steps that follow:

(1) Refer to 51-20-01. Apply a chemical conversion layer to the reworked layer.

(2) Refer to SOPM 20-41-02. Apply one layer of BMS 10-11, Type I primer to the reworked area.

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3. References

Reference	Title
51-10-02	INSPECTION AND REMOVAL OF DAMAGE
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-30-03	NON-METALLIC MATERIALS
51-30-05	EQUIPMENT AND TOOLS FOR REPAIRS
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes

4. Allowable Damage Limits

A. Adapter, Doubler, and Triplers

(1) Cracks:

(a) Remove the damage as shown in Figure 103, Details A, B, C, and D.

(2) Nicks, Gouges, Scratches, and Corrosion:

(a) Remove the damage as shown in Figure 103, Details A, B, C, D, F, and G.

(3) Dents are permitted as shown in Figure 103, Detail H.

(4) Holes and Punctures are not permitted.

B. Channels

(1) Cracks:

(a) Remove the damage as shown in Figure 103, Details A, B, C, D, and E.

(2) Nicks, Scratches, Gouges, and Corrosion:

(a) Remove the damage as shown in Figure 103, Details A, B, C, D, E, F, and G.

(3) Dents are permitted as shown in Figure 103, Detail H.

(4) Holes and Punctures are not permitted.

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NOTE: THERE MUST BE A MINIMUM 2D EDGE MARGIN BETWEEN THE EDGE OF THE HOLE AND ANY FASTENER HOLES AFTER YOU REMOVE THE DAMAGE.

REMOVAL OF DAMAGED MATERIAL AT THE CENTER HOLE

A

REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER EDGE MARGINS DO NOT HAVE AN OVERLAP

B

REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER EDGE MARGINS HAVE AN OVERLAP

C

NOTES

1 FOR AIRPLANES THAT HAVE COMPLETED SERVICE BULLETIN 737-21-1149.
2 FOR AIRPLANES THAT HAVE NOT COMPLETED SERVICE BULLETIN 737-21-1149.

400670 S0000136512_V1

Allowable Damage Limits
Figure 103 (Sheet 1 of 4)

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X = WIDTH OF THE MATERIAL THAT IS REMOVED
= A MAXIMUM OF 0.05 INCH (1.27 mm) 1
= A MAXIMUM OF 0.10 INCH (2.54 mm) 2

T = THICKNESS OF THE MATERIAL

REMOVAL OF DAMAGED MATERIAL AT AN EDGE

D

X = WIDTH OF THE MATERIAL THAT IS REMOVED
= A MAXIMUM OF 5 PERCENT OF THE WIDTH OF THE FLANGE 1
= A MAXIMUM OF 10 PERCENT OF THE WIDTH OF THE FLANGE 2

REMOVAL OF DAMAGED MATERIAL ON AN EDGE OF A FORMED PART

E

400671 S0000136513_V1

Allowable Damage Limits
Figure 103 (Sheet 2 of 4)

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REMOVAL OF DAMAGE AROUND THE FASTENERS ON AN EDGE OR A SURFACE

F

A–A

REMOVAL OF DAMAGED MATERIAL ON A SURFACE

G

B–B

400672 S0000136514_V1

Allowable Damage Limits
Figure 103 (Sheet 3 of 4)

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DENT THAT IS PERMITTED

H

409723 S0000136515_V1

Allowable Damage Limits
Figure 103 (Sheet 4 of 4)

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IDENTIFICATION GENERAL - SECTION 43 PASSENGER COMPARTMENT FLOOR PANELS

F97860 S0006589387_V1

Section 43 Passenger Compartment Floor Panel Location
Figure 1

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F48121 S0006589390_V1

Section 43 Passenger Compartment Floor Panel Location
Figure 101

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F48127 S0006589393_V1

Section 43 Passenger Compartment Floor Panel Location
Figure 201

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IDENTIFICATION 1 - SECTION 43 TRANSVERSE FLOOR BEAMS

NOTE: REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

K26447 S0006589399_V1

Section 43 Floor Beam Structure Location
Figure 1

Table 1:

REFERENCE DRAWINGS	
DRAWING NUMBER	**TITLE**
140A0346	Floor Grid Collector, Section 43
143A5502	Beam Detail and Installation - Passenger Floor, Station 380
143A5503	Beam Detail and Installation - Passenger Floor, Station 400
143A5504	Beam Detail and Installation - Passenger Floor, Station 420
143A5505	Beam Detail and Installation - Passenger Floor, Station 440
143A5506	Beam Detail and Installation - Passenger Floor, Station 460
143A5510	Beam Detail and Installation - Passenger Floor, Station 480

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Table 1: (Continued)

REFERENCE DRAWINGS	
DRAWING NUMBER	**TITLE**
143A5511	Beam Detail and Installation - Passenger Floor, Station 500
143A5512	Beam Detail and Installation - Passenger Floor, Station 500A
143A5513	Beam Detail and Installation - Passenger Floor, Station 500B
143A5514	Beam Detail and Installation - Passenger Floor, Station 500C
143A5515	Beam Detail and Installation - Passenger Floor, Station 500D
143A5516	Beam Detail and Installation - Passenger Floor, Station 500E
143A5517	Beam Detail and Installation - Passenger Floor, Station 500F
143A5518	Beam Detail and Installation - Passenger Floor, Station 500G
143A5519	Beam Detail and Installation - Passenger Floor, Station 500H
143A5520	Beam Detail and Installation - Passenger Floor, Station 500I
143A5521	Beam Detail and Installation - Passenger Floor, Station 520

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H61817 S0006589403_V1

Section 43 Transverse Floor Beams
Figure 2 (Sheet 1 of 2)

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H61892 S0006589406_V1

Section 43 Transverse Floor Beams
Figure 2 (Sheet 2 of 2)

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NOTE: REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

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FLOOR BEAM AT STATION 380

A

K28979 S0006589404_V2

Section 43 Transverse Floor Beams
Figure 3

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Table 2:

LIST OF MATERIALS FOR FIGURE 2, DETAIL A				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Transverse Beam		BAC1518-1214 7075-T6511 extrusion as given in QQ-A-200/11. Refer to Boeing production drawing for the chem-milled thicknesses	
[2]	Stiffener		AND10133-1002 7075-T6511 extrusion as given in QQ-A-200/11	
[3]	Stiffener (3)		BAC 1503-1512 7075-T6511 extrusion as given in QQ-A-200/11	
[4]	Stiffener		BAC1503-100187 7075-T6511 extrusion as given in QQ-A-200/11	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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NOTE: REFER TO TABLE 3 FOR THE LIST OF MATERIALS.

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FLOOR BEAM AT STATION 400

B

K36658 S0006589412_V2

Section 43 Transverse Floor Beam Identification
Figure 4

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Table 3:

LIST OF MATERIALS FOR FIGURE 2, DETAIL B				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Transverse Beam		BAC1518-1214 7075-T6511 extrusion as given in QQ-A-200/11. Refer to Boeing production drawing for chem-milled thicknesses	
[2]	Stiffener		BAC1503-1512 7075-T6511 extrusion as given in QQ-A-200/11	
[3]	Lower Chord		BAC1503-100889 7075-T62 extrusion as given in QQ-A-200/11	
[4]	Stiffener		BAC1503-1512 7075-T6511 extrusion as given in QQ-A-200/11	
[5]	Angle Stiffener (6)		AND10134-1003 7075-T6511 extrusion as given in QQ-A-200/11	
[6]	Stiffener		BAC1503-100917 7075-T6511 extrusion as given in QQ-A-200/11	
[7]	Bracket (2)		BAC1503-100187 7075-T6511 extrusion as given in QQ-A-200/11	
[8]	Angle Stiffener		BAC1503-100436 7075-T511 extrusion as given in QQ-A-200/11	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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NOTE: REFER TO TABLE 4 FOR THE LIST OF MATERIALS.

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FLOOR BEAM AT STATION 420

C

K36660 S0006589416_V1

Section 43 Transverse Floor Beam Identification
Figure 5

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Table 4:

LIST OF MATERIALS FOR FIGURE 2, DETAIL C				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Transverse Beam		BAC1518-1213 7075-T6511 extrusion as given in QQ-A-200/11. Refer to Boeing production drawing for the chem-milled thicknesses	
[2]	Angle Stiffener (3)		BAC1503-100436 7075-T6511 extrusion as given in QQ-A-200/11	
[3]	Tee Stiffener		BAC1505-100364 7075-T6511 extrusion as given in QQ-A-200/11	
[4]	Bracket (2)	0.050 (1.3)	6013-T6 sheet as given in AMS 4347	
[5]	Channel Stiffener (2)		BAC1509-100657 2024-T3511 extrusion as given in QQ-A-200/3	
[6]	Angle Stiffener (2)		BAC1490-2529 2024-T42 clad sheet as given in QQ-A-250/5	
[7]	Angle Stiffener		BAC1490-2581 2024-T3 clad sheet as given in QQ-A-250/5	
[8]	Stiffener		BAC1503-100917 7075-T6511 extrusion as given in QQ-A-200/11	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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NOTE: REFER TO TABLE 5 FOR THE LIST OF MATERIALS.

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FLOOR BEAM AT STATION 440

D

K36692 S0006589420_V1

Section 43 Transverse Floor Beam Identification
Figure 6

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Table 5:

LIST OF MATERIALS FOR FIGURE 2, DETAIL D				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Transverse Beam		BAC1518-1213 7075-T6511 extrusion as given in QQ-A-200/11. Refer to Boeing production drawing for the chem-milled thicknesses	
[2]	Stiffener (2)		BAC1503-100436 7075-T6511 extrusion as given in QQ-A-200/11	
[3]	Tee Stiffener (2)		BAC1505-100364 7075-T6511 extrusion as given in QQ-A-200/3	
[4]	Channel Stiffener (2)		BAC1509-100657 7075-T6511 extrusion as given in QQ-A-200/11	
[5]	Bracket	1.0 (25.4)	7050-T7451 plate as given in AMS 4050	
[6]	Bracket		AND10134-1003 7075-T6511 extrusion as given in QQ-A-200/11	
[7]	Angle		BAC1505-100364 7075-T6511 extrusion as given in QQ-A-200/11	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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NOTE: REFER TO TABLE 6 FOR THE LIST OF MATERIALS.

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FLOOR BEAM STATION AT 460

E

K36693 S0006589424_V2

Section 43 Transverse Floor Beam Identification
Figure 7

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Table 6:

LIST OF MATERIALS FOR FIGURE 2, DETAIL E				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Transverse Beam		BAC1518-1213 7075-T6511 extrusion as given in QQ-A-200/11. Refer to Boeing production drawing for the chem-milled thicknesses	
[2]	Stiffener (3)		BAC1503-100436 7075-T6511 extrusion as given in QQ-A-200/11	
[3]	Tee Stiffener		AND10136-2401 7075-T6511 extrusion as given in QQ-A-200/11	
[4]	Channel Stiffener		BAC1509-100657 7075-T6511 extrusion as given in QQ-A-200/11	
[5]	Stiffener (3)		AND10133-0601 7075-T6511 extrusion as given in QQ-A-200/11	
[6]	Bracket		AND10134-1003 7075-T6511 extrusion as given in QQ-A-200/11	
[7]	Angle Stiffener		BAC1503-100066 7075-T6511 extrusion as given in QQ-A-200/11	
[8]	Tee Stiffener		BAC1505-100364 7075-T6511 extrusion as given in QQ-A-200/11	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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NOTE: REFER TO TABLE 7 FOR THE LIST OF MATERIALS.

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FLOOR BEAM AT STATION 480

F

K36694 S0006589428_V1

Section 43 Transverse Floor Beam Identification
Figure 8

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Table 7:

LIST OF MATERIALS FOR FIGURE 2, DETAIL F				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Transverse Beam		BAC1518-1213 7075-T6511 extrusion as given in QQ-A-200/11. Refer to Boeing production drawing for the chem-milled thicknesses	
[2]	Angle Stiffener		BAC1504-100436 7075-T6511 extrusion as given in QQ-A-200/11	
[3]	Support (8)	1.10 (27.9)	7050-T7451 plate as given in AMS 4050	
[4]	Bracket		AND10134-1003 7075-T6511 extrusion as given in QQ-A-200/11	
[5]	Stiffener		AND10133-06010 7075-T6511 extrusion as given in QQ-A-200/11	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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NOTE: REFER TO TABLE 8 FOR THE LIST OF MATERIALS.

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FLOOR BEAM AT STATION 500

G

1348395 S0000240754_V1

Section 43 Transverse Floor Beam Identification
Figure 9

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Table 8:

LIST OF MATERIALS FOR FIGURE 2, DETAIL G				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Transverse Beam		BAC1518-1213 7075-T6511 extrusion as given in QQ-A-200/11. Refer to Boeing production drawing for the chem-milled thicknesses	Line numbers 001 thru 2224
[2]	Angle Stiffener (2)		BAC1503-100436 7075-T6511 extrusion as given in QQ-A-200/11	
[3]	Stiffener, Channel		BAC1509-100447 7075-T6511 extrusion as given in QQ-A-200/11	
[4]	Channel Stiffener (2)		BAC1509-100657 7075-T6511 extrusion as given in QQ-A-200/11	
[5]	Bracket		AND10134-1003 7075-T6511 extrusion as given in QQ-A-200/11	
[6]	Transverse Beam		BAC1518-1294 7075-T73511 extrusion as given in QQ-A-200/11. Refer to Boeing production drawing for the chem-milled thicknesses	Line numbers 2225 and on.

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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NOTE: REFER TO TABLE 9 FOR THE LIST OF MATERIALS.

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FLOOR BEAM AT STATION 500A

H

K36696 S0006589436_V1

Section 43 Transverse Floor Beam Identification
Figure 10

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Table 9:

LIST OF MATERIALS FOR FIGURE 2, DETAIL H				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Transverse Beam		BAC1518-1213 7075-T6511 extrusion as given in QQ-A-200/11. Refer to Boeing production drawing for the chem-milled thicknesses	
[2]	Angle Stiffener		BAC1503-100442 7075-T6511 extrusion as given in QQ-A-200/11	
[3]	Angle Stiffener		BAC1503-100436 7075-T6511 extrusion as given in QQ-A-200/11	
[4]	Channel Stiffener (2)		BAC1509-100447 7075-T6511 extrusion as given in QQ-A-200/11	
[5]	Channel Stiffener (2)		BAC1509-100657 7075-T6511 extrusion as given in QQ-A-200/11	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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NOTE: REFER TO TABLE 10 FOR THE LIST OF MATERIALS.

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FLOOR BEAM AT STATION 500B

I

K36697 S0006589440_V1

Section 43 Transverse Floor Beam Identification
Figure 11

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Table 10:

LIST OF MATERIALS FOR FIGURE 2, DETAIL I				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Transverse Beam		BAC1518-1213 7075-T6511 extrusion as given in QQ-A-200/11. Refer to Boeing production drawing for the chem-milled thicknesses	
[2]	Stiffener (2)		BAC1503-100066 7075-T6511 extrusion as given in QQ-A-200/11	
[3]	Stiffener (2)		BAC1509-100447 7075-T6511 extrusion as given in QQ-A-200/11	
[4]	Stiffener (2)		BAC1509-100657 7075-T6511 extrusion as given in QQ-A-200/11	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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NOTE: REFER TO TABLE 11 FOR THE LIST OF MATERIALS.

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FLOOR BEAM AT STATION 500C

J

K36698 S0006589443_V1

Section 43 Transverse Floor Beam Identification
Figure 12

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Table 11:

LIST OF MATERIALS FOR FIGURE 2, DETAIL J				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Transverse Beam		BAC1518-1213 7075-T6511 extrusion as given in QQ-A-200/11. Refer to Boeing production drawing for the chem-milled thicknesses	
[2]	Angle Stiffener (2)		BAC1503-100436 7075-T6511 extrusion as given in QQ-A-200/11	
[3]	Angle Stiffener		BAC1503-100442 7075-T6511 extrusion as given in QQ-A-200/11	
[4]	Stiffener (2)		BAC1509-100447 7075-T6511 extrusion as given in QQ-A-200/11	
[5]	Stiffener (2)		BAC1505-100364 7075-T6511 extrusion as given in QQ-A-200/11	
[6]	Stiffener (2)		BAC1509-100657 7075-T6511 extrusion as given in QQ-A-200/11	
[7]	Stiffener		AND10136-2402 7075-T6511 extrusion as given in QQ-A-200/11	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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NOTE: REFER TO TABLE 12 FOR THE LIST OF MATERIALS.

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FLOOR BEAM AT STATION 500D

K

K36700 S0006589446_V2

Section 43 Transverse Floor Beam Identification
Figure 13

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Table 12:

LIST OF MATERIALS FOR FIGURE 2, DETAIL K				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Transverse Beam		BAC1518-1213 7075-T6511 extrusion as given in QQ-A-200/11. Refer to Boeing production drawing for the chem-milled thicknesses	
[2]	Doubler (2)	0.125 (3.2)	7075-T6 clad sheet as given in QQ-A-250/13	
[3]	Tee Stiffener (2)		BAC1505-100364 7075-T6511 extrusion as given in QQ-A-200/11	
[4]	Stiffener (2)		BAC1509-100657 7075-T6511 extrusion as given in QQ-A-200/11	
[5]	Angle Stiffener (2)		BAC1503-100436 7075-T6511 extrusion as given in QQ-A-200/11	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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NOTE: REFER TO TABLE 9 FOR THE LIST OF MATERIALS.

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FLOOR BEAM AT STATION 500E

L

K36701 S0006589449_V2

Section 43 Transverse Floor Beam Identification
Figure 14

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Table 13:

LIST OF MATERIALS FOR FIGURE 2, DETAIL L				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Transverse Beam		BAC1518-1213 7075-T6511 extrusion as given in QQ-A-200/11. Refer to Boeing production drawing for the chem-milled thicknesses	
[2]	Doubler (2)	0.125 (3.2)	7075-T6 sheet as given in QQ-A-250/13	
[3]	Channel Stiffener (2)		BAC1503-100436 7075-T6511 n extrusion as given in QQ-A-200/11	
[4]	Angle Stiffener (2)		BAC1509-100657 7050-T6511 extrusion as given in QQ-A-200/11	
[5]	Stiffener		BAC1503-100147 7075-T6511 extrusion as given in QQ-A-200/11	
[6]	Stiffener		BAC1504-8252 7075-T73511 extrusion as given in QQ-A-200/11	
[7]	Stiffener		BAC1504-8252 7075-T3511 extrusion as given in QQ-A-200/11	
[8]	Stiffener		BAC1505-100122 7075-T6511 extrusion as given in QQ-A-200/11	
[9]	Stiffener		BAC1504-8252 7075-T73511 extrusion as given in QQ-A-200/11	
[10]	Stiffener		BAC1503-100147 7075-T6511 extrusion as given in QQ-A-200/11	
[11]	Stiffener		BAC1503-100147 7075-T6511 extrusion as given in QQ-A-200/11	
[12]	Stiffener		BAC1504-8252 7075-T73511 extrusion as given in QQ-A-200/11	
[13]	Stiffener		BAC1505-100122 7075-T6511 extrusion as given in QQ-A-200/11	
[14]	Stiffener		BAC1504-8252 7075-T73511 extrusion as given in QQ-A-200/11	
[15]	Stiffener		BAC1503-100648 7075-T6511 extrusion as given in QQ-A-200/11	
[16]	Stiffener		BAC1503-100147 7075-T6511 extrusion as given in QQ-A-200/11	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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NOTE: REFER TO TABLE 14 FOR THE LIST OF MATERIALS.

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FLOOR BEAM AT STATION 500F

M

K36704 S0006589451_V1

Section 43 Transverse Floor Beam Identification
Figure 15

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Table 14:

LIST OF MATERIALS FOR FIGURE 2, DETAIL M				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Transverse Beam		BAC1518-1213 7075-T6511 extrusion as given in QQ-A-200/11. Refer to Boeing production drawing for the chem-milled thicknesses	
[2]	Doubler (2)	0.125 (3.18)	7075-T6 clad sheet as given in QQ-A-250/13	
[3]	Channel Stiffener (2)		BAC1509-100447 7075-T6511 extrusion as given in QQ-A-200/11	
[4]	Channel Stiffener (2)		BAC1509-100657 7075-T6511 extrusion as given in QQ-A-200/11	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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NOTE: REFER TO TABLE 15 FOR THE LIST OF MATERIALS.

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FLOOR BEAM AT STATION 500G

N

K36706 S0006589453_V1

Section 43 Transverse Floor Beam Identification
Figure 16

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Table 15:

LIST OF MATERIALS FOR FIGURE 2, DETAIL N				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Transverse Beam		BAC1518-1213 7075-T6511 extrusion as given in QQ-A-200/11. Refer to Boeing production drawing for the chem-milled thicknesses	
[2]	Doubler (2)	0.125 (3.2)	7075-T6 clad sheet as given in QQ-A-250/13	
[3]	Channel Stiffener (2)		BAC1509-100447 7075-T6511 extrusion as given in QQ-A-200/11	
[4]	Channel Stiffener (2)		BAC1509-100657 7075-T6511 extrusion as given in QQ-A-200/11	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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NOTE: REFER TO TABLE 16 FOR THE LIST OF MATERIALS.

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FLOOR BEAM AT STATION 500H

0

K36707 S0006589455_V1

Section 43 Transverse Floor Beam Identification
Figure 17

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Table 16:

LIST OF MATERIALS FOR FIGURE 2, DETAIL O				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Transverse Beam		BAC1518-1213 7075-T6511 extrusion as given in QQ-A-200/11. Refer to Boeing production drawing for the chem-milled thicknesses	
[2]	Doubler (2)	0.125 (3.2)	7075-T6 clad sheet as given in QQ-A-250/13	
[3]	Channel Stiffener (2)		BAC1509-100447 7075-T6511 extrusion as given in QQ-A-200/11	
[4]	Channel Stiffener (2)		BAC1509-100657 7075-T6511 extrusion as given in QQ-A-200/11	
[5]	Angle Stiffener		BAC1503-100436 7075-T6511 extrusion as given in QQ-A-200/11	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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NOTE: REFER TO TABLE 17 FOR THE LIST OF MATERIALS.

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FLOOR BEAM AT STATION 500I

P

K36708 S0006589457_V1

Section 43 Transverse Floor Beam Identification
Figure 18

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Table 17:

LIST OF MATERIALS FOR FIGURE 2, DETAIL P				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Transverse Beam		BAC1518-1213 7075-T6511 extrusion as given in QQ-A-200/11. Refer to Boeing production drawing for the chem-milled thicknesses	
[2]	Doubler (2)	0.125 (3.2)	7075-T6 clad sheet as given in QQ-A-250/13	
[3]	Angle Stiffener (3)		BAC1503-100436 7075-T6511 extrusion as given in QQ-A-200/11	
[4]	Angle (4)		BAC1503-100593 7075-T6511 extrusion as given in QQ-A-200/11	
[5]	Channel Stiffener (2)		BAC1509-100447 7075-T6511 extrusion as given in QQ-A-200/11	
[6]	Channel Stiffener (2)		BAC1509-100657 7075-T6511 extrusion as given in QQ-A-200/11	
[7]	Angle Stiffener		BAC1503-100917 7075-T6511 extrusion as given in QQ-A-200/11	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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NOTE: REFER TO TABLE 18 FOR THE LIST OF MATERIALS.

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FLOOR BEAM AT STATION 520

Q

H65492 S0006589460_V1

Section 43 Transverse Floor Beam Identification
Figure 19

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Table 18:

LIST OF MATERIALS FOR FIGURE 2, DETAIL Q				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Transverse Beam		BAC1518-1213 7075-T6511 extrusion as given in QQ-A-200/11. Refer to Boeing production drawing for the chem-milled thicknesses	
[2]	Doubler (2)	0.125 (3.2)	7075-T6 sheet as given in QQ-A-250/13	
[3]	Angle Stiffener (3)		BAC1503-100436 7075-T6511 extrusion as given in QQ-A-200/11	
[4]	Channel (5)		BAC1503-100701 7050-T7451 plate as given in AMS 4050	
[5]	Tee Stiffener (2)		AND10136-1503 7075-T6511 extrusion as given in QQ-A-200/11	
[6]	Stiffener		BAC1505-101210 7075-T6511 extrusion as given in QQ-A-200/11	
[7]	Stiffener (2)		BAC1490-2581 2024-T3 clad sheet as given in QQ-A-250/5	
[8]	Tee Stiffener (2)		BAC1505-100122 7075-T6511 extrusion as given in QQ-A-200/11	
[9]	Strap	0.125 (3.2)	7075-T6 clad sheet as given in QQ-A-250/12	
[10]	Angle Stiffener (2)		BAC1504-8252 7075-T73511 extrusion as given in QQ-A-200/11	
[11]	Angle Stiffener (2)		BAC1503-100147 7075-T6511 extrusion as given in QQ-A-200/11	
[12]	Angle Stiffener		BAC1490-2711 7075-T62 clad sheet as given in QQ-A-250/13	
[13]	Angle Stiffener		BAC1503-100917 7075-T6511 extrusion as given in QQ-A-200/11	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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IDENTIFICATION 2 - SECTION 43 FLOOR STRUCTURE

NOTE: REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

K27599 S0006589469_V1

Section 43 Floor Structure Location
Figure 1

Table 1:

REFERENCE DRAWINGS	
DRAWING NUMBER	**TITLE**
140A0346	Floor Grid Collector, Section 43
143A5400	Stabilizer Installation Section 43

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NOTE: REFER TO TABLE 2 FOR THE LIST OF MATERIALS. THE FLOOR STRUCTURE SHOWN IS THE BASIC CONFIGURATION. REFER TO BOEING DRAWINGS FOR OPTIONAL FLOOR STRUCTURE.

K27994 S0006589473_V1

Section 43 Floor Structure Identification
Figure 2

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Table 2:

LIST OF MATERIALS FOR FIGURE 2				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Web Assembly			
	Web	0.025 (0.64)	2024-T3 clad sheet as given in QQ-A-250/5	
	Angle		BAC1490-2506 7075-T62 clad sheet as given in QQ-A-250/13	
[2]	Strap (9)		BAC1513-295 2024-T3511 extrusion as given in QQ-A-200/3	
[3]	Angle		BAC1490-2631 7075-T62 clad sheet as given in QQ-A-250/13	
[4]	Tee (2)		BAC1505-100425 7075-T6511 extrusion as given in QQ-A-200/11	
[5]	Splice	0.050 (1.27)	2024-T3 clad sheet as given in QQ-A-250/5	
[6]	Angle (2)		BAC1490-2529 7075-T62 clad sheet as given in QQ-A-250/13	
[7]	Strap	0.050 (1.27)	2024-T3 clad sheet as given in QQ-A-250/5	
[8]	Channel Assembly (2)			
	Channel	0.063 (1.6)	7075-T62 clad sheet as given in QQ-A-250/13	
	Doubler (2)	0.125 (3.18)	7075-T6 clad sheet as given in QQ-A-250/13	
[9]	Stabilizer Assembly			
	Angle		BAC1490-2631 7075-T62 clad sheet as given in QQ-A-250/13	
	Intercostal (3)	0.050 (1.27)	7075-T62 clad sheet as given in QQ-A-250/13	
	Upper Chord (2)		BAC1490-2843 7075-T62 clad sheet as given in QQ-A-250/13	
[10]	Web	0.025 (0.64)	7075-T62 clad sheet as given in QQ-A-250/13	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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H05779 S0006589505_V2

Section 43 Floor Beam Location
Figure 201

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REPAIR 2 - SECTION 43 FLOOR STRUCTURE

1. Applicability

A. Repair 2 is applicable to damage to the floor structure as shown in Section 43 Floor Structure Repairs, Figure 201/REPAIR 2.

NOTE: THE BASIC FLOOR STRUCTURE CAN BE DIFFERENT BECAUSE OF OPERATOR OPTIONS. THE REPAIRS GIVEN IN THESE SECTIONS WILL ALSO BE APPLICABLE TO OPERATOR OPTIONS UNLESS SUCH AN OPTION NEEDS A SPECIFIED REPAIR IN THE MANUAL.

REFER TO SRM 51-70-11 , SRM 51-70-12, AND SRM 51-70-13 FOR THE TYPICAL FORMED SECTION REPAIRS, TYPICAL EXTRUDED SECTION REPAIRS, AND TYPICAL WEB REPAIRS. THESE TYPICAL REPAIRS CAN BE USED WHEREVER THEY ARE APPLICABLE IF SUFFICIENT SPACE IS AVAILABLE FOR THE INSTALLATION OF THE REPAIR PARTS, WITH NO INTERFERENCE TO ADJACENT STRUCTURE. SOME OF THESE REPAIRS CAN NOT BE USED IN SPECIFIED AREAS OF THE AIRPLANE, AS GIVEN IN THE TYPICAL REPAIR FIGURES. REFER TO THE USAGE LIMITS IN THE TYPICAL REPAIR FIGURES BEFORE YOU START A REPAIR.

H11747 S0006589507_V1

Section 43 Floor Structure Repairs
Figure 201

2. General

A. The typical repairs given in 51-70-11, 51-70-12, or 51-70-13 can be used, where applicable, if there is sufficient clearance with the adjacent structure to install the repair parts.

B. Refer to the limits of the typical repairs given in 51-70-11, 51-70-12, or 51-70-13 before you start a repair.

3. References

Reference	Title

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(Continued)

51-70-11	TYPICAL FORMED SECTION REPAIRS
51-70-12	EXTRUDED SECTION REPAIRS
51-70-13	TYPICAL WEB REPAIRS
53-30-51	FUSELAGE FLOOR STRUCTURE - SECTION 43

4. Repair Instructions

A. Section 43 Floor Structure

(1) Refer to Table 201/REPAIR 2 to find the applicable repairs to the floor structure in Section 43 floor structure.

NOTE: If necessary, refer to 53-30-51, Identification 2 to find the material and the process that was used to make the part which you want to repair.

Table 201:

REPAIR REFERENCES FOR THE SECTION 43 FLOOR STRUCTURE	
COMPONENT	**REPAIR**
Straps and Angles	Refer to SRM 51-70-12
Shear Webs	There are no repairs for these parts in the Structural Repair Manual at this time
Straps, Brackets, Formed Angles, and Machined Splice Angles	There are no repairs for these parts in the Structural Repair Manual at this time.

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IDENTIFICATION 1 - SECTION 43 SEAT TRACKS

NOTE: REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

F87451 S0006589515_V1

Section 43 Seat Track Location
Figure 1

Table 1:

REFERENCE DRAWINGS	
DRAWING NUMBER	**TITLE**
140A0346	Floor Grid Collector, Section 43
143A5300	Seat Track Installation, Section 43

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NOTE: REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

THERE ARE MANY SEAT TRACK CONFIGURATIONS FOR THIS AIRPLANE. THESE CONFIGURATIONS CAN BE DIFFERENT THAN THE ONE THAT IS SHOWN. REFER TO DRAWING 140A0346 TO SEE THE DIFFERENT CONFIGURATIONS.

F87452 S0006589517_V2

Section 43 Seat Track Identification
Figure 2 (Sheet 1 of 2)

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W84880 S0000130140_V1

Section 43 Seat Track Identification
Figure 2 (Sheet 2 of 2)

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Table 2:

LIST OF MATERIALS FOR FIGURE 2				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Seat Track (8)		BAC1520-2789 7178-T6511 extrusion as given in QQ-A-200/13	
[2]	Seat Track (4)		BAC1520-1342 7178-T6511 extrusion as given in QQ-A-200/13	For Cum Line Numbers 1 Thru 1221
[3]	Channel (4)		BAC1508-129 7075-T6511 extrusion as given in QQ-A-200/11	For Cum Line Numbers 1 Thru 1221
[4]	Pivot Link (4)		BAC1520-2979 7178-T6511 extrusion as given in QQ-A-200/13	For Cum Line Numbers 1222 and on

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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F96992 S0006589523_V1

Section 43 Seat Track Allowable Damage
Figure 101

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F97129 S0006589528_V1

Section 43 Seat Track Repairs
Figure 201

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IDENTIFICATION 1 - SECTION 43 FORWARD CARGO COMPARTMENT FLOOR PANELS

NOTE: REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

H96780 S0006589534_V1

Section 43 Cargo Compartment Floor Panel Locations
Figure 1

Table 1:

REFERENCE DRAWINGS	
DRAWING NUMBER	**TITLE**
400A9101	Functional Product Collector - Payloads - Final Assembly
453A1600	Deck Panel Installation - Forward Cargo
453A1610	Panel Assembly - Deck, Forward Cargo Compartment

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NOTE: REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

H96763 S0006589539_V1

Section 43 Cargo Compartment Floor Panel Identification
Figure 2

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Table 2:

LIST OF MATERIALS FOR FIGURE 2				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Deck Panel	0.070 (1.79)	GILLINER 1266 Gill Coated (white) fiberglass	Refer to the Engineering Drawing
		0.090 (2.29)	GILLINER 1266 Gill Coated (white) fiberglass	
		0.071 (1.80)	2024-T3 clad sheet	
		0.090 (2.29)	Conolite P/N A90RG1W	
		0.058 (1.47)	BMS 7-326, Class 2/1, Grade C, Type VII	
[2]	Cap Strip		BAC1513-286 2024-T3511 extrusion	
[3]	Tiedown Plate	0.20 (5.08)	2024-T3 clad sheet	
[4]	Capstrip	0.063 (1.60)	2024-T3 clad sheet	
[5]	Capstrip	0.080 (2.03)	2024-T3 clad sheet	
[6]	Splice Plate	0.063 (1.6)	2024-T3 clad sheet	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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IDENTIFICATION 2 - SECTION 43 FORWARD CARGO COMPARTMENT FLOOR STRUCTURE

NOTE: REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

H97682 S0006589545_V2

Section 43 Cargo Compartment Floor Structure Locations
Figure 1

Table 1:

REFERENCE DRAWINGS	
DRAWING NUMBER	**TITLE**
400A9101	Functional Product Collector - Payloads - Final Assembly
140A4320	Section 43 lower Lobe Functional Product Collector
453A1600	Deck Panel Installation - Forward Cargo
143A7500	Cargo Floor Installation - Section 43
143A7501	Details - Cargo Floor Support, Section 43
143A7502	Clip - Details, Cargo Floor Support Section 43
143A7503	Intercostal Detail - Cargo Floor Support

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Table 1: (Continued)

REFERENCE DRAWINGS	
DRAWING NUMBER	**TITLE**
143A7505	Cargo Floor Support Installation - Section 43
143A9403	Web - Intercostal Forward Door Surround
453A1611	Capstrip - Forward Cargo Compartment

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NOTE: REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

H97776 S0006589552_V1

Section 43 Cargo Compartment Floor Structure Identification
Figure 2

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Table 2:

LIST OF MATERIALS				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Channel		BAC1496-444 7075-T6 clad sheet	
[2]	Track - Tiedown Assembly			
	Track Support Tee		AND10136-1405 7050-T76511 extrusion as given in AMS 4340	
	Track - Tiedown		BAC1520-1397 7050-T76511 extrusion as given in AMS 4340	
[2]	Track - Tiedown Assembly			
	Track Support Tee		AND10136-1405 7050-T76511 extrusion as given in AMS 4340	
	Track - Tiedown		BAC1520-1397 7050-T73511 extrusion as given in AMS 4340	
	Splice		BAC1503-101166 7050-T73511 extrusion	
[3]	Channel		BAC1509-100146 7050-T76511 extrusion as given in AMS 4340	
[4]	Zee		BAC1517-1167 7050-T76511 extrusion as given in AMS 4340	
[5]	Track - Tiedown		BAC1520-1397 7050-T76511 as given in AMS 4340. Refer to the engineering drawing for the machined thicknesses	
[6]	Channel Assembly			
	Channel		BAC1496-444 7075-T62 clad sheet	
	Clip	0.040 (1.02)	7075-T6 clad sheet	
[7]	Channel Assembly			
	Channel		BAC1496-444 7075-T62 clad sheet	
	Clip	0.040 (1.02)	7075-T6 clad sheet	
[8]	Clip		BAC1503-100593 7075-T73511 extrusion Refer to the engineering drawing for the machined thicknesses	
[9]	Clip	0.020 (0.51)	7075-T62 clad sheet	
	Clip	0.032 (0.81)	7075-T62 clad sheet	
[10]	Bracket (2)		BAC1505-100581 7075-T6511 extrusion	
[11]	Support Bracket	0.071 (1.80)	2024-T42 clad sheet	
[12]	Baffle Assembly			
	Clip	0.032 (0.81)	7075-T62 clad sheet	
	Baffle	0.020 (0.51)	7075-T6 clad sheet	
[13]	Intercostal Assembly			
	Clip	0.900 (22.9)	7050-T7451 plate as given in AMS 4050	
	Clip		BAC1503-100350 7050-T73511 extrusion	
	Intercostal	0.050 (1.27)	7075-T62 clad sheet	

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Table 2: (Continued)

LIST OF MATERIALS				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[14]	Intercostal Assembly			
	Clip (2)		7050-T7451 plate as given in AMS 4050	
	Intercostal	0.050 (1.27)	7075-T62 clad sheet	
[15]	Baffle Assembly			
	Clip	0.032 (0.81)	7075-T62 clad sheet	
	Clip	0.020 (0.51)	7075-T62 clad sheet	
	Baffle	0.020 (0.51)	7075-T6 clad sheet	
[16]	Baffle Assembly			
	Clip (2)	0.032 (0.81)	7075-T62 clad sheet	
	Clip (2)	0.020 (0.51)	7075-T62 clad sheet	
	Baffle (2)	0.020 (0.51)	7075-T6 clad sheet	
[17]	Baffle Assembly			
	Clip (2)	0.032 (0.81)	7075-T62 clad sheet	
	Clip (2)	0.020 (0.51)	7075-T62 clad sheet	
	Baffle (2)	0.020 (0.51)	7075-T6 clad sheet	
	Clip		BAC1503-100179 7075-T73511 extrusion	
[18]	Baffle Assembly			
	Clip (3)	0.032 (0.81)	7075-T62 clad sheet	
	Clip (3)	0.020 (0.51)	7075-T62 clad sheet	
	Baffle (3)	0.020 (0.51)	7075-T6 clad sheet	
[19]	Intercostal Assembly (2)			
	Clip	0.032 (0.81)	7075-T62 clad sheet	
	Clip	0.020 (0.51)	7075-T62 clad sheet	
	Intercostal	0.032 (0.81)	7075-T62 clad sheet	
[20]	Baffle Assembly			
	Clip	0.032 (0.81)	7075-T62 clad sheet	
	Baffle	0.020 (0.51)	7075-T6 clad sheet	
[21]	Intercostal Assembly			
	Clip	0.900 (22.9)	7050-T7451 plate as given in AMS 4050	
	Clip		BAC1514-2570 7075-T73511 extrusion	
	Intercostal	0.050 (1.27)	7075-T62 clad sheet	
[22]	Intercostal Assembly			
	Clip (3)		7050-T7451 plate as given in AMS 4050	
	Intercostal	0.050 (1.27)	7075-T62 clad sheet	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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L78737 S0006589560_V1

Section 43 Forward Cargo Compartment Floor Structure
Figure 101

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L78739 S0006589565_V1

Section 43 Forward Cargo Compartment Floor Structure
Figure 201

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IDENTIFICATION 1 - SECTION 43 - WING-TO-BODY FAIRING SKIN PANELS

NOTE: REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

H25945 S0006589572_V1

Section 43 Wing-to-Body Fairing Skin Panels Identification
Figure 1

Table 1:

REFERENCE DRAWINGS	
DRAWING NUMBER	**TITLE**
149A7011	Functional Collector - Section 49 Panel Installations
149A7102	Mid Forward Fairing Panel Installation
149A7103	Upper Forward Fairing Panel Installation

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NOTE: REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

H21191 S0006589576_V1

Section 43 Wing-to-Body Fairing Skin Panels Identification
Figure 2

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Table 2:

LIST OF MATERIALS FOR FIGURE 2				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Upper Forward Fairing - Bonded Part		Glass Fiber Reinforced Plastic (GFRP) honeycomb sandwich	
	Skin Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 120 (Optional: 220)	
	Doubler Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 1581 (Optional: 7781)	
	Filler Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class II, Grade B, Style 120 (Optional: 220), Style 1581 (Optional: 7781), or Style 1584	
	Core	0.80 (20.3)	Non-metallic honeycomb as given in BMS 8-124, Class IV, Type V, Grade 5.0	
	Core (Bubble area only)	0.30 (7.62)	Non-metallic honeycomb as given in BMS 8-124, Class IV, Type VI, Grade 3.0	
[2]	Forward Overwing Fairing - Bonded Part		Glass Fiber Reinforced Plastic (GFRP) honeycomb sandwich	
	Skin Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 120 (Optional: 220)	
	Doubler Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 1581 (Optional: 7781)	
	Filler Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 120 (Optional: 220), Style 1581 (Optional: 7781), or Style 1584	
	Core	0.70 (17.8)	Non-metallic honeycomb as given in BMS 8-124, Class IV, Type VI, Grade 3.0	
[3]	Forward Fairing Access Door Assembly			
	Door	0.100 (2.54)	2024-T42 sheet as given in QQ-A-250/4	
	Stiffener	0.063 (1.60)	2024-T42 sheet as given in QQ-A-250/4	
	Doubler	0.100 (2.54)	2024-T42 sheet as given in QQ-A-250/4	
[4]	Forward Underwing Fairing - Bonded Part		Glass Fiber Reinforced Plastic (GFRP) honeycomb sandwich	
	Skin Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 120 (Optional: 220)	
	Doubler Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 1581 (Optional: 7781)	
	Filler Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 120 (Optional: 220), or Style 1581 (Optional: 7781)	

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Table 2: (Continued)

LIST OF MATERIALS FOR FIGURE 2				
ITEM	DESCRIPTION	T*[1]	MATERIAL	EFFECTIVITY
	Core	1.00 (25.4)	Non-metallic honeycomb as given in BMS 8-124, Class IV, Type V, Grade 5.0	
[5]	Ram Air Inlet Lip Assembly - Bonded Part		Glass Fiber Reinforced Plastic (GFRP) honeycomb sandwich	
	Skin Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 120 (Optional: 220)	
	Doubler Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 1581 (Optional: 7781)	
	Filler Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 120 (Optional: 220), Style 1581 (Optional: 7781), or Style 1584	
	Core	0.50 (12.7)	Non-metallic honeycomb as given in BMS 8-124, Class IV, Type V, Grade 3.0	
[6]	Forward Fairing Access Door Assembly			All airplane line numbers except 3464
	Door	0.125 (3.18)	2024-T42 sheet as given in QQ-A-250/4	
	Doubler	0.063 (1.60)	2024-T42 sheet as given in QQ-A-250/4	
[6]	Forward Fairing Access Door Assembly			Airplane line number 3464 only
	Door	0.125 (3.18)	2024-T42 sheet as given in QQ-A-250/4 (Optional: 2024-T4 as given in BMS 7-363)	
	Doubler	0.063 (1.60)	2024-T42 sheet as given in QQ-A-250/4 (Optional: 2024-T4 as given in BMS 7-363)	
[7]	Ram Air Inlet Ramp - Bonded Part		Glass Fiber Reinforced Plastic (GFRP) honeycomb sandwich	
	Skin Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 120 (Optional: 220)	
	Doubler Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 1581 (Optional: 7781)	
	Filler Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 120 (Optional: 220), Style 1581 (Optional: 7781), or Style 1584	
	Core	0.25 (6.4)	Non-metallic honeycomb as given in BMS 8-124, Class IV, Type V, Grade 3.0	
[8]	Forward Fairing BSTA 500A to FS Lower - Bonded Part		Glass Fiber Reinforced Plastic (GFRP) honeycomb sandwich with aluminum foil mesh lightning protection ply	
	Skin Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 120 (Optional: 220)	

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Table 2: (Continued)

LIST OF MATERIALS FOR FIGURE 2				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
	Doubler Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 1581 (Optional: 7781), and Style 120 (Optional: 220)	
	Lightning Protection Ply		Phosphoric acid anodized expanded aluminum foil as given in BMS 8-336, Type I, Class I, Grade 016 in accordance with BAC 5555 and primed in accordance with BAC 5514-589	
	Core	0.90 (22.8)	Non-metallic honeycomb as given in BMS 8-124, Class IV, Type V, Grade 3.0 and Grade 5.0	
[9]	Mid Forward Fairing - Bonded Part		Glass Fiber Reinforced Plastic (GFRP) honeycomb sandwich	
	Skin Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 120 (Optional: 220), and Style 1581 (Optional: 7781)	
	Doubler Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 1581 (Optional: 7781)	
	Filler Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 120 (Optional: 220), or Style 1581 (Optional: 7781)	
	Core	1.10 (27.9)	Non-metallic honeycomb as given in BMS 8-124, Class IV, Type V, Grade 3.0	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

NOTE: Refer to the production drawings for the ply lay-up.
Refer to the production drawings for the core ribbon direction.

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ALLOWABLE DAMAGE 1 - SECTION 43 WING-TO-BODY FAIRING SKIN PANELS

1. Applicability

A. This subject gives the allowable damage limits for the section 43 wing-to-body fairing skin panels shown in Section 43 Wing-to-Body Fairing Skin Panels Location, Figure 101/ALLOWABLE DAMAGE 1.

B. The allowable damage limits are only applicable if they are sealed as given in Paragraph 2.

NOTES

- GFRP = GLASS FIBER REINFORCED PLASTIC

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Section 43 Wing-to-Body Fairing Skin Panels Location
Figure 101 (Sheet 1 of 2)

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EXPANDED ALUMINUM FOIL MESH LIGHTNING PROTECTION (BMS 8-336)

A

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Section 43 Wing-to-Body Fairing Skin Panels Location
Figure 101 (Sheet 2 of 2)

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2. General

A. Do the steps that follow for the skin panels made of Glass Fiber Reinforced Plastic (GFRP) honeycomb sandwich panels.

(1) Do an inspection of the damaged area to find the length, width and depth of the damage. Boeing recommends that you use an instrumented Non-Destructive Test (NDT) procedure. Refer to 737 NDT Part 1, 51-01-02 for inspection procedures.

NOTE: Other equivalent inspection methods that have been examined and found to be satisfactory by the operator can be used.

(a) For the honeycomb core areas, the tap test is an alternative procedure to an instrumented NDT.

(b) Refer to Damage Definitions, Figure 102/ALLOWABLE DAMAGE 1, Details A , B , and C for the definitions of the length, width, and depth of damage.

(c) Refer to Definitions of the Facesheets, Figure 103/ALLOWABLE DAMAGE 1 for the definitions of the facesheets of a honeycomb core area.

(2) Remove all the contamination and water from the structure.

(a) Refer to 51-30-05 for possible sources of the equipment and tools you can use to remove the damage.

(b) Refer to 51-70-04 for the cleanup procedures.

(3) Some GFRP panels have BMS 8-336 expanded aluminum foil mesh as shown in Section 43 Wing-to-Body Fairing Skin Panels Location, Figure 101/ALLOWABLE DAMAGE 1. If damage occurs to the expanded aluminum foil mesh, do the steps that follow:

(a) Refer to 51-70-14 for the allowable damage limits for the expanded aluminum foil mesh.

(b) Seal the damaged area as given in 51-70-14.

(4) Seal all damaged areas that do not have BMS 8-336 expanded aluminum foil mesh with the steps that follow:

(a) Seal the damaged areas that are not more than one ply deep and that agree with the allowable damage limits given in Paragraph 4./ALLOWABLE DAMAGE 1

1) Make a temporary seal.

a) Apply aluminum foil tape (speed tape).

b) Keep a record of the location.

c) Make sure the tape is in satisfactory condition at normal maintenance intervals.

2) Make a permanent seal.

a) Apply BMS 8-201, BMS 8-207 or BMS 8-301 epoxy resin to the area as given 51-70-08.

b) Apply one layer of BMS 10-79, Type 3 or BMS 10-103, Type 1 primer. Refer to SOPM 20-44-04.

c) Apply one layer of BMS 10-60 enamel to the areas sealed with epoxy resin. Refer to AMM PAGEBLOCK 51-21-99/701.

(b) Seal the damaged areas that are more than one ply deep and that agree with the allowable damage limits given in Paragraph 4./ALLOWABLE DAMAGE 1

1) Use a vacuum and heat to remove moisture from the solid laminate or the honeycomb cells. Refer to 51-70-04.

2) Make a temporary seal with aluminum foil tape (speed tape).

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3) Keep a record of the location.

4) Repair the damage no later than 24 months from the time the seal was made.

B. Do the steps that follow for the skin panels made of formed aluminum sheet:

(1) Refer to Section 43 Wing-to-Body Fairing Skin Panels Location, Figure 101/ALLOWABLE DAMAGE 1 for the location of the aluminum panels.

(2) Remove the damaged material as necessary.

(a) Refer to 51-10-02 for the inspection and removal of damage.

(b) Refer to 51-30-03 for possible sources of the abrasive and other materials you can use to remove the damage.

(c) Refer to 51-30-05 for possible sources of the equipment and tools you can use to remove the damage.

(3) Apply a chemical conversion coating to the bare surfaces of the aluminum. Refer to 51-20-01.

(4) Apply one layer of BMS 10-11, Type I primer to the bare surfaces of the aluminum. Refer to SOPM 20-41-02.

C. Make sure the aerodynamic smoothness is satisfactory or there will be a decrease in the economic performance of the airplane.

D. Refer to Table 101/ALLOWABLE DAMAGE 1 for the paragraph references for the allowable damage limits.

Table 101:

PARAGRAPH REFERENCES FOR THE ALLOWABLE DAMAGE LIMITS	
TYPE OF STRUCTURE	**PARAGRAPH**
GFRP/HONEYCOMB SANDWICH PANELS - FULL DEPTH HONEYCOMB CORE AREAS	4.A
GFRP/HONEYCOMB SANDWICH PANELS - EDGEBAND AREAS	4.B
FORMED ALUMINUM SHEET PANELS	4.C

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DEFINITIONS FOR NICK, GOUGE, OR SCRATCH DAMAGE

A

DEFINITIONS FOR DENT DAMAGE

B

DEFINITIONS FOR EDGE DAMAGE

C

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Damage Definitions
Figure 102

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G52379 S0006589588_V1

Definitions of the Facesheets
Figure 103

3. References

Reference	Title
51-10-01, GENERAL	Aerodynamic Smoothness Requirements
51-10-02	INSPECTION AND REMOVAL OF DAMAGE
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-20-05, GENERAL	Repair Sealing
51-30-03	NON-METALLIC MATERIALS
51-30-05	EQUIPMENT AND TOOLS FOR REPAIRS
51-70-01, REPAIR GENERAL	Procedures to Rework or Fill Allowable Dents on the External Aerodynamic Surfaces of Metallic Parts
51-70-04	REPAIR PROCEDURES FOR WET LAYUP MATERIALS
51-70-08	RESIN SWEEP-FAIR PROCEDURES
51-70-14	STRUCTURES WITH ALUMINUM COATINGS AND FOILS
AMM 51-21-99 P/B 701	DECORATIVE EXTERIOR PAINT SYSTEM - CLEANING/PAINTING
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes
SOPM 20-44-04	Application of Urethane Compatible Primer
737 NDT Part 1, 51-01-02	NDT Examination of Composite Structure for Impact Damage

4. Allowable Damage Limits

A. GFRP Honeycomb Sandwich Panels - Full Depth Honeycomb Core Area

(1) Cracks are permitted if:

(a) They are a maximum of one facesheet and the core in depth

(b) The dimension of the damage is less than the limits given in GFRP Honeycomb Sandwich Panels - Damage Size and Spacing Limits, Figure 104/ALLOWABLE DAMAGE 1 and Table 102/ALLOWABLE DAMAGE 1

(c) They are in the full depth core area and are a minimum distance away from fastener holes or material edges as shown in GFRP Honeycomb Sandwich Panels - Damage Size and Spacing Limits, Figure 104/ALLOWABLE DAMAGE 1 and Table 102/ALLOWABLE DAMAGE 1

(d) They are a minimum distance away from the edge of other damage as shown in GFRP Honeycomb Sandwich Panels - Damage Size and Spacing Limits, Figure 104/ALLOWABLE DAMAGE 1 and Table 102/ALLOWABLE DAMAGE 1

NOTE: Other damage does not include nicks, gouges, and scratches that:

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- Do not cause damage to the glass fiber plies
- Are sealed as given in Paragraph 2.

(e) They are sealed as given in Paragraph 2.

(2) Nicks, Gouges and Scratches that do not cause damage to the glass fibers are permitted.

(3) Nicks, Gouges and Scratches that cause damage to the glass fibers are permitted if:

(a) The dimension of the damage is less than the limits given in GFRP Honeycomb Sandwich Panels - Damage Size and Spacing Limits, Figure 104/ALLOWABLE DAMAGE 1 and Table 102/ALLOWABLE DAMAGE 1

(b) They are a minimum distance away from the edge of other damage as shown in GFRP Honeycomb Sandwich Panels - Damage Size and Spacing Limits, Figure 104/ALLOWABLE DAMAGE 1 and Table 102/ALLOWABLE DAMAGE 1

NOTE: Other damage does not include nicks, gouges, and scratches that:

- Do not cause damage to the glass fiber plies
- Are sealed as given in Paragraph 2.

(c) They are sealed as given in Paragraph 2.

(4) Dents are permitted if:

(a) The dimension of the damage is less than the limits given in GFRP Honeycomb Sandwich Panels - Damage Size and Spacing Limits, Figure 104/ALLOWABLE DAMAGE 1 and Table 102/ALLOWABLE DAMAGE 1

(b) They are in the full depth core area and are a minimum distance away from fastener holes or material edges as shown in GFRP Honeycomb Sandwich Panels - Damage Size and Spacing Limits, Figure 104/ALLOWABLE DAMAGE 1 and Table 102/ALLOWABLE DAMAGE 1

(c) They are a minimum distance away from the edge of other damage as shown in GFRP Honeycomb Sandwich Panels - Damage Size and Spacing Limits, Figure 104/ALLOWABLE DAMAGE 1 and Table 102/ALLOWABLE DAMAGE 1

NOTE: Other damage does not include nicks, gouges, and scratches that:

- Do not cause damage to the glass fiber plies
- Are sealed as given in Paragraph 2.

(d) They are sealed as given in Paragraph 2.

(5) Holes and Punctures are permitted if:

(a) They are a maximum of one facesheet and the core in depth

(b) The dimension of the damage is less than the limits given in GFRP Honeycomb Sandwich Panels - Damage Size and Spacing Limits, Figure 104/ALLOWABLE DAMAGE 1 and Table 102/ALLOWABLE DAMAGE 1

(c) They are in the full depth core area and are a minimum distance away from fastener holes or material edges as shown in GFRP Honeycomb Sandwich Panels - Damage Size and Spacing Limits, Figure 104/ALLOWABLE DAMAGE 1 and Table 102/ALLOWABLE DAMAGE 1

(d) They are a minimum distance away from the edge of other damage as shown in GFRP Honeycomb Sandwich Panels - Damage Size and Spacing Limits, Figure 104/ALLOWABLE DAMAGE 1 andTable 102/ALLOWABLE DAMAGE 1

NOTE: Other damage does not include nicks, gouges, and scratches that:

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- Do not cause damage to the glass fiber plies
- Are sealed as given in Paragraph 2.

(e) They are sealed as given in Paragraph 2.

(6) Delaminations are permitted if:

(a) The dimension of the damage is less than the limits given in GFRP Honeycomb Sandwich Panels - Damage Size and Spacing Limits, Figure 104/ALLOWABLE DAMAGE 1 and Table 102/ALLOWABLE DAMAGE 1

(b) They are in the full depth core area and are a minimum distance away from fastener holes or material edges as shown in GFRP Honeycomb Sandwich Panels - Damage Size and Spacing Limits, Figure 104/ALLOWABLE DAMAGE 1 and Table 102/ALLOWABLE DAMAGE 1

(c) They are a minimum distance away from the edge of other damage as shown in GFRP Honeycomb Sandwich Panels - Damage Size and Spacing Limits, Figure 104/ALLOWABLE DAMAGE 1 and Table 102/ALLOWABLE DAMAGE 1

NOTE: Other damage does not include nicks, gouges, and scratches that:

- Do not cause damage to the glass fiber plies
- Are sealed as given in Paragraph 2.

(d) They are sealed as given in Paragraph 2.

Table 102:

DAMAGE DIMENSION DATA FOR THE FULL DEPTH HONEYCOMB CORE AREAS - SECTION 43 WING-TO-BODY FAIRING SKIN			
PANEL DRAWING NUMBER	BAGSIDE FACESHEET OR TOOLSIDE FACESHEET		
	MAXIMUM DAMAGE DIMENSION "D" OR "d" IN INCHES (mm)	MINIMUM DAMAGE SPACING DIMENSION "A" IN INCHES (mm)	MINIMUM DAMAGE DISTANCE "B" OR "C" FROM FASTENER HOLES OR MATERIAL EDGES IN INCHES (mm) "B" "C"
149A7137	2.0 (50.8)	1.7 x (D+d) (43.2)x(D+d)	2.0D 2.0d (50.8)D (50.8)d
149A7151	3.0 (76.2)	3.8 x (D+d) (96.5)x(D+d)	4.1D 4.1d (104.1)D (104.1)d
149A7155	3.0 (76.2)	1.5 x (D+d) (38.1)x(D+d)	1.7D 1.7d (43.7)D (43.7)d
149A7156	1.8 (45.7)	4.8 x (D+d) (121.9)x(D+d)	5.5D 5.5d (139.7)D (139.7)d
149A7157	3.0 (76.2)	2.3 x (D+d) (58.4)x(D+d)	2.5D 2.5d (63.5)D (63.5)d
149A7161	2.0 (50.8)	1.7 x (D+d) (43.2)x(D+d)	1.9D 1.9d (48.3)D (48.3)d
149A7351	1.9 (48.3)	1.5 x (D+d) (38.1)x(D+d)	1.7D 1.7d (43.2)D (43.2)d

B. GFRP Honeycomb Sandwich Panels - Edgeband Area

(1) Cracks are permitted if they are:

(a) A maximum of 0.25 inch (6.4 mm) measured across the largest dimension of the damage

(b) A minimum distance of 0.5 inch (12.7 mm) away from the edge of fastener holes or material edges

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(c) A minimum distance of 3.0 inches (76.2 mm) away from the edge of other damage

NOTE: Other damage does not include nicks, gouges, and scratches that:

- Do not cause damage to the glass fiber plies
- Are sealed as given in Paragraph 2.

(d) Sealed as given in Paragraph 2.

(2) Nicks, Gouges and Scratches that do not cause damage to the glass fibers are permitted.

(3) Nicks, Gouges and Scratches that cause damage to the glass fibers are permitted if they are:

(a) A maximum of one ply in depth

NOTE: Use the limits for holes and punctures if the depth of the damage is more than 1 ply in depth.

(b) A maximum of 1.0 inch (25.4 mm) in length

(c) A maximum of 0.25 inch (6.4 mm) in width

(d) A minimum distance of 0.5 inch (12.7 mm) away from the edge of fastener holes or material edges

(e) A minimum distance of 3.0 inches (76.2 mm) away from the edge of other damage

NOTE: Other damage does not include nicks, gouges, and scratches that:

- Do not cause damage to the glass fiber plies
- Are sealed as given in Paragraph 2.

(f) Sealed as given in Paragraph 2.

(4) Dents are not permitted.

(5) Holes and Punctures are permitted if they are:

(a) A maximum of 0.25 inch (6.4 mm) measured across the largest dimension of the damage

(b) A minimum distance of 0.5 inch (12.7 mm) away from the edge of fastener holes or material edges

(c) A minimum distance of 3.0 inches (76.2 mm) away from the edge of other damage

NOTE: Other damage does not include nicks, gouges, and scratches that:

- Do not cause damage to the glass fiber plies
- Are sealed as given in Paragraph 2.

(d) Sealed as given in Paragraph 2.

(6) Delaminations are permitted if they are:

(a) A maximum of 1.00 inch (25.4 mm) measured across the largest dimension of the damage

(b) A minimum distance of 0.5 inch (12.7 mm) away from the edge of fastener holes or material edges

(c) A minimum distance of 3.0 inches (76.2 mm) away from the edge of other damage

NOTE: Other damage does not include nicks, gouges, and scratches that:

- Do not cause damage to the glass fiber plies
- Are sealed as given in Paragraph 2.

(d) Sealed as given in Paragraph 2.

(7) Edge damage is permitted if it is:

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(a) A maximum of 0.10 inch (2.54 mm) in depth

(b) A maximum of 0.50 inch (6.4 mm) in width

(c) A minimum of distance of 2.5D (D = the largest dimension across the damage) away from the edge of other damage or the edge of a hole

NOTE: Other damage does not include nicks, gouges, and scratches that:

- Do not cause damage to the glass fiber plies
- Are sealed as given in Paragraph 2.

(d) Sealed as given in Paragraph 2.

(8) Edge Erosion is permitted as shown in GFRP Honeycomb Sandwich Panels - Sealing of Erosion Damage at an Edge , Figure 105/ALLOWABLE DAMAGE 1.

C. Panels Made of Formed Aluminum Sheet

(1) Cracks:

(a) Remove the damage as shown in Aluminum Panel - Allowable Damage Limits, Figure 106/ALLOWABLE DAMAGE 1, Details A , B , and C .

(2) Nicks, Gouges, Scratches, and Corrosion:

(a) Remove the damage as shown in Aluminum Panel - Allowable Damage Limits, Figure 106/ALLOWABLE DAMAGE 1, Details A , B , C , D , and F .

(3) Dents are permitted if they:

(a) Agree with the conditions shown in Aluminum Panel - Allowable Damage Limits, Figure 106/ALLOWABLE DAMAGE 1, Detail E

(b) Are a minimum distance of 3.0D (D = the largest dimension across the damage) away from the edge of other damage, the edge of a hole, or the edge of the material.

(4) Holes and Punctures are permitted if:

(a) They are a maximum of 0.25 inch (6.4 mm) measured across the largest dimension of the damage

(b) The edge of the damage is a minimum of 1.0 inch (25.4 mm) away from a fastener hole, an edge, or other damage

(c) They are filled with a 2017-T3 or 2117-T4 aluminum flush head rivet without sealant.

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NOTE: TO FIND DELAMINATION, YOU CAN USE NONDESTRUCTIVE INSPECTION PROCEDURES. REFER TO NDT PART 1, 51-01-02.

THE DIAMETER OF A DAMAGE AREA IS EITHER THE DIAMETER OF THE VISUAL DAMAGE OR THE DIAMETER OF THE DELAMINATION. USE THE DIAMETER OF THE LARGER DAMAGE.

D IS THE LARGER DIAMETER OF TWO ADJACENT DAMAGE AREAS.

d IS THE SMALLER DIAMETER OF TWO ADJACENT DAMAGE AREAS.

A IS THE DISTANCE BETWEEN TWO ADJACENT DAMAGE AREAS.

B AND C ARE THE DISTANCES BETWEEN THE DAMAGE AND THE FASTENER HOLES OR MATERIAL EDGES.

FOR THE VALUES OF D, d, A, B, AND C, REFER TO TABLE 102.

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GFRP Honeycomb Sandwich Panels - Damage Size and Spacing Limits
Figure 104

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GFRP Honeycomb Sandwich Panels - Sealing of Erosion Damage at an Edge
Figure 105

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X = THE WIDTH OF THE MATERIAL REMOVED
= 0.10 INCH (2.54 mm) THICKNESS MAXIMUM

REMOVAL OF DAMAGED MATERIAL AT AN EDGE

A

REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER EDGE MARGINS DO NOT HAVE AN OVERLAP

B

REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER EDGE MARGINS HAVE AN OVERLAP

C

G52387 S0006589592_V1

Aluminum Panel - Allowable Damage Limits
Figure 106 (Sheet 1 of 3)

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REMOVAL OF DAMAGED MATERIAL ON A SURFACE

D

DENT THAT IS PERMITTED

E

G52391 S0006589593_V1

Aluminum Panel - Allowable Damage Limits
Figure 106 (Sheet 2 of 3)

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G52393 S0006589594_V2

Aluminum Panel - Allowable Damage Limits
Figure 106 (Sheet 3 of 3)

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REPAIR 1 - SECTION 43 WING-TO-BODY FAIRING SKIN PANELS

1. Applicability

A. Repair 1 is applicable to the wing-to-body fairing skin panels shown in Section 43 Wing-to-Body Fairing Skin Panels Location, Figure 201/REPAIR 1.

B. Repair 1 is applicable to damage that is more than the limits permitted in 53-30-70, Allowable Damage 1.

NOTES

- GFRP = GLASS FIBER REINFORCED PLASTIC

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Section 43 Wing-to-Body Fairing Skin Panels Location
Figure 201 (Sheet 1 of 2)

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H20368 S0006589602_V1

Section 43 Wing-to-Body Fairing Skin Panels Location
Figure 201 (Sheet 2 of 2)

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2. General

A. Repair 1 gives instructions for Category A and B repairs. Refer to 51-00-06 to find the definitions of the different categories of repairs.

B. Get access to the damaged area.

(1) If necessary, remove the wing-to-body fairing skin panels as given in AMM 53-51-21/401.

(a) Refer to 51-40-02 for the fastener removal procedures.

(b) If a fastener hole is damaged, refer to Repair 8 of 51-70-04 or Repair 8 of 51-70-05 for the repair procedures.

C. Do an inspection of the damaged area to find the dimensions of the damage. Boeing recommends that you use an instrumented Non-Destructive Test (NDT) procedure. Refer to 737 NDT Part 1, 51-01-02 for the inspection procedures.

NOTE: Other equivalent inspection methods that have been examined and found to be satisfactory by the operator can be used.

(1) For the honeycomb core areas, the tap test is an alternative procedure to an instrumented NDT.

(2) Refer to Damage Definitions, Figure 202/REPAIR 1, Details A, B, and C for the definitions of the length, width, and depth of damage.

(3) Refer to Definitions of the Facesheets, Figure 203/REPAIR 1 for the definitions of the facesheets of a honeycomb core area.

D. Some GFRP wing-to-body fairing skin panels have BMS 8-336 expanded aluminum foil mesh as shown in Section 43 Wing-to-Body Fairing Skin Panels Location, Figure 201/REPAIR 1. If damage occurs, refer to 51-70-14 for the procedures to repair the BMS 8-336 expanded aluminum foil mesh.

E. Do the repair as given in Paragraph 4./REPAIR 1

F. Put the wing-to-body fairing skin panels back to the initial condition, as applicable.

(1) Install the wing-to-body fairing skin panels as given in AMM 53-51-21/401, if they were removed.

(a) Refer to 51-40-02 for the fastener installation procedures.

(b) Refer to 51-40-03 for fastener substitution.

(2) Make sure the aerodynamic smoothness is satisfactory or there will be a decrease in the economic performance of the airplane.

G. Restore the aircraft wing-to-body fairing skin panels exterior finish, as applicable. Refer to AMM PAGEBLOCK 51-21-99/701.

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DEFINITIONS FOR NICK, GOUGE, OR SCRATCH DAMAGE

A

DEFINITIONS FOR DENT DAMAGE

B

DEFINITIONS FOR EDGE DAMAGE

C

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Damage Definitions
Figure 202

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Definitions of the Facesheets
Figure 203

3. References

Reference	Title
51-00-06	STRUCTURAL REPAIR DEFINITIONS
51-10-01, GENERAL	Aerodynamic Smoothness Requirements
51-10-02, GENERAL	Inspection and Removal of Damage
51-20-05, GENERAL	Repair Sealing
51-40-02	FASTENER INSTALLATION AND REMOVAL
51-40-03	FASTENER SUBSTITUTION
51-70-04	REPAIR PROCEDURES FOR WET LAYUP MATERIALS
51-70-05	REPAIR PROCEDURES FOR PREIMPREGNATED MATERIALS
51-70-06, REPAIR GENERAL	Room Temperature Cure Repairs With Wet Layup Materials For Glass Fabric Reinforced Plastic Solid Laminates and Honeycomb Core Panels
51-70-14	STRUCTURES WITH ALUMINUM COATINGS AND FOILS
53-30-70	FUSELAGE FAIRING SKIN - SECTION 43
53-30-70, ALLOWABLE DAMAGE 1	Section 43 Wing-to-Body Fairing Skin Panels
AMM 51-21-99 P/B 701	DECORATIVE EXTERIOR PAINT SYSTEM - CLEANING/PAINTING
AMM 53-51-21/401	Aft Wing-to-Body Fairing Removal/Installation
737 NDT Part 1, 51-01-01	Inspection of Repairs to Composite Structure
737 NDT Part 1, 51-01-02	NDT Examination of Composite Structure for Impact Damage

4. Repair Instructions

NOTE: If necessary, refer to 53-30-70, Identification 1 to find the material or the build-up of the part that you want to repair.

A. For dents that are a maximum of 2 inches in diameter and have no fiber damage and delamination, do the steps that follow:

(1) Fill the dent with BMS 5-28, Type 7 potting compound

(2) Apply a fiberglass patch over the potted area as given in Repair 14 of 51-70-04.

B. If Paragraph 4.A./REPAIR 1 is not applicable, then refer to:

(1) Table 201/REPAIR 1 for the repair data that is applicable to damage to the full depth honeycomb core areas of the sandwich panels

(2) Table 202/REPAIR 1 for the repair data that is applicable to damage to the edgebands of the honeycomb sandwich panels.

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C. For repairs made with wet layup materials, do as follows, as applicable:

(1) Use one repair ply of fabric for each initial ply that was damaged.

(2) Add two structural plies of fabric for each surface that is repaired. Put one structural ply at ±45 degrees to the core ribbon direction and the other at 0 or 90 degrees.

(3) Inspect Category B repairs after each 800 flight hour interval or more frequently. Refer to 737 NDT Part 1, 51-01-01 for inspection procedures. If deterioration is found, then they must be replaced with Category A repairs.

NOTE: Other inspection methods that have been examined and found to be satisfactory by the operator can be used.

D. For repairs made with preimpregnated layup materials, use the same number of repair plies as the number of initial plies that were damaged.

Table 201:

REPAIR DATA FOR THE 250°F (121°C) CURE WING-TO-BODY FAIRING SKIN PANELS FOR THE FULL DEPTH HONEYCOMB CORE AREAS OF THE SANDWICH PANELS				
REPAIR TYPE	**CATEGORY B WET LAYUP REPAIR**	**CATEGORY A WET LAYUP REPAIR**	**CATEGORY A WET LAYUP REPAIR**	**CATEGORY A PREIMPREGNATED LAYUP REPAIR**
REPAIR CURE TEMPERATURE	**Room Temperature**	**150°F (66°C)**	**200°F (93°C)**	**250°F (121°C)**
REPAIR SIZE AND LIMITS	Contact Boeing for repair instructions	Damage that is a maximum of: - 6.0 inches diameter 3.0 inches minimum clearance from: - other repairs - fastener holes - panel edges	Damage that is a maximum of: - 6.0 inches diameter 3.0 inches minimum clearance from: - other repairs - fastener holes - panel edges	There are no size limits on the repairs made with autoclave pressures. See the note below for vacuum bag repairs.
REPAIR PROCEDURES	SRM 51-70-06 and Paragraph 4.C	SRM 51-70-04 and Paragraph 4.C	SRM 51-70-04 and Paragraph 4.C	SRM 51-70-05 and Paragraph 4.D

NOTE: For panels that are greater than 1296 inches², vacuum bag repairs shall not be more than 75% of the panel area for either the inner or outer skin and 50% of the panel area for both the inner and outer skins. For a given honeycomb area that is less than 1296 inches², it is permitted to use a vacuum bag repair for the complete inner or outer skin of the honeycomb area. If both skins of the honeycomb area need a repair, then 75% of the inner and outer skin facesheets can be repaired.

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Table 202:

REPAIR DATA FOR THE EDGEBANDS OF 250°F (121°C) CURE WING-TO-BODY FAIRING SKIN HONEYCOMB SANDWICH PANELS				
REPAIR TYPE	**CATEGORY B WET LAYUP REPAIR**	**CATEGORY A WET LAYUP REPAIR**	**CATEGORY A WET LAYUP REPAIR**	**CATEGORY A PREIMPREGNATED LAYUP REPAIR**
REPAIR CURE TEMPERATURE	**Room Temperature**	**150°F (66°C)**	**200°F (93°C)**	**250°F (121°C)**
REPAIR SIZE AND LIMITS	Contact Boeing for repair instructions	Damage that is a maximum of: - 6.0 inches diameter - 30 percent of the length of the edgeband on the side of the damag	Damage that is a maximum of: - 6.0 inches diameter - 30 percent of the length of the edgeband on the side of the damag	There are no size limits on the repairs made with autoclave pressures. See the note below for vacuum bag repairs.
REPAIR PROCEDURES	SRM 51-70-06 and Paragraph 4.C	SRM 51-70-04 and Paragraph 4.C	SRM 51-70-04 and Paragraph 4.C	SRM 51-70-05 and Paragraph 4.D

NOTE: For panels that are greater than 1296 inches², vacuum bag repairs shall not be more than 75% of the panel area for either the inner or outer skin and 50% of the panel area for both the inner and outer skins. For a given honeycomb area that is less than 1296 inches², it is permitted to use a vacuum bag repair for the complete inner or outer skin of the honeycomb area. If both skins of the honeycomb area need a repair, then 75% of the inner and outer skin facesheets can be repaired.

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IDENTIFICATION 1 - SECTION 43 WING-TO-BODY FAIRING SUPPORT STRUCTURE

NOTE: REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

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Section 43 Wing-to-Body Fairing Support Structure Location
Figure 1

Table 1:

REFERENCE DRAWINGS	
DRAWING NUMBER	**TITLE**
143A7800	Installation - Wing-to-Body Fairing Support Structure
146A7800	Wing-to-Body Fairing Attachment Installation
149A7002	Functional Collector - Section 49, Ram Air Inlet
149A7005	Functional Collector - Section 49, Support Structure
149A7009	Functional Collector - Section 49, Support Structure
149A7011	Functional Collector - Section 49, Panel Installation
149A7101	Support Installation - Strakelet, Forward Fairing

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Table 1: (Continued)

REFERENCE DRAWINGS	
DRAWING NUMBER	**TITLE**
149A7130	Support Installation - Ram Air Inlet, Forward Fairing
149A7140	Support Installation - Intercostal, Forward Fairing
149A7190	Frame Installation - Landing Light, Forward Fairing

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NOTE: REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

RIGHT SIDE IS SHOWN, LEFT SIDE IS OPPOSITE H28907 S0006589614_V1

Section 43 Wing-to-Body Fairing Support Structure (Sta 500A to Sta 540) Identification
Figure 2

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Table 2:

LIST OF MATERIALS FOR FIGURE 2				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Clip		BAC1517-2801 7075-T62 sheet as given in QQ-A-250/12	
[2]	Frame		7050-T7451 plate as given in AMS 4050. Refer to the production drawings for the grain direction	
[3]	Support Fitting	0.900 (22.86)	7050-T7451 plate as given in AMS 4050. Refer to the production drawings for the grain direction	
[4]	Support Frame		7050-T7451 plate as given in AMS 4050. Refer to the production drawings for the grain direction	
[5]	Angle	0.100 (2.5)	7075-T73 sheet as given in QQ-A-250/12	
[6]	Clip	0.050 (1.3)	7075-T62 clad sheet as given in QQ-A-250/13	
[7]	Cover Plate	0.100 (2.5)	6061-T4 sheet as given in QQ-A-250/11	
[8]	Clip		7050-T7451 plate as given in AMS 4050. Refer to the production drawings for the grain direction	
[9]	Frame		7050-T7451 plate as given in AMS 4050. Refer to the production drawings for the grain direction	
[10]	Frame		7050-T7451 plate as given in AMS 4050. Refer to the production drawings for the grain direction	
[11]	Angle Support		BAC1514-2639 7075-T73511 extrusion as given in QQ-A-200/11	
[12]	Deflector	0.032 (0.8)	6013-T6 sheet as given in AMS 4347	
[13]	Retainer	0.040 (1.0)	6013-T4 sheet as given in AMS 4347	
[14]	Vertical Support		BAC1510-1364 7075-T73511 extrusion as given in QQ-A-200/11 (Optional: 7050-T7451 plate as given in AMS 4050)	
[15]	Frame		7050-T7451 plate as given in AMS 4050. Refer to the production drawings for the grain direction	
[16]	Angle		BAC1503-100607 7075-T73511 extrusion as given in QQ-A-200/11	
[17]	Clip		BAC1514-2882 7075-T73511 extrusion as given in QQ-A-200/11	
[18]	Intercostal		7050-T7451 plate as given in BMS 7-323, Type I. Refer to the production drawings for the grain direction	
[19]	Forward Fairing Ram Air Inlet - Bonded Part		Epoxy impregnated fiberglass woven fabric. Refer to Figure 3 and Table 3 for the ply lay-up	
[20]	Vertical Support		AND10137-1201 7075-T73511 extrusion as given in QQ-A-200/11	
[21]	Angle		AND10134-1006 7075-T73 extrusion as given in QQ-A-200/11	
[22]	Clip	0.100 (2.5)	7075-T62 aluminum sheet as given in QQ-A-250/12	
[23]	Frame		BAC1506-3922 7075-T73 extrusion as given in QQ-A-200/11	
[24]	Vertical Support		BAC1503-100079 7075-T73511 extrusion as given in QQ-A-200/11	

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Table 2: (Continued)

LIST OF MATERIALS FOR FIGURE 2				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[25]	Clip		BAC1514-2731 7075-T73511 extrusion as given in QQ-A-200/11	
[26]	Clip		BAC1503-101044 7075-T73511 extrusion as given in QQ-A-200/11	
[27]	Frame		7050-T7451 plate as given in AMS 4050. Refer to the production drawings for the grain direction	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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Ply Direction and Ply Sequence for the Forward Fairing Ram Air Inlet B
Figure 3

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Table 3:

PLY MATERIAL AND DIRECTION FOR FIGURE 3		
PLY	**DIRECTION**	**MATERIAL**
P1 through P12	0 or 90 degrees	Epoxy impregnated glass woven fabric as given in BMS 8-79, Style 1581 or Style 7781, Class III, Grade B
P13	Optional	1 mil white Tedlar film as given in BAC 5317-2 to bagside area of part

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ALLOWABLE DAMAGE 1 - SECTION 43 WING-TO-BODY FAIRING SUPPORT STRUCTURE

1. Applicability

A. This subject gives the allowable damage limits for the section 43 wing-to-body fairing support structure shown in Section 43 Wing-to-Body Fairing Support Structure Location, Figure 101/ALLOWABLE DAMAGE 1 and Section 43 Wing-to-Body Fairing Support Structure (Sta 460 to Sta 540) Location, Figure 102/ALLOWABLE DAMAGE 1.

(1) For the composite part, the allowable damage limits are only applicable if they are sealed as given in Paragraph 2.B./ALLOWABLE DAMAGE 1

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Section 43 Wing-to-Body Fairing Support Structure Location
Figure 101

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MATERIAL: ALUMINUM (EXCEPT WHERE NOTED)

RIGHT SIDE IS SHOWN, LEFT SIDE IS OPPOSITE H28905 S0006589626_V2

Section 43 Wing-to-Body Fairing Support Structure (Sta 460 to Sta 540) Location
Figure 102

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2. General

A. Do the steps that follow if you have damage to the aluminum parts:

NOTE: The steps that follow do not apply to dent damage.

(1) Do a detailed close visual inspection of the damaged area to find the length, width, and depth of the damage.

(a) The methods that follow are permitted as an alternative to the detailed close visual inspection:

1) Penetrant inspection. Refer to SOPM 20-20-02.

2) High Frequency Eddy Current (HFEC) inspection. Refer to 737 NDT Part 6, 51-00-00, Figure 4 .

(2) Remove the damaged material as necessary.

(a) Refer to 51-10-02 for the inspection and removal of damage.

(b) Refer to 51-30-03 for possible sources of the abrasive and other materials you can use to remove the damage.

(c) Refer to 51-30-05 for possible sources of the equipment and tools you can use to remove the damage.

(3) Apply a chemical conversion coating to the reworked areas. Refer to 51-20-01.

(4) Apply two layers of BMS 10-11, Type I, primer to the reworked areas. Refer to SOPM 20-41-02.

B. Do the steps that follow for the skin panels made of Glass Fiber Reinforced Plastic (GFRP) solid laminate panels.

(1) Do an inspection of the damaged area to find the length, width and depth of the damage. Boeing recommends that you use an instrumented Non-Destructive Test (NDT) procedure. Refer to 737 NDT Part 1, 51-01-02 for inspection procedures.

NOTE: Other equivalent inspection methods that have been examined and found to be satisfactory by the operator, can be used.

(a) Refer to Damage Definitions, Figure 103/ALLOWABLE DAMAGE 1, Details A , B , and C for the definitions of the length, width, and depth of damage.

(2) Remove all the contamination and water from the structure.

(a) Refer to 51-30-05 for possible sources of the equipment and tools you can use to remove the damage.

(b) Refer to 51-70-04 for the cleanup procedures.

(3) Seal all damaged areas with the steps that follow:

(a) Seal the damage that is not more than one ply deep and that agrees with the allowable damage limits given in Paragraph 4.B./ALLOWABLE DAMAGE 1

1) Use a vacuum and heat to remove moisture from the solid laminate or the honeycomb cells. Refer to 51-70-04.

2) Make a temporary seal.

a) Apply aluminum foil tape (speed tape).

b) Keep a record of the location.

c) Make sure the tape is in satisfactory condition at each scheduled maintenance interval.

3) Make a permanent seal.

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a) Apply BMS 8-201, BMS 8-207 or BMS 8-301 epoxy resin to the area as given 51-70-08.

b) Apply one layer of BMS 10-79, Type 3 or BMS 10-103, Type 1 primer. Refer to SOPM 20-44-04.

c) Apply one layer of BMS 10-60 enamel to the areas sealed with epoxy resin. Refer to AMM PAGEBLOCK 51-21-99/701.

(b) Seal the damage that is more than one ply deep and that agrees with the allowable damage limits given in Paragraph 4.B./ALLOWABLE DAMAGE 1.

1) Use a vacuum and heat to remove moisture from the solid laminate. Refer to 51-70-04.

2) Make a temporary seal.

a) Apply aluminum foil tape (speed tape).

b) Keep a record of the location.

c) Repair the damage permanently no later than 24 months from the time the temporary seal was made.

C. Refer to Table 101/ALLOWABLE DAMAGE 1 for the references for the allowable damage limits.

Table 101:

PARAGRAPH REFERENCES FOR THE ALLOWABLE DAMAGE LIMITS	
TYPE OF STRUCTURE	**PARAGRAPH**
ALUMINUM PARTS	4.A
GFRP SOLID LAMINATE BONDED PART	4.B

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DEFINITIONS FOR NICK, GOUGE, OR SCRATCH DAMAGE

A

DEFINITIONS FOR DENT DAMAGE

B

DEFINITIONS FOR EDGE DAMAGE

C

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Damage Definitions
Figure 103

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3. References

Reference	Title
51-10-02	INSPECTION AND REMOVAL OF DAMAGE
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-20-05, GENERAL	Repair Sealing
51-30-03	NON-METALLIC MATERIALS
51-30-05	EQUIPMENT AND TOOLS FOR REPAIRS
51-40-06, GENERAL	Fastener Edge Margins
51-70-04	REPAIR PROCEDURES FOR WET LAYUP MATERIALS
51-70-08	RESIN SWEEP-FAIR PROCEDURES
53-40-71, ALLOWABLE DAMAGE 1	Section 44 Wing-to-Body Fairing Support Structure
53-60-71, ALLOWABLE DAMAGE 1	Section 46 Wing-to-Body Fairing Support Structure
AMM 51-21-00 P/B 701	INTERIOR AND EXTERIOR FINISHES - CLEANING/PAINTING
AMM 51-21-99 P/B 701	DECORATIVE EXTERIOR PAINT SYSTEM - CLEANING/PAINTING
SOPM 20-20-02	Penetrant Methods of Inspection
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes
SOPM 20-44-04	Application of Urethane Compatible Primer
737 NDT Part 1, 51-01-02	NDT Examination of Composite Structure for Impact Damage
737 NDT Part 6, 51-00-00	Structures - General

4. Allowable Damage Limits

A. Aluminum Parts

(1) The allowable damage limits that follow are applicable to the parts listed in Table 102/ALLOWABLE DAMAGE 1 and shown in Section 43 Wing-to-Body Fairing Support Structure (Sta 460 to Sta 540) Location, Figure 102/ALLOWABLE DAMAGE 1.

Table 102:

ITEM	DESCRIPTION	ITEM	DESCRIPTION
[1]	Clip (Formed)	[12]	Deflector (Formed)
[5]	Angle (Formed)	[13]	Retainer (Formed)
[6]	Cover Plate (Formed)	[24]	Clip (Formed)
[7]	Clip (Formed)		

(a) Cracks:

1) Remove the damage as shown in Allowable Damage Limits - Aluminum Parts, Figure 104/ALLOWABLE DAMAGE 1, Details A , B , and L .

(b) Nicks, Gouges, Scratches, and Corrosion:

1) Remove the damage as shown in Allowable Damage Limits - Aluminum Parts, Figure 104/ALLOWABLE DAMAGE 1, Details A , B , C , E , and L .

(c) Dents are permitted as shown in Allowable Damage Limits - Aluminum Parts, Figure 104/ALLOWABLE DAMAGE 1, Detail D if:

1) They do not extend across an attached structure.

(d) Holes and Punctures are not permitted.

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(2) The allowable damage limits that follow are applicable to the parts listed in Table 103/ ALLOWABLE DAMAGE 1 and shown in Section 43 Wing-to-Body Fairing Support Structure (Sta 460 to Sta 540) Location, Figure 102/ALLOWABLE DAMAGE 1.

Table 103:

ITEM	DESCRIPTION	ITEM	DESCRIPTION
[2]	Frame (Machined)	[25]	Frame (Extruded)
[9]	Frame (Machined)	[28]	Frame (Machined)
[15]	Frame (Machined)		

(a) Cracks:

1) Remove the damage as shown in Allowable Damage Limits - Aluminum Parts, Figure 104/ALLOWABLE DAMAGE 1, Details A , B , G , H , and I .

(b) Nicks, Gouges, Scratches, and Corrosion:

1) Remove the damage as shown in Allowable Damage Limits - Aluminum Parts, Figure 104/ALLOWABLE DAMAGE 1, Details A , B , C , E , F , G , H , I , J , and K .

(c) Dents are not permitted.

(d) Holes and Punctures are not permitted.

(3) The allowable damage limits that follow are applicable to the parts listed in Table 104/ ALLOWABLE DAMAGE 1 and shown in Section 43 Wing-to-Body Fairing Support Structure (Sta 460 to Sta 540) Location, Figure 102/ALLOWABLE DAMAGE 1.

Table 104:

ITEM	DESCRIPTION	ITEM	DESCRIPTION
[10]	Frame (Machined)	[19]	Intercostal (Machined)

(a) Cracks:

1) Remove the damage as shown in Allowable Damage Limits - Aluminum Parts, Figure 104/ALLOWABLE DAMAGE 1, Details A , B , G , H , and I .

(b) Nicks, Gouges, Scratches, and Corrosion:

1) Remove the damage as shown in Allowable Damage Limits - Aluminum Parts, Figure 104/ALLOWABLE DAMAGE 1, Details A , B , C , E , F , G , H , I , J , and K .

(c) Dents are not permitted.

(d) Holes and Punctures are permitted as shown in Allowable Damage Limits - Aluminum Parts, Figure 104/ALLOWABLE DAMAGE 1, Detail M .

(4) The allowable damage limits that follow are applicable to the parts listed in Table 105/ ALLOWABLE DAMAGE 1 and shown in Section 43 Wing-to-Body Fairing Support Structure (Sta 460 to Sta 540) Location, Figure 102/ALLOWABLE DAMAGE 1.

Table 105:

ITEM	DESCRIPTION	ITEM	DESCRIPTION
[8]	Clip (Machined)	[23]	Angle (Extruded)
[16]	Angle (Extruded)	[27]	Clip (Extruded)
[17]	Clip (Machined)	[29]	Clip (Extruded)
[18]	Clip (Extruded)		

(a) Cracks:

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1) Remove the damage as shown in Allowable Damage Limits - Aluminum Parts, Figure 104/ALLOWABLE DAMAGE 1, Details A , B , and H .

(b) Nicks, Gouges, Scratches, and Corrosion:

1) Remove the damage as shown in Allowable Damage Limits - Aluminum Parts, Figure 104/ALLOWABLE DAMAGE 1, Details A , B , C , E , F , and H .

(c) Dents are not permitted.

(d) Holes and Punctures are not permitted.

(5) The allowable damage limits that follow are applicable to the parts listed in Table 106/ALLOWABLE DAMAGE 1 and shown in Section 43 Wing-to-Body Fairing Support Structure (Sta 460 to Sta 540) Location, Figure 102/ALLOWABLE DAMAGE 1.

Table 106:

ITEM	DESCRIPTION	ITEM	DESCRIPTION
[3]	Support Fitting (Machined)	[14]	Vertical Support (Extruded)
[4]	Support Frame (Machined)	[22]	Vertical Support (Extruded)
[11]	Angle Support (Extruded)	[26]	Vertical Support (Extruded)

(a) Cracks:

1) Remove the damage as shown in Allowable Damage Limits - Aluminum Parts, Figure 104/ALLOWABLE DAMAGE 1, Details A , B , and H .

(b) Nicks, Gouges, Scratches, and Corrosion:

1) Remove the damage as shown in Allowable Damage Limits - Aluminum Parts, Figure 104/ALLOWABLE DAMAGE 1, Details A , B , C , E , F , and H .

(c) Dents are not permitted.

(d) Holes and Punctures are permitted as shown in Allowable Damage Limits - Aluminum Parts, Figure 104/ALLOWABLE DAMAGE 1, Detail M .

B. GFRP Solid Laminate Bonded Part (Section 43 Wing-to-Body Fairing Support Structure (Sta 460 to Sta 540) Location, Figure 102/ALLOWABLE DAMAGE 1.

(1) Nicks, Gouges and Scratches that do not cause damage to the glass fibers are permitted.

(2) Nicks, Gouges and Scratches that cause damage to the glass fibers are permitted if they are:

(a) A maximum of one ply in depth

NOTE: Use the limits for holes and punctures if the depth of the damage is more than one ply in depth.

(b) A maximum of 3.0 inches (76.2 mm) in length

(c) A minimum distance of 0.50 inch (12.7 mm) away from the edge of other damage, fastener holes or material edges.

NOTE: Other damage does not include nicks, gouges, and scratches that:

- Do not cause damage to the glass fiber plies
- Are sealed as given in Paragraph 2.B./ALLOWABLE DAMAGE 1

(d) Are sealed as given in Paragraph 2.B./ALLOWABLE DAMAGE 1

(3) Dents are permitted if they are:

(a) A maximum of 2.0 in. (50.8 mm) measured across the largest dimension of the damage

(b) A maximum of 2 plies in depth.

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(c) A minimum distance away from the edge of other damage, fastener holes or material edges as shown in GFRP Solid Laminate Bonded Part - Damage Size and Spacing Limits, Figure 105/ALLOWABLE DAMAGE 1.

NOTE: Other damage does not include nicks, gouges, and scratches that:

- Do not cause damage to the glass fiber plies
- Are sealed as given in Paragraph 2.B./ALLOWABLE DAMAGE 1

(d) Are sealed as given in Paragraph 2.B./ALLOWABLE DAMAGE 1

(4) Holes and Punctures are permitted if they are:

(a) A maximum of 0.625 in. (15.875 mm) measured across the largest dimension of the damage

(b) A minimum distance away from the edge of other damage, fastener holes or material edges as shown in GFRP Solid Laminate Bonded Part - Damage Size and Spacing Limits, Figure 105/ALLOWABLE DAMAGE 1.

NOTE: Other damage does not include nicks, gouges, and scratches that:

- Do not cause damage to the glass fiber plies
- Are sealed as given in Paragraph 2.B./ALLOWABLE DAMAGE 1

(c) Are sealed as given in Paragraph 2.B./ALLOWABLE DAMAGE 1

(5) Delaminations are permitted if they are:

(a) A maximum of 0.625 in. (15.875 mm) measured across the largest dimension of the damage

(b) A minimum distance away from the edge of other damage, the edge of a hole, or material edges as shown in GFRP Solid Laminate Bonded Part - Damage Size and Spacing Limits, Figure 105/ALLOWABLE DAMAGE 1.

NOTE: Other damage does not include nicks, gouges, and scratches that:

- Do not cause damage to the glass fiber plies
- Are sealed as given in Paragraph 2.B./ALLOWABLE DAMAGE 1

(c) Are sealed as given in Paragraph 2.B./ALLOWABLE DAMAGE 1

(6) Edge damage is permitted if it is:

(a) A maximum of 2 plies in depth

(b) A maximum of 0.5 in. (12.700 mm) away from the edge of a fastener hole

(c) Sealed as given in Paragraph 2.B./ALLOWABLE DAMAGE 1

(7) Edge Erosion is permitted as shown in GFRP Solid Laminate Bonded Part - Sealing of Erosion Damage at an Edge , Figure 106/ALLOWABLE DAMAGE 1.

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REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER EDGE MARGINS DO NOT HAVE AN OVERLAP

A

REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER EDGE MARGINS HAVE AN OVERLAP

B

REMOVAL OF DAMAGED MATERIAL ON A SURFACE

C

G45867 S0006589636_V1

Allowable Damage Limits - Aluminum Parts
Figure 104 (Sheet 1 of 10)

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DENT AWAY FROM AN EDGE IS SHOWN, DENT AT AN EDGE IS SIMILAR

DENT THAT IS PERMITTED

D

REMOVAL OF DAMAGE AROUND THE FASTENERS ON AN EDGE OR A SURFACE

E

B–B

G45869 S0006589637_V1

Allowable Damage Limits - Aluminum Parts
Figure 104 (Sheet 2 of 10)

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NOTE: APPLICABLE TO L-SECTIONS AND T-SECTIONS WITH SERRATED FLANGES.

X = DEPTH OF THE MATERIAL THAT IS REMOVED
= A MAXIMUM OF 10 PERCENT OF THE THICKNESS OF THE FLANGE AT THE DAMAGE LOCATION

Y = WIDTH OF THE MATERIAL THAT IS REMOVED
= A MAXIMUM OF 70 PERCENT OF THE WIDTH OF THE FLANGE AT THE DAMAGE LOCATION

NOTE: APPLICABLE TO L-SECTIONS AND T-SECTIONS.

REMOVAL OF DAMAGED MATERIAL
ON A SURFACE AT AN EDGE

F

G47022 S0006589638_V1

Allowable Damage Limits - Aluminum Parts
Figure 104 (Sheet 3 of 10)

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C–C

G47025 S0006589639_V1

Allowable Damage Limits - Aluminum Parts
Figure 104 (Sheet 4 of 10)

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X = THE WIDTH OF THE MATERIAL THAT IS REMOVED
= A MAXIMUM OF 10 PERCENT OF THE WIDTH OF THE FLANGE

REMOVAL OF DAMAGED MATERIAL ON AN EDGE

G

X = WIDTH OF THE MATERIAL REMOVED
= A MAXIMUM OF 10 PERCENT OF THE WIDTH OF THE FLANGE

REMOVAL OF DAMAGED MATERIAL AT AN EDGE

H

G47026 S0006589640_V1

Allowable Damage Limits - Aluminum Parts
Figure 104 (Sheet 5 of 10)

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REMOVAL OF DAMAGED MATERIAL ON A SERRATED EDGE

I

REMOVAL OF DAMAGE MATERIAL ON A FLANGED SURFACE
(A TEE SECTION IS SHOWN)

J

G47029 S0006589641_V1

Allowable Damage Limits - Aluminum Parts
Figure 104 (Sheet 6 of 10)

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D_3 = DIAMETER OF THE INITIAL HOLE AT LOCATION 3

T = THICKNESS OF THE FLANGE

A_i = INITIAL CROSS-SECTIONAL AREA OF THE FLANGE
= THE TOTAL CROSS-SECTIONAL AREA MINUS THE CROSS-SECTIONAL AREA OF THE INITIAL HOLES (AS MANUFACTURED BY BOEING)
= $4T - D_3T$

A_1 = CROSS-SECTIONAL AREA OF THE MATERIAL DAMAGE THAT IS REMOVED AT LOCATION 1

A_2 = CROSS-SECTIONAL AREA OF THE MATERIAL DAMAGE THAT IS REMOVED AT LOCATION 2

A_4 = CROSS-SECTIONAL AREA OF THE MATERIAL DAMAGE THAT IS REMOVED AT LOCATION 4

$$\left(\frac{A_1 + A_2 + A_4}{A_i}\right) \times 100 = \text{PERCENT OF CROSS-SECTIONAL AREA REMOVED}$$
= A MAXIMUM OF 20 PERCENT

THE TOTAL CROSS-SECTIONAL AREA REMOVED IN ALL ZONES A-B (2.00 INCHES (50.8 mm) ON EACH SIDE OF A LINE A-B) MUST NOT BE MORE THAN 20 PERCENT OF THE INITIAL CROSS-SECTIONAL AREA OF THE FLANGE.

D-D

G47030 S0006589642_V1

Allowable Damage Limits - Aluminum Parts
Figure 104 (Sheet 7 of 10)

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REMOVAL OF DAMAGED MATERIAL FROM A WEB OF A TEE SECTION

K

G47031 S0006589643_V1

Allowable Damage Limits - Aluminum Parts
Figure 104 (Sheet 8 of 10)

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D_2 = DIAMETER OF THE INITAL HOLE AT LOCATION 2

H = HEIGHT OF THE WEB

T = THICKNESS OF THE WEB

A_i = INITIAL CROSS-SECTIONAL AREA OF THE WEB
= THE TOTAL CROSS-SECTIONAL AREA MINUS THE CROSS-SECTIONAL AREA OF THE INITIAL HOLES (AS MANUFACTURED BY BOEING)
= $HT - D_2T$

A_1 = CROSS-SECTIONAL AREA OF THE MATERIAL DAMAGE THAT IS REMOVED AT LOCATION 1

A_3 = CROSS-SECTIONAL AREA OF THE MATERIAL DAMAGE THAT IS REMOVED AT LOCATION 3

$$\left(\frac{A_1 + A_3}{A_i}\right) \times 100 = \text{PERCENT OF CROSS-SECTIONAL AREA REMOVED}$$
= A MAXIMUM OF 20 PERCENT

THE TOTAL CROSS-SECTIONAL AREA REMOVED IN ALL ZONES A-B (2.00 INCHES (50.8 mm) ON EACH SIDE OF A LINE A-B) MUST NOT BE MORE THAN 20 PERCENT OF THE INITIAL CROSS-SECTIONAL AREA OF THE WEB.

(ROTATED 90° CLOCKWISE)
E-E

G47105 S0006589644_V1

Allowable Damage Limits - Aluminum Parts
Figure 104 (Sheet 9 of 10)

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X = WIDTH OF THE MATERIAL THAT IS REMOVED
= A MAXIMUM OF 10 PERCENT OF THE WIDTH OF THE FLANGE

REMOVAL OF DAMAGED MATERIAL ON AN EDGE

L

NOTE: NO HOLE DAMAGE ALLOWED IN FASTENED FLANGES.

HOLES AND PUNCTURES IN A FREE FLANGE

M

G47112 S0006589645_V1

Allowable Damage Limits - Aluminum Parts
Figure 104 (Sheet 10 of 10)

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NOTE: TO FIND DELAMINATION, YOU CAN USE NONDESTRUCTIVE INSPECTION PROCEDURES. REFER TO NDT PART 1, 51-01-02.

THE DIAMETER OF A DAMAGE AREA IS EITHER THE DIAMETER OF THE VISUAL DAMAGE OR THE DIAMETER OF THE DELAMINATION. USE THE DIAMETER OF THE LARGER DAMAGE.

D IS THE LARGER DIAMETER OF TWO ADJACENT DAMAGE AREAS.

d IS THE SMALLER DIAMETER OF TWO ADJACENT DAMAGE AREAS.

A IS THE DISTANCE BETWEEN TWO ADJACENT DAMAGE AREAS.

THE MINIMUM A THAT IS PERMITTED IS 2.5D.

G47114 S0006589648_V1

GFRP Solid Laminate Bonded Part - Damage Size and Spacing Limits
Figure 105

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G47116 S0006589649_V1

GFRP Solid Laminate Bonded Part - Sealing of Erosion Damage at an Edge
Figure 106

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REPAIR 1 - SECTION 43 WING-TO-BODY FAIRING SUPPORT STRUCTURE

1. Applicability

A. Repair 1 is applicable to damage:

(1) To all the metal and composite parts of the wing-to-body fairing support structure in section 43 shown in Section 43 Wing-to-Body Fairing Support Structure Location, Figure 201/REPAIR 1 and Section 43 Wing-to-Body Fairing Support Structure (Sta 460 to Sta 540) Location, Figure 202/REPAIR 1.

(2) That is more than the limits permitted in 53-30-71, Allowable Damage 1.

G45954 S0006589652_V1

Section 43 Wing-to-Body Fairing Support Structure Location
Figure 201

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MATERIAL: ALUMINUM (EXCEPT WHEN NOTED)

RIGHT SIDE IS SHOWN, LEFT SIDE IS OPPOSITE

NOTES

1 REFER TO PARAGRAPH 4.A TO FIND THE APPLICABLE REPAIR FOR THIS PART.

2 THERE ARE NO REPAIRS FOR THIS PART IN THE STRUCTURAL REPAIR MANUAL AT THIS TIME. IF THE DAMAGE TO THE PART IS MORE THAN THE LIMITS GIVEN IN SRM 53-30-71, ALLOWABLE DAMAGE 1, REPLACE THE DAMAGED PART.

3 REFER TO PARAGRAPH 4.B TO FIND THE APPLICABLE REPAIR FOR THIS PART.

H28903 S0006589655_V2

Section 43 Wing-to-Body Fairing Support Structure (Sta 460 to Sta 540) Location
Figure 202

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2. General

A. Get access to the damaged area.

(1) Remove the fairing skin panel(s) at the damage location as necessary.

B. Metal Repairs

(1) The typical repairs given in 51-70-11, 51-70-12, and 51-70-13 can be used when applicable if there is sufficient clearance with the adjacent structure for the installation of the repair parts.

(2) Refer to Paragraph 4.A./REPAIR 1 for a repair.

C. Composite Repairs

(1) Get access to the damaged area.

(a) If necessary, remove the wing-to-body fairing support structure panel that you want to repair.

1) Refer to 51-40-02 for the fastener removal procedures.

2) If a fastener hole is damaged, refer to Repair 8 of 51-70-04 or Repair 8 of 51-70-05 for the repair procedures.

(2) Do an inspection of the damaged area to find the dimensions of the damage. Boeing recommends that you use an instrumented Non-Destructive Test (NDT) procedure. Refer to 737 NDT Part 1, 51-01-02 for the inspection procedures.

NOTE: Other equivalent inspection methods that have been examined and found to be satisfactory by the operator can be used.

(3) Refer to Section 43 Wing-to-Body Fairing Support Structure Location, Figure 201/REPAIR 1 and Section 43 Wing-to-Body Fairing Support Structure (Sta 460 to Sta 540) Location, Figure 202/REPAIR 1, and Table 201 to find the applicable repair for the composite part that you want to repair.

NOTE: If necessary, refer to 53-30-71, Identification 1 to find the material and the process that was used to make the part that you want to repair.

Table 201:

REPAIR REFERENCES FOR THE WING-TO-BODY FAIRING SUPPORT STRUCTURE - COMPOSITE PARTS	
TYPE OF COMPONENT	**REPAIR**
Solid Laminate Panel	Refer to Paragraph 4.B

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DEFINITIONS FOR NICK, GOUGE, OR SCRATCH DAMAGE

A

DEFINITIONS FOR DENT DAMAGE

B

DEFINITIONS FOR EDGE DAMAGE

C

G45958 S0006589657_V1

Damage Definitions
Figure 203

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3. References

Reference	Title
51-00-06, GENERAL	Structural Repair Definitions
51-10-02, GENERAL	Inspection and Removal of Damage
51-20-05, GENERAL	Repair Sealing
51-40-02	FASTENER INSTALLATION AND REMOVAL
51-40-03, GENERAL	Fastener Substitution
51-70-04	REPAIR PROCEDURES FOR WET LAYUP MATERIALS
51-70-05	REPAIR PROCEDURES FOR PREIMPREGNATED MATERIALS
51-70-06, REPAIR GENERAL	Room Temperature Cure Repairs With Wet Layup Materials For Glass Fabric Reinforced Plastic Solid Laminates and Honeycomb Core Panels
51-70-11	TYPICAL FORMED SECTION REPAIRS
51-70-12	EXTRUDED SECTION REPAIRS
51-70-13	TYPICAL WEB REPAIRS
53-30-71	FUSELAGE FAIRING STRUCTURE - SECTION 43
53-30-71, ALLOWABLE DAMAGE 1	Section 43 Wing-to-Body Fairing Support Structure
737 NDT Part 1, 51-01-01	Inspection of Repairs to Composite Structure
737 NDT Part 1, 51-01-02	NDT Examination of Composite Structure for Impact Damage

4. Repair Instructions

A. Metal Repairs

(1) Refer to Section 43 Wing-to-Body Fairing Support Structure Location, Figure 201/REPAIR 1 and Section 43 Wing-to-Body Fairing Support Structure (Sta 460 to Sta 540) Location, Figure 202/REPAIR 1, and Table 202 to find the applicable repair for the metal part that you want to repair.

NOTE: If necessary, refer to 53-30-71, Identification 1 to find the material and the process that was used to make the part that you want to repair.

Table 202:

REPAIR REFERENCES FOR THE WING-TO-BODY FAIRING SUPPORT STRUCTURE - METAL PARTS	
TYPE OF COMPONENT	**REPAIR**
Formed parts	Refer to SRM 51-70-11
Extruded parts	Refer to SRM 51-70-12
Machined parts	Refer to SRM 51-70-12

B. Composite Repairs - Solid Laminate Panels

NOTE: If necessary, refer to 53-30-71, Identification 1 to find the material and the build-up of the part that you want to repair.

(1) For dents that are a maximum of 2 inches in diameter and have no fiber damage and delamination, do the steps that follow:

(a) Fill the dent with BMS 5-28, Type 7 potting compound.

(b) Apply a fiberglass patch over the potted area as given in Repair 14 of 51-70-04.

(2) If Paragraph 4.B.(1)/REPAIR 1 is not applicable, then refer to Table 203/REPAIR 1 for the repair data that is applicable to damage to the solid laminate panel.

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(3) For repairs made with wet layup materials, do as follows:

(a) Use one repair ply of fabric for each initial ply that was damaged.

(b) Make an inspection of the interim repairs after each 800 flight hour interval or more frequently. Refer to 737 NDT Part 1, 51-01-01 for inspection procedures. If deterioration is found, then you must replace the interim repair with a permanent repair.

NOTE: Other inspection methods that have been examined and found to be satisfactory by the operator, can be used.

(4) For repairs made with preimpregnated layup materials, use the same number of repair plies as the number of initial plies that were damaged.

Table 203:

REPAIR DATA FOR THE 250°F (121°C) CURE SOLID LAMINATE WING-TO-BODY FAIRING SUPPORT STRUCTURE PANEL				
REPAIR TYPE	**CATEGORY B WET LAYUP REPAIR**	**CATEGORY A WET LAYUP REPAIR**	**CATEGORY A WET LAYUP REPAIR**	**CATEGORY A PREIMPREGNATED LAYUP REPAIR**
REPAIR CURE TEMPERATURE	**Room Temperature**	**150°F (66°C)**	**200°F (93°C)**	**250°F (121°C)**
REPAIR SIZE AND LIMITS	Contact Boeing for repair instructions	Damage that is a maximum of: - 6.0 inches (152.40 mm) diameter 3.0 inches (76.20 mm) minimum clearance from: -other repairs -fastener holes -panel edges	Damage that is a maximum of: - 6.0 inches (152.40 mm) diameter 3.0 inches (76.20 mm) minimum clearance from: -other repairs -fastener holes -panel edges	There are no size limits on the repairs made with autoclave pressure. See the note below for vacuum bag repairs.
REPAIR PROCEDURES	SRM 51-70-06 and Paragraph 4.C.(3)	SRM 51-70-04 and Paragraph 4.C.(3)	SRM 51-70-04 and Paragraph 4.C.(3)	SRM 51-70-05 and Paragraph 4.C.(4)

NOTE: For panels that are greater than 1296 inches², vacuum bag repairs shall not be more than 50% of the panel area. For a given solid laminate area that is less than 1296 inches², it is permitted to use a vacuum bag repair for the complete area.

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REPAIR 2 - REPAIR OF WEARING DAMAGE ON THE WING TO BODY FAIRING CHORD AT BS 540

1. Applicability

A. This repair is applicable to wear damage on the Wing to Body Fairing Chord at BS 540 caused by the High Pressure Door Hinges. Refer to Figure 202/REPAIR 2

B. Refer to Paragraph 4.A. for repair instructions of damage less than 60% of the initial material thickness.

C. Refer to Paragraph 5.A. for repair instructions of damage greater than 60% of the initial material thickness on the horizontal flange only.

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Section 43 Wing-to-Body Fairing Support Structure Location
Figure 201

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RIGHT SIDE IS SHOWN, LEFT SIDE IS OPPOSITE

2274862 S0000511846_V1

Section 43 Wing-to-Body Fairing Support Structure Location at Sta 540
Figure 202

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2. General

A. This repair has two repair procedures

(1) Procedure I is used when the damage is less that 60% of the initial material thickness. Procedure I requires blending the damage and installing the repair parts.

(2) Procedure II is used when the damage is greater than 60% of the initial material thickness. Procedure II requires cutting out the damage and installing the repair parts on the horizontal flange only.

B. D = Fastener Diameter in inches (mm).

C. Keep a minimum of 2D edge margin unless specified differently.

D. Maintain a 4D to 6D spacing for all new fasteners.

E. Maintain 125 microinches Ra or smoother for all cut surfaces.

F. You can form the aluminum repair parts in the annealed condition to align with the contour of the frame. Then you must heat treat the part before installation. Refer to SHEET METAL MATERIALS, 51-30-01.

G. Repair parts must be bent as given in SHEET METAL MATERIALS, 51-30-01.

H. Shim all spaces that are more than 0.010 in. (0.254 mm) and less than 0.040 in. (1.016 mm) before you install the fasteners. If the space is greater than 0.040 in. (1.016 mm), contact The Boeing Company.

3. References

Reference	Title
51-10-02	INSPECTION AND REMOVAL OF DAMAGE
51-20-05	REPAIR SEALING
51-30-01	SHEET METAL MATERIALS
51-40-05	FASTENER HOLE SIZES
51-40-08	COUNTERSINKING
THE BOEING COMPANY SOPM 20-20-02	Penetrant Methods of Inspection
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes
SOPM 20-41-05	Application of Corrosion Inhibiting Compounds
SOPM 20-42-05	Bright Cadmium Plating
SOPM 20-43-03	Chemical Conversion Coatings for Aluminum
737 NDT Part 6, 51-00-00, Procedure 16	Aluminum Part Fastener Hole Inspection (Rotary Scanner)
737 NDT Part 6, 51-00-00, Procedure 23	Aluminum Part Surface Inspection (Impedance Plane Display)

4. Repair Instructions I

A. Procedure I – Repair for Damage Less Than 60% of the Initial Material Thickness

(1) Remove the necessary structure in the repair area for access to the damage.

(2) Remove the damage as given in Figure 203 (Sheet 3), Detail B. Refer to INSPECTION AND REMOVAL OF DAMAGE, 51-10-02

(a) Blend to a 20:1 blend ratio.

(b) Keep a 1.0 in. (25.4 mm) minimum bottom ratio.

(c) Keep a surface smoothness of 125 microinches Ra or smoother.

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(d) Minimum thickness that remains after blending must be 60% of the initial material or more.

(3) Do a High Frequency Eddy Current (HFEC) Surface Inspection in the reworked area. Refer to 737 NDT Part 6, 51-00-00, Procedure 23.

(4) Do an HFEC Hole Inspection in the reworked area. Refer to 737 NDT Part 6, 51-00-00, Procedure 16.

(5) Do a visual inspection to the adjacent structures in the reworked area. If you find other damage, contact The Boeing Company.

Table 201: Repair Materials

ITEM	PART	QUANTITY	MATERIAL
[1]	Repair Angle	1	Use 0.050 in. (1.270 mm) 301 CRES 1/2 Hard. as given in AMS 5518.
[2]	Filler	1	Thickness as necessary. Use 2024-T3 Clad Sheet as given in AMS-QQ-A-250/5.

(6) Make the repair parts as given in Table 201 and Figure 203/REPAIR 2.

(a) Maintain a 0.38 in. (9.65 mm) corner radius.

(b) Keep a minimum bend radius of 0.12 in. (3.05 mm) and do a penetrant inspection of the bend. Refer to THE BOEING COMPANY SOPM 20-20-02.

(7) At RBL 40.935, remove the stiffener as necessary. Keep the stiffener so you can install it later. If the stiffener is damaged, make a new stiffener.

(8) Form the repair parts to align with the contour of the fuselage before fastener installation. Refer to SHEET METAL MATERIALS, 51-30-01.

(9) If the blendout is more than 0.010 in. (0.25 mm) at a fastener location, you must spotface to make a flat surface. Do not spotface deeper than maximum blend depth at fastener location.

(a) The spotface edge radius must be 0.060 in. (1.52 mm) to 0.090 in. (2.29 mm).

(b) Install washer type filler.

(c) Fill the space in the blendout area with BMS 5-95 sealant. Refer to REPAIR SEALING, 51-20-05.

(10) Apply a chemical conversion coating to the repair area. Refer to SOPM 20-43-03.

(11) Apply two layers of BMS 10-11, Type I primer to all bare aluminum surfaces and the Part [2] Filler. Refer to SOPM 20-41-02.

(12) Apply cadmium plating to the Part [1] Repair Angle. Refer to SOPM 20-42-05.

(13) Apply one layer of BMS 10-11 Type I primer to the Part [1] Repair Angle. Refer to SOPM 20-41-02.

(14) Install countersink repair washers at initial countersink locations below the repair part. Refer to COUNTERSINKING, 51-40-08.

(15) Assemble the repair parts and drill the fastener holes as shown in Figure 203/REPAIR 2.

(a) After drilling, disassemble the repair. Remove nicks, scratches, gouges, burrs and sharp edges from the repair parts and the frame.

(b) If necessary, at production fastener locations, you are permitted to oversize up to 1/32 inch diameter. Maintain 1.7D minimum edge margin.

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(c) At repair fastener locations maintain 4D to 6D fastener spacing.

(d) If the countersink depth is more than 80% of the material thickness, do not use flush head fasteners.

(e) Do not use fasteners on the bend radius of the Part [1] Repair Angle.

(f) At RBL 40.935, if you removed the stiffener, then install the stiffener per drawing as necessary.

(g) Apply a fillet seal with BMS 5-95 around the edges of the repair. Refer to REPAIR SEALING, 51-20-05.

(16) Install the fasteners. Install hex-drive bolts wet with BMS 5-95 sealant. If the parts are all aluminum, install the hex-drive bolts in transition fit holes. If any part is steel, install the hex-drive bolts in close reamed holes. Refer to FASTENER HOLE SIZES, 51-40-05

(17) Apply a layer of BMS 3-23 corrosion inhibiting compound or an equivalent to the internal surfaces of the repair. Refer to SOPM 20-41-05.

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(VIEW LOOKING FORWARD DIRECTION)

A

FASTENER SYMBOLS

- INITIAL FASTENER LOCATION. INSTALL A BACB30MY8K HEX-DRIVE BOLT WITH A BACC30M COLLAR.
- INITIAL FASTENER LOCATION. INSTALL THE SAME TYPE AND SIZE FASTENER AS THE INITIAL FASTENER (UP TO 1/32 INCH OVERSIZE).
- REPAIR FASTENER LOCATION. INSTALL A BACB30VT6K HEX-DRIVE BOLT WITH A BACC30BL COLLAR.
- REPAIR FASTENER LOCATION. INSTALL A BACB30NW6K HEX-DRIVE BOLT WITH A BACC30M COLLAR.
- INITIAL HINGE ATTACH FASTENER LOCATION. INSTALL THE SAME TYPE AND SIZE FASTENER AS THE INITIAL FASTENER (UP TO 1/32 INCH OVERSIZE).
- INITIAL NUTPLATE LOCATION. INSTALL THE SAME TYPE AND SIZE FASTENER AS THE INITIAL FASTENER (UP TO 1/32 INCH OVERSIZE).
- INITIAL FASTENER LOCATION. INSTALL A BACB30NW6K HEX-DRIVE BOLT WITH A BACC30M COLLAR.

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Station 540 Repair Installation
Figure 203 (Sheet 1 of 3)

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IF THE BLEND AT A FASTENER LOCATION IS MORE THAN 0.01 INCH, SPOTFACE TO MAKE A FLAT SURFACE. MAKE THE SPOTFACE EDGE RADIUS 0.06 TO 0.09 INCH. INSTALL A WASHER FILLER.

A–A

B–B
(NOT TO SCALE)

2275068 S0000512292_V2

Station 540 Repair Installation
Figure 203 (Sheet 2 of 3)

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2275028 S0000512098_V2

Station 540 Repair Installation
Figure 203 (Sheet 3 of 3)

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5. **Repair Instructions II**

A. Procedure II – Repair for Damage Greater Than 60% of the Initial Material Thickness Of the Horizontal Flange Only

(1) Remove the necessary structure in the repair area for access to the damage.

(a) Remove the damage as given as given in INSPECTION AND REMOVAL OF DAMAGE, 51-10-02 , and as shown in Figure 204 / Repair 2.Carefully cut out the damaged area of the frame. [Make the cut in the shape of a rectangle with the sides parallel or perpendicular to the stringer or frame].

(b) Make the corner radii of the cut out a minimum of 0.50 inch (12.7 mm).

(2) Do a High Frequency Eddy Current (HFEC) Inspection of the cut edges for cracks or other damage. Refer to 737 NDT Part 6, 51-00-00, Procedure 4 or 23.

(3) Do an HFEC hole inspection for the cracks or other damage in the rework area. Refer to 737 NDT part 6, 51-00-00, Procedure 16.

(4) Do a visual inspection of the adjacent structures in the reworked area. If you find other damage, contact The Boeing Company.

Table 202: Repair Materials

ITEM	PART	QUANTITY	MATERIAL
[1]	Formed L angle	1	Use 0.10 inch (0.254 mm) thick 7075-O Clad sheet as given in AMS-QQ-A-250/13. Heat treat to -T6 after forming.
[2]	Cutout Filler	2	Use 0.125 inch (3.175 mm) thick 7075-TO clad sheet as given in AMS-QQ-250/13. Heat treat angle to -T6 after forming
[3]	Filler Strap	1	Use 0.10 inch (0.254 mm) thick 7075-T6 Clad Sheet as given in AMS-QQ-A-250/13

(5) Make the repair parts as given in Table 202/ Repair 2 and Figure 204 / Repair 2.

(a) Maintain a 0.25 in. (6.35 mm) corner radius

(6) Trim the outboard vertical flange of Repair Part [1] to match the profile of the stiffener at RBL 40.935. Do not trim the horizontal flange. Maintain a 2D edge margin on the outboard fastener.

(7) Form the repair parts to align with the contour before fastener installation. Refer to SHEET METAL MATERIALS, 51-30-01.

(8) Apply a chemical conversion coating to the repair area and repair parts. Refer toSOPM 20-43-03.

(9) Apply two layers of BMS 10-11, Type I primer to all bare aluminum surfaces and repair parts. Refer toSOPM 20-41-02.

(10) Assemble the repair parts and drill the fastener holes as shown in Figure 204/REPAIR 2.

(a) If necessary, at production fastener locations, you are permitted to oversize up to 1/32 inch diameter. Maintain 2D minimum edge margin.

(b) Do not use fasteners on the bend radius of the Part [1] Repair Angle.

(11) Disassemble the repair. Remove the nicks, scratches, gouges, burrs, and sharp edges from the repair parts and the frame.

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(12) Remove existing inboard seal retainer nut-plate and install nut-plate on part [1] per Figure 204/ Repair 2.

(13) Install the repair parts with BMS 5-95 sealant between the faying surfaces. Refer to REPAIR SEALING, 51-20-05 .

(14) Install repair parts as shown in Figure 204/ Repair 2 and with the following requirements:

(a) Install non-aluminum fasteners wet with BMS5-95 sealant. Reference hole sizes as given in FASTENER HOLE SIZES, 51-40-05.

(15) Apply a fillet seal with BMS 5-95 around the edges of the repair. Refer to REPAIR SEALING, 51-20-05.

(16) Apply a layer of BMS 3-23 corrosion inhibiting compound or an equivalent to the internal surfaces of the repair. Refer toSOPM 20-41-05.

(17) Chamfer lower edge of the frame flange a minimum amount to permit hinge clearance.

(18) Shim out hinges on door as needed to accommodate repair parts as given in SHEET METAL MATERIALS, 51-30-01.

(19) Reinstall door according to applicable manual and ensure proper closing and latching.

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(VIEW LOOKING FORWARD DIRECTION)

A

FASTENER SYMBOLS

- INITIAL FASTENER LOCATION. INSTALL A BACB30NX8K HEX-DRIVE BOLT WITH A BACC30BH COLLAR.
- INITIAL FASTENER LOCATION. INSTALL THE SAME TYPE AND SIZE FASTENER AS THE INITIAL FASTENER (UP TO 1/32 INCH OVERSIZE).
- REPAIR FASTENER LOCATION. INSTALL A BACB30NX6K HEX-DRIVE BOLT WITH A BACC30BH COLLAR.
- REPAIR FASTENER LOCATION. INSTALL A BACB30NW6K HEX-DRIVE BOLT WITH A BACC30M COLLAR.
- INITIAL HINGE ATTACH FASTENER LOCATION. INSTALL THE SAME TYPE AND SIZE FASTENER AS THE INITIAL FASTENER (UP TO 1/32 INCH OVERSIZE).
- INITIAL NUTPLATE LOCATION. INSTALL THE SAME TYPE AND SIZE FASTENER AS THE INITIAL FASTENER (UP TO 1/32 INCH OVERSIZE).
- INITIAL FASTENER LOCATION. INSTALL A BACB30NX6K HEX-DRIVE BOLT WITH A BACC30BH COLLAR.
- INITIAL FASTENER LOCATION. INSTALL A BACB30NW6K HEX-DRIVE BOLT WITH A BACC30M COLLAR. (UP TO 1/32 INCH OVERSIZE).

2437995 S0000565470_V1

Damage Repair Installation
Figure 204 (Sheet 1 of 3)

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A–A

B–B
(NOT TO SCALE)

2437998 S0000565471_V1

Damage Repair Installation
Figure 204 (Sheet 2 of 3)

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(VIEW LOOKING FORWARD DIRECTION)

B

2438000 S0000565473_V1

Damage Repair Installation
Figure 204 (Sheet 3 of 3)

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IDENTIFICATION 1 - SECTION 44 FUSELAGE SKIN

NOTE: REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

G73115 S0006589668_V1

Section 44 Fuselage Skin Location
Figure 1

Table 1:

REFERENCE DRAWINGS	
DRAWING NUMBER	**TITLE**
140A4401	Section 44 Crown Panel Assembly Functional Collector
140A4402	Side Panel Assembly Functional Collector - Section 44
140A4404	Crown Panel Integration Functional Collector-Sect 44
140A4405	Side Panel Integration Functional Collector - Section 44
144A3101	Skin Installation - S-9L to S-9R, STA 540 to 727
144A3102	Skin Installation - S-10L to S-10R, STA 540 to 727
144A3301	Skin Installation - STA 540 to STA 727, S-10 to S-18A
144A3302	Skin Installation - STA 540 to STA 727, S-10 to S-18A
144A3311	Skin Assembly - STA 540 to STA 727, S-10 to S-18A

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NOTE: REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

LEFT SIDE IS SHOWN, RIGHT SIDE IS OPPOSITE

G74224 S0006589672_V1

Section 44 Fuselage Skin Identification
Figure 2

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Table 2:

LIST OF MATERIALS FOR FIGURE 2				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Skin Assembly			
	Skin	0.050 (1.27)	2024-T3 clad sheet as given in QQ-A-250/5	
	Doubler	0.040 (1.02)	2024-T3 Clad sheet as given in QQ-A-250/5. Refer to Figure 4 for the thicknesses of the chem-milled areas	
[2]	Skin Assembly	0.145 (3.68)	2024-T3 clad sheet as given in QQ-A-250/5. Refer to Figure 5 for the thicknesses of the chem-milled areas	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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NOTE: REFER TO TABLE 3 FOR THE LIST OF MATERIALS.

LEFT SIDE IS SHOWN, RIGHT SIDE IS OPPOSITE

G76984 S0006589677_V1

Section 44 Fuselage Skin Doubler, Tripler, and Bear Strap Identification
Figure 3

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Table 3:

LIST OF MATERIALS FOR FIGURE 3				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Doubler (2)	0.100 (2.54)	2024-T3 clad sheet as given in QQ-A-250/5. This is a controlled part. The grain direction is parallel to the length of the part	
[2]	Doubler - External	0.100 (2.54)	2024-T3 clad sheet as given in QQ-A-250/5. This is a controlled part. The grain direction is parallel to the length of the part	
[3]	Doubler	0.090 (2.29)	2024-T3 clad sheet as given in QQ-A-250/5. This is a controlled part. The grain direction is parallel to the length of the part. Refer to Figure 6 for the thicknesses of the chem-milled areas	
[4]	Doubler	0.063 (1.60)	2024-T3 clad sheet as given in QQ-A-250/5. This is a controlled part. The grain direction is parallel to the length of the part	
[5]	Doubler	0.125 (3.18)	2024-T3 clad sheet as given in QQ-A-250/5. This is a controlled part. The grain direction is parallel to the length of the part. Refer to Figure 7 for the thicknesses of the chem-milled areas	
[6]	Doubler - External	0.025 (0.64)	2024-T3 clad sheet as given in QQ-A-250/5. This is a controlled part. The grain direction is parallel to the length of the part	
[7]	Bear Strap	0.135 (3.43)	2024-T3 clad sheet as given in QQ-A-250/5. This is a controlled part. The grain direction is parallel to the length of the part. Refer to Figure 8 for the thicknesses of the machined and tapered areas	
[8]	Cub Strap	0.130 (3.3)	2024-T3 clad sheet as given in QQ-A-250/5. This is a controlled part. The grain direction is parallel to the length of the part	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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VIEW IS ON INNER SURFACE OF SKIN 1

VIEW IS ON INNER SURFACE OF SKIN 2

NOTES

- ALL DIMENSIONS SHOWN ARE THICKNESSES OF THE DOUBLER IN INCHES. THIS SKIN PANEL IS LAMINATED AND ONLY THE DOUBLER IS CHEM-MILLED. POCKETS WITH NO DIMENSIONS ARE CHEM-MILLED THROUGH THE DOUBLER.

1 FOR LINE NUMBERS 7 THRU 3463

2 FOR LINE NUMBERS 3464 AND ON

G77008 S0006589683_V4

Chem-Milled Areas of Figure 2, Item [1]
Figure 4 (Sheet 1 of 2)

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LEFT SIDE IS SHOWN, RIGHT SIDE IS OPPOSITE
VIEW IS ON INNER SURFACE OF SKIN

NOTES

- ALL DIMENSIONS SHOWN ARE THICKNESSES OF THE DOUBLER IN INCHES. THIS SKIN PANEL IS LAMINATED AND ONLY THE DOUBLER IS CHEM-MILLED. POCKETS WITH NO DIMENSIONS ARE CHEM-MILLED THROUGH THE DOUBLER.

2026826 S0000401818_V1

Chem-Milled Areas of Figure 2, Item [1]
Figure 4 (Sheet 2 of 2)

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NOTE: ALL DIMENSIONS SHOWN ARE THICKNESSES IN INCHES.

LEFT SIDE IS SHOWN, RIGHT SIDE IS OPPOSITE

VIEW IS ON THE INNER SURFACE OF THE SKIN

G77014 S0006589688_V2

Chem-Milled Areas of Figure 2, Item [2]
Figure 5

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NOTE: ALL DIMENSIONS SHOWN ARE THICKNESSES IN INCHES.

LEFT SIDE IS SHOWN, RIGHT SIDE IS OPPOSITE

VIEW IS ON THE INNER SURFACE OF THE SKIN

G77062 S0006589693_V1

Chem-Milled Areas of Figure 3, Item [3]
Figure 6

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NOTE: ALL DIMENSIONS SHOWN ARE THICKNESSES IN INCHES.

LEFT SIDE IS SHOWN, RIGHT SIDE IS OPPOSITE

G77070 S0006589697_V1

Machined Areas of Figure 3, Item [5]
Figure 7

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NOTE: ALL DIMENSIONS SHOWN ARE THICKNESSES IN INCHES.

G77150 S0006589701_V2

Machined Areas of Figure 3, Item [7]
Figure 8

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H51829 S0006589710_V1

Section 44 Fuselage Skin Location
Figure 101

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H51831 S0006589715_V1

Section 44 Fuselage Skin Location
Figure 201

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IDENTIFICATION 1 - SECTION 44 FUSELAGE STRINGERS

NOTE: REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

G79000 S0006589721_V1

Section 44 Stringer Location
Figure 1

Table 1:

REFERENCE DRAWINGS	
DRAWING NUMBER	**TITLE**
140A4401	Section 44 Crown Panel Assembly, Functional Collector
144A3101	Skin Installation - S-9L to S-9R, STA 540 to STA 727
140A4402	Side Panel Assembly Functional Collector - Section 44
144A3602	Stringer Installation - S-14 to S-16
144A3301	Skin Installation - STA 540 to STA 727, S-10 to S-18A
140A4404	Crown Panel Integration Functional Collector - Section 44
144A3102	Skin Installation - S-10L to S-10R, STA 540 to STA 727
140A4405	Side Panel Integration Functional Collector - Section 44
144A3302	Skin Installation - STA 540 to STA 727, S-10 to S-18A

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NOTE: REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

LEFT SIDE IS SHOWN, RIGHT SIDE IS OPPOSITE

G79004 S0006589726_V1

Section 44 Stringer Identification - Station 540 to Station 727
Figure 2

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Table 2:

LIST OF MATERIALS FOR FIGURE 2				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Stringer, Tapered	0.071 (1.8)	7075-T62 sheet as given in QQ-A-250/12	
[2]	Stringer (STA 543.41 to STA 572.39 and STA 651.93 to STA 724.85)		BAC1498-167 7075-T62 sheet as given in QQ-A-250/12	YC001 - YC003 ONLY
	Stringer (STA 543.41 to STA 577.68 and STA 639.32 to STA 724.85)		BAC1498-167 7075-T62 sheet as given in QQ-A-250/12	YC004 - YC007 YC051 - YC055 YC071 - YC073 YC101 - YC102 YC111, YC121, YC301 - YC302 YC321 - YC331, YC381, YC401 - YC404 YC501 - YC506 YC571 - YC577 YC601 - YC605 ONLY
	Stringer (STA 540 to STA 578 and STA 639 to STA 727)		BAC1498-167 7075-T62 sheet as given in QQ-A-250/12	YC008 - YC050 YC056 - YC070 YC103 - YC110 YC112 - YC120 YC122 - YC299 YC303 - YC320 YC332 - YC380 YC382 - YC399 YC405 - YC499 YC507 - YC570 YC578 - YC599 YC606 - YD999 ONLY
[3]	Strap	0.500 (12.7)	7075-T7351 plate as given in QQ-A-250/12	
[4]	Stringer		BAC1517-1485 7075-T6511 extrusion as given in QQ-A-200/11	
[5]	Stringer, machined		7050-T7451 machined plate as given in AMS 4050. (Grain direction controlled part)	
[6]	Strap		7075-T62 extruded bar as given in QQ-A-200/11	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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L07788 S0006589732_V1

Section 44 Stringer Allowable Damage
Figure 101

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REPAIR 1 - SECTION 44 FUSELAGE STRINGERS

1. Applicability

A. Repair 1 is applicable to damage to the stringers in Body Section 44 shown in Section 44 Stringer Repair, Figure 201/REPAIR 1.

H24568 S0006589736_V1

Section 44 Stringer Repair
Figure 201

2. General

A. The typical repairs given in TYPICAL FORMED SECTION REPAIRS, 51-70-11 and EXTRUDED SECTION REPAIRS, 51-70-12 can be used when applicable if:

(1) There is sufficient clearance with the adjacent structure for the installation of repair parts.

B. Refer to the limits of the typical repairs given in TYPICAL FORMED SECTION REPAIRS, 51-70-11 and EXTRUDED SECTION REPAIRS, 51-70-12 before you start a repair.

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3. References

Reference	Title
51-70-11	TYPICAL FORMED SECTION REPAIRS
51-70-12	EXTRUDED SECTION REPAIRS
53-00-03	FUSELAGE STRINGERS
53-00-03, REPAIR 1	Repair for a Type I, Type II, or Type IV Fuselage Stringer with General Damage
53-00-03, REPAIR 2	Repair for a Type I, II or IV Fuselage Stringer with Longitudinal Crack Damage in a Formed Corner of a Skin Attachment Flange
53-00-03, REPAIR 3	Repair for a Type III Fuselage Stringer With General Damage
53-00-03, REPAIR 4	Repair for a Type III Fuselage Stringer With Longitudinal Crack Damage in a Formed Corner of a Skin Attachment Flange
53-40-03, ALLOWABLE DAMAGE 1	Section 44 Fuselage Stringers
53-40-03, IDENTIFICATION 1	Section 44 Fuselage Stringers

4. Repair Instructions

A. Refer to Table 201 to find the applicable repairs to the section 44 fuselage stringers.

NOTE: Refer to 53-40-03, IDENTIFICATION 1 to find the material and the process that was used to make the part which you want to repair.

Table 201:

REPAIR REFERENCES FOR THE SECTION 44 FUSELAGE STRINGERS		
STRINGER	**LOCATION**	**REPAIR**
S-11L, S-11R, S-13L, S-13R	STA 540 to STA 727	Refer to EXTRUDED SECTION REPAIRS, 51-70-12.
S-14L, S-14R	STA 540 to STA 578	There are no repairs for these parts in the Structural Repair Manual at this time. If the damage to the structure is more than the limits given in 53-40-03, ALLOWABLE DAMAGE 1, replace the damaged part or contact The Boeing Company.
S-15L, S-15R, S-16L, S-16R	STA 540 to STA 727	There are no repairs for these parts in the Structural Repair Manual at this time. If the damage to the structure is more than the limits given in 53-40-03, ALLOWABLE DAMAGE 1, replace the damaged part or contact The Boeing Company.
S-18L, S-18R, S-18AL, S-18AR	STA 663 to STA 727	There are no repairs for these parts in the Structural Repair Manual at this time.
All other stringers	STA 540 to STA 727	Refer to FUSELAGE STRINGERS, 53-00-03.

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IDENTIFICATION 1 - SECTION 44 INTERCOSTALS

L50359 S0006589745_V1

Section 44 Intercostal Location
Figure 1

Table 1:

REFERENCE DRAWINGS	
DRAWING NUMBER	**TITLE**
140A4402	Side Panel Assembly Functional Collector - Section 44
144A7500	Intercostal Installation - Stringer 14

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NOTE: REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

RIGHT SIDE IS SHOWN,
LEFT SIDE IS OPPOSITE

G54598 S0006589747_V1

Section 44 Intercostal Identification
Figure 2

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Table 2:

LIST OF MATERIALS FOR FIGURE 2				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Web, Aft and Forward		7050-T7451 bare plate as given in AMS4050	
[2]	Strap	0.125 (3.18)	7075-T73 bare sheet as given in QQ-A-250/12	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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L07791 S0006589753_V1

Section 44 Fuselage Intercostal Locations
Figure 101

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REPAIR 1 - SECTION 44 FUSELAGE INTERCOSTALS

1. Applicability

A. Repair 1 is applicable to damage to the fuselage intercostals as shown in Section 44 Intercostal Location, Figure 201/REPAIR 1.

L07803 S0006589758_V1

Section 44 Intercostal Location
Figure 201

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RIGHT SIDE IS SHOWN,
LEFT SIDE IS OPPOSITE

G67339 S0006589759_V1

Section 44 Fuselage Intercostal Structure
Figure 202

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2. General

A. The typical repair given in 51-70-12 can be used when applicable if:

(1) There is sufficient clearance with the adjacent structure for the installation of the repair parts.

B. Refer to the limits of the typical repairs given in 51-70-12 before you start a repair.

3. References

Reference	Title
51-70-11, REPAIR GENERAL	Typical Formed Section Repair
51-70-12	EXTRUDED SECTION REPAIRS
51-70-12, REPAIR GENERAL	Typical Extruded Section Repairs
53-00-04, ALLOWABLE DAMAGE 1	Fuselage Intercostals
53-40-04	FUSELAGE INTERCOSTALS - SECTION 44
53-40-04, IDENTIFICATION 1	Section 44 Intercostals

4. Repair Instructions

A. Refer to Table 201/REPAIR 1 and Figure 202 to find the applicable repair for the part you want to repair.

NOTE: If necessary, refer to 53-40-04, Identification 1 to find the material and the process that was used to make the part which you want to repair.

Table 201:

REPAIR REFERENCES FOR THE FUSELAGE INTERCOSTALS	
TYPE OF COMPONENT	**REPAIR**
Machined parts	Refer to SRM 51-70-12 or Refer to SRM 51-70-11
Straps	There are no repairs for these parts in the Structural Repair Manual at this time. If the damage to the structure is more than the limits given in SRM 53-00-04, Allowable Damage 1, replace the damaged part

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IDENTIFICATION 1 - SECTION 44 FUSELAGE FRAMES

NOTE: REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

H35047 S0006589766_V1

Section 44 Fuselage Frame Location
Figure 1

Table 1:

REFERENCE DRAWINGS	
DRAWING NUMBER	**TITLE**
140A4401	Section 44 - Crown Panel Assembly, Functional Collector
140A4402	Side Panel Assembly, Functional Collector - Section 44
140A4404	Crown Panel Integration, Functional Collector - Section 44
144A1101	Frame Installation - STA 559, S-10L to S-10R
144A1102	Frame Installation - STA 578, S-10L to S-10R
144A1104	Frame Installation - STA 616, S-10L to S-10R
144A1105	Frame Installation - STA 639, S-10L to S-10R

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Table 1: (Continued)

REFERENCE DRAWINGS	
DRAWING NUMBER	**TITLE**
144A1106	Frame Installation - STA 685, S-10L to S-10R
144A1107	Frame Installation - STA 706, S-10L to S-10R
144A1108	Frame Splice Installation - STA 559 to STA 706
144A1109	Frame Installation - STA 601, S-10L to S-10R
144A1400	Frame Installation - STA 685
144A3101	Skin Installation S-9L to S-9R, STA 540 to 727
144A3301	Skin Installation-STA 540 to STA 727, S-10 to S-18A
144A8301	Frame Installation - STA 578
144A8501	Frame Installation - STA 616
144A8601	Frame Installation - STA 639

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LEFT SIDE AND CROWN FRAMES ARE SHOWN,
RIGHT SIDE FRAMES ARE OPPOSITE THE LEFT SIDE FRAMES

NOTES

- REFER TO TABLE 2 FOR THE LIST OF MATERIALS.
- REFER TO DETAILS A THRU D FOR TYPICAL SECTION VIEWS OF THE FRAMES.

H35159 S0006589771_V3

Section 44 Fuselage Frames Identification
Figure 2 (Sheet 1 of 2)

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TYPICAL SECTION THROUGH AN ITEM [1] AND ITEM [2] FRAME

A

TYPICAL SECTION THROUGH AN ITEM [3] AND ITEM [4] FRAME ASSEMBLY

B

TYPICAL SECTION THROUGH AN ITEM [5] AND ITEM [9] FRAME ASSEMBLY

C

TYPICAL SECTION THROUGH AN ITEM [6], ITEM [7] AND ITEM [8] FRAME ASSEMBLY

D

H35189 S0006589774_V2

Section 44 Fuselage Frames Identification
Figure 2 (Sheet 2 of 2)

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Table 2:

LIST OF MATERIALS FOR FIGURE 2				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Frame		BAC1517-706 7075-T62 clad sheet as given in QQ-A-250/13	
[2]	Frame		BAC1517-1062 7075-T62 clad sheet as given in QQ-A-250/13	
[3]	Frame Assembly			
	Frame		BAC1517-706 7075-T62 clad sheet as given in QQ-A-250/13	
	Inner Chord Strap (2)	0.056 (1.42)	7075-T62 clad sheet as given in QQ-A-250/13	
[4]	Frame Assembly			
	Frame		BAC1517-2757 7075-T62 clad sheet as given in QQ-A-250/13	
	Inner Chord Strap (2)	0.056 (1.42)	7075-T62 clad sheet as given in QQ-A-250/13	
[5]	Frame Assembly			
	Inner Chord	1.000 (25.4)	7050-T7451 plate as given in AMS 4050, machined to different thicknesses (Grain direction controlled part)	
	Failsafe Chord		AND10134-1204 7075-T62 extrusion as given in QQ-A-200/11	
[6]	Frame Assembly			
	Inner Chord	1.750 (44.45)	7050-T7451 plate as given in AMS 4050, machined to different thicknesses (Grain direction controlled part)	Line numbers 7 thru 9 only.
		1.375 (34.9)	7050-T7451 plate as given in AMS 4050, machined to different thicknesses (Grain direction controlled part)	Line numbers 36 and on.
	Outer Chord		BAC1514-3229 7075-T73 extrusion as given in QQ-A-200/11	Line numbers 7 thru 9 only.
			BAC1514-3229 7075-T73 extrusion as given in QQ-A-200/11 (Optional: 7075-T73511 or 7075-T6511 extruded bar)	Line numbers 36 and on.
[7]	Frame Assembly			
	Inner Chord	1.375 (34.9)	7050-T7451 plate as given in AMS 4050, machined to different thicknesses (Grain direction controlled part)	
	Outer Chord		BAC1514-3229 7075-T73 extrusion given in QQ-A-200/11	Line numbers 7 thru 9 only.
			BAC1514-3229 7075-T73 extrusion given in QQ-A-200/11 (Optional: 7075-T73511 extruded bar)	Line numbers 36 and on.
[8]	Frame Assembly			
	Inner Chord	1.750 (44.45)	7050-T7451 plate as given in AMS 4050, machined to different thicknesses (Grain direction controlled part)	

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Table 2: (Continued)

LIST OF MATERIALS FOR FIGURE 2				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
	Outer Chord		BAC1514-3229 7075-T73 extrusion as given in QQ-A-200/11	Line numbers 7 thru 9 only.
			BAC1514-3229 7075-T73 extrusion as given in QQ-A-200/11 (Optional: 7075-T73511 or 7075-T6511 extruded bar)	Line numbers 36 and on.
[9]	Frame Assembly			
	Inner Chord	1.250 (31.8)	7050-T7451 plate as given in AMS 4050, machined to different thicknesses (Grain direction controlled part)	
	Failsafe Chord		AND10134-1204 7075-T62 extrusion as given in QQ-A-200/11	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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LEFT SIDE AND CROWN FRAMES ARE SHOWN,
RIGHT SIDE FRAMES ARE OPPOSITE THE LEFT SIDE FRAMES

NOTES

- REFER TO TABLE 3 FOR THE LIST OF MATERIALS.

H35210 S0006589778_V1

Section 44 Fuselage Frame Splices Identification
Figure 3 (Sheet 1 of 4)

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H35364 S0006589782_V2

Section 44 Fuselage Frame Splices Identification
Figure 3 (Sheet 2 of 4)

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H35381 S0006589785_V2

Section 44 Fuselage Frame Splices Identification
Figure 3 (Sheet 3 of 4)

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H35385 S0006589787_V2

Section 44 Fuselage Frame Splices Identification
Figure 3 (Sheet 4 of 4)

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Table 3:

LIST OF MATERIALS FOR FIGURE 3				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Splice Strap	0.125 (3.18)	7075-T6 clad sheet as given in QQ-A-250/13	
[2]	Splice Strap	0.071 (1.80)	7075-T6 clad sheet as given in QQ-A-250/13	
[3]	Splice Strap	0.125 (3.18)	7075-T6 bare sheet as given in QQ-A-250/12	Line numbers 7 thru 9 only.
		0.125 (3.18)	7050-TT6 clad sheet as given in QQ-A-250/13	Line numbers 36 and on.
[4]	Splice Angle	0.125 (3.18)	7050-T7451 sheet as given in AMS 4050 (Grain direction controlled part)	
[5]	Splice Angle	0.125 (3.18)	7050-T7451 sheet as given in AMS 4050 (Grain direction controlled part)	Line numbers 7 thru 147 only.
		0.125 (3.18)	7050-T7451 plate as given in AMS 4050 (optional: BAC1503-100898 7075-T73511 Extrusion as given in QQ-A-200/11) (Grain direction controlled part)	Line numbers 151 and on.
[6]	Splice Angle		BAC1503-100096 7075-T73511 extrusion as given in QQ-A-200/11	
[7]	Splice Angle		BAC1503-2743 7075-T73511 extrusion as given in QQ-A-200/11	
[8]	Splice Angle		BAC1503-1831 7075-T73511 extrusion as given in QQ-A-200/11	
[9]	Shear Tie		BAC1503-101154 7075-T73511 extrusion as given in QQ-A-200/11. (Optional: BAC1514–3165)	
[10]	Shear Tie		BAC1514–3165 7075-T73511 extrusion as given in QQ-A-200/11	
[11]	Shear Tie		BAC1503-101154 7075-T73511 extrusion as given in QQ-A-200/11. (Optional: BAC1503-100283)	
[12]	Shear Tie		BAC1503-101144 7075-T73511 extrusion as given in QQ-A-200/11. (Optional: BAC1503-100283)	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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ALLOWABLE DAMAGE 1 - SECTION 44 FUSELAGE FRAMES

1. Applicability

A. This subject gives the allowable damage limits for the fuselage frames in body section 44 as shown in Allowable Damage - Typical Section 44 Fuselage Frames, Figure 101/ALLOWABLE DAMAGE 1.

B. This subject is not applicable to what follows:

(1) Frame splices

(2) Bulkhead frames at STA 540, STA 663.75, or STA 727

(3) Main landing gear support frames at STA 695, STA 706, or STA 716

(4) Frame sections where the floor beams or stub beams are attached

(5) Frame sections that include doublers or other repair parts.

2. General

A. Refer to Paragraph 4./ALLOWABLE DAMAGE 1 for the allowable damage limits.

B. Remove the damage as necessary.

(1) Refer to 51-10-02 for the inspection and removal of damage.

(2) Refer to 51-30-03 for possible sources of abrasives and other materials you can use to remove damage.

(3) Refer to 51-30-05 for possible sources of the equipment and tools you can use to remove damage.

C. After you remove the damage, do the steps that follow:

(1) Apply a chemical conversion coating to the bare surfaces of the reworked areas. Refer to 51-20-01.

(2) Apply two layers of BMS 10-11, Type I primer to the bare surfaces of the reworked areas. Refer to SOPM 20-41-02.

(3) Apply corrosion inhibiting compound to the reworked areas, as necessary. Refer to 51-20-01.

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TYPICAL BUILT-UP FRAME SECTIONS (ALUMINUM)

TYPICAL ZEE FRAME (ALUMINUM)

F89479 S0006589793_V1

Allowable Damage - Typical Section 44 Fuselage Frames
Figure 101

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3. References

Reference	Title
51-10-02	INSPECTION AND REMOVAL OF DAMAGE
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-30-03	NON-METALLIC MATERIALS
51-30-05	EQUIPMENT AND TOOLS FOR REPAIRS
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes

4. Allowable Damage Limits

A. Inner Chord, Outer Chord, Failsafe Chord, and Shear Ties

(1) Cracks:

(a) Remove damage as shown in Allowable Damage Limits, Figure 102/ALLOWABLE DAMAGE 1, Details A , B and D .

(2) Nicks, Gouges, Scratches and Corrosion:

(a) Remove damage as shown in Allowable Damage Limits, Figure 102/ALLOWABLE DAMAGE 1, Details A , B , C and D .

(3) Dents are not permitted.

(4) Holes and Punctures are not permitted.

B. Webs (Does not include chord flanges, shear tie flanges or the area under those flanges)

(1) Cracks:

(a) Remove damage as shown in Allowable Damage Limits, Figure 102/ALLOWABLE DAMAGE 1, Details A , B and E .

(2) Nicks, Gouges, Scratches and Corrosion:

(a) Remove damage as shown in Allowable Damage Limits, Figure 102/ALLOWABLE DAMAGE 1, Details A , B , C and E .

(3) Dents:

(a) Refer to Allowable Damage Limits, Figure 102/ALLOWABLE DAMAGE 1, Detail G for damage that is permitted.

(4) Holes and Punctures:

(a) Rework the damage as shown in Allowable Damage Limits, Figure 102/ALLOWABLE DAMAGE 1, Detail F .

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REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER EDGE MARGINS DO NOT HAVE AN OVERLAP

A

REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER EDGE MARGINS HAVE AN OVERLAP

B

REMOVAL OF DAMAGED MATERIAL ON A SURFACE

C

1 FOR AIRPLANES THAT HAVE COMPLETED SERVICE BULLETIN 737-21-1149.

2 FOR AIRPLANES THAT HAVE NOT COMPLETED SERVICE BULLETIN 737-21-1149.

400674 S0000137168_V1

Allowable Damage Limits
Figure 102 (Sheet 1 of 4)

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X = THE WIDTH OF THE MATERIAL REMOVED
= 0.10W MAXIMUM

REMOVAL OF DAMAGED MATERIAL ON AN EDGE

D

X = THE WIDTH OF THE MATERIAL REMOVED
= 0.10 INCH MAXIMUM (2.54 mm)

REMOVAL OF DAMAGED MATERIAL AT AN EDGE

E

419195 S0000137169_V1

Allowable Damage Limits
Figure 102 (Sheet 2 of 4)

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NOTE: DAMAGE C IS NOT LOCATED IN ZONE A AND SHOULD NOT BE INCLUDED TO CALCULATE THE CROSS-SECTIONAL AREA WHICH HAS BEEN REMOVED IN THE EXAMPLE GIVEN IN B-B.

CROSS-SECTIONAL AREA REMOVAL IN A WEB

F

EXAMPLE: THE CROSS-SECTIONAL AREA WHICH HAS BEEN REMOVED IS

$td + XI \leq 0.05th$ 1

$td + XI \leq 0.10th$ 2

NOTE: THE CROSS-SECTIONAL AREA IN ZONE A MUST NOT DECREASE MORE THAN 10 PERCENT FROM THE INITIAL CROSS-SECTIONAL AREA MINUS THE FASTENER HOLES.

B-B

400676 S0000137170_V1

Allowable Damage Limits
Figure 102 (Sheet 3 of 4)

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DENT THAT IS PERMITTED

G

419201 S0000137171_V1

Allowable Damage Limits
Figure 102 (Sheet 4 of 4)

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L07806 S0006589801_V1

Section 44 Fuselage Frame Location
Figure 201

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IDENTIFICATION 1 - BODY STATION 540 FRONT SPAR BULKHEAD

NOTE: REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

K03502 S0006589806_V1

Station 540 Front Spar Bulkhead Location
Figure 1

Table 1:

REFERENCE DRAWINGS	
DRAWING NUMBER	**TITLE**
001A4001	Fuselage Product Collector
111A0000	Functional Product Collector, Wing Center Section
111A2000	Front Spar Installation, Wing Center Section
111A2001	Front Spar Assembly, Wing Center Section
144A2101	Frame Installation - Front Spar, Station 540, S-10L T0 S-10R
144A2111	Frame Assembly - Front Spar, Station 540, S-10L To S-10R
144A2201	Frame Fitting Assembly - Station 540, Lower

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NOTES

- REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

K03606 S0006589810_V1

Station 540 Front Spar Bulkhead Identification
Figure 2 (Sheet 1 of 2)

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Station 540 Front Spar Bulkhead Identification
Figure 2 (Sheet 2 of 2)

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Table 2:

LIST OF MATERIALS FOR FIGURE 2				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Frame Fitting		7075-T73 die forging as given in BMS 7-186	
[2]	Strap	0.500 (12.7)	7075-T651 plate as given in QQ-A-250/12 (Grain direction controlled part)	
[3]	Bond Assembly			
	Frame		BAC1518-1239 7075-T62 extrusion as given in QQ-A-200/11	
	Strap	0.040 (1.02)	2024-T3 sheet as given in QQ-A-250/4 (chem-milled)	
[4]	Web Splice (2)	0.125 (3.18)	7075-T6 clad sheet as given in QQ-A-250/13	
[5]	Splice Strap, Outboard (4)	0.300 (7.62)	7075-T7351 plate as given in QQ-A-250/12	
[6]	Web Splice (2)	0.100 (2.54)	7075-T6 clad sheet as given in QQ-A-250/13	
[7]	Splice Strap, Inboard (2)	0.160 (4.06)	7075-T6 sheet as given in QQ-A-250/12	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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IDENTIFICATION 2 - BODY STATION 663.75 REAR SPAR BULKHEAD

NOTE: REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

L30252 S0006589817_V1

Station 663.75 Rear Spar Bulkhead Location
Figure 1

Table 1:

REFERENCE DRAWINGS	
DRAWING NUMBER	**TITLE**
001A4001	Fuselage Product Collector
140A4401	Section 44, Crown Panel Assembly Functional Collector
140A4402	Side Panel Assembly Functional Collector - Section 44
140A4403	Lower Lobe Functional Collector - Section 44
144A2301	Frame Installation - Station 663.75, S-9L To S-9R
144A2400	Frame Installation - Rear Spar, Station 663.75
144A1108	Frame Splice Installation - Station 599 to Station 706

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NOTE: REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

SECTION 44 REAR SPAR BULKHEAD

G69251 S0006589819_V2

Station 663.75 Rear Spar Bulkhead Identification
Figure 2 (Sheet 1 of 2)

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K05963 S0006589823_V2

Station 663.75 Rear Spar Bulkhead Identification
Figure 2 (Sheet 2 of 2)

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Table 2:

LIST OF MATERIALS FOR FIGURE 2				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Frame Fitting		7075-T73 die forging as given in BMS 7-186	
[2]	Strap	0.500 (12.7)	7075-T651 aluminum plate as given in QQ-A-250/12 (Grain direction controlled part)	
[3]	Frame		BAC1518-1227 7075-T62 extrusion as given in QQ-A-200/11	Line numbers 1 thru 171
			BAC1518-1258 7075-T62 extruded shape as given in QQ-A-200/11 (Optional: BAC1518-1296 Extrusion)	Line numbers 172 and on
[4]	Splice Plate	0.125 (3.175)	7075-T6 Bare sheet as given in QQ-A-250/12	
[5]	Splice Strap (3)	0.140 (3.556)	7075-T6 Bare sheet as given in QQ-A-250/12	
[6]	Splice Strap (2)	0.313 (7.95)	7075-T7351 Bare plate as given in QQ-A-250/12	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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IDENTIFICATION 3 - BODY STATION 727 WHEEL WELL BULKHEAD

NOTE: REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

G67727 S0006589826_V1

Station 727 Wheel Well Bulkhead Location
Figure 1

Table 1:

REFERENCE DRAWINGS	
DRAWING NUMBER	**TITLE**
001A4001	Fuselage Product Collector
140A4402	Side Panel Assembly Functional Collector - Section 44
140A4403	Lower Lobe Functional Collector - Section 44
140A4404	Crown Panel Integration, Section 44
144A2500	Frame Installation - Upper, Station 727.00, Bulkhead
144A2600	Bulkhead Installation - Station 727.00
144A2604	Frame Assembly - Lower, Station 727.00, Bulkhead

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NOTES

- REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

K06420 S0006589828_V1

Station 727 Wheel Well Bulkhead Identification
Figure 2 (Sheet 1 of 2)

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Station 727 Wheel Well Bulkhead Identification
Figure 2 (Sheet 2 of 2)

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Table 2:

LIST OF MATERIALS FOR FIGURE 2				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Chord		BAC1490-2900 7075-T62 clad sheet as given in QQ-A-250/13	
[2]	Chord-Compression	0.050 (1.27)	Ti-6Al-4V titanium sheet as given in MIL-T-9046, Code AB-1, Condition A	
[3]	Strap	0.063 (1.6)	7075-T6 sheet as given in QQ-A-250/12	
[4]	Strap (2 locations)	0.250 (6.35)	2024-T351 plate as given in QQ-A-250/4	
[5]	Fitting (2)	3.000 (76.2)	7050-T7451 plate as given in BMS 7-323, Type 1 (Grain direction controlled part)	
[6]	Chord-Compression		BAC1503-100637 7075-T73511 extrusion as given in QQ-A-200/11	
[7]	Outer Chord		BAC1503-101048 7075-T73511 extrusion as given in QQ-A-200/11	
[8]	Seal Ring	1.250 (31.75)	7050-T7451 plate as given in AMS 4050 (Grain direction controlled part)	
[9]	Backup-Tee		BAC1505-101439 7075-T73511 extrusion as given in QQ-A-200/11	
[10]	Web Assembly			
	Strap-Horizontal (2)	0.080 (2.03)	2024-T3 clad sheet as given in QQ-A-250/5	
	Web	0.125 (3.18)	2024-T3 clad sheet as given in QQ-A-250/5. Refer to Figure 3 for chem-milled thicknesses	
[11]	Frame Assembly (2)			
	Chord-Failsafe		BAC1490-2887 7075-T62 clad sheet as given in QQ-A-250/13	
	Bonded Assembly Frame-Lower	5.000 (127.0)	7050-T7451 plate as given in BMS 7-323 (Grain direction controlled part)	
	Strap	0.190 (4.82)	2024-T3 sheet as given in QQ-A-250/4	
[12]	Chord (2)		BAC1490-2899 7075-T62 clad sheet as given in QQ-A-250/13	
[13]	Beam (11)		BAC1520-2785 7150-T77511 as given in BMS 7-306 (Optional: 7150-T7451 extrusion as given in AMS 4050)	
[14]	Vertical Beam (2)	2.250 (57.15)	7150-T77511 extruded bar as given in BMS 7-306	
[15]	Frame Assembly Bonded Assembly			
	Strap- Failsafe	0.050 (1.27)	2024-T3 clad sheet as given in QQ-A-250/5	
	Frame		BAC1518-1161 7075-T73 extrusion as given in QQ-A-200/11	
[16]	Stiffener (3)	2.250 (57.15)	7150-T77511 extruded bar as given in BMS 7-306	
[17]	Stiffener (4)		BAC1505-101655 2024-T3511 extrusion as given in QQ-A-200/3	
[18]	Stiffener (2)		AND10136-2007 7075-T6511 extrusion as given in QQ-A-200/11	

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Table 2: (Continued)

LIST OF MATERIALS FOR FIGURE 2				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[19]	Intercostal (4)	0.040 (1.02)	7075-T62 clad sheet as given in QQ-A-250/13	
[20]	Strap (2)	0.045 (1.14)	7075-T6 clad sheet as given in QQ-A-250/13	
[21]	Chord-Compression		BAC1503-100427 7075-T73511 extrusion as given in QQ-A-200/11	
[22]	Chord-Inner (2)		BAC1505-100587 7075-T73511 extrusion as given in QQ-A-200/11	
[23]	Tee-Aft (2)	3.400 (86.36)	7050-T7451 plate as given in BMS 7-323, Type 1 (Grain direction controlled part)	
[24]	Channel	0.050 (1.27)	2024-T3 clad sheet as given in QQ-A-250/5	
[25]	Angle (2)		BAC1490-2596 7075-T62 clad sheet as given in QQ-A-250/13	
[26]	Splice Plate (2)	0.250 (6.35)	7050-T7451 plate as given in AMS 4050	
[27]	Outer Splice (4)	0.375 (9.52)	7075-T7351 plate as given in QQ-A-250/12	
[28]	Inner Splice (2)	0.125 (3.18)	7075-T6 clad sheet as given in QQ-A-250/13	
[29]	Splice Plate (2)	0.080 (2.03)	7075-T6 clad sheet as given in QQ-A-250/13	
[30]	Fitting (2)	2.700 (68.58)	7050-T7451 plate as given in BMS 7-323, Type 1 (Grain direction controlled part)	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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K06526 S0006589835_V1

Chem-milled Thickness for Figure 2, Item [10]
Figure 3

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ALLOWABLE DAMAGE 1 - FRONT SPAR BULKHEAD STRUCTURE - STATION 540

1. Applicability

A. This subject gives the allowable damage limits for the Front Spar Bulkhead Structure at Station 540.00 shown in Station 540 Front Spar Bulkhead Location, Figure 101/ALLOWABLE DAMAGE 1.

2. General

A. Remove the parts as necessary to get access to the damaged area.

B. Refer to Paragraph 4./ALLOWABLE DAMAGE 1 for the allowable damage limits.

(1) Refer to Table 101/ALLOWABLE DAMAGE 1 for the allowable damage limits that is applicable to each type of structure.

Table 101:

PARAGRAPH REFERENCES FOR THE ALLOWABLE DAMAGE LIMITS	
TYPE OF STRUCTURE	**PARAGRAPH**
Fittings, I-Beam, and Tees	4.A
Straps, Webs, and Fillers	4.B
Clips and Support Brackets	4.C

C. Remove the damage as necessary.

(1) Refer to 51-10-02 for the inspection and removal of damage.

(2) Refer to 51-30-03 for possible sources of abrasives and other materials you can use to remove damage.

(3) Refer to 51-30-05 for possible sources of equipment and tools you can use to remove damage.

D. After you remove the damage, do the steps that follow:

(1) Apply a chemical conversion coating to the bare surfaces of the reworked areas. Refer to 51-20-01.

(2) Apply one layer of BMS 10-11, Type I primer to the surface of the reworked area. Refer to SOPM 20-41-02.

(3) Apply one layer of BMS 3-23, Type II corrosion inhibiting compound to the surface of the repair area. Refer to 51-20-01.

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1898527 S0000349406_V1

Station 540 Front Spar Bulkhead Location
Figure 101

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SECTION 44 FRONT SPAR BULKHEAD

NOTE: ALL PARTS ARE ALUMINIUM EXCEPT AS NOTED.

G90222 S0006589841_V1

Station 540 Front Spar Bulkhead Structure
Figure 102 (Sheet 1 of 2)

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G90488 S0006589842_V1

Station 540 Front Spar Bulkhead Structure
Figure 102 (Sheet 2 of 2)

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3. References

Reference	Title
51-10-02	INSPECTION AND REMOVAL OF DAMAGE
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-20-06	SHOT PEENING
51-30-03	NON-METALLIC MATERIALS
51-30-05	EQUIPMENT AND TOOLS FOR REPAIRS
51-40-02, GENERAL	Fastener Installation and Removal
51-40-05, GENERAL	Fastener Hole Sizes
SOPM 20-10-03	SHOT PEENING
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes

4. Allowable Damage Limits

A. Fittings, I-Beams, and Tees

(1) Cracks:

(a) Remove the damage as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 1, Details A , B , E , I , and M .

(2) Nicks, Gouges, Scratches, and Corrosion:

(a) Remove the damage as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 1, Details A , B , D , E , F , I , and N .

1) After you remove the damage from the fitting, shot peen the fitting surface.

a) Refer to 51-20-06 for shot peen intensity and shot number.

b) Refer to SOPM 20-10-03 for flap peen and shot peen procedures.

(3) Dents are not permitted

(4) Holes and Punctures are permitted as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 1, Detail L if:

(a) They are maximum of 0.25 inch (6.4 mm) in diameter after cleanup

(b) A minimum of 1.00 inch (25.4 mm) away from the edge of a fastener hole, other damage, or material edge

(c) You install a 2117-T3 or 2117-T4 rivet without sealant in the hole as shown in zone 2 of the web.

B. Clips and Support Brackets

(1) Cracks:

(a) Remove the damage as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 1, Details A , B , and E .

(2) Nicks, Gouges, Scratches, and Corrosion:

(a) Remove the damage as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 1, Details A , B , C , D , and E .

(3) Dents are not permitted.

(4) Holes and Punctures are not permitted.

C. Straps, Webs, and Fillers

(1) Cracks:

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(a) Remove the damage as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 1, Details A , B , G , and J .

(2) Nicks, Gouges, Scratches, and Corrosion:

(a) Remove the damage as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 1, Details A , B , C , D , G , J , and K .

(3) Dents are permitted as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 1, Detail H if:

(a) They do not extend across attached structures

(b) They do not have an "oil can" condition.

(4) Holes and Punctures are permitted if:

(a) They are maximum of 0.25 inch (6.4 mm) in diameter after cleanup

(b) They are a minimum of 1.00 inch (25.4 mm) away from the edge of a fastener hole, other damage, or material edge

(c) You install a 2117-T3 or 2117-T4 rivet without sealant in the hole as shown in zone 2 of the web.

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REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER EDGE MARGINS DO NOT HAVE AN OVERLAP

A

REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER EDGE MARGINS HAVE AN OVERLAP

B

REMOVAL OF DAMAGED MATERIAL ON A SURFACE

C

A–A

H10252 S0006589843_V1

Allowable Damage Limits
Figure 103 (Sheet 1 of 9)

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Allowable Damage Limits
Figure 103 (Sheet 2 of 9)

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Y = WIDTH OF THE MATERIAL THAT IS REMOVED

REMOVAL OF DAMAGED MATERIAL ON A SURFACE AT AN EDGE OF A MACHINED OR EXTRUDED PART

F

C-C

H10254 S0006589845_V1

Allowable Damage Limits
Figure 103 (Sheet 3 of 9)

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X = WIDTH OF THE MATERIAL THAT IS REMOVED
= A MAXIMUM OF 0.10 INCH (2.54 mm)

REMOVAL OF DAMAGED MATERIAL AT AN EDGE OF A WEB

G

DENT THAT IS PERMITTED

H

H10255 S0006589846_V2

Allowable Damage Limits
Figure 103 (Sheet 4 of 9)

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X = THE WIDTH OF THE MATERIAL THAT IS REMOVED
= A MAXIMUM OF 0.10 INCH (2.54 mm)

REMOVAL OF DAMAGED MATERIAL ON AN EDGE

I

X = WIDTH OF THE MATERIAL REMOVED
= A MAXIMUM OF 0.10 INCH (2.54 mm)

REMOVAL OF DAMAGED MATERIAL AT AN EDGE OF A STRAP

J

H10256 S0006589847_V1

Allowable Damage Limits
Figure 103 (Sheet 5 of 9)

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Y = WIDTH OF THE MATERIAL THAT IS REMOVED
= A MAXIMUM OF 0.10 INCH (2.54 mm)

X = A MAXIMUM OF 0.10T

REMOVAL OF DAMAGED MATERIAL ON A SURFACE AT AN EDGE OF A STRAP

K

D–D

H10257 S0006589848_V1

Allowable Damage Limits
Figure 103 (Sheet 6 of 9)

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ALLOWABLE DAMAGE LIMITS FOR HOLES
IN THE FREE FLANGES AND THE WEB OF AN I-BEAM

L

ZONE 1 - HOLES AND PUNCTURES ARE PERMITTED UP TO 0.25 INCH (6.4 mm) IN DIAMETER

ZONE 2 - HOLES AND PUNCTURES ARE PERMITTED UP TO 0.25 INCH (6.4 mm) IN DIAMETER IF THEY ARE FILLED WITH 2117-T3 OR 2117-T4 RIVETS.

E-E

H10702 S0006589849_V1

Allowable Damage Limits
Figure 103 (Sheet 7 of 9)

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REMOVAL OF DAMAGED MATERIAL AT THE EDGE OF A HOLE

M

LOSS OF MATERIAL PERMITTED FROM THE CROSS-SECTIONAL AREA OF THE I-BEAM WEB

N

H15231 S0006589850_V1

Allowable Damage Limits
Figure 103 (Sheet 8 of 9)

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D = DIAMETER OF THE INITIAL HOLE

H = HEIGHT OF THE WEB

T = THICKNESS OF THE WEB

A_1 = INITIAL AREA OF THE WEB
= THE TOTAL CROSS-SECTIONAL AREA MINUS THE CROSS-SECTIONAL AREA OF THE INITIAL HOLES (AS MANUFACTURED BY BOEING)
= HT - DT

A_2 = CROSS-SECTIONAL AREA OF THE DAMAGE THAT IS REMOVED AT LOCATION 2

A_3 = CROSS-SECTIONAL AREA OF THE DAMAGE THAT IS REMOVED AT LOCATION 3

$$\left(\frac{A_2 + A_3}{A_1}\right) \times 100 = \text{PERCENT OF CROSS-SECTIONAL AREA REMOVED}$$
$$= 10 \text{ PERCENT MAXIMUM}$$

THE TOTAL CROSS-SECTIONAL AREA REMOVED IN ALL ZONES A-B (2.00 INCHES (50.8 mm) ON EACH SIDE OF A LINE A-B) MUST NOT BE MORE THAN 10 PERCENT OF THE INITIAL AREA OF THE WEB.

F-F

H15240 S0006589851_V1

Allowable Damage Limits
Figure 103 (Sheet 9 of 9)

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ALLOWABLE DAMAGE 2 - REAR SPAR BULKHEAD STRUCTURE - STATION 663.75

1. Applicability

A. This subject gives the allowable damage limits for the Rear Spar Bulkhead Structure at Station 663.75 shown in Station 663.75 Rear Spar Bulkhead Location, Figure 101/ALLOWABLE DAMAGE 2.

2. General

A. Remove the parts as necessary to get access to the damaged area.

B. Refer to Paragraph 4./ALLOWABLE DAMAGE 2 for the allowable damage limits.

(1) Refer to Table 101/ALLOWABLE DAMAGE 2 for the allowable damage limits that is applicable to each type of structure.

Table 101:

PARAGRAPH REFERENCES FOR THE ALLOWABLE DAMAGE LIMITS	
TYPE OF STRUCTURE	**PARAGRAPH**
Frame fitting, I-Beam, Chords, Seal Ring, and Tees	4.B
Clips, Angles, Brackets, and Channels	4.C
Web, Straps, and Fillers	4.D

C. Remove the damage as necessary.

(1) Refer to 51-10-02, GENERAL for the inspection and removal of damage.

(2) Refer to 51-30-03, GENERAL for possible sources of abrasives and other materials you can use to remove damage.

(3) Refer to 51-30-05, GENERAL for possible sources of equipment and tools you can use to remove damage.

D. After you remove the damage, do the steps that follow:

(1) Apply a chemical conversion coating to the bare surfaces of the reworked areas. Refer to 51-20-01, GENERAL.

(2) Apply one layer of BMS 10-11, Type I primer to the surface of the reworked area. Refer to SOPM 20-41-02.

(3) Apply one layer of BMS 3-23, Type II corrosion inhibiting compound to the surface of the repair area. Refer to 51-20-01, GENERAL.

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G89952 S0006589854_V2

Station 663.75 Rear Spar Bulkhead Location
Figure 101

BOEING PROPRIETARY - Copyright © Unpublished Work - See title page for details

NOTE: ALL PARTS ARE ALUMINUM EXCEPT AS NOTED.

Station 663.75 Rear Spar Bulkhead Structure
Figure 102 (Sheet 1 of 3)

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A–A

B–B

G90031 S0006589856_V2

Station 663.75 Rear Spar Bulkhead Structure
Figure 102 (Sheet 2 of 3)

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C–C

2441727 S0000566986_V1

Station 663.75 Rear Spar Bulkhead Structure
Figure 102 (Sheet 3 of 3)

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3. References

Reference	Title
51-10-02, GENERAL	Inspection and Removal of Damage
51-20-01, GENERAL	Protective Treatment of Metallic and Composite Materials
51-20-06, GENERAL	Shot Peening
51-30-03, GENERAL	Sources for Non-Metallic Repair Materials
51-30-05, GENERAL	Equipment and Tools For Repairs
SOPM 20-10-03	SHOT PEENING
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes

4. Allowable Damage Limits

A. Refer to Figure 102/ALLOWABLE DAMAGE 2 for locations where damage is not permitted.

B. Frame fitting, I-Beam, Chords, Seal Ring, and Tees

(1) Cracks:

(a) Remove the damage as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 2, Details A, B, E, I, and M.

(2) Nicks, Gouges, Scratches, and Corrosion:

(a) Remove the damage as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 2, Details A, B, D, E, F, I, and N.

1) After you remove the damage from the fitting, shot peen the fitting surface.

a) Refer to 51-20-06, GENERAL for shot peen intensity and shot number.

b) Refer to SOPM 20-10-03 for flap peen and shot peen procedures.

(3) Dents are not permitted.

(4) Holes and punctures are permitted as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 2, Detail L if:

(a) They are maximum of 0.25 inch (6.4 mm) in diameter after cleanup.

(b) They are minimum of 1.00 inch (25.4 mm) away from the edge of a fastener hole, other damage, or material edge.

(c) You install a 2117-T3 or 2117-T4 rivet without sealant in the hole.

NOTE: Open holes or punctures are not permitted.

C. Clips, Angles, Brackets, and Channels

(1) Cracks:

(a) Remove the damage as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 2, Details A, B, and E.

(2) Nicks, Gouges, Scratches, and Corrosion:

(a) Remove the damage as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 2, Details A, B, C, D, and E.

(3) Dents are not permitted.

(4) Holes and Punctures are not permitted.

D. Web, Straps, and Fillers

(1) Cracks:

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(a) Remove the damage as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 2, Details A, B, G, and J.

(2) Nicks, Gouges, Scratches, and Corrosion:

(a) Remove the damage as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 2, Details A, B, C, D, G, J, and K.

(3) Dents are permitted as shown in Figure 103/ALLOWABLE DAMAGE 2, Detail H if:

(a) They do not extend across attached structures.

(b) They do not have an “oil can” condition.

(4) Holes and punctures are permitted if:

(a) They are maximum of 0.25 inch (6.4 mm) in diameter after cleanup.

(b) They are minimum of 1.00 inch (25.4 mm) away from the edge of a fastener hole, other damage, or material edge.

(c) You install a 2117-T3 or 2117-T4 rivet without sealant in the hole.

NOTE: Open holes or punctures are not permitted.

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REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER EDGE MARGINS DO NOT HAVE AN OVERLAP

A

REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER EDGE MARGINS HAVE AN OVERLAP

B

REMOVAL OF DAMAGED MATERIAL ON A SURFACE

C

A–A

H10280 S0006589857_V1

Allowable Damage Limits
Figure 103 (Sheet 1 of 9)

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REMOVAL OF DAMAGE AROUND THE FASTENERS ON AN EDGE OF A SURFACE

D

X = WIDTH OF THE MATERIAL THAT IS REMOVED
= A MAXIMUM OF 0.05 INCH (1.30 mm) FOR FLANGES OF THE MACHINED OR EXTRUDED PART
= A MAXIMUM OF 0.10 INCH (2.54 mm) FOR FLANGES OF THE FORMED PART
= A MAXIMUM OF 0.10 INCH (2.54 mm) FOR ALL OTHER STRUCTURE

REMOVAL OF DAMAGED MATERIAL ON AN EDGE OF A FLANGE

E

H10281 S0006589858_V2

Allowable Damage Limits
Figure 103 (Sheet 2 of 9)

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Y = WIDTH OF THE MATERIAL THAT IS REMOVED

REMOVAL OF DAMAGED MATERIAL ON A SURFACE AT AN EDGE OF A MACHINED OR EXTRUDED PART

F

C-C

H10282 S0006589859_V1

Allowable Damage Limits
Figure 103 (Sheet 3 of 9)

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X = WIDTH OF THE MATERIAL THAT IS REMOVED
= A MAXIMUM OF 0.10 INCH (2.54 mm)

REMOVAL OF DAMAGED MATERIAL AT AN EDGE OF A WEB

G

DENT THAT IS PERMITTED

H

H10283 S0006589860_V1

Allowable Damage Limits
Figure 103 (Sheet 4 of 9)

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X = THE WIDTH OF THE MATERIAL THAT IS REMOVED
= A MAXIMUM OF 0.10 INCH (2.54 mm)

REMOVAL OF DAMAGED MATERIAL ON AN EDGE

I

X = WIDTH OF THE MATERIAL REMOVED
= A MAXIMUM OF 0.10 INCH (2.54 mm)

REMOVAL OF DAMAGED MATERIAL AT AN EDGE OF A STRAP

J

H10284 S0006589861_V2

Allowable Damage Limits
Figure 103 (Sheet 5 of 9)

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Y = WIDTH OF THE MATERIAL THAT IS REMOVED
= A MAXIMUM OF 0.10 INCH (2.54 mm)

X = A MAXIMUM OF 0.10T

REMOVAL OF DAMAGED MATERIAL ON A SURFACE AT AN EDGE OF A STRAP

K

D–D

H16217 S0006589862_V2

Allowable Damage Limits
Figure 103 (Sheet 6 of 9)

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NOTES: D = THE RIVET DIAMETER
b = THE HEIGHT OF THE FRAME
FILL ALL HOLES

ALLOWABLE DAMAGE LIMITS FOR HOLES
IN THE FREE FLANGES AND THE WEB OF THE FRAME

HOLES AND PUNCTURES ARE PERMITTED UP TO 0.25 INCH (6.4 mm) IN DIAMETER IF THEY ARE FILLED WITH 2117-T3 OR 2117-T4 RIVETS.

E-E

H15607 S0006589863_V2

Allowable Damage Limits
Figure 103 (Sheet 7 of 9)

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REMOVAL OF DAMAGED MATERIAL AT THE EDGE OF A HOLE

M

LOSS OF MATERIAL PERMITTED FROM THE CROSS-SECTIONAL AREA OF THE FRAME WEB

N

H15610 S0006589864_V2

Allowable Damage Limits
Figure 103 (Sheet 8 of 9)

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D = DIAMETER OF THE INITIAL HOLE

H = HEIGHT OF THE WEB

T = THICKNESS OF THE WEB

A_1 = INITIAL AREA OF THE WEB
= THE TOTAL CROSS-SECTIONAL AREA MINUS THE CROSS-SECTIONAL AREA OF THE INITIAL HOLES (AS MANUFACTURED BY BOEING)
= HT - DT

A_2 = CROSS-SECTIONAL AREA OF THE DAMAGE THAT IS REMOVED AT LOCATION 2

A_3 = CROSS-SECTIONAL AREA OF THE DAMAGE THAT IS REMOVED AT LOCATION 3

$$\left(\frac{A_2 + A_3}{A_1}\right) \times 100 = \text{PERCENT OF CROSS-SECTIONAL AREA REMOVED}$$
$$= 10 \text{ PERCENT MAXIMUM}$$

NOTE: THE TOTAL CROSS-SECTIONAL AREA REMOVED IN ALL ZONES A-B (2.00 INCHES (50.8 mm) ON EACH SIDE OF A LINE A-B) MUST NOT BE MORE THAN 10 PERCENT OF THE INITIAL AREA OF THE WEB.

F-F

H10286 S0006589865_V2

Allowable Damage Limits
Figure 103 (Sheet 9 of 9)

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ALLOWABLE DAMAGE 3 - MAIN LANDING GEAR WHEEL WELL BULKHEAD STRUCTURE - STATION 727

1. Applicability

A. This subject gives the allowable damage limits for the Main Landing Gear Wheel Well Bulkhead Structure at Station 727 as shown in Station 727 Wheel Well Bulkhead Location, Figure 101/ ALLOWABLE DAMAGE 3.

2. General

A. Remove the parts as necessary to get access to the damaged area.

B. Refer to Paragraph 4./ALLOWABLE DAMAGE 3 for the allowable damage limits.

(1) Refer to Table 101/ALLOWABLE DAMAGE 3 for the allowable damage limits that is applicable to each type of structure.

Table 101:

PARAGRAPH REFERENCES FOR THE ALLOWABLE DAMAGE LIMITS	
TYPE OF STRUCTURE	**PARAGRAPH**
Fitting, Chords, Beam, Intercostal, and Tees	4.B
Clips, Channels, Angle, Stiffener, and Support Brackets	4.C
Webs, Straps, Plates, and Fillers	4.D

C. Remove the damage as necessary.

(1) Refer to 51-10-02 for the inspection and removal of damage.

(2) Refer to 51-30-03 for possible sources of abrasives and other materials you can use to remove damage.

(3) Refer to 51-30-05 for possible sources of equipment and tools you can use to remove damage.

D. After you remove the damage, do the steps that follow:

(1) Apply a chemical conversion coating to the bare surfaces of the reworked areas. Refer to 51-20-01.

(2) Apply one layer of BMS 10-11, Type I primer to the surface of the reworked area. Refer to SOPM 20-41-02.

(3) Apply one layer of BMS 3-23, Type II corrosion inhibiting compound to the surface of the repair area. Refer to 51-20-01.

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G88351 S0006589868_V1

Station 727 Wheel Well Bulkhead Location
Figure 101

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NOTE: ALL PARTS ARE ALUMINUM EXCEPT AS NOTED.

2440253 S0000566445_V1

Station 727 Wheel Well Bulkhead Structure
Figure 102 (Sheet 1 of 5)

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VIEW LOOKING FORWARD
LEFT SIDE IS SHOWN, RIGHT SIDE IS SIMILAR

A

2440559 S0000566446_V1

Station 727 Wheel Well Bulkhead Structure
Figure 102 (Sheet 2 of 5)

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VIEW LOOKING OUTBOARD
A-A

2455322 S0000570004_V1

Station 727 Wheel Well Bulkhead Structure
Figure 102 (Sheet 3 of 5)

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2440856 S0000566447_V1

Station 727 Wheel Well Bulkhead Structure
Figure 102 (Sheet 4 of 5)

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C–C

2455352 S0000570006_V1

Station 727 Wheel Well Bulkhead Structure
Figure 102 (Sheet 5 of 5)

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3. References

Reference	Title
51-10-02	INSPECTION AND REMOVAL OF DAMAGE
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-20-06	SHOT PEENING
51-30-03	NON-METALLIC MATERIALS
51-30-05	EQUIPMENT AND TOOLS FOR REPAIRS
SOPM 20-10-03	SHOT PEENING
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes

4. Allowable Damage Limits

A. Refer to Figure 102/ALLOWABLE DAMAGE 3 for locations where damage is not permitted.

B. Fitting, Chords, Beam, Intercostal, and Tees

(1) Cracks:

(a) Remove the damage as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 3, Details A , B , E , I , and M.

(2) Nicks, Gouges, Scratches, and Corrosion:

(a) Remove the damage as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 3, Details A , B , D , E , F , I and N.

1) After you remove the damage from the fitting, shot peen the fitting surface.

a) Refer to 51-20-06 for shot peen intensity and shot number.

b) Refer to SOPM 20-10-03 for flap peen and shot peen procedures.

(3) Dents are not permitted.

(4) Holes and Punctures are permitted as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 3, Detail L if:

(a) They are a maximum of 0.25 in. (6.4 mm) in diameter after cleanup

(b) They are a minimum of 1.00 in. (25.4 mm) away from the edge of a fastener hole, other damage, or material edge

(c) You install a 2117-T3 or 2117-T4 rivet without sealant in the hole.

NOTE: Open holes or punctures are not permitted.

C. Clips, Channels, Angle, Stiffener, and Support Brackets

(1) Cracks:

(a) Remove the damage as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 3, Details A , B , and E.

(2) Nicks, Gouges, Scratches, and Corrosion:

(a) Remove the damage as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 3, Details A , B , C , D , and E.

(3) Dents are not permitted.

(4) Holes and Punctures are not permitted.

D. Webs, Straps, Plates, and Fillers

(1) Cracks:

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(a) Remove the damage as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 3, Details A , B , G , and J.

(2) Nicks, Gouges, Scratches, and Corrosion:

(a) Remove the damage as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 3, Details A , B , C , D , G , J , and K.

(3) Dents are permitted as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 3, Detail H if:

(a) They do not extend across attached structures.

(b) They do not have an "oil can" condition.

(4) Holes and Punctures are permitted if:

(a) They are a maximum of 0.25 in. (6.4 mm) in diameter after cleanup.

(b) They are a minimum of 1.00 in. (25.4 mm) away from the edge of a fastener hole, other damage, or material edge.

(c) You install a 2117-T3 or 2117-T4 rivet without sealant in the hole.

NOTE: Open holes or punctures are not permitted.

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REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER EDGE MARGINS DO NOT HAVE AN OVERLAP

A

REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER EDGE MARGINS HAVE AN OVERLAP

B

REMOVAL OF DAMAGED MATERIAL ON A SURFACE

C

A–A

H10287 S0006589872_V1

Allowable Damage Limits
Figure 103 (Sheet 1 of 9)

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H10288 S0006589873_V2

Allowable Damage Limits
Figure 103 (Sheet 2 of 9)

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Y = WIDTH OF THE MATERIAL THAT IS REMOVED

REMOVAL OF DAMAGED MATERIAL ON A SURFACE AT AN EDGE OF A MACHINED OR EXTRUDED PART

F

C-C

H10289 S0006589874_V1

Allowable Damage Limits
Figure 103 (Sheet 3 of 9)

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X = WIDTH OF THE MATERIAL THAT IS REMOVED
= A MAXIMUM OF 0.10 INCH (2.54 mm)

REMOVAL OF DAMAGED MATERIAL AT AN EDGE OF A WEB

G

DENT THAT IS PERMITTED

H

H10290 S0006589875_V2

Allowable Damage Limits
Figure 103 (Sheet 4 of 9)

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X = THE WIDTH OF THE MATERIAL THAT IS REMOVED
= A MAXIMUM OF 0.10 INCH (2.54 mm)

REMOVAL OF DAMAGED MATERIAL ON AN EDGE

I

X = WIDTH OF THE MATERIAL REMOVED
= A MAXIMUM OF 0.10 INCH (2.54 mm)

REMOVAL OF DAMAGED MATERIAL AT AN EDGE OF A STRAP

J

H10291 S0006589876_V2

Allowable Damage Limits
Figure 103 (Sheet 5 of 9)

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Y = WIDTH OF THE MATERIAL THAT IS REMOVED
= A MAXIMUM OF 0.10 INCH (2.54 mm)

X = A MAXIMUM OF 0.10T

REMOVAL OF DAMAGED MATERIAL ON A SURFACE AT AN EDGE OF A STRAP

K

D–D

H16176 S0006589878_V2

Allowable Damage Limits
Figure 103 (Sheet 6 of 9)

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NOTES: D = THE RIVET DIAMETER
b = THE HEIGHT OF THE BEAM
FILL ALL HOLES

ALLOWABLE DAMAGE LIMITS FOR HOLES
IN THE FREE FLANGES AND THE WEB OF THE BEAM

L

HOLES AND PUNCTURES ARE PERMITTED UP TO 0.25 INCH (6.4 mm) IN DIAMETER IF THEY ARE FILLED WITH 2117-T3 OR 2117-T4 RIVETS.

E-E

H12666 S0006589879_V2

Allowable Damage Limits
Figure 103 (Sheet 7 of 9)

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REMOVAL OF DAMAGED MATERIAL AT THE EDGE OF A HOLE

M

LOSS OF MATERIAL PERMITTED FROM THE CROSS-SECTIONAL AREA OF THE BEAM WEB

N

H15601 S0006589880_V2

Allowable Damage Limits
Figure 103 (Sheet 8 of 9)

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D = DIAMETER OF THE INITIAL HOLE

H = HEIGHT OF THE WEB

T = THICKNESS OF THE WEB

A_1 = INITIAL AREA OF THE WEB
= THE TOTAL CROSS-SECTIONAL AREA MINUS THE CROSS-SECTIONAL AREA OF THE INITIAL HOLES (AS MANUFACTURED BY BOEING)
= HT - DT

A_2 = CROSS-SECTIONAL AREA OF THE DAMAGE THAT IS REMOVED AT LOCATION 2

A_3 = CROSS-SECTIONAL AREA OF THE DAMAGE THAT IS REMOVED AT LOCATION 3

$$\left(\frac{A_2 + A_3}{A_1}\right) \times 100 = \text{PERCENT OF CROSS-SECTIONAL AREA REMOVED}$$
$$= 10 \text{ PERCENT MAXIMUM}$$

THE TOTAL CROSS-SECTIONAL AREA REMOVED IN ALL ZONES A-B (2.00 INCHES (50.8 mm) EACH SIDE OF A LINE A-B) MUST NOT BE MORE THAN 10 PERCENT OF THE INITIAL AREA OF THE WEB.

F-F

H15602 S0006589881_V2

Allowable Damage Limits
Figure 103 (Sheet 9 of 9)

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H53140 S0006589904_V1

Section 44 Keel Beam Structure Identification
Figure 1

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H53144 S0006589910_V1

Section 44 Keel Beam Structure Allowable Damage
Figure 101

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H53145 S0006589916_V1

Section 44 Keel Beam Structure Repair
Figure 201

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IDENTIFICATION 1 - SECTION 44 CREASE BEAM STRUCTURE

NOTE: REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

L62394 S0006589922_V1

Section 44 Crease Beam Location
Figure 1

Table 1:

REFERENCE DRAWINGS	
DRAWING NUMBER	**TITLE**
140A4405	Side Panel Integration Functional Collector - Section 44
144A5900	Crease Beam Installation, Section 44
144A5901	Crease Beam Installation, Section 44
144A5910	Inner Chord - Crease Beam, Section 44
144A5920	Web Assemblies - Crease Beam, Section 44
144A5925	Shear Webs - Crease Beam, Section 44

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NOTES

1 AIRPLANE LINE NUMBERS 1 THRU 1185

2 AIRPLANE LINE NUMBERS 1186 THRU 3849

3 AIRPLANE LINE NUMBERS 3850 AND ON

N82975 S0006589924_V4

Section 44 Crease Beam Identification
Figure 2 (Sheet 1 of 4)

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LEFT SIDE IS SHOWN, RIGHT SIDE IS OPPOSITE
CREASE BEAM

NOTE: REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

A

K08587 S0006589928_V2

Section 44 Crease Beam Identification
Figure 2 (Sheet 2 of 4)

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NOTE: REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

LEFT SIDE IS SHOWN, RIGHT SIDE IS OPPOSITE
CREASE BEAM

B

N85987 S0006589932_V4

Section 44 Crease Beam Identification
Figure 2 (Sheet 3 of 4)

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NOTE: REFER TO TABLE 3 FOR THE LIST OF MATERIALS.

LEFT SIDE IS SHOWN, RIGHT SIDE IS OPPOSITE
CREASE BEAM

C

2125320 S0000457989_V2

Section 44 Crease Beam Identification
Figure 2 (Sheet 4 of 4)

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Table 2:

LIST OF MATERIALS FOR FIGURE 2, Detail A and Detail B				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Inner Chord		BAC1514-3355 7075-T6511 extrusion as given in QQ-A-200/11	
[2]	Shear Web Assembly			
	Shear Web	0.071 (1.80)	7075-T62 clad sheet as given in QQ-A-250/13	
	Angle		BAC1503-100618 7075-T73511 extrusion as given in QQ-A-200/11 (Optional: 7050-T7451 plate as given in AMS 4050)	
[3]	Shear Web (5)	0.063 (1.60)	7075-T62 clad sheet as given in QQ-A-250/13	
[4]	Clip-Frame (6)		7050-T7451 plate as given in AMS 4050 (Grain direction controlled part)	
[5]	Angle		BAC1503-101015 7075-T73511 extrusion as given in QQ-A-200/11	
[6]	Splice Angle (4)	0.125 (3.18)	7075-T62 clad sheet as given in QQ-A-250/13	
[7]	Doubler (2)	0.100 (2.54)	7075-T6 clad sheet as given in QQ-A-250/13	
[8]	Angle		BAC1514-3158 7075-T73511 extrusion as given in QQ-A-200/11	
[9]	Angle		BAC1489-158 7075-T62 clad sheet as given in QQ-A-250/13	
[10]	Angle (3)		BAC1503-100142 7075-T6511 extrusion as given in QQ-A-200/11	
[11]	Angle		BAC1503-100747 7075-T73511 extrusion as given in QQ-A-200/11	
[12]	Support Angle		BAC1503-101040 7075-T6511 extrusion as given in QQ-A-200/11	
[13]	Support Angle		BAC1503-100325 7075-T6511 extrusion as given in QQ-A-200/11	
[14]	Support Angle		BAC1514-837 7075-T6511 extrusion as given in QQ-A-200/11	
[15]	Inner Chord	0.071 (1.80)	7075-T62 clad sheet as given in QQ-A-250/13	
[16]	Angle Assembly			
	Angle (2)	0.056 (1.42)	7075-T6 clad sheet as given in QQ-A-250/13	
[17]	Web Assembly Shear Web	0.050 (1.27)	7075-T62 clad sheet as given in QQ-A-250/13	
	Angle (2)	0.056 (1.42)	7075-T6 clad sheet as given in QQ-A-250/13	
[18]	Web Assembly			
	Shear Web	0.045 (1.14)	7075-T62 clad sheet as given in QQ-A-250/13	
	Angle		BAC1514-3167 7075-T73511 extrusion as given in QQ-A-200/11 (Optional: AND10133-1204)	
[19]	Web Assembly			
	Shear Web	0.045 (1.14)	7075-T62 clad sheet as given in QQ-A-250/13	
	Angle (2)		BAC1514-3167 7075-T73511 extrusion as given in QQ-A-200/11 (Optional: AND10133-1204)	

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Table 2: (Continued)

LIST OF MATERIALS FOR FIGURE 2, Detail A and Detail B				
ITEM	DESCRIPTION	T*[1]	MATERIAL	EFFECTIVITY
[20]	Web Assembly			
	Shear Web	0.045 (1.14)	7075-T62 clad sheet as given in QQ-A-250/13	
	Angle		BAC1514-3167 7075-T73511 extrusion as given in QQ-A-200/11 (Optional: AND10133-1204)	
	Angle		BAC1503-100306 7075-T73511 extrusion as given in QQ-A-200/11	
[21]	Splice Channel		BAC1413-587 7075-T62 clad sheet as given in QQ-A-250/13	
[22]	Outer Chord		7050-T7451 plate as given in AMS 4050 (Grain direction controlled part)	
[23]	Angle	0.056 (1.42)	7075-T6 clad sheet as given in QQ-A-250/13	
[24]	Outer Chord		7050-T7451 plate as given in AMS 4050 (Grain direction controlled part)	
[25]	Outer Chord		7050-T7451 plate as given in AMS 4050 (Grain direction controlled part)	
[26]	Splice Strap	0.160 (4.06)	7075-T6 clad sheet as given in QQ-A-250/13	
[27]	Inner Chord		BAC1514-3355 7075-T6511 extrusion as given in QQ-A-200/11	
[28]	Web	0.063 (1.60)	7075-T62 clad sheet as given in QQ-A-250/13	
[29]	Outer Chord		7050-T7451 plate as given in AMS 4050	
[30]	Inner Chord		7050-T7451 plate as given in AMS 4050 (Grain direction controlled part)	
[31]	Outer Chord		7050-T7451 plate as given in AMS 4050 (Grain direction controlled part)	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

Table 3:

LIST OF MATERIALS FOR FIGURE 2, Detail C				
ITEM	DESCRIPTION	T*[1]	MATERIAL	EFFECTIVITY
[1]	Web Assembly			
	Shear Web	0.045 (1.14)	7075-T62 clad sheet as given in QQ-A-250/13	
	Angle		BAC1514-3167 7075-T73511 extrusion as given in QQ-A-200/11 (Optional: AND10133-1204)	
	Angle		BAC1503-100306 7075-T73511 extrusion as given in QQ-A-200/11	
[2]	Web Assembly			
	Shear Web	0.045 (1.14)	7075-T62 clad sheet as given in QQ-A-250/13	
	Angle (2)		BAC1514-3167 7075-T73511 extrusion as given in QQ-A-200/11 (Optional: AND10133-1204)	
[3]	Web assembly			

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Table 3: (Continued)

LIST OF MATERIALS FOR FIGURE 2, Detail C				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
	Shear Web	0.045 (1.14)	7075-T62 clad sheet as given in QQ-A-250/13	
[4]	Web assembly			
	Shear Web	0.050 (1.27)	7075-T62 clad sheet as given in QQ-A-250/13	
	Angle (2)	0.056 (1.42)	7075-T6 clad sheet as given in QQ-A-250/13	
[5]	Inner Chord	0.071 (1.80)	7075-T62 clad sheet as given in QQ-A-250/13	
[6]	Inner Chord		BAC1515-531 7075-T6511 extrusion as given in QQ-A-200/11 (Grain direction controlled part)	
[7]	Splice Channel		BAC1413-587 7075-T62 clad sheet as given in QQ-A-250/13	
[8]	Outer Chord		7050-T7451 plate as given in AMS 4050	
[9]	Outer Chord		7050-T7451 plate as given in AMS 4050 (Grain direction controlled part)	
[10]	Outer Chord		7050-T7451 plate as given in AMS 4050 (Grain direction controlled part)	
[11]	Outer Chord		7050-T7451 plate as given in AMS 4050 (Grain direction controlled part)	
[12]	Outer Chord		7050-T7451 plate as given in AMS 4050 (Grain direction controlled part)	
[13]	Splice Strap	0.160 (4.06)	7075-T6 clad sheet as given in QQ-A-250/13	
[14]	Angle		BAC1514-3158 7075-T73511 extrusion as given in QQ-A-200/11 (Optional: 7050-T7451 plate as given in AMS 4050)	
[15]	Angle		BAC1503-100618 7075-T73511 extrusion as given in QQ-A-200/11 (Optional: 7050-T7451 plate as givien in AMS 4050)	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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IDENTIFICATION 1 - MAIN LANDING GEAR SUPPORT STRUCTURE

NOTE: REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

L50363 S0006589959_V1

Main Landing Gear Support Structure Location
Figure 1

Table 1:

REFERENCE DRAWINGS	
DRAWING NUMBER	**TITLE**
001A1001	Wing Left - Product Collector
001A4001	Fuselage Product Collector
115A0001	Functional Product Collector - Fixed Trailing Edge, Left Wing
115A0002	Functional Product Collector - Fixed Trailing Edge, Right Wing
115A0003	Collector - Functional Product, Fixed Trailing Edge to Rear Spar, Left Wing
115A0004	Collector - Functional Product, Fixed Trailing Edge to Rear Spar, Right Wing
115A1001	Main Landing Gear Beam Installation

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Table 1: (Continued)

REFERENCE DRAWINGS	
DRAWING NUMBER	**TITLE**
115A5002	Installation - Main Landing Gear Forward Trunnion Support
115A5005	Installation - Main Landing Gear Forward Trunnion Bearing
140A4402	Side Panel Assembly Functional Collector - Section 44
144A1500	Frame Installation - Station 695 and Station 706
144A1510	Frame Fitting Assembly - Station 695
144A1560	Frame Fitting Assembly - Station 706
144A1600	Frame Installation - Main Landing Gear Beam Support, Station 716.3
144A1605	Main Landing Gear Beam Support Fitting Assembly - Station 716.3

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NOTE: REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

G54297 S0006589961_V1

Main Landing Gear Support Structure Identification
Figure 2

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Table 2:

LIST OF MATERIALS FOR FIGURE 2				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Side Strut Support- Forward, Aft		7075-T73 forging as given in BMS 7-186	
[2]	Support Fitting - Forward, Aft		7075-T73 forging as given in BMS 7-186	
[3]	Main Landing Gear Beam Support		7050-T74 forging as given in BMS 7-214	
[4]	Main Landing Gear Uplock Fitting	4.00 (101.6)	7050-T7451 plate as given in BMS 7-323, Type I. (Grain direction controlled part)	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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IDENTIFICATION 1 - AUTOMATIC OVERWING EXIT DOOR SURROUND STRUCTURE

NOTE: REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

K17537 S0006590064_V1

Automatic Overwing Exit Door Surround Structure
Figure 1

Table 1:

REFERENCE DRAWINGS	
DRAWING NUMBER	**TITLE**
001A4001	Fuselage Product Collector
140A4402	Side Panel Assembly Functional Collector - Section 44
144A8101	Sill Installation - Upper, Emergency Escape Hatch
144A8102	Sill Installation - Upper Auxiliary, Emergency Escape Hatch
144A8201	Sill Installation - Lower, Emergency Escape Hatch
144A8301	Frame Installation - Station 578
144A8311	Frame Assembly - Station 578
144A8401	Frame Installation - Station 601
144A8411	Frame Assembly - Station 601
144A8501	Frame Installation - Station 616
144A8511	Frame Assembly - Station 616
144A8601	Frame Installation - Station 639
144A8611	Frame Assembly - Station 639
144A8801	Door Stop Installation
144A8802	Hinge Installation

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LEFT SIDE IS SHOWN, RIGHT SIDE IS OPPOSITE

L38874 S0006590067_V1

Upper Sill, Lower Sill, and Upper Auxiliary Sill Structure Identification
Figure 2

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NOTE: REFER TO TABLE 2 FOR THE LIST OF MATERALS. THE PARTS SHOWN BETWEEN STA 578 AND STA 601 ARE ALSO USED BETWEEN STA 616 AND STA 639.

LEFT SIDE IS SHOWN, RIGHT SIDE IS OPPOSITE
UPPER AUXILIARY SILL AND STUB FRAMES

L38905 S0006590074_V1

Upper Auxiliary Sill Structure and Stub Frames Identification
Figure 3

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Table 2:

LIST OF MATERIALS FOR FIGURE 3				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Splice Fitting - S-8 (2)		7050-T7451 plate as given in AMS 4050 (Grain direction controlled part)	
[2]	Clip (4)		BAC1503-100710 7075-T73511 extrusion as given in QQ-A-200/11	
[3]	Intercostal (2)		7050-T7451 plate as given in BMS 7-323, Type I (Grain direction controlled part)	
[4]	Clevis Fitting (6)		7050-T7451 plate as given in AMS 4050 (Grain direction controlled part)	
[5]	Stub Frame (4)		7050-T7451 plate as given in AMS 4050 (Grain direction controlled part)	
[6]	Hinge Fitting (4)		Ti-6Al-4V titanium plate as given in MIL-T-9046, Code AB-1, condition mill annealed	
[7]	Backup Fitting (4)		7050-T7451 plate as given in AMS 4050 (Grain direction controlled part)	
[8]	Drainage Tray	0.050 (1.27)	6013-T6 sheet as given in AMS 4347	
[9]	Fitting, S-8		7050-T7451 plate as given in AMS 4050 (Grain direction controlled part)	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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NOTE: REFER TO TABLE 3 FOR THE LIST OF MATERIALS.

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K19149 S0006590076_V1

Upper Sill Structure Identification
Figure 4

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Table 3:

LIST OF MATERIALS FOR FIGURE 4				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Intercostal (4)		7050-T7451 plate as given in BMS 7-323, Type I (Grain direction controlled part)	
[2]	Chord - Outboard Upper Sill	0.125	2024-T3 clad sheet as given in QQ-A-250/5	
[3]	Intercostal		7050-T7451 plate as given in AMS 4050 (Grain direction controlled part)	
[4]	Strap	0.50 (12.7)	7050-T7451 plate as given in AMS 4050 (Grain direction controlled part)	
[5]	Strap	0.80 (20.3)	7050-T7451 plate as given in AMS 4050 (Grain direction controlled part)	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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LEFT SIDE IS SHOWN, RIGHT SIDE IS OPPOSITE
LOWER SILL STRUCTURE

A–A

NOTE: REFER TO TABLE 4 FOR THE LIST OF MATERIALS.

L38947 S0006590079_V1

Lower Sill Structure Identification
Figure 5

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Table 4:

LIST OF MATERIALS FOR FIGURE 5				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Intercostal (5)	0.080 (2.03)	7075-T62 sheet as given in QQ-A-250/13	
[2]	Strap (3)		2024-T351 plate as given in QQ-A-250/4	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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NOTE: REFER TO TABLE 5 FOR THE LIST OF MATERIALS.

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K21379 S0006590081_V1

Door Surround Frame Structure Identification
Figure 6

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Table 5:

LIST OF MATERIALS FOR FIGURE 6				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Serrated Plate (2)		15-5PH CRES plate as given in BMS 7-240, Type 1. Heat treat 180-200 KSI	
[2]	Backup Fitting (11)		7050-T7451 plate as given in BMS 7-323 (Grain direction controlled part)	
[3]	Intercostal Assembly (2)			
	Intercostal	0.056 (1.32)	7075-T62 clad sheet as given in QQ-A-250/13	
	Chord		BAC1503-100703 7075-T73511 extrusion as given in QQ-A-200/11	
[4]	Down Lock Stop Block (2)		BAC1505-100297 7075-T6511 extrusion as given in QQ-A-200/11	
[5]	Track (2)		15-5PH CRES bar as given in AMS 5659. Heat treat 180-200 KSI	
[6]	Stop Fitting (8)		15-5PH CRES bar as given in AMS 5659. Heat treat 180-170 KSI	
[7]	Frame (STA 616)			
	Outer Chord		BAC1514-3229 7075-T73 extrusion as given in QQ-A-200/11 (Optional: 7075-T73511 or 7075-T6511 extruded bar)	
	Inner Chord		7050-T7451 plate as given in AMS 4050 (Grain direction controlled part). Refer to Figure 7 for the machined thicknesses	
[8]	Frame (STA 639)			
	Outer Chord		BAC1514-3229 7075-T73 extrusion as given in QQ-A-200/11 (Optional: 7075-T73511 or 7075-T6511 extruded bar)	
	Inner Chord		7050-T7451 plate as given in AMS 4050 (Grain direction controlled part). Refer to Figure 8 for the machined thicknesses	
[9]	Intercostal Assembly			
	Intercostal	0.063 (1.6)	7075-T62 clad sheet as given in QQ-A-250/13	
	Chord		BAC1503-100703 7075-T73511 extrusion as given in QQ-A-200/11	
[10]	Backup Fitting (5)		7050-T7451 plate as given in AMS 4050 (Grain direction controlled part)	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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VIEW LOOKING AFT

STATION 616 IS SHOWN, STATION 578 IS SIMILAR

K20663 S0006590083_V1

Machined Thicknesses for the Inner Chord, Figure 6, Item [7]
Figure 7

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VIEW LOOKING FORWARD

STATION 639 IS SHOWN, STATION 601 IS SIMILAR

K20850 S0006590084_V1

Machined Thicknesses for the Inner Chord, Figure 6, Item [8]
Figure 8

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ALLOWABLE DAMAGE 1 - AUTOMATIC OVERWING EXIT DOOR LOWER SILL

1. Applicability

A. This procedure gives the allowable damage limits for the Automatic Overwing Exit Door Lower Sill shown in Figure 101/ALLOWABLE DAMAGE 1.

2255025 S0000504648_V1

Overwing Emergency Exit Door Lower Sill
Figure 101 (Sheet 1 of 2)

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(LEFT SIDE IS SHOWN, RIGHT SIDE IS OPPOSITE)

LOWER SILL STRUCTURE

A

2255034 S0000504650_V1

Overwing Emergency Exit Door Lower Sill
Figure 101 (Sheet 2 of 2)

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2. General

A. Remove the damage as necessary.

(1) Refer to INSPECTION AND REMOVAL OF DAMAGE, 51-10-02 for the inspection and removal of damage.

(2) Refer to NON-METALLIC MATERIALS, 51-30-03 for possible sources of the abrasive and other materials you can use to remove the damage.

(3) Refer to EQUIPMENT AND TOOLS FOR REPAIRS, 51-30-05 for possible sources of the equipment and tools you can use to remove the damage.

B. Do Nondestructive Test (NDT) inspections of the reworked area to make sure that there are no cracks or corrosion.

(1) Do a High Frequency Eddy Current (HFEC) Surface Inspection to the reworked area. Refer to 737 NDT Part 6, 51-00-00, Procedure 4 or 737 NDT Part 6, 51-00-00, Procedure 23.

(2) Do an HFEC Fastener Hole Inspection in the open holes in the reworked area. Refer to 737 NDT Part 6, 51-00-00, Procedure 16.

(3) If cracks are found or the damage is more than the limits in Paragraph 4./ALLOWABLE DAMAGE 1, contact The Boeing Company.

C. After you remove the damage, do the steps that follow:

(1) If there is corrosion under the head of a fastener in the blend area, oversize the fastener hole a minimum of 1/32 inch or more. Maintain a minimum edge margin of 1.5 times the fastener diameter.

(2) Apply a chemical conversion coating to the reworked areas. Refer to PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS, 51-20-01.

(3) Apply two layers of BMS 10-11, Type I primer to the reworked areas. Refer to SOPM 20-41-02.

NOTE: If a drain hole is installed, then apply two layers of BMS 10-11, Type I primer around the edge of the drain hole.

(4) Install the parts with BMS 5-95 sealant between the mating surfaces. Refer to REPAIR SEALING, 51-20-05

(5) Apply a layer of BMS 3-23 Corrosion Inhibiting Compound (CIC) to the area as necessary. Refer to PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS, 51-20-01.

3. References

Reference	Title
51-10-02	INSPECTION AND REMOVAL OF DAMAGE
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-20-05	REPAIR SEALING
51-20-13	SURFACE ROUGHNESS FINISH REQUIREMENTS
51-30-03	NON-METALLIC MATERIALS
51-30-05	EQUIPMENT AND TOOLS FOR REPAIRS
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes
737 NDT Part 6, 51-00-00, Procedure 16	Aluminum Part Fastener Hole Inspection (Rotary Scanner)
737 NDT Part 6, 51-00-00, Procedure 23	Aluminum Part Surface Inspection (Impedance Plane Display)
737 NDT Part 6, 51-00-00, Procedure 4	Surface Inspection of Aluminum Parts (Meter Display)

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4. **Allowable Damage Limits**

A. Cracks are not permitted.

B. Nicks, Gouges, Scratches, Corrosion:

(1) Remove the damage as shown in Figure 102/ALLOWABLE DAMAGE 1. Make sure the reworked surface has a surface finish of 63 microinches Ra or smoother. Refer to SURFACE ROUGHNESS FINISH REQUIREMENTS, 51-20-13.

(2) If corrosion is less than 0.25 inch from the seal retainer, remove the seal retainer. Examine the area below the seal retainer for more corrosion.

(3) If the seal retainer is removed and there is no corrosion around the fastener hole, install the same type and size of fastener.

C. Dents are not permitted.

D. Holes and Punctures are not permitted.

NOTE: This does not apply to the drain hole that is installed as part of Service Bulletin 737-25-1602.

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Overwing Emergency Exit Door Lower Sill
Figure 102

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5. **Inspection Requirements**

A. Do the inspections that follow at either 50,000 flight cycles after airplane delivery or 24,000 flight cycles after you do this rework. Use the threshold that comes later. Do the inspections again at each 24,000 flight cycle interval. Do the inspections shown in Figure 103/ALLOWABLE DAMAGE 1.

(1) Do an HFEC Surface Inspection on the chord horizontal flange in the area around the fasteners along the length of the blend. Refer to 737 NDT Part 6, 51-00-00, Procedure 4 or 737 NDT Part 6, 51-00-00, Procedure 23.

(2) Do an HFEC Surface Inspection on the sill web area along the edge of the outer chord for the length of the blend and one inch around the blendout. Refer to 737 NDT Part 6, 51-00-00, Procedure 4 or 737 NDT Part 6, 51-00-00, Procedure 23.

(3) Do an HFEC Surface Inspection in the reworked area and 0.5 inch around the reworked area. This inspection does not apply below the seal retainer. Refer to 737 NDT Part 6, 51-00-00, Procedure 4 or 737 NDT Part 6, 51-00-00, Procedure 23.

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INSPECTION REQUIREMENTS

1. HFEC INSPECTION AREA. DO AN HFEC INSPECTION ON THE CHORD HORIZONTAL FLANGE IN THE AREA AROUND THE FASTENERS ALONG THE LENGTH OF THE BLEND. REFER TO 737 NDT PART 6, 51-00-00, PROCEDURE 4 OR PROCEDURE 23.
2. HFEC INSPECTION AREA. DO AN HFEC INSPECTION ON THE SILL WEB AREA ALONG THE EDGE OF THE OUTER CHORD FOR THE LENGTH OF THE BLEND AND ONE INCH AROUND THE BLENDOUT. REFER TO 737 NDT PART 6, 51-00-00, PROCEDURE 4 OR PROCEDURE 23.
3. HFEC INSPECTION AREA. DO AN HFEC SURFACE INSPECTION IN THE REWORKED AREA AND 0.5 INCH AROUND THE REWORKED AREA. THIS INSPECTION DOES NOT APPLY BELOW THE SEAL RETAINER. REFER TO 737 NDT PART 6, 51-00-00, PROCEDURE 4 OR PROCEDURE 23.

INSPECTION AREAS

2266911 S0000509122_V2

Inspection Requirements
Figure 103

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F97862 S0006590134_V1

Section 44 Passenger Compartment Floor Panel Location
Figure 1

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F82970 S0006590137_V1

Section 44 Passenger Compartment Floor Panel Location
Figure 101

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F82920 S0006590140_V1

Section 44 Passenger Compartment Floor Panel Location
Figure 201

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IDENTIFICATION 1 - SECTION 44 FLOOR BEAM STRUCTURE

NOTE: REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

G50449 S0006590144_V1

Section 44 Floor Structure Location
Figure 1

Table 1:

REFERENCE DRAWINGS	
DRAWING NUMBER	**TITLE**
001A4001	Fuselage Product Collector
111A0000	Functional Product Collector, Wing Center Section
111A6000	Floor Beam Installation - Wing Center Section
111A6001	Floor Beam Assembly - LBL 0.07, Wing Center Section
111A6002	Floor Beam Assembly - BL 24.82, Wing Center Section
111A6003	Floor Beam Assembly - BL 45.57, Wing Center Section
111A6401	Fitting - Floor Beam, Body Station 727, Wing Center Section

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G50459 S0006590146_V1

Section 44 Floor Beam Location
Figure 2

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NOTE: REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

FLOOR BEAM AT LBL 0.07

G50866 S0006590147_V1

LBL 0.07 Floor Beam Identification
Figure 3

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Table 2:

LIST OF MATERIALS FOR FIGURE 3				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Web		7050-T7451 plate as given in AMS 4050. Refer to the Boeing production drawing for the machined thicknesses	
[2]	Upper Chord		BAC1505-100096 7150-T77511 extrusion as given in BMS 7-306	
[3]	Lower Chord		BAC1505-101652 7150-T77511 extrusion as given in BMS 7-306. Refer to the Boeing production drawing for the machined thicknesses	
[4]	Fitting (2)		7075-T73 die forging as given in BMS 7-186	
[5]	Angle		BAC1503-100937 7075-T73511 extrusion as given in QQ-A-200/11	
[6]	Fitting		BAC1506-4253 7075-T73511 extrusion as given in QQ-A-200/11 (Optional: 7075-T73511 extruded bar)	
[7]	Tension Fitting (2)		7050-T7451 plate as given in AMS 4050	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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NOTE: REFER TO TABLE 3 FOR THE LIST OF MATERIALS.

LEFT SIDE IS SHOWN, RIGHT SIDE IS OPPOSITE

FLOOR BEAM AT LBL 24.82

G50888 S0006590149_V1

LBL 24.82 Floor Beam Identification
Figure 4

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Table 3:

LIST OF MATERIALS FOR FIGURE 4				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Web		7050-T7451 plate as given in AMS 4050. Refer to the Boeing production drawing for the machined thicknesses	
[2]	Upper Chord		BAC1506-1108 7150-T77511 extrusion as given in BMS 7-306 (Optional: BAC1505-101448)	
[3]	Lower Chord		BAC1505-101654 7150-T77511 extrusion as given in BMS 7-306. Refer to the Boeing production drawing for the machined thicknesses	
[4]	Fitting (2)		7075-T73 die forging as given in BMS 7-186	
[5]	Angle		BAC1517-2374 7075-T73511 extrusion as given in QQ-A-200/11	
[6]	Stiffener (2)		BAC1503-100081 7075-T73511 extrusion as given in QQ-A-200/11	
[7]	Stiffener (3)		AND10134-1003 7075-T73511 extrusion as given in QQ-A-200/11	
[8]	Fitting		BAC1506-4253 7075-T73511 extrusion as given in QQ-A-200/11 (Optional: 7075-T73511 extruded bar)	
[9]	Tension Fitting (2)		7050-T7451 plate as given in AMS 4050	
[10]	Bracket (3)	0.063 (1.6)	6013-T4 sheet as given in AMS 4347	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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NOTE: REFER TO TABLE 4 FOR THE LIST OF MATERIALS.

LEFT SIDE IS SHOWN, RIGHT SIDE IS OPPOSITE

FLOOR BEAM AT LBL 45.57

G50983 S0006590151_V2

LBL 45.57 Floor Beam Identification
Figure 5

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Table 4:

LIST OF MATERIALS FOR FIGURE 5				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Web		7050-T7451 plate as given in AMS 4050. Refer to the Boeing production drawing for the machined thicknesses	
[2]	Upper Chord		BAC1506-1108 7150-T77511 extrusion as given in BMS 7-306) (Optional: BAC1505-101448)	
[3]	Lower Chord		BAC1505-101654 7150-T77511 extrusion as given in BMS 7-306. Refer to the Boeing production drawing for the machined thicknesses	
[4]	Angle		BAC1503-100937 7075-T73511 extrusion as given in QQ-A-200/11. Refer to the production drawings for the machined areas.	
[5]	Fitting		BAC1506-4252 7075-T73511 extrusion as given in QQ-A-200/11 (Optional: 7075-T73511 extruded bar)	
[6]	Tension Fitting (2)		7050-T7451 plate as given in AMS 4050	
[7]	Angle		BAC 1503-11780 7075-T73511 extrusion as given in QQ-A-200/11. Refer to the production drawings for the machined areas.	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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IDENTIFICATION 2 - SECTION 44 FLOOR STRUCTURE

NOTE: REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

G50986 S0006590154_V1

Section 44 Floor Structure Location
Figure 1

Table 1:

REFERENCE DRAWINGS	
DRAWING NUMBER	**TITLE**
001A4001	Fuselage Product Collector
140A4403	Lower Lobe Functional Collector - Section 44
144A1701	Stub Beam Instl – STA 559
144A1702	Stub Beam Instl – STA 578
144A1704	Stub Beam Instl – STA 616
144A1705	Stub Beam Instl – STA 639
144A1706	Stub Beam Instl – STA 601
144A1801	Stub Beam Instl – STA 685
144A7700	Installation - Pressure Floor
144A7710	Assembly - Pressure Floor

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NOTE: REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

U86729 S0000220519_V1

Section 44 Floor Structure Identification
Figure 2

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Table 2:

LIST OF MATERIALS FOR FIGURE 2				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Stub Beam (2)		7050-T7451 plate as given in BMS 7-323, Type I	
[2]	Stub Beam (4)		7050-T7451 plate as given in BMS 7 – 323, Type I. (Optional: 7050-T7452 as given in BMS 7-214, Type I.	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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NOTE: REFER TO TABLE 3 FOR THE LIST OF MATERIALS.

G52377 S0006590158_V2

Section 44 Pressure Floor Identification
Figure 3

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Table 3:

LIST OF MATERIALS FOR FIGURE 3				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Pressure Box		Epoxy Preimpregnated Glass (EPGF) as given in BMS 8-139, Style 1581 or 7781, Class I. Refer to Figure 4 for a typical pressure box ply layup	
[2]	Angle (16)		BAC1490-2824 7075-T62 clad sheet as given in QQ-A-250/13	
[3]	Stiffener		BAC1505-100420 7075-T73511 extrusion as given in QQ-A-200/11	
[4]	Stiffener (2)		BAC1506-4350 2024-T42 extrusion as given in QQ-A-200/3 (Optional: 7050-T7451 plate as given in BMS 7-323, Type I)	
[5]	Stiffener (4)		BAC1506-4349 2024-T3511 extrusion as given in QQ-A-200/3 (Optional: 7050-T7451 plate as given in BMS 7-323, Type I)	
[6]	Stiffener (2)		BAC1506-4347 7075-T73511 extrusion as given in QQ-A-200/11 (Optional: 7050-T7451 plate as given in BMS 7-323, Type I)	
[7]	Stiffener (2)		7050-T7451 plate as given in AMS 4050	
[8]	Stiffener		BAC1514-3230 7075-T76511 extrusion as given in QQ-A-200/11	
[9]	Stiffener		BAC1505-47676 7075-T6511 extrusion as given in QQ-A-200/11 (Optional: BAC1505-101696)	
[10]	Stiffener (2)		BAC1514-3232 2024-T3511 extrusion as given in QQ-A-200/3	
[11]	Stiffener (2)		BAC1505-100952 2024-T3511 extrusion as given in QQ-A-200/3	
[12]	Chord	0.090 (2.29)	Ti-6Al-4V sheet as given in MIL-T-9046, Code AB-1, in the annealed condition	
[13]	Stiffener (2)		BAC1503-100105 7075-T73511 extrusion as given in QQ-A-200/11	
[14]	Channel		BAC1509-100696 7075-T6511 extrusion as given in QQ-A-200/11	
[15]	Stiffener (2)		BAC1506-4441 7075-T73511 extrusion as given in QQ-A-200/11	
[16]	Chord (4)		7050-T7451 plate as given in AMS 4050	
[17]	Web, Closeout (8)	0.056 (1.42)	2024-T42 clad sheet as given in QQ-A-250/5	
[18]	Spanwise Stiffener (5)		BAC1520-2784 7150-T77511 extrusion as given in BMS 7-306	
[19]	Web	0.063 (1.6)	2024-T42 clad sheet as given in QQ-A-250/5	
[20]	Web (2)	0.056 (1.42)	2024-T42 clad sheet as given in QQ-A-250/5	
[21]	Stiffener (3)		BAC1505-47676 7075-T6511 extrusion as given in QQ-A-200/11 (Optional: BAC1506-4366)	
[22]	Stiffener (2)		BAC1506-4366 7075-T6511 extrusion as given in QQ-A-200/11	
[23]	Stiffener		BAC1505-100074 7075-T6511 extrusion as given in QQ-A-200/11	

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Table 3: (Continued)

LIST OF MATERIALS FOR FIGURE 3				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[24]	Stiffener		7050-T7451 plate as given in AMS 4050 (Grain direction controlled part).	
[25]	Doubler (3)	0.040 (1.02)	2024-T3 clad sheet as given in QQ-A-250/5	
[26]	Doubler (2)	0.063 (1.6)	2024-T3 clad sheet as given in QQ-A-250/5	
[27]	Stiffener (4)		BAC1520-2784 7150-T77511 extrusion as given in BMS 7-306. (Optional: 7150-T77511 extruded bar as given in BMS 7-306 or BAC1518-1297 7150-T77511 extrusion as given in BMS 7-306).	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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G52388 S0006590160_V1

Ply Layup for Figure 3, Item [1]
Figure 4

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Table 4:

PLY MATERIAL AND DIRECTION FOR FIGURE 3, ITEM [1]		
PLY	**DIRECTION**	**MATERIAL**
P1 thru P10	0 or 90 degrees	EPGF as given in BMS 8-139, Style 1581 or 7781, Class I

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REPAIR 1 - OVER-WING FLOOR BEAM UPPER CHORD REPAIR AT STA 727B

1. Applicability

A. This repair is applicable to the upper chord flange of the over-wing BL 45.50 and 24.75 floor beams at STA 727B. Refer to Figure 201/REPAIR 1.

B. This repair is applicable if you find cracks when you do the seat track bolts replacement and inspections as given in Service Bulletin 737-53-1296, Revision 1.

2. General

A. This repair is a Category A repair. The inspections given in the Maintenance Planning Data (MPD) are sufficient to maintain damage tolerance of the initial structure with this repair installed. Refer to 51-00-06, GENERAL for the definitions of the different categories of repairs.

B. The Manager of the Federal Aviation Administration Seattle Aircraft Certification Office approves accomplishment of this repair as an Alternative Method of Compliance, only for the repaired seat track location, to the optional terminating action specified in paragraph (i) of AD 2013-23-04.

C. All dimensions are in inches (mm), unless they are shown differently.

D. D = fastener diameter.

E. Keep a 2D edge margin, unless shown differently.

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2302482 S0000521259_V1

Over-Wing Floor Beam at STA 727B - Location of Damage
Figure 201

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3. References

Reference	Title
51-00-06, GENERAL	Structural Repair Definitions
51-10-02, GENERAL	Inspection and Removal of Damage
51-20-01, GENERAL	Protective Treatment of Metallic and Composite Materials
51-20-05, GENERAL	Repair Sealing
51-20-06, GENERAL	Shot Peening
51-30-01, GENERAL	Sheet Metal Materials
51-40-02, GENERAL	Fastener Installation and Removal
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes
737 NDT Part 6, 51-00-00, Procedure 23	Aluminum Part Surface Inspection (Impedance Plane Display)
737 NDT Part 6, 51-00-00, Procedure 4	Surface Inspection of Aluminum Parts (Meter Display)

4. Repair Instructions

A. Get access to the damaged area.

B. Trim out the damaged part of the upper chord flange of the floor beam. Remove the minimum material necessary to remove all damage. Refer to 51-10-02, GENERAL.

NOTE: Do not trim into the radius of the floor beam chord.

C. Do a High Frequency Eddy Current (HFEC) inspection of the cut edges as given in 737 NDT Part 6, 51-00-00, Procedure 4 or 737 NDT Part 6, 51-00-00, Procedure 23, with 0.020 in. (0.508 mm) or 0.030 in. (0.762 mm) notch sensitivity.

D. Make an insurance cut if there are no more cracks. The insurance cut must be a minimum of 0.030 in. (0.762 mm) if you use 0.020 in. (0.508 mm) notch sensitivity and a minimum of 0.040 in. (1.016 mm) if you use 0.030 in. (0.762 mm) notch sensitivity.

(1) Keep a minimum of 0.25 in. (6.35 mm) corner radius.

(2) All trimmed edges must have a surface smoothness of 63 microinches Ra or better.

E. Shot peen or flap peen the cut edges. Refer to 51-20-06, GENERAL.

F. Make the repair parts. Refer to Table 201/REPAIR 1 and Figure 203/REPAIR 1.

Table 201: Repair Material

PART		QUANTITY	MATERIAL
1	Doubler	1	0.125 in. (3.175 mm) thick, 7075-T6 clad sheet as given in QQ-A-250/13
2	Filler	1	0.090 in. (2.29 mm) thick, 7075-T6 clad sheet as given in QQ-A-250/13
3	Filler	1	0.160 in. (4.06 mm) thick, 7075-T6 clad sheet as given in QQ-A-250/13

G. Assemble the repair parts. Refer to Figure 203/REPAIR 1.

H. Drill the fastener holes. Keep a 4D to 6D fastener spacing for all repair fasteners. Include initial floor panel fastener holes in your fastener pattern.

NOTE: Align the repair nutplate holes with the initial floor panel fastener holes in the Part 1 Doubler and drill the nutplate fastener holes through the Part 1 Doubler only.

I. Disassemble the repair parts.

J. Remove the nicks, scratches, gouges, burrs and sharp edges from the repair parts and the bare surface of the upper chord flange.

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K. Apply a chemical conversion coating to the repair parts and to the bare surfaces of the upper chord flange. Refer to 51-20-01, GENERAL.

L. Apply one layer of BMS 10-11, Type I primer to the repair parts and to the bare surface of the upper chord flange. Refer to SOPM 20-41-02.

M. Install the BACN10JR3CFD nutplates to the Part 1 Doubler with BACR15BA3AD fasteners.

N. Install the repair parts.

O. Shim all gaps that are more than 0.005 in. (0.127 mm). Refer to 51-30-01, GENERAL.

(1) Use 2024-T3 clad sheet as given in QQ-A-250/5 for the shim material.

(2) The thickness of the shim cannot be more than 0.04 in. (1.02 mm).

(3) Apply a finish to the shim as given in 51-20-01, GENERAL.

P. Install the fasteners. Install hex drive bolts wet with BMS 5-95 sealant. Refer to 51-40-02, GENERAL.

Q. Apply a fillet seal and fill all internal gaps with BMS 5-95 sealant. Refer to 51-20-05, GENERAL.

R. Reinstall the items that you removed for access.

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(VIEW IN THE DOWN DIRECTION)

REPAIR FOR RBL 45.50 SHOWN, REPAIR FOR LBL 45.50
AND RBL/LBL 24.75 ARE SIMILAR 2

(SEAT TRACK IS NOT SHOWN FOR CLARITY)

A-A

2302816 S0000521677_V1

Section 44 - Over-Wing Floor Beam Upper Chord Repair at STA 727B
Figure 202

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NOTES

- THE FASTENER PATTERN CAN BE DIFFERENT THAN THE ONE SHOWN. KEEP A 4D TO 6D FASTENER SPACING. A MINIMUM 3D FASTENER SPACING IS PERMITTED WHEN NECESSARY IF YOU DO NO HAVE SUFFICIENT SPACE.

1 THERE MUST BE A MINIMUM OF FIVE REPAIR FASTENERS THROUGH THE PART 3 FILLER. DO NOT INCLUDE THE FLOOR PANEL FASTENERS.

2 THIS REPAIR IS SHOWN ON THE OUTBOARD SIDE OF THE UPPER CHORD FLANGE. THE REPAIR CAN ALSO BE DONE ON THE INBOARD SIDE OF THE UPPER CHORD FLANGE OR BOTH.

3 KEEP A MINIMUM OF 0.25 INCH (6.35 mm) RADIUS ON ALL THE CORNERS OF THE PART 1 DOUBLER.

4 THESE PARTS ARE INSTALLED PER SB 737-53-1296, REVISION 1.

5 THE TRIM LINE IS SHOWN TO REMOVE TWO FASTENERS OF THE UPPER CHORD FLANGE OF THE FLOOR BEAM. THE TRIM LINE CAN ALSO REMOVE ONLY THE MOST AFT FASTENER.

FASTENER SYMBOLS

REFERENCE FASTENER LOCATION. INSTALL AS GIVEN IN SB 737-53-1296, REVISION 1.

SEAT TRACK FASTENER LOCATION. INSTALL AS GIVEN IN SB 737-53-1296, REVISION 1.

REPAIR FASTENER LOCATION. INSTALL A BACB30FN6A() HEX DRIVE BOLT WITH A BACC30AB6C OR BACC30M6 COLLAR. AS AN ALTERNATIVE, INSTALL A BACB30FN6AK() HEX DRIVE BOLT WITH A BACC30AB6C OR BACC30M6 COLLAR.

FLOOR PANEL FASTENER LOCATION. INSTALL THE SAME TYPE AND DIAMETER FASTENER AS THE INITIAL FASTENER.

2302551 S0000521678_V1

Notes and Fastener Symbols
Figure 203

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IDENTIFICATION 1 - SECTION 44 SEAT TRACKS

NOTE: REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

F87453 S0006590193_V1

Section 44 Seat Track Location
Figure 1

Table 1:

REFERENCE DRAWINGS	
DRAWING NUMBER	**TITLE**
140A4001	Fuselage Miscellaneous Functional Collector
144A5300	Seat Track Installation, Section 44

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NOTE: REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

THERE ARE MANY SEAT TRACK CONFIGURATIONS FOR THIS AIRPLANE. THESE CONFIGURATIONS CAN BE DIFFERENT THAN THE ONE THAT IS SHOWN. REFER TO DRAWING 140A4001 TO SEE THE DIFFERENT CONFIGURATIONS.

F87516 S0006590195_V1

Section 44 Seat Track Identification

Figure 2

Table 2:

LIST OF MATERIALS FOR FIGURE 2				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Seat Track Crown (4)		BAC1520-2779 7178-T6511 extrusion as given in QQ-A-200/13	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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F96995 S0006590201_V1

Section 44 Seat Track Allowable Damage
Figure 101

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F97131 S0006590204_V1

Section 44 Seat Track Repairs
Figure 201

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IDENTIFICATION 1 - SECTION 44 WING-TO-BODY FAIRING SKIN PANELS

NOTE: REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

H26179 S0006590211_V1

Section 44 Wing-to-Body Fairing Skin Panels Identification
Figure 1

Table 1:

REFERENCE DRAWINGS	
DRAWING NUMBER	**TITLE**
149A7011	Functional Collector - Section 49 Panel Installations
149A7201	ECS Bay Panel Installation
149A7202	Front Spar to Rear Spar Underwing Panel Installation
149A7230	ECS Access Door Installation, Front to Rear Spar
149A7240	High Pressure Connect Door Installation
149A7301	Overwing Fairing Panel Installation
149A7602	Wheel Well Panel Installation
149A7709	Under Keel, Front Spar to Rear Spar Panel Installation

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NOTE: REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

G52327 S0006590213_V1

Section 44 Wing-to-Body Fairing Skin Panels Identification
Figure 2

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Table 2:

LIST OF MATERIALS FOR FIGURE 2				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Underwing Bolt Cover, FS to STA 595.71 - Bonded Part		Glass Fiber Reinforced Plastic (GFRP) honeycomb sandwich	
	Skin Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 120 (Optional: 220) *[2]	
	Doubler Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 1581 (Optional: 7781) *[2]	
	Filler Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 120 (Optional: 220), or Style 1581 (Optional: 7781), or Style 1584 *[2]	
	Core Core	0.40 (10.2) 0.50 (12.7) 0.60 (15.2)	Non-metallic honeycomb as given in BMS 8-124, Class 4, Type V, Grade 3.0 *[3]	
[2]	Underwing Bolt Cover, STA 595.71 to RS - Bonded Part		Glass Fiber Reinforced Plastic (GFRP) honeycomb sandwich	
	Skin Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 120 (Optional: 220) *[2]	
	Doubler Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 1581 (Optional: 7781) *[2]	
	Filler Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 120 (Optional: 220), or Style 1581 (Optional: 7781), or Style 1584 *[2]	
	Core	0.50 (12.7) 0.70 (17.8) 0.80 (20.3) 0.90 (22.9)	Non-metallic honeycomb as given in BMS 8-124, Class 4, Type V, Grade 3.0 *[3]	
[3]	Overwing Fairing, STA 557.1 to STA 643 - Bonded Part		Glass Fiber Reinforced Plastic (GFRP) honeycomb sandwich	
	Skin Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 120 (Optional: 220) *[2]	
	Doubler Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 1581 (Optional: 7781) *[2]	
	Filler Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 120 (Optional: 220), or Style 1581 (Optional: 7781), or Style 1584 *[2]	
	Core	0.25 (6.4)	Non-metallic honeycomb as given in BMS 8-124, Class 4, Type V, Grade 3.0 *[3]	
	Core	0.50 (12.7)	Non-metallic honeycomb as given in BMS 8-124, Class 4, Type VI (OX), Grade 3.0 *[3]	

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Table 2: (Continued)

LIST OF MATERIALS FOR FIGURE 2				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[4]	ECS Access Door - FS to RS - Bonded Part		Carbon Fiber Reinforced Plastic (CFRP) honeycomb sandwich	
	Skin Ply and Doubler Ply		CFRP woven fabric as given in BMS 8-168, Type II, Class II, Style 3K-70-PW *[2]	
	Doubler Ply		CFRP unidirectional tape as given in BMS 8-168, Type II, Class I, Grade 190 *[2]	
	Isolation Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 120 (Optional: 220) *[2]	
	Core	1.00 (25.4)	Non-metallic honeycomb as given in BMS 8-124, Class 1, Type I, Grade 5.5 *[3]	
	Core	1.00 (25.4)	Non-metallic honeycomb as given in BMS 8-124, Class 1, Type I, Grade 8.0 *[3]	
	Core	1.00 (25.4)	Non-metallic honeycomb as given in BMS 8-124, Class 4, Type V, Grade 3.0 *[3]	
[5]	Overwing Fairing, STA 643 to STA 727+2.7 - Bonded Part		Glass Fiber Reinforced Plastic (GFRP) honeycomb sandwich	
	Skin Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 120 (Optional: 220) *[2]	
	Doubler Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 1581 (Optional: 7781) *[2]	
	Filler Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 120 (Optional: 220), or Style 1581 (Optional: 7781), or Style 1584 *[2]	
	Core	1.00 (25.4)	Non-metallic honeycomb as given in BMS 8-124, Class 4, Type VI, Grade 3.0 *[3]	
[6]	Underwing, FS to RS - Bonded Part		Carbon Fiber Reinforced Plastic (CFRP) honeycomb sandwich	
	Skin Ply		CFRP woven fabric as given in BMS 8-168, Type II, Class II, Style 3K-70-PW *[2]	
	Doubler Ply		CFRP woven fabric as given in BMS 8-168, Type II, Class II, Style 3K-70-PW *[2]	
	Filler Ply		CFRP woven fabric as given in BMS 8-168, Type II, Class II, Style 3K-70-PW *[2]	
	Core	0.90 (22.9)	Non-metallic honeycomb as given in BMS 8-124, Class 4, Type V, Grade 4.0 *[3]	
[7]	Forward Outboard Wheel Well - Bonded Part		Glass Fiber Reinforced Plastic (GFRP) honeycomb sandwich	Line Numbers 1 thru 2006, except 1820, 1831, 1981
	Skin Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 120 (Optional: 220) *[2]	

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Table 2: (Continued)

LIST OF MATERIALS FOR FIGURE 2				
ITEM	DESCRIPTION	T*[1]	MATERIAL	EFFECTIVITY
	Doubler Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 1581 (Optional: 7781) *[2]	
	Filler Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 120 (Optional: 220), or Style 1581 (Optional: 7781), or Style 1584 *[2]	
	Core	0.40 (10.2)	Non-metallic honeycomb as given in BMS 8-124, Class 4, Type V, Grade 3.0 *[3]	
[7]	Forward Outboard Wheel Well - Bonded Part		Glass Fiber Reinforced Plastic (GFRP) honeycomb sandwich	Line Numbers 1820, 1831, 1981, 2007 and on
	Lightning Protection Ply		Expanded aluminum foil as given in BMS 8-336, Type I, Class 1, Grade 016	
	Skin Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-139, Class 1, Style 120 (Optional: 220) *[2]	
	Doubler Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-139, Class 1, Style 1581 (Optional: 7781) *[2]	
	Filler Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-139, Class 1, Style 120 (Optional: 220), or Style 1581 (Optional: 7781), or Style 1584 *[2]	
	Core	0.40 (10.2)	Non-metallic honeycomb as given in BMS 8-124, Class 4, Type V, Grade 3.0 *[3]	
[8]	ECS Bay, FS to RS - Bonded Part		Glass Fiber Reinforced Plastic (GFRP) honeycomb sandwich with Aluminum Flame Spray as given in BAC 5056, Type I on the toolside	Line Numbers 1 thru 4514, except 4358
	Skin Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 120 (Optional: 220) *[2]	
	Doubler Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 1581 (Optional: 7781) *[2]	
	Filler Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 120 (Optional: 220), or Style 1581 (Optional: 7781), or Style 1584 *[2]	
	Core	0.30 (7.6)	Non-metallic honeycomb as given in BMS 8-124, Class 4, Type V, Grade 3.0 *[3]	
[8]	ECS Bay, FS to RS - Bonded Part		Glass Fiber Reinforced Plastic (GFRP) honeycomb sandwich	Line Numbers 4358, 4515 and on
	Lightning Protection Ply		Expanded aluminum foil as given in BMS 8-336, Type I, Class 1, Grade 016	
	Skin Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-139, Class 1, Style 120 (Optional: 220) *[2]	

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Table 2: (Continued)

LIST OF MATERIALS FOR FIGURE 2				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
	Doubler Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-139, Class 1, Style 1581 (Optional: 7781) *[2]	
	Filler Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-139, Class 1, Grade B, Style 120 (Optional: 220), or Style 1581 (Optional: 7781), or Style 1584 *[2]	
	Core	0.30 (7.6)	Non-metallic honeycomb as given in BMS 8-124, Class 4, Type V, Grade 4.0 *[3]	
[9]	Aft Outboard Wheel Well - Bonded Part		Glass Fiber Reinforced Plastic (GFRP) honeycomb sandwich	
	Skin Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 120 (Optional: 220) *[2]	
	Doubler Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 1581 (Optional: 7781) *[2]	
	Filler Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 120 (Optional: 220), or Style 1581 (Optional: 7781), or Style 1584 *[2]	
	Core	0.30 (7.6) 0.40 (10.2)	Non-metallic honeycomb as given in BMS 8-124, Class 4, Type V, Grade 3.0 *[3]	
[10]	Aft Wheel Well - Bonded Part	0.10 (2.5)	Fiberglass filler as given in BACF3U035N250	
[11]	Under Keel - STA 649.7 to STA 660.7 - Bonded Part		Glass Fiber Reinforced Plastic (GFRP) honeycomb sandwich with Aluminum Flame Spray as given in BAC 5056, Type I on the toolside	Line Numbers 1 thru 4514, except 3464 and 4358
	Skin Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 120 (Optional: 220) *[2]	
	Doubler Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 1581 (Optional: 7781)*[2]	
	Filler Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 120 (Optional: 220), or Style 1581 (Optional: 7781), or Style 1584 *[2]	
	Core	0.30 (7.6)	Non-metallic honeycomb as given in BMS 8-124, Class 4, Type V, Grade 3.0 *[3]	
[11]	Under Keel - STA 649.7 to STA 660.7 - Bonded Part		Glass Fiber Reinforced Plastic (GFRP) honeycomb sandwich with Aluminum Flame Spray as given in BAC 5056, Type I on the toolside	Line Numbers 3464, 4358, 4515 and on
	Skin Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-139, Class 1, Style 120 (Optional: 220) *[2]	

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Table 2: (Continued)

LIST OF MATERIALS FOR FIGURE 2				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
	Doubler Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-139, Class 1, Style 1581 (Optional: 7781)*[2]	
	Filler Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-139, Class 1, Style 120 (Optional: 220), or Style 1581 (Optional: 7781), or Style 1584 *[2]	
	Core	0.30 (7.6)	Non-metallic honeycomb as given in BMS 8-124, Class 4, Type V, Grade 4.0 *[3]	
[12]	Aft Center Wheel Well - Bonded Part		Glass Fiber Reinforced Plastic (GFRP) honeycomb sandwich	
	Skin Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 120 (Optional: 220) *[2]	
	Doubler Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 1581 (Optional: 7781) *[2]	
	Filler Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 120 (Optional: 220), or Style 1581 (Optional: 7781), or Style 1584 *[2]	
	Core	0.40 (10.2)	Non-metallic honeycomb as given in BMS 8-124, Class 4, Type V, Grade 3.0 *[3]	
[13]	Forward Inboard Wheel Well - Bonded Part		Glass Fiber Reinforced Plastic (GFRP) honeycomb sandwich	Line Numbers 1 thru 4514, except 3464 and 4358
	Skin Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-139, Class 1, Style 120 (Optional: 220) *[2]	
	Doubler Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-139, Class 1, Style 1581 (Optional: 7781) *[2]	
	Filler Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-139, Class 1, Style 120 (Optional: 220) or Style 1581 (Optional: 7781) *[2]	
	Core	0.50 (12.7)	Non-metallic honeycomb as given in BMS 8-124, Class 4, Type V, Grade 3.0 *[3]	
[13]	Forward Inboard Wheel Well - Bonded Part		Glass Fiber Reinforced Plastic (GFRP) honeycomb sandwich	Line Numbers 3464, 4358, 4515 and on
	Skin Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-139, Class 1, Style 120 (Optional: 220) *[2]	
	Doubler Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-139, Class 1, Style 1581 (Optional: 7781) *[2]	
	Filler Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-139, Class 1, Style 120 (Optional: 220) or Style 1581 (Optional: 7781) *[2]	

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Table 2: (Continued)

LIST OF MATERIALS FOR FIGURE 2				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
	Core	0.50 (12.7)	Non-metallic honeycomb as given in BMS 8-124, Class 4, Type V, Grade 4.0 *[3]	
[14]	Under Keel - STA 534.9 to STA 572 Bonded Part		Glass Fiber Reinforced Plastic (GFRP) honeycomb sandwich with Aluminum Flame Spray as given in BAC 5056, Type I on the toolside	
	Skin Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 120 (Optional: 220) *[2]	
	Doubler Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 1581 (Optional: 7781) *[2]	
	Filler Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 120 (Optional: 220), or Style 1581 (Optional: 7781), or Style 1584 *[2]	
	Core	0.50 (12.7)	Non-metallic honeycomb as given in BMS 8-124, Class 4, Type V, Grade 5.0 *[3]	
[15]	Under Keel - STA 572.1 to STA 649.6 - Bonded Part		Glass Fiber Reinforced Plastic (GFRP) honeycomb sandwich with Aluminum Flame Spray as given in BAC 5056, Type I on the toolside	
	Skin Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 120 (Optional: 220) *[2]	
	Doubler Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 1581 (Optional: 7781) *[2]	
	Filler Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 120 (Optional: 220), or Style 1581 (Optional: 7781), or Style 1584 *[2]	
	Core	0.90 (22.9)	Non-metallic honeycomb as given in BMS 8-124, Class 4, Type V, Grade 5.0 *[3]	
[16]	Under Keel Sump Drain Door	0.100 (2.54)	7075-T73 sheet as given in QQ-A-250/12	
[17]	High Pressure Connect Access Door	0.100 (2.54)	7075-T73 sheet as given in QQ-A-250/12	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

*[2] Refer to the production drawings for the ply layup.

*[3] Refer to the production drawings for the core ribbon direction.

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ALLOWABLE DAMAGE 1 - SECTION 44 WING-TO-BODY FAIRING SKIN PANELS

1. Applicability

A. This subject gives the allowable damage limits for the section 44 wing-to-body fairing skin panels shown in Section 44 Wing-to-Body Fairing Skin Panels Location, Figure 101/ALLOWABLE DAMAGE 1.

B. The allowable damage limits are only applicable if they are sealed as given in Paragraph 2.

NOTES

- GFRP = GLASS FIBER REINFORCED PLASTIC
- CFRP = CARBON FIBER REINFORCED PLASTIC

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Section 44 Wing-to-Body Fairing Skin Panels Location
Figure 101 (Sheet 1 of 2)

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Section 44 Wing-to-Body Fairing Skin Panels Location
Figure 101 (Sheet 2 of 2)

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2. General

A. Do the steps that follow for the skin panels made of Glass Fiber Reinforced Plastic (GFRP) or Carbon Fiber Reinforced Plastic (CFRP) honeycomb sandwich panels.

(1) Do an inspection of the damaged area to find the length, width and depth of the damage. Boeing recommends that you use an instrumented Non-Destructive Test (NDT) procedure. Refer to 737 NDT Part 1, 51-01-02 for inspection procedures.

NOTE: Other equivalent inspection methods that have been examined and found to be satisfactory by the operator, can be used.

(a) For the honeycomb core areas, the tap test is an alternative procedure to an instrumented NDT.

(b) Refer to Damage Definitions, Figure 102/ALLOWABLE DAMAGE 1, Details A , B , and C for the definitions of the length, width, and depth of damage.

(c) Refer to Definitions of the Facesheets, Figure 103/ALLOWABLE DAMAGE 1 for the definitions of the facesheets of a honeycomb core area.

(2) Remove all the contamination and water from the structure.

(a) Refer to 51-30-05 for possible sources of the equipment and tools you can use to remove the damage.

(b) Refer to 51-70-04 for the cleanup procedures.

(3) Some GFRP panels have a flame-sprayed aluminum coating as shown in Section 44 Wing-to-Body Fairing Skin Panels Location, Figure 101/ALLOWABLE DAMAGE 1. If damage occurs to the flame-sprayed aluminum coating, do the steps that follow:

(a) Refer to 51-70-14 for the allowable damage limits for the flame-sprayed aluminum coating.

(b) Seal the damaged area as given in 51-70-14.

(4) Seal all damaged areas that do not have BMS 8-336 expanded aluminum foil mesh nor a flame-sprayed aluminum coating with the steps that follow:

(a) Seal the damaged areas that are not more than one ply deep and that agree with the allowable damage limits given in Paragraph 4./ALLOWABLE DAMAGE 1

1) Make a temporary seal.

a) Apply aluminum foil tape (speed tape).

b) Keep a record of the location.

c) Make sure the tape is in satisfactory condition at normal maintenance intervals.

2) Make a permanent seal.

a) Apply BMS 8-201, BMS 8-207 or BMS 8-301 epoxy resin to the area as given 51-70-08.

b) Apply one layer of BMS 10-79, Type 3 or BMS 10-103, Type 1 primer. Refer to SOPM 20-44-04.

c) Apply one layer of BMS 10-60 enamel to the areas sealed with epoxy resin. Refer to AMM PAGEBLOCK 51-21-99/701.

(b) Seal the damaged areas that are more than one ply deep and that agree with the allowable damage limits given in Paragraph 4./ALLOWABLE DAMAGE 1

1) Use a vacuum and heat to remove moisture from the solid laminate or the honeycomb cells. Refer to 51-70-04.

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2) Make a temporary seal with aluminum foil tape (speed tape).
3) Keep a record of the location.
4) Repair the damage no later than 24 months from the time the seal was made.

B. Do the steps that follow for the skin panels made of formed aluminum sheet:
(1) Refer to Section 44 Wing-to-Body Fairing Skin Panels Location, Figure 101/ALLOWABLE DAMAGE 1 for the location of the aluminum panels.
(2) Remove the damaged material as necessary.
(a) Refer to 51-10-02 for the inspection and removal of damage.
(b) Refer to 51-30-03 for possible sources of the abrasive and other materials you can use to remove the damage.
(c) Refer to 51-30-05 for possible sources of the equipment and tools you can use to remove the damage.
(3) Apply a chemical conversion coating to the bare surfaces of the aluminum. Refer to 51-20-01.
(4) Apply one layer of BMS 10-11, Type I primer to the bare surfaces of the aluminum. Refer to SOPM 20-41-02.

C. Make sure the aerodynamic smoothness is satisfactory or there will be a decrease in the economic performance of the airplane.

D. Refer to Table 101/ALLOWABLE DAMAGE 1 for the paragraph references for the allowable damage limits.

Table 101:

PARAGRAPH REFERENCES FOR THE ALLOWABLE DAMAGE LIMITS	
TYPE OF STRUCTURE	**PARAGRAPH**
GFRP/HONEYCOMB SANDWICH PANELS - FULL DEPTH HONEYCOMB CORE AREAS	4.A
CFRP/HONEYCOMB SANDWICH PANELS - FULL DEPTH HONEYCOMB CORE AREAS	4.A
GFRP/HONEYCOMB SANDWICH PANELS - EDGEBAND AREAS	4.B
CFRP/HONEYCOMB SANDWICH PANELS - EDGEBAND AREAS	4.B
GFRP SOLID LAMINATE PANELS	4.C
FORMED ALUMINUM SHEET PANELS	4.D

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DEFINITIONS FOR NICK, GOUGE, OR SCRATCH DAMAGE

A

DEFINITIONS FOR DENT DAMAGE

B

DEFINITIONS FOR EDGE DAMAGE

C

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Damage Definitions
Figure 102

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Definitions of the Facesheets
Figure 103

3. References

Reference	Title
51-10-02	INSPECTION AND REMOVAL OF DAMAGE
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-20-05, GENERAL	Repair Sealing
51-30-03	NON-METALLIC MATERIALS
51-30-05	EQUIPMENT AND TOOLS FOR REPAIRS
51-70-01, REPAIR GENERAL	Procedures to Rework or Fill Allowable Dents on the External Aerodynamic Surfaces of Metallic Parts
51-70-04	REPAIR PROCEDURES FOR WET LAYUP MATERIALS
51-70-08	RESIN SWEEP-FAIR PROCEDURES
51-70-14	STRUCTURES WITH ALUMINUM COATINGS AND FOILS
AMM 51-21-99 P/B 701	DECORATIVE EXTERIOR PAINT SYSTEM - CLEANING/PAINTING
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes
SOPM 20-44-04	Application of Urethane Compatible Primer
737 NDT Part 1, 51-01-02	NDT Examination of Composite Structure for Impact Damage

4. Allowable Damage Limits

A. GFRP Honeycomb Sandwich Panels and CFRP Honeycomb Sandwich Panels - Full Depth Honeycomb Core Area

(1) Cracks are permitted if:

(a) They are a maximum of one facesheet and the core in depth

(b) The dimension of the damage is less than the limits given in GFRP and CFRP Honeycomb Sandwich Panels - Damage Size and Spacing Limits , Figure 104/ALLOWABLE DAMAGE 1 and Table 102/ALLOWABLE DAMAGE 1

(c) They are in the full depth core area and are a minimum distance away from fastener holes or material edges as shown in GFRP and CFRP Honeycomb Sandwich Panels - Damage Size and Spacing Limits , Figure 104/ALLOWABLE DAMAGE 1 and Table 102/ALLOWABLE DAMAGE 1

(d) They are a minimum distance away from the edge of other damage as shown in GFRP and CFRP Honeycomb Sandwich Panels - Damage Size and Spacing Limits , Figure 104/ALLOWABLE DAMAGE 1 and Table 102/ALLOWABLE DAMAGE 1.

NOTE: Other damage does not include nicks, gouges, and scratches that:

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- Do not cause damage to the glass or carbon fiber plies
- Are sealed as given in Paragraph 2.

(e) They are sealed as given in Paragraph 2.

(2) Nicks, Gouges and Scratches that do not cause damage to the glass or carbon fibers are permitted.

(3) Nicks, Gouges and Scratches that cause damage to the glass or carbon fibers are permitted if:

(a) The dimension of the damage is less than the limits given in Table 102/ALLOWABLE DAMAGE 1 and Figure 104/ALLOWABLE DAMAGE 1

(b) They are a minimum distance away from the edge of other damage as shown in GFRP and CFRP Honeycomb Sandwich Panels - Damage Size and Spacing Limits , Figure 104/ALLOWABLE DAMAGE 1 and Table 102/ALLOWABLE DAMAGE 1

NOTE: Other damage does not include nicks, gouges, and scratches that:

- Do not cause damage to the glass or carbon fiber plies
- Are sealed as given in Paragraph 2.

(c) They are sealed as given in Paragraph 2.

(4) Dents are permitted if:

(a) The dimension of the damage is less than the limits given in GFRP and CFRP Honeycomb Sandwich Panels - Damage Size and Spacing Limits , Figure 104/ALLOWABLE DAMAGE 1 and Table 102/ALLOWABLE DAMAGE 1

(b) They are in the full depth core area and are a minimum distance away from fastener holes or material edges as shown in GFRP and CFRP Honeycomb Sandwich Panels - Damage Size and Spacing Limits , Figure 104/ALLOWABLE DAMAGE 1 and Table 102/ALLOWABLE DAMAGE 1

(c) They are a minimum distance away from the edge of other damage as shown in GFRP and CFRP Honeycomb Sandwich Panels - Damage Size and Spacing Limits , Figure 104/ALLOWABLE DAMAGE 1 and Table 102/ALLOWABLE DAMAGE 1

NOTE: Other damage does not include nicks, gouges, and scratches that:

- Do not cause damage to the glass or carbon fiber plies
- Are sealed as given in Paragraph 2.

(d) They are sealed as given in Paragraph 2.

(5) Holes and Punctures are permitted if:

(a) They are a maximum of one facesheet and the core in depth

(b) The dimension of the damage is less than the limits given in GFRP and CFRP Honeycomb Sandwich Panels - Damage Size and Spacing Limits , Figure 104/ALLOWABLE DAMAGE 1 and Table 102/ALLOWABLE DAMAGE 1

(c) They are in the full depth core area and are a minimum distance away from fastener holes or material edges as shown in GFRP and CFRP Honeycomb Sandwich Panels - Damage Size and Spacing Limits , Figure 104/ALLOWABLE DAMAGE 1 and Table 102/ALLOWABLE DAMAGE 1

(d) They are a minimum distance away from the edge of other damage as shown in GFRP and CFRP Honeycomb Sandwich Panels - Damage Size and Spacing Limits , Figure 104/ALLOWABLE DAMAGE 1 and Table 102/ALLOWABLE DAMAGE 1

NOTE: Other damage does not include nicks, gouges, and scratches that:

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- Do not cause damage to the glass or carbon fiber plies
- Are sealed as given in Paragraph 2.

(e) They are sealed as given in Paragraph 2.

(6) Delaminations are permitted if:

(a) The dimension of the damage is less than the limits given in GFRP and CFRP Honeycomb Sandwich Panels - Damage Size and Spacing Limits , Figure 104/ALLOWABLE DAMAGE 1 and Table 102/ALLOWABLE DAMAGE 1

(b) They are in the full depth core area and are a minimum distance away from fastener holes or material edges as shown in GFRP and CFRP Honeycomb Sandwich Panels - Damage Size and Spacing Limits , Figure 104/ALLOWABLE DAMAGE 1 and Table 102/ALLOWABLE DAMAGE 1

(c) They are a minimum distance away from the edge of other damage as shown in GFRP and CFRP Honeycomb Sandwich Panels - Damage Size and Spacing Limits , Figure 104/ALLOWABLE DAMAGE 1 and Table 102/ALLOWABLE DAMAGE 1

NOTE: Other damage does not include nicks, gouges, and scratches that:

- Do not cause damage to the glass or carbon fiber plies
- Are sealed as given in Paragraph 2.

(d) They are sealed as given in Paragraph 2.

Table 102:

DAMAGE DIMENSION DATA FOR THE FULL DEPTH HONEYCOMB CORE AREAS - SECTION 44 WING-TO-BODY FAIRING SKIN				
PANEL DRAWING NUMBER	BAGSIDE FACESHEET OR TOOLSIDE FACESHEET			
	MAXIMUM DAMAGE DIMENSION "D" OR "d" (INCHES)	MINIMUM DAMAGE SPACING DIMENSION "A" (INCHES)	MINIMUM DAMAGE DISTANCE "B" OR "C" FROM FASTENER HOLES OR MATERIAL EDGES (INCHES)	
			"B"	"C"
149A7232	2.0	1.5(D+d)	1.7D	1.7d
149A7255	2.0	1.5(D+d)	1.7D	1.7d
149A7257	2.0	1.5(D+d)	1.7D	1.7d
149A7258	2.0	1.5(D+d)	1.7D	1.7d
149A7259	2.0	1.5(D+d)	1.7D	1.7d
149A7353	2.0	1.5(D+d)	1.7D	1.7d
149A7354	2.0	1.5(D+d)	1.7D	1.7d
149A7651	2.0	1.5(D+d)	1.7D	1.7d
149A7652	2.0	1.5(D+d)	1.7D	1.7d
149A7653	2.0	1.5(D+d)	1.7D	1.7d
149A7654	2.0	1.5(D+d)	1.7D	1.7d
149A7751	2.0	1.5(D+d)	1.7D	1.7d
149A7755	2.0	1.5(D+d)	1.7D	1.7d
149A7756	2.0	1.5(D+d)	1.7D	1.7d

B. GFRP Honeycomb Sandwich Panels and CFRP Honeycomb Sandwich Panels - Edgeband Area

(1) Nicks, Gouges and Scratches that do not cause damage to the glass or carbon fibers are permitted.

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(2) Nicks, Gouges and Scratches that cause damage to the glass or carbon fibers are permitted if they are:

(a) A maximum of one ply in depth

NOTE: Use the limits for holes and punctures if the depth of the damage is more than 1 ply in depth.

(b) A maximum of 1.0 inch in length

(c) A maximum of 0.25 inch in width

(d) A minimum distance of 0.5 inch away from the edge of fastener holes or material edges

(e) A minimum distance of 3.0 inches away from the edge of other damage

NOTE: Other damage does not include nicks, gouges, and scratches that:

- Do not cause damage to the glass or carbon fiber plies
- Are sealed as given in Paragraph 2.

(f) Sealed as given in Paragraph 2.

(3) Dents that do not cause damage to the fibers are permitted.

(4) Dents that do cause damage to the fibers or the damage depth is more than 1 ply are permitted if they are:

(a) A maximum of 0.625 inch measured across the largest of the damage.

(b) A maximum of 2 plies in depth.

(c) A minimum distance of 0.5 inch away from the edge of fastener holes or material edges.

(d) A minimum distance of 3.0 inches away from the edge of other damage

NOTE: Other damage does not include nicks, gouges, and scratches that:

- Do not cause damage to the glass or carbon fiber plies
- Are sealed as given in Paragraph 2.

(e) Sealed as given in Paragraph 2

(5) Holes and Punctures are permitted if they are:

(a) A maximum of 0.625 inch measured across the largest dimension of the damage

(b) A minimum distance of 0.5 inch away from the edge of fastener holes or material edges

(c) A minimum distance of 3.0 inches away from the edge of other damage

NOTE: Other damage does not include nicks, gouges, and scratches that:

- Do not cause damage to the glass or carbon fiber plies
- Are sealed as given in Paragraph 2.

(d) Sealed as given in Paragraph 2.

(6) Delaminations are permitted if they are:

(a) A maximum of 0.625 inch measured across the largest dimension of the damage

(b) A minimum distance of 0.5 inch away from the edge of fastener holes or material edges

(c) A minimum distance of 3.0 inches away from the edge of other damage

NOTE: Other damage does not include nicks, gouges, and scratches that:

- Do not cause damage to the glass or carbon fiber plies
- Are sealed as given in Paragraph 2.

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(d) Sealed as given in Paragraph 2.

(7) Edge damage is permitted if it is:

(a) A maximum of 0.10 inch in depth

(b) A maximum of 0.50 inch in width

(c) A minimum distance of 2.5D (D = the largest dimension across the damage) away from the edge of other damage or the edge of a hole

NOTE: Other damage does not include nicks, gouges, and scratches that:

- Do not cause damage to the glass or carbon fiber plies
- Are sealed as given in Paragraph 2.

(d) Sealed as given in Paragraph 2.

(8) Edge Erosion is permitted as shown in GFRP and CFRP Honeycomb Sandwich Panels - Sealing of Erosion Damage at an Edge, Figure 105/ALLOWABLE DAMAGE 1.

C. GFRP Solid Laminate Panels (does not include the solid laminate areas in honeycomb sandwich panels)

(1) Nicks, Gouges and Scratches that do not cause damage to the glass fibers are permitted.

(2) Nicks, Gouges and Scratches that cause damage to the glass fibers are permitted if they are:

(a) A maximum of 1 ply in depth

NOTE: Use the limits for holes and punctures if the depth of the damage is more than 1 ply in depth.

(b) A maximum of 3.0 inches in length

(c) A minimum distance of 0.50 inch away from the edge of other damage, fastener holes or material edges.

NOTE: Other damage does not include nicks, gouges, and scratches that:

- Do not cause damage to the glass or carbon fiber plies
- Are sealed as given in Paragraph 2.

(d) Sealed as given in Paragraph 2.

(3) Dents are permitted if they are:

(a) A maximum of 2.0 inch measured across the largest dimension of the damage

(b) A minimum distance away from the edge of other damage, fastener holes or material edges as shown in GFRP Solid Laminate Panels - Damage Size and Spacing Limits, Figure 106/ALLOWABLE DAMAGE 1

NOTE: Other damage does not include nicks, gouges, and scratches that:

- Do not cause damage to the glass or carbon fiber plies
- Are sealed as given in Paragraph 2.

(c) Sealed as given in Paragraph 2.

(4) Holes and Punctures are permitted if they are:

(a) A maximum of 0.625 inch measured across the largest dimension of the damage

(b) A minimum distance away from the edge of other damage, fastener holes or material edges as shown in GFRP Solid Laminate Panels - Damage Size and Spacing Limits, Figure 106/ALLOWABLE DAMAGE 1

NOTE: Other damage does not include nicks, gouges, and scratches that:

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- Do not cause damage to the glass or carbon fiber plies
- Are sealed as given in Paragraph 2.

(c) Sealed as given in Paragraph 2.

(5) Delaminations are permitted if they are:

(a) A maximum of 0.625 inch measured across the largest dimension of the damage

(b) A minimum distance away from the edge of other damage, the edge of a hole, or the edge of the material as shown in GFRP Solid Laminate Panels - Damage Size and Spacing Limits, Figure 106/ALLOWABLE DAMAGE 1

NOTE: Other damage does not include nicks, gouges, and scratches that:

- Do not cause damage to the glass or carbon fiber plies
- Are sealed as given in Paragraph 2.

(c) Sealed as given in Paragraph 2.

(6) Edge damage is permitted if it is:

(a) A maximum of 2 plies in depth

(b) A maximum of 0.50 inch in away from a fastener hole edge

(c) A minimum distance of 2.5D (D = the largest dimension across the damage) away from the edge of other damage or the edge of a hole

NOTE: Other damage does not include nicks, gouges, and scratches that:

- Do not cause damage to the glass or carbon fiber plies
- Are sealed as given in Paragraph 2.

(d) Sealed as given in Paragraph 2.

(7) Edge Erosion is permitted as shown in GFRP Solid Laminate Panels - Sealing of Erosion Damage at an Edge, Figure 107/ALLOWABLE DAMAGE 1.

D. Panels Made of Formed Aluminum Sheet

(1) Cracks:

(a) Remove the damage as shown in Aluminum Panel - Allowable Damage Limits, Figure 108/ALLOWABLE DAMAGE 1, Details A , B , and C .

(2) Nicks, Gouges, Scratches, and Corrosion:

(a) Remove the damage as shown in Aluminum Panel - Allowable Damage Limits, Figure 108/ALLOWABLE DAMAGE 1, Details A , B , C , D , and F .

(3) Dents are permitted if they:

(a) Agree with the conditions shown in Aluminum Panel - Allowable Damage Limits, Figure 108/ALLOWABLE DAMAGE 1, Detail E

(b) Are a minimum distance of 3.0D (D = the largest dimension across the damage) away from the edge of other damage, the edge of a hole, or the edge of the material.

(4) Holes and Punctures are permitted if:

(a) They are a maximum of 0.25 measured across the largest dimension of the damage

(b) The edge of the damage is a minimum of 1.0 inch away from a fastener hole, an edge, or other damage

(c) They are filled with a 2017-T3 or 2117-T4 aluminum flush head rivet without sealant.

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NOTE: TO FIND DELAMINATION, YOU CAN USE NONDESTRUCTIVE INSPECTION PROCEDURES. REFER TO NDT PART 1, 51-01-02.

THE DIAMETER OF A DAMAGE AREA IS EITHER THE DIAMETER OF THE VISUAL DAMAGE OR THE DIAMETER OF THE DELAMINATION. USE THE DIAMETER OF THE LARGER DAMAGE.

D IS THE LARGER DIAMETER OF TWO ADJACENT DAMAGE AREAS.

d IS THE SMALLER DIAMETER OF TWO ADJACENT DAMAGE AREAS.

A IS THE DISTANCE BETWEEN TWO ADJACENT DAMAGE AREAS.

B AND C ARE THE DISTANCES BETWEEN THE DAMAGE AND THE FASTENER HOLES OR MATERIAL EDGES.

FOR THE VALUES OF D, d, A, B, AND C, REFER TO TABLE 102.

G52439 S0006590225_V1

GFRP and CFRP Honeycomb Sandwich Panels - Damage Size and Spacing Limits
Figure 104

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G52440 S0006590226_V1

GFRP and CFRP Honeycomb Sandwich Panels - Sealing of Erosion Damage at an Edge
Figure 105

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NOTE: TO FIND DELAMINATION, YOU CAN USE NONDESTRUCTIVE INSPECTION PROCEDURES. REFER TO NDT PART 1, 51-01-02.

THE DIAMETER OF A DAMAGE AREA IS EITHER THE DIAMETER OF THE VISUAL DAMAGE OR THE DIAMETER OF THE DELAMINATION. USE THE DIAMETER OF THE LARGER DAMAGE.

D IS THE LARGER DIAMETER OF TWO ADJACENT DAMAGE AREAS.

d IS THE SMALLER DIAMETER OF TWO ADJACENT DAMAGE AREAS.

A IS THE DISTANCE BETWEEN TWO ADJACENT DAMAGE AREAS.

THE MINIMUM A THAT IS PERMITTED IS 2.5D.

G52441 S0006590227_V1

GFRP Solid Laminate Panels - Damage Size and Spacing Limits
Figure 106

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G52442 S0006590228_V1

GFRP Solid Laminate Panels - Sealing of Erosion Damage at an Edge
Figure 107

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X = THE WIDTH OF THE MATERIAL REMOVED
= 0.10 INCH THICKNESS MAXIMUM

REMOVAL OF DAMAGED MATERIAL AT AN EDGE

A

REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER EDGE MARGINS DO NOT HAVE AN OVERLAP

B

REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER EDGE MARGINS HAVE AN OVERLAP

C

G52443 S0006590229_V1

Aluminum Panel - Allowable Damage Limits
Figure 108 (Sheet 1 of 3)

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REMOVAL OF DAMAGED MATERIAL ON A SURFACE

D

DENT THAT IS PERMITTED

E

G52444 S0006590230_V1

Aluminum Panel - Allowable Damage Limits
Figure 108 (Sheet 2 of 3)

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REMOVAL OF CORROSION AROUND THE FASTENERS

F

B–B

G52445 S0006590231_V1

Aluminum Panel - Allowable Damage Limits
Figure 108 (Sheet 3 of 3)

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REPAIR 1 - SECTION 44 WING-TO-BODY FAIRING SKIN PANELS MADE OF COMPOSITE MATERIALS

1. Applicability

A. Repair 1 is applicable to the wing-to-body fairing skin panels shown in Section 44 Wing-to-Body Fairing Skin Panels Location, Figure 201/REPAIR 1.

B. Repair 1 is applicable to damage that is more than the limits permitted in 53-40-70, Allowable Damage 1.

NOTES

- GFRP = GLASS FIBER REINFORCED PLASTIC
- CFRP = CARBON FIBER REINFORCED PLASTIC

H26196 S0006590236_V1

Section 44 Wing-to-Body Fairing Skin Panels Location
Figure 201 (Sheet 1 of 2)

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G52545 S0006590237_V1

Section 44 Wing-to-Body Fairing Skin Panels Location
Figure 201 (Sheet 2 of 2)

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2. General

A. Repair 1 gives instructions for Category A and B repairs. Refer to 51-00-06 to find the definitions of the different categories of repairs.

B. Get access to the damaged area.

(1) If necessary, remove the wing-to-body fairing skin panels as given in AMM 53-51-21/401.

(a) Refer to 51-40-02 for the fastener removal procedures.

(b) If a fastener hole is damaged, refer to Repair 8 of 51-70-04 or Repair 8 of 51-70-05 for the repair procedures.

C. Do an inspection of the damaged area to find the dimensions of the damage. Boeing recommends that you use an instrumented Non-Destructive Test (NDT) procedure. Refer to 737 NDT Part 1, 51-01-02 for the inspection procedures.

NOTE: Other equivalent inspection methods that have been examined and found to be satisfactory by the operator can be used.

(1) For the honeycomb core areas, the tap test is an alternative procedure to an instrumented NDT.

(2) Refer to Damage Definitions, Figure 202/REPAIR 1, Details A, B, and C for the definitions of the length, width, and depth of damage.

(3) Refer to Definitions of the Facesheets, Figure 203/REPAIR 1 for the definitions of the facesheets of a honeycomb core area.

D. Some GFRP wing-to-body fairing skin panels have a flame-sprayed aluminum coating as shown in Section 44 Wing-to-Body Fairing Skin Panels Location, Figure 201/REPAIR 1. If damage occurs, refer to 51-70-14 for the procedures to repair the flame-sprayed aluminum coating.

E. Do the repair as given in Paragraph 4./REPAIR 1

F. Put the wing-to-body fairing skin panels back to the initial condition, as applicable.

(1) Install the wing-to-body fairing skin panels as given in AMM 53-51-21/401, if they were removed.

(a) Refer to 51-40-02 for the fastener installation procedures.

(b) Refer to 51-40-03 for fastener substitution.

(2) Make sure the aerodynamic smoothness is satisfactory or there will be a decrease in the economic performance of the airplane.

G. Restore the aircraft wing-to-body fairing skin panels exterior finish, as applicable. Refer to AMM PAGEBLOCK 51-21-99/701.

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DEFINITIONS FOR NICK, GOUGE, OR SCRATCH DAMAGE

A

DEFINITIONS FOR DENT DAMAGE

B

DEFINITIONS FOR EDGE DAMAGE

C

G52547 S0006590238_V1

Damage Definitions
Figure 202

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G52551 S0006590239_V1

Definitions of the Facesheets
Figure 203

3. References

Reference	Title
51-00-06	STRUCTURAL REPAIR DEFINITIONS
51-10-01, GENERAL	Aerodynamic Smoothness Requirements
51-10-02, GENERAL	Inspection and Removal of Damage
51-20-05, GENERAL	Repair Sealing
51-40-02	FASTENER INSTALLATION AND REMOVAL
51-40-03	FASTENER SUBSTITUTION
51-70-04	REPAIR PROCEDURES FOR WET LAYUP MATERIALS
51-70-05	REPAIR PROCEDURES FOR PREIMPREGNATED MATERIALS
51-70-06, REPAIR GENERAL	Room Temperature Cure Repairs With Wet Layup Materials For Glass Fabric Reinforced Plastic Solid Laminates and Honeycomb Core Panels
51-70-14	STRUCTURES WITH ALUMINUM COATINGS AND FOILS
53-40-70	FUSELAGE FAIRING SKIN - SECTION 44
AMM 51-21-99 P/B 701	DECORATIVE EXTERIOR PAINT SYSTEM - CLEANING/PAINTING
AMM 53-51-21/401	Aft Wing-to-Body Fairing Removal/Installation
737 NDT Part 1, 51-01-01	Inspection of Repairs to Composite Structure
737 NDT Part 1, 51-01-02	NDT Examination of Composite Structure for Impact Damage

4. Repair Instructions

NOTE: If necessary, refer to 53-40-70, Identification 1 for the material and build-up of the part that you want to repair.

A. For dents that are a maximum of 2 inches in diameter and have no fiber damage or delamination, do the steps that follow:

(1) Fill the dent with BMS 5-28, Type 7 potting compound.

(2) Apply a fiberglass patch over the potted area as given in Repair 14 of 51-70-04.

B. If Paragraph 4.A./REPAIR 1 is not applicable, then refer to:

(1) Table 201/REPAIR 1 for the repair data that is applicable to damage to the full depth honeycomb core areas of the sandwich panels

(2) Table 202/REPAIR 1 for the repair data that is applicable to damage to the edgebands of the honeycomb sandwich panels

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(3) Table 203/REPAIR 1 for the repair data that is applicable to damage to the solid laminate panels.

C. For repairs made with wet layup materials, do as follows, as applicable:

(1) Use one repair ply of fabric for each initial ply that was damaged.

(2) Add two structural plies of fabric for each surface that is repaired. Put one structural ply at ±45 degrees to the core ribbon direction and the other at 0 or 90 degrees.

(3) Inspect Category B repairs after each 800 flight hour interval or more frequently. Refer to 737 NDT Part 1, 51-01-01 for inspection procedures. If deterioration is found, then they must be replaced with Category A repairs.

NOTE: Other inspection methods that have been examined and found to be satisfactory by the operator can be used.

D. For repairs made with preimpregnated layup materials, use the same number of repair plies as the number of initial plies that were damaged.

Table 201:

REPAIR DATA FOR THE 250°F (121°C) CURE WING-TO-BODY FAIRING SKIN PANELS FOR THE FULL DEPTH HONEYCOMB CORE AREAS OF THE SANDWICH PANELS				
REPAIR TYPE	**CATEGORY B WET LAYUP REPAIR**	**CATEGORY A WET LAYUP REPAIR**	**CATEGORY A WET LAYUP REPAIR**	**CATEGORY A PREIMPREGNATED LAYUP REPAIR**
REPAIR CURE TEMPERATURE	**Room Temperature**	**150°F (66°C)**	**200°F (93°C)**	**250°F (121°C)**
REPAIR SIZE AND LIMITS	Contact Boeing for repair instructions	Damage that is a maximum of: - 6.0 inches (152.40 mm) across the largest dimension of the damage 3.0 inches minimum clearance from: -other repairs -fastener holes -panel edges	Damage that is a maximum of: - 6.0 inches (152.40 mm) across the largest dimension of the damage 3.0 inches minimum clearance from: -other repairs -fastener holes -panel edges	There are no size limits on the repairs made with autoclave pressure. See the note below for vacuum bag repairs.
REPAIR PROCEDURES	SRM 51-70-06 and Paragraph 4.C	SRM 51-70-04 and Paragraph 4.C	SRM 51-70-04 and Paragraph 4.C	SRM 51-70-05 and Paragraph 4.D

NOTE: For panels that are greater than 1296 inches², vacuum bag repairs shall not be more than 75% of the panel area for either the inner or outer skin and 50% of the panel area for both the inner and outer skins. For a given honeycomb area that is less than 1296 inches², it is permitted to use a vacuum bag repair for the complete inner or outer skin of the honeycomb area. If both skins of the honeycomb area need a repair, then 75% of the inner and outer skin facesheets can be repaired.

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Table 202:

REPAIR DATA FOR THE EDGEBANDS OF 250°F (121°C) CURE WING-TO-BODY FAIRING SKIN HONEYCOMB SANDWICH PANELS				
REPAIR TYPE	**CATEGORY B WET LAYUP REPAIR**	**CATEGORY A WET LAYUP REPAIR**	**CATEGORY A WET LAYUP REPAIR**	**CATEGORY A PREIMPREGNATED LAYUP REPAIR**
REPAIR CURE TEMPERATURE	**Room Temperature**	**150°F (66°C)**	**200°F (93°C)**	**250°F (121°C)**
REPAIR SIZE	Contact Boeing for repair instructions	Damage that is a maximum of: - 6.0 inches (152.4 mm) across the largest dimension of the damage - 30 percent of the length of the edgeband on the side of the damage	Damage that is a maximum of: - 6.0 inches (152.4 mm) across the largest dimension of the damage - 30 percent of the length of the edgeband on the side of the damage	There are no size limits on the repairs made with autoclave pressure. See the note below for vacuum bag repairs.
REPAIR PROCEDURES	SRM 51-70-06 and Paragraph 4.C	SRM 51-70-04 and Paragraph 4.C	SRM 51-70-04 and Paragraph 4.C	SRM 51-70-05 and Paragraph 4.D

NOTE: For panels that are greater than 1296 inches², vacuum bag repairs shall not be more than 75% of the panel area for either the inner or outer skin and 50% of the panel area for both the inner and outer skins. For a given honeycomb area that is less than 1296 inches², it is permitted to use a vacuum bag repair for the complete inner or outer skin of the honeycomb area. If both skins of the honeycomb area need a repair, then 75% of the inner and outer skin facesheets can be repaired.

Table 203:

REPAIR DATA FOR THE 250°F (121°C) CURE SOLID LAMINATE WING-TO-BODY FAIRING SKIN PANELS				
REPAIR TYPE	**CATEGORY B WET LAYUP REPAIR**	**CATEGORY A WET LAYUP REPAIR**	**CATEGORY A WET LAYUP REPAIR**	**CATEGORY A PREIMPREGNATED LAYUP REPAIR**
REPAIR CURE TEMPERATURE	**Room Temperature**	**150°F (66°C)**	**200°F (93°C)**	**250°F (121°C)**
REPAIR SIZE AND LIMITS	Contact Boeing for repair instructions	Damage that is a maximum of: - 6.0 inches (152.4 mm) across the largest dimension of the damage 3.0 inches (76.2 mm) minimum clearance from: - other repairs - fastener holes - panel edges	Damage that is a maximum of: - 6.0 inches (152.4 mm) across the largest dimension of the damage 3.0 inches (76.2 mm) minimum clearance from: - other repairs - fastener holes - panel edges	There are no size limits on the repairs made with autoclave pressure. See the note below for vacuum bag repairs.
REPAIR PROCEDURES	SRM 51-70-06 and Paragraph 4.C	SRM 51-70-04 and Paragraph 4.C	SRM 51-70-04 and Paragraph 4.C	SRM 51-70-05 and Paragraph 4.D

NOTE: For panels that are greater than 1296 inches², vacuum bag repairs shall not be more than 50% of the panel area. For a given solid laminate area that is less than 1296 inches², it is permitted to use a vacuum bag repair for the complete area.

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IDENTIFICATION 1 - SECTION 44 WING-TO-BODY FAIRING SUPPORT STRUCTURE

NOTE: REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

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Section 44 Wing-to-Body Fairing Support Structure Location
Figure 1

Table 1:

REFERENCE DRAWINGS	
DRAWING NUMBER	**TITLE**
112A3301	Rib Chord Installation - Upper Panel, BBL 70.85
143A7800	Installation - Wing-to-Body Fairing Support Structure
146A7800	Wing-to-Body Fairing Attachment Installation
149A7003	Functional Collector - Support Structure, Under Keel
149A7004	Functional Collector - Front Spar to Rear Spar
149A7011	Functional Collector - Section 49, Panel Installation
149A7210	Support Installation - ECS Bay

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Table 1: (Continued)

REFERENCE DRAWINGS	
DRAWING NUMBER	**TITLE**
149A7270	Support Installation - Bolt Cover Underwing
149A7280	Beam Installation - Underwing Bay
149A7301	Panel Installation - Overwing Fairing
149A7601	Support Installation - Wheel Well, Wing-to-Body Fairing
149A7701	Support Installation - Under Keel
149A7702	Hinge Installation - Under Keel

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NOTE: REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

RIGHT SIDE IS SHOWN, LEFT SIDE IS OPPOSITE
BSTA 540 TO BSTA 667.68

2077787 S0000435112_V2

Section 44 Wing-to-Body Fairing Support Structure (Sta 540 to Sta 727+2.7) Identification
Figure 2 (Sheet 1 of 3)

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RIGHT SIDE IS SHOWN, LEFT SIDE IS OPPOSITE
FOR LINE NUMBER 3464 ONLY

A

2079534 S0000435132_V2

Section 44 Wing-to-Body Fairing Support Structure (Sta 540 to Sta 727+2.7) Identification
Figure 2 (Sheet 2 of 3)

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Section 44 Wing-to-Body Fairing Support Structure (Sta 540 to Sta 727+2.7) Identification
Figure 2 (Sheet 3 of 3)

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Table 2:

LIST OF MATERIALS FOR FIGURE 2				
ITEM	DESCRIPTION	T*[1]	MATERIAL	EFFECTIVITY
[1]	Clip		BAC1517-2801 7075-T62 extrusion as given in QQ-A-250/12	
[2]	Splice Plate	0.080 (2.03)	6061-T62 sheet as given in QQ-A-250/11	
[3]	Clip		BAC1506-4373 7075-T73511 extrusion as given in QQ-A-200/11	
[4]	Support		7050-T7451 plate as given in AMS 4050. Refer to the production drawings for the grain direction	
[5]	Tee Chord		BAC1505-101671 7075-T73 extrusion as given in QQ-A-200/11	
[6]	Angle		BAC1503-3471 7075-T73511 extrusion as given in QQ-A-200/11	All airplane line numbers except 3464
[7]	Angle		AND10134-1204 7075-T73511 extrusion as given in QQ-A-200/11	
[8]	Web	0.063 (1.60)	2024-T42 clad sheet as given in QQ-A-250/5	
[9]	Clip	0.050 (1.27)	2024-T42 clad sheet as given in QQ-A-250/5	
[10]	Frame		BAC1505-101645 7075-T73 extrusion as given in QQ-A-200/11	All airplane line numbers except 3464
[11]	Frame		BAC1506-4475 7075-T73511 extrusion as given in QQ-A-200/11	All airplane line numbers except 3464
[12]	Tee Chord		BAC1506-4400 2024-T3511 extrusion as given in QQ-A-200/3	
[13]	Frame		7050-T7451 plate as given in AMS 4050. Refer to the production drawings for the grain direction	
[14]	Seal Retainer	0.040 (1.02)	6013-T4 sheet as given in AMS 4347	
[15]	Clip		BAC1505-100206 7075-T73511 extrusion as given in QQ-A-200/11	
[16]	Fitting		7050-T7451 plate as given in AMS 4050. Refer to the production drawings for the grain direction	
[17]	Support Fitting		7050-T7451 plate as given in AMS 4050. Refer to the production drawings for the grain direction	
[18]	Support Frame		BAC1518-1203 7075-T73511 extrusion as given in QQ-A-200/11	
[19]	Attachment Bracket	0.500 (12.7)	7050-T7451 plate as given in AMS 4050	
[20]	Support Fitting		7050-T7451 plate as given in AMS 4050. Refer to the production drawings for the grain direction	
[21]	Attachment Fitting		7050-T7451 plate as given in AMS 4050. Refer to the production drawings for the grain direction	
[22]	Bracket		7050-T7451 plate as given in AMS 4050. Refer to the production drawings for the grain direction	
[23]	Beam		BAC1510-1343 7075-T73 extrusion as given in QQ-A-200/11	
[24]	Tee Clip		7050-T7451 plate as given in AMS 4050. Refer to the production drawings for the grain direction	

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Table 2: (Continued)

LIST OF MATERIALS FOR FIGURE 2				
ITEM	DESCRIPTION	T*[1]	MATERIAL	EFFECTIVITY
[25]	Angle		BAC1503-100710 7075-T73511 extrusion as given in QQ-A-200/11	
[26]	Clip	0.160 (4.06)	7075-T62 sheet as given in QQ-A-250/12	
[27]	Intercostal		BAC1509-100611 7075-T73511 extrusion as given in QQ-A-200/11	
[28]	Shear Tie	0.063 (1.60)	7075-T73 sheet as given in QQ-A-250/12	
[29]	Support	0.100 (2.54)	7075-T73 sheet as given in QQ-A-250/12	
[30]	Brace		7050-T7451 plate as given in BMS 7-323, Type I. Refer to the production drawings for the grain direction	
[31]	Stiffener		AND10133-0701 7075-T73511 extrusion as given in QQ-A-200/11	
[32]	Web	0.040 (1.02)	Laminated aluminum sheet as given in BMS 5-69, Type VIII	
[33]	Seal Retainer	0.063 (1.60)	2024-T42 clad sheet as given in QQ-A-250/5	
[34]	Chord	0.063 (1.60)	7075-T62 clad sheet as given in QQ-A-250/13	
[35]	Web	0.040 (1.02)	2024-T3 clad sheet as given in QQ-A-250/5	
[36]	Clip	0.050 (1.27)	2024-T42 clad sheet as given in QQ-A-250/5	
[37]	Lower Chord		BAC1503-101070 7075-T73 extrusion as given in QQ-A-200/11	
[38]	Seal Support	0.100 (2.54)	7075-T73 sheet as given in QQ-A-250/12	
[39]	Support Fitting		BAC1518-1224 7075-T73511 extrusion as given in QQ-A-200/11	
[40]	Support Fitting		7050-T7451 plate as given in AMS 4050. Refer to the production drawings for the grain direction	
[41]	Fitting		7050-T7451 plate as given in BMS 7-323, Type I. Refer to the production drawings for the grain direction	
[42]	T-Clip		BAC1505-101576 7075-T73511 as given in QQ-A-200/11 (Optional: BAC1506-3416)	All airplane line numbers except 3464
[43]	Gusset		7050-T7451 plate as given in AMS 4050. Refer to the production drawings for the grain direction	
[44]	Brace		7050-T7451 plate as given in AMS 4050. Refer to the production drawings for the grain direction	
[45]	Intercostal		7050-T7451 plate as given in AMS 4050. Refer to the production drawings for the grain direction	
[46]	Former		7050-T7451 plate as given in BMS 7-323, Type I. Refer to the production drawings for the grain direction	
[47]	Seal Retainer	0.040 (1.02)	6061-T42 sheet as given in QQ-A-250/11	
[48]	Fairing	0.063 (1.60)	2024-T42 sheet as given in QQ-A-250/4	All airplane line numbers except 3464

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Table 2: (Continued)

LIST OF MATERIALS FOR FIGURE 2				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[49]	Fitting		7050-T7451 plate as given in BMS 7-323, Type I. Refer to the production drawings for the grain direction	
[50]	Upper Chord		BAC1503-101070 7075-T73 extrusion as given in QQ-A-200/11	
[51]	T-Clip		BAC1506-101576 7075-T73511 extrusion as given in QQ-A-200/11	
[52]	Shear Clip		AND10134-1407 7075-T6511 extrusion as given in QQ-A-200/11	
[53]	Shear Clip		AND10133-1002 7075-T6511 extrusion as given in QQ-A-200/11	
[54]	Frame		BAC1505-101645 7075-T73 extrusion as given in QQ-A-200/11 (Optional: 7050–T7451 plate as given in AMS 4050)	Airplane line number 3464 only
[55]	Frame		BAC1506-4475 7075-T73511 extrusion as given in QQ-A-200/11 (Optional: 7050-T7451 plate as given in AMS 4050)	Airplane line number 3464 only
[56]	Frame		7075-T7351 plate as given in AMS-QQ-A-250/12, Class A. Refer to the production drawings for the grain direction	Airplane line number 3464 only
[57]	Frame		7050-T7451 plate as given in AMS 4050. Refer to the production drawings for the grain direction	Airplane line number 3464 only
[58]	Frame		7050-T7451 plate as given in BMS 7-323. Refer to the production drawings for the grain direction	Airplane line number 3464 only
[59]	Fairing Assembly			Airplane line number 3464 only
	Fairing	0.063 (1.60)	2024-T42 bare sheet as given in AMS-QQ-A-250/4	
	Stiffener	0.063 (1.60)	2024-T42 bare sheet as given in AMS-QQ-A-250/4 (Optional: 2024-T4 bare sheet as given in BMS 7-363)	
[60]	T-Clip		BAC1505-101576 7075-T73 extrusion as given in QQ-A-200/11	Airplane line number 3464 only

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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ALLOWABLE DAMAGE 1 - SECTION 44 WING-TO-BODY FAIRING SUPPORT STRUCTURE

1. Applicability

A. This subject gives the allowable damage limits for the section 44 wing-to-body fairing support structure shown in Section 44 Wing-to-Body Fairing Support Structure Location, Figure 101/ ALLOWABLE DAMAGE 1 and Section 44 Wing-to-Body Fairing Support Structure (Sta 540 to Sta 727+2.7) Location, Figure 102/ALLOWABLE DAMAGE 1.

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Section 44 Wing-to-Body Fairing Support Structure Location
Figure 101

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MATERIAL: ALUMINUM

RIGHT SIDE IS SHOWN, LEFT SIDE IS OPPOSITE
BSTA 540 TO BSTA 667.68

G45851 S0006590254_V2

Section 44 Wing-to-Body Fairing Support Structure (Sta 540 to Sta 727+2.7) Location
Figure 102 (Sheet 1 of 2)

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Section 44 Wing-to-Body Fairing Support Structure (Sta 540 to Sta 727+2.7) Location
Figure 102 (Sheet 2 of 2)

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2. General

A. Do a detailed close visual inspection of the damaged area to find the length, width, and depth of the damage.

NOTE: The steps that follow do not apply to dent damage.

(1) The methods that follow are permitted as an alternative to the detailed close visual inspection:

(a) Penetrant inspection. Refer to SOPM 20-20-02.

(b) High Frequency Eddy Current (HFEC) inspection. Refer to 737 NDT Part 6, 51-00-00, Figure 4 .

B. Remove the damaged material as necessary.

(1) Refer to 51-10-02 for the inspection and removal of damage.

(2) Refer to 51-30-03 for possible sources of the abrasive and other materials you can use to remove the damage.

(3) Refer to 51-30-05 for possible sources of the equipment and tools you can use to remove the damage.

C. Apply a chemical conversion coating to the reworked areas. Refer to 51-20-01.

D. Apply the primer as follows:

(1) For the parts given in Table 101/ALLOWABLE DAMAGE 1 and shown in Section 44 Wing-to-Body Fairing Support Structure (Sta 540 to Sta 727+2.7) Location, Figure 102/ALLOWABLE DAMAGE 1, apply two layers of BMS 10-11, Type I, primer to the reworked areas. Refer to SOPM 20-41-02.

Table 101:

ITEM	DESCRIPTION	ITEM	DESCRIPTION
[2]	Splice Plate (Formed)	[17]	Support Fitting (Machined)
[3]	Clip (Extruded)	[18]	Support Frame (Extruded)
[4]	Support (Machined)	[20]	Support Fitting (Machined)
[5]	Tee Chord (Extruded)	[21]	Attachment Fitting (Machined)
[6]	Angle (Extruded)	[22]	Bracket (Machined)
[7]	Angle (Extruded)	[23]	Beam (Extruded)
[10]	Frame (Extruded)	[24]	Tee Clip (Machined)
[11]	Frame (Extruded)	[25]	Angle (Extruded)
[12]	Tee Chord (Extruded)	[46]	Intercostal (Machined)
[13]	Frame (Machined)	[53]	Shear Clip (Extruded)
[14]	Seal Retainer (Formed)	[54]	Shear Clip (Extruded)
[15]	Seal Deflector (Formed)		
[16]	Hinge Fitting (Machined)		

(2) For the parts given in Table 102/ALLOWABLE DAMAGE 1 and shown in Section 44 Wing-to-Body Fairing Support Structure (Sta 540 to Sta 727+2.7) Location, Figure 102/ALLOWABLE DAMAGE 1, apply one layer of BMS 10-11, Type I, primer to the reworked areas. Refer to SOPM 20-41-02.

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Table 102:

ITEM	DESCRIPTION	ITEM	DESCRIPTION
[8]	Web (Clad sheet)	[39]	Support Fitting (Extruded)
[9]	Clip (Formed)	[40]	Support Fitting (Machined)
[27]	Intercostal (Extruded)	[41]	Fitting (Machined)
[28]	Shear Tie (Formed)	[42]	T-Clip (Extruded)
[29]	Support (Formed)	[43]	Gusset (Machined)
[30]	Brace (Machined)	[44]	Gusset (Machined)
[31]	Stiffener (Extruded)	[45]	Brace (Machined)
[32]	Web (Laminated sheet)	[47]	Former (Machined)
[33]	Seal Retainer (Formed)	[48]	Seal Retainer (Formed)
[34]	Chord (Formed)	[49]	Fairing (Formed)
[35]	Web (Clad sheet)	[50]	Fitting (Machined)
[36]	Clip (Formed)	[51]	Upper Chord (Extruded)
[37]	Lower Chord (Extruded)	[52]	T-Clip (Extruded)
[38]	Seal Support (Formed)		

(3) For the parts given in Table 103/ALLOWABLE DAMAGE 1 and shown in Section 44 Wing-to-Body Fairing Support Structure (Sta 540 to Sta 727+2.7) Location, Figure 102/ALLOWABLE DAMAGE 1, apply one layer of BMS 10-79, Type III, primer to the reworked areas. Refer to SOPM 20-44-04.

Table 103:

ITEM	DESCRIPTION	ITEM	DESCRIPTION
[1]	Clip (Extruded)	[26]	Clip (Formed)

(4) For the parts given in Table 104/ALLOWABLE DAMAGE 1 and shown in Section 44 Wing-to-Body Fairing Support Structure (Sta 540 to Sta 727+2.7) Location, Figure 102/ALLOWABLE DAMAGE 1, apply one layer of BMS 10-11, Type II, primer to the reworked areas. Refer to SOPM 20-41-02.

Table 104:

ITEM	DESCRIPTION	ITEM	DESCRIPTION
[27]	Intercostal (Extruded)	[48]	Seal Retainer (Formed)
[33]	Chord (Formed)	[49]	Fairing (Formed)
[38]	Seal Support (Formed)		

(5) For the parts given in Table 105/ALLOWABLE DAMAGE 1 and shown in Section 44 Wing-to-Body Fairing Support Structure (Sta 540 to Sta 727+2.7) Location, Figure 102/ALLOWABLE DAMAGE 1, apply one layer of BMS 10-11, Type I, primer and one layer of BMS 10-11, Type II enamel, color 707 grey, to the reworked areas. Refer to SOPM 20-41-02.

Table 105:

ITEM	DESCRIPTION	ITEM	DESCRIPTION
[19]	Attachment Bracket (Machined)		

E. Refer to Paragraph 4./ALLOWABLE DAMAGE 1 for the allowable damage limits.

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3. References

Reference	Title
51-10-02	INSPECTION AND REMOVAL OF DAMAGE
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-20-05, GENERAL	Repair Sealing
51-30-03	NON-METALLIC MATERIALS
51-30-05	EQUIPMENT AND TOOLS FOR REPAIRS
51-40-06, GENERAL	Fastener Edge Margins
53-30-71, ALLOWABLE DAMAGE 1	Section 43 Wing-to-Body Fairing Support Structure
53-60-71, ALLOWABLE DAMAGE 1	Section 46 Wing-to-Body Fairing Support Structure
SOPM 20-20-02	Penetrant Methods of Inspection
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes
SOPM 20-44-04	Application of Urethane Compatible Primer
737 NDT Part 6, 51-00-00	Structures - General
737 NDT Part 6, 51-00-00, Procedure 4	Surface Inspection of Aluminum Parts (Meter Display)

4. Allowable Damage Limits

A. The allowable damage limits that follow are applicable to the parts listed in Table 106/ALLOWABLE DAMAGE 1 and shown in Section 44 Wing-to-Body Fairing Support Structure (Sta 540 to Sta 727+2.7) Location, Figure 102/ALLOWABLE DAMAGE 1.

Table 106:

ITEM	DESCRIPTION	ITEM	DESCRIPTION
[9]	Clip (Formed)	[34]	Chord (Formed)
[26]	Clip (Formed)	[36]	Clip (Formed)
[28]	Shear Tie (Formed)		

(1) Cracks:

(a) Remove the damage as shown in Allowable Damage Limits - Aluminum Parts, Figure 103/ALLOWABLE DAMAGE 1, Details A , B , and L .

(2) Nicks, Gouges, Scratches, and Corrosion:

(a) Remove the damage as shown in Allowable Damage Limits - Aluminum Parts, Figure 103/ALLOWABLE DAMAGE 1, Details A , B , C , E , and L .

(3) Dents are not permitted.

(4) Holes and Punctures are not permitted.

B. The allowable damage limits that follow are applicable to the parts listed in Table 107/ALLOWABLE DAMAGE 1 and shown in Section 44 Wing-to-Body Fairing Support Structure (Sta 540 to Sta 727+2.7) Location, Figure 102/ALLOWABLE DAMAGE 1.

Table 107:

ITEM	DESCRIPTION	ITEM	DESCRIPTION
[14]	Seal Retainer (Formed)	[38]	Seal Support (Formed)
[15]	Seal Deflector (Formed)	[48]	Seal Retainer (Formed)
[29]	Support (Formed)	[49]	Fairing (Formed)

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Table 107: (Continued)

ITEM	DESCRIPTION	ITEM	DESCRIPTION
[33]	Seal Retainer (Formed)		

(1) Cracks:

(a) Remove the damage as shown in Allowable Damage Limits - Aluminum Parts, Figure 103/ALLOWABLE DAMAGE 1, Details A , B , and L .

(2) Nicks, Gouges, Scratches, and Corrosion:

(a) Remove the damage as shown in Allowable Damage Limits - Aluminum Parts, Figure 103/ALLOWABLE DAMAGE 1, Details A , B , C , E , and L .

(3) Dents are permitted as shown in Allowable Damage Limits - Aluminum Parts, Figure 103/ALLOWABLE DAMAGE 1, Detail D if:

(a) They do not extend across an attached structure.

(4) Holes and Punctures are permitted as shown in Allowable Damage Limits - Aluminum Parts, Figure 103/ALLOWABLE DAMAGE 1, Detail N .

C. The allowable damage limits that follow are applicable to the parts listed in Table 108/ALLOWABLE DAMAGE 1 and shown in Section 44 Wing-to-Body Fairing Support Structure (Sta 540 to Sta 727+2.7) Location, Figure 102/ALLOWABLE DAMAGE 1.

Table 108:

ITEM	DESCRIPTION	ITEM	DESCRIPTION
[2]	Splice Plate (Formed)		

(1) Cracks:

(a) Remove the damage as shown in Allowable Damage Limits - Aluminum Parts, Figure 103/ALLOWABLE DAMAGE 1, Details A , B , and M .

(2) Nicks, Gouges, Scratches, and Corrosion:

(a) Remove the damage as shown in Allowable Damage Limits - Aluminum Parts, Figure 103/ALLOWABLE DAMAGE 1, Details A , B , C , E , and M .

(3) Dents are not permitted.

(4) Holes and Punctures are not permitted.

D. The allowable damage limits that follow are applicable to the parts listed in Table 109/ALLOWABLE DAMAGE 1 and shown in Section 44 Wing-to-Body Fairing Support Structure (Sta 540 to Sta 727+2.7) Location, Figure 102/ALLOWABLE DAMAGE 1.

Table 109:

ITEM	DESCRIPTION	ITEM	DESCRIPTION
[32]	Web (Laminated sheet)	[35]	Web (Clad sheet)

(1) Cracks:

(a) Remove the damage as shown in Allowable Damage Limits - Aluminum Parts, Figure 103/ALLOWABLE DAMAGE 1, Details A , B , and M .

(2) Nicks, Gouges, Scratches, and Corrosion:

(a) Remove the damage as shown in Allowable Damage Limits - Aluminum Parts, Figure 103/ALLOWABLE DAMAGE 1, Details A , B , C , E , M , and P .

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(3) Dents are permitted as shown in Allowable Damage Limits - Aluminum Parts, Figure 103/ALLOWABLE DAMAGE 1, Detail D if:

(a) They do not extend across an attached structure.

(4) Holes and Punctures are permitted as shown in Allowable Damage Limits - Aluminum Parts, Figure 103/ALLOWABLE DAMAGE 1, Detail P .

E. The allowable damage limits that follow are applicable to the parts listed in Table 110/ALLOWABLE DAMAGE 1 and shown in Section 44 Wing-to-Body Fairing Support Structure (Sta 540 to Sta 727+2.7) Location, Figure 102/ALLOWABLE DAMAGE 1.

Table 110:

ITEM	DESCRIPTION	ITEM	DESCRIPTION
[8]	Web (Clad sheet)		

(1) Cracks:

(a) Remove the damage as shown in Allowable Damage Limits - Aluminum Parts, Figure 103/ALLOWABLE DAMAGE 1, Details A , B , and M .

(2) Nicks, Gouges, Scratches, and Corrosion:

(a) Remove the damage as shown in Allowable Damage Limits - Aluminum Parts, Figure 103/ALLOWABLE DAMAGE 1, Details A , B , C , E , M , P , and S .

(3) Dents are permitted as shown in Allowable Damage Limits - Aluminum Parts, Figure 103/ALLOWABLE DAMAGE 1, Detail D if:

(a) They do not extend across an attached structure.

(4) Holes and Punctures are permitted as shown in Allowable Damage Limits - Aluminum Parts, Figure 103/ALLOWABLE DAMAGE 1, Detail P .

F. The allowable damage limits that follow are applicable to the parts listed in Table 111/ALLOWABLE DAMAGE 1 and shown in Section 44 Wing-to-Body Fairing Support Structure (Sta 540 to Sta 727+2.7) Location, Figure 102/ALLOWABLE DAMAGE 1.

Table 111:

ITEM	DESCRIPTION	ITEM	DESCRIPTION
[39]	Support Fitting (Extruded)		

(1) Cracks:

(a) Remove the damage as shown in Allowable Damage Limits - Aluminum Parts, Figure 103/ALLOWABLE DAMAGE 1, Details A , B , and G .

(2) Nicks, Gouges, Scratches, and Corrosion:

(a) Remove the damage as shown in Allowable Damage Limits - Aluminum Parts, Figure 103/ALLOWABLE DAMAGE 1, Details A , B , C , E , F , and G .

(3) Dents are not permitted.

(4) Holes and Punctures are not permitted.

G. The allowable damage limits that follow are applicable to the parts listed in Table 112/ALLOWABLE DAMAGE 1 and shown in Section 44 Wing-to-Body Fairing Support Structure (Sta 540 to Sta 727+2.7) Location, Figure 102/ALLOWABLE DAMAGE 1.

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Table 112:

ITEM	DESCRIPTION	ITEM	DESCRIPTION
[5]	Tee Chord (Extruded)	[41]	Fitting (Machined)
[10]	Frame (Extruded)	[50]	Fitting (Extruded)
[12]	Tee Chord (Extruded)	[51]	Upper Chord (Extruded)
[18]	Support Frame (Extruded)		

(1) Cracks:

(a) Remove the damage as shown in Allowable Damage Limits - Aluminum Parts, Figure 103/ALLOWABLE DAMAGE 1, Details A , B , H , and I .

(2) Nicks, Gouges, Scratches, and Corrosion:

(a) Remove the damage as shown in Allowable Damage Limits - Aluminum Parts, Figure 103/ALLOWABLE DAMAGE 1, Details A , B , C , E , F , H , I , J , and K .

(3) Dents are not permitted.

(4) Holes and Punctures are not permitted.

H. The allowable damage limits that follow are applicable to the parts listed in Table 113/ALLOWABLE DAMAGE 1 and shown in Section 44 Wing-to-Body Fairing Support Structure (Sta 540 to Sta 727+2.7) Location, Figure 102/ALLOWABLE DAMAGE 1.

Table 113:

ITEM	DESCRIPTION	ITEM	DESCRIPTION
[11]	Frame (Extruded)	[40]	Support Fitting (Machined)
[13]	Frame (Machined)		

(1) Cracks:

(a) Remove the damage as shown in Allowable Damage Limits - Aluminum Parts, Figure 103/ALLOWABLE DAMAGE 1, Details A , B , H , and I .

(2) Nicks, Gouges, Scratches, and Corrosion:

(a) Remove the damage as shown in Allowable Damage Limits - Aluminum Parts, Figure 103/ALLOWABLE DAMAGE 1, Details A , B , C , E , F , H , I , J , and K .

(3) Dents are not permitted.

(4) Holes and Punctures are permitted as shown in Allowable Damage Limits - Aluminum Parts, Figure 103/ALLOWABLE DAMAGE 1, Detail N .

I. The allowable damage limits that follow are applicable to the parts listed in Table 114/ALLOWABLE DAMAGE 1 and shown in Section 44 Wing-to-Body Fairing Support Structure (Sta 540 to Sta 727+2.7) Location, Figure 102/ALLOWABLE DAMAGE 1.

Table 114:

ITEM	DESCRIPTION	ITEM	DESCRIPTION
[1]	Clip (Extruded)	[25]	Angle (Extruded)
[3]	Clip (Extruded)	[37]	Lower Chord (Extruded)
[4]	Slice Plate (Machined)	[42]	T-Clip (Extruded)
[17]	Support Fitting (Machined)	[43]	Gusset (Machined)

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Table 114: (Continued)

ITEM	DESCRIPTION	ITEM	DESCRIPTION
[21]	Attachment Fitting (Machined)	[52]	T-Clip (Extruded)
[22]	Bracket (Machined)	[53]	Shear Clip (Extruded)
[23]	Beam (Extruded)	[54]	Shear Clip (Extruded)
[24]	Tee Clip (Machined)		

(1) Cracks:

(a) Remove the damage as shown in Allowable Damage Limits - Aluminum Parts, Figure 103/ALLOWABLE DAMAGE 1, Details A , B , and H .

(2) Nicks, Gouges, Scratches, and Corrosion:

(a) Remove the damage as shown in Allowable Damage Limits - Aluminum Parts, Figure 103/ALLOWABLE DAMAGE 1, Details A , B , C , E , F , and H .

(3) Dents are not permitted.

(4) Holes and Punctures are not permitted.

J. The allowable damage limits that follow are applicable to the parts listed in Table 115/ALLOWABLE DAMAGE 1 and shown in Section 44 Wing-to-Body Fairing Support Structure (Sta 540 to Sta 727+2.7) Location, Figure 102/ALLOWABLE DAMAGE 1.

Table 115:

ITEM	DESCRIPTION	ITEM	DESCRIPTION
[6]	Angle (Extruded)	[7]	Angle (Extruded)

(1) Cracks:

(a) Remove the damage as shown in Allowable Damage Limits - Aluminum Parts, Figure 103/ALLOWABLE DAMAGE 1, Details A , B , and H .

(2) Nicks, Gouges, Scratches, and Corrosion:

(a) Remove the damage as shown in Allowable Damage Limits - Aluminum Parts, Figure 103/ALLOWABLE DAMAGE 1, Details A , B , C , E , F , and H .

(3) Dents are not permitted.

(4) Holes and Punctures are permitted as shown in Allowable Damage Limits - Aluminum Parts, Figure 103/ALLOWABLE DAMAGE 1, Detail N .

K. The allowable damage limits that follow are applicable to the parts listed in Table 116/ALLOWABLE DAMAGE 1 and shown in Section 44 Wing-to-Body Fairing Support Structure (Sta 540 to Sta 727+2.7) Location, Figure 102/ALLOWABLE DAMAGE 1.

Table 116:

ITEM	DESCRIPTION	ITEM	DESCRIPTION
[27]	Intercostal (Extruded)	[46]	Intercostal (Machined)
[45]	Brace (Machined)		

(1) Cracks:

(a) Remove the damage as shown in Allowable Damage Limits - Aluminum Parts, Figure 103/ALLOWABLE DAMAGE 1, Details A , B , and H .

(2) Nicks, Gouges, Scratches, and Corrosion:

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(a) Remove the damage as shown in Allowable Damage Limits - Aluminum Parts, Figure 103/ALLOWABLE DAMAGE 1, Details A , B , C , E , F , H , J , and P .

(3) Dents are not permitted.

(4) Holes and Punctures are permitted as shown in Allowable Damage Limits - Aluminum Parts, Figure 103/ALLOWABLE DAMAGE 1, Detail N .

L. The allowable damage limits that follow are applicable to the parts listed in Table 117/ALLOWABLE DAMAGE 1 and shown in Section 44 Wing-to-Body Fairing Support Structure (Sta 540 to Sta 727+2.7) Location, Figure 102/ALLOWABLE DAMAGE 1.

Table 117:

ITEM	DESCRIPTION	ITEM	DESCRIPTION
[31]	Stiffener (Extruded)		

(1) Cracks:

(a) Remove the damage as shown in Allowable Damage Limits - Aluminum Parts, Figure 103/ALLOWABLE DAMAGE 1, Details A , B , and H .

(2) Nicks, Gouges, Scratches, and Corrosion:

(a) Remove the damage as shown in Allowable Damage Limits - Aluminum Parts, Figure 103/ALLOWABLE DAMAGE 1, Details A , B , C , E , F , and H .

(3) Dents are not permitted.

(4) Holes and Punctures are permitted as shown in Allowable Damage Limits - Aluminum Parts, Figure 103/ALLOWABLE DAMAGE 1, Detail O .

M. The allowable damage limits that follow are applicable to the parts listed in Table 118/ALLOWABLE DAMAGE 1 and shown in Section 44 Wing-to-Body Fairing Support Structure (Sta 540 to Sta 727+2.7) Location, Figure 102/ALLOWABLE DAMAGE 1.

Table 118:

ITEM	DESCRIPTION	ITEM	DESCRIPTION
[19]	Attachment Bracket (Machined)	[44]	Gusset (Machined)
[30]	Brace (Machined)	[47]	Former (Machined)

(1) Cracks:

(a) Remove the damage as shown in Allowable Damage Limits - Aluminum Parts, Figure 103/ALLOWABLE DAMAGE 1, Details A , B , and H .

(2) Nicks, Gouges, Scratches, and Corrosion:

(a) Remove the damage as shown in Allowable Damage Limits - Aluminum Parts, Figure 103/ALLOWABLE DAMAGE 1, Details A , B , C , E , F , H , and Q .

(3) Dents are not permitted.

(4) Holes and Punctures are not permitted.

N. The allowable damage limits that follow are applicable to the parts listed in Table 119/ALLOWABLE DAMAGE 1 and shown in Section 44 Wing-to-Body Fairing Support Structure (Sta 540 to Sta 727+2.7) Location, Figure 102/ALLOWABLE DAMAGE 1.

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Table 119:

ITEM	DESCRIPTION	ITEM	DESCRIPTION
[16]	Hinge Fitting (Machined)	[20]	Support Fitting (Machined)

(1) Cracks:

(a) Remove the damage as shown in Allowable Damage Limits - Aluminum Parts, Figure 103/ALLOWABLE DAMAGE 1, Details A , B , and H .

(2) Nicks, Gouges, Scratches, and Corrosion:

(a) Remove the damage as shown in Allowable Damage Limits - Aluminum Parts, Figure 103/ALLOWABLE DAMAGE 1, Details A , B , C , E , F , H , and R .

(3) Dents are not permitted.

(4) Holes and Punctures are not permitted.

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REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER EDGE MARGINS DO NOT HAVE AN OVERLAP

A

REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER EDGE MARGINS HAVE AN OVERLAP

B

REMOVAL OF DAMAGED MATERIAL ON A SURFACE

C

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Allowable Damage Limits - Aluminum Parts
Figure 103 (Sheet 1 of 16)

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DENT AWAY FROM AN EDGE IS SHOWN, DENT AT AN EDGE IS SIMILAR

DENT THAT IS PERMITTED

D

REMOVAL OF DAMAGE AROUND THE FASTENERS ON AN EDGE OR A SURFACE

E

B–B

G45872 S0006590276_V1

Allowable Damage Limits - Aluminum Parts
Figure 103 (Sheet 2 of 16)

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NOTE: APPLICABLE TO L-SECTIONS AND T-SECTIONS WITH SERRATED FLANGES.

X = DEPTH OF THE MATERIAL THAT IS REMOVED
= A MAXIMUM OF 10 PERCENT OF THE THICKNESS OF THE FLANGE AT THE DAMAGE LOCATION

Y = WIDTH OF THE MATERIAL THAT IS REMOVED
= A MAXIMUM OF 10 PERCENT OF THE WIDTH OF THE FLANGE AT THE DAMAGE LOCATION

NOTE: APPLICABLE TO L-SECTIONS AND T-SECTIONS.

REMOVAL OF DAMAGED MATERIAL
ON A SURFACE AT AN EDGE

F

G47146 S0006590277_V1

Allowable Damage Limits - Aluminum Parts
Figure 103 (Sheet 3 of 16)

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G47148 S0006590278_V1

Allowable Damage Limits - Aluminum Parts
Figure 103 (Sheet 4 of 16)

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X = THE WIDTH OF THE MATERIAL THAT IS REMOVED
= A MAXIMUM OF 10 PERCENT OF THE WIDTH OF THE FLANGE

REMOVAL OF DAMAGED MATERIAL ON AN EDGE

G

X = WIDTH OF THE MATERIAL REMOVED
= A MAXIMUM OF 10 PERCENT OF THE WIDTH OF THE FLANGE

REMOVAL OF DAMAGED MATERIAL AT AN EDGE

H

G47149 S0006590279_V1

Allowable Damage Limits - Aluminum Parts
Figure 103 (Sheet 5 of 16)

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REMOVAL OF DAMAGED MATERIAL ON A SERRATED EDGE

I

REMOVAL OF DAMAGE MATERIAL ON A FLANGED SURFACE
(A TEE SECTION IS SHOWN)

J

G47150 S0006590280_V1

Allowable Damage Limits - Aluminum Parts
Figure 103 (Sheet 6 of 16)

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D_3 = DIAMETER OF THE INITIAL HOLE AT LOCATION 3

T = THICKNESS OF THE FLANGE

A_i = INITIAL CROSS-SECTIONAL AREA OF THE FLANGE
= THE TOTAL CROSS-SECTIONAL AREA MINUS THE CROSS-SECTIONAL AREA OF THE INITIAL HOLES (AS MANUFACTURED BY BOEING)
= $4T - D_3T$

A_1 = CROSS-SECTIONAL AREA OF THE MATERIAL DAMAGE THAT IS REMOVED AT LOCATION 1

A_2 = CROSS-SECTIONAL AREA OF THE MATERIAL DAMAGE THAT IS REMOVED AT LOCATION 2

A_4 = CROSS-SECTIONAL AREA OF THE MATERIAL DAMAGE THAT IS REMOVED AT LOCATION 4

$$\left(\frac{A_1 + A_2 + A_4}{A_i}\right) \times 100 = \text{PERCENT OF CROSS-SECTIONAL AREA REMOVED}$$
= A MAXIMUM OF 20 PERCENT

THE TOTAL CROSS-SECTIONAL AREA REMOVED IN ALL ZONES A-B (2.00 INCHES ON EACH SIDE OF A LINE A-B) MUST NOT BE MORE THAN 20 PERCENT OF THE INITIAL CROSS-SECTIONAL AREA OF THE FLANGE.

D-D

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Allowable Damage Limits - Aluminum Parts
Figure 103 (Sheet 7 of 16)

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REMOVAL OF DAMAGED MATERIAL FROM A WEB OF A TEE SECTION

K

G47152 S0006590282_V1

Allowable Damage Limits - Aluminum Parts
Figure 103 (Sheet 8 of 16)

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D_2 = DIAMETER OF THE INITAL HOLE AT LOCATION 2

H = HEIGHT OF THE WEB

T = THICKNESS OF THE WEB

A_i = INITIAL CROSS-SECTIONAL AREA OF THE WEB
= THE TOTAL CROSS-SECTIONAL AREA MINUS THE CROSS-SECTIONAL AREA OF THE INITIAL HOLES (AS MANUFACTURED BY BOEING)
= $HT - D_2T$

A_1 = CROSS-SECTIONAL AREA OF THE MATERIAL DAMAGE THAT IS REMOVED AT LOCATION 1

A_3 = CROSS-SECTIONAL AREA OF THE MATERIAL DAMAGE THAT IS REMOVED AT LOCATION 3

$$\left(\frac{A_1 + A_3}{A_i}\right) \times 100 = \text{PERCENT OF CROSS-SECTIONAL AREA REMOVED}$$
= A MAXIMUM OF 20 PERCENT

THE TOTAL CROSS-SECTIONAL AREA REMOVED IN ALL ZONES A-B (2.00 INCHES ON EACH SIDE OF A LINE A-B) MUST NOT BE MORE THAN 20 PERCENT OF THE INITIAL CROSS-SECTIONAL AREA OF THE WEB.

(ROTATED 90° CLOCKWISE)
E-E

G47153 S0006590283_V1

Allowable Damage Limits - Aluminum Parts
Figure 103 (Sheet 9 of 16)

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X = WIDTH OF THE MATERIAL THAT IS REMOVED
= A MAXIMUM OF 10 PERCENT OF THE WIDTH OF THE FLANGE

REMOVAL OF DAMAGED MATERIAL ON AN EDGE

L

X = WIDTH OF THE MATERIAL THAT IS REMOVED
= A MAXIMUM OF 0.10 INCH

NOTE: APPLICABLE TO SINGLE AND MULTIPLE-PLY SKINS OR WEBS.

REMOVAL OF DAMAGED MATERIAL AT AN EDGE OF A METAL SKIN OR WEB

M

G47154 S0006590284_V1

Allowable Damage Limits - Aluminum Parts
Figure 103 (Sheet 10 of 16)

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NOTE: NO HOLE DAMAGE ALLOWED IN FASTENED FLANGES.

HOLES AND PUNCTURES IN A FREE FLANGE

N

W = THE WIDTH OF THE STIFFENER FLANGE

HOLES THAT ARE PERMITTED TO REMOVE DAMAGED MATERIAL IN WEB STIFFENERS

O

G47156 S0006590285_V1

Allowable Damage Limits - Aluminum Parts
Figure 103 (Sheet 11 of 16)

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REMOVAL OF DAMAGED MATERIAL FROM A WEB OR DOUBLER

P

G47157 S0006590286_V1

Allowable Damage Limits - Aluminum Parts
Figure 103 (Sheet 12 of 16)

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D_1, D_4, D_5 = DIAMETER OF THE INITIAL HOLE

D_2 = DIAMETER OF THE HOLE AT LOCATION 2

D_3 = DIAMETER OF THE HOLE AT LOCATION 3

H = HEIGHT OF THE WEB

T = THICKNESS OF THE WEB

A_i = INITIAL CROSS-SECTIONAL AREA OF THE WEB
= THE TOTAL CROSS-SECTIONAL AREA MINUS THE CROSS-SECTIONAL AREA OF THE INITIAL HOLES (AS MANUFACTURED BY BOEING)
$= HT - D_1T - D_4T - D_5T$

A_2 = CROSS-SECTIONAL AREA OF THE DAMAGE THAT IS REMOVED AT LOCATION 2

A_3 = CROSS-SECTIONAL AREA OF THE DAMAGE THAT IS REMOVED AT LOCATION 3

$\left(\frac{A_2 + A_3}{A_i}\right) \times 100$ = PERCENT OF CROSS-SECTIONAL AREA REMOVED
= 10 PERCENT MAXIMUM

THE TOTAL CROSS-SECTIONAL AREA REMOVED IN ALL ZONES A-B (2.00 INCHES ON EACH SIDE OF A LINE A-B) MUST NOT BE MORE THAN 10 PERCENT OF THE INITIAL CROSS-SECTIONAL AREA OF THE WEB.

(ROTATED 90° CLOCKWISE)
F-F

G47158 S0006590287_V1

Allowable Damage Limits - Aluminum Parts
Figure 103 (Sheet 13 of 16)

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NOTE: DAMAGED SEALANT IS NOT PERMITTED. IF THE SEALANT IS DAMAGED, LOOK FOR MIGRATION OR ROTATION OF THE BUSHING. IF THERE IS NO MIGRATION, ROTATION, OR CORROSION, REMOVE THE DAMAGED SEALANT AND APPLY A NEW FILLET SEAL.

REMOVAL OF SURFACE AND EDGE DAMAGE FROM A LUG THAT HAS A BUSHING

Q

G47159 S0006590288_V1

Allowable Damage Limits - Aluminum Parts
Figure 103 (Sheet 14 of 16)

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REMOVAL OF SURFACE AND EDGE DAMAGE FROM A LUG THAT HAS A BEARING

R

I–I

J–J

G47161 S0006590289_V1

Allowable Damage Limits - Aluminum Parts
Figure 103 (Sheet 15 of 16)

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Allowable Damage Limits - Aluminum Parts
Figure 103 (Sheet 16 of 16)

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REPAIR 1 - SECTION 44 WING-TO-BODY FAIRING SUPPORT STRUCTURE

1. Applicability

A. Repair 1 is applicable to damage:

(1) To all the metal parts of the wing-to-body fairing support structure in Section 44 shown in Section 44 Wing-to-Body Fairing Support Structure Location, Figure 201/REPAIR 1 and Section 44 Wing-to-Body Fairing Support Structure (Sta 540 to Sta 727[redacted]2.7) Location, Figure 202/REPAIR 1.

(2) That is more than the limits permitted in 53-40-71, Allowable Damage 1.

G45965 S0006590293_V1

Section 44 Wing-to-Body Fairing Support Structure Location
Figure 201

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MATERIAL: ALUMINUM

RIGHT SIDE IS SHOWN, LEFT SIDE IS OPPOSITE
BSTA 540 TO BSTA 667.68

NOTES

1 REFER TO PARAGRAPH 4.A TO FIND THE APPLICABLE REPAIR FOR THIS PART.

2 THERE IS NO REPAIR FOR THIS PART IN THE STRUCTUAL REPAIR MANUAL. IF THE DAMAGE TO THE PART IS MORE THAN THE LIMITS GIVEN IN SRM 53-40-71, ALLOWABLE DAMAGE 1, REPLACE THE DAMAGED PART.

3 THERE IS NO REPAIR FOR THIS PART IN THE STRUCTURAL REPAIR MANUAL AT THIS TIME.

G45977 S0006590294_V3

Section 44 Wing-to-Body Fairing Support Structure (Sta 540 to Sta 727.2.7) Location
Figure 202 (Sheet 1 of 2)

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Section 44 Wing-to-Body Fairing Support Structure (Sta 540 to Sta 727[redacted]2.7) Location
Figure 202 (Sheet 2 of 2)

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2. General

A. Get access to the damaged area.

(1) Remove the fairing skin panel(s) at the damage location as necessary.

B. The typical repairs given in 51-70-11, 51-70-12, and 51-70-13 can be used when applicable if there is sufficient clearance with the adjacent structure for the installation of the repair parts.

C. Refer to Paragraph 4./REPAIR 1 for a repair.

3. References

Reference	Title
51-00-06, GENERAL	Structural Repair Definitions
51-10-02, GENERAL	Inspection and Removal of Damage
51-20-05, GENERAL	Repair Sealing
51-40-02, GENERAL	Fastener Installation and Removal
51-40-03, GENERAL	Fastener Substitution
51-70-11	TYPICAL FORMED SECTION REPAIRS
51-70-12	EXTRUDED SECTION REPAIRS
51-70-13	TYPICAL WEB REPAIRS
53-30-71, REPAIR 1	Section 43 Wing-to-Body Fairing Support Structure
53-40-71	FUSELAGE FAIRING STRUCTURE - SECTION 44
53-40-71, ALLOWABLE DAMAGE 1	Section 44 Wing-to-Body Fairing Support Structure
53-60-71, REPAIR 1	Section 46 Wing-to-Body Fairing Support Structure

4. Repair Instructions

A. Refer to Section 44 Wing-to-Body Fairing Support Structure Location, Figure 201/REPAIR 1 and Section 44 Wing-to-Body Fairing Support Structure (Sta 540 to Sta 727[redacted]2.7) Location, Figure 202/REPAIR 1, and Table 201 to find the applicable repair for the part that you want to repair.

NOTE: If necessary, refer to 53-40-71, Identification 1 to find the material and the process that was used to make the part that you want to repair.

Table 201:

REPAIR REFERENCES FOR THE WING-TO-BODY FAIRING SUPPORT STRUCTURE - METAL PARTS	
TYPE OF COMPONENT	**REPAIR**
Formed parts	Refer to SRM 51-70-11
Extruded parts	Refer to SRM 51-70-12
Machined parts	Refer to SRM 51-70-12
Webs	Refer to SRM 51-70-13

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IDENTIFICATION 1 - SECTION 46 FUSELAGE SKIN

NOTE: REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

G80071 S0006590303_V1

Section 46 Fuselage Skin Location
Figure 1

Table 1:

REFERENCE DRAWINGS	
DRAWING NUMBER	**TITLE**
140A4610	Functional Collector, Section 46 Upper Lobe
146A3100	Skin Installation, S-4L to S-4R, Station 727-888
146A3130	Skin Installation, S-4 to S-10, Station 727-888
146A3150	Skin Installation, S-10 to S-14, Station 727-888
140A4620	Functional Collector, Section 46 Lower Lobe
146A3200	Skin Installation, S-14L to S-23L, Station 727-888
146A3230	Skin Installation, S-23L to S-23R, Station 727-888
146A3250	Skin Installation, S-14R to S-23R, Station 727-888

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NOTE: REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

G80235 S0006590307_V3

Section 46 Fuselage Skin Identification
Figure 2

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Table 2:

LIST OF MATERIALS FOR FIGURE 2				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Skin Panel Assembly			
	Skin	0.040 (1.02)	2024-T3 clad sheet	Line Numbers 7 thru 3591
	Skin	0.045 (1.14)	2024-T3 clad sheet	Line Numbers 3592 and on
	Doubler	0.040 (1.02)	2024-T3 clad sheet. Refer to Figure 4 for the thicknesses of the chem-milled areas	
[2]	Skin Panel Assembly			
	Skin	0.040 (1.02)	2024-T3 clad sheet	Line Numbers 7 thru 3591
	Skin	0.045 (1.14)	2024-T3 clad sheet	Line Numbers 3592 thru 3716
	Doubler	0.040 (1.02)	2024-T3 clad sheet. Refer to Figure 5 for the thicknesses of the chem-milled areas	
[3]	Skin Panel Assembly			
	Skin	0.100 (2.54)	2024-T3 clad sheet. Refer to Figure 6 for the thicknesses of the chem-milled areas.	
	Doubler	0.100 (2.54)	2024-T3 clad sheet.	
[4]	Doubler	0.080 (2.03)	2024-T3 clad sheet	For airplanes that have the SATCOM Antenna
[5]	Doubler (3)	0.056 (1.42)	2024-T3 clad sheet	For airplanes that have the Ku Band Antenna and Tri-Band Antenna

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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NOTE: REFER TO TABLE 3 FOR THE LIST OF MATERIALS.

G80780 S0006590313_V1

Section 46 Lower Lobe Skin Identification
Figure 3

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Table 3:

LIST OF MATERIALS FOR FIGURE 3				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Skin	0.100 (2.54)	2024-T3 clad sheet. Refer to Figure 7 for the thicknesses of the chem-milled areas	
[2]	Skin	0.160 (4.06)	2024-T3 clad sheet. Refer to Figure 8 for the thicknesses of the chem-milled areas	
[3]	Bear Strap	0.130 (3.30)	2024-T3 bare sheet	
[4]	Skin	0.100 (2.54)	2024-T3 clad sheet. Refer to Figure 9 for the thicknesses of the chem-milled areas	
[5]	Doubler	0.090 (2.23)	2024-T3 clad sheet	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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NOTES

- SKIN PANEL ASSEMBLY IS MADE FROM TWO BONDED SHEETS OF ALUMINUM AND ONLY THE INNER DOUBLER IS CHEM-MILLED. ALL POCKETS SHOWN ARE THROUGH THE INNER DOUBLER ONLY. ALL OTHER AREAS ARE THE THICKNESSES SHOWN.
- FOR AIRPLANES WITH LINE NUMBERS 7 THRU 9

G80859 S0006590318_V5

Chem-Milled Areas of Figure 2, Item [1]
Figure 4 (Sheet 1 of 7)

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NOTES

- SKIN PANEL ASSEMBLY IS MADE FROM TWO BONDED SHEETS OF ALUMINUM AND ONLY THE INNER DOUBLER IS CHEM-MILLED. ALL POCKETS SHOWN ARE THROUGH THE INNER DOUBLER ONLY. ALL OTHER AREAS ARE THE THICKNESSES SHOWN.
- FOR AIRPLANES WITH LINE NUMBERS 36 THRU 871

2018980 S0000399230_V2

Chem-Milled Areas of Figure 2, Item [1]
Figure 4 (Sheet 2 of 7)

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NOTES

- SKIN PANEL ASSEMBLY IS MADE FROM TWO BONDED SHEETS OF ALUMINUM AND ONLY THE INNER DOUBLER IS CHEM-MILLED. ALL POCKETS SHOWN ARE THROUGH THE INNER DOUBLER ONLY. ALL OTHER AREAS ARE THE THICKNESSES SHOWN.
- FOR AIRPLANES WITH LINE NUMBERS 875 THRU 3591

2019309 S0000399233_V2

Chem-Milled Areas of Figure 2, Item [1]
Figure 4 (Sheet 3 of 7)

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NOTES

- SKIN PANEL ASSEMBLY IS MADE FROM TWO BONDED SHEETS OF ALUMINUM AND ONLY THE INNER DOUBLER IS CHEM-MILLED. ALL POCKETS SHOWN ARE THROUGH THE INNER DOUBLER ONLY. ALL OTHER AREAS ARE THE THICKNESSES SHOWN.
- FOR AIRPLANES WITH LINE NUMBERS 3592 AND ON, AND PRR 38788 INCORPORATED

2019428 S0000399242_V2

Chem-Milled Areas of Figure 2, Item [1]
Figure 4 (Sheet 4 of 7)

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NOTES

- SKIN PANEL ASSEMBLY IS MADE FROM TWO BONDED SHEETS OF ALUMINUM AND ONLY THE INNER DOUBLER IS CHEM-MILLED. ALL POCKETS SHOWN ARE THROUGH THE INNER DOUBLER ONLY. ALL OTHER AREAS ARE THE THICKNESSES SHOWN.
- FOR AIRPLANES WITH SATCOM ANTENNA

2019324 S0000399235_V2

Chem-Milled Areas of Figure 2, Item [1]
Figure 4 (Sheet 5 of 7)

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NOTES

- SKIN PANEL ASSEMBLY IS MADE FROM TWO BONDED SHEETS OF ALUMINUM AND ONLY THE INNER DOUBLER IS CHEM-MILLED. ALL POCKETS SHOWN ARE THROUGH THE INNER DOUBLER ONLY. ALL OTHER AREAS ARE THE THICKNESSES SHOWN.
- FOR AIRPLANES WITH LINE NUMBERS 3592 AND ON, AND WITH LARGE SATCOM ANTENNA

2019629 S0000399243_V4

Chem-Milled Areas of Figure 2, Item [1]
Figure 4 (Sheet 6 of 7)

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NOTES

- SKIN PANEL ASSEMBLY IS MADE FROM TWO BONDED SHEETS OF ALUMINUM AND ONLY THE INNER DOUBLER IS CHEM-MILLED. ALL POCKETS SHOWN ARE THROUGH THE INNER DOUBLER ONLY. ALL OTHER AREAS ARE THE THICKNESSES SHOWN.
- FOR AIRPLANES WITH KU BAND ANTENNA AND TRI-BAND ANTENNA.

2390327 S0000549593_V2

Chem-Milled Areas of Figure 2, Item [1]
Figure 4 (Sheet 7 of 7)

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NOTES

- SKIN PANEL ASSEMBLY IS MADE FROM TWO BONDED SHEETS OF ALUMINUM AND ONLY THE INNER DOUBLER IS CHEM-MILLED. ALL POCKETS SHOWN ARE THROUGH THE INNER DOUBLER ONLY. ALL OTHER AREAS ARE THE THICKNESSES SHOWN.
- FOR AIRPLANES WITH LINE NUMBERS 7 THRU 871

G80872 S0006590323_V2

Chem-Milled Areas of Figure 2, Item [2]
Figure 5 (Sheet 1 of 3)

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NOTES

- SKIN PANEL ASSEMBLY IS MADE FROM TWO BONDED SHEETS OF ALUMINUM AND ONLY THE INNER DOUBLER IS CHEM-MILLED. ALL POCKETS SHOWN ARE THROUGH THE INNER DOUBLER ONLY. ALL OTHER AREAS ARE THE THICKNESSES SHOWN.
- FOR AIRPLANES WITH LINE NUMBERS 875 THRU 3591

2019921 S0000399244_V1

Chem-Milled Areas of Figure 2, Item [2]
Figure 5 (Sheet 2 of 3)

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NOTES

- SKIN PANEL ASSEMBLY IS MADE FROM TWO BONDED SHEETS OF ALUMINUM AND ONLY THE INNER DOUBLER IS CHEM-MILLED. ALL POCKETS SHOWN ARE THROUGH THE INNER DOUBLER ONLY. ALL OTHER AREAS ARE THE THICKNESSES SHOWN.
- FOR AIRPLANES WITH LINE NUMBERS 3592 THRU 3716

2019959 S0000399245_V3

Chem-Milled Areas of Figure 2, Item [2]
Figure 5 (Sheet 3 of 3)

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RIGHT SIDE IS SHOWN, LEFT SIDE IS OPPOSITE

VIEW IS ON INNER SURFACE OF SKIN

G80932 S0006590329_V1

Chem-Milled Areas of Figure 2, Item [3]
Figure 6

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NOTE: ALL DIMENSIONS SHOWN ARE THICKNESSES IN INCHES.

G80998 S0006590335_V1

Chem-Milled Areas of Figure 3, Item [1]
Figure 7

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FOR AIRPLANES WITH LINE NUMBERS 2121 THRU 2225

A

NOTES

- ALL DIMENSIONS SHOWN ARE THICKNESSES IN INCHES.

G81797 S0006590342_V4

Chem-Milled Areas of Figure 3, Item [2]
Figure 8 (Sheet 1 of 2)

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FOR ALL AIRPLANES EXCEPT THE AIRPLANES WITH LINE NUMBERS 2121 THRU 2225

B

1878092 S0000334792_V2

Chem-Milled Areas of Figure 3, Item [2]
Figure 8 (Sheet 2 of 2)

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NOTE: ALL DIMENSIONS SHOWN ARE THICKNESSES IN INCHES.

G81850 S0006590350_V1

Chem-Milled Areas of Figure 3, Item [4]
Figure 9

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NOTE: REFER TO SRM 53-60-70 FOR THE FAIRING SKIN ALLOWABLE DAMAGE.

1 FOR AIRPLANES WITH THE KU BAND ANTENNA AND TRI-BAND ANTENNA, NO ALLOWABLE DAMAGE DATA IS APPLICABLE BETWEEN STA 727B TO STA 747 AND S-10L TO S-10R (UPPER FUSELAGE SECTION). REFER TO SRM 53-00-01 FOR THE ALLOWABLE DAMAGE DATA THAT IS APPLICABLE TO THE OTHER AREAS OF THE FUSELAGE SKIN IN SECTION 46.

2178072 S0000480859_V3

Section 46 Fuselage Skin Location
Figure 101

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NOTES

- REFER TO SRM 53-30-70 FOR THE FAIRING SKIN REPAIR.

1 FOR AIRPLANES WITH THE KU BAND ANTENNA AND TRI-BAND ANTENNA, NO REPAIR DATA IS APPLICABLE BETWEEN STA 727B TO STA 747 AND S-10L TO S-10R (UPPER FUSELAGE SECTION). REFER TO SRM 53-00-01 FOR THE REPAIR DATA THAT IS APPLICABLE TO THE OTHER AREAS OF THE FUSELAGE SKIN IN SECTION 46.

L08205 S0006590363_V10

Section 46 Fuselage Skin Location
Figure 201

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IDENTIFICATION 1 - SECTION 46 FUSELAGE STRINGERS

NOTE: REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

G79354 S0006590369_V1

Section 46 Stringer Identification
Figure 1

Table 1:

REFERENCE DRAWINGS	
DRAWING NUMBER	**TITLE**
140A4610	Functional Collector - Section 46 Upper Lobe
146A3100	Skin Installation S-4L to S-4R, Station 727 to Station 888
146A3130	Skin Installation S-4 to S-10, Station 727 to Station 888
146A3150	Skin Installation S-10 to S-14, Station 727 to Station 888
140A4620	Functional Collector, Section 46 Lower Lobe
146A3200	Skin Installation S-14L to S-23L, Station 727 to Station 888
146A3230	Skin Installation S-23L to S-23R, Station 727 to Station 888
146A3250	Skin Installation S-14R to S-23R, Station 727 to Station 888
146A3233	Stringer Assembly S-24L to S-24R, Section 46

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NOTES

- REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

LEFT SIDE IS SHOWN

G79031 S0006590374_V2

Section 46 Stringer Identification
Figure 2 (Sheet 1 of 2)

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NOTE: REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

RIGHT SIDE IS SHOWN

G79805 S0006590379_V3

Section 46 Stringer Identification
Figure 2 (Sheet 2 of 2)

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Table 2:

LIST OF MATERIALS FOR FIGURE 2				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Stringer, Tapered	0.071 (1.8)	7075-T62 sheet as given in QQ-A-250/12	
[2]	Stringer, Tapered	0.050 (1.27)	7075-T62 sheet as given in QQ-A-250/12	
[3]	Stringer, Tapered	0.056 (1.42)	7075-T62 sheet as given in QQ-A-250/12	
[4]	Stringer, Tapered	0.063 (1.6)	7075-T62 sheet as given in QQ-A-250/12	
[5]	Stringer		BAC1517-1485 7075-T6511 extrusion as given in QQ-A-200/11 (Optional: BAC1520-2844)	
[6]	Stringer, Tapered	0.080 (2.03)	7075-T62 sheet as given in QQ-A-250/12	
[7]	Stringer, Tapered	0.090 (2.29)	7075-T62 sheet as given in QQ-A-250/12	
[8]	Stringer		BAC1498-157 7075-T62 extrusion as given in QQ-A-250/12	
[9]	Stringer		BAC1498-158 7075-T62 extrusion as given in QQ-A-250/12	
[10]	Stringer		BAC1498-159 7075-T62 extrusion as given in QQ-A-250/12	
[11]	Stringer		BAC1498-161 7075-T62 extrusion as given in QQ-A-250/12	
[12]	Stringer		BAC1498-162 7075-T62 extrusion as given in QQ-A-250/12	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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ALLOWABLE DAMAGE 1 - SECTION 46 FUSELAGE STRINGERS

NOTES

1 FOR AIRPLANES WITH THE KU BAND ANTENNA AND TRI-BAND ANTENNA, NO ALLOWABLE DAMAGE DATA IS APPLICABLE BETWEEN STA 727B TO STA 747 AND S-10L TO S-10R (UPPER FUSELAGE SECTION). REFER TO SRM 53-00-03 FOR THE ALLOWABLE DAMAGE DATA THAT IS APPLICABLE TO THE OTHER AREAS OF THE FUSELAGE STRINGERS IN SECTION 46.

2420181 S0000559337_V2

Section 46 Stringer Allowable Damage
Figure 101

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REPAIR 1 - SECTION 46 FUSELAGE STRINGERS

1. Applicability

A. Repair 1 is applicable to damage to the stringers in body Section 46 shown in Section 46 Stringer Repairs, Figure 201/REPAIR 1.

NOTES

1 FOR AIRPLANES WITH THE KU BAND ANTENNA AND TRI-BAND ANTENNA, NO REPAIR DATA IS APPLICABLE BETWEEN STA 727B TO STA 747 AND S-10L TO S-10R (UPPER FUSELAGE SECTION). REFER TO SRM 53-00-03 AND TABLE 201 FOR THE REPAIR DATA THAT IS APPLICABLE TO THE OTHER AREAS OF THE FUSELAGE STRINGERS IN SECTION 46.

L08060 S0006590394_V3

Section 46 Stringer Repairs
Figure 201

2. General

A. The typical repairs given in 51-70-12 can be used when applicable if:

(1) There is sufficient clearance with the adjacent structure for the installation of repair parts.

B. Refer to the limits of the typical repairs given in 51-70-12 before you start a repair.

3. References

Reference	Title
51-70-12	EXTRUDED SECTION REPAIRS

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(Continued)

Reference	Title
53-00-03, REPAIR 1	Repair for a Type I, Type II, or Type IV Fuselage Stringer with General Damage
53-00-03, REPAIR 2	Repair for a Type I, II or IV Fuselage Stringer with Longitudinal Crack Damage in a Formed Corner of a Skin Attachment Flange
53-00-03, REPAIR 3	Repair for a Type III Fuselage Stringer With General Damage
53-00-03, REPAIR 4	Repair for a Type III Fuselage Stringer With Longitudinal Crack Damage in a Formed Corner of a Skin Attachment Flange
53-00-03, REPAIR GENERAL	Formed Fuselage Stringers
53-60-03	FUSELAGE STRINGERS - SECTION 46

4. Repair Instructions

A. Refer to Table 201/REPAIR 1 to find the applicable repairs to the section 46 fuselage stringers.

NOTE: If necessary, refer to 53-60-03, Identification 1 to find the material and the process that was used to make the part which you want to repair.

Table 201:

REPAIR REFERENCES FOR THE SECTION 46 FUSELAGE STRINGERS		
STRINGER	**LOCATION**	**REPAIR**
S-11L, S-11R, S-13L, S-13R,	STA 727 to STA 887	Refer to SRM 51-70-12
S-17L, S-17R	STA 727 to STA 887	Refer to SRM 53-60-13
All other stringers	STA 727 to STA 887	Refer to SRM 53-00-03

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IDENTIFICATION 1 - SECTION 46 FUSELAGE INTERCOSTALS

G50693 S0006590399_V1

Section 46 Fuselage Intercostal Identification
Figure 1

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G67341 S0006590402_V1

Section 46 Fuselage Intercostal Allowable Damage
Figure 101

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G67361 S0006590405_V1

Section 46 Fuselage Intercostal Repair
Figure 201

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IDENTIFICATION 1 - SECTION 46 FUSELAGE FRAMES

NOTE: REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

G48584 S0006590409_V1

Section 46 Fuselage Frame Location
Figure 1

Table 1:

REFERENCE DRAWINGS	
DRAWING NUMBER	**TITLE**
001A4001	Fuselage Product Collector
140A4610	Functional Collector - Section 46, Upper Lobe
140A4620	Functional Collector - Section 46, Lower Lobe

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H95547 S0006590414_V1

Section 46 Frame Locations
Figure 2

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SECTION 46 UPPER LOBE FRAME (STRINGER 1 TO 14)

NOTES

- REFER TO TABLE 2 FOR THE LIST OF MATERIALS.
- REFER TO DETAIL A FOR A TYPICAL SECTION VIEW OF THE FRAMES.

H95578 S0006590419_V3

Section 46 Upper Lobe Frame Identification
Figure 3 (Sheet 1 of 2)

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TYPICAL SECTION THROUGH A FRAME

A

G48590 S0006590421_V1

Section 46 Upper Lobe Frame Identification
Figure 3 (Sheet 2 of 2)

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Table 2:

LIST OF MATERIALS FOR FIGURE 3				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Frame		BAC1517-705 7075-T62 clad sheet as given in QQ-A-250/13	Line Numbers 7 thru 1113
[2]	Frame Assembly			
	Doubler	0.020 (0.51)	7075-T6 clad sheet as given in QQ-A-250/13	
	Frame		BAC1517-705 7075-T62 clad sheet as given in QQ-A-250/13	
[3]	Frame		BAC1517–1062 7075–T62 clad sheet as given in QQ-A-250/13	
[4]	Frame		BAC1517–705 7075–T62 clad formed section as given in QQ-A-250/13	Line Numbers 1117 thru 3716
[5]	Frame Assembly			Line Numbers 2225 thru 2584
	Doubler (2)	0.050 (1.27)	7075-T62 clad sheet as given in AMS-QQ-A-250/13	
	Frame		BAC1517-705 7075-T62 clad formed section as given in QQ-A-250/13	
[6]	Frame Assembly			Line Numbers 2731 thru 3625
	Doubler	0.050 (1.27)	7075-T62 clad sheet as given in AMS-QQ-A-250/13	
	Doubler	0.050 (1.27)	7075-T62 clad sheet as given in AMS-QQ-A-250/13 (Optional: BAC1490-2907 7075-T62 clad formed as given in AMS-QQ-A-250/13)	
	Frame		BAC1517-705 7075-T62 clad formed section as given in QQ-A-250/13	
[7]	Frame Assembly			
	Doubler (2)	0.020 (0.51)	7075-T6 clad sheet as given in QQ-A-250/13	
	Frame		BAC1517–705 clad formed section as given in QQ-A-250/13	
[8]	Frame Assembly			Airplanes with Ku Band Antenna and Tri-Band Antenna
	Doubler	0.056 (1.42)	7075-T62 clad sheet as given in AMS-QQ-A-250/13	
	Doubler	0.050 (1.27)	7075-T62 clad sheet as given in AMS-QQ-A-250/13 (Optional: BAC1490-2907 7075-T62 clad formed section as given in AMS-QQ-A-250/13)	
	Frame		BAC1517-1062 7075-T62 clad formed section as given in AMS-QQ-A-250/13	
[9]	Frame Assembly			Airplanes with Ku Band Antenna and Tri-Band Antenna
	Doubler	0.056 (1.42)	7075-T62 clad sheet as given in AMS-QQ-A-250/13	

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Table 2: (Continued)

LIST OF MATERIALS FOR FIGURE 3				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
	Doubler	0.050 (1.27)	7075-T62 clad sheet as given in AMS-QQ-A-250/13 (Optional: BAC1490-2907 7075-T62 clad formed section as given in AMS-QQ-A-250/13)	
	Frame		BAC1517-1062 7075-T62 clad formed section as given in AMS-QQ-A-250/13	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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SECTION 46 LOWER LOBE FRAME (STRINGER 14 TO 28)

NOTES

- REFER TO TABLE 3 FOR THE LIST OF MATERIALS.
- REFER TO DETAIL A THRU H FOR A TYPICAL SECTION VIEW OF THE FRAMES.

H95620 S0006590425_V1

Section 46 Lower Lobe Frame Identification
Figure 4 (Sheet 1 of 3)

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TYPICAL SECTION
THROUGH AN ITEM [1] FRAME

A

TYPICAL SECTION THROUGH
AN ITEM [4] AND [7] FRAME

B

TYPICAL SECTION
THROUGH AN ITEM [3] FRAME

C

TYPICAL SECTION THROUGH AN
ITEM [2], [5], [11] AND [13] FRAME

D

H95624 S0006590429_V1

Section 46 Lower Lobe Frame Identification
Figure 4 (Sheet 2 of 3)

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TYPICAL SECTION
THROUGH AN ITEM [6] FRAME

E

TYPICAL SECTION
THROUGH AN ITEM [8] FRAME

F

TYPICAL SECTION THROUGH AN
ITEM [9] AND [12] FRAME

G

TYPICAL SECTION
THROUGH AN ITEM [10] FRAME

H

H95625 S0006590431_V1

Section 46 Lower Lobe Frame Identification
Figure 4 (Sheet 3 of 3)

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Table 3:

LIST OF MATERIALS FOR FIGURE 4				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Frame Assembly			
	Web (2)	0.063 (1.6)	7075-T62 clad sheet as given in QQ-A-250/13	
	Fail-Safe Chord (2)		BAC1503-100985 7075-T62 extrusion as given in QQ-A-200/11	
	Fail-Safe Chord		AND10134-1005 7075-T62 extrusion as given in QQ-A-200/11	
	Stiffener		BAC1511-10026 7075-T73511 extrusion as given in QQ-A-200/11	
	Splice	0.071 (1.8)	7075-T62 clad sheet as given in QQ-A-250/13	
	Doubler (2)	0.040 (1.02)	7075-T62 clad sheet as given in QQ-A-250/13	
	Doubler (2)	0.071 (1.8)	7075-T6 clad sheet as given in QQ-A-250/13	
[2]	Frame Assembly			
	Web (2)	0.063 (1.6)	7075-T62 clad sheet as given in QQ-A-250/13	
	Fail-Safe Chord		BAC1503-100985 7075-T62 extrusion as given in QQ-A-200/11	
	Splice	0.071 (1.8)	7075-T62 clad sheet as given in QQ-A-250/13	
[3]	Frame Assembly			
	Web (2)	0.063 (1.6)	7075-T62 clad sheet as given in QQ-A-250/13	
	Fail-Safe Chord		BAC1503-100985 7075-T62 extrusion as given in QQ-A-200/11	
	Splice	0.063 (1.6)	7075-T62 clad sheet as given in QQ-A-250/13	
[4]	Frame Assembly			
	Web (2)	0.063 (1.6)	7075-T62 clad sheet as given in QQ-A-250/13	
	Fail-Safe Chord		BAC1514-3142 7075-T62 extrusion as given in QQ-A-200/11	
	Splice	0.063 (1.6)	7075-T62 clad sheet as given in QQ-A-250/13	
[5]	Frame Assembly			
	Web	0.056 (1.42)	7075-T62 clad sheet as given in QQ-A-250/13	
	Fail-Safe Chord		BAC1514-3142 7075-T62 extrusion as given in QQ-A-200/11	
[6]	Frame Assembly			
	Web	0.063 (1.6)	7075-T62 clad sheet as given in QQ-A-250/13	FOR CUM LINES 1 THRU 238
	Fail-Safe Chord		BAC1514-3141 7075-T62 extrusion as given in QQ-A-200/11	FOR CUM LINES 1 THRU 238
	Frame Assembly			
	Web	0.056 (1.42)	7075-T62 clad sheet as given in QQ-A-250/13	FOR CUM LINES 239 AND ON
	Failsafe Chord		BAC1514-3141 7075-T62 extrusion as given in QQ-A-200/11	FOR CUM LINES 239 AND ON

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Table 3: (Continued)

LIST OF MATERIALS FOR FIGURE 4				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[7]	Frame Assembly			
	Web (2)	0.063 (1.6)	7075-T62 clad sheet as given in QQ-A-250/13	
	Fail-Safe Chord		BAC1514-3141 7075-T62 extrusion as given in QQ-A-200/11	
	Splice	0.063 (1.6)	7075-T62 clad sheet as given in QQ-A-250/13	
[8]	Frame Assembly			
	Web (2)	0.056 (1.42)	7075-T62 clad sheet as given in QQ-A-250/13	
	Fail-Safe Chord		BAC1514-3140 7075-T62 extrusion as given in QQ-A-200/11	
	Splice (2)	0.063 (1.6)	7075-T62 clad sheet as given in QQ-A-250/13	
[9]	Frame Assembly			
	Web	0.063 (1.6)	7075-T62 clad sheet as given in QQ-A-250/13	
	Failsafe Chord		BAC1503-100985 7075-T62 extrusion as given in QQ-A-200/11 or 7075-T73511 extrusion as given in QQ-A-200/11	
[10]	Frame Assembly			
	Web	0.063 (1.6)	7075-T62 clad sheet as given in QQ-A-250/13	
	Chord		BAC1514-1261 7075-T62 extrusion as given in QQ-A-200/11	
[11]	Frame Assembly			
	Web (2)	0.063 (1.6)	7075-T62 clad sheet as given in QQ-A-250/13	
	Fail-Safe Chord		BAC1503-100985 7075-T62 extrusion as given in QQ-A-200/11	
	Splice	0.071 (1.8)	7075-T62 clad sheet as given in QQ-A-250/13	
	Stiffener		BAC1511-10026 7075-T73511 extrusion as given in QQ-A-200/11	
[12]	Frame Assembly			
	Web (2)	0.063 (1.6)	7075-T62 clad sheet as given in QQ-A-250/13	
	Fail-Safe Chord		BAC1503-101071 7075-T62 extrusion as given in QQ-A-200/11	
	Splice	0.071 (1.8)	7075-T62 clad sheet as given in QQ-A-250/13	
[13]	Frame Assembly			
	Web (2)	0.063 (1.6)	7075-T62 clad sheet as given in QQ-A-250/13	
	Fail-Safe Chord		BAC1503-101071 7075-T62 extrusion as given in QQ-A-200/11	
	Splice	0.071 (1.8)	7075-T62 clad sheet as given in QQ-A-250/13	
	Channel		BAC1493-938 2024-T42 clad sheet as given in QQ-A-250/5	
	Channel		BAC1493-927 2024-T42 clad sheet as given in QQ-A-250/5	

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*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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ALLOWABLE DAMAGE GENERAL - SECTION 46 FUSELAGE FRAMES

NOTES

1 FOR AIRPLANES WITH THE KU BAND ANTENNA AND TRI-BAND ANTENNA, NO ALLOWABLE DAMAGE DATA IS APPLICABLE BETWEEN STA 727B TO STA 747 AND S-10L TO S-10R (UPPER FUSELAGE SECTION). REFER TO SRM 53-00-07 FOR THE ALLOWABLE DAMAGE DATA THAT IS APPLICABLE TO THE OTHER AREAS OF THE FUSELAGE FRAMES IN SECTION 46.

2393270 S0000551153_V2

Section 46 Fuselage Frame Location
Figure 101

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NOTES

1 FOR AIRPLANES WITH THE KU BAND ANTENNA AND TRI-BAND ANTENNA, NO REPAIR DATA IS APPLICABLE BETWEEN STA 727B TO STA 747 AND S-10L TO S-10R (UPPER FUSELAGE SECTION). REFER TO SRM 53-00-07 FOR THE REPAIR DATA THAT IS APPLICABLE TO THE OTHER AREAS OF THE FUSELAGE FRAMES IN SECTION 46.

L08066 S0006590442_V4

Section 46 Fuselage Frame Location
Figure 201

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H55022 S0006590454_V1

Section 46 Keel Beam Structure Identification
Figure 1

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L62792 S0006590460_V1

Section 46 Keel Beam Structure Allowable Damage
Figure 101

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L62793 S0006590466_V1

Section 46 Keel Beam Structure Repair
Figure 201

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IDENTIFICATION 1 - SECTION 46 CREASE BEAM STRUCTURE

NOTE: REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

L66790 S0006590473_V1

Section 46 Crease Beam Location
Figure 1

Table 1:

REFERENCE DRAWINGS	
DRAWING NUMBER	**TITLE**
001A4001	Fuselage Product Collector
140A0351	Floor to Body Integration Collector, Section 46
140A4620	Functional Collector Section 46 Lower Lobe
146A3200	Skin Installation - S-14L TO S-23L, Station 727 - Station 888
146A3250	Skin Installation - S-14R TO S-23R, Station 727 - Station 888
146A5900	Crease Beam Installation, Section 46

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K32321 S0006590478_V1

Section 46 Crease Beam Locations
Figure 2

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NOTE: REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

LEFT SIDE IS SHOWN, (STA 727 TO STA 888)
RIGHT SIDE IS OPPOSITE (STA 727 TO STA 747)
FOR AIRPLANE LINE NUMBERS 1 THRU 1995

K32038 S0006590482_V2

Section 46 Crease Beam (STA 727 to STA 888) Identification
Figure 3 (Sheet 1 of 2)

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LEFT SIDE IS SHOWN, (STA 727 TO STA 888)
RIGHT SIDE IS OPPOSITE (STA 727 TO STA 747)
FOR AIRPLANE LINE NUMBERS 1996 AND ON

D78329 S0000165048_V1

Section 46 Crease Beam (STA 727 to STA 888) Identification
Figure 3 (Sheet 2 of 2)

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Table 2:

LIST OF MATERIALS FOR FIGURE 3				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Inner Chord		BAC1515-531 7075-T6511 extrusion as given in QQ-A-200/11	
[2]	Shear Web (2)	0.045 (1.14)	7075-T62 clad sheet as given in QQ-A-250/13	
[3]	Shear Web	0.056 (1.42)	7075-T62 clad sheet as given in QQ-A-250/13	
[4]	Stiffener Angle		BAC1503-100360 7075-T73511 as given in QQ-A-200/11	
[5]	Splice Channel		BAC1493-196 7075-T62 clad sheet as given in QQ-A-250/13	
[6]	Shear Web	0.036 (0.91)	7075-T62 clad sheet as given in QQ-A-250/13	
[7]	Outer Chord (3 locations)		7050-T7451 plate as given in AMS 4050 (Grain direction controlled part)	Cum Line 001 thru 1195
[8]	Splice Angle (4 locations)	0.071 (1.80)	7075-T62 clad sheet as given in QQ-A-250/13	Cum Line 001 thru 1195
[9]	Attach Angle		AND10133-1201 7075-T6511 extrusion as given in QQ-A-200/11	
[10]	Splice Strap		BAC1511-3735 7075-T6511 extrusion as given in QQ-A-200/11	
[11]	Outer Chord (LH)		BAC1506–2260 or BAC1506–4632 7075-T73511 extrusion as given in QQ-A-200/11	Cum Line 1196 and on

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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NOTE: REFER TO TABLE 3 FOR THE LIST OF MATERIALS.

RIGHT SIDE IS SHOWN (STA 747 TO STA 888)
FOR AIRPLANE LINE MUNBERS 1 THRU 1195

K32170 S0006590489_V2

Section 46 Crease Beam (STA 747 to STA 888) Identification
Figure 4 (Sheet 1 of 2)

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NOTE: REFER TO TABLE 3 FOR THE LIST OF MATERIALS.

RIGHT SIDE IS SHOWN (STA 747 TO STA 888)
FOR AIRPLANE LINE NUMBERS 1196 AND ON

D77662 S0000164984_V1

Section 46 Crease Beam (STA 747 to STA 888) Identification
Figure 4 (Sheet 2 of 2)

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Table 3:

LIST OF MATERIALS FOR FIGURE 4				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Outer Chord (3 locations)		7050-T7451 plate as given in AMS 4050 (Grain direction controlled part)	Cum Line 001 thru 1195
[2]	Splice Channel		BAC1493-196 7075-T62 clad sheet as given in QQ-A-250/13	
[3]	Shear Web	0.036 (0.91)	7075-T62 clad sheet as given in QQ-A-250/13	
[4]	Shear Web	0.040 (1.02)	7075-T62 clad sheet as given in QQ-A-250/13	
[5]	Shear Web Assembly			
	Shear Web	0.045 (1.14)	7075-T62 clad sheet as given in QQ-A-250/13	
	Doubler	0.063 (1.6)	7075-T62 clad sheet as given in QQ-A-250/13	
[6]	Splice Angle (4 locations)	0.071 (1.80)	7075-T62 clad sheet as given in QQ-A-250/13	Cum Line 001 thru 1195
	Splice Angle (2 locations)	0.071 (1.80)	7075-T62 clad sheet as given in QQ-A-250/13	Cum Line 1196 and on
[7]	Attach Angle		BAC1503-101045 7075-T3511 extrusion as given in QQ-A-200/11	
[8]	Splice Strap (3)		BAC1511-3735 7075-T6511 extrusion as given in QQ-A-200/11	
[9]	Inner Chord		BAC1515-531 7075-T6511 extrusion as given in QQ-A-200/11	
[10]	Shear Web	0.045 (1.14)	7075-T62 clad sheet as given in QQ-A-250/13	
[11]	Shear Web		7050-T7451 plate as given in AMS 4050 (Grain direction controlled part)	
[12]	Attach Angle (2)		AND10133-1201 7075-T6511 extrusion as given in QQ-A-200/11	
[13]	Outer Chord		BAC1506–2260 or BAC1506–4632 7075-T73511 extrusion as given in QQ-A-200/11	Cum Line 1196 and on

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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IDENTIFICATION 1 - SECTION 46 AFT CARGO DOOR SURROUND STRUCTURE

NOTE: REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

G22195 S0006590519_V1

Section 46 Aft Cargo Door Surround Structure
Figure 1

Table 1:

REFERENCE DRAWINGS	
DRAWING NUMBER	**TITLE**
001A4001	Fuselage Product Collector
140A4620	Functional Collector Section 46 Lower Lobe
140A4630	Functional Collector - Aft Cargo Door Surround
140A4631	Integration Collector - Aft Cargo Door Surround, Section 46
146A0080	Sill Integration - Upper Main, Aft Cargo Door Surround
146A0081	Sill Integration - Lower Main, Aft Cargo Door Surround
146A0082	Frame Integration - Forward Edge Frame, Station 794.37, Aft Cargo Door Surround
146A0083	Frame Integration - Aft Edge Frame, Station 847.00, Aft Cargo Door Surround
146A8100	Sill Installation - Upper Auxiliary, Aft Cargo Door Surround
146A8110	Sill Installation - Upper Main, Aft Cargo Door Surround
146A8120	Sill Installation - Lower Main, Aft Cargo Door Surround
146A8130	Sill Installation - Lower Auxiliary, Aft Cargo Door Surround
146A8200	Frame Assembly/Installation - Station 794.37, Aft Cargo Door Surround
146A8201	Frame Assembly/Installation - Station 847, Aft Cargo Door Door Surround
146A8230	Frame Installation/Assembly - Station 807, Aft Cargo Door Surround
146A8231	Frame Assembly/Installation - Station 827, Aft Cargo Door Surround
146A8232	Frame Assembly/Installation - Station 855.95 Aft Cargo Door Surround

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Table 1: (Continued)

REFERENCE DRAWINGS	
DRAWING NUMBER	**TITLE**
146A8320	Intercostal Installation - Forward, Aft Cargo Door Surround
146A8321	Intercostal Installation - Aft, Aft Cargo Door Surround
146A8340	Scuff Plate Installation - Lower Main Sill, Aft Cargo Door Surround

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NOTE: REFER TO THE BOEING PRODUCTION DRAWING FOR THE SHEAR TIE IDENTIFICATION.

G22170 S0006590521_V2

Section 46 Aft Cargo Door Surround Structure Locations
Figure 2

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NOTE: REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

G22177 S0006590522_V2

Section 46 Aft Cargo Door Surround Structure Identification
Figure 3

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Table 2:

LIST OF MATERIALS FOR FIGURE 3				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Frame		7050-T7451 plate as given in AMS 4050. (Grain Direction controlled part)	
[2]	Failsafe Strap	0.160 (4.06)	2024-T3 sheet as given in QQ-A-250/4	
[3]	Failsafe Strap	0.160 (4.06)	2024-T3 sheet as given in QQ-A-250/4	
[4]	Failsafe Chord		BAC1503-100985 7075-T62 extrusion as given in QQ-A-200/11	
[5]	Failsafe Strap	0.190 (4.83)	7075-T73 sheet as given in QQ-A-250/12	
[6]	Web - Intercostal (10)	0.056 (1.42)	7075-T62 clad sheet as given in BMS 7-302, Type II	
[7]	Web - Intercostal (2)	0.063 (1.6)	7075-T62 clad sheet as given in QQ-A-250/13	
[8]	Frame Assembly (2) Web Fail Safe Chord	 0.063 (1.6)	 7075-T62 clad sheet as given in QQ-A-250/13 BAC1503-100985 7075-T62 extrusion as given in QQ-A-200/11	
[9]	Chord - Failsafe		BAC1514-3142 7075-T62 extrusion as given in QQ-A-200/11	
[10]	Forward Reveal	0.050 (1.27)	6013-T6 sheet as given in AMS 4347	
[11]	Aft Reveal	0.050 (1.27)	6013-T6 sheet as given in AMS 4347	
[12]	Failsafe Strap		BAC1512-3462 2024-T3511extrusion as given in QQ-A-200/3	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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NOTE: REFER TO TABLE 3 FOR THE LIST OF MATERIALS.

G22188 S0006590524_V1

Section 46 Upper Main Sill Structure Identification
Figure 4

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Table 3:

LIST OF MATERIALS FOR FIGURE 4				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Web Assembly STA 794.37 to STA 847			
	Web	0.045 (1.14)	7075-T6 clad sheet as given in QQ-A-250/13	
	Outer Chord		BAC1505-101670 7075-T62 extrusion as given in QQ-A-200/11	
	Inner Chord		BAC1496-441 7075-T62 clad sheet as given in QQ-A-250/13	
	Splice Angle		BAC1504-8253 7075-T73511 extrusion as given in QQ-A-200/11	
[2]	Web	0.056 (1.42)	7075-T62 clad sheet as given in QQ-A-250/13	
[3]	Web	0.063 (1.6)	7075-T62 clad sheet as given in QQ-A-250/13	
[4]	Strap	0.180 (4.57)	7075-T6 sheet as given in QQ-A-250/12	
[5]	Strap	0.160 (4.06)	2024-T3 sheet as given in QQ-A-250/4	
[6]	Upper Reveal	0.050 (1.27)	2024-T42 clad sheet as given in QQ-A-250/5	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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NOTE: REFER TO TABLE 4 FOR THE LIST OF MATERIALS.

G22193 S0006590526_V2

Section 46 Lower Main Sill Structure Identification
Figure 5

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Table 4:

LIST OF MATERIALS FOR FIGURE 5				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Web Assembly			
	Web	0.056 (1.42)	7075-T62 clad sheet as given in QQ-A-250/13	
	Chord		BAC1503-100933 7075-T6511 extrusion as given in QQ-A-200/11, heat treated to -T73	
[2]	Lower Main Sill			
	Web (3)	0.045 (1.14)	7075-T62 clad sheet as given in QQ-A-250/1	Cum Line 1 thru 865
	Web	0.050 (1.27)	7075-T62 clad sheet as given in QQ-A-250/13	Cum Line 866 and on
	Chord		7050-T7451 plate as given in AMS 4050. (Grain Direction controlled part)	
	Rib (5)		BAC1503-101077 chem-milled as given in BAC 5772, Type II	
	Strap	0.100 (2.54)	7075-T62 clad sheet as given in QQ-A-250/13	
	Strap	0.215 (5.46)	2024-T3 sheet as given in QQ-A-250/4	
	Strap	0.160 (4.06)	2024-T3 clad sheet as given in QQ-A-250/5	
[3]	Scuff Plate Assembly (2)			
	Scuff Plate	0.063 (1.6)	6061-T6 sheet as given in QQ-A-250/11	
	Scuff Plate		A356-T61 aluminum investment casting as given in AMS 4218	
[4]	Scuff Plate Assembly (2)			
	Scuff Plate	0.063 (1.6)	6061-T6 sheet as given in QQ-A-250/11	
	Scuff Plate	0.040 (1.02)	Titanium sheet as given in SAE-AMS-T-9046A, Code CP-1, Condition A	
	Scuff Plate		A356-T61 aluminum investment casting as given in AMS 4218	
[5]	Web	0.045 (1.14)	7075-T62 clad sheet as given in QQ-A-250/13	
[6]	Web	0.050 (1.27)	7075-T62 clad sheet as given in QQ-A-250/13	
[7]	Shield (2)	0.050 (1.27)	7075-T62 clad sheet as given in QQ-A-250/13	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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NOTE: REFER TO TABLE 5 FOR THE LIST OF MATERIALS.

G69226 S0006590528_V2

Section 46 Upper Auxilary Sill Structure Identification
Figure 6

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Table 5:

LIST OF MATERIALS FOR FIGURE 6				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Web	0.056 (1.42)	7075-T62 clad sheet as given in QQ-A-250/13	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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NOTE: REFER TO TABLE 6 FOR THE LIST OF MATERIALS.

G69224 S0006590530_V2

Section 46 Lower Auxilary Sill Structure Identification
Figure 7

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Table 6:

LIST OF MATERIALS FOR FIGURE 7				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Web	0.040 (1.02)	7075-T62 clad sheet as given in QQ-A-250/13	
[2]	Web	0.050 (1.27)	7075-T62 clad sheet as given in QQ-A-250/13	
[3]	Web	0.036 (0.91)	7075-T62 clad sheet as given in QQ-A-250/13	
[4]	Strap	0.080 (2.03)	2024-T3 clad sheet as given in QQ-A-250/5	
[5]	Strap	0.070 (1.80)	7075-T62 clad sheet as given in QQ-A-250/13	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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ALLOWABLE DAMAGE 1 - AFT CARGO DOOR SURROUND STRUCTURE

1. Applicability

A. This subject gives the allowable damage limits for the door surround structure as shown in Section 46 Aft Cargo Door Surround Structure, Figure 101/ALLOWABLE DAMAGE 1.

G75301 S0006590534_V1

Section 46 Aft Cargo Door Surround Structure
Figure 101

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G24277 S0006590535_V1

Section 46 Aft Cargo Door Surround Structure Allowable Damage
Figure 102 (Sheet 1 of 11)

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FORWARD EDGE FRAME AND FORWARD INTERCOSTALS

A

G24709 S0006590536_V1

Section 46 Aft Cargo Door Surround Structure Allowable Damage
Figure 102 (Sheet 2 of 11)

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G74724 S0006590537_V1

Section 46 Aft Cargo Door Surround Structure Allowable Damage
Figure 102 (Sheet 3 of 11)

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UPPER AUXILLIARY SILL

B

G24787 S0006590538_V1

Section 46 Aft Cargo Door Surround Structure Allowable Damage
Figure 102 (Sheet 4 of 11)

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UPPER MAIN SILL

C

C–C

G24882 S0006590539_V1

Section 46 Aft Cargo Door Surround Structure Allowable Damage
Figure 102 (Sheet 5 of 11)

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AFT EDGE FRAME AND AFT INTERCOSTALS

D

G74038 S0006590540_V1

Section 46 Aft Cargo Door Surround Structure Allowable Damage
Figure 102 (Sheet 6 of 11)

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Section 46 Aft Cargo Door Surround Structure Allowable Damage
Figure 102 (Sheet 7 of 11)

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TYPICAL INTERCOSTAL

E

G74903 S0006590542_V1

Section 46 Aft Cargo Door Surround Structure Allowable Damage
Figure 102 (Sheet 8 of 11)

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G74497 S0006590543_V1

Section 46 Aft Cargo Door Surround Structure Allowable Damage
Figure 102 (Sheet 9 of 11)

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LOWER AUXILLIARY SILL

G

G74349 S0006590544_V1

Section 46 Aft Cargo Door Surround Structure Allowable Damage
Figure 102 (Sheet 10 of 11)

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SCUFF PLATE

H

G72840 S0006590545_V1

Section 46 Aft Cargo Door Surround Structure Allowable Damage
Figure 102 (Sheet 11 of 11)

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2. General

A. Remove the damaged material as necessary.

(1) Refer to 51-10-02 for the inspection and removal of damage.

(2) Refer to 51-30-03 for possible sources of the abrasive and other materials you need to remove the damage.

(3) Refer to 51-30-05 for possible sources of the equipment and tools you need to remove the damage.

(4) Make the edges of the blendouts and holes smooth to a finish of 125 microinches Ra or smoother.

B. Apply a chemical conversion coating to the bare surfaces of the reworked area. Refer to 51-20-01.

C. Apply one layer of BMS 10-11, Type I, primer to the bare surfaces of the reworked area. Refer to SOPM 20-41-02.

D. Refer to Table 101/ALLOWABLE DAMAGE 1 for the paragraph references for the allowable damage of the different parts.

Table 101:

PARAGRAPH REFERENCES FOR THE ALLOWABLE DAMAGE LIMITS		
TYPE OF STRUCTURE	**PART NAME**	**PARAGRAPH**
EDGE FRAME BETWEEN STOP #2 AND STRINGER -17	INNER CHORD	4.A.(1)
	WEB (STOP #2 TO S-18)	4.A.(2)
	FAIL SAFE STRAPS	4.A.(3)
EDGE FRAME THAT IS NOT BETWEEN STOP #2 AND STRINGER-17	INNER AND OUTER CHORDS	4.B.(1)
	WEB	4.B.(2)
	FAIL SAFE STRAPS	4.B.(3)
	FAIL SAFE CHORD	4.B.(4)
	STIFFENERS	4.B.(4)
	SHEAR TIES	4.B.(4)
	CLIPS	4.B.(4)
INTERCOSTALS, STOP BACK-UP, DOOR STOPS, AND LATCH FITTINGS	INTERCOSTAL CHORDS	4.C.(1)
	INTERCOSTAL WEBS	4.C.(2)
	STOP BACK-UP FITTINGS	4.C.(3)
	DOOR STOPS	4.C.(4)
	LATCH FITTINGS	4.C.(5)
UPPER MAIN SILL BETWEEN STA 787 AND STA 807	CHORDS	4.D.(1)
	WEBS	4.D.(2)
	STRAPS, DOUBLERS	4.D.(3)
	STIFFENERS AND CLIPS	4.D.(4)
	BULBED SPLICED ANGLE	4.D.(5)
UPPER MAIN SILL THAT IS NOT BETWEEN STA 787 AND STA 807	CHORDS	4.E.(1)
	WEBS	4.E.(2)
	STRAPS	4.E.(3)
	STIFFENERS AND CLIPS	4.E.(4)

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Table 101: (Continued)

PARAGRAPH REFERENCES FOR THE ALLOWABLE DAMAGE LIMITS		
TYPE OF STRUCTURE	**PART NAME**	**PARAGRAPH**
LOWER MAIN SILL SPLICE STRAP WITHIN FOUR FASTENERS AFT AND FWD OF STA 794.37 AND STA 847.0	INNER LOWER STRAPS	4.F.(1)
LOWER MAIN SILL	CHORDS	4.G.(1)
	WEBS	4.G.(2)
	STRAPS	4.G.(3)
	STIFFENERS AND CLIPS	4.G.(4)
	SCUFF PLATES	4.G.(5)
LOWER AND UPPER AUXILIARY SILL	WEBS	4.H.(1)
	STRAPS AND GUSSETS	4.H.(2)
	CLIPS (STIFFENERS)	4.H.(3)

3. References

Reference	Title
51-10-02	INSPECTION AND REMOVAL OF DAMAGE
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-20-06, GENERAL	Shot Peening
51-30-03	NON-METALLIC MATERIALS
51-30-05	EQUIPMENT AND TOOLS FOR REPAIRS
AMM 51-21-00 P/B 701	INTERIOR AND EXTERIOR FINISHES - CLEANING/PAINTING
SOPM 20-20-02	Penetrant Methods of Inspection
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes

4. Allowable Damage Limits

A. Edge Frame Between Stop #2 and Stringer S-17

(1) Inner Chord Between Stop #2 and Stringer S-17

(a) Cracks are not permitted.

(b) Nicks, Gouges, Scratches, and Corrosion are not permitted.

(c) Dents are not permitted.

(d) Holes and Punctures are not permitted.

(2) Webs - Stop #2 to Stringer S-18

(a) Cracks are not permitted.

(b) Nicks, Gouges, Scratches, and Corrosion are not permitted.

(c) Dents are not permitted.

(d) Holes and Punctures are not permitted.

(3) Fail Safe Straps Stop #2 to Stringer S-17

(a) Cracks are not permitted.

(b) Nicks, Gouges, Scratches, and Corrosion are not permitted.

(c) Dents are not permitted.

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(d) Holes and Punctures are not permitted.

B. Edge Frame That is not Between Stop #2 and Stringer S-17

(1) Inner and Outer Chords

(a) Cracks:

1) Remove the damage as shown in Figure 103, Details A, B, and C.

(b) Nicks, Gouges, Scratches, and Corrosion:

1) Remove the damage as shown in Figure 103, Details A, B, C, D, and E.

(c) Dents are not permitted.

(d) Holes and Punctures are not permitted.

(2) Web

(a) Cracks:

1) Remove the damaged area as shown in Figure 103, Details A, B, and F.

2) The damage area that is removed must be less than 0.25 inch in length.

(b) Nicks, Gouges, Scratches, and Corrosion:

1) Remove the damaged area as shown in Figure 103, Details A, B, D, F, and G.

2) The damage area that is removed must be less than 0.25 inch in length.

(c) Dents are permitted as shown in Figure 103, Detail H.

(d) Holes and Punctures are permitted if they are:

1) A maximum of 0.25 inch in diameter

2) A minimum of 4D (D= the diameter of the damage) away from a fastener hole, the part edge, or other damage

3) They are filled with a 2117-T3 or 2117-T4 aluminum rivet installed without sealant.

(3) Fail Safe Straps

(a) Cracks:

1) Remove the damage as shown in Figure 103, Details A, B, I, and J.

(b) Nicks, Gouges, Scratches, and Corrosion:

1) Remove the damage as shown in Figure 103, Details A, B, D, G, I, and J.

(c) Dents are not permitted.

(d) Holes and Punctures are not permitted.

(4) Fail Safe Chord, Stiffeners, Shear Ties, and Clips

(a) Cracks:

1) Remove the damage as shown in Figure 103, Details A, B, C, and K.

(b) Nicks, Gouges, Scratches, and Corrosion:

1) Remove the damage as shown in Figure 103, Details A, B, C, D, E, and K.

(c) Dents are not permitted.

(d) Holes and Punctures are not permitted.

C. Intercostals, Stop Back-up Fittings, Door Stops and Latch Fittings

(1) Intercostal Chords

(a) Cracks:

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1) Remove the damage as shown in Figure 103, Details A, B, C, I, and J.

(b) Nicks, Gouges, Scratches, and Corrosion:

1) Remove the damage as shown in Figure 103, Details A, B, C, D, E, G, I, and J.

(c) Dents are permitted as shown in Figure 103, Detail H.

(d) Holes and Punctures are not permitted.

(2) Intercostal Webs

(a) Cracks:

1) Remove the damage as shown in Figure 103, Details A, B, and F.

(b) Nicks, Gouges, Scratches, and Corrosion:

1) Remove the damage as shown in Figure 103, Details A, B, D, F, and G.

(c) Dents are permitted as shown in Figure 103, Detail H.

(d) Holes and Punctures are permitted if they are:

1) A maximum of 0.25 inch in diameter

2) A minimum of 4D (D= the diameter of the damage) away from a fastener hole, the part edge, or other damage

3) They are filled with a 2117-T3 or 2117-T4 aluminum rivet installed without sealant.

(3) Stop Back-up Fittings

(a) Cracks:

1) Damage is not permitted between the Stop fasteners and the first row of fasteners common to the intercostals.

2) For other crack locations:

a) Remove the damage as shown in Figure 103, Details, A, B, C, and K.

(b) Nicks, Gouges, Scratches, and Corrosion:

1) Damage is not permitted between the Stop fasteners and the first row of fasteners common to the intercostals.

2) For other locations:

a) Remove the damage as shown in Figure 103, Details A, B, C, D, E, and K.

(c) Dents:

1) Damage is permitted in the Tee inboard flange under the cargo net anchor plates (tie-down pucks).

2) For other locations:

a) Damage is permitted as shown in Figure 103, Detail H.

(d) Holes and Punctures:

1) Damage is permitted in the Tee inboard flange under the cargo net anchor plates (tie-down pucks).

2) For other locations, damage is permitted if it is:

a) A maximum of 0.25 inch in diameter

b) A minimum of 4D (D= the diameter of the damage) away from a fastener hole, the part edge, or other damage

c) You fill the hole with a 2117-T3 or 2117-T4 aluminum rivet installed without sealant.

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(4) Door Stops
  (a) Cracks are not permitted.
  (b) Nicks, Gouges, Scratches, and Corrosion are not permitted.
  (c) Dents are not permitted.
  (d) Holes and Punctures are not permitted.

(5) Latch Fittings
  (a) Cracks are not permitted.
  (b) Nicks, Gouges, Scratches, and Corrosion: are not permitted on the lug region.
    1) Damage is not permitted in the lug area.
    2) For other locations:
      a) Remove the damage as shown in Figure 103, Details A, B, C, E, and I.
  (c) Dents are not permitted.
  (d) Holes and Punctures are not permitted.

D. Upper Main Sill Between Sta 787.00 and Sta 808.00

(1) Chords
  (a) Cracks are not permitted.
  (b) Nicks, Gouges, Scratches, and Corrosion are not permitted.
  (c) Dents are not permitted.
  (d) Holes and Punctures are not permitted.

(2) Webs
  (a) Cracks are not permitted.
  (b) Nicks, Gouges, Scratches, and Corrosion are not permitted.
  (c) Dents are not permitted.
  (d) Holes and Punctures are not permitted.

(3) Inner Strap and Doublers
  (a) Cracks are not permitted.
  (b) Nicks, Gouges, Scratches, and Corrosion are not permitted.
  (c) Dents are not permitted.
  (d) Holes and Punctures are not permitted.

(4) Stiffeners and Clips
  (a) Cracks are permitted only on the free flange:
    1) Remove the damage as shown in Figure 103, Details A, B, and C.
  (b) Nicks, Gouges, Scratches, and Corrosion are permitted only on the free flange:
    1) Remove the damage as shown in Figure 103, Details A, B, C, D and E.
  (c) Dents are not permitted.
  (d) Holes and Punctures are not permitted.

(5) Bulbed Splice Angle
  (a) Cracks are not permitted.
  (b) Nicks, Gouges, Scratches, and Corrosion:

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1) Remove the damage as shown in Figure 103, Details A, B, C, D, E and L.

(c) Dents are not permitted.

(d) Holes and Punctures are not permitted.

E. Upper Main Sill That is Not Between Sta 787.00 and Sta 808.00

(1) Chords

(a) Cracks:

1) Remove the damage as shown in Figure 103, Details A, B, C, and K.

(b) Nicks, Gouges, Scratches, and Corrosion:

1) Remove the damage as shown in Figure 103, Details A, B, C, D, E, and K.

(c) Dents are not permitted.

(d) Holes and Punctures are not permitted.

(2) Webs

(a) Cracks:

1) Remove the damage as shown in Figure 103, Details A, B, and F.

(b) Nicks, Gouges, Scratches, and Corrosion:

1) Remove the damage as shown in Figure 103, Details A, B, D, F and G.

(c) Dents are permitted as shown in Figure 103, Detail H.

(d) Holes and Punctures are permitted if they are:

1) A maximum of 0.25 inch in diameter

2) A minimum of 4D (D= the diameter of the damage) away from a fastener hole, the part edge, or other damage

3) They are filled with a 2117-T3 or 2117-T4 aluminum rivet installed without sealant.

(3) Straps

(a) Cracks:

1) Remove the damage as shown in Figure 103, Details A, B, I, and J.

(b) Nicks, Gouges, Scratches, and Corrosion:

1) Remove the damage as shown in Figure 103, Details A, B, D, G, I and J.

(c) Dents are not permitted.

(d) Holes and Punctures are not permitted.

(4) Stiffeners and Clips

(a) Cracks:

1) Remove the damage as shown in Figure 103, Details A, B, and C.

(b) Nicks, Gouges, Scratches, and Corrosion:

1) Remove the damage as shown in Figure 103, Details A, B, C, D and E.

(c) Dents are permitted only in the free flange as shown in Figure 103, Detail H.

(d) Holes and Punctures are permitted only in the free flange as shown in Figure 103, Detail M if they are:

1) A maximum of 0.25 inch in diameter

2) A minimum of 4D (D= the diameter of the damage) away from a fastener hole, the part edge, or other damage

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3) They are filled with a 2117-T3 or 2117-T4 aluminum rivet installed without sealant.

F. Lower Main Sill Splice Strap Within Four Fasteners at Sta 847.0 and Sta 794.37

(1) Inner Lower Straps

(a) Cracks are not permitted.

(b) Nicks, Gouges, Scratches, and Corrosion are not permitted.

(c) Dents are not permitted.

(d) Holes and Punctures are not permitted.

G. Lower Main Sill

(1) Chords

(a) Cracks:

1) Remove the damage as shown in Figure 103, Details A, B, C.

(b) Nicks, Gouges, Scratches, and Corrosion:

1) Remove the damage as shown in Figure 103, Details A, B, C, D and E.

(c) Dents are not permitted.

(d) Holes and Punctures are not permitted.

(2) Webs

(a) Cracks:

1) Remove the damage as shown in Figure 103, Details A, B, and F.

(b) Nicks, Gouges, Scratches, and Corrosion:

1) Remove the damage as shown in Figure 103, Details A, B, D, F and G.

(c) Dents are permitted as shown in Figure 103, Detail H.

(d) Holes and Punctures are permitted if they are:

1) A maximum of 0.25 inch in diameter

2) A minimum of 4D (D= the diameter of the damage) away from a fastener hole, the part edge, or other damage

3) They are filled with a 2117-T3 or 2117-T4 aluminum rivet installed without sealant.

(3) Straps

(a) Cracks:

1) Remove the damage as shown in Figure 103, Details A, B, I, and J.

(b) Nicks, Gouges, Scratches, and Corrosion:

1) Remove the damage as shown in Figure 103, Details A, B, D, G, I and J.

(c) Dents are not permitted.

(d) Holes and Punctures are not permitted.

(4) Stiffeners and Clips

(a) Cracks:

1) Remove the damage as shown in Figure 103, Details A, B, and C.

(b) Nicks, Gouges, Scratches, and Corrosion:

1) Remove the damage as shown in Figure 103, Details A, B, C, D, and E.

(c) Dents are permitted only in the free flange as shown in Figure 103, Detail H.

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(d) Holes and Punctures are permitted in the free flange as shown in Figure 103, Detail M if they are:

1) A maximum of 0.25 inch in diameter

2) A minimum of 4D (D= the diameter of the damage) away from a fastener hole, the part edge, or other damage

3) They are filled with a 2117-T3 or 2117-T4 aluminum rivet installed without sealant.

(5) Scuff Plates

(a) Cracks:

1) Remove the damage as shown in Figure 103, Details A, B, C, and F.

(b) Nicks, Gouges, Scratches, and Corrosion:

1) Remove the damage as shown in Figure 103, Details A, B, C, D, E, F, and G.

(c) Dents are permitted as shown in Figure 103, Detail H. Dents larger than the limits shown in Figure 103, Detail H, that cannot be repaired immediately are permitted if:

1) There are no loose or missing fasteners.

2) There are no damaged fastener holes.

3) There are no creases, gouges, or cracks near the dent.

4) You do not fill the dent.

5) You do a detail visual inspection of the dent for corrosion and cracks after each 1500 flight cycles, or more frequently.

6) You do a detail visual inspection of the underlying structure and there is no damage that is more than the permitted damage limits.

(d) Holes and Punctures are permitted if they are:

1) A maximum of 0.25 inch in diameter

2) A minimum of 4D (D= the diameter of the damage) away from a fastener hole, the part edge, or other damage

3) They are filled with a 2117-T3 or 2117-T4 aluminum rivet installed without sealant.

H. Lower and Upper Auxiliary Sill

(1) Webs

(a) Cracks:

1) Remove the damage as shown in Figure 103, Details A, B, and F.

(b) Nicks, Gouges, Scratches, and Corrosion:

1) Remove the damage as shown in Figure 103, Details A, B, D, F, and G.

(c) Dents are permitted as shown in Figure 103, Detail H.

(d) Holes and Punctures are permitted if they are:

1) A maximum of 0.25 inch in diameter

2) A minimum of 4D (D= the diameter of the damage) away from a fastener hole, the part edge, or other damage

3) They are filled with a 2117-T3 or 2117-T4 aluminum rivet installed without sealant.

(2) Straps and Gussets

(a) Cracks:

1) Remove the damage as shown in Figure 103, Details A, B, I, and J.

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(b) Nicks, Gouges, Scratches, and Corrosion:

1) Remove the damage as shown in Figure 103, Details A, B, D, G, I and J.

(c) Dents are not permitted.

(d) Holes and Punctures are not permitted.

(3) Stiffener Clips

(a) Cracks:

1) Remove the damage as shown in Figure 103, Details A, B, and C.

(b) Nicks, Gouges, Scratches, and Corrosion:

1) Remove the damage as shown in Figure 103, Details A, B, C, D and E.

(c) Dents are permitted as shown in Figure 103, Detail H.

(d) Holes and Punctures are permitted in the free flanges as shown in Figure 103, Detail M if they are:

1) A maximum of 0.25 inch in diameter

2) A minimum of 4D (D= the diameter of the damage) away from a fastener hole, the part edge, or other damage

3) They are filled with a 2117-T3 or 2117-T4 aluminum rivet installed without sealant.

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REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER EDGE MARGINS DO NOT HAVE AN OVERLAP

A

REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER EDGE MARGINS HAVE AN OVERLAP

B

REMOVAL OF DAMAGED MATERIAL AT A FLANGE EDGE

C

NOTES

1 FOR AIRPLANES THAT HAVE COMPLETED SERVICE BULLETIN 737-21-1149.

2 FOR AIRPLANES THAT HAVE NOT COMPLETED SERVICE BULLETIN 737-21-1149.

3 FOR SCUFF PLATES

400677 S0000136409_V2

Allowable Damage Limits
Figure 103 (Sheet 1 of 9)

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REMOVAL OF DAMAGED MATERIAL ON A SURFACE

D

400678 S0000136410_V2

Allowable Damage Limits
Figure 103 (Sheet 2 of 9)

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Y = WIDTH OF THE MATERIAL THAT IS REMOVED
≤ 5 PERCENT OF THE WIDTH OF THE FLANGE 1
≤ 10 PERCENT OF THE WIDTH OF THE FLANGE 2

REMOVAL OF DAMAGED MATERIAL ON A FLANGE SURFACE
AT AN EDGE OF A MACHINED OR EXTRUDED PART

E

B–B

400679 S0000136411_V2

Allowable Damage Limits
Figure 103 (Sheet 3 of 9)

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X = WIDTH OF THE MATERIAL THAT IS REMOVED
≤ 0.05 INCH 1
≤ 0.10 INCH 2

REMOVAL OF DAMAGED MATERIAL AT AN EDGE OF A WEB

F

REMOVAL OF DAMAGE AROUND THE FASTENERS ON AN EDGE OR A SURFACE

G

C–C

400680 S0000136412_V2

Allowable Damage Limits
Figure 103 (Sheet 4 of 9)

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DENT THAT IS PERMITTED

H

X = WIDTH OF THE MATERIAL REMOVED
≤ 5 PERCENT OF THE WIDTH OF THE STRAP 1
≤ 10 PERCENT OF THE WIDTH OF THE STRAP 2

REMOVAL OF DAMAGED MATERIAL AT A STRAP EDGE

I

400681 S0000136413_V2

Allowable Damage Limits
Figure 103 (Sheet 5 of 9)

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Y = WIDTH OF THE MATERIAL THAT IS REMOVED
≤ 5 PERCENT OF THE WIDTH OF THE STRAP 1
≤ 10 PERCENT OF THE WIDTH OF THE STRAP 2

REMOVAL OF DAMAGED MATERIAL ON A SURFACE
AT AN EDGE OF A MACHINED OR EXTRUDED STRAP

J

D–D

400682 S0000136414_V1

Allowable Damage Limits
Figure 103 (Sheet 6 of 9)

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X = THE WIDTH OF THE MATERIAL THAT IS REMOVED
≤ 5 PERCENT OF THE WIDTH OF THE FLANGE 1
≤ 10 PERCENT OF THE WIDTH OF THE FLANGE 2

REMOVAL OF DAMAGED MATERIAL ON A FLANGE EDGE

K

400683 S0000136415_V1

Allowable Damage Limits
Figure 103 (Sheet 7 of 9)

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Y = WIDTH OF THE MATERIAL REMOVED

≤ 5 PERCENT OF THE THICKNESS OF THE BULB 1

≤ 10 PERCENT OF THE THICKNESS OF THE BULB 2

REMOVAL OF DAMAGED MATERIAL ON A SURFACE
AT AN EDGE OF A BULBED EXTRUSION

L

D–D

E–E

400684 S0000136416_V1

Allowable Damage Limits
Figure 103 (Sheet 8 of 9)

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NOTE: HOLE DAMAGE IS NOT PERMITTED IN THE FASTENED FLANGES.

HOLES AND PUNCTURES IN A FREE FLANGE

M

408833 S0000136417_V1

Allowable Damage Limits
Figure 103 (Sheet 9 of 9)

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REPAIR 1 - AFT CARGO DOOR SURROUND STRUCTURE

1. Applicability

A. Repair 1 is applicable to damage to the Aft Cargo Door Surround Structures shown in Section 46 Aft Cargo Door Surround Structure, Figure 201/REPAIR 1.

G24266 S0006590558_V1

Section 46 Aft Cargo Door Surround Structure
Figure 201

2. General

A. The typical repairs given in 51-70-11, 51-70-12, and 51-70-13 can be used when applicable if there is sufficient clearance with the adjacent structure for the installation of the repair parts.

B. Some of the typical repairs given in 51-70-11, 51-70-12, and 51-70-13 must not be used in some areas, as given in the typical repair figures. Refer to 51-70-11, 51-70-12, and 51-70-13.

C. Refer to the limits of the typical repairs given in 51-70-11, 51-70-12, and 51-70-13 before you start a repair.

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D. Repair 1 gives instructions for a permanent repair. Refer to 51-00-06, GENERAL for the definitions of the different types of repairs.

3. References

Reference	Title
51-00-06, GENERAL	Structural Repair Definitions
51-20-01, GENERAL	Protective Treatment of Metallic and Composite Materials
51-20-05, GENERAL	Repair Sealing
51-40-02, GENERAL	Fastener Installation and Removal
51-70-01, REPAIR GENERAL	Procedures to Rework or Fill Allowable Dents on the External Aerodynamic Surfaces of Metallic Parts
51-70-11	TYPICAL FORMED SECTION REPAIRS
51-70-12	EXTRUDED SECTION REPAIRS
51-70-13	TYPICAL WEB REPAIRS
53-60-15	FUSELAGE DOOR SURROUND STRUCTURE - SECTION 46
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes

4. Repair Instructions

A. Refer to Section 46 Aft Cargo Door Surround Structure, Figure 201/REPAIR 1 and Section 46 Aft Cargo Door Surround Structure Repairs, Figure 202/REPAIR 1, and Table 201/REPAIR 1to find the applicable repair for the part you want to repair.

NOTE: If necessary, refer to 53-60-15, Identification 1 to find the material and the process that was used to make the part which you want to repair.

Table 201:

REPAIR REFERENCES FOR THE DOOR SURROUND STRUCTURE	
TYPE OF COMPONENT	**REPAIR**
Formed parts	Refer to SRM 51-70-11
Extruded parts	Refer to SRM 51-70-12
Webs	Refer to SRM 51-70-13
Straps, Doublers, Forgings, and Castings	There are no repairs for these parts in the Structural Repair Manual at this time. If the damage to the structure is more than the limits given in SRM 53-60-15, Allowable Damage, replace the damaged part
Scuff Plate	Refer to Paragraph 4.B./REPAIR 1

B. Repair the scuff plate as given in Figure 203/REPAIR 1.

(1) If the scuff plates were removed to install the repair parts, repair the scuff plates as necessary and install as follows:

NOTE: The scuff plate is not a structural part. You can do your own repair procedure to repair or do correct installation of the scuff plate. Incorrect installation of the scuff plate could cause a pressure leak around the door edges.

(a) Cut the crest of the scuff plates as necessary to fit. Refer to Figure 203/REPAIR 1 for typical repair details.

(b) Weld the scuff plates. Refer to BAC 5975 using base metal or ER 4043 material as given in AWS A5.10. Penetrant inspect the weld as given in BAC 5423. Radiographic inspection, post weld heat treat, or age hardening are not necessary.

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(c) Sand the edges and outer surfaces, in a constant direction, with 120-grit abrasive.

(d) Apply one layer of BMS 10-11, Type I primer to the inner surfaces of the scuff plate. Refer to SOPM 20-41-02.

(e) Apply a layer of parting agent to all mating surfaces of the scuff plates and fuselage skin/repair parts. Refer to 51-20-05, GENERAL.

(f) Apply BMS 3-23, Type II corrosion inhibiting compound to the surfaces below the scuff plates where no parting agent was applied. Refer to 51-20-01, GENERAL.

(g) Pack BMS 5-95 sealant into the scuff plates before installing. Refer to 51-20-05, GENERAL.

(h) Install the scuff plates with the same type fasteners as the initial fasteners. Make sure that the fasteners have the correct grip length. Refer to 51-40-02, GENERAL. Make sure that the sealant that squeezes out along the bottom of the scuff plates is a constant with no gaps. Remove sealant that is more than necessary.

NOTE: There can be cabin noise and air leaks which are not acceptable if there are sealant gaps along the bottom of the scuff plates.

(i) Make a ramp of fairing compound in the upper corners of the scuff plates to the doorway frame to give a smooth transition for the door seal. Refer to 51-70-01, REPAIR GENERAL for the fairing compounds. Protect the scuff plate with tape. Sand the seal ramp smooth. Refer to Figure 203/REPAIR 1.

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G75302 S0006590560_V1

Section 46 Aft Cargo Door Surround Structure Repairs
Figure 202 (Sheet 1 of 11)

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FORWARD EDGE FRAME AND FORWARD INTERCOSTALS

A

G75303 S0006590561_V1

Section 46 Aft Cargo Door Surround Structure Repairs
Figure 202 (Sheet 2 of 11)

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G75304 S0006590562_V1

Section 46 Aft Cargo Door Surround Structure Repairs
Figure 202 (Sheet 3 of 11)

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UPPER AUXILLIARY SILL

B

G75305 S0006590563_V1

Section 46 Aft Cargo Door Surround Structure Repairs
Figure 202 (Sheet 4 of 11)

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Section 46 Aft Cargo Door Surround Structure Repairs
Figure 202 (Sheet 5 of 11)

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AFT EDGE FRAME AND AFT INTERCOSTALS

D

G75307 S0006590565_V1

Section 46 Aft Cargo Door Surround Structure Repairs
Figure 202 (Sheet 6 of 11)

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Section 46 Aft Cargo Door Surround Structure Repairs
Figure 202 (Sheet 7 of 11)

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TYPICAL INTERCOSTAL

E

G75311 S0006590567_V1

Section 46 Aft Cargo Door Surround Structure Repairs
Figure 202 (Sheet 8 of 11)

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G75314 S0006590568_V1

Section 46 Aft Cargo Door Surround Structure Repairs
Figure 202 (Sheet 9 of 11)

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LOWER AUXILLIARY SILL

G

G75317 S0006590569_V1

Section 46 Aft Cargo Door Surround Structure Repairs
Figure 202 (Sheet 10 of 11)

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NOTE: REFER TO FIGURE 203 FOR THE SCUFF PLATE REPAIR

SCUFF PLATE

H

G75318 S0006590570_V2

Section 46 Aft Cargo Door Surround Structure Repairs
Figure 202 (Sheet 11 of 11)

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THRESHOLD INSTALLATION (TYPICAL)

A-A

B-B

2438050 S0000565747_V1

Section 46 Aft Cargo Door Surround Structure - Scuff Plate Repair
Figure 203 (Sheet 1 of 2)

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FAIRING COMPOUND APPLICATION

BEFORE APPLICATION OF FAIRING COMPOUND

FAIRING COMPOUND

AFTER APPLICATION OF FAIRING COMPOUND

C–C

2438057 S0000565748_V1

Section 46 Aft Cargo Door Surround Structure - Scuff Plate Repair
Figure 203 (Sheet 2 of 2)

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F97863 S0006590574_V1

Section 46 Passenger Compartment Floor Panel Location
Figure 1

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F48140 S0006590577_V1

Section 46 Passenger Compartment Floor Panel Location
Figure 101

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F48141 S0006590580_V1

Section 46 Passenger Compartment Floor Panel Location
Figure 201

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IDENTIFICATION 1 - SECTION 46 FLOOR BEAMS

NOTE: REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

H14251 S0006590586_V1

Section 46 Floor Beams
Figure 1

Table 1:

REFERENCE DRAWINGS	
DRAWING NUMBER	**TITLE**
001A4001	Fuselage Product Collector
140A0350	Functional Collector - Floor Grid, Section 46
146A5502	Beam Installation - Passenger Floor, Station 727B
146A5503	Beam Installation - Passenger Floor, Station 727C
146A5504	Beam Installation - Passenger Floor, Station 727D
146A5505	Beam Installation - Passenger Floor, Station 727E
146A5506	Beam Installation - Passenger Floor, Station 727F
146A5507	Beam Installation - Passenger Floor, Station 727G
146A5508	Beam Installation - Passenger Floor, Station 727H
146A5509	Beam Installation - Passenger Floor, Station 727I
146A5510	Beam Installation - Passenger Floor, Station 727J
146A5511	Beam Installation - Passenger Floor, Station 747
146A5512	Beam Installation - Passenger Floor, Station 767
146A5513	Beam Installation - Passenger Floor, Station 787
146A5514	Beam Installation - Passenger Floor, Station 807
146A5515	Beam Installation - Passenger Floor, Station 827
146A5516	Beam Installation - Passenger Floor, Station 847

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Table 1: (Continued)

REFERENCE DRAWINGS	
DRAWING NUMBER	**TITLE**
146A5517	Beam Installation - Passenger Floor, Station 867
146A5518	Beam Installation - Passenger Floor, Station 887

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H15296 S0006590590_V1

Section 46 Floor Beam Locations
Figure 2

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NOTE: REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

G70593 S0006590592_V2

Station 727B Floor Beam Identification
Figure 3
Table 2:

LIST OF MATERIALS FOR FIGURE 3				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Beam		BAC1518-1207 7075-T6511 extrusion as given in QQ-A-200/11	
[2]	Angle (4)		AND10133-0601 7075-T73511 extrusion as given in QQ-A-200/11	
[3]	Stiffener (4)		BAC1503-100142 7075-T73511 extrusion as given in QQ-A-200/11	
[4]	Termination Fitting (4)		7050-T7451 plate as given in AMS 4340	
[5]	Depressor Strip		BAC1503-295 2024-T3511 extrusion as given in QQ-A-200/3	
[6]	Stiffener		BAC1503-100142 7075-T73511 extrusion as given in QQ-A-200/11	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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NOTE: REFER TO TABLE 3 FOR THE LIST OF MATERIALS.

G70783 S0006590598_V1

Station 727C Floor Beam Identification
Figure 4

Table 3:

LIST OF MATERIALS FOR FIGURE 4				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Beam		BAC1518-1207 7075-T6511 extrusion as given in QQ-A-200/11	
[2]	Angle - Seat Track (4)		BAC1503-100987 7075-T6511 extrusion as given in QQ-A-200/11	
[3]	Angle - Seat Track (4)		BAC1503-100987 7075-T6511 extrusion as given in QQ-A-200/11	
[4]	Depressor Strip		BAC1503-295 2024-T3511 extrusion as given in QQ-A-200/3	
[5]	Stiffener		BAC1503-100436 7075-T6511 extrusion as given in QQ-A-200/11	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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NOTE: REFER TO TABLE 4 FOR THE LIST OF MATERIALS.

STATION 727D FLOOR BEAM IS SHOWN,
STATION 727E THRU 727J FLOOR BEAMS ARE ALMOST THE SAME

H14974 S0006590604_V1

Stations 727D thru 727J Floor Beam Identification
Figure 5

Table 4:

LIST OF MATERIALS FOR FIGURE 5				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Beam		BAC1518-1207 7075-T6511 extrusion as given in QQ-A-200/11	
[2]	Angle - Seat Track (4)		BAC1503-100987 7075-T6511 extrusion as given in QQ-A-200/11	
[3]	Angle - Seat Track (4)		BAC1503-100987 7075-T6511 extrusion as given in QQ-A-200/11	
[4]	Stiffener		BAC1503-100436 7075-T6511 extrusion as given in QQ-A-200/11	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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NOTE: REFER TO TABLE 5 FOR THE LIST OF MATERIALS.

STATION 747 FLOOR BEAM IS SHOWN,
STATION 767 FLOOR BEAM IS ALMOST THE SAME

K30506 S0006590614_V1

Stations 747 and 767 Floor Beam Identification

Figure 6

Table 5:

LIST OF MATERIALS FOR FIGURE 6				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Beam		BAC1518-1207 7075-T6511 extrusion as given in QQ-A-200/11	
[2]	Stiffener (6)		BAC1503-100436 7075-T6511 extrusion as given in QQ-A-200/11	
[3]	Angle - Seat Track (4)		BAC1503-100987 7075-T6511 extrusion as given in QQ-A-200/11	
[4]	Angle - Seat Track (4)		BAC1503-100987 7075-T6511 extrusion as given in QQ-A-200/11	
[5]	Depressor Strip		BAC1503-295 2024-T3511 extrusion as given in QQ-A-200/3	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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NOTE: REFER TO TABLE 6 FOR THE LIST OF MATERIALS.

STATION 787 FLOOR BEAM IS SHOWN,
STATIONS 827, 847, 867, AND 887 FLOOR BEAMS ARE ALMOST THE SAME

G71080 S0006590620_V1

Stations 787, 827, 847, 867, and 887 Floor Beam Identification
Figure 7

Table 6:

LIST OF MATERIALS FOR FIGURE 7				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Beam		BAC1518-1207 7075-T6511 extrusion as given in QQ-A-200/11	
[2]	Stiffener (6)		BAC1503-100436 7075-T6511 extrusion as given in QQ-A-200/11	
[3]	Angle - Seat Track (4)		BAC1503-100987 7075-T6511 extrusion as given in QQ-A-200/11	
[4]	Angle - Seat Track (4)		BAC1503-100987 7075-T6511 extrusion as given in QQ-A-200/11	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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NOTE: REFER TO TABLE 7 FOR THE LIST OF MATERIALS.

G71098 S0006590626_V1

Station 807 Floor Beam Identification
Figure 8
Table 7:

LIST OF MATERIALS FOR FIGURE 8				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Beam		BAC1518-1207 7075-T6511 extrusion as given in QQ-A-200/11	
[2]	Stiffener (6)		BAC1503-100436 7075-T6511 extrusion as given in QQ-A-200/11	
[3]	Angle - Seat Track (4)		BAC1503-100987 7075-T6511 extrusion as given in QQ-A-200/11	
[4]	Angle - Seat Track (4)		BAC1503-100987 7075-T6511 extrusion as given in QQ-A-200/11	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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IDENTIFICATION 2 - SECTION 46 FLOOR STRUCTURE

L37471 S0006590641_V1

Section 46 Floor Structure Location
Figure 1

Table 1:

REFERENCE DRAWINGS	
DRAWING NUMBER	**TITLE**
001A4001	Fuselage Product Collector
140A0350	Functional Collector - Floor Grid, Section 46
146A5400	Stabilization Installation - Floor, Section 46

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L37434 S0006590646_V1

Section 46 Floor Structure Identification
Figure 2 (Sheet 1 of 2)

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TYPICAL AT 2 LOCATIONS

A

NOTES

- REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

L37577 S0006590647_V1

Section 46 Floor Structure Identification
Figure 2 (Sheet 2 of 2)

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Table 2:

LIST OF MATERIALS FOR FIGURE 2				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Stabilizer Strap (9)		BAC1513-295 7075-T76511 extrusion as given in QQ-A-200/15	
[2]	Splice (6)	0.050 (1.27)	7075-T6 clad sheet as given in QQ-A-250/13	
[3]	Depressor Strip (2)		BAC1513-295 2024-T3511 extrusion as given in QQ-A-200/3	
[4]	Support Channel (4)		BAC1493-370 2024-T3 clad sheet as given in QQ-A-250/5	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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ALLOWABLE DAMAGE 1 - SECTION 46 TRANSVERSE FLOOR BEAMS

1. Applicability

A. This subject gives the allowable damage limits for the flanges of the upper chord of the extruded transverse floor beams in Section 46 from STA 727B to STA 887 as shown in Figure 101/ ALLOWABLE DAMAGE 1.

B. No damage is permitted at the following areas:

(1) Floor beam upper chord at the web access hole.

(2) Floor beam upper chord under the seat track attachment.

(3) Floor beam to fuselage frame joint.

(4) Floor beam upper chord under intercostals for galley hard mount or attachments.

C. Only the basic configuration of the floor structure is shown. Refer to Boeing drawings for optional structure.

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2477438 S0000580968_V1

Section 46 Transverse Floor Beams
Figure 101

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NOTE: ALL FLOOR BEAMS ARE MADE OF ALUMINUM EXTRUSION

2477465 S0000580960_V1

Section 46 Transverse Floor Beam Locations
Figure 102

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2. General

A. Remove the damaged material as necessary.

(1) Refer to 51-10-02, GENERAL for the inspection and removal of damage.

(2) Refer to 51-30-03, GENERAL for possible sources of the abrasive and other materials you can use to remove the damage.

(3) Refer to 51-30-05, GENERAL for possible sources of the equipment and tools you can use to remove the damage.

B. Apply a chemical conversion coating to the bare surfaces of the repair areas. Refer to 51-20-01, GENERAL.

C. Apply one of the two finishes to the repair areas:

(1) Apply two layers of BMS 10-11, Type I, primer. Refer to SOPM 20-41-02 and AMM PAGEBLOCK 51-21-00/701.

(2) Apply one layer of BMS 10-11, Type I, primer and one layer of BMS 10-11, Type II, enamel. Refer to SOPM 20-41-02 and AMM PAGEBLOCK 51-21-00/701.

3. References

Reference	Title
51-10-02, GENERAL	Inspection and Removal of Damage
51-20-01, GENERAL	Protective Treatment of Metallic and Composite Materials
51-30-03, GENERAL	Sources for Non-Metallic Repair Materials
51-30-05, GENERAL	Equipment and Tools For Repairs
AMM 51-21-00 P/B 701	INTERIOR AND EXTERIOR FINISHES - CLEANING/PAINTING
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes

4. Allowable Damage Limits

A. Allowable damage limits are as follows:

(1) Cracks:

(a) Remove the damage as shown in Figure 103/ALLOWABLE DAMAGE 1, Details A and B.

(2) Nicks, Gouges, Scratches, and Corrosion:

(a) Remove the damage as shown in Figure 103/ALLOWABLE DAMAGE 1, Details A and B.

(3) Dents are not permitted.

(4) Holes and Punctures are not permitted.

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REMOVAL OF DAMAGED MATERIAL
ON A SURFACE

A

X = DEPTH OF THE MATERIAL THAT IS REMOVED

= A MAXIMUM OF 0.05T FOR STA 727B, STA 727C, STA 727D, STA 727E, STA 727F, STA 727G, STA 727H, AND STA 727I FLOOR BEAMS

= A MAXIMUM OF 0.09T FOR STA 847, AND STA 867 FLOOR BEAMS

= A MAXIMUM OF 0.10T FOR STA 727J, STA 747, STA 767, STA 787, STA 807, STA 827, AND STA 887 FLOOR BEAMS

A–A

2477508 S0000580954_V1

Allowable Damage Limits
Figure 103 (Sheet 1 of 2)

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REMOVAL OF DAMAGE FROM A FLOOR BEAM UPPER FLANGE
STATION 727B THRU STATION 887

B

X = DEPTH OF THE MATERIAL THAT IS REMOVED
- = A MAXIMUM OF 0.05T FOR STA 727B, STA 727C, STA 727D, STA 727E, STA 727F, STA 727G, STA 727H, AND STA 727I FLOOR BEAMS
- = A MAXIMUM OF 0.09T FOR STA 847, AND STA 867 FLOOR BEAMS
- = A MAXIMUM OF 0.10T FOR STA 727J, STA 747, STA 767, STA 787, STA 807, STA 827, AND STA 887 FLOOR BEAMS

NOTES

- USE FILLERS AS NECESSARY AT LOCATIONS WHERE THE FLOOR BEAM IS ATTACHED TO ADJACENT STRUCTURE. THE MAXIMUM GAP BEFORE FASTENERS ARE INSTALLED IS 0.01 INCH.

2477695 S0000580955_V1

Allowable Damage Limits
Figure 103 (Sheet 2 of 2)

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REPAIR 1 - SECTION 46 TRANSVERSE FLOOR BEAMS

K90243 S0006590662_V1

Section 46 Transverse Floor Beams
Figure 201

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REPAIR 2 - SECTION 46 FLOOR STRUCTURE

1. Applicability

A. Repair 2 is applicable to damage to the floor structure as shown in Section 46 Floor Structure Repairs, Figure 201/REPAIR 2.

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NOTE: THE BASIC FLOOR STRUCTURE CAN BE DIFFERENT BECAUSE OF OPERATOR OPTIONS. THE REPAIRS GIVEN IN THESE SECTIONS WILL ALSO BE APPLICABLE TO OPERATOR OPTIONS UNLESS SUCH AN OPTION NEEDS A SPECIFIED REPAIR IN THE MANUAL.

REFER TO SRM 51-70-11 , SRM 51-70-12, AND SRM 51-70-13 FOR THE TYPICAL FORMED SECTION REPAIRS, TYPICAL EXTRUDED SECTION REPAIRS, AND TYPICAL WEB REPAIRS. THESE TYPICAL REPAIRS CAN BE USED WHEREVER THEY ARE APPLICABLE IF SUFFICIENT SPACE IS AVAILABLE FOR THE INSTALLATION OF THE REPAIR PARTS, WITH NO INTERFERENCE TO ADJACENT STRUCTURE. SOME OF THESE REPAIRS CAN NOT BE USED IN SPECIFIED AREAS OF THE AIRPLANE, AS GIVEN IN THE TYPICAL REPAIR FIGURES. REFER TO THE USAGE LIMITS IN THE TYPICAL REPAIR FIGURES BEFORE YOU START A REPAIR.

H16676 S0006590664_V1

Section 46 Floor Structure Repairs
Figure 201

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2. General

A. The typical repairs given in 51-70-11, 51-70-12, or 51-70-13 can be used, where applicable, if there is sufficient clearance with the adjacent structure to install the repair parts.

B. Refer to the limits of the typical repairs given in 51-70-11, 51-70-12, or 51-70-13 before you start a repair.

3. References

Reference	Title
51-70-11	TYPICAL FORMED SECTION REPAIRS
51-70-12	EXTRUDED SECTION REPAIRS
51-70-13	TYPICAL WEB REPAIRS
53-60-51	FUSELAGE FLOOR STRUCTURE - SECTION 46

4. Repair Instructions

A. Section 46 Floor Structure

(1) Refer to Table 201/REPAIR 2 to find the applicable repairs to the floor structure in Section 46 floor structure.

NOTE: If necessary, refer to 53-60-51, Identification 1 to find the material and the process that was used to make the part which you want to repair.

Table 201:

REPAIR REFERENCES FOR THE SECTION 46 FLOOR STRUCTURE	
COMPONENT	**REPAIR**
Straps and Angles	Refer to SRM 51-70-12
Shear Webs	There are no repairs for these parts in the Structural Repair Manual at this time.
Straps, Brackets, Formed Angles, and Machined Splice Angles	There are no repairs for these parts in the Structural Repair Manual at this time.

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IDENTIFICATION 1 - SECTION 46 SEAT TRACKS

NOTE: REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

L47294 S0006590671_V1

Section 46 Seat Track Location
Figure 1

Table 1:

REFERENCE DRAWINGS	
DRAWING NUMBER	**TITLE**
140A0350	Functional Collector - Floor Grid, Section 46
146A5300	Seat Track Installation, Section 46

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NOTE: REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

THERE ARE MANY SEAT TRACK CONFIGURATIONS FOR THIS AIRPLANE. THESE CONFIGURATIONS CAN BE DIFFERENT THAN THE ONE THAT IS SHOWN. REFER TO DRAWING 140A0350 TO SEE THE DIFFERENT CONFIGURATIONS.

F87535 S0006590673_V1

Section 46 Seat Track Identification

Figure 2

Table 2:

LIST OF MATERIALS FOR FIGURE 2				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Seat Track		BAC1520-2789 7178-T6511 extrusion as given in QQ-A-200/13	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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F96997 S0006590681_V1

Section 46 Seat Track Allowable Damage
Figure 101

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F97132 S0006590684_V1

Section 46 Seat Track Repairs
Figure 201

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IDENTIFICATION 1 - SECTION 46 CARGO COMPARTMENT FLOOR PANELS

NOTE: REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

F89364 S0006590689_V1

Section 46 Cargo Compartment Floor Panel Locations
Figure 1

Table 1:

REFERENCE DRAWINGS	
DRAWING NUMBER	**TITLE**
400A9101	Functional Product Collector - Payloads - Final Assembly
453A2600	Deck Panel Installation - Aft Cargo

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NOTE: REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

F89326 S0006590691_V2

Section 46 Cargo Compartment Floor Panel Identification
Figure 2

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Table 2:

LIST OF MATERIALS				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Deck Panel	0.070 (1.79)	GILLINER 1266 Gill Coated (white) fiberglass	Refer to the Engineering Drawing
		0.090 (2.29)	GILLINER 1266 Gill Coated (white) fiberglass	
		0.071 (1.80)	2024-T3 clad sheet as given in QQ-A-250/5	
		0.090 (2.29)	Conolite P/N A90RG1W	
		0.058 (1.47)	BMS 7-326, Class 2/1, Grade C, Type VII	
[2]	Cap Strip	0.063 (1.6)	2024-T3 clad sheet as given in QQ-A-250/5	
[3]	Scuff Plate	0.125 (3.18)	7075-T6 formed plate as given in QQ-A-250/13	
[4]	Cap Strip	0.063 (1.6)	6013-T6 formed sheet as given in AMS 4347	
[5]	Cap Strip	0.050 (1.3)	2024-T3 clad sheet as given in QQ-A-250/5	
[6]	Stiffener	0.063 (1.6)	2024-T3 clad sheet as given in QQ-A-250/5	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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IDENTIFICATION 2 - SECTION 46 CARGO COMPARTMENT FLOOR STRUCTURE

NOTE: REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

F95946 S0006590694_V1

Section 46 Cargo Compartment Floor Structure Location
Figure 1

Table 1:

REFERENCE DRAWINGS	
DRAWING NUMBER	**TITLE**
140A4620	Functional Collector Section 46 Lower Lobe
146A7500	Support Installation - Cargo Deck, Section 46
146A7501	Track Assembly - Cargo Support, Section 46
146A7502	Zee Assembly - Cargo Floor, Section 46
146A7503	Rail Assembly - Cargo Deck Support, Section 46
146A7505	Intercostals - Cargo Deck Support, Section 46
146A7506	Splice - Cargo Deck Support, Section 46
146A9401	Support Assembly - Payloads, Aft Cargo

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NOTES

- REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

F95943 S0006590696_V1

Section 46 Cargo Compartment Floor Structure Identification
Figure 2 (Sheet 1 of 3)

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(SHOWN WITH RAILS REMOVED)

G23199 S0006590697_V1

Section 46 Cargo Compartment Floor Structure Identification
Figure 2 (Sheet 2 of 3)

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(SHOWN WITH RAILS REMOVED)

G24861 S0006590698_V1

Section 46 Cargo Compartment Floor Structure Identification
Figure 2 (Sheet 3 of 3)

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Table 2:

LIST OF MATERIALS FOR FIGURE 2				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Track		BAC1520-1397 7050-T76511 extrusion as given in AMS 4340	
[2]	Intercostal - Track		BAC1496-377 7075-T62 clad formed sheet as given in QQ-A-250/13	
[3]	Rail		BAC1509-100146 7050-T76511 extrusion as given in AMS 4340	
[4]	Tee		BAC1505-100543 7075-T6511 extrusion as given in QQ-A-200/11	
[5]	Tee		BAC1505-100581 7075-T6511 extrusion as given in QQ-A-200/11	
[6]	Intercostal - Zee	0.032 (0.81)	7075-T62 clad sheet as given in QQ-A-250/13	
[7]	Intercostal - Track	0.045 (1.143)	7075-T62 clad sheet as given in QQ-A-250/13	
[8]	Intercostal - Rail	0.036 (0.914)	7075-T62 clad sheet as given in QQ-A-250/13	
[9]	Clip		BAC1503-100703 7075-T73511 extrusion as given in QQ-A-200/11	
[10]	Clip		BAC1503-100283 7075-T73511 extrusion as given in QQ-A-200/11	
[11]	Clip - Station 807		BAC1503-100219 7075-T73511 extrusion as given in QQ-A-200/11	
[12]	Clip - Station 827 and 867		7075-T7351 machined plate as given in QQ-A-250/12. Refer to the production drawing for the machined thicknesses	
[13]	Clip - Station 887	0.056 (1.422)	7075-T62 clad sheet as given in QQ-A-250/13	
[14]	Clip - Station 847		BAC1505-101508 7075-T73511 extrusion as given in QQ-A-200/11	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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G08871 S0006590702_V1

Section 46 Aft Cargo Compartment Floor Structure
Figure 101

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G08872 S0006590705_V1

Section 46 Aft Cargo Compartment Floor Structure
Figure 201

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IDENTIFICATION 1 - SECTION 46 WING-TO-BODY FAIRING SKIN PANELS

NOTE: REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

H26204 S0006590711_V1

Section 46 Wing-to-Body Fairing Skin Panels Identification
Figure 1

Table 1:

REFERENCE DRAWINGS	
DRAWING NUMBER	**TITLE**
149A7011	Functional Collector - Section 49 Panel Installations
149A7503	Lower Aft Fairing Panel Installation
149A7504	Flap Track, Aft Fairing Panel Installation
149A7507	Aft Fairing Panel Installation
149A7508	Lower Aft Fairing Panel Installation

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NOTE: REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

H26230 S0006590715_V1

Section 46 Wing-to-Body Fairing Skin Panels Identification
Figure 2

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Table 2:

LIST OF MATERIALS FOR FIGURE 2				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Upper Flap Track, BSTA 727+2.7 to BSTA 727B - Bonded Part		Glass Fiber Reinforced Plastic (GFRP) honeycomb sandwich	
	Skin Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 120 (Optional: 220)	
	Doubler Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 1581 (Optional: 7781)	
	Filler Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 1581 (Optional: 7781)	
	Core	0.70 (17.8)	Non-metallic honeycomb as given in BMS 8-124, Class IV, Type V, Grade 3.0	
	Rub Strip	0.032 (0.81)	AISI 302 CRES sheet as given in AMS 5516, annealed condition	
[2]	Upper Aft Fairing, BSTA 727B to BSTA 727C - Bonded Part		Glass Fiber Reinforced Plastic (GFRP) honeycomb sandwich	
	Skin Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 120 (Optional: 220)	
	Doubler Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 1581 (Optional: 7781)	
	Filler Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 120 (Optional: 220), Style 1581 (Optional: 7781), or Style 1584	
	Core	0.40 (10.2)	Non-metallic honeycomb as given in BMS 8-124, Class IV, Type VI, 3/16 OX, Grade 3.0	
[3]	Upper Aft Fairing, BSTA 727C to Aft - Bonded Part		Glass Fiber Reinforced Plastic (GFRP) honeycomb sandwich	
	Skin Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 120 (Optional: 220)	
	Doubler Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 1581 (Optional: 7781)	
	Filler Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 120 (Optional: 220), Style 1581 (Optional: 7781), or Style 1584	
	Core	0.40 (10.2)	Non-metallic honeycomb as given in BMS 8-124, Class IV, Type V, Grade 3.0	
[4]	Lower Aft Fairing, BSTA 727C to Aft - Bonded Part		Glass Fiber Reinforced Plastic (GFRP) honeycomb sandwich with aluminum foil mesh lightning protection ply	

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Table 2: (Continued)

LIST OF MATERIALS FOR FIGURE 2				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
	Skin Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 120 (Optional: 220)	
	Doubler Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 1581 (Optional: 7781)	
	Filler Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 1581 (Optional: 7781)	
	Lightning Protection Ply		Phosphoric acid anodized expanded aluminum foil as given in BMS 8-336, Type I, Class I, Grade 016 in accordance with BAC 5555 and primed in accordance with BAC 5514-589	
	Core	0.80 (20.3)	Non-metallic honeycomb as given in BMS 8-124, Class IV, Type VI, Grade 3.0	
[5]	Lower Aft Fairing, BSTA 727C to Aft - Bonded Part		Glass Fiber Reinforced Plastic (GFRP) honeycomb sandwich with aluminum foil mesh lightning protection ply	
	Skin Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 120 (Optional: 220)	
	Doubler Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 1581 (Optional: 7781)	
	Filler Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 1581 (Optional: 7781)	
	Lightning Protection Ply		Phosphoric acid anodized expanded aluminum foil as given in BMS 8-336, Type I, Class I, Grade 016 in accordance with BAC 5555 and primed in accordance with BAC 5514-589	
	Core	0.80 (20.3)	Non-metallic honeycomb as given in BMS 8-124, Class IV, Type V, Grade 3.0	
[6]	Lower Aft Fairing, BSTA 727+2.7 to BSTA 727B - Bonded Part		Glass Fiber Reinforced Plastic (GFRP) honeycomb sandwich	
	Skin Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 120 (Optional: 220)	
	Doubler Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 1581 (Optional: 7781)	
	Filler Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 120 (Optional: 220), Style 1581 (Optional: 7781), or Style 1584	
	Core	0.30 (7.6)	Non-metallic honeycomb as given in BMS 8-124, Class IV, Type V, Grade 3.0	

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Table 2: (Continued)

LIST OF MATERIALS FOR FIGURE 2				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[7]	Lower Aft Fairing, BSTA 727+2.7 to BSTA 727C - Bonded Part		Glass Fiber Reinforced Plastic (GFRP) honeycomb sandwich with aluminum foil mesh lightning protection ply	
	Skin Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 120 (Optional: 220)	
	Doubler Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 1581 (Optional: 7781)	
	Filler Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 120 (Optional: 220), Style 1581 (Optional: 7781), or Style 1584	
	Lightning Protection Ply		Phosphoric acid anodized expanded aluminum foil as given in BMS 8-336, Type I, Class I, Grade 016 in accordance with BAC 5555 and primed in accordance with BAC 5514-589	
	Core	0.80 (20.3)	Non-metallic honeycomb as given in BMS 8-124, Class IV, Type V, Grade 3.0	
[8]	Lower Aft Fairing, BSTA 727+2.7 to BSTA 727C - Bonded Part		Glass Fiber Reinforced Plastic (GFRP) honeycomb sandwich	
	Skin Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 120 (Optional: 220)	
	Doubler Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 1581 (Optional: 7781)	
	Filler Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 120 (Optional: 220), Style 1581 (Optional: 7781), or Style 1584	
	Core	0.60 (15.2)	Non-metallic honeycomb as given in BMS 8-124, Class IV, Type V, Grade 3.0	
[9]	Brake Accumulator Access Door, Aft Fairing - Bonded Part		Glass Fiber Reinforced Plastic (GFRP) honeycomb sandwich with aluminum foil mesh lightning protection ply	
	Skin Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 120 (Optional: 220)	
	Skin Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 1581 (Optional: 7781)	
	Doubler Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 1581 (optional 7781)	
	Filler Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 1581 (Optional: 7781)	

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Table 2: (Continued)

LIST OF MATERIALS FOR FIGURE 2				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
	Lightning Protection Ply		Phosphoric acid anodized expanded aluminum foil as given in BMS 8-336, Type I, Class I, Grade 016 in accordance with BAC 5555 and primed in accordance with BAC 5514-589	
	Core	1.00 (25.4)	Non-metallic honeycomb as given in BMS 8-124, Class IV, Type V, Grade 3.0	
	Core	1.00 (25.4)	Non-metallic honeycomb as given in BMS 8-124, Class I, Type I, Grade 5.5	
[10]	Flap Track Access Panel, Aft Fairing - Bonded Part		Glass Fiber Reinforced Plastic (GFRP) Solid Laminate	
	Skin Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 120 (Optional: 220)	
	Skin Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 1581 (Optional: 7781)	
	Filler Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 1581 (Optional: 7781)	
	Rub Strip	0.032 (0.81)	AISI 302 CRES sheet as given in AMS 5516, annealed condition	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

NOTE: Refer to the production drawings for the ply lay-up and core ribbon direction.

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ALLOWABLE DAMAGE 1 - SECTION 46 WING-TO-BODY FAIRING SKIN PANELS

1. Applicability

A. This subject gives the allowable damage limits for the section 46 wing-to-body fairing skin panels shown in Section 46 Wing-to-Body Fairing Skin Panels Location, Figure 101/ALLOWABLE DAMAGE 1.

B. The allowable damage limits are only applicable if they are sealed as given in Paragraph 2.

NOTES

- GFRP = GLASS FIBER REINFORCED PLASTIC

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Section 46 Wing-to-Body Fairing Skin Panels Location
Figure 101 (Sheet 1 of 2)

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A

H26977 S0006590724_V1

Section 46 Wing-to-Body Fairing Skin Panels Location
Figure 101 (Sheet 2 of 2)

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2. General

A. Do the steps that follow for the skin panels made of Glass Fiber Reinforced Plastic (GFRP) honeycomb sandwich panels.

(1) Do an inspection of the damaged area to find the length, width and depth of the damage. Boeing recommends that you use an instrumented Non-Destructive Test (NDT) procedure. Refer to 737 NDT Part 1, 51-01-02 for inspection procedures.

NOTE: Other equivalent inspection methods that have been examined and found to be satisfactory by the operator can be used.

(a) For the honeycomb core areas, the tap test is an alternative procedure to an instrumented NDT.

(b) Refer to Damage Definitions, Figure 102/ALLOWABLE DAMAGE 1, Details A, B, and C for the definitions of the length, width, and depth of damage.

(c) Refer to Definitions of the Facesheets, Figure 103/ALLOWABLE DAMAGE 1 for the definitions of the facesheets of a honeycomb core area.

(2) Remove all the contamination and water from the structure.

(a) Refer to 51-30-05 for possible sources of the equipment and tools you can use to remove the damage.

(b) Refer to 51-70-04 for the cleanup procedures.

(3) Some GFRP panels have BMS 8-336 expanded aluminum foil mesh as shown in Section 46 Wing-to-Body Fairing Skin Panels Location, Figure 101/ALLOWABLE DAMAGE 1. If damage occurs to the expanded aluminum foil mesh, do the steps that follow:

(a) Refer to 51-70-14 for the allowable damage limits for the expanded aluminum foil mesh.

(b) Seal the damaged area as given in 51-70-14.

(4) Seal all damaged areas that do not have BMS 8-336 expanded aluminum foil mesh nor a flame-sprayed aluminum coating with the steps that follow:

(a) Seal the damaged areas that are not more than one ply deep and that agree with the allowable damage limits given in Paragraph 4./ALLOWABLE DAMAGE 1

1) Make a temporary seal.

a) Apply aluminum foil tape (speed tape).

b) Keep a record of the location.

c) Make sure the tape is in satisfactory condition at normal maintenance intervals.

2) Make a permanent seal.

a) Apply BMS 8-201, BMS 8-207 or BMS 8-301 epoxy resin to the area as given 51-70-08.

b) Apply one layer of BMS 10-79, Type 3 or BMS 10-103, Type 1 primer. Refer to SOPM 20-44-04.

c) Apply one layer of BMS 10-60 enamel to the areas sealed with epoxy resin. Refer to AMM PAGEBLOCK 51-21-99/701.

(b) Seal the damaged areas that are more than one ply deep and that agree with the allowable damage limits given in Paragraph 4./ALLOWABLE DAMAGE 1

1) Use a vacuum and heat to remove moisture from the solid laminate or the honeycomb cells. Refer to 51-70-04.

2) Make a temporary seal with aluminum foil tape (speed tape).

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3) Keep a record of the location.

4) Repair the damage no later than 24 months from the time the seal was made.

B. Do the steps that follow for the skin panels made of formed aluminum sheet:

(1) Refer to Section 46 Wing-to-Body Fairing Skin Panels Location, Figure 101/ALLOWABLE DAMAGE 1 for the location of the aluminum panels.

(2) Remove the damaged material as necessary.

(a) Refer to 51-10-02 for the inspection and removal of damage.

(b) Refer to 51-30-03 for possible sources of the abrasive and other materials you can use to remove the damage.

(c) Refer to 51-30-05 for possible sources of the equipment and tools you can use to remove the damage.

(3) Apply a chemical conversion coating to the bare surfaces of the aluminum. Refer to 51-20-01.

(4) Apply one layer of BMS 10-11, Type I primer to the bare surfaces of the aluminum. Refer to SOPM 20-41-02.

C. Make sure the aerodynamic smoothness is satisfactory or there will be a decrease in the economic performance of the airplane.

D. Refer to Table 101/ALLOWABLE DAMAGE 1 for the paragraph references for the allowable damage limits.

Table 101:

PARAGRAPH REFERENCES FOR THE ALLOWABLE DAMAGE LIMITS	
TYPE OF STRUCTURE	**PARAGRAPH**
GFRP/HONEYCOMB SANDWICH PANELS - FULL DEPTH HONEYCOMB CORE AREAS	4.A
GFRP/HONEYCOMB SANDWICH PANELS - EDGEBAND AREAS	4.B
GFRP SOLID LAMINATE PANELS	4.C
FORMED ALUMINUM SHEET PANELS	4.D

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DEFINITIONS FOR NICK, GOUGE, OR SCRATCH DAMAGE

A

DEFINITIONS FOR DENT DAMAGE

B

DEFINITIONS FOR EDGE DAMAGE

C

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Damage Definitions
Figure 102

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G52512 S0006590727_V1

Definitions of the Facesheets
Figure 103

3. References

Reference	Title
51-10-01, GENERAL	Aerodynamic Smoothness Requirements
51-10-02	INSPECTION AND REMOVAL OF DAMAGE
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-20-05, GENERAL	Repair Sealing
51-30-03	NON-METALLIC MATERIALS
51-30-05	EQUIPMENT AND TOOLS FOR REPAIRS
51-70-01, REPAIR GENERAL	Procedures to Rework or Fill Allowable Dents on the External Aerodynamic Surfaces of Metallic Parts
51-70-04	REPAIR PROCEDURES FOR WET LAYUP MATERIALS
51-70-08	RESIN SWEEP-FAIR PROCEDURES
51-70-14	STRUCTURES WITH ALUMINUM COATINGS AND FOILS
AMM 51-21-99 P/B 701	DECORATIVE EXTERIOR PAINT SYSTEM - CLEANING/PAINTING
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes
SOPM 20-44-04	Application of Urethane Compatible Primer
737 NDT Part 1, 51-01-02	NDT Examination of Composite Structure for Impact Damage

4. Allowable Damage Limits

A. GFRP Honeycomb Sandwich Panels - Full Depth Honeycomb Core Area

(1) Cracks are permitted if:

(a) They are a maximum of one facesheet and the core in depth

(b) The dimension of the damage is less than the limits given in GFRP Honeycomb Sandwich Panels - Damage Size and Spacing Limits, Figure 104/ALLOWABLE DAMAGE 1 and Table 102/ALLOWABLE DAMAGE 1

(c) They are in the full depth core area and are a minimum distance away from fastener holes or material edges as shown in GFRP Honeycomb Sandwich Panels - Damage Size and Spacing Limits, Figure 104/ALLOWABLE DAMAGE 1 and Table 102/ALLOWABLE DAMAGE 1

(d) They are a minimum distance away from the edge of other damage as shown in GFRP Honeycomb Sandwich Panels - Damage Size and Spacing Limits, Figure 104/ALLOWABLE DAMAGE 1 and Table 102/ALLOWABLE DAMAGE 1

NOTE: Other damage does not include nicks, gouges, and scratches that:

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- Do not cause damage to the glass fiber plies
- Are sealed as given in Paragraph 2.

(e) They are sealed as given in Paragraph 2.

(2) Nicks, Gouges and Scratches that do not cause damage to the glass fibers are permitted.

(3) Nicks, Gouges and Scratches that cause damage to the glass fibers are permitted if:

(a) The dimension of the damage is less than the limits given in GFRP Honeycomb Sandwich Panels - Damage Size and Spacing Limits, Figure 104/ALLOWABLE DAMAGE 1 and Table 102/ALLOWABLE DAMAGE 1

(b) They are a minimum distance away from the edge of other damage as shown in GFRP Honeycomb Sandwich Panels - Damage Size and Spacing Limits, Figure 104/ALLOWABLE DAMAGE 1 and Table 102/ALLOWABLE DAMAGE 1

NOTE: Other damage does not include nicks, gouges, and scratches that:

- Do not cause damage to the glass fiber plies
- Are sealed as given in Paragraph 2.

(c) They are sealed as given in Paragraph 2.

(4) Dents are permitted if:

(a) The dimension of the damage is less than the limits given in GFRP Honeycomb Sandwich Panels - Damage Size and Spacing Limits, Figure 104/ALLOWABLE DAMAGE 1 and Table 102/ALLOWABLE DAMAGE 1

(b) They are in the full depth core area and are a minimum distance away from fastener holes or material edges as shown in GFRP Honeycomb Sandwich Panels - Damage Size and Spacing Limits, Figure 104/ALLOWABLE DAMAGE 1 and Table 102/ALLOWABLE DAMAGE 1

(c) They are a minimum distance away from the edge of other damage as shown in GFRP Honeycomb Sandwich Panels - Damage Size and Spacing Limits, Figure 104/ALLOWABLE DAMAGE 1 and Table 102/ALLOWABLE DAMAGE 1

NOTE: Other damage does not include nicks, gouges, and scratches that:

- Do not cause damage to the glass fiber plies
- Are sealed as given in Paragraph 2.

(d) They are sealed as given in Paragraph 2.

(5) Holes and Punctures are permitted if:

(a) They are a maximum of one facesheet and the core in depth

(b) The dimension of the damage is less than the limits given in GFRP Honeycomb Sandwich Panels - Damage Size and Spacing Limits, Figure 104/ALLOWABLE DAMAGE 1 and Table 102/ALLOWABLE DAMAGE 1

(c) They are in the full depth core area and are a minimum distance away from fastener holes or material edges as shown in GFRP Honeycomb Sandwich Panels - Damage Size and Spacing Limits, Figure 104/ALLOWABLE DAMAGE 1 and Table 102/ALLOWABLE DAMAGE 1

(d) They are a minimum distance away from the edge of other damage as shown in GFRP Honeycomb Sandwich Panels - Damage Size and Spacing Limits, Figure 104/ALLOWABLE DAMAGE 1 and Table 102/ALLOWABLE DAMAGE 1

NOTE: Other damage does not include nicks, gouges, and scratches that:

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- Do not cause damage to the glass fiber plies
- Are sealed as given in Paragraph 2.

(e) They are sealed as given in Paragraph 2.

(6) Delaminations are permitted if:

(a) The dimension of the damage is less than the limits given in GFRP Honeycomb Sandwich Panels - Damage Size and Spacing Limits, Figure 104/ALLOWABLE DAMAGE 1 and Table 102/ALLOWABLE DAMAGE 1

(b) They are in the full depth core area and are a minimum distance away from fastener holes or material edges as shown in GFRP Honeycomb Sandwich Panels - Damage Size and Spacing Limits, Figure 104/ALLOWABLE DAMAGE 1 and Table 102/ALLOWABLE DAMAGE 1

(c) They are a minimum distance away from the edge of other damage as shown in GFRP Honeycomb Sandwich Panels - Damage Size and Spacing Limits, Figure 104/ALLOWABLE DAMAGE 1 and Table 102/ALLOWABLE DAMAGE 1

NOTE: Other damage does not include nicks, gouges, and scratches that:

- Do not cause damage to the glass fiber plies
- Are sealed as given in Paragraph 2.

(d) They are sealed as given in Paragraph 2.

Table 102:

DAMAGE DIMENSION DATA FOR THE FULL DEPTH HONEYCOMB CORE AREAS - SECTION 46 WING-TO-BODY FAIRING SKIN			
PANEL DRAWING NUMBER	BAGSIDE FACESHEET OR TOOLSIDE FACESHEET		
	MAXIMUM DAMAGE DIMENSION "D" OR "d" (INCHES	MINIMUM DAMAGE SPACING DIMENSION "A" (INCHES)	MINIMUM DAMAGE DISTANCE "B" OR "C" FROM FASTENER HOLES OR MATERIAL EDGES (INCHES) "B" "C"
149A7548	3.0	(1.5)x(D+d)	1.7D 1.7d
149A7552	3.0	(1.5)x(D+d)	1.7D 1.7d
149A7553	3.0	(1.5)x(D+d)	1.7D 1.7d
149A7554	2.2	(4.8)x(D+d)	5.3D 5.3d
149A7555	2.3	(3.8)x(D+d)	4.2D 4.2d
149A7556	3.0	(1.5)x(D+d)	1.7D 1.7d
149A7557	3.0	(1.5)x(D+d)	1.7D 1.7d
149A7559	1.7	(5.7)x(D+d)	6.0D 6.0d
149A7562	3.0	(1.5)x(D+d)	1.7D 1.7d

B. GFRP Honeycomb Sandwich Panels - Edgeband Area

(1) Cracks are permitted if they are:

(a) A maximum of 0.25 inch measured across the largest dimension of the damage

(b) A minimum distance of 0.5 inch away from the edge of fastener holes or material edges

(c) A minimum distance of 3.0 inches away from the edge of other damage

NOTE: Other damage does not include nicks, gouges, and scratches that:

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- Do not cause damage to the glass fiber plies
- Are sealed as given in Paragraph 2.

(d) Sealed as given in Paragraph 2.

(2) Nicks, Gouges and Scratches that do not cause damage to the glass fibers are permitted.

(3) Nicks, Gouges and Scratches that cause damage to the glass fibers are permitted if they are:

(a) A maximum of one ply in depth

NOTE: Use the limits for holes and punctures if the depth of the damage is more than 1 ply in depth.

(b) A maximum of 1.0 inch in length

(c) A maximum of 0.25 inch in width

(d) A minimum distance of 0.5 inch away from the edge of fastener holes or material edges

(e) A minimum distance of 3.0 inches away from the edge of other damage

NOTE: Other damage does not include nicks, gouges, and scratches that:

- Do not cause damage to the glass fiber plies
- Are sealed as given in Paragraph 2.

(f) Sealed as given in Paragraph 2.

(4) Dents are not permitted.

(5) Holes and Punctures are permitted if they are:

(a) A maximum of 0.25 inch measured across the largest dimension of the damage

(b) A minimum distance of 0.5 inch away from the edge of fastener holes or material edges

(c) A minimum distance of 3.0 inches away from the edge of other damage

NOTE: Other damage does not include nicks, gouges, and scratches that:

- Do not cause damage to the glass fiber plies
- Are sealed as given in Paragraph 2.

(d) Sealed as given in Paragraph 2.

(6) Delaminations are permitted if they are:

(a) A maximum of 1.00 inch measured across the largest dimension of the damage

(b) A minimum distance of 0.5 inch away from the edge of fastener holes or material edges

(c) A minimum distance of 3.0 inches away from the edge of other damage

NOTE: Other damage does not include nicks, gouges, and scratches that:

- Do not cause damage to the glass fiber plies
- Are sealed as given in Paragraph 2.

(d) Sealed as given in Paragraph 2.

(7) Edge damage is permitted if it is:

(a) A maximum of 0.10 inch in depth

(b) A maximum of 0.50 inch in width

(c) A minimum of distance of 2.5D (D = the largest dimension across the damage) away from the edge of other damage or the edge of a hole

NOTE: Other damage does not include nicks, gouges, and scratches that:

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- Do not cause damage to the glass fiber plies
- Are sealed as given in Paragraph 2.

(d) Sealed as given in Paragraph 2.

(8) Edge Erosion is permitted as shown in GFRP Honeycomb Sandwich Panels - Sealing of Erosion Damage at an Edge , Figure 105/ALLOWABLE DAMAGE 1.

C. GFRP Solid Laminate Panels (does not include the solid laminate areas in honeycomb sandwich panels)

(1) Cracks are permitted if they are:

(a) A maximum of 0.50 inch measured across the largest dimension of the damage

(b) A minimum distance away from the edge of other damage, fastener holes or material edges as shown in GFRP Solid Laminate Panels - Damage Size and Spacing Limits, Figure 106/ALLOWABLE DAMAGE 1

NOTE: Other damage does not include nicks, gouges, and scratches that:

- Do not cause damage to the glass fiber plies
- Are sealed as given in Paragraph 2.

(c) Sealed as given in Paragraph 2.

(2) Nicks, Gouges and Scratches that do not cause damage to the glass fibers are permitted.

(3) Nicks, Gouges and Scratches that cause damage to the glass fibers are permitted if they are:

(a) A maximum of 1 ply in depth

NOTE: Use the limits for holes and punctures if the depth of the damage is more than 1 ply in depth.

(b) A maximum of 3.0 inches in length

(c) A minimum distance of 0.50 inch away from the edge of other damage, fastener holes or material edges

NOTE: Other damage does not include nicks, gouges, and scratches that:

- Do not cause damage to the glass fiber plies
- Are sealed as given in Paragraph 2.

(d) Sealed as given in Paragraph 2.

(4) Dents are permitted if they are:

(a) A maximum of 2.0 inch measured across the largest dimension of the damage

(b) A minimum distance away from the edge of other damage, fastener holes or material edges as shown in GFRP Solid Laminate Panels - Damage Size and Spacing Limits, Figure 106/ALLOWABLE DAMAGE 1

NOTE: Other damage does not include nicks, gouges, and scratches that:

- Do not cause damage to the glass fiber plies
- Are sealed as given in Paragraph 2.

(c) A maximum of 2 plies in depth

(d) Sealed as given in Paragraph 2.

(5) Holes and Punctures are permitted if they are:

(a) A maximum of 0.625 inch measured across the largest dimension of the damage

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(b) A minimum distance away from the edge of other damage, fastener holes or material edges as shown in GFRP Solid Laminate Panels - Damage Size and Spacing Limits, Figure 106/ALLOWABLE DAMAGE 1

NOTE: Other damage does not include nicks, gouges, and scratches that:

- Do not cause damage to the glass fiber plies
- Are sealed as given in Paragraph 2.

(c) Sealed as given in Paragraph 2.

(6) Delaminations are permitted if they are:

(a) A maximum of 0.625 inch measured across the largest dimension of the damage

(b) A minimum distance away from the edge of other damage, the edge of a hole, or the edge of the material as shown in GFRP Solid Laminate Panels - Damage Size and Spacing Limits, Figure 106/ALLOWABLE DAMAGE 1

NOTE: Other damage does not include nicks, gouges, and scratches that:

- Do not cause damage to the glass fiber plies
- Are sealed as given in Paragraph 2.

(c) Sealed as given in Paragraph 2.

(7) Edge damage is permitted if it is:

(a) A maximum of 2 plies in depth

(b) A maximum of 0.50 inch away from a fastener hole edge.

(c) A minimum distance of 2.5D (D = the largest dimension across the damage) away from the edge of other damage or the edge of a hole

NOTE: Other damage does not include nicks, gouges, and scratches that:

- Do not cause damage to the glass fiber plies
- Are sealed as given in Paragraph 2.

(d) Sealed as given in Paragraph 2.

(8) Edge Erosion is permitted as shown in GFRP Solid Laminate Panels - Sealing of Erosion Damage at an Edge, Figure 107/ALLOWABLE DAMAGE 1.

D. Panels Made of Formed Aluminum Sheet

(1) Cracks:

(a) Remove the damage as shown in Aluminum Panel - Allowable Damage Limits, Figure 108/ALLOWABLE DAMAGE 1, Details A, B, and C.

(2) Nicks, Gouges, Scratches, and Corrosion:

(a) Remove the damage as shown in Aluminum Panel - Allowable Damage Limits, Figure 108/ALLOWABLE DAMAGE 1, Details A, B, C, D, and F.

(3) Dents are permitted if they:

(a) Agree with the conditions shown in Aluminum Panel - Allowable Damage Limits, Figure 108/ALLOWABLE DAMAGE 1, Detail E

(b) Are a minimum distance of 3.0D (D = the largest dimension across the damage) away from the edge of other damage, the edge of a hole, or the edge of the material.

(4) Holes and Punctures are permitted if:

(a) They are a maximum of 0.25 measured across the largest dimension of the damage

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(b) The edge of the damage is a minimum of 1.0 inch away from a fastener hole, an edge, or other damage

(c) They are filled with a 2017-T3 or 2117-T4 aluminum flush head rivet without sealant.

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NOTE: TO FIND DELAMINATION, YOU CAN USE NONDESTRUCTIVE INSPECTION PROCEDURES. REFER TO NDT PART 1, 51-01-02.

THE DIAMETER OF A DAMAGE AREA IS EITHER THE DIAMETER OF THE VISUAL DAMAGE OR THE DIAMETER OF THE DELAMINATION. USE THE DIAMETER OF THE LARGER DAMAGE.

D IS THE LARGER DIAMETER OF TWO ADJACENT DAMAGE AREAS.

d IS THE SMALLER DIAMETER OF TWO ADJACENT DAMAGE AREAS.

A IS THE DISTANCE BETWEEN TWO ADJACENT DAMAGE AREAS.

B AND C ARE THE DISTANCES BETWEEN THE DAMAGE AND THE FASTENER HOLES OR MATERIAL EDGES.

FOR THE VALUES OF D, d, A, B, AND C, REFER TO TABLE 102.

G52513 S0006590729_V1

GFRP Honeycomb Sandwich Panels - Damage Size and Spacing Limits
Figure 104

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G52515 S0006590730_V1

GFRP Honeycomb Sandwich Panels - Sealing of Erosion Damage at an Edge
Figure 105

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NOTE: TO FIND DELAMINATION, YOU CAN USE NONDESTRUCTIVE INSPECTION PROCEDURES. REFER TO NDT PART 1, 51-01-02.

THE DIAMETER OF A DAMAGE AREA IS EITHER THE DIAMETER OF THE VISUAL DAMAGE OR THE DIAMETER OF THE DELAMINATION. USE THE DIAMETER OF THE LARGER DAMAGE.

D IS THE LARGER DIAMETER OF TWO ADJACENT DAMAGE AREAS.

d IS THE SMALLER DIAMETER OF TWO ADJACENT DAMAGE AREAS.

A IS THE DISTANCE BETWEEN TWO ADJACENT DAMAGE AREAS.

THE MINIMUM A THAT IS PERMITTED IS 2.5D.

G52516 S0006590731_V1

GFRP Solid Laminate Panels - Damage Size and Spacing Limits
Figure 106

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G52517 S0006590732_V1

GFRP Solid Laminate Panels - Sealing of Erosion Damage at an Edge
Figure 107

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X = THE WIDTH OF THE MATERIAL REMOVED
= 0.10 INCH THICKNESS MAXIMUM

REMOVAL OF DAMAGED MATERIAL AT AN EDGE

A

REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER EDGE MARGINS DO NOT HAVE AN OVERLAP

B

REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER EDGE MARGINS HAVE AN OVERLAP

C

G52518 S0006590733_V1

Aluminum Panel - Allowable Damage Limits
Figure 108 (Sheet 1 of 3)

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REMOVAL OF DAMAGED MATERIAL ON A SURFACE

D

DENT THAT IS PERMITTED

E

G52520 S0006590734_V1

Aluminum Panel - Allowable Damage Limits
Figure 108 (Sheet 2 of 3)

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REMOVAL OF CORROSION AROUND THE FASTENERS

F

B–B

G52521 S0006590735_V1

Aluminum Panel - Allowable Damage Limits
Figure 108 (Sheet 3 of 3)

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REPAIR 1 - SECTION 46 WING-TO-BODY FAIRING SKIN PANELS MADE OF COMPOSITE MATERIALS

1. Applicability

A. Repair 1 is applicable to the wing-to-body fairing skin panels shown in Section 46 Wing-to-Body Fairing Skin Panels Location, Figure 201/REPAIR 1.

B. Repair 1 is applicable to damage that is more than the limits permitted in 53-60-70, Allowable Damage 1.

NOTES

- GFRP = GLASS FIBER REINFORCED PLASTIC

H26996 S0006590740_V1

Section 46 Wing-to-Body Fairing Skin Panels Location
Figure 201 (Sheet 1 of 2)

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A

H27132 S0006590743_V1

Section 46 Wing-to-Body Fairing Skin Panels Location
Figure 201 (Sheet 2 of 2)

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2. General

A. Repair 1 gives instructions for Category A and B repairs. Refer to 51-00-06 to find the definitions of the different categories of repairs.

B. Get access to the damaged area.

(1) If necessary, remove the wing-to-body fairing skin panels as given in AMM 53-51-21/401.

(a) Refer to 51-40-02 for the fastener removal procedures.

(b) If a fastener hole is damaged, refer to Repair 8 of 51-70-04 or Repair 8 of 51-70-05 for the repair procedures.

C. Do an inspection of the damaged area to find the dimensions of the damage. Boeing recommends that you use an instrumented Non-Destructive Test (NDT) procedure. Refer to 737 NDT Part 1, 51-01-02 for the inspection procedures.

NOTE: Other equivalent inspection methods that have been examined and found to be satisfactory by the operator can be used.

(1) For the honeycomb core areas, the tap test is an alternative procedure to an instrumented NDT.

(2) Refer to Damage Definitions, Figure 202/REPAIR 1, Details A, B, and C for the definitions of the length, width, and depth of damage.

(3) Refer to Definitions of the Facesheets, Figure 203/REPAIR 1 for the definitions of the facesheets of a honeycomb core area.

D. Some GFRP wing-to-body fairing skin panels have BMS 8-336 expanded aluminum foil mesh as shown in Section 46 Wing-to-Body Fairing Skin Panels Location, Figure 201/REPAIR 1. If damage occurs, refer to 51-70-14 for the procedures to repair the BMS 8-336 expanded aluminum foil mesh.

E. Do the repair as given in Paragraph 4./REPAIR 1

F. Put the wing-to-body fairing skin panels back to the initial condition, as applicable.

(1) Install the wing-to-body fairing skin panels as given in AMM 53-51-21/401, if they were removed.

(a) Refer to 51-40-02 for the fastener installation procedures.

(b) Refer to 51-40-03 for fastener substitution.

(2) Make sure the aerodynamic smoothness is satisfactory or there will be a decrease in the economic performance of the airplane.

G. Restore the aircraft wing-to-body fairing skin panels exterior decorative finish, as applicable. Refer to AMM PAGEBLOCK 51-21-99/701.

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DEFINITIONS FOR NICK, GOUGE, OR SCRATCH DAMAGE

A

DEFINITIONS FOR DENT DAMAGE

B

DEFINITIONS FOR EDGE DAMAGE

C

G52577 S0006590744_V1

Damage Definitions
Figure 202

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G52578 S0006590745_V1

Definitions of the Facesheets
Figure 203

3. References

Reference	Title
51-00-06	STRUCTURAL REPAIR DEFINITIONS
51-10-01, GENERAL	Aerodynamic Smoothness Requirements
51-10-02, GENERAL	Inspection and Removal of Damage
51-20-05, GENERAL	Repair Sealing
51-40-02	FASTENER INSTALLATION AND REMOVAL
51-40-03	FASTENER SUBSTITUTION
51-70-04	REPAIR PROCEDURES FOR WET LAYUP MATERIALS
51-70-05	REPAIR PROCEDURES FOR PREIMPREGNATED MATERIALS
51-70-06, REPAIR GENERAL	Room Temperature Cure Repairs With Wet Layup Materials For Glass Fabric Reinforced Plastic Solid Laminates and Honeycomb Core Panels
51-70-14	STRUCTURES WITH ALUMINUM COATINGS AND FOILS
51-70-14, REPAIR GENERAL	Structures With Aluminum Coatings and Foils
53-60-70	FUSELAGE FAIRING SKIN - SECTION 46
53-60-70, ALLOWABLE DAMAGE 1	Section 46 Wing-to-Body Fairing Skin Panels
AMM 51-21-99 P/B 701	DECORATIVE EXTERIOR PAINT SYSTEM - CLEANING/PAINTING
AMM 53-51-21/401	Aft Wing-to-Body Fairing Removal/Installation
737 NDT Part 1, 51-01-01	Inspection of Repairs to Composite Structure
737 NDT Part 1, 51-01-02	NDT Examination of Composite Structure for Impact Damage

4. Repair Instructions

NOTE: If necessary, refer to 53-60-70, Identification 1 for the material and build-up of the part that you want to repair.

A. For dents that are a maximum of 2 inches in diameter and have no fiber damage or delamination, do the steps that follow:

(1) Fill the dent with BMS 5-28, Type 7 potting compound

(2) Apply a fiberglass patch over the potted area as given in Repair 14 of 51-70-04.

B. If Paragraph 4.A./REPAIR 1 is not applicable, then refer to:

(1) Table 201/REPAIR 1 for the repair data that is applicable to damage to the full depth honeycomb core areas of the sandwich panels

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(2) Table 202/REPAIR 1 for the repair data that is applicable to damage to the edgebands of the honeycomb sandwich panels

(3) Table 203/REPAIR 1 for the repair data that is applicable to damage to the solid laminate panels.

C. For repairs made with wet layup materials, do as follows, as applicable:

(1) Use one repair ply of fabric for each initial ply that was damaged.

(2) Add two structural plies of fabric for each surface that is repaired. Put one structural ply at ±45 degrees to the core ribbon direction and the other at 0 or 90 degrees.

(3) Inspect Category B repairs after each 800 flight hour interval or more frequently. Refer to 737 NDT Part 1, 51-01-01 for inspection procedures. If deterioration is found, then they must be replaced with Category A repairs.

NOTE: Other inspection methods that have been examined and found to be satisfactory by the operator, can be used.

D. For repairs made with preimpregnated layup materials, use the same number of repair plies as the number of initial plies that were damaged.

Table 201:

REPAIR DATA FOR THE 250°F (121°C) CURE WING-TO-BODY FAIRING SKIN PANELS FOR THE FULL DEPTH HONEYCOMB CORE AREAS OF THE SANDWICH PANELS				
REPAIR TYPE	**CATEGORY B WET LAYUP REPAIR**	**CATEGORY A WET LAYUP REPAIR**	**CATEGORY A WET LAYUP REPAIR**	**CATEGORY A PREIMPREGNATED LAYUP REPAIR**
REPAIR CURE TEMPERATURE	**Room Temperature**	**150°F (66°C)**	**200°F (93°C)**	**250°F (121°C)**
REPAIR SIZE AND LIMITS	Contact Boeing for repair instruction	Damage that is a maximum of: - 6.0 inches (152.4 mm) diameter 3.0 inches minimum clearance from: - other repairs - fastener holes - panel edges	Damage that is a maximum of: - 6.0 inches (152.4 mm) diameter 3.0 inches minimum clearance from: - other repairs - fastener holes - panel edges	There are no size limits on the repairs made with autoclave pressure. See the note below for vacuum bag repairs.
REPAIR PROCEDURES	SRM 51-70-06 and Paragraph 4.C	SRM 51-70-04 and Paragraph 4.C	SRM 51-70-04 and Paragraph 4.C	SRM 51-70-05 and Paragraph 4.D

NOTE: For panels that are greater than 1296 inches², vacuum bag repairs shall not be more than 75% of the panel area for either the inner or outer skin and 50% of the panel area for both the inner and outer skins. For a given honeycomb area that is less than 1296 inches², it is permitted to use a vacuum bag repair for the complete inner or outer skin of the honeycomb area. If both skins of the honeycomb area need a repair, then 75% of the inner and outer skin facesheets can be repaired.

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Table 202:

REPAIR DATA FOR THE EDGEBANDS OF 250°F (121°C) CURE WING-TO-BODY FAIRING SKIN HONEYCOMB SANDWICH PANELS				
REPAIR TYPE	**CATEGORY B WET LAYUP REPAIR**	**CATEGORY A WET LAYUP REPAIR**	**CATEGORY A WET LAYUP REPAIR**	**CATEGORY A PREIMPREGNATED LAYUP REPAIR**
REPAIR CURE TEMPERATURE	**Room Temperature**	**150°F (66°C)**	**200°F (93°C)**	**250°F (121°C)**
REPAIR SIZE	Contact Boeing for repair instruction	Damage that is a maximum of: - 6.0 inches (152.40 mm) across the largest dimension of the damage - 30 percent of the length of the edgeband on the side of the damage	Damage that is a maximum of: - 6.0 inches (152.40 mm) across the largest dimension of the damage - 30 percent of the length of the edgeband on the side of the damage	There are no size limits on the repairs made with autoclave pressure. See the note below for vacuum bag repairs.
REPAIR PROCEDURES	SRM 51-70-06 and Paragraph 4.C	SRM 51-70-04 and Paragraph 4.C	SRM 51-70-04 and Paragraph 4.C	SRM 51-70-05 and Paragraph 4.D

NOTE: For panels that are greater than 1296 inches², vacuum bag repairs shall not be more than 75% of the panel area for either the inner or outer skin and 50% of the panel area for both the inner and outer skins. For a given honeycomb area that is less than 1296 inches², it is permitted to use a vacuum bag repair for the complete inner or outer skin of the honeycomb area. If both skins of the honeycomb area need a repair, then 75% of the inner and outer skin facesheets can be repaired.

Table 203:

REPAIR DATA FOR THE 250°F (121°C) CURE SOLID LAMINATE WING-TO-BODY FAIRING SKIN PANELS				
REPAIR TYPE	**CATEGORY B WET LAYUP REPAIR**	**CATEGORY A WET LAYUP REPAIR**	**CATEGORY A WET LAYUP REPAIR**	**CATEGORY A PREIMPREGNATED LAYUP REPAIR**
REPAIR CURE TEMPERATURE	**Room Temperature**	**150°F (66°C)**	**200°F (93°C)**	**250°F (121°C)**
REPAIR SIZE AND LIMITS	Contact Boeing for repair instructions	Damage that is a maximum of: - 6.0 inches (152.40 mm) across the largest dimension of the damage 3.0 inches minimum clearance from: -other repairs -fastener holes -panel edges	Damage that is a maximum of: - 6.0 inches (152.40 mm) across the largest dimension of the damage 3.0 inches minimum clearance from: -other repairs -fastener holes -panel edges	There are no size limits on the repairs made with autoclave pressure. See the note below for vacuum bag repairs.
REPAIR PROCEDURES	SRM 51-70-06 and Paragraph 4.C	SRM 51-70-04 and Paragraph 4.C	SRM 51-70-04 and Paragraph 4.C	SRM 51-70-05 and Paragraph 4.D

NOTE: For panels that are greater than 1296 inches², vacuum bag repairs shall not be more than 50% of the panel area. For a given solid laminate area that is less than 1296 inches², it is permitted to use a vacuum bag repair for the complete area.

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IDENTIFICATION 1 - SECTION 46 WING-TO-BODY FAIRING SUPPORT STRUCTURE

NOTE: REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

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Section 46 Wing-to-Body Fairing Support Structure Location
Figure 1

Table 1:

REFERENCE DRAWINGS	
DRAWING NUMBER	**TITLE**
143A7800	Installation - Wing-to-Body Fairing Support Structure
146A7800	Wing-to-Body Fairing Attachment Installation
149A7011	Functional Collector - Section 49, Panel Installation
149A7013	Functional Collector - Section 49, Aft Fairing
149A7501	Support Installation - Aft Fairing
149A7502	Support Installation - Aft Fairing
149A7505	Support Installation - Aft Fairing
149A7506	Support Installation - Aft Fairing

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NOTES

- REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

1 FOR AIRPLANES WITH LINE NUMBERS 1 THROUGH 1537
2 FOR AIRPLANES WITH LINE NUMBERS 1538 AND ON

G47541 S0006590754_V2

Section 46 Wing-to-Body Fairing Support Structure (Sta 727+2.7 to Sta 747) Identification
Figure 2 (Sheet 1 of 5)

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RIGHT SIDE IS SHOWN, LEFT SIDE IS OPPOSITE
BSTA 727+2.7 TO BSTA 727C, RBL 52.0 TO OUTBOARD

A 1

Section 46 Wing-to-Body Fairing Support Structure (Sta 727+2.7 to Sta 747) Identification
Figure 2 (Sheet 2 of 5)

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RIGHT SIDE IS SHOWN, LEFT SIDE IS OPPOSITE
BSTA 727+2.7 TO BSTA 727C, RBL 52.0 TO OUTBOARD

D 2

U55176 S0000206920_V2

Section 46 Wing-to-Body Fairing Support Structure (Sta 727+2.7 to Sta 747) Identification
Figure 2 (Sheet 3 of 5)

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RIGHT SIDE IS SHOWN, LEFT SIDE IS OPPOSITE
(EXCEPT AS NOTED)
BSTA 727+2.7 TO BSTA 747, LBL 15.0 TO RBL 52.0

B

G47547 S0006590756_V1

Section 46 Wing-to-Body Fairing Support Structure (Sta 727+2.7 to Sta 747) Identification
Figure 2 (Sheet 4 of 5)

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LEFT SIDE ONLY
BSTA 727B TO BSTA 727C, LBL 52.0 TO LBL 62.0

C

G47548 S0006590757_V1

Section 46 Wing-to-Body Fairing Support Structure (Sta 727+2.7 to Sta 747) Identification
Figure 2 (Sheet 5 of 5)

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Table 2:

LIST OF MATERIALS FOR FIGURE 2				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Frame		BAC1509-100665 7075-T73 extrusion as given in QQ-A-200/11	
[2]	Clip		BAC1514-3272 7075-T73511 extrusion as given in QQ-A-200/11 (Optional: 7050-T7451 plate as given in AMS 4050)	
[3]	Frame		BAC1506-4251 7075-T73 extrusion as given in QQ-A-200/11	
[4]	Clip		BAC1505-101698 7075-T73511 extrusion as given in QQ-A-200/11 (Optional: 7050-T7451 plate as given in BMS 7-323, Type I)	
[5]	Frame		BAC1505-101645 7075-T73 extrusion as given in QQ-A-200/11	
[6]	Clip		BAC1503-101044 7075-T73511 extrusion as given in QQ-A-200/11 (Optional: 7050-T7451 plate as given in AMS 4050)	
[7]	L-Chord		BAC1503-100533 7075-T73 extrusion as given in QQ-A-200/11	
[8]	Aft Fairing BSTA 727B - Bonded Part Skin Core	 0.300 (7.62)	Glass Fiber Reinforced Plastic (GFRP) honeycomb sandwich Refer to Figure 3 and Table 3 for the ply lay-up Honeycomb core non-metallic as given in BMS 8-124, Class IV, Type V, Grade 3.0. Refer to Figure 3 for the core ribbon direction	
[9]	Splice Plate	0.080 (2.03)	7075-T73 sheet as given in QQ-A-250/12	
[10]	Splice Plate	0.100 (2.54)	7075-T73 sheet as given in QQ-A-250/12	
[11]	Clevis		7075-T73511 extruded bar as given in QQ-A-200/11	
[12]	Corner Frame		7050-T7451 plate as given in AMS 4050. Refer to the production drawings for the grain direction	
[13]	Stiffener		BAC1503-100079 7075-T73511 extrusion as given in QQ-A-200/11	
[14]	Attachment Angle		BAC1503-100607 7075-T73511 extrusion as given in QQ-A-200/11 (Optional: 7050-T7451 plate as given in BMS 7-323, Type I)	
[15]	L-Chord		BAC1514-3269 7075-T73511 extrusion as given in QQ-A-200/11	
[16]	Lower Flap Track BSTA 727 + 2.7 - BSTA 727B - Bonded Part Skin Core	 0.300 (7.62)	Glass Fiber Reinforced Plastic (GFRP) honeycomb sandwich Refer to Figure 4 and Table 4 for the ply lay-up Honeycomb core non-metallic as given in BMS 8-124, Class IV, Type V, Grade 3.0. Refer to Figure 4 for the core ribbon direction	
[17]	Attachment Angle		BAC1503-101048 7075-T73511 extrusion as given in QQ-A-200/11 (Optional: 7050-T7451 plate as given in BMS 7-323, Type I)	
[18]	Frame		BAC1509-100664 7075-T73 extrusion as given in QQ-A-200/11	

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Table 2: (Continued)

LIST OF MATERIALS FOR FIGURE 2				
ITEM	DESCRIPTION	T*[1]	MATERIAL	EFFECTIVITY
[19]	Frame		7050-T7451 plate as given in AMS 4050. Refer to the production drawings for the grain direction	
[20]	Tee Clip		BAC1506-2673 7075-T73511 extrusion as given in QQ-A-200/11	
[21]	Splice Clip	0.080 (2.03)	7075-T73 sheet as given in QQ-A-250/12	
[22]	Splice Clip	0.063 (1.60)	7075-T73 sheet as given in QQ-A-250/12	
[23]	Attachment Angle		BAC1503-100362 7075-T73511 extrusion as given in QQ-A-200/11 (Optional: 7050-T7451 plate as given in BMS 7-323, Type I)	
[24]	Splice Clip	0.080 (2.03)	7075-T73 sheet as given in QQ-A-250/12	
[25]	Splice Clip	0.125 (3.18)	7075-T73 sheet as given in QQ-A-250/12	
[26]	Splice Clip	0.100 (2.54)	7075-T73 sheet as given in QQ-A-250/12	
[27]	Clip		7050-T7451 plate as given in BMS 7-323, Type I	
[28]	Intercostal		BAC1506-4251 7075-T73 extrusion as given in QQ-A-200/11	
[29]	Tee Clip		BAC1505-100809 7075-T73511 extrusion as given in QQ-A-200/11	
[30]	Clip		BAC1514-3269, 7075-T73511 extrusion as given in QQ-A-200/11 (Optional: 7050-T7451 plate as given in AMS 4050)	
[31]	Channel Support		AND10137-0604 7075-T73511 extrusion as given in QQ-A-200/11	
[32]	Clip		7050-T7451 plate as given in BMS 7-323, Type I. Refer to the production drawings for the grain direction	
[33]	Clip		BAC1503-100279 7075-T73511 extrusion as given in QQ-A-200/11 (Optional: 7050-T7451 plate as given in AMS 4050)	
[34]	Intercostal		BAC1505-101645 7075-T73 extrusion as given in QQ-A-200/11	
[35]	Clip		BAC1514-3271 7075-T73511 extrusion as given in QQ-A-200/11 (Optional: 7050-T7451 plate as given in AMS 4050)	
[36]	Tee Clip		BAC1505-101168 7075-T73511 extrusion as given in QQ-A-200/11	
[37]	Web	0.100 (2.54)	7050-T73 sheet as given in QQ-A-250/12	
[38]	Tee Clip		BAC1505-100295 7075-T73511 extrusion as given in QQ-A-200/11	
[39]	Aft Fairing BSTA 727 + 2.7 - Bonded Part		Glass Fiber Reinforced Plastic (GFRP) honeycomb sandwich	
	Skin		Refer to Figure 5 and Table 5 for the ply lay-up	
	Core	0.300 (7.62)	Honeycomb core non-metallic as given in BMS 8-124, Class IV, Type V, Grade 3.0. Refer to Figure 5 for the core ribbon direction	

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Table 2: (Continued)

LIST OF MATERIALS FOR FIGURE 2				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[40]	Latch Support	0.100 (2.54)	7075-T62 sheet as given in QQ-A-250/12	
[41]	Latch Support		BAC1514-1279 7075-T73511 extrusion as given in QQ-A-200/11	
[42]	Latch Support	0.112 (2.85)	7075-T62 sheet as given in QQ-A-250/12	
[43]	Clevis		7050-T7451 plate as given in AMS 4050. Refer to the production drawings for the grain direction	
[44]	Frame		BAC1503-100891 7075-T73 extrusion as given in QQ-A-200/11	
[45]	Attachment Angle		BAC1503-100490 7075-T73511 extrusion as given in QQ-A-200/11 (Optional: 7050-T7451 plate as given in BMS 7-323, Type I)	
[46]	L-Chord		AND10133-1402 7075-T73 extrusion as given in QQ-A-200/11	
[47]	Tee Clip		BAC1505-100246 7075-T73511 extrusion as given in QQ-A-200/11	
[48]	Clip		BAC1503-100095 7075-T73511 extrusion as given in QQ-A-200/11	
[49]	Stiffener		BAC1509-100061 7075-T73511 extrusion as given in QQ-A-200/11	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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Ply Direction, Core Ribbon Direction, and Ply Sequence for the Aft Fairing Bonded Part, Sta 727B, Figure 2, Item [8]
Figure 3

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Table 3:

TYPICAL PLY MATERIAL AND DIRECTION FOR FIGURE 3		
PLY	**DIRECTION**	**MATERIAL**
P1, P2, P3, P6, P7, P8	+ or - 45 degrees	Epoxy impregnated glass woven fabric as given in BMS 8-79, Style 120 or Style 220, Class III, Grade B
P4, P5	0 or 90 degrees	Epoxy impregnated glass woven fabric as given in BMS 8-79, Style 1581 or Style 7781, Class III, Grade B
Filler Plies	Optional	BMS 8-79, Class III, Grade B, Style 120 (optional 220), Style 1581 (optional 7781), or Style 1584
P9	Optional	1 mil white Tedlar film as given in BAC 5317-2 on bagside area of part

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LEFT SIDE BONDED PART IS SHOWN,
RIGHT SIDE BONDED PART IS OPPOSITE

VIEW IS ON THE BAGSIDE

PLY LAYUP DIRECTION AND CORE RIBBON DIRECTION

A

A–A
(TYPICAL)

G47552 S0006590761_V1

Ply Direction, Core Ribbon Direction, and Ply Sequence for the Lower Flap Track Bonded Part, Sta 727+2.7 to Sta 727B, Figure 2, Item [16]
Figure 4

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Table 4:

TYPICAL PLY MATERIAL AND DIRECTION FOR FIGURE 4		
PLY	**DIRECTION**	**MATERIAL**
P1, P2, P3, P6, P7, P8	0 or 90 degrees	Epoxy impregnated glass woven fabric as given in BMS 8-79, Style 120 or Style 220, Class III, Grade B.
P4, P5	0 or 90 degrees	Epoxy impregnated glass woven fabric as given in BMS 8-79, Style 1581 or Style 7781, Class III, Grade B.
Filler Plies	Optional	BMS 8-79, Class III, Grade B, Style 120 (optional 220), Style 1581 (optional 7781), or Style 1584
P9	Optional	1 mil white Tedlar film as given in BAC 5317-2 on bagside area of part

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LEFT SIDE BONDED PART IS SHOWN,
RIGHT SIDE BONDED PART IS ALMOST THE SAME

VIEW IS ON THE BAGSIDE

PLY LAYUP DIRECTION AND CORE RIBBON DIRECTION

A

A-A
(TYPICAL)

G47556 S0006590763_V1

Ply Direction, Core Ribbon Direction, and Ply Sequence for the Aft Fairing Bonded Part, Sta 727+2.7, Figure 2, Item [39]
Figure 5

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Table 5:

TYPICAL PLY MATERIAL AND DIRECTION FOR FIGURE 5		
PLY	**DIRECTION**	**MATERIAL**
P4, P5	+ or - 45 degrees	Epoxy impregnated glass woven fabric as given in BMS 8-79, Style 1581 or Style 7781, Class III, Grade B.
P1, P2, P3, P6, P7, P8	0 or 90 degrees	Epoxy impregnated glass woven fabric as given in BMS 8-79, Style 120 or Style 220, Class III, Grade B.
Filler Plies	Optional	BMS 8-79, Class III, Grade B, Style 120 (optional 220), Style 1581 (optional 7781), or Style 1584
P9	Optional	1 mil white Tedlar film as given in BAC 5317-2 on bagside area of part

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ALLOWABLE DAMAGE 1 - SECTION 46 WING-TO-BODY FAIRING SUPPORT STRUCTURE

1. Applicability

A. This subject gives the allowable damage limits for the section 46 wing-to-body fairing support structure shown in Section 46 Wing-to-Body Fairing Support Structure Location, Figure 101/ALLOWABLE DAMAGE 1 and Section 46 Wing-to-Body Fairing Support Structure (Sta 727+2.7 to Sta 747) Location, Figure 102/ALLOWABLE DAMAGE 1.

(1) For the composite parts, the allowable damage limits are only applicable if they are sealed as given in Paragraph 2.B./ALLOWABLE DAMAGE 1

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Section 46 Wing-to-Body Fairing Support Structure Location
Figure 101

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G45826 S0006590768_V1

Section 46 Wing-to-Body Fairing Support Structure (Sta 727+2.7 to Sta 747) Location
Figure 102 (Sheet 1 of 4)

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MATERIAL: ALUMINUM (EXCEPT WHERE NOTED)

RIGHT SIDE IS SHOWN, LEFT SIDE IS OPPOSITE

BSTA 727+2.7 TO BSTA 727C, RBL 52.0 TO OUTBOARD

A

1 FOR AIRPLANES WITH LINE NUMBERS 1 THROUGH 1537

2 FOR AIRPLANES WITH LINE NUMBERS 1538 AND ON

G45832 S0006590769_V2

Section 46 Wing-to-Body Fairing Support Structure (Sta 727+2.7 to Sta 747) Location
Figure 102 (Sheet 2 of 4)

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MATERIAL: ALUMINUM (EXCEPT WHERE NOTED)

RIGHT SIDE IS SHOWN, LEFT SIDE IS OPPOSITE
(EXCEPT AS NOTED)
BSTA 727+2.7 TO BSTA 747, LBL 15.0 TO RBL 52.0

B

G45835 S0006590770_V1

Section 46 Wing-to-Body Fairing Support Structure (Sta 727+2.7 to Sta 747) Location
Figure 102 (Sheet 3 of 4)

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LEFT SIDE ONLY
BSTA 727B TO BSTA 727C, LBL 52.0 TO LBL 62.0

C

G45836 S0006590771_V1

Section 46 Wing-to-Body Fairing Support Structure (Sta 727+2.7 to Sta 747) Location
Figure 102 (Sheet 4 of 4)

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2. General

A. Do the steps that follow if you have damage to the aluminum parts:

NOTE: The steps that follow do not apply to dent damage.

(1) Do a detailed close visual inspection of the damaged area to find the length, width, and depth of the damage.

(a) The methods that follow are permitted as an alternative to the detailed close visual inspection:

1) Penetrant inspection. Refer to SOPM 20-20-02.

2) High Frequency Eddy Current (HFEC) inspection. Refer to 737 NDT Part 6, 51-00-00, Figure 4.

(2) Remove the damaged material as necessary.

(a) Refer to 51-10-02 for the inspection and removal of damage.

(b) Refer to 51-30-03 for possible sources of the abrasive and other materials you can use to remove the damage.

(c) Refer to 51-30-05 for possible sources of the equipment and tools you can use to remove the damage.

(3) Apply a chemical conversion coating to the reworked areas. Refer to 51-20-01.

(4) Apply two layers of BMS 10-11, Type I, primer to the reworked areas. Refer to SOPM 20-41-02.

B. Do the steps that follow if you have damage to the composite parts:

(1) Do the steps that follow for the support structure made of Glass Fiber Reinforced Plastic (GFRP) honeycomb sandwich material:

(a) Do an inspection of the damaged area to find the length, width and depth of the damage. Boeing recommends that you use an instrumented Non-Destructive Test (NDT) procedure. Refer to NDT, Part 1, 51-01-02 for inspection procedures.

NOTE: Other equivalent inspection methods that have been examined and found to be satisfactory by the operator, can be used.

1) For the honeycomb core areas, the tap test is an alternative procedure to an instrumented NDT.

2) Refer to Damage Definitions, Figure 103/ALLOWABLE DAMAGE 1, Details A, B, and C for the definitions of the length, width, and depth of damage.

3) Refer to Definitions of the Facesheets, Figure 104/ALLOWABLE DAMAGE 1 for the definitions of the facesheets of a honeycomb core area.

(2) Remove all the contamination and water from the structure.

(a) Refer to 51-30-05 for possible sources of the equipment and tools you can use to remove the damage.

(b) Refer to 51-70-04 for the cleanup procedures.

(3) Seal all damaged areas with the steps that follow:

(a) Seal the damage that is not more than one ply deep and that agrees with the allowable damage limits given in Paragraph 4.B./ALLOWABLE DAMAGE 1

1) Use a vacuum and heat to remove moisture from the solid laminate or the honeycomb cells. Refer to 51-70-04.

2) Make a temporary seal.

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a) Apply aluminum foil tape (speed tape).

b) Keep a record of the location.

c) Make sure the tape is in satisfactory condition at each scheduled maintenance interval.

3) Make a permanent seal.

a) Apply BMS 8-201, BMS 8-207 or BMS 8-301 epoxy resin to the area as given 51-70-08.

b) Apply one layer of BMS 10-79, Type 3 or BMS 10-103, Type 1 primer. Refer to SOPM 20-44-04.

c) Apply one layer of BMS 10-60 enamel to the areas sealed with epoxy resin. Refer to AMM PAGEBLOCK 51-21-99/701.

(b) Seal the damaged areas that are more than one ply deep and that agree with the allowable damage limits given in Paragraph 4.B./ALLOWABLE DAMAGE 1

1) Use a vacuum and heat to remove moisture from the solid laminate or the honeycomb cells. Refer to 51-70-04.

2) Make a temporary seal.

a) Apply aluminum foil tape (speed tape).

b) Keep a record of the location.

c) Repair the damage no later than 24 months from the time the seal was made.

C. Refer to Table 101/ALLOWABLE DAMAGE 1 for the paragraph references for the allowable damage limits.

Table 101:

PARAGRAPH REFERENCES FOR THE ALLOWABLE DAMAGE LIMITS	
ALUMINUM PARTS	4.A
GFRP HONEYCOMB SANDWICH PANELS FULL DEPTH HONEYCOMB CORE AREA	4.B.(1)
GFRP HONEYCOMB SANDWICH PANELS EDGEBAND AREA	4.B.(2)

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DEFINITIONS FOR NICK, GOUGE, OR SCRATCH DAMAGE

A

DEFINITIONS FOR DENT DAMAGE

B

DEFINITIONS FOR EDGE DAMAGE

C

G45858 S0006590773_V1

Damage Definitions
Figure 103

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Definitions of the Facesheets
Figure 104

3. References

Reference	Title
51-10-02	INSPECTION AND REMOVAL OF DAMAGE
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-20-05, GENERAL	Repair Sealing
51-30-03	NON-METALLIC MATERIALS
51-30-05	EQUIPMENT AND TOOLS FOR REPAIRS
51-40-06, GENERAL	Fastener Edge Margins
51-70-04	REPAIR PROCEDURES FOR WET LAYUP MATERIALS
51-70-08	RESIN SWEEP-FAIR PROCEDURES
53-30-71, ALLOWABLE DAMAGE 1	Section 43 Wing-to-Body Fairing Support Structure
53-40-71, ALLOWABLE DAMAGE 1	Section 44 Wing-to-Body Fairing Support Structure
AMM 51-21-99 P/B 701	DECORATIVE EXTERIOR PAINT SYSTEM - CLEANING/PAINTING
SOPM 20-20-02	Penetrant Methods of Inspection
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes
SOPM 20-44-04	Application of Urethane Compatible Primer
737 NDT Part 1, 51-01-02	NDT Examination of Composite Structure for Impact Damage
737 NDT Part 6, 51-00-00	Structures - General
737 NDT Part 6, 51-00-00, Procedure 4	Surface Inspection of Aluminum Parts (Meter Display)

4. Allowable Damage Limits

A. Aluminum Parts

(1) The allowable damage limits that follow are applicable to the parts listed in Table 102/ALLOWABLE DAMAGE 1 and shown in Section 46 Wing-to-Body Fairing Support Structure (Sta 727+2.7 to Sta 747) Location, Figure 102/ALLOWABLE DAMAGE 1.

Table 102:

ITEM	DESCRIPTION	ITEM	DESCRIPTION
[22]	Splice Clip (Formed)	[40]	Latch Support (Formed)
[24]	Splice Clip (Formed)	[42]	Latch Support (Formed)
[25]	Splice Clip (Formed)		

(a) Cracks:

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1) Remove the damage as shown in Allowable Damage Limits - Aluminum Parts, Figure 105/ALLOWABLE DAMAGE 1, Details A, B, and L.

(b) Nicks, Gouges, Scratches, and Corrosion:

1) Remove the damage as shown in Allowable Damage Limits - Aluminum Parts, Figure 105/ALLOWABLE DAMAGE 1, Details A, B, C, E, and L.

(c) Dents are not permitted.

(d) Holes and Punctures are not permitted.

(2) The allowable damage limits that follow are applicable to the parts listed in Table 103/ALLOWABLE DAMAGE 1 and shown in Section 46 Wing-to-Body Fairing Support Structure (Sta 727+2.7 to Sta 747) Location, Figure 102/ALLOWABLE DAMAGE 1.

Table 103:

ITEM	DESCRIPTION	ITEM	DESCRIPTION
[9]	Splice Plate (Formed)	[21]	Splice Clip (Formed)
[10]	Splice Plate (Formed)	[26]	Splice Clip (Formed)

(a) Cracks:

1) Remove the damage as shown in Allowable Damage Limits - Aluminum Parts, Figure 105/ALLOWABLE DAMAGE 1, Details A, B, and M.

(b) Nicks, Gouges, Scratches, and Corrosion:

1) Remove the damage as shown in Allowable Damage Limits - Aluminum Parts, Figure 105/ALLOWABLE DAMAGE 1, Details A, B, C, E, and M.

(c) Dents are not permitted.

(d) Holes and Punctures are not permitted.

(3) The allowable damage limits that follow are applicable to the parts listed in Table 104/ALLOWABLE DAMAGE 1 and shown in Section 46 Wing-to-Body Fairing Support Structure (Sta 727+2.7 to Sta 747) Location, Figure 102/ALLOWABLE DAMAGE 1.

Table 104:

ITEM	DESCRIPTION	ITEM	DESCRIPTION
[37]	Web (Sheet)		

(a) Cracks:

1) Remove the damage as shown in Allowable Damage Limits - Aluminum Parts, Figure 105/ALLOWABLE DAMAGE 1, Details A, B, and M.

(b) Nicks, Gouges, Scratches, and Corrosion:

1) Remove the damage as shown in Allowable Damage Limits - Aluminum Parts, Figure 105/ALLOWABLE DAMAGE 1, Details A, B, C, E, M, and P.

(c) Dents are permitted as shown in Allowable Damage Limits - Aluminum Parts, Figure 105/ALLOWABLE DAMAGE 1, Detail D if:

1) They do not extend across an attached structure.

(d) Holes and Punctures are permitted as shown in Allowable Damage Limits - Aluminum Parts, Figure 105/ALLOWABLE DAMAGE 1, Details K and O.

(4) The allowable damage limits that follow are applicable to the parts listed in Table 105/ALLOWABLE DAMAGE 1 and shown in Section 46 Wing-to-Body Fairing Support Structure (Sta 727+2.7 to Sta 747) Location, Figure 102/ALLOWABLE DAMAGE 1.

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Table 105:

ITEM	DESCRIPTION	ITEM	DESCRIPTION
[1]	Frame (Extruded)	[18]	Frame (Extruded)
[3]	Frame (Extruded)	[19]	Frame (Machined)
[5]	Frame (Machined)	[28]	Intercostal (Extruded)
[12]	Corner Frame (Machined)	[34]	Intercostal (Extruded)

(a) Cracks:

1) Remove the damage as shown in Allowable Damage Limits - Aluminum Parts, Figure 105/ALLOWABLE DAMAGE 1, Details A, B, G, H, and I.

(b) Nicks, Gouges, Scratches, and Corrosion:

1) Remove the damage as shown in Allowable Damage Limits - Aluminum Parts, Figure 105/ALLOWABLE DAMAGE 1, Details A, B, C, E, F, G, H, I, J, and K.

(c) Dents are not permitted.

(d) Holes and Punctures are permitted as shown in Allowable Damage Limits - Aluminum Parts, Figure 105/ALLOWABLE DAMAGE 1, Detail N.

(5) The allowable damage limits that follow are applicable to the parts listed in Table 106/ALLOWABLE DAMAGE 1 and shown in Section 46 Wing-to-Body Fairing Support Structure (Sta 727+2.7 to Sta 747) Location, Figure 102/ALLOWABLE DAMAGE 1.

Table 106:

ITEM	DESCRIPTION	ITEM	DESCRIPTION
[2]	Clip (Extruded)	[30]	Clip (Extruded)
[4]	Clip (Extruded)	[32]	Clip (Machined)
[6]	Clip (Extruded)	[33]	Clip (Extruded)
[7]	L-Chord (Extruded)	[35]	Clip (Extruded)
[13]	Stiffener (Extruded)	[36]	Tee Clip (Extruded)
[14]	Attachment Angle (Extruded)	[38]	Tee Clip (Extruded)
[15]	L-Chord (Extruded)	[41]	Latch Support (Extruded)
[17]	Attachment Angle (Extruded)	[44]	Frame (Extruded)
[20]	Tee Clip (Extruded)	[45]	Attachment Angle (Extruded)
[23]	Attachment Angle (Extruded)	[46]	L-Chord (Extruded)
[27]	Clip (Machined)	[47]	Tee Clip (Extruded)
[29]	Tee Clip (Extruded)	[48]	Clip (Extruded)

(a) Cracks:

1) Remove the damage as shown in Allowable Damage Limits - Aluminum Parts, Figure 105/ALLOWABLE DAMAGE 1, Details A, B, and H.

(b) Nicks, Gouges, Scratches, and Corrosion:

1) Remove the damage as shown in Allowable Damage Limits - Aluminum Parts, Figure 105/ALLOWABLE DAMAGE 1, Details A, B, C, E, F, and H.

(c) Dents are not permitted.

(d) Holes and Punctures are not permitted.

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(6) The allowable damage limits that are applicable to the parts listed in Table 107/ALLOWABLE DAMAGE 1 and shown in Section 46 Wing-to-Body Fairing Support Structure (Sta 727+2.7 to Sta 747) Location, Figure 102/ALLOWABLE DAMAGE 1.

Table 107:

ITEM	DESCRIPTION	ITEM	DESCRIPTION
[31]	Channel Support (Extruded)	[49]	Stiffener (Extruded)

(a) Cracks:

1) Remove the damage as shown in Allowable Damage Limits - Aluminum Parts, Figure 105/ALLOWABLE DAMAGE 1, Details A, B, and H.

(b) Nicks, Gouges, Scratches, and Corrosion:

1) Remove the damage as shown in Allowable Damage Limits - Aluminum Parts, Figure 105/ALLOWABLE DAMAGE 1, Details A, B, C, E, F, and H.

(c) Dents are not permitted.

(d) Holes and Punctures are permitted as shown in Allowable Damage Limits - Aluminum Parts, Figure 105/ALLOWABLE DAMAGE 1, Detail N.

(7) The allowable damage limits that follow are applicable to the parts listed in Table 108/ ALLOWABLE DAMAGE 1 and shown in Section 46 Wing-to-Body Fairing Support Structure (Sta 727+2.7 to Sta 747) Location, Figure 102/ALLOWABLE DAMAGE 1.

Table 108:

ITEM	DESCRIPTION	ITEM	DESCRIPTION
[11]	Clevis (Extruded)	[43]	Clevis (Machined)

(a) Cracks:

1) Remove the damage as shown in Allowable Damage Limits - Aluminum Parts, Figure 105/ALLOWABLE DAMAGE 1, Details A, B, and H.

(b) Nicks, Gouges, Scratches, and Corrosion:

1) Remove the damage as shown in Allowable Damage Limits - Aluminum Parts, Figure 105/ALLOWABLE DAMAGE 1, Details A, B, C, E, F, H, and Q.

(c) Dents are not permitted.

(d) Holes and Punctures are not permitted.

B. Composite Parts

(1) Honeycomb Sandwich Panels - Full Depth Honeycomb Core Area

(a) Nicks, Gouges and Scratches that do not cause damage to the glass fibers are permitted.

(b) Nicks, Gouges and Scratches that cause damage to the glass fibers are permitted if:

1) The dimension of the damage is less than the limits given in Table 109/ ALLOWABLE DAMAGE 1

2) They are a minimum distance away from the edge of other damage as shown in GFRP Honeycomb Sandwich Panels - Damage Size and Spacing Limits, Figure 106/ALLOWABLE DAMAGE 1 and Table 109/ALLOWABLE DAMAGE 1

NOTE: Other damage does not include nicks, gouges, and scratches that:

- Do not cause damage to the glass fiber plies
- Are sealed as given in Paragraph 2.B./ALLOWABLE DAMAGE 1

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3) Are sealed as given in Paragraph 2.B./ALLOWABLE DAMAGE 1

(c) Dents are permitted if:

1) The dimension of the damage is less than the limits given in Table 109/ALLOWABLE DAMAGE 1

2) They are in the full depth core area and are a minimum distance away from fastener holes or material edges as shown in GFRP Honeycomb Sandwich Panels - Damage Size and Spacing Limits, Figure 106/ALLOWABLE DAMAGE 1 and Table 109/ALLOWABLE DAMAGE 1

3) They are a minimum distance away from the edge of other damage as shown in GFRP Honeycomb Sandwich Panels - Damage Size and Spacing Limits, Figure 106/ALLOWABLE DAMAGE 1 and Table 109/ALLOWABLE DAMAGE 1

NOTE: Other damage does not include nicks, gouges, and scratches that:

- Do not cause damage to the glass fiber plies
- Are sealed as given in Paragraph 2.B./ALLOWABLE DAMAGE 1

4) Are sealed as given in Paragraph 2.B./ALLOWABLE DAMAGE 1

(d) Holes and Punctures are permitted if:

1) They are a maximum of one facesheet and the core in depth

2) The dimension of the damage is less than the limits given in Table 109/ALLOWABLE DAMAGE 1

3) They are in the full depth core area and are a minimum distance away from fastener holes or material edges as shown in GFRP Honeycomb Sandwich Panels - Damage Size and Spacing Limits, Figure 106/ALLOWABLE DAMAGE 1 and Table 109/ALLOWABLE DAMAGE 1

4) They are a minimum distance away from the edge of other damage as shown in GFRP Honeycomb Sandwich Panels - Damage Size and Spacing Limits, Figure 106/ALLOWABLE DAMAGE 1 and Table 109/ALLOWABLE DAMAGE 1

NOTE: Other damage does not include nicks, gouges, and scratches that:

- Do not cause damage to the glass fiber plies
- Are sealed as given in Paragraph 2.B./ALLOWABLE DAMAGE 1

5) Are sealed as given in Paragraph 2.B./ALLOWABLE DAMAGE 1

(e) Delaminations are permitted if:

1) The dimension of the damage is less than the limits given in Table 109/ALLOWABLE DAMAGE 1

2) They are in the full depth core area and are a minimum distance away from fastener holes or material edges as shown in GFRP Honeycomb Sandwich Panels - Damage Size and Spacing Limits, Figure 106/ALLOWABLE DAMAGE 1 and Table 109/ALLOWABLE DAMAGE 1

3) They are a minimum distance away from the edge of other damage as shown in GFRP Honeycomb Sandwich Panels - Damage Size and Spacing Limits, Figure 106/ALLOWABLE DAMAGE 1 and Table 109/ALLOWABLE DAMAGE 1

NOTE: Other damage does not include nicks, gouges, and scratches that:

- Do not cause damage to the glass fiber plies
- Are sealed as given in Paragraph 2.B./ALLOWABLE DAMAGE 1

4) Are sealed as given in Paragraph 2.B./ALLOWABLE DAMAGE 1

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Table 109:

DAMAGE DIMENSIONS FOR FULL DEPTH HONEYCOMB CORE AREAS - SECTION 46 WING-TO-BODY FAIRING SUPPORT STRUCTURE			
PANEL DRAWING NUMBER FIGURE AND ITEM REFERENCE	BAGSIDE FACESHEET OR TOOLSIDE FACESHEET		
	MAXIMUM DAMAGE DIMENSION "D" OR "d" (INCHES)	MINIMUM DAMAGE SPACING DIMENSION "A" (INCHES)	MINIMUM DAMAGE DISTANCE "B" AND "C" FROM FASTENER HOLES OR MATERIAL EDGES (INCHES) "B" "C"
149A7511 Figure 102, Item [8]	3.0	(1.5)x(D+d)	2.0D 2.0d
149A7521 Figure 102, Item [39]	3.0	(1.5)x(D+d)	2.0D 2.0d
149A7541 Figure 102, Item [16]	2.3	(1.8)x(D+d)	2.0D 2.0d

(2) GFRP Honeycomb Sandwich Panels - Edgeband Area

(a) Nicks, Gouges and Scratches that do not cause damage to the glass fibers are permitted.

(b) Nicks, Gouges and Scratches that cause damage to the glass fibers are permitted if they are:

1) A maximum of one ply in depth

NOTE: Use the limits for holes and punctures if the depth of the damage is more than one ply in depth.

2) A maximum of 1.0 inch in length

3) A maximum of 0.25 inch in width

4) A minimum distance of 0.5 inch away from the edge of fastener holes or material edges

5) A minimum distance of 3.0 inches away from the edge of other damage

NOTE: Other damage does not include nicks, gouges, and scratches that:

- Do not cause damage to the glass fiber plies
- Are sealed as given in Paragraph 2.B./ALLOWABLE DAMAGE 1

6) Are sealed as given in Paragraph 2.B./ALLOWABLE DAMAGE 1

(c) Dents are not permitted.

(d) Holes and Punctures are permitted if they are:

1) A maximum of 0.25 inch measured across the largest dimension of the damage

2) A minimum distance of 0.5 inch away from the edge of fastener holes or material edges

3) A minimum distance of 3.0 inches away from the edge of other damage

NOTE: Other damage does not include nicks, gouges, and scratches that:

- Do not cause damage to the glass fiber plies
- Are sealed as given in Paragraph 2.B./ALLOWABLE DAMAGE 1

4) Are sealed as given in Paragraph 2.B./ALLOWABLE DAMAGE 1

(e) Delaminations are permitted if they are:

1) A maximum of 1.00 inch measured across the largest dimension of the damage

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2) A minimum distance of 0.5 inch away from the edge of fastener holes or material edges

3) A minimum distance of 3.0 inches away from the edge of other damage

NOTE: Other damage does not include nicks, gouges, and scratches that:

- Do not cause damage to the glass fiber plies
- Are sealed as given in Paragraph 2.B./ALLOWABLE DAMAGE 1

4) Are sealed as given in Paragraph 2.B./ALLOWABLE DAMAGE 1

(f) Edge damage is permitted if it is:

1) A maximum of 0.10 inch in depth

2) A maximum of 0.50 inch in width

3) A minimum of 2.5D (D = the largest dimension across the damage) away from the edge of other damage or the edge of a hole

NOTE: Other damage does not include nicks, gouges, and scratches that:

- Do not cause damage to the glass fiber plies
- Are sealed as given in Paragraph 2.B./ALLOWABLE DAMAGE 1

4) Sealed as given in Paragraph 2.B./ALLOWABLE DAMAGE 1

(g) Edge Erosion is permitted as shown in GFRP Honeycomb Sandwich Panels - Sealing of Erosion Damage at an Edge , Figure 107/ALLOWABLE DAMAGE 1.

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REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER EDGE MARGINS DO NOT HAVE AN OVERLAP

A

REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER EDGE MARGINS HAVE AN OVERLAP

B

REMOVAL OF DAMAGED MATERIAL ON A SURFACE

C

G45862 S0006590783_V1

Allowable Damage Limits - Aluminum Parts
Figure 105 (Sheet 1 of 14)

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DENT AWAY FROM AN EDGE IS SHOWN, DENT AT AN EDGE IS SIMILAR

DENT THAT IS PERMITTED

D

REMOVAL OF DAMAGE AROUND THE FASTENERS ON AN EDGE OR A SURFACE

E

B–B

G45863 S0006590784_V1

Allowable Damage Limits - Aluminum Parts
Figure 105 (Sheet 2 of 14)

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NOTE: APPLICABLE TO L-SECTIONS AND T-SECTIONS WITH SERRATED FLANGES.

X = DEPTH OF THE MATERIAL THAT IS REMOVED
= A MAXIMUM OF 10 PERCENT OF THE THICKNESS OF THE FLANGE AT THE DAMAGE LOCATION

Y = WIDTH OF THE MATERIAL THAT IS REMOVED
= A MAXIMUM OF 10 PERCENT OF THE WIDTH OF THE FLANGE AT THE DAMAGE LOCATION

NOTE: APPLICABLE TO L-SECTIONS AND T-SECTIONS.

REMOVAL OF DAMAGED MATERIAL
ON A SURFACE AT AN EDGE

F

G46225 S0006590785_V1

Allowable Damage Limits - Aluminum Parts
Figure 105 (Sheet 3 of 14)

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G46369 S0006590786_V1

Allowable Damage Limits - Aluminum Parts
Figure 105 (Sheet 4 of 14)

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X = THE WIDTH OF THE MATERIAL THAT IS REMOVED
= A MAXIMUM OF 10 PERCENT OF THE WIDTH OF THE FLANGE

REMOVAL OF DAMAGED MATERIAL ON AN EDGE

G

X = WIDTH OF THE MATERIAL REMOVED
= A MAXIMUM OF 10 PERCENT OF THE WIDTH OF THE FLANGE

REMOVAL OF DAMAGED MATERIAL AT AN EDGE

H

G46311 S0006590787_V1

Allowable Damage Limits - Aluminum Parts
Figure 105 (Sheet 5 of 14)

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REMOVAL OF DAMAGED MATERIAL ON A SERRATED EDGE

I

REMOVAL OF DAMAGE MATERIAL ON A FLANGED SURFACE
(A TEE SECTION IS SHOWN)

J

G46591 S0006590788_V1

Allowable Damage Limits - Aluminum Parts
Figure 105 (Sheet 6 of 14)

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D_3 = DIAMETER OF THE INITIAL HOLE AT LOCATION 3

T = THICKNESS OF THE FLANGE

A_i = INITIAL CROSS-SECTIONAL AREA OF THE FLANGE
= THE TOTAL CROSS-SECTIONAL AREA MINUS THE CROSS-SECTIONAL AREA OF THE INITIAL HOLES (AS MANUFACTURED BY BOEING)
= $4T - D_3T$

A_1 = CROSS-SECTIONAL AREA OF THE MATERIAL DAMAGE THAT IS REMOVED AT LOCATION 1

A_2 = CROSS-SECTIONAL AREA OF THE MATERIAL DAMAGE THAT IS REMOVED AT LOCATION 2

A_4 = CROSS-SECTIONAL AREA OF THE MATERIAL DAMAGE THAT IS REMOVED AT LOCATION 4

$$\left(\frac{A_1 + A_2 + A_4}{A_i}\right) \times 100 = \text{PERCENT OF CROSS-SECTIONAL AREA REMOVED}$$
= A MAXIMUM OF 20 PERCENT

THE TOTAL CROSS-SECTIONAL AREA REMOVED IN ALL ZONES A-B (2.00 INCHES ON EACH SIDE OF A LINE A-B) MUST NOT BE MORE THAN 20 PERCENT OF THE INITIAL CROSS-SECTIONAL AREA OF THE FLANGE.

D-D

G46329 S0006590789_V1

Allowable Damage Limits - Aluminum Parts
Figure 105 (Sheet 7 of 14)

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REMOVAL OF DAMAGED MATERIAL FROM A WEB OF A TEE SECTION

K

G46331 S0006590790_V1

Allowable Damage Limits - Aluminum Parts
Figure 105 (Sheet 8 of 14)

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D_2 = DIAMETER OF THE INITAL HOLE AT LOCATION 2

H = HEIGHT OF THE WEB

T = THICKNESS OF THE WEB

A_i = INITIAL CROSS-SECTIONAL AREA OF THE WEB
= THE TOTAL CROSS-SECTIONAL AREA MINUS THE CROSS-SECTIONAL AREA OF THE INITIAL HOLES (AS MANUFACTURED BY BOEING)
= $HT - D_2T$

A_1 = CROSS-SECTIONAL AREA OF THE MATERIAL DAMAGE THAT IS REMOVED AT LOCATION 1

A_3 = CROSS-SECTIONAL AREA OF THE MATERIAL DAMAGE THAT IS REMOVED AT LOCATION 3

$$\left(\frac{A_1 + A_3}{A_i}\right) \times 100 = \text{PERCENT OF CROSS-SECTIONAL AREA REMOVED}$$
= A MAXIMUM OF 20 PERCENT

THE TOTAL CROSS-SECTIONAL AREA REMOVED IN ALL ZONES A-B (2.00 INCHES ON EACH SIDE OF A LINE A-B) MUST NOT BE MORE THAN 20 PERCENT OF THE INITIAL CROSS-SECTIONAL AREA OF THE WEB.

(ROTATED 90° CLOCKWISE)
E-E

G46332 S0006590791_V1

Allowable Damage Limits - Aluminum Parts
Figure 105 (Sheet 9 of 14)

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X = WIDTH OF THE MATERIAL THAT IS REMOVED
= A MAXIMUM OF 10 PERCENT OF THE WIDTH OF THE FLANGE

REMOVAL OF DAMAGED MATERIAL ON AN EDGE

L

X = WIDTH OF THE MATERIAL THAT IS REMOVED
= A MAXIMUM OF 0.10 INCH

NOTE: APPLICABLE TO SINGLE AND MULTIPLE-PLY SKINS OR WEBS.

REMOVAL OF DAMAGED MATERIAL AT AN EDGE OF A METAL SKIN OR WEB

M

G46333 S0006590792_V1

Allowable Damage Limits - Aluminum Parts
Figure 105 (Sheet 10 of 14)

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NOTE: NO HOLE DAMAGE ALLOWED IN FASTENED FLANGES.

HOLES AND PUNCTURES IN A FREE FLANGE

N

G46338 S0006590793_V1

Allowable Damage Limits - Aluminum Parts
Figure 105 (Sheet 11 of 14)

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REMOVAL OF DAMAGED MATERIAL FROM A WEB OR DOUBLER

0

G46339 S0006590794_V1

Allowable Damage Limits - Aluminum Parts
Figure 105 (Sheet 12 of 14)

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D_1, D_4, D_5 = DIAMETER OF THE INITIAL HOLE

D_2 = DIAMETER OF THE HOLE AT LOCATION 2

H = HEIGHT OF THE WEB

T = THICKNESS OF THE WEB

A_i = INITIAL CROSS-SECTIONAL AREA OF THE WEB
= THE TOTAL CROSS-SECTIONAL AREA MINUS THE CROSS-SECTIONAL AREA OF THE INITIAL HOLES (AS MANUFACTURED BY BOEING)
= $HT - D_1T - D_4T - D_5T$

A_2 = CROSS-SECTIONAL AREA OF THE DAMAGE THAT IS REMOVED AT LOCATION 2

A_3 = CROSS-SECTIONAL AREA OF THE DAMAGE THAT IS REMOVED AT LOCATION 3

$\left(\frac{A_2 + A_3}{A_i}\right) \times 100$ = PERCENT OF CROSS-SECTIONAL AREA REMOVED
= 10 PERCENT MAXIMUM

THE TOTAL CROSS-SECTIONAL AREA REMOVED IN ALL ZONES A-B (2.00 INCHES ON EACH SIDE OF A LINE A-B) MUST NOT BE MORE THAN 10 PERCENT OF THE INITIAL CROSS-SECTIONAL AREA OF THE WEB.

(ROTATED 90° CLOCKWISE)
F-F

G46345 S0006590795_V1

Allowable Damage Limits - Aluminum Parts
Figure 105 (Sheet 13 of 14)

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NOTE: DAMAGED SEALANT IS NOT PERMITTED. IF THE SEALANT IS DAMAGED, LOOK FOR MIGRATION OR ROTATION OF THE BUSHING. IF THERE IS NO MIGRATION, ROTATION, OR CORROSION, REMOVE THE DAMAGED SEALANT AND APPLY A NEW FILLET SEAL.

REMOVAL OF SURFACE AND EDGE DAMAGE FROM A LUG THAT HAS A BUSHING

(P)

G46347 S0006590796_V1

Allowable Damage Limits - Aluminum Parts
Figure 105 (Sheet 14 of 14)

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NOTE: TO FIND DELAMINATION, YOU CAN USE NONDESTRUCTIVE INSPECTION PROCEDURES. REFER TO NDT PART 1, 51-01-02.

THE DIAMETER OF A DAMAGE AREA IS EITHER THE DIAMETER OF THE VISUAL DAMAGE OR THE DIAMETER OF THE DELAMINATION. USE THE DIAMETER OF THE LARGER DAMAGE.

D IS THE LARGER DIAMETER OF TWO ADJACENT DAMAGE AREAS.

d IS THE SMALLER DIAMETER OF TWO ADJACENT DAMAGE AREAS.

A IS THE DISTANCE BETWEEN TWO ADJACENT DAMAGE AREAS.

B AND C ARE THE DISTANCES BETWEEN THE DAMGE AND THE FASTENER HOLES OR MATERIAL EDGES.

FOR THE VALUES OF D, d, A, B, AND C REFER TO TABLE 109.

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GFRP Honeycomb Sandwich Panels - Damage Size and Spacing Limits
Figure 106

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G46352 S0006590798_V1

GFRP Honeycomb Sandwich Panels - Sealing of Erosion Damage at an Edge
Figure 107

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REPAIR 1 - SECTION 46 WING-TO-BODY FAIRING SUPPORT STRUCTURE

1. Applicability

A. Repair 1 is applicable to damage:

(1) To all the metal and composite parts of the wing-to-body fairing support structure in section 46 shown in Section 46 Wing-to-Body Fairing Support Structure Location, Figure 201/REPAIR 1 and Section 46 Wing-to-Body Fairing Support Structure (Sta 727+2.7 to Sta 747) Location, Figure 202/REPAIR 1.

(2) That is more than the limits permitted in 53-60-71, Allowable Damage 1.

K63604 S0006590801_V1

Section 46 Wing-to-Body Fairing Support Structure Location
Figure 201

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NOTES

1 REFER TO PARAGRAPH 4.A TO FIND THE APPLICABLE REPAIR FOR THIS PART.

2 THERE ARE NO REPAIRS FOR THIS PART IN THE STRUCTURAL REPAIR MANUAL AT THIS TIME. IF THE DAMAGE TO THE PART IS MORE THAN THE LIMITS GIVEN IN SRM 53-60-71, ALLOWABLE DAMAGE 1, REPLACE THE DAMAGED PART.

3 REFER TO PARAGRAPH 4.B TO FIND THE APPLICABLE REPAIR FOR THIS PART.

4 FOR AIRPLANES WITH LINE NUMBERS 1 THROUGH 1537

U55243 S0000207023_V1

Section 46 Wing-to-Body Fairing Support Structure (Sta 727+2.7 to Sta 747) Location
Figure 202 (Sheet 1 of 4)

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MATERIAL: ALUMINUM (EXCEPT WHEN NOTED)

RIGHT SIDE IS SHOWN, LEFT SIDE IS OPPOSITE
BSTA 727+2.7 TO BSTA 727C, RBL 52.0 TO OUTBOARD

A

U55239 S0000207032_V1

Section 46 Wing-to-Body Fairing Support Structure (Sta 727+2.7 to Sta 747) Location
Figure 202 (Sheet 2 of 4)

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MATERIAL: ALUMINUM (EXCEPT WHEN NOTED)

RIGHT SIDE IS SHOWN, LEFT SIDE IS OPPOSITE
(EXCEPT AS NOTED)
BSTA 727+2.7 TO BSTA 747, LBL 15.0 TO RBL 52.0

B

K63607 S0006590804_V1

Section 46 Wing-to-Body Fairing Support Structure (Sta 727+2.7 to Sta 747) Location
Figure 202 (Sheet 3 of 4)

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LEFT SIDE ONLY
BSTA 727B TO BSTA 727C, LBL 52.0 TO LBL 62.0

C

K63608 S0006590805_V1

Section 46 Wing-to-Body Fairing Support Structure (Sta 727+2.7 to Sta 747) Location
Figure 202 (Sheet 4 of 4)

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2. General

A. Get access to the damaged area.

(1) Remove the fairing skin panel(s) at the damage location as necessary.

B. Metal Repairs

(1) The typical repairs given in 51-70-11, 51-70-12, and 51-70-13 can be used when applicable if there is sufficient clearance with the adjacent structure for the installation of the repair parts.

(2) Refer to Paragraph 4.A./REPAIR 1 for a repair.

C. Composite Repairs

(1) Get access to the damaged area.

(a) If necessary, remove the wing-to-body fairing support structure panel that you want to repair.

1) Refer to 51-40-02 for the fastener removal procedures.

2) If a fastener hole is damaged, refer to Repair 8 of 51-70-04 or Repair 8 of 51-70-05 for the repair procedures.

(2) Do an inspection of the damaged area to find the dimensions of the damage. Boeing recommends that you use an instrumented Non-Destructive Test (NDT) procedure. Refer to 737 NDT Part 1, 51-01-02 for the inspection procedures.

NOTE: Other equivalent inspection methods that have been examined and found to be satisfactory by the operator can be used.

(a) For the honeycomb core areas, the tap test is an alternative procedure to an instrumented NDT.

(b) Refer to Damage Definitions, Figure 203/REPAIR 1, Details A, B, and C for the definitions of the length, width, and depth of damage.

(c) Refer to Definitions of the Facesheets, Figure 204/REPAIR 1 for the definitions of the facesheets of a honeycomb core area.

(3) Do the repair as given in Paragraph 4.B./REPAIR 1

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DEFINITIONS FOR NICK, GOUGE, OR SCRATCH DAMAGE

A

DEFINITIONS FOR DENT DAMAGE

B

DEFINITIONS FOR EDGE DAMAGE

C

K63609 S0006590806_V1

Damage Definitions
Figure 203

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K63611 S0006590807_V1

Definitions of the Facesheets
Figure 204

3. References

Reference	Title
51-00-06, GENERAL	Structural Repair Definitions
51-10-02, GENERAL	Inspection and Removal of Damage
51-20-05, GENERAL	Repair Sealing
51-40-02	FASTENER INSTALLATION AND REMOVAL
51-40-03, GENERAL	Fastener Substitution
51-70-04	REPAIR PROCEDURES FOR WET LAYUP MATERIALS
51-70-05	REPAIR PROCEDURES FOR PREIMPREGNATED MATERIALS
51-70-06, REPAIR GENERAL	Room Temperature Cure Repairs With Wet Layup Materials For Glass Fabric Reinforced Plastic Solid Laminates and Honeycomb Core Panels
51-70-11	TYPICAL FORMED SECTION REPAIRS
51-70-12	EXTRUDED SECTION REPAIRS
51-70-13	TYPICAL WEB REPAIRS
53-30-71, REPAIR 1	Section 43 Wing-to-Body Fairing Support Structure
53-40-71, REPAIR 1	Section 44 Wing-to-Body Fairing Support Structure
53-60-71	FUSELAGE FAIRING STRUCTURE - SECTION 46
737 NDT Part 1, 51-01-01	Inspection of Repairs to Composite Structure
737 NDT Part 1, 51-01-02	NDT Examination of Composite Structure for Impact Damage

4. Repair Instructions

A. Metal Repairs

(1) Refer to Section 46 Wing-to-Body Fairing Support Structure Location, Figure 201/REPAIR 1 and Section 46 Wing-to-Body Fairing Support Structure (Sta 727+2.7 to Sta 747) Location, Figure 202/REPAIR 1, and Table 201/REPAIR 1 to find the applicable repair for the metal part that you want to repair.

NOTE: If necessary, refer to 53-60-71, Identification 1 to find the material and the process that was used to make the part that you want to repair.

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Table 201:

REPAIR REFERENCES FOR THE WING-TO-BODY FAIRING SUPPORT STRUCTURE - METAL PARTS	
TYPE OF COMPONENT	**REPAIR**
Formed parts	Refer to SRM 51-70-11
Extruded parts	Refer to SRM 51-70-12
Machined parts	Refer to SRM 51-70-12
Webs	Refer to SRM 51-70-13

B. Composite Repairs

NOTE: If necessary, refer to 53-60-71, Identification 1 to find the material and the build-up of the part that you want to repair.

(1) For dents that are a maximum of 2 inches in diameter and have no fiber damage and delamination, do the steps that follow:

(a) Fill the dent with BMS 5-28, Type 7 potting compound.

(b) Apply a fiberglass patch over the potted area as given in Repair 14 of 51-70-04.

(2) If Paragraph 4.B.(1)/REPAIR 1 is not applicable, then refer to:

(a) Table 202/REPAIR 1 for the repair data that is applicable to damage to the honeycomb sandwich panel areas other than the edgebands.

(b) Table 203/REPAIR 1 for the repair data that is applicable to damage to the edgebands of the honeycomb sandwich panels.

(3) For repairs made with wet layup materials, do the steps that follow, as applicable:

(a) Use one repair ply of fabric for each initial ply that was damaged.

(b) Add two structural plies of fabric for each facesheet that is repaired. Put one structural ply at ±45 degrees to the core ribbon direction and the other at 0 or 90 degrees.

(c) Inspect Category B repairs after each 800 flight hour interval or more frequently. Refer to 737 NDT Part 1, 51-01-01 for inspection procedures. If deterioration is found, then they must be replaced with Category A repairs.

NOTE: Other inspection methods that have been examined and found to be satisfactory by the operator can be used.

(4) For repairs made with preimpregnated layup materials, use the same number of repair plies as the number of initial plies that were damaged.

Table 202:

REPAIR DATA FOR THE 250°F (121°C) CURE WING-TO-BODY FAIRING SUPPORT STRUCTURE FOR THE FULL DEPTH HONEYCOMB CORE AREAS OF THE SANDWICH PANELS				
REPAIR TYPE	**CATEGORY B WET LAYUP REPAIR**	**CATEGORY A WET LAYUP REPAIR**	**CATEGORY A WET LAYUP REPAIR**	**CATEGORY A PREIMPREGNATED LAYUP REPAIR**
REPAIR CURE TEMPERATURE	**Room Temperature**	**150°F (66°C)**	**200°F (93°C)**	**250°F (121°C)**
REPAIR SIZE AND LIMITS	Contact Boeing for repair instructions	Damage that is a maximum of: - 6.0 inches (152.4 mm) diameter	Damage that is a maximum of: - 6.0 inches (152.4 mm) diameter	There are no limits on the sizes of the repairs made with autoclave pressure. See the note below for vacuum bag repairs.

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Table 202: (Continued)

REPAIR DATA FOR THE 250°F (121°C) CURE WING-TO-BODY FAIRING SUPPORT STRUCTURE FOR THE FULL DEPTH HONEYCOMB CORE AREAS OF THE SANDWICH PANELS				
REPAIR TYPE	**CATEGORY B WET LAYUP REPAIR**	**CATEGORY A WET LAYUP REPAIR**	**CATEGORY A WET LAYUP REPAIR**	**CATEGORY A PREIMPREGNATED LAYUP REPAIR**
REPAIR CURE TEMPERATURE	**Room Temperature**	**150°F (66°C)**	**200°F (93°C)**	**250°F (121°C)**
		3.0 inches minimum clearance from: -other repairs -fastener holes -panel edges	3.0 inches minimum clearance from: -other repairs -fastener holes -panel edges	
REPAIR PROCEDURES	SRM 51-70-06 and Para. 4.B.(3)	SRM 51-70-04 and Para. 4.B.(3)	SRM 51-70-04 and Para. 4.B.(3)	SRM 51-70-05 and Para. 4.B.(4)

NOTE: For panels that are greater than 1296 inches², vacuum bag repairs shall not be more than 75% of the panel area for either the inner or outer skin and 50% of the panel area for both the inner and outer skins. For a given honeycomb area that is less than 1296 inches², it is permitted to use a vacuum bag repair for the complete inner or outer skin of the honeycomb area. If both skins of the honeycomb area need a repair, then 75% of the inner and outer skin facesheets can be repaired.

Table 203:

REPAIR DATA FOR THE EDGEBANDS OF 250°F (121°C) CURE WING-TO-BODY FAIRING SUPPORT STRUCTURE HONEYCOMB SANDWICH PANELS				
REPAIR TYPE	**CATEGORY B WET LAYUP REPAIR**	**CATEGORY A WET LAYUP REPAIR**	**CATEGORY A WET LAYUP REPAIR**	**CATEGORY A PREIMPREGNATED LAYUP REPAIR**
REPAIR CURE TEMPERATURE	**Room Temperature**	**150°F (66°C)**	**200°F (93°C)**	**250°F (121°C)**
REPAIR SIZE AND LIMITS	Contact Boeing for repair instructions	Damage that is a maximum of: - 6.0 inches (152.40 mm) across the largest dimension - 30 percent of the length of the edgeband on the side of the damage	Damage that is a maximum of: - 6.0 inches (152.40 mm) across the largest dimension 30 percent of the length of the edgeband on the side of the damage	There are no size limits on the repairs made with autoclave pressure. See note below for vacuum bag repairs.
REPAIR PROCEDURES	SRM 51-70-06 and Paragraph 4.B.(3)	SRM 51-70-04 and Paragraph 4.B.(3)	SRM 51-70-04 and Paragraph 4.B.(3)	SRM 51-70-05 and Paragraph 4.B.(4)

NOTE: For panels that are greater than 1296 inches², vacuum bag repairs shall not be more than 75% of the panel area for either the inner or outer skin and 50% of the panel area for both the inner and outer skins. For a given honeycomb area that is less than 1296 inches², it is permitted to use a vacuum bag repair for the complete inner or outer skin of the honeycomb area. If both skins of the honeycomb area need a repair, then 75% of the inner and outer skin facesheets can be repaired.

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REPAIR 2 - WING-TO-BODY FAIRING SUPPORT FRAME NUTPLATE DAMAGE REPAIR

1. Applicability

A. This repair is applicable to nutplate wear damage on the wing-to-body fairing support frames located along BS 727 + 2.7 between RBL 60 and LBL 60 that are identified in Figure 201/REPAIR 2.

B. The nutplate wear damage can be a maximum of 0.75 in. (19.0 mm) wide and 0.90 in. (22.9 mm) long. Refer to Figure 203/REPAIR 2.

C. This repair is not applicable to airplane Line Numbers 3533 and on, or airplanes that have been changed by Service Bulletin (SB) 737-53-1307.

2. General

A. All dimensions are in inches.

B. D = fastener diameter.

RIGHT SIDE IS SHOWN, LEFT SIDE IS OPPOSITE
(EXCEPT AS NOTED)

1596909 S0000297746_V3

Wing-to-Body Fairing Support Frame Applicability Identification
Figure 201

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3. References

Reference	Title
51-10-02	INSPECTION AND REMOVAL OF DAMAGE
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-20-05	REPAIR SEALING
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes

4. Repair Instructions

A. Get access to the damaged area.

B. Remove the damaged nutplate.

C. Blend out the hole damage. Refer to INSPECTION AND REMOVAL OF DAMAGE, 51-10-02. Use a minimum trim radius of 0.125 in. (3.18 mm). The maximum dimensions of the blended out damage are 0.75 in. (19.0 mm) wide by 0.9 in. (23 mm) long. Refer to Figure 203/REPAIR 2.

D. Make the repair parts. Refer to Table 201/REPAIR 2.

(1) Make either the aluminum repair strap or the steel repair strap.

Table 201:

REPAIR MATERIALS			
PART		QUANTITY	MATERIAL
1	Repair Strap	1	0.125 in. (3.18 mm) thick 7075–T6 aluminum sheet. As an alternative, use 0.10 in. (2.5 mm) thick 301 CRES steel sheet in the 1/2 hard condition per MIL-S-5059 or 15-5PH CRES steel sheet per AMS 5862.
2	Filler	1	2024–T3 clad aluminum sheet. Use the same thickness as the initial frame.

E. Assemble the repair parts. Drill the fastener holes. Figure 203/REPAIR 2.

NOTE: Align the repair nutplate hole in the strap with the initial hole in the skin.

NOTE: Keep a minimum distance of 2D between the repair fasteners and the repair nutplate attach fasteners. A distance of 4D is recommended.

F. Disassemble the repair parts.

G. Remove all nicks, scratches, burrs, and sharp edges from the repair parts and the initial parts.

H. Apply a chemical conversion coating to the aluminum repair parts and the bare surfaces of the initial parts. Refer to PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS, 51-20-01.

I. If you made a steel strap:

(1) Abrasive clean the part [1] repair strap. Refer to INSPECTION AND REMOVAL OF DAMAGE, 51-10-02.

J. Apply primer to the initial and repair parts. Refer to SOPM 20-41-02.

(1) If you made a steel strap:

(a) Apply two layers of BMS 10-11, Type I primer to the part [1] repair strap.

(2) If you made an aluminum strap:

(a) Apply one layer of BMS 10-11, Type I primer to the part [1] repair strap.

(3) Apply one layer of BMS 10-11, Type I primer to the part [2] filler and to the bare surfaces of the initial parts.

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K. Attach the part [2] filler to the part [1] repair strap with two BACR15BA2DD rivets. Install the rivets double flush. Refer to Figure 203/REPAIR 2.

L. Install the repair parts.

(1) Install the part [1] repair strap to the initial frame.

NOTE: Install the repair strap to the frame with BMS 5-95 sealant on all mating surfaces. Refer to REPAIR SEALING, 51-20-05.

(2) Install a BACN11P3B()CG nutplate to the repair strap with BACR15BA3AD() fasteners. Keep a 2D edge margin at all new fastener locations. Refer to Figure 203/REPAIR 2.

NOTE: Install the BACR15BA3AD() nutplate attach fasteners through the nutplate, the repair strap, and the initial frame.

M. Restore the finish. Refer to PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS, 51-20-01.

N. Replace all items removed for access.

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NOTES

- ALL DIMENSIONS ARE IN INCHES (mm)
- D = THE DIAMETER OF THE FASTENER.

1 INSTALL THE BACR15BA3AD() NUTPLATE ATTACH FASTENERS THOUGH THE NUTPLATE, THE PART [1] REPAIR STRAP, AND THE INITIAL FRAME.

2 INSTALL THE BACR15BA2DD() RIVETS DOUBLE FLUSH WITH THE PART [1] REPAIR STRAP AND THE PART [2] FILLER.

FASTENER SYMBOLS

+ REPAIR FASTENER LOCATION. INSTALL A BACB30NW5K HEX DRIVE BOLT WITH A BACC30M COLLAR.

1934671 S0000364632_V1

Notes and Fastener Symbols
Figure 202

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1568389 S0000287394_V3

Wing-to-Body Fairing Support Frame Nutplate Damage Repair
Figure 203 (Sheet 1 of 2)

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A–A

B–B

1570590 S0000292703_V3

Wing-to-Body Fairing Support Frame Nutplate Damage Repair
Figure 203 (Sheet 2 of 2)

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IDENTIFICATION 1 - SECTION 47 FUSELAGE SKIN

NOTE: REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

F67900 S0006590815_V1

Section 47 Fuselage Skin Location
Figure 1

Table 1:

REFERENCE DRAWINGS	
DRAWING NUMBER	**TITLE**
147A0010	Panel Installation - Entry, Section 47
147A0020	Panel Installation - Galley, Section 47
147A0030	Crown Panel Installation - Section 47
147A0040	Lower Panel Installation - Section 47
147A3100	Skin Assembly - STA 888 to STA 1016, S-4L/R TO S-23L/R

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NOTE: REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

F67920 S0006590817_V1

Section 47 Fuselage Skin Identification
Figure 2

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Table 2:

LIST OF MATERIALS FOR FIGURE 2				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Skin	0.071 (1.8)	2024-T3 clad sheet as given in QQ-A-250/5. Refer to Figure 4 for the thicknesses of the chem-milled areas	
[2]	Skin	0.125 (3.18)	2024-T3 clad sheet as given in QQ-A-250/5. Refer to Figures 5 and 6 for the thicknesses of the chem-milled areas	
[3]	Skin	0.063 (1.6)	2024-T3 clad sheet as given in QQ-A-250/5. Refer to Figure 7 for the thicknesses of the chem-milled areas	
[4]	Skin, Upper Corner	0.125 (3.18)	2024-T3 clad sheet as given in QQ-A-250/5. Refer to Figure 8 for the thicknesses of the chem-milled areas	
[5]	Skin, Lower Corner	0.125 (3.18)	2024-T3 clad sheet as given in QQ-A-250/5. Refer to Figure 9 for the thicknesses of the chem-milled areas	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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LEFT SIDE IS SHOWN, RIGHT SIDE IS OPPOSITE

NOTE: REFER TO TABLE 3 FOR THE LIST OF MATERIALS.

F67921 S0006590819_V1

Section 47 Fuselage Skin Bear Strap Identification
Figure 3 (Sheet 1 of 2)

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LOWER SKIN PANEL STRAPS AND DOUBLERS

A

G78788 S0006590820_V2

Section 47 Fuselage Skin Bear Strap Identification
Figure 3 (Sheet 2 of 2)

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Table 3:

LIST OF MATERIALS FOR FIGURE 3				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Strap, Doorway	0.125 (3.18)	2024-T3 sheet as given in QQ-A-250/4. Refer to Figures 10 and 11 for the thicknesses of the machined areas	
[2]	Splice Strap (3)	0.080 (2.03)	2024-T3 clad sheet as given in QQ-A-250/5	
[3]	Strap, Lower	0.040 (1.02)	2024-T3 clad sheet as given in QQ-A-250/5	
[4]	Strap (3)		BAC1511-10016 7075-T6511 extrusion as given in QQ-A-200/11	
[5]	Doubler, Water Pan	0.056 (1.42)	2024-T3 clad sheet as given in QQ-A-250/5	
[6]	Doubler, Water Drain	0.050 (1.27)	2024-T3 clad sheet as given in QQ-A-250/5	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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NOTE: ALL DIMENSIONS SHOWN ARE THICKNESSES IN INCHES.

F67994 S0006590822_V1

Chem-Milled Areas of Figure 2, Item [1]
Figure 4

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NOTE: ALL DIMENSIONS SHOWN ARE THICKNESSES IN INCHES.

LEFT SIDE IS SHOWN

F68248 S0006590823_V1

Chem-Milled and Machined Areas of Figure 2, Item [2]
Figure 5

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NOTE: ALL DIMENSIONS SHOWN ARE THICKNESSES IN INCHES.

RIGHT SIDE IS SHOWN

F70374 S0006590824_V1

Chem-Milled and Machined Areas of Figure 2, Item [2]
Figure 6

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NOTE: ALL DIMENSIONS SHWON ARE THICKNESSES IN INCHES.

F68293 S0006590825_V1

Chem-Milled and Machined Areas of Figure 2, Item [3]
Figure 7

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NOTE: ALL DIMENSIONS SHOWN ARE THICKNESSES IN INCHES.

G79651 S0006590826_V1

Machined Areas of Figure 2, Item [4]
Figure 8

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NOTE: ALL DIMENSIONS SHOWN ARE THICKNESSES IN INCHES.

G79854 S0006590827_V1

Machined Areas of Figure 2, Item [5]
Figure 9

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NOTE: ALL DIMENSIONS SHOWN ARE THICKNESSES IN INCHES.

LEFT SIDE IS SHOWN

F68079 S0006590828_V1

Machined Areas of Figure 3, Item [1]
Figure 10

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NOTE: ALL DIMENSIONS SHOWN ARE THICKNESSES IN INCHES.

RIGHT SIDE IS SHOWN

F70728 S0006590829_V1

Machined Areas of Figure 3, Item [1]
Figure 11

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L08071 S0006590833_V1

Section 47 Fuselage Skin Location
Figure 101

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L08106 S0006590837_V1

Section 47 Fuselage Skin Location
Figure 201

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REPAIR 1 - FUSELAGE SKIN REPAIR - BETWEEN S-12L AND S-16L, AND BETWEEN STA 1006 AND STA 1016

1. Applicability

A. This repair is applicable to damage on the fuselage upper skin in Section 47 between STA 1006 and STA 1016, from S-13L to S-14L.

B. This repair is not applicable to damage at 3 in. (76.2 mm) or less away from the edge of an initial repair.

2. General

A. This repair is a Category B repair. This Category B repair has FAA approval if you do the supplemental inspections given in Paragraph 5./REPAIR 1. Incorporation of these inspection requirements into the airplane's maintenance program satisfies the damage tolerance assessment of this repair. Refer to STRUCTURAL REPAIR DEFINITIONS, 51-00-06 for the repair categories and definitions.

B. The manager of the FAA Seattle ACO approves the incorporation of the inspection methods, compliance times and repeat intervals given in Paragraph 5., Inspection Requirements, as an Alternative Method of Compliance (AMOC) to the inspections in the area of PSEs 53-70-03-3 and 53-70-03-4 covered by this repair only, required by paragraphs (g) and (h) of AD 2013-19-23. All provisions of AD 2013-19-23 that are not specifically referenced in the above statement remain fully applicable and must be complied with accordingly. If operators choose this AMOC, then they must revise their FAA approved maintenance or inspection program to incorporate these alternative inspections.

C. All dimensions are in inches (mm), unless they are shown differently.

D. D = fastener diameter.

E. Keep a 5D to 6D fastener spacing for all repair fasteners, unless shown differently.

F. Keep a minimum of 2D edge margin as given in 51-40-06, GENERAL.

G. All cut surfaces must have a finish of 63 microinches Ra or smoother.

H. Keep a minimum of 0.50 in. (12.7 mm) external radius and 2 in. (50.8 mm) internal radius on repair part corners.

I. Chamfer all visible edges of external repair parts that are 0.050 in. (1.27 mm) or thicker. Refer to 51-10-01, GENERAL.

J. At initial fastener locations, you are permitted to oversize a maximum of 1/32 inch if necessary.

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1953754 S0000371716_V1

Section 47- Fuselage Skin Repair - Location of Damage
Figure 201

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3. References

Reference	Title
51-00-06	STRUCTURAL REPAIR DEFINITIONS
51-10-01, GENERAL	Aerodynamic Smoothness Requirements
51-10-02, GENERAL	Inspection and Removal of Damage
51-20-01, GENERAL	Protective Treatment of Metallic and Composite Materials
51-20-05, GENERAL	Repair Sealing
51-30-01, GENERAL	Sheet Metal Materials
51-40-02, GENERAL	Fastener Installation and Removal
51-40-03, GENERAL	Fastener Substitution
51-40-05, GENERAL	Fastener Hole Sizes
51-40-06, GENERAL	Fastener Edge Margins
51-40-08, GENERAL	Countersink Data and Procedures for Metal Structures
AMM 51-21	INTERIOR AND EXTERIOR FINISHES
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes
SOPM 20-41-05	Application of Corrosion Inhibiting Compounds
SOPM 20-44-04	Application of Urethane Compatible Primer
737 NDT Part 6, 51-00-00, Procedure 16	Aluminum Part Fastener Hole Inspection (Rotary Scanner)
737 NDT Part 6, 51-00-00, Procedure 23	Aluminum Part Surface Inspection (Impedance Plane Display)
737 NDT Part 6, 51-00-00, Procedure 4	Surface Inspection of Aluminum Parts (Meter Display)
737 NDT Part 6, 53-30-00, Procedure 4	Countersink Inspection of Aluminum Parts (Impedance Plane Display)
737 NDT Part 6, 53-30-00, Procedure 5	Inspection of External Fuselage Repairs
737 NDT Part 6, 53-30-09	Fuselage - Section 46 Skin Crack Inspection Along Subsurface Edges
737 NDT Part 6, 53-30-19	Magneto Optic Imager (MOI) Inspection of Skin Cracks at Doubler Edges

4. Repair Instructions

A. Get access to the damaged area.

B. Remove the fasteners in the repair area.

CAUTION: DO NOT MAKE GOUGES, SCRATCHES OR BUCKLES IN THE SKIN AND INTERNAL STRUCTURE THAT IS ADJACENT TO THE REPAIR AREA. IF YOU DO, MORE DAMAGE TO THE STRUCTURE WILL OCCUR.

C. Carefully trim out and remove the damaged upper skin at S-14L. Refer to Figure 203/REPAIR 1.

NOTE: Do not damage the lower skin.

NOTE: Use a thin steel sheet as needed to prevent damage to the adjacent structure.

D. Do a High Frequency Eddy Current (HFEC) inspection along the edge of the cutout to make sure there are no cracks. Refer to 737 NDT Part 6, 51-00-00, Procedure 4 or 737 NDT Part 6, 51-00-00, Procedure 23.

E. If you find no more damage, make an insurance cut of 0.040 in. (1.02 mm) along the edge of the cutout.

(1) Keep a minimum of 0.50 in. (12.70 mm) corner radius.

(2) Keep a minimum 2D edge margin at all initial fastener locations. Refer to 51-40-06, GENERAL.

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(3) Make sure the cutout lines are parallel to the frames/stringers.

F. Do an HFEC inspection at all initial fastener holes common to the repair area with a probe with 0.030 in. (0.762 mm) notch sensitivity. Refer to 737 NDT Part 6, 51-00-00, Procedure 16. If you find any cracks, contact The Boeing Company for further information.

G. Do an HFEC inspection at all countersinks of the initial fastener holes common to the repair area. Refer to 737 NDT Part 6, 53-30-00, Procedure 4. If you find any cracks, contact The Boeing Company for further information.

H. Do a Medium Frequency Eddy Current (MFEC) inspection of the chem-milled steps adjacent to the cutout area to make sure there are no cracks. Refer to 737 NDT Part 6, 53-30-09 or 737 NDT Part 6, 53-30-19.

I. Do a detailed inspection for scribe lines in the repair area. Do an inspection with 10X magnification of the initial skin at the S-14L lap joint. If you find any scribe damage, contact The Boeing Company.

J. Do a visual inspection of the structures (stringers and frames) below the damaged skin in the repair area to make sure there is no other damage. If you find any damage, contact The Boeing Company.

CAUTION: WHEN YOU MAKE THE PARTS, MAKE SURE THAT ALL THE APPLICABLE REQUIREMENTS IN SRM 51-30-01 ARE MET. REVERSE FORMING IS NOT PERMITTED. SHIMS ARE NOT PERMITTED BETWEEN THE REPAIR PARTS AND THE FUSELAGE SKIN.

K. Make the repair parts. Refer to Table 201/REPAIR 1 and Figure 203/REPAIR 1.

Table 201: Repair Material

PART		QUANTITY	MATERIAL
1	Doubler	1	0.040 in. (1.02 mm) thick, clad 2024-T3 clad sheet as given in QQ-A-250/5
2	Tripler	1	0.063 in. (1.60 mm) thick, clad 2024-T3 clad sheet as given in QQ-A-250/5
3	Structural Filler	1	0.040 in. (1.02 mm) thick, clad 2024-T3 clad sheet as given in QQ-A-250/5
4	Structural Filler	1	0.040 in. (1.02 mm) thick, clad 2024-T3 clad sheet as given in QQ-A-250/5
5	Structural Filler	1	0.071 in. (1.80 mm) thick, clad 2024-T3 clad sheet as given in QQ-A-250/5

L. Pre-form or roll the repair parts to match the fuselage skin contour before they are installed. Refer to 51-30-01, GENERAL for sheet metal materials.

M. Assemble the repair parts. Refer to Figure 203/REPAIR 1.

N. Drill the fastener holes. Make sure that you locate the holes so that the fastener tails will not be seated in the chem-milled radius of the skin. Keep a minimum of 1D fastener spacing from the edge of the chem-milled step.

NOTE: When you drill new fastener holes, drill the holes from the inside to make sure the holes are not near the chem-milled steps.

O. Disassemble the repair parts.

P. Remove the nicks, scratches, gouges, burrs and sharp edges from the repair parts and the bare surfaces of the initial parts.

Q. Apply a chemical conversion coating to the repair parts and to the bare surfaces of the initial parts. Refer to 51-20-01, GENERAL.

R. Apply two layers of BMS 10-79, Type II or Type III primer to the repair parts and to the bare surfaces of the initial parts. Refer to SOPM 20-44-04.

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S. Make and install countersink repair washers in the initial countersink locations that will be covered by the repair parts. Install the repair washers with BMS 5-95 sealant. Refer to 51-40-08, GENERAL.

T. Install the repair parts with BMS 5-95 sealant on all of the mating surfaces and in all the gaps. Refer to 51-20-05, GENERAL.

U. Install the fasteners.

(1) Install all hex drive bolts wet with BMS 5-95 sealant. Refer to 51-40-05, GENERAL.

(2) Install all rivets over-driven to a minimum of 1.4D. Refer to 51-40-02, GENERAL.

V. Apply a fillet seal with BMS 5-95 sealant along the edges of the repair parts. Refer to 51-20-05, GENERAL.

W. Apply one layer of BMS 10-11, Type II enamel to the internal surfaces of the repair area. Refer to SOPM 20-41-02.

X. Apply a layer of BMS 3-23, Type II corrosion inhibiting compound on to the internal surface of the entire repair area after the BMS 5-95 sealant has cured. Refer to SOPM 20-41-05.

Y. Apply the finish. Refer to AMM SECTION 51-21.

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NOTES

- FASTENER SUBSTITUTION IS PERMITTED PER SRM 51-40-03.
- MAXIMUM SPACING OF 8D IS PERMITTED IN THE CHEM-MILLED TRANSITION AREA.

1 KEEP AN 8D TO 10D FASTENER SPACING BETWEEN FASTENERS.

FASTENER SYMBOLS

REFERENCE FASTENER LOCATION.

INITIAL FASTENER LOCATION. INSTALL A BACB30NX6K()X WITH A BACC30BH COLLAR.

INITIAL FASTENER LOCATION. INSTALL A BACB30NW6K()X HEX-DRIVE BOLT WITH A BACC30M COLLAR.

INITIAL FASTENER LOCATION. INSTALL A BACR15CE6D RIVET AT INITIAL RIVET LOCATIONS. INSTALL A BACB30NW6K()X WITH A BACC30M COLLAR AT INITIAL HEX-DRIVE BOLT AND LOCKBOLT LOCATIONS.

INITIAL FASTENER LOCATION. INSTALL A BACR15BB6D RIVET AT INITIAL RIVET LOCATIONS. INSTALL A BACB30NX6K()X WITH A BACC30BH COLLAR AT INITIAL HEX-DRIVE BOLT AND LOCKBOLT LOCATIONS.

REPAIR FASTENER LOCATION. INSTALL A BACR15CE6D RIVET.

REPAIR FASTENER LOCATION. INSTALL A BACR15BB6D RIVET.

REPAIR FASTENER LOCATION. INSTALL A BACR15CE6D RIVET. 1

1953916 S0000371717_V1

Notes and Fastener Symbols
Figure 202

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1953920 S0000371718_V1

Section 47 - Fuselage Skin Repair Between S-12L and S-16L, and Between STA 1000 and STA 1016
Figure 203 (Sheet 1 of 2)

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(VIEW ROTATED 90° CLOCKWISE)

A-A

1954793 S0000371719_V1

Section 47 - Fuselage Skin Repair Between S-12L and S-16L, and Between STA 1000 and STA 1016
Figure 203 (Sheet 2 of 2)

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5. **Inspection Requirements**

A. Do the supplemental inspections as given in Table 202/REPAIR 1 and Figure 204/REPAIR 1.

Table 202: Category B Repair Inspection Requirements

CATEGORY B REPAIR INSPECTION REQUIREMENTS			
INSPECTION THRESHOLD	REPEAT INSPECTION		
	METHOD	INTERVAL	REFERENCE
50,000 total flight cycles or 18,000 flight cycles after repair installation, whichever is later *[1]	Low Frequency Eddy Current (LFEC) Inspection and Detailed Visual Inspection	18,000 flight cycles *[1]	737 NDT Part 6, 53-30-00, Procedure 5
28,000 total flight cycles or 15,000 flight cycles after repair installation, whichever is later *[2]		15,000 flight cycles *[2]	

*[1] For airplanes that have not completed SB 737-21-1149.

*[2] For airplanes that have completed SB 737-21-1149.

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1954880 S0000371721_V1

Inspection Requirements
Figure 204

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IDENTIFICATION 1 - SECTION 47 FUSELAGE STRINGERS

NOTE: REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

G78294 S0006590842_V1

Section 47 Stringer Location
Figure 1

Table 1:

REFERENCE DRAWINGS	
DRAWING NUMBER	**TITLE**
001A4001	Fuselage Product Collector
140A4700	Section 47 - Integration Functional Collector
147A0001	Crown Panel Integration Installation - Section 47
147A0002	Lower Panel Integration Installation - Section 47
140A4710	Entry Panel Functional Collector Section 47
147A0010	Panel Installation - Entry - Section 47
140A4720	Galley Panel Functional Collector Section 47

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Table 1: (Continued)

REFERENCE DRAWINGS	
DRAWING NUMBER	**TITLE**
147A0020	Panel Installation - Galley - Section 47
140A4730	Crown Panel Functional Collector Section 47
147A0030	Crown Panel Installation - Section 47
140A4740	Lower Panel Functional Collector Section 47
147A0040	Lower Panel Installation - Section 47

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RIGHT SIDE VIEW
STRINGERS S-1 TO S-27R

NOTES

- STATION LOCATIONS ARE APPROXIMATE.
- REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

F84964 S0006590844_V2

Section 47 Stringer Identification
Figure 2 (Sheet 1 of 2)

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F85141 S0006590845_V2

Section 47 Stringer Identification
Figure 2 (Sheet 2 of 2)

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Table 2:

LIST OF MATERIALS FOR FIGURE 2				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Stringer		BAC1498-163 7075-T62 sheet as given in QQ-A-250/12	
[2]	Stringer		BAC1498-164 7075-T62 sheet as given in QQ-A-250/12	
[3]	Stringer		BAC1498-165 7075-T62 sheet as given in QQ-A-250/12	
[4]	Stringer	0.045 (1.14)	7075-T62 sheet as given in QQ-A-250/12. Machined taper gage	
[5]	Stringer	0.050 (1.27)	7075-T62 sheet as given in QQ-A-250/12. Machined taper gage	
[6]	Stringer	0.056 (1.42)	7075-T62 sheet as given in QQ-A-250/12. Machined taper gage	
[7]	Stringer	0.063 (1.60)	7075-T62 sheet as given in QQ-A-250/12. Machined taper gage	
[8]	Stringer	0.071 (1.80)	7075-T62 sheet as given in QQ-A-250/12. Machined taper gage	
[9]	Chord		BAC1506-3800 2024-T42 extrusion as given in QQ-A-200/3	
[10]	Chord		BAC1506-4504 2024-T42 extrusion as given in QQ-A-200/3	
[11]	Stringer		BAC1517-1485 7075-T62 extrusion as given in QQ-A-200/11	
[12]	Stringer		BAC1517-2234 7075-T62 extrusion as given in QQ-A-200/11	
[13]	Stringer		BAC1498-153 7075-T62 sheet as given in QQ-A-250/12	
[14]	Stringer		BAC1498-154 7075-T62 sheet as given in QQ-A-250/12	
[15]	Stringer		BAC1498-157 7075-T62 sheet as given in QQ-A-250/12	
[16]	Stringer		BAC1498-158 7075-T62 sheet as given in QQ-A-250/12	
[17]	Stringer		BAC1498-159 7075-T62 sheet as given in QQ-A-250/12	
[18]	Stringer		BAC1498-160 7075-T62 sheet as given in QQ-A-250/12	
[19]	Stringer		BAC1498-161 7075-T62 sheet as given in QQ-A-250/12	
[20]	Stringer		BAC1498-162 7075-T62 sheet as given in QQ-A-250/12	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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L08074 S0006590850_V1

Section 47 Stringer Allowable Damage
Figure 101

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REPAIR 1 - SECTION 47 FUSELAGE STRINGERS

1. Applicability

A. Repair 1 is applicable to damage to the stringers in body Section 47 shown in Section 47 Stringer Repairs, Figure 201/REPAIR 1.

L08094 S0006590854_V1

Section 47 Stringer Repairs
Figure 201

2. General

A. The typical repairs given in 51-70-11 or 51-70-12 can be used when applicable if:

(1) There is sufficient clearance with the adjacent structure for the installation of repair parts.

B. Refer to the limits of the typical repairs given in 51-70-11 or 51-70-12 before you start a repair.

3. References

Reference	Title
51-70-11	TYPICAL FORMED SECTION REPAIRS
51-70-12	EXTRUDED SECTION REPAIRS
53-00-03, REPAIR 1	Repair for a Type I, Type II, or Type IV Fuselage Stringer with General Damage
53-00-03, REPAIR 2	Repair for a Type I, II or IV Fuselage Stringer with Longitudinal Crack Damage in a Formed Corner of a Skin Attachment Flange
53-00-03, REPAIR 3	Repair for a Type III Fuselage Stringer With General Damage
53-00-03, REPAIR 4	Repair for a Type III Fuselage Stringer With Longitudinal Crack Damage in a Formed Corner of a Skin Attachment Flange
53-00-03, REPAIR GENERAL	Formed Fuselage Stringers
53-70-03	FUSELAGE STRINGERS - SECTION 47

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4. Repair Instructions

A. Refer to Table 201/REPAIR 1 to find the applicable repairs to the section 47 fuselage stringers.

NOTE: If necessary, refer to 53-70-03, Identification 1 to find the material and the process that was used to make the part which you want to repair.

Table 201:

REPAIR REFERENCES FOR THE SECTION 47 FUSELAGE STRINGERS		
STRINGER	**LOCATION**	**REPAIR**
S-8R	STA 887 to STA 1016	Refer to SRM 51-70-11
S-7L	STA 887 to STA 1016	Refer to SRM 51-70-12
S-11L FWD, S-11R FWD, S-13R, S-17L	STA 887 to STA 957	Refer to SRM 51-70-11
S-13L, S-17R	STA 887 to STA 957	Refer to SRM 51-70-12
All other stringers	STA 887 to STA 1016	Refer to SRM 53-00-03

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L55332 S0006590860_V1

Section 47 Fuselage Intercostal Locations
Figure 1

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L08097 S0006590864_V1

Section 47 Fuselage Intercostal Allowable Damage
Figure 101

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L08099 S0006590868_V1

Section 47 Fuselage Intercostal Repair
Figure 201

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IDENTIFICATION 1 - SECTION 47 FUSELAGE FRAMES

NOTE: REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

G29146 S0006590872_V1

Section 47 Fuselage Frame Location
Figure 1

Table 1:

REFERENCE DRAWINGS	
DRAWING NUMBER	**TITLE**
001A4001	Fuselage Product Collector
140A4710	Entry Door Panel Functional Collector - Section 47
140A4720	Galley Door Panel Functional Collector - Section 47
140A4730	Crown Panel Functional Collector - Section 47
140A4740	Lower Panel Functional Collector - Section 47
147A1007	STA 907 Frame Assy
147A1027	STA 927 Frame Assy
147A1047	STA 947.5 Frame Assy
147A1067	STA 967 Frame Assy
147A1086	STA 986.5 Frame Assy
147A1006	STA 1006 Frame Assy

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NOTE: REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

L45393 S0006590876_V1

Section 47 Frames - Left, Right, and Crown Identification
Figure 2 (Sheet 1 of 2)

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TYPICAL SECTION THROUGH A FRAME FOR ITEMS [1], [2], [4], [5], [6], [8], AND [10]

TYPICAL SECTION THROUGH A FRAME FOR ITEM [3]

STATION 907
TYPICAL SECTION THROUGH A FRAME FOR ITEM [6]

TYPICAL SECTION THROUGH A FRAME FOR ITEM [7]

TYPICAL SECTION THROUGH A FRAME FOR ITEM [9]

L50375 S0006590878_V2

Section 47 Frames - Left, Right, and Crown Identification
Figure 2 (Sheet 2 of 2)

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Table 2:

LIST OF MATERIALS FOR FIGURE 2				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Frame Assembly			
	Frame	0.045 (1.14)	7075-T62 clad sheet as given in QQ-A-250/13	
	Failsafe Chord		BAC1514-1324 7075-T62 extrusion as given in QQ-A-200/11	
[2]	Frame Assembly			
	Frame	0.056 (1.42)	7075-T62 clad sheet as given in QQ-A-250/13	
	Failsafe Chord		BAC1514-3319 7075-T62 extrusion as given in QQ-A-200/11	
[3]	Frame Assembly			
	Frame	0.071 (1.80)	7075-T62 clad sheet as given in QQ-A-250/13	
	Failsafe Chord		BAC1503-101074 7075-T62 extrusion as given in QQ-A-200/11	
[4]	Frame Assembly			
	Frame	0.050 (1.27)	7075-T62 clad sheet as given in QQ-A-250/13	
	Failsafe Chord		BAC1503-2732 7075-T62 extrusion as given in QQ-A-200/11	
[5]	Frame Assembly			
	Frame	0.063 (1.60)	7075-T62 clad sheet as given in QQ-A-250/13	
	Failsafe Chord		BAC1514-1998 7075-T62 extrusion as given in QQ-A-200/11	
[6]	Frame Assembly			
	Frame	0.045 (1.14)	7075-T62 clad sheet as given in QQ-A-250/13	
	Failsafe Chord		BAC1503-2732 7075-T62 extrusion as given in QQ-A-200/11	
[7]	Frame Assembly			
	Frame	0.056 (1.42)	7075-T62 clad sheet as given in QQ-A-250/13	
	Failsafe Chord		BAC1514-3312 7075-T62 extrusion as given in QQ-A-200/11	
[8]	Frame Assembly			
	Frame	0.045 (1.14)	7075-T62 clad sheet as given in QQ-A-250/13	
	Failsafe Chord		BAC1514-1325 7075-T62 extrusion as given in QQ-A-200/11	
[9]	Frame Assembly			
	Frame	0.071 (1.80)	7075-T62 clad sheet as given in QQ-A-250/13	
	Failsafe Chord		BAC1514-1681 7075-T62 extrusion as given in QQ-A-200/11	
[10]	Frame Assembly			
	Frame	0.063 (1.60)	7075-T62 clad sheet as given in QQ-A-250/13	

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Table 2: (Continued)

LIST OF MATERIALS FOR FIGURE 2				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
	Failsafe Chord		BAC1503-100028 7075-T62 extrusion as given in QQ-A-200/11	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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BOTTOM VIEW IS SHOWN

NOTE: REFER TO TABLE 3 FOR THE LIST OF MATERIALS.

G34077 S0006590882_V1

Section 47 Lower Lobe Frame Identification
Figure 3 (Sheet 1 of 3)

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TYPICAL SECTION THROUGH
A FRAME FOR ITEM [1]

STATION 907
TYPICAL SECTION THROUGH
A FRAME FOR ITEM [2]

TYPICAL SECTION THROUGH
A FRAME FOR ITEM [3]

TYPICAL SECTION THROUGH
A FRAME FOR ITEM [4]

G34122 S0006590883_V1

Section 47 Lower Lobe Frame Identification
Figure 3 (Sheet 2 of 3)

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STATION 967
TYPICAL SECTION THROUGH
A FRAME FOR ITEM [2]

TYPICAL SECTION THROUGH
A FRAME FOR ITEM [5]

G34202 S0006590884_V1

Section 47 Lower Lobe Frame Identification
Figure 3 (Sheet 3 of 3)

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Table 3:

LIST OF MATERIALS FOR FIGURE 3				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Frame Assembly			
	Frame	0.063 (1.60)	7075-T62 clad sheet as given in QQ-A-250/13	
	Failsafe Chord		BAC1514-831 7075-T62 extrusion as given in QQ-A-200/11	
[2]	Frame Assembly			
	Frame	0.056 (1.42)	7075-T62 clad sheet as given in QQ-A-250/13	
	Failsafe Chord		BAC1514-3312 7075-T62 extrusion as given in QQ-A-200/11	
[3]	Frame Assembly			
	Frame	0.071 (1.80)	7075-T62 clad sheet as given in QQ-A-250/13	
	Failsafe Chord		BAC1514-945 7075-T62 extrusion as given in QQ-A-200/11	
[4]	Frame Assembly			
	Frame	0.063 (1.60)	7075-T62 clad sheet as given in QQ-A-250/13	
	Failsafe Chord		BAC1514-1998 7075-T62 extrusion as given in QQ-A-200/11	
[5]	Frame Assembly			
	Frame	0.056 (1.42)	7075-T62 clad sheet as given in QQ-A-250/13	
	Failsafe Chord		BAC1514-1681 7075-T62 extrusion as given in QQ-A-200/11	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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L08100 S0006590890_V1

Section 47 Fuselage Frame Location
Figure 101

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L08101 S0006590894_V1

Section 47 Fuselage Frame Location
Figure 201

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IDENTIFICATION 1 - SECTION 47 DOOR SURROUND STRUCTURE

NOTE: REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

G06528 S0006590908_V1

Section 47 - Door Surround Structure Location
Figure 1

Table 1:

REFERENCE DRAWINGS	
DRAWING NUMBER	**TITLE**
001A4001	Fuselage Product Collector
140A4700	Section 47 Integration Functional Collector
140A4710	Entry Door Panel Functional Collector - Section 47
140A4720	Galley Door Panel Functional Collector - Section 47
147A0010	Panel Installation - Entry, Section 47
147A0020	Panel Installation - Galley, Section 47
147A8101	Door Panel - Surround Structure - Installation
147A8110	Frame Installation - Aft Doorway, Station 951.000
147A8111	Frame Installation - Aft Doorway, Station 992.8
147A8301	Main Sill Installation - Upper Entry Door Panel
147A8401	Main Sill Installation - Upper Galley Door Panel
147A8501	Main Sill Installation - Lower, Entry and Galley Door Panels
147A8901	Reveal Installation - Entry and Galley Door Panels

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NOTES

- REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

G06318 S0006590910_V2

Section 47 - Door Surround Structure Identification
Figure 2 (Sheet 1 of 3)

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LOWER MAIN AND AUXILIARY SILL

A

G16145 S0006590911_V3

Section 47 - Door Surround Structure Identification
Figure 2 (Sheet 2 of 3)

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SCUFF PLATE

B

2324889 S0000526898_V1

Section 47 - Door Surround Structure Identification
Figure 2 (Sheet 3 of 3)

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Table 2:

LIST OF MATERIALS FOR FIGURE 2				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Intercostal Web	0.063 (1.60)	7075-T6 sheet as given in QQ-A-250/12 Refer to Figure 3 for the chem-milled thicknesses	
[2]	Intercostal	0.063 (1.60)	2024-T42 clad as given in QQ-A-250/5	
[3]	Intercostal Channel	0.080 (2.03)	7075-T62 clad as given in QQ-A-250/13	
[4]	Intercostal Outer Chord		7050-T7451 plate as given in AMS 4050. Refer to the production drawing for the machined thicknesses. Refer to Figure 4 for a typical machined intercostal	
[5]	Outer Chord		2024-T42 BAC1506-4476 extrusion as given in QQ-A-200/3	LINE NUMBER 7 AND 8
[5]	Outer Chord		2024-T42 BAC1506-3800 extrusion as given in QQ-A-200/3	LINE NUMBER 9 AND ON
[6]	Inner Chord		2024-T3511 BAC1505-100818 extrusion as given in QQ-A-200/3	
[7]	Inner Chord		7075-T6511 BAC1514-589 extrusion as given in QQ-A-200/11	
[8]	Inner Chord		2024-T3511 BAC1505-100914 extrusion as given in QQ-A-200/3	
[9]	Inner Chord		2024-T3511 BAC1506-2710 extrusion as given in QQ-A-200/3	
[10]	Inner Chord		7075-T6511 BAC1514-2920 extrusion as given in QQ-A-200/11	
[11]	Stub Frame	0.063 (1.60)	7075-T62 clad as given in QQ-A-250/13	
[12]	Frame Assembly - STA 951			
	Outer Chord		2024-T3511 BAC1514-3360 extrusion as given in QQ-A-200/3 heat treated to T42 (Optional: 2024-0 extrusion). Refer to the production drawing for machined thicknesses	
	Inner Chord		7075-T62 BAC1514-3281 extrusion as given in QQ-A-200/11. Refer to the production drawing for the machined thicknesses	
	Doubler	0.071 (1.80)	7075-T6 clad sheet as given in QQ-A-250/13	
	Upper and Lower Failsafe Angle		7075-T62 BAC1503-100609 extrusion as given in QQ-A-200/11	
[13]	Frame Assembly - STA 992			
	Outer Chord		2024-T3511 BAC1514-3360 extrusion as given in QQ-A-200/3 heat treated to T42 (Optional: 2024-0 extrusion). Refer to the production drawing for machined thicknesses	
	Inner Chord		7075-T62 BAC1514-3283 extrusion as given in QQ-A-200/11. Refer to the production drawing for the machined thicknesses	
	Upper and Lower Failsafe Angle		7075-T62 BAC1503-100609 extrusion as given in QQ-A-200/11	
[14]	Upper Main Sill Assembly			

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Table 2: (Continued)

LIST OF MATERIALS FOR FIGURE 2				
ITEM	DESCRIPTION	T*[1]	MATERIAL	EFFECTIVITY
	Web	0.090 (2.29)	7075-T62 clad sheet as given in QQ-A-250/13	
	Web	0.071 (1.80)	7075-T62 clad sheet as given in QQ-A-250/13	
	Web	0.063 (1.60)	7075-T62 clad sheet as given in QQ-A-250/13	
	Strap	0.190 (4.83)	7075-T6 sheet as given in QQ-A-250/12	
	Angle (5)		7075-T73511 BAC1503-100219 extrusion as given in QQ-A-200/11	
[15]	Lower Main Sill Assembly (STA 888 to STA 1016)			
	Web	0.040 (1.02)	7075-T62 clad sheet as given in QQ-A-250/13	
	Web	0.090 (2.29)	7075-T62 clad sheet as given in QQ-A-250/13	
	Web	0.071 (1.80)	7075-T6 clad sheet as given in QQ-A-250/13	
	Web	0.063 (1.60)	7075-T6 clad sheet as given in QQ-A-250/13	
	Inner Chord	0.080 (2.03)	7075-T62 clad as given in QQ-A-250/13	
	Doubler	0.250 (6.35)	7075-T7351 plate as given in QQ-A-250/12	
	Angle (6)		7075-T62 BAC1490-2798 extrusion as given in QQ-A-250/13	
	Angle (2)		7075-T6511 BAC1504-8255 extrusion as given in QQ-A-200/11	
	Angle		7075-T73511 BAC1514-3299 extrusion as given in QQ-A-200/11	
	Angle		7075-T73511 BAC1514-3297 extrusion as given in QQ-A-200/11	LINE NUMBER 7 AND 8
	Angle		7075-T73511 BAC1514-1126 extrusion as given in QQ-A-200/11	LINE NUMBER 9 AND ON
[16]	Upper Auxiliary Sill Assembly			
	Web	0.032 (0.81)	7075-T6 clad sheet as given in QQ-A-250/13	LINE NUMBER 1 THRU 183
	Web	0.040 (1.02)	7075-T62 clad sheet as given in QQ-A-250/13	LINE NUMBER 184 AND ON
	Web	0.050 (1.27)	7075-T6 clad sheet as given in QQ-A-250/13	
	Web	0.036 (0.94)	7075-T6 clad sheet as given in QQ-A-250/13	
	Web	0.040 (1.02)	7075-T6 clad sheet as given in QQ-A-250/13	
	Channel (4)		7050-T7451 BAC1510-1351 extruded plate as given in AMS 4050	
	Channel (2)		7075-T62 BAC1493-602 clad extruded sheet as given in QQ-A-250/13	
	Strap	0.080 (2.03)	2024-T3 sheet as given in QQ-A-250/4	
	Strap (2) (left side only)	0.080 (2.03)	7075-T6 sheet as given in QQ-A-250/12	
	Doubler (left side only)	0.063 (1.60)	7075-T62 clad as given in QQ-A-250/13	
[17]	Lower Auxiliary Sill Installation			

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Table 2: (Continued)

LIST OF MATERIALS FOR FIGURE 2				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
	Web (4)	0.040 (1.02)	7075-T6 clad sheet as given in QQ-A-250/13	
	Strap	0.140 (3.56)	2024-T3 clad sheet as given in QQ-A-250/4	
	Strap	0.056 (1.42)	7075-T6 clad sheet as given in QQ-A-250/13	
	Strap	0.063 (1.60)	7075-T6 clad sheet as given in QQ-A-250/13	
	Doubler (3)	0.032 (0.81)	7075-T6 clad sheet as given in QQ-A-250/13	
	Channel (4)		7075-T73511 BAC1509-100694 extrusion as given in QQ-A-200/11	
	Angle		7075-T62 BAC1490-2541 clad extrusion as given in QQ-A-250/13	
	Angle		7075-T62 BAC1490-2707 clad extrusion as given in QQ-A-250/13	
[18]	Closeout plate	0.063 (1.60)	2024-T3 clad sheet as given in QQ-A-250/5	
[19]	Outer Chord		2024-T42 BAC1506-4504 extrusion as given in QQ-A-200/3	
[20]	Inner Chord	0.080 (2.03)	7075-T62 Clad Sheet as given in QQ-A-250/13	
[21]	Lower Forward Corner Reveal Assembly			
	Casting		A357.0 T61 aluminum alloy casting as given in AMS 4219	
[22]	Lower Aft Corner Reveal Assembly			
	Casting		A357.0 T61 aluminum alloy casting as given in AMS 4219	
	Shim		Aluminum alloy sheet, Type IA, as given in BMS 7–335 (Make from BACS40R010B036)	Line Number 26 and on
[23]	Threshold Assembly			
	Threshold	0.040 (6.35)	Ti-6Al-4V titanium sheet, condition A, as given in AMS-T-9046	
	Stop Plate	0.050 (1.27)	301 CRES sheet as given in AMS 5519, condition hard, surface condition 2D	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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G06559 S0006590913_V1

Chem-Milled Thickness for Figure 2, Item [1]
Figure 3

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G06568 S0006590914_V1

Machined Thickness for Figure 2, Item [4]
Figure 4

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ALLOWABLE DAMAGE 1 - SECTION 47 DOOR SURROUND STRUCTURE

1. Applicability

A. This subject gives the allowable damage limits for the Section 47 Door Surround Structure shown in Section 47 - Door Surround Structure Location, Figure 101/ALLOWABLE DAMAGE 1.

G15230 S0006590917_V1

Section 47 - Door Surround Structure Location
Figure 101

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AFT ENTRY DOOR SURROUND STRUCTURE IS SHOWN,
AFT GALLEY DOOR SURROUND STRUCTURE IS OPPOSITE EXCEPT AS NOTED

G15796 S0006590919_V2

Section 47 - Door Surround Structure Allowable Damage
Figure 102 (Sheet 1 of 12)

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UPPER AUXILIARY SILL IS SHOWN,
LOWER AUXILIARY SILL IS SIMILAR

A

G20393 S0006590920_V1

Section 47 - Door Surround Structure Allowable Damage
Figure 102 (Sheet 2 of 12)

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A-A

(TYPICAL FOR THE UPPER
AND LOWER AUXILIARY SILL)

B-B

(TYPICAL FOR THE UPPER
AND LOWER AUXILIARY SILL)

C-C

(TYPICAL FOR THE UPPER
AND LOWER AUXILIARY SILL)

G20460 S0006590921_V1

Section 47 - Door Surround Structure Allowable Damage
Figure 102 (Sheet 3 of 12)

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G21864 S0006590922_V1

Section 47 - Door Surround Structure Allowable Damage
Figure 102 (Sheet 4 of 12)

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Section 47 - Door Surround Structure Allowable Damage
Figure 102 (Sheet 5 of 12)

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BUILT-UP INTERCOSTAL (TYPICAL)

C

F-F
(TYPICAL AT 8 LOCATIONS)

G-G
(TYPICAL AT 2 LOCATIONS)

G21321 S0006590924_V1

Section 47 - Door Surround Structure Allowable Damage
Figure 102 (Sheet 6 of 12)

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LOWER MAIN SILL

D

G21773 S0006590925_V1

Section 47 - Door Surround Structure Allowable Damage
Figure 102 (Sheet 7 of 12)

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H–H

I–I

G21784 S0006590926_V1

Section 47 - Door Surround Structure Allowable Damage
Figure 102 (Sheet 8 of 12)

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FORMED INTERCOSTAL (TYPICAL)

E

J–J

G21941 S0006590927_V1

Section 47 - Door Surround Structure Allowable Damage
Figure 102 (Sheet 9 of 12)

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Section 47 - Door Surround Structure Allowable Damage
Figure 102 (Sheet 10 of 12)

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Section 47 - Door Surround Structure Allowable Damage
Figure 102 (Sheet 11 of 12)

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SCUFF PLATE

H

O–O

2360506 S0000539250_V1

Section 47 - Door Surround Structure Allowable Damage
Figure 102 (Sheet 12 of 12)

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2. General

A. Remove the damaged material as necessary.

(1) Refer to 51-10-02 for the inspection and removal of damage.

(2) Refer to 51-30-03 for possible sources of the abrasive and other materials you can use to remove the damage.

(3) Refer to 51-30-05 for possible sources of the equipment and tools you can use to remove the damage.

B. After you remove the damage, do as follows:

(1) Apply a chemical conversion coating to the bare surfaces of the reworked area. Refer to 51-20-01.

(2) Apply one layer of BMS 10-11, Type I, primer to the bare surfaces of the reworked area. Refer to SOPM 20-41-02.

Table 101:

PARAGRAPH REFERENCES FOR THE ALLOWABLE DAMAGE LIMITS		
TYPE OF STRUCTURE	PART NAME	PARAGRAPH
UPPER AUXILIARY SILL AND LOWER AUXILIARY SILL	WEB	4.A
	DOUBLER	4.A
	CHANNEL	4.C
	STRAP	4.E
	JAY CLIP	4.E
	TEE CLIP	4.E
UPPER MAIN SILL	WEB	4.A.
	OUTER CHORD	4.E
	STRAP	4.E
	ANGLE	4.E
	TEE CLIP	4.E
BUILT-UP INTERCOSTAL	INNER CHORD	4.D
	TENSION STRAP	4.E
	OUTER CHORD	4.E
FORMED INTERCOSTAL	DOUBLER	4.A
	WEB	4.A
	INTERCOSTAL	4.C
DOOR EDGE FRAMES	WEB	4.A.
	INNER CHORD	4.E
	OUTER CHORD	4.E

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Table 101: (Continued)

PARAGRAPH REFERENCES FOR THE ALLOWABLE DAMAGE LIMITS		
TYPE OF STRUCTURE	PART NAME	PARAGRAPH
LOWER MAIN SILL	DOUBLER	4.A
	WEB	4.A
	INNER CHORD	4.D
	OUTER CHORD	4.E
	ZEE	4.E
	ANGLE	4.E
	SUPPORT ANGLE	4.E
	SUPPORT ZEE	4.E
	TEE CLIP	4.E
	JAY CLIP	4.E
	BULBED ANGLE	4.F
	SCUFF PLATE	4.G
OTHER STRUCTURES	CLOSEOUT PLATE	4.A
	SPLICE PLATE	4.A
	STUB FRAMES	4.B

3. References

Reference	Title
51-10-02	INSPECTION AND REMOVAL OF DAMAGE
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-20-06, GENERAL	Shot Peening
51-30-03	NON-METALLIC MATERIALS
51-30-05	EQUIPMENT AND TOOLS FOR REPAIRS
AMM 51-21-00 P/B 701	INTERIOR AND EXTERIOR FINISHES - CLEANING/PAINTING
SOPM 20-20-02	Penetrant Methods of Inspection
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes

4. Allowable Damage Limits

A. Webs, Closeout Plate, Doublers and Splice Plates

(1) Cracks:

(a) Remove the damage as shown in Figure 103, Details A, B, and C.

(2) Nicks, Gouges, Scratches, and Corrosion:

(a) You are permitted to do one of the procedures that follows:

1) Remove the damage as shown in Figure 103, Details A, B, C, D, and E.

2) Drill out the damage to the same limits as given for Holes and Punctures, as shown in Figure 103, Detail H.

NOTE: Do not drill out the damage if it has been blended out before.

(3) Dents are permitted as shown in Figure 103, Detail F.

(4) Holes and Punctures are permitted if they are:

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(a) A maximum of 0.25 inch in diameter

(b) A minimum of 4D (D= the diameter of the damage) away from a hole, the edge of the part, or other damage

(c) Filled with a 2117-T3 or 2117-T4 aluminum rivet installed without sealant.

B. Stub Frames

(1) Cracks:

(a) Remove the damage as permitted in Figure 103, Details A, B, and C.

(2) Nicks, Gouges, Scratches, and Corrosion:

(a) Remove the damage as shown in Figure 103, Details A, B, C, D, E, and G.

(3) Dents are permitted as shown in Figure 103, Detail F.

(4) Holes and Punctures are permitted in:

(a) The free flange as shown in Figure 103, Detail H.

(b) The webs if they are:

1) A maximum of 0.25 inch in diameter

2) A minimum of 4D (D = the diameter of the damage) away from the hole, the edge of the part, or other damage

3) Filled with a 2117-T3 or 2117-T4 aluminum rivet installed without sealant.

C. Formed Intercostals and Channels

(1) Cracks:

(a) Remove the damage as shown in Figure 103, Details A, B, and G.

(2) Nicks, Gouges, Scratches, and Corrosion:

(a) Remove the damage as shown inFigure 103, Details A, B, D, E, and G.

(3) Dents are permitted in the web only as shown in Figure 103, Detail F.

(4) Holes and Punctures:

(a) The damage is permitted in the free flange as shown in Figure 103, Detail H, if it is:

1) A maximum of 0.25 inch in diameter

2) A minimum of 4D (D= the diameter of the damage) from a hole, the edge of the part, or other damage

3) Filled with a 2117-T3 or 2117-T4 aluminum rivet installed without sealant.

D. Inner Chord of the Built-up Intercostal, and Lower Main Sill.

(1) Cracks:

(a) The damage is permitted as shown in Figure 103, Details A, B, I, J, and K.

(2) Nicks, Gouges, Scratches, and Corrosion:

(a) Remove the damage as shown in Figure 103, Details A, B, D, E, I, J, and K.

(3) Dents are not permitted.

(4) Holes and Punctures are not permitted.

E. Outer Chords, Inner Chords, Angles, Zee, Tee Clips, Jay Clips, Straps, Support Angles, Support Zees, and Tension Straps

(1) Cracks:

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(a) The damage is permitted as shown in Figure 103, Details A, B, I, and J.

(2) Nicks, Gouges, Scratches, and Corrosion:

(a) Remove the damage as shown in Figure 103, Details A, B, D, E, I, and J.

(3) Dents are not permitted.

(4) Holes and Punctures are not permitted.

F. Bulbed Angle

(1) Cracks:

(a) Remove the damage as shown in Figure 103, Details A and B.

(2) Nicks, Gouges, Scratches, and Corrosion:

(a) Remove the damage as shown in Figure 103, Details A, B, D, E, I, K, and L.

(3) Dents are not permitted.

(4) Holes and Punctures are not permitted.

G. Scuff Plate

(1) Cracks:

(a) Remove the damage as shown in Figure 103/ALLOWABLE DAMAGE 1, Details A, B, C and I.

(2) Nicks, Gouges, Scratches and Corrosion:

(a) Remove the damage as shown in Figure 103/ALLOWABLE DAMAGE 1, Details A, B, C, D, E, I and K.

(3) Dents are permitted as shown in Figure 103/ALLOWABLE DAMAGE 1, Detail F.

(4) Holes and Punctures are permitted if they are:

(a) A maximum of 0.25 inch in diameter

(b) A minimum of 4D (D= the diameter of the damage) away from a hole, the edge part, or other damage

(c) Filled with a 2117-T3 or 2117-T4 aluminum rivet installed without sealant.

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REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER EDGE MARGINS DO NOT HAVE AN OVERLAP

A

REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER EDGE MARGINS HAVE AN OVERLAP

B

X = WIDTH OF THE MATERIAL THAT IS REMOVED
= A MAXIMUM OF 0.05 INCH 1
= A MAXIMUM OF 0.10 INCH 2

REMOVAL OF DAMAGED MATERIAL AT AN EDGE OF A WEB

C

NOTES

1 FOR AIRPLANES THAT HAVE COMPLETED SERVICE BULLETIN 737-21-1149.

2 FOR AIRPLANES THAT HAVE NOT COMPLETED SERVICE BULLETIN 737-21-1149.

400685 S0000136482_V1

Allowable Damage Limits
Figure 103 (Sheet 1 of 7)

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REMOVAL OF DAMAGED MATERIAL ON A SURFACE

D

REMOVAL OF DAMAGE AROUND THE FASTENERS ON AN EDGE OR A SURFACE

E

400686 S0000136483_V1

Allowable Damage Limits
Figure 103 (Sheet 2 of 7)

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DENT THAT IS PERMITTED

F

X = WIDTH OF THE MATERIAL THAT IS REMOVED
= A MAXIMUM OF 0.05 INCH 1
= A MAXIMUM OF 0.10 INCH 2

REMOVAL OF DAMAGED MATERIAL ON AN EDGE OF A FORMED PART

G

400687 S0000136484_V2

Allowable Damage Limits
Figure 103 (Sheet 3 of 7)

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NOTE: HOLE DAMAGE IS NOT PERMITTED IN THE FASTENED FLANGES.

HOLES AND PUNCTURES IN A FREE FLANGE

H

X = WIDTH OF THE MATERIAL REMOVED
= A MAXIMUM OF 0.05 INCH 1
= A MAXIMUM OF 0.10 INCH 2

REMOVAL OF DAMAGED MATERIAL AT AN EDGE

I

400688 S0000136485_V1

Allowable Damage Limits
Figure 103 (Sheet 4 of 7)

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REMOVAL OF DAMAGED MATERIAL ON AN EDGE

J

400690 S0000136487_V1

Allowable Damage Limits
Figure 103 (Sheet 5 of 7)

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Y = WIDTH OF THE MATERIAL THAT IS REMOVED

REMOVAL OF DAMAGED MATERIAL ON A SURFACE AT AN EDGE OF A MACHINED OR EXTRUDED PART

K

415667 S0000136918_V1

Allowable Damage Limits
Figure 103 (Sheet 6 of 7)

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REMOVAL OF DAMAGED MATERIAL ON A SURFACE
AT AN EDGE OF A BULBED EXTRUSION

L

Allowable Damage Limits
Figure 103 (Sheet 7 of 7)

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REPAIR 1 - SECTION 47 DOOR SURROUND STRUCTURE

1. Applicability

A. Repair 1 is applicable to damage to the Section 47 Door Surround Structure in Section 47 - Door Surround Structure Location, Figure 201/REPAIR 1.

G28476 S0006590939_V1

Section 47 - Door Surround Structure Location
Figure 201

2. General

A. The typical repairs given in 51-70-11, 51-70-12, and 51-70-13 can be used when applicable if there is sufficient clearance with the adjacent structure for the installation of the repair parts.

B. Some of the typical repairs given in 51-70-11, 51-70-12, and 51-70-13 can not be used in some areas, as given in the typical repair figures. Refer to 51-70-11, 51-70-12, and 51-70-13.

C. Refer to the limits of the typical repairs given in 51-70-11, 51-70-12, and 51-70-13 before you start a repair.

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3. References

Reference	Title
51-70-11	TYPICAL FORMED SECTION REPAIRS
51-70-12	EXTRUDED SECTION REPAIRS
51-70-13	TYPICAL WEB REPAIRS
53-70-15	FUSELAGE DOOR SURROUND STRUCTURE - SECTION 47

4. Repair Instructions

A. Refer to Section 47 - Door Surround Structure Location, Figure 201/REPAIR 1 and Section 47 - Door Surround Structure Repair, Figure 202/REPAIR 1, and Table 201/REPAIR 1 to find the applicable repair for the part you want to repair.

NOTE: If necessary, refer to 53-70-15, Identification 1 to find the material and the process that was used to make the part which you want to repair.

Table 201:

REPAIR REFERENCES FOR THE DOOR SURROUND STRUCTURES	
TYPE OF COMPONENT	**REPAIR**
Formed parts	Refer to SRM 51-70-11
Extruded parts	Refer to SRM 51-70-12
Webs (Not Machined)	Refer to SRM 51-70-13
Straps, Doublers, Plates	There are no repairs for these parts in the Structural Repair Manual at this time. If the damage to the structure is more than the limits given in SRM 53-70-15, Allowable Damage 1, replace the damaged part
Machined Inner Chords Machined Webs	There are no repairs for these parts in the Structural Repair Manual at this time.

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AFT ENTRY DOOR SURROUND STRUCTURE IS SHOWN,

AFT GALLEY DOOR SURROUND STRUCTURE IS OPPOSITE EXCEPT AS NOTED

G28477 S0006590941_V2

Section 47 - Door Surround Structure Repair
Figure 202 (Sheet 1 of 12)

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UPPER AUXILIARY SILL IS SHOWN,
LOWER AUXILIARY SILL IS SIMILAR

A

G28478 S0006590942_V1

Section 47 - Door Surround Structure Repair
Figure 202 (Sheet 2 of 12)

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A-A

(TYPICAL FOR THE UPPER
AND LOWER AUXILIARY SILL)

B-B

(TYPICAL FOR THE UPPER
AND LOWER AUXILIARY SILL)

C-C

(TYPICAL FOR THE UPPER
AND LOWER AUXILIARY SILL)

G28479 S0006590943_V1

Section 47 - Door Surround Structure Repair
Figure 202 (Sheet 3 of 12)

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UPPER MAIN SILL

B

G28480 S0006590944_V1

Section 47 - Door Surround Structure Repair
Figure 202 (Sheet 4 of 12)

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G28481 S0006590945_V1

Section 47 - Door Surround Structure Repair
Figure 202 (Sheet 5 of 12)

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BUILT-UP INTERCOSTAL (TYPICAL)

C

F-F
(TYPICAL AT 8 LOCATIONS)

G-G
(TYPICAL AT 2 LOCATIONS)

G28482 S0006590946_V1

Section 47 - Door Surround Structure Repair
Figure 202 (Sheet 6 of 12)

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LOWER MAIN SILL

D

G28483 S0006590947_V1

Section 47 - Door Surround Structure Repair
Figure 202 (Sheet 7 of 12)

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H-H

I-I

G28484 S0006590948_V1

Section 47 - Door Surround Structure Repair
Figure 202 (Sheet 8 of 12)

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FORMED INTERCOSTAL (TYPICAL)

E

J–J

G28486 S0006590949_V1

Section 47 - Door Surround Structure Repair
Figure 202 (Sheet 9 of 12)

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Section 47 - Door Surround Structure Repair
Figure 202 (Sheet 10 of 12)

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Section 47 - Door Surround Structure Repair
Figure 202 (Sheet 11 of 12)

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SCUFF PLATE

H

O–O

2324733 S0000526895_V1

Section 47 - Door Surround Structure Repair
Figure 202 (Sheet 12 of 12)

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U45820 S0000196459_V1

Section 47 Passenger Compartment Floor Panel Location
Figure 1

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U45818 S0000196463_V1

Section 47 Passenger Compartment Floor Panel Location
Figure 101

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U45817 S0000196465_V1

Section 47 Passenger Compartment Floor Panel Location
Figure 201

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IDENTIFICATION 1 - SECTION 47 FLOOR STRUCTURE

NOTE: REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

1 AIRPLANES WITH AFT PRESSURE BULKHEAD AT STATION 1016.

2 AIRPLANES WITH AFT PRESSURE BULKHEAD AT STATION 1042.

U62495 S0000204837_V1

Section 47 Floor Beams Location
Figure 1

Table 1:

REFERENCE DRAWINGS	
DRAWING NUMBER	**TITLE**
001A4001	Fuselage Product Collector
140A0353	Floor Grid Collector - Section 47
147A5101	Cantilever Floor Assembly/Installation
147A5502	STA 907 Floor Beam Assemby
147A5503	STA 927 Floor Beam Assemby
147A5504	STA 947.5 Floor Beam Assemby
147A5505	STA 967 Floor Beam Assemby
147A5506	STA 986.5 Floor Beam Assemby
147A5507	STA 1006 Floor Beam Assemby
147A5558	STA 1016 Floor Beam Assemby

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NOTE: REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

G53663 S0006590967_V1

Section 47 Floor Beam at Station 907 Identification
Figure 2

Table 2:

LIST OF MATERIALS FOR FIGURE 2				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Beam		BAC1518-1211 7050-T76511 extrusion as given in AMS 4340	
[2]	Stiffener (3)		BAC1503-100436 7075-T6511 extrusion as given in QQ-A-200/11 (Optional: BAC1503-100108)	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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NOTE: REFER TO TABLE 3 FOR THE LIST OF MATERIALS.

G53672 S0006590971_V1

Section 47 Floor Beam at Station 927 Identification

Figure 3

Table 3:

LIST OF MATERIALS FOR FIGURE 3				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Beam		BAC1518-1211 7050-T76511 extrusion as given in AMS 4340	
[2]	Stiffener (6)		BAC1503-100436 7075-T6511 extrusion as given in QQ-A-200/11 (Optional: BAC1503-100108)	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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NOTE: REFER TO TABLE 4 FOR THE LIST OF MATERIALS.

G53819 S0006590975_V1

Section 47 Floor Beam at Station 947.5 Identification
Figure 4

Table 4:

LIST OF MATERIALS FOR FIGURE 4				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Beam		BAC1518-1212 7050-T76511 extrusion as given in AMS 4340	
[2]	Stiffener (2)		BAC1503-100436 7075-T6511 extrusion as given in QQ-A-200/11 (Optional: BAC1503-100108)	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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NOTE: REFER TO TABLE 5 FOR THE LIST OF MATERIALS.

G53833 S0006590979_V1

Section 47 Floor Beam at Station 967 Identification
Figure 5
Table 5:

LIST OF MATERIALS FOR FIGURE 5				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Beam		BAC1518-1207 7050-T76511 extrusion as given in AMS 4340	
[2]	Stiffener (7)		BAC1503-100436 7075-T6511 extrusion as given in QQ-A-200/11 (Optional: BAC1503-100108)	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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NOTE: REFER TO TABLE 6 FOR THE LIST OF MATERIALS.

G53846 S0006590983_V1

Section 47 Floor Beam at Station 986.5 Identification
Figure 6

Table 6:

LIST OF MATERIALS FOR FIGURE 6				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Beam		BAC1518-1211 7050-T76511 extrusion as given in AMS 4340	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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NOTE: REFER TO TABLE 7 FOR THE LIST OF MATERIALS.

G53869 S0006590987_V1

Section 47 Floor Beam at Station 1006 Identification

Figure 7

Table 7:

LIST OF MATERIALS FOR FIGURE 7				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Beam		BAC1518-1207 7050-T76511 extrusion as given in AMS 4340	
[2]	Stiffener		BAC1503-100436 7075-T6511 extrusion as given in QQ-A-200/11 (Optional: BAC1503-100108)	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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NOTE: REFER TO TABLE 8 FOR THE LIST OF MATERIALS.

U46149 S0000196444_V1

Section 47 Floor Beam at Station 1016 Identification
Figure 8
Table 8:

LIST OF MATERIALS FOR FIGURE 8				
ITEM	**DESCRIPTION**	**T**	**MATERIAL**	**EFFECTIVITY**
[1]	Beam		BAC1518-1211 7050-T76511 extrusion as given in AMS 4340	
[2]	Stiffener		AND10136-1702 7075-T73511 extrusion as given in QQ-A-200/11	

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NOTE: REFER TO TABLE 9 FOR THE LIST OF MATERIALS.

U47733 S0000193966_V1

Section 47 Floor Beam at Station 1030 Identification

Figure 9

Table 9:

LIST OF MATERIALS FOR FIGURE 9				
ITEM	**DESCRIPTION**	**T**	**MATERIAL**	**EFFECTIVITY**
[1]	Beam		7050-T7451 plate as given in BMS 7-323	

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NOTE: REFER TO TABLE 8 FOR THE LIST OF MATERIALS.

1381869 S0000251582_V1

Section 47 Cantilever Floor Identification
Figure 10

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Table 10:

LIST OF MATERIALS FOR FIGURE 8				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Support		BAC1506-43 7050-T76511 extrusion as given in AMS 4340	
[2]	Support		BAC1514-2569 7050-T76511 extrusion as given in AMS 4340	
[3]	Support (2)		BAC1517-2659 7050-T76511 extrusion as given in AMS 4340	
[4]	Support (2)		BAC1505-100323 7050-T76511 extrusion as given in AMS 4340	
[5]	Support (2)		AND10139-1107 7050-T76511 extrusion as given in AMS 4340	
[6]	Intercostal (7)	0.063 (1.60)	7075-T62 clad sheet as given in QQ-A-250/13	
[7]	Intercostal (4)	0.050 (1.27)	7075-T62 clad sheet as given in QQ-A-250/13	
[8]	Chord (4)		BAC1503-100096 7075-T73 extrusion as given in QQ-A-200/11	
[9]	Beam Assembly - Floor Beam Stiffener		 BAC1518-1211 7050-T76511 extrusion as given in AMS 4340 AND10136-1702 7075-T73511 extrusion as given in QQ-A-200/11	
[10]	Chord (2)		BAC1503-100851 7075-T73 extrusion as given in QQ-A-200/11	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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IDENTIFICATION 2 - SECTION 47 FLOOR STRUCTURE - SUPPORT AND STABILIZATION

U66059 S0000212369_V1

Section 47 Floor Structure Location
Figure 1

Table 1:

REFERENCE DRAWINGS	
DRAWING NUMBER	**TITLE**
140A0353	Floor Grid Collector - Section 47
147A5400	Stabilization Installation - Floor, Section 47
149A8101	Support Installation - Vacuum Waste Tank Enclosure, Aft Cargo Compartment

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NOTE: REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

VIEW IS LOOKING AFT

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Section 47 Floor Structure Stabilization Identification
Figure 2

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Table 2:

LIST OF MATERIALS FOR FIGURE 2				
ITEM	DESCRIPTION	T*[1]	MATERIAL	EFFECTIVITY
[1]	Strap		BAC1513-295 7075-T6511 extrusion as given in QQ-A-200/11	
[2]	Web	0.056 (0.142)	2024-T42 clad sheet as given in QQ-A-250/5	
[3]	Web	0.063 (1.6)	2024-T42 clad sheet as given in QQ-A-250/5	
[4]	Chord	0.063 (1.6)	7075-T62 clad sheet as given in QQ-A-250/13	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

G53929 S0006591002_V1

Vacuum Waste Tank Enclosure Support Identification

Figure 3

Table 3:

LIST OF MATERIALS FOR FIGURE 3				
ITEM	DESCRIPTION	T*[1]	MATERIAL	EFFECTIVITY
[1]	Depressor Strip		BAC1513-295 2024-T3511 extrusion as given in QQ-A-200/3	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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ALLOWABLE DAMAGE 1 - SECTION 47 FLOOR STRUCTURE

1. Applicability

A. This subject gives the allowable damage limits for the Section 47 STA 907 through 1016 floor beams structure as shown in Figure 101/ALLOWABLE DAMAGE 1.

B. No damage is permitted at the following areas:

(1) Floor beam upper chord at the web access hole.

(2) Floor beam upper chord under the seat track attachment.

(3) Floor beam to fuselage frame joint.

(4) Floor beam upper chord under intercostals for galley hard mount/attachments.

C. Only the basic configuration of the floor structure is shown. Refer to Boeing drawings for optional structure. The allowable damage data for optional structure is the same as the basic structure for a given part.

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G49422 S0006591006_V1

Section 47 Floor Structure Location
Figure 101

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NOTES

- ALL PARTS IDENTIFIED ARE MADE OF ALUMINUM

G49692 S0006591007_V1

Section 47 - Floor Structures - Station 907 through Station 1016
Figure 102 (Sheet 1 of 7)

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TYPICAL FLOOR BEAM FOR STATIONS 907, 927, 947.5, AND 967

A

A–A

G49442 S0006591008_V1

Section 47 - Floor Structures - Station 907 through Station 1016
Figure 102 (Sheet 2 of 7)

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FLOOR BEAM AT STATION 1006

B

B–B

G49443 S0006591009_V1

Section 47 - Floor Structures - Station 907 through Station 1016
Figure 102 (Sheet 3 of 7)

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G49571 S0006591010_V1

Section 47 - Floor Structures - Station 907 through Station 1016
Figure 102 (Sheet 4 of 7)

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SECTION 47 FLOOR ASSEMBLY

D

G50814 S0006591011_V1

Section 47 - Floor Structures - Station 907 through Station 1016
Figure 102 (Sheet 5 of 7)

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FLOOR BEAM AT STATION 986.5

E

K41488 S0006591012_V1

Section 47 - Floor Structures - Station 907 through Station 1016
Figure 102 (Sheet 6 of 7)

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STABILIZATION INSTALLATION

F

G50870 S0006591013_V1

Section 47 - Floor Structures - Station 907 through Station 1016
Figure 102 (Sheet 7 of 7)

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2. General

A. Refer to Table 101/ALLOWABLE DAMAGE 1 and Paragraph 4./ALLOWABLE DAMAGE 1 for the allowable damage limits.

B. Remove the damaged material as necessary.

(1) Refer to 51-10-02 for the inspection and removal of damage.

(2) Refer to 51-30-03 for possible sources of the abrasive and other materials you can use to remove the damage.

(3) Refer to 51-30-05 for possible sources of the equipment and tools you can use to remove the damage.

C. Apply a chemical conversion coating to the bare surfaces of the reworked areas. Refer to 51-20-01.

Table 101:

PARAGRAPH REFERENCES FOR THE ALLOWABLE DAMAGE LIMITS			
TYPE OF STRUCTURE	FIGURE	GROUP	PARAGRAPH
INTERCOSTALS (MACHINED)	102	1	4.A
INTERCOSTALS (FORMED)	102	2	4.B
SUPPORTS, SUPPORT PANELS (EXTRUDED)	102	3	4.C
CHORDS (EXTRUDED)	102	4	4.D
CHORDS (FORMED)	102	5	4.E
STIFFENERS, BRACKETS, TEE STIFFENERS, CLIPS (EXTRUDED)	102	6	4.F
BULBED DEPRESSOR STRIPS, STRAPS (EXTRUDED)	102	7	4.G
TRANSVERSE BEAMS STA 907 THRU 1016 (EXTRUDED)	102	8	4.H

D. Apply one of the two finishes to the reworked areas:

(1) Apply two layers of BMS 10-11, Type I, primer. Refer to SOPM 20-41-02 and AMM 51-21-00/701.

(2) Apply one layer of BMS 10-11, Type I, primer and one layer of BMS 10-11, Type II, enamel. Refer to SOPM 20-41-02 and AMM 51-21-00/701.

3. References

Reference	Title
51-10-02	INSPECTION AND REMOVAL OF DAMAGE
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-30-03	NON-METALLIC MATERIALS
51-30-05	EQUIPMENT AND TOOLS FOR REPAIRS
AMM 51-21-00/701	Interior And Exterior Finishes - Cleaning/Painting
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes

4. Allowable Damage Limits

A. Group 1 Parts: Intercostals - Machined

(1) Cracks:

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(a) Remove the damage as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 1, Details A, B, G, and K.

(2) Nicks, Gouges, Scratches, and Corrosion:

(a) Remove the damage as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 1, Details A, B, C, E, F, G, and K.

(3) Dents are permitted as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 1, Detail D.

(4) Holes and Punctures are not permitted.

B. Group 2 Parts: Intercostals - Formed

(1) Cracks:

(a) Remove the damage as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 1, Details A, B, and K.

(2) Nicks, Gouges, Scratches, and Corrosion:

(a) Remove the damage as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 1, Details A, B, C, E, and K.

(3) Dents are permitted as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 1, Detail D.

(4) Holes and Punctures are permitted as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 1, Detail I.

C. Group 3 Parts: Supports and Support Panels - Extruded

(1) Cracks:

(a) Remove the damage as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 1, Details A, B, G, and H.

(2) Nicks, Gouges, Scratches, and Corrosion:

(a) Remove the damage as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 1, Details A, B, C, E, F, G, and H.

(3) Dents are permitted as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 1, Detail D.

(4) Holes and Punctures are not permitted.

D. Group 4 Parts: Chords - Extruded

(1) Cracks:

(a) Remove the damage as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 1, Details A, B, and H.

(2) Nicks, Gouges, Scratches, and Corrosion:

(a) Remove the damage as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 1, Details A, B, C, E, F, and H.

(3) Dents are not permitted.

(4) Holes and Punctures are not permitted.

E. Group 5 Parts: Chords - Formed

(1) Cracks:

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(a) Remove the damage as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 1, Details A, B, and K.

(2) Nicks, Gouges, Scratches, and Corrosion:

(a) Remove the damage as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 1, Details A, B, C, E, and K.

(3) Dents are permitted as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 1, Detail D.

(4) Holes and Punctures are permitted if they are:

(a) A maximum of 0.25 inch (6.4 mm) in diameter

(b) A minimum of 4D (D = the diameter of the damage) away from a hole, other damage, or the part edge

(c) Filled with a 2117-T3 or 2117-T4 aluminum rivet installed without sealant.

F. Group 6 Parts: Stiffeners, Tee Stiffeners, Brackets, and Clips - Extruded

(1) Cracks:

(a) Remove the damage as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 1, Details A, B, G, and H.

(2) Nicks, Gouges, Scratches, and Corrosion:

(a) Remove the damage as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 1, Details A, B, C, E, F, G, and H.

(3) Dents are permitted as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 1, Detail D.

(4) Holes and Punctures are permitted as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 1, Detail J.

G. Group 7 Parts: Bulbed Depressor Strips and Straps - Extruded

(1) Cracks:

(a) Remove the damage as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 1, Details A, B, and L.

(2) Nicks, Gouges, Scratches, and Corrosion:

(a) Remove the damage as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 1, Details A, B, C, E, L, and M.

(3) Dents are not permitted.

(4) Holes and Punctures are not permitted.

H. Group 8 Parts: Transverse Beams from STA 907 to STA 1016 - Extruded

(1) Web area:

(a) No damage is permitted.

(2) Flange areas:

(a) Cracks:

1) Remove the damage as shown in Figure 103/ALLOWABLE DAMAGE 1, Details A, B, G, and H.

(b) Nicks, Gouges, Scratches, and Corrosion:

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1) Remove the damage as shown in Figure 103/ALLOWABLE DAMAGE 1, Details A, B, C, E, F, G, H, and N.

(c) Dents are not permitted.

(d) Holes and Punctures are not permitted.

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X = WIDTH OF THE MATERIAL THAT IS REMOVED
= A MAXIMUM OF 5 PERCENT OF THE WIDTH OF THE TRANSVERSE FLOOR BEAM FLANGES FOR BS 907, 967, 1006, AND 1016
= A MAXIMUM OF 15 PERCENT OF THE WIDTH OF THE TRANSVERSE FLOOR BEAMS UPPER FLANGES FOR BS 927, 947.5 AND 986.5
= A MAXIMUM OF 10 PERCENT OF THE WIDTH OF THE FLANGE FOR PARTS THAT ARE NOT TRANSVERSE FLOOR BEAMS

REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER EDGE MARGINS DO NOT HAVE AN OVERLAP

A

X = WIDTH OF THE MATERIAL THAT IS REMOVED
= A MAXIMUM OF 5 PERCENT OF THE WIDTH OF THE TRANSVERSE FLOOR BEAM FLANGES FOR BS 907, 967, 1006, AND 1016
= A MAXIMUM OF 15 PERCENT OF THE WIDTH OF THE TRANSVERSE FLOOR BEAMS UPPER FLANGES FOR BS 927, 947.5 AND 986.5
= A MAXIMUM OF 10 PERCENT OF THE WIDTH OF THE FLANGE FOR PARTS THAT ARE NOT TRANSVERSE FLOOR BEAMS

REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER EDGE MARGINS HAVE AN OVERLAP

B

REMOVAL OF DAMAGED MATERIAL ON A SURFACE

C

X = DEPTH OF THE MATERIAL THAT IS REMOVED
= A MAXIMUM OF 5 PERCENT OF THE THICKNESS OF THE TRANSVERSE FLOOR BEAM FLANGES FOR BS 907, 986.5, 1006, AND 1016
= A MAXIMUM OF 15 PERCENT OF THE THICKNESS OF THE TRANSVERSE FLOOR BEAMS UPPER FLANGES FOR BS 947.5 AND 967
= A MAXIMUM OF 25 PERCENT OF THE THICKNESS OF THE FLANGES FOR BS 927
= A MAXIMUM OF 10 PERCENT OF THE THICKNESS OF THE FLANGE FOR PARTS THAT ARE NOT TRANSVERSE FLOOR BEAMS

A–A

2203865 S0000491037_V3

Allowable Damage Limits
Figure 103 (Sheet 1 of 8)

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DENT THAT IS PERMITTED

D

REMOVAL OF DAMAGE AROUND THE FASTENERS ON AN EDGE OR A SURFACE

E

B–B

G54015 S0006591016_V3

Allowable Damage Limits
Figure 103 (Sheet 2 of 8)

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Y = WIDTH OF THE MATERIAL THAT IS REMOVED
= A MAXIMUM OF 10 PERCENT OF THE WIDTH OF THE FLANGE FOR PARTS THAT ARE NOT TRANSVERSE FLOOR BEAMS
= A MAXIMUM OF 5 PERCENT OF THE WIDTH OF THE TRANSVERSE FLOOR BEAM FLANGE

NOTE: AN ANGLE IS SHOWN, BUT THE DETAIL CAN ALSO BE APPLICABLE TO A TEE SECTION.

REMOVAL OF DAMAGED MATERIAL
ON A SURFACE AT AN EDGE

F

C–C

G54018 S0006591017_V1

Allowable Damage Limits
Figure 103 (Sheet 3 of 8)

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X = THE WIDTH OF THE MATERIAL THAT IS REMOVED
= A MAXIMUM OF 5 PERCENT OF THE WIDTH OF THE TRANSVERSE FLOOR BEAM FLANGES FOR BS 907, 967, 1006, AND 1016
= A MAXIMUM OF 15 PERCENT OF THE WIDTH OF THE TRANSVERSE FLOOR BEAMS UPPER FLANGES FOR BS 927, 947.5 AND 986.5
= A MAXIMUM OF 10 PERCENT OF THE WIDTH OF THE FLANGE FOR PARTS THAT ARE NOT TRANSVERSE FLOOR BEAMS

REMOVAL OF DAMAGED MATERIAL ON AN EDGE

G

X = WIDTH OF THE MATERIAL REMOVED
= A MAXIMUM OF 5 PERCENT OF THE WIDTH OF THE TRANSVERSE FLOOR BEAM FLANGES FOR BS 907, 967, 1006, AND 1016
= A MAXIMUM OF 15 PERCENT OF THE WIDTH OF THE TRANSVERSE FLOOR BEAMS UPPER FLANGES FOR BS 927, 947.5 AND 986.5
= A MAXIMUM OF 10 PERCENT OF THE WIDTH OF THE FLANGE FOR PARTS THAT ARE NOT TRANSVERSE FLOOR BEAMS

REMOVAL OF DAMAGED MATERIAL AT AN EDGE

H

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Allowable Damage Limits
Figure 103 (Sheet 4 of 8)

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D = THE DIMENSION OF THE LARGEST DAMAGE
W = THE WIDTH OF THE FLANGE

NOTE: HOLES ARE NOT PERMITTED IN A FLANGE RADIUS.

HOLES THAT ARE PERMITTED FOR THE REMOVAL OF DAMAGED MATERIAL IN A FLANGE

I

W = THE WIDTH OF THE STIFFENER FLANGE

HOLES THAT ARE PERMITTED TO REMOVE DAMAGED MATERIAL IN WEB STIFFENERS

J

G54024 S0006591019_V1

Allowable Damage Limits
Figure 103 (Sheet 5 of 8)

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X = WIDTH OF THE MATERIAL THAT IS REMOVED
= A MAXIMUM OF 10 PERCENT OF THE WIDTH OF THE FLANGE

REMOVAL OF DAMAGED MATERIAL ON AN EDGE

K

X = WIDTH OF THE MATERIAL THAT IS REMOVED
= A MAXIMUM OF 0.20 INCH (5.1 mm)

REMOVAL OF DAMAGED MATERIAL AT AN EDGE OF A STRAP OR WEB

L

G54027 S0006591020_V1

Allowable Damage Limits
Figure 103 (Sheet 6 of 8)

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Y = WIDTH OF THE MATERIAL REMOVED

= A MAXIMUM OF 10 PERCENT OF THE THICKNESS OF THE BULB

REMOVAL OF DAMAGED MATERIAL ON A SURFACE
AT AN EDGE OF A BULBED STRAP

M

D–D

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Allowable Damage Limits
Figure 103 (Sheet 7 of 8)

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REMOVAL OF DAMAGE FROM A FLOOR BEAM UPPER FLANGE
STATION 907 THRU STATION 1016

N

MAXIMUM MATERIAL THAT IS REMOVED:
- 0.05T FOR BS 907, 967, 1006 AND BS 1016 FLOOR BEAMS
- 0.15T FOR BS 927, 947.5 AND BS 986.5 FLOOR BEAMS

T_o = INITIAL THICKNESS OF THE FLANGE
T_f = THICKNESS OF THE FLANGE AFTER DAMAGE REMOVAL

E–E

MAXIMUM MATERIAL THAT IS REMOVED:
- 0.05T FOR BS 907, 986.5, AND BS 1016 FLOOR BEAMS
- 0.15T FOR BS 947.5 AND BS 967 FLOOR BEAMS
- 0.25T FOR BS 927 FLOOR BEAMS

T_o = INITIAL THICKNESS OF THE FLANGE
T_f = THICKNESS OF THE FLANGE AFTER DAMAGE REMOVAL

F–F

MAXIMUM MATERIAL THAT IS REMOVED:
- 0.05T FOR BS 907, 986.5, 1006 AND BS 1016 FLOOR BEAMS
- 0.15T FOR BS 947.5 AND BS 967 FLOOR BEAMS
- 0.25T FOR BS 927 FLOOR BEAM

T_o = INITIAL THICKNESS OF THE FLANGE
T_f = THICKNESS OF THE FLANGE AFTER DAMAGE REMOVAL

G–G

NOTES

- UPPER FLANGE IS SHOWN. THE DAMAGE LIMITS ARE 5 PERCENT FOR THE LOWER FLANGE.
- ONLY ONE DAMAGE LOCATION IS PERMITTED BETWEEN TWO LOWER STABILIZER STRAPS.
- USE FILLERS AS NECESSARY IN THE DAMAGE AREA BETWEEN THE FLOOR BEAM AND ADJACENT STRUCTURE TO WHICH IT ATTACHES. THE MAXIMUM GAP BETWEEN THE FLOOR BEAM AND ADJACENT STRUCTURE BEFORE FASTENERS ARE INSTALLED IS 0.01 INCH (0.25 mm).

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Allowable Damage Limits
Figure 103 (Sheet 8 of 8)

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Section 47 Transverse Floor Beam Repairs
Figure 201

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REPAIR 2 - SECTION 47 FLOOR STRUCTURE

1. Applicability

A. Repair 2 is applicable to damage to the floor structure as shown in Section 47 Floor Structure Repairs, Figure 201/REPAIR 2.

NOTE: THE BASIC FLOOR STRUCTURE CAN BE DIFFERENT BECAUSE OF OPERATOR OPTIONS. THE REPAIRS GIVEN IN THESE SECTIONS WILL ALSO BE APPLICABLE TO OPERATOR OPTIONS UNLESS SUCH AN OPTION NEEDS A SPECIFIED REPAIR IN THE MANUAL.

REFER TO SRM 51-70-11 , SRM 51-70-12, AND SRM 51-70-13 FOR THE TYPICAL FORMED SECTION REPAIRS, TYPICAL EXTRUDED SECTION REPAIRS, AND TYPICAL WEB REPAIRS. THESE TYPICAL REPAIRS CAN BE USED WHEREVER THEY ARE APPLICABLE IF SUFFICIENT SPACE IS AVAILABLE FOR THE INSTALLATION OF THE REPAIR PARTS, WITH NO INTERFERENCE TO ADJACENT STRUCTURE. SOME OF THESE REPAIRS CAN NOT BE USED IN SPECIFIED AREAS OF THE AIRPLANE, AS GIVEN IN THE TYPICAL REPAIR FIGURES. REFER TO THE USAGE LIMITS IN THE TYPICAL REPAIR FIGURES BEFORE YOU START A REPAIR.

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Section 47 Floor Structure Repairs
Figure 201

2. General

A. The typical repairs given in 51-70-11, 51-70-12, or 51-70-13 can be used, where applicable, if there is sufficient clearance with the adjacent structure to install the repair parts.

B. Refer to the limits of the typical repairs given in 51-70-11, 51-70-12, or 51-70-13 before you start a repair.

3. References

Reference	Title

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(Continued)

51-70-11	TYPICAL FORMED SECTION REPAIRS
51-70-12	EXTRUDED SECTION REPAIRS
51-70-13	TYPICAL WEB REPAIRS
53-70-51	FUSELAGE FLOOR STRUCTURE - SECTION 47

4. Repair Instructions

A. Section 47 Floor Structure

(1) Refer to Table 201/REPAIR 2 to find the applicable repairs to the floor structure in Section 47 floor structure.

NOTE: If necessary, refer to 53-70-51, Identification 1 to find the material and the process that was used to make the part which you want to repair.

Table 201:

REPAIR REFERENCES FOR THE SECTION 47 FLOOR STRUCTURE	
COMPONENT	**REPAIR**
Straps and Angles	Refer to SRM 51-70-12
Shear Webs	There are no repairs for these parts in the Structural Repair Manual at this time.
Straps, Brackets, Formed Angles, and Machined Splice Angles	There are no repairs for these parts in the Structural Repair Manual at this time.

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REPAIR 3 - SECTION 47 - CORROSION DAMAGE ON THE UPPER FLANGE OF A FLOOR INTERCOSTAL (MACHINED)

1. Applicability

A. This repair is applicable to corrosion damage on the upper flange of the machined intercoastal in Section 47 between stations 986.5 and 1006. Refer to Figure 201/REPAIR 3.

B. This repair is not applicable to floor intercostals with crack damage. If you find a crack, get alternative repair instructions from The Boeing Company.

C. The maximum diameter freeze plug allowed for this repair is 0.3 in. (7.62 mm).

2. General

A. This repair is a permanent repair. Refer to STRUCTURAL REPAIR DEFINITIONS, 51-00-06 to find the definitions of the different categories of repairs.

B. D = fastener diameter.

C. All dimensions are in inches, unless they are shown differently.

3. References

Reference	Title
51-00-06	STRUCTURAL REPAIR DEFINITIONS
51-10-02	INSPECTION AND REMOVAL OF DAMAGE
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-20-05	REPAIR SEALING
51-20-10	FREEZE PLUG INSTALLATION
51-20-13	SURFACE ROUGHNESS FINISH REQUIREMENTS
51-30-01	SHEET METAL MATERIALS
51-40-02	FASTENER INSTALLATION AND REMOVAL
51-40-05	FASTENER HOLE SIZES
51-40-06	FASTENER EDGE MARGINS
AMM 51-21-00	INTERIOR AND EXTERIOR FINISHES
SOPM 20-20-02	Penetrant Methods of Inspection
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes
737 NDT Part 6, 51-00-00, Procedure 1	Fastener Holes in Aluminum Parts (Meter Display)
737 NDT Part 6, 51-00-00, Procedure 4	Surface Inspection of Aluminum Parts (Meter Display)

4. Repair Instructions

A. Get access to the repair area. Remove the floor panels and necessary adjacent structure to get access to the damaged floor intercostal.

B. Remove the necessary fasteners in the damaged area. Keep a record of the floor panel fastener location.

C. Do a visual inspection of the damaged area. Refer to INSPECTION AND REMOVAL OF DAMAGE, 51-10-02 for the inspection procedure.

D. Remove the corrosion damage. Refer to Figure 202/REPAIR 3, Detail B and INSPECTION AND REMOVAL OF DAMAGE, 51-10-02

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(1) Refer to Figure 202/REPAIR 3, Detail A and INSPECTION AND REMOVAL OF DAMAGE, 51-10-02 for the procedure for the removal of damage.

(2) Make sure that the thickness of remaining material of the upper flange is not less than a minimum permitted value.

E. Do a High Frequency Eddy Current (HFEC) Inspection of the repair area to make sure that there is no more damage. Refer to 737 NDT Part 6, 51-00-00, Procedure 1 and 737 NDT Part 6, 51-00-00, Procedure 4. If you find more damage, do steps E thru F, Paragraph 4./REPAIR 3 again.

NOTE: As an alternative, you can do a penetrant inspection of the repair area. Refer to SOPM 20-20-02.

F. Measure the thickness of the remaining material of the upper flange of the floor intercostal where you removed material. Refer to Figure 202/REPAIR 3, Detail B for the minimum value of thickness that is permitted.

(1) If the thickness of remaining material of the upper flange is less than the minimum permitted value, do not continue with this repair. Get alternative repair instructions from The Boeing Company.

(2) If the thickness of remaining material of the upper flange is larger than the minimum permitted value, continue the repair procedures.

G. For all the cleaned surfaces, make the surface texture roughness 63 microinches (1.6 micrometers) Ra or smoother. Refer to SURFACE ROUGHNESS FINISH REQUIREMENTS, 51-20-13.

H. Ream the damaged fastener hole to the oversized diameter to install the Part 2 Freeze Plug. Refer FREEZE PLUG INSTALLATION, 51-20-10. Use the smallest diameter reamer possible to remove the damage.

I. Countersink the hole of the upper flange on the bottom surface to install the Part 2 Freeze Plug. Refer to Figure 202/REPAIR 3, Detail A and FREEZE PLUG INSTALLATION, 51-20-10.

J. Apply a chemical conversion coating to the bare surfaces of the floor intercostal. Refer to PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS, 51-20-01.

K. Make the repair parts. Refer to Table 201/REPAIR 3, Figure 204/REPAIR 3, Detail A, B or C, as applicable, and SHEET METAL MATERIALS, 51-30-01.

Table 201: REPAIR MATERIAL

REPAIR MATERIAL			
ITEM	PART	QUANTITY	MATERIAL
[1]	Shim	As Necessary	Use 7075-T6 clad sheet. Thickness is the same as the thickness of the removed material
[2]	Freeze Plug	As Necessary	Use 7075-T6. Refer to FREEZE PLUG INSTALLATION, 51-20-10.
[3]	Angle	As Necessary	Use 7075-T6 clad sheet.*[1] Refer to Figure 204/REPAIR 3, Detail B for dimensions.
[4]	Strip	As Necessary	Use 7075-T6 clad sheet. Thickness is 0.032 Inch. Refer to Figure 204/REPAIR 3, Detail C for dimensions.

*[1] Form in the 'O' condition then heat treat to T6.

L. Apply a chemical conversion coating to the Part 2 Freeze Plug, as necessary. Refer to FREEZE PLUG INSTALLATION, 51-20-10.

M. Install the Part 2 Freeze Plugs as given in FREEZE PLUG INSTALLATION, 51-20-10.

N. Assemble the repair parts as shown in Figure 203/REPAIR 3, Detail A. Make sure that gaps between mating surfaces of repair parts are not larger than 0.010 in. (0.25 mm).

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O. Drill the necessary fastener holes.

(1) Both end fasteners at the web flanges and web must be outside the Part 2 Freeze Plug.

(2) Do not drill fastener holes through the chem-milled or fillet radius.

(3) Refer to Figure 203/REPAIR 3, Detail A for the type and the dimension of the fasteners.

(4) Refer to FASTENER HOLE SIZES, 51-40-05 for the fastener hole dimensions.

(5) Refer to FASTENER EDGE MARGINS, 51-40-06 for the fastener edge margins.

(6) Make sure that the wall thickness of the Part 2 Freeze Plug is not less than the minimum value given in FREEZE PLUG INSTALLATION, 51-20-10.

P. Disassemble the repair parts.

Q. Remove all nicks, scratches, gouges, burrs, sharp edges from the repair parts and repaired surfaces of the initial parts.

R. Apply a chemical conversion coating to the repair parts. Refer to PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS, 51-20-01.

S. Apply two layers of BMS 10-11, Type I primer to the bare surfaces of the repair parts and the floor intercostal. Refer to SOPM 20-41-02.

T. Install the repair parts as shown in Figure 203/REPAIR 3, Detail A.

(1) Apply BMS 5-95 sealant to the mating surfaces. Refer to REPAIR SEALING, 51-20-05.

(2) Refer to FASTENER INSTALLATION AND REMOVAL, 51-40-02 for the fastener installation.

(3) Install the fasteners with BMS 5-95 sealant. Refer to REPAIR SEALING, 51-20-05.

U. Apply a fillet seal and fill all internal gaps with BMS 5-95 sealant. Refer to REPAIR SEALING, 51-20-05.

V. Apply one layer of BMS 10-11, Type I primer to the fastener head in the repair area. Refer to SOPM 20-41-02.

W. Apply one layer of BMS 3-23, Type II corrosion inhibiting compound followed by one layer of BMS 3-26 corrosion inhibiting compound to the repair area. Refer to PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS, 51-20-01.

(1) As an alternative, apply one layer of BMS 3-29 corrosion inhibiting compound. Refer to PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS, 51-20-01.

X. Install the adjacent structure that was removed.

Y. Install the floor panels.

(1) Clean the fastener holes as given in PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS, 51-20-01.

(2) Apply a chemical conversion coating to the fastener holes as given in PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS, 51-20-01.

(3) Apply one layer of BMS 10-11, Type I primer to the fastener holes. Refer to AMM SUBJECT 51-21-00.

(4) Apply BMS 3-24 grease to the fastener holes.

(5) Install the clip-on nuts or nutplates at each fastener hole, as applicable.

(a) Align the clip-on nuts or nutplates and the floor panel fastener holes, as applicable.

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Z. Put the floor panels in position and install the fasteners wet with BMS 3-24 grease. Torque the fasteners between 20 in-lb (2.3 N·m) and 25 in-lb (2.8 N·m).

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1336980 S0000238614_V1

Floor Intercostal Location
Figure 201

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FLOOR INTERCOSTAL, TYPICAL CORROSION DAMAGE

A

B

1336981 S0000238616_V1

Removal of the Damage
Figure 202 (Sheet 1 of 2)

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THE AREA WHERE MATERIAL IS REMOVED BECAUSE OF DAMAGE, MAXIMUM 1.60 INCH WIDTH PERPENDICULAR TO VIEW SHOWN

A–A

1336982 S0000238617_V1

Removal of the Damage
Figure 202 (Sheet 2 of 2)

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NOTE: THE REPAIR OF 0.080 INCH THICK UPPER FLANGE INTERCOSTAL IS SHOWN.

TYPICAL REPAIR OF THE INTERCOSTAL UPPER FLANGE
FOR CORROSION DAMAGE TO ONE FASTENER

A

A-A

1336983 S0000238618_V1

Floor Intercostal Repair
Figure 203 (Sheet 1 of 5)

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1336984 S0000238619_V1

Floor Intercostal Repair
Figure 203 (Sheet 2 of 5)

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NOTE: THE REPAIR OF 0.080 INCH THICK UPPER FLANGE INTERCOSTAL IS SHOWN.

TYPICAL REPAIR OF THE INTERCOSTAL UPPER FLANGE
FOR CORROSION DAMAGE TO MULTIPLE FASTENERS

B

C-C

1336985 S0000238620_V1

Floor Intercostal Repair
Figure 203 (Sheet 3 of 5)

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D–D

TYPICAL NUTPLATE INSTALLATION

C

1336986 S0000238621_V1

Floor Intercostal Repair
Figure 203 (Sheet 4 of 5)

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NOTES

1. FILL ALL GAPS WITH BMS 5-95 SEALANT.
2. INSTALL PART [4] STRIP AND BACR15CE3AD()C RIVETS IF YOU REINSTALL THE BACN10JR3CFD NUTPLATE.
3. FOR CORROSION DAMAGE WHERE TWO DAMAGED FASTENERS ARE LOCATED AT A DIAGONAL FROM EACH OTHER OR WHERE THERE ARE THREE DAMAGED FASTENERS, BOTH REPAIR ANGLES SHOULD BEGIN AND END AT THE SAME LOCATIONS ON EACH SIDE OF THE INTERCOSTAL. BOTH REPAIR ANGLE ENDS SHOULD EXTEND TO INCLUDE A MINIMUM OF ONE FASTENER PAST THE FREEZE PLUG.

FASTENER SYMBOLS

- REFERENCE FASTENER LOCATION.
- FLOOR PANEL FASTENER LOCATION. INSTALL A BACN10JR3CFD NUTPLATE WITH BACR15CE3AD()C RIVETS WHERE BACN10VR()CG CLIP-ON NUT CAN NOT BE INSTALLED.
- REPAIR FASTENER LOCATION. INSTALL A BACR15CE3AD()C RIVET. 2
- REPAIR FASTENER LOCATION. INSTALL A BACB30NW6K() HEX-DRIVE BOLT WITH A BACC30M6 COLLAR.
- REPAIR FASTENER LOCATION. INSTALL A BACB30MY6K() HEX-DRIVE BOLT WITH A BACC30M6 COLLAR.

1336987 S0000238622_V1

Floor Intercostal Repair
Figure 203 (Sheet 5 of 5)

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REPAIR PART [3] ANGLE

B

B–B

1336988 S0000238623_V1

Repair Parts for Floor Intercostal Repair
Figure 204 (Sheet 1 of 2)

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PART [4] STRIP

C

NOTES

1 MAKE LENGTH OF THE REPAIR PART AS NECESSARY TO KEEP 4D-5D DISTANCE BETWEEN FASTENERS AND 2D EDGE MARGIN.

1336989 S0000238624_V1

Repair Parts for Floor Intercostal Repair
Figure 204 (Sheet 2 of 2)

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REPAIR 4 - SECTION 47 - CORROSION DAMAGE ON THE UPPER CHORD OF THE FLOOR BEAM AT STA 986.5

1. Applicability

A. This repair is applicable to the BS 986.5 floor beam that has machined intercostals on the aft side at two locations. The machined intercostals must have a forward flange and web that are 0.070 in. (1.78 mm) thick.

2. General

A. This repair is a Category A repair. The inspections given in the Maintenance Planning Data (MPD) are sufficient to maintain damage tolerance of the initial structure with this repair installed. Refer to STRUCTURAL REPAIR DEFINITIONS, 51-00-06 for the definitions of the different categories of repairs.

B. This repair has two alternatives:

Alternative 1 : Use this typical repair if you find damage on the upper chord along the full length of the Floor Beam. Refer to Figure 204/REPAIR 4.

Alternative 2 : Use this typical repair if you find damage on the upper chord at the end of the Floor Beam. Refer to Figure 205/REPAIR 4.

C. Do not install splice parts in locations directly adjacent to the galley or lavatory fittings.

D. You are not permitted to make changes to the intercostals that have galley or lavatory hardpoint fittings attached. If it is necessary to change these structures, contact the Boeing Company for further repair instructions.

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1337465 S0000238974_V1

Section 47 - Location of the Floor Beam at STA 986.5
Figure 201

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3. References

Reference	Title
51-00-06	STRUCTURAL REPAIR DEFINITIONS
51-10-02	INSPECTION AND REMOVAL OF DAMAGE
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-20-05	REPAIR SEALING
51-20-13	SURFACE ROUGHNESS FINISH REQUIREMENTS
51-30-01	SHEET METAL MATERIALS
51-30-01, GENERAL	Sheet Metal Materials
51-40-02	FASTENER INSTALLATION AND REMOVAL
51-40-03, GENERAL	Fastener Substitution
51-40-05	FASTENER HOLE SIZES
51-40-06	FASTENER EDGE MARGINS
SOPM 20-10-03	SHOT PEENING
SOPM 20-20-02	Penetrant Methods of Inspection
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes

4. Repair Instructions

A. Get access to the repair area, as necessary.

(1) Remove the adjacent structure to get access to the damaged floor beam.

(2) Remove the necessary fasteners in the repair area.

B. Find the limits of the damage.

(1) Refer to Figure 204/REPAIR 4 if you find damage along the full length of the floor beam.

(2) Refer to Figure 205/REPAIR 4 if you find damage at one or both of the ends of the floor beam only.

C. Cut and remove the damaged flanges of the upper chord of the floor beam. Refer to Figure 203/REPAIR 4 and INSPECTION AND REMOVAL OF DAMAGE, 51-10-02.

(1) At the initial fastener locations keep a minimum 2.0 D edge margin.

(2) Do a detailed visual inspection of the cut edge to make sure that there is no damage caused by corrosion.

(3) Do one of the steps that follow:

(a) Shot peen or flap peen the cut edge with 100% coverage. Refer to SOPM 20-10-03. This will improve the corrosion resistance of the cut edge.

(b) Do not shot peen or flap peen the cut edge. Go to Paragraph 4.D./REPAIR 4.

D. Remove the initial rivet that plugs the tooling hole in the web of the initial floor beam.

(1) Countersink the tooling hole to a depth of 0.020 in. (0.51 mm) to 0.025 in. (0.64 mm).

(2) Double flush plug the initial tooling hole with a BACR15CE()AD rivet.

(3) Microshave the rivet flush.

E. Trim out the flange from the top four fasteners of the machined intercostal(s) attached to the floor beam if necessary. Refer to Figure 206/REPAIR 4 and INSPECTION AND REMOVAL OF DAMAGE, 51-10-02.

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(1) Keep a minimum 2D edge margin.

(2) Make the edges of the cut smooth to a finish of 63 microinches (1.6 micrometers) Ra or smoother before you flap peen. Refer to SURFACE ROUGHNESS FINISH REQUIREMENTS, 51-20-13.

(3) Do one of the steps that follow:

(a) Shot peen or flap peen the cut edge with 100% coverage. Refer to SOPM 20-10-03. This will improve the corrosion resistance of the cut edge.

(b) Do not shot peen or flap peen the cut edge. Go to Paragraph 4.F./REPAIR 4.

F. Apply a chemical conversion coating to the bare surfaces of the floor beam and intercostals. Refer to PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS, 51-20-01.

G. Make the repair parts. Refer to Table 201/REPAIR 4 and Figure 204/REPAIR 4 or Figure 205/REPAIR 4 as applicable, and Figure 206/REPAIR 4 and SHEET METAL MATERIALS, 51-30-01.

(1) When you make the part [1] T-Chord, it is permitted to use an optional “T” shape extrusion as long as:

(a) The material for the extrusion is 7050-T76511 or 7075-T6511.

(b) The horizontal flange is 0.150 in. (3.81 mm) thick, the vertical flange is 0.090 in. (2.29 mm) thick, and the corner radius is 0.120 in. (3.05 mm) to 0.125 in. (3.175 mm).

(c) The horizontal flange is a minimum of 2.30 in. (58.42 mm) wide to provide the necessary edge margin to the floor panel attach fasteners.

(d) Make sure that the vertical flange has 2D edge margin at all new fastener locations.

(e) Make sure that the new fastener locations on the vertical flange have the spacing as shown in the applicable figures.

(f) Do one of the steps that follow:

1) Shot peen or flap peen the cut edge with 100% coverage. Refer to SOPM 20-10-03. This will improve the corrosion resistance of the cut edge.

2) Do not shot peen or flap peen the cut edge. Go to Paragraph 4.G.(2)/REPAIR 4.

(2) If it is necessary to machine the thickness of the new T-Chord then use the dye penetrant inspection as given in SOPM 20-20-02. Shot peen or flap peen the machined areas with 100% coverage as given in SOPM 20-10-03.

(3) When you make the Part [7] Shear Tie, refer to Figure 206 (Sheet 8). Machine the shear tie to keep a 2.0 D edge margin at the forward leg.

(4) Make structural shims as necessary at the floor beam and clips. Refer to 51-30-01, GENERAL.

Table 201: REPAIR MATERIAL

ITEM	PART	QUANTITY	MATERIAL
[1]	T-Chord	As necessary	Use BAC1505-101474 7050-T76511 (optional: 7075-T6511) extrusion or an equivalent extrusion.
[2]	Angle	2	Use 7075-T0 clad sheet Thickness is 0.071 in. (1.80 mm). Heat treat to T62 after you form it. Maintain the minimum bend radius. (Optional: BAC 1490-2811 7075-T6 clad formed angle or an equivalent 0.071 in. (1.80 mm) 7075-T6 clad formed angle).
[3]	Angle	2	Use 7075-T0 clad sheet. Thickness is 0.080 in. (2.03 mm). Heat treat to T62 after you form it. Maintain the minimum bend radius. (Optional: BAC 1490-2887 7075-T6 clad formed angle or an equivalent 0.080 in. (2.03 mm) 7075-T6 clad formed angle).

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Table 201: REPAIR MATERIAL (Continued)

ITEM	PART	QUANTITY	MATERIAL
[4]	Strap	2	Use 7075-T6 clad sheet. Thickness is 0.080 in. (2.03 mm).
[5]	Angle	4	Use clad 7075-T6 clad sheet. Thickness is 0.080 in. (2.03 mm). Maintain the minimum bend radius. (Optional:BAC 1490-2651 7075-T6 clad formed angle or an equivalent 0.080 in. (2.03 mm) 7075-T6 clad formed angle).
[6]	Filler	4	Use 7075-T6 clad sheet. Thickness is 0.020 in. (0.51 mm).
[7]	Shear Tie	2	Use BAC1506-4480 7075 T73511 extrusion as given in AMS-QQ-A-200/11 or an equivalent extrusion that has the necessary thickness shown on the drawing.

H. Assemble the repair parts. Install the Part [1] T-Chord on the aft side of the floor beam. Do not install between the frame and initial beam structure. Make sure that the distance between mating surfaces of the repair parts are not larger than 0.010 in. (0.25 mm).

(1) Refer to Figure 204/REPAIR 4 or Figure 205/REPAIR 4 as applicable.

(2) Refer to Figure 206/REPAIR 4 for the typical attachment of the part [1] T-chord(s).

(3) If the part 251A2124 support brackets are in the same location as the repair parts, move the bracket to a lower location.

(a) Countersink depth to be 0.020 in. (0.51 mm) to 0.025 in. (0.64 mm).

(b) Plug the initial holes with BACR15CE()AD rivets.

(c) Microshave the rivets flush.

I. Drill necessary fastener holes.

(1) Refer to Figure 204/REPAIR 4 or Figure 205/REPAIR 4, as applicable, for the type and size of fasteners.

(2) Refer to FASTENER HOLE SIZES, 51-40-05 for the fastener hole sizes.

(3) Refer to FASTENER EDGE MARGINS, 51-40-06 for the fastener edge margins.

NOTE: Make sure that the floor panel attach fastener holes do not go into the radius of the repair angle. If necessary, move the floor panel attach fastener holes in the splice area away from the radius of the repair angle to a different location. It will be necessary to move the floor potted inserts if you move the fastener holes in the beam.

J. Disassemble the repair parts.

K. Remove all nicks, scratches, gouges, burrs, and sharp edges from the repair parts and repaired surfaces of the initial parts.

L. Apply a chemical conversion coating to the repair parts and the machined surfaces of the initial parts. Refer to PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS, 51-20-01.

M. Apply two layers of BMS 10-11, Type I primer to the repair parts and to the machined surfaces of the initial parts. Refer to SOPM 20-41-02.

N. Install the repair parts.

(1) Refer to Figure 204/REPAIR 4 or Figure 205/REPAIR 4, as applicable.

(2) Refer to Figure 206/REPAIR 4 for the typical attachment of the Part [1] T-Chord(s).

(3) Apply BMS 5-95 sealant to the mating surfaces. Refer to REPAIR SEALING, 51-20-05.

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(4) Install hex drive bolts wet with BMS 5-95 sealant into transition fit holes. Install the rivets without sealant. Refer to FASTENER INSTALLATION AND REMOVAL, 51-40-02 for the fastener installation. Refer to REPAIR SEALING, 51-20-05.

(5) When you install the repair parts, use fillers if the space between parts is 0.010 in. (0.25 mm) or more before fastener pull-up.

O. Apply a fillet seal and fill all internal gaps with BMS 5-95 sealant. Refer to REPAIR SEALING, 51-20-05.

P. Apply one layer of BMS 10-11, Type I primer to the fastener heads in the repair area. Refer to SOPM 20-41-02.

Q. Apply a corrosion inhibiting compound in accordance with PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS, 51-20-01 or an operator approved procedure.

R. Install the adjacent structure that you removed.

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NOTES

- ALL DIMENSIONS ARE IN INCHES (mm).
- D = THE DIAMETER OF THE FASTENER.

1 IF YOU MUST MAKE THE FASTENER HOLE LARGER, INSTALL A 1/64TH INCH LARGER FASTENER OF THE SAME TYPE AS THE INITIAL FASTENER. THE HOLE MUST BE A TRANSITION FIT HOLE. INSTALL THE FASTENER WET WITH BMS 5-95.

2 THERE MUST BE A MINIMUM OF TWO REPAIR FASTENERS THROUGH THE ENDS OF EACH VERTICAL FLANGE OF THE PART [2] ANGLE.

3 THERE MUST BE A MINIMUM OF THREE REPAIR FASTENERS THROUGH THE PART [4] STRAP. THIS DOES NOT INCLUDE A FLOOR PANEL FASTENER OR A CARGO LINER FASTENER.

4 THERE MUST BE A MINIMUM OF ONE REPAIR FASTENER IN THE HORIZONTAL FLANGE OF THE PART [3] ANGLE EXTENDED BEYOND THE PART (4) STRAP. THIS DOES NOT INCLUDE A FLOOR PANEL FASTENER OR A CARGO LINER FASTENER.

5 THERE MUST BE A MINIMUM OF TWO REPAIR FASTENERS IN THE HORIZONTAL FLANGE OF THE PART [2] ANGLE EXTENDED BEYOND THE PART (3) ANGLE. THIS DOES NOT INCLUDE A FLOOR PANEL FASTENER OR A CARGO LINER FASTENER.

FASTENER SYMBOLS

REFERENCE FASTENER LOCATION.

INITIAL FASTENER LOCATION. INSTALL A BACB30NX6K() HEX DRIVE BOLT WITH A BACC30M COLLAR. 1

FLOOR PANEL OR CARGO LINER FASTENER LOCATION. INSTALL A BACN10JR3CFD OR BACN10JZ3B2CDM NUTPLATE WITH BACR15BA3AD() RIVETS WHERE BACN10VR()CG CLIP-ON NUT CAN NOT BE INSTALLED. INSTALL THROUGH THE LOWER MOST REPAIR PART ONLY.

REPAIR FASTENER LOCATION. INSTALL A BACB30MY6K() OR BACB30FM6K() HEX DRIVE BOLT WITH BACC30M COLLAR.

REPAIR FASTENER LOCATION. INSTALL A BACB30NW6K() OR BACB30FN6K() HEX DRIVE BOLT WITH A BACC30M COLLAR.

INITIAL FASTENER LOCATION. INSTALL A BACB30MY8K() OR BACB30FM8K() HEX DRIVE BOLT WITH BACC30M COLLAR. 1

INITIAL FASTENER LOCATION. INSTALL A FASTENER OF THE SAME TYPE AND SIZE AS THE INITIAL FASTENER. 1

1337471 S0000239002_V2

Notes and Fastener Symbols
Figure 202

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THE AREA WHERE MATERIAL IS REMOVED BECAUSE OF DAMAGE.

REMOVAL OF THE DAMAGE

1337466 S0000238997_V1

Removal of the Damage
Figure 203

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NOTE: INTERCOSTALS CAN BE AT DIFFERENT LOCATIONS THAN SHOWN.

ALTERNATIVE 1 - TYPICAL REPAIR FOR DAMAGE ON THE FLANGES OF THE UPPER CHORD ALONG THE FULL LENGTH OF THE FLOOR BEAM

1337467 S0000238998_V1

Repair Alternative 1
Figure 204 (Sheet 1 of 4)

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NOTE: THE SPLICE CAN BE AT DIFFERENT LOCATIONS BECAUSE OF SPECIFIC CONFIGURATIONS. DO NOT CENTER THE SPLICE ABOVE A CUT-OUT IN THE WEB.

SPLICE OF THE PARTS [1] T-CHORDS

(A)

1337468 S0000238999_V1

Repair Alternative 1
Figure 204 (Sheet 2 of 4)

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A–A

1337469 S0000239000_V2

Repair Alternative 1
Figure 204 (Sheet 3 of 4)

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1337470 S0000239001_V1

Repair Alternative 1
Figure 204 (Sheet 4 of 4)

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NOTE: INTERCOSTALS CAN BE AT DIFFERENT LOCATIONS THAN SHOWN.

ALTERNATIVE 2 - TYPICAL REPAIR FOR DAMAGE ON THE FLANGES OF THE UPPER CHORD AT THE END OF THE FLOOR BEAM

1337472 S0000239004_V1

Repair Alternative 2
Figure 205 (Sheet 1 of 5)

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NOTE: THE SPLICE CAN BE AT DIFFERENT LOCATIONS BECAUSE OF SPECIFIC CONFIGURATIONS DO NOT CENTER THE SPICE ABOVE A CUT-OUT IN THE WEB

SPLICE OF THE PART [1] T-CHORD AND FLOOR BEAM

A

1337473 S0000239005_V1

Repair Alternative 2
Figure 205 (Sheet 2 of 5)

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A–A

1337474 S0000239006_V1

Repair Alternative 2
Figure 205 (Sheet 3 of 5)

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B-B

C-C

1337475 S0000239007_V1

Repair Alternative 2
Figure 205 (Sheet 4 of 5)

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ANGLES PART [2] AND PART [3], AND STRAP PART
[4] ARE NOT SHOWN FOR CLARITY

B

1337476 S0000239008_V2

Repair Alternative 2
Figure 205 (Sheet 5 of 5)

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LEFT SIDE IS SHOWN, RIGHT SIDE IS OPPOSITE

TYPICAL ATTACHMENT OF THE PART [1] T-CHORD AT LBL/RBL50

A

1337478 S0000239010_V2

T-Chord Attachment at Ends of Floor Beam, Intercostals and Penetration Holes
Figure 206 (Sheet 1 of 8)

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1337479 S0000239011_V1

T-Chord Attachment at Ends of Floor Beam, Intercostals and Penetration Holes
Figure 206 (Sheet 2 of 8)

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LEFT SIDE IS SHOWN, RIGHT SIDE IS OPPOSITE

TYPICAL ATTACHMENT OF THE PART [1] T-CHORD
WITH INTERCOSTALS

B

1337480 S0000239012_V1

T-Chord Attachment at Ends of Floor Beam, Intercostals and Penetration Holes
Figure 206 (Sheet 3 of 8)

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B–B

1337481 S0000239013_V1

T-Chord Attachment at Ends of Floor Beam, Intercostals and Penetration Holes
Figure 206 (Sheet 4 of 8)

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C–C

1337482 S0000239014_V1

T-Chord Attachment at Ends of Floor Beam, Intercostals and Penetration Holes
Figure 206 (Sheet 5 of 8)

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D-D

E-E

1337483 S0000239015_V1

T-Chord Attachment at Ends of Floor Beam, Intercostals and Penetration Holes
Figure 206 (Sheet 6 of 8)

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NOTES

1 THE REPAIR PARTS MUST NOT CAUSE A BLOCKAGE OF THE FLOOR BEAM HOLES. MAKE THE CUT OUT IN THE REPAIR PARTS THE SAME SHAPE AS THE HOLES THEY MUST GO AROUND IN THE FLOOR BEAM.

1337484 S0000239016_V1

T-Chord Attachment at Ends of Floor Beam, Intercostals and Penetration Holes
Figure 206 (Sheet 7 of 8)

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1553092 S0000285771_V1

T-Chord Attachment at Ends of Floor Beam, Intercostals and Penetration Holes
Figure 206 (Sheet 8 of 8)

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REPAIR 5 - SECTION 47 - LARGE CORROSION DAMAGE ON THE UPPER CHORD OF THE FLOOR BEAM AT STA 947.5

1. Applicability

A. This repair is applicable to corrosion damage on the two flanges of the upper chord of the floor beam at STA 947.5 between LBL 58.60 and RBL 58.60.

2. General

A. This repair is a Category A repair. The inspections given in the Maintenance Planning Data (MPD) are sufficient to maintain damage tolerance of the initial structure with this repair installed. Refer to STRUCTURAL REPAIR DEFINITIONS, 51-00-06 for the definitions of the different categories of repairs.

B. This repair has two alternatives:

Alternative 1 : Use this typical repair if you find damage on the upper chord along the full length of the Floor Beam. Refer to Figure 205/REPAIR 5.

Alternative 2 : Use this typical repair if you find damage on the upper chord at the end of the Floor Beam. Refer to Figure 206/REPAIR 5.

C. Do not install the splice parts in locations:

(1) Adjacent to the galley or lavatory fittings.

(2) Adjacent to the floor beam intercostals. You are not permitted to move a floor beam intercostal to install the splice straps and angles.

D. You are not permitted to make changes to the intercostals that have galley or lavatory hardpoint fittings attached. If it is necessary to change these structures, contact the Boeing Company for further repair instructions.

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1879511 S0000330094_V1

Section 47 - Location of the Floor Beam at STA 947.5
Figure 201

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3. References

Reference	Title
51-00-06	STRUCTURAL REPAIR DEFINITIONS
51-10-02	INSPECTION AND REMOVAL OF DAMAGE
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-20-05	REPAIR SEALING
51-30-01	SHEET METAL MATERIALS
51-30-01, GENERAL	Sheet Metal Materials
51-40-02	FASTENER INSTALLATION AND REMOVAL
51-40-03, GENERAL	Fastener Substitution
51-40-05	FASTENER HOLE SIZES
51-40-06	FASTENER EDGE MARGINS
SOPM 20-10-03	SHOT PEENING
SOPM 20-20-02	Penetrant Methods of Inspection
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes

4. Repair Instructions

A. Get access to the damaged area, as necessary.

(1) Remove the adjacent structure to get access to the damaged floor beam.

(2) Remove the necessary fasteners in the repair area.

B. Find the limits of the damage.

(1) Refer to Figure 205/REPAIR 5 if you find damage along the full length of the floor beam.

(2) Refer to Figure 206/REPAIR 5 if you find damage at one or both of the ends of the floor beam only.

C. Remove the damaged flanges of the upper chord of the floor beam. Refer to Figure 203/REPAIR 5 and INSPECTION AND REMOVAL OF DAMAGE, 51-10-02.

(1) Keep a minimum 2.0 D edge margin at all initial fastener locations.

(2) Do a detailed visual inspection of the cut edge. Make sure that there is no damage.

(3) Do one of the steps that follow:

(a) Shot peen or flap peen the cut edge with 100% coverage. Refer to SOPM 20-10-03. This will improve the corrosion resistance of the cut edge.

(b) Do not shot peen or flap peen the cut edge. Go to Paragraph 4.D./REPAIR 5.

D. Apply a chemical conversion coating to the bare surfaces of the floor beam. Refer to PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS, 51-20-01.

E. Make the repair parts. Refer to Table 201/REPAIR 5 and Figure 205/REPAIR 5 or Figure 206/REPAIR 5 as applicable, and Figure 207/REPAIR 5 and SHEET METAL MATERIALS, 51-30-01.

(1) When you make the Part 1 T-chord, it is permitted to use an optional “T” shaped extrusion as long as:

(a) The material for the extrusion is 7050-T76511 or 7075-T6511.

(b) The horizontal flange is 0.180 in. (4.57 mm) thick, the vertical flange is 0.100 in. (2.54 mm) thick, and the corner radius is a minimum of 0.120 in. (3.05 mm). Refer to Figure 204/REPAIR 5.

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(c) The horizontal flange is a minimum of 2.20 in. (55.88 mm) wide to provide the necessary edge margin to the floor panel attach fasteners. Refer to Figure 204/REPAIR 5.

(d) Make sure that the vertical flange has 2D edge margin at all new fastener locations.

(e) Make sure that the new fastener locations on the vertical flange have the spacing as shown in the applicable figures.

(f) Shot peen or flap peen is not necessary on the cut edge of flange.

(2) If it is necessary to machine the thickness of the new T-chord, then penetrant inspect the chord as given in SOPM 20-20-02. Shot peen or flap peen the machined areas with 100% coverage as given in SOPM 20-10-03.

(3) Make the Part 2 Angle.

(a) Heat treat the formed angle from the -O temper to the -T62 temper.

(4) Make structural shims as necessary at the floor beam and clips. Refer to 51-30-01, GENERAL.

Table 201: Repair Materials

PART		QUANTITY	MATERIAL
[1]	T-chord	As necessary	Use AND10136–3006 7050-T76511 (optional: 7075-T6511) extrusion or an equivalent extrusion. As an alternative, use BAC1505–101045 7075–T6511 extrusion.
[2]	Angle	2	Use 7075-O clad sheet. Thickness is 0.100 in. (2.54 mm). As an alternative, use BAC1490–2885 7075–T6.
[3]	Strap	2	Use 7075-T6 clad sheet. Thickness is 0.125 in. (3.18 mm).
[4]	Filler	4	Use 7075-T6 clad sheet. Thickness is 0.100 in. (2.54 mm).

F. Assemble the repair parts. Install the Part 1 T-chord on the aft side of the floor beam. Make sure that the distance between mating surfaces of the repair parts is not larger than 0.010 in. (0.25 mm).

(1) Refer to Figure 205/REPAIR 5 or Figure 206/REPAIR 5 as applicable.

(2) Refer to Figure 207/REPAIR 5 for the typical attachment of the Part 1 T-chord(s).

G. Drill the necessary fastener holes.

(1) Refer to Figure 205/REPAIR 5 or Figure 206/REPAIR 5, as applicable, for the type and size of fasteners.

(2) Refer to FASTENER HOLE SIZES, 51-40-05 for the fastener hole sizes.

(3) Refer to FASTENER EDGE MARGINS, 51-40-06 for the fastener edge margins.

NOTE: Make sure that the floor panel attach fastener holes do not go into the radius of the repair angle. If necessary, move the floor panel attach fastener holes in the splice area away from the radius of the repair angle to a different location. It will be necessary to move the floor potted inserts if you move the fastener holes in the beam.

H. Disassemble the repair parts.

I. Remove all nicks, scratches, gouges, burrs, and sharp edges from the repair parts and repaired surfaces of the initial parts.

J. Apply a chemical conversion coating to the repair parts and the machined surfaces of the initial parts. Refer to PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS, 51-20-01.

K. Apply two layers of BMS 10-11, Type I primer to the repair parts and to the machined surfaces of the initial parts. Refer to SOPM 20-41-02.

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L. Install the repair parts.

(1) Refer to Figure 205/REPAIR 5 or Figure 206/REPAIR 5, as applicable.

(2) Refer to Figure 207/REPAIR 5 for the typical attachment of the Part 1 T-chord(s).

(3) Apply BMS 5-95 sealant to the mating surfaces. Refer to REPAIR SEALING, 51-20-05.

(4) Install hex drive bolts wet with BMS 5-95 sealant into transition fit holes. Install the rivets without sealant. Refer to FASTENER INSTALLATION AND REMOVAL, 51-40-02 for the fastener installation. Refer to REPAIR SEALING, 51-20-05.

(5) When you install the repair parts, use fillers if the space between parts is 0.010 in. (0.25 mm) or more before fastener pull-up.

M. Apply a fillet seal and fill all internal gaps with BMS 5-95 sealant. Refer to REPAIR SEALING, 51-20-05.

N. Apply one layer of BMS 10-11, Type I primer to the fastener heads in the repair area. Refer to SOPM 20-41-02.

O. Apply a corrosion inhibiting compound in accordance with PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS, 51-20-01 or an operator approved procedure.

P. Install the adjacent structure that you removed.

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NOTES

- ALL DIMENSIONS ARE IN INCHES (mm).
- D = THE DIAMETER OF THE FASTENER.

1 IF YOU MUST MAKE THE FASTENER HOLE LARGER, INSTALL A 1/32TH INCH LARGER FASTENER OF THE SAME TYPE AS THE INITIAL FASTENER. THE HOLE MUST BE A TRANSITION FIT HOLE. INSTALL THE FASTENER WET WITH BMS 5-95.

2 THERE MUST BE A MINIMUM OF FOUR REPAIR FASTENERS THROUGH THE PART [3] STRAP. THIS DOES NOT INCLUDE A FLOOR PANEL FASTENER.

3 THERE MUST BE A MINIMUM OF TWO REPAIR FASTENERS IN THE HORIZONTAL FLANGE OF THE PART [2] ANGLE EXTENDED BEYOND THE PART [3] STRAP. THIS DOES NOT INCLUDE A FLOOR PANEL FASTENER.

4 THE REPAIR PARTS MUST NOT CAUSE A BLOCKAGE OF THE FLOOR BEAM HOLES. MAKE THE CUT OUT IN THE REPAIR PARTS THE SAME SHAPE AS THE HOLES THEY MUST GO AROUND IN THE FLOOR BEAM.

FASTENER SYMBOLS

REFERENCE FASTENER LOCATION.

INITIAL FASTENER LOCATION. INSTALL A BACB30NX6K() HEX DRIVE BOLT WITH A BACC30M COLLAR. 1

FLOOR PANEL LOCATION. INSTALL A BACN10JR3CFD OR BACN10JZ3B2CDM NUTPLATE WITH BACR15BA3AD() RIVETS WHERE BACN10VR()CG CLIP-ON NUT CAN NOT BE INSTALLED. INSTALL THROUGH THE LOWER MOST REPAIR PART ONLY.

REPAIR FASTENER LOCATION. INSTALL A BACB30MY6K() OR BACB30FM6A() HEX DRIVE BOLT WITH BACC30M COLLAR.

REPAIR FASTENER LOCATION. INSTALL A BACB30NW6K() OR BACB30FN6A() HEX DRIVE BOLT WITH A BACC30M COLLAR.

INITIAL FASTENER LOCATION. INSTALL A BACB30MY8K()X OR BACB30FP8A() HEX DRIVE BOLT WITH BACC30M COLLAR. 1

1879516 S0000330107_V2

Notes and Fastener Symbols
Figure 202

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THE AREA WHERE MATERIAL IS REMOVED BECAUSE OF DAMAGE.

REMOVAL OF THE DAMAGE

1879519 S0000330110_V2

Removal of the Damage
Figure 203

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OPTIONAL PART 1 T-CHORD EXTRUSION

2239996 S0000500831_V1

Optional Part 1 T-chord Extrusion
Figure 204

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ALTERNATIVE 1 - TYPICAL REPAIR FOR DAMAGE ON THE FLANGES OF THE UPPER CHORD ALONG THE FULL LENGTH OF THE FLOOR BEAM

1878149 S0000330108_V3

Repair Alternative 1
Figure 205 (Sheet 1 of 5)

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NOTE: THE SPLICE CAN BE AT DIFFERENT LOCATIONS BECAUSE OF SPECIFIC CONFIGURATIONS. DO NOT CENTER THE SPLICE ABOVE A CUT-OUT IN THE WEB.

SPLICE OF THE PARTS [1] T-CHORDS

(A)

1878150 S0000330111_V3

Repair Alternative 1
Figure 205 (Sheet 2 of 5)

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A-A

1878151 S0000342181_V2

Repair Alternative 1
Figure 205 (Sheet 3 of 5)

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B-B

1878152 S0000342182_V2

Repair Alternative 1
Figure 205 (Sheet 4 of 5)

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C-C

1878153 S0000343082_V1

Repair Alternative 1
Figure 205 (Sheet 5 of 5)

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NOTE: INTERCOSTALS CAN BE AT DIFFERENT LOCATIONS THAN SHOWN.

ALTERNATIVE 2 - TYPICAL REPAIR FOR DAMAGE ON THE FLANGES OF THE UPPER CHORD AT THE END OF THE FLOOR BEAM

1878154 S0000330109_V3

Repair Alternative 2
Figure 206 (Sheet 1 of 5)

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NOTE: THE SPLICE CAN BE AT DIFFERENT LOCATIONS BECAUSE OF SPECIFIC CONFIGURATIONS. DO NOT CENTER THE SPICE ABOVE A CUT-OUT IN THE WEB.

SPLICE OF THE PART [1] T-CHORD AND FLOOR BEAM

A

1878155 S0000330113_V3

Repair Alternative 2
Figure 206 (Sheet 2 of 5)

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A–A

1878157 S0000342183_V2

Repair Alternative 2
Figure 206 (Sheet 3 of 5)

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B-B

C-C

1878160 S0000342184_V2

Repair Alternative 2
Figure 206 (Sheet 4 of 5)

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THE PART [2] ANGLE AND THE PART [3] STRAP
ARE NOT SHOWN FOR CLARITY

B

1878161 S0000342185_V1

Repair Alternative 2
Figure 206 (Sheet 5 of 5)

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LEFT SIDE IS SHOWN, SEE DETAIL B FOR RIGHT SIDE

TYPICAL ATTACHMENT OF THE PART [1] T-CHORD AT LBL 58.6

A

1878162 S0000330981_V4

T-chord Attachment at Ends of Floor Beam, Intercostals, Penetration Holes and Angles
Figure 207 (Sheet 1 of 6)

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RIGHT SIDE IS SHOWN, SEE DETAIL A FOR LEFT SIDE

TYPICAL ATTACHMENT OF THE PART [1] T-CHORD AT RBL 58.6

B

1878163 S0000330983_V3

T-chord Attachment at Ends of Floor Beam, Intercostals, Penetration Holes and Angles
Figure 207 (Sheet 2 of 6)

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A-A

1878165 S0000342187_V2

T-chord Attachment at Ends of Floor Beam, Intercostals, Penetration Holes and Angles
Figure 207 (Sheet 3 of 6)

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B-B

1878166 S0000342188_V1

T-chord Attachment at Ends of Floor Beam, Intercostals, Penetration Holes and Angles
Figure 207 (Sheet 4 of 6)

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1879498 S0000342189_V2

T-chord Attachment at Ends of Floor Beam, Intercostals, Penetration Holes and Angles
Figure 207 (Sheet 5 of 6)

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2240091 S0000500834_V1

T-chord Attachment at Ends of Floor Beam, Intercostals, Penetration Holes and Angles
Figure 207 (Sheet 6 of 6)

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REPAIR 6 - SECTION 47 - SMALL CORROSION DAMAGE ON THE UPPER CHORD OF THE FLOOR BEAM AT STA 947.5 AND STA 986.5

1. Applicability

A. This repair is applicable to small corrosion damage on either of the two flanges of the upper chord of the floor beam at STA 947.5 and STA 986.5 as shown in Figure 201. Refer to Table 201/REPAIR 6 for the depth of corrosion damage permitted at each floor beam..

B. Refer to Table 201/REPAIR 6 for the list of extrusions that are applicable to this repair and the permitted depth of damage.

Table 201: Small Corrosion Damage Depth Permitted

FLOOR BEAM STA	Extrusion	DEPTH OF DAMAGE PERMITTED
947.5	BAC 1518-1212	0.050 in. (1.27 mm)
986.5	BAC 1518-1211	0.050 in. (1.27 mm)

2. General

A. This is a permanent repair. For Structural Repair Definitions, refer to STRUCTURAL REPAIR DEFINITIONS, 51-00-06.

B. This repair has two alternatives:

Alternative 1: Use this repair if there is only damage on one flange of the upper chord, and you can install a strap on the lower surface of the flange. Refer to Figure 203/REPAIR 6.

Alternative 2: Use this repair if there is damage on both of the flanges of the upper chord. For this alternative, you must install a strap on the upper surface of the flange. Refer to Figure 204/REPAIR 6.

C. This repair is applicable to damage that is more than the limits shown in SRM 53-70-51, Allowable Damage 1.

D. You are not permitted to make changes to any structure adjacent to the floor beam.

E. The gap on all parts must be 0.010 in. (0.254 mm) or less.

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1916195 S0000355102_V1

Section 47 Floor Structure Locations
Figure 201 (Sheet 1 of 2)

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TYPICAL DAMAGE

B

1916368 S0000355176_V1

Section 47 Floor Structure Locations
Figure 201 (Sheet 2 of 2)

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3. References

Reference	Title
51-00-06	STRUCTURAL REPAIR DEFINITIONS
51-10-02, GENERAL	Inspection and Removal of Damage
51-10-04, GENERAL	Detailed Inspection Procedures - Metallic Materials
51-20-01, GENERAL	Protective Treatment of Metallic and Composite Materials
51-20-05, GENERAL P/B GENERAL	REPAIR SEALING
51-20-13, GENERAL	Surface Roughness Finish Requirements
51-30-01	SHEET METAL MATERIALS
51-40-02	FASTENER INSTALLATION AND REMOVAL
51-40-05	FASTENER HOLE SIZES
51-40-05, GENERAL	Fastener Hole Sizes
51-40-05, GENERAL P/B GENERAL	FASTENER HOLE SIZES
51-70-01	REPAIRS FOR MINOR DENTS IN METALLIC SHEET MATERIALS
SOPM 20-10-03	SHOT PEENING
737 NDT Part 6, 51-00-00, Procedure 4	Surface Inspection of Aluminum Parts (Meter Display)

4. Repair Instructions

A. Get access to the damaged area.

B. Do a detailed visual inspection of the damaged area. Look for loose or missing fasteners, cracks, worn areas, and other corrosion in the damaged area. Inspect the top and bottom surfaces of the upper chord in the damaged area. Refer to 51-10-04, GENERAL.

C. Remove the corrosion damage with a minimum 20:1 blend ratio. Refer to 51-10-02, GENERAL.

D. Make the blend area smooth to a finish of 125 microinches Ra or smoother. Refer to 51-20-13, GENERAL.

E. Do a High Frequency Eddy Current (HFEC) Surface Inspection of the repair area to make sure that there is no more damage. Refer to 737 NDT Part 6, 51-00-00, Procedure 4.

F. Remove an additional 0.002 in. (0.051 mm) of material. Refer to 51-10-02, GENERAL.

G. Make the blend area smooth to a finish of 125 microinches Ra or smoother. Refer to 51-20-13, GENERAL.

H. Shot peen or flap peen the blend area with 200% coverage. This will improve the corrosion resistance of the blended surface. Refer to SOPM 20-10-03.

I. Make the repair parts. Refer to Table 202/REPAIR 6. Refer to Figure 202/REPAIR 6 for the fastener symbols.

(1) Make the part [1] strap, or the part [2] strap as applicable. Refer to Figure 203/REPAIR 6, or Figure 204/REPAIR 6.

(2) If you install the repair on the upper surface of the upper chord, make the part [3] tapered filler as necessary. Refer to or Figure 204/REPAIR 6.

NOTE: If a tapered filler interferes with a seat track, do not use a tapered filler on that side of the strap. Extend the length of the strap to be adjacent with the seat track.

NOTE: As an alternative to the part [3] tapered filler, you can make the part [1] strap or the part [2] strap longer and taper the ends.

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Table 202: REPAIR MATERIAL

PART	DESCRIPTION	QUANTITY	MATERIAL
[1]	Strap	1 (If necessary)	Use 0.100 in. (2.540 mm) thick 7075–T6 clad sheet
[2]	Strap	1 (If necessary)	Use 0.100 in. (2.540 mm) thick 7075–T6 clad sheet
[3]	Tapered Filler	As necessary	Use 0.100 in. (2.540 mm) thick 7075–T6 clad sheet

J. Assemble the repair parts.

NOTE: Make sure that the repair parts do not block or cover any initial holes in the floor beam. Make cutouts in the repair parts to match the initial holes in the floor beam.

K. Drill the fastener holes. Refer to 51-40-05, GENERAL.

(1) Keep a 2D minimum edge margin.

(2) Maintain a 4D to 6D fastener spacing.

(3) Do not drill fastener holes into a chem-milled radius.

L. Disassemble the repair parts.

M. Remove the nicks, scratches, gouges, burrs, and sharp edges from the repair parts and the initial parts.

N. Apply a chemical conversion coating to the repair parts and to the bare surfaces of the initial parts. Refer to 51-20-01, GENERAL.

O. Apply 2 coats of BMS 10-11, Type I primer to the repair parts and to the bare surfaces of the initial parts. Refer to SOPM 20-41-02.

P. For Alternative 2, fill the blend area. Refer to Paragraph 4.C and Paragraph 4.D of REPAIRS FOR MINOR DENTS IN METALLIC SHEET MATERIALS, 51-70-01.

Q. Install the repair parts. Refer to Figure 203/REPAIR 6, or Figure 204/REPAIR 6.

R. Shim all gaps that are more than 0.01 in. (0.254 mm) before you install the fasteners. Refer to SHEET METAL MATERIALS, 51-30-01.

S. Assemble the repair parts with BMS 5-95 sealant between the mating surfaces. Refer to REPAIR SEALING, PAGEBLOCK 51-20-05, GENERAL.

T. Install the fasteners. Refer to FASTENER INSTALLATION AND REMOVAL, 51-40-02.

(1) Install all hex drive bolts in transition fit holes wet with BMS 5-95 sealant.

(2) At countersink fastener locations, do not countersink the fastener holes more than 80 percent of the initial material thickness. Refer to FASTENER HOLE SIZES, PAGEBLOCK 51-40-05, GENERAL.

(3) At initial hole locations, you are permitted to oversize a maximum of 1/32 in. (1 mm) if necessary. Refer to FASTENER HOLE SIZES, 51-40-05.

(4) If it is necessary to install larger fasteners than shown in the repair contact The Boeing Company.

U. For Alternative 1, fill the blend area. Refer to Paragraph 4.C and Paragraph 4.D of REPAIRS FOR MINOR DENTS IN METALLIC SHEET MATERIALS, 51-70-01.

V. Replace the items that you removed for access.

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NOTES

- ALL DIMENSIONS ARE IN INCHES (mm).
- D = THE DIAMETER OF THE FASTENER.
- THE FLOOR BEAM CONFIGURATION CAN BE DIFFERENT THAN THE FIGURES.

1 KEEP A MINIMUM OF FOUR REPAIR FASTENERS BETWEEN THE EDGE OF THE STRAP AND THE EDGE OF THE BLEND AREA. DO NOT COUNT INITIAL FLOOR PANEL FASTENERS AS A PART OF THE FOUR.

2 THE BLEND MUST HAVE A MINIMUM RATIO OF 20:1.

3 STRAIGHT TAPER THE PART [3] TAPERED FILLER FROM THE INITIAL THICKNESS TO 0.020 INCH (0.508 MM). USE A MINIMUM RATIO OF 50:1.

FASTENER SYMBOLS

REFERENCE FASTENER LOCATION.

REPAIR FASTENER LOCATION. INSTALL A BACB30FN6A( ) OR A BACB30NW6K( ) HEX DRIVE BOLT WITH A BACC30M6 COLLAR.

FLOOR PANEL OR CARGO LINER FASTENER LOCATION. INSTALL A BACN10VR( )CG CLIP-ON NUT. AS AN ALTERNATIVE, INSTALL A BACN10JR3CFD OR A BACN10JZ3B2CDM NUTPLATE WITH BACR15BA3AD( ) RIVETS.

1916369 S0000355158_V1

Notes and Fastener Symbols
Figure 202

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TOP VIEW

VIEW IN THE FORWARD DIRECTION
A–A

1916400 S0000355185_V1

Corrosion Damage on the Upper Chord of the Floor Beam at STA 947.5 and 986.5, Alternative 1
Figure 203 (Sheet 1 of 2)

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SECTION B-B

1916402 S0000355187_V1

Corrosion Damage on the Upper Chord of the Floor Beam at STA 947.5 and 986.5, Alternative 1
Figure 203 (Sheet 2 of 2)

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TOP VIEW

VIEW IN THE FORWARD DIRECTION
A–A

1916507 S0000355190_V1

Corrosion Damage on the Upper Chord of the Floor Beam at STA 947.5 and 986.5, Alternative 2
Figure 204 (Sheet 1 of 2)

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SECTION B-B

1916736 S0000355191_V1

Corrosion Damage on the Upper Chord of the Floor Beam at STA 947.5 and 986.5, Alternative 2
Figure 204 (Sheet 2 of 2)

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IDENTIFICATION 1 - SECTION 47 SEAT TRACKS

NOTE: REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

F87541 S0006591032_V2

Section 47 Seat Track Location
Figure 1

Table 1:

REFERENCE DRAWINGS	
DRAWING NUMBER	**TITLE**
140A0355	Section 46/47 Floor Integration Collector
147A0060	Section 46/47 Fuselage Integration Installation
147A5300	Seat Track Installation - Section 47

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NOTE: REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

THERE ARE MANY SEAT TRACK CONFIGURATIONS FOR THIS AIRPLANE. THESE CONFIGURATIONS CAN BE DIFFERENT THAN THE ONE THAT IS SHOWN. REFER TO DRAWING 14OAO355 TO SEE THE DIFFERENT CONFIGURATIONS.

F87760 S0006591035_V1

Section 47 Seat Track Identification

Figure 2

Table 2:

LIST OF MATERIALS FOR FIGURE 2				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Seat Track (4)		Ti-6Al-4V titanium plate as given in MIL-T-9046 (Optional: Ti-6Al-4V extruded titanium bar as given in AMS 4935)	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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F97007 S0006591041_V2

Section 47 Seat Track Allowable Damage
Figure 101

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F97133 S0006591044_V2

Section 47 Seat Track Repairs
Figure 201

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IDENTIFICATION 1 - SECTION 47 CARGO COMPARTMENT FLOOR PANELS

NOTE: REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

F89366 S0006591049_V1

Section 47 Cargo Compartment Floor Panel Location
Figure 1

Table 1:

REFERENCE DRAWINGS	
DRAWING NUMBER	**TITLE**
400A9101	Functional Product Collector - Payloads - Final Assembly
453A2600	Deck Panel Installation - Aft Cargo
453A2610	Panel Assembly - Deck, Aft cargo Compartment
453A2611	Cap Strip Assembly - Deck, Aft Cargo Compartment

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NOTE: REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

F89614 S0006591051_V1

Section 47 Cargo Compartment Floor Panel Identification
Figure 2

Table 2:

LIST OF MATERIALS				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Deck Panel	0.07 (1.78)	Gilliner 1266 fiberglass sheet	Refer to engineering drawing
		0.07 (1.78)	BMS 8-2 fiberglass sheet	
		0.071 (1.80)	2024-T3 Clad Sheet	
		0.09 (2.29)	Gilliner 1266 fiberglass sheet	
		0.09 (2.29)	Pioneer Plastics, Conolite A90RG1W sheet	
		0.058 (1.47)	BMS 7-326, Class 2/1, Grade C, Type VII, fiberglass-aluminum laminate	
[2]	Cap Strip	0.063 (1.60)	6013-T6 sheet	
[3]	Cap Strip		2024-T3511 BAC1513-286 extrusion	
[4]	Cap Strip	0.063 (1.60)	2024-T3 clad sheet	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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IDENTIFICATION 2 - SECTION 47 CARGO COMPARTMENT FLOOR STRUCTURE

NOTE: REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

F96808 S0006591054_V1

Section 47 Cargo Compartment Floor Structure Location
Figure 1

Table 1:

REFERENCE DRAWINGS	
DRAWING NUMBER	**TITLE**
140A4700	Section 47 Integration Functional Collector
140A4740	Lower Panel Functional Collector - Section 47
146A9403	Bracket Assembly - Payloads, Cargo Liners

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NOTES

- REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

G19120 S0006591056_V1

Section 47 Cargo Compartment Floor Structure Identification
Figure 2 (Sheet 1 of 2)

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(SHOWN WITH RAILS REMOVED)

G22783 S0006591057_V1

Section 47 Cargo Compartment Floor Structure Identification
Figure 2 (Sheet 2 of 2)

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Table 2:

LIST OF MATERIALS FOR FIGURE 2				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Zee		BAC1496-377 7075-T62 clad sheet as given in QQ-A-250/13	
[2]	Track		BAC1520-1397 7050-T76511 extrusion as given in AMS 4340	
[3]	Intercostal Assembly			
	Intercostal	0.032 (0.81)	7075-T62 clad sheet as given in QQ-A-250/13	
	Clip		BAC1506-3482 7075-T73511 extrusion as given in QQ-A-200/11	
[4]	Intercostal Assembly (3)			
	Intercostal	0.045 (1.14)	7075-T62 clad sheet as given in QQ-A-250/13	
	Clip	0.063 (1.60)	7075-T62 clad sheet as given in QQ-A-250/13	
	Clip		BAC1510-1355 7075-T73511 extrusion as given in QQ-A-200/11	
[5]	Rail (3)		BAC1509-100146 7050-T76511 extrusion as given in AMS 4340	
[6]	Track		BAC1496-377 7075-T62 clad sheet as given in QQ-A-250/13	
[7]	Tee Assembly STA 887			
	Plate	0.071 (1.80)	7075-T62 clad sheet as given in QQ-A-250/13. Refer to the production drawing for the machined thicknesses	
	Tee		BAC1505-100543 7075-T6511 extrusion as given in QQ-A-200/11. Refer to the production drawing for the machined thicknesses	
[8]	Clip (2)		BAC1503-100787 7075-T73511 extrusion as given in QQ-A-200/11	
[9]	Clip		BAC1503-100423 7075-T73511 extrusion as given in QQ-A-200/11	
[10]	Clip (5)		BAC1510-1353 7075-T73511 extrusion as given in QQ-A-200/11	
[11]	Clip (10)	0.063 (1.60)	7075-T62 clad sheet as given in QQ-A-250/13	
[12]	Clip		BAC1506-3482 7075-T73511 extrusion as given in QQ-A-200/11	
[13]	Clip (4)		BAC1503-100283 7075-T73511 extrusion as given in QQ-A-200/11	
[14]	Clip	0.056 (1.42)	7075-T62 clad sheet as given in QQ-A-250/13	
[15]	Clip		BAC1503-100147 7075-T73511 extrusion as given in QQ-A-200/11	
[16]	Clip		7075-T62 clad plate as given in QQ-A-250/12, Class A. Refer to the production drawing for the machined thicknesses	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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G12703 S0006591061_V1

Section 47 Aft Cargo Compartment Floor Structure
Figure 101

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G12712 S0006591064_V1

Section 47 Aft Cargo Compartment Floor Structure
Figure 201

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IDENTIFICATION 1 - SECTION 48 FUSELAGE SKIN - STATIONS 1016 TO 1156

NOTE: REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

F68562 S0006591069_V1

Section 48 Skin Location
Figure 1

Table 1:

REFERENCE DRAWINGS	
DRAWING NUMBER	**TITLE**
140A4803	Upper Panel Functional Collector - S-9L to S-9R, STA 1016-1188
148A3110	Skin Panel Installation, STA 1016-1088, S-9L - S-4R
148A3120	Skin Panel Installation - STA 1016-1088, S-4R to S9R
140A4804	Functional Collector, Lower Panel, S-9R to S-9L, STA 1016-1188
148A3310	Skin Panel Installation - Lower Panel, Station 1016 to 1188, S-24L to S-9L
148A3320	Skin Panel Installation - Lower Panel, Station 1016 to 1188, S-24L to S-16R
148A3330	Skin Panel Installation - Lower APU Inlet, S-9R to S-16R

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Table 1: (Continued)

REFERENCE DRAWINGS	
DRAWING NUMBER	**TITLE**
140A4809	Crown Skin and Vortex Generator Functional Collector, STA 1016-1156
148A3590	Crown Skin and Vortex Generator Installation
140A4810	Skin Panel, Lower Aft, STA 1016-1156, Functional Collector
148A3800	Skin Panel Installation, Lower Aft, STA 1016-1156,

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NOTES

- BASIC CONFIGURATION IS SHOWN
- REFER TO TABLE 2 FOR THE LIST OF MATERIALS

F74584 S0006591071_V3

Section 48 Lower Right Skin Identification
Figure 2

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Table 2:

LIST OF MATERIALS FOR FIGURE 2				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Skin	0.080 (2.03)	2024-T3 clad sheet as given in QQ-A-250/5. Refer to Figure 5 for the thicknesses of the chem-milled areas	
[2]	Skin	0.110 (2.79)	2024-T3 clad sheet as given in QQ-A-250/5. Refer to Figure 6 for the thicknesses of the chem-milled areas	
[3]	Doubler	0.125 (3.18)	2024-T3 clad sheet as given in QQ-A-250/5	
[4]	Skin	0.125 (3.18)	2024-T3 clad sheet as given in QQ-A-250/5. Refer to Figure 7 for the thicknesses of the chem-milled areas	
[5]	Skin	0.100 (2.54)	2024-T3 clad sheet as given in QQ-A-250/5. Refer to Figure 8 for the thicknesses of the chem-milled areas	
[6]	Skin	0.080 (2.03)	2024-T3 clad sheet as given in QQ-A-250/5. Refer to Figure 9 for the thicknesses of the chem-milled areas	
[7]	Strap	0.080 (2.03)	2024-T3 clad sheet as given in QQ-A-250/5	
[8]	Doubler, External	0.080 (2.03)	2024-T3 clad sheet as given in QQ-A-250/5	
[9]	Skin	0.100 (2.54)	2024-T3 clad sheet as given in QQ-A-250/5. Refer to Figure 13 for the thicknesses of the chem-milled areas	
[10]	Doubler, External	0.056 (1.42)	2024-T3 clad sheet as given in QQ-A-250/5	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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NOTE: REFER TO TABLE 3 FOR THE LIST OF MATERIALS.

F74030 S0006591075_V1

Section 48 Upper Left Skin Identification
Figure 3

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Table 3:

LIST OF MATERIALS FOR FIGURE 3				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Skin	0.100 (2.54)	2024-T3 clad sheet as given in QQ-A-250/5. Refer to Figure 10 for the thicknesses of the chem-milled areas	
[2]	Skin	0.125 (3.18)	2024-T3 clad sheet as given in QQ-A-250/5. Refer to Figure 7 for the thicknesses of the chem-milled areas	
[3]	Skin	0.080 (2.03)	2024-T3 clad sheet as given in QQ-A-250/5. Refer to Figure 11 for the thicknesses of the chem-milled areas	
[4]	Strap	0.080 (2.03)	2024-T3 clad sheet as given in QQ-A-250/5	
[5]	Vortex Generator Assembly (8)			
	Doubler, External	0.190 (4.83)	2024-T3 clad sheet as given in QQ-A-250/5. Refer to Boeing production drawing for chem-milled thicknesses	
	Vortex Generator		BAC1505-100308 2024-T3511 as given in QQ-A-200/3	
[6]	Strap	0.110 (2.79)	2024-T42 sheet as given in QQ-A-250/4. Refer to Figure 14 for the thicknesses of the chem-milled areas	
[7]	Doubler		7050-T7451 plate as given in AMS 4050. This is a Grain Direction Controlled Part)	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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NOTE: REFER TO TABLE 4 FOR THE LIST OF MATERIALS.

U41325 S0000194023_V1

Section 48 Lower Left Skin Identification
Figure 4

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Table 4:

LIST OF MATERIALS FOR FIGURE 4				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Skin	0.080 (2.03)	2024-T3 clad sheet as given in QQ-A-250/5. Refer to Figure 12 for the thicknesses of the chem-milled areas	Airplanes with Dome Aft Pressure Bulkhead (Basic Configuration)
	Skin	0.100 (2.54)	2024-T3 clad sheet as given in QQ-A-250/5. Refer to Figure 12 for the thicknesses of the chem-milled areas	Airplanes with Flat Aft Pressure Bulkhead
[2]	Skin	0.100 (2.54)	2024-T3 clad sheet as given in QQ-A-250/5. Refer to Figure 15 for the thicknesses of the chem-milled areas	
[3]	Doubler	0.063 (1.60)	2024-T3 clad sheet as given in QQ-A-250/5	Airplanes with Dome Aft Pressure Bulkhead (Basic Configuration)
	Doubler	0.071 (1.80)	2024-T3 clad sheet as given in QQ-A-250/5	Airplanes with Flat Aft Pressure Bulkhead

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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NOTE: ALL DIMENSIONS ARE THICKNESSES IN INCHES.

VIEWS ARE ON THE INNER SURFACE OF THE SKINS
FOR AIRCRAFT WITH THE DOME AFT PRESSURE BULKHEAD

U59020 S0000202016_V1

Chem-Milled Areas for Figure 2, Item [1]
Figure 5 (Sheet 1 of 2)

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NOTE: ALL DIMENSIONS ARE THICKNESSES IN INCHES.

VIEW IS ON THE INNER SURFACE OF THE SKIN
FOR AIRCRAFT WITH A FLAT AFT PRESSURE BULKHEAD

U62097 S0000208688_V1

Chem-Milled Areas for Figure 2, Item [1]
Figure 5 (Sheet 2 of 2)

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NOTE: ALL DIMENSIONS ARE THICKNESSES IN INCHES.

VIEW IS ON THE INNER SURFACE OF THE SKIN
FOR AIRCRAFT WITH THE DOME AFT PRESSURE BULKHEAD

U62101 S0000202047_V1

Chem-Milled Areas for Figure 2, Item [2]
Figure 6 (Sheet 1 of 2)

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NOTE: ALL DIMENSIONS ARE THICKNESSES IN INCHES.

VIEW IS ON THE INNER SURFACE OF THE SKIN
FOR AAIRCRAFT WITH A FLAT AFT PRESSURE BULKHEAD

U62109 S0000210305_V1

Chem-Milled Areas for Figure 2, Item [2]
Figure 6 (Sheet 2 of 2)

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NOTE: ALL DIMENSIONS ARE THICKNESSES IN INCHES.

VIEW IS ON THE INNER SURFACE OF THE SKIN

F71082 S0006591081_V1

Chem-Milled Areas for Figure 2, Item [4] and Figure 3, Item [2]
Figure 7

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NOTE: ALL DIMENSIONS ARE THICKNESSES IN INCHES.

VIEW IS ON THE INNER SURFACE OF THE SKIN

F74683 S0006591082_V1

Chem-Milled Areas for Figure 2, Item [5]
Figure 8

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NOTES

- ALL DIMENSIONS ARE IN INCHES.

VIEW IS ON THE INNER SURFACE OF THE SKIN
FOR AIRCRAFT WITH THE DOME AFT PRESSURE BULKHEAD

J99220 S0000190489_V2

Chem-Milled Areas for Figure 2, Item [6]
Figure 9 (Sheet 1 of 3)

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NOTES

- ALL DIMENSIONS ARE THICKNESSES IN INCHES.

FOR AIRCRAFT WITH THE "SHORT FIELD PERFORMANCE" OPTION
VIEW IS ON THE INNER SURFACE OF THE SKIN

J99227 S0000190488_V1

Chem-Milled Areas for Figure 2, Item [6]
Figure 9 (Sheet 2 of 3)

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NOTE: ALL DIMENSIONS ARE THICKNESSES IN INCHES.

VIEW IS ON THE INNER SURFACE OF THE SKIN
FOR AIRCRAFT WITH A FLAT AFT PRESSURE BULKHEAD

U62092 S0000202134_V1

Chem-Milled Areas for Figure 2, Item [6]
Figure 9 (Sheet 3 of 3)

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NOTE: ALL DIMENSIONS ARE THICKNESSES IN INCHES.

VIEW IS ON THE INNER SURFACE OF THE SKIN

F74851 S0006591086_V1

Chem-Milled Areas for Figure 3, Item [1]
Figure 10

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NOTE: ALL DIMENSIONS ARE THICKNESSES IN INCHES.

VIEW IS ON THE INNER SURFACE OF THE SKIN
FOR AIRCRAFT WITH A DOME AFT PRESSURE BULKHEAD

U62088 S0000202143_V1

Chem-Milled Areas for Figure 3, Item [3]
Figure 11 (Sheet 1 of 2)

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NOTE: ALL DIMENSIONS ARE THICKNESSES IN INCHES.

VIEW IS ON THE INNER SURFACE OF THE SKIN
FOR AIRCRAFT WITH A FLAT AFT PRESSURE BULKHEAD

U62071 S0000202144_V1

Chem-Milled Areas for Figure 3, Item [3]
Figure 11 (Sheet 2 of 2)

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NOTE: ALL DIMENSIONS ARE THICKNESSES IN INCHES.

VIEW IS ON THE INNER SURFACE OF THE SKIN FOR AIRCRAFT WITH A DOME AFT PRESSURE BULKHEAD

U62042 S0000202151_V2

Chem-Milled Areas for Figure 4, Item [1]
Figure 12 (Sheet 1 of 2)

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Chem-Milled Areas for Figure 4, Item [1]
Figure 12 (Sheet 2 of 2)

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NOTE: ALL DIMENSIONS ARE THICKNESSES IN INCHES.

VIEW IS ON THE INNER SURFACE OF THE SKIN

U43839 S0000194057_V1

Chem-milled Areas for Figure 2, Item [9]
Figure 13

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G77756 S0006591090_V1

Chem-milled Areas for Figure 3, Item [6]
Figure 14

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NOTE: ALL DIMENSIONS ARE THICKNESSES IN INCHES.

VIEW IS ON THE INNER SURFACE OF THE SKIN

F74805 S0006591089_V1

Chem-Milled Areas for Figure 4, Item [2]
Figure 15

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F55253 S0006591093_V1

Section 48 Fuselage Skin Location
Figure 101

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F55252 S0006591096_V1

Section 48 Fuselage Skin Location
Figure 201

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REPAIR 1 - SECTION 48 FUSELAGE SKIN REPAIR AT APU DOOR HINGE LOCATIONS

1. Applicability

A. Repair 1 is a external repair that is applicable to fuselage skin damage at the APU Access Door Hinge Locations as shown in Figure 201/REPAIR 1.

B. Repair 1 is not applicable to damage:

(1) At 10 inches (254 mm) or less away from the edge of a initial repair

(a) If damage occurs in this area, then remove the initial repair and make one repair that includes the two areas of damage.

2. General

A. Repair 1 is a Category A Repair. Refer to 51-00-06 for the definitions of the different types of repairs.

3. References

Reference	Title
51-00-06	STRUCTURAL REPAIR DEFINITIONS
51-10-02, GENERAL	Inspection and Removal of Damage
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-20-05	REPAIR SEALING
51-20-13, GENERAL	Surface Roughness Finish Requirements
51-40-02, GENERAL	Fastener Installation and Removal
51-40-03, GENERAL	Fastener Substitution
51-40-05	FASTENER HOLE SIZES
51-40-06, GENERAL	Fastener Edge Margins
51-40-08, GENERAL	Countersink Data and Procedures for Metal Structures
AMM 51-21-99 P/B 701	DECORATIVE EXTERIOR PAINT SYSTEM - CLEANING/PAINTING
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes
737 NDT Part 6, 51-00-00, Procedure 4	Surface Inspection of Aluminum Parts (Meter Display)
737 NDT Part 6, 51-00-00, Procedure 8	Inspection of Subsurface Cracks in Aluminum Structure
737 NDT Part 6, 51-00-00, Procedure 9	Inspection of Subsurface Cracks at Fastener Holes in Aluminum Structure

4. Repair Instructions

A. Get access to the damaged area.

(1) Remove the necessary fasteners in the area of the damaged skin as shown in Figure 201/REPAIR 1. Refer to 51-40-02, GENERAL.

(2) If Repair 1 will replace a initial external repair, remove the repair fasteners and the repair parts.

B. Cut and remove the damaged part of the fuselage skin, if necessary, as shown in Figure 201/REPAIR 1. Refer to 51-10-02, GENERAL.

(1) Make the cut in the shape of a circle with a minimum radius of 1.00 inch (25.4 mm) as shown in Figure 201/REPAIR 1.

(2) Make the corner radii of the cut a minimum of 0.50 inch (12.7 mm).

C. Put the skin around the cut back to the initial contour.

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D. Do a High Frequency Eddy Current (HFEC) inspection of the repair area to make sure that all of the damage is removed. Do a 0.040 inch (1.02 mm) insurance cut if no further damage is found. Refer to 737 NDT Part 6, 51-00-00, Procedure 4, 737 NDT Part 6, 51-00-00, Procedure 8 and 737 NDT Part 6, 51-00-00, Procedure 9.

E. Make the repair parts as given in Table 201/REPAIR 1.

F. Make the contour of the repair parts the same as the contour of the initial skin as necessary.

G. Assemble the repair parts as shown in Figure 201/REPAIR 1.

Table 201:

REPAIR MATERIAL			
ITEM	**PART**	**QUANTITY**	**MATERIAL**
[1]	Doubler	1	Use the same material and heat treat condition as the initial skin. Refer to Figure 201/REPAIR 1 to find the length, width, necessary fastener spacing, number of rows, and edge margins. The doubler thickness is 0.125 in. (3.175 mm) thick.
[2]	Filler	as necessary	Use the same material, heat treat and thickness as the initial skin.
[3]	Filler	as necessary	Use a BACF3F008K020NN filler or an equivalent filler.

H. Drill the necessary fastener holes. Refer to Figure 201/REPAIR 1 for the fastener spacing. Refer to 51-40-05 for the fastener hole dimensions.

(1) Do not countersink the fastener holes more than 80 percent of the initial skin thickness.

(a) This will prevent a knife-edge condition of the initial skin.

(2) If Repair 1 will replace a initial external repair, then:

(a) Use the same fastener holes as the external repair.

(b) Use the same fastener spacing as the external repair if you drill more fastener holes.

I. Disassemble the repair parts.

J. Remove all the nicks, scratches, burrs, and sharp edges from the repair parts and the bare surfaces of the initial parts. The edges of the cutout must have a surface smoothness of 63 microinches Ra or better. Refer to 51-20-13, GENERAL.

K. Apply a chemical conversion coating to the repair parts and to the bare surfaces of the initial parts. Refer to 51-20-01.

L. Apply two layers of BMS 10-11, Type I primer to the repair parts and to the bare surfaces of the initial parts. Refer to SOPM 20-41-02.

M. Make and install the countersink repair washers at all the initial fastener locations in the initial skin panel that will be covered by the repair doubler as shown in Figure 201/REPAIR 1. Install the countersink repair washers with BMS 5-95 sealant. Refer to 51-40-08, GENERAL.

N. Install the repair parts and the initial parts. Apply BMS 5-95 sealant to all the mating surfaces. Refer to 51-20-05.

O. Install the fasteners per BAC 5004-1.

P. Seal the repair area. Refer to 51-20-05.

(1) Apply a fillet seal to the repair parts on the external side of the repair area with BMS 5-95 sealant.

(2) Put sealant into the space between the part [2] filler and the skin.

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Q. Apply a decorative finish to the external surfaces of the repair area, if necessary. Refer to AMM PAGEBLOCK 51-21-99/701.

R. Apply a layer of BMS 3-23, corrosion inhibiting compound, to all the interior structure of the repair area, after the BMS 5-95 sealant has cured.

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D34570 S0000152545_V1

Layout of the Repair Parts
Figure 201 (Sheet 1 of 3)

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APU ACCESS DOOR HINGE REPAIR

B

DAMAGE CUTOUT

C

D34685 S0000152546_V1

Layout of the Repair Parts
Figure 201 (Sheet 2 of 3)

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A–A

NOTES

- MAINTAIN A 4D - 6D FASTENER SPACING AT ALL NEW FASTENER LOCATIONS.
- INSTALL ALL NEW FASTENERS IN-LINE WITH INITIAL ANGLE FASTENERS AS SHOWN IN FIGURE 201.

1 REINSTALL THE INITIAL BACF3F008K020NN FILLER AS NECESSARY. IF THE INITIAL BACF3F008K020NN FILLER WAS NOT INSTALLED AT EITHER HINGE LOCATION, INSTALL A NEW PART [3] FILLER.

2 REFER TO SRM 51-40-06 FOR THE EDGE MARGIN

3 INSTALL THE PART [2] FILLER AS SHOWN. MAKE SURE THERE IS A MINIMUM OF 0.01 INCH (0.3 mm) FASTENER PULL-UP.

FASTENER SYMBOLS

REFERENCE FASTENER LOCATION.

INITIAL FASTENER LOCATION. INSTALL A BACR15CE6D() RIVET. INSTALL THE SAME TYPE AND SIZE AS THE INITIAL FASTENER, UP TO 1/32 INCH OVERSIZE, IF NECESSARY. AS AN ALTERNATIVE, INSTALL A BACR15GF6D() RIVET.

REPAIR FASTENER LOCATION. INSTALL A BACR15CE6D() RIVET. AS AN ALTERNATIVE, INSTALL A BACR15GF6D() RIVET.

REPAIR FASTENER LOCATION. INSTALL A BACR15CE5D() RIVET. AS AN ALTERNATIVE, INSTALL A BACR15GF5D() RIVET.

D37899 S0000154537_V1

Layout of the Repair Parts
Figure 201 (Sheet 3 of 3)

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REPAIR 2 - FUSELAGE SKIN REPAIR - DAMAGE BETWEEN S-11L AND S-17AL AND BETWEEN STA 1016 AND STA 1064

1. Applicability

A. This repair is applicable to damage to 0.056 inch thick (or less) fuselage skin or skins and bonded doublers in Section 48 between STA 1016 and STA 1064, from Stringer 11L to Stringer 17AL. Refer to Figure 201/REPAIR 2 for the area that is applicable to this repair.

B. Repair 2 is not applicable to damage:

(1) If the repair doubler goes into the shaded areas that are shown in Figure 202/REPAIR 2.

(2) At 10 in. (254 mm) or less away from the edge of an initial repair.

(a) If damage occurs in this area, then remove the initial repair and make one repair that includes the two areas of damage.

2. General

A. This is a Category A repair. The inspections given in the Maintenance Planning Data (MPD) are sufficient to maintain the damage tolerance of the initial structure with this repair installed. Refer to STRUCTURAL REPAIR DEFINITIONS, 51-00-06 for repair categories and definitions.

B. The details shown in this repair are general repair procedures. The specific damage size, shape and location can be different for actual repairs. The intent of this repair is to give general guidelines to permit you to design repairs for your specific damage. The dimensions and shape of the repair can be different than what is shown. You must obey the general repair rules as given in Paragraph 4./ REPAIR 2 and Flag Notes as shown in Figure 202/REPAIR 2 to make sure that your repair is structurally satisfactory.

C. D = fastener diameter.

D. Keep a 2D minimum fastener edge margin Refer to 51-40-06, GENERAL for the fastener edge margins.

E. All dimensions are in inches, unless they are shown differently.

F. Keep a minimum of 0.50 in. (12.7 mm) external radius and 2.0 in. (50.8 mm) internal radius on initial and repair part corners, unless they are shown differently.

G. Keep a 5D to 6D fastener spacing, unless it is shown differently.

H. Make sure the cut edges of the repair and initial parts have a surface smoothness of 63 microinches Ra or smoother. Refer to 51-20-13, GENERAL.

I. Make sure the repair and initial parts have a surface smoothness of 125 microinches Ra or smoother. Refer to 51-20-13, GENERAL.

J. If a drain hole is common to the repair, extend the repair parts a minimum of 3 fasteners all around the drain hole. Drill the drain hole through the repair parts and reinstall the drain through the repair parts.

K. If two repairs are within three fastener rows of each other, the repairs must be combined.

L. Chamfer all the edges of the Part 1 Doubler as given in 51-10-01, GENERAL.

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Section 48 - Fuselage Skin Repair - Location of Damage
Figure 201

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3. References

Reference	Title
51-00-06	STRUCTURAL REPAIR DEFINITIONS
51-10-01, GENERAL	Aerodynamic Smoothness Requirements
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-20-05	REPAIR SEALING
51-20-05, GENERAL	Repair Sealing
51-20-13, GENERAL	Surface Roughness Finish Requirements
51-30-01	SHEET METAL MATERIALS
51-40-02, GENERAL	Fastener Installation and Removal
51-40-05, GENERAL	Fastener Hole Sizes
51-40-06, GENERAL	Fastener Edge Margins
51-40-08	COUNTERSINKING
AMM 51-21	INTERIOR AND EXTERIOR FINISHES
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes
SOPM 20-44-04	Application of Urethane Compatible Primer
737 NDT Part 6, 51-00-00, Procedure 16	Aluminum Part Fastener Hole Inspection (Rotary Scanner)
737 NDT Part 6, 51-00-00, Procedure 4	Surface Inspection of Aluminum Parts (Meter Display)

4. Repair Instructions

A. Get access to the damaged area.

B. Remove the necessary fasteners in the repair area. Refer to 51-40-02, GENERAL.

CAUTION: DO NOT MAKE GOUGES, SCRATCHES OR BUCKLES IN THE SKIN AND INTERNAL STRUCTURE THAT IS ADJACENT TO THE REPAIR AREA. IF YOU DO, MORE DAMAGE TO THE STRUCTURE WILL OCCUR.

C. Carefully cut out the damaged area of the skin. Cut out the minimum amount of material necessary to remove the damage. Use a thin steel sheet as needed to protect the adjacent structure.

NOTE: Make the horizontal cut parallel to the stringer and the vertical cut parallel to the shear ties.

D. Remove the steel sheet, if one was used.

E. Do a High Frequency Eddy Current (HFEC) inspection along the edge of the cutout. Make sure there are no cracks or corrosion or disbond between the skin and the doubler. Refer to 737 NDT Part 6, 51-00-00, Procedure 4 for the HFEC procedure. If there is no more damage, make an insurance cut of 0.04 in. (1.02 mm).

F. Do a HFEC hole probe inspection at all removed fastener locations in the repair area. Refer to 737 NDT Part 6, 51-00-00, Procedure 16 using 0.03 notch calibration. If you find cracks, contact The Boeing Company for further information.

G. Do a detailed visual inspection of the structure in the area of the repair to make sure there is no damage. Make sure you inspect any stringers or frames that are near the repair. If you find damage, contact The Boeing Company.

H. Make the repair parts. Refer to Table 201/REPAIR 2 or Table 202/REPAIR 2 and details Figure 203/REPAIR 2, Figure 204/REPAIR 2 or Figure 205/REPAIR 2.

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CAUTION: WHEN YOU MAKE THE PARTS, MAKE SURE THAT ALL THE APPLICABLE REQUIREMENTS IN SRM 51-30-01 ARE MET. REVERSE FORMING IS NOT PERMITTED. SHIMS ARE NOT PERMITTED BETWEEN THE REPAIR PARTS AND THE FUSELAGE SKIN.

I. Pre-form or roll the repair parts to match the fuselage skin contour before they are installed. Refer to SHEET METAL MATERIALS, 51-30-01 for sheet metal materials and 51-10-01, GENERAL.

Table 201: REPAIR MATERIAL FOR REPAIR BETWEEN STRINGERS

ITEM	PART	QUANTITY	MATERIAL
1	Doubler	1	See Table 203/REPAIR 2 for thickness, 2024-T3 clad sheet

Table 202: REPAIR MATERIAL FOR REPAIR AT STRINGER OR SHEAR TIE AND AT STRINGERS AND OR FRAME

ITEM	PART	QUANTITY	MATERIAL
1	Doubler	1	0.063 in. (1.60 mm) thick, 2024-T3 clad sheet
2	Structural Filler	As Needed	Same gage as the initial skin that was removed, 2024-T3 clad sheet

J. Assemble the repair parts. Refer to Figure 203 (Sheet 1), Figure 204 (Sheet 1) or Figure 205 (Sheet 1).

K. Drill the fastener holes.

(1) Refer to Figure 203/REPAIR 2, Figure 204/REPAIR 2 or Figure 205/REPAIR 2 for fastener locations.

(2) Refer to Table 203/REPAIR 2 for fastener types.

(3) Refer to 51-40-05, GENERAL for fastener hole sizes.

NOTE: The fastener pattern does not have to line up with the adjacent structure fastener pattern of adjacent structure.

NOTE: Do not drill fastener holes into a chem-milled radius.

L. Disassemble the repair parts.

M. Remove nicks, scratches, gouges, burrs and sharp edges from the repair parts and the bare surfaces of the initial parts.

N. Apply a chemical conversion coating to the repair parts and to the bare surfaces of the initial parts. Refer to PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS, 51-20-01.

O. Apply two layers of BMS 10-79, Type II or III primer to the repair parts and to the bare surfaces of the initial parts. Refer to SOPM 20-44-04 as an alternative apply a layer of BMS 10–11 Type I Primer. Refer to SOPM 20-41-02.

P. Install countersink repair washers in the initial countersink locations that will be covered by the repair Part 1 Doubler. Install repair washers with BMS 5-95 sealant. Refer to COUNTERSINKING, 51-40-08.

Q. Make sure that the mating surfaces of the initial and repair parts mating surfaces are clean. Refer to 51-20-05, GENERAL.

R. Install the repair parts with BMS 5-95 sealant on all of the mating surfaces and in all the gaps. Refer to REPAIR SEALING, 51-20-05.

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S. Install the fasteners. Refer to 51-40-02, GENERAL. Fasteners that are not made of aluminium must be installed wet with BMS 5-95 sealant. Torque the all hex-drive bolts to 25 to 35 inch-pounds.

NOTE: If the production fasteners common to the repair are not rivets, or 3/16 lock-bolts or hex-drive bolts, then either install the same type fastener as the production fastener or contact The Boeing Company. Install these fasteners in holes as given in the respective drawing requirements. Use the requirements on the respective production drawings to install these fasteners in the holes. Refer to Flag Note 4, Figure 202/REPAIR 2.

T. Re-torque the hex-drive bolts in less than the squeeze-out time for the sealant as given in the BMS 5-95 specification. Refer to 51-40-02, GENERAL.

U. Apply a fillet seal along the edges of the repair parts.

V. Apply a layer of BMS 3-23, Type II corrosion inhibiting compound on to the internal surface of the repair area after the BMS 5-95 sealant has cured. Refer to PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS, 51-20-01.

W. Apply a finish to the external surface of the repair area. Refer to AMM SECTION 51-21.

Table 203: External Doubler Thicknesses and Fastener Types

Repair Detail	Repair Fastener Type, Diameter and Minimum Number of Rows and Spacing					
	Initial Skin Thickness (maximum skin pocket thickness), inches (mm).	Part Doubler Thickness, inches (mm).	Fastener Type *[1]	Necessary Number of Fastener Rows		Fastener Spacing 4D to 6 D, inches (mm).
				Circumferential	Longitudinal	
Figure 203	0.033 in. (0.838 mm)	0.040 in. (1.016 mm)	BACR15BB5D	3	3	0.63 - 0.94 (16.00 - 24.00)
	0.038 in. (0.965 mm)	0.045 in. (1.143 mm)				
	0.045 in. (1.143 mm)	0.050 in. (1.270 mm)				
	0.052 in. (1.321 mm)	0.055 in. (1.397 mm)	BACR15BB6D			0.75 - 1.125 (19.00 - 28.00)
Figure 204	0.033 in. (0.838 mm)	0.063 in. (1.600 mm)				
	0.038 in. (0.965 mm)					
	0.045 in. (1.143 mm)					
	0.052 in. (1.321 mm)					
Figure 205	0.033 in. (0.838 mm)	0.063 in. (1.600 mm)		4	4	
	0.038 in. (0.965 mm)					
	0.045 in. (1.143 mm)					
	0.052 in. (1.321 mm)					

*[1] Acceptable rivet substitution with the same fastener diameter is BAC15BB()D to BACR15FT()D.

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Fuselage Skin Repair Between S-11L and S-17AL and between STA 1016 and STA 1064
Figure 202 (Sheet 1 of 2)

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NOTES

1. FOR DETAILS D AND E, EXTEND THE DOUBLER A MINIMUM OF THREE FASTENER ROWS BEYOND ALL SIDES OF THE CUTOUT. FOR DETAIL F EXTEND THE DOUBLER A MINIMUM OF 4 FASTENERS ROWS BEYOND ALL SIDES OF THE CUTOUT.
2. IF THE DOUBLER ENDS ON A STRINGER, FRAME OR OTHER INTERNAL STRUCTURE, EXTEND THE DOUBLER ONE FASTENER ROW BEYOND THE INTERNAL STRUCTURE.
3. MAKE SURE THAT STRUCTURAL FILLERS ARE INSTALLED AT LOCATIONS WHERE THE CUTOUT IS COMMON TO A FRAME OR STRINGER. MAKE SURE THAT THE DAMAGE CUTOUT IS LARGE ENOUGH TO PERMIT TWO ROWS OF FASTENERS TO BE INSTALLED IN THE PART 2 STRUCTURAL FILLER.
4. MAKE SURE THAT THE COUNTERSINK DEPTH IS NOT MORE THAN 80 PERCENT OF THE THICKNESS OF THE MOST EXTERNAL REPAIR PART. IF IT IS MORE THAN 80 PERCENT OF THE REPAIR PART THICKNESS, DO NOT COUNTERSINK THE FASTENER HOLE, USE A PROTRUDING HEAD FASTENER OF THE SAME TYPE AND SIZE AS THE INITIAL FASTENER.
5. SKIN AREA OF THE BUTT SPLICE AT STA 1016 OF 0.08 INCH THICKNESS SHOULD NOT BE TRIMMED OUT.

FASTENER SYMBOLS

REFERENCE FASTENER LOCATION.

INITIAL FASTENER LOCATION. IF THE INITIAL FASTENER IS A RIVET, INSTALL A FASTENER THAT IS THE SAME TYPE AND SIZE OR 1/32 IN OVERSIZED (IF REQUIRED). IF THE INITIAL FASTENER IS A LOCK-BOLT OR A HEX-DRIVE BOLT, INSTALL SAME TYPE AND 1/64 INCH OVERSIZE FASTENER IN A TRANSITION FIT HOLE.

REPAIR FASTENER LOCATION. REFER TO TABLE 1 FOR FASTENER TYPES APPLICABLE FOR REPAIR.

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Fuselage Skin Repair Between S-11L and S-17AL and between STA 1016 and STA 1064
Figure 202 (Sheet 2 of 2)

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Fuselage Skin Repair Between S-11L and S-17AL and between STA 1016 and STA 1064 between Stringers
Figure 203

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REPAIR AT STRINGER OR SHEAR TIE

E 5

2424980 S0000560327_V1

Fuselage Skin Repair Between S-11L And S-17AL and between STA 1016 and STA 1064 at Stringer or Shear Tie
Figure 204

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EXTERNAL REPAIR AT STRINGERS AND OR FRAMES

F 5

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Fuselage Skin Repair Between S-11L And S-17AL and between STA 1016 and STA 1064 at Stringers and/or Frames
Figure 205

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IDENTIFICATION 1 - SECTION 48 FUSELAGE STRINGERS

NOTE: REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

1 REFER TO FIGURE 3 FOR AIRCRAFT WITH A FLAT AFT PRESSURE BULKHEAD AT BS 1042

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Section 48 Stringer Identification
Figure 1

Table 1:

REFERENCE DRAWINGS	
DRAWING NUMBER	**TITLE**
140A4803	Upper Panel Functional Collector- S-9R to S-9L - STA 1016-1088
148A0931	Upper Panel Integration Installation, S-9R to S-9L - STA 1016-1088
148A0987	Stringer Installation, Upper Module, STA 1088 to 1156, S-5L to S-5R
148A3110	Skin Panel Installation - STA 1016-1088, S-9L to S-4R
148A3120	Skin Panel Installation - STA 1016-1088, S-4R to S-9R
140A4804	Functional Collector, Lower Panel STA 1016-1088, S-9R to S-9L
148A0933	Lower Panel Integration Installation, S-9R to S-9L STA 1016-1088

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Table 1: (Continued)

REFERENCE DRAWINGS	
DRAWING NUMBER	**TITLE**
148A3310	Skin Panel Installation, STA 1016-1088, S-24L to S-9L
148A3372	Stringer Assembly - S-18L
148A3320	Skin Panel Installation, STA 1016-1088, S-24L to S-16R
148A3330	Skin Panel Installation - Lower, APU Inlet, S-9R to S-16R
148A3375	Stringer Assembly - APU Inlet Skin Panel
140A4807	Upper Module Functional Collector - STA 1088-1156

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NOTES FWD

- STATION LOCATIONS ARE APPROXIMATE.
- REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

1 STRINGER SPANS FROM STA 1016 TO STA 1064 ON AIRCRAFT WITH "SHORT FIELD PERFORMANCE" OPTION.

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Stringer Identification S-1 to S-27 for Aircraft with a Domed Aft Pressure Bulkhead
Figure 2 (Sheet 1 of 2)

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NOTES

- STATION LOCATIONS ARE APPROXIMATE.
- REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

1 STRINGER SPANS FROM STA 1016 TO STA 1064 ON AIRCRAFT WITH "SHORT FIELD PERFORMANCE" OPTION.

U58471 S0000202450_V1

Stringer Identification S-1 to S-27 for Aircraft with a Domed Aft Pressure Bulkhead
Figure 2 (Sheet 2 of 2)

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Table 2:

LIST OF MATERIALS FOR FIGURE 2				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Stringer	0.090 (2.29)	7075-T62 sheet as given in QQ-A-250/12. Machined taper gage	
[2]	Stringer	0.071 (1.80)	7075-T62 sheet as given in QQ-A-250/12. Machined taper gage	
[3]	Stringer	0.063 (1.60)	7075-T62 sheet as given in QQ-A-250/12. Machined taper gage	
[4]	Stringer	0.056 (1.42)	7075-T62 sheet as given in QQ-A-250/12. Machined taper gage	
[5]	Stringer	0.050 (1.27)	7075-T62 sheet as given in QQ-A-250/12. Machined taper gage	
[6]	Stringer	0.045 (1.14)	7075-T62 sheet as given in QQ-A-250/12. Machined taper gage	
[7]	Stringer		BAC1517-2322 7075-T62 extrusion as given in QQ-A-200/11	
[8]	Stringer Assembly			
	Intercostal	0.063 (1.60)	7075-T62 clad sheet as given in QQ-A-250/13	
	Angle	0.063 (1.60)	7075-T62 clad sheet as given in QQ-A-250/13	
	Angle		AND10133-0601 7075-T6511 extrusion as given in QQ-A-200/11	
[9]	Stringer		BAC1498-156 7075-T62 sheet as given in QQ-A-250/12	
[10]	Stringer		BAC1498-157 7075-T62 sheet as given in QQ-A-250/12	
[11]	Stringer		BAC1498-158 7075-T62 sheet as given in QQ-A-250/12	
[12]	Stringer		BAC1498-159 7075-T62 sheet as given in QQ-A-250/12	
[13]	Stringer		BAC1498-160 7075-T62 sheet as given in QQ-A-250/12	
[14]	Stringer		BAC1498-161 7075-T62 sheet as given in QQ-A-250/12	
[15]	Stringer		BAC1498-165 7075-T62 sheet as given in QQ-A-250/12	
[16]	Stringer		BAC1517-2322 7075-T62 sheet as given in QQ-A-250/11	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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Stringer Identification S-1 to S-27 for Aircraft with a Flat Aft Pressure Bulkhead
Figure 3 (Sheet 1 of 2)

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RIGHT SIDE VIEW

NOTES

- STATION LOCATIONS ARE APPROXIMATE.
- REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

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Stringer Identification S-1 to S-27 for Aircraft with a Flat Aft Pressure Bulkhead
Figure 3 (Sheet 2 of 2)

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Table 3:

LIST OF MATERIALS FOR FIGURE 3				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Stringer		BAC1498-156 7075-T62 sheet as given in QQ-A-250/12	
[2]	Stringer		BAC1498-157 7075-T62 sheet as given in QQ-A-250/12	
[3]	Stringer		BAC1498-158 7075-T62 sheet as given in QQ-A-250/12	
[4]	Stringer		BAC1498-159 7075-T62 sheet as given in QQ-A-250/12	
[5]	Stringer		BAC1498-160 7075-T62 sheet as given in QQ-A-250/12	
[6]	Stringer		BAC1498-161 7075-T62 sheet as given in QQ-A-250/12	
[7]	Stringer		BAC1498-162 7075-T62 sheet as given in QQ-A-250/12	
[8]	Stringer		BAC1498-165 7075-T62 sheet as given in QQ-A-250/12	
[9]	Stringer	0.032 (0.81)	7075-T62 sheet as given in QQ-A-250/12. Machined taper gage	
[10]	Stringer	0.045 (1.14)	7075-T62 sheet as given in QQ-A-250/12. Machined taper gage	
[11]	Stringer	0.050 (1.27)	7075-T62 sheet as given in QQ-A-250/12. Machined taper gage	
[12]	Stringer	0.056 (1.42)	7075-T62 sheet as given in QQ-A-250/12. Machined taper gage	
[13]	Stringer	0.063 (1.63)	7075-T62 sheet as given in QQ-A-250/12. Machined taper gage	
[14]	Stringer	0.080 (2.03)	7075-T62 sheet as given in QQ-A-250/12. Machined taper gage	
[15]	Stringer	0.090 (2.29)	7075-T62 sheet as given in QQ-A-250/12. Machined taper gage	
[16]	Stringer Assembly			
	Intercostal		7050-T7451 plate as given in BMS 7-323, Type I	
	Angle		BAC1503-100283 7075-T73511 extrusion as given in QQ-A-200/11	
	Angle	0.080 (2.03)	7075-T62 sheet as given in QQ-A-250/13.	
[17]	Stringer		BAC1517-2322 7075-T62 extrusion as given in QQ-A-200/11	
[18]	Stringer		7050-T7451 plate as given in AMS4050	
[19]	Stringer	0.056 (1.42)	7075-T62 sheet as given in QQ-A-250/13	
[20]	Stringer		BAC1517-2322 7075-T62 extrusion as given in QQ-A-200/11	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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Section 48 Fuselage Stringer Allowable Damage
Figure 101

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REPAIR 1 - SECTION 48 FUSELAGE STRINGERS

1. Applicability

A. Repair 1 is applicable to damage to the stringers in body Section 48 shown in Section 48 Stringer Repairs, Figure 201/REPAIR 1.

2. General

A. The typical repairs given in 51-70-11 or 51-70-12 can be used when applicable if:

(1) There is sufficient clearance with the adjacent structure for the installation of repair parts.

B. Refer to the limits of the typical repairs given in 51-70-11 or 51-70-12 before you start a repair.

F77717 S0006591113_V1

Section 48 Stringer Repairs
Figure 201

3. References

Reference	Title
51-70-11	TYPICAL FORMED SECTION REPAIRS
51-70-12	EXTRUDED SECTION REPAIRS
53-00-03, REPAIR 1	Repair for a Type I, Type II, or Type IV Fuselage Stringer with General Damage
53-00-03, REPAIR 2	Repair for a Type I, II or IV Fuselage Stringer with Longitudinal Crack Damage in a Formed Corner of a Skin Attachment Flange
53-00-03, REPAIR 3	Repair for a Type III Fuselage Stringer With General Damage
53-00-03, REPAIR 4	Repair for a Type III Fuselage Stringer With Longitudinal Crack Damage in a Formed Corner of a Skin Attachment Flange
53-00-03, REPAIR GENERAL	Formed Fuselage Stringers
53-80-03	FUSELAGE STRINGERS - SECTION 48

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4. Repair Instructions

A. Refer to Table 201/REPAIR 1 to find the applicable repairs to the section 48 fuselage stringers.

NOTE: If necessary, refer to 53-80-03, Identification 1 to find the material and the process that was used to make the part which you want to repair.

Table 201:

REPAIR REFERENCES FOR THE SECTION 48 FUSELAGE STRINGERS		
STRINGER	**LOCATION**	**REPAIR**
S-1	STA 1016 to STA 1088	Refer to SRM 51-70-11
S-12R, S-15R	STA 1016 to STA 1064	Refer to SRM 51-70-11, and SRM 51-70-12
S-5L, S-5R	STA 1088 to STA 1121	Refer to SRM 51-70-12
S-15R	STA 1088 to STA 1156	Refer to SRM 51-70-11
All other stringers	STA 1016 to STA 1156	Refer to SRM 53-00-03

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IDENTIFICATION 1 - SECTION 48 FUSELAGE INTERCOSTALS

NOTE: REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

F95953 S0006591118_V1

Section 48 Fuselage Intercostal Locations
Figure 1

Table 1:

REFERENCE DRAWINGS	
DRAWING NUMBER	**TITLE**
140A4808	Lower Module Functional Collector - Body Section 48
148A3800	Skin Panel Installation, Lower Aft, Station 1088 - 1156

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NOTE: REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

LEFT SIDE IS SHOWN, RIGHT SIDE IS OPPOSITE

F96172 S0006591120_V1

Section 48 Fuselage Intercostal Identification
Figure 2

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Table 2:

LIST OF MATERIALS FOR FIGURE 2				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Intercostal		BAC1505-101205 7075-T62 extrusion	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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Section 48 Fuselage Intercostal Locations
Figure 101

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REPAIR 1 - SECTION 48 FUSELAGE INTERCOSTALS

1. Applicability

A. Repair 1 is applicable to damage to the fuselage intercostals as shown in Section 48 Fuselage Intercostal Locations, Figure 201/REPAIR 1.

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Section 48 Fuselage Intercostal Locations
Figure 201

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LEFT SIDE IS SHOWN, RIGHT SIDE IS OPPOSITE

G67346 S0006591128_V1

Section 48 Fuselage Intercostal Structure
Figure 202

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2. General

A. The typical repair given in 51-70-12 can be used when applicable if:

(1) There is sufficient clearance with the adjacent structure for the installation of the repair parts.

B. Refer to the limits of the typical repairs given in 51-70-12 before you start a repair.

3. References

Reference	Title
51-70-12	EXTRUDED SECTION REPAIRS
53-00-04, ALLOWABLE DAMAGE 1	Fuselage Intercostals
53-80-04	FUSELAGE INTERCOSTALS - SECTION 48

4. Repair Instructions

A. Refer to Table 201/REPAIR 1 and Figure 202/REPAIR 1 to find the applicable repair for the part you want to repair.

NOTE: If necessary, refer to 53-80-04, Identification 1 to find the material and the process that was used to make the part which you want to repair.

Table 201:

REPAIR REFERENCES FOR THE FUSELAGE INTERCOSTALS	
TYPE OF COMPONENT	**REPAIR**
Extruded parts	Refer to SRM 51-70-12

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IDENTIFICATION 1 - SECTION 48 FUSELAGE FRAMES

NOTE: REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

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Section 48 Fuselage Frame Locations
Figure 1

Table 1:

REFERENCE DRAWINGS	
DRAWING NUMBER	**TITLE**
140A4801	Integration Functional Collector - Body Section 48
140A4803	Upper Panel Functional Collector - S-9L to S-9R, STA 1016 to STA 1088
140A4804	Lower Panel Functional Collector - S-9R to S-9L, STA 1016 to STA 1088
140A4807	Upper Module Functional Collector - Body Section 48
140A4808	Lower Module Functional Collector - Body Section 48

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NOTE: REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

U58498 S0000202743_V1

Section 48 Right Side Fuselage Frame Identification on Aircraft with a Dome Aft Pressure Bulkhead
Figure 2

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Table 2:

LIST OF MATERIALS FOR FIGURE 2				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Frame Assembly			
	Frame (Zee)	0.040 (1.02)	7075-T62 clad sheet	
	Doubler	0.050 (1.27)	7075-T6 clad sheet	
	Channel		BAC1493-216 7075-T62 clad formed section	
[2]	Lower Frame - STA 1104	0.063 (1.60)	7075-T62 clad sheet	
[3]	Frame (Zee) STA 1064	0.045 (1.14)	7075-T62 clad sheet	
[4]	Frame - STA 1104	0.056 (1.42)	7075-T62 clad sheet	
[5]	Shear Tie - STA 1104	0.063 (1.60)	2024-T42 clad sheet	
[6]	Frame - STA 1112	0.071 (1.80)	7075-T62 sheet	
[7]	Frame - STA 1129	0.071 (1.80)	7075-T62 sheet	
[8]	Shear Tie - STA 1138	0.070 (1.78)	7075-T6 sheet	
[9]	Center Frame - STA 1138	0.063 (1.60)	7075-T62 clad sheet	
[10]	Shear Tie - STA 1121	0.071 (1.80)	7075-T62 sheet	
[11]	Frame - STA 1121	0.040 (1.02)	7075-T6 clad sheet	
[12]	Lower Frame - STA 1138	0.063 (1.60)	7075-T62 clad sheet	
[13]	Lower Frame - STA 1121	0.040 (1.02)	7075-T6 clad sheet	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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NOTE: REFER TO TABLE 3 FOR THE LIST OF MATERIALS.

U58536 S0000202747_V1

Section 48 Left Side Fuselage Frame Identification on Aircraft with a Dome Aft Pressure Bulkhead
Figure 3

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Table 3:

LIST OF MATERIALS FOR FIGURE 3				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Lower Frame - STA 1104	0.063 (1.60)	7075-T62 clad sheet	
[2]	Lower Frame - STA 1121	0.040 (1.02)	7075-T62 clad sheet	
[3]	Lower Frame - STA 1138	0.063 (1.60)	7075-T62 clad sheet	
[4]	Frame - STA 1121	0.040 (1.02)	7075-T6 clad sheet	
[5]	Shear Tie - STA 1121	0.071 (1.80)	7075-T6 sheet	
[6]	Center Frame - STA 1138	0.063 (1.60)	7075-T62 clad sheet	
[7]	Shear Tie - STA 1138	0.070 (1.78)	7075-T6 sheet	
[8]	Frame - STA 1129	0.071 (1.80)	7075-T62 sheet	
[9]	Frame - STA 1112	0.071 (1.80)	7075-T62 sheet	
[10]	Shear Tie - STA 1104	0.063 (1.60)	2024-T42 clad sheet	
[11]	Frame - STA 1104	0.056 (1.42)	7075-T62 clad sheet	
[12]	Zee Frame - STA 1064		BAC1517-2717 7075-T62 clad formed sheet	
[13]	Zee Frame - STA 1040	0.040 (1.02)	7075-T62 clad sheet	
[14]	Zee - STA 1064	0.050 (1.27)	7075-T62 clad sheet	
[15]	Doubler	0.050 (1.27)	7075-T6 clad sheet	
[16]	Doubler	0.063 (1.60)	7075-T62 clad sheet	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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NOTE: REFER TO TABLE 4 FOR THE LIST OF MATERIALS.

U58555 S0000202751_V1

Section 48 Fuselage Crown Frame Identification on Aircraft with a Dome Aft Pressure Bulkhead
Figure 4

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Table 4:

LIST OF MATERIALS FOR FIGURE 4				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Frame - STA 1040		BAC1517-2718 7075-T62 clad formed sheet	
[2]	Frame - STA 1064		BAC1517-2718 7075-T62 clad formed sheet	
[3]	Web - STA 1104	0.050 (1.27)	7075-T62 clad sheet	
[4]	Upper Frame - STA 1104	0.056 (1.42)	7075-T62 clad sheet	
[5]	Crown Frame - STA 1121	0.040 (1.02)	2024-T42 clad sheet	
[6]	Crown Frame - STA 1138	0.063 (0.160)	7075-T62 clad sheet	
[7]	Web - STA 1138	0.056 (1.42)	2024-T3 sheet	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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NOTE: REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

U58559 S0000202756_V1

Section 48 Right Side Fuselage Frame Identification for Aircraft with a Flat Aft Pressure Bulkhead
Figure 5

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Table 5:

LIST OF MATERIALS FOR FIGURE 5				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Frame, Right - STA 1030	0.125 (3.20)	7075-T62 clad sheet	
[2]	Lower Frame - STA 1104	0.063 (1.60)	7075-T62 clad sheet	
[3]	Frame (Zee) STA 1064	0.045 (1.14)	7075-T62 clad sheet	
[4]	Frame - STA 1104	0.056 (1.42)	7075-T62 clad sheet	
[5]	Shear Tie - STA 1104	0.063 (1.60)	2024-T42 clad sheet	
[6]	Frame - STA 1112	0.071 (1.80)	7075-T62 sheet	
[7]	Frame - STA 1129	0.071 (1.80)	7075-T62 sheet	
[8]	Shear Tie - STA 1138	0.070 (1.78)	7075-T6 sheet	
[9]	Center Frame - STA 1138	0.063 (1.60)	7075-T62 clad sheet	
[10]	Shear Tie - STA 1121	0.071 (1.80)	7075-T62 sheet	
[11]	Frame - STA 1121	0.040 (1.02)	7075-T6 clad sheet	
[12]	Lower Frame - STA 1138	0.063 (1.60)	7075-T62 clad sheet	
[13]	Lower Frame - STA 1121	0.040 (1.02)	7075-T6 clad sheet	
[14]	Chord, Right- STA 1030		7050-T7451 plate as given in AMS 4050	
[15]	Lower Frame - STA 1030	0.071 (1.80)	7075-T6 clad sheet	
[16]	Chord, Lower- STA 1030		BAC 1514-945 7075-T62 clad formed sheet	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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NOTE: REFER TO TABLE 3 FOR THE LIST OF MATERIALS.

U58569 S0000202762_V1

Section 48 Left Side Fuselage Frame Identification for Aircraft with a Flat Aft Pressure Bulkhead
Figure 6

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Table 6:

LIST OF MATERIALS FOR FIGURE 6				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Lower Frame - STA 1104	0.063 (1.60)	7075-T62 clad sheet	
[2]	Lower Frame - STA 1121	0.040 (1.02)	7075-T62 clad sheet	
[3]	Lower Frame - STA 1138	0.063 (1.60)	7075-T62 clad sheet	
[4]	Frame - STA 1121	0.040 (1.02)	7075-T6 clad sheet	
[5]	Shear Tie - STA 1121	0.071 (1.80)	7075-T6 sheet	
[6]	Center Frame - STA 1138	0.063 (1.60)	7075-T62 clad sheet	
[7]	Shear Tie - STA 1138	0.070 (1.78)	7075-T6 sheet	
[8]	Frame - STA 1129	0.071 (1.80)	7075-T62 sheet	
[9]	Frame - STA 1112	0.071 (1.80)	7075-T62 sheet	
[10]	Shear Tie - STA 1104	0.063 (1.60)	2024-T42 clad sheet	
[11]	Frame - STA 1104	0.056 (1.42)	7075-T62 clad sheet	
[12]	Zee Frame - STA 1064		BAC1517-2717 7075-T62 clad formed sheet	
[13]	Frame, Lower - STA 1030	0.071 (1.80)	7075-T62 clad sheet	
[14]	Zee - STA 1064	0.050 (1.27)	7075-T62 clad sheet	
[15]	Doubler	0.050 (1.27)	7075-T6 clad sheet	
[15]	Doubler	0.063 (1.60)	7075-T62 clad sheet	
[16]	Chord		BAC1514-945 7075-T62 clad formed sheet	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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NOTE: REFER TO TABLE 4 FOR THE LIST OF MATERIALS.

U58572 S0000202766_V1

Section 48 Fuselage Crown Frame Identification for Aircraft with a Flat Aft Pressure Bulkhead
Figure 7

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Table 7:

LIST OF MATERIALS FOR FIGURE 7				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Upper Frame - STA 1030	0.071 (1.80)	7075-T62 clad sheet	
[2]	Frame - STA 1064		BAC1517-2718 7075-T62 clad formed sheet	
[3]	Web - STA 1104	0.050 (1.27)	7075-T62 clad sheet	
[4]	Upper Frame - STA 1104	0.056 (1.42)	7075-T62 clad sheet	
[5]	Crown Frame - STA 1121	0.040 (1.02)	2024-T42 clad sheet	
[6]	Crown Frame - STA 1138	0.063 (0.160)	7075-T6 clad sheet	
[7]	Web - STA 1138	0.056 (1.42)	2024-T3 sheet	
[8]	Chord - STA 1030		BAC1503-101074 7075-T62 clad formed sheet	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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F55320 S0006591144_V1

Section 48 Fuselage Frame Location
Figure 101

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F55321 S0006591147_V1

Section 48 Fuselage Frame Location
Figure 201

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IDENTIFICATION 1 - STATION 1016 AFT PRESSURE BULKHEAD STRUCTURE

NOTE: REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

U58581 S0000203086_V1

Station 1016 Aft Pressure Bulkhead Location

Figure 1

Table 1:

REFERENCE DRAWINGS	
DRAWING NUMBER	**TITLE**
140A4802	Pressure Bulkhead, Station 1016 Functional Collector
148A0922	Bulkhead Integration Installation Station 1016
148A2220	Fuel Pan Assembly Installation - APU Station 1016
148A2230	Web Installation Center Upper
148A2240	Web Installation Side
148A2270	Lower Beam Assembly
148A2280	Pressure Dome Installation

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NOTE: REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

FRONT VIEW

F52494 S0006591153_V1

Station 1016 Bulkhead Identification
Figure 2

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Table 2:

LIST OF MATERIALS FOR FIGURE 2				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Beam (2)		AND10140-1403 7075-T6511 extrusion as given in QQ-A-200/11	
[2]	Web (2)	0.025 (0.64)	7075-T6 clad sheet as given in QQ-A-250/13.	
[3]	Stiffener (16)		BAC1490-39 7075-T62 clad sheet as given in QQ-A-250/13	
[4]	Channel		BAC1509-100666 7075-T62 extrusion as given in QQ-A-200/11	
[5]	Stiffener (2)		AND10133-1203 7075-T6511 extrusion as given in QQ-A-200/11	
[6]	Web-Pressure, Dome Station 1016	0.032 (0.81) 0.040 (1.02)	2024-T42 clad sheet as given in QQ-A-250/5	Line Numbers 1 thru 1712 Line Numbers 1713 and on
[7]	Web, Upper, RH and LH	0.040 (1.02)	7075-T6 clad sheet as given in QQ-A-250/13	
[8]	Intercostal (2)	0.020 (0.51)	7075-T62 clad sheet as given in QQ-A-250/13	
[9]	Intercostal (6)	0.020 (0.51)	7075-T6 clad sheet as given in QQ-A-250/13	
[10]	Channel	0.050 (1.27)	7075-T62 Clad sheet as given in QQ-A-250/13	
[11]	Pan Dome	0.063 (1.6)	2024-T42 clad sheet as given in QQ-A-250/5	
[12]	Cover Dome	0.040 (1.02)	2024-T3 clad sheet as given in QQ-A-250/5. Refer to the Boeing production drawings for the machined thicknesses.	
[13]	Frame Chord		7050-T7451 plate as given in BMS 7-323, Type I	
[14]	Frame Chord (2)		BAC1514-3144 2024-T42 extrusion as given in QQ-A-200/3	
[15]	Splice Angle	0.080 (2.03)	7075-T62 clad sheet as given in QQ-A-250/13	
[16]	Stiffener (4)		AND10134-0702 7075-T6511 extrusion as given in QQ-A-200/11	
[17]	Web, Upper, Center	0.375 (9.53)	7050-T7451 plate as given in AMS 4050	
[18]	Angle		AND10133-1203 7075-T6511 extrusion as given in QQ-A-200/11	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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NOTE: REFER TO TABLE 3 FOR THE LIST OF MATERIALS.

VIEW LOOKING FORWARD

G43257 S0006591155_V2

Station 1016 Bulkhead Identification
Figure 3

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Table 3:

LIST OF MATERIALS FOR FIGURE 3				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Strap (8)	0.063 (1.6)	2024-T3 clad sheet as given in QQ-A-250/5	
[2]	Strap (7)	0.025 (0.64)	2024-T3 clad sheet as given in QQ-A-250/5	
[3]	Tripler (3)	0.050 (1.27)	2024-T3 clad sheet as given in QQ-A-250/5	
[4]	Stiffener Assembly			
	Stiffener (2)	0.032 (0.81)	2024-T42 clad sheet as given in QQ-A-250/5	
	Angle		AND10136-1301 7075-T6511 extrusion as given in QQ-A-200/11	
[5]	Doubler	0.040 (1.02)	2024-T42 clad sheet as given in QQ-A-250/5	
[6]	Doubler (2)	0.040 (1.02)	2024-T42 clad sheet as given in QQ-A-250/5	
[7]	Doubler (3)	0.040 (1.02)	2024-T3 clad sheet as given in QQ-A-250/5	
[8]	Pressure Chord (4)		BAC1506-4557 2024-T42 as given in QQ-A-200/3	
[9]	Stiffener (23)	0.032 (0.81)	2024-T42 clad sheet as given in QQ-A-250/5	
[10]	Pan		Reinforced plastic fabric as given in BAC 5480 (BMS 8-80 material)	
[11]	Chord Assembly			
	Chord		BAC1506-4557 2024-T42 extrusion as given in QQ-A-200/3	
	Angle		BAC1514-413 2024-T42 extrusion as given in QQ-A-200/3	
[12]	Pan	0.080 (2.03)	2024-T42 clad sheet as given in QQ-A-250/5	
[13]	Bonded Web Assy Upper, RH and LH			
	Web	0.032 (0.081)	2024-T42 clad sheet as given in QQ-A-250/5	Line Numbers 1 Thru 1712
		0.040 (1.020)		Line Numbers 1713 and on
	Doubler	0.032 (0.081)	2024-T42 clad sheet as given in QQ-A-250/5	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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IDENTIFICATION 2 - STATION 1088 BULKHEAD STRUCTURE

NOTE: REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

1 REFER TO FIGURE 2 FOR THE AIRPLANE LINE NUMBERS 1 THRU 1198.
REFER TO FIGURE 3 FOR THE AIRPLANE LINE NUMBERS 1199 AND ON.

U58640 S0000203300_V1

Station 1088 Bulkhead Location
Figure 1

Table 1:

REFERENCE DRAWINGS	
DRAWING NUMBER	**TITLE**
140A4806	Station 1088 Bulkhead Functional Collector
148A0924	Bulkhead Integration/Installation
148A2410	Lower Center Installation/Assembly - Station 1088 Bulkhead
148A2440	Web Assembly - Lower Center, Station 1088 Bulkhead

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FRONT VIEW

A

NOTES

- REFER TO TABLE 2 AND 3 FOR THE LIST OF MATERIALS.

F53278 S0006591160_V2

Station 1088 Bulkhead Identification
Figure 2 (Sheet 1 of 2)

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G44452 S0006591162_V2

Station 1088 Bulkhead Identification
Figure 2 (Sheet 2 of 2)

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Table 2:

LIST OF MATERIALS FOR FIGURE 2, DETAIL A				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Chord		BAC1514-3275 7075-T62 extrusion as given in QQ-A-200/11	
[2]	Chord		7075-T73 die forging as given in QQ-A-367	
[3]	Chord (2)		BAC1506-4450 7075-T73 extrusion as given in QQ-A-200/11	
[4]	Web Assembly, Upper Center Web (3)	0.200 (5.08)	7075-T6 sheet as given in QQ-A-250/12	
[5]	Tee (2)		BAC1505-100119 7075-T3511 extrusion as given in QQ-A-200/11	
[6]	Bonded Web Assembly Web (3)	0.200 (5.08)	BAC5514-5101 as given in BMS 5-101, Type II, Grade 5 adhesive 7075-T6 sheet as given in QQ-A-250/12	
[7]	Intercostal (2)	0.063 (1.6)	7075-T62 clad sheet as given in QQ-A-250/13	
[8]	Chord (2)		7050-T7451 plate as given in BMS 7-323, Type I	
[9]	Angle		AND10133-0601 7075-T6511 extrusion as given in QQ-A-200/11	
[10]	Stiffener		BAC1520-2792 7075-T6511 extrusion as given in QQ-A-200/11	
[11]	Stiffener		AND10136-2002 7075-T62 extrusion as given in QQ-A-200/11	
[12]	Stiffener		BAC1504-8254 7075-T6511 extrusion as given in QQ-A-200/11	
[13]	Stiffener (2)		AND10135-1005 7075-T6511 extrusion as given in QQ-A-200/11	
[14]	Stiffener		BAC1505-100320 7075-T73511 extrusion as given in QQ-A-200/11	
[15]	Lower Chord		BAC1514-1712 7075-T62 extrusion as given in QQ-A-200/11	
[16]	Pan Assembly Pan (4)	0.032 (0.81)	Ti-6Al-4V titanium sheet as given in MIL-T-9046, Code AB-1, Condition A	
[17]	Web	0.032 (0.81)	7075-T6 clad sheet as given in QQ-A-250/13	
[18]	Stiffener		AND10136-2002 7075-T62 extrusion as given in QQ-A-200/11	
[19]	Fitting Assembly (2)		7075-T73 bar as given in QQ-A-200/11. Refer to the Boeing production drawing for the machined thicknesses	
[20]	Doubler (2)	0.100 (2.54)	7075-T6 clad sheet as given in QQ-A-250/13	
[21]	Stiffener		AND10134-1404 7075-T62 extrusion as given in QQ-A-200/11	
[22]	Stiffener		AND10134-1407 7075-T62 extrusion as given in QQ-A-200/11	

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Table 2: (Continued)

LIST OF MATERIALS FOR FIGURE 2, DETAIL A				
ITEM	DESCRIPTION	T*[1]	MATERIAL	EFFECTIVITY
[23]	Stiffener		AND10136-2001 7075-T6511 extrusion as given in QQ-A-200/11	
[24]	Stiffener		BAC1506-4449 7075-T6511 extrusion as given in QQ-A-200/11	
[25]	Stiffener (2)		AND10141-2001 7075-T6511 extrusion as given in QQ-A-200/11	
[26]	Stiffener		BAC1490-2865 7075-T62 clad sheet as given in QQ-A-250/13	
[27]	Angle		AND10134-1204 7075-T6511 extrusion as given in QQ-A-200/11	
[28]	Stiffener		BAC1520-2793 7075-T6511 extrusion as given in QQ-A-200/11	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

Table 3:

LIST OF MATERIALS FOR FIGURE 2, DETAIL B				
ITEM	DESCRIPTION	T*[1]	MATERIAL	EFFECTIVITY
[29]	Chord		BAC1514-3275 7075-T62 extrusion as given in QQ-A-200/11	
[30]	Chord		BAC1506-4450 7075-T73 extrusion as given in QQ-A-200/11	
[31]	Chord		BAC1506-4450 7075-T73 extrusion as given in QQ-A-200/11	
[32]	Chord	0.210 (5.33)	7075-T7451 plate as given in AMS 4050	
[33]	Chord		7075-T73 forged aluminum as given in QQ-A-367	
[34]	Stiffener Assembly Stiffener Stiffener		 BAC1503-100022 7075-T6511 extrusion as given in QQ-A-200/11 BAC1503-100232 2024-T3511 extrusion as given in QQ-A-200/3	
[35]	Stiffener		AND10135-1005 7075-T6511 extrusion as given in QQ-A-200/11	
[36]	Stiffener (3)		AND10135-1004 7075-T6511 extrusion as given in QQ-A-200/11	
[37]	Chord		7050-T7451 plates as given in BMS 7-323, Type I	
[38]	Pan	0.032 (0.81)	Ti-6Al-4V titanium sheet as given in MIL-T-9046, Code AB-1, in the annealed condition	
[39]	Stiffener	0.063 (1.60)	7075-T62 clad sheet as given in QQ-A-250/13	
[40]	Pan	0.032 (0.81)	Ti-6Al-4V titanium sheet as given in MIL-T-9046, Code AB-1, in the annealed condition	
[41]	Stiffener		BAC1505-101001 7075-T73511 extrusion as given in QQ-A-200/11	
[42]	Bulkhead Fitting	0.040 (1.02)	Ti-CP commercially pure titanium as given in MIL-T-9046, Code CP-1, in the annealed condition	

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Table 3: (Continued)

LIST OF MATERIALS FOR FIGURE 2, DETAIL B				
ITEM	DESCRIPTION	T*[1]	MATERIAL	EFFECTIVITY
[43]	Channel	0.080 (2.03)	7075-T62 clad sheet as given in QQ-A-250/13	
[44]	Stiffener		BAC1505-101677 7075-T73511 extrusion as given in QQ-A-200/11	
[45]	Doubler	0.10 (2.54)	7075-T6 clad sheet as given in QQ-A-250/13	
[46]	Stiffener		7050-T7451 plate as given in AMS 4050	
[47]	Stiffener		AND10134-1404 7075-T6511 extrusion as given in QQ-A-200/11	
[48]	Plate	0.050 (2.54)	7075-T6 clad sheet as given in QQ-A-250/13	
[49]	Stiffener		AND10134-1205 7075-T6511 extrusion as given in QQ-A-200/11	
[50]	Stiffener		AND10136-2002 7075-T62 extrusion as given in QQ-A-200/11	
[51]	Web (2)	0.032 (0.81)	7075-T6 clad sheet as given in QQ-A-250/13	
[52]	Stiffener		BAC1490-2865 7075-T62 clad sheet as given in QQ-A-250/13	
[53]	Stiffener (3)		AND10135-1004 7075-T6511 extrusion as given in QQ-A-200/11	
[54]	Stiffener		AND10135-1005 7075-T6511 extrusion as given in QQ-A-200/11	
[55]	Stiffener		BAC1503-100022 7075-T6511 extrusion as given in QQ-A-200/11	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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NOTE: REFER TO TABLE 4 FOR THE LIST OF MATERIALS.

VIEW IS LOOKING AFT

A

N78798 S0006591164_V2

Station 1088 Bulkhead Location
Figure 3 (Sheet 1 of 3)

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Station 1088 Bulkhead Location
Figure 3 (Sheet 2 of 3)

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N79826 S0006591167_V1

Station 1088 Bulkhead Location
Figure 3 (Sheet 3 of 3)

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Table 4:

LIST OF MATERIALS				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Bulkhead, Failsafe	4.000 (101.6)	7050-T7451 Plate as given in BMS 7-323, Type I	
[2]	Bulkhead, Primary	3.200 (81.28)	7050-T7451 Plate as given in BMS 7-323, Type I	
[3]	Chord, Failsafe LH / RH	1.300 (33.02)	7050-T7451 Plate as given in AMS 4050	
[4]	Channel - LH / RH	0.080 (2.03)	7075-T62 clad Sheet as given in QQ-A-250/13.	
[5]	Chord, Auxiliary - Forward	2.500 (63.50)	7050-T7451 Plate as given in BMS 7-323, Type I	
[6]	Chord, Auxiliary - Aft	3.400 (86.36)	7050-T7451 Plate as given in BMS 7-323, Type I	
[7]	Stiffener		BAC1505-100974 7075-T6511 extrusion as given in QQ-A-200/11	
[8]	Fitting, Jack Pad	2.500 (63.50	7050-T7451 Plate as given in BMS 7-323, Type I	
[9]	Angle, Jack Pad		BAC1503-100220 7075-T6511 extrusion as given in QQ-A-200/11	
[10]	Stiffener		BAC1503-100434 7075-T6511 extrusion as given in QQ-A-200/11	
[11]	Stiffener	0.100 (2.54)	7075-T62 clad sheet as given in QQ-A-250/13	
[12]	Stiffener	0.063 (1.60)	7075-T62 clad sheet as given in QQ-A-250/13	
(13)	Pan	0.032 (0.81)	Ti-6Al-4V titanium sheet as given in MIL-T-9046, Code AB-1, Condition A	
[14]	Stiffener		AND10136-2002, 7075-T73511 extrusion as given in QQ-A-200/11	
(15)	Pan	0.032 (0.81)	Ti-6Al-4V titanium sheet as given in AMS 4911 Condition A	
[16]	Stiffener		AND10134-1404 7075-T6511 extrusion as given in QQ-A-200/11	
[17]	Stiffener		AND10134-1205 7075-T6511 extrusion as given in QQ-A-200/11	
[18]	Stiffener		BAC1503-101677 7075-T73511 extrusion as given in QQ-A-200/11	
[19]	Bulkhead Fitting Assembly			
	Cylinder	0.040 (1.02)	Ti-6AL-4V titanium sheet as given in MIL-T-9046, Cond A	
	Doubler	0.040 (1.02)	Ti-6AL-4V titanium sheet as given in MIL-T-9046, Cond A	
[20]	Stiffener	0.063 (1.6)	7075-T62 clad sheet as given in QQ-A-250/13	
[21]	Rub Block		Cotton fabric phenolic resin as given in MIL-P-15035 TYP FBM	
(22)	Pan	0.032 (0.81)	Ti-6Al-4V titanium sheet as given in AMS 4911 Condition A	
[23]	Fitting, Stabilizer Jackscrew Lower mount	0.380 (9.652)	7073-T73 Die - forging as given in BMS 7-186	

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Table 4: (Continued)

LIST OF MATERIALS				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[24]	Stiffener		7050-T7451 Plate as given in BMS 7-323, Type I	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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IDENTIFICATION 3 - STATION 1156 BULKHEAD STRUCTURE

NOTES

- REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

1 REFER TO FIGURE 2 FOR THE AIRPLANE LINE NUMBERS 1 THRU 1198.
REFER TO FIGURE 3 FOR THE AIRPLANE LINE NUMBERS 1199 AND ON.

U58654 S0000203304_V1

Station 1156 Bulkhead Location

Figure 1

Table 1:

REFERENCE DRAWINGS	
DRAWING NUMBER	**TITLE**
140A4812	Bulkhead - Horizontal Stabilizer Support, Station 1156, Functional Collector
148A2601	Bulkhead Installation - Station 1156
148A2602	Side Load Beam Installation - Station 1156 Bulkhead
148A2650	Hinge Beam Installation - Horizontal Stabilizer Support, Station 1156 Bulkhead

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FRONT VIEW

NOTES

- REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

F53351 S0006591172_V1

Station 1156 Bulkhead Structure Identification
Figure 2 (Sheet 1 of 2)

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K02428 S0006591173_V2

Station 1156 Bulkhead Structure Identification
Figure 2 (Sheet 2 of 2)

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Table 2:

LIST OF MATERIALS				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Tee (4)	0.045 (1.14)	BAC1505-100310 7075-T6511 extrusion as given in QQ-A-200/11	
[2]	Stiffener - Upper Deck		BAC1514-2697 7075-T6511 extrusion as given in QQ-A-200/11 (Optional: 7150-T77511 bar as given in BMS 7-306)	
[3]	Beam (2)		7050-T7451 plate as given in AMS 4050 (Grain direction controlled part)	
[4]	Beam Bulkhead (2)	0.040 (1.02)	7075-T6 clad sheet as given in QQ-A-250/13	
[5]	Splice Angle	0.063 (1.60)	7075-T62 clad sheet as given in QQ-A-250/13	
[6]	Failsafe Angle (4)		7050-T7451 plate as given in AMS 4050 (Grain direction controlled part)	
[7]	Tee (4)		BAC1505-29548 7075-T6511 extrusion as given in QQ-A-200/11	
[8]	Stiffener Tie		AND10134-1407 7075-T6511 extrusion as given in QQ-A-200/11	
[9]	Splice Angle	0.080 (2.03)	7075-T62 clad sheet as given in QQ-A-250/13	
[10]	Torque Box Chord (2)	0.080 (2.03)	7075-T62 clad sheet as given in QQ-A-250/13	
[11]	Stiffener - Lower Deck		AND10133-1203 7075-T6511 extrusion as given in QQ-A-200/11	
[12]	Chord Cap	0.080 (2.03)	7075-T62 clad sheet as given in QQ-A-250/13	
[13]	Angle	0.063 (1.6)	7075-T62 clad sheet as given in QQ-A-250/13	
[14]	Stiffener (2)		AND10133-0601 2024-T3511 extrusion as given in QQ-A-200/3	
[15]	Support Channel (4)		7050-T7451 plate as given in AMS 4050 (Grain direction controlled part)	
[16]	Upper Bulkhead Chord		BAC1506-1808 7075-T6 extrusion as given in QQ-A-200/11	
[17]	Web Assembly			
	Doubler (2)	0.090 (2.29)	7075-T6 sheet as given in QQ-A-250/12	
	Doubler	0.080 (2.03)	7075-T62 sheet as given in QQ-A-250/12	
	Doubler	0.050 (1.27)	7075-T6 sheet as given in QQ-A-250/12	
	Web	0.125 (3.18)	2024-T3 sheet as given in QQ-A-250/4. Refer to the Boeing production drawings for the chem-mill thicknesses	
[18]	Stiffener (2)		BAC1503-100016 7075-T6511 extrusion as given in QQ-A-200/11	
[19]	Stiffener Assembly			
	Stiffener		BAC1503-100026 7075-T6511 extrusion as given in QQ-A-200/11	
	Stiffener		BAC1503-100344 7075-T6511 extrusion as given in QQ-A-200/11	
	Angle		AND10133-1001 7075-T73511 extrusion as given in QQ-A-200/11	

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Table 2: (Continued)

LIST OF MATERIALS				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[20]	Stiffener (2)		BAC1503-100119 7075-T6511 extrusion as given in QQ-A-200/11	
[21]	Strap - Failsafe (2)		7050-T7451 plate as given in AMS 4050 (Grain direction controlled part)	
[22]	Splice Angle - Aft Lower (2)	0.056 (1.42)	7075-T62 clad sheet as given in QQ-A-250/13	
[23]	Closeout Fitting Assembly Closeout Fitting Hold Open Fitting		 7050-T7451 plate as given in AMS 4050 7050-T7451 plate as given in AMS 4050	
[24]	Frame Chord		BAC1503-100386 7075-T62 extrusion as given in QQ-A-200/11	
[25]	Lower Bulkhead Chord	0.080 (2.03)	7075-T62 clad sheet as given in QQ-A-250/13	
[26]	Stiffener		BAC1514-3217 7075-T6511 extrusion as given in QQ-A-200/11	
[27]	Stiffener (2)		BAC1503-100383 7075-T6511 extrusion as given in QQ-A-200/11	
[28]	Support Zee (2)		AND10138-0604 7075-T6511 extrusion as given in QQ-A-200/11	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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FRONT VIEW

NOTE: REFER TO TABLE 3 FOR THE LIST OF MATERIALS.

N62153 S0006591175_V1

Station 1156 Bulkhead Structure Identification
Figure 3 (Sheet 1 of 5)

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Station 1156 Bulkhead Structure Identification
Figure 3 (Sheet 2 of 5)

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VIEW IS ROTATED 90° CLOCKWISE

D-D

VIEW IS ROTATED 90° COUNTER CLOCKWISE

E-E

N62287 S0006591177_V1

Station 1156 Bulkhead Structure Identification
Figure 3 (Sheet 3 of 5)

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HINGE BEAM ASSEMBLY

A

N62391 S0006591178_V1

Station 1156 Bulkhead Structure Identification
Figure 3 (Sheet 4 of 5)

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N62411 S0006591179_V1

Station 1156 Bulkhead Structure Identification
Figure 3 (Sheet 5 of 5)

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Table 3:

LIST OF MATERIALS				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Bulkhead, Machined	3.200 (81.28)	7050-T7451 plate as given in BMS 7-323, Type I	
[2]	Closeout Fitting Assembly			
	Firewall Angles	0.050 (1.270)	2024-T42 clad sheet as given in QQ-A-250/5	
	Fitting	1.250 (31.75)	7050-T7451 plate as given in AMS 4050	
[3]	Chord Strap	0.080 (2.030)	7075-T62 clad sheet as given in QQ-A-250/13	
[4]	Chord	0.080 (2.030)	7075-T62 clad sheet as given in QQ-A-250/13	
[5]	Angle	0.063 (1.600)	7075-T62 clad sheet as given in QQ-A-250/13	
[6]	Bracket		BAC1503-4363 7075-T73511 extrusion as given in QQ-A-200/11	
[7]	Stiffener Assembly (2)			
	Stiffener		BAC1503-100119 7075-T6511 extrusion as given in QQ-A-200/11	
	Bracket		BAC1503-100386 7075-T6511 extrusion as given in QQ-A-200/11	
	Clip		BAC1505-100541 7075-T6511 extrusion as given in QQ-A-200/11	
[8]	Stiffener		BAC1503-100016 7075-T6511 extrusion as given in QQ-A-200/11	
[9]	Stiffener Lower Deck		BAC1514-3217 7075-T6511 extrusion as given in QQ-A-250/11	
[10]	Tee (4)		BAC1505-29548 7075-T6511 extrusion as given in QQ-A-200/11	
[11]	Clip Tee		BAC1505-100315 7075-T6511 extrusion as given in QQ-A-200/11	
[12]	Stiffener Upper Deck		BAC1514-2697 7075-T6511 extrusion as given in QQ-A-200/11	
[13]	Bracket	0.090 (2.290)	6013-T4 bare sheet as given in AMS 4347	
[14]	Bracket	0.050 (1.270)	2219-T62 bare sheet as given in QQ-A-250/30	
[15]	Support Channel (4)	2.000 (50.80)	7050-T7451 plate as given in AMS 4050	
[16]	Strap - Failsafe (2)	0.900 (22.86)	7050-T7451 plate as given in AMS 4050	
[17]	Beam	1.500 (38.10)	7050-T7451 plate as given in AMS 4050	
[18]	Beam	1.500 (38.10)	7050-T7451 plate as given in AMS 4050	
[19]	Beam Bulkhead	0.040 (1.02)	7075-T6 clad sheet as given in QQ-A-250/13	

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Table 3: (Continued)

LIST OF MATERIALS				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[20]	Beam, Bulkhead Angle		AND10133-0601 2024-T3511 extrusion as given in QQ-A-200/3	
[21]	Hinge Fitting (2)	2.500 (63.50)	7050-T7451 plate as given in AMS 4050	
[22]	Hinge Fitting (2)	2.900 (73.66)	7050-T7451 plate as given in AMS 4050	
[23]	Failsafe Angle Inboard (2)	1.500 (38.10)	7050-T7451 plate as given in AMS 4050	
[24]	Failsafe Angle Outboard (2)	1.500 (38.10)	7050-T7451 plate as given in AMS 4050	
[25]	Clip Failsafe Lower (2)	0.100 (2.540)	7075-T62 clad sheet as given in QQ-A-250/13	
[26]	Bracket		BAC1514-1116 7075-T76511 extrusion as given in QQ-A-200/11	
[27]	Bracket (2)		BAC1505-34228 7075-T73511 extrusion as given in QQ-A-200/11	
[28]	Angle		BAC1503-100137 7075-T6511 extrusion as given in QQ-A-200/11	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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IDENTIFICATION 4 - STATION 1016 BULKHEAD STRUCTURE

NOTE: REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

U58607 S0000203096_V1

Station 1016 Bulkhead Location

Figure 1

Table 1:

REFERENCE DRAWINGS	
DRAWING NUMBER	**TITLE**
148A0933	Lower Panel Integration Instl
148A2230	Web Assembly STA 1016 Bulkhead

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NOTE: REFER TO TABLE 2 FOR THE LIST OF MATERIALS

U41304 S0000193718_V1

Station 1016 Bulkhead Identification
Figure 2

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Table 2:

LIST OF MATERIALS FOR FIGURE 2				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Monolithic A-Frame	1.800 (45.72)	7075-T7351 plate as given in QQ-A-250/12	
[2]	Doubler Strap	0.100 (2.5)	2024-T3 clad sheet as given in QQ-A-250/5	
[3]	Chord	5.900 (149.86)	7050-T7451 plate as given in BMS 7-323	
[4]	Tee Chord	4.500 (114.3)	7050-T7451 plate as given in BMS 7-323	
[5]	Chord	1.200 (30.48)	7050-T7451 plate as given in BMS 7-323	
[6]	Splice Strap	1.250 (3.175)	2024-T42 clad sheet as given in QQ-A-250/5	
[7]	Strap	0.100 (2.5)	7075-T6 clad sheet as given in QQ-A-250/12	
[8]	Channel	1.500 (38.10)	7075-T7351 plate as given in QQ-A-250/12	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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IDENTIFICATION 5 - STATION 1042 AFT PRESSURE BULKHEAD STRUCTURE

NOTE: REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

U58618 S0000203307_V1

Station 1042 Aft Pressure Bulkhead Location

Figure 1

Table 1:

REFERENCE DRAWINGS	
DRAWING NUMBER	**TITLE**
148A2311	Web
148A2301	Bulkhead Instl
148A1687	Integration Instl
148A0931	Upper Panel Installation
148A0933	Lower Panel - Integration Installation

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VIEW WHEN YOU LOOK AFT

DETAIL I

NOTES

- REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

U41070 S0000193748_V1

Station 1042 Aft Pressure Bulkhead Identification
Figure 2 (Sheet 1 of 5)

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VIEW WHEN YOU LOOK FORWARD

DETAIL II

U41080 S0000194849_V1

Station 1042 Aft Pressure Bulkhead Identification
Figure 2 (Sheet 2 of 5)

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U41200 S0000194850_V1

Station 1042 Aft Pressure Bulkhead Identification
Figure 2 (Sheet 3 of 5)

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1314573 S0000229436_V1

Station 1042 Aft Pressure Bulkhead Identification
Figure 2 (Sheet 4 of 5)

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Station 1042 Aft Pressure Bulkhead Identification
Figure 2 (Sheet 5 of 5)

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Table 2:

LIST OF MATERIALS FOR FIGURE 2				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Web	0.15 (3.81)	2024-T3 Bare Sheet as given in QQ-A-250/4. Refer to Figure 3 for the thicknesses of the chem-milled areas.	
[2]	Stiffener		BAC 1509-100728 7075-T73511 Extruded Shape	
[3]	Strap		7050-T7451 Plate as given in AMS 4050	
[4]	T Chord		7050-T7451 Plate as given in BMS 7-323	
[5]	Fitting		7050-T7451 Plate as given in AMS 4050	
[6]	Fitting		7050-T7451 Plate as given in AMS 4050	
[7]	Fitting		7050-T7451 Plate as given in AMS 4050	
[8]	Stabilizer		7050-T7451 Plate as given in AMS 4050	
[9]	Intercostal		7050-T7451 Plate as given in AMS 4050	
[10]	Intercostal		7050-T7451 Plate as given in BMS 7-323	
[11]	Diagonal Beam Assembly Intercostal Fitting		7050-T7451 Plate as given in BMS 7-323 7050-T7451 Plate as given in BMS 7-323	
[12]	Fitting		7050-T7451 Plate as given in AMS 4050	
[13]	Beam		7050-T7451 Plate as given in BMS 7-323	
[14]	Fitting		7050-T7451 Plate as given in AMS 4050	
[15]	Horizontal Beam Assembly Intercostal Fitting		7050-T7451 Plate as given in BMS 7-323 7050-T7451 Plate as given in AMS 4050	
[16]	Intercostal		7050-T7451 Plate as given in BMS 7-323	
[17]	Strap		7050-T7451 Plate as given in AMS 4050	
[18]	Fitting		7050-T7451 Plate as given in AMS 4050	
[19]	Intercostal		7050-T7451 Plate as given in AMS 4050	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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0.090
(62 LOCATIONS)
0.150
(STOCK)
0.090
0.090
0.060
0.060
0.060
0.060
0.060
0.080
0.125
0.060
0.060
0.060
0.060
0.060

ALLOWABLE DAMAGE 1 - STATION 1016 AFT PRESSURE BULKHEAD STRUCTURE

1. Applicability

A. This subject gives the allowable damage limits for the Station 1016 pressure bulkhead shown in Aft Pressure Bulkhead Location - Station 1016, Figure 101/ALLOWABLE DAMAGE 1.

G45683 S0006591183_V2

Aft Pressure Bulkhead Location - Station 1016
Figure 101

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NOTE: ALL PARTS ARE MADE OF ALUMINUM UNLESS GIVEN DIFFERENTLY.

VIEW LOOKING AFT

G45759 S0006591184_V2

Aft Pressure Bulkhead - Station 1016
Figure 102 (Sheet 1 of 4)

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NOTE: ALL PARTS ARE MADE OF ALUMINUM UNLESS GIVEN DIFFERENTLY.

REAR VIEW

G45775 S0006591185_V1

Aft Pressure Bulkhead - Station 1016
Figure 102 (Sheet 2 of 4)

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A–A

B–B

G89230 S0006591186_V1

Aft Pressure Bulkhead - Station 1016
Figure 102 (Sheet 3 of 4)

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G89364 S0006591187_V1

Aft Pressure Bulkhead - Station 1016
Figure 102 (Sheet 4 of 4)

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2. General

A. Remove the parts as necessary to get access to the damaged area.

B. Refer to Paragraph 4./ALLOWABLE DAMAGE 1 for the allowable damage limits.

(1) Refer to Table 101/ALLOWABLE DAMAGE 1 for the allowable damage limits paragraph that is applicable to each type of structure.

Table 101:

PARAGRAPH REFERENCES FOR THE ALLOWABLE DAMAGE LIMITS	
TYPE OF STRUCTURE	**PARAGRAPH**
Dome Webs, Doublers (on the angle chord), Straps, and Pan	4.A
Web (except the Dome Web),	4.B
Chords, Angles, and Splice Angles	4.C
Pan Dome and Cover Dome, Doublers and Triplers (on the Dome Web)	4.D
Beams, Stiffeners, and Channels	4.E
Intercostals	4.F

C. Remove the damage as necessary.

(1) Refer to 51-10-02, GENERAL for the inspection and removal of damage.

(2) Refer to 51-30-03, GENERAL for possible sources of abrasives and other materials you can use to remove damage.

(3) Refer to 51-30-05, GENERAL for possible sources of equipment and tools you can use to remove damage.

D. After you remove the damage, do the steps that follow:

(1) Apply a chemical conversion coating to the bare surfaces of the reworked area. Refer to 51-20-01, GENERAL.

(2) Apply one layer of BMS 10-11, Type I primer to the surface of the reworked area. Refer to SOPM 20-41-02.

(3) Apply one layer of BMS 3-23, Type II corrosion inhibiting compound to the surface of the reworked area. Refer to 51-20-01, GENERAL.

3. References

Reference	Title
51-10-02, GENERAL	Inspection and Removal of Damage
51-20-01, GENERAL	Protective Treatment of Metallic and Composite Materials
51-30-03, GENERAL	Sources for Non-Metallic Repair Materials
51-30-05, GENERAL	Equipment and Tools For Repairs
53-80-08, REPAIR 1	BSTA 1016 Pressure Bulkhead Cutout Repair
53-80-08, REPAIR 2	BSTA 1016 Pressure Bulkhead (Oil Can) Condition
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes
737 NDT Part 6, 51-00-00, Procedure 16	Aluminum Part Fastener Hole Inspection (Rotary Scanner)
737 NDT Part 6, 51-00-00, Procedure 23	Aluminum Part Surface Inspection (Impedance Plane Display)
737 NDT Part 6, 51-00-00, Procedure 4	Surface Inspection of Aluminum Parts (Meter Display)
737 NDT Part 6, 53-10-41	Eddy Current BS 1016 Aft Pressure Bulkhead

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(Continued)

Reference	Title
737 NDT Part 6, 53-10-54	BS 1016 Aft Pressure Bulkhead Web at the "Y" Chord

4. **Allowable Damage Limits**

A. Dome Web, Strap, Pan, and Doublers in the lower half of the bulkhead

(1) Cracks:

(a) Remove the damage as shown in Figure 103/ALLOWABLE DAMAGE 1, Details A, B, and C.

(2) Nicks, Gouges, Scratches, and Corrosion:

(a) Remove the damage as shown in Figure 103/ALLOWABLE DAMAGE 1, Details A, B, C, D, and E.

(3) Dents:

(a) Damage is permitted as shown in Figure 103/ALLOWABLE DAMAGE 1, Detail F.

1) If there is an "oil can" condition, refer to Paragraph 4.A.(4)/ALLOWABLE DAMAGE 1.

(4) "Oil Can" Condition

NOTE: An “Oil Can” is an area on the pressure dome web, at the station 1016 bulkhead, that has visibly changed forward from the initial contour of the pressure dome web.

(a) When inspecting for an “Oil Can” condition, make sure the airplane is not jacked, cradled, or supported at or aft of the pressure bulkhead.

(b) An "oil can" condition is permitted without a repair for 12,000 flight cycles, as a time-limited condition provided:

1) You NDI inspect as given in Paragraph 4.A.(4)(e)1) through Paragraph 4.A.(4)(e)7) the “oil can” area at each 1200 flight cycle interval, or more frequently.

2) You install a repair at or before 12,000 flight cycles from the time the damage is found.

3) The damage is smooth and free from sharp creases, gouges, or cracks.

4) The damage has not caused any deformation to a stiffener, strap, chord, or doubler.

5) The “oil can” damage is at least 0.60 inch (15.2 mm) away from any adjacent fasteners. Fasteners are not permitted inside the “oil can” damage area.

6) There is no indication of pressure leakage, damaged holes, and loose or missing fasteners.

7) The maximum “oil can” depth shall not be more than 0.20 inch (5.1 mm). The width to depth (w/d) ratio shall not be more than the limits given in Figure 103/ ALLOWABLE DAMAGE 1, Sheet 9.

(c) More than one "oil can" condition is permitted if the conditions given in Paragraph 4.A.(4)(b)3)/ALLOWABLE DAMAGE 1 thru Paragraph 4.A.(4)(b)7) are met, and the edge of the “oil can” is located no less than 2.0 inches (50.80 mm) from the edge of another “oil can”.

(d) If an "oil can" condition does not meet the conditions given in Paragraph 4.A.(4)(b)3)/ ALLOWABLE DAMAGE 1 thru Paragraph 4.A.(4)(b)7), then the “oil can” must be repaired.

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(e) Oil Can allowable damage limits are given in Figure 103/ALLOWABLE DAMAGE 1, Sheet 9. Make sure that you inspect the oil can and surrounding structure for cracks as described below:

1) Do a detailed visual and High Frequency Eddy Current (HFEC) surface inspection of the gore web for cracks at the oil can location.

2) Do an NDT inspection of the web at all fastener locations common to the outer bay area in which the “oil can” condition is found.

3) Do an NDT inspection of the web at the locations that follow as applicable:

a) At a web lap splice hidden fastener row

b) At web lap splices below the circumferential tear straps

c) At circumferential tear strap splices

d) At the web below the circumferential tear straps

e) At a doubler above a web lap splice

f) At the outer circumferential tear strap above a doubler

g) At a doubler above a web

h) At the pan that is located between S-25L and S-25R

i) At the web common to the “Y” chord

j) At the web common to the radial stiffeners

k) At the web common to a lap splice visible from the aft side of the bulkhead

4) Do an NDT inspection of the web from the aft side of the aft pressure bulkhead as given in 737 NDT Part 6, 53-10-41 for all locations listed in Paragraph 4.A.(4)(e)3) other than the:

a) Web common to the “Y” chord

b) Web common to the radial stiffeners

c) Web common to a lap splice, visible from the aft side of the bulkhead.

5) At the web common to the radial stiffeners, from the aft side of the pressure bulkhead, do a High Frequency Eddy Current (HFEC) inspection of the web around the fasteners as given in 737 NDT Part 6, 51-00-00, Procedure 4 or 737 NDT Part 6, 51-00-00, Procedure 23.

6) At the web, common to the lap splice, from the aft side of the bulkhead, do a High Frequency Eddy Current (HFEC) inspection of the web around the fasteners as given in 737 NDT Part 6, 51-00-00, Procedure 4 or 737 NDT Part 6, 51-00-00, Procedure 23.

7) If the “oil can” is in the outer bay adjacent to the web common to the “Y” chord, inspect the locations in Paragraph 4.A.(4)(e)3)a) thru Paragraph 4.A.(4)(e)3)k) as applicable.

a) For locations above S-15L and S-15R, do an inspection as given in 737 NDT Part 6, 53-10-54 from the aft side of the bulkhead as shown in Figure 105/ALLOWABLE DAMAGE 1, Sheet 1. It is not necessary to inspect the web in the area of the steel straps.

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b) As an alternative to doing the inspection from the aft side of the bulkhead, you can do an NDT inspection at the aft fastener row from the forward side of the bulkhead as shown in Figure 106/ALLOWABLE DAMAGE 1, Sheet 1. Do the inspection as given in 737 NDT Part 6, 51-00-00, Procedure 4 or 737 NDT Part 6, 51-00-00, Procedure 23.

NOTE: Where a radial stiffener overlaps the “Y” chord at the perimeter of the web at the fastener locations, inspect as given in 737 NDT Part 6, 51-00-00, Procedure 4 or 737 NDT Part 6, 51-00-00, Procedure 23. Inspect the web along the edge of the radial stiffener adjacent to the fastener locations to be inspected. Inspect the web to 1.0 inch on each side of the fastener row.

Where the fin terminal fitting doublers overlap the web, inspect the web along the edge of the doublers when you inspect from the forward side. Inspect as given in 737 NDT Part 6, 51-00-00, Procedure 4 or 737 NDT Part 6, 51-00-00, Procedure 23.

c) For locations below S-15L and S-15R, do an inspection from the forward side of the bulkhead as given in 737 NDT Part 6, 51-00-00, Procedure 4 or 737 NDT Part 6, 51-00-00, Procedure 23. Refer to Figure 107/ALLOWABLE DAMAGE 1.

d) Do a Low Frequency Eddy Current (LFEC) inspection from the aft side of the bulkhead web at the “Y” chord splice and common to the floor structure. Inspect as given in 737 NDT Part 6, 53-10-54. Refer to Figure 107/ALLOWABLE DAMAGE 1.

NOTE: Where a radial stiffener overlaps the “Y” chord at the perimeter of the web at the fastener locations inspect as given in 737 NDT Part 6, 51-00-00, Procedure 4 or 737 NDT Part 6, 51-00-00, Procedure 23. Inspect the web along the edge of the radial stiffener adjacent to the fastener locations to be inspected. Inspect the web to 1.0 inch on each side of the fastener row.

e) If there is a crack in the web when you do a Low Frequency Eddy Current (LFEC) inspection, then do a High Frequency Eddy Current (HFEC) inspection from the opposite side of the bulkhead at the damage location.

f) If you can not get access to the web to do a High Frequency Eddy Current (HFEC) inspection, then remove the fasteners at the NDT inspection location. Then do an open hole eddy current inspection of the web as given in 737 NDT Part 6, 51-00-00, Procedure 16.

8) As an alternative to doing an inspection from the aft side of the bulkhead, you can do an NDT inspection from the forward side of the bulkhead as given in 737 NDT Part 6, 51-00-00, Procedure 4 or 737 NDT Part 6, 51-00-00, Procedure 23.

9) If you find any cracks, contact The Boeing Company for repair information or refer to 53-80-08, REPAIR 1 and 53-80-08, REPAIR 2 as applicable.

(5) ”Bulge” condition

(a) A “bulge” condition is any change of the pressure dome web aft of the initial contour. Refer to Figure 104/ALLOWABLE DAMAGE 1, Sheet 2 for the permitted allowable damage limits.

(6) Holes and Punctures are not permitted.

B. Webs (Except the Dome Web)

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(1) Cracks:

(a) Remove the damage as shown in Figure 103/ALLOWABLE DAMAGE 1, Details A, B, and C.

(2) Nicks, Gouges, Scratches, and Corrosion:

(a) You are permitted to do one of the procedures that follow:

1) Remove the damage as shown in Figure 103/ALLOWABLE DAMAGE 1, Details A, B, C, D, and E.

2) Drill out the damage as given in Holes and Punctures.

(3) Dents are permitted as shown in Figure 103/ALLOWABLE DAMAGE 1, Detail F if:

(a) They do not extend across an attached structure

(b) There is not an "oil can" condition.

(4) Holes and Punctures:

(a) The damage is permitted if it is:

1) A maximum of 0.25 inch (6.4 mm) in diameter

2) A minimum of 1.0 inch (25.4 mm) away from a fastener hole, the edge of the part, or other damage

3) Filled with a 2117-T3 or 2117-T4 protruding head rivet.

a) Install the rivet without sealant.

C. Chords, Angles, and Splice Angle

(1) Cracks:

(a) Remove the damage as shown in Figure 103/ALLOWABLE DAMAGE 1, Details A, B, G, and H.

(2) Nicks, Gouges, Scratches, and Corrosion:

(a) Remove the damage as shown in Figure 103/ALLOWABLE DAMAGE 1, Details A, B, E, G, H, I, and J.

(3) Dents are not permitted.

(4) Holes and Punctures are not permitted.

D. Pan Dome, Cover Dome, Triplers, and Doublers in the upper half of the bulkhead

(1) Cracks:

(a) Remove the damage as shown in Figure 103/ALLOWABLE DAMAGE 1, Details A, B, and C.

(2) Nicks, Gouges, Scratches, and Corrosion:

(a) Remove the damage as shown in Figure 103/ALLOWABLE DAMAGE 1, Details A, B, C, D, and E.

(3) Dents are not permitted.

(4) Holes and Punctures are not permitted.

E. Beams, Stiffeners, and Channels

(1) Cracks:

(a) Remove the damage as shown in Figure 103/ALLOWABLE DAMAGE 1, Details A, B, G, and H.

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(2) Nicks, Gouges, Scratches, and Corrosion:

(a) You are permitted to do one of the procedures that follow:

1) Remove the damage as shown in Figure 103/ALLOWABLE DAMAGE 1, Details A, B, E, G, H, I, and J.

2) Drill out the damage as given in Holes and Punctures.

(3) Dents are not permitted.

(4) Holes and Punctures are permitted if they are:

(a) In the free flange as shown in Figure 103/ALLOWABLE DAMAGE 1, Detail K.

1) The damage must not be more than 0.25 inch (6.4 mm) in diameter.

a) Fill the hole with a 2117-T3 or 2117-T4 protruding head rivet.

b) Install the rivet without sealant.

F. Intercostals

(1) Web

(a) Cracks:

1) Remove the damage as shown in Figure 103/ALLOWABLE DAMAGE 1, Details A B, and C.

(b) Nicks, Gouges, Scratches, and Corrosion:

1) Remove the damage as shown in Figure 103/ALLOWABLE DAMAGE 1, Details A, B, C, D, and E.

(c) Dents:

1) Refer to Figure 103/ALLOWABLE DAMAGE 1, Detail F for the damage that is permitted.

(d) Holes and Punctures are permitted if they are:

1) A maximum of 0.25 inch (6.4 mm) in diameter

2) A minimum of 1.0 inch (25.4 mm) away from a fastener hole, the edge of the part, or other damage

3) Filled with a 2117-T3 or 2117-T4 protruding head rivet.

a) Install the rivet without sealant.

(2) Flange

(a) Cracks are not permitted.

1) Remove the damage as shown in Figure 103/ALLOWABLE DAMAGE 1, Details A, B, and G.

(b) Nicks, Gouges, Scratches, and Corrosion:

1) Remove the damage as shown in Figure 103/ALLOWABLE DAMAGE 1, Details A, B, E, G, and I.

(c) Dents are not permitted.

(d) Holes and Punctures are not permitted.

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NOTES

- ALL DIMENSIONS ARE IN INCHES

1 FOR AIRPLANES THAT HAVE COMPLETED SERVICE BULLETIN 737-21-1149.

2 FOR AIRPLANES THAT HAVE NOT COMPLETED SERVICE BULLETIN 737-21-1149.

3 WHEN YOU INSPECT FOR 'OIL CANS' AND BULGES MAKE SURE THE AIRCRAFT IS NOT JACKED, CRADLED, OR SUPPORTED AFT OF THE PRESSURE BULKHEAD.

4 REPAIR AS GIVEN IN REPAIR 1 IS NECESSARY.

5 REPAIR AS GIVEN IN REPAIR 1 PREFERRED. REPAIR AS GIVEN IN REPAIR 2 IS AN ALTERNATIVE.

6 IF "OIL CAN" OR DENT OR BULGE NEEDING A REPAIR IS 6.0 INCHES (152.4 mm) OR LESS FROM THE CIRCUMFERENTIAL STRAP, REPAIR AS GIVEN IN REPAIR 1.

7 IF THE OIL CAN IS CONCAVE FORWARD OF THE DESIGN CONTOUR, AND IF THE OIL CAN IS PRESSED WITH 12 LBS OF HAND PRESSURE FROM THE FORWARD SIDE, THE WEB POPS AFT AND REMAINS AFT AFTER HAND PRESSURE IS RELEASED.

8 ALL CONDITIONS LISTED IN SRM SECTION 4.A(4)b)3) THROUGH 4.A(4)b)7) MUST BE MET.

2206944 S0000492439_V1

Allowable Damage Limits
Figure 103 (Sheet 1 of 9)

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REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER EDGE MARGINS DO NOT HAVE AN OVERLAP

A

REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER EDGE MARGINS HAVE AN OVERLAP

B

X = WIDTH OF THE MATERIAL THAT IS REMOVED
= A MAXIMUM OF 0.05 INCH (1.27 mm) 1
= A MAXIMUM OF 0.10 INCH (2.54 mm) 2

REMOVAL OF DAMAGED MATERIAL AT AN EDGE

C

400692 S0000137849_V2

Allowable Damage Limits
Figure 103 (Sheet 2 of 9)

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REMOVAL OF DAMAGED MATERIAL ON A SURFACE

D

X = DEPTH OF THE MATERIAL THAT IS REMOVED

X = A MAXIMUM OF 0.05T [1] OR 0.10T [2] FOR ALL STRUCTURE BUT THE DOME WEB ATTACH FLANGE

X = A MAXIMUM OF 0.010 INCH [1] (0.254 mm) OR 0.020 INCH [2] (0.51 mm) FOR THE DOME WEB ATTACH FLANGE

A–A

REMOVAL OF DAMAGE AROUND THE FASTENERS ON AN EDGE OR A SURFACE

E

X = DEPTH OF THE MATERIAL THAT IS REMOVED

X = A MAXIMUM OF 0.05T [1] OR 0.10T [2] ALL STRUCTURE BUT THE DOME ATTACH FLANGE

X = A MAXIMUM OF 0.010 INCH (0.254 mm) [1] OR 0.020 INCH (0.508 mm) [2] FOR THE DOME WEB ATTACH FLANGE

B–B

400693 S0000137850_V1

Allowable Damage Limits
Figure 103 (Sheet 3 of 9)

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DENT THAT IS PERMITTED

F

X = WIDTH OF THE MATERIAL THAT IS REMOVED
= A MAXIMUM OF 5 PERCENT OF THE WIDTH OF THE FLANGE 1
= A MAXIMUM OF 10 PERCENT OF THE WIDTH OF THE FLANGE 2

REMOVAL OF DAMAGED MATERIAL ON AN EDGE

G

400694 S0000137851_V1

Allowable Damage Limits
Figure 103 (Sheet 4 of 9)

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X = THE WIDTH OF THE MATERIAL THAT IS REMOVED
= A MAXIMUM OF 5 PERCENT OF THE WIDTH OF THE FLANGE 1
= A MAXIMUM OF 10 PERCENT OF THE WIDTH OF THE FLANGE 2

REMOVAL OF DAMAGED MATERIAL ON AN EDGE

H

400695 S0000137852_V1

Allowable Damage Limits
Figure 103 (Sheet 5 of 9)

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Y = WIDTH OF THE MATERIAL THAT IS REMOVED
= A MAXIMUM OF 5 PERCENT OF THE WIDTH OF THE FLANGE 1
= A MAXIMUM OF 10 PERCENT OF THE WIDTH OF THE FLANGE 2

REMOVAL OF DAMAGED MATERIAL
ON A SURFACE AT AN EDGE

I

400696 S0000137853_V1

Allowable Damage Limits
Figure 103 (Sheet 6 of 9)

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Y = WIDTH OF THE MATERIAL THAT IS REMOVED
= A MAXIMUM OF 5 PERCENT OF THE WIDTH OF THE FLANGE 1
= A MAXIMUM OF 10 PERCENT OF THE WIDTH OF THE FLANGE 2

REMOVAL OF DAMAGED MATERIAL
ON A SURFACE AT AN EDGE

J

D–D

400697 S0000137854_V1

Allowable Damage Limits
Figure 103 (Sheet 7 of 9)

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NOTE: HOLES ARE NOT PERMITTED IN A FLANGE RADIUS.

HOLES THAT ARE PERMITTED FOR THE REMOVAL OF DAMAGED MATERIAL IN THE FREE FLANGE

K

G45912 S0006591195_V1

Allowable Damage Limits
Figure 103 (Sheet 8 of 9)

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'OIL CAN' AND BULGE LIMITATIONS AND REPAIR REQUIREMENTS ON PRESSURE BULKHEAD
GRAPH I 3

2206945 S0000492445_V1

Allowable Damage Limits
Figure 103 (Sheet 9 of 9)

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NOTES

- AN OIL CAN IS AN AREA ON THE PRESSURE DOME WEB THAT HAS CHANGED FORWARD FROM THE INITIAL CONTOUR OF THE PRESSURE DOME WEB, AS SHOWN.
- D = DEFLECTION FORWARD OF THE INITIAL CONTOUR
  = 0.20 INCH (5.08 mm) OR LESS. REFER TO FIGURE 103, SHEETS 8 AND 9 FOR THE PERMITTED LIMITS.
- W = MINIMUM WIDTH OF OIL CAN AT THE PERIMETER.

G45943 S0000137855_V2

Allowable Damage Limits - "Oil Cans" and Bulges
Figure 104 (Sheet 1 of 2)

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NOTES

- A BULGE IS AN AREA ON THE PRESSURE DOME WEB THAT HAS CHANGED AFT FROM THE INITIAL CONTOUR OF THE PRESSURE DOME WEB, AS SHOWN.
- D = DEFLECTION AFT OF THE INITIAL CONTOUR
  = 0.20 INCH (5.08 mm) OR LESS.
- W = MINIMUM WIDTH OF BULGE AT THE PERIMETER.
- REFER TO FIGURE 103, SHEETS 8 AND 9 FOR THE PERMITTED DAMAGE LIMITS.

N84459 S0000137863_V2

Allowable Damage Limits - "Oil Cans" and Bulges
Figure 104 (Sheet 2 of 2)

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VIEW LOOKING FORWARD
A-A

N84253 S0000137856_V1

LFEC Inspection of the Web at the Y-Chord - Above S-15
Figure 105 (Sheet 1 of 2)

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N84255 S0000137857_V1

LFEC Inspection of the Web at the Y-Chord - Above S-15
Figure 105 (Sheet 2 of 2)

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HFEC Inspection of the Web at the Y-Chord - Above S-15
Figure 106 (Sheet 1 of 2)

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B-B

N84262 S0000137861_V1

HFEC Inspection of the Web at the Y-Chord - Above S-15
Figure 106 (Sheet 2 of 2)

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NDT Inspection of the Web at the Y-Chord - Below S-15
Figure 107

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ALLOWABLE DAMAGE 4 - STATION 1016 BULKHEAD STRUCTURE

1. Applicability

A. This subject gives the allowable damage limits for the Station 1016 Bulkhead Structure shown in Figure 101/ALLOWABLE DAMAGE 4.

U40669 S0000194921_V2

Station 1016 Bulkhead Location
Figure 101

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U40664 S0000194922_V1

Station 1016 Bulkhead
Figure 102

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2. General

A. Remove the parts as necessary to get access to the damaged area.

B. Refer to Paragraph 4./ALLOWABLE DAMAGE 4 for the allowable damage limits.

(1) Refer to Table 101/ALLOWABLE DAMAGE 4 for the allowable damage limits that are applicable to each type of structure.

Table 101:

PARAGRAPH REFERENCES FOR THE ALLOWABLE DAMAGE LIMITS	
TYPE OF STRUCTURE	**PARAGRAPH**
Doubler Strap, Splice Strap	Paragraph 4.A./ALLOWABLE DAMAGE 4
Monolithic Structure	Paragraph 4.B./ALLOWABLE DAMAGE 4
T-Chord, Inner Chord	Paragraph 4.C./ALLOWABLE DAMAGE 4
Channel, Strap	Paragraph 4.D./ALLOWABLE DAMAGE 4

C. Remove the damage as necessary.

(1) Refer to 51-10-02 for the inspection and removal of damage.

(2) Refer to 51-30-03 for possible sources of abrasives and other materials you can use to remove damage.

(3) Refer to 51-30-05 for possible sources of equipment and tools you can use to remove damage.

D. After you remove the damage, do the steps that follow:

(1) Apply a chemical conversion coating to the bare surfaces of the reworked areas. Refer to 51-20-01.

(2) Apply one layer of BMS 10-11, Type I primer to the surface of the reworked area. Refer to SOPM 20-41-02.

(3) Apply one layer of BMS 3-23, Type II corrosion inhibiting compound to the surface of the repair area. Refer to 51-20-01.

3. References

Reference	Title
51-10-02	INSPECTION AND REMOVAL OF DAMAGE
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-30-03	NON-METALLIC MATERIALS
51-30-05	EQUIPMENT AND TOOLS FOR REPAIRS
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes

4. Allowable Damage Limits

A. Doubler Strap, Splice Strap

(1) Cracks are not permitted.

(2) Nicks, Gouges, Scratches, and Corrosion are not permitted.

(3) Dents are not permitted.

(4) Holes and Punctures are not permitted.

B. Monolithic Structure

(1) Cracks:

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(a) Remove the damage as shown in Figure 103/ALLOWABLE DAMAGE 4, Details A , B, C, D, G, and H.

(2) Nicks, Gouges, Scratches, and Corrosion:

(a) Remove the damage as shown in Figure 103/ALLOWABLE DAMAGE 4, Details A, B, C, D, G, H, I and J.

(3) Dents are not permitted.

(4) Holes and Punctures are permitted if they are:

(a) In the free flange as shown in Figure 103/ALLOWABLE DAMAGE 4, Detail K.

1) The damage must not be more that 0.25 inch (6.4 mm) in diameter.

2) A minimum of 1.0 inch (25.4 mm) away from a fastener hole, the edge of a part or other damage.

3) Fill the hole with a 2117-T3 or 2117-T4 protruding head rivet.

a) Install the rivet without sealant.

(b) Damage not permitted on the web.

C. T-Chord, Inner Chord

(1) Cracks:

(a) Remove the damage as shown in Figure 103/ALLOWABLE DAMAGE 4, Details A , B, C, D, G, and H.

(2) Nicks, Gouges, Scratches, and Corrosion:

(a) Remove the damage as shown in Figure 103/ALLOWABLE DAMAGE 4, Details A, B, C, D, G, H, I and J.

(3) Dents are not permitted.

(4) Holes and Punctures are permitted if they are:

(a) In the free flange as shown in Figure 103/ALLOWABLE DAMAGE 4, Detail K.

1) The damage must not be more that 0.25 inch (6.4 mm) in diameter.

2) A minimum of 1.0 inch (25.4 mm) away from a fastener hole, the edge of a part or other damage.

3) Fill the hole with a 2117-T3 or 2117-T4 protruding head rivet.

a) Install the rivet without sealant.

D. Channel, Strap

(1) Cracks:

(a) Remove the damage as shown in Figure 103/ALLOWABLE DAMAGE 4, Details A , B, C, D, G, and H.

(2) Nicks, Gouges, Scratches, and Corrosion:

(a) Remove the damage as shown in Figure 103/ALLOWABLE DAMAGE 4, Details A, B, C, D, E, G, H, I and J.

(3) Dents are not permitted.

(4) Holes and Punctures are permitted if they are:

(a) In the free flange as shown in Figure 103/ALLOWABLE DAMAGE 4, Detail K.

1) The damage must not be more that 0.25 inch (6.4 mm) or 0.1H in diameter.

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2) A minimum of 1.0 inch (25.4 mm) away from a fastener hole, the edge of a part or other damage.

3) Fill the hole with a 2117-T3 or 2117-T4 protruding head rivet.

   a) Install the rivet without sealant.

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REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER EDGE MARGINS DO NOT HAVE AN OVERLAP

A

REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER EDGE MARGINS HAVE AN OVERLAP

B

X = WIDTH OF THE MATERIAL THAT IS REMOVED
= A MAXIMUM OF 0.10 INCH (2.54 mm)

REMOVAL OF DAMAGED MATERIAL AT AN EDGE

C

G46509 S0006591218_V1

Allowable Damage Limits
Figure 103 (Sheet 1 of 7)

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REMOVAL OF DAMAGED MATERIAL ON A SURFACE

D

A–A

REMOVAL OF DAMAGE AROUND THE FASTENERS ON AN EDGE OR A SURFACE

E

B–B

G46512 S0006591219_V1

Allowable Damage Limits
Figure 103 (Sheet 2 of 7)

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DENT THAT IS PERMITTED

F

X = WIDTH OF THE MATERIAL THAT IS REMOVED
= A MAXIMUM OF 10 PERCENT OF THE WIDTH OF THE FLANGE

REMOVAL OF DAMAGED MATERIAL ON AN EDGE

G

G46518 S0006591220_V1

Allowable Damage Limits
Figure 103 (Sheet 3 of 7)

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X = THE WIDTH OF THE MATERIAL THAT IS REMOVED
= A MAXIMUM OF 10 PERCENT OF THE WIDTH OF THE FLANGE

REMOVAL OF DAMAGED MATERIAL ON AN EDGE

H

G46521 S0006591221_V1

Allowable Damage Limits
Figure 103 (Sheet 4 of 7)

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Y = WIDTH OF THE MATERIAL THAT IS REMOVED
= A MAXIMUM OF 10 PERCENT OF THE WIDTH OF THE FLANGE

REMOVAL OF DAMAGED MATERIAL
ON A SURFACE AT AN EDGE

I

C–C

G46526 S0006591222_V1

Allowable Damage Limits
Figure 103 (Sheet 5 of 7)

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Y = WIDTH OF THE MATERIAL THAT IS REMOVED
= A MAXIMUM OF 10 PERCENT OF THE WIDTH OF THE FLANGE

REMOVAL OF DAMAGED MATERIAL
ON A SURFACE AT AN EDGE

J

D–D

G46531 S0006591223_V1

Allowable Damage Limits
Figure 103 (Sheet 6 of 7)

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NOTE: HOLES ARE NOT PERMITTED IN A FLANGE RADIUS.

HOLES THAT ARE PERMITTED FOR THE REMOVAL OF DAMAGED MATERIAL IN THE FREE FLANGE

K

G46534 S0006591224_V1

Allowable Damage Limits
Figure 103 (Sheet 7 of 7)

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ALLOWABLE DAMAGE 5 - STATION 1042 AFT PRESSURE BULKHEAD STRUCTURE

1. Applicability

A. This subject gives the allowable damage limits for the Aft Pressure Bulkhead Structure - Station 1042 shown in Figure 101/ALLOWABLE DAMAGE 5.

U40677 S0000194314_V1

Aft Pressure Bulkhead Structure Station 1042 Location
Figure 101

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VIEW LOOKING AFT

DETAIL I

U40902 S0000194315_V1

Aft Pressure Bulkhead Structure Station 1042
Figure 102 (Sheet 1 of 3)

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NOTE: ALL PARTS SHOWN ARE MADE FROM MACHINED ALUMINUM

VIEW WHEN YOU LOOK FORWARD

DETAIL II

U47471 S0000198408_V1

Aft Pressure Bulkhead Structure Station 1042
Figure 102 (Sheet 2 of 3)

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NOTE: ALL PARTS SHOWN ARE MADE FROM MACHINED ALUMINUM

VIEW LOOKING AFT

DETAIL III

U44127 S0000195917_V1

Aft Pressure Bulkhead Structure Station 1042
Figure 102 (Sheet 3 of 3)

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2. General

A. Remove the parts as necessary to get access to the damaged area.

B. Refer to Table 101/ALLOWABLE DAMAGE 5 for the allowable damage limits that are applicable to each type of structure.

Table 101:

STRUCTURE TYPE ALLOWABLE DAMAGE				
TYPE OF STRUCTURE	EDGE	SURFACE DAMAGE	DENTS	HOLES AND PUNCTURES
T-CHORD	X	X	-	-
WEB	X	-	-	-
STIFFENER	X	X	-	-
BEAM				
- CHORDS	X	X	-	-
- WEB	X	X	X	X
- FITTING	-	X	-	-
- APU BEAM	X	X	-	-
INTERCOSTAL				
- CHORD	X	X	-	-
- WEB	X	X	X	X
- STRAP	X	X	-	-
LINK ATTACHMENT FITTING	X	X	-	-
SKIN INTERCOSTAL	X	X	-	-

C. Remove the damage as necessary.

(1) Refer to 51-10-02 for the inspection and removal of damage

(2) Refer to 51-30-03 for possible sources of abrasives and other materials you can use to remove damage.

(3) Refer to 51-30-05 for possible sources of equipment and tools you can use to remove damage

D. After you remove the damage, do the steps that follow:

(1) Apply a chemical conversion coating to the bare surfaces of the reworked areas. Refer to 51-20-01.

(2) Apply one layer of BMS 10-11, Type I primer to the surface of the reworked area. Refer to SOPM 20-41-02.

(3) Apply one layer of BMS 3-23, Type II corrosion inhibiting compound to the surface of the repair area. Refer to 51-20-01.

3. References

Reference	Title
51-10-02	INSPECTION AND REMOVAL OF DAMAGE
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-30-03	NON-METALLIC MATERIALS
51-30-05	EQUIPMENT AND TOOLS FOR REPAIRS
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes

4. Allowable Damage Limits

A. Edge Cracks

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(1) Remove the damage as shown in Figure 103/ALLOWABLE DAMAGE 5, Details A, B, C, E, G and H.

B. Surface Damage:

(1) Remove the damage as shown in Figure 103/ALLOWABLE DAMAGE 5, Details D, Details I and J.

(2) Damage is not permitted to webs of the skin intercostals.

C. Dents:

(1) Refer to Figure 103/ALLOWABLE DAMAGE 5, Detail F.

(a) Dents may not extend across an attached structure.

D. Holes and Punctures:

(1) Remove the damage as shown in Figure 103/ALLOWABLE DAMAGE 5, Detail K.

(2) Holes and Punctures are permitted if they are:

(a) Not be more than 0.25 inch (6.4 mm) in diameter

(b) Not closer than 1.0 inch (25.4 mm) to a fastener hole.

(3) Fill the hole with a 2117-T3 or 2117-T4 protruding head rivet.

(a) Install the rivet without sealant.

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REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER EDGE MARGINS DO NOT HAVE AN OVERLAP

A

REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER EDGE MARGINS HAVE AN OVERLAP

B

X = WIDTH OF THE MATERIAL THAT IS REMOVED
= A MAXIMUM OF 0.10 INCH (2.54 mm)

REMOVAL OF DAMAGED MATERIAL AT AN EDGE

C

U40966 S0000194344_V1

Allowable Damage Limits
Figure 103 (Sheet 1 of 7)

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REMOVAL OF DAMAGED MATERIAL ON A SURFACE

D

A–A

REMOVAL OF DAMAGE AROUND THE FASTENERS ON AN EDGE OR A SURFACE

E

B–B

U40968 S0000194345_V1

Allowable Damage Limits
Figure 103 (Sheet 2 of 7)

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DENT THAT IS PERMITTED

F

REMOVAL OF DAMAGED MATERIAL ON AN EDGE

G

U40971 S0000194346_V1

Allowable Damage Limits
Figure 103 (Sheet 3 of 7)

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X = THE WIDTH OF THE MATERIAL THAT IS REMOVED
= A MAXIMUM OF 10 PERCENT OF THE WIDTH OF
THE FLANGE OR 0.10 INCH, WHICHEVER IS LESS

REMOVAL OF DAMAGED MATERIAL ON AN EDGE

H

U40974 S0000194347_V1

Allowable Damage Limits
Figure 103 (Sheet 4 of 7)

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Y = WIDTH OF THE MATERIAL THAT IS REMOVED
= A MAXIMUM OF 10 PERCENT OF THE WIDTH
OF THE FLANGE OR 0.10 INCH, WHICHEVER IS LESS

REMOVAL OF DAMAGED MATERIAL
ON A SURFACE AT AN EDGE

I

C–C

U40975 S0000194348_V1

Allowable Damage Limits
Figure 103 (Sheet 5 of 7)

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Y = WIDTH OF THE MATERIAL THAT IS REMOVED
= A MAXIMUM OF 10 PERCENT OF THE WIDTH
OF THE FLANGE 0.10 INCH, WHICHEVER IS LESS

REMOVAL OF DAMAGED MATERIAL
ON A SURFACE AT AN EDGE

J

D–D

U40976 S0000194349_V1

Allowable Damage Limits
Figure 103 (Sheet 6 of 7)

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NOTE: HOLES ARE NOT PERMITTED IN A FLANGE RADIUS.

HOLES THAT ARE PERMITTED FOR THE REMOVAL OF DAMAGED MATERIAL IN THE FREE FLANGE

K

U40977 S0000194350_V1

Allowable Damage Limits
Figure 103 (Sheet 7 of 7)

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REPAIR 1 - BSTA 1016 PRESSURE BULKHEAD CUTOUT REPAIR

1. Applicability

A. Repair 1 is applicable to an "oil can" condition in the web of the BSTA 1016 Pressure Bulkhead as shown in Body Station 1016 Bulkhead Location, Figure 201/REPAIR 1, and Zone 1 in Body Station 1016 Pressure Bulkhead, Figure 202/REPAIR 1.

B. Repair 1 is not applicable as shown in Zone 2 in Body Station 1016 Pressure Bulkhead, Figure 202/REPAIR 1.

C. Repair 1 is not applicable to any other cause of damage other than oil cans.

G50401 S0006591227_V1

Body Station 1016 Bulkhead Location
Figure 201

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ZONE 1 - REPAIR IS APPLICABLE

ZONE 2 - REPAIR IS NOT APPLICABLE

NOTE: ALL PARTS ARE MADE OF ALUMINUM EXCEPT AS NOTED.

REAR VIEW

G69297 S0006591228_V1

Body Station 1016 Pressure Bulkhead
Figure 202

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2. General

A. Repair 1 gives instructions for a Category B repair. Refer to 51-00-06 to find the definitions of the different categories of repairs.

B. Repair 1 is a cutout repair that:

(1) Can be used in an area of the web that has a strap. Refer to Figures 203 and 204.

(2) Can be used in an area of the web that does not have a strap. Refer to Figure 205.

C. Repair 1 is an alternative to Repair 2. Repair 2 does not cutout the damage.

D. An "oil can" condition is a deflection that can occur in the web of a pressure bulkhead during a pressurization or depressurization cycle. The deflection can cause:

(1) The web of the pressure bulkhead to have a shorter fatigue life.

3. References

Reference	Title
51-00-06	STRUCTURAL REPAIR DEFINITIONS
51-20-01, GENERAL	Protective Treatment of Metallic and Composite Materials
51-20-05, GENERAL	Repair Sealing
51-40-00, GENERAL	Fasteners
51-40-02, GENERAL	Fastener Installation and Removal
51-40-03, GENERAL	Fastener Substitution
51-40-05	FASTENER HOLE SIZES
51-40-06, GENERAL	Fastener Edge Margins
AMM 51-31-00 P/B 201	SEALS AND SEALING - MAINTENANCE PRACTICES
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes
737 NDT Part 6, 51-00-00	Structures - General
737 NDT Part 6, 51-00-00, Procedure 16	Aluminum Part Fastener Hole Inspection (Rotary Scanner)
737 NDT Part 6, 51-00-00, Procedure 4	Surface Inspection of Aluminum Parts (Meter Display)
737 NDT Part 6, 53-10-41	Eddy Current BS 1016 Aft Pressure Bulkhead

4. Repair Instructions

A. Get access to the repair area through the locations that follow (Refer to Body Station 1016 Bulkhead Location, Figure 201/REPAIR 1):

(1) Section 48 Blowout Door

(2) The aft cargo compartment.

B. Cut and Remove the damaged area of the pressure bulkhead web, as necessary.

C. Make the repair parts as given in Table 201/REPAIR 1 and as shown in Figures 203, 204, and 205. The material thickness and contour of the repair parts are to match the initial part thickness and contour.

Table 201:

REPAIR MATERIAL			
ITEM	PART	QUANTITY	MATERIAL
[1]	Plate	1	Use 2024-T3 clad sheet that is 0.032 inch thick

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Table 201: (Continued)

REPAIR MATERIAL			
ITEM	**PART**	**QUANTITY**	**MATERIAL**
[2]	Strap	1	Use 2024-T3 clad sheet that is the same gage as the initial strap
[3]	Shim	As Necessary	Use 2024-T3 clad sheet that has the necessary thickness

(1) You can use a part number 148A2281 pressure bulkhead web and 65-46568 strap to make the repair parts.

(2) As an alternative, you can form the repair part contour. Form the repair part to all applicable sections of BAC5300 and instructions as given as follows:

(a) Skin quality as given in D6-9002

(b) Fit-up forces as given in BAC5300 11.1.5

(c) Metal thinning as given in BAC5300 11.1.2

(d) Surface waviness as given in BAC5300 11.1.4

(e) Surface integrity as given in BAC5300 11.3 Table XI

D. Assemble the repair parts as shown in Figures 203, 204, and 205.

E. Drill the fastener holes. Refer to 51-40-05 for the fastener hole sizes.

F. Disassemble the repair parts.

G. Remove all the nicks, scratches, burrs, and sharp edges from the repair parts and the initial parts.

H. Apply a chemical conversion coating to the repair parts and to the bare surfaces of the initial parts. Refer to 51-20-01, GENERAL.

I. Apply the finish.

(1) Apply two layers of BMS 10-11, Type I primer to the repair parts and the bare surfaces of the initial parts. Refer to SOPM 20-41-02.

J. Install the repair parts.

(1) Apply BMS 5-95 sealant to the mating surfaces of the repair parts. Refer to 51-20-05, GENERAL.

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NOTES

- DO NOT DAMAGE THE STRAP DURING REPAIR PROCEDURES.
- INSTALL THE MANUFACTURED HEAD OF THE FASTENER ON THE AFT SIDE

VIEW LOOKING FORWARD

FASTENER SYMBOLS

INITIAL FASTENER LOCATION. INSTALL A BACR15FT5D RIVET. AS AN ALTERNATIVE, INSTALL A BACR15BB5D OR AN MS204705D RIVET.

REPAIR FASTENER LOCATION. INSTALL A BACR15FT5D RIVET. AS AN ALTERNATIVE, INSTALL A BACR15BB5D OR AN MS204705D RIVET. INSTALL A 5/32 INCH DIAMETER RIVET WITH 0.35 INCH MINIMUM EDGE MARGIN.

Damage to the Web In a Strap Area In Which the Strap is Not Damaged
Figure 203

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FASTENER SYMBOLS

INITIAL FASTENER LOCATION. INSTALL A BACR15FT5D RIVET. AS AN ALTERNATIVE, INSTALL A BACR15BB5D OR AN MS204705D RIVET.

REPAIR FASTENER LOCATION. INSTALL A BACR15FT5D RIVET. AS AN ALTERNATIVE, INSTALL A BACR15BB5D OR AN MS204705D RIVET. INSTALL A 5/32 INCH DIAMETER RIVET USING 0.35 INCH MINIMUM EDGE MARGIN.

REPAIR FASTENER LOCATION. INSTALL A BACR15FT6D RIVET AT STRAP SPLICE LOCATIONS.

Damage to the Web in the Area of a Strap in Which the Strap is Damaged
Figure 204

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FASTENER SYMBOLS

✦ REPAIR FASTENER LOCATION. INSTALL A BACR15FT5D RIVET. AS AN ALTERNATIVE, INSTALL A BACR15BB5D OR AN MS20470D5D RIVET. INSTALL 5/32 INCH DIAMETER RIVETS WITH 0.35 INCH MINIMUM EDGE MARGIN.

Typical Repair for Damage to the Web That is Not in a Strap Area
Figure 205

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5. **Inspection Instructions**

A. Do an NDT inspection of the pressure web and repair plate for cracking at all fastener locations as given in Table 202 for airplanes that have not completed Service Bulletin 737-21-1149. Do an NDT inspection of the pressure web and repair plate for cracking at all fastener locations as given in Table 203 for airplanes that have completed Service Bulletin 737-21-1149.

Table 202:

CATEGORY B REPAIR INSPECTION REQUIREMENTS (FOR AIRPLANES THAT HAVE NOT COMPLETED SERVICE BULLETIN 737-21-1149)			
INSPECTION THRESHOLD	INSPECTION AND REPEAT INTERVALS		
	METHOD	INTERVAL	REFERENCE
36,000 flight cycles from the time the repair is done	HFEC At fastener locations not common to a tear strap, inspect the web from the aft side of the pressure bulkhead and the repair plate from the forward side of the bulkhead.	24,000 flight cycles	NDT Part 6, 51-00-00, Figure 4 or 23
36,000 flight cycles from the time the repair is done	HFEC At fastener locations common to a tear strap inspect the visible web and repair plate from the forward side of the bulkhead between the area bounded by the radial 'Z' stiffeners LFEC (As an alternative to the HFEC inspection, from the aft side of the bulkhead, perform an LFEC inspection of the web at the fastener locations common to the tear strap between the area bounded by the radial 'z' stiffeners. Note that this inspection is an alternative for the Figure 203 repair only.)	10,000 flight cycles 4,000 flight cycles	NDT Part 6, 51-00-00, Figure 4 or 23 NDT Part 6, 53-10-41
Note: If crack damage occurs when you do a Low Frequency Eddy Current Inspection (LFEC) then remove the fasteners and do an open hole eddy current inspection as given in NDT Part 6, 51-00-00, Figure 16. Contact The Boeing Company for further repair instructions.			

Table 203:

CATEGORY B REPAIR INSPECTION REQUIREMENTS (FOR AIRPLANES THAT HAVE COMPLETED SERVICE BULLETIN 737-21-1149)			
INSPECTION THRESHOLD	INSPECTION AND REPEAT INTERVALS		
	METHOD	INTERVAL	REFERENCE
22,500 flight cycles from the time the repair is done	HFEC At fastener locations not common to a tear strap, inspect the web from the aft side of the pressure bulkhead and the repair plate from the forward side of the bulkhead.	20,000 flight cycles	NDT Part 6, 51-00-00, Figure 4 or 23

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Table 203: (Continued)

CATEGORY B REPAIR INSPECTION REQUIREMENTS (FOR AIRPLANES THAT HAVE COMPLETED SERVICE BULLETIN 737-21-1149)			
INSPECTION THRESHOLD	INSPECTION AND REPEAT INTERVALS		
	METHOD	INTERVAL	REFERENCE
22,500 flight cycles from the time the repair is done	HFEC At fastener locations common to a tear strap inspect the visible web and repair plate from the forward side of the bulkhead between the area bounded by the radial 'Z' stiffeners LFEC (As an alternative to the HFEC inspection, from the aft side of the bulkhead, perform an LFEC inspection of the web at the fastener locations common to the tear strap between the area bounded by the radial 'z' stiffeners. Note that this inspection is an alternative for the Figure 203 repair only.)	8,000 flight cycles 3,000 flight cycles	NDT Part 6, 51-00-00, Figure 4 or 23 NDT Part 6, 53-10-41
Note: If crack damage occurs when you do a Low Frequency Eddy Current Inspection (LFEC) then remove the fasteners and do an open hole eddy current inspection as given in NDT Part 6, 51-00-00, Figure 16. Contact The Boeing Company for further repair instructions.			

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REPAIR 2 - BSTA 1016 PRESSURE BULKHEAD (OIL CAN) CONDITION

1. Applicability

A. Repair 2 is applicable to an "oil can" condition that is:

(1) In the web of the Pressure Bulkhead at BSTA 1016 as shown in Body Station 1016 Bulkhead Location, Figure 201/REPAIR 2

(2) Between the straps and stiffeners.

B. Repair 2 is an alternative to Repair 1 when it is not necessary to cut out the pressure bulkhead.

C. Repair 2 is not applicable if there is not sufficient clearance between the repair area and the straps, stiffeners, and doublers.

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Body Station 1016 Bulkhead Location
Figure 201

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ZONE 1 - REPAIR IS APPLICABLE

ZONE 2 - REPAIR IS NOT APPLICABLE

NOTE: ALL PARTS ARE MADE OF ALUMINUM EXCEPT AS NOTED.

REAR VIEW

M51597 S0006591234_V1

Body Station 1016 Pressure Bulkhead
Figure 202

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2. General

A. Repair 2 gives instructions for a Category B repair. Refer to SRM 51-00-06 to find the definitions of the different categories of repairs.

B. Repair 2 is a patch repair that:

(1) Cannot be used in an area that has a strap

(2) Cannot be used in areas where there is not sufficient clearance between:

(a) The edge of the "oil can" condition

(b) The edge of the part [1] patch.

(3) Is an alternative to Repair 1 which cuts out the damage.

C. An "oil can" condition is a deflection that can occur in the web of the pressure bulkhead when the cabin goes through the pressurization and depressurization cycle. The deflection can cause:

(1) A noise that is unsatisfactory to the passengers near the pressure bulkhead

(2) The web to have a shorter fatigue life.

3. References

Reference	Title
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-20-05	REPAIR SEALING
51-40-00, GENERAL	Fasteners
51-40-02, GENERAL	Fastener Installation and Removal
51-40-03, GENERAL	Fastener Substitution
51-40-05	FASTENER HOLE SIZES
51-40-06, GENERAL	Fastener Edge Margins
AMM 51-31-00 P/B 201	SEALS AND SEALING - MAINTENANCE PRACTICES
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes
737 NDT Part 6, 51-00-00	Structures - General
737 NDT Part 6, 51-00-00, Procedure 4	Surface Inspection of Aluminum Parts (Meter Display)

4. Repair Instructions

A. Get access to the repair area through the locations that follow:

(1) The APU access doors

(2) The rear of the passenger cabin

(3) The aft cargo compartment.

B. Put the pressure bulkhead web back to the initial contour with normal hand pressure, as necessary.

C. Make the repair part as given in Table 201/REPAIR 2 and as shown in Figure 203/REPAIR 2. The material thickness and contour of the part [1] patch is to match the initial part thickness and contour.

Table 201:

REPAIR MATERIAL			
ITEM	**PART**	**QUANTITY**	**MATERIAL**
[1]	Patch	1	Use dome web that is 0.032 inch thick. As an alternative, you can use 2024-T3 clad sheet contoured as given in BAC 5300.

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(1) You can use a part number 148A2281 pressure bulkhead web to make the repair part.

(2) As an alternative, you can form the repair part to contour. Form the repair part to all applicable instructions of BAC5300 and the sections that follow:

(a) Skin quality as given in D6-9002

(b) Fit-up forces as given in BAC5300 11.1.5

(c) Metal thinning as given in BAC5300 11.1.2

(d) Surface waviness as given in BAC5300 11.1.4

(e) Surface integrity as given in BAC5300 11.3 Table X1

D. Assemble the repair part as shown in Body Station 1016 Pressure Bulkhead "Oil Can" Repair, Figure 203/REPAIR 2.

E. Drill the fastener holes as shown in Body Station 1016 Pressure Bulkhead "Oil Can" Repair, Figure 203/REPAIR 2. Refer to 51-40-05 for the fastener hole sizes.

NOTE: Make sure you do not drill the fastener holes in the damaged area. This will permit the cutout of the damaged area if it is necessary.

F. Assemble the repair part with temporary bolts.

G. Make an inspection of the repair.

(1) Make sure that the part [1] patch keeps the web to its initial contour and does not cause creases, wrinkles, or buckles.

(a) If the initial contour is kept, continue to do the repair instructions that remain.

(b) If the initial contour is not kept or there is more damage, refer to Repair 1 for the cutout repair.

H. Disassemble the repair parts.

I. Remove all the nicks, scratches, burrs, and sharp edges from the repair parts and the initial parts.

J. Apply a chemical conversion coating to the repair parts and to the bare surfaces of the initial parts. Refer to 51-20-01.

K. Apply the finish.

(1) Apply two layers of BMS 10-11, Type I primer to the repair parts and the bare surfaces of the initial parts. Refer to SOPM 20-41-02.

L. Install the repair parts.

(1) Apply BMS 5-95 sealant to the mating surfaces of the repair parts. Refer to 51-20-05.

(2) Install the fasteners without sealant.

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VIEW OF THE REPAIR LOOKING AFT

A-A

FASTENER SYMBOLS

✦ REPAIR FASTENER LOCATION. INSTALL A BACR15FT5D RIVET. AS AN ALTERNATIVE, INSTALL A BACR15BB5D OR AN MS20470D5 RIVET. INSTALL ALL 5/32 INCH DIAMETER RIVETS WITH 0.34 INCH MINIMUM EDGE MARGIN.

Body Station 1016 Pressure Bulkhead "Oil Can" Repair
Figure 203

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5. **Inspection Instructions**

A. Do an NDT inspection of the pressure web for cracking at all fastener locations as given in Table 202 for airplanes that have not completed Service Bulletin 737-21-1149. Do an NDT inspection of the pressure web for cracking at all fastener locations as given in Table 203 for airplanes that have completed Service Bulletin 737-21-1149.

Table 202:

CATEGORY B REPAIR INSPECTION REQUIREMENTS (FOR AIRPLANES THAT HAVE NOT COMPLETED SERVICE BULLETIN 737-21-1149)			
INSPECTION THRESHOLD	REPEAT INSPECTION ALTERNATIVES		
	METHOD	INTERVAL	REFERENCE
36,000 flight cycles from the time the repair is done	HFEC Inspect the web from the aft side of the pressure bulkhead (See Note)	24,000 flight cycles	NDT Part 6, 51-00-00, Figure 4 or 23
Note: If crack damage occurs then contact The Boeing Company for further repair instructions.			

Table 203:

CATEGORY B REPAIR INSPECTION REQUIREMENTS (FOR AIRPLANES THAT HAVE COMPLETED SERVICE BULLETIN 737-21-1149)			
INSPECTION THRESHOLD	REPEAT INSPECTION ALTERNATIVES		
	METHOD	INTERVAL	REFERENCE
22,500 flight cycles from the time the repair is done	HFEC Inspect the web from the aft side of the pressure bulkhead (See Note)	20,000 flight cycles	NDT Part 6, 51-00-00, Figure 4 or 23
Note: If crack damage occurs then contact The Boeing Company for further repair instructions.			

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REPAIR 3 - SECTION 48 BULKHEAD STRUCTURES

1. Applicability

A. Repair 3 is applicable to damage to the Section 48 bulkhead structures shown in Figure 201/REPAIR 3.

2. General

A. Typical web repairs in 51-70-13 are not approved for Section 48 Bulkheads. The typical repairs given in 51-70-11 and 51-70-12 can be used when applicable if there is sufficient clearance with the adjacent structure for the installation of repair parts.

B. Refer to the limits of the typical repairs given in 51-70-11 and 51-70-12 before you start a repair.

C. If the aircraft has a domed aft pressure bulkhead at BS 1016, refer to Figure 202/REPAIR 3.

D. If the aircraft has a flat aft pressure bulkhead at BS 1042, there are no repairs for the bulkhead structure at BS 1016 and BS 1042 at this time.

E. Refer to Figure 203/REPAIR 3 for the bulkhead structure at BS 1088.

F. Refer to Figure 204/REPAIR 3 for the bulkhead structure at BS 1156.

G. This repair is not applicable to monolithic structure at BS 1088 or BS 1156 bulkheads.

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AIRCRAFT WITH A DOMED AFT PRESSURE BULKHEAD AT BS 1016

AIRCRAFT WITH A FLAT AFT PRESSURE BULKHEAD AT BS 1042

NOTES

1 REFER TO FIGURE 203 AND 204 FOR THE AIRPLANE LINE NUMBERS 1 THRU 1198.
REFER TO FIGURE 205 AND 206 FOR THE AIRPLANE LINE NUMBERS 1199 AND ON.

U58939 S0000203620_V1

Section 48 Bulkhead Locations
Figure 201

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3. References

Reference	Title
51-70-11	TYPICAL FORMED SECTION REPAIRS
51-70-12	EXTRUDED SECTION REPAIRS
51-70-13	TYPICAL WEB REPAIRS
53-80-08	FUSELAGE BULKHEADS - SECTION 48

4. Repair Instructions

A. Station 1016 Aft Pressure Bulkhead Structure, Front Side

(1) Refer to Table 201/REPAIR 3 to find the applicable repairs for structure on the forward side of the BS 1016 aft pressure bulkhead.

NOTE: If necessary, refer to 53-80-08, Identification 1 to find the material and the process that was used to make the part which you want to repair.

Table 201:

REPAIR REFERENCES FOR THE FORWARD SIDE OF THE AFT PRESSURE BULKHEAD AT BS 1016	
COMPONENT	**REPAIR**
Stiffeners, Intercostals, Channel, Splice Angle, Frame Chord (FORMED PARTS)	Refer to SRM 51-70-11
Beams, Channels, Stiffeners, Angle Stiffener (EXTRUDED PARTS)	Refer to SRM 51-70-12
Dome Web	Refer to SRM 53-80-08, Repairs 1 and 2
Cover Dome, Pan, Pan Dome, Doublers, Frame Chords (extrusion), Pressure Chord, Webs Other than the Dome Web	There are no repairs for these parts in the Structural Repair Manual at this time.

(2) Refer to Aft Pressure Bulkhead - BS 1016, Figure 202/REPAIR 3, Detail A for the structure on the forward side of the BS 1016 aft pressure bulkhead.

B. Station 1016 Aft Pressure Bulkhead Structure, Aft Side

(1) Refer to Table 202/REPAIR 3 to find the applicable repairs for structure on the aft side of the BS 1016 aft pressure bulkhead.

NOTE: If necessary, refer to 53-80-08, Identification 1 to find the material and the process that was used to make the part which you want to repair.

Table 202:

REPAIR REFERENCES FOR THE AFT SIDE OF THE AFT PRESSURE BULKHEAD AT BS 1016	
COMPONENT	**REPAIR**
Straps, Triplers, Stiffeners, Pan (FORMED PARTS)	Refer to SRM 51-70-11
Angle, Stiffeners, Stiffener Tees (EXTRUDED PARTS)	Refer to SRM 51-70-12
Doublers and Pan, Frame Chords (EXTRUDED), Chords	There are no repairs for these parts in the Structural Repair Manual at this time.

(2) Refer to Aft Pressure Bulkhead - BS 1016, Figure 202/REPAIR 3, Detail C for the structure on the aft side of the BS 1016 aft pressure bulkhead.

C. BS 1088 Bulkhead Structure, Forward Side

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(1) Refer to Table 203/REPAIR 3 to find the applicable repairs for structure on the forward side of the BS 1088 bulkhead.

NOTE: If necessary, refer to 53-80-08, Identification 2 to find the material and the process that was used to make the part which you want to repair.

Table 203:

REPAIR REFERENCES FOR THE FORWARD SIDE OF THE BULKHEAD AT BS 1088	
COMPONENT	**REPAIR**
Channels, Intercostals, Stiffeners (FORMED PARTS)	Refer to SRM 51-70-11
Chords, Tees (EXTRUDED) Stiffeners, Frame Chords, Angles (EXTRUDED)	Refer to SRM 51-70-12
Doublers, Pan Assembly, Fittings, Cylinder, Webs and Forged and Machined Parts	There are no repairs for these parts in the Structural Repair Manual at this time.

(2) Refer to Figure 203/REPAIR 3 or Figure 205/REPAIR 3, Detail A for structure on the forward side of the BS 1088 bulkhead

D. BS 1088 Bulkhead Structure, Aft Side

(1) Refer to Table 204/REPAIR 3 to find the applicable repairs for structure on the aft side of the BS 1088 bulkhead.

NOTE: If necessary, refer to 53-80-08, Identification 2 to find the material and the process that was used to make the part which you want to repair.

Table 204:

REPAIR REFERENCES FOR THE AFT SIDE OF THE BULKHEAD AT BS 1088	
COMPONENT	**REPAIR**
Stiffeners (FORMED PARTS)	Refer to SRM 51-70-11
Stiffeners (EXTRUDED PARTS)	Refer to SRM 51-70-12
Doublers and Webs	There are no repairs for these parts in the Structural Repair Manual at this time.

(2) Refer to Figure 203/REPAIR 3 or Figure 205/REPAIR 3, Detail B for structure on the aft side of the BS 1088 bulkhead

E. BS 1156 Bulkhead Structure, Forward Side

(1) Refer to Table 205/REPAIR 3 to find the applicable repairs for structure on the forward side of the BS 1156 bulkhead.

NOTE: If necessary, refer to 53-80-08, Identification 3 to find the material and the process that was used to make the part which you want to repair.

Table 205:

REPAIR REFERENCES FOR THE FORWARD SIDE OF THE BULKHEAD AT BS 1156	
COMPONENT	**REPAIR**
Bulkhead Beams, Angle, Tee, Torque Box Chord (FORMED PARTS)	Refer to SRM 51-70-11
Beams, Failsafe Angle, Stiffeners, Tees, Failsafe Strap (EXTRUDED)	Refer to SRM 51-70-12
Failsafe Straps, Support Channels, and Machined Parts	There are no repairs for these parts in the Structural Repair Manual at this time.

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(2) Refer to Figure 204/REPAIR 3 or Figure 206/REPAIR 3, Detail A for structure on the forward side of the BS 1156 bulkhead

F. BS 1156 Bulkhead Structure, Aft Side

(1) Refer to Table 206/REPAIR 3 to find the applicable repairs for structure on the aft side of the BS 1156 bulkhead.

NOTE: If necessary, refer to 53-80-08, Identification 3 to find the material and the process that was used to make the part which you want to repair.

Table 206:

REPAIR REFERENCES FOR THE AFT SIDE OF THE BULKHEAD AT BS 1156	
COMPONENT	**REPAIR**
Splice Angles, Chord Cap, Lower Bulkhead Chord, Chord Angle, Chord (FORMED PARTS)	Refer to SRM 51-70-11
Frame Chord, Upper Bulkhead Chord, Stiffener Assembly, Support Zees (EXTRUDED)	Refer to SRM 51-70-12
Failsafe Straps, Doublers, Web, Close-out Fitting, Hold Open Fitting, Machined Parts	There are no repairs for these parts in the Structural Repair Manual at this time.

(2) Refer to Figure 204/REPAIR 3 or Figure 206/REPAIR 3, Detail B for structure on the aft side of the BS 1156 bulkhead

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NOTE: REFER TO TABLE 201 FOR THE REPAIR REFERENCES.
ALL PARTS IDENTIFIED ARE MADE FROM ALUMINUM EXCEPT AS NOTED.

VIEW LOOKING AFT

A

G95524 S0006591245_V2

Aft Pressure Bulkhead - BS 1016
Figure 202 (Sheet 1 of 4)

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H55783 S0006591246_V1

Aft Pressure Bulkhead - BS 1016
Figure 202 (Sheet 2 of 4)

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NOTE: REFER TO TABLE 202 FOR THE REPAIR REFERENCES.
ALL PARTS IDENTIFIED ARE MADE FROM ALUMINUM EXCEPT AS NOTED.

VIEW LOOKING FORWARD

C

G95575 S0006591247_V2

Aft Pressure Bulkhead - BS 1016
Figure 202 (Sheet 3 of 4)

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H55796 S0006591248_V1

Aft Pressure Bulkhead - BS 1016
Figure 202 (Sheet 4 of 4)

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NOTE: REFER TO TABLE 205 FOR THE REPAIR REFERENCES.
ALL PARTS IDENTIFIED ARE MADE FROM ALUMINUMEXCEPT AS NOTED.

VIEW LOOKING AFT

(A)

G95581 S0006591249_V2

Body Station 1088 Bulkhead
Figure 203 (Sheet 1 of 2)

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NOTE: REFER TO TABLE 206 FOR THE REPAIR REFERENCES.
ALL PARTS IDENTIFIED ARE MADE FROM ALUMINUM EXCEPT AS NOTED.

VIEW LOOKING FORWARD

B

G95597 S0006591250_V2

Body Station 1088 Bulkhead
Figure 203 (Sheet 2 of 2)

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VIEW LOOKING AFT

A

NOTES

- REFER TO TABLES 207 AND 208 FOR THE REPAIR REFERENCES.
- ALL PARTS IDENTIFIED ARE MADE FROM ALUMINUM EXCEPT AS NOTED.

U45681 S0000196990_V1

Body Station 1156 Bulkhead
Figure 204 (Sheet 1 of 2)

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VIEW LOOKING FORWARD

B

G95791 S0006591252_V2

Body Station 1156 Bulkhead
Figure 204 (Sheet 2 of 2)

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NOTE: REFER TO TABLES 205 AND 206 FOR THE REPAIR REFERENCES.

VIEW LOOKING AFT

(A)

1307726 S0000225777_V1

Body Station 1088 Bulkhead
Figure 205 (Sheet 1 of 3)

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1307732 S0000225778_V1

Body Station 1088 Bulkhead
Figure 205 (Sheet 2 of 3)

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VIEW LOOKING FORWARD

B

1307735 S0000225779_V1

Body Station 1088 Bulkhead
Figure 205 (Sheet 3 of 3)

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NOTE: REFER TO TABLES 207 AND 208 FOR THE REPAIR REFERENCES.

1307851 S0000225780_V1

Body Station 1156 Bulkhead
Figure 206 (Sheet 1 of 6)

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1307859 S0000225781_V1

Body Station 1156 Bulkhead
Figure 206 (Sheet 2 of 6)

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HINGE BEAM ASSEMBLY

C

1307861 S0000225782_V1

Body Station 1156 Bulkhead
Figure 206 (Sheet 3 of 6)

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1307869 S0000225783_V1

Body Station 1156 Bulkhead
Figure 206 (Sheet 4 of 6)

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VIEW IS ROTATED 90° COUNTER CLOCKWISE

D-D

VIEW IS ROTATED 90° COUNTER CLOCKWISE

E-E

1307871 S0000225784_V1

Body Station 1156 Bulkhead
Figure 206 (Sheet 5 of 6)

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1307877 S0000225785_V1

Body Station 1156 Bulkhead
Figure 206 (Sheet 6 of 6)

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5. **Inspection Instructions**

A. Refer to the inspection instructions given in 51-70-11 and 51-70-12.

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REPAIR 4 - BS 1016 PRESSURE BULKHEAD (OIL CAN) REPAIR BETWEEN STRAPS

1. **Repair 4**

   A. This repair has been removed.

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REPAIR 5 - BS 1016 BULKHEAD (OIL CAN) REPAIR ACROSS A STRAP

1. **Repair 5**

   A. This repair has been removed.

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REPAIR 7 - BS 1016 AFT PRESSURE BULKHEAD (OIL CAN) REPAIR FROM BL0.0 STIFFENER TO S-3L STIFFENER, AND FROM OUTER STRAP OUTBOARD TO PRESSURE CHORD

1. Applicability

A. Repair 7 is applicable to:

- An “oil can” condition in the web of the Pressure Bulkhead as shown in Figure 201/REPAIR 7, and Zone 1 in Figure 202/REPAIR 7.
- Airplanes with Line Numbers 1–1755.

B. Repair 7 is not applicable to:

- Zone 2 in Figure 202/REPAIR 7.
- Damage other than pressure bulkhead webs.
- Damage that is repaired by SRM 53-80-08, repairs 1, 2, or 3.
- Damage in fastener holes.

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1963613 S0000371834_V1

Body Station 1016 Pressure Bulkhead Location
Figure 201

2. General

A. Repair 7 is a Category B repair. This Category B repair has FAA approval if you do the supplemental inspections given in Paragraph 5./REPAIR 7. Incorporation of these inspection requirements into the airplane maintenance program satisfies the damage tolerance assessment of the repair. Refer to STRUCTURAL REPAIR DEFINITIONS, 51-00-06 for repair categories and definitions.

B. The manager of the FAA Seattle ACO approves accomplishment of this repair as an alternative method of compliance (AMOC) for the inspections, for the repair area only, required by paragraph (f) of AD 2007-25-03.

C. An “oil can” condition is a deflection that can occur in the web of a pressure bulkhead during a pressurization or depressurization cycle. The deflection can cause the web of the pressure bulkhead to have a shorter fatigue life.

D. All dimensions are in inches, unless they are shown differently.

E. D = fastener diameter.

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VIEW LOOKING FORWARD

ZONE 1: REPAIR IS APPLICABLE

ZONE 2: REPAIR IS NOT APPLICABLE

1963622 S0000371835_V1

Body Station 1016 Pressure Bulkhead
Figure 202

F. Use a minimum of 2D fastener edge margin.

G. Use 4D-6D spacing between repair fasteners.

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H. Use 8D-10D spacing between field fasteners.

I. Put fastener heads on the aft side of the pressure bulkhead, unless stated differently.

J. Use a minimum of 0.50 in. (12.70 mm) internal and external corner radius for the repair parts, unless stated differently.

K. Finish the machined surfaces to 63 microinches (Ra) or better, unless a different finish is specified.

L. Make sure that the space between the mating surfaces of the repair parts is less than a 0.010 in. (0.254 mm) gap before you install the fasteners. If the space is more than 0.010 in. (0.254 mm), and less than or equal to 0.040 in. (1.016 mm), install shims in the space. If the space is greater than 0.040 in. (1.016 mm), remove first repair part, and replace with the new repair part.

M. For approved fasteners and process material substitutions, refer to FASTENER SUBSTITUTION, 51-40-03.

3. References

Reference	Title
51-00-06	STRUCTURAL REPAIR DEFINITIONS
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-20-05	REPAIR SEALING
51-20-13	SURFACE ROUGHNESS FINISH REQUIREMENTS
51-30-01	SHEET METAL MATERIALS
51-40-02	FASTENER INSTALLATION AND REMOVAL
51-40-03	FASTENER SUBSTITUTION
51-40-05	FASTENER HOLE SIZES
51-40-06	FASTENER EDGE MARGINS
SOPM 20-20-02	Penetrant Methods of Inspection
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes
737 NDT Part 6, 51-00-00, Procedure 16	Aluminum Part Fastener Hole Inspection (Rotary Scanner)
737 NDT Part 6, 51-00-00, Procedure 23	Aluminum Part Surface Inspection (Impedance Plane Display)
737 NDT Part 6, 51-00-00, Procedure 4	Surface Inspection of Aluminum Parts (Meter Display)

4. Repair Instructions

A. Get access to the repair area.

B. Do a dye penetrant inspection of the web damage area. Refer to SOPM 20-20-02. If there are cracks on the web, Go to Paragraph 4.F./REPAIR 7.

C. Do a High Frequency Eddy Current (HFEC) inspection of the web around initial fastener locations to make sure there are no crack indications. Refer to 737 NDT Part 6, 51-00-00, Procedure 4 or 737 NDT Part 6, 51-00-00, Procedure 23. If there are crack indications, contact the Boeing Company for disposition.

D. Put the pressure bulkhead web back to the initial contour with normal hand pressure, as necessary. Repeat this step until the repair parts are in place. If you can not restore the web contour, go to Paragraph 4.F./REPAIR 7.

E. Do a dye penetrant inspection of web damage area after you restore the web contour as given in Paragraph 4.D./REPAIR 7. Refer to SOPM 20-20-02. If you find cracks, go to Paragraph 4.F./REPAIR 7. If no cracks are found and the initial contour is restored then go to Paragraph 4.G./REPAIR 7.

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F. Cut and remove the damaged area of the pressure bulkhead web, as necessary.

(1) Remove the fasteners from the initial structure around the damaged area as necessary. Refer to FASTENER INSTALLATION AND REMOVAL, 51-40-02.

(2) Do a High Frequency Eddy Current (HFEC) inspection to all open holes where you removed the fasteners to make sure there are no cracks. Refer to 737 NDT Part 6, 51-00-00, Procedure 16.

(3) Remove the initial parts that are around the web damage. Keep these parts for reinstallation.

(4) Make the corner radii of the cut a minimum of 0.50 in. (12.70 mm) at all trimout locations.

(5) Make sure there is a minimum surface finish of 63 Ra at all trimout locations. Refer to SURFACE ROUGHNESS FINISH REQUIREMENTS, 51-20-13.

G. Do a detailed visual inspection of the area around the damage to make sure there is no damage to substructure. If you find damage, contact the Boeing Company for further repair instructions.

H. Make the repair parts. Refer to Table 201/REPAIR 7 and Figure 203/REPAIR 7. Refer to SHEET METAL MATERIALS, 51-30-01. The material thickness and contour of the repair parts are to match the initial part thickness and contour.

Table 201:

REPAIR MATERIAL			
ITEM	PART	QUANTITY	MATERIAL
[1]	Repair Doubler	1	0.032 in. (0.813 mm) thick 2024–T0 clad sheet. Heat treat to T42 condition after you form the part. As an alternative, you can use a p/n 148A2281 pressure bulkhead web to make the repair parts.
[2]	Filler *[1]	1	0.040 in. (1.016 mm) thick 2024–T0. Heat treat to T42 condition after you form the part.
[3]	Filler	1	0.032 in. (0.813 mm) thick 2024-T0. Heat treat to T42 condition after you form the part.
[4]	Tapered Shim	2	0.071 in. (1.803 mm) thick 2024–T3 bare sheet. Make sure the taper is 50:1
[5]	Flat Shim	2	0.032 in. (0.813 mm) thick 2024–T3 clad sheet.

*[1] This part is not necessary if the production doubler is installed on top of the repair doubler.

I. Assemble the repair parts as shown in Figure 203/REPAIR 7.

J. Drill the fastener holes. Refer to FASTENER HOLE SIZES, 51-40-05, FASTENER SUBSTITUTION, 51-40-03, and FASTENER EDGE MARGINS, 51-40-06.

K. Disassemble the repair parts.

L. Remove all the nicks, scratches, burrs, and sharp edges from the repair parts and the initial parts.

M. Apply a chemical conversion coating to the repair parts and to the bare surfaces of the initial parts. Refer to PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS, 51-20-01.

N. Apply two layers of BMS 10-11, Type I primer to the repair parts and the bare surfaces of the initial parts. Refer to SOPM 20-41-02.

O. Install the repair parts on the forward side of the bulkhead web.

(1) Apply BMS 5–95 sealant to the mating surfaces of the repair parts. Refer to REPAIR SEALING, 51-20-05.

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(2) Apply a fillet seal along the edges of the repair parts with BMS 5–95 sealant. Refer to REPAIR SEALING, 51-20-05.

P. Install the intial parts that were removed to get access to the damaged area.

Q. Install the fasteners. Refer toFASTENER INSTALLATION AND REMOVAL, 51-40-02.

(1) If installing Non-Aluminum fasteners, install Non-Aluminum fasteners in transition fit holes as given in SRM 51-40-05 (except at steel parts, then install in close ream holes), Figure 4, wet with BMS 5-95 sealant.

(2) If installing Rivets, install the aluminum rivets without sealant, over-driven to a minimum 1.4D driven head as given in FASTENER INSTALLATION AND REMOVAL, 51-40-02.

R. Apply one layer of BMS 3–23 Type II corrosion inhibiting compound to the surface of the repair area. Refer to PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS, 51-20-01.

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(VIEW IN THE AFT DIRECTION)

A

1964639 S0000372587_V1

Layout of the Repair Parts
Figure 203 (Sheet 1 of 3)

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A–A

B–B

1964793 S0000372671_V1

Layout of the Repair Parts
Figure 203 (Sheet 2 of 3)

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NOTES

1. DO NOT MIX BETWEEN RIVETS AND BOLTS. USE EITHER ALL RIVETS OR ALL BOLTS IN THE REPAIR AREA.
2. TRIM THE INITIAL WEB BACK TO KEEP A MINIMUM 1.7D EDGE MARGIN ON THE REPAIR PARTS AND THE INITIAL PARTS.
3. THE PART [2] FILLER IS NOT NECESSARY IF THE INITIAL PRODUCTION DOUBLER WAS REMOVED PRIOR TO INSTALLATION OF REPAIR DOUBLER. PRODUCTION DOUBLER IS REINSTALLED ON TOP OF REPAIR DOUBLER, ONLY AFTER INSTALLATION OF REPAIR DOUBLER.

FASTENER SYMBOLS

- REFERENCE FASTENER LOCATION
- INITIAL FASTENER LOCATION. INSTALL A BACR15BB5D()C RIVET. AS AN ALTENATIVE, YOU CAN INSTALL A BACB30VT6K() HEX DRIVE BOLT WITH A BACC30BL6 COLLAR. 1
- INITIAL FASTENER LOCATION. INSTALL A BACR15BB6D()C RIVET. AS AN ALTERNATIVE, YOU CAN INSTALL A BACB30NX6K()X HEX DRIVE BOLT WITH A BACC30M6 COLLAR, OR YOU CAN INSTALL A SECOND OVERSIZE BACB30NX6K()Y HEX DRIVE BOLT WITH A BACC30R6 COLLAR AS NECESSARY TO HAVE CLOSE REAM FIT. 1
- INITIAL FASTENER LOCATION. INSTALL A BACB30NX6K()X HEX DRIVE BOLT WITH A BACC30M6 COLLAR, OR YOU CAN INSTALL A SECOND OVERSIZE BACB30NX6K()Y HEX DRIVE BOLT WITH A BACC30R6 COLLAR AS NECESSARY TO HAVE TRANSITION FIT.
- REPAIR FASTENER LOCATION. INSTALL A BACR15BB5D()C RIVET. AS AN ALTERNATIVE, INSTALL A BACB30VT6K() HEX DRIVE BOLT WITH A BACC30BL6 COLLAR. KEEP A MINIMUM 2D EDGE MARGIN AND 4D TO 6D FASTENER SPACING. 1
- REPAIR FASTENER LOCATION. FIELD FASTENER LOCATION. INSTALL A BACR15BB5D()C RIVET. AS AN ALTERNATIVE, INSTALL A BACB30VT6K() HEX DRIVE BOLT WITH A BACC30BL6 COLLAR. KEEP A 8D TO 10D FASTENER SPACING. 1
- INITIAL FASTENER LOCATION. INSTALL A BACR15BB6D()C RIVET. AS AN ALTERNATIVE, INSTALL A BACB30NX6K()X HEX DRIVE BOLT WITH A BACC30M6 COLLAR, OR YOU CAN INSTALL A SECOND OVERSIZE BACB30NX6K()Y HEX DRIVE BOLT WITH A BACC30R6 COLLAR AS NECESSARY TO HAVE TRANSITION FIT. 1

1964804 S0000375318_V1

Layout of the Repair Parts
Figure 203 (Sheet 3 of 3)

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5. **Inspection Requirements**

A. Refer to STRUCTURAL REPAIR DEFINITIONS, 51-00-06 for repair categories and definitions.

B. Do the inspections as shown in Table 202 and Figure 204/REPAIR 7.

C. Do an NDT inspection of the pressure bulkhead web for crack at all fastener locations as given in Table 202/REPAIR 7.

Table 202:

CATEGORY B REPAIR INSPECTION REQUIREMENTS			
INSPECTION THRESHOLD	REPEAT INSPECTION AND REPEAT INTERVALS		
	METHOD	INTERVAL	REFERENCE
36,000 flight cycles from the time the repair is done	HFEC At the first fastener row common to the repair and web, inspect the web from the aft side of the pressure bulkhead (See Note) HFEC At the fastener rows common to the repair, web, and pressure chord, inspect the repair doubler from the forward side of the pressure bulkhead	16,000 flight cycles	NDT Part 6, 51-00-00, Figure 4 or 23
	LFEC At the fastener rows common to the strap, the repair, and the web, inspect the web from the aft side of the pressure bulkhead	4000 flight cycles	NDT Part 6, 53–10–41
Note: If crack damage occurs when you do a Low Frequency Eddy Current Inspection (LFEC) , remove the fasteners and do an open hole eddy current inspection as given in NDT Part 6, 51–00–00, Figure 16. Contact The Boeing Company for further repair instructions.			

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ZONE 1 HFEC INSPECT AS GIVEN IN TABLE 202.

ZONE 2 LFEC INSPECT AS GIVEN IN TABLE 202.

(VIEW IN THE AFT DIRECTION)

1964815 S0000374887_V1

Repair Inspection Requirements
Figure 204

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REPAIR 8 - BS 1016 AFT PRESSURE BULKHEAD (OIL CAN) REPAIR FROM S-3L STIFFENER TO S-5L STIFFENER, AND FROM OUTER STRAP OUTBOARD TO PRESSURE CHORD

1. Applicability

A. Repair 8 is applicable to:

- An “oil can” condition in the web of the Pressure Bulkhead as shown in Figure 201/REPAIR 8, and Zone 1 in Figure 202/REPAIR 8.
- Airplanes with Line Numbers 1–1755.

B. Repair 8 is not applicable to:

- Zone 2 in Figure 202/REPAIR 8.
- Damage other than pressure bulkhead webs.
- Damage that is repaired by SRM 53-80-08, repairs 1, 2, or 3.
- Damage in fastener holes.

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1967714 S0000377191_V1

Body Station 1016 Bulkhead Location
Figure 201

2. General

A. Repair 8 is a Category B repair. This Category B repair has FAA approval if you do the supplemental inspections given in Paragraph 5./REPAIR 8. Incorporation of these inspection requirements into the airplane maintenance program satisfies the damage tolerance assessment of the repair. Refer to STRUCTURAL REPAIR DEFINITIONS, 51-00-06 for repair categories and definitions..

B. The manager of the FAA Seattle ACO approves accomplishment of this repair as an alternative method of compliance (AMOC) for the inspections, for the repair area only, required by paragraph (f) of AD 2007-25-03.

C. An “oil can” condition is a deflection that can occur in the web of a pressure bulkhead during a pressurization or depressurization cycle. The deflection can cause the web of the pressure bulkhead to have a shorter fatigue life.

D. All dimensions are in inches, unless they are shown differently.

E. D = fastener diameter.

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VIEW LOOKING FORWARD

ZONE 1: REPAIR IS APPLICABLE

ZONE 2: REPAIR IS NOT APPLICABLE

1968198 S0000377192_V1

Body Station 1016 Pressure Bulkhead
Figure 202

F. Use a minimum of 2D fastener edge margin.

G. Use 4D-6D spacing between repair fasteners.

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H. Use 8D-10D spacing between field fasteners.

I. Put fastener heads on the aft side of the pressure bulkhead, unless stated differently.

J. Use a minimum of 0.50 in. (12.70 mm) internal and external corner radius for the repair parts, unless stated differently.

K. Finish the machined surfaces to 63 microinches (Ra) or better, unless a different finish is specified.

L. Make sure that the space between the mating surfaces of the repair parts is less than a 0.010 in. (0.254 mm) gap before you install the fasteners. If the space is more than 0.010 in. (0.254 mm), and less than or equal to 0.040 in. (1.016 mm), install shims in the space. If the space is greater than 0.040 in. (1.016 mm), remove first repair part, and replace with the new repair part.

M. For approved fasteners and process material substitutions, refer to FASTENER SUBSTITUTION, 51-40-03.

3. References

Reference	Title
51-00-06	STRUCTURAL REPAIR DEFINITIONS
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-20-05	REPAIR SEALING
51-20-13	SURFACE ROUGHNESS FINISH REQUIREMENTS
51-30-01	SHEET METAL MATERIALS
51-40-02	FASTENER INSTALLATION AND REMOVAL
51-40-03	FASTENER SUBSTITUTION
51-40-05	FASTENER HOLE SIZES
51-40-06	FASTENER EDGE MARGINS
SOPM 20-20-02	Penetrant Methods of Inspection
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes
737 NDT Part 6, 51-00-00, Procedure 16	Aluminum Part Fastener Hole Inspection (Rotary Scanner)
737 NDT Part 6, 51-00-00, Procedure 23	Aluminum Part Surface Inspection (Impedance Plane Display)
737 NDT Part 6, 51-00-00, Procedure 4	Surface Inspection of Aluminum Parts (Meter Display)

4. Repair Instructions

A. Get access to the repair area.

B. Do a dye penetrant inspection of the web damage area. Refer to SOPM 20-20-02. If you find cracks, go to Paragraph 4.F./REPAIR 8.

C. Do a High Frequency Eddy Current (HFEC) inspection of the web around initial fastener locations to make sure there are no crack indications. Refer to 737 NDT Part 6, 51-00-00, Procedure 4 or 737 NDT Part 6, 51-00-00, Procedure 23. If there are crack indications, contact the Boeing Company for disposition.

D. Put the pressure bulkhead web back to the initial contour with normal hand pressure, as necessary. Repeat this step until the repair parts are in place. If you can not restore the web contour, go to Paragraph 4.F./REPAIR 8.

E. Do a dye penetrant inspection of web damage area after you restore the web contour as given in Paragraph 4.D./REPAIR 8. Refer to SOPM 20-20-02. If you find cracks, go to Paragraph 4.F./REPAIR 8. If no cracks are found and the initial contour is restored then go to Paragraph 4.G./REPAIR 8.

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F. Cut and remove the damaged area of the pressure bulkhead web, as necessary.

(1) Remove the fasteners from the initial structure around the damaged area, as necessary. Refer to FASTENER INSTALLATION AND REMOVAL, 51-40-02.

(2) Do a High Frequency Eddy Current (HFEC) inspection to all open holes where you removed the fasteners to make sure there are no cracks. Refer to 737 NDT Part 6, 51-00-00, Procedure 16.

(3) Remove the initial parts that are around the web damage. Keep these parts for reinstallation.

(4) Make the corner radii of the cut a minimum of 0.50 in. (12.70 mm) at all trimout locations.

(5) Make sure there is a minimum surface finish of 63 Ra at all trimout locations. Refer to SURFACE ROUGHNESS FINISH REQUIREMENTS, 51-20-13.

G. Do a detailed visual inspection of the area around the damage to make sure there is no damage to the substructure. If you find damage, contact the Boeing Company for further repair instructions.

H. Make the repair parts. Refer to Table 201/REPAIR 8 and Figure 203/REPAIR 8. Refer to SHEET METAL MATERIALS, 51-30-01. The material thickness and contour of the repair parts are to match the initial part thickness and contour.

Table 201:

REPAIR MATERIAL			
ITEM	PART	QUANTITY	MATERIAL
[1]	Repair Doubler	1	0.040 in. (1.016 mm) thick 2024–T0 clad sheet. Heat treat to T42 condition after you form the part. As an alternative, you can use a part number 148A2281 pressure bulkhead web to make the repair parts.
[2]	Tapered Shim	2	0.040 in. (1.016 mm) thick 2024–T3 bare sheet. Make sure the taper is 50:1.

I. Assemble the repair parts as shown in Figure 203/REPAIR 8.

J. Drill the fastener holes. Refer to FASTENER HOLE SIZES, 51-40-05, FASTENER SUBSTITUTION, 51-40-03, and FASTENER EDGE MARGINS, 51-40-06.

K. Disassemble the repair parts.

L. Remove all the nicks, scratches, burrs, and sharp edges from the repair parts and the initial parts.

M. Apply a chemical conversion coating to the repair parts and to the bare surfaces of the initial parts. Refer to PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS, 51-20-01.

N. Apply two layers of BMS 10-11, Type I primer to the repair parts and the bare surfaces of the initial parts. Refer to SOPM 20-41-02.

O. Install the repair parts on the forward side of the bulkhead web.

(1) Apply BMS 5–95 sealant to the mating surfaces of the repair parts. Refer to REPAIR SEALING, 51-20-05.

(2) Apply a fillet seal along the edges of the repair parts with BMS 5–95 sealant. Refer to REPAIR SEALING, 51-20-05.

P. Install the intial parts that were removed to get access to the damaged area.

Q. Install the fasteners. Refer toFASTENER INSTALLATION AND REMOVAL, 51-40-02.

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(1) If installing Non-Aluminum fasteners, install Non-Aluminum fasteners in transition fit holes as given in SRM 51-40-05 (except at steel parts, then install in close ream holes), Figure 4, wet with BMS 5-95 sealant.

(2) If installing Rivets, install the aluminum rivets without sealant, over-driven to a minimum 1.4D driven head as given in FASTENER INSTALLATION AND REMOVAL, 51-40-02.

R. Apply one layer of BMS 3–23 Type II corrosion inhibiting compound to the surface of the repair area. Refer to PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS, 51-20-01.

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Layout of the Repair Parts
Figure 203 (Sheet 1 of 2)

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A–A

NOTES

1 DO NOT MIX BETWEEN RIVETS AND BOLTS. USE EITHER ALL RIVETS OR ALL BOLTS IN THE REPAIR AREA.

FASTENER SYMBOLS

REFERENCE FASTENER LOCATION

INITIAL FASTENER LOCATION. INSTALL A BACR15BB5D()C RIVET. AS AN ALTENATIVE, YOU CAN INSTALL A BACB30VT6K() HEX DRIVE BOLT WITH A BACC30BL6 COLLAR. 1

INITIAL FASTENER LOCATION. INSTALL A BACR15BB6D()C RIVET. AS AN ALTERNATIVE, YOU CAN INSTALL A BACB30NX6K()X HEX DRIVE BOLT WITH A BACC30M6 COLLAR, OR YOU CAN INSTALL A SECOND OVERSIZE BACB30NX6K()Y HEX DRIVE BOLT WITH A BACC30R6 COLLAR AS NECESSARY TO HAVE CLOSE REAM FIT. 1

REPAIR FASTENER LOCATION. INSTALL A BACR15BB5D()C RIVET. AS AN ALTERNATIVE, INSTALL A BACB30VT6K() HEX DRIVE BOLT WITH A BACC30BL6 COLLAR. KEEP A MINIMUM 2D EDGE MARGIN AND 4D TO 6D FASTENER SPACING. 1

REPAIR FASTENER LOCATION. FIELD FASTENER LOCATION. INSTALL A BACR15BB5D()C RIVET. AS AN ALTERNATIVE, INSTALL A BACB30VT6K() HEX DRIVE BOLT WITH A BACC30BL6 COLLAR. KEEP A 8D TO 10D FASTENER SPACING. 1

1972204 S0000377194_V1

Layout of the Repair Parts
Figure 203 (Sheet 2 of 2)

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5. **Inspection Requirements**

A. Refer to STRUCTURAL REPAIR DEFINITIONS, 51-00-06 for repair categories and definitions.

B. Do the inspections as shown in Table 202 and Figure 204/REPAIR 8.

C. Do an NDT inspection of the pressure bulkhead web for crack at all fastener locations as given in Table 202/REPAIR 8.

Table 202:

CATEGORY B REPAIR INSPECTION REQUIREMENTS			
INSPECTION THRESHOLD	REPEAT INSPECTION AND REPEAT INTERVALS		
	METHOD	INTERVAL	REFERENCE
36,000 flight cycles from the time the repair is done	HFEC At the first fastener row common to the repair and web, inspect the web from the aft side of the pressure bulkhead (See Note) HFEC At the fastener rows common to the repair, web, and pressure chord, inspect the repair doubler from the forward side of the pressure bulkhead	16,000 flight cycles	NDT Part 6, 51-00-00, Figure 4 or 23
	LFEC At the fastener rows common to the strap, the repair, and the web, inspect the web from the aft side of the pressure bulkhead	4000 flight cycles	NDT Part 6, 53–10–41
Note: If crack damage occurs when you do a Low Frequency Eddy Current Inspection (LFEC) , remove the fasteners and do an open hole eddy current inspection as given in NDT Part 6, 51–00–00, Figure 16. Contact The Boeing Company for further repair instructions.			

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ZONE 1 HFEC INSPECT AS GIVEN IN TABLE 202.

ZONE 2 LFEC INSPECT AS GIVEN IN TABLE 202.

(VIEW IN THE AFT DIRECTION)

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Repair Inspection Requirements
Figure 204

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REPAIR 9 - BS 1016 AFT PRESSURE BULKHEAD (OIL CAN) REPAIR FROM S-5L STIFFENER TO S-7L STIFFENER, AND FROM OUTER STRAP OUTBOARD TO PRESSURE CHORD

1. Applicability

A. Repair 9 is applicable to:

- An “oil can” condition in the web of the Pressure Bulkhead as shown in Figure 201/REPAIR 9, and Zone 1 in Figure 202/REPAIR 9.
- Airplanes with Line Numbers 1–1755.

B. Repair 9 is not applicable to:

- Zone 2 in Figure 202/REPAIR 9.
- Damage other than pressure bulkhead web.
- Damage that is repaired by SRM 53-80-08, repairs 1, 2, or 3.
- Damage in fastener holes.

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Body Station 1016 Bulkhead Location
Figure 201

2. General

A. Repair 9 is a Category B repair. This Category B repair has FAA approval if you do the supplemental inspections given in Paragraph 5./REPAIR 9. Incorporation of these inpection requirements into the airplane maintenance program satisfies the damage tolerance assessment of the repair. Refer to STRUCTURAL REPAIR DEFINITIONS, 51-00-06 for repair categories and definitions.

B. The manager of the FAA Seattle ACO approves accomplishment of this repair as an alternative method of compliance (AMOC) for the inspections, for the repair area only, required by paragraph (f) of AD 2007-25-03.

C. An “oil can” condition is a deflection that can occur in the web of a pressure bulkhead during a pressurization or depressurization cycle. The deflection can cause the web of the pressure bulkhead to have a shorter fatigue life.

D. All dimensions are in inches, unless they are shown differently.

E. D = fastener diameter.

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VIEW LOOKING FORWARD

ZONE 1: REPAIR IS APPLICABLE

ZONE 2: REPAIR IS NOT APPLICABLE

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Body Station 1016 Pressure Bulkhead
Figure 202

F. Use a minimum of 2D fastener edge margin.

G. Use 4D-6D spacing between repair fasteners.

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H. Use 8D-10D spacing between field fasteners.

I. Put fastener heads on the aft side of the pressure bulkhead, unless stated differently.

J. Use a minimum of 0.50 in. (12.70 mm) internal and external corner radius for the repair parts, unless stated differently.

K. Finish the machined surfaces to 63 microinches (Ra) or better, unless a different finish is specified.

L. Make sure that the space between the mating surfaces of the repair parts is less than a 0.010 in. (0.254 mm) gap before you install the fasteners. If the space is more than 0.010 in. (0.254 mm), and less than or equal to 0.040 in. (1.016 mm), install shims in the space. If the space is greater than 0.040 in. (1.016 mm), remove first repair part, and replace with the new repair part.

M. For approved fasteners and process material substitutions, refer to FASTENER SUBSTITUTION, 51-40-03.

3. References

Reference	Title
51-00-06	STRUCTURAL REPAIR DEFINITIONS
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-20-05	REPAIR SEALING
51-20-13	SURFACE ROUGHNESS FINISH REQUIREMENTS
51-30-01	SHEET METAL MATERIALS
51-40-02	FASTENER INSTALLATION AND REMOVAL
51-40-03	FASTENER SUBSTITUTION
51-40-05	FASTENER HOLE SIZES
51-40-06	FASTENER EDGE MARGINS
SOPM 20-20-02	Penetrant Methods of Inspection
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes
737 NDT Part 6, 51-00-00, Procedure 16	Aluminum Part Fastener Hole Inspection (Rotary Scanner)
737 NDT Part 6, 51-00-00, Procedure 23	Aluminum Part Surface Inspection (Impedance Plane Display)
737 NDT Part 6, 51-00-00, Procedure 4	Surface Inspection of Aluminum Parts (Meter Display)

4. Repair Instructions

A. Get access to the repair area.

B. Do a dye penetrant inspection of the web damage area. Refer to SOPM 20-20-02. If there are cracks on the web, Go to Paragraph 4.F./REPAIR 9.

C. Do a High Frequency Eddy Current (HFEC) inspection of the web around initial fastener locations to make sure there are no crack indications. Refer to 737 NDT Part 6, 51-00-00, Procedure 4 or 737 NDT Part 6, 51-00-00, Procedure 23. If there are crack indications, contact the Boeing Company for disposition.

D. Put the pressure bulkhead web back to the initial contour with normal hand pressure, as necessary. Repeat this step until the repair parts are in place. If you can not restore the web contour, go to Paragraph 4.F./REPAIR 9.

E. Do a dye penetrant inspection of web damage area after you restore the web contour as given in Paragraph 4.D./REPAIR 9. Refer to SOPM 20-20-02. If you find cracks, go to Paragraph 4.F./REPAIR 9. If no cracks are found and the initial contour is restored then go to Paragraph 4.G./REPAIR 9.

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F. Cut and remove the damaged area of the pressure bulkhead web, as necessary.

(1) Remove the fasteners from the initial structure around the damaged area, as necessary. Refer to FASTENER INSTALLATION AND REMOVAL, 51-40-02.

(2) Do a High Frequency Eddy Current (HFEC) inspection to all open holes where you removed the fasteners to make sure there are no cracks. Refer to 737 NDT Part 6, 51-00-00, Procedure 16.

(3) Remove the initial parts that are around the web damage. Keep these parts for reinstallation.

(4) Make the corner radii of the cut a minimum of 0.50 in. (12.70 mm) at all trimout locations.

(5) Make sure there is a minimum surface finish of 63 Ra at all trimout locations. Refer to SURFACE ROUGHNESS FINISH REQUIREMENTS, 51-20-13.

G. Do a detailed visual inspection of the area around the damage to make sure there is no damage to the substructure. If you find damage, contact The Boeing Company for further repair instructions.

H. Make the repair parts. Refer to Table 201/REPAIR 9 and Figure 203/REPAIR 9. Refer to SHEET METAL MATERIALS, 51-30-01. The material thickness and contour of the repair parts are to match the initial part thickness and contour.

Table 201:

REPAIR MATERIAL			
ITEM	PART	QUANTITY	MATERIAL
[1]	Repair Doubler	1	0.040 in. (1.016 mm) thick 2024–T0 clad sheet. Heat treat to T42 condition after you form the part. As an alternative, you can use a p/n 148A2281.
[2]	Filler	1	0.032 in. (0.813 mm) thick 2024-T0. Heat treat to T42 condition after you form the part.
[3]	Tapered Shim	1	0.071 in. (1.803 mm) thick 2024–T3 bare sheet.
[4]	Flat Shim	1	0.032 in. (0.813 mm) thick 2024–T3 clad sheet.
[5]	Tapered Shim	1	0.040 in. (1.016 mm) thick 2024–T3 bare sheet. Make sure the taper is 50:1.

I. Assemble the repair parts as shown in Figure 203/REPAIR 9.

J. Drill the fastener holes. Refer to FASTENER HOLE SIZES, 51-40-05, FASTENER SUBSTITUTION, 51-40-03, and FASTENER EDGE MARGINS, 51-40-06.

K. Disassemble the repair parts.

L. Remove all the nicks, scratches, burrs, and sharp edges from the repair parts and the initial parts.

M. Apply a chemical conversion coating to the repair parts and to the bare surfaces of the initial parts. Refer to PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS, 51-20-01.

N. Apply two layers of BMS 10-11, Type I primer to the repair parts and the bare surfaces of the initial parts. Refer to SOPM 20-41-02.

O. Install the repair parts on the forward side of the bulkhead web.

(1) Apply BMS 5–95 sealant to the mating surfaces of the repair parts. Refer to REPAIR SEALING, 51-20-05.

(2) Apply a fillet seal along the edges of the repair parts with BMS 5–95 sealant. Refer to REPAIR SEALING, 51-20-05.

P. Install the intial parts that were removed to get access to the damaged area.

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Q. Install the fasteners. Refer toFASTENER INSTALLATION AND REMOVAL, 51-40-02.

(1) If installing Non-Aluminum fasteners, install Non-Aluminum fasteners in transition fit holes as given in SRM 51-40-05 (except at steel parts, then install in close ream holes), Figure 4, wet with BMS 5-95 sealant.

(2) If installing Rivets, install the aluminum rivets without sealant, over-driven to a minimum 1.4D driven head as given in FASTENER INSTALLATION AND REMOVAL, 51-40-02.

R. Apply one layer of BMS 3–23 Type II corrosion inhibiting compound to the surface of the repair area. Refer to PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS, 51-20-01.

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(VIEW IN THE AFT DIRECTION)

A

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Layout of the Repair Parts
Figure 203 (Sheet 1 of 3)

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1967180 S0000377578_V1

Layout of the Repair Parts
Figure 203 (Sheet 2 of 3)

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NOTES

1 DO NOT MIX BETWEEN RIVETS AND BOLTS. USE EITHER ALL RIVETS OR ALL BOLTS IN THE REPAIR AREA.

2 TRIM THE INITIAL WEB BACK TO KEEP A MINIMUM 1.7D EDGE MARGIN ON THE REPAIR PARTS AND THE INITIAL PARTS.

FASTENER SYMBOLS

REFERENCE FASTENER LOCATION

INITIAL FASTENER LOCATION. INSTALL A BACR15BB5D()C RIVET. AS AN ALTENATIVE, YOU CAN INSTALL A BACB30VT6K() HEX DRIVE BOLT WITH A BACC30BL6 COLLAR. 1

INITIAL FASTENER LOCATION. INSTALL A BACR15BB6D()C RIVET. AS AN ALTERNATIVE, YOU CAN INSTALL A BACB30NX6K()X HEX DRIVE BOLT WITH A BACC30M6 COLLAR, OR YOU CAN INSTALL A SECOND OVERSIZE BACB30NX6K()Y HEX DRIVE BOLT WITH A BACC30R6 COLLAR AS NECESSARY TO HAVE CLOSE REAM FIT. 1

REPAIR FASTENER LOCATION. INSTALL A BACR15BB5D()C RIVET. AS AN ALTERNATIVE, INSTALL A BACB30VT6K() HEX DRIVE BOLT WITH A BACC30BL6 COLLAR. KEEP A MINIMUM 2D EDGE MARGIN AND 4D TO 6D FASTENER SPACING. 1

REPAIR FASTENER LOCATION. FIELD FASTENER LOCATION. INSTALL A BACR15BB5D()C RIVET. AS AN ALTERNATIVE, INSTALL A BACB30VT6K() HEX DRIVE BOLT WITH A BACC30BL6 COLLAR. KEEP A 8D TO 10D FASTENER SPACING. 1

1967189 S0000377581_V1

Layout of the Repair Parts
Figure 203 (Sheet 3 of 3)

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5. **Inspection Requirements**

A. Refer to STRUCTURAL REPAIR DEFINITIONS, 51-00-06 for repair categories and definitions.

B. Do the inspections as shown in Table 202 and Figure 204/REPAIR 9:

C. Do an NDT inspection of the pressure bulkhead web for crack at all fastener locations as given in Table 202.

Table 202:

CATEGORY B REPAIR INSPECTION REQUIREMENTS			
INSPECTION THRESHOLD	REPEAT INSPECTION AND REPEAT INTERVALS		
	METHOD	INTERVAL	REFERENCE
36,000 flight cycles from the time the repair is done	HFEC At the first fastener row common to the repair and web, inspect the web from the aft side of the pressure bulkhead (See Note) HFEC At the fastener rows common to the repair, web, and pressure chord, inspect the repair doubler from the forward side of the pressure bulkhead	16,000 flight cycles	NDT Part 6, 51-00-00, Figure 4 or 23
	LFEC At the fastener rows common to the strap, the repair, and the web, inspect the web from the aft side of the pressure bulkhead	4000 flight cycles	NDT Part 6, 53–10–41
Note: If crack damage occurs when you do a Low Frequency Eddy Current Inspection (LFEC) , remove the fasteners and do an open hole eddy current inspection as given in NDT Part 6, 51–00–00, Figure 16. Contact The Boeing Company for further repair instructions.			

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(VIEW IN THE AFT DIRECTION)

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Repair Inspection Requirements
Figure 204

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REPAIR 10 - BS 1016 AFT PRESSURE BULKHEAD (OIL CAN) REPAIR FROM S-3R STIFFENER TO S-5R STIFFENER, AND FROM OUTER STRAP OUTBOARD TO PRESSURE BULKHEAD CHORD

1. Applicability

A. Repair 10 is applicable to:

- An “oil can” condition in the web of the Pressure Bulkhead as shown in Figure 201/REPAIR 10, and Zone 1 in Figure 202/REPAIR 10.
- Airplanes with Line Numbers 1–1755.

B. Repair 10 is not applicable to:

- Zone 2 in Figure 202/REPAIR 10.
- Damage other than pressure bulkhead webs.
- Damage that is repaired by SRM 53-80-08, repairs 1, 2, or 3.
- Damage in fastener holes.

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Body Station 1016 Bulkhead Location
Figure 201

2. General

A. Repair 10 is a Category B repair. This Category B repair has FAA approval if you do the supplemental inspections as given in Paragraph 5./REPAIR 10. Incorporation of these inspection requirements into the airplane maintenance program satisfies the damage tolerance assessment of the repair. Refer to STRUCTURAL REPAIR DEFINITIONS, 51-00-06 for repair categories and definitions.

B. The manager of the FAA Seattle ACO approves accomplishment of this repair as an alternative method of compliance (AMOC) for the inspections, for the repair area only, required by paragraph (f) of AD 2007-25-03.

C. An “oil can” condition is a deflection that can occur in the web of a pressure bulkhead during a pressurization or depressurization cycle. The deflection can cause the web of the pressure bulkhead to have a shorter fatigue life.

D. All dimensions are in inches, unless they are shown differently.

E. D = fastener diameter.

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VIEW LOOKING FORWARD

ZONE 1: REPAIR IS APPLICABLE

ZONE 2: REPAIR IS NOT APPLICABLE

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Body Station 1016 Pressure Bulkhead
Figure 202

F. Use a minimum of 2D fastener edge margin.

G. Use 4D-6D spacing between repair fasteners.

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H. Use 8D-10D spacing between field fasteners.

I. Put fastener heads on the aft side of the pressure bulkhead, unless stated differently.

J. Use a minimum of 0.50 in. (12.70 mm) internal and external corner radius for the repair parts, unless stated differently.

K. Finish the machined surfaces to 63 microinches (Ra) or better, unless a different finish is specified.

L. Make sure that the space between the mating surfaces of the repair parts is less than a 0.010 in. (0.254 mm) gap before you install the fasteners. If the space is more than 0.010 in. (0.254 mm), and less than or equal to 0.040 in. (1.016 mm), install shims in the space. If the space is greater than 0.040 in. (1.016 mm), remove first repair part, and replace with the new repair part.

M. For approved fasteners and process material substitutions, refer to FASTENER SUBSTITUTION, 51-40-03.

3. References

Reference	Title
51-00-06	STRUCTURAL REPAIR DEFINITIONS
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-20-05	REPAIR SEALING
51-20-13	SURFACE ROUGHNESS FINISH REQUIREMENTS
51-30-01	SHEET METAL MATERIALS
51-40-02	FASTENER INSTALLATION AND REMOVAL
51-40-03	FASTENER SUBSTITUTION
51-40-05	FASTENER HOLE SIZES
51-40-06	FASTENER EDGE MARGINS
SOPM 20-20-02	Penetrant Methods of Inspection
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes
737 NDT Part 6, 51-00-00, Procedure 16	Aluminum Part Fastener Hole Inspection (Rotary Scanner)
737 NDT Part 6, 51-00-00, Procedure 23	Aluminum Part Surface Inspection (Impedance Plane Display)
737 NDT Part 6, 51-00-00, Procedure 4	Surface Inspection of Aluminum Parts (Meter Display)

4. Repair Instructions

A. Get access to the repair area.

B. Do a dye penetrant inspection of the web damage area. Refer to SOPM 20-20-02. If you there are cracks on the web, continue to do Paragraph 4.F./REPAIR 10.

C. Do a High Frequency Eddy Current (HFEC) inspection of the web around the initial fastener locations. Refer to 737 NDT Part 6, 51-00-00, Procedure 4 and 737 NDT Part 6, 51-00-00, Procedure 23. If there are crack indications, contact the Boeing Company for disposition.

D. Put the pressure bulkhead web back to the initial contour with normal hand pressure, as necessary. Repeat this step until the repair parts are in place. If you can not restore the web contour, continue to do Paragraph 4.F./REPAIR 10.

E. Do a dye penetrant inspection of web damage area after you restore the web contour as given in Paragraph 4.D./REPAIR 10 . Refer to SOPM 20-20-02. If you find cracks, continue to do Paragraph 4.F./REPAIR 10. If no cracks are found and the initial contour is restored then go to Paragraph 4.G./REPAIR 10.

F. Cut and remove the damaged area of the pressure bulkhead web, as necessary.

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(1) Remove the fasteners from the initial structure around the damaged area, as necessary. Refer to FASTENER INSTALLATION AND REMOVAL, 51-40-02.

(2) Do a High Frequency Eddy Current (HFEC) inspection to all open holes where you removed the fasteners to make sure there are no cracks. Refer to 737 NDT Part 6, 51-00-00, Procedure 16.

(3) Remove the initial parts that are around the web damage. Keep these parts for reinstallation.

(4) Make the corner radii of the cut a minimum of 0.50 in. (12.70 mm) at all trimout locations.

(5) Make sure there is a minimum surface finish of 63 Ra at all trimout locations. Refer to SURFACE ROUGHNESS FINISH REQUIREMENTS, 51-20-13.

G. Do a detailed visual inspection of the area around the damage to make sure there is no damage to the substructure. If you find damage, contact The Boeing Company for further repair instructions.

H. Make the repair parts. Refer to Table 201/REPAIR 10 and Figure 203/REPAIR 10. Refer to SHEET METAL MATERIALS, 51-30-01. The material thickness and contour of the repair parts are to match the initial part thickness and contour.

Table 201:

REPAIR MATERIAL			
ITEM	PART	QUANTITY	MATERIAL
[1]	Repair Doubler	1	0.040 in. (1.016 mm) thick 2024–T0 clad sheet. Heat treat to T42 condition after you form the part. As an alternative, you can use p/n 148A2281 pressure bulkhead web to make the repair parts.
[2]	Tapered Shim	2	0.040 in. (1.016 mm) thick 2024–T3 bare sheet. Make sure the taper is 50:1.

I. Assemble the repair parts as shown in Figure 203/REPAIR 10.

J. Drill the fastener holes. Refer to FASTENER HOLE SIZES, 51-40-05, FASTENER SUBSTITUTION, 51-40-03, and FASTENER EDGE MARGINS, 51-40-06.

K. Disassemble the repair parts.

L. Remove all the nicks, scratches, burrs, and sharp edges from the repair parts and the initial parts.

M. Apply a chemical conversion coating to the repair parts and to the bare surfaces of the initial parts. Refer to PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS, 51-20-01.

N. Apply two layers of BMS 10-11, Type I primer to the repair parts and the bare surfaces of the initial parts. Refer to SOPM 20-41-02.

O. Install the repair parts on the forward side of the bulkhead web.

(1) Apply BMS 5–95 sealant to the mating surfaces of the repair parts. Refer to REPAIR SEALING, 51-20-05.

(2) Apply a fillet seal along the edges of the repair parts with BMS 5–95 sealant. Refer to REPAIR SEALING, 51-20-05.

P. Install the intial parts that were removed to get access to the damaged area.

Q. Install the fasteners. Refer toFASTENER INSTALLATION AND REMOVAL, 51-40-02.

(1) If installing Non-Aluminum fasteners, install Non-Aluminum fasteners in transition fit holes as given in SRM 51-40-05 (except at steel parts, then install in close ream holes), Figure 4, wet with BMS 5-95 sealant.

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(2) If installing Rivets, install the aluminum rivets without sealant, over-driven to a minimum 1.4D driven head as given in FASTENER INSTALLATION AND REMOVAL, 51-40-02.

R. Apply one layer of BMS 3–23 Type II corrosion inhibiting compound to the surface of the repair area. Refer to PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS, 51-20-01.

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Layout of the Repair Parts
Figure 203 (Sheet 1 of 2)

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A–A

NOTES

1 DO NOT MIX BETWEEN RIVETS AND BOLTS. USE EITHER ALL RIVETS OR ALL BOLTS IN THE REPAIR AREA.

FASTENER SYMBOLS

REFERENCE FASTENER LOCATION

INITIAL FASTENER LOCATION. INSTALL A BACR15BB5D()C RIVET. AS AN ALTENATIVE, YOU CAN INSTALL A BACB30VT6K() HEX DRIVE BOLT WITH A BACC30BL6 COLLAR. 1

INITIAL FASTENER LOCATION. INSTALL A BACR15BB6D()C RIVET. AS AN ALTERNATIVE, YOU CAN INSTALL A BACB30NX6K()X HEX DRIVE BOLT WITH A BACC30M6 COLLAR, OR YOU CAN INSTALL A SECOND OVERSIZE BACB30NX6K()Y HEX DRIVE BOLT WITH A BACC30R6 COLLAR AS NECESSARY TO HAVE CLOSE REAM FIT. 1

REPAIR FASTENER LOCATION. INSTALL A BACR15BB5D()C RIVET. AS AN ALTERNATIVE, INSTALL A BACB30VT6K() HEX DRIVE BOLT WITH A BACC30BL6 COLLAR. KEEP A MINIMUM 2D EDGE MARGIN AND 4D TO 6D FASTENER SPACING. 1

REPAIR FASTENER LOCATION. FIELD FASTENER LOCATION. INSTALL A BACR15BB5D()C RIVET. AS AN ALTERNATIVE, INSTALL A BACB30VT6K() HEX DRIVE BOLT WITH A BACC30BL6 COLLAR. KEEP A 8D TO 10D FASTENER SPACING. 1

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Layout of the Repair Parts
Figure 203 (Sheet 2 of 2)

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5. **Inspection Requirements**

A. Refer to STRUCTURAL REPAIR DEFINITIONS, 51-00-06 for repair categories and definitions.

B. Do the inspections as shown in Table 202 and Figure 204/REPAIR 10.

C. Do an NDT inspection of the pressure bulkhead web for crack at all fastener locations as given in Table 202.

Table 202:

CATEGORY B REPAIR INSPECTION REQUIREMENTS			
INSPECTION THRESHOLD	REPEAT INSPECTION AND REPEAT INTERVALS		
	METHOD	INTERVAL	REFERENCE
36,000 flight cycles from the time the repair is done	HFEC At the first fastener row common to the repair and web, inspect the web from the aft side of the pressure bulkhead (See Note) HFEC At the fastener rows common to the repair, web, and pressure chord, inspect the repair doubler from the forward side of the pressure bulkhead	16,000 flight cycles	NDT Part 6, 51-00-00, Figure 4 or 23
	LFEC At the fastener rows common to the strap, the repair, and the web, inspect the web from the aft side of the pressure bulkhead	4000 flight cycles	NDT Part 6, 53–10–41
Note: If crack damage occurs when you do a Low Frequency Eddy Current Inspection (LFEC) , remove the fasteners and do an open hole eddy current inspection as given in NDT Part 6, 51–00–00, Figure 16. Contact The Boeing Company for further repair instructions.			

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ZONE 1 HFEC INSPECT AS GIVEN IN TABLE 202.

ZONE 2 LFEC INSPECT AS GIVEN IN TABLE 202.

(VIEW IN THE AFT DIRECTION)

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Repair Inspection Requirements
Figure 204

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REPAIR 11 - BS 1016 AFT PRESSURE BULKHEAD (OIL CAN) REPAIR FROM S-5R STIFFENER TO S-7R STIFFENER, AND FROM OUTER STRAP OUTBOARD TO PRESSURE CHORD

1. Applicability

A. Repair 11 is applicable to:

- An “oil can” condition in the web of the Pressure Bulkhead as shown in Figure 201/REPAIR 11, and Zone 1 in Figure 202/REPAIR 11.
- Airplanes with Line Numbers 1–1755.

B. Repair 11 is not applicable to:

- Zone 2 in Figure 202/REPAIR 11.
- Damage other than pressure bulkhead webs.
- Damage that is repaired by SRM 53-80-08, repairs 1, 2, or 3.
- Damage in fastener holes.

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Body Station 1016 Pressure Bulkhead Location
Figure 201

2. General

A. Repair 11 is a Category B repair. This Category B repair has FAA approcal if you do the supplemental inspections as given in Paragraph 5./REPAIR 11. Incorporation of these inspection requirements into the airplane maintenance program satisfies the damage tolerance assessment of the repair. Refer to STRUCTURAL REPAIR DEFINITIONS, 51-00-06 for repair categories and definitions.

B. The manager of the FAA Seattle ACO approves accomplishment of this repair as an alternative method of compliance (AMOC) for the inspections, for the repair area only, required by paragraph (f) of AD 2007-25-03.

C. An “oil can” condition is a deflection that can occur in the web of a pressure bulkhead during a pressurization or depressurization cycle. The deflection can cause the web of the pressure bulkhead to have a shorter fatigue life.

D. All dimensions are in inches, unless they are shown differently.

E. D = fastener diameter.

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VIEW LOOKING FORWARD

ZONE 1: REPAIR IS APPLICABLE

ZONE 2: REPAIR IS NOT APPLICABLE

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Body Station 1016 Pressure Bulkhead
Figure 202

F. Use a minimum of 2D fastener edge margin.

G. Use 4D-6D spacing between repair fasteners.

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H. Use 8D-10D spacing between field fasteners.

I. Put fastener heads on the aft side of the pressure bulkhead, unless stated differently.

J. Use a minimum of 0.50 in. (12.70 mm) internal and external corner radius for the repair parts, unless stated differently.

K. Finish the machined surfaces to 63 microinches (Ra) or better, unless a different finish is specified.

L. Make sure that the space between the mating surfaces of the repair parts is less than a 0.010 in. (0.254 mm) gap before you install the fasteners. If the space is more than 0.010 in. (0.254 mm), and less than or equal to 0.040 in. (1.016 mm), install shims in the space. If the space is greater than 0.040 in. (1.016 mm), remove first repair part, and replace with the new repair part.

M. For approved fasteners and process material substitutions, refer to FASTENER SUBSTITUTION, 51-40-03.

3. References

Reference	Title
51-00-06	STRUCTURAL REPAIR DEFINITIONS
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-20-05	REPAIR SEALING
51-20-13	SURFACE ROUGHNESS FINISH REQUIREMENTS
51-30-01	SHEET METAL MATERIALS
51-40-02	FASTENER INSTALLATION AND REMOVAL
51-40-03	FASTENER SUBSTITUTION
51-40-05	FASTENER HOLE SIZES
51-40-06	FASTENER EDGE MARGINS
SOPM 20-20-02	Penetrant Methods of Inspection
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes
737 NDT Part 6, 51-00-00, Procedure 16	Aluminum Part Fastener Hole Inspection (Rotary Scanner)
737 NDT Part 6, 51-00-00, Procedure 23	Aluminum Part Surface Inspection (Impedance Plane Display)
737 NDT Part 6, 51-00-00, Procedure 4	Surface Inspection of Aluminum Parts (Meter Display)

4. Repair Instructions

A. Get access to the repair area.

B. Do a dye penetrant inspection of the web damage area. Refer to SOPM 20-20-02. If you find cracks, continue to do Paragraph 4.F./REPAIR 11.

C. Do a High Frequency Eddy Current (HFEC) inspection of the web around the initial fastener locations. Refer to 737 NDT Part 6, 51-00-00, Procedure 4 and 737 NDT Part 6, 51-00-00, Procedure 23. If there are crack indications, contact the Boeing Company for disposition.

D. Put the pressure bulkhead web back to the initial contour with normal hand pressure, as necessary. Repeat this step until the repair parts are in place. If you can not restore the web contour, continue to do Paragraph 4.F./REPAIR 11.

E. Do a dye penetrant inspection of web damage area after you restore the web contour as given in Paragraph 4.D./REPAIR 11. Refer to SOPM 20-20-02. If you find cracks, continue to do Paragraph 4.F./REPAIR 11. If no cracks are found and the initial contour is restored then go to Paragraph 4.G./REPAIR 11.

F. Cut and remove the damaged area of the pressure bulkhead web, as necessary.

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(1) Remove the fasteners from the initial structure around the damaged area, as necessary. Refer to FASTENER INSTALLATION AND REMOVAL, 51-40-02.

(2) Do a High Frequency Eddy Current (HFEC) inspection to all open holes where you removed the fasteners to make sure there are no cracks. Refer to 737 NDT Part 6, 51-00-00, Procedure 16.

(3) Remove the initial parts that are around the web damage. Keep these parts for reinstallation.

(4) Make the corner radii of the cut a minimum of 0.50 in. (12.70 mm) at all trimout locations.

(5) Make sure there is a minimum surface finish of 63 Ra at all trimout locations. Refer to SURFACE ROUGHNESS FINISH REQUIREMENTS, 51-20-13.

G. Do a detailed visual inspection of the area around the damage to make sure there is no damage to the substructure. If there is damage, contact The Boeing Company for further repair instructions.

H. Make the repair parts. Refer to Table 201/REPAIR 11 and Figure 203/REPAIR 11. Refer to SHEET METAL MATERIALS, 51-30-01. The material thickness and contour of the repair parts are to match the initial part thickness and contour.

Table 201:

REPAIR MATERIAL			
ITEM	PART	QUANTITY	MATERIAL
[1]	Repair Doubler	1	0.040 in. (1.016 mm) thick 2024–T0 clad sheet. Heat treat to T42 condition after you form the part. As an alternative, you can use a p/n 148A2281 pressure bulkhead web to make the repair parts.
[2]	Filler	1	0.032 in. (0.813 mm) thick 2024–T0. Heat treat to T42 condition after you form the part.
[3]	Tapered Shim	2	0.040 in. (1.016 mm) thick 2024–T3 bare sheet. Make sure the taper is 50:1.

I. Assemble the repair parts as shown in Figure 203/REPAIR 11.

J. Drill the fastener holes. Refer to FASTENER HOLE SIZES, 51-40-05, FASTENER SUBSTITUTION, 51-40-03, and FASTENER EDGE MARGINS, 51-40-06.

K. Disassemble the repair parts.

L. Remove all the nicks, scratches, burrs, and sharp edges from the repair parts and the initial parts.

M. Apply a chemical conversion coating to the repair parts and to the bare surfaces of the initial parts. Refer to PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS, 51-20-01.

N. Apply two layers of BMS 10-11, Type I primer to the repair parts and the bare surfaces of the initial parts. Refer to SOPM 20-41-02.

O. Install the repair parts on the forward side of the bulkhead web.

(1) Apply BMS 5–95 sealant to the mating surfaces of the repair parts. Refer to REPAIR SEALING, 51-20-05.

(2) Apply fit up forces to the repair parts as given in SHEET METAL MATERIALS, 51-30-01. Keep the pull-up limit to a maximum of 0.010 in. (0.25 mm).

(3) Apply a fillet seal along the edges of the repair parts with BMS 5–95 sealant. Refer to REPAIR SEALING, 51-20-05.

P. Install the intial parts that were removed to get access to the damaged area.

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Q. Install the fasteners. Refer toFASTENER INSTALLATION AND REMOVAL, 51-40-02.

(1) If installing Non-Aluminum fasteners, install Non-Aluminum fasteners in transition fit holes as given in SRM 51-40-05 (except at steel parts, then install in close ream holes), Figure 4, wet with BMS 5-95 sealant.

(2) If installing Rivets, install the aluminum rivets without sealant, over-driven to a minimum 1.4D driven head as given in FASTENER INSTALLATION AND REMOVAL, 51-40-02.

R. Apply one layer of BMS 3–23 Type II corrosion inhibiting compound to the surface of the repair area. Refer to PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS, 51-20-01.

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Layout of the Repair Parts
Figure 203 (Sheet 1 of 3)

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A–A

B–B

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Layout of the Repair Parts
Figure 203 (Sheet 2 of 3)

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NOTES

1 DO NOT MIX BETWEEN RIVETS AND BOLTS. USE EITHER ALL RIVETS OR ALL BOLTS IN THE REPAIR AREA.

2 TRIM THE INITIAL WEB BACK TO KEEP A MINIMUM 1.7D EDGE MARGIN ON THE REPAIR PARTS AND THE INITIAL PARTS.

FASTENER SYMBOLS

REFERENCE FASTENER LOCATION

INITIAL FASTENER LOCATION. INSTALL A BACR15BB5D()C RIVET. AS AN ALTENATIVE, YOU CAN INSTALL A BACB30VT6K() HEX DRIVE BOLT WITH A BACC30BL6 COLLAR. 1

INITIAL FASTENER LOCATION. INSTALL A BACR15BB6D()C RIVET. AS AN ALTERNATIVE, YOU CAN INSTALL A BACB30NX6K()X HEX DRIVE BOLT WITH A BACC30M6 COLLAR, OR YOU CAN INSTALL A SECOND OVERSIZE BACB30NX6K()Y HEX DRIVE BOLT WITH A BACC30R6 COLLAR AS NECESSARY TO HAVE CLOSE REAM FIT. 1

REPAIR FASTENER LOCATION. INSTALL A BACR15BB5D()C RIVET. AS AN ALTERNATIVE, INSTALL A BACB30VT6K() HEX DRIVE BOLT WITH A BACC30BL6 COLLAR. KEEP A MINIMUM 2D EDGE MARGIN AND 4D TO 6D FASTENER SPACING. 1

REPAIR FASTENER LOCATION. FIELD FASTENER LOCATION. INSTALL A BACR15BB5D()C RIVET. AS AN ALTERNATIVE, INSTALL A BACB30VT6K() HEX DRIVE BOLT WITH A BACC30BL6 COLLAR. KEEP A 8D TO 10D FASTENER SPACING. 1

INITIAL FASTENER LOCATION. INSTALL A BACR15BB6D()C RIVET. AS AN ALTERNATIVE, INSTALL A BACB30NX6K()X HEX DRIVE BOLT WITH A BACC30M6 COLLAR, OR YOU CAN INSTALL A SECOND OVERSIZE BACB30NX6K()Y HEX DRIVE BOLT WITH A BACC30R6 COLLAR AS NECESSARY TO HAVE TRANSITION FIT. 1

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Layout of the Repair Parts
Figure 203 (Sheet 3 of 3)

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5. **Inspection Requirements**

A. Refer to STRUCTURAL REPAIR DEFINITIONS, 51-00-06 for repair categories and definitions.

B. Do the inspections as shown in Table 202 and Figure 204/REPAIR 11.

C. Do an NDT inspection of the pressure bulkhead web for crack at all fastener locations as given in Table 202.

Table 202:

CATEGORY B REPAIR INSPECTION REQUIREMENTS			
INSPECTION THRESHOLD	REPEAT INSPECTION AND REPEAT INTERVALS		
	METHOD	INTERVAL	REFERENCE
36,000 flight cycles from the time the repair is done	HFEC At the first fastener row common to the repair and web, inspect the web from the aft side of the pressure bulkhead (See Note) HFEC At the fastener rows common to the repair, web, and pressure chord, inspect the repair doubler from the forward side of the pressure bulkhead	16,000 flight cycles	NDT Part 6, 51-00-00, Figure 4 or 23
	LFEC At the fastener rows common to the strap, the repair, and the web, inspect the web from the aft side of the pressure bulkhead	4000 flight cycles	NDT Part 6, 53–10–41
Note: If crack damage occurs when you do a Low Frequency Eddy Current Inspection (LFEC) , remove the fasteners and do an open hole eddy current inspection as given in NDT Part 6, 51–00–00, Figure 16. Contact The Boeing Company for further repair instructions.			

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ZONE 1 HFEC INSPECT AS GIVEN IN TABLE 202.

ZONE 2 LFEC INSPECT AS GIVEN IN TABLE 202.

(VIEW IN THE AFT DIRECTION)

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Repair Inspection Requirements
Figure 204

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REPAIR 12 - BS 1016 AFT PRESSURE BULKHEAD (OIL CAN) REPAIR FROM BL 0.0 STIFFENER TO S-3R STIFFENER, AND FROM OUTER STRAP OUTBOARD TO PRESSURE CHORD

1. Applicability

A. Repair 12 is applicable to:

- An “oil can” condition in the web of the Pressure Bulkhead as shown in Figure 201/REPAIR 12, and Zone 1 in Figure 202/REPAIR 12.
- Airplanes with Line Numbers 1–1755.

B. Repair 12 is not applicable to:

- Zone 2 in Figure 202/REPAIR 12.
- Damage other than pressure bulkhead webs.
- Damage that is repaired by SRM 53-80-08, repairs 1, 2, or 3.
- Damage in fastener holes.

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Body Station 1016 Pressure Bulkhead Location
Figure 201

2. General

A. Repair 12 is a Category B repair. This Category B repair has FAA approval if you do the suppelemental inspections given in Paragraph 5./REPAIR 12. Incorporation of these inspection requirement into the airplane maintenance program satisfies the damage tolerance assessment of the repair. Refer to STRUCTURAL REPAIR DEFINITIONS, 51-00-06 for repair categories and definitions.

B. The manager of the FAA Seattle ACO approves accomplishment of this repair as an alternative method of compliance (AMOC) for the inspections, for the repair area only, required by paragraph (f) of AD 2007-25-03.

C. An “oil can” condition is a deflection that can occur in the web of a pressure bulkhead during a pressurization or depressurization cycle. The deflection can cause the web of the pressure bulkhead to have a shorter fatigue life.

D. All dimensions are in inches, unless they are shown differently.

E. D = fastener diameter.

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VIEW LOOKING FORWARD

ZONE 1: REPAIR IS APPLICABLE

ZONE 2: REPAIR IS NOT APPLICABLE

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Body Station 1016 Pressure Bulkhead
Figure 202

F. Use a minimum of 2D fastener edge margin.

G. Use 4D-6D spacing between repair fasteners.

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H. Use 8D-10D spacing between field fasteners.

I. Put fastener heads on the aft side of the pressure bulkhead, unless stated differently.

J. Use a minimum of 0.50 in. (12.70 mm) internal and external corner radius for the repair parts, unless stated differently.

K. Finish the machined surfaces to 63 microinches (Ra) or better, unless a different finish is specified.

L. Make sure that the space between the mating surfaces of the repair parts is less than a 0.010 in. (0.254 mm) gap before you install the fasteners. If the space is more than 0.010 in. (0.254 mm), and less than or equal to 0.040 in. (1.016 mm), install shims in the space. If the space is greater than 0.040 in. (1.016 mm), remove the first repair part, and replace with the new repair part.

M. For approved fasteners and process material substitutions, refer to FASTENER SUBSTITUTION, 51-40-03.

3. References

Reference	Title
51-00-06	STRUCTURAL REPAIR DEFINITIONS
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-20-05	REPAIR SEALING
51-20-13	SURFACE ROUGHNESS FINISH REQUIREMENTS
51-30-01	SHEET METAL MATERIALS
51-40-02	FASTENER INSTALLATION AND REMOVAL
51-40-03	FASTENER SUBSTITUTION
51-40-05	FASTENER HOLE SIZES
51-40-06	FASTENER EDGE MARGINS
SOPM 20-20-02	Penetrant Methods of Inspection
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes
737 NDT Part 6, 51-00-00, Procedure 16	Aluminum Part Fastener Hole Inspection (Rotary Scanner)
737 NDT Part 6, 51-00-00, Procedure 23	Aluminum Part Surface Inspection (Impedance Plane Display)
737 NDT Part 6, 51-00-00, Procedure 4	Surface Inspection of Aluminum Parts (Meter Display)

4. Repair Instructions

A. Get access to the repair area.

B. Do a dye penetrant inspection of the web damage area. Refer to SOPM 20-20-02. If you find cracks, continue to do Paragraph 4.F./REPAIR 12.

C. Do a High Frequency Eddy Current (HFEC) inspection of the web around the initial fastener locations. Refer to 737 NDT Part 6, 51-00-00, Procedure 4 and 737 NDT Part 6, 51-00-00, Procedure 23. If there are crack indications, contact the Boeing Company for disposition.

D. Put the pressure bulkhead web back to the initial contour with normal hand pressure, as necessary. Repeat this step until the repair parts are in place. If you can not restore the web contour, continue to do Paragraph 4.F./REPAIR 12.

E. Do a dye penetrant inspection of web damage area after you restore the web contour as given in Paragraph 4.D./REPAIR 12. Refer to SOPM 20-20-02. If you find cracks, continue to do Paragraph 4.F./REPAIR 12. If no cracks are found and the initial contour is restored then go to Paragraph 4.G./REPAIR 12.

F. Cut and remove the damaged area of the pressure bulkhead web, as necessary.

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(1) Remove the fasteners from the initial structure around the damaged area, as necessary. Refer to FASTENER INSTALLATION AND REMOVAL, 51-40-02.

(2) Do a High Frequency Eddy Current (HFEC) inspection to all open holes where you removed the fasteners to make sure there are no cracks. Refer to 737 NDT Part 6, 51-00-00, Procedure 16.

(3) Remove the initial parts that are around the web damage. Keep these parts for reinstallation.

(4) Make the corner radii of the cut a minimum of 0.50 in. (12.70 mm) at all trimout locations.

(5) Make sure there is a minimum surface finish of 63 Ra at all trimout locations. Refer to SURFACE ROUGHNESS FINISH REQUIREMENTS, 51-20-13.

G. Do a detailed visual inspection of the area around the damage to make sure there is no damage to the substructure. If there is damage, contact The Boeing Company for further repair instructions.

H. Make the repair parts. Refer to Table 201/REPAIR 12 and Figure 203/REPAIR 12. Refer to SHEET METAL MATERIALS, 51-30-01. The material thickness and contour of the repair parts are to match the initial part thickness and contour.

Table 201:

REPAIR MATERIAL			
ITEM	PART	QUANTITY	MATERIAL
[1]	Repair Doubler	1	0.032 in. (0.813 mm) thick 2024–T0 clad sheet. Heat treat to T42 condition after you form the part. As an alternative, you can use a p/n 148A2281 pressure bulkhead web to make the repair parts.
[2]	Filler *[1]	1	0.040 in. (1.016 mm) thick 2024–T0. Heat treat to T42 condition after you form the part.
[3]	Tapered Shim	1	0.071 in. (1.803 mm) thick 2024–T3 bare sheet
[4]	Flat Shim	1	0.032 in. (0.813 mm) thick 2024–T3 clad sheet.
[5]	Tapered Shim	1	0.040 in. (1.016 mm) thick 2024–T3 bare sheet. Make sure the taper is 50:1.

*[1] This part is not necessary if the production doubler is installed on top of the repair doubler.

I. Assemble the repair parts as shown in Figure 203/REPAIR 12.

J. Drill the fastener holes. Refer to FASTENER HOLE SIZES, 51-40-05, FASTENER SUBSTITUTION, 51-40-03, and FASTENER EDGE MARGINS, 51-40-06.

K. Disassemble the repair parts.

L. Remove all the nicks, scratches, burrs, and sharp edges from the repair parts and the initial parts.

M. Apply a chemical conversion coating to the repair parts and to the bare surfaces of the initial parts. Refer to PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS, 51-20-01.

N. Apply two layers of BMS 10-11, Type I primer to the repair parts and the bare surfaces of the initial parts. Refer to SOPM 20-41-02.

O. Install the repair parts on the forward side of the bulkhead web.

(1) Apply BMS 5–95 sealant to the mating surfaces of the repair parts. Refer to REPAIR SEALING, 51-20-05.

(2) Apply fit up forces to the repair parts as given in SHEET METAL MATERIALS, 51-30-01. Keep the pull-up limit to a maximum of 0.010 in. (0.25 mm).

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(3) Apply a fillet seal along the edges of the repair parts with BMS 5–95 sealant. Refer to REPAIR SEALING, 51-20-05.

P. Install the intial parts that were removed to get access to the damaged area.

Q. Install the fasteners. Refer toFASTENER INSTALLATION AND REMOVAL, 51-40-02.

(1) If installing Non-Aluminum fasteners, install Non-Aluminum fasteners in transition fit holes as given in SRM 51-40-05 (except at steel parts, then install in close ream holes), Figure 4, wet with BMS 5-95 sealant.

(2) If installing Rivets, install the aluminum rivets without sealant, over-driven to a minimum 1.4D driven head as given in FASTENER INSTALLATION AND REMOVAL, 51-40-02.

R. Apply one layer of BMS 3–23 Type II corrosion inhibiting compound to the surface of the repair area. Refer to PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS, 51-20-01.

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(VIEW IN THE AFT DIRECTION)

A

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Layout of the Repair Parts
Figure 203 (Sheet 1 of 3)

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A–A

B–B

1976640 S0000379290_V1

Layout of the Repair Parts
Figure 203 (Sheet 2 of 3)

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NOTES

1 DO NOT MIX BETWEEN RIVETS AND BOLTS. USE EITHER ALL RIVETS OR ALL BOLTS IN THE REPAIR AREA.

2 TRIM THE INITIAL WEB BACK TO KEEP A MINIMUM 1.7D EDGE MARGIN ON THE REPAIR PARTS AND THE INITIAL PARTS.

3 THE PART [2] FILLER IS NOT NECESSARY IF THE INITIAL PRODUCTION DOUBLER WAS REMOVED PRIOR TO INSTALLATION OF REPAIR DOUBLER. PRODUCTION DOUBLER IS REINSTALLED ON TOP OF REPAIR DOUBLER, ONLY AFTER INSTALLATION OF REPAIR DOUBLER.

FASTENER SYMBOLS

REFERENCE FASTENER LOCATION

INITIAL FASTENER LOCATION. INSTALL A BACR15BB5D()C RIVET. AS AN ALTENATIVE, YOU CAN INSTALL A BACB30VT6K() HEX DRIVE BOLT WITH A BACC30BL6 COLLAR. 1

INITIAL FASTENER LOCATION. INSTALL A BACR15BB6D()C RIVET. AS AN ALTERNATIVE, YOU CAN INSTALL A BACB30NX6K()X HEX DRIVE BOLT WITH A BACC30M6 COLLAR, OR YOU CAN INSTALL A SECOND OVERSIZE BACB30NX6K()Y HEX DRIVE BOLT WITH A BACC30R6 COLLAR AS NECESSARY TO HAVE CLOSE REAM FIT. 1

INITIAL FASTENER LOCATION. INSTALL A BACB30NX6K()X HEX DRIVE BOLT WITH A BACC30M6 COLLAR, OR YOU CAN INSTALL A SECOND OVERSIZE BACB30NX6K()Y HEX DRIVE BOLT WITH A BACC30R6 COLLAR AS NECESSARY TO HAVE TRANSITION FIT.

REPAIR FASTENER LOCATION. INSTALL A BACR15BB5D()C RIVET. AS AN ALTERNATIVE, INSTALL A BACB30VT6K() HEX DRIVE BOLT WITH A BACC30BL6 COLLAR. KEEP A MINIMUM 2D EDGE MARGIN AND 4D TO 6D FASTENER SPACING. 1

REPAIR FASTENER LOCATION. FIELD FASTENER LOCATION. INSTALL A BACR15BB5D()C RIVET. AS AN ALTERNATIVE, INSTALL A BACB30VT6K() HEX DRIVE BOLT WITH A BACC30BL6 COLLAR. KEEP A 8D TO 10D FASTENER SPACING. 1

1976641 S0000379292_V1

Layout of the Repair Parts
Figure 203 (Sheet 3 of 3)

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5. **Inspection Requirements**

A. Refer to STRUCTURAL REPAIR DEFINITIONS, 51-00-06 for repair categories and definitions.

B. Do the inspections as shown in Table 202 and Figure 204/REPAIR 12.

C. Do an NDT inspection of the pressure bulkhead web for crack at all fastener locations as given in Table 202.

Table 202:

CATEGORY B REPAIR INSPECTION REQUIREMENTS			
INSPECTION THRESHOLD	REPEAT INSPECTION AND REPEAT INTERVALS		
	METHOD	INTERVAL	REFERENCE
36,000 flight cycles from the time the repair is done	HFEC At the first fastener row common to the repair and web, inspect the web from the aft side of the pressure bulkhead (See Note) HFEC At the fastener rows common to the repair, web, and pressure chord, inspect the repair doubler from the forward side of the pressure bulkhead	16,000 flight cycles	NDT Part 6, 51-00-00, Figure 4 or 23
	LFEC At the fastener rows common to the strap, the repair, and the web, inspect the web from the aft side of the pressure bulkhead	4000 flight cycles	NDT Part 6, 53–10–41
Note: If crack damage occurs when you do a Low Frequency Eddy Current Inspection (LFEC) , remove the fasteners and do an open hole eddy current inspection as given in NDT Part 6, 51–00–00, Figure 16. Contact The Boeing Company for further repair instructions.			

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ZONE 1 HFEC INSPECT AS GIVEN IN TABLE 202.

ZONE 2 LFEC INSPECT AS GIVEN IN TABLE 202.

(VIEW IN THE AFT DIRECTION)

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Repair Inspection Requirements
Figure 204

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REPAIR 13 - BS 1016 AFT PRESSURE BULKHEAD (OIL CAN) REPAIR FROM SHORTER L-SHAPED STIFFENER TO S-3L/R STIFFENER, AND FROM OUTER STRAP OUTBOARD TO PRESSURE CHORD

1. Applicability

A. Repair 13 is applicable to:

- An “oil can” condition in the web of the Pressure Bulkhead as shown in Figure 201/REPAIR 13, and Zone 1 in Figure 202/REPAIR 13.
- Airplanes with Line Numbers 1-1755.

B. Repair 13 is not applicable to:

- Zone 2 in Figure 202/REPAIR 13.
- Damage other than pressure bulkhead webs.
- Damage that is repaired by SRM 53-80-08, repairs 1, 2, or 3.
- Damage in fastener holes.

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Body Station 1016 Pressure Bulkhead Location
Figure 201

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VIEW LOOKING FORWARD

ZONE 1: REPAIR IS APPLICABLE

ZONE 2: REPAIR IS NOT APPLICABLE

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Body Station 1016 Pressure Bulkhead
Figure 202

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2. General

A. Repair 13 is a Category B repair. This Category B repair has FAA approval if you do the supplemental inspections given in Paragraph 5./REPAIR 13. Incorporation of these inspection requirements into the airplane maintenance program satisfies the damage tolerance assessment of this repair. Refer to STRUCTURAL REPAIR DEFINITIONS, 51-00-06 for repair categories and definitions.

B. The manager of the FAA Seattle ACO approves accomplishment of this repair as an alternative method of compliance (AMOC) for the inspections, for the repair area only, required by paragraph (f) of AD 2007-25-03.

C. An “oil can” condition is a deflection that can occur in the web of a pressure bulkhead during a pressurization or depressurization cycle. The deflection can cause the web of the pressure bulkhead to have a shorter fatigue life.

D. All dimensions are in inches, unless they are shown differently.

E. D = fastener diameter.

F. Use a minimum of 2D fastener edge margin.

G. Use 4D-6D spacing between repair fasteners.

H. Use 8D-10D spacing between field fasteners.

I. Put fastener heads on the aft side of the pressure bulkhead, unless stated differently.

J. Use a minimum of 0.50 in. (12.70 mm) internal and external corner radius for the repair parts, unless stated differently.

K. Finish the machined surfaces to 63 microinches (Ra) or better, unless a different finish is specified.

L. Make sure that the space between the mating surfaces of the repair parts is less than a 0.010 in. (0.254 mm) gap before you install the fasteners. If the space is more than 0.010 in. (0.254 mm), and less than or equal to 0.040 in. (1.016 mm), install shims in the space. If the space is greater than 0.040 in. (1.016 mm), remove first repair part, and replace with the new repair part.

M. For approved fasteners and process material substitutions, refer to FASTENER SUBSTITUTION, 51-40-03.

3. References

Reference	Title
51-00-06	STRUCTURAL REPAIR DEFINITIONS
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-20-05	REPAIR SEALING
51-20-13	SURFACE ROUGHNESS FINISH REQUIREMENTS
51-30-01	SHEET METAL MATERIALS
51-40-02	FASTENER INSTALLATION AND REMOVAL
51-40-03	FASTENER SUBSTITUTION
51-40-05	FASTENER HOLE SIZES
51-40-06	FASTENER EDGE MARGINS
SOPM 20-20-02	Penetrant Methods of Inspection
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes
737 NDT Part 6, 51-00-00, Procedure 16	Aluminum Part Fastener Hole Inspection (Rotary Scanner)
737 NDT Part 6, 51-00-00, Procedure 23	Aluminum Part Surface Inspection (Impedance Plane Display)

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(Continued)

Reference	Title
737 NDT Part 6, 51-00-00, Procedure 4	Surface Inspection of Aluminum Parts (Meter Display)

4. Repair Instructions

A. Get access to the repair area.

B. Do a dye penetrant inspection of the web damage area. Refer to SOPM 20-20-02. If you find cracks, continue to do Paragraph 4.F./REPAIR 13.

C. Do a High Frequency Eddy Current (HFEC) inspection of the web around the initial fastener locations. Refer to 737 NDT Part 6, 51-00-00, Procedure 4 and 737 NDT Part 6, 51-00-00, Procedure 23.If there are crack indications, contact the Boeing Company for disposition.

D. Put the pressure bulkhead web back to the initial contour with normal hand pressure, as necessary. Repeat this step until the repair parts are in place. If you can not restore the web contour, continue to do Paragraph 4.F./REPAIR 13.

E. Do a dye penetrant inspection of web damage area after you restore the web contour as given in Paragraph 4.D./REPAIR 13. Refer to SOPM 20-20-02. If you find cracks, continue to do Paragraph 4.F./REPAIR 13. If no cracks are found and the initial contour is restored then go to Paragraph 4.G./REPAIR 13.

F. Cut and remove the damaged area of the pressure bulkhead web, as necessary.

(1) Remove the fasteners from the initial structure around the damaged area, as necessary. Refer to FASTENER INSTALLATION AND REMOVAL, 51-40-02.

(2) Do a High Frequency Eddy Current (HFEC) inspection to all open holes where you removed the fasteners to make sure there are no cracks. Refer to 737 NDT Part 6, 51-00-00, Procedure 16.

(3) Remove the initial parts that are around the web damage. Keep these parts for reinstallation.

(4) Make the corner radii of the cut a minimum of 0.50 in. (12.70 mm) at all trimout locations.

(5) Make sure there is a minimum surface finish of 63 Ra at all trimout locations. Refer to SURFACE ROUGHNESS FINISH REQUIREMENTS, 51-20-13.

G. Do a detailed visual inspection of the area around the damage to make sure there is no damage to the substructure. If there is damage, contact The Boeing Company for further repair instructions.

H. Make the repair parts. Refer to Table 201/REPAIR 13 and Figure 203/REPAIR 13. Refer to SHEET METAL MATERIALS, 51-30-01. The material thickness and contour of the repair parts are to match the initial part thickness and contour.

Table 201:

REPAIR MATERIAL			
ITEM	PART	QUANTITY	MATERIAL
[1]	Repair Doubler	1	0.032 in. (0.813 mm) thick 2024–T0 clad sheet. Heat treat to T42 condition after you form the part. As an alternative, you can use a p/n 148A2281 pressure bulkhead web to make the repair parts.
[2]	Filler	1	0.040 in. (1.016 mm) thick 2024–T0 clad. Heat treat to T42 condition after you form the part.
[3]	Tapered Shim	1	0.071 in. (1.803 mm) thick 2024–T3 bare sheet.

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Table 201: (Continued)

REPAIR MATERIAL			
[4]	Flat Shim	1	0.032 in. (0.813 mm) thick 2024–T3 clad sheet. Make sure the taper is 50:1.

I. Assemble the repair parts as shown in Figure 203/REPAIR 13.

J. Drill the fastener holes. Refer to FASTENER HOLE SIZES, 51-40-05, FASTENER SUBSTITUTION, 51-40-03, and FASTENER EDGE MARGINS, 51-40-06.

K. Disassemble the repair parts.

L. Remove all the nicks, scratches, burrs, and sharp edges from the repair parts and the initial parts.

M. Apply a chemical conversion coating to the repair parts and to the bare surfaces of the initial parts. Refer to PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS, 51-20-01.

N. Apply two layers of BMS 10-11, Type I primer to the repair parts and the bare surfaces of the initial parts. Refer to SOPM 20-41-02.

O. Install the repair parts on the forward side of the bulkhead web.

(1) Apply BMS 5–95 sealant to the mating surfaces of the repair parts. Refer to REPAIR SEALING, 51-20-05.

(2) Apply fit up forces to the repair parts as given in SHEET METAL MATERIALS, 51-30-01. Keep the pull-up limit to a maximum of 0.010 in. (0.25 mm).

(3) Apply a fillet seal along the edges of the repair parts with BMS 5–95 sealant. Refer to REPAIR SEALING, 51-20-05.

P. Install the intial parts that were removed to get access to the damaged area.

Q. Install the fasteners. Refer toFASTENER INSTALLATION AND REMOVAL, 51-40-02.

(1) If installing Non-Aluminum fasteners, install Non-Aluminum fasteners in transition fit holes as given in SRM 51-40-05 (except at steel parts, then install in close ream holes), Figure 4, wet with BMS 5-95 sealant.

(2) If installing Rivets, install the aluminum rivets without sealant, over-driven to a minimum 1.4D driven head as given in FASTENER INSTALLATION AND REMOVAL, 51-40-02.

R. Apply one layer of BMS 3–23 Type II corrosion inhibiting compound to the surface of the repair area. Refer to PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS, 51-20-01.

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(VIEW IN THE AFT DIRECTION)

A

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Layout of the Repair Parts
Figure 203 (Sheet 1 of 3)

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A–A

B–B

1977016 S0000380020_V1

Layout of the Repair Parts
Figure 203 (Sheet 2 of 3)

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NOTES

1 DO NOT MIX BETWEEN RIVETS AND BOLTS. USE EITHER ALL RIVETS OR ALL BOLTS IN THE REPAIR AREA.

FASTENER SYMBOLS

REFERENCE FASTENER LOCATION

INITIAL FASTENER LOCATION. INSTALL A BACR15BB5D()C RIVET. AS AN ALTENATIVE, YOU CAN INSTALL A BACB30VT6K() HEX DRIVE BOLT WITH A BACC30BL6 COLLAR. 1

INITIAL FASTENER LOCATION. INSTALL A BACR15BB6D()C RIVET. AS AN ALTERNATIVE, YOU CAN INSTALL A BACB30NX6K()X HEX DRIVE BOLT WITH A BACC30M6 COLLAR, OR YOU CAN INSTALL A SECOND OVERSIZE BACB30NX6K()Y HEX DRIVE BOLT WITH A BACC30R6 COLLAR AS NECESSARY TO HAVE CLOSE REAM FIT. 1

INITIAL FASTENER LOCATION. INSTALL A BACB30NX6K()X HEX DRIVE BOLT WITH A BACC30M6 COLLAR, OR YOU CAN INSTALL A SECOND OVERSIZE BACB30NX6K()Y HEX DRIVE BOLT WITH A BACC30R6 COLLAR AS NECESSARY TO HAVE TRANSITION FIT.

REPAIR FASTENER LOCATION. INSTALL A BACR15BB5D()C RIVET. AS AN ALTERNATIVE, INSTALL A BACB30VT6K() HEX DRIVE BOLT WITH A BACC30BL6 COLLAR. KEEP A MINIMUM 2D EDGE MARGIN AND 4D TO 6D FASTENER SPACING. 1

REPAIR FASTENER LOCATION. FIELD FASTENER LOCATION. INSTALL A BACR15BB5D()C RIVET. AS AN ALTERNATIVE, INSTALL A BACB30VT6K() HEX DRIVE BOLT WITH A BACC30BL6 COLLAR. KEEP A 8D TO 10D FASTENER SPACING. 1

INITIAL FASTENER LOCATION. INSTALL A BACR15BB6D()C RIVET. AS AN ALTERNATIVE, INSTALL A BACB30NX6K()X HEX DRIVE BOLT WITH A BACC30M6 COLLAR, OR YOU CAN INSTALL A SECOND OVERSIZE BACB30NX6K()Y HEX DRIVE BOLT WITH A BACC30R6 COLLAR AS NECESSARY TO HAVE TRANSITION FIT. 1

1977020 S0000380021_V1

Layout of the Repair Parts
Figure 203 (Sheet 3 of 3)

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5. **Inspection Requirements**

A. Refer to STRUCTURAL REPAIR DEFINITIONS, 51-00-06 for repair categories and definitions.

B. Do the inspections as shown in Table 202 and Figure 204/REPAIR 13.

C. Do an NDT inspection of the pressure bulkhead web for crack at all fastener locations as given in Table 202.

Table 202:

CATEGORY B REPAIR INSPECTION REQUIREMENTS			
INSPECTION THRESHOLD	REPEAT INSPECTION AND REPEAT INTERVALS		
	METHOD	INTERVAL	REFERENCE
36,000 flight cycles from the time the repair is done	HFEC At the first fastener row common to the repair and web, inspect the web from the aft side of the pressure bulkhead (See Note) HFEC At the fastener rows common to the repair, web, and pressure chord, inspect the repair doubler from the forward side of the pressure bulkhead	16,000 flight cycles	NDT Part 6, 51-00-00, Figure 4 or 23
	LFEC At the fastener rows common to the strap, the repair, and the web, inspect the web from the aft side of the pressure bulkhead	4000 flight cycles	NDT Part 6, 53–10–41
Note: If crack damage occurs when you do a Low Frequency Eddy Current Inspection (LFEC) , remove the fasteners and do an open hole eddy current inspection as given in NDT Part 6, 51–00–00, Figure 16. Contact The Boeing Company for further repair instructions.			

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ZONE 1 HFEC INSPECT AS GIVEN IN TABLE 202.

ZONE 2 LFEC INSPECT AS GIVEN IN TABLE 202.

(VIEW IN THE AFT DIRECTION)

1977047 S0000380030_V1

Repair Inspection Requirements
Figure 204

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IDENTIFICATION 1 - SECTION 48 UPPER AND LOWER HORIZONTAL BEAMS

G21088 S0006591261_V1

Section 48 Upper and Lower Horizontal Beam Location
Figure 1

Table 1:

REFERENCE DRAWINGS	
DRAWING NUMBER	**TITLE**
140A4807	Upper Module Functional Collector - Body Section 48
148A8700	Horizontal Beam Installation - Upper Module
140A4808	Lower Module Functional Collector - Body Section 48
148A8500	Horizontal Beam Installation - Lower - Station 1088 to 1156

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UPPER HORIZONTAL BEAM

G21178 S0006591263_V3

Section 48 Upper Horizontal Beam Identification
Figure 2

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Table 2:

LIST OF MATERIALS FOR FIGURE 2				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Web, Forward	0.063 (1.60)	2024-T3 clad sheet as given in QQ-A-250/5. Refer to the production drawing for the chem-milled thicknesses	
[2]	Web, Center	0.040 (1.02)	2024-T3 clad sheet as given in QQ-A-250/5. Refer to the production drawing for the chem-milled thicknesses	
[3]	Web, Aft	0.090 (2.29)	2024-T3 clad sheet as given in QQ-A-250/5. Refer to the production drawing for the chem-milled thicknesses	
[4]	Inboard Chord		AND10133-1003 7075-T6511 extrusion as given in QQ-A-200/11 (Optional: 7050-T7451 plate as given in AMS4050)	
[5]	Outer Chord, Lower	0.071 (1.80)	2024-T42 clad sheet as given in QQ-A-250/5	
[6]	Outer Chord, Upper	0.063 (1.60)	2024-T42 clad sheet as given in QQ-A-250/5	
[7]	Stiffener		BAC1506-1796 7075-T6511 extrusion as given in QQ-A-200/11 (Optional: 7050-T7451 plate as given in AMS4050)	
[8]	Stiffener		BAC1505-100022 2024-T3511 extrusion as given in QQ-A-200/3	
[9]	Stiffener		AND10134-1206 7075-T6511 extrusion as given in QQ-A-200/11	
[10]	Stiffener		BAC1503-100369 7075-T73511 extrusion as given in QQ-A-200/11	
[11]	Stiffener		BAC1506-3178 7075-T6511 extrusion as given in QQ-A-200/11 (Optional: 7050-T7451 plate as given in AMS4050)	
[12]	Stiffener		BAC1514-867 7075-T73511 extrusion as given in QQ-A-200/11	
[13]	Stiffener		BAC1514-1325 7075-T6511 extrusion as given in QQ-A-200/11 (Optional: 7050-T7451 plate as given in AMS 4050)	
[14]	Stiffener		BAC1514-2012 7075-T73511 extrusion as given in QQ-A-200/11 (Optional: 7050-T7451 plate as given in AMS 4050)	For cum line numbers 1 thru 967, 969 thru 972
			BAC1514-2012 7075-T73511 extrusion as given in QQ-A-200/11	For cum line numbers 968, 973 and on
[15]	Stiffener		BAC1503-100319 7075-T73511 extrusion as given in QQ-A-200/11	
[16]	Bracket	0.063 (1.60)	2024-T42 clad sheet as given in QQ-A-250/5	For cum line numbers 7 thru 9
			7050-T7451 plate as given in BMS 7-323, Type 1	For cum line numbers 36 and on
[17]	Angle, Lower	0.071 (1.80)	7075-T62 clad sheet as given in QQ-A-250/13	
[18]	Doubler	0.063 (1.60)	2024-T3 clad sheet as given in QQ-A-250/5	
[19]	Doubler	0.032 (0.81)	2024-T3 clad sheet as given in QQ-A-250/5	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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LOWER HORIZONTAL BEAM
AIRPLANE NUMBERS 1 THRU 1380 ONLY

G21237 S0006591265_V3

Section 48 Lower Horizontal Beam Identification
Figure 3 (Sheet 1 of 2)

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LOWER HORIZONTAL BEAM
AIRPLANE NUMBERS 1381 AND ON ONLY

W54389 S0000129998_V3

Section 48 Lower Horizontal Beam Identification
Figure 3 (Sheet 2 of 2)

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Table 3:

LIST OF MATERIALS FOR FIGURE 3				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Web	0.080 (2.03)	2024-T3 clad sheet as given in QQ-A-250/5. Refer to the production drawing for the chem-milled thicknesses	
[2]	Chord, Upper and Lower	0.063 (1.60)	2024-T42 clad sheet as given in QQ-A-250/5	
[3]	Stiffener Channel	0.063 (1.60)	7075-T62 clad sheet as given in QQ-A-250/13	
[4]	Stiffener Channel	0.050 (1.27)	7075-T62 clad sheet as given in QQ-A-250/13	
[5]	Stiffener		BAC1514-633 7075-T73511 extrusion as given in QQ-A-200/11	
[6]	Stiffener		BAC1505-100372 7075-T73511 extrusion as given in QQ-A-200/11	
[7]	Stiffener		BAC1490-2642 7075-T62 clad sheet, formed angle, as given in QQ-A-250/13	
[8]	Stiffener		BAC1505-100055 7075-T73511 extrusion as given in QQ-A-200/11	
[9]	Angle		BAC1503-100354 7075-T73511 extrusion as given in QQ-A-200/11	
[10]	Angle		BAC1514-751 7075-T73511 extrusion as given in QQ-A-200/11	
[11]	Angle		BAC1503-1430 7075-T6511 extrusion as given in QQ-A-200/11	
[12]	Angle		BAC1490-2630 7075-T62 clad sheet, formed angle, as given in QQ-A-250/13	
[13]	Angle		BAC1490-2736 7075-T62 clad sheet, formed angle, as given in QQ-A-250/13	
[14]	Angle		AND10134-1204 7075-T73511 extrusion as given in QQ-A-200/11	
[15]	Angle		BAC1490-2712 7075-T62 clad sheet, formed angle, as given in QQ-A-250/13	
[16]	Channel		BAC1493-526 7075-T62 clad sheet, formed channel, as given in QQ-A-250/13	
[17]	Stiffener		BAC1506-4271 7075-T6511 extrusion as given in QQ-A-200/11	
[18]	Bracket, Angle (2)	0.050 (1.27)	7075-T62 clad sheet as given in QQ-A-250/13	For cum line numbers 1 Thru 1380
[19]	Web, Fitting LH/RH		7050-T7451 plate as given in AMS4050	For cum line numbers 1381 and on
[20]	Bracket, Angle	0.071 (1.803)	2024-T42 clad sheet as given in QQ-A-250/5	
[21]	Stiffener		BAC1503-100319 7075-T73511 extrusion as given in QQ-A-200/11	
[22]	Stiffener		BAC1490-2642 7075-T62 clad sheet, formed angle, as given in QQ-A-250/13	For cum line numbers 1 thru 803, 805 thru 825, 827 thru 834, 861, 1121

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Table 3: (Continued)

LIST OF MATERIALS FOR FIGURE 3				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
			BAC1489-125 7075-T62 clad sheet, formed angle, as given in QQ-A-250/13	For cum line numbers 804, 826, 835 thru 860, 862 thru 1120, 1122 thru 1380

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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IDENTIFICATION 2 - SECTION 48 TORQUE BOX BEAM

NOTE: REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

G21214 S0006591268_V1

Section 48 Torque Box Beam Locations
Figure 1

Table 1:

REFERENCE DRAWINGS	
DRAWING NUMBER	**TITLE**
148A8600	Torque Box Installation - Left Hand, Station 1088 - 1156
148A8650	Torque Box Installation - Right Hand, Station 1088 - 1156
148A9350	Bracket Assembly - APU Support, Miscellaneous

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NOTE: REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

G21054 S0006591270_V1

Section 48 Left Side Torque Box Beam Identification
Figure 2

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Table 2:

LIST OF MATERIALS FOR FIGURE 2				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Stiffener		BAC1517-2737 7075-T6511 extrusion, as given in QQ-A-200/11. Refer to the production drawing for the machined thicknesses	
[2]	Stiffener		BAC1514-2569 7075-T73511 extrusion, as given in QQ-A-200/11. Refer to the production drawing for the machined thicknesses	
[3]	Upper Chord	0.090 (2.29)	7075-T62 clad sheet as given in QQ-A-250/13	
[4]	Stiffener		BAC1517-2735 7075-T6511 extrusion, as given in QQ-A-200/11. Refer to the production drawing for the machined thicknesses	
[5]	Web	0.040 (1.02)	2024-T3 clad sheet as given in QQ-A-250/5	
[6]	Stiffener		BAC1514-633 7075-T73511 extrusion, as given in QQ-A-200/11. Refer to the production drawing for the machined thicknesses	
[7]	Panel	0.100 (2.54)	2024-T3 clad sheet as given in QQ-A-250/5	
[8]	Inboard, Lower Chord	0.090 (2.29)	7075-T62 clad sheet as given in QQ-A-250/13	
[9]	Gusset		7075-T6 plate, as given in QQ-A-250/12. Refer to the production drawing for the machined thicknesses	
[10]	Cover	0.032 (0.81)	2024-T3 clad sheet as given in QQ-A-250/5	
[11]	Panel	0.150 (3.81)	2024-T3 bare sheet, as given in QQ-A-250/4. Refer to the production drawing for the chem-milled thicknesses	
[12]	Panel	0.110 (2.79)	2024-T3 clad sheet as given in QQ-A-250/5	
[13]	Clip	0.071 (1.80)	7075-T62 clad sheet as given in QQ-A-250/13	
[14]	Angle	0.063 (1.60)	7075-T62 clad sheet as given in QQ-A-250/13	
[15]	Firewall Bracket	0.050 (1.27)	2219-T62 sheet as given in QQ-A-250/30	
[16]	Stiffener		BAC1503-100442 7075-T6511 extrusion, as given in QQ-A-200/11. Refer to the production drawing for the machined thicknesses	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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NOTE: REFER TO TABLE 3 FOR THE LIST OF MATERIALS.

G21348 S0006591272_V2

Section 48 Right Side Torque Box Beam Identification
Figure 3

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Table 3:

LIST OF MATERIALS FOR FIGURE 3				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Angle		BAC1504-8180 7075-T6511 extrusion, as given in QQ-A-200/11. Refer to the production drawing for the machined thicknesses	
[2]	Tee, Stiffener		BAC1505-100155 7075-T6511 extrusion, as given in QQ-A-200/11. Refer to the production drawing for the machined thicknesses	
[3]	Stiffener		BAC1517-2735 7075-T6511 extrusion, as given in QQ-A-200/11. Refer to the production drawing for the machined thicknesses	
[4]	Stiffener		BAC1518-1183 7075-T6511 extrusion, as given in QQ-A-200/11 (optional: 7050–T7451 plate as given in AMS4050). Refer to the production drawing for the machined thicknesses	
[5]	Web	0.063 (1.60)	2024-T3 clad sheet as given in QQ-A-250/5	
[6]	Upper Chord	0.090 (2.29)	7075-T62 clad sheet as given in QQ-A-250/13	
[7]	Stiffener		BAC1517-2737 7075-T6511 extrusion, as given in QQ-A-200/11. Refer to the production drawing for the machined thicknesses	
[8]	Firewall Bracket	0.080 (2.03)	2219-T62 sheet as given in QQ-A-250/30	
[9]	Web	0.040 (1.02)	2024-T3 clad sheet as given in QQ-A-250/5	
[10]	Panel	0.125 (3.18)	2024-T3 clad sheet as given in QQ-A-250/5	
[11]	Lower Chord, Inboard	0.063 (1.60)	7075-T62 clad sheet as given in QQ-A-250/13	
[12]	Bracket	0.050 (1.27)	2219-T6 sheet as given in QQ-A-250/30	
[13]	Angle		BAC1503-100441 7075-T73511 extrusion, as given in QQ-A-200/11. Refer to the production drawing for the machined thicknesses	
[14]	Cover (2 locations)	0.032 (0.81)	2024-T3 clad sheet as given in QQ-A-250/5	
[15]	Tee, Stiffener		BAC1506-1872 7075-T6511 extrusion, as given in QQ-A-200/11. Refer to the production drawing for the machined thicknesses	
[16]	Firewall Bracket	0.050 (1.27)	2219-T62 sheet as given in QQ-A-250/30	
[17]	Tee, Stiffener		BAC1506-626 7075-T6511 extrusion as given in QQ-A-200/11	
[18]	Clip	0.071 (1.80)	7075-T62 clad sheet as given in QQ-A-250/13	
[19]	Lower Chord, Outboard	0.090 (2.29)	7075-T62 clad sheet as given in QQ-A-250/13	
[20]	Gusset	0.190 (4.83)	7075-T6 plate, as given in QQ-A-250/12. Refer to the production drawing for the machined thicknesses	
[21]	Web	0.090 (2.29)	2024-T3 clad sheet as given in QQ-A-250/5	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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ALLOWABLE DAMAGE 1 - SECTION 48 UPPER AND LOWER HORIZONTAL BEAMS

1. Applicability

A. This subject gives the allowable damage limits for the Section 48 upper and lower horizontal beams shown in Section 48 Upper and Lower Horizontal Beam Location, Figure 101/ALLOWABLE DAMAGE 1.

G45307 S0006591276_V1

Section 48 Upper and Lower Horizontal Beam Location
Figure 101

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NOTE: ALL PARTS ARE MADE OF ALUMINUM UNLESS GIVEN DIFFERENTLY.

UPPER HORIZONTAL BEAM

G21276 S0006591277_V1

Section 48 Upper Horizontal Beam
Figure 102

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NOTE: ALL PARTS ARE MADE OF ALUMINUM UNLESS GIVEN DIFFERENTLY.

LOWER HORIZONTAL BEAM

G21266 S0006591278_V1

Section 48 Lower Horizontal Beam
Figure 103

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2. General

A. Remove the parts as necessary to get access to the damaged area.

B. Refer to Paragraph 4./ALLOWABLE DAMAGE 1 for the allowable damage limits.

(1) Refer to Table 101/ALLOWABLE DAMAGE 1 for the allowable damage limits paragraph that is applicable to each type of structure.

Table 101:

PARAGRAPH REFERENCES FOR THE ALLOWABLE DAMAGE LIMITS	
TYPE OF STRUCTURE	PARAGRAPH
Web	4.A
Extruded Chord	4.B
Formed Chord	4.C
Extruded Stiffener	4.D
Formed Stiffener	4.E
Formed Stiffener Channel	4.E
Extruded Angle	4.D
Formed Angle	4.E
Bracket	4.E

C. Remove the damage as necessary.

(1) Refer to 51-10-02 for the inspection and removal of damage.

(2) Refer to 51-30-03 for possible sources of abrasives and other materials you can use to remove damage.

(3) Refer to 51-30-05 for possible sources of equipment and tools you can use to remove damage.

D. After you remove the damage, do the steps that follow:

(1) Apply a chemical conversion coating to the bare surfaces of the reworked areas. Refer to 51-20-01.

(2) Apply one layer of BMS 10-11, Type I primer to the surface of the reworked area. Refer to SOPM 20-41-02.

(3) Apply one layer of BMS 3-23, Type II corrosion inhibiting compound to the surface of the repair area. Refer to 51-20-01. Do not apply BMS 3-23, Type II corrosion inhibiting compound to the lower surface of the lower horizontal beam within the APU compartment.

3. References

Reference	Title
51-10-02	INSPECTION AND REMOVAL OF DAMAGE
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-30-03	NON-METALLIC MATERIALS
51-30-05	EQUIPMENT AND TOOLS FOR REPAIRS
51-40-06, GENERAL	Fastener Edge Margins
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes

4. Allowable Damage Limits

A. Web

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(1) Cracks are not permitted.

(2) Nicks, Gouges, Scratches, and Corrosion:

(a) Remove the damage as shown in Section 48 Upper and Lower Horizontal Beams Allowable Damage Details, Figure 104/ALLOWABLE DAMAGE 1, Details A, B, C, D, E, and F.

(3) Dents:

(a) Refer to Section 48 Upper and Lower Horizontal Beams Allowable Damage Details, Figure 104/ALLOWABLE DAMAGE 1, Detail G for the damage that is permitted.

(4) Holes and Punctures:

(a) The damage is permitted if it is:

1) A maximum of 0.25 inch in diameter.

2) A minimum of 1.0 inch away from a fastener hole, the edge of the part, or other damage.

3) A minimum of 1.5 inch away from the edge of a flanged hole.

4) Filled with a 2117-T3 or 2117-T4 protruding head rivet.

a) Install the rivet without sealant.

B. Extruded Chord

(1) Cracks are not permitted.

(2) Nicks, Gouges, Scratches, and Corrosion:

(a) Remove the damage as shown in Section 48 Upper and Lower Horizontal Beams Allowable Damage Details, Figure 104/ALLOWABLE DAMAGE 1, Details A, B, C, D, H, I, J, and K.

(3) Dents are not permitted.

(4) Holes and Punctures:

(a) The damage is permitted if it is:

1) A maximum of 0.25 inch in diameter.

2) A minimum of 1.0 inch away from a fastener hole, the edge of the part, or other damage.

3) Filled with a 2117-T3 or 2117-T4 protruding head rivet.

a) Install the rivet without sealant.

C. Formed Chord

(1) Cracks are not permitted.

(2) Nicks, Gouges, Scratches, and Corrosion:

(a) Remove the damage as shown in Section 48 Upper and Lower Horizontal Beams Allowable Damage Details, Figure 104/ALLOWABLE DAMAGE 1, Details A, B, C, D, E, and H.

(3) Dents are not permitted.

(4) Holes and Punctures:

(a) The damage is permitted if it is:

1) A maximum of 0.25 inch in diameter.

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2) A minimum of 1.0 inch away from a fastener hole, the edge of the part, or other damage.

3) Filled with a 2117-T3 or 2117-T4 protruding head rivet.

a) Install the rivet without sealant.

D. Extruded Stiffener and Extruded Angle

(1) Cracks are not permitted.

(2) Nicks, Gouges, Scratches, and Corrosion:

(a) Remove the damage as shown in Section 48 Upper and Lower Horizontal Beams Allowable Damage Details, Figure 104/ALLOWABLE DAMAGE 1, Details A, B, C , D, H, I, J, and K.

(3) Dents are not permitted.

(4) Holes and Punctures are permitted if they are:

(a) In the free flange as shown in Section 48 Upper and Lower Horizontal Beams Allowable Damage Details, Figure 104/ALLOWABLE DAMAGE 1, Detail L.

1) The damage must not be more than 0.25 inch in diameter.

2) Fill the hole with a 2117-T3 or 2117-T4 protruding head rivet.

a) Install the rivet without sealant.

E. Formed Stiffener, Formed Stiffener Channel, Formed Angle, and Bracket

(1) Cracks are not permitted.

(2) Nicks, Gouges, Scratches, and Corrosion:

(a) Remove the damage as shown in Section 48 Upper and Lower Horizontal Beams Allowable Damage Details, Figure 104/ALLOWABLE DAMAGE 1, Details A, B, C, D, E, and H.

(3) Dents are not permitted.

(4) Holes and Punctures are permitted if they are:

(a) In the free flange as shown in Section 48 Upper and Lower Horizontal Beams Allowable Damage Details, Figure 104/ALLOWABLE DAMAGE 1, Detail L.

(b) In the web of stiffener channels and bracket channels as shown in Section 48 Upper and Lower Horizontal Beams Allowable Damage Details, Figure 104/ALLOWABLE DAMAGE 1, Detail M.

1) The damage must not be more than 0.25 inch in diameter.

2) The damage must be a minimum of 1.0 inch away from a fastener hole, the edge of the part, or other damage.

3) Fill the hole with a 2117-T3 or 2117-T4 protruding head rivet.

a) Install the rivet without sealant.

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REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER EDGE MARGINS DO NOT HAVE AN OVERLAP

A

REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER EDGE MARGINS HAVE AN OVERLAP

B

REMOVAL OF DAMAGED MATERIAL ON A SURFACE

C

A–A

G21292 S0006591280_V1

Section 48 Upper and Lower Horizontal Beams Allowable Damage Details
Figure 104 (Sheet 1 of 7)

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REMOVAL OF DAMAGE AROUND THE FASTENERS ON AN EDGE OR A SURFACE

D

X = WIDTH OF THE MATERIAL THAT IS REMOVED
= A MAXIMUM OF 0.20 INCH

REMOVAL OF DAMAGED MATERIAL AT AN EDGE

E

G21296 S0006591281_V1

Section 48 Upper and Lower Horizontal Beams Allowable Damage Details
Figure 104 (Sheet 2 of 7)

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REMOVAL OF DAMAGED MATERIAL AT AN EDGE OF A FLANGED HOLE

F

X = DEPTH OF THE MATERIAL THAT IS REMOVED
= A MAXIMUM OF 0.10T

Y = LENGTH OF THE MATERIAL THAT IS REMOVED
= A MAXIMUM OF 50 PERCENT OF THE FLANGE HEIGHT, OR 1.10 INCHES, THAT WHICH IS LESS

C–C

$\frac{W}{Y}$ MUST BE 30 OR MORE AT EACH POINT ALONG THE LENGTH OF THE DENT

Y = A MAXIMUM OF 0.125 INCH

DENT THAT IS PERMITTED

G

G21303 S0006591282_V1

Section 48 Upper and Lower Horizontal Beams Allowable Damage Details
Figure 104 (Sheet 3 of 7)

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Y = WIDTH OF THE MATERIAL THAT IS REMOVED
= A MAXIMUM OF 10 PERCENT OF THE WIDTH OF THE FLANGE

REMOVAL OF DAMAGED MATERIAL
ON A SURFACE AT AN EDGE

H

D–D

G21309 S0006591283_V1

Section 48 Upper and Lower Horizontal Beams Allowable Damage Details
Figure 104 (Sheet 4 of 7)

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Y = WIDTH OF THE MATERIAL THAT IS REMOVED
= A MAXIMUM OF 10 PERCENT OF THE WIDTH OF THE FLANGE

REMOVAL OF DAMAGED MATERIAL
ON A SURFACE AT AN EDGE

I

E–E

G21312 S0006591284_V1

Section 48 Upper and Lower Horizontal Beams Allowable Damage Details
Figure 104 (Sheet 5 of 7)

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X = WIDTH OF THE MATERIAL REMOVED
= A MAXIMUM OF 10 PERCENT OF THE WIDTH OF THE FLANGE

REMOVAL OF DAMAGED MATERIAL AT AN EDGE

J

X = THE WIDTH OF THE MATERIAL THAT IS REMOVED
= A MAXIMUM OF 10 PERCENT OF THE WIDTH OF THE FLANGE

REMOVAL OF DAMAGED MATERIAL ON AN EDGE

K

G21317 S0006591285_V1

Section 48 Upper and Lower Horizontal Beams Allowable Damage Details
Figure 104 (Sheet 6 of 7)

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NOTE: HOLES ARE NOT PERMITTED IN A FLANGE RADIUS.

HOLES THAT ARE PERMITTED FOR THE REMOVAL OF DAMAGED MATERIAL IN THE FREE FLANGE

L

NOTE: HOLES ARE NOT PERMITTED IN A FLANGE RADIUS.

HOLES THAT ARE PERMITTED FOR THE REMOVAL OF DAMAGED MATERIAL IN THE WEB OF CHANNELS

M

G21349 S0006591286_V1

Section 48 Upper and Lower Horizontal Beams Allowable Damage Details
Figure 104 (Sheet 7 of 7)

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ALLOWABLE DAMAGE 2 - SECTION 48 TORQUE BOX

1. Applicability

A. This subject gives the allowable damage limits for the Section 48 left and right side of the torque box shown in Section 48 Torque Box Location, Figure 101/ALLOWABLE DAMAGE 2.

G45312 S0006591288_V1

Section 48 Torque Box Location
Figure 101

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NOTE: ALL PARTS ARE MADE OF ALUMINUM UNLESS GIVEN DIFFERENTLY.

TORQUE BOX - LEFT SIDE

G21404 S0006591289_V1

Section 48 Torque Box - Left Side
Figure 102

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NOTE: ALL PARTS ARE MADE OF ALUMINUM UNLESS GIVEN DIFFERENTLY.

TORQUE BOX - RIGHT SIDE

G21391 S0006591290_V1

Section 48 Torque Box - Right Side
Figure 103

BOEING PROPRIETARY - Copyright © Unpublished Work - See title page for details

2. General

A. Remove the parts as necessary to get access to the damaged area.

B. Refer to Paragraph 4./ALLOWABLE DAMAGE 2 for the allowable damage limits.

(1) Refer to Table 101/ALLOWABLE DAMAGE 2 for the allowable damage limits paragraph that is applicable to each type of structure.

Table 101:

PARAGRAPH REFERENCES FOR THE ALLOWABLE DAMAGE LIMITS	
TYPE OF STRUCTURE	**PARAGRAPH**
Web	4.A
Panel	4.A
Cover	4.A
Chord	4.B
Stiffener Tee (Bulb)	4.C
Angle (Bulb)	4.C
Stiffener Angle	4.D
Extruded Angle	4.D
Stiffener Zee	4.E
Stiffener Tee	4.E
Stiffener "I"	4.E
Formed Angle	4.F
Bracket	4.F

C. Remove the damage as necessary.

(1) Refer to 51-10-02 for the inspection and removal of damage.

(2) Refer to 51-30-03 for possible sources of abrasives and other materials you can use to remove damage.

(3) Refer to 51-30-05 for possible sources of equipment and tools you can use to remove damage.

D. After you remove the damage, do the steps that follow:

(1) Apply a chemical conversion coating to the bare surfaces of the reworked areas. Refer to 51-20-01.

(2) Apply one layer of BMS 10-11, Type I primer to the surface of the reworked area. Refer to SOPM 20-41-02.

(3) Apply one layer of BMS 3-23, Type II corrosion inhibiting compound to the surface of the repair area. Refer to 51-20-01. Do not apply BMS 3-23, Type II corrosion inhibiting compound to the sides of the torque box beam that face the APU compartment.

3. References

Reference	Title
51-10-02	INSPECTION AND REMOVAL OF DAMAGE
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-30-03	NON-METALLIC MATERIALS
51-30-05	EQUIPMENT AND TOOLS FOR REPAIRS

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(Continued)

Reference	Title
51-40-06, GENERAL	Fastener Edge Margins
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes

4. Allowable Damage Limits

A. Web, Panel, and Cover

(1) Cracks are not permitted.

(2) Nicks, Gouges, Scratches, and Corrosion:

(a) Remove the damage as shown in Section 48 Torque Box Allowable Damage Details, Figure 104/ALLOWABLE DAMAGE 2, Details A, B, C, D, and E.

(3) Dents:

(a) Refer to Section 48 Torque Box Allowable Damage Details, Figure 104/ALLOWABLE DAMAGE 2, Detail F for the damage that is permitted.

(4) Holes and Punctures are permitted if they are:

(a) A maximum of 0.25 inch in diameter

(b) A minimum of 1.0 inch away from a fastener hole, the edge of the part, or other damage

(c) Filled with a 2117-T3 or 2117-T4 protruding head rivet.

1) Install the rivet without sealant.

B. Chord

(1) Cracks are not permitted.

(2) Nicks, Gouges, Scratches, and Corrosion:

(a) Remove the damage as shown in Section 48 Torque Box Allowable Damage Details, Figure 104/ALLOWABLE DAMAGE 2, Details A, B, C, D, E, and G.

(3) Dents are not permitted.

(4) Holes and Punctures are permitted if they are:

(a) A maximum of 0.25 inch in diameter

(b) A minimum of 1.0 inch away from a fastener hole, the edge of the part, or other damage

(c) Filled with a 2117-T3 or 2117-T4 protruding head rivet.

1) Install the rivet without sealant.

C. Stiffener Tee (Bulb) and Angle (Bulb)

(1) Cracks are not permitted.

(2) Nicks, Gouges, Scratches, and Corrosion:

(a) Remove the damage as shown in Section 48 Torque Box Allowable Damage Details, Figure 104/ALLOWABLE DAMAGE 2, Details A thru D and G thru M.

(3) Dents are not permitted.

(4) Holes and Punctures are not permitted.

D. Stiffener Angle and Extruded Angle

(1) Cracks are not permitted.

(2) Nicks, Gouges, Scratches, and Corrosion:

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(a) Remove the damage as shown in Section 48 Torque Box Allowable Damage Details, Figure 104/ALLOWABLE DAMAGE 2, Details A, B, C, D, G, H, K, and L.

(3) Dents are not permitted.

(4) Holes and Punctures are permitted if they are:

(a) In the free flange as shown in Section 48 Torque Box Allowable Damage Details, Figure 104/ALLOWABLE DAMAGE 2, Detail L

(b) A maximum of 0.25 inch in diameter

(c) Filled with a 2117-T3 or 2117-T4 protruding head rivet.

1) Install the rivet without sealant.

E. Stiffener - Zee, Tee, and "I"

(1) Cracks are not permitted.

(2) Nicks, Gouges, Scratches, and Corrosion:

(a) Remove the damage as shown in Section 48 Torque Box Allowable Damage Details, Figure 104/ALLOWABLE DAMAGE 2, Details A, B, C, D, G, H, K, and L.

(3) Dents are not permitted.

(4) Holes and Punctures are permitted if they are:

(a) A maximum of 0.25 inch in diameter

(b) Filled with a 2117-T3 or 2117-T4 protruding head rivet.

1) Install the rivet without sealant.

F. Formed Angle and Bracket

(1) Cracks are not permitted.

(2) Nicks, Gouges, Scratches, and Corrosion:

(a) Remove the damage as shown in Section 48 Torque Box Allowable Damage Details, Figure 104/ALLOWABLE DAMAGE 2, Details A, B, C, D, E, and G.

(3) Dents are not permitted.

(4) Holes and Punctures are permitted if they are:

(a) In the free flange as shown in Section 48 Torque Box Allowable Damage Details, Figure 104/ALLOWABLE DAMAGE 2, Detail M

(b) A maximum of 0.25 inch in diameter

(c) Filled with a 2117-T3 or 2117-T4 protruding head rivet.

1) Install the rivet without sealant.

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REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER EDGE MARGINS DO NOT HAVE AN OVERLAP

A

REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER EDGE MARGINS HAVE AN OVERLAP

B

REMOVAL OF DAMAGED MATERIAL ON A SURFACE

C

A–A

G21405 S0006591292_V1

Section 48 Torque Box Allowable Damage Details
Figure 104 (Sheet 1 of 9)

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REMOVAL OF DAMAGE AROUND THE FASTENERS ON AN EDGE OR A SURFACE

D

X = WIDTH OF THE MATERIAL THAT IS REMOVED
= A MAXIMUM OF 0.20 INCH

REMOVAL OF DAMAGED MATERIAL AT AN EDGE

E

G21407 S0006591293_V1

Section 48 Torque Box Allowable Damage Details
Figure 104 (Sheet 2 of 9)

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DENT THAT IS PERMITTED

F

G21449 S0006591294_V1

Section 48 Torque Box Allowable Damage Details
Figure 104 (Sheet 3 of 9)

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Y = WIDTH OF THE MATERIAL THAT IS REMOVED
= A MAXIMUM OF 10 PERCENT OF THE WIDTH OF THE FLANGE

REMOVAL OF DAMAGED MATERIAL
ON A SURFACE AT AN EDGE

G

C–C

G21455 S0006591295_V1

Section 48 Torque Box Allowable Damage Details
Figure 104 (Sheet 4 of 9)

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Y = WIDTH OF THE MATERIAL THAT IS REMOVED
= A MAXIMUM OF 10 PERCENT OF THE WIDTH OF THE FLANGE

REMOVAL OF DAMAGED MATERIAL
ON A SURFACE AT AN EDGE

H

D–D

G21463 S0006591296_V1

Section 48 Torque Box Allowable Damage Details
Figure 104 (Sheet 5 of 9)

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X = DEPTH OF THE MATERIAL REMOVED

= A MAXIMUM OF 10 PERCENT OF THE THICKNESS OF THE BULB

REMOVAL OF DAMAGED MATERIAL ON A SURFACE
AT AN EDGE OF A BULBED EXTRUSION

I

E-E

G21495 S0006591297_V1

Section 48 Torque Box Allowable Damage Details
Figure 104 (Sheet 6 of 9)

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X = DEPTH OF THE MATERIAL REMOVED

= A MAXIMUM OF 10 PERCENT OF THE THICKNESS OF THE BULB

REMOVAL OF DAMAGED MATERIAL ON A SURFACE
AT AN EDGE OF A BULBED EXTRUSION

J

F–F

G21542 S0006591298_V1

Section 48 Torque Box Allowable Damage Details
Figure 104 (Sheet 7 of 9)

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X = WIDTH OF THE MATERIAL REMOVED
= A MAXIMUM OF 10 PERCENT OF THE WIDTH OF THE FLANGE

REMOVAL OF DAMAGED MATERIAL AT AN EDGE

K

X = THE WIDTH OF THE MATERIAL THAT IS REMOVED
= A MAXIMUM OF 10 PERCENT OF THE WIDTH OF THE FLANGE

REMOVAL OF DAMAGED MATERIAL ON AN EDGE

L

G21550 S0006591299_V1

Section 48 Torque Box Allowable Damage Details
Figure 104 (Sheet 8 of 9)

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NOTE: HOLES ARE NOT PERMITTED IN A FLANGE RADIUS.

HOLES THAT ARE PERMITTED FOR THE REMOVAL OF DAMAGED MATERIAL IN THE FREE FLANGE

M

G21553 S0006591300_V1

Section 48 Torque Box Allowable Damage Details
Figure 104 (Sheet 9 of 9)

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REPAIR 1 - SECTION 48 UPPER AND LOWER HORIZONTAL BEAM STRUCTURE

1. Applicability

A. Repair 1 is applicable to damage to the Section 48 upper and lower horizontal beams shown in Section 48 Upper and Lower Horizontal Beam Location, Figure 201/REPAIR 1.

G28473 S0006591303_V1

Section 48 Upper and Lower Horizontal Beam Location
Figure 201

2. General

A. The typical repairs given in 51-70-11, 51-70-12, and 51-70-13 can be used when applicable if:

(1) There is sufficient clearance with the adjacent structure for the installation of repair parts.

B. Refer to the limits of the typical repairs given in 51-70-11, 51-70-12, and 51-70-13 before you start a repair.

3. References

Reference	Title
51-30-01, GENERAL	Sheet Metal Materials
51-70-11	TYPICAL FORMED SECTION REPAIRS
51-70-12	EXTRUDED SECTION REPAIRS
51-70-13	TYPICAL WEB REPAIRS
53-80-13	HORIZONTAL BEAMS - SECTION 48
53-80-13, IDENTIFICATION 1	Section 48 Upper and Lower Horizontal Beams

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4. Repair Instructions

A. Refer to Table 201/REPAIR 1 to find the applicable repair for a component of the upper and lower horizontal beams shown in Section 48 Upper and Lower Horizontal Beams, Figure 202/REPAIR 1 and Section 48 Upper and Lower Horizontal Beams, Figure 203/REPAIR 1.

NOTE: If necessary, refer to 53-80-13, Identification 1 to find the material and the process that was used to make the part which you want to repair.

Table 201:

REPAIR REFERENCES FOR THE SECTION 48 UPPER AND LOWER HORIZONTAL BEAMS	
COMPONENT	**REPAIR**
Web (sheet)	Refer to SRM 51-70-13
Chord (extrusion)	Refer to SRM 51-70-12
Chord (formed)	Refer to SRM 51-70-11
Stiffener (extrusion)	Refer to SRM 51-70-12
Stiffener (formed)	Refer to SRM 51-70-11
Stiffener Channel (formed)	Refer to SRM 51-70-11
Angle (extrusion)	Refer to SRM 51-70-12
Angle (formed)	Refer to SRM 51-70-11
Bracket (formed)	Refer to SRM 51-70-11

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UPPER HORIZONTAL BEAM

G28471 S0006591305_V1

Section 48 Upper and Lower Horizontal Beams
Figure 202

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LOWER HORIZONTAL BEAM

G28472 S0006591306_V1

Section 48 Upper and Lower Horizontal Beams
Figure 203

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REPAIR 2 - SECTION 48 TORQUE BOX BEAM STRUCTURE

1. Applicability

A. Repair 2 is applicable to damage to the Section 48 torque box shown in Section 48 Torque Box Beam Location, Figure 201/REPAIR 2.

NOTE: REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

G28470 S0006591308_V1

Section 48 Torque Box Beam Location
Figure 201

2. General

A. The typical repairs given in 51-70-11, 51-70-12, and 51-70-13 can be used when applicable if:

(1) There is sufficient clearance with the adjacent structure for the installation of repair parts.

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B. Refer to the limits of the typical repairs given in 51-70-11, 51-70-12, and 51-70-13 before you start a repair.

3. References

Reference	Title
51-30-01, GENERAL	Sheet Metal Materials
51-70-11	TYPICAL FORMED SECTION REPAIRS
51-70-12	EXTRUDED SECTION REPAIRS
51-70-13	TYPICAL WEB REPAIRS
53-80-13	HORIZONTAL BEAMS - SECTION 48
53-80-13, IDENTIFICATION 2	Section 48 Torque Box Beam

4. Repair Instructions

A. Refer to Table 201/REPAIR 2 to find the applicable repair for a component of the torque box shown in Section 48 Torque Box, Figure 202/REPAIR 2.

NOTE: If necessary, refer to 53-80-13, Identification 2 to find the material and the process that was used to make the part which you want to repair.

Table 201:

REPAIR REFERENCES FOR THE SECTION 48 TORQUE BOX	
COMPONENT	**REPAIR**
Web (sheet)	Refer to SRM 51-70-13
Panel (sheet)	Refer to SRM 51-70-13
Cover (sheet)	There are no repairs for these parts in the Structural Repair Manual at this time.
Chord (formed)	Refer to SRM 51-70-11
Stiffener Tee (bulbed extrusion)	Refer to SRM 51-70-12
Angle (bulbed extrusion)	Refer to SRM 51-70-12
Stiffener Angle (extrusion)	Refer to SRM 51-70-12
Angle (extrusion)	Refer to SRM 51-70-12
Angle (formed)	Refer to SRM 51-70-11
Stiffener Zee (extrusion)	Refer to SRM 51-70-12
Stiffener Tee (extrusion)	Refer to SRM 51-70-12
Stiffener "I" (extrusion)	Refer to SRM 51-70-12
Bracket (extrusion)	Refer to SRM 51-70-12

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TORQUE BOX - LEFT SIDE

G28474 S0006591310_V1

Section 48 Torque Box
Figure 202

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TORQUE BOX - RIGHT SIDE

G28475 S0006591311_V1

Section 48 Torque Box
Figure 203

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IDENTIFICATION 1 - AUXILIARY POWER UNIT AIR INLET LINER

NOTES

- REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

1 AIRPLANE LINE NUMBERS 1 THRU 1198

2 AIRPLANE LINE NUMBERS 1199 AND ON

J90794 S0000183353_V1

Auxiliary Power Unit Air Inlet Liner Location
Figure 1

Table 1:

REFERENCE DRAWINGS	
DRAWING NUMBER	**TITLE**
001A4001	Fuselage Product Collector
350A0101	Auxiliary Power Unit - Functional Product Collector
353A2000	Plenum Installation - Air Inlet, APU

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NOTE: REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

G48615 S0006591332_V2

Titanium Liner Identification
Figure 2

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Table 2:

ITEM	DESCRIPTION	T*[1]	MATERIAL	EFFECTIVITY
[1]	Angle	0.040 (1.02)	Ti-6Al-4V titanium sheet as given in MIL-T-9046, Code CP-3, Condition A	
[2]	Cover Plate	0.032 (0.81)	Ti-6Al-4V titanium sheet as given in MIL-T-9046, Code CP-3, Condition A	
[3]	Plate, Upper and Lower	0.032 (0.81)	Ti-6Al-4V titanium sheet as given in MIL-T-9046, Code CP-3, Condition A	
[4]	Panel Assembly, Outboard			
	Angle	0.040 (1.02)	Ti-6Al-4V titanium sheet as given in MIL-T-9046, Code CP-3, Condition A	
	Doubler	0.040 (1.02)	Ti-6Al-4V titanium sheet as given in MIL-T-9046, Code CP-3, Condition A	
	Panel, Outboard	0.032 (0.81)	Ti-6Al-4V titanium sheet as given in MIL-T-9046, Code AB-1, Condition A	
[5]	Panel Assembly, Inboard			
	Angle	0.040 (1.02)	Ti-6Al-4V titanium sheet as given in MIL-T-9046, Code CP-3, Condition A	
	Doubler	0.040 (1.02)	Ti-6Al-4V titanium sheet as given in MIL-T-9046, Code CP-3, Condition A	
	Panel, Inboard	0.032 (0.81)	Ti-6Al-4V titanium sheet as given in MIL-T-9046, Code AB-1, Condition A	
[6]	Panel Assembly, Top Forward			
	Panel, Roof Forward	0.020 (0.51)	Ti-6Al-4V titanium sheet as given in MIL-T-9046, Code AB-1, Condition A	
	Doubler, Upper Forward	0.040 (1.02)	Ti-6Al-4V titanium sheet as given in MIL-T-9046, Code CP-3, Condition A	
[7]	Panel Assembly, Top Aft			
	Panel, Roof Aft	0.025 (0.64)	Ti-6Al-4V titanium sheet as given in MIL-T-9046, Code AB-1, Condition A	
	Splice Plate	0.040 (1.02)	Ti-6Al-4V titanium sheet as given in MIL-T-9046, Code CP-3, Condition A	
[8]	Panel, Upper End	0.025 (0.64)	Ti-6Al-4V titanium sheet as given in MIL-T-9046, Code AB-1, Condition A	
[9]	Panel, Floor	0.032 (0.81)	Ti-6Al-4V titanium sheet as given in MIL-T-9046, Code AB-1, Condition A	
[10]	Bulkhead Assembly - Aft			
	Aft Bulkhead Panel	0.032 (0.81)	Ti-6Al-4V titanium sheet as given in MIL-T-9046, Code AB-1, Condition A	
	Doubler	0.032 (0.81)	Ti-6Al-4V titanium sheet as given in MIL-T-9046, Code AB-1, Condition A	
[11]	Frame Panel	0.032 (0.81)	Ti-6Al-4V titanium sheet as given in MIL-T-9046, Code AB-1, Condition A	
[12]	Doubler	0.032 (0.81)	Ti-6Al-4V titanium sheet as given in MIL-T-9046, Code CP-3, Condition A	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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NOTE: REFER TO TABLE 3 FOR THE LIST OF MATERIALS.

J90842 S0000181496_V1

Titanium/Fiberglass Liner Identification
Figure 3

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Table 3:

ITEM	DESCRIPTION	T*[1]	MATERIAL	EFFECTIVITY
[1]	Plenum Assy, Fwd Bond Angle, Outboard Angle, Inboard	0.063 0.063	Fiberglass Reinforced Epoxy Sheet, 1581 Style (Option: 7781 Style) as given in BMS 8-139 Ti-6Al-4V titanium sheet as given in MIL-T-9046, Condition A Ti-6Al-4V titanium sheet as given in MIL-T-9046, Condition A	
[2]	Plenum Assy, Aft Weldment Flange, Aft Angle, Forward Angle, Aft	0.050 0.090 0.040 0.040	AMS-T-9046 TI-Compure 55 Condition A Sheeet AMS-T-9046 TI-Compure 55 Condition A Sheeet AMS-T-9046 TI-Compure 55 Condition A Sheeet AMS-T-9046 TI-Compure 55 Condition A Sheeet	
[3]	Interconnect Frame Assy Frame Weldment	0.050	AMS-T-9046 TI-Compure 55 Condition A Sheeet	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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IDENTIFICATION 1 - SECTION 48 TAILCONE FAIRING SKIN

NOTE: REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

F64813 S0006591337_V1

Tailcone Fairing Skin Location
Figure 1

Table 1:

REFERENCE DRAWINGS	
DRAWING NUMBER	**TITLE**
148A0971	Tailcone Integration Installation
148A7110	Tailcone Installation, Forward Body

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NOTE: REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

F67765 S0006591339_V1

Tailcone Fairing Skin Identification
Figure 2

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Table 2:

LIST OF MATERIALS FOR FIGURE 2				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Forward Tailcone Assembly		Glass Fiber Reinforced Plastic (GFRP) honeycomb sandwich	
	Skin		Refer to Figure 3	
	Core	0.50 (12.7)	Nonmetallic honeycomb as given in BMS 8-124, Class IV, Type 5, Grade 3.0	
	Core	0.50 (12.7)	Aluminum honeycomb as given in BMS 4-4, Class NPA, Type 2-07, Grade 1.0	
[2]	Aft Tailcone Assembly		GFRP honeycomb sandwich	
	Skin		Refer to Figure 4	
	Core	0.50 (12.7)	Nonmetallic honeycomb as given in BMS 8-124, Class IV, Type 5, Grade 3.0	
[3]	APU Exhaust Duct Fairing	0.080 (2.03)	Ti-6Al-4V titanium as given in MIL-T-9046 or AMS 4911, Type III, Composition C, in the annealed condition	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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VIEW IS ON THE BAGSIDE (NON-AERODYNAMIC) SURFACE

PLY LAYUP DIRECTION AND CORE RIBBON DIRECTION

A

NOTES

- THE PLY DIRECTION IS THE WARP DIRECTION OF THE FABRIC. REFER TO DETAIL A FOR THE 0 DEGREE PLY DIRECTION AND THE CORE RIBBON DIRECTION.
- REFER TO SECTIONS A-A AND B-B FOR THE PLY SEQUENCE.
- REFER TO THE ENGINEERING DRAWING FOR THE PLY SEQUENCE DATA THAT IS NOT SHOWN.
- REFER TO TABLE 3 FOR THE DIRECTION AND MATERIAL FOR EACH PLY.

F67987 S0006591341_V2

Ply Direction, Core Ribbon Direction, and Ply Sequence for the Forward Tailcone Assembly
Figure 3 (Sheet 1 of 2)

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PLY LAYUP SEQUENCE

A-A

PLY LAYUP SEQUENCE

B-B

F65188 S0006591342_V1

Ply Direction, Core Ribbon Direction, and Ply Sequence for the Forward Tailcone Assembly
Figure 3 (Sheet 2 of 2)

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Table 3:

PLY MATERIAL AND DIRECTION FOR FIGURE 2, ITEM [1]		
PLY	**DIRECTION**	**MATERIAL**
P1, P16, P20, P24	0 or 90 degrees	Epoxy impregnated glass woven fabric as given in BMS 8-79, Class III, Style 120 or 220
P14, P19, P22	+ or - 45 degrees	
P2, P4, P6, P8, P10, P12, P18, P23, P25, P27, P29	+ or - 45 degrees	Epoxy impregnated glass woven fabric as given in BMS 8-79, Class III, Style 1581 or 7781
P3, P5, P7, P9, P11, P13, P15, P17, P21, P26, P28, P30	0 or 90 degrees	

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PLY LAYUP DIRECTION AND CORE RIBBON DIRECTION

A

PLY LAYUP SEQUENCE

A-A

NOTES

- THE PLY DIRECTION IS THE WARP DIRECTION OF THE FABRIC. REFER TO DETAIL A FOR THE 0 DEGREE PLY DIRECTION AND THE CORE RIBBON DIRECTION.
- REFER TO SECTION A-A FOR THE PLY SEQUENCE.
- REFER TO TABLE 4 FOR THE DIRECTION AND MATERIAL FOR EACH PLY.

F68022 S0006591344_V1

Ply Direction, Core Ribbon Direction, and Ply Sequence for the Aft Tailcone Assembly
Figure 4

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Table 4:

PLY MATERIAL AND DIRECTION FOR FIGURE 2, ITEM [2]		
PLY	**DIRECTION**	**MATERIAL**
P1, P5, P8, P12	0 or 90 degrees	Epoxy impregnated glass woven fabric as given in BMS 8-79, Class III, Style 120 or 220
P3, P7, P10	+ or - 45 degrees	
P2, P4, P6, P9, P12	0 or 90 degrees	Epoxy impregnated glass woven fabric as given in BMS 8-79, Class III, Style 1581 or 7781
P11	+ or - 45 degrees	

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IDENTIFICATION 3 - SECTION 48 TAILSKID FAIRING SKIN

NOTE: REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

G25395 S0006591347_V1

Tailskid Fairing Skin Location
Figure 1

Table 1:

REFERENCE DRAWINGS	
DRAWING NUMBER	**TITLE**
140A4801	Integration Functional Collector - Section 48
148A7240	Fairing Installation - Tailskid

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NOTES

- REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

1 AIRCRAFT WITH "SHORT FIELD PERFORMANCE" OPTION.

J83314 S0000179717_V2

Tailskid Fairing Skin Identification
Figure 2

Table 2:

LIST OF MATERIALS FOR FIGURE 2				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Forward Fairing	0.080	6061-T6 sheet as given in QQ-A-250/11	
[2]	Forward Fairing	0.080	6061-T62 sheet as given in QQ-A-250/11	
[3]	Aft Fairing	0.080	6061-T6 sheet as given in QQ-A-250/11	
[4]	Aft Fairing	0.080	6061-T62 sheet as given in QQ-A-250/11	

*[1] Note: T = Pre-manufactured thickness in inches.

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IDENTIFICATION 4 - SECTION 48 BODY-TO-HORIZONTAL STABILIZER SLIDING SEALS, SKINS, AND PLATES

REFER TO FIGURE 2 FOR THE SECTION 48 BODY-TO-HORIZONTAL STABILIZER SLIDING SEALS, SKINS AND PLATES IDENTIFICATION

NOTE: REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

G44730 S0006591352_V1

Section 48 Body-to-Horizontal Stabilizer Sliding Seals, Skins and Plates Location

Figure 1

Table 1:

REFERENCE DRAWINGS	
DRAWING NUMBER	**TITLE**
140A4814	Functional Collector - Sliding Seals, Front and Rear Spar
181A8005	Panel Installation - Front Spar Sliding Seal
181A8050	Track Installation - Rear Spar Sliding Seal

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NOTES

- REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

1 AIRPLANE LINE NUMBERS 1 THRU 1380, AND AIRPLANES THAT ARE NOT RETROFITTED WITH PRR38275-44, PART B.

2 AIRPLANE LINE NUMBERS 1381 AND ON, AND AIRPLANES THAT ARE RETROFITTED WITH PRR38275-44, PART B.

G45421 S0006591354_V4

Section 48 Body-to-Horizontal Stabilizer Sliding Seals, Skins and Plates Identification
Figure 2

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Table 2:

LIST OF MATERIALS FOR FIGURE 2				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Seal Plate	0.025 (0.64)	17-7 PH CRES sheet as given in AMS 5528, Condition A. Heat treat to 150-170 ksi as given in BAC 5619	
[2]	Vertical Seal Rub Strip	0.016 (0.41)	AISI 301 CRES sheet as given in AMS 5518, Condition 1/2 hard	
[3]	Forward Ramp	0.125 (3.18)	2024-T3 sheet as given in QQ-A-250/4	
[4]	Forward Skin Filler	0.180 (4.57)	2024-T3 sheet as given in QQ-A-250/4	
[5]	Upper Forward Track Assembley			
	Upper Forward Track	0.025 (0.64)	15-5 PH CRES sheet as given in BMS 7-240, Type I. Heat treat to 150-170 ksi	
	Upper Forward Rub Strip	0.025 (0.64)	15-5 PH CRES sheet as given in BMS 7-240, Type I. Heat treat to 150-170 ksi	
	Upper Forward Spacer	0.040 (1.02)	2024-T42 clad sheet as given in QQ-A-250/5	
[6]	Upper Forward Skin Filler	0.100 (2.54)	2024-T3 clad sheet as given in QQ-A-250/5 (Optional: 2024-T42 clad sheet as given in QQ-A-250/5)	
[7]	Upper Forward Ramp	0.125 (3.18)	2024-T42 sheet as given in QQ-A-250/4	
[8]	Rub Strip	0.100 (2.54)	2024-T3 sheet as given in QQ-A-250/4	
[9]	Upper Blade	0.020 (0.51)	AISI 301 CRES sheet as given in AMS 5518, Condition 1/2 hard	
[10]	Upper Aft Skin Filler	0.100 (2.54)	2024-T3 clad sheet as given in QQ-A-250/5 (Optional: 2024-T42 clad sheet as given in QQ-A-250/5)	
[11]	Upper Aft Track assembley			
	Upper Aft Rub Strip	0.025 (0.64)	15-5 PH CRES sheet as given in BMS 7-240, Type I. Heat treat to 150-170 ksi	
	Upper Aft Spacer	0.040 (1.02)	2024-T42 clad sheet as given in QQ-A-250/5	
	Upper Aft Track	0.025 (0.64)	15-5 PH CRES sheet as given in BMS 7-240, Type I. Heat treat to 150-170 ksi	
[12]	Rub Strip	0.100 (2.54)	2024-T3 clad sheet as given in QQ-A-250/5	
[13]	Lower Aft Track assembly			
	Lower Aft Rub Strip	0.025 (0.64)	15-5 PH CRES sheet as given in BMS 7-240, Type I. Heat treat to 150-170 ksi	
	Lower Aft Spacer	0.040 (1.02)	2024-T42 clad sheet as given in QQ-A-250/5	
	Lower Aft Track	0.025 (0.64)	15-5 PH CRES sheet as given in BMS 7-240, Type I. Heat treat to 150-170 ksi	
[14]	Lower Blade	0.020 (0.51)	AISI 301 CRES sheet as given in AMS 5518, Condition 1/2 hard	
[15]	Lower Skin Filler	0.100 (2.54)	2024-T3 clad sheet as given in QQ-A-250/5 (Optional: 2024-T42 clad sheet as given in QQ-A-250/5)	
[16]	Lower Forward Track Assembly			

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Table 2: (Continued)

LIST OF MATERIALS FOR FIGURE 2				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
	Lower Forward Track	0.025 (0.64)	15-5 PH CRES sheet as given in BMS 7-240, Type I. Heat treat to 150-170 ksi	
	Lower Forward Spacer	0.040 (1.02)	2024-T42 clad sheet as given in QQ-A-250/5	
	Lower Forward Rub Strip	0.025 (0.64)	15-5 PH CRES sheet as given in BMS 7-240, Type I. Heat treat to 150-170 ksi	
[17]	Lower Forward Ramp	0.125 (3.18)	2024-T3 sheet as given in QQ-A-250/4	
[18]	Aft Panel Assembly			
	Aft Doubler	0.032 (0.81)	2024-T42 clad sheet as given in QQ-A-250/5	
	Aft Filler	0.025 (0.64)	2024-T3 clad sheet as given in QQ-A-250/5	
	Aft Skin	0.063 (1.60)	2024-T42 clad sheet as given in QQ-A-250/5	
[19]	Forward Panel Assembly			
	Forward Doubler	0.032 (0.81)	2024-T42 clad sheet as given in QQ-A-250/5	
	Forward Skin	0.063 (1.60)	2024-T42 clad sheet as given in QQ-A-250/5	
	Forward Filler	0.025 (0.64)	2024-T3 clad sheet as given in QQ-A-250/5	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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ALLOWABLE DAMAGE 1 - SECTION 48 TAILCONE FAIRING SKIN

1. Applicability

A. This subject gives the allowable damage limits for the tailcone fairing skins as shown in Tailcone Fairing Skin Location, Figure 101/ALLOWABLE DAMAGE 1.

2. General

A. Refer to Definitions of Damage Size, Figure 102/ALLOWABLE DAMAGE 1, Details A, B, and C for the definitions of the length, width, and depth of damage.

B. Refer to Definitions of the Facesheets, Figure 103/ALLOWABLE DAMAGE 1 for the definitions of the facesheets of a honeycomb core area.

C. Remove contamination and water from the structure surface.

D. Seal all permitted damage areas that are not more than one ply deep. Refer to the allowable damage limits. Seal the damage with one of the two methods that follow:

(1) Make a temporary seal.

(a) Apply aluminum foil tape (speed tape).

(b) Keep a record of the location.

(c) Make sure that the tape is in satisfactory condition after each 400 flight hour interval or more frequently.

(d) Repair the damage at or before 5000 flight hours from the time the seal was made.

(2) Make a permanent seal.

(a) Apply BMS 8-201, BMS 8-207 or BMS 8-301 epoxy resin to the area as given 51-70-08.

(b) Apply one layer of BMS 10-79, Type III primer. Refer to SOPM 20-44-04.

(c) Apply one layer of BMS 10-60 enamel to the areas sealed with epoxy resin. Refer to AMM 51-21-00/701.

E. Seal all permitted damage areas that are more than one ply in depth. Refer to the allowable damage limits. Seal the damage as follows:

(1) Use vacuum and heat to remove moisture from the solid laminate and/or honeycomb cells, as applicable. Refer to 51-70-04.

(2) Make a temporary seal with aluminum foil tape (speed tape).

(3) Keep a record of the location.

(4) Make sure that the tape is in satisfactory condition after each 400 flight hour interval or more frequently.

(5) Repair the damage at or before 5000 flight hours from the time the seal was made.

F. The definition of the words "other damage" as used in the allowable damage limits, does not include nicks, gouges, and scratches that do not cause glass fiber damage and are sealed.

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F70821 S0006591358_V1

Tailcone Fairing Skin Location
Figure 101

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SIZE DEFINITIONS FOR
NICK, GOUGE, OR SCRATCH DAMAGE

A

SIZE DEFINITIONS FOR
DENT DAMAGE

B

SIZE DEFINITIONS FOR
EDGE DAMAGE

C

F70822 S0006591359_V1

Definitions of Damage Size
Figure 102

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F70823 S0006591360_V1

Definitions of the Facesheets
Figure 103

3. References

Reference	Title
51-30-03, GENERAL	Sources for Non-Metallic Repair Materials
51-30-05, GENERAL	Equipment and Tools For Repairs
51-70-04	REPAIR PROCEDURES FOR WET LAYUP MATERIALS
51-70-08	RESIN SWEEP-FAIR PROCEDURES
AMM 51-21-00/701	Interior And Exterior Finishes - Cleaning/Painting
SOPM 20-44-04	Application of Urethane Compatible Primer

4. Allowable Damage Limits for the Section 48 Tailcone Fairing Skin

A. Solid Laminate Areas

(1) Nicks, Gouges, and Scratches that do not cause damage to the glass fibers are permitted.

(2) Nicks, Gouges, and Scratches that cause damage to the glass fibers are permitted if:

(a) They are a maximum of one ply in depth. If damage is more than one ply in depth, then use the limits for holes and punctures.

(b) Not more than one fastener hole in six is damaged.

(c) Not more than 10 percent of the edgeband length for each side of panel is damaged.

(3) Dents are permitted if:

(a) They cause no glass fiber damage. If there is glass fiber damage, then, use the limits for nicks, gouges and scratches.

(b) They are a maximum of 2.0 inches (50.8 mm) in diameter.

(c) Not more than one fastener hole in six is damaged.

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(d) Not more than 10 percent of the edgeband length for each side of panel is damaged.

(4) Holes and Punctures are not permitted.

(5) Fastener Hole Damage is permitted if:

(a) Not more than one fastener hole in six is damaged.

(b) Not more than 10 percent of the edgeband length for each side of panel is damaged.

(6) Delaminations are permitted if:

(a) Damage does not extend more than 0.10 inch (2.54 mm) from the part edge.

(b) Not more than one fastener hole in six is damaged.

(c) Not more than 10 percent of the edgeband length for each side of panel is damaged.

(7) Edge damage is permitted if:

(a) It is a maximum 0.10 inch (2.54 mm) in depth.

(b) Not more than 10 percent of the edgeband length for each side of panel is damaged.

B. Honeycomb Core Area

(1) Nicks, Gouges, and Scratches that do not cause damage to the glass fibers are permitted.

(2) Nicks, Gouges, and Scratches that cause damage to the glass fibers are permitted if they are:

(a) A maximum of one ply in depth. If damage is more than one ply in depth, then use the limits for holes and punctures.

(b) A maximum length of 6.0 inches (152.4 mm)

(c) A maximum width of 0.25 inch (6.35 mm)

(d) A minimum distance of 6.0 inches (152.4 mm) away from the edge of any other damage and a minimum of 2.0 inches (50.8 mm) away from any hole or part edge.

(3) Dents are permitted if they are:

(a) In a maximum of one facesheet

(b) A maximum diameter of 6.0 inches (152.4 mm). Damage to a maximum diameter of 12.0 inches (304.8 mm) is permitted for a maximum of 20 flight cycles.

(c) A minimum distance of 6.0 inches (152.4 mm) away from the edge of any other damage and a minimum of 2.0 inches (50.8 mm) away from any hole or part edge.

(4) Holes and Punctures are permitted if they are:

(a) A maximum of 1.0 inch (25.4 mm) in diameter

(b) A minimum distance of 6.0 inches (152.4 mm) away from the edge of any other damage and a minimum of 2.0 inches (50.8 mm) away from any hole or part edge.

(5) Delaminations are permitted if they are:

(a) In a maximum of one facesheet

(b) A maximum diameter of 6.0 inches (152.4 mm). A maximum diameter of 12.0 inches (304.8 mm) is permitted for a maximum of 20 flight cycles.

(c) A minimum distance of 6.0 inches (152.4 mm) away from the edge of any other damage and a minimum of 2.0 inches (50.8 mm) away from any hole or part edge.

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ALLOWABLE DAMAGE 2 - APU EXHAUST DUCT FAIRING SKIN

1. Applicability

A. This subject gives the allowable damage limits for the auxiliary power unit (APU) exhaust duct fairing skin as shown in APU Exhaust Duct Fairing Location, Figure 101/ALLOWABLE DAMAGE 2.

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APU Exhaust Duct Fairing Location
Figure 101

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2. General

WARNING: SMALL PARTICLES AND THIN CUTS OF TITANIUM ARE FLAMMABLE. IN A SUFFICIENT CONCENTRATION, AN EXPLOSION CAN OCCUR. EXTINGUISH FIRES OF TITANIUM WITH FULLY DRY TALC, CALCIUM CARBONATE, SAND OR GRAPHITE. APPLY THE POWDER TO A DEPTH OF 1/2 INCH (12.7 MM) OR MORE ON THE AREA THAT IS ON FIRE. DO NOT USE FOAM, WATER, CARBON TETRACHLORIDE, HALON OR CARBON DIOXIDE. WATER IN CONTACT WITH MOLTEN TITANIUM CAN CAUSE A STEAM EXPLOSION.

A. Remove the damaged material, as applicable. Make sure that the material to be removed is less than or equal to the allowable damage limits.

B. Refer to 51-10-02 for the inspection and removal of damage.

C. Refer to 51-30-03 for the sources of abrasives and other materials to remove damage.

D. Refer to 51-30-05 for the sources of equipment and tools to remove damage.

E. Make sure that all the damage has been removed within the limits, as applicable. Refer to SOPM 20-20-02 for penetrant inspection procedures or 737 NDT Part 6, 51-00-00, Procedure 14 for eddy current inspection procedures.

3. References

Reference	Title
51-10-02	INSPECTION AND REMOVAL OF DAMAGE
51-20-05	REPAIR SEALING
51-30-03	NON-METALLIC MATERIALS
51-30-05	EQUIPMENT AND TOOLS FOR REPAIRS
51-40-02	FASTENER INSTALLATION AND REMOVAL
SOPM 20-20-02	Penetrant Methods of Inspection
737 NDT Part 6, 51-00-00	Structures - General
737 NDT Part 6, 51-00-00, Procedure 14	Surface Inspection of Titanium and other Low Conductivity Materials(Impedance Plane or Meter Display

4. Allowable Damage Limits

A. Cracks:

(1) Remove the damage as shown in Allowable Damage Limits, Figure 102/ALLOWABLE DAMAGE 2, Detail A.

B. Nicks, Gouges, Scratches, and Corrosion:

(1) Remove the damage as shown in Allowable Damage Limits, Figure 102/ALLOWABLE DAMAGE 2, Details A, B, or D.

C. Dents:

(1) Refer to Allowable Damage Limits, Figure 102/ALLOWABLE DAMAGE 2, Detail C for the damage that is permitted.

D. Holes and Punctures:

(1) The maximum diameter of damage permitted is 0.25 inch (6.35 mm) after cleanup. The damage must be 1.00 inch (25.4 mm) minimum from other holes, part edge, or other damage. Fill the hole with a titanium rivet that is installed wet with BMS 5-63 sealant. Refer to 51-20-05 and 51-40-02.

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REMOVAL OF DAMAGED MATERIAL
AT EDGES WITH FASTENERS

A

REMOVAL OF DAMAGED MATERIAL
ON A SURFACE

B

F70888 S0006591363_V1

Allowable Damage Limits
Figure 102 (Sheet 1 of 2)

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DENT THAT IS PERMITTED

C

REMOVAL OF DAMAGE AROUND THE FASTENERS ON AN EDGE OR A SURFACE

D

I–I

F70890 S0006591364_V2

Allowable Damage Limits
Figure 102 (Sheet 2 of 2)

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ALLOWABLE DAMAGE 3 - SECTION 48 TAILSKID FAIRING SKIN

1. Applicability

A. This subject gives the allowable damage limits for the tailskid fairing skin shown in Tailskid Fairing Skin Location, Figure 101/ALLOWABLE DAMAGE 3.

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Tailskid Fairing Skin Location
Figure 101

2. General

A. If structural damage occurs to the tailskid fairing after a tail strike, do an inspection of the tailskid. Refer to AMM 32-71-00/601.

B. As necessary, examine the tailskid fairing support structure for damage. Refer to 53-80-71, Allowable Damage 3.

C. Remove the damaged material as necessary.

(1) Refer to 51-10-02 for the inspection and removal of damage.

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(2) Refer to 51-30-03 for possible sources of the abrasive and other materials you can use to remove the damage.

(3) Refer to 51-30-05 for possible sources of the equipment and tools you can use to remove the damage.

D. After you remove the damage, do the steps that follow:

(1) Apply a chemical conversion coating to the bare surfaces of the reworked areas. Refer to 51-20-01.

(2) Apply one layer of BMS 10-79, Type III, primer to the reworked areas. Refer to SOPM 20-44-04.

(3) Apply the decorative finish, as applicable. Refer to AMM PAGEBLOCK 51-21-99/701.

3. References

Reference	Title
51-10-01, GENERAL	Aerodynamic Smoothness Requirements
51-10-02	INSPECTION AND REMOVAL OF DAMAGE
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-30-03	NON-METALLIC MATERIALS
51-30-05	EQUIPMENT AND TOOLS FOR REPAIRS
51-40-06, GENERAL	Fastener Edge Margins
53-80-71	FAIRING SUPPORT STRUCTURE - SECTION 48
AMM 51-21-99 P/B 701	DECORATIVE EXTERIOR PAINT SYSTEM - CLEANING/PAINTING
AMM 32-71-00/601	Tailskid Inspection/Check
SOPM 20-44-04	Application of Urethane Compatible Primer

4. Allowable Damage Limits

A. Forward and Aft Fairing Skin

(1) Cracks:

(a) Remove the damage as shown in Allowable Damage Limits, Figure 102/ALLOWABLE DAMAGE 3, Details A, B, and C.

(2) Nicks, Gouges, Scratches, and Corrosion:

(a) Remove the damage as shown in Allowable Damage Limits, Figure 102/ALLOWABLE DAMAGE 3, Details A, B, C, D, and F.

(3) Dents:

(a) The damage is permitted as shown in Allowable Damage Limits, Figure 102/ALLOWABLE DAMAGE 3, Detail E, for a maximum depth of 0.25 inch.

(b) Fill or rework the dent if:

1) It is larger than 0.25 inch and less than 0.50 inch in depth

2) The damage agrees with the conditions shown in Allowable Damage Limits, Figure 102/ALLOWABLE DAMAGE 3, Detail E.

3) If you fill the dent, then do the steps that follow:

a) Seal the damage with aluminum foil tape (speed tape)

b) Make an inspection of the dent at each 400 flight hour interval or more frequently.

- Make sure the tape is in satisfactory condition

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- Repair the dent if the damage becomes larger.

c) Repair the damage at or before 1000 flight hours have occurred.

(4) Holes and punctures are permitted if:

(a) They are a maximum of 0.25 inch in diameter

(b) The edge of the damage is a minimum of 1.0 inch away from a hole, an edge, or other damage

(c) They are filled with a 2117-T3 or 2117-T4 aluminum flush head rivet.

1) Install the rivet without sealant.

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REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER EDGE MARGINS DO NOT HAVE AN OVERLAP

A

REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER EDGE MARGINS HAVE AN OVERLAP

B

X = WIDTH OF THE MATERIAL THAT IS REMOVED
= A MAXIMUM OF 0.15 INCH

REMOVAL OF DAMAGED MATERIAL AT AN EDGE

C

G26607 S0006591367_V1

Allowable Damage Limits
Figure 102 (Sheet 1 of 3)

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REMOVAL OF DAMAGED MATERIAL ON A SURFACE

D

DENT THAT IS PERMITTED

E

G26612 S0006591368_V1

Allowable Damage Limits
Figure 102 (Sheet 2 of 3)

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Allowable Damage Limits
Figure 102 (Sheet 3 of 3)

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ALLOWABLE DAMAGE 4 - SECTION 48 BODY-TO-HORIZONTAL STABILIZER SLIDING SEALS, SKINS, AND PLATES

1. Applicability

A. This subject gives the allowable damage limits for the skins and plates of the body-to-horizontal stabilizer sliding seals shown in Section 48 Body-to-Horizontal Stabilizer Sliding Seals, Skins and Plates Location, Figure 101/ALLOWABLE DAMAGE 4.

2. General

A. Remove the parts as necessary to get access to the damaged area.

B. Refer to Paragraph 4./ALLOWABLE DAMAGE 4 for the allowable damage limits.

C. Do the steps that follow if you have damage to the parts:

NOTE: The procedures that follow do not apply to dent damage.

(1) Do a detailed close visual inspection of the damaged area to find the length, width, and depth of the damage.

(a) For aluminum parts, the methods that follow are permitted as an alternative to the detailed close visual inspection:

1) Penetrant inspection. Refer to SOPM 20-20-02.

2) High Frequency Eddy Current (HFEC) inspection. Refer to 737 NDT Part 6, 51-00-00, Figure 4.

(b) For CRES parts a magnetic particle inspection is permitted as an alternative to the detailed close visual inspection. Refer to SOPM 20-20-01.

D. Remove the damaged material as necessary.

NOTE: The procedures that follow do not apply to dent damage.

(1) Refer to 51-10-02 for the inspection and removal of damage.

(2) Refer to 51-30-03 for possible sources of the abrasive and other materials you can use to remove the damage.

(3) Refer to 51-30-05 for possible sources of the equipment and tools you can use to remove the damage.

E. After you have removed the damage, do the steps that follow for the parts given in the tables that follow:

NOTE: The procedures that follow do not apply to dent damage.

(1) Do what follows for the parts given in Table 101/ALLOWABLE DAMAGE 4 and shown in Section 48 Body-to-Horizontal Stabilizer Sliding Seals, Skins and Plates Location, Figure 101/ALLOWABLE DAMAGE 4.

Table 101:

ITEM	DESCRIPTION	ITEM	DESCRIPTION
[26]	Aft Panel Assembly (Bonded Formed Aluminum)	[27]	Forward Panel Assembly (Bonded Formed Aluminum)

(a) Apply a chemical conversion coating to the reworked areas of the part. Refer to 51-20-01.

(b) For the interior surface, do what follows:

1) Apply two layers of BMS 10-11, Type I primer to the reworked areas. Refer to SOPM 20-41-02.

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2) Prepare the surface and apply a BMS 10-86, Type I, or Type II Teflon filled coating, color gray. Refer to SOPM 20-44-01.

(c) For the exterior surface, do what follows:

1) Apply one layer of BMS 10-11, Type I primer to the reworked areas. Refer to SOPM 20-41-02.

(2) Do what follows for the parts listed in Table 102/ALLOWABLE DAMAGE 4 and shown in Allowable Damage Limits, Figure 102/ALLOWABLE DAMAGE 4.

Table 102:

ITEM	DESCRIPTION	ITEM	DESCRIPTION
[3]	Forward Ramp (Formed Aluminum)	[14]	Upper Aft Spacer (Formed Aluminum)
[4]	Forward Skin Filler (Formed Aluminum)	[18]	Lower Aft Spacer (Formed Aluminum)
[7]	Upper Forward Spacer (Formed Aluminum)	[23]	Lower Forward Ramp (Formed Aluminum)
[9]	Upper Forward Ramp (Formed Aluminum)	[24]	Lower Forward Spacer (Formed Aluminum)
[10]	Rub Strip (Formed Aluminum)		

(a) Apply a chemical conversion coating to the reworked areas of the part. Refer to 51-20-01.

(b) Apply two layers of BMS 10-11, Type I primer to the reworked areas. Refer to SOPM 20-41-02.

(3) Do what follows for the parts listed in Table 103/ALLOWABLE DAMAGE 4 and shown in Section 48 Body-to-Horizontal Stabilizer Sliding Seals, Skins and Plates Location, Figure 101/ALLOWABLE DAMAGE 4.

Table 103:

ITEM	DESCRIPTION	ITEM	DESCRIPTION
[5]	Upper Forward Track (Formed CRES)	[17]	Lower Aft Rub Strip (Formed CRES)
[5]	Upper Forward Rub Strip (Formed CRES)	[19]	Lower Aft Track (Formed CRES)
[13]	Upper Aft Rub Strip (Formed CRES)	[22]	Lower Forward Track (Formed CRES)
[15]	Upper Aft Track (Formed CRES)	[25]	Lower Forward Rub Strip (Formed CRES)

(a) For the lower and upper aft track, and the lower and upper forward track do what follows:

1) Apply a 0.0005-0.0007 inch thick chromium plating to the reworked areas of the part. Refer to SOPM 20-42-03, Class 4.

(b) For the lower and upper aft rub strip, and the lower and upper forward rub strip do what follows:

1) Apply a 0.0005-0.0007 inch thick chromium plating to the reworked areas of the part. Refer to SOPM 20-42-03, Class 2A.

(c) Apply a layer of Teflon-S 958-203:

1) Clean the reworked areas of the part with the dry abrasive cleaning method. Refer to SOPM 20-30-03.

2) Apply a layer of Teflon-S 958-203 as given in BAC 5824 to a final film thickness of 0.0010-0.0016 inch to the reworked areas of the part.

(d) Apply two layers of BMS 10-79, Type III primer to the reworked areas. Refer to SOPM 20-44-04.

(4) Do what follows for the parts listed in Table 104/ALLOWABLE DAMAGE 4 and shown in Section 48 Body-to-Horizontal Stabilizer Sliding Seals, Skins and Plates Location, Figure 101/ALLOWABLE DAMAGE 4.

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Table 104:

ITEM	DESCRIPTION	ITEM	DESCRIPTION
[8]	Upper Forward Skin Filler (Formed Aluminum)	[21]	Lower Skin Filler (Formed Aluminum)
[12]	Upper Aft Skin Filler (Formed Aluminum)		

(a) Apply a chemical conversion coating to the reworked areas of the part. Refer to 51-20-01.

(b) For the interior surface, do what follows:

1) Apply two layers of BMS 10-11, Type I primer to the reworked areas. Refer to SOPM 20-41-02.

(c) For the exterior surface, do what follows:

1) Apply one layer of BMS 10-11, Type I primer to the reworked areas. Refer to SOPM 20-41-02.

(5) Do what follows for the parts listed in Table 105/ALLOWABLE DAMAGE 4 and shown in Section 48 Body-to-Horizontal Stabilizer Sliding Seals, Skins and Plates Location, Figure 101/ ALLOWABLE DAMAGE 4.

Table 105:

ITEM	DESCRIPTION	ITEM	DESCRIPTION
[16]	Rub Strip (Formed Aluminum)		

(a) Apply a chemical conversion coating to the reworked areas of the part. Refer to 51-20-01.

(b) Apply one layer of BMS 10-79, Type III primer to the reworked areas. Refer to SOPM 20-44-04.

(c) For the exterior surface, do what follows:

1) Prepare the surface and apply a BMS 10-86, Type I, or Type II Teflon filled coating, color gray. Refer to SOPM 20-44-01, Type 27.

(6) Do what follows for the parts listed in Table 106/ALLOWABLE DAMAGE 4 and shown in Section 48 Body-to-Horizontal Stabilizer Sliding Seals, Skins and Plates Location, Figure 101/ ALLOWABLE DAMAGE 4.

Table 106:

ITEM	DESCRIPTION	ITEM	DESCRIPTION
[2]	Vertical Seal Rub Strip (Formed CRES)		

(a) Apply a cadmium plating to the reworked areas of the part. Refer to SOPM 20-42-05, Type 2, Class 2.

(b) Apply one layer of BMS 10-79, Type III primer to the reworked areas. Refer to SOPM 20-44-04.

(c) For the exterior surface, do what follows:

1) Prepare the surface and apply a BMS 10-86, Type I, or Type II Teflon filled coating, color gray. Refer to SOPM 20-44-01, Type 27.

(7) Do what follows for the parts listed in Table 107/ALLOWABLE DAMAGE 4 and shown in Section 48 Body-to-Horizontal Stabilizer Sliding Seals, Skins and Plates Location, Figure 101/ ALLOWABLE DAMAGE 4.

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Table 107:

ITEM	DESCRIPTION	ITEM	DESCRIPTION
[1]	Seal Plate (Formed CRES)	[20]	Lower Blade (Formed CRES)
[11]	Upper Blade (Formed CRES)		

(a) Apply a layer of Teflon-S 958-203:

1) Clean the reworked areas of the part with the dry abrasive cleaning method. Refer to SOPM 20-30-03

2) Apply a layer of Teflon-S 958-203 as given in BAC 5824 to a final film thickness of 0.0010-0.0016 inch to the reworked areas of the part.

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Section 48 Body-to-Horizontal Stabilizer Sliding Seals, Skins and Plates Location
Figure 101 (Sheet 1 of 2)

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Section 48 Body-to-Horizontal Stabilizer Sliding Seals, Skins and Plates Location
Figure 101 (Sheet 2 of 2)

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3. References

Reference	Title
51-10-01, GENERAL	Aerodynamic Smoothness Requirements
51-10-02	INSPECTION AND REMOVAL OF DAMAGE
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-30-03	NON-METALLIC MATERIALS
51-30-05	EQUIPMENT AND TOOLS FOR REPAIRS
51-40-06, GENERAL	Fastener Edge Margins
53-80-71, ALLOWABLE DAMAGE 4	Section 48 Body-to-Horizontal Stabilizer Sliding Seals Structure
AMM 51-21-00 P/B 701	INTERIOR AND EXTERIOR FINISHES - CLEANING/PAINTING
SOPM 20-20-01	Magnetic Particle Inspection
SOPM 20-20-02	Penetrant Methods of Inspection
SOPM 20-30-03	General Cleaning Procedures
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes
SOPM 20-42-03	Hard Chrome Plating
SOPM 20-42-05	Bright Cadmium Plating
SOPM 20-44-01	Application of Special Purpose Coatings and Finishes
SOPM 20-44-04	Application of Urethane Compatible Primer
737 NDT Part 6, 51-00-00	Structures - General

4. Allowable Damage Limits

A. Cracks

(1) Remove the damage as shown in Allowable Damage Limits, Figure 102/ALLOWABLE DAMAGE 4, Details A, B, and F.

(2) Cracks are permitted if they are:

(a) A maximum of 0.50 inch in length

(b) A minimum of 1.0 inch away from an edge, or other damage

NOTE: A crack with a maximum length of 0.50 inch and ends at a fastener hole is permitted.

(c) Stop-drilled with 0.250 inch diameter stop holes at the end(s) of the crack. Refer to 51-10-02.

B. Nicks, Gouges, Scratches, and Corrosion:

(1) Remove the damage as shown in Allowable Damage Limits, Figure 102/ALLOWABLE DAMAGE 4, Details A, B, C, E, and F.

C. Dents are permitted as shown in Allowable Damage Limits, Figure 102/ALLOWABLE DAMAGE 4, Detail D if:

(1) They do not extend across an attached structure.

D. Holes and Punctures are permitted if:

(1) They are a maximum of 0.50 inch in diameter

(2) The edge of the damage is a minimum of 0.75 inch away from a hole, an edge, or other damage

(3) They are filled with:

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(a) A 2117-T3 or 2117-T4 aluminum flush head rivet for aluminum parts

1) Install the rivet without sealant.

(b) A monel flush head rivet for CRES parts.

1) Install the rivet without sealant.

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REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER EDGE MARGINS DO NOT HAVE AN OVERLAP

A

REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER EDGE MARGINS HAVE AN OVERLAP

B

REMOVAL OF DAMAGED MATERIAL ON A SURFACE

C

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Allowable Damage Limits
Figure 102 (Sheet 1 of 3)

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DENT AWAY FROM AN EDGE IS SHOWN, DENT AT AN EDGE IS SIMILAR

DENT THAT IS PERMITTED

D

REMOVAL OF DAMAGE AROUND THE FASTENERS ON AN EDGE OR A SURFACE

E

B–B

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Allowable Damage Limits
Figure 102 (Sheet 2 of 3)

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X = WIDTH OF THE MATERIAL THAT IS REMOVED
= A MAXIMUM OF 0.10 INCH

NOTE: APPLICABLE TO SINGLE AND MULTI-PLY SKINS AND PLATES

REMOVAL OF DAMAGED MATERIAL AT AN EDGE OF A METAL SKIN OR WEB

F

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Allowable Damage Limits
Figure 102 (Sheet 3 of 3)

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REPAIR 1 - SECTION 48 TAILCONE FAIRING SKIN

1. Applicability

A. Repair 1 is applicable to damage on the forward and aft skin panels of the Section 48 tailcone fairing as shown in Tailcone Fairing Skin Location, Figure 201/REPAIR 1.

B. Repair 1 is applicable to damage that is more than the limits permitted in Allowable Damage 1. Refer to Allowable Damage 1 for the type and the dimensions of the damage that is permitted.

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Tailcone Fairing Skin Location
Figure 201

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2. General

A. Repair 1 gives instructions for Category A and B repairs. Refer to 51-00-06 to find the definitions of the different categories of repairs.

B. Remove the panel as necessary to get access to the inner surfaces. Refer to AMM 53-53-00/401.

(1) Remove the necessary fasteners. Refer to 51-40-02 for information on fastener removal.

C. Do an inspection of the damaged area to find the dimensions of the damage.

(1) For the honeycomb core areas that have damage on a facesheet with 3 or less initial plies, Boeing recommends that you do the step that follows:

(a) Use an instrumented Non-Destructive Test (NDT) procedure. The tap test procedure is optional. Refer to 737 NDT Part 1, 51-05-01 for inspection procedures.

NOTE: Other inspection methods that have been examined and found to be satisfactory by the operator, can be used.

(2) For the honeycomb core areas that have damage on a facesheet with 4 or more initial plies, Boeing recommends that you do the step that follows:

(a) Use an instrumented Non-Destructive Test (NDT) procedure. Refer to 737 NDT Part 1, 51-01-02 for inspection procedures.

NOTE: Other inspection methods that have been examined and found to be satisfactory by the operator, can be used.

(3) For damage in solid laminate areas, Boeing recommends that you do the step that follows:

(a) Use an instrumented Non-Destructive Test (NDT) procedure. Refer to 737 NDT Part 1, 51-01-02 for inspection procedures.

NOTE: Other inspection methods that have been examined and found to be satisfactory by the operator, can be used.

(4) Refer to Definitions of Damage Size, Figure 202/REPAIR 1 for the definitions of the diameter and depth of damage.

(5) Refer to Definitions of the Facesheets, Figure 203/REPAIR 1 for the definitions of the facesheets of a honeycomb core area.

D. Do the repair as given in Paragraph 4./REPAIR 1.

E. Install the panels that were removed. Refer to AMM 53-53-00/401.

(1) Install the fasteners after all repairs are complete. Refer to 51-40-02 for information on fastener installation.

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Definitions of Damage Size
Figure 202

F72893 S0006591387_V1

Definitions of the Facesheets
Figure 203

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3. References

Reference	Title
51-00-06	STRUCTURAL REPAIR DEFINITIONS
51-10-01, GENERAL	Aerodynamic Smoothness Requirements
51-30-05, GENERAL	Equipment and Tools For Repairs
51-40-02	FASTENER INSTALLATION AND REMOVAL
51-40-03, GENERAL	Fastener Substitution
51-70-04, REPAIR GENERAL	Repair Procedures for Wet Layup Materials
51-70-05, REPAIR GENERAL	Repair Procedures for Pre-impregnated Materials
51-70-06	ROOM TEMPERATURE CURE REPAIRS
AMM 51-21-00 P/B 701	INTERIOR AND EXTERIOR FINISHES - CLEANING/PAINTING
AMM 51-21-71 P/B 701	CONDUCTIVE COATING FOR EXTERNAL SURFACES - CLEANING/ PAINTING
AMM 53-53-00/401	Tailcone Fairing Assembly - Installation/Removal
737 NDT Part 1, 51-01-01	Inspection of Repairs to Composite Structure
737 NDT Part 1, 51-01-02	NDT Examination of Composite Structure for Impact Damage
737 NDT Part 1, 51-05-01	Tap Test Inspection of Honeycomb Sandwich Structure

4. Repair Instructions

A. For dents that are a maximum of 2 inches (50.8 mm) in diameter and have no fiber damage and delamination, use Repair 12 as given in 51-70-06.

B. For dents that are not permitted by Paragraph 4.A./REPAIR 1 and for other damage that is not permitted by Allowable Damage 1, refer to:

(1) Table 201/REPAIR 1 for the repair data that is applicable to damage in the honeycomb core areas of the panels.

(2) Table 202/REPAIR 1 for the repair data that is applicable to damage in the solid laminate areas of the panels.

Table 201:

REPAIR DATA FOR THE HONEYCOMB CORE AREAS OF THE 250°F (121°C) CURE, TAILCONE SKIN PANELS				
REPAIR TYPE	**CATEGORY B WET LAYUP**	**CATEGORY A WET LAYUP**	**CATEGORY A WET LAYUP**	**CATEGORY A PREIMPREGNATED LAYUP**
REPAIR CURE TEMPERATURE	**Room Temperature**	**150°F (66°C)**	**200°F (93°C)**	**250°F (121°C)**
REPAIR SIZE AND LIMITS	Damage that is a maximum of: - 6.0 inches (152.4 mm) in diameter - 30 percent of the smallest dimension across the panel at the damage location - one facesheet and the honeycomb core in depth	Damage that is a maximum of: - 6.0 inches (152.4 mm) in diameter - 50 percent of the smallest dimension across the panel at the damage location	Damage that is a maximum of: - 12.0 inches (304.8 mm) in diameter - 50 percent of the smallest dimension across the panel at the damage location	There are no limits on the repair dimensions.

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Table 201: (Continued)

REPAIR DATA FOR THE HONEYCOMB CORE AREAS OF THE 250°F (121°C) CURE, TAILCONE SKIN PANELS				
REPAIR TYPE	**CATEGORY B WET LAYUP**	**CATEGORY A WET LAYUP**	**CATEGORY A WET LAYUP**	**CATEGORY A PREIMPREGNATED LAYUP**
REPAIR CURE TEMPERATURE	**Room Temperature**	**150°F (66°C)**	**200°F (93°C)**	**250°F (121°C)**
	One repair for each 144 inches² (0.93 M²) 6.0 inches (152.4 mm) minimum clearance from: -other repairs -fastener holes -panel edges	One repair for each 144 inches² (0.93 M²) 3.0 inches (76.2 mm) minimum clearance from: -other repairs -fastener holes -panel edges		
REPAIR PROCEDURES	SRM 51-70-06 and Paragraph 4.C	SRM 51-70-04 and Paragraph 4.D	SRM 51-70-04 and Paragraph 4.D	SRM 51-70-05 and Paragraph 4.E

Table 202:

REPAIR DATA FOR THE SOLID LAMINATE AREAS OF THE 250°F (121°C) CURE, TAILCONE SKIN PANELS			
REPAIR TYPE	**CATEGORY B WET LAYUP**	**CATEGORY A WET LAYUP**	**CATEGORY A PREIMPREGNATED LAYUP**
REPAIR CURE TEMPERATURE	**ROOM TEMPERATURE**	**200°F (93°C)**	**250°F (121°C**
REPAIR SIZE AND LIMITS	Damage that is a maximum of: - 15 percent of the cross-sectional area through the edgeband or solid laminate area - 10 percent of the edgeband length on the side of the damage, as applicable	There are no size limits on the repair.	There are no size limits on the repair.
REPAIR PROCEDURES	SRM 51-70-06 and Paragraph 4.C	SRM 51-70-04 and Paragraph 4.D	SRM 51-70-05 and Paragraph 4.E

C. For Category B repairs made with wet layup materials at room temperature cure, do as follows, as applicable:

NOTE: Repair plies or added plies are not necessary in the repair of delamination at an edge if the delamination is a minimum of 2D (D = fastener diameter) away from a fastener hole. If it is not, repair it as hole damage.

(1) Use the same number of repair plies as the number of initial plies that are removed.

(2) Add one structural ply of BMS 9-3, Type H-2 or H-3 glass fabric that is ±45 degrees.

(3) Add a second structural ply of BMS 9-3, Type H-2 or H-3 glass fabric that is 0 or 90 degrees.

(4) Inspect repairs after each 5000 flight hour interval or more frequently. Refer to 737 NDT Part 1, 51-01-01 for inspection procedures. If deterioration is found, then they must be replaced with Category A repairs.

NOTE: Other inspection methods that have been examined and found to be satisfactory by the operator, can be used.

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D. For Category A repairs made with wet layup materials at 150°F (66°C) or 200°F (93°C) cure, do as follows, as applicable:

NOTE: Repair plies or added plies are not necessary in the repair of delamination at an edge if the delamination is a minimum of 2D (D = fastener diameter) away from a fastener hole. If it is not, then repair it as hole damage.

(1) Use the same number of repair plies as the number of initial plies that are removed.

(2) Add one structural ply of BMS 9-3, Type H-2 or H-3 glass fabric that is ±45 degrees.

(3) Add a second structural ply of BMS 9-3, Type H-2 or H-3 glass fabric that is 0 or 90 degrees.

E. For Category A repairs made with preimpregnated layup materials at 250°F (121°C) cure, use the same number of repair plies as the number of initial plies that are removed.

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REPAIR 3 - SECTION 48 TAILSKID FAIRING SKIN

1. Applicability

A. Repair 3 is applicable to damage to the tailskid fairing skin shown in Tailskid Fairing Skin Location, Figure 201/REPAIR 3.

G28224 S0006591391_V1

Tailskid Fairing Skin Location
Figure 201

2. General

A. Repair 3 is a Category A repair. Refer to 51-00-06 to find the definitions of the different categories of repairs.

3. References

Reference	Title
51-00-06	STRUCTURAL REPAIR DEFINITIONS
51-10-01, GENERAL	Aerodynamic Smoothness Requirements

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(Continued)

Reference	Title
51-10-02	INSPECTION AND REMOVAL OF DAMAGE
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-20-05	REPAIR SEALING
51-40-02, GENERAL	Fastener Installation and Removal
51-40-03, GENERAL	Fastener Substitution
51-40-05, GENERAL	Fastener Hole Sizes
51-40-06, GENERAL	Fastener Edge Margins
51-40-08	COUNTERSINKING
53-80-71, REPAIR 3	Section 48 Tailskid Fairing Support Structure
AMM 51-21-99 P/B 701	DECORATIVE EXTERIOR PAINT SYSTEM - CLEANING/PAINTING
SOPM 20-44-04	Application of Urethane Compatible Primer

4. Repair Instructions

A. Cut and remove the damaged part of the tailskid fairing skin as shown in Tailskid Fairing Skin External Repair, Figure 202/REPAIR 3. Refer to 51-10-02 for the procedures to remove the damage.

(1) Make sure there is a minimum of two rows of repair fasteners around the edges of the cutout.

B. Put the skin that is around the damage back to the initial contour.

C. Make the repair part as shown in Tailskid Fairing Skin External Repair, Figure 202/REPAIR 3 and given in Table 201/REPAIR 3.

(1) Make the contour of the repair part the same as the contour of the initial skin.

Table 201:

REPAIR MATERIAL			
ITEM	**PART**	**QUANTITY**	**MATERIAL**
[1]	Repair Plate	1	Use bare or clad 6061-T6 that is 0.080 inch thick.

D. Assemble the repair part as shown in Tailskid Fairing Skin External Repair, Figure 202/REPAIR 3.

E. Drill and countersink the fastener holes.

F. Disassemble the repair part.

G. Remove the nicks, scratches, gouges, and sharp edges from the repair parts and the bare surfaces of the initial skin.

H. Apply a chemical conversion coating to the repair parts and bare surfaces of the initial skin. Refer to 51-20-01 for the chemical conversion coating procedures.

I. Apply one layer of BMS 10-79, Type III primer to the repair parts and the bare surfaces of the initial skin. Refer to SOPM 20-44-04.

J. Install the repair parts with BMS 5-95 sealant between the mating surfaces. Refer to 51-20-05 for the procedures to apply the sealant.

K. Install the fasteners without sealant.

(1) If necessary, use countersink repair washers. Refer to 51-40-08

L. Fill the space between the part [1] repair plate and the initial skin with BMS 5-95 sealant. Refer to 51-20-05.

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M. Apply the decorative finish to the repair area as given in AMM PAGEBLOCK 51-21-99/701.

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FASTENER SYMBOLS

✦ REPAIR FASTENER LOCATION. INSTALL A BACR15CE5D 100° SHEAR HEAD RIVET OR AN MS20426D5 COUNTERSUNK 100° PRECISION HEAD SOLID RIVET.

G28351 S0006591393_V1

Tailskid Fairing Skin External Repair
Figure 202

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G49321 S0006591395_V1

Section 48 Body-to-Horizontal Stabilizer Sliding Seals, Skins and Plates Location
Figure 201 (Sheet 1 of 2)

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NOTES

1 THERE ARE NO REPAIRS FOR THIS PART IN THE STRUCTURAL REPAIR MANUAL AT THIS TIME. IF THE DAMAGE TO THE PART IS MORE THAN THE LIMITS GIVEN IN SRM 53-80-70, ALLOWABLE DAMAGE 4, REPLACE THE DAMAGED PART.

2 THERE ARE NO REPAIRS FOR THIS PART IN THE STRUCTURAL REPAIR MANUAL AT THIS TIME.

G49346 S0006591396_V2

Section 48 Body-to-Horizontal Stabilizer Sliding Seals, Skins and Plates Location
Figure 201 (Sheet 2 of 2)

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IDENTIFICATION 3 - SECTION 48 TAILSKID FAIRING SUPPORT STRUCTURE

NOTE: REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

J97936 S0000189969_V1

Tailskid Fairing Support Structure Location
Figure 1

Table 1:

REFERENCE DRAWINGS	
DRAWING NUMBER	**TITLE**
148A4801	Integration Functional Collector - Section 48
148A7240	Fairing Installation - Tailskid
148A7241	Frame Assembly - Tailskid Fairing

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NOTES

- REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

1 FOR AIRCRAFT WITHOUT "SHORT FIELD PERFORMANCE" OR A FLAT AFT PRESSURE BULKHEAD OPTION.

2 FOR AIRCRAFT WITH "SHORT FIELD PERFORMANCE" OR A FLAT AFT PRESSURE BULKHEAD OPTION.

J99382 S0000190901_V2

Tailskid Fairing Support Structure Identification
Figure 2

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Table 2:

LIST OF MATERIALS FOR FIGURE 2				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Frame	0.063 (1.6)	6061-T62 sheet as given in QQ-A-250/11	
[2]	Attachment Angle	0.080 (2.03)	2024-T42 clad sheet as given in QQ-A-250/5	
[3]	Frame	0.063 (1.6)	6061-T62 sheet as given in QQ-A-250/11	
[4]	Attachment Angle	0.080 (2.03)	2024-T42 clad sheet as given in QQ-A-250/5	
[5]	Frame	0.063 (1.6)	6061-T6 sheet as given in QQ-A-250/11	
[6]	Frame	0.063 (1.6)	6061-T6 sheet as given in QQ-A-250/11	
[7]	Frame	0.063 (1.6)	6061-T62 sheet as given in QQ-A-250/11	
[8]	Attachment Angle	0.063 (1.6)	2024-T42 clad sheet as given in QQ-A-250/5	
[9]	Frame	0.063 (1.6)	6061-T6 sheet as given in QQ-A-250/11	
[10]	Frame	0.063 (1.6)	6061-T6 sheet as given in QQ-A-250/11	
[11]	Seal Retainer	0.050 (1.3)	2024-T3 clad sheet as given in QQ-A-250/5	
[12]	Seal Retainer	0.050 (1.3)	2024-T3 clad sheet as given in QQ-A-250/5	
[13]	Seal Retainer		BAC1490-2582 2024-T42 clad sheet as given in QQ-A-250/5	
[14]	Seal Retainer	0.032 (0.81)	2024-T3 clad sheet as given in QQ-A-250/5	
[15]	Drop Tube	0.050 (1.3)	2024-T42 clad sheet as given in QQ-A-250/5	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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IDENTIFICATION 4 - SECTION 48 BODY-TO-HORIZONTAL STABILIZER SLIDING SEALS STRUCTURE

NOTE: REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

G45205 S0006591405_V2

Section 48 Body-to-Horizontal Stabilizer Sliding Seals - Structure Location

Figure 1

Table 1:

REFERENCE DRAWINGS	
DRAWING NUMBER	**TITLE**
140A4814	Functional Collector - Sliding Seals, Front and Rear Spar
181A8001	Frame Installation - Track Support, Front Spar Sliding Seal
181A8002	Track Installation, Front Spar Sliding Seal
181A8004	Seal Installation, Front Spar Sliding Seal
181A8050	Track Installation, Rear Spar Sliding Seal

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NOTE: REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

G45659 S0006591407_V3

Section 48 Body-to-Horizontal Stabilizer Sliding Seals - Structure Identification
Figure 2 (Sheet 1 of 4)

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G45735 S0006591408_V1

Section 48 Body-to-Horizontal Stabilizer Sliding Seals - Structure Identification
Figure 2 (Sheet 2 of 4)

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G46085 S0006591409_V2

Section 48 Body-to-Horizontal Stabilizer Sliding Seals - Structure Identification
Figure 2 (Sheet 3 of 4)

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SECTION A-A

SECTION B-B

W54392 S0000129983_V1

Section 48 Body-to-Horizontal Stabilizer Sliding Seals - Structure Identification
Figure 2 (Sheet 4 of 4)

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Table 2:

LIST OF MATERIALS FOR FIGURE 2				
ITEM	DESCRIPTION	T*[1]	MATERIAL	EFFECTIVITY
[1]	Lower Skin Support Channel	0.050 (1.27)	2024-T42 clad sheet as given in QQ-A-250/5	
[2]	Clip Angle	0.050 (1.27)	2024-T3 clad sheet as given in QQ-A-250/5	
[3]	Channel	0.050 (1.27)	2024-T42 clad sheet as given in QQ-A-250/5	
[4]	Skin Support Zee	0.050 (1.27)	2024-T42 clad sheet as given in QQ-A-250/5	
[5]	Filler	0.250 (6.35)	7075-T73511 plate as given in QQ-A-250/12	
[6]	Strip, Forward, Upper, Outer	0.040 (1.02)	15-5 PH CRES sheet as given in BMS 7-240, Type 1. Heat treat to 150-170 ksi as given in BAC 5619	
[7]	Strip, Aft, Upper, Outer	0.040 (1.02)	15-5 PH CRES sheet as given in BMS 7-240, Type 1. Heat treat to 150-170 ksi as given in BAC 5619	
[8]	Strip, Forward, Upper, Inner	0.040 (1.02)	15-5 PH CRES sheet as given in BMS 7-240, Type 1. Heat treat to 150-170 ksi as given in BAC 5619	
[9]	Strip, Aft, Upper, Inner	0.040 (1.02)	15-5 PH CRES sheet as given in BMS 7-240, Type 1. Heat treat to 150-170 ksi as given in BAC 5619	
[10]	Frame	0.063 (1.60)	2024-T42 clad sheet as given in QQ-A-250/5	
[11]	Angle	0.063 (1.60)	2024-T42 clad sheet as given in QQ-A-250/5	
[12]	Strip, Forward, Lower, Inner	0.040 (1.02)	301 CRES sheet as given in AMS 5518. Surface Condition 2D, 1/2 hard	
[13]	Strip, Forward, Lower, Outer	0.040 (1.02)	301 CRES sheet as given in AMS 5518. Surface Condition 2D, 1/2 hard	
[14]	Filler	0.200 (5.10)	2024-T3 clad sheet as given in QQ-A-250/5	
[15]	Strip, Aft, Lower, Outer	0.040 (1.02)	301 CRES sheet as given in AMS 5518. Surface Condition 2D, 1/2 hard	
[16]	Strip, Aft, Lower, Inner	0.040 (1.02)	301 CRES sheet as given in AMS 5518. Surface Condition 2D, 1/2 hard	
[17]	Strip, Aft, Mid, Inner	0.250 (6.35)	15-5 PH CRES plate as given in AMS 5862. Heat treat to 150-170 ksi as given in BAC 5619	
[18]	Strip, Forward, Mid, Inner	0.250 (6.35)	15-5 PH CRES plate as given in AMS 5862. Heat treat to 150-170 ksi as given in BAC 5619	
[19]	Clip	0.071 (1.80)	7075-T62 clad sheet as given in QQ-A-250/13	
[20]	Channel	0.063 (1.60)	2024-T42 clad sheet as given in QQ-A-250/5	
[21]	Clip Tee		BAC1506-3160 2024-T3511 extrusion as given in QQ-A-200/3	
[22]	Clip Tee		BAC1505-100261 2024-T3511 extrusion as given in QQ-A-200/3	
[23]	Clip Tee		BAC1506-2296 2024-T3511 extrusion as given in QQ-A-200/3	
[24]	Clip	0.063 (1.60)	2024-T42 clad sheet as given in QQ-A-250/5	
[25]	Angle	0.063 (1.60)	2024-T42 clad sheet as given in QQ-A-250/5	
[26]	Strip, Aft, Mid	0.040 (1.02)	301 CRES sheet as given in AMS 5518. Surface Condition 2D, 1/2 hard	
[27]	Filler	0.080 (2.03)	2024-T3 clad sheet as given in QQ-A-250/5	

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Table 2: (Continued)

LIST OF MATERIALS FOR FIGURE 2				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[28]	Plate	0.040 (1.02)	301 CRES sheet as given in AMS 5901, annealed. Surface Condition 2D	
[29]	Angle		AND10134-0701 2024-T3511 extrusion as given in QQ-A-200/3	
[30]	Plate, Inner	0.040 (1.02)	2024-T3 clad sheet as given in QQ-A-250/5	
[31]	Filler	0.032 (0.81)	2024-T3 clad sheet as given in QQ-A-250/5	
[32]	Plate, Mid	0.090 (2.29)	2024-T3 clad sheet as given in QQ-A-250/5	
[33]	Plate, Outer	0.040 (1.02)	2024-T3 clad sheet as given in QQ-A-250/5	For Cum Line Numbers 1 Thru 1380
[33]	Plate, Outer	0.100 (2.54)	2024-T3 clad sheet as given in QQ-A-250/5	For Cum Line Numbers 1381 and on
[34]	Strip, Forward, Mid	0.040 (1.02)	301 CRES sheet as given in AMS 5518. Surface Condition 2D, 1/2 hard	
[35]	Link Fitting		15-5 PH CRES casting as given in AMS 5346	
[36]	Clip Tee		BAC1505-101184 2024-T3511 extrusion as given in QQ-A-200/3	
[37]	Filler, Tapered	0.250 (6.40)	7075-T7351 plate as given in QQ-A-250/12	For Cum Line Numbers 1381 and on
[38]	Filler, Tapered	0.500 (12.70)	7075-T7351 plate as given in QQ-A-250/12	For Cum Line Numbers 1381 and on
[39]	Channel, Forward Frame	0.063 (1.60)	2024-T42 clad sheet as given in QQ-A-250/5	For Cum Line Numbers 1381 and on
[40]	Angle	0.063 (1.60)	2024-T42 clad sheet as given in QQ-A-250/5	For Cum Line Numbers 1381 and on

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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IDENTIFICATION 5 - SECTION 48 BODY-TO-RUDDER SEAL RETAINER STRUCTURE

NOTE: REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

G25233 S0006591412_V1

Body-to-Rudder Seal Retainer Structure Location
Figure 1

Table 1:

REFERENCE DRAWINGS	
DRAWING NUMBER	**TITLE**
140A4801	Integration Functional Collector - Section 48
148A1680	Seal Installation - Body/Rudder

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NOTE: REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

G25370 S0006591414_V2

Body-to-Rudder Seal Retainer Structure Identification
Figure 2

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Table 2:

LIST OF MATERIALS FOR FIGURE 2				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Retainer	0.050 (1.27)	2024-T3 clad sheet as given in QQ-A-250/5	
[2]	Plate	0.063 (1.60)	2024-T3 clad sheet as given in QQ-A-250/5	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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ALLOWABLE DAMAGE 3 - SECTION 48 TAILSKID FAIRING SUPPORT STRUCTURE

1. Applicability

A. This subject gives the allowable damage limits for the tailskid fairing support structure shown in Tailskid Fairing Support Structure Location, Figure 101/ALLOWABLE DAMAGE 3.

NOTE: ALL PARTS IDENTIFIED ARE MADE OF FORMED ALUMINUM.

G28463 S0006591418_V1

Tailskid Fairing Support Structure Location
Figure 101

2. General

A. Remove the damaged material as necessary.

(1) Refer to 51-10-02 for the inspection and removal of damage.

(2) Refer to 51-30-03 for possible sources of the abrasive and other materials you can use to remove the damage.

(3) Refer to 51-30-05 for possible sources of the equipment and tools you can use to remove the damage.

B. After you remove the damage, do the steps that follow:

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(1) Apply a chemical conversion coating to the reworked areas. Refer to 51-20-01.

(2) Apply one layer of BMS10-11, Type I, primer to the reworked areas. Refer to SOPM 20-41-02.

3. References

Reference	Title
51-10-02	INSPECTION AND REMOVAL OF DAMAGE
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-30-03	NON-METALLIC MATERIALS
51-30-05	EQUIPMENT AND TOOLS FOR REPAIRS
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes

4. Allowable Damage Limits

A. Frames

(1) Cracks:

(a) Remove the damage as shown in Allowable Damage Limits, Figure 102/ALLOWABLE DAMAGE 3, Details A, B, F, and G.

(2) Nicks, Gouges, Scratches, and Corrosion:

(a) Remove the damage as shown in Allowable Damage Limits, Figure 102/ALLOWABLE DAMAGE 3, Details A, B, C, E, F, and G.

(3) Dents are not permitted.

(4) Holes and punctures are not permitted.

B. Attachment Angles and Seal Retainers

(1) Cracks:

(a) Remove the damage as shown in Allowable Damage Limits, Figure 102/ALLOWABLE DAMAGE 3, Details A, B, and F.

(2) Nicks, Gouges, Scratches, and Corrosion:

(a) Remove the damage as shown in Allowable Damage Limits, Figure 102/ALLOWABLE DAMAGE 3, Details A, B, C, E, and F.

(3) Dents:

(a) Dents are permitted if:

1) They agree with the conditions shown in Allowable Damage Limits, Figure 102/ALLOWABLE DAMAGE 3, Detail D.

2) They do not extend across an attached structure.

(4) Holes and punctures are not permitted.

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REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER EDGE MARGINS DO NOT HAVE AN OVERLAP

A

REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER EDGE MARGINS HAVE AN OVERLAP

B

REMOVAL OF DAMAGED MATERIAL ON A SURFACE

C

G28464 S0006591419_V1

Allowable Damage Limits
Figure 102 (Sheet 1 of 3)

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DENT AWAY FROM AN EDGE IS SHOWN, DENT AT AN EDGE IS SIMILAR

DENT THAT IS PERMITTED

D

REMOVAL OF DAMAGE AROUND THE FASTENERS ON AN EDGE OR A SURFACE

E

B–B

G28465 S0006591420_V1

Allowable Damage Limits
Figure 102 (Sheet 2 of 3)

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X = WIDTH OF THE MATERIAL THAT IS REMOVED
= A MAXIMUM OF 10 PERCENT OF THE WIDTH OF THE FLANGE

REMOVAL OF DAMAGED MATERIAL ON AN EDGE

F

X = WIDTH OF THE MATERIAL THAT IS REMOVED
= A MAXIMUM OF 0.10 INCH

REMOVAL OF DAMAGED MATERIAL AT AN EDGE OF A METAL SKIN OR WEB

G

G28468 S0006591421_V1

Allowable Damage Limits
Figure 102 (Sheet 3 of 3)

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ALLOWABLE DAMAGE 4 - SECTION 48 BODY-TO-HORIZONTAL STABILIZER SLIDING SEALS STRUCTURE

1. Applicability

A. This subject gives the allowable damage limits for the structure of the body-to-horizontal stabilizer sliding seals shown in Section 48 Body-to-Horizontal Stabilizer Sliding Seals Structure Location, Figure 101/ALLOWABLE DAMAGE 4.

G48629 S0006591423_V1

Section 48 Body-to-Horizontal Stabilizer Sliding Seals Structure Location
Figure 101

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Section 48 Body-to-Horizontal Stabilizer Sliding Seals - Structure Location
Figure 102 (Sheet 1 of 3)

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G48640 S0006591425_V1

Section 48 Body-to-Horizontal Stabilizer Sliding Seals - Structure Location
Figure 102 (Sheet 2 of 3)

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G48646 S0006591426_V1

Section 48 Body-to-Horizontal Stabilizer Sliding Seals - Structure Location
Figure 102 (Sheet 3 of 3)

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2. General

A. Remove the parts as necessary to get access to the damaged area.

B. Refer to Paragraph 4./ALLOWABLE DAMAGE 4 for the allowable damage limits.

C. Do the steps that follow if you have damage to the parts:

NOTE: The procedures that follow do not apply to dent damage.

(1) Do a detailed close visual inspection of the damaged area to find the length, width, and depth of the damage.

(a) For aluminum parts, the methods that follow are permitted as an alternative to the detailed close visual inspection:

1) Penetrant inspection. Refer to SOPM 20-20-02.

2) High Frequency Eddy Current (HFEC) inspection. Refer to 737 NDT Part 6, 51-00-00, Figure 4.

(b) For CRES parts a magnetic particle inspection is permitted as an alternative to the detailed close visual inspection. Refer to SOPM 20-20-01.

D. Remove the damaged material as necessary.

NOTE: The procedures that follow do not apply to dent damage.

(1) Refer to 51-10-02 for the inspection and removal of damage.

(2) Refer to 51-30-03 for possible sources of the abrasive and other materials you can use to remove the damage.

(3) Refer to 51-30-05 for possible sources of the equipment and tools you can use to remove the damage.

E. After you have removed the damage, do the steps that follow for the parts listed.

NOTE: The procedures that follow do not apply to dent damage.

(1) Do what follows for the parts listed in Table 101/ALLOWABLE DAMAGE 4 and shown in Section 48 Body-to-Horizontal Stabilizer Sliding Seals - Structure Location, Figure 102/ALLOWABLE DAMAGE 4.

Table 101:

ITEM	DESCRIPTION	ITEM	DESCRIPTION
[10]	Frame (Formed aluminum)	[11]	Angle (Formed aluminum)

(a) Apply a chemical conversion coating to the reworked areas of the part. Refer to 51-20-01.

(b) Apply one layer of BMS 10-11, Type I primer to the reworked areas. Refer to SOPM 20-41-02.

(2) Do what follows for the parts listed in Table 102/ALLOWABLE DAMAGE 4 and shown in Figure 102/ALLOWABLE DAMAGE 4.

Table 102:

ITEM	DESCRIPTION	ITEM	DESCRIPTION
[1]	Lower Skin Support Channel (Formed aluminum)	[23]	Clip Tee (Extruded aluminum)
[2]	Clip Angle (Formed aluminum)	[24]	Clip (Formed aluminum)
[3]	Channel (Formed aluminum)	[25]	Angle (Formed aluminum)
[4]	Skin Support Zee (Formed aluminum)	[27]	Filler (Formed aluminum)

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Table 102: (Continued)

ITEM	DESCRIPTION	ITEM	DESCRIPTION
[5]	Filler (Formed aluminum)	[29]	Angle (Extruded aluminum)
[14]	Filler (Formed aluminum)	[30]	Plate, Inner (Formed aluminum)
[19]	Clip (Formed aluminum)	[31]	Filler (Formed aluminum)
[20]	Channel (Formed aluminum)	[32]	Plate, Mid (Formed aluminum)
[21]	Clip Tee (Extruded aluminum)	[33]	Plate Outer (Formed aluminum)
[22]	Clip Tee (Extruded aluminum)	[36]	Clip Tee (Extruded aluminum)

(a) Apply a chemical conversion coating to the reworked areas of the part. Refer to 51-20-01, GENERAL.

(b) Apply two layers of BMS 10-11, Type I primer to the reworked areas. Refer to SOPM 20-41-02.

(3) Do what follows for the parts listed in Table 103/ALLOWABLE DAMAGE 4 and shown in Figure 102/ALLOWABLE DAMAGE 4.

Table 103:

ITEM	DESCRIPTION	ITEM	DESCRIPTION
[6]	Strip, Forward, Upper, Outer (Formed CRES)	[13]	Strip, Forward, Lower, Outer (Formed CRES)
[7]	Strip, Aft, Upper, Outer (Formed CRES)	[15]	Strip, Aft, Lower, Outer (Formed CRES)
[8]	Strip, Forward, Upper, Inner (Formed CRES)	[16]	Strip, Aft, Lower, Inner (Formed CRES)
[9]	Strip, Aft, Upper, Inner (Formed CRES)	[17]	Strip, Aft, Mid, Inner (Machined CRES)
[12]	Strip, Forward, Lower, Inner (Formed CRES)	[18]	Strip, Forward, Mid, Inner (Machined CRES)

(a) Apply a 0.0005 - 0.0007 inch thick chromium plating to the reworked areas of the part. Refer to SOPM 20-42-03, Class 4.

(b) Apply a layer of Teflon-S 958-203 to the inner wear surfaces only:

1) Clean the reworked areas of the part with the dry abrasive cleaning method. Refer to SOPM 20-30-03.

2) Apply a layer of Teflon - S 958-203 as given in BAC 5824 to a final film thickness of 0.0010 - 0.0016 inch to the reworked areas of the part.

(c) Apply one layer of BMS 10-11, Type I primer to the reworked areas except the inner wear surfaces. Refer to SOPM 20-41-02.

(4) Do what follows for the parts listed in Table 104/ALLOWABLE DAMAGE 4 and shown in Figure 102/ALLOWABLE DAMAGE 4.

Table 104:

ITEM	DESCRIPTION	ITEM	DESCRIPTION
[26]	Strip, Aft, Mid (Formed CRES)	[34]	Strip, Forward, Mid (Formed CRES)

(a) Apply a 0.0005-0.0007 inch thick chromium plating to the reworked areas of the part. Refer to SOPM 20-42-03, Class 4.

(b) Apply a layer of Teflon - S 958-203 to the inner wear surfaces only:

1) Clean the reworked areas of the part with the dry abrasive cleaning method. Refer to SOPM 20-30-03.

2) Apply a layer of Teflon - S 958-203 as given in BAC 5824 to a final film thickness of 0.0010 - 0.0016 inch to the reworked areas of the part.

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(c) Apply one layer of BMS 10-79, Type III primer to the reworked areas except the inner wear surfaces. Refer to SOPM 20-44-04.

(5) Do what follows for the parts listed in Table 105/ALLOWABLE DAMAGE 4 and shown in Section 48 Body-to-Horizontal Stabilizer Sliding Seals - Structure Location, Figure 102/ALLOWABLE DAMAGE 4.

Table 105:

ITEM	DESCRIPTION	ITEM	DESCRIPTION
[28]	Plate (Formed CRES)	[35]	Link Fitting (CRES casting)

(a) Clean the reworked areas of the part with the dry abrasive cleaning method. Refer to SOPM 20-30-03.

3. References

Reference	Title
51-10-01, GENERAL	Aerodynamic Smoothness Requirements
51-10-02	INSPECTION AND REMOVAL OF DAMAGE
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-20-01, GENERAL	Protective Treatment of Metallic and Composite Materials
51-30-03	NON-METALLIC MATERIALS
51-30-05	EQUIPMENT AND TOOLS FOR REPAIRS
51-40-06, GENERAL	Fastener Edge Margins
53-80-70, ALLOWABLE DAMAGE 4	Section 48 Body-to-Horizontal Stabilizer Sliding Seals, Skins, and Plates
AMM 51-21-00 P/B 701	INTERIOR AND EXTERIOR FINISHES - CLEANING/PAINTING
SOPM 20-20-01	Magnetic Particle Inspection
SOPM 20-20-02	Penetrant Methods of Inspection
SOPM 20-30-03	General Cleaning Procedures
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes
SOPM 20-42-03	Hard Chrome Plating
SOPM 20-42-05	Bright Cadmium Plating
SOPM 20-44-04	Application of Urethane Compatible Primer
737 NDT Part 6, 51-00-00	Structures - General
737 NDT Part 6, 51-00-00, Procedure 4	Surface Inspection of Aluminum Parts (Meter Display)

4. Allowable Damage Limits

A. The allowable damage limits that follow are applicable to the parts listed in Table 106/ALLOWABLE DAMAGE 4 and shown in Figure 103/ALLOWABLE DAMAGE 4.

Table 106:

ITEM	DESCRIPTION	ITEM	DESCRIPTION
[1]	Lower Skin Support (Formed aluminum)	[10]	Frame (Formed aluminum)
[4]	Skin Support Zee (Formed aluminum)		

(1) Cracks:

(a) Remove the damage as shown in Figure 103/ALLOWABLE DAMAGE 4, Details A, B, and F.

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(2) Nicks, Gouges, Scratches, and Corrosion:

(a) Remove the damage as shown in Figure 103/ALLOWABLE DAMAGE 4, Details A, B, C, E, and F.

(3) Dents are permitted as shown in Figure 103/ALLOWABLE DAMAGE 4, Detail D.

(4) Holes and Punctures are permitted as shown in Figure 103/ALLOWABLE DAMAGE 4, Detail J.

B. The allowable damage limits that follow are applicable to the parts listed in Table 107/ALLOWABLE DAMAGE 4 and shown in Section 48 Body-to-Horizontal Stabilizer Sliding Seals - Structure Location, Figure 102/ALLOWABLE DAMAGE 4.

Table 107:

ITEM	DESCRIPTION	ITEM	DESCRIPTION
[3]	Channel (Formed aluminum)		

(1) Cracks:

(a) Remove the damage as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 4, Details A, B, and F.

(2) Nicks, Gouges, Scratches, and Corrosion:

(a) Remove the damage as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 4, Details A, B, C, E, and F.

(3) Dents are permitted as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 4, Detail D.

(4) Holes and Punctures are not permitted.

C. The allowable damage limits that follow are applicable to the parts listed in Table 108/ALLOWABLE DAMAGE 4 and shown in Figure 102 (Sheet 1)

Table 108:

ITEM	DESCRIPTION	ITEM	DESCRIPTION
[2]	Clip Angle (Formed aluminum)	[24]	Clip (Formed aluminum)
[11]	Angle (Formed aluminum)	[25]	Angle (Formed aluminum)
[19]	Clip (Formed aluminum)		

(1) Cracks:

(a) Remove the damage as shown in Figure 103/ALLOWABLE DAMAGE 4, Details A, B, and F.

(2) Nicks, Gouges, Scratches, and Corrosion:

(a) Remove the damage as shown in Figure 103/ALLOWABLE DAMAGE 4, Details A, B, C, E, and F.

(3) Dents are not permitted.

(4) Holes and Punctures are not permitted.

D. The allowable damage limits that follow are applicable to the parts listed in Table 109/ALLOWABLE DAMAGE 4 and shown in Section 48 Body-to-Horizontal Stabilizer Sliding Seals - Structure Location, Figure 102/ALLOWABLE DAMAGE 4

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Table 109:

ITEM	DESCRIPTION	ITEM	DESCRIPTION
[29]	Angle (Extruded aluminum)		

(1) Cracks:

(a) Remove the damage as shown in Figure 103/ALLOWABLE DAMAGE 4, Details A, B, and I.

(2) Nicks, Gouges, Scratches, and Corrosion:

(a) Remove the damage as shown in Figure 103/ALLOWABLE DAMAGE 4, Details A, B, C, E, H, and I.

(3) Dents are permitted as shown in Figure 103/ALLOWABLE DAMAGE 4, Detail D.

(4) Holes and Punctures are permitted as shown in Figure 103/ALLOWABLE DAMAGE 4, Detail J.

E. The allowable damage limits that follow are applicable to the parts listed in Table 110/ALLOWABLE DAMAGE 4 and shown in Section 48 Body-to-Horizontal Stabilizer Sliding Seals - Structure Location, Figure 102/ALLOWABLE DAMAGE 4.

Table 110:

ITEM	DESCRIPTION	ITEM	DESCRIPTION
[21]	Clip Tee (Extruded aluminum)	[23]	Clip Tee (Extruded aluminum)
[22]	Clip Tee (Extruded aluminum)	[36]	Clip Tee (Extruded aluminum)

(1) Cracks:

(a) Remove the damage as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 4, Details A, B, and I.

(2) Nicks, Gouges, Scratches, and Corrosion:

(a) Remove the damage as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 4, Details A, B, C, E, H, and I.

(3) Dents are not permitted.

(4) Holes and Punctures are not permitted.

F. The allowable damage limits that follow are applicable to the parts listed in Table 111/ALLOWABLE DAMAGE 4 and shown in Figure 102/ALLOWABLE DAMAGE 4

Table 111:

ITEM	DESCRIPTION	ITEM	DESCRIPTION
[5]	Filler (Machined aluminum)	[15]	Strip, Aft, Lower, Outer (Formed CRES)
[6]	Strip, Forward, Upper, Outer (Formed CRES)	[16]	Strip, Aft, Lower, Inner (Formed CRES)
[7]	Strip, Aft, Upper, Outer (Formed CRES)	[17]	Strip, Aft, Mid, Inner (Machined CRES)
[8]	Strip, Forward, Upper, Inner (Formed CRES)	[18]	Strip, Forward, Mid, Inner (Machined CRES)
[9]	Strip, Aft, Upper, Inner (Formed CRES)	[26]	Strip, Aft, Mid (Formed CRES)
[12]	Strip, Forward, Lower, Inner (Formed CRES)	[27]	Filler (Formed aluminum)
[13]	Strip, Forward, Lower, Outer (Formed CRES)	[28]	Plate (Formed CRES)
[14]	Filler (Formed aluminum)	[34]	Strip, Forward, Mid (Formed CRES)

(1) Cracks:

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(a) Remove the damage as shown in Figure 103/ALLOWABLE DAMAGE 4, Details A, B, and G.

(2) Nicks, Gouges, Scratches, and Corrosion:

(a) Remove the damage as shown in Figure 103/ALLOWABLE DAMAGE 4, Details A, B, C, E, and G.

(3) Dents are not permitted.

(4) Holes and Punctures are not permitted.

G. The allowable damage limits that follow are applicable to the parts listed in Table 112/ALLOWABLE DAMAGE 4 and shown in Section 48 Body-to-Horizontal Stabilizer Sliding Seals - Structure Location, Figure 102/ALLOWABLE DAMAGE 4.

Table 112:

ITEM	DESCRIPTION	ITEM	DESCRIPTION
[30]	Plate, Inner (Formed aluminum)	[32]	Plate, Mid (Formed Aluminum)
[31]	Filler (Formed aluminum)	[33]	Plate, Outer (Formed Aluminum)

(1) Cracks:

(a) Remove the damage as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 4, Details A, B, and G.

(2) Nicks, Gouges, Scratches, and Corrosion:

(a) Remove the damage as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 4, Details A, B, C, E, and G.

(3) Dents are permitted as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 4, Detail D.

(4) Holes and Punctures are not permitted.

H. The allowable damage limits that follow are applicable to the parts listed in Table 113/ALLOWABLE DAMAGE 4 and shown in Section 48 Body-to-Horizontal Stabilizer Sliding Seals - Structure Location, Figure 102/ALLOWABLE DAMAGE 4.

Table 113:

ITEM	DESCRIPTION
[35]	Link Fitting (CRES casting)

(1) Cracks:

(a) Remove the damage as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 4, Details A, B, and I.

(2) Nicks, Gouges, Scratches, and Corrosion:

(a) Remove the damage as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 4, Details A, B, C, E, H, I, and K.

(3) Dents are not permitted.

(4) Holes and Punctures are not permitted.

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REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER EDGE MARGINS DO NOT HAVE AN OVERLAP

A

REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER EDGE MARGINS HAVE AN OVERLAP

B

REMOVAL OF DAMAGED MATERIAL ON A SURFACE

C

G48647 S0006591440_V1

Allowable Damage Limits
Figure 103 (Sheet 1 of 6)

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DENT AWAY FROM AN EDGE IS SHOWN, DENT AT AN EDGE IS SIMILAR

DENT THAT IS PERMITTED

D

REMOVAL OF DAMAGE AROUND THE FASTENERS ON AN EDGE OR A SURFACE

E

B–B

G48648 S0006591441_V1

Allowable Damage Limits
Figure 103 (Sheet 2 of 6)

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X = WIDTH OF THE MATERIAL THAT IS REMOVED
= A MAXIMUM OF 10 PERCENT OF THE WIDTH OF THE FLANGE

REMOVAL OF DAMAGED MATERIAL ON AN EDGE

F

X = WIDTH OF THE MATERIAL THAT IS REMOVED
= A MAXIMUM OF 0.10 INCH (2.54 mm)

REMOVAL OF DAMAGED MATERIAL AT AN EDGE OF A METAL SKIN OR WEB

G

G48649 S0006591442_V1

Allowable Damage Limits
Figure 103 (Sheet 3 of 6)

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Y = WIDTH OF THE MATERIAL THAT IS REMOVED
= A MAXIMUM OF 10 PERCENT OF THE WIDTH OF THE FLANGE

REMOVAL OF DAMAGED MATERIAL
ON A SURFACE AT AN EDGE

H

C–C

G48650 S0006591443_V1

Allowable Damage Limits
Figure 103 (Sheet 4 of 6)

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X = WIDTH OF THE MATERIAL REMOVED
= A MAXIMUM OF 10 PERCENT OF THE WIDTH OF THE FLANGE

REMOVAL OF DAMAGED MATERIAL AT AN EDGE

I

NOTE: NO HOLE DAMAGE ALLOWED IN FASTENED FLANGES.

HOLES AND PUNCTURES IN A FREE FLANGE

J

G48652 S0006591444_V1

Allowable Damage Limits
Figure 103 (Sheet 5 of 6)

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REMOVAL OF DAMAGED MATERIAL ON A LUG WITHOUT BUSHINGS

K

G48653 S0006591445_V1

Allowable Damage Limits
Figure 103 (Sheet 6 of 6)

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ALLOWABLE DAMAGE 5 - SECTION 48 BODY-TO-RUDDER SEAL RETAINER STRUCTURE

1. Applicability

A. This subject gives the allowable damage limits for the body-to-rudder seal retainer structure shown in Body-to-Rudder Seal Retainer Structure Location, Figure 101/ALLOWABLE DAMAGE 5.

G28460 S0006591447_V1

Body-to-Rudder Seal Retainer Structure Location
Figure 101

2. General

A. Remove the damaged material as necessary.

(1) Refer to 51-10-02 for the inspection and removal of damage.

(2) Refer to 51-30-03 for possible sources of the abrasive and other materials you can use to remove the damage.

(3) Refer to 51-30-05 for possible sources of the equipment and tools you can use to remove the damage.

B. After you remove the damage, do the steps that follow:

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(1) Apply a chemical conversion coating to the reworked areas. Refer to 51-20-01.

(2) Apply one layer of BMS 10-79, Type III, primer to the reworked areas. Refer to SOPM 20-44-04.

(3) Apply the decorative finish, as applicable. Refer to AMM PAGEBLOCK 51-21-99/701.

(4) Make sure the aerodynamic smoothness is satisfactory or there will be a decrease in the economic performance of the airplane.

3. References

Reference	Title
51-10-01, GENERAL	Aerodynamic Smoothness Requirements
51-10-02	INSPECTION AND REMOVAL OF DAMAGE
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-30-03	NON-METALLIC MATERIALS
51-30-05	EQUIPMENT AND TOOLS FOR REPAIRS
51-40-06, GENERAL	Fastener Edge Margins
AMM 51-21-99 P/B 701	DECORATIVE EXTERIOR PAINT SYSTEM - CLEANING/PAINTING
SOPM 20-44-04	Application of Urethane Compatible Primer

4. Allowable Damage Limits

A. Retainers and Plate

(1) Cracks:

(a) Remove the damage as shown in Allowable Damage Limits, Figure 102/ALLOWABLE DAMAGE 5, Details A, B, and E.

(2) Nicks, Gouges, Scratches, and Corrosion:

(a) Remove the damage as shown in Allowable Damage Limits, Figure 102/ALLOWABLE DAMAGE 5, Details A, B, C, D, and E.

(3) Dents are not permitted.

(4) Holes and Punctures are not permitted.

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REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER EDGE MARGINS DO NOT HAVE AN OVERLAP

A

REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER EDGE MARGINS HAVE AN OVERLAP

B

REMOVAL OF DAMAGED MATERIAL ON A SURFACE

C

G28613 S0006591448_V1

Allowable Damage Limits
Figure 102 (Sheet 1 of 2)

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REMOVAL OF DAMAGE AROUND THE FASTENERS ON AN EDGE OR A SURFACE

D

B–B

X = WIDTH OF THE MATERIAL THAT IS REMOVED
= A MAXIMUM OF 0.10 INCH

REMOVAL OF DAMAGED MATERIAL AT AN EDGE OF A METAL SKIN OR WEB

E

G28615 S0006591449_V1

Allowable Damage Limits
Figure 102 (Sheet 2 of 2)

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REPAIR 3 - SECTION 48 TAILSKID FAIRING SUPPORT STRUCTURE

1. Applicability

A. Repair 3 is applicable to damage to the tailskid fairing support structure shown in Tailskid Fairing Support Structure Location, Figure 201/REPAIR 3.

NOTE: ALL PARTS IDENTIFIED ARE MADE OF FORMED ALUMINUM.

G28469 S0006591452_V1

Tailskid Fairing Support Structure Location
Figure 201

2. General

A. The typical repairs given in 51-70-11 can be used when applicable if there is sufficient clearance with the adjacent structure for the installation of the repair parts.

B. Some of the typical repairs given in 51-70-11 must not be used in some areas, as given in the typical repair figures. Refer to 51-70-11.

C. Refer to the limits of the typical repairs given in 51-70-11 before you start a repair.

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3. References

Reference	Title
51-70-11	TYPICAL FORMED SECTION REPAIRS
53-80-70, REPAIR 3	Section 48 Tailskid Fairing Skin

4. Repair Instructions

A. Refer to 51-70-11 to find the applicable repair for a component of the section 48 tailskid fairing support structure shown in Tailskid Fairing Support Structure Location, Figure 201/REPAIR 3.

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REPAIR 4 - SECTION 48 BODY-TO-HORIZONTAL STABILIZER SLIDING SEALS STRUCTURE

1. Applicability

A. Repair 4 is applicable to damage to the body-to-horizontal stabilizer sliding seals structure shown in Section 48 Body-to-Horizontal Stabilizer Sliding Seals - Structure Location, Figure 201/REPAIR 4 and Section 48 Body-to-Horizontal Stabilizer Sliding Seals - Structure Location, Figure 202/REPAIR 4.

2. General

A. The typical repairs given in 51-70-11 can be used when applicable if there is sufficient clearance with the adjacent structure for the installation of the repair parts.

G48587 S0006591454_V1

Section 48 Body-to-Horizontal Stabilizer Sliding Seals - Structure Location
Figure 201

3. References

Reference	Title
51-70-11	TYPICAL FORMED SECTION REPAIRS
53-80-70, REPAIR 4	Section 48 Body-to-Horizontal Stabilizer Sliding Seals Skins and Plates

4. Repair Instructions

A. Refer to 51-70-11 to find the applicable repair for a component of the Section 48 body-to-horizontal stabilizer sliding seals structure shown in Section 48 Body-to-Horizontal Stabilizer Sliding Seals - Structure Location, Figure 201/REPAIR 4 and Section 48 Body-to-Horizontal Stabilizer Sliding Seals - Structure Location, Figure 202/REPAIR 4.

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NOTES

1 REFER TO SRM 51-70-11 TO FIND THE APPLICABLE REPAIR FOR THIS PART.

2 THERE ARE NO REPAIRS FOR THIS PART IN THE STRUCTURAL REPAIR MANUAL AT THIS TIME. IF THE DAMAGE TO THE PART IS MORE THAN THE LIMITS GIVEN IN SRM 53-80-71, ALLOWABLE DAMAGE 4, REPLACE THE DAMAGE PART.

G48607 S0006591455_V2

Section 48 Body-to-Horizontal Stabilizer Sliding Seals - Structure Location
Figure 202 (Sheet 1 of 3)

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G48616 S0006591456_V1

Section 48 Body-to-Horizontal Stabilizer Sliding Seals - Structure Location
Figure 202 (Sheet 2 of 3)

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G48622 S0006591457_V1

Section 48 Body-to-Horizontal Stabilizer Sliding Seals - Structure Location
Figure 202 (Sheet 3 of 3)

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REPAIR 5 - SECTION 48 BODY-TO-RUDDER SEAL RETAINER STRUCTURE

NOTE: THERE ARE NO REPAIRS FOR THE BODY-TO-RUDDER SEAL RETAINER STRUCTURE IN THE STRUCTURAL REPAIR MANUAL AT THIS TIME. IF THE DAMAGE TO THE STRUCTURE IS MORE THAN THE LIMITS GIVEN IN SRM 53-80-71, ALLOWABLE DAMAGE 5, REPLACE THE DAMAGED PART.

G28462 S0006591459_V2

Body-to-Rudder Seal Retainer Structure Repair
Figure 201

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REPAIR 6 - FUSELAGE FIN TO BODY INTERFACE - CLOSURE ANGLE CHAFFING DAMAGE REPAIR

1. Applicability

A. Repair 6 is applicable to damage on the closure angle at the fuselage to vertical stabilizer interface.

2. General

A. Repair 6 gives instructions for a Category A repair. Refer to STRUCTURAL REPAIR DEFINITIONS, 51-00-06 to find the definitions of the different categories of repairs. The inspections given in the Maintenance Planning Data (MPD) are sufficient to maintain the damage tolerance of the initial structure with this repair installed.

B. All dimensions are in inches, unless they are shown differently.

C. D = fastener diameter.

D. Maintain minimum edge margins as given in FASTENER EDGE MARGINS, 51-40-06, unless otherwise specified.

E. Make sure the repair parts and machined surfaces have a surface finish of 63 microinches Ra or smoother.

3. References

Reference	Title
51-00-06	STRUCTURAL REPAIR DEFINITIONS
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-30-01	SHEET METAL MATERIALS
51-40-02	FASTENER INSTALLATION AND REMOVAL
51-40-03	FASTENER SUBSTITUTION
51-40-05	FASTENER HOLE SIZES
51-40-06	FASTENER EDGE MARGINS
AMM 51-21	INTERIOR AND EXTERIOR FINISHES
SOPM 20-20-02	Penetrant Methods of Inspection
SOPM 20-44-01	Application of Special Purpose Coatings and Finishes
SOPM 20-44-04	Application of Urethane Compatible Primer
737 NDT Part 6, 51-00-00, Procedure 16	Aluminum Part Fastener Hole Inspection (Rotary Scanner)
737 NDT Part 6, 51-00-00, Procedure 23	Aluminum Part Surface Inspection (Impedance Plane Display)
737 NDT Part 6, 53-30-00, Procedure 4	Countersink Inspection of Aluminum Parts (Impedance Plane Display)

4. Repair Instructions

A. Gain access to the damaged area.

B. Do one of the following steps:

(1) Cut the closure angle a minimum of 5.0 in. (12.7 cm) forward and aft of the damage. Remove the damaged section of the closure angle.

(2) Cut the closure angle a minimum of 5.0 in. (12.7 cm) forward or aft of the damage. Remove the closure angle from the cut location to the end of the part.

NOTE: When you cut the closure angle, put a thin steel sheet between the closure angle and the skin to prevent damage to the skin.

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C. Remove the four initial fasteners through the closure angle and the skin forward and aft of the removed section. Refer to FASTENER INSTALLATION AND REMOVAL, 51-40-02 for fastener removal.

D. Do a High Frequency Eddy Current (HFEC) inspection of all open fastener holes to make sure there are no cracks. Do the inspection as given in 737 NDT Part 6, 51-00-00, Procedure 16. Use a 0.03 notch calibration. If any cracks are found, contact The Boeing Company for further instructions.

E. Do a countersink HFEC inspection at all open fastener locations forward and aft of the removed section. Refer to 737 NDT Part 6, 53-30-00, Procedure 4.

F. Do an HFEC inspection of the cut edges of the closure angle to make sure there are no cracks. Make a 0.040 in. (1.016 mm) insurance cut if no further damage is found. Refer to 737 NDT Part 6, 51-00-00, Procedure 23.

G. Do a detailed visual inspection of the surrounding structure in the area of the repair. If additional damage is found, contact The Boeing Company.

H. Make the repair parts. Refer to Table 201/REPAIR 6.

(1) Make the contour of the Part 1 Angle the same as the contour of the fuselage and of the removed angle. Refer to SHEET METAL MATERIALS, 51-30-01.

(2) Perform a dye penetrant inspection on the Part 1 Angle after it is formed and heat treated to make sure that no cracking occurred during forming. Refer to SOPM 20-20-02.

Table 201: Repair Material

ITEM	PART NAME	QTY	MATERIAL
1	Angle	1	0.063 in. (1.600 mm) thick 2024–O clad sheet. Heat treat to the T42 condition after you form the part. *[1]*[2]
2	Strap	As Necessary	0.080 in. (2.032 mm) thick 2024-T3 clad sheet. *[1]*[3]

*[1] As given in QQ-A-250/5.

*[2] Heat treat as given in BAC 5602.

*[3] Make sure you keep the strap edge radius the same as the inner bend radius of Part 1 Angle and the initial production angle.

I. Assemble the repair parts. Refer to Figure 201/REPAIR 6.

NOTE: If gaps more than 0.01 in. (0.25 mm) are found between Part 1 Angle and the fuselage skin, contact The Boeing Company.

J. Drill the necessary fastener holes.

(1) Maintain a 0.32 in. (8.13 mm) minimum edge margin on the initial closure angle and Part 2 Strap.

(2) Maintain a 1.7D minimum edge margin on the Part 1 Angle.

K. Disassemble the repair parts.

L. Remove all the nicks, scratches, gouges, burrs, and sharp edges from the repair parts and the reworked surfaces of the initial parts.

M. Apply a chemical conversion coating to all repair parts and the bare surfaces of the initial parts. Refer to PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS, 51-20-01.

N. Apply two coats of BMS 10–79, Type III primer to all repair parts and bare surfaces of the initial parts. Refer to SOPM 20-44-04.

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O. Apply BMS 10-86, Type I or Type II, abrasion resistant Teflon coating to the inboard and outboard sides of the vertical flange of Part 1 Angle. Refer to SOPM 20-44-01.

P. Install the repair parts with BMS 5–95 sealant between the faying surfaces. Refer to Figure 201/ REPAIR 6 and FASTENER INSTALLATION AND REMOVAL, 51-40-02.

(1) Make sure that the vertical flange of Part 1 Angle is aligned with the vertical flange of the initial angle. A maximum difference of 2 degrees is permitted.

(2) Install countersink washers under Part 2 Strap where necessary.

(3) Install all hex-drive bolts wet with BMS 5-95 sealant. Refer to FASTENER HOLE SIZES, 51-40-05, Figure 4.

(4) Overdrive rivets to 1.4D. Refer to FASTENER INSTALLATION AND REMOVAL, 51-40-02.

(5) Fastener substitution is permitted. Refer to FASTENER SUBSTITUTION, 51-40-03.

Q. Apply a fillet seal of BMS 5-95 sealant around the edges of the repair.

R. Restore the aircraft exterior paint in the repair area as necessary. Refer to AMM SECTION 51-21.

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SPLICE REPAIR
(LEFT SIDE IS SHOWN, RIGHT SIDE IS OPPOSITE)
(TYPICAL FOR EACH CUT LINE)
DETAIL I

FASTENER SYMBOLS

REFERENCE FASTENER LOCATION.

INITIAL FASTENER LOCATION.
INSTALL A BACR15GF6D RIVET

INITIAL FASTENER LOCATION.

- AT THE INITIAL RIVET LOCATION, INSTALL SAME TYPE AND SIZE AS THE INITIAL FASTENER.
- AT THE INITIAL HEX-DRIVE BOLT OR LOCK-BOLT LOCATION, INSTALL SAME TYPE AND SIZE AS THE INITIAL FASTENER, WITH 1/64 INCH OVERSIZE.

2193702 S0000487307_V1

Closure Angle Chaffing Damage Repair
Figure 201 (Sheet 1 of 2)

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SECTION A-A

SECTION B-B

2193796 S0000487308_V1

Closure Angle Chaffing Damage Repair
Figure 201 (Sheet 2 of 2)

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IDENTIFICATION 1 - SECTION 48 FITTINGS

REFER TO FIGURE 2 SHEET 1 FOR THE DRAG BRACE ATTACHMENT FITTINGS IDENTIFICATION. 1

REFER TO FIGURE 2 SHEET 2 FOR THE DRAG BRACE ATTACHMENT FITTINGS IDENTIFICATION 2

NOTES

- REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

1 AIRPLANE LINE NUMBERS 1 THRU 69

2 AIRPLANE LINE NUMBERS 70 AND ON

3 AIRPLANE LINE NUMBERS 1 THRU 1198

4 AIRPLANE LINE NUMBERS 1199 AND ON

D73113 S0000164173_V2

Fin Attachment Fitting Location
Figure 1

Table 1:

REFERENCE DRAWINGS	
DRAWING NUMBER	**TITLE**
140A4801	Integration Functional Collector - Section 48
140A4802	Pressure Bulkhead, Station 1016 Functional Collector
140A4806	Station 1088 Bulkhead Functional Collector
148A0922	Bulkhead Integration/Installation Station 1016
148A0924	Bulkhead Integration/Installation Station 1088

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NOTE: REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

FIN ATTACHMENT FITTINGS 1

D73115 S0000164171_V2

Fin Attachment Fitting Identification
Figure 2 (Sheet 1 of 2)

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NOTE: REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

FIN ATTACHMENT FITTINGS 2

D73116 S0000164152_V2

Fin Attachment Fitting Identification
Figure 2 (Sheet 2 of 2)

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Table 2:

LIST OF MATERIALS FOR FIGURE 2 AND 3				
ITEM	**DESCRIPTION**	**T*[1]**	**MATERIAL**	**EFFECTIVITY**
[1]	Fitting, Vertical Fin Attachment, Fwd (2)		7050-T7451 plate as given in BMS 7-323, Type I (Grain direction controlled part) or 7075–T73 forging as given in BMS 7–186	Refer to DWG. No:140A4802 for effectivity
[2]	Fitting, Vertical Fin Attachment, Aft (2)		7075-T73 forging as given in BMS 7-186	
[3]	Fitting, Main Fin Attachment, Fwd Outboard		Ti-6Al-4V plate as given in MIL-T-9046, Code AB-1, annealed	
[4]	Fitting, Fail Safe Fin Attachment, Fwd Inboard		Ti-6Al-4V plate as given in MIL-T-9046, Code AB-1, annealed	
[5]	Fitting, Main Fin Attachment, Aft Outboard		Ti-6Al-4V plate as given in MIL-T-9046, Code AB-1, annealed	
[6]	Fitting, Fail Safe Fin Attachment, Aft Inboard		Ti-6Al-4V plate as given in MIL-T-9046, Code AB-1, annealed	
[7]	Fitting, Drag Brace, Forward (2)		7050 – T7451 plate as given in BMS 7-323, Type I (Grain direction controlled part)	Line numbers 1 thru 69 only
[7]	Fitting, Drag Brace, Forward Main and Fail Safe (4)		7050 – T7451 plate as given in BMS 7-323, Type I (Grain direction controlled part)	Line numbers 70 and above only
[8]	Fitting, Drag Brace, Aft (2)		7050 – T7451 plate as given in BMS 7-323, Type I (Grain direction controlled part)	Line numbers 1 thru 69 only
[8]	Fitting, Drag Brace, Aft Main and Fail Safe (4)		7050 – T7451 plate as given in BMS 7-323, Type I (Grain direction controlled part)	Line numbers 70 and above only
[9]	Channel, Drag Fitting Brace, Aft (4)	0.125 (3.175)	7075-T62 clad sheet as given in QQ-A-250/13	Line numbers 1 thru 69 only
[9]	Channel, Drag Fitting Brace, Aft (2)		7050 – T7451 plate as given in BMS 7-323, Type I (Grain direction controlled part)	Line numbers 70 and above only
[10]	Channel, Drag Fitting Brace , Fwd (4)	0.125 (3.175)	7075-T62 clad sheet as given in QQ-A-250/13	Line numbers 1 thru 69 only
[10]	Channel, Drag Fitting Brace , Fwd (2)		7050 – T7451 plate as given in BMS 7-323, Type I (Grain direction controlled part)	Line numbers 70 and above only
[11]	Bearstrap	0.160 (4.064)	2024-T3 bare sheet as given in QQ-A-250/4	

*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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