

KSSU Group

PAGE	DATE	CODE	PAGE	DATE	CODE	PAGE	DATE	CODE
			51-21-01			51-24-02		
STRUCTURES	TAB		701	JUN 10/91	01	701	OCT 10/91	01
CHARTER E1	TAD		702 703	JUN 10/91 JUN 10/91	01	702 703	OCT 10/91	01 01
CHAPTER 51	IAB		703	JUN 10/91 JUN 10/91	01 01	703	OCT 10/91 BLANK	UI
STRUCTURES	3		705	JUN 15/98	01		DEATH	
I			706	JUN 15/98	01	51-24-03		
E4 CONTENT			707 708	JUN 10/91 JUN 10/91	01 01	701	JUN 18/99 JUN 10/88	01
51-CONTENT	OCT 18/99	KSS	100	JUN 10/91	UI	702 703	JUN 10/88 JUN 10/91	01 01
2	FEB 15/99	KSS	51-21-02			704	OCT 18/99	01
3	FEB 15/99	KSS	701	JUN 10/91	01	705	OCT 18/99	01
4	BLANK		702 703	OCT 10/91 JUN 15/98	01	706	FEB 10/92	01
51-00-00			703	JUN 15/98	01 01	51-24-04		
1	JUN 10/88	01	705	OCT 10/95	01	701	OCT 10/96	01
2	JUN 10/88	01	706	FEB 15/99	01	702	JUN 15/98	01
2 3 4 5 6	JUN 10/88	01	707	FEB 15/99	01	703	JUN 15/98	01
4 5	JUN 10/88 JUN 10/88	01 01	708 709	FEB 15/99 FEB 15/99	01 01	704 705	JUN 15/98 OCT 10/97	01 01
6	JUN 10/88	01	710	FEB 15/99	01	706	OCT 10/97	01
7	JUN 10/88	01	İ			707	OCT 10/96	01
8	BLANK		51-21-03	40/07	04	708	OCT 10/96	01
51-10-00			701 702	FEB 10/97 FEB 10/97	01 01	51-24-04		
601	JUN 18/99	01	703	FEB 10/97	01	801	JUN 10/91	01
602	FEB 15/99	01	704	FEB 10/97	01	802	JUN 10/91	01
603	JUN 10/97	01	705	FEB 10/97	01			
604 605	FEB 15/99 JUN 18/00	01 01	706 707	FEB 10/97 FEB 10/97	01 01	51-24-06 701	OCT 10/91	01
606	JUN 10/96	01	707	FEB 10/97	01	701	JUN 10/91	01
607	JUN 10/96	01	İ	125 10771	0.	703	JUN 10/91	01
608	FEB 10/97	01	51-21-04	10/00		704	BLANK	
609 610	FEB 10/97 FEB 18/00	01 01	701 702	FEB 18/00 OCT 10/95	01 01	51-24-07		
611	FEB 18/00	01	703	FEB 18/00	01	701	JUN 15/98	01
612	FEB 10/97	01	704	FEB 10/93	01	702	OCT 10/91	01
613	FEB 10/97	01	705	FEB 18/00	01	703	JUN 15/98	01
614 615	FEB 15/99 FEB 15/99	01 01	706 707	FEB 15/99 FEB 15/99	01 01	R 704 705	OCT 18/00 JUN 15/98	01.1 01
616	JUN 18/00	01	707	FEB 15/99	01	706	JUN 15/98	01
617	FEB 10/97	01	İ		٠.	707	OCT 10/97	01
618	BLANK		51-21-05			708	OCT 10/97	01
51-11-00			701 R 702	OCT 10/95 OCT 18/00	01 01 . 1	709 710	OCT 10/97 OCT 10/97	01 01
601	OCT 18/99	02	R 702	OCT 18/00	01.1	710	OCT 10/97	01
602	OCT 18/99	02	704	BLANK	J	712	BLANK	J.
603	OCT 18/99	02	İ			1		
604	BLANK		51-24-00	IIIN 10/00	01	51-24-08	EED 10/02	01
51-20-00			1 2	JUN 10/88 JUN 10/88	01 01	701 702	FEB 10/92 FEB 10/92	01 01
1 1	FEB 10/92	01		0014 10700	01	703	OCT 10/95	01
2	JUN 10/88	01	51-24-01			704	OCT 10/95	01
51_21_00			701	OCT 10/95	01	705	OCT 10/95	01
51-21-00 1	JUN 18/00	01	702	BLANK		706	BLANK	
2	BLANK	01						

CHAPTER 51 **EFFECTIVE PAGES** PAGE CONTINUED



KSSU Group

PAGE	DATE	CODE	PAGE	DATE	CODE	PAGE	DATE	CODE
51-24-09			51-31-00		CONT.	51-41-01		CONT.
701	OCT 10/91	01	7	OCT 10/88	01	605	JUN 10/94	14
702	OCT 10/95	01	8	JUN 10/91	03	606	JUN 10/94	14
703	JUN 15/98	01	9	APR 10/89	01	607	JUN 10/94	03
704	OCT 15/98	01	10	APR 10/89	01	608	OCT 15/98	01
705	JUN 15/98	01	11	APR 10/89	01	609	OCT 15/98	01
706	JUN 15/98 JUN 15/98	01	12 13	APR 10/89 OCT 10/91	01	610	OCT 15/98 OCT 15/98	01
707 708	JUN 15/98	01 01	14	OCT 10/91	02 01	611	OCT 15/98	01 03
709	JUN 10/88	01	15	OCT 18/99	01	613	OCT 15/98	03
710	JUN 15/98	01	16	APR 10/89	01	614	OCT 15/98	01
711	OCT 10/91	01	17	APR 10/89	01	615	OCT 15/98	01
712	JUN 15/98	01	18	OCT 18/99	01	616	JUN 18/00	03
			19	OCT 18/99	01	617	OCT 15/98	04
51-24-10			20	APR 10/89	03	618	OCT 15/98	02
801	OCT 10/91	01	21	APR 10/89	03			
802	OCT 10/91	01	22	APR 10/89	03	51-41-01	FED 45 (00	04
803 804	OCT 10/95 OCT 10/91	01	E1 71 01			801 802	FEB 15/99 FEB 15/99	01
004	001 10/91	01	51-31-01 201	FEB 15/99	01	002	FEB 13/99	01
51-24-11			202	FEB 15/99	01	51-41-02		
701	FEB 15/99	01	203	FEB 15/99	01	601	OCT 10/91	01
702	JUN 18/99	01	204	FEB 15/99	01	602	OCT 10/91	01
703	JUN 18/99	01	205	FEB 15/99	01	603	JUN 10/90	01
704	BLANK		206	FEB 15/99	01	604	OCT 10/91	01
			207	FEB 15/99	01	605	OCT 10/91	01
51-24-12	45 /00		208	FEB 15/99	01	606	FEB 10/96	01
701	JUN 15/98	01	209	FEB 15/99	01	607	OCT 10/91	01
702	OCT 10/91	01	210	FEB 15/99	01	608	OCT 10/91	01
703 704	OCT 10/91 BLANK	01	211	FEB 15/99 FEB 15/99	01 01	609	OCT 10/91 OCT 10/93	01 01
104	DLANK		213	FEB 15/99	01	010	001 10773	01
51-24-13			214	FEB 15/99	01	51-41-03		
701	FEB 10/93	01	215	FEB 15/99	01	401	JUN 10/90	01
702	FEB 10/93	01	216	FEB 15/99	01	402	JUN 10/90	01
703	OCT 10/91	03	217	FEB 15/99	01			
704	JUN 10/93	01	218	FEB 15/99	01	51-41-12		
705	FEB 10/93	01	219	FEB 15/99	01	201	OCT 10/91	01
706	FEB 10/93	01	220	FEB 15/99	01	202	JUN 18/00	01
51-24-17			221 222	FEB 15/99 FEB 15/99	01 01	203 204	OCT 10/91 OCT 10/91	01 01
701	OCT 10/91	01	223	FEB 15/99	01	205	OCT 10/91	01
702	JUN 15/98	01	224	FEB 15/99	01	206	OCT 10/91	01
703	JUN 18/99	01				207	OCT 10/95	01
704	JUN 18/99	01	51-32-01			208	OCT 10/91	01
705	JUN 15/98	01	201	FEB 10/94	01	209	OCT 10/95	01
706	JUN 15/98	01	202	BLANK		210	OCT 10/91	01
						211	OCT 10/91	01
51-24-20	OCT 10/01	01	51-41-00	EED 10/02	01	212	BLANK	
701 702	OCT 10/91 OCT 10/91	01 01	1 2	FEB 10/92 APR 10/89	01 01	51-51-00		
102	001 10/91	UI	2 3	FEB 10/92	01	R 801	OCT 18/00	01.1
51-31-00			4	FEB 10/96	05	802	JUN 15/98	01.1
1 1	OCT 10/88	01	1			803	OCT 10/91	01
2	OCT 10/88	01	51-41-01			804	JUN 15/98	01
3 4	OCT 10/88	01	601	FEB 15/99	04	R 805	OCT 18/00	01.1
4	APR 10/89	01	602	OCT 10/91	01	806	OCT 10/91	01
5	OCT 10/88	01	603	OCT 10/91	01	807	OCT 10/91	01
6	APR 10/89	01	604	JUN 18/99	01	808	OCT 10/91	01

R = REVISED, A = ADDED OR D = DELETED
F = FOLDOUT PAGE 98
OCT 18/00
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CHAPTER 51 **EFFECTIVE PAGES** 2 PAGE CONTINUED



KSSU Group

PAGE	DATE	CODE	PAGE	DATE	CODE	PAGE	DATE	CODE
51-51-00 809 R 810 R 811 812 R 813 814	OCT 10/95 OCT 18/00 OCT 18/00 JUN 15/98 OCT 18/00 BLANK	CONT. 01 01.1 01.1 01.1 01						
814 51-61-01 801 802	BLANK FEB 10/96 JUN 15/98	01 01 01						

CHAPTER 51 **EFFECTIVE PAGES** PAGE 3 LAST PAGE



CHAPTER 51 - STRUCTURES

TABLE OF CONTENTS

Subject	Chapter Section Subject	<u>Page</u>	Effectivity
STRUCTURES Description and Operation General Empennage Engine Nacelles - Pylons Fuselage Wing-to-Fuselage Attachment Winglet Wings	51-00-00	1 7 7 1 5 5	ALL
REDUCED VERTICAL SEPARATION MINIMUM (RVSM)	51-10-00		
Inspection/Check DOOR AND HATCH LEAK CHECK	51-11-00	601	ALL
Inspection/Check		601	ALL
STRUCTURES FINISHES Description and Operation General Fire-Resistant Hydraulic FLuid	51-20-00	1 1 1	ALL
Contamination Areas FINISHES - INTERIOR AND EXTERIOR Description and Operation	51-21-00	1	ALL
ALODINE COATING Cleaning/Painting CONVERSION COATING - MAGNESIUM	51-21-04 51-21-05	701	ALL
Cleaning/Painting CORROSION - REMOVAL AND CONTROL	51-21-03	701	ALL
Cleaning/Painting INTERIOR AND EXTERIOR FINISHES — PREPAINT CLEANING AND	51-21-02	701	ALL
PRETREATMENT Cleaning/Painting INTERIOR AND EXTERIOR FINISHES — PAINT STRIPPING	51-21-01	701	ALL
Cleaning/Painting PROTECTIVE FINISHES	51-24-00	701	ALL
Description and Operation General Equipment Protective Finishes		1 1 2 1	ALL

51-CONTENTS



CHAPTER 51 - STRUCTURES

TABLE OF CONTENTS

<u>Subject</u>	Chapter Section Subject	<u>Page</u>	<u>Effectivity</u>
ABRASION-RESISTANT TEFLON	51-24-04		
COATING Cleaning/Painting		701	ALL
Approved Repairs		801	ALL
COATING - HEAT, WEATHER, AND OIL RESISTANT	51-24-10		
Approved Repairs	54 07 47	801	ALL
COATING - RAIN EROSION RESISTANT Cleaning/Painting	51-24-17	701	ALL
COATING - TEMPORARY LEEDER 314N	51-24-12	704	
Cleaning/Painting COMPOUND - WATER DISPLACING	51-24-13	701	ALL
CORROSION PREVENTIVE		704	
Cleaning/Painting CONDUCTIVE COATING SYSTEM -	51-24-03	701	ALL
EXTERIOR FIBERGLASS		701	A
<pre>Cleaning/Painting CORROSION CONTROL - SKIN AND</pre>	51-24-07	701	ALL
FASTENERS Cleaning/Painting		701	ALL
FINISH - CHEMICAL AND SOLVENT	51-24-01	701	ALL
RESISTANT Cleaning/Painting		701	ALL
FINISH - FIRE RESISTANT	51-24-02	701	ALL
HYDRAULIC FLUID RESISTANT Cleaning/Painting		701	ALL
FINISH - INTERIOR NON-REFLECTIVE	51-24-06	701	ALL
Cleaning/Painting PAINT SYSTEM - DECORATIVE	51-24-11	701	ALL
Cleaning/Painting	J1-24-11	701	ALL
PRIMER - ALUMINIZED EPOXY Cleaning/Painting	51-24-20	701	ALL
SURFACE - NONSKID	51-24-09		
Cleaning/Painting TITANIUM COATING — HIGH	51-24-08	701	ALL
TEMPERATURE	J1 24 00		
Cleaning/Painting		701	ALL
SEALS AND SEALING	51-30-00		
SEALS AND SEALING Description and Operation	51-31-00	1	ALL
General		1	-
Structural Sealing		1	

51-CONTENTS

KSS

Page 2 Feb 15/99



CHAPTER 51 - STRUCTURES

TABLE OF CONTENTS

	Chapter Section		
Subject	<u>Subject</u>	<u>Page</u>	<u>Effectivity</u>
SEALS AND SEALING	51-31-01		
Maintenance Practices ACOUSTICAL LINERS	51-32-01	201	ALL
Maintenance Practices	71-32-01	201	ALL
<u>DRAINAGE</u>	51-40-00		
DRAINS - AIRFRAME	51-41-00		
Description and Operation	F4 /4 O4	1	ALL
DRAINAGE - EXTERNAL Inspection/Check	51-41-01	601	ALL
Approved Repairs		801	ALL
DRAINAGE - INTERNAL	51-41-02		
Inspection/Check		601	ALL
DRAINAGE - MAIN DECK CARGO EQUIPMENT	51-41-12		
Maintenance Practices	4000 50115045115	201	[*]
[*] AIRPLANES WITH MAIN DECK C	ARGO EQUIPMENT		
VALVE - FUSELAGE DRAIN	51-41-03		
Removal/Installation		401	ALL
BONDING	51-50-00		
BONDED RUB PADS	51-51-00		
Approved Repairs		801	ALL
<u>SHEILDING</u>	51-60-00		
TAPE - ALUMINUM FOIL, WING LEADING EDGE CAVITY	51-61-01		
Approved Repairs		801	ALL

51-CONTENTS



STRUCTURES - DESCRIPTION AND OPERATION

1. General

- A. The airplane structure (Fig. 1) is designed to provided maximum strength and safety with minimum weight. This objective has been achieved by designing fail—safe load paths into the structure so that a failure of one segment cannot endanger the airplane and also by the use of appropriately selected materials. The materials most commonly used throughout the structure are high strength aluminum, steel, and titanium alloys. The most extensively used materials are certain aluminum alloys, which are selected according to the particular type of load they are best suited to withstand. The wings, fuselage, stabilizers, empennage, and engine structure are composed basically of the these materials.
- B. Fiberglass and aluminum honeycomb core materials are used extensively on secondary areas of structures and many of the flight control surfaces. Flight control surfaces include flaps, spoilers, ailerons, horizontal stabilizers, elevators, rudders, and winglets.
- C. Pressure relief, blowout panels, and doors are located in various areas on the structure of the airplane (Fig. 2). These are designed to prevent excessive pressures which may cause structural damage.

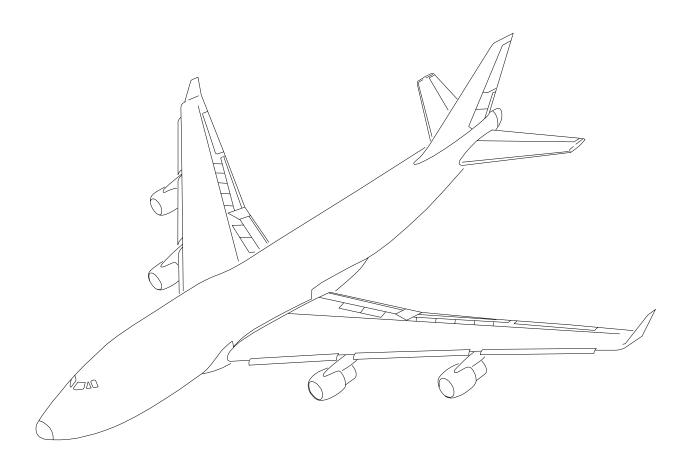
2. Fuselage (Fig. 3)

- A. The fuselage is principally made of aluminum alloy. It is a semimonocoque structure consisting of bulkheads, zee section frames, and skin stiffened with hat or zee section stiffeners. It is composed of five sections. Four sections extend from body stations 140 to 2360. These sections contain all of the crew, cargo, and passenger accommodations. The fifth section is at the aft end and provides support for the stabilizers and houses the APU (auxiliary power unit) system.
- The fuselage interior is pressurized except the nose radome, wing center section, nose, wing and body landing gear wheel wells, and the tail section. The pressurized area extends from body stations 140 to 2360. Structural continuity is provided across the wheel well areas by a keel beam which passes below the wing center section and is connected at right angles to the landing gear beam through the body station 1350 bulkhead. The wing center section, wing and body gear wheel wells (body stations 900 thru 1480) have many systems running through them with limited access. Hydraulic lines, electrical wire bundles, ducts, and other systems pass through this area between body buttock line 0.0 and 127.75. The pressurized fuselage area is provided with flooring in the upper deck, main deck, and lower lobe areas. Typical floor structure consists of horizontal and transverse beams attached to the fuselage frames. Local area variations from this floor structure include the control cabin, stairwell, center wing box, and the wing and body wheel well areas.

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Basic Structures Figure 1

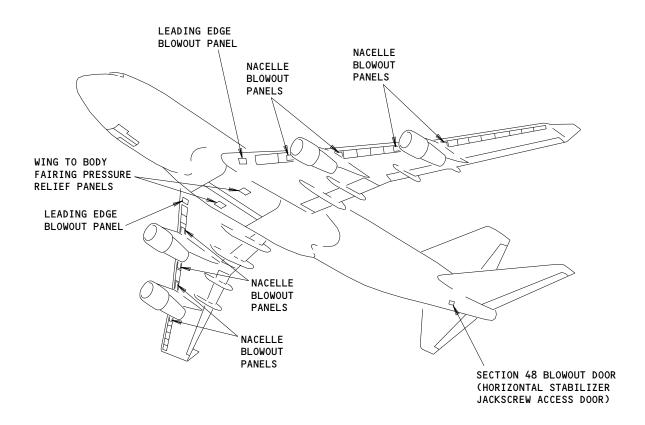
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51-00-00

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Page 2 Jun 10/88





Pressure Relief and Blowout Panels and Doors Figure 2

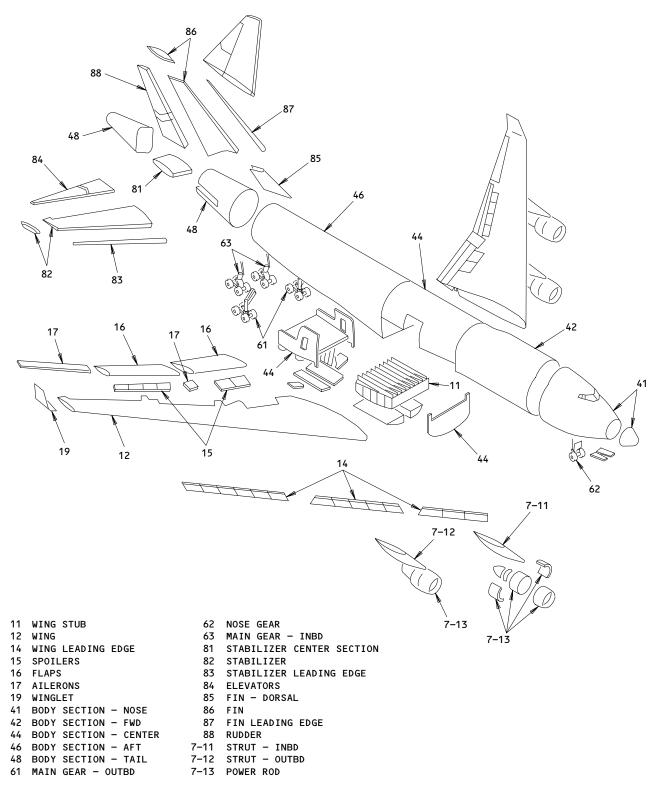
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Page 3 Jun 10/88





Airplane Section Numbers Figure 3

ALL 51-00-00
ALL 01 Page 4
Jun 10/88

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C. Section 48, the fifth fuselage section, is not pressurized. It extends aft from the rear pressure bulkhead at station 2360. The vertical fin structure and the horizontal stabilizer structure are supported by Section 48. The auxiliary power unit (APU) is installed in a fireproof compartment in this section.

3. Wings

- A. The primary wing structure consists basically of the left main wing box, the wing center section, and the right main wing box. The left and right main wing boxes are cantilevered from the wing center section which is enclosed within the fuselage. The thickness and chord of each wing taper from inboard to outboard and, in plan view, both wings sweep back from the wing center section.
- B. The left and right wing boxes consist of upper and lower skin panels stiffened by spanwise stringers, front, mid, and rear spars, and chordwise rib structure. The front and rear spars enclose the forward and aft portions of the box and consist of vertically stiffened webs attached to upper and lower chords. Chordwise ribs enclose the reamining portions of the box and consist of rib chords and web stiffener construction. The wings are also supported by the wing landing gear acting as a spar through the fuselage to reinforce the wing landing gear and wings. The wing boxes are sealed to serve as fuel tanks. The wing center section is reinforced by spanwise beams.
- C. The leading edge structure on each wing is cantilevered forward from the front spar. The trailing edge structure is cantilevered aft from the rear spar and supported additionally by the wing landing gear beam and the trailing edge beam. These structures make up the wing control surfaces and include leading edge Krueger flaps, variable camber flaps, trailing edge triple-slotted flaps, spoilers, and ailerons. The variable camber flaps provide a large curved leading edge and slot for takeoff and landing.

4. Winglet

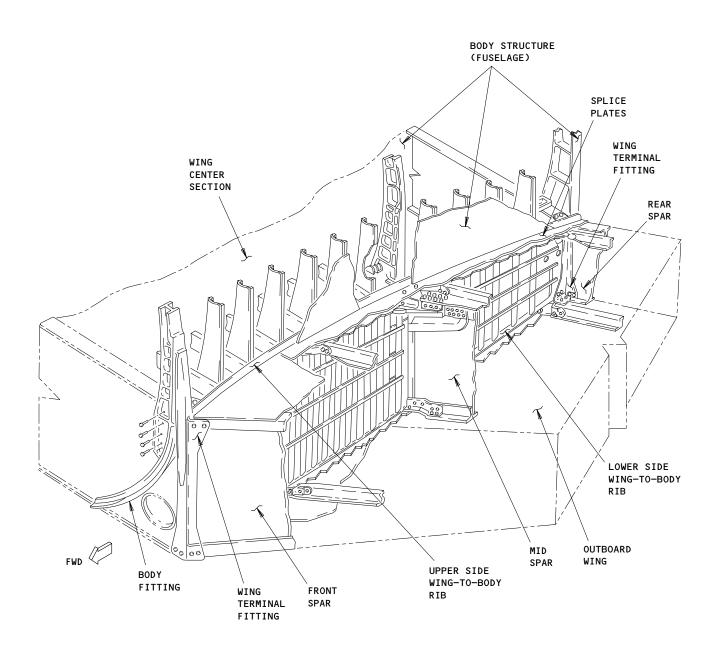
A. The winglet is a removable airfoil attached to the outboard end of the left and right wing and is made of nomex honeycomb and epoxy impregnated graphite fabric spars and ribs. The spars and ribs are enclosed by a nomex honeycomb and epoxy impregnated graphite fabric skins. The winglet is faired into the wing by rigid fairings which are attached to the winglet and the wing.

5. <u>Wing-to-Fuselage Attachment</u> (Fig. 4)

- A. The outboard wing boxes are joined as one unit to the wing center section in the fuselage.
- B. The wing and fuselage are connected by body fittings bolted to the front, mid, and rear spars, the scalloped upper side of body ribchords, and the keel beam tie to the lower wing surface.

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Wing-to-Fuselage Attachment Figure 4

ALL

O1 Page 6
Jun 10/88

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- C. The wing center section and the wing front spar are bolted together at Sta 996. A similar integration of the mid spar and the wing center box occurs at Sta 1136. The rear spar and the wing center section are connected at Sta 1236.
- D. The wing to fuselage attachment is reinforced by the landing gear beams connected to the fuselage at the body station 1350 bulkhead. The keel beam which extends from the front spar through the wheel wells provides longitudinal reinforcement to the fuselage, and provides a structural connection for the wing center section underside, rear spar, and landing gear beams.

Empennage

- A. The empennage comprises a dorsal fin, a vertical fin, an adjustable horizontal stabilizer, upper and lower rudders, inboard and outboard elevators, fuel tank in the horizontal stabilizer center section, and a surge at the outboard end of right horizontal stabilizer.
- B. The horizontal stabilizer is attached to the body by hinge and actuator attachments. The stabilizer center section is made of stiffened aluminum skin panels. These panels are supported by rib and spar assemblies constructed of aluminum sheet and extrusions. The outboard portions of the stabilizers consist of removable leading edges; auxiliary, front, and rear spars with interconnecting ribs; a forward torque box consisting of thin skin and closely spaced ribs; an aft torque box of aluminum skin-stiffener and rib construction; and a fixed trailing edge consisting of bonded panels and hinge rib construction for connecting to the elevators.
- C. The inboard and outboard elevators are composed of fiberglass honeycomb panels and aluminum rib and spar structure. The elevators are hinged from the stabilizer rear spar.
- D. The vertical fin is constructed in a similar manner to the outboard horizontal stabilizers. The fin is attached to the body by bolt attachments in the aft torque box and the pinned link at the auxiliary spar-
- E. The upper and lower rudders are hinged from the rear spar of the fin box. They are of fiberglass honeycomb panel and aluminum rib and spar construction.

7. Engine Nacelles - Pylons

A. The four engines are individually mounted in nacelles and attached by pylons to the wing. A forward and aft fairing installation is affixed to each pylon. These fairing installations are nonstructural and support local pressure load only. They are made of aluminum alloy.

51-00-00



REDUCED VERTICAL SEPARATION MINIMUM (RVSM) - INSPECTION/CHECK

1. General

- A. RVSM airspace is any airspace where airplanes are separated by 1000 feet (instead of the current 2000 feet) vertically between Flight Level 290 and Flight Level 410. RVSM may be used in a specific area, on a specific route, or by a specific operator. RVSM would effectively double the available route assignments and provide benefits to operators through more optimized route assignments and reduced schedule delays. RVSM may also facilitate increased use of direct routings at altitudes not currently available.
- B. This procedure contains one task. The task is to examine the airplane skin for smoothness in the area of the pitot-static probes.

TASK 51-10-00-216-001

- 2. Examine the Airplane Skin
 - A. Equipment
 - (1) G51001-21 Skin Waviness Tool
 MIT65B00007 Alternate Skin Waviness Tool
 - B. Access
 - (1) Location Zone

100 Fuselage - Lower Half 200 Fuselage - Upper Half

C. Procedure

s 826-003

(1) Calibrate the measuring tool (Fig. 601).

NOTE: After ten airplanes have been measured, the measuring tool should be calibrated as shown in this procedure.

NOTE: The tool should be used at the same temperature as it was when it was calibrated. The tool will change its shape in different temperatures adversly affecting the accuracy of the tool.

- (a) Place the tool on a flat level surface.
- (b) Push the plunger down until it contacts the flat level surface.

EFFECTIVITY-

51-10-00



(c) Verify that the tool reads 5.500 inches +/-0.003 inches.

NOTE: If the tool does not read 5.500 inches \pm 0.003 inches, then unlock the dial gage and set the tool so that it reads 5.500 inches $\pm - 0.003$ inches.

NOTE: The correct measurement tool reading is the sum of the plunger scale reading and the dial gauge reading.

- (d) Lock the dial in place.
- Take two other measurements along the flat level surface to verify that the tool is within tolerance.

s 826-004

(2) Calibrate the dial gauge.

The dial gauge should be calibrated immediately prior to each NOTE: airplane being measured. The dial gauge can be calibrated at room temperature. The temperature at which the dial gauge is calibrated does not have a significant impact on the accuracy of the dial gauge.

- (a) Set the plunger at 5.000 inches.
- (b) Unlock the dial and rotate it until it reads 0.000 inches.
- (c) Lock the dial in place.

Do not unlock the dial until all of the measurements NOTE: have been taken on this airplane.

s 026-005

ALL

DO NOT MEASURE THE AIRPLANE WHEN THE PITOT PROBES ARE HEATED. WARNING: THE PROBES OPERATE AT APPROXIMATELY 1000 DEGREES FAHRENHEIT AND PERSONS CAN BE SEVERLY BURNED IF THEY COME IN CONTACT WITH THE PROBE.

- (3) Disable the pitot heat system.
 - Open the "PITOT HEAT" circuit breaker and attach a "DO NOT REMOVE" tag on the overhead circuit breaker panel.

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51-10-00



s 416-006

(4) Install the mylar Waterline Reference Templates (WRT's) on the sides of the airplane (fig. 602).

NOTE: The templates are used to position the legs of the skin smoothness measurement tool. Correct tool positioning is critical for data accuracy. There are four templates; two for Body Station 280 (right and left) and two for Body Station 240 (right and left).

NOTE: The WRT'S provide all of the necessary frame, bulkhead, stringer and rivet location information in the area of the pitot-static probes.

s 936-014

(5) AIRPLANES WITHOUT NOSE CARGO DOOR; Do the following steps:

NOTE: The templates are used to position the legs of the skin smoothness measurement tool. Correct tool positioning is critical for data accuracy. There are four templates; two for Body Station 280 (right and left) and two for Body Station 240 (right and left).

NOTE: The WRT'S provide all of the necessary frame, bulkhead, stringer and rivet location information in the area of the pitot-static probes.

- (a) Align the templates with the correct BSTA frame line of fasteners.
- (b) Index the template to the Stringer 24A row of fasteners.
- (c) Secure the templates to the airplane with masking tape.
- (d) Temporarily mark the tooling point locations on both forward and aft sides of the airplane.

NOTE: These marks are used to position the forward and aft facing upper foot of the skin measurement tool. The upper foot of the mesasurement tool may not contact the mark when the tool is held in position. The upper forward foot may be up to 0.75 inch aft of the mark.

(e) Remove the templates from the airplane.

EFFECTIVITY-

51-10-00

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- D. Prepare to measure the skin
 - NOTE: The contour measurement accuracy is critical to correctly assess the waviness of the pitot-static area. The tool is lightweight, but requires two people to support the tool correctly and take the necessary measurements. It is recommended that a third person record the measurements.
 - NOTE: A large measurement error can occur if improper pressure is applied to the tool during the measurement process. Always hold the tool against the skin at the leg positions, not on the center of the beam, because the beam will bend and you will get an incorrect measurement.

s 836-008

(1) Measure the skin at 170 points on each side of the airplane in the area of the pitot-static probes, Fig. 603 for 5 inch probes or Fig. 605 for 10 inch probes.

<u>NOTE</u>: If the area to be measured is wet, then wipe it dry with a non-abrasive cloth.

- (a) Position the tool at a Body Waterline.
- (b) Hold both aft feet against the skin.

NOTE: Do not push hard against the skin.

(c) Hold the forward end of the tool against the skin.

NOTE: Do not push hard against the skin.

NOTE: If only one forward foot contacts the skin, then take the measurement with only one forward foot against the skin. Do not force both forward feet against the skin because it will rock one of the aft feet of the tool off of the skin. It is more important that both aft feet contact the skin.

<u>NOTE</u>: The forward feet will touch the skin 0.75 to 1.00 inch aft of the forward tooling point locations.

- (d) Locate the plunger at the desired BSTA index location.
- (e) Lock the knob that securely holds the carriage stationary.

EFFECTIVITY-

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- (f) Push the plunger down until the plunger contacts the skin and lock it down.
- (q) Record the measurement.
- (h) Unlock the plunger and the carriage.
- (i) Repeat steps (e) thru (i) for each BSTA index along the first Body Waterline.
- (j) Repeat steps (a) thru (j) at each Body Waterline until all 170 points on each side of the airplane have been measured.

NOTE: At Body Waterline 192, move the tool up approximately 0.5 inch up from the WL 192 reference markings. This will allow the sliding carriage to clear the lower pitot-static probge.

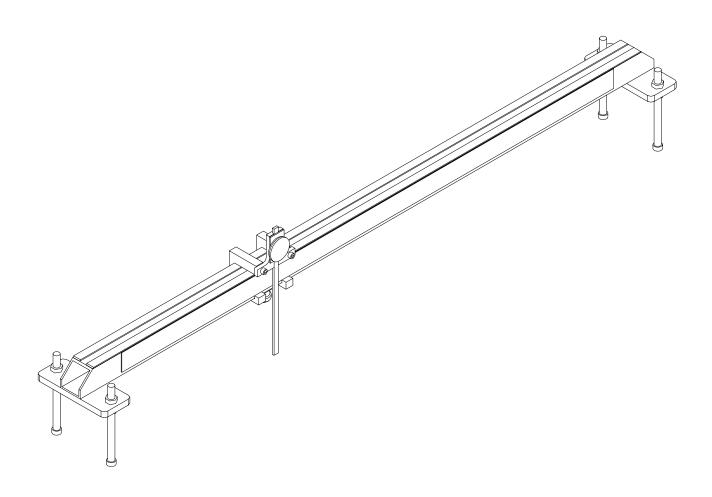
s 836-009

- (2) Analyze the data that you recorded on Fig. 604 for 5 inch probes or Fig. 606 for 10 inch probes.
 - (a) If the readings are less than the waviness limits, then the airplane is qualified to be flown with RVSM upon applying for regulatory agency approval, if not already completed.

EFFECTIVITY-

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Reduced Vertical Separation Minimum (RVSM)
Skin Smoothness Inspection Tool
Figure 601

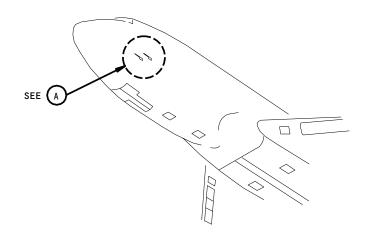
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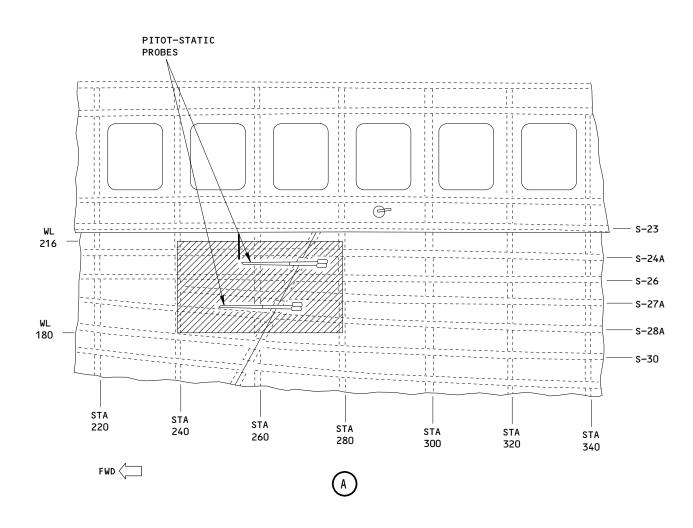
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Page 606 Jun 10/96







Skin Waviness Measurement Figure 602

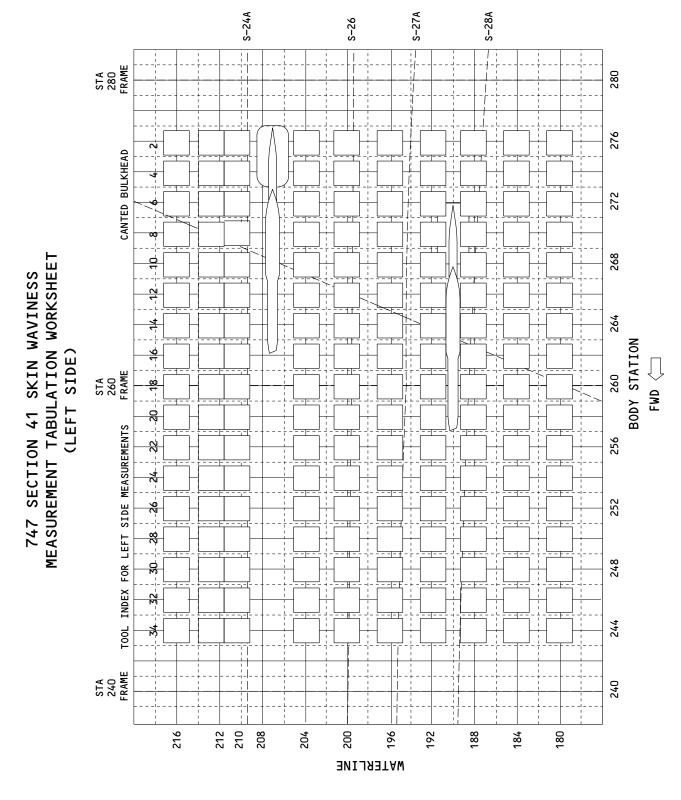
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Skin Waviness Measurement Worksheet (5-Inch Probe) Figure 603 (Sheet 1)

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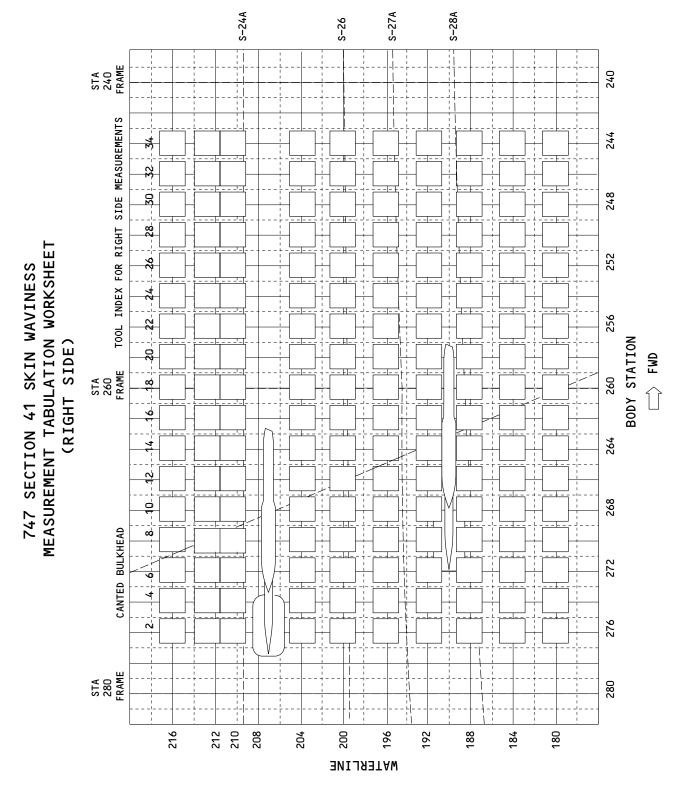
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Page 608 Feb 10/97





Skin Waviness Measurement Worksheet (5-Inch Probe) Figure 603 (Sheet 2)

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Feb 10/97

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Skin Waviness Analysis Worksheet (5-Inch Probe) Figure 604 (Sheet 1)

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Page 610 Feb 18/00



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SKIN WAVINESS JT PITOT-STATI	5.326			5.324			5.324			5.317			5.313			5.305			5.298			5.284			5.271			5.258			16
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47 SECTION FIVE-INCH	5.351			5.350			5.350			5.343			5.339			5.331			5.326			5.313			5.301			5.290			10
47 S 'FIVE	5.366			5.385			5.366			5.359			5.356			5.348			5.344			5.331			5.320			5.311			∞
747 (747/FI\	5.385			5.365			5.385			5.378			5.376			5.369			5.366			5.354			5.344			5.336			9
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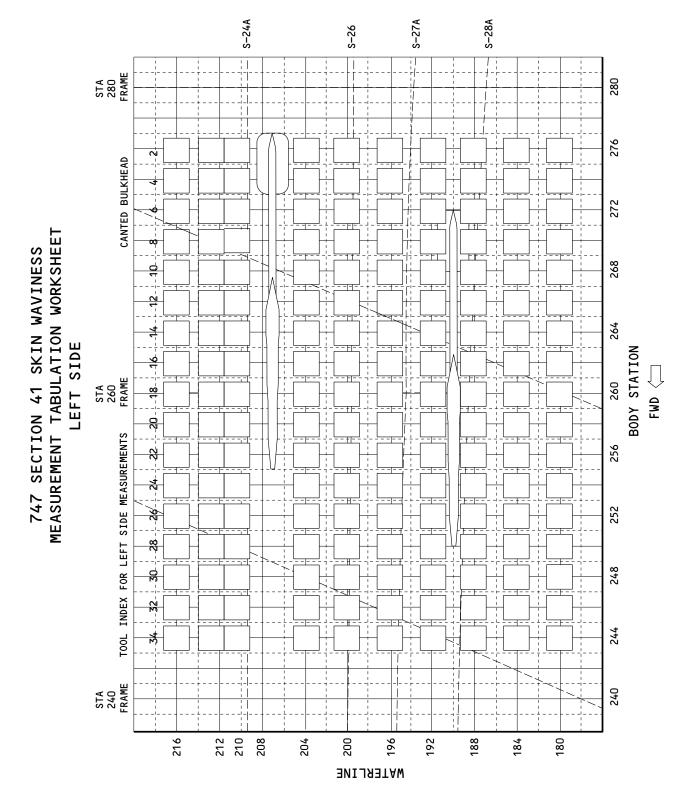
Skin Waviness Analysis Worksheet (5-Inch Probe) Figure 604 (Sheet 2)

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Page 611 Feb 18/00





Skin Waviness Measurement Worksheet (10-Inch Probe) Figure 605 (Sheet 1)

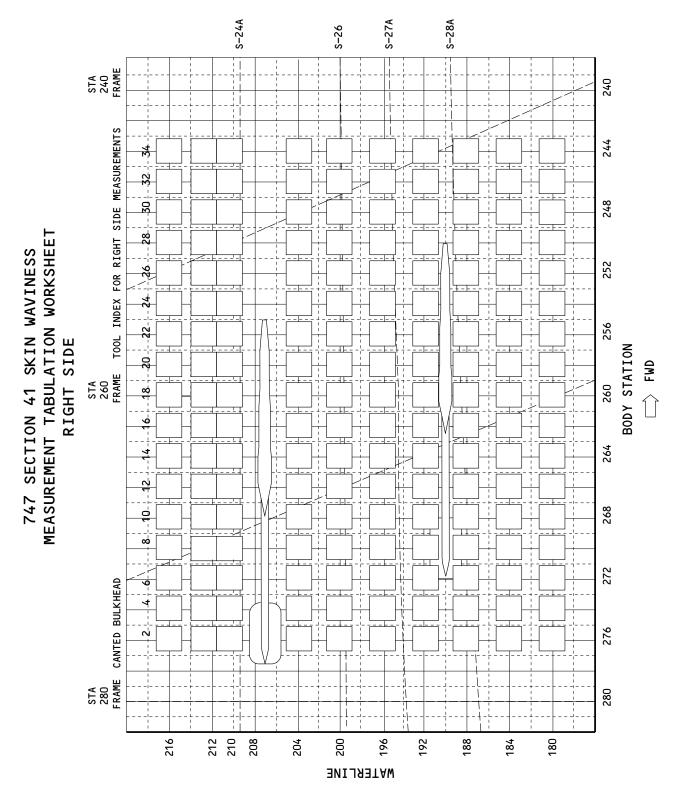
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Page 612 Feb 10/97





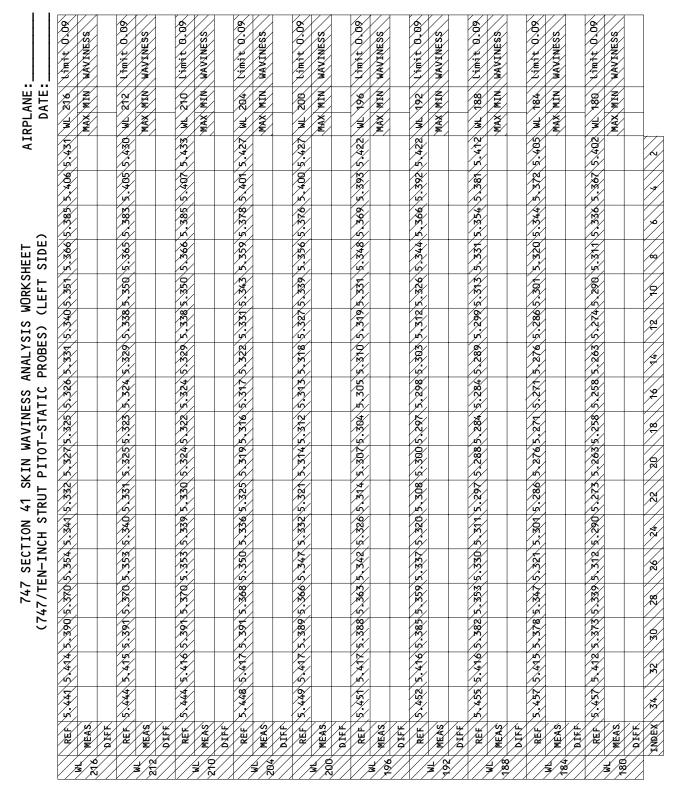
Skin Waviness Measurement Worksheet (10-Inch Probe) Figure 605 (Sheet 2)

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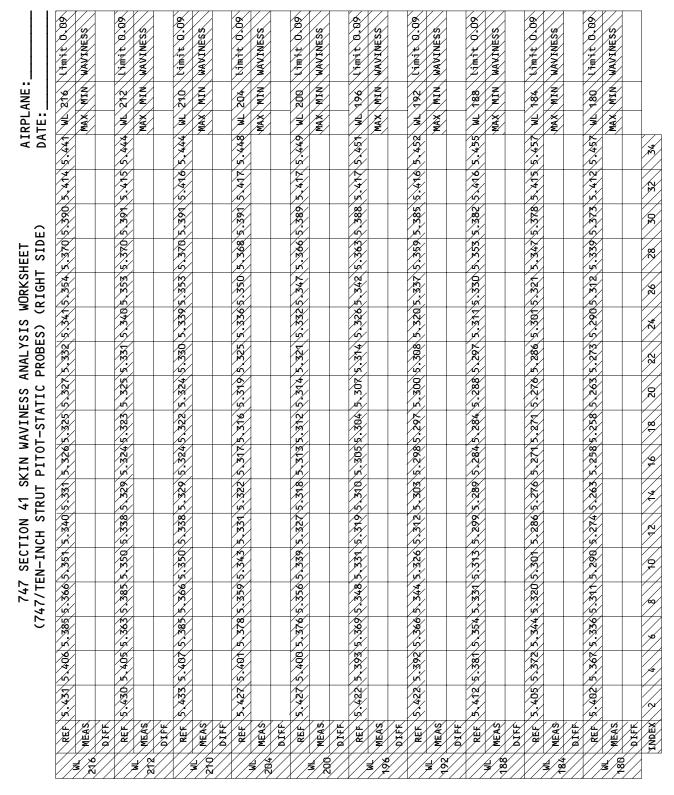


Skin Waviness Analysis Worksheet (10-Inch Probe) Figure 606 (Sheet 1)

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Feb 15/99

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Skin Waviness Analysis Worksheet (10-Inch Probe)
Figure 606 (Sheet 2)

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O1 Page 615
Feb 15/99

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If the readings are higher than the waviness limits, contact Boeing for further analysis.

NOTE: Operators with airplanes that fail this inspection can contract Boeing to do a Computational Fluid Dynamics (CFD) analysis of the skin measurements to find if the skin waviness is within the limits necessary for RVSM. The analysis examines the skin measurements from both sides of the airplane at all four pitot-static probes at the same time. An airplane which failed the dimensional check may still have skin waviness within the limits necessary for RVSM operation.

NOTE: If the CFD analysis shows the skin waviness is within the limits necessary for RVSM, Boeing will take appropriate action.

If the analysis shows that the skin waviness is not NOTE: within the limits for RVSM, operators can contact Boeing for shim installation instructions under the skin. After you install the shims, you should do the skin measurement and data analysis again. This will make sure the skin waviness is within the limits necessary for RVSM.

E. RVSM Reporting

Boeing requests operators use the following Reduced Vertical NOTE: Separation Minimum (RVSM) reporting system to tell Boeing about airplanes that fail the skin waviness inspection.

s 976-010

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(1) If you find a problem, send all information to Boeing with this heading.

ATTENTION - RVSM DISCREPANCY - SERVICE BULLETIN RELATED

EFFECTIVITY-

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s 976-011

- (2) Include the following information:
 - (a) The Service Bulletin Number.

The airplane serial number.

The number of flight cycles and hours on the airplane.

s 976-012

- (3) Send the data and reports of the skin waviness and RVSM to Boeing through the field service representative or directly to:
 - (a) Boeing Commercial Airplane Group P.O. Box 3707 Seattle, Washington 98124 Attn: Director, 747/767 Service Engineering Org. M-7240, Mail Stop 04-CR

s 976-013

- (4) Boeing will review all requirements immediately. Boeing will, if contracted, do a Computational Fluid Dynamics (CFD) analysis on the data.
 - NOTE: Boeing will notify the operator if the CFD analysis shows the skin waviness is within acceptable limits. If the CFD analysis shows that the skin waviness is not within acceptable limits, Boeing will notify the operator of the necessary corrective action.

EFFECTIVITY-

51-10-00



DOOR AND HATCH LEAK CHECK - INSPECTION/CHECK

1. General

- A. This procedure has this task:
 - (1) Doors and Hatches Leak Check

TASK 51-11-00-286-011

- 2. <u>Doors and Hatches Leak Check</u>
 - A. General
 - (1) This task is for the door and hatch leak check.
 - B. Equipment
 - (1) ST6760A-1, Ultrasonic Leak Probe Tool
 - (2) ST9999-VBA-201, Vacuum Generator (No. 2 window, door and hatch)
 - (3) ST9999-VB, Door and Hatch Vacuum Blanket
 - C. Procedure

s 846-012

- (1) Do the steps that follow to prepare the vacuum blanket:
 - (a) Calibrate the ultrasonic leak detector as follows:
 - 1) Use the white noise generator to set the PASS/FAIL indication to 40dB.
 - (b) Connect the vacuum generator to the vacuum blanket.
 - (c) Connect the vacuum generator to a compressed air source.

s 486-013

- (2) Install the vacuum blanket over the exterior of the door or hatch.
 - (a) Make sure the vacuum blanket covers the entire exterior of the door or hatch and the gap between the door or hatch and the fuselage.
 - (b) Remove all bubbles and creases.
 - (c) Make sure the vacuum gauge indicates 18 to 20 inches (HG) of vacuum when the blanket is attached to the door or hatch.

s 276-014

- (3) Do a check of the noise levels around the interior of the door or hatch that you test as follows:
 - (a) Hold the ultrasonic leak detector approximately 2 inches from the door or hatch.
 - (b) Move the ultrasonic leak detector around the edge of the door or hatch.
 - (c) Use the headphones and watch the noise meter on the ultrasonic leak detector.

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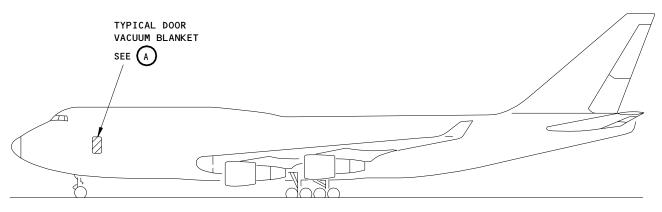
- (4) If the noise levels are more than ed 40dB do the steps that follow:
 - (a) Determine the exact location of the noise with a stethoscope.
 - (b) Remove the vacuum blanket from the door or hatch.
 - (c) Make sure the door seal or hatch seal is clean and in good condition; free from wrinkles, kinks, cracks, rips, tears, etc.
 - If you find wrinkles, kinks, cracks, rips, tears, or other types of damage, do the applicable replacement.
 - (d) Install the vacuum blanket again and check for leaks.
 - NOTE: You will have to repeat the installation of the vaccum blanket and do a check for leaks to make sure all the leaks have been corrected.
 - (e) If the seal does not need to be replaced do the applicable door or hatch adjustments.
 - (f) Install the vacuum blanket again and check for leaks.
 - NOTE: You will have to repeat the installation of the vaccum blanket and do a check for leaks to make sure all the leaks have been corrected.

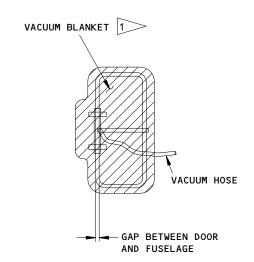
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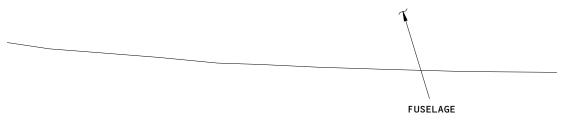
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TYPICAL DOOR VACUUM BLANKET



NOTE: THE VACUUM BLANKET COVERS THE ENTIRE DOOR AND THE GAP BETWEEN THE DOOR AND THE FUSELAGE.

THIS PROCEDURE IS THE SAME FOR THE GALLEY ENTRY DOORS AND THE ESCAPE HATCHES

Typical Door Vacuum Blanket Check Figure 601

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Page 603 Oct 18/99



STRUCTURES FINISHES - DESCRIPTION AND OPERATION

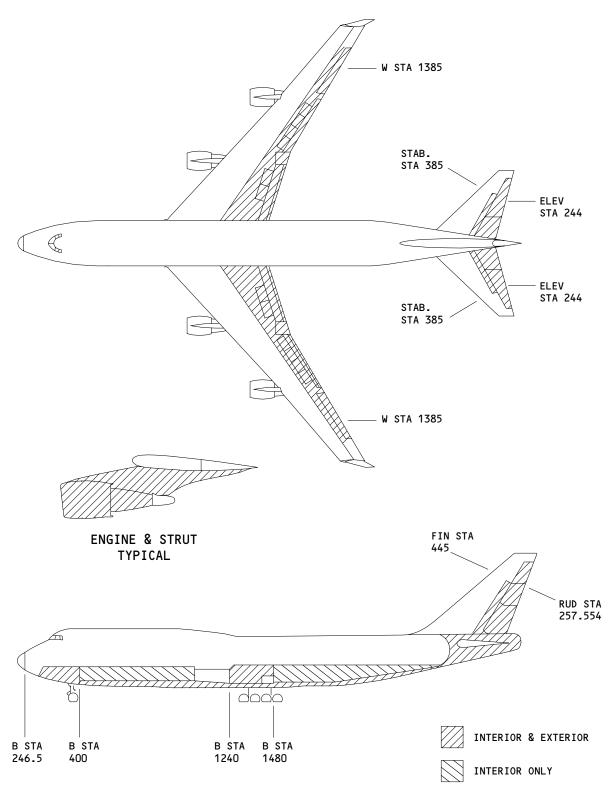
1. General

- A. The structure of the airplane is protected from corrosion by various finishes. The finish applied to a surface depends upon material to be finished and upon whether the surface is an interior or an exterior surface.
- B. The exterior surfaces of the airplane are defined, for the purposes of this subject, as follows:
 - (1) All aerodynamic surfaces, including doors, hatches, and covers.
 - (2) Landing gear and wheel wells.
 - (3) All exposed areas of the wing, flight control surfaces, supports, and cove areas (surfaces visible when the flight control surfaces are in the extended or deflected position).
 - (4) All areas beneath exterior fairings.
- C. BMS 10-79 type II primer is used on some non-errosion area surfaces. BMS 10-11 primer is optional for some non-errosion area surfaces. BMS 10-79 type II and III primer is used on aerodynamic errosion areas and on some non-errosion areas. This is a chemical and solvent-resistant, green-colored, organic finish which may be applied by spray or brush. A coat of white enamel, BMS 10-60 is applied over the primer areas where corrosion protection and better visibility for maintenance purposes are required.
- D. Refer to 28-11-00/701 and 28-11-00/801, Fuel Tanks, for integral fuel tank cleaning and sealing.
- 2. Fire-Resistant Hydraulic Fluid Contamination Areas (Fig. 1)
 - A. Certain areas on the airplane are subject to contamination by fire-resistant hydraulic fluid. Refer to Fig. 1 for the locations of possible fire-resistant hydraulic fluid contamination.

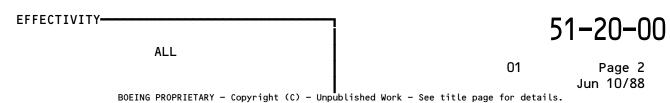
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Possible Fire Resistant Hydraulic Fluid Contamination Areas Figure 1





INTERIOR AND EXTERIOR FINISHES - DESCRIPTION AND OPERATION

1. General

- A. Prior to applying paint finishes or systems, the surface to receive the finish requires preparation to ensure good paint adhesion. Surface preparation, depending upon the material, usually consists of removing the old deteriorated finish, removing corrosion, if present, cleaning, and application of conversion coating, if required.
- B. Deteriorated or old paint finishes are removed with stripping compounds or by mechanical sanding with abrasive paper.
- C. Several standard methods are available for corrosion removal. The methods normally used to remove corrosion are chemical treatments, hand sanding with abrasive paper or metal wool, mechanical sanding with abrasive mats, and dry abrasive blasting. The method used depends upon the metal and the severity of corrosion.
- D. Solvent cleaning is generally used to prepare surfaces for conversion coating or painting by removing soils and residues from stripping and corrosion removal operations. Surfaces must be absolutely clean to ensure good conversion coating and/or paint adhesion. The importance of clean surfaces prior to application of conversion coating or paint cannot be overstressed.
- E. Several conversion coatings are used to form a protective film on metal surfaces. The coating is formed by a chemical process which converts the surface metal into an oxide film. Various conversion coatings are used depending upon the metal. Common to all processes is chromic acid or a similar oxidizing agent which will form a thin, tightly clinging film and prevent corrosive agents from contacting the metal surface.
- F. For application of flame-sprayed aluminum, refer to Chapter 51 of the Structural Repair Manual.



INTERIOR AND EXTERIOR FINISHES (PAINT STRIPPING) - CLEANING/PAINTING

1. General

- A. This procedure contains two tasks. The first task is the removal of paint, adhesive, and primer. The second task is the removal of rain erosion coating from fiberglass.
- B. You can remove paint on metal surfaces with paint strippers or solvents. Solvents are usually used to remove small quantities of paint. Do not use paint stripper on plastic laminates, fiberglass, aerodynamic smoother, edges of metal bonds or rubber parts. Only use approved solvents for these materials.

CAUTION: DO NOT USE PAINT STRIPPERS ON COMPOSITE PANELS. PAINT STRIPPERS CAN CAUSE DAMAGE TO THE COMPOSITE PANELS.

- C. Use mechanical tools to remove the paint from the composite surfaces.
- You can use a spray gun or brush for paint stripping. The brush-on procedure is frequently used during line maintenance.
- Before you remove the paint with the stripping procedure, make sure the surface is dry and the temperature is between 50°F and 100°F. Do not use the stripping procedure in hot or wet weather.
- Use alkaline solvent, emulsion cleaning agents or degreasing solvent to clean the surface with too much soil.
- Make sure the components in the paint stripper mixture are fully mixed. Keep the container closed when not in use.

CAUTION: DO NOT LET PAINT STRIPPERS FALL ON TEFLON LINED SELF-LUBRICATED BEARINGS, ELECTRICAL TERMINAL PLUGS, NYLON-COATED WIRES AND NYLON BUSHINGS. THE CHEMICAL COMPOUNDS IN THE PAINT STRIPPER CAN CAUSE DAMAGE TO THE AIRPLANE COMPONENTS.

H. Protection is necessary for parts which are easily damaged by paint strippers. Put the applicable tape or covers on lubricated parts, rubber parts, laminated plastics, fiberglass, aerodynamic smoother and metal bonded edges.

EFFECTIVITY-

ALL



- I. Apply tape to all access doors, fairings, and wing leading and trailing edges at least 1 inch on the skin.
- J. Apply tape on the drain holes and vents.
- K. Make sure no paint strippers fall on the joints. Do not use strippers in the fuel tanks.

TASK 51-21-01-157-011

2. Paint Stripping

- A. General
 - (1) Strippers that you apply with a brush or with a spray gun contain agents that make a solution thick. Apply these strippers on vertical and horizontal surfaces.
 - (2) Strippers that you apply with a cloth are used to remove temporary finishes, waxes and oversprays.
- B. Equipment
 - (1) Wood or plastic scraper Commercially available
- C. Consumable Materials
 - (1) G00217 Gloves, clean Commercially available
 - (2) G00117 Brush, soft and rigid bristle Commercially available
 - (3) G00217 Sponge
 - (4) G00034 Cheesecloth new, clean, dry, lint free
 - (5) GOO117 Tape Aluminum Foil Permacel P112
 - (6) G00291 Tape Conductive Scotch No. 425 (Aluminum Foil)
 - (7) G00365 Paper plastic coated, VV-P-272C
 - (8) G00252 All plastic coated or impregnated paper which is chemically neutral, water proof and resistant to stripper solutions.
 - (9) GOO111 Polyethylene, polypropylene, mylar or equivalent plastic sheeting resistant to paint strippers.
 - (10) Spray or Brush-On Strippers
 - (a) E00043 Alcor L0-2030M
 - (b) E00044 Stripper Organic Cee Bee A-228D
 - (c) E00119 Cee Bee A-306B
 - (d) E00120 Cee Bee R256A
 - (e) E00041 Stripper Organic Fiber-Resin ES-1
 - (f) E00122 Pennwalt EZ Strip 19E
 - (g) B00279 Stripper Brush on organic paint Turco 52923
 - (h) E00002 Stripper (Paint) Turco 5351
 - (i) E00125 Turco 5873
 - (11) Wipe or Squirt-On Strippers
 - (a) E00124 Ethylene Glycol Monobutyl Ether (Butyl Cellosolve) TT-E-776
 - (b) B00068 Ethyl Alcohol, Denatured, 0-E-760, Grade III or IV
 - (c) B00148 Methyl Ethyl Ketone (MEK) TT-M-261

EFFECTIVITY-

51-21-01

ALL



- (d) E00046 Organic Stripper Methyl Isobutyl Ketone (MIBK), TT-M-268
- (e) B00153 Toluene (Toluol), Technical grade, TT-T-548 or JAN-T-171, Grade A
- (f) E00050 Stripper Organic Turco 800
- (g) E00048 Organic stripper Xylene, ASTM-845 or -846 Grade A or B
- (12) B00192 Solvent, BMS 3-2, Type I
- (13) B00074 Solvent, P-D-680, Type I
- D. Prepare for Paint Stripping

s 957-012

(1) Apply tape or put covers on areas which are easily damaged by the strippers.

s 107-013

(2) Do these steps to clean the area:

NOTE: Use BMS 3-2, Type I or P-D-680, Type I solvent for this step.

- (a) Remove the loose soil, grease and oil. Be careful not to put soil on a larger area than it is necessary.
- (b) Clean the surface with a cheesecloth, soft brush or sponge that is moist with solvent.

NOTE: You can use a spray gun to help clean the surface.

- (c) Flush the surface with clean solvent. Then, rub the surface with a clean cheesecloth.
- (d) Remove all unwanted solvent. Let the surface dry.

s 107-014

(3) Do these steps to clean the area again:

CAUTION: YOU MUST FULLY CLEAN THE SURFACE BEFORE YOU APPLY PAINT OR ADHESIVES. USE BMS 3-2 IN THE LAST STEP OF THE PROCEDURE TO CLEAN THE SURFACE. DO NOT USE

P-D-680, TYPE I FOR THE LAST STEP OF THE PROCEDURE TO CLEAN THE SURFACE. DAMAGE TO THE SURFACE CAN OCCUR

IF P-D-680, TYPE I IS USED IN THE LAST STEP.

- (a) Use a bottle to apply the solvent on the surface.
- (b) Clean the surface with a clean cheesecloth until all large pieces of soil are removed. Use a soft bristle brush if it is necessary.
- (c) Clean the surface again until no signs of soil are found on a clean cheesecloth.
- (d) Dry the area with a clean dry cheesecloth. Do not let drops of solvent dry on the surface.
- E. Procedure Paint Stripping

EFFECTIVITY-

ALL

51-21-01



s 377-015

WARNING: DO NOT GET ORGANIC-PAINT STRIPPERS IN YOUR MOUTH, IN YOUR EYES, ON YOUR SKIN, OR ON YOUR CLOTHES. DO NOT BREATHE THE FUMES FROM THE ORGANIC-PAINT STRIPPERS. MAKE SURE THE AIR FLOWS FREELY THROUGH THE WORK AREA. USE CHEMICAL-RESISTANT GLOVES, HATS, COATS, GOGGLES OR PLASTIC FACE SHIELDS WHEN YOU USE THE ORGANIC-PAINT STRIPPERS. IMMEDIATELY USE WATER TO REMOVE THE ORGANIC-PAINT STRIPPERS THAT TOUCHES YOUR SKIN. KEEP THE ORGANIC-PAINT STRIPPERS AWAY FROM SPARKS, FLAME, AND HEAT. THE ORGANIC-PAINT STRIPPERS ARE POISONOUS AND FLAMMABLE AND CAN CAUSE INJURY OR DAMAGE. REFER TO THE APPLICABLE FIRE, INDUSTRIAL HYGIENE AND SAFETY STANDARDS FOR THE SAFE USE OF ORGANIC-PAINT STRIPPERS.

(1) Fully mix the strippers. Refer to the manufacturer's instructions.

s 157-020

WARNING: DO NOT BREATHE THE FUMES OF THE PAINT STRIPPERS. MAKE SURE THE AIR FLOWS FREELY THROUGH THE WORK AREA. THE VAPORS OF THE PAINT STRIPPERS CAN CAUSE INJURY.

(2) Apply the stripper on the paint. Keep the surface wet.

s 157-018

(3) Remove the paint with a piece of wood or a plastic scrapper before the stripper dries.

s 177-021

(4) Flush the area with high-pressure warm water.

s 177-022

- (5) Dry the surface with a cheesecloth.
- F. Procedure Remove the Adhesives

s 157-023

CAUTION: MAKE SURE THE STRIPPER DOES NOT TOUCH THE SURFACE FOR MORE THAN 2 HOURS. DAMAGE TO THE SURFACE CAN OCCUR IF THE STRIPPER TOUCHES THE SURFACE FOR A LONG TIME.

(1) Fully mix the stripper. Refer to the manufacturer's instructions.

s 917-024

ALL

(2) Apply a small quantity of stripper on the adhesive with a brush. Let the stripper absorb the adhesive for 30 minutes. Do not let the stripper fall on aluminum surfaces.

EFFECTIVITY-



s 157-025

(3) Remove the stripper and loosened adhesive with a cheesecloth, wood or plastic scraper.

s 157-026

(4) If necessary, apply the stripper again to remove all unwanted adhesive.

s 117-027

WARNING: DO NOT GET SOLVENTS IN YOUR MOUTH, OR YOUR EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM SOLVENTS. SOLVENTS ARE HAZARDOUS MATERIALS. SOLVENTS MAY BE FLAMMABLE OR HARMFUL TO THE ENVIRONMENT. REFER TO PRODUCT MATERIAL SAFETY DATA SHEETS (MSDS) AND LOCAL REQUIREMENTS FOR PROPER HANDLING PROCEDURES.

(5) Flush the surface with a sponge that is soaked with water or solvent, Series 84 (AMM 20-30-84) to clean the surface.

s 107-028

- (6) Dry the surface with a clean dry cheesecloth.
- G. Procedure Remove the High Temperature Primer (BMS 10-53)

s 157-029

CAUTION: DO NOT USE WATER UNTIL THE PRIMER IS REMOVED. WATER MAKES THE EPOXY HARD. DAMAGE TO THE SURFACE CAN OCCUR IF THE EPOXY BECOMES HARD.

(1) Apply Turco 5292, full strength, with a brush. Do not use force to apply the paint stripper on the primer, but apply a thick layer of the stripper on the area.

s 157-030

(2) Permit sufficient time to loosen the primer (20 minutes to 1 hour).

s 157-031

(3) When the primer is loose, fully rub the area with a rigid bristle brush.

EFFECTIVITY-

51-21-01



s 117-032

WARNING: DO NOT GET SOLVENTS IN YOUR MOUTH, OR YOUR EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM SOLVENTS. SOLVENTS ARE HAZARDOUS MATERIALS. SOLVENTS MAY BE FLAMMABLE OR HARMFUL TO

THE ENVIRONMENT. REFER TO PRODUCT MATERIAL SAFETY DATA SHEETS (MSDS) AND LOCAL REQUIREMENTS FOR PROPER HANDLING PROCEDURES.

(4) Clean the area with solvent, Series 84 (AMM 20-30-84). Use a brush or spray gun.

ALL

51-21-01

01

Page 706 Jun 15/98



TYPE OF ORGANIC FINISH TO BE REMOVED	APPROVED METAL SUBSTRATES	MEANS OF APPLICATION	TYPE OF STRIPPER	APPROVED STRIPPER	OPERATING TEMPERATURE (°F)
PRIMERS, WAX,OVER SPRAY,AND TEMPORARY COATINGS	ALL	WIPE OR SQUIRT-ON	SOLVENT	BUTYL CELL- OSOLVE, METHYL ISOBUTYL KETONE ETHYL ALCO- HOL, XYLENE, TOLUENE, TURCO 800	ROOM (NOT MORE THAN 90°F)
ALL FINISHES	ALL EXCEPT STEEL HEAT- TREATED ABOVE 220 KSI	SPRAY ON BRUSH-ON	SOLVENT NON- PHENOLIC NON- CHROMATED	CEE BEE A-306B	50-100°F RECOMMENDED 65-800°F
			SOLVENT NON- PHENOLIC CHROMATED	TURCO 5878 PENNWALT EZ STRIP 19E	50-100F RECOMMENDED 65-80°F
ADHESIVES *[1]	ALUMINUM	SPRAY ON BRUSH-ON	SOLVENT	ALCOR LO- 2030N FIBER- RESIN ES1 TURCO 5351 (THICK) TURCO 5351 (THIN)	50-100°F RECOMMENDED 65-80°F
*[2]	ALL EXCEPT STEEL HEAT- TREATED ABOVE 220 KSI	SPRAY OR BRUSH-ON	SOLVENT	TURCO 5292B TURCO 5351 (THICK)	50-100°F RECOMMENDED 65-80°F
ALL EXCEPT *[1] AND *[2]	ALL	SPRAY OR BRUSH-ON	SOLVENT	TURCO 5292B CEE BEE A-228-D TURCO 5351 (THICK)	50-100°F RECOMMENDED 65-80°F

^{*[1]} EPON 933, EPON 9303, BMS 5-42, 5-51, 5-70, 5-80, 5-89

^{*[2]} BMS 10-53, 10-39; EPOXY PRIMER, EPOXIES, POLYURETHANES



TASK 51-21-01-107-004

- Remove Rain Erosion Coating from Fiberglass
 - Equipment
 - (1) Clothing Protective
 - Consumable Materials
 - B00094 Solvent Toluene (Toluol), TT-T-548, Flash Point 40°F
 - B00344 Solvent Xylene, TT-X-916, Flash Point 81°F (2)
 - (3) G00382 Paper Abrasive, Aluminum Oxide, 240-Grit (minimum)
 - (4) G00034 Cheesecloth Clean and Lint-Free
 - (5) G00507 Cloth Clean and Lint-Free
 - (6) G00252 Film Polyethylene
 - (7) G00317 Tape Masking, Aluminum Foil
 - C. Procedure

s 157-005

(1) Place cloths that are moist with toluene on the rain erosion coating.

s 157-006

MAKE SURE THE TOLUENE DOES NOT TOUCH THE FIBERGLASS FOR MORE CAUTION: THAN 2 HOURS. DAMAGE TO THE SURFACE CAN OCCUR IF THE STRIPPER TOUCHES THE SURFACE FOR A LONG TIME.

(2) If it is necessary, add more toluene to keep the cloths moist. Permit sufficient time to loosen the coating from the fiberglass (20 minutes to 1 hour).

s 157-010

(3) Scrap or peel off the coating.

s 127-007

(4) Lightly rub the surface with 240 grit (minimum) abrasive paper.

s 117-008

ALL

(5) Clean with xylene solvent.

EFFECTIVITY-

51-21-01

01

Page 708 Jun 10/91



<u>INTERIOR AND EXTERIOR FINISHES (PREPAINT CLEANING AND PRETREATMENT) - CLEANING/PAINTING</u>

1. General

- A. This procedure contains 3 tasks:
 - (1) The first task is to clean the surface before you apply paint.
 - (2) The second task is to prepare the surface before you apply paint.
 - (3) The third task is to clean and prepare plastic surfaces before you apply paint.

TASK 51-21-02-107-001

- 2. <u>Clean the Surface</u>
 - A. Equipment
 - (1) Wood or plastic scrapers; Commercially available
 - (2) Stiff bristle brush; Commercially available
 - (3) Spray equipment; Commercially available
 - B. Consumable Materials
 - (1) Masking Materials
 - (a) Aluminum foil tapes
 - 1) G00117 Permacel P-112
 - 2) G00291 Scotch No. 425
 - (b) Masking tapes
 - 1) G00366 Permacel P-705
 - 2) G00132 3M No. 214
 - 3) G00367 Mystic 6223
 - (c) GOO111 Plastic film mylar or polyethylene
 - (d) G00365 Polyethylene coated paper, VV-P-272C
 - (e) G00301 Protex 20V
 - (2) Solvents
 - (a) GOO148 Methyl Ethyl Ketone (MEK) TT-M-261
 - (b) B00135 Naphtha

ALL

(c) B00151 Methyl Iso-Butyl Ketone (MIBK) TT-M-268

EFFECTIVITY-



- (d) B00153 Toluene (Toluol) TT-T-548 or JAN-T-171 Grade A
- (e) 1:1 MEK-Toluene Mixture
- (f) B00189 Thinner, TL-52
- (3) B00280 Stripper Turco 5351
- (4) G00034 Cheesecloth
- (5) Other Materials
 - (a) G00251 Aluminum oxide abrasive paper, 240grit (minimum)
 - (b) B00340 Silicon carbide paper, 240-grit (minimum)
 - (c) B00102 Silicon carbide abrasive disc (Bear Tex) 240-grit (minimum)
 - (d) B00107 Scotchbrite sheets, Type A,
 Aluminum Oxide Abrasive 240-grit
 (minimum)
 - (e) B00101 Nylon pad, Aluminum Oxide Abrasive, Type F, 240-grit (minimum)
 - (f) B00137 Abrasive paper 240-grit (minimum), P-P-121
- C. References
 - (1) 51-21-01/701 Interior and Exterior Finishes (Paint Stripping)
 - (2) 51-21-04/701 Alodized Surfaces
 - (3) 51-24-11/701 Decorative Paint System
 - (4) 51-31-01/201 Seals and Sealing
- D. Procedure Clean the Surface

s 917-002

<u>CAUTION</u>: DO NOT APPLY SOLVENTS, CLEANERS, AND ALODINE ON SEALANTS AND SMOOTHERS. SOLVENTS, CLEANERS AND ALODINE CAN REACT CHEMICALLY WITH SEALANTS AND SMOOTHERS AND CAUSE DAMAGE.

- (1) Put covers on all adjacent areas.
 - s 037-003
- (2) Remove all temporary finishes.

s 127-004

ALL

CAUTION: DO NOT LET STRIPPERS FALL ON FIBERGLASS, ALUMINUM FIBERGLASS, ACRYLIC WINDOWS OR FILLETS. DAMAGE TO THESE SURFACES CAN OCCUR.

(3) Use wood or plastic scrappers, abrasive paper or Scotchbrite sheets to remove bad finishes and unwanted adhesive from the surface. You can also use strippers to remove bad finishes from the surface (Ref 51-21-01).

EFFECTIVITY-



s 177-005

(4) Use a spray gun to remove all the remaining stripper material, loose dust and contamination.

NOTE: Use water at a temperature between 135°F and 145°F and at a rate of 10 to 20 gallons per minute.

s 117-006

WARNING: DO NOT GET SOLVENTS IN YOUR MOUTH, OR YOUR EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM SOLVENTS. SOLVENTS ARE HAZARDOUS MATERIALS. SOLVENTS MAY BE FLAMMABLE OR HARMFUL TO THE ENVIRONMENT. REFER TO PRODUCT MATERIAL SAFETY DATA SHEETS (MSDS) AND LOCL REQUIREMENTS FOR PROPER HANDLING PROCEDURES.

CAUTION: FOLLOW THE NECESSARY PRECAUTIONS WHEN YOU CLEAN AROUND FASTENERS, SEAMS, AND LAP JOINTS. IF YOU ARE NOT CAREFUL, DAMAGE TO THE FASTENERS, SEAMS, AND LAP JOINTS CAN OCCUR.

(5) Use a rigid bristle brush that is moist with solvent, Series 85 (AMM 20-30-85) to clean around fasteners, seams and lap joints.

NOTE: You can isolate the sealant fillet from the skin when you clean with solvent, Series 85 (AMM 20-30-85). Do not test the bond of the fillet with your fingernail or with a knife. Only do a visual inspection of the interface between the fillet and the skin.

s 147-007

(6) Remove the separation that is confined to the thin edge of the sealant with solvent, Series 85 (AMM 20-30-85). Lightly rub the area with Scotchbrite sheets.

<u>NOTE</u>: If separation occurs between the body of the sealant fillet and the airplane skin, remove the separated part of the fillet.

s 397-008

(7) Repair all damaged sealant (Ref 51-31-01).

s 127-009

(8) Use silicone carbide paper to make stainless steel and titanium surfaces rough.

<u>NOTE</u>: Do not make aluminum flame-sprayed fiberglass or Alodine 1200 treated surfaces rough.

EFFECTIVITY-

51-21-02

ALL



s 117-010

(9) Before you paint the surface, clean the surface with solvent, Series 85 (AMM 20-30-85). Clean the surface until no signs of soil are found on a clean cheesecloth.

TASK 51-21-02-107-030

3. Prepare the Surface

- A. Equipment
 - (1) Wood or plastic scrapers; Commercially available
 - (2) Stiff bristle brush; Commercially available
- B. Consumable Materials
 - (1) Masking Materials
 - (a) Aluminum foil tapes
 - 1) G00117 Permacel P-112
 - 2) G00291 Scotch No. 425
 - (b) Masking tapes
 - 1) G00366 Permacel P-705
 - 2) G00132 3M No. 214
 - 3) G00367 Mystic 6223
 - (c) GOO111 Plastic film mylar or polyethylene
 - (d) G00365 Polyethylene coated paper, VV-P-272C
 - (e) G00301 Protex 20V
 - (2) Solvents
 - (a) GOO148 Methyl Ethyl Ketone (MEK) TT-M-261
 - (b) B00135 Naphtha
 - (c) B00151 Methyl Iso-Butyl Ketone (MIBK) TT-M-268
 - (d) B00153 Toluene (Toluol) TT-T-548 or JAN-T-171 Grade A
 - (e) 1:1 MEK-Toluene Mixture
 - (f) B00189 Thinner, TL-52
 - (3) Alkaline Cleaners
 - (4) G00034 Cheesecloth
 - (5) Miscellaneous Materials
 - (a) G00251 Aluminum Oxide Abrasive Paper, 240grit (minimum)
 - (b) B00340 Silicon carbide paper, 240-grit (minimum)
 - (c) B00102 Silicon carbide abrasive disc (Bear Tex) 240-grit (minimum)
 - (d) B00107 Scotchbrite sheets, Type A,
 Aluminum Oxide Abrasive 240-grit
 (minimum)
 - (e) B00101 Nylon pad, Aluminum Oxide Abrasive, Type F, 240-grit (minimum)
 - (f) B00137 Abrasive paper 240-grit (minimum), P-P-121

EFFECTIVITY-

51-21-02



- (g) COOO64 Conversion Coating, MIL-C-5541 (Alodine)
- C. References
 - (1) 51-21-01/701 Interior and Exterior Finishes (Paint Stripping)
 - (2) 51-21-04/701 Alodized Surfaces
 - (3) 51-24-11/701 Decorative Paint System
 - (4) 51-31-01/201 Seals and Sealing
- D. Procedure Prepare the Surface

s 377-011

CAUTION: FOLLOW THE NECESSARY PRECAUTIONS WHEN YOU CLEAN AROUND FASTENERS, SEAMS AND LAP JOINTS. IF YOU ARE NOT CAREFUL, DAMAGE TO THE FASTENERS, SEAMS, AND LAP JOINTS CAN OCCUR.

- (1) Procedure Method I: (Before you apply wash or epoxy primer system without alodizing)
 - (a) Prepare the alkaline cleaner, mix 1 part (by volume) of cleaner with 3 parts (by volume) of water.
 - (b) Use abrasive pads and alkaline cleaner to make the surface rough.
 - (c) Flush the surface with water until you get a water break-free surface. Make sure you flush all unwanted material from the joints and fasteners.

<u>NOTE</u>: A water break-free surface will have a continuous layer of water for 30 seconds.

- (d) Before you apply the primer, let the surfaces, seams and lap joints fully dry.
- (e) Apply primer on the surface.

s 377-012

ALL

(2) Procedure Method II: (before you apply an epoxy primer system with alodizing)

<u>CAUTION</u>: DO NOT MIX SOLVENTS WITH ALODINE. A FIRE CAN OCCUR IF THE SOLVENTS ARE MIXED WITH ALODINE.

- (a) Use Scotchbrite sheets and clean water to make the surface rough.
- (b) Use a cheesecloth that is moist with water to clean the surface. Clean the surface again to remove all remaining particles.
- (c) Flush the surface with water until you get a water break-free surface. Make sure you flush all unwanted material from the joints and fasteners.

<u>NOTE</u>: A water break-free surface will have a continuous layer of water for 30 seconds.

EFFECTIVITY-

51-21-02



WARNING: DO NOT GET ALODINE IN YOUR MOUTH, IN YOUR EYES, ON YOUR SKIN, OR ON YOUR CLOTHES. DO NOT BREATHE THE FUMES FROM THIS MATERIAL. MAKE SURE THE AIR FLOWS FREELY THROUGH THE WORK AREA. USE THE NECESSARY RESPIRATORY PROTECTION.

KEEP THIS MATERIAL AWAY FROM SPARKS, FLAME, AND HEAT.
THIS MATERIAL IS POISONOUS AND FLAMMABLE AND CAN CAUSE

INJURY OR DAMAGE.

(d) Apply Alodine 1000, 1200 or 1200S (Ref 51-21-04).

- (e) Before you apply the primer, let the surfaces, seams and lap joints fully dry.
- (f) Apply BMS 10-79 type II primer (preferred) or BMS 10-11 primer (optional) on the surface.

s 377-013

- (3) Do these steps to prepare surfaces that are painted:
 - (a) For epoxy primer that was applied in less than 48 hours:
 - 1) Use abrasive papers or pads to remove rough surfaces and loose soils. Rub the surface until it is smooth.

NOTE: If it is necessary to rub the surface to the bare metal, prepare the surface as if it was not painted.

- 2) Before you apply the topcoat, clean the surface with tack rags to remove dust and lint.
- (b) For Epoxy primer that was applied for more than 48 hours:

CAUTION: USING COARSE GRIT ABRASIVES CAN CAUSE DAMAGE TO THE SUBSTRATE FIBERS IF THE GRIT COMES IN CONTACT WITH THE RESIN COATING OF THE COMPOSITE SUBSTRATE. TO REDUCE THE POSSIBILITY OF DAMAGE TO THE COMPOSITE SUBSTRATE, ONCE THE TOPCAOT HAS BEEN REMOVED, USE PROGRESSIVELY FINER GRITS TO OBTAIN THE REQUIRED SURFACE FINISH.

 Use abrasive papers or pads to remove rough surfaces and loose soil. It is optional to use coarse grit abrasives for expedient cleaning and material removal to the first paint topcoat layer.

NOTE: Do not use abrasive paper on rough surfaces such as castings and forgings. Use a tack rag or solvent to clean these surfaces.

Rub the surface with a clean cheesecloth that is moist with solvent.

<u>NOTE</u>: Rub glossy enamel surfaces until the gloss is removed.

EFFECTIVITY-

51-21-02

ALL



3) Dry the surface with a clean dry cheesecloth.

NOTE: Make sure that the surface is dry before you apply the finish.

- (c) For Prestec that was applied in less than 12 hours:
 - 1) It is not necessary to prepare the surface.
- (d) For Prestec that was applied in more than 12 hours:
 - 1) Rub the surface with 240 grit (minimum) abrasive paper.
 - 2) Remove all the remaining particles and soils with a cheesecloth that is moist with naphtha.
 - 3) Before the solvent becomes dry, rub the surface with a clean dry cheesecloth.

TASK 51-21-02-107-031

4. <u>Clean and Prepare Plastic Surfaces</u>

- A. Equipment
 - (1) Wood or plastic scrapers; Commercially available
 - (2) Stiff bristle brush; Commercially available
 - (3) Spray equipment; Commercially available
- B. Consumable Materials
 - (1) Masking Materials
 - (a) Aluminum foil tapes
 - 1) G00117 Permacel P-112
 - 2) G00291 Scotch No. 425
 - (b) Masking tapes
 - 1) G00366 Permacel P-705
 - 2) G00132 3M No. 214
 - 3) G00367 Mystic 6223
 - (c) GOO111 Plastic film mylar or polyethylene
 - (d) G00365 Polyethylene coated paper, VV-P-272C
 - (e) G00301 Protex 20V
 - (2) Solvents
 - (a) GOO148 Methyl Ethyl Ketone (MEK) TT-M-261
 - (b) B00135 Naphtha
 - (c) B00151 Methyl Iso-Butyl Ketone (MIBK) TT-M-268
 - (d) B00153 Toluene (Toluol) TT-T-548 or JAN-T-171 Grade A
 - (e) 1:1 MEK-Toluene Mixture
 - (f) B00189 Thinner, TL-52
 - (3) G00034 Cheesecloth

ALL

- (4) Other Materials
 - (a) G00251 Aluminum Oxide Abrasive Paper, 240grit (minimum)
 - (b) B00340 Silicon carbide paper, 240-grit (minimum)

EFFECTIVITY-



- (c) B00102 Silicon carbide abrasive disc (Bear Tex) 240-grit (minimum)
- B00107 Scotchbrite sheets, Type A, Aluminum Oxide Abrasive 240-grit (minimum)
- B00101 Nylon pad, Aluminum Oxide Abrasive, (e) Type F, 240-grit (minimum)
- B00137 Abrasive paper 240-grit (minimum), (f) P-P-121
- COOO58 Magna 28-C-1 Static Conditioner (5)
- COOO59 Magna 8-W-5 Surfacer (6)
 - (a) C00061 Hardener 50-C-3 or 10-C-32
 - (b) C00062 Reducer 66-C-28
- References
 - (1) 51-21-01/701 Interior and Exterior Finishes (Paint Stripping)
 - (2) 51-21-04/701 Alodized Surfaces
 - (3) 51-24-11/701 Decorative Paint System
 - (4) 51-31-01/201 Seals and Sealing
- D. Procedure Clean the Surface

s 107-014

(1) Do these steps for surfaces with no paint and surfaces with surface porosity.

WARNING: DO NOT GET SOLVENTS IN YOUR MOUTH, OR YOUR EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM SOLVENTS. SOLVENTS ARE HAZARDOUS MATERIALS. SOLVENTS MAY BE FLAMMABLE OR HARMFUL TO THE ENVIRONMENT. REFER TO PRODUCT MATERIAL SAFETY DATA SHEETS (MSDS) AND LOCAL REQUIREMENTS FOR PROPER HANDLING PROCEDURES.

- Use a clean cheesecloth that is moist with toluene, methyl ethyl ketone (MEK) , acetone, isopropyl alcohol, or ethyl alcohol to remove grease and contamination.
- Dry the surface with a clean dry cheesecloth. (b)
- For structural and non-structural laminates:
 - Use 240 grit, minimum, abrasive paper to remove the glossy finish of the laminate.

When you rub the surface, make sure you do not rub NOTE: the fiberglass material.

- 2) Use a clean cheesecloth that is moist with TL-52 thinner to remove all remaining particles and soil from the surface.
- Before the thinner becomes dry, dry the surface with a clean dry cheesecloth.

EFFECTIVITY-

ALL

51-21-02



- (d) For Nonstructural Laminates Only (Optional)
 - 1) Use the sand blast equipment to make the laminate surface lightly rough.

NOTE: When you use the sand blast equipment on the surface, make sure you do not remove the fiberglass material.

- 2) Use TL-52 thinner to remove all remaining particles and soils from the surface.
- 3) Before the thinner becomes dry, dry the surface with a clean dry cheesecloth.
- (e) Prepare surface porosity as follows:
 - 1) For a Magna Surface Conditioner System:

NOTE: This system contains Magna 28-C-1 static conditioner which is used for microscopic holes and Magna 8-W-5 which is used for larger surface defects. Make sure you apply the static conditioner before you apply the surfacer.

a) Use a clean cheesecloth to apply the Magna 28-C-1 static conditioner on the surface.

NOTE: Do not make the static conditioner thin. Use sufficient pressure to push the static conditioner into the microscopic holes of the laminate.

- b) Let the surface dry for approximately 30 minutes at room temperature or higher (until it becomes white).
- c) Use a clean dry cheesecloth to remove all the unwanted material from the laminate surface.
- d) After you remove all the unwanted material from the laminate surface, immediately apply the subsequent material.

NOTE: If the surface becomes soiled after you applied

the conditioner, use toluene or naphtha to clean the surface and apply static conditioner again.

CAUTION: DO NOT USE MAGNA 8-W-5 SURFACER AS A FAIRING COMPOUND OR CONTOURING MATERIAL. MAGNA 8-W-5 SURFACER IS VERY HARD WHEN CURED AND DIFFICULT TO RUB WITH ABRASIVE PAPER.

e) Mix 4 parts (by volume) of Magna 8-W-5 with 1 part (by volume) of hardener 50-C-3 or 10-C-32.

EFFECTIVITY-

51-21-02

ALL



- f) Fully mix the mixture. Do not move the mixture for 15 minutes before it is applied.
- g) Make the mixture thin with 1 part (by volume) of 66-C-28 reducer.

NOTE: The pot life of the mixture is 6 hours at 70°F. Do not use the mixture if the pot life has expired.

- h) Use a brush, spray gun or cloth to apply the mixture (surfacer).
- (f) Use 150-grit (minimum) abrasive paper to make the surface smooth.

NOTE: After 5 hours, the surfacer becomes very hard. You must make the surface smooth before 5 hours.

(g) Use a clean cheesecloth that is moist with naptha to remove all remaining particles.

NOTE: If microscopic or small holes show on the surfacer, apply Magna 28-C-1 again after you rubbed and cleaned the surface. Immediately apply the subsequent layers as soon as possible.

s 107-015

ALL

- (2) Do these steps for surfaces with no paint and for surfaces without surface porosity.
 - (a) Use Scotchbrite sheets and clean water to make the surface rough.
 - (b) Use a cheesecloth that is moist with water to clean the surface. Clean the surface again to remove all remaining particles.

EFFECTIVITY-

51-21-02



CORROSION REMOVAL AND CONTROL - CLEANING/PAINTING

1. General

- A. This procedure contains one task. The task is to remove corrosion and apply solutions to control the corrosion.
- B. Carefully examine all structural parts where corrosion can occur. Replace these parts or repair them if it is possible. Apply the protective finish on the part or surface. If it is not possible to remove the part, use the applicable procedure to control and remove corrosion.
- C. Corrosion removal and control procedures are applicable to all areas.

 Use these procedures only for small quantities of corrosion. To remove large quantities of corrosion, refer to the Structural Repair Manual.
- D. Make sure that all areas that are prepared for corrosion inhibiting compounds are clean. Remove oil, grease, dirt, and paint from the surface or the part.
- E. Make sure you remove all corrosion material from the surfaces or parts. Failure to remove all corrosion material can permit corrosion to start again. For limits of corrosion removal, refer to the Structural Repair Manual.
- F. Use acid brighteners for aluminum. Acid brighteners are strong in acid concentration and can cause damage to metal surfaces. Phosphoric acid—type corrosion removers are weaker in acid concentration but can cause damage to metal surfaces.
- G. If you cannot immediately remove corrosion from an area, prepare the area with BMS 3-23 (Ref 51-24-13). The BMS 3-23 is used to stop corrosion.

TASK 51-21-03-107-001

2. Remove the Corrosion

- A. Equipment
 - (1) Cleaning brushes, nylon and wire; Commercially available
- B. Consumable Materials

ALL

- (1) Acid brighteners for aluminum
 - (a) B00001 Kelite L-20

EFFECTIVITY-

51-21-03



- (b) B00002 Metal Glo No. 2
- (2) B00137 Abrasive paper, aluminum oxide, 220 and 400 grit
- (3) G00133 Tape Masking, No. 221, 3M Company
- (4) B00312 Aluminum Wool
- (5) B00446 Stainless Steel Wool
- (6) C00064 Coating Surface Treatment MIL-C-5541, Type II, Grade C, Class 1 for Aluminum or Aluminum Alloys (Alodine Coating) Alodine 1000 Clear, Alodine 1200
- (7) G00034 Cheesecloth New, Clean, Dry, Lint Free
- (8) GO2223 Paper pH neutral
- (9) E00079 Stripper, Inorganic Chromic Acid
- (10) G00009 Compound Corrosion Inhibiting BMS 3-23
- (11) B00047 Corrosion Remover 0-A-88 Nitric Acid
- (12) Corrosion Remover Phosphoric Acid Type (for aluminum)
 - (a) B00285 Kelite Process K
 - (b) B00288 Turco W.0.1
 - (c) B00162 Oakite 36
- (13) B00046 Remover Corrosion, Phosphoric Acid Type (for steel)
 - (a) B00447 GMC 801
 - (b) B00285 Kelite Process K
 - (c) B00170 Oakite 31
 - (d) B00171 Turco Prepaint
- (14) E00074 Stripper Inorganic Sodium Dichromate Sulfuric Acid
- (15) C00000 Solution Dow 1
- (16) COOO15 Coating Conversion Dow 19
- (17) B00000 Potassium Dichromate
- (18) B00385 Sulphate Calcium (powder)
- C. References
 - (1) 51-21-02/701, Interior and Exterior Finishes (Prepaint Cleaning and Pretreatment)
 - (2) 51-24-13/701, Water Displacing Corrosion Preventive
- D. Procedure
 - s 107-002

ALL

CAUTION: DO NOT LET ACID BRIGHTENERS FOR ALUMINUM AND PHOSPHORIC ACID CORROSION REMOVERS FALL ON OR TOUCH TEFLON-LINED SELF-LUBRICATED BEARINGS, ELECTRICAL TERMINAL PLUGS, NYLON-COATED WIRES, NYLON BUSHINGS, OR WHITE-THERMAL PROTECTIVE FINISHES. THE CHEMICALS IN THESE MATERIALS CAN CAUSE DAMAGE TO THESE COMPONENTS.

- (1) Do the subsequent steps to remove aluminum corrosion from the external surface of the airplane:
 - (a) Put the airplane in an area where you can fully and quickly flush all the surfaces with water.

EFFECTIVITY-



- (b) Remove all the grease, oil and loose paint from the surface (Ref 51-21-02).
- (c) Add three parts (by volume) of water to Kelite L-20 and Metal Glo No. 2.
- CAUTION: KEEP THE ACID BRIGHTENER SOLUTION AWAY FROM NONCLAD ALUMINUM ALLOYS, STEEL THAT WAS PREPARED OVER 180,000 PSI, FABRIC, AND PLASTIC. DAMAGE CAN OCCUR IF THE ACID BRIGHTENER SOLUTION TOUCHES THOSE MATERIALS. IF THE ACID BRIGHTENER SOLUTION TOUCHES FABRIC OR PLASTIC SURFACES, YOU MUST IMMEDIATELY FLUSH THE FABRIC OR PLASTIC SURFACES WITH WATER. IF YOU LET THE ACID BRIGHTENER SOLUTION DRY ON FABRIC OR PLASTIC SURFACES, DAMAGE TO THE SURFACE CAN OCCUR.
- (d) Apply the acid brightener solution to small areas. Start from the lower surfaces and continue up the surface.
- CAUTION: DO NOT LET THE SOLUTION STAY ON THE SURFACE FOR MORE THAN 30 MINUTES. IF THE SOLUTION IS ON THE SURFACE FOR MORE THAN 30 MINUTES, DAMAGE TO THE SURFACE CAN OCCUR.
- (e) Keep the solution on the surface for 5 to 30 minutes.
 - NOTE: Do not use the solution during temperatures above 100°F or below 45°F.
- (f) Mix the solution regularly with a brush. A nylon brush is recommended.
- (g) Keep the surface wet with the solution.
- (h) Lightly flush the surface with water when you apply the last layer of solution.
- (i) Fully flush the surface with high pressure water.
- (j) Do the same steps for the remaining areas of the airplane. Always start from the bottom surface and continue up to the top surface.
 - <u>NOTE</u>: Apply the solution to small areas. If you apply the solution to areas that are too large, the solution will dry and you will get an unsatisfactory result.

EFFECTIVITY-

ALL



(k) Fully flush all of the area, the prepared and the adjacent areas, with water.

NOTE: Make sure that you flush out all the solution from the wheel well areas, the skin seams, and all other holes on the surface.

- (l) Apply Alodine 1000 to the areas of the clad aluminum which are to be painted.
- (m) After all material is removed, apply Alodine 12005 to nonclad areas. Apply protective finish to all other areas if it is necessary.

s 107-004

(2) Do the subsequent steps to remove small quantities of aluminum corrosion from the external surface of the airplane:

NOTE: This procedure is optional.

- (a) Remove the corrosion with an approved airplane polish.
- (b) Use a solvent alkaline or emulsion cleaner to remove the remaining particles of airplane polish from the surface. Fully flush the surface with water (Ref 51-24-13).
- (c) Kelite Process K phosphoric acid type corrosion remover.

NOTE: Before use, add 5 parts (by volume) of water to 1 part (by volume) of Kelite Process K.

(d) Turco W.O. No. 1 phosphoric acid type corrosion remover.

NOTE: Before use, add 6 parts (by volume) of water to 1 part (by volume) of Turco W.O. No. 1.

- (e) Apply phosphoric acid corrosion remover on the surface.
- (f) Fully flush all of the area, the prepared area and the adjacent areas, with water.

NOTE: Make sure that you flush out all of the phosphoric acid corrosion remover from the wheel well areas, the skin seams and all openings or holes on the surface.

EFFECTIVITY-

ALL

51-21-03



s 107-029

(3) Do the subsequent steps to remove corrosion from magnesium:

SMALL PARTICLES OF MAGNESIUM CAN EASILY CAUSE IGNITION. WARNING: USE DRY TALC, CALCIUM CARBONATE, SAND, OR GRAPHITE TO EXTINGUISH A MAGNESIUM FIRE. DO NOT USE WATER, CARBON DIOXIDE, CARBON TETRACHLORIDE, OR AN ORDINARY DRY CHEMICAL FIRE EXTINGUISHER TO EXTINGUISH A MAGNESIUM FIRE. INJURY OR DAMAGE CAN OCCUR IF INCORRECT PROCEDURES ARE USED TO

EXTINGUISH A MAGNESIUM FIRE.

MAKE SURE THAT ALL ADJACENT AREAS HAVE PROTECTION WHEN YOU CAUTION: REMOVE CORROSION. DAMAGE CAN OCCUR IF THE ADJACENT AREAS DO NOT HAVE PROTECTION DURING THE CORROSION REMOVAL.

- (a) Clean the corrosion with aluminum wool and a rigid bristled brush. If is is necessary, use aluminum oxide abrasive, 220-grit (minimum). Do not use silicone carbide abrasive.
- (b) Protect all material and parts not to be treated from contact with the corrosion removing solution or fumes.
- (c) Clean corrosion from pits with Dow 1 solution as follows:
 - 1) Brush a generous quantity of Dow 1 solution mixed with 1-1/2 pounds of sodium dichromate and 1-1/2 pints of concentrated nitric acid per gallon.
 - 2) Wipe dry, rinse with clean water, and wipe dry again.

s 377-028

- Apply the protective finish as follows:
 - (a) Apply Dow 19 solution.
 - 1) Prepare the solution in a clean glass or polyethylene container as follows:
 - add 9/10 gallons of water
 - mix 1-1/3 ounces chromic acid
 - mix 1 ounce calcium sulfate (powder)

EFFECTIVITY-

51-21-03



- 2) Fill to the one gallon level with water. Stir for a minimum of 15 minutes and allow to settle.
- Make sure the pH is from 1.2 to 1.6. Use sulfuric acid to lower the pH or use sodium hydroxide to increase the pH.

SWAB THE SURFACE LIGHTLY AS SEVERE RUBBING OF THE WET CAUTION: SURFACE WILL DAMAGE THE COATING.

4) Apply fresh solution until the surface becomes dark brown in color.

HIGH PRESSURE WATER SPRAY, RUBBING ABRASION, AND HIGH CAUTION: PRESSURE AIR BLAST WILL DAMAGE THE FRESH COATING.

- 5) Rinse with clean cold water.
- 6) Dry the solution with air at a maximum temperature of 180°F.
- 7) Make sure that the surface is free from uncoated areas, scratches, powder, and streaks.
- 8) Remove the powder by wiping the surface with a clean cloth.
- 9) Reapply the coating and touch up any uncoated areas.
- Apply the protective finish as soon as possible to avoid soiling, scuffing, or the start of new corrosion.

s 107-003

Do the subsequent steps to remove steel corrosion (steel parts heat-treated to 180 ksi or less):

CAUTION: WHEN THE HEAT-TREAT VALUE OF A PART IS UNKNOWN, PREPARE THE PART AS IF IT WAS HEAT-TREATED OVER 180 KSI AND DO NOT APPLY ACID SOLUTIONS TO THE PART. MAKE SURE THAT ALL ADJACENT AREAS HAVE PROTECTION DURING THE REMOVAL OF CORROSION. DAMAGE TO THE PART CAN OCCUR IF THERE IS NO PROTECTION FROM THE ACID SOLUTIONS.

Remove all loose corrosion with a stainless steel wool and a wire brush.

EFFECTIVITY-

ALL

51-21-03



CAUTION: APPLY THE ACID SOLUTION ONLY ON THE AREAS OF CORROSION. DAMAGE TO THE ADJACENT AREA CAN OCCUR.

Use a phosphoric acid corrosion remover to remove the remaining corrosion from the surface.

Use one part of phosphoric acid corrosion remover to NOTE: three parts of water.

- (c) Let the acid solution stay on the surface until you can see a gray coating.
- (d) Flush the surface with clean water.
- (e) Clean the surface with a moist cloth. Let the surface dry. Use a machine to dry the surface if it is possible.
- (f) Immediately apply protective finish when it is necessary.

s 107-005

Do the subsequent steps to remove steel corrosion (steel parts heat-treated over 180 ksi, optional for parts less than 180 ksi):

MAKE SURE ALL THE ADJACENT AREAS HAVE PROTECTION DURING CAUTION: THE MANUAL REMOVAL OF CORROSION. DAMAGE CAN OCCUR IF THE ADJACENT AREAS DO NOT HAVE PROTECTION.

- (a) Use 220 grit (maximum) abrasive paper or dry abrasive blast the surface to remove corrosion.
- (b) Use a solvent to clean the surface.
- (c) Apply protective finish.

NOTE: Apply primer coats in 1 hour after you rub or dry-blast the surface.

s 107-006

ALL

(7) Do the subsequent steps to remove corrosion from resisting steel (all types), nickel-base alloys and titanium:

EFFECTIVITY-

51-21-03



SMALL PARTICLES OF TITANIUM ALLOY CAN EASILY CAUSE WARNING:

> IGNITION. USE DRY TALC, CALCIUM CARBONATE, SAND, OR GRAPHITE TO EXTINGUISH A TITANIUM ALLOY FIRE. DO NOT USE

WATER, CARBON DIOXIDE, CARBON TETRACHLORIDE, OR AN ORDINARY DRY CHEMICAL FIRE EXTINGUISHER TO EXTINGUISH A TITANIUM ALLOY FIRE. INJURY OR DAMAGE CAN OCCUR IF INCORRECT PROCEDURES ARE USED TO EXTINGUISH A TITANIUM

ALLOY FIRE.

MAKE SURE THAT ALL ADJACENT AREAS HAVE PROTECTION WHEN YOU CAUTION:

REMOVE CORROSION. DAMAGE CAN OCCUR IF THE ADJACENT AREAS

DO NOT HAVE PROTECTION DURING THE CORROSION REMOVAL.

Use stainless steel wool, a wire brush, fine abrasive paper or abrasive blast to remove corrosion.

NOTE: Make sure that no particles of corrosion stay on the

surface. Rub the surface until all corrosion has been

removed.

- (b) Polish the surface with 400 grit aluminum oxide paper to remove all scratches.
- (c) Remove the remaining particles with solvent alkaline cleaner. Then flush the surface with water.
- (d) Use an air blast dry the surface.
- Apply protective finish if it is necessary.

EFFECTIVITY-

ALL

51-21-03



ALODINE COATING - CLEANING/PAINTING

1. General

- A. This procedure contains two tasks:
 - (1) The first task is to apply Alodine 1000 solution.
 - (2) The second task is to apply Alodine 600, 1200 or 1200S solution.
- B. Alodine is used for protection. It is a paint base. Alodine 600, 1000, 1200, and 1200S, solutions are used to give the chemical coating.
- C. In areas where Alodine may come in contact with BMS 10-20 primer only Alodine 600 should be used. BMS 10-20 is typically used on the fuel tank wing structure.
- D. When you use Alodine 600, 1000, 1200, and 1200S obey the precautions for chemicals that can cause corrosion. Wear respirators and rubber or neoprene gloves when you mix and apply Alodine solutions. Follow the necessary precautions and do not get Alodine solutions on your skin.
- E. Do not let the papers or cloths dry after you apply Alodine solutions. They can cause a fire when they are dry. After you use the cloths or paper, soak them in water before you discard them.

TASK 51-21-04-377-001

2. Apply Alodine 1000 Solution

- A. Equipment
 - (1) Brush, soft-bristle (fiber); Commercially available
 - (2) Container, stainless steel or acid resistance (not lead or glass, recommend polyethylene), Commercially available
 - (3) Gloves, neoprene or rubber; Commercially available
 - (4) Respirators; Commercially available
- B. Consumable Materials
 - (1) GO2285 Abrasive Wheel Aluminum Oxide, Scotchbrite Tycro, Type 3A
 - (2) B00137 Abrasive Paper Aluminum Oxide, 400-grit (minimum)
 - (3) Abrasive Fabric or Pad 400-grit (minimum)
 - (a) G00251 Aluminum Oxide Scotchbrite, Type A, 3M Company

EFFECTIVITY-

51-21-04



- (b) B00102 Aluminum Oxide Bear Tex, Norton Company
- (4) COOO64 Coating Chemical conversion coating for aluminum or aluminum alloys, (MIL-C-5541).
- G00034 Cheesecloth New, Clean, Dry, Lint Free
- B00148 Solvent Methyl Ethyl Ketone (MEK),
- G00116 Sponge, Cellulose (Aircraft Cleaning) (7) L-S-626
- (8) B00107 Chamois Scotchbrite Sheet, Finishing Pads, Type A
- References
 - (1) SRM 51-20-05
- Prepare the surface for alodine coating

S 957-024

Apply tape to all adjacent areas. Do not let the Alodine solution (1) fall on surfaces that have no tape.

NOTE: You do not have to apply tape on anodized surfaces.

s 397-008

Seal all holes and clearances on assemblies that have honeycomb or foam plastic. Use the applicable sealing or caulking material or use rubber plugs to prevent entrance of the Alodine solution.

s 147-009

(3) Clean the surface with a liquid solvent grease remover. Use a clean brush or rags. Dry the surface with warm air or rub it.

s 147-025

- Remove the organic, inorganic and hydraulic fluid resistant finishes from the repair area. Use the subsequent materials:
 - Scotchbrite Tycro, Type 3A aluminum oxide abrasive wheel attached to a drill motor.
 - (b) 400 grit (minimum grit number) aluminum abrasive fabric or pad.
 - (c) 400 grit (minimum grit number) aluminum oxide paper.

s 147-026

(5) Remove all the material (organic, inorganic) from the area until you get a clean and shiny aluminum surface.

ALL

(6) Clean the surface with a dry, clean cheesecloth to remove all loose and remaining particles from the area.

EFFECTIVITY-

51-21-04



s 117-011

WARNING: DO NOT GET SOLVENTS IN YOUR MOUTH, OR YOUR EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM SOLVENTS. SOLVENTS ARE HAZARDOUS MATERIALS. SOLVENTS MAY BE FLAMMABLE OR HARMFUL TO THE ENVIRONMENT. REFER TO PRODUCT MATERIAL SAFETY DATA SHEETS (MSDS) AND LOCAL REQUIREMENTS FOR PROPER HANDLING PROCEDURES.

(7) Rub the surface with a cheesecloth. Make the cheesecloth moist (not soaked) with solvent, Series 88 (AMM 20-30-88). Clean the surface with a clean cheesecloth until no remaining particles are found on the cheesecloth.

s 917-012

(8) Let the surface dry for a minimum of 15 minutes.

s 107-013

(9) Remove all corrosion material found on the surface.

s 107-014

- (10) For information on the installation of sealant in the integral fuel tanks, refer to the Structural Repair Manual (SRM 51-20-05).
- E. Prepare Alodine 1000 Solution

NOTE: In areas where Alodine may come in contact with BMS 10-20 primer, only Alodine 600 should be used.

s 377-002

WARNING: DO NOT GET ALODINE SOLUTION IN YOUR MOUTH, IN YOUR EYES, ON YOUR SKIN, OR ON YOUR CLOTHES. DO NOT BREATHE THE FUMES FROM THIS MATERIAL. AIR MUST FLOW FREELY THROUGH THE WORK AREA. USE THE NECESSARY RESPIRATORY PROTECTION. KEEP THIS MATERIAL AWAY FROM SPARKS, FLAME, AND HEAT. THIS MATERIAL IS POISONOUS AND FLAMMABLE AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

- (1) To prepare the Alodine 1000 solution, do these steps:
 - (a) If you are using Alodine 1000L, do the steps that follow:
 - Put 6 parts (by volume) of water in a clean polyethylene container.

EFFECTIVITY-

51-21-04



- 2) Add 4 parts (by volume) of Alodine 1000L liquid concentrate to the water.
- (b) If you are using Alodine 1000 powder, add 0.4 ounces of Alodine 1000 powder to water for each gallon of final solution.
- (c) Fully mix the Alodine solution.
- (d) Let the solution stay for an hour before it is used.
- (e) Put the Alodine 1000 solution in clean polyethylene bottles.
- (f) Identify the bottles with a label. Write the date when the solution was mixed and the date when the pot life ends.

NOTE: The pot life of the Alodine 1000 solution is 14 days. Because the Alodine 1000 solution is sensitive to all types of contamination, make sure all containers are fully clean before they are used.

F. Procedure - Apply Alodine 1000 Solution

NOTE: In areas where the Alodine may come in contact with BMS 10-20 primer, only Alodine 600 should be used.

s 377-017

WARNING: DO NOT GET ALODINE SOLUTION IN YOUR MOUTH, IN YOUR EYES, ON YOUR SKIN, OR ON YOUR CLOTHES. DO NOT BREATHE THE FUMES FROM THIS MATERIAL. AIR MUST FLOW FREELY THROUGH THE WORK AREA. USE THE NECESSARY RESPIRATORY PROTECTION. KEEP THIS MATERIAL AWAY FROM SPARKS, FLAME, AND HEAT. THIS MATERIAL IS POISONOUS AND FLAMMABLE AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(1) Apply Alodine 1000 solution with a clean cheesecloth.

NOTE: Keep the room temperature above 65°F.

s 377-021

(2) Keep the part wet with the Alodine 1000 solution for 3 to 5 minutes.

NOTE: Do not let the papers or cloths dry after you apply Alodine solutions. They can cause a fire when they are dry. After you use the cloths or paper soak them in water before you discard them.

s 177-022

(3) Flush the surface with water.

EFFECTIVITY-

51-21-04

ALL



s 917-022

<u>CAUTION</u>: DO NOT TOUCH THE PART UNTIL IT IS FULLY DRY. THE WET ALODINE SOLUTION IS EASILY DAMAGED.

(4) Air dry the surface.

NOTE: Dry at 120 degrees F (optimum), 130 degrees F (maximum).

TASK 51-21-04-377-003

- 3. Apply Alodine 600, 1200 or 1200S Solution
 - A. Equipment
 - (1) Brush, soft-bristle (fiber), Commercially available
 - (2) Container, stainless steel or acid resistance (not lead or glass, recommend polyethylene), Commercially available
 - (3) Gloves, neoprene or rubber; Commercially available
 - (4) Respirators; Commercially available
 - B. Consumable Materials
 - (1) GO2285 Abrasive Wheel Aluminum Oxide Scotchbrite Tycro, Type 3A
 - (2) B00137 Abrasive Paper Aluminum Oxide, 400-grit (minimum)
 - (3) Abrasive Fabric or Pad 400-grit (minimum)
 (a) G00251 Aluminum Oxide Scotchbrite, Type A, 3M Company
 (b) B00102 Aluminum Oxide Bear Tex, Norton Company
 - (4) COOO64 Coating Chemical conversion coating for aluminum or aluminum alloys, (MIL-C-5541).
 - (5) G00034 Cheesecloth New, Clean, Dry, Lint Free
 - (6) B00148 Solvent Methyl Ethyl Ketone (MEK), TT-M-261
 - (7) G00116 Sponge, Cellulose (Aircraft Cleaning) L-S-626
 - (8) B00107 Chamois Scotchbrite Sheet, Finishing Pads, Type A
 - C. Prepare Alodine 600, 1200 or 1200S solution

NOTE: In areas where the Alodine may come in contact with BMS 10-20 primer, only Alodine 600 should be used.

EFFECTIVITY-

51-21-04

ALL



s 377-008

DO NOT GET ALODINE SOLUTION IN YOUR MOUTH, IN YOUR EYES, ON WARNING: YOUR SKIN, OR ON YOUR CLOTHES. DO NOT BREATHE THE FUMES FROM THIS MATERIAL. AIR MUST FLOW FREELY THROUGH THE WORK AREA. USE THE NECESSARY RESPIRATORY PROTECTION. KEEP THIS MATERIAL AWAY FROM SPARKS, FLAME, AND HEAT. THIS MATERIAL IS POISONOUS AND FLAMMABLE AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO

EQUIPMENT.

(1) Put Alodine 600, 1200 or 1200S on paper and use a roller to make the powder smooth.

s 377-005

(2) Mix the solution in a stainless steel or acid-resistant container.

NOTE: Do not use lead or glass.

s 377-019

(3) For Alodine 600 or 1200, add 3 ounces of powder for each gallon of final solution.

s 377-020

(4) For Alodine 1200S, add 2 ounces of powder for each gallon of final solution.

NOTE: For spray application add 0.7 ounces of Alodine1200S for each gallon of final solution. For application of other Alodine products refer to BAC 5719.

The use of test specimens is recommended to find the most NOTE: satifactory combination of concentration and treatment times to get correct corrosion resistance and paint adhesion properties, refer to BAC 5719.

s 377-009

(5) Fully mix the solution.

ALL

EFFECTIVITY-

51-21-04



s 917-007

(6) Do not move the solution for a minimum of 1 hour.

A dirty solution is unsatisfactory. Prepare the solution in NOTE: small quantities and discard it when it is dirty. If water that is not distilled is used, add nitric acid to control the pH range from 1.50 to 2.00 for Alodine 1200 or 1200s. For Aoldine 600 add 2 percent by volume of Alodine Toner 22 and stir to adjust the pH to between 1.5 and 2.0. Do a pH check. Use pHydrion paper #60781. Do not add wetting agents or other materials to this solution.

D. Procedure - Apply Alodine 600, 1200 or 1200S solution.

NOTE: In areas where the Alodine may come in contact with BMS 10-20 primer, only Alodine 600 should be used.

s 377-018

WARNING:

DO NOT GET ALODINE SOLUTION IN YOUR MOUTH, IN YOUR EYES, ON YOUR SKIN, OR ON YOUR CLOTHES. DO NOT BREATHE THE FUMES FROM THIS MATERIAL. AIR MUST FLOW FREELY THROUGH THE WORK AREA. USE THE NECESSARY RESPIRATORY PROTECTION. KEEP THIS MATERIAL AWAY FROM SPARKS, FLAME, AND HEAT. THIS MATERIAL IS POISONOUS AND FLAMMABLE AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

DO NOT LET THE CLOTHS YOU USE TO DRY. THESE CLOTHS, WHEN DRY, CAN CAUSE A FIRE.

(1) Apply Alodine 600, 1200 or 1200S equally with a fiber or nylon brush or a clean cheesecloth. Start from the bottom.

(2) Let the solution stay on the surface until a given color is found. Keep the area wet. Apply small quantities of solution with a cheesecloth.

Do not let the Alodine 600, 1200, or 1200S solution dry until the color of the surface changes.

s 147-027

(3) Carefully flush the surface with a clean cheesecloth that is moist with water. Start from the bottom.

NOTE: Be careful when you rub or dry the surface. Do not remove the coating or cause scratches on the surface.

EFFECTIVITY-

51-21-04

ALL



s 147-016

(4) Lightly rub the surface with a clean dry cheesecloth to remove unwanted liquid. Rub the surface until the liquid is gone.

s 107-017

(5) Immediately after use, fully clean the cloths in water and keep them in a container filled with water.

s 917-021

(6) Air dry the surface.

NOTE: Dry at 120 degrees F (optimum), 130 degrees F (maximum).

s 377-023

(7) Apply the last finish or start adhesive bonding (Chapter 51 of the Structural Repair Manual). Touch the parts or surface with clean gloves and keep the parts or surface dry and clean to prevent surface contamination.

EFFECTIVITY-

ALL



MAGNESIUM - (CONVERSION COATING) CLEANING/PAINTING

1. General

A. This procedure contains one task. The task is the application of conversion coating.

TASK 51-21-05-107-009

- 2. Apply Conversion Coating
 - A. General

WARNING: CLEANING AND CONVERSION COATING SOLUTIONS CONTAIN POISONOUS AND FLAMMABLE MATERIALS. CLEANING AND CONVERSION COATING SOLUTIONS CAN CAUSE DAMAGE TO EQUIPMENT OR INJURY TO PERSONS.

- (1) Obey this warning during all of this task.
- B. Consumable Materials
 - (1) G00371 Brush Soft-Bristle
 - (2) B00004 Cleaner Waterbase Alkaline Kelite 28
 - (3) Magnesium Oxide
 - (4) CO0015 Coating Conversion (Magnesium)
 - (5) G00549 Acid Chromic
 - (6) E00197 Calcium Sulfate (Powder)
 - (7) B00232 Sodium Hydroxide
 - (8) E00069 Acid Sulfuric
 - (9) A00322 Paper Abrasive, Aluminum Oxide, 240 Grit or Finer
 - (10) G00238 Gauze Clean
 - (11) G00034 Cheesecloth Clean and Lint-Free
 - (12) G00115 Polyethylene Sheet
 - (13) G00253 Paper Greaseproof
 - (14) G00257 Paper Laminated Waterproof
 - (15) G00217 Sponge
- C. Procedure Apply Conversion Coating

s 127-002

WARNING: MAGNESIUM POWDER CAN CAUSE A FIRE. DAMAGE TO EQUIPMENT OR INJURY TO PERSONS CAN OCCUR.

(1) Rub the edge of the finish with abrasive paper (240 grit maximum).

EFFECTIVITY-

51-21-05

ALL



s 167-004

- Clean the surface as follows.
 - Remove all loose particles from the surface with a soft-bristle brush or rub the surface with a clean gauze.

CAUTION: PROTECT ALL SURFACES THAT YOU DO NOT WANT TO CLEAN. CLEANER CAN DAMAGE FINISH, CADIUM AND ALUMINUM.

- Apply protection to all areas that you do not want to clean. Use a material that will resist water. For example, use polyethylene sheet, greaseproof paper, or laminated waterproof
- (c) To prepare the cleaning solution, mix 10 volumes of water to 1 volume of Kelite 28.

DO NOT ALLOW THE CLEANING SOLUTION TO STAY IN FAYING CAUTION: SURFACES. DAMAGE TO THE FAYING SURFACES CAN OCCUR IF YOU PERMIT THE CLEANING SOLUTION TO STAY ON THE SURFACE.

Apply the cleaning solution to the surface using a cloth, brush, or a sponge. Let the solution soak for 5 minutes.

NOTE: Do not permit the cleaner to dry on the surface.

- (e) Flush the surface with a clean wet cloth or a sponge. Flush the surface a minimum of two times.
- Flush the surface with water until you get a water break-free surface.

NOTE: A water break-free surface will have a continuous layer of water for 30 seconds.

Clean the surface with a mixture of magnesium oxide and water to remove the water break. Dry the surface with a clean gauze and do step (e) again.

s 377-005

ALL

- (3) Mix the Dow 19 conversion coating as follows.
 - In a clean 1 gallon glass or polyethylene container:
 - add 9/10 gallon water
 - add 1 1/3 ounce chromic acid
 - add 1 ounce calcium sulfate powder
 - add water to fill the container to the 1 gallon level.

EFFECTIVITY-

51-21-05

01.1



Mix the solution for a minimum of 15 minutes. Let particles in the solution go to the bottom of the container.

The solution must be free of all particles when it is applied.

(c) Measure the pH of the solution. The pH must be from 1.2 to 1.6. Use sulfuric acid to lower the pH or use sodium hydroxide to increase the pH.

s 377-006

CAUTION: DO NOT USE FORCE TO RUB THE WET SURFACE. TOO MUCH FORCE CAN CAUSE DAMAGE TO THE COATING.

- Apply the conversion coating solution:
 - Apply a large quantity of solution to the metal surface until the metal surface is gold to dark brown in color.

HIGH PRESSURE WATER SPRAY, RUBBING ABRASION, OR HIGH CAUTION: PRESSURE AIR BLAST CAN CAUSE DAMAGE TO THE NEW COATING.

- (b) Flush the surface with clean cold water.
- (c) Dry the surface with air at a maximum temperature of 180°F.
- (d) Make sure all of the surface is coated.
- Make sure that there are no scratches, powder or lines on the surface.
- (f) To remove the powder, rub the surface with a clean cloth and apply the conversion coating again.

s 377-007

ALL

Apply the correct protective finish as soon as it is possible to prevent contamination of the surface or the start of new corrosion.

EFFECTIVITY-

51-21-05

01.1



PROTECTIVE FINISHES - DESCRIPTION AND OPERATION

1. General

A. The following sections provide the procedures for application of finishes for protection of aluminum, steel, titanium, and nonmetallic surfaces from contamination from chemicals and other environments. They also provide for application of finishes for protection of fiberglass from static electricity buildup, protection of metal from wear and other purposes.

2. Protective Finishes

- A. The following protective finishes are used to protect airplane parts.
 - (1) Chemical and solvent resistant finish is used for general purpose corrosion protection on the interior and exterior of the airplane.
 - (2) Clear fire resistant hydraulic fluid resistant finish is used to protect surfaces, other than titanium at 250°F and above, from fire resistant hydraulic fluid contamination.
 - (3) The conductive coating system for exterior fiberglass is used to prevent static electricity buildup on fiberglass.
 - (4) Abrasion resistant Teflon finish is used to protect faying surfaces from chaffing.
 - (5) Velvet coating for nonglare areas is used to provide a dull finish where it is required. For other finishes, used as airline options, in nonglare areas, refer to applicable exterior decorative markings drawing.
 - (6) The BMS 10-100 paint system is used to protect against corrosion on the wing upper and lower inspar skins and the horizontal stabilizer upper and lower inspar skins.
 - (7) High temperature coating for titanium is used to protect titanium from fire resistant hydraulic fluid at 250°F and above.
 - (8) Nonskid surface coating is used to provide nonskid surfaces in required areas on the airplane.
 - (9) Heat, weather, and oil resistant inorganic protective coating BMS 14-4 is used for corrosion protection, but is not effective above 900°F.
 - (10) Decorative paint system is a polyurethane system recommended for exterior decorative markings. It also provides corrosion protection in some areas.
 - (11) Temporary 558B coating is intended for use over the permanent finish and can be removed at a later date without affecting the underlying finish of polyurethane enamels.
 - (12) BMS 3-23 and BMS 3-26 are used as a corrosion inhibitive compound.



(13) BMS 5-89 corrosion inhibiting adhesive primer (CIAP) is required production primer for all structural bonded assemblies. The structural bonded assembly receives a subsequent coating of BMS 10-11 or BMS 10-79 primer on top of CIAP. In instances where service experience has shown that corrosion is not a problem, the CIAP is left uncoated.

3. Equipment

A. Clean and proper equipment is essential to good finishing. Equipment air lines have filters to eliminate contamination from oil, grit, and water droplets. Filters are checked and blown out at least twice a day when in use.

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51-24-00

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Page 2 Jun 10/88



CHEMICAL AND SOLVENT RESISTANT FINISH - CLEANING/PAINTING

TASK 51-24-01-307-001

- 1. <u>Chemical and Solvent Resistant Finish Cleaning/Painting</u>
 - A. General
 - (1) Refer to the Standard Overhaul Practices Manual section 20-41-02.

 51-24-01

01

Page 701 Oct 10/95



FIRE RESISTANT HYDRAULIC FLUID RESISTANT FINISH - CLEANING/PAINTING

1. General

A. This procedure contains two tasks. The first task is to clean the surface. The second task is to apply the finish.

TASK 51-24-02-107-001

- 2. Clean the Surface
 - A. Consumable Materials
 - (1) G00382 Paper Abrasive, Aluminum Oxide, 280 Grit or Finer
 - (2) B00192 Solvent General Purpose BMS 3-2, Type I
 - (3) B00005 Cleaner Alkaline Manual, CEEBEE 280
 - (4) GOOO27 Cheesecloth Boiled, No. 301, Rymplecloth, The Kendall Company
 - B. References
 - (1) 12-25-01/301, Airplane Servicing (Exterior Cleaning)
 - C. Procedure

s 127-002

- (1) Rub the surface:
 - (a) Rub the high gloss plastic surfaces and painted surfaces with 280 grit (minimum grit number) abrasive paper. Remove the high gloss surface finish.

<u>NOTE</u>: Do not rub around the decals of painted surfaces when clear hydrualic fluid resistant finish is used as an edge sealer.

s 117-003

(2) Clean the decals, placards, and stencils with alkaline cleaner. Apply the cleaner with a clean cheesecloth (Ref 12-25-01/301).

s 117-004

- (3) Clean all the other surfaces:
 - (a) Rub the surface with a clean cheesecloth that is moist with
 - (b) Before the solvent is dry, rub the surface with a clean, dry cheesecloth.
 - (c) Do steps (a) and (b) again until no unwanted material is found when you rub the surface with a clean cloth.

TASK 51-24-02-307-005

- 3. Apply the Finish
 - A. Consumable Materials
 - (1) C00179 Finish Grade A, Finch 683-3-2
 - (2) C00032 Finish Grade A, X-310 Catalyst
 - (3) G00371 Brush Cleaning, Nylon or Bristle

EFFECTIVITY-

51-24-02

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B. Mix the Materials

s 377-006

(1) Mix the base component with the catalyst as follows:

NOTE: Use clean containers to make the mixture. Do not use containers lined with organic finish.

- (a) Mix 1 part of X-310 with 2 parts of 683-3-2 by volume. Add the catalyst to the base while you stir the base component.
- (b) Make sure there is an equal distribution of the components in the mixture.

NOTE: When the mixture is ready for use, put a lable on the container that shows the date and the hour the mix was made and the hour the pot life will expire (par. 3.B.). The catalyzed finish material has a pot life of 4 hours at 70°F. Discard any catalyzed finish material whose pot life has expired. The use of a finish that has exceeded its pot life will affect how well the finish protects. Store finish that has not catalyzed at a temperature of between 40°F and 90°F. The shelf life of finish that has not catalyzed is 12 months from the date that it is manufactured.

C. Apply the Finish

s 117-007

(1) Clean all of the surfaces as shown in paragraph 2, before you apply the finish.

NOTE: When a finish is applied over a sealant, let the sealant cure to a tack free condition.

s 377-008

ALL

(2) Apply the finish in an area that will have a good flow of air. Keep a temperature more than 65°F and a relative humidity of 85 percent or less. Apply the finish with a brush to a thickness of 1 to 2 mils (0.001 to 0.002 inch).

EFFECTIVITY-

51-24-02



s 377-009

(3) Apply the finish on the surface with an overlap of 1/4 inch minimum. To seal the edge of decals, apply the finish to the decal with a 1/4 inch overlap of both the decal and the adjacent surface.

s 377-010

- (4) Cure the finish.
 - (a) Cure the finish for 4 hours at a minimum of $65^{\circ}F$.

NOTE: A full cure is 14 days at a minimum of 65°F.

EFFECTIVITY-



CONDUCTIVE COATING SYSTEM FOR EXTERIOR FIBERGLASS - CLEANING/PAINTING

1. General

- A. This procedure contains one task. The task is to apply conductive coating on external fiberglass.
- B. For radome see (Ref AMM 53-52-01).

TASK 51-24-03-307-001

- 2. Apply Conductive Coating (Fig. 701)
 - A. Equipment
 - (1) Multimeter commercially available
 - (2) Aluminum Foil Strips or Copper Tape (two with the same dimensions and properties)
 - B. Consumable Materials
 - (1) COO767 Coating Anti-Static/Conductive, BMS 10-21, Type III
 - (2) G00382 Paper Abrasive, Aluminum Oxide, 240-grit (minimum)
 - (3) G00034 Cheesecloth
 - (4) G00270 Tape, Masking Aluminum Foil Adhesive
 - (5) G00000 Tape Adhesive, Aluminum Foil Permacel P112
 - (6) GOO115 Sheeting Transparent, Polyethylene Film PS 17-64
 - (7) B00083 Solvent Aliphatic Naphtha TT-N-95
 - (8) C00130 Primer BMS 10-79, Type II
 - (9) C00175 Primer BMS 10-79, Type III
 - C. References
 - (1) 51-21-02/701, Prepaint Cleaning and Treatment
 - (2) 51-24-11/701, Decorative Paint System
 - D. Procedure

s 117-009

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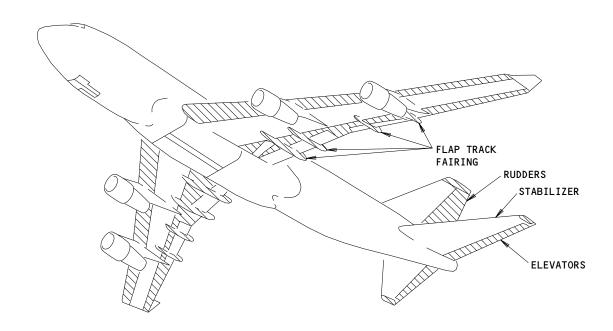
WARNING: DO NOT GET PAINT MATERIALS AND SOLVENTS IN YOUR MOUTH, IN YOUR EYES, ON YOUR SKIN, OR ON YOUR CLOTHES. DO NOT BREATHE THE FUMES FROM THESE MATERIALS. MAKE SURE THE AIR FLOWS FREELY THROUGH THE WORK AREA. USE THE NECESSARY RESPIRATORY PROTECTION. KEEP THESE MATERIALS AWAY FROM SPARKS, FLAME, AND HEAT. THESE MATERIALS ARE POISONOUS AND FLAMMABLE AND CAN

(1) Clean and prepare the surface (Ref 51-21-02).

CAUSE INJURY OR DAMAGE.

EFFECTIVITY-





FIBERGLASS SKINS (UPPER AND LOWER ON WING AND STABILIZER, LEFT AND RIGHT ON FIN, UPPER WING/BODY FAIRING PANELS)

Fiberglass Panel Areas Figure 701

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51-24-03

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Page 702 Jun 10/88



s 377-010

(2) Fully shake each conductive coating component.

NOTE: The conductive coating is supplied with two components, the base component and the catalyst.

s 377-012

(3) Refer to the manufacturer's instruction to mix the conductive coatings.

s 937-011

(4) Identify the container with a label. Write the date and hour when the compound was mixed and the hour when the pot life ends.

NOTE: The conductive coating compound has a pot life of 4 ±0.5 hours at 75 ±0.5°F. Do not use the compound if its pot life has ended.

s 377-013

(5) Let the conductive coating compound stay for not less than 30 minutes before it is used.

s 957-014

(6) Apply masking tape to all adjacent areas.

s 377-015

WARNING: DO NOT APPLY PAINT THAT HAS METAL PARTICLES ON THE ANTENNA FAIRINGS. THE METAL PARTICLES IN THE PAINT CAN CAUSE THE ANTENNA TO OPERATE INCORRECTLY.

(7) Apply the conductive coating compound with a spray gun or use a brush. Make sure the dry film thickness is 0.6 \pm 0.2 mil (0.006 \pm 0.002 inch).

s 377-016

(8) Let the conductive coating cure before you measure the conductivity (Fig. 702).

NOTE: Let the conductive coating that is in fastener holes cure for not less than 20 minutes before you install the fasteners.

s 767-017

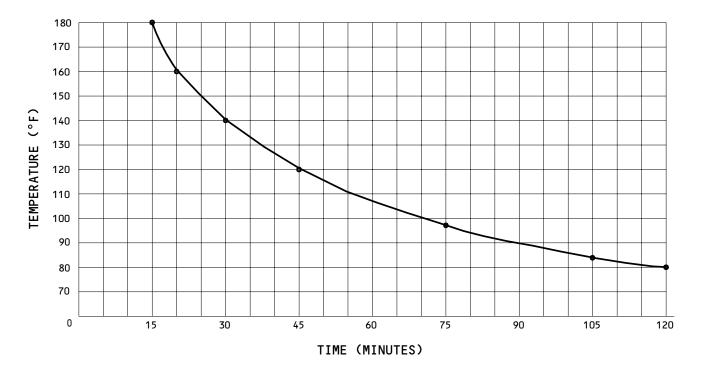
- (9) Do these steps to measure the conductivity of the conductive coating by the Ohms Per Square Method (Fig. 703):
 - (a) Push the two probes of the multimeter against the conductive coating.

EFFECTIVITY-

51-24-03

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Drying Time - BMS 10-21, Type III Figure 702

51-24-03

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Page 704 0ct 18/99



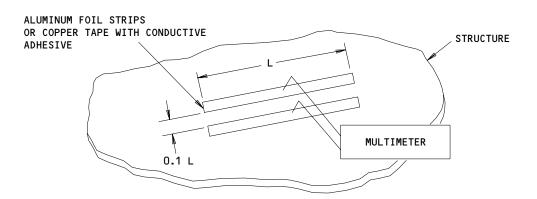
- Measure the resistivity between the two strips by use of the multimeter.
- The measured value multiplied by 10 will give the value of resistivity in ohms/square.
- (d) The maximum permitted resistivity is 300,000 ohms/square.

s 107-018

- (10) Do these steps, if the resistivity of the conductive coating is more than 300,000 ohms/square:
 - (a) Sand the area with 240 grit or finer abrasive paper. Do not sand through the coating.
 - Remove the remaining particles with a clean cheesecloth that is moist with aliphatic naphtha. Then dry the surface with a clean cheesecloth.
 - (c) Apply the new layers of conductive coating. Refer to the above procedure.
 - (d) Do the above steps to measure the conductivity of the new layers of coating.

s 377-019

- (11) Do these steps, if you are to apply a topcoat.
 - (a) Rub the conductive coating with a clean cheesecloth that is moist with solvent.



Method for Measuring Resistance of Conductive Finish by the Ohms Per Square Method Figure 703

EFFECTIVITY-ALL

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- (b) Rub the surface with a clean, dry cheesecloth before the solvent dries. Clean the surface until no soil or dust particles are found on a clean cheesecloth.
- (c) Apply BMS 10-79 Type II or III in a uniform coat, free of runs and wrinkles, to a dry film thickness of 0.5 to 0.8 mil within 24 hours after application of conductive coating. (Ref 51-24-11).

NOTE: Pot life of BMS 10-79 is 8 hours from the time of mixing.

- (d) Allow BMS 10-79 Type II to dry a minimum of 2 hours, or as shown in Fig. 702 for Type III, prior to masking.
- (e) Allow BMS 10-79 Type II to dry a minimum of 2 hours, or as shown in Fig. 702 for Type III, prior to top coating.

NOTE: Do not allow BMS 10-79 Type II to be dried at a temperature greater than 95 degrees Fahrenheit.

(f) Apply enamel to surface (Ref 51-24-11).

EFFECTIVITY-

ALL



ABRASION-RESISTANT TEFLON COATING - CLEANING/PAINTING

1. General

- A. This procedure contains one task. The task is to apply abrasion-resistant teflon coating.
- B. You can apply abrasion-resistant teflon coating with a spray gun or a brush. Abrasion, chemical, and solvent resistant finishes are applied to worn surfaces.
- C. Apply abrasion-resistant teflon coating on BMS 10-11, Type 1 primers or BMS 5-89 primers unless you know differently. Use the thickness that is specified. When no thickness is specified, apply abrasion-resistant teflon coating to a dry thickness of 5 to 10 mils (0.005 to 0.010 inch). You can use a total dry thickness of 20 mils (0.020 inch) maximum if it is approved by specification. You can also use the 20 mils dry thickness for the replacement of solid (phenolic) rubstrips.
- D. Use a spray gun if one is available and the area to coat is not too small. You can also use a spray gun if the solution's pot life is less than 45 minutes.
- E. Use a brush if the area to coat is too small. Also, use a brush when the time to dry must be less than 1 to 2 hours.
- F. Make sure that you use the correct type of equipment. Make sure the equipment is clean. Make sure the coating is applied equally on the surface.

TASK 51-24-04-107-001

2. Apply Abrasion-Resistant Teflon Coating

- A. Equipment
 - (1) Rigid bristle brush Commercially available
 - (2) Wooden or plastic scraper Commercially available
 - (3) Vacuum Commercially available
- B. Consumable Materials

ALL

(1) Laminar teflon coating kit - colors white or gray

X-500 Coating Kit - Color W (White)
SPRAY Resin Component 7-W-27 Hardener 10-C-81

EFFECTIVITY-



c00304	C-500 Coating Kit - Color G (Gray) SPRAY Resin Component 7-X-74 Hardener 10-C-81
c00306	X-500 Coating Kit - Color W (White) BRUSH Resin Component 7-W-27FC Hardener 10-C-81
c00306	C-500 Coating Kit - Color G (Gray) BRUSH Resin Component 7-X-74FC Hardener 10-C-81
c00259	Primer - BMS 10-11, Type 1

(2) Reducers - Laminar Teflon Coating Kit

c00304	66-C-28 - (For spray application)
c00008	66-C-20 - (For brush application)

(3) Solvents

в00154	Toluene - TT-T-548 (JAN-T-171, Grade A, optional)
B00154	Methyl Isobutyl Ketone (MIBK) – TT-M-268
в00083	Cleaning Solvent - General Purpose BMS 3-2, optional: Aliphatic Naphtha, TT-N-95
B00148	Methyl Ethyl Ketone (MEK) - TT-M-261

ALL



(4) Other Materials

G00027	Cheesecloth - Boiled	
в00103	Abrasive Fabric-Aluminum Oxide - Scotchbrite, Type A; Optional: Abrasive Disk-Aluminum Oxide, Bear Tex	
G00011	Tec 361	
c00064	Alodine 1000	
G00251	Abrasive Paper - Silicon Carbide, 180 to 325 grit	
G00294	Tape - Masking, permacel No. 76	

- C. References
 - (1) 51-21-01/701, Interior and Exterior Finishes (Paint Stripping)
 - (2) 51-21-02/701, Interior and Exterior Finishes (Prepaint Cleaning and Treatment)
 - (3) 51-21-04/701, Alodized Surfaces
 - (4) 51-24-11/701, Decorative Paint System
- D. Prepare the Surface

s 107-017

(1) Do these steps to prepare the metal surfaces that are not painted:

WARNING:

DO NOT GET SOLVENTS IN YOUR MOUTH, OR YOUR EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM SOLVENTS.

SOLVENTS ARE HAZARDOUS MATERIALS. SOLVENTS MAY BE FLAMMABLE OR HARMFUL TO THE ENVIRONMENT. REFER TO PRODUCT MATERIAL SAFETY DATA SHEETS (MSDS) AND LOCAL REQUIREMENTS FOR PROPER HANDLING PROCEDURES.

- (a) Clean the surface with a clean cheesecloth that is moist with solvent, Series 89 (AMM 20-30-89).
- (b) Clean around the fasteners, seams, and lap joints with a rigid bristle brush that is moist with solvent, Series 89 (AMM 20-30-89).

NOTE: If it is necessary, you can use a wooden or plastic scrapper, sandpaper, or Scotchbrite sheets. You can also use a stripper that is applied with a brush (Ref 51-21-01) to remove contamination. Turco 5351 is recommended.

- (c) Before the solvent becomes dry, rub the surface with a clean dry cheesecloth.
- (d) Remove all the remaining particles, and unwanted sealants and adhesives from the surface.

EFFECTIVITY-

51-24-04

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WARNING: DO NOT GET SOLVENTS IN YOUR MOUTH, OR YOUR EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM SOLVENTS.

SOLVENTS ARE HAZARDOUS MATERIALS. SOLVENTS MAY BE

FLAMMABLE OR HARMFUL TO THE ENVIRONMENT. REFER TO PRODUCT MATERIAL SAFETY DATA SHEETS (MSDS) AND LOCAL REQUIREMENTS

FOR PROPER HANDLING PROCEDURES.

(e) Rub the surface with a Scotchbrite sheet that is moist with solvent, Series 89 (AMM 20-30-89).

<u>NOTE</u>: Do not use this mixture on honeycomb assemblies or anodized aluminum.

- (f) Use 180 to 325-grit silicone-carbide abrasive paper to clean the stainless steel and titanium surfaces.
- (g) Remove all the remaining particles with a cheesecloth that is moist with solvent, Series 89 (AMM 20-30-89).
- (h) Clean the surface with a dry clean cheesecloth before the solvent becomes dry.
- (i) Apply the Tec 361 etchant on the surface.

NOTE: Do not apply the Tec 361 on anodized aluminum surfaces.

- (j) Keep the surface wet with the Tec 361 etchant for 5 to 6 minutes. Then dry the surface with a clean dry cheesecloth.
- (k) Immediately flush the surface with water while you rub the surface with a clean cheesecloth.

<u>NOTE</u>: Be careful when you flush the seams and joints on the surface.

- (l) Dry the surface with a clean dry cheesecloth.
- (m) Use a vacuum cleaner to remove all the remaining liquids from the seams and lap joints.
- (n) Apply Alodine 1000 on the surface (Ref 51-21-04/701).

s 107-018

- (2) Do these steps to prepare painted surfaces:
 - (a) Manually clean the surface with Toluene.
 - (b) Rub the surface with 320-grit (minimum) aluminum oxide paper.
 - (c) Manually clean the surface again with MIBK.

s 107-019

- (3) To prepare plastic laminate surfaces refer to the cleaning/painting procedures on plastic laminate surfaces (Ref 51-21-02/701).
- E. Procedure Apply Abrasion-Resistant Teflon Coating

s 957-010

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(1) Apply masking tape to all near by areas that you do not want to be coated with abrasion-resistant teflon coating.

EFFECTIVITY-



s 167-020

(2) Clean all the equipment and containers that you will use.

s 377-021

- (3) Do these steps to apply the abrasion-resistant teflon coating with a spray gun:
 - (a) Mix and apply one layer of BMS 10-11, Type 1 Primer (Ref 51-24-11/701).

WARNING: DO NOT GET THE TEFLON FINISH IN YOUR MOUTH, IN YOUR EYES, ON YOUR SKIN, OR ON YOUR CLOTHES. DO NOT BREATHE THE FUMES FROM THIS MATERIAL. MAKE SURE THE AIR FLOWS FREELY THROUGH THE WORK AREA. USE THE NECESSARY RESPIRATORY PROTECTION. KEEP THIS MATERIAL AWAY FROM SPARKS, FLAME, AND HEAT. THIS MATERIAL IS POISONOUS AND FLAMMABLE AND CAN CAUSE INJURY OR DAMAGE.

- (b) Mix the abrasion-resistant coating as follows:
 - 1) Add 3 parts (by volume) of the resin component 7-W-27 or 7-X-74 to 1 part (by volume) of the hardener 10-C-81.

NOTE: The abrasion-resistant coating is supplied in a kit. The kit has a resin component, 7-W-27 (white) or 7-X-74 (grey), and a hardener, 10-C-81.

2) Manually mix the components.

NOTE: Do not shake the mixture. You will get air bubbles if you shake the mixture. Air bubbles will make a unsatisfactory coating.

- 3) If it is necessary, add 1 part (by volume) of 66-C-28 reducer to 3 parts (by volume) of the mixture.
- 4) Be careful not to shake the mixture. Always mix the mixture manually.
- 5) Let the mixture stay for a minimum of 5 minutes before it is used.
- 6) Make sure you use the mixture before the pot life is complete.

NOTE: At a temperature of 70°F, the mixture has a pot life of 1-1/2 hours. The pot life decreases by one half for each increase of 20°F in temperature. Do not use the mixture if the pot life has ended. Mix the correct quantity of mixture.

EFFECTIVITY-

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51-24-04



(c) Apply the abrasion-resistant teflon coating.

NOTE: If no dry thickness is specified, apply 5 to 10 mils (0.005 to 0.010 inch) of the abrasion-resistant teflon coating.

If it is not easy to apply the abrasion-resistant teflon coating with a spray gun, you can use a brush.

- (d) Let the coating dry for 5 to 10 minutes before you apply the next layer.
- (e) Before you touch the surface or part, let the coating dry for 2 hours at 70 ±5°F.
- (f) Let the coating cure for 12 hours (minimum) before flight (Fig. 701).
- (g) Remove all sharp paint edges with a hardwood stick, then lightly rub the surface or part with 180-grit abrasive paper. Be careful not to cause damage to the aluminum skin.

s 377-023

(4) Do these steps to apply the abrasion-resistant teflon coating with a brush:

WARNING: DO NOT GET THE TEFLON COATING IN YOUR MOUTH, IN YOUR EYES, ON YOUR SKIN, OR ON YOUR CLOTHES. DO NOT BREATHE THE FUMES FROM THIS MATERIAL. MAKE SURE THE AIR FLOWS FREELY THROUGH THE WORK AREA. USE THE NECESSARY RESPIRATORY PROTECTION. KEEP THIS MATERIAL AWAY FROM SPARKS, FLAME, AND HEAT. THIS MATERIAL IS POISONOUS AND FLAMMABLE AND CAN CAUSE INJURY OR DAMAGE.

- (a) Mix the abrasion-resistant teflon coating as follows:
 - 1) Add 3 parts (by volume) of the resin component 7-W-27 FC or 7-X-74 FC to 1 part (by volume) of the hardener.

NOTE: The abrasion-resistant coating is supplied in a kit. The kit has a resin component, 7-W-27 FC (white) or 7-X-74 FC (grey), and a hardener component, 10-C-81.

2) Manually mix the components.

NOTE: Do not shake the mixture. You will get air bubbles if you shake the mixture. Air bubbles will make an unsatisfactory finish.

3) If it is necessary, add 66-C-20 reducer to make the mixture thin.

NOTE: Add 66-C-20 reducer to a maximum of 20 percent by volume.

EFFECTIVITY-

51-24-04

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4) Make sure you use the mixture in 5 to 10 minutes after it is mixed.

NOTE: The pot life of the mixture is 45 minutes at 70°F.

5) Apply the abrasion-resistant teflon coating in one direction with a brush.

NOTE: Make sure the maximum dry thickness is 6 to 8 mils (0.006 to 0.008 inch).

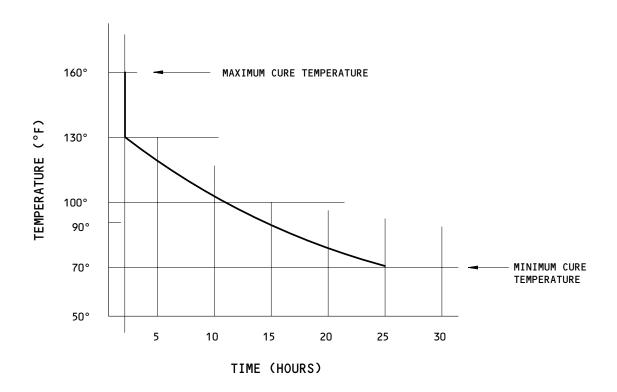
- 6) Let the coating dry for 30 minutes between each layer.
- 7) Let the last layer cure for 8 hours (minimum) at 70°F before flight.

NOTE: If you use a heater, the time to cure the surface will decrease. Do not let the finish get hotter than $140^{\circ}F$.

EFFECTIVITY-

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NOTE: DO NOT USE THIS CHART WITH FC MATERIALS (BRUSH TEFLON).

Cure Chart for Teflon Finish Figure 701

51-24-04

01

Page 708 Oct 10/96



ABRASION RESISTANT TEFLON COATING - REPAIRS

1. General

A. This procedure contains one task. The task is to repair the abrasion resistant teflon finish.

TASK 51-24-04-308-001

- 2. Repair the Abrasion Resistant Teflon Finish
 - A. Consumable Materials
 - (1) C00008 Reducer 66-C-28
 - (2) B00094 Solvent Toluene, TT-T-548
 - (3) G00034 Cheesecloth Clean and lint-free
 - (4) G00382 Abrasive Paper, aluminum oxide, 280-grit minimum
 - (5) G00270 Masking Tape Commercially available
 - B. References
 - (1) 51-24-04/701, Abrasion Resistant Teflon Finish Cleaning/Painting
 - C. Procedure

s 958-002

(1) Apply masking tape around the damaged area.

\$ 128-007

(2) Rub the damaged area with 280-grit (minimum) abrasive paper.

s 118-006

WARNING:

DO NOT GET PAINT MATERIALS AND SOLVENTS IN YOUR MOUTH, IN YOUR EYES, ON YOUR SKIN, OR ON YOUR CLOTHES. DO NOT BREATHE THE FUMES FROM THESE MATERIALS. MAKE SURE THE AIR FLOWS FREELY THROUGH THE WORK AREA. USE THE NECESSARY RESPIRATORY PROTECTION. KEEP THESE MATERIALS AWAY FROM SPARKS, FLAME, AND HEAT. THESE MATERIALS ARE POISONOUS AND FLAMMABLE AND CAN CAUSE INJURY OR DAMAGE. REFER TO THE APPLICABLE INDUSTRIAL HYGIENE, FIRE AND SAFETY STANDARDS FOR THE SAFE USE OF PAINT MATERIALS AND SOLVENTS.

(3) Clean the area with a clean cheesecloth that is moist with toluene or reducer 66-C-28. Then dry the area with a clean cheesecloth.

s 378-005

ALL

(4) Apply the abrasion resistant finish (Ref 51-24-04/701).

NOTE: Primer is not necessary unless you find bare metal.

EFFECTIVITY-

51-24-04



s 038-008

(5) Remove the masking tape.

EFFECTIVITY

ALL

51-24-04

01

Page 802 Jun 10/91



INTERIOR NON-REFLECTIVE FINISH - CLEANING/PAINTING

1. General

A. This procedure contains one task. The task is to apply interior non-reflective finish.

TASK 51-24-06-307-001

- Apply the Interior Non-Reflective Finish
 - A. Consumable Materials
 - (1) B00094 Solvent Toluene, ASTM D 362
 - (2) B00344 Solvent Xylene, ASTM D 846
 - (3) B00151 Solvent Methyl Isobutyl Ketone (MIBK), ASTM D 1153
 - (4) B00148 Solvent Methyl Ethyl Ketone (MEK), ASTM D 740
 - (5) G00033 Cheesecloth
 - (6) COO334 Coating Nextel Suede
 - (a) CO0000 Primer 911 P4
 - (b) C00000 3101 Base Component I
 - (c) COOOOO 3101 Catalyst Component II
 - (d) C00000 3101 Promoter Component III
 - (7) G00132 Tape, Masking 3M #214
 - B. References
 - (1) 51-21-02/701, Prepaint CLeaning and Pretreatment
 - C. Procedure

s 117-002

(1) Clean and prepare the surface (Ref 51-21-02/701).

s 377-003

- (2) Apply the primer, 911-P4.
 - (a) Mix the primer as follows:
 - 1) Base 2 parts (by volume)

WARNING: DO NOT GET METHYL ETHYL KETONE (MEK) IN YOUR MOUTH OR EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM MEK. PUT ON A PROTECTIVE SPLASH GOGGLE AND GLOVES WHEN YOU USE MEK. KEEP MEK AWAY FROM SPARKS, FLAME, AND HEAT. MEK IS A POISONOUS AND FLAMMABLE SOLVENT WHICH CAN CAUSE INJURY OR DAMAGE.

2) Thinner - 1 part (by volume)

NOTE: Use a mixture of two solvents to make the base thin. The mixture must have an equal quantity of each solvent. MIBK, Toluene, and MEK are satisfactory solvents. Toluene has the longest flash time and and MIBK has the shortest flash time.

EFFECTIVITY-

51-24-06

ALL



- Apply the primer on the surface with a spray gun.
 - 1) Make sure that the dry thickness is between 0.4 mil and 1.0 mil (0.0004 to 0.001 inch).
 - 2) Let the primer dry (minimum of 10 minutes and maximum of 60 minutes) at 70° to 90°F before you apply the Nextel Suede.

s 377-004

- Apply the top coat of Nextel Suede. (3)
 - (a) Mix the Nextel Suede components as follows:

Add the catalyst component II to the base component I. NOTE: Sufficiently shake the mixture for 15 minutes. Then add the thinner. Do not move the mixture for 15 minutes before you use it.

> The usual pot life without the promoter component III is 8 hours. When you add the promoter component III, the pot life of the mixture decreases approximately 4 to 6 hours.

- 1) Base component I 8 parts (by volume)
- Catalyst component II 1 part (by volume)
- 3) Promoter component III Refer to manufacturer's instruction.

DO NOT GET METHYL ETHYL KETONE (MEK) IN YOUR MOUTH OR **WARNING:** EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM MEK. PUT ON A PROTECTIVE SPLASH GOGGLE AND GLOVES WHEN YOU USE MEK. KEEP MEK AWAY FROM SPARKS, FLAME, AND HEAT. MEK IS A POISONOUS AND FLAMMABLE SOLVENT WHICH CAN CAUSE INJURY OR DAMAGE.

- 4) Thinner 1/3 part (by volume)
 - NOTE: Use MEK or Xylene to make the base component thin. Or you can use a mixture of MEK and Xylene to make the base component thin. If a mixture of MEK and Xylene is used, the MEK and Xylene must be used in equal quantities.
- Apply the Nextel Suede on the primed surface with a spray qun. Make sure that the dry thickness is 2 to 3 mils (0.002 to 0.003 inch).

NOTE: If the thickness is larger than specified, cracks on the surface can occur.

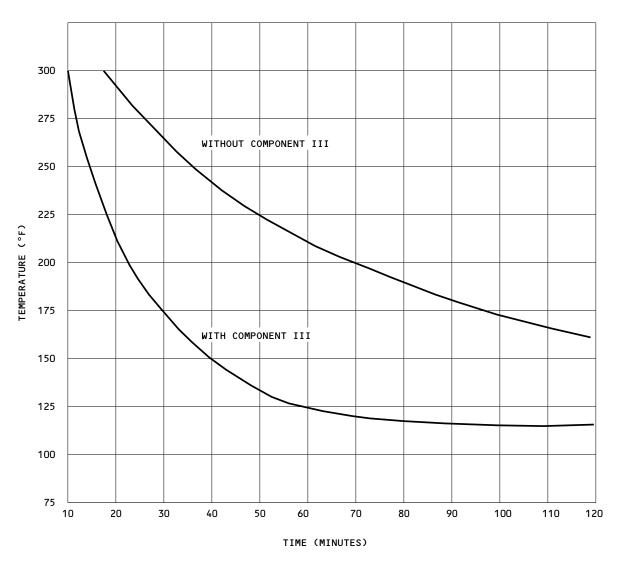
(c) Cure the Nextel Suede. Refer to Fig. 701 for the cure times.

EFFECTIVITY-

ALL

51-24-06





CAUTION: LIGHT COLORS (FOR EXAMPLE, BAC8847 OR BAC8950 MUST BE CURED AT TEMPERATURES OF 180°F OR LESS TO PREVENT INCORRECT COLOR.

NOTES: BEFORE BRAKING, FLASH DRY 10 TO 20 MINUTES UNTIL THE GLOSS IS GONE.

- TO CURE AT A ROOM TEMPERATURE OF 70°F USE THE CURE TIME BELOW:
- A. WITH COMPONENT III 40 HOURS
- B. WITHOUT COMPONENT III 5 DAYS.

Topcoat Cure Chart - Nextel Suede Figure 701

301391

51-24-06

01

Page 703 Jun 10/91



SKIN AND FASTENERS (CORROSION CONTROL) - CLEANING/PAINTING

1. General

- A. This procedure contains seven tasks as follows:
 - inspection/check for rust on the head of steel fasteners
 - rust and corrosion removal from steel fasteners
 - clean the skin before the application of alodine
 - brush the alodine finish
 - apply sealant to fasteners
 - apply corrosion preventative paint
 - rework and repair damaged surfaces.

WARNING: FINISH, CLEANER, THINNER, AND SOLVENT CONTAIN DANGEROUS AND FLAMMABLE COMPONENTS. DO NOT BREATH THE VAPOR OR MIST. USE IN AN AREA THAT IS OPEN TO THE AIR. USE APPROVED RESPIRATORY PROTECTION. DO NOT GET FLUID IN YOUR EYES. PREVENT CONTACT WITH YOUR SKIN AND CLOTHING. USE PROTECTIVE EQUIPMENT AND CLOTHING. KEEP FLAMMABLE MATERIALS AWAY FROM ANY SOURCE OF IGNITION. FINISH, CLEANER, THINNER AND SOLVENT CAN CAUSE DAMAGE TO EQUIPMENT AND INJURY TO PERSONS.

- B. You can apply Aeroflex to all structural surfaces that are not exposed to hydraulic fluid or high heat (Ref 51-20-00/001). Do not use Aeroflex below a different paint system or as a replacement for a different decorative paint system.
 - NOTE: If BMS 10-100 (Aeroflex G12E25) is not available, use BMS 5-95 Class F sprayable sealant and BMS 10-60, Type II polyurethane enamel (Ref 51-24-11/701). Use solvent, Series 84 (AMM 20-30-84) to remove BMS 10-100 (Aeroflex G12E25). BMS 10-60, Type II overspray will not bond to BMS 10-100 (Aeroflex G12E25). A difference in color and surface finish can occur.
- C. You can apply Aeroflex to metal structure to help prevent corrosion.

EFFECTIVITY-

ALL



- D. It is not necessary to remove BMS 10-11 Type 1 and BMS 10-20 primer before you apply the finish coat.
- E. To brighten the surface or remove small corrosion, refer to 51-21-03/701.
- F. To remove normal corrosion refer to the Corrosion Prevention Manual, Part I, Chapter 20-40-00.
- G. For data on the quantity of corrosion you can remove, refer to the Structural Repair Manual.

TASK 51-24-07-207-001

- 2. Inspection/Check for Rust on the Head of Steel Fasteners
 - A. Procedure

s 217-002

(1) To find skin corrosion, look for fastener head rust and for discoloration of the adjacent anodized skin. To repair skin corrosion refer to paragraph 3.

TASK 51-24-07-107-003

- 3. Rust and Corrosion Removal from Steel Fasteners
 - A. Equipment
 - (1) Magnifying Glass 5X to 10X magnification
 - (2) Portable Blaster Edul-O-Matic E10A, Clementina LTD., San Francisco, California
 - B. Consumable Materials
 - (1) B00148 Solvent Methyl Ethyl Ketone (MEK), TT-M-261
 - (2) G00270 Tape Masking, No. 221, 3M Company
 - (3) Grit Abrasive, Aluminum Oxide, Grit No. 154 (600-4F Mesh)
 - (4) G00382 Paper Abrasive, Aluminum Oxide, 240-Grit
 - (5) E00017 Scraper Hardwood
 - C. References
 - (1) 51-21-01/701, Interior and Exterior Finishes (Paint Stripping)
 - D. You can remove rust and corrosion as follows:

s 117-004

(1) Remove corrosion preventive paint in the corroded area (Ref 51-21-01/701).

s 357-005

ALL

(2) You cannot remove BMS 10-11 Type I or BMS 10-20 primer with paint stripper. You can rub the area adjacent to the corrosion with abrasive paper to mix the primer into the base metal.

EFFECTIVITY-

51-24-07



s 147-034

DO NOT GET SOLVENTS IN YOUR MOUTH, OR YOUR EYES, OR ON YOUR WARNING: SKIN. DO NOT BREATHE THE FUMES FROM SOLVENTS. SOLVENTS ARE HAZARDOUS MATERIALS. SOLVENTS MAY BE FLAMMABLE OR HARMFUL TO THE ENVIRONMENT. REFER TO PRODUCT MATERIAL SAFETY DATA SHEETS (MSDS) AND LOCAL REQUIREMENTS FOR PROPER HANDLING PROCEDURES.

(3) Remove the fastener sealant with a hardwood scraper and solvent, Series 80 (AMM 20-30-80).

s 127-007

(4) Use a grit spray to remove the head rust. You can use a grit spray to remove corrosion to the depth that is specified in Chapter 57 of the Structural Repair Manual. Do not grit spray aircraft skin that does not have corrosion. You can also remove rust and corrosion with 240-grit aluminum oxide paper or cloth.

NOTE: Put covers on all fuel tank vents and fill points to keep the grit out of the tanks.

s 217-008

(5) After you remove the rust and skin corrosion, examine the countersunk area around the fastener heads for corrosion. Use a 5X to 10X magnifying glass to do the inspection.

NOTE: Do not let the skin move when you replace the rivets. For rows of rivets, you can remove and replace a single row of rivets at a time. For a single row of rivets, you can remove and replace every other rivet.

s 127-035

(6) If you find corrosion in the countersunk area, you must remove the fasteners. To remove the corrosion refer to Chapter 57 of the Structural Repair Manual.

TASK 51-24-07-107-010

4. Clean the Skin Before the Application of Alodine

Clean the skin or fasteners if all primer or finish has been NOTE: removed. Do this step before you apply the alodine finish.

- A. Consumable Materials
 - B00003 Solvent Alkaline, Cleaner, Wyandott (1) Aerowash A, Cee Bee Alumiloy P, GMC 528B
 - Water Not more that 150 ppm total disolved (2) solids

EFFECTIVITY-

51-24-07

ALL



- (3) B00192 Solvent General Purpose, BMS 3-2, Type I
- (4) G00215 Brush Cleaning, Soft-Bristle
- B. References
 - (1) 20-41-01/201, Static Grounding
- C. Clean the skin as follows:

NOTE: The skin must be clean for the Alodine treatment. You must follow this procedure fully.

s 587-011

(1) Make sure the airplane is not in the sunlight and that the airplane is grounded. (Ref 20-41-01/201).

s 117-012

- (2) Clean the surface:
 - (a) To make the solution to clean the surface, mix the following ingrediants in a clean container:
 - one part (by volume) solvent alkaline cleaner
 - two parts water
 - five to six parts BMS 3-2 Type I solvent.
 - (b) Apply the cleaner to the surface and let the cleaner soak for a minimum of 10 minutes. Do not let the cleaner dry on the surface. If it is necessary, apply more cleaner to the surface.
 - (c) Rub the surface with a soft-bristled brush. Make sure the countersunk areas and rivet heads are clean.
 - (d) Use a high pressure hose to flush the area with water.
 - (e) Flush the surface with water until you get a water break-free surface.

<u>NOTE</u>: A water break-free surface will have a continuous layer of water for 30 seconds.

TASK 51-24-07-307-013

- 5. Brush the Alodine Finish
 - . Consumable Materials
 - (1) G00268 Brush Paint, Nylon or Bristle
 - (2) G00378 Alodine 1200 or 1200S
 - B. References
 - (1) 51-21-04/701, Alodized Surfaces
 - C. Procedure

s 377-014

(1) Apply the Alodine 1200 or 1200S finish to all cleaned steel fastener heads and the adjacent aluminum skin surfaces (Ref 51-21-04/701).

EFFECTIVITY-

51-24-07

ALL

01.1



TASK 51-24-07-307-015

Apply the Sealant to Fasteners

- A. General
 - (1) You can use sealant to make an area level with the aluminum skin and to fill the area below the heads of installed fasteners.
 - (2) Make sure the alodine surface is clean before you apply sealant.
 - (3) Install rivets dry, unless you are told differently.

<u>NOTE</u>: Install 5056 aluminum rivets wet with sealant in aluminum structure. Install 5056 aluminum rivets dry in magnesium structure.

- B. Equipment
 - (1) Extrusion gun or spatula
 - (2) Fairing Tool Plastic scraper or duckbill nozzle
 - (3) Knife Made from 2024 aluminum sheet with a beveled cutting edge
 - (4) Pressure spray equipment standard type
 - (5) Gum rubber buffing wheel
- C. Consumable Materials
 - (1) B00148 Solvent Methyl Ethyl Ketone (MEK), TT-M-261
 - (2) B00351 Trichloroethylene, 0-T-634
 - (3) B00184 Solvent BMS 11-7
 - (4) COOO66 Solvent Toluene, TT-T-266A
 - (5) G00034 Cheesecloth Clean and Lint-Free
 - (6) A00248 Sealant PR1422, Class A, Parts A and B
 - (7) A00250 Sealant PR1422, Class B, Parts A and B
 - (8) A00247 Sealant PR 1432GP, Parts A and B
 - (9) GO2188 Cloth Abrasive, Aluminum Oxide, 220-Grit
 - (10) G01601 Cloth Abrasive, Aluminum Oxide, 400-Grit
 - (11) G00382 Paper Abrasive, Aluminum Oxide, 220-Grit
 - (12) G00876 Paper Abrasive, Aluminum Oxide, 400-Grit
- D. Apply the sealant to the fastener as follows:

s 117-016

(1) Clean the fasteners:

WARNING: DO NOT GET SOLVENTS IN YOUR MOUTH, OR YOUR EYES, OR ON

YOUR SKIN. DO NOT BREATHE THE FUMES FROM SOLVENTS. SOLVENTS ARE HAZARDOUS MATERIALS. SOLVENTS MAY BE

FLAMMABLE OR HARMFUL TO THE ENVIRONMENT. REFER TO PRODUCT MATERIAL SAFETY DATA SHEETS (MSDS) AND LOCAL REQUIREMENTS

FOR PROPER HANDLING PROCEDURES.

- (a) To remove all of the lubricant from the fasteners use solvent, Series 92 (AMM 20-30-92).
- (b) Remove all lubricant and dirt from the fastener countersink and other reworked areas. Rub the area with a clean cloth that is moist with BMS 11-7 solvent.

EFFECTIVITY-

51-24-07

ALL



(c) Rub the surface dry with a clean cloth before you install the sealant and the fasteners.

s 397-017

- (2) Apply PR 1422, Class B, sealant:
 - (a) Follow the sealant manufacturer's instructions to mix the sealant.

NOTE: You can obtain PR 1422 class B with a working life of 1/2 or 2 hours. Mix the quantity that you can use in less than the working life of the sealant.

- (b) Apply a small amount of PR 1422, class B sealant to the countersunk area or under the head of the fastener. Install the fastener immediately. Remove unwanted sealant with a cloth that is moist with solvent, Series 92 (AMM 20-30-92).
- (c) Let the sealant cure as follows:

Temperature	Relative Humidity	Time
75°F	50%	72 Hours
120°F	50%	18 Hours

(d) Rub the cured sealant with fine abrasive paper, cloth (aluminum oxide grit) or with a gum rubber buffing wheel to smooth and fair the surface.

<u>NOTE</u>: Repair all alodine finish that is damaged by the above procedure.

s 397-018

ALL

- (3) Apply the PR 1422 class A sealant:
 - (a) Use the manufacture's instructions to mix the sealant. Mix 1 part A (accelerator) to 10 parts B (base).

NOTE: You can obtain PR 1422 class A with a working life of 1/2 or 2 hours. Mix the quantity you can use in less than the working life of the sealant.

(b) Apply a coat of mixed PR 1422, class A sealant to the area to be reworked. Brush the sealant around the fasteners. A continuous layer is necessary on the reworked surfaces.

EFFECTIVITY-

51-24-07



(c) Let the sealant to cure as follows:

Temperature	Relative Humidity	Time
75°F	50%	72 Hours
120°F	50%	18 Hours

(d) Smooth and fair out the surface of the cured sealant by rubbing the sealant with a fine abrasive paper, cloth (aluminum oxide grit), or with a gum rubber buffing wheel.

<u>NOTE</u>: Repair all alodine finish that is damaged by the above procedure.

s 397-019

- (4) Apply PR 1422, class B sealant over class A sealant:
 - (a) Follow the sealant manufacturer's instructions to mix the sealant. Ratios to mix the sealant by volume are as follows:

PR 1422, Class A - 1 part A (accelerator) to 10 parts B (base) PR 1422, Class B - 1 part A (accelerator) to 7-1/2 parts B (base)

NOTE: You can get PR1422 class A and B with a working lifeof 1/2 or 2 hours. Mix the quantity that you can use in the working life of the sealant.

(b) Apply PR 1422, class B sealant on class A sealant with an extrusion gun or a spatula. Fair out the sealant with a fairing tool, plastic scraper or a duckbill nozzle. Make sure the surface of the sealant is below the surface of the adjacent wing skin. Use a spatula or a fairing tool to move air out of the sealant.

NOTE: If it is necessary, you can apply a heavy layer of PR 1422 class B sealant above the level of the wing surface. Let the sealant cure. Cut the cured sealant to a height that is level with the wing surface. Use a knife made from 2024 aluminum sheet.

(c) Let the sealant cure as follows:

Temperature Relative Humidity Time

EFFECTIVITY-

51-24-07

ALL



Temperature	Relative Humidity	Time
75°F	50%	72 Hours
120°F	50%	18 Hours

To smooth and fair out the cured sealant, rub the surface with a fine abrasive paper, cloth (aluminum oxide grit), or with a gum rubber buffing wheel.

NOTE: Repair all alodine finish that is damaged by the above procedure.

s 397-020

(5) Apply the PR 1432GP sealant:

Use PR 1432GP sealant for locations that must have a large NOTE: repair.

Use the manufacturer's instructions to mix the sealant. The ratio by volume for the mixture is 1 part A (accelerator) to 15 parts B (base).

NOTE: PR 1432GP has a working life of 1 hour. Mix the quantity that you can use in the working life of the sealant.

(b) To apply a large amount of PR 1432GP, spray the sealant until the rework area is fully filled. The sealant must extend over the edge of the repair and blend into the not damaged area.

You can apply PR 1432GP sealant with a spray gun and NOTE: pressure spray equipment. Use an external mix spray gun with an orifice diameter of a minimum of 0.085 inches. An atomizing pressure of approximately 35 psi is necessary. If it is necessary, you can make the PR 1432GP sealant thin. Add 10 percent toluene, by volume, to the base material. Mix the solution and then add the accelerator. Keep the mixture shaken.

EFFECTIVITY-

ALL

51-24-07



(c) Let the sealant to cure as follows:

Temperature	Relative Humidity	Time
75°F	50%	72 Hours
120°F	50%	18 Hours

Smooth and fair out the cured sealant by rubbing with a fine abrasive paper, cloth (aluminum oxide grit) or with a gum rubber buffing wheel.

NOTE: Repair all Alodine finish that is damaged by the above procedure.

TASK 51-24-07-307-021

- 7. Apply Corrosion Preventative Paint
 - Equipment
 - (1) Stainless steel pressure pot liners and mixing equipment
 - (2) Metal Sieve 60 to 80 mesh
 - (3) DeVilbiss MBC or JGA gun EX needle and tip, 30 or 36 air cap or Binks No. 18 gun 66 X 66, SD nozzle assembly, or equivalent; Fluid pressure 10 to 20 psi and 60 to 70 psi atomization air (used to apply Corogard paint EC-843)
 - (4) DeVilbiss MBC or JGA gun FX needle and tip, 704 or 765 air cap, or Binks No. 18 gun 63 X 63, PB nozzle assembly, or equivalent; Fluid pressure 10 to 15 psi atomization air (used to apply Corogard paint EC-843S)
 - B. Consumable Materials
 - (1) C00298 Primer BMS 10-11, Type I
 - (2) C00130 Primer BMS 10-79, Type II
 - (3) COO175 Primer BMS 10-79, Type III
 - (4) C00844 Coating Aluminized, Aeroflex G12E25
 - (5) B00068 Alcohol Ethyl, MIL-A-6091 or 0E-760B, Grade 2
 - (6) B00080 Alcohol Butyl, TT-B-846
 - (7) B00528 Toluene (Toluol) TT-T-548
 - (8) B00151 Solvent Methyl Isobutyl Ketone (MIBK), TT-M-268
 - (9) B00192 Solvent General Purpose, BMS 3-2, Type I
 - (10) B00316 Solvent Aliphatic Naphtha, TT-N-95
 - (11) B00079 Solvent Normal Butyl Acetate, TT-B-838
 - (12) B00139 Solvent Lacquer Thinner, TT-T-266a
 - (13) B00148 Solvent Methyl Ethyl Ketone (MEK), TT-M-261

EFFECTIVITY-ALL

51-24-07



- (14) B00344 Cleaner Xylene, TT-X-916
- (15) G00034 Cloth Clean and Lint-Free
- (16) G00219 Tack Rags Varnish or Linseed Oil Type
- (17) G00382 Paper Abrasive, Aluminum Oxide, 280-Grit or Finer
- (18) G00876 Paper Abrasive, Aluminum Oxide, 400-Grit
- C. References
 - (1) 51-24-11/701, Decorative Paint System
- Apply the Corrosion Preventive Paint (aluminized coating Aeroflex G12E25)

s 377-022

(1) Shake the mixture by hand or power mix for 10 to 15 minutes. The aluminum pigment must be fully mixed.

NOTE: Do not get air bubbles in the mixture.

If it is necessary, you can add C25/90S thinner to make the mixture thin (up to 20 percent, by volume, of the base)

The working life of the material is 4 hours.

s 377-023

(2) If it is necessary, rework the BMS 10-11 and BMS 10-20 primed surfaces as shown in 51-24-11/701. Let the primer dry as shown in 51-24-11/701 before you apply the corrosion inhibiting finish.

s 377-024

(3) Put the mixture through a clean cloth filter before you use it.

s 377-025

ALL

(4) Apply the mixture with a spray gun until you have a dry layer with a thickness of 2 to 3 mils.

If you get a dry spray condition with Aeroflex G12E25 you can decrease the atomizing pressure or you can make the mixture thin with C25/90S thinner.

EFFECTIVITY-

51-24-07



s 377-026

(5) Let the topcoat air dry at 65 to 85°F for a minimum of 4 hours before you move the material. Let the material dry for 24 hours before you use the material.

NOTE: You can use heat on the surface to decrease the cure time. Increase the temperature of the surface to $125 \pm 5^{\circ}F$ for 2 hours.

TASK 51-24-07-307-027

- 8. Rework and Repair Damaged Surfaces
 - A. Consumable Materials
 - (1) G00382 Paper Abrasive, Aluminum Oxide, 280-Grit or Finer
 - (2) G00032 Cloth Clean and Lint-Free
 - (3) B00528 Toluene (Toluol) TT-T-548
 - (4) B00344 Cleaner Xylene, TT-X-916
 - B. Procedure

s 117-028

(1) You can rub small damage with 280-grit (minimum) abrasive paper until the surface is smooth. You can use a clean cloth that is wet with toluene or xylene to clean the area.

s 377-029

(2) Apply Aeroflex overcoat as shown in par. 7. You can use a brush to apply the overcoat to areas that need small repair.

s 117-030

(3) Before you apply the overcoat, you can use toluene or xylene to fully clean the cured Aeroflex G12E25 finish.

s 127-031

(4) Rub the area with 280-grit (minimum) abrasive paper.

s 117-032

(5) You can use a clean cloth that is wet with toluene or xylene to remove particles from the surface. Rub the surface dry before the solvent evaporates.

s 377-033

(6) The total dry film thickness must not be larger than 5.0 mils.

EFFECTIVITY-

51-24-07

ALL



HIGH TEMPERATURE COATING (TITANIUM) - CLEANING/PAINTING

- 1. General
 - A. This procedure contains two tasks:
 - (1) The first task is to apply the B-2000 coating.
 - (2) The second task is to apply the BMS 10-82 coating.

TASK 51-24-08-307-001

- 2. Apply B-2000 Coating
 - A. Equipment
 - (1) Mild steel tanks and handling equipment
 - (2) Paint Spraying Equipment
 - (3) Sand-Blasting Equipment
 - B. Consumable Materials
 - (1) B00722 Solvents Stoddard
 - (2) E00003 Stripper Turco 4338
 - (3) B00007 Cleaners Oakite 61
 - (4) G02227 Water Distilled
 - (5) G00000 Gloves Rubber
 - (6) G00034 Cheesecloth Clean and Lint-Free
 - (7) B00312 Wool Coarse Aluminum
 - (8) G00116 Sponge Celluose
 - (9) G00268 Brush Soft, High Quality Bristle
 - (10) C00000 Coating B-2000
 - (11) G02057 Goggles
 - (12) GO2191 Grit Abrasive, Aluminum Oxide
 - C. Prepare the Surface

NOTE: You can remove the high temperature coating from the titanium parts on the airplane or the parts removed from the airplane. You can use sand-blast to remove the coatings on the parts that are on the airplane. You can use stripper to remove the coatings on the parts that are removed from the airplane. Because of its corrosive effects, you can not use stripper in the airplane.

s 127-002

(1) Use sand blast on the titanium parts to remove all the contamination and coating.

<u>NOTE</u>: Do not sand blast the interior surfaces that are not being treated.

EFFECTIVITY-

51-24-08

ALL



s 967-003

(2) Replace all parts that have metal corrosion.

NOTE: A metallic surface with an etched surface is a sign of corrosion.

s 967-004

(3) Remove the titanium parts from the airplane if you use stripper to remove the coatings.

s 117-005

(4) To clean the fire-resistant hydraulic fluid contamination, do the steps that follow:

NOTE: A light glossy brown layer, shiny black residue, or a bare surface are signs of hydraulic fluid contamination. The titanium parts in fire-resistant hydraulic fluid areas have a flat, black inorganic finish. Make sure you know the difference between the fire-resistant hydraulic fluid contamination and the fire-resistant hydraulic fluid residue.

Clean with cheesecloth or aluminum wool that is moist with Oakite 61 or equivalent.

NOTE: If you use the aluminum wool, make sure it is sufficiently coarse to make the surface not shiny. Do not clean a shiny or polished surface.

- (b) Flush the surface with water.
- Remove the unwanted moisture with cheesecloth. (c)
- (d) Flush the surface with a clean wet cloth.
- Flush the surface with water until you get a water break-free surface.

NOTE: A water break-free surface will have a continuous layer of water for 30 seconds.

s 117-006

ALL

- (5) To remove the remaining unwanted material, do the steps that follow:
 - Use the cheesecloth to remove the unwanted material with the Stoddard solvent.
 - Flush the surface fully with water. Use the high pressure flush if it is possible.

EFFECTIVITY-

51-24-08



(c) Clean with Stoddard solvent and flush the surface with water until you get a water break-free surface.

NOTE: A water break-free surface will have a continuous layer of water for 30 seconds.

(d) Let the surface dry.

s 157-007

(6) To remove the unwanted coating, do the steps that follow:

WARNING: ALKALINE IS STRONGLY OXIDIZING WHEN USED AT 200°F. WEAR GOGGLES AND HEAVY RUBBER GLOVES AND DO NOT TOUCH THE ALKALINE. USE MILD STEEL CONTAINERS AND HANDLING EQUIPMENT. DO NOT TOUCH THE ALKALINE WITH ORGANIC SOLVENTS SUCH AS ACETONE OR METHYL ETHYL KETONE WHICH CAN CAUSE EXPLOSION.

- (a) Refer to the direction on the container to prepare the Turco 4338 stripper.
- (b) Put the parts in the stripper for 30 to 40 minutes.
- (c) Flush the parts with water.
- (d) Wash the parts with air water spray.
- (e) Do the step (6) again until the black coating is removed.

s 967-008

- (7) Replace the parts that have metal corrosion.
- D. Apply High Temperature Coating

s 377-023

CAUTION: DO NOT SHAKE THE COATING. IF YOU SHAKE THE COATING, THE AIR WILL STAY IN THE COATING, AND THE COATING WILL HAVE AN UNSATISFACTORY SURFACE.

(1) Slowly add distilled or deionized water to the B-2000 coating. Refer to the container instructions while you slowly shake the mixture.

EFFECTIVITY-

51-24-08



s 377-024

CAUTION: DO NOT APPLY B-2000 COATING WHERE THERE ARE OTHER SOLVENTS IN THE AIR, BECAUSE THIS CAUSES FILM CRATERING AND UNSATISFACTORY BOND.

(2) Brush or spray apply mixed B-2000 coating to a dry film thickness of 0.8 to 1.2 mils.

NOTE: If you use a brush, the brush must have soft, high quality bristles.

s 377-011

(3) Permit to air dry a minimum of 1 hour at 70 to 90°F.

s 377-012

(4) Bake the coating at 350 ±25°F a minimum of 1 hour.

<u>NOTE</u>: The coating must be dry before you bake. If a blister occurs when you bake, increase the air dry time.

TASK 51-24-08-307-013

- Apply BMS 10-82 Coating
 - A. Consumable Materials
 - (1) COO314 Coating Low Emissivity Gold, BMS 10-82
 - (2) B00184 Solvent BMS 11-7
 - (3) B00394 Solvent Toluene, TT-T-548
 - (4) B00153 Solvent Toluene, JAN-T-171
 - (5) GO2167 Sandpaper Scotch-Brite, Finish Type A (Aluminum Oxide Grit)
 - (6) G00000 Gloves Rubber
 - B. Prepare for the Coating

s 157-014

CAUTION: TO PREVENT CORROSION, BE CAREFUL NOT TO HAVE SALT DEPOSITS OR FINGERPRINTS, ON THE TITANIUM SURFACE THAT IS NOT COATED. USE CLEAN WHITE COTTON GLOVES WHEN YOU MOVE OR TOUCH TITANIUM.

(1) Be careful with the parts and use clean gloves to prevent contamination. Remove the unwanted coating.

s 117-015

ALL

(2) Examine the surface for sign of soil (hydraulic fluid contamination is shown by ashy-like debris or charred resin accumulation).

EFFECTIVITY-

51-24-08



s 117-025

WARNING: THE MATERIALS IN THIS PROCEDURE BELOW CAN BE TOXIC OR FLAMMABLE. IF YOU ARE NOT CAREFUL, INJURY CAN OCCUR.

(3) Clean with BMS 11-7 or TT-T-548 solvent to remove the soil.

NOTE: To help in the soil and stain removal, you can clean with Scotch-Brite sheet before you clean with the solvent.

s 117-022

(4) Make sure the parts are clean and dry before you apply the coating.C. Apply the Coating

s 377-026

WARNING: THE MATERIALS IN THIS PROCEDURE BELOW CAN BE TOXIC OR FLAMMABLE. IF YOU ARE NOT CAREFUL, INJURY CAN OCCUR.

(1) Shake the BMS 10-82 until it is mixed.

s 377-017

(2) Spray the coating.

NOTE: Apply sufficient coats to produce a transparent red, smooth, layer of film that is free of sags, runs and wrinkles.

Permit 5 to 10 minutes between coats. Recommended air atomizing pressure is 10 to 25 pounds.

s 377-018

(3) Bake as soon as possible after you apply the coatings. Keep wet film free of contamination.

s 377-019

(4) Bake coated parts at a part temperature of 825 ±25°F for 10 to 15 minutes. Use a well ventilated oven to permit removal of smoke and fumes. The coating after baking must be a tightly adherent yellow gold film which is smooth, uniform and free from runs, sags, blisters, pinholes, wrinkles, or other unsatisfactory surface.

s 557-020

(5) Be careful with the parts until installation to prevent rework and repair.

EFFECTIVITY-

51-24-08

ALL



NONSKID SURFACE - CLEANING/PAINTING

1. General

- A. This procedure contains five tasks as follows:
 - the application of nonskid surface paint on the wing walkways
 - the application of epoxy walkway coating
 - the application of 3M Safety Walk surfacing (non-vinyl covered floors)
 - the application of a fire retarded base coat on the galley floor
 - and the application of polyurethane (BMS 10-60) or chemglaze antiskid on the galley floor.
- B. Nonskid surfaces are applied to the overwing emergency walkway and to the interior floor areas. Different types of material are used for each area.

TASK 51-24-09-307-001

- 2. Application of Nonskid Surface Paint (Overwing)
 - A. Standard Tools and Equipment
 - (1) DeVilbiss MBCX or P-MBC-510 spray gun with No. 62CS (No. 62 air cap, AS needle and CS fluid tip) and special heavy fluid spring. This is the preferred system.
 - (2) Binks No. 62 spray gun with No. 68 nozzle assembly (No. 68 air cap, No. 368 needle, and No. 69 fluid tip). This is an optional system.
 - (3) Pressure Tank must hold 100 psi pressure and have a mechanism for mix materials
 - (4) Fluid Hose must be large enough to provide material to the gun at the correct pressure
 - B. Consumable Materials
 - (1) B00148 Solvent Methyl Ethyl Ketone (MEK), TT-M-261
 - (2) B0094 Solvent Toluene (Toluol), TT-T-548
 - (3) B00151 Solvent Methyl Isobutyl Ketone (MIBK), TT-M-268
 - (4) B00083 Solvent Aliphatic Naphtha, TT-N-95, Type II
 - (5) C00038 Griptred A862 white, Type I, Smooth, Goodyear (optional: MIL-W-5044, Type I, Color Fed Std 595, 37875 white)
 - (6) C00038 Griptred A419A, Black, Type I, Smooth, Goodyear (optional: MIL-W-5044, Type I, Color Fed Std 595, 37038 Black)
 - (7) C00038 Griptred A859, Light dull gray, Type I, Smooth, Goodyear (optional: MIL-W-5044, Type I, Color Fed Std 595, 36440 light dull gray)
 - (8) CO0038 Griptred A441A, Dark dull gray, Type I, Smooth, Goodyear (optional: MIL-W-5044, Type I, Color Fed Std 595, 36231 Dark dull gray)

EFFECTIVITY-

51-24-09

ALL



- (10) G00500 Brush Paint, Bristle
- (11) G00270 Tape Masking No. 221, 3M Company
- C. Prepare the Surface for Painting

<u>NOTE</u>: You must apply nonskid coating over primed, or primed and topcoated, surfaces as shown in drawing specifications.

s 117-066

WARNING: DO NOT GET THE SOLVENTS IN YOUR MOUTH OR EYES, ON YOUR SKIN OR CLOTHES. DO NOT BREATHE THE FUMES FROM THESE SOLVENTS. MAKE SURE THE AIR FLOWS FREELY THROUGH THE WORK AREA. USE THE NECESSARY RESPIRATORY PROTECTION. KEEP THESE MATERIALS AWAY FROM SPARKS, FLAME, AND HEAT. THESE SOLVENTS ARE POISONOUS AND FLAMMABLE AND CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (1) Clean the surface:
 - (a) If it has been less than 48 hours since you applied the coating, do these steps:
 - 1) Rub the surface with 320 grit (minimum) abrasive paper, if it is necessary.
 - 2) Clean the surface with toluene.
 - (b) If it has been more than 48 hours since you applied the coating, do these steps:
 - 1) Manually clean the surface with toluene.
 - 2) Rub the surface clean with a 320 grit (minimum) aluminum oxide abrasive paper, fabric, or disk.
 - 3) Manually clean the surface with MIBK.
- D. Apply the Nonskid Surface

s 377-003

(1) Add aliphatic naphtha to make the coating thin, if it is necessary.

s 377-004

ALL

- (2) Apply the nonskid surface with a spray gun or a brush:
 - (a) Make sure the coating is 0.005 to 0.007 inch (6 to 8 ounces for each square yard) thick after it is dry.

<u>NOTE</u>: The dry thickness is the distance from the primer to the external surface.

EFFECTIVITY-

51-24-09



(b) Let each layer dry for a minimum of 30 minutes.

s 037-055

(3) Carefully remove the tape before the coating is fully dry.

s 217-056

(4) Examine the surface to make sure the coating is dry before you touch it.

NOTE: The finish is hard after 24 hours at 70°F.

E. Repair the Nonskid Surface (Small Damaged Areas).

s 117-007

(1) Clean the area to be repaired as follows:

WARNING: DO NOT GET SOLVENTS IN YOUR MOUTH, OR YOUR EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM SOLVENTS.

SOLVENTS ARE HAZARDOUS MATERIALS. SOLVENTS MAY BE FLAMMABLE OR HARMFUL TO THE ENVIRONMENT. REFER TO PRODUCT MATERIAL SAFETY DATA SHEETS (MSDS) AND LOCAL REQUIREMENTS FOR PROPER HANDLING PROCEDURES.

- (a) Make the cheesecloth moist with solvent, Series 85 (AMM 20-30-85).
- (b) Use the cheesecloth to remove particles from the surface.

NOTE: Do not rub the cheesecloth on the surface. The cheesecloth can be damaged by the surface.

s 127-008

- (2) Rub the damaged area with 320 grit (minimum) aluminum oxide abrasive paper:
 - (a) Rub the damaged area until it is smooth. Also, rub the edge of the area that is not damaged. Make sure there is a smooth surface between the area that is damaged and the area that is not damaged.

s 117-009

(3) Use a cheesecloth that is wet with solvent, Series 85 (AMM 20-30-85) to remove particles from the surface.

s 377-010

(4) If you can see not painted aluminum, use Alodine 1200 on the surface (Ref 51-21-04/701).

s 377-011

(5) Apply primer and paint as shown in the drawing specification.

EFFECTIVITY-

51-24-09

ALL



s 377-012

(6) Apply the nonskid coating as shown in par. 2.D.

TASK 51-24-09-307-013

- Application of Epoxy Walkway Coating
 - A. Standard Tools and Equipment
 - (1) Binks model 7 spray gun with No. 38-PD air cap, No. 38 fluid tip, and No. 38 needle.
 - B. Consumable Materials
 - (1) C00259 Enamel BMS 10-11, Type II
 - (2) G00000 Pumice Grit No. 1-1/2, 40 to 50 mesh
 - (3) G00383 Paper Abrasive, Aluminum oxide, 320 grit (minimum)
 - (4) G00000 Tape Masking, No. 221, 3M Company
 - (5) B00153 Solvent Toluene, TT-T-548
 - (6) B00148 Solvent Methyl Ethyl Ketone (MEK), TT-M-261
 - C. Prepare for Painting Previously Painted Surfaces

<u>NOTE</u>: You must apply the nonskid coating on top of primed or primed and top coated surfaces.

s 117-057

WARNING: DO NOT GET THE SOLVENTS IN YOUR MOUTH, OR EYES, ON YOUR SKIN OR CLOTHES. DO NOT BREATHE THE FUMES FROM THESE SOLVENTS. MAKE SURE THE AIR FLOWS FREELY THROUGH THE WORK AREA. USE THE NECESSARY RESPIRATORY PROTECTION. KEEP THESE MATERIALS AWAY FROM SPARKS, FLAME, AND HEAT. THESE SOLVENTS ARE POISONOUS AND FLAMMABLE AND CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (1) If it has been less than 48 hours since you applied the coating, do these steps:
 - (a) Rub the surface with 320 grit (minimum) abrasive paper, if it is necessary.

NOTE: Do not remove the protective finish. You must repair protective finish that has been removed from the surface of the metal.

(b) Clean the surface with toluene.

s 117-015

- (2) If it has been more than 48 hours since you applied the coating, do these steps:
 - (a) Manually clean the surface with toluene.

EFFECTIVITY-

51-24-09



- (b) Rub the surface clean with a 320 grit (minimum) aluminum oxide abrasive paper.
- (c) Manually clean the surface with MIBK.

s 957-016

- (3) Apply masking tape on the adjacent areas.
- D. Paint the Nonskid Surface

s 377-017

- (1) Mix the paint as follows:
 - (a) Mix the enamel. If it is necessary, make the enamel thin before you spray it.
 - (b) Mix one pound of No. 1-1/2 grit pumice per gallon of enamel.
 - (c) Add the catalyst to the mixture. The mixture will be ready for use in one hour.
 - (d) Make sure the mixture of grit and paint remains mixed while it is being applied to the surface.

s 377-018

(2) Spray the grit and paint mixture as follows:

NOTE: The dry film weight must be 4 to 6 ounces per square yard.

- (a) Apply one layer of grit and paint mixture. Make sure the surface of the layer is smooth. Let the mixture dry for 60 minutes (minimum) at 70°F or more.
- (b) Apply 3 layers of BMS 10-11, Type II epoxy enamel (without grit).
- (c) Let the layers dry for 8 hours (minimum) before you move the surface. The layers must dry for 24 hours (minimum) before you walk on the surface.

s 957-019

- (3) Carefully remove the masking tape before the layers are fully dry.
- E. Repair the Nonskid Surface (Small Damaged Areas)

s 117-020

(1) Clean the area to be repaired as follows:

WARNING: DO NOT GET SOLVENTS IN YOUR MOUTH, OR YOUR EYES, OR ON

YOUR SKIN. DO NOT BREATHE THE FUMES FROM SOLVENTS. SOLVENTS ARE HAZARDOUS MATERIALS. SOLVENT MAY BE

FLAMMABLE OR HARMFUL TO THE ENVIRONMENT. REFER TO PRODUCT MATERIAL SAFETY DATA SHEETS (MSDS) AND LOCAL REQUIREMENTS

FOR PROPER HANDLING PROCEDURES.

(a) Make the cheesecloth moist with solvent, Series 85 (AMM 20-30-85).

EFFECTIVITY-

51-24-09

ALL



(b) Use the cheesecloth to remove particles from the surface.

NOTE: Do not rub the cheesecloth on the surface. The cheesecloth can be damaged by the surface.

s 127-058

- (2) Rub the damaged area with 320 grit (minimum) aluminum oxide abrasive paper:
 - (a) Rub the damaged area until it is smooth. Also, rub the edge of the area that is not damaged. Make sure there is a smooth surface between the area that is damaged and the area that is not damaged.

s 117-059

(3) Use a cheesecloth that is wet with solvent, Series 85 (AMM 20-30-85) to remove particles from the surface.

s 377-060

(4) If you can see not painted aluminum, use Alodine 1200 on the surface (Ref 51-21-04/701).

s 377-061

(5) Apply primer and paint as shown in the drawing specification.

s 377-062

(6) Apply the nonskid coating as shown in par. 3.D.

TASK 51-24-09-307-026

4. Application of 3M Safety Walk Surfacing (Non-Vinyl covered floors)

NOTE: You can apply 3M brand Safety Walk to areas where nonskid surface has become worn or hazardous.

- A. Consumable Materials
 - (1) B00448 Solvent Trichloroethane 1,1,1, Fed Spec 0-T-620C
 - (2) B00148 Solvent Methyl Ethyl Ketone (MEK), TT-M-261
 - (3) G00000 Safety Walk Type B, 3M Company
 - (4) GO1043 Cloth Clean and lint-free
 - (5) A00077 Sealer Bead Safety Walk
- B. Application of the Safety Walk

s 117-027

(1) Use a clean cloth that is wet with solvent to clean the surface. You must remove all solvent while it is wet.

s 377-028

(2) Trim the Safety Walk material to a dimension that is larger than the worn area.

EFFECTIVITY-

51-24-09

ALL



s 377-029

Remove the protective backing and apply the Safety Walk material. Use firm pressure to roll the Safety Walk material over the worn area. Make sure the edges of the material are attached to the surface. Make sure air is not caught underneath the material.

s 397-030

- (4) Apply a bead of Safety Walk Brand Bead Sealer around the edge of the material.
 - (a) Let the Safety Walk cure for 30 minutes at 70°F (minimum) before you walk on it.

TASK 51-24-09-307-031

- Application of Fire Retarded Base Coat for the Galley Floor (Non-Vinyl Covered Floors)
 - Consumable Materials
 - (1) C00000 Primer BMS 5-108, Type I
 - (2) C00839 Basecoat BMS 5-108, Type I, Class B-2
 - (3) C00000 Antimony Trioxide/MEK Slurry 1M-111, Crown Metro Inc., Greenville, SC 29606
 - (4) A00247 Sealant BMS 5-95, Type I, Class B-2
 - (5) B00448 Solvent Trichloroethane 1,1,1, Fed Spec 0-T-620C
 - (6) B00148 Solvent Methyl Ethyl Ketone (MEK), TT-M-261
 - (7) A00247 Sealant BMS 5-95, Type 1, Class B-2
 - (8) G01043 Cloth Clean and Lint-free
 - (9) G00000 Tape Masking No. 221, 3M Company
 - (10) G00383 Paper Abrasive, Aluminum Oxide, 320-grit (minimum)
 - Prepare for the Application of the Fire Retarded Base Coat
 - NOTE: You must seal and coat all of the area inside the floor drain. Do not seal the drain screens, top surface and holes of the galley support fittings, or the inserts in floor panels. You must protect these areas from overspray.

s 117-054

DO NOT GET SOLVENTS IN YOUR MOUTH, OR YOUR EYES, OR ON YOUR **WARNING:** DO NOT BREATHE THE FUMES FROM SOLVENTS. SOLVENTS ARE HAZARDOUS MATERIALS. SOLVENTS MAY BE FLAMMABLE OR HARMFUL TO THE ENVIRONMENT. REFER TO PRODUCT MATERIAL SAFETY DATA SHEETS (MSDS) AND LOCAL REQUIREMENTS FOR PROPER HANDLING PROCEDURES.

(1) Use a cloth that is wet with solvent, Series 85 (AMM 20-30-85) to clean the edge of the panels.

EFFECTIVITY-ALL 51-24-09



s 397-033

(2) Use BMS 5-95 B2 sealant to fill all joints.

NOTE: You must remove all BMS 5-95 from the surface of the panel before you apply the primer.

s 377-035

(3) Follow the manufacturer's instructions to mix the BMS 5-108, Type I primer.

s 117-036

(4) Use a clean cloth that is wet with solvent , Series 85 (AMM 20-30-85) to clean the surface. Remove all solvent before it becomes dry.

s 377-037

(5) Apply BMS 5-108, Type I primer to all galley support fittings, gutters, and splash guards. Allow the primer to dry for 2 hours.

NOTE: You must apply the sealant no greater than 8 hours after application of the primer. Do not keep any BMS 5-108, Type I primer that you did not use.

s 377-064

- (6) Apply BMS 5-108, Type I primer on all floor panel surfaces that are not coated with BMS 5-108 Type I, Class B-2, basecoat. Apply Type I primer to a wet film thickness of 0.001 to 0.002 inch. Let the primer to dry for a minimum of 2 hours and a maximum of 8 hours.
- C. Apply the Fire Retarded Base Coat

s 377-039

- (1) Mix the fire retarded base coat.
 - (a) Follow the manufacturers instructions to mix the fire retarded base coat.

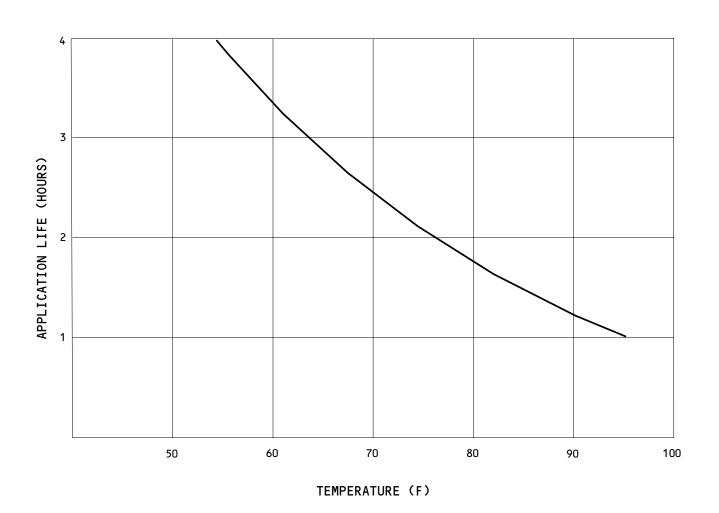
WARNING: BE CAREFULL WHEN YOU USE ANTIMONY TRIOXIDE. TALK TO YOUR INDUSTRIAL HYGIENE AND SAFETY ORGANIZATION FOR DATA ON THE SAFE USE OF ANTIMONY TRIOXIDE. ANTIMONY TRIOXIDE CAN CAUSE INJURY TO PERSONS.

- (b) Mix 1 kit of Antimony Trioxide/MEX with 3 gallons of BMS 5-108, Type I, Class B-2.
- (c) You must use this mixture before the time shown in Fig. 701 has expired.

EFFECTIVITY-

51-24-09





Application Life of BMS5-108 Type 1, Class B-2 Figure 701

51-24-09
ALL
01 Page 709
Jun 10/88

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s 377-040

(2) Apply BMS 5-108, Type I, Class B2, basecoat to the primed areas. The thickness of the basecoat must result in a level surface across the joint. After the basecoat has cured, you can have a 0.05 inch thickness greater than the level thickness.

s 127-041

- (3) Rub the surface of cured BMS 5-108 Type I basecoat with abrasive paper. You should have a smooth surface across all joints.
- D. Repair Minor Damage

s 117-042

- (1) Clean the surface.
 - (a) Remove the loose or damaged base coat.
 - (b) To smooth the damaged area, lightly rub the area with 60 grit (minimum) aluminum oxide abrasive paper.
 - (c) Use a clean cloth that is wet with solvent, Series 85 (AMM 20-30-85). Remove all solvent while it is wet.

s 377-043

(2) Apply BMS 5-108, Type I, Class B-2 to a dry film thickness of 0.015 to 0.25 inch.

TASK 51-24-09-307-044

6. <u>Application of Polyurethane (BMS 10-60) or Chemqlaze Antiskid on the Galley Floor</u>

<u>NOTE</u>: You can add non-skid granules to the finish to give a better grip in the galley areas.

- A. Consumable Materials
 - (1) B00448 Solvent Trichloroethane 1,1,1, Fed Spec 0-T-620C
 - (2) B00148 Solvent Methyl Ethyl Ketone (MEK), TT-M-261
 - (3) C00584 Primer BMS 10-79, Type II
 - (4) C00032 Enamel BMS 10-60, Type II
 - (5) GO2126 Grit Rubber, Antiskid Material, Atlos TP-027+0165, Atlos Rubber Co., Los Angeles, California 90063
 - (6) COOOOO Chemglaze Hughson "V" series
 - (7) G00000 Paint Roller Short nap semi-textured roller
 - (8) G00034 Cheesecloth Dry, Lint Free
 - (9) G00383 Paper Abrasive, Aluminum Oxide, 60 Grit or Finer
- B. References
 - (1) 51-21-02/701, Interior and Exterior Finishes (Prepaint Cleaning and Pretreatment)
 - (2) 51-24-11/701, Decorative Paint System

 51-24-09



C. Prepare the Surfaces for Paint

s 147-045

(1) Clean the area with the Method I instructions (Ref 51-21-02/701).

s 377-046

- (2) Apply BMS 10-79, Type II, primer (Ref 51-24-11/701).
- D. Mix the Enamel

s 377-047

- (1) Mix BMS 10-60, Type II (The two component enamel kit contains a resin base and a catalyst):
 - (a) Add six fluid ounces of antiskid material to each quart of decorative enamel.
 - (b) Mix the antiskid material and enamel. Make sure you do not create air bubbles.
 - Add the catalyst to the enamel. The ratio is one part catalyst to one part enamel.
 - 2) Let mixture stand for 15 minutes before you use it.

s 377-048

- (2) Mix Hughson "V" Series Chemglaze (The two component Chemglaze kit contains a resin base and a catalyst).
 - (a) Add 6 fluid ounces of antiskid material to each quart of the decorative enamel being used.
 - (b) Mix the antiskid material and the enamel. Use a paint shaker to shake the mixture for a minimum of 5 minutes. Or, slowly hand stir. Do not create air bubbles in the mixture.
 - 1) Mix 15 parts enamel to one part Hughson 9989 catalyst (2 fluid ounces Hughson 9989 per one quart of paint).
 - 2) The mixture is now ready to spread.
- E. Apply the Enamel to the Floor Surface

s 377-049

(1) Pour the mixture onto the floor area to be painted. Spread the mixture with a semi-textured roller.

NOTE: Dry at a temperature above 70°F for 24 hours.

If the temperature is below 70°F, supply heat to the area from an external source.

F. Repair the Minor Damage

s 117-050

(1) Clean the area to be repaired as follows:

EFFECTIVITY-

51-24-09



WARNING: DO NOT GET SOLVENTS IN YOUR MOUTH, OR YOUR EYES, OR ON

YOUR SKIN. DO NOT BREATHE THE FUMES FROM SOLVENTS. SOLVENTS ARE HAZARDOUS MATERIALS. SOLVENTS MAY BE

FLAMMABLE OR HARMFUL TO THE ENVIRONMENT. REFER TO PRODUCT MATERIAL SAFETY DATA SHEETS (MSDS) AND LOCAL REQUIREMENTS

FOR PROPER HANDLING PROCEDURES.

- Make the cheesecloth wet with solvent, Series 87 (AMM 20-30-87).
- Apply MEK to the damaged area with the cheesecloth to remove (b) all of the particles on the surface.

NOTE: Do not rub surface. The surface can damage the cheesecloth.

s 147-051

(2) Use a power disc sander with 60 grit (minimum grit number) abrasive paper to remove all grit and layers in the repair area. Smooth the edges of the damage, if it is necessary.

NOTE: Make sure you protect the aiplane interior from dust and particles when you power sand the surface..

s 117-052

(3) Use a cheesecloth that is wet with 1,1,1 Trichloroethylene to remove particles from the surface.

s 377-053

(4) Mix BMS 10-60, Type II, enamel or Hughson V series chemglaze with the instructions given in par. D.

s 377-065

ALL

(5) Apply enamel to the floor surface with the instructions given in par. E.

EFFECTIVITY-

51-24-09



HEAT, WEATHER, AND OIL RESISTANT COATING - REPAIRS

1. General

- A. This procedure contains one task:
 - (1) The task is to repair the BMS 14-4 Type 1 coating.
- B. The BMS 14-4 Type 1 is a weather, oil, and heat resistant protective coating cured at a high temperature. The BMS 14-4 Type 2 gives the same protection as the BMS 14-4 Type 1 coating. The BMS 14-4 Type 2 uses catalyst and cures at room temperatures.
- C. You can repair the BMS 14-4 Type 1 coating satisfactorily with the use of the catalyst cured repair materials. You permit to have an overlap of the coating as long as the maximum layer thickness of the coating is not more than the allowance.

TASK 51-24-10-308-001

2. Repair BMS 14-4 Type 1

- A. Equipment
 - (1) Tester Film Thickness (Permascope No. EC3, Twin Cities Testing Corporation, North Tonawanda, New York) or equivalent
- B. Consumable Materials
 - (1) G00268 Brush Paint, Soft bristle
 - (2) GO1043 Cloth Lint-free
 - (3) B00192 Solvent BMS 3-2, type I
 - (4) G00381 Paper Abrasive, Aluminum oxide, 180-grit
 - (5) C00251 Coating BMS 14-4, type 2
- C. Prepare the surface for repair.

s 118-002

WARNING: THE SOLVENTS CONTAIN TOXIC AND/OR FLAMMABLE INGREDIENTS. GET INSTRUCTIONS FROM THE INDUSTRIAL HYGIENE, FIRE, AND/OR SAFETY ORGANIZATIONS ON FACILITIES, EQUIPMENT, VENTILATION, AND OTHER NECESSARIES FOR SAFE OPERATIONS.

<u>CAUTION</u>: DO NOT LET THE SOLVENTS TO STAY IN THE FAYING SURFACES AS THE SOLVENTS CAN CAUSE CORROSION.

(1) Use the cloth that is moist with solvent to rub the repair and overlap area to remove the dirty surface.

s 118-013

(2) Dry the surface with clean, dry cloth.

s 128-003

(3) Use the aluminum oxide paper to manually rub the damaged area.

<u>NOTE</u>: Rub the damaged area until you remove the damaged coating and you can see the bare, rough, clean metal.

EFFECTIVITY-

51-24-10

ALL



s 128-014

(4) Rub the repair surface until it becomes smooth.

s 118-004

<u>CAUTION</u>: DO NOT LET THE SOLVENT TO STAY IN THE FAYING SURFACES. THE SOLVENT CAN CAUSE CORROSION.

DO NOT LET THE SOLVENT TO BECOME DRY. THE FILM WILL STAY ON THE SURFACE AND CAUSE POOR COATING ADHESION.

(5) Use the squirt or squeeze-type bottles to clean the repair surface with solvent.

s 118-015

(6) Clean the repair surface with clean cloth.

NOTE: Do this step again frequently with new clean cloth, until the clean cloth shows no unwanted material.

s 118-016

- (7) Dry the repair surface with clean, dry cloth.
- D. Examine the repair surface

s 218-005

(1) Use the light to visually examine the surface.

NOTE: Make sure the surface has no dirt, oil.

s 118-006

(2) Do the steps C (5-7) again until the surface is clean.

s 118-007

ALL

(3) Dry the surface with clean, dry, lint-free cloth.

<u>NOTE</u>: Do the steps C(5-7) again if there is unwantede material on the cloth.

EFFECTIVITY-

51-24-10



E. Apply BMS 14-4 Type 2 coating

NOTE: It is necessary to apply the coating immediately.

s 378-019

WARNING: THE PAINT MATERIALS CONTAIN TOXIC AND/OR FLAMMABLE INGREDIENTS.

GET INSTRUCTIONS FROM THE INDUSTRIAL HYGIENE, FIRE, AND/OR

SAFETY ORGANIZATIONS ON FACILITIES, EQUIPMENT, VENTILATION, AND

OTHER NECESSARIES FOR SAFE OPERATIONS.

(1) Mix the BMS 14-4 Type 2 coating refer to the manufacturer's instructions.

s 378-009

<u>CAUTION</u>: FULLY MIX THE COATING MATERIAL BEFORE USE TO MAKE SURE THE COATING HAS A HOMOGENEOUS MIXTURE.

(2) Apply the spray or brush coat of the BMS 14-4 Type 2 coating to the repair area.

NOTE: Make an overlap of the coating to the area that is not damaged a minimum of 1/2 inch peripherally until you get a smooth gray coating.

s 378-017

(3) Permit to air dry for 30 minutes.

s 378-018

(4) Make sure the coating has a smooth gray color after it is dry.

s 378-010

ALL

<u>CAUTION</u>: DO NOT MIX THE COATING WITH THE CATALYST AND DO NOT LET THE CATALYST TO TOUCH THE ADJACENT SURFACES.

(5) Apply one coat BMS 14-4 Type 2 catalyst to the repair area.

EFFECTIVITY-

51-24-10



s 378-011

(6) Cure the coating at room temperature for a minimum of 16 hours before you can use it. You can touch the coating after 8 hours cure.

NOTE: Cure the coating at 300 +50/-50°F for 4 hours will decrease the cure time.

> The final coating must be 1.5 to 3.5 mils (0.0015 to 0.0035 inches) thick. Do the coating again as necessary to get the thickness.

s 218-012

- (7) Make sure the cured coating has a smooth gray surface with no cracks, checks, blisters, discoloration, or other defects.
 - (a) If it is necessary, remove the defective coating and do steps 2.C through 2.E again.

EFFECTIVITY-

ALL

51-24-10



DECORATIVE PAINT SYSTEM - CLEANING/PAINTING

1. General

- A. This procedure contains these tasks:
 - (1) Decorative Exterior Paint System Application.
 - (2) Decorative Exterior Paint System Repair.

TASK 51-24-11-377-082

- 2. <u>Decorative Exterior Paint System Application</u>
 - A. General
 - (1) Do not get paint or primer on the surfaces of the items that follow:
 - (a) Rain repellent nozzles that are forward of the windshields.
 - (b) Rubber mohair seals, rub strips made of stainless steel, anodized handles and door handle pans, or silicone rubber sealant.
 - (c) Pressure relief valves or outflow valves.
 - (d) Circular bands, one inch in width, around or on the pressure relief valve doors, or outflow valves.
 - (e) Door operating mechanisms, hinge assemblies, and equivalent surfaces.
 - (2) Do not allow solvents, cleaners, or overspray to contact polycarbafil plastic parts.
 - B. References
 - (1) 51-21-02/701, Clean the Surface.
 - (2) 51-21-02-7, Prepare the surface.
 - C. Procedure

s 107-084

(1) Do this task: Clean the Surface (AMM 51-21-02/701).

s 847-085

(2) Do this task: Prepare the Surface (AMM 51-21-02/701).

s 377-086

WARNING: DO NOT GET FINISHES, CLEANERS, THINNERS, OR SOLVENTS IN YOUR MOUTH, OR YOUR EYES, OR ON YOUR SKIN OR CLOTHES. DO NOT BREATHE THE FUMES FROM THESE MATERIALS. MAKE SURE THE AIR

FLOWS FREELY THROUGH THE WORK AREA. USE THE NECESSARY
RESPIRATORY PROTECTION. KEEP THESE MATERIALS AWAY FROM SPARKS,
FLAME, AND HEAT. THESE MATERIALS ARE POISONOUS AND FLAMMABLE

AND CAN CAUSE INJURY OR DAMAGE.

(3) Apply the decorative exterior paint system as specified by the manufacturer's specifications and with the table, (Table 701).

EFFECTIVITY-

51-24-11



Decorative Exterior Paint System Application Specifications Table 701		
Description	Coating Specification	Application Specification
Chemical and Solvent Resistant Finishes	BMS 10-11	BAC 5736
Corrosion Resistant Finish for Integral Fuel Tanks	BMS 10-20	BAC 5793
Polyurethane Enamel	BMS 10-60	BAC 5845
Exterior Decorative Paint	BMS 10-72	D6-1816
Urethane Compatible Primer	BMS 10-79	BAC 5882

TASK 51-24-11-477-083

- 3. <u>Decorative Exterior Paint System Repair</u>
 - A. Consumables
 - (1) B00102 Abrasive, aluminum oxide disks and sheets A-A-1048
 - (2) G00034 Cloth, process cleaning absorbent wiper (cheesecloth, gauze) BMS15-5
 - (3) B01005 Solvent, Final Cleaning of All Organic Coatings Prior to Painting Series 85 (AMM 20-30-85/201 or SOPM 20-30-85)
 - B. References
 - (1) 51-21-01/701, Interior/Exterior Finishes (Paint Stripping)
 - (2) 51-24-11/701, Decorative Exterior Paint System Application
 - C. Procedure
 - s 377-087
 - (1) Repair areas with minor damage (no bare metal) as follows:
 - (a) Rub the surface smooth with a 240 grit (minimum) wet or dry abrasive, A-A-1048 paper.
 - (b) Remove the remaining particles with a clean cloth that is moist with solvent, Series 85 (AMM 20-30-85/201 or SOPM 20-30-85).
 - (c) Dry the surface with a clean cloth, BMS15-5.
 - (d) Apply the applicable primer and topcoats, if necessary as follows:
 - 1) Do this task: Decorative Exterior Paint System Application (51-24-11/701).
 - (e) Feather the edges to get a smooth continuous finish.
 - s 377-088
 - (2) Repair areas with large damage (bare metal) as follows:

 51-24-11



CAUTION: DO NOT LET THE PAINT STRIPPER TOUCH FIBERGLASS OR SEAMS OF ADHESIVE BONDED PARTS. THE PAINT STRIPPER CAN CAUSE DAMAGE TO FIBERGLASS OR SEAMSOF ADHESIVE BONDED PARTS.

- (a) Rub the surface smooth with abrasive, A-A-1048 paper, or do this task: Paint Stripping (AMM 51-21-01/701).
- (b) Feather the edges of the adjacent are with a 240 grit (minimum) abrasive, A-A-1048 paper that is moist with water.
- (c) Remove the remaining particles with a clean cloth, BMS15-5 that is moist with solvent, Series 85 (AMM 20-30-85/701).
- (d) Dry the surface with a clean cloth, BMS15-5.
- (e) Apply the applicable primers and topcoats as follows:1) Do this task: Decorative Exterior Paint System Application (AMM 51-24-11/701).
- (f) Feather the edges to get a smooth continuous finish.

s 377-089

- (3) Repair areas with defective paint layers as follows:
 - (a) Rub the surface with a 240 grit (minimum) wet or dry abrasive, A-A-1048 paper to remove defects.
 - (b) Feather the edges into the adjacent areas.
 - (c) Remove the remaining particles with a clean cloth, BMS15-5 that is moist with solvent, Series 85 (AMM 20-30-85/201 or SOPM 20-30-85).
 - (d) Dry the surface with a clean cloth, BMS15-5.
 - (e) Apply the applicable topcoats per the manufacturer's specifications and Table 701.
 - (f) Feather the edges to get a smooth continuous finish.

EFFECTIVITY-

51-24-11



TEMPORARY LEEDER 314N COATING - CLEANING/PAINTING

1. General

- A. This procedure contains two tasks:
 - (1) The first task is the removal of the temporary Leeder 314N coating.
 - (2) The second task is to apply the temporary Leeder 314N coating.
- B. The temporary Leeder 314N coating is for use on the permanent decorative finish. You can remove the coating at a later date, and will not cause damage to the finish of polyurethane enamels.
- C. To prevent color differences in areas where the Leeder 314N is applied, you must remove the Leeder 314N and replace in 3 to 4 months.

TASK 51-24-12-307-001

- 2. Temporary Leeder 314N Coating Removal
 - A. Consumable Materials
 - (1) B00316 Solvent Aliphatic Naphtha, TT-N-95
 - (2) B00775 Alcohol Isopropyl, TT-I-735
 - (3) B00192 Solvent Cleaning, General Purpose, BMS 3-2, Type 1
 - (4) B00148 Solvent Methyl Ethyl Ketone (MEK), TT-M-261
 - (5) G00000 Compound Rubbing, Parko
 - (6) G00034 Cheesecloth Clean and Lint-Free
 - B. References
 - (1) 51-24-11/701, Decorative Paint System
 - C. Procedure

s 117-014

WARNING: DO NOT GET SOLVENTS IN YOUR MOUTH, OR YOUR EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM SOLVENTS. SOLVENTS ARE HAZARDOUS MATERIALS. SOLVENTS MAY BE FLAMMABLE OR HARMFUL TO THE ENVIRONMENT. REFER TO PRODUCT MATERIAL SAFETY DATA SHEETS (MSDS) AND LOCAL REQUIREMENTS FOR PROPER HANDLING PROCEDURES.

(1) Remove the marks with a clean cloth that is moist with BMS 3-2 TT-N-95 naphtha or a solution of 4 parts naphtha and 1 part isopropyl alcohol.

s 117-003

(2) Do the step again if it is necessary until all the marks are removed.

s 117-004

(3) Use the Parko Rubbing Compound to remove the remaining marks or discoloration.

EFFECTIVITY-

51-24-12

ALL



s 117-015

(4) Repair the permanent decorative finish that is damaged during the removal (Ref 51-24-11/701).

TASK 51-24-12-307-007

- 3. Temporary Leeder 314N Coating Apply
 - A. Consumable Materials
 - (1) G00034 Cheescloth Clean and Lint-Free
 - (2) B00000 Cleaner Leeder 168D
 - (3) B00192 Solvent Cleaning, General Purpose, BMS 3-2, Type 1
 - (4) B00083 Solvent Aliphatic Naphtha, TT-N-95
 - (5) G00132 Tape Masking, No. 214, 3M Company
 - (6) B00000 Leeder 314N
 - B. References
 - (1) 51-21-02/701, Interior and Exterior Finishes (Prepaint Cleaning and Pretreatment)
 - C. Procedure

s 117-016

(1) Remove the unwanted materials from the surface.

s 117-017

(2) Use sand paper to remove the unwanted materias if it is necessary (Ref 51-21-02/701).

s 117-018

- (3) To clean the surface with the Leeder 168D cleaner, do the steps that follow:
 - (a) Apply the Leeder 168D cleaner with the clean cheesecloth and clean the surface fully.
 - (b) Before the Leeder 168D cleaner dries, dry the surface with a clean, dry cheesecloth.
 - (c) Do the operation again until the cheesecloth shows no unwanted materials.

<u>NOTE</u>: The clean surface is overcoated in 6 hours after you clean it.

s 377-008

(4) Let the enamel paints to cure a minimum of 48 hours at room temperature before you apply the Leeder 314N.

s 117-009

(5) Lightly clean the surface with the clean cheesecloth that is moist with the BMS 3-2 solvent or TT-N-95 naphtha.

EFFECTIVITY-

51-24-12

ALL



s 957-010

(6) Put 3M No. 214 tape around the areas where you will apply the coating.

s 377-011

(7) Fully mix the Leeder 314N and strain it through layers of the cheesecloth.

s 377-012

(8) Apply the spray of the Leeder 314N to a dry layer thickness sufficient to get a full color but no more than 2.0 mils.

s 377-013

(9) Do not touch the Leeder 314N, and let it dry in 1 hour at 75°F or higher. Let the Leeder 314N dry for 4 hours at this temperature before it can get to the rain or temperature below 60°F.

EFFECTIVITY-

51-24-12

ALL



WATER DISPLACING CORROSION PREVENTIVE COMPOUND - CLEANING/PAINTING

1. General

- A. This procedure contains three tasks:
 - (1) The first task is to prepare the surface before you apply the corrosion preventive compound.
 - (2) The second task is the instructions to apply the corrosion preventive compound.
 - (3) The third task is the removal of corrosion preventive compound.

TASK 51-24-13-107-001

2. Prepare the Surface

- A. Consumable Materials
 - (1) B00535 Solvent Perchloroethylene, Technical, 0-T-236
 - (2) G00034 Cheesecloth Clean and Lint-Free
 - (3) G00000 Tape Masking, No. 221, 3M company
 - (4) G00000 Caps Protective closure for exposed oxygen system tubing
 - (5) G00818 Film Plastic
 - (6) GOO111 Sheeting Plastic Film, Mylar
 - (7) G00000 Polyethylene
 - (8) G00000 Polyvinyl Chloride
 - (9) G00000 Paper Polyethylene coated
- B. References
 - (1) 24-22-00/201, Manual Control
 - (2) 20-41-01/201, Static Grounding (Airplanes)
 - (3) 35-00-00/201, 0xygen
- C. Procedure

s 587-002

(1) Remove the electrical power (Ref 24-22-00/201).

s 587-003

(2) Ground the airplane (Ref 20-41-01/201).

s 147-004

(3) Clean the surfaces with a vacuum cleaner.

EFFECTIVITY-

51-24-13

ALL



s 117-005

(4) Clean the surface with perchloroethylene solvent.

NOTE: You must fully clean the surface to help the corrosion preventive compound get in the surface and mating surfaces.

s 957-006

(5) Apply masking tape or plastic to the adjacent surfaces.

s 957-007

(6) Apply masking tape to the open electrical connector to keep contamination out of the electrical contacts.

s 957-008

DO NOT LET CORROSION PREVENTIVE COMPOUND GET IN THE OXYGEN WARNING: SYSTEM. IF THE CORROSION PREVENTIVE COMPOUND GETS IN THE OXYGEN SYSTEM, A FIRE OR AN EXPLOSION CAN OCCUR.

(7) Make sure you keep the BMS 3-23 corrosion preventive compound out of the oxygen system (Ref 35-00-00/201).

s 957-009

(8) Put covers on the control cables, pulleys, teflon bearings, rubber, silicone, and lubricated surfaces.

NOTE: Masking tape is not sufficient. Use plastic or equivalent covers to fully seal the equipment from the compound.

TASK 51-24-13-607-010

3. <u>Corrosion Preventive Compound - Apply</u>

ALL

A. General

EFFECTIVITY-

51-24-13



WARNING: THE BMS 3-23 IS APPROXIMATELY AS POISONOUS AS KEROSENE OR ALIPHATIC NAPHTHA. USE THE SAME PRECAUTIONS FOR BMS 3-23 AS KEROSENE. WHEN YOU SPRAY THE BMS 3-23 IN A CLOSED AREA, A GAS CONCENTRATION OF 500 PPM (PARTS PER MILLION) IS THE MAXIMUM COMFORTABLE WORKING LIMIT. AT THIS CONCENTRATION, A PERSON CAN WORK FOR 8 HOURS. GAS LEVELS MORE THAN 500 PPM ARE NOT FULLY POISONOUS, BUT YOU MUST SUPPLY A FLOW OF AIR TO KEEP THE AREA COMFORTABLE. PERCHLOROETHYLENE IS THE RECOMMENDED SOLVENT BECAUSE IT IS NONFLAMMABLE. BUT, PERCHLOROETHYLENE IS POISONOUS. YOU MUST SUPPLY A FLOW OF AIR IF YOU WILL USED IT IN CLOSED AREAS. RESPIRATORY DEVICES AND SKIN PROTECTION CAN BE NECESSARY.

(1) This procedure gives instructions to apply the water-displacing corrosion preventive compound, BMS 3-23. We recommended that you apply the BMS 3-23 periodically.

NOTE: Each operator must know his aircraft's environment, the corrosion preventive compound used, and when it was applied. If not, the corrosion protection can be unsatifactory. Boeing made BMS 3-23 as a standard for organic corrosion inhibitors and recommends its use. But, there are other water-displacing corrosion preventive compounds that can be satisfactory.

CAUTION: KEEP BMS 3-23 AWAY FROM SURFACES THAT CAN BE 300°F OR MORE DURING USE. THE DRY FILM FLASH POINT IS 500°F. THE BMS 3-23 CAN CAUSE A FIRE OR AN EXPLOSION.

- (2) The BMS 3-23 is not satisfactory for surfaces that can be more than 150°F because it contains wax compounds.
- (3) It is not easy to apply a primer and paint on the BMS 3-23. The BMS 3-23 gets in the surface and can bleed-out. This can cause the primer and paint to have a unsatisfactory bond.
- (4) Let the primer and enamel dry for a minimum of 8 hours before you apply the BMS 3-23.

EFFECTIVITY-

51-24-13



- (5) Apply masking tape and paper or plastic to the area where you will not apply the BMS 3-23.
- Apply tape and plastic to the electrical connectors to prevent contamination on the electrical contacts.
- (7) Do not apply BMS 3-23 to the actuator rods.

NOTE: BMS 3-23 or all other hydrocarbons can cause damage to the seals that are used with BMS 3-11 hydraulic fluid.

(8) Be careful when you apply the BMS 3-23 near to silicone rubber seals or clamps with rubber lining.

WARNING: DO NOT LET CORROSION PREVENTIVE COMPOUND GET IN THE OXYGEN SYSTEM. IF THE CORROSION PREVENTIVE COMPOUND GETS IN THE OXYGEN SYSTEM, A FIRE OR AN EXPLOSION CAN OCCUR.

(9) Make sure you keep the BMS 3-23 corrosion preventive compound out of the oxygen system (Ref 35-00-00/201).

NOTE: Masking tape is not sufficient. Use plastic or equivalent covers to fully seal the equipment.

- Consumable Materials
 - G00009 Compound Corrosion Preventive, BMS 3-23, Type I or Type II
 - (2) COO755 Compound Corrosion Preventive, BMS 3-26, Type I
 - COO915 Compound Corrosion Preventive Advanced, BMS 3-29 (3)
 - (4) G00034 Cheesecloth Clean and Lint-Free
 - (5) G00268 Paint Brush Nylon or Bristle
- References
 - (1) 51-41-03/401, Fuselage Drain Valve Removal/Installation
- Procedure

s 027-018

(1) Remove the drain valves (Ref 51-41-03).

s 497-019

ALL

(2) Apply the necessary masking tape and plastic.

EFFECTIVITY-

51-24-13



s 627-011

Apply a layer of the corrosion preventive compound. You can spray it, use a brush or a cloth to apply it.

Make sure a sufficient quantity of air can flow through the closed areas like the cavities and cargo compartments.

s 627-012

(4) Permit the layer to stay on the surface for a minimum of 30 minutes to make sure it gets into the mating surfaces.

s 147-013

(5) Remove the unwanted corrosion preventive compound from the surface with clean wipers.

NOTE: Only a thin layer is necessary. A thick layer will not give better protection than a thin layer, and will hold dirt.

s 957-014

(6) Remove all the masking tape, and the protective paper or plastic.

s 847-015

(7) Make sure a sufficient quantity of air can flow through the closed areas like the cavities and cargo compartments until they are dry.

The gas from the compound can be volatile. You must remove NOTE: the gas before you close the access panels that will hold the gas in the closed areas.

TASK 51-24-13-107-016

4. <u>Corrosion Preventive Compound - Removal</u>

ALL

- General
 - (1) The corrosion preventive compound can come through skin fasteners. It will be a brown color on the airplane.

EFFECTIVITY-

51-24-13



- B. Consumable Materials
 - (1) B00535 Solvent Perchlorethylene, Technical, 0-T-236
 - (2) B00115 Solvent Trichlorothane, 0-T-620
 - (3) B00083 Solvent Alphatic Naphtha, TT-N-95
 - (4) B00722 Solvent Stoddard, P-D-680
 - (5) G00034 Cheesecloth Clean and Lint-Free
- C. Procedure

s 117-017

- (1) To remove the unwanted corrosion preventative compound from the airplane, use one of these solvents (Ref 20-30-01):
 - Perchlorethylene
 - Trichlorethane
 - Naphtha
 - Stoddard Solvent

NOTE: Methyl Ethyl Ketone (MEK) or Acetone is not recommended. You must make sure the air flow is sufficient while you remove the corrosion preventive compound and until the area is dry.

EFFECTIVITY-

51-24-13

ALL



RAIN EROSION RESISTANT COATING - CLEANING/PAINTING

1. General

- A. This procedure contains one task:
 - (1) The task is to apply the rain erosion resistant coating on the nose radome.
- WARNING: THE COATING MATERIALS ARE TOXIC AND FLAMMABLE. HAVE SUFFICIENT AIR FLOW AND OBEY THE CORRECT FIRE PRECAUTIONS WHEN YOU MIX AND APPLY THE MATERIALS.
- CAUTION: THE COATING IS VERY SENSITIVE TO THE PERMANENT STAIN. DO NOT TOUCH THE COATING WITH DYED MATERIAL. DYE CAN PERMANENTLY STAIN THE COATING.
- B. The rain erosion resistant coating prevents the erosion by the rain, and prevents the radome structure from the weather and the moisture.
- C. To control the environment, each coat thickness and recoat cure time is important to give a bubble free, adherent and erosion resistant coating.
- D. The erosion resistant coating system has a primer (1.0 \pm 0.5 mils) and an erosion resistant material (12.0 \pm 2.0 mils).
- E. To get a good quality coating, the area that you apply the coating must be clean and free of the dust, lint or other contamination.
- F. The coating cures only by the effect with air moisture. An unsatisfactory quality coating and extended cure time is a result when the humidity is less than 40% at 70°F.

TASK 51-24-17-307-001

2. Nose Radome Painting - Rain Erosion Resistant Coating

- A. Equipment
 - (1) Spraying Equipment
 - (2) No. 2 Zahn Cup
- B. Consumable Materials
 - (1) G00268 Brush Soft Bristle (Nylon)
 - (2) G00034 Cheesecloth Clean and Lint-Free
 - (3) G00381 Paper Abrasive, Aluminum Oxide 180 Grit
 - (4) C00000 Astrocoat Kit 7100, Polyurethane Erosion Coating (Includes Coating, Primer, Accelerator and Thinner)
 - (5) COOOOO Caapcoat Fluoroelastomer, Type 2, ASM 3138/2
 - (6) B00148 Solvent Methyl Ethyl Ketone (MEK), TT-M-261
 - (7) B00344 Cleaner Xylene, TT-X-916
 - (8) B00153 Solvent Toluene (Toluol), TT-T-548
 - (9) B00189 Solvent Thinner, TL-52
 - (10) B00000 Solvent Methyl Isobutyl Ketone (MIBK), TT-M-268

EFFECTIVITY-

51-24-17

ALL



C. Storage

s 917-010

- (1) Keep all the coating materials in the building at temperatures between 40 to 80°F. The shelf life is 12 months from the date of the manufacture.
- D. Paint the Nose Radome

s 117-009

WARNING: THE COATING MATERIALS ARE TOXIC AND FLAMMABLE. HAVE SUFFICIENT VENTILATION AND CORRECT FIRE PRECAUTIONS WHEN YOU MIX AND APPLY THE MATERIALS.

- (1) Miscellaneous Data
 - (a) The coating materials must be same and free of coarse particles.
 - (b) Make sure the coating materials have a lint and bubble free, smooth and continuous layer of the necessary film thickness.
 - (c) Make sure you do not apply the coating on the rubber paint.
 - (d) Make sure the laminate surface to be coated is smooth and bubble free.
 - (e) If you can not see the small bubbles in the final coat, do not reject the coating materials.

s 127-003

(2) Prepare the Surface

ALL

WARNING: DO NOT GET SOLVENTS IN YOUR MOUTH, OR YOUR EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM SOLVENTS.

SOLVENTS ARE HAZARDOUS MATERIALS. SOLVENTS MAY BE FLAMMABLE OR HARMFUL TO THE ENVIRONMENT. REFER TO PRODUCT MATERIAL SAFETY DATA SHEETS (MSDS) AND LOCAL REQUIREMENTS FOR PROPER HANDLING PROCEDURES.

<u>CAUTION</u>: DO NOT LET THE SOLVENT TOUCHES THE ASTROCOAT TOO LONG.

THE COATING WILL BECOME LARGER.

- (a) On the radomes which are coated with Astrocoat before, clean the surface fully with solvent, Series 94 (AMM 20-30-94).
- (b) On the radomes which are coated with other coating but the Astrocoat, prepare the surface as follows:
 - 1) Before you use the sand paper on the surface, remove the remaining materials from the surface to be coated with clean cheesecloth that is moist with Toluene or Xylene.

EFFECTIVITY-

51-24-17



- 2) Clean the surface dry with clean cheesecloth.
- 3) Use the sand paper with 180 grit or finer abrasive on the surface to be coated to remove the coatings or glossy finish of the laminate.
- 4) Clean the laminate with clean cheesecloth to remove the dirt.
- 5) Clean the surface to be coated with clean cheesecloth that is moist with Toluene or Xylene.
- 6) Clean the surface dry with dry cheesecloth.

s 377-004

(3) Mix and Apply the Primer

NOTE: The primer is supplied in Astrocoat kit 7100.

- (a) Shake the primer base fully.
- (b) Add one part by volume of accelerator to one part by volume of base, while you mix the base.
- (c) Put the label on the container immediately after you mix, with the information on the date and the time when you mix and the expired time of the pot life.

NOTE: The pot life at 75 ±5°F is 8 hours from the time you mix. Discard the material of the pot life that is expired.

(d) Mix with the thinner as it is necessary to get a viscosity of 27 to 29 seconds measured with a No. 2 Zahn cup.

<u>NOTE</u>: The maximum ratio of the thin is one part by volume of thinner to one part by volume of base.

- (e) Let the primer dry for 15 minutes minimum.
- (f) Use the brush or spray gun to apply the primer to get a dry film thickness of 1.0 ± 0.5 mil.
- (g) Let the primer dry at 75 ±5°F for a minimum of 2 hours and a maximum of 18 hours before you apply the erosion coating.
- (h) If the layer is rough, use the sand paper lightly on the primer coat with 180 grit or finer abrasive paper before you put on the coating again.
- (i) Clean the surface with Toluene or Xylene to remove the dirt.

s 377-005

(4) Mix and Apply the Erosion Coating

NOTE: The erosion coating is supplied in Astrocoat kit 7100.

(a) Shake the base material fully.

EFFECTIVITY-

51-24-17



(b) Add the catalyst to the base at the maximum ratio of 40 ml (1.3 fluid ounce) catalyst for one quart of base.

NOTE: Carefully not to have more than this ratio.

- (c) Mix the base.
- (d) Put the label on the container immediately after you mix, with the information on the date and time when you mix and the expired time of the pot life

NOTE: The pot life at 75 ±5°F is 4 hours from the time you mix. Discard the material of the pot life which is expired.

(e) If you use spray gun to apply the coating, mix with the thinner as it is necessary to get a viscosity of 27 to 29 seconds measured with a No. 2 Zahn cup.

<u>NOTE</u>: The maximum ratio of the thinner is one part by volume of thinner to three parts by volume of base.

- (f) If you use a brush to apply the coating, it is not necessary to have the thinner.
- (g) The coating mixture does not need to dry before you can apply the coating.
- (h) Apply one coating by brush or spray gun to get a wet layer thickness of 0.8 to 1.5 mils (0.5 to 1.0 mil dry).
- (i) Let the coating dry sufficiently, for when you touch the coating, there will not be the coating on the fingers and the fingerprint will not be on the coating. The coating must be lightly tacky.

NOTE: The dry time between the coating procedure is approximately 1.5 hours at 40 to 50% relative humidity and 70 to 75° F.

- (j) Apply more coatings as it is necessary to get a dry film thickness of 10 to 14 mils.
 - NOTE: You must complete the coating procedure and try not to have intermittent time if it is possible. If the intermittent time between coats is more than 4 hours, the last coat before the intermittent time must not be catalyzed. You can start the coating procedure again after 8 to 18 hours at 40 to 50% relative humidity and 70 to 75°F; but the coating before the intermitten time must stay lightly tacky. If the coating is not tacky, start the coating again with solvent, Series 94 (AMM 20-30-94).

EFFECTIVITY-

51-24-17



(k) If you stop the coating procedure, and the coating before is not tacky, start the coating procedure again with solvent, Series 94 (SOPM 20-30-94), refer to "Prepare the Surface" task.

NOTE: You can have bubbles during cure if the coat is too heavy, or if the dry time is not sufficient between the coats.

- (l) If small bubbles occur in the coating, let the cure time be longer between the coating and decrease the coating thickness.
- (m) If you continue to have bubbles in the next two coating procedures, remove the coating refer to "In Process Correction of Damaged Rain Erosion Coating - Major Damage" task.
- (n) Start the coating procedure again.
- (o) If big bubbles occur in the coating, remove the coating refer to "In Process Correction of Damaged Rain Erosion Coating -Major Damage" task.
- (p) Start the coating procedure again.

s 377-006

- (5) To cure the erosion coating, do the steps that follow:
 - (a) Cure a minimum of 8 hours at the usual cure conditions (70 to 75°F and 40 to 50% relative humidity) after you apply the final coating.

<u>NOTE</u>: If the temperature is less than 70°F or the humidity is less than 40%, you will need a longer time to cure the coating.

- (b) The cure time it needs before you can use the sandpaper on the coating is from 24 to 36 hours at the usual cure conditions.
- (c) You can use forced cure at high temperature and humidity on the coating procedure at 1 hour intermittent.

NOTE: The uncatalyzed coatings have too much cure time.

E. In Process Correction of Damaged Rain Erosion Coating

s 357-007

(1) Repair the small damage.

<u>NOTE</u>: Small nick, scratch, gouge, or other defect is small damage.

- (a) Cut the loose coating.
- (b) Use the sand paper with 180 grit or finer abrasive on the defect coating. Try not to use the sand paper on the laminate.
- (c) Clean the coating with toluene or xylene.

EFFECTIVITY-

51-24-17



(d) Apply the primer with the brush as it is necessary.

NOTE: Do not apply the primer on the polyurethane coating.

(e) Apply the topcoat with brush as it is necessary.

s 357-008

(2) Repair the big damage.

NOTE: Big bubbles on the coating, or the coating is incorrect are big damage.

- (a) Use the cloths that are moist with with solvent, Series 94 # (AMM 20-30-94) to remove the coating from the damaged area.
- Put the plastic film on the damaged area to be removed. (b)
- Do the step (a) again until the removal is complete.
- Do the damaged coating again refer to "Paint the Nose Radome" task.

EFFECTIVITY-

ALL

51-24-17



ALUMINIZED EPOXY PRIMER - CLEANING/PAINTING

1. General

- A. This procedure contains two tasks:
 - (1) The first task is to clean the surface before you apply the aluminized epoxy primer.
 - (2) The second task is to apply the aluminized epoxy primer.
- B. The aluminized epoxy primer is for use as an interior paint.

TASK 51-24-20-107-001

- 2. Clean the Surface To Apply Aluminized Epoxy Primer
 - A. Consumable Materials
 - (1) B00083 Solvent Aliphatic Naphtha, TT-N-95
 - (2) G00383 Paper Abrasive, Aluminum Oxide, 320 grit
 - B. References
 - (1) 51-21-03/701, Corrosion Removal and Control
 - C. Procedure

s 117-002

- (1) To clean the surface to be apply with aluminized epoxy primer, do the steps that follow:
 - (a) Clean the surface with aliphatic naphtha to remove the oil or grease.
 - (b) Remove the corrosion if it is necessary (Ref 51-21-03/701).

TASK 51-24-20-307-003

- 3. Aluminized Epoxy Primer Apply
 - A. Consumable Materials
 - (1) C00324 Alodine Clear, MIL-C-5541
 - (2) COOOOO Primer Aluminized Epoxy, 463-6-4
 - (3) C00325 Catalyst X-306
 - (4) B00189 Solvent Thinner TL-52
 - B. References
 - (1) 51-21-04/701, Alodized Surfaces
 - C. Procedure

s 377-006

WARNING: DO NOT GET ALODINE ON YOUR SKIN. THE ALODINE CONTAINS CHROMIC ACID. DO NOT LET THE ALODINE SOAKS THE CLOTHS TO DRY OUT BEFORE YOU DISCARD THE CLOTHS, THE ALODINE CAN CAUSE EXPLOSION.

(1) Clean the bare aluminum surface with clear alodine (Ref 51-21-04/701).

s 377-005

- (2) To apply the aluminized epoxy primer to the surface, do the steps that follow:
 - (a) Mix the primer, three parts base and one part catalyst by volume.

EFFECTIVITY-

51-24-20

ALL



- (b) Make the primer thin with TL-52 up to a maximum thin ratio of four parts finish and one part thinner by volume if it is necessary.
- (c) Apply the spray to a dry layer thickness of 0.8 to 1.2 mils.
- (d) Cure a minimum of four hours at 75 ±5°F before service.

ALL

51-24-20

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Page 702 Oct 10/91



SEALS AND SEALING - DESCRIPTION AND OPERATION

1. General

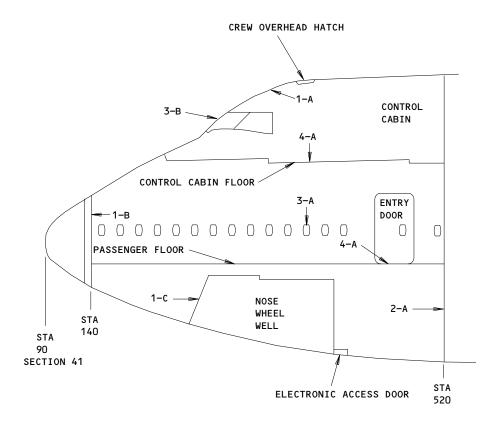
- A. Certain portions of airplane structure are sealed to prevent passage of gases or liquids through the many small gaps which normally exist at joints in fabricated structures. Sealing is accomplished by applying sealing compounds to crevices, edges and joints through which a fluid or gas might pass. The sealant used depends upon such factors as resistance of sealant to effects of fluids and temperatures.
- B. In addition to sealing requirements contained in this section, installation drawings for specific items may require additional sealing.
- C. Sealing definitions used in this section other than wing sealing are as follows. Wing sealing definitions are located in Fig. 6 and 7:
 - (1) <u>Absolute seal</u>. No leakage is allowed. All openings of any nature in the seal envelope, including all fasteners and seams require sealing.
 - (2) <u>Intermediate seal</u>. All holes, slots, and joggles, and seams in the seal envelope require sealing.
 - (3) <u>Limited seal</u>. All holes, slots, and joggles in the seal envelope require sealing.
- D. Unless otherwise specified, all sealing shall be accomplished per 51-31-01/201.

2. Structural Sealing

- A. Most of the structural sealing on the airplane encloses the pressurized zone of the fuselage and integral fuel tanks in the outboard and center sections of the wing (Fig. 1 thru 8).
- B. Several other local areas of structure are sealed to provide protection from, and proper drainage of, certain fluids. Examples of this are the areas below the toilets, galley, battery stowage, and air conditioning plenums.
- C. In the area of the engines, sealant is used to isolate nacelles and pylons from the wing.

51-31-00





SEALING REQUIREMENTS

PRESSURE SEAL

1-A (INTERMEDIATE) - INSIDE CONTOUR

1-B (INTERMEDIATE) - AFT SURFACE OF STA 140 BULKHEAD 1-C (INTERMEDIATE) - AIRPLANE SIDE OF WHEEL WELL

WEATHER SEAL

2-A (INTERMEDIATE) - ALL EXTERNAL GAPS AND NONBONDED SEAMS

AERODYNAMIC SEAL

3-A (LIMITED) - ALL EXTERNAL GAPS INVOLVED IN THE AIRSTREAM NECESSARY TO MEET

AERODYNAMIC REQUIREMENTS

3-B (LIMITED) - CAB WINDOWS SEALED PER CHAPTER 56

LIQUID SEAL

- UPPER SURFACES OF CONTROL CABIN FLOORS IN FORWARD OF STA 520 AND 4-A (ABSOLUTE)

PASSENGER FLOOR IN AREA OF LAV, GALLEY, ENTRY AND BAR

Seal Index and Requirements Body Section 41 Figure 1 (Sheet 1)

EFFECTIVITY-ALL

51-31-00

01

Page 2 Oct 10/88



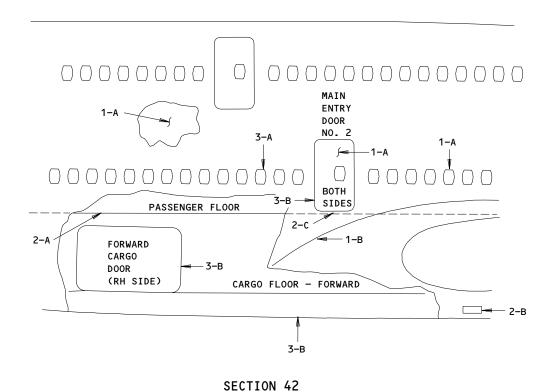
APL SEC NO.	DRAWING NO.	DESCRIPTION
41	65B00053	SEAL APPLICATION - FLOORS, SECTION 41
41	65B00052	SEAL APPLICATION - EXTERIOR, SECTION 41
41	65B10410	SEAL APPLICATION - SKIN AREA, SECTION 41
41	65B10411	SEAL APPLICATION - NOSE WHEEL WELL
41	65B10412	SEAL APPLICATION - CAB
41	65B10413	SEAL APPLICATION - STA 140 BULKHEAD
41	65B10414	SEAL APPLICATION - DOORS, SECTION 41
41	65B14868	COLD BOND AREAS, CORROSION RESISTANCE

Seal Index and Requirements Body Section 41 Figure 1 (Sheet 2)

51-31-00

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SEALING REQUIREMENTS

PRESSURE SEAL

1-A (INTERMEDIATE) - INSIDE CONTOUR OF AIRPLANE FROM STA 520 TO STA 1000 INCLUDING

WINDOW FORGINGS AND DOORS - FAIRING ATTACH POINTS TO BODY 1-B (INTERMEDIATE)

LIQUID SEAL

2-A (ABSOLUTE) - FLOOR PANELS IN ENTRY AISLES, GALLEY, BAR, COAT CLOSETS AND

LAVATORY COMPARTMENT

2-B (ABSOLUTE) - WATER SERVICE PAN

- LOWER AREA OF MAIN CABIN DOOR INTERIOR (WATER DAM) 2-C (ABSOLUTE)

WEATHER AND AERODYNAMIC SEAL

3-A (LIMITED OR INTERMEDIATE) - EXTERIOR GAP AROUND WINDOW FORGINGS
3-B (LIMITED OR INTERMEDIATE) - EDGE OF DOOR CUTOUTS, EXTERNAL SKIN GAPS AND SEAMS

Seal Index and Requirements Body Section 42 Figure 2 (Sheet 1)

EFFECTIVITY-51-31-00 ALL 01 Page 4 Apr 10/89 BOEING PROPRIETARY - Copyright (C) - Unpublished Work - See title page for details.



APL SEC NO.	DRAWING NO.	DESCRIPTION
42	65B04916	SEAL APPLICATION - SECTION 42
42	65B04918	SEAL APPLICATION - BODY TO WING FAIRING ATTACHMENT
42	65B04919	SEAL APPLICATION - FORWARD AND AFT CARGO DOORS
42	65B04920	SEAL APPLICATION - EXTERIOR
42	65B04881	SEAL APPLICATION - FLOOR PANELS
42	65B06856	SEAL APPLICATION - MAIN CABIN DOORS

Seal Index and Requirements Body Section 42 Figure 2 (Sheet 2)

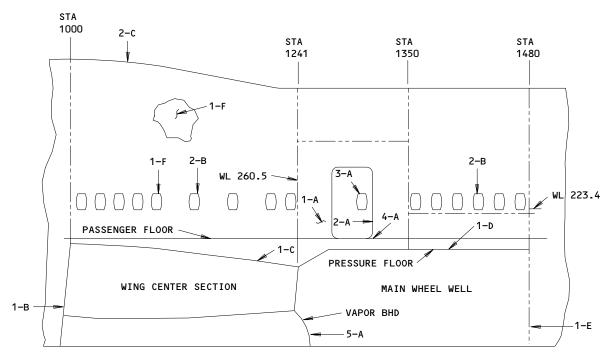
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Page 5 Oct 10/88





SECTION 44

SEALING REQUIREMENTS

PRESSURE SEALING

1-A	(INTERMEDIATE)	_	INSIDE	CONTOUR,	ABOVE	PRESSURE	FLOOR	AND	WING

1-B (INTERMEDIATE) - FORWARD SIDE OF FRONT SPAR PRESSURE BULKHEAD AND FRONT SPAR

1-C (INTERMEDIATE) - WING CENTER SECTION

1-D (INTERMEDIATE) - UPPER SURFACE OF PRESSURE FLOOR 1-E (INTERMEDIATE) - AFT SIDE OF STA 1480 BULKHEAD

1-F (INTERMEDIATE) - INSIDE CONTOUR OF AIRPLANE FROM STA 1000 TO STA 1480 ENTIRE

PERIPHERY OF UPPER SECTION INCLUDING WINDOW FORGINGS

WEATHER SEALING

2-A (INTERMEDIATE) - ALL EXTERNAL GAPS AND NONBONDED SEAMS

AERODYNAMIC SEALING

3-A (LIMITED) - ALL EXTERNAL GAPS INVOLVED IN THE AIRSTREAM NECESSARY TO MEET

AERODYNAMIC REQUIREMENTS

LIQUID SEALING

4-A (ABSOLUTE) - UPPER SURFACES OF FLOORS IN LAVATORY AND COAT CLOSETS (GALLEYS,

ENTRY AREAS, BARS, AND LOUNGE - IF APPLICABLE)

FUEL VAPOR SEALING

5-A (INTERMEDIATE) - AFT SIDE OF VAPOR BULKHEAD

WEATHER AND AERODYNAMIC SEAL

2-B (LIMITED OR INTERMEDIATE) - EXTERIOR GAP AROUND WINDOW FORGINGS

2-C (LIMITED OR INTERMEDIATE) - EXTERNAL SKIN GAPS AND SEAMS

Seal Index and Requirements Body Section 44 Figure 3 (Sheet 1)

51-31-00

01

Page 6 Apr 10/89



APL SEC NO.	DRAWING NO.	DESCRIPTION
44	65B44652	SEAL APPLICATION - EXTERIOR, SECTION 44 LOWER
44	65B44653	SEAL APPLICATION - FLOORS, SECTION 44 LOWER
44	65B04882	SEAL APPLICATION - SECTION 44 UPPER
44	65B04920	SEAL APPLICATION - EXTERIOR
44	65B10440	SEAL APPLICATION - SKIN AREA, SECTION 44 LOWER
44	65B10441	SEAL APPLICATION - FRONT SPAR AND STA 1000 PRESSURE BULKHEAD
44	65B10442	SEAL APPLICATION - FUEL VAPOR BULKHEAD, SECTION 44 LOWER
44	65B10443	SEAL APPLICATION - STA 1480 BULKHEAD, SECTION 44 LOWER
44	65B10444	SEAL APPLICATION - PRESSURE FLOOR, SECTION 44 LOWER
44	65B10445	SEAL APPLICATION - ENTRY DOORS, SECTION 44 LOWER
44	65B00013	SEAL APPLICATION - WING CENTER SECTION

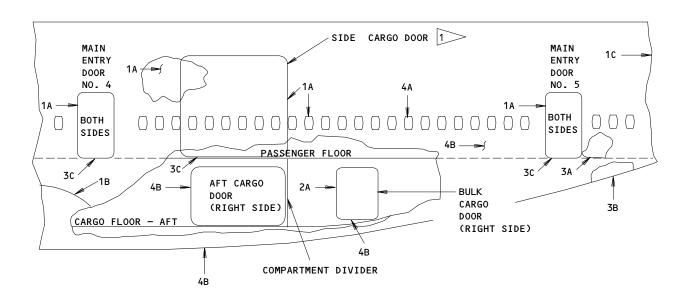
Seal Index and Requirements Body Section 44 Figure 3 (Sheet 2)

51-31-00

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Page 7 Oct 10/88





SEALING REQUIREMENTS

PRESSURE SEAL

1-A (INTERMEDIATE) - INSIDE CONTOUR OF AIRPLANE FROM STA 1480 TO STA 2360 INCLUDING

WINDOW FORGINGS AND DOORS

1-B (INTERMEDIATE) - FAIRING ATTACH POINTS TO BODY 1-C (INTERMEDIATE) - EXTERNAL SKIN CLEARANCES AND SEAMS STA 2181-STA 2360

2-A (LIMITED) - INTERIOR SURFACE OF BULK CARGO COMPARTMENT

INTERIOR SURFACE OF BULK CARGO COMPARTMENT, INCLUDING DOOR FRAMES, SILLS AND HINGE BOXES PER CARGO COMPARTMENT INSTALLATION DRAWINGS 2-A (LIMITED)

AND SEAL APPLICATION DRAWING

AND SIDE CARGO DOOR

LIQUID SEAL

3-A (ABSOLUTE) - FLOOR PANELS IN ENTRY AISLES, GALLEY, COAT AND LAVATORY COMPARMENTS

- FORWARD AND AFT LAVATORY SERVICE PANELS 3-B (ABSOLUTE)

3-C (ABSOLUTE) - LOWER AREA OF MAIN ENTRY DOOR INTERIORS (WATER DAM) AND SIDE CARGO DOOR

WEATHER AND AERODYNAMIC SEAL

4-A (LIMITED OR INTERMEDIATE) - EXTERIOR CLEARANCE AROUND WINDOW FORGINGS 4-B (LIMITED OR INTERMEDIATE) - EDGE OF DOOR CUTOUTS, EXTERNAL SKIN CLEARANCES AND SEAMS FORWARD OF STA 2181

> AIRPLANES WITH SIDE CARGO DOOR

Seal Index and Requirements Body Section 46 Figure 4 (Sheet 1)

EFFECTIVITY-ALL

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Page 8 Jun 10/91

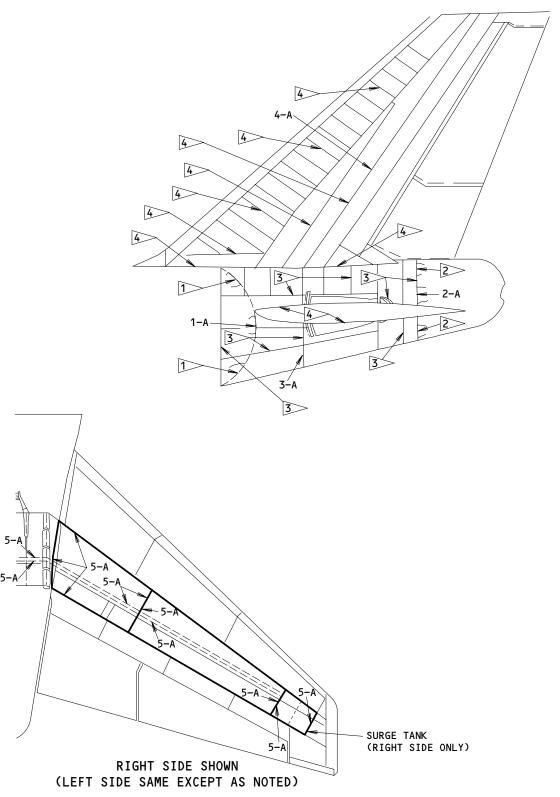


APL SEC NO.	DRAWING NO.	DESCRIPTION
46	65B06851	SEAL APPLICATION - SECTION 46
46	65B04880	SEAL APPLICATION - BULK CARGO DOOR
46	65B04918	SEAL APPLICATION - BODY TO WING FAIRING ATTACHMENT
46	65B06856	SEAL APPLICATION - MAIN ENTRY DOOR
46	65B04881	SEAL APPLICATION - FLOOR PANELS
46	65B04919	SEAL APPLICATION - FORWARD AND AFT CARGO DOORS
46	65B04920	SEAL APPLICATION - EXTERIOR

Seal Index and Requirements Body Section 46 Figure 4 (Sheet 2)

EFFECTIVITY





Seal Index and Requirements - Body Section 48, Horizontal Stabilizer and Vertical Fin Figure 5 (Sheet 1)

51-31-00

01

Page 10 Apr 10/89



SEALING REQUIREMENTS

PRESSURE SEAL

1-A (INTERMEDIATE) - FORWARD FACE OF PRESSURE DOME

FIREWALL SEAL

2-A (INTERMEDIATE) - AFT FACE OF FIREWALL

WEATHER SEAL

3-A (INTERMEDIATE) - EXTERNAL SURFACE OF AIRFRAME ENVELOPE

AERODYNAMIC SEAL

4-A (LIMITED) - HORIZONTAL STABILIZER AND FIN

FUEL SEAL

5-A (FILLET) - HORIZONTAL STABILIZER

COLLECTOR RING, CONTROL CABLE OUTLETS, PLATE SPLICE JOINTS AND VARIOUS OPENINGS PRESSURE SEAL PER 65B02626 SEAL DRAWING

PERIPHERY OF AFT FACE STA 2658 APU SUPPORT BRACKETS AND FUEL LINE INLETS FIREWALL SEAL PER 65B02813 SEAL DRAWING

3 ALL EXTERNAL NONBONDED SEAMS, GAPS AND HOLES WEATHER SEAL PER 65B02648 SEAL DRAWING

ALL HOLES THAT LEAD INTO HORIZONTAL STABILIZER AND FIN AND ALL SKIN GAPS FORWARD OF THE REAR SPAR OF THE HORIZONTAL STABILIZER AND FIN AERODYNAMIC SEAL PER 65B02648 SEAL DRAWING WITH EXCEPTION OF DRAIN HOLES AND REMOVABLE PANEL SKIN GAPS

Seal Index and Requirements - Body Section 48, Horizontal Stabilizer and Vertical Fin Figure 5 (Sheet 2)

EFFECTIVITY-

51-31-00

ALL

01

Page 11 Apr 10/89



NO. SHT.	DRAWING NO.	DESCRIPTION
1	65B02813	SEAL APPLICATION - FIREWALL, BODY STATION 2658
1	65B02648	SEAL APPLICATION - EXTERIOR
2	65B02626	SEAL APPLICATION - PRESSURE DOME
1	18000014	SEAL APPLICATION - HORIZONTAL STABLIZER

Seal Index and Requirements - Body Section 48, Horizontal Stabilizer and Vertical Fin Figure 5 (Sheet 3)

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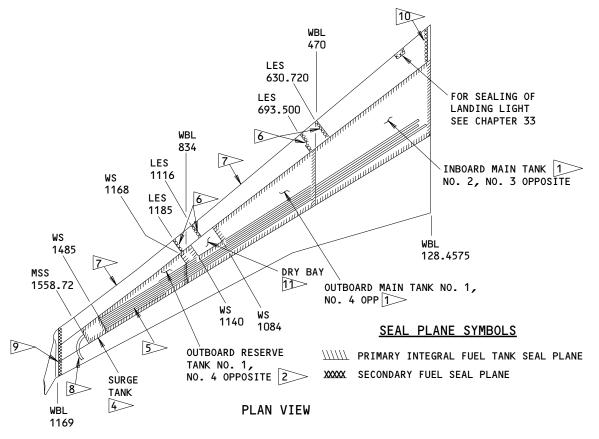
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Page 12 Apr 10/89





1>> MAIN FUEL TANKS.

ABSOLUTE FUEL SEAL PER CHAPTER 28 REQUIRED ON ALL INTERNAL BOUNDARIES OF TANK, EXCEPT WBL 470 AND WBL 834 TANK END RIBS WHICH HAVE ABSOLUTE FUEL SEAL ON OUTBOARD SIDE ONLY. ABSOLUTE FUEL SEALS REQUIRED AT SPECIFIED INTERVALS ALONG ALL SEALED SEAMS (EXCEPT FUEL VENT STRINGERS)

2 RESERVE TANK.

ARSOLUTE FUEL SEAL PER CHAPTEL

ABSOLUTE FUEL SEAL PER CHAPTER 28 REQUIRED ON ALL INTERNAL BOUNDARIES OF TANK, EXCEPT WS 1485 RIB WHICH WILL HAVE ABSOLUTE FUEL SEAL ON BOTH SIDES, AND WS 1168 RIB WHICH WILL HAVE ABSOLUTE FUEL SEAL ON INBOARD SIDE ONLY

3 DELETED

4 VENT SURGE TANK.

ABSOLUTE FUEL SEAL PER CHAPTER 28 REQUIRED ON ALL INTERNAL BOUNDARIES OF THE TANK

5 FUEL VENT STRINGERS (INTEGRAL TANKS) ABSOLUTE FUEL SEAL PER CHAPTER 28 REQUIRED ON EXTERNAL BOUNDARIES OF VENTS

6 > LEADING EDGE SEAL RIB.

ABSOLUTE FUEL SEAL UP 2.0 INCHES FROM BOTTON OF RIB. LIMITED SEAL REMAINDER OF RIB (EXCEPT DO NOT SEAL CABLE OPENINGS IN FAIRLEADS)

7 THERMAL ANTI-ICING.

LIMITED SEALING

8> VENT OUTLET. ABSOLUTE FUEL SEAL PER CHAPTER 28 REQUIRED ON VENT LINE AND NACA VENT OUTLET.

9 > CLOSURE RIB.

322495

ABSOLUTE VAPOR SEAL LE TO TE

10 LEADING EDGE SEAL RIB.

ABSOLUTE FUEL SEAL 2.0 INCHES UP FROM LOWER LEADING EDGE PANEL FROM FRONT SPAR FORWARD TO BS 958. LIMITED VAPOR SEAL REMAINDER OF RIB

OUTBOARD ENGINE DRY BAY. ABSOLUTE FULL SEAL PER CHAPTER 28 REQUIRED ON ALL INTERNAL BOUNDARIES OF TANK

Seal Index and Requirements Outboard Wing Figure 6

51-31-00

02

Page 13 Oct 10/91



APL SEC NO.	DRAWING NO.	DESCRIPTION
1 2 3 4 5 6 7 8 9 10 12 12 13	11003101 11003102 11003103 11003104 65807717 65807718 65807719 65807720 11003105 11003106 65807724 11003109	SEAL APPLICATION - FRONT SPAR - REAR SPAR - UPPER PANEL - LOWER PANEL - RIB, BBL 127.50 - RIB, WBL 470 - RIB, WBL 834 - RIB, WS 1168 - RIB, WS 1485 - RIB, MSS 1558.72 - LEADING EDGE AND TRAILING EDGE - WING EXT VAPOR SEALING SEAL APPLICATION - DRY BAY VARIABLE

NOTE: The gaps between the wing leading edge panels (Ref P/N 65B01132) require a special sealant because of greater flexibility of these joints. When the sealant in these joints require repair or replacement proceed as follows. Remove old loose sealant. Clean thoroughly with solvent, Series 92 (AMM 20-30-92) to remove all oil and grease and reapply RTV 157.

GENERAL REQUIREMENTS

ALL NUTPLATES AND THREADED OR SWAGED COLLAR FASTENERS THAT PENETRATE AN ABSOLUTE SEAL AREA MUST BE SEALED.

DOME TYPE NUTPLATES, WITH OR WITHOUT INTEGRAL O-RING, MUST BE FILLET SEALED.

THREADED OR SWAGED COLLAR FASTENERS, WITH A MECHANICAL SEAL DEVICE LOCATED ON SEAL PLANE, DO NOT REQUIRE FILLET OR CAP SEALING.

ALUMINUM RIVETS INSTALLED WITH A SELF-SEALING END ON SEAL PLANE DO NOT REQUIRE ADDITIONAL SEALING.

SEALANT SHOULD NOT BE APPLIED OVER CORROSION PROTECTIVE COATING ON PRIMARY INTEGRAL TANK SEAL PLANE. SEALANT MAY BE APPLIED OVER BARE AREAS ON PRIMARY INTEGRAL TANK SEAL PLANE. IN AREAS OTHER THAN PRIMARY INTEGRAL TANK SEAL PLANE, SEALANT MAY BE APPLIED OVER BARE AREAS OR CORROSION PROTECTIVE COATING.

FUNCTIONAL LEAK TEST PER D6-13200.

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51-31-00



DEFINITIONS

LEVELS OF SEALING.

ABSOLUTE SEAL - REQUIRES SEALING ALL SEAMS AND OPENINGS OF ANY SHAPE COMMON TO THE SEAL PLANE AND ALL FASTENERS THAT PENETRATE THE SEAL PLANE.

EXTENSIVE SEAL - SAME AS "ABSOLUTE SEAL" EXCEPT FASTENERS INSTALLED IN CLASS I OR CLOSER TOLERANCE HOLES DO NOT REQUIRE SEALING.

INTERMEDIATE SEAL - SAME AS "EXTENSIVE SEAL", EXCEPT FASTENERS DO NOT REQUIRE SEALING.

LIMITED SEAL - SAME AS "EXTENSIVE SEAL", EXCEPT SEAMS AND FASTENERS DO NOT REQUIRE SEALING.

TYPES OF APPLIED SEALS (FILLET, PREPACK, FAYING SURFACE AND INJECTION SEALS).

PRIMARY SEAL - THE SEALANT WHICH PRIMARILY PREVENTS LEAKAGE AND IS IN DIRECT CONTACT WITH FUEL AND PRESSURE.

NOTE: IN SPECIFIC AREAS, SUCH AS RIB SHEAR TIES, TWO PRIMARY SEALS ARE REQUIRED FOR RELIABILITY (I.E., FILLET SEAL OVER A FAYING SURFACE SEAL).

SECONDARY SEAL - ALL OTHER APPLIED SEALANT.

THE SEALANT MATERIAL INSTALLED IN CAVITIES TO BACKUP OR SUPPORT THE PRIMARY FILLET SEAL PLACED OVER IT.

THE ISOLATION SEAL (USUALLY A FAYING SURFACE TYPE) PLACED BETWEEN MATING SURFACES TO ISOLATE OR LIMIT FUEL SPREADING UNDER STRUCTURAL PARTS AND TO FACILITATE LEAK TRACING AND SERVICE REPAIRS.

THE ADDITIONAL SEALANT, LOCATED "DOWNSTREAM" FROM A POTENTIAL PRIMARY SEAL PLANE LEAK SOURCE, WHICH WILL ADEQUATELY CONTAIN FUEL OR VAPOR IF THE PRIMARY SEAL FAILS.

TYPES OF SEAL PLANES.

PRIMARY INTEGRAL FUEL TANK SEAL PLANE - THE COMBINATION OF STRUCTURE, SEALANT AND SEALING DEVICES THAT PROVIDES THE INITIAL, CONTINUOUS BARRIER TO CONFINE FUEL AND VAPOR WHICH, IF PENETRATED, MAY RESULT IN A LEAK.

SECONDARY FUEL AND VAPOR CONTROL SEAL PLANE - THE COMBINATION OF STRUCTURE, SEALANT AND SEALING DEVICES THAT PROVIDES AN EFFECTIVE BARRIER TO CONTROL FUEL AND VAPOR IN CASE OF PRIMARY SEAL PLANE FAILURE.

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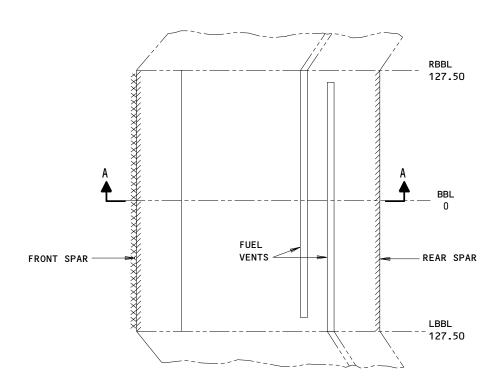
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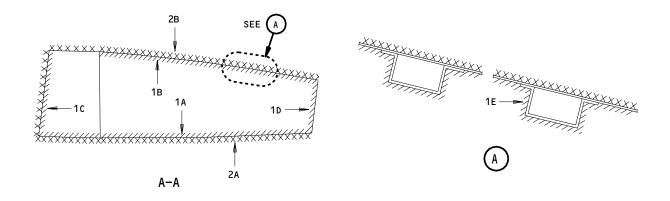
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SEAL PLANE SYMBOLS

///// PRIMARY INTEGRAL FUEL TANK SEAL PLANE $\times \times \times \times$ SECONDARY FUEL SEAL PLANE

Seal Index and Requirements Wing Center Section Figure 7 (Sheet 1)

51-31-00

01

Page 16 Apr 10/89



PRIMARY INTEGRAL FUEL TANK SEAL PLANE. ABSOLUTE FUEL SEAL PER CHAPTER 28 REQUIRED ON:

- 1A. LOWER PANEL, INTERIOR SURFACE, BETWEEN FRONT SPAR AND REAR SPAR.
- 1B. UPPER PANEL, INTERIOR SURFACE, BETWEEN FRONT SPAR AND REAR SPAR.
- 1C. ENTIRE AFT SURFACE OF FRONT SPAR.
 1D. ENTIRE FWD SURFACE OF REAR SPAR.
- 1E. EXTERNAL SEAL PLANES OF FUEL VENTS.

SECONDARY FUEL SEAL PLANE.

ABSOLUTE FUEL SEAL PER BAC5000 REQUIRED ON:

- 2A. LOWER PANEL, EXTERIOR SURFACE, BETWEEN FRONT SPAR AND REAR SPAR (SEE NOTE).
- 2B. UPPER PANEL, EXTERIOR SURFACE, BETWEEN FRONT SPAR AND REAR SPAR (SEE NOTE).

NOTE: FOR AREAS 2A & 2B SEALANT SHALL BE OMITTED FROM THE MANUFACTURED HEAD OF ALUMINUM RIVETS UNLESS SPECIFICALLY CALLED OUT ON THE RESPECTIVE SEAL APPLICATION DRAWING.

2C. ENTIRE FWD SURFACE OF FRONT SPAR.

APL SEC NO.	DRAWING NO.	DESCRIPTION
11	65B07736	SEAL APPLICATION - FRONT SPAR
11	110u3108	SEAL APPLICATION - REAR SPAR
11	65B07732	SEAL APPLICATION - UPPER PANEL
11	65B07733	SEAL APPLICATION - LOWER PANEL

Seal Index and Requirements Wing Center Section Figure 7 (Sheet 2)

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GENERAL REQUIREMENTS

ALL NUTPLATES AND THREADED OR SWAGED COLLAR FASTENERS THAT PENETRATE AN ABSOLUTE SEAL AREA MUST BE SEALED.

DOME TYPE NUTPLATES, WITH OR WITHOUT INTEGRAL O-RING, MUST BE FILLET SEALED.

THREADED OR SWAGED COLLAR FASTENERS, WITH A MECHANICAL SEAL DEVICE LOCATED ON THE SEAL PLANE, DO NOT REQUIRE FILLET OR CAP SEALING UNLESS SPECIFICALLY CALLED OUT ON SEAL APPLICATION DRAWING.

ALUMINUM RIVETS INSTALLED WITH A SELF-SEALING END ON SEAL PLANE DO NOT REQUIRE ADDITIONAL SEALING UNLESS SPECIFICALLY CALLED OUT ON SEAL APPLICATION DRAWING.

ON PRIMARY INTEGRAL TANK SEAL PLANE AREAS:

SEALANT SHOULD NOT BE APPLIED OVER CORROSION PROTECTIVE COATING UNLESS SPECIFICALLY CALLED OUT ON SEAL APPLICATION DRAWING.

SEALANT MAY BE APPLIED OVER UNPRIMED AREAS.

ON AREAS OTHER THAN THE PRIMARY INTEGRAL TANK SEAL PLANE: SEALANT MAY BE APPLIED OVER BARE AREAS OR CORROSION PROTECTIVE COATING.

FUNCTIONAL LEAK TEST PER D6-13200 (AFTER SECTION 11 AND SECTION 12 ASSY AND PRIOR TO APPLICATION OF SECONDARY FUEL SEAL PLANE SEALANT).

EFFECTIVITY ALL



DEFINITIONS

LEVELS OF SEALING.

ABSOLUTE SEAL - REQUIRES SEALING ALL SEAMS AND OPENINGS OF ANY SHAPE COMMON TO THE SEAL PLANE AND ALL FASTENERS THAT PENETRATE THE SEAL PLANE.

EXTENSIVE SEAL - SAME AS "ABSOLUTE SEAL" EXCEPT FASTENERS INSTALLED IN CLASS I OR CLOSER TOLERANCE HOLES DO NOT REQUIRE SEALING.

TYPES OF APPLIED SEALS (FILLET, PREPACK, FAYING SURFACE AND INJECTION SEALS).

PRIMARY SEAL - THE SEALANT WHICH PRIMARILY PREVENTS LEAKAGE AND IS IN DIRECT CONTACT WITH FUEL AND PRESSURE.

NOTE: IN SPECIFIC AREAS, SUCH AS SPAR SHEAR TIES, TWO PRIMARY SEALS ARE REQUIRED FOR REALIBILITY (I.E., FILLET SEAL OVER FAYING SURFACE SEAL).

SECONDARY SEAL - ALL OTHER APPLIED SEALANT.

THE SEALANT MATERIAL INSTALLED IN CAVITIES TO BACK UP OR SUPPORT THE PRIMARY FILLET SEAL PLACED OVER IT.

THE ISOLATION SEAL (USUALLY A FAYING SURFACE TYPE) PLACED BETWEEN MATING SURFACES TO ISLOLATE OR LIMIT FUEL SPREADING UNDER STRUCTURAL PARTS AND TO FACILITATE LEAK TRACING AND SERVICE REPAIRS.

THE ADDITIONAL SEALANT, LOCATED "DOWNSTREAM" FROM A POTENTIAL PRIMARY SEAL PLANE LEAK SOURCE, WHICH WILL ADEQUATELY CONTAIN FUEL OR VAPOR IF THE PRIMARY SEAL FAILS.

TYPES OF SEAL PLANES.

PRIMARY INTEGRAL FUEL TANK SEAL PLANE - THE COMBINATION OF STRUCTURE, SEALANT AND SEALING DEVICES THAT PROVIDES THE INITIAL CONTINUOUS BARRIER TO CONFINE FUEL AND VAPOR WHICH, IF PENETRATED, MAY RESULT IN A LEAK.

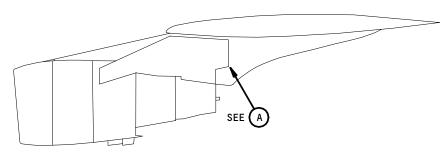
SECONDARY FUEL SEAL PLANE - THE COMBINATION OF STRUCTURE, SEALANT, AND SEALING DEVICES THAT PROVIDES AN EFFECTIVE BARRIER TO CONTROL FUEL AND VAPOR IN CASE OF PRIMARY SEAL PLANE FAILURE.

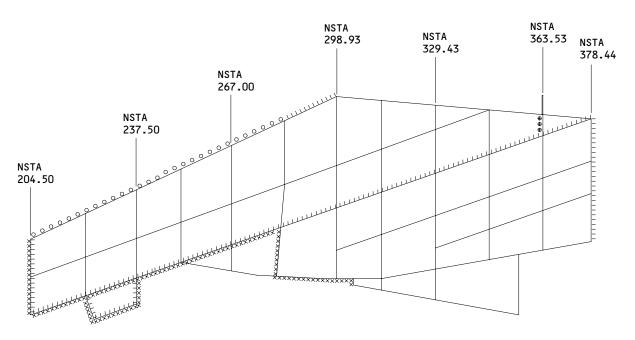
SECONDARY FUEL AND VAPOR CONTROL SEAL PLANE - THE COMBINATION OF STRUCTURE, SEALANT, AND SEALING DEVICES THAT PROVIDES AN EFFECTIVE BARRIER TO CONTROL FUEL AND VAPOR IN CASE OF PRIMARY SEAL PLANE FAILURE.

EFFECTIVITY-

ALL







INBOARD NACELLE STRUT LH SIDE VIEW



INTERMEDIATE SEAL - ALL HOLES, SLOTS, JOGGLES AND ENCLOSURE JOINTS (SEAMS) UNLESS SEAM HAS BEEN BONDED AT ASSEMBLY. FASTENERS OF ANY TYPE DO NOT REQUIRE SEALING IN INTERMEDIATE SEAL LEVEL AREAS.

ABSOLUTE SEAL - (NO LEAKAGE ALLOWED) ALL SEAMS, HOLES, SLOTS, JOGGLES, FASTENERS AND STRUCTURE FASTENED TO SEAL PLANE MUST BE SEALED.

****** - INTERMEDIATE (FIREWALL SEAL)

ooooooooo - INTERMEDIATE (HYDRAULIC SEAL)

•••••••• - INTERMEDIATE (FUEL VAPOR SEAL)

- ABSOLUTE (FUEL SEAL)

Seal Index and Requirements Nacelle Struts Figure 8 (Sheet 1)

EFFECTIVITY-ALL

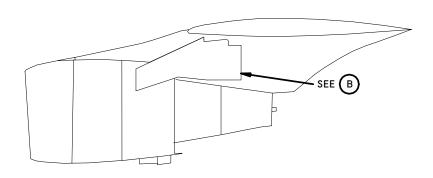
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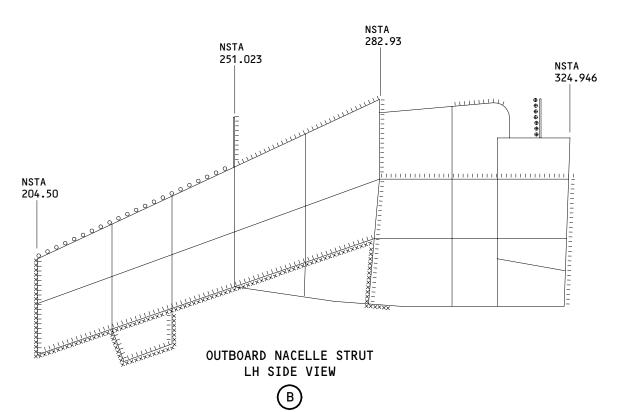
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03

Page 20 Apr 10/89







INTERMEDIATE SEAL - ALL HOLES, SLOTS, JOGGLES AND ENCLOSURE JOINTS (SEAMS) UNLESS SEAM HAS BEEN BONDED AT ASSEMBLY. FASTENERS OF ANY TYPE DO NOT REQUIRE SEALING IN INTERMEDIATE SEAL LEVEL AREAS.

ABSOLUTE SEAL - (NO LEAKAGE ALLOWED) ALL SEAMS, HOLES, SLOTS, JOGGLES, FASTENERS AND STRUCTURE FASTENED TO SEAL PLANE MUST BE SEALED.

xxxxxxxxxxx - INTERMEDIATE (FIREWALL SEAL)

ooooooooo - INTERMEDIATE (HYDRAULIC SEAL)

•••••••• - INTERMEDIATE (FUEL VAPOR SEAL)

- ABSOLUTE (FUEL SEAL)

Seal Index and Requirements Nacelle Struts Figure 8 (Sheet 2)

EFFECTIVITY ALL

51-31-00

03

Page 21 Apr 10/89



SEALING REQUIREMENTS

WEATHER SEAL: INTERMEDIATE - ALL EXTERNAL SKIN GAPS AND NONBONDED SEAMS

AERODYNAMIC SEAL: LIMITED - ALL EXTERNAL GAPS INVOLVED IN THE AIRSTREAM TO MEET AERODYNAMIC

REQUIREMENTS

CAUTION: REPLACE SEALANT IF SEALANT BECOMES LOOSE OR IS MISSING. CLEAN SURFACE AND APPLY PRIMER

BEFORE APPLYING SEALANT. DO NOT APPLY SEALANT WHERE SEALANT WILL PREVENT FLOW OF LIQUID

TO DRAIN HOLES AND PAST THE ENDS OF STIFFENERS ETC. USE LEVELING COMPOUND TO PREVENT

PUDDLING AND TO ASSURE DRAINAGE

301u2700	AERODYNAMIC SMOOTHNESS REQMT
310T4010	SEAL APPLICATION - STRUT FIREWALL, FUEL AND VAPOR
31008792	PI TUBING INST. STRUT INBD
31008892	WIRE BUNDLE INSTALLATION SECTION 31, LEFT AND RIGHT INBD STRUTS
311U2010	SEALING APPLICATION INBD, NAC STRUT
311U2080	VAPOR BARRIER INST. STRUT/WING - INBD NACELLE STRUT
31102630	DRAIN INSTL - NACELLE STRUT
311U4011	SEAL APPLICATION - INBOARD STRUT SYSTEMS
31202330	PNEUMATIC DUCT INSTL - INBD NACELLE STRUT
31202350	DUCT INSTL - NOSE COWL THERMAL ANTI-ICING ENG
312U4100	PLUMBING INSTALLATION HYDRAULIC AND FUEL - INBD
32008792	PI TUBING INST. STRUT OUTBD
32008892	WIRE BUNDLE INSTALLATION SECTION 32, LEFT AND RIGHT OUTBD STRUT
321U2010	SEALING APPLICATION OUTBD NAC STRUT

321U2080	VAPOR BARRIER INST. STRUT/WING - OUTBD NACELLE STRUT
321U2630	DRAIN INST OUTBD NACELLE STRUT
321U4011	SEAL APPLICATION - OUTBOARD STRUT SYSTEMS
322U2330	PNEUMATIC DUCT INSTL - OUTBD NACELLE STRUT
322U4100	PLUMBING ISTALLATION HYDRAULIC AND FUEL - OUTBD
330u8793	PI TUBING INST. SECTION 33, UPPER LEFT SIDE ENGINE
330u8794	PI TUBING INST. SECTION 33, UPPER RIGHT SIDE ENGINE
330u8795	PI TUBING INST. SECTION 33, LOWER LEFT SIDE ENGINE
330U8796	PI TUBING INST. SECTION 33, LOWER RIGHT SIDE ENGINE
33008893	WIRE BUNDLE INSTALLATION SECTION 33, UPPER LEFT SIDE ENGINE
330U8894	WIRE BUNDLE INSTALLATION SECTION 33, UPPER RIGHT SIDE ENGINE
330U8895	WIRE BUNDLE INSTALLATION SECTION 33, LOWER LEFT SIDE ENGINE
330U8896	WIRE BUNDLE INSTALLATION SECTION 33, LOWER RIGHT SIDE ENGINE

Seal Index and Requirements Nacelle Struts Figure 8 (Sheet 3)

EFFECTIVITY-



SEALS AND SEALING - MAINTENANCE PRACTICES

1. General

- A. This procedure contains these tasks:
 - (1) Prepare the surface for the sealing procedure.
 - (2) Apply a non-removable faying (mated) surface seal.
 - (3) Apply a removable faying mated surface seal and form to place gaskets.
 - (4) Apply an injection seal.
 - (5) Apply a hole and slot seal.
 - (6) Apply a fillet seal.
 - (7) Apply a fastener seal.
 - (8) Apply aerodynamic smoother.
 - (9) Apply an electrical fitting seal.
 - (10) Apply a fuel seal.
 - (11) Protection of sealing materials.
 - (12) Accelerated curing.
- B. These tasks give instructions to prevent the leakage of fluids and gases.
- C. Listen for the air leakage during a fuselage pressure check to help you find the location of the air leakage.
- D. Look for the fluids or stains that are on the dry side of the structural members to help you find the location of the fluid leakage.
- E. There are drain (limber) holes in the fuselage stringers and fuselage frames.
- F. The drain holes permit fluids and condensation to drain downward to the external (overboard) drains that are on the bottom of the airplane.
- G. Make sure you do not cause blockage to these drain holes when you apply the sealant.
- H. For information on internal and external drain holes and paths, refer to AMM 51-41-00/001.
- I. For information on alternative sealants, refer to Figure 208.

TASK 51-31-01-302-102

2. Prepare for Sealing

- A. Equipment
 - (1) Sealant Removal Tool made from wood or plastic 3/16-inch thick, 8-inches long in 1/4, 1/2 and 3/4-inch widths.
- B. Consumable Materials
 - (1) B00184 Cleaning Solvent BMS 11-7
 - (2) G00027 Cheesecloth
- C. Procedure

s 302-103

(1) If structural repair is necessary on the airplane structure, refer to the Structural Repair Manual.

s 212-104

(2) Examine the seal in the area where there is a leak.

EFFECTIVITY-

51-31-01



s 212-026

(3) Identify the seal surface and the seal plane in the adjacent structure.

NOTE: The seal plane is the limit plane through the assembly of Structural Items with a continuous flow of fluids or gases.

s 212-027

(4) Identify the type of seal necessary to do the repair.

s 212-028

<u>CAUTION</u>: DO NOT MIX THE SEALING MATERIALS. THE SEALING MATERIALS CAN CONTAMINATE EACH OTHER AND CAUSE POOR ADHESION.

(5) Identify the type of sealant that is used in the damaged area.

s 362-029

CAUTION: USE HARDWOOD OR PLASTIC CUTTING TOOLS. DO NOT USE METAL CUTTING TOOLS. THE METAL CUTTING TOOLS CAN CAUSE DAMAGE TO THE AIRPLANE SURFACE.

(6) Remove all of the old sealant in the damaged area.

s 362-030

(7) Remove all the loose pieces of the sealant from the damaged areas.(a) Do not attempt to apply new sealant over cured/damaged sealant.

s 102-031

ALL

- (8) Do these steps to clean the damaged area immediately before you apply the sealant:
 - (a) Make sure you clean an area that is wider than necessary to apply the sealant.
 - (b) Make sure you remove the grease, oil, dirt, and loose particles.
 - (c) Make sure you use a clean cheesecloth that is moist with solvent.
 - (d) Continue to clean the area with the clean cheesecloth until there is no sign of grease, oil, dirt, or loose particles on the cheesecloth.
 - (e) Make sure the solvent is removed from the area with a dry, clean cheesecloth before the solvent dries.
 - (f) Use compressed air to remove the remaining solvent from the area.
 - (g) If a large quantity of primer was accidentally removed from the area, then you must apply more primer to the area after you apply the sealant.

EFFECTIVITY-

51-31-01

i i



TASK 51-31-01-912-114

3. Non-Removable Faying (Mated) Surface Seal Application

- A. General
 - (1) You must clean all the equipment before and after you apply the sealing compound.
 - (2) When the sealing compounds are used with an activator, you must clean the equipment before the compounds become hard.
 - (3) Do not mix the tools that you use for silicone with the tools that you use for the non-silicone materials.
 - (4) Do not apply the materials, which are used to smooth, fair, and seal, on the zinc chromate primer until the primer is hard and strong.
- B. Equipment
 - (1) Spatula made of wood or plastic
 - (2) Sealing gun and nozzles
- C. Procedure

s 302-033

(1) Do the Prepare for Sealing task.

s 392-034

CAUTION: DO NOT CAUSE A BLOCKAGE WHEN YOU APPLY SEALANT NEAR OR AROUND THE FUSELAGE DRAIN HOLES, TUBES, OR PATHS. THE FUNCTION OF THE DRAIN HOLES IS TO DRAIN CONDENSATION AND FLUIDS OVERBOARD. IF YOU CAUSE A BLOCKAGE, FLUIDS WILL COLLECT IN THE AIRPLANE. THE FLUIDS CAN CAUSE CORROSION TO THE STRUCTURE, OR A FIRE IF THE FLUIDS ARE FLAMMABLE.

(2) Apply permenant seal by applying sealant compound to one surface with a flow gun or spatula. Make sure you apply the sealing compound on the full area of the mating surface (Fig. 201).

NOTE: The thickness of the sealing compound must be 1/32 inch.

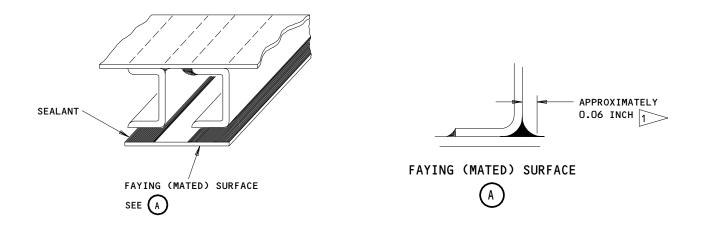
s 432-035

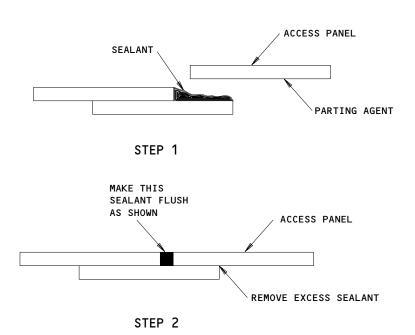
(3) Put the component parts together. Install the necessary fasteners.

EFFECTIVITY-

51-31-01







REMOVABLE SEALS
(THE SEALANT IS APPLIED IMMEDIATELY BEFORE THE ACCESS PANEL IS INSTALLED)

1 AFTER ASSEMBLY OF THE PARTS, THE SEALANT MUST AGREE WITH THIS DIMENSION

Faying Surface Seal Figure 201

ALL

O1 Page 204
Feb 15/99

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s 212-036

(4) If you will seal the fasteners, make sure you install them during the pot life of the sealing compound.

s 492-037

(5) If you cannot install the permanent fasteners before the pot life of the sealing compound ends, use temporary fasteners to hold the parts together until the sealing compound dries.

s 392-038

(6) Install the permanent fasteners with the new sealant. Apply the sealant on the fastener or in the hole.

s 212-039

- (7) Remove the unwanted sealant.
 - (a) Make sure the faying (mated) surface is smooth and the squeeze out is approximately 0.06 inch along the joint.

TASK 51-31-01-392-032

4. Removable Faying (Mated) Surface Seal Application

- A. General
 - (1) You must clean all the equipment before and after you apply the sealing compound.
 - (2) When the sealing compounds are used with an activator, you must clean the equipment before the compounds become hard.
 - (3) Do not mix the tools that you use for silicone with the tools that you use for the non-silicone materials.
 - (4) Do not apply the materials, which are used to smooth, fair, and seal, on the zinc chromate primer until the primer is hard and strong.
- B. Equipment
 - (1) Spatula made of wood or plastic
 - (2) Sealing gun and nozzles
- C. Consumable Materials
 - (1) G00771 Parting Agent Green Strippable Vinyl Coating 4A-183

EFFECTIVITY-

51-31-01



D. Procedure

s 302-106

(1) Do the Prepare for Sealing task.

s 392-041

CAUTION: DO NOT LET A WET PARTING AGENT TOUCH AN ACRYLIC SURFACE. IF A WET PARTING AGENT TOUCHES AN ACRYLIC SURFACE, DAMAGE TO THE ACRYLIC SURFACE CAN OCCUR.

(2) Apply the parting agent to one of the mating surfaces. If one of the mating surfaces is acrylic, apply the parting agent to the non-acrylic surface.

s 392-042

(3) When the parting agent is sufficiently dry to touch, apply the sealant to the opposite mating surface.

s 392-107

CAUTION: DO NOT CAUSE A BLOCKAGE WHEN YOU APPLY SEALANT NEAR OR AROUND THE FUSELAGE DRAIN HOLES, TUBES, OR PATHS. THE FUNCTION OF THE DRAIN HOLES IS TO DRAIN CONDENSATION AND FLUIDS OVERBOARD. IF YOU CAUSE A BLOCKAGE, FLUIDS WILL COLLECT IN THE AIRPLANE. THE FLUIDS CAN CAUSE CORROSION TO THE STRUCTURE, OR A FIRE IF THE FLUIDS ARE FLAMMABLE.

(4) Apply permenant seal by applying sealant compound to one surface with a flow gun or spatula. Make sure you apply the sealing compound on the full area of the faying (mated) surface (Fig. 201).

NOTE: The thickness of the sealing compound must be 1/32 inch.

s 432-108

(5) Put the component parts together. Install the necessary fasteners.

s 212-109

(6) If you will seal the fasteners, make sure you install them during the pot life of the sealing compound.

s 492-110

ALL

(7) If you cannot install the permanent fasteners before the pot life of the sealing compound ends, use temporary fasteners to hold the parts together until the sealing compound dries.

EFFECTIVITY-

51-31-01



s 392-111

(8) Install the permanent fasteners with the new sealant. Apply the sealant on the fastener or in the hole.

s 212-112

- (9) Remove the unwanted sealant.
 - (a) Make sure the faying (mated) surface and the squeeze out is approximately 0.06 inch along the joint.

s 432-043

(10) Assemble the parts when the parting agent is sufficiently dry to touch.

TASK 51-31-01-392-044

- 5. <u>Injection Seal Application</u>
 - A. Equipment
 - (1) Sealing gun and nozzles
 - B. Procedure

s 302-045

(1) Do the Prepare for Sealing task.

s 392-046

CAUTION: DO NOT CAUSE A BLOCKAGE WHEN YOU APPLY SEALANT NEAR OR AROUND THE FUSELAGE DRAIN HOLES, TUBES, OR PATHS. THE FUNCTION OF THE DRAIN HOLES IS TO DRAIN CONDENSATION AND FLUIDS OVERBOARD. IF YOU CAUSE A BLOCKAGE, FLUIDS WILL COLLECT IN THE AIRPLANE. THE FLUIDS CAN CAUSE CORROSION TO THE STRUCTURE, OR A FIRE IF THE FLUIDS ARE FLAMMABLE.

(2) When a continuous seal is necessary, put a finger or a spatula on one end of the hole to stop the flow of the sealant (Fig. 202).

s 392-047

ALL

CAUTION: DO NOT FULLY EMPTY A FLOW GUN. ALWAYS APPLY THE SEALANT FROM ONE DIRECTION. DO NOT SEAL A SURFACE FROM THE TWO ENDS OF A HOLE. AIR POCKETS AND POSSIBLE LEAKS IN THE SEAL CAN OCCUR.

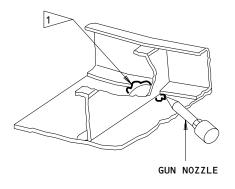
(3) Put the sealant into one end of the hole with a flow gun until the sealant comes out from all other openings.

NOTE: When an opening is to be closed only for support of the sealant, it is not necessary to apply the sealant to the full depth of the opening.

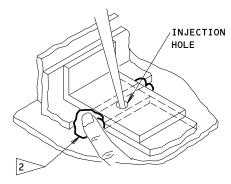
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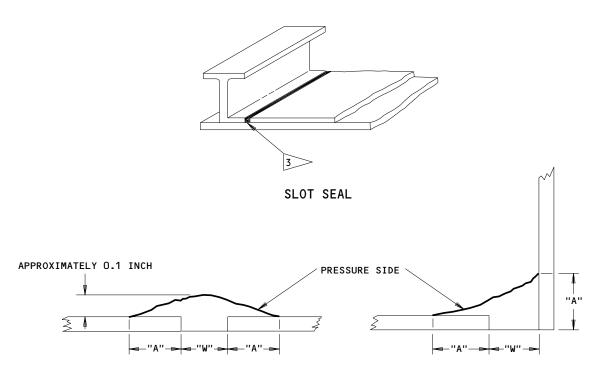




INJECTION SEAL



INJECTION SEAL



NOTE: "A" = 0.25 INCH MINIMUM, BUT NOT LESS THAN "W".

HOLE FILLING

HOLE FILLING

THE INJECTION SEAL IS COMPLETE WHEN THE SEALANT GOES THROUGH TO THE OTHER END
USE YOUR FINGER OR A SPATULA TO STOP THE FLOW OF THE SEALANT AT THE OTHER END
THE SEALANT MUST FULLY FILL THE SLOT

Injection Seal Figure 202

51-31-01
ALL
01 Page 208
Feb 15/99



s 392-048

(4) When you apply the sealant at the bottom of the slot, make sure you fill the slot. Make sure you get a continuous seal with the bottom and sides of the slot.

TASK 51-31-01-392-049

- 6. Hole and Slot Seal Application
 - A. Equipment
 - (1) Spatula made of wood or plastic
 - (2) Sealing gun and nozzles
 - B. Consumable Materials
 - (1) G00138 Masking Tape Permacel No. 70 or 85, American Tuck No. 210
 - C. Procedure

s 302-050

(1) Do the Prepare for Sealing task.

s 392-094

(2) Apply the sealant on all the tool and coordination holes that are not riveted (Fig. 203).

s 392-051

(3) Apply the sealant on the rivets in fully sealed areas.

s 392-052

(4) Apply a hole filling compound to the pressure side of the hole.

s 952-053

(5) Apply the masking tape on the large slots and holes.

s 952-054

(6) Remove the masking tape after the sealant is mixed.

s 392-055

(7) Apply the compound to the pressure side of the hole with a spatula or applicable tool.

EFFECTIVITY-

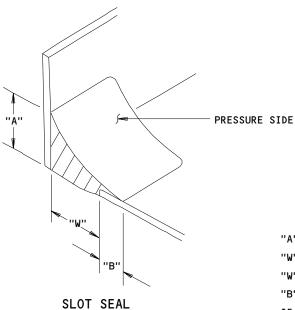
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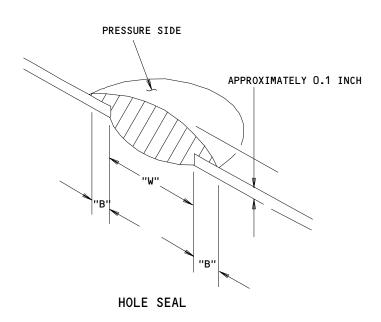
"A" = 0.25 INCH MINIMUM AND NOT LESS THAN "W"

"W" = 0.25 INCH MAXIMUM FOR DUCT AND PRESSURE SEAL

"W" = 0.50 INCH MAXIMUM FOR WEATHER AND FUEL SEAL

"B" = 0.25 INCH MINIMUM

IF "W" IS 0.1 INCH OR LESS, COMPOUND TO FILL THE HOLE IS NOT NECESSARY.



Hole and Slot Seal Figure 203

EFFECTIVITY-ALL

51-31-01

01

Page 210 Feb 15/99



s 392-056

(8) Apply the compound tightly into the hole or slot.

s 392-057

(9) Make the compound smooth with the adjacent surfaces.

TASK 51-31-01-392-058

7. Fillet Seal Application

- A. Equipment
 - (1) Fillet Fairing Tools
 - (2) Sealing gun and nozzles
- B. Procedure

s 302-059

(1) Do the Prepare for Sealing task.

s 392-060

(2) Apply the sealant with a flow gun.

s 392-061

(3) Put the nozzle tip into the seam.

s 212-062

(4) Make sure the sealant is applied in a straight line (Fig. 204).

s 392-063

(5) Push the bead of the sealant forward of the nozzle head.

s 212-064

(6) Push the sealant tightly into position with the fairing tool. Make sure you get a smooth fillet.

s 392-065

(7) Apply the sealant again to get a full body fillet.

NOTE: A second application of the sealant is necessary only for integral fuel tanks. You can cut the nozzle tip to give the full body seal some contour.

s 392-066

(8) Use the fairing tool to get the last shape of the fillet.

s 392-067

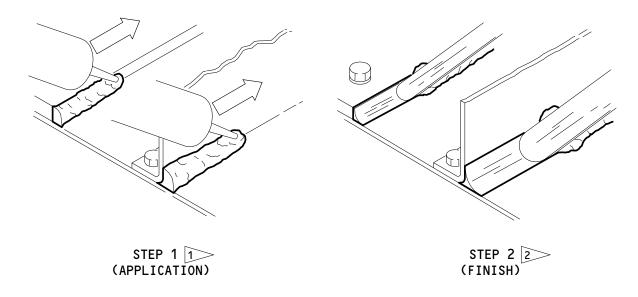
(9) Push the tool against the sealant and move the tool parallel to the bead.

EFFECTIVITY-

51-31-01

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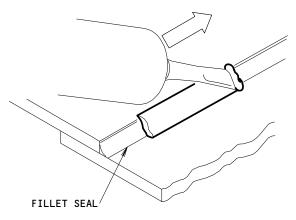


FILLET SEAL

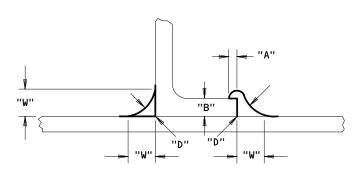
"A" = 0.04 TO 0.15 INCH EXCEPT "A" = 0 WHEN "B" = 0.15 INCH OR MORE

"D" = 0.08 INCH MINIMUM

"W" = 0.12 TO 0.25 INCH



APPLICATION OF FILLET FULL BODY SEAL



FILLET SEAL FINISHED DIMENSIONS

1 APPLY SEALANT WITH A FLOW GUN

2 USE AN UNLUBRICATED FAIRING TOOL TO PUSH THE SEALANT INTO POSITION

Fillet Seal Figure 204

EFFECTIVITY-ALL

51-31-01

01

Page 212 Feb 15/99



s 212-068

(10) Make sure the seal is smooth. Make sure there are no air bubbles in the seal.

s 212-069

(11) Make sure the bead has the shape of a faired fillet, after the work is completed.

TASK 51-31-01-392-070

8. Fastener Seal Application

- A. General
 - (1) If the fasteners were installed during the pot life of the sealant, sealing is not necessary.
 - (2) Install rivets dry, unless you are told differently.

NOTE: Install 5056 aluminum rivets wet with sealant in aluminum structure. Install 5056 aluminum rivets dry in magnesium structure.

- B. Equipment
 - (1) Fillet Fairing Tools
 - (2) Sealant Removal Tool made from wood or plastic 3/16 inch thick, 8 inches long in 1/4, 1/2 and 3/4 inch widths.
 - (3) Spatula made of wood or plastic
 - (4) Sealing gun and nozzles
- C. Procedure

s 302-071

(1) Do the Prepare for Sealing task.

s 392-072

CAUTION: DO NOT CAUSE A BLOCKAGE WHEN YOU APPLY SEALANT NEAR OR AROUND THE FUSELAGE DRAIN HOLES, TUBES OR PATHS. THE DRAIN HOLES DRAIN FLUIDS AND CONDENSATION OVERBOARD. IF YOU CAUSE A BLOCKAGE, FLUIDS WILL COLLECT. THE FLUIDS CAN CAUSE CORROSION TO THE STRUCTURE, OR A FIRE IF THE FLUIDS ARE FLAMMABLE.

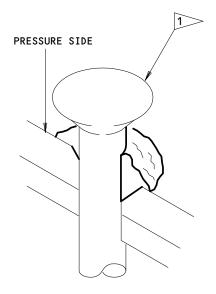
- (2) Use one of these procedures to seal the fasteners that are installed through the mating surface. Use these procedures when the sealant pot life has ended or when no mating surface sealant is used (Fig. 205):
 - (a) Apply the sealant to the fastener or hole at the installation.

EFFECTIVITY-

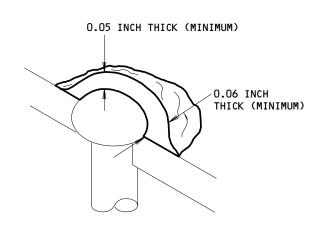
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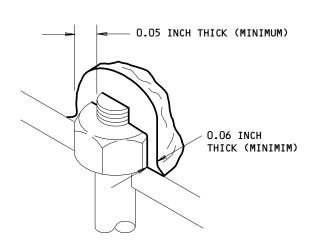




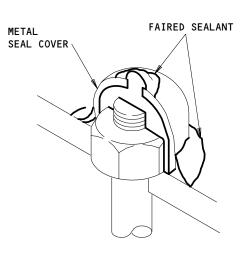
SEAL DURING INSTALLATION



SEAL AFTER INSTALLATION



FILLET AFTER INSTALLATION



FAIRING SEAL AT THE METAL SEAL COVER

1 YOU CAN APPLY THE SEALANT TO THE HOLE OR THE FASTENER

Fastener Seal Figure 205

EFFECTIVITY-ALL

51-31-01



- (b) Apply the sealant to the fastener after the installation.
- (c) Make the sealant smooth around the fastener after the installation.

s 392-073

- (3) Seal the fasteners that have metal covers as follows:
 - (a) Fill the metal cover between 1/2 to 2/3 full of sealant.
 - (b) Push the metal cover down on the fastener until the flange touches the structure.
 - (c) Remove the unwanted sealant from the top of the metal cover.
 - (d) Make the sealant smooth around the base of the metal cover.

TASK 51-31-01-392-074

- 9. Aerodynamic Smoother Application
 - A. Equipment
 - (1) Sealant Removal Tool made from wood or plastic 3/16 inch thick, 8 inches long in 1/4, 1/2 and 3/4 inch widths.
 - (2) Spatula made of wood or plastic
 - (3) Sealing gun and nozzles
 - B. Consumable Materials
 - (1) G00138 Masking Tape Permacel No. 70 or 85, American Tuck No. 210
 - C. References
 - (1) AMM 51-41-00/001, Airframe Drainage
 - D. Procedure

s 302-075

(1) Do the Prepare for Sealing task.

s 952-076

(2) Apply the masking tape to the surface that is adjacent to the damaged area.

s 392-077

<u>CAUTION</u>:

DO NOT CAUSE A BLOCKAGE WHEN YOU APPLY SEALANT NEAR OR AROUND THE FUSELAGE DRAIN HOLES, TUBES, OR PATHS. THE FUNCTION OF THE DRAIN HOLES IS TO DRAIN CONDENSATION AND FLUIDS OVERBOARD. IF YOU CAUSE A BLOCKAGE, FLUIDS WILL COLLECT IN THE AIRPLANE. THE FLUIDS CAN CAUSE CORROSION TO THE STRUCTURE, OR A FIRE IF THE FLUIDS ARE FLAMMABLE.

WHEN YOU APPLY THE AERODYNAMIC SMOOTHER TO THE WING-TO-BODY FAIRINGS, LIMIT YOUR APPLICATIONS TO THE LOCATIONS SHOWN IN 51-41-00/001. THE CLEARANCES BETWEEN THE FAIRING PANELS ARE MADE TO LET THE FLUIDS IN THE FAIRING TO DRAIN OVERBOARD.

(3) Apply the aerodynamic smoother with a flow gun or spatula. Make sure there are no air bubbles when you apply the aerodynamic smoother.

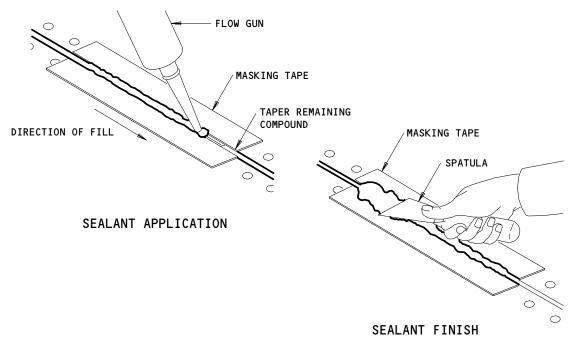
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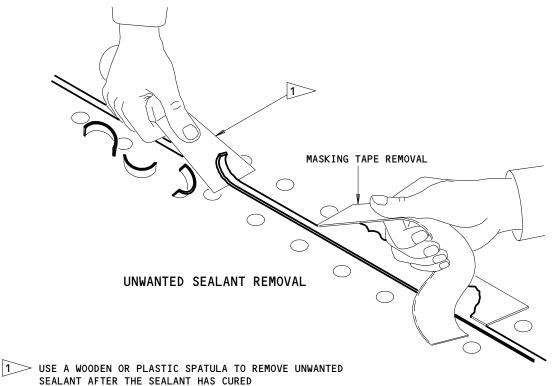
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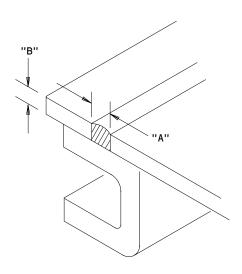
Aerodynamic Sealer Figure 206 (Sheet 1)

51-31-01

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Page 216 Feb 15/99





SLOT WIDTH AND DEPTH					
WIDTH "A" (INCHES)	WIDTH "B" (INCHES)				
0.02 - 0.03	O.10 MAXIMUM				
0.03 - 0.05	O.25 MAXIMUM				
0.05 - 0.10	O.50 MAXIMUM				
0.10 - 0.15	O.75 MAXIMUM				

Aerodynamic Sealer Figure 206 (Sheet 2)

579753

51-31-01



s 392-078

(4) Apply more of the aerodynamic smoother, if it is necessary, to make the edges around the seal smooth.

<u>NOTE</u>: Because of shrinkage, you must apply the aerodynamic smoother again, approximately 8 hours apart, to fill the clearances.

s 392-079

(5) Use a spatula to make the seal smooth with the masking tape.

s 952-080

(6) Remove the masking tape after the seal is smooth or let the masking tape stay during the curing time.

s 392-081

(7) Make the edges of the seal smooth. Remove all the unwanted compound with a wooden or plastic tool.

TASK 51-31-01-392-082

10. Electrical Fitting Seal Application

- A. General
 - (1) BMS 5-37 sealant is the recommended sealant for the electrical seal fittings. BMS 5-26, BMS 5-32, and BMS 5-95 sealants will do the same function as the BMS 5-37. But, BMS 5-26, BMS 5-32, and BMS 5-95 are not the recommended sealants because they will bond to electrical wires which do not have a teflon coating. For wires that are not teflon coated it is not easy to do maintenance on electrical seal fittings that have sealant bonded to the electrical wires. For wires with a teflon coating do not use BMS5-37, use BMS5-26.
- B. Equipment
 - (1) Fillet Fairing Tools
 - (2) Sealant Removal Tool made from wood or plastic 3/16 inch thick, 8 inches long in 1/4, 1/2 and 3/4 inch widths.
 - (3) Spatula made of wood or plastic
 - (4) Sealing gun and nozzles
- C. Consumable Materials
 - (1) G00138 Masking Tape Permacel No. 70 or 85, American Tuck No. 210; 3/4-inch wide and 1 1/2-inch wide
- D. Procedure

s 302-083

(1) Do the Prepare for Sealing task.

s 422-096

(2) Put the wire bundle through an available cutout.

EFFECTIVITY-

51-31-01

ALL



s 412-097

- (3) Isolate the wires before you apply the seal:
 - (a) If there are three or less wires, use the plastic separators to isolate the wires.
 - (b) If there are four or more wires, use the wire coil separators to isolate the wires. Wind the wire coil separators two to four turns around each wire.

s 432-098

(4) Assemble the fitting together around the wires. Make sure the flange of the fitting is on the pressurized side of the airplane.

NOTE: A fitting is made of two halves.

s 432-099

- (5) On BACS45B type seal fittings, do these steps:
 - (a) Fill the clearance between the snap ring groove and the structure with seal rings.
 - (b) Install the snap ring.

s 392-100

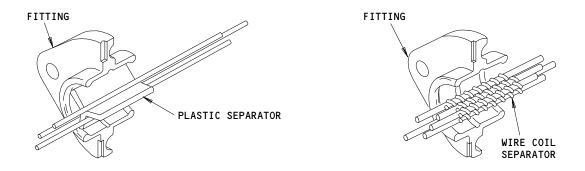
- (6) Seal the multiple cutouts in the primary sealing areas as follows:
 - (a) Make sure the plastic separators or the wire coil separator is satisfactorily installed on the wires in the bulkhead fitting.
 - (b) Put a 8-inch long string against the bulkhead fitting and parallel with the wires.
 - (c) Wind three turns of 1 1/2-inch wide masking tape around the fitting.
 - (d) Crimp the 1 1/2-inch wide masking tape around the bulkhead fitting. Make sure the wires are in the center of the bulkhead fitting and the masking tape.
 - (e) Wind three turns of 3/4-inch wide masking tape around the 1 1/2-inch wide masking tape.
 - (f) Put the bulkhead fitting, cover plate and the filler in position on the unpreesurized size of the airplane. Install the fasteners.
 - (g) Make an injection hole in the 1 1/2-inch wide masking tape at an applicable location.
 - (h) Use the sealing gun to apply the sealant. Apply the sealant until it comes out from the flange of the bulkhead fitting.
 - (i) Apply the sealant to make a fillet seal on the filler.
 - (j) Apply the sealant on the fastener that is in the center of the filler.
 - (k) Let the sealant cure for 16 to 24 hours.
 - (l) Pull the string to remove the masking tape.

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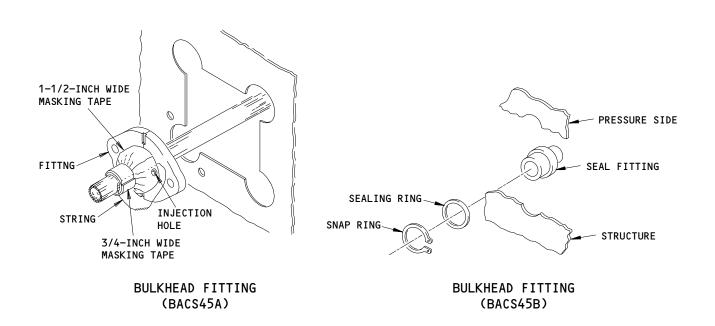
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INSTALLATION OF SEPARATORS



Electrical Fitting Seal Figure 207 (Sheet 1)

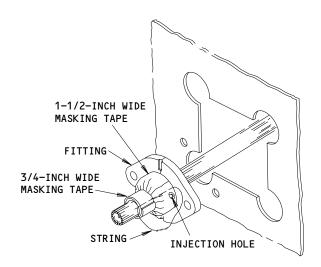
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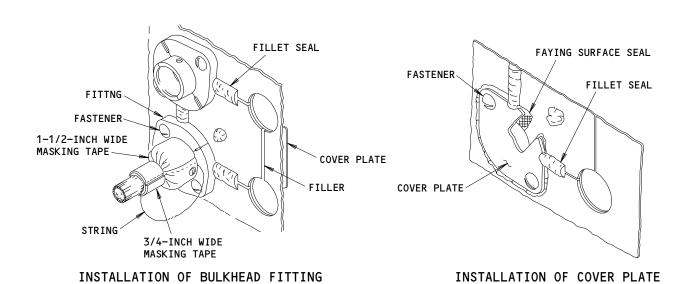
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Page 220 Feb 15/99





ASSEMBLY OF BULKHEAD FITTING



Electrical Fitting Seal Figure 207 (Sheet 2)

51-31-01
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01 Page 221
Feb 15/99

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s 392-085

(7) Do the steps above to seal the multiple cutouts in the intermediate sealing areas. Do not use the coil spacers.

s 392-086

(8) Do the above steps to seal the single cutouts in primary or intermediate areas. Do not use the seal plate or filler.

TASK 51-31-01-392-087

- 11. Fuel Seal Application
 - A. References
 - (1) AMM 28-11-00/801, Fuel Tanks Approved Repair
 - Procedure

s 392-088

(1) Seal the integral fuel tanks (AMM 28-11-00/801).

The dry bay access panels are sealed with the "Fillet Seal Application" and "Fastener Seal Application" tasks.

TASK 51-31-01-602-089

- 12. Protection of Sealing Materials
 - A. Procedure

(1) Keep the sealing materials away from grease, oil, dirt, metal particles and all unwanted materials.

s 602-091

(2) After the sealant is tack-free, put a protective cover on the sealing area for protection.

TASK 51-31-01-392-092

- 13. Accelerated Curing
 - A. Equipment
 - (1) Hot air blowers

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EFFECTIVITY-

51-31-01



- (2) Heat Lamps
- B. Procedure

s 392-093

(1) Use one of these steps to accelerate the cure:

CAUTION: MAKE SURE THE TEMPERATURE IS BELOW 120°F. IF THE TEMPERATURE IS ABOVE 120°F, BUBBLES WILL OCCUR ON THE

SEALANT.

- (a) Use hot air blowers or heat lamps to apply heat to the sealant.
- (b) Make the airplane structure warm after you apply the sealant.

EFFECTIVITY-

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PERMITTED SUBSTITUTES FOR INITIAL SPECIFIED SEALANT								
INITIAL	PERMITTED ALTERNATIVE SEALANTS							
SPECIFIED SEALANTS	BMS 5-26	BMS 5-45	BMS 5-63	BMS 5-95	BMS 5-142	PR-1826	PR-1828	BMS 5-150
BMS 5-19	YES	YES	NO	NO	NO	YES	NO	NO
BMS 5-26		NO	NO	NO	NO	YES	YES	NO
BMS 5-32	YES	YES	NO	YES	YES	YES	YES	NO
BMS 5-45	YES		NO	NO	NO	YES	YES	NO
BMS 5-63	NO	NO		NO	NO	NO	NO	NO
BMS 5-79	YES	YES	NO	YES	YES	YES	YES	NO
BMS 5-95	YES BMS 5-26 (CLASS B, TYPE II ONLY)	YES	NO		YES	YES	YES	YES BMS 5-150 (CLASS B-2 ONLY)
BMS 5-142	YES	YES	NO	YES		YES	YES	NO

TABLE I

BMS 5-79 SEALANT ALTERNATIVES				
INITIAL MATERIAL	ALTERNATIVE MATERIAL			
BMS 5-79 CLASS B-1/2 CLASS B-2 CLASS B-4 CLASS B-8 CLASS C-24 CLASS C-48	BMS 5-95 CLASS B-1/2 CLASS B-2 CLASS B-4 NONE CLASS C-20 CLASS C-80			
CLASS D-2	BMS 5-16			

TABLE II

NOTES

- A THIS ALTERNATIVE IS NOT PERMITTED FOR MATING SURFACE SEAL, PRE-PACK SEALING, AND WET FASTENER INSTALLATION PROCEDURES.
- B YOU MUST APPLY A LAYER OF PRIMER BEFORE YOU APPLY THE SEALANT.

Alternative Sealants Data Figure 208

51-31-01



ACOUSTICAL LINERS - MAINTENANCE PRACTICES

- 1. General
 - A. This procedure contains these tasks:
 - (1) Removal of the acoustical liners.
 - (2) Installation of the acoustical liners.

TASK 51-32-01-002-001

- 2. Acoustical Liner Removal
 - A. Procedure

s 022-002

(1) Remove acoustical tiles as necessary.

TASK 51-32-01-402-003

- 3. Acoustical Liner Installation
 - A. Consumable Materials
 - (1) Solvents:
 - (a) B00083 Aliphatic Petroleum, TT-N-95 (non-Kevlar acoustic tiles)
 - (b) B00074 Dry Cleaning Solvent P-D-680 (non-Kevlar acoustic tiles)
 - (c) B00778 Methyl Ethyl Ketone TT-M-261 (Kevlar acoustic tiles)
 - (2) Tape:
 - (a) GO1288 Tape Double Backed, BMS 5-133, Type II
 - B. Access
 - (1) Location Zone

100 Lower Half of Fuselage

200 Upper Half of Fuselage

C. Procedure

s 112-004

(1) Use the solvent to clean the surfaces as follows immediately before you install the tiles:

NOTE: Clean the surfaces 1 hour or less before you apply the tape.

s 422-005

- (2) Install the acoustical tiles as follows:
 - (a) Install the tape on the outboard surfaces of the acoustical tiles where they will touch the structure.
 - (b) In areas whre the acoustic tiles overlap, clean the exposed surface on the bottom acoustic tile with the solvent before you install the upper acoustic tile.
 - (c) Press the acoustic tiles firmly to make sure the tile completely touches the skin and the stringers.

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AIRFRAME DRAINS - DESCRIPTION AND OPERATION

1. General

A. External drain holes and internal drain paths are provided to prevent water and other fluids from collecting within the airplane. Drain paths and drain holes must be inspected periodically to ensure they are clear of obstructions.

2. External Drains (Fig. 1 and 2)

- A. Drain ports are located on exterior surfaces of body, wing, and empennage to dump fluids overboard. Leveling compound is used to ensure proper drainage in sloping areas. A removable valve assembly or a spring valve is used in pressurized areas. The valves close off ports when the airplane is pressurized and allow ports to remain open when the airplane is not pressurized. Drain ports in nonpressurized areas are always open.
- B. A spring valve in catch basin, is located on the aft side of the wing center section rear spar in each landing gear wheel well. The catch basin should periodically be checked to ensure that opening to catch basin and spring loaded drain valve are not clogged.
- C. The canted pressure deck has continuous overflow drain fittings and lines which are vented overboard just aft of the air conditioning ram air outlet.
- D. On some airplanes, drain fittings with a removable hex cap are located in the sloping pressure deck at the intersection of the center wing section upper surface and the rear spar.
- E. On some airplanes, drain fittings with a manual valve and drain tube are located in the sloping pressure deck at the intersection of the center wing section upper surface and the rear spar.

3. Internal Drain Paths and Drain Holes

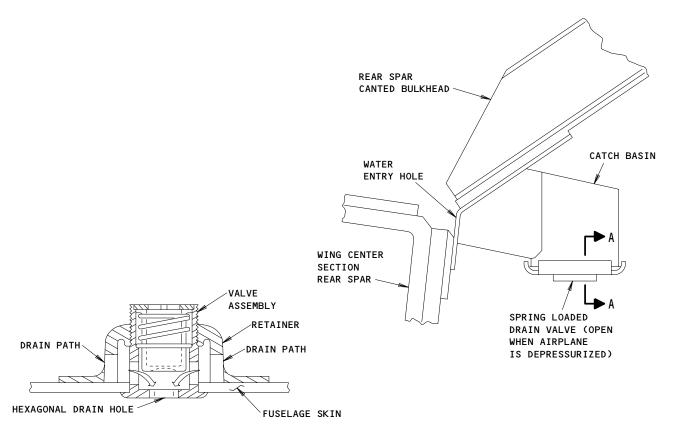
- A. Internal structure is provided with tubes, channels, dams, and drain holes, to direct the flow of fluids toward external drainage points.
 - (1) Primary body drain paths are provided in the forward lower body area (body Sta 520 to 970), in the overwing and wheel well area (body Sta 1000 to 1480), and in the aft lower body area (body Sta 1480 to 2360).
 - (2) Secondary body drain paths are provided to all stringer splice locations. Drain ports in the floor at waterline 310 permit fluids to flow to the lower body skin where they drain overboard.
 - (3) Internal drain paths are provided for fluid to flow down the vertical stabilizer auxiliary spar to a natural opening at the base where they drain overboard. Fluids drain through ports in the ribs near the vertical stabilizer front and rear spars to slots at the base where they drain overboard.
 - (4) Fluids drain along the horizontal stabilizer auxiliary spar to a drain port near the body and drain overboard. Fluids drain along the horizontal stabilizer front spar to drain holes near each rib, forward of the spar.

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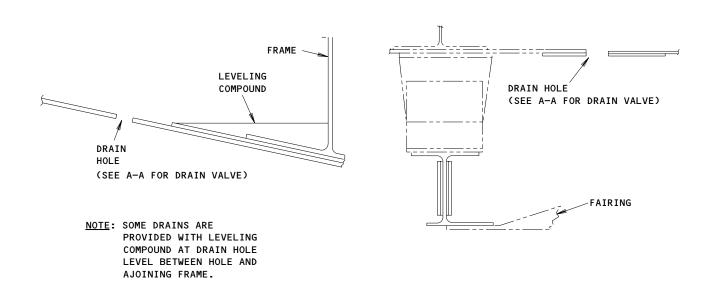
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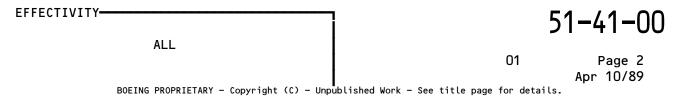




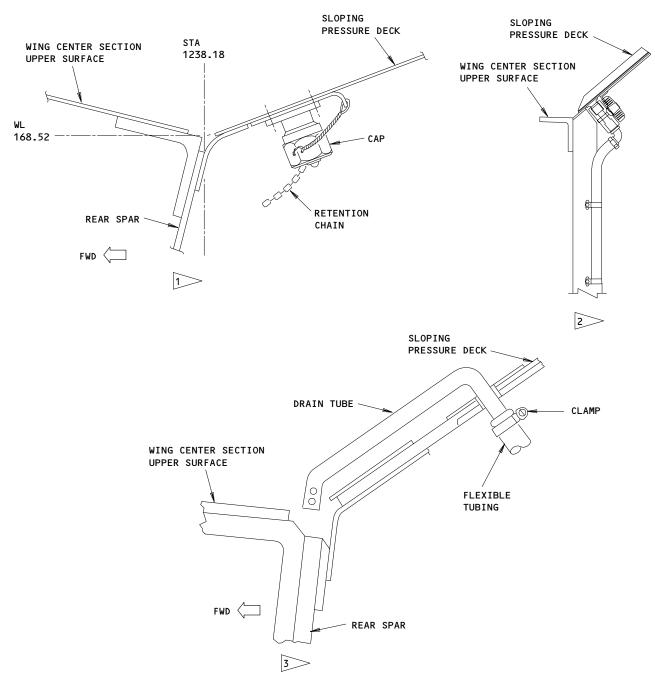
REMOVABLE VALVE ASSEMBLY
A-A



Typical External Drains
Figure 1







AIRPLANES WITH DRAINAGE TEST PORT WITH CAP AIRPLANES WITH DRAINAGE TEST PORT WITH MANUAL VALVE AIRPLANES WITH DRAIN SCAVENGE TUBE (CONTINUOUS DRAINAGE)

> Overwing and Pressure Deck Drains (Examples) Figure 2

EFFECTIVITY-ALL

51-41-00

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Page 3 Feb 10/92



- (5) The wing and control surfaces are provided with drain holes, as are the wing boost pump access and crew service doors. The nacelle is provided with drain holes in the side cowls.
- (6) On some airplanes, drain holes are provided on all main entry door thresholds and on floor panels in each entryway, with drain tubes leading to exterior drains.

4. Main Deck Drainage

- A. Airplanes having main deck cargo equipment have drainage facilities provided to remove water deposited on main deck during cargo loading operations.
 - (1) Floor Drainage
 - (a) Floor drainage consists of screened collectors recessed into the floor and collectors mounted under power drive units.
 - (2) Drain Lines
 - (a) Drain lines lead from all collectors to sump tanks, or in some cases empty into the bilge area.
 - (3) Sump Tanks
 - (a) Sump tanks are located near the bottom of the lower lobe to collect and temporarily store drain water while the airplane is pressurized.
 - (b) A valve in the bottom of each tank allows the accumulated water to drain through the bottom of the body when internal and external pressure is equalized.
 - (c) The aft sump tank is located in the under-floor area aft of the bulk cargo compartment. The forward sump tank is located under the center cargo tracks of the forward baggage compartment.

EFFECTIVITY

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51-41-00

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EXTERNAL DRAINAGE - INSPECTION/CHECK

1. General

- A. This procedure contains two tasks:
 - (1) The first task is to examine the external drains.
 - (2) The second task is to clean and examine the drain system aft of the wing center section.
- B. You must examine all the external drains with a regular schedule to make sure the drainage operates correctly.

TASK 51-41-01-206-001

- External Drains Inspection/Check (Fig. 601 thru 606)
 - A. Consumable Materials
 - (1) G01043 Cloth Clean and Lint-Free
 - (2) B00003 Cleaner Mild, GMC 528B
 - B. References
 - (1) 51-41-03/401, Fuselage Drain Valve
 - C. Examine the external drains

NOTE: Examine the external drains and the drain inlet screens frequently to make sure they are free from blockage.

s 216-002

(1) Examine the drain holes in the areas of the body, wing, empennage, nacelle, and control surfaces.

s 216-009

(2) AIRPLANES WITH HORIZONTAL STABILIZER FUEL TANK;
Examine the screens (LH/RH) above the fuel/water drain holes,
located below the horizontal stabilizer center section front spar.

s 216-010

(3) Examine the drain inlet screens above the fuel drain holes in the engine struts (Fig. 608).

s 216-021

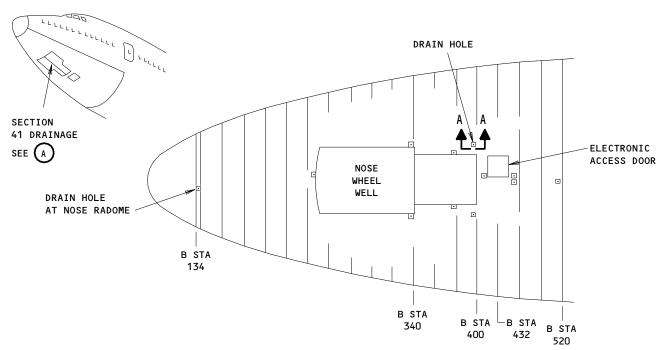
(4) To examine the valve in the catch basin, at the body station 1238 and left and right BL 100, get access through the main wheel well.

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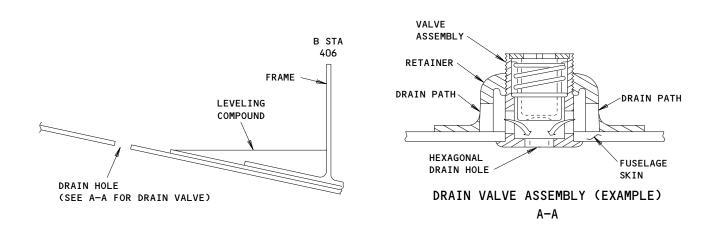
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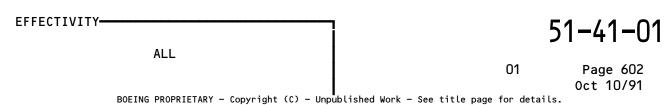
SECTION 41 DRAINAGE (BOTTOM VIEW)



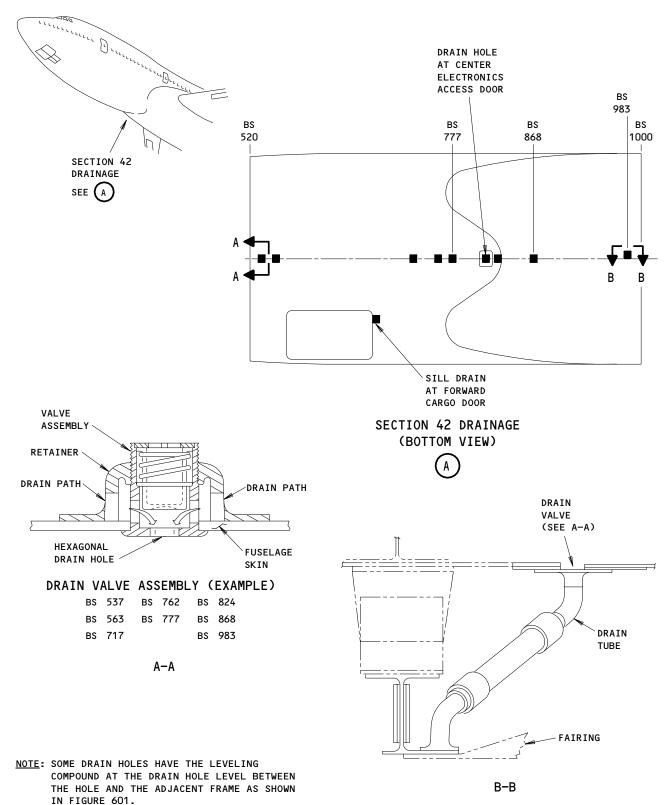


NOTE: SOME DRAINS HAVE THE
LEVELING COMPOUND AT THE
DRAIN HOLE LEVEL BETWEEN
THE HOLE AND THE ADJACENT FRAME.

External Airframe Drainage Section 41 Figure 601







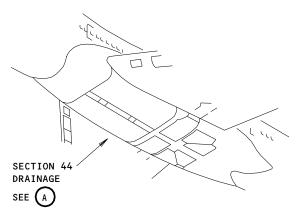
External Airframe Drainage Section 42 Figure 602

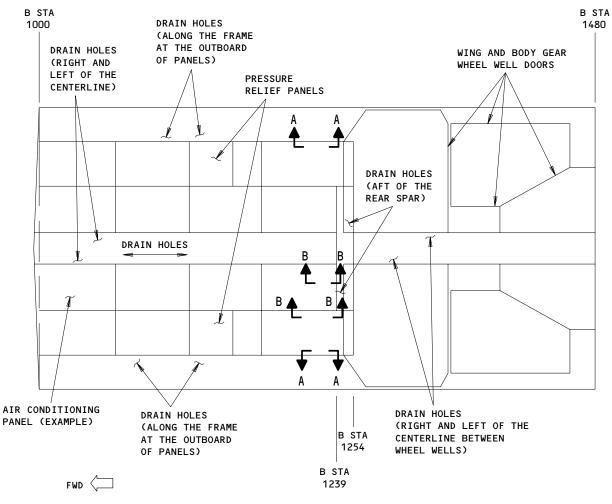
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O1 Page 603
Oct 10/91

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SECTION 44 DRAINAGE (BOTTOM VIEW)



External Airframe Drainage Section 44
Figure 603 (Sheet 1)

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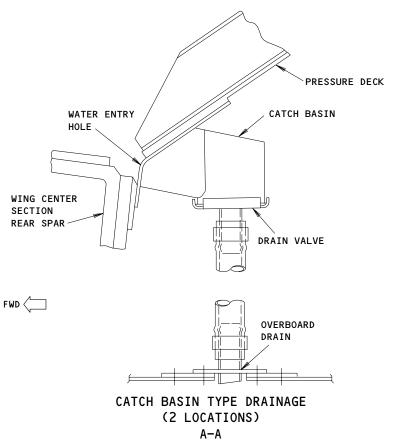
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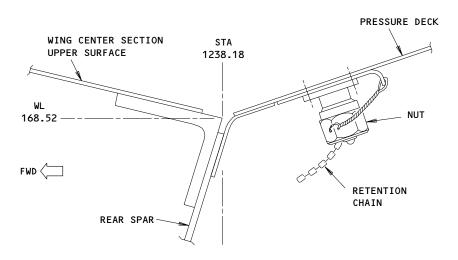
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Page 604 Jun 18/99







INSTALLED AT LEFT BL 42.75 AND LEFT BL 65.00

> KLM 001,002,025-028;
UTA 301

A02105

B-B

DRAINAGE TEST PORT

External Airframe Drainage Section 44
Figure 603 (Sheet 2)

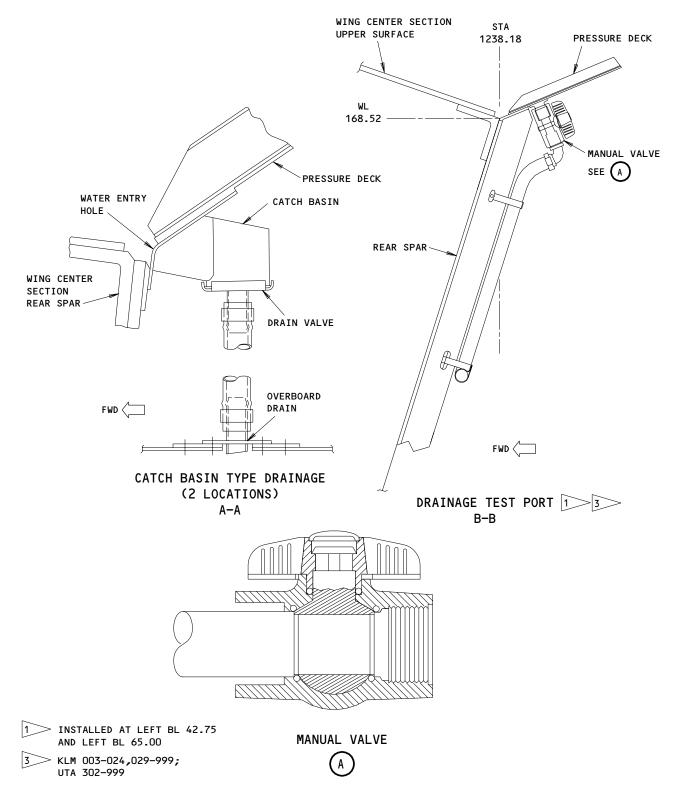
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Page 605 Jun 10/94





External Airframe Drainage Section 44
Figure 603 (Sheet 3)

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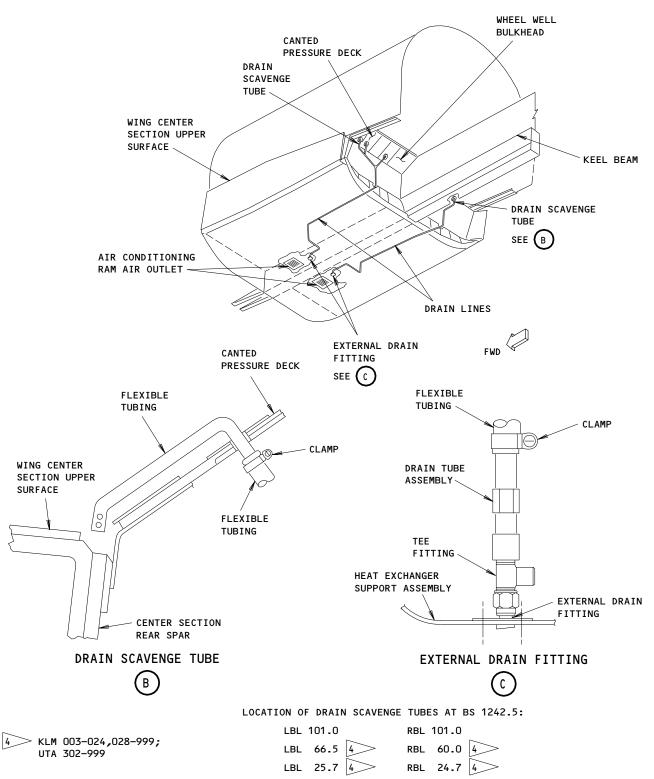
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14 Page 606

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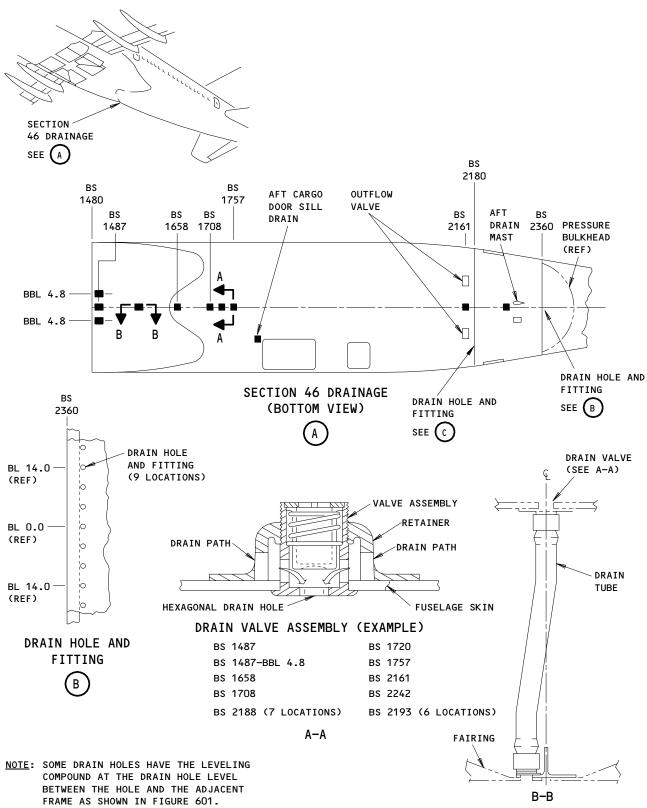
External Airframe Drainage Section 44
Figure 603 (Sheet 4)

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Page 607
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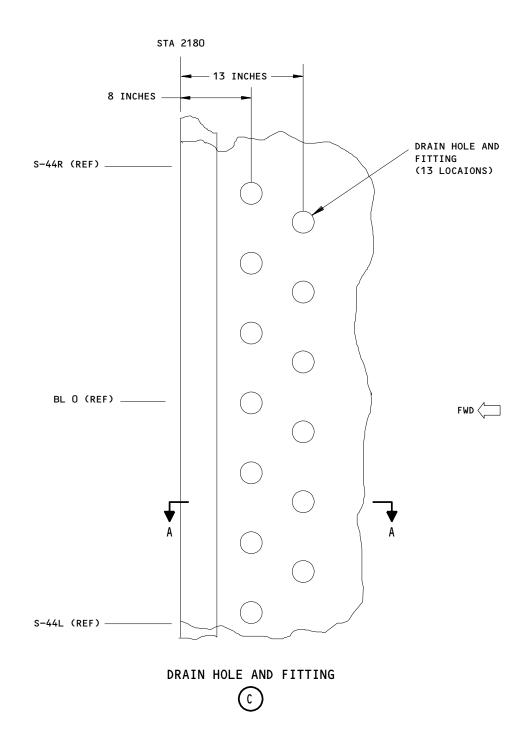
External Airframe Drainage Section 46
Figure 604 (Sheet 1)

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Oct 15/98

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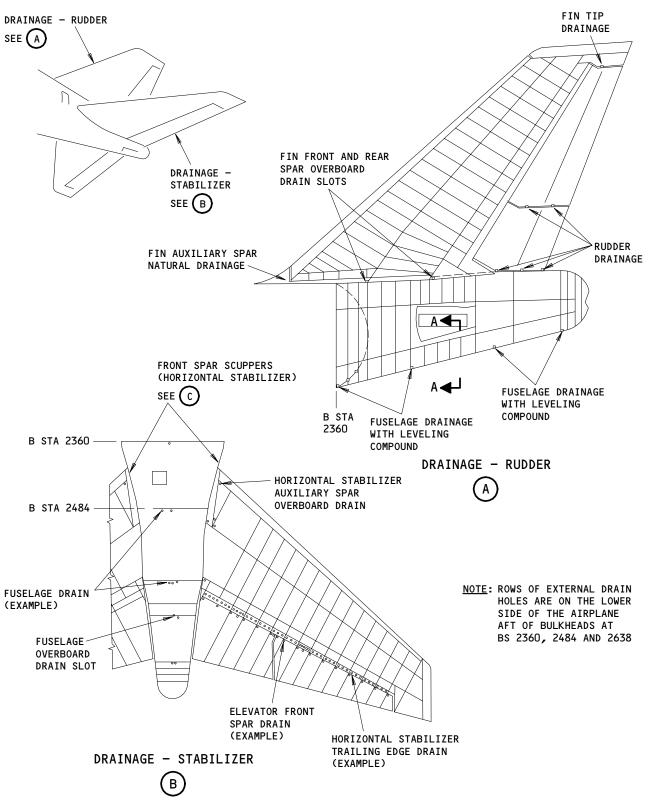
External Airframe Drainage Section 46 Figure 604 (Sheet 2)

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Oct 15/98

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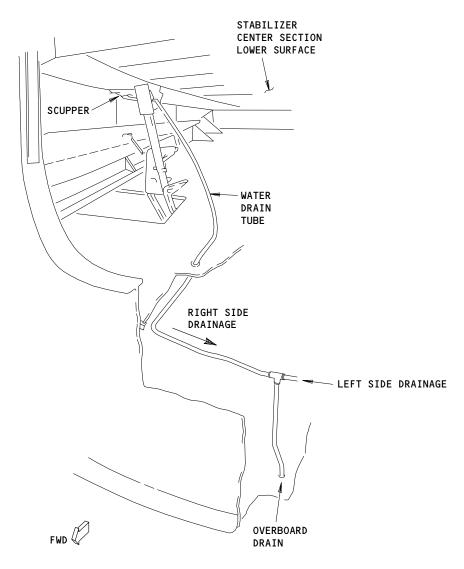




External Airframe Drainage - Empenage Figure 605 (Sheet 1)

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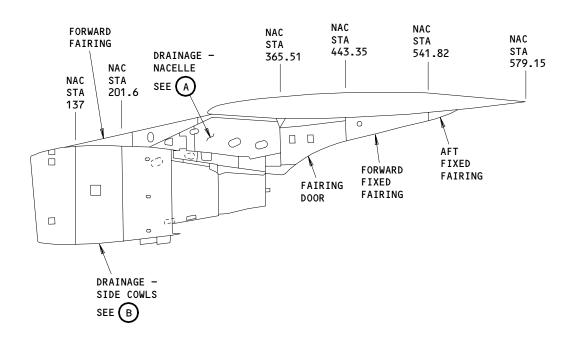
FRONT SPAR SCUPPERS

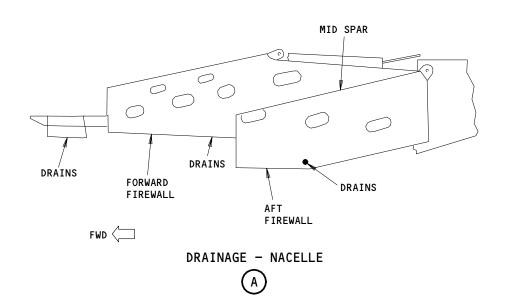
External Airframe Drainage - Empennage Figure 605 (Sheet 2)

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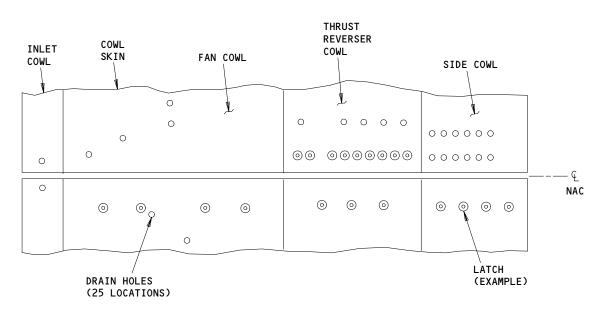
External Airframe Drainage Nacelle and Side Cowl Figure 606 (Sheet 1)

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Page 612
Oct 15/98

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DRAINAGE - LEFT AND RIGHT SIDE COWLS (BOTTOM VIEW)



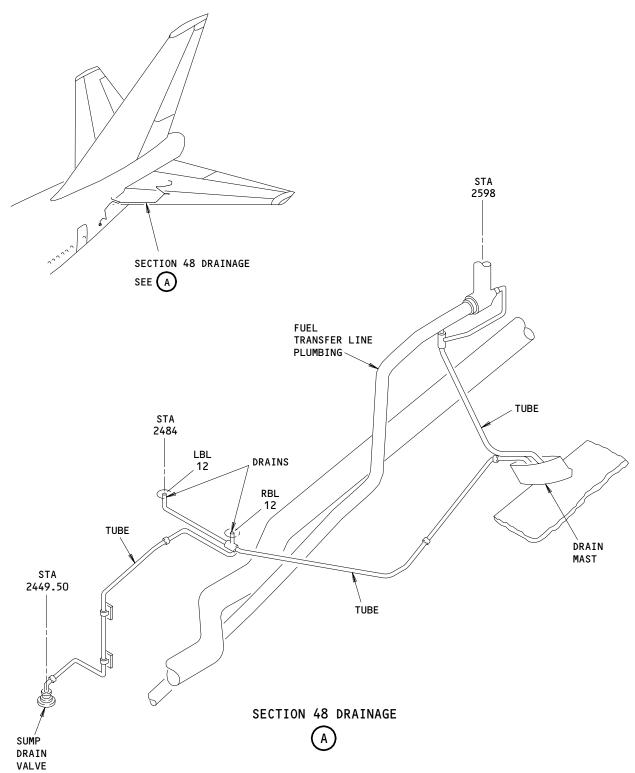
External Airframe Drainage Nacelle and Side Cowl Figure 606 (Sheet 2)

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Oct 15/98

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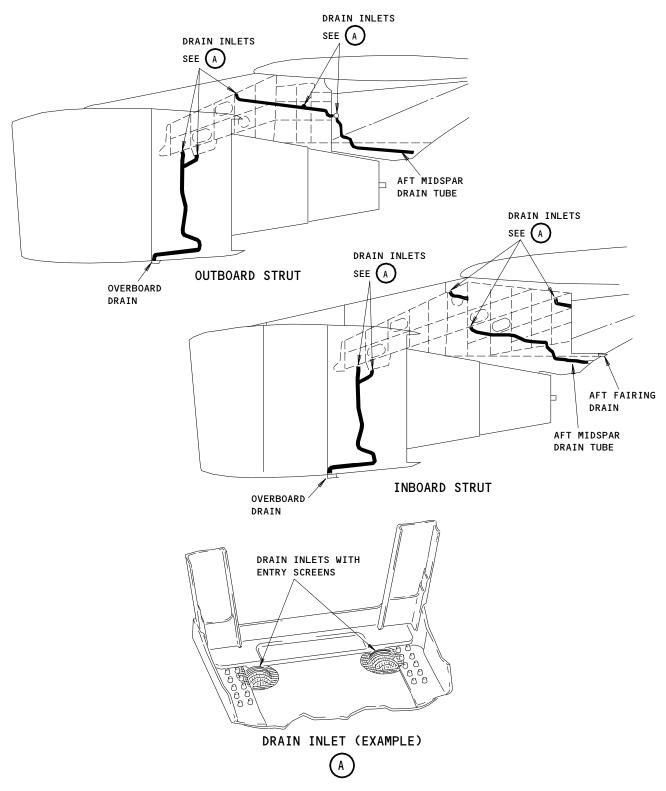
External Airframe Drainage - Section 48 Figure 607

ALL

O1 Page 614
Oct 15/98

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Nacelle Strut Drains Figure 608

ALL

O1 Page 615
Oct 15/98

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s 216-019

- (5) Get access to the drain fittings through main wheel well and do the steps that follow:
 - (a) Remove the cap or nut and clean the overwing drain fittings if it is necessary.
 - (b) Clean the pressure deck fittings if it is necessary.
 - (c) Examine and clean the pressure deck fitting 0-ring.

NOTE: Replace the 0-ring if it is necessary.

- (d) If the water flows out, get access above the pressure deck and clean the cross drain tubes.
- (e) Tighten the nut with the proper tool or tighten cap by hand.

s 216-020

- (6) To make sure the drain fittings in the canted deck area are open and that the fluid can drain from the fuselage external drain fitting aft of No. 2 and No. 3 air conditioning ram air outlet, do the steps that follow:
 - (a) Get access to the canted deck area through the main deck floor panels.
 - (b) Remove all the corrosion inhibiting compound from the forward surface of the canted deck.
 - (c) Make sure all the drains are open.

WARNING: WHEN YOU EXAMINE THE DRAINS WITH COMPRESSED AIR, MAKE SURE YOU WEAR EYE PROTECTION GOGGLE. YOU CAN CAUSE INJURY IF YOU DO NOT WEAR EYE PROTECTION GOGGLE.

- (d) Use a compressed air source, blow the air through the drain fittings and lines. Make sure there is airflow from the opposite end.
- (e) Apply the corrosion inhibiting compound to the forward surface of the canted pressure deck (Ref 51-24-13/701).

s 216-006

- (7) Make sure the scuppers and tubes below the horizontal stabilizer are clear.
- D. Examine the operation of the drain system at section 48 (Figure 607).

s 216-012

- (1) To examine the drain system, put 5 gallons of the water into the left or right drains at BL 12.
 - (a) With the valve poppet at the closed position, make sure the water flows freely to the drain mast.
 - (b) With the valve poppet at the open position, make sure the water flows freely from the drain valve.

s 216-011

(2) Examine the drain holes for blockage.

 51-41-01



s 216-013

(3) Remove all blockage and unwanted materials.

s 146-014

- (4) Clean the drain holes.
- E. Clean the Drains.

s 116-007

(1) Use the cloth that is moist with mild cleaner solution, remove all the soils and unwanted materials from the drains.

s 116-015

(2) Remove and clean the drain valves (Ref 51-41-03/401).

s 116-016

(3) If you install the valve again, clean the valve in a mild detergent solution.

TASK 51-41-01-216-022

- 3. Clean and Examine Drain System Aft of the Wing Center Section (Fig. 603)
 - A. Access
 - (1) Location Zones

135 Wing Landing Gear Well (left)

136 Wing Landing Gear Well (right)

Passenger Cabin Second to Third Door (left)

242 Passenger Cabin Second to Third Door (right)

B. Prepare for examination of drain system.

s 016-023

(1) Remove seats as necessary.

s 016-024

(2) Remove floor panels as necessary.

s 016-025

(3) Open air conditioning bay doors as necessary.

s 016-026

- (4) Access main wheel well area as necessary.
- C. Clean and examine the drain system.

s 146-027

(1) Remove all unwanted materials from the wing center section cavity, drain inlets and catch basins.

s 176-028

(2) Make sure all scavenge tubes, valves, drain lines and exits are clear.

EFFECTIVITY-

51-41-01

ALL



D. Restore airplane to normal

s 416-029

(1) Reinstall removed equipment.

EFFECTIVITY-

ALL

51-41-01



EXTERNAL DRAINAGE - REPAIRS

- 1. General
 - A. This procedure contains one task:
 - (1) The task is to repair the drainage leveling compound.

TASK 51-41-01-308-001

- 2. <u>Drainage Leveling Compound Repair</u>
 - A. Equipment
 - (1) GO2157 Brush Cleaning, Stiff-Bristle
 - B. Consumable Materials
 - (1) G00000 Hardwood Tool
 - (2) G00000 Plastic Tool
 - (3) B01010 Solvent Final Cleaning of Solvent Resistant Organic Coatings prior to Non-structural Bonding (Series 90) (AMM 20-30-90 and SOPM 20-30-90).
 - C. References
 - (1) 51-21-02/701, Interior and Exterior Finishes (Prepaint Cleaning and Pretreatment) Cleaning/Painting
 - (2) 51-21-04/701, Alodized Surfaces Cleaning/Painting
 - D. Procedure

s 338-010

(1) With a hardwood or plastic tool, remove the damaged leveling compound.

s 338-011

(2) Remove all the loose pieces of the leveling compound with a stiff-bristle brush.

s 118-009

WARNING: DO NOT GET SOLVENTS IN YOUR MOUTH, OR YOUR EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM SOLVENTS. SOLVENTS ARE HAZARDOUS MATERIALS. SOLVENTS MAY BE FLAMMABLE OR HARMFUL TO THE ENVIRONMENT. REFER TO PRODUCT MATERIAL SAFETY DATA SHEETS (MSDS) AND LOCAL REQUIREMENTS FOR PROPER HANDLING PROCEDURES.

(3) Fully clean the structure and the remaining leveling compound with solvent, Series 90 (AMM 20-30-90 or SOPM 20-30-90).

EFFECTIVITY-

51-41-01

ALL



s 378-005

(4) If the surface is not applied with the primer, or if the primer is removed, alodize the surface (Ref 51-21-04/701) and apply the BMS 10-11, Type I, primer (Ref 51-21-02/701).

NOTE: Do not apply the leveling compound to the bare aluminum surface.

s 598-013

(5) Mix the base and catalyst, refer to the supplier's instructions.

s 398-007

(6) Apply the leveling compound. The leveling compound must be level with the top of the drain hole or the bottom of the drain valve retainer opening.

The airplane must be in a level or taxi attitude when you apply the leveling compound and stay that way until the leveling compound is cured (6 hours at 72 ±5°F). Full cure takes 7 days.

s 218-008

(7) After the leveling compound is cured, make sure the drain holes are open and that there is no water in the drain.

EFFECTIVITY-

ALL

51-41-01



INTERNAL DRAINAGE - INSPECTION/CHECK

1. General

- A. This procedure contains three tasks:
 - (1) The first task is to examine the internal drains.
 - (2) The second task is to examine the conditioned air condensate drains.
 - (3) The third task is to clean the drains.
- B. You must examine the internal drains with a regular schedule to make sure the drainage operates correctly. The internal drains are drained overboard by the external drains (Ref 51-41-01/601).
- C. At a given conditions, the water that comes from the airplane air conditioning system collects in the conditioned air plenums.
- D. The drain holes to remove the water are in the plenums, floor beams, and at the intersection of the wing center section upper surface and rear spar.
- E. If the drain holes in the conditioned air plenum are sealed, the water can collect in the plenum, and slowly will move to the conditioned air distribution system of the passenger area.

TASK 51-41-02-206-001

2. Examine Internal Drains

- A. References
 - (1) 51-41-01/801, External Drainage
- B. Procedure

s 216-002

(1) Make sure the internal drain holes and drain paths shown in Fig. 601 through 605 are clear.

s 116-011

(2) Clean the drains if it is necessary, refer to "Clean the Drains" task.

s 216-010

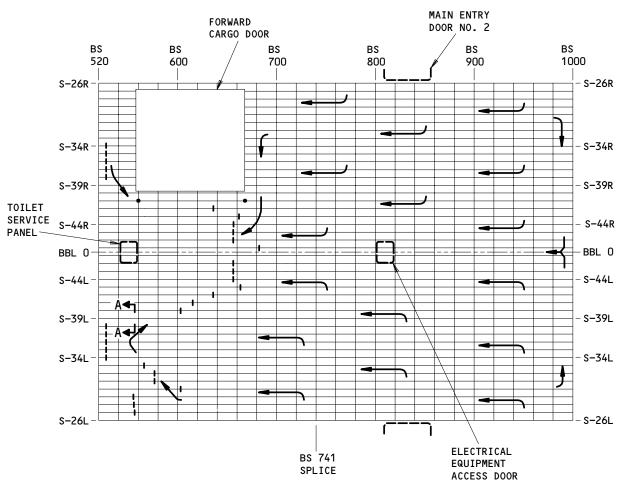
- (3) To examine the wing center section cavity and the drain holes, do the steps that follow:
 - (a) Remove the seats.

EFFECTIVITY-

51-41-02

ALL



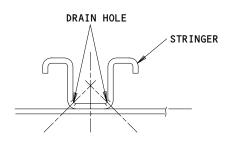


LEGEND

315092

- RELIEF CUTOUT IN SHEAR TIE
- I STRINGER DRAIN HOLE
- → DRAIN PATH

NOTE: FOR EXTERNAL DRAIN HOLE LOCATION, REFER TO 51-41-01/601



A-A (EXAMPLE)

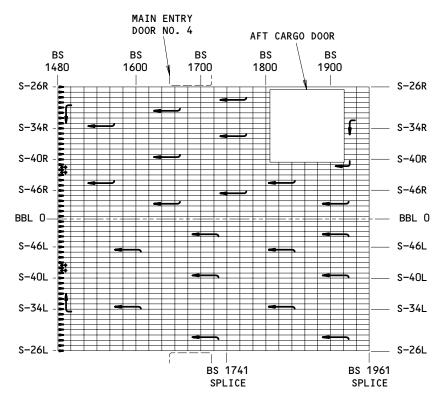
Internal Drainage Section 42 Figure 601

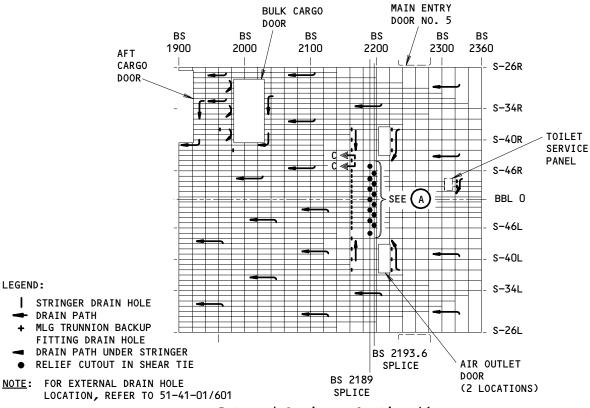
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Page 602 0ct 10/91







Internal Drainage Section 46 Figure 602 (Sheet 1)

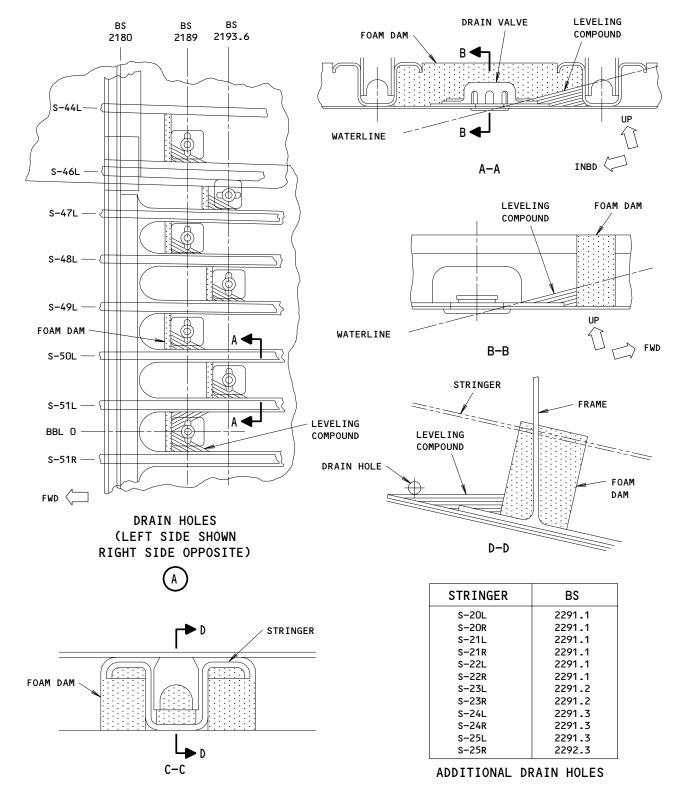
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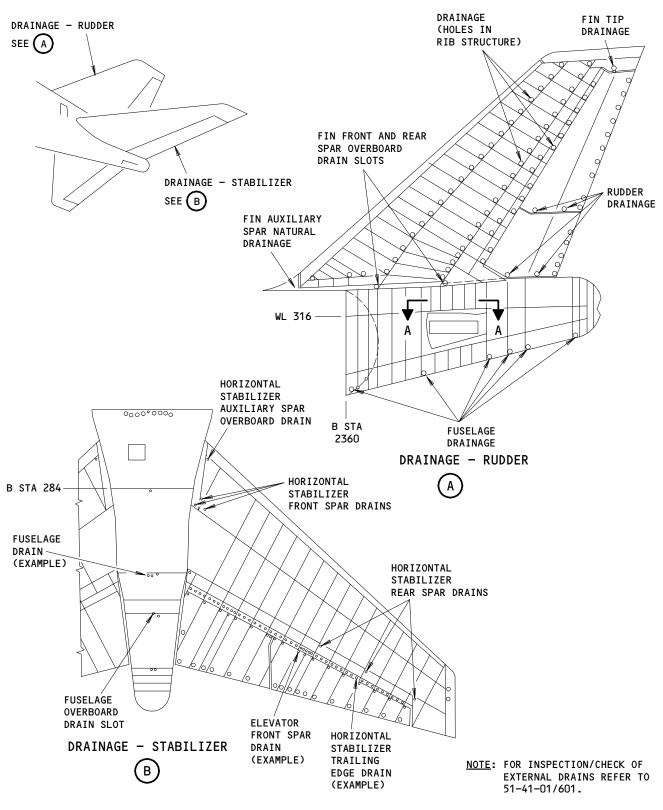
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Internal Drainage Section 46 Figure 602 (Sheet 2)





Internal Airframe Drainage - Empennage
 Figure 603 (Sheet 1)

ALL

O1 Page 605
Oct 10/91

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- Remove the floor covering and panels.
- Visually examine the wing center section cavity.
 - Remove all the unwanted materials.
 - Make sure all the drain holes are clear.
- (d) Examine the drain holes.
 - 1) Remove all the unwanted materials.
 - 2) Clean the drain holes if it is necessary.

s 356-003

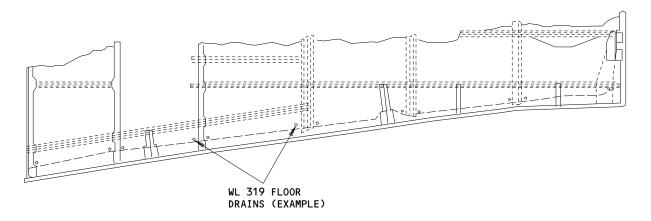
(4) Repair the leveling compound (Ref 51-41-01/801).

s 216-004

- (5) Make sure the drain path between the center and corner scuff plates is clean at all main entry doors.
 - (a) If an entryway door drain is blocked with ice, slowly pour warm water into the drain to melt the ice.

s 216-012

(6) Cut the groove in the sealant in the area outboard of the scuff plate, if the water stays on the drain path because of the sealant.



NOTE: DRAINAGE FLOWS TO LOWER FUSELAGE AREA WHERE IT DRAINS OVERBOARD.

315277

A-A

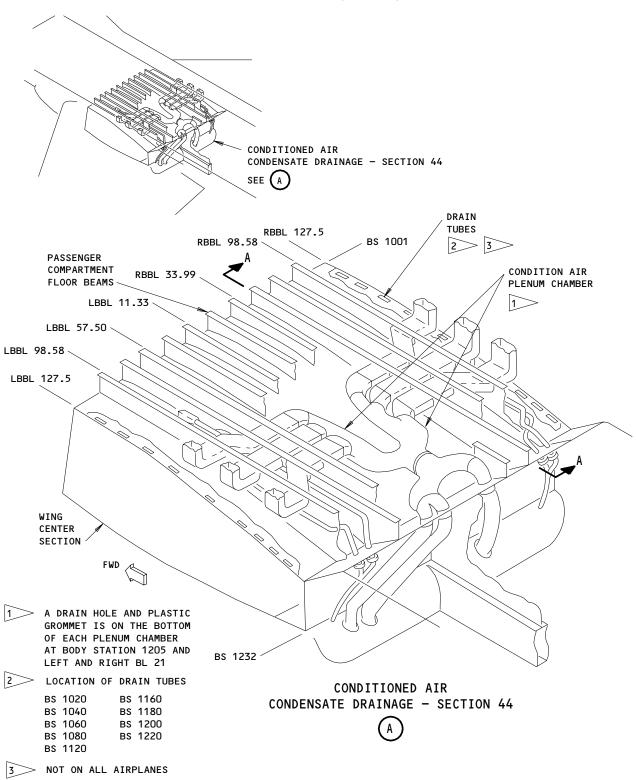
Internal Airframe Drainage - Empennage Figure 603 (Sheet 2)

EFFECTIVITY-ALL

51-41-02

Page 606 Feb 10/96





Conditioned Air Condensate Drainage, Section 44 Figure 604 (Sheet 1)

51-41-02
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01 Page 607
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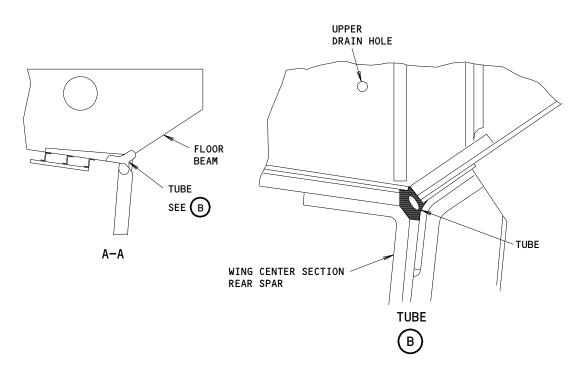


s 216-005

- (7) Make sure the drain lines and fittings at all main entry and upper deck door thresholds are clear and clean.
 - (a) Clean the drain lines and fittings if it is necessary, refer to "Clean the Drains" task.

TASK 51-41-02-206-006

- 3. Examine the Conditioned Air Condensate Drains (Fig. 604)
 - A. References
 - (1) 25-25-01/401, Track-Mounted Passenger Seats Removal/Installation



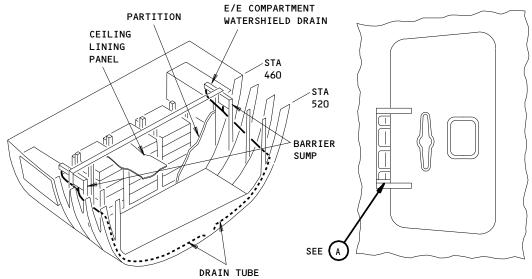
Conditioned Air Condensate Drainage, Section 44 Figure 604 (Sheet 2)

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O1 Page 608
Oct 10/91

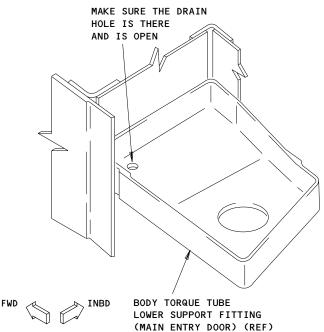
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FORWARD CARGO COMPARTMENT WATER BARRIER DRAIN

DOOR 1 THRU 5 (EXAMPLE)



BODY TORQUE TUBE LOWER SUPPORT DRAIN (MAIN ENTRY DOOR)

> DOOR SHOWN (EXAMPLE). LOCATION AND NUMBER OF HOLES ARE DIFFERENT FOR EACH DOOR.

> Internal Drainage - Miscellaneous Figure 605

EFFECTIVITY-ALL

51-41-02

01

Page 609 Oct 10/91



- (2) 25-27-01/401, Main Deck Floor Covering Removal/Installation
- (3) 53-21-02/401, Main and Upper Deck Floor Removal/Installation
- B. Procedure
 - s 216-007
 - (1) To examine all the floor beam drain holes and drain tubes are clear and clean.
 - (a) Remove the passenger seats.
 - (b) Remove the floor covering panels to get access to the drain tubes.
 - (c) Clean the tubes and holes if they are necessary (View A-A).

TASK 51-41-02-106-014

- 4. Clean the Drains
 - A. Consumable Materials
 - (1) G01043 Cloth Lint Free
 - (2) A00003 Mild Cleaner GMC 528B
 - B. Procedure
 - s 116-009
 - (1) Use the cloth that is moist with water-cleaner solution, remove all the soil and unwanted materials.

EFFECTIVITY-

51-41-02

01

ALL



Fuselage Drain Valve - Removal/Installation

1. General

- A. This procedure contains two tasks. The first task is the removal procedure for the fuselage drain valve. The second task is the installation of the fuselage drain valve.
- B. You can get access to the fuselage drain valve from the outer surface of the fuselage.

TASK 51-41-03-004-005

- 2. Remove Drain Valve (Fig. 401)
 - A. Special Tools and Equipment
 - (1) 2024 Installation Tool (Stewart Industries Inc., 5210 14th Avenue Northwest, Seattle, WA 98107-3795)
 - B. Remove Drain Valve

s 024-001

<u>CAUTION</u>: DO NOT USE THE A STEEL WRENCH. A STEEL WRENCH CAN CAUSE DAMAGE TO THE DRAIN VALVE.

(1) Turn the drain valve assembly out of the valve retainer with the installation tool.

s 024-002

(2) Remove the valve assembly from the retainer.

TASK 51-41-03-404-006

- 3. <u>Install Drain Valve</u> (Fig. 401)
 - A. Special Tools and Equipment
 - (1) 2024 Installation Tool (Stewart Industries Inc., 5210 14th Avenue Northwest, Seattle, WA 98107-3795)
 - B. Consumable Materials
 - (1) B00003 Cleaner GMC 528B
 - C. Prepare for Installation

s 114-003

(1) Clean the drain valve in a water cleaner solution.

EFFECTIVITY-

51-41-03

ALL



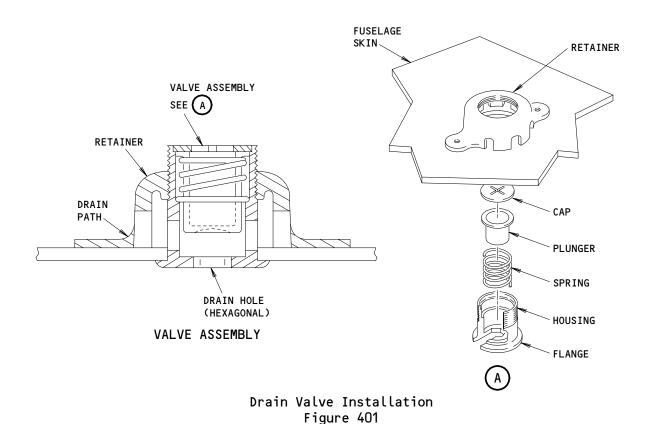
D. Install Drain Valve

s 424-004

(1) Put the valve assembly into the fuselage hole.

s 434-007

(2) Engage the thread of the valve assembly in the retainer and tighten with the installation tool.





MAIN DECK CARGO EQUIPMENT DRAINAGE - MAINTENANCE PRACTICES

1. General

- A. This procedure contains seven tasks:
 - (1) The first task is the removal of the sump tank valves.
 - (2) The second task is the installation of the sump tank valves.
 - (3) The third task is to examine the sump tank and valves.
 - (4) The fourth task is to examine the steerable power drive units.
 - (5) The fifth task is to examine the non-steerable power dirve units.
 - (6) The sixth task is to examine the floor drains.
 - (7) The seventh task is to examine the drip pans below the retractable power drive units.

TASK 51-41-12-002-001

- 2. Sump Tank Valve Removal (Fig. 201)
 - A. General
 - (1) For the tank that is near the door No. 5, get access to the under-floor compartment through the door in the aft wall of the bulk cargo compartment.
 - B. Access
 - (1) Location Zones

151/152 Area Aft of Bulk Cargo Compartment

C. Procedure

s 032-002

(1) Disconnect the inflow drain line at each end of the tank.

s 032-049

(2) Disconnect the outflow drain line at the bottom of the tank.

s 032-003

(3) Remove the fasteners that attach the tank to the hanger channels at each corner of the tank and at the lower tank.

s 032-004

(4) Remove the fasteners that attach the cover to the tank.

s 032-050

(5) Remove the cover.

s 032-005

(6) Remove the fasteners in the tank that attach the valve frame to the valve base.



s 032-051

(7) Remove the valve frame, plate, and spring.

s 032-006

(8) Remove the nut that attaches the valve spring to the plate.

\$ 032-007

(9) If it is necessary, remove the fasteners that attach the valve base to the tank.

NOTE: Break the sealant and remove the valve base.

s 022-008

- (10) To remove the tanks that are below the baggage compartments (if they are installed), do the steps that follow:
 - (a) Remove the fasteners that attach the cover to the tank.

NOTE: Get access below the cargo tracks.

- (b) Remove the cover.
- (c) Remove the valve, refer to "Sump Tank Valve" task.

TASK 51-41-12-402-009

- Sump Tank Valve Installation (Fig. 201)
 - A. Consumable Materials
 - (1) A00490 Sealant BMS 5-95, Class B
 - B. Access
 - (1) Location Zones

151/152 Area Aft of Bulk Cargo Compartment

C. Procedure

s 432-010

- (1) To install the valve base on the bottom of the tank (if it is removed), do the steps that follow:
 - (a) Clean the mating surfaces of the tank and fitting.
 - (b) Apply the sealant to the mating surfaces of the tank and valve base.
 - (c) Install the fasteners.

s 422-011

(2) Assemble the valve frame, plate and spring.

s 142-012

(3) Clean the mating surfaces of the frame and base.

s 392-013

(4) Apply the sealant to the mating surfaces of the valve frame and valve base.



s 432-014

(5) Install the fasteners to attach the valve frame and valve base.

NOTE: Make sure the valve plate is in the center on the hole in 0.12 inch of the centerline.##

s 412-052

(6) Put the cover in its position on the tank.

s 432-053

(7) Install the fasteners to attach the cover to the tank.

s 422-016

- (8) To install the tank that is near the door No. 5, do the steps that follow:
 - (a) Put the tank in its position.
 - (b) Install the fasteners to attach the tank to the hanger channels at each corner.

s 432-017

(9) Install the inflow drain line at each end of the tank.

s 432-054

(10) Install the outflow drain line at the bottom of the tank.

TASK 51-41-12-202-018

- 4. Examine the Sump Tank and Valve (Fig. 201)
 - A. Equipment
 - (1) Hose Water, Garden Variety or Equivalent
 - B. Access
 - (1) Location Zones

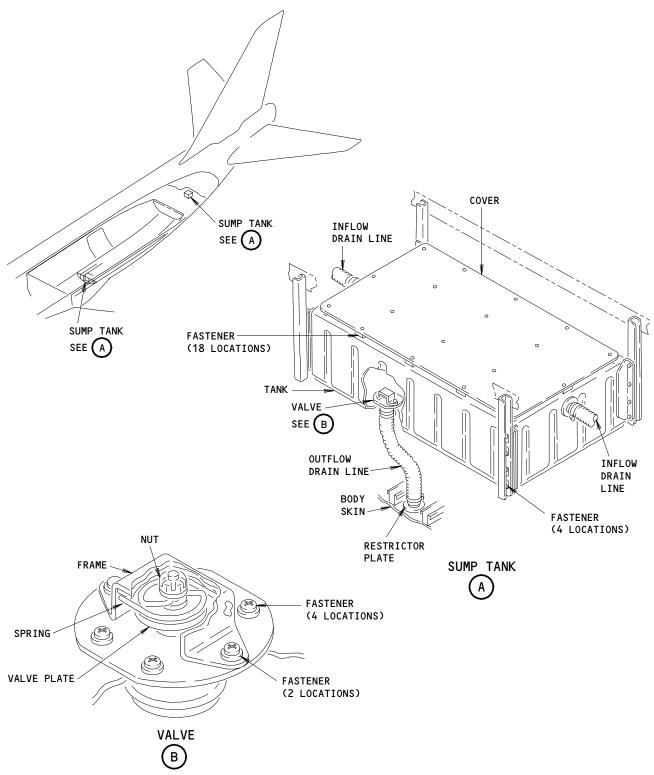
151/152 Area Aft of Bulk Cargo Compartment

C. Procedure

s 712-019

(1) To examine the drain system, use the hose to put the water in the floor drains.





Sump Tank and Valve Installation Figure 201

51-41-12

01

Page 204 Oct 10/91



s 212-020

(2) If the water does not flow freely from the outflow drain line, examine the restrictor plate in the drain opening at the body skin for unwanted materials.

s 162-021

(3) Clean the restrictor plate.

s 212-022

(4) Examine the valve for unwanted materials, weak or broken spring, or dirty plate.

s 162-055

(5) Clean the valve if it is necessary.

s 712-023

- (6) To examine the cleaned valve, do the steps that follow:
 - (a) Put the water in the tank and push the valve plate down with your finger.

NOTE: The water must not drain when you push the valve plate down.

(b) Release your finger from the valve plate.

<u>NOTE</u>: The water must drain freely when you release your finger from the valve plate.

TASK 51-41-12-202-024

- 5. Examine the Steerable Power Drive Units (Fig. 202)
 - A. Equipment
 - (1) Hose Water, Garden Variety or Equivalent
 - B. Access
 - (1) Location Zones

151/152 Area Aft of Bulk Cargo Compartment

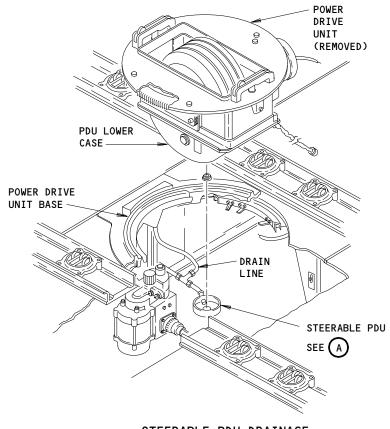
C. Procedure

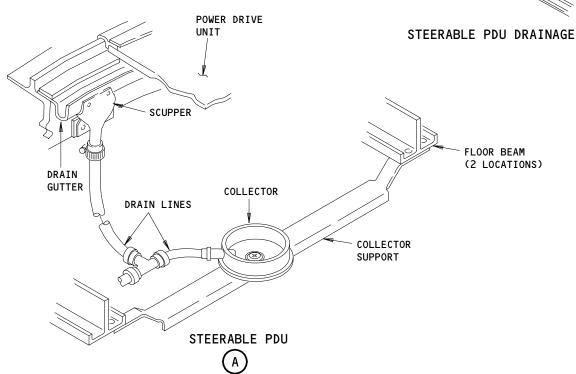
s 212-056

CAUTION: BE CAREFUL WHEN YOU REMOVE THE STEERABLE PDU FROM THE SUPPORT FITTING. IF YOU ARE NOT CAREFUL, YOU CAN CAUSE DAMAGE TO THE GEAR AND LIMIT SWITCH ASSEMBLY. BE CAREFUL TO PREVENT DAMAGE TO THE DRAIN GUTTERS AT THE INNER PERIPHERY OF THE SUPPORT RING IN THE FLOOR.

(1) Hold the PDU handles and push the triggers (a red flag will show the PDU as open).







Steerable Power Drive Unit Drainage Figure 202

51-41-12

01

Page 206 0ct 10/91

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s 212-057

(2) Lift and put the PDU at an angle to remove from the support structure.

s 212-026

(3) Examine the lower case of PDU to make sure the drain hole is clear.

s 212-027

(4) Make sure the collector cup under the PDU is clean.

s 212-028

(5) Make sure the drain hoses are clear.

<u>NOTE</u>: The water puts in the collector cup continues to drain away freely.

s 212-029

(6) Make sure the drain gutter around PDU base is clean.

TASK 51-41-12-202-060

- 6. Examine the Non-steerable Power Drive Unit (Fig. 203)
 - A. Access
 - (1) Location Zones

151/152 Area Aft of Bulk Cargo Compartment

B. Procedure

s 212-059

(1) Hold the PDU handles and push the triggers (a red flag will show the PDU as open).

s 212-058

(2) Lift and put the PDU at an angle to remove from the support structure.

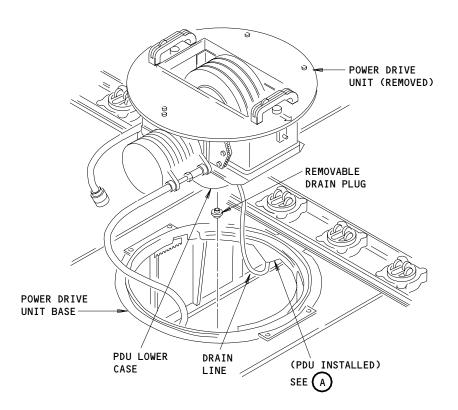
s 032-031

(3) Remove the drain plug.

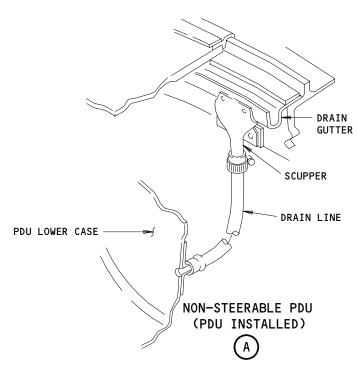
s 212-032

(4) Examine the lower case of the PDU for unwanted materials.





NON-STEERABLE PDU DRAINAGE



Non-Steerable Power Drive Unit Drainage Figure 203

51-41-12

01

Page 208 Oct 10/91



s 162-033

(5) Clean the lower case of the PDU if it is necessary.

s 212-034

(6) Make sure the drain gutter around the PDU base is clean.

s 212-036

(7) Make sure the hose from the drain gutter to the lower case of the PDU is clear.

TASK 51-41-12-402-061

7. PDU Drain Gutters Installation

- A. Consumable Materials
 - (1) A00292 Adhesive BMS 5-105 Type II, Class 1 or 2 (Preferred) (Ref 20-30-05)
 - (2) A00181 Adhesive BMS 5-92 Type I or II (Optional) (Ref 20-30-05)
 - (3) B00062 Acetone (Ref 20-30-01)
- B. Access
 - (1) Location Zones

151/152 Area Aft of Bulk Cargo Compartment

C. Procedure

s 112-045

(1) Clean the bonding surfaces with acetone.

s 142-046

(2) Use the medium grit sand paper to rub the bonding surfaces of polyurethane drain until there are no shiny surfaces.

s 392-047

(3) Prepare the adhesive, refer to the manufacturer's instructions.

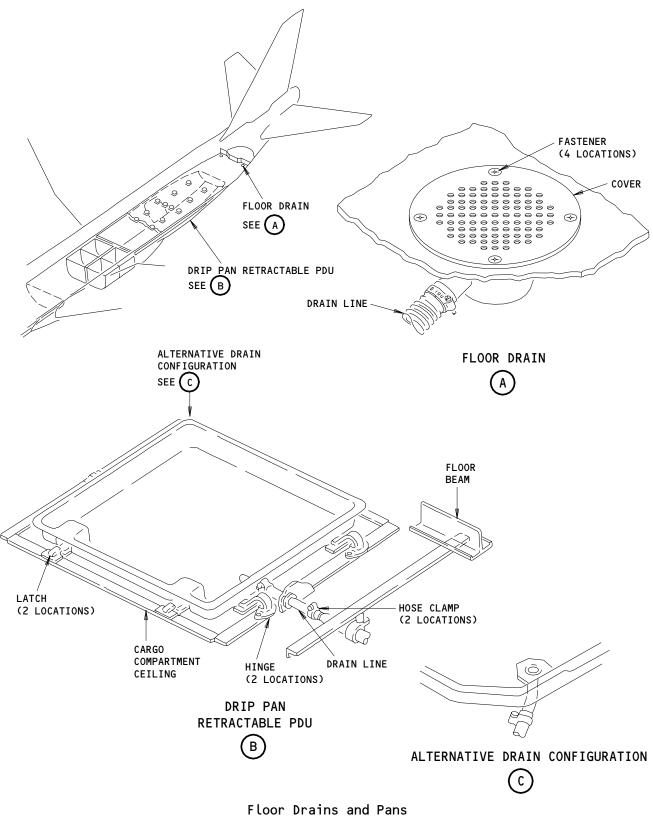
s 392-048

(4) Use the clamps or deadweight to apply mixed adhesive and bond under the light pressure

TASK 51-41-12-202-037

8. Examine the Floor Drains (Fig. 204)





Floor Drains and Pans Figure 204

51-41-12

01

Page 210 Oct 10/91



- A. Access
 - (1) Location Zones

151/152 Area Aft of Bulk Cargo Compartment

B. Procedure

s 032-038

(1) Remove the cover with holes from the floor drain.

s 212-039

(2) Make sure the receptacle is clean.

TASK 51-41-12-202-041

- 9. Examine the Drip Pans Under Retractable Power Drive Units (Fig. 204)
 - A. Equipment
 - (1) Hose Water, Garden Variety or Equivalent
 - B. Access
 - (1) Location Zones

151/152 Area Aft of Bulk Cargo Compartment

C. Procedure

s 032-042

(1) Unlatch and lower the drip pans that are in the ceiling of the aft luggage compartment.

s 162-043

(2) Clean the pans and hoses if they are necessary.

s 212-044

(3) Make sure the drain hoses from all receptacles and pans are clear.

NOTE: The water continues to drain away freely.



BONDED RUB PADS - REPAIRS

1. General

- A. This procedure contains four tasks:
 - (1) The first task is to use a heat source to repair rub pads made of bonded phenolic or stainless steel.
 - (2) The second task is to not use a heat source to repair rub pads made of bonded phenolic or stainless steel.
 - (3) The third task is to do a temporary repair of rub pads made of bonded phenolic or stainless steel.
 - (4) The fourth task is to do a repair of rub pads made of bonded teflon.

TASK 51-51-00-308-001

- 2. Bonded Phenolic or Stainless Steel Rub Pad Repair (Heat Source Available)
 - A. Standard Tools and Equipment
 - (1) Semco Sealing Gun
 - (2) Heat Lamps 250 Watts
 - (3) Thermocouples
 - B. Consumable Materials
 - (1) G00000 Wedge, Hardwood
 - (2) G00000 Wedge, Plastic
 - (3) A00250 Adhesive BMS 5-26, Class B-1/2
 - (4) A00251 Adhesive BMS 5-26, Class B-2
 - (5) B00184 Solvent BMS 11-7
 - (6) B00148 Solvent Methyl Ethyl Ketone (MEK), TT-M-261
 - (7) B00316 Solvent Aliphatic Naphtha TT-N-95
 - (8) B00153 Solvent Toluene (Toluol), TT-T-548
 - (9) A00322 Paper Abrasive, Aluminum Oxide, 100 Grit (minimum)
 - (10) G00000 Cloth Abrasive, Aluminum Oxide, 100 Grit (minimum)
 - (11) G00034 Cheesecloth Clean
 - (12) B00000 Pads Scotch-brite, Aluminum Oxide Impregnated, Type A
 - (13) G00000 Spatula
 - (14) G00000 Gloves Rubber or Cotton
 - C. Prepare the Mating Surfaces
 - <u>NOTE</u>: Make sure you put on clean cotton or rubber gloves when you clean the mating surfaces.

s 118-002

- (1) To clean the phenolic rub pads, do these steps:
 - (a) Remove all loose dirt, grease or oil from the surface with a clean cheesecloth.

EFFECTIVITY-

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WARNING: DO NOT GET SOLVENTS IN YOUR MOUTH, OR YOUR EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM SOLVENTS.

SOLVENTS ARE HAZARDOUS MATERIALS. SOLVENTS MAY BE

FLAMMABLE OR HARMFUL TO THE ENVIRONMENT. REFER TO PRODUCT MATERIAL SAFETY DATA SHEETS (MSDS) AND LOCAL REQUIREMENTS

FOR PROPER HANDLING PROCEDURES.

- (b) Clean the surface with a cheesecloth that is moist with solvent, Series 95 (AMM 20-30-95).
- (c) Immediately dry the surface with a clean dry cheesecloth.
- (d) Lightly rub the phenolic pad with abrasive paper until the shiny surface is removed. Make sure the shiny surface is removed from all edges and corners of the pad.
- (e) Remove all of the remaining particles with a clean cheesecloth.

NOTE: Do not use solvent to remove the remaining particles.

- (f) Clean the surface with a clean cheesecloth that is moist with solvent, Series 98-1 (SOPM 20-30-98) until all the remaining particles are removed.
- (g) Clean the surface again, if it is necessary.

s 118-003

- (2) To clean rub pads made of stainless steel that do not have primer applied, do these steps:
 - (a) Remove all loose dirt, grease, or oil from the surface with a clean cheesecloth.
 - (b) Clean the surface with a clean cheesecloth that is moist with solvent, Series 88 (AMM 20-30-88).
 - (c) Immediately dry the surface with a clean, dry cheesecloth.
 - (d) Clean the surface again, if it is necessary.

s 118-004

ALL

- (3) To clean the clad aluminum surfaces that do not have primer applied, do these steps:
 - (a) Remove all loose dirt, grease, or oil from the surface with a clean cheesecloth.
 - (b) Clean the surface with a clean cheesecloth that is moist with solvent, Series 88 (AMM 20-30-88).

EFFECTIVITY-

51-51-00



- (c) Immediately dry the surface with a clean dry cheesecloth.
- (d) Lightly rub the clad surface with Scotch-brite sheets until the mating surface is not shiny.
- (e) Remove the remaining particles with a clean cheesecloth.

NOTE: Do not use solvent to remove the remaining particles.

- (f) Rub the surface with a cheesecloth that is moist with BMS 11-7 solvent until all of the remaining particles are removed.
- (g) Immediately dry the surface with a clean cheesecloth.
- (h) Clean the surface again, if it is necessary.

s 118-005

(4) To clean the metal surfaces that have BMS 10-11 primer applied, do these steps:

NOTE: It is not necessary to clean the metal surfaces if the BMS 10-11 primer was applied less than 6 hours before.

- (a) For surfaces that have the primer applied between 6 and 48 hours, clean the surface with a cheesecloth that is moist with naphtha.
- (b) Immediately dry the surface with a clean cheesecloth.
- (c) Clean the surface again, if it is necessary.
- (d) For surfaces that have the primer applied for more than 48 hours, clean the surface with a cheesecloth that is moist with BMS 11-7 solvent.
- (e) Immediately dry the surface with a clean cheesecloth.
- (f) Clean the surface again, if it is necessary.
- D. Apply the Adhesive

s 118-029

- (1) Do these steps to apply the adhesive on the mating surface.
 - (a) In less than 1 hour before you apply the adhesive, make sure all the surfaces are clean.
 - (b) Remove the rub pads with a hardwood or plastic wedge.
 - (c) Use heat lamps to make the adhesive soft.

NOTE: Do not apply heat at a temperature of 190°F or more. Use a thermocouple to measure the temperature.

(d) Remove the remaining adhesive from the surface with a hardwood or plastic wedge.

EFFECTIVITY-

51-51-00



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- Clean the area with a clean cheesecloth that is moist with solvent, Series 88 (AMM 20-30-88).
- Immediately dry the area with a clean dry cheesecloth. (f)
- Refer to the manufacturer's instructions to mix the base component and the curing agent. Make sure the mixture is smooth and constant. Keep air bubbles to a minimum when you mix the components.

NOTE: Class B-2 sealant has a pot life of 2 hours and class B-1/2 has a pot life of 1/2 hour at 70°F. Keep the components that were not mixed in clean, airtight metal containers. Keep the mixed components at -20°F or lower. If the mixture is kept at temperatures between 20 and 30°F, the mixture has a pot life of 7 days. If the mixture is kept at temperatures between -30 and -40°F, the mixture has a pot life of 10 days. If the mixture is kept at temperatures below -40°F, the mixture has a pot life of 14 days.

CAUTION: DO NOT APPLY ADHESIVE IF THE TEMPERATURE OF THE STRUCTURE IS BELOW 50°F. AT TEMPERATURES BELOW 50°F, THE PERFORMANCE OF THE ADHESIVE IS UNSATISFACTORY.

Apply a thin constant layer (approximately 50 grams for each square foot) of the mixture on each mating surface.

NOTE: Use a spreader that has serrations to apply the adhesive on a large mating surface.

- Make sure the adhesive has a sufficient thickness to let the adhesive flow around the edges of the rub pad when the cure pressure is applied.
- Do these steps to assemble the parts in less than 2 hours after (i) you mix the B-2 material or in less than 20 minutes after you mix the B-1/2 material:
 - 1) Put the rub pads in their positions.

EFFECTIVITY-

ALL

51-51-00



2) Use a clean roller or rub the surface with a clean cheesecloth to remove the air caught between the surfaces.

NOTE: Too much pressure can push the adhesive out from between the rub pad and the airplane surface.

- 3) Remove unwanted adhesive with a clean cheesecloth that is moist with an appropriate solvent. Do not let the solvent go into the bond line.
- 4) Let the adhesive dry for 10 minutes before you apply the cure pressure.
- 5) Apply the cure pressure equally to the part in less than 3.0 hours after you mix the B-2 material or in less than 1.0 hour after you mix the B-1/2 material.
- 6) Cure the phenolic pads that are bonded to aluminum at a constant pressure of 5 to 14 pounds per square-inch (psi). Refer to the subsequent chart.

	Hours After You Apply the Cure Pressure	
Curing Temperature (°F)	Adhesive Class B-1/2	Adhesive Class B-2
77 ±5 72 ±5 67 ±5 62 ±5 115 ±5 *[2] 185 ±5 *[1] Bond line Temperature below cure Pressure	45 68 90 135 12 *[2] 0.75 *[1]	72 108 144 216 18 *[2] 0.75 *[1]

- *[1] More time on the cure pressure is necessary to heat the adhesive from 70 to 180°F.
- *[2] Optional cure temperature and time. You can use the optional cure temperature and time only with Pro Seal 890.
- (k) Remove the unwanted adhesive with a hardwood or plastic wedge.
- (l) Remove the remaining adhesive from the surface with a clean cheesecloth that is moist with solvent Series 98-1 (AMM 20-30-98).

EFFECTIVITY-

ALL



TASK 51-51-00-308-010

3. Bonded Phenolic or Stainless Steel Rub Pad Repair (No Heat Source Available)

<u>NOTE</u>: This procedure is recommended for a field repair of the bonded rubstrips when a short cure time is necessary.

- A. Standard Tools and Equipment
 - (1) Semco Sealing Gun
- B. Consumable Materials
 - (1) G00000 Wedge, Hardwood
 - (2) G00000 Wedge, Plastic
 - (3) A00250 Adhesive BMS 5-126, Class B-1/2
 - (4) A00251 Adhesive BMS 5-126, Class B-2 (Pro-seal 890)
 - (5) B00184 Solvent BMS 11-7
 - (6) B00316 Solvent Aliphatic Naphtha TT-N-95
 - (7) B00153 Solvent Toluene (Toluol), TT-T-548
 - (8) A00322 Paper Abrasive, Aluminum Oxide, 100 Grit (minimum)
 - (9) G00000 Cloth Abrasive, Aluminum Oxide, 100 Grit (minimum)
 - (10) G00034 Cheesecloth Clean
 - (11) B00000 Pads Scotch-brite, Aluminum Oxide Impregnated, Type A
 - (12) G00000 Spatula
 - (13) G00000 Gloves Rubber or Cotton
- C. Repair the Bonded Rub Pads

s 118-030

(1) Refer to the steps in the first procedure to apply adhesives on the mating surfaces.

s 348-031

ALL

- (2) Do these steps to apply a new pad:
 - (a) Mix 22 (±2) parts (by volume) of BMS 5-26, Pro Seal 890 B-2 with actuator, to 100 parts (by volume) of the base component.
 - (b) To install the new rub strip on the assembly, do these steps:
 - 1) Make sure the mating surfaces are clean.
 - 2) Put the rub strip flat against the assembly surface.

NOTE: Do not hold or use a clamp on the rub strip.

EFFECTIVITY-

51-51-00



- 3) If the clearance between the mating surfaces of the rub strip and the assembly is greater than 0.125 inch, install a new rub strip with a clean roller to get a smaller clearance.
- 4) Apply a thin constant layer of adhesive (approximately 50 grams for each square foot) on each mating surface.
- (c) Assemble the parts in less than 25 minutes after you mix the adhesive.
- (d) Keep the minimum cure time is 6 hours. The minimum cure temperature is 64°F.
- (e) To apply the cure pressure, do these steps:
 - Apply a smooth constant pressure to the rub strip each 15 minutes during the first 3 hours after the parts are assembled.
 - 2) Keep a continuous bead of the adhesive at the bond line to get a satisfactory bond between the mating surfaces.
 - 3) Apply more pressure to remove air bubbles in the bond line during the first 3 hours after the parts are assembled.

TASK 51-51-00-308-013

- 4. <u>Bonded Phenolic or Stainless Steel Rub Pad</u> (field repair with a heat source)
 - A. Standard Tools and Equipment
 - (1) Semco Sealing Gun
 - (2) Heat Lamps 250 Watts
 - (3) Thermocouples
 - B. Consumable Materials
 - (1) G00000 Wedge, Hardwood
 - (2) G00000 Wedge, Plastic
 - (3) A00250 Sealant BMS 5-26, Class B-1/2
 - (4) A00251 Sealant BMS 526, Class B-2
 - (5) B00184 Solvent BMS 11-7
 - (6) B00316 Solvent Aliphatic Naphtha, TT-N-95
 - (7) B00153 Solvent Toluene (Toluol), TT-T-548
 - (8) A00322 Paper Abrasive, Aluminum Oxide, 100
 Grit (minimum)
 - (9) G00000 Cloth Abrasive, Aluminum Oxide, 100 Grit (minimum)
 - (10) G00034 Cheesecloth Clean
 - (11) GOOOOO Pads Scotch-brite, Aluminum Oxide Impregnated, Type A
 - (12) G00000 Spatula
 - (13) G00000 Gloves Rubber or Cotton
 - C. Repair the Bonded Rub Pads

s 118-032

(1) Refer to the steps in the first procedure to apply the adhesive on the mating surface.

s 348-033

- (2) Do these steps to apply a new pad:
 - (a) Mix 22 (±2) parts (by volume) of BMS 5-26, Pro Seal 890 B-2 with activator, to 100 parts (by volume) of the base component.

EFFECTIVITY-

51-51-00

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- To install the new rub strip on the assembly, do these steps:
 - 1) Make sure the mating surfaces are clean.
 - 2) Put the rub strip flat against the assembly surface.

NOTE: Do not hold or use a clamp on the rub strip.

- 3) If the clearance between the mating surfaces of the rub strip and the assembly is greater than 0.125 inch, install a new rub strip with a clean roller to get a smaller clearance.
- 4) Apply a thin constant layer of the adhesive (approximately 50 grams on each square foot) on each mating surface.
- (c) Assemble the parts in less than 25 minutes after you mix the adhesive.
- (d) To cure the assembly, do these steps:
 - 1) Use two heat lamps, 250 watts each, as a heat source. Put the lamps 9 inches apart and 6 inches from the rub strip. Make sure the heat lamps point down on the rub strip.
 - 2) Apply heat on the assembly at a temperature of 90 (±5)°F. Allow a minimum of 1 1/2 hours from the time you mix the adhesive to the time you cure the adhesive.
 - 3) Cure the assembly for 2 hours minimum at 85 to 120°F.

NOTE: Use a thermocouple to measure the temperature.

- 4) Let the assembly stay for at least 20 minutes before you apply the cure pressure.
- To apply the cure pressure, do these steps:
 - 1) Apply a smooth constant pressure to the rub strip each 15 minutes during the first 2 hours after the parts are assembled.
 - Keep a continuous bead of the adhesive at the bond line to get a satisfactory bond between the mating surfaces.
 - Apply more pressure to remove air bubbles in the bond line as the adhesive cures in the assembly.

TASK 51-51-00-308-034

5. Bonded Teflon Rub Pad Repair

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A. General

EFFECTIVITY-

51-51-00



WARNING: TEFLON ETCHING MATERIAL IS CORROSIVE, TOXIC, FLAMMABLE, AND EXPLOSIVE. DO NOT BREATH THE VAPOR OR MIST FROM TEFLON ETCHING MATERIAL. DO NOT LET TEFLON ETCHING MATERIAL CONTACT YOUR SKIN, EYES OR CLOTHES. TEFLON ETCHING MATERIAL CAN CAUSE INJURY.

- (1) We recommend the you follow these safety procedures.
 - (a) Do not breath the vapor or mist. You must etch the teflon rubstrips in a ventilated area. If it is possible, etch the teflon rubstrips under a ventilation hood.
 - (b) Keep all flammable material away from a source of ignition.
 - (c) You must make sure you use anhydrous ammonia. Anhydrous ammonia does not contain water.

<u>NOTE</u>: Liquid anhydrous ammonia is available only in sealed cylinders.

- 1) Sodium metal will have a dangerous reaction with water or a water solution (such as aqueous ammonia NH40H solution).
- (d) Anhydrous ammonia gas is very poisonous. Do not breathe anhydrous ammonia gas. Injury to your nose, throat and lungs can occur. Also, do not let anhydrous ammonia gas touch your skin or your eyes. Bad burns can occur. A mixture of 15 to 28% (by volume) of ammonia can explode.
- (e) Do not swallow the liquid ammonia. Bad burns to your skin can occur.
- (f) Supply protective clothing and equipment as follows.
 - 1) Chemical goggles or face shields.
 - 2) Coated chemical resistant gloves.
 - 3) Cotton clothes.
 - 4) Full face, airline respirator with a self-contained air or oxygen breathing unit or canister mask.
- B. Standard Tools and Equipment
 - (1) Heat Lamps 250 Watts
 - (2) Thermocouples
 - (3) Rex Model A Durometer
 - (4) Shore A Durometer
 - (5) Chemical Goggles
 - (6) Face Shield
 - (7) Coated Chemical Resistant Gloves
 - (8) Cotton Clothes
 - (9) Full Face Airline Respirator
 - (10) Self-Contained Air or Oxygen Breathing Unit
 - (11) Canister Mask
- C. Consumable Materials
 - (1) B00062 Acetone Technical, 0-A-51
 - (2) B00148 Solvent Methyl Ethyl Ketone (MEK), TT-M-261

EFFECTIVITY-

51-51-00



- (3) B00080 Solvent Butyl Alcohol, TT-B-846
- (4) B00066 Anhydrous Ammonia 0-A-445
- (5) G00000 Sodium Metal - Technical, MIL-S-10391
- (6) A00134 Adhesive - BMS 14
- G00000 Tape Masking, Permacel 733 (7)
- G00000 Etchant Fluorobond TFE (8)
- (9) G00000 Etchant Tetra-Etch TFE
- (10) A00247 Adhesive BMS 5-95, Class B-1/2
- (11) A00247 Adhesive BMS 5-95, Class B-2
- (12) A00251 Adhesive BMS 5-26, Class B-2 (Pro-Seal 890 Only)
- D. Prepare the mating surfaces.

s 118-027

DO NOT GET SOLVENTS IN YOUR MOUTH, OR YOUR EYES, OR ON YOUR WARNING: DO NOT BREATHE THE FUMES FROM SOLVENTS. SOLVENTS ARE HAZARDOUS MATERIALS. SOLVENTS MAY BE FLAMMABLE OR HARMFUL TO THE ENVIRONMENT. REFER TO PRODUCT MATERIAL SAFETY DATA SHEETS (MSDS) AND LOCAL REQUIREMENTS FOR PROPER HANDLING PROCEDURES.

(1) Use a cloth that is moist with solvent, Series 98 (AMM 20-30-98) to clean the mating surface.

s 118-017

(2) Use a cloth that is moist with acetone to clean the mating surface of the teflon pad.

s 958-018

ALL

- Apply a mask to the opposite side of the teflon pad mating surface.
- Etch the teflon pad mating surface as follows:

NOTE: You can get teflon rub pads that are etched. This paragraph applies only to teflon pads that are not etched.

EFFECTIVITY-

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Page 810 Oct 18/00



s 118-036

WARNING: TEFLON ETCHING MATERIALS ARE CORROSIVE, TOXIC, FLAMMABLE, AND/OR EXPLOSIVE. OBSERVE SAFETY REQUIREMENTS PRESENTED IN PAR. 5.A. TEFLON ETCHING MATERIALS CAN CAUSE INJURY OR DAMAGE.

- (1) Etching Method I (FluoroBond or Tetra-Etch)
 - (a) Put the part in the etchant solution for a minimum of 30 seconds and a maximum of 60 seconds.
 - (b) The part must have a dark brown color in 60 seconds. If the part is not dark brown in 60 seconds the etchant solution must be replaced with new etchant solution.
 - (c) Immediately clean the part. Use a 3 to 5 percent solution (by volume) of water in n-butyl alcohol to remove all of the etchant from the part.
 - (d) Wash the part in clean water. Remove the mask. Wash the masked surface with a clean cloth that is wet with acetone.

s 118-037

WARNING: TEFLON ETCHING MATERIALS ARE CORROSIVE, TOXIC, FLAMMABLE, AND/OR EXPLOSIVE. OBSERVE SAFETY REQUIREMENTS PRESENTED IN PAR. 5.A. TEFLON ETCHING MATERIALS CAN CAUSE INJURY OR DAMAGE.

- (2) Etching Method II (Sodium-ammonia)
 - (a) Mix the etchant solution in a clean, dry container. The container must be made of either polyethylene or stainless steel.
 - (b) Put anhydrous ammonia into the container. Make sure the part will be fully covered by the ammonia. You can use rubber or Tygon tube to move the liquid ammonia into the container.
 - (c) Add 10 grams of metallic sodium chips to the solution for each liter of ammonia.
 - (d) Mix the solution with a rod made of glass or polyethylene.

 Make sure all of the sodium is mixed into the solution.

NOTE: You can neutralize the solution by one of the following methods:

- Either, add a 3 to 5 percent solution (by volume) of water in n-butyl alcohol to the etchant until the etchant has no color.
- Or, let the ammonia become dry. Rinse the container with a 3 to 5 percent solution (by volume) of water in n-butyl alcohol. Add the rinse solution until no color remains. As a last step, flush the container with water.

EFFECTIVITY-

51-51-00

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- Put the rub pad in the solution for 10 to 20 seconds. Make sure the part is completely covered by the solution. If it is necessary, wet one end of the pad and then wet the other end of the pad.
- The pad must have a dark brown color after a maximum of 20 seconds in the solution. If the pad is not dark brown after 20 seconds in the solution, add 10 grams of sodium for each liter of ammonia of the solution.
- Wash the pad as shown in steps (1)(c) and (1)(d). (g)
- (h) Use a clean cloth that is moist with solvent, Series 98 (AMM 20-30-98) to clean the surface of the teflon pad.
- F. Repair the Teflon Rub Pad

s 348-021

(1) Mix each adhesive component. Mix the base compound with the activator per the manufacturers instructions. Do not make the adhesive thin.

You can use the adhesive mix for a maximum of 20 days if you keep the mixture at a temperature less than -40°F. Make sure you keep the mixture in sealant gun tubes or in aluminum toothpaste type tubes. Make a mark on each container with the material name and the expiration date.

s 348-022

(2) Apply a thin constant layer (approximately 50 grams for each square foot) of the mixture on each mating surface.

NOTE: Use a spreader that has serrations to apply the adhesive on a large mating surface.

s 438-023

ALL

(3) Put the teflon rub pad on the airplane surface. Apply pressure to make sure the rub pad makes full contact with the airplane surface.

NOTE: Make sure the adhesive has a sufficient thickness to let the adhesive flow around the edges of the rub pad when the cure pressure is applied.

EFFECTIVITY-

51-51-00



S 348-024

(4) Cure the pad at 75 to 80°F. The cure time to handling strength is as follows:

NOTE: The time to a full cure is one week or more.

Adhesive	hesive Handling Time	
BMS 5-26, Class B-2	48 hours	
BMS 5-95, Class B-1/2	24 hours	
BMS 5-95, Class B-2	48 hours	

s 228-025

(5) You can make a test of the cure strength with a Durometer. Before you touch the rub pad, the Rex Model A Durometer must read 30 and the Shore A Durometer must read 20.

s 348-026

(6) You can apply heat to increase the speed of the cure time, up to a temperature of 120°F. The cure time will be reduced by 50 percent for each 20°F rise in temperature. Temperatures below 75°F will increase the cure time.

EFFECTIVITY-

ALL

51-51-00

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WING LEADING EDGE CAVITY ALUMINUM FOIL TAPE - REPAIRS

1. General

- A. This procedure contains one task:
 - (1) The task is to repair the aluminum foil tape.
- B. The protection is given to the electrical/electronic wiring in the leading edge by an aluminum foil tape applied to a part of the inner surface of the nonmetallic leading edge skins.
- C. The tape does the dual functions:
 - (1) The tape prevents a possible direct stroke contact to the wires below the tape.
 - (2) The tape gives the electromagnetic shielding from the fields set up by a lighting strike.

TASK 51-61-01-308-001

2. <u>Aluminum Foil Tape - Repair</u>

- A. Consumable Materials
 - (1) G00291 Tape Aluminum Foil, Scotch Brand Industrial Tape No. 425 with Liner (0.003 Inch Thick)
 - (2) B00083 Solvent Aliphatic Naphtha, TT-N-95
 - (3) B00535 Solvent Tetrachloroethylene (Perchloroethylene), Technical, 0-T-236
 - (4) B00148 Solvent Methyl Ethyl Ketone (MEK), TT-M-261
- B. Procedure

s 028-007

WARNING: THE FINISHES, CLEANERS, THINNERS, AND SOLVENTS CONTAIN TOXIC AND/OR FLAMMABLE COMPONENTS. DO NOT BREATHE THE VAPORS AND MIST. USE WITH SUFFICIENT VENTILATION. DO NOT GET THESE TOXIC COMPONENTS IN YOUR MOUTH OR EYES, OR ON YOUR SKIN. PUT ON A PROTECTIVE SPLASH GOGGLE AND GLOVES. KEEP FLAMMABLE MATERIALS AWAY FROM SOURCES OF IGNITION.

CAUTION: DO NOT LET THE SOLVENTS TO TOUCH THE PLASTICS, CONTROL CABLES, LUBRICATED AREAS, PLASTIC DECALS, OR PAINTS OR MARKS WHICH ARE RESISTANT TO HYDRAULIC FLUID.

(1) Remove the damaged foil.

<u>NOTE</u>: Make sure the edges of the remaining tape are bonded correctly.

s 118-003

(2) Clean the surfaces with aliphatic naphtha or tetrachloroethylene in 1 hour before you apply the tape to the surfaces.

EFFECTIVITY-

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s 118-006

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(3) Use MEK, acetone, isopropyl alcohol, or ethyl alcohol to remove the paint or contamination in 1/2-inch wide strip on the remaining tape around the area to be repaired.

s 398-008

(4) Apply the new tape on the repair area with minimum of 1/2-inch overlap on the old tape.

NOTE: Use your fingers to push the new tape tightly in position.

s 378-009

(5) Apply the paint if it is necessary.

EFFECTIVITY-

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