

CHAPTER

22

AUTOFLIGHT



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AIRCRAFT MAINTENANCE MANUAL

CHAPTER 22
AUTOFLIGHT

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22-EFFECTIVE PAGES			22-11-00	(cont)		22-11-00	(cont)	
1 thru 8	JUN 15/2016		207	Oct 15/2015		534	Jun 15/2015	
22-CONTENTS			208	Jun 15/2015		535	Jun 15/2015	
1	Oct 15/2014		22-11-00			536	Oct 15/2015	
2	Jun 15/2015		501	Oct 15/2014		537	Oct 15/2015	
O 3	Jun 15/2016		502	Oct 15/2014		538	Oct 15/2015	
4	Feb 15/2015	R	503	Jun 15/2016		539	Oct 15/2014	
5	Feb 15/2015	R	504	Jun 15/2016		540	Oct 15/2014	
6	Feb 15/2015		505	Oct 15/2015		541	Oct 15/2015	
7	Jun 15/2015		506	Jun 15/2015		542	Jun 15/2015	
8	Feb 15/2015		507	Oct 15/2014		543	Oct 15/2014	
9	Feb 15/2015		508	Oct 15/2014		544	Feb 15/2016	
10	Feb 15/2015		509	Oct 15/2014		545	Oct 15/2014	
11	Feb 15/2015		510	Oct 15/2015		546	Feb 15/2016	
12	Feb 15/2015		511	Oct 15/2015		547	Oct 15/2015	
13	Feb 15/2015		512	Jun 15/2015		548	Jun 15/2015	
O 14	Jun 15/2016		513	Jun 15/2015		549	Oct 15/2014	
O 15	Jun 15/2016	R	514	Jun 15/2016		550	Oct 15/2015	
O 16	Jun 15/2016		515	Jun 15/2015	R	551	Jun 15/2016	
22-00-00			516	Oct 15/2015		O 552	Jun 15/2016	
901	Oct 15/2015		517	Jun 15/2015		553	Jun 15/2015	
902	Jun 15/2015		518	Oct 15/2014		554	Feb 15/2015	
903	Oct 15/2015		519	Oct 15/2014		555	Oct 15/2015	
904	Feb 15/2016		520	Oct 15/2014		556	Jun 15/2015	
905	Oct 15/2014		521	Oct 15/2015		557	Oct 15/2015	
906	Oct 15/2014		522	Feb 15/2016		558	Jun 15/2015	
907	Jun 15/2015		523	Oct 15/2015		559	Jun 15/2015	
908	Oct 15/2014		524	Oct 15/2014		560	Jun 15/2015	
909	Feb 15/2016		525	Oct 15/2015		561	Jun 15/2015	
910	BLANK		526	Oct 15/2015		562	Jun 15/2015	
22-11-00			527	Oct 15/2015		563	Oct 15/2015	
201	Oct 15/2014		528	Oct 15/2015		564	Oct 15/2015	
202	Oct 15/2014		529	Oct 15/2015		565	Oct 15/2015	
203	Oct 15/2015		530	Oct 15/2015		566	Oct 15/2015	
204	Oct 15/2014		531	Oct 15/2014		567	Oct 15/2015	
205	Oct 15/2014		532	Oct 15/2014		568	Oct 15/2015	
206	Oct 15/2015		533	Oct 15/2015		569	Oct 15/2015	

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570	Jun 15/2015		201	Oct 15/2015		208	Feb 15/2015	
571	Jun 15/2015		202	Jun 15/2015		209	Feb 15/2015	
572	Oct 15/2015		203	Feb 15/2015		210	BLANK	
573	Oct 15/2015		204	Oct 15/2015		22-11-12		
574	Oct 15/2015		205	Oct 15/2015		401	Oct 15/2014	
575	Feb 15/2016		206	Jun 15/2015		402	Oct 15/2014	
576	Feb 15/2016		22-11-11			403	Oct 15/2014	
577	Feb 15/2016		401	Oct 15/2014		404	Oct 15/2015	
578	Feb 15/2016		402	Oct 15/2014		405	Oct 15/2015	
R 579	Jun 15/2016		403	Oct 15/2015		406	Oct 15/2015	
580	Feb 15/2016		404	Oct 15/2015		407	Feb 15/2016	
581	Jun 15/2015		405	Oct 15/2015		408	Oct 15/2014	
582	Oct 15/2015		406	Oct 15/2015		409	Jun 15/2015	
583	Jun 15/2015		407	Oct 15/2015		410	Jun 15/2015	
584	Oct 15/2015		408	Feb 15/2015		411	Oct 15/2015	
585	Feb 15/2016		409	Oct 15/2014		412	BLANK	
586	Jun 15/2015		410	Oct 15/2014		22-11-14		
587	Jun 15/2015		22-11-11			201	Oct 15/2015	
588	Jun 15/2015		501	Oct 15/2015		202	Oct 15/2015	
589	Jun 15/2015		502	Feb 15/2016		203	Feb 15/2015	
590	Jun 15/2015		503	Feb 15/2015		204	Oct 15/2015	
591	Oct 15/2015		504	Feb 15/2015		205	Oct 15/2015	
592	Oct 15/2015		505	Oct 15/2015		206	Jun 15/2015	
593	Jun 15/2015		506	Oct 15/2015		207	Jun 15/2015	
R 594	Jun 15/2016		507	Oct 15/2015		208	BLANK	
595	Jun 15/2015		508	Oct 15/2015		22-11-14		
596	Jun 15/2015		509	Oct 15/2015		R 401	Jun 15/2016	
597	Oct 15/2015		510	Oct 15/2015		402	Oct 15/2014	
598	Oct 15/2015		22-11-12			403	Oct 15/2015	
R 598.1	Jun 15/2016		201	Jun 15/2015		404	Oct 15/2015	
R 598.2	Jun 15/2016		202	Feb 15/2015		405	Oct 15/2014	
R 598.3	Jun 15/2016		203	Jun 15/2015		406	Oct 15/2014	
O 598.4	Jun 15/2016		204	Feb 15/2015		22-11-14		
D 598.5	Jun 15/2016		205	Oct 15/2015		501	Feb 15/2016	
D 598.6	Jun 15/2016		206	Oct 15/2015		502	Oct 15/2014	
			207	Oct 15/2015		503	Jun 15/2015	

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22-11-14 (cont)			22-11-23			22-11-24		
504	Oct 15/2014		401	Oct 15/2014		501	Feb 15/2016	
505	Oct 15/2015		402	Oct 15/2014		502	Jun 15/2015	
506	Oct 15/2015		403	Oct 15/2015		22-11-25		
507	Oct 15/2015		404	Oct 15/2015		201	Jun 15/2015	
508	Oct 15/2015		405	Oct 15/2014		202	Jun 15/2015	
509	Oct 15/2015		406	Oct 15/2014		203	Feb 15/2015	
510	Oct 15/2015		407	Oct 15/2014		204	Oct 15/2015	
511	Oct 15/2015		408	BLANK		205	Oct 15/2015	
512	BLANK		22-11-23			206	Feb 15/2015	
22-11-22			501	Oct 15/2015		207	Feb 15/2015	
201	Jun 15/2015		502	Oct 15/2014		208	BLANK	
202	Jun 15/2015		503	Jun 15/2015		22-11-25		
203	Feb 15/2015		504	Oct 15/2015		401	Feb 15/2015	
204	Oct 15/2015		505	Oct 15/2015		402	Oct 15/2014	
205	Oct 15/2015		506	Oct 15/2015		403	Oct 15/2014	
206	Feb 15/2015		507	Oct 15/2015		404	Oct 15/2015	
207	Feb 15/2015		508	BLANK		405	Oct 15/2015	
208	BLANK		22-11-24			406	Oct 15/2015	
22-11-22			201	Jun 15/2015		407	Oct 15/2015	
401	Oct 15/2014		202	Jun 15/2015		408	Feb 15/2016	
402	Oct 15/2014		203	Feb 15/2015		409	Feb 15/2015	
403	Oct 15/2015		204	Oct 15/2015		410	Feb 15/2015	
404	Feb 15/2015		205	Oct 15/2015		411	Oct 15/2014	
405	Feb 15/2015		206	Oct 15/2015		412	BLANK	
406	Oct 15/2015		207	Feb 15/2015		22-11-25		
407	Jun 15/2015		208	BLANK		501	Oct 15/2015	
408	Oct 15/2015		22-11-24			502	Jun 15/2015	
22-11-23			R 401	Jun 15/2016		503	Oct 15/2014	
201	Jun 15/2015		R 402	Jun 15/2016		504	Oct 15/2015	
202	Jun 15/2015		R 403	Jun 15/2016		505	Oct 15/2015	
203	Feb 15/2015		404	Oct 15/2015		506	Oct 15/2015	
204	Oct 15/2015		405	Oct 15/2015		507	Oct 15/2015	
205	Oct 15/2015		R 406	Jun 15/2016		508	Oct 15/2015	
206	Feb 15/2015		R 407	Jun 15/2016		22-11-25		
207	Feb 15/2015		R 408	Jun 15/2016		601	Feb 15/2015	
208	BLANK					602	Oct 15/2015	

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22-11-25 (cont)			22-11-26			22-11-29		
603	Oct 15/2015		601	Feb 15/2015		201	Oct 15/2015	
604	Oct 15/2015		602	Oct 15/2015		202	Oct 15/2015	
605	Oct 15/2015		603	Oct 15/2015		203	Feb 15/2015	
606	BLANK		604	Oct 15/2015		204	Oct 15/2015	
22-11-26			605	Oct 15/2015		205	Oct 15/2015	
201	Jun 15/2015		606	Oct 15/2015		206	Jun 15/2015	
202	Jun 15/2015		22-11-27			22-11-29		
203	Feb 15/2015		201	Jun 15/2015		401	Oct 15/2014	
204	Oct 15/2015		202	Jun 15/2015		402	Oct 15/2014	
205	Oct 15/2015		203	Feb 15/2015		403	Oct 15/2015	
206	Feb 15/2015		204	Oct 15/2015		404	Oct 15/2015	
207	Feb 15/2015		205	Oct 15/2015		405	Feb 15/2015	
208	BLANK		206	Feb 15/2015		406	Oct 15/2014	
22-11-26			207	Feb 15/2015		22-11-29		
401	Oct 15/2014		208	BLANK		501	Oct 15/2015	
402	Oct 15/2014		22-11-27			502	Jun 15/2015	
403	Oct 15/2015		401	Jun 15/2015		503	Oct 15/2015	
404	Oct 15/2015		402	Jun 15/2015		504	Jun 15/2015	
405	Feb 15/2016		403	Oct 15/2014		505	Oct 15/2015	
406	Oct 15/2014		404	Oct 15/2015		506	Oct 15/2015	
407	Oct 15/2014		405	Oct 15/2015		507	Oct 15/2015	
408	Oct 15/2014		406	Feb 15/2015		508	Oct 15/2015	
22-11-26			407	Feb 15/2015		22-11-30		
501	Feb 15/2016		408	Feb 15/2015		201	Oct 15/2015	
502	Feb 15/2016		22-11-27			202	Oct 15/2015	
503	Jun 15/2015		501	Oct 15/2015		203	Feb 15/2015	
504	Oct 15/2014		502	Jun 15/2015		204	Oct 15/2015	
505	Oct 15/2015		503	Oct 15/2014		205	Oct 15/2015	
506	Oct 15/2015		504	Oct 15/2014		206	Jun 15/2015	
507	Jun 15/2015		505	Oct 15/2015		207	Jun 15/2015	
508	Oct 15/2015		506	Oct 15/2015		208	BLANK	
509	Oct 15/2015		507	Oct 15/2015		22-11-30		
510	Oct 15/2015		508	Oct 15/2015		401	Oct 15/2014	
511	Oct 15/2015		509	Oct 15/2015		402	Oct 15/2014	
512	Oct 15/2015		510	BLANK		403	Oct 15/2015	
						404	Oct 15/2015	

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22-11-30 (cont)			22-11-31 (cont)			22-11-32 (cont)		
405	Oct 15/2015		408	Feb 15/2015		406	BLANK	
406	Oct 15/2015		409	Feb 15/2015		22-11-33		
407	Feb 15/2016		410	Feb 15/2015		201	Jun 15/2015	
408	Feb 15/2016		411	Feb 15/2015		202	Jun 15/2015	
409	Oct 15/2014		412	BLANK		203	Feb 15/2015	
410	Oct 15/2014		22-11-31			204	Oct 15/2015	
22-11-30			501	Feb 15/2016		205	Feb 15/2015	
R 501	Jun 15/2016		502	Jun 15/2015		R 206	Jun 15/2016	
502	Jun 15/2015		503	Jun 15/2015		207	Feb 15/2015	
503	Oct 15/2014		504	Oct 15/2015		208	Feb 15/2015	
504	Oct 15/2015		505	Oct 15/2014		209	Jun 15/2015	
505	Oct 15/2014		506	Oct 15/2015		210	Feb 15/2015	
506	Oct 15/2015		507	Oct 15/2015		211	Jun 15/2015	
507	Oct 15/2015		508	Oct 15/2015		212	Jun 15/2015	
508	Oct 15/2015		509	Oct 15/2015		213	Feb 15/2015	
509	Oct 15/2015		510	Oct 15/2015		214	Feb 15/2015	
510	Oct 15/2015		511	Oct 15/2015		215	Jun 15/2015	
511	Oct 15/2015		512	BLANK		216	Feb 15/2015	
512	BLANK		22-11-32			217	Feb 15/2015	
22-11-31			201	Jun 15/2015		218	Feb 15/2015	
201	Oct 15/2015		202	Jun 15/2015		219	Jun 15/2015	
202	Oct 15/2015		203	Oct 15/2015		R 220	Jun 15/2016	
203	Feb 15/2015		204	Feb 15/2015		R 221	Jun 15/2016	
204	Oct 15/2015		205	Feb 15/2015		222	Feb 15/2015	
205	Oct 15/2015		206	BLANK		223	Feb 15/2015	
206	Jun 15/2015		22-11-32			224	Jun 15/2015	
207	Jun 15/2015		301	Oct 15/2014		225	Jun 15/2015	
208	BLANK		R 302	Jun 15/2016		226	Feb 15/2015	
22-11-31			303	Jun 15/2015		227	Feb 15/2015	
401	Oct 15/2014		304	BLANK		228	Feb 15/2015	
402	Oct 15/2014		22-11-32			229	Jun 15/2015	
403	Oct 15/2015		R 401	Jun 15/2016		230	Jun 15/2015	
404	Oct 15/2015		402	Oct 15/2014		231	Feb 15/2015	
405	Oct 15/2015		403	Oct 15/2015		232	Feb 15/2015	
406	Oct 15/2015		404	Jun 15/2015		233	Feb 15/2015	
R 407	Jun 15/2016		405	Oct 15/2014		234	Feb 15/2015	

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22-11-33 (cont)			22-11-34			22-11-40 (cont)		
235	Jun 15/2015		701	Oct 15/2014		204	Oct 15/2015	
R 236	Jun 15/2016		702	BLANK		205	Feb 15/2015	
R 237	Jun 15/2016	22-11-37				206	Feb 15/2015	
R 238	Jun 15/2016	201	Jun 15/2015		22-11-40			
239	Feb 15/2015	202	Feb 15/2015		401	Oct 15/2014		
R 240	Jun 15/2016	203	Feb 15/2015		402	Oct 15/2014		
R 241	Jun 15/2016	204	Oct 15/2015		403	Oct 15/2015		
242	Jun 15/2015	205	Oct 15/2015		404	Oct 15/2015		
22-11-33		206	Feb 15/2015		405	Oct 15/2015		
401	Oct 15/2014	207	Feb 15/2015		406	Feb 15/2016		
402	Oct 15/2014	208	BLANK		407	Oct 15/2014		
403	Oct 15/2015	22-11-37			408	Jun 15/2015		
404	Jun 15/2015	401	Oct 15/2014		409	Jun 15/2015		
405	Oct 15/2014	402	Oct 15/2014		410	Oct 15/2015		
406	Jun 15/2015	403	Oct 15/2015		22-11-41			
R 407	Jun 15/2016	404	Jun 15/2015		201	Jun 15/2015		
408	Jun 15/2015	405	Oct 15/2014		202	Jun 15/2015		
22-11-34		406	Jun 15/2015		203	Oct 15/2015		
201	Jun 15/2015	407	Oct 15/2014		204	Feb 15/2015		
202	Feb 15/2015	408	Jun 15/2015		22-11-41			
203	Oct 15/2015	22-11-39			401	Feb 15/2015		
204	Oct 15/2015	201	Jun 15/2015		402	Feb 15/2015		
205	Feb 15/2015	202	Feb 15/2015		403	Oct 15/2015		
206	BLANK	203	Oct 15/2015		404	Oct 15/2015		
22-11-34		204	Feb 15/2015		405	Feb 15/2015		
R 401	Jun 15/2016	22-11-39			406	Jun 15/2015		
402	Oct 15/2014	401	Jun 15/2015		407	Oct 15/2015		
403	Oct 15/2015	402	Jun 15/2015		408	BLANK		
404	Oct 15/2014	403	Oct 15/2015		22-11-81			
405	Oct 15/2014	404	Jun 15/2015		501	Oct 15/2015		
406	BLANK	405	Jun 15/2015		502	Feb 15/2015		
22-11-34		406	Jun 15/2015		503	Oct 15/2015		
501	Jun 15/2015	22-11-40			504	BLANK		
502	Jun 15/2015	201	Jun 15/2015		22-11-92			
		202	Jun 15/2015		201	Oct 15/2015		
		203	Feb 15/2015		202	Oct 15/2015		

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22-11-92 (cont)			22-23-00			22-23-21 (cont)		
203	Feb 15/2015		D 401	Jun 15/2016		407	Jun 15/2015	
204	Oct 15/2015		D 402	Jun 15/2016		408	BLANK	
205	Jun 15/2015		D 403	Jun 15/2016		22-23-21		
206	BLANK		D 404	BLANK		R 501	Jun 15/2016	
22-11-92			22-23-00			502	Feb 15/2015	
401	Oct 15/2014		501	Jun 15/2015		503	Feb 15/2015	
402	Oct 15/2014		502	Jun 15/2015		504	Jun 15/2015	
403	Oct 15/2015		503	Oct 15/2014		22-31-00		
404	Oct 15/2015		504	Oct 15/2014		201	Jun 15/2015	
405	Oct 15/2015		505	Oct 15/2014		202	Feb 15/2015	
R 406	Jun 15/2016		506	Oct 15/2014		22-31-00		
407	Oct 15/2014		507	Oct 15/2014		501	Jun 15/2015	
408	BLANK		508	Oct 15/2014		502	Jun 15/2015	
22-11-92			509	Jun 15/2015		503	Oct 15/2014	
501	Feb 15/2016		510	BLANK		504	Oct 15/2014	
502	Feb 15/2016		22-23-11			505	Oct 15/2014	
R 503	Jun 15/2016		401	Oct 15/2014		506	Oct 15/2014	
504	Feb 15/2016		402	Oct 15/2014		R 507	Jun 15/2016	
505	Feb 15/2016		403	Oct 15/2015		R 508	Jun 15/2016	
506	Oct 15/2015		404	Oct 15/2015		509	Jun 15/2015	
507	Oct 15/2015		R 405	Jun 15/2016		510	BLANK	
508	Oct 15/2015		O 406	Jun 15/2016		22-31-51		
509	Oct 15/2015		O 407	Jun 15/2016		401	Oct 15/2014	
510	Oct 15/2015		408	BLANK		402	Oct 15/2015	
511	Oct 15/2015		22-23-11			403	Oct 15/2015	
512	Oct 15/2015		501	Jun 15/2015		404	Jun 15/2015	
R 513	Jun 15/2016		502	Oct 15/2014		405	Jun 15/2015	
514	Feb 15/2015		503	Oct 15/2014		406	BLANK	
515	Oct 15/2015		504	Jun 15/2015		22-31-81		
516	BLANK		22-23-21			401	Oct 15/2014	
22-23-00			401	Oct 15/2014		402	Oct 15/2015	
D 201	Jun 15/2016		402	Oct 15/2014		403	Oct 15/2015	
D 202	Jun 15/2016		403	Oct 15/2015		404	Oct 15/2015	
D 203	Jun 15/2016		404	Oct 15/2015		22-31-91		
D 204	Jun 15/2016		405	Feb 15/2016		401	Oct 15/2014	
			406	Oct 15/2014		402	Oct 15/2014	

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22-31-91 (cont)								
403	Oct 15/2015							
404	Oct 15/2015							
405	Feb 15/2016							
406	Oct 15/2014							
407	Feb 15/2016							
408	BLANK							

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<u>SUBJECT</u>	<u>CHAPTER</u>	<u>SECTION</u>	<u>SUBJECT</u>	<u>CONF</u>	<u>PAGE</u>	<u>EFFECT</u>
<u>AUTOFLIGHT - DDPG MAINTENANCE PROCEDURES</u>	22-00-00				901	AKS ALL
MMEL 22-5 (DDPG) Preparation - Mach Trim Systems Inoperative					901	AKS ALL
TASK 22-00-00-500-801						
MMEL 22-5 (DDPG) Restoration - Mach Trim Systems Inoperative					903	AKS ALL
TASK 22-00-00-890-801						
MMEL 22-9 (DDPG) Deactivation - Speed Trim Fail Light Systems Inoperative					905	AKS ALL
TASK 22-00-00-890-802						
MMEL 22-9 (DDPG) Restoration - Speed Trim Fail Light Systems Inoperative					906	AKS ALL
TASK 22-00-00-890-803						
MMEL 22-10 (DDPG) Preparation - Speed Trim System Inoperative					907	AKS ALL
TASK 22-00-00-890-804						
MMEL 22-10 (DDPG) Restoration - Speed Trim System Inoperative					908	AKS ALL
TASK 22-00-00-890-805						
<u>DIGITAL FLIGHT CONTROL SYSTEM - MAINTENANCE PRACTICES</u>	22-11-00				201	AKS ALL
Land Verify Test					201	AKS ALL
TASK 22-11-00-700-801						
Reset Latches Procedure					208	AKS ALL
TASK 22-11-00-700-802						
<u>DIGITAL FLIGHT CONTROL SYSTEM - ADJUSTMENT/TEST</u>	22-11-00				501	AKS ALL
Digital Flight Control System (DFCS) - Operational Test					502	AKS ALL
TASK 22-11-00-740-801						
Digital Flight Control System (DFCS) - System Test					512	AKS ALL
TASK 22-11-00-740-802						
Flight Control Computer Option Pins Test					512	AKS ALL
TASK 22-11-00-740-814						

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BITE Library Test TASK 22-11-00-740-806				515	AKS ALL
Wheel Spin Up Test TASK 22-11-00-740-807				521	AKS ALL
Power Bus Transfer Test TASK 22-11-00-740-808				523	AKS ALL
Power Bus Isolation Test TASK 22-11-00-740-809				525	AKS ALL
Circuit Breaker Interface Test TASK 22-11-00-740-810				528	AKS ALL
Air/Ground Discrete Test TASK 22-11-00-740-811				534	AKS ALL
Other Discrete Inputs Test TASK 22-11-00-740-812				536	AKS ALL
Sensor Excitation Test TASK 22-11-00-820-801				537	AKS ALL
Maintenance Monitor Test TASK 22-11-00-740-813				541	AKS ALL
Master Caution Test TASK 22-11-00-800-801				548	AKS ALL
Elevator Rigging Test TASK 22-11-00-820-802				550	AKS ALL
Aileron Rigging Test TASK 22-11-00-820-803				569	AKS ALL
Flaps Rigging Test TASK 22-11-00-820-804				572	AKS ALL
Stabilizer Rigging Test TASK 22-11-00-820-805				575	AKS ALL
Pitch Control Wheel Steering Rigging Test TASK 22-11-00-820-806				578	AKS ALL
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Remote Light Sensor Input Test TASK 22-11-00-820-811				597	AKS ALL
Elevator Centering Unit Test TASK 22-11-00-820-812				598	AKS ALL
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<u>ROLL CONTROL WHEEL STEERING FORCE</u> <u>TRANSDUCER - MAINTENANCE PRACTICES</u>	22-11-11			201	AKS ALL
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A/P Actuator Solenoid and Electrohydraulic Servo Valves - Deactivation TASK 22-11-12-040-801				201	AKS ALL
A/P Actuator Solenoid and Electrohydraulic Servo Valves - Activation TASK 22-11-12-440-801				208	AKS ALL
<u>A/P ACTUATOR SOLENOID AND ELECTROHYDRAULIC SERVO VALVES - REMOVAL/INSTALLATION</u>		22-11-12		401	AKS ALL
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<u>ELEVATOR NEUTRAL SHIFT SENSOR - MAINTENANCE PRACTICES</u>		22-11-14		201	AKS ALL
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<u>ELEVATOR NEUTRAL SHIFT SENSOR - REMOVAL/INSTALLATION</u>		22-11-14		401	AKS ALL
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Rudder Rollout Guidance Actuator - Deactivation TASK 22-11-22-040-801				201	AKS ALL; AIRPLANES WITH ROLLOUT CONTROL
Rudder Rollout Guidance Actuator - Activation TASK 22-11-22-440-801				206	AKS ALL; AIRPLANES WITH ROLLOUT CONTROL
RUDDER ROLLOUT GUIDANCE ACTUATOR - REMOVAL/INSTALLATION		22-11-22		401	AKS ALL; AIRPLANES WITH ROLLOUT CONTROL
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AUTOPILOT RUDDER POSITION SENSOR - REMOVAL/INSTALLATION		22-11-23		401	AKS ALL; AIRPLANES WITH ROLLOUT CONTROL
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Autopilot Rudder Position Sensor Installation TASK 22-11-23-400-801				405	AKS ALL; AIRPLANES WITH ROLLOUT CONTROL
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Rudder Position Sensor Adjustment and Test TASK 22-11-23-820-801				501	AKS ALL; AIRPLANES WITH ROLLOUT CONTROL
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Mach Trim Actuator - Activation TASK 22-11-24-440-801					207	AKS ALL
<u>MACH TRIM ACTUATOR - REMOVAL/INSTALLATION</u>	22-11-24				401	AKS ALL
Mach Trim Actuator Removal TASK 22-11-24-000-801					401	AKS ALL
Mach Trim Actuator Installation TASK 22-11-24-400-801					406	AKS ALL
<u>MACH TRIM ACTUATOR - ADJUSTMENT/TEST</u>	22-11-24				501	AKS ALL
Mach Trim Actuator Installation Test TASK 22-11-24-740-801					501	AKS ALL
<u>AUTOPILOT AILERON ACTUATOR - MAINTENANCE PRACTICES</u>	22-11-25				201	AKS ALL
Autopilot Aileron Actuator - Deactivation TASK 22-11-25-040-801					201	AKS ALL
Autopilot Aileron Actuator - Activation TASK 22-11-25-440-801					206	AKS ALL
<u>AUTOPILOT AILERON ACTUATOR - REMOVAL/INSTALLATION</u>	22-11-25				401	AKS ALL
Autopilot Aileron Actuator Removal TASK 22-11-25-000-801					401	AKS ALL
Autopilot Aileron Actuator Installation TASK 22-11-25-400-801					408	AKS ALL
<u>AUTOPILOT AILERON ACTUATOR - ADJUSTMENT/TEST</u>	22-11-25				501	AKS ALL
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<u>AUTOPILOT AILERON ACTUATOR - INSPECTION/CHECK</u>			Autopilot Aileron Actuator Linkage Inspection TASK 22-11-25-200-801		601	AKS ALL
<u>AUTOPILOT ELEVATOR ACTUATOR - MAINTENANCE PRACTICES</u>	22-11-26				201	AKS ALL
			Autopilot Elevator Actuator - Deactivation TASK 22-11-26-040-801		201	AKS ALL
			Autopilot Elevator Actuator - Activation TASK 22-11-26-440-801		206	AKS ALL
<u>AUTOPILOT ELEVATOR ACTUATOR - REMOVAL/INSTALLATION</u>	22-11-26				401	AKS ALL
			Autopilot Elevator Actuator Removal TASK 22-11-26-000-801		401	AKS ALL
			Autopilot Elevator Actuator Installation TASK 22-11-26-400-801		405	AKS ALL
<u>AUTOPILOT ELEVATOR ACTUATOR - ADJUSTMENT/TEST</u>	22-11-26				501	AKS ALL
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			Autopilot Elevator Actuator Test TASK 22-11-26-710-801		511	AKS ALL
<u>AUTOPILOT ELEVATOR ACTUATOR - INSPECTION/CHECK</u>	22-11-26				601	AKS ALL
			Autopilot Elevator Actuator Linkage Inspection TASK 22-11-26-200-802		601	AKS ALL
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			Spoiler Position Sensor Installation TASK 22-11-27-400-801		406	AKS ALL
<u>SPOILER POSITION SENSOR - ADJUSTMENT/TEST</u>	22-11-27		Spoiler Position Sensor Adjustment TASK 22-11-27-820-801		501	AKS ALL
			Spoiler Position Sensor Test TASK 22-11-27-710-801		508	AKS ALL
<u>AILERON POSITION SENSOR - MAINTENANCE PRACTICES</u>	22-11-29		Aileron Position Sensor - Deactivation TASK 22-11-29-040-801		201	AKS ALL
			Aileron Position Sensor - Activation TASK 22-11-29-440-801		206	AKS ALL
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			Aileron Position Sensor Installation TASK 22-11-29-400-801		405	AKS ALL
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			Elevator Position Sensor - Activation TASK 22-11-30-440-801		206	AKS ALL

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Elevator Position Sensor Removal TASK 22-11-30-000-801					401	AKS ALL
Elevator Position Sensor Installation TASK 22-11-30-400-801					407	AKS ALL
<u>ELEVATOR POSITION SENSOR - ADJUSTMENT/TEST</u>	22-11-30				501	AKS ALL
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FCC BITE Test Data Download with an Airborne Data Loader TASK 22-11-33-470-806				211	AKS ALL
FCC Software Installation with an Enhanced Airborne Data Loader TASK 22-11-33-470-811				215	AKS ALL
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Yaw Damper System - System Test				502	AKS ALL
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<u>AUTOTHROTTLE SYSTEM - ADJUSTMENT/TEST</u>	22-31-00				501	AKS ALL
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Autothrottle System - System Test					502	AKS ALL
TASK 22-31-00-710-802						
<u>AUTOTHROTTLE DISENGAGE SWITCH -</u>	22-31-51				401	AKS ALL
<u>REMOVAL/INSTALLATION</u>						
Autothrottle Disengage Switch Removal					401	AKS ALL
TASK 22-31-51-000-801						
Autothrottle Disengage Switch Installation					404	AKS ALL
TASK 22-31-51-400-801						
<u>AUTOTHROTTLE BRAKE ASSEMBLY -</u>	22-31-81				401	AKS ALL
<u>REMOVAL/INSTALLATION</u>						
Autothrottle Brake Assembly - Removal					401	AKS ALL
TASK 22-31-81-000-801						

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CHAPTER 22
AUTOFLIGHT

SUBJECT	CHAPTER SECTION	SUBJECT	CONF	PAGE	EFFECT
Autothrottle Brake Assembly - Installation TASK 22-31-81-400-801				404	AKS ALL
AUTOTHROTTLE SERVO MOTOR AND GEARBOX - REMOVAL/INSTALLATION	22-31-91			401	AKS ALL
Autothrottle Servo Motor and Gearbox Removal TASK 22-31-91-020-801				401	AKS ALL
Autothrottle Servo Motor and Gearbox Installation TASK 22-31-91-400-801				405	AKS ALL

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AUTOFLIGHT - DDPG MAINTENANCE PROCEDURES

1. General

- A. This procedure has maintenance tasks for the Master Minimum Equipment List (MMEL) maintenance requirements as shown in the Dispatch Deviations Procedures Guide (DDPG). These tasks prepare the airplane for flight with certain systems/components inoperative.
- B. This procedure also contains the tasks that put the airplane to its usual position.
- C. These are the tasks for the components in the autoflight system:
 - (1) MMEL 22-5 (DDPG) Preparation - Mach Trim System Inoperative
 - (2) MMEL 22-5 (DDPG) Restoration - Mach Trim System Inoperative
 - (3) MMEL 22-9 (DDPG) Preparation - Speed Trim Fail Light System Inoperative
 - (4) MMEL 22-9 (DDPG) Restoration - Speed Trim Fail Light System Inoperative
 - (5) MMEL 22-10 (DDPG) Preparation - Speed Trim System Inoperative
 - (6) MMEL 22-10 (DDPG) Restoration - Speed Trim System Inoperative

TASK 22-00-00-500-801

2. MMEL 22-5 (DDPG) Preparation - Mach Trim Systems Inoperative

A. General

- (1) This task contains the maintenance procedure that prepares the airplane for flight when one or both of the Mach Trim Systems are inoperative.

B. References

Reference	Title
22-11-00-740-806	BITE Library Test (P/B 501)
24-22-00-860-811	Supply Electrical Power (P/B 201)
29-11-00-860-801	Hydraulic System A or B Pressurization (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)

C. Location Zones

Zone	Area
210	Subzone - Control Compartment - Body Station 178.00 to Body Station 259.50

D. Single Mach Trim System Deactivation

SUBTASK 22-00-00-860-003

- (1) Do these steps to verify the remaining Mach Trim System and MACH TRIM FAIL light operate normally:
 - (a) If channel A fails, then open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
C	4	C00456	AFCS SYS A MACH TRIM AC
D	4	C00457	AFCS SYS A MACH TRIM DC

- (b) If channel B fails, then open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	2	C01064	AFCS SYS B MACH TRIM DC

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(Continued)

F/O Electrical System Panel, P6-2

Row Col Number Name

C	1	C01037	AFCS SYS B MACH TRIM AC
---	---	--------	-------------------------

- (c) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.
- (d) If channel A fails, do the DFCS library test No. 33, Mach Trim, for channel B. To do it, do this task: BITE Library Test, TASK 22-11-00-740-806.
 - 1) Make sure the test passes.
- (e) If channel B fails, do the DFCS library test No. 33, Mach Trim, for channel A. To do it, do this task: BITE Library Test, TASK 22-11-00-740-806.
 - 1) Make sure the test passes.

E. Dual Mach Trim System Deactivation

SUBTASK 22-00-00-860-001

- (1) Do these steps to deactivate the mach trim systems:
 - (a) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

WARNING: KEEP PERSONS AND EQUIPMENT AWAY FROM THE FLIGHT CONTROL SURFACES. THE AILERONS, ELEVATORS, RUDDER, FLAPS, SLATS, SPOILERS, STABILIZER AND NOSE GEAR CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (b) Supply hydraulic power to hydraulic systems A and B. To supply hydraulic power, do this task: Hydraulic System A or B Pressurization, TASK 29-11-00-860-801
- (c) Make sure the flaps are set to 0.
- (d) Put the Stabilizer to 4 units of trim.
- (e) Move the control column slightly to put the elevators in the detent position.
- (f) Make sure the elevator trailing edge is aligned with the elevator index mark on the tailcone at 0 (± 0.06) inch (1.5 mm).

NOTE: A Mach Trim Actuator and Mach Trim System is required to position the elevator trailing edge if it is out of alignment. An actuator or accessory box that does not operate must be replaced. Dispatch with the A and B Mach Trim Systems inoperative is not allowed if the elevator trailing edge is not aligned with the index mark on the fuselage.

NOTE: Dispatch with both Mach Trim Systems inoperative is not allowed if the elevator trailing edge is not aligned with the index mark on the fuselage.

- (g) Open these circuit breakers and install safety locks:

CAPT Electrical System Panel, P18-1

Row Col Number Name

C	4	C00456	AFCS SYS A MACH TRIM AC
---	---	--------	-------------------------

D	4	C00457	AFCS SYS A MACH TRIM DC
---	---	--------	-------------------------

F/O Electrical System Panel, P6-2

Row Col Number Name

B	2	C01064	AFCS SYS B MACH TRIM DC
---	---	--------	-------------------------

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F/O Electrical System Panel, P6-2

Row Col Number Name

C	1	C01037	AFCS SYS B MACH TRIM AC
---	---	--------	-------------------------

- (h) Remove hydraulic power from hydraulic systems A and B. To remove hydraulic power, do this task: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805

———— END OF TASK ————

TASK 22-00-00-890-801

3. MMEL 22-5 (DDPG) Restoration - Mach Trim Systems Inoperative

A. General

- (1) This task puts the airplane back to its usual condition after operation with the Mach Trim Systems inoperative.

B. References

<u>Reference</u>	<u>Title</u>
22-11-24 P/B 401	MACH TRIM ACTUATOR - REMOVAL/INSTALLATION
22-11-33-000-801	Flight Control Computer Removal (P/B 401)
22-11-33-400-801	Flight Control Computer Installation (P/B 401)
22-11-37 P/B 401	INTEGRATED FLIGHT SYSTEM ACCESSORY UNIT - REMOVAL/INSTALLATION
WDM 22-18-11	Wiring Diagram Manual

C. Location Zones

<u>Zone</u>	<u>Area</u>
210	Subzone - Control Compartment - Body Station 178.00 to Body Station 259.50

D. Mach Trim System Test

SUBTASK 22-00-00-860-002

- (1) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	4	C00456	AFCS SYS A MACH TRIM AC
D	4	C00457	AFCS SYS A MACH TRIM DC

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	2	C01064	AFCS SYS B MACH TRIM DC
C	1	C01037	AFCS SYS B MACH TRIM AC

SUBTASK 22-00-00-740-001

- (2) Do these steps to do a test of the mach trim system:

- (a) From the INIT/REF INDEX screen on the CDU, make these selections:

- 1) MAINT>
- 2) <DFCS
- 3) <FAULT REVIEW
- 4) <CURRENT STATUS

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- 5) Do steps as required on CDU screen.
- 6) <CONTINUE
- (b) If the CURRENT STATUS test fails, correct the fault shown on the CDU.
- (c) If the CURRENT STATUS test passes, continue.
- (d) Make these selections on the CDU:
 - 1) <CHANNEL A AND B
 - 2) <MACH TRIM SYSTEM
 - 3) Do steps as required on CDU screen.
 - 4) <CONTINUE
- (e) If the surface test passes, then there was an intermittent fault.
- (f) If the surface test fails, then make this selection.
 - 1) <TEST RESULTS
- (g) Replace the mach trim actuator (MACH TRIM ACTUATOR - REMOVAL/INSTALLATION, PAGEBLOCK 22-11-24/401).
- (h) Select RERUN on the CDU.
 - (i) If the test passes, you corrected the fault.
 - (j) If the test fails, continue.
- (k) Replace the integrated flight accessory unit(INTEGRATED FLIGHT SYSTEM ACCESSORY UNIT - REMOVAL/INSTALLATION, PAGEBLOCK 22-11-37/401).
- (l) Select RERUN on the CDU.
- (m) If the test passes, you corrected the fault.
- (n) If the test fails, continue.
- (o) Disconnect connector D545 from the mach trim actuator.
- (p) For a CHANNEL A problem, do these steps:
 - 1) Remove the FCC-A (M1875). To remove it, do this task: Flight Control Computer Removal, TASK 22-11-33-000-801.
 - 2) Do these steps to check the wiring of connector D10135C at the E1-1 shelf and connector D545 in the tailcone (WDM 22-18-11):
 - a) Examine the connectors for contamination, damage, and bent or pushed back pins.
 - b) Do a continuity check from pin to pin. Check for short circuits between the pins, and from each pin to structure ground.

Table 901/22-00-00-993-809

D10135C	D545
pin E4	pin 25
pin D4	pin 26

- (q) For a CHANNEL B problem, do these steps:
 - 1) Remove the FCC-B (M1876). To remove it, do this task: Flight Control Computer Removal, TASK 22-11-33-000-801.

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- 2) Do these steps to check the wiring of connector D10137C at the E1-1 shelf and connector D545 in the tailcone (WDM 22-18-11):
 - a) Examine the connectors for contamination, damage, and bent or pushed back pins.
 - b) Do a continuity check from pin to pin. Check for short circuits between the pins, and from each pin to structure ground.

Table 902/22-00-00-993-810

D10137C	D545
pin E4	pin 25
pin D4	pin 26

- (r) If you find a problem with the wiring, then do this step:
 - 1) Repair the wiring.
- (s) Re-connect D545.
- (t) Re-install the FCC, M1875 or M1876. To install it, do this task: Flight Control Computer Installation, TASK 22-11-33-400-801.
- (u) Select RERUN on the CDU.
- (v) If the test passes, you corrected the fault.

— END OF TASK —

TASK 22-00-00-890-802

4. MMEL 22-9 (DDPG) Deactivation - Speed Trim Fail Light Systems Inoperative

A. General

- (1) This task contains the maintenance procedure that prepares the airplane for flight when the speed trim light is inoperative.

B. Location Zones

Zone	Area
210	Subzone - Control Compartment - Body Station 178.00 to Body Station 259.50

C. Speed Trim System Test

SUBTASK 22-00-00-740-002

- (1) Do these steps to do a test of the speed trim system:
 - (a) From the INIT/REF INDEX screen on the CDU, make these selections:
 - 1) MAINT>
 - 2) <DFCS
 - 3) <FAULT REVIEW
 - 4) <CURRENT STATUS
 - 5) Do steps as required on CDU screen.
 - 6) <CONTINUE
 - (b) If the CURRENT STATUS test fails, correct the fault shown on the CDU.
 - (c) If the CURRENT STATUS test passes, continue.
 - (d) Make these selections on the CDU:

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- 1) <CHANNEL A AND B
 - 2) <SPEED TRIM SYSTEM
 - 3) Do steps as required on CDU screen.
 - 4) <CONTINUE
- (e) Make sure that the speed trim fail light fails the test.
- (f) Make sure the other speed and stab trim tests pass.

———— END OF TASK ————

TASK 22-00-00-890-803

5. MMEL 22-9 (DDPG) Restoration - Speed Trim Fail Light Systems Inoperative

A. General

- (1) This task puts the airplane back to its usual condition after operation with the speed trim light system inoperative.

B. References

Reference	Title
33-18-00-960-801	Indicator Light - Lamp Replacement (P/B 201)

C. Location Zones

Zone	Area
210	Subzone - Control Compartment - Body Station 178.00 to Body Station 259.50

D. Speed Trim Light Systems Replacement

SUBTASK 22-00-00-900-001

- (1) Replace the speed trim fail lights. To replace them, do this task: Indicator Light - Lamp Replacement, TASK 33-18-00-960-801.

SUBTASK 22-00-00-740-003

- (2) Do these steps to do a test of the speed trim system:
 - (a) From the INIT/REF INDEX screen on the CDU, make these selections:
 - 1) MAINT>
 - 2) <DFCS
 - 3) <FAULT REVIEW
 - 4) <CURRENT STATUS
 - 5) Do steps as required on CDU screen.
 - 6) <CONTINUE
 - (b) If the CURRENT STATUS test fails, correct the fault shown on the CDU.
 - (c) If the CURRENT STATUS test passes, continue.
 - (d) Make these selections on the CDU:
 - 1) <CHANNEL A AND B
 - 2) <SPEED TRIM SYSTEM
 - 3) Do steps as required on CDU screen.
 - 4) <CONTINUE
 - (e) If the test passes, you corrected the fault.

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- (f) If the test fails, replace the speed trim light assembly. To replace it, do this task: Indicator Light - Lamp Replacement, TASK 33-18-00-960-801.

———— END OF TASK ——

TASK 22-00-00-890-804

6. MMEL 22-10 (DDPG) Preparation - Speed Trim System Inoperative

A. General

- (1) This task contains the maintenance procedure that prepares the airplane for flight when the Speed Trim System are inoperative.

B. References

Reference	Title
24-22-00-860-811	Supply Electrical Power (P/B 201)

C. Location Zones

Zone	Area
210	Subzone - Control Compartment - Body Station 178.00 to Body Station 259.50

D. Speed Trim System Deactivation

SUBTASK 22-00-00-890-003

- (1) Do these steps to verify the remaining Speed Trim System and Speed Trim Fail light operated normally.

- (a) If channel A fails, then open this circuit breaker and install safety tag:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
D	2	C01045	AFCS SYS A FCC DC

- (b) If channel B fails, then open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	3	C01046	AFCS SYS B FCC DC

NOTE: The associated Flight Control Computer (FCC) will be deactivated. Refer to MMEL item 22-01

NOTE: Flight Director Takeoff and Go-around are not available when either FCC circuit breaker is pulled open.

NOTE: A deactivated FCC will generate a dispatchable PSEU fault. Refer to MMEL item 32-17.

- (c) Do this task: Supply Electrical Power, TASK 24-22-00-860-811

- (d) If channel A fails, do the DFCS Group 14 test , Speed/Stab Trim, for channel B.

- 1) From the INIT/REF INDEX screen on the CDU, make these selections:

- a) MAINT>
- b) <DFCS
- c) <FAULT REVIEW
- d) <CURRENT STATUS
- e) Do steps as required on CDU screen.
- f) <CONTINUE

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- g) <CHANNEL A AND B
 - h) <SPEED/STAB TRIM SYSTEM
 - i) Do steps as required on CDU screen.
- 2) Make sure the test passes for channel B.
- (e) If channel B fails, do the DFCS Group 14 test, Speed/Stab Trim, for channel A.
- 1) From the INIT/REF INDEX screen on the CDU, make these selections:
 - a) MAINT>
 - b) <DFCS
 - c) <FAULT REVIEW
 - d) <CURRENT STATUS
 - e) Do steps as required on CDU screen.
 - f) <CONTINUE
 - g) <CHANNEL A AND B
 - h) <SPEED/STAB TRIM SYSTEM
 - i) Do steps as required on CDU screen.
 - 2) Make sure the test passes for channel A.

————— END OF TASK ————

TASK 22-00-00-890-805

7. MMEL 22-10 (DDPG) Restoration - Speed Trim System Inoperative

A. General

- (1) This task puts the airplane back to its usual condition after operation with the Speed Trim System are inoperative.

B. References

Reference	Title
FIM 22-15 TASK 821	FCC, Stab Trim Problem - Fault Isolation

C. Location Zones

Zone	Area
210	Subzone - Control Compartment - Body Station 178.00 to Body Station 259.50

D. Speed Trim System Test

SUBTASK 22-00-00-890-001

- (1) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
D	2	C01045	AFCS SYS A FCC DC

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	3	C01046	AFCS SYS B FCC DC

SUBTASK 22-00-00-890-002

- (2) Do these steps to do a test of the mach trim system:

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- (a) From the INIT/REF INDEX screen on the CDU, make these selections:
 - 1) MAINT>
 - 2) <DFCS
 - 3) <FAULT REVIEW
 - 4) <CURRENT STATUS
 - 5) Do steps as required on CDU screen.
 - 6) <CONTINUE
- (b) If the CURRENT STATUS test fails, correct the fault shown on the CDU.
- (c) If the CURRENT STATUS test passes, continue.
- (d) Make these selections on the CDU:
 - 1) <CHANNEL A AND B
 - 2) <SPEED/STAB TRIM SYSTEM
 - 3) Do steps as required on CDU screen.
 - 4) <CONTINUE
- (e) If the surface test passes, then there was an intermittent fault.
- (f) If the surface test fails, then make this selection.
 - 1) <TEST RESULTS
- (g) Do this task: FIM 22-15 TASK 821
- (h) Select RERUN on the CDU.
- (i) If the test passes, you corrected the fault.

———— END OF TASK ————

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DIGITAL FLIGHT CONTROL SYSTEM - MAINTENANCE PRACTICES

1. General

- A. This procedure contains these tasks:
 - (1) Land Verify Test - Maintenance Practices
 - (2) Reset Latches Procedure - Maintenance Practices
- B. You use the Flight Management Computer Control Display Unit (FMC CDU) to do the Built-In-Test Equipment (BITE) tests in these procedures.

NOTE: The A/P - P/RST and the A/T - P/RST lights will stay on during DFCS BITE testing.

- (1) FMC CDU (Figure 201)
 - (a) The FMC CDU has 12 line-select keys (LSKs). There are six keys on the left hand side and six keys on the right hand side of the CDU display. These keys are defined as 1L through 6L and 1R through 6R. The 6L (or 6R) refers to the sixth key down on the left (or right) hand side of the CDU display.
 - (b) If data is shown on the CDU display with a prompt (< or >) adjacent to it, then it is a selection. You can push the LSK that is adjacent to the prompt and make the selection. It lets you get access to tests or options.
 - (c) Some selections that you often make when you do the BITE test are the CONTINUE, PREV MENU, EXIT prompts on the CDU display and the NEXT PAGE and PREV PAGE keys on the CDU keyboard.
 - 1) CONTINUE
 - a) If you push the LSK that is adjacent to CONTINUE, then the BITE will take you to the subsequent page of the test.
 - 2) PREV MENU
 - a) If you push the LSK that is adjacent to PREV MENU, then the BITE will take you to the previous selection page.
 - 3) EXIT
 - a) If you push the LSK that is adjacent to EXIT, then the BITE will take you out of BITE test and put the airplane back to its usual condition.
 - 4) NEXT PAGE or PREV PAGE key
 - a) If it is necessary to change page, then you push the NEXT PAGE or PREV PAGE key on the CDU keyboard. The BITE lets you change page when there is more than one screen page.

TASK 22-11-00-700-801

2. Land Verify Test

A. General

- (1) The Land Verify Test does a check on the interfaces between the Digital Flight Control System (DFCS) and its Line Replaceable Units.
- (2) The Land Verify Test contains a quick test (autotest), an interactive test and a surface test.
 - (a) The sequence of the Land Verify Test is as follows:
 - 1) Autotests
 - 2) Interactive Tests
 - 3) Surface Tests

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- (b) The autotests are automatic.
- (c) The interactive tests are not automatic. You must do the instructions that show on the CDU display to complete the interactive tests.
- (d) The surface tests are not automatic and hydraulic power is necessary for the surface tests. You must do the instructions that show on the CDU display to complete the surface tests.

(3) Autotests

Table 201/22-11-00-993-801

Test Name	Group No./ Test No.
ADIRU	49.01
Autothrottle	49.04
DME	49.05
LRRA	49.07
LNAV	49.11
MCP INTERF	49.16
FMC	49.18
Analog Sensors	49.21
SMYDC	49.22
VOR	49.23
MMR/ILS	49.24
CDS	49.25
MCP Display/Selftest	49.57
Discrete Input	49.70

(4) Interactive Tests

Table 202/22-11-00-993-802

Test Name	Group No./ Test No.
MCP CMD/CWS Interlock	49.58
Disengage Warning	49.62

(5) Surface Tests

Table 203/22-11-00-993-803

Test Name	Group No./ Test No.
Speed/Stab Trim	49.32
Flaps	49.34
Dual Stab	49.35
Rudder	49.36

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B. References

Reference	Title
24-22-00-860-811	Supply Electrical Power (P/B 201)
29-11-00-860-801	Hydraulic System A or B Pressurization (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)

C. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

D. Prepare for the Test

SUBTASK 22-11-00-860-265

- (1) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

SUBTASK 22-11-00-860-306

- (2) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
D	18	C00451	LANDING GEAR AURAL WARN

SUBTASK 22-11-00-860-266

- (3) Set the autopilot stab trim cutout switch, on the control stand, to the CUTOUT position.

SUBTASK 22-11-00-860-267

- (4) Make sure that the VHF NAV and IRS switches, on the P5 forward overhead panel, are in the NORMAL positions.

SUBTASK 22-11-00-860-268

- (5) Set the left and right IRS select switches, on the P5 aft overhead panel, to the ALIGN or NAV position.

SUBTASK 22-11-00-860-269

WARNING: KEEP PERSONS AND EQUIPMENT AWAY FROM THE FLIGHT CONTROL SURFACES. THE AILERONS, ELEVATORS, RUDDER, FLAPS, SLATS, SPOILERS, STABILIZER AND NOSE GEAR CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (6) Supply hydraulic power to hydraulic systems A and B. To supply hydraulic power, do this task: Hydraulic System A or B Pressurization, TASK 29-11-00-860-801.

NOTE: Hydraulic power is necessary for surface test.

E. Procedure

SUBTASK 22-11-00-740-045

- (1) Push the INIT REF key on the CDU keyboard.

(a) Push the Line Select Key (LSK) that is adjacent to each selection:

NOTE: If the CONTINUE shows during the BITE test, then do the instructions that show on the CDU display before you push the LSK that is adjacent to CONTINUE. Use the NEXT PAGE or PREV PAGE key to change the page if it is necessary.

- 1) INDEX
- 2) MAINT



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3) DFCS

4) LAND VERIFY

(b) Autotest:

1) Do the instructions that show on the CDU display.

NOTE: If the initialization setup is correct, AUTOTEST IN PROGRESS will show on the CDU display.

2) If AUTOTEST PASSED shows on the CDU display, then the test is completed with no failure.

NOTE: Some autotests can be completed very fast and you cannot see the AUTOTEST PASSED message. The autotest passed if you do not see the AUTOTEST FAILED message.

NOTE: When all the autotests are completed, the summary page shows AUTOTEST PASSED or AUTOTEST FAILED.

3) If AUTOTEST FAILED shows, then do the library test(s) that shows on the CDU display.

4) Make a record of the channel (A, B, or A/B), suspect LRUs and the pin numbers that show on the CDU display.

NOTE: You can find the channel data adjacent to the INPUT/OUTPUT PINS that shows on the CDU display. Channel A is for the FCC-A and channel B is for the FCC-B. If there is no pin number for the suspect LRU, the channel data does not show.

NOTE: Each suspect LRU is referred to as a maintenance message.

- a) If it is necessary to do the test again, then do these steps:
 - b) Push the LSK adjacent to TEST DATA.
 - c) Push the LSK adjacent to RERUN.

5) Refer to 22-Maintenance Message Index in the FIM to find the fault isolation task for the applicable maintenance message.

- a) Push the LSK adjacent to CONTINUE.

(c) Interactive Test:

NOTE: The interactive tests come immediately after you complete the last autotest.

1) Do the instructions that show on the CDU display to complete all the interactive tests.

2) If INTERACTIVE TEST PASSED shows on the CDU display, then the test is completed with no failure.

NOTE: After you complete the last interactive test, the summary page shows TEST FAILED or ALL TESTS PASSED.

3) If INTERACTIVE TEST FAILED shows on the CDU display, then do these steps:

- a) Push the LSK adjacent to TEST RESULTS.

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- 4) Make a record of the channel (A, B, or A/B), suspect LRUs and the pin numbers that show on the CDU display.

NOTE: You can find the channel data adjacent to the INPUT/OUTPUT PINS that shows on the CDU display. Channel A is for the FCC-A and channel B is for the FCC-B. If there is no pin number for the suspect LRU, the channel data does not show.

NOTE: Each suspect LRU is referred to as a maintenance message.

- a) If it is necessary to do the test again, then do these steps:
 - b) Push the LSK adjacent to TEST DATA.
 - c) Push the LSK adjacent to RERUN.

- 5) Refer to 22-Maintenance Message Index in the FIM to find the fault isolation task for the applicable maintenance message.

- (d) Surface Test:

NOTE: The surface tests come immediately after you complete the last interactive test.

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- 1) Do the instructions that show on the CDU display to complete all the surface tests.
- 2) If SURFACE TEST PASSED shows on the CDU display, then the test is completed with no failure.

NOTE: After you complete the last surface test, the summary page shows TEST FAILED or ALL TESTS PASSED.

- 3) If SURFACE TEST FAILED shows on the CDU display, then do these steps:
 - a) Push the LSK adjacent to TEST RESULTS.
- 4) Make a record of the channel (A, B, or A/B), suspect LRUs and the pin numbers that show on the CDU display.

NOTE: You can find the channel data adjacent to the INPUT/OUTPUT PINS that shows on the CDU display. Channel A is for the FCC-A and channel B is for the FCC-B. If there is no pin number for the suspect LRU, the channel data does not show.

NOTE: Each suspect LRU is referred to as a maintenance message.

- a) If it is necessary to do the test again, then do these steps:
 - b) Push the LSK adjacent to TEST DATA.
 - c) Push the LSK adjacent to RERUN.
- 5) Refer to 22-Maintenance Message Index in the FIM to find the fault isolation task for the applicable maintenance message.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 22-11-00-860-270

- (1) Push the captain's or first officer's autopilot disengage switch, on the control wheel, to make sure that the autopilot is disengaged.

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SUBTASK 22-11-00-860-271

- (2) Remove the safety tag and close this circuit breaker:

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	18	C00451	LANDING GEAR AURAL WARN

SUBTASK 22-11-00-860-272

- (3) Set the autopilot stab trim cutout switch, on the control stand, to the NORMAL position.

SUBTASK 22-11-00-860-273

- (4) Remove hydraulic power from hydraulic systems A and B. To remove hydraulic power, do this task: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805.

SUBTASK 22-11-00-860-337

- (5) Turn the ADIRU's off on the Nav Mode select panel, by turning the IRS select switches to off.

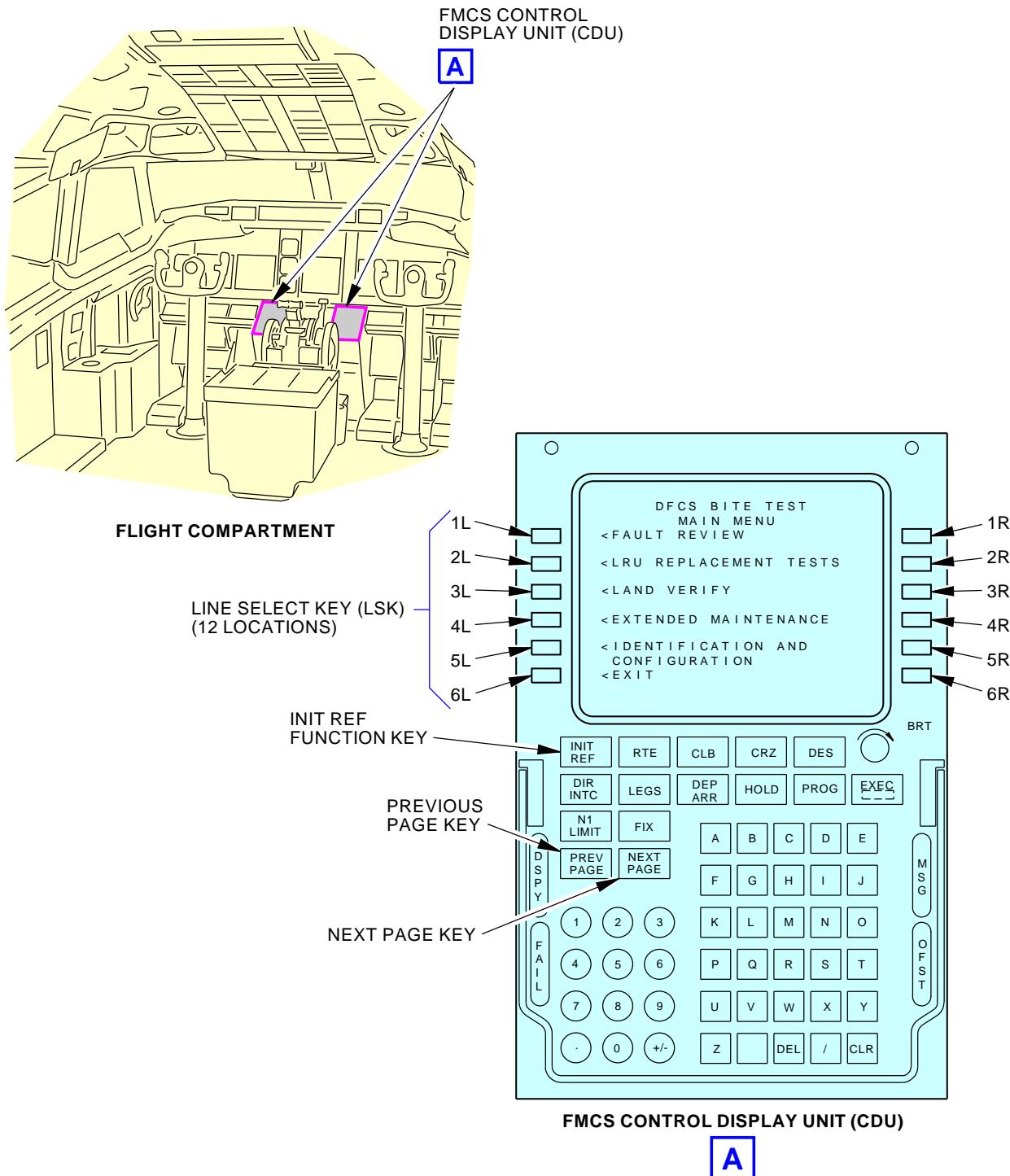
———— END OF TASK ————

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K45540 S0006563722_V2

Flight Management Computer (FMC)/Control Display Unit (CDU)
Figure 201/22-11-00-990-804

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TASK 22-11-00-700-802

3. Reset Latches Procedure

A. General

- (1) The Reset Latches Procedure tells you how to remove the latches that you may find in DFCS BITE for Category IIIb flight deck effects (FDEs).

B. References

Reference	Title
24-22-00-860-811	Supply Electrical Power (P/B 201)
24-22-00-860-812	Remove Electrical Power (P/B 201)

C. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

D. Prepare for the Procedure

SUBTASK 22-11-00-860-275

- (1) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

E. Procedure

SUBTASK 22-11-00-740-046

- (1) Push the INIT REF key on the CDU keyboard.

- (a) Push the Line Select Key (LSK) that is adjacent to each selection:

NOTE: If the CONTINUE shows during the BITE test, then do the instructions that show on the CDU display before you push the LSK that is adjacent to CONTINUE. Use the NEXT PAGE or PREV PAGE key to change the page if it is necessary.

- 1) INDEX
- 2) MAINT
- 3) DFCS
- 4) FAULT REVIEW
- 5) ERASE FAULTS/RESET FDE
- 6) RESET LATCHED FDE

NOTE: Make sure that you have corrected all the faults that you see on the RESET FDE page before you remove them.

- a) Push the LSK adjacent to the FDE(s) where you want to remove the latch(es).
- b) Push the LSK adjacent to YES.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 22-11-00-860-276

- (1) Do this task: Remove Electrical Power, TASK 24-22-00-860-812.

———— END OF TASK ————



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DIGITAL FLIGHT CONTROL SYSTEM - ADJUSTMENT/TEST

1. General

A. This procedure contains these tasks:

- (1) Digital Flight Control System - Operational Test
- (2) Digital Flight Control System - System Test
- (3) Option Pins Test
- (4) BITE Library Test
- (5) Wheel Spin Up Test
- (6) Power Bus Transfer Test
- (7) Power Bus Isolation Test
- (8) Circuit Breaker Interface Test
- (9) Air/Ground Discrete Test
- (10) Other Discrete Inputs Test
- (11) Sensor Excitation Test
- (12) Maintenance Monitor Test
- (13) Master Caution Test
- (14) Elevator Rigging Test
- (15) Aileron Rigging Test
- (16) Flaps Rigging Test
- (17) Stabilizer Rigging Test
- (18) Pitch Control Wheel Steering Rigging Test
- (19) Roll Control Wheel Steering Rigging Test
- (20) Mach Trim Rigging Test
- (21) Rudder Rigging Test
- (22) Alpha Vane Rigging Test
- (23) Remote Light Sensor Input Test
- (24) Digital Flight Control System LRU Replacement Test

B. You use the Flight Management Computer Control Display Unit (FMC CDU) to do the Built-In-Test Equipment (BITE) tests in this procedure.

NOTE: The A/P - P/RST and the A/T - P/RST lights will stay on during DFCS BITE testing.

(1) FMC CDU (Figure 501)

- (a) The FMC CDU has 12 line-select keys (LSKs). There are six keys on the left hand side and six keys on the right hand side of the CDU display. These keys are defined as 1L through 6L and 1R through 6R. The 6L (or 6R) refers to the sixth key down on the left (or right) hand side of the CDU display.
- (b) If the data that is shown on the CDU display with a prompt (< or >) adjacent to it, then it is a selection. You can push the LSK that is adjacent to the prompt and make the selection. It lets you get access to tests or options.
- (c) Some selections that you often make when you do the BITE test are the CONTINUE, PREV MENU, EXIT prompts on the CDU display and the NEXT PAGE and PREV PAGE keys on the CDU keyboard.

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- 1) CONTINUE
 - a) If you push the LSK that is adjacent to CONTINUE, then the BITE will take you to the subsequent page of the test.
- 2) PREV MENU
 - a) If you push the LSK that is adjacent to PREV MENU, then the BITE will take you to the previous selection page.
- 3) EXIT
 - a) If you push the LSK that is adjacent to EXIT, then the BITE will take you out of BITE test and put the airplane back to its usual condition.
- 4) NEXT PAGE or PREV PAGE key
 - a) If it is necessary to change page, then you push the NEXT PAGE or PREV PAGE key on the CDU keyboard. The BITE lets you change page when there is more than one screen page.

TASK 22-11-00-740-801

2. Digital Flight Control System (DFCS) - Operational Test

A. General

- (1) The DFCS operational test does a quick check of the serviceable condition of the DFCS. It uses no external equipment. Electrical power and hydraulic power are the only power sources that are necessary for this test.
- (2) You do the DFCS operational test from the control display unit (CDU). The first test is a check of the FCC software part number. Then use the current status quick test and five additional tests under the CURRENT STATUS item on the DFCS BITE TEST Fault Review menu.
- (3) The CURRENT STATUS item on the DFCS BITE TEST FAULT REVIEW menu contains these tests:
 - (a) Current Status Quick Test (Group 10)
 - (b) Additional Tests:
 - 1) Autopilot (Group 11)
 - 2) Flight Director (Group 12)
 - 3) Mach Trim System (Group 13)
 - 4) Speed Trim System (Group 14)
 - 5) Altitude Alert (Group 15)
 - (c) The current status quick test comes before the additional tests. In each additional test, if there are interactive and surface tests, then the interactive tests come before the surface tests. The sequence of the Current Status test is as follows:
 - 1) Current Status Quick Test
 - 2) Additional test
 - a) Interactive tests
 - b) Surface tests
- (4) The current status quick test contains a number of library tests. These library tests are automatic and they are referred to as autotests.
- (5) There are five additional tests. Each additional test contains a number of library tests. These library tests are interactive and/or surface tests.

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- (a) The interactive tests are not automatic. You must do the instructions that show on the CDU display to complete the interactive tests.
 - (b) The surface tests are not automatic and hydraulic power is necessary for the surface tests. You must do the instructions that show on the CDU display to complete the surface tests.
- (6) Current Status Quick Test (Group 10)

Table 501/22-11-00-993-804

Library Test Name	Group No./ Library Test No.
Discrete Input	10.70
ADIRU	10.01
A/T (Autothrottle)	10.04
DME	10.05
LRRA	10.07
LNAV	10.11
MCP INT (MCP Interface)	10.16
FMC	10.18
ANLG SEN (Analog Sensor)	10.21
SMYDC	10.22
VOR	10.23
MMR/ILS	10.24
CDS	10.25
MCP Display /Self Test	10.57
GPS (If installed)	10.27

- (7) Autopilot (Group 11)

Table 502/22-11-00-993-805

Library Test Name	Group No./ Library Test No.
Interactive	
ADIRU	11.01
LNAV	11.11
VOR	11.23
MMR/ILS	11.24
MCP Pushbuttons	11.50
MCP IAS/Mach Changeover	11.52
MCP Speed Select	11.54
MCP Bank Angle Limit	11.53
MCP Altitude Select Knob	11.55
MCP Vertical Speed Knob	11.56

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Table 502/22-11-00-993-805 (Continued)

Library Test Name	Group No./ Library Test No.
MCP CMD/CWS Interlock	11.58
MCP Displays/Self-Test	11.57
MCP Course/Heading Select	11.59
ALT Alert	11.61
Disengage Warning	11.62
GPS (If installed)	11.27
Surface	
Elevator	11.30
Aileron	11.31
Speed/Stab Trim	11.32
Mach Trim	11.33
Flaps	11.34
Dual Stab	11.35
AKS ALL; AIRPLANES WITH ROLLOUT CONTROL	
Rudder	11.36
AKS ALL	

(8) Flight Director (Group 12)

Table 503/22-11-00-993-806

Library Test Name	Group No./ Library Test No.
Interactive	
LNAV	12.11
MCP Pushbuttons	12.50
MCP F/D Switches	12.51
MCP IAS/Mach Changeover	12.52
MCP Speed select	12.54
MCP Bank Angle Limit	12.53
MCP Altitude Select Knob	12.55
MCP Vertical Speed Knob	12.56
MCP Displays/Self-Test	12.57
MCP Course/Heading Select	12.59
Surface	
Flaps	12.34

(9) Mach Trim System (Group 13)

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Table 504/22-11-00-993-807

Library Test Name	Group No./ Library Test No.
Interactive	
None	
Surface	
Mach Trim	13.33

(10) Speed Trim System (Group 14)

Table 505/22-11-00-993-808

Library Test Name	Group No./ Library Test No.
Interactive	
Speed/Stab Trim	14.32
Surface	
Speed/Stab Trim	14.32

(11) Altitude Alert (Group 15)

Table 506/22-11-00-993-809

Library Test Name	Group No./ Library Test No.
Interactive	
MCP Altitude Select Knob	15.55
MCP Displays/Self-Test	15.57
ALT Alert	15.61
Surface	
None	

B. References

Reference	Title
24-22-00-860-811	Supply Electrical Power (P/B 201)
24-22-00-860-812	Remove Electrical Power (P/B 201)
29-11-00-860-801	Hydraulic System A or B Pressurization (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)
34-21-00-820-801	Air Data Inertial Reference System - Alignment from the FMC CDU (P/B 201)
34-21-00-820-802	Air Data Inertial Reference System - Alignment from the ISDU (P/B 201)

C. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

D. Prepare for the Test

SUBTASK 22-11-00-860-001

- (1) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

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SUBTASK 22-11-00-860-287

- (2) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	18	C00451	LANDING GEAR AURAL WARN

SUBTASK 22-11-00-860-309

- (3) Close these circuit breakers:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	2	C01045	AFCS SYS A FCC DC

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	3	C01046	AFCS SYS B FCC DC

SUBTASK 22-11-00-860-002

- (4) Set the autopilot stab trim cutout switch, on the control stand, to the CUTOUT position.

SUBTASK 22-11-00-860-228

- (5) Make sure that the left and right ADIRU's are aligned in the NAV mode. To align the ADIRU's, do this task: Air Data Inertial Reference System - Alignment from the ISDU, TASK 34-21-00-820-802 or Air Data Inertial Reference System - Alignment from the FMC CDU, TASK 34-21-00-820-801.

SUBTASK 22-11-00-860-003

- (6) Make sure that the VHF NAV and IRS switches, on the P5 forward overhead panel, are in the NORMAL positions.

SUBTASK 22-11-00-860-005

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- (7) Supply hydraulic power to hydraulic systems A and B. To supply hydraulic power, do this task: Hydraulic System A or B Pressurization, TASK 29-11-00-860-801.

NOTE: Hydraulic power is necessary for surface test.

E. FCC Software Part Number Test

SUBTASK 22-11-00-420-001

- (1) Do these steps to test the software part number:

- (a) If you are not at one of the DFCS BITE TEST displays, then do these steps:
- 1) Push the INIT REF key on the CDU keyboard.
 - 2) If the POS INIT display shows, then push the line select key (LSK) adjacent to INDEX.
NOTE: This makes the INIT/REF INDEX show.
 - 3) Push the LSK adjacent to MAINT.



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- (b) From the MAINT BITE INDEX, push the LSK adjacent to DFCS.
NOTE: The DFCS will do a self-test.
- (c) When the self-test is complete, push the LSK adjacent to IDENTIFICATION AND CONFIGURATION.
- (d) Push the LSK adjacent to CHANNEL A.
 - 1) Make sure that the software part number for FCC A is correct.
NOTE: The software part number shows below FCC OPS.
- (e) Push the LSK adjacent to PREV MENU.
- (f) Push the LSK adjacent to CHANNEL B.
 - 1) Make sure that the software part number for FCC B is correct.
NOTE: The software part number shows below FCC OPS.

F. Current Status Tests

SUBTASK 22-11-00-740-001

- (1) Push the INIT REF key on the CDU keyboard.
 - (a) Push the Line Select Key (LSK) that is adjacent to each selection:
NOTE: If the CONTINUE shows during the BITE test, then do the instructions that show on the CDU display before you push the LSK that is adjacent to CONTINUE. Use the NEXT PAGE or PREV PAGE key to change page if it is necessary.
 - 1) INDEX
 - 2) MAINT
 - 3) DFCS
 - 4) FAULT REVIEW
 - 5) CURRENT STATUS
 - 6) Select channel A, B, or A and B.
 - (b) Autotest:
 - 1) Do the instructions that show on the CDU display.
NOTE: If the initialization setup is correct, AUTOTEST IN PROGRESS will show on the CDU display.
 - 2) If AUTOTEST PASSED shows on the CDU display, then the test is completed with no failure.
NOTE: Some autotests can be completed very fast and you cannot see the AUTOTEST PASSED message. The autotest passed if you do not see the AUTOTEST FAILED message.
NOTE: When all the autotests are completed, the summary page shows AUTOTEST PASSED or AUTOTEST FAILED.
 - 3) If AUTOTEST FAILED shows, then do the library test(s) that shows on the CDU display.



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- 4) Make a record of the channel (A, B, or A/B), suspect LRUs and the pin numbers that show on the CDU display.

NOTE: You can find the channel data adjacent to the INPUT/OUTPUT PINS that shows on the CDU display. Channel A is for the FCC-A and channel B is for the FCC-B. If there is no pin number for the suspect LRU, the channel data does not show.

NOTE: Each suspect LRU is referred to as a maintenance message.

- a) If it is necessary to do the test again, then do these steps:
 - b) Push the LSK adjacent to TEST DATA.
 - c) Push the LSK adjacent to RERUN.

- 5) Refer to 22-Maintenance Message Index in the FIM to find the fault isolation task for the applicable maintenance message.

(c) Additional Test:

NOTE: The additional test comes immediately after you complete the last autotest.

- 1) Push the LSK that is adjacent to the additional test.

NOTE: When the test is completed and to make the selection for the next additional test, you can push the LSK adjacent to PREV MENU until you see the CURRENT STATUS SELECT ADDITIONAL TEST menu again.

- a) Make sure that you do the Autopilot, Flight Director, Mach Trim System, Speed Trim System and Alt Alert tests.

2) AUTOPILOT

- a) Do the interactive tests.
- b) Do the surface tests.
- c) Make sure that the Autopilot Test is completed with no failure.

3) FLIGHT DIRECTOR

- a) Do the interactive tests.
- b) Do the surface test.

NOTE: No corrective action is required if the library test 62 fails for channel A only and only maintenance message 22-11540 shows on the CDU display. This is a nuisance fault.

- c) Make sure that the Flight Director Test is completed with no failure.

4) MACH TRIM SYSTEM

- a) Do the surface test.

NOTE: There is no interactive test for the Mach Trim Test, thus the BITE goes directly to the surface test.

- b) Make sure that the Mach Trim System Test is completed with no failure.

5) SPEED TRIM SYSTEM

- a) Do the interactive test.
- b) Do the surface test.
- c) Make sure that the Speed Trim System Test is completed with no failure.

6) ALT ALERT

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- a) Do the interactive tests.

NOTE: There is no surface test for the Alt Alert Test.

- b) Make sure that the Alt Alert Test is completed with no failure.

(d) Interactive Test:

- 1) Do the instructions that show on the CDU display to complete all the interactive tests.

- 2) If INTERACTIVE TEST PASSED shows on the CDU display, then the test is completed with no failure.

NOTE: After you complete the last interactive test, the summary page shows TEST FAILED or ALL TESTS PASSED.

- 3) If INTERACTIVE TEST FAILED shows on the CDU display, then do these steps:

NOTE: No corrective action is required if the library test 61 shows TEST FAILED for channel B only and only maintenance message 22-11115 shows on the CDU display. This is a nuisance fault.

NOTE: No corrective action is required if library test 62 shows TEST FAILED for channel A only and only maintenance message 22-11540 shows on the CDU display. This is a nuisance fault.

NOTE: No corrective action is required if the library test 32 shows TEST FAILED with only maintenance messages 22-11176 and 22-11216 show on the CDU display. This is a nuisance fault.

- a) Push the LSK adjacent to TEST RESULTS.

- b) Make a record of the channel (A, B, or A/B), suspect LRUs and the pin numbers that show on the CDU display.

NOTE: You can find the channel data adjacent to the INPUT/OUTPUT PINS that shows on the CDU display. Channel A is for the FCC-A and channel B is for the FCC-B. If there is no pin number for the suspect LRU, the channel data does not show.

NOTE: Each suspect LRU is referred to as a maintenance message.

- c) If it is necessary to do the test again, then do these steps:

- d) Push the LSK adjacent to TEST DATA.

- e) Push the LSK adjacent to RERUN.

- 4) Refer to 22-Maintenance Message Index in the FIM to find the fault isolation task for the applicable maintenance message.

(e) Surface Test:

NOTE: The surface test comes immediately after you complete the last interactive test.

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- 1) Do the instructions that show on the CDU display to complete all the surface tests.

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- 2) If SURFACE TEST PASSED shows on the CDU display, then the test is completed with no failure.
NOTE: After you complete the last surface test, the summary page shows TEST FAILED or ALL TESTS PASSED.
- 3) If SURFACE TEST FAILED shows on the CDU display, then do these steps:
NOTE: No corrective action is required if the library test 32 shows TEST FAILED and only maintenance messages 22-11176 and 22-11216 show on the CDU display. This is a nuisance fault.
 - a) Push the LSK adjacent to TEST RESULTS.
 - b) Make a record of the channel (A, B, or A/B), suspect LRUs and the pin numbers that show on the CDU display.
NOTE: You can find the channel data adjacent to the INPUT/OUTPUT PINS that shows on the CDU display. Channel A is for the FCC-A and channel B is for the FCC-B. If there is no pin number for the suspect LRU, the channel data does not show.
 - c) If it is necessary to do the test again, then do these steps:
 - d) Push the LSK adjacent to TEST DATA.
 - e) Push the LSK adjacent to RERUN.
- 4) Refer to 22-Maintenance Message Index in the FIM to find the fault isolation task for the applicable maintenance message.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 22-11-00-860-006

- (1) Push the captain's or first officer's autopilot disengage switch, on the control wheel, to make sure that the autopilot is disengaged.

SUBTASK 22-11-00-860-208

- (2) Remove the safety tag and close this circuit breaker:

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	18	C00451	LANDING GEAR AURAL WARN

SUBTASK 22-11-00-860-008

- (3) Set the autopilot stab trim cutout switch, on the control stand, to the NORMAL position.

SUBTASK 22-11-00-860-009

- (4) Remove hydraulic power from hydraulic systems A and B. To remove hydraulic power, do this task: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805.

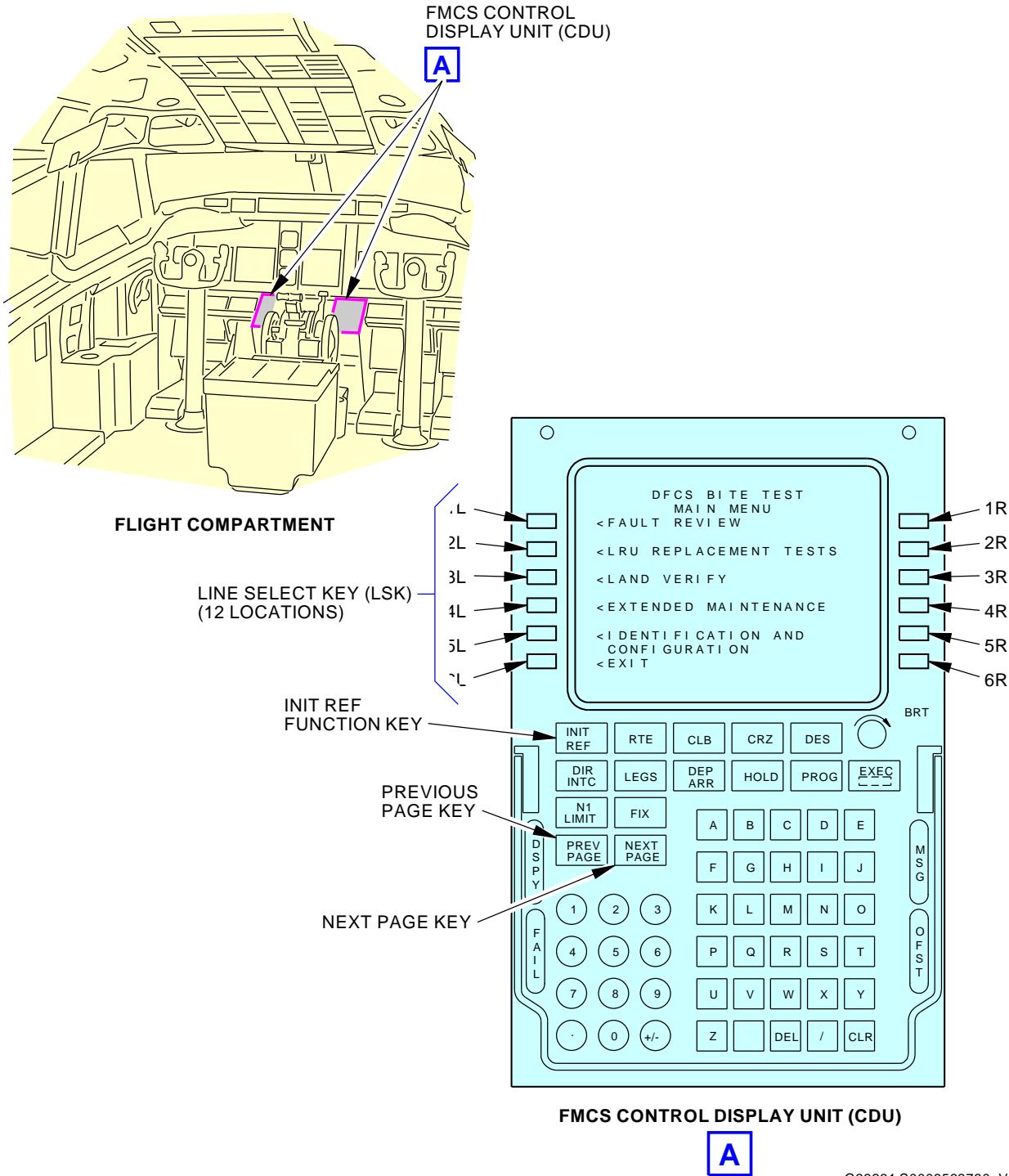
SUBTASK 22-11-00-860-010

- (5) Do this task: Remove Electrical Power, TASK 24-22-00-860-812.

———— END OF TASK ————



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G23231 S0006563730_V2

Flight Management Computer (FMC)/Control Display Unit (CDU)
Figure 501/22-11-00-990-805

EFFECTIVITY
AKS ALL

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TASK 22-11-00-740-802

3. Digital Flight Control System (DFCS) - System Test

A. General

- (1) The DFCS System Test does a check on all of the DFCS's interfaces. It makes sure that the DFCS operates correctly.

B. Location Zones

Zone	Area
------	------

- | | |
|-----|----------------------------|
| 211 | Flight Compartment - Left |
| 212 | Flight Compartment - Right |

C. Procedure

SUBTASK 22-11-00-740-002

- (1) Do this task: Flight Control Computer Option Pins Test, TASK 22-11-00-740-814.

SUBTASK 22-11-00-740-005

- (2) Do this task: BITE Library Test, TASK 22-11-00-740-806.

SUBTASK 22-11-00-740-006

- (3) Do this task: Wheel Spin Up Test, TASK 22-11-00-740-807.

SUBTASK 22-11-00-740-007

- (4) Do this task: Power Bus Transfer Test, TASK 22-11-00-740-808.

SUBTASK 22-11-00-740-008

- (5) Do this task: Power Bus Isolation Test, TASK 22-11-00-740-809.

SUBTASK 22-11-00-740-009

- (6) Do this task: Circuit Breaker Interface Test, TASK 22-11-00-740-810.

SUBTASK 22-11-00-740-010

- (7) Do this task: Air/Ground Discrete Test, TASK 22-11-00-740-811.

SUBTASK 22-11-00-740-011

- (8) Do this task: Other Discrete Inputs Test, TASK 22-11-00-740-812.

SUBTASK 22-11-00-740-012

- (9) Do this task: Sensor Excitation Test, TASK 22-11-00-820-801.

SUBTASK 22-11-00-740-013

- (10) Do this task: Maintenance Monitor Test, TASK 22-11-00-740-813.

SUBTASK 22-11-00-740-014

- (11) Do this task: Master Caution Test, TASK 22-11-00-800-801.

———— END OF TASK ————

TASK 22-11-00-740-814

4. Flight Control Computer Option Pins Test

A. General

- (1) The Option Pins Test lets you do a check on the option and program pins for the flight control computers A (FCC-A) and FCC-B.

B. References

Reference	Title
24-22-00-860-811	Supply Electrical Power (P/B 201)

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AKS ALL

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(Continued)

Reference	Title
24-22-00-860-812	Remove Electrical Power (P/B 201)

C. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

D. Prepare for the Test

SUBTASK 22-11-00-861-001

- (1) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

SUBTASK 22-11-00-862-001

- (2) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
D	18	C00451	LANDING GEAR AURAL WARN

SUBTASK 22-11-00-860-313

- (3) Set the autopilot stab trim cutout switch, on the control stand, to the CUTOUT position.

SUBTASK 22-11-00-860-314

- (4) Make sure that the VHF NAV and IRS switches, on the P5 forward overhead panel, are in the NORMAL positions.

SUBTASK 22-11-00-860-315

- (5) Set the left and right IRS select switches, on the P5 aft overhead panel, to the ALIGN or NAV position.

E. Procedure

SUBTASK 22-11-00-740-049

- (1) Push the INIT REF key on the CDU keyboard.

- (a) Push the Line Select Key (LSK) that is adjacent to each selection:

- 1) INDEX
 - 2) MAINT
 - 3) DFCS
 - 4) EXTENDED MAINTENANCE
 - 5) SENSOR VALUES

NOTE: The value that shows on the CDU screen for each FCC is a 10-digits Hex representation of all the FCC program pin options associated with the parity pin.

- 6) OPTION/PROG PINS

NOTE: Push the NEXT PAGE button on the CDU scratch pad to see more options.

- a) Make sure these pin options show on the CDU display:

NOTE: Ignore FMC LNAV and BL-01 because they are not part of the DFCS BITE test.



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Table 507/22-11-00-993-948 FCC Program Pin Options

737-800
AIRPLANE CONFG 1
AKS 001-004 PRE SB 737-22-1295
ALT ALERT OPT 2
AKS 005-999; AKS 001-004 POST SB 737-22-1295
ALT ALERT OPT 3
AKS ALL
A/S WARN
AKS 009-999
CWS OVERRIDE
AKS ALL
CWS WARN
BL-01
FMC LNAV
DUAL CHAN
AKS 014, 019, 026-999
MMR/GLS
AKS ALL
INHIBIT GS BEFORE LOC
HDG SEL TOGA
SPD/ALT INTERVENTION
EFDCS
WINGLETS INSTALLED
CAT IIIB AIRPLANE
SFP

7) Push the LSK adjacent to EXIT until you get out of the BITE test.

NOTE: If there are instructions on the CDU display it is necessary to do the instructions that show on the CDU display.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 22-11-00-861-002

(1) Remove the safety tag and close this circuit breaker:

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	18	C00451	LANDING GEAR AURAL WARN

SUBTASK 22-11-00-860-317

(2) Set the autopilot stab trim cutout switch, on the control stand, to the NORMAL position.

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AKS ALL

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SUBTASK 22-11-00-862-003

- (3) Do this task: Remove Electrical Power, TASK 24-22-00-860-812.

———— END OF TASK ——

TASK 22-11-00-740-806

5. BITE Library Test

A. General

- (1) The BITE library Test does a check on the interfaces between the Digital Flight Control System (DFCS) and its Line Replaceable Units.
- (2) The BITE Library Test contains three types of tests. The quick test (autotest), interactive test and surface test. The autotest comes before the interactive test, and the interactive test comes before the surface test.
- (a) The sequence of the BITE Library Test is as follows:
- 1) Autotests
 - 2) Interactive Tests
 - 3) Surface Tests
- (b) The autotests are automatic.
- (c) The interactive tests are not automatic. You must do the instructions that show on the CDU display to complete the interactive tests.
- (d) The surface tests are not automatic and hydraulic power is necessary for the surface tests. You must do the instructions that show on the CDU display to complete the surface tests.
- (3) Autotests

Table 508/22-11-00-993-815

Library Test Name	Group No./ Library Test No.
ADIRU/ISFD	60.01
Autothrottle	60.04
DME	60.05
LRRA	60.07
LNAV	60.11
MCP INTERF	60.16
FMC	60.18
Analog Sensors	60.21
SMYDC	60.22
VOR	60.23
MMR/ILS	60.24
CDS	60.25
MCP Display/Selftest	60.57
Discrete Input	60.70

- (4) Interactive Tests

———— EFFECTIVITY ——
AKS ALL

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Table 509/22-11-00-993-816

Library Test Name	Group No./ Library Test No.
ADIRU/ISFD	60.10
VOR	60.23
MMR/ILS	60.24
MCP Pushbuttons	60.50
MCP F/D Switches	60.51
MCP IAS/Mach Changeover	60.52
MCP Bank Angle Limit	60.53
MCP Speed Select	60.54
MCP Altitude Select Knob	60.55
MCP Vertical Speed Knob	60.56
MCP Displays/Selftest	60.57
MCP CMD/CWS Interlock	60.58
MCP Course/Heading Select	60.59
ALT Alert	60.61
Disengage Warning	60.62

(5) Surface Tests

Table 510/22-11-00-993-817

Library Test Name	Group No./ Library Test No.
Elevator	60.30
Aileron	60.31
Speed/Stab Trim	60.32
Mach Trim	60.33
Flaps	60.34
Dual Stab	60.35
Rudder	60.36

B. References

Reference	Title
24-22-00-860-811	Supply Electrical Power (P/B 201)
24-22-00-860-812	Remove Electrical Power (P/B 201)
29-11-00-860-801	Hydraulic System A or B Pressurization (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)

C. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

EFFECTIVITY
AKS ALL

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D. Prepare for the Test

SUBTASK 22-11-00-860-039

- (1) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

SUBTASK 22-11-00-860-303

- (2) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	18	C00451	LANDING GEAR AURAL WARN

SUBTASK 22-11-00-860-040

- (3) Set the autopilot stab trim cutout switch, on the control stand, to the CUTOUT position.

SUBTASK 22-11-00-860-041

- (4) Make sure that the VHF NAV and IRS switches, on the P5 forward overhead panel, are in the NORMAL positions.

SUBTASK 22-11-00-860-042

- (5) Set the left and right IRS select switches, on the P5 aft overhead panel, to the ALIGN or NAV position.

SUBTASK 22-11-00-860-043

WARNING: KEEP PERSONS AND EQUIPMENT AWAY FROM THE FLIGHT CONTROL SURFACES. THE AILERONS, ELEVATORS, RUDDER, FLAPS, SLATS, SPOILERS, STABILIZER AND NOSE GEAR CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (6) Supply hydraulic power to hydraulic systems A and B. To supply hydraulic power, do this task: Hydraulic System A or B Pressurization, TASK 29-11-00-860-801.

NOTE: Hydraulic power is necessary for surface test.

E. Procedure

SUBTASK 22-11-00-740-018

- (1) Push the INIT REF key on the CDU keyboard.

- (a) Push the Line Select Key (LSK) that is adjacent to each selection:

NOTE: If the CONTINUE shows during the BITE test, then do the instructions that show on the CDU display before you push the LSK that is adjacent to CONTINUE. Use the NEXT PAGE or PREV PAGE key to change page if it is necessary.

- 1) INDEX
- 2) MAINT
- 3) DFCS
- 4) EXTENDED MAINTENANCE
- 5) BITE LIBRARY TESTS
- 6) CHANNEL A AND B
- 7) RUN ALL LIBRARY TESTS

- (b) Autotest:



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- 1) Do the instructions that show on the CDU display.
NOTE: If the initialization setup is correct, AUTOTEST IN PROGRESS will show on the CDU display.
 - 2) If AUTOTEST PASSED shows on the CDU display, then the test is completed with no failure.
NOTE: Some autotests can be completed very fast and you cannot see the AUTOTEST PASSED message. The autotest passed if you do not see the AUTOTEST FAILED message.
NOTE: When all the autotests are completed, the summary page shows AUTOTEST PASSED or AUTOTEST FAILED.
 - 3) If AUTOTEST FAILED shows, then do the library test(s) that shows on the CDU display.
 - 4) Make a record of the channel (A, B, or A/B), suspect LRUs and the pin numbers that show on the CDU display.
NOTE: You can find the channel data adjacent to the INPUT/OUTPUT PINS that shows on the CDU display. Channel A is for the FCC-A and channel B is for the FCC-B. If there is no pin number for the suspect LRU, the channel data does not show.
NOTE: Each suspect LRU is referred to as a maintenance message.
 - a) If it is necessary to do the test again, then do these steps:
 - b) Push the LSK adjacent to TEST DATA.
 - c) Push the LSK adjacent to RERUN.
 - 5) Refer to 22-Maintenance Message Index in the FIM to find the fault isolation task for the applicable maintenance message.
- (c) Interactive Test:
NOTE: The interactive tests come immediately after you complete the last autotest.
- 1) Do the instructions that show on the CDU display to complete all the interactive tests.
NOTE: If the airplane is equipped with a Rockwell Collins MCP (mode control panel), only 7 segments will be displayed during the DFCS BITE Library Test 57 and the check can pass. If the airplane is equipped with a Honeywell MCP and only 7 segments are displayed during the DFCS BITE Library Test 57, the MCP should be replaced.
 - 2) If INTERACTIVE TEST PASSED shows on the CDU display, then the test is completed with no failure.
NOTE: After you complete the last interactive test, the summary page shows TEST FAILED or ALL TESTS PASSED.
 - 3) If INTERACTIVE TEST FAILED shows on the CDU display, then do these steps:
NOTE: No corrective action is required if the library test 62 shows TEST FAILED for channel A only and only maintenance message 22-11540 shows on the CDU display. This is a nuisance fault.
NOTE: No corrective action is required if the INTERACTIVE TEST 32 shows TEST FAILED and only maintenance messages 22-11176 and 22-11216 show on the CDU display. This is a nuisance fault.
 - a) Push the LSK adjacent to TEST RESULTS.

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AKS ALL

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- b) Make a record of the channel (A, B, or A/B), suspect LRUs and the pin numbers that show on the CDU display.

NOTE: You can find the channel data adjacent to the INPUT/OUTPUT PINS that shows on the CDU display. Channel A is for the FCC-A and channel B is for the FCC-B. If there is no pin number for the suspect LRU, the channel data does not show.

NOTE: Each suspect LRU is referred to as a maintenance message.

- c) If it is necessary to do the test again, then do these steps:
d) Push the LSK adjacent to TEST DATA.
e) Push the LSK adjacent to RERUN.

- 4) Refer to 22-Maintenance Message Index in the FIM to find the fault isolation task for the applicable maintenance message.

- (d) Surface Test:

NOTE: The surface tests come immediately after the you complete the last interactive test.

WARNING: KEEP PERSONS AND EQUIPMENT AWAY FROM THE FLIGHT CONTROL SURFACES. THE AILERONS, ELEVATORS, RUDDER, FLAPS, SLATS, SPOILERS, STABILIZER AND NOSE GEAR CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- 1) Do the instructions that show on the CDU display to complete all the surface tests.
2) If SURFACE TEST PASSED shows on the CDU display, then the test is completed with no failure.

NOTE: After you complete the last surface test, the summary page shows TEST FAILED or ALL TESTS PASSED.

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AKS ALL

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- 3) If SURFACE TEST FAILED shows on the CDU display, then do these steps:

NOTE: No corrective action is required if the library test 62 shows TEST FAILED for channel A only and only maintenance message 22-11540 shows on the CDU display. This is a nuisance fault.

NOTE: No corrective action is required if the library test 61 shows TEST FAILED for channel B only and only maintenance message 22-11115 shows on the CDU display. This is a nuisance fault.

NOTE: No corrective action is required if the library test 32 shows TEST FAILED and only maintenance messages 22-11176 and 22-11216 show on the CDU display. This is a nuisance fault.

NOTE: If EDFCS-BITE library test 30 fails, the operator should select the LSK associated with "TEST DATA". If only subtests S052 and/or S152 fail and the data field displays a value between 4.00 and 5.57, the test should be considered a PASS. If the value is outside these limits, troubleshoot per the applicable FIM instructions.

NOTE: If EDFCS-BITE library test 32 fails, the operator should select the LSK associated with "TEST DATA". If only subtests S035 and/or S135 fail and the data field displays a value between 1.00 and 1.5, the test should be considered a PASS. If the value is outside these limits, troubleshoot per the applicable FIM instructions.

NOTE: When EDFCS-BITE displays the message "*SET STAB TO VAC BELOW (STAB AT 8.0 UNITS)" in library test 32 or "*SET STAB TO VAC BELOW (STAB AT 11.0 UNITS)" in library test 35, the operator should manually jiggle the control column near neutral after setting the stab position to ensure the system is centered, and then push LSK 6L "CONTINUE". The system will be centered and the test should pass. If not, troubleshoot the airplane per the displayed fault information and associated FIM instructions.

- Push the LSK adjacent to TEST RESULTS.
- Make a record of the channel (A, B, or A/B), suspect LRUs and the pin numbers that show on the CDU display.

NOTE: You can find the channel data adjacent to the INPUT/OUTPUT PINS that shows on the CDU display. Channel A is for the FCC-A and channel B is for the FCC-B. If there is no pin number for the suspect LRU, the channel data does not show.

NOTE: Each suspect LRU is referred to as a maintenance message.

- If it is necessary to do the test again, then do these steps:
- Push the LSK adjacent to TEST DATA.
- Push the LSK adjacent to RERUN.

- 4) Refer to 22-Maintenance Message Index in the FIM to find the fault isolation task for the applicable maintenance message.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 22-11-00-860-044

- (1) Push the captain's or first officer's autopilot disengage switch, on the control wheel, to make sure that the autopilot is disengaged.

EFFECTIVITY
AKS ALL

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SUBTASK 22-11-00-860-045

- (2) Remove the safety tag and close this circuit breaker:

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	18	C00451	LANDING GEAR AURAL WARN

SUBTASK 22-11-00-860-046

- (3) Set the autopilot stab trim cutout switch, on the control stand, to the NORMAL position.

SUBTASK 22-11-00-860-047

- (4) Remove hydraulic power from hydraulic systems A and B. To remove hydraulic power, do this task: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805.

SUBTASK 22-11-00-860-048

- (5) Do this task: Remove Electrical Power, TASK 24-22-00-860-812.

———— END OF TASK ————

TASK 22-11-00-740-807

6. Wheel Spin Up Test

A. General

- (1) The Wheel Spin Up Test does a check on the interfaces between the Digital Flight Control System (DFCS) and the wheel spin logic circuit.

B. References

<u>Reference</u>	<u>Title</u>
24-22-00-860-811	Supply Electrical Power (P/B 201)
24-22-00-860-812	Remove Electrical Power (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)

C. Location Zones

<u>Zone</u>	<u>Area</u>
211	Flight Compartment - Left
212	Flight Compartment - Right

D. Prepare for the Test

SUBTASK 22-11-00-860-049

- (1) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

SUBTASK 22-11-00-860-302

- (2) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	18	C00451	LANDING GEAR AURAL WARN

SUBTASK 22-11-00-860-050

- (3) Set the autopilot stab trim cutout switch, on the control stand, to the CUTOUT position.

SUBTASK 22-11-00-860-051

- (4) Make sure that the VHF NAV and IRS switches, on the P5 forward overhead panel, are in the NORMAL positions.

EFFECTIVITY
AKS ALL

22-11-00



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SUBTASK 22-11-00-860-052

- (5) Set the left and right IRS select switches, on the P5 aft overhead panel, to the ALIGN or NAV position.

E. Procedure

SUBTASK 22-11-00-740-019

- (1) Push the INIT REF key on the CDU keyboard.

- (a) Push the Line Select Key (LSK) that is adjacent to each selection:

NOTE: If the CONTINUE shows during the BITE test, then do the instructions that show on the CDU display before you push the LSK that is adjacent to CONTINUE. Use the NEXT PAGE or PREV PAGE key to change page if it is necessary.

- 1) INDEX
- 2) MAINT
- 3) DFCS
- 4) EXTENDED MAINTENANCE
- 5) SENSOR VALUES
- 6) DISCRETE INPUTS
- 7) J1A
- 8) Find the "WHEEL SPIN J10" discrete name and pin that shows on the CDU display.
- 9) Make sure that the CDU display shows "OP" on the A side and B side for the "WHEEL SPIN J10".
- 10) Set the switch on antiskid/autobrake control unit, on the E1-2 shelf, to the OUTBD position.
- 11) Push and hold the PRESS/TEST switch.
- 12) Push and hold the ENABLE/VERIFY switch.
- 13) Make sure that the CDU display shows "28" on the A side and B side for the "WHEEL SPIN J10".
- 14) Release the PRESS/TEST and ENABLE/VERIFY switches.
- 15) Push the LSK adjacent to EXIT until you get out of the BITE test.

NOTE: If there are instructions on the CDU display, it is necessary to do the instructions that show on the CDU display.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 22-11-00-860-053

- (1) Push the captain's or first officer's autopilot disengage switch, on the control wheel, to make sure that the autopilot is disengaged.

SUBTASK 22-11-00-860-211

- (2) Remove the safety tag and close this circuit breaker:

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	18	C00451	LANDING GEAR AURAL WARN

SUBTASK 22-11-00-860-055

- (3) Set the autopilot stab trim cutout switch, on the control stand, to the NORMAL position.

EFFECTIVITY
AKS ALL

22-11-00



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SUBTASK 22-11-00-860-056

- (4) Remove hydraulic power from hydraulic systems A and B if hydraulic power is on. To remove hydraulic power, do this task: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805.

SUBTASK 22-11-00-860-057

- (5) Do this task: Remove Electrical Power, TASK 24-22-00-860-812.

———— END OF TASK ————

TASK 22-11-00-740-808

7. Power Bus Transfer Test

A. General

- (1) The Power Bus Transfer Test does a check on the interface between the Digital Flight Control System (DFCS) and the bus transfer relay.

B. References

Reference	Title
24-22-00-860-811	Supply Electrical Power (P/B 201)
24-22-00-860-812	Remove Electrical Power (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)
49-11-00-860-801	APU Starting and Operation - Activation (P/B 201)
49-11-00-860-802	APU Usual Shutdown (P/B 201)

C. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

D. Prepare for the Test

SUBTASK 22-11-00-860-058

- (1) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

SUBTASK 22-11-00-860-301

- (2) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
D	18	C00451	LANDING GEAR AURAL WARN

SUBTASK 22-11-00-860-059

- (3) Set the autopilot stab trim cutout switch, on the control stand, to the CUTOUT position.

SUBTASK 22-11-00-860-060

- (4) Make sure that the VHF NAV and IRS switches, on the P5 forward overhead panel, are in the NORMAL positions.

SUBTASK 22-11-00-860-061

- (5) Set the left and right IRS select switches, on the P5 aft overhead panel, to the ALIGN or NAV position.

SUBTASK 22-11-00-860-062

- (6) Start the APU. To start the APU, do this task: APU Starting and Operation - Activation, TASK 49-11-00-860-801.

EFFECTIVITY
AKS ALL

22-11-00



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- (a) Set the two APU generator switches, on the P5 forward overhead panel, to the ON position.
- (b) Make sure that the BUS TRANSFER switch, on the P5 forward overhead panel, is in the AUTO position.

E. Procedure

SUBTASK 22-11-00-740-020

- (1) Push the INIT REF key on the CDU keyboard.

- (a) Push the Line Select Key (LSK) that is adjacent to each selection:

NOTE: If the CONTINUE shows during the BITE test, then do the instructions that show on the CDU display before you push the LSK that is adjacent to CONTINUE. Use the NEXT PAGE or PREV PAGE key to change page if it is necessary.

- 1) INDEX
 - 2) MAINT
 - 3) DFCS
 - 4) EXTENDED MAINTENANCE
 - 5) SENSOR VALUES
 - 6) DISCRETE INPUTS
 - 7) J1B
 - 8) Find the "BUS TRANSFER H14" discrete name and pin that shows on the CDU display.
 - 9) Do this check for the APU GEN 1:
 - a) Set the APU GEN 1 switch, on the P5 forward overhead panel, to the OFF position.
 - b) Make sure that the CDU display shows "OP" on the A side for the "BUS TRANSFER H14".
 - c) Set the APU GEN 1 switch, on the P5 forward overhead panel, to the ON position.
 - d) Make sure that the CDU display shows "28" on the A side for the "BUS TRANSFER H14".
 - 10) Do this check for the APU GEN 2:
 - a) Set the APU GEN 2 switch, on the P5 forward overhead panel, to the OFF position.
 - b) Make sure that the CDU display shows "OP" on the B side for the "BUS TRANSFER H14".
 - c) Set the APU GEN 2 switch, on the P5 forward overhead panel, to the ON position.
 - d) Make sure that the CDU display shows "28" on the B side for the "BUS TRANSFER H14".
 - 11) Push the LSK adjacent to EXIT until you get out of the BITE test.

NOTE: If there are instructions on the CDU display, it is necessary to do the instructions that show on the CDU display.

EFFECTIVITY
AKS ALL

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F. Put the Airplane Back to Its Usual Condition

SUBTASK 22-11-00-860-063

- (1) Do this task: APU Usual Shutdown, TASK 49-11-00-860-802.

SUBTASK 22-11-00-860-064

- (2) Push the captain's or first officer's autopilot disengage switch, on the control wheel, to make sure that the autopilot is disengaged.

SUBTASK 22-11-00-860-212

- (3) Remove the safety tag and close this circuit breaker:

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	18	C00451	LANDING GEAR AURAL WARN

SUBTASK 22-11-00-860-066

- (4) Set the autopilot stab trim cutout switch, on the control stand, to the NORMAL position.

SUBTASK 22-11-00-860-067

- (5) Remove hydraulic power from hydraulic systems A and B if hydraulic power is on. To remove hydraulic power, do this task: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805.

SUBTASK 22-11-00-860-068

- (6) Do this task: Remove Electrical Power, TASK 24-22-00-860-812.

————— END OF TASK ————

TASK 22-11-00-740-809

8. Power Bus Isolation Test

A. General

- (1) The Power Bus Isolation Test does a check on the interface between the Digital Flight Control System (DFCS) and the bus isolation relay.

B. References

Reference	Title
24-22-00-860-811	Supply Electrical Power (P/B 201)
24-22-00-860-812	Remove Electrical Power (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)

C. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

D. Prepare for the Test

SUBTASK 22-11-00-860-069

- (1) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

EFFECTIVITY
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SUBTASK 22-11-00-860-300

- (2) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	18	C00451	LANDING GEAR AURAL WARN

SUBTASK 22-11-00-860-070

- (3) Set the autopilot stab trim cutout switch, on the control stand, to the CUTOOUT position.

SUBTASK 22-11-00-860-071

- (4) Make sure that the VHF NAV and IRS switches, on the P5 forward overhead panel, are in the NORMAL positions.

SUBTASK 22-11-00-860-072

- (5) Set the left and right IRS select switches, on the P5 aft overhead panel, to the ALIGN or NAV position.

E. Procedure

SUBTASK 22-11-00-860-073

- (1) Set the DC meter selector switch, on the P5 forward overhead panel, to the TR 1 position.

SUBTASK 22-11-00-860-074

- (2) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	1	C01049	AFCS SYS A WARN LIGHT (BAT)
D	2	C01045	AFCS SYS A FCC DC

Power Distribution Panel Number 1, P91

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	6	C00806	TRU 1

SUBTASK 22-11-00-860-075

- (3) Make sure that the DC VOLTS meter display, on the P5 forward overhead panel, shows 22 to 30 VDC.

SUBTASK 22-11-00-740-021

- (4) Push the INIT REF key on the CDU keyboard.

- (a) Push the Line Select Key (LSK) that is adjacent to each selection:

NOTE: If the CONTINUE shows during the BITE test, then do the instructions that show on the CDU display before you push the LSK that is adjacent to CONTINUE. Use the NEXT PAGE or PREV PAGE key to change page if it is necessary.

- 1) INDEX
- 2) MAINT
- 3) DFCS
- 4) EXTENDED MAINTENANCE
- 5) SENSOR VALUES
- 6) DISCRETE OUTPUTS
- 7) DC BUS ISOLATION OUTPUT

EFFECTIVITY
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- 8) DC BUS ISOLATION OUTPUT
 - (b) Make sure that the CDU display shows "STATE=ON (28 VDC)".
 - (c) Make sure that the DC VOLTS meter display, on the P5 forward overhead panel, shows -2.0 to +2.0 VDC.
 - (d) Push the LSK adjacent to "DC BUS ISOLATION OUTPUT".
 - (e) Make sure that the DC VOLTS meter display, on the P5 forward overhead panel, shows 22 to 30 VDC.
 - (f) Push the LSK adjacent to EXIT until you get out of the BITE test.

NOTE: If there are instructions on the CDU display, it is necessary to do the instructions that show on the CDU display.

SUBTASK 22-11-00-860-225

- (5) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	1	C01049	AFCS SYS A WARN LIGHT (BAT)
D	2	C01045	AFCS SYS A FCC DC

SUBTASK 22-11-00-860-226

- (6) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	1	C00374	AFCS SYS B WARN LIGHT (BAT)
B	3	C01046	AFCS SYS B FCC DC

SUBTASK 22-11-00-860-079

- (7) Make sure that the DC VOLTS meter display, on the P5 forward overhead panel, shows 22 to 30 VDC.

SUBTASK 22-11-00-860-227

- (8) Make sure that the word "F/D" goes out of view on the Captains Primary Flight Display.

NOTE: This can take up to 50 seconds to occur.

SUBTASK 22-11-00-740-022

- (9) Push the INIT REF key on the CDU keyboard.

- (a) Push the Line Select Key (LSK) that is adjacent to each selection:

NOTE: If the CONTINUE shows during the BITE test, then do the instructions that show on the CDU display before you push the LSK that is adjacent to CONTINUE. Use the NEXT PAGE or PREV PAGE key to change page if it is necessary.

- 1) INDEX
- 2) MAINT
- 3) DFCS
- 4) EXTENDED MAINTENANCE
- 5) SENSOR VALUES
- 6) DISCRETE OUTPUTS
- 7) DC BUS ISOLATION OUTPUT
- 8) DC BUS ISOLATION OUTPUT



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- 9) Make sure that the CDU display shows "DFCS BITE INOP CHECK INTERFACE".
(b) Push the LSK adjacent to EXIT until you get out of the BITE test.
NOTE: If there are instructions on the CDU display, it is necessary to do the instructions that show on the CDU display.

SUBTASK 22-11-00-860-080

- (10) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	1	C00374	AFCS SYS B WARN LIGHT (BAT)
B	3	C01046	AFCS SYS B FCC DC

Power Distribution Panel Number 1, P91

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	6	C00806	TRU 1

F. Put the Airplane Back to Its Usual Condition

SUBTASK 22-11-00-860-081

- (1) Push the captain's or first officer's autopilot disengage switch, on the control wheel, to make sure that the autopilot is disengaged.

SUBTASK 22-11-00-860-213

- (2) Remove the safety tag and close this circuit breaker:

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	18	C00451	LANDING GEAR AURAL WARN

SUBTASK 22-11-00-860-083

- (3) Set the autopilot stab trim cutout switch, on the control stand, to the NORMAL position.

SUBTASK 22-11-00-860-084

- (4) Remove hydraulic power from hydraulic systems A and B if hydraulic power is on. To remove hydraulic power, do this task: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805.

SUBTASK 22-11-00-860-085

- (5) Do this task: Remove Electrical Power, TASK 24-22-00-860-812.

———— END OF TASK ————

TASK 22-11-00-740-810

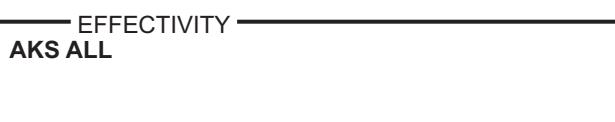
9. Circuit Breaker Interface Test

A. General

- (1) The Circuit Breaker Interface Test does a check on the interfaces between the Digital Flight Control System (DFCS) and all of its circuit breakers.

B. References

<u>Reference</u>	<u>Title</u>
24-22-00-860-811	Supply Electrical Power (P/B 201)
24-22-00-860-812	Remove Electrical Power (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)



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C. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

D. Prepare for the Test

SUBTASK 22-11-00-860-086

- (1) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

SUBTASK 22-11-00-860-299

- (2) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
D	18	C00451	LANDING GEAR AURAL WARN

SUBTASK 22-11-00-860-087

- (3) Set the autopilot stab trim cutout switch, on the control stand, to the CUTOUT position.

SUBTASK 22-11-00-860-088

- (4) Make sure that the VHF NAV and IRS switches, on the P5 forward overhead panel, are in the NORMAL positions.

SUBTASK 22-11-00-860-089

- (5) Set the left and right IRS select switches, on the P5 aft overhead panel, to the ALIGN or NAV position.

E. Procedure

SUBTASK 22-11-00-980-001

- (1) Do a check on these circuit breakers for the Primary Flight Display:

- (a) Open this circuit breaker:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
D	2	C01045	AFCS SYS A FCC DC

- 1) Make sure that the "F/D" (in amber box) shows on the captain's primary flight display.

- (b) Close this circuit breaker:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
D	2	C01045	AFCS SYS A FCC DC

- 1) Make sure that the "F/D" (in amber box) does not show on the captain's primary flight display.

NOTE: It can take approximately 20 seconds for this to happen after you close the circuit breaker.

- (c) Open this circuit breaker:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	3	C01046	AFCS SYS B FCC DC



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- 1) Make sure that the "F/D" (in amber box) shows on the first officer's primary flight display.
- (d) Close this circuit breaker:

F/O Electrical System Panel, P6-2

Row Col Number Name

B 3 C01046 AFCS SYS B FCC DC

- 1) Make sure that the "F/D" (in amber box) does not show on the first officer's primary flight display.

NOTE: It can take approximately 20 seconds for this to occur after you close the circuit breaker.

SUBTASK 22-11-00-740-023

- (2) Push the INIT REF key on the CDU keyboard.

- (a) Push the Line Select Key (LSK) that is adjacent to each selection:

NOTE: If the CONTINUE shows during the BITE test, then do the instructions that show on the CDU display before you push the LSK that is adjacent to CONTINUE. Use the NEXT PAGE or PREV PAGE key to change page if it is necessary.

- 1) INDEX
- 2) MAINT
- 3) DFCS
- 4) EXTENDED MAINTENANCE
- 5) SENSOR VALUES
- 6) DISCRETE INPUTS
- 7) CIRCUIT BREAKER CHECK

- (b) Do a check on these circuit breakers for the FCCA side:

- 1) Open this circuit breaker:

CAPT Electrical System Panel, P18-1

Row Col Number Name

D 3 C01048 AFCS SYS A ENGAGE INTLK

- a) Make sure that the CDU display shows "ENGAGE INTLK = 0 (± 2)" on the FCCA side.

- 2) Close this circuit breaker:

CAPT Electrical System Panel, P18-1

Row Col Number Name

D 3 C01048 AFCS SYS A ENGAGE INTLK

- a) Make sure that the CDU display shows "ENGAGE INTLK = 28 (± 2)" on the FCCA side.

- 3) Open this circuit breaker:

CAPT Electrical System Panel, P18-1

Row Col Number Name

D 4 C00457 AFCS SYS A MACH TRIM DC

- a) Make sure that the CDU display shows "MACH TRIM DC = 0 (± 2)" on the FCCA side.

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- 4) Close this circuit breaker:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	4	C00457	AFCS SYS A MACH TRIM DC

- a) Make sure that the CDU display shows "MACH TRIM DC = 28 (± 2)" on the FCCA side.

- 5) Open this circuit breaker:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	4	C00456	AFCS SYS A MACH TRIM AC

- a) Make sure that the CDU display shows "MACH TRIM AC = 0 (± 3)" on the FCCA side.

- 6) Close this circuit breaker:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	4	C00456	AFCS SYS A MACH TRIM AC

- a) Make sure that the CDU display shows "MACH TRIM AC = 115 (± 3)" on the FCCA side.

- (c) Do a check on these circuit breakers for the FCCB side:

- 1) Open this circuit breaker:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	4	C00716	AFCS SYS B ENGAGE INTLK

- a) Make sure that the CDU display shows "ENGAGE INTLK = 0 (± 2)" on the FCCB side.

- 2) Close this circuit breaker:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	4	C00716	AFCS SYS B ENGAGE INTLK

- a) Make sure that the CDU display shows "ENGAGE INTLK = 28 (± 2)" on the FCCB side.

- 3) Open this circuit breaker:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	2	C01064	AFCS SYS B MACH TRIM DC

- a) Make sure that the CDU display shows "MACH TRIM DC = 0 (± 2)" on the FCCB side.

- 4) Close this circuit breaker:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	2	C01064	AFCS SYS B MACH TRIM DC

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- a) Make sure that the CDU display shows "MACH TRIM DC = 28 (± 2)" on the FCCB side.
- 5) Open this circuit breaker:

F/O Electrical System Panel, P6-2

Row Col Number Name

C	1	C01037	AFCS SYS B MACH TRIM AC
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- a) Make sure that the CDU display shows "MACH TRIM AC = 0 (± 3)" on the FCCB side.
- 6) Close this circuit breaker:

F/O Electrical System Panel, P6-2

Row Col Number Name

C	1	C01037	AFCS SYS B MACH TRIM AC
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- a) Make sure that the CDU display shows "MACH TRIM AC = 115 (± 3)" on the FCCB side.
- 7) Use the NEXT PAGE key to find "SNSR EXC AC".

- (d) Do a check on these circuit breakers for the FCCA side:

- 1) Open this circuit breaker:

CAPT Electrical System Panel, P18-1

Row Col Number Name

C	5	C01041	AFCS SYS A SNSR EXC AC
---	---	--------	------------------------

- a) Make sure that the CDU display shows "SNSR EXC AC = 0 (± 3)" on the FCCA side.
- 2) Close this circuit breaker:

CAPT Electrical System Panel, P18-1

Row Col Number Name

C	5	C01041	AFCS SYS A SNSR EXC AC
---	---	--------	------------------------

- a) Make sure that the CDU display shows "SNSR EXC AC = 26 (± 3)" on the FCCA side.
- 3) Open this circuit breaker:

CAPT Electrical System Panel, P18-1

Row Col Number Name

D	1	C01049	AFCS SYS A WARN LIGHT (BAT)
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- a) Make sure that the CDU display shows "WARN LIGHT (BAT) = 0 (± 2)" on the FCCA side.
- 4) Close this circuit breaker:

CAPT Electrical System Panel, P18-1

Row Col Number Name

D	1	C01049	AFCS SYS A WARN LIGHT (BAT)
---	---	--------	-----------------------------

- a) Make sure that the CDU display shows "WARN LIGHT (BAT) = 28 (± 2)" on the FCCA side.

- (e) Do a check on these circuit breakers for the FCCB side:

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- 1) Open this circuit breaker:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	2	C01042	AFCS SYS B SNSR EXC AC

- a) Make sure that the CDU display shows "SNSR EXC AC = 0 (± 3)" on the FCCB side.

- 2) Close this circuit breaker:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	2	C01042	AFCS SYS B SNSR EXC AC

- a) Make sure that the CDU display shows "SNSR EXC AC = 26 (± 3)" on the FCCB side.

- 3) Open this circuit breaker:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	1	C00374	AFCS SYS B WARN LIGHT (BAT)

- a) Make sure that the CDU display shows "WARN LIGHT (BAT) = 0 (± 2)" on the FCCB side.

- 4) Close this circuit breaker:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	1	C00374	AFCS SYS B WARN LIGHT (BAT)

- a) Make sure that the CDU display shows "WARN LIGHT (BAT) = 28 (± 2)" on the FCCB side.

- 5) Push the LSK adjacent to EXIT until you get out of the BITE test.

NOTE: If there are instructions on the CDU display, it is necessary to do the instructions that show on the CDU display.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 22-11-00-860-090

- (1) Push the captain's or first officer's autopilot disengage switch, on the control wheel, to make sure that the autopilot is disengaged.

SUBTASK 22-11-00-860-214

- (2) Remove the safety tag and close this circuit breaker:

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	18	C00451	LANDING GEAR AURAL WARN

SUBTASK 22-11-00-860-092

- (3) Set the autopilot stab trim cutout switch, on the control stand, to the NORMAL position.

SUBTASK 22-11-00-860-093

- (4) Remove hydraulic power from hydraulic systems A and B if hydraulic power is on. To remove hydraulic power, do this task: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805.



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SUBTASK 22-11-00-860-094

- (5) Do this task: Remove Electrical Power, TASK 24-22-00-860-812.

———— END OF TASK ————

TASK 22-11-00-740-811

10. Air/Ground Discrete Test

A. General

- (1) The Air/Ground Discrete Test does a check on the interface between the Digital Flight Control System (DFCS) and the main landing gear squat switch logic circuit.

B. References

Reference	Title
24-22-00-860-811	Supply Electrical Power (P/B 201)
24-22-00-860-812	Remove Electrical Power (P/B 201)

C. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

D. Procedure

SUBTASK 22-11-00-860-095

- (1) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

SUBTASK 22-11-00-860-096

- (2) Open these circuit breakers:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
D	5	C01044	AFCS MCP DC 1

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	3	C01046	AFCS SYS B FCC DC

SUBTASK 22-11-00-740-024

- (3) Push the INIT REF key on the CDU keyboard.

- (a) Push the Line Select Key (LSK) that is adjacent to each selection:

- 1) INDEX
- 2) MAINT
- 3) DFCS
- 4) Make sure that these messages show on the CDU display:

Table 511/22-11-00-993-818

BITE ENTRY FOR FCC-A
AIR/GND SW INDICATES AIR MODE (J1A-B03)

- (b) Push the INIT REF key on the CDU keyboard.

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SUBTASK 22-11-00-860-097

- (4) Close these circuit breakers:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	5	C01044	AFCS MCP DC 1

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	3	C01046	AFCS SYS B FCC DC

SUBTASK 22-11-00-860-098

- (5) Open these circuit breakers:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	2	C01045	AFCS SYS A FCC DC

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	3	C01047	AFCS MCP DC 2

SUBTASK 22-11-00-740-025

- (6) Push the INIT REF key on the CDU keyboard.

- (a) Push the Line Select Key (LSK) that is adjacent to each selection:

- 1) INDEX
- 2) MAINT
- 3) DFCS
- 4) Make sure that these messages show on the CDU display:

Table 512/22-11-00-993-819

BITE ENTRY FOR FCC-B
AIR/GND SW INDICATES AIR MODE (J1A-B03)

- (b) Push the INIT REF key on the CDU keyboard.

SUBTASK 22-11-00-860-099

- (7) Close these circuit breakers:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	2	C01045	AFCS SYS A FCC DC

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	3	C01047	AFCS MCP DC 2

SUBTASK 22-11-00-860-100

- (8) Do this task: Remove Electrical Power, TASK 24-22-00-860-812.

———— END OF TASK ————

EFFECTIVITY
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TASK 22-11-00-740-812

11. Other Discrete Inputs Test

A. General

- (1) The Other Discrete Inputs Test does a check on the baro correct switch, auto/manual tune, DME hold and LNAV valid discrete inputs to the Digital Flight Control System (DFCS).

B. References

Reference	Title
24-22-00-860-811	Supply Electrical Power (P/B 201)
24-22-00-860-812	Remove Electrical Power (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)

C. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

D. Prepare for the Test

SUBTASK 22-11-00-860-101

- (1) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

SUBTASK 22-11-00-860-298

- (2) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
D	18	C00451	LANDING GEAR AURAL WARN

SUBTASK 22-11-00-860-102

- (3) Set the autopilot stab trim cutout switch, on the control stand, to the CUTOUT position.

SUBTASK 22-11-00-860-103

- (4) Make sure that the VHF NAV and IRS switches, on the P5 forward overhead panel, are in the NORMAL positions.

SUBTASK 22-11-00-860-104

- (5) Set the left and right IRS select switches, on the P5 aft overhead panel, to the ALIGN or NAV position.

E. Procedure

SUBTASK 22-11-00-740-026

- (1) Push the INIT REF key on the CDU keyboard.

- (a) Push the Line Select Key (LSK) that is adjacent to each selection:

NOTE: If the CONTINUE shows during the BITE test, then do the instructions that show on the CDU display before you push the LSK that is adjacent to CONTINUE. Use the NEXT PAGE or PREV PAGE key to change page if it is necessary.

- 1) INDEX
- 2) MAINT
- 3) DFCS
- 4) EXTENDED MAINTENANCE
- 5) SENSOR VALUES



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- 6) DISCRETE INPUTS
- 7) J1B
- 8) Find the "AUTOTUNE C05" discrete name and pin that shows on the CDU display.
 - a) Make sure that the CDU display shows "OP" on the A side and B side for the "AUTOTUNE C05".
- 9) Find the "BARO CORR SEL C07" discrete name and pin that shows on the CDU display.
 - a) Make sure that the CDU display shows "OP" on the A side and B side for the "BARO CORR SEL C07".
- 10) Find the "DME HOLD A01" discrete name and pin that shows on the CDU display.
 - a) Make sure that the CDU display shows "GD" on the A side and B side for the "DME HOLD A01".
- 11) Find the "LNAV VALID H05" discrete name and pin that shows on the CDU display.
 - a) Make sure that the CDU display shows "OP" on the A side and B side for the "LNAV VALID H05".
- 12) Push the LSK adjacent to EXIT until you get out of the BITE test.

NOTE: If there are instructions on the CDU display, it is necessary to do the instructions that show on the CDU display.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 22-11-00-860-105

- (1) Push the captain's or first officer's autopilot disengage switch, on the control wheel, to make sure that the autopilot is disengaged.

SUBTASK 22-11-00-860-215

- (2) Remove the safety tag and close this circuit breaker:

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	18	C00451	LANDING GEAR AURAL WARN

SUBTASK 22-11-00-860-107

- (3) Set the autopilot stab trim cutout switch, on the control stand, to the NORMAL position.

SUBTASK 22-11-00-860-108

- (4) Remove hydraulic power from hydraulic systems A and B if hydraulic power is on. To remove hydraulic power, do this task: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805.

SUBTASK 22-11-00-860-109

- (5) Do this task: Remove Electrical Power, TASK 24-22-00-860-812.

———— END OF TASK ————

TASK 22-11-00-820-801

12. Sensor Excitation Test

A. General

- (1) The Sensor Excitation Test does a check on the sensor excitation voltages for the A flight control computer (FCC-A) and the B flight control computer (FCC-B).

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B. References

Reference	Title
24-22-00-860-811	Supply Electrical Power (P/B 201)
24-22-00-860-812	Remove Electrical Power (P/B 201)
29-11-00-860-801	Hydraulic System A or B Pressurization (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)

C. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

D. Prepare for the Test

SUBTASK 22-11-00-860-110

- (1) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

SUBTASK 22-11-00-860-297

- (2) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
D	18	C00451	LANDING GEAR AURAL WARN

SUBTASK 22-11-00-860-111

- (3) Set the autopilot stab trim cutout switch, on the control stand, to the CUTOUT position.

SUBTASK 22-11-00-860-112

- (4) Make sure that the VHF NAV and IRS switches, on the P5 forward overhead panel, are in the NORMAL positions.

SUBTASK 22-11-00-860-113

- (5) Set the left and right IRS select switches, on the P5 aft overhead panel, to the ALIGN or NAV position.

SUBTASK 22-11-00-860-114

WARNING: KEEP PERSONS AND EQUIPMENT AWAY FROM THE FLIGHT CONTROL SURFACES. THE AILERONS, ELEVATORS, RUDDER, FLAPS, SLATS, SPOILERS, STABILIZER AND NOSE GEAR CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (6) Supply hydraulic power to hydraulic systems A and B. To supply hydraulic power, do this task: Hydraulic System A or B Pressurization, TASK 29-11-00-860-801.

NOTE: Hydraulic power is necessary for surface test.

E. Procedure

SUBTASK 22-11-00-740-027

- (1) Push the INIT REF key on the CDU keyboard.
 - (a) Push the Line Select Key (LSK) that is adjacent INDEX.
 - (b) Push the LSK that is adjacent to MAINT.



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- (c) Open these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	3	C01046	AFCS SYS B FCC DC
C	2	C01042	AFCS SYS B SNSR EXC AC

- (d) Set the DISPLAYS SOURCE switch, on the P5 forward overhead panel, to the ALL ON 1 position.

- (e) Continue to push the LSK that is adjacent to each selection:

- 1) DFCS
- 2) EXTENDED MAINTENANCE
- 3) BITE LIBRARY TESTS
- 4) CHANNEL A
- 5) RUN SELECT LIBRARY TESTS
- 6) Push the LSK that is adjacent to these library tests:

NOTE: After you push the LSK that is adjacent to each library test, the asterisk "*" shows. Use the NEXT PAGE or PREV PAGE key to change page.

Table 513/22-11-00-993-820

30 ELEVATOR
31 AILERON
32 SPD/STAB
34 FLAPS
59 MCP CRS/HDG
61 ALT ALERT

- a) Push the LSK that is adjacent to EXECUTE.

NOTE: If the CONTINUE shows during the BITE test, then do the instructions that show on the CDU display before you push the LSK that is adjacent to CONTINUE.

- b) Do the instructions that show on the CDU to complete each library test.
- c) Make sure that "DFCS TEST PASSED" shows on the CDU display.
- d) Push the LSK that is adjacent to PREV MENU on the "SUMMARY" screen.

- (f) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	3	C01046	AFCS SYS B FCC DC
C	2	C01042	AFCS SYS B SNSR EXC AC

- (g) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	5	C01041	AFCS SYS A SNSR EXC AC
D	2	C01045	AFCS SYS A FCC DC

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- (h) Set the DISPLAYS SOURCE switch, on the P5 forward overhead panel, to the ALL ON 2 position.
- (i) Push the INIT REF key on the CDU keyboard.
- (j) Push the LSK that is adjacent to each selection:
 - 1) INDEX
 - 2) MAINT
 - 3) DFCS
 - 4) EXTENDED MAINTENANCE
 - 5) BITE LIBRARY TESTS
 - 6) CHANNEL B
 - 7) RUN SELECT LIBRARY TESTS
 - 8) Push the LSK that is adjacent to these library tests:

NOTE: After you push the LSK the is adjacent to each library test, the asterisk "*" shows. Use the NEXT PAGE or PREV PAGE key to change page.

Table 514/22-11-00-993-821

30 ELEVATOR
31 AILERON
32 SPD/STAB
34 FLAPS
59 MCP CRS/HDG
61 ALT ALERT

- a) Push the LSK that is adjacent to EXECUTE.

NOTE: If the CONTINUE shows during the BITE test, then do the instructions that show on the CDU display before you push the LSK that is adjacent to CONTINUE.

- b) Do the instructions that show on the CDU to complete each library test.
- c) Make sure that "DFCS TEST PASSED" shows on the CDU display.
- d) Push the LSK adjacent to EXIT until you get out of the BITE test.

NOTE: If there are instructions on the CDU display, it is necessary to do the instructions that show on the CDU display.

- (k) Close these circuit breakers:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	5	C01041	AFCS SYS A SNSR EXC AC
D	2	C01045	AFCS SYS A FCC DC

- (l) Set the DISPLAYS SOURCE switch, on the P5 forward overhead panel, to the AUTO position.

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F. Put the Airplane Back to Its Usual Condition

SUBTASK 22-11-00-860-115

- (1) Push the captain's or first officer's autopilot disengage switch, on the control wheel, to make sure that the autopilot is disengaged.

SUBTASK 22-11-00-860-216

- (2) Remove the safety tag and close this circuit breaker:

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	18	C00451	LANDING GEAR AURAL WARN

SUBTASK 22-11-00-860-117

- (3) Set the autopilot stab trim cutout switch, on the control stand, to the NORMAL position.

SUBTASK 22-11-00-860-118

- (4) Remove hydraulic power from hydraulic systems A and B. To remove hydraulic power, do this task: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805.

SUBTASK 22-11-00-860-119

- (5) Do this task: Remove Electrical Power, TASK 24-22-00-860-812.

————— END OF TASK ————

TASK 22-11-00-740-813

13. Maintenance Monitor Test

A. General

- (1) The Maintenance Monitor Test does a check on the maintenance monitor of the BITE. It makes sure that the monitor can record faults. This test also does a check on the DC power of the mode control panel.

B. References

Reference	Title
24-22-00-860-811	Supply Electrical Power (P/B 201)
24-22-00-860-812	Remove Electrical Power (P/B 201)
29-11-00-860-801	Hydraulic System A or B Pressurization (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)

C. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

D. Procedure

SUBTASK 22-11-00-860-120

- (1) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

SUBTASK 22-11-00-860-121

- (2) Set the left and right IRS select switches, on the P5 aft overhead panel, to the NAV position.



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SUBTASK 22-11-00-860-122

WARNING: KEEP PERSONS AND EQUIPMENT AWAY FROM THE FLIGHT CONTROL SURFACES. THE AILERONS, ELEVATORS, RUDDER, FLAPS, SLATS, SPOILERS, STABILIZER AND NOSE GEAR CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (3) Supply hydraulic power to hydraulic systems A and B. To supply hydraulic power, do this task:
Hydraulic System A or B Pressurization, TASK 29-11-00-860-801.

SUBTASK 22-11-00-980-002

- (4) Do these steps to set the autopilot engaged and disengaged conditions:

- (a) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	1	C01399	PSEU PRI

- (b) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	2	C01400	PSEU ALTN

- (c) Stop for 5 seconds.

- (d) Push the A/P engage switch on the mode control panel (MCP) to engage the channel A autopilot to the CMD mode.

- (e) Push the ALT HOLD button on the MCP.

- (f) Push the HDG SEL button on the MCP.

- (g) Set the captain's flight director switch on the MCP to on.

- (h) Make sure that these occur:

- 1) F/D bars stay in view.

- 2) The autopilot stays engaged in the CMD mode.

- (i) Open this circuit breaker:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	5	C01041	AFCS SYS A SNSR EXC AC

- (j) Make sure that the autopilot disengages.

- (k) Close this circuit breaker:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	5	C01041	AFCS SYS A SNSR EXC AC

- (l) Stop for 5 seconds.

- (m) Set the captain's flight director switch on the MCP to off.

- (n) Push the A/P engage switch on the MCP to engage the channel B autopilot to the CMD mode.

- (o) Push the ALT HOLD button on the mode control panel (MCP).



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- (p) Push the HDG SEL button on the MCP.
- (q) Set the first officer's flight director switch on the MCP to on.
- (r) Make sure that these occur:
 - 1) F/D bars stay in view.
 - 2) The autopilot stays engaged in the CMD mode.
- (s) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	2	C01042	AFCS SYS B SNSR EXC AC

- (t) Make sure that the autopilot disengages.
- (u) Set the first officer's flight director switch on the MCP to off.
- (v) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	2	C01042	AFCS SYS B SNSR EXC AC

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	1	C01399	PSEU PRI
D	2	C01400	PSEU ALTN

- (w) Stop for 20 seconds.

SUBTASK 22-11-00-740-028

- (5) Push the INIT REF key on the CDU keyboard.
 - (a) Push the Line Select Key (LSK) that is adjacent to each selection:
 - 1) INDEX
 - 2) MAINT
 - 3) DFCS
 - 4) FAULT REVIEW
 - 5) FAULT HISTORY SORTED BY FLIGHT LEG
 - 6) CHANNEL A
 - 7) LEG 01
 - (a) Make sure that these messages show on the CDU display:

NOTE: Use the NEXT PAGE or PREV PAGE key to change page if it is necessary.

Table 515/22-11-00-993-822

DFCS BITE TEST	
FAULT HISTORY -A	*01/ XX
LEG 01 xx xx:xxz	xx xxx xxx
CHAN-A* ALT HOLD* HDG SEL*	

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Table 515/22-11-00-993-822 (Continued)

400 HZ PWR INV

- 8) PREV MENU
- 9) PREV MENU
- 10) CHANNEL B
- 11) LEG 01

a) Make sure that these messages show on the CDU display:

NOTE: Use the NEXT PAGE or PREV PAGE key to change page if it is necessary.

Table 516/22-11-00-993-823

DFCS BITE TEST

FAULT HISTORY -B	*01/ XX
LEG 01 XX XX : XXZ	DD MMM YY

CHAN-B* ALT HOLD* HDG SEL*

400 HZ PWR INV

- 12) PREV MENU
- 13) EXIT
- 14) EXIT

NOTE: On the TEST COMPLETE screen.

a) Do the instructions on the END OF DFCS BITE screen, except DO NOT turn off Hydraulic power.

- 15) EXIT

SUBTASK 22-11-00-980-003

- (6) Do this check on the autopilot:

- (a) Stop for 50 seconds.
- (b) Make sure FD is removed from the Captain's and First Officer's Primary Flight Display.
- (c) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	1	C01399	PSEU PRI
D	2	C01400	PSEU ALTN

- (d) Stop for 5 seconds.
- (e) Set the autopilot stab trim cutout switch, on the control stand, to the CUTOUT position.
- (f) Push the A/P engage switches on the MCP to make sure that the autopilot cannot be engaged.
- (g) Stop for 5 seconds.

EFFECTIVITY
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- (h) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	1	C01399	PSEU PRI
D	2	C01400	PSEU ALTN

- (i) Stop for 20 seconds.

SUBTASK 22-11-00-740-029

- (7) Push the INIT REF key on the CDU keyboard.

- (a) Push the Line Select Key (LSK) that is adjacent to each selection:

- 1) INDEX
- 2) MAINT
- 3) DFCS
- 4) FAULT REVIEW
- 5) FAULT HISTORY SORTED BY FLIGHT LEG
- 6) CHANNEL A
- 7) LEG 01

- a) Make sure that these messages show on the CDU display:

NOTE: Use the NEXT PAGE or PREV PAGE key to change page if it is necessary.

Table 517/22-11-00-993-824

DFCS BITE TEST	
FAULT HISTORY -A	XX / XX
LEG 01 * XX	DD MMM YY
CHAN-A* * *	
AUTO STAB TRIM CUTOUT	

- 8) PREV MENU
- 9) PREV MENU
- 10) CHANNEL B
- 11) LEG 01

- a) Make sure that these messages show on the CDU display:

NOTE: Use the NEXT PAGE or PREV PAGE key to change page if it is necessary.

Table 518/22-11-00-993-825

DFCS BITE TEST	
FAULT HISTORY -A	*XX / XX
LEG 01 *XX:XXZ	DD MMM YY
CHAN-B* * *	
AUTO STAB TRIM CUTOUT	

- (b) Set the Auto Stab Trim Switch to NORMAL.

EFFECTIVITY
AKS ALL

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- (c) Make these selections on the CDU:

- 1) PREV MENU
- 2) EXIT
- 3) EXIT

NOTE: On the TEST COMPLETE screen.

- a) Do the instructions on the END OF DFCS BITE screen, except DO NOT turn off Hydraulic power.

- 4) EXIT

SUBTASK 22-11-00-980-004

- (8) Do this check on the DC power of the mode control panel:

- (a) Stop for 50 seconds.
- (b) Make sure FD is removed from the Captain's and First Officer's Primary Flight Display.
- (c) Open this circuit breaker:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	3	C01047	AFCS MCP DC 2

- (d) Stop for 5 seconds.
- (e) Push the A/P engage switch on the MCP to engage the channel A autopilot to the CMD mode.
- (f) Push the HDG SEL button on the MCP.
- (g) Make sure that the HDG SEL mode is engaged.
- (h) Open this circuit breaker:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	5	C01044	AFCS MCP DC 1

- (i) Make sure that the autopilot disengages.
- (j) Close this circuit breaker:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	3	C01047	AFCS MCP DC 2

- (k) Push the A/P engage switch to engage the channel B autopilot to the CMD mode.
- (l) Stop for 5 seconds.
- (m) Push the HDG SEL button on the MCP.
- (n) Make sure that the HDG SEL mode is engaged.
- (o) Open this circuit breaker:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	3	C01047	AFCS MCP DC 2

- (p) Make sure that the autopilot disengages.

EFFECTIVITY
AKS ALL

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- (q) Close these circuit breakers:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	5	C01044	AFCS MCP DC 1

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	3	C01047	AFCS MCP DC 2

SUBTASK 22-11-00-740-030

- (9) Push the INIT REF key on the CDU keyboard.

- (a) Push the Line Select Key (LSK) that is adjacent to each selection:

- 1) INDEX
- 2) MAINT
- 3) DFCS
- 4) FAULT REVIEW
- 5) ERASE FAULT HISTORY
- 6) CHANNEL A AND B
- 7) YES
- 8) Make sure that this message shows on the CDU display:

Table 519/22-11-00-993-826

DFCS BITE TEST
ERASE FAULT HISTORY
FAULT HISTORY ERASED

- (b) Push the Line Select Key (LSK) that is adjacent to this selection:

- 1) EXIT
- 2) EXIT

Table 520/22-11-00-993-946

DFCS BITE TEST
TEST COMPLETE
*SELECT "MAIN MENU" OF YOU WANT TO STAY IN DFCS BITE MENU

NOTE: On the TEST COMPLETE screen.

- a) Do the instructions on the END OF DFCS BITE screen.

- (c) Push the Line Select Key (LSK) that is adjacent to this selection:

- 1) EXIT

SUBTASK 22-11-00-860-123

- (10) Remove hydraulic power from hydraulic systems A and B. To remove hydraulic power, do this task: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805.

EFFECTIVITY
AKS ALL

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SUBTASK 22-11-00-860-124

- (11) Do this task: Remove Electrical Power, TASK 24-22-00-860-812.

———— END OF TASK ————

TASK 22-11-00-800-801

14. Master Caution Test

A. General

- (1) The Master Caution Test does a check on the interfaces between the Digital Flight Control System (DFCS) and the master caution annunciators.

B. References

Reference	Title
24-22-00-860-811	Supply Electrical Power (P/B 201)
24-22-00-860-812	Remove Electrical Power (P/B 201)

C. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

D. Procedure

SUBTASK 22-11-00-860-125

- (1) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

SUBTASK 22-11-00-980-005

- (2) Do this check on the captain's master caution annunciator:

- (a) Open this circuit breaker and install safety tag:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
D	2	C01045	AFCS SYS A FCC DC

- 1) Stop for 7 seconds.
- 2) Make sure that the MACH TRIM FAIL light, on the P5 forward overhead panel, remains off.

- (b) Push the left system annunciator lights on the P7 panel.

- (c) Make sure that these lights come on:

- 1) MACH TRIM FAIL light on the P5 forward overhead panel.
- 2) Master caution FLT CONT annunciator on the P7 panel.
- 3) Captain's master caution annunciator on the P7 panel.
- 4) First officer's master caution annunciator on the P7 panel.

- (d) Push the captain's master caution annunciator.

- (e) Make sure that these lights go off:

- 1) MACH TRIM FAIL light on the P5 forward overhead panel.
- 2) Master caution FLT CONT annunciator on the P7 panel.
- 3) Captain's master caution annunciator on the P7 panel.
- 4) First officer's master caution annunciator on the P7 panel.

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- (f) Remove the safety tag and close this circuit breaker:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	2	C01045	AFCS SYS A FCC DC

- (g) Stop for 50 seconds.

- (h) Make sure FD is removed from the Captain's Primary Flight Display.

SUBTASK 22-11-00-980-006

- (3) Do this check on the first officer's master caution annunciator:

- (a) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	3	C01046	AFCS SYS B FCC DC

- 1) Stop for 7 seconds.

- 2) Make sure that the MACH TRIM FAIL light, on the P5 forward overhead panel, stays off.

- (b) Push the left system annunciator lights on the P7 panel.

- (c) Make sure that these lights come on:

- 1) MACH TRIM FAIL light on the P5 forward overhead panel.

- 2) Master caution FLT CONT annunciator on the P7 panel.

- 3) Captain's master caution annunciator on the P7 panel.

- 4) First officer's master caution annunciator on the P7 panel.

- (d) Push the first officer's master caution annunciator.

- (e) Make sure that these lights go off:

- 1) MACH TRIM FAIL light on the P5 forward overhead panel.

- 2) Master caution FLT CONT annunciator on the P7 panel.

- 3) Captain's master caution annunciator on the P7 panel.

- 4) First officer's master caution annunciator on the P7 panel.

- (f) Open this circuit breaker and install safety tag:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	2	C01045	AFCS SYS A FCC DC

- (g) Stop for 7 seconds.

- (h) Make sure that these lights come on:

- 1) MACH TRIM FAIL light on the P5 forward overhead panel.

- 2) Master caution FLT CONT annunciator on the P7 panel.

- 3) Captain's master caution annunciator on the P7 panel.

- 4) First officer's master caution annunciator on the P7 panel.

- (i) Push the first officer's master caution annunciator.

- 1) Make sure that the MACH TRIM FAIL light, on the P5 forward overhead panel, stays on.

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- (j) Make sure that these lights go off.
 - 1) Master caution FLT CONT annunciator on the P7 panel.
 - 2) Captain's master caution annunciator on the P7 panel.
 - 3) First officer's master caution annunciator on the P7 panel.
- (k) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	2	C01045	AFCS SYS A FCC DC

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	3	C01046	AFCS SYS B FCC DC

- (l) Stop for 50 seconds.
 - 1) Make sure that the MACH TRIM FAIL light, on the P5 forward overhead panel, goes off.

SUBTASK 22-11-00-860-126

- (4) Do this task: Remove Electrical Power, TASK 24-22-00-860-812.

———— END OF TASK ————

TASK 22-11-00-820-802

15. Elevator Rigging Test

A. General

- (1) The Elevator Rigging Test does a check on the interfaces between the Digital Flight Control System (DFCS) and the elevator system wiring and sensors.

B. References

Reference	Title
24-22-00-860-811	Supply Electrical Power (P/B 201)
24-22-00-860-812	Remove Electrical Power (P/B 201)
29-11-00-860-801	Hydraulic System A or B Pressurization (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.



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Reference	Description
COM-1914	Test Set - Air Data Model FLMTS (Flight Line Maintenance) Part #: 18910920000 Supplier: 89944 Part #: ADTS405F Supplier: U0427 Part #: ADTS530 Supplier: U0427 Part #: ADTS552F Supplier: U0427 Part #: D60340MK Supplier: K1474 Part #: DPS1000 Supplier: 21844 Part #: DPS350 Supplier: 21844 Part #: DPS450 Supplier: 21844 Part #: MODEL 6300 Supplier: 0RDZ5 Part #: MPS34C Supplier: 48RQ2 Part #: MPS43 Supplier: A0197 Part #: MPS45 Supplier: 48RQ2 Part #: MPS49 Supplier: 48RQ2 Part #: TES9463 Supplier: 88277 Opt Part #: 01-0987-00 Supplier: 41364 Opt Part #: 18910480000 Supplier: 89944 Opt Part #: ADTS505 Supplier: U0427 Opt Part #: D60302 Supplier: K1474 Opt Part #: D60340 Supplier: K1474 Opt Part #: D60383 Supplier: K1474 Opt Part #: DPS500 Supplier: 21844 Opt Part #: MPS31C Supplier: 48RQ2
SPL-1677	Assembly - Trammel Bar, Stabilizer Trim Actuator Part #: F80055-10 Supplier: 81205 Opt Part #: F80055-1 Supplier: 81205
SPL-1742	Regulator - Air Pressure, Elevator Feel Computer Part #: F72928-58 Supplier: 81205 Part #: F72928-62 Supplier: 81205 Part #: F72928-63 Supplier: 81205

D. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right
311	Area Aft of Pressure Bulkhead - Left
323	Vertical Fin - Front Spar To Rear Spar

E. Access Panels

Number	Name/Location
311BL	Stabilizer Trim Access Door

F. Prepare for the Test

SUBTASK 22-11-00-860-127

- (1) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

SUBTASK 22-11-00-860-296

- (2) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
D	18	C00451	LANDING GEAR AURAL WARN

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SUBTASK 22-11-00-860-128

- (3) Set the autopilot stab trim cutout switch, on the control stand, to the CUTOUT position.

SUBTASK 22-11-00-860-129

- (4) Make sure that the VHF NAV and IRS switches, on the P5 forward overhead panel, are in the NORMAL positions.

SUBTASK 22-11-00-860-130

- (5) Set the left and right IRS select switches, on the P5 aft overhead panel, to the ALIGN or NAV position.

SUBTASK 22-11-00-390-001

WARNING: WHEN THE PITOT PROBES HAVE COVERS ON THEM, MAKE SURE THAT A PERSON ON THE GROUND CAN SEE THE COVERS. ALSO MAKE SURE YOU ATTACH A TAG TO THE LEFT CONTROL WHEEL IN THE FLIGHT COMPARTMENT AS A REMINDER THAT THE PITOT PROBES HAVE COVERS ON THEM. IF THE COVERS ARE NOT REMOVED FROM THE PITOT PROBES, INCORRECT AIRSPEED-SENSING AND ALTITUDE-SENSING SIGNALS CAN OCCUR. THIS CAN CAUSE DANGEROUS FLIGHT CONDITIONS.

- (6) At the two pitot probes on the vertical fin, do the following:

- (a) Seal the drain hole on each pitot probe.

CAUTION: MAKE SURE THAT THE PITOT PROBE HAS NO ADDED WEIGHT ON IT FROM THE TEST HOSE. THE WEIGHT OF THE TEST HOSE CAN BEND OR TWIST THE PITOT PROBE OUT OF TOLERANCE.

- (b) Connect the pressure lines from the air data model test set, COM-1914 or regulator, SPL-1742 to the two pitot probes on the vertical fin.

SUBTASK 22-11-00-010-006

- (7) Open this access panel:

Number Name/Location

311BL Stabilizer Trim Access Door

SUBTASK 22-11-00-860-312

- (8) Inside the aft unpressurized compartment, below the elevator feel computer, do the following:

- (a) Remove the restrictor valves from the bottom of the pitot lines.

- (b) If you are using the regulator, SPL-1742, or equivalent, do the following:

- 1) Connect the pressure gage lines from the regulator, SPL-1742, or equivalent, to the drain holes of the pitot lines.

- (c) If you are using the air data model test set, COM-1914, then do the following:

- 1) Install plugs over the ends of the pitot lines.

- 2) Install a highly visible streamer on the opening of the aft unpressurized compartment.

NOTE: Make sure that you can easily see the streamer from the ground. This is to remind you to remove the plugs and install the restrictor valves again when the test is completed.

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SUBTASK 22-11-00-860-131

WARNING: KEEP PERSONS AND EQUIPMENT AWAY FROM THE FLIGHT CONTROL SURFACES. THE AILERONS, ELEVATORS, RUDDER, FLAPS, SLATS, SPOILERS, STABILIZER AND NOSE GEAR CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (9) Supply hydraulic power to hydraulic systems A and B. To supply hydraulic power, do this task:
Hydraulic System A or B Pressurization, TASK 29-11-00-860-801.

SUBTASK 22-11-00-980-007

- (10) Do these steps to set the B dimension (Figure 502):

NOTE: The B dimension is measured between the center of the upper and lower Gimbal pins on the stabilizer trim jackscrew. To do this, one person must be in the tail of the airplane with a headset and the other person in the flight compartment.

- Turn the stab trim wheel handle on the control stand to set the B dimension.
- Use the trammel bar, SPL-1677 to measure the B dimension.
- Make sure that the B dimension is 39.89 (± 0.01) inches.

G. Procedure

SUBTASK 22-11-00-740-031

- (1) Push the INIT REF key on the CDU keyboard.

- (a) Push the Line Select Key (LSK) that is adjacent to each selection:

- INDEX
- MAINT
- DFCS
- EXTENDED MAINTENANCE
- RIGGING
- ELEVATOR

NOTE: After you make this selection, the CONTINUE shows. Do the instructions that show on the CDU display before you push the LSK that is adjacent to CONTINUE.

- 7) COMPLETE ELEV RIG

NOTE: This selection contains the ELEV RIG, ELEV AUTH SINGLE and ELEV AUTH DUAL tests.

- During this test, do the instructions that show on the CDU display.
- After you do the instructions that show on the CDU display, push the LSK that is adjacent to CONTINUE.

- (b) Do the Elevator Rigging Check:

- Make sure that the values for the A and B sides are between the limits that show on the CDU display or in this task.

Table 521/22-11-00-993-827

Test		Limits:
51.01	STAB POS (VAC)	-0.07 to 0.07

- 2) Use the trammel bar, SPL-1677 to measure the B dimension.

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- 3) Make sure that the B dimension is 39.89 (± 0.01) inches.

Table 522/22-11-00-993-828

Test		Limits
51.02	MT ACT POS (VAC)	-8.70 to -6.35
Note: No value for B side; N/A		
51.03	MT ACT POS (VAC)	-0.20 TO 0.20
Note: No value for B side; N/A		
51.04	ELEV POS (vac)	-0.55 RO -0.45

- 4) Make sure that the elevator trailing edge aligns with the elevator index on the tail cone at 0 (± 0.06) inch.

Table 523/22-11-00-993-831

Test		Limits
51.05	NSS POS (VAC)	-1.77 to -1.67
51.06	ELEV LVDT (VAC)	-2.05 to -1.95
51.07	ELEV POS (VAC)	-0.55 TO -0.45

- 5) Make sure that the elevator trailing edge aligns with the elevator index on the tail cone at 0 (± 0.06) inch.

Table 524/22-11-00-993-833

Test		Limits
51.08	ELEV POS (VAC)	-0.55 to -0.45
51.09	ELEV POS (VAC)	-0.55 to -0.45
51.10	ELEV POS (VAC)	-0.55 to -0.45
51.11	ELEV POS (VAC)	-0.55 to -0.45

- 6) Set the B dimension to within the limit shown on the FMC CDU.
 7) Use the trammel bar, SPL-1677 to measure the B dimension.
 8) Make sure that the B dimension is within the limit shown on the FMC CDU.

Table 525/22-11-00-993-834

Test		Limits
51.12	STAB POS (VAC)	4.47 to 5.29
51.13	ELEV LVDT (VAC)	-0.06 to 0.06
51.14	ELEV POS (VAC)	-0.10 to 0.10
51.15	NSS POS (VAC)	-0.20 to 0.20

- (c) Do the Elevator Single Authority Check:
 1) Push the LSK that is adjacent to CONTINUE.
 2) Test 51.16, set up the Feel System Condition II as follows:

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CAUTION: OBEY THE LIMITS THAT FOLLOW. IF YOU DO NOT, DAMAGE TO THE ELEVATOR FEEL COMPUTER CAN OCCUR.

- a) Make sure that the pressure is no more than 5 PSIG (34.47 KPA), 474 KNOTS (878 KM/H) during the test.
- b) Operate the air data model test set, COM-1914 or regulator, SPL-1742 or equivalent, to pressurize the pitot system to 0.80 (± 0.05) PSIG=180.16 (± 10.00) Knots at sea level.
- 3) Use the CDU keyboard to put code 100 into the scratchpad.
- 4) Push the LSK 6R.
- 5) Push the LSK that is adjacent to CONTINUE.
- 6) Make sure that the values for the A side are between the limits that show on the CDU display or in this task.
- 7) Do these steps:
 - a) Set the B dimension to 38.46 (± 0.01) inches.
 - b) Use the trammel bar, SPL-1677 to measure the B dimension.
 - c) Make sure that the B dimension is 38.46 (± 0.01) inches.

Table 526/22-11-00-993-835

Test		Limits
51.17	STAB POS (DEG)	0.80 to 1.20

- 8) Remove hydraulic power from the hydraulic system B. To remove hydraulic power, do this task: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805.
- 9) Engage autopilot A to CMD mode.

Table 527/22-11-00-993-951

Test		Limits
51.18	ELEV POS (DEG)	1.60 to 2.00

- 10) Apply a mark on tail cone opposite the trailing edge of the elevator.

Table 528/22-11-00-993-963

Test		Limits
51.19	SURF AUTH (DEG)	-3.90 to -2.10

- 11) Measure the elevator trailing edge deflection from the mark applied in test 51.18.
- 12) Make sure that the deflection distance is between 1.25 and 2.32 inches.
- 13) Write the number on a piece of paper (A=_____).

Table 529/22-11-00-993-838

Test		Limits
51.20	ELEV POS (DEG)	1.60 to 2.00
51.21	SURF AUTH (DEG)	1.90 to 3.70

- 14) Measure the elevator trailing edge deflection from the mark applied in test 51.18.
- 15) Make sure that the deflection distance is between 1.13 and 2.20 inches.

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- 16) Write the number on a piece of paper (B=_____).

Table 530/22-11-00-993-840

Test		Limits:
51.22	SURF AUTH (DEG)	4.00 (MIN)

- 17) Add the two numbers A and B (absolute values) in tests 51.19 and 51.21.

- 18) Make sure that the total sum of the A and B is 2.38 inches (Minimum).

- 19) Push the LSK that is adjacent to YES (on second screen page of Test 51.22).

NOTE: The CDU display shows "DO YOU WANT TO INSERT ANOTHER HARDOVER CONDITION ?". After you make the YES selection, the BITE takes you back to previous test screen.

- 20) Push the LSK that is adjacent to CONTINUE on test 51.16 and test 51.17.

- 21) Keep the same pitot pressure and the B dimension.

WARNING: KEEP PERSONS AND EQUIPMENT AWAY FROM THE FLIGHT CONTROL SURFACES. THE AILERONS, ELEVATORS, RUDDER, FLAPS, SLATS, SPOILERS, STABILIZER AND NOSE GEAR CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- 22) Supply hydraulic power to hydraulic systems A and B. To supply hydraulic power, do this task: Hydraulic System A or B Pressurization, TASK 29-11-00-860-801.

- 23) Engage autopilot A to CMD mode.

- 24) Make sure that the values are between the limits that show on the CDU display or in this task.

Table 531/22-11-00-993-953

Test		Limits
51.18	ELEV POS (DEG)	1.60 to 2.00

- 25) Apply a mark on the tail cone opposite the trailing edge of the elevator.

Table 532/22-11-00-993-954

Test		Limits
51.19	SURF AUTH (DEG)	-3.90 to -2.10

- 26) Measure the elevator trailing edge deflection from the mark applied in test 51.18.

- 27) Make sure that the deflection distance is between 1.25 and 2.32 inches.

- 28) Write the number on a piece of paper (C=_____).

Table 533/22-11-00-993-843

Test		Limits
51.20	ELEV POS (DEG)	1.60 to 2.00
51.21	SURF AUTH (DEG)	1.90 to 3.70

- 29) Measure the elevator trailing edge deflection from the mark applied in test 51.18.

- 30) Make sure that the deflection distance is between 1.13 and 2.20 inches.

- 31) Write the number on a piece of paper (D=_____).

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Table 534/22-11-00-993-845

Test		Limits
51.22	SURF AUTH (DEG)	4.00 (MIN)

- 32) Add the two numbers C and D (absolute values) in tests 51.19 and 51.21.
- 33) Make sure that the total sum of C and D is 2.38 inches (Minimum).
- 34) Push the LSK that is adjacent to YES (on second screen page of Test 51.22).
NOTE: The CDU display shows "DO YOU WANT TO INSERT ANOTHER HARDOVER CONDITION ?". After you make the YES selection, the BITE takes you back to previous test screen.
- 35) Push the LSK that is adjacent to CONTINUE on test 51.16 and test 51.17.
- 36) Keep the same pitot pressure and the B dimension.
- 37) Remove hydraulic power from the hydraulic system A. To remove hydraulic power, do this task: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805.
- 38) Engage autopilot B to CMD mode.
- 39) Make sure that the values are between the limits that show on the CDU display or in this task.

Table 535/22-11-00-993-955

Test		Limits
51.18	ELEV POS (DEG)	1.60 to 2.00

- 40) Apply a mark on the tail cone opposite the trailing edge of the elevator.

Table 536/22-11-00-993-956

Test		Limits
51.19	SURF AUTH (DEG)	-3.90 to -2.10

- 41) Measure the elevator trailing edge deflection from the mark applied in test 51.18.
- 42) Make sure that the deflection distance is between 1.25 and 2.32 inches.
- 43) Write the number on a piece of paper (E=_____).

Table 537/22-11-00-993-848

Test		Limits
51.20	ELEV POS (DEG)	1.60 to 2.00
51.21	SURF AUTH (DEG)	1.90 to 3.70

- 44) Measure the elevator trailing edge deflection from the mark applied in test 51.18.
- 45) Make sure that the deflection distance is between 1.13 and 2.20 inches.
- 46) Write the number on a piece of paper (F=_____).

Table 538/22-11-00-993-850

Test		Limits
51.22	SURF AUTH (DEG)	4.00 (MIN)

- 47) Add the two numbers E and F (absolute values) in tests 51.19 and 51.21.
- 48) Make sure that the total sum of E and F is 2.38 inches (Minimum).

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- 49) Push the LSK that is adjacent to YES (on second screen page of Test 51.22).

NOTE: The CDU display shows "DO YOU WANT TO INSERT ANOTHER HARDOVER CONDITION ?". After you make the YES selection, the BITE takes you back to previous test screen.

- 50) Push the LSK that is adjacent to CONTINUE on test 51.16 and test 51.17.

- 51) Keep the same pitot pressure and the B dimension.

WARNING: KEEP PERSONS AND EQUIPMENT AWAY FROM THE FLIGHT CONTROL SURFACES. THE AILERONS, ELEVATORS, RUDDER, FLAPS, SLATS, SPOILERS, STABILIZER AND NOSE GEAR CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- 52) Supply hydraulic power to hydraulic systems A and B. To supply hydraulic power, do this task: Hydraulic System A or B Pressurization, TASK 29-11-00-860-801.

- 53) Engage autopilot B to CMD mode.

- 54) Make sure that the values are between the limits that show on the CDU display or in this task.

Table 539/22-11-00-993-957

Test		Limits
51.18	ELEV POS (DEG)	1.60 to 2.00

- 55) Apply a mark on the tail cone opposite the trailing edge of the elevator.

Table 540/22-11-00-993-958

Test		Limits
51.19	SURF AUTH (DEG)	-3.90 to -2.10

- 56) Measure the elevator trailing edge deflection from the mark applied in test 51.18.

- 57) Make sure that the deflection distance is between 1.25 and 2.32 inches.

- 58) Write the number on a piece of paper (G=_____).

Table 541/22-11-00-993-853

Test		Limits
51.20	ELEV POS (DEG)	1.60 to 2.00
51.21	SURF AUTH (DEG)	1.90 to 3.70

- 59) Measure the elevator trailing edge deflection from the mark applied in test 51.18.

- 60) Make sure that the deflection distance is between 1.13 and 2.20 inches.

- 61) Write the number on a piece of paper (H=_____).

Table 542/22-11-00-993-855

Test		Limits
51.22	SURF AUTH (DEG)	4.00 (MIN)

- 62) Add the two numbers G and H (absolute values) in tests 51.19 and 51.21.

- 63) Make sure that the total sum of G and H is 2.38 inches (Minimum).

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- 64) Push the LSK that is adjacent to YES (on second screen page of Test 51.22).

NOTE: The CDU display shows "DO YOU WANT TO INSERT ANOTHER HARDOVER CONDITION ?". After you make the YES selection, the BITE takes you back to previous test screen.

- 65) Test 51.16, set up the Feel System Condition I as follows:

CAUTION: DO NOT INCREASE THE PRESSURE TO MORE THAN 6 PSIG (41 KPA), 474 KNOTS (878 KM/H) DURING THE TEST. IF THE PRESSURE IS MORE THAN 6 PSIG (41 KPA), 474 KNOTS (878 KM/H), IT CAN CAUSE DAMAGE TO THE ELEVATOR FEEL COMPUTER.

- 66) Operate the air data model test set, COM-1914 or regulator, SPL-1742 or equivalent, to reduce the pitot pressure to 0.0 PSIG, then increase the pitot pressure to 0.45 (± 0.05) PSIG = 138.00 (± 10.00) Knots at sea level.

- 67) Use the CDU keyboard to put code 100 into the scratchpad.

- 68) Push the LSK 6R.

- 69) Push the LSK that is adjacent to CONTINUE.

- 70) Make sure that the values are between the limits that show on the CDU display or in this task.

- 71) Do these steps:

- Set the B dimension to 38.46 (± 0.01) inches.
- Use the trammel bar, SPL-1677 to measure the B dimension.
- Make sure that the B dimension is 38.46 (± 0.01) inches.

Table 543/22-11-00-993-856

Test		Limits
51.17	STAB POS (DEG)	0.80 to 1.20

WARNING: KEEP PERSONS AND EQUIPMENT AWAY FROM THE FLIGHT CONTROL SURFACES. THE AILERONS, ELEVATORS, RUDDER, FLAPS, SLATS, SPOILERS, STABILIZER AND NOSE GEAR CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- 72) Supply hydraulic power to hydraulic systems A and B. To supply hydraulic power, do this task: Hydraulic System A or B Pressurization, TASK 29-11-00-860-801.

- 73) Engage autopilot A to CMD mode.

Table 544/22-11-00-993-959

Test		Limits
51.18	ELEV POS (DEG)	1.60 to 2.00

- 74) Apply a mark on the tail cone opposite the trailing edge of the elevator.

Table 545/22-11-00-993-960

Test		Limits
51.19	SURF AUTH (DEG)	-12.0 to -7.30

- 75) Measure the elevator trailing edge deflection from the mark applied in test 51.18.

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- 76) Make sure that the deflection distance is between 4.34 and 7.14 inches.
- 77) Write the number on a piece of paper ($I = \underline{\hspace{1cm}}$).

Table 546/22-11-00-993-859

Test		Limits
51.20	ELEV POS (DEG)	1.60 to 2.00
51.21	SURF AUTH (DEG)	4.10 to 6.40

- 78) Measure the elevator trailing edge deflection from the mark applied in test 51.18.
- 79) Make sure that the deflection distance is between 2.44 and 3.80 inches.
- 80) Write the number on a piece of paper ($J = \underline{\hspace{1cm}}$).

Table 547/22-11-00-993-861

Test		Limits
51.22	SURF AUTH (DEG)	11.40 (MIN)

- 81) Add the two numbers I and J (absolute values) in tests 51.19 and 51.21.
 - 82) Make sure that the total sum of the I and J is 6.78 inches (Minimum).
 - 83) Push the LSK that is adjacent to YES (on second screen page of Test 51.22).
- NOTE: The CDU display shows "DO YOU WANT TO INSERT ANOTHER HARDOVER CONDITION ?". After you make the YES selection, the BITE takes you back to previous test screen.
- 84) Test 51.16, set up the Feel System Condition III as follows:

CAUTION: DO NOT INCREASE THE PRESSURE TO MORE THAN 6 PSIG (41 KPA), 474 KNOTS (878 KM/H) DURING THE TEST. IF THE PRESSURE IS MORE THAN 6 PSIG (41 KPA), 474 KNOTS (878 KM/H), IT CAN CAUSE DAMAGE TO THE ELEVATOR FEEL COMPUTER.

- a) Operate the air data model test set, COM-1914 or regulator, SPL-1742 or equivalent, to reduce the pitot pressure to 0 PSIG, then increase the pitot pressure to 4.10 (± 0.05) PSIG=402.00 (± 4.5) Knots at sea level.
- 85) Use the CDU keyboard to put code 100 into the scratchpad.
- 86) Push the LSK 6R.
- 87) Push the LSK that is adjacent to CONTINUE.
- 88) Make sure that the values are between the limits that show on the CDU display or in this task.
- 89) Do these steps:
 - a) Set the B dimension to 38.46 (± 0.01) inches.
 - b) Use the trammel bar, SPL-1677 to measure the B dimension.
 - c) Make sure that the dimension is 38.46 (± 0.01) inches.

Table 548/22-11-00-993-862

Test		Limits
51.17	STAB POS (DEG)	0.80 to 1.20

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WARNING: KEEP PERSONS AND EQUIPMENT AWAY FROM THE FLIGHT CONTROL SURFACES. THE AILERONS, ELEVATORS, RUDDER, FLAPS, SLATS, SPOILERS, STABILIZER AND NOSE GEAR CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- 90) Supply hydraulic power to hydraulic systems A and B. To supply hydraulic power, do this task: Hydraulic System A or B Pressurization, TASK 29-11-00-860-801.
- 91) Engage autopilot B to CMD mode.

Table 549/22-11-00-993-961

Test		Limits
51.18	ELEV POS (DEG)	1.60 to 2.00

- 92) Apply a mark on the tail cone opposite the trailing edge of the elevator.

Table 550/22-11-00-993-962

Test		Limits
51.19	SURF AUTH (DEG)	-2.20 to -1.20

- 93) Measure the elevator trailing edge deflection from the mark applied in test 51.18.
- 94) Make sure that the deflection distance is between 0.71 and 1.31 inches.
- 95) Write the number on a piece of paper (K=_____).

Table 551/22-11-00-993-865

Test		Limits
51.20	ELEV POS (DEG)	1.60 to 2.00
51.21	SURF AUTH (DEG)	1.20 to 2.30

- 96) Measure the elevator trailing edge deflection from the mark applied in test 51.18.
- 97) Make sure that the deflection distance is between 0.58 and 1.36 inches.
- 98) Write the number on a piece of paper (L=_____).

Table 552/22-11-00-993-867

Test		Limits
51.22	SURF AUTH (DEG)	2.40 (MIN)

- 99) Add the two numbers K and L (absolute values) in tests 51.19 and 51.21.
- 100) Make sure that the total sum of the K and L is 1.74 inches (Minimum).

(d) Do the Elevator Dual Authority Check:

- 1) Push the LSK that is adjacent to NO (on second screen page of Test 51.22).

NOTE: The CDU display shows "DO YOU WANT TO INSERT ANOTHER HARDOVER CONDITION ?". After you make the NO selection, the BITE takes you to the subsequent test screen.

- 2) Do the instructions that show on the CDU display.

- 3) Do these steps:

- a) Set the B dimension to 39.89 (± 0.01) inches.

- b) Use the trammel bar, SPL-1677 to measure the B dimension.

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- c) Make sure that the B dimension is 39.89 (± 0.01) inches.
- 4) Make sure that the values for the A side and B side are between the limits that show on the CDU display or in this task.

Table 553/22-11-00-993-868

Test		Limits
51.23	STAB POS (VAC)	-0.07 to 0.07

Table 554/22-11-00-993-947

Test		Limits
51.24	+SURF DELTA (DEG)	14.5 to 17.5
51.25	-SURF DELTA (DEG)	11.7 TO 14.7
51.26:	ELEV POS (VAC)	-0.40 to 0.40
51.27	ELEV LVDT (VAC)	-2.15 to -1.95
51.28	ELEV POS (VAC)	-0.55 to -0.45

- 5) Make sure that the elevator trailing edge aligns with the elevator index on the tail cone at 0.0 (± 0.06) inch.

Table 555/22-11-00-993-871

Test		Limits
51.29	+SURF DELTA (DEG)	0.00 to 1.00
51.30	-SURF DELTA (DEG)	-1.00 to 0.00
51.31	+SURF DELTA (DEG)	0.00 to 1.00
51.32:	-SURF DELTA (DEG)	-1.00 to 0.00
51.33	ELEV POS (DEG)	1.80 to 2.20

- 6) Measure the distance of the elevator trailing edge deflection from the elevator index mark on the tail cone.
- 7) Make sure that the deflection distance is between 1.10 and 1.30 inches from the elevator index mark.

Table 556/22-11-00-993-873

Test		Limits
51.34	-SURF DELTA (DEG)	-1.00 to 0.00
51.35	ELEV POS (DEG)	-1.00 to 0.50
51.36	ELEV POS (DEG)	-1.00 to 0.50
51.37	-SURF DELTA (DEG)	-1.00 to 0.00

- 8) Do these steps to get out of the BITE test:

NOTE: If there are instructions on the CDU display, it is necessary to do the instructions that show on the CDU display.

- a) Push the LSK adjacent to PREV MENU on test 51.37 screen.
- b) Push the LSK adjacent to PREV MENU on the ELEVATOR RIGGING screen.

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- c) Push the LSK adjacent to CONTINUE on the RIGGING INDEX screen.
- d) Push the LSK adjacent to EXIT on the RIGGING INDEX screen.
- e) Push the LSK adjacent to CONTINUE on the END OF BITE RIGGING screen.
- f) Push the LSK adjacent to EXIT until you get out of the BITE test.

H. Put the Airplane Back to Its Usual Condition

SUBTASK 22-11-00-860-132

- (1) Push the captain's or first officer's autopilot disengage switch, on the control wheel, to make sure that the autopilot is disengaged.

SUBTASK 22-11-00-860-217

- (2) Remove the safety tag and close this circuit breaker:

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	18	C00451	LANDING GEAR AURAL WARN

SUBTASK 22-11-00-860-134

- (3) Set the autopilot stab trim cutout switch, on the control stand, to the NORMAL position.

SUBTASK 22-11-00-860-135

- (4) Remove hydraulic power from hydraulic systems A and B. To remove hydraulic power, do this task: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805.

SUBTASK 22-11-00-080-002

- (5) At the two pitot probes on the vertical fin, do the following:
 - (a) Remove the pressure lines from the air data model test set, COM-1914 or regulator, SPL-1742, or equivalent to the pitot probes.
 - (b) Remove the seals from the drain holes in each pitot probe.

SUBTASK 22-11-00-080-003

- (6) In the aft unpressurized compartment, below the elevator feel computer, do the following:
 - (a) If you use the regulator, SPL-1742, or equivalent, do the following:
 - 1) Disconnect the pressure gage lines of the regulator, SPL-1742, or equivalent, from the drain holes of the pitot lines.
 - (b) If you used the air data model test set, COM-1914, do the following:
 - 1) Remove the plugs that were installed over the ends of the pitot lines.
 - 2) Remove the highly visible streamer on the opening of the aft unpressurized compartment.
 - 3) Install the restrictor valves on the bottom of the pitot lines.

SUBTASK 22-11-00-410-001

- (7) Close this access door:

<u>Number</u>	<u>Name/Location</u>
311BL	Stabilizer Trim Access Door

SUBTASK 22-11-00-860-136

- (8) Do this task: Remove Electrical Power, TASK 24-22-00-860-812.

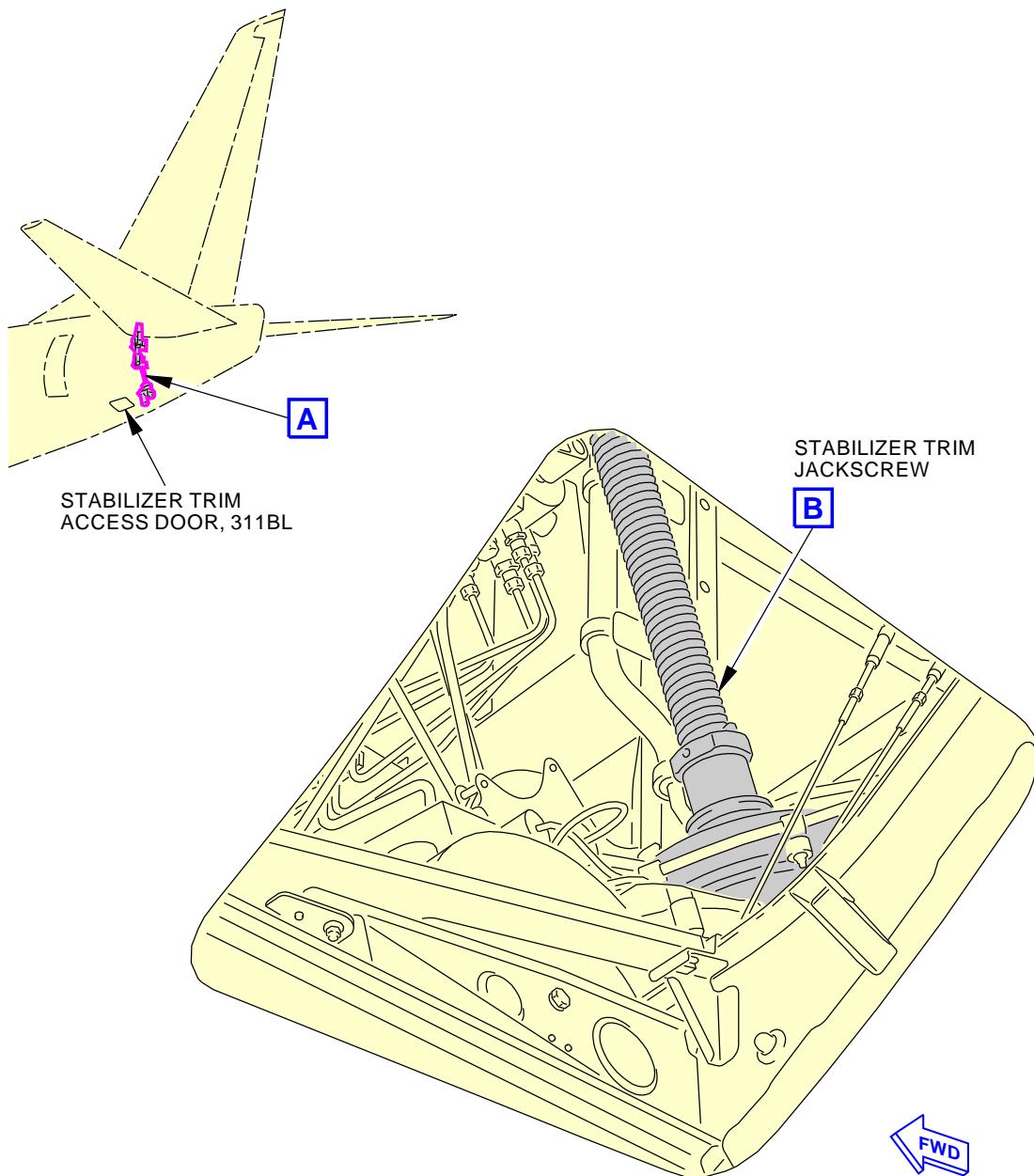
———— END OF TASK ————

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VIEW WHEN YOU LOOK UP THROUGH THE
STABILIZER TRIM ACCESS DOOR



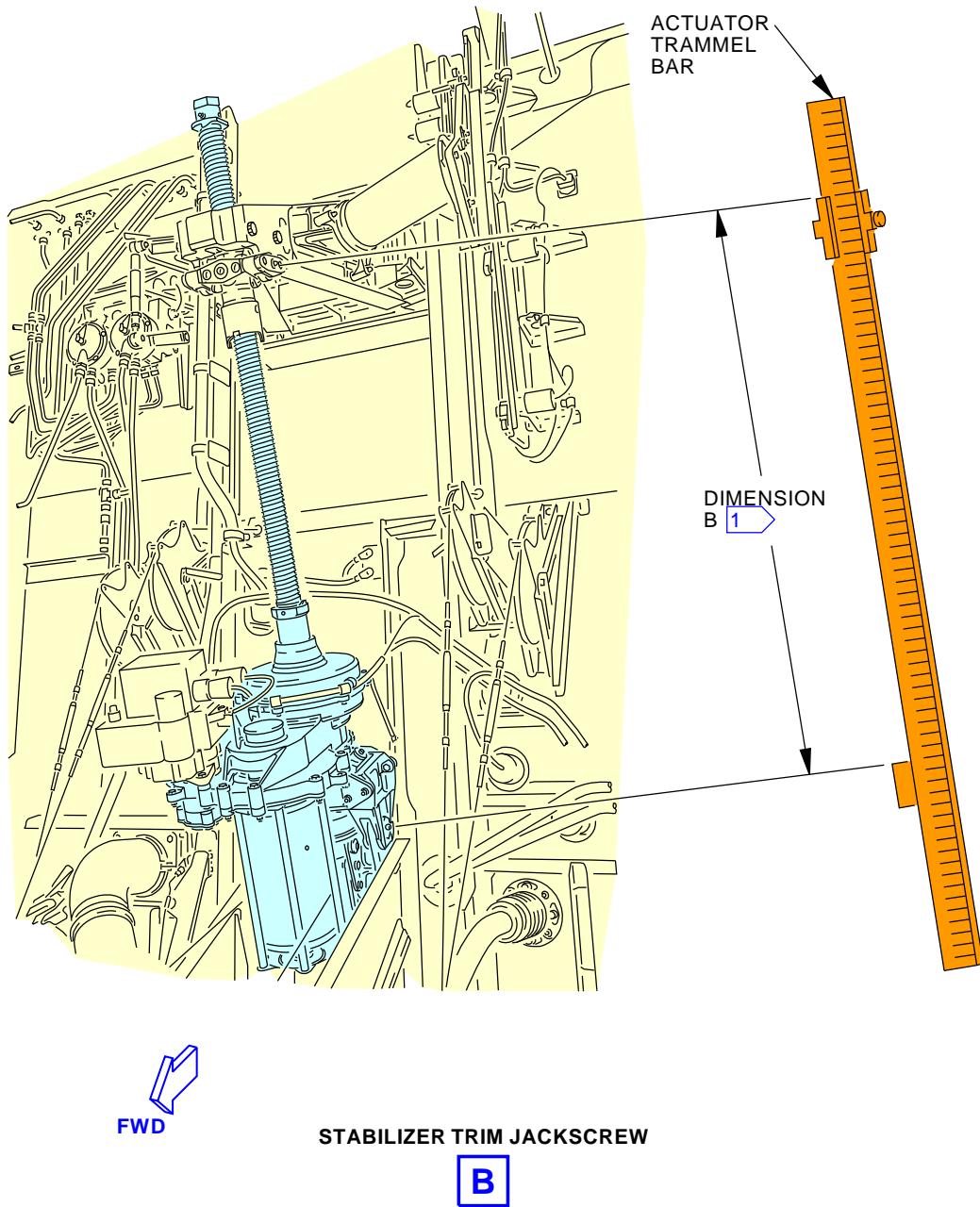
G23233 S0006563817_V3

Stabilizer Trim Jackscrew Setting
Figure 502/22-11-00-990-802 (Sheet 1 of 2)

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**NOTE:**

THE STABILIZER TRIM JACKSCREW IS SHOWN WITH THE STABILIZER LEADING EDGE AT ZERO DEGREE.

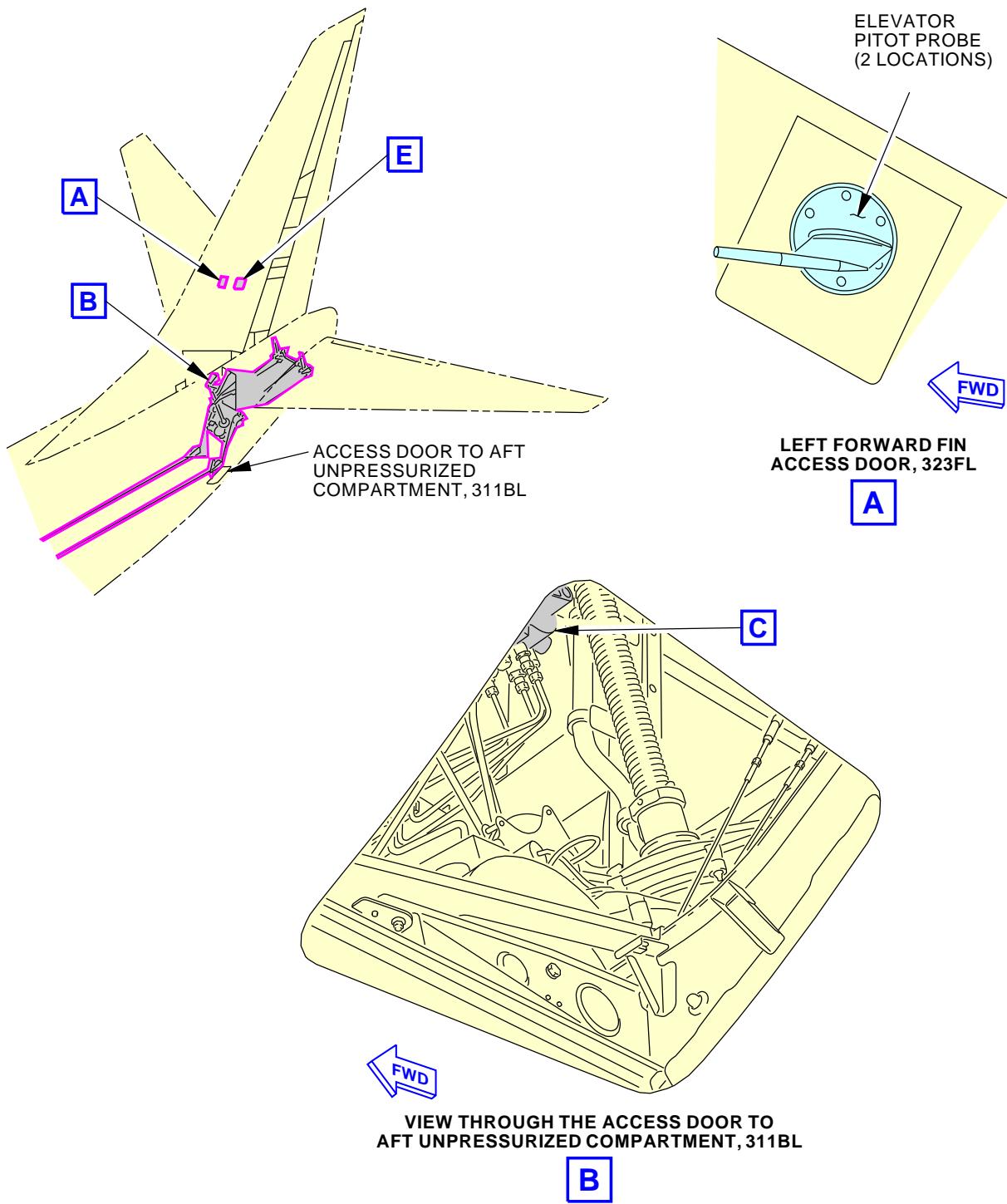
- [1] THE DIMENSION B IS MEASURED BETWEEN THE CENTER OF THE UPPER AND LOWER GIMBAL PINS.

G23234 S0006563818_V2

Stabilizer Trim Jackscrew Setting
Figure 502/22-11-00-990-802 (Sheet 2 of 2)

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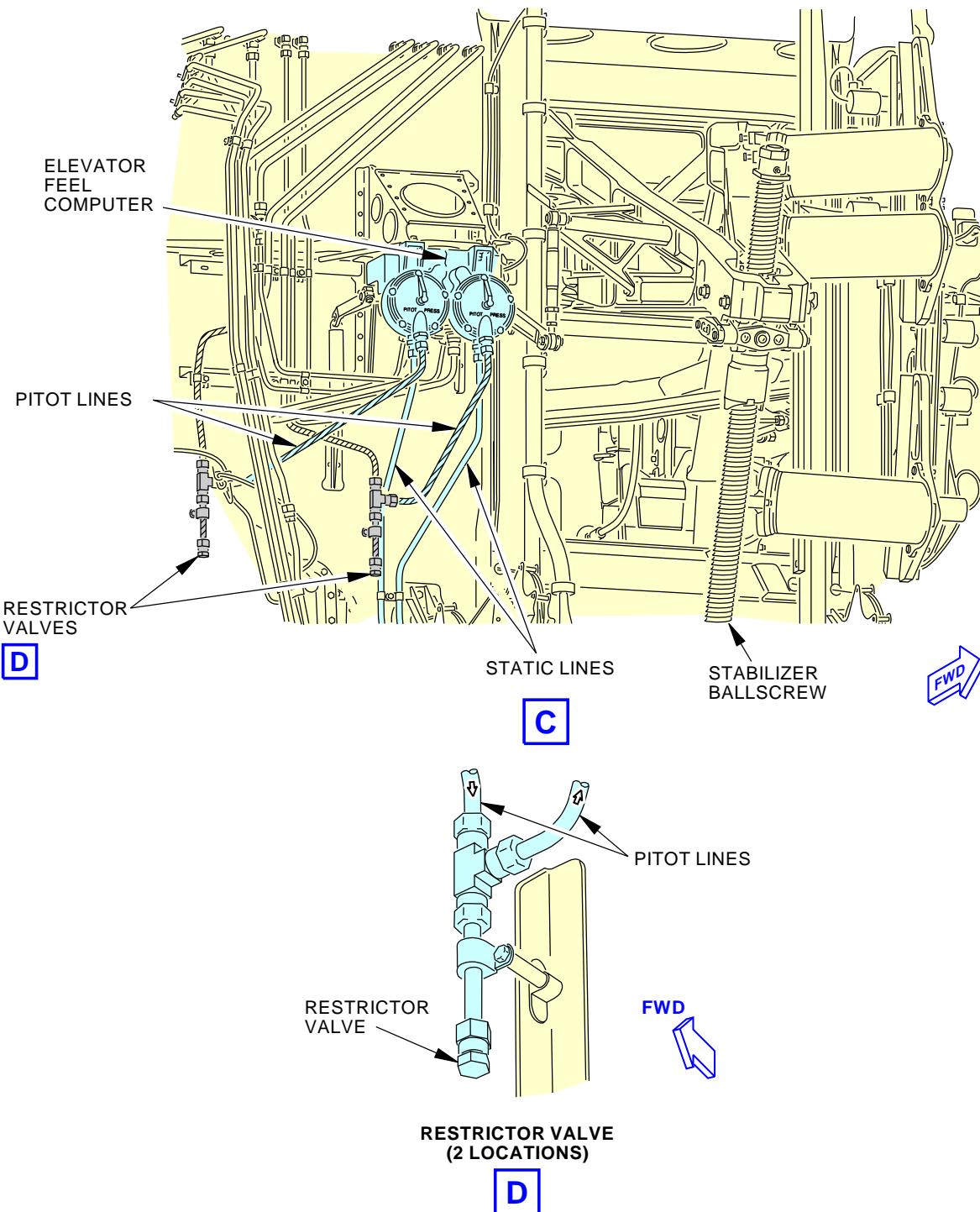
G20561 S0006569376_V4

Elevator Pitot Static System Installation
Figure 503/22-11-00-990-806 (Sheet 1 of 3)

EFFECTIVITY
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G20563 S0006569377_V3

Elevator Pitot Static System Installation
Figure 503/22-11-00-990-806 (Sheet 2 of 3)

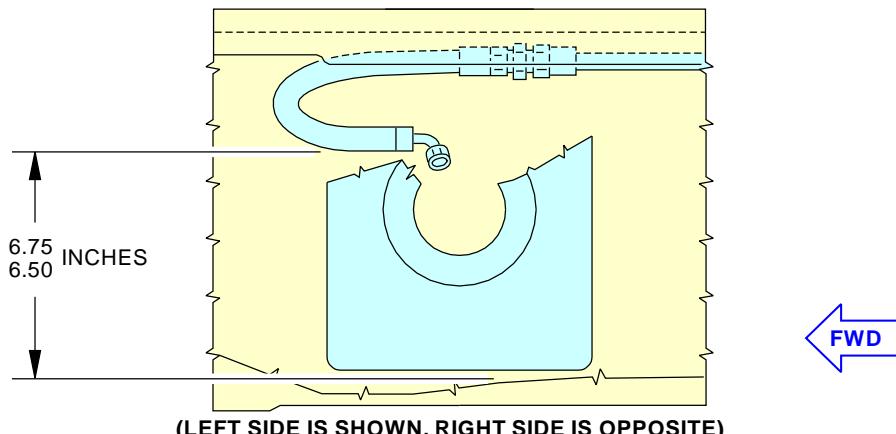
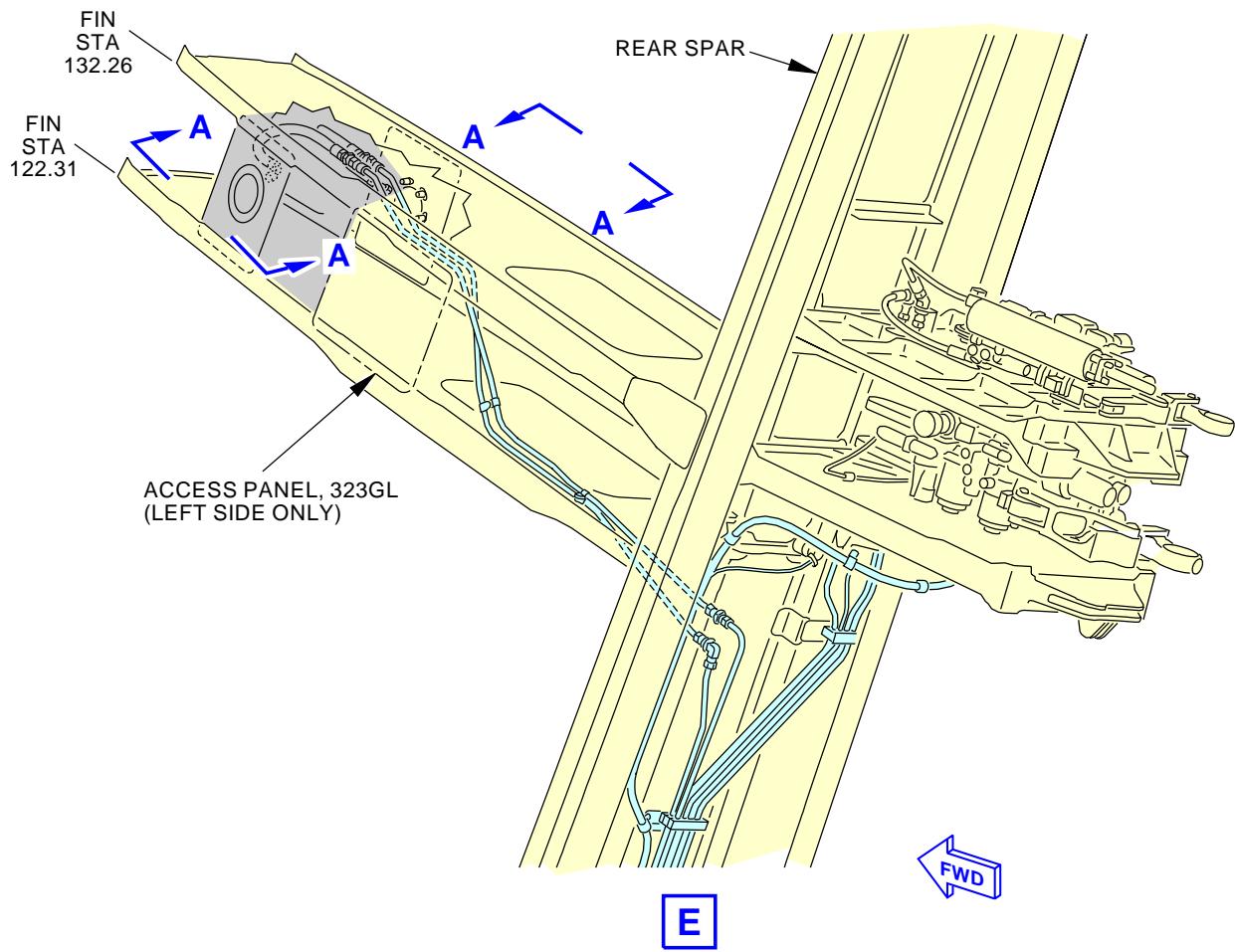
EFFECTIVITY
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L03807 S0006569378_V3

Elevator Pitot Static System Installation
Figure 503/22-11-00-990-806 (Sheet 3 of 3)

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TASK 22-11-00-820-803

16. Aileron Rigging Test

A. General

- (1) The Aileron Rigging Test does a check on the interfaces between the Digital Flight Control System (DFCS) and the aileron system wiring and sensors.

B. References

Reference	Title
24-22-00-860-811	Supply Electrical Power (P/B 201)
24-22-00-860-812	Remove Electrical Power (P/B 201)
29-11-00-860-801	Hydraulic System A or B Pressurization (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)

C. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

D. Prepare for the Test

SUBTASK 22-11-00-860-137

- (1) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

SUBTASK 22-11-00-860-295

- (2) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
D	18	C00451	LANDING GEAR AURAL WARN

SUBTASK 22-11-00-860-138

- (3) Set the autopilot stab trim cutout switch, on the control stand, to the CUTOUT position.

SUBTASK 22-11-00-860-139

- (4) Make sure that the VHF NAV and IRS switches, on the P5 forward overhead panel, are in the NORMAL positions.

SUBTASK 22-11-00-860-140

- (5) Set the left and right IRS select switches, on the P5 aft overhead panel, to the ALIGN or NAV position.

SUBTASK 22-11-00-860-141

WARNING: KEEP PERSONS AND EQUIPMENT AWAY FROM THE FLIGHT CONTROL SURFACES. THE AILERONS, ELEVATORS, RUDDER, FLAPS, SLATS, SPOILERS, STABILIZER AND NOSE GEAR CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (6) Supply hydraulic power to hydraulic systems A and B. To supply hydraulic power, do this task: Hydraulic System A or B Pressurization, TASK 29-11-00-860-801.

SUBTASK 22-11-00-980-008

- (7) Set the aileron trim to 0 unit.

SUBTASK 22-11-00-980-010

- (8) Set the speed brake handle to the down position.

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E. Procedure

SUBTASK 22-11-00-740-039

- (1) Push the INIT REF key on the CDU keyboard.

- (a) Push the Line Select Key (LSK) that is adjacent to each selection:

- 1) INDEX
- 2) MAINT
- 3) DFCS
- 4) EXTENDED MAINTENANCE
- 5) RIGGING
- 6) AILERON

NOTE: After you make this selection, then CONTINUE shows. Do the instructions that show on the CDU display before you push the LSK that is adjacent to CONTINUE.

- 7) COMPLETE AIL RIG

NOTE: This selection contains the AIL RIG, AIL AUTHORITY and SPOILER tests.

- 8) During this test, do the instructions that show on the CDU display.

- 9) After you do the instructions that show on the CDU display, push the LSK that is adjacent to CONTINUE.

- (b) Do the Aileron Rigging Check:

- 1) Make sure that the values for the A and B sides are between the limits that show on the CDU display or in this task.

Table 557/22-11-00-993-881

Test		Limits
52.01	AIL POS (VAC)	-0.06 to 0.06

- 2) Make sure that the outboard surfaces of the left and right aileron are 0.245 (± 0.05) inches down from the adjacent fixed structure panel.

- 3) Test limits:

Table 558/22-11-00-993-882

Test 52.02 AIL POS (VAC) Limits: -0.06 to 0.06
--

- 4) Make sure that the left and right ailerons do not move.

Table 559/22-11-00-993-883

Test		Limits
52.03:	AIL POS (VAC)	-0.06 to 0.06
Test 52.04Limits	AIL LVDT (VAC) :	-0.08 to 0.08
Test 52.05Limits	AIL POS (VAC)	: -0.06 to 0.06

- (c) Do the Aileron Authority Check:

- 1) Push the LSK that is adjacent to CONTINUE.

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Table 560/22-11-00-993-884

Test		Limits
52.07	AIL LVDT (DEG)	4.90 to 5.10
52.08	AIL POS (VAC)	1.95 to 2.39

- 2) Make sure that the outboard surface of the right aileron is 0.98 (± 0.15) inches above the adjacent fixed structure panel.
- 3) Make sure that the outboard surface of the left aileron is 1.47 (± 0.15) inches below the adjacent fixed structure panel.
- 4) Test limits:

Table 561/22-11-00-993-885

Test 52.09 AIL LVDT (DEG) Limits: -5.10 to -4.90
Test 52.10 AIL POS (VAC) Limits: -2.47 to -2.00

- 5) Make sure that the outboard surface of the left aileron is 0.98 (± 0.15) inches above the adjacent fixed structure panel.
- 6) Make sure that the outboard surface of the right aileron is 1.47 (± 0.15) inches below the adjacent fixed structure panel.
- 7) Test limits:

Table 562/22-11-00-993-886

Test 52.11 SURF DELTA (VAC) Limits: 0.00 to 0.38
Test 52.12 AIL POS (VAC) Limits: -0.44 to 0.44
Test 52.13 SURF DELTA (VAC) Limits: 0.00 to 0.38
Test 52.14 AIL POS (VAC) Limits: -0.44 to 0.44
Test 52.15 AIL LVDT (VAC) Limits: -0.08 to 0.08
Test 52.16 AIL POS (VAC) Limits: -0.06 to 0.06
Test 52.17 AIL POS (VAC) Limits: -0.06 to 0.06
Test 52.18 AIL POS (VAC) Limits: -0.06 to 0.06
Test 52.19 AIL POS (VAC) Limits: -0.06 to 0.06
Test 52.20 AIL POS (VAC) Limits: -0.38 to 0.38
Test 52.21 AIL POS (VAC) Limits: -0.38 to 0.38

- (d) Do the Spoiler Check:
 - 1) Push the LSK that is adjacent to CONTINUE.
 - 2) Make sure that the values for the A side and B side are between the limits that show on the CDU display or in this task.

Table 563/22-11-00-993-887

Test		Limits

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Table 563/22-11-00-993-887 (Continued)

52.23	SPOILER 4 (VAC)	-0.20 to 0.20
52.24	SPOILER 9 (VAC)	-0.20 to 0.20
52.25	SPOILER 4 (VAC)	4.15 to 5.39
52.26	SPOILER 9 (VAC)	4.15 to 5.39

- 3) Do these steps to get out of the BITE test:

NOTE: If there are instructions on the CDU display, it is necessary to do the instructions that show on the CDU display.

- a) Push the LSK adjacent to PREV MENU.
- b) Push the LSK adjacent to CONTINUE on the test 52.00 screen.
- c) Push the LSK adjacent to PREV MENU on the AILERON RIGGING screen.
- d) Push the LSK adjacent to CONTINUE on the RIGGING INDEX screen.
- e) Push the LSK adjacent to EXIT until you get out of the BITE test.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 22-11-00-860-142

- (1) Push the captain's or first officer's autopilot disengage switch, on the control wheel, to make sure that the autopilot is disengaged.

SUBTASK 22-11-00-860-218

- (2) Remove the safety tag and close this circuit breaker:

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	18	C00451	LANDING GEAR AURAL WARN

SUBTASK 22-11-00-860-144

- (3) Set the autopilot stab trim cutout switch, on the control stand, to the NORMAL position.

SUBTASK 22-11-00-860-145

- (4) Remove hydraulic power from hydraulic systems A and B. To remove hydraulic power, do this task: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805.

SUBTASK 22-11-00-860-146

- (5) Do this task: Remove Electrical Power, TASK 24-22-00-860-812.

———— END OF TASK ————

TASK 22-11-00-820-804

17. Flaps Rigging Test

A. General

- (1) The Flaps Rigging Test does a check on the interfaces between the Digital Flight Control System (DFCS) and the flap system wiring and sensors.

B. References

<u>Reference</u>	<u>Title</u>
24-22-00-860-811	Supply Electrical Power (P/B 201)
24-22-00-860-812	Remove Electrical Power (P/B 201)
29-11-00-860-801	Hydraulic System A or B Pressurization (P/B 201)

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(Continued)

Reference	Title
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)

C. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

D. Prepare for the Test

SUBTASK 22-11-00-860-147

- (1) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

SUBTASK 22-11-00-860-294

- (2) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
D	18	C00451	LANDING GEAR AURAL WARN

SUBTASK 22-11-00-860-148

- (3) Set the autopilot stab trim cutout switch, on the control stand, to the CUTOUT position.

SUBTASK 22-11-00-860-149

- (4) Make sure that the VHF NAV and IRS switches, on the P5 forward overhead panel, are in the NORMAL positions.

SUBTASK 22-11-00-860-150

- (5) Set the left and right IRS select switches, on the P5 aft overhead panel, to the ALIGN or NAV position.

SUBTASK 22-11-00-860-151

WARNING: KEEP PERSONS AND EQUIPMENT AWAY FROM THE FLIGHT CONTROL SURFACES. THE AILERONS, ELEVATORS, RUDDER, FLAPS, SLATS, SPOILERS, STABILIZER AND NOSE GEAR CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (6) Supply hydraulic power to hydraulic systems A and B. To supply hydraulic power, do this task: Hydraulic System A or B Pressurization, TASK 29-11-00-860-801.

E. Procedure

SUBTASK 22-11-00-740-033

- (1) Push the INIT REF key on the CDU keyboard.
 - (a) Push the Line Select Key (LSK) that is adjacent to each selection:
 - 1) INDEX
 - 2) MAINT
 - 3) DFCS
 - 4) EXTENDED MAINTENANCE
 - 5) RIGGING



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6) FLAPS

NOTE: After you make this selection, the CONTINUE shows. Do the instructions that show on the CDU display before you push the LSK that is adjacent to CONTINUE.

- 7) During this test, do the instructions that show on the CDU display.
- 8) After you do the instructions that show on the CDU display, push the LSK that is adjacent to CONTINUE.
- 9) Make sure that the values for the A and B sides are between the limits that show on the CDU display or in this task.

Table 564/22-11-00-993-888

Test		Limits
53.01	FLAP SYNCRO (DEG)	315 to 8
53.02	FLAP SYNCRO (DEG)	26 to 42
53.03	FLAP SYNCRO (DEG)	71 to 84
53.04	FLAP SYNCRO (DEG)	105 to 122
53.05	FLAP SYNCRO (DEG)	146 to 159
53.06	FLAP SYNCRO (DEG)	171 to 193
53.07	FLAP SYNCRO (DEG)	199 to 219
53.08	FLAP SYNCRO (DEG)	234 to 246
53.09	FLAP SYNCRO (DEG)	266 to 315

- 10) Do these steps to get out of the BITE test:

NOTE: If there are instructions on the CDU display, it is necessary to do the instructions that show on the CDU display.

- a) Push the LSK adjacent PREV MENU on test 53.09 screen.
- b) Push the LSK adjacent to CONTINUE on the RIGGING INDEX screen.
- c) Push the LSK adjacent to EXIT until you get out of the BITE test.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 22-11-00-860-152

- (1) Push the captain's or first officer's autopilot disengage switch, on the control wheel, to make sure that the autopilot is disengaged.

SUBTASK 22-11-00-860-219

- (2) Remove the safety tag and close this circuit breaker:

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
D	18	C00451	LANDING GEAR AURAL WARN

SUBTASK 22-11-00-860-154

- (3) Set the autopilot stab trim cutout switch, on the control stand, to the NORMAL position.

SUBTASK 22-11-00-860-155

- (4) Remove hydraulic power from hydraulic systems A and B. To remove hydraulic power, do this task: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805.

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SUBTASK 22-11-00-860-156

- (5) Do this task: Remove Electrical Power, TASK 24-22-00-860-812.

———— END OF TASK ————

TASK 22-11-00-820-805

18. Stabilizer Rigging Test

A. General

- (1) The Stabilizer Rigging Test does a check on the interfaces between the Digital Flight Control System (DFCS) and the stabilizer system wiring and sensors.

B. References

Reference	Title
24-22-00-860-811	Supply Electrical Power (P/B 201)
24-22-00-860-812	Remove Electrical Power (P/B 201)
29-11-00-860-801	Hydraulic System A or B Pressurization (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1677	Assembly - Trammel Bar, Stabilizer Trim Actuator Part #: F80055-10 Supplier: 81205 Opt Part #: F80055-1 Supplier: 81205

D. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right
311	Area Aft of Pressure Bulkhead - Left

E. Access Panels

Number	Name/Location
311BL	Stabilizer Trim Access Door

F. Prepare for the Test

SUBTASK 22-11-00-860-157

- (1) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

SUBTASK 22-11-00-860-293

- (2) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
D	18	C00451	LANDING GEAR AURAL WARN

SUBTASK 22-11-00-860-158

- (3) Make sure that the autopilot stab trim cutout switch, on the control stand, is in the NORMAL position.

NOTE: It is necessary that the switch is in the NORMAL position for the stabilizer rigging test.

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SUBTASK 22-11-00-860-159

- (4) Make sure that the VHF NAV and IRS switches, on the P5 forward overhead panel, are in the NORMAL positions.

SUBTASK 22-11-00-860-160

- (5) Set the left and right IRS select switches, on the P5 aft overhead panel, to the ALIGN or NAV position.

SUBTASK 22-11-00-860-161

WARNING: KEEP PERSONS AND EQUIPMENT AWAY FROM THE FLIGHT CONTROL SURFACES. THE AILERONS, ELEVATORS, RUDDER, FLAPS, SLATS, SPOILERS, STABILIZER AND NOSE GEAR CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (6) Supply hydraulic power to hydraulic systems A and B. To supply hydraulic power, do this task: Hydraulic System A or B Pressurization, TASK 29-11-00-860-801.

SUBTASK 22-11-00-010-002

- (7) To get access to the stabilizer trim jackscrew, open this access door:

Number Name/Location

311BL Stabilizer Trim Access Door

SUBTASK 22-11-00-980-011

- (8) Do these steps to set the B dimension (Figure 502):

NOTE: The B dimension is measured between the center of the upper and lower Gimbal pins on the stabilizer trim jackscrew. To do this, one person must be in the tail of the airplane with a headset and the other person in the flight compartment.

- (a) Turn the stab trim wheel handle on the control stand to set the B dimension.
- (b) Use the trammel bar, SPL-1677 to measure the B dimension.
- (c) Make sure that the B dimension is 39.89 (± 0.01) inches.

G. Procedure

SUBTASK 22-11-00-740-034

- (1) Push the INIT REF key on the CDU keyboard.

- (a) Push the Line Select Key (LSK) that is adjacent to each selection:

- 1) INDEX
- 2) MAINT
- 3) DFCS
- 4) EXTENDED MAINTENANCE
- 5) RIGGING
- 6) STABILIZER

NOTE: After you make this selection, the CONTINUE shows. Do the instructions that show on the CDU display before you push the LSK that is adjacent to CONTINUE.

- 7) During this test, do the instructions that show on the CDU display.
- 8) After you do the instructions that show on the CDU display, push the LSK that is adjacent to CONTINUE.



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- 9) Make sure that the values for the A and B sides are between the limits that show on the CDU display or in this task.

Table 565/22-11-00-993-889

Test		Limits
54.01	STAB POS (vac)	: -0.07 to 0.07

- 10) Use the trammel bar, SPL-1677 to measure the B dimension.
 11) Make sure that the B dimension is 39.89 (± 0.01) inches.

Table 566/22-11-00-993-890

Test		Limits
54.02	STAB POS (VAC)	: -1.30 to -1.16
54.03	STAB POS (VAC)	-2.51 to -2.31

- 12) Do these steps when the stabilizer stops to move:
 a) Use the trammel bar, SPL-1677 to measure the B dimension.
 b) Make sure that the B dimension is between 45.43 and 45.53 inches.
 13) Push the LSK adjacent to NO if the test shows no failures.

Table 567/22-11-00-993-892

Test		Limits
54.04	STAB POS (VAC)	5.07 to 5.21
54.05	STAB POS (VAC)	6.47 to 7.07

- 14) Do these steps when the stabilizer stops to move:
 a) Use the trammel bar, SPL-1677 to measure the B dimension.
 b) Make sure that the B dimension is between 24.75 and 24.85 inches.
 15) Push the LSK adjacent to NO if the test shows no failures.

AKS ALL; AIRPLANES WITH FCC SOFTWARE -704 OR SUBSEQUENT

- (b) Make sure that the values for the A and B sides are between the limits that show on the CDU display or in this task.

Table 568/22-11-00-993-894

Test		Limits
54.06	STAB POS (VAC)	-0.07 to 0.07
54.07	ELEV POS (DEG)	4.10 to 6.20

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- 1) Use these limits:

Table 569/22-11-00-993-897

Test		Limits
54.08	ELEV POS (DEG)	-9.61 to -7.44

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AKS ALL; AIRPLANES WITH FCC SOFTWARE -704 OR SUBSEQUENT

- 2) Do these steps to get out of the BITE test:

NOTE: If there are instructions on the CDU display, it is necessary to do the instructions that show on the CDU display.

- a) Push the LSK adjacent PREV MENU on the END OF STAB RIG screen.
- b) Push the LSK adjacent to EXIT on the RIGGING INDEX screen.
- c) Push the LSK adjacent to CONTINUE on the END OF BITE RIGGING screen.
- d) Push the LSK adjacent to EXIT until you get out of the BITE test.

AKS ALL

H. Put the Airplane Back to Its Usual Condition

SUBTASK 22-11-00-860-162

- (1) Push the captain's or first officer's autopilot disengage switch, on the control wheel, to make sure that the autopilot is disengaged.

SUBTASK 22-11-00-860-220

- (2) Remove the safety tag and close this circuit breaker:

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	18	C00451	LANDING GEAR AURAL WARN

SUBTASK 22-11-00-860-164

- (3) Set the autopilot stab trim cutout switch, on the control stand, to the NORMAL position.

SUBTASK 22-11-00-860-165

- (4) Remove hydraulic power from hydraulic systems A and B. To remove hydraulic power, do this task: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805.

SUBTASK 22-11-00-860-166

- (5) Do this task: Remove Electrical Power, TASK 24-22-00-860-812.

SUBTASK 22-11-00-410-002

- (6) Close this access door:

<u>Number</u>	<u>Name/Location</u>
311BL	Stabilizer Trim Access Door

———— END OF TASK ————

TASK 22-11-00-820-806

19. Pitch Control Wheel Steering Rigging Test

A. General

- (1) The Pitch Control Wheel Steering Rigging Test does a check on the interfaces between the Digital Flight Control System (DFCS) and the pitch control wheel steering (CWS) system wiring and sensors.

B. References

<u>Reference</u>	<u>Title</u>
24-22-00-860-811	Supply Electrical Power (P/B 201)
24-22-00-860-812	Remove Electrical Power (P/B 201)
29-11-00-860-801	Hydraulic System A or B Pressurization (P/B 201)



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(Continued)

Reference	Title
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
COM-1557	Gauge - Force Part #: DG-200 Supplier: 92456 Part #: FDIX 100 Supplier: 0BFD9 Part #: FDIX 50 Supplier: 0BFD9 Part #: LG-050 Supplier: 92456 Part #: LG-100 Supplier: 92456 Opt Part #: DPP-500G Supplier: 92456 Opt Part #: DPPH-150 Supplier: 92456 Opt Part #: DPPH-200 Supplier: 92456 Opt Part #: DPPH-50 Supplier: 92456 Opt Part #: FDI 100 Supplier: 0BFD9 Opt Part #: FDI 50 Supplier: 0BFD9 Opt Part #: FDV 100 Supplier: 0BFD9 Opt Part #: FDV 50 Supplier: 0BFD9
SPL-1677	Assembly - Trammel Bar, Stabilizer Trim Actuator Part #: F80055-10 Supplier: 81205 Opt Part #: F80055-1 Supplier: 81205

D. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right
311	Area Aft of Pressure Bulkhead - Left

E. Access Panels

Number	Name/Location
311BL	Stabilizer Trim Access Door

F. Prepare for the Test

SUBTASK 22-11-00-860-167

- (1) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

SUBTASK 22-11-00-860-292

- (2) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
D	18	C00451	LANDING GEAR AURAL WARN

SUBTASK 22-11-00-860-168

- (3) Set the autopilot stab trim cutout switch, on the control stand, to the CUTOUT position.

SUBTASK 22-11-00-860-169

- (4) Make sure that the VHF NAV and IRS switches, on the P5 forward overhead panel, are in the NORMAL positions.

EFFECTIVITY
AKS ALL

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SUBTASK 22-11-00-860-170

- (5) Set the left and right IRS select switches, on the P5 aft overhead panel, to the ALIGN or NAV position.

SUBTASK 22-11-00-860-171

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- (6) Supply hydraulic power to hydraulic systems A and B. To supply hydraulic power, do this task: Hydraulic System A or B Pressurization, TASK 29-11-00-860-801.

SUBTASK 22-11-00-010-003

- (7) To get access to the stabilizer trim jackscrew, open this access door:

Number Name/Location

311BL Stabilizer Trim Access Door

SUBTASK 22-11-00-980-012

- (8) Do these steps to set the B dimension (Figure 502):

NOTE: The B dimension is measured between the center of the upper and lower Gimbal pins on the stabilizer trim jackscrew. To do this, one person must be in the tail of the airplane with a headset and the other person in the flight compartment.

- (a) Turn the stab trim wheel handle on the control stand to set the B dimension.
- (b) Use the trammel bar, SPL-1677 to measure the B dimension.
- (c) Make sure that the B dimension is 39.89 (± 0.01) inches.

G. Procedure

SUBTASK 22-11-00-740-035

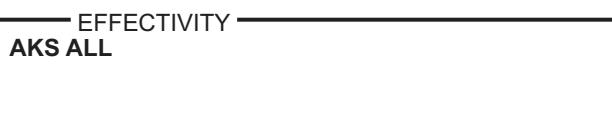
- (1) Push the INIT REF key on the CDU keyboard.

- (a) Push the Line Select Key (LSK) that is adjacent to each selection:

- 1) INDEX
 - 2) MAINT
 - 3) DFCS
 - 4) EXTENDED MAINTENANCE
 - 5) RIGGING
 - 6) CWS

NOTE: After you make this selection, the CONTINUE shows. Do the instructions that show on the CDU display before you push the LSK that is adjacent to CONTINUE.

- 7) PITCH CWS
- 8) During this test, do the instructions that show on the CDU display.
- 9) Make sure that the values for the A and B sides are between the limits that show on the CDU display or in this task.



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- 10) When the CDU display shows "Pull or push the captain (or first officer) column to xx.x LBS on scale", use the push and pull spring force gauge, COM-1557 to measure the force that you put on the control column.
NOTE: Where xx.x is a number.
- 11) Make sure that you apply the force at the center of the control wheel hub and it is perpendicular to the control column.
NOTE: It is not necessary to apply force to the control column for Test 55.01 through Test 55.04.
- 12) After you do the instructions that show on the CDU display, push the LSK that is adjacent to CONTINUE.

Table 570/22-11-00-993-898

Test		Limits
55.01	STAB POS (vac)	-0.07 to 0.07

- 13) Use the trammel bar, SPL-1677 to measure the B dimension.
- 14) Make sure that the B dimension is 39.89 (± 0.01) inches.

Table 571/22-11-00-993-900

Test		Limits
55.02	PCWS FORCE (VAC)	-0.20 to +0.20
55.03	PCWS FORCE (VAC)	-0.20 to +0.20
55.04	PCWS FORCE (VAC)	-0.20 to +0.20
55.05	PCWS FORCE (LBS)	3.0 to 9.1
55.06	PCWS FORCE (LBS)	14.7 to 22.0
55.07	PCWS FORCE (LBS)	20.6 to 28.4
55.08	PCWS FORCE (LBS)	3.0 to 9.1
55.09	PCWS FORCE (LBS)	14.7 to 22.0
55.10	PCWS FORCE (LBS)	20.6 to 28.4
55.11	PCWS FORCE (LBS)	3.0 to 9.1
55.12	PCWS FORCE (LBS)	14.7 to 22.0
55.13	PCWS FORCE (LBS)	20.6 to 28.4
55.14	PCWS FORCE (LBS)	3.0 to 9.1
55.15	PCWS FORCE (LBS)	14.7 to 22.0
55.16	PCWS FORCE (LBS)	20.6 to 28.4

- 15) Do these steps to get out of the BITE test:

NOTE: If there are instructions on the CDU display, it is necessary to do the instructions that show on the CDU display.

- a) Push the LSK adjacent to CONTINUE on test 55.16 screen.
- b) Push the LSK adjacent to PREV MENU on the CWS RIGGING INDEX screen.
- c) Push the LSK adjacent to CONTINUE on the RIGGING INDEX screen.
- d) Push the LSK adjacent to EXIT until you get out of the BITE test.

EFFECTIVITY
AKS ALL

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H. Put the Airplane Back to Its Usual Condition

SUBTASK 22-11-00-860-172

- (1) Push the captain's or first officer's autopilot disengage switch, on the control wheel, to make sure that the autopilot is disengaged.

SUBTASK 22-11-00-860-221

- (2) Remove the safety tag and close this circuit breaker:

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	18	C00451	LANDING GEAR AURAL WARN

SUBTASK 22-11-00-860-174

- (3) Set the autopilot stab trim cutout switch, on the control stand, to the NORMAL position.

SUBTASK 22-11-00-860-175

- (4) Remove hydraulic power from hydraulic systems A and B. To remove hydraulic power, do this task: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805.

SUBTASK 22-11-00-860-176

- (5) Do this task: Remove Electrical Power, TASK 24-22-00-860-812.

SUBTASK 22-11-00-410-003

- (6) Close this access door:

<u>Number</u>	<u>Name/Location</u>
311BL	Stabilizer Trim Access Door

———— END OF TASK ————

TASK 22-11-00-820-807

20. Roll Control Wheel Steering Rigging Test

A. General

- (1) The Roll Control Wheel Steering Rigging Test does a check on the interfaces between the Digital Flight Control System (DFCS) and the roll control wheel steering (CWS) system wiring and sensors.

B. References

<u>Reference</u>	<u>Title</u>
24-22-00-860-811	Supply Electrical Power (P/B 201)
24-22-00-860-812	Remove Electrical Power (P/B 201)
29-11-00-860-801	Hydraulic System A or B Pressurization (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

<u>Reference</u>	<u>Description</u>
SPL-1674	Assembly - Adapter, Control Wheel, Torque and Force Test Part #: C27060-1 Supplier: 81205 Opt Part #: F72867-1 Supplier: 81205
STD-1293	Wrench - Torque (100 Lb-In)

EFFECTIVITY
AKS ALL

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D. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

E. Prepare for the Test

SUBTASK 22-11-00-860-177

- (1) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

SUBTASK 22-11-00-860-291

- (2) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
D	18	C00451	LANDING GEAR AURAL WARN

SUBTASK 22-11-00-860-178

- (3) Set the autopilot stab trim cutout switch, on the control stand, to the CUTOUT position.

SUBTASK 22-11-00-860-179

- (4) Make sure that the VHF NAV and IRS switches, on the P5 forward overhead panel, are in the NORMAL positions.

SUBTASK 22-11-00-860-180

- (5) Set the left and right IRS select switches, on the P5 aft overhead panel, to the ALIGN or NAV position.

SUBTASK 22-11-00-860-181

WARNING: KEEP PERSONS AND EQUIPMENT AWAY FROM THE FLIGHT CONTROL SURFACES. THE AILERONS, ELEVATORS, RUDDER, FLAPS, SLATS, SPOILERS, STABILIZER AND NOSE GEAR CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (6) Supply hydraulic power to hydraulic systems A and B. To supply hydraulic power, do this task: Hydraulic System A or B Pressurization, TASK 29-11-00-860-801.

SUBTASK 22-11-00-480-001

- (7) Install the control wheel torque wrench adapter, SPL-1674.

F. Procedure

SUBTASK 22-11-00-740-036

- (1) Push the INIT REF key on the CDU keyboard.

- (a) Push the Line Select Key (LSK) that is adjacent to each selection:
- 1) INDEX
 - 2) MAINT
 - 3) DFCS
 - 4) EXTENDED MAINTENANCE
 - 5) RIGGING
 - 6) CWS

NOTE: After you make this selection, the CONTINUE shows. Do the instructions that show on the CDU display before you push the LSK that is adjacent to CONTINUE.

EFFECTIVITY _____
AKS ALL

22-11-00



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- 7) ROLL CWS
- 8) During this test, do the instructions that show on the CDU display.
- 9) Make sure that the values for the A and B sides are between the limits that show on the CDU display or in this task.
- 10) When the CDU display shows "Torque wheel clockwise (or counter-clockwise) to x LBS on scale", use the control wheel torque wrench (100 Lb-In), STD-1293 to measure the force that you put on the control wheel.
NOTE: Where x is a number.
NOTE: It is not necessary to apply force to the control wheel for Test 55.18.
- 11) After you do the instructions that show on the CDU display, push the LSK that is adjacent to CONTINUE.

Table 572/22-11-00-993-902

Test		Limits
55.18	RCWS SENSOR (VAC)	-0.15 to 0.15
55.19	RCWS FORCE (IN-LBS)	14 to 26
55.20	RCWS FORCE (IN-LBS)	60 to 100
55.21	RCWS FORCE (IN-LBS)	14 to 26
55.22	RCWS FORCE (IN-LBS)	60 to 100

- 12) Do these steps to get out of the BITE test:
NOTE: If there are instructions on the CDU display, it is necessary to do the instructions that show on the CDU display.
 - a) Push the LSK adjacent to PREV MENU on test 55.22 screen.
 - b) Push the LSK adjacent to PREV MENU on the CWS RIGGING INDEX screen.
 - c) Push the LSK adjacent to CONTINUE on the RIGGING INDEX screen.
 - d) Push the LSK adjacent to EXIT until you get out of the BITE test.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 22-11-00-080-001

- (1) Remove the control wheel torque wrench adapter, SPL-1674.

SUBTASK 22-11-00-860-182

- (2) Push the captain's or first officer's autopilot disengage switch, on the control wheel, to make sure that the autopilot is disengaged.

SUBTASK 22-11-00-860-222

- (3) Remove the safety tag and close this circuit breaker:

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	18	C00451	LANDING GEAR AURAL WARN

SUBTASK 22-11-00-860-184

- (4) Set the autopilot stab trim cutout switch, on the control stand, to the NORMAL position.

SUBTASK 22-11-00-860-185

- (5) Remove hydraulic power from hydraulic systems A and B. To remove hydraulic power, do this task: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805.

EFFECTIVITY
AKS ALL

22-11-00



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SUBTASK 22-11-00-860-186

- (6) Do this task: Remove Electrical Power, TASK 24-22-00-860-812.

———— END OF TASK ————

TASK 22-11-00-820-808

21. Mach Trim Rigging Test

A. General

- (1) The Mach Trim Rigging Test does a check on the interfaces between the Digital Flight Control System (DFCS) and the Mach trim system wiring and sensors.

B. References

Reference	Title
24-22-00-860-811	Supply Electrical Power (P/B 201)
24-22-00-860-812	Remove Electrical Power (P/B 201)
29-11-00-860-801	Hydraulic System A or B Pressurization (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1677	Assembly - Trammel Bar, Stabilizer Trim Actuator Part #: F80055-10 Supplier: 81205 Opt Part #: F80055-1 Supplier: 81205

D. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right
311	Area Aft of Pressure Bulkhead - Left

E. Access Panels

Number	Name/Location
311BL	Stabilizer Trim Access Door

F. Prepare for the Test

SUBTASK 22-11-00-860-187

- (1) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

SUBTASK 22-11-00-860-290

- (2) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
D	18	C00451	LANDING GEAR AURAL WARN

SUBTASK 22-11-00-860-188

- (3) Set the autopilot stab trim cutout switch, on the control stand, to the CUTOUT position.

EFFECTIVITY
AKS ALL

22-11-00



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SUBTASK 22-11-00-860-189

- (4) Make sure that the VHF NAV and IRS switches, on the P5 forward overhead panel, are in the NORMAL positions.

SUBTASK 22-11-00-860-190

- (5) Set the left and right IRS select switches, on the P5 aft overhead panel, to the ALIGN or NAV position.

SUBTASK 22-11-00-860-191

WARNING: KEEP PERSONS AND EQUIPMENT AWAY FROM THE FLIGHT CONTROL SURFACES. THE AILERONS, ELEVATORS, RUDDER, FLAPS, SLATS, SPOILERS, STABILIZER AND NOSE GEAR CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (6) Supply hydraulic power to hydraulic systems A and B. To supply hydraulic power, do this task: Hydraulic System A or B Pressurization, TASK 29-11-00-860-801.

SUBTASK 22-11-00-010-004

- (7) To get access to the stabilizer trim jackscrew, open this access door:

Number Name/Location

311BL Stabilizer Trim Access Door

SUBTASK 22-11-00-980-013

- (8) Do these steps to set the B dimension (Figure 502):

NOTE: The B dimension is measured between the center of the upper and lower Gimbal pins on the stabilizer trim jackscrew. To do this, one person must be in the tail of the airplane with a headset and the other person in the flight compartment.

- (a) Turn the stab trim wheel handle on the control stand to set the B dimension.
- (b) Use the trammel bar, SPL-1677 to measure the B dimension.
- (c) Make sure that the B dimension is 39.89 (± 0.01) inches.

G. Procedure

AKS ALL; AIRPLANES WITH FCC SOFTWARE -704 OR SUBSEQUENT

SUBTASK 22-11-00-740-040

- (1) Push the INIT REF key on the CDU keyboard.

- (a) Push the Line Select Key (LSK) that is adjacent to each selection:

- 1) INDEX
 - 2) MAINT
 - 3) DFCS
 - 4) EXTENDED MAINTENANCE
 - 5) RIGGING
 - 6) MACH TRIM

NOTE: After you make this selection, the CONTINUE shows. Do the instructions that show on the CDU display before you push the LSK that is adjacent to CONTINUE.

- 7) CHANNEL A
 - 8) During this test, do the instructions that show on the CDU display.



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AKS ALL; AIRPLANES WITH FCC SOFTWARE -704 OR SUBSEQUENT (Continued)

- 9) After you do the instructions that show on the CDU display, push the LSK that is adjacent to CONTINUE.
- 10) Make sure that the values for the A side are between the limits that show on the CDU display or in this task.

AKS ALL

NOTE: For aircraft equipped with Collins FCCs, ignore the limits on the FMC-CDU screen for tests 57.11 and 57.29 and use the limits of -0.10 to 0.20. See MT 22-034 for more information.

AKS ALL; AIRPLANES WITH FCC SOFTWARE -704 OR SUBSEQUENT

Table 573/22-11-00-993-919

Test		Limits
57.01	STAB POS (vac)	-0.07 to 0.07

- 11) Use the trammel bar, SPL-1677 to measure the B dimension.
- 12) Make sure that the B dimension is 39.89 (± 0.01) inches.

Table 574/22-11-00-993-920

Test		Limits
57.02	MT ACT POS (vac)	-0.20 to +0.20

Table 575/22-11-00-993-921

Test		Limits
57.03	ELEV SENS (vac)	-0.55 to -0.45

- 13) Make sure that the elevator trailing edge aligns with the elevator index on the tail cone at 0 (± 0.06) inch.

Table 576/22-11-00-993-922

Test		Limits
57.04	RETRACTION (sec)	8 to 20

Table 577/22-11-00-993-923

Test		Limits
57.05	MT ACT POS (deg)	4.55 to 4.90

AKS ALL

Table 578/22-11-00-993-924

Test		Limits
57.06	-DELTA SURF (deg)	4.30 to 5.10

EFFECTIVITY
AKS ALL

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NOTE: Ignore limits on FMC-CDU screen for test 57.06.

AKS ALL; AIRPLANES WITH FCC SOFTWARE -704 OR SUBSEQUENT

- 14) Measure the distance of the elevator trailing edge deflection from the elevator index mark on the tail cone.
- 15) Make sure that the deflection distance is between 2.55 and 3.05 inches from the elevator index mark.

Table 579/22-11-00-993-925

Test		Limits
57.07	EXTENSION (sec)	8 to 20

Table 580/22-11-00-993-926

Test		Limits
57.08	MT ACT POS (vac)	-0.10 to +0.10

Table 581/22-11-00-993-927

Test		Limits
57.09	ELEV POS (vac)	-0.55 to -0.45

- 16) Make sure that the elevator trailing edge aligns with the elevator index on the tail cone at 0 (± 0.06) inch.

Table 582/22-11-00-993-928

Test		Limits
AKS ALL		
57.11	MT ACT POS (DEG)	-0.10 to 0.20
AKS ALL; AIRPLANES WITH FCC SOFTWARE -704 OR SUBSEQUENT		
57.13	MT ACT POS (DEG)	0.56 to 0.68
57.15	MT ACT POS (DEG)	1.31 to 1.60
57.17	MT ACT POS (DEG)	2.50 to 3.10
57.19	MT ACT POS (DEG)	4.55 to 4.90
57.21	MT ACT POS (DEG)	2.50 to 3.10
57.23	MT ACT POS (DEG)	1.31 to 1.60
57.25	MT ACT POS (DEG)	0.56 to 0.68
57.27	MT ACT POS (DEG)	0.10 to 0.20
AKS ALL		
57.29	MT ACT POS (DEG)	-0.10 to 0.20
AKS ALL; AIRPLANES WITH FCC SOFTWARE -704 OR SUBSEQUENT		
57.31	MT ACT POS (DEG)	-1.10 to -0.90
57.33	MT ACT POS (DEG)	-1.90 to -1.56
57.35	MT ACT POS (DEG)	-1.10 to -0.90

EFFECTIVITY
AKS ALL

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AKS ALL; AIRPLANES WITH FCC SOFTWARE -704 OR SUBSEQUENT (Continued)

Table 582/22-11-00-993-928 (Continued)

57.37	MT ACT POS (DEG)	-0.10 to 0.10
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- 17) Push the LSK that is adjacent to PREV MENU.

NOTE: After you make this selection, the BITE takes you back to the SELECT CHANNEL FOR TEST screen.

- 18) Push the LSK that is adjacent to CHANNEL B.

NOTE: The BITE takes you back to Test 57.01. This lets you do the Mach trim rigging test again for the channel B.

- 19) Make sure that the values for the B side are between the limits that show on the CDU display or in this task.

AKS ALL

NOTE: For aircraft equipped with Collins FCCs, ignore the limits on the FMC-CDU screen for tests 57.11 and 57.29 and use the limits of -0.10 to 0.20. See MT 22-034 for more information.

AKS ALL; AIRPLANES WITH FCC SOFTWARE -704 OR SUBSEQUENT

Table 583/22-11-00-993-929

Test		Limits
57.01	STAB POS (vac)	-0.07 to 0.07

- 20) Use the trammel bar, SPL-1677 to measure the B dimension.

- 21) Make sure that the B dimension is 39.89 (± 0.01) inches.

Table 584/22-11-00-993-930

Test		Limits
57.02	MT ACT POS (vac)	-0.20 to +0.20

Table 585/22-11-00-993-931

Test		Limits
57.03	ELEV SENS (vac)	-0.55 to -0.45

- 22) Make sure that the elevator trailing edge aligns with the elevator index on the tail cone at 0 (± 0.06) inch.

Table 586/22-11-00-993-932

Test		Limits
57.04	RETRACTION (sec)	8 to 20

Table 587/22-11-00-993-933

Test		Limits
57.05	MT ACT POS (deg)	4.55 to 4.90

EFFECTIVITY
AKS ALL

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AKS ALL

Table 588/22-11-00-993-934

Test		Limits
57.06	-DELTA SURF (deg)	4.30 to 5.10

NOTE: Ignore limits on FMC-CDU screen for test 57.06.

AKS ALL; AIRPLANES WITH FCC SOFTWARE -704 OR SUBSEQUENT

- 23) Measure the distance of the elevator trailing edge deflection from the elevator index mark on the tail cone.
- 24) Make sure that the deflection distance is between 2.55 and 3.05 inches from the elevator index mark.

Table 589/22-11-00-993-935

Test		Limits
57.07	EXTENSION (sec)	8 to 20

Table 590/22-11-00-993-936

Test		Limits
57.08	MT ACT POS (vac)	-0.10 to +0.10

Table 591/22-11-00-993-937

Test		Limits
57.09	ELEV POS (vac)	-0.55 to -0.45

- 25) Make sure that the elevator trailing edge aligns with the elevator index on the tail cone at 0 (± 0.06) inch.

Table 592/22-11-00-993-938

Test		Limits
AKS ALL		
57.11	MT ACT POS (DEG)	-0.10 to 0.20
AKS ALL; AIRPLANES WITH FCC SOFTWARE -704 OR SUBSEQUENT		
57.13	MT ACT POS (DEG)	0.56 to 0.68
57.15	MT ACT POS (DEG)	1.31 to 1.60
57.17	MT ACT POS (DEG)	2.50 to 3.10
57.19	MT ACT POS (DEG)	4.55 to 4.90
57.21	MT ACT POS (DEG)	2.50 to 3.10
57.23	MT ACT POS (DEG)	1.31 to 1.60
57.25	MT ACT POS (DEG)	0.56 to 0.68
57.27	MT ACT POS (DEG)	0.10 to 0.20
AKS ALL		
57.29	MT ACT POS (DEG)	-0.10 to 0.20

— EFFECTIVITY —

AKS ALL

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Table 592/22-11-00-993-938 (Continued)

AKS ALL; AIRPLANES WITH FCC SOFTWARE -704 OR SUBSEQUENT		
57.31	MT ACT POS (DEG)	-1.10 to -0.90
57.33	MT ACT POS (DEG)	-1.90 to -1.56
57.35	MT ACT POS (DEG)	-1.10 to -0.90
57.37	MT ACT POS (DEG)	-0.10 to 0.10

- 26) Do these steps to get out of the BITE test:

NOTE: If there are instructions on the CDU display, it is necessary to do the instructions that show on the CDU display.

- a) Push the LSK adjacent to CONTINUE on Test 57.37 screen.
- b) Push the LSK adjacent to PREV MENU on the END OF MACH TRIM RIG screen.
- c) Push the LSK adjacent to PREV MENU on the SELECT CHANNEL FOR TEST screen.
- d) Push the LSK adjacent to EXIT on the RIGGING INDEX screen.
- e) Push the LSK adjacent to CONTINUE on the END OF BITE RIGGING screen.
- f) Push the LSK adjacent to EXIT until you get out of the BITE test.

AKS ALL

H. Put the Airplane Back to Its Usual Condition

SUBTASK 22-11-00-860-192

- (1) Push the captain's or first officer's autopilot disengage switch, on the control wheel, to make sure that the autopilot is disengaged.

SUBTASK 22-11-00-860-223

- (2) Remove the safety tag and close this circuit breaker:

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
D	18	C00451	LANDING GEAR AURAL WARN

SUBTASK 22-11-00-860-194

- (3) Set the autopilot stab trim cutout switch, on the control stand, to the NORMAL position.

SUBTASK 22-11-00-860-195

- (4) Remove hydraulic power from hydraulic systems A and B. To remove hydraulic power, do this task: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805.

SUBTASK 22-11-00-410-005

- (5) Close this access panel:

Number Name/Location

311BL Stabilizer Trim Access Door

SUBTASK 22-11-00-860-196

- (6) Do this task: Remove Electrical Power, TASK 24-22-00-860-812.

————— END OF TASK ————

EFFECTIVITY
AKS ALL

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TASK 22-11-00-820-810

22. Rudder Rigging Test

A. General

- (1) The Rudder Rigging Test does a check on the interfaces between the Digital Flight Control System (DFCS) and the rudder rollout control system wiring and sensors.

B. References

Reference	Title
24-22-00-860-811	Supply Electrical Power (P/B 201)
24-22-00-860-812	Remove Electrical Power (P/B 201)
29-11-00-860-801	Hydraulic System A or B Pressurization (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)

C. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

D. Prepare for the Test

SUBTASK 22-11-00-860-277

- (1) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

SUBTASK 22-11-00-860-289

- (2) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
D	18	C00451	LANDING GEAR AURAL WARN

SUBTASK 22-11-00-860-278

- (3) Set the autopilot stab trim cutout switch, on the control stand, to the CUTOUT position.

SUBTASK 22-11-00-860-279

- (4) Make sure that the VHF NAV and IRS switches, on the P5 forward overhead panel, are in the NORMAL positions.

SUBTASK 22-11-00-860-280

- (5) Set the left and right IRS select switches, on the P5 aft overhead panel, to the ALIGN or NAV position.

SUBTASK 22-11-00-860-281

WARNING: KEEP PERSONS AND EQUIPMENT AWAY FROM THE FLIGHT CONTROL SURFACES. THE AILERONS, ELEVATORS, RUDDER, FLAPS, SLATS, SPOILERS, STABILIZER AND NOSE GEAR CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (6) Supply hydraulic power to hydraulic systems A and B. To supply hydraulic power, do this task: Hydraulic System A or B Pressurization, TASK 29-11-00-860-801.

E. Procedure

SUBTASK 22-11-00-740-047

- (1) Push the INIT REF key on the CDU keyboard.
(a) Push the Line Select Key (LSK) that is adjacent to each selection:

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- 1) INDEX
- 2) MAINT
- 3) DFCS
- 4) EXTENDED MAINTENANCE
- 5) RIGGING
- 6) RUDDER
- 7) CONTINUE

NOTE: After you make this selection, the CONTINUE shows. Do the instructions that show on the CDU display before you push the LSK that is adjacent to CONTINUE.

- 8) CONTINUE
 - 9) COMPLETE RUDDER RIG
- (b) Do the Rudder Rigging Check:
- 1) During this test, do the instructions that show on the CDU display.
 - 2) After you do the instructions that show on the CDU display, push the LSK that is adjacent to CONTINUE.
 - 3) Make sure that the values for the A and B sides are between the limits that show on the CDU display or in this task.

Table 593/22-11-00-993-939

TEST		LIMITS
58.01	RUDDER POS (vac)	-0.30 to 0.30
58.02	RUDDER POS (deg)	-32.50 to 29.50
58.03	RUDDER POS (deg)	29.05 to 32.50
58.04	RUDDER POS (vac)	-0.30 to 0.30
58.05	RUDDER POS (deg)	-32.50 to 29.50
58.06	RUDDER POS (deg)	29.50 to 32.50
58.07	RUDDER POS (vac)	-0.30 to 0.30
58.08	RUDDER POS (deg)	27.50 to 30.50
58.09	RUDDER POS (deg)	-30.50 to -27.50
58.10	RUDDER POS (vac)	-0.30 to 0.30

- 4) Do these steps to get out of the BITE test:

NOTE: If there are instructions on the CDU display, it is necessary to do the instructions that show on the CDU display.

- a) Push the LSK adjacent CONTINUE on test screen 58.10.
- b) Push the LSK adjacent PREV MENU on the END OF RUDDER RIG TEST screen.
- c) Push the LSK adjacent PREV MENU on the RUDDER RIGGING menu.
- d) Push the LSK adjacent to EXIT on the RIGGING INDEX screen.
- e) Push the LSK adjacent CONTINUE on the END OF BITE RIGGING screen.

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- f) Push the LSK adjacent to EXIT until you get out of the BITE test.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 22-11-00-860-282

- (1) Push the captain's or first officer's autopilot disengage switch, on the control wheel, to make sure that the autopilot is disengaged.

SUBTASK 22-11-00-860-283

- (2) Remove the safety tag and close this circuit breaker:

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	18	C00451	LANDING GEAR AURAL WARN

SUBTASK 22-11-00-860-284

- (3) Set the autopilot stab trim cutout switch, on the control stand, to the NORMAL position.

SUBTASK 22-11-00-860-285

- (4) Remove hydraulic power from hydraulic systems A and B. To remove hydraulic power, do this task: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805.

SUBTASK 22-11-00-860-286

- (5) Do this task: Remove Electrical Power, TASK 24-22-00-860-812.

———— END OF TASK ————

TASK 22-11-00-820-809

23. Alpha Vane Rigging Test

A. General

- (1) The Alpha Vane Rigging Test does a check on the interfaces between the Digital Flight Control System (DFCS) and the alpha vane wiring.

B. References

Reference	Title
24-22-00-860-811	Supply Electrical Power (P/B 201)
24-22-00-860-812	Remove Electrical Power (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1917	Fixture - Test, Angle of Attack Sensor, ROSEMOUNT AOA's
	Part #: J34002-19 Supplier: 81205
	Opt Part #: A34012-19 Supplier: 81205
	Opt Part #: A34012-24 Supplier: 81205
	Opt Part #: J34002-18 Supplier: 81205

D. Prepare for the Test

SUBTASK 22-11-00-860-197

- (1) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

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SUBTASK 22-11-00-860-288

- (2) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	18	C00451	LANDING GEAR AURAL WARN

SUBTASK 22-11-00-860-198

- (3) Set the autopilot stab trim cutout switch, on the control stand, to the CUTOOUT position.

SUBTASK 22-11-00-860-199

- (4) Make sure that the VHF NAV and IRS switches, on the P5 forward overhead panel, are in the NORMAL positions.

SUBTASK 22-11-00-860-200

- (5) Set the left and right IRS select switches, on the P5 aft overhead panel, to the ALIGN or NAV position.

SUBTASK 22-11-00-860-201

- (6) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	3	C01072	HEATERS ALPHA VANE LEFT
D	3	C01071	HEATERS ALPHA VANE RIGHT

E. Procedure

SUBTASK 22-11-00-740-038

- (1) Push the INIT REF key on the CDU keyboard.

- (a) Push the Line Select Key (LSK) that is adjacent to each selection:

- 1) INDEX
- 2) MAINT
- 3) DFCS
- 4) EXTENDED MAINTENANCE
- 5) SENSOR VALUES
- 6) DIGITAL SIGNALS
- 7) ADIRU -LCL (ADC-BUS)
- 8) ALPHA (221)

- (b) Install the angle of attack test angle of attack probe test fixture, SPL-1917 on the left alpha vane.

- (c) Set the angle of attack test angle of attack probe test fixture, SPL-1917 to 0.0 (± 0.5) degree.

- 1) Make sure that the value for the A side is between the limits that show on the CDU display or in this task.

- a) Limits: -0.50 to +0.50 (deg)

- (d) Set the angle of attack test angle of attack probe test fixture, SPL-1917 to +10.0 (± 0.5) degrees.

- 1) Make sure that the value for the A side is between the limits that show on the CDU display or in this task.



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- a) Limits: 9.5 to 10.5 (deg)
- (e) Set the angle of attack test angle of attack probe test fixture, SPL-1917 to -10.0 (± 0.5) degrees.
 - 1) Make sure that the value for the A side is between the limits that show on the CDU display or in this task.
 - a) Limits: -10.5 to -9.5 (deg)
- (f) Remove the angle of attack test angle of attack probe test fixture, SPL-1917 from the left alpha vane.
- (g) Install the angle of attack test angle of attack probe test fixture, SPL-1917 on the right alpha vane.
- (h) Set the angle of attack test angle of attack probe test fixture, SPL-1917 to 0.0 (± 0.5) degree.
 - 1) Make sure that the value for the A side is between the limits that show on the CDU display or in this task.
 - a) Limits: -0.50 to +0.50 (deg)
- (i) Set the angle of attack test angle of attack probe test fixture, SPL-1917 to +10.0 (± 0.5) degrees.
 - 1) Make sure that the value for the A side is between the limits that show on the CDU display or in this task.
 - a) Limits: 9.5 to 10.5 (deg)
- (j) Set the angle of attack test angle of attack probe test fixture, SPL-1917 to -10.0 (± 0.5) degrees.
 - 1) Make sure that the value for the A side is between the limits that show on the CDU display or in this task.
 - a) Limits: -10.5 to 9.5 (deg)
- (k) Remove the angle of attack test angle of attack probe test fixture, SPL-1917 from the right alpha vane.
 - 1) Push the LSK adjacent to EXIT until you get out of the BITE test.

NOTE: If there are instructions on the CDU display, it is necessary to do the instructions that show on the CDU display.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 22-11-00-860-202

- (1) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	3	C01072	HEATERS ALPHA VANE LEFT
D	3	C01071	HEATERS ALPHA VANE RIGHT

SUBTASK 22-11-00-860-203

- (2) Push the captain's or first officer's autopilot disengage switch, on the control wheel, to make sure that the autopilot is disengaged.



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SUBTASK 22-11-00-860-224

- (3) Remove the safety tag and close this circuit breaker:

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	18	C00451	LANDING GEAR AURAL WARN

SUBTASK 22-11-00-860-205

- (4) Set the autopilot stab trim cutout switch, on the control stand, to the NORMAL position.

SUBTASK 22-11-00-860-206

- (5) Remove hydraulic power from hydraulic systems A and B if hydraulic power is on. To remove hydraulic power, do this task: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805.

SUBTASK 22-11-00-860-207

- (6) Do this task: Remove Electrical Power, TASK 24-22-00-860-812.

———— END OF TASK ————

TASK 22-11-00-820-811

24. Remote Light Sensor Input Test

A. General

- (1) The Remote Light Sensor Input Test checks the input to the MCP that will change the LCD intensity.
(2) The remote light sensors are on the forward part of the glareshield. The sensors face forward.

B. References

Reference	Title
24-22-00-860-811	Supply Electrical Power (P/B 201)
24-22-00-860-812	Remove Electrical Power (P/B 201)

C. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

D. Prepare for the Test

SUBTASK 22-11-00-860-307

- (1) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

E. Procedure

SUBTASK 22-11-00-740-048

- (1) Push the INIT REF key on the CDU keyboard.
(2) Push the Line Select Key (LSK) that is adjacent to each selection:
(a) INDEX
(b) MAINT
(c) DFCS
(d) EXTENDED MAINTENANCE
(e) SENSOR VALUES
(f) DIGITAL SIGNALS

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- (g) MCP
- (h) RLS-L
- (3) Point a flashlight at the notch on the front of the left remote light sensor (T507).
- (4) Verify that the value of the B channel is greater than 5.00.
- (5) Put an opaque lint-free fabric to the left remote light sensor (T507) so the sensor housing is completely covered.
- (6) Verify that the value of the B channel is less than 3.00.
- (7) Push the Line Select Key (LSK) that is adjacent to each selection:
 - (a) PREV MENU
 - (b) RLS-R
- (8) Point a flashlight at the notch on the front of the right remote light sensor (T508).
- (9) Verify that the value of the B channel is greater than 5.00.
- (10) Put an opaque lint-free fabric to the right remote light sensor (T508) so the sensor housing is completely covered.
- (11) Verify that the value of the B channel is less than 3.00.
- (12) Push the Line Select Key (LSK) that is adjacent to each selection:
 - (a) EXIT
 - (b) EXIT on TEST COMPLETE screen.
 - (c) EXIT after having complied with the instructions on END OF DFCS BITE screen.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 22-11-00-860-308

- (1) Do this task: Remove Electrical Power, TASK 24-22-00-860-812.

————— END OF TASK ————

TASK 22-11-00-820-812

25. Elevator Centering Unit Test

A. General

- (1) The elevator centering unit test does a check on the freeplay of the torque tube.

B. References

Reference	Title
22-11-00-700-801	Land Verify Test (P/B 201)
24-22-00-860-811	Supply Electrical Power (P/B 201)
24-22-00-860-812	Remove Electrical Power (P/B 201)
27-31-91-000-801	Elevator Neutral Shift Mechanism Removal (P/B 401)
27-31-91-400-801	Elevator Neutral Shift Mechanism Installation (P/B 401)
29-11-00-860-801	Hydraulic System A or B Pressurization (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

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Reference	Description
SPL-1677	Assembly - Trammel Bar, Stabilizer Trim Actuator Part #: F80055-10 Supplier: 81205 Opt Part #: F80055-1 Supplier: 81205

D. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right
311	Area Aft of Pressure Bulkhead - Left
323	Vertical Fin - Front Spar To Rear Spar

E. Prepare for the Test

SUBTASK 22-11-00-860-319

- (1) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

SUBTASK 22-11-00-860-320

- (2) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
D	18	C00451	LANDING GEAR AURAL WARN

SUBTASK 22-11-00-860-321

- (3) Set the autopilot stab trim cutout switch, on the control stand, to the CUTOUT position.

SUBTASK 22-11-00-860-322

- (4) Make sure that the VHF NAV and IRS switches, on the P5 forward overhead panel, are in the NORMAL positions.

SUBTASK 22-11-00-860-323

- (5) Set the left and right IRS select switches, on the P5 aft overhead panel, to the ALIGN or NAV position.

SUBTASK 22-11-00-860-327

WARNING: KEEP PERSONS AND EQUIPMENT AWAY FROM THE FLIGHT CONTROL SURFACES. THE AILERONS, ELEVATORS, RUDDER, FLAPS, SLATS, SPOILERS, STABILIZER AND NOSE GEAR CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (6) Supply hydraulic power to hydraulic systems A and B. To supply hydraulic power, to this task: Hydraulic System A or B Pressurization, TASK 29-11-00-860-801.

SUBTASK 22-11-00-860-328

- (7) Do these steps to set the B dimension (Figure 502):

NOTE: The B dimension is measured between the center of the upper and lower Gimbal pins on the stabilizer trim jackscrew. To do this, one person must be in the tail of the airplane with a headset and the other person in the flight compartment.

- (a) Turn the stab trim wheel handle on the control stand to set the B dimension.
- (b) Use the trammel bar, SPL-1677 to measure the B dimension.
- (c) Make sure that the B dimension is 39.89 (± 0.01) inches.

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F. Procedure

SUBTASK 22-11-00-860-329

- (1) Push the INIT REF key on the CDU keyboard.

- (a) Push the Line Select Key (LSK) that is adjacent to each selection:

- 1) INDEX
- 2) MAINT
- 3) DFCS
- 4) EXTENDED MAINTENANCE
- 5) RIGGING
- 6) ELEVATOR

NOTE: After you make this selection, the Continue shows. Do the instructions that show on the CDU display before you push the LSK that is adjacent to CONTINUE.

- 7) ELEV RIG

NOTE: This selection contains the ELEV RIG, ELEV AUTH SINGLE and ELEV AUTH DUAL tests.

- 8) During this test, do the instructions that show on the CDU display.
- 9) After you do the instructions that show on the CDU display, push the LSK that is adjacent to CONTINUE.

- (b) Do the elevator centering unit check:

- 1) Make sure that the values for the A and B sides are between the limits that show on the CDU display or in this task:

Test		Limits:
51.01	STAB POS (VAC)	-0.07 to 0.07
51.02	MT ACT POS (VAC)	-8.70 to -6.35
Note: No value for B side; N/A		
51.03	MT ACT POST (VAC)	-0.20 to 0.20
Note: No value for B side; N/A		
51.04	ELEV POS (VAC)	-0.53 to -0.47

- 2) Make sure that the elevator trailing edge aligns with the elevator index on the tail cone at 0 (± 0.06) inch.

Test		Limits
51.05	NSS POS (VAC)	-1.75 to -1.69

- 3) Use the main stab trim switch to trim the Stabilizer system until the NSS POS on A and B sides of screen test 51.05 read 0.00 (± 0.2).
- 4) Jiggle the column to insure the system is in detent.
- 5) Make sure the Stabilizer is 11.60 units of trim.
- 6) Push the control column to the stop.
- 7) Make sure that the A and B values do not change more than ± 0.25 from the values displayed on the FMC CDU test screen 51.05.

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- 8) Pull the control column to the stop.
- 9) Make sure that the values do not change more than ± 0.25 from the values displayed on the FMC CDU test screen 51.05.
- (c) If the values disagree, do the following steps.

NOTE: To do the following steps, one person must be in the tail of the airplane with a headset and the other person in the flight compartment.

- 1) Replace the torque tube. Do these tasks: Elevator Neutral Shift Mechanism Removal, TASK 27-31-91-000-801; Elevator Neutral Shift Mechanism Installation, TASK 27-31-91-400-801.

NOTE: If the maintenance capability is not available, tighten all eight of the fasteners attaching the cranks to the torque tube to 105 in-lbs. Replace the torque tube at the next convenient maintenance opportunity.

SUBTASK 22-11-00-860-336

- (2) Do the land verify test.

Do this task: Land Verify Test, TASK 22-11-00-700-801

NOTE: Only do this step if Elevator Neutral Shift Mechanism Removal, TASK 27-31-91-000-801 and Elevator Neutral Shift Mechanism Installation, TASK 27-31-91-400-801 have been completed.

G. Put the Airplane Back to its Usual Condition

SUBTASK 22-11-00-860-330

- (1) Push the captain's or first officer's autopilot disengage switch, on the control wheel.
 - (a) make sure that the autopilot is disengaged.

SUBTASK 22-11-00-860-331

- (2) Remove the safety tag and close this circuit breaker:

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
D	18	C00451	LANDING GEAR AURAL WARN

SUBTASK 22-11-00-860-332

- (3) Set the autopilot stab trim cutout switch, on the control stand, to the NORMAL position.

SUBTASK 22-11-00-860-333

- (4) Remove hydraulic power from hydraulic systems A and B. To remove hydraulic power, do this task: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805

SUBTASK 22-11-00-860-318

- (5) Do this task: Remove Electrical Power, TASK 24-22-00-860-812.

———— END OF TASK ————

TASK 22-11-00-740-815

26. Digital Flight Control System LRU Replacement Tests

A. General

- (1) The LRU Replacement Test lets you do a quick test of the LRU that has been replaced to ensure that it is functioning.

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B. References

Reference	Title
24-22-00-860-811	Supply Electrical Power (P/B 201)
24-22-00-860-812	Remove Electrical Power (P/B 201)

C. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

D. Prepare for the Test

SUBTASK 22-11-00-860-358

- (1) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

E. Procedure

SUBTASK 22-11-00-740-050

- (1) Push the INIT REF key on the CDU keyboard.
 - (a) Push the Line Select Key (LSK) that is adjacent to each selection:
 - 1) INDEX
 - 2) MAINT
 - 3) DFCS
 - 4) LRU REPLACEMENT TEST
 - 5) CHANNEL "A" and "B"
 - (b) Push LSK adjacent to the replaced LRU.
NOTE: Use "NEXT PAGE" or "PREVIOUS PAGE" key to change pages.
 - (c) Push "CONTINUE" on "AUTOTEST INITIALIZATION" screen and run the test by following the instructions on the CDU.
 - (d) VERIFY, "ALL TEST PASSED" message displays on the CDU.
NOTE: Some test may be completed so fast that they may not be visible on the CDU.
NOTE: Test can be considered as having passed unless a "TEST FAILED" message appeared.
 - (e) Push "CONTINUE" on test "SUMMARY" screen.
 - (f) Push "CONTINUE" after having complied with the instructions "TURN OFF HYD A-B".
 - (g) Push "EXIT" on "TEST COMPLETE" screen.
 - (h) Push "EXIT" after having complied with the instructions on "END OF DFCS BITE" screen.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 22-11-00-860-359

- (1) Do this task: Remove Electrical Power, TASK 24-22-00-860-812.

— END OF TASK —



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ROLL CONTROL WHEEL STEERING FORCE TRANSDUCER - MAINTENANCE PRACTICES

1. General

- A. This procedure has these tasks:
- (1) Roll Control Wheel Steering Force Transducer Deactivation.
 - (2) Roll Control Wheel Steering Force Transducer Activation.

TASK 22-11-11-040-801

2. Roll Control Wheel Steering Force Transducer - Deactivation

(Figure 202)

A. General

- (1) This procedure removes electrical power and hydraulic pressure to the Roll Control Wheel Steering Force Transducer.

B. References

Reference	Title
24-22-00-860-811	Supply Electrical Power (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)

C. Tools/Equipment

Reference	Description
STD-858	Tag - DO NOT OPERATE

D. Location Zones

Zone	Area
112	Area Forward of Nose Landing Gear Wheel Well
211	Flight Compartment - Left
212	Flight Compartment - Right

E. Procedure

SUBTASK 22-11-11-020-005

WARNING: MAKE SURE THAT PERSONNEL AND EQUIPMENT ARE CLEAR OF THE FLIGHT CONTROLS SURFACES. MAKE SURE THAT THE INBOARD FAN DUCT COWL AND THE INBOARD AND OUTBOARD THRUST REVERSERS ARE CLOSED. THE FLIGHT CONTROL SURFACES CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (1) Remove hydraulic power from systems A and B. To remove hydraulic power, do this task: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805

SUBTASK 22-11-11-860-034

- (2) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
C	5	C01041	AFCS SYS A SNSR EXC AC
D	1	C01049	AFCS SYS A WARN LIGHT (BAT)
D	2	C01045	AFCS SYS A FCC DC

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F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	1	C00374	AFCS SYS B WARN LIGHT (BAT)
B	3	C01046	AFCS SYS B FCC DC
C	2	C01042	AFCS SYS B SNSR EXC AC

SUBTASK 22-11-11-860-036

- (3) Attach DO NOT OPERATE tag, STD-858 to the captain's and first officer's control columns.

F. Roll Control Wheel Steering Force Transducer - Tryout

NOTE: This tryout is to make sure the Roll Control Wheel Steering Force Transducer is in a zero energy state.

SUBTASK 22-11-11-860-039

WARNING: MAKE SURE THAT PERSONNEL AND EQUIPMENT ARE CLEAR OF THE FLIGHT CONTROLS SURFACES. MAKE SURE THAT THE INBOARD FAN DUCT COWL AND THE INBOARD AND OUTBOARD THRUST REVERSERS ARE CLOSED. THE FLIGHT CONTROL SURFACES CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (1) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

SUBTASK 22-11-11-860-035

- (2) Make sure that these circuit breakers are open and have safety tags:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	5	C01041	AFCS SYS A SNSR EXC AC
D	1	C01049	AFCS SYS A WARN LIGHT (BAT)
D	2	C01045	AFCS SYS A FCC DC

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	1	C00374	AFCS SYS B WARN LIGHT (BAT)
B	3	C01046	AFCS SYS B FCC DC
C	2	C01042	AFCS SYS B SNSR EXC AC

SUBTASK 22-11-11-700-001

- (3) Use the FMC - CDU and do the following test (Figure 201):

- SELECT, INIT/REF on the keyboard.
- SELECT, "INDEX" (LSK 6L).
- SELECT, "MAINT" (LSK 6R).
- SELECT, "DFCS" (LSK 2L).

- DFCS will run the self test and display as following:
 - FCC-A SELF TEST FAIL
 - FCC-B SELF TEST FAIL
 - CROSS CHANNEL TEST PASS

- SELECT, "CONTINUE" (LSK 6R)

NOTE: Ignore the message that appears.

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- (f) SELECT, "CONTINUE" (LSK 6R).
- (g) SELECT, "EXTENDED MAINTENANCE"(LSK 4L).
- (h) SELECT, "SENSOR VALUES"(LSK 4L).
- (i) SELECT, "DISCRETE INPUTS"(LSK 5L).
- (j) SELECT, "CIRCUIT BREAKER CHECK"(LSK 5R).
- (k) SELECT, INIT/REF on the keyboard, to exit of BITE.
- (l) End of test.

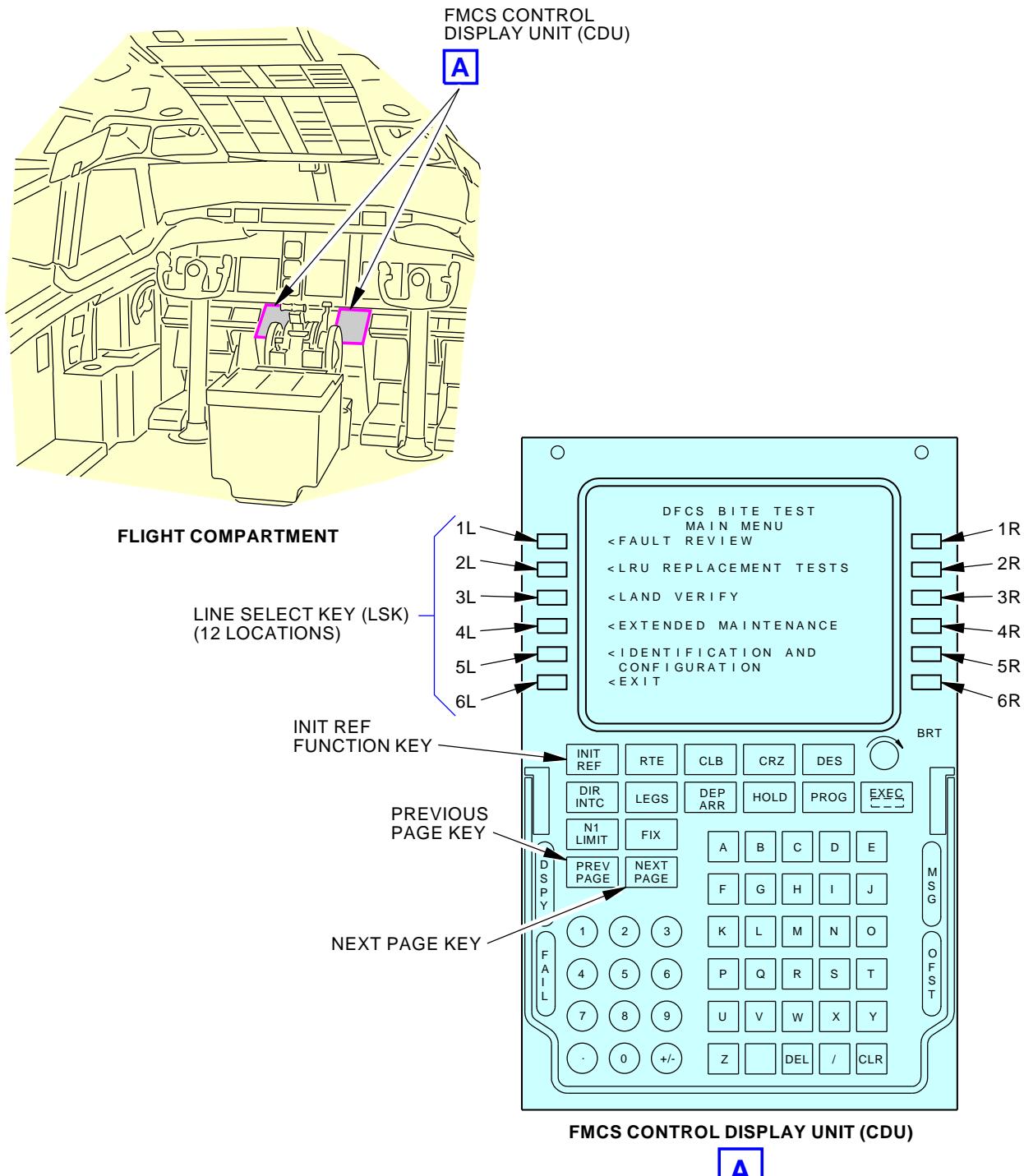
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Flight Management Computer Control Display Unit
Figure 201/22-11-11-990-805

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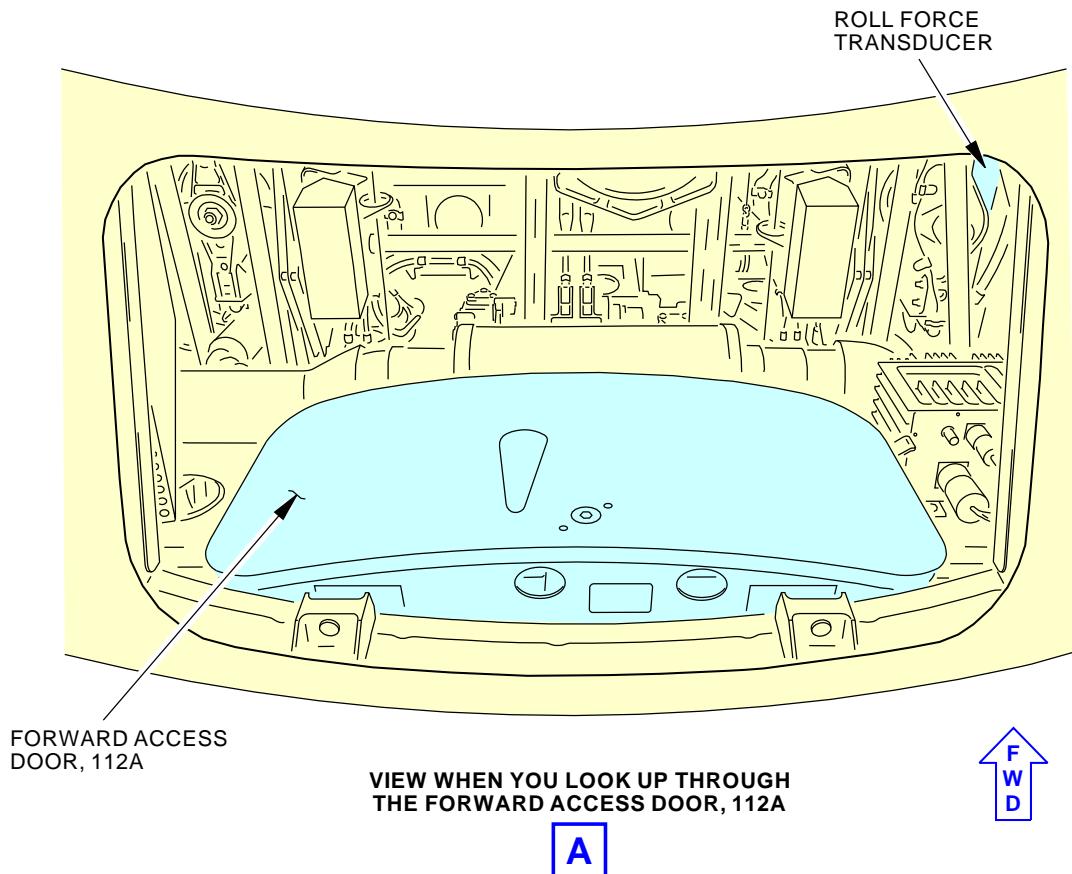
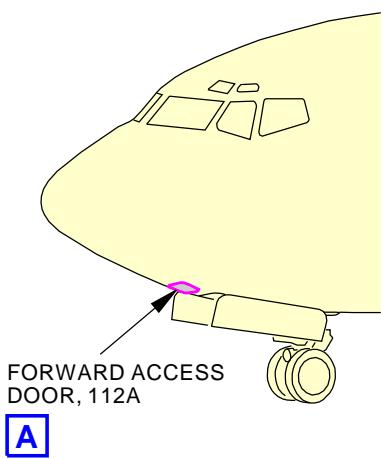
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2375111 S0000542778_V1

Roll Force Transducer
Figure 202/22-11-11-990-806



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TASK 22-11-11-440-801

3. Roll Control Wheel Steering Force Transducer - Activation

(Figure 202)

A. General

- (1) This procedure adds electrical power and hydraulic pressure to the Roll Control Wheel Steering Force Transducer.

B. References

Reference	Title
29-11-00-860-801	Hydraulic System A or B Pressurization (P/B 201)

C. Location Zones

Zone	Area
112	Area Forward of Nose Landing Gear Wheel Well
211	Flight Compartment - Left
212	Flight Compartment - Right

D. Procedure

SUBTASK 22-11-11-860-037

WARNING: MAKE SURE THAT PERSONNEL AND EQUIPMENT ARE CLEAR OF THE FLIGHT CONTROLS SURFACES. MAKE SURE THAT THE INBOARD FAN DUCT COWL AND THE INBOARD AND OUTBOARD THRUST REVERSERS ARE CLOSED. THE FLIGHT CONTROL SURFACES CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (1) Supply hydraulic power to hydraulic systems A and B. To supply hydraulic power, do this task:
Hydraulic System A or B Pressurization, TASK 29-11-00-860-801

SUBTASK 22-11-11-860-038

- (2) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
C	5	C01041	AFCS SYS A SNSR EXC AC
D	1	C01049	AFCS SYS A WARN LIGHT (BAT)
D	2	C01045	AFCS SYS A FCC DC

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	1	C00374	AFCS SYS B WARN LIGHT (BAT)
B	3	C01046	AFCS SYS B FCC DC
C	2	C01042	AFCS SYS B SNSR EXC AC

———— END OF TASK ————

EFFECTIVITY
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ROLL CONTROL WHEEL STEERING FORCE TRANSDUCER - REMOVAL/INSTALLATION

1. General

- A. This procedure has these tasks:
 - (1) The removal of the roll control wheel steering force transducer (Roll Force Transducer).
 - (2) The installation of the roll force transducer.
- B. You can find the roll force transducer (M221) on the aileron drum at the bottom of the captain's control column.

TASK 22-11-11-000-801

2. Roll Force Transducer Removal

(Figure 401)

A. Location Zones

<u>Zone</u>	<u>Area</u>
112	Area Forward of Nose Landing Gear Wheel Well

B. Access Panels

<u>Number</u>	<u>Name/Location</u>
112A	Forward Access Door

C. Prepare for the Removal

SUBTASK 22-11-11-860-024

- (1) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	5	C01041	AFCS SYS A SNSR EXC AC
D	1	C01049	AFCS SYS A WARN LIGHT (BAT)
D	2	C01045	AFCS SYS A FCC DC

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	1	C00374	AFCS SYS B WARN LIGHT (BAT)
B	3	C01046	AFCS SYS B FCC DC
C	2	C01042	AFCS SYS B SNSR EXC AC

SUBTASK 22-11-11-860-025

- (2) Install the DO-NOT OPERATE tags to the control columns.

SUBTASK 22-11-11-010-002

- (3) To get access to the roll force transducer, open this access door:

Number Name/Location

112A	Forward Access Door
------	---------------------

D. Procedure

SUBTASK 22-11-11-020-001

- (1) Disconnect the connectors of the roll force transducer [1].

SUBTASK 22-11-11-020-002

- (2) For the upper spool, do these steps to remove the cable [5] of the roll force transducer [1]:

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- (a) Remove the screws [9], screw [15], bolt [14], washers [7], washers [10], nut [6], spacer [13], cable clamps [11] and plugs [12].
- (b) Wind the cable [5] of the roll force transducer [1] off the shaft assembly of the upper spool.

NOTE: Write down the direction of the cable.

SUBTASK 22-11-11-020-003

- (3) For the lower spool, do these steps to remove the cable [5] of the roll force transducer [1]:
 - (a) Remove the nuts [6], bolt [17], screws [9], washers [10], cable clamps [11], cable clamp [16] and plugs [12].
 - (b) Wind the cable [5] of the roll force transducer [1] off the shaft assembly of the lower spool.

NOTE: Write down the direction of the cable.

SUBTASK 22-11-11-020-004

- (4) Do these steps to remove the roll force transducer [1]:
 - (a) Remove the mounting bolts [8], washers [7] and nuts [6] that attach the roll force transducer [1] to the aileron drum assembly.
 - (b) Remove the roll force transducer [1].

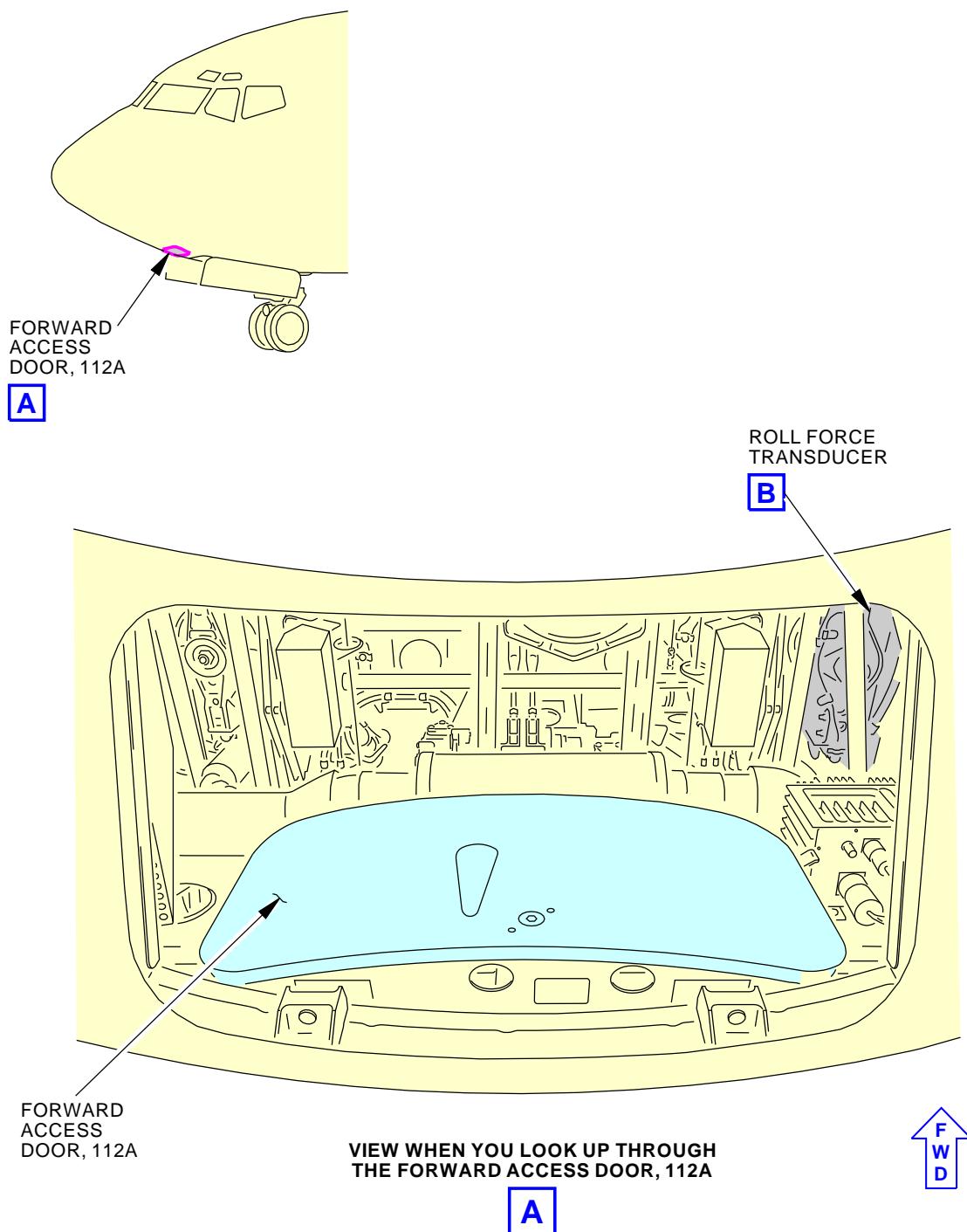
———— END OF TASK ————

EFFECTIVITY	AKS ALL
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Roll Force Transducer Installation
Figure 401/22-11-11-990-804 (Sheet 1 of 5)

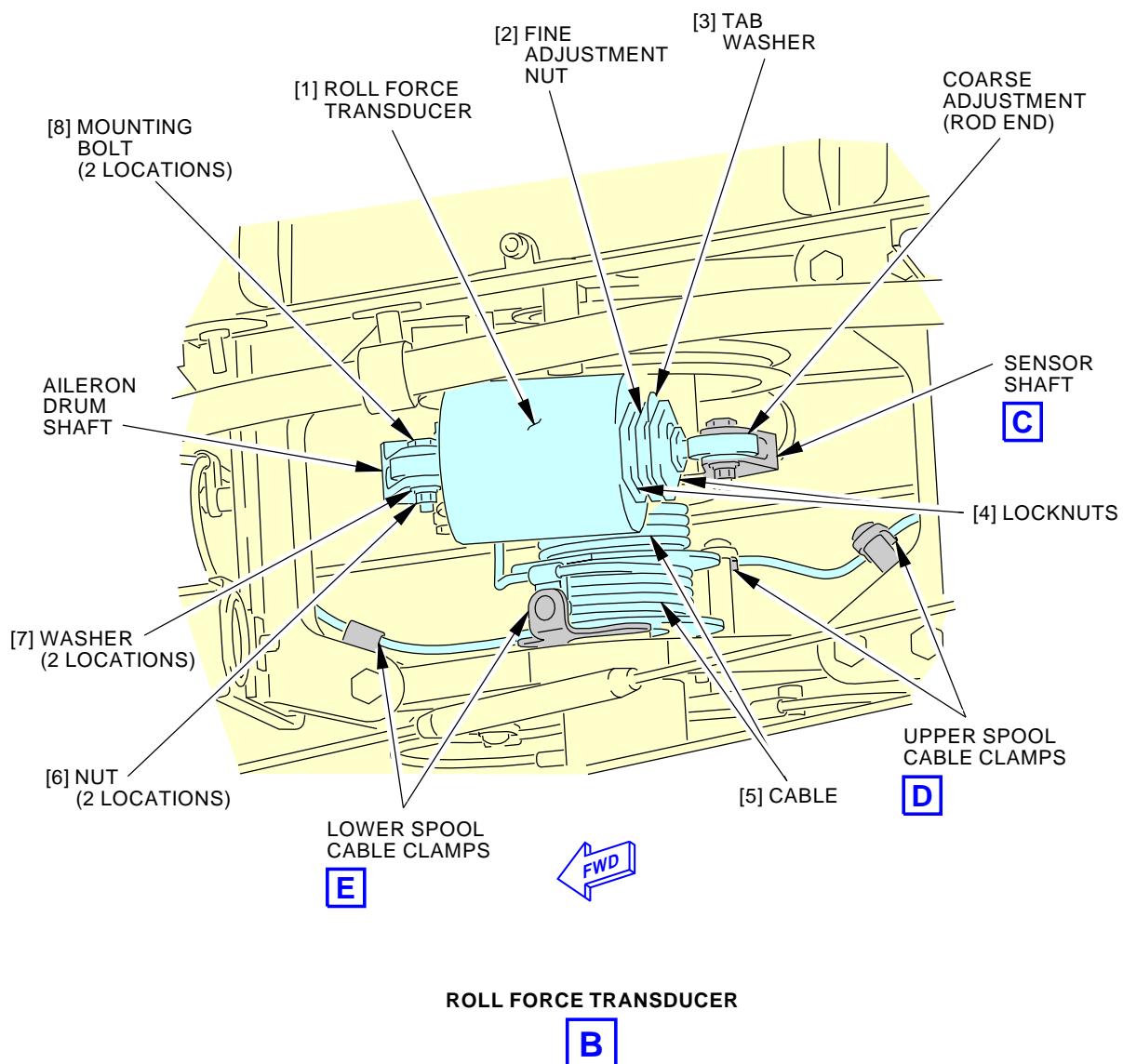
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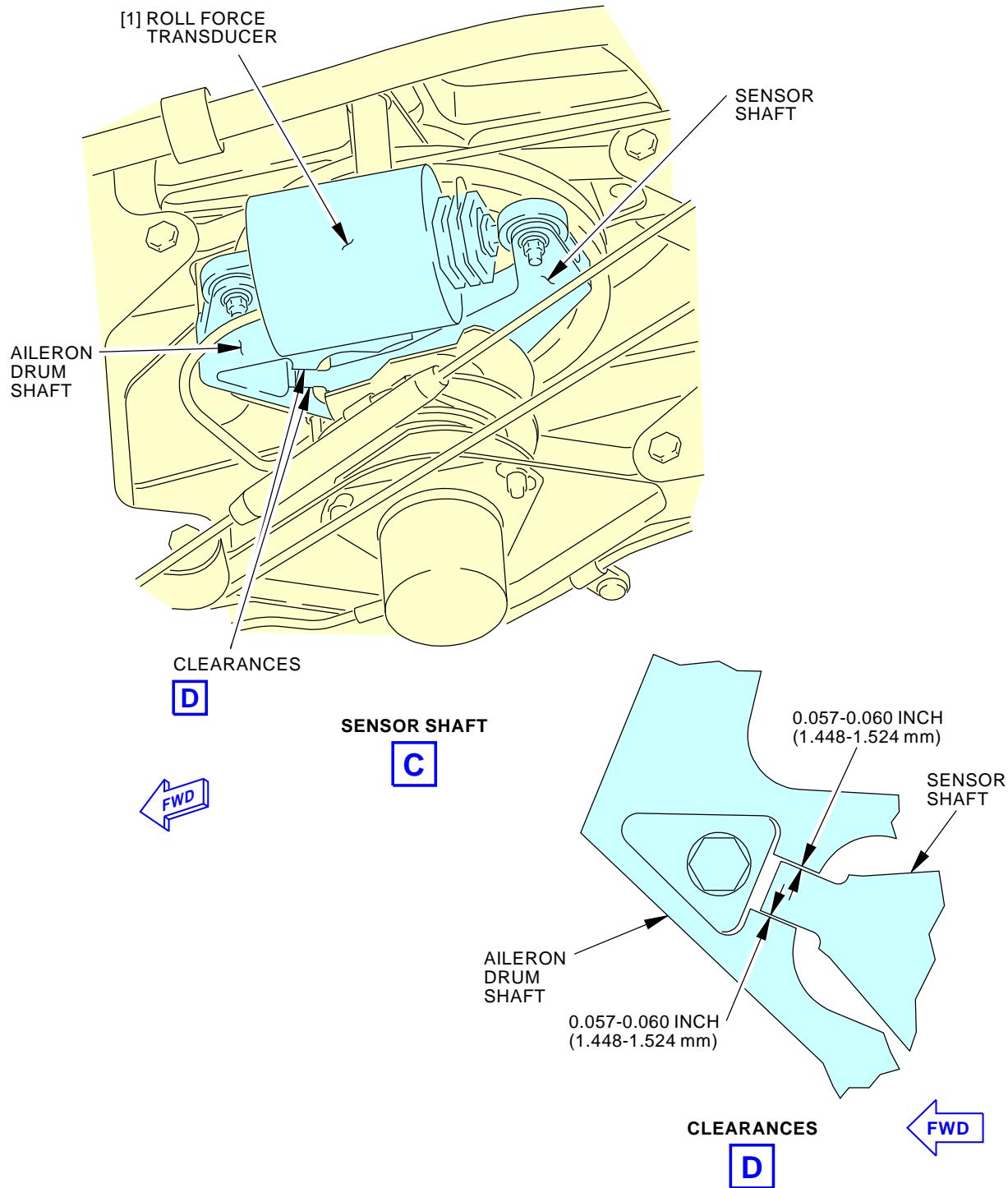
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Roll Force Transducer Installation
Figure 401/22-11-11-990-804 (Sheet 2 of 5)

EFFECTIVITY
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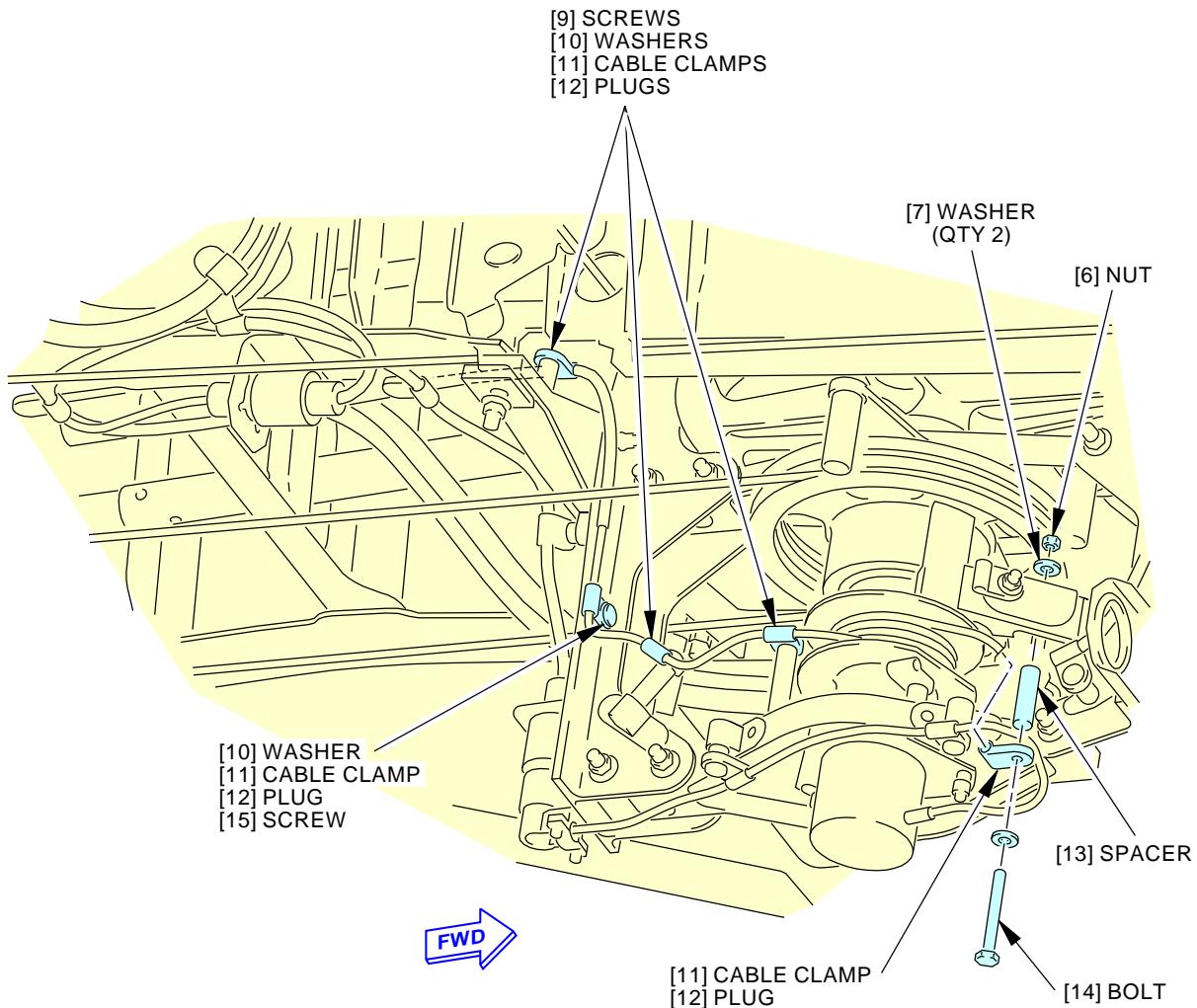


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Roll Force Transducer Installation
Figure 401/22-11-11-990-804 (Sheet 3 of 5)

EFFECTIVITY
AKS ALL

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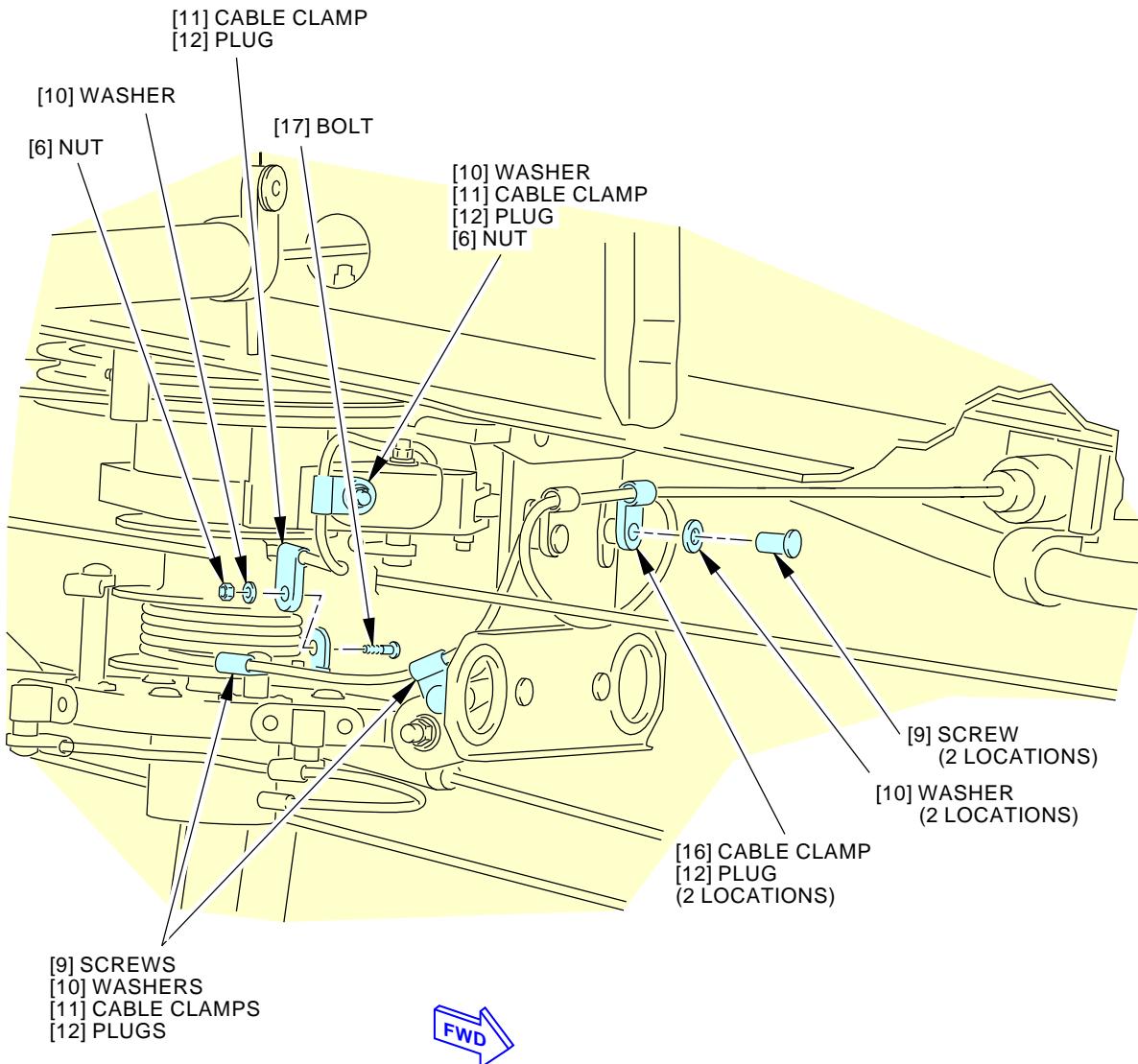

UPPER SPOOL CABLE CLAMPS
D

F81986 S0006563905_V2

Roll Force Transducer Installation
Figure 401/22-11-11-990-804 (Sheet 4 of 5)

 EFFECTIVITY
AKS ALL
22-11-11

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LOWER SPOOL CABLE CLAMPS
E

F82003 S0006563906_V2

**Roll Force Transducer Installation
Figure 401/22-11-11-990-804 (Sheet 5 of 5)**

 EFFECTIVITY
AKS ALL

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TASK 22-11-11-400-801

3. Roll Force Transducer Installation

(Figure 401)

A. References

Reference	Title
22-11-11-740-801	Roll Force Transducer Test (P/B 501)
22-11-11-820-801	Roll Force Transducer Adjustment and Test (P/B 501)

B. Tools/Equipment

Reference	Description
STD-1107	Gauge - Feeler, 0.0 - 0.5 Inch, Readable to 1/1000th

C. Location Zones

Zone	Area
112	Area Forward of Nose Landing Gear Wheel Well
211	Flight Compartment - Left
212	Flight Compartment - Right

D. Access Panels

Number	Name/Location
112A	Forward Access Door

E. Prepare for the Installation

SUBTASK 22-11-11-860-028

- (1) Make sure that these circuit breakers are open and have safety tags:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
C	5	C01041	AFCS SYS A SNSR EXC AC
D	1	C01049	AFCS SYS A WARN LIGHT (BAT)
D	2	C01045	AFCS SYS A FCC DC

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	1	C00374	AFCS SYS B WARN LIGHT (BAT)
B	3	C01046	AFCS SYS B FCC DC
C	2	C01042	AFCS SYS B SNSR EXC AC

F. Procedure

SUBTASK 22-11-11-800-001

- (1) Use the 0.0 - 0.5 Inch feeler gauge, STD-1107 to make a clearance (two locations) between the sensor shaft and the aileron drum shaft.
- (a) Make sure that each clearance is between 0.057 in. (1.448 mm) and 0.060 in. (1.524 mm)

SUBTASK 22-11-11-820-001

- (2) For the non-adjustable end of the roll force transducer [1], do these steps:
- (a) Hold the roll force transducer [1] in its position for installation.
- (b) Install the mounting bolt [8], washer [7] and nut [6].

EFFECTIVITY
AKS ALL

22-11-11



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SUBTASK 22-11-11-420-001

- (3) For the adjustable end of the roll force transducer [1], do these steps:
 - (a) Hold the roll force transducer [1] in its position for installation.
 - (b) Install the mounting bolt [8], washer [7] and nut [6].

SUBTASK 22-11-11-420-002

- (4) Do these steps to install the lower cable [5] of the roll force transducer [1] in the upper spool:
 - (a) Attach the cable [5] with the cable clamp [11] below the roll force transducer [1].
 - 1) Install the bolt [14], washers [7], spacer [13], nut [6] and plug [12].
 - 2) Make sure you do not pull the cable [5] tightly.
 - (b) Wind the cable [5] around the upper spool, approximately 4 turns, in the CCW direction (as seen from the bottom) from the top to the bottom of the spool.
 - (c) Turn the control wheel, to the limit, in the direction to tighten the cable [5] around the spool.
 - (d) Attach the cable [5] with the cable clamps [11] on the bracket.
 - 1) Install the screw [9], screw [15], washers [10] and plugs [12].
 - (e) Turn the control wheel clockwise and then counter-clockwise, to the limit, for two or three times.
 - 1) Make sure that the cable [5] does not prevent the movement.
 - 2) Adjust the cable [5] in the bracket if it is necessary.

SUBTASK 22-11-11-420-003

- (5) Do these steps to install the top cable [5] of the roll force transducer [1] in the lower spool:
 - (a) Attach the cable [5] with the cable clamp [11] adjacent to the roll force transducer [1].
 - 1) Install the washer [10], nut [6] and plug [12].
 - (b) Attach the cable [5] with the cable clamp [11] on the spool bracket of the lower flange.
 - 1) Install the bolt [17], washer [10], nut [6] and plug [12].
 - 2) Make sure you do not pull the cable [5] tightly.
 - (c) Wind the cable [5] around the lower spool, approximately 4.5 turns, in the CW direction (as seen from the bottom) from the top to the bottom of the spool.
 - (d) Turn the control wheel, to the limit, in the direction to tighten the cable [5] around the spool.
 - (e) Attach the cable [5] with the cable clamp [11], cable clamp [16] on the bracket.
 - 1) Install the screws [9], washers [10] and plugs [12].
 - (f) Turn the control wheel clockwise and then counter-clockwise, to the limit, for two or three times.
 - 1) Make sure that the cable [5] does not prevent the movement.
 - 2) Make sure that the cable [5] is not too loose to contact bolt [17].
 - 3) Adjust the cable [5] in the bracket if it is necessary.

SUBTASK 22-11-11-420-004

- (6) Connect the roll force transducer connectors.

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SUBTASK 22-11-11-800-002

- (7) Remove the 0.0 - 0.5 Inch feeler gauge, STD-1107 (two locations) between the sensor shaft and the aileron drum shaft.
 - (a) Make sure that each clearance is between 0.057 in. (1.448 mm) and 0.060 in. (1.524 mm)

SUBTASK 22-11-11-860-029

- (8) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	5	C01041	AFCS SYS A SNSR EXC AC
D	1	C01049	AFCS SYS A WARN LIGHT (BAT)
D	2	C01045	AFCS SYS A FCC DC

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	1	C00374	AFCS SYS B WARN LIGHT (BAT)
B	3	C01046	AFCS SYS B FCC DC
C	2	C01042	AFCS SYS B SNSR EXC AC

SUBTASK 22-11-11-820-002

- (9) Do this task: Roll Force Transducer Adjustment and Test, TASK 22-11-11-820-801.

SUBTASK 22-11-11-740-003

- (10) Do this task: Roll Force Transducer Test, TASK 22-11-11-740-801.

SUBTASK 22-11-11-800-003

- (11) Remove the DO-NOT-OPERATE tags from the control columns.

SUBTASK 22-11-11-410-002

- (12) Close this access door:

<u>Number</u>	<u>Name/Location</u>
112A	Forward Access Door

———— END OF TASK ————



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ROLL CONTROL WHEEL STEERING FORCE TRANSDUCER - ADJUSTMENT/TEST

1. General

- A. This procedure has these tasks:
 - (1) Roll Force Transducer Adjustment.
 - (2) Roll Force Transducer Test.
- B. The adjustment of the roll force transducer is important. If the adjustment is not correct, you cannot engage the autopilot.

TASK 22-11-11-820-801

2. Roll Force Transducer Adjustment and Test

(Figure 501)

A. References

Reference	Title
20-10-44-000-801	Lockwire, Cotter Pins, and Lockrings - Removal (P/B 401)
20-10-44-400-801	Lockwire, Cotter Pins, and Lockrings - Installation (P/B 401)
22-11-00-820-807	Roll Control Wheel Steering Rigging Test (P/B 501)
24-22-00-860-811	Supply Electrical Power (P/B 201)
24-22-00-860-812	Remove Electrical Power (P/B 201)
29-11-00-860-801	Hydraulic System A or B Pressurization (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1674	Assembly - Adapter, Control Wheel, Torque and Force Test Part #: C27060-1 Supplier: 81205 Opt Part #: F72867-1 Supplier: 81205
STD-1107	Gauge - Feeler, 0.0 - 0.5 Inch, Readable to 1/1000th
STD-1293	Wrench - Torque (100 Lb-In)

C. Location Zones

Zone	Area
112	Area Forward of Nose Landing Gear Wheel Well
211	Flight Compartment - Left
212	Flight Compartment - Right

D. Access Panels

Number	Name/Location
112A	Forward Access Door

E. Prepare for the Adjustment

SUBTASK 22-11-010-001

- (1) To get access to the roll force transducer, open this access door:

Number	Name/Location
112A	Forward Access Door

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SUBTASK 22-11-11-860-001

- (2) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

SUBTASK 22-11-11-860-032

- (3) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	18	C00451	LANDING GEAR AURAL WARN

SUBTASK 22-11-11-860-002

WARNING: KEEP PERSONS AND EQUIPMENT AWAY FROM THE FLIGHT CONTROL SURFACES. THE AILERONS, ELEVATORS, RUDDER, FLAPS, SLATS, SPOILERS, STABILIZER AND NOSE GEAR CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (4) Supply hydraulic power to hydraulic systems A and B. To supply hydraulic power, do this task: Hydraulic System A or B Pressurization, TASK 29-11-00-860-801.

SUBTASK 22-11-11-980-001

- (5) Do these steps to put the control wheel to the center:

NOTE: The power control units must be serviceable for the correct adjustment of the cables in relation to the roll force transducer.

- Turn the control wheel clockwise 30 degrees.
- Turn the control wheel counter-clockwise 30 degrees.
- Slowly turn the control wheel to the center.

SUBTASK 22-11-11-860-003

- (6) Attach the DO-NOT-OPERATE tags to the control columns.

SUBTASK 22-11-11-860-004

- (7) Set the aileron trim to 0.0 unit.

SUBTASK 22-11-11-860-005

- (8) Set the autopilot stab trim cutout switch, on the control stand, to the CUTOUT position.

SUBTASK 22-11-11-860-006

- (9) Make sure that the VHF NAV and IRS switches, on the P5 forward overhead panel, are in the NORMAL positions.

SUBTASK 22-11-11-860-007

- (10) Set the left and right IRS select switches, on the P5 aft overhead panel, to the ALIGN or NAV position.

F. Procedure

NOTE: Two persons are necessary for this task.

SUBTASK 22-11-11-740-001

- (1) Do these steps to get access to DFCS BITE:

- Push the INIT REF key on the CDU keyboard.
- Push the Line Select Key (LSK) that is adjacent to each selection:

NOTE: If the CONTINUE shows during the BITE test, then do the instructions that show on the CDU display before you push the LSK that is adjacent to CONTINUE. Use the NEXT PAGE or PREV PAGE key to change page if it is necessary.

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- 1) INDEX
- 2) MAINT
- 3) DFCS
- 4) EXTENDED MAINTENANCE
- 5) RIGGING
- 6) CWS
- 7) ROLL CWS
- 8) Do the instructions that show on the CDU display until test 55.18.
 - a) Test 55.18, RCWS SENSOR (VAC), Limits: -0.15 to +0.15.

NOTE: Use this CDU display to do the adjustment for the roll force transducer.

SUBTASK 22-11-11-820-003

WARNING: DO NOT PUSH THE LSK THAT IS ADJACENT TO <CONTINUE ON TEST 55.18 WHEN YOU ADJUST THE ROLL FORCE TRANSDUCER. THE CABLES, CONTROL WHEEL AND FLIGHT CONTROL SURFACES CAN MOVE WHEN YOU PUSH THE LSK THAT IS ADJACENT TO <CONTINUE. THIS CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

- (2) Do these steps to adjust the roll force transducer:

- (a) Use the 0.0 - 0.5 Inch feeler gauge, STD-1107 to make a clearance (two locations) between the sensor shaft and the aileron drum shaft.

NOTE: If you cannot get access to this area, then remove the bolt [4], nut [1], washers [5], spacer [8], clamp [7] and plug [6].

- (b) Make sure that each clearance is between 0.057 in. (1.448 mm) and 0.060 in. (1.524 mm).
 - (c) Remove the mounting bolt [3], washer [2] and nut [1].
 - (d) If the voltages on the CDU display (Test 55.18) for the A and B sides are more than 0.08 VAC, do these steps:

NOTE: For minimum error, you must hold the roll force transducer horizontally when you read the voltage.

- 1) Make sure that there is no external force applied to the roll force transducer (For example, if the cable is tightly pulled, then it can cause the voltage to increase).
 - 2) Remove lockwires from the locknuts, fine adjustment nut and the tab washer. To remove it, do this task: Lockwire, Cotter Pins, and Lockrings - Removal, TASK 20-10-44-000-801.
 - 3) Loosen the locknuts.
 - 4) Turn the coarse adjustment (rod end) until the voltages on the CDU for the A and B sides are less than .08 VAC.

NOTE: The coarse adjustment is approximately 0.016 in. (0.406 mm) for each turn.

- (e) Record the voltage.
 - (f) Turn the coarse adjustment (rod end) until the mounting hole is parallel to the mounting hole.
 - (g) Install the mounting bolt [3], washer [2] and nut [1].

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- (h) Make sure that the voltage is within ± 0.01 VAC of the voltage you recorded earlier.
NOTE: Use the fine adjustment nut if necessary.
- (i) Push the tab washer against the end of the roll force transducer.
- (j) Tighten the locknut on the adjustable sleeve.
- (k) Tighten the locknut on the rod end.
- (l) For the locknuts, fine adjustment nut and the tab washer, do this task: Lockwire, Cotter Pins, and Lockrings - Installation, TASK 20-10-44-400-801.
- (m) Remove the 0.0 - 0.5 Inch feeler gauge, STD-1107 (2 locations) between the sensor shaft and the aileron drum shaft.
NOTE: Install the bolt [4], nut [1], washers [5], spacer [8], clamp [7] and plug [6] if you remove them earlier.
- (n) Make sure that each clearance is between 0.057 in. (1.448 mm) and 0.060 in. (1.524 mm)
- (o) Do the following, to check the adjustments:

WARNING: KEEP PERSONS AND EQUIPMENT AWAY FROM THE ROLL CONTROL WHEEL STEERING FORCE TRANSDUCER. THE CABLES, CONTROL WHEEL AND FLIGHT CONTROL SURFACES CAN MOVE WHEN YOU PUSH THE LSK THAT IS ADJACENT TO <CONTINUE. THIS CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

- 1) Push the LSK that is adjacent to <CONTINUE (on the CDU display - Test 55.18).
 - a) Do the instructions that show on the CDU display to complete the ROLL CWS test.
 - b) Make sure that the values for the A and B sides are between the limits that show on the CDU display.
NOTE: For detailed data about the ROLL CWS rigging test, refer to "Roll Control Wheel Steering Rigging Test" in (TASK 22-11-00-820-807).
 - c) To continue the test, you must install the control wheel torque wrench adapter, SPL-1674.
 - d) When the CDU display shows "Torque wheel clockwise (or counter-clockwise) to x LBS on scale", use the control wheel torque wrench (100 Lb-In), STD-1293 to measure the force that you put on the control wheel.
NOTE: Where x is a number.
- 2) Remove the control wheel torque wrench adapter, SPL-1674 when you complete the ROLL CWS test.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 22-11-11-860-008

- (1) Push the captain's or first officer's autopilot disengage switch, on the control wheel, to make sure that the autopilot is disengaged.

SUBTASK 22-11-11-860-030

- (2) Remove the safety tag and close this circuit breaker:

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
D	18	C00451	LANDING GEAR AURAL WARN

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SUBTASK 22-11-11-860-010

- (3) Set the autopilot stab trim cutout switch, on the control stand, to the NORMAL position.

SUBTASK 22-11-11-860-011

- (4) Remove hydraulic power from hydraulic systems A and B. To remove hydraulic power, do this task: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805.

SUBTASK 22-11-11-860-012

- (5) Do this task: Remove Electrical Power, TASK 24-22-00-860-812.

SUBTASK 22-11-11-860-013

- (6) Remove the DO-NOT-OPERATE tags on the control columns.

SUBTASK 22-11-11-410-001

- (7) Close this access panel:

Number Name/Location

112A Forward Access Door

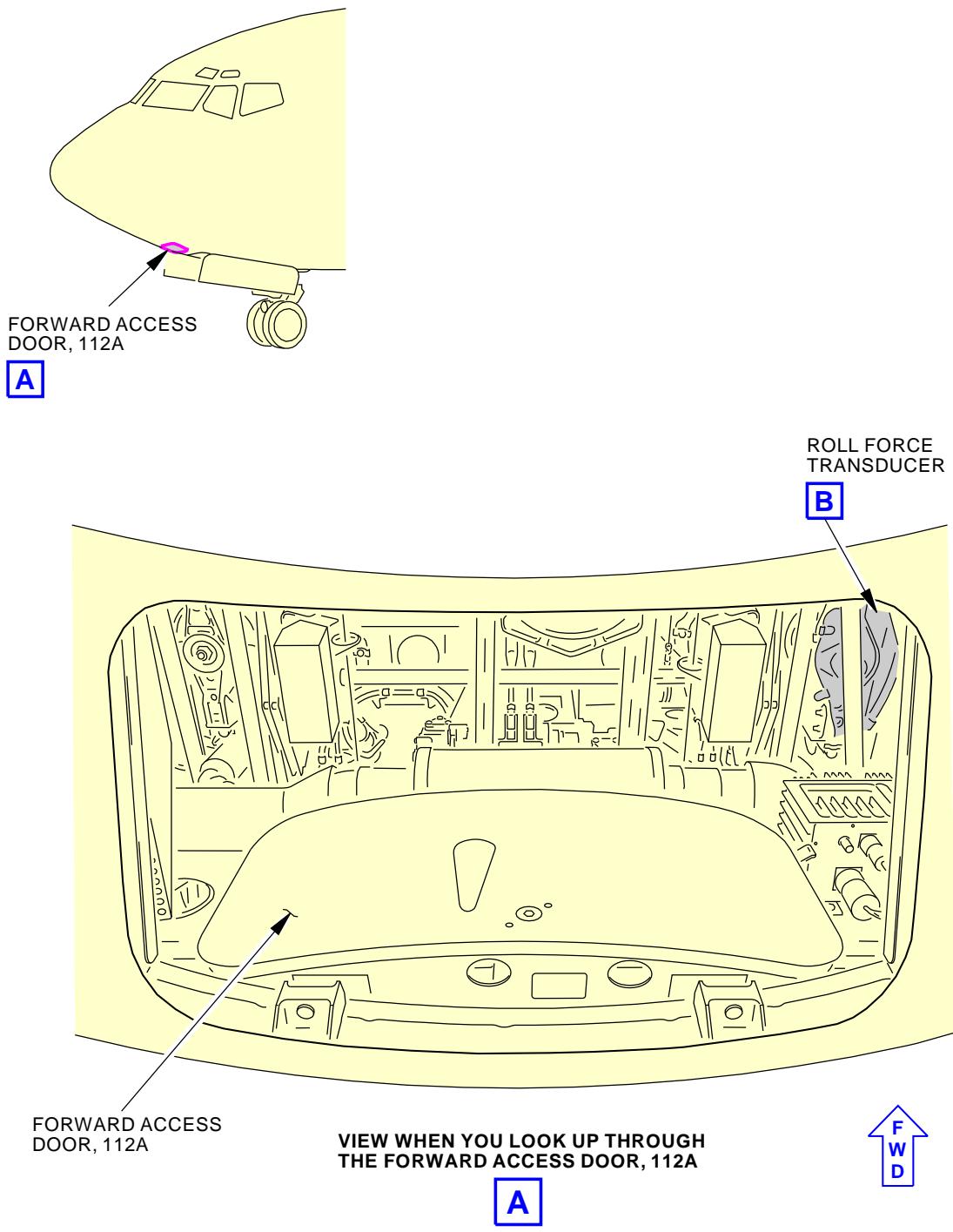
———— END OF TASK ————

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F80571 S0006563911_V2

Roll Force Transducer Adjustment
Figure 501/22-11-11-990-803 (Sheet 1 of 3)

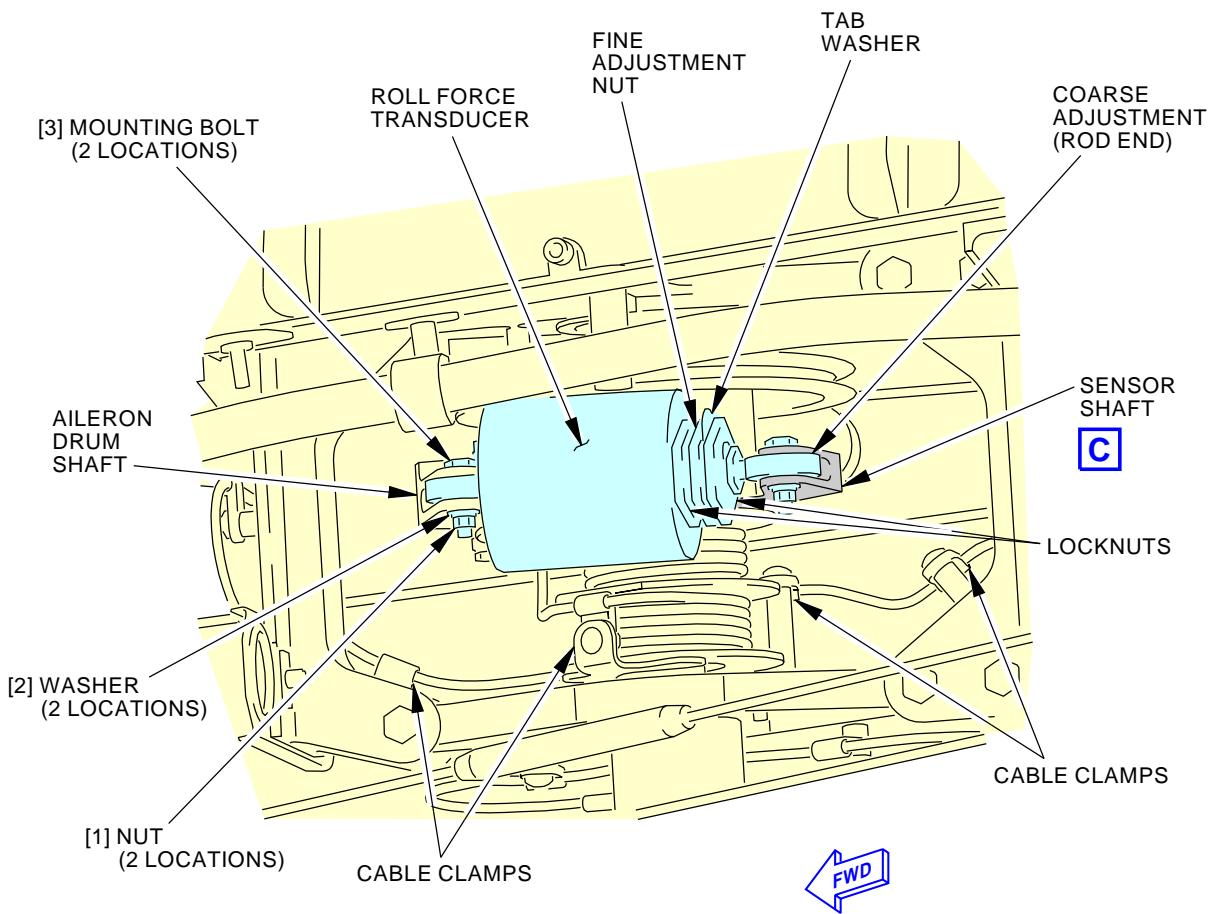
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ROLL FORCE TRANSDUCER

B

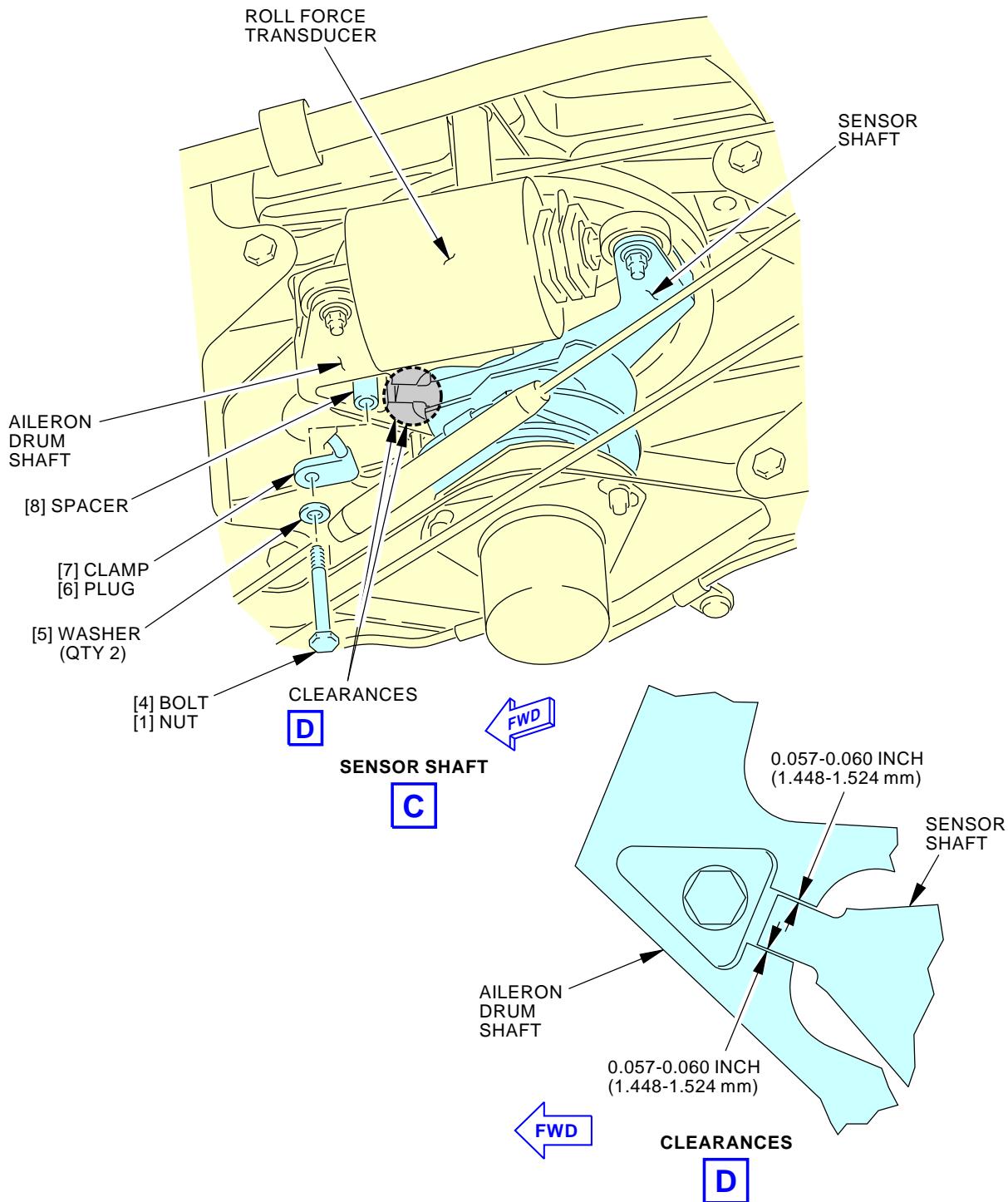
F80579 S0006563912_V2

Roll Force Transducer Adjustment
Figure 501/22-11-11-990-803 (Sheet 2 of 3)

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2043401 S0000413268_V2

Roll Force Transducer Adjustment
Figure 501/22-11-11-990-803 (Sheet 3 of 3)

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TASK 22-11-11-740-801

3. Roll Force Transducer Test

A. References

<u>Reference</u>	<u>Title</u>
24-22-00-860-811	Supply Electrical Power (P/B 201)
24-22-00-860-812	Remove Electrical Power (P/B 201)
29-11-00-860-801	Hydraulic System A or B Pressurization (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)

B. Location Zones

<u>Zone</u>	<u>Area</u>
211	Flight Compartment - Left
212	Flight Compartment - Right

C. Prepare for the Test

SUBTASK 22-11-11-860-014

- (1) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

SUBTASK 22-11-11-860-033

- (2) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	18	C00451	LANDING GEAR AURAL WARN

SUBTASK 22-11-11-860-015

- (3) Set the autopilot stab trim cutout switch, on the control stand, to the CUTOUT position.

SUBTASK 22-11-11-860-016

- (4) Make sure that the VHF NAV and IRS switches, on the P5 forward overhead panel, are in the NORMAL positions.

SUBTASK 22-11-11-860-017

- (5) Set the left and right IRS select switches, on the P5 aft overhead panel, to the ALIGN or NAV position.

SUBTASK 22-11-11-860-018

WARNING: KEEP PERSONS AND EQUIPMENT AWAY FROM THE FLIGHT CONTROL SURFACES. THE AILERONS, ELEVATORS, RUDDER, FLAPS, SLATS, SPOILERS, STABILIZER AND NOSE GEAR CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (6) Supply hydraulic power to hydraulic systems A and B. To supply hydraulic power, do this task: Hydraulic System A or B Pressurization, TASK 29-11-00-860-801.

NOTE: Hydraulic power is necessary for surface test.

D. Procedure

SUBTASK 22-11-11-740-002

- (1) Do this BITE test:

- (a) Push the INIT REF key on the CDU keyboard.

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- (b) Push the Line Select Key (LSK) that is adjacent to each selection:

NOTE: If the CONTINUE shows during the BITE test, then do the instructions that show on the CDU display before you push the LSK that is adjacent to CONTINUE. Use the NEXT PAGE or PREV PAGE key to change page if it is necessary.

- 1) INDEX
- 2) MAINT
- 3) DFCS
- 4) LRU REPLACEMENT TESTS
- 5) CHANNEL A AND B
- 6) ROLL SENS
- 7) Do the instructions that show on the CDU display to complete the test.
- 8) Make sure that the test is completed with no failure or the "TEST FAILED" message does not show.

E. Put the Airplane Back to Its Usual Condition

SUBTASK 22-11-11-860-019

- (1) Push the captain's or first officer's autopilot disengage switch, on the control wheel, to make sure that the autopilot is disengaged.

SUBTASK 22-11-11-860-031

- (2) Remove the safety tag and close this circuit breaker:

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	18	C00451	LANDING GEAR AURAL WARN

SUBTASK 22-11-11-860-021

- (3) Set the autopilot stab trim cutout switch, on the control stand, to the NORMAL position.

SUBTASK 22-11-11-860-022

- (4) Remove hydraulic power from hydraulic systems A and B. To remove hydraulic power, do this task: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805.

SUBTASK 22-11-11-860-023

- (5) Do this task: Remove Electrical Power, TASK 24-22-00-860-812.

———— END OF TASK ————



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A/P ACTUATOR SOLENOID AND ELECTROHYDRAULIC SERVO VALVES - MAINTENANCE PRACTICES

1. General

- A. This procedure has these tasks:
- (1) A/P Actuator Solenoid and Electrohydraulic Servo Valves Deactivation.
 - (2) A/P Actuator Solenoid and Electrohydraulic Servo Valves Activation.

TASK 22-11-12-040-801

2. A/P Actuator Solenoid and Electrohydraulic Servo Valves - Deactivation

(Figure 202)

A. General

- (1) This procedure removes electrical power and hydraulic pressure to A/P Actuator Solenoid and Electrohydraulic Servo Valves.

B. References

Reference	Title
24-22-00-860-811	Supply Electrical Power (P/B 201)
27-11-00-860-801	Pressure from the Aileron Hydraulic Systems A and B - Deactivation (P/B 201)
27-31-00-800-802	Remove Pressure from the Elevator Hydraulic Systems A and B (P/B 201)
32-00-01-480-801	Landing Gear Downlock Pins Installation (P/B 201)

C. Tools/Equipment

Reference	Description
STD-858	Tag - DO NOT OPERATE

D. Location Zones

Zone	Area
113	Area Above and Outboard of Nose Landing Gear Wheel Well - Left
211	Flight Compartment - Left
212	Flight Compartment - Right
317	Tail Cone Compartment - Left
318	Tail Cone Compartment - Right

E. Procedure

SUBTASK 22-11-12-860-018

WARNING: MAKE SURE THAT PERSONNEL AND EQUIPMENT ARE CLEAR OF THE FLIGHT CONTROLS SURFACES. MAKE SURE THAT THE INBOARD FAN DUCT COWL AND THE INBOARD AND OUTBOARD THRUST REVERSERS ARE CLOSED. THE FLIGHT CONTROL SURFACES CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (1) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
C	4	C00456	AFCS SYS A MACH TRIM AC
C	5	C01041	AFCS SYS A SNSR EXC AC

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(Continued)

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	1	C01049	AFCS SYS A WARN LIGHT (BAT)
D	2	C01045	AFCS SYS A FCC DC
D	3	C01048	AFCS SYS A ENGAGE INTLK
D	4	C00457	AFCS SYS A MACH TRIM DC
D	5	C01044	AFCS MCP DC 1

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	1	C00374	AFCS SYS B WARN LIGHT (BAT)
B	2	C01064	AFCS SYS B MACH TRIM DC
B	3	C01046	AFCS SYS B FCC DC
B	4	C00716	AFCS SYS B ENGAGE INTLK
B	10	C00207	FLIGHT CONTROL STAB TRIM CONT
C	1	C01037	AFCS SYS B MACH TRIM AC
C	2	C01042	AFCS SYS B SNSR EXC AC
C	3	C01047	AFCS MCP DC 2
D	10	C00840	FLIGHT CONTROL STAB TRIM ACTUATOR

SUBTASK 22-11-12-010-004

- (2) For the A/P aileron actuators, do these steps:
 - (a) Do this task: Pressure from the Aileron Hydraulic Systems A and B - Deactivation, TASK 27-11-00-860-801.

WARNING: MAKE SURE THAT THE GROUND LOCKS ARE INSTALLED IN ALL OF THE LANDING GEAR. WITHOUT THE GROUND LOCKS, THE LANDING GEAR CAN RETRACT. THIS CAN CAUSE INJURIES TO PERSONNEL, AND DAMAGE TO EQUIPMENT.

- (b) Do this task: Landing Gear Downlock Pins Installation, TASK 32-00-01-480-801.

SUBTASK 22-11-12-010-005

- (3) For the A/P elevator actuators, do this step:
 - (a) Do this task: Remove Pressure from the Elevator Hydraulic Systems A and B, TASK 27-31-00-800-802.
- (4) Attach DO NOT OPERATE tag, STD-858 to the captain's and first officer's control columns.

F. A/P Actuator Solenoid and Electrohydraulic Servo Valves - Tryout

NOTE: This tryout is to make sure the A/P Actuator Solenoid and Electrohydraulic Servo Valves is in a zero energy state.



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SUBTASK 22-11-12-860-022

WARNING: MAKE SURE THAT PERSONNEL AND EQUIPMENT ARE CLEAR OF THE FLIGHT CONTROLS SURFACES. MAKE SURE THAT THE INBOARD FAN DUCT COWL AND THE INBOARD AND OUTBOARD THRUST REVERSERS ARE CLOSED. THE FLIGHT CONTROL SURFACES CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (1) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

SUBTASK 22-11-12-860-020

- (2) Make sure that these circuit breakers are open and have safety tags:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	4	C00456	AFCS SYS A MACH TRIM AC
C	5	C01041	AFCS SYS A SNSR EXC AC
D	1	C01049	AFCS SYS A WARN LIGHT (BAT)
D	2	C01045	AFCS SYS A FCC DC
D	3	C01048	AFCS SYS A ENGAGE INTLK
D	4	C00457	AFCS SYS A MACH TRIM DC
D	5	C01044	AFCS MCP DC 1

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	1	C00374	AFCS SYS B WARN LIGHT (BAT)
B	2	C01064	AFCS SYS B MACH TRIM DC
B	3	C01046	AFCS SYS B FCC DC
B	4	C00716	AFCS SYS B ENGAGE INTLK
B	10	C00207	FLIGHT CONTROL STAB TRIM CONT
C	1	C01037	AFCS SYS B MACH TRIM AC
C	2	C01042	AFCS SYS B SNSR EXC AC
C	3	C01047	AFCS MCP DC 2
D	10	C00840	FLIGHT CONTROL STAB TRIM ACTUATOR

SUBTASK 22-11-12-700-001

- (3) Use the FMC - CDU and do the following test (Figure 201):

- (a) SELECT, INIT/REF on the keyboard.
- (b) SELECT, "INDEX" (LSK 6L).
- (c) SELECT, "MAINT" (LSK 6R).
- (d) SELECT, "DFCS" (LSK 2L).
 - 1) DFCS will run the self test and display as following:
 - FCC-A SELF TEST FAIL
 - FCC-B SELF TEST FAIL
 - CROSS CHANNEL TEST PASS
- (e) SELECT, "CONTINUE" (LSK 6R)
NOTE: Ignore the message that appears.
- (f) SELECT, "CONTINUE" (LSK 6R).

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- (g) SELECT, "EXTENDED MAINTENANCE"(LSK 4L).
- (h) SELECT, "SENSOR VALUES"(LSK 4L).
- (i) SELECT, "DISCRETE INPUTS"(LSK 5L).
- (j) SELECT, "CIRCUIT BREAKER CHECK"(LSK 5R).
- (k) SELECT, INIT/REF on the keyboard, to exit of BITE.
- (l) End of test.

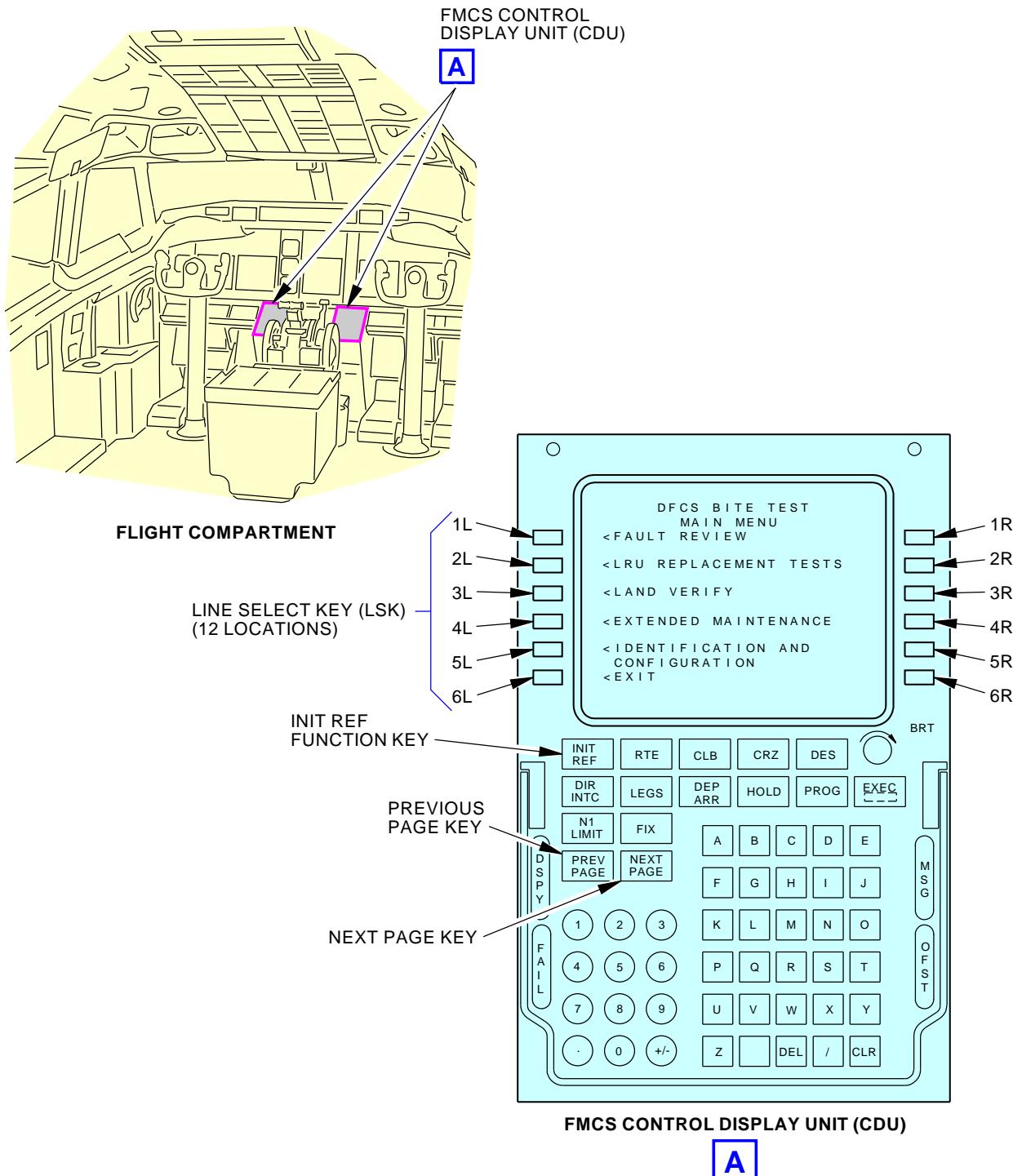
———— END OF TASK ————

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K45540 S0006563722_V2

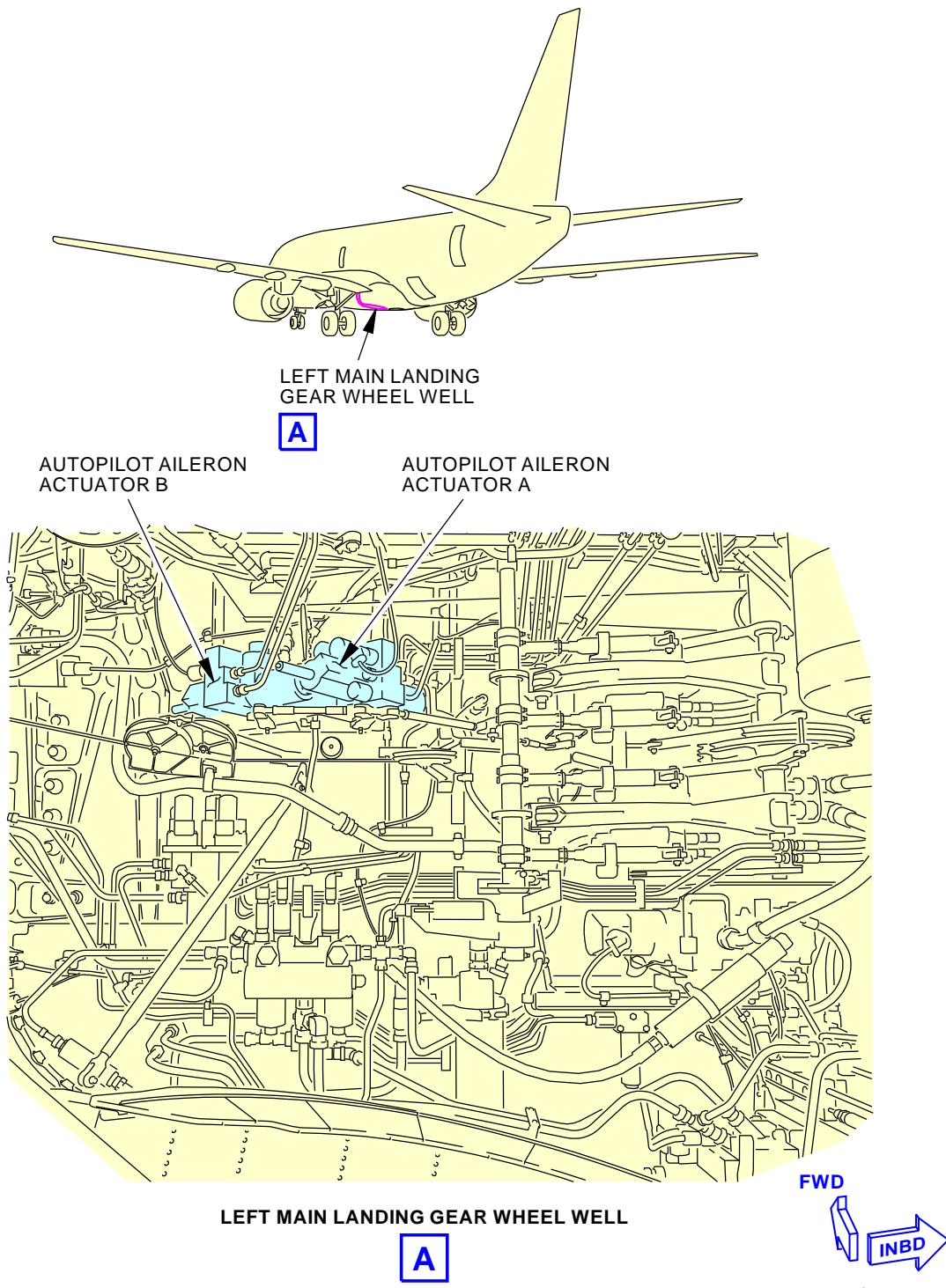
Flight Management Computer Control Display Unit
Figure 201/22-11-12-990-804

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2375117 S0000542801_V1

Solenoid and Electrohydraulic Valve
Figure 202/22-11-12-990-803 (Sheet 1 of 2)

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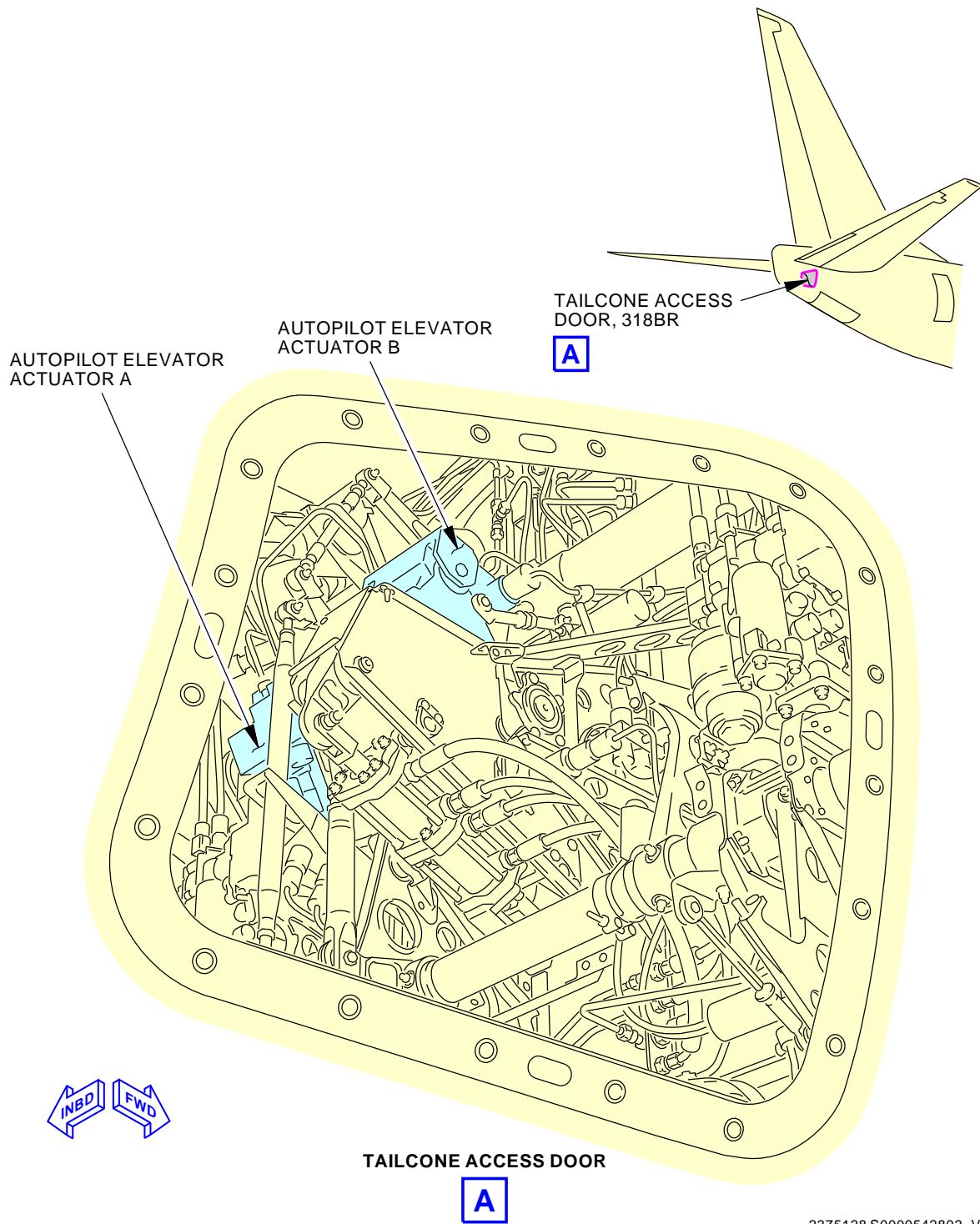
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2375128 S0000542802_V1

Solenoid and Electrohydraulic Valve
Figure 202/22-11-12-990-803 (Sheet 2 of 2)

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TASK 22-11-12-440-801

3. A/P Actuator Solenoid and Electrohydraulic Servo Valves - Activation
(Figure 202)

A. General

- (1) This procedure adds electrical power and hydraulic pressure to A/P Actuator Solenoid and Electrohydraulic Servo Valves.

B. References

Reference	Title
27-11-00-860-802	Pressure to the Aileron Hydraulic Systems A and B - Activation (P/B 201)
27-31-00-800-801	Elevator Hydraulic System A and B - Pressurization (P/B 201)
32-00-01-080-801	Landing Gear Downlock Pins Removal (P/B 201)

C. Location Zones

Zone	Area
113	Area Above and Outboard of Nose Landing Gear Wheel Well - Left
211	Flight Compartment - Left
212	Flight Compartment - Right
317	Tail Cone Compartment - Left
318	Tail Cone Compartment - Right

D. Procedure

SUBTASK 22-11-12-860-021

WARNING: MAKE SURE THAT PERSONNEL AND EQUIPMENT ARE CLEAR OF THE FLIGHT CONTROLS SURFACES. MAKE SURE THAT THE INBOARD FAN DUCT COWL AND THE INBOARD AND OUTBOARD THRUST REVERSERS ARE CLOSED. THE FLIGHT CONTROL SURFACES CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (1) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
C	4	C00456	AFCS SYS A MACH TRIM AC
C	5	C01041	AFCS SYS A SNSR EXC AC
D	1	C01049	AFCS SYS A WARN LIGHT (BAT)
D	2	C01045	AFCS SYS A FCC DC
D	3	C01048	AFCS SYS A ENGAGE INTLK
D	4	C00457	AFCS SYS A MACH TRIM DC
D	5	C01044	AFCS MCP DC 1

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	1	C00374	AFCS SYS B WARN LIGHT (BAT)
B	2	C01064	AFCS SYS B MACH TRIM DC
B	3	C01046	AFCS SYS B FCC DC
B	4	C00716	AFCS SYS B ENGAGE INTLK
B	10	C00207	FLIGHT CONTROL STAB TRIM CONT

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(Continued)

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	1	C01037	AFCS SYS B MACH TRIM AC
C	2	C01042	AFCS SYS B SNSR EXC AC
C	3	C01047	AFCS MCP DC 2
D	10	C00840	FLIGHT CONTROL STAB TRIM ACTUATOR

SUBTASK 22-11-12-410-002

- (2) For the A/P aileron actuators, do these steps:
 - (a) Do this task: Pressure to the Aileron Hydraulic Systems A and B - Activation, TASK 27-11-00-860-802.
 - (b) Do this task: Landing Gear Downlock Pins Removal, TASK 32-00-01-080-801.

SUBTASK 22-11-12-410-003

- (3) For the A/P elevator actuators, do this step:
 - (a) Do this task: Elevator Hydraulic System A and B - Pressurization, TASK 27-31-00-800-801.

———— END OF TASK ————

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A/P ACTUATOR SOLENOID AND ELECTROHYDRAULIC SERVO VALVES - REMOVAL/INSTALLATION

1. General

- A. This procedure has these tasks:
 - (1) The removal of a solenoid valve or electrohydraulic servo valve.
 - (2) The installation of a solenoid valve or electrohydraulic servo valve.
- B. There are two solenoid valves and one electrohydraulic servo valve on each autopilot (A/P) actuator. The removal and installation procedures of the solenoid valves and the electrohydraulic servo valve are the same on all of the A/P actuators (A/P Aileron Actuators and A/P Elevator Actuators).
- C. You can find the two A/P aileron actuators (M943 and M1024) in the left main landing gear wheel well.
- D. You can find the two A/P elevator actuators (M1020 and M1022) on the aft bulkhead at Body station 1156.

TASK 22-11-12-000-801

2. Valve Removal

(Figure 401)

A. References

Reference	Title
27-11-00-860-801	Pressure from the Aileron Hydraulic Systems A and B - Deactivation (P/B 201)
27-31-00-800-802	Remove Pressure from the Elevator Hydraulic Systems A and B (P/B 201)
32-00-01-480-801	Landing Gear Downlock Pins Installation (P/B 201)

B. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
4	Gasket plate	27-11-54-50-025	AKS ALL
5	O-ring	27-11-54-50-030	AKS ALL
		27-11-54-50-150	AKS ALL

C. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
317	Tail Cone Compartment - Left
318	Tail Cone Compartment - Right

D. Access Panels

Number	Name/Location
318BR	Tailcone Access Door

E. Prepare for the Removal

SUBTASK 22-11-12-860-001

- (1) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
C	4	C00456	AFCS SYS A MACH TRIM AC
C	5	C01041	AFCS SYS A SNSR EXC AC

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(Continued)

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	1	C01049	AFCS SYS A WARN LIGHT (BAT)
D	2	C01045	AFCS SYS A FCC DC
D	3	C01048	AFCS SYS A ENGAGE INTLK
D	4	C00457	AFCS SYS A MACH TRIM DC
D	5	C01044	AFCS MCP DC 1

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	1	C00374	AFCS SYS B WARN LIGHT (BAT)
B	2	C01064	AFCS SYS B MACH TRIM DC
B	3	C01046	AFCS SYS B FCC DC
B	4	C00716	AFCS SYS B ENGAGE INTLK
B	10	C00207	FLIGHT CONTROL STAB TRIM CONT
C	1	C01037	AFCS SYS B MACH TRIM AC
C	2	C01042	AFCS SYS B SNSR EXC AC
C	3	C01047	AFCS MCP DC 2
D	10	C00840	FLIGHT CONTROL STAB TRIM ACTUATOR

SUBTASK 22-11-12-010-001

- (2) For the A/P aileron actuators, do these steps:
 - (a) Do this task: Pressure from the Aileron Hydraulic Systems A and B - Deactivation, TASK 27-11-00-860-801.

WARNING: YOU MUST CAREFULLY INSTALL THE GROUND LOCKS IN ALL LANDING GEAR. AN ACCIDENTAL RETRACTION OF THE LANDING GEAR CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (b) Do this task: Landing Gear Downlock Pins Installation, TASK 32-00-01-480-801.

SUBTASK 22-11-12-010-002

- (3) For the A/P elevator actuators, do these steps:

- (a) Do this task: Remove Pressure from the Elevator Hydraulic Systems A and B, TASK 27-31-00-800-802.
- (b) Open this access door:

<u>Number</u>	<u>Name/Location</u>
318BR	Tailcone Access Door

F. Procedure

SUBTASK 22-11-12-020-001

- (1) Do these steps to remove the solenoid valve [1]:
 - (a) Remove the screws [2] and washers [3] that attach the solenoid valve [1].
 - (b) Remove the solenoid valve [1].
 - (c) Remove the o-ring [5].
 - (d) Remove the gasket plate [4] and discard it.

SUBTASK 22-11-12-020-002

- (2) Do these steps to remove the electrohydraulic servo valve [7]:



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- (a) Remove the screws [8] and washers [9] that attach the electrohydraulic servo valve [7].
- (b) Remove the electrohydraulic servo valve [7].
- (c) Remove the o-ring [5].
- (d) Remove the gasket plate [6] and discard it.

———— END OF TASK ————

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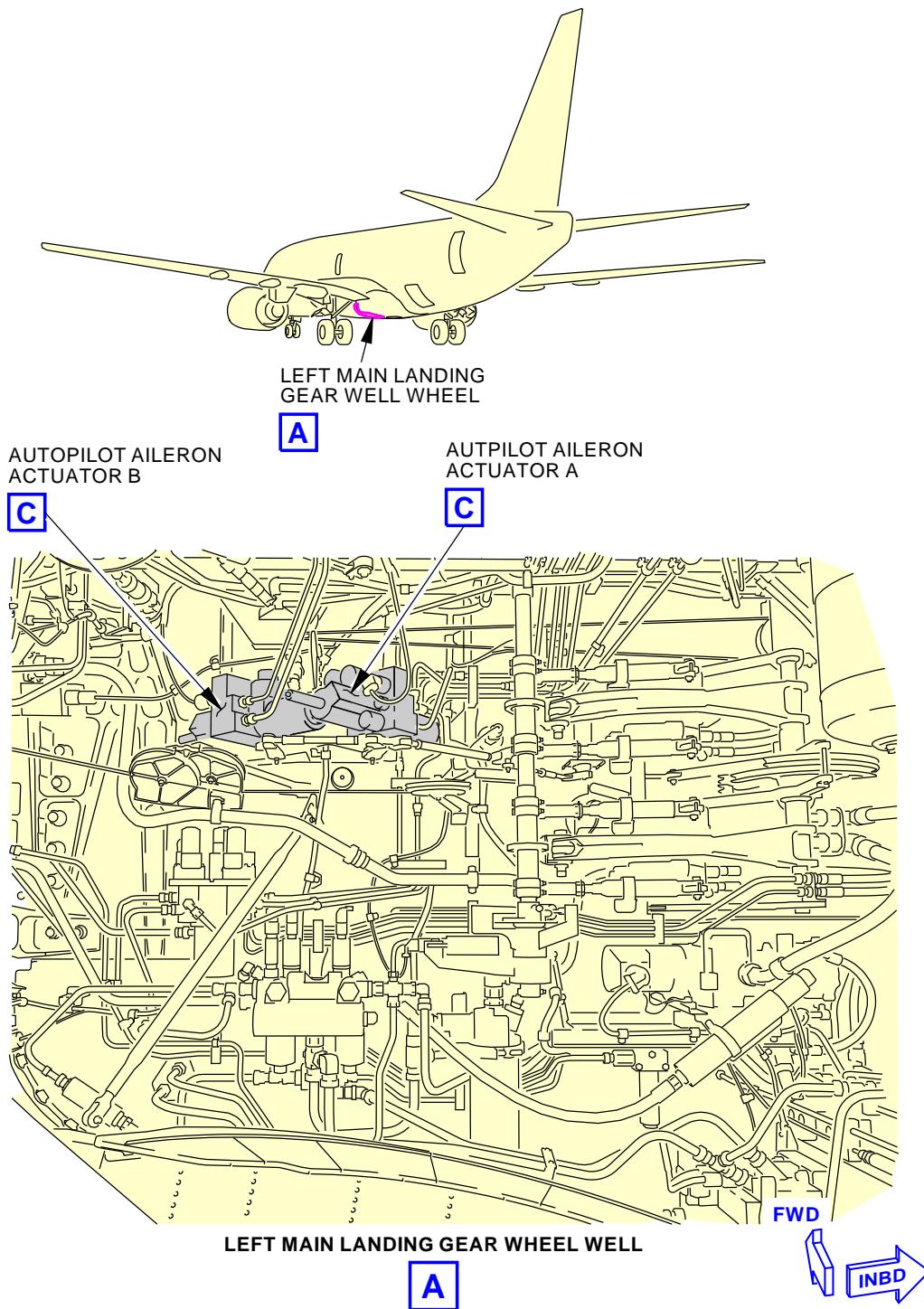
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Solenoid and Electrohydraulic Valve Installation
Figure 401/22-11-12-990-802 (Sheet 1 of 3)

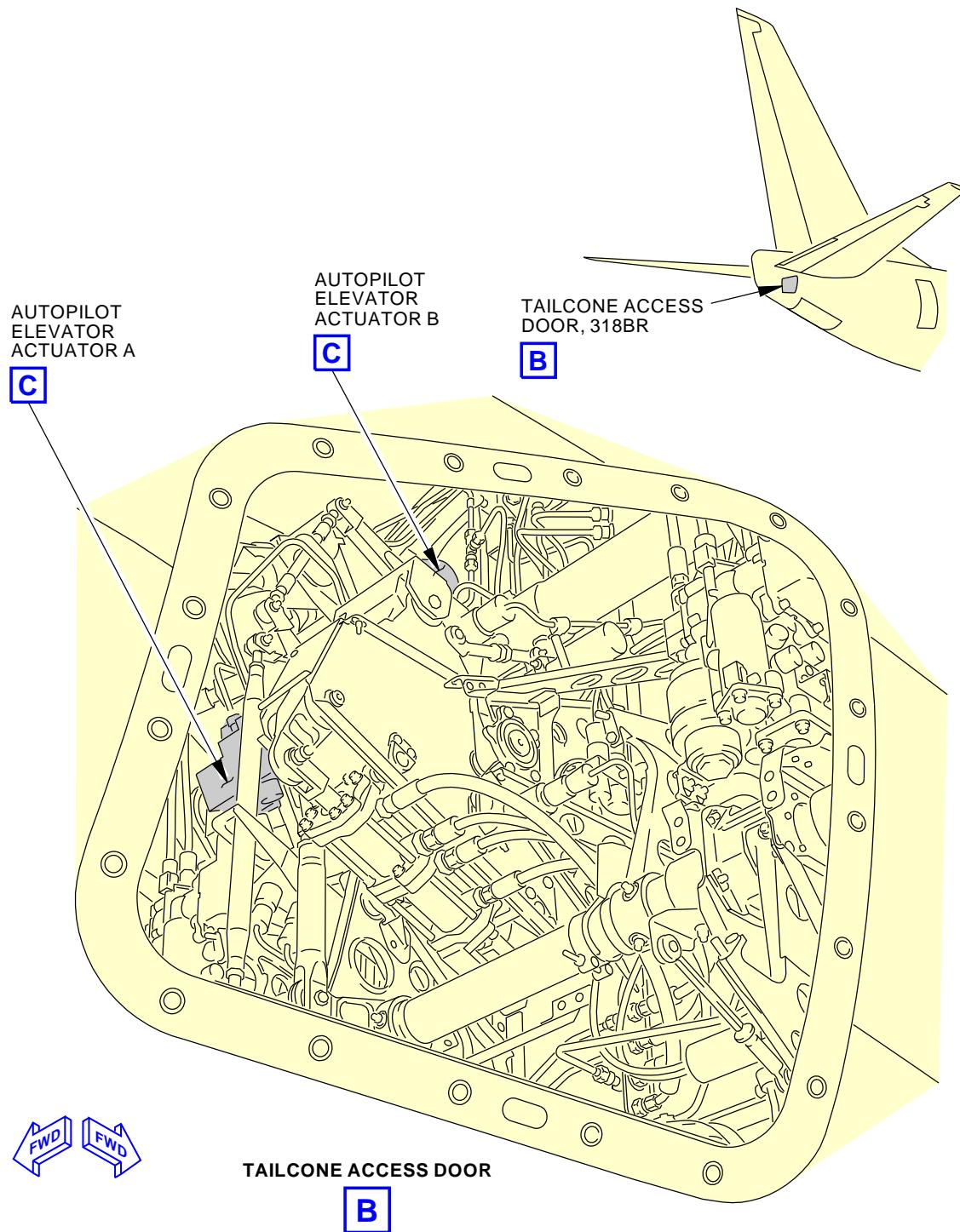
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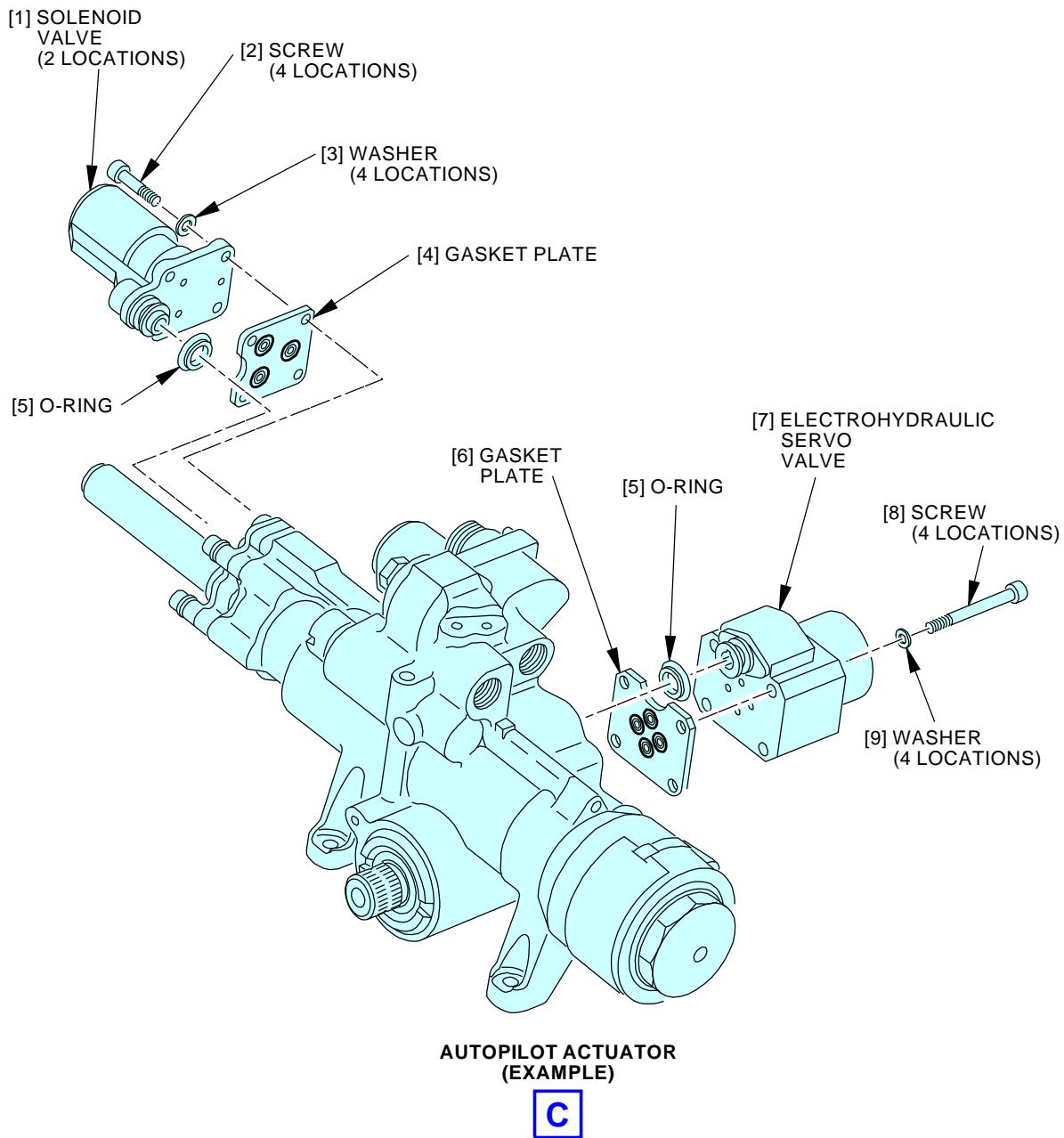
Solenoid and Electrohydraulic Valve Installation
Figure 401/22-11-12-990-802 (Sheet 2 of 3)

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F69924 S0006563921_V3

Solenoid and Electrohydraulic Valve Installation
Figure 401/22-11-12-990-802 (Sheet 3 of 3)

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TASK 22-11-12-400-801

3. Valve Installation

(Figure 401)

A. References

Reference	Title
24-22-00-860-811	Supply Electrical Power (P/B 201)
24-22-00-860-812	Remove Electrical Power (P/B 201)
27-11-00-860-801	Pressure from the Aileron Hydraulic Systems A and B - Deactivation (P/B 201)
27-31-00-800-802	Remove Pressure from the Elevator Hydraulic Systems A and B (P/B 201)
29-11-00-860-801	Hydraulic System A or B Pressurization (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)
32-00-01-080-801	Landing Gear Downlock Pins Removal (P/B 201)
32-00-01-480-801	Landing Gear Downlock Pins Installation (P/B 201)

B. Consumable Materials

Reference	Description	Specification
D00054	Fluid - Hydraulic Assembly Lubricant - MCS 352B (Formerly Monsanto MCS 352B)	
D00153	Fluid - Hydraulic Fluid, Fire Resistant (Interchangeable And Intermixable With BMS 3-11 Type V)	BMS3-11 Type IV

C. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
211	Flight Compartment - Left
212	Flight Compartment - Right
315	APU Compartment - Left
316	APU Compartment - Right

D. Access Panels

Number	Name/Location
318BR	Tailcone Access Door

E. Prepare for the Installation

SUBTASK 22-11-12-860-002

- (1) Make sure that these circuit breakers are open and have safety tags:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
C	4	C00456	AFCS SYS A MACH TRIM AC
C	5	C01041	AFCS SYS A SNSR EXC AC
D	1	C01049	AFCS SYS A WARN LIGHT (BAT)
D	2	C01045	AFCS SYS A FCC DC
D	3	C01048	AFCS SYS A ENGAGE INTLK
D	4	C00457	AFCS SYS A MACH TRIM DC
D	5	C01044	AFCS MCP DC 1



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F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	1	C00374	AFCS SYS B WARN LIGHT (BAT)
B	2	C01064	AFCS SYS B MACH TRIM DC
B	3	C01046	AFCS SYS B FCC DC
B	4	C00716	AFCS SYS B ENGAGE INTLK
B	10	C00207	FLIGHT CONTROL STAB TRIM CONT
C	1	C01037	AFCS SYS B MACH TRIM AC
C	2	C01042	AFCS SYS B SNSR EXC AC
C	3	C01047	AFCS MCP DC 2
D	10	C00840	FLIGHT CONTROL STAB TRIM ACTUATOR

SUBTASK 22-11-12-860-003

- (2) For the A/P aileron actuators, make sure you do these steps:
 - (a) Do this task: Pressure from the Aileron Hydraulic Systems A and B - Deactivation, TASK 27-11-00-860-801.

WARNING: YOU MUST CAREFULLY INSTALL THE GROUND LOCKS IN ALL LANDING GEAR. AN ACCIDENTAL RETRACTION OF THE LANDING GEAR CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (b) Do this task: Landing Gear Downlock Pins Installation, TASK 32-00-01-480-801.

SUBTASK 22-11-12-010-003

- (3) For the A/P elevator actuators, make sure you do these steps:
 - (a) Do this task: Remove Pressure from the Elevator Hydraulic Systems A and B, TASK 27-31-00-800-802.
 - (b) Open this access door:

Number Name/Location

318BR Tailcone Access Door

F. Procedure

SUBTASK 22-11-12-420-001

- (1) Do these steps to install the solenoid valve [1]:
 - (a) Install the o-ring [5] on the solenoid valve [1].
 - (b) Apply a layer of the hydraulic fluid, D00153 or MCS 352B fluid, D00054 to the two sides of the gasket plate [4].
 - (c) Put the new gasket plate [4] in the correct position.
 - (d) Put the solenoid valve [1] in its position for installation.
 - (e) Install the screws [2] and washers [3] that attach the solenoid valve [1].
 - (f) Tighten the screws [2] to 50 in-lb (5.6 N·m) to 70 in-lb (7.9 N·m).

SUBTASK 22-11-12-420-002

- (2) Do these steps to install the electrohydraulic servo valve [7]:
 - (a) Install the o-ring [5] on the electrohydraulic servo valve [7].
 - (b) Apply a layer of the hydraulic fluid, D00153 or MCS 352B fluid, D00054 to the two sides of the gasket plate [6].
 - (c) Put the new gasket plate [6] in the correct position.

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- (d) Put the electrohydraulic servo valve [7] in its position for installation.
- (e) Install the screws [8] and washers [9] that attach the electrohydraulic servo valve [7].
- (f) Tighten the screws [8] to 50 in-lb (5.6 N·m) to 70 in-lb (7.9 N·m).

SUBTASK 22-11-12-860-004

- (3) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	4	C00456	AFCS SYS A MACH TRIM AC
C	5	C01041	AFCS SYS A SNSR EXC AC
D	1	C01049	AFCS SYS A WARN LIGHT (BAT)
D	2	C01045	AFCS SYS A FCC DC
D	3	C01048	AFCS SYS A ENGAGE INTLK
D	4	C00457	AFCS SYS A MACH TRIM DC
D	5	C01044	AFCS MCP DC 1

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	1	C00374	AFCS SYS B WARN LIGHT (BAT)
B	2	C01064	AFCS SYS B MACH TRIM DC
B	3	C01046	AFCS SYS B FCC DC
B	4	C00716	AFCS SYS B ENGAGE INTLK
B	10	C00207	FLIGHT CONTROL STAB TRIM CONT
C	1	C01037	AFCS SYS B MACH TRIM AC
C	2	C01042	AFCS SYS B SNSR EXC AC
C	3	C01047	AFCS MCP DC 2
D	10	C00840	FLIGHT CONTROL STAB TRIM ACTUATOR

G. Prepare for the Test

SUBTASK 22-11-12-860-005

- (1) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

SUBTASK 22-11-12-860-017

- (2) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	18	C00451	LANDING GEAR AURAL WARN

SUBTASK 22-11-12-860-006

- (3) Set the autopilot stab trim cutout switch, on the control stand, to the CUTOUT position.

SUBTASK 22-11-12-860-007

- (4) Make sure that the VHF NAV and IRS switches, on the P5 forward overhead panel, are in the NORMAL positions.

SUBTASK 22-11-12-860-008

- (5) Set the left and right IRS select switches, on the P5 aft overhead panel, to the ALIGN or NAV position.



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SUBTASK 22-11-12-860-009

WARNING: KEEP PERSONS AND EQUIPMENT AWAY FROM THE FLIGHT CONTROL SURFACES. THE AILERONS, ELEVATORS, RUDDER, FLAPS, SLATS, SPOILERS, STABILIZER AND NOSE GEAR CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (6) Supply hydraulic power to hydraulic systems A and B. To supply hydraulic power, do this task:
Hydraulic System A or B Pressurization, TASK 29-11-00-860-801.

H. Post Installation Test

SUBTASK 22-11-12-740-001

- (1) Do this BITE test:

- (a) Push the INIT REF key on the CDU keyboard.
- (b) Push the Line Select Key (LSK) that is adjacent to each selection:

NOTE: If the CONTINUE shows during the BITE test, then do the instructions that show on the CDU display before you push the LSK that is adjacent to CONTINUE. Use the NEXT PAGE or PREV PAGE key to change page if it is necessary.

- 1) INDEX
- 2) MAINT
- 3) DFCS
- 4) EXTENDED MAINTENANCE
- 5) BITE LIBRARY TEST
- 6) Make a selection for the applicable channel:

NOTE: A/P aileron actuator A and A/P elevator actuator A have interfaces with the Flight Control Computer A (Channel A). A/P aileron actuator B and A/P elevator actuator B have interfaces with the Flight Control Computer B (Channel B).

- a) CHANNEL A
- b) CHANNEL B
- c) CHANNEL A AND B
- 7) RUN SELECT LIBRARY TESTS
- 8) 30 ELEV CONTROL or 31 AIL CONTROL

NOTE: 30 ELEV CONTROL is for the A/P elevator actuators and 31 AIL CONTROL is for the A/P aileron actuators.

- 9) EXECUTE
- (c) Do the instructions that show on the CDU to complete the test.
- (d) Make sure that the test is completed with no failure or the "TEST FAILED" message does not show.

SUBTASK 22-11-12-210-001

- (2) Visually examine the solenoid valve [1] and electrohydraulic servo valve [7].
(a) Make sure that there is no hydraulic leak.

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I. Put the Airplane Back to Its Usual Condition

SUBTASK 22-11-12-410-001

- (1) Install this access panel:

Number Name/Location

318BR Tailcone Access Door

SUBTASK 22-11-12-860-010

- (2) Do this task: Landing Gear Downlock Pins Removal, TASK 32-00-01-080-801.

SUBTASK 22-11-12-860-011

- (3) Push the captain's or first officer's autopilot disengage switch, on the control wheel, to make sure that the autopilot is disengaged.

SUBTASK 22-11-12-860-016

- (4) Remove the safety tag and close this circuit breaker:

F/O Electrical System Panel, P6-3

Row Col Number Name

D 18 C00451 LANDING GEAR AURAL WARN

SUBTASK 22-11-12-860-013

- (5) Set the autopilot stab trim cutout switch, on the control stand, to the NORMAL position.

SUBTASK 22-11-12-860-014

- (6) Remove hydraulic power from hydraulic systems A and B. To remove hydraulic power, do this task: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805.

SUBTASK 22-11-12-860-015

- (7) Do this task: Remove Electrical Power, TASK 24-22-00-860-812.

———— END OF TASK ————

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ELEVATOR NEUTRAL SHIFT SENSOR - MAINTENANCE PRACTICES

1. General

- A. This procedure has these tasks:
- (1) Elevator Neutral Shift Sensor Deactivation.
 - (2) Elevator Neutral Shift Sensor Activation.

TASK 22-11-14-040-801

2. Elevator Neutral Shift Sensor - Deactivation

(Figure 202)

A. General

- (1) This procedure removes electrical power and hydraulic pressure to Elevator Neutral Shift Sensor.

B. References

Reference	Title
24-22-00-860-811	Supply Electrical Power (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)

C. Tools/Equipment

Reference	Description
STD-858	Tag - DO NOT OPERATE

D. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right
317	Tail Cone Compartment - Left
318	Tail Cone Compartment - Right

E. Procedure

SUBTASK 22-11-14-860-029

WARNING: MAKE SURE THAT PERSONNEL AND EQUIPMENT ARE CLEAR OF THE FLIGHT CONTROLS SURFACES. MAKE SURE THAT THE INBOARD FAN DUCT COWL AND THE INBOARD AND OUTBOARD THRUST REVERSERS ARE CLOSED. THE FLIGHT CONTROL SURFACES CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (1) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
C	4	C00456	AFCS SYS A MACH TRIM AC
C	5	C01041	AFCS SYS A SNSR EXC AC
D	1	C01049	AFCS SYS A WARN LIGHT (BAT)
D	2	C01045	AFCS SYS A FCC DC
D	3	C01048	AFCS SYS A ENGAGE INTLK
D	4	C00457	AFCS SYS A MACH TRIM DC
D	5	C01044	AFCS MCP DC 1

EFFECTIVITY
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F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	1	C00374	AFCS SYS B WARN LIGHT (BAT)
B	2	C01064	AFCS SYS B MACH TRIM DC
B	3	C01046	AFCS SYS B FCC DC
B	4	C00716	AFCS SYS B ENGAGE INTLK
C	1	C01037	AFCS SYS B MACH TRIM AC
C	2	C01042	AFCS SYS B SNSR EXC AC
C	3	C01047	AFCS MCP DC 2

SUBTASK 22-11-14-010-005

- (2) Do this task: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805.

SUBTASK 22-11-14-860-030

- (3) Attach DO NOT OPERATE tag, STD-858 to the captain's and first officer's control columns.

F. Elevator Neutral Shift Sensor - Tryout

NOTE: This tryout is to make sure the Elevator Neutral Shift Sensor is in a zero energy state.

SUBTASK 22-11-14-860-033

WARNING: MAKE SURE THAT PERSONNEL AND EQUIPMENT ARE CLEAR OF THE FLIGHT CONTROLS SURFACES. MAKE SURE THAT THE INBOARD FAN DUCT COWL AND THE INBOARD AND OUTBOARD THRUST REVERSERS ARE CLOSED. THE FLIGHT CONTROL SURFACES CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (1) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

SUBTASK 22-11-14-860-031

- (2) Make sure that these circuit breakers are open and have safety tags:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	4	C00456	AFCS SYS A MACH TRIM AC
C	5	C01041	AFCS SYS A SNSR EXC AC
D	1	C01049	AFCS SYS A WARN LIGHT (BAT)
D	2	C01045	AFCS SYS A FCC DC
D	3	C01048	AFCS SYS A ENGAGE INTLK
D	4	C00457	AFCS SYS A MACH TRIM DC
D	5	C01044	AFCS MCP DC 1

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	1	C00374	AFCS SYS B WARN LIGHT (BAT)
B	2	C01064	AFCS SYS B MACH TRIM DC
B	3	C01046	AFCS SYS B FCC DC
B	4	C00716	AFCS SYS B ENGAGE INTLK
C	1	C01037	AFCS SYS B MACH TRIM AC
C	2	C01042	AFCS SYS B SNSR EXC AC
C	3	C01047	AFCS MCP DC 2



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SUBTASK 22-11-14-700-002

- (3) Use the FMC - CDU and do the following test (Figure 201):
- (a) SELECT, INIT/REF on the keyboard.
 - (b) SELECT, "INDEX" (LSK 6L).
 - (c) SELECT, "MAINT" (LSK 6R).
 - (d) SELECT, "DFCS" (LSK 2L).
 - 1) DFCS will run the self test and display as following:
 - FCC-A SELF TEST FAIL
 - FCC-B SELF TEST FAIL
 - CROSS CHANNEL TEST PASS
 - (e) SELECT, "CONTINUE" (LSK 6R)
NOTE: Ignore the message that appears.
 - (f) SELECT, "CONTINUE" (LSK 6R).
 - (g) SELECT, "EXTENDED MAINTENANCE"(LSK 4L).
 - (h) SELECT, "SENSOR VALUES"(LSK 4L).
 - (i) SELECT, "DISCRETE INPUTS"(LSK 5L).
 - (j) SELECT, "CIRCUIT BREAKER CHECK"(LSK 5R).
 - (k) SELECT, INIT/REF on the keyboard, to exit of BITE.
 - (l) End of test.

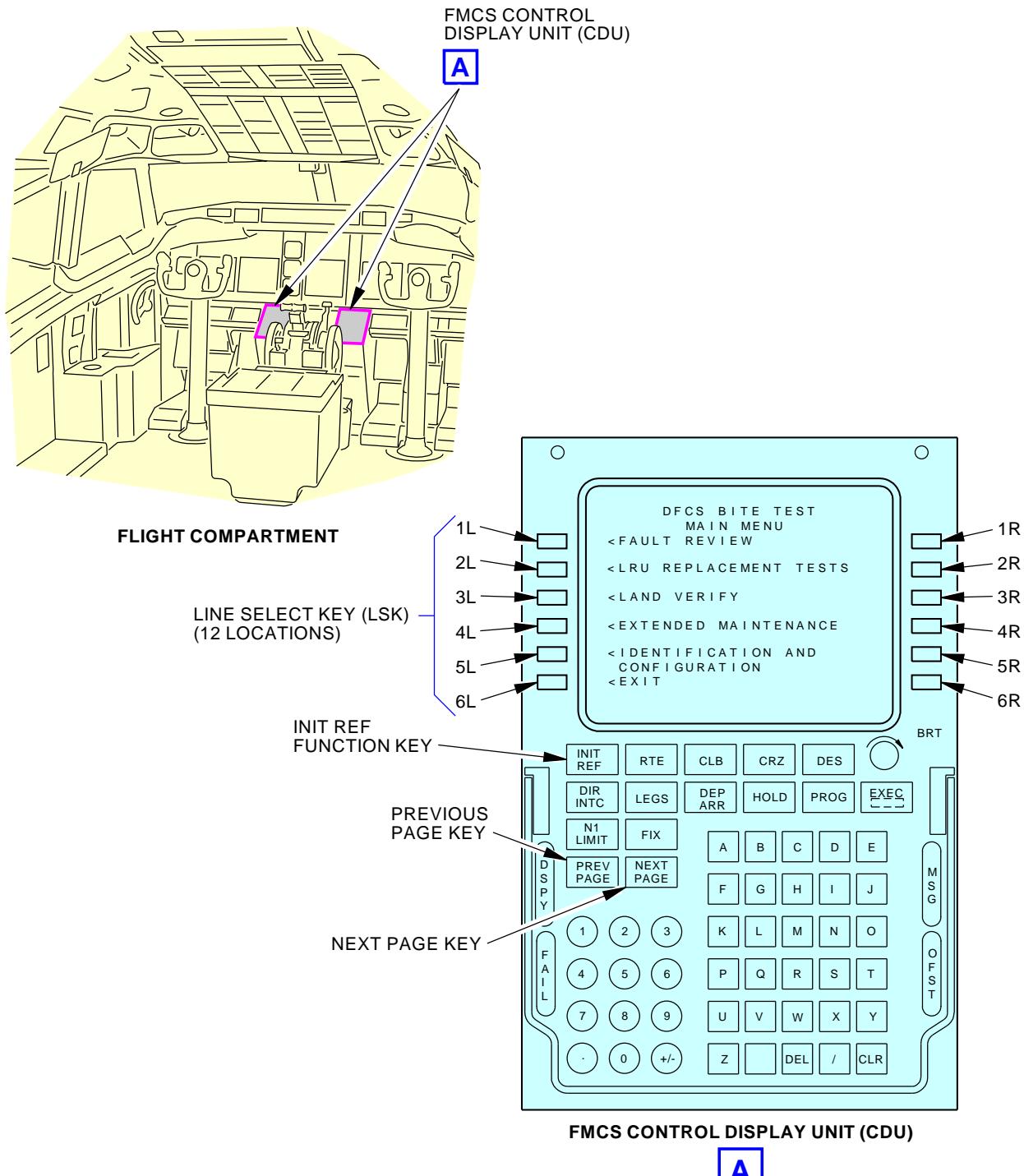
———— END OF TASK ————

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K45540 S0006563722_V2

Flight Management Computer Control Display Unit
Figure 201/22-11-14-990-806

EFFECTIVITY
AKS ALL

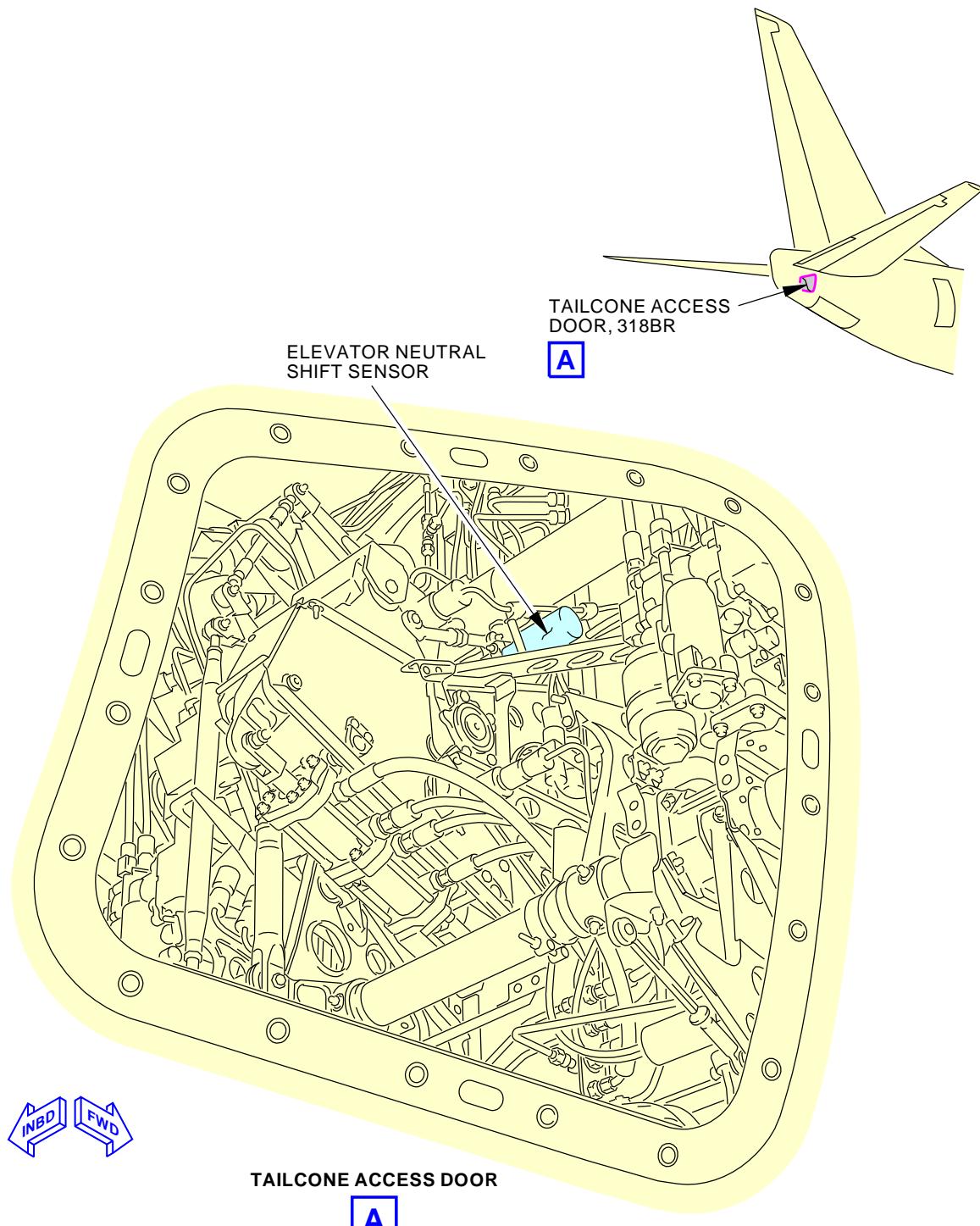
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Elevator Neutral Shift Sensor
Figure 202/22-11-14-990-805

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TASK 22-11-14-440-801

3. Elevator Neutral Shift Sensor - Activation

(Figure 202)

A. General

- (1) This procedure adds electrical power and hydraulic pressure to Elevator Neutral Shift Sensor.

B. References

Reference	Title
29-11-00-860-801	Hydraulic System A or B Pressurization (P/B 201)

C. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right
317	Tail Cone Compartment - Left
318	Tail Cone Compartment - Right

D. Procedure

SUBTASK 22-11-14-860-032

WARNING: MAKE SURE THAT PERSONNEL AND EQUIPMENT ARE CLEAR OF THE FLIGHT CONTROLS SURFACES. MAKE SURE THAT THE INBOARD FAN DUCT COWL AND THE INBOARD AND OUTBOARD THRUST REVERSERS ARE CLOSED. THE FLIGHT CONTROL SURFACES CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (1) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
C	4	C00456	AFCS SYS A MACH TRIM AC
C	5	C01041	AFCS SYS A SNSR EXC AC
D	1	C01049	AFCS SYS A WARN LIGHT (BAT)
D	2	C01045	AFCS SYS A FCC DC
D	3	C01048	AFCS SYS A ENGAGE INTLK
D	4	C00457	AFCS SYS A MACH TRIM DC
D	5	C01044	AFCS MCP DC 1

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	1	C00374	AFCS SYS B WARN LIGHT (BAT)
B	3	C01046	AFCS SYS B FCC DC
B	4	C00716	AFCS SYS B ENGAGE INTLK
B	10	C00207	FLIGHT CONTROL STAB TRIM CONT
C	2	C01042	AFCS SYS B SNSR EXC AC
C	3	C01047	AFCS MCP DC 2
D	10	C00840	FLIGHT CONTROL STAB TRIM ACTUATOR



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SUBTASK 22-11-14-410-003

- (2) Do this task: Hydraulic System A or B Pressurization, TASK 29-11-00-860-801.

———— END OF TASK ————

EFFECTIVITY
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ELEVATOR NEUTRAL SHIFT SENSOR - REMOVAL/INSTALLATION

1. General

- A. This procedure has these tasks:
 - (1) A removal of the elevator neutral shift sensor.
 - (2) An installation of the elevator neutral shift sensor.
- B. The elevator neutral shift sensor (M958) is located on the forward right side of the feel and centering unit. The elevator neutral shift sensor is installed on the aft bulkhead at Body Station 1156.

TASK 22-11-14-000-801

2. Elevator Neutral Shift Sensor Removal

(Figure 401)

A. Location Zones

<u>Zone</u>	<u>Area</u>
317	Tail Cone Compartment - Left
318	Tail Cone Compartment - Right

B. Access Panels

<u>Number</u>	<u>Name/Location</u>
318BR	Tailcone Access Door

C. Prepare for the Removal

SUBTASK 22-11-14-860-021

- (1) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	4	C00456	AFCS SYS A MACH TRIM AC
C	5	C01041	AFCS SYS A SNSR EXC AC
D	1	C01049	AFCS SYS A WARN LIGHT (BAT)
D	2	C01045	AFCS SYS A FCC DC
D	3	C01048	AFCS SYS A ENGAGE INTLK
D	4	C00457	AFCS SYS A MACH TRIM DC
D	5	C01044	AFCS MCP DC 1

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	1	C00374	AFCS SYS B WARN LIGHT (BAT)
B	2	C01064	AFCS SYS B MACH TRIM DC
B	3	C01046	AFCS SYS B FCC DC
B	4	C00716	AFCS SYS B ENGAGE INTLK
C	1	C01037	AFCS SYS B MACH TRIM AC
C	2	C01042	AFCS SYS B SNSR EXC AC
C	3	C01047	AFCS MCP DC 2

SUBTASK 22-11-14-010-003

- (2) Open this access door:

Number Name/Location

318BR Tailcone Access Door

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D. Procedure

SUBTASK 22-11-14-020-001

- (1) Disconnect the electrical connectorss [4].

SUBTASK 22-11-14-020-002

- (2) Do these steps to remove the elevator neutral shift sensor [5].

- (a) Remove the bolt [7], washer [8], and nut [9] in the crank [10].
(b) Loosen the bolt [1] in the bracket [6].

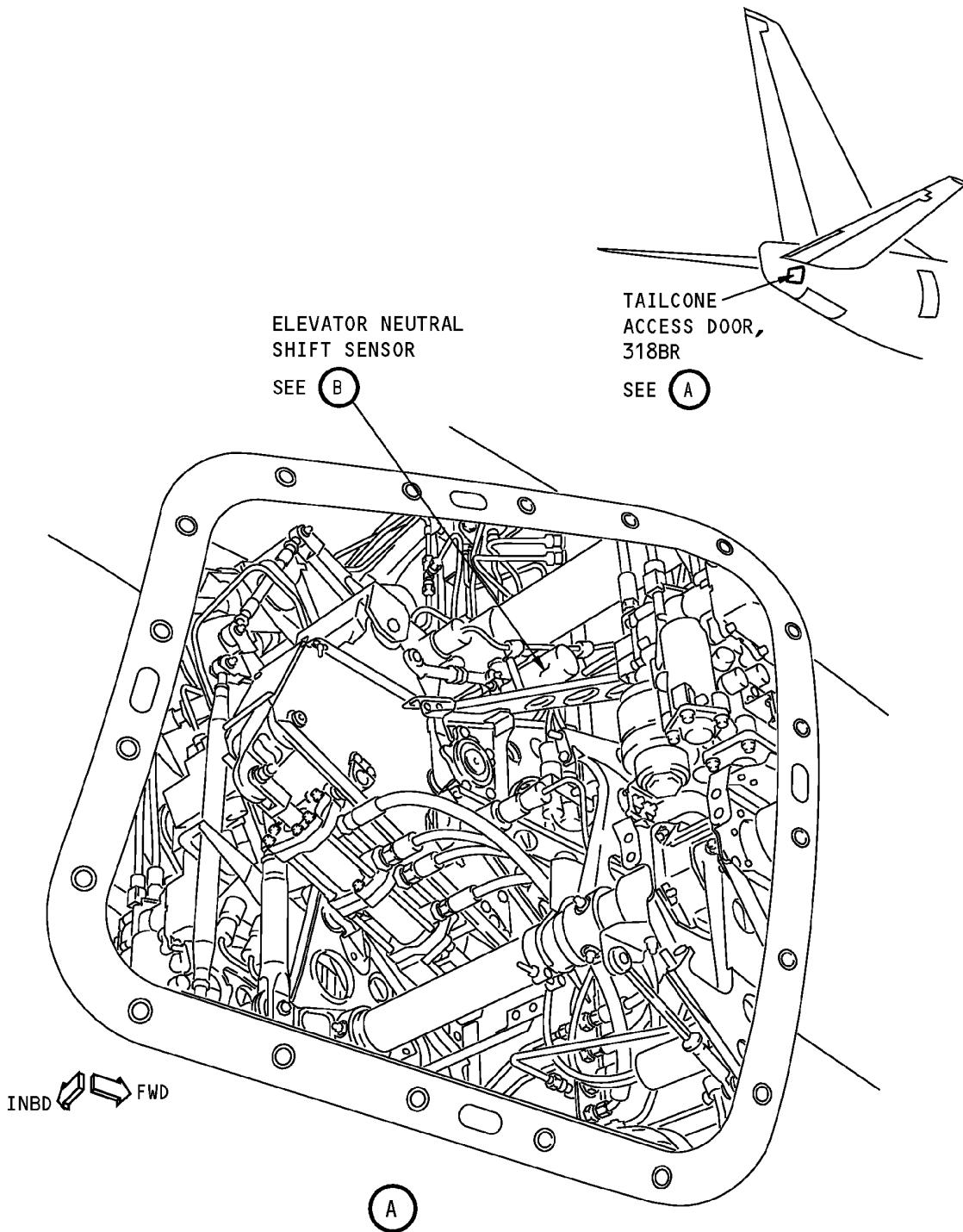
NOTE: You do not have to remove the bolt [1], washer [2], and nut [3].

- (c) Remove the elevator neutral shift sensor [5].

———— END OF TASK ————

EFFECTIVITY
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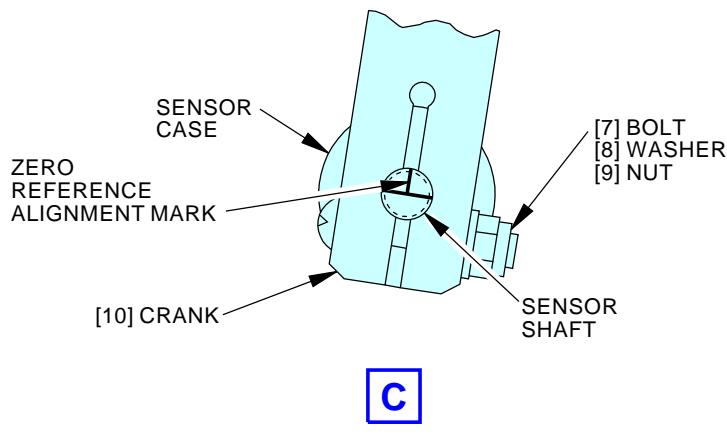
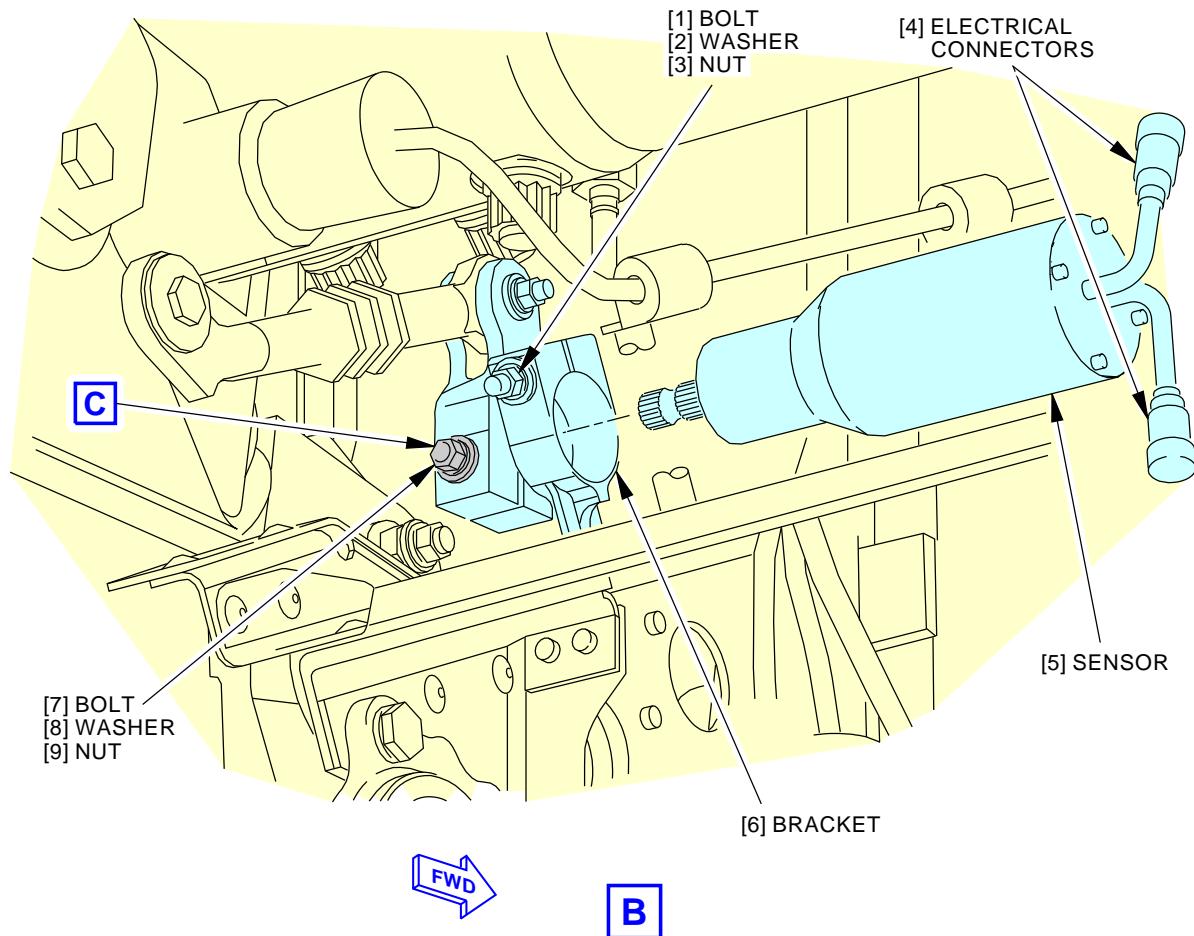


Elevator Neutral Shift Sensor Installation
Figure 401/22-11-14-990-804 (Sheet 1 of 2)

EFFECTIVITY
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G18297 S0006563928_V3

Elevator Neutral Shift Sensor Installation
Figure 401/22-11-14-990-804 (Sheet 2 of 2)

EFFECTIVITY
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TASK 22-11-14-400-801

3. Elevator Neutral Shift Sensor Installation

(Figure 401)

A. References

Reference	Title
22-11-14-710-801	Elevator Neutral Shift Sensor Test (P/B 501)
22-11-14-820-801	Elevator Neutral Shift Sensor Adjustment and Test (P/B 501)

B. Location Zones

Zone	Area
311	Area Aft of Pressure Bulkhead - Left
317	Tail Cone Compartment - Left
318	Tail Cone Compartment - Right

C. Access Panels

Number	Name/Location
318BR	Tailcone Access Door

D. Prepare for the Installation

SUBTASK 22-11-14-860-022

- (1) Make sure that these circuit breakers are open and have safety tags:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
C	4	C00456	AFCS SYS A MACH TRIM AC
C	5	C01041	AFCS SYS A SNSR EXC AC
D	1	C01049	AFCS SYS A WARN LIGHT (BAT)
D	2	C01045	AFCS SYS A FCC DC
D	3	C01048	AFCS SYS A ENGAGE INTLK
D	4	C00457	AFCS SYS A MACH TRIM DC
D	5	C01044	AFCS MCP DC 1

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	1	C00374	AFCS SYS B WARN LIGHT (BAT)
B	2	C01064	AFCS SYS B MACH TRIM DC
B	3	C01046	AFCS SYS B FCC DC
B	4	C00716	AFCS SYS B ENGAGE INTLK
C	1	C01037	AFCS SYS B MACH TRIM AC
C	2	C01042	AFCS SYS B SNSR EXC AC
C	3	C01047	AFCS MCP DC 2

SUBTASK 22-11-14-010-004

- (2) Open this access door:

Number	Name/Location
318BR	Tailcone Access Door

SUBTASK 22-11-14-980-003

- (3) Do these steps to set the stabilizer (this is the position where the Neutral Shift Sensor voltage is null):

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- (a) Turn the stab trim wheel handle on the control stand to set the stab to 11.6 units.

E. Procedure

SUBTASK 22-11-14-820-002

- (1) Align the reference mark on the sensor case with the reference mark on the end of the sensor shaft.

SUBTASK 22-11-14-420-001

- (2) Do these steps to install the elevator neutral shift sensor [5]:
- Make sure that the thumbwheel on the rod is not positioned near either end of its travel.
 - Put the elevator neutral shift sensor [5] in the bracket and the crank [10] with the zero reference alignment mark aligned with the slot in the crank [10].
 - Install the bolt [7], washer [8], and nut [9] in the crank [10] and tighten to 35 pound-inches (3.95–3.96 newton-meters).
 - Tighten the bolt [1] in the bracket [6] to 35 pound-inches ((3.95–3.96 newton-meters)).

SUBTASK 22-11-14-420-002

- (3) Connect the electrical connectorss [4].

SUBTASK 22-11-14-860-023

- (4) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	4	C00456	AFCS SYS A MACH TRIM AC
C	5	C01041	AFCS SYS A SNSR EXC AC
D	1	C01049	AFCS SYS A WARN LIGHT (BAT)
D	2	C01045	AFCS SYS A FCC DC
D	3	C01048	AFCS SYS A ENGAGE INTLK
D	4	C00457	AFCS SYS A MACH TRIM DC
D	5	C01044	AFCS MCP DC 1

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	1	C00374	AFCS SYS B WARN LIGHT (BAT)
B	2	C01064	AFCS SYS B MACH TRIM DC
B	3	C01046	AFCS SYS B FCC DC
B	4	C00716	AFCS SYS B ENGAGE INTLK
C	1	C01037	AFCS SYS B MACH TRIM AC
C	2	C01042	AFCS SYS B SNSR EXC AC
C	3	C01047	AFCS MCP DC 2

SUBTASK 22-11-14-820-003

- (5) Do this task: Elevator Neutral Shift Sensor Adjustment and Test, TASK 22-11-14-820-801.

SUBTASK 22-11-14-710-001

- (6) Do this task: Elevator Neutral Shift Sensor Test, TASK 22-11-14-710-801.

———— END OF TASK ————

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ELEVATOR NEUTRAL SHIFT SENSOR - ADJUSTMENT/TEST

1. General

- A. This procedure has these tasks:
 - (1) Elevator Neutral Shift Sensor Adjustment and Test.
 - (2) Elevator Neutral Shift Sensor Test.
- B. The elevator neutral shift sensor (M958) is located on the forward right side of the feel and centering unit. The elevator neutral shift sensor is installed on the aft bulkhead at Body Station 1156.

TASK 22-11-14-820-801

2. Elevator Neutral Shift Sensor Adjustment and Test

(Figure 501, Figure 502)

A. References

Reference	Title
24-22-00-860-811	Supply Electrical Power (P/B 201)
24-22-00-860-812	Remove Electrical Power (P/B 201)
29-11-00-860-801	Hydraulic System A or B Pressurization (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1677	Assembly - Trammel Bar, Stabilizer Trim Actuator Part #: F80055-10 Supplier: 81205 Opt Part #: F80055-1 Supplier: 81205

C. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right
311	Area Aft of Pressure Bulkhead - Left
317	Tail Cone Compartment - Left
318	Tail Cone Compartment - Right

D. Access Panels

Number	Name/Location
311BL	Stabilizer Trim Access Door
318BR	Tailcone Access Door

E. Prepare for the Adjustment

SUBTASK 22-11-14-860-001

- (1) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

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SUBTASK 22-11-14-860-028

- (2) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	18	C00451	LANDING GEAR AURAL WARN

SUBTASK 22-11-14-860-002

- (3) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	4	C00456	AFCS SYS A MACH TRIM AC
C	5	C01041	AFCS SYS A SNSR EXC AC
D	1	C01049	AFCS SYS A WARN LIGHT (BAT)
D	2	C01045	AFCS SYS A FCC DC
D	3	C01048	AFCS SYS A ENGAGE INTLK
D	4	C00457	AFCS SYS A MACH TRIM DC
D	5	C01044	AFCS MCP DC 1

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	1	C00374	AFCS SYS B WARN LIGHT (BAT)
B	2	C01064	AFCS SYS B MACH TRIM DC
B	3	C01046	AFCS SYS B FCC DC
B	4	C00716	AFCS SYS B ENGAGE INTLK
C	1	C01037	AFCS SYS B MACH TRIM AC
C	2	C01042	AFCS SYS B SNSR EXC AC
C	3	C01047	AFCS MCP DC 2

SUBTASK 22-11-14-010-001

- (4) Open this access panel:

Number Name/Location

318BR Tailcone Access Door

SUBTASK 22-11-14-010-002

- (5) To get access to the stabilizer trim jackscrew, open this access door:

Number Name/Location

311BL Stabilizer Trim Access Door

SUBTASK 22-11-14-980-001

- (6) Do these steps to set the B dimension (Figure 502):

NOTE: The B dimension is measured between the center of the upper and lower Gimbal pins on the stabilizer trim jackscrew. To do this, one person must be in the tail of the airplane with a headset and the other person in the flight compartment.

- (a) Make sure that the main stabilizer trim cutout switch on the control stand is in the NORMAL position.

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WARNING: STAY AWAY FROM THE STABILIZER TRIM WHEEL ON THE CONTROL STAND IF YOU USE THE STABILIZER TRIM SWITCH ON THE CONTROL WHEEL. THE STABILIZER TRIM SWITCH CAN CAUSE THE STABILIZER TRIM WHEEL TO TURN VERY FAST. INJURY TO PERSONS MAY OCCUR IF YOU TOUCH IT WHEN IT TURNS.

- (b) Set the B dimension to 39.89 ± 0.01 in. (1013.21 ± 0.26 mm).

NOTE: This B dimension is equivalent to the horizontal stabilizer at 4 units of trim.

- (c) Use the trammel bar, SPL-1677, to measure the B dimension.

- 1) Make sure that the B dimension is 39.89 ± 0.01 in. (1013.21 ± 0.26 mm).

SUBTASK 22-11-14-860-003

- (7) Set the autopilot stabilizer trim cutout switch, on the control stand, to the CUTOUT position.

SUBTASK 22-11-14-860-004

- (8) Make sure that the VHF NAV and IRS switches on the P5 forward overhead panel are in the NORMAL positions.

SUBTASK 22-11-14-860-005

- (9) Set the left and right IRS select switches on the P5 aft overhead panel to the ALIGN or NAV position.

SUBTASK 22-11-14-860-006

WARNING: KEEP ALL PERSONS AND EQUIPMENT CLEAR OF ALL CONTROL SURFACES BEFORE YOU SUPPLY HYDRAULIC POWER. AILERONS, RUDDERS, ELEVATORS, FLAPS, SPOILERS, LANDING GEAR, AND THRUST REVERSERS CAN MOVE QUICKLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

- (10) Supply hydraulic power to hydraulic systems A and B. To supply hydraulic power, do this task:
Hydraulic System A or B Pressurization, TASK 29-11-00-860-801

F. Procedure

SUBTASK 22-11-14-740-002

- (1) Push the INIT REF key on the CDU keyboard.

SUBTASK 22-11-14-740-003

- (2) Push the Line Select Key (LSK) that is adjacent to each selection:

NOTE: If the CONTINUE shows during the BITE test, then do the instructions that show on the CDU display before you push the LSK that is adjacent to CONTINUE. Use the NEXT PAGE or PREV PAGE key to change pages if it is necessary.

- (a) INDEX
- (b) MAINT
- (c) DFCS
- (d) EXTENDED MAINTENANCE
- (e) RIGGING
- (f) ELEVATOR
- (g) CONTINUE
- (h) CONTINUE
- (i) ELEV RIG



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SUBTASK 22-11-14-740-007

- (3) Select CONTINUE to advance to test 51.01.

SUBTASK 22-11-14-820-007

- (4) Make sure that the jackscrew B dimension equals 39.89 ± 0.01 in. (1013.21 ± 0.26 mm).

SUBTASK 22-11-14-820-009

- (5) Select CONTINUE to access display screen 51.02.

SUBTASK 22-11-14-820-010

- (6) Select CONTINUE to access display screen 51.03.

SUBTASK 22-11-14-820-011

- (7) Make sure that A is within limits shown on screen 51.03

SUBTASK 22-11-14-820-012

- (8) Select CONTINUE on screen 51.03

SUBTASK 22-11-14-820-013

- (9) Jiggle the Column and wheel per instructions on the CDU.

SUBTASK 22-11-14-820-014

- (10) Select CONTINUE after following the instruction on the CDU to access display screen 51.04.

SUBTASK 22-11-14-820-016

- (11) Verify that the right elevator trailing edge aligns with tailcone index mark within ± 0.06 in.
(1.5 mm).

SUBTASK 22-11-14-820-034

- (12) Select CONTINUE to advance to screen 51.05.

SUBTASK 22-11-14-820-035

- (13) For coarse adjustment, loosen the bolt [1] used to clamp the sensor to the support bracket only enough to allow neutral shift sensor to be rotated in the bracket.
- Rotate the neutral shift sensor housing slowly in both direction seeking a reading of -1.72 volts (-1.22V max, -2.22V min) on FMC-CDU display.
 - Tighten the bolt [1] to 30 in-lb (3.4 N·m) to 35 in-lb (4 N·m).

SUBTASK 22-11-14-820-036

- (14) For fine adjustment, remove the lockwire on thumbnut on the micro adjustment rod.
- Turn knurled thumb nut on micro-adjustment rod 69-73371 to obtain -1.72 volts $\pm .03$ volts on FMC-CDU display.
 - Install lockwire on the thumbnut on micro-adjustment rod.

SUBTASK 22-11-14-820-037

- (15) Ensure neutral shift sensor reads -1.72 volts $\pm .03$.

SUBTASK 22-11-14-820-038

- (16) Set stabilizer to 11.6 units of trim.
- Ensure that the jackscrew "B" dimension equals 29.00 ± 0.01 in. (736.60 ± 0.25 mm).

SUBTASK 22-11-14-820-039

- (17) Jiggle the control column to center the system.



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SUBTASK 22-11-14-820-040

- (18) Make sure the voltage for the A and B value on the FMC-CDU screen 51.05 read 0.00 ± 0.10 VAC.

NOTE: Ignore the limits on FMC-CDU screen for this step.

NOTE: If the voltage does not fall within tolerance limits then check to make sure adjustment rod length is $5.33 \pm .01$ inches and installed correctly. Adjust the micro-adjustment rod 69-73371 using the knurled thumb nut to obtain a reading of $0.00 \pm .05$ VAC

SUBTASK 22-11-14-820-041

- (19) Continue to adjust as necessary to make sure voltage readings in step 15 and 18 meet the tolerance requirements after micro-adjustment rod thumbnut has been lockwired.

SUBTASK 22-11-14-820-042

- (20) Set the horizontal stabilizer to 0° (4 units of trim).

(a) Ensure that the jackscrew B dimension equals 39.89 ± 0.01 in. (1013.21 ± 0.26 mm).

G. Return the Airplane to the Initial Condition

SUBTASK 22-11-14-410-001

- (1) Close this access door:

<u>Number</u>	<u>Name/Location</u>
318BR	Tailcone Access Door

SUBTASK 22-11-14-410-002

- (2) Close this access door:

<u>Number</u>	<u>Name/Location</u>
311BL	Stabilizer Trim Access Door

SUBTASK 22-11-14-860-007

- (3) Push the captain's or first officer's autopilot disengage switch, on the control wheel, to make sure that the autopilot is disengaged.

SUBTASK 22-11-14-860-024

- (4) Remove the safety tag and close this circuit breaker:

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	18	C00451	LANDING GEAR AURAL WARN

SUBTASK 22-11-14-860-009

- (5) Set the autopilot stabilizer trim cutout switch, on the control stand, to the NORMAL position.

SUBTASK 22-11-14-860-010

- (6) Remove hydraulic power from hydraulic systems A and B. To remove hydraulic power, do this task: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805

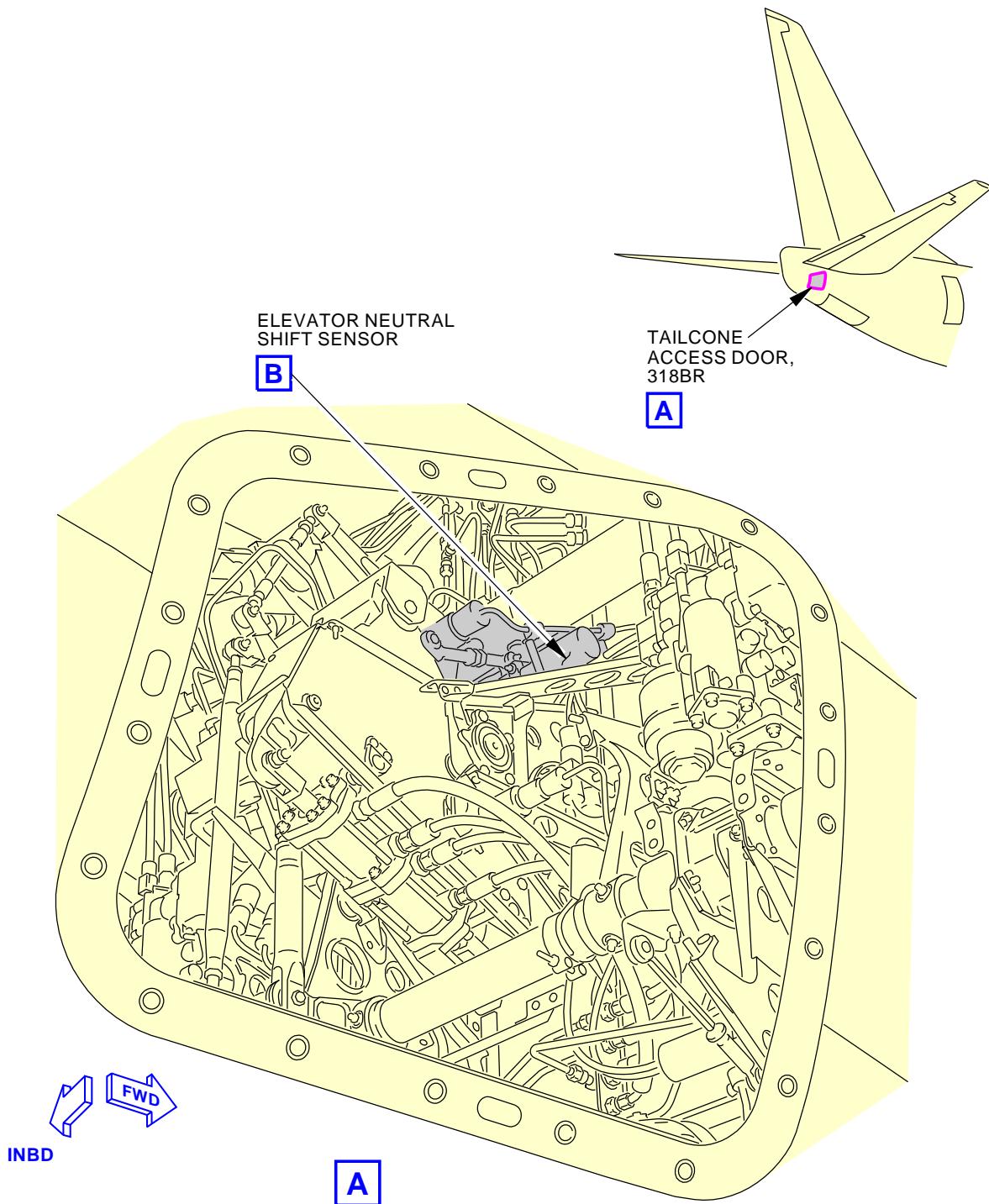
SUBTASK 22-11-14-860-011

- (7) Do this task: Remove Electrical Power, TASK 24-22-00-860-812.

———— END OF TASK ————



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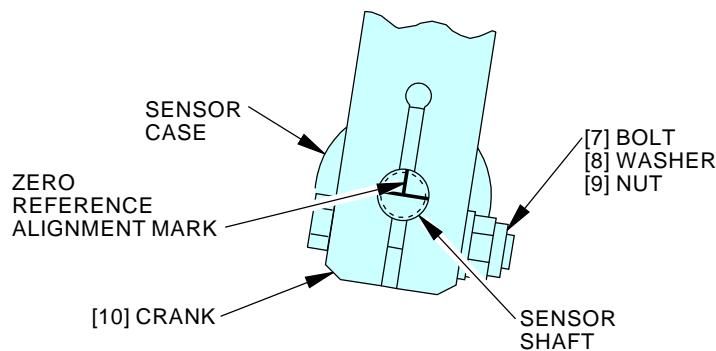
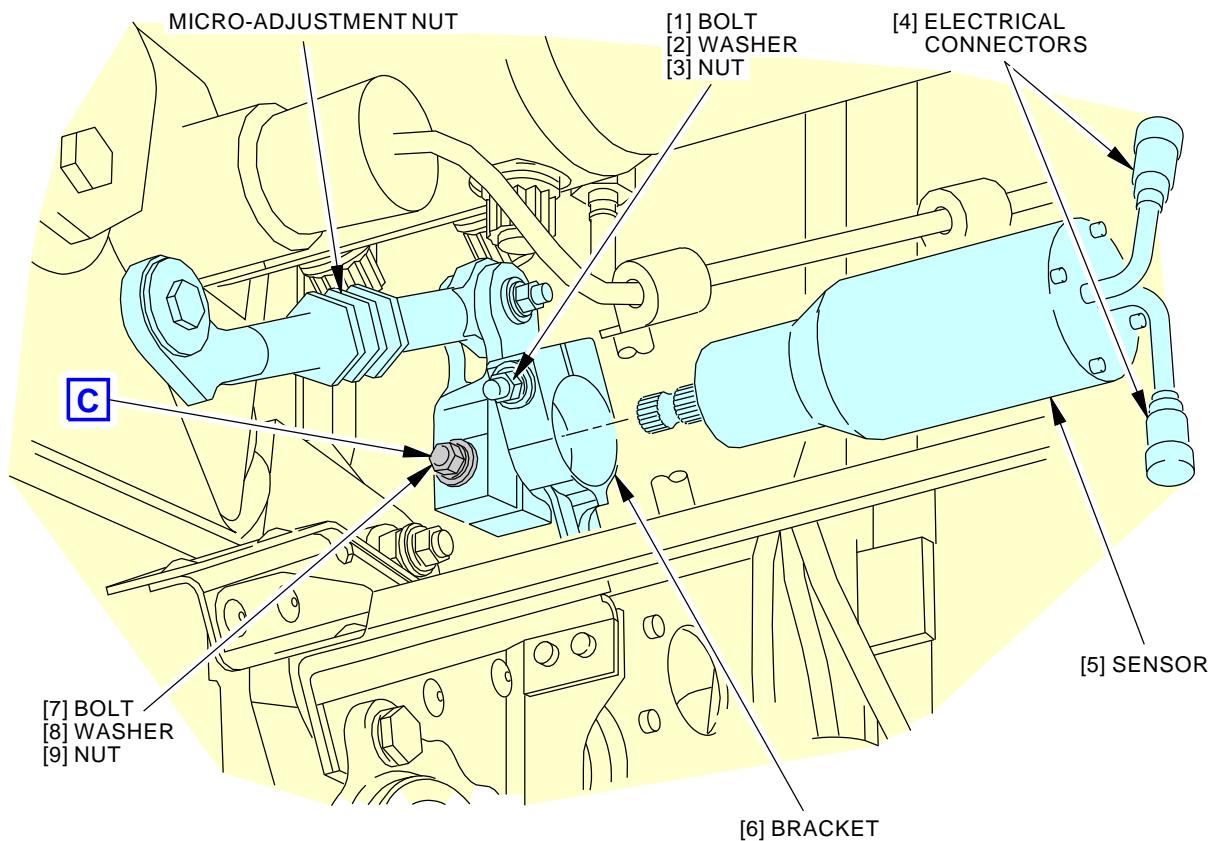
G19401 S0006563933_V2

Elevator Neutral Shift Sensor Installation
Figure 501/22-11-14-990-801 (Sheet 1 of 2)

EFFECTIVITY
AKS ALL

22-11-14

D633A101-AKS



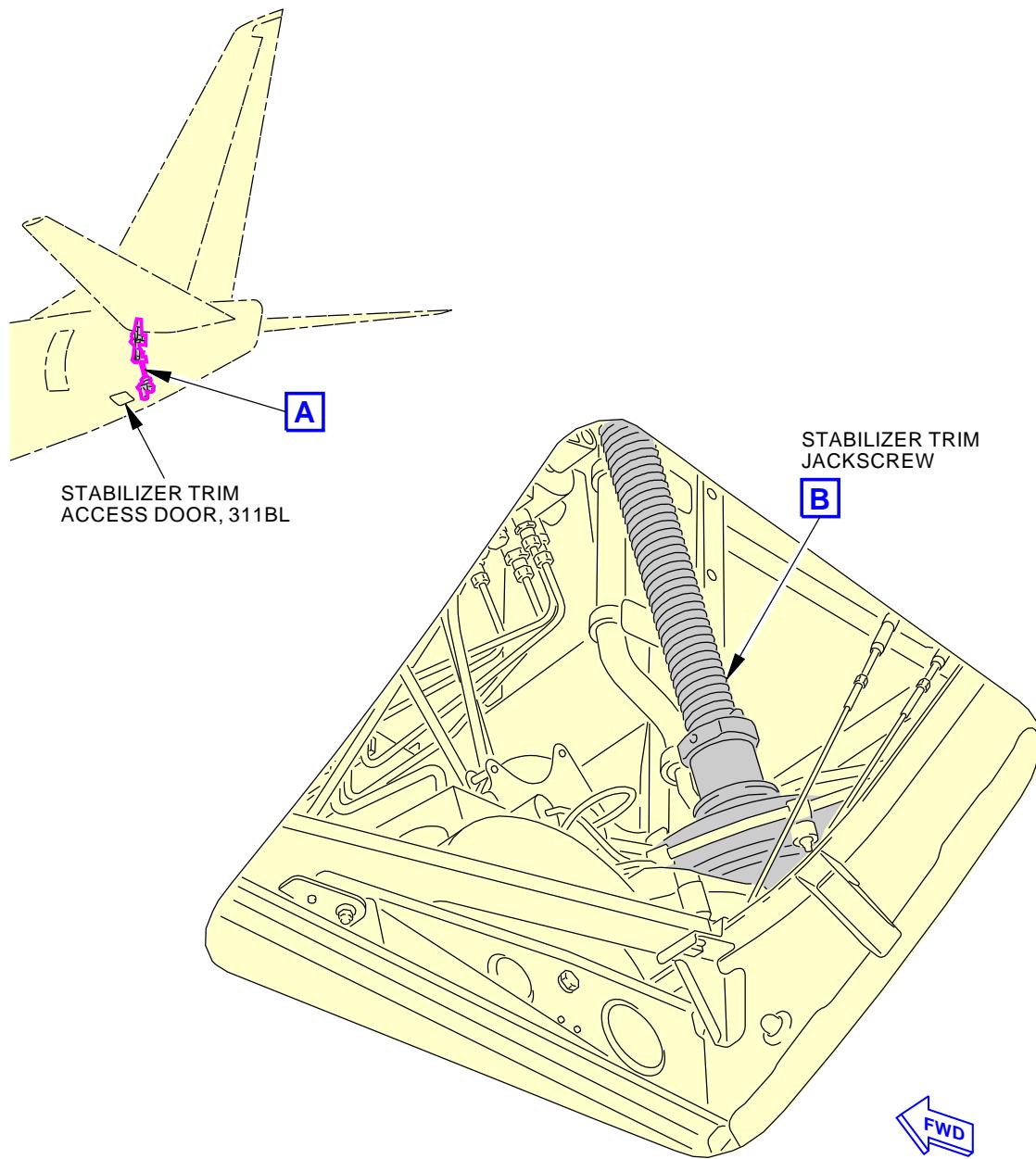
G19455 S0006563934_V3

Elevator Neutral Shift Sensor Installation
Figure 501/22-11-14-990-801 (Sheet 2 of 2)

EFFECTIVITY
AKS ALL

22-11-14

D633A101-AKS



VIEW WHEN YOU LOOK UP THROUGH THE
STABILIZER TRIM ACCESS DOOR



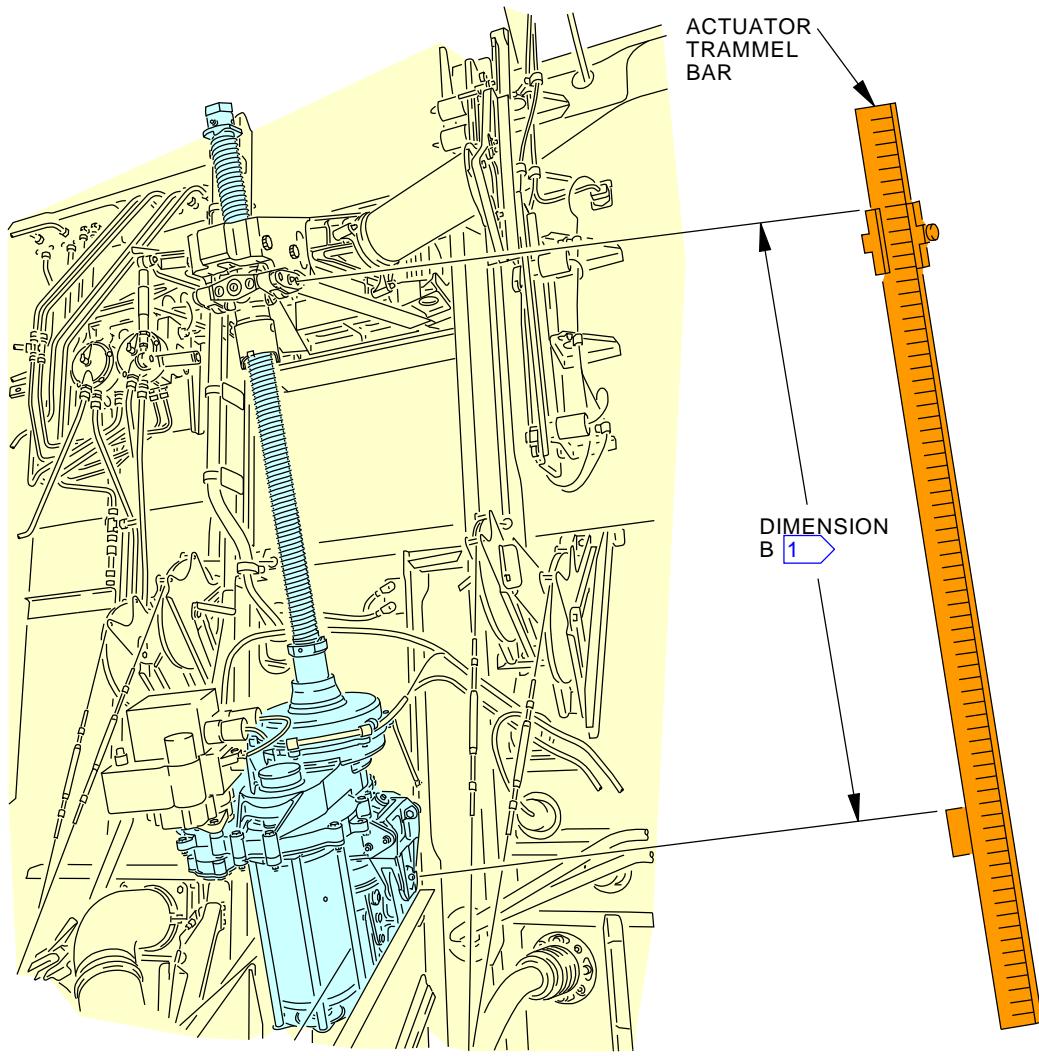
G19456 S0006563935_V2

Stabilizer Trim Jackscrew Setting
Figure 502/22-11-14-990-802 (Sheet 1 of 2)

EFFECTIVITY
AKS ALL

22-11-14

D633A101-AKS



FWD

STABILIZER TRIM JACKSCREW

B

NOTE:

THE STABILIZER TRIM JACKSCREW IS SHOWN WITH THE STABILIZER LEADING EDGE AT ZERO DEGREE.

- 1 THE DIMENSION B IS MEASURED BETWEEN THE CENTER OF THE UPPER AND LOWER GIMBAL PINS.

G19457 S0006563936_V2

Stabilizer Trim Jackscrew Setting
Figure 502/22-11-14-990-802 (Sheet 2 of 2)

EFFECTIVITY
AKS ALL

22-11-14

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TASK 22-11-14-710-801

3. Elevator Neutral Shift Sensor Test

A. References

<u>Reference</u>	<u>Title</u>
24-22-00-860-811	Supply Electrical Power (P/B 201)
24-22-00-860-812	Remove Electrical Power (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)

B. Location Zones

<u>Zone</u>	<u>Area</u>
211	Flight Compartment - Left
212	Flight Compartment - Right

C. Prepare for the Test

SUBTASK 22-11-14-860-012

- (1) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

SUBTASK 22-11-14-860-027

- (2) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	18	C00451	LANDING GEAR AURAL WARN

SUBTASK 22-11-14-860-013

- (3) Set the autopilot stabilizer trim cutout switch, on the control stand, to the CUTOUT position.

SUBTASK 22-11-14-860-014

- (4) Make sure that the VHF NAV and IRS switches, on the P5 forward overhead panel, are in the NORMAL positions.

SUBTASK 22-11-14-860-015

- (5) Set the left and right IRS select switches, on the P5 aft overhead panel, to the ALIGN or NAV position.

D. Procedure

SUBTASK 22-11-14-740-001

- (1) Do this BITE test:

- (a) Push the INIT REF key on the CDU keyboard.
(b) Push the Line Select Key (LSK) that is adjacent to each selection:

NOTE: Use the NEXT PAGE or PREV PAGE key to change page if it is necessary.

During the BITE test, if the "CONTINUE" shows, then push the LSK that is adjacent to "CONTINUE" after you do the instructions that show on the CDU display.

- 1) INDEX
- 2) MAINT
- 3) DFCS
- 4) LRU REPLACEMENT TESTS
- 5) CHANNEL A AND B
- 6) PITCH SENS

EFFECTIVITY
AKS ALL

22-11-14



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- 7) Do the instructions that show on the CDU display to complete the test.
- 8) Make sure that the test is completed with no failure or the "TEST FAILED" message does not show.

SUBTASK 22-11-14-860-016

- (2) Push the captain's or first officer's autopilot disengage switch, on the control wheel, to make sure that the autopilot is disengaged.

SUBTASK 22-11-14-860-025

- (3) Close this circuit breaker:

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	18	C00451	LANDING GEAR AURAL WARN

SUBTASK 22-11-14-860-018

- (4) Set the autopilot stabilizer trim cutout switch, on the control stand, to the NORMAL position.

SUBTASK 22-11-14-860-019

- (5) Remove hydraulic power from hydraulic systems A and B. To remove hydraulic power, do this task: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805.

SUBTASK 22-11-14-860-020

- (6) Do this task: Remove Electrical Power, TASK 24-22-00-860-812.

———— END OF TASK ————



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RUDDER ROLLOUT GUIDANCE ACTUATOR - MAINTENANCE PRACTICES

1. General

- A. This procedure has these tasks:
- (1) Rudder Rollout Guidance Actuator Deactivation.
 - (2) Rudder Rollout Guidance Actuator Activation.

TASK 22-11-22-040-801

2. Rudder Rollout Guidance Actuator - Deactivation

(Figure 202)

A. General

- (1) This procedure removes electrical power and hydraulic pressure to Rudder Rollout Guidance Actuator.

B. References

Reference	Title
24-22-00-860-811	Supply Electrical Power (P/B 201)
27-11-00-860-801	Pressure from the Aileron Hydraulic Systems A and B - Deactivation (P/B 201)

C. Tools/Equipment

Reference	Description
STD-858	Tag - DO NOT OPERATE

D. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right
324	Vertical Fin - Rear Spar To Trailing Edge

E. Procedure

SUBTASK 22-11-22-860-015

WARNING: MAKE SURE THAT PERSONNEL AND EQUIPMENT ARE CLEAR OF THE FLIGHT CONTROLS SURFACES. MAKE SURE THAT THE INBOARD FAN DUCT COWL AND THE INBOARD AND OUTBOARD THRUST REVERSERS ARE CLOSED. THE FLIGHT CONTROL SURFACES CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (1) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
C	4	C00456	AFCS SYS A MACH TRIM AC
C	5	C01041	AFCS SYS A SNSR EXC AC
D	1	C01049	AFCS SYS A WARN LIGHT (BAT)
D	2	C01045	AFCS SYS A FCC DC
D	3	C01048	AFCS SYS A ENGAGE INTLK
D	4	C00457	AFCS SYS A MACH TRIM DC
D	5	C01044	AFCS MCP DC 1

EFFECTIVITY
AKS ALL; AIRPLANES WITH ROLLOUT CONTROL

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(Continued)

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	4	C01629	AFCS SYS A RUDDER DC

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	1	C00374	AFCS SYS B WARN LIGHT (BAT)
B	2	C01064	AFCS SYS B MACH TRIM DC
B	3	C01046	AFCS SYS B FCC DC
B	4	C00716	AFCS SYS B ENGAGE INTLK
B	10	C00207	FLIGHT CONTROL STAB TRIM CONT
C	1	C01037	AFCS SYS B MACH TRIM AC
C	2	C01042	AFCS SYS B SNSR EXC AC
C	3	C01047	AFCS MCP DC 2
D	3	C01630	AFCS SYS B RUDDER DC
D	10	C00840	FLIGHT CONTROL STAB TRIM ACTUATOR

SUBTASK 22-11-22-010-005

- (2) Do this task: Pressure from the Aileron Hydraulic Systems A and B - Deactivation, TASK 27-11-00-860-801.

SUBTASK 22-11-22-860-018

- (3) Attach DO NOT OPERATE tag, STD-858 to the captain's and first officer's control columns.

F. Rudder Rollout Guidance Actuator - Tryout

NOTE: This tryout is to make sure the Rudder Rollout Guidance Actuator is in a zero energy state.

SUBTASK 22-11-22-860-019

WARNING: MAKE SURE THAT PERSONNEL AND EQUIPMENT ARE CLEAR OF THE FLIGHT CONTROLS SURFACES. MAKE SURE THAT THE INBOARD FAN DUCT COWL AND THE INBOARD AND OUTBOARD THRUST REVERSERS ARE CLOSED. THE FLIGHT CONTROL SURFACES CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (1) Do this task: Supply Electrical Power, TASK 24-22-00-860-811

SUBTASK 22-11-22-860-016

- (2) Make sure that these circuit breakers are open and have safety tags:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	4	C00456	AFCS SYS A MACH TRIM AC
C	5	C01041	AFCS SYS A SNSR EXC AC
D	1	C01049	AFCS SYS A WARN LIGHT (BAT)
D	2	C01045	AFCS SYS A FCC DC
D	3	C01048	AFCS SYS A ENGAGE INTLK
D	4	C00457	AFCS SYS A MACH TRIM DC
D	5	C01044	AFCS MCP DC 1
E	4	C01629	AFCS SYS A RUDDER DC

EFFECTIVITY
AKS ALL; AIRPLANES WITH ROLLOUT CONTROL

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F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	1	C00374	AFCS SYS B WARN LIGHT (BAT)
B	2	C01064	AFCS SYS B MACH TRIM DC
B	3	C01046	AFCS SYS B FCC DC
B	4	C00716	AFCS SYS B ENGAGE INTLK
B	10	C00207	FLIGHT CONTROL STAB TRIM CONT
C	1	C01037	AFCS SYS B MACH TRIM AC
C	2	C01042	AFCS SYS B SNSR EXC AC
C	3	C01047	AFCS MCP DC 2
D	3	C01630	AFCS SYS B RUDDER DC
D	10	C00840	FLIGHT CONTROL STAB TRIM ACTUATOR

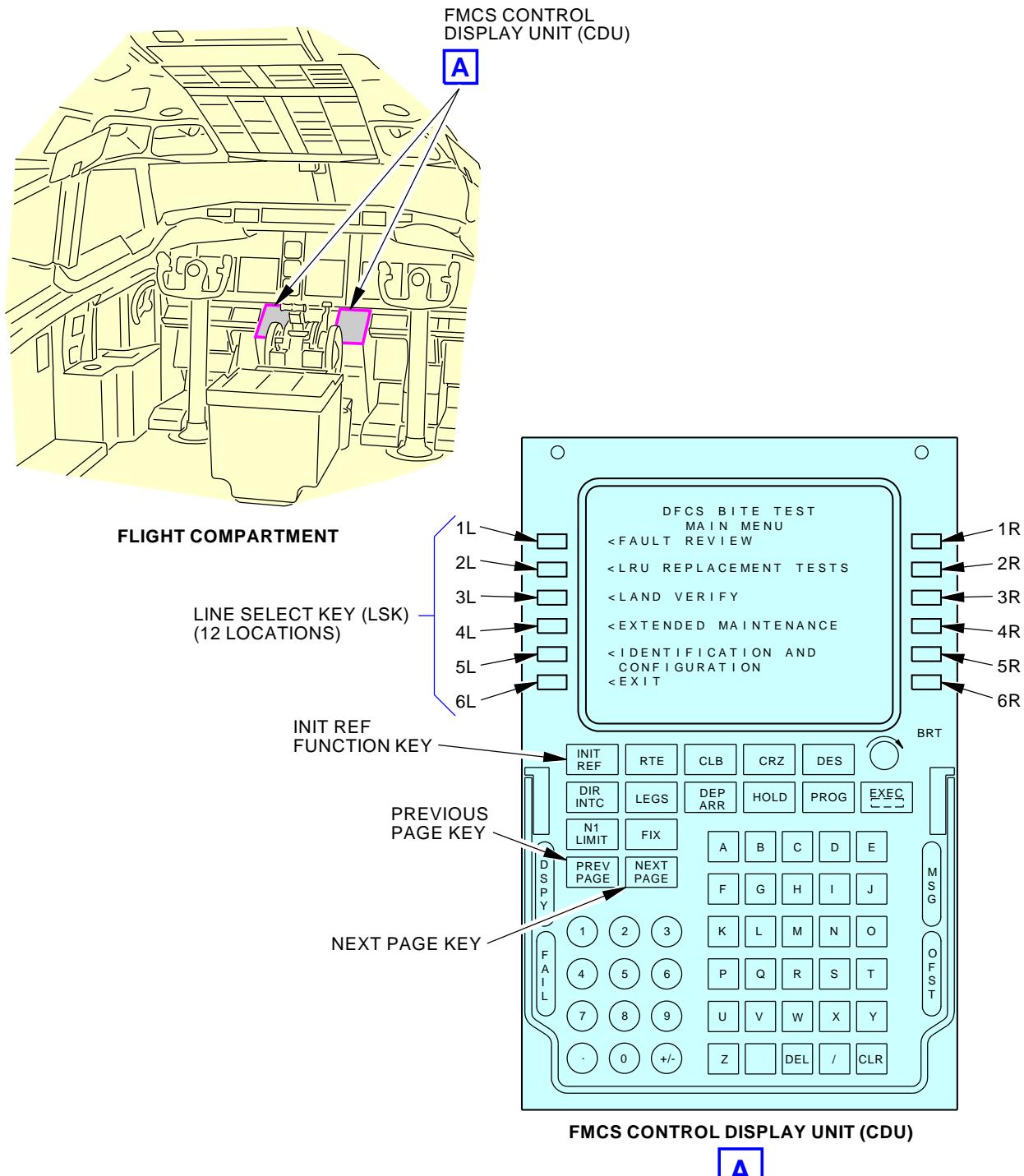
SUBTASK 22-11-22-700-001

- (3) Use the FMC - CDU and do the following test (Figure 201):
 - (a) SELECT, INIT/REF on the keyboard.
 - (b) SELECT, "INDEX" (LSK 6L).
 - (c) SELECT, "MAINT" (LSK 6R).
 - (d) SELECT, "DFCS" (LSK 2L).
 - 1) DFCS will run the self test and display as following:
 - FCC-A SELF TEST FAIL
 - FCC-B SELF TEST FAIL
 - CROSS CHANNEL TEST PASS
 - (e) SELECT, "CONTINUE" (LSK 6R)
NOTE: Ignore the message that appears.
 - (f) SELECT, "CONTINUE" (LSK 6R).
 - (g) SELECT, "EXTENDED MAINTENANCE"(LSK 4L).
 - (h) SELECT, "SENSOR VALUES"(LSK 4L).
 - (i) SELECT, "DISCRETE INPUTS"(LSK 5L).
 - (j) SELECT, "CIRCUIT BREAKER CHECK"(LSK 5R).
 - (k) SELECT, INIT/REF on the keyboard, to exit of BITE.
 - (l) End of test.

———— END OF TASK ————

EFFECTIVITY
AKS ALL; AIRPLANES WITH ROLLOUT CONTROL

22-11-22



K45540 S0006563722_V2

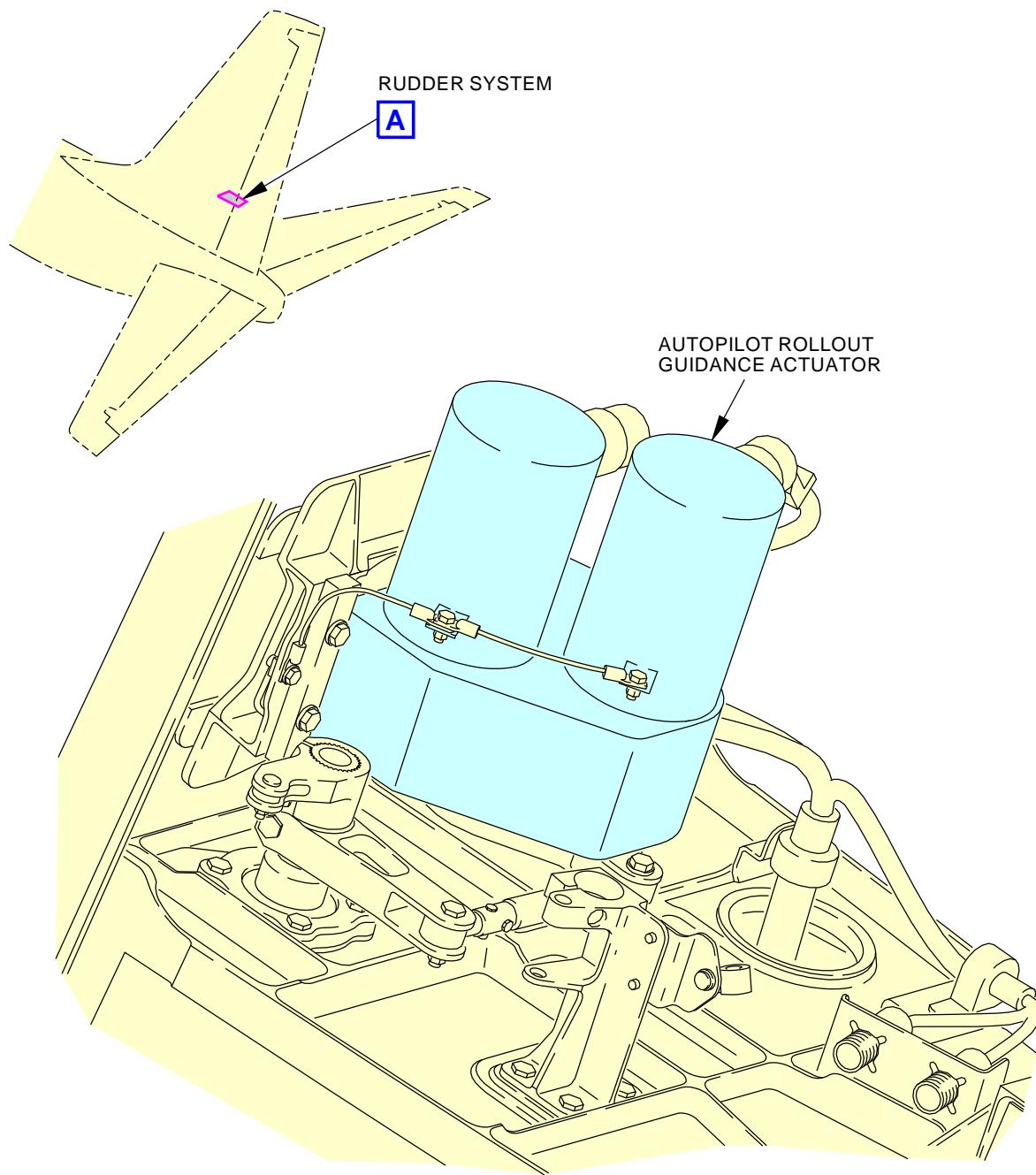
Flight Management Computer Control Display Unit
Figure 201/22-11-22-990-804

EFFECTIVITY
AKS ALL; AIRPLANES WITH ROLLOUT CONTROL

22-11-22

D633A101-AKS

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RUDDER SYSTEM

A



2375170 S0000542864_V1

Rudder Rollout Guidance Actuator
Figure 202/22-11-22-990-803EFFECTIVITY
AKS ALL; AIRPLANES WITH ROLLOUT CONTROL**22-11-22**

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TASK 22-11-22-440-801

3. Rudder Rollout Guidance Actuator - Activation

(Figure 202)

A. General

- (1) This procedure adds electrical power and hydraulic pressure to Rudder Rollout Guidance Actuator.

B. References

Reference	Title
27-11-00-860-802	Pressure to the Aileron Hydraulic Systems A and B - Activation (P/B 201)

C. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right
324	Vertical Fin - Rear Spar To Trailing Edge

D. Procedure

SUBTASK 22-11-22-860-017

WARNING: MAKE SURE THAT PERSONNEL AND EQUIPMENT ARE CLEAR OF THE FLIGHT CONTROLS SURFACES. MAKE SURE THAT THE INBOARD FAN DUCT COWL AND THE INBOARD AND OUTBOARD THRUST REVERSERS ARE CLOSED. THE FLIGHT CONTROL SURFACES CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (1) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
C	4	C00456	AFCS SYS A MACH TRIM AC
C	5	C01041	AFCS SYS A SNSR EXC AC
D	1	C01049	AFCS SYS A WARN LIGHT (BAT)
D	2	C01045	AFCS SYS A FCC DC
D	3	C01048	AFCS SYS A ENGAGE INTLK
D	4	C00457	AFCS SYS A MACH TRIM DC
D	5	C01044	AFCS MCP DC 1
E	4	C01629	AFCS SYS A RUDDER DC

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	1	C00374	AFCS SYS B WARN LIGHT (BAT)
B	2	C01064	AFCS SYS B MACH TRIM DC
B	3	C01046	AFCS SYS B FCC DC
B	4	C00716	AFCS SYS B ENGAGE INTLK
B	10	C00207	FLIGHT CONTROL STAB TRIM CONT
C	1	C01037	AFCS SYS B MACH TRIM AC
C	2	C01042	AFCS SYS B SNSR EXC AC
C	3	C01047	AFCS MCP DC 2

EFFECTIVITY
AKS ALL; AIRPLANES WITH ROLLOUT CONTROL

22-11-22



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AIRCRAFT MAINTENANCE MANUAL

(Continued)

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
------------	------------	---------------	-------------

D	3	C01630	AFCS SYS B RUDDER DC
D	10	C00840	FLIGHT CONTROL STAB TRIM ACTUATOR

SUBTASK 22-11-22-410-002

- (2) Do this task: Pressure to the Aileron Hydraulic Systems A and B - Activation,
TASK 27-11-00-860-802.

———— END OF TASK ——

EFFECTIVITY
AKS ALL; AIRPLANES WITH ROLLOUT CONTROL

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RUDDER ROLLOUT GUIDANCE ACTUATOR - REMOVAL/INSTALLATION

1. General

- A. This procedure has these tasks:
 - (1) The removal of the rollout guidance actuator.
 - (2) The installation of the rollout guidance actuator.
- B. The rollout guidance actuator (M2446) is located on a bracket on the rudder trailing edge hinge rib at rudder station 74.8.

TASK 22-11-22-000-801

2. Rudder Rollout Guidance Actuator - Removal

(Figure 401)

A. References

Reference	Title
27-21-00-800-802	Pressure from the Rudder Hydraulic Systems A, B, and Standby - Deactivation (P/B 201)

B. Location Zones

Zone	Area
324	Vertical Fin - Rear Spar To Trailing Edge

C. Access Panels

Number	Name/Location
324JL	Vertical Fin, Access

D. Prepare for the Removal

SUBTASK 22-11-22-860-001

- (1) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
C	4	C00456	AFCS SYS A MACH TRIM AC
C	5	C01041	AFCS SYS A SNSR EXC AC
D	1	C01049	AFCS SYS A WARN LIGHT (BAT)
D	2	C01045	AFCS SYS A FCC DC
D	3	C01048	AFCS SYS A ENGAGE INTLK
D	4	C00457	AFCS SYS A MACH TRIM DC
D	5	C01044	AFCS MCP DC 1
E	4	C01629	AFCS SYS A RUDDER DC

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	1	C00374	AFCS SYS B WARN LIGHT (BAT)
B	2	C01064	AFCS SYS B MACH TRIM DC
B	3	C01046	AFCS SYS B FCC DC
B	4	C00716	AFCS SYS B ENGAGE INTLK
B	10	C00207	FLIGHT CONTROL STAB TRIM CONT
C	1	C01037	AFCS SYS B MACH TRIM AC
C	2	C01042	AFCS SYS B SNSR EXC AC

EFFECTIVITY
AKS ALL; AIRPLANES WITH ROLLOUT CONTROL

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AIRCRAFT MAINTENANCE MANUAL

(Continued)

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	3	C01047	AFCS MCP DC 2
D	3	C01630	AFCS SYS B RUDDER DC
D	10	C00840	FLIGHT CONTROL STAB TRIM ACTUATOR

SUBTASK 22-11-22-010-001

- (2) Do this task: Pressure from the Rudder Hydraulic Systems A, B, and Standby - Deactivation, TASK 27-21-00-800-802.

SUBTASK 22-11-22-010-002

- (3) Remove this access panel:

<u>Number</u>	<u>Name/Location</u>
324JL	Vertical Fin, Access

E. Procedure

SUBTASK 22-11-22-020-001

- (1) Disconnect the two electrical connectors [11].

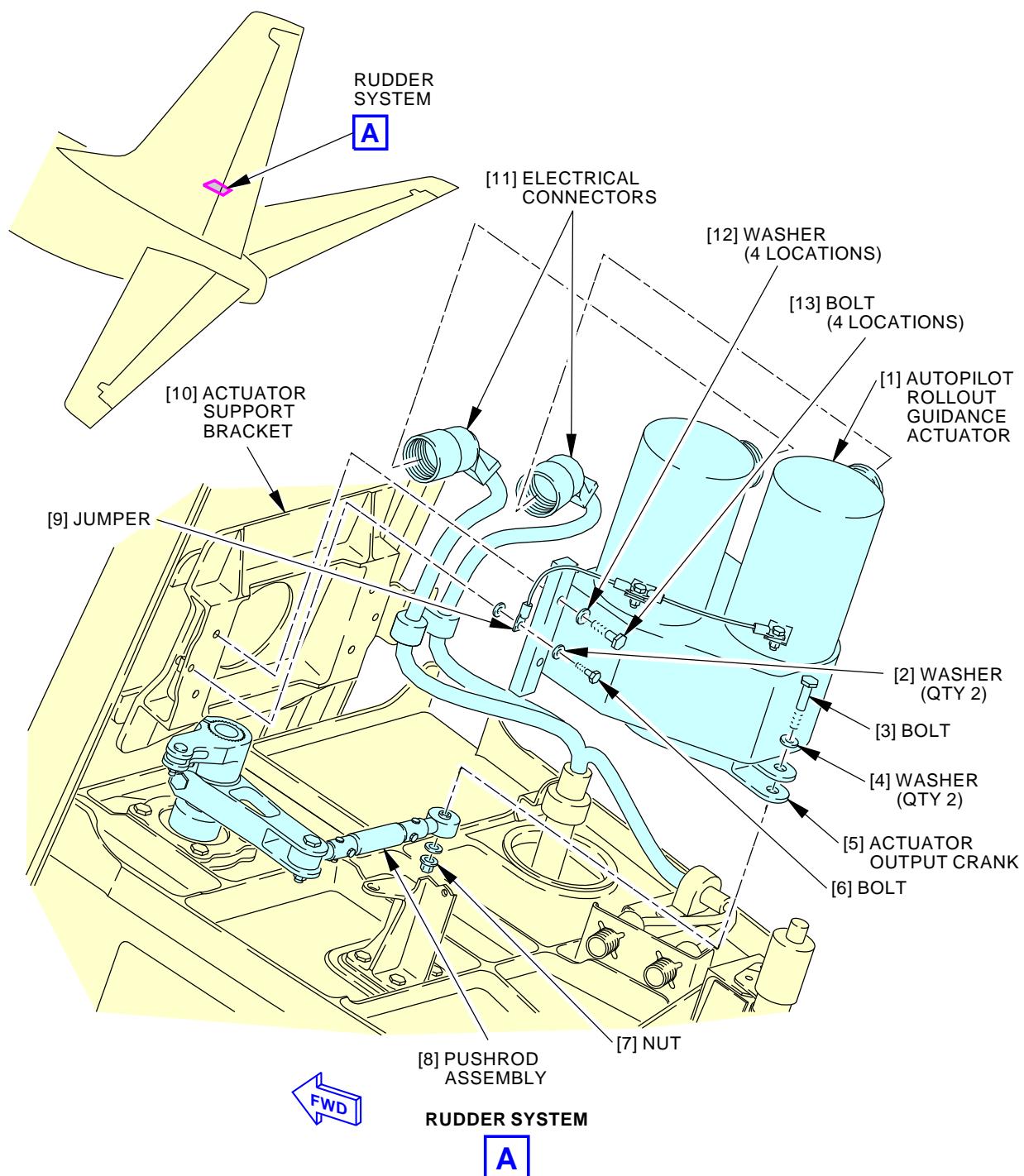
SUBTASK 22-11-22-020-002

- (2) Do these steps to remove the actuator [1]:
- Remove the bolt [6] and washers [2] on the jumpers [9].
 - Remove the bolt [3], washers [4] and nut [7] that hold the pushrod assembly [8] onto the output crank.
 - Remove the four mounting bolts [13] and washers [12] that hold the actuator [1] onto the actuator support bracket [10].
 - Remove the actuator [1].

———— END OF TASK ————

EFFECTIVITY
AKS ALL; AIRPLANES WITH ROLLOUT CONTROL

22-11-22



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Autopilot Rollout Guidance Actuator Installation
Figure 401/22-11-22-990-802

EFFECTIVITY
AKS ALL; AIRPLANES WITH ROLLOUT CONTROL

22-11-22

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AIRCRAFT MAINTENANCE MANUAL

TASK 22-11-22-400-801

3. Rudder Rollout Guidance Actuator - Installation

(Figure 401)

A. References

Reference	Title
20-10-34-110-802	Clean Bare, Clad, or Plated Metal with Solvent (P/B 701)
27-21-00-800-802	Pressure from the Rudder Hydraulic Systems A, B, and Standby - Deactivation (P/B 201)
27-21-00-840-802	Pressure to the Rudder Systems A, B, and Standby - Activation (P/B 201)

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
COM-1550	Bonding Meters - Approved, Intrinsically Safe (Approved for use in Class I, Divisions I & II hazardous (classified) locations. Outside these hazardous locations, COM-614 can be used in lieu of COM-1550). Part #: C15292 (MODEL T477W) Supplier: 01014 Part #: M1 Supplier: 3AD17 Opt Part #: M1B Supplier: 3AD17

C. Location Zones

Zone	Area
324	Vertical Fin - Rear Spar To Trailing Edge

D. Access Panels

Number	Name/Location
324JL	Vertical Fin, Access

E. Prepare for the Installation

SUBTASK 22-11-22-010-003

- (1) Make sure that you remove the pressure from the rudder hydraulic systems A and B. To remove the pressure, do this task: Pressure from the Rudder Hydraulic Systems A, B, and Standby - Deactivation, TASK 27-21-00-800-802.

SUBTASK 22-11-22-010-004

- (2) To get access to the rudder rollout guidance actuator, remove this access panel:

Number	Name/Location
324JL	Vertical Fin, Access

SUBTASK 22-11-22-860-002

- (3) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
C	4	C00456	AFCS SYS A MACH TRIM AC
C	5	C01041	AFCS SYS A SNSR EXC AC
D	1	C01049	AFCS SYS A WARN LIGHT (BAT)

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(Continued)

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	2	C01045	AFCS SYS A FCC DC
D	3	C01048	AFCS SYS A ENGAGE INTLK
D	4	C00457	AFCS SYS A MACH TRIM DC
D	5	C01044	AFCS MCP DC 1
E	4	C01629	AFCS SYS A RUDDER DC

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	1	C00374	AFCS SYS B WARN LIGHT (BAT)
B	2	C01064	AFCS SYS B MACH TRIM DC
B	3	C01046	AFCS SYS B FCC DC
B	4	C00716	AFCS SYS B ENGAGE INTLK
B	10	C00207	FLIGHT CONTROL STAB TRIM CONT
C	1	C01037	AFCS SYS B MACH TRIM AC
C	2	C01042	AFCS SYS B SNSR EXC AC
C	3	C01047	AFCS MCP DC 2
D	3	C01630	AFCS SYS B RUDDER DC
D	10	C00840	FLIGHT CONTROL STAB TRIM ACTUATOR

SUBTASK 22-11-22-100-001

- (4) For the bonding surface of the actuator support bracket [10], actuator [1], or jumper [9], do this task: Clean Bare, Clad, or Plated Metal with Solvent, TASK 20-10-34-110-802.

F. Procedure

SUBTASK 22-11-22-420-001

- (1) Install the actuator [1]:
- Hold the actuator [1] in position for mounting.
 - Install the four bolts [13] and washers [12] that hold the actuator [1] to the actuator support bracket [10].
 - Align the pushrod assembly [8] with the actuator output crank [5].
 - Install the bolt [3], washers [4], and nut [7] to connect the actuator output crank [5] to the pushrod assembly [8].
 - Install the bolt [6] and washer [2] to connect the jumpers [9].

SUBTASK 22-11-22-420-002

- (2) Connect the two electrical connectors [11].

SUBTASK 22-11-22-420-003

- (3) Measure the resistance between the actuator and the support bracket with an intrinsically safe approved bonding meter, COM-1550.
- Make sure that the resistance is less than 0.008 ohms.

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SUBTASK 22-11-22-860-003

- (4) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	4	C00456	AFCS SYS A MACH TRIM AC
C	5	C01041	AFCS SYS A SNSR EXC AC
D	1	C01049	AFCS SYS A WARN LIGHT (BAT)
D	2	C01045	AFCS SYS A FCC DC
D	3	C01048	AFCS SYS A ENGAGE INTLK
D	4	C00457	AFCS SYS A MACH TRIM DC
D	5	C01044	AFCS MCP DC 1
E	4	C01629	AFCS SYS A RUDDER DC

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	1	C00374	AFCS SYS B WARN LIGHT (BAT)
B	2	C01064	AFCS SYS B MACH TRIM DC
B	3	C01046	AFCS SYS B FCC DC
B	4	C00716	AFCS SYS B ENGAGE INTLK
B	10	C00207	FLIGHT CONTROL STAB TRIM CONT
C	1	C01037	AFCS SYS B MACH TRIM AC
C	2	C01042	AFCS SYS B SNSR EXC AC
C	3	C01047	AFCS MCP DC 2
D	3	C01630	AFCS SYS B RUDDER DC
D	10	C00840	FLIGHT CONTROL STAB TRIM ACTUATOR

SUBTASK 22-11-22-820-001

- (5) Do this task: Pressure to the Rudder Systems A, B, and Standby - Activation, TASK 27-21-00-840-802.

SUBTASK 22-11-22-710-001

- (6) Do this task: Rudder Rollout Guidance Actuator Test, TASK 22-11-22-710-801.

SUBTASK 22-11-22-410-001

- (7) Install this access panel:

<u>Number</u>	<u>Name/Location</u>
324JL	Vertical Fin, Access

———— END OF TASK ————

TASK 22-11-22-710-801

4. Rudder Rollout Guidance Actuator Test

A. References

<u>Reference</u>	<u>Title</u>
24-22-00-860-811	Supply Electrical Power (P/B 201)
24-22-00-860-812	Remove Electrical Power (P/B 201)
29-11-00-860-801	Hydraulic System A or B Pressurization (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)

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B. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

C. Prepare for the Test

SUBTASK 22-11-22-860-004

- (1) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

SUBTASK 22-11-22-860-014

- (2) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
D	18	C00451	LANDING GEAR AURAL WARN

SUBTASK 22-11-22-860-005

- (3) Set the autopilot stab trim cutout switch, on the control stand, to the CUTOUT position.

SUBTASK 22-11-22-860-006

- (4) Make sure that the VHF NAV and IRS switches, on the P5 forward overhead panel, are in the NORMAL positions.

SUBTASK 22-11-22-860-007

- (5) Set the left and right IRS select switches, on the P5 aft overhead panel, to the ALIGN or NAV position.

SUBTASK 22-11-22-860-008

WARNING: KEEP PERSONS AND EQUIPMENT AWAY FROM THE FLIGHT CONTROL SURFACES. THE AILERONS, ELEVATORS, RUDDER, FLAPS, SLATS, SPOILERS, STABILIZER AND NOSE GEAR CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (6) Supply hydraulic power to hydraulic systems A and B. To supply hydraulic power, do this task: Hydraulic System A or B Pressurization, TASK 29-11-00-860-801.

NOTE: Hydraulic power is necessary for surface test.

D. Procedure

SUBTASK 22-11-22-740-001

- (1) Do this BITE test:

(a) Push the INIT REF key on the CDU keyboard.

(b) Push the Line Select Key (LSK) that is adjacent to each selection:

NOTE: If the CONTINUE shows during the BITE test, then do the instructions that show on the CDU display before you push the LSK that is adjacent to CONTINUE. Use the NEXT PAGE or PREV PAGE key to change page if it is necessary.

- 1) INDEX
- 2) MAINT
- 3) DFCS
- 4) LRU REPLACEMENT TESTS
- 5) CHANNEL A AND B

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AKS ALL; AIRPLANES WITH ROLLOUT CONTROL

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- 6) YAW SENS
- 7) Do the instructions that show on the CDU to complete the test.
- 8) Make sure that the test is completed with no failure or the "TEST FAILED" message does not show.

E. Put the Airplane Back to Its Usual Condition

SUBTASK 22-11-22-860-009

- (1) Push the captain's or first officer's autopilot disengage switch on the control wheel to make sure that the autopilot is disengaged.

SUBTASK 22-11-22-860-010

- (2) Remove the safety tag and close this circuit breaker:

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	18	C00451	LANDING GEAR AURAL WARN

SUBTASK 22-11-22-860-011

- (3) Set the autopilot stab trim cutout switch, on the control stand, to the NORMAL position.

SUBTASK 22-11-22-860-012

- (4) Remove hydraulic power from hydraulic systems A and B. To remove hydraulic power, do this task: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805.

SUBTASK 22-11-22-860-013

- (5) Do this task: Remove Electrical Power, TASK 24-22-00-860-812.

———— END OF TASK ————

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AUTOPILOT RUDDER POSITION SENSOR - MAINTENANCE PRACTICES

1. General

- A. This procedure has these tasks:
- (1) Autopilot Rudder Position Sensor Deactivation.
 - (2) Autopilot Rudder Position Sensor Activation.

TASK 22-11-23-040-801

2. Autopilot Rudder Position Sensor - Deactivation

(Figure 202)

A. General

- (1) This procedure removes electrical power and hydraulic press to Autopilot Rudder Position Sensor.

B. References

Reference	Title
24-22-00-860-811	Supply Electrical Power (P/B 201)
27-11-00-860-801	Pressure from the Aileron Hydraulic Systems A and B - Deactivation (P/B 201)

C. Tools/Equipment

Reference	Description
STD-858	Tag - DO NOT OPERATE

D. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right
324	Vertical Fin - Rear Spar To Trailing Edge

E. Procedure

SUBTASK 22-11-23-860-025

WARNING: MAKE SURE THAT PERSONNEL AND EQUIPMENT ARE CLEAR OF THE FLIGHT CONTROLS SURFACES. MAKE SURE THAT THE INBOARD FAN DUCT COWL AND THE INBOARD AND OUTBOARD THRUST REVERSERS ARE CLOSED. THE FLIGHT CONTROL SURFACES CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (1) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
C	4	C00456	AFCS SYS A MACH TRIM AC
C	5	C01041	AFCS SYS A SNSR EXC AC
D	1	C01049	AFCS SYS A WARN LIGHT (BAT)
D	2	C01045	AFCS SYS A FCC DC
D	3	C01048	AFCS SYS A ENGAGE INTLK
D	4	C00457	AFCS SYS A MACH TRIM DC
D	5	C01044	AFCS MCP DC 1

EFFECTIVITY
AKS ALL; AIRPLANES WITH ROLLOUT CONTROL

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(Continued)

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	4	C01629	AFCS SYS A RUDDER DC

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	1	C00374	AFCS SYS B WARN LIGHT (BAT)
B	2	C01064	AFCS SYS B MACH TRIM DC
B	3	C01046	AFCS SYS B FCC DC
B	4	C00716	AFCS SYS B ENGAGE INTLK
B	10	C00207	FLIGHT CONTROL STAB TRIM CONT
C	1	C01037	AFCS SYS B MACH TRIM AC
C	2	C01042	AFCS SYS B SNSR EXC AC
C	3	C01047	AFCS MCP DC 2
D	3	C01630	AFCS SYS B RUDDER DC
D	10	C00840	FLIGHT CONTROL STAB TRIM ACTUATOR

SUBTASK 22-11-23-010-007

- (2) Do this task: Pressure from the Aileron Hydraulic Systems A and B - Deactivation,
TASK 27-11-00-860-801

SUBTASK 22-11-23-860-028

- (3) Attach DO NOT OPERATE tag, STD-858 to the captain's and first officer's control columns.

F. Autopilot Rudder Position Sensor - Tryout

NOTE: This tryout is to make sure the Autopilot Rudder Position Sensor is in a zero energy state.

SUBTASK 22-11-23-860-029

WARNING: MAKE SURE THAT PERSONNEL AND EQUIPMENT ARE CLEAR OF THE FLIGHT CONTROLS SURFACES. MAKE SURE THAT THE INBOARD FAN DUCT COWL AND THE INBOARD AND OUTBOARD THRUST REVERSERS ARE CLOSED. THE FLIGHT CONTROL SURFACES CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (1) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

SUBTASK 22-11-23-860-026

- (2) Make sure that these circuit breakers are open and have safety tags:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	4	C00456	AFCS SYS A MACH TRIM AC
C	5	C01041	AFCS SYS A SNSR EXC AC
D	1	C01049	AFCS SYS A WARN LIGHT (BAT)
D	2	C01045	AFCS SYS A FCC DC
D	3	C01048	AFCS SYS A ENGAGE INTLK
D	4	C00457	AFCS SYS A MACH TRIM DC
D	5	C01044	AFCS MCP DC 1
E	4	C01629	AFCS SYS A RUDDER DC

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F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	1	C00374	AFCS SYS B WARN LIGHT (BAT)
B	2	C01064	AFCS SYS B MACH TRIM DC
B	3	C01046	AFCS SYS B FCC DC
B	4	C00716	AFCS SYS B ENGAGE INTLK
B	10	C00207	FLIGHT CONTROL STAB TRIM CONT
C	1	C01037	AFCS SYS B MACH TRIM AC
C	2	C01042	AFCS SYS B SNSR EXC AC
C	3	C01047	AFCS MCP DC 2
D	3	C01630	AFCS SYS B RUDDER DC
D	10	C00840	FLIGHT CONTROL STAB TRIM ACTUATOR

SUBTASK 22-11-23-700-001

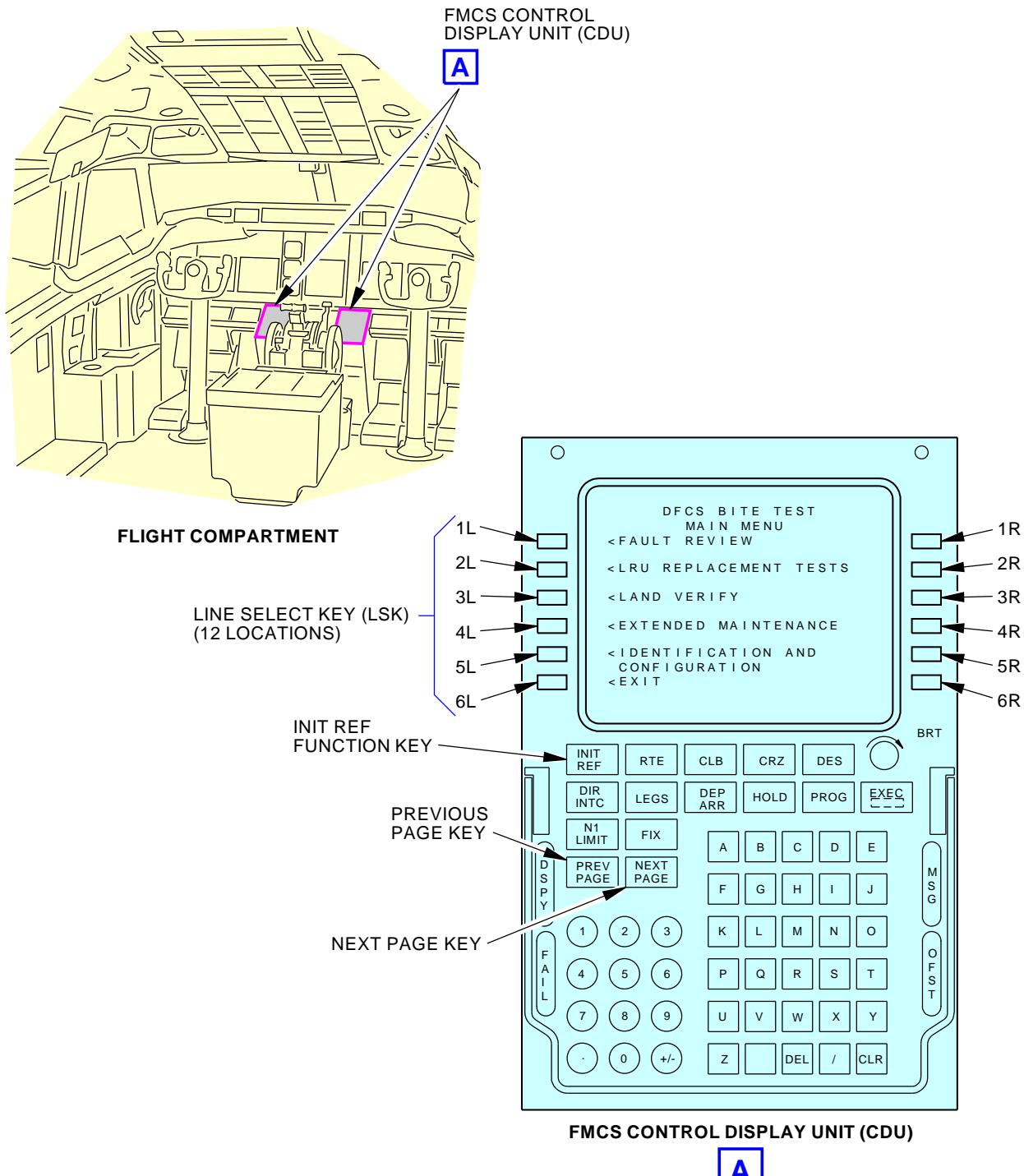
- (3) Use the FMC - CDU and do the following test (Figure 201):
 - (a) SELECT, INIT/REF on the keyboard.
 - (b) SELECT, "INDEX" (LSK 6L).
 - (c) SELECT, "MAINT" (LSK 6R).
 - (d) SELECT, "DFCS" (LSK 2L).
 - 1) DFCS will run the self test and display as following:
 - FCC-A SELF TEST FAIL
 - FCC-B SELF TEST FAIL
 - CROSS CHANNEL TEST PASS
 - (e) SELECT, "CONTINUE" (LSK 6R)
NOTE: Ignore the message that appears.
 - (f) SELECT, "CONTINUE" (LSK 6R).
 - (g) SELECT, "EXTENDED MAINTENANCE"(LSK 4L).
 - (h) SELECT, "SENSOR VALUES"(LSK 4L).
 - (i) SELECT, "DISCRETE INPUTS"(LSK 5L).
 - (j) SELECT, "CIRCUIT BREAKER CHECK"(LSK 5R).
 - (k) SELECT, INIT/REF on the keyboard, to exit of BITE.
 - (l) End of test.

———— END OF TASK ————

EFFECTIVITY
AKS ALL; AIRPLANES WITH ROLLOUT CONTROL

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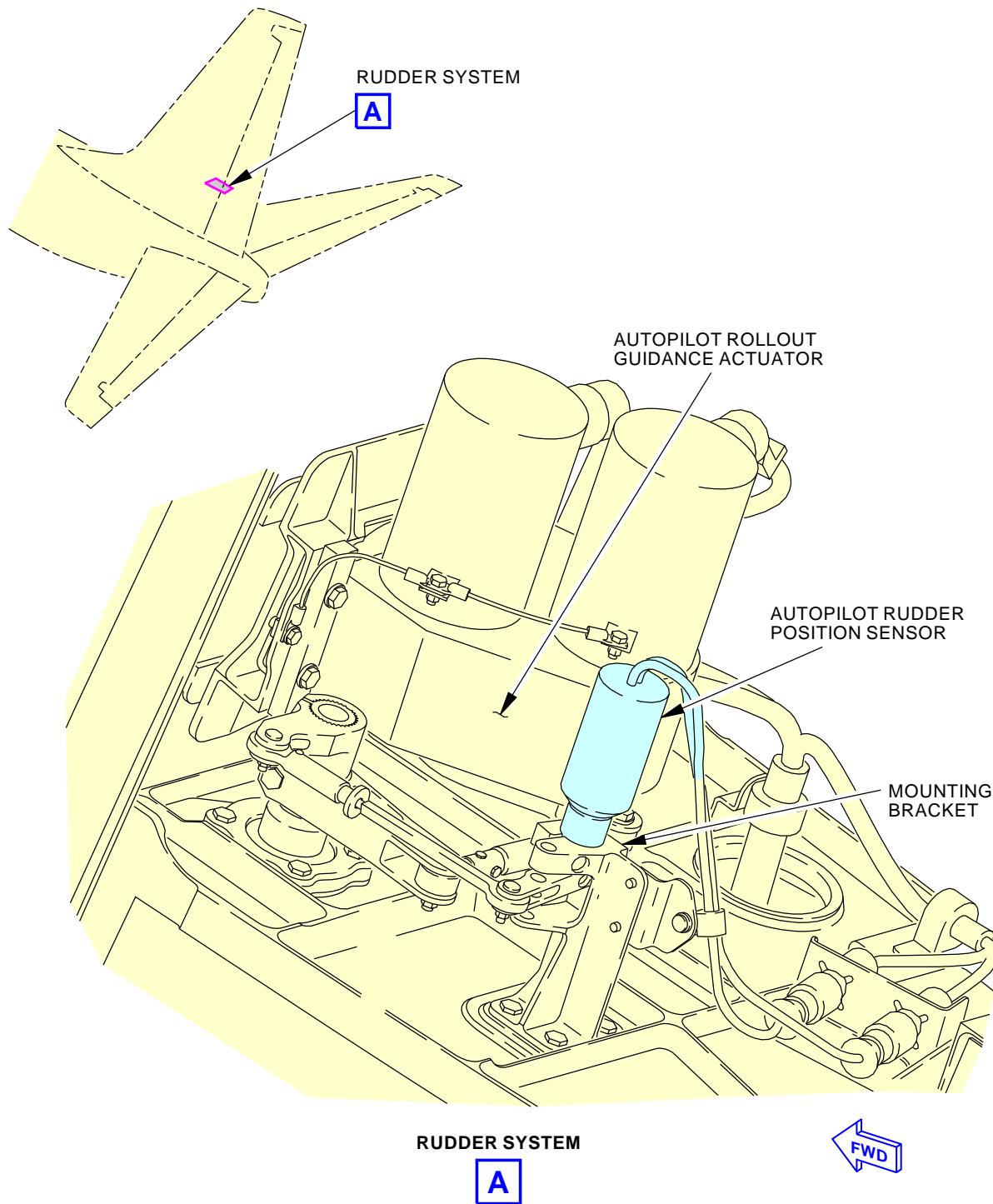
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Flight Management Computer Control Display Unit
Figure 201/22-11-23-990-806

EFFECTIVITY
AKS ALL; AIRPLANES WITH ROLLOUT CONTROL

22-11-23

D633A101-AKS



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Autopilot Rudder Position Sensor
Figure 202/22-11-23-990-805

EFFECTIVITY
AKS ALL; AIRPLANES WITH ROLLOUT CONTROL

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TASK 22-11-23-440-801

3. Autopilot Rudder Position Sensor - Activation

(Figure 202)

A. General

- (1) This procedure adds electrical power and hydraulic pressure to Autopilot Rudder Position Sensor.

B. References

Reference	Title
27-11-00-860-802	Pressure to the Aileron Hydraulic Systems A and B - Activation (P/B 201)

C. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right
324	Vertical Fin - Rear Spar To Trailing Edge

D. Procedure

SUBTASK 22-11-23-860-027

WARNING: MAKE SURE THAT PERSONNEL AND EQUIPMENT ARE CLEAR OF THE FLIGHT CONTROLS SURFACES. MAKE SURE THAT THE INBOARD FAN DUCT COWL AND THE INBOARD AND OUTBOARD THRUST REVERSERS ARE CLOSED. THE FLIGHT CONTROL SURFACES CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (1) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
C	4	C00456	AFCS SYS A MACH TRIM AC
C	5	C01041	AFCS SYS A SNSR EXC AC
D	1	C01049	AFCS SYS A WARN LIGHT (BAT)
D	2	C01045	AFCS SYS A FCC DC
D	3	C01048	AFCS SYS A ENGAGE INTLK
D	4	C00457	AFCS SYS A MACH TRIM DC
D	5	C01044	AFCS MCP DC 1
E	4	C01629	AFCS SYS A RUDDER DC

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	1	C00374	AFCS SYS B WARN LIGHT (BAT)
B	2	C01064	AFCS SYS B MACH TRIM DC
B	3	C01046	AFCS SYS B FCC DC
B	4	C00716	AFCS SYS B ENGAGE INTLK
B	10	C00207	FLIGHT CONTROL STAB TRIM CONT
C	1	C01037	AFCS SYS B MACH TRIM AC
C	2	C01042	AFCS SYS B SNSR EXC AC
C	3	C01047	AFCS MCP DC 2

EFFECTIVITY
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(Continued)

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	3	C01630	AFCS SYS B RUDDER DC
D	10	C00840	FLIGHT CONTROL STAB TRIM ACTUATOR

SUBTASK 22-11-23-440-001

- (2) Do This task: Pressure to the Aileron Hydraulic Systems A and B - Activation,
TASK 27-11-00-860-802.

———— END OF TASK ——

EFFECTIVITY
AKS ALL; AIRPLANES WITH ROLLOUT CONTROL

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AUTOPILOT RUDDER POSITION SENSOR - REMOVAL/INSTALLATION

1. General

- A. This procedure has these tasks:
 - (1) The removal of the autopilot rudder position sensor.
 - (2) The installation of the autopilot rudder position sensor.
- B. The autopilot rudder position sensor (M2445) is on a bracket on the rudder trailing edge hinge rib at station 74.8.

TASK 22-11-23-000-801

2. Autopilot Rudder Position Sensor Removal

(Figure 401)

A. References

Reference	Title
27-21-00-800-802	Pressure from the Rudder Hydraulic Systems A, B, and Standby - Deactivation (P/B 201)

B. Location Zones

Zone	Area
324	Vertical Fin - Rear Spar To Trailing Edge

C. Access Panels

Number	Name/Location
324JL	Vertical Fin, Access

D. Prepare for the Removal

SUBTASK 22-11-23-860-001

- (1) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
C	4	C00456	AFCS SYS A MACH TRIM AC
C	5	C01041	AFCS SYS A SNSR EXC AC
D	1	C01049	AFCS SYS A WARN LIGHT (BAT)
D	2	C01045	AFCS SYS A FCC DC
D	3	C01048	AFCS SYS A ENGAGE INTLK
D	4	C00457	AFCS SYS A MACH TRIM DC
D	5	C01044	AFCS MCP DC 1
E	4	C01629	AFCS SYS A RUDDER DC

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	1	C00374	AFCS SYS B WARN LIGHT (BAT)
B	2	C01064	AFCS SYS B MACH TRIM DC
B	3	C01046	AFCS SYS B FCC DC
B	4	C00716	AFCS SYS B ENGAGE INTLK
B	10	C00207	FLIGHT CONTROL STAB TRIM CONT
C	1	C01037	AFCS SYS B MACH TRIM AC
C	2	C01042	AFCS SYS B SNSR EXC AC

EFFECTIVITY
AKS ALL; AIRPLANES WITH ROLLOUT CONTROL

22-11-23



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(Continued)

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	3	C01047	AFCS MCP DC 2
D	3	C01630	AFCS SYS B RUDDER DC
D	10	C00840	FLIGHT CONTROL STAB TRIM ACTUATOR

SUBTASK 22-11-23-710-001

- (2) Do this task: Pressure from the Rudder Hydraulic Systems A, B, and Standby - Deactivation, TASK 27-21-00-800-802.

SUBTASK 22-11-23-010-001

- (3) Remove this access panel:

<u>Number</u>	<u>Name/Location</u>
324JL	Vertical Fin, Access

E. Procedure

SUBTASK 22-11-23-020-001

- (1) Disconnect the two electrical connectors [4].

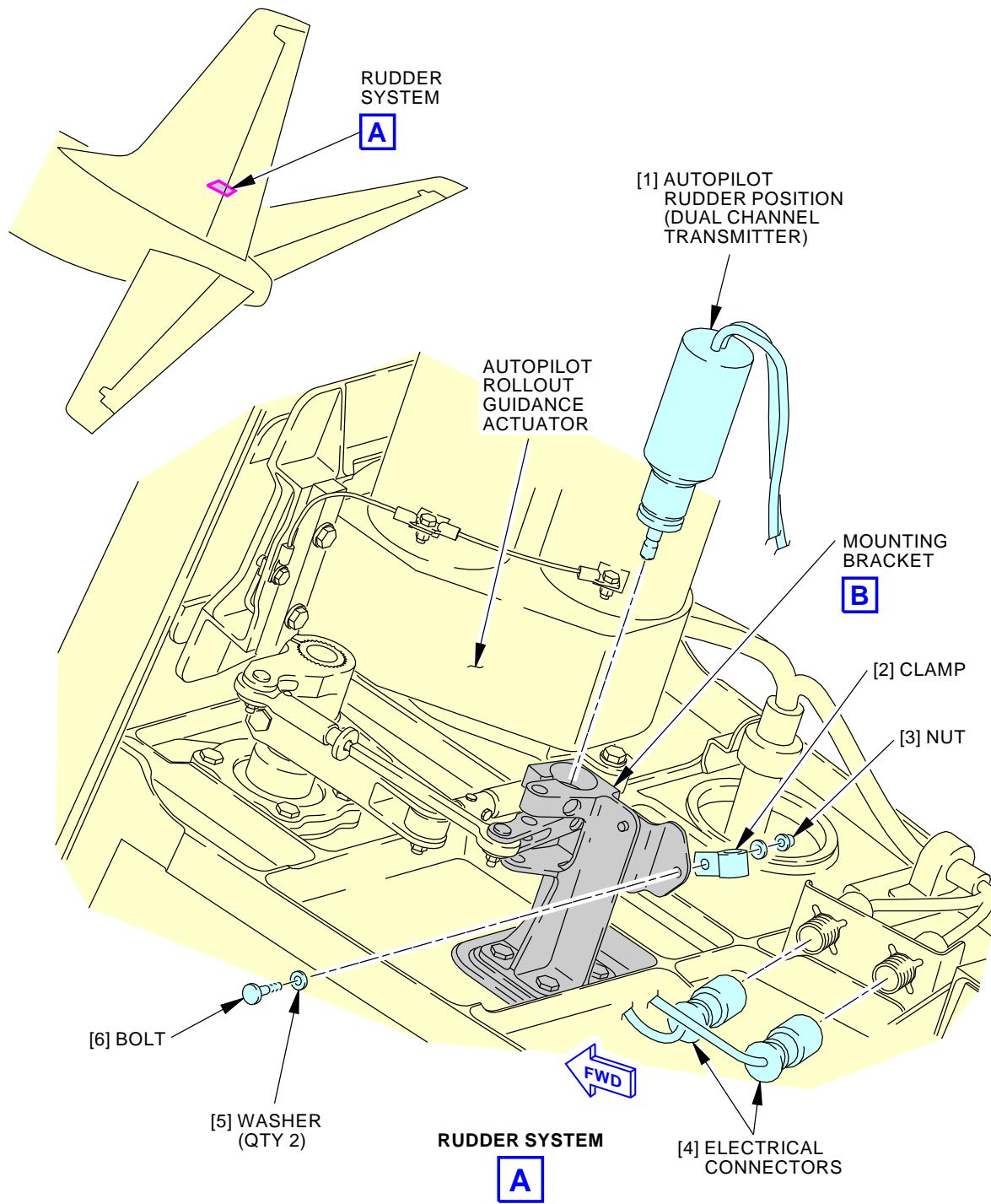
SUBTASK 22-11-23-020-002

- (2) Do these steps to remove the sensor [1] (transmitter):
- Remove the screw [6], washers [5] and nut [3] in the cable clamp [2].
 - Remove the cable clamp [2].
 - Remove the screw [9], washer [11] and nut [12] in the lever [10].
 - Remove the bolt [7], washer [14] and nut [13] in the sensor mounting bracket [8].
 - Remove the sensor transmitter [1].

———— END OF TASK ————

EFFECTIVITY
AKS ALL; AIRPLANES WITH ROLLOUT CONTROL

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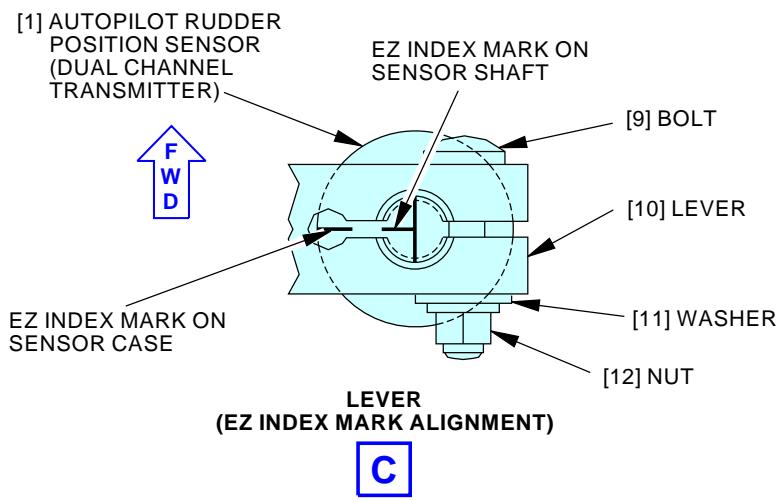
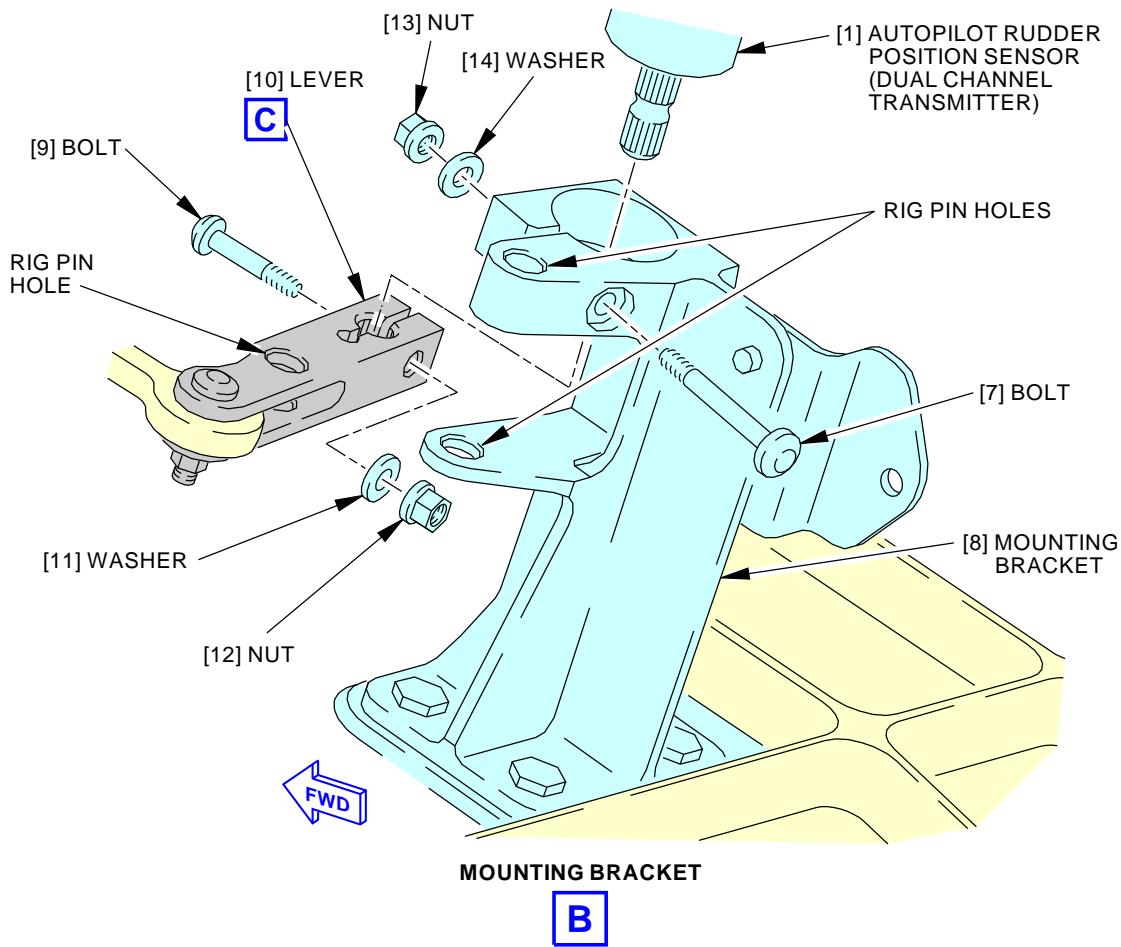


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Autopilot Rudder Position Sensor Installation
Figure 401/22-11-23-990-803 (Sheet 1 of 2)

 EFFECTIVITY
AKS ALL; AIRPLANES WITH ROLLOUT CONTROL
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**Autopilot Rudder Position Sensor Installation
Figure 401/22-11-23-990-803 (Sheet 2 of 2)**

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TASK 22-11-23-400-801

3. **Autopilot Rudder Position Sensor Installation**

(Figure 401)

A. **References**

Reference	Title
22-11-23-710-801	Autopilot Rudder Position Sensor Test (P/B 501)
22-11-23-820-801	Rudder Position Sensor Adjustment and Test (P/B 501)
27-21-00-800-801	Rudder Hydraulic System A, B, or Standby Pressurization (P/B 201)
27-21-00-800-802	Pressure from the Rudder Hydraulic Systems A, B, and Standby - Deactivation (P/B 201)

B. **Expendables/Parts**

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Transmitter	31-31-41-01-020	AKS ALL
		31-31-60-04-055	AKS ALL

C. **Location Zones**

Zone	Area
118	Electrical and Electronics Compartment - Right
311	Area Aft of Pressure Bulkhead - Left
324	Vertical Fin - Rear Spar To Trailing Edge

D. **Access Panels**

Number	Name/Location
324JL	Vertical Fin, Access

E. **Prepare for the Installation**

SUBTASK 22-11-23-010-002

- (1) To get access to the autopilot rudder position sensor, open this access panel:

Number	Name/Location
324JL	Vertical Fin, Access

SUBTASK 22-11-23-010-004

- (2) Make sure that you remove pressure from the rudder hydraulic systems A and B. To remove the pressure, do this task: Pressure from the Rudder Hydraulic Systems A, B, and Standby - Deactivation, TASK 27-21-00-800-802.

SUBTASK 22-11-23-010-005

- (3) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
C	4	C00456	AFCS SYS A MACH TRIM AC
C	5	C01041	AFCS SYS A SNSR EXC AC
D	1	C01049	AFCS SYS A WARN LIGHT (BAT)
D	2	C01045	AFCS SYS A FCC DC
D	3	C01048	AFCS SYS A ENGAGE INTLK
D	4	C00457	AFCS SYS A MACH TRIM DC
D	5	C01044	AFCS MCP DC 1

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CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	4	C01629	AFCS SYS A RUDDER DC

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	1	C00374	AFCS SYS B WARN LIGHT (BAT)
B	2	C01064	AFCS SYS B MACH TRIM DC
B	3	C01046	AFCS SYS B FCC DC
B	4	C00716	AFCS SYS B ENGAGE INTLK
B	10	C00207	FLIGHT CONTROL STAB TRIM CONT
C	1	C01037	AFCS SYS B MACH TRIM AC
C	2	C01042	AFCS SYS B SNSR EXC AC
C	3	C01047	AFCS MCP DC 2
D	3	C01630	AFCS SYS B RUDDER DC
D	10	C00840	FLIGHT CONTROL STAB TRIM ACTUATOR

F. Procedure

SUBTASK 22-11-23-020-003

- (1) Install the autopilot rudder position sensor transmitter [1]:
 - (a) Align the reference mark on the sensor shaft with the reference mark on the sensor case.
 - (b) Align the EZ (Electrical Zero) mark on the sensor case with the slot in the bracket.
 - (c) Align the lever with the EZ mark on the sensor shaft.
 - (d) Put the sensor [1] into the mounting bracket [8], and through the hole in the lever [10].
 - (e) Install the bolts [7], washer [14], and nut [13] to clamp the bracket onto the sensor.
 - (f) Tighten the clamp bolt to 25-35 IN-LBS (2.8-3.9 Nm).
 - (g) Install the bolt [9], washer [11] and nut [12] to clamp the lever [10] to the sensor shaft.
 - (h) Tighten the clamp bolt to 25-35 IN-LBS (2.8-3.9 Nm).
 - (i) Install the cable clamp [2] with the screw [6], washers [5] and nut [3].

SUBTASK 22-11-23-820-001

- (2) Connect the two electrical connectors [4].

SUBTASK 22-11-23-820-002

- (3) Do this task: Rudder Hydraulic System A, B, or Standby Pressurization,
TASK 27-21-00-800-801.

SUBTASK 22-11-23-010-006

- (4) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	4	C00456	AFCS SYS A MACH TRIM AC
C	5	C01041	AFCS SYS A SNSR EXC AC
D	1	C01049	AFCS SYS A WARN LIGHT (BAT)
D	2	C01045	AFCS SYS A FCC DC
D	3	C01048	AFCS SYS A ENGAGE INTLK

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CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	4	C00457	AFCS SYS A MACH TRIM DC
D	5	C01044	AFCS MCP DC 1
E	4	C01629	AFCS SYS A RUDDER DC

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	1	C00374	AFCS SYS B WARN LIGHT (BAT)
B	2	C01064	AFCS SYS B MACH TRIM DC
B	3	C01046	AFCS SYS B FCC DC
B	4	C00716	AFCS SYS B ENGAGE INTLK
B	10	C00207	FLIGHT CONTROL STAB TRIM CONT
C	1	C01037	AFCS SYS B MACH TRIM AC
C	2	C01042	AFCS SYS B SNSR EXC AC
C	3	C01047	AFCS MCP DC 2
D	3	C01630	AFCS SYS B RUDDER DC
D	10	C00840	FLIGHT CONTROL STAB TRIM ACTUATOR

SUBTASK 22-11-23-820-003

- (5) Do this task: Rudder Position Sensor Adjustment and Test, TASK 22-11-23-820-801.

SUBTASK 22-11-23-820-004

- (6) Do this task: Autopilot Rudder Position Sensor Test, TASK 22-11-23-710-801.

SUBTASK 22-11-23-410-001

- (7) Install this access panel:

<u>Number</u>	<u>Name/Location</u>
324JL	Vertical Fin, Access

———— END OF TASK ————

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RUDDER POSITION SENSOR - ADJUSTMENT/TEST

1. General

- A. This procedure has these tasks:
- (1) Rudder Position Sensor Adjustment.
 - (2) Rudder Position Sensor Test.

TASK 22-11-23-820-801

2. Rudder Position Sensor Adjustment and Test

(Figure 501)

A. References

Reference	Title
20-10-44-000-801	Lockwire, Cotter Pins, and Lockrings - Removal (P/B 401)
20-10-44-400-801	Lockwire, Cotter Pins, and Lockrings - Installation (P/B 401)
24-22-00-860-811	Supply Electrical Power (P/B 201)
24-22-00-860-812	Remove Electrical Power (P/B 201)
29-11-00-860-801	Hydraulic System A or B Pressurization (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)
32-00-01-480-801	Landing Gear Downlock Pins Installation (P/B 201)

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1585	Kit - Rigging Pins, All Systems Part #: F70207-109 Supplier: 81205

C. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right
324	Vertical Fin - Rear Spar To Trailing Edge

D. Access Panels

Number	Name/Location
324JL	Vertical Fin, Access

E. Prepare for the Adjustment

SUBTASK 22-11-23-860-002

- (1) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

SUBTASK 22-11-23-860-003

- (2) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
D	5	C01044	AFCS MCP DC 1

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F/O Electrical System Panel, P6-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	14	C01008	ADIRU RIGHT AC
C	15	C00426	ADIRU RIGHT EXC
C	17	C01010	ADIRU RIGHT DC
D	15	C01239	FMCS MCDU 2
D	16	C01262	FMCS CMPTR 2

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	1	C00374	AFCS SYS B WARN LIGHT (BAT)
B	2	C01064	AFCS SYS B MACH TRIM DC
B	3	C01046	AFCS SYS B FCC DC
C	1	C01037	AFCS SYS B MACH TRIM AC
C	2	C01042	AFCS SYS B SNSR EXC AC
C	3	C01047	AFCS MCP DC 2

Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	4	C00456	AFCS SYS A MACH TRIM AC
C	5	C01041	AFCS SYS A SNSR EXC AC
D	1	C01049	AFCS SYS A WARN LIGHT (BAT)
D	2	C01045	AFCS SYS A FCC DC
D	3	C01048	AFCS SYS A ENGAGE INTLK
D	4	C00457	AFCS SYS A MACH TRIM DC
E	1	C00721	AUTOTHROTTLE DC 1
E	5	C01009	ADIRU LEFT DC
E	7	C01007	ADIRU LEFT AC

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	6	C01017	FMCS CMPTR 1
A	7	C01238	FMCS MCDU 1

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	3	C01047	AFCS MCP DC 2

SUBTASK 22-11-23-860-004

WARNING: YOU MUST CAREFULLY INSTALL THE GROUND LOCKS IN ALL LANDING GEAR.
AN ACCIDENTAL RETRACTION OF THE LANDING GEAR CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (3) Make sure that you install the landing gear downlock pins (TASK 32-00-01-480-801).

SUBTASK 22-11-23-860-005

- (4) Set the autopilot stab trim cutout switch, on the control stand, to the CUTOUT position.

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SUBTASK 22-11-23-860-006

- (5) Make sure that the VHF NAV and IRS switches, on the P5 forward overhead panel, are in the NORMAL positions.

SUBTASK 22-11-23-860-007

- (6) Set the left and right IRS select switches, on the P5 aft overhead panel, to the ALIGN or NAV position.

SUBTASK 22-11-23-860-008

- (7) Remove this access panel:

Number Name/Location

324JL Vertical Fin, Access

SUBTASK 22-11-23-860-009

WARNING: KEEP PERSONS AND EQUIPMENT AWAY FROM THE FLIGHT CONTROL SURFACES. THE AILERONS, ELEVATORS, RUDDER, FLAPS, SLATS, SPOILERS, STABILIZER AND NOSE GEAR CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (8) Supply hydraulic power to hydraulic systems A and B. To supply hydraulic power, do this task: Hydraulic System A or B Pressurization, TASK 29-11-00-860-801.

F. Procedure

NOTE: Two persons are necessary for this task.

SUBTASK 22-11-23-820-005

- (1) Do this BITE test:

- (a) Push the INIT REF key on the CDU keyboard.

- (b) Push the Line Select Key (LSK) that is adjacent to each selection:

NOTE: If the CONTINUE shows during the BITE test, then do the instructions that show on the CDU display before you push the LSK that is adjacent to CONTINUE. Use the NEXT PAGE or PREV PAGE key to change page if it is necessary.

- 1) INDEX
- 2) MAINT
- 3) DFCS
- 4) EXTENDED MAINTENANCE
- 5) RIGGING
- 6) RUDDER
- 7) RUDDER POSITION
- 8) Jiggle the Rudder Feel Centering Unit input arm to make sure it is centered in the cam. Adjust the rudder trim using the Rudder Trim Knob until the rudder is at the neutral position.

NOTE: Both sides of the rudder must be within the marks on the index plate.

- 9) Make sure that rig pin #6 can be freely inserted. rig pin kit, SPL-1585
- 10) Loosen the clamp bolt for the sensor case, and rotate the case until the reading on the BITE screen is as close to zero as possible.
- 11) Tighten the sensor case clamp bolt to 25-35 pound-inches (2.8-3.9 newton-meters).

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- 12) Remove Rig Pin #6.
- 13) Remove the lockwire on the thumb nut on the micro-adjustment rod (Lockwire, Cotter Pins, and Lockrings - Removal, TASK 20-10-44-000-801).
- 14) Turn the thumb nut on the micro-adjustment rod until you get the smallest value less than 0.02 VAC.
NOTE: Do not turn the thumbnut more than one complete turn in either direction.
- 15) Install the lockwire on the thumbnut on the micro-adjustment rod (Lockwire, Cotter Pins, and Lockrings - Installation, TASK 20-10-44-400-801).
- 16) Press the LSK next to "PREV MENU" on the CDU to go back to the "RUDDER RIGGING" screen.
- 17) Press the LSK next to "PREV MENU" on the CDU to go back to the "RIGGING INDEX" screen.
- 18) Press the LSK next to "EXIT" on the CDU to go to the "EXIT" screen.
- 19) Do the instructions on the "END OF BITE" screen on the CDU.
- 20) Press the LSK next to "EXIT" on the "TEST COMPLETE" screen.
- 21) Press the LSK next to "EXIT" after you do the instructions on the "END OF DFCS BITE" screen.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 22-11-23-860-010

- (1) Set the autopilot stab trim cutout switch, on the control stand, to the NORMAL position.

SUBTASK 22-11-23-860-011

- (2) Remove hydraulic power from hydraulic systems A and B. To remove hydraulic power, do this task: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805.

SUBTASK 22-11-23-860-012

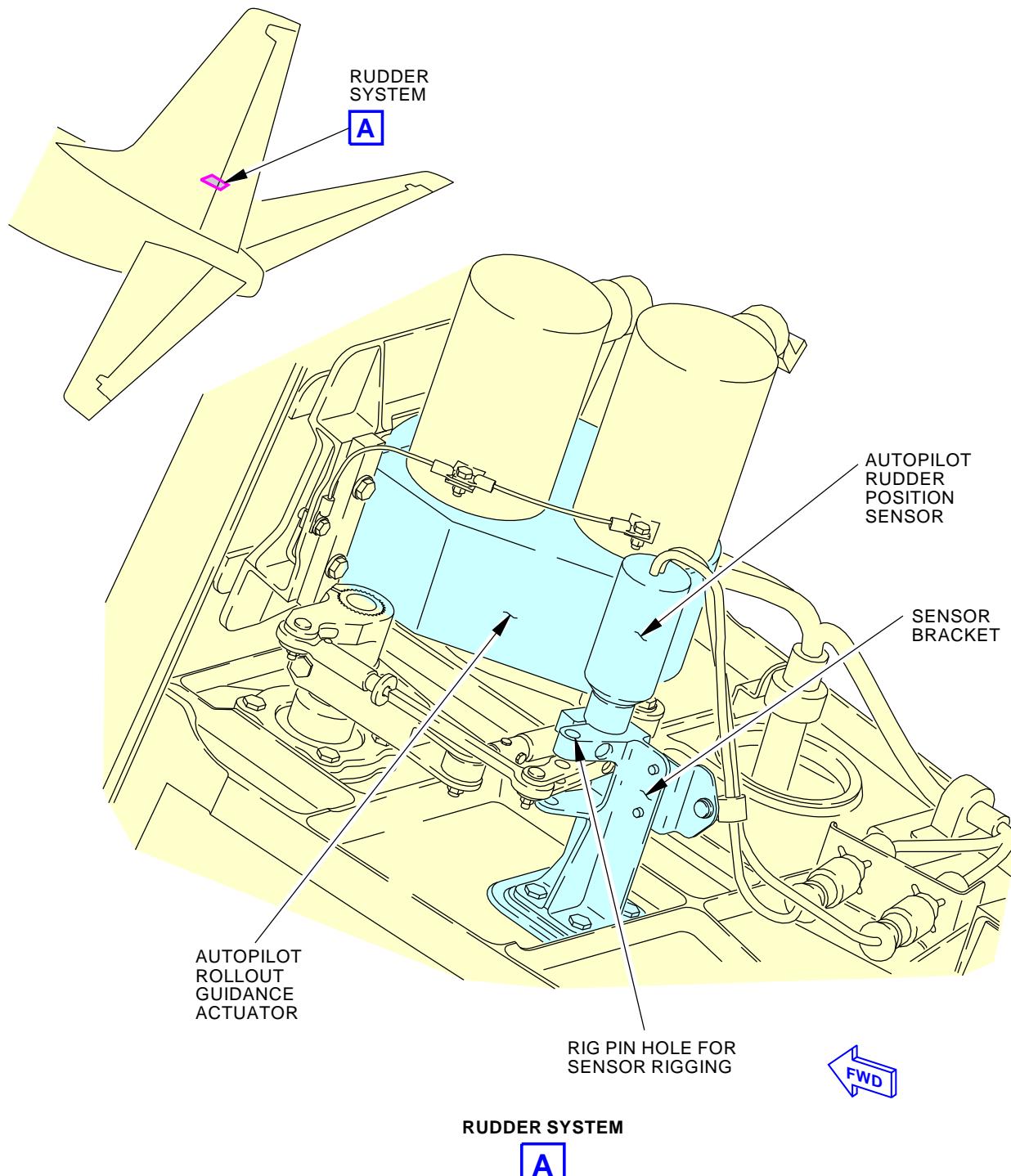
- (3) Do this task: Remove Electrical Power, TASK 24-22-00-860-812.

———— END OF TASK ————

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Autopilot Rudder Position Sensor Adjustment/Test
Figure 501/22-11-23-990-804**EFFECTIVITY**
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TASK 22-11-23-710-801

3. Autopilot Rudder Position Sensor Test

A. References

<u>Reference</u>	<u>Title</u>
24-22-00-860-811	Supply Electrical Power (P/B 201)
24-22-00-860-812	Remove Electrical Power (P/B 201)
29-11-00-860-801	Hydraulic System A or B Pressurization (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)

B. Location Zones

<u>Zone</u>	<u>Area</u>
211	Flight Compartment - Left
212	Flight Compartment - Right

C. Access Panels

<u>Number</u>	<u>Name/Location</u>
324JL	Vertical Fin, Access

D. Prepare for the Test

SUBTASK 22-11-23-860-013

- (1) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

SUBTASK 22-11-23-860-024

- (2) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	18	C00451	LANDING GEAR AURAL WARN

SUBTASK 22-11-23-860-014

- (3) Set the autopilot stab trim cutout switch, on the control stand, to the CUTOUT position.

SUBTASK 22-11-23-860-015

- (4) Make sure that the VHF NAV and IRS switches, on the P5 forward overhead panel, are in the NORMAL positions.

SUBTASK 22-11-23-860-016

- (5) Set the left and right IRS select switches, on the P5 aft overhead panel, to the ALIGN or NAV position.

SUBTASK 22-11-23-860-017

WARNING: KEEP PERSONS AND EQUIPMENT AWAY FROM THE FLIGHT CONTROL SURFACES. THE AILERONS, ELEVATORS, RUDDER, FLAPS, SLATS, SPOILERS, STABILIZER AND NOSE GEAR CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (6) Supply hydraulic power to hydraulic systems A and B. To supply hydraulic power, do this task: Hydraulic System A or B Pressurization, TASK 29-11-00-860-801.

NOTE: Hydraulic power is necessary for surface test.

E. Procedure

SUBTASK 22-11-23-740-001

- (1) Do this BITE test:

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- (a) Push the INIT REF key on the CDU keyboard.
- (b) Push the Line Select Key (LSK) that is adjacent to each selection:

NOTE: If the CONTINUE shows during the BITE test, then do the instructions that show on the CDU display before you push the LSK that is adjacent to CONTINUE. Use the NEXT PAGE or PREV PAGE key to change page if it is necessary.

- 1) INDEX
- 2) MAINT
- 3) DFCS
- 4) LRU REPLACEMENT TESTS
- 5) CHANNEL A AND B

NOTE: The autopilot rudder position sensor has interfaces with the FCC-A (channel A) and FCC-B (channel B).

- 6) YAW SENS
- 7) Do the instructions that show on the CDU to complete the test.
- 8) Make sure that the test is completed with no failure or the "TEST FAILED" message does not show.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 22-11-23-860-018

- (1) Push the captain's or first officer's autopilot disengage switch on the control wheel to make sure that the autopilot is disengaged.

SUBTASK 22-11-23-860-019

- (2) Remove the safety tag and close this circuit breaker:

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	18	C00451	LANDING GEAR AURAL WARN

SUBTASK 22-11-23-860-020

- (3) Set the autopilot stab trim cutout switch, on the control stand, to the NORMAL position.

SUBTASK 22-11-23-860-021

- (4) Remove hydraulic power from hydraulic systems A and B. To remove hydraulic power, do this task: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805.

SUBTASK 22-11-23-860-022

- (5) Do this task: Remove Electrical Power, TASK 24-22-00-860-812.

SUBTASK 22-11-23-860-023

- (6) Install this access panel:

<u>Number</u>	<u>Name/Location</u>
324JL	Vertical Fin, Access

———— END OF TASK ————

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MACH TRIM ACTUATOR - MAINTENANCE PRACTICES

1. General

- A. This procedure has these tasks:
- (1) Mach Trim Actuator Deactivation
 - (2) Mach Trim Actuator Activation

TASK 22-11-24-040-801

2. Mach Trim Actuator - Deactivation

(Figure 203)

A. General

- (1) This procedure removes electrical power and hydraulic pressure to the Mach Trim Servo.

B. References

Reference	Title
24-22-00-860-811	Supply Electrical Power (P/B 201)
27-31-00-800-802	Remove Pressure from the Elevator Hydraulic Systems A and B (P/B 201)

C. Tools/Equipment

Reference	Description
STD-858	Tag - DO NOT OPERATE

D. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right
315	APU Compartment - Left
316	APU Compartment - Right

E. Procedure

SUBTASK 22-11-24-860-018

WARNING: MAKE SURE THAT PERSONNEL AND EQUIPMENT ARE CLEAR OF THE FLIGHT CONTROLS SURFACES. MAKE SURE THAT THE INBOARD FAN DUCT COWL AND THE INBOARD AND OUTBOARD THRUST REVERSERS ARE CLOSED. THE FLIGHT CONTROL SURFACES CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (1) Do this task: Remove Pressure from the Elevator Hydraulic Systems A and B, TASK 27-31-00-800-802.

SUBTASK 22-11-24-860-011

- (2) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
C	4	C00456	AFCS SYS A MACH TRIM AC

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F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	1	C01037	AFCS SYS B MACH TRIM AC

SUBTASK 22-11-24-860-020

- (3) Attach DO NOT OPERATE tag, STD-858 to the captain's and first officer's control columns.

F. Mach Trim Actuator - Tryout

NOTE: This tryout is to make sure the Mach Trim Actuator is in a zero energy state.

SUBTASK 22-11-24-860-012

WARNING: MAKE SURE THAT PERSONNEL AND EQUIPMENT ARE CLEAR OF THE FLIGHT CONTROLS SURFACES. MAKE SURE THAT THE INBOARD FAN DUCT COWL AND THE INBOARD AND OUTBOARD THRUST REVERSERS ARE CLOSED. THE FLIGHT CONTROL SURFACES CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (1) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

SUBTASK 22-11-24-860-017

- (2) Make sure that these circuit breakers are closed:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	5	C01041	AFCS SYS A SNSR EXC AC
D	1	C01049	AFCS SYS A WARN LIGHT (BAT)
D	2	C01045	AFCS SYS A FCC DC
D	3	C01048	AFCS SYS A ENGAGE INTLK
D	5	C01044	AFCS MCP DC 1
E	1	C00721	AUTOTHROTTLE DC 1
E	4	C01629	AFCS SYS A RUDDER DC

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	3	C01631	AFCS INTLK 2
B	1	C00374	AFCS SYS B WARN LIGHT (BAT)
B	2	C01064	AFCS SYS B MACH TRIM DC
B	3	C01046	AFCS SYS B FCC DC
B	4	C00716	AFCS SYS B ENGAGE INTLK
B	10	C00207	FLIGHT CONTROL STAB TRIM CONT
C	2	C01042	AFCS SYS B SNSR EXC AC
C	3	C01047	AFCS MCP DC 2
D	3	C01630	AFCS SYS B RUDDER DC

SUBTASK 22-11-24-700-001

- (3) Ensure that the Mach Trim warning light is turned ON (Figure 202).

SUBTASK 22-11-24-700-002

- (4) Use the FMC - CDU and do the following test (Figure 201):

- SELECT, INIT/REF on the keyboard.
- SELECT, "INDEX" (LSK 6L).



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- (c) SELECT, "MAINT" (LSK 6R).
- (d) SELECT, "DFCS" (LSK 2L).
 - 1) DFCS will run the self test and display as following:
 - FCC-A SELF TEST FAIL
 - FCC-B SELF TEST FAIL
 - CROSS CHANNEL TEST PASS
- (e) SELECT, "CONTINUE" (LSK 6R)
NOTE: Ignore this message, "CALIBRATION ERROR ---MSG22-11235".
- (f) SELECT, "CONTINUE" (LSK 6R).
- (g) SELECT, "EXTENDED MAINTENANCE"(LSK 4L).
- (h) SELECT, "SENSOR VALUES"(LSK 4L).
- (i) SELECT, "DISCRETE INPUTS"(LSK 5L).
- (j) SELECT, "CIRCUIT BREAKER CHECK"(LSK 5R).
 - 1) Make sure that 0.00 +/-5.00 VAC appears on both FCC-A and FCC-B on "MACH TRIM AC (J1C-A05/B05)"
- (k) SELECT, INIT/REF on the keyboard, to exit of BITE.
- (l) End of test.

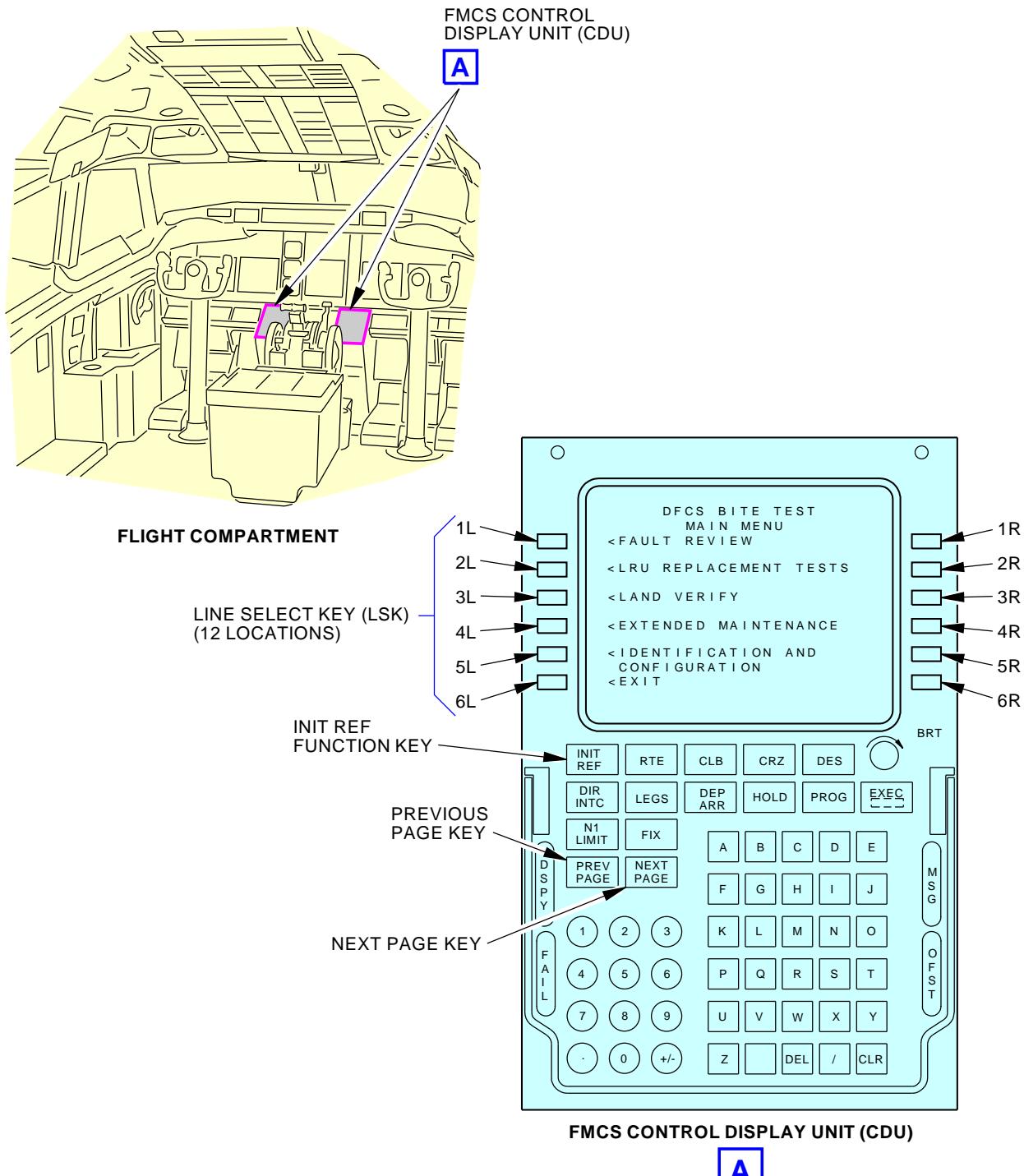
———— END OF TASK ————

EFFECTIVITY
AKS ALL

22-11-24



737-600/700/800/900
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K45540 S0006563722_V2

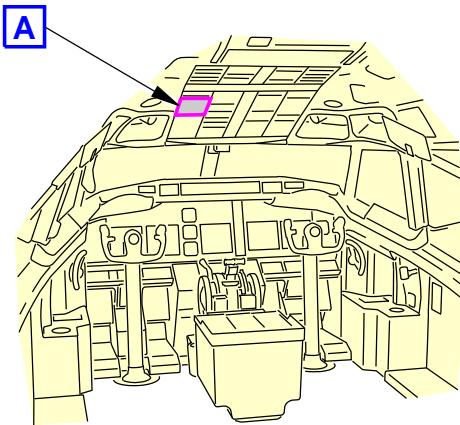
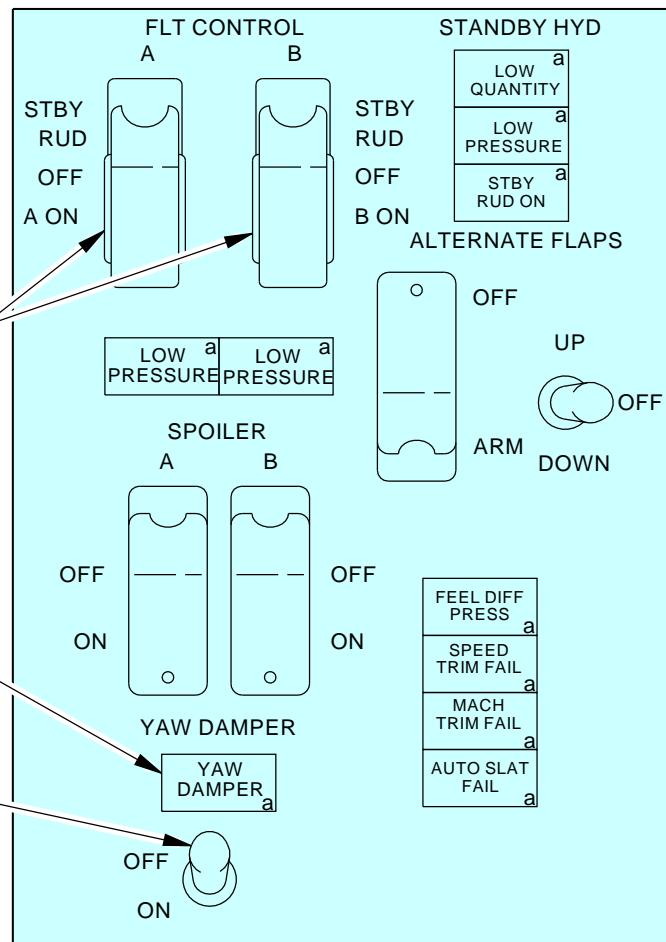
Flight Management Computer Control Display Unit
Figure 201/22-11-24-990-802

EFFECTIVITY
AKS ALL

22-11-24

D633A101-AKS

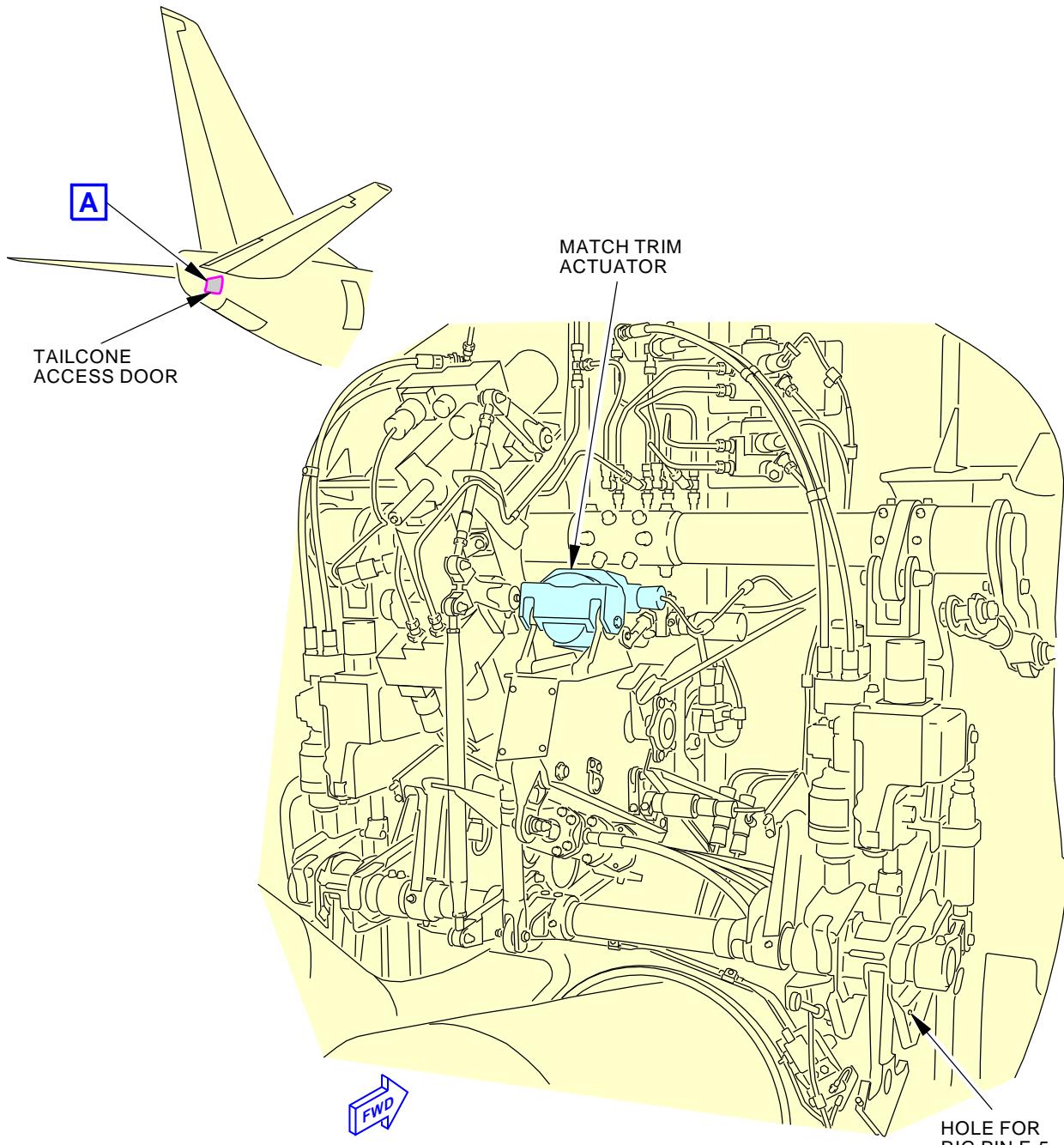
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**FLIGHT CONTROLS
PANEL (P5-3)**

FLIGHT COMPARTMENT
**FLT CONTROL
A AND B SWITCHES**
**DISENGAGE
WARNING LIGHT**
**YAW DAMPER
ENGAGE SWITCH**

FLIGHT CONTROLS PANEL (P5-3)


2356682 S0000538458_V2

**Flight Control Panel P5-3
Figure 202/22-11-24-990-803**

 EFFECTIVITY
AKS ALL
22-11-24



(VIEW WHEN YOU ARE LOOKING THROUGH THE TAILCONE ACCESS DOOR)

A

2356686 S0000538466_V2

Mach Trim Actuator
Figure 203/22-11-24-990-804

EFFECTIVITY
AKS ALL

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TASK 22-11-24-440-801

3. Mach Trim Actuator - Activation

(Figure 203)

A. General

- (1) This procedure adds electrical power and hydraulic pressure to the Mach Trim Servo.

B. References

Reference	Title
27-31-00-800-801	Elevator Hydraulic System A and B - Pressurization (P/B 201)

C. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right
315	APU Compartment - Left
316	APU Compartment - Right

D. Procedure

SUBTASK 22-11-24-860-014

WARNING: MAKE SURE THAT PERSONNEL AND EQUIPMENT ARE CLEAR OF THE FLIGHT CONTROLS SURFACES. MAKE SURE THAT THE INBOARD FAN DUCT COWL AND THE INBOARD AND OUTBOARD THRUST REVERSERS ARE CLOSED. THE FLIGHT CONTROL SURFACES CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (1) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
C	4	C00456	AFCS SYS A MACH TRIM AC

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
C	1	C01037	AFCS SYS B MACH TRIM AC

SUBTASK 22-11-24-860-019

- (2) Do this task: Elevator Hydraulic System A and B - Pressurization, TASK 27-31-00-800-801.

SUBTASK 22-11-24-700-003

- (3) Make sure that the Mach Trim warning light is turned OFF (Figure 202).

———— END OF TASK ————



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MACH TRIM ACTUATOR - REMOVAL/INSTALLATION

1. General

- A. This procedure has these tasks:
 - (1) A removal of the mach trim actuator.
 - (2) An installation of the mach trim actuator.
- B. The mach trim actuator (M414) is in the APU Compartment.
- C. The mach trim actuator must be calibrated if the elevator rigging is changed. To check for the correct calibration of the mach trim actuator, do this task: Mach Trim Actuator Installation Test, TASK 22-11-24-740-801

To adjust the rigging, do this task: Sensor Null - Test, TASK 27-31-00-700-814.

TASK 22-11-24-000-801

2. Mach Trim Actuator Removal

(Figure 401)

A. References

Reference	Title
27-31-00-800-802	Remove Pressure from the Elevator Hydraulic Systems A and B (P/B 201)

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1585	Kit - Rigging Pins, All Systems Part #: F70207-109 Supplier: 81205

C. Location Zones

Zone	Area
315	APU Compartment - Left
316	APU Compartment - Right

D. Access Panels

Number	Name/Location
318BR	Tailcone Access Door

E. Prepare for the Removal

SUBTASK 22-11-24-860-001

- (1) Do this task: Remove Pressure from the Elevator Hydraulic Systems A and B, TASK 27-31-00-800-802.

SUBTASK 22-11-24-860-002

- (2) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
C	4	C00456	AFCS SYS A MACH TRIM AC
D	4	C00457	AFCS SYS A MACH TRIM DC

EFFECTIVITY	AKS ALL
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F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	2	C01064	AFCS SYS B MACH TRIM DC
C	1	C01037	AFCS SYS B MACH TRIM AC

SUBTASK 22-11-24-010-001

- (3) To get access to the actuator [1], do this step:

Open this access panel:

Number Name/Location

318BR Tailcone Access Door

F. Removal Procedure

SUBTASK 22-11-24-820-001

- (1) Put rigging pin E-5 from the kit of rig pin kit, SPL-1585 into its hole in the aft control quadrant.

SUBTASK 22-11-24-020-001

- (2) Disconnect the electrical connector [4] from the actuator [1].

SUBTASK 22-11-24-020-002

- (3) Remove the nut [8], washer [7], nut [6], washer [5], washer [11], and bolt assembly [3], to disconnect the actuator [1] from the neutral shift mechanism

NOTE: Pull up on the aft end of the elevator feel and centering unit to release the load on the bolt.

SUBTASK 22-11-24-020-003

- (4) Remove the two bolts [2] that attach the actuator [1] to the elevator feel and centering unit.

SUBTASK 22-11-24-020-004

- (5) Remove the actuator [1].

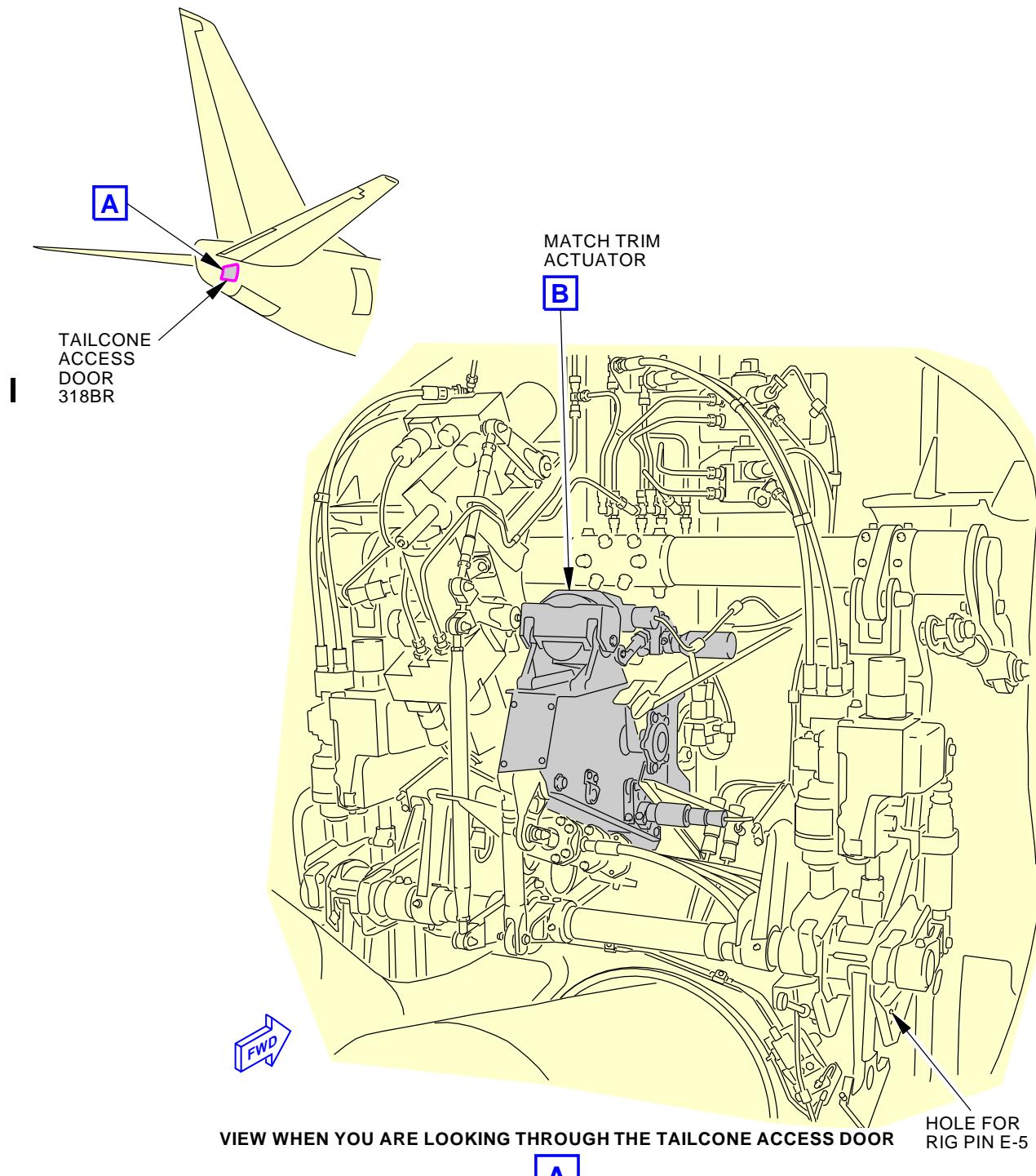
———— END OF TASK ————

EFFECTIVITY
AKS ALL

22-11-24



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AIRCRAFT MAINTENANCE MANUAL



F95598 S0006563960_V3

Mach Trim Actuator Installation
Figure 401/22-11-24-990-801 (Sheet 1 of 3)

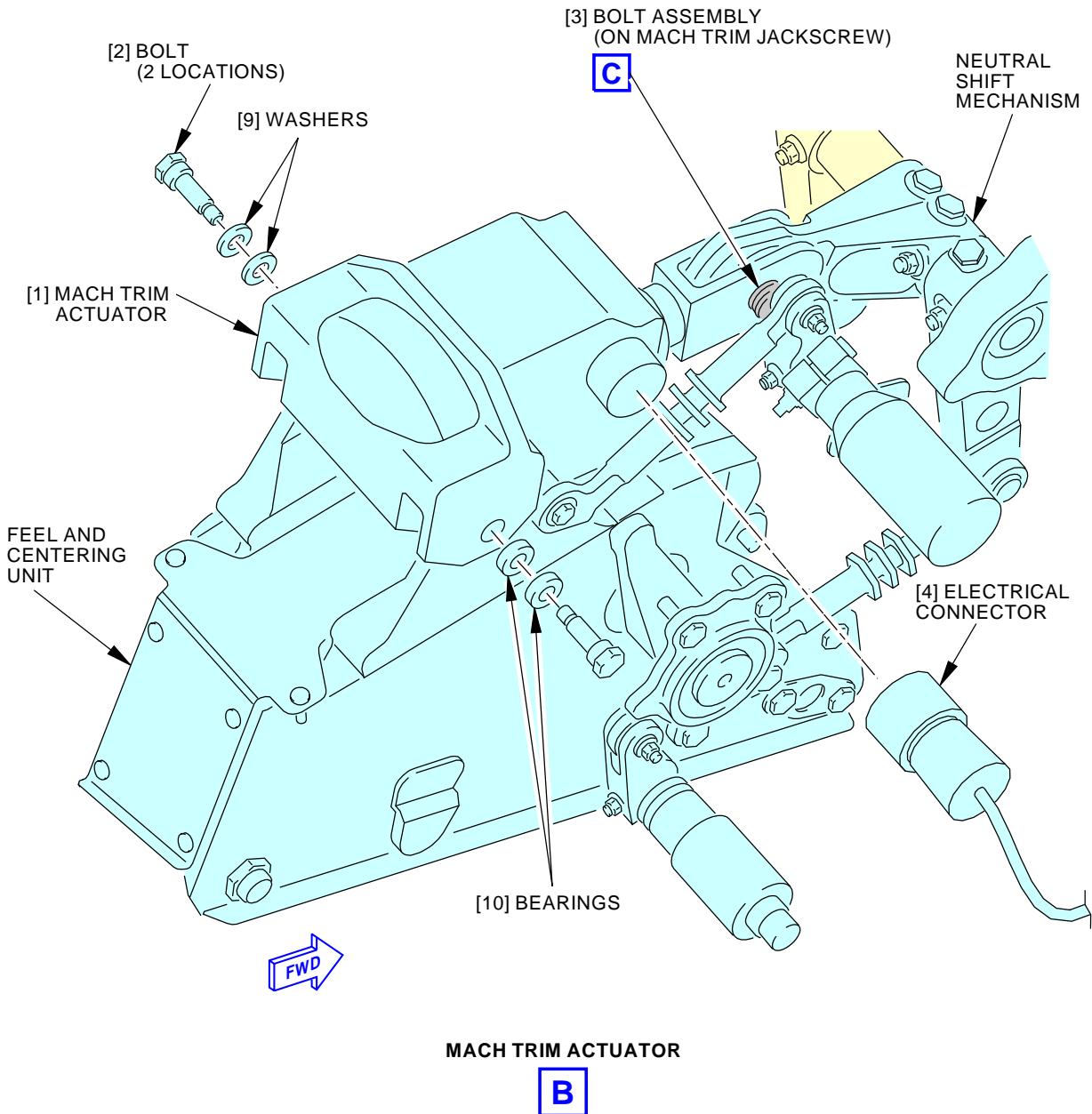
EFFECTIVITY
AKS ALL

22-11-24

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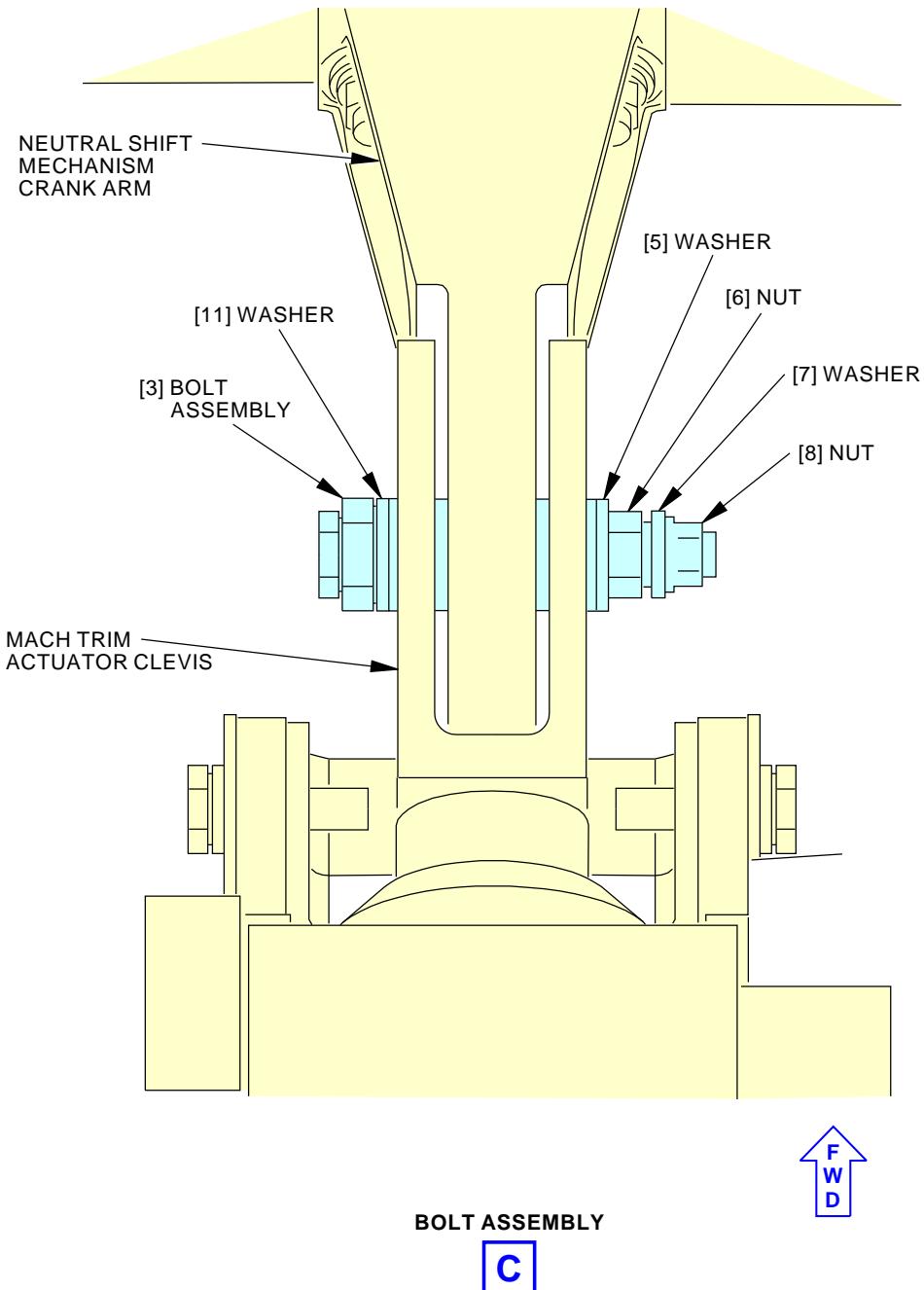
F95651 S0006563961_V3

Mach Trim Actuator Installation
Figure 401/22-11-24-990-801 (Sheet 2 of 3)

EFFECTIVITY
AKS ALL

22-11-24

D633A101-AKS



J85569 S0000180514_V2

Mach Trim Actuator Installation
Figure 401/22-11-24-990-801 (Sheet 3 of 3)

EFFECTIVITY
AKS ALL

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AIRCRAFT MAINTENANCE MANUAL

TASK 22-11-24-400-801

3. Mach Trim Actuator Installation

(Figure 401)

A. References

Reference	Title
22-11-24-740-801	Mach Trim Actuator Installation Test (P/B 501)
27-31-00-800-802	Remove Pressure from the Elevator Hydraulic Systems A and B (P/B 201)

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1585	Kit - Rigging Pins, All Systems Part #: F70207-109 Supplier: 81205

C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Actuator	22-11-24-01-065	AKS ALL

D. Location Zones

Zone	Area
315	APU Compartment - Left
316	APU Compartment - Right

E. Access Panels

Number	Name/Location
318BR	Tailcone Access Door

F. Prepare for the Installation

SUBTASK 22-11-24-860-003

- (1) Do this task: Remove Pressure from the Elevator Hydraulic Systems A and B, TASK 27-31-00-800-802.

SUBTASK 22-11-24-860-004

- (2) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
C	4	C00456	AFCS SYS A MACH TRIM AC
D	4	C00457	AFCS SYS A MACH TRIM DC

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	2	C01064	AFCS SYS B MACH TRIM DC
C	1	C01037	AFCS SYS B MACH TRIM AC



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SUBTASK 22-11-24-010-002

- (3) Open this access door:

Number Name/Location

318BR Tailcone Access Door

G. Installation Procedure

SUBTASK 22-11-24-820-002

- (1) Put rigging pin E-5 from the kit of rig pin kit, SPL-1585 into its hole in the aft control quadrant.

SUBTASK 22-11-24-420-001

- (2) Make sure the bearings and washer are in the correct position at the mounting points on the feel and centering unit.

NOTE: Move the feel and centering unit up or down to put the actuator arm in position. If it is necessary, remove the rigging pin and push the elevator control surface up, or pull aft on the control column.

SUBTASK 22-11-24-420-002

- (3) Set the actuator [1] on top of the feel and centering unit and put in the two bolts [2], two washers [9] and two bearings [10] on the sides.

SUBTASK 22-11-24-420-003

- (4) Make sure the crank arm of the neutral shift mechanism can move freely in the clevis of the mach trim actuator arm.

SUBTASK 22-11-24-420-004

WARNING: MAKE SURE THAT YOU TURN THE NEUTRAL SHIFT CRANK IN THE UP DIRECTION. IF YOU INSTALL THE NEUTRAL SHIFT CRANK INCORRECTLY, THE STABILIZER CAN MOVE QUICKLY WHEN YOU ENGAGE THE AUTOPILOT. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (5) Install the bolt assembly [3]:

- (a) Install the bolt assembly [3] and washer [11] from the left to the right side.
 - (b) Install the washer [5], and nut [6].

NOTE: This is the larger nut.

- (c) Tighten the nut [6] to 85 in-lb (9.6 N·m) - 100 in-lb (11.3 N·m).

CAUTION: DO NOT CHANGE THE TORQUE ON THE LARGE NUT [6] AFTER YOU TIGHTEN THE SMALL NUT [8]. IF CHANGED, THE TORQUE VALUE WILL BE INCORRECT.

- (d) Install the washer [7] and the nut [8].

- (e) Tighten the nut [8] to 30 in-lb (3.4 N·m) - 35 in-lb (4.0 N·m).

SUBTASK 22-11-24-420-005

- (6) Tighten the two bolts [2] with two washers [9] and two bearings [10] on the sides of the actuator [1] to 20 in-lb (2.3 N·m) - 25 in-lb (2.8 N·m).

SUBTASK 22-11-24-940-001

- (7) Remove the rigging pin E-5 from the aft control quadrant.

SUBTASK 22-11-24-710-001

- (8) Do this task: Mach Trim Actuator Installation Test, TASK 22-11-24-740-801.

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H. Put the Airplane Back to Its Usual Condition

SUBTASK 22-11-24-410-001

- (1) Close this access door:

Number Name/Location

318BR Tailcone Access Door

SUBTASK 22-11-24-860-005

- (2) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	4	C00456	AFCS SYS A MACH TRIM AC
D	4	C00457	AFCS SYS A MACH TRIM DC

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	2	C01064	AFCS SYS B MACH TRIM DC
C	1	C01037	AFCS SYS B MACH TRIM AC

———— END OF TASK ————

EFFECTIVITY
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MACH TRIM ACTUATOR - ADJUSTMENT/TEST

1. General

- A. This procedure has this task:
 - (1) An installation test of the mach trim actuator.
- B. The mach trim actuator is located in the APU Compartment.
- C. The DFCS built-in test equipment (BITE) is used to do the LRU Replacement test after the installation of the mach trim actuator. The test uses no external equipment. The airplane electrical and hydraulic systems are the only power sources necessary for this task.

TASK 22-11-24-740-801

2. Mach Trim Actuator Installation Test

A. General

- (1) The installation test makes sure that the mach trim actuator is installed correctly.

B. References

Reference	Title
24-22-00-860-811	Supply Electrical Power (P/B 201)
24-22-00-860-814	Remove External Power (P/B 201)
27-31-00-800-801	Elevator Hydraulic System A and B - Pressurization (P/B 201)
27-31-00-800-802	Remove Pressure from the Elevator Hydraulic Systems A and B (P/B 201)

C. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

D. Installation Test

SUBTASK 22-11-24-860-006

- (1) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

SUBTASK 22-11-24-860-007

- (2) Do this task: Elevator Hydraulic System A and B - Pressurization, TASK 27-31-00-800-801.

SUBTASK 22-11-24-860-008

- (3) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
C	4	C00456	AFCS SYS A MACH TRIM AC
D	4	C00457	AFCS SYS A MACH TRIM DC

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	2	C01064	AFCS SYS B MACH TRIM DC
C	1	C01037	AFCS SYS B MACH TRIM AC

SUBTASK 22-11-24-740-001

- (4) Do this BITE test:

- (a) Push the INIT REF key on the CDU keyboard.

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- (b) Push the Line Select Key (LSK) that is adjacent to each selection:

NOTE: If CONTINUE shows on the CDU display during the BITE test, first do the instructions on the CDU display. Then push the LSK that is adjacent to CONTINUE. Use the NEXT PAGE or PREV PAGE key to change the page if it is necessary.

- 1) INDEX
- 2) MAINT
- 3) DFCS
- 4) LRU REPLACEMENT TESTS
- 5) Make the selection for the applicable channel:

NOTE: Channel A is for FCC-A and channel B is for FCC-B.

- a) CHANNEL A
 - b) CHANNEL B
 - c) CHANNEL A AND B
- 6) MACH TRIM
 - 7) Do the instructions that show on the CDU display to complete the test.
 - 8) Make sure that the test is completed with no failure.

NOTE: If a failure occurs, the TEST FAILED indication will show on the CDU display.

SUBTASK 22-11-24-860-009

- (5) Do this task: Remove Pressure from the Elevator Hydraulic Systems A and B, TASK 27-31-00-800-802.

SUBTASK 22-11-24-740-002

- (6) Continue the instructions on the CDU display:
- (a) Push the LSK next to INDEX.
 - (b) Do the instructions on the CDU display.
 - (c) Push the LSK next to INDEX.

SUBTASK 22-11-24-860-010

- (7) Do this task: Remove External Power, TASK 24-22-00-860-814.

———— END OF TASK ————

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AUTOPILOT AILERON ACTUATOR - MAINTENANCE PRACTICES

1. General

- A. This procedure has these tasks:
- (1) Autopilot Aileron Actuator Deactivation.
 - (2) Autopilot Aileron Actuator Activation.

TASK 22-11-25-040-801

2. Autopilot Aileron Actuator - Deactivation

(Figure 202)

A. General

- (1) This procedure removes electrical power and hydraulic pressure to Autopilot Aileron Actuator.

B. References

Reference	Title
24-22-00-860-811	Supply Electrical Power (P/B 201)
27-11-00-860-801	Pressure from the Aileron Hydraulic Systems A and B - Deactivation (P/B 201)
32-00-01-480-801	Landing Gear Downlock Pins Installation (P/B 201)

C. Tools/Equipment

Reference	Description
STD-858	Tag - DO NOT OPERATE

D. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
211	Flight Compartment - Left
212	Flight Compartment - Right

E. Procedure

SUBTASK 22-11-25-860-043

WARNING: MAKE SURE THAT PERSONNEL AND EQUIPMENT ARE CLEAR OF THE FLIGHT CONTROLS SURFACES. MAKE SURE THAT THE INBOARD FAN DUCT COWL AND THE INBOARD AND OUTBOARD THRUST REVERSERS ARE CLOSED. THE FLIGHT CONTROL SURFACES CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (1) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
C	4	C00456	AFCS SYS A MACH TRIM AC
C	5	C01041	AFCS SYS A SNSR EXC AC
D	1	C01049	AFCS SYS A WARN LIGHT (BAT)
D	2	C01045	AFCS SYS A FCC DC
D	3	C01048	AFCS SYS A ENGAGE INTLK
D	4	C00457	AFCS SYS A MACH TRIM DC
D	5	C01044	AFCS MCP DC 1



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F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	1	C00374	AFCS SYS B WARN LIGHT (BAT)
B	2	C01064	AFCS SYS B MACH TRIM DC
B	3	C01046	AFCS SYS B FCC DC
B	4	C00716	AFCS SYS B ENGAGE INTLK
C	1	C01037	AFCS SYS B MACH TRIM AC
C	2	C01042	AFCS SYS B SNSR EXC AC
C	3	C01047	AFCS MCP DC 2

SUBTASK 22-11-25-010-001

- (2) Do this task: Pressure from the Aileron Hydraulic Systems A and B - Deactivation, TASK 27-11-00-860-801.

SUBTASK 22-11-25-860-044

WARNING: MAKE SURE THAT THE GROUND LOCKS ARE INSTALLED IN ALL OF THE LANDING GEAR. WITHOUT THE GROUND LOCKS, THE LANDING GEAR CAN RETRACT. THIS CAN CAUSE INJURIES TO PERSONNEL, AND DAMAGE TO EQUIPMENT.

- (3) Do this task: Landing Gear Downlock Pins Installation, TASK 32-00-01-480-801.

SUBTASK 22-11-25-860-047

- (4) Attach DO NOT OPERATE tag, STD-858 to the captain's and first officer's control columns.

F. Autopilot Aileron Actuator - Tryout

NOTE: This tryout is to make sure the Autopilot Aileron Actuator is in a zero energy state.

SUBTASK 22-11-25-860-048

WARNING: MAKE SURE THAT PERSONNEL AND EQUIPMENT ARE CLEAR OF THE FLIGHT CONTROLS SURFACES. MAKE SURE THAT THE INBOARD FAN DUCT COWL AND THE INBOARD AND OUTBOARD THRUST REVERSERS ARE CLOSED. THE FLIGHT CONTROL SURFACES CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (1) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

SUBTASK 22-11-25-860-045

- (2) Make sure that these circuit breakers are open and have safety tags:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	4	C00456	AFCS SYS A MACH TRIM AC
C	5	C01041	AFCS SYS A SNSR EXC AC
D	1	C01049	AFCS SYS A WARN LIGHT (BAT)
D	2	C01045	AFCS SYS A FCC DC
D	3	C01048	AFCS SYS A ENGAGE INTLK
D	4	C00457	AFCS SYS A MACH TRIM DC
D	5	C01044	AFCS MCP DC 1



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F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	1	C00374	AFCS SYS B WARN LIGHT (BAT)
B	2	C01064	AFCS SYS B MACH TRIM DC
B	3	C01046	AFCS SYS B FCC DC
B	4	C00716	AFCS SYS B ENGAGE INTLK
C	1	C01037	AFCS SYS B MACH TRIM AC
C	2	C01042	AFCS SYS B SNSR EXC AC
C	3	C01047	AFCS MCP DC 2

SUBTASK 22-11-25-700-002

- (3) Use the FMC - CDU and do the following test (Figure 201):
- SELECT, INIT/REF on the keyboard.
 - SELECT, "INDEX" (LSK 6L).
 - SELECT, "MAINT" (LSK 6R).
 - SELECT, "DFCS" (LSK 2L).
 - DFCS will run the self test and display as following:
 - FCC-A SELF TEST FAIL
 - FCC-B SELF TEST FAIL
 - CROSS CHANNEL TEST PASS
 - SELECT, "CONTINUE" (LSK 6R)
NOTE: Ignore the message that appears.
 - SELECT, "CONTINUE" (LSK 6R).
 - SELECT, "EXTENDED MAINTENANCE"(LSK 4L).
 - SELECT, "SENSOR VALUES"(LSK 4L).
 - SELECT, "DISCRETE INPUTS"(LSK 5L).
 - SELECT, "CIRCUIT BREAKER CHECK"(LSK 5R).
 - SELECT, INIT/REF on the keyboard, to exit of BITE.
 - End of test.

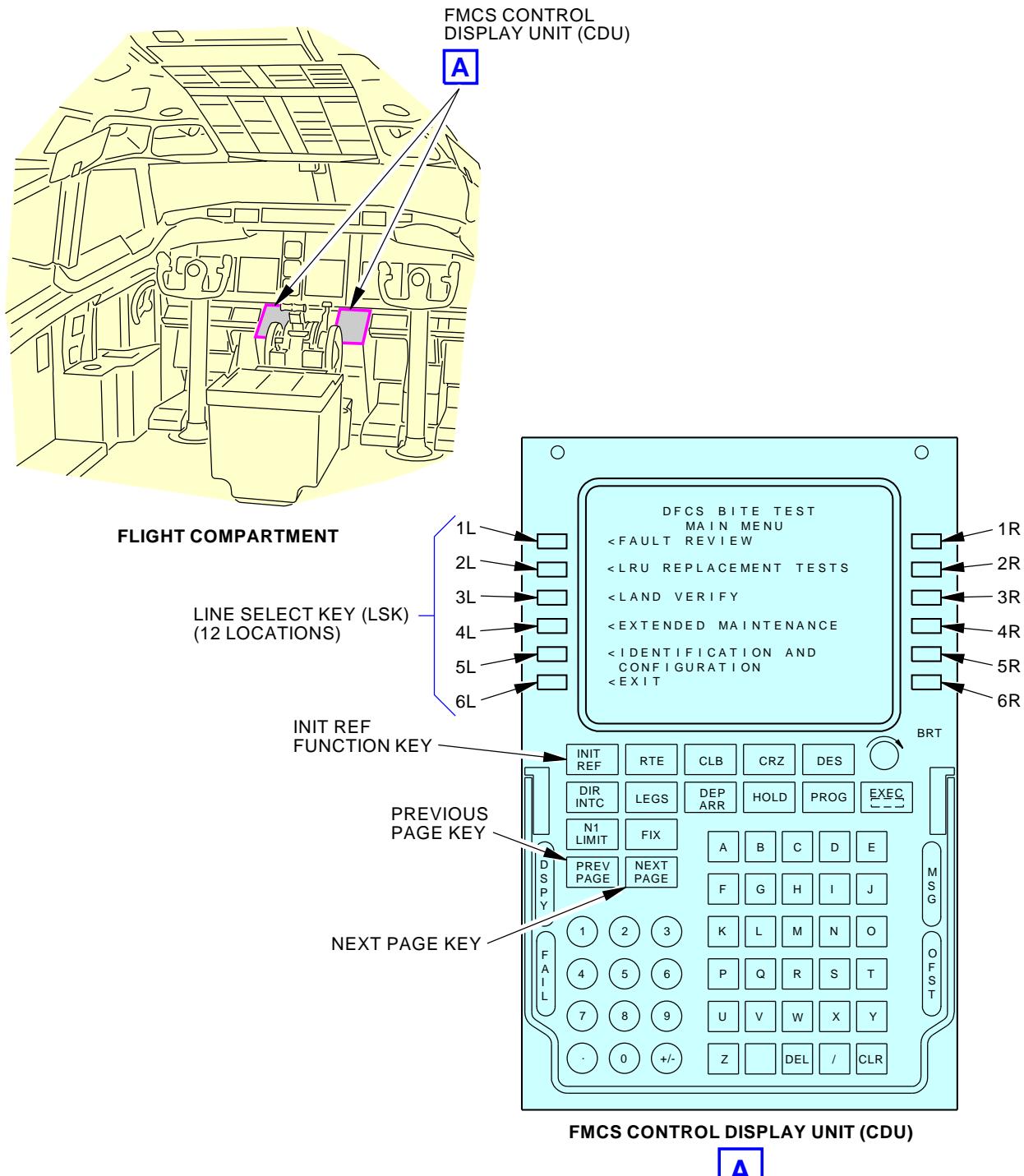
———— END OF TASK ————

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Flight Management Computer Control Display Unit
Figure 201/22-11-25-990-808

EFFECTIVITY
AKS ALL

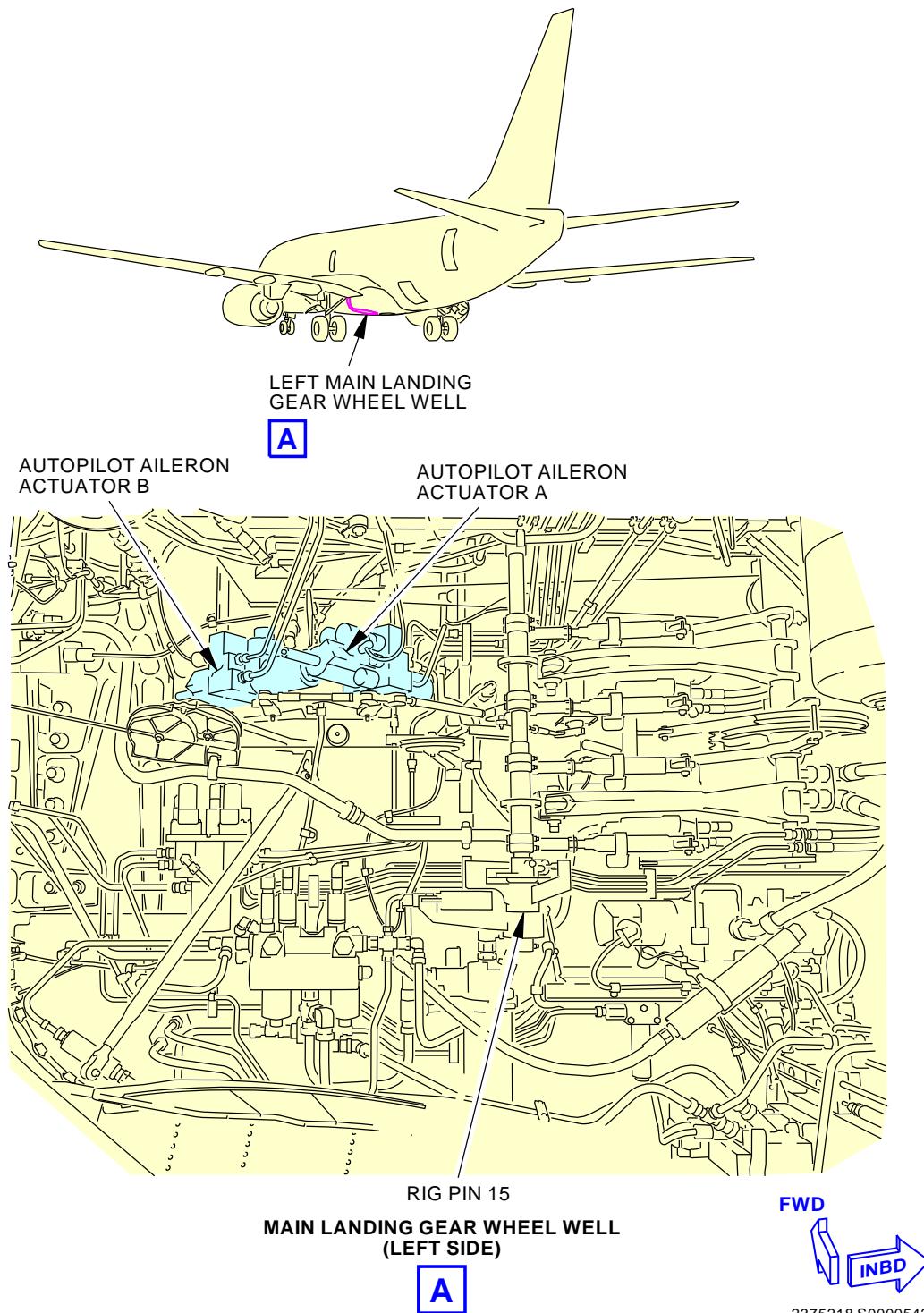
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AIRCRAFT MAINTENANCE MANUAL



2375218 S0000542929_V1

Autopilot Aileron Actuator
Figure 202/22-11-25-990-807

EFFECTIVITY
AKS ALL

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TASK 22-11-25-440-801

3. Autopilot Aileron Actuator - Activation

(Figure 202)

A. General

- (1) This procedure adds electrical power and hydraulic pressure to Autopilot Aileron Actuator.

B. References

Reference	Title
27-11-00-860-802	Pressure to the Aileron Hydraulic Systems A and B - Activation (P/B 201)

C. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
211	Flight Compartment - Left
212	Flight Compartment - Right

D. Procedure

SUBTASK 22-11-25-860-046

WARNING: MAKE SURE THAT PERSONNEL AND EQUIPMENT ARE CLEAR OF THE FLIGHT CONTROLS SURFACES. MAKE SURE THAT THE INBOARD FAN DUCT COWL AND THE INBOARD AND OUTBOARD THRUST REVERSERS ARE CLOSED. THE FLIGHT CONTROL SURFACES CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (1) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
C	4	C00456	AFCS SYS A MACH TRIM AC
C	5	C01041	AFCS SYS A SNSR EXC AC
D	1	C01049	AFCS SYS A WARN LIGHT (BAT)
D	2	C01045	AFCS SYS A FCC DC
D	3	C01048	AFCS SYS A ENGAGE INTLK
D	4	C00457	AFCS SYS A MACH TRIM DC
D	5	C01044	AFCS MCP DC 1

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	1	C00374	AFCS SYS B WARN LIGHT (BAT)
B	2	C01064	AFCS SYS B MACH TRIM DC
B	3	C01046	AFCS SYS B FCC DC
B	4	C00716	AFCS SYS B ENGAGE INTLK
C	1	C01037	AFCS SYS B MACH TRIM AC
C	2	C01042	AFCS SYS B SNSR EXC AC
C	3	C01047	AFCS MCP DC 2



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SUBTASK 22-11-25-410-001

- (2) Do this task: Pressure to the Aileron Hydraulic Systems A and B - Activation,
TASK 27-11-00-860-802.

———— END OF TASK ————

EFFECTIVITY
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AUTOPILOT AILERON ACTUATOR - REMOVAL/INSTALLATION

1. General

- A. This procedure has these tasks:
 - (1) The removal of an autopilot aileron actuator.
 - (2) The installation of an autopilot aileron actuator.
- B. There are two autopilot aileron actuators. You can find the autopilot aileron actuator A (M943) and autopilot aileron actuator B (M1024) in the left main landing gear wheel well, outboard of the power control units for the ailerons.
- C. The removal/installation procedure is the same for each of the autopilot aileron actuators.

TASK 22-11-25-000-801

2. Autopilot Aileron Actuator Removal

(Figure 401)

A. References

Reference	Title
27-11-00-860-801	Pressure from the Aileron Hydraulic Systems A and B - Deactivation (P/B 201)
32-00-01-480-801	Landing Gear Downlock Pins Installation (P/B 201)

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1585	Kit - Rigging Pins, All Systems Part #: F70207-109 Supplier: 81205

C. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left

D. Prepare for the Removal

SUBTASK 22-11-25-860-026

- (1) Do this task: Pressure from the Aileron Hydraulic Systems A and B - Deactivation, TASK 27-11-00-860-801.

SUBTASK 22-11-25-860-027

- (2) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
C	4	C00456	AFCS SYS A MACH TRIM AC
C	5	C01041	AFCS SYS A SNSR EXC AC
D	1	C01049	AFCS SYS A WARN LIGHT (BAT)
D	2	C01045	AFCS SYS A FCC DC
D	3	C01048	AFCS SYS A ENGAGE INTLK
D	4	C00457	AFCS SYS A MACH TRIM DC
D	5	C01044	AFCS MCP DC 1

EFFECTIVITY	AKS ALL
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F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	1	C00374	AFCS SYS B WARN LIGHT (BAT)
B	2	C01064	AFCS SYS B MACH TRIM DC
B	3	C01046	AFCS SYS B FCC DC
B	4	C00716	AFCS SYS B ENGAGE INTLK
C	1	C01037	AFCS SYS B MACH TRIM AC
C	2	C01042	AFCS SYS B SNSR EXC AC
C	3	C01047	AFCS MCP DC 2

SUBTASK 22-11-25-860-028

WARNING: YOU MUST CAREFULLY INSTALL THE GROUND LOCKS IN ALL LANDING GEAR.
AN ACCIDENTAL RETRACTION OF THE LANDING GEAR CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (3) Make sure that you install the landing gear downlock pins (TASK 32-00-01-480-801).

SUBTASK 22-11-25-860-040

- (4) Insert rig pin A/S 15 from rig pin kit, SPL-1585.

E. Procedure

SUBTASK 22-11-25-020-004

- (1) Disconnect the hydraulic lines from the hydraulic ports on the actuator assembly [1].
 - (a) Seal the hydraulic lines and the hydraulic ports with plugs.

SUBTASK 22-11-25-020-005

- (2) Remove the electrical connector [18] from the actuator assembly [1].

SUBTASK 22-11-25-020-006

- (3) Remove the electrical connector [5] from the hydraulic pressure switch [4].

SUBTASK 22-11-25-020-007

- (4) Do these steps to remove the actuator assembly [1]:

- (a) Remove the screw [16], washer [13], and nut [12] that attach the lever assembly [17] or [22] to the actuator assembly [1].
 - (b) Remove the nut [14] and washer [15] that attach the output shaft of the actuator assembly [1] to the lever assembly [17] or [22].
 - (c) Move the lever assembly [17] or [22] away from the actuator assembly [1].
 - (d) Remove the mounting bolts [20], mounting bolt [21] and washers [19].

NOTE: The mounting bolt [21] is shorter in length and it is only on the actuator assy A [1].

- (e) Remove the actuator assembly [1].

SUBTASK 22-11-25-020-008

- (5) Remove the hydraulic pressure switch [4] and O-ring [3] from the actuator assembly [1]:

- (a) Seal the hydraulic port with a plug.
 - (b) Keep the hydraulic pressure switch [4].
 - (c) Remove the fitting [2], O-ring [6], swivel nut [7], union [8] and O-ring [3].

NOTE: These items are only on the actuator assy B [1].

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AKS ALL

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SUBTASK 22-11-25-020-009

- (6) Remove the reducer [10], union [9] and O-rings [11] from the ports on the actuator assembly [1].
 - (a) Seal the ports with plugs.
 - (b) Keep the reducer [10] and the union [9].

———— END OF TASK ————

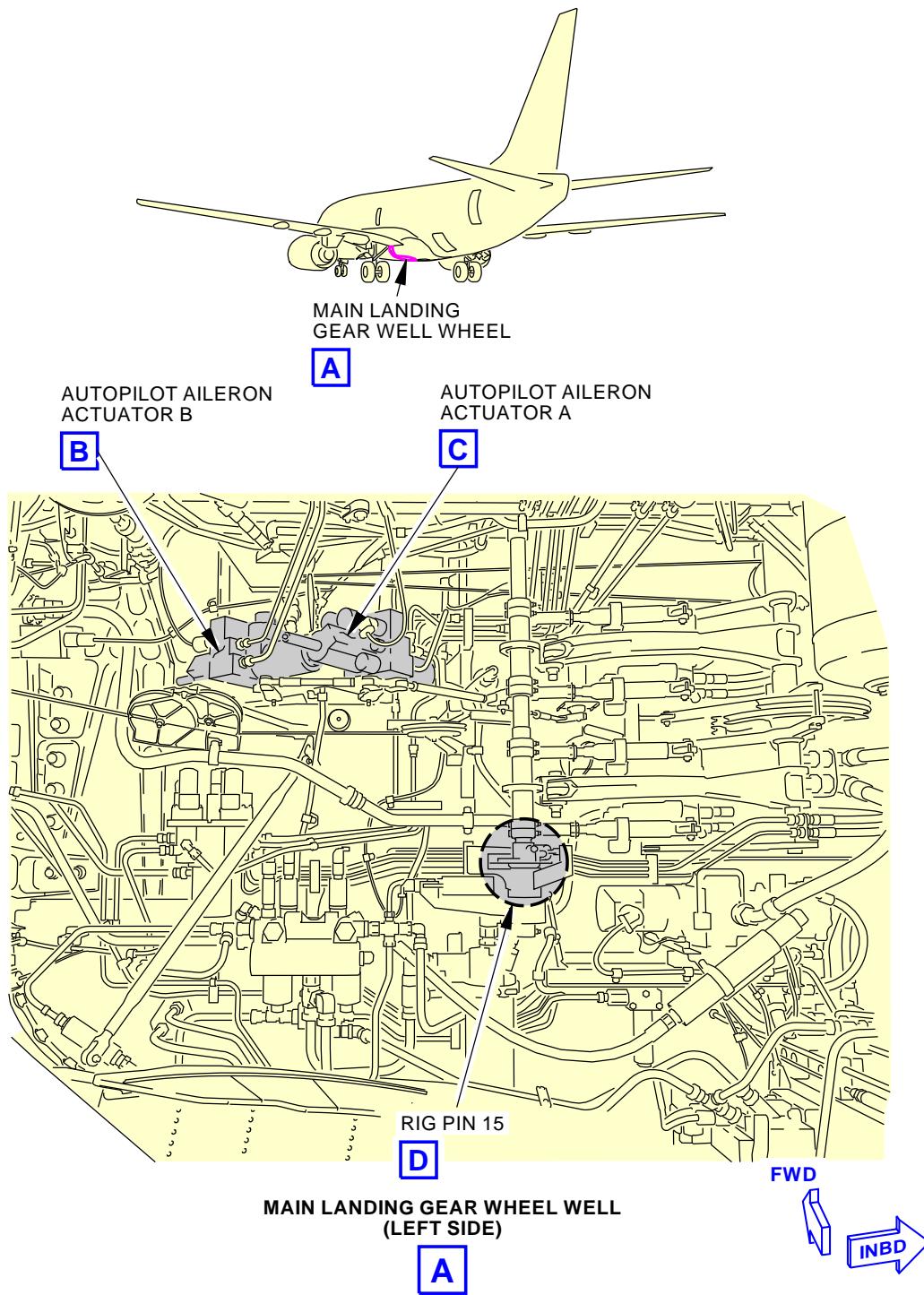
EFFECTIVITY
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**Autopilot Aileron Actuator Installation
Figure 401/22-11-25-990-806 (Sheet 1 of 4)**

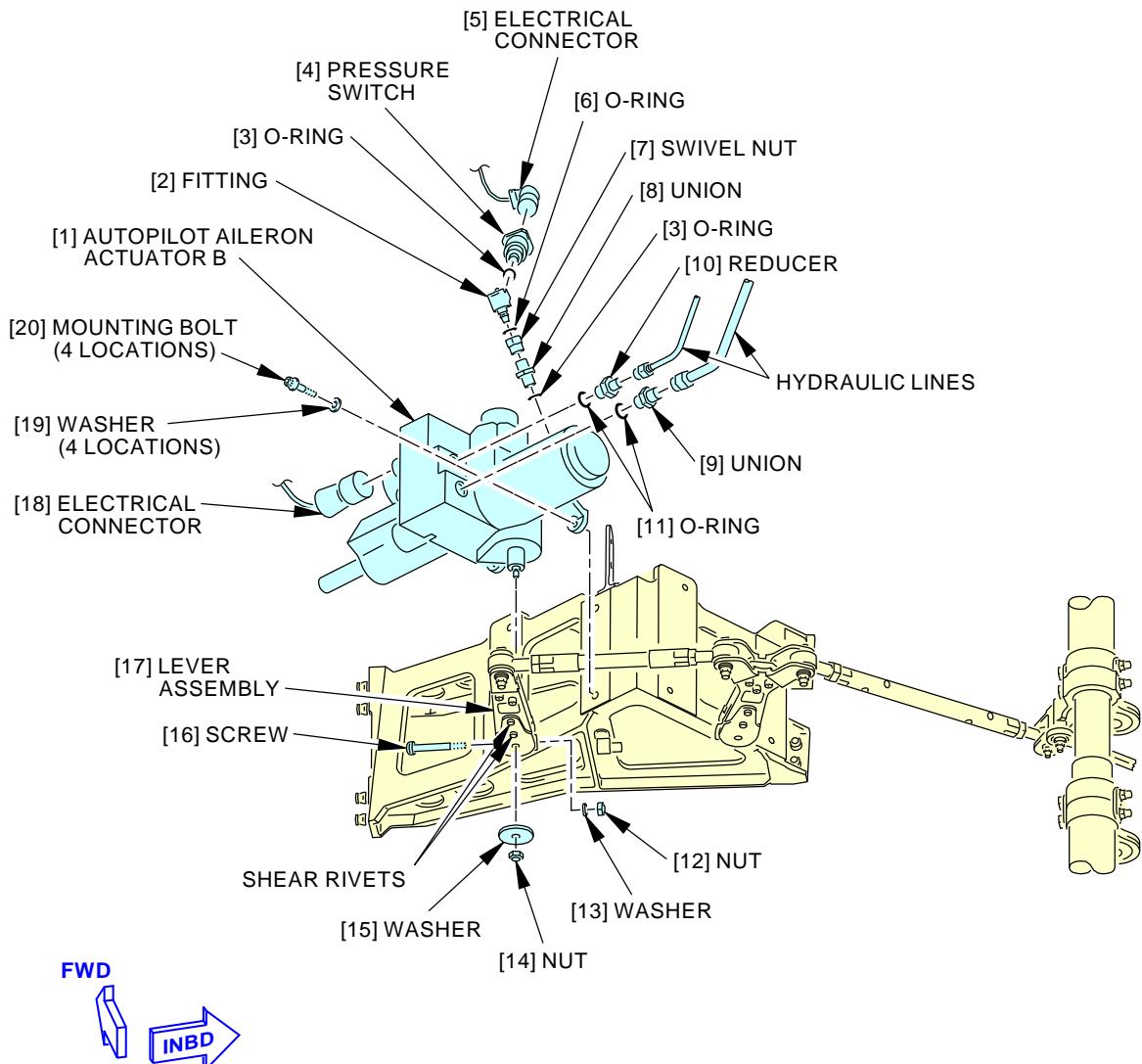
EFFECTIVITY
AKS ALL

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AUTOPILOT AILERON ACTUATOR B

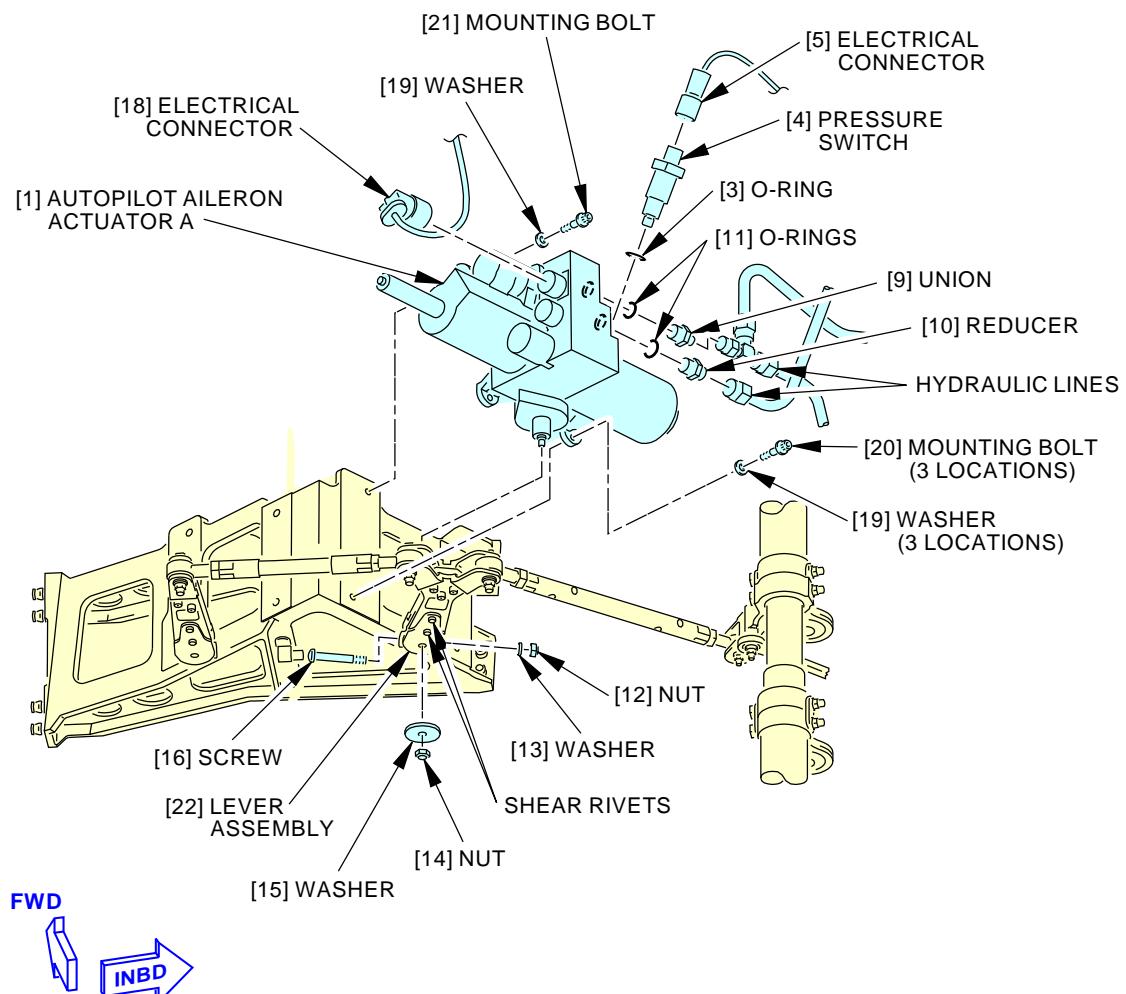
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Autopilot Aileron Actuator Installation
Figure 401/22-11-25-990-806 (Sheet 2 of 4)

EFFECTIVITY
AKS ALL

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AUTOPILOT AILERON ACTUATOR A
C

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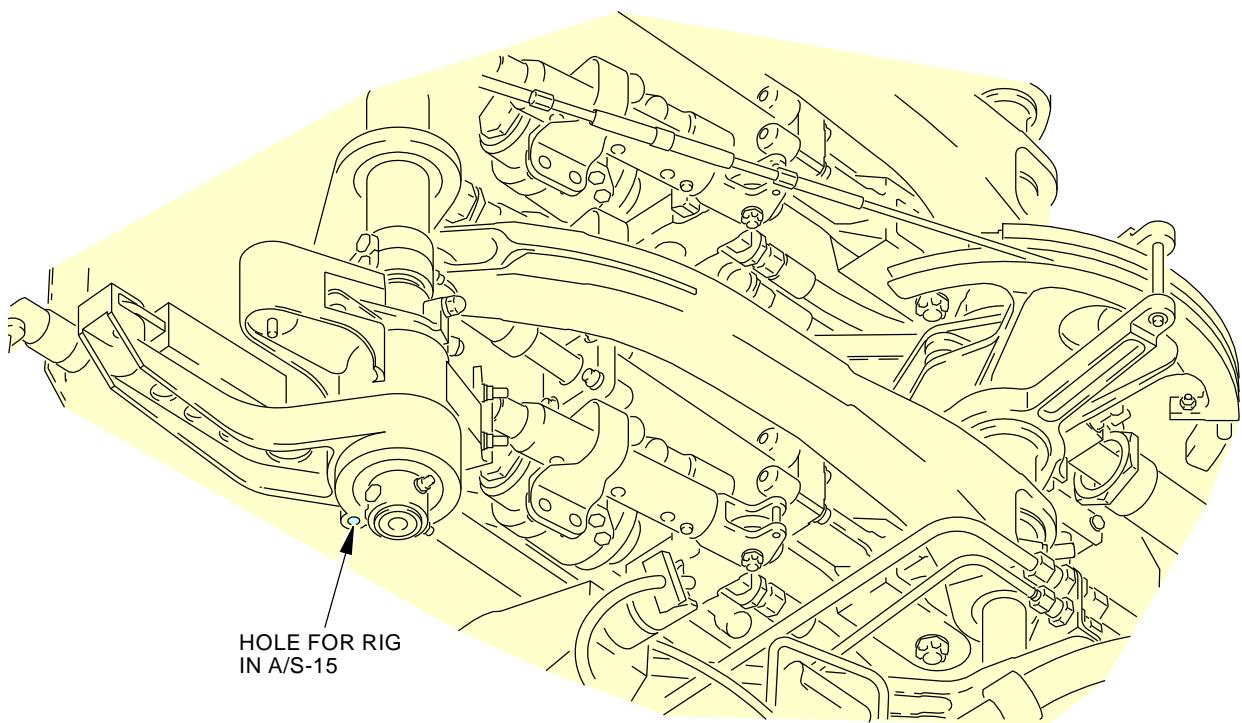
**Autopilot Aileron Actuator Installation
Figure 401/22-11-25-990-806 (Sheet 3 of 4)**

EFFECTIVITY
AKS ALL

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RIG PIN 15



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Autopilot Aileron Actuator Installation
Figure 401/22-11-25-990-806 (Sheet 4 of 4)

EFFECTIVITY
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TASK 22-11-25-400-801

3. Autopilot Aileron Actuator Installation

(Figure 401)

A. References

Reference	Title
20-10-44-400-801	Lockwire, Cotter Pins, and Lockrings - Installation (P/B 401)
22-11-25-710-801	Autopilot Aileron Actuator Test (P/B 501)
22-11-25-820-801	Autopilot Aileron Actuator Adjustment (P/B 501)
27-11-00-860-801	Pressure from the Aileron Hydraulic Systems A and B - Deactivation (P/B 201)
27-11-00-860-802	Pressure to the Aileron Hydraulic Systems A and B - Activation (P/B 201)
32-00-01-480-801	Landing Gear Downlock Pins Installation (P/B 201)

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1585	Kit - Rigging Pins, All Systems Part #: F70207-109 Supplier: 81205

C. Consumable Materials

Reference	Description	Specification
D00153	Fluid - Hydraulic Fluid, Fire Resistant (Interchangeable And Intermixable With BMS 3-11 Type V)	BMS3-11 Type IV

D. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left

E. Prepare for the Installation

SUBTASK 22-11-25-860-029

- (1) Make sure that you do these steps:

- (a) Do this task: Pressure from the Aileron Hydraulic Systems A and B - Deactivation, TASK 27-11-00-860-801.

WARNING: YOU MUST CAREFULLY INSTALL THE GROUND LOCKS IN ALL LANDING GEAR. AN ACCIDENTAL RETRACTION OF THE LANDING GEAR CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (b) Do this task: Landing Gear Downlock Pins Installation, TASK 32-00-01-480-801.
(c) Install rig pin A/S 15 from rig pin kit, SPL-1585.

SUBTASK 22-11-25-860-030

- (2) Make sure that these circuit breakers are open and have safety tags:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
C	4	C00456	AFCS SYS A MACH TRIM AC

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(Continued)

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	5	C01041	AFCS SYS A SNSR EXC AC
D	1	C01049	AFCS SYS A WARN LIGHT (BAT)
D	2	C01045	AFCS SYS A FCC DC
D	3	C01048	AFCS SYS A ENGAGE INTLK
D	4	C00457	AFCS SYS A MACH TRIM DC
D	5	C01044	AFCS MCP DC 1

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	1	C00374	AFCS SYS B WARN LIGHT (BAT)
B	2	C01064	AFCS SYS B MACH TRIM DC
B	3	C01046	AFCS SYS B FCC DC
B	4	C00716	AFCS SYS B ENGAGE INTLK
C	1	C01037	AFCS SYS B MACH TRIM AC
C	2	C01042	AFCS SYS B SNSR EXC AC
C	3	C01047	AFCS MCP DC 2

F. Procedure

SUBTASK 22-11-25-420-002

- (1) Do these steps to install the reducer [10] and union [9]:
 - (a) Lightly lubricate the new O-rings [11] on the reducer [10] and union [9] with the hydraulic fluid, D00153.
 - (b) Install the reducer [10] and O-ring [11] in the pressure port on the actuator assembly [1].
 - 1) Tighten the reducer [10] to 165-175 pound-inches (18.6-19.8 newton-meters).
 - (c) Install the union [9] and O-ring [11] in the port on the actuator assembly [1].
 - 1) Tighten the union [9] to 165-175 pound-inches (18.6-19.8 newton-meters).

SUBTASK 22-11-25-420-003

- (2) Do these steps to install the fitting [2], swivel nut [7] and union [8]:

NOTE: These items are only on the actuator assy B [1].

- (a) Lightly lubricate the new O-ring [3] on the reducer [8] with the hydraulic fluid, D00153.
- (b) Install the union [8] and O-ring [3] in the pressure port on the actuator assembly [1].
 - 1) Tighten the union [8] to 105-115 pound-inches (11.9-13 newton-meters).
- (c) Install the fitting [2], O-ring [6] and swivel nut [7].
 - 1) Tighten the swivel nut [7] to 105-115 pound-inches (11.9-13 newton-meters).

SUBTASK 22-11-25-420-004

- (3) Install the hydraulic pressure switch [4] on the autopilot aileron actuator [1]:
 - (a) Remove the plug from the hydraulic port on the actuator assembly [1].
 - (b) Install the hydraulic pressure switch [4] and O-ring [3].
 - 1) Tighten the hydraulic pressure switch [4] to 70-115 pound-inches (7.9-13 newton-meters).

EFFECTIVITY
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- 2) Install lockwire (Lockwire, Cotter Pins, and Lockrings - Installation, TASK 20-10-44-400-801).

SUBTASK 22-11-25-800-001

- (4) Fill the actuator assembly [1] with the hydraulic fluid, D00153.
(a) Seal the reducer [10] and the union [9] with plugs.

SUBTASK 22-11-25-420-005

- (5) Hold the autopilot aileron actuator [1] in its position for installation.
(a) Install the mounting bolts [20], mounting bolt [21] and washers [19].
NOTE: Make sure that the countersunk side of the washer [17] is against the head of the bolt.
NOTE: The mounting bolt [21] is only for autopilot aileron actuator B [1].

SUBTASK 22-11-25-200-004

- (6) Do these steps to examine the shear rivets on the lever assembly [17] or [22]:
(a) Make sure that there is no unwanted materials in the shear rivet holes.
(b) Do this step to check for deformation of the rivet:
1) Insert a 0.0375-0.0395 inch diameter pin in the inspection hole in each rivet.
(c) Make sure the pin moves freely while applying force in both directions to the lever assembly.
(d) If the pin does not move freely, do this step:
1) Replace the shear rivets. (OHM 27-09-05)

SUBTASK 22-11-25-420-006

- (7) Install the lever assembly [17] or [22]:
(a) Place the lever assembly [17] or [22] on the autopilot aileron actuator [1].
(b) Carefully align the splines.
NOTE: The position of a tooth not on the spline provides the access.
(c) Install the screw [16], washer [13], and nut [12] to attach the lever assembly [17] or [22] to the autopilot aileron actuator [1].
(d) Install the washer [15] and nut [14] on the output shaft of the autopilot aileron actuator [1].
(e) Tighten the nut [14] on the output shaft.
(f) Tighten the screw [16].

SUBTASK 22-11-25-420-007

- (8) Connect the hydraulic lines:
(a) Remove the plugs from the hydraulic lines and the plugs on the reducer [10] and the union [9].
(b) Connect the hydraulic lines to the hydraulic ports on the autopilot aileron actuator [1].

SUBTASK 22-11-25-420-008

- (9) Connect the electrical connector [18] for the autopilot aileron actuator [1].

SUBTASK 22-11-25-420-009

- (10) Connect the electrical connector [5] for the hydraulic pressure switch [4].

EFFECTIVITY
AKS ALL

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SUBTASK 22-11-25-860-031

- (11) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	4	C00456	AFCS SYS A MACH TRIM AC
C	5	C01041	AFCS SYS A SNSR EXC AC
D	1	C01049	AFCS SYS A WARN LIGHT (BAT)
D	2	C01045	AFCS SYS A FCC DC
D	3	C01048	AFCS SYS A ENGAGE INTLK
D	4	C00457	AFCS SYS A MACH TRIM DC
D	5	C01044	AFCS MCP DC 1

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	1	C00374	AFCS SYS B WARN LIGHT (BAT)
B	2	C01064	AFCS SYS B MACH TRIM DC
B	3	C01046	AFCS SYS B FCC DC
B	4	C00716	AFCS SYS B ENGAGE INTLK
C	1	C01037	AFCS SYS B MACH TRIM AC
C	2	C01042	AFCS SYS B SNSR EXC AC
C	3	C01047	AFCS MCP DC 2

SUBTASK 22-11-25-790-001

- (12) Do a hydraulic leak check:

WARNING: KEEP ALL PERSONS AND EQUIPMENT AWAY FROM THE FLIGHT CONTROL SURFACES. THE AILERONS, ELEVATORS, RUDDER, FLAPS, SLATS, SPOILERS, STABILIZER AND NOSE GEAR CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (a) Do this task: Pressure to the Aileron Hydraulic Systems A and B - Activation, TASK 27-11-00-860-802.
- (b) Visually examine the autopilot aileron actuator [1].
 - 1) Make sure that there is no hydraulic leak.
- (c) Do this task: Pressure from the Aileron Hydraulic Systems A and B - Deactivation, TASK 27-11-00-860-801.

SUBTASK 22-11-25-860-041

- (13) Remove rig pin A/S 15 from rig pin kit, SPL-1585.

SUBTASK 22-11-25-820-004

- (14) Do this task: Autopilot Aileron Actuator Adjustment, TASK 22-11-25-820-801.

SUBTASK 22-11-25-740-003

- (15) Do this task: Autopilot Aileron Actuator Test, TASK 22-11-25-710-801.

———— END OF TASK ————



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AUTOPILOT AILERON ACTUATOR - ADJUSTMENT/TEST

1. General

- A. This procedure has these tasks:
 - (1) Autopilot Aileron Actuator Adjustment.
 - (2) Autopilot Aileron Actuator Test.
- B. If you must adjust the aileron and aileron trim control system and the autopilot aileron actuators, then you must adjust the aileron and aileron trim control system first before you adjust the autopilot aileron actuators.

TASK 22-11-25-820-801

2. Autopilot Aileron Actuator Adjustment

(Figure 501)

A. References

Reference	Title
20-10-44-400-801	Lockwire, Cotter Pins, and Lockrings - Installation (P/B 401)
22-11-00-820-803	Aileron Rigging Test (P/B 501)
24-22-00-860-811	Supply Electrical Power (P/B 201)
24-22-00-860-812	Remove Electrical Power (P/B 201)
29-11-00-860-801	Hydraulic System A or B Pressurization (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)
32-00-01-480-801	Landing Gear Downlock Pins Installation (P/B 201)

B. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
211	Flight Compartment - Left
212	Flight Compartment - Right

C. Prepare for the Adjustment

SUBTASK 22-11-25-860-001

- (1) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

SUBTASK 22-11-25-860-002

- (2) Set the autopilot stab trim cutout switch, on the control stand, to the CUTOUT position.

SUBTASK 22-11-25-860-003

- (3) Make sure that the VHF NAV and IRS switches, on the P5 forward overhead panel, are in the NORMAL positions.

SUBTASK 22-11-25-860-004

- (4) Set the left and right IRS select switches, on the P5 aft overhead panel, to the ALIGN or NAV position.

SUBTASK 22-11-25-860-005

- (5) Set the aileron trim to 0 unit.

SUBTASK 22-11-25-860-006

- (6) Set the flaps to 1 degree.

SUBTASK 22-11-25-860-007

- (7) Set the speed brake handle to the down position.



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SUBTASK 22-11-25-860-008

WARNING: YOU MUST CAREFULLY INSTALL THE GROUND LOCKS IN ALL LANDING GEAR.
AN ACCIDENTAL RETRACTION OF THE LANDING GEAR CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (8) Make sure that you install the landing gear downlock pins (TASK 32-00-01-480-801).

D. Procedure

NOTE: Two persons are necessary for this task.

SUBTASK 22-11-25-020-001

- (1) Disconnect the end of the rod assembly [5] which connects to the autopilot aileron actuator B lever assembly [8]:

- (a) Remove the bolt [1], washer [2], washer [3] and nut [4].

SUBTASK 22-11-25-020-002

- (2) Disconnect the end of the rod assembly [7] which connects to the autopilot aileron actuator A lever assembly [6]:

- (a) Remove the bolt [1], washer [2], washer [3] and nut [4].

SUBTASK 22-11-25-200-005

- (3) Do these steps to examine the shear rivets on the lever assembly [17] or [22]:

- (a) Make sure that there is no unwanted materials in the shear rivet holes.

- (b) Do this step to check for deformation of the rivet:

- 1) Insert a 0.0375-0.0395 inch diameter pin in the inspection hole in each rivet.

- (c) Make sure the pin moves freely while applying force in both directions to the lever assembly.

- (d) If the pin does not move freely, do this step:

- 1) Replace the shear rivets. (OHM 27-09-05)

SUBTASK 22-11-25-860-009

WARNING: KEEP PERSONS AND EQUIPMENT AWAY FROM THE FLIGHT CONTROL SURFACES. THE AILERONS, ELEVATORS, RUDDER, FLAPS, SLATS, SPOILERS, STABILIZER AND NOSE GEAR CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (4) Supply hydraulic power to hydraulic systems A and B. To supply hydraulic power, do this task: Hydraulic System A or B Pressurization, TASK 29-11-00-860-801.

SUBTASK 22-11-25-820-001

- (5) Do this BITE test:

- (a) Push the INIT REF key on the CDU keyboard.

- (b) Push the Line Select Key (LSK) that is adjacent to each selection:

NOTE: If the CONTINUE shows during the BITE test, then do the instructions that show on the CDU display before you push the LSK that is adjacent to CONTINUE. Use the NEXT PAGE or PREV PAGE key to change page if it is necessary.

- 1) INDEX

- 2) MAINT

- 3) DFCS

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- 4) EXTENDED MAINTENANCE
 - 5) RIGGING
 - 6) AILERON
 - 7) AIL RIG
- (c) Do the instructions that show on the CDU display until test 52.04.

NOTE: For detailed data about the ELEV RIG test, refer to "Do the Aileron Rigging Check" in (TASK 22-11-00-820-803).

WARNING: KEEP ALL PERSONS AND EQUIPMENT AWAY FROM THE FLIGHT CONTROL SURFACES AND THE FLIGHT CONTROL DRIVE MECHANISMS. THESE COMPONENTS WILL MOVE. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

- 1) Do not press the LSK adjacent to "CONTINUE" or exit BITE until the rod adjustments are complete.
NOTE: If the "CONTINUE" LSK is pushed or BITE is exited the rod assemblies may move.
- 2) Test 52.04, AIL LVDT (VAC), Limits: -0.08 to +0.08
NOTE: Use this CDU display to do the adjustment for the rod assemblies.
- 3) Make sure that the values for the A side and B side are between the limits that show on the CDU display.
NOTE: Ignore the values check for the AIL POS (VAC) limits on tests 52.01, 52.02 and 52.03 in this test

SUBTASK 22-11-25-820-002

- (6) Adjust the rod assembly [5]:
- (a) Adjust the length of the rod assembly [5] until the bolt [1] can go smoothly through the rod end and the autopilot aileron actuator B lever assembly [8].
 - (b) Make sure that you can see the bearing thread of the rod end through the inspection hole at the end of the rod assembly [5].
 - 1) Adjust the rod assembly [5] if it is necessary.
NOTE: The nominal length of the rod assembly is 8.08 inches.
 - (c) Tighten the locknut on the rod end.
 - 1) Install lockwire (TASK 20-10-44-400-801).
 - (d) Install the bolt [1], washer [2], washer [3] and nut [4].
NOTE: The bolt must go smoothly through the rod end and the lever assembly.
 - (e) Make sure that the values for the A side and B side are at 0 ± 0.08 VAC that show on the CDU display (Test 52.04).

SUBTASK 22-11-25-820-003

- (7) Adjust the rod assembly [7]:
- (a) Jiggle the captain's control wheel at the neutral position to make sure that the system is at center.
 - (b) Adjust the length of the rod assembly [7] until the bolt [1] can go smoothly through the rod and the autopilot aileron actuator A lever assembly [6].
 - (c) Make sure that you can see the bearing threads of the rod end through the inspection hole at the end of the rod assembly [7].

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- 1) Adjust the rod assembly if it is necessary.

NOTE: The nominal length of the rod assembly is 10.35 inches.

- (d) Tighten the locknut on the rod end.

- 1) Install lockwire (Lockwire, Cotter Pins, and Lockrings - Installation, TASK 20-10-44-400-801).

- (e) Install the bolt [1], washer [2], washer [3] and nut [4].

NOTE: The bolt must go smoothly through the rod end and the lever assembly.

- 1) Make sure that the installation of the bolt [1] does not cause the ailerons to move from their rigged position.

NOTE: You can see the movement at the inboard end of the right aileron.

- (f) Make sure that the values for the A side and B side are at 0 ± 0.08 VAC that show on the CDU display (Test 52.04).

SUBTASK 22-11-25-740-001

WARNING: KEEP ALL PERSONS AND EQUIPMENT AWAY FROM THE FLIGHT CONTROL SURFACES AND THE FLIGHT CONTROL DRIVE MECHANISMS. THESE COMPONENTS WILL MOVE. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

- (8) Push the LSK that is adjacent to <CONTINUE (on the CDU display - Test 52.04).
 - (a) Do the instructions that show on the CDU display to complete the AIL RIG test.
 - (b) Make sure that the values for the A side and B side are between the limits that show on the CDU display.

E. Put the Airplane Back to Its Usual Condition

SUBTASK 22-11-25-860-010

- (1) Push the captain's or first officer's autopilot disengage switch, on the control wheel, to make sure that the autopilot is disengaged.

SUBTASK 22-11-25-860-038

- (2) Make sure that this circuit breaker is closed:

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	18	C00451	LANDING GEAR AURAL WARN

SUBTASK 22-11-25-860-012

- (3) Set the autopilot stab trim cutout switch, on the control stand, to the NORMAL position.

SUBTASK 22-11-25-860-013

- (4) Remove hydraulic power from hydraulic systems A and B. To remove hydraulic power, do this task: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805.

SUBTASK 22-11-25-860-014

- (5) Do this task: Remove Electrical Power, TASK 24-22-00-860-812.

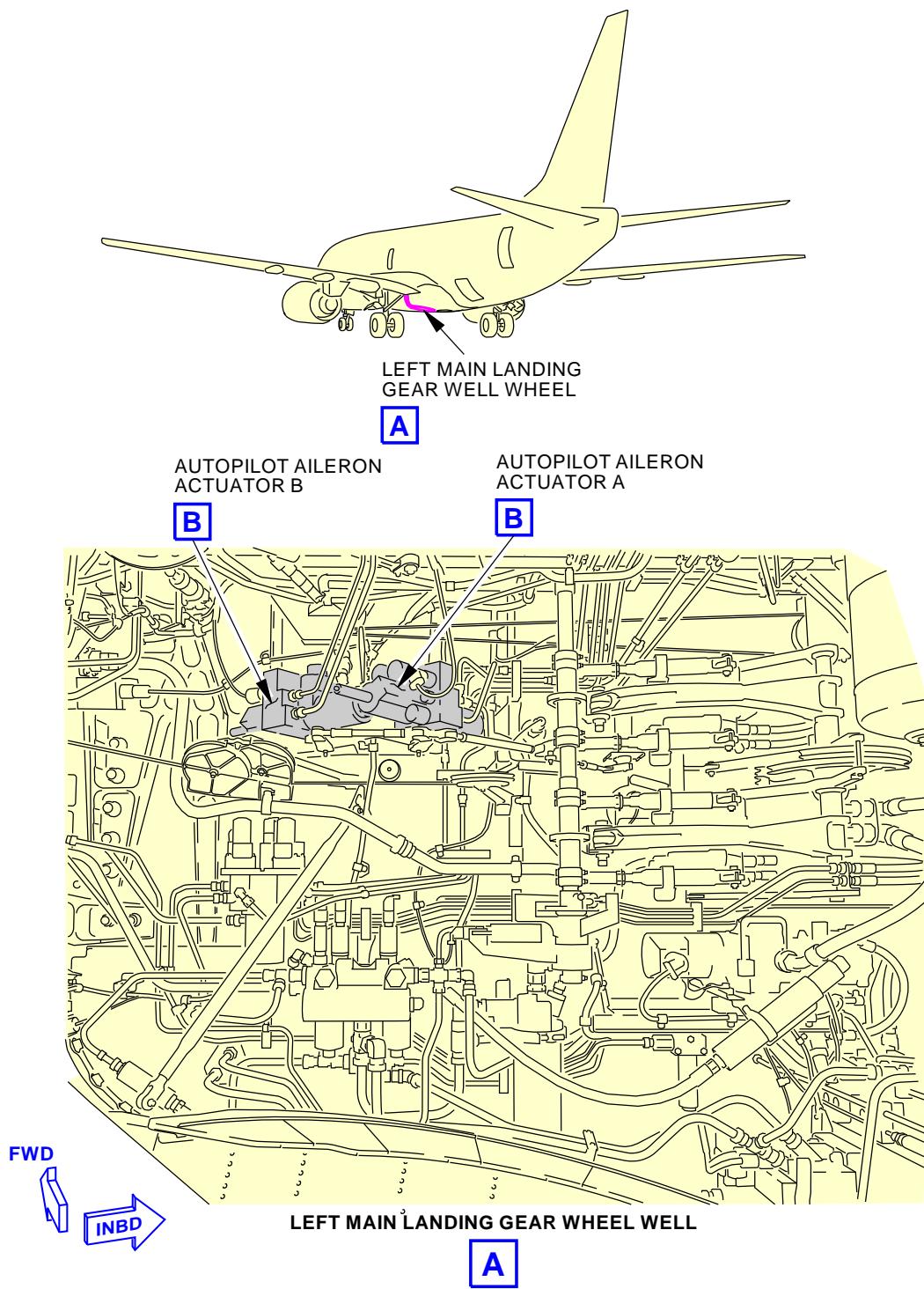
———— END OF TASK ————

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Autopilot Aileron Actuator Adjustment
Figure 501/22-11-25-990-804 (Sheet 1 of 2)

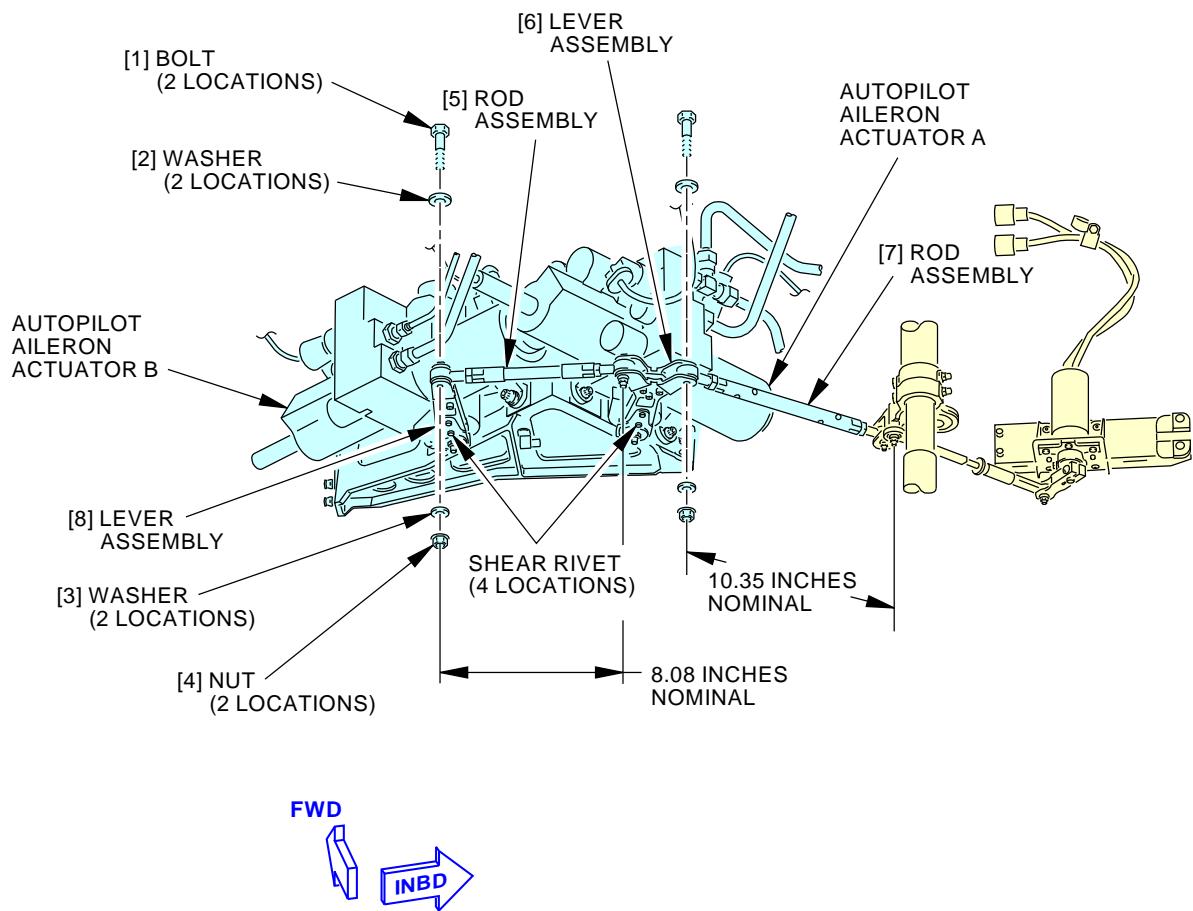
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AUTOPILOT AILERON ACTUATORS A AND B
B

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Autopilot Aileron Actuator Adjustment
Figure 501/22-11-25-990-804 (Sheet 2 of 2)

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TASK 22-11-25-710-801

3. Autopilot Aileron Actuator Test

A. References

Reference	Title
24-22-00-860-811	Supply Electrical Power (P/B 201)
24-22-00-860-812	Remove Electrical Power (P/B 201)
29-11-00-860-801	Hydraulic System A or B Pressurization (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)

B. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
211	Flight Compartment - Left
212	Flight Compartment - Right

C. Prepare for the Test

SUBTASK 22-11-25-860-016

- (1) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

SUBTASK 22-11-25-860-042

- (2) Remove the safety tag and close this circuit breaker:

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
D	18	C00451	LANDING GEAR AURAL WARN

SUBTASK 22-11-25-860-017

- (3) Set the autopilot stab trim cutout switch, on the control stand, to the CUTOUT position.

SUBTASK 22-11-25-860-018

- (4) Make sure that the VHF NAV and IRS switches, on the P5 forward overhead panel, are in the NORMAL positions.

SUBTASK 22-11-25-860-019

- (5) Set the left and right IRS select switches, on the P5 aft overhead panel, to the ALIGN or NAV position.

SUBTASK 22-11-25-860-020

WARNING: KEEP PERSONS AND EQUIPMENT AWAY FROM THE FLIGHT CONTROL SURFACES. THE AILERONS, ELEVATORS, RUDDER, FLAPS, SLATS, SPOILERS, STABILIZER AND NOSE GEAR CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (6) Supply hydraulic power to hydraulic systems A and B. To supply hydraulic power, do this task: Hydraulic System A or B Pressurization, TASK 29-11-00-860-801.

D. Procedure

SUBTASK 22-11-25-740-002

- (1) Do this BITE test:

- (a) Push the INIT REF key on the CDU keyboard.

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- (b) Push the Line Select Key (LSK) that is adjacent to each selection:

NOTE: If the CONTINUE shows during the BITE test, then do the instructions that show on the CDU display before you push the LSK that is adjacent to CONTINUE. Use the NEXT PAGE or PREV PAGE key to change page if it is necessary.

- 1) INDEX
- 2) MAINT
- 3) DFCS
- 4) EXTENDED MAINTENANCE
- 5) BITE LIBRARY TEST
- 6) Make a selection for the applicable channel:

NOTE: A/P aileron actuator A has interface with the Flight Control Computer A (Channel A). A/P aileron actuator B has interface with the Flight Control Computer B (Channel B).

- a) CHANNEL A
- b) CHANNEL B
- c) CHANNEL A AND B
- 7) RUN SELECT LIBRARY TESTS
- 8) 31 AIL CONTROL
- 9) EXECUTE
- 10) Do the instructions that show on the CDU to complete the test.
- 11) Make sure that the test is completed with no failure or the "TEST FAILED" message does not show.

E. Put the Airplane Back to Its Usual Condition

SUBTASK 22-11-25-860-021

- (1) Push the captain's or first officer's autopilot disengage switch, on the control wheel, to make sure that the autopilot is disengaged.

SUBTASK 22-11-25-860-039

- (2) Remove the safety tag and close this circuit breaker:

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	18	C00451	LANDING GEAR AURAL WARN

SUBTASK 22-11-25-860-023

- (3) Set the autopilot stab trim cutout switch, on the control stand, to the NORMAL position.

SUBTASK 22-11-25-860-024

- (4) Remove hydraulic power from hydraulic systems A and B. To remove hydraulic power, do this task: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805.

SUBTASK 22-11-25-860-025

- (5) Do this task: Remove Electrical Power, TASK 24-22-00-860-812.

———— END OF TASK ————

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AUTOPILOT AILERON ACTUATOR - INSPECTION/CHECK

TASK 22-11-25-200-801

1. Autopilot Aileron Actuator Linkage Inspection

(Figure 601)

A. General

- (1) This procedure is for an inspection of the worn areas of the autopilot aileron actuator linkage. To do this check, you must remove the autopilot aileron actuator linkage. Usually you use this procedure when you do the overhaul of the autopilot aileron actuator linkage. To get access to the components or to replace the components during the inspection, refer to (Autopilot Aileron Actuator Removal, TASK 22-11-25-000-801)

B. References

Reference	Title
22-11-25-000-801	Autopilot Aileron Actuator Removal (P/B 401)

C. Tools/Equipment

Reference	Description
STD-1096	Micrometer - Depth, 0-1 Inch, Readable to 1/1000 Inch
STD-1097	Caliper - Vernier, 0-6 Inch, Readable to 1/1000 Inch

D. Procedure

SUBTASK 22-11-25-020-003

- (1) Remove the parts that are necessary for inspection.

SUBTASK 22-11-25-200-003

- (2) Examine the parts:

- (a) Use a micrometer (0-1 Inch, readable to 1/1000 Inch), STD-1096 or a readable to 1/1000 inch vernier 0 - 6 inch caliper, STD-1097 to measure the parts.
- (b) Compare the dimensions you measured with the permitted dimensions shown in (Figure 601).
- (c) Repair or replace the parts that are out of the tolerance.

SUBTASK 22-11-25-420-001

- (3) Install the parts.

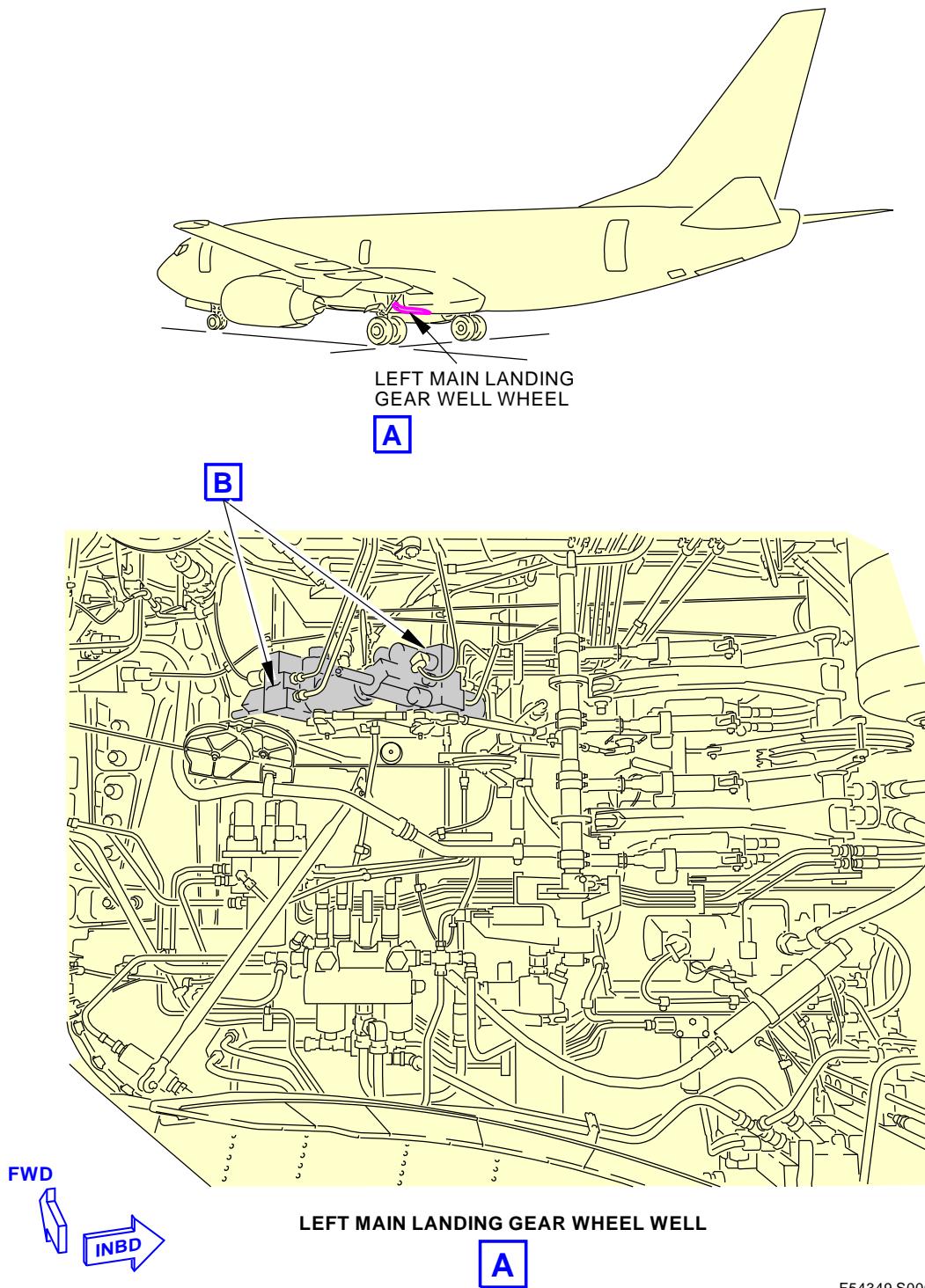
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Autopilot Aileron Actuator Linkage Wear Limits
Figure 601/22-11-25-990-805 (Sheet 1 of 4)

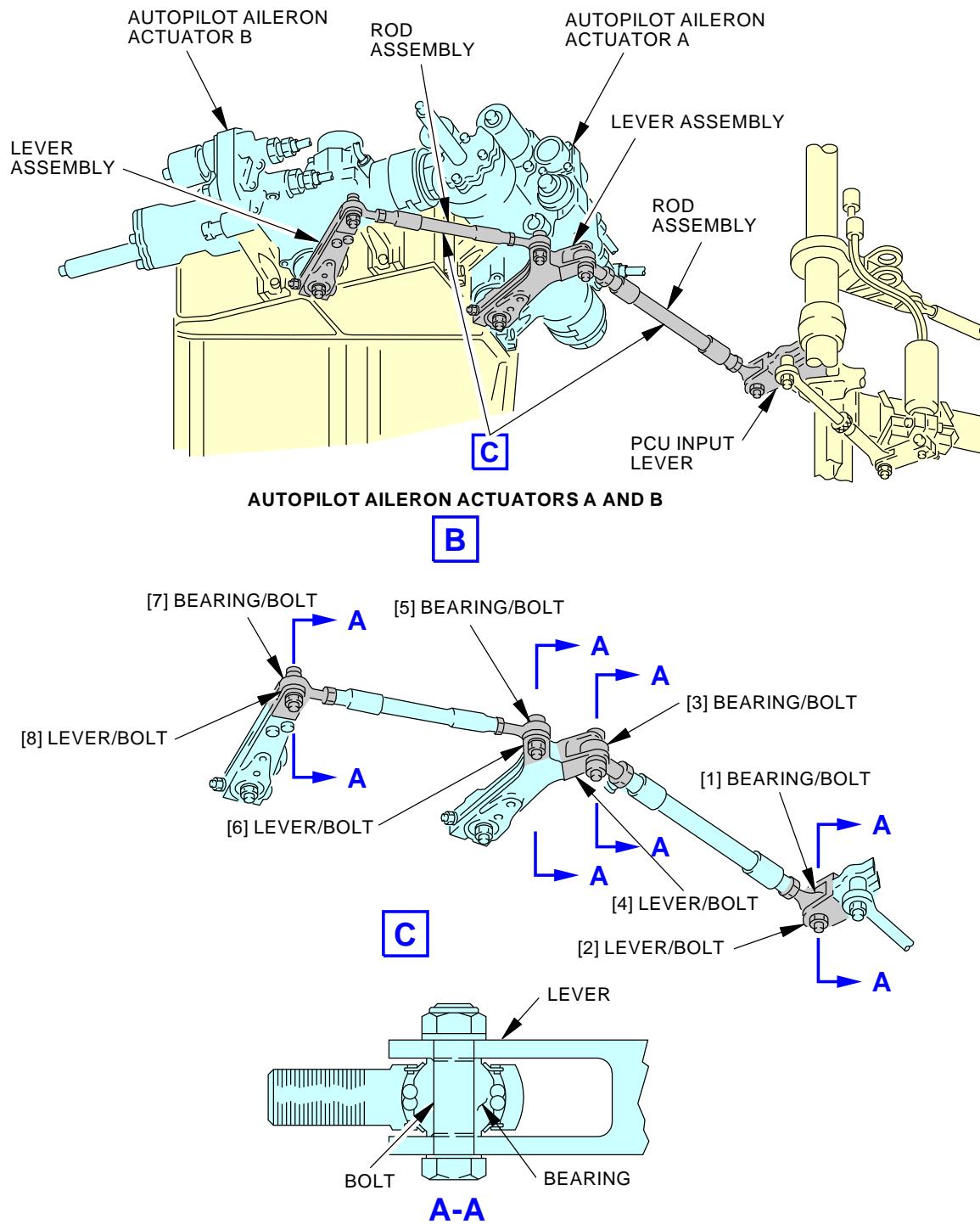
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**Autopilot Aileron Actuator Linkage Wear Limits
Figure 601/22-11-25-990-805 (Sheet 2 of 4)**

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INDEX NO.	PART NAME	DIM.	DESIGN LIMITS		WEAR LIMITS		REPLACE WORN PART	REPAIR WORN PART	REPAIR INSTR			
			DIAMETER		PERMITTED WEAR DIMENSION INCHES (mm)	MAXIMUM DIAMETER CLEARANCE INCHES (mm)						
			MINIMUM INCHES (mm)	MAXIMUM INCHES (mm)								
[1]	Bearing	ID	0.2497 (6.34)	0.2500 (6.35)	0.2530 (6.43)	3 → 0.0035 (0.09)	X					
	Bolt	OD	0.2485 (6.31)	0.2495 (6.34)	0.2481 (6.3)		X					
[2]	Lever	ID	0.250 (6.35)	0.251 (6.38)	0.255 (6.48)	3 → 0.005 (0.13)		X	1 →			
	Bolt	OD	0.2485 (6.31)	0.2495 (6.34)	0.2481 (6.3)		X					
[3]	Bearing	ID	0.2497 (6.34)	0.2500 (6.35)	0.2530 (6.43)	3 → 0.0035 (0.09)	X					
	Bolt	OD	0.2485 (6.31)	0.2495 (6.34)	0.2481 (6.3)		X					
[4]	Lever	ID	0.2495 (6.34)	0.2505 (6.36)	0.2535 (6.44)	3 → 0.0040 (0.10)		X	2 →			
	Bolt	OD	0.2485 (6.31)	0.2495 (6.34)	0.2481 (6.3)		X					
[5]	Bearing	ID	0.2497 (6.34)	0.2500 (6.35)	0.2530 (6.43)	3 → 0.0035 (0.09)	X					
	Bolt	OD	0.2485 (6.31)	0.2495 (6.34)	0.2481 (6.3)		X					
[6]	Lever	ID	0.2495 (6.34)	0.2505 (6.36)	0.2535 (6.44)	3 → 0.0040 (0.10)		X	2 →			
	Bolt	OD	0.2485 (6.31)	0.2495 (6.34)	0.2481 (6.3)		X					
[7]	Bearing	ID	0.2497 (6.34)	0.2500 (6.35)	0.2530 (6.43)	3 → 0.0035 (0.09)	X					
	Bolt	OD	0.2485 (6.31)	0.2495 (6.34)	0.2481 (6.3)		X					

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Autopilot Aileron Actuator Linkage Wear Limits
Figure 601/22-11-25-990-805 (Sheet 3 of 4)

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INDEX NO.	PART NAME	DIM.	DESIGN LIMITS		WEAR LIMITS		REPLACE WORN PART	REPAIR WORN PART	REPAIR INSTR			
			DIAMETER		PERMITTED WEAR DIMENSION INCHES (mm)	MAXIMUM DIAMETER CLEARANCE INCHES (mm)						
			MINIMUM INCHES (mm)	MAXIMUM INCHES (mm)								
[8]	Lever	ID	0.2495 (6.34)	0.2505 (6.36)	0.2535 (6.44)	3 → 0.0040 (0.10)		X	2 →			
	Bolt	OD	0.2485 (6.31)	0.2495 (6.34)	0.2481 (6.3)		X					

- [1] GET THE BUSHING. BORE A HOLE [0.3756 INCH (9.54 mm) DIAMETER MAXIMUM] TO GET 0.0002 +0.0009 OR -0.0002 INCH (0.005 +0.023 OR -0.005 mm) INTERFERENCE FIT. REAM BUSHING TO 0.250/0.251 INCH (6.35/6.38 mm) DIAMETER.
- [2] GET THE BUSHING. BORE A HOLE [0.3756 INCH (9.54 mm) DIAMETER MAXIMUM] TO GET 0.0002 +0.0009 OR -0.0002 INCH (0.005 +0.023 OR -0.005 mm) INTERFERENCE FIT. REAM BUSHING TO 0.2495/0.2505 INCH (6.34/6.363 mm) DIAMETER.
- [3] THE TOTAL DIAMETRICAL CLEARANCE OF LOCATIONS (1 + 2 + 3 + 4 + 5 + 6 + 7 + 8) MUST NOT BE MORE THAN 0.0225 INCH (0.572 mm).

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Autopilot Aileron Actuator Linkage Wear Limits
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AUTOPILOT ELEVATOR ACTUATOR - MAINTENANCE PRACTICES

1. General

- A. This procedure has these tasks:
- (1) Autopilot Elevator Actuator Deactivation.
 - (2) Autopilot Elevator Actuator Activation.

TASK 22-11-26-040-801

2. Autopilot Elevator Actuator - Deactivation

(Figure 202)

A. General

- (1) This procedure removes electrical power and hydraulic pressure to Autopilot Elevator Actuator.

B. References

Reference	Title
24-22-00-860-811	Supply Electrical Power (P/B 201)
27-31-00-800-802	Remove Pressure from the Elevator Hydraulic Systems A and B (P/B 201)

C. Tools/Equipment

Reference	Description
STD-858	Tag - DO NOT OPERATE

D. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right
318	Tail Cone Compartment - Right

E. Procedure

SUBTASK 22-11-26-860-033

WARNING: MAKE SURE THAT PERSONNEL AND EQUIPMENT ARE CLEAR OF THE FLIGHT CONTROLS SURFACES. MAKE SURE THAT THE INBOARD FAN DUCT COWL AND THE INBOARD AND OUTBOARD THRUST REVERSERS ARE CLOSED. THE FLIGHT CONTROL SURFACES CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (1) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
C	4	C00456	AFCS SYS A MACH TRIM AC
C	5	C01041	AFCS SYS A SNSR EXC AC
D	1	C01049	AFCS SYS A WARN LIGHT (BAT)
D	2	C01045	AFCS SYS A FCC DC
D	3	C01048	AFCS SYS A ENGAGE INTLK
D	4	C00457	AFCS SYS A MACH TRIM DC
D	5	C01044	AFCS MCP DC 1

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F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	1	C00374	AFCS SYS B WARN LIGHT (BAT)
B	2	C01064	AFCS SYS B MACH TRIM DC
B	3	C01046	AFCS SYS B FCC DC
B	4	C00716	AFCS SYS B ENGAGE INTLK
B	10	C00207	FLIGHT CONTROL STAB TRIM CONT
C	1	C01037	AFCS SYS B MACH TRIM AC
C	2	C01042	AFCS SYS B SNSR EXC AC
C	3	C01047	AFCS MCP DC 2
D	10	C00840	FLIGHT CONTROL STAB TRIM ACTUATOR

SUBTASK 22-11-26-010-005

- (2) Do this task: Remove Pressure from the Elevator Hydraulic Systems A and B,
TASK 27-31-00-800-802

SUBTASK 22-11-26-860-034

- (3) Attach DO NOT OPERATE tag, STD-858 to the captain's and first officer's control columns.

F. Autopilot Elevator Actuator - Tryout

NOTE: This tryout is to make sure the Autopilot Elevator Actuator is in a zero energy state.

SUBTASK 22-11-26-860-037

WARNING: MAKE SURE THAT PERSONNEL AND EQUIPMENT ARE CLEAR OF THE FLIGHT CONTROLS SURFACES. MAKE SURE THAT THE INBOARD FAN DUCT COWL AND THE INBOARD AND OUTBOARD THRUST REVERSERS ARE CLOSED. THE FLIGHT CONTROL SURFACES CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (1) Do this task: Supply Electrical Power, TASK 24-22-00-860-811

SUBTASK 22-11-26-860-035

- (2) Make sure that these circuit breakers are open and have safety tags:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	4	C00456	AFCS SYS A MACH TRIM AC
C	5	C01041	AFCS SYS A SNSR EXC AC
D	1	C01049	AFCS SYS A WARN LIGHT (BAT)
D	2	C01045	AFCS SYS A FCC DC
D	3	C01048	AFCS SYS A ENGAGE INTLK
D	4	C00457	AFCS SYS A MACH TRIM DC
D	5	C01044	AFCS MCP DC 1

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	1	C00374	AFCS SYS B WARN LIGHT (BAT)
B	2	C01064	AFCS SYS B MACH TRIM DC
B	3	C01046	AFCS SYS B FCC DC
B	4	C00716	AFCS SYS B ENGAGE INTLK
B	10	C00207	FLIGHT CONTROL STAB TRIM CONT

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(Continued)

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	1	C01037	AFCS SYS B MACH TRIM AC
C	2	C01042	AFCS SYS B SNSR EXC AC
C	3	C01047	AFCS MCP DC 2
D	10	C00840	FLIGHT CONTROL STAB TRIM ACTUATOR

SUBTASK 22-11-26-700-002

- (3) Use the FMC - CDU and do the following test (Figure 201):
 - (a) SELECT, INIT/REF on the keyboard.
 - (b) SELECT, "INDEX" (LSK 6L).
 - (c) SELECT, "MAINT" (LSK 6R).
 - (d) SELECT, "DFCS" (LSK 2L).
 - 1) DFCS will run the self test and display as following:
 - FCC-A SELF TEST FAIL
 - FCC-B SELF TEST FAIL
 - CROSS CHANNEL TEST PASS
- (e) SELECT, "CONTINUE" (LSK 6R)
NOTE: Ignore the message that appears.
- (f) SELECT, "CONTINUE" (LSK 6R).
- (g) SELECT, "EXTENDED MAINTENANCE"(LSK 4L).
- (h) SELECT, "SENSOR VALUES"(LSK 4L).
- (i) SELECT, "DISCRETE INPUTS"(LSK 5L).
- (j) SELECT, "CIRCUIT BREAKER CHECK"(LSK 5R).
- (k) SELECT, INIT/REF on the keyboard, to exit of BITE.
- (l) End of test.

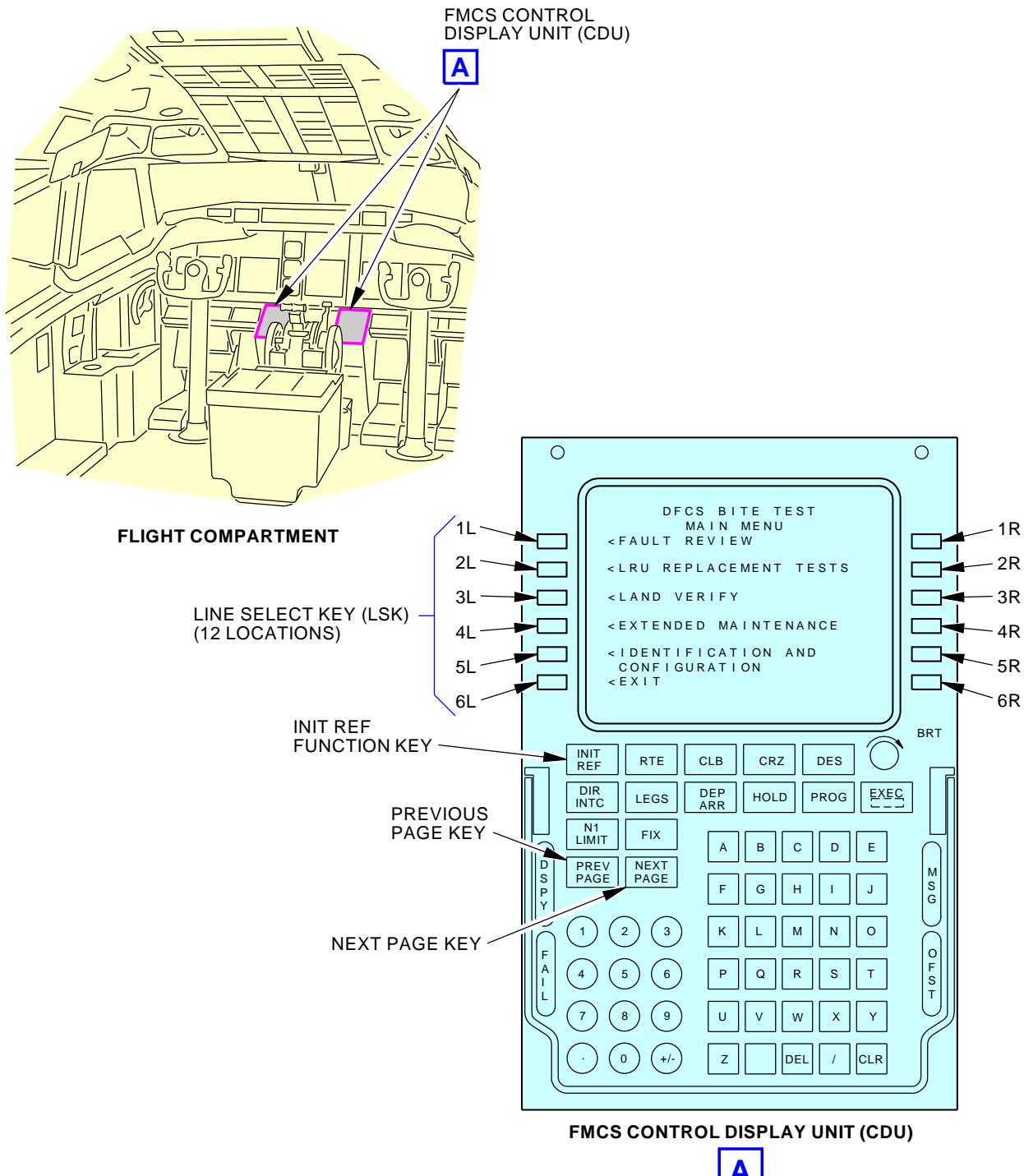
———— END OF TASK ————

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K45540 S0006563722_V2

Flight Management Computer Control Display Unit
Figure 201/22-11-26-990-810

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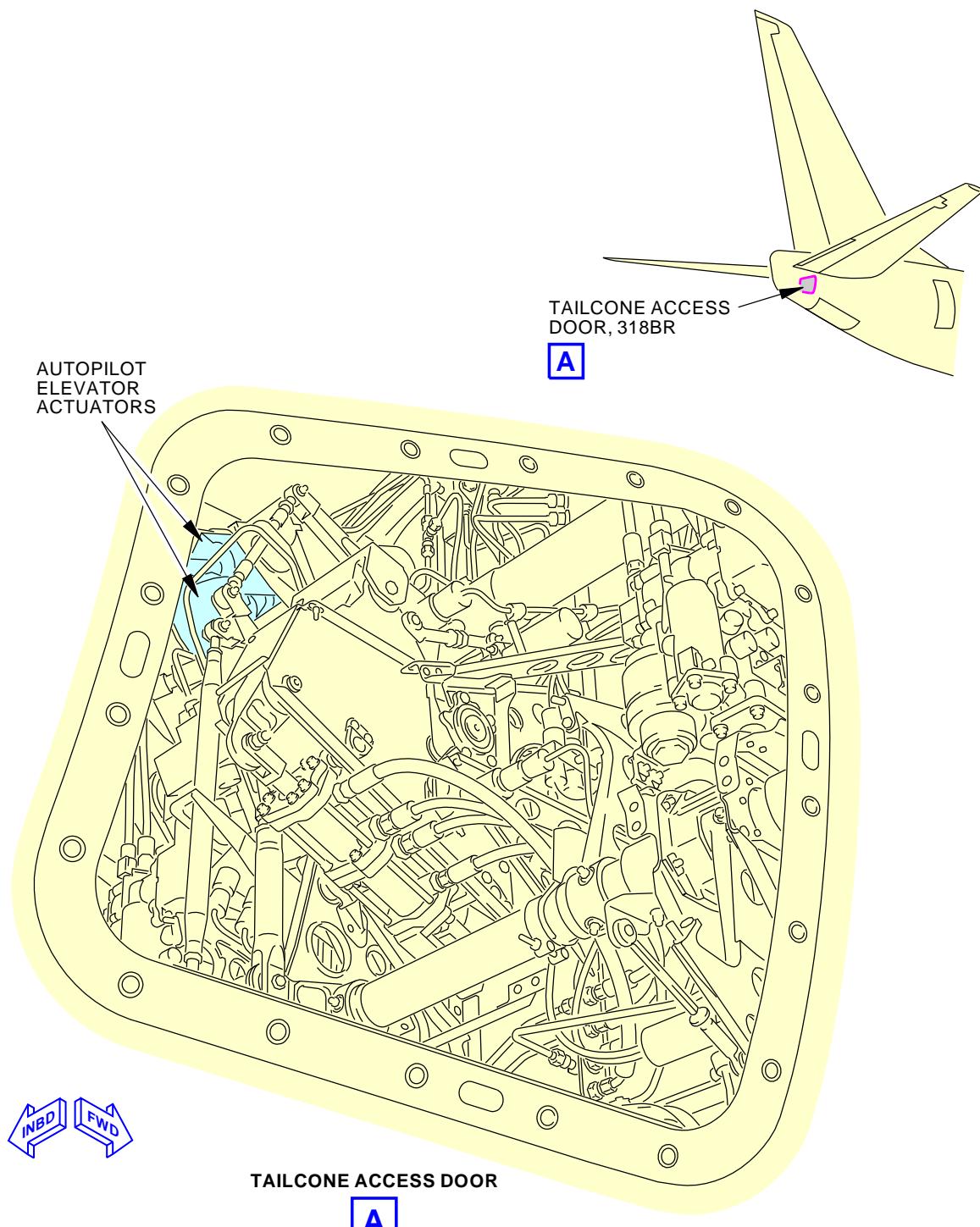
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2375240 S0000542940_V1

Autopilot Elevator Actuator
Figure 202/22-11-26-990-809

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TASK 22-11-26-440-801

3. Autopilot Elevator Actuator - Activation

(Figure 202)

A. General

- (1) This procedure adds electrical power and hydraulic power to Autopilot Elevator Actuator.

B. References

Reference	Title
27-31-00-800-801	Elevator Hydraulic System A and B - Pressurization (P/B 201)

C. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right
318	Tail Cone Compartment - Right

D. Procedure

SUBTASK 22-11-26-860-036

WARNING: MAKE SURE THAT PERSONNEL AND EQUIPMENT ARE CLEAR OF THE FLIGHT CONTROLS SURFACES. MAKE SURE THAT THE INBOARD FAN DUCT COWL AND THE INBOARD AND OUTBOARD THRUST REVERSERS ARE CLOSED. THE FLIGHT CONTROL SURFACES CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (1) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
C	4	C00456	AFCS SYS A MACH TRIM AC
C	5	C01041	AFCS SYS A SNSR EXC AC
D	1	C01049	AFCS SYS A WARN LIGHT (BAT)
D	2	C01045	AFCS SYS A FCC DC
D	3	C01048	AFCS SYS A ENGAGE INTLK
D	4	C00457	AFCS SYS A MACH TRIM DC
D	5	C01044	AFCS MCP DC 1

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	1	C00374	AFCS SYS B WARN LIGHT (BAT)
B	2	C01064	AFCS SYS B MACH TRIM DC
B	3	C01046	AFCS SYS B FCC DC
B	4	C00716	AFCS SYS B ENGAGE INTLK
B	10	C00207	FLIGHT CONTROL STAB TRIM CONT
C	1	C01037	AFCS SYS B MACH TRIM AC
C	2	C01042	AFCS SYS B SNSR EXC AC
C	3	C01047	AFCS MCP DC 2
D	10	C00840	FLIGHT CONTROL STAB TRIM ACTUATOR

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SUBTASK 22-11-26-410-005

- (2) Do this task: Elevator Hydraulic System A and B - Pressurization, TASK 27-31-00-800-801.

———— END OF TASK ——

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AUTOPILOT ELEVATOR ACTUATOR - REMOVAL/INSTALLATION

1. General

- A. This procedure has these tasks:
 - (1) The removal of an autopilot elevator actuator.
 - (2) The installation of an autopilot elevator actuator.
- B. There are two autopilot elevator actuators. The autopilot elevator actuator A (M1020) and autopilot elevator actuator B (M1020) are located adjacent to the elevator power control units on the aft bulkhead at Body Station 1156.
- C. The removal/installation procedure is the same for each of the autopilot elevator actuator.

TASK 22-11-26-000-801

2. Autopilot Elevator Actuator Removal

(Figure 401)

A. References

Reference	Title
27-31-00-800-802	Remove Pressure from the Elevator Hydraulic Systems A and B (P/B 201)

B. Location Zones

Zone	Area
318	Tail Cone Compartment - Right

C. Access Panels

Number	Name/Location
318BR	Tailcone Access Door

D. Prepare for the Removal

SUBTASK 22-11-26-860-001

- (1) Do this task: Remove Pressure from the Elevator Hydraulic Systems A and B, TASK 27-31-00-800-802.

SUBTASK 22-11-26-860-002

- (2) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
C	4	C00456	AFCS SYS A MACH TRIM AC
C	5	C01041	AFCS SYS A SNSR EXC AC
D	1	C01049	AFCS SYS A WARN LIGHT (BAT)
D	2	C01045	AFCS SYS A FCC DC
D	3	C01048	AFCS SYS A ENGAGE INTLK
D	4	C00457	AFCS SYS A MACH TRIM DC
D	5	C01044	AFCS MCP DC 1

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	1	C00374	AFCS SYS B WARN LIGHT (BAT)
B	2	C01064	AFCS SYS B MACH TRIM DC

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(Continued)

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	3	C01046	AFCS SYS B FCC DC
B	4	C00716	AFCS SYS B ENGAGE INTLK
B	10	C00207	FLIGHT CONTROL STAB TRIM CONT
C	1	C01037	AFCS SYS B MACH TRIM AC
C	2	C01042	AFCS SYS B SNSR EXC AC
C	3	C01047	AFCS MCP DC 2
D	10	C00840	FLIGHT CONTROL STAB TRIM ACTUATOR

SUBTASK 22-11-26-010-001

- (3) To get access to the autopilot elevator actuators, open this access door:

<u>Number</u>	<u>Name/Location</u>
318BR	Tailcone Access Door

E. Procedure

SUBTASK 22-11-26-020-001

- (1) Disconnect the hydraulic lines from the hydraulic ports on the actuator assembly [1].
(a) Seal the hydraulic lines and the hydraulic ports with plugs.

SUBTASK 22-11-26-020-002

- (2) Remove the electrical connector from the actuator assembly [1].

SUBTASK 22-11-26-020-003

- (3) Remove the electrical connector from the hydraulic pressure switch [11].

SUBTASK 22-11-26-020-004

- (4) Remove the hydraulic pressure switch [11].
(a) Seal the hydraulic port with a plug.
(b) Keep the hydraulic pressure switch [11].

SUBTASK 22-11-26-020-005

- (5) Do these steps to remove the actuator assembly [1]:
(a) Remove the clamp-bolt [6], washer (under nut) [7], and nut [8] that attach the lever assembly [13] or [12] to the actuator assembly [1].
(b) Remove the nut [4] and washer [5] that attach the output shaft of the actuator assembly [1] to the lever assembly [13] or [12].
(c) Move the lever assembly [13] or [12] away from the actuator assembly [1].
(d) Remove the mounting bolts [2] and washers [3] that hold the actuator assembly [1].
(e) Remove the actuator assembly [1].
(f) Remove the reducers [9] and [10] from the hydraulic ports on the actuator assembly [1].
1) Seal the ports with plugs.
2) Keep the reducers [9] and [10].

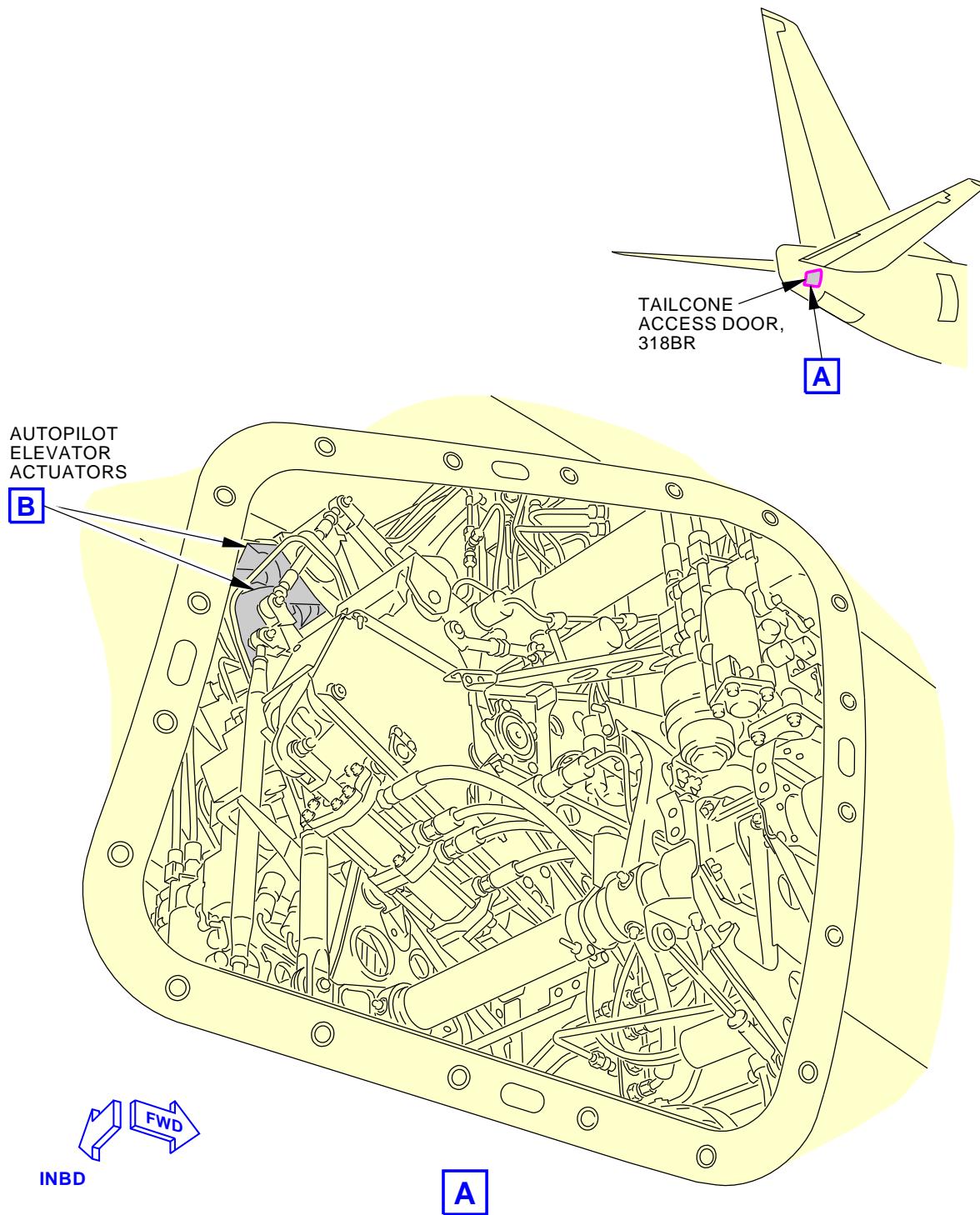
———— END OF TASK ————



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F96115 S0006563992_V2

Autopilot Elevator Actuator Installation
Figure 401/22-11-26-990-805 (Sheet 1 of 2)

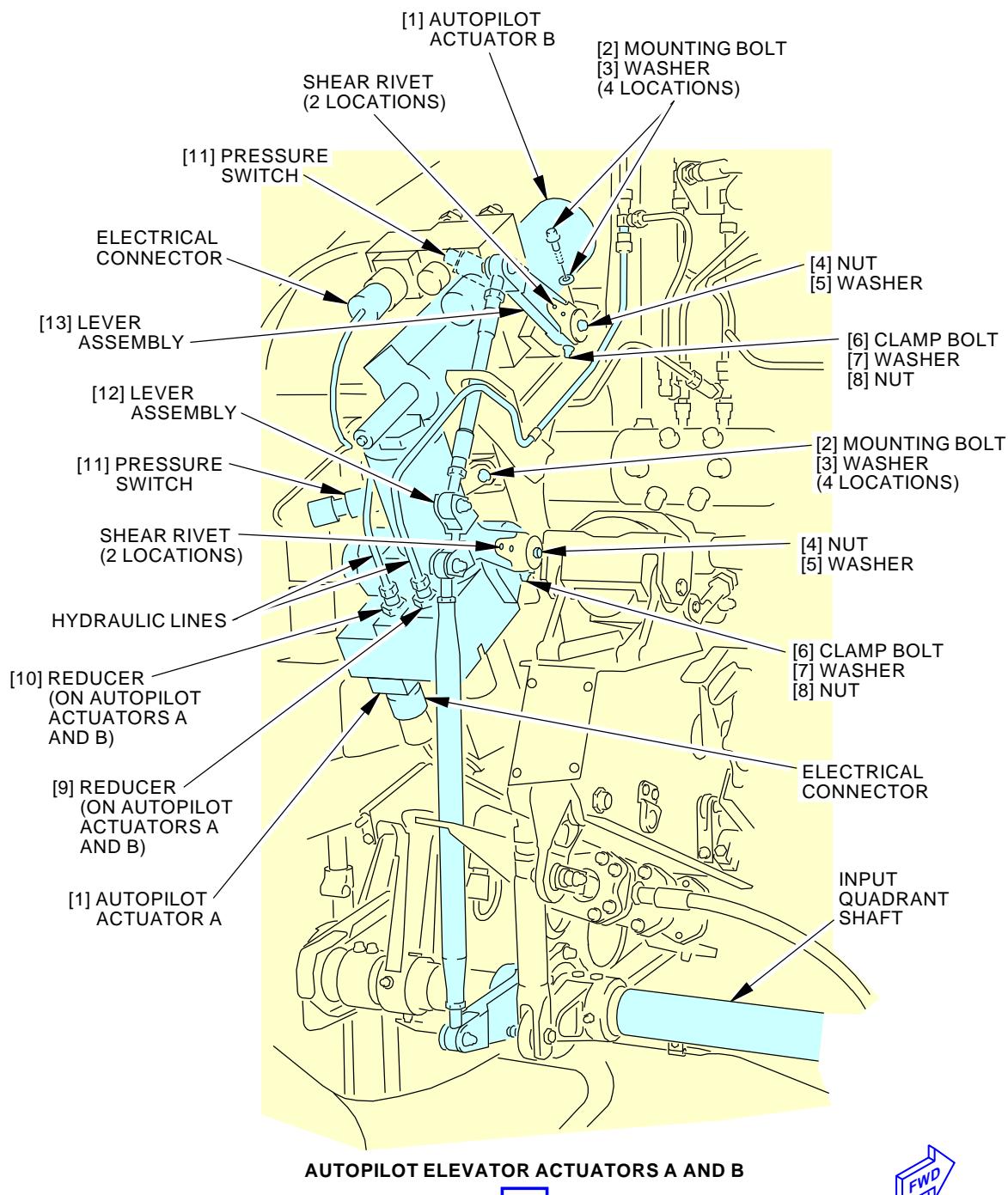
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F96330 S0006563993_V2

Autopilot Elevator Actuator Installation
Figure 401/22-11-26-990-805 (Sheet 2 of 2)

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TASK 22-11-26-400-801

3. Autopilot Elevator Actuator Installation

(Figure 401)

()

A. References

Reference	Title
20-10-44-400-801	Lockwire, Cotter Pins, and Lockrings - Installation (P/B 401)
22-11-26-710-801	Autopilot Elevator Actuator Test (P/B 501)
22-11-26-820-801	Autopilot Elevator Actuator Adjustment and Test (P/B 501)
27-31-00-800-801	Elevator Hydraulic System A and B - Pressurization (P/B 201)
27-31-00-800-802	Remove Pressure from the Elevator Hydraulic Systems A and B (P/B 201)

B. Consumable Materials

Reference	Description	Specification
D00153	Fluid - Hydraulic Fluid, Fire Resistant (Interchangeable And Intermixable With BMS 3-11 Type V)	BMS3-11 Type IV

C. Location Zones

Zone	Area
317	Tail Cone Compartment - Left
318	Tail Cone Compartment - Right

D. Access Panels

Number	Name/Location
318BR	Tailcone Access Door

E. Prepare for the Installation

SUBTASK 22-11-26-860-003

- (1) Make sure that you do these steps:

- (a) Do this task: Remove Pressure from the Elevator Hydraulic Systems A and B, TASK 27-31-00-800-802.
- (b) Open this access door:

Number	Name/Location
318BR	Tailcone Access Door

SUBTASK 22-11-26-860-004

- (2) Make sure that these circuit breakers are open and have safety tags:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
C	4	C00456	AFCS SYS A MACH TRIM AC
C	5	C01041	AFCS SYS A SNSR EXC AC
D	1	C01049	AFCS SYS A WARN LIGHT (BAT)
D	2	C01045	AFCS SYS A FCC DC
D	3	C01048	AFCS SYS A ENGAGE INTLK
D	4	C00457	AFCS SYS A MACH TRIM DC
D	5	C01044	AFCS MCP DC 1

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F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	1	C00374	AFCS SYS B WARN LIGHT (BAT)
B	2	C01064	AFCS SYS B MACH TRIM DC
B	3	C01046	AFCS SYS B FCC DC
B	4	C00716	AFCS SYS B ENGAGE INTLK
B	10	C00207	FLIGHT CONTROL STAB TRIM CONT
C	1	C01037	AFCS SYS B MACH TRIM AC
C	2	C01042	AFCS SYS B SNSR EXC AC
C	3	C01047	AFCS MCP DC 2
D	10	C00840	FLIGHT CONTROL STAB TRIM ACTUATOR

F. Procedure

SUBTASK 22-11-26-420-001

- (1) Lightly lubricate the new O-ring on the reducers [9] and [10] with hydraulic fluid, D00153.
 - (a) Install the reducers [9] and [10] in the hydraulic ports on the actuator assembly [1].

SUBTASK 22-11-26-800-001

- (2) Fill the actuator assembly [1] with hydraulic fluid, D00153.
 - (a) Seal the reducers [9] and [10] with plugs.

SUBTASK 22-11-26-420-002

- (3) Hold the actuator assembly [1] in its position for installation.

- (a) Install the mounting bolts [2] and washers [3].

NOTE: Make sure that the countersunk side of the washer [3] is against the head of the bolt.

SUBTASK 22-11-26-200-007

- (4) Do these steps to examine the shear rivets on the lever assembly [12] or [13]:
 - (a) Make sure that there is no unwanted materials in the shear rivet holes.
 - (b) Do this step to check for deformation of the rivet:
 - 1) Insert a 0.0375-0.0395 inch diameter pin in the inspection hole in each rivet.
 - (c) Make sure the pin moves freely while applying force in both directions to the lever assembly.
 - (d) If the pin does not move freely, do this step:
 - 1) Replace the shear rivets.

SUBTASK 22-11-26-420-003

- (5) Install the lever assembly [13] or [12]:
 - (a) Place the lever assembly [13] or [12] on the actuator assembly [1].
 - (b) Carefully align the splines.

NOTE: The position of a tooth not on the spline provides the access.

 - (c) Install the clamp-bolt [6], washer (under nut) [7], and nut [8] to attach the lever assembly [13] or [12] to the actuator assembly [1].
 - (d) Install the washer [5] and nut [4] on the output shaft of the actuator assembly [1].
 - (e) Tighten the nut [4] on the output shaft.
 - (f) Tighten the clamp-bolt [6].



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SUBTASK 22-11-26-420-004

- (6) Connect the hydraulic lines:
- Remove the plugs from the hydraulic lines and the plugs on the reducers [9] and [10].
 - Connect the hydraulic lines to the hydraulic ports on the actuator assembly [1].

SUBTASK 22-11-26-420-005

- (7) Install the hydraulic pressure switch [11]:
- Remove the plug from the hydraulic port on the actuator assembly [1].
 - Install the hydraulic pressure switch [11] on the actuator assembly [1].
 - Tighten the hydraulic pressure switch [11] to 70-120 pound-inches (7.9-13.6 newton-meters).
- Install lockwire (Lockwire, Cotter Pins, and Lockrings - Installation, TASK 20-10-44-400-801).

SUBTASK 22-11-26-420-006

- (8) Connect the electrical connector for the actuator assembly [1].

SUBTASK 22-11-26-420-007

- (9) Connect the electrical connector for the hydraulic pressure switch [11].

SUBTASK 22-11-26-860-005

- (10) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	4	C00456	AFCS SYS A MACH TRIM AC
C	5	C01041	AFCS SYS A SNSR EXC AC
D	1	C01049	AFCS SYS A WARN LIGHT (BAT)
D	2	C01045	AFCS SYS A FCC DC
D	3	C01048	AFCS SYS A ENGAGE INTLK
D	4	C00457	AFCS SYS A MACH TRIM DC
D	5	C01044	AFCS MCP DC 1

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	1	C00374	AFCS SYS B WARN LIGHT (BAT)
B	2	C01064	AFCS SYS B MACH TRIM DC
B	3	C01046	AFCS SYS B FCC DC
B	4	C00716	AFCS SYS B ENGAGE INTLK
B	10	C00207	FLIGHT CONTROL STAB TRIM CONT
C	1	C01037	AFCS SYS B MACH TRIM AC
C	2	C01042	AFCS SYS B SNSR EXC AC
C	3	C01047	AFCS MCP DC 2
D	10	C00840	FLIGHT CONTROL STAB TRIM ACTUATOR

SUBTASK 22-11-26-790-001

- (11) Do a hydraulic leak check:

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WARNING: KEEP PERSONS AND EQUIPMENT AWAY FROM THE FLIGHT CONTROL SURFACES. THE AILERONS, ELEVATORS, RUDDER, FLAPS, SLATS, SPOILERS, STABILIZER AND NOSE GEAR CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (a) Supply hydraulic pressure to the elevator hydraulic systems A and B. To supply hydraulic pressure, do this task: Elevator Hydraulic System A and B - Pressurization, TASK 27-31-00-800-801.
- (b) Visually examine the actuator assembly [1].
 - 1) Make sure that there is no hydraulic leak.
- (c) Do this task: Remove Pressure from the Elevator Hydraulic Systems A and B, TASK 27-31-00-800-802.

SUBTASK 22-11-26-820-001

- (12) Do this task: Autopilot Elevator Actuator Adjustment and Test, TASK 22-11-26-820-801.

SUBTASK 22-11-26-710-001

- (13) Do this task: Autopilot Elevator Actuator Test, TASK 22-11-26-710-801.

SUBTASK 22-11-26-410-001

- (14) Close this access door:

Number Name/Location

318BR Tailcone Access Door

———— END OF TASK ————



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AUTOPILOT ELEVATOR ACTUATOR - ADJUSTMENT/TEST

1. General

- A. This procedure contains scheduled maintenance task data.
- B. This procedure has these tasks:
 - (1) Autopilot Elevator Actuator Adjustment and Test.
 - (2) Autopilot Elevator Actuator Test.
- C. If you do the adjustments for the elevator and elevator tab control system and the autopilot elevator actuators, then you must do the adjustment for the elevator and elevator tab control system first before you do the adjustment for the autopilot elevator actuators.

TASK 22-11-26-820-801

2. Autopilot Elevator Actuator Adjustment and Test

(Figure 501)

A. References

Reference	Title
20-10-44-400-801	Lockwire, Cotter Pins, and Lockrings - Installation (P/B 401)
22-11-00-820-802	Elevator Rigging Test (P/B 501)
22-11-31-990-808	Figure: Stabilizer Trim Jackscrew Setting (P/B 501)
24-22-00-860-811	Supply Electrical Power (P/B 201)
24-22-00-860-812	Remove Electrical Power (P/B 201)
29-11-00-860-801	Hydraulic System A or B Pressurization (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1677	Assembly - Trammel Bar, Stabilizer Trim Actuator Part #: F80055-10 Supplier: 81205 Opt Part #: F80055-1 Supplier: 81205

C. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right
316	APU Compartment - Right
317	Tail Cone Compartment - Left
318	Tail Cone Compartment - Right

D. Access Panels

Number	Name/Location
311BL	Stabilizer Trim Access Door
318BR	Tailcone Access Door



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E. Prepare for the Adjustment

SUBTASK 22-11-26-860-009

- (1) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

SUBTASK 22-11-26-860-032

- (2) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	18	C00451	LANDING GEAR AURAL WARN

SUBTASK 22-11-26-010-003

- (3) To get access to the elevator autopilot actuators, open this access door:

Number Name/Location

318BR Tailcone Access Door

SUBTASK 22-11-26-010-004

- (4) To get access to the stabilizer trim jackscrew, open this access door:

Number Name/Location

311BL Stabilizer Trim Access Door

SUBTASK 22-11-26-980-001

- (5) Do these steps to set the B dimension (Figure 22-11-31-990-808):

NOTE: The B dimension is measured between the center of the upper and lower Gimbal pins on the stabilizer trim jackscrew. To do this, one person must be in the tail of the airplane with a headset and the other person in the flight compartment

- (a) Turn the stab trim wheel handle on the control stand to set the B dimension.

NOTE: This B dimension is equivalent to the horizontal stabilizer at 4 units of trim (zero degree).

- (b) Use the trammel bar, SPL-1677, to measure the B dimension.

- 1) Make sure that the B dimension is 39.89 (± 0.01) inches (1013.21 $\pm .254$ millimeters).

SUBTASK 22-11-26-860-010

- (6) Set the autopilot stab trim cutout switch, on the control stand, to the CUTOUT position.

SUBTASK 22-11-26-860-011

- (7) Make sure that the VHF NAV and IRS switches, on the P5 forward overhead panel, are in the NORMAL positions.

SUBTASK 22-11-26-860-012

- (8) Set the left and right IRS select switches, on the P5 aft overhead panel, to the ALIGN or NAV position.

F. Procedure

NOTE: Two persons are necessary for this task.

SUBTASK 22-11-26-020-006

- (1) Disconnect the end of the rod assembly [8] which connects to the autopilot elevator actuator B lever assembly [1]:

- (a) Remove the bolt [2], washers [3], [4] and nut [5].



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SUBTASK 22-11-26-020-007

- (2) Disconnect the end of the rod assembly [6] which connects to the autopilot elevator actuator A lever assembly [7]:
 - (a) Remove the bolt [2], washers [3], [4] and nut [5].

SUBTASK 22-11-26-200-005

- (3) Do these steps to examine the shear rivets on the lever assembly [17] or [22]:
 - (a) Make sure that there is no unwanted materials in the shear rivet holes.
 - (b) Do this step to check for deformation of the rivet:
 - 1) Insert a 0.0375-0.0395 inch diameter pin in the inspection hole in each rivet.
 - (c) Make sure the pin moves freely while applying force in both directions to the lever assembly.
 - (d) If the pin does not move freely, do this step:
 - 1) Replace the shear rivets. (OHM 27-09-05)

SUBTASK 22-11-26-860-013

WARNING: KEEP PERSONS AND EQUIPMENT AWAY FROM THE FLIGHT CONTROL SURFACES. THE AILERONS, ELEVATORS, RUDDER, FLAPS, SLATS, SPOILERS, STABILIZER AND NOSE GEAR CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (4) Supply hydraulic power to hydraulic systems A and B. To supply hydraulic power, do this task: Hydraulic System A or B Pressurization, TASK 29-11-00-860-801.

SUBTASK 22-11-26-820-002

- (5) Do this BITE test:
 - (a) Push the INIT REF key on the CDU keyboard.
 - (b) Push the Line Select Key (LSK) that is adjacent to each selection:

NOTE: If the CONTINUE shows during the BITE test, then do the instructions that show on the CDU display before you push the LSK that is adjacent to CONTINUE. Use the NEXT PAGE or PREV PAGE key to change page if it is necessary.

- 1) INDEX
- 2) MAINT
- 3) DFCS
- 4) EXTENDED MAINTENANCE
- 5) RIGGING
- 6) ELEVATOR
- 7) ELEV RIG
- 8) Do the instructions that show on the CDU display until test 51.06.

NOTE: Use the trammel bar, SPL-1677 for measurement of the "B" dimension that shows on the CDU display (Test 51.01).

NOTE: For detailed data about the ELEV RIG test, refer to "Do the Elevator Rigging Check" in (TASK 22-11-00-820-802).

- 9) Make sure that the values for the A side and B side are between the limits that show on the CDU display.

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CAUTION: DO NOT PUSH THE LSK THAT IS ADJACENT TO <CONTINUE UNTIL YOU COMPLETE THE ROD ADJUSTMENTS. PUSH <CONTINUE BEFORE YOU COMPLETE THE ROD ADJUSTMENTS CAN CAUSE DAMAGE TO THE ROD ASSEMBLIES.

- a) Test 51.06, ELEV LVDT (VAC), Limits: -2.05 to -1.95

NOTE: Use this CDU display to do the adjustment for the rod assemblies.

SUBTASK 22-11-26-420-008

WARNING: DO NOT PUSH THE LSK THAT IS ADJACENT TO <CONTINUE ON TEST 51.06 WHEN YOU ADJUST THE ROD ASSEMBLIES. THE A/P ACTUATORS, ROD ASSEMBLIES AND FLIGHT CONTROL SURFACES CAN MOVE WHEN YOU PUSH THE LSK THAT IS ADJACENT TO <CONTINUE. THIS CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

- (6) Adjust the rod assembly [8]:

- (a) Adjust the length of the rod assembly [8] until the bolt [2] can go smoothly through the rod end and the autopilot elevator actuator B lever assembly [1].

NOTE: Use the CDU display (Test 51.06) to do the adjustment for the rod assembly.

- 1) Make sure that the elevator A/P actuator LVDT voltage is -2.00 (± 0.05) VAC.
- 2) Make sure that you can see the threads of the rod end through the inspection hole at the end of the rod assembly [8].
- 3) Adjust the rod assembly [8] if it is necessary.

NOTE: The nominal length of the rod assembly is 9.43 inches.

- (b) Tighten the locknut on the rod end.

- 1) Do this task: Lockwire, Cotter Pins, and Lockrings - Installation, TASK 20-10-44-400-801.

- (c) Install the bolt [2], washers [3], [4] and nut [5].

NOTE: The bolt must go smoothly through the rod end and the lever assembly.

SUBTASK 22-11-26-420-009

WARNING: DO NOT PUSH THE LSK THAT IS ADJACENT TO <CONTINUE ON TEST 51.06 WHEN YOU ADJUST THE ROD ASSEMBLIES. THE A/P ACTUATORS, ROD ASSEMBLIES AND FLIGHT CONTROL SURFACES CAN MOVE WHEN YOU PUSH THE LSK THAT IS ADJACENT TO <CONTINUE. THIS CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

- (7) Adjust the rod assembly [6]:

- (a) Jiggle the aft quadrant.

- 1) Make sure that the trailing edge of the right elevator aligns with the index mark on the tail cone within ± 0.06 inch.

- (b) Adjust the length of the rod assembly [6] until the bolt [2] can go smoothly through the rod and the autopilot elevator actuator A lever assembly [7].

NOTE: Use the CDU display (Test 51.06) to do the adjustment for the rod assembly.

- 1) Make sure that the elevator A/P actuator LVDT voltage is -2.00 (± 0.05) VAC.

- 2) Make sure that you can see the threads of the rod end through the inspection hole at the end of the rod assembly [6].

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- 3) Adjust the rod assembly if it is necessary.

NOTE: The nominal length of the rod assembly is 17.52 inches (445.01 millimeters).

- (c) Tighten the locknut on the rod end.
1) Do this task: Lockwire, Cotter Pins, and Lockrings - Installation, TASK 20-10-44-400-801.
- (d) Install the bolt [2], washers [3], [4] and nut [5].

NOTE: The bolt must go smoothly through the rod end and the lever assembly.

SUBTASK 22-11-26-740-001

WARNING: KEEP PERSONS AND EQUIPMENT AWAY FROM THE A/P ACTUATORS, ROD ASSEMBLIES AND FLIGHT CONTROL SURFACES. THE A/P ACTUATORS, ROD ASSEMBLIES AND FLIGHT CONTROL SURFACES CAN MOVE WHEN YOU PUSH THE LSK THAT IS ADJACENT TO <CONTINUE. THIS CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

- (8) Push the LSK that is adjacent to <CONTINUE (on the CDU display - Test 51.06).
(a) Do the instructions that show on the CDU display to complete the ELEV RIG test.
(b) Make sure that the values for the A side and B side are between the limits that show on the CDU display.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 22-11-26-860-014

- (1) Push the captain's or first officer's autopilot disengage switch, on the control wheel, to make sure that the autopilot is disengaged.

SUBTASK 22-11-26-860-029

- (2) Remove the safety tag and close this circuit breaker:

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	18	C00451	LANDING GEAR AURAL WARN

SUBTASK 22-11-26-860-016

- (3) Set the autopilot stab trim cutout switch, on the control stand, to the NORMAL position.

SUBTASK 22-11-26-860-017

- (4) Remove hydraulic power from hydraulic systems A and B. To remove hydraulic power, do this task: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805.

SUBTASK 22-11-26-860-018

- (5) Do this task: Remove Electrical Power, TASK 24-22-00-860-812.

SUBTASK 22-11-26-410-003

- (6) Close this access door:

<u>Number</u>	<u>Name/Location</u>
318BR	Tailcone Access Door

SUBTASK 22-11-26-410-004

- (7) Close this access door:

<u>Number</u>	<u>Name/Location</u>
311BL	Stabilizer Trim Access Door



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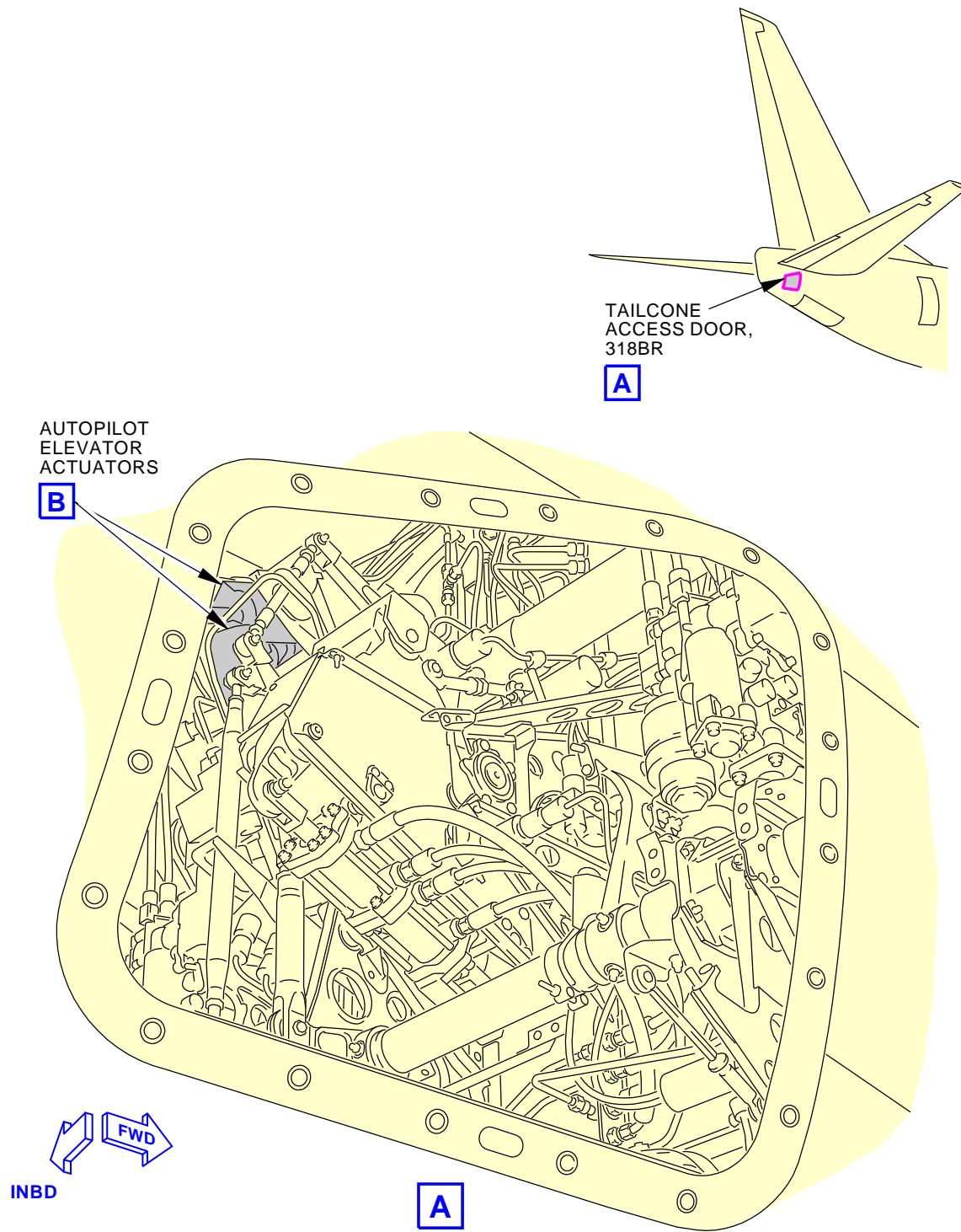


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———— END OF TASK ————

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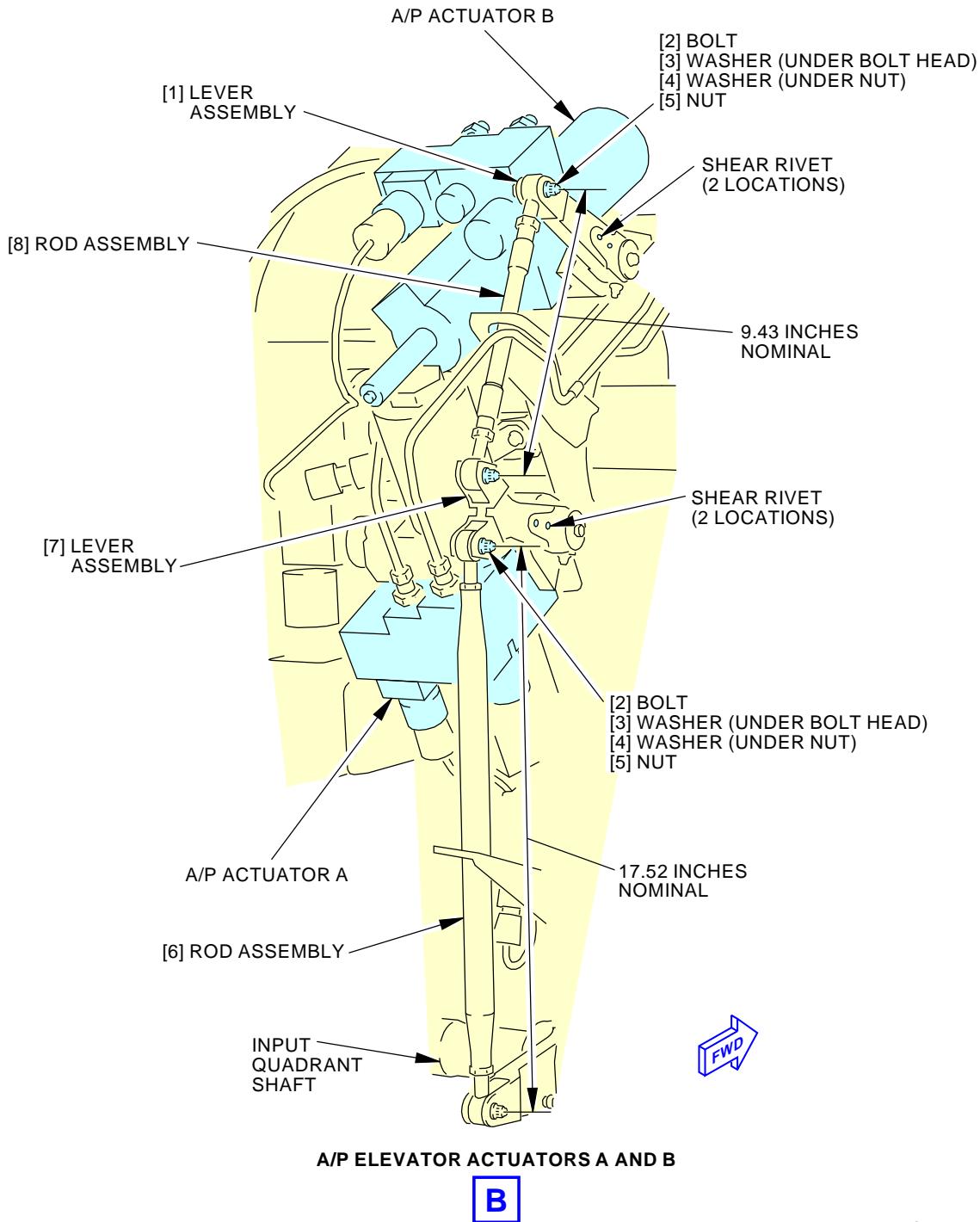
Autopilot Elevator Actuator Adjustment
Figure 501/22-11-26-990-807 (Sheet 1 of 2)

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Autopilot Elevator Actuator Adjustment
Figure 501/22-11-26-990-807 (Sheet 2 of 2)

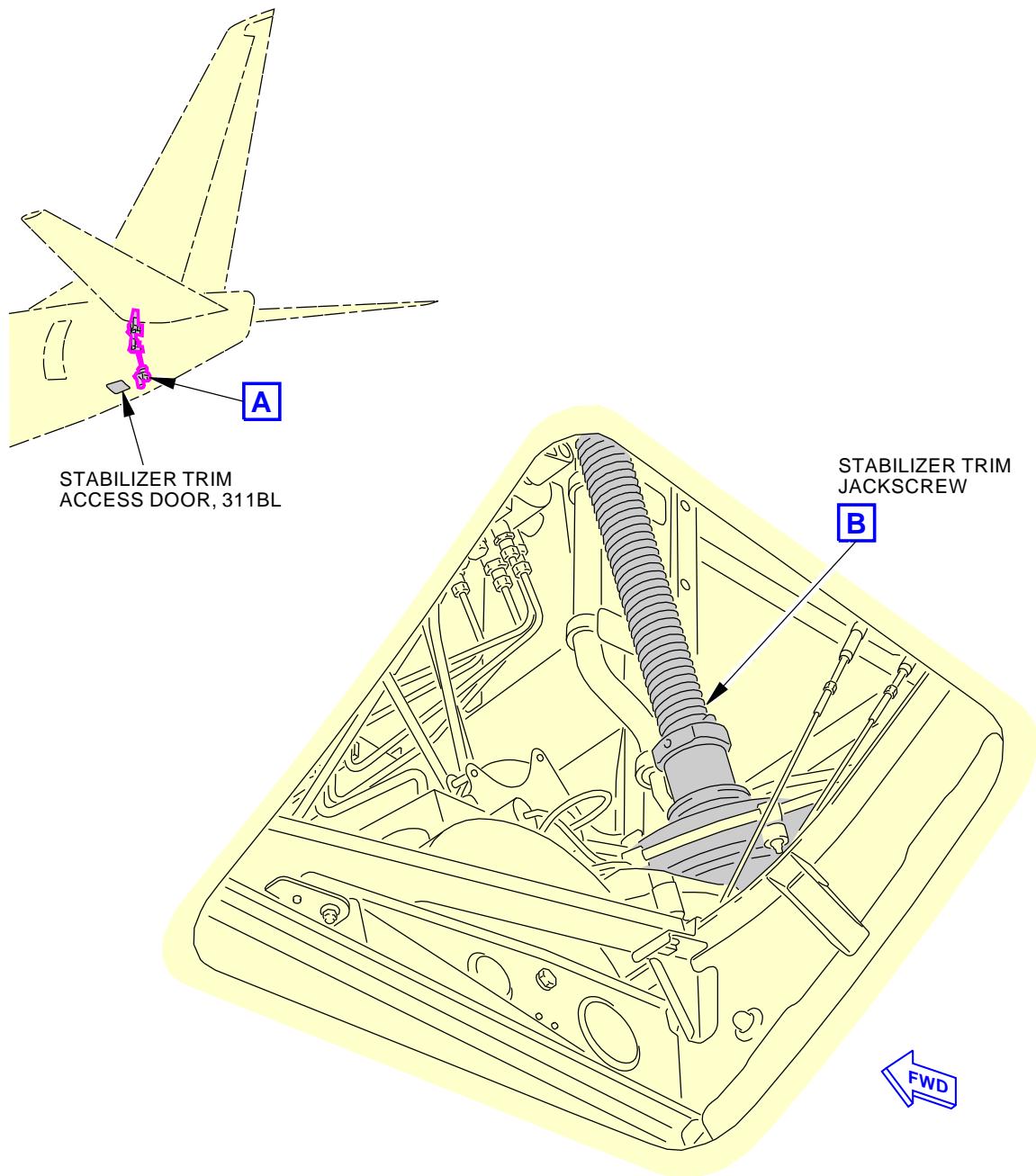
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VIEW WHEN YOU LOOK UP THROUGH THE STABILIZER
TRIM ACCESS DOOR

A

G05685 S0006564001_V2

Stabilizer Trim Jackscrew Setting
Figure 502/22-11-26-990-808 (Sheet 1 of 2)

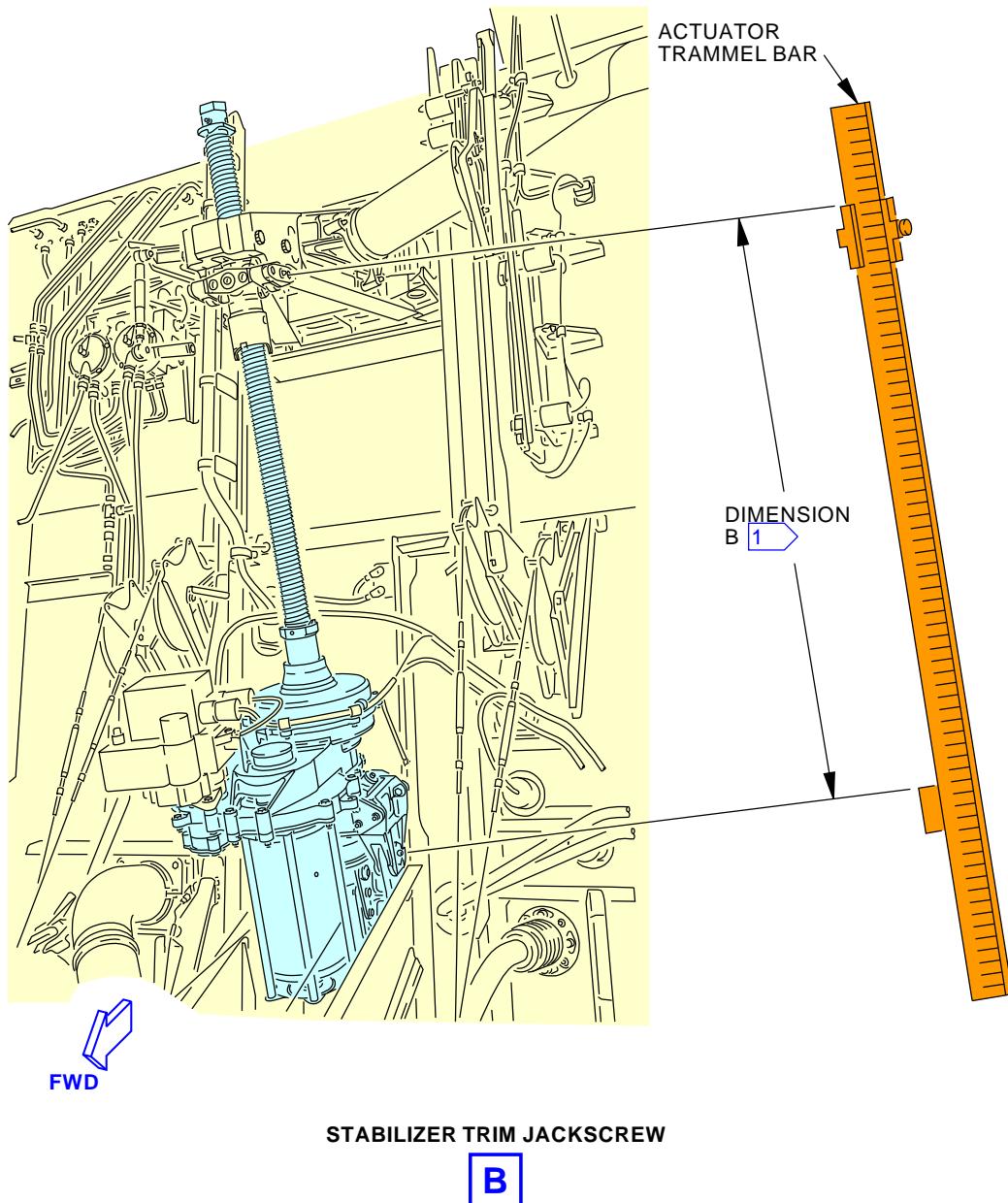
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**NOTE:**

THE STABILIZER TRIM JACKSCREW IS SHOWN WITH THE STABILIZER LEADING EDGE AT ZERO DEGREE.

- 1** THE DIMENSION B IS MEASURED BETWEEN THE CENTER OF THE UPPER AND LOWER GIMBAL PINS.

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Stabilizer Trim Jackscrew Setting
Figure 502/22-11-26-990-808 (Sheet 2 of 2)

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TASK 22-11-26-710-801

3. Autopilot Elevator Actuator Test

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
24-22-00-860-811	Supply Electrical Power (P/B 201)
24-22-00-860-812	Remove Electrical Power (P/B 201)
29-11-00-860-801	Hydraulic System A or B Pressurization (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)

B. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

C. Prepare for the Test

SUBTASK 22-11-26-860-019

- (1) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

SUBTASK 22-11-26-860-031

- (2) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
D	18	C00451	LANDING GEAR AURAL WARN

SUBTASK 22-11-26-860-020

- (3) Set the autopilot stab trim cutout switch, on the control stand, to the CUTOUT position.

SUBTASK 22-11-26-860-021

- (4) Make sure that the VHF NAV and IRS switches, on the P5 forward overhead panel, are in the NORMAL positions.

SUBTASK 22-11-26-860-022

- (5) Set the left and right IRS select switches, on the P5 aft overhead panel, to the ALIGN or NAV position.

SUBTASK 22-11-26-860-023

WARNING: KEEP PERSONS AND EQUIPMENT AWAY FROM THE FLIGHT CONTROL SURFACES. THE AILERONS, ELEVATORS, RUDDER, FLAPS, SLATS, SPOILERS, STABILIZER AND NOSE GEAR CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

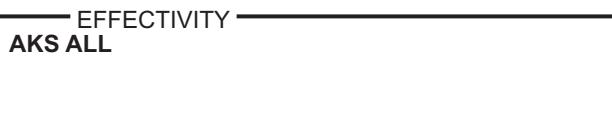
- (6) Supply hydraulic power to hydraulic systems A and B. To supply hydraulic power, do this task: Hydraulic System A or B Pressurization, TASK 29-11-00-860-801.

D. Procedure

SUBTASK 22-11-26-740-002

- (1) Do this BITE test:

- (a) Push the INIT REF key on the CDU keyboard.



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- (b) Push the Line Select Key (LSK) that is adjacent to each selection:

NOTE: If the CONTINUE shows during the BITE test, then do the instructions that show on the CDU display before you push the LSK that is adjacent to CONTINUE. Use the NEXT PAGE or PREV PAGE key to change page if it is necessary.

- 1) INDEX
- 2) MAINT
- 3) DFCS
- 4) EXTENDED MAINTENANCE
- 5) BITE LIBRARY TEST
- 6) Make a selection for the applicable channel:

NOTE: If you do the test as a scheduled maintenance task, you must do the CHANNEL A test, the CHANNEL B test, and the CHANNEL A AND B test.

NOTE: A/P elevator actuator A has interface with the Flight Control Computer A (Channel A). A/P elevator actuator B has interface with the Flight Control Computer B (Channel B).

- a) CHANNEL A
- b) CHANNEL B
- c) CHANNEL A AND B
- 7) RUN SELECT LIBRARY TESTS
- 8) 30 ELEV
- 9) EXECUTE
- 10) Do the instructions that show on the CDU display to complete the test.
- 11) Make sure that the test is completed with no failure or the "TEST FAILED" message does not show.

E. Put the Airplane Back to Its Usual Condition

SUBTASK 22-11-26-860-024

- (1) Push the captain's or first officer's autopilot disengage switch, on the control wheel, to make sure that the autopilot is disengaged.

SUBTASK 22-11-26-860-030

- (2) Remove the safety tag and close this circuit breaker:

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
D	18	C00451	LANDING GEAR AURAL WARN

SUBTASK 22-11-26-860-026

- (3) Set the autopilot stab trim cutout switch, on the control stand, to the NORMAL position.

SUBTASK 22-11-26-860-027

- (4) Remove hydraulic power from hydraulic systems A and B. To remove hydraulic power, do this task: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805.

SUBTASK 22-11-26-860-028

- (5) Do this task: Remove Electrical Power, TASK 24-22-00-860-812.

———— END OF TASK ————

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AUTOPILOT ELEVATOR ACTUATOR - INSPECTION/CHECK

TASK 22-11-26-200-802

1. Autopilot Elevator Actuator Linkage Inspection

(Figure 601)

A. General

- (1) This procedure is for an inspection of the worn areas of the autopilot elevator actuator linkage. To do this check, you must remove the autopilot elevator actuator linkage. Usually you use this procedure when you do the overhaul of the autopilot elevator actuator linkage. To get access to the components or to replace the components during the inspection, refer to (Autopilot Elevator Actuator Removal, TASK 22-11-26-000-801).

B. References

Reference	Title
22-11-26-000-801	Autopilot Elevator Actuator Removal (P/B 401)

C. Tools/Equipment

Reference	Description
STD-1096	Micrometer - Depth, 0-1 Inch, Readable to 1/1000 Inch
STD-1097	Caliper - Vernier, 0-6 Inch, Readable to 1/1000 Inch

D. Procedure

SUBTASK 22-11-26-020-008

- (1) Remove the parts that are necessary for inspection.

SUBTASK 22-11-26-200-003

- (2) Examine the parts:

- (a) Use a micrometer (0-1 Inch, readable to 1/1000 Inch), STD-1096 or a readable to 1/1000 inch vernier 0 - 6 inch caliper, STD-1097 to measure the parts.
- (b) Compare the dimensions you measured with the permitted dimensions shown in Figure 6.
- (c) Repair or replace the parts that are out of the tolerance.

SUBTASK 22-11-26-420-010

- (3) Install the parts.

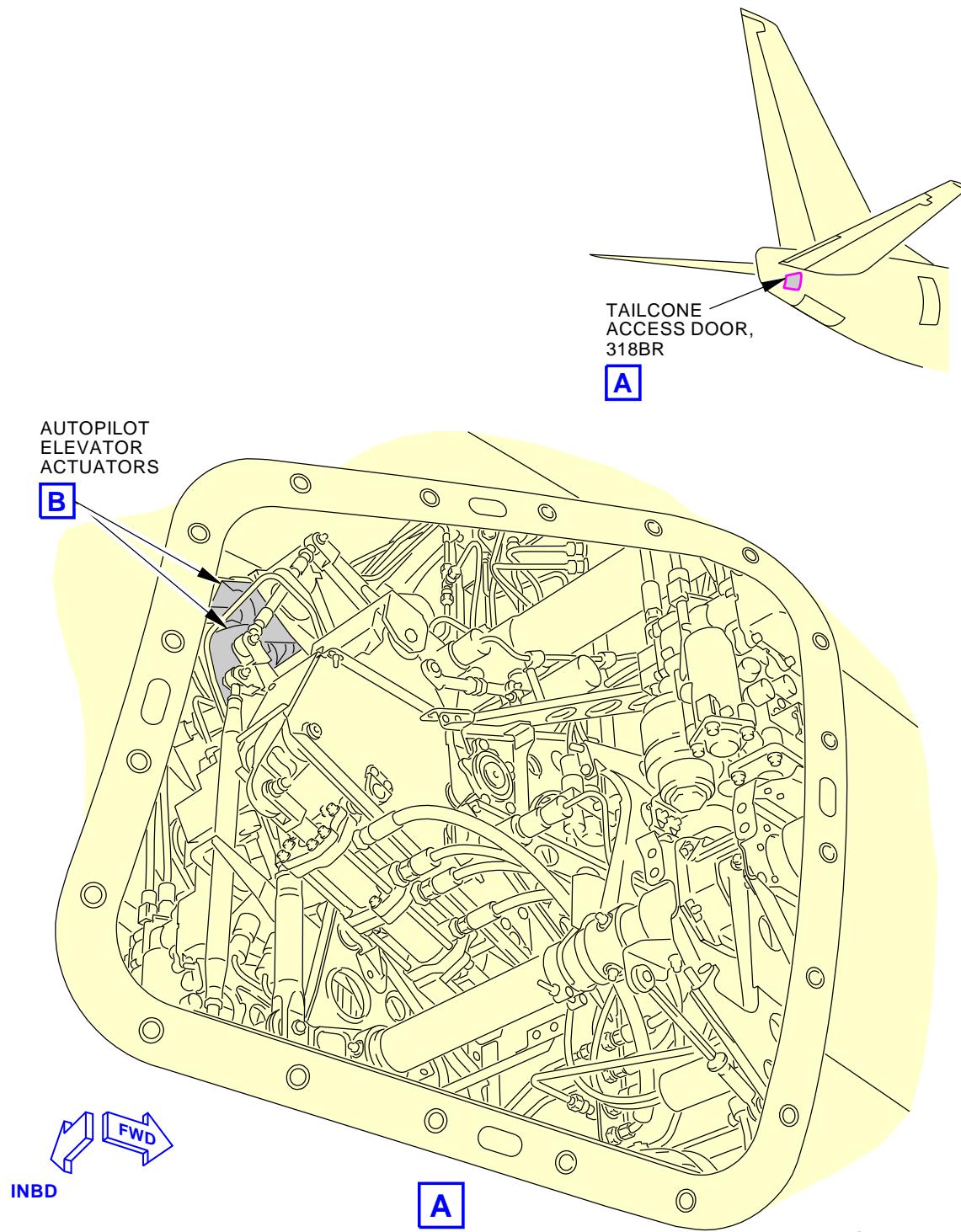
———— END OF TASK ————

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Autopilot Elevator Actuator Linkage Wear Limits
Figure 601/22-11-26-990-806 (Sheet 1 of 5)

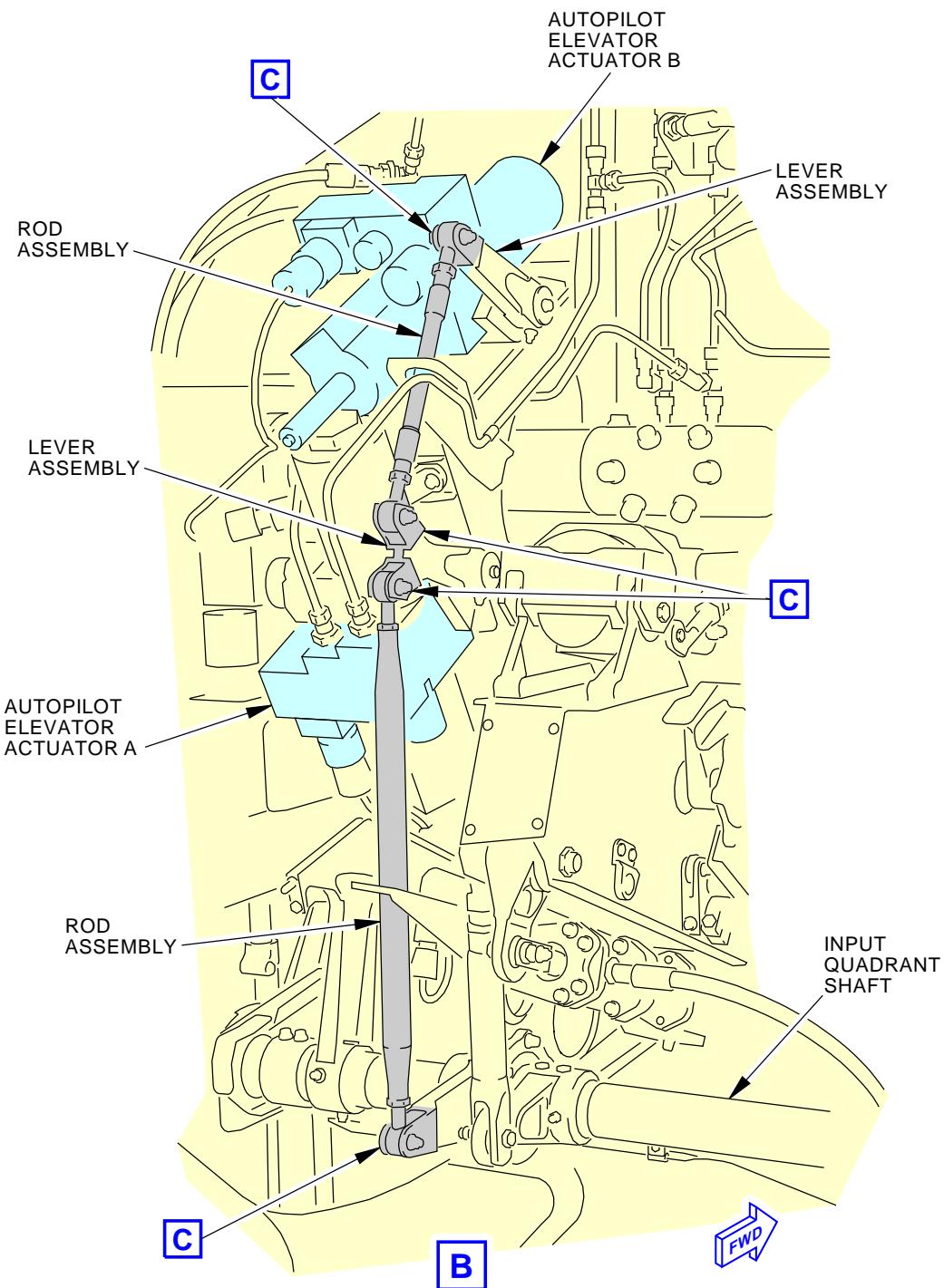
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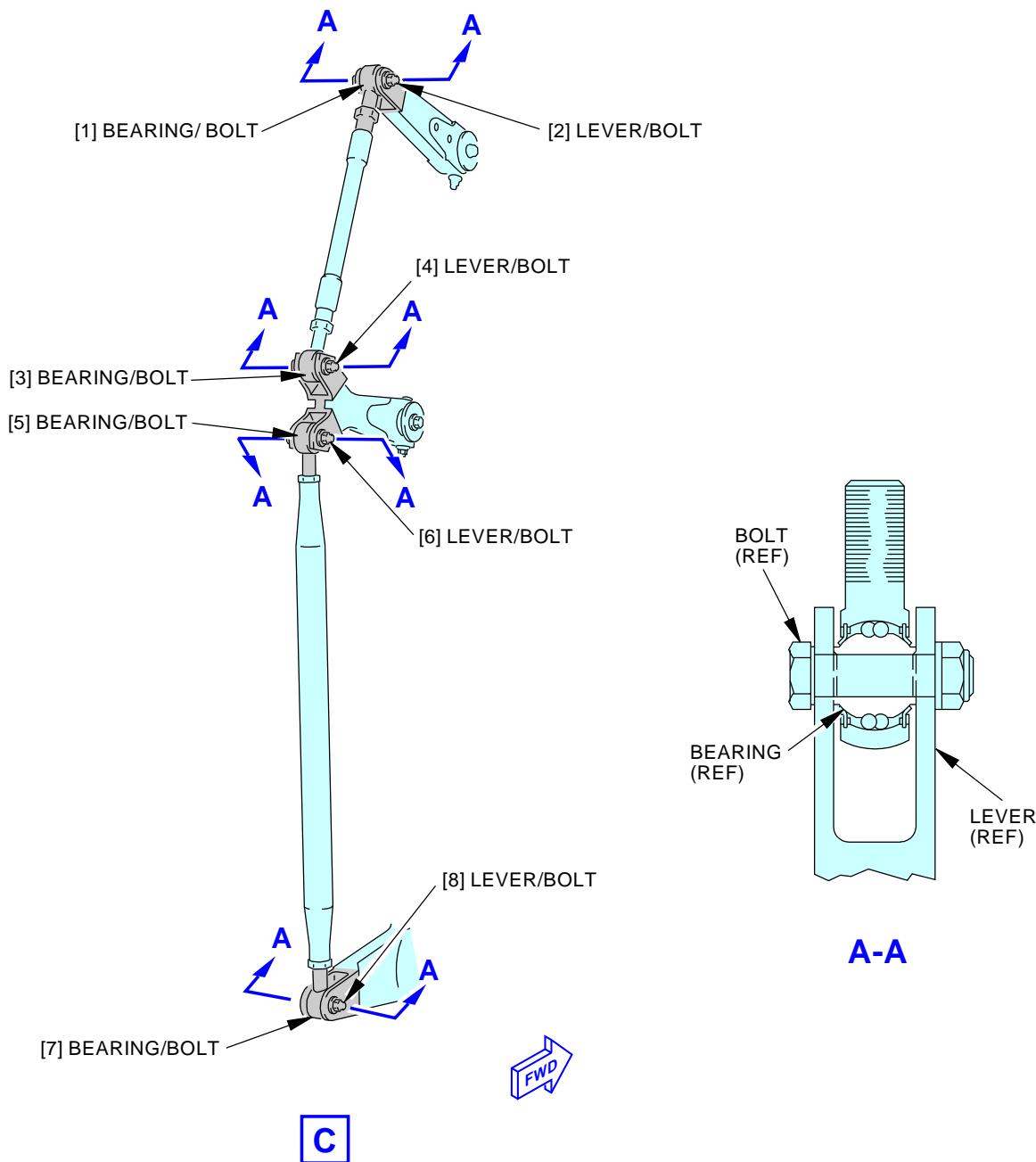
Autopilot Elevator Actuator Linkage Wear Limits
Figure 601/22-11-26-990-806 (Sheet 2 of 5)

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Autopilot Elevator Actuator Linkage Wear Limits
Figure 601/22-11-26-990-806 (Sheet 3 of 5)

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INDEX NO.	PART NAME	DIM.	DESIGN LIMITS		WEAR LIMITS		REPLACE WORN PART	REPAIR WORN PART	REPAIR INSTR			
			DIAMETER		PERMITTED WEAR DIMENSION INCHES (mm)	MAXIMUM DIAMETER CLEARANCE INCHES (mm)						
			MINIMUM INCHES (mm)	MAXIMUM INCHES (mm)								
[1]	Bearing	ID	0.2497 (6.34)	0.2500 (6.35)	0.2530 (6.43)	3 → 0.0035 (0.09)	X					
	Bolt	OD	0.2485 (6.31)	0.2495 (6.34)	0.2481 (6.3)		X					
[2]	Lever	ID	0.2495 (6.34)	0.2505 (6.36)	0.2535 (6.44)	3 → 0.0040 (0.10)		X	[1] →			
	Bolt	OD	0.2485 (6.31)	0.2495 (6.34)	0.2481 (6.3)		X					
[3]	Bearing	ID	0.2497 (6.34)	0.2500 (6.35)	0.2530 (6.43)	3 → 0.0035 (0.09)	X					
	Bolt	OD	0.2485 (6.31)	0.2495 (6.34)	0.2481 (6.3)		X					
[4]	Lever	ID	0.2495 (6.34)	0.2505 (6.36)	0.2535 (6.44)	3 → 0.0040 (0.10)		X	[1] →			
	Bolt	OD	0.2485 (6.31)	0.2495 (6.34)	0.2481 (6.3)		X					
[5]	Bearing	ID	0.2497 (6.34)	0.2500 (6.35)	0.2530 (6.43)	3 → 0.0035 (0.09)	X					
	Bolt	OD	0.2485 (6.31)	0.2495 (6.34)	0.2481 (6.3)		X					
[6]	Lever	ID	0.2495 (6.34)	0.2505 (6.36)	0.2535 (6.44)	3 → 0.0040 (0.10)		X	[1] →			
	Bolt	OD	0.2485 (6.31)	0.2495 (6.34)	0.2481 (6.3)		X					
[7]	Bearing	ID	0.2497 (6.34)	0.2500 (6.35)	0.2530 (6.43)	3 → 0.0035 (0.09)	X					
	Bolt	OD	0.2485 (6.31)	0.2495 (6.34)	0.2481 (6.3)		X					

F97242 S0006564010_V1

Autopilot Elevator Actuator Linkage Wear Limits
Figure 601/22-11-26-990-806 (Sheet 4 of 5)

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AIRCRAFT MAINTENANCE MANUAL

INDEX NO.	PART NAME	DIM.	DESIGN LIMITS		WEAR LIMITS		REPLACE WORN PART	REPAIR WORN PART	REPAIR INSTR			
			DIAMETER		PERMITTED WEAR DIMENSION INCHES (mm)	MAXIMUM DIAMETER CLEARANCE INCHES (mm)						
			MINIMUM INCHES (mm)	MAXIMUM INCHES (mm)								
[8]	Lever	ID	0.250 (6.35)	0.251 (6.38)	0.255 (6.48)	3 ➤ 0.005 (0.13)		X	2 ➤			
	Bolt	OD	0.2485 (6.31)	0.2495 (6.34)	0.2481 (6.3)		X					

- [1] ➤ GET THE BUSHING. BORE A HOLE [0.3756 INCH (9.54 mm) DIAMETER MAXIMUM] TO GET 0.0002 +0.0009 OR -0.0002 INCH (0.005 +0.023 OR -0.005 mm) INTERFERENCE FIT. REAM BUSHING TO 0.2495/0.2500 INCH (6.38/6.35 mm) DIAMETER.
- [2] ➤ GET THE BUSHING. BORE A HOLE [0.3756 INCH (9.54 mm) DIAMETER MAXIMUM] TO GET 0.0002 +0.0009 OR -0.0002 INCH (0.005 +0.023 OR -0.005 mm) INTERFERENCE FIT. REAM BUSHING TO 0.250/0.251 INCH (6.35/6.38 mm) DIAMETER.
- [3] ➤ THE TOTAL DIAMETRICAL CLEARANCE OF LOCATIONS ([1] + [2] + [3] + [4] + [5] + [6] + [7] + [8]) MUST NOT BE MORE THAN 0.0225 INCH (0.572 mm).

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Autopilot Elevator Actuator Linkage Wear Limits
Figure 601/22-11-26-990-806 (Sheet 5 of 5)

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SPOILER POSITION SENSOR - MAINTENANCE PRACTICES

1. General

- A. This procedure has these tasks:
- (1) Spoiler Position Sensor Deactivation.
 - (2) Spoiler Position Sensor Activation.

TASK 22-11-27-040-801

2. Spoiler Position Sensor - Deactivation

(Figure 202)

A. General

- (1) This procedure removes electrical power and hydraulic pressure to Spoiler Position Sensor.

B. References

Reference	Title
24-22-00-860-811	Supply Electrical Power (P/B 201)
27-61-00-800-802	Remove Pressure from the Spoiler Hydraulic Systems A and B (P/B 201)

C. Tools/Equipment

Reference	Description
STD-858	Tag - DO NOT OPERATE

D. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right
563	Left Wing - Spoiler No. 4
663	Right Wing - Spoiler No. 9

E. Procedure

SUBTASK 22-11-27-860-043

WARNING: MAKE SURE THAT PERSONNEL AND EQUIPMENT ARE CLEAR OF THE FLIGHT CONTROLS SURFACES. MAKE SURE THAT THE INBOARD FAN DUCT COWL AND THE INBOARD AND OUTBOARD THRUST REVERSERS ARE CLOSED. THE FLIGHT CONTROL SURFACES CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (1) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
C	4	C00456	AFCS SYS A MACH TRIM AC
C	5	C01041	AFCS SYS A SNSR EXC AC
D	1	C01049	AFCS SYS A WARN LIGHT (BAT)
D	2	C01045	AFCS SYS A FCC DC
D	3	C01048	AFCS SYS A ENGAGE INTLK
D	4	C00457	AFCS SYS A MACH TRIM DC
D	5	C01044	AFCS MCP DC 1

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F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	1	C00374	AFCS SYS B WARN LIGHT (BAT)
B	2	C01064	AFCS SYS B MACH TRIM DC
B	3	C01046	AFCS SYS B FCC DC
B	4	C00716	AFCS SYS B ENGAGE INTLK
C	1	C01037	AFCS SYS B MACH TRIM AC
C	2	C01042	AFCS SYS B SNSR EXC AC
C	3	C01047	AFCS MCP DC 2

SUBTASK 22-11-27-010-001

- (2) Do this task: Remove Pressure from the Spoiler Hydraulic Systems A and B, TASK 27-61-00-800-802.

SUBTASK 22-11-27-860-044

- (3) Attach DO NOT OPERATE tag, STD-858 to the captain's and first officer's control columns.

F. Spoiler Position Sensor - Tryout

NOTE: This tryout is to make sure the Spoiler Position Sensor is in a zero energy state.

SUBTASK 22-11-27-860-047

WARNING: MAKE SURE THAT PERSONNEL AND EQUIPMENT ARE CLEAR OF THE FLIGHT CONTROLS SURFACES. MAKE SURE THAT THE INBOARD FAN DUCT COWL AND THE INBOARD AND OUTBOARD THRUST REVERSERS ARE CLOSED. THE FLIGHT CONTROL SURFACES CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (1) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

SUBTASK 22-11-27-860-045

- (2) Make sure that these circuit breakers are open and have safety tags:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	4	C00456	AFCS SYS A MACH TRIM AC
C	5	C01041	AFCS SYS A SNSR EXC AC
D	1	C01049	AFCS SYS A WARN LIGHT (BAT)
D	2	C01045	AFCS SYS A FCC DC
D	3	C01048	AFCS SYS A ENGAGE INTLK
D	4	C00457	AFCS SYS A MACH TRIM DC
D	5	C01044	AFCS MCP DC 1

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	1	C00374	AFCS SYS B WARN LIGHT (BAT)
B	2	C01064	AFCS SYS B MACH TRIM DC
B	3	C01046	AFCS SYS B FCC DC
B	4	C00716	AFCS SYS B ENGAGE INTLK
C	1	C01037	AFCS SYS B MACH TRIM AC
C	2	C01042	AFCS SYS B SNSR EXC AC
C	3	C01047	AFCS MCP DC 2



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SUBTASK 22-11-27-700-002

- (3) Use the FMC - CDU and do the following test (Figure 201):
- (a) SELECT, INIT/REF on the keyboard.
 - (b) SELECT, "INDEX" (LSK 6L).
 - (c) SELECT, "MAINT" (LSK 6R).
 - (d) SELECT, "DFCS" (LSK 2L).
 - 1) DFCS will run the self test and display as following:
 - FCC-A SELF TEST FAIL
 - FCC-B SELF TEST FAIL
 - CROSS CHANNEL TEST PASS
 - (e) SELECT, "CONTINUE" (LSK 6R)
NOTE: Ignore the message that appears.
 - (f) SELECT, "CONTINUE" (LSK 6R).
 - (g) SELECT, "EXTENDED MAINTENANCE"(LSK 4L).
 - (h) SELECT, "SENSOR VALUES"(LSK 4L).
 - (i) SELECT, "DISCRETE INPUTS"(LSK 5L).
 - (j) SELECT, "CIRCUIT BREAKER CHECK"(LSK 5R).
 - (k) SELECT, INIT/REF on the keyboard, to exit of BITE.
 - (l) End of test.

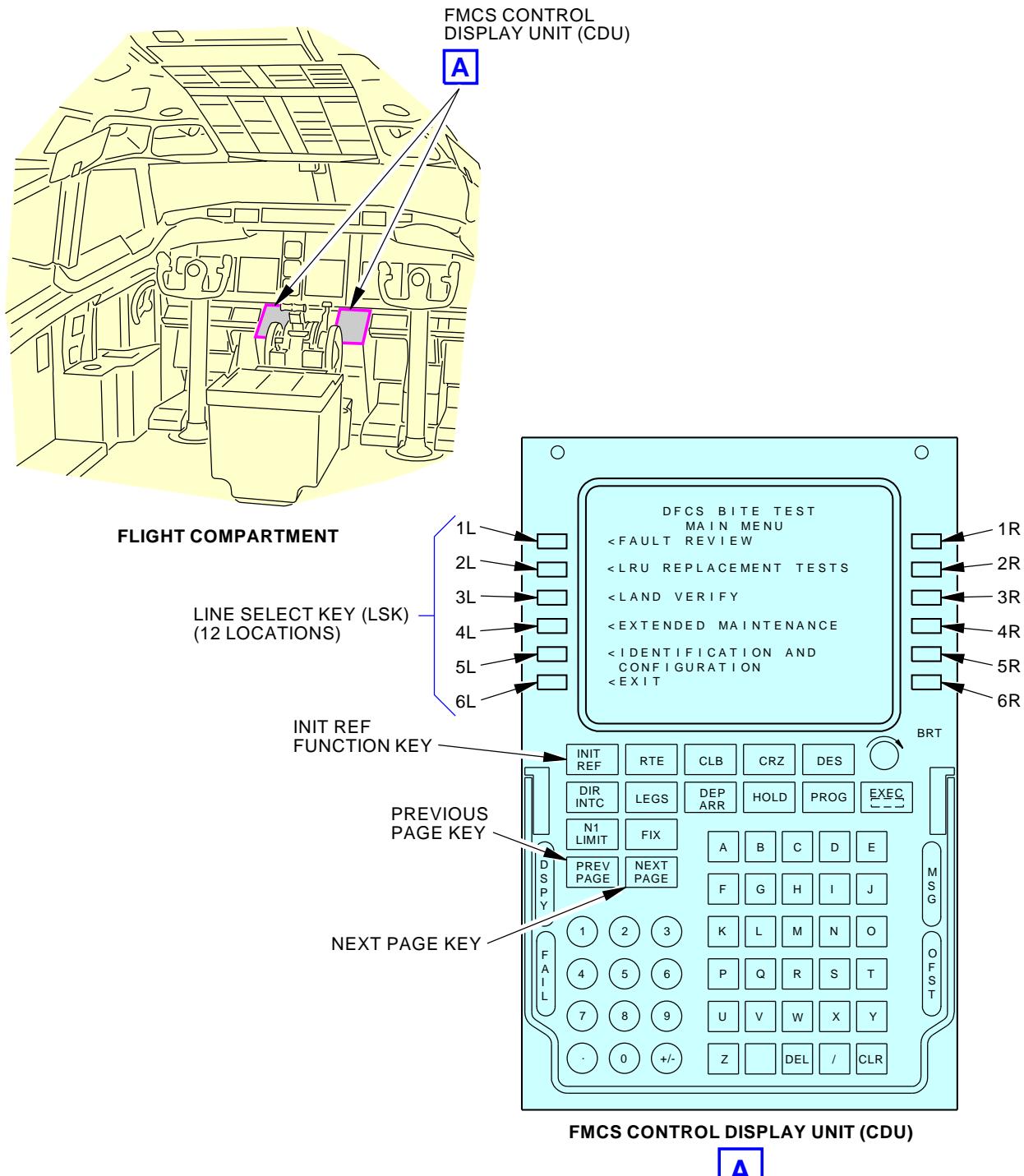
———— END OF TASK ————

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Flight Management Computer Control Display Unit
Figure 201/22-11-27-990-806

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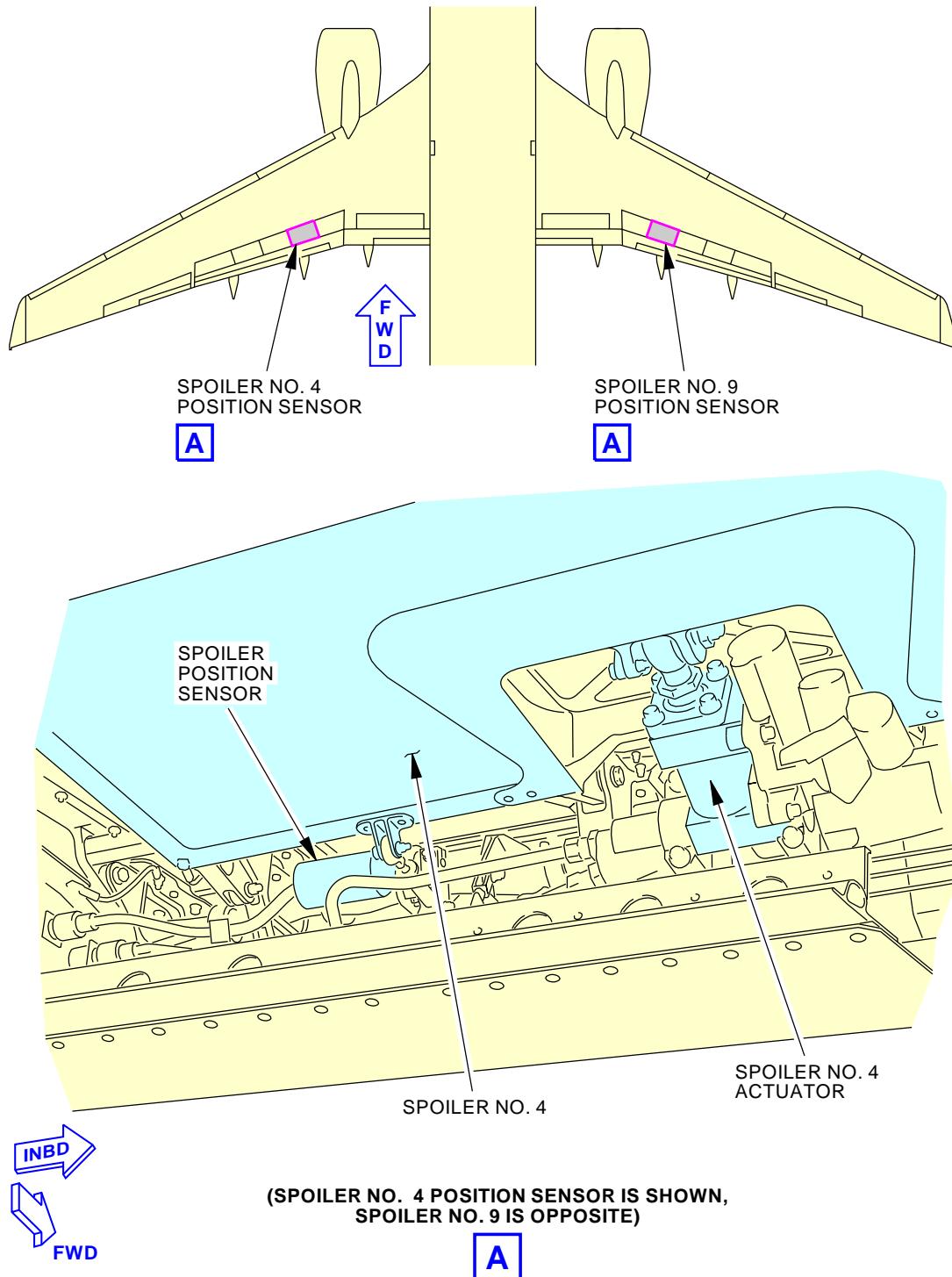
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Spoiler Position Sensor
Figure 202/22-11-27-990-805

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TASK 22-11-27-440-801

3. Spoiler Position Sensor - Activation

(Figure 202)

A. General

- (1) This procedure adds electrical power and hydraulic pressure to Spoiler Position Sensor.

B. References

Reference	Title
27-61-00-800-801	Spoiler Hydraulic Systems A and B Pressurization (P/B 201)

C. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right
563	Left Wing - Spoiler No. 4
663	Right Wing - Spoiler No. 9

D. Procedure

SUBTASK 22-11-27-860-046

WARNING: MAKE SURE THAT PERSONNEL AND EQUIPMENT ARE CLEAR OF THE FLIGHT CONTROLS SURFACES. MAKE SURE THAT THE INBOARD FAN DUCT COWL AND THE INBOARD AND OUTBOARD THRUST REVERSERS ARE CLOSED. THE FLIGHT CONTROL SURFACES CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (1) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
C	4	C00456	AFCS SYS A MACH TRIM AC
C	5	C01041	AFCS SYS A SNSR EXC AC
D	1	C01049	AFCS SYS A WARN LIGHT (BAT)
D	2	C01045	AFCS SYS A FCC DC
D	3	C01048	AFCS SYS A ENGAGE INTLK
D	4	C00457	AFCS SYS A MACH TRIM DC
D	5	C01044	AFCS MCP DC 1

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	1	C00374	AFCS SYS B WARN LIGHT (BAT)
B	2	C01064	AFCS SYS B MACH TRIM DC
B	3	C01046	AFCS SYS B FCC DC
B	4	C00716	AFCS SYS B ENGAGE INTLK
C	1	C01037	AFCS SYS B MACH TRIM AC
C	2	C01042	AFCS SYS B SNSR EXC AC
C	3	C01047	AFCS MCP DC 2



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SUBTASK 22-11-27-410-001

- (2) Do this task: Spoiler Hydraulic Systems A and B Pressurization, TASK 27-61-00-800-801.

———— END OF TASK ——

EFFECTIVITY
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SPOILER POSITION SENSOR - REMOVAL/INSTALLATION

1. General

- A. This procedure has these tasks:
 - (1) The removal of a spoiler position sensor.
 - (2) The installation of a spoiler position sensor.
- B. There are four spoiler position sensors. The spoiler No. 3 position sensor and spoiler No. 10 position sensor are for the flight control system. The spoiler No. 4 position sensor and spoiler No. 9 position sensor are for the autopilot system.
- C. This procedure only contains the tasks for the spoiler No. 4 position sensor and spoiler No. 9 position sensor.
- D. The spoiler position sensor No. 4 (M931) is installed on the left wing spoiler No. 4. The spoiler position sensor (M930) No. 9 is installed on the right wing spoiler No. 9. To get access to the spoiler position sensors, you must extend the spoilers.
- E. For the removal of the spoiler No. 3 positions sensor and spoiler No. 10 position sensor, refer to (Spoiler Position Sensor Removal, TASK 27-61-04-000-801).
- F. For the installation of the spoiler No. 3 positions sensor and spoiler No. 10 position sensor, refer to (Spoiler Position Sensor Installation, TASK 27-61-04-400-801).

TASK 22-11-27-000-801

2. Spoiler Position Sensor Removal

(Figure 401)

A. References

Reference	Title
24-22-00-860-811	Supply Electrical Power (P/B 201)
27-51-00-860-803	Extend the Trailing Edge Flaps (P/B 201)
27-61-00-800-801	Spoiler Hydraulic Systems A and B Pressurization (P/B 201)
27-61-00-800-802	Remove Pressure from the Spoiler Hydraulic Systems A and B (P/B 201)

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-5586	Set - Lock, Flight Spoiler Actuator, 737 SFP (Short Field Performance) (Contains 8 Lock Assemblies) Part #: C27047-43 Supplier: 81205

C. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right
563	Left Wing - Spoiler No. 4
663	Right Wing - Spoiler No. 9



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D. Prepare for the Removal

SUBTASK 22-11-27-860-001

- (1) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

SUBTASK 22-11-27-860-002

WARNING: KEEP PERSONS AND EQUIPMENT AWAY FROM THE FLIGHT CONTROL SURFACES. THE AILERONS, ELEVATORS, RUDDER, FLAPS, SLATS, SPOILERS, STABILIZER AND NOSE GEAR CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (2) Do this task: Spoiler Hydraulic Systems A and B Pressurization, TASK 27-61-00-800-801.

SUBTASK 22-11-27-860-003

- (3) Do this task: Extend the Trailing Edge Flaps, TASK 27-51-00-860-803.

SUBTASK 22-11-27-860-004

- (4) Do this step to extend the spoiler:

- (a) Set the speedbrake control lever to the UP position.

SUBTASK 22-11-27-860-005

- (5) Do this task: Remove Pressure from the Spoiler Hydraulic Systems A and B, TASK 27-61-00-800-802.

SUBTASK 22-11-27-860-006

- (6) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
C	4	C00456	AFCS SYS A MACH TRIM AC
C	5	C01041	AFCS SYS A SNSR EXC AC
D	1	C01049	AFCS SYS A WARN LIGHT (BAT)
D	2	C01045	AFCS SYS A FCC DC
D	3	C01048	AFCS SYS A ENGAGE INTLK
D	4	C00457	AFCS SYS A MACH TRIM DC
D	5	C01044	AFCS MCP DC 1

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	1	C00374	AFCS SYS B WARN LIGHT (BAT)
B	2	C01064	AFCS SYS B MACH TRIM DC
B	3	C01046	AFCS SYS B FCC DC
B	4	C00716	AFCS SYS B ENGAGE INTLK
C	1	C01037	AFCS SYS B MACH TRIM AC
C	2	C01042	AFCS SYS B SNSR EXC AC
C	3	C01047	AFCS MCP DC 2

SUBTASK 22-11-27-860-042

- (7) Install the spoiler ground lock, lock set, SPL-5586 on the spoiler actuator No. 4 or No. 9.

E. Procedure

SUBTASK 22-11-27-020-001

- (1) Disconnect the electrical connectors of the spoiler position sensor [1].

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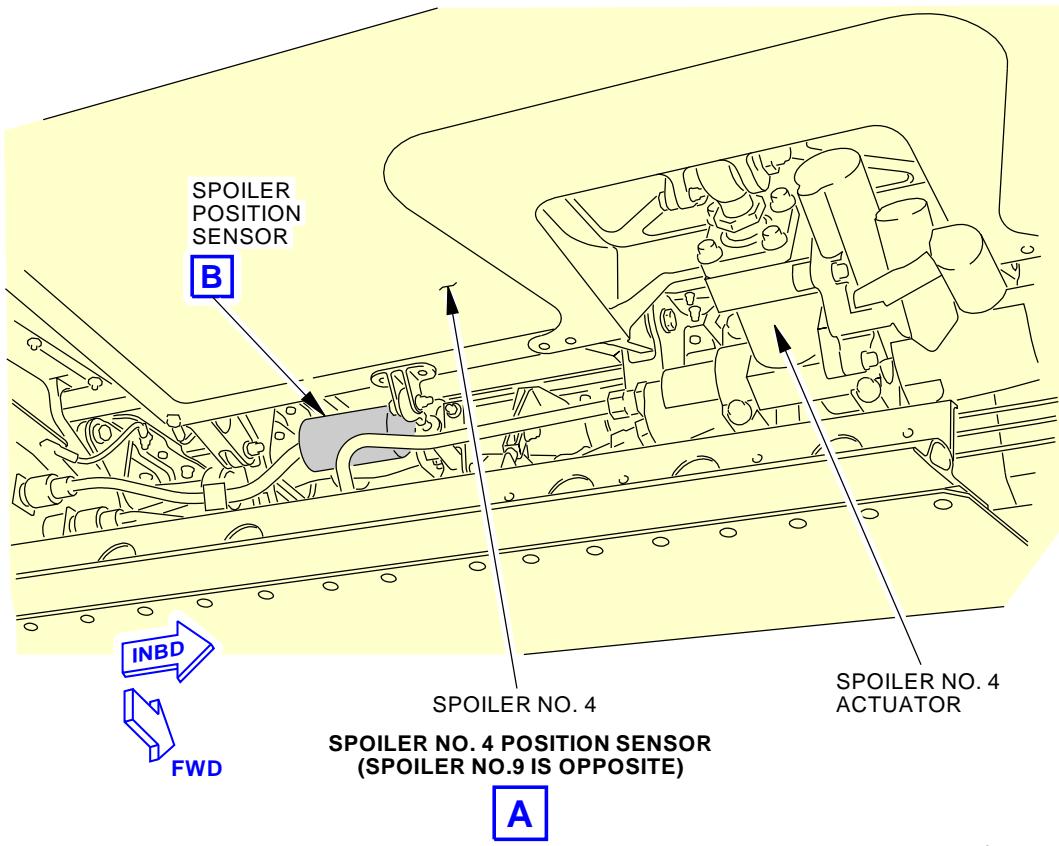
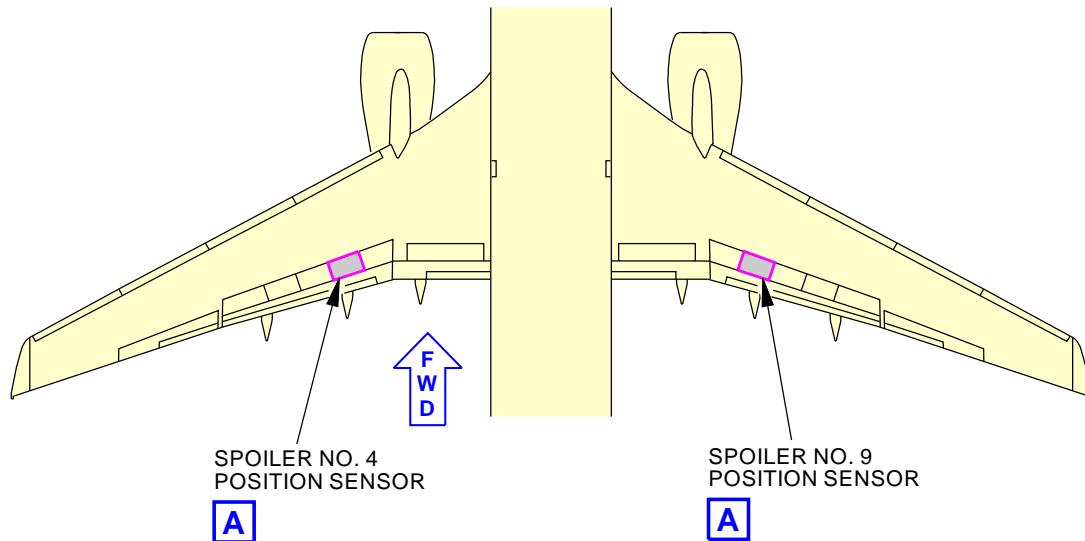
SUBTASK 22-11-27-020-002

- (2) Do these steps to remove the spoiler position sensor [1]:
- (a) Remove the bolt [7], washer [8] and nut [5] in the crank [9].
 - (b) Remove the bolt [2], washer [3] and nut [5] in the mounting bracket [6].
 - (c) Remove the spoiler position sensor [1].

———— END OF TASK ————

EFFECTIVITY
AKS ALL

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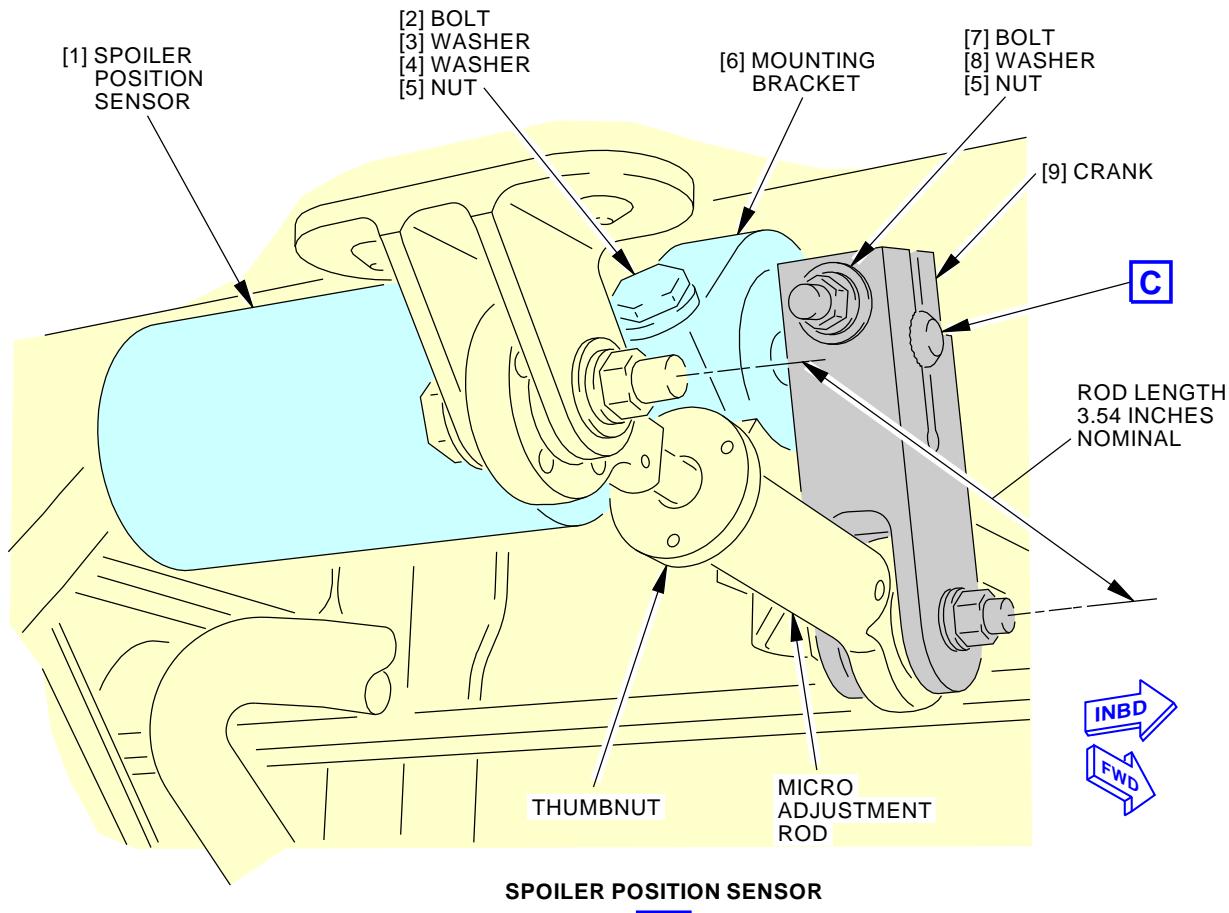
Spoiler Position Sensor Installation
Figure 401/22-11-27-990-804 (Sheet 1 of 2)

EFFECTIVITY
AKS ALL

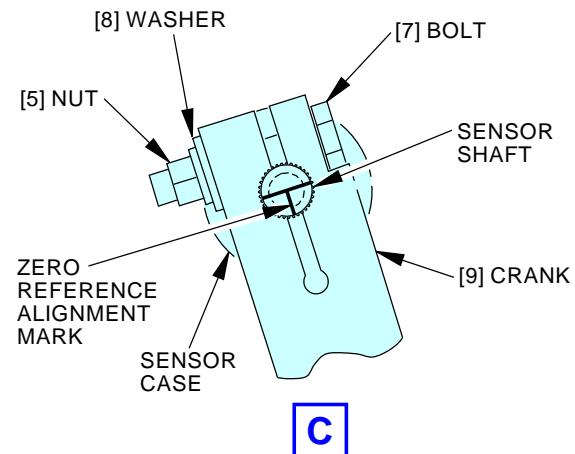
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SPOILER POSITION SENSOR

B**C**

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Spoiler Position Sensor Installation
Figure 401/22-11-27-990-804 (Sheet 2 of 2)

EFFECTIVITY
AKS ALL

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TASK 22-11-27-400-801

3. Spoiler Position Sensor Installation

(Figure 401)

A. References

Reference	Title
22-11-27-710-801	Spoiler Position Sensor Test (P/B 501)
22-11-27-820-801	Spoiler Position Sensor Adjustment (P/B 501)
27-51-00-860-803	Extend the Trailing Edge Flaps (P/B 201)
27-51-00-860-804	Retract the Trailing Edge Flaps (P/B 201)
27-61-00-800-802	Remove Pressure from the Spoiler Hydraulic Systems A and B (P/B 201)

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1745	Set - Lock, Flight Spoiler Actuator (Contains 8 Lock Assys)(737NG before L/N 2040) Part #: C27047-19 Supplier: 81205
SPL-5586	Set - Lock, Flight Spoiler Actuator, 737 SFP (Short Field Performance) (Contains 8 Lock Assemblies) Part #: C27047-43 Supplier: 81205

C. Location Zones

Zone	Area
563	Left Wing - Spoiler No. 4
663	Right Wing - Spoiler No. 9

D. Prepare for the Installation

SUBTASK 22-11-27-860-008

- (1) Make sure that you do these steps:
 - (a) Do this task: Extend the Trailing Edge Flaps, TASK 27-51-00-860-803.
 - (b) Set the speedbrake control lever to the UP position.
 - (c) Do this task: Remove Pressure from the Spoiler Hydraulic Systems A and B, TASK 27-61-00-800-802.
 - (d) Install the spoiler ground lock, lock set, SPL-5586 on the spoiler actuator No. 4 or No. 9.

SUBTASK 22-11-27-860-009

- (2) Make sure that these circuit breakers are open and have safety tags:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
C	4	C00456	AFCS SYS A MACH TRIM AC
C	5	C01041	AFCS SYS A SNSR EXC AC
D	1	C01049	AFCS SYS A WARN LIGHT (BAT)
D	2	C01045	AFCS SYS A FCC DC
D	3	C01048	AFCS SYS A ENGAGE INTLK



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(Continued)

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	4	C00457	AFCS SYS A MACH TRIM DC
D	5	C01044	AFCS MCP DC 1

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	1	C00374	AFCS SYS B WARN LIGHT (BAT)
B	2	C01064	AFCS SYS B MACH TRIM DC
B	3	C01046	AFCS SYS B FCC DC
B	4	C00716	AFCS SYS B ENGAGE INTLK
C	1	C01037	AFCS SYS B MACH TRIM AC
C	2	C01042	AFCS SYS B SNSR EXC AC
C	3	C01047	AFCS MCP DC 2

E. Procedure

SUBTASK 22-11-27-820-001

- (1) Align the reference mark on the sensor case with the reference mark on the sensor shaft.

SUBTASK 22-11-27-420-001

- (2) Install the spoiler position sensor [1]:

- Put the spoiler position sensor [1] into the mounting bracket [6] and the crank [9] with the zero reference alignment mark aligned with the slot in the crank [9].
- Tighten the bolt [7] in the crank [9] to 35 in-lb (4 N·m).
- Tighten the bolt [2] in the mounting bracket [6] to 35 in-lb (4 N·m).

SUBTASK 22-11-27-420-002

- (3) Install the electrical connectors.

SUBTASK 22-11-27-800-001

- (4) Remove the spoiler ground lock, set, SPL-1745 from the spoiler actuator.

SUBTASK 22-11-27-860-010

- (5) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	4	C00456	AFCS SYS A MACH TRIM AC
C	5	C01041	AFCS SYS A SNSR EXC AC
D	1	C01049	AFCS SYS A WARN LIGHT (BAT)
D	2	C01045	AFCS SYS A FCC DC
D	3	C01048	AFCS SYS A ENGAGE INTLK
D	4	C00457	AFCS SYS A MACH TRIM DC
D	5	C01044	AFCS MCP DC 1

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	1	C00374	AFCS SYS B WARN LIGHT (BAT)
B	2	C01064	AFCS SYS B MACH TRIM DC

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(Continued)

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	3	C01046	AFCS SYS B FCC DC
B	4	C00716	AFCS SYS B ENGAGE INTLK
C	1	C01037	AFCS SYS B MACH TRIM AC
C	2	C01042	AFCS SYS B SNSR EXC AC
C	3	C01047	AFCS MCP DC 2

SUBTASK 22-11-27-820-002

- (6) Do this task: Spoiler Position Sensor Adjustment, TASK 22-11-27-820-801.

SUBTASK 22-11-27-740-001

- (7) Do this task: Spoiler Position Sensor Test, TASK 22-11-27-710-801.

SUBTASK 22-11-27-860-011

- (8) Set the speedbrake control lever to the DOWN position.

SUBTASK 22-11-27-860-012

- (9) Do this task: Retract the Trailing Edge Flaps, TASK 27-51-00-860-804.

———— END OF TASK ————

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SPOILER POSITION SENSOR - ADJUSTMENT/TEST

1. General

- A. This procedure has these tasks:
 - (1) Spoiler Position Sensor Adjustment.
 - (2) Spoiler Position Sensor Test.
- B. There are four spoiler position sensors. The spoiler No. 3 position sensor and spoiler No. 10 position sensor are for the flight spoiler system. The spoiler No. 4 position sensor and spoiler No. 9 position sensor are for the autopilot system.
- C. This procedure only contains the tasks for the spoiler No. 4 position sensor and spoiler No. 9 positions sensor. For the adjustment test of the spoiler No. 3 position sensor and spoiler No. 10 position sensor, refer to (TASK 27-61-00-820-806).

TASK 22-11-27-820-801

2. Spoiler Position Sensor Adjustment

(Figure 501)

A. References

Reference	Title
20-10-44-000-801	Lockwire, Cotter Pins, and Lockrings - Removal (P/B 401)
20-10-44-400-801	Lockwire, Cotter Pins, and Lockrings - Installation (P/B 401)
22-11-00-820-803	Aileron Rigging Test (P/B 501)
24-22-00-860-811	Supply Electrical Power (P/B 201)
24-22-00-860-812	Remove Electrical Power (P/B 201)
27-51-00-860-803	Extend the Trailing Edge Flaps (P/B 201)
27-51-00-860-804	Retract the Trailing Edge Flaps (P/B 201)
29-11-00-860-801	Hydraulic System A or B Pressurization (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)

B. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right
563	Left Wing - Spoiler No. 4
663	Right Wing - Spoiler No. 9

C. Prepare for the Adjustment

SUBTASK 22-11-27-860-013

- (1) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

SUBTASK 22-11-27-860-041

- (2) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
D	18	C00451	LANDING GEAR AURAL WARN

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SUBTASK 22-11-27-860-014

WARNING: KEEP PERSONS AND EQUIPMENT AWAY FROM THE FLIGHT CONTROL SURFACES. THE AILERONS, ELEVATORS, RUDDER, FLAPS, SLATS, SPOILERS, STABILIZER AND NOSE GEAR CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (3) Supply hydraulic power to hydraulic systems A and B. To supply hydraulic power, do this task:
Hydraulic System A or B Pressurization, TASK 29-11-00-860-801.

SUBTASK 22-11-27-860-015

- (4) Do this task: Extend the Trailing Edge Flaps, TASK 27-51-00-860-803.

SUBTASK 22-11-27-860-016

- (5) Set the speedbrake control lever to the DOWN position.

SUBTASK 22-11-27-860-017

- (6) Set the aileron trim to zero.

SUBTASK 22-11-27-860-018

- (7) Put the pilot's control wheel in the center position.
(a) Jiggle the pilot's control wheel.
(b) Make sure that the pilot's control wheel is in the center position.

SUBTASK 22-11-27-860-019

- (8) Set the autopilot stab trim cutout switch, on the control stand, to the CUTOUT position.

SUBTASK 22-11-27-860-020

- (9) Make sure that the VHF NAV and IRS switches, on the P5 forward overhead panel, are in the NORMAL positions.

SUBTASK 22-11-27-860-021

- (10) Set the left and right IRS select switches, on the P5 aft overhead panel, to the ALIGN or NAV position.

D. Procedure

NOTE: Two persons are necessary for this task.

SUBTASK 22-11-27-820-003

- (1) Do this BITE test:

- (a) Push the INIT REF key on the CDU keyboard.
(b) Push the Line Select Key (LSK) that is adjacent to each selection:

NOTE: If the CONTINUE shows during the BITE test, then do the instructions that show on the CDU display before you push the LSK that is adjacent to CONTINUE. Use the NEXT PAGE or PREV PAGE key to change page if it is necessary.

- 1) INDEX
- 2) MAINT
- 3) DFCS
- 4) EXTENDED MAINTENANCE
- 5) RIGGING
- 6) AILERON
- 7) SPOILER



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- (c) Do the instructions that show on the CDU display until test 52.24.

NOTE: For detailed data about the SPOILER test, refer to "Do the Spoiler Check" in (TASK 22-11-00-820-803).

- (d) Make sure that the values for the A side and B side are between the limits that show on the CDU display.

- 1) Test 52.24, SPOILER 4 (VAC), Limits: -0.20 to +0.20

NOTE: Use this CDU display to do the adjustment for the spoiler position sensor (No. 4).

WARNING: DO NOT PUSH THE LSK THAT IS ADJACENT TO <CONTINUE ON TEST 52.24 WHEN YOU ADJUST THE SPOILER POSITION SENSOR. THE AILERONS, SPOILERS AND FLIGHT CONTROL SURFACES CAN MOVE WHEN YOU PUSH THE LSK THAT IS ADJACENT TO <CONTINUE. THIS CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

- (e) Adjust the spoiler position sensor (No. 4):

- 1) Loosen the bolt [1] on the mounting bracket until you can turn the spoiler position sensor.

NOTE: You do not have to remove the bolt [1], washer [2], washer [3] and nut [4].

- 2) Turn the spoiler position sensor until you get a value less than 0.10 VAC.

- 3) Tighten the bolt [1] on the mounting bracket to 35 in-lb (4 N·m).

- 4) Do this check:

- a) Slowly move the speedbrake lever aft and look at the CDU display while the spoilers start to move up.

- b) If the value on the CDU decreases toward zero before it increases when the speed brake starts to move up, then do these steps:

- c) Put the speedbrake lever to the OFF position.

- d) Do the above adjustment for the spoiler position sensor (No. 4) again.

- e) If the value on the CDU does not decrease toward zero before it increases when the speedbrake starts to move up, then continue.

- f) Remove the lockwire from the thumbnut on the micro-adjustment rod (TASK 20-10-44-000-801).

- g) Turn the thumbnut on the micro-adjustment rod until you get a smallest possible value less than 0.06 VAC.

- h) Install lockwire on the thumbnut (TASK 20-10-44-400-801).

WARNING: KEEP PERSONS AND EQUIPMENT AWAY FROM THE SPOILER POSITION SENSOR. THE AILERONS, SPOILERS AND FLIGHT CONTROL SURFACES CAN MOVE WHEN YOU PUSH THE LSK THAT IS ADJACENT TO <CONTINUE. THIS CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

- i) Push the LSK that is adjacent to <CONTINUE.

- j) Test 52.25, SPOILER 9 (VAC), Limits: -0.20 to +0.20

NOTE: Use this CDU display to do the adjustment for the spoiler position sensor (No. 9).

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WARNING: DO NOT PUSH THE LSK THAT IS ADJACENT TO <CONTINUE ON TEST 52.25 WHEN YOU ADJUST THE SPOILER POSITION SENSOR. THE AILERONS, SPOILERS AND FLIGHT CONTROL SURFACES CAN MOVE WHEN YOU PUSH THE LSK THAT IS ADJACENT TO <CONTINUE. THIS CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

- (f) Adjust the spoiler position sensor (No. 9):

- 1) Loosen the bolt [1] on the mounting bracket until you can turn the spoiler position sensor.

NOTE: You do not have to remove the bolt [1], washer [2], washer [3] and nut [4].

- 2) Turn the spoiler position sensor until you get a value less than 0.10 VAC.

- 3) Tighten the bolt [1] on the mounting bracket to 35 in-lb (4 N·m).

- 4) Do this check:

- a) Slowly move the speedbrake lever aft and look at the CDU display while the spoilers start to move up.

- b) If the value on the CDU decreases toward zero before it increases when the speed brake starts to move up, then do these steps:

- c) Put the speedbrake lever to the OFF position.

- d) Do the above adjustment for the spoiler position sensor (No. 9) again.

- e) If the value on the CDU does not decrease toward zero before it increases when the speed brake starts to move up, then continue.

- f) Remove the lockwire from the thumbnut on the micro-adjustment rod (TASK 20-10-44-000-801).

- g) Turn the thumbnut on the micro-adjustment rod until you get a smallest possible value less than 0.06 VAC.

- h) Install lockwire on the thumbnut (TASK 20-10-44-400-801).

WARNING: KEEP PERSONS AND EQUIPMENT AWAY FROM THE SPOILER POSITION SENSOR. THE AILERONS, SPOILERS AND FLIGHT CONTROL SURFACES CAN MOVE WHEN YOU PUSH THE LSK THAT IS ADJACENT TO <CONTINUE. THIS CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

- 5) Push the LSK that is adjacent to <CONTINUE (on the CDU display - Test 52.25).

- a) Do the instructions that show on the CDU display to complete the SPOILER test.

- b) Make sure that the values for the A side and B side are between the limits that show on the CDU display.

E. Put the Airplane Back to Its Usual Condition

SUBTASK 22-11-27-860-022

- (1) Push the captain's or first officer's autopilot disengage switch, on the control wheel, to make sure that the autopilot is disengaged.

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SUBTASK 22-11-27-860-038

- (2) Remove the safety tag and close this circuit breaker:

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	18	C00451	LANDING GEAR AURAL WARN

SUBTASK 22-11-27-860-024

- (3) Set the autopilot stab trim cutout switch, on the control stand, to the NORMAL position.

SUBTASK 22-11-27-860-025

- (4) Do this task: Retract the Trailing Edge Flaps, TASK 27-51-00-860-804.

SUBTASK 22-11-27-860-026

- (5) Remove hydraulic power from hydraulic systems A and B. To remove hydraulic power, do this task: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805.

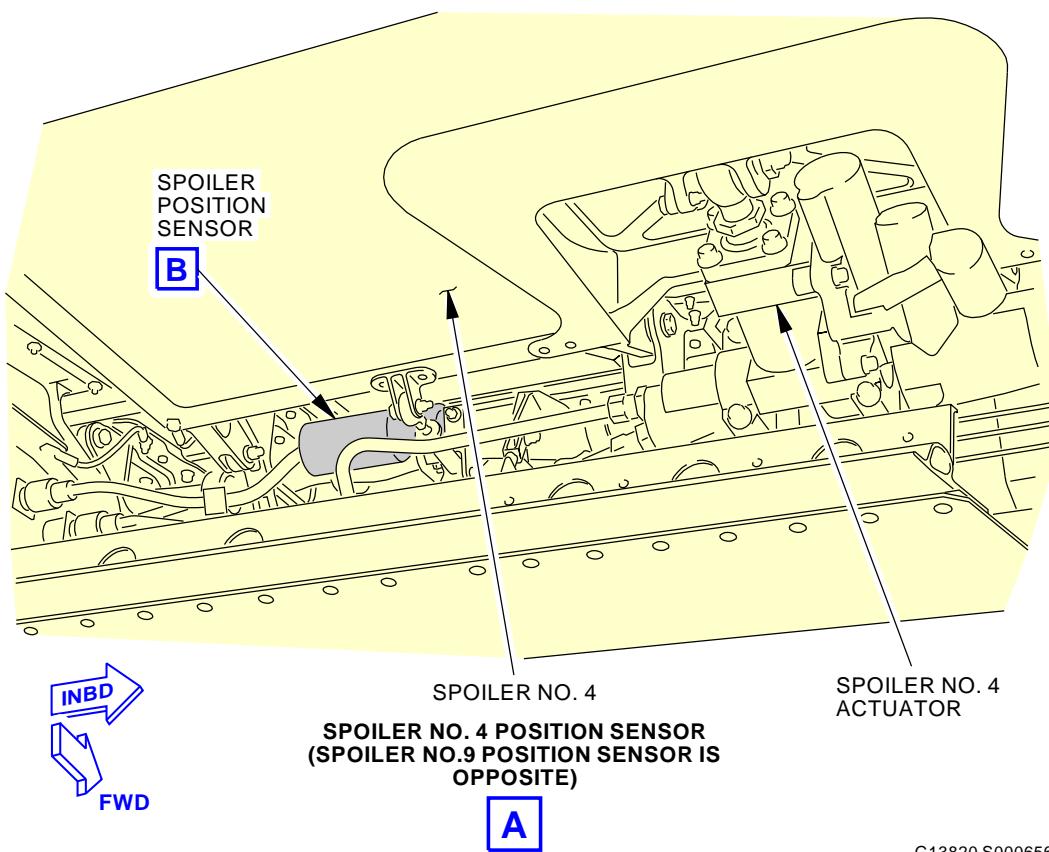
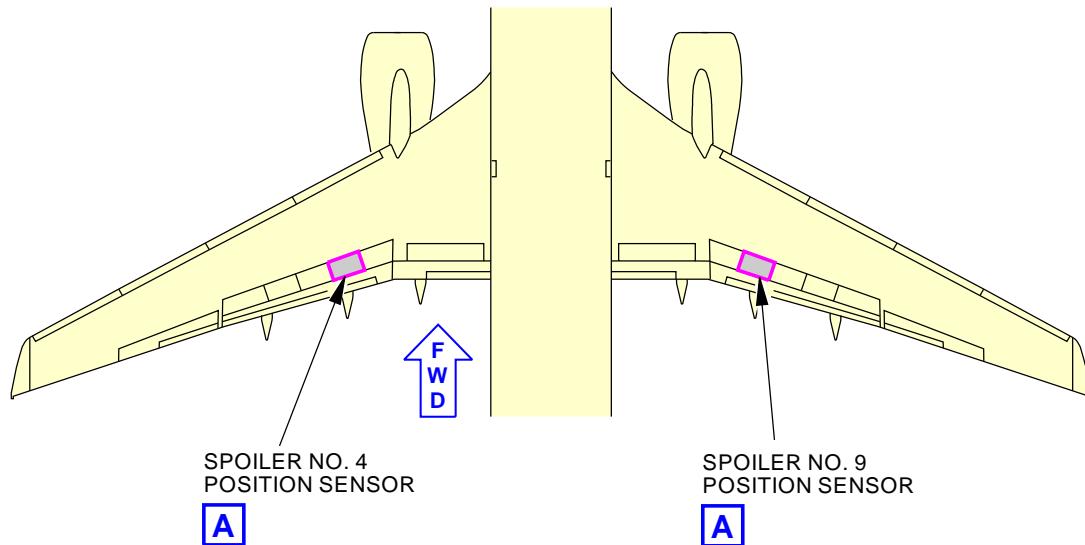
SUBTASK 22-11-27-860-027

- (6) Do this task: Remove Electrical Power, TASK 24-22-00-860-812.

———— END OF TASK ————

EFFECTIVITY
AKS ALL

22-11-27



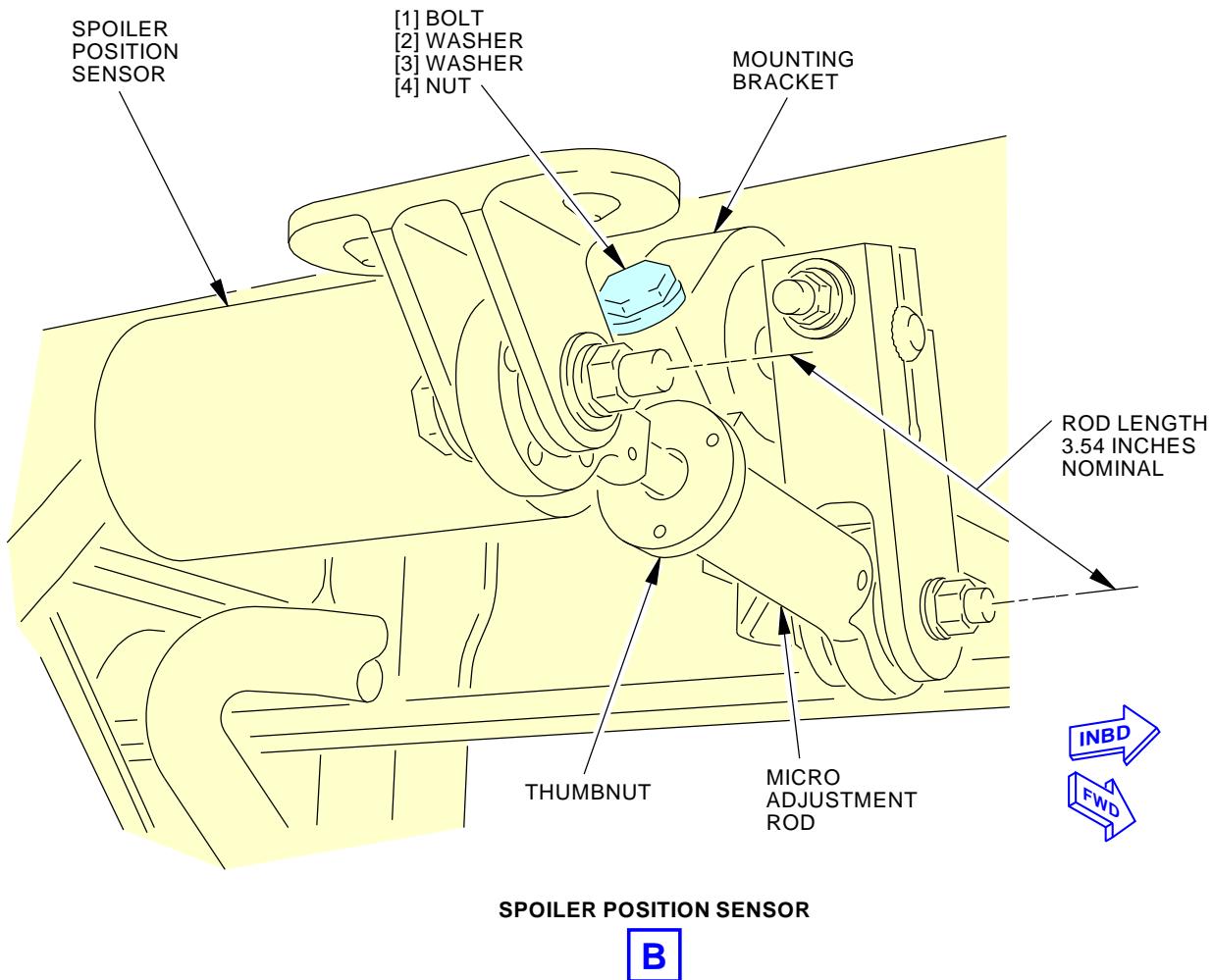
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Spoiler Position Sensor Adjustment
Figure 501/22-11-27-990-803 (Sheet 1 of 2)

EFFECTIVITY
AKS ALL

22-11-27

D633A101-AKS



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Spoiler Position Sensor Adjustment
Figure 501/22-11-27-990-803 (Sheet 2 of 2)

EFFECTIVITY
AKS ALL

22-11-27

D633A101-AKS



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TASK 22-11-27-710-801

3. Spoiler Position Sensor Test

A. References

<u>Reference</u>	<u>Title</u>
24-22-00-860-811	Supply Electrical Power (P/B 201)
24-22-00-860-812	Remove Electrical Power (P/B 201)
29-11-00-860-801	Hydraulic System A or B Pressurization (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)

B. Location Zones

<u>Zone</u>	<u>Area</u>
211	Flight Compartment - Left
212	Flight Compartment - Right

C. Prepare for the Test

SUBTASK 22-11-27-860-028

- (1) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

SUBTASK 22-11-27-860-040

- (2) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	18	C00451	LANDING GEAR AURAL WARN

SUBTASK 22-11-27-860-029

- (3) Set the autopilot stab trim cutout switch, on the control stand, to the CUTOUT position.

SUBTASK 22-11-27-860-030

- (4) Make sure that the VHF NAV and IRS switches, on the P5 forward overhead panel, are in the NORMAL positions.

SUBTASK 22-11-27-860-031

- (5) Set the left and right IRS select switches, on the P5 aft overhead panel, to the ALIGN or NAV position.

SUBTASK 22-11-27-860-032

WARNING: KEEP PERSONS AND EQUIPMENT AWAY FROM THE FLIGHT CONTROL SURFACES. THE AILERONS, ELEVATORS, RUDDER, FLAPS, SLATS, SPOILERS, STABILIZER AND NOSE GEAR CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (6) Supply hydraulic power to hydraulic systems A and B. To supply hydraulic power, do this task: Hydraulic System A or B Pressurization, TASK 29-11-00-860-801.

NOTE: Hydraulic power is necessary for surface test.

D. Procedure

SUBTASK 22-11-27-740-002

- (1) Do this BITE test:

- (a) Push the INIT REF key on the CDU keyboard.



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- (b) Push the Line Select Key (LSK) that is adjacent to each selection:

NOTE: If the CONTINUE shows during the BITE test, then do the instructions that show on the CDU display before you push the LSK that is adjacent to CONTINUE. Use the NEXT PAGE or PREV PAGE key to change page if it is necessary.

- 1) INDEX
 - 2) MAINT
 - 3) DFCS
 - 4) LRU REPLACEMENT TESTS
 - 5) CHANNEL A AND B
- NOTE: The spoiler position sensor (No. 4 or No. 9) has interfaces with the FCC-A (channel A) and FCC-B (channel B).
- 6) ROLL SENS
 - 7) Do the instructions that show on the CDU display to complete the test.
 - 8) Make sure that the test is completed with no failure or the "TEST FAILED" message does not show.

E. Put the Airplane Back to Its Usual Condition

SUBTASK 22-11-27-860-033

- (1) Push the captain's or first officer's autopilot disengage switch, on the control wheel, to make sure that the autopilot is disengaged.

SUBTASK 22-11-27-860-039

- (2) Remove the safety tag and close this circuit breaker:

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	18	C00451	LANDING GEAR AURAL WARN

SUBTASK 22-11-27-860-035

- (3) Set the autopilot stab trim cutout switch, on the control stand, to the NORMAL position.

SUBTASK 22-11-27-860-036

- (4) Remove hydraulic power from hydraulic systems A and B. To remove hydraulic power, do this task: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805.

SUBTASK 22-11-27-860-037

- (5) Do this task: Remove Electrical Power, TASK 24-22-00-860-812.

———— END OF TASK ————

EFFECTIVITY
AKS ALL

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AILERON POSITION SENSOR - MAINTENANCE PRACTICES

1. General

- A. This procedure has these tasks:
- (1) Aileron Position Sensor Deactivation.
 - (2) Aileron Position Sensor Activation.

TASK 22-11-29-040-801

2. Aileron Position Sensor - Deactivation

(Figure 202)

A. General

- (1) This procedure removes electrical power and hydraulic pressure to Aileron Position Sensor.

B. References

Reference	Title
24-22-00-860-811	Supply Electrical Power (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)
32-00-01-480-801	Landing Gear Downlock Pins Installation (P/B 201)

C. Tools/Equipment

Reference	Description
STD-858	Tag - DO NOT OPERATE

D. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
211	Flight Compartment - Left
212	Flight Compartment - Right

E. Procedure

SUBTASK 22-11-29-860-037

WARNING: MAKE SURE THAT PERSONNEL AND EQUIPMENT ARE CLEAR OF THE FLIGHT CONTROLS SURFACES. MAKE SURE THAT THE INBOARD FAN DUCT COWL AND THE INBOARD AND OUTBOARD THRUST REVERSERS ARE CLOSED. THE FLIGHT CONTROL SURFACES CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (1) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
C	4	C00456	AFCS SYS A MACH TRIM AC
C	5	C01041	AFCS SYS A SNSR EXC AC
D	1	C01049	AFCS SYS A WARN LIGHT (BAT)
D	2	C01045	AFCS SYS A FCC DC
D	3	C01048	AFCS SYS A ENGAGE INTLK
D	4	C00457	AFCS SYS A MACH TRIM DC
D	5	C01044	AFCS MCP DC 1

EFFECTIVITY
AKS ALL

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F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	1	C00374	AFCS SYS B WARN LIGHT (BAT)
B	2	C01064	AFCS SYS B MACH TRIM DC
B	3	C01046	AFCS SYS B FCC DC
B	4	C00716	AFCS SYS B ENGAGE INTLK
C	1	C01037	AFCS SYS B MACH TRIM AC
C	2	C01042	AFCS SYS B SNSR EXC AC
C	3	C01047	AFCS MCP DC 2

SUBTASK 22-11-29-010-001

- (2) Do this task: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805.

SUBTASK 22-11-29-860-038

WARNING: MAKE SURE THAT THE GROUND LOCKS ARE INSTALLED IN ALL OF THE LANDING GEAR. WITHOUT THE GROUND LOCKS, THE LANDING GEAR CAN RETRACT. THIS CAN CAUSE INJURIES TO PERSONNEL, AND DAMAGE TO EQUIPMENT.

- (3) Do this task: Landing Gear Downlock Pins Installation, TASK 32-00-01-480-801.

SUBTASK 22-11-29-860-039

- (4) Attach DO NOT OPERATE tag, STD-858 to the captain's and first officer's control columns.

F. Aileron Position Sensor - Tryout

NOTE: This tryout is to make sure the Aileron Position Sensor is in a zero energy state.

SUBTASK 22-11-29-860-042

WARNING: MAKE SURE THAT PERSONNEL AND EQUIPMENT ARE CLEAR OF THE FLIGHT CONTROLS SURFACES. MAKE SURE THAT THE INBOARD FAN DUCT COWL AND THE INBOARD AND OUTBOARD THRUST REVERSERS ARE CLOSED. THE FLIGHT CONTROL SURFACES CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (1) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

SUBTASK 22-11-29-860-040

- (2) Make sure that these circuit breakers are open and have safety tags:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	4	C00456	AFCS SYS A MACH TRIM AC
C	5	C01041	AFCS SYS A SNSR EXC AC
D	1	C01049	AFCS SYS A WARN LIGHT (BAT)
D	2	C01045	AFCS SYS A FCC DC
D	3	C01048	AFCS SYS A ENGAGE INTLK
D	4	C00457	AFCS SYS A MACH TRIM DC
D	5	C01044	AFCS MCP DC 1

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	1	C00374	AFCS SYS B WARN LIGHT (BAT)



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AIRCRAFT MAINTENANCE MANUAL

(Continued)

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	2	C01064	AFCS SYS B MACH TRIM DC
B	3	C01046	AFCS SYS B FCC DC
B	4	C00716	AFCS SYS B ENGAGE INTLK
C	1	C01037	AFCS SYS B MACH TRIM AC
C	2	C01042	AFCS SYS B SNSR EXC AC
C	3	C01047	AFCS MCP DC 2

SUBTASK 22-11-29-700-002

- (3) Use the FMC - CDU and do the following test (Figure 201):
 - (a) SELECT, INIT/REF on the keyboard.
 - (b) SELECT, "INDEX" (LSK 6L).
 - (c) SELECT, "MAINT" (LSK 6R).
 - (d) SELECT, "DFCS" (LSK 2L).
 - 1) DFCS will run the self test and display as following:
 - FCC-A SELF TEST FAIL
 - FCC-B SELF TEST FAIL
 - CROSS CHANNEL TEST PASS
 - (e) SELECT, "CONTINUE" (LSK 6R)
NOTE: Ignore the message that appears.
 - (f) SELECT, "CONTINUE" (LSK 6R).
 - (g) SELECT, "EXTENDED MAINTENANCE"(LSK 4L).
 - (h) SELECT, "SENSOR VALUES"(LSK 4L).
 - (i) SELECT, "DISCRETE INPUTS"(LSK 5L).
 - (j) SELECT, "CIRCUIT BREAKER CHECK"(LSK 5R).
 - (k) SELECT, INIT/REF on the keyboard, to exit of BITE.
 - (l) End of test.

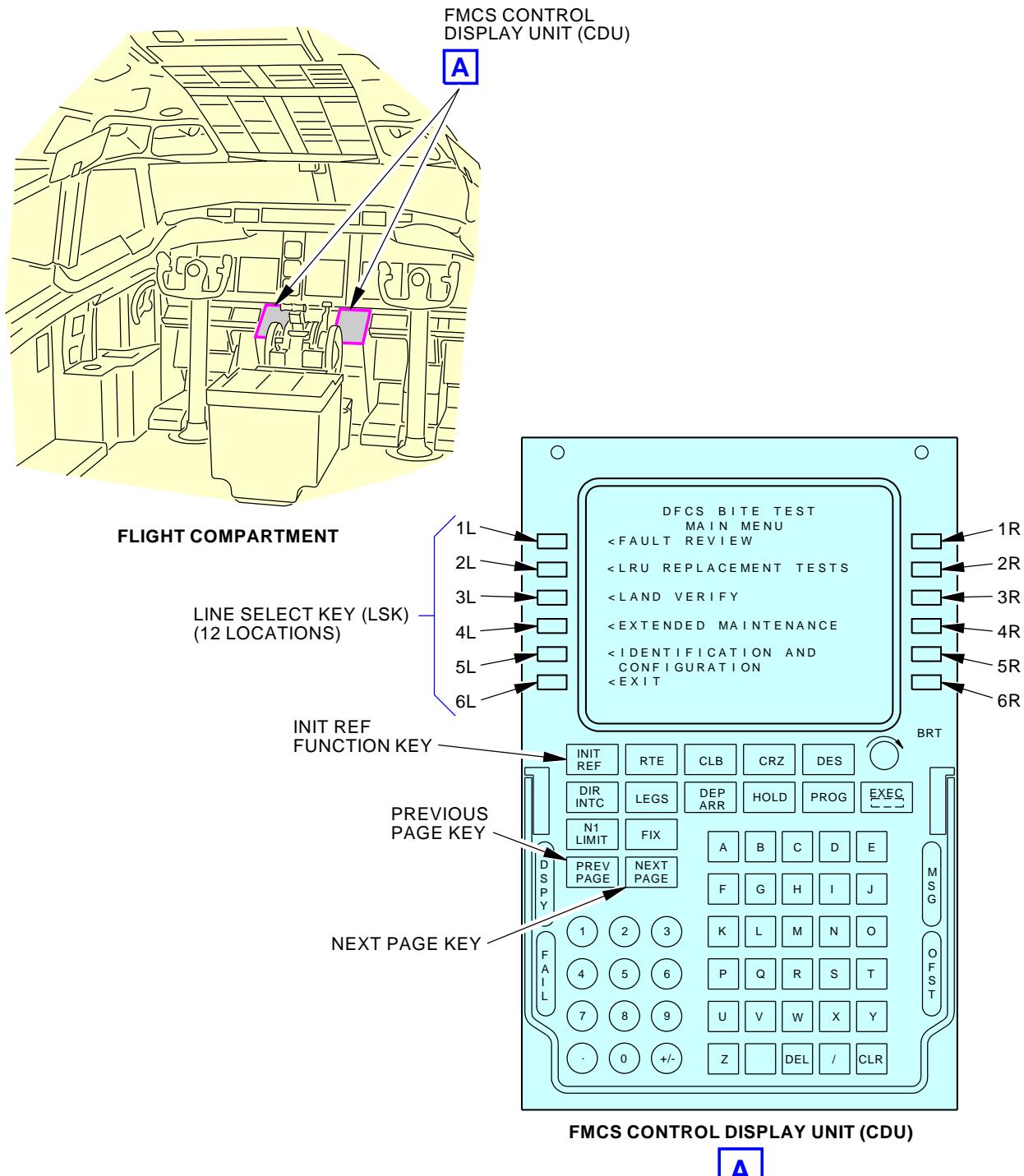
———— END OF TASK ————

EFFECTIVITY
AKS ALL

22-11-29



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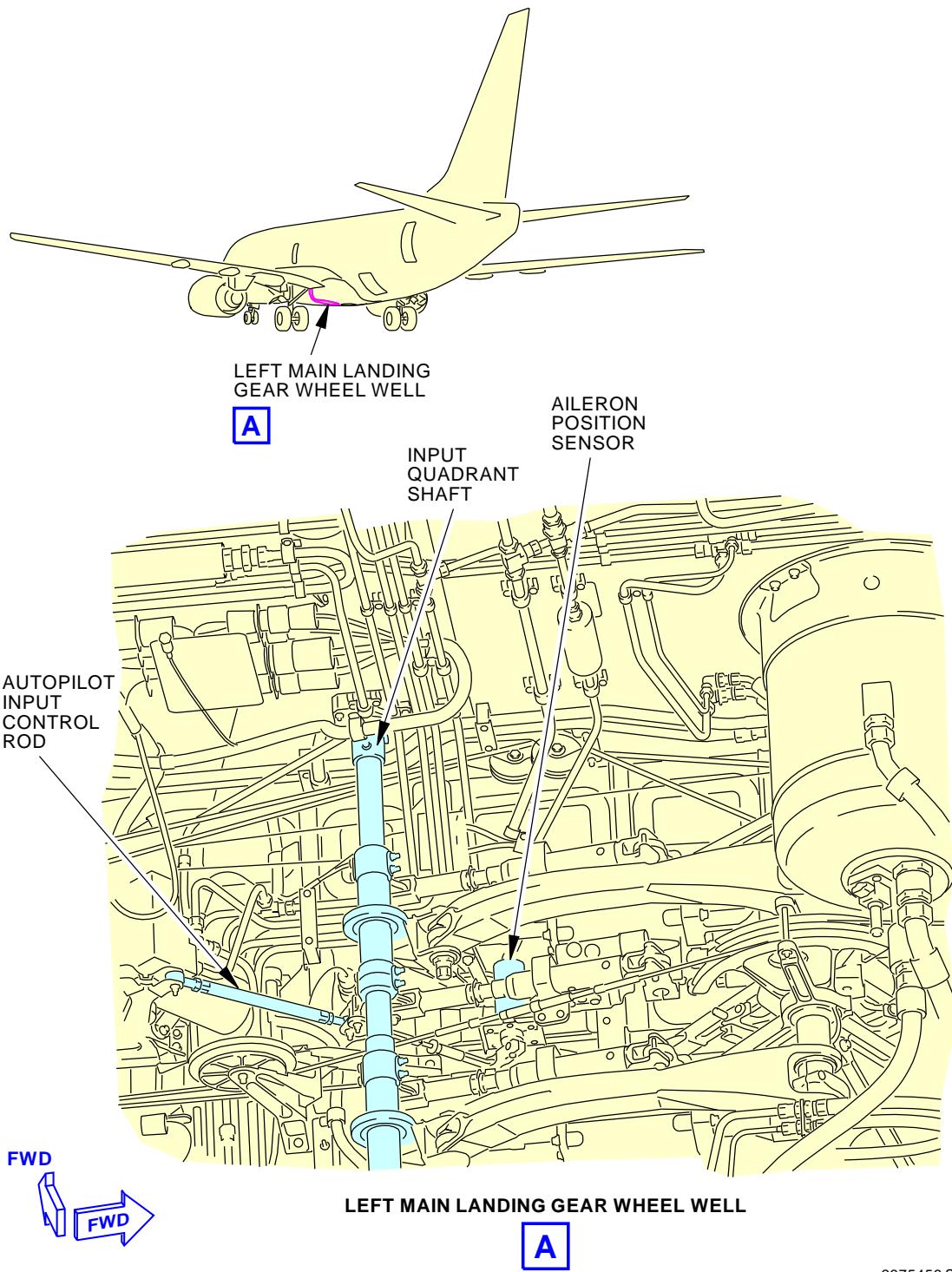
Flight Management Computer Control Display Unit
Figure 201/22-11-29-990-806

EFFECTIVITY
AKS ALL

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D633A101-AKS

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Aileron Position Sensor
Figure 202/22-11-29-990-805

EFFECTIVITY
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AIRCRAFT MAINTENANCE MANUAL

TASK 22-11-29-440-801

3. Aileron Position Sensor - Activation

(Figure 202)

A. General

- (1) This procedure adds electrical power and hydraulic pressure to Aileron Position Sensor.

B. References

Reference	Title
29-11-00-860-801	Hydraulic System A or B Pressurization (P/B 201)

C. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
211	Flight Compartment - Left
212	Flight Compartment - Right

D. Procedure

SUBTASK 22-11-29-860-041

WARNING: MAKE SURE THAT PERSONNEL AND EQUIPMENT ARE CLEAR OF THE FLIGHT CONTROLS SURFACES. MAKE SURE THAT THE INBOARD FAN DUCT COWL AND THE INBOARD AND OUTBOARD THRUST REVERSERS ARE CLOSED. THE FLIGHT CONTROL SURFACES CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (1) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
C	4	C00456	AFCS SYS A MACH TRIM AC
C	5	C01041	AFCS SYS A SNSR EXC AC
D	1	C01049	AFCS SYS A WARN LIGHT (BAT)
D	2	C01045	AFCS SYS A FCC DC
D	3	C01048	AFCS SYS A ENGAGE INTLK
D	4	C00457	AFCS SYS A MACH TRIM DC
D	5	C01044	AFCS MCP DC 1

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	1	C00374	AFCS SYS B WARN LIGHT (BAT)
B	2	C01064	AFCS SYS B MACH TRIM DC
B	3	C01046	AFCS SYS B FCC DC
B	4	C00716	AFCS SYS B ENGAGE INTLK
C	1	C01037	AFCS SYS B MACH TRIM AC
C	2	C01042	AFCS SYS B SNSR EXC AC
C	3	C01047	AFCS MCP DC 2

SUBTASK 22-11-29-410-001

- (2) Do this task: Hydraulic System A or B Pressurization, TASK 29-11-00-860-801.

———— END OF TASK ————

EFFECTIVITY
AKS ALL

22-11-29

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AILERON POSITION SENSOR - REMOVAL/INSTALLATION

1. General

- A. This procedure has these tasks:
 - (1) The removal of the aileron position sensor.
 - (2) The installation of the aileron position sensor.
- B. The aileron position sensor (M937) is installed on the left aileron torque tube. You can find it on the forward wall of the main landing gear wheel well adjacent to the autopilot aileron actuators.

TASK 22-11-29-000-801

2. Aileron Position Sensor Removal

(Figure 401)

A. References

Reference	Title
32-00-01-480-801	Landing Gear Downlock Pins Installation (P/B 201)

B. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left

C. Prepare for the Removal

SUBTASK 22-11-29-860-025

- (1) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
C	4	C00456	AFCS SYS A MACH TRIM AC
C	5	C01041	AFCS SYS A SNSR EXC AC
D	1	C01049	AFCS SYS A WARN LIGHT (BAT)
D	2	C01045	AFCS SYS A FCC DC
D	3	C01048	AFCS SYS A ENGAGE INTLK
D	4	C00457	AFCS SYS A MACH TRIM DC
D	5	C01044	AFCS MCP DC 1

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	1	C00374	AFCS SYS B WARN LIGHT (BAT)
B	2	C01064	AFCS SYS B MACH TRIM DC
B	3	C01046	AFCS SYS B FCC DC
B	4	C00716	AFCS SYS B ENGAGE INTLK
C	1	C01037	AFCS SYS B MACH TRIM AC
C	2	C01042	AFCS SYS B SNSR EXC AC
C	3	C01047	AFCS MCP DC 2

SUBTASK 22-11-29-860-026

WARNING: YOU MUST CAREFULLY INSTALL THE GROUND LOCKS IN ALL LANDING GEAR.
AN ACCIDENTAL RETRACTION OF THE LANDING GEAR CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (2) Make sure that you install the landing gear downlock pins (TASK 32-00-01-480-801).

EFFECTIVITY
AKS ALL

22-11-29



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D. Procedure

SUBTASK 22-11-29-020-001

- (1) Disconnect the electrical connector [1].

SUBTASK 22-11-29-020-002

- (2) Remove the clamp [2], bolt [3], washers [4] and nut [5].

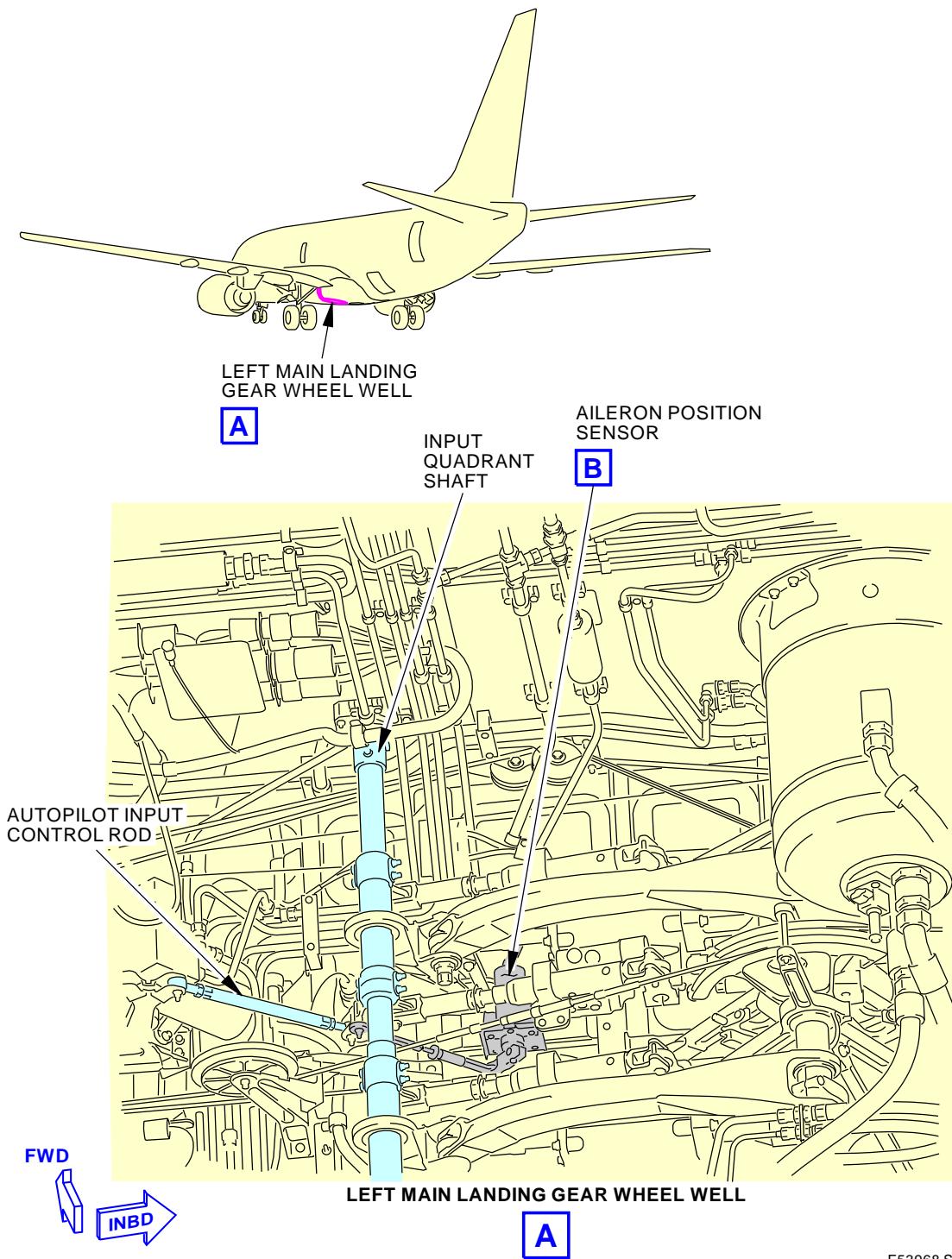
SUBTASK 22-11-29-020-003

- (3) Do these steps to remove the aileron position sensor [11]:
 - (a) Remove the bolt [8], washer [7] and nut [5] in the crank [9].
 - (b) Remove the bolt [6], washer [7], and nut [5] in the clamp [10].
 - (c) Remove the aileron position sensor [11].

———— END OF TASK ————

EFFECTIVITY
AKS ALL

22-11-29



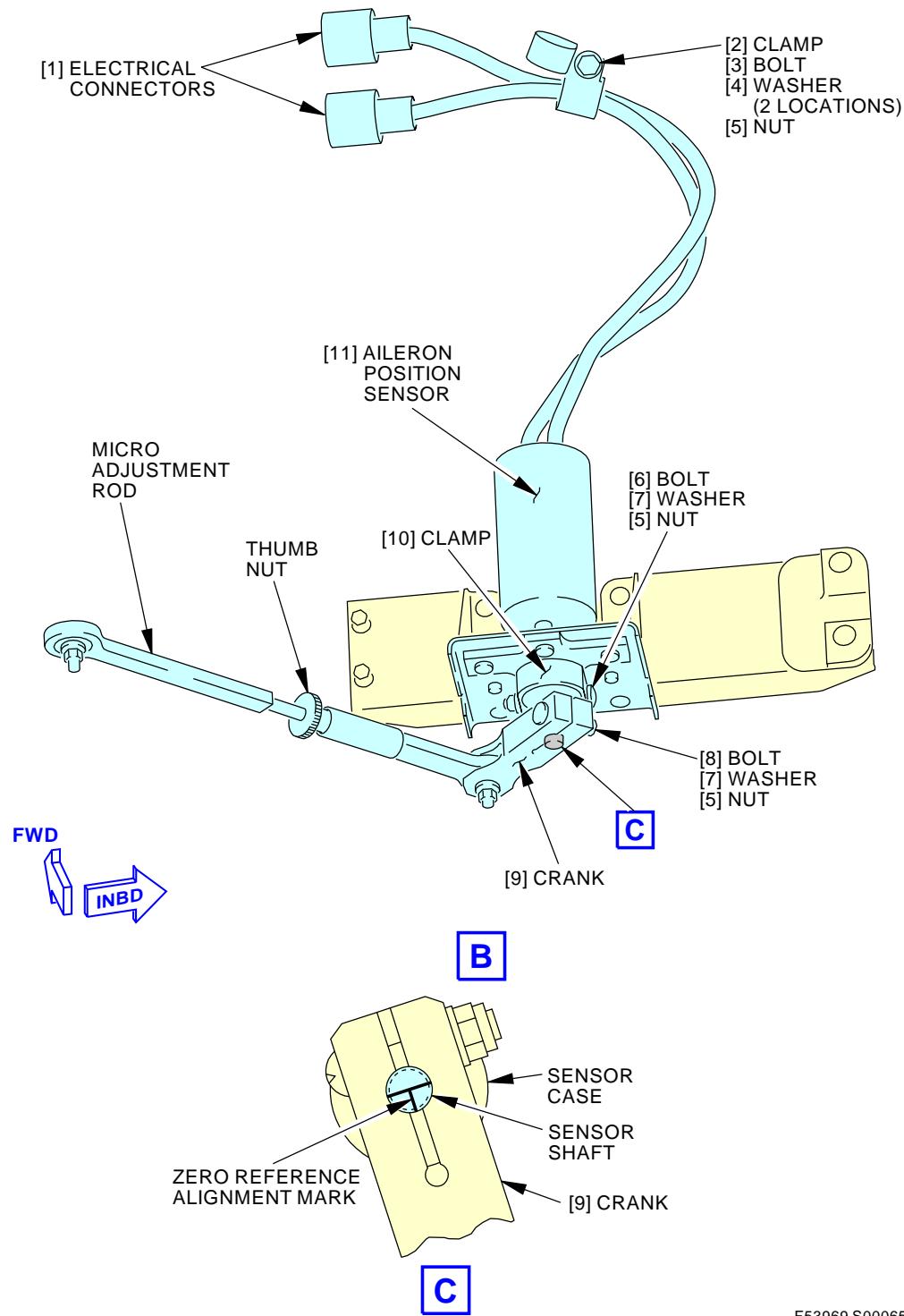
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Aileron Position Sensor Installation
Figure 401/22-11-29-990-803 (Sheet 1 of 2)

EFFECTIVITY
 AKS ALL

22-11-29

D633A101-AKS



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Aileron Position Sensor Installation
Figure 401/22-11-29-990-803 (Sheet 2 of 2)

EFFECTIVITY
 AKS ALL

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D633A101-AKS



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TASK 22-11-29-400-801

3. Aileron Position Sensor Installation

(Figure 401)

A. References

Reference	Title
22-11-29-710-801	Aileron Position Sensor Test (P/B 501)
22-11-29-820-801	Aileron Position Sensor Adjustment (P/B 501)
32-00-01-480-801	Landing Gear Downlock Pins Installation (P/B 201)

B. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
11	Sensor	22-11-29-01-155	AKS ALL

C. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left

D. Prepare for the Installation

SUBTASK 22-11-29-860-027

- (1) Set the aileron trim to 0 unit.

SUBTASK 22-11-29-860-028

- (2) Make sure that these circuit breakers are open and have safety tags:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
C	4	C00456	AFCS SYS A MACH TRIM AC
C	5	C01041	AFCS SYS A SNSR EXC AC
D	1	C01049	AFCS SYS A WARN LIGHT (BAT)
D	2	C01045	AFCS SYS A FCC DC
D	3	C01048	AFCS SYS A ENGAGE INTLK
D	4	C00457	AFCS SYS A MACH TRIM DC
D	5	C01044	AFCS MCP DC 1

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	1	C00374	AFCS SYS B WARN LIGHT (BAT)
B	2	C01064	AFCS SYS B MACH TRIM DC
B	3	C01046	AFCS SYS B FCC DC
B	4	C00716	AFCS SYS B ENGAGE INTLK
C	1	C01037	AFCS SYS B MACH TRIM AC
C	2	C01042	AFCS SYS B SNSR EXC AC
C	3	C01047	AFCS MCP DC 2

SUBTASK 22-11-29-860-029

WARNING: YOU MUST CAREFULLY INSTALL THE GROUND LOCKS IN ALL LANDING GEAR.
AN ACCIDENTAL RETRACTION OF THE LANDING GEAR CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (3) Make sure that you install the landing gear downlock pins (TASK 32-00-01-480-801).

EFFECTIVITY	AKS ALL
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22-11-29



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E. Procedure

SUBTASK 22-11-29-820-002

- (1) Align the reference mark on the sensor case with the reference mark on the sensor shaft.

SUBTASK 22-11-29-420-001

- (2) Do these steps to install the aileron position sensor [11]:

- (a) Put the aileron position sensor [11] into the clamp [10] and the crank [9] with the zero reference alignment mark aligned with the slot in the crank [9].
1) Tighten the bolt [8] in the crank [9] to 35 in-lb (4 N·m).
2) Tighten the bolt [6] in clamp [10] to 35 in-lb (4 N·m).

SUBTASK 22-11-29-420-002

- (3) Install the clamp [2] with the bolt [3], washers [4] and nut [5].

SUBTASK 22-11-29-420-003

- (4) Connect the electrical connector [1].

SUBTASK 22-11-29-860-030

- (5) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	4	C00456	AFCS SYS A MACH TRIM AC
C	5	C01041	AFCS SYS A SNSR EXC AC
D	1	C01049	AFCS SYS A WARN LIGHT (BAT)
D	2	C01045	AFCS SYS A FCC DC
D	3	C01048	AFCS SYS A ENGAGE INTLK
D	4	C00457	AFCS SYS A MACH TRIM DC
D	5	C01044	AFCS MCP DC 1

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	1	C00374	AFCS SYS B WARN LIGHT (BAT)
B	2	C01064	AFCS SYS B MACH TRIM DC
B	3	C01046	AFCS SYS B FCC DC
B	4	C00716	AFCS SYS B ENGAGE INTLK
C	1	C01037	AFCS SYS B MACH TRIM AC
C	2	C01042	AFCS SYS B SNSR EXC AC
C	3	C01047	AFCS MCP DC 2

SUBTASK 22-11-29-820-003

- (6) Do this task: Aileron Position Sensor Adjustment, TASK 22-11-29-820-801.

SUBTASK 22-11-29-740-002

- (7) Do this task: Aileron Position Sensor Test, TASK 22-11-29-710-801.

———— END OF TASK ————



22-11-29



737-600/700/800/900
AIRCRAFT MAINTENANCE MANUAL

AILERON POSITION SENSOR - ADJUSTMENT/TEST

1. General

- A. This procedure has these tasks:
- (1) Aileron Position Sensor Adjustment.
 - (2) Aileron Position Sensor Test.

TASK 22-11-29-820-801

2. Aileron Position Sensor Adjustment

(Figure 501)

A. References

Reference	Title
20-10-44-000-801	Lockwire, Cotter Pins, and Lockrings - Removal (P/B 401)
20-10-44-400-801	Lockwire, Cotter Pins, and Lockrings - Installation (P/B 401)
22-11-00-820-803	Aileron Rigging Test (P/B 501)
24-22-00-860-811	Supply Electrical Power (P/B 201)
24-22-00-860-812	Remove Electrical Power (P/B 201)
29-11-00-860-801	Hydraulic System A or B Pressurization (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)
32-00-01-480-801	Landing Gear Downlock Pins Installation (P/B 201)

B. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
211	Flight Compartment - Left
212	Flight Compartment - Right

C. Prepare for the Adjustment

SUBTASK 22-11-29-860-001

- (1) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

SUBTASK 22-11-29-860-035

- (2) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
D	18	C00451	LANDING GEAR AURAL WARN

SUBTASK 22-11-29-860-002

- (3) Set the autopilot stab trim cutout switch, on the control stand, to the CUTOUT position.

SUBTASK 22-11-29-860-003

- (4) Make sure that the VHF NAV and IRS switches, on the P5 forward overhead panel, are in the NORMAL positions.

SUBTASK 22-11-29-860-004

- (5) Set the left and right IRS select switches, on the P5 aft overhead panel, to the ALIGN or NAV position.



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SUBTASK 22-11-29-860-005

WARNING: KEEP PERSONS AND EQUIPMENT AWAY FROM THE FLIGHT CONTROL SURFACES. THE AILERONS, ELEVATORS, RUDDER, FLAPS, SLATS, SPOILERS, STABILIZER AND NOSE GEAR CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (6) Supply hydraulic power to hydraulic systems A and B. To supply hydraulic power, do this task:
Hydraulic System A or B Pressurization, TASK 29-11-00-860-801.

SUBTASK 22-11-29-860-006

- (7) Make sure that the ailerons and the aileron trim are set to zero.

SUBTASK 22-11-29-860-007

- (8) Set the speed brake handle to the down position.

SUBTASK 22-11-29-860-008

WARNING: YOU MUST CAREFULLY INSTALL THE GROUND LOCKS IN ALL LANDING GEAR. AN ACCIDENTAL RETRACTION OF THE LANDING GEAR CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (9) Make sure that you install the landing gear downlock pins (TASK 32-00-01-480-801).

D. Procedure

NOTE: Two persons are necessary for this task.

SUBTASK 22-11-29-820-001

- (1) Do this BITE test:

- (a) Push the INIT REF key on the CDU keyboard.
(b) Push the Line Select Key (LSK) that is adjacent to each selection:

NOTE: If the CONTINUE shows during the BITE test, then do the instructions that show on the CDU display before you push the LSK that is adjacent to CONTINUE. Use the NEXT PAGE or PREV PAGE key to change page if it is necessary.

- 1) INDEX
- 2) MAINT
- 3) DFCS
- 4) EXTENDED MAINTENANCE
- 5) RIGGING
- 6) AILERON
- 7) AIL RIG
- 8) Do the instructions that show on the CDU display until test 52.01.
NOTE: For detailed data about the AIL RIG test, refer to "Do the Aileron Rigging Check" in (TASK 22-11-00-820-803).
- 9) Make sure that the values for the A side and B side are between the limits that show on the CDU display.
 - a) Test 52.01, AIL POS (VAC), Limits: -0.06 to +0.06
NOTE: Use this CDU display to do the adjustment for the aileron position sensor.



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WARNING: DO NOT PUSH THE LSK THAT IS ADJACENT TO <CONTINUE ON TEST 52.01 WHEN YOU ADJUST THE AILERON POSITION SENSOR. THE A/P ACTUATORS, ROD ASSEMBLIES AND FLIGHT CONTROL SURFACES CAN MOVE WHEN YOU PUSH THE LSK THAT IS ADJACENT TO <CONTINUE. THIS CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

- 10) Adjust the aileron position sensor:

- a) Loosen the bolt [1] on the clamp until you can turn the aileron position sensor.
NOTE: You do not have to remove the bolt [1], washer [2] and nut [3].
- b) Turn the aileron position sensor slowly in the clockwise and counter-clockwise directions until you get a value less than 0.06 VAC.
- c) Tighten the bolt [1] on the clamp to 35 in-lb (4 N·m).
- d) Remove the lockwire on the thumb nut on the micro-adjustment rod (TASK 20-10-44-000-801).
- e) Turn the thumb nut on the micro-adjustment rod until you get a smallest value less than 0.03 VAC.
- f) Install the lockwire on the thumb nut on the micro-adjustment rod (TASK 20-10-44-400-801).

WARNING: KEEP PERSONS AND EQUIPMENT AWAY FROM THE AILERON POSITION SENSOR AND FLIGHT CONTROL SURFACES. THE A/P ACTUATORS, ROD ASSEMBLIES AND FLIGHT CONTROL SURFACES CAN MOVE WHEN YOU PUSH THE LSK THAT IS ADJACENT TO <CONTINUE. THIS CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

- 11) Push the LSK that is adjacent to <CONTINUE (on the CDU display - Test 52.01).
- 12) Do the instructions that show on the CDU display to complete the AIL RIG test.
- 13) Make sure that the values for the A side and B side are between the limits that show on the CDU display.

E. Put the Airplane Back to Its Usual Condition

SUBTASK 22-11-29-860-009

- (1) Push the captain's or first officer's autopilot disengage switch on the control wheel to make sure that the autopilot is disengaged.

SUBTASK 22-11-29-860-032

- (2) Remove the safety tag and close this circuit breaker:

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
D	18	C00451	LANDING GEAR AURAL WARN

SUBTASK 22-11-29-860-011

- (3) Set the autopilot stab trim cutout switch, on the control stand, to the NORMAL position.

SUBTASK 22-11-29-860-012

- (4) Remove hydraulic power from hydraulic systems A and B. To remove hydraulic power, do this task: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805.

EFFECTIVITY	AKS ALL
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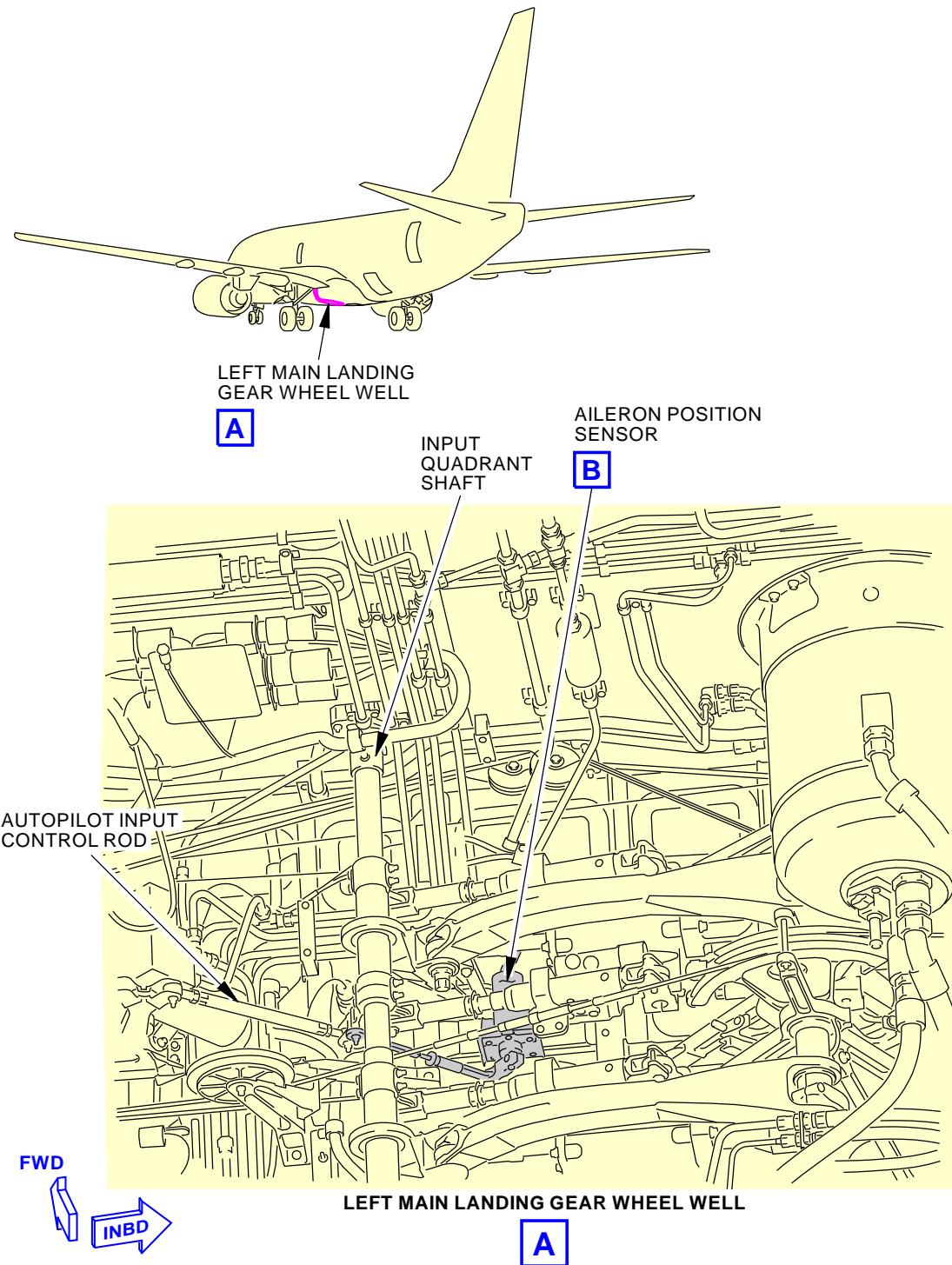
SUBTASK 22-11-29-860-013

- (5) Do this task: Remove Electrical Power, TASK 24-22-00-860-812.

———— END OF TASK ——

EFFECTIVITY
AKS ALL

22-11-29



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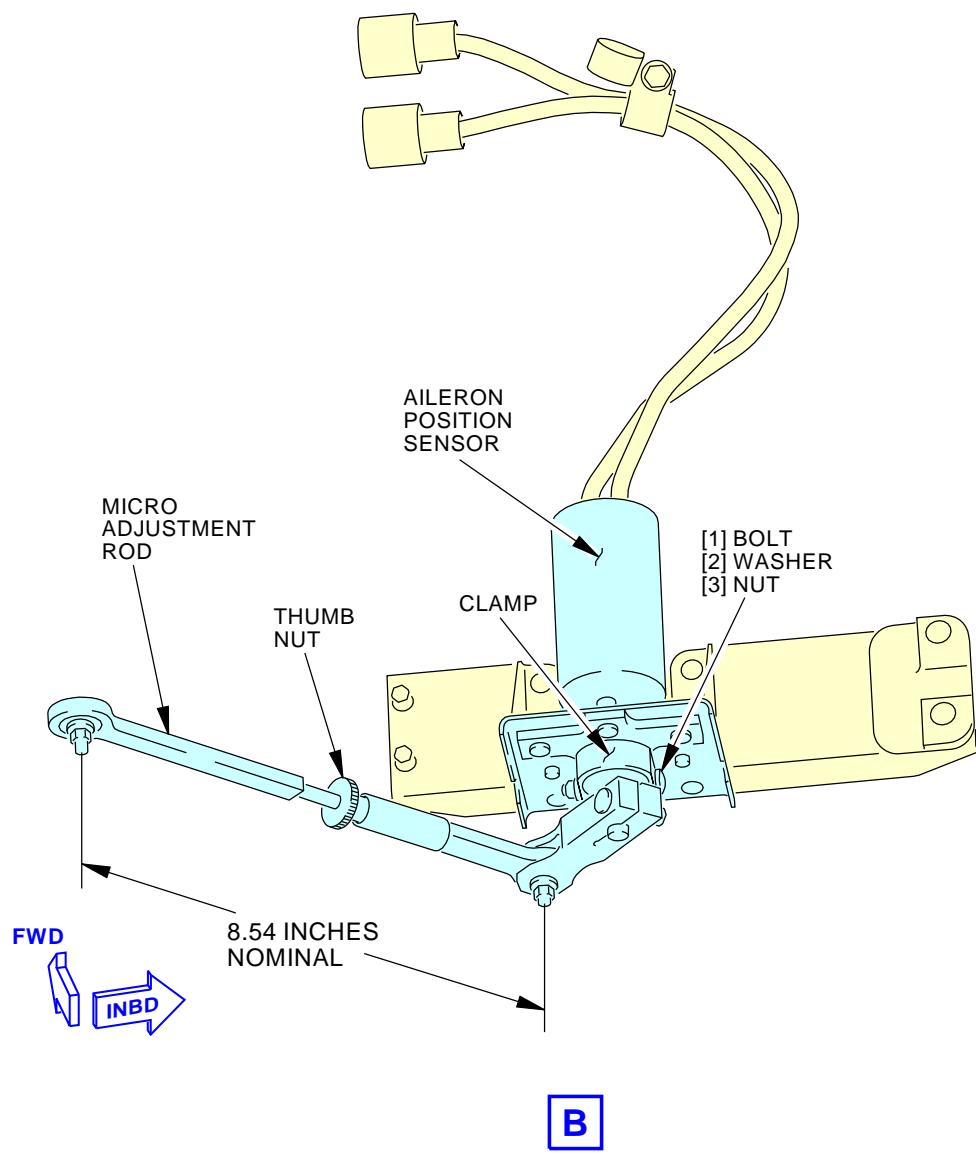
Aileron Position Sensor Adjustment
Figure 501/22-11-29-990-804 (Sheet 1 of 2)

EFFECTIVITY
AKS ALL

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Aileron Position Sensor Adjustment
Figure 501/22-11-29-990-804 (Sheet 2 of 2)

EFFECTIVITY
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TASK 22-11-29-710-801

3. Aileron Position Sensor Test

A. References

Reference	Title
24-22-00-860-811	Supply Electrical Power (P/B 201)
24-22-00-860-812	Remove Electrical Power (P/B 201)
29-11-00-860-801	Hydraulic System A or B Pressurization (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)

B. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

C. Prepare for the Test

SUBTASK 22-11-29-860-015

- (1) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

SUBTASK 22-11-29-860-034

- (2) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
D	18	C00451	LANDING GEAR AURAL WARN

SUBTASK 22-11-29-860-016

- (3) Set the autopilot stab trim cutout switch, on the control stand, to the CUTOUT position.

SUBTASK 22-11-29-860-017

- (4) Make sure that the VHF NAV and IRS switches, on the P5 forward overhead panel, are in the NORMAL positions.

SUBTASK 22-11-29-860-018

- (5) Set the left and right IRS select switches, on the P5 aft overhead panel, to the ALIGN or NAV position.

SUBTASK 22-11-29-860-019

WARNING: KEEP PERSONS AND EQUIPMENT AWAY FROM THE FLIGHT CONTROL SURFACES. THE AILERONS, ELEVATORS, RUDDER, FLAPS, SLATS, SPOILERS, STABILIZER AND NOSE GEAR CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (6) Supply hydraulic power to hydraulic systems A and B. To supply hydraulic power, do this task: Hydraulic System A or B Pressurization, TASK 29-11-00-860-801.

NOTE: Hydraulic power is necessary for surface test.

D. Procedure

SUBTASK 22-11-29-740-001

- (1) Do this BITE test:

- (a) Push the INIT REF key on the CDU keyboard.

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- (b) Push the Line Select Key (LSK) that is adjacent to each selection:

NOTE: If the CONTINUE shows during the BITE test, then do the instructions that show on the CDU display before you push the LSK that is adjacent to CONTINUE. Use the NEXT PAGE or PREV PAGE key to change page if it is necessary.

- 1) INDEX
- 2) MAINT
- 3) DFCS
- 4) LRU REPLACEMENT TESTS
- 5) CHANNEL A AND B
- 6) ROLL SENS
- 7) Do the instructions that show on the CDU to complete the test.
- 8) Make sure that the test is completed with no failure or the "TEST FAILED" message does not show.

E. Put the Airplane Back to Its Usual Condition

SUBTASK 22-11-29-860-020

- (1) Push the captain's or first officer's autopilot disengage switch on the control wheel to make sure that the autopilot is disengaged.

SUBTASK 22-11-29-860-033

- (2) Remove the safety tag and close this circuit breaker:

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	18	C00451	LANDING GEAR AURAL WARN

SUBTASK 22-11-29-860-022

- (3) Set the autopilot stab trim cutout switch, on the control stand, to the NORMAL position.

SUBTASK 22-11-29-860-023

- (4) Remove hydraulic power from hydraulic systems A and B. To remove hydraulic power, do this task: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805.

SUBTASK 22-11-29-860-024

- (5) Do this task: Remove Electrical Power, TASK 24-22-00-860-812.

———— END OF TASK ————



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ELEVATOR POSITION SENSOR - MAINTENANCE PRACTICES

1. General

- A. This procedure has these tasks:
- (1) Elevator Position Sensor Deactivation.
 - (2) Elevator Position Sensor Activation.

TASK 22-11-30-040-801

2. Elevator Position Sensor - Deactivation

(Figure 202)

A. General

- (1) This procedure removes electrical power and hydraulic pressure to Elevator Position Sensor.

B. References

Reference	Title
24-22-00-860-811	Supply Electrical Power (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)

C. Tools/Equipment

Reference	Description
STD-858	Tag - DO NOT OPERATE

D. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right
318	Tail Cone Compartment - Right

E. Procedure

SUBTASK 22-11-30-860-031

WARNING: MAKE SURE THAT PERSONNEL AND EQUIPMENT ARE CLEAR OF THE FLIGHT CONTROLS SURFACES. MAKE SURE THAT THE INBOARD FAN DUCT COWL AND THE INBOARD AND OUTBOARD THRUST REVERSERS ARE CLOSED. THE FLIGHT CONTROL SURFACES CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (1) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
C	4	C00456	AFCS SYS A MACH TRIM AC
C	5	C01041	AFCS SYS A SNSR EXC AC
D	1	C01049	AFCS SYS A WARN LIGHT (BAT)
D	2	C01045	AFCS SYS A FCC DC
D	3	C01048	AFCS SYS A ENGAGE INTLK
D	4	C00457	AFCS SYS A MACH TRIM DC
D	5	C01044	AFCS MCP DC 1

EFFECTIVITY	AKS ALL
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F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	1	C00374	AFCS SYS B WARN LIGHT (BAT)
B	2	C01064	AFCS SYS B MACH TRIM DC
B	3	C01046	AFCS SYS B FCC DC
B	4	C00716	AFCS SYS B ENGAGE INTLK
B	10	C00207	FLIGHT CONTROL STAB TRIM CONT
C	1	C01037	AFCS SYS B MACH TRIM AC
C	2	C01042	AFCS SYS B SNSR EXC AC
C	3	C01047	AFCS MCP DC 2
D	10	C00840	FLIGHT CONTROL STAB TRIM ACTUATOR

SUBTASK 22-11-30-010-006

- (2) Do this task: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805.

SUBTASK 22-11-30-860-034

- (3) Attach DO NOT OPERATE tag, STD-858 to the captain's and first officer's control columns.

F. Elevator Position Sensor - Tryout

NOTE: This tryout is to make sure the Elevator Position Sensor is in a zero energy state.

SUBTASK 22-11-30-860-035

WARNING: MAKE SURE THAT PERSONNEL AND EQUIPMENT ARE CLEAR OF THE FLIGHT CONTROLS SURFACES. MAKE SURE THAT THE INBOARD FAN DUCT COWL AND THE INBOARD AND OUTBOARD THRUST REVERSERS ARE CLOSED. THE FLIGHT CONTROL SURFACES CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (1) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

SUBTASK 22-11-30-860-032

- (2) Make sure that these circuit breakers are open and have safety tags:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	4	C00456	AFCS SYS A MACH TRIM AC
C	5	C01041	AFCS SYS A SNSR EXC AC
D	1	C01049	AFCS SYS A WARN LIGHT (BAT)
D	2	C01045	AFCS SYS A FCC DC
D	3	C01048	AFCS SYS A ENGAGE INTLK
D	4	C00457	AFCS SYS A MACH TRIM DC
D	5	C01044	AFCS MCP DC 1

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	1	C00374	AFCS SYS B WARN LIGHT (BAT)
B	2	C01064	AFCS SYS B MACH TRIM DC
B	3	C01046	AFCS SYS B FCC DC
B	4	C00716	AFCS SYS B ENGAGE INTLK
B	10	C00207	FLIGHT CONTROL STAB TRIM CONT
C	1	C01037	AFCS SYS B MACH TRIM AC



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(Continued)

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	2	C01042	AFCS SYS B SNSR EXC AC
C	3	C01047	AFCS MCP DC 2
D	10	C00840	FLIGHT CONTROL STAB TRIM ACTUATOR

SUBTASK 22-11-30-700-001

- (3) Use the FMC - CDU and do the following test (Figure 201):

- (a) SELECT, INIT/REF on the keyboard.
- (b) SELECT, "INDEX" (LSK 6L).
- (c) SELECT, "MAINT" (LSK 6R).
- (d) SELECT, "DFCS" (LSK 2L).
 - 1) DFCS will run the self test and display as following:
 - FCC-A SELF TEST FAIL
 - FCC-B SELF TEST FAIL
 - CROSS CHANNEL TEST PASS
- (e) SELECT, "CONTINUE" (LSK 6R)
NOTE: Ignore the message that appears.
- (f) SELECT, "CONTINUE" (LSK 6R).
- (g) SELECT, "EXTENDED MAINTENANCE"(LSK 4L).
- (h) SELECT, "SENSOR VALUES"(LSK 4L).
- (i) SELECT, "DISCRETE INPUTS"(LSK 5L).
- (j) SELECT, "CIRCUIT BREAKER CHECK"(LSK 5R).
- (k) SELECT, INIT/REF on the keyboard, to exit of BITE.
- (l) End of test.

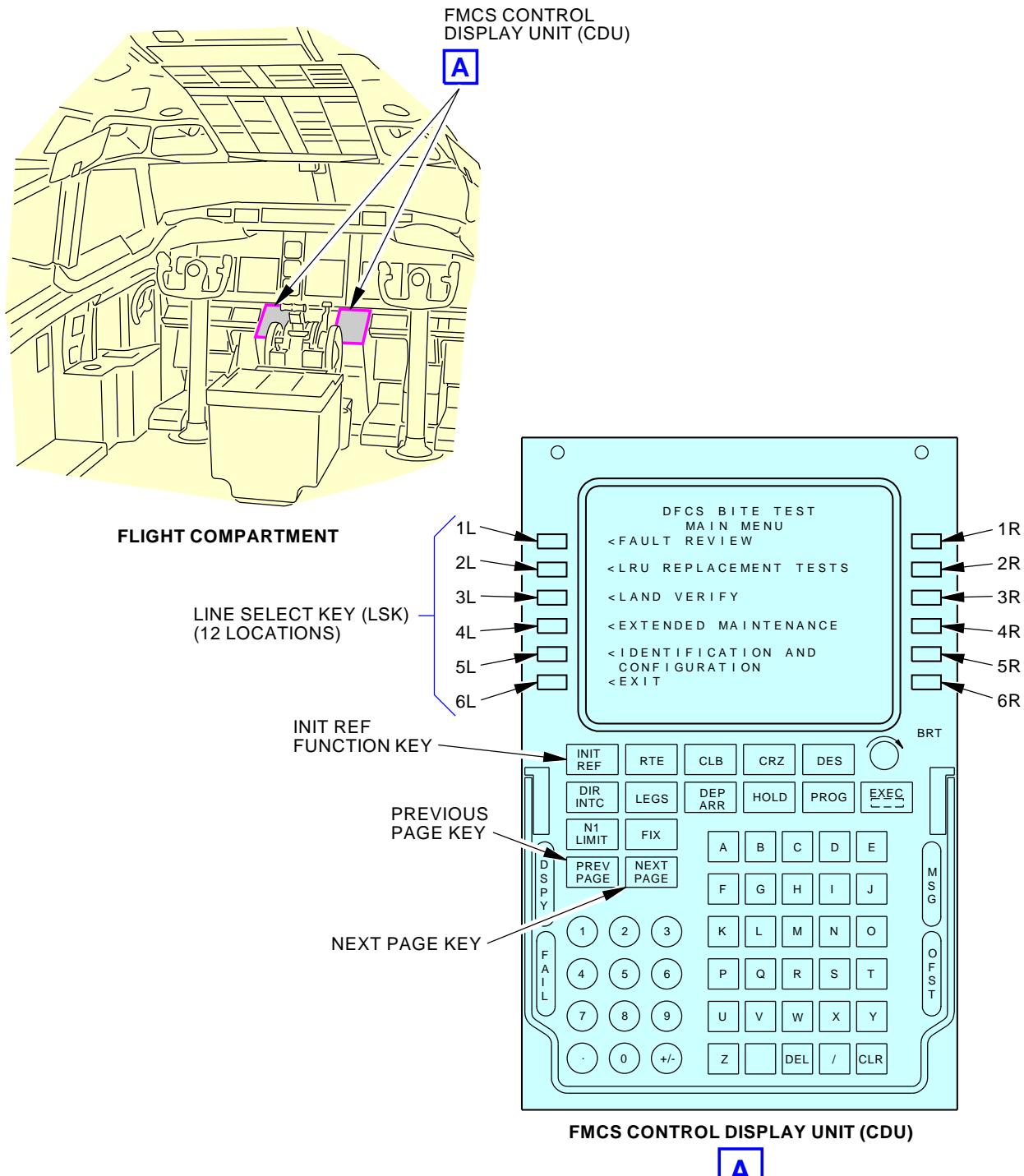
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EFFECTIVITY
AKS ALL

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Flight Management Computer Control Display Unit
Figure 201/22-11-30-990-810

EFFECTIVITY
AKS ALL

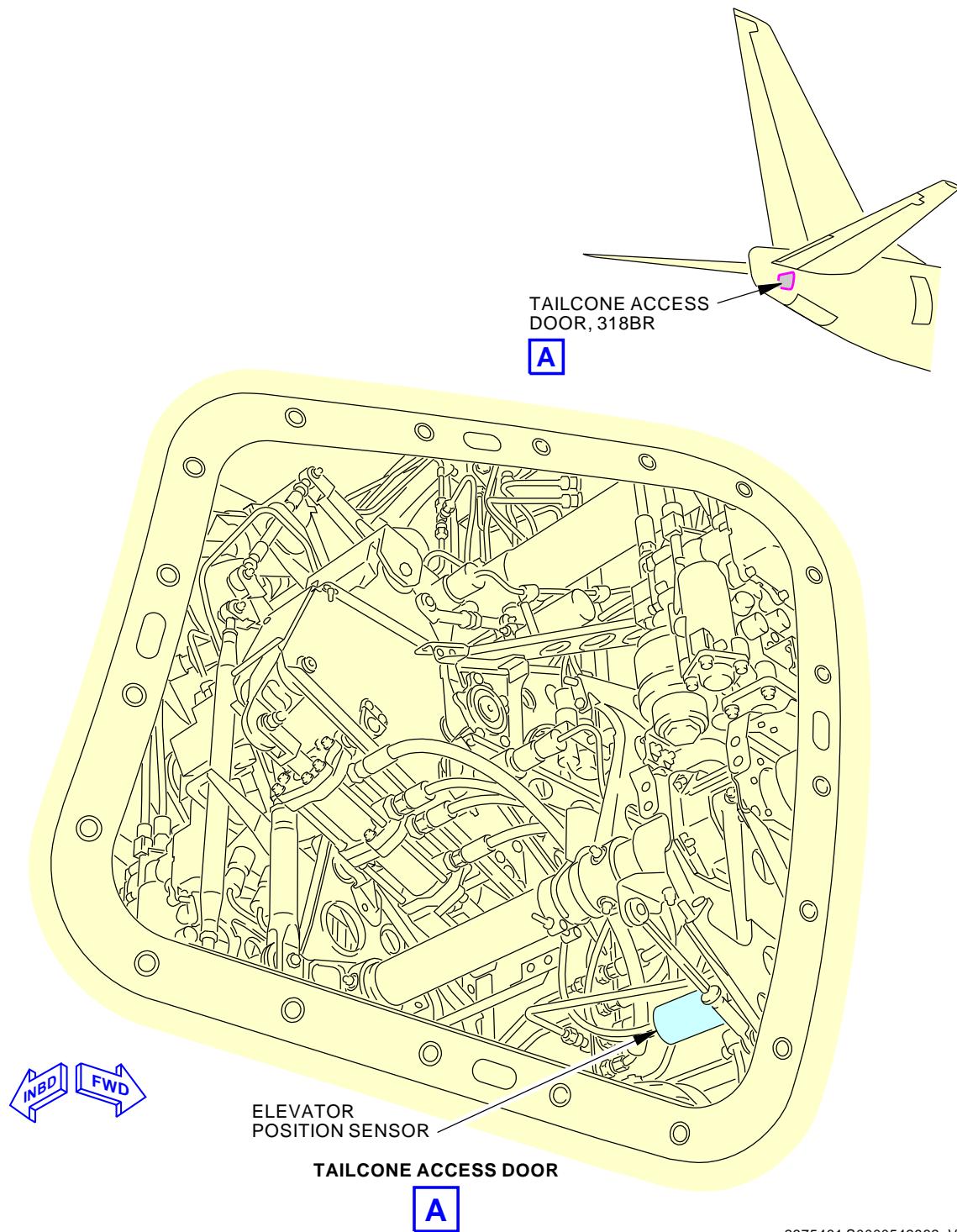
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Elevator Position Sensor
Figure 202/22-11-30-990-809

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TASK 22-11-30-440-801

3. Elevator Position Sensor - Activation

(Figure 202)

A. General

- (1) This procedure adds electrical power and hydraulic pressure to Elevator Position Sensor.

B. References

Reference	Title
29-11-00-860-801	Hydraulic System A or B Pressurization (P/B 201)

C. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right
318	Tail Cone Compartment - Right

D. Procedure

SUBTASK 22-11-30-860-033

WARNING: MAKE SURE THAT PERSONNEL AND EQUIPMENT ARE CLEAR OF THE FLIGHT CONTROLS SURFACES. MAKE SURE THAT THE INBOARD FAN DUCT COWL AND THE INBOARD AND OUTBOARD THRUST REVERSERS ARE CLOSED. THE FLIGHT CONTROL SURFACES CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (1) Make sure that these circuit breakers are open and have safety tags:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
C	4	C00456	AFCS SYS A MACH TRIM AC
C	5	C01041	AFCS SYS A SNSR EXC AC
D	1	C01049	AFCS SYS A WARN LIGHT (BAT)
D	2	C01045	AFCS SYS A FCC DC
D	3	C01048	AFCS SYS A ENGAGE INTLK
D	4	C00457	AFCS SYS A MACH TRIM DC
D	5	C01044	AFCS MCP DC 1

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	1	C00374	AFCS SYS B WARN LIGHT (BAT)
B	2	C01064	AFCS SYS B MACH TRIM DC
B	3	C01046	AFCS SYS B FCC DC
B	4	C00716	AFCS SYS B ENGAGE INTLK
B	10	C00207	FLIGHT CONTROL STAB TRIM CONT
C	1	C01037	AFCS SYS B MACH TRIM AC
C	2	C01042	AFCS SYS B SNSR EXC AC
C	3	C01047	AFCS MCP DC 2
D	10	C00840	FLIGHT CONTROL STAB TRIM ACTUATOR



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SUBTASK 22-11-30-410-005

- (2) Do this task: Hydraulic System A or B Pressurization, TASK 29-11-00-860-801.

———— END OF TASK ————

EFFECTIVITY
AKS ALL

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ELEVATOR POSITION SENSOR - REMOVAL/INSTALLATION

1. General

- A. This procedure has these tasks:
 - (1) The removal of the elevator position sensor.
 - (2) The installation of the elevator position sensor.
- B. The elevator position sensor (M929) is on the input torque tube adjacent to the lower right hand control quadrant located at Body Station 1156.

TASK 22-11-30-000-801

2. Elevator Position Sensor Removal

(Figure 401)

A. Location Zones

Zone	Area
317	Tail Cone Compartment - Left
318	Tail Cone Compartment - Right

B. Access Panels

Number	Name/Location
318BR	Tailcone Access Door

C. Prepare for the Removal

SUBTASK 22-11-30-860-021

- (1) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
C	4	C00456	AFCS SYS A MACH TRIM AC
C	5	C01041	AFCS SYS A SNSR EXC AC
D	1	C01049	AFCS SYS A WARN LIGHT (BAT)
D	2	C01045	AFCS SYS A FCC DC
D	3	C01048	AFCS SYS A ENGAGE INTLK
D	4	C00457	AFCS SYS A MACH TRIM DC
D	5	C01044	AFCS MCP DC 1

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	1	C00374	AFCS SYS B WARN LIGHT (BAT)
B	2	C01064	AFCS SYS B MACH TRIM DC
B	3	C01046	AFCS SYS B FCC DC
B	4	C00716	AFCS SYS B ENGAGE INTLK
B	10	C00207	FLIGHT CONTROL STAB TRIM CONT
C	1	C01037	AFCS SYS B MACH TRIM AC
C	2	C01042	AFCS SYS B SNSR EXC AC
C	3	C01047	AFCS MCP DC 2
D	10	C00840	FLIGHT CONTROL STAB TRIM ACTUATOR



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SUBTASK 22-11-30-010-003

- (2) Open this access door:

Number Name/Location

318BR Tailcone Access Door

D. Procedure

SUBTASK 22-11-30-020-001

- (1) Disconnect the electrical connector [1].

SUBTASK 22-11-30-020-002

- (2) Do these steps to remove the elevator position sensor [6]:

- (a) Remove the bolt [7], washer [3], and nut [4] in the crank [5].
- (b) Remove the bolt [2], washer [3] and nut [4] in the bracket.
- (c) Remove the elevator position sensor [6].

———— END OF TASK ————

EFFECTIVITY
AKS ALL

22-11-30

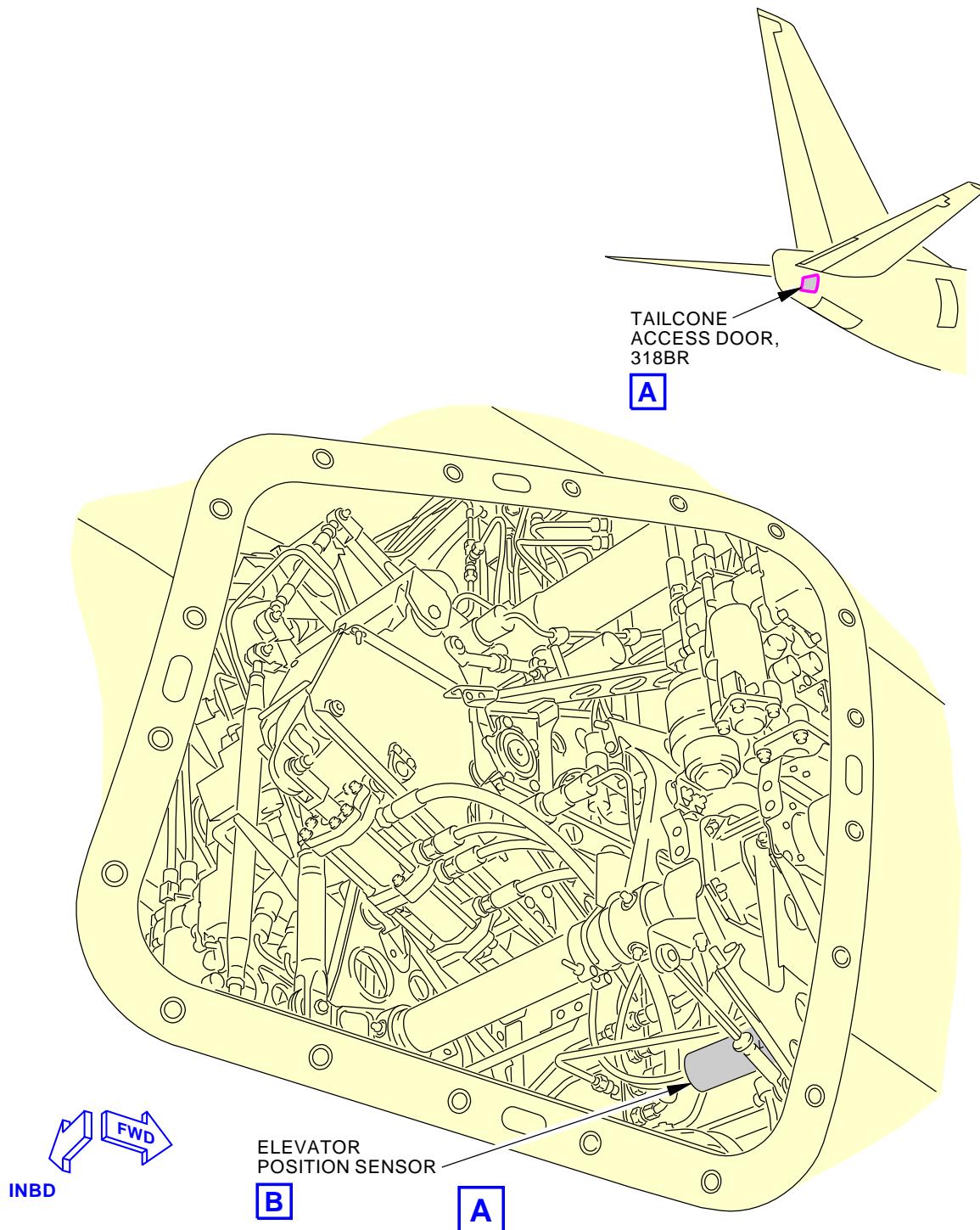
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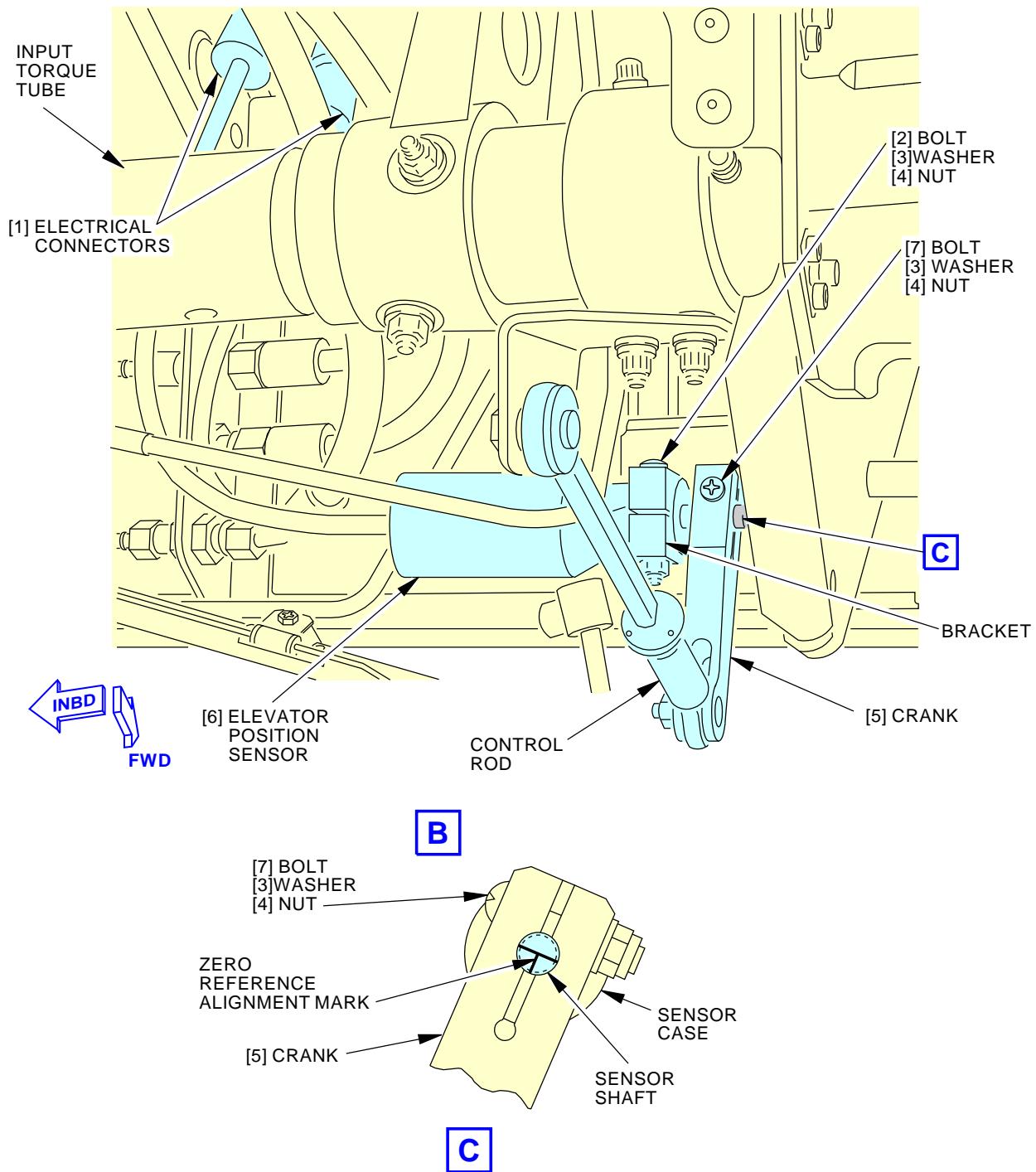
Elevator Position Sensor Installation
Figure 401/22-11-30-990-805 (Sheet 1 of 2)

EFFECTIVITY
AKS ALL

D633A101-AKS

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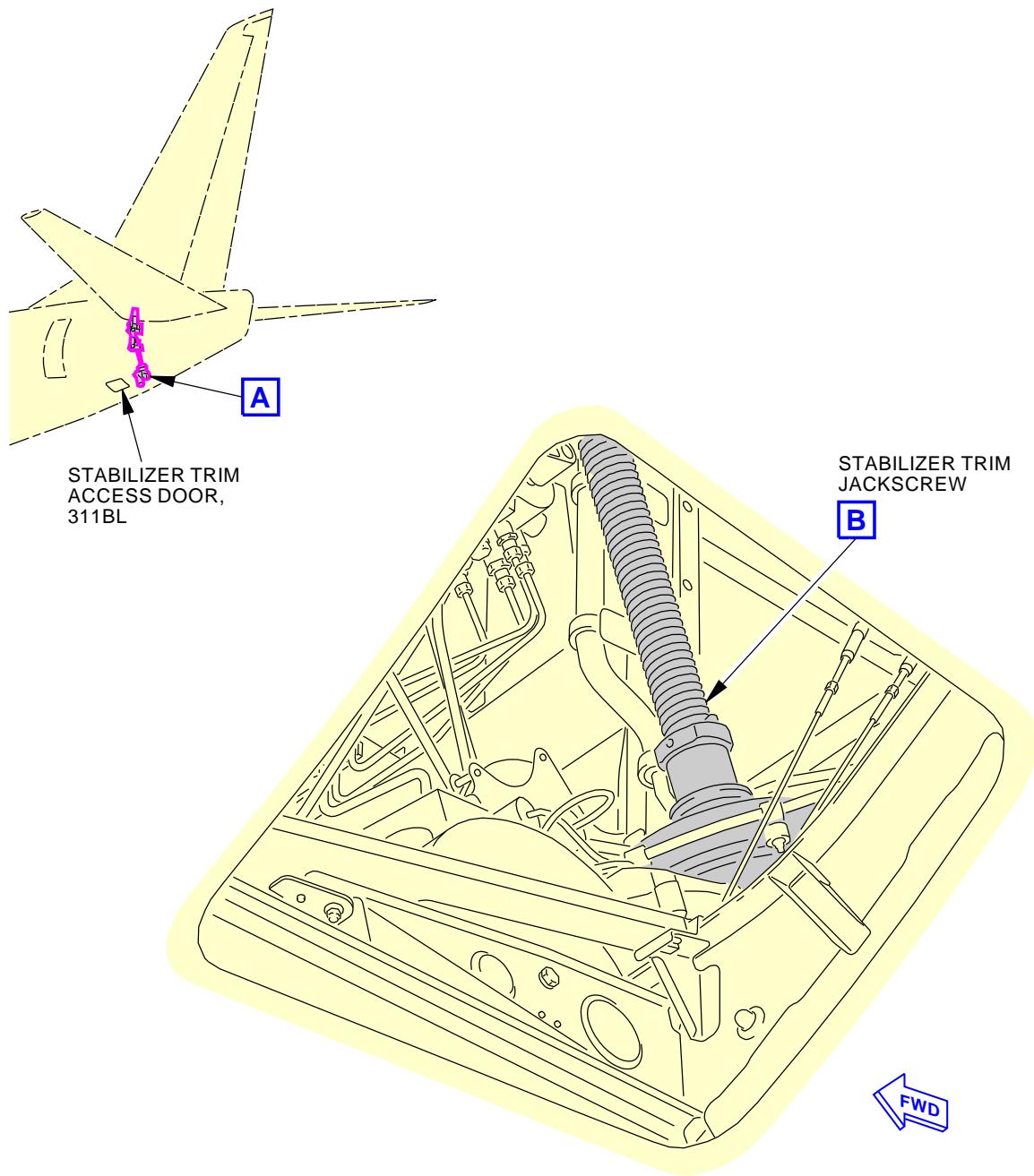
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Elevator Position Sensor Installation
Figure 401/22-11-30-990-805 (Sheet 2 of 2)

EFFECTIVITY
AKS ALL

22-11-30

D633A101-AKS



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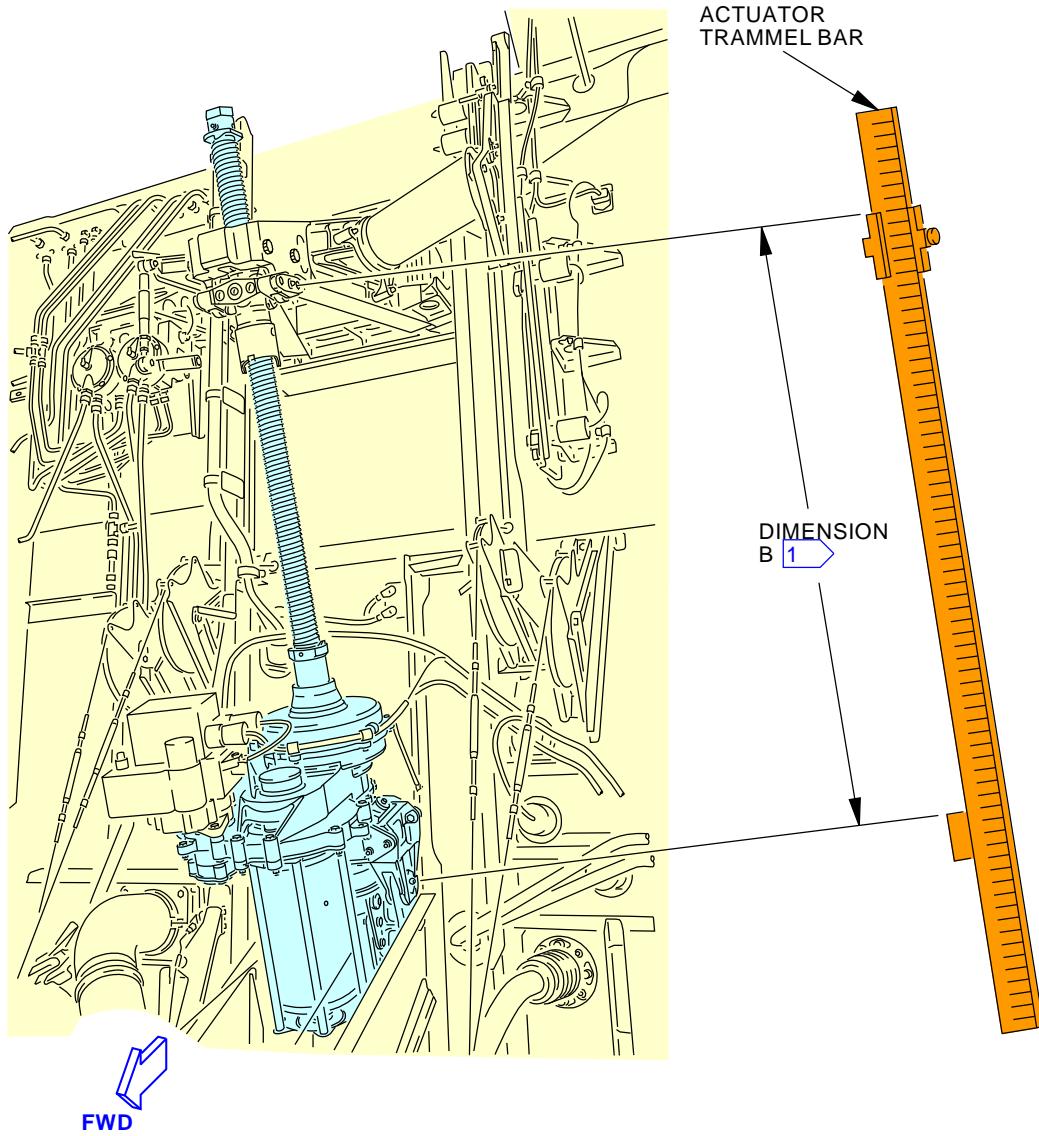
Stabilizer Trim Jackscrew Setting
Figure 402/22-11-30-990-806 (Sheet 1 of 2)

EFFECTIVITY
AKS ALL

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**NOTE:**

THE STABILIZER TRIM JACKSCREW IS SHOWN WITH THE STABILIZER LEADING EDGE AT ZERO DEGREE.

- 1** THE DIMENSION B IS MEASURED BETWEEN THE CENTER OF THE UPPER AND LOWER GIMBAL PINS.

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Stabilizer Trim Jackscrew Setting
Figure 402/22-11-30-990-806 (Sheet 2 of 2)

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TASK 22-11-30-400-801

3. Elevator Position Sensor Installation

Figure 401

A. References

Reference	Title
22-11-00-820-808	Mach Trim Rigging Test (P/B 501)
22-11-30-710-801	Elevator Position Sensor Test (P/B 501)
22-11-30-820-801	Elevator Position Sensor Adjustment and Test (P/B 501)
22-11-30-990-808	Figure: Stabilizer Trim Jackscrew Setting (P/B 501)

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1677	Assembly - Trammel Bar, Stabilizer Trim Actuator
	Part #: F80055-10 Supplier: 81205
	Opt Part #: F80055-1 Supplier: 81205

C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
6	Sensor	31-31-51-02-105	AKS ALL

D. Location Zones

Zone	Area
118	Electrical and Electronics Compartment - Right
311	Area Aft of Pressure Bulkhead - Left
316	APU Compartment - Right
317	Tail Cone Compartment - Left
318	Tail Cone Compartment - Right

E. Access Panels

Number	Name/Location
311BL	Stabilizer Trim Access Door
318BR	Tailcone Access Door

F. Prepare for the Installation

SUBTASK 22-11-30-010-004

- (1) Make sure you remove this access panel:

Number	Name/Location
318BR	Tailcone Access Door

SUBTASK 22-11-30-010-005

- (2) To get access to the stabilizer trim jackscrew, do this step:

Open this access panel:

Number	Name/Location
311BL	Stabilizer Trim Access Door

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SUBTASK 22-11-30-980-002

- (3) Do these steps to set the B dimension (Figure 22-11-30-990-808):

NOTE: The B dimension is measured between the center of the upper and lower Gimbal pins on the stabilizer trim jackscrew. To do this, one person must be in the tail of the airplane with a headset and the other person in the flight compartment

- (a) Turn the stab trim wheel handle on the control stand to set the B dimension.

NOTE: This B dimension is equivalent to the horizontal stabilizer at 4 units of trim (zero degrees).

- (b) Use the trammel bar, SPL-1677, to measure the B dimension.

- 1) Make sure that the B dimension is 39.89 ± 0.01 in. (1013.21 ± 0.26 mm).

SUBTASK 22-11-30-800-001

- (4) Do these steps to make sure that the mach trim actuator is at the null position:

- (a) Push the INIT REF key on the CDU keyboard.

- (b) Push the Line Select Key (LSK) that is adjacent to each selection:

1) INDEX

2) MAINT

3) DFCS

4) EXTENDED MAINTENANCE

5) RIGGING

6) ELEVATOR

NOTE: After you make this selection, CONTINUE shows. Do the instructions that show on the CDU display before you push the LSK that is adjacent to CONTINUE.

7) CONTINUE

8) COMPLETE ELEV RIG

9) During this test, do the instructions that show on the CDU display.

10) After you do the instructions that show on the CDU display, push the LSK that is adjacent to CONTINUE.

- (c) Do this elevator rigging check:

NOTE: These steps make sure the mach trim actuator is at the null position.

- 1) Make sure that the values for the A and B sides are between the limits that show on the CDU display or in this task.

Table 401/22-11-30-993-801

TEST NUMBER	DFCS BIT TEST	UPPER AND LOWER LIMITS
51.01	STAB POS (VAC)	-0.07 to 0.07

- 2) Use the trammel bar, SPL-1677, to measure the B dimension.

- 3) Make sure that the B dimension is 39.89 ± 0.01 in. (1013.21 ± 0.26 mm).

Table 402/22-11-30-993-802

TEST NUMBER	DFCS BIT TEST	UPPER AND LOWER LIMITS
51.02	MT ACT POS (VAC)	-6.10 to -8.43

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Table 402/22-11-30-993-802 (Continued)

	Note: No value for B side; N/A	
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Table 403/22-11-30-993-803

TEST NUMBER	DFCS BIT TEST	UPPER AND LOWER LIMITS
51.03	MT ACT POS (VAC)	-0.10 to 0.10
	Note: No value for B side; N/A	

- (d) If the value of A is greater than the limits, do this task: Mach Trim Rigging Test, TASK 22-11-00-820-808.

SUBTASK 22-11-30-860-026

- (5) Make sure that these circuit breakers are open and have safety tags:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	4	C00456	AFCS SYS A MACH TRIM AC
C	5	C01041	AFCS SYS A SNSR EXC AC
D	1	C01049	AFCS SYS A WARN LIGHT (BAT)
D	2	C01045	AFCS SYS A FCC DC
D	3	C01048	AFCS SYS A ENGAGE INTLK
D	4	C00457	AFCS SYS A MACH TRIM DC
D	5	C01044	AFCS MCP DC 1

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	1	C00374	AFCS SYS B WARN LIGHT (BAT)
B	2	C01064	AFCS SYS B MACH TRIM DC
B	3	C01046	AFCS SYS B FCC DC
B	4	C00716	AFCS SYS B ENGAGE INTLK
B	10	C00207	FLIGHT CONTROL STAB TRIM CONT
C	1	C01037	AFCS SYS B MACH TRIM AC
C	2	C01042	AFCS SYS B SNSR EXC AC
C	3	C01047	AFCS MCP DC 2
D	10	C00840	FLIGHT CONTROL STAB TRIM ACTUATOR

G. Procedure

SUBTASK 22-11-30-820-002

- (1) Align the reference mark on the sensor case with the reference mark on the sensor shaft.

SUBTASK 22-11-30-420-001

- (2) Install the elevator position sensor [6]:

- (a) Put the elevator position sensor [6] into the bracket and the crank [5] with the zero reference alignment mark aligned with the slot in the crank [5].
- (b) Install the bolt [7], washer [3] and nut [4] in the crank [5].
 - 1) Tighten the bolt [7] to 35 in-lb (4 N·m).
- (c) Install the bolt [2], washer [3] and nut [4] in the bracket.
 - 1) Tighten the bolt [2] to 35 in-lb (4 N·m).

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SUBTASK 22-11-30-420-002

- (3) Connect the electrical connector [1].

SUBTASK 22-11-30-860-023

- (4) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	4	C00456	AFCS SYS A MACH TRIM AC
C	5	C01041	AFCS SYS A SNSR EXC AC
D	1	C01049	AFCS SYS A WARN LIGHT (BAT)
D	2	C01045	AFCS SYS A FCC DC
D	3	C01048	AFCS SYS A ENGAGE INTLK
D	4	C00457	AFCS SYS A MACH TRIM DC
D	5	C01044	AFCS MCP DC 1

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	1	C00374	AFCS SYS B WARN LIGHT (BAT)
B	2	C01064	AFCS SYS B MACH TRIM DC
B	3	C01046	AFCS SYS B FCC DC
B	4	C00716	AFCS SYS B ENGAGE INTLK
B	10	C00207	FLIGHT CONTROL STAB TRIM CONT
C	1	C01037	AFCS SYS B MACH TRIM AC
C	2	C01042	AFCS SYS B SNSR EXC AC
C	3	C01047	AFCS MCP DC 2
D	10	C00840	FLIGHT CONTROL STAB TRIM ACTUATOR

SUBTASK 22-11-30-820-003

- (5) Do this task: Elevator Position Sensor Adjustment and Test, TASK 22-11-30-820-801.

SUBTASK 22-11-30-710-001

- (6) Do this task: Elevator Position Sensor Test, TASK 22-11-30-710-801.

SUBTASK 22-11-30-410-003

- (7) Close this access panel:

<u>Number</u>	<u>Name/Location</u>
311BL	Stabilizer Trim Access Door

SUBTASK 22-11-30-410-004

- (8) Install this access panel:

<u>Number</u>	<u>Name/Location</u>
318BR	Tailcone Access Door

———— END OF TASK ————



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ELEVATOR POSITION SENSOR - ADJUSTMENT/TEST

1. General

- A. This procedure has these tasks:
 - (1) Elevator Position Sensor Adjustment and Test.
 - (2) Elevator Position Sensor Test.
- B. The elevator position sensor is on the input torque tube adjacent to the lower right hand control quadrant located a aft bulkhead station 1156.

TASK 22-11-30-820-801

2. Elevator Position Sensor Adjustment and Test

(Figure 501)

A. References

Reference	Title
20-10-44-000-801	Lockwire, Cotter Pins, and Lockrings - Removal (P/B 401)
20-10-44-400-801	Lockwire, Cotter Pins, and Lockrings - Installation (P/B 401)
24-22-00-860-811	Supply Electrical Power (P/B 201)
24-22-00-860-812	Remove Electrical Power (P/B 201)
29-11-00-860-801	Hydraulic System A or B Pressurization (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1677	Assembly - Trammel Bar, Stabilizer Trim Actuator Part #: F80055-10 Supplier: 81205 Opt Part #: F80055-1 Supplier: 81205

C. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right
311	Area Aft of Pressure Bulkhead - Left

D. Access Panels

Number	Name/Location
311BL	Stabilizer Trim Access Door
318BR	Tailcone Access Door

E. Prepare for the Adjustment

SUBTASK 22-11-30-010-001

- (1) Open this access door:

Number	Name/Location
318BR	Tailcone Access Door



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SUBTASK 22-11-30-010-002

- (2) To get access to the stabilizer trim jackscrew, open this access door:

Number Name/Location

311BL Stabilizer Trim Access Door

SUBTASK 22-11-30-860-001

- (3) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

SUBTASK 22-11-30-860-030

- (4) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
D	18	C00451	LANDING GEAR AURAL WARN

SUBTASK 22-11-30-980-001

- (5) Do these steps to set the B dimension (Figure 502):

NOTE: The B dimension is measured between the center of the upper and lower Gimbal pins on the stabilizer trim jackscrew. To do this, one person must be in the tail of the airplane with a headset and the other person in the flight compartment

- (a) Make sure that the main stabilizer trim cutout switch on the control stand is in the NORMAL position.

WARNING: STAY AWAY FROM THE STABILIZER TRIM WHEEL ON THE CONTROL STAND IF YOU USE THE STABILIZER TRIM SWITCH ON THE CONTROL WHEEL. THE STABILIZER TRIM SWITCH CAN CAUSE THE STABILIZER TRIM WHEEL TO TURN VERY FAST. INJURY TO PERSONS MAY OCCUR IF YOU TOUCH IT WHEN IT TURNS.

- (b) Set the B dimension to 39.89 ± 0.01 in. (1013.21 ± 0.26 mm).

NOTE: This B dimension is equivalent to the horizontal stabilizer at 4 units of trim.

- (c) Use the trammel bar, SPL-1677, to measure the B dimension.

- 1) Make sure that the B dimension is 39.89 ± 0.01 in. (1013.21 ± 0.26 mm).

SUBTASK 22-11-30-860-003

- (6) Set the autopilot stabilizer trim cutout switch, on the control stand, to the CUTOUT position.

SUBTASK 22-11-30-860-004

- (7) Make sure that the VHF NAV and IRS switches, on the P5 forward overhead panel, are in the NORMAL positions.

SUBTASK 22-11-30-860-005

- (8) Set the left and right IRS select switches, on the P5 aft overhead panel, to the ALIGN or NAV position.

SUBTASK 22-11-30-860-027

WARNING: KEEP PERSONS AND EQUIPMENT AWAY FROM THE FLIGHT CONTROL SURFACES. THE AILERONS, ELEVATORS, RUDDER, FLAPS, SLATS, SPOILERS, STABILIZER AND NOSE GEAR CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (9) Supply hydraulic power to hydraulic systems A and B. To supply hydraulic power, do this task: Hydraulic System A or B Pressurization, TASK 29-11-00-860-801.

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F. Procedure

SUBTASK 22-11-30-820-001

- (1) Push the INIT REF key on the CDU keyboard.

SUBTASK 22-11-30-820-004

- (2) Push the Line Select Key (LSK) that is adjacent to each selection:

NOTE: If the CONTINUE shows during the BITE test, then do the instructions that show on the CDU display before you push the LSK that is adjacent to CONTINUE. Use the NEXT PAGE or PREV PAGE key to change page if it is necessary.

- (a) INDEX
- (b) MAINT
- (c) DFCS
- (d) EXTENDED MAINTENANCE
- (e) RIGGING
- (f) ELEVATOR
- (g) CONTINUE
- (h) CONTINUE
- (i) ELEV RIG

SUBTASK 22-11-30-820-009

- (3) The CDU will display screen 51.01.
(4) Make sure that the jackscrew B dimension equals 39.89 ± 0.01 in. (1013.21 ± 0.26 mm), which is equal to the horizontal stabilizer set at 0 degrees (4 units of trim).
(a) Make sure that the A and B values are within the limits shown on the CDU.

SUBTASK 22-11-30-740-002

- (5) Select CONTINUE to advance to test 51.02.

SUBTASK 22-11-30-820-010

- (6) Select CONTINUE to advance to test 51.03

SUBTASK 22-11-30-740-003

- (7) Make sure that the A value is within the limits shown on the CDU.

NOTE: For tests 51.03, there is no value for the B side.

SUBTASK 22-11-30-820-011

- (8) Select CONTINUE on screen 51.03

SUBTASK 22-11-30-860-028

- (9) Lightly jiggle the control column to center the system.

SUBTASK 22-11-30-740-004

- (10) Select CONTINUE to advance to test 51.04.

SUBTASK 22-11-30-820-012

- (11) Make sure that the right Elevator trailing edge is aligned with the tailcone index within plus or minus 0.06 in. (1.52 mm).

SUBTASK 22-11-30-820-005

- (12) Do these steps to adjust the elevator position sensor:

- (a) Loosen the bolt [1] on the bracket until you can turn the elevator position sensor.

NOTE: You do not have to remove the bolt [1], washer [2] and nut [3].

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- (b) Turn the elevator position sensor slowly in the clockwise and counterclockwise directions until you get a value of -0.50 (0 max, -1 min) VAC.
- (c) Tighten the bolt [1] on the bracket to 30 in-lb (3.4 N·m) to 35 in-lb (4 N·m).
- (d) Do this step again and again until no more adjustment is necessary.

SUBTASK 22-11-30-820-013

- (13) Do these steps to fine adjust the elevator position sensor:
 - (a) Do these steps to adjust the elevator position sensor (Figure 501):
 - 1) Remove the lockwire on the micro-adjustment nut (TASK 20-10-44-000-801).
 - 2) Turn the micro-adjustment nut until you get a value of -0.50 ± 0.03 VAC.
 - (b) Install the lockwire on the micro-adjustment nut (TASK 20-10-44-400-801) monitoring the voltage for test 51.04 to make sure that the value remains within -0.50 ± 0.03 VAC.

SUBTASK 22-11-30-820-014

- (14) Set the stabilizer to 11.6 units of trim.
 - (a) Make sure that the B dimension equals 29.00 ± 0.01 in. (736.60 ± 0.25 mm).
- (15) Lightly jiggle the control column to center the system.
 - (a) Make sure that the voltage for the A and B value of screen 51.04 read 0.00 ± 0.07 VAC.

NOTE: Ignore the limits on FMC-CDU screen for this step.

NOTE: If the voltage does not fall within tolerance limits then check to make sure adjustment rod length is 6.70 ± 0.02 in. (170.18 ± 0.51 mm) and installed correctly. Adjust the micro-adjustment rod 69-43490 using the knurled thumbnut to obtain a reading of $0.00 \pm .07$ VAC.

SUBTASK 22-11-30-820-015

- (16) Continue to adjust as necessary to make sure the voltage readings in steps B.(13)(a)2 and B.(15)(a) meet the tolerance requirements after the micro-adjustment rod thumbnut has been lockwired.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 22-11-30-860-006

- (1) Push the captain's or first officer's autopilot disengage switch, on the control wheel, to make sure that the autopilot is disengaged.

SUBTASK 22-11-30-860-024

- (2) Remove the safety tag and close this circuit breaker:

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	18	C00451	LANDING GEAR AURAL WARN

SUBTASK 22-11-30-860-008

- (3) Set the autopilot stabilizer trim cutout switch, on the control stand, to the NORMAL position.

SUBTASK 22-11-30-860-009

- (4) Remove hydraulic power from hydraulic systems A and B. To remove hydraulic power, do this task: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805.

SUBTASK 22-11-30-860-010

- (5) Do this task: Remove Electrical Power, TASK 24-22-00-860-812.

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SUBTASK 22-11-30-410-001

- (6) Close this access door:

Number Name/Location

318BR Tailcone Access Door

SUBTASK 22-11-30-410-002

- (7) Close this access door:

Number Name/Location

311BL Stabilizer Trim Access Door

———— END OF TASK ————

EFFECTIVITY
AKS ALL

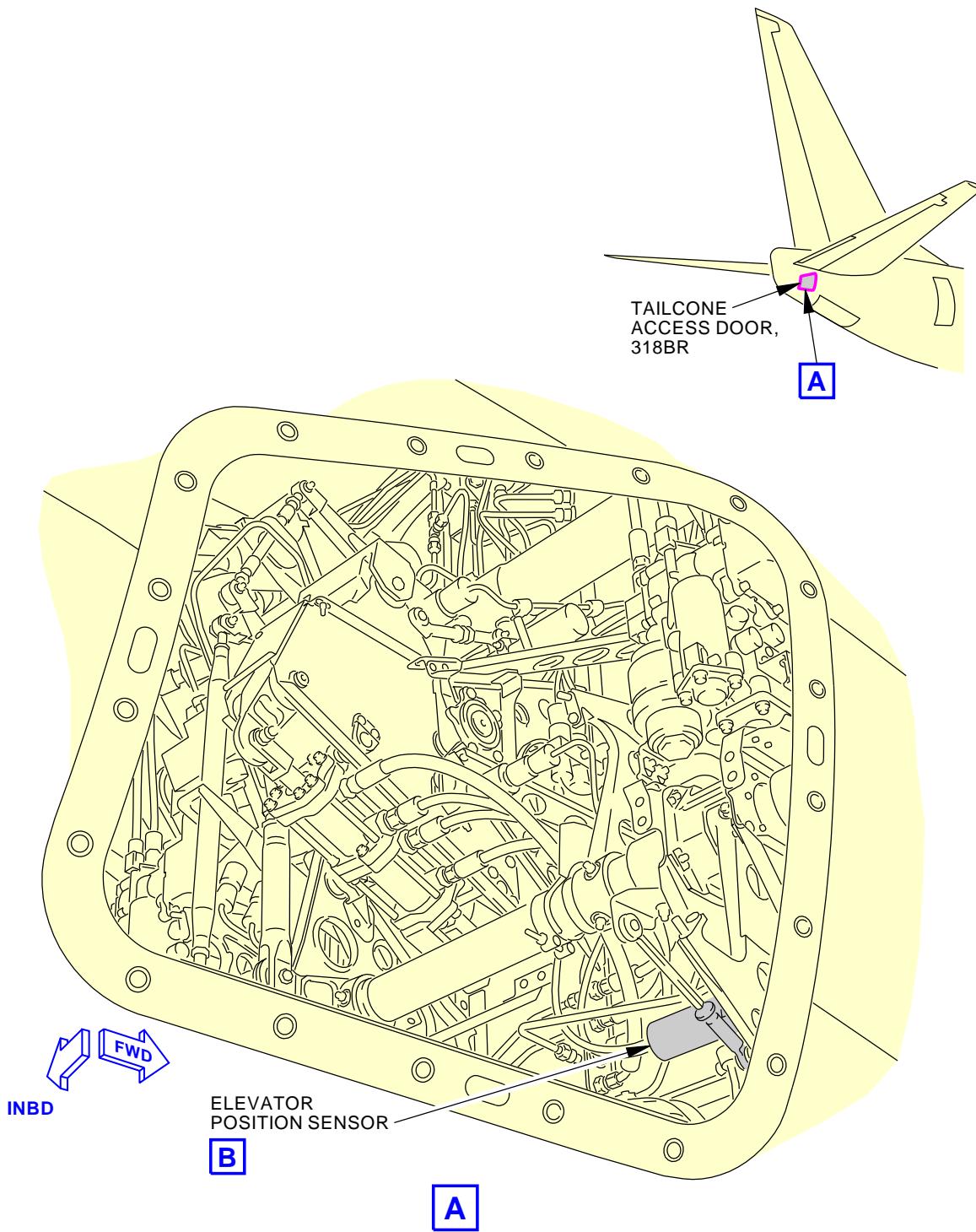
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Elevator Position Sensor Adjustment
Figure 501/22-11-30-990-807 (Sheet 1 of 2)

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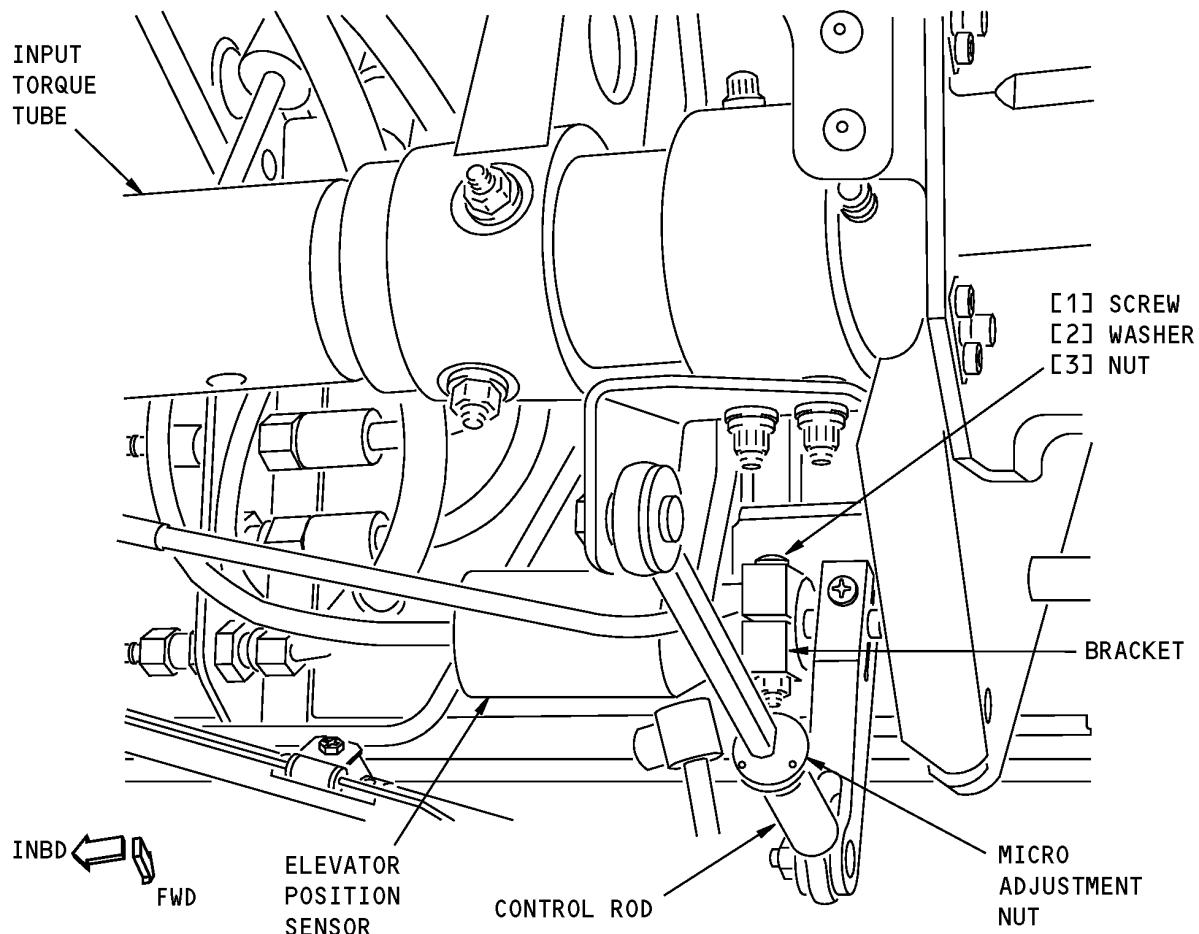
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B

Elevator Position Sensor Adjustment
Figure 501/22-11-30-990-807 (Sheet 2 of 2)

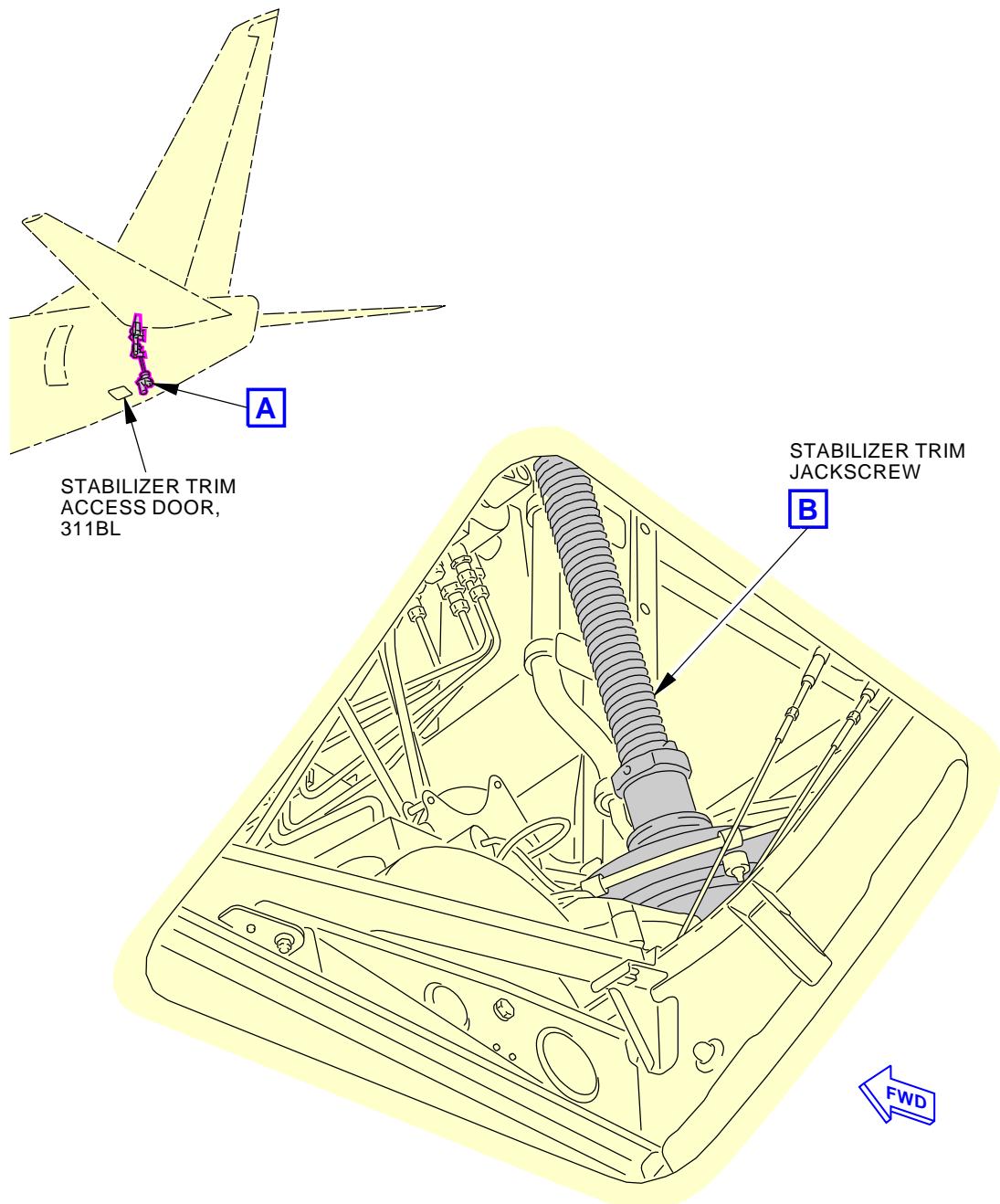
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VIEW WHEN YOU LOOK UP THROUGH THE STABILIZER TRIM ACCESS DOOR

A

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Stabilizer Trim Jackscrew Setting
Figure 502/22-11-30-990-808 (Sheet 1 of 2)

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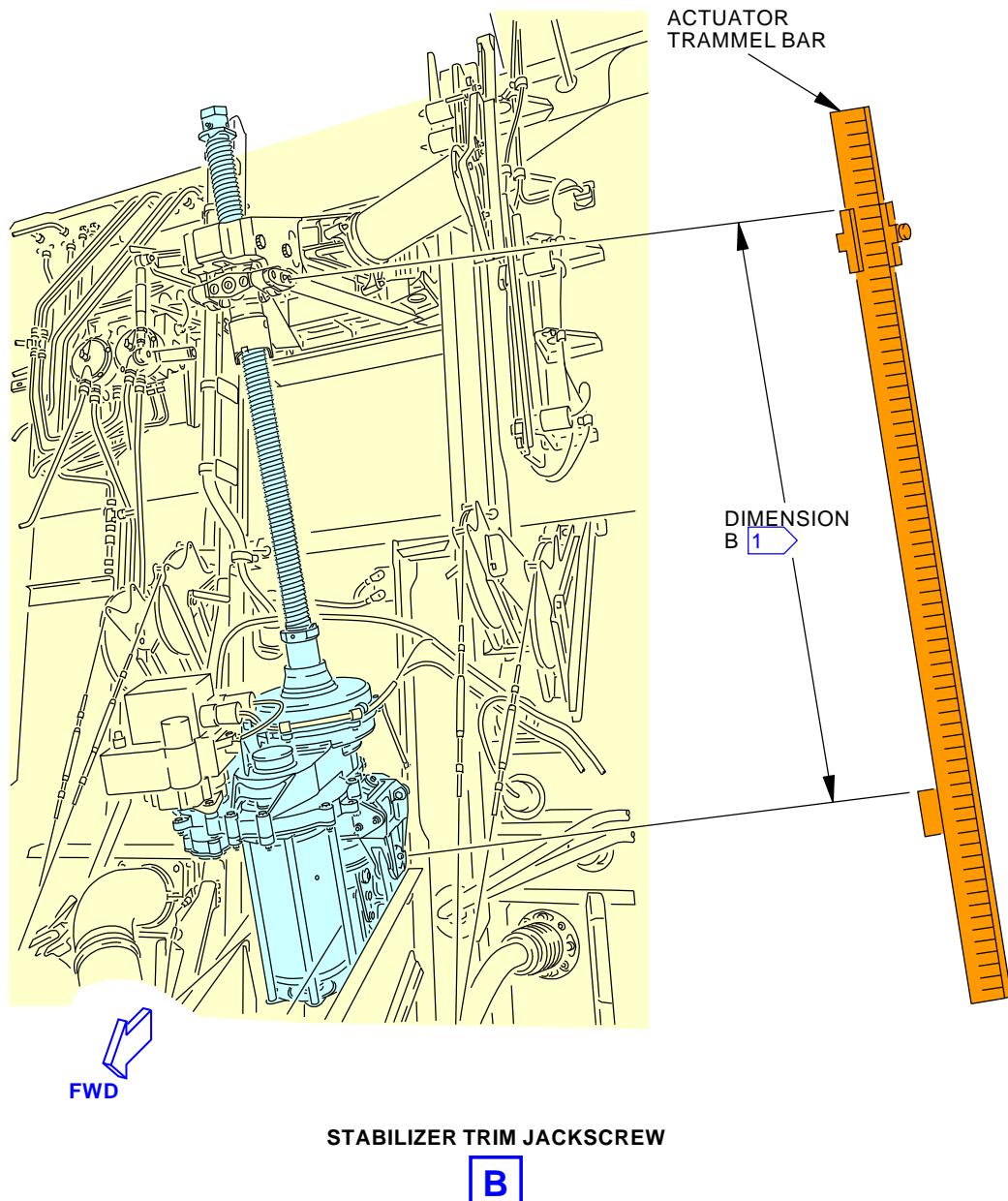
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**NOTE:**

THE STABILIZER TRIM JACKSCREW IS SHOWN WITH THE STABILIZER LEADING EDGE AT ZERO DEGREE.

- 1** THE DIMENSION B IS MEASURED BETWEEN THE CENTER OF THE UPPER AND LOWER GIMBAL PINS.

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Stabilizer Trim Jackscrew Setting
Figure 502/22-11-30-990-808 (Sheet 2 of 2)

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TASK 22-11-30-710-801

3. Elevator Position Sensor Test

A. References

<u>Reference</u>	<u>Title</u>
24-22-00-860-811	Supply Electrical Power (P/B 201)
24-22-00-860-812	Remove Electrical Power (P/B 201)
29-11-00-860-801	Hydraulic System A or B Pressurization (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)

B. Location Zones

<u>Zone</u>	<u>Area</u>
211	Flight Compartment - Left
212	Flight Compartment - Right

C. Prepare for the Test

SUBTASK 22-11-30-860-011

- (1) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

SUBTASK 22-11-30-860-029

- (2) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	18	C00451	LANDING GEAR AURAL WARN

SUBTASK 22-11-30-860-012

- (3) Set the autopilot stabilizer trim cutout switch, on the control stand, to the CUTOUT position.

SUBTASK 22-11-30-860-013

- (4) Make sure that the VHF NAV and IRS switches, on the P5 forward overhead panel, are in the NORMAL positions.

SUBTASK 22-11-30-860-014

- (5) Set the left and right IRS select switches, on the P5 aft overhead panel, to the ALIGN or NAV position.

SUBTASK 22-11-30-860-015

WARNING: KEEP PERSONS AND EQUIPMENT AWAY FROM THE FLIGHT CONTROL SURFACES. THE AILERONS, ELEVATORS, RUDDER, FLAPS, SLATS, SPOILERS, STABILIZER AND NOSE GEAR CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (6) Supply hydraulic power to hydraulic systems A and B. To supply hydraulic power, do this task: Hydraulic System A or B Pressurization, TASK 29-11-00-860-801.

NOTE: Hydraulic power is necessary for surface test.

D. Procedure

SUBTASK 22-11-30-740-001

- (1) Do this BITE test:

- (a) Push the INIT REF key on the CDU keyboard.



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- (b) Push the Line Select Key (LSK) that is adjacent to each selection:

NOTE: If the CONTINUE shows during the BITE test, then do the instructions that show on the CDU display before you push the LSK that is adjacent to CONTINUE. Use the NEXT PAGE or PREV PAGE key to change page if it is necessary.

- 1) INDEX
- 2) MAINT
- 3) DFCS
- 4) LRU REPLACEMENT TESTS
- 5) CHANNEL A AND B
- 6) PITCH SENS
- 7) Do the instructions that show on the CDU display to complete the test.
- 8) Make sure that the test is completed with no failure or the "TEST FAILED" message does not show.

E. Put the Airplane Back to Its Usual Condition

SUBTASK 22-11-30-860-016

- (1) Push the captain's or first officer's autopilot disengage switch, on the control wheel, to make sure that the autopilot is disengaged.

SUBTASK 22-11-30-860-025

- (2) Remove the safety tag and close this circuit breaker:

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	18	C00451	LANDING GEAR AURAL WARN

SUBTASK 22-11-30-860-018

- (3) Set the autopilot stabilizer trim cutout switch, on the control stand, to the NORMAL position.

SUBTASK 22-11-30-860-019

- (4) Remove hydraulic power from hydraulic systems A and B. To remove hydraulic power, do this task: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805.

SUBTASK 22-11-30-860-020

- (5) Do this task: Remove Electrical Power, TASK 24-22-00-860-812.

———— END OF TASK ————

EFFECTIVITY
AKS ALL

22-11-30



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STABILIZER POSITION SENSOR - MAINTENANCE PRACTICES

1. General

- A. This procedure has these tasks:
- (1) Stabilizer Position Sensor Deactivation.
 - (2) Stabilizer Position Sensor Activation.

TASK 22-11-31-040-801

2. Stabilizer Position Sensor - Deactivation

(Figure 202)

A. General

- (1) This procedure removes electrical power and hydraulic pressure to the Stabilizer Position Sensor.

B. References

Reference	Title
24-22-00-860-811	Supply Electrical Power (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)

C. Tools/Equipment

Reference	Description
STD-858	Tag - DO NOT OPERATE

D. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right
318	Tail Cone Compartment - Right

E. Procedure

SUBTASK 22-11-31-860-029

WARNING: MAKE SURE THAT PERSONNEL AND EQUIPMENT ARE CLEAR OF THE FLIGHT CONTROLS SURFACES. MAKE SURE THAT THE INBOARD FAN DUCT COWL AND THE INBOARD AND OUTBOARD THRUST REVERSERS ARE CLOSED. THE FLIGHT CONTROL SURFACES CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (1) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
C	4	C00456	AFCS SYS A MACH TRIM AC
C	5	C01041	AFCS SYS A SNSR EXC AC
D	1	C01049	AFCS SYS A WARN LIGHT (BAT)
D	2	C01045	AFCS SYS A FCC DC
D	3	C01048	AFCS SYS A ENGAGE INTLK
D	4	C00457	AFCS SYS A MACH TRIM DC
D	5	C01044	AFCS MCP DC 1

EFFECTIVITY
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F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	1	C00374	AFCS SYS B WARN LIGHT (BAT)
B	2	C01064	AFCS SYS B MACH TRIM DC
B	3	C01046	AFCS SYS B FCC DC
B	4	C00716	AFCS SYS B ENGAGE INTLK
B	10	C00207	FLIGHT CONTROL STAB TRIM CONT
C	1	C01037	AFCS SYS B MACH TRIM AC
C	2	C01042	AFCS SYS B SNSR EXC AC
C	3	C01047	AFCS MCP DC 2
D	10	C00840	FLIGHT CONTROL STAB TRIM ACTUATOR

SUBTASK 22-11-31-010-006

- (2) Do this task: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805.

SUBTASK 22-11-31-860-032

- (3) Attach DO NOT OPERATE tag, STD-858 to the captain's and first officer's control columns.

F. Stabilizer Position Sensor - Tryout

NOTE: This tryout is to make sure the Stabilizer Position Sensor is in a zero energy state.

SUBTASK 22-11-31-860-033

WARNING: MAKE SURE THAT PERSONNEL AND EQUIPMENT ARE CLEAR OF THE FLIGHT CONTROLS SURFACES. MAKE SURE THAT THE INBOARD FAN DUCT COWL AND THE INBOARD AND OUTBOARD THRUST REVERSERS ARE CLOSED. THE FLIGHT CONTROL SURFACES CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (1) Do this task: Supply Electrical Power, TASK 24-22-00-860-811

SUBTASK 22-11-31-860-030

- (2) Make sure that these circuit breakers are open and have safety tags:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	4	C00456	AFCS SYS A MACH TRIM AC
C	5	C01041	AFCS SYS A SNSR EXC AC
D	1	C01049	AFCS SYS A WARN LIGHT (BAT)
D	2	C01045	AFCS SYS A FCC DC
D	3	C01048	AFCS SYS A ENGAGE INTLK
D	4	C00457	AFCS SYS A MACH TRIM DC
D	5	C01044	AFCS MCP DC 1

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	1	C00374	AFCS SYS B WARN LIGHT (BAT)
B	2	C01064	AFCS SYS B MACH TRIM DC
B	3	C01046	AFCS SYS B FCC DC
B	4	C00716	AFCS SYS B ENGAGE INTLK
B	10	C00207	FLIGHT CONTROL STAB TRIM CONT
C	1	C01037	AFCS SYS B MACH TRIM AC



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(Continued)

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	2	C01042	AFCS SYS B SNSR EXC AC
C	3	C01047	AFCS MCP DC 2
D	10	C00840	FLIGHT CONTROL STAB TRIM ACTUATOR

SUBTASK 22-11-31-700-001

- (3) Use the FMC - CDU and do the following test (Figure 201):

- (a) SELECT, INIT/REF on the keyboard.
- (b) SELECT, "INDEX" (LSK 6L).
- (c) SELECT, "MAINT" (LSK 6R).
- (d) SELECT, "DFCS" (LSK 2L).
 - 1) DFCS will run the self test and display as following:
 - FCC-A SELF TEST FAIL
 - FCC-B SELF TEST FAIL
 - CROSS CHANNEL TEST PASS
- (e) SELECT, "CONTINUE" (LSK 6R)
NOTE: Ignore the message that appears.
- (f) SELECT, "CONTINUE" (LSK 6R).
- (g) SELECT, "EXTENDED MAINTENANCE"(LSK 4L).
- (h) SELECT, "SENSOR VALUES"(LSK 4L).
- (i) SELECT, "DISCRETE INPUTS"(LSK 5L).
- (j) SELECT, "CIRCUIT BREAKER CHECK"(LSK 5R).
- (k) SELECT, INIT/REF on the keyboard, to exit of BITE.
- (l) End of test.

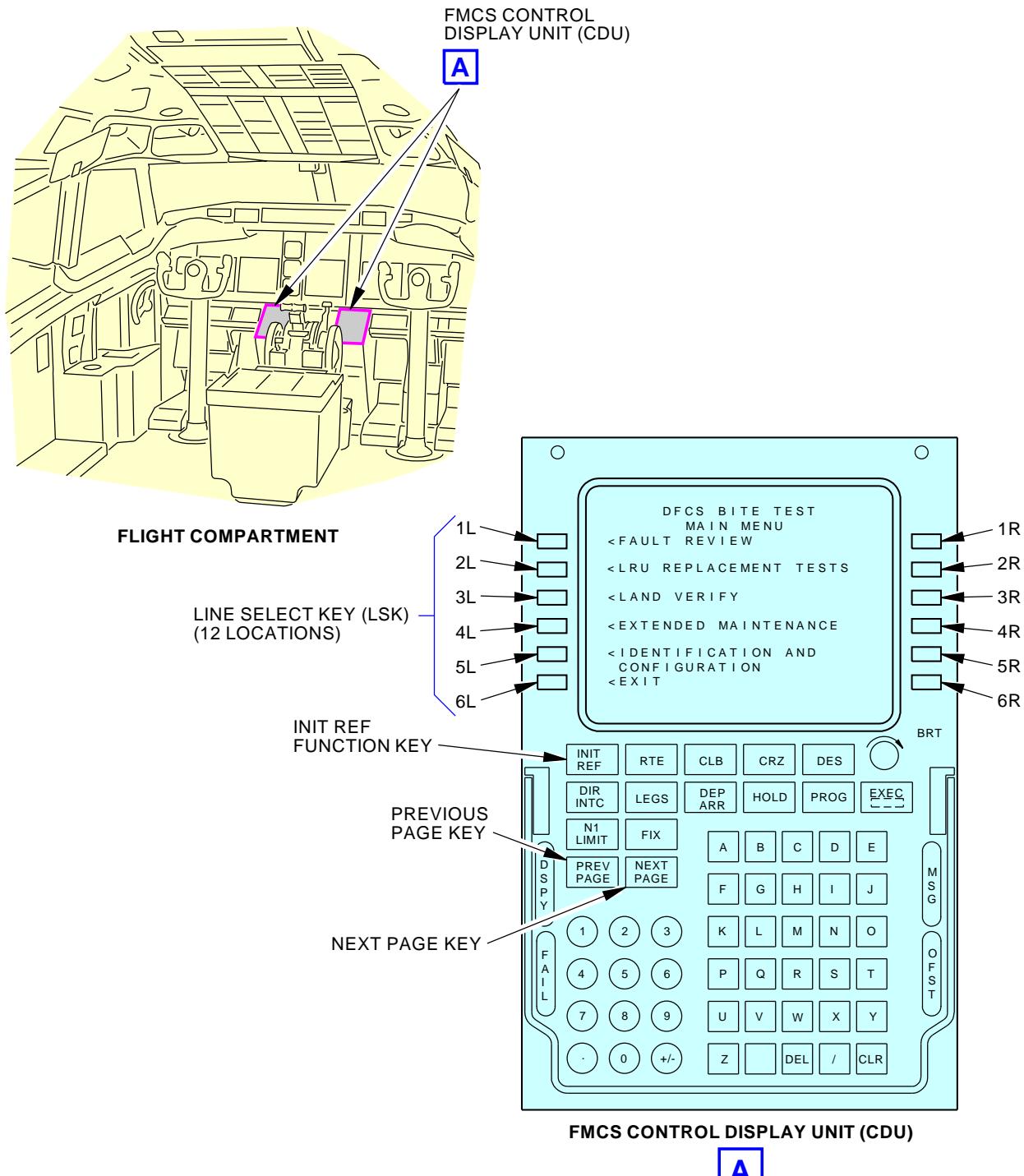
———— END OF TASK ————

EFFECTIVITY
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K45540 S0006563722_V2

Flight Management Computer Control Display Unit
Figure 201/22-11-31-990-810

EFFECTIVITY
AKS ALL

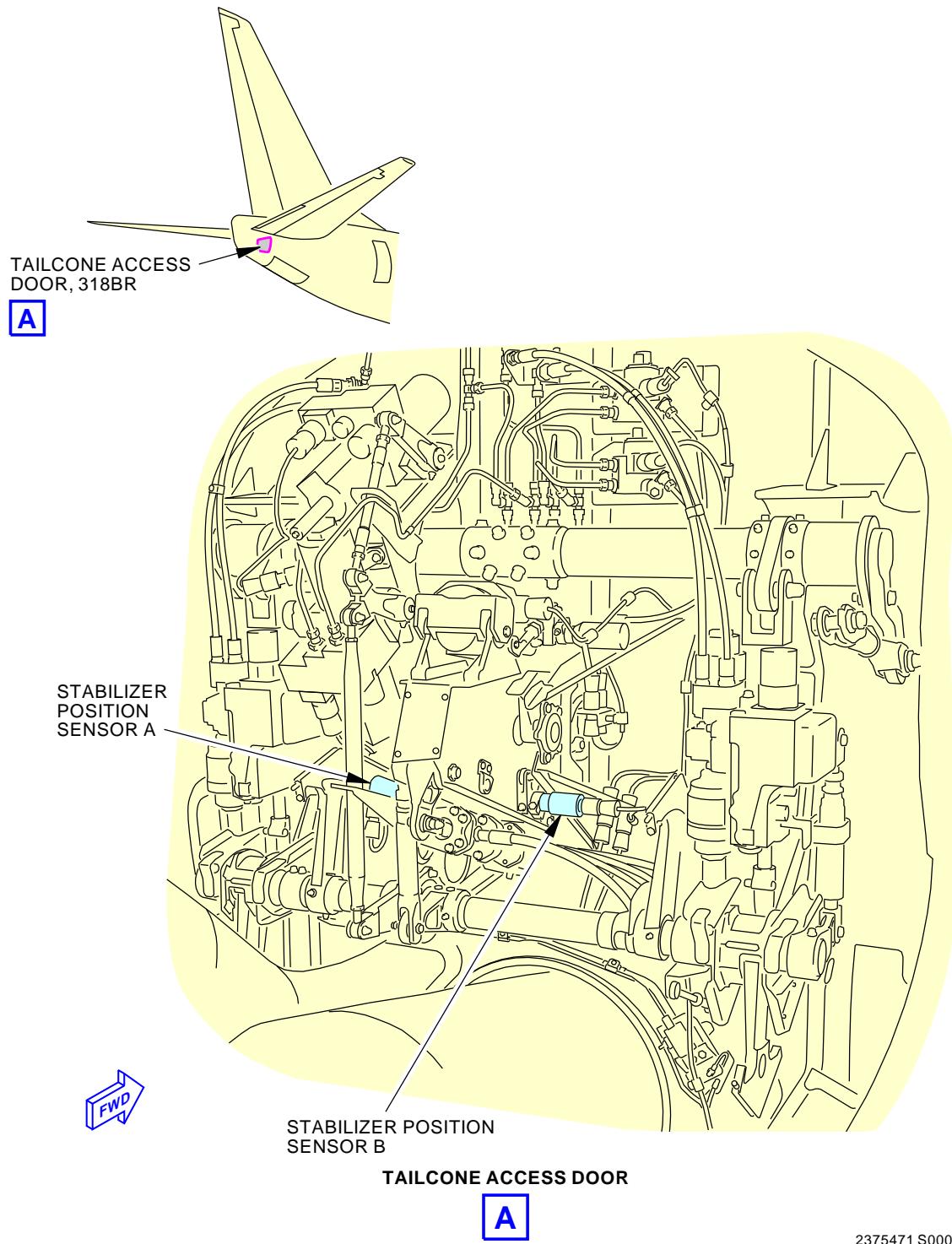
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Stabilizer Position Sensor
Figure 202/22-11-31-990-809

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TASK 22-11-31-440-801

3. Stabilizer Position Sensor - Activation

(Figure 202)

A. General

- (1) This procedure adds electrical power and hydraulic pressure to the Stabilizer Position Sensor.

B. References

Reference	Title
29-11-00-860-801	Hydraulic System A or B Pressurization (P/B 201)

C. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right
318	Tail Cone Compartment - Right

D. Procedure

SUBTASK 22-11-31-860-031

WARNING: MAKE SURE THAT PERSONNEL AND EQUIPMENT ARE CLEAR OF THE FLIGHT CONTROLS SURFACES. MAKE SURE THAT THE INBOARD FAN DUCT COWL AND THE INBOARD AND OUTBOARD THRUST REVERSERS ARE CLOSED. THE FLIGHT CONTROL SURFACES CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (1) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
C	4	C00456	AFCS SYS A MACH TRIM AC
C	5	C01041	AFCS SYS A SNSR EXC AC
D	1	C01049	AFCS SYS A WARN LIGHT (BAT)
D	2	C01045	AFCS SYS A FCC DC
D	3	C01048	AFCS SYS A ENGAGE INTLK
D	4	C00457	AFCS SYS A MACH TRIM DC
D	5	C01044	AFCS MCP DC 1

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	1	C00374	AFCS SYS B WARN LIGHT (BAT)
B	2	C01064	AFCS SYS B MACH TRIM DC
B	3	C01046	AFCS SYS B FCC DC
B	4	C00716	AFCS SYS B ENGAGE INTLK
B	10	C00207	FLIGHT CONTROL STAB TRIM CONT
C	1	C01037	AFCS SYS B MACH TRIM AC
C	2	C01042	AFCS SYS B SNSR EXC AC
C	3	C01047	AFCS MCP DC 2
D	10	C00840	FLIGHT CONTROL STAB TRIM ACTUATOR



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SUBTASK 22-11-31-410-005

- (2) Do this task: Hydraulic System A or B Pressurization, TASK 29-11-00-860-801.

———— END OF TASK ————

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STABILIZER POSITION SENSOR - REMOVAL/INSTALLATION

1. General

- A. This procedure has these tasks:
 - (1) The removal of a stabilizer position sensor.
 - (2) The installation of a stabilizer position sensor.
- B. There are two stabilizer position sensors. They are on the aft bulkhead station 1156.
 - (1) The stabilizer position sensor A (M1192) is a dual synchro position sensor and it has two connectors.
 - (2) The stabilizer position sensor B (M1193) is a single synchro position sensor and it only has one connector.
- C. The removal and installation procedures are the same for the stabilizer position sensor A and stabilizer position sensor B.
 - (1) The stabilizer position sensor A is on the left side of the elevator feel and centering unit.
 - (2) The stabilizer position sensor B is on the right side of the elevator feel and centering unit.

TASK 22-11-31-000-801

2. Stabilizer Position Sensor Removal

(Figure 22-11-31-990-808)

A. References

Reference	Title
22-11-31-990-808	Figure: Stabilizer Trim Jackscrew Setting (P/B 501)

B. Location Zones

Zone	Area
315	APU Compartment - Left
317	Tail Cone Compartment - Left
318	Tail Cone Compartment - Right

C. Access Panels

Number	Name/Location
318BR	Tailcone Access Door

D. Prepare for the Removal

SUBTASK 22-11-31-860-021

- (1) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
C	4	C00456	AFCS SYS A MACH TRIM AC
C	5	C01041	AFCS SYS A SNSR EXC AC
D	1	C01049	AFCS SYS A WARN LIGHT (BAT)
D	2	C01045	AFCS SYS A FCC DC
D	3	C01048	AFCS SYS A ENGAGE INTLK
D	4	C00457	AFCS SYS A MACH TRIM DC
D	5	C01044	AFCS MCP DC 1

EFFECTIVITY	AKS ALL
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F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	1	C00374	AFCS SYS B WARN LIGHT (BAT)
B	2	C01064	AFCS SYS B MACH TRIM DC
B	3	C01046	AFCS SYS B FCC DC
B	4	C00716	AFCS SYS B ENGAGE INTLK
B	10	C00207	FLIGHT CONTROL STAB TRIM CONT
C	1	C01037	AFCS SYS B MACH TRIM AC
C	2	C01042	AFCS SYS B SNSR EXC AC
C	3	C01047	AFCS MCP DC 2
D	10	C00840	FLIGHT CONTROL STAB TRIM ACTUATOR

SUBTASK 22-11-31-010-003

- (2) Open this access door:

<u>Number</u>	<u>Name/Location</u>
318BR	Tailcone Access Door

E. Procedure

SUBTASK 22-11-31-020-001

- (1) Disconnect the electrical connector(s).

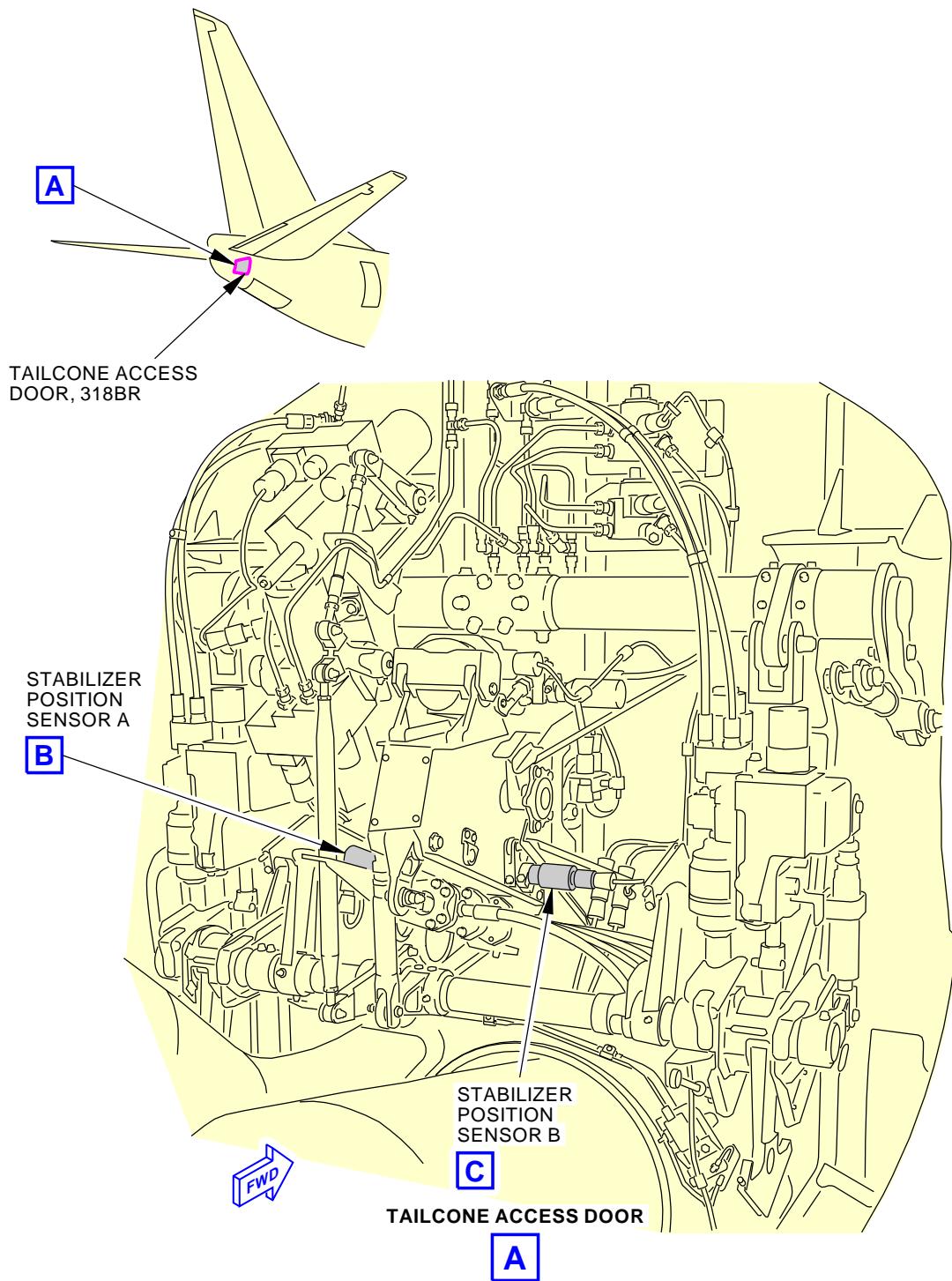
SUBTASK 22-11-31-020-002

- (2) Do these steps to remove the stabilizer position sensor [4] or stabilizer position sensor [6]:
- Remove the bolt [1], washer [2] and nut [3] in the crank.
 - Remove the bolt [5], washer [2] and nut [3] in the bracket.
 - Remove the stabilizer position sensor [4] or stabilizer position sensor [6].

———— END OF TASK ————



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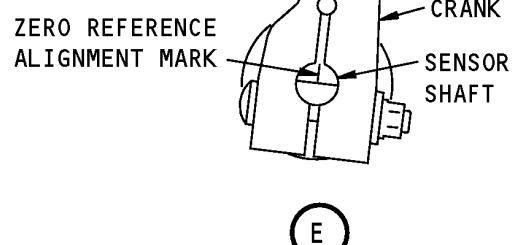
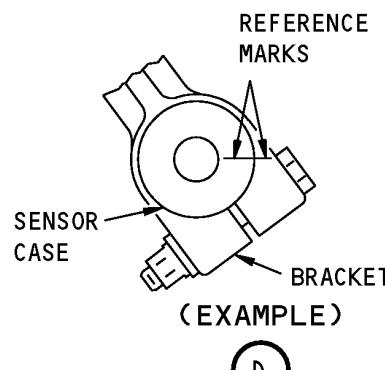
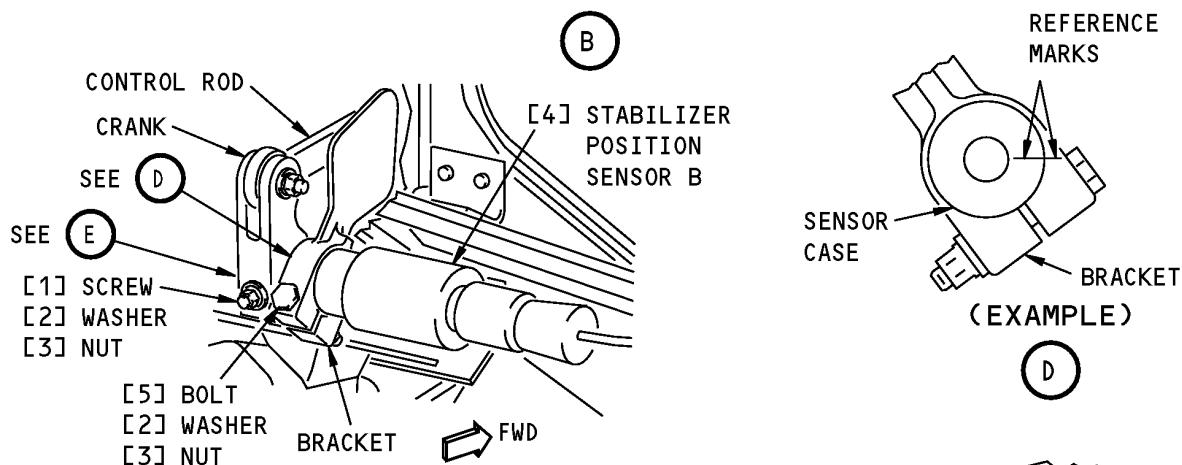
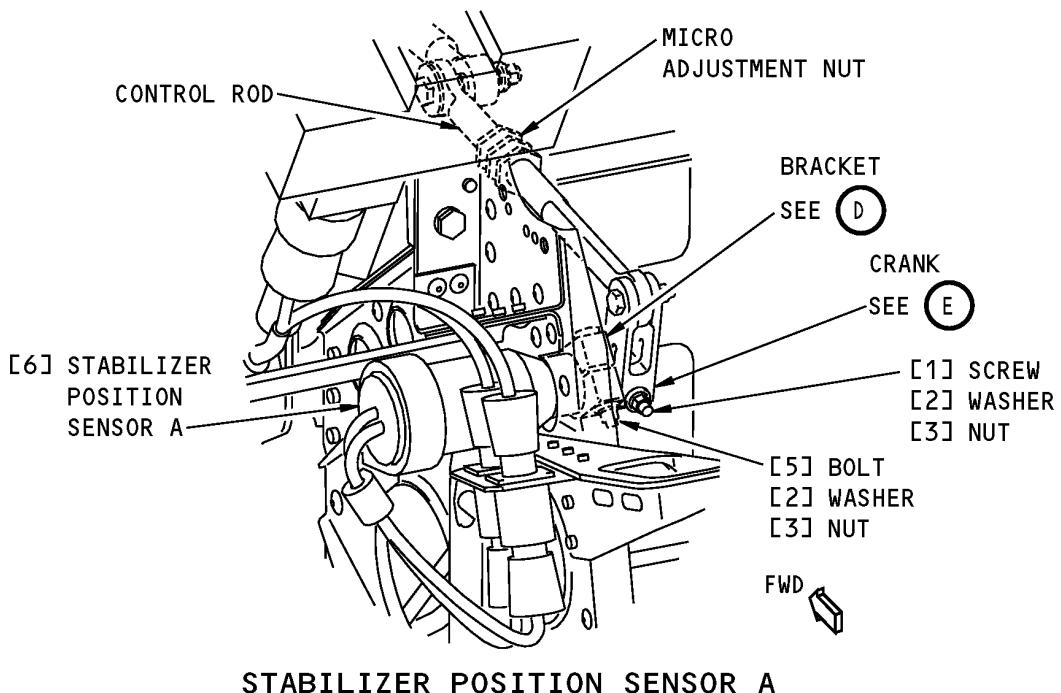
Stabilizer Position Sensors Installation
Figure 401/22-11-31-990-805 (Sheet 1 of 2)

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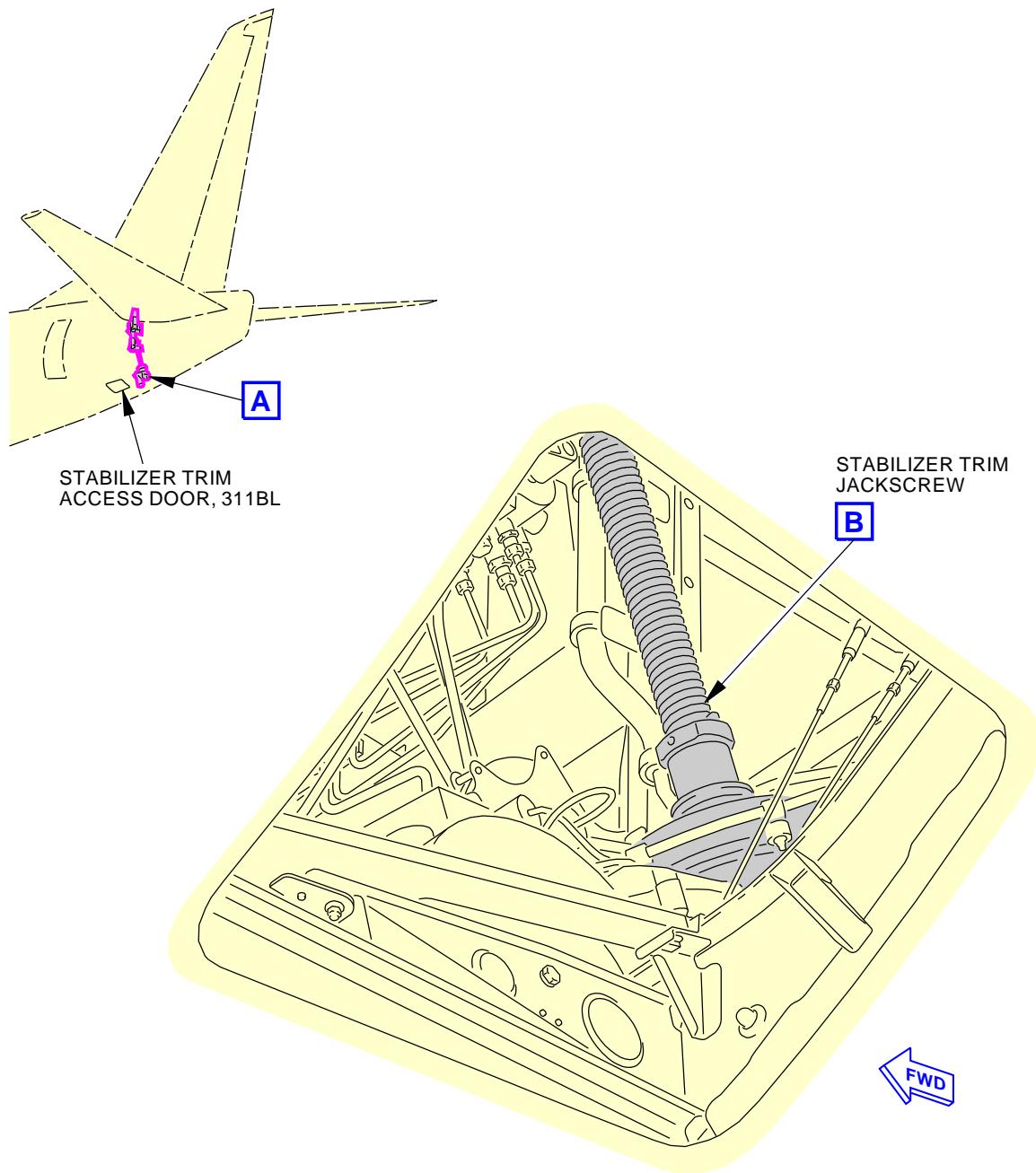


NOTE: FOR STABILIZER POSITION SENSOR B,
THERE ARE ALSO TWO REFERENCE MARKS,
ONE MARK IS ON THE BRACKET AND THE
OTHER MARK IS ON THE SIDE OF THE
SENSOR CASE.

Stabilizer Position Sensors Installation
Figure 401/22-11-31-990-805 (Sheet 2 of 2)

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VIEW WHEN YOU LOOK UP THROUGH THE STABILIZER
TRIM ACCESS DOOR

A

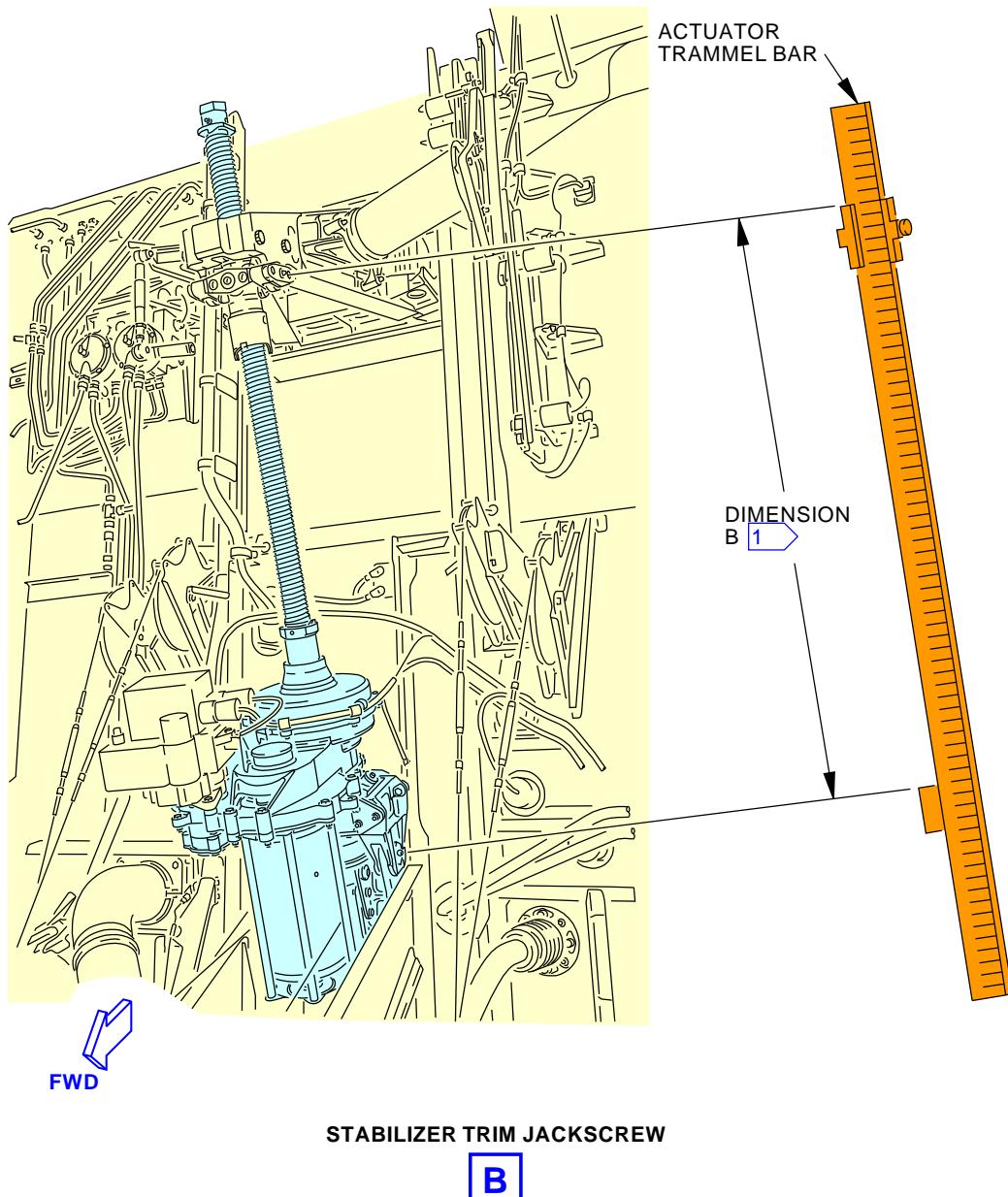
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Stabilizer Trim Jackscrew Setting
Figure 402/22-11-31-990-806 (Sheet 1 of 2)

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**NOTE:**

THE STABILIZER TRIM JACKSCREW IS SHOWN WITH THE STABILIZER LEADING EDGE AT ZERO DEGREE.

- [1]** THE DIMENSION B IS MEASURED BETWEEN THE CENTER OF THE UPPER AND LOWER GIMBAL PINS.

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Stabilizer Trim Jackscrew Setting
Figure 402/22-11-31-990-806 (Sheet 2 of 2)

EFFECTIVITY
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TASK 22-11-31-400-801

3. Stabilizer Position Sensor Installation

(Figure 401 or Figure 402)

A. References

Reference	Title
22-11-31-710-801	Stabilizer Position Sensor Test (P/B 501)
22-11-31-820-801	Stabilizer Position Sensor Adjustment and Test (P/B 501)

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
COM-1793	Multimeter - Digital/Analog (or equivalent meter meets task requirements) Part #: 117 Supplier: 89536 Part #: 260-8XPI Supplier: 55026 Part #: 260-8XPI Supplier: 88277 Part #: 287 Supplier: 89536 Part #: 289 Supplier: 89536 Part #: 87V Supplier: 89536 Part #: FLUKE 27 II Supplier: 89536 Part #: FLUKE-77-4 Supplier: 89536 Opt Part #: 187 Supplier: 89536 Opt Part #: 189 Supplier: 89536 Opt Part #: 21 Supplier: 89536 Opt Part #: 77 SERIES III Supplier: 89536 Opt Part #: 87 Supplier: 89536 Opt Part #: FLUKE 27 Supplier: 89536
SPL-1677	Assembly - Trammel Bar, Stabilizer Trim Actuator Part #: F80055-10 Supplier: 81205 Opt Part #: F80055-1 Supplier: 81205

C. Location Zones

Zone	Area
118	Electrical and Electronics Compartment - Right
311	Area Aft of Pressure Bulkhead - Left
315	APU Compartment - Left
316	APU Compartment - Right
317	Tail Cone Compartment - Left
318	Tail Cone Compartment - Right

D. Access Panels

Number	Name/Location
117A	Electronic Equipment Access Door
311BL	Stabilizer Trim Access Door
318BR	Tailcone Access Door

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E. Prepare for the Installation

SUBTASK 22-11-31-860-022

- (1) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	4	C00456	AFCS SYS A MACH TRIM AC
C	5	C01041	AFCS SYS A SNSR EXC AC
D	1	C01049	AFCS SYS A WARN LIGHT (BAT)
D	2	C01045	AFCS SYS A FCC DC
D	3	C01048	AFCS SYS A ENGAGE INTLK
D	4	C00457	AFCS SYS A MACH TRIM DC
D	5	C01044	AFCS MCP DC 1

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	1	C00374	AFCS SYS B WARN LIGHT (BAT)
B	2	C01064	AFCS SYS B MACH TRIM DC
B	3	C01046	AFCS SYS B FCC DC
B	4	C00716	AFCS SYS B ENGAGE INTLK
B	10	C00207	FLIGHT CONTROL STAB TRIM CONT
C	1	C01037	AFCS SYS B MACH TRIM AC
C	2	C01042	AFCS SYS B SNSR EXC AC
C	3	C01047	AFCS MCP DC 2
D	10	C00840	FLIGHT CONTROL STAB TRIM ACTUATOR

SUBTASK 22-11-31-010-004

- (2) Open this access door:

<u>Number</u>	<u>Name/Location</u>
318BR	Tailcone Access Door

SUBTASK 22-11-31-010-005

- (3) To get access to the stabilizer trim jackscrew, open this access door:

<u>Number</u>	<u>Name/Location</u>
311BL	Stabilizer Trim Access Door

SUBTASK 22-11-31-980-002

- (4) Do these steps to set the B dimension (Figure 401 or Figure 402):

NOTE: The B dimension is measured between the center of the upper and lower Gimbal pins on the stabilizer trim jackscrew. To do this, one person must be in the tail of the airplane with a headset and the other person in the flight compartment.

- (a) Turn the stab trim wheel handle on the control stand to set the B dimension.

NOTE: This B dimension is equivalent to the horizontal stabilizer at 4 units of trim (zero degree).

- (b) Use the trammel bar, SPL-1677, to measure the B dimension.

- 1) Make sure that the B dimension is 39.89 ± 0.01 in. (1013.21 ± 0.26 mm)).

SUBTASK 22-11-31-800-001

- (5) Do these steps to make sure that the Mach trim actuator is at the null position:



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- (a) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	4	C00456	AFCS SYS A MACH TRIM AC
C	5	C01041	AFCS SYS A SNSR EXC AC
D	2	C01045	AFCS SYS A FCC DC
D	3	C01048	AFCS SYS A ENGAGE INTLK
D	4	C00457	AFCS SYS A MACH TRIM DC

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	2	C01064	AFCS SYS B MACH TRIM DC
B	3	C01046	AFCS SYS B FCC DC
B	4	C00716	AFCS SYS B ENGAGE INTLK
C	1	C01037	AFCS SYS B MACH TRIM AC
C	2	C01042	AFCS SYS B SNSR EXC AC

- (b) Open this access door:

Number Name/Location

117A Electronic Equipment Access Door

- (c) Get access to the flight control computer (FCC) A on the E1 electronic equipment rack, shelf No. 1 (E1-1) or flight control computer B on the E1 electronic equipment rack, shelf No. 4 (E1-4).
- (d) Use the digital/analog multimeter, COM-1793 to measure pin J3-1 and pin J3-37 of the FCC-A or FCC-B front test connector.
- (e) Make sure that the voltage is less than 50 mvdc.
- (f) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	4	C00456	AFCS SYS A MACH TRIM AC
C	5	C01041	AFCS SYS A SNSR EXC AC
D	2	C01045	AFCS SYS A FCC DC
D	3	C01048	AFCS SYS A ENGAGE INTLK
D	4	C00457	AFCS SYS A MACH TRIM DC

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	2	C01064	AFCS SYS B MACH TRIM DC
B	3	C01046	AFCS SYS B FCC DC
B	4	C00716	AFCS SYS B ENGAGE INTLK
C	1	C01037	AFCS SYS B MACH TRIM AC
C	2	C01042	AFCS SYS B SNSR EXC AC

F. Procedure

SUBTASK 22-11-31-820-002

- (1) Align the reference mark on the sensor case with the reference mark on the bracket.

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SUBTASK 22-11-31-420-001

- (2) Install the stabilizer position sensor [4] or stabilizer position sensor [6]:
 - (a) Put the stabilizer position sensor [4] or stabilizer position sensor [6] into the bracket and the crank with the zero reference alignment mark on the sensor shaft aligned with the slot in the crank.
 - (b) Tighten the bolt [1] in the crank to 35 in-lb (4 N·m).
 - (c) Tighten the bolt [5] in the bracket to 35 in-lb (4 N·m).

SUBTASK 22-11-31-420-002

- (3) Connect the electrical connector(s).

SUBTASK 22-11-31-860-023

- (4) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	4	C00456	AFCS SYS A MACH TRIM AC
C	5	C01041	AFCS SYS A SNSR EXC AC
D	1	C01049	AFCS SYS A WARN LIGHT (BAT)
D	2	C01045	AFCS SYS A FCC DC
D	3	C01048	AFCS SYS A ENGAGE INTLK
D	4	C00457	AFCS SYS A MACH TRIM DC
D	5	C01044	AFCS MCP DC 1

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	1	C00374	AFCS SYS B WARN LIGHT (BAT)
B	2	C01064	AFCS SYS B MACH TRIM DC
B	3	C01046	AFCS SYS B FCC DC
B	4	C00716	AFCS SYS B ENGAGE INTLK
B	10	C00207	FLIGHT CONTROL STAB TRIM CONT
C	1	C01037	AFCS SYS B MACH TRIM AC
C	2	C01042	AFCS SYS B SNSR EXC AC
C	3	C01047	AFCS MCP DC 2
D	10	C00840	FLIGHT CONTROL STAB TRIM ACTUATOR

SUBTASK 22-11-31-820-003

- (5) Do this task: Stabilizer Position Sensor Adjustment and Test, TASK 22-11-31-820-801.

SUBTASK 22-11-31-710-001

- (6) Do this task: Stabilizer Position Sensor Test, TASK 22-11-31-710-801.

SUBTASK 22-11-31-420-003

- (7) Close this access door:

<u>Number</u>	<u>Name/Location</u>
117A	Electronic Equipment Access Door

SUBTASK 22-11-31-410-003

- (8) Close this access door:

<u>Number</u>	<u>Name/Location</u>
318BR	Tailcone Access Door



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SUBTASK 22-11-31-410-004

- (9) Close this access door:

Number Name/Location

311BL Stabilizer Trim Access Door

———— END OF TASK ————

EFFECTIVITY
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STABILIZER POSITION SENSOR - ADJUSTMENT/TEST

1. General

- A. This procedure has these tasks:
 - (1) Stabilizer Position Sensor Adjustment.
 - (2) Stabilizer Position Sensor Test.
- B. There are two stabilizer position sensors. They are located on the aft bulkhead station 1156.
 - (1) The stabilizer position sensor A (M1192) is on the left side of the elevator feel and centering unit.
 - (2) The stabilizer position sensor B (M1193) is on the right side of the elevator feel and centering unit.

TASK 22-11-31-820-801

2. Stabilizer Position Sensor Adjustment and Test

(Figure 501)

A. References

Reference	Title
20-10-44-000-801	Lockwire, Cotter Pins, and Lockrings - Removal (P/B 401)
20-10-44-400-801	Lockwire, Cotter Pins, and Lockrings - Installation (P/B 401)
22-11-00-820-805	Stabilizer Rigging Test (P/B 501)
24-22-00-860-811	Supply Electrical Power (P/B 201)
24-22-00-860-812	Remove Electrical Power (P/B 201)
29-11-00-860-801	Hydraulic System A or B Pressurization (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1677	Assembly - Trammel Bar, Stabilizer Trim Actuator Part #: F80055-10 Supplier: 81205 Opt Part #: F80055-1 Supplier: 81205

C. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right
311	Area Aft of Pressure Bulkhead - Left
317	Tail Cone Compartment - Left
318	Tail Cone Compartment - Right

D. Access Panels

Number	Name/Location
311BL	Stabilizer Trim Access Door
318BR	Tailcone Access Door

EFFECTIVITY
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E. Prepare for the Adjustment

SUBTASK 22-11-31-860-001

- (1) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

SUBTASK 22-11-31-860-026

- (2) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	18	C00451	LANDING GEAR AURAL WARN

SUBTASK 22-11-31-010-001

- (3) To get access to the stabilizer position sensors, remove this access door:

Number Name/Location

318BR Tailcone Access Door

SUBTASK 22-11-31-010-002

- (4) To get access to the stabilizer trim jackscrew, open this access door:

Number Name/Location

311BL Stabilizer Trim Access Door

SUBTASK 22-11-31-980-001

- (5) Do these steps to set the B dimension (Figure 502):

NOTE: The B dimension is measured between the center of the upper and lower Gimbal pins on the stabilizer trim jackscrew. To do this, one person must be in the tail of the airplane with a headset and the other person in the flight compartment

- (a) Turn the stab trim wheel handle on the control stand to set the B dimension.

NOTE: This B dimension is equivalent to the horizontal stabilizer at 4 units of trim (zero degree).

- (b) Use the trammel bar, SPL-1677, to measure the B dimension.

1) Make sure that the B dimension is 39.89 ± 0.01 in. (1013.21 ± 0.26 mm).

SUBTASK 22-11-31-860-002

- (6) Set the autopilot stab trim cutout switch, on the control stand, to the CUTOUT position.

SUBTASK 22-11-31-860-003

- (7) Make sure that the VHF NAV and IRS switches, on the P5 forward overhead panel, are in the NORMAL positions.

SUBTASK 22-11-31-860-004

- (8) Set the left and right IRS select switches, on the P5 aft overhead panel, to the ALIGN or NAV position.

SUBTASK 22-11-31-860-005

WARNING: KEEP PERSONS AND EQUIPMENT AWAY FROM THE FLIGHT CONTROL SURFACES. THE AILERONS, ELEVATORS, RUDDER, FLAPS, SLATS, SPOILERS, STABILIZER AND NOSE GEAR CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (9) Supply hydraulic power to hydraulic systems A and B. To supply hydraulic power, do this task: Hydraulic System A or B Pressurization, TASK 29-11-00-860-801.

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F. Procedure

NOTE: Two persons are necessary for this task.

SUBTASK 22-11-31-820-001

(1) Do this BITE test:

- (a) Push the INIT REF key on the CDU keyboard.
- (b) Push the Line Select Key (LSK) that is adjacent to each selection:

NOTE: If the CONTINUE shows during the BITE test, then do the instructions that show on the CDU display before you push the LSK that is adjacent to CONTINUE. Use the NEXT PAGE or PREV PAGE key to change page if it is necessary.

- 1) INDEX
- 2) MAINT
- 3) DFCS
- 4) EXTENDED MAINTENANCE
- 5) RIGGING
- 6) STABILIZER
- 7) Do the instructions that show on the CDU display until test 54.01.

NOTE: Use the trammel bar, SPL-1677 for measurement of the "B" dimension that shows on the CDU display (Test 54.01).

NOTE: For detailed data about the STAB RIG test, refer to Stabilizer Rigging Test, TASK 22-11-00-820-805.

- a) Test 54.01, STAB POS (VAC), Limits: -0.07 to +0.07

NOTE: Use this CDU display to do the adjustment for the stabilizer position sensors.

- b) Jiggle the aft quadrant.
- c) Make sure that the right elevator trailing edge aligns with the elevator index on the tail cone at 0 ± 0.06 inch.

WARNING: DO NOT PUSH THE LSK THAT IS ADJACENT TO <CONTINUE ON TEST 54.01 WHEN YOU ADJUST THE STABILIZER POSITION SENSOR. THE ACTUATORS, ROD ASSEMBLIES AND FLIGHT CONTROL SURFACES CAN MOVE WHEN YOU PUSH THE LSK THAT IS ADJACENT TO <CONTINUE. THIS CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

8) Adjust the stabilizer position sensor A [4]:

- a) Loosen the bolt [1] on the bracket until you can turn the stabilizer position sensor.

NOTE: You do not have to remove the bolt [1], washer [2] and nut [3].

- b) Turn the stabilizer position sensor slowly in the clockwise and counter-clockwise directions until the voltage is less than 0.0 ± 0.5 VAC.
- c) Tighten the bolt [1] on the bracket to 35 in-lb (4 N·m).
- d) Remove the lockwire on the micro-adjustment nut (TASK 20-10-44-000-801).
- e) Turn the micro-adjustment nut until you get a smallest possible voltage that is between -0.07 and +0.07 VAC.
- f) Install the lockwire on the micro-adjustment nut (TASK 20-10-44-400-801).

EFFECTIVITY	AKS ALL
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WARNING: DO NOT PUSH THE LSK THAT IS ADJACENT TO <CONTINUE ON TEST 51.01 WHEN YOU ADJUST THE STABILIZER POSITION SENSOR. THE ACTUATORS, ROD ASSEMBLIES AND FLIGHT CONTROL SURFACES CAN MOVE WHEN YOU PUSH THE LSK THAT IS ADJACENT TO <CONTINUE. THIS CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

- 9) Adjust the stabilizer position sensor B [5]:
 - a) Loosen the bolt [1] on the bracket until you can turn the stabilizer position sensor.
NOTE: You do not have to remove the bolt [1], washer [2] and nut [3].
 - b) Turn the stabilizer position sensor slowly in the clockwise and counter-clockwise directions until the voltage is less than 0.0 ± 0.5 VAC.
 - c) Tighten the bolt [1] on the bracket to 35 in-lb (4 N·m).
 - d) Remove the lockwire on the micro-adjustment nut (TASK 20-10-44-000-801).
 - e) Turn the micro-adjustment nut until you get a smallest possible voltage that is between -0.07 and +0.07 VAC.
 - f) Install the lockwire on the micro-adjustment nut (TASK 20-10-44-400-801).

WARNING: KEEP PERSONS AND EQUIPMENT AWAY FROM THE STABILIZER POSITION SENSOR. THE ACTUATORS, ROD ASSEMBLIES AND FLIGHT CONTROL SURFACES CAN MOVE WHEN YOU PUSH THE LSK THAT IS ADJACENT TO <CONTINUE. THIS CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

- (c) Push the LSK that is adjacent to <CONTINUE (on the CDU display - Test 54.01).
 - 1) Do the instructions that show on the CDU display to complete the STAB RIG test.
 - 2) Make sure that the values for the A side and B side are between the limits that show on the CDU display.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 22-11-31-860-006

- (1) Push the captain's or first officer's autopilot disengage switch, on the control wheel, to make sure that the autopilot is disengaged.

SUBTASK 22-11-31-860-024

- (2) Remove the safety tag and close this circuit breaker:

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	18	C00451	LANDING GEAR AURAL WARN

SUBTASK 22-11-31-860-008

- (3) Set the autopilot stab trim cutout switch, on the control stand, to the NORMAL position.

SUBTASK 22-11-31-860-009

- (4) Remove hydraulic power from hydraulic systems A and B. To remove hydraulic power, do this task: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805.

SUBTASK 22-11-31-860-010

- (5) Do this task: Remove Electrical Power, TASK 24-22-00-860-812.



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SUBTASK 22-11-31-410-001

- (6) Close this access door:

Number Name/Location

318BR Tailcone Access Door

SUBTASK 22-11-31-410-002

- (7) Close this access door:

Number Name/Location

311BL Stabilizer Trim Access Door

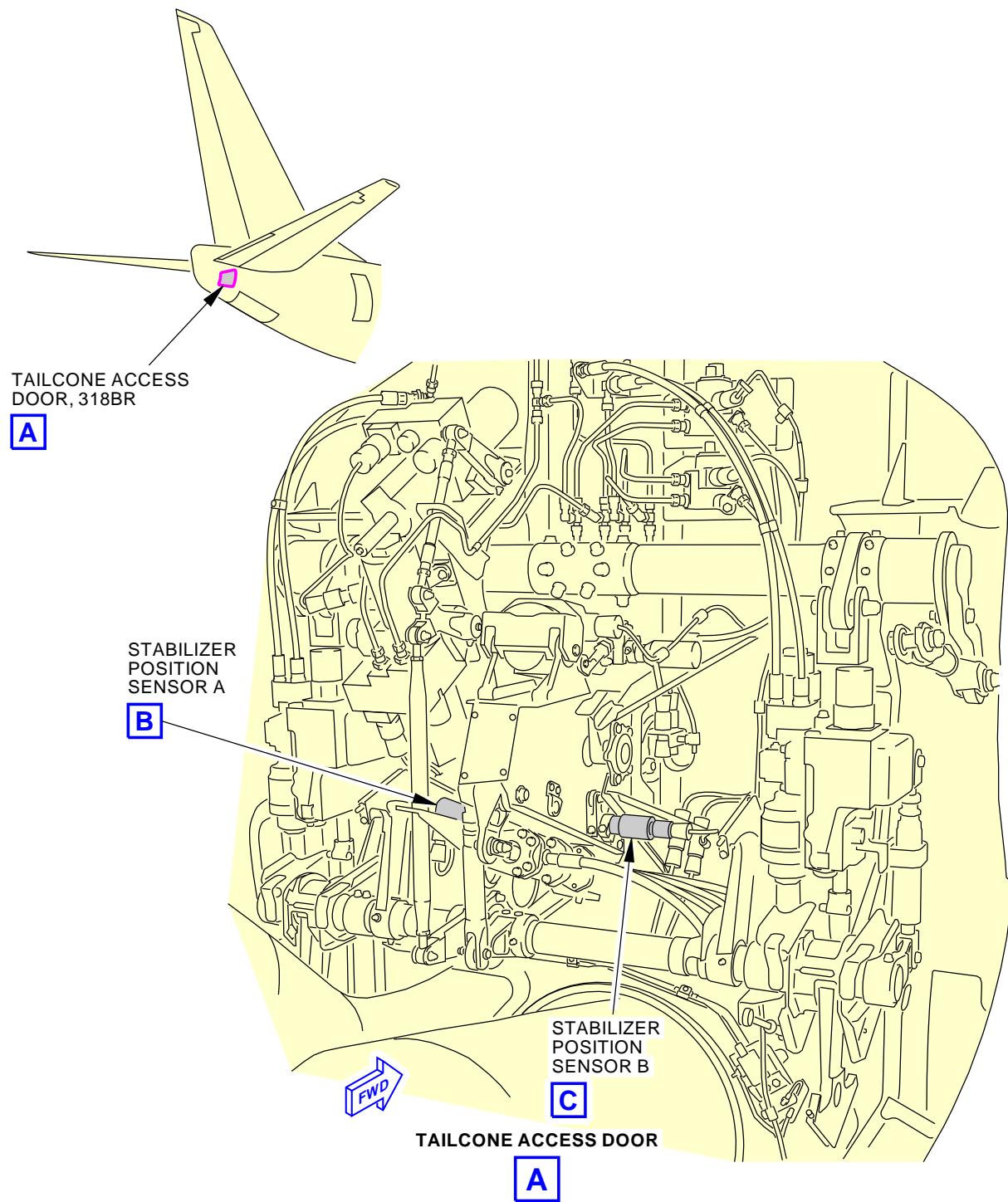
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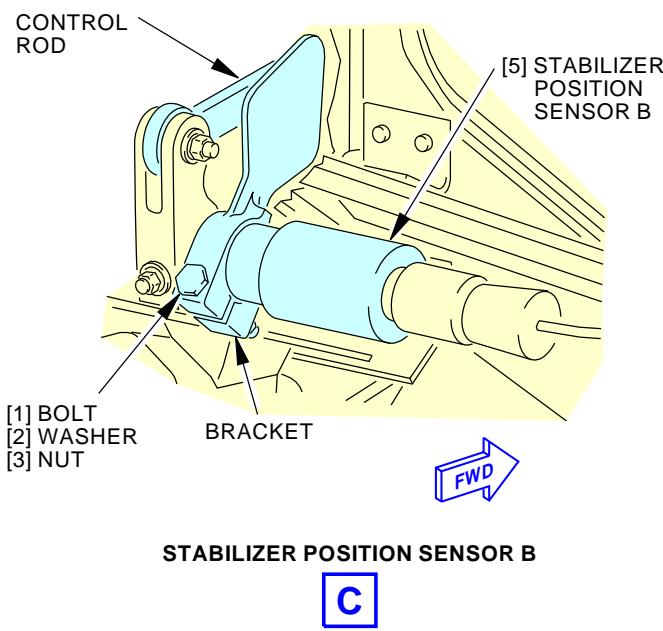
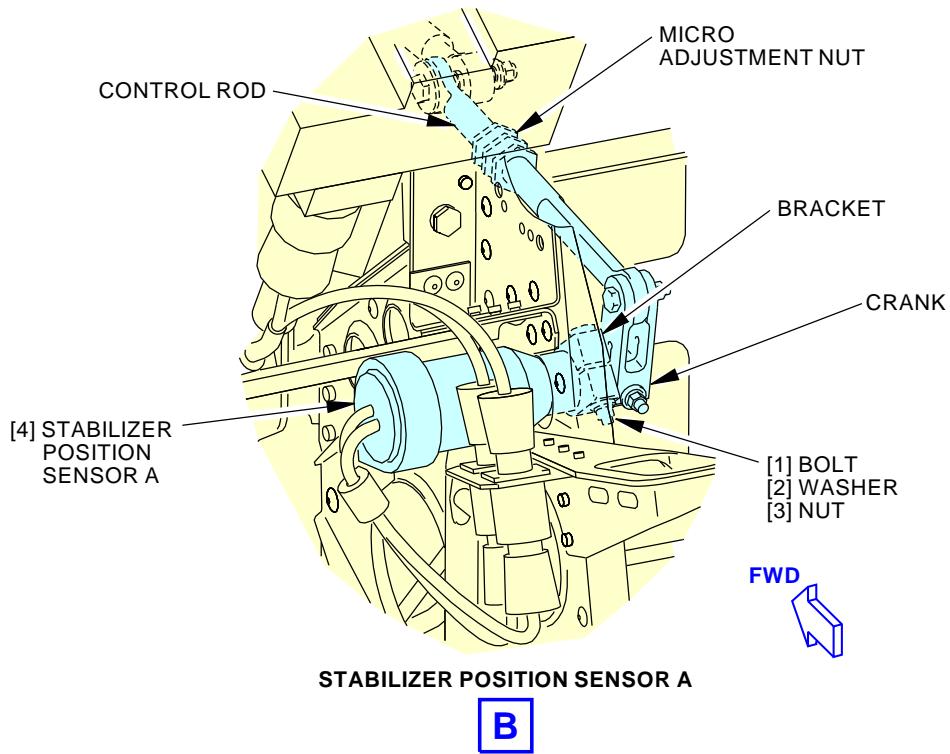
Stabilizer Position Sensors Adjustment
Figure 501/22-11-31-990-807 (Sheet 1 of 2)

EFFECTIVITY
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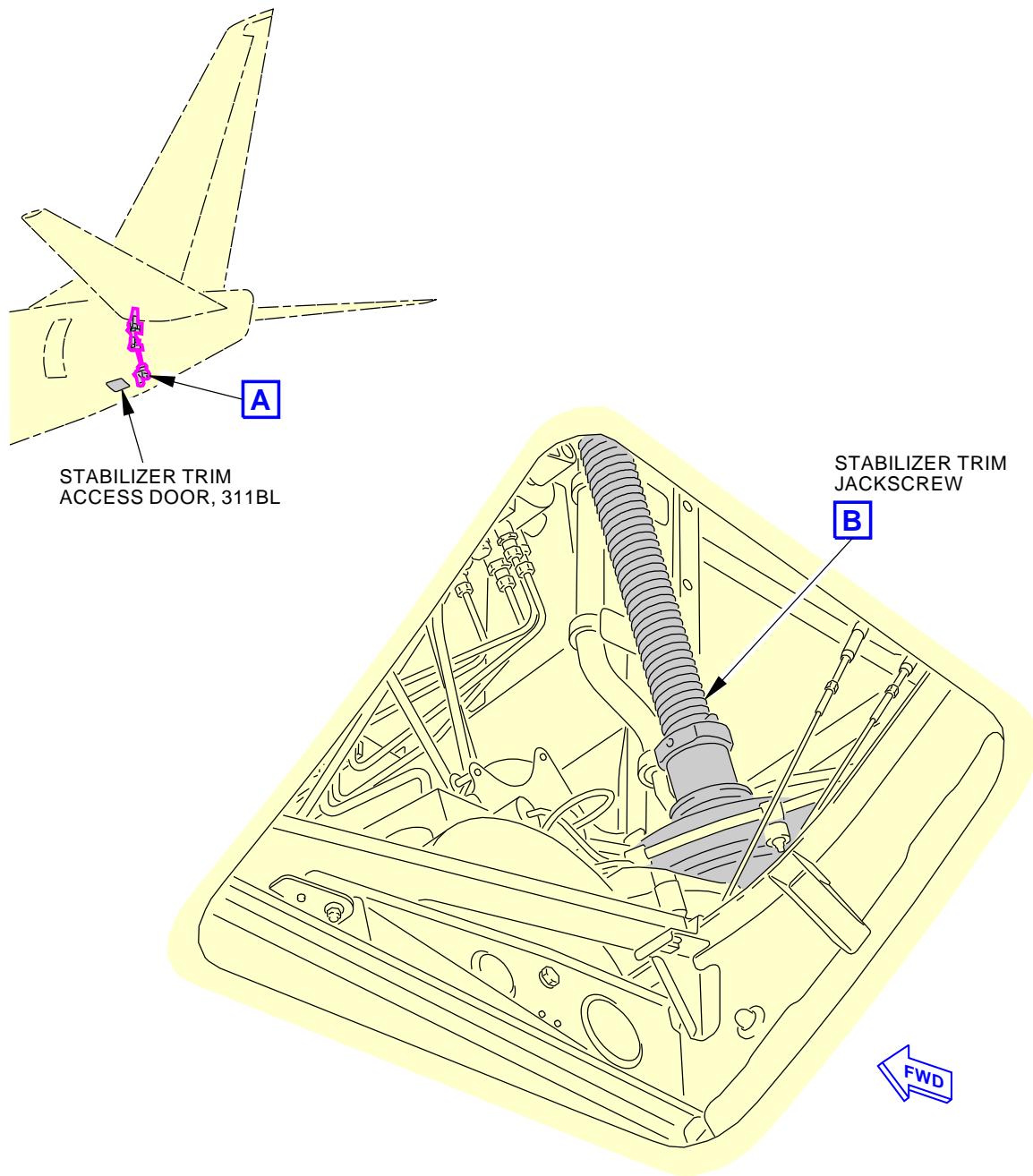
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Stabilizer Position Sensors Adjustment
Figure 501/22-11-31-990-807 (Sheet 2 of 2)

EFFECTIVITY
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**VIEW WHEN YOU LOOK UP THROUGH THE STABILIZER
TRIM ACCESS DOOR**

A

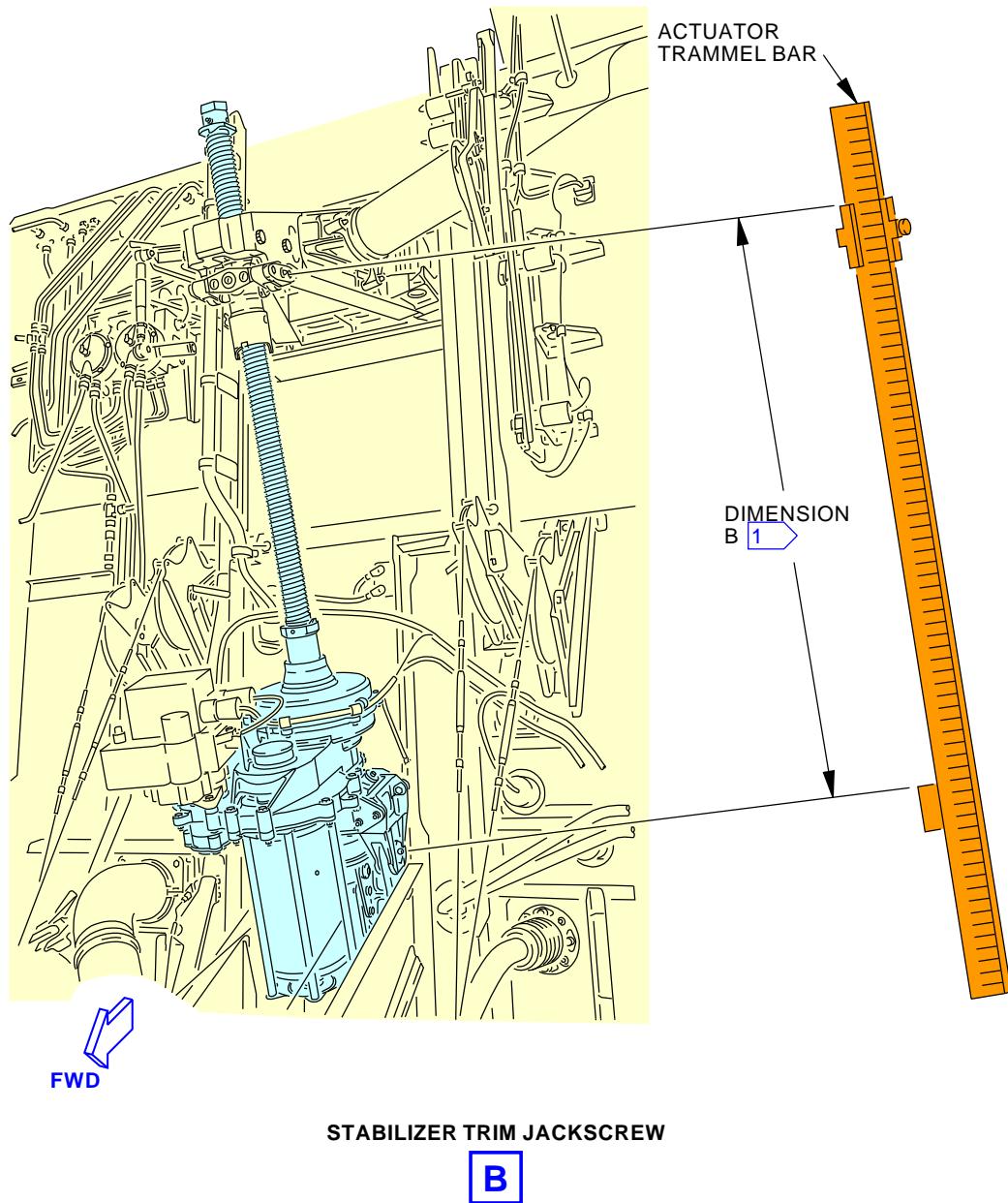
F95330 S0006564072_V2

Stabilizer Trim Jackscrew Setting
Figure 502/22-11-31-990-808 (Sheet 1 of 2)

EFFECTIVITY
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**NOTE:**

THE STABILIZER TRIM JACKSCREW IS SHOWN WITH THE STABILIZER LEADING EDGE AT ZERO DEGREE.

- [1]** THE DIMENSION B IS MEASURED BETWEEN THE CENTER OF THE UPPER AND LOWER GIMBAL PINS.

F95331 S0006564073_V2

Stabilizer Trim Jackscrew Setting
Figure 502/22-11-31-990-808 (Sheet 2 of 2)

EFFECTIVITY
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TASK 22-11-31-710-801

3. Stabilizer Position Sensor Test

A. References

Reference	Title
24-22-00-860-811	Supply Electrical Power (P/B 201)
24-22-00-860-812	Remove Electrical Power (P/B 201)
29-11-00-860-801	Hydraulic System A or B Pressurization (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)

B. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

C. Prepare for the Test

SUBTASK 22-11-31-860-011

- (1) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

SUBTASK 22-11-31-860-027

- (2) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
D	18	C00451	LANDING GEAR AURAL WARN

SUBTASK 22-11-31-860-012

- (3) Set the autopilot stab trim cutout switch, on the control stand, to the CUTOUT position.

SUBTASK 22-11-31-860-013

- (4) Make sure that the VHF NAV and IRS switches, on the P5 forward overhead panel, are in the NORMAL positions.

SUBTASK 22-11-31-860-014

- (5) Set the left and right IRS select switches, on the P5 aft overhead panel, to the ALIGN or NAV position.

SUBTASK 22-11-31-860-015

WARNING: KEEP PERSONS AND EQUIPMENT AWAY FROM THE FLIGHT CONTROL SURFACES. THE AILERONS, ELEVATORS, RUDDER, FLAPS, SLATS, SPOILERS, STABILIZER AND NOSE GEAR CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (6) Supply hydraulic power to hydraulic systems A and B. To supply hydraulic power, do this task: Hydraulic System A or B Pressurization, TASK 29-11-00-860-801.

NOTE: Hydraulic power is necessary for surface test.

D. Procedure

SUBTASK 22-11-31-740-001

- (1) Do this BITE test:

- (a) Push the INIT REF key on the CDU keyboard.



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- (b) Push the Line Select Key (LSK) that is adjacent to each selection:

NOTE: If the CONTINUE shows during the BITE test, then do the instructions that show on the CDU display before you push the LSK that is adjacent to CONTINUE. Use the NEXT PAGE or PREV PAGE key to change page if it is necessary.

- (c) INDEX
- (d) MAINT
- (e) DFCS
- (f) LRU REPLACEMENT TESTS
- (g) Make a selection for the applicable channel:

NOTE: Stabilizer position sensor A has interface with the Flight Control Computer A (Channel A). Stabilizer position sensor B has interface with the Flight Control Computer B (Channel B).

- 1) CHANNEL A
- 2) CHANNEL B
- 3) CHANNEL A AND B

- (h) STAB SENS

- 1) Do the instructions that show on the CDU display to complete the test.
- 2) Make sure that the test is completed with no failure or the "TEST FAILED" message does not show.

E. Put the Airplane Back to Its Usual Condition

SUBTASK 22-11-31-860-016

- (1) Push the captain's or first officer's autopilot disengage switch, on the control wheel, to make sure that the autopilot is disengaged.

SUBTASK 22-11-31-860-025

- (2) Remove the safety tag and close this circuit breaker:

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	18	C00451	LANDING GEAR AURAL WARN

SUBTASK 22-11-31-860-018

- (3) Set the autopilot stab trim cutout switch, on the control stand, to the NORMAL position.

SUBTASK 22-11-31-860-019

- (4) Remove hydraulic power from hydraulic systems A and B. To remove hydraulic power, do this task: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805.

SUBTASK 22-11-31-860-020

- (5) Do this task: Remove Electrical Power, TASK 24-22-00-860-812.

———— END OF TASK ————



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AUTOFLIGHT STATUS ANNUNCIATOR - MAINTENANCE PRACTICES

1. General

- A. This procedure has these tasks:
- (1) Autoflight Status Annunciator Deactivation.
 - (2) Autoflight Status Annunciator Activation.

TASK 22-11-32-040-801

2. Autoflight Status Annunciator - Deactivation

(Figure 201)

A. General

- (1) This procedure removes electrical power to the Autoflight Status Annunciator.

B. References

Reference	Title
24-22-00-860-811	Supply Electrical Power (P/B 201)

C. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

D. Procedure

SUBTASK 22-11-32-860-006

- (1) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
C	4	C00456	AFCS SYS A MACH TRIM AC
C	5	C01041	AFCS SYS A SNSR EXC AC
D	1	C01049	AFCS SYS A WARN LIGHT (BAT)
D	2	C01045	AFCS SYS A FCC DC
D	3	C01048	AFCS SYS A ENGAGE INTLK
D	4	C00457	AFCS SYS A MACH TRIM DC
D	5	C01044	AFCS MCP DC 1
E	1	C00721	AUTOTHROTTLE DC 1

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
A	6	C01017	FMCS CMPTR 1

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	1	C00374	AFCS SYS B WARN LIGHT (BAT)
B	2	C01064	AFCS SYS B MACH TRIM DC
B	3	C01046	AFCS SYS B FCC DC
B	4	C00716	AFCS SYS B ENGAGE INTLK
C	1	C01037	AFCS SYS B MACH TRIM AC
C	2	C01042	AFCS SYS B SNSR EXC AC

EFFECTIVITY	AKS ALL
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(Continued)

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	3	C01047	AFCS MCP DC 2

E. Autoflight Status Annunciator - Tryout

NOTE: This tryout is to make sure the Autoflight Status Annunciator is in a zero energy state.

SUBTASK 22-11-32-860-009

- (1) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

SUBTASK 22-11-32-860-007

- (2) Make sure that these circuit breakers are open and have safety tags:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	4	C00456	AFCS SYS A MACH TRIM AC
C	5	C01041	AFCS SYS A SNSR EXC AC
D	1	C01049	AFCS SYS A WARN LIGHT (BAT)
D	2	C01045	AFCS SYS A FCC DC
D	3	C01048	AFCS SYS A ENGAGE INTLK
D	4	C00457	AFCS SYS A MACH TRIM DC
D	5	C01044	AFCS MCP DC 1
E	1	C00721	AUTOTHROTTLE DC 1

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	6	C01017	FMCS CMPTR 1

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	1	C00374	AFCS SYS B WARN LIGHT (BAT)
B	2	C01064	AFCS SYS B MACH TRIM DC
B	3	C01046	AFCS SYS B FCC DC
B	4	C00716	AFCS SYS B ENGAGE INTLK
C	1	C01037	AFCS SYS B MACH TRIM AC
C	2	C01042	AFCS SYS B SNSR EXC AC
C	3	C01047	AFCS MCP DC 2

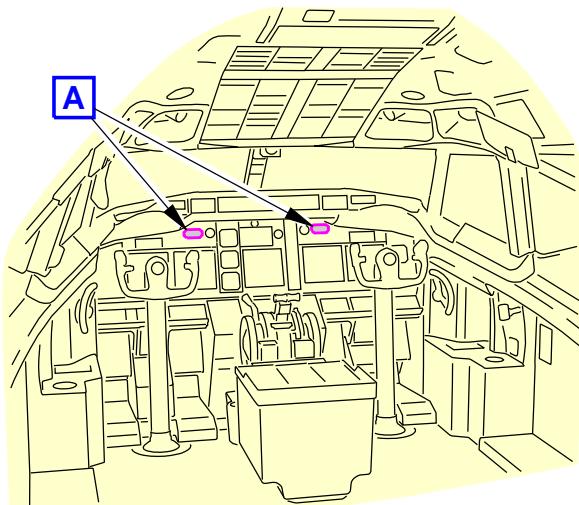
SUBTASK 22-11-32-700-001

- (3) Do the following steps to make sure electrical power has been removed:
 - (a) Hold the TEST switch in the position 1:
 - 1) Make sure none of the warning lights come on.
 - (b) Hold the TEST switch in the position 2:
 - 1) Make sure none of the warning lights come on.

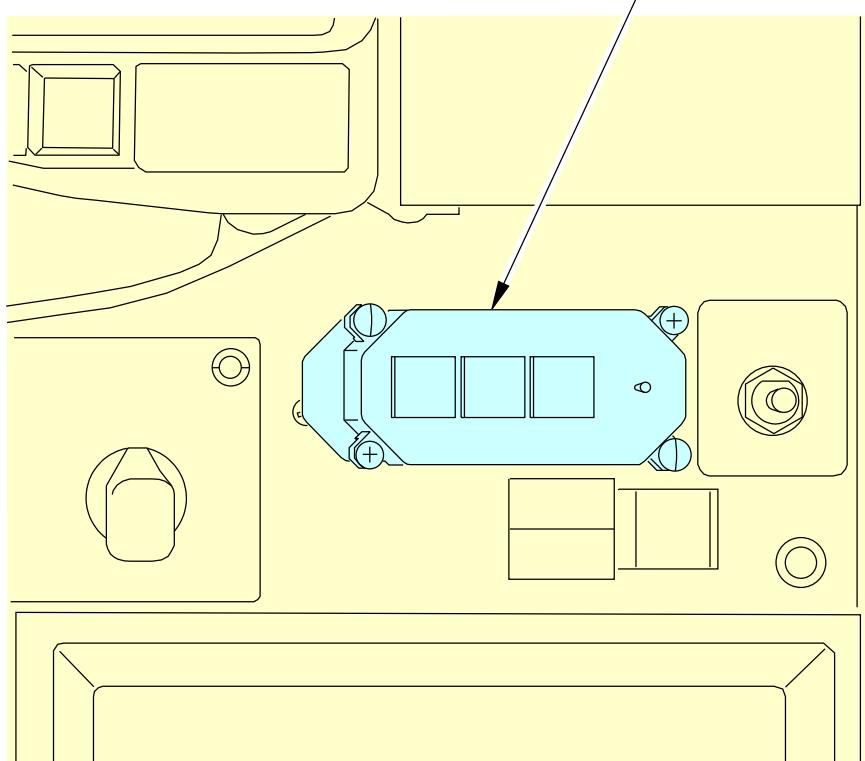
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FLIGHT COMPARTMENT

AUTOFLIGHT
STATUS
ANNUNCIATOR

A

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Autoflight Status Annunciator
Figure 201/22-11-32-990-804

EFFECTIVITY
AKS ALL

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TASK 22-11-32-440-801

3. Autoflight Status Annunciator - Activation

(Figure 201)

A. General

- (1) This procedure adds electrical power to Autoflight the Status Annunciator.

B. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

C. Procedure

SUBTASK 22-11-32-860-008

- (1) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
C	4	C00456	AFCS SYS A MACH TRIM AC
C	5	C01041	AFCS SYS A SNSR EXC AC
D	1	C01049	AFCS SYS A WARN LIGHT (BAT)
D	2	C01045	AFCS SYS A FCC DC
D	3	C01048	AFCS SYS A ENGAGE INTLK
D	4	C00457	AFCS SYS A MACH TRIM DC
D	5	C01044	AFCS MCP DC 1
E	1	C00721	AUTOTHROTTLE DC 1

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
A	6	C01017	FMCS CMPTR 1

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	1	C00374	AFCS SYS B WARN LIGHT (BAT)
B	2	C01064	AFCS SYS B MACH TRIM DC
B	3	C01046	AFCS SYS B FCC DC
B	4	C00716	AFCS SYS B ENGAGE INTLK
C	1	C01037	AFCS SYS B MACH TRIM AC
C	2	C01042	AFCS SYS B SNSR EXC AC
C	3	C01047	AFCS MCP DC 2

SUBTASK 22-11-32-700-002

- (2) Do the following steps to make sure power has been restored:

- (a) Hold the TEST switch in the position 1:

- 1) Make sure all three warning lights come on (in amber).

NOTE: The A/P and A/T warning lights come on before the FMC warning light comes on.

- (b) Release the TEST switch:

- 1) Make sure all the warning lights go off.

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- (c) Hold the TEST switch in the position 2:
 - 1) Make sure the A/P and A/T warning lights come on (in red), then the FMC warning light comes on (in amber).
- (d) Release the TEST switch:
 - 1) Make sure all the warning lights go off.

———— END OF TASK ————

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AUTOFLIGHT STATUS ANNUNCIATOR - SERVICING

1. General

- A. This procedure contains two tasks. The first task is for the replacement of the lamps in the autoflight status annunciator. The second task is the annunciator test. It makes sure that the annunciator operates correctly after the replacement of the lamps.
- B. There are two autoflight status annunciators installed in the airplane, one on each pilot's instrument panel. When you replace the lamps, you do not have to remove the annunciator.
- C. Each annunciator has three warning light indicators and a test switch. Each warning light indicator has four filament lamps (each at 28v and 0.4A). In each warning light indicator, you will find two lamps behind an amber filter and two behind a red filter. The red lamps in the FMC warning light indicator are not connected.

TASK 22-11-32-960-801

2. Lamp Replacement

(Figure 301)

A. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Lamps	33-11-01-10-055	AKS ALL
		33-11-01-10-065	AKS ALL
		33-11-01-10-075	AKS ALL

B. Location Zones

Zone	Area
210	Subzone - Control Compartment - Body Station 178.00 to Body Station 259.50

C. Procedure

SUBTASK 22-11-32-020-001

- (1) Pull the front cap out and hold it down to get access to the lamps.

SUBTASK 22-11-32-960-001

- (2) Do these steps to replace a lamps [1]:
 - (a) Remove all the lamps [1] in the cap.
NOTE: In the FMC warning light indicator, you only replace the two lamps installed behind the amber filter.
 - (b) Examine all the lamps [1].
 - (c) Replace the bad lamps [1].

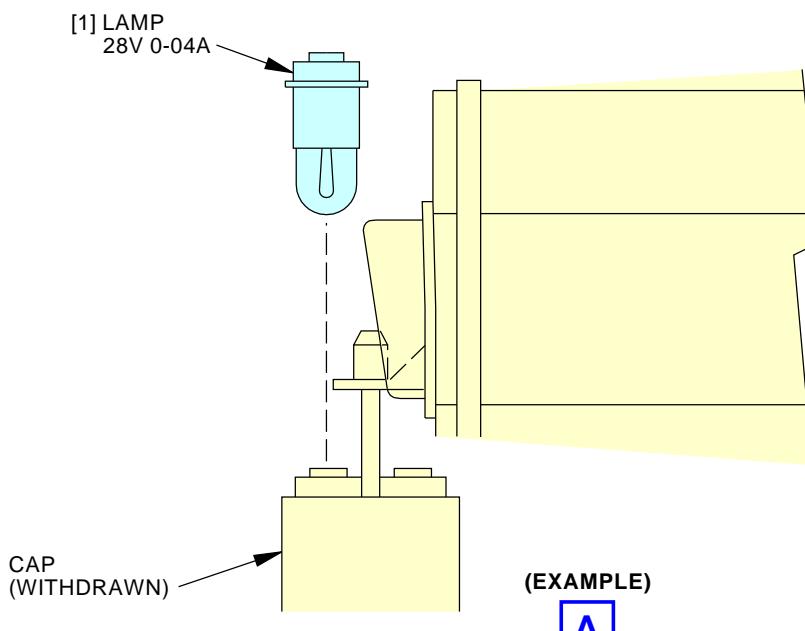
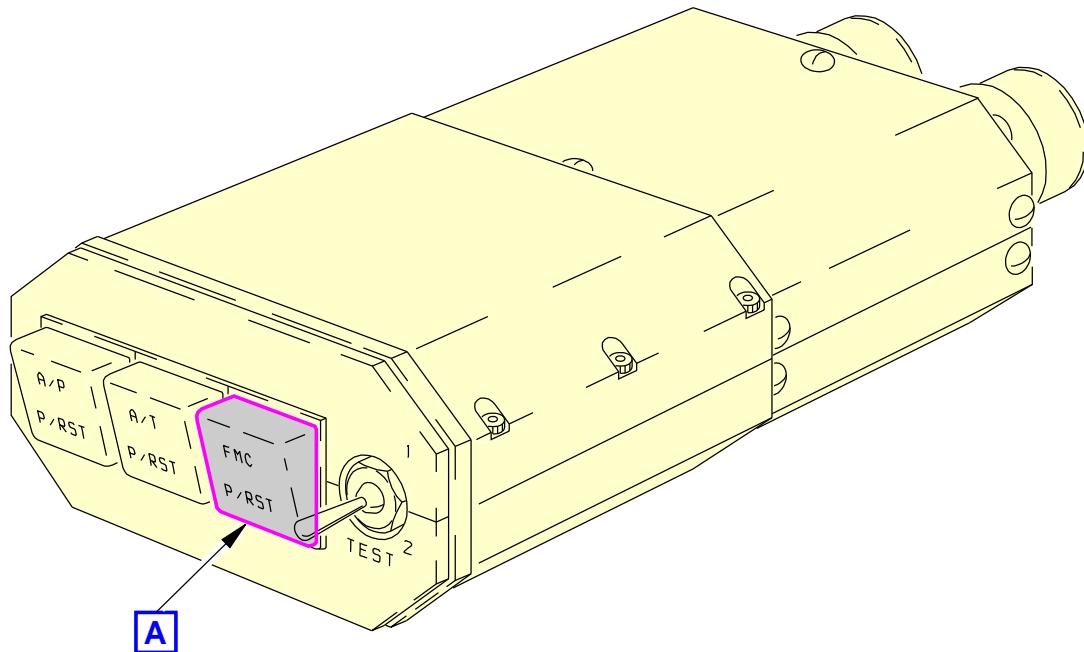
SUBTASK 22-11-32-420-001

- (3) Lift the cap assembly and move it into the autoflight status annunciator until the cap assembly goes into its position.

———— END OF TASK ————



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Autoflight Status Annunciator - Lamp Replacement
Figure 301/22-11-32-990-801

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TASK 22-11-32-710-801

3. Annunciator Test

A. References

Reference	Title
24-22-00-860-811	Supply Electrical Power (P/B 201)

B. Location Zones

Zone	Area
210	Subzone - Control Compartment - Body Station 178.00 to Body Station 259.50

C. Procedure

SUBTASK 22-11-32-860-001

- (1) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

SUBTASK 22-11-32-710-001

- (2) Hold the TEST switch in the 1 position:

- (a) Make sure that all three amber warning lights come on.

NOTE: The A/P and A/T warning lights come on before the FMC warning light comes on.

SUBTASK 22-11-32-710-002

- (3) Release the TEST switch:

- (a) Make sure that all the warning lights go off.

SUBTASK 22-11-32-710-003

- (4) Hold the TEST switch in the 2 position:

- (a) Make sure that the red A/P and A/T warning lights come on, and then the amber FMC warning light comes on.

SUBTASK 22-11-32-710-004

- (5) Release the TEST switch:

- (a) Make sure that all the warning lights go off.

———— END OF TASK ————



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AUTOFLIGHT STATUS ANNUNCIATOR - REMOVAL/INSTALLATION

1. General

- A. This procedure contains two tasks. The first task is for the removal of the autoflight status annunciator. The second task is for the installation of the autoflight status annunciator.
- B. The autoflight status annunciator is also known as the FMS warning annunciator. There are two autoflight status annunciators installed in the airplane, one on each pilot's instrument panel.
- C. Each annunciator is attached to the rear of the pilot's instrument panel with a clamp. Two electrical connectors are at the rear of each annunciator.

TASK 22-11-32-000-801

2. Annunciator - Removal

(Figure 401)

A. Location Zones

<u>Zone</u>	<u>Area</u>
210	Subzone - Control Compartment - Body Station 178.00 to Body Station 259.50

B. Procedure

SUBTASK 22-11-32-860-002

- (1) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	4	C00456	AFCS SYS A MACH TRIM AC
C	5	C01041	AFCS SYS A SNSR EXC AC
D	1	C01049	AFCS SYS A WARN LIGHT (BAT)
D	2	C01045	AFCS SYS A FCC DC
D	3	C01048	AFCS SYS A ENGAGE INTLK
D	4	C00457	AFCS SYS A MACH TRIM DC
D	5	C01044	AFCS MCP DC 1
E	1	C00721	AUTOTHROTTLE DC 1

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	6	C01017	FMCS CMPTR 1

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	1	C00374	AFCS SYS B WARN LIGHT (BAT)
B	2	C01064	AFCS SYS B MACH TRIM DC
B	3	C01046	AFCS SYS B FCC DC
B	4	C00716	AFCS SYS B ENGAGE INTLK
C	1	C01037	AFCS SYS B MACH TRIM AC
C	2	C01042	AFCS SYS B SNSR EXC AC
C	3	C01047	AFCS MCP DC 2

SUBTASK 22-11-32-020-002

- (2) Do these steps to remove the annunciator assembly [1]:

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- (a) Loosen the two fasteners [3] that attach the clamp to the annunciator assembly [1].
NOTE: The two fasteners used to remove the ASA are the top left and bottom right corners. Do not loosen the top right and the lower left adjustment screws [2]. These two screws hold the annunciator in its position behind the instrument panel.
- (b) Carefully pull the annunciator assembly [1] out of the instrument panel.
- (c) Disconnect the two electrical connectors [4].
- (d) Install the dust caps on the electrical connectors [4].

———— END OF TASK ————

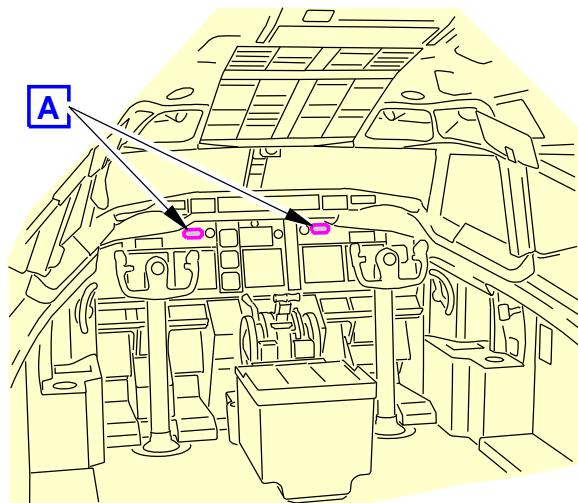
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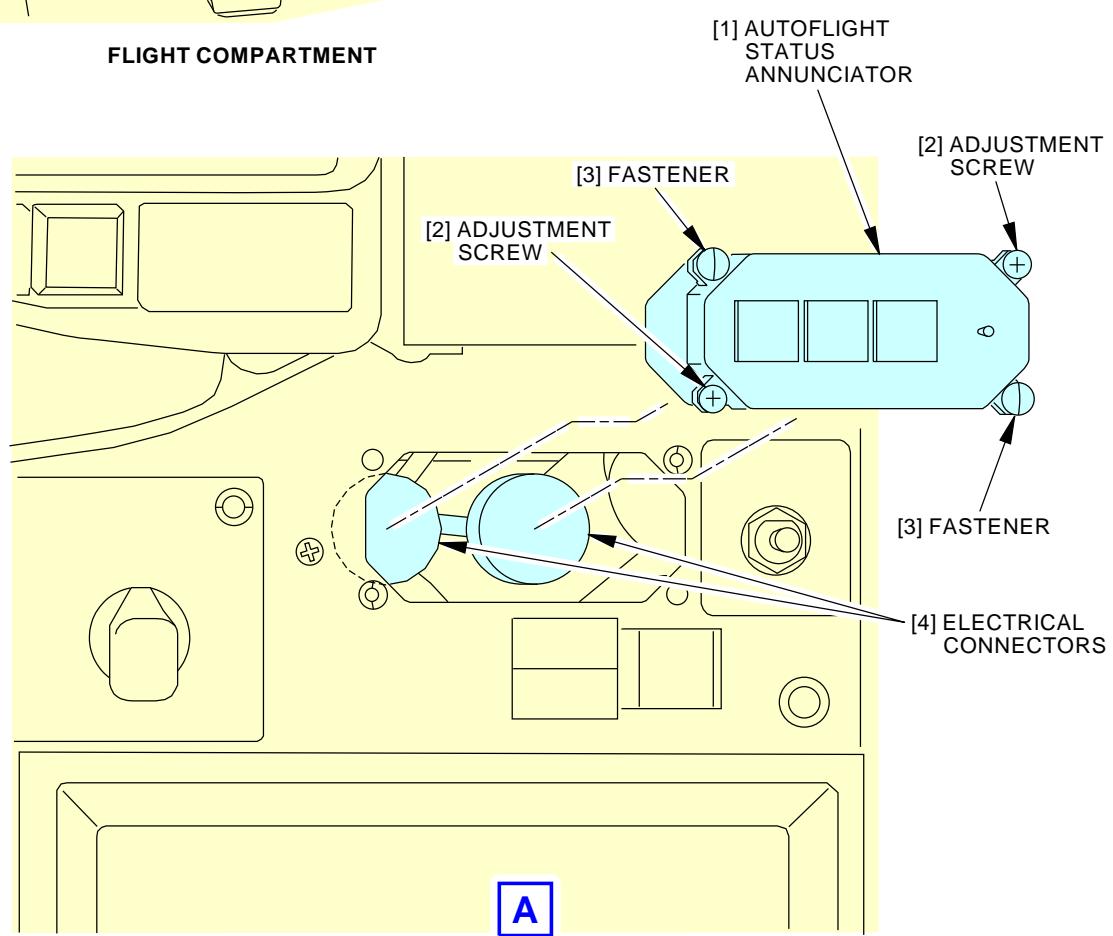
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FLIGHT COMPARTMENT



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Autoflight Status Annunciator Installation

Figure 401/22-11-32-990-803

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TASK 22-11-32-400-801

3. Annunciator - Installation

(Figure 401)

A. References

Reference	Title
24-22-00-860-811	Supply Electrical Power (P/B 201)

B. Location Zones

Zone	Area
210	Subzone - Control Compartment - Body Station 178.00 to Body Station 259.50

C. Procedure

SUBTASK 22-11-32-420-002

- (1) Do these steps to install the annunciator assembly [1]:
 - (a) Remove the dust caps from the electrical connectors [4].
 - (b) Connect the two electrical connectors [4].
 - (c) Put the annunciator assembly [1] in its position.
 - (d) Tighten the two fasteners [3].

D. Annunciator Test

SUBTASK 22-11-32-860-003

- (1) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

SUBTASK 22-11-32-860-004

- (2) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
C	4	C00456	AFCS SYS A MACH TRIM AC
C	5	C01041	AFCS SYS A SNSR EXC AC
D	1	C01049	AFCS SYS A WARN LIGHT (BAT)
D	2	C01045	AFCS SYS A FCC DC
D	3	C01048	AFCS SYS A ENGAGE INTLK
D	4	C00457	AFCS SYS A MACH TRIM DC
D	5	C01044	AFCS MCP DC 1
E	1	C00721	AUTOTHROTTLE DC 1

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
A	6	C01017	FMCS CMPTR 1

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	1	C00374	AFCS SYS B WARN LIGHT (BAT)
B	2	C01064	AFCS SYS B MACH TRIM DC
B	3	C01046	AFCS SYS B FCC DC
B	4	C00716	AFCS SYS B ENGAGE INTLK
C	1	C01037	AFCS SYS B MACH TRIM AC
C	2	C01042	AFCS SYS B SNSR EXC AC

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(Continued)

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
------------	------------	---------------	-------------

C	3	C01047	AFCS MCP DC 2
---	---	--------	---------------

NOTE: Make sure that you close the AFCS A FCC DC and AFCS B FCC DC circuit breakers last.

SUBTASK 22-11-32-710-005

- (3) Hold the TEST switch in the position 1:

- (a) Make sure all three warning lights come on (in amber).

NOTE: The A/P and A/T warning lights come on before the FMC warning light comes on.

SUBTASK 22-11-32-710-006

- (4) Release the TEST switch:

- (a) Make sure all the warning lights go off.

SUBTASK 22-11-32-710-007

- (5) Hold the TEST switch in the position 2:

- (a) Make sure the A/P and A/T warning lights come on (in red), then the FMC warning light comes on (in amber).

SUBTASK 22-11-32-710-008

- (6) Release the TEST switch:

- (a) Make sure all the warning lights go off.

———— END OF TASK ————



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FLIGHT CONTROL COMPUTER - MAINTENANCE PRACTICES

1. General

- A. This procedure contains these tasks:
 - (1) Flight Control Computer Deactivation.
 - (2) Flight Control Computer Activation.
 - (3) An installation of the FCC operational program software (OPS) with an airborne data loader (ADL).
 - (4) An download of the FCC flight faults memory with an airborne data loader (ADL).
 - (5) An download of the FCC BITE test data with an airborne data loader (ADL).
 - (6) An installation of the FCC operational program software (OPS) with a portable data loader (PDL) from the flight compartment.
 - (7) An download of the FCC flight faults memory with a portable data loader (PDL) from the flight compartment.
 - (8) An download of the FCC BITE test data with a portable data loader (PDL) from the flight compartment.
 - (9) An installation of the FCC operational program software (OPS) with a portable data loader (PDL) from the electrical and electronics compartment.
 - (10) An installation of the FCC operational program software (OPS) from one FCC to the other FCC, using the FCC cross-load function. A data loader is not needed in this task.
- B. The data loader control panel (DLCP) is installed on the P61 panel in the flight compartment. The DLCP can have one or two switches.
 - (1) If the DLCP has two switches, then you can install the FCC software from the flight compartment. If an ADL is installed on the P61 panel, then use the software installation procedure with the ADL. If a DATA TRANSFER UNIT RECEPTACLE is installed on the P61 panel, then use the procedure with the PDL from the flight compartment.
 - (2) If the DLCP has one switch, then you cannot install FCC software from the flight compartment because there is no FCC switch position. Use the alternate procedure to install the FCC software from the electrical and electronics compartment with a PDL.

TASK 22-11-33-040-801

2. Flight Control Computer - Deactivation

(Figure 22-11-33-990-802)

A. General

- (1) This procedure removes electrical power to the Flight Control Computer.

B. References

Reference	Title
22-11-33-990-802	Figure: Flight Control Computer Installation (P/B 401)
24-22-00-860-811	Supply Electrical Power (P/B 201)

C. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

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D. Procedure

SUBTASK 22-11-33-860-208

- (1) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	4	C00456	AFCS SYS A MACH TRIM AC
C	5	C01041	AFCS SYS A SNSR EXC AC
D	1	C01049	AFCS SYS A WARN LIGHT (BAT)
D	2	C01045	AFCS SYS A FCC DC
D	3	C01048	AFCS SYS A ENGAGE INTLK
D	4	C00457	AFCS SYS A MACH TRIM DC
D	5	C01044	AFCS MCP DC 1
E	1	C00721	AUTOTHROTTLE DC 1

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	1	C00374	AFCS SYS B WARN LIGHT (BAT)
B	2	C01064	AFCS SYS B MACH TRIM DC
B	3	C01046	AFCS SYS B FCC DC
B	4	C00716	AFCS SYS B ENGAGE INTLK
C	1	C01037	AFCS SYS B MACH TRIM AC
C	2	C01042	AFCS SYS B SNSR EXC AC
C	3	C01047	AFCS MCP DC 2

E. Flight Control Computer - Tryout

NOTE: This tryout is to make sure the Flight Control Computer is in a zero energy state.

SUBTASK 22-11-33-860-212

- (1) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

SUBTASK 22-11-33-860-209

- (2) Make sure that these circuit breakers are open and have safety tags:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	4	C00456	AFCS SYS A MACH TRIM AC
C	5	C01041	AFCS SYS A SNSR EXC AC
D	1	C01049	AFCS SYS A WARN LIGHT (BAT)
D	2	C01045	AFCS SYS A FCC DC
D	3	C01048	AFCS SYS A ENGAGE INTLK
D	4	C00457	AFCS SYS A MACH TRIM DC
D	5	C01044	AFCS MCP DC 1
E	1	C00721	AUTOTHROTTLE DC 1

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	1	C00374	AFCS SYS B WARN LIGHT (BAT)
B	2	C01064	AFCS SYS B MACH TRIM DC
B	3	C01046	AFCS SYS B FCC DC



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(Continued)

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	4	C00716	AFCS SYS B ENGAGE INTLK
C	1	C01037	AFCS SYS B MACH TRIM AC
C	2	C01042	AFCS SYS B SNSR EXC AC
C	3	C01047	AFCS MCP DC 2

SUBTASK 22-11-33-860-210

- (3) At the FMC - CDU make sure that the keyboard and display panel are not functioning (Figure 201).

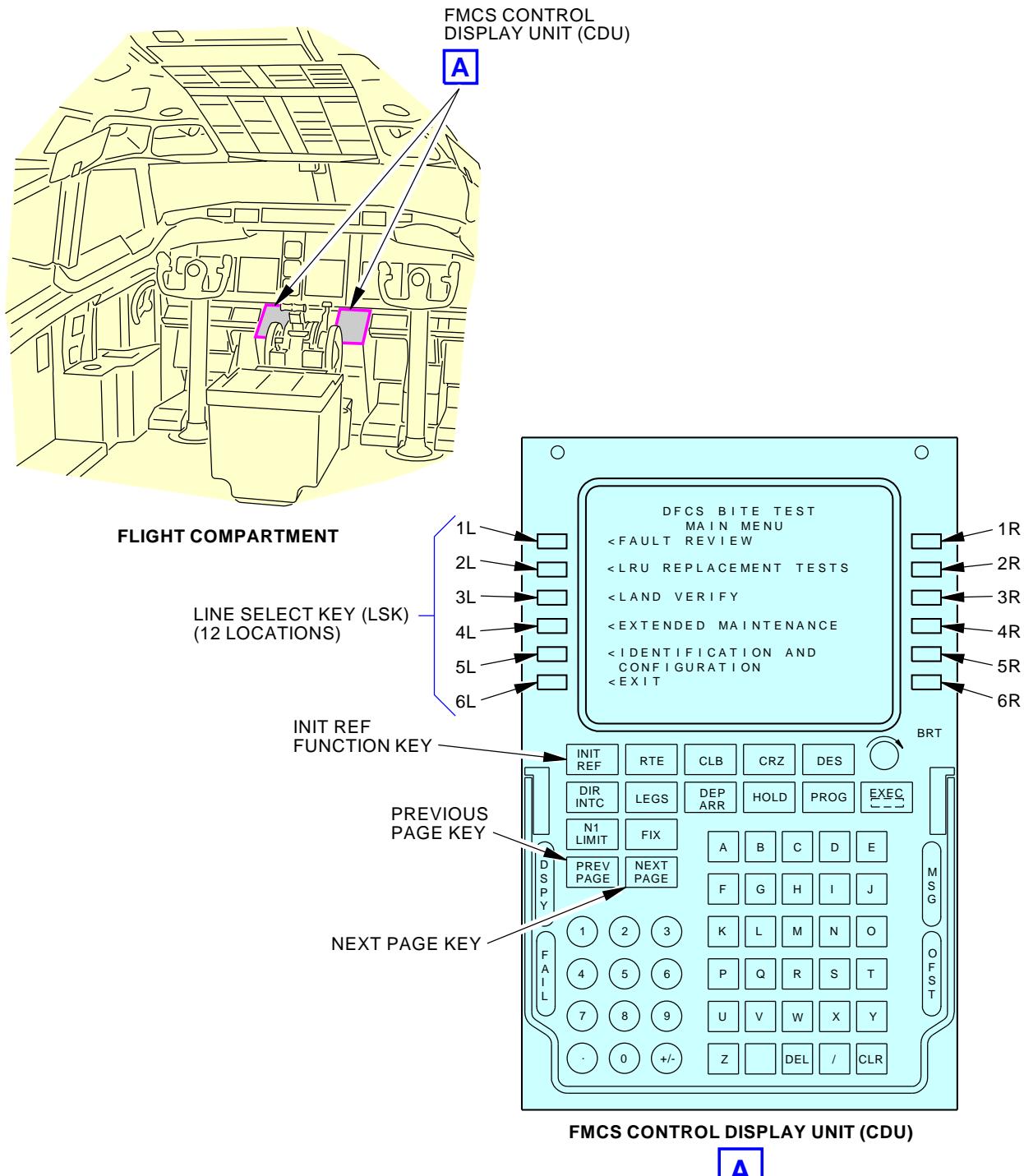
———— END OF TASK ————

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Flight Management Computer Control Display Unit
Figure 201/22-11-33-990-804

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TASK 22-11-33-440-801

3. Flight Control Computer - Activation

Figure 22-11-33-990-802

A. General

- (1) This procedure adds electrical power to the Flight Control Computer.

B. References

Reference	Title
22-11-33-990-802	Figure: Flight Control Computer Installation (P/B 401)

C. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

D. Procedure

SUBTASK 22-11-33-860-211

- (1) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
C	4	C00456	AFCS SYS A MACH TRIM AC
C	5	C01041	AFCS SYS A SNSR EXC AC
D	1	C01049	AFCS SYS A WARN LIGHT (BAT)
D	2	C01045	AFCS SYS A FCC DC
D	3	C01048	AFCS SYS A ENGAGE INTLK
D	4	C00457	AFCS SYS A MACH TRIM DC
D	5	C01044	AFCS MCP DC 1
E	1	C00721	AUTOTHROTTLE DC 1

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
A	6	C01017	FMCS CMPTR 1

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	1	C00374	AFCS SYS B WARN LIGHT (BAT)
B	2	C01064	AFCS SYS B MACH TRIM DC
B	3	C01046	AFCS SYS B FCC DC
B	4	C00716	AFCS SYS B ENGAGE INTLK
C	1	C01037	AFCS SYS B MACH TRIM AC
C	2	C01042	AFCS SYS B SNSR EXC AC
C	3	C01047	AFCS MCP DC 2

— END OF TASK —

TASK 22-11-33-470-802

4. FCC Software Installation with an Airborne Data Loader

A. General

- (1) This procedure tells you how to install operational program software (OPS) in the FCC.

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- (2) An airborne data loader (ADL) and a data loader control panel are necessary for this procedure. There must be an FCC switch position on the data loader control panel. The data loader control panel is installed above the airborne data loader on the P61 panel.
- (3) The airplane must be on the ground with the engines shutdown before you can install software.
- (4) Some airlines keep the circuit breaker for the data loader open when the data loader is not necessary. This increases the length of time that the data loader is serviceable.
- (5) To read about software installation times and data loaders, do this task: On-Airplane Software Installation, TASK 20-15-11-400-801.

B. References

Reference	Title
20-15-11-400-801	On-Airplane Software Installation (P/B 201)
24-22-00-860-811	Supply Electrical Power (P/B 201)
24-22-00-860-812	Remove Electrical Power (P/B 201)

C. Location Zones

Zone	Area
212	Flight Compartment - Right

D. Prepare for Software Installation

SUBTASK 22-11-33-860-025

- (1) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

SUBTASK 22-11-33-860-026

- (2) Make sure the DFCS is not engaged.

SUBTASK 22-11-33-860-027

- (3) Use an ADL to install software in the FCC.

NOTE: You must know the correct software part numbers for the FCC. For the FCC to be an approved installation, the correct part number must be installed.

SUBTASK 22-11-33-860-028

- (4) Make sure that the lower system select switch on the data loader control panel (P61) is set to NORMAL.

SUBTASK 22-11-33-850-001

- (5) Remove the safety tag and close this circuit breaker:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
A	9	C00923	DATA LOADER

E. Software Installation Procedure for FCC A

SUBTASK 22-11-33-860-171

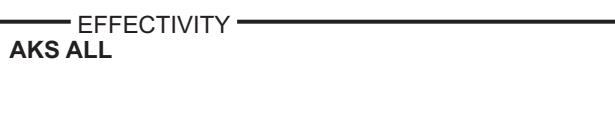
- (1) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	3	C01046	AFCS SYS B FCC DC

SUBTASK 22-11-33-860-031

- (2) Set the upper system select switch on the data loader control panel (P61) to L.



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SUBTASK 22-11-33-860-032

- (3) Set the lower system select switch on the data loader control panel to FCC.

SUBTASK 22-11-33-860-033

- (4) Make sure that this circuit breaker is closed:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	2	C01045	AFCS SYS A FCC DC

SUBTASK 22-11-33-420-005

- (5) Do these steps to install the software into FCC A:

- (a) Put the correct disk in the disk drive.

- (b) Follow the prompts on the data loader to complete the installation.

NOTE: COMP, LOAD COMPLETE and TRANSF COMPLETE are examples of data loader prompts for a completed installation.

- (c) Remove the disk from the disk drive when the software installation is completed.

F. Software Installation Procedure for FCC B

SUBTASK 22-11-33-860-034

- (1) Set the upper system select switch on the data loader control panel (P61) to R.

SUBTASK 22-11-33-860-035

- (2) Close this circuit breaker:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	3	C01046	AFCS SYS B FCC DC

SUBTASK 22-11-33-860-172

- (3) Open this circuit breaker and install safety tag:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	2	C01045	AFCS SYS A FCC DC

SUBTASK 22-11-33-420-006

- (4) Do these steps to install the software into FCC B:

- (a) Put the correct disk in the disk drive.

- (b) Follow the prompts on the data loader to complete the installation.

NOTE: COMP, LOAD COMPLETE and TRANSF COMPLETE are examples of data loader prompts for a completed installation.

NOTE: The software for the Collins FCC's is supplied on two diskettes. Put the second disk in less than ten minutes after the first disk has completed. If the second disk is not installed in less than ten minutes, the software installation procedure must start over.

- (c) When the software installation is completed, set the lower system select switch on the data loader control panel (P61) to NORMAL.

- (d) Set the upper system select switch on the data loader control panel to SINGLE SYS.

- (e) Remove the disk from the disk drive.



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SUBTASK 22-11-33-860-173

- (5) Remove the safety tag and close this circuit breaker:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	2	C01045	AFCS SYS A FCC DC

SUBTASK 22-11-33-860-174

- (6) Open this circuit breaker and install safety tag:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	9	C00923	DATA LOADER

SUBTASK 22-11-33-860-056

- (7) After two minutes, do the Software Installation Test below.

G. Software Installation Test from the FMCS CDU

SUBTASK 22-11-33-420-007

- (1) Do these steps to test the software installation:

NOTE: Do not continue the procedure until the flight director flags are gone from the EADI's.
The software installation is not complete when the flight director flags show.

- (a) If you are not at one of the DFCS BITE TEST displays, then do these steps:
- 1) Push the INIT REF function key.
 - 2) If the POS INIT display shows, then push the line select key adjacent to the INDEX prompt.
NOTE: This makes the INIT/REF INDEX show.
 - 3) Push the line select key adjacent to the MAINT prompt.
- (b) From the MAINT BITE INDEX, push the line select key adjacent to the DFCS prompt.
NOTE: The DFCS will do a self-test.
- (c) When the self-test is complete, push the line select key adjacent to the IDENTIFICATION AND CONFIGURATION prompt.
- (d) Push the line select key adjacent to the CHANNEL A prompt.
- 1) Make sure that the software part number for FCC A is correct.
NOTE: The software part number shows below FCC OPS.
- (e) Push the line select key adjacent to the PREV MENU prompt.
- (f) Push the line select key adjacent to the CHANNEL B prompt.
- 1) Make sure that the software part number for FCC B is correct.
NOTE: The software part number shows below FCC OPS.
- (g) Push the line select key adjacent to the PREV MENU prompt.
- (h) Push the line select key adjacent to the PREV MENU prompt.
- (i) Push the line select key adjacent to the FAULT REVIEW prompt.
- (j) Push the line select key adjacent to the ERASE FAULT HISTORY prompt.
- (k) Push the line select key adjacent to the CHANNEL A AND B prompt.
- (l) Push the line select key adjacent to the YES prompt.

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- (m) Push and release the line select key adjacent to the EXIT prompt until you are out of DFCS BITE.

H. Put the Airplane Back to Its Usual Condition

SUBTASK 22-11-33-860-036

- (1) Do this task: Remove Electrical Power, TASK 24-22-00-860-812.

———— END OF TASK ————

TASK 22-11-33-470-805

5. FCC Inflight Faults Memory Download with an Airborne Data Loader

A. General

- (1) This procedure tells you how to download Flight Faults Memory in the FCC.
- (2) An airborne data loader (ADL) and a data loader control panel are necessary for this procedure. There must be an FCC switch position on the data loader control panel. The data loader control panel is installed above the airborne data loader on the (P61) panel.
- (3) The airplane must be on the ground with the engines shutdown before you download the flight faults.
- (4) Some airlines keep the circuit breaker for the data loader open when the data loader is not necessary. This increases the length of time that the data loader is serviceable.
- (5) To read about software installation times and data loaders, do this task:On-Airplane Software Installation, TASK 20-15-11-400-801

B. References

Reference	Title
20-15-11-400-801	On-Airplane Software Installation (P/B 201)
24-22-00-860-811	Supply Electrical Power (P/B 201)
24-22-00-860-812	Remove Electrical Power (P/B 201)

C. Location Zones

Zone	Area
212	Flight Compartment - Right

D. Prepare for FCC Faults Memory Download

SUBTASK 22-11-33-860-067

- (1) Do this task:Supply Electrical Power, TASK 24-22-00-860-811.

SUBTASK 22-11-33-860-068

- (2) Make sure the DFCS is not engaged

SUBTASK 22-11-33-860-069

- (3) Use an ADL to download the flight faults in the FCC.

SUBTASK 22-11-33-860-070

- (4) Make sure that the lower system select switch on the data loader control panel (P61) is set to NORMAL

SUBTASK 22-11-33-860-071

- (5) Make sure that the FCC is power up and not in BITE.



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E. FCC Flight Faults Memory Download Procedure for FCC A

SUBTASK 22-11-33-860-072

- (1) Open these circuit breakers:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	2	C01045	AFCS SYS A FCC DC

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	3	C01046	AFCS SYS B FCC DC

SUBTASK 22-11-33-860-073

- (2) Make sure that this circuit breaker is closed:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	9	C00923	DATA LOADER

SUBTASK 22-11-33-860-074

- (3) Set the upper system select switch on the data loader control panel (P61) to L.

SUBTASK 22-11-33-860-075

- (4) Set the lower system select switch on the data loader control panel to FCC.

SUBTASK 22-11-33-860-076

- (5) Close this circuit breaker:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	2	C01045	AFCS SYS A FCC DC

NOTE: WAIT until the FCC powers-up and the F/D flag is out of view before proceeding to the next step (this could take approximately 60 seconds).

SUBTASK 22-11-33-970-001

- (6) Do these steps to download the Flight Faults Memory of FCC A

- (a) Use the FMC-CDU to enter DFCS BITE.
- (b) Select INDEX.
- (c) Select MAINT.
- (d) Select DFCS.
- (e) Select FAULT REVIEW.
- (f) Select DOWNLOAD FAULT HISTORY.
- (g) Select AUTOPILOT FAULT HISTORY or AUTOTHROTTLE FAULT HISTORY.
- (h) Install a floppy disk into the disk drive.

NOTE: The file name will show on the CDU when the download is completed.

It takes around 15 minutes to complete the download.

- (i) Remove the disk from the disk drive when the download is completed.

- (7) Set the upper system select switch on the data loader control panel (P61) to C.

- (8) Remove the Data Loader connection before exit BITE.

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F. FCC Flight Faults Memory Download Procedure for FCC B.

SUBTASK 22-11-33-860-077

- (1) Set the upper system select switch on the data loader control panel (P61) to R.

SUBTASK 22-11-33-860-078

- (2) Close this circuit breaker:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	3	C01046	AFCS SYS B FCC DC

NOTE: WAIT until the FCC powers-up and the F/D flag is out of view before proceeding to the next step (this could take approximately 60 seconds).

SUBTASK 22-11-33-970-002

- (3) Do these steps to download the Flight Faults Memory of FCC B.

- (a) Use the FMC-CDU to enter DFCS BITE.
- (b) Select INDEX.
- (c) Select MAINT.
- (d) Select DFCS.
- (e) Select FAULT REVIEW.
- (f) Select DOWNLOAD FAULT HISTORY.
- (g) Select AUTOPILOT FAULT HISTORY or AUTOTHROTTLE FAULT HISTORY.
- (h) Install a floppy disk into the disk drive.

NOTE: The file name will show on the CDU when the download is completed.

It takes around 15 minutes to complete the download.

- (i) Remove the disk from the disk drive when the download is completed.

- (4) Set the upper system select switch on the data loader control panel (P61) to C.
- (5) Set the lower system select switch on the data loader control panel to NORMAL.
- (6) Remove the Data Loader connection before exit BITE.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 22-11-33-860-079

- (1) Do this Task. Remove Electrical Power, TASK 24-22-00-860-812

———— END OF TASK ————

TASK 22-11-33-470-806

6. FCC BITE Test Data Download with an Airborne Data Loader

A. General

- (1) This procedure tells you how to download BITE test data in the FCC.
- (2) An airborne data loader (ADL) and a data loader control panel are necessary for this procedure. There must be an FCC switch position on the data loader control panel. The data loader control panel is installed above the airborne data loader on the P61 panel.
- (3) The airplane must be on the ground with the engines shutdown before you download the BITE test data.



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- (4) Some airlines keep the circuit breaker for the data loader open when the data loader is not necessary. This increases the length of time that the data loader is serviceable.
- (5) To read about the software installation times and data loaders, do this task. On-Airplane Software Installation, TASK 20-15-11-400-801

B. References

Reference	Title
20-15-11-400-801	On-Airplane Software Installation (P/B 201)
24-22-00-860-811	Supply Electrical Power (P/B 201)
24-22-00-860-812	Remove Electrical Power (P/B 201)

C. Location Zones

Zone	Area
212	Flight Compartment - Right

D. Prepare for BITE Test Data Download

SUBTASK 22-11-33-860-080

- (1) Do this task: Supply Electrical Power, TASK 24-22-00-860-811

SUBTASK 22-11-33-860-081

- (2) Make sure this DFCS is not engaged.

SUBTASK 22-11-33-860-082

- (3) Use an ADL to download the BITE test data in the FCC.

SUBTASK 22-11-33-860-083

- (4) Make sure that the lower system select switch on the data loader control panel (P61) is set to NORMAL.

SUBTASK 22-11-33-860-084

- (5) Make sure that the FCC is power up and not in BITE.

E. BITE Test Data Download Procedure for FCC A

SUBTASK 22-11-33-860-085

- (1) Open these circuit breakers:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
D	2	C01045	AFCS SYS A FCC DC

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	3	C01046	AFCS SYS B FCC DC

SUBTASK 22-11-33-860-086

- (2) Make sure that this circuit breaker is closed:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
A	9	C00923	DATA LOADER

SUBTASK 22-11-33-860-087

- (3) Set the upper system select switch on the data loader control panel (P61) to L.

SUBTASK 22-11-33-860-088

- (4) Set the lower system select switch on the data loader control panel to FCC.

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SUBTASK 22-11-33-860-089

- (5) Close this circuit breaker:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	2	C01045	AFCS SYS A FCC DC

SUBTASK 22-11-33-970-018

- (6) Do these steps to download the BITE Test Data of the FCC A.

- (a) Use the FMC-CDU to enter DFCS BITE.
- (b) Select INDEX.
- (c) Select MAINT.
- (d) Select DFCS.
- (e) Turn on the data loader.
- (f) Install a floppy disk into the disk drive.
- (g) Do these steps below for the applicable download:

- 1) For the CURRENT STATUS, select FAULT REVIEW.
 - a) Select CURRENT STATUS.
 - b) Enter 100.
 - c) Select LSK 6R.

NOTE: The engineer code 100 must be entered after the initialization screen is shown and before continue the test.

- 2) For the LRU INTERFACE TEST, select LRU REPLACEMENT TEST.

- a) Enter 100.
- b) Select LSK 6R.

NOTE: The engineer code 100 must be entered after the initialization screen is shown and before continue the test.

- 3) For the LAND VERIFY, select LAND VERIFY.

- a) Enter 100.
- b) Select LSK 6R.

NOTE: The engineer code 100 must be entered after the initialization screen is shown and before continue the test.

- 4) For the EXTENDED MAINTENANCE, select EXTENDED MAINTENANCE.

- a) Select BITE LIBRARY TEST.
- b) Select the library test suspect of fail.
- c) Enter 100.
- d) Select LSK 6R.

NOTE: The engineer code 100 must be entered after the initialization screen is shown and before continue the test.

- (h) Select EXECUTE.

NOTE: If test pass, the CDU will display TEST PASS.

- (i) Select DATA.

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- (j) Select CONTINUE.
- (k) Select TEST RESULT.

NOTE: If no disk is in the data loader, CDU will show INSERT DISKETTE.

The file name will show on the CDU when the download is completed.

NOTE: If the download fail occurs, disconnect the power on the data loader for 10 second. Then reconnect the power.

- (l) Remove the disk from the disk drive when the download is completed.

SUBTASK 22-11-33-970-019

- (7) Set the upper system select switch on the data loader control panel (P61) to C.

SUBTASK 22-11-33-970-020

- (8) Remove the Data Loader connection before exit BITE.

F. BITE Test Data Download Procedure for FCC B.

SUBTASK 22-11-33-860-090

- (1) Set the upper system select switch on the data loader control panel (P61) to R.

SUBTASK 22-11-33-860-098

- (2) Close this circuit breaker:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	3	C01046	AFCS SYS B FCC DC

SUBTASK 22-11-33-970-014

- (3) Do these steps to download the BITE test data of the FCC B.
 - (a) Use the FMC-CDU to enter DFCS BITE.
 - (b) Select INDEX.
 - (c) Select MAINT.
 - (d) Select DFCS.
 - (e) Connect the Data Loader.
 - (f) Install a floppy disk into the disk drive.
 - (g) Select FAULT REVIEW.
 - (h) Select CURRENT STATUS.
 - (i) Select LRU INTERFACE TEST.
 - (j) Select LAND VERIFY.
 - (k) Select EXTENDED MAINTENANCE.
 - (l) Select BITE LIBRARY TEST.
 - (m) Select the library test suspect of fail.
 - (n) Select EXECUTE.
 - (o) Select DATA.
 - (p) Select CONTINUE.
 - (q) Select TEST RESULTS.

NOTE: If no disk is in the data loader, CDU will show INSERT DISKETTE.

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The file name will show on the CDU when the download is completed.

NOTE: If the download fail occurs, disconnect the power on the data loader for 10 second. Then reconnect the power.

- (r) Remove the disk from the disk drive when the download is completed.
- (4) Set the upper system select switch on the data loader control panel (P61) to C.
- (5) Remove the Data Loader connection before exit BITE.

G. Put the Airplane Back to its Usual Condition

SUBTASK 22-11-33-860-164

- (1) Do this task: Remove Electrical Power, TASK 24-22-00-860-812

————— END OF TASK ————

TASK 22-11-33-470-811

7. FCC Software Installation with an Enhanced Airborne Data Loader

A. General

- (1) This task provides instructions on how to install operational program software (OPS) in the flight control computer with an Enhanced Airborne Data Loader (eADL)
- (2) An enhanced airborne data loader (eADL) and a control display unit (CDU) are necessary for this procedure. A data loader control panel is also necessary. The data loader control panel is installed above the enhanced airborne data loader on the P61 panel.
- (3) The eADL has two procedures for software installation:
 - (a) Floppy Disk Software Installation
 - (b) USB Flash Drive Software Installation
 - 1) This procedure uses the USB port on the front panel of the eADL to install software from a valid USB flash drive to the Mass Storage Device (MSD). Once the software is installed on the MSD, the software is loaded to the CMU LRU.
 - 2) The USB flash drive must be configured correctly using the USB stick creator tool defined in the eADL Operations Guide.
- (4) The airplane must be on the ground with the engines shutdown before you can install software.
- (5) To read about software installation times and data loaders, reference this task: On-Airplane Software Installation, TASK 20-15-11-400-801.
- (6) Some airlines keep the circuit breaker for the data loader open when the data loader is not necessary. This increases the length of time that the data loader is serviceable.
- (7) The word "media" defines a data storage device. Examples of media are CDs, mass storage devices, diskettes, or floppy disks.

B. References

Reference	Title
20-15-11-400-801	On-Airplane Software Installation (P/B 201)
24-22-00-860-811	Supply Electrical Power (P/B 201)
24-22-00-860-812	Remove Electrical Power (P/B 201)

C. Prepare for the Software Installation

SUBTASK 22-11-33-470-010

- (1) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.
- (2) Make sure the DFCS is not engaged.

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- (3) Make sure you know the correct software part number for the FCC.
NOTE: For the FCC to be an approved installation, the correct software part number must be installed.
- (4) Make sure that the lower system select switch on the data loader control panel (P61) is set to NORMAL.
- (5) Make sure that this circuit breaker is closed:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	9	C00923	DATA LOADER

SUBTASK 22-11-33-470-011

- (6) To install software in FCC A follow these step:
(a) Make sure that this circuit breaker is closed:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	2	C01045	AFCS SYS A FCC DC

Make sure that this circuit breaker is open and has safety tag:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	3	C01046	AFCS SYS B FCC DC

- (b) Set the upper system select switch on the data loader control panel (P61) to L.
(c) Set the lower system select switch on the data loader control panel to FCC.

SUBTASK 22-11-33-470-012

- (7) To install software in FCC B follow these step:
(a) Make sure that this circuit breaker is closed:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	3	C01046	AFCS SYS B FCC DC

Make sure that this circuit breaker is open and has safety tag:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	2	C01045	AFCS SYS A FCC DC

- (b) Set the upper system select switch on the data loader control panel (P61) to R.
(c) Set the lower system select switch on the data loader control panel to FCC.

D. Software Installation Procedure

SUBTASK 22-11-33-470-013

- (1) Do these steps to install software from a floppy disk:
(a) Wait until the display shows the eADL Main Menu.
NOTE: To navigate UP or DOWN and make a selection on the eADL screen, use the appropriate buttons on the eADL front panel.
NOTE: If the eADL Main Menu does not show, select MAIN or GO BACK until the eADL shows the Main Menu.



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- (b) Select "Target Page."
 - 1) The eADL will show the Select Target System screen.
- (c) Select "Floppy Drive."
 - 1) The eADL will show a Load Confirmation screen.
- (d) Carefully push the first disk (label up) into the disk drive.
- (e) Select "CONFIRM."
 - 1) The eADL will show "LOADING" on the Transfer In Progress screen.
NOTE: It may take one to two minutes for the installation to start.
NOTE: If the disk set has more than one disk and the data of the current disk is completely transferred, the eADL will prompt you to insert the next diskette. Eject the current diskette, insert the next diskette and select "CONTINUE."
- (f) In the Transfer In Progress screen, wait for the eADL to show "LOAD COMPLETE."
- (g) Select "MAIN" to go back to the main menu.
- (h) Eject the disk from the disk drive when the software installation is completed.

SUBTASK 22-11-33-470-014

- (2) Do these steps to install software from a USB flash drive to the eADL MSD:
 - (a) Put the USB flash drive into the eADL USB port.
NOTE: The USB flash drive must be configured correctly by the USB stick creator tool as specified in the eADL Operations Guide.
 - (b) Make sure that the "eADL Main Menu" is shown.
NOTE: To navigate UP or DOWN and make a selection on the eADL screen, use the appropriate buttons on the eADL front panel.
NOTE: If the eADL Main Menu does not show, select MAIN or GO BACK until the eADL shows the Main Menu.
 - (c) Select "Maintenance Page."
 - 1) This will show the "Maintenance Menu" screen.
 - (d) Select "Transfer Parts From USB."
NOTE: If the error message "USB Is Not Mounted Or Is Not A Valid USB" is shown, select "GO BACK" and do the steps again.
NOTE: Make sure the USB flash drive is configured correctly by the USB stick creator tool as specified in the eADL Operations Guide.
 - 1) The eADL screen will show "CONFIRM TO BEGIN TRANSFERRING."
 - 2) Select "CONFIRM."
NOTE: The USB and MSD annunciators will turn yellow during the transfer procedure.
NOTE: If the software is already on the eADL MSD, this message will show: "Skipping, the software part number already exists."
 - (e) When the software transfer is complete, the USB and MSD annunciators will turn green and this message will show:
"Part Transfer Complete"
NOTE: The annunciators will turn red if the transfer procedure is aborted or if there is a failure.



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- (f) Select "GO BACK" two times to go back to the main menu.

SUBTASK 22-11-33-470-015

- (3) Do these steps to install the software from the eADL MSD to the LRU:

- (a) Make sure that the "eADL Main Menu" is shown.

NOTE: To navigate UP or DOWN and make a selection on the eADL screen, use the appropriate buttons on the eADL front panel.

NOTE: If the eADL Main Menu does not show, select MAIN or GO BACK until the eADL shows the Main Menu.

- (b) Select "Target Page."

- 1) This will show the "Select Target System" screen.

- (c) Select the LRU to receive the software.

- 1) This will show the "Select Software Part" screen.

- (d) Push the "SELECT" button for the desired software.

NOTE: The listed software will appear as it was originally configured in the USB stick creator tool.

- (e) Make sure that the "Load Confirmation" screen shows.

- (f) Select "CONFIRM."

- 1) This will show the "Transfer In Progress" screen.

- 2) The "TRANSFER" annunciator will change to "LOADING" and turn yellow during the installation procedure.

- 3) The "LOADING" annunciator will change to "COMPLETE" and turn green when the installation procedure is completed.

- (g) Select "MAIN" to go back to the main menu.

E. Software Installation Test from the FMCS CDU

SUBTASK 22-11-33-470-009

- (1) Do these steps to test the software installation:

NOTE: Do not continue the procedure until the flight director flags are gone from the EADI's.
The software installation is not complete when the flight director flags show.

- (a) Make sure that these circuit breakers are closed:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	2	C01045	AFCS SYS A FCC DC

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	3	C01046	AFCS SYS B FCC DC

- (b) If you are not at one of the DFCS BITE TEST displays, then do these steps:

- 1) Push the INIT REF function key.

- 2) If the POS INIT display shows, then push the line select key adjacent to the INDEX prompt.

NOTE: This makes the INIT/REF INDEX show.

- 3) Push the line select key adjacent to the MAINT prompt.



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- (c) From the MAINT BITE INDEX, push the line select key adjacent to the DFCS prompt.
NOTE: The DFCS will do a self-test.
- (d) When the self-test is complete, push the line select key adjacent to the IDENTIFICATION AND CONFIGURATION prompt.
- (e) Push the line select key adjacent to the CHANNEL A prompt.
 - 1) Make sure that the software part number for FCC A is correct.
NOTE: The software part number shows below FCC OPS.
- (f) Push the line select key adjacent to the PREV MENU prompt.
- (g) Push the line select key adjacent to the CHANNEL B prompt.
 - 1) Make sure that the software part number for FCC B is correct.
NOTE: The software part number shows below FCC OPS.
- (h) Push the line select key adjacent to the PREV MENU prompt.
- (i) Push the line select key adjacent to the PREV MENU prompt.
- (j) Push the line select key adjacent to the FAULT REVIEW prompt.
- (k) Push the line select key adjacent to the ERASE FAULT HISTORY prompt.
- (l) Push the line select key adjacent to the CHANNEL A AND B prompt.
- (m) Push the line select key adjacent to the YES prompt.
- (n) Push and release the line select key adjacent to the EXIT prompt until you are out of DFCS BITE.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 22-11-33-860-205

- (1) Do this task: Remove Electrical Power, TASK 24-22-00-860-812.

————— END OF TASK ————

TASK 22-11-33-470-803

8. FCC Software Installation from the Flight Compartment with a Portable Data Loader

A. General

- (1) This procedure tells you how to install operational program software (OPS) in the FCC.
- (2) A portable data loader (PDL) is necessary for this procedure. A data loader control panel and a PDL interface connector are also necessary. There must be an FCC switch position on the data loader control panel. The data loader control panel is installed above the DATA TRANSFER UNIT RECEPTACLE connector on the P61 panel.
- (3) A PDL is not a Boeing supplied part. Refer to the PDL supplier for instructions for operation. PDLs have a disk drive for software installation from disks. Some PDLs have an internal mass storage device. If the software is stored in the PDL, then disks are not necessary.
- (4) The airplane must be on the ground with the engines shutdown before you can install software.
- (5) To read about software installation times and data loaders, do this task: On-Airplane Software Installation, TASK 20-15-11-400-801.

B. References

Reference	Title
20-15-11-400-801	On-Airplane Software Installation (P/B 201)
24-22-00-860-811	Supply Electrical Power (P/B 201)

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(Continued)

Reference	Title
24-22-00-860-812	Remove Electrical Power (P/B 201)

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
COM-1915	Data Loader - ARINC 615 Part #: 11615-50 Supplier: 0D4J3 Part #: 2231560-1-B Supplier: 98571 Part #: 30100 Supplier: 0BAW0 Part #: 465130-01-01 Supplier: 30782 Part #: 800-0631 Supplier: 1JSZ6 Part #: CEI-715-DL-2 Supplier: 0BPH5 Part #: P2K-615A-06 Supplier: 0BAW0 Part #: YV68A110 Supplier: FAQ15 Opt Part #: 11615-02 Supplier: 0D4J3 Opt Part #: 11615-20 Supplier: 0D4J3 Opt Part #: 18000-02 Supplier: 0D4J3 Opt Part #: 80000-03-01010203 Supplier: 0BAW0 Opt Part #: 80000-04-01020301 Supplier: 0BAW0 Opt Part #: 80000-05 Supplier: 0BAW0 Opt Part #: 964-0400-020 Supplier: 97896 Opt Part #: 964-0400-025 Supplier: 97896 Opt Part #: 964-0400-030 Supplier: 97896 Opt Part #: 964-0400-055 Supplier: 97896

D. Location Zones

Zone	Area
212	Flight Compartment - Right

E. Prepare for Software Installation

SUBTASK 22-11-33-860-037

- (1) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

SUBTASK 22-11-33-860-038

- (2) Make sure that the DFCS is not engaged.

SUBTASK 22-11-33-860-039

- (3) Use a PDL to install software in the FCC.

NOTE: You must know the correct software part numbers for the FCC. For the FCC to be an approved installation, the correct part number must be installed.

SUBTASK 22-11-33-860-040

- (4) Make sure that the lower system select switch on the data loader control panel (P61) is set to NORMAL.



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F. Software Installation Procedure for FCC A

SUBTASK 22-11-33-860-041

- (1) Open these circuit breakers:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	2	C01045	AFCS SYS A FCC DC

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	3	C01046	AFCS SYS B FCC DC

SUBTASK 22-11-33-860-043

CAUTION: SET THE POWER SWITCH FOR THE PORTABLE DATA LOADER TO OFF BEFORE YOU CONNECT, OR REMOVE THE INTERFACE CABLE. IF THE POWER SWITCH IS NOT OFF, DAMAGE TO THE PORTABLE DATA LOADER CAN OCCUR.

- (2) Set the power switch on the portable data loader to the off position.

SUBTASK 22-11-33-860-044

- (3) Connect the interface cable of the portable data ARINC 615 data loader, COM-1915 to the DATA TRANSFER UNIT RECEPTACLE on the P61 panel.

SUBTASK 22-11-33-860-045

- (4) Set the upper system select switch on the data loader control panel (P61) to L.

SUBTASK 22-11-33-860-046

- (5) Set the lower system select switch on the data loader control panel to FCC.

SUBTASK 22-11-33-860-047

- (6) Close this circuit breaker:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	2	C01045	AFCS SYS A FCC DC

SUBTASK 22-11-33-470-001

- (7) SOFTWARE INSTALLATION WITH A PDL DISK DRIVE;

Do these steps to install the software into FCC A:

NOTE: For more information on how to use the data loader, refer to the supplier's instructions for the data loader.

- (a) Set the power switch on the portable data loader to the on position.
(b) Put the correct disk in the disk drive.
(c) Follow the prompts on the data loader to complete the installation.

NOTE: COMP, LOAD COMPLETE and TRANSF COMPLETE are examples of data loader prompts for a completed installation.

- (d) Remove the disk from the disk drive when the software installation is completed.

SUBTASK 22-11-33-470-002

- (8) SOFTWARE INSTALLATION WITH A PORTABLE DATA LOADER WITH A MASS STORAGE DEVICE;

Follow the PDL supplier instructions to install the software.

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SUBTASK 22-11-33-940-001

CAUTION: SET THE POWER SWITCH FOR THE PORTABLE DATA LOADER TO OFF BEFORE YOU CONNECT, OR REMOVE THE INTERFACE CABLE. IF THE POWER SWITCH IS NOT OFF, DAMAGE TO THE PORTABLE DATA LOADER CAN OCCUR.

- (9) Set the power switch on the data loader to the off position.

G. Software Installation Procedure for FCC B

SUBTASK 22-11-33-860-048

- (1) Set the upper system select switch on the data loader control panel (P61) to R.

SUBTASK 22-11-33-860-049

- (2) Close this circuit breaker:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	3	C01046	AFCS SYS B FCC DC

SUBTASK 22-11-33-860-169

- (3) Open this circuit breaker and install safety tag:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	2	C01045	AFCS SYS A FCC DC

SUBTASK 22-11-33-470-003

- (4) SOFTWARE INSTALLATION WITH A PORTABLE DATA LOADER WITH A DISK DRIVE;

Do these steps to install the software into FCC B:

NOTE: For more information on how to use the data loader, refer to the supplier's instructions for the data loader.

- Set the power switch on the portable data loader to the on position.
 - Put the correct disk in the disk drive.
 - Follow the prompts on the data loader to complete the installation.
- NOTE: COMP, LOAD COMPLETE and TRANSF COMPLETE are examples of data loader prompts for a completed installation.

- Remove the disk from the disk drive.

SUBTASK 22-11-33-470-004

- (5) SOFTWARE INSTALLATION WITH A PORTABLE DATA LOADER WITH A MASS STORAGE DEVICE;

Follow the PDL supplier instructions to install the software.

SUBTASK 22-11-33-860-055

- (6) Set the system select switch on the data loader control panel (P61) to NORMAL.

SUBTASK 22-11-33-940-002

CAUTION: SET THE POWER SWITCH FOR THE PORTABLE DATA LOADER TO OFF BEFORE YOU CONNECT, OR REMOVE THE INTERFACE CABLE. IF THE POWER SWITCH IS NOT OFF, DAMAGE TO THE PORTABLE DATA LOADER CAN OCCUR.

- (7) Set the power switch on the data loader to the off position.



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SUBTASK 22-11-33-860-170

- (8) Remove the safety tag and close this circuit breaker:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	2	C01045	AFCS SYS A FCC DC

SUBTASK 22-11-33-860-051

- (9) Remove the interface cable from the DATA TRANSFER UNIT RECEPTACLE on the P61 panel.

SUBTASK 22-11-33-860-057

- (10) After two minutes, do the Software Installation Test below.

H. Software Installation Test from the FMCS CDU

SUBTASK 22-11-33-420-010

- (1) Do these steps to test the software installation:

- (a) If you are not at one of the DFCS BITE TEST displays, then do these steps:
 - 1) Push the INIT REF function key.
 - 2) If the POS INIT display shows, then push the line select key adjacent to the INDEX prompt.
NOTE: This makes the INIT/REF INDEX show.
 - 3) Push the line select key adjacent to the MAINT prompt.
- (b) From the MAINT BITE INDEX, push the line select key adjacent to the DFCS prompt.
NOTE: The DFCS will do a self-test.
- (c) When the self-test is complete, push the line select key adjacent to the IDENTIFICATION AND CONFIGURATION prompt.
- (d) Push the line select key adjacent to the CHANNEL A prompt.
 - 1) Make sure that the software part number for FCC A is correct.
NOTE: The software part number shows below FCC OPS.
- (e) Push the line select key adjacent to the PREV MENU prompt.
- (f) Push the line select key adjacent to the CHANNEL B prompt.
 - 1) Make sure that the software part number for FCC B is correct.
NOTE: The software part number shows below FCC OPS.
- (g) Push the line select key adjacent to the PREV MENU prompt.
- (h) Push the line select key adjacent to the PREV MENU prompt.
- (i) Push the line select key adjacent to the FAULT REVIEW prompt.
- (j) Push the line select key adjacent to the ERASE FAULT HISTORY prompt.
- (k) Push the line select key adjacent to the CHANNEL A AND B prompt.
- (l) Push the line select key adjacent to the YES prompt.
- (m) Push and release the line select key adjacent to the EXIT prompt until you are out of DFCS BITE.



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I. Put the Airplane Back to Its Usual Condition

SUBTASK 22-11-33-860-052

- (1) Do this task: Remove Electrical Power, TASK 24-22-00-860-812.

————— END OF TASK ————

TASK 22-11-33-470-807

9. FCC Inflight Faults Memory Download with a Portable Data Loader

A. General

- (1) This procedure tells you how to download Flights Faults Memory in the FCC.
- (2) A portable data loader (PDL) is necessary for this procedure. A data loader control panel and a PDL interface connector are also necessary. There must be an FCC switch position on the data loader control panel. The data loader control panel is installed above the DATA TRANSFER UNIT RECEPTACLE connector on the (P61) panel.
- (3) The airplane must be on the ground with the engines shutdown before you can install software.
- (4) To read about software installation times and data loaders, do this task:On-Airplane Software Installation, TASK 20-15-11-400-801

B. References

Reference	Title
20-15-11-400-801	On-Airplane Software Installation (P/B 201)
24-22-00-860-811	Supply Electrical Power (P/B 201)
24-22-00-860-812	Remove Electrical Power (P/B 201)

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
COM-1915	Data Loader - ARINC 615 Part #: 11615-50 Supplier: 0D4J3 Part #: 2231560-1-B Supplier: 98571 Part #: 30100 Supplier: 0BAW0 Part #: 465130-01-01 Supplier: 30782 Part #: 800-0631 Supplier: 1JSZ6 Part #: CEI-715-DL-2 Supplier: 0BPH5 Part #: P2K-615A-06 Supplier: 0BAW0 Part #: YV68A110 Supplier: FAQ15 Opt Part #: 11615-02 Supplier: 0D4J3 Opt Part #: 11615-20 Supplier: 0D4J3 Opt Part #: 18000-02 Supplier: 0D4J3 Opt Part #: 80000-03-01010203 Supplier: 0BAW0 Opt Part #: 80000-04-01020301 Supplier: 0BAW0 Opt Part #: 80000-05 Supplier: 0BAW0 Opt Part #: 964-0400-020 Supplier: 97896 Opt Part #: 964-0400-025 Supplier: 97896 Opt Part #: 964-0400-030 Supplier: 97896 Opt Part #: 964-0400-055 Supplier: 97896



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D. Location Zones

Zone	Area
117	Electrical and Electronics Compartment - Left

E. Prepare for FCC Faults Memory Download

SUBTASK 22-11-33-860-099

- (1) Do this task Supply Electrical Power, TASK 24-22-00-860-811

SUBTASK 22-11-33-860-100

- (2) Make sure the DFCS is not engaged.

SUBTASK 22-11-33-860-101

- (3) Use an PDL to download the flight faults in the FCC.

SUBTASK 22-11-33-860-175

- (4) If you use the J2 connector on the front of the FCC, do this step.
 - (a) Remove the J2 connector cap.

SUBTASK 22-11-33-860-184

- (5) If you use the DATA TRANSFER UNIT RECEPTACLE connector on the (P61) panel, do this step.
 - (a) Remove the connector cap.

SUBTASK 22-11-33-860-103

- (6) Make sure that the lower system select switch on the data loader control panel (P61) is set to NORMAL.

SUBTASK 22-11-33-860-104

- (7) Make sure that the FCC is power up and not in BITE.

F. FCC Flight Faults Memory Download Procedure for FCC A

SUBTASK 22-11-33-860-105

- (1) Open these circuit breakers:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
D	2	C01045	AFCS SYS A FCC DC

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	3	C01046	AFCS SYS B FCC DC

SUBTASK 22-11-33-860-106

CAUTION: MAKE SURE THAT THE CIRCUIT BREAKER FOR THE DATA LOADER IS OPEN BEFORE YOU CONNECT OR REMOVE THE INTERFACE CABLE. IF THE CIRCUIT BREAKER IS NOT OPEN, DAMAGE TO EQUIPMENT CAN OCCUR.

- (2) Open this circuit breaker:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
A	9	C00923	DATA LOADER



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SUBTASK 22-11-33-860-107

CAUTION: SET THE POWER SWITCH FOR THE PORTABLE DATA LOADER TO OFF BEFORE YOU CONNECT, OR REMOVE THE INTERFACE CABLE. IF THE POWER SWITCH IS NOT OFF, DAMAGE TO THE PORTABLE DATA LOADER CAN OCCUR.

- (3) Set the power switch on the portable data loader to the off position.

SUBTASK 22-11-33-860-176

- (4) If using the J2 connector on the front of the FCC A (E1-1 shelf), do this step.
(a) Connect the interface cable from the portable data loader ARINC 615 data loader, COM-1915 to the J2 connector on the front of the FCC A (E1-1 shelf).

SUBTASK 22-11-33-860-108

- (5) If using the DATA TRANSFER UNIT RECEPTACLE on the P61 panel, do these steps.
(a) Connect the interface cable from the portable data loader ARINC 615 data loader, COM-1915 to the DATA TRANSFER UNIT RECEPTACLE on the P61 panel.
(b) Set the upper system select switch on the data loader control panel (P61) to L.
(c) Set the lower system select switch on the data loader control panel to FCC.

SUBTASK 22-11-33-860-109

- (6) Close these circuit breakers:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	2	C01045	AFCS SYS A FCC DC

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	9	C00923	DATA LOADER

SUBTASK 22-11-33-970-007

- (7) Do these steps to download the Flight Faults Memory of FCC A
(a) Use the FMC-CDU to enter DFCS BITE.
(b) Select INDEX.
(c) Select MAINT.
(d) Select DFCS.
(e) Turn on the data loader.
(f) Install a floppy disk into the disk drive.
(g) Select FAULT REVIEW.
(h) Select DOWNLOAD FAULT HISTORY.
(i) Select AUTOPILOT FAULT HISTORY or AUTOTHROTTLE FAULT HISTORY.

NOTE: If no disk is in the data loader, CDU will show INSERT DISKETTE. The file name will show on the CDU when the download is completed. It takes around 15 minutes to complete the download.

NOTE: If the download fail occurs, disconnect the power on the data loader for 10 second. Then reconnect the power.

- (j) Remove the disk from the disk drive when the download is completed.

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SUBTASK 22-11-33-860-110

- (8) Set the power off switch on the data loader to the off position.

SUBTASK 22-11-33-860-111

CAUTION: MAKE SURE THAT THE CIRCUIT BREAKER FOR THE DATA LOADER IS OPEN BEFORE YOU CONNECT OR REMOVE THE INTERFACE CABLE. IF THE CIRCUIT BREAKER IS NOT OPEN, DAMAGE TO EQUIPMENT CAN OCCUR.

- (9) Open this circuit breaker:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	9	C00923	DATA LOADER

SUBTASK 22-11-33-860-177

- (10) If using the J2 connector on the front of the FCC A (E1-1 shelf), do these steps.
- Remove the interface cable from the portable data loaderARINC 615 data loader, COM-1915 to the J2 connector on the front of the FCC A (E1-1 shelf) before exit BITE.
 - Reinstall the J2 connector cap.

SUBTASK 22-11-33-860-112

- (11) If using the DATA TRANSFER UNIT RECEPTACLE on the P61 panel, do this step.
- Remove the interface cable from the portable data loaderARINC 615 data loader, COM-1915 to the DATA TRANSFER UNIT RECEPTACLE on the P61 panel before exit BITE.

G. FCC Flight Faults Memory Download Procedure for FCC B

SUBTASK 22-11-33-860-114

- (1) Set the power switch on the portable data loader to the off position.

SUBTASK 22-11-33-860-178

- (2) If using the J2 connector on the front of the FCC B (E1-4 shelf), do these steps.
- Remove the J2 connector cap.
 - Connect the interface cable from the portable data loaderARINC 615 data loader, COM-1915 to the J2 connector on the front of the FCC B (E1-4 shelf).

SUBTASK 22-11-33-860-179

- (3) If using the DATA TRANSFER UNIT RECEPTACLE on the P61 panel, do these steps.
- Connect the interface cable from the portable data loaderARINC 615 data loader, COM-1915 to the DATA TRANSFER UNIT RECEPTACLE on the P61 panel.
 - Set the upper system select switch on the data loader control panel (P61) to R.
 - Set the lower system select switch on the data loader control panel to FCC.

SUBTASK 22-11-33-860-116

- (4) Close these circuit breakers:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	9	C00923	DATA LOADER



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F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	3	C01046	AFCS SYS B FCC DC

SUBTASK 22-11-33-970-008

- (5) Do these steps to download the Flight Faults Memory of FCC B
 - (a) Use the FMC-CDU to enter DFCS BITE.
 - (b) Select INDEX.
 - (c) Select MAINT.
 - (d) Select DFCS.
 - (e) Turn on the data loader.
 - (f) Install a floppy disk into the disk drive.
 - (g) Select FAULT REVIEW.
 - (h) Select DOWNLOAD FAULT HISTORY.

NOTE: If no disk is in the data loader, CDU will show INSERT DISKETTE.

NOTE: If the download fail occurs, disconnect the power on the data loader for 10 second. Then reconnect the power.

- (i) Remove the disk from the disk drive when the download is completed.

SUBTASK 22-11-33-860-117

- (6) Turn the power off the PDL

SUBTASK 22-11-33-860-118

CAUTION: MAKE SURE THAT THE CIRCUIT BREAKER FOR THE DATA LOADER IS OPEN BEFORE YOU CONNECT OR REMOVE THE INTERFACE CABLE. IF THE CIRCUIT BREAKER IS NOT OPEN, DAMAGE TO EQUIPMENT CAN OCCUR.

- (7) Open this circuit breaker:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	9	C00923	DATA LOADER

SUBTASK 22-11-33-860-180

- (8) If using the J2 connector on the front of the FCC B (E1-4 shelf), do these steps.
 - (a) Remove the interface cable from the portable data loaderARINC 615 data loader, COM-1915 to the J2 connector on the front of the FCC B (E1-4 shelf) before exit BITE.
 - (b) Reinstall the J2 connector cap.

SUBTASK 22-11-33-860-181

- (9) If using the DATA TRANSFER UNIT RECEPTACLE on the P61 panel, do these steps.
 - (a) Remove the interface cable from the portable data loaderARINC 615 data loader, COM-1915 to the DATA TRANSFER UNIT RECEPTACLE on the P61 panel before exit BITE.
 - (b) Reinstall the connector cap.

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H. Put the Airplane Back to its Usual Condition

SUBTASK 22-11-33-860-121

- (1) Do this task: Remove Electrical Power, TASK 24-22-00-860-812

———— END OF TASK ————

TASK 22-11-33-470-808

10. FCC BITE Test Data Download from the Flight Compartment with a Portable Data Loader

A. General

- (1) This procedure tells you how to download Flights Faults Memory in the FCC.
- (2) A portable data loader (PDL) is necessary for this procedure. A data loader control panel and a PDL interface connector are also necessary. There must be an FCC switch position on the data loader control panel. The data loader control panel is installed above the DATA TRANSFER UNIT RECEPTACLE connector on the (P61) panel.
- (3) The airplane must be on the ground with the engines shutdown before you can install software.
- (4) To read about software installation times and data loaders, do this task: On-Airplane Software Installation, TASK 20-15-11-400-801

B. References

Reference	Title
20-15-11-400-801	On-Airplane Software Installation (P/B 201)
24-22-00-860-811	Supply Electrical Power (P/B 201)
24-22-00-860-812	Remove Electrical Power (P/B 201)

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
COM-1915	Data Loader - ARINC 615 Part #: 11615-50 Supplier: 0D4J3 Part #: 2231560-1-B Supplier: 98571 Part #: 30100 Supplier: 0BAW0 Part #: 465130-01-01 Supplier: 30782 Part #: 800-0631 Supplier: 1JSZ6 Part #: CEI-715-DL-2 Supplier: 0BPH5 Part #: P2K-615A-06 Supplier: 0BAW0 Part #: YV68A110 Supplier: FAQ15 Opt Part #: 11615-02 Supplier: 0D4J3 Opt Part #: 11615-20 Supplier: 0D4J3 Opt Part #: 18000-02 Supplier: 0D4J3 Opt Part #: 80000-03-01010203 Supplier: 0BAW0 Opt Part #: 80000-04-01020301 Supplier: 0BAW0 Opt Part #: 80000-05 Supplier: 0BAW0 Opt Part #: 964-0400-020 Supplier: 97896 Opt Part #: 964-0400-025 Supplier: 97896 Opt Part #: 964-0400-030 Supplier: 97896 Opt Part #: 964-0400-055 Supplier: 97896



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D. Location Zones

Zone	Area
117	Electrical and Electronics Compartment - Left

E. Prepare for BITE Test Data Download

SUBTASK 22-11-33-860-122

- (1) Do this task: Supply Electrical Power, TASK 24-22-00-860-811

SUBTASK 22-11-33-860-123

- (2) Make sure the DFCS is not engaged.

SUBTASK 22-11-33-860-124

- (3) Use an PDL to download the BITE test data in the FCC.

SUBTASK 22-11-33-860-182

- (4) If using the J2 connector on the front of the FCC, do this step.
 - (a) Remove the J2 connector cap.

SUBTASK 22-11-33-860-183

- (5) If using the DATA TRANSFER UNIT RECEPTACLE connector on the (P61) panel, do this step.
 - (a) Remove the connector cap.

SUBTASK 22-11-33-860-126

- (6) Make sure that the FCC is power up and not in BITE.

F. BITE Test Data Download Procedure for FCC A

SUBTASK 22-11-33-860-127

- (1) Open these circuit breakers:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
D	2	C01045	AFCS SYS A FCC DC

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	3	C01046	AFCS SYS B FCC DC

SUBTASK 22-11-33-860-128

CAUTION: MAKE SURE THAT THE CIRCUIT BREAKER FOR THE DATA LOADER IS OPEN BEFORE YOU CONNECT OR REMOVE THE INTERFACE CABLE. IF THE CIRCUIT BREAKER IS NOT OPEN, DAMAGE TO EQUIPMENT CAN OCCUR.

- (2) Open this circuit breaker:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
A	9	C00923	DATA LOADER

SUBTASK 22-11-33-860-129

CAUTION: SET THE POWER SWITCH FOR THE PORTABLE DATA LOADER TO OFF BEFORE YOU CONNECT, OR REMOVE THE INTERFACE CABLE. IF THE POWER SWITCH IS NOT OFF, DAMAGE TO THE PORTABLE DATA LOADER CAN OCCUR.

- (3) Set the power switch on the portable data loader to the off position.



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SUBTASK 22-11-33-860-185

- (4) If using the J2 connector on the front of the FCC A (E1-1 shelf), do this step.
 - (a) Connect the interface cable from the portable data loader ARINC 615 data loader, COM-1915 to the J2 connector on the front of the FCC A (E1-1 shelf).

SUBTASK 22-11-33-860-186

- (5) If using the DATA TRANSFER UNIT RECEPTACLE on the P61 panel, do these steps.
 - (a) Connect the interface cable from the portable data loader ARINC 615 data loader, COM-1915 to the DATA TRANSFER UNIT RECEPTACLE on the P61 panel.
 - (b) Set the upper system select switch on the data loader control panel (P61) to L.
 - (c) Set the lower system select switch on the data loader control panel to FCC.

SUBTASK 22-11-33-860-131

- (6) Close these circuit breakers:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	2	C01045	AFCS SYS A FCC DC

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	9	C00923	DATA LOADER

SUBTASK 22-11-33-970-015

- (7) Do these steps to download the BITE Test Data.
 - (a) Use the FMC-CDU to enter DFCS BITE.
 - (b) Select INDEX.
 - (c) Select MAINT.
 - (d) Select DFCS.
 - (e) Turn on the data loader.
 - (f) Install a floppy disk into the disk drive.
 - (g) Do these steps below for the applicable download:
 - 1) For the CURRENT STATUS, select FAULT REVIEW.
 - a) Select CURRENT STATUS.
 - b) Enter 100.
 - c) Select LSK 6R.

NOTE: The engineer code 100 must be entered after the initialization screen is shown and before continue the test.
 - 2) For the LRU INTERFACE TEST, select LRU REPLACEMENT TEST.
 - a) Enter 100.
 - b) Select LSK 6R.

NOTE: The engineer code 100 must be entered after the initialization screen is shown and before continue the test.
 - 3) For the LAND VERIFY, select LAND VERIFY.
 - a) Enter 100.



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- b) Select LSK 6R.

NOTE: The engineer code 100 must be entered after the initialization screen is shown and before continue the test.

- 4) For the EXTENDED MAINTENANCE, select EXTENDED MAINTENANCE.

- a) Select BITE LIBRARY TEST.
- b) Select the library test suspect of fail.
- c) Enter 100.
- d) Select LSK 6R.

NOTE: The engineer code 100 must be entered after the initialization screen is shown and before continue the test.

- (h) Select EXECUTE.

NOTE: If test pass, the CDU will display TEST PASS.

- (i) Select DATA.

- (j) Select CONTINUE.

- (k) Select TEST RESULT.

NOTE: If no disk is in the data loader, CDU will show INSERT DISKETTE.

The file name will show on the CDU when the download is completed.

NOTE: If the download fail occurs, disconnect the power on the data loader for 10 second. Then reconnect the power.

- (l) Remove the disk from the disk drive when the download is completed.

SUBTASK 22-11-33-860-132

- (8) Set the power off switch on the data loader to the off position.

SUBTASK 22-11-33-860-133

CAUTION: MAKE SURE THAT THE CIRCUIT BREAKER FOR THE DATA LOADER IS OPEN BEFORE YOU CONNECT OR REMOVE THE INTERFACE CABLE. IF THE CIRCUIT BREAKER IS NOT OPEN, DAMAGE TO EQUIPMENT CAN OCCUR.

- (9) Open this circuit breaker:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	9	C00923	DATA LOADER

SUBTASK 22-11-33-860-187

- (10) If using the J2 connector on the front of the FCC A (E1-1 shelf), do these steps.

- (a) Remove the interface cable from the portable data loader ARINC 615 data loader, COM-1915 to the J2 connector on the front of the FCC A (E1-1 shelf) before exit BITE.
- (b) Reinstall the J2 connector cap.

SUBTASK 22-11-33-860-188

- (11) If using the DATA TRANSFER UNIT RECEPTACLE on the P61 panel, do this step.

- (a) Remove the interface cable from the portable data loader ARINC 615 data loader, COM-1915 to the DATA TRANSFER UNIT RECEPTACLE on the P61 panel before exit BITE.

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G. BITE Test Data Download Procedure for FCC B

SUBTASK 22-11-33-860-137

- (1) Open these circuit breakers:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	2	C01045	AFCS SYS A FCC DC

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	3	C01046	AFCS SYS B FCC DC

SUBTASK 22-11-33-860-138

CAUTION: MAKE SURE THAT THE CIRCUIT BREAKER FOR THE DATA LOADER IS OPEN BEFORE YOU CONNECT OR REMOVE THE INTERFACE CABLE. IF THE CIRCUIT BREAKER IS NOT OPEN, DAMAGE TO EQUIPMENT CAN OCCUR.

- (2) Open this circuit breaker:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	9	C00923	DATA LOADER

SUBTASK 22-11-33-860-139

CAUTION: SET THE POWER SWITCH FOR THE PORTABLE DATA LOADER TO OFF BEFORE YOU CONNECT, OR REMOVE THE INTERFACE CABLE. IF THE POWER SWITCH IS NOT OFF, DAMAGE TO THE PORTABLE DATA LOADER CAN OCCUR.

- (3) Set the power switch on the portable data loader to the off position.

SUBTASK 22-11-33-860-189

- (4) If using the J2 connector on the front of the FCC B (E1-4 shelf), do these steps.

- Remove the J2 connector cap.
- Connect the interface cable from the portable data loader ARINC 615 data loader, COM-1915 to the J2 connector on the front of the FCC B (E1-4 shelf).

SUBTASK 22-11-33-860-190

- (5) If using the DATA TRANSFER UNIT RECEPTACLE on the P61 panel, do these steps.

- Connect the interface cable from the portable data loader ARINC 615 data loader, COM-1915 to the DATA TRANSFER UNIT RECEPTACLE on the P61 panel.
- Set the upper system select switch on the data loader control panel (P61) to R.
- Set the lower system select switch on the data loader control panel to FCC.

SUBTASK 22-11-33-860-141

- (6) Close these circuit breakers:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	9	C00923	DATA LOADER



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F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	3	C01046	AFCS SYS B FCC DC

SUBTASK 22-11-33-970-026

- (7) Do these steps to download the BITE Test Data.
 - (a) Use the FMC-CDU to enter DFCS BITE.
 - (b) Select INDEX.
 - (c) Select MAINT.
 - (d) Select DFCS.
 - (e) Turn on the data loader.
 - (f) Install a floppy disk into the disk drive.
 - (g) Select FAULT REVIEW.
 - (h) Select CURRENT STATUS.
 - (i) Select LRU INTERFACE TEST.
 - (j) Select LAND VERIFY.
 - (k) Select EXTENDED MAINTENANCE.
 - (l) Select BITE LIBRARY TEST.
 - (m) Select the library test suspect of fail.
 - (n) Select EXECUTE.
 - (o) Select DATA.
 - (p) Select CONTINUE.
 - (q) Select TEST RESULT.

NOTE: If no disk is in the data loader, CDU will show INSERT DISKETTE.

The file name will show on the CDU when the download is completed.

NOTE: If the download fail occurs, disconnect the power on the data loader for 10 second. Then reconnect the power.

- (r) Remove the disk from the disk drive when the download is completed.

SUBTASK 22-11-33-860-142

- (8) Set the power off switch on the data loader to the off position.

SUBTASK 22-11-33-860-143

CAUTION: MAKE SURE THAT THE CIRCUIT BREAKER FOR THE DATA LOADER IS OPEN BEFORE YOU CONNECT OR REMOVE THE INTERFACE CABLE. IF THE CIRCUIT BREAKER IS NOT OPEN, DAMAGE TO EQUIPMENT CAN OCCUR.

- (9) Open this circuit breaker:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	9	C00923	DATA LOADER

SUBTASK 22-11-33-860-191

- (10) If you use the J2 connector on the front of the FCC B (E1–4 shelf), do these steps.

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- (a) Remove the interface cable from the portable data loader ARINC 615 data loader, COM-1915 to the J2 connector on the front of the FCC B (E1-4 shelf) before you exit BITE.
- (b) Reinstall the J2 connector cap.

SUBTASK 22-11-33-860-192

- (11) If you use the DATA TRANSFER UNIT RECEPTACLE on the P61 panel, do this step.
 - (a) Remove the interface cable from the portable data loader ARINC 615 data loader, COM-1915 to the DATA TRANSFER UNIT RECEPTACLE on the P61 panel before you exit BITE.
 - (b) Reinstall the connector cap.

H. Put the Airplane Back to its Usual Condition

SUBTASK 22-11-33-860-163

- (1) Do this task: Remove Electrical Power, TASK 24-22-00-860-812

———— END OF TASK ————

TASK 22-11-33-470-801

11. FCC Software Installation from the Electrical and Electronics Compartment with a Portable Data Loader

A. General

- (1) This procedure tells you how to install operational program software (OPS) in the FCC.
- (2) A portable data loader (PDL) is necessary for this procedure.
- (3) The airplane must be on the ground with the engines shutdown before you can install software.
- (4) To read about software installation times and data loaders, do this task: On-Airplane Software Installation, TASK 20-15-11-400-801.

B. References

Reference	Title
06-41-00-800-801	Finding an Access Door or Panel on the Lower Half of the Fuselage (P/B 201)
20-15-11-400-801	On-Airplane Software Installation (P/B 201)
24-22-00-860-811	Supply Electrical Power (P/B 201)
24-22-00-860-812	Remove Electrical Power (P/B 201)

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.



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Reference	Description
COM-1915	Data Loader - ARINC 615 Part #: 11615-50 Supplier: 0D4J3 Part #: 2231560-1-B Supplier: 98571 Part #: 30100 Supplier: 0BAW0 Part #: 465130-01-01 Supplier: 30782 Part #: 800-0631 Supplier: 1JSZ6 Part #: CEI-715-DL-2 Supplier: 0BPH5 Part #: P2K-615A-06 Supplier: 0BAW0 Part #: YV68A110 Supplier: FAQ15 Opt Part #: 11615-02 Supplier: 0D4J3 Opt Part #: 11615-20 Supplier: 0D4J3 Opt Part #: 18000-02 Supplier: 0D4J3 Opt Part #: 80000-03-01010203 Supplier: 0BAW0 Opt Part #: 80000-04-01020301 Supplier: 0BAW0 Opt Part #: 80000-05 Supplier: 0BAW0 Opt Part #: 964-0400-020 Supplier: 97896 Opt Part #: 964-0400-025 Supplier: 97896 Opt Part #: 964-0400-030 Supplier: 97896 Opt Part #: 964-0400-055 Supplier: 97896

D. Location Zones

Zone	Area
118	Electrical and Electronics Compartment - Right
211	Flight Compartment - Left
212	Flight Compartment - Right

E. Access Panels

Number	Name/Location
117A	Electronic Equipment Access Door

F. Prepare for Software Installation

SUBTASK 22-11-33-860-013

- (1) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

SUBTASK 22-11-33-860-053

- (2) Make sure the DFCS is not engaged.

SUBTASK 22-11-33-860-014

- (3) Use a PDL to install software in the FCC.

NOTE: You must know the correct software part numbers for the FCC. For the FCC to be an approved installation, the correct part number must be installed.

G. Software Installation Procedure for FCC A

SUBTASK 22-11-33-860-015

- (1) Open these circuit breakers:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
C	4	C00456	AFCS SYS A MACH TRIM AC
D	2	C01045	AFCS SYS A FCC DC



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F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	3	C01046	AFCS SYS B FCC DC
C	1	C01037	AFCS SYS B MACH TRIM AC

SUBTASK 22-11-33-010-002

- (2) To get access to the electrical and electronic compartment, do this task: (Finding an Access Door or Panel on the Lower Half of the Fuselage, TASK 06-41-00-800-801).

Open this access panel:

Number Name/Location

117A	Electronic Equipment Access Door
------	----------------------------------

SUBTASK 22-11-33-860-016

- (3) Take the portable data ARINC 615 data loader, COM-1915 to the electrical and electronics compartment and do these steps:

CAUTION: MAKE SURE THE PORTABLE DATA LOADER POWER SWITCH IS SET TO OFF BEFORE YOU CONNECT OR REMOVE THE INTERFACE CABLE. IF THE POWER SWITCH IS NOT OFF, DAMAGE TO THE PORTABLE DATA LOADER CAN OCCUR.

- (a) Set the power switch on the portable data loader to the off position.
(b) Connect the interface cable between the portable data loader and the P2 connector of FCC A.

NOTE: There are three connectors of the front of the FCC. The P2 connector is on the top.

SUBTASK 22-11-33-860-017

- (4) Close these circuit breakers:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	4	C00456	AFCS SYS A MACH TRIM AC
D	2	C01045	AFCS SYS A FCC DC

SUBTASK 22-11-33-470-005

- (5) SOFTWARE INSTALLATION WITH A PORTABLE DATA LOADER DISK DRIVE;

Do these steps to install the software into FCC A:

NOTE: For more information on how to use the portable data loader, refer to the supplier's instructions for the data loader.

- (a) Set the power switch on the portable data loader to the on position.
(b) Put the correct disk in the disk drive.
(c) Follow the prompts on the data loader to complete the installation.

NOTE: COMP, LOAD COMPLETE and TRANSF COMPLETE are examples of data loader prompts for a completed installation.

- (d) Remove the disk from the disk drive when the software installation is completed.
(e) Remove the interface cable between the portable data loader and the P2 connector of FCC A



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SUBTASK 22-11-33-470-006

- (6) SOFTWARE INSTALLATION WITH A PORTABLE DATA LOADER WITH A MASS STORAGE DEVICE;

Follow the portable data loader supplier instructions to install the software.

SUBTASK 22-11-33-940-003

CAUTION: MAKE SURE THE PORTABLE DATA LOADER POWER SWITCH IS SET TO OFF BEFORE YOU CONNECT OR REMOVE THE INTERFACE CABLE. IF THE POWER SWITCH IS NOT OFF, DAMAGE TO THE PORTABLE DATA LOADER CAN OCCUR.

- (7) Set the power switch on the data loader to the off position.

H. Software Installation Procedure for Flight Control Computer B

SUBTASK 22-11-33-860-019

- (1) Connect the interface cable between the portable data loader and the P2 connector of Flight Control Computer B.

NOTE: There are three connectors on the front of the FCC. The P2 connector is on the top.

SUBTASK 22-11-33-860-020

- (2) Close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	3	C01046	AFCS SYS B FCC DC
C	1	C01037	AFCS SYS B MACH TRIM AC

SUBTASK 22-11-33-860-167

- (3) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	4	C00456	AFCS SYS A MACH TRIM AC
D	2	C01045	AFCS SYS A FCC DC

SUBTASK 22-11-33-470-007

- (4) SOFTWARE INSTALLATION WITH A PORTABLE DATA LOADER DISK DRIVE;

Do these steps to install the software into FCC B:

NOTE: For more information on how to use the data loader, refer to the supplier's instructions for the data loader.

- (a) Set the power switch on the portable data loader to the on position.
(b) Put the correct disk in the disk drive.
(c) Follow the prompts on the data loader to complete the installation.

NOTE: COMP, LOAD COMPLETE and TRANSF COMPLETE are examples of data loader prompts for a completed installation.

- (d) Remove the disk from the disk drive when the software installation is completed.

SUBTASK 22-11-33-470-008

- (5) SOFTWARE INSTALLATION WITH A PORTABLE DATA LOADER WITH A MASS STORAGE DEVICE;

Follow the PDL supplier instructions to install the software.

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SUBTASK 22-11-33-940-004

CAUTION: MAKE SURE THE PORTABLE DATA LOADER POWER SWITCH IS SET TO OFF BEFORE YOU CONNECT OR REMOVE THE INTERFACE CABLE. IF THE POWER SWITCH IS NOT OFF, DAMAGE TO THE PORTABLE DATA LOADER CAN OCCUR.

- (6) Set the power switch on the data loader to the off position.

SUBTASK 22-11-33-860-168

- (7) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	4	C00456	AFCS SYS A MACH TRIM AC
D	2	C01045	AFCS SYS A FCC DC

SUBTASK 22-11-33-860-022

- (8) Remove the interface cable from the P2 connector on Flight Control Computer B.

SUBTASK 22-11-33-410-002

- (9) Do this task (Finding an Access Door or Panel on the Lower Half of the Fuselage, TASK 06-41-00-800-801).

Close this access panel:

Number Name/Location

117A Electronic Equipment Access Door

SUBTASK 22-11-33-860-058

- (10) After two minutes, do the Software Installation Test below.

I. Software Installation Test from the FMCS CDU

SUBTASK 22-11-33-420-004

- (1) Do these steps to test the software installation:

- (a) If you are not at one of the DFCS BITE TEST displays, then do these steps:
- 1) Push the INIT REF function key.
 - 2) If the POS INIT display shows, then push the line select key adjacent to the INDEX prompt.
NOTE: This makes the INIT/REF INDEX show.
 - 3) Push the line select key adjacent to the MAINT prompt.
- (b) From the MAINT BITE INDEX, push the line select key adjacent to the DFCS prompt.
NOTE: The DFCS will do a self-test.
- (c) When the self-test is complete, push the line select key adjacent to the IDENTIFICATION AND CONFIGURATION prompt.
- (d) Push the line select key adjacent to the CHANNEL A prompt.
- 1) Make sure that the software part number for FCC A is correct.
NOTE: The software part number shows below FCC OPS.
- (e) Push the line select key adjacent to the PREV MENU prompt.
- (f) Push the line select key adjacent to the CHANNEL B prompt.
- 1) Make sure that the software part number for FCC B is correct.
NOTE: The software part number shows below FCC OPS.



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- (g) Push and release the line select key adjacent to the EXIT prompt until you are out of DFCS BITE.

J. Put the Airplane Back to Its Usual Condition

SUBTASK 22-11-33-860-024

- (1) Do this task: Remove Electrical Power, TASK 24-22-00-860-812.

———— END OF TASK ————

TASK 22-11-33-470-804

12. FCC Software Installation using the Cross-load Function

A. General

- (1) This procedure tells you how to install operational program software (OPS) from one FCC to the other FCC.
- (2) The airplane must be on the ground with the engines shutdown before you can cross-load software.
- (3) To read about software installation times, do this task: On-Airplane Software Installation, TASK 20-15-11-400-801

B. References

Reference	Title
20-15-11-400-801	On-Airplane Software Installation (P/B 201)
24-22-00-860-811	Supply Electrical Power (P/B 201)
24-22-00-860-812	Remove Electrical Power (P/B 201)

C. Location Zones

Zone	Area
212	Flight Compartment - Right

D. FCC Cross-load Software Installation Procedure

SUBTASK 22-11-33-860-059

- (1) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

SUBTASK 22-11-33-860-060

- (2) Make sure the DFCS is not engaged.

SUBTASK 22-11-33-860-061

- (3) Use the cross-load function to install software in the FCC.

NOTE: You must know the correct software part numbers for the FCC. For the FCC to be an approved installation, the correct part numbers must be cross-loaded.

SUBTASK 22-11-33-860-062

- (4) Make sure that these circuit breakers are closed:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
D	2	C01045	AFCS SYS A FCC DC

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	3	C01046	AFCS SYS B FCC DC

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SUBTASK 22-11-33-860-063

- (5) Do these steps to install the software into an FCC:
- On the FMCS CDU, if you are not at one of the DFCS BITE TEST displays, then do these steps:
 - Push the INIT REF function key.
 - If the POS INIT display shows, then push the line select key adjacent to the INDEX prompt.
NOTE: This makes the INIT/REF INDEX show.
 - Push the line select key adjacent to the MAINT prompt.
 - From the MAINT BITE INDEX, push the line select key adjacent to the DFCS prompt.
NOTE: The DFCS will do a self-test.
 - When the self-test is complete, push the line select key adjacent to the IDENTIFICATION AND CONFIGURATION prompt.
 - Push the line select key adjacent to the CROSSLOAD prompt.
NOTE: The CROSSLOAD prompt only appears if the FCCs have different OPS part numbers installed. The OPS and OPC software part numbers will be displayed for both FCC-A and FCC-B.
 - To load software from FCC-A to FCC-B, push the line select key adjacent to the A TO B prompt.
 - To load software from FCC-B to FCC-A, push the line select key adjacent to the B TO A prompt.
 - To start the software cross-load, push the line select key adjacent to the YES prompt.
 - If the software cross-load is successful, the following BITE screen will be displayed:
DFCS BITE TEST
CROSSLOAD FROM FCC-A (or B)
CROSSLOAD COMPLETE.
INITIALIZATION OF FCC
IN PROGRESS. THIS MAY
REQUIRE 30 SECONDS.
NOTE: The software cross-load may take between 6 and 8 minutes. During this time the message IN PROGRESS will be displayed.

SUBTASK 22-11-33-860-064

- (6) After two minutes, do the Software Installation Test below. If cross-loading is successful, the CDU should display the DFCS BITE TEST MAIN MENU.

E. Software Installation Test from the FMCS CDU

SUBTASK 22-11-33-420-011

- (1) Do these steps to test the software installation:
- If you are not at one of the DFCS BITE TEST displays, then do these steps:
 - Push the INIT REF function key.
 - If the POS INIT display shows, then push the line select key adjacent to the INDEX prompt.
NOTE: This makes the INIT/REF INDEX show.

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- 3) Push the line select key adjacent to the MAINT prompt.
- (b) From the MAINT BITE INDEX, push the line select key adjacent to the DFCS prompt.
NOTE: The DFCS will do a self-test.
- (c) When the self-test is complete, push the line select key adjacent to the IDENTIFICATION AND CONFIGURATION prompt.
- (d) Push the line select key adjacent to the CHANNEL A prompt.
 - 1) Make sure that the software part number for FCC A is correct.
NOTE: The software part number shows below FCC OPS.
- (e) Push the line select key adjacent to the PREV MENU prompt.
- (f) Push the line select key adjacent to the CHANNEL B prompt.
 - 1) Make sure that the software part number for FCC B is correct.
NOTE: The software part number shows below FCC OPS.
- (g) Push the line select key adjacent to the PREV MENU prompt.
- (h) Push the line select key adjacent to the PREV MENU prompt.
- (i) Push the line select key adjacent to the FAULT REVIEW prompt.
- (j) Push the line select key adjacent to the ERASE FAULT HISTORY prompt.
- (k) Push the line select key adjacent to the CHANNEL A AND B prompt.
- (l) Push the line select key adjacent to the YES prompt.
- (m) Push and release the line select key adjacent to the EXIT prompt until you are out of DFCS BITE.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 22-11-33-860-065

- (1) Do this task: Remove Electrical Power, TASK 24-22-00-860-812.

———— END OF TASK ————



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FLIGHT CONTROL COMPUTER - REMOVAL/INSTALLATION

1. General

- A. This procedure has these tasks:
 - (1) The removal of a flight control computer.
 - (2) The installation of a flight control computer.
- B. There are two flight control computers (FCCs) in the main equipment center. The FCC-A (M1875), is on the E1 electronics equipment rack, shelf No. 1 (E1-1). The FCC-B (M1876), is on the E1 electronics equipment rack, shelf No. 4 (E1-4).
- C. The removal and installation tasks are the same for the FCC-A and FCC-B.

TASK 22-11-33-000-801

2. Flight Control Computer Removal

(Figure 401)

A. References

Reference	Title
20-10-07-000-801	E/E Box Removal (P/B 201)

B. Location Zones

Zone	Area
118	Electrical and Electronics Compartment - Right
211	Flight Compartment - Left
212	Flight Compartment - Right

C. Access Panels

Number	Name/Location
117A	Electronic Equipment Access Door

D. Removal Procedure

SUBTASK 22-11-33-860-001

- (1) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
C	4	C00456	AFCS SYS A MACH TRIM AC
C	5	C01041	AFCS SYS A SNSR EXC AC
D	1	C01049	AFCS SYS A WARN LIGHT (BAT)
D	2	C01045	AFCS SYS A FCC DC
D	3	C01048	AFCS SYS A ENGAGE INTLK
D	4	C00457	AFCS SYS A MACH TRIM DC
D	5	C01044	AFCS MCP DC 1
E	1	C00721	AUTOTHROTTLE DC 1

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	1	C00374	AFCS SYS B WARN LIGHT (BAT)
B	2	C01064	AFCS SYS B MACH TRIM DC
B	3	C01046	AFCS SYS B FCC DC
B	4	C00716	AFCS SYS B ENGAGE INTLK

EFFECTIVITY	AKS ALL
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(Continued)

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	1	C01037	AFCS SYS B MACH TRIM AC
C	2	C01042	AFCS SYS B SNSR EXC AC
C	3	C01047	AFCS MCP DC 2

SUBTASK 22-11-33-010-001

- (2) To get access to the electrical and electronic compartment, open this access door:

<u>Number</u>	<u>Name/Location</u>
117A	Electronic Equipment Access Door

SUBTASK 22-11-33-020-001

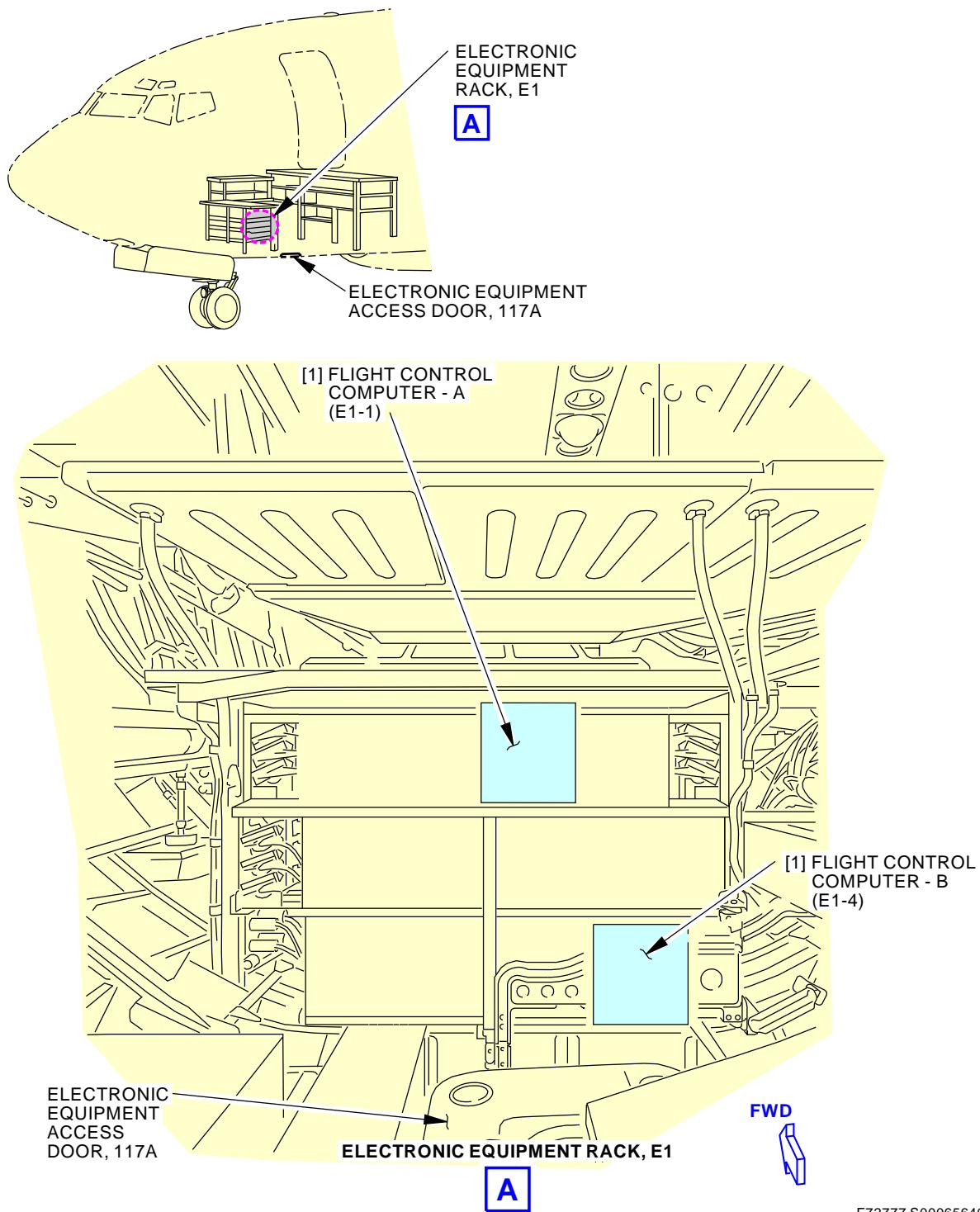
CAUTION: DO NOT TOUCH THE CONNECTOR PINS OR OTHER CONDUCTORS ON THE FCC.
IF YOU TOUCH THESE CONDUCTORS, ELECTROSTATIC DISCHARGE CAN
CAUSE DAMAGE TO THE FCC.

- (3) To remove the FCC [1], do this task: E/E Box Removal, TASK 20-10-07-000-801.

———— END OF TASK ————

EFFECTIVITY
AKS ALL

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**Flight Control Computer Installation
Figure 401/22-11-33-990-802**

EFFECTIVITY
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TASK 22-11-33-400-801

3. Flight Control Computer Installation

(Figure 401)

A. References

Reference	Title
20-10-07-000-801	E/E Box Removal (P/B 201)
20-10-07-400-801	E/E Box Installation (P/B 201)
22-11-33-470-801	FCC Software Installation from the Electrical and Electronics Compartment with a Portable Data Loader (P/B 201)
22-11-33-470-802	FCC Software Installation with an Airborne Data Loader (P/B 201)
22-11-33-470-803	FCC Software Installation from the Flight Compartment with a Portable Data Loader (P/B 201)
24-22-00-860-811	Supply Electrical Power (P/B 201)
24-22-00-860-812	Remove Electrical Power (P/B 201)

B. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	FCC	22-11-33-03-010	AKS ALL

C. Location Zones

Zone	Area
118	Electrical and Electronics Compartment - Right
211	Flight Compartment - Left
212	Flight Compartment - Right

D. Access Panels

Number	Name/Location
117A	Electronic Equipment Access Door

E. Installation Procedure

SUBTASK 22-11-33-860-002

- (1) Make sure that these circuit breakers are open and have safety tags:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
C	4	C00456	AFCS SYS A MACH TRIM AC
C	5	C01041	AFCS SYS A SNSR EXC AC
D	1	C01049	AFCS SYS A WARN LIGHT (BAT)
D	2	C01045	AFCS SYS A FCC DC
D	3	C01048	AFCS SYS A ENGAGE INTLK
D	4	C00457	AFCS SYS A MACH TRIM DC
D	5	C01044	AFCS MCP DC 1
E	1	C00721	AUTOTHROTTLE DC 1

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	1	C00374	AFCS SYS B WARN LIGHT (BAT)
B	2	C01064	AFCS SYS B MACH TRIM DC

EFFECTIVITY	AKS ALL
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(Continued)

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	3	C01046	AFCS SYS B FCC DC
B	4	C00716	AFCS SYS B ENGAGE INTLK
C	1	C01037	AFCS SYS B MACH TRIM AC
C	2	C01042	AFCS SYS B SNSR EXC AC
C	3	C01047	AFCS MCP DC 2

SUBTASK 22-11-33-420-001

CAUTION: DO NOT TOUCH THE CONNECTOR PINS OR OTHER CONDUCTORS ON THE FCC.
IF YOU TOUCH THESE CONDUCTORS, ELECTROSTATIC DISCHARGE CAN
CAUSE DAMAGE TO THE FCC.

- (2) To install the FCC [1], do this task: E/E Box Installation, TASK 20-10-07-400-801.

SUBTASK 22-11-33-410-001

- (3) Close this access door:

Number Name/Location

117A Electronic Equipment Access Door

SUBTASK 22-11-33-860-003

- (4) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	4	C00456	AFCS SYS A MACH TRIM AC
C	5	C01041	AFCS SYS A SNSR EXC AC
D	1	C01049	AFCS SYS A WARN LIGHT (BAT)
D	3	C01048	AFCS SYS A ENGAGE INTLK
D	4	C00457	AFCS SYS A MACH TRIM DC
D	5	C01044	AFCS MCP DC 1
E	1	C00721	AUTOTHROTTLE DC 1

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	1	C00374	AFCS SYS B WARN LIGHT (BAT)
B	2	C01064	AFCS SYS B MACH TRIM DC
B	4	C00716	AFCS SYS B ENGAGE INTLK
C	1	C01037	AFCS SYS B MACH TRIM AC
C	2	C01042	AFCS SYS B SNSR EXC AC
C	3	C01047	AFCS MCP DC 2

SUBTASK 22-11-33-860-207

- (5) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	2	C01045	AFCS SYS A FCC DC



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F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	3	C01046	AFCS SYS B FCC DC

F. Prepare for the Test

SUBTASK 22-11-33-860-004

- (1) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

SUBTASK 22-11-33-860-066

- (2) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	18	C00451	LANDING GEAR AURAL WARN

SUBTASK 22-11-33-860-005

- (3) Set the autopilot stab trim cutout switch, on the control stand, to the CUTOUT position.

SUBTASK 22-11-33-860-006

- (4) Make sure that the VHF NAV and IRS switches, on the P5 forward overhead panel, are in the NORMAL positions.

SUBTASK 22-11-33-860-007

- (5) Set the left and right IRS select switches, on the P5 aft overhead panel, to the ALIGN or NAV position.

G. Installation Test

SUBTASK 22-11-33-740-001

- (1) Do this BITE test:

- (a) Push the INIT REF key on the CDU keyboard.

- (b) Push the Line Select Key (LSK) that is adjacent to each selection:

NOTE: If the CONTINUE shows during the BITE test, then do the instructions that show on the CDU display before you push the LSK that is adjacent to CONTINUE. Use the NEXT PAGE or PREV PAGE key to change page if it is necessary.

- 1) INDEX
- 2) MAINT
- 3) DFCS
- 4) LRU REPLACEMENT TESTS
- 5) Make a selection for the applicable channel:

NOTE: Channel A is for FCC-A and channel B is for FCC-B.

- a) CHANNEL A
- b) CHANNEL B
- c) CHANNEL A AND B

- 6) DFCS/AT or FCC

NOTE: If you push the LSK adjacent to CHANNEL A or CHANNEL A AND B, DFCS/AT will show on the BITE display.

If you push the LSK adjacent to CHANNEL B, FCC will show on the BITE display.

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- 7) Do the instructions that show on the CDU display to complete the test.
- 8) Make sure that the test is completed with no failure or the "TEST FAILED" message does not show.

SUBTASK 22-11-33-740-002

- (2) Do these steps to test the software installation:

NOTE: Make sure that you know the correct software part numbers for the FCCs. Make sure that both FCCs have the same software part numbers installed.

- (a) Push and release the CONTINUE key until you get back to the DFCS BITE TEST MAIN MENU.
- (b) Push the line select key next to the IDENTIFICATION AND CONFIGURATION prompt.
- (c) Push the line select key next to the CHANNEL A prompt.

- 1) Make sure that the software part number for FCC A is correct.

NOTE: The software part number shows below FCC OPS.

- a) If the part number is not correct, do one of these tasks:

<1> Load the correct softwareFCC Software Installation from the Electrical and Electronics Compartment with a Portable Data Loader, TASK 22-11-33-470-801 or FCC Software Installation from the Flight Compartment with a Portable Data Loader, TASK 22-11-33-470-803 or FCC Software Installation with an Airborne Data Loader, TASK 22-11-33-470-802.

NOTE: AIRPLANES WITH COLLINS FCCs;

If the correct software part number is installed on FCC A, it may be cross-loaded to FCC B.

<2> Replace the Flight Control Computer E/E Box Removal, TASK 20-10-07-000-801.

- (d) Push the line select key next to the PREV MENU prompt.
- (e) Push the line select key next to the CHANNEL B prompt.

- 1) Make sure that the software part number for FCC B is correct.

NOTE: The software part number shows below FCC OPS.

- a) If the part number is not correct, do one of these tasks:

<1> Load the correct softwareFCC Software Installation from the Electrical and Electronics Compartment with a Portable Data Loader, TASK 22-11-33-470-801 or FCC Software Installation from the Flight Compartment with a Portable Data Loader, TASK 22-11-33-470-803 or FCC Software Installation with an Airborne Data Loader, TASK 22-11-33-470-802.

NOTE: AIRPLANES WITH COLLINS FCCs;

If the correct software part number is installed on FCC A, it may be cross-loaded to FCC B.

<2> Replace the Flight Control Computer E/E Box Removal, TASK 20-10-07-000-801 and begin the flight control computer test .

- (f) Push and release the line select key next to the EXIT prompt until you are out of DFCS BITE.



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H. Put the Airplane Back to Its Usual Condition

SUBTASK 22-11-33-860-008

- (1) Push the captain's or first officer's autopilot disengage switch, on the control wheel, to make sure that the autopilot is disengaged.

SUBTASK 22-11-33-860-012

- (2) Close this circuit breaker:

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	18	C00451	LANDING GEAR AURAL WARN

SUBTASK 22-11-33-860-010

- (3) Set the autopilot stab trim cutout switch, on the control stand, to the NORMAL position.

SUBTASK 22-11-33-860-011

- (4) Do this task: Remove Electrical Power, TASK 24-22-00-860-812.

———— END OF TASK ————

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DFCS MODE CONTROL PANEL - CLEANING/PAINTING

1. General

- A. This procedure has this task:
 - (1) Clean the MCP.
- B. The MCP is in the center of the glareshield, P7, in the control compartment.

TASK 22-11-34-100-801

2. DFCS Mode Control Panel Cleaning

A. General

- (1) The mode control panel must not be cleaned with the incorrect liquid. The procedure cautions must be obeyed to make sure that there is no damage to the mode control panel.

B. Consumable Materials

Reference	Description	Specification
B00130	Alcohol - Isopropyl	TT-I-735

C. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

D. Procedure

SUBTASK 22-11-34-420-001

- (1) Clean the surface of the MCP:

CAUTION: MAKE SURE THAT THE OUTLET HOSE OF COMPRESSED AIR HAS AN AIR IONIZING GUN ATTACHMENT OR AIR IONIZING NOZZLE. YOU CAN DAMAGE THE MCP IF THE AIR IS NOT IONIZED.

- (a) Use the compressed air or a brush (soft and natural bristle) to remove light dirt and dust from the surface of the MCP.

CAUTION: DO NOT APPLY THE ISOPROPYL ALCOHOL IN LARGE QUANTITIES. THE LIQUID MAY GET INSIDE A COMPONENT OF THE MCP AND CAUSE DAMAGE.

- (b) Use the cotton swab with a small quantity of alcohol, B00130 to remove heavy oil and grease from the surface of the MCP.

CAUTION: DO NOT USE LIQUID CLEANING AGENTS TO CLEAN THE LIQUID CRYSTAL DISPLAY (LCD). THE LIQUID CLEANING AGENTS CAN CAUSE MOISTURE CONTAMINATION IN THE LCD MODULES.

- (c) Use the lens tissue to remove dust, dirt, oil, and grease from the LCD displays and edgelight panel.

———— END OF TASK ————



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DFCS MODE CONTROL PANEL - REMOVAL/INSTALLATION

1. General

- A. This procedure has these tasks:
 - (1) A removal of the mode control panel (MCP).
 - (2) An installation of the MCP.
- B. The MCP (M198) is in the center of the glare shield, P7, in the control compartment.

TASK 22-11-34-000-801

2. DFCS Mode Control Panel Removal

(Figure 401)

A. Location Zones

<u>Zone</u>	<u>Area</u>
211	Flight Compartment - Left
212	Flight Compartment - Right

B. MCP Removal

SUBTASK 22-11-34-860-007

- (1) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	1	C01049	AFCS SYS A WARN LIGHT (BAT)
D	2	C01045	AFCS SYS A FCC DC
D	3	C01048	AFCS SYS A ENGAGE INTLK
D	5	C01044	AFCS MCP DC 1
E	1	C00721	AUTOTHROTTLE DC 1

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	1	C00374	AFCS SYS B WARN LIGHT (BAT)
B	3	C01046	AFCS SYS B FCC DC
B	4	C00716	AFCS SYS B ENGAGE INTLK
C	3	C01047	AFCS MCP DC 2

SUBTASK 22-11-34-860-008

- (2) Turn the PANEL BRIGHT knob on captain's light control module (P1) to OFF.

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NOTE: The MCP light is controlled by the main panel brightness knob (P1-5 panel). To view the light you will have to latch the A/T arm switch in the ARM position and adjust the main panel brightness knob. If the MCP light illuminates, the panel is not defective. Incidentally, leaving the light illuminated for daytime viewing only reduces the bulb life, and therefore is not recommended.

AKS ALL

SUBTASK 22-11-34-020-001

- (3) Remove the MCP [3]:
 - (a) Remove the four mounting screws [2] on the front of the MCP [3].

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- (b) Remove the two mounting screws [4] on the bottom of the MCP [3].

CAUTION: CAREFULLY MOVE THE MCP OUT FROM ITS SUPPORTS IN THE GLARE SHIELD TO PREVENT FORCE ON THE ELECTRICAL CABLES. DAMAGE TO THE ELECTRICAL CABLES COULD OCCUR IF YOU PUT TOO MUCH FORCE ON THEM.

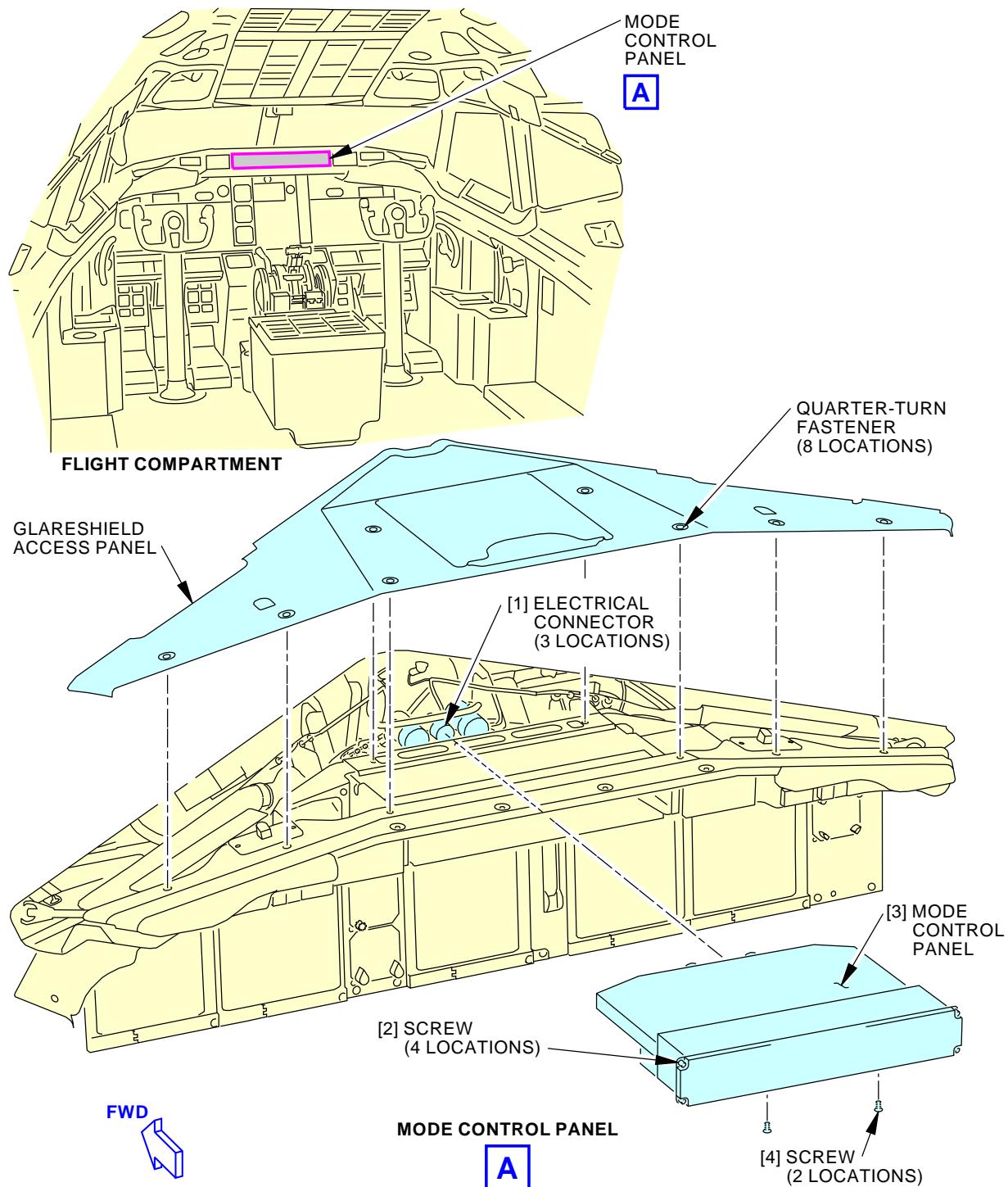
- (c) Move the MCP [3] out from its supports in the glare shield until you can get access to the electrical connectors [1] at the rear of the MCP unit.
- (d) Disconnect the electrical connectors [1].
- (e) Remove the MCP [3] from its supports in the glare shield.
- (f) Put protective covers on the electrical connectors [1].

———— END OF TASK ————

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**Mode Control Panel Installation
Figure 401/22-11-34-990-801**

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TASK 22-11-34-400-801

3. DFCS Mode Control Panel Installation

(Figure 401)

A. General

- (1) The installation test makes sure that the mode control panel is installed correctly.

B. References

Reference	Title
22-11-34-740-801	Mode Control Panel Installation Test (P/B 501)

C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
3	MCP	22-11-34-02-005	AKS ALL
		31-11-41-02-215	AKS ALL

D. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

E. MCP Installation

SUBTASK 22-11-34-860-009

- (1) Make sure that these circuit breakers are open and have safety tags:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
D	1	C01049	AFCS SYS A WARN LIGHT (BAT)
D	2	C01045	AFCS SYS A FCC DC
D	3	C01048	AFCS SYS A ENGAGE INTLK
D	5	C01044	AFCS MCP DC 1
E	1	C00721	AUTOTHROTTLE DC 1

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	1	C00374	AFCS SYS B WARN LIGHT (BAT)
B	3	C01046	AFCS SYS B FCC DC
B	4	C00716	AFCS SYS B ENGAGE INTLK
C	3	C01047	AFCS MCP DC 2

SUBTASK 22-11-34-420-002

- (2) Install the MCP [3]:

- (a) Remove the protective covers from the electrical connectors [1].
- (b) Examine the electrical connectors [1] for bent or broken pins, dirt, and damage.
- (c) Move the MCP [3] onto its supports in the glare shield until the electrical connectors [1] can connect to the rear of the MCP.
- (d) Connect the electrical connectors.
- (e) Move the MCP [3] into its installed position.
- (f) Install the four mounting screws [2] on the front of the MCP [3].
- (g) Install the two mounting screws [4] on the bottom of the MCP [3].



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SUBTASK 22-11-34-860-010

- (3) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	1	C01049	AFCS SYS A WARN LIGHT (BAT)
D	3	C01048	AFCS SYS A ENGAGE INTLK
D	5	C01044	AFCS MCP DC 1
E	1	C00721	AUTOTHROTTLE DC 1

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	1	C00374	AFCS SYS B WARN LIGHT (BAT)
B	4	C00716	AFCS SYS B ENGAGE INTLK
C	3	C01047	AFCS MCP DC 2

SUBTASK 22-11-34-860-012

- (4) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	2	C01045	AFCS SYS A FCC DC

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	3	C01046	AFCS SYS B FCC DC

SUBTASK 22-11-34-710-001

- (5) Do this task: Mode Control Panel Installation Test, TASK 22-11-34-740-801.

———— END OF TASK ————



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DFCS MODE CONTROL PANEL - ADJUSTMENT/TEST

1. General

- A. This procedure contains scheduled maintenance task data.
- B. This procedure has this task:
 - (1) An installation test of the DFCS mode control panel (MCP).
- C. The MCP is in the center of the glare shield, P7, in the control compartment.
- D. The DFCS built-in test equipment (BITE) is used to do the operational test after the installation of the DFCS mode control panel (MCP). The test uses no external equipment. The airplane electrical and hydraulic systems are the only power sources necessary for this task.

TASK 22-11-34-740-801

2. Mode Control Panel Installation Test

A. General

- (1) The installation test makes sure that the mode control panel is installed correctly.

B. References

Reference	Title
24-22-00-860-811	Supply Electrical Power (P/B 201)
24-22-00-860-812	Remove Electrical Power (P/B 201)
34-21-00-820-801	Air Data Inertial Reference System - Alignment from the FMC CDU (P/B 201)
34-21-00-820-802	Air Data Inertial Reference System - Alignment from the ISDU (P/B 201)

C. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

D. Installation Test

SUBTASK 22-11-34-860-001

- (1) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

SUBTASK 22-11-34-860-004

- (2) On the captain's main instrument panel (P1), turn the control knob of the AFDS FLOOD lights approximately to the middle position.

SUBTASK 22-11-34-740-001

- (3) Do the LRU replacement test for the DFCS MCP:

(a) Prepare for the LRU replacement test:

- 1) Make sure that the BAT switch on the Pilots' Forward Overhead Panel (P5) is in the ON position.
- 2) Set the STANDBY POWER switch on the Pilots' Forward Overhead Panel (P5) to the AUTO position.
- 3) Align the ADIRS. Do this task: Air Data Inertial Reference System - Alignment from the ISDU, TASK 34-21-00-820-802 or Air Data Inertial Reference System - Alignment from the FMC CDU, TASK 34-21-00-820-801 to align the ADIRS.
- 4) Make sure that all the instrument switches (P5) are in the NORMAL position.

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- 5) Make sure that the airplane is in the ground mode.
- 6) Make sure that the autopilot is disengaged.
- 7) Make sure that the IRS ground speed is less than 20 knots or the FMC ground speed is less than 20 knots.
 - (b) Push the INIT REF key on the FMCS CDU.
 - (c) Push the line select key (LSK) adjacent to <INDEX>.
 - (d) Push the LSK adjacent to MAINT>.
 - (e) Push the LSK adjacent to <DFCS>.

NOTE: The DFCS self-test will start and will run for a few seconds.

- (f) Push the LSK adjacent to <LRU REPLACEMENT TESTS>.
- (g) Push the LSK adjacent to <CHANNEL A AND B>.
- (h) Push the LSK adjacent to <MCP>.
- (i) Do the preparation steps as shown on the CDU display.
- (j) Push the LSK adjacent to <CONTINUE>.
- (k) Make sure that the test is completed with no failure.

NOTE: If a failure occurs, the TEST FAILED indication will show on the CDU display.

- (l) If a failure occurs, do these steps:
 - 1) Look at the CDU display and make a note of the channel and the LRU that caused the failure.

NOTE: Before you replace a defective component, do the BITE on the system (if it is applicable) and on the FMS interface subsystems that have the defective component.
 - 2) Replace the LRU that had the failure.
 - 3) Do the LRU REPLACEMENT TEST for DFCS MCP again.
- (m) Make sure that the CDU display shows TEST PASSED.

NOTE: Some tests are too fast to see. The tests passed unless TEST FAILED shows on the CDU display.

SUBTASK 22-11-34-740-002

- (4) Continue the instructions on the CDU display:
 - (a) Push the LSK adjacent to <EXIT>.
 - (b) Do the instructions on the CDU display.
 - (c) Push the LSK adjacent to <EXIT>.

SUBTASK 22-11-34-860-006

- (5) Do this task: Remove Electrical Power, TASK 24-22-00-860-812.

———— END OF TASK ————

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DFCS MODE CONTROL PANEL - MAINTENANCE PRACTICES

1. General

- A. This procedure has these tasks:
- (1) DFCS Mode Control Panel Deactivation.
 - (2) DFCS Mode Control Panel Activation.

TASK 22-11-34-040-801

2. DFCS Mode Control Panel - Deactivation

(Figure 202)

A. General

- (1) This procedure removes electrical power from the DFCS Mode Control Panel.

B. References

Reference	Title
24-22-00-860-811	Supply Electrical Power (P/B 201)

C. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

D. Procedure

SUBTASK 22-11-34-860-014

- (1) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
D	1	C01049	AFCS SYS A WARN LIGHT (BAT)
D	2	C01045	AFCS SYS A FCC DC
D	3	C01048	AFCS SYS A ENGAGE INTLK
D	5	C01044	AFCS MCP DC 1
E	1	C00721	AUTOTHROTTLE DC 1

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	1	C00374	AFCS SYS B WARN LIGHT (BAT)
B	3	C01046	AFCS SYS B FCC DC
B	4	C00716	AFCS SYS B ENGAGE INTLK
C	3	C01047	AFCS MCP DC 2

E. DFCS Mode Control Panel - Tryout

NOTE: This tryout is to make sure the DFCS Mode Control Panel is in a zero energy state.

SUBTASK 22-11-34-860-016

- (1) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

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SUBTASK 22-11-34-860-015

- (2) Make sure that these circuit breakers are open and have safety tags:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	1	C01049	AFCS SYS A WARN LIGHT (BAT)
D	2	C01045	AFCS SYS A FCC DC
D	3	C01048	AFCS SYS A ENGAGE INTLK
D	5	C01044	AFCS MCP DC 1
E	1	C00721	AUTOTHROTTLE DC 1

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	1	C00374	AFCS SYS B WARN LIGHT (BAT)
B	3	C01046	AFCS SYS B FCC DC
B	4	C00716	AFCS SYS B ENGAGE INTLK
C	3	C01047	AFCS MCP DC 2

SUBTASK 22-11-34-700-001

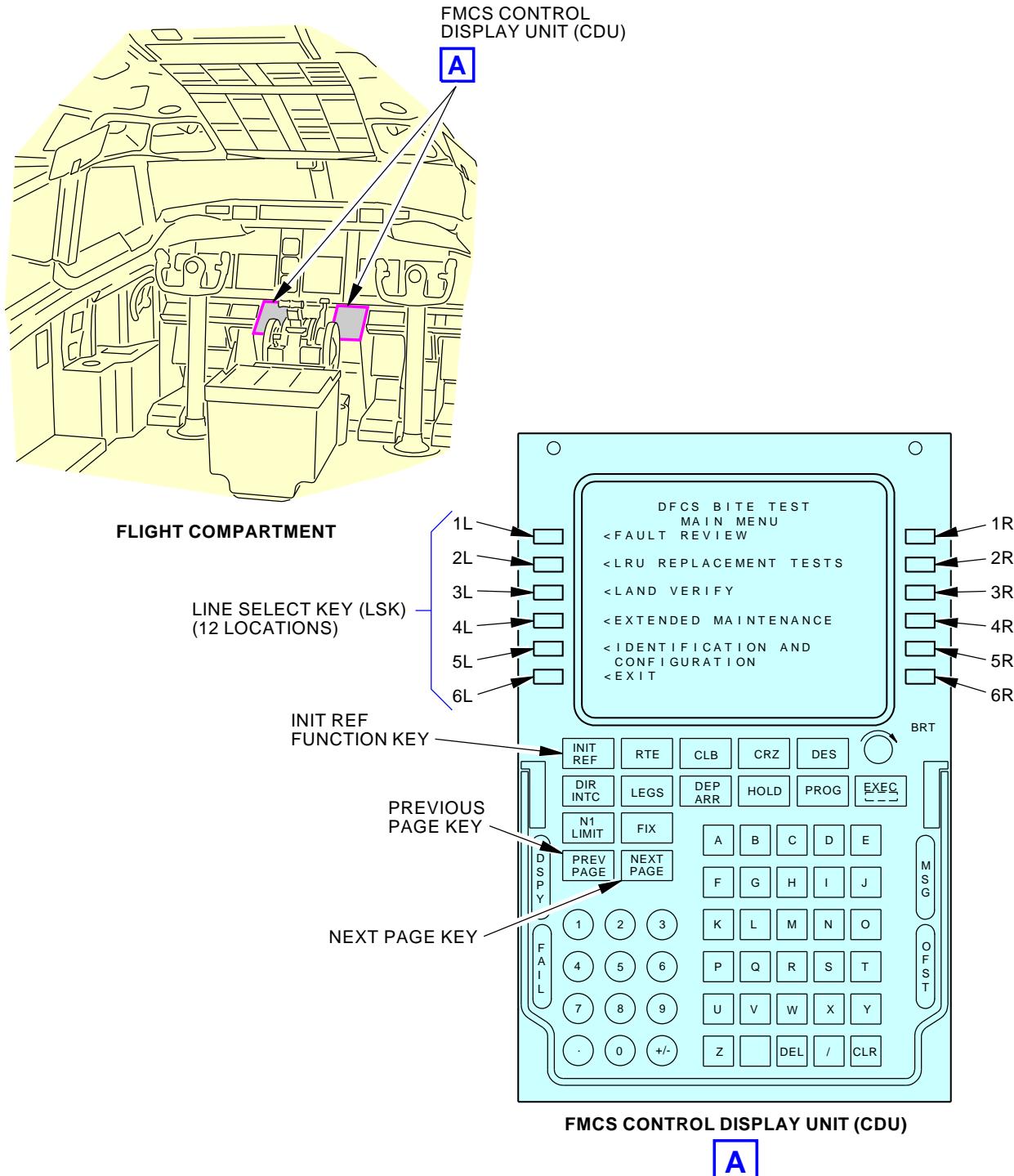
- (3) Use the FMC - CDU and do the following test (Figure 201):

- (a) SELECT, INIT/REF on the keyboard.
- (b) SELECT, "INDEX" (LSK 6L).
- (c) SELECT, "MAINT" (LSK 6R).
- (d) SELECT, "DFCS" (LSK 2L).
 - 1) DFCS will run the self test and display as following:
 - FCC-A SELF TEST FAIL
 - FCC-B SELF TEST FAIL
 - CROSS CHANNEL TEST PASS
- (e) SELECT, "CONTINUE" (LSK 6R)
NOTE: Ignore the message that appears.
- (f) SELECT, "CONTINUE" (LSK 6R).
- (g) SELECT, "EXTENDED MAINTENANCE"(LSK 4L).
- (h) SELECT, "SENSOR VALUES"(LSK 4L).
- (i) SELECT, "DISCRETE INPUTS"(LSK 5L).
- (j) SELECT, "CIRCUIT BREAKER CHECK"(LSK 5R).
- (k) SELECT, INIT/REF on the keyboard, to exit of BITE.
- (l) End of test.

———— END OF TASK ————



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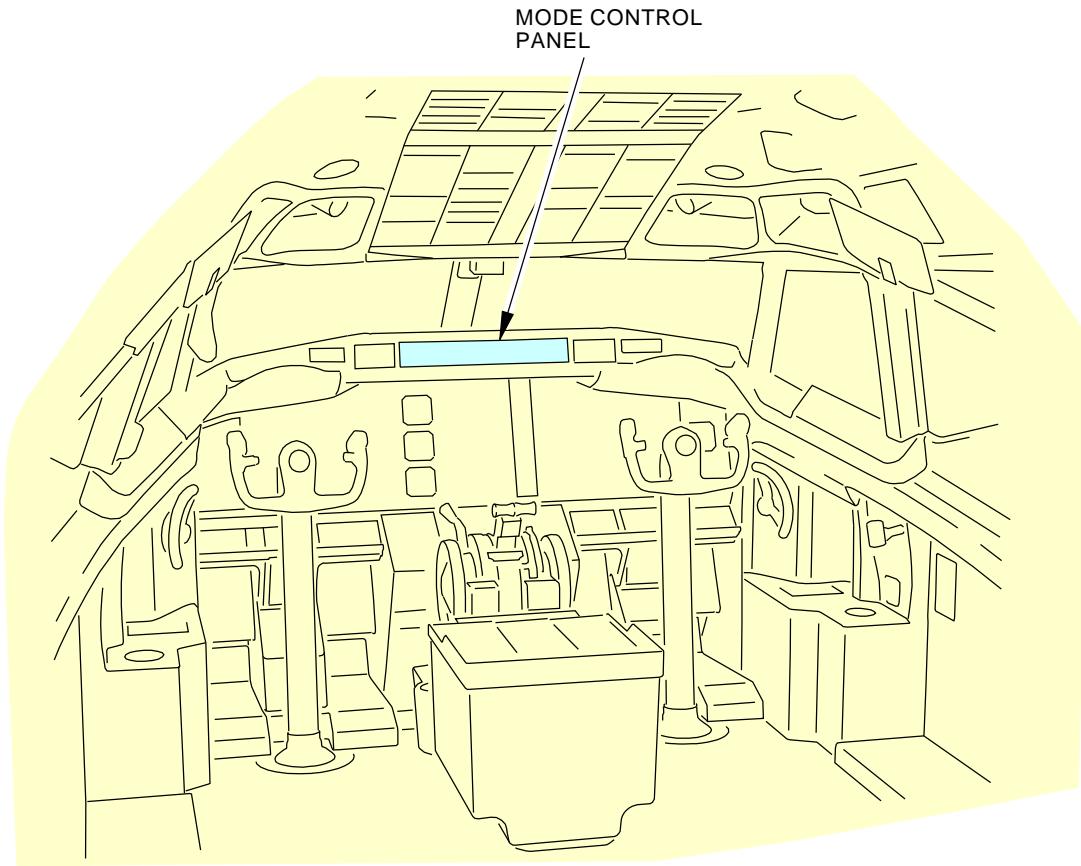
Flight Management Computer Control Display Unit
Figure 201/22-11-34-990-803

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FLIGHT COMPARTMENT

2375476 S0000543204_V1

DFCS Mode Control Panel
Figure 202/22-11-34-990-804

EFFECTIVITY
AKS ALL

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D633A101-AKS

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TASK 22-11-34-440-801

3. DFCS Mode Control Panel - Activation

(Figure 202)

A. General

- (1) This procedure adds electrical power to the DFCS Mode Control Panel.

B. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

C. Procedure

SUBTASK 22-11-34-860-013

- (1) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
D	1	C01049	AFCS SYS A WARN LIGHT (BAT)
D	2	C01045	AFCS SYS A FCC DC
D	3	C01048	AFCS SYS A ENGAGE INTLK
D	5	C01044	AFCS MCP DC 1
E	1	C00721	AUTOTHROTTLE DC 1

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	1	C00374	AFCS SYS B WARN LIGHT (BAT)
B	3	C01046	AFCS SYS B FCC DC
B	4	C00716	AFCS SYS B ENGAGE INTLK
C	3	C01047	AFCS MCP DC 2

———— END OF TASK ————

EFFECTIVITY
AKS ALL

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INTEGRATED FLIGHT SYSTEM ACCESSORY UNIT - MAINTENANCE PRACTICES

1. General

- A. This procedure has these tasks:
- (1) Integrated Flight System Accessory Unit (IFSAU) Deactivation
 - (2) Integrated Flight System Accessory Unit (IFSAU) Activation

TASK 22-11-37-040-801

2. Integrated Flight System Accessory Unit - Deactivation

(Figure 202)

A. General

- (1) This procedure removes electrical power to the IFSAU.

B. References

Reference	Title
24-22-00-860-811	Supply Electrical Power (P/B 201)

C. Location Zones

Zone	Area
117	Electrical and Electronics Compartment - Left
211	Flight Compartment - Left
212	Flight Compartment - Right

D. Procedure

SUBTASK 22-11-37-860-013

- (1) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
C	5	C01041	AFCS SYS A SNSR EXC AC

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
C	2	C01042	AFCS SYS B SNSR EXC AC

E. IFSAU - Tryout

NOTE: This tryout is to make sure the IFSAU system is in a zero energy state.

SUBTASK 22-11-37-860-015

WARNING: MAKE SURE THAT PERSONNEL AND EQUIPMENT ARE CLEAR OF THE FLIGHT CONTROLS SURFACES. MAKE SURE THAT THE INBOARD FAN DUCT COWL AND THE INBOARD AND OUTBOARD THRUST REVERSERS ARE CLOSED. THE FLIGHT CONTROL SURFACES CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (1) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.



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SUBTASK 22-11-37-860-016

- (2) Make sure that these circuit breakers are closed:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	4	C00456	AFCS SYS A MACH TRIM AC
D	1	C01049	AFCS SYS A WARN LIGHT (BAT)
D	2	C01045	AFCS SYS A FCC DC
D	3	C01048	AFCS SYS A ENGAGE INTLK
D	4	C00457	AFCS SYS A MACH TRIM DC
D	5	C01044	AFCS MCP DC 1
E	1	C00721	AUTOTHROTTLE DC 1
E	4	C01629	AFCS SYS A RUDDER DC

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	3	C01631	AFCS INTLK 2
B	1	C00374	AFCS SYS B WARN LIGHT (BAT)
B	2	C01064	AFCS SYS B MACH TRIM DC
B	3	C01046	AFCS SYS B FCC DC
B	4	C00716	AFCS SYS B ENGAGE INTLK
B	10	C00207	FLIGHT CONTROL STAB TRIM CONT
C	1	C01037	AFCS SYS B MACH TRIM AC
C	3	C01047	AFCS MCP DC 2
D	3	C01630	AFCS SYS B RUDDER DC

SUBTASK 22-11-37-700-001

- (3) Use the FMC - CDU and do the following test (Figure 201):

- (a) SELECT, INIT/REF on the keyboard.
- (b) SELECT, "INDEX" (LSK 6L).
- (c) SELECT, "MAINT" (LSK 6R).
- (d) SELECT, "DFCS" (LSK 2L).
 - 1) DFCS will run the self test and display as following:
 - FCC-A SELF TEST FAIL
 - FCC-B SELF TEST FAIL
 - CROSS CHANNEL TEST PASS
- (e) SELECT, "CONTINUE" (LSK 6R)
NOTE: Ignore this message, "400 HZ PWR INV---MSG22-11333".
- (f) SELECT, "CONTINUE" (LSK 6R).
- (g) SELECT, "EXTENDED MAINTENANCE"(LSK 4L).
- (h) SELECT, "SENSOR VALUES"(LSK 4L).
- (i) SELECT, "DISCRETE INPUTS"(LSK 5L).
- (j) SELECT, "CIRCUIT BREAKER CHECK"(LSK 5R).
 - 1) Make sure that 0.00 +/- 5.00 VAC appears on both FCC-A and FCC-B opposite "SNSR EXC AC (J1C-G05)"



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- (k) SELECT, INIT/REF on the keyboard, to exit of BITE.
- (l) End of test.

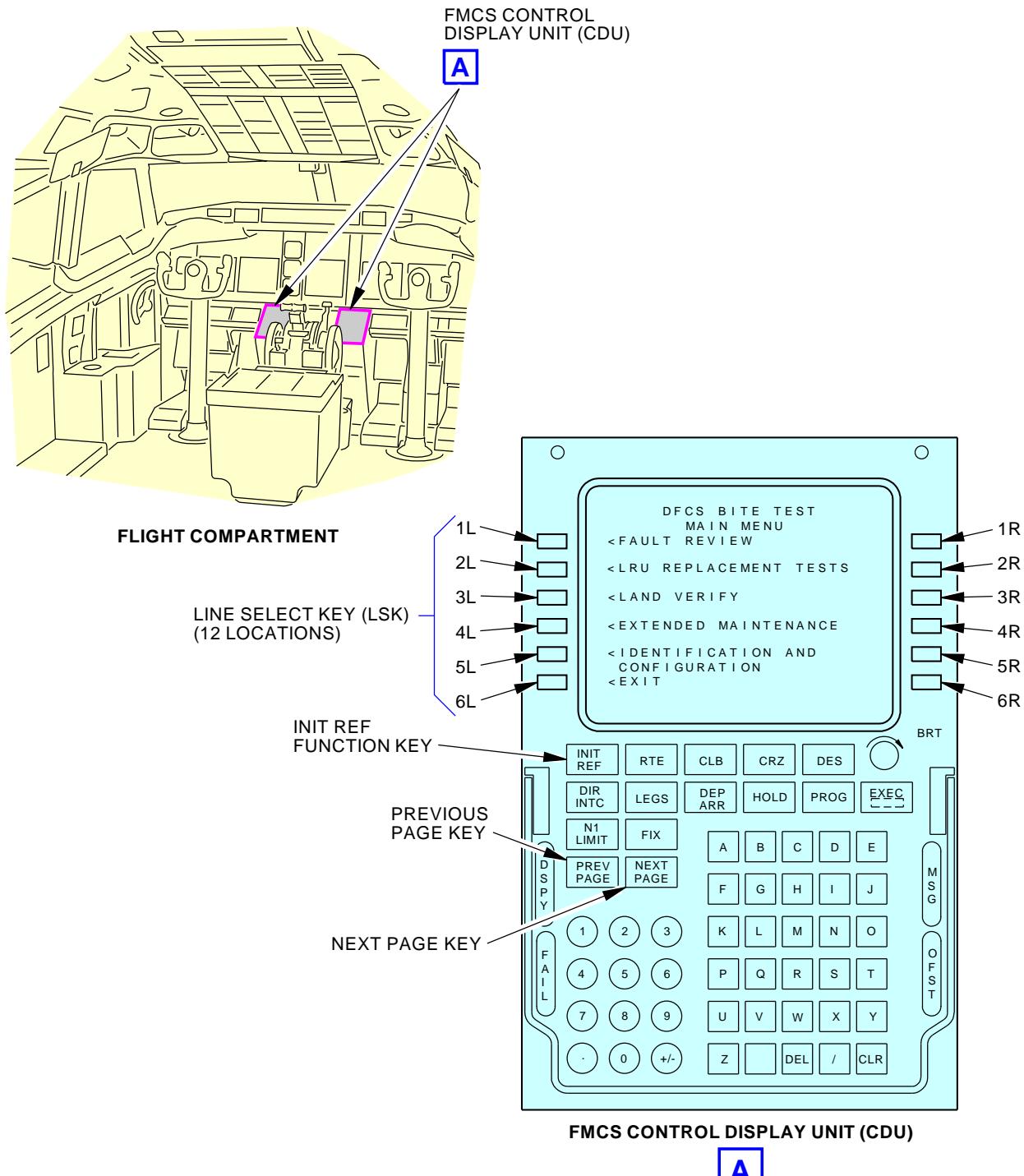
———— END OF TASK ————

———— EFFECTIVITY ————
AKS ALL

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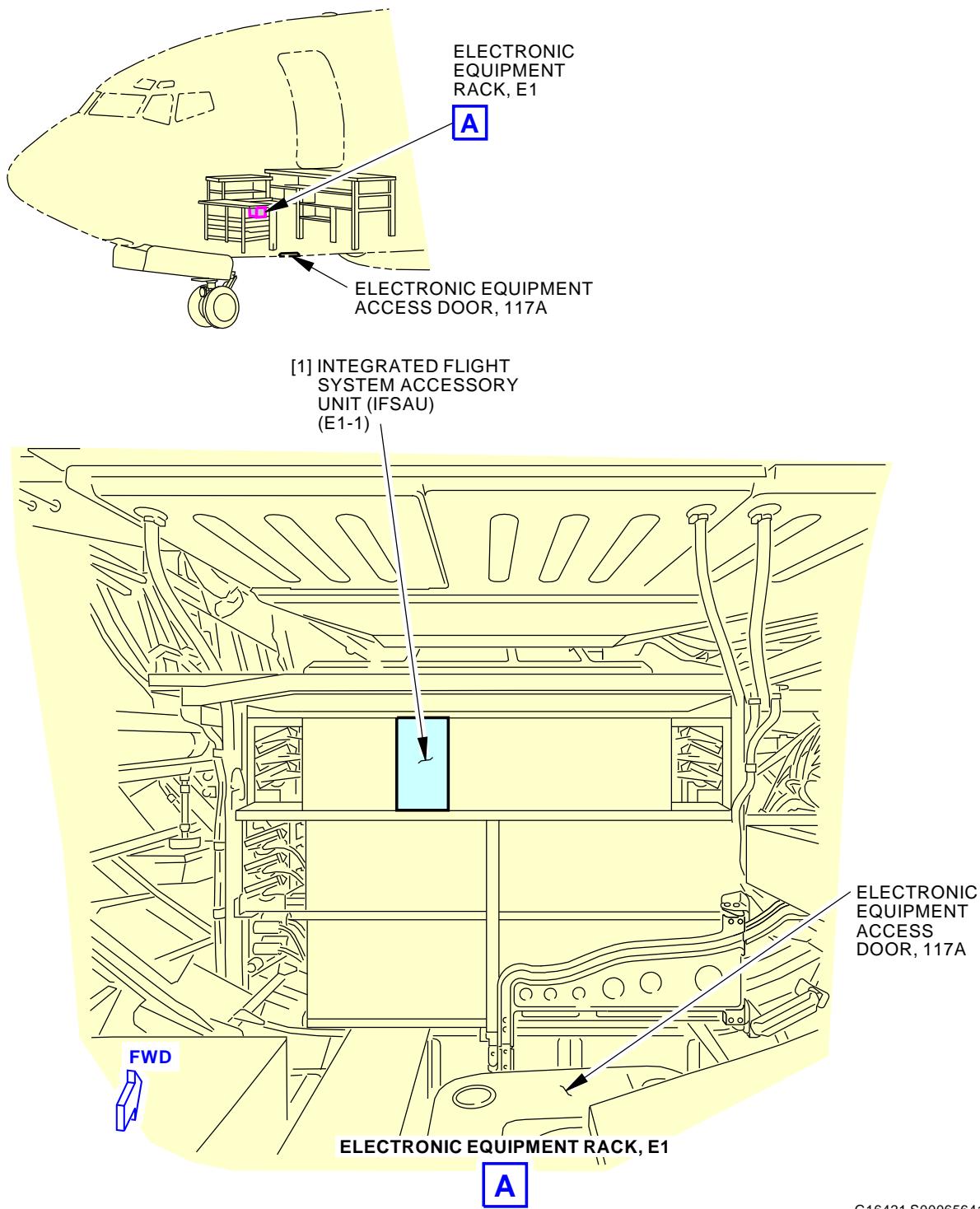
Flight Management Computer
Figure 201/22-11-37-990-802

EFFECTIVITY
AKS ALL

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Integrated Flight System Accessory Unit
Figure 202/22-11-37-990-803

EFFECTIVITY
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TASK 22-11-37-440-801

3. Integrated Flight System Accessory Unit - Activation

(Figure 202)

A. General

- (1) This procedure adds electrical power to the IFSAU.

B. Location Zones

Zone	Area
117	Electrical and Electronics Compartment - Left
211	Flight Compartment - Left
212	Flight Compartment - Right

C. Procedure

SUBTASK 22-11-37-860-018

WARNING: MAKE SURE THAT PERSONNEL AND EQUIPMENT ARE CLEAR OF THE FLIGHT CONTROLS SURFACES. MAKE SURE THAT THE INBOARD FAN DUCT COWL AND THE INBOARD AND OUTBOARD THRUST REVERSERS ARE CLOSED. THE FLIGHT CONTROL SURFACES CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (1) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
C	5	C01041	AFCS SYS A SNSR EXC AC

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
C	2	C01042	AFCS SYS B SNSR EXC AC

SUBTASK 22-11-37-860-019

- (2) Make sure that these circuit breakers are closed:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
C	4	C00456	AFCS SYS A MACH TRIM AC
C	5	C01041	AFCS SYS A SNSR EXC AC
D	1	C01049	AFCS SYS A WARN LIGHT (BAT)
D	2	C01045	AFCS SYS A FCC DC
D	3	C01048	AFCS SYS A ENGAGE INTLK
D	4	C00457	AFCS SYS A MACH TRIM DC
D	5	C01044	AFCS MCP DC 1
E	1	C00721	AUTOTHROTTLE DC 1
E	4	C01629	AFCS SYS A RUDDER DC

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	3	C01631	AFCS INTLK 2
B	1	C00374	AFCS SYS B WARN LIGHT (BAT)

EFFECTIVITY	AKS ALL
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(Continued)

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	2	C01064	AFCS SYS B MACH TRIM DC
B	3	C01046	AFCS SYS B FCC DC
B	4	C00716	AFCS SYS B ENGAGE INTLK
B	10	C00207	FLIGHT CONTROL STAB TRIM CONT
C	1	C01037	AFCS SYS B MACH TRIM AC
C	3	C01047	AFCS MCP DC 2
D	3	C01630	AFCS SYS B RUDDER DC

———— END OF TASK ————

EFFECTIVITY
AKS ALL

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INTEGRATED FLIGHT SYSTEM ACCESSORY UNIT - REMOVAL/INSTALLATION

1. General

- A. This procedure has these tasks:
 - (1) A removal of the Integrated Flight System Accessory Unit (IFSAU).
 - (2) An installation of the IFSAU.
- B. The IFSAU (M1474) is on the E1 electronic equipment rack, shelf number 1, in the main equipment center.

TASK 22-11-37-000-801

2. Integrated Flight System Accessory Unit (IFSAU) Removal

(Figure 401)

A. References

Reference	Title
06-41-00-800-801	Finding an Access Door or Panel on the Lower Half of the Fuselage (P/B 201)
20-10-07-000-801	E/E Box Removal (P/B 201)
20-40-12-000-802	ESDS Handling for Metal Encased Unit Removal (P/B 201)

B. Location Zones

Zone	Area
117	Electrical and Electronics Compartment - Left
211	Flight Compartment - Left
212	Flight Compartment - Right

C. Access Panels

Number	Name/Location
117A	Electronic Equipment Access Door

D. Removal Procedure

SUBTASK 22-11-37-860-001

- (1) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-1

Row	Col	Number	Name
A	10	C01377	RADIO NAVIGATION NAV SNSR DC-2
C	14	C01008	ADIRU RIGHT AC
C	15	C00426	ADIRU RIGHT EXC
C	17	C01010	ADIRU RIGHT DC

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	3	C01631	AFCS INTLK 2
B	1	C00374	AFCS SYS B WARN LIGHT (BAT)
B	2	C01064	AFCS SYS B MACH TRIM DC
B	3	C01046	AFCS SYS B FCC DC
B	4	C00716	AFCS SYS B ENGAGE INTLK
C	1	C01037	AFCS SYS B MACH TRIM AC
C	2	C01042	AFCS SYS B SNSR EXC AC



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(Continued)

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	3	C01047	AFCS MCP DC 2

SUBTASK 22-11-37-730-001

- (2) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	1	C01376	RADIO NAVIGATION NAV SNSR DC-1
C	4	C00456	AFCS SYS A MACH TRIM AC
C	5	C01041	AFCS SYS A SNSR EXC AC
D	1	C01049	AFCS SYS A WARN LIGHT (BAT)
D	2	C01045	AFCS SYS A FCC DC
D	3	C01048	AFCS SYS A ENGAGE INTLK
D	4	C00457	AFCS SYS A MACH TRIM DC
D	5	C01044	AFCS MCP DC 1
E	5	C01009	ADIRU LEFT DC
E	7	C01007	ADIRU LEFT AC

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	2	C00412	INSTR XFR
E	8	C00425	ADIRU LEFT EXC

SUBTASK 22-11-37-010-001

- (3) To get access to the electrical and electronics compartment, open this access door:

Number Name/Location

117A Electronic Equipment Access Door

Do this task: Finding an Access Door or Panel on the Lower Half of the Fuselage,
TASK 06-41-00-800-801.

SUBTASK 22-11-37-020-001

CAUTION: DO NOT TOUCH THE CONNECTOR PINS OR OTHER CONDUCTORS ON THE IFSAU. IF YOU TOUCH THESE CONDUCTORS, ELECTROSTATIC DISCHARGE CAN CAUSE DAMAGE TO THE IFSAU.

- (4) Before you touch the IFSAU [1], do this task: ESDS Handling for Metal Encased Unit Removal, TASK 20-40-12-000-802.

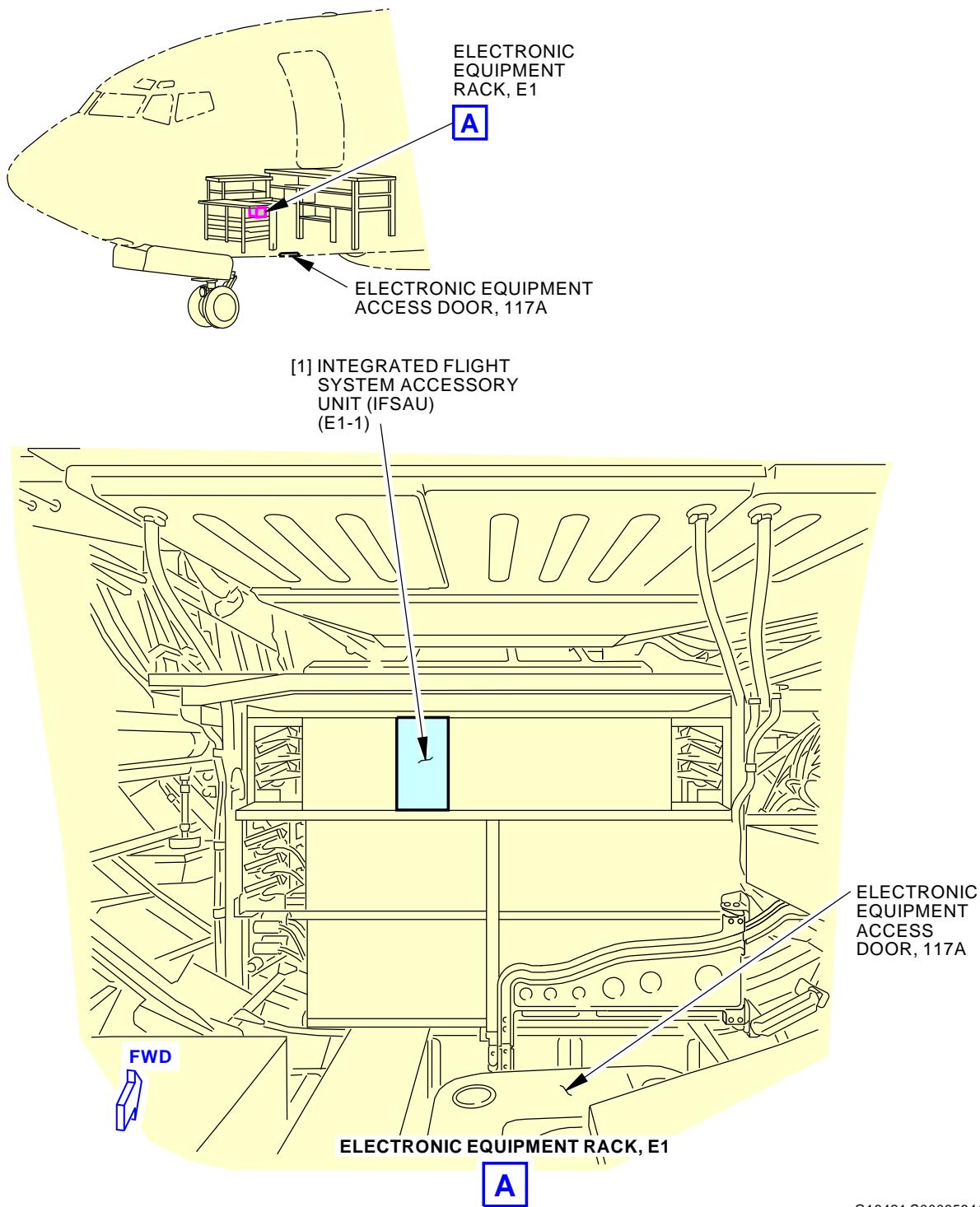
SUBTASK 22-11-37-020-003

- (5) To remove the IFSAU [1], do this task: E/E Box Removal, TASK 20-10-07-000-801.

———— END OF TASK ————



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Integrated Flight System Accessory Unit (IFSAU) Installation
Figure 401/22-11-37-990-801

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TASK 22-11-37-400-801

3. Integrated Flight System Accessory Unit Installation

(Figure 401)

A. General

- (1) The installation test at the end of this procedure makes sure that the IFSAU is installed correctly.

B. References

Reference	Title
06-41-00-800-801	Finding an Access Door or Panel on the Lower Half of the Fuselage (P/B 201)
20-10-07-400-801	E/E Box Installation (P/B 201)
20-40-12-400-802	ESDS Handling for Metal Encased Unit Installation (P/B 201)
24-22-00-860-811	Supply Electrical Power (P/B 201)
24-22-00-860-814	Remove External Power (P/B 201)

C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	IFSAU	22-11-37-02-005	AKS ALL

D. Location Zones

Zone	Area
117	Electrical and Electronics Compartment - Left
211	Flight Compartment - Left
212	Flight Compartment - Right

E. Access Panels

Number	Name/Location
117A	Electronic Equipment Access Door

F. Installation Procedure

SUBTASK 22-11-37-860-002

- (1) Make sure that these circuit breakers are open and have safety tags:

F/O Electrical System Panel, P6-1

Row	Col	Number	Name
A	10	C01377	RADIO NAVIGATION NAV SNSR DC-2
C	14	C01008	ADIRU RIGHT AC
C	15	C00426	ADIRU RIGHT EXC
C	17	C01010	ADIRU RIGHT DC

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	3	C01631	AFCS INTLK 2
B	1	C00374	AFCS SYS B WARN LIGHT (BAT)
B	2	C01064	AFCS SYS B MACH TRIM DC
B	3	C01046	AFCS SYS B FCC DC
B	4	C00716	AFCS SYS B ENGAGE INTLK
C	1	C01037	AFCS SYS B MACH TRIM AC
C	2	C01042	AFCS SYS B SNSR EXC AC

EFFECTIVITY	AKS ALL
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(Continued)

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	3	C01047	AFCS MCP DC 2

SUBTASK 22-11-37-730-002

- (2) Make sure that these circuit breakers are open and have safety tags:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	1	C01376	RADIO NAVIGATION NAV SNSR DC-1
C	4	C00456	AFCS SYS A MACH TRIM AC
C	5	C01041	AFCS SYS A SNSR EXC AC
D	1	C01049	AFCS SYS A WARN LIGHT (BAT)
D	2	C01045	AFCS SYS A FCC DC
D	3	C01048	AFCS SYS A ENGAGE INTLK
D	4	C00457	AFCS SYS A MACH TRIM DC
D	5	C01044	AFCS MCP DC 1
E	5	C01009	ADIRU LEFT DC
E	7	C01007	ADIRU LEFT AC

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	2	C00412	INSTR XFR
E	8	C00425	ADIRU LEFT EXC

SUBTASK 22-11-37-020-002

CAUTION: DO NOT TOUCH THE CONNECTOR PINS OR OTHER CONDUCTORS ON THE IFSAU. IF YOU TOUCH THESE CONDUCTORS, ELECTROSTATIC DISCHARGE CAN CAUSE DAMAGE TO THE IFSAU.

- (3) Before you touch the IFSAU [1], do this task: ESDS Handling for Metal Encased Unit Installation, TASK 20-40-12-400-802.

SUBTASK 22-11-37-420-001

- (4) To install the IFSAU [1], do this task: E/E Box Installation, TASK 20-10-07-400-801.

SUBTASK 22-11-37-860-003

- (5) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	10	C01377	RADIO NAVIGATION NAV SNSR DC-2
C	14	C01008	ADIRU RIGHT AC
C	15	C00426	ADIRU RIGHT EXC
C	17	C01010	ADIRU RIGHT DC

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	3	C01631	AFCS INTLK 2
B	1	C00374	AFCS SYS B WARN LIGHT (BAT)
B	2	C01064	AFCS SYS B MACH TRIM DC



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(Continued)

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	3	C01046	AFCS SYS B FCC DC
B	4	C00716	AFCS SYS B ENGAGE INTLK
C	1	C01037	AFCS SYS B MACH TRIM AC
C	2	C01042	AFCS SYS B SNSR EXC AC
C	3	C01047	AFCS MCP DC 2

SUBTASK 22-11-37-730-003

- (6) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	1	C01376	RADIO NAVIGATION NAV SNSR DC-1
C	4	C00456	AFCS SYS A MACH TRIM AC
C	5	C01041	AFCS SYS A SNSR EXC AC
D	1	C01049	AFCS SYS A WARN LIGHT (BAT)
D	2	C01045	AFCS SYS A FCC DC
D	3	C01048	AFCS SYS A ENGAGE INTLK
D	4	C00457	AFCS SYS A MACH TRIM DC
D	5	C01044	AFCS MCP DC 1
E	5	C01009	ADIRU LEFT DC
E	7	C01007	ADIRU LEFT AC

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	2	C00412	INSTR XFR
E	8	C00425	ADIRU LEFT EXC

SUBTASK 22-11-37-410-001

- (7) Do this task: Finding an Access Door or Panel on the Lower Half of the Fuselage, TASK 06-41-00-800-801.

Close this access door:

Number Name/Location

117A Electronic Equipment Access Door

G. Prepare for the Test

SUBTASK 22-11-37-860-004

- (1) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

SUBTASK 22-11-37-860-005

- (2) Set the autopilot stab trim cutout switch on the control stand to CUTOUT.

SUBTASK 22-11-37-860-006

- (3) Make sure that the VHF NAV and IRS switches on the P5 forward overhead panel are in NORMAL.

SUBTASK 22-11-37-860-007

- (4) Set the left and right IRS select switches on the P5 aft overhead panel to ALIGN or NAV.



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H. Installation Test

SUBTASK 22-11-37-740-001

- (1) Do this BITE test:

(a) Push the INIT REF key on the CDU keyboard.

(b) Push the Line Select Key (LSK) that is adjacent to each selection:

NOTE: Use the NEXT PAGE or PREV PAGE key to change page if it is necessary. If the CONTINUE shows during the BITE test, then push the LSK that is adjacent to CONTINUE after you do the instructions that show on the CDU display.

- 1) INDEX
- 2) MAINT
- 3) DFCS
- 4) LRU REPLACEMENT TESTS

- 5) Make a selection for the applicable channel:

NOTE: Channel A is for FCC-A and channel B is for FCC-B.

- a) CHANNEL A
- b) CHANNEL B
- c) CHANNEL A AND B

- 6) DFCS/AT or FCC

NOTE: If you push the LSK adjacent to CHANNEL A or CHANNEL A AND B, DFCS/AT will show on the BITE display.

If you push the LSK adjacent to CHANNEL B, FCC will show on the BITE display.

- 7) Do the instructions that show on the CDU display to complete the test.

- 8) Make sure that the test is completed with no failures.

SUBTASK 22-11-37-800-001

- (2) Continue the instructions on the CDU display:

- (a) Push the LSK adjacent to EXIT.
- (b) Do the instructions on the CDU display.
- (c) Push the LSK adjacent to EXIT.

I. Put the Airplane Back to Its Usual Condition

SUBTASK 22-11-37-860-008

- (1) Push the captain's or first officer's autopilot disengage switch on the control wheel to make sure that the autopilot is disengaged.

SUBTASK 22-11-37-860-009

- (2) Make sure that these circuit breakers are closed:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	1	C01049	AFCS SYS A WARN LIGHT (BAT)



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F/O Electrical System Panel, P6-2

Row Col Number Name

B 1 C00374 AFCS SYS B WARN LIGHT (BAT)

SUBTASK 22-11-37-860-010

- (3) Set the autopilot stab trim cutout switch on the control stand to NORMAL.

SUBTASK 22-11-37-860-011

- (4) Do this task: Remove External Power, TASK 24-22-00-860-814.

———— END OF TASK ————

EFFECTIVITY
AKS ALL

22-11-37



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TAKEOFF/GO-AROUND SWITCH - MAINTENANCE PRACTICES

1. General

- A. This procedure has these tasks:
 - (1) Takeoff/Go-Around Switch Deactivation.
 - (2) Takeoff/Go-Around Switch Activation.

TASK 22-11-39-040-801

2. Takeoff/Go-Around Switch - Deactivation

(Figure 201)

A. General

- (1) This procedure removes electrical power to the Takeoff/Go-Around Switch.

B. References

Reference	Title
24-22-00-860-811	Supply Electrical Power (P/B 201)

C. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

D. Procedure

SUBTASK 22-11-39-860-009

- (1) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
C	5	C01041	AFCS SYS A SNSR EXC AC
D	1	C01049	AFCS SYS A WARN LIGHT (BAT)
D	2	C01045	AFCS SYS A FCC DC
E	1	C00721	AUTOTHROTTLE DC 1

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	1	C00374	AFCS SYS B WARN LIGHT (BAT)
B	3	C01046	AFCS SYS B FCC DC

E. Takeoff/Go-Around Switch - Tryout

NOTE: This tryout is to make sure the Takeoff/Go-Around Switch is in a zero energy state.

SUBTASK 22-11-39-860-012

- (1) Do this task: Supply Electrical Power, TASK 24-22-00-860-811

SUBTASK 22-11-39-860-010

- (2) Make sure that these circuit breakers are open and have safety tags:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
C	5	C01041	AFCS SYS A SNSR EXC AC
D	1	C01049	AFCS SYS A WARN LIGHT (BAT)



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(Continued)

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	2	C01045	AFCS SYS A FCC DC
E	1	C00721	AUTOTHROTTLE DC 1

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	1	C00374	AFCS SYS B WARN LIGHT (BAT)
B	3	C01046	AFCS SYS B FCC DC

SUBTASK 22-11-39-700-001

- (3) Use the FMC - CDU and do the following test (Figure 201):
 - (a) SELECT, INIT/REF on the keyboard.
 - (b) SELECT, "INDEX" (LSK 6L).
 - (c) SELECT, "MAINT" (LSK 6R).
 - (d) SELECT, "DFCS" (LSK 2L).
 - 1) DFCS will run the self test and display as following:
 - FCC-A SELF TEST FAIL
 - FCC-B SELF TEST FAIL
 - CROSS CHANNEL TEST PASS
 - (e) SELECT, "CONTINUE" (LSK 6R)
NOTE: Ignore the message that appears.
 - (f) SELECT, "CONTINUE" (LSK 6R).
 - (g) SELECT, "EXTENDED MAINTENANCE"(LSK 4L).
 - (h) SELECT, "SENSOR VALUES"(LSK 4L).
 - (i) SELECT, "DISCRETE INPUTS"(LSK 5L).
 - (j) SELECT, "CIRCUIT BREAKER CHECK"(LSK 5R).
 - (k) SELECT, INIT/REF on the keyboard, to exit of BITE.
 - (l) End of test.

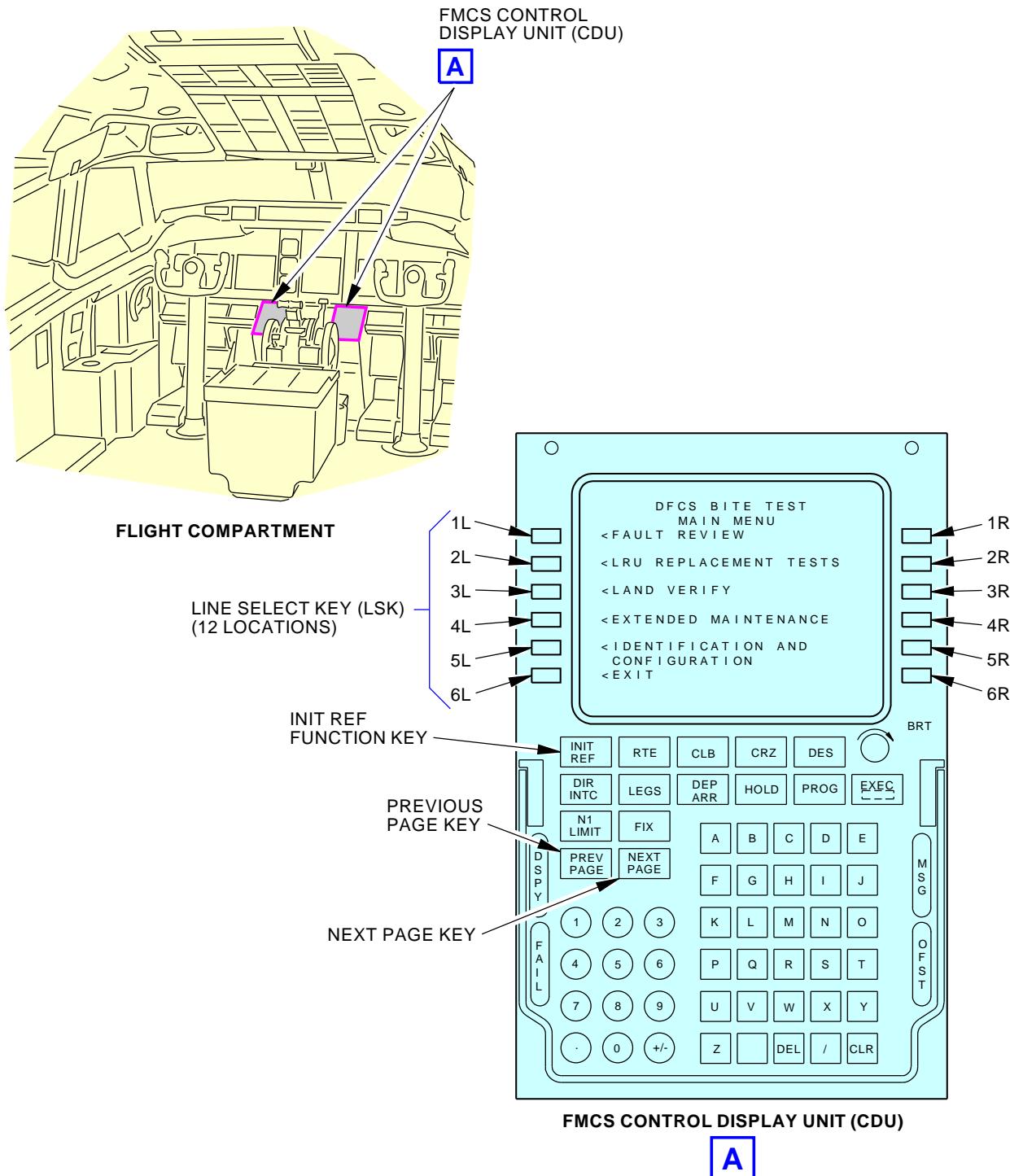
———— END OF TASK ————

EFFECTIVITY
AKS ALL

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K45540 S0006563722_V2

Flight Management Computer Control Display Unit
Figure 201/22-11-39-990-803

EFFECTIVITY
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TASK 22-11-39-440-801

3. Takeoff/Go-Around Switch - Activation

(Figure 201)

A. General

- (1) This procedure adds electrical power to the Takeoff/Go-Around Switch.

B. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

C. Procedure

SUBTASK 22-11-39-860-011

- (1) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	5	C01041	AFCS SYS A SNSR EXC AC
D	1	C01049	AFCS SYS A WARN LIGHT (BAT)
D	2	C01045	AFCS SYS A FCC DC
E	1	C00721	AUTOTHROTTLE DC 1

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	1	C00374	AFCS SYS B WARN LIGHT (BAT)
B	3	C01046	AFCS SYS B FCC DC

———— END OF TASK ————

EFFECTIVITY
AKS ALL

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AIRCRAFT MAINTENANCE MANUAL

TAKEOFF/GO-AROUND SWITCH - REMOVAL/INSTALLATION

1. General

- A. This procedure has these tasks:
 - (1) The removal of a Takeoff Go-Around (TOGA) switch.
 - (2) The installation of a TOGA switch.
- B. There are two TOGA switches (S786 and S787). You can find the TOGA switch on the top of the aft edge of each thrust lever.

TASK 22-11-39-000-801

2. Takeoff/Go-Around Switch Removal

(Figure 401)

A. Tools/Equipment

Reference	Description
STD-3905	Gun - Soldering

B. Consumable Materials

Reference	Description	Specification
G01148	Sleeve - Insulation, Electrical, Heat Shrinkable - RT-876	
G51210	Tubing - Highly Flame-Retardant, Low-Shrink Temperature, Polyolefin	AMS-DTL-23053/5 Class 1

C. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

D. Removal Procedure

SUBTASK 22-11-39-860-001

- (1) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
C	5	C01041	AFCS SYS A SNSR EXC AC
D	1	C01049	AFCS SYS A WARN LIGHT (BAT)
D	2	C01045	AFCS SYS A FCC DC
E	1	C00721	AUTOTHROTTLE DC 1

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	1	C00374	AFCS SYS B WARN LIGHT (BAT)
B	3	C01046	AFCS SYS B FCC DC
C	2	C01042	AFCS SYS B SNSR EXC AC

SUBTASK 22-11-39-860-002

- (2) Make sure that the engines are not in operation.

SUBTASK 22-11-39-860-003

- (3) Put the thrust lever in a position so that you can get access to the switch [6].

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SUBTASK 22-11-39-010-001

- (4) Remove the applicable cover [4] or [5] from the left or right thrust lever.
 - (a) Remove the screws [7] from the applicable cover.

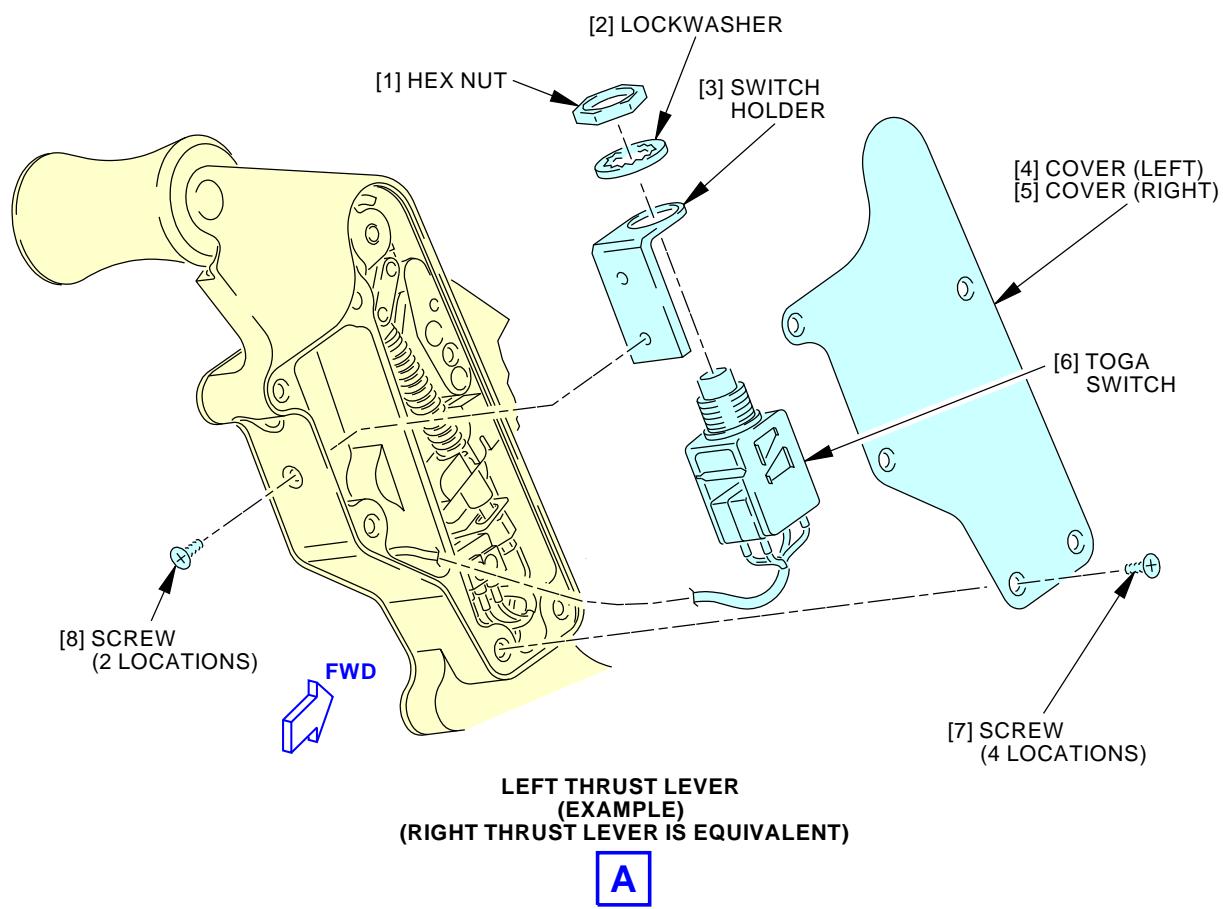
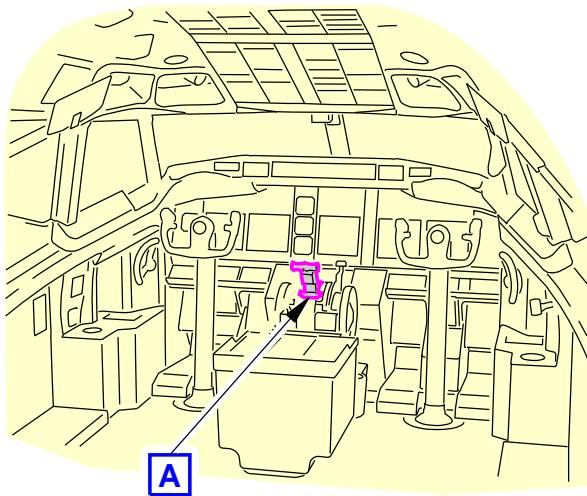
SUBTASK 22-11-39-020-001

- (5) Do these steps to remove the switch [6]:
 - (a) Remove the lacing tape that attaches the TOGA switch wire bundle.
 - (b) Remove the screws [8] which attach the switch holder [3] and the switch [6] to the thrust lever.
 - (c) Remove the hex nut [1], and the lockwasher [2] from the switch [6].
 - (d) Remove the switch [6] from the switch holder [3].
 - (e) Remove the heat shrinkable RT-876 sleeve, G01148 or Versafit heat shrink tubing, G51210 from the switch terminals.
 - (f) Use the soldering gun, STD-3905 to melt the solder on the switch terminals to release the wires from the switch [6].
 - 1) Make a record of the wire positions and the locations of the switch terminals.
 - (g) Remove the switch [6].

———— END OF TASK ————

EFFECTIVITY
AKS ALL

22-11-39



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**Takeoff/Go-Around Switch Installation
Figure 401/22-11-39-990-802**

EFFECTIVITY
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D633A101-AKS

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TASK 22-11-39-400-801

3. TOGA Switch Installation

(Figure 401)

A. References

Reference	Title
24-22-00-860-811	Supply Electrical Power (P/B 201)
24-22-00-860-812	Remove Electrical Power (P/B 201)

B. Tools/Equipment

Reference	Description
STD-442	Gun - Heat, 180° F (82° C) Maximum Output Temperature
STD-3905	Gun - Soldering

C. Consumable Materials

Reference	Description	Specification
G01148	Sleeve - Insulation, Electrical, Heat Shrinkable - RT-876	

D. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

E. Installation Procedure

SUBTASK 22-11-39-860-004

- (1) Make sure that these circuit breakers are open and have safety tags:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
C	5	C01041	AFCS SYS A SNSR EXC AC
D	1	C01049	AFCS SYS A WARN LIGHT (BAT)
D	2	C01045	AFCS SYS A FCC DC
E	1	C00721	AUTOTHROTTLE DC 1

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	1	C00374	AFCS SYS B WARN LIGHT (BAT)
B	3	C01046	AFCS SYS B FCC DC
C	2	C01042	AFCS SYS B SNSR EXC AC

SUBTASK 22-11-39-420-001

- (2) Do these steps to install the switch [6]:

- (a) Put the wire for each terminal of the switch [6] through a heat shrinkable RT-876 sleeve, G01148.
- (b) Use the soldering gun, STD-3905 to solder the wires to the new TOGA switch terminals.
- (c) Push the heat shrinkable RT-876 sleeve, G01148 on all of the switch terminals.
- (d) Use the heat 180° F (82° C) maximum output temperature heat gun, STD-442 to blow the hot air on the heat shrinkable RT-876 sleeve, G01148 to make it smaller and tighter.
- (e) Put the switch [6] in the switch holder [3].



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- 1) Install the lockwasher [2] and the hex nut [1].
- (f) Install the switch [6] and the switch holder [3] in the thrust lever with the screws [8].
- (g) Use the lacing tape to attach the TOGA switch wire bundle.
- (h) Install the applicable cover [4] or [5] with the screws [7].

SUBTASK 22-11-39-860-005

- (3) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	5	C01041	AFCS SYS A SNSR EXC AC
D	1	C01049	AFCS SYS A WARN LIGHT (BAT)
D	2	C01045	AFCS SYS A FCC DC
E	1	C00721	AUTOTHROTTLE DC 1

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	1	C00374	AFCS SYS B WARN LIGHT (BAT)
B	3	C01046	AFCS SYS B FCC DC
C	2	C01042	AFCS SYS B SNSR EXC AC

F. Installation Test

SUBTASK 22-11-39-860-006

- (1) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

SUBTASK 22-11-39-740-001

- (2) Do this BITE test:

- (a) Push the INIT REF key on the CDU keyboard.
- (b) Push the Line Select Key (LSK) that is adjacent to each selection:

NOTE: If the CONTINUE shows during the BITE test, then do the instructions that show on the CDU display before you push the LSK that is adjacent to CONTINUE. Use the NEXT PAGE or PREV PAGE key to change page if it is necessary.

- (c) INDEX
- (d) MAINT
- (e) A/T
- (f) INTERACTIVE
- (g) INPUT DISCRETES
- (h) Find the CDU display that shows the input discrete for the TOGA.
 - 1) Make sure that the CDU display shows TOGA NOT PRESSED.
 - 2) Push and hold the switch [6] on each thrust lever one at a time.
 - 3) Make sure that the CDU display shows TOGA PRESSED.
 - 4) Release the switch [6].
 - 5) Make sure that the CDU display shows TOGA NOT PRESSED.
 - 6) Push the INIT REF key on the CDU keyboard to get out of the BITE test.

EFFECTIVITY
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SUBTASK 22-11-39-860-007

- (3) Do this task: Remove Electrical Power, TASK 24-22-00-860-812.

———— END OF TASK ——

EFFECTIVITY
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22-11-39



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AIRCRAFT MAINTENANCE MANUAL

HYDRAULIC PRESSURE SWITCH - MAINTENANCE PRACTICES

1. General

- A. This procedure has these tasks:
- (1) Hydraulic Pressure Switch Deactivation.
 - (2) Hydraulic Pressure Switch Activation.

TASK 22-11-40-040-801

2. Hydraulic Pressure Switch - Deactivation

(Figure 22-11-40-990-802)

A. General

- (1) This procedure removes electrical and hydraulic pressure from the Hydraulic Pressure Switch.

B. References

Reference	Title
22-11-40-990-802	Figure: Hydraulic Pressure Switch Installation (P/B 401)
24-22-00-860-811	Supply Electrical Power (P/B 201)
27-11-00-860-801	Pressure from the Aileron Hydraulic Systems A and B - Deactivation (P/B 201)
27-31-00-800-802	Remove Pressure from the Elevator Hydraulic Systems A and B (P/B 201)
32-00-01-480-801	Landing Gear Downlock Pins Installation (P/B 201)

C. Tools/Equipment

Reference	Description
STD-858	Tag - DO NOT OPERATE

D. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
211	Flight Compartment - Left
212	Flight Compartment - Right
317	Tail Cone Compartment - Left
318	Tail Cone Compartment - Right

E. Procedure

WARNING: MAKE SURE THAT PERSONNEL AND EQUIPMENT ARE CLEAR OF THE FLIGHT CONTROLS SURFACES. MAKE SURE THAT THE INBOARD FAN DUCT COWL AND THE INBOARD AND OUTBOARD THRUST REVERSERS ARE CLOSED. THE FLIGHT CONTROL SURFACES CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

SUBTASK 22-11-40-860-019

- (1) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
C	4	C00456	AFCS SYS A MACH TRIM AC
D	1	C01049	AFCS SYS A WARN LIGHT (BAT)

EFFECTIVITY
AKS ALL

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(Continued)

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	2	C01045	AFCS SYS A FCC DC
D	3	C01048	AFCS SYS A ENGAGE INTLK
D	4	C00457	AFCS SYS A MACH TRIM DC
D	5	C01044	AFCS MCP DC 1

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	1	C00374	AFCS SYS B WARN LIGHT (BAT)
B	2	C01064	AFCS SYS B MACH TRIM DC
B	3	C01046	AFCS SYS B FCC DC
B	4	C00716	AFCS SYS B ENGAGE INTLK
B	10	C00207	FLIGHT CONTROL STAB TRIM CONT
C	1	C01037	AFCS SYS B MACH TRIM AC
C	2	C01042	AFCS SYS B SNSR EXC AC
D	10	C00840	FLIGHT CONTROL STAB TRIM ACTUATOR

SUBTASK 22-11-40-010-003

- (2) For the A/P aileron actuators, do these steps:
 - (a) Do this task: Pressure from the Aileron Hydraulic Systems A and B - Deactivation, TASK 27-11-00-860-801.

WARNING: MAKE SURE THAT THE GROUND LOCKS ARE INSTALLED IN ALL OF THE LANDING GEAR. WITHOUT THE GROUND LOCKS, THE LANDING GEAR CAN RETRACT. THIS CAN CAUSE INJURIES TO PERSONNEL, AND DAMAGE TO EQUIPMENT.

- (b) Make sure that you install the landing gear downlock pins (Landing Gear Downlock Pins Installation, TASK 32-00-01-480-801).

SUBTASK 22-11-40-010-004

- (3) For the A/P elevator actuators, do this step:
 - (a) Do this task: Remove Pressure from the Elevator Hydraulic Systems A and B, TASK 27-31-00-800-802.

SUBTASK 22-11-40-860-020

- (4) Attach DO NOT OPERATE tag, STD-858 to the captain's and first officer's control columns.

F. Hydraulic Pressure Switch - Tryout

NOTE: This tryout is to make sure the Hydraulic Pressure Switch is in a zero energy state.

SUBTASK 22-11-40-860-021

WARNING: MAKE SURE THAT PERSONNEL AND EQUIPMENT ARE CLEAR OF THE FLIGHT CONTROLS SURFACES. MAKE SURE THAT THE INBOARD FAN DUCT COWL AND THE INBOARD AND OUTBOARD THRUST REVERSERS ARE CLOSED. THE FLIGHT CONTROL SURFACES CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (1) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.



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SUBTASK 22-11-40-860-022

- (2) Make sure that these circuit breakers are open and have safety tags:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	4	C00456	AFCS SYS A MACH TRIM AC
D	1	C01049	AFCS SYS A WARN LIGHT (BAT)
D	3	C01048	AFCS SYS A ENGAGE INTLK
D	4	C00457	AFCS SYS A MACH TRIM DC
D	5	C01044	AFCS MCP DC 1

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	1	C00374	AFCS SYS B WARN LIGHT (BAT)
B	2	C01064	AFCS SYS B MACH TRIM DC
B	3	C01046	AFCS SYS B FCC DC
B	4	C00716	AFCS SYS B ENGAGE INTLK
B	10	C00207	FLIGHT CONTROL STAB TRIM CONT
C	1	C01037	AFCS SYS B MACH TRIM AC
C	2	C01042	AFCS SYS B SNSR EXC AC
D	10	C00840	FLIGHT CONTROL STAB TRIM ACTUATOR

SUBTASK 22-11-40-700-001

- (3) Use the FMC - CDU and do the following test (Figure 201):

- (a) SELECT, INIT/REF on the keyboard.
- (b) SELECT, "INDEX" (LSK 6L).
- (c) SELECT, "MAINT" (LSK 6R).
- (d) SELECT, "DFCS" (LSK 2L).
 - 1) DFCS will run the self test and display as following:
 - FCC-A SELF TEST FAIL
 - FCC-B SELF TEST FAIL
 - CROSS CHANNEL TEST PASS
- (e) SELECT, "CONTINUE" (LSK 6R)
NOTE: Ignore the message that appears.
- (f) SELECT, "CONTINUE" (LSK 6R).
- (g) SELECT, "EXTENDED MAINTENANCE"(LSK 4L).
- (h) SELECT, "SENSOR VALUES"(LSK 4L).
- (i) SELECT, "DISCRETE INPUTS"(LSK 5L).
- (j) SELECT, "CIRCUIT BREAKER CHECK"(LSK 5R).
- (k) SELECT, INIT/REF on the keyboard, to exit of BITE.
- (l) End of test.

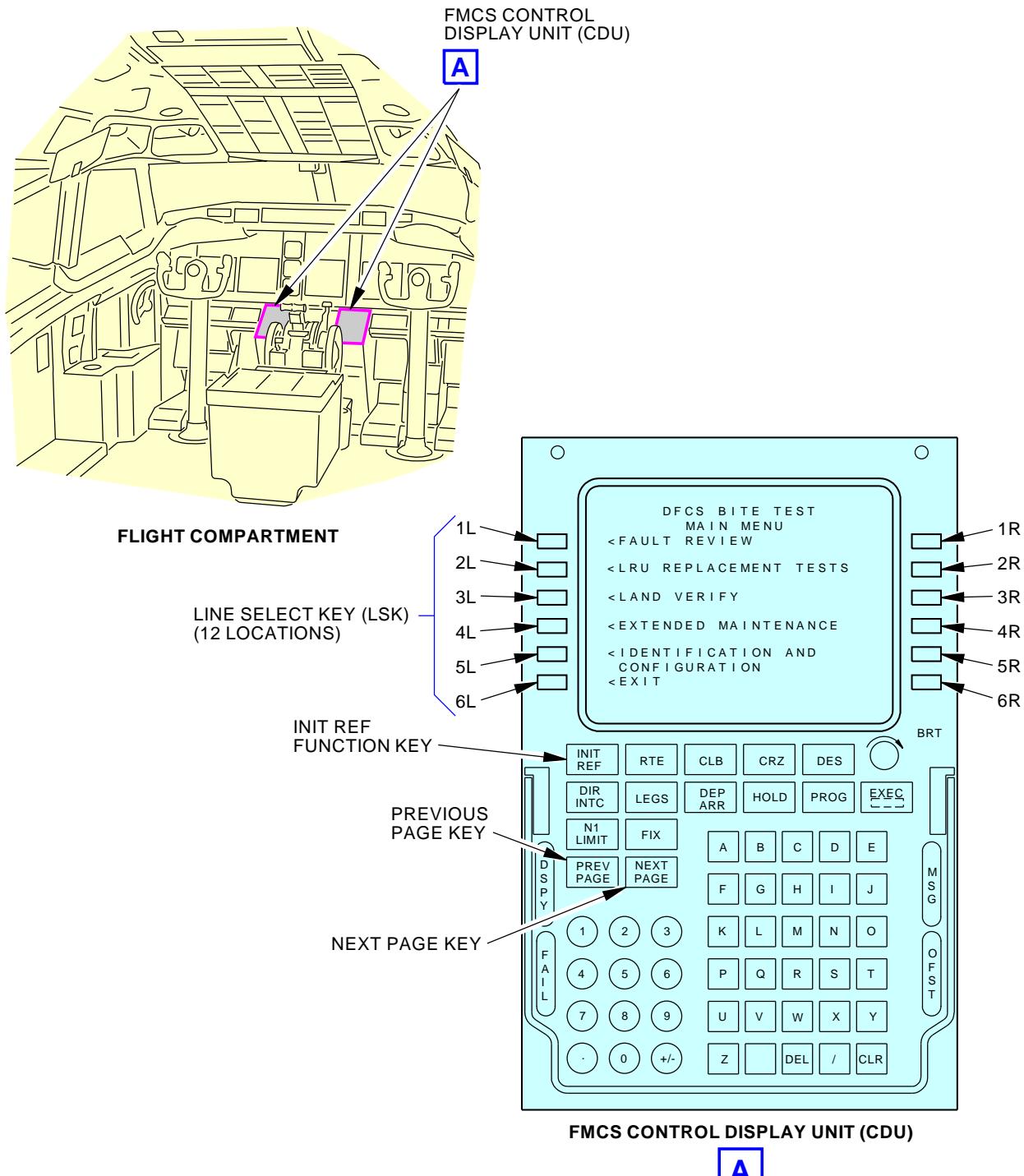
———— END OF TASK ————



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K45540 S0006563722_V2

Flight Management Computer Control Display Unit
Figure 201/22-11-40-990-803

EFFECTIVITY
AKS ALL

22-11-40

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AIRCRAFT MAINTENANCE MANUAL

TASK 22-11-40-440-801

3. Hydraulic Pressure Switch - Activation

(Figure 22-11-40-990-802)

A. General

- (1) This procedure adds electrical power and hydraulic pressure to the Hydraulic Pressure Switch.

B. References

Reference	Title
22-11-40-990-802	Figure: Hydraulic Pressure Switch Installation (P/B 401)
27-11-00-860-802	Pressure to the Aileron Hydraulic Systems A and B - Activation (P/B 201)
27-31-00-800-801	Elevator Hydraulic System A and B - Pressurization (P/B 201)

C. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
211	Flight Compartment - Left
212	Flight Compartment - Right
317	Tail Cone Compartment - Left
318	Tail Cone Compartment - Right

D. Procedure

SUBTASK 22-11-40-860-023

- (1) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
C	4	C00456	AFCS SYS A MACH TRIM AC
D	1	C01049	AFCS SYS A WARN LIGHT (BAT)
D	2	C01045	AFCS SYS A FCC DC
D	3	C01048	AFCS SYS A ENGAGE INTLK
D	4	C00457	AFCS SYS A MACH TRIM DC
D	5	C01044	AFCS MCP DC 1

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	1	C00374	AFCS SYS B WARN LIGHT (BAT)
B	2	C01064	AFCS SYS B MACH TRIM DC
B	3	C01046	AFCS SYS B FCC DC
B	4	C00716	AFCS SYS B ENGAGE INTLK
B	10	C00207	FLIGHT CONTROL STAB TRIM CONT
C	1	C01037	AFCS SYS B MACH TRIM AC
C	2	C01042	AFCS SYS B SNSR EXC AC
D	10	C00840	FLIGHT CONTROL STAB TRIM ACTUATOR

SUBTASK 22-11-40-410-002

- (2) For the A/P aileron actuators, do this step:

- (a) Do this task: Pressure to the Aileron Hydraulic Systems A and B - Activation, TASK 27-11-00-860-802.

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SUBTASK 22-11-40-410-003

- (3) For the A/P elevator actuators, do this step: Elevator Hydraulic System A and B - Pressurization, TASK 27-31-00-800-801.

———— END OF TASK ————

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HYDRAULIC PRESSURE SWITCH - REMOVAL/INSTALLATION

1. General

- A. This procedure has these tasks:
 - (1) The removal of a hydraulic pressure switch.
 - (2) The installation of a hydraulic pressure switch.
- B. There is one hydraulic pressure switch on each A/P actuator. The removal and installation procedures of the hydraulic pressure switch are the same on all of the A/P actuators (A/P Aileron Actuators and A/P Elevator Actuators).
- C. You can find the A/P aileron actuator A (M943) and the A/P aileron actuator B (M1024) in the left main landing gear wheel well.
- D. You can find the A/P elevator actuator A (M1020) and the A/P elevator actuator B (M1022) on the aft bulkhead at Body station 1156.

TASK 22-11-40-000-801

2. Hydraulic Pressure Switch Removal

(Figure 401)

A. References

Reference	Title
27-11-00-860-801	Pressure from the Aileron Hydraulic Systems A and B - Deactivation (P/B 201)
27-31-00-800-802	Remove Pressure from the Elevator Hydraulic Systems A and B (P/B 201)
32-00-01-480-801	Landing Gear Downlock Pins Installation (P/B 201)

B. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
317	Tail Cone Compartment - Left
318	Tail Cone Compartment - Right

C. Access Panels

Number	Name/Location
318BR	Tailcone Access Door

D. Prepare for the Removal

SUBTASK 22-11-40-860-001

- (1) For the A/P aileron actuators, do these steps:

- (a) Do this task: Pressure from the Aileron Hydraulic Systems A and B - Deactivation, TASK 27-11-00-860-801.

WARNING: YOU MUST CAREFULLY INSTALL THE GROUND LOCKS IN ALL LANDING GEAR. AN ACCIDENTAL RETRACTION OF THE LANDING GEAR CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (b) Make sure that you install the landing gear downlock pins (TASK 32-00-01-480-801).

SUBTASK 22-11-40-010-001

- (2) For the A/P elevator actuators, do these steps:

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- (a) Do this task: Remove Pressure from the Elevator Hydraulic Systems A and B, TASK 27-31-00-800-802.
- (b) Open this access door, to get access to the A/P elevator actuators:

<u>Number</u>	<u>Name/Location</u>
318BR	Tailcone Access Door

SUBTASK 22-11-40-860-002

- (3) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	4	C00456	AFCS SYS A MACH TRIM AC
C	5	C01041	AFCS SYS A SNSR EXC AC
D	1	C01049	AFCS SYS A WARN LIGHT (BAT)
D	2	C01045	AFCS SYS A FCC DC
D	3	C01048	AFCS SYS A ENGAGE INTLK
D	4	C00457	AFCS SYS A MACH TRIM DC
D	5	C01044	AFCS MCP DC 1

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	1	C00374	AFCS SYS B WARN LIGHT (BAT)
B	2	C01064	AFCS SYS B MACH TRIM DC
B	3	C01046	AFCS SYS B FCC DC
B	4	C00716	AFCS SYS B ENGAGE INTLK
B	10	C00207	FLIGHT CONTROL STAB TRIM CONT
C	1	C01037	AFCS SYS B MACH TRIM AC
C	2	C01042	AFCS SYS B SNSR EXC AC
C	3	C01047	AFCS MCP DC 2
D	10	C00840	FLIGHT CONTROL STAB TRIM ACTUATOR

E. Procedure

SUBTASK 22-11-40-020-001

- (1) Do these steps to remove the hydraulic pressure switch [1]:
 - (a) Disconnect the electrical connector from the hydraulic pressure switch [1].
 - (b) Remove the hydraulic pressure switch [1].
 - (c) Remove the packing [2] and discard it.
 - (d) Install a cover on the open hydraulic port.

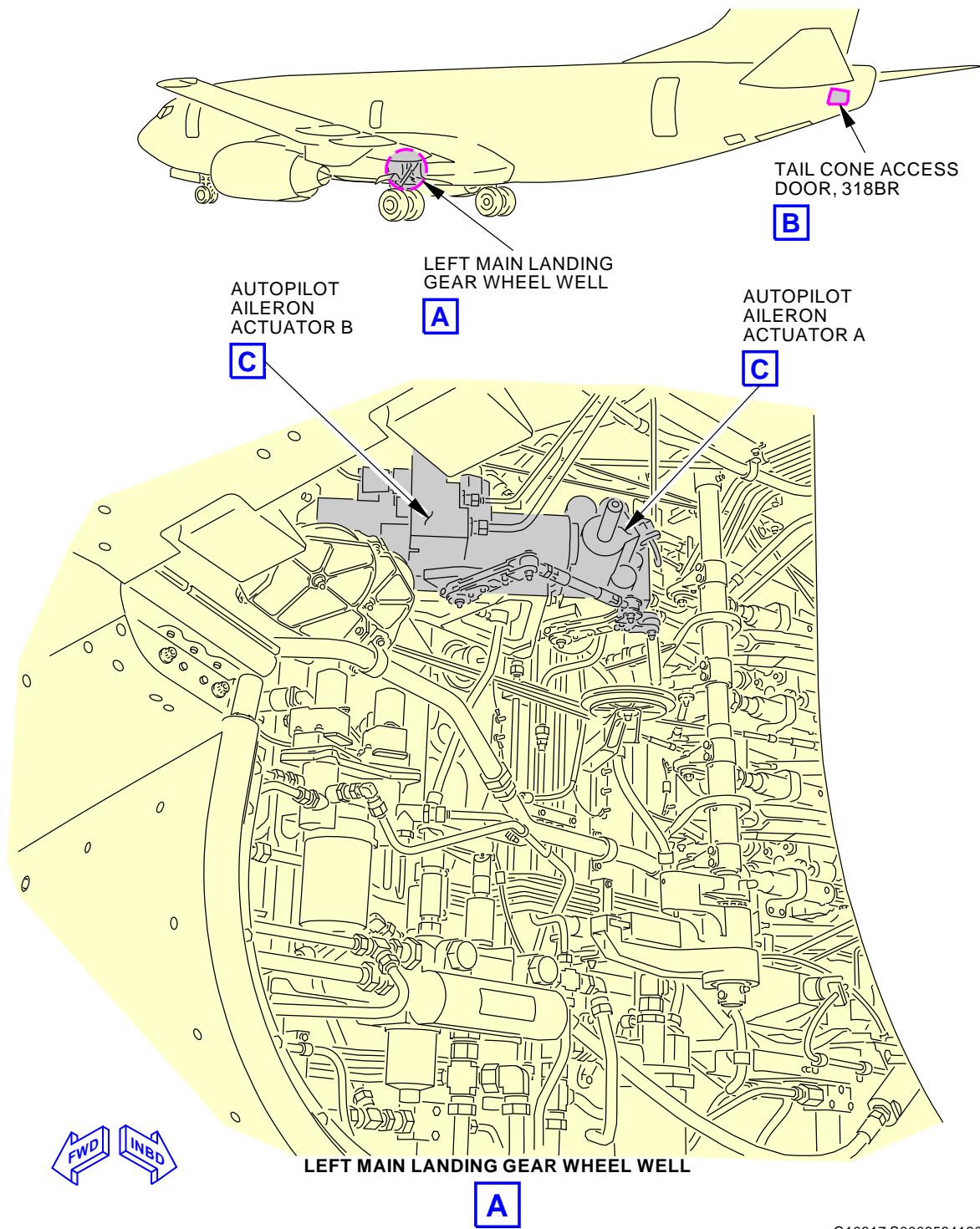
———— END OF TASK ————



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Hydraulic Pressure Switch Installation
Figure 401/22-11-40-990-802 (Sheet 1 of 3)

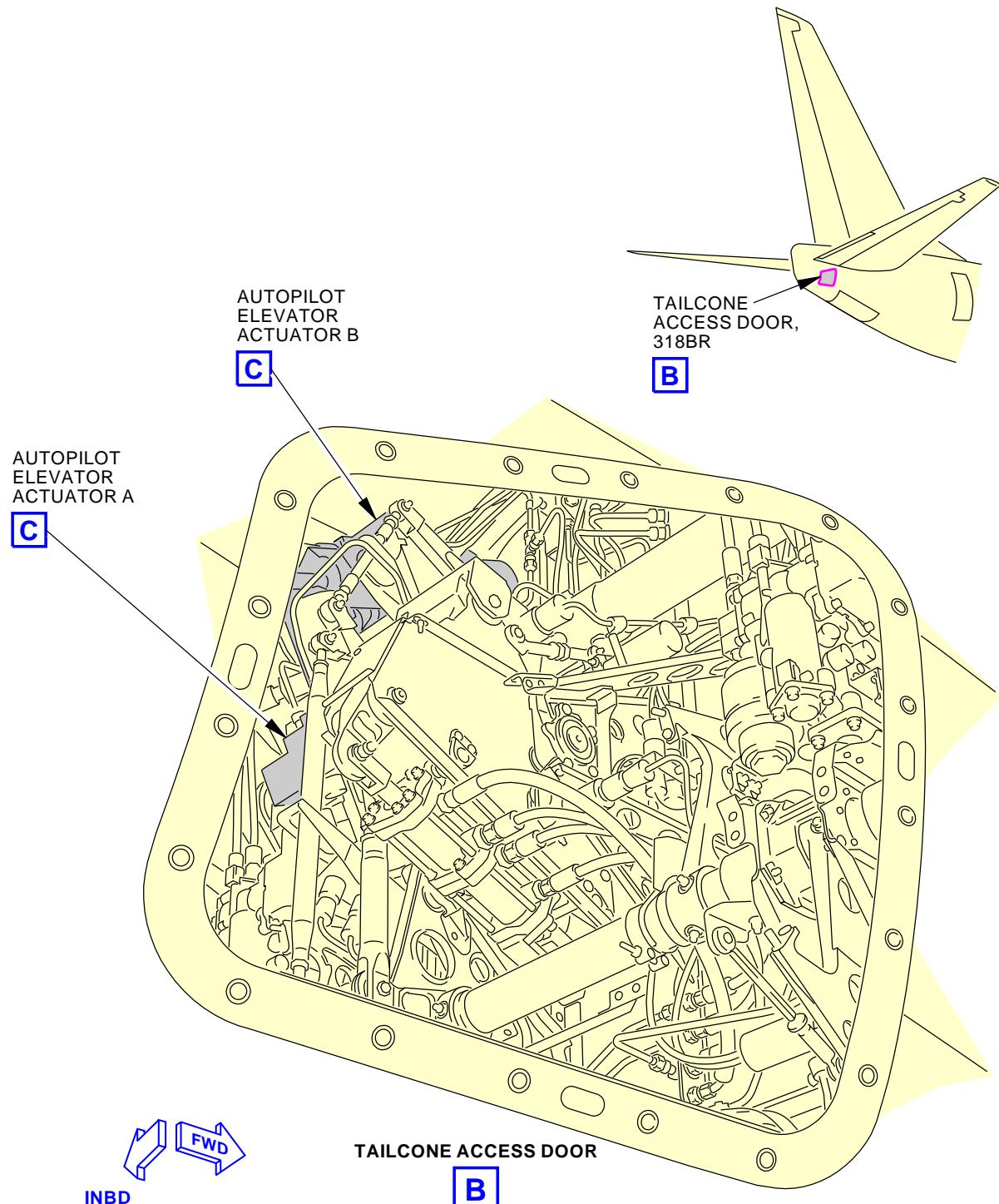
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Hydraulic Pressure Switch Installation
Figure 401/22-11-40-990-802 (Sheet 2 of 3)

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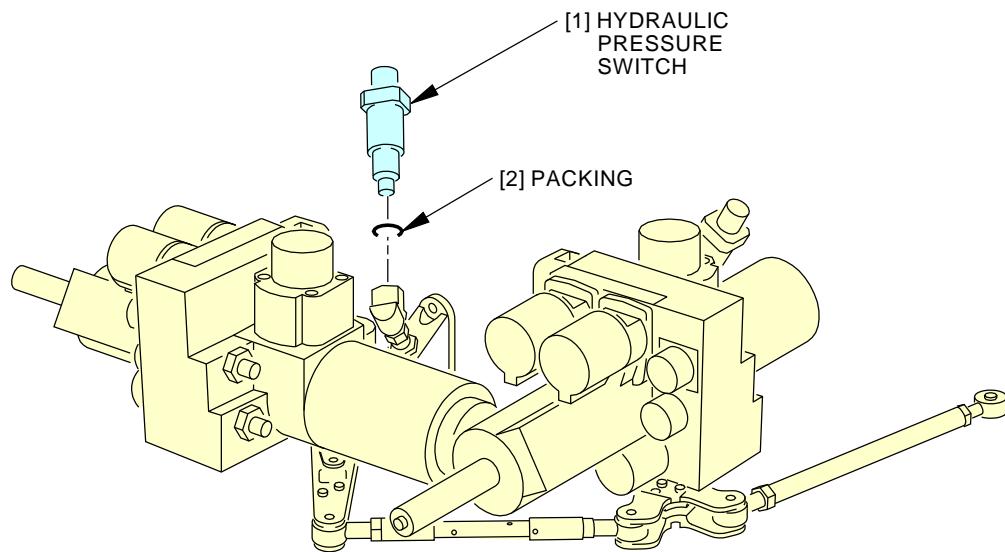
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A/P ACTUATORS (EXAMPLE)

C

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Hydraulic Pressure Switch Installation
Figure 401/22-11-40-990-802 (Sheet 3 of 3)

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TASK 22-11-40-400-801

3. Hydraulic Pressure Switch - Installation

(Figure 401)

A. References

Reference	Title
20-10-44-400-801	Lockwire, Cotter Pins, and Lockrings - Installation (P/B 401)
24-22-00-860-811	Supply Electrical Power (P/B 201)
24-22-00-860-812	Remove Electrical Power (P/B 201)
27-11-00-860-801	Pressure from the Aileron Hydraulic Systems A and B - Deactivation (P/B 201)
27-31-00-800-802	Remove Pressure from the Elevator Hydraulic Systems A and B (P/B 201)
29-11-00-860-801	Hydraulic System A or B Pressurization (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)
32-00-01-480-801	Landing Gear Downlock Pins Installation (P/B 201)

B. Consumable Materials

Reference	Description	Specification
D00054	Fluid - Hydraulic Assembly Lubricant - MCS 352B (Formerly Monsanto MCS 352B)	
D00153	Fluid - Hydraulic Fluid, Fire Resistant (Interchangeable And Intermixable With BMS 3-11 Type V)	BMS3-11 Type IV

C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Switch	22-11-40-02-010	AKS ALL
2	Packing	22-11-40-02-005	AKS ALL

D. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
211	Flight Compartment - Left
212	Flight Compartment - Right
317	Tail Cone Compartment - Left
318	Tail Cone Compartment - Right

E. Access Panels

Number	Name/Location
318BR	Tailcone Access Door

F. Prepare for the Installation

SUBTASK 22-11-40-860-003

- (1) Make sure that these circuit breakers are open and have safety tags:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
C	4	C00456	AFCS SYS A MACH TRIM AC
C	5	C01041	AFCS SYS A SNSR EXC AC
D	1	C01049	AFCS SYS A WARN LIGHT (BAT)



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(Continued)

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	2	C01045	AFCS SYS A FCC DC
D	3	C01048	AFCS SYS A ENGAGE INTLK
D	4	C00457	AFCS SYS A MACH TRIM DC
D	5	C01044	AFCS MCP DC 1

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	1	C00374	AFCS SYS B WARN LIGHT (BAT)
B	2	C01064	AFCS SYS B MACH TRIM DC
B	3	C01046	AFCS SYS B FCC DC
B	4	C00716	AFCS SYS B ENGAGE INTLK
B	10	C00207	FLIGHT CONTROL STAB TRIM CONT
C	1	C01037	AFCS SYS B MACH TRIM AC
C	2	C01042	AFCS SYS B SNSR EXC AC
C	3	C01047	AFCS MCP DC 2
D	10	C00840	FLIGHT CONTROL STAB TRIM ACTUATOR

SUBTASK 22-11-40-860-004

- (2) For the A/P aileron actuators, make sure you do these steps:
 - (a) Do this task: Pressure from the Aileron Hydraulic Systems A and B - Deactivation, TASK 27-11-00-860-801.

WARNING: YOU MUST CAREFULLY INSTALL THE GROUND LOCKS IN ALL LANDING GEARS. AN ACCIDENTAL RETRACTION OF THE LANDING GEARS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (b) Do this task: Landing Gear Downlock Pins Installation, TASK 32-00-01-480-801.

SUBTASK 22-11-40-010-002

- (3) For the A/P elevator actuators, make sure you do these steps:
 - (a) Do this task: Remove Pressure from the Elevator Hydraulic Systems A and B, TASK 27-31-00-800-802.
 - (b) Remove this access panel:

<u>Number</u>	<u>Name/Location</u>
318BR	Tailcone Access Door

G. Procedure

SUBTASK 22-11-40-020-002

- (1) Remove the cover from the hydraulic port.

SUBTASK 22-11-40-420-001

- (2) Do these steps to install the hydraulic pressure switch [1]:
 - (a) Apply a layer of the MCS 352B fluid, D00054 or hydraulic fluid, D00153 to the packing [2].
 - (b) Apply a layer of the hydraulic MCS 352B fluid, D00054 or hydraulic fluid, D00153 to the threads of the hydraulic pressure switch [1].
 - (c) Install the packing [2] on the hydraulic pressure switch [1].



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- (d) Install the hydraulic pressure switch [1].
- (e) Tighten the hydraulic pressure switch [1] from 70-120 pound-inches (7.9-13.6 newton-meters).
- (f) Do this task: Lockwire, Cotter Pins, and Lockrings - Installation, TASK 20-10-44-400-801.

SUBTASK 22-11-40-860-005

- (3) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	4	C00456	AFCS SYS A MACH TRIM AC
C	5	C01041	AFCS SYS A SNSR EXC AC
D	1	C01049	AFCS SYS A WARN LIGHT (BAT)
D	2	C01045	AFCS SYS A FCC DC
D	3	C01048	AFCS SYS A ENGAGE INTLK
D	4	C00457	AFCS SYS A MACH TRIM DC
D	5	C01044	AFCS MCP DC 1

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	1	C00374	AFCS SYS B WARN LIGHT (BAT)
B	2	C01064	AFCS SYS B MACH TRIM DC
B	3	C01046	AFCS SYS B FCC DC
B	4	C00716	AFCS SYS B ENGAGE INTLK
B	10	C00207	FLIGHT CONTROL STAB TRIM CONT
C	1	C01037	AFCS SYS B MACH TRIM AC
C	2	C01042	AFCS SYS B SNSR EXC AC
C	3	C01047	AFCS MCP DC 2
D	10	C00840	FLIGHT CONTROL STAB TRIM ACTUATOR

H. Prepare for the Test

SUBTASK 22-11-40-860-006

- (1) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

NOTE: Landing gear aural warning horn may sound during this test.

SUBTASK 22-11-40-860-007

- (2) Set the autopilot stab trim cutout switch, on the control stand, to the CUTOUT position.

SUBTASK 22-11-40-860-008

- (3) Make sure that the VHF NAV and IRS switches, on the P5 forward overhead panel, are in the NORMAL positions.

SUBTASK 22-11-40-860-009

- (4) Set the left and right IRS select switches, on the P5 aft overhead panel, to the ALIGN or NAV position.



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SUBTASK 22-11-40-860-010

WARNING: KEEP PERSONS AND EQUIPMENT AWAY FROM THE FLIGHT CONTROL SURFACES. THE AILERONS, ELEVATORS, RUDDER, FLAPS, SLATS, SPOILERS, STABILIZER AND NOSE GEAR CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (5) Supply hydraulic power to hydraulic systems A and B. To supply hydraulic power, do this task:
Hydraulic System A or B Pressurization, TASK 29-11-00-860-801.

I. Installation Test

SUBTASK 22-11-40-740-001

- (1) Do this BITE test:

(a) Push the INIT REF key on the CDU keyboard.

(b) Push the Line Select Key (LSK) that is adjacent to each selection:

NOTE: If the CONTINUE shows during the BITE test, then do the instructions that show on the CDU display before you push the LSK that is adjacent to CONTINUE. Use the NEXT PAGE or PREV PAGE key to change page if it is necessary.

1) INDEX

2) MAINT

3) DFCS

4) EXTENDED MAINTENANCE

5) BITE LIBRARY TEST

6) Make a selection for the applicable channel:

NOTE: The A/P aileron actuator A and the A/P elevator actuator A have interfaces with the Flight Control Computer A (Channel A). The A/P aileron actuator B and the A/P elevator actuator B have interfaces with the Flight Control Computer B (Channel B).

7) CHANNEL A

8) CHANNEL B

9) CHANNEL A AND B

10) RUN SELECT LIBRARY TESTS

11) 30 ELEV CONTROL or 31 AIL CONTROL

NOTE: The 30 ELEV CONTROL is for the A/P elevator actuators and 31 AIL CONTROL is for the A/P aileron actuators.

12) EXECUTE

13) Do the instructions that show on the CDU to complete the test.

14) Make sure that the test is completed with no failure or the "TEST FAILED" message does not show.

SUBTASK 22-11-40-210-001

- (2) Visually examine the hydraulic pressure switch.

(a) Make sure that there is no hydraulic leak.

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J. Put the Airplane Back to Its Usual Condition

SUBTASK 22-11-40-860-011

- (1) Push the captain's or first officer's autopilot disengage switch, on the control wheel, to make sure that the autopilot is disengaged.

SUBTASK 22-11-40-860-017

- (2) Make sure that this circuit breaker is closed:

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	18	C00451	LANDING GEAR AURAL WARN

SUBTASK 22-11-40-860-013

- (3) Set the autopilot stab trim cutout switch, on the control stand, to the NORMAL position.

SUBTASK 22-11-40-860-014

- (4) Remove hydraulic power from hydraulic systems A and B. To remove hydraulic power, do this task: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805.

SUBTASK 22-11-40-860-015

- (5) Do this task: Remove Electrical Power, TASK 24-22-00-860-812.

SUBTASK 22-11-40-410-001

- (6) Close this access door:

<u>Number</u>	<u>Name/Location</u>
318BR	Tailcone Access Door

———— END OF TASK ————

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AUTOPILOT DISENGAGE SWITCH - MAINTENANCE PRACTICES

1. General

- A. This procedure has these tasks:
- (1) Autopilot Disengage Switch Deactivation.
 - (2) Autopilot Disengage Switch Activation.

TASK 22-11-41-040-801

2. Autopilot Disengage Switch - Deactivation

(Figure 201)

A. General

- (1) This procedure removes electrical power from the Autopilot Disengage Switch.

B. References

Reference	Title
24-22-00-860-811	Supply Electrical Power (P/B 201)

C. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

D. Procedure

SUBTASK 22-11-41-860-012

- (1) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
C	4	C00456	AFCS SYS A MACH TRIM AC
C	5	C01041	AFCS SYS A SNSR EXC AC
D	1	C01049	AFCS SYS A WARN LIGHT (BAT)
D	2	C01045	AFCS SYS A FCC DC
D	3	C01048	AFCS SYS A ENGAGE INTLK
D	4	C00457	AFCS SYS A MACH TRIM DC
D	5	C01044	AFCS MCP DC 1

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	1	C00374	AFCS SYS B WARN LIGHT (BAT)
B	2	C01064	AFCS SYS B MACH TRIM DC
B	3	C01046	AFCS SYS B FCC DC
B	4	C00716	AFCS SYS B ENGAGE INTLK
C	1	C01037	AFCS SYS B MACH TRIM AC
C	2	C01042	AFCS SYS B SNSR EXC AC
C	3	C01047	AFCS MCP DC 2

E. Autopilot Disengage Switch - Tryout

NOTE: This tryout is to make sure the Autopilot Disengage Switch is in a zero energy state.

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SUBTASK 22-11-41-860-015

- (1) Do this task: Supply Electrical Power, TASK 24-22-00-860-811

SUBTASK 22-11-41-860-013

- (2) Make sure that these circuit breakers are open and have safety tags:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	4	C00456	AFCS SYS A MACH TRIM AC
C	5	C01041	AFCS SYS A SNSR EXC AC
D	1	C01049	AFCS SYS A WARN LIGHT (BAT)
D	2	C01045	AFCS SYS A FCC DC
D	3	C01048	AFCS SYS A ENGAGE INTLK
D	4	C00457	AFCS SYS A MACH TRIM DC
D	5	C01044	AFCS MCP DC 1

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	1	C00374	AFCS SYS B WARN LIGHT (BAT)
B	2	C01064	AFCS SYS B MACH TRIM DC
B	3	C01046	AFCS SYS B FCC DC
B	4	C00716	AFCS SYS B ENGAGE INTLK
C	1	C01037	AFCS SYS B MACH TRIM AC
C	2	C01042	AFCS SYS B SNSR EXC AC
C	3	C01047	AFCS MCP DC 2

SUBTASK 22-11-41-700-001

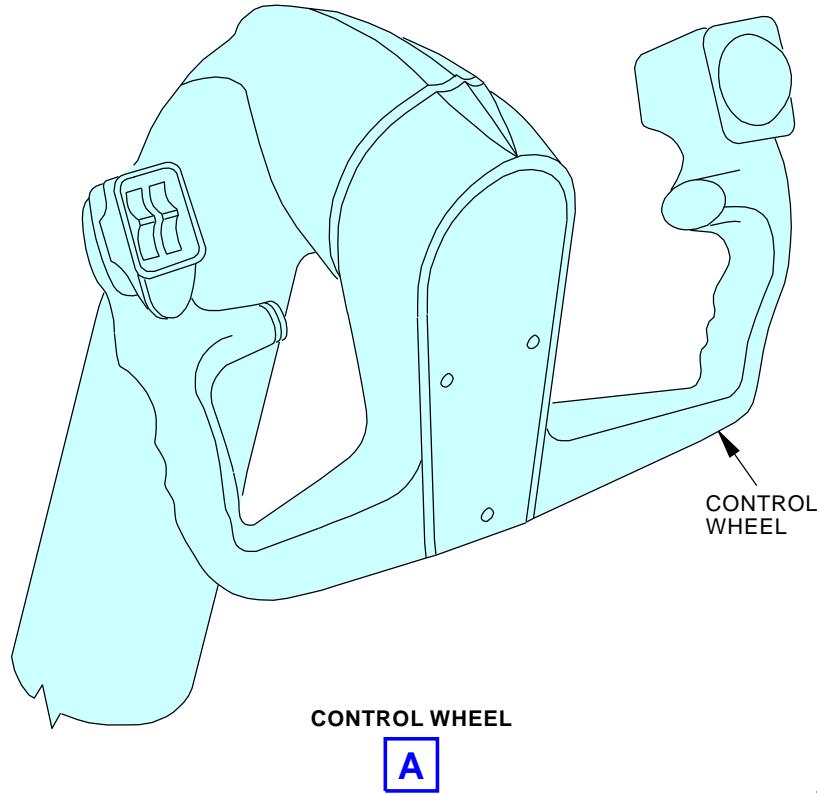
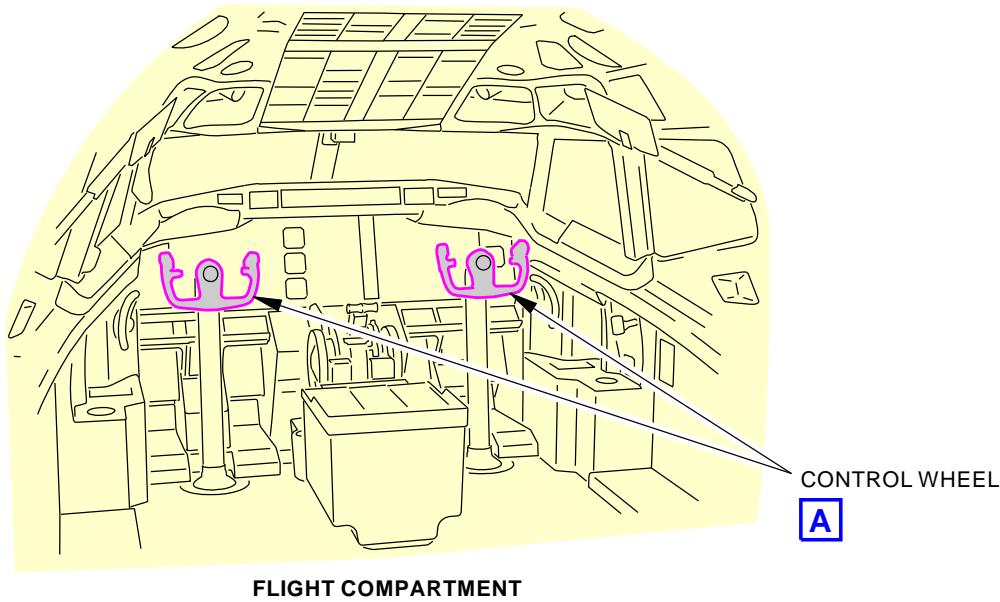
- (3) Do these steps:

- (a) Push the CMD A or CMD B autopilot engage switch on the mode control panel to engage the autopilot.
- 1) Make sure that the CMD A or CMD B autopilot engage switch light does not come on.
- (b) Push the captain or first officer autopilot disengage switch on the control wheel to disengage the autopilot.
- 1) Make sure that the A/P warning lights do not flash.
 - 2) Make sure that the A/P disengage warning sound does not come on.
 - 3) Push the captain or first officer autopilot disengage switch again.
 - a) Make sure that the A/P warning lights do not come on.
 - b) Make sure that there is no A/P disengage warning sound.

———— END OF TASK ————



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Autopilot Disengage Switch
Figure 201/22-11-41-990-802

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TASK 22-11-41-440-801

3. Autopilot Disengage Switch - Activation

(Figure 201)

A. General

- (1) This procedure adds electrical power to the Autopilot Disengage Switch.

B. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

C. Procedure

SUBTASK 22-11-41-860-014

- (1) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	4	C00456	AFCS SYS A MACH TRIM AC
C	5	C01041	AFCS SYS A SNSR EXC AC
D	1	C01049	AFCS SYS A WARN LIGHT (BAT)
D	2	C01045	AFCS SYS A FCC DC
D	3	C01048	AFCS SYS A ENGAGE INTLK
D	4	C00457	AFCS SYS A MACH TRIM DC
D	5	C01044	AFCS MCP DC 1

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	1	C00374	AFCS SYS B WARN LIGHT (BAT)
B	2	C01064	AFCS SYS B MACH TRIM DC
B	3	C01046	AFCS SYS B FCC DC
B	4	C00716	AFCS SYS B ENGAGE INTLK
C	1	C01037	AFCS SYS B MACH TRIM AC
C	2	C01042	AFCS SYS B SNSR EXC AC
C	3	C01047	AFCS MCP DC 2

— END OF TASK —

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AUTOPILOT DISENGAGE SWITCH - REMOVAL/INSTALLATION

1. General

- A. This procedure has these tasks:
 - (1) The removal of an autopilot disengage switch.
 - (2) The installation of an autopilot disengage switch.
- B. You can find the two autopilot disengage switches (S231 and S232) on each outboard horn of the pilot's control wheel. The switch is a single action, multipole, pushbutton type. A switch plate holds the switch in its position.
- C. The removal and installation tasks are the same for the two autopilot disengage switches.

TASK 22-11-41-000-801

2. Autopilot Disengage Switch Removal

(Figure 401)

A. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
COM-3934	Tool - Wire, Insertion and Extraction (contact size 20)
	Part #: M15570-20 Supplier: 11139
	Part #: M81969/14-11 Supplier: 11139

B. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

C. Removal Procedure

SUBTASK 22-11-41-860-001

- (1) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
C	4	C00456	AFCS SYS A MACH TRIM AC
C	5	C01041	AFCS SYS A SNSR EXC AC
D	1	C01049	AFCS SYS A WARN LIGHT (BAT)
D	2	C01045	AFCS SYS A FCC DC
D	3	C01048	AFCS SYS A ENGAGE INTLK
D	4	C00457	AFCS SYS A MACH TRIM DC
D	5	C01044	AFCS MCP DC 1

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	1	C00374	AFCS SYS B WARN LIGHT (BAT)
B	2	C01064	AFCS SYS B MACH TRIM DC
B	3	C01046	AFCS SYS B FCC DC
B	4	C00716	AFCS SYS B ENGAGE INTLK

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(Continued)

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	1	C01037	AFCS SYS B MACH TRIM AC
C	2	C01042	AFCS SYS B SNSR EXC AC
C	3	C01047	AFCS MCP DC 2

SUBTASK 22-11-41-020-001

- (2) Do these steps to remove the switch [1]:

- (a) At the center of the control wheel, remove the screws [4] on the medallion and approach plate [5].

NOTE: The medallion is part of the approach plate.

- 1) Remove the medallion and approach plate [5].

- (b) Use the extraction wire insertion and extraction tool, COM-3934 to disconnect the eight wires on the autopilot disengage switch side of the wire connectors in the center of the control wheel.

- (c) Attach one end of the threading wire around the eight wires that connect to the switch [1].

NOTE: For the threading wire, you can use a 30-inch (76.2 centimeters) length of standard wire (No. 18 to 20 gage, without insulation).

- (d) Remove the screw [3] on the outboard horn of the control wheel.

- (e) Remove the switch plate [2].

- (f) Pull the switch [1] and its eight wires through the control wheel horn slowly until the threading wire shows.

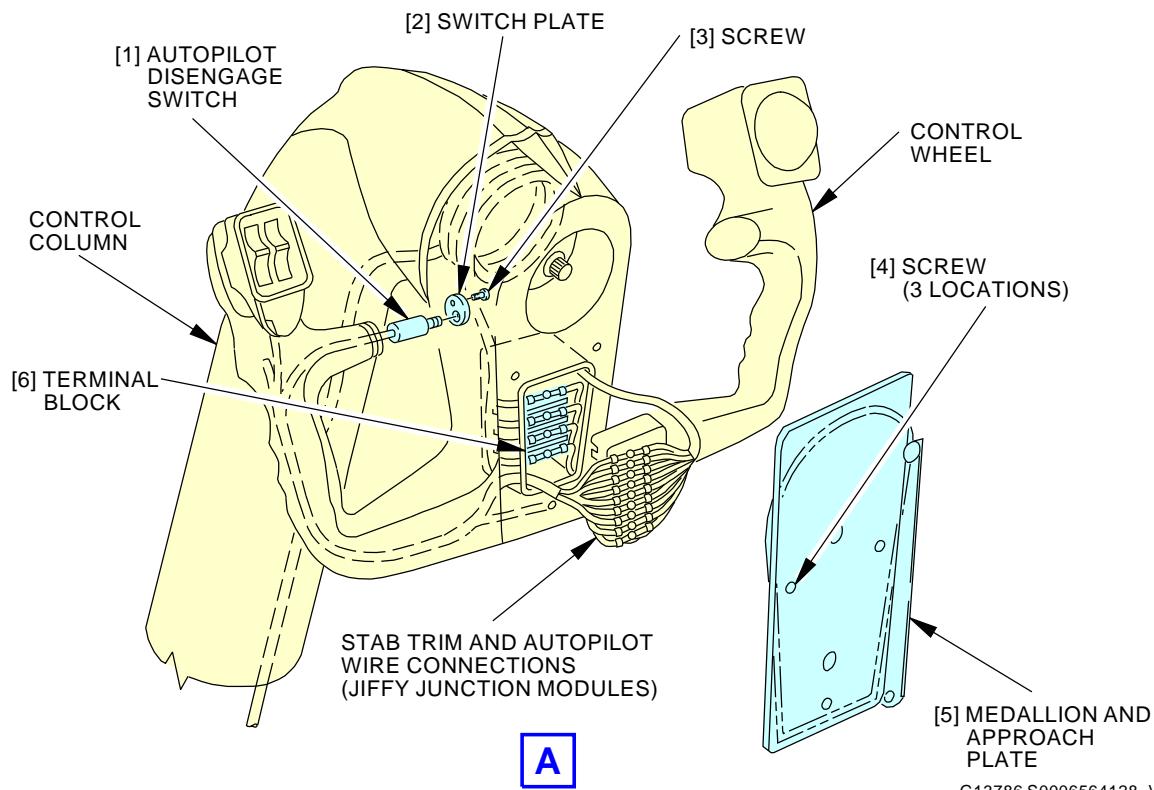
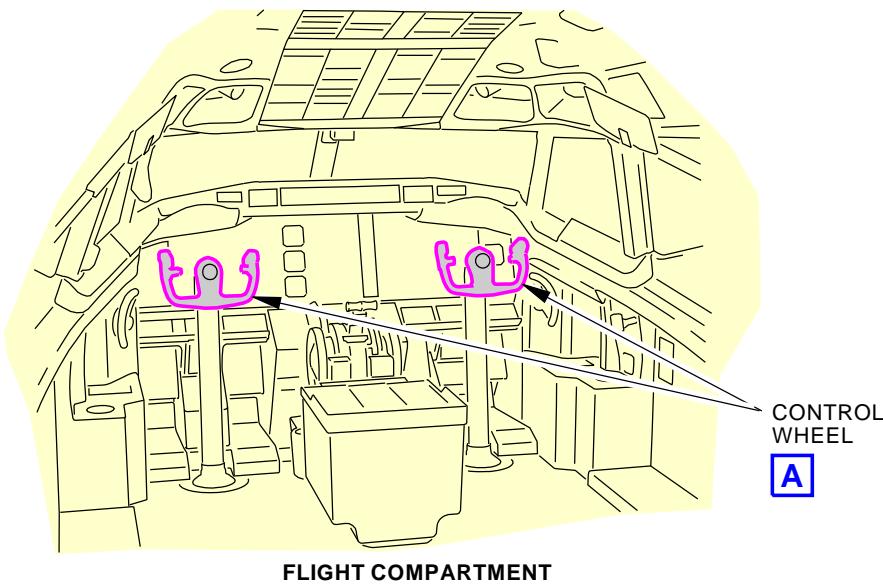
NOTE: Pull until approximately 3 inches (76.2 millimeters) of the threading wire comes out of the control wheel horn. Do not remove the threading wire. It is necessary to use this threading wire for the installation.

- (g) Remove the eight wires from the threading wire.

———— END OF TASK ————

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Autopilot Disengage switch Installation
Figure 401/22-11-41-990-801

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TASK 22-11-41-400-801

3. Autopilot Disengage Switch Installation

(Figure 401)

A. References

Reference	Title
24-22-00-860-811	Supply Electrical Power (P/B 201)
24-22-00-860-812	Remove Electrical Power (P/B 201)
29-11-00-860-801	Hydraulic System A or B Pressurization (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
COM-3934	Tool - Wire, Insertion and Extraction (contact size 20)
	Part #: M15570-20 Supplier: 11139
	Part #: M81969/14-11 Supplier: 11139

C. Consumable Materials

Reference	Description	Specification
C00259	Coating - Chemical And Solvent Resistant Finish, Corrosion Inhibiting Primer	BMS10-11 Type I

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Switch	22-11-41-01-025	AKS ALL

E. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

F. Installation Procedure

SUBTASK 22-11-41-860-002

- (1) Make sure that these circuit breakers are open and have safety tags:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
C	4	C00456	AFCS SYS A MACH TRIM AC
C	5	C01041	AFCS SYS A SNSR EXC AC
D	1	C01049	AFCS SYS A WARN LIGHT (BAT)
D	2	C01045	AFCS SYS A FCC DC
D	3	C01048	AFCS SYS A ENGAGE INTLK
D	4	C00457	AFCS SYS A MACH TRIM DC
D	5	C01044	AFCS MCP DC 1

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	1	C00374	AFCS SYS B WARN LIGHT (BAT)

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(Continued)

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	2	C01064	AFCS SYS B MACH TRIM DC
B	3	C01046	AFCS SYS B FCC DC
B	4	C00716	AFCS SYS B ENGAGE INTLK
C	1	C01037	AFCS SYS B MACH TRIM AC
C	2	C01042	AFCS SYS B SNSR EXC AC
C	3	C01047	AFCS MCP DC 2

SUBTASK 22-11-41-420-001

- (2) Do these steps to install the switch [1]:

- (a) Install the switch plate [2] on the autopilot disengage switch [1] with the primer, C00259.

NOTE: Apply the primer, C00259 on the threads only.

- (b) Make sure that the threading wire is in the control wheel horn and the two ends of the threading wire show.

- (c) Attach the end of the threading wire that comes out of the control wheel horn around the eight wires of the switch [1].

- (d) Pull the eight wires down through the control wheel horn with the opposite end of the threading wire.

- (e) Put the switch [1] in its position for installation.

- 1) Install the switch plate [2] to the control wheel horn with the screw [3].

- (f) Remove the threading wire from the eight wires.

- (g) Use the insertion wire insertion and extraction tool, COM-3934 to connect the eight wires to the wire connectors in the center of the control wheel.

NOTE: There are two equivalent switches you can use for the autopilot disconnect function. The switches have different part numbers and some different wire colors.

NOTE: The wires on the 721101-A1 switch are white. The switch wire labels are stamped onto the wires. The wires on the SW43896 switch each have a different color.

NOTE: In the AIRPLANE WIRE COLOR column of the table, the second color is for the stripe on the wire.

- (h) Use (Table 401) for switch part number 721101-A1 or (Table 402) for switch part number SW43896.

Table 401/22-11-41-993-802 Wire Colors for Switch 721101-A1

SWITCH WIRE LABEL	AIRPLANE WIRE COLOR
BKB	BLACK/BLUE
BRN	BROWN
GRN	GREEN
YEL	YELLOW
BKG (Not Used)	(Not Used)
BKY (Not Used)	(Not Used)

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Table 401/22-11-41-993-802 Wire Colors for Switch 721101-A1 (Continued)

SWITCH WIRE LABEL	AIRPLANE WIRE COLOR
BKA	BLACK/GREY
BLU	BLUE

Table 402/22-11-41-993-803 Wire Colors for Switch SW43896

SWITCH WIRE COLOR	AIRPLANE WIRE COLOR
BLACK	BLACK/BLUE
BROWN	BROWN
GREEN	GREEN
YELLOW	YELLOW
GRAY (Not Used)	(Not Used)
ORANGE (Not Used)	(Not Used)
WHITE	BLACK/GREY
BLUE	BLUE

- (i) Put the wire connectors on top of the terminal block [6].
- (j) Install the medallion and approach plate [5] with the screws [4].

SUBTASK 22-11-41-860-003

- (3) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
C	4	C00456	AFCS SYS A MACH TRIM AC
C	5	C01041	AFCS SYS A SNSR EXC AC
D	1	C01049	AFCS SYS A WARN LIGHT (BAT)
D	2	C01045	AFCS SYS A FCC DC
D	3	C01048	AFCS SYS A ENGAGE INTLK
D	4	C00457	AFCS SYS A MACH TRIM DC
D	5	C01044	AFCS MCP DC 1

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	1	C00374	AFCS SYS B WARN LIGHT (BAT)
B	2	C01064	AFCS SYS B MACH TRIM DC
B	3	C01046	AFCS SYS B FCC DC
B	4	C00716	AFCS SYS B ENGAGE INTLK
C	1	C01037	AFCS SYS B MACH TRIM AC
C	2	C01042	AFCS SYS B SNSR EXC AC
C	3	C01047	AFCS MCP DC 2

SUBTASK 22-11-41-860-004

- (4) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

SUBTASK 22-11-41-860-005

- (5) Make sure that the autopilot stab trim cutout switch, on the control stand, is in the NORMAL position.

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SUBTASK 22-11-41-860-006

- (6) Make sure that the VHF NAV and IRS switches, on the P5 forward overhead panel, are in the NORMAL positions.

SUBTASK 22-11-41-860-007

- (7) Set the left and right IRS select switches, on the P5 aft overhead panel, to the ALIGN or NAV position.

SUBTASK 22-11-41-860-008

WARNING: KEEP PERSONS AND EQUIPMENT AWAY FROM THE FLIGHT CONTROL SURFACES. THE AILERONS, ELEVATORS, RUDDER, FLAPS, SLATS, SPOILERS, STABILIZER AND NOSE GEAR CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (8) Supply hydraulic power to hydraulic systems A and B. To supply hydraulic power, do this task: Hydraulic System A or B Pressurization, TASK 29-11-00-860-801.

G. Installation Test

SUBTASK 22-11-41-740-001

- (1) Do this manual test:

- (a) Push the CMD A or CMD B autopilot engage switch on the mode control panel to engage the autopilot.
 - 1) Make sure that the CMD A or CMD B autopilot engage switch light comes on.
 - (b) Push the captain or first officer autopilot disengage switch on the control wheel to disengage the autopilot.
 - 1) Make sure that the A/P warning lights flash.
 - 2) Make sure that the A/P disengage warning sound comes on.
 - 3) Push the captain or first officer autopilot disengage switch again.
 - a) Make sure that the A/P warning lights go off.
 - b) Make sure that there is no A/P disengage warning sound.

H. Put the Airplane Back to Its Usual Condition

SUBTASK 22-11-41-860-009

- (1) Remove hydraulic power from hydraulic systems A and B. To remove hydraulic power, do this task: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805.

SUBTASK 22-11-41-860-010

- (2) Do this task: Remove Electrical Power, TASK 24-22-00-860-812.

———— END OF TASK ———



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STABILIZER TRIM MOTOR (AUTOPilot TEST) - ADJUSTMENT/TEST

1. General

- A. This procedure has one task. This task makes sure that the stabilizer trim motor operates correctly.

TASK 22-11-81-710-801

2. Stabilizer Trim Motor Test

A. References

Reference	Title
24-22-00-860-811	Supply Electrical Power (P/B 201)
24-22-00-860-812	Remove Electrical Power (P/B 201)
29-11-00-860-801	Hydraulic System A or B Pressurization (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)
34-21-00-820-801	Air Data Inertial Reference System - Alignment from the FMC CDU (P/B 201)
34-21-00-820-802	Air Data Inertial Reference System - Alignment from the ISDU (P/B 201)

B. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

C. Procedure

SUBTASK 22-11-81-860-001

- (1) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

SUBTASK 22-11-81-860-006

- (2) Set the autopilot stab trim cutout switch, on the control stand, to the NORMAL position.

SUBTASK 22-11-81-860-007

- (3) Make sure that the VHF NAV and IRS switches, on the P5 forward overhead panel, are in the NORMAL positions.

SUBTASK 22-11-81-860-008

- (4) Do this task: Air Data Inertial Reference System - Alignment from the ISDU, TASK 34-21-00-820-802 or Air Data Inertial Reference System - Alignment from the FMC CDU, TASK 34-21-00-820-801.

SUBTASK 22-11-81-860-002

WARNING: KEEP PERSONS AND EQUIPMENT AWAY FROM THE FLIGHT CONTROL SURFACES. THE AILERONS, ELEVATORS, RUDDER, FLAPS, SLATS, SPOILERS, STABILIZER AND NOSE GEAR CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (5) Supply hydraulic power to hydraulic systems A and B. To supply hydraulic power, do this task: Hydraulic System A or B Pressurization, TASK 29-11-00-860-801.

SUBTASK 22-11-81-980-001

- (6) Set the stabilizer to 5 units of trim.

SUBTASK 22-11-81-860-003

- (7) Make sure that the trailing edge flaps are in the UP position.

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SUBTASK 22-11-81-980-002

- (8) Engage the autopilot A in the CWS mode.

SUBTASK 22-11-81-980-003

- (9) Pull the control column to the aft position approximately 2 inches (51 mm). Release the control column. To prevent a camout of the control column, keep the force on the control column below 15 pounds.

NOTE: These conditions can cause the STAB OUT OF TRIM light to come on during the test:

1. Camout of the control column.
2. STAB NOSE UP or STAB NOSE DOWN limit switches are engaged.
3. The Stab Trim Motor is bad and did not operate at the correct rate.

SUBTASK 22-11-81-210-001

- (10) Make sure that these occur:

- (a) The stabilizer starts to move.
- (b) The stabilizer leading edge moves down at a rate of 3 units in 30 to 40 seconds.

SUBTASK 22-11-81-980-004

- (11) Disengage the autopilot A.

SUBTASK 22-11-81-980-005

- (12) Set the stabilizer to 5 units of trim.

SUBTASK 22-11-81-980-006

- (13) Extend the flaps to 5 degrees.

SUBTASK 22-11-81-980-007

- (14) Engage the autopilot B in the CWS mode.

SUBTASK 22-11-81-980-008

- (15) Push the control column to the fwd position approximately 2 inches (51 mm). Release the control column. To prevent a camout of the control column, keep the force on the control column below 15 pounds.

NOTE: These conditions can cause the STAB OUT OF TRIM light to come on during the test:

1. Camout of the control column.
2. STAB NOSE UP or STAB NOSE DOWN limit switches are engaged.
3. The Stab Trim Motor is bad and did not operate at the correct rate.

SUBTASK 22-11-81-210-002

- (16) Make sure that these occur:

- (a) The stabilizer starts to move.
- (b) The stabilizer leading edge moves up at a rate of 1 unit in 4 to 7 seconds.

SUBTASK 22-11-81-980-009

- (17) Disengage the autopilot B.

SUBTASK 22-11-81-860-010

- (18) Set the mode select switches on the inertial reference system (IRS) and mode select unit (MSU) to the OFF position.

SUBTASK 22-11-81-980-010

- (19) Set the flaps in the UP position.

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SUBTASK 22-11-81-860-004

- (20) Remove hydraulic power from hydraulic systems A and B. To remove hydraulic power, do this task: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805.

SUBTASK 22-11-81-860-005

- (21) Do this task: Remove Electrical Power, TASK 24-22-00-860-812.

———— END OF TASK ——

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PITCH CONTROL WHEEL STEERING FORCE TRANSDUCER - MAINTENANCE PRACTICES

1. General

- A. This procedure has these tasks:
- (1) Pitch Control Wheel Steering Force Transducer Deactivation.
 - (2) Pitch Control Wheel Steering Force Transducer Activation.

TASK 22-11-92-040-801

2. Pitch Control Wheel Steering Force Transducer - Deactivation

(Figure 201)

A. General

- (1) This procedure removes electrical power and hydraulic pressure from the Pitch Control Wheel Steering Force Transducer.

B. References

Reference	Title
24-22-00-860-811	Supply Electrical Power (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)

C. Tools/Equipment

Reference	Description
STD-858	Tag - DO NOT OPERATE

D. Location Zones

Zone	Area
112	Area Forward of Nose Landing Gear Wheel Well
211	Flight Compartment - Left
212	Flight Compartment - Right

E. Procedure

SUBTASK 22-11-92-860-015

WARNING: MAKE SURE THAT PERSONNEL AND EQUIPMENT ARE CLEAR OF THE FLIGHT CONTROLS SURFACES. MAKE SURE THAT THE INBOARD FAN DUCT COWL AND THE INBOARD AND OUTBOARD THRUST REVERSERS ARE CLOSED. THE FLIGHT CONTROL SURFACES CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (1) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
C	4	C00456	AFCS SYS A MACH TRIM AC
C	5	C01041	AFCS SYS A SNSR EXC AC
D	1	C01049	AFCS SYS A WARN LIGHT (BAT)
D	2	C01045	AFCS SYS A FCC DC
D	3	C01048	AFCS SYS A ENGAGE INTLK
D	4	C00457	AFCS SYS A MACH TRIM DC
D	5	C01044	AFCS MCP DC 1

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F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	1	C00374	AFCS SYS B WARN LIGHT (BAT)
B	2	C01064	AFCS SYS B MACH TRIM DC
B	3	C01046	AFCS SYS B FCC DC
B	4	C00716	AFCS SYS B ENGAGE INTLK
C	1	C01037	AFCS SYS B MACH TRIM AC
C	2	C01042	AFCS SYS B SNSR EXC AC
C	3	C01047	AFCS MCP DC 2

SUBTASK 22-11-92-010-006

- (2) Do this task: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805

SUBTASK 22-11-92-860-016

- (3) Attach DO NOT OPERATE tag, STD-858 on the captain's and first officer's control columns.

F. Pitch Control Wheel Steering Force Transducer - Tryout

NOTE: This tryout is to make sure the Pitch Control Wheel Steering Force Transducer is in a zero energy state.

SUBTASK 22-11-92-860-017

WARNING: MAKE SURE THAT PERSONNEL AND EQUIPMENT ARE CLEAR OF THE FLIGHT CONTROLS SURFACES. MAKE SURE THAT THE INBOARD FAN DUCT COWL AND THE INBOARD AND OUTBOARD THRUST REVERSERS ARE CLOSED. THE FLIGHT CONTROL SURFACES CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (1) Do this task: Supply Electrical Power, TASK 24-22-00-860-811

SUBTASK 22-11-92-860-018

- (2) Make sure that these circuit breakers are open and have safety tags:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	4	C00456	AFCS SYS A MACH TRIM AC
C	5	C01041	AFCS SYS A SNSR EXC AC
D	1	C01049	AFCS SYS A WARN LIGHT (BAT)
D	2	C01045	AFCS SYS A FCC DC
D	3	C01048	AFCS SYS A ENGAGE INTLK
D	4	C00457	AFCS SYS A MACH TRIM DC
D	5	C01044	AFCS MCP DC 1

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	1	C00374	AFCS SYS B WARN LIGHT (BAT)
B	2	C01064	AFCS SYS B MACH TRIM DC
B	3	C01046	AFCS SYS B FCC DC
B	4	C00716	AFCS SYS B ENGAGE INTLK
C	1	C01037	AFCS SYS B MACH TRIM AC
C	2	C01042	AFCS SYS B SNSR EXC AC
C	3	C01047	AFCS MCP DC 2



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SUBTASK 22-11-92-700-001

- (3) Use the FMC - CDU and do the following test (Figure 201):
- (a) SELECT, INIT/REF on the keyboard.
 - (b) SELECT, "INDEX" (LSK 6L).
 - (c) SELECT, "MAINT" (LSK 6R).
 - (d) SELECT, "DFCS" (LSK 2L).
 - 1) DFCS will run the self test and display as following:
 - FCC-A SELF TEST FAIL
 - FCC-B SELF TEST FAIL
 - CROSS CHANNEL TEST PASS
 - (e) SELECT, "CONTINUE" (LSK 6R)
NOTE: Ignore the message that appears.
 - (f) SELECT, "CONTINUE" (LSK 6R).
 - (g) SELECT, "EXTENDED MAINTENANCE"(LSK 4L).
 - (h) SELECT, "SENSOR VALUES"(LSK 4L).
 - (i) SELECT, "DISCRETE INPUTS"(LSK 5L).
 - (j) SELECT, "CIRCUIT BREAKER CHECK"(LSK 5R).
 - (k) SELECT, INIT/REF on the keyboard, to exit of BITE.
 - (l) End of test.

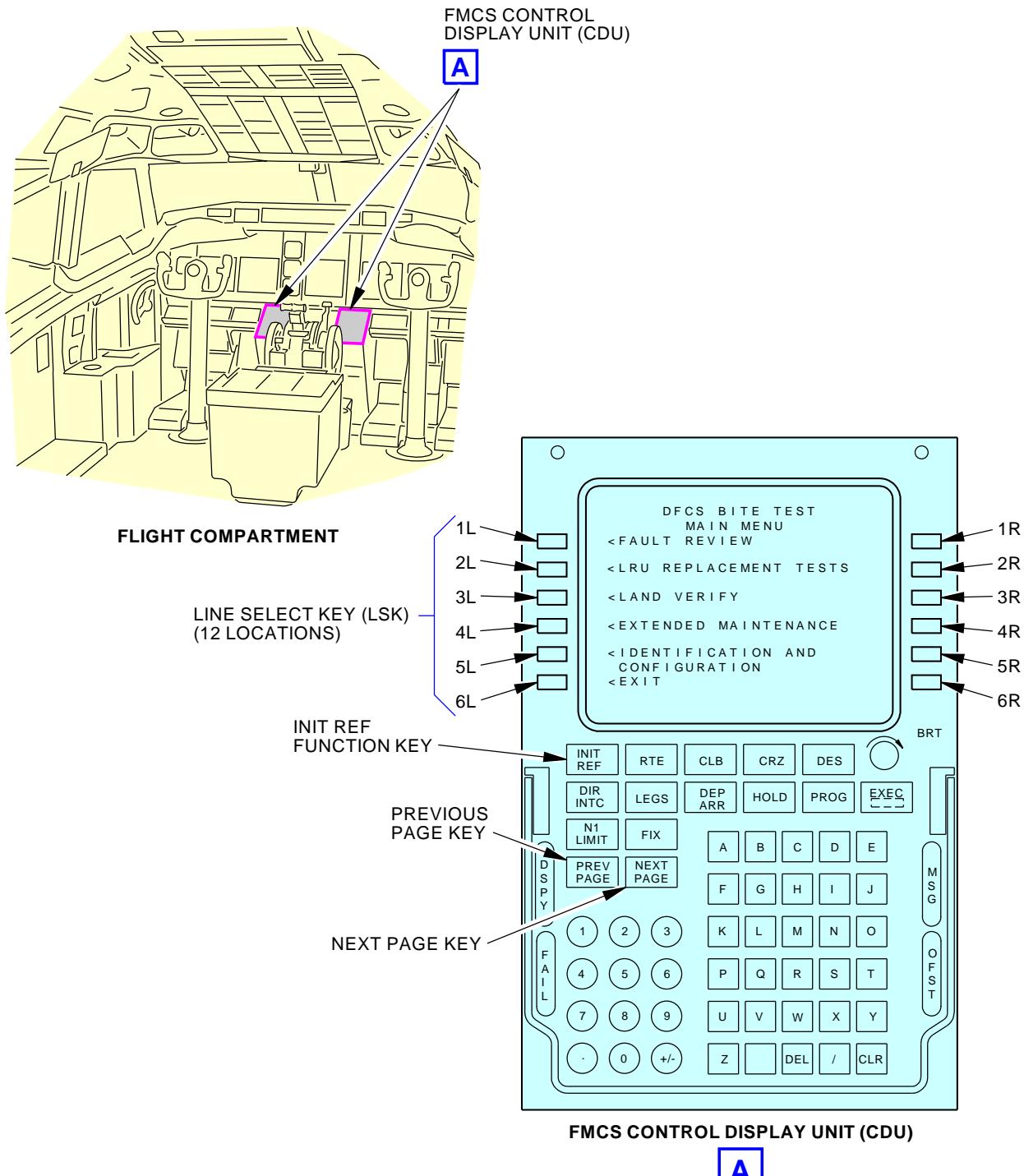
———— END OF TASK ————

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K45540 S0006563722_V2

Flight Management Computer Control Display Unit
Figure 201/22-11-92-990-805

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TASK 22-11-92-440-801

3. Pitch Control Wheel Steering Force Transducer - Activation

(Figure 201)

A. General

- (1) This procedure adds electrical power and hydraulic pressure to the Pitch Control Wheel Steering Force Transducer.

B. References

Reference	Title
29-11-00-860-801	Hydraulic System A or B Pressurization (P/B 201)

C. Location Zones

Zone	Area
112	Area Forward of Nose Landing Gear Wheel Well
211	Flight Compartment - Left
212	Flight Compartment - Right

D. Procedure

SUBTASK 22-11-92-860-019

- (1) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
C	4	C00456	AFCS SYS A MACH TRIM AC
C	5	C01041	AFCS SYS A SNSR EXC AC
D	1	C01049	AFCS SYS A WARN LIGHT (BAT)
D	2	C01045	AFCS SYS A FCC DC
D	3	C01048	AFCS SYS A ENGAGE INTLK
D	4	C00457	AFCS SYS A MACH TRIM DC
D	5	C01044	AFCS MCP DC 1

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	1	C00374	AFCS SYS B WARN LIGHT (BAT)
B	2	C01064	AFCS SYS B MACH TRIM DC
B	3	C01046	AFCS SYS B FCC DC
B	4	C00716	AFCS SYS B ENGAGE INTLK
C	1	C01037	AFCS SYS B MACH TRIM AC
C	2	C01042	AFCS SYS B SNSR EXC AC
C	3	C01047	AFCS MCP DC 2

SUBTASK 22-11-92-410-004

- (2) Do this task: Hydraulic System A or B Pressurization, TASK 29-11-00-860-801.

— END OF TASK —

EFFECTIVITY
AKS ALL

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PITCH CONTROL WHEEL STEERING FORCE TRANSDUCER - REMOVAL/INSTALLATION

1. General

- A. This procedure contains two tasks.
 - (1) The first task is for the removal of a pitch control wheel steering force transducer.
 - (2) The second task is for the installation of a pitch control wheel steering force transducer.
- B. The pitch control wheel steering force transducer is referred to as the pitch force transducer in this procedure.
- C. Each control column has one pitch force transducer installed on the assembly of the elevator control quadrant. The two pitch force transducers are installed opposite to each other.

TASK 22-11-92-000-801

2. Pitch Force Transducer Removal

(Figure 401)

A. Location Zones

Zone	Area
112	Area Forward of Nose Landing Gear Wheel Well

B. Access Panels

Number	Name/Location
112A	Forward Access Door

C. Prepare for Removal

SUBTASK 22-11-92-860-012

- (1) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
C	4	C00456	AFCS SYS A MACH TRIM AC
C	5	C01041	AFCS SYS A SNSR EXC AC
D	1	C01049	AFCS SYS A WARN LIGHT (BAT)
D	2	C01045	AFCS SYS A FCC DC
D	3	C01048	AFCS SYS A ENGAGE INTLK
D	4	C00457	AFCS SYS A MACH TRIM DC
D	5	C01044	AFCS MCP DC 1

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	1	C00374	AFCS SYS B WARN LIGHT (BAT)
B	2	C01064	AFCS SYS B MACH TRIM DC
B	3	C01046	AFCS SYS B FCC DC
B	4	C00716	AFCS SYS B ENGAGE INTLK
C	1	C01037	AFCS SYS B MACH TRIM AC
C	2	C01042	AFCS SYS B SNSR EXC AC
C	3	C01047	AFCS MCP DC 2

SUBTASK 22-11-92-940-001

- (2) Do these steps to prepare for the removal:

EFFECTIVITY
AKS ALL

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- (a) To get access to the pitch force transducer [1], open this access door:

Number Name/Location

112A Forward Access Door

- (b) Remove the lockwire from the mass balance weight [4].
(c) Remove the bolts [2], and washers [3] that attach the mass balance weight [4] to the forward quadrant assembly.

D. Pitch Force Transducer Removal

SUBTASK 22-11-92-020-003

- (1) Do these steps to remove the transducer [1]:

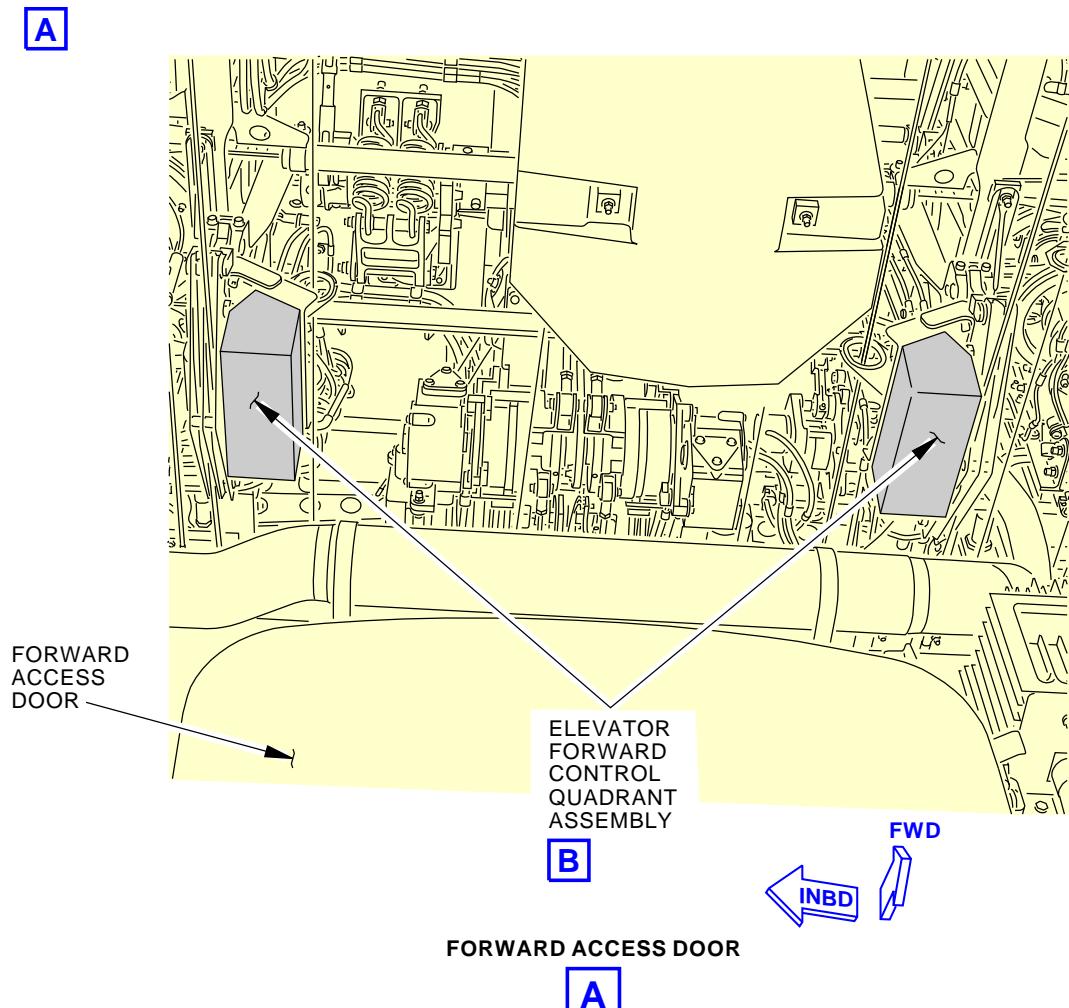
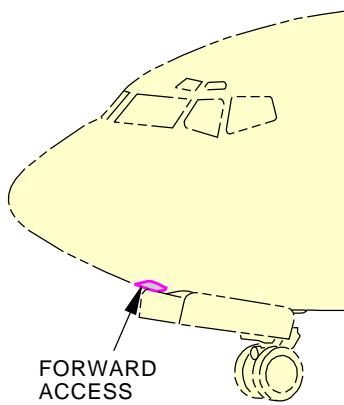
- (a) Disconnect the pitch force transducer connectors.
(b) Remove electrical cables from the clamps [5].
(c) Remove the bolt [6], washer [10], nut [11] and bushing [9] from the pitch adjustable rod end of the transducer [1].
(d) Remove the bolt [15], washer [14], and nut [13] from the transducer [1] and the quadrant assembly.
(e) Remove the transducer [1].

———— END OF TASK ———



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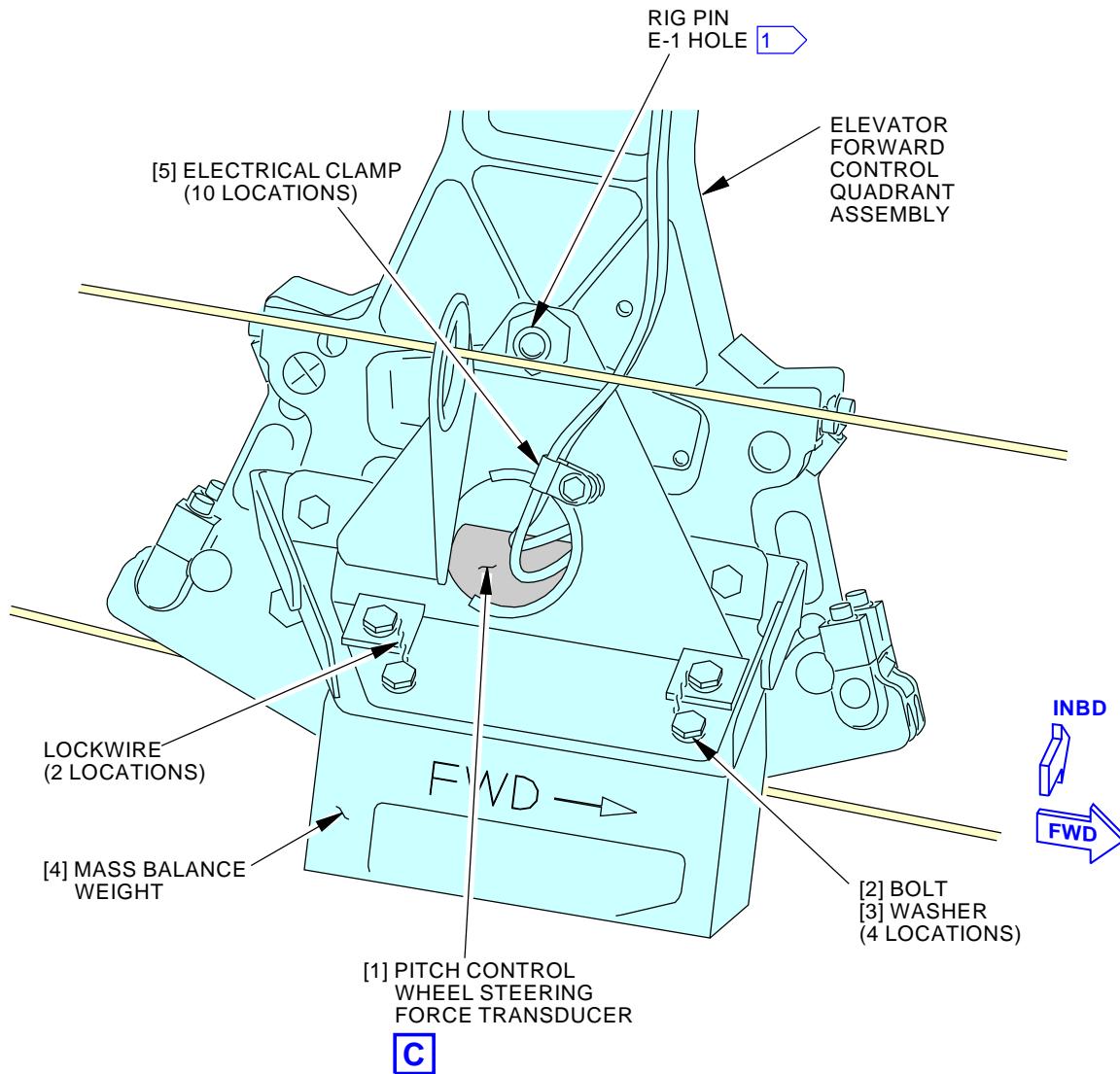
G22789 S0006564138_V2

Pitch Control Wheel Steering Force Transducer Installation
Figure 401/22-11-92-990-804 (Sheet 1 of 3)

EFFECTIVITY
 AKS ALL

22-11-92

D633A101-AKS



1 LEFT SIDE OF FORWARD QUADRANT ASSEMBLY ONLY

G22790 S0006564139_V2

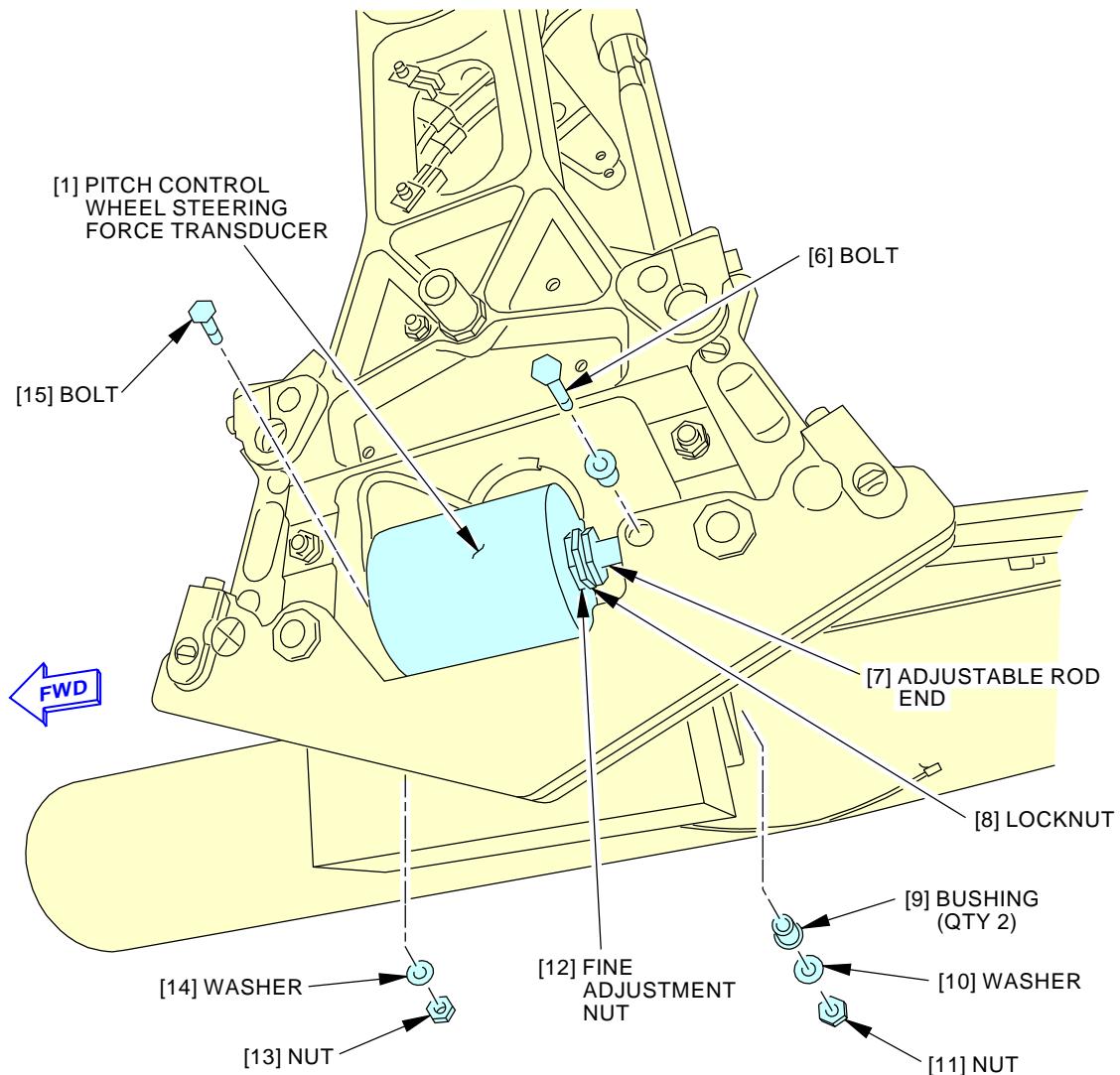
Pitch Control Wheel Steering Force Transducer Installation
Figure 401/22-11-92-990-804 (Sheet 2 of 3)

EFFECTIVITY
AKS ALL

D633A101-AKS

22-11-92

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PITCH CONTROL WHEEL STEERING FORCE TRANSDUCER
(LEFT SIDE SHOWN, RIGHT SIDE IS EQUIVALENT)**C**

G22938 S0006564140_V2

Pitch Control Wheel Steering Force Transducer Installation
Figure 401/22-11-92-990-804 (Sheet 3 of 3)

EFFECTIVITY
AKS ALL**22-11-92**

D633A101-AKS



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TASK 22-11-92-400-801

3. Pitch Force Transducer Installation

A. References

Reference	Title
22-11-92-820-801	Pitch Force Transducer Adjustment (DFCS BITE Test) (P/B 501)

B. Location Zones

Zone	Area
112	Area Forward of Nose Landing Gear Wheel Well

C. Access Panels

Number	Name/Location
112A	Forward Access Door

D. Pitch Force Transducer Installation

SUBTASK 22-11-92-860-013

- (1) Loosen the adjustable rod end [7] and locknuts [8] until the fine adjustment nut [12] and rod end [7] can be turned.

SUBTASK 22-11-92-420-002

- (2) Put the transducer [1] in its position and install it with the bolts [15], washers [14], and nuts [13] to the quadrant assembly.

NOTE: The adjustable end [7] must point forward on the right quadrant. The adjustable end must point aft on the left quadrant.

SUBTASK 22-11-92-420-003

- (3) Attach electrical cables to the electrical clamps [5].

NOTE: Do not pull the electrical cables tightly.

SUBTASK 22-11-92-420-004

- (4) Connect the transducer [1].

SUBTASK 22-11-92-860-014

- (5) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
C	4	C00456	AFCS SYS A MACH TRIM AC
C	5	C01041	AFCS SYS A SNSR EXC AC
D	1	C01049	AFCS SYS A WARN LIGHT (BAT)
D	2	C01045	AFCS SYS A FCC DC
D	3	C01048	AFCS SYS A ENGAGE INTLK
D	4	C00457	AFCS SYS A MACH TRIM DC
D	5	C01044	AFCS MCP DC 1

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	1	C00374	AFCS SYS B WARN LIGHT (BAT)
B	2	C01064	AFCS SYS B MACH TRIM DC
B	3	C01046	AFCS SYS B FCC DC
B	4	C00716	AFCS SYS B ENGAGE INTLK
C	1	C01037	AFCS SYS B MACH TRIM AC

EFFECTIVITY
AKS ALL

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(Continued)

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	2	C01042	AFCS SYS B SNSR EXC AC
C	3	C01047	AFCS MCP DC 2

SUBTASK 22-11-92-820-001

- (6) Do this task: Pitch Force Transducer Adjustment (DFCS BITE Test), TASK 22-11-92-820-801.

NOTE: The installation will be completed in the Adjustment/Test.

SUBTASK 22-11-92-410-003

- (7) Close this access door:

<u>Number</u>	<u>Name/Location</u>
112A	Forward Access Door

———— END OF TASK ————

EFFECTIVITY
AKS ALL

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PITCH CONTROL WHEEL STEERING FORCE TRANSDUCER - ADJUSTMENT/TEST

1. General

- A. This procedure contains these tasks.
 - (1) The first task uses the DFCS BITE test for the adjustment of the transducers.
 - (2) The second task is the pitch force transducer test.
- B. Each control column has a pitch force transducer installed on the quadrant assembly. You can find the transducers installed opposite to each other, and they are electrically 180 degrees out of phase. This will decrease the null error voltage to the autopilot system.
- C. The adjustment/test procedures for the captain's and first officer's pitch force transducers are the same, except as shown.
- D. The adjustment procedure adjusts the length of the transducer adjustable rod end such that no force is applied while the control columns are at the neutral position.

TASK 22-11-92-820-801

2. Pitch Force Transducer Adjustment (DFCS BITE Test)

(Figure 501, Figure 502, Figure 503)

A. References

Reference	Title
20-10-44-000-801	Lockwire, Cotter Pins, and Lockrings - Removal (P/B 401)
20-10-44-400-801	Lockwire, Cotter Pins, and Lockrings - Installation (P/B 401)
24-22-00-860-811	Supply Electrical Power (P/B 201)
27-31-00-700-801	Null Procedure - Mach Trim Actuator (P/B 201)
27-31-00-820-801	Elevator Control Cables EA and EB and Pitch Force Transducers - Adjustment (P/B 501)

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1585	Kit - Rigging Pins, All Systems Part #: F70207-109 Supplier: 81205
SPL-1677	Assembly - Trammel Bar, Stabilizer Trim Actuator Part #: F80055-10 Supplier: 81205 Opt Part #: F80055-1 Supplier: 81205

C. Location Zones

Zone	Area
311	Area Aft of Pressure Bulkhead - Left
315	APU Compartment - Left
316	APU Compartment - Right

D. Access Panels

Number	Name/Location
112A	Forward Access Door
311BL	Stabilizer Trim Access Door
318BR	Tailcone Access Door



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E. Prepare for the Pitch Force Transducers Adjustment

SUBTASK 22-11-92-800-001

- (1) Make sure the cable tension of the elevator control cables are adjusted correctly. To make sure, do this task: Elevator Control Cables EA and EB and Pitch Force Transducers - Adjustment, TASK 27-31-00-820-801.

NOTE: If the cables are not rigged properly then there may be a pitch control wheel steering fault BITE message.

SUBTASK 22-11-92-730-003

- (2) Do this task: Null Procedure - Mach Trim Actuator, TASK 27-31-00-700-801.

SUBTASK 22-11-92-860-001

- (3) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

SUBTASK 22-11-92-010-002

- (4) Open this access door:

Number Name/Location

318BR Tailcone Access Door

SUBTASK 22-11-92-860-003

- (5) Insert rig pin E-5, from the rig pin kit, SPL-1585, in the aft quadrant.

NOTE: Rig pin E-5 must go through easily and freely.

SUBTASK 22-11-92-010-005

- (6) Open this access door:

Number Name/Location

311BL Stabilizer Trim Access Door

SUBTASK 22-11-92-010-003

- (7) Open this access door:

Number Name/Location

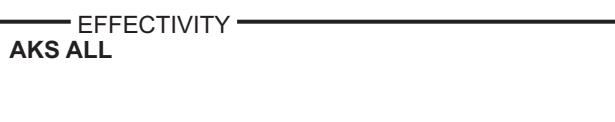
112A Forward Access Door

SUBTASK 22-11-92-740-001

- (8) Make these selections on the CDU:

- (a) Push the INIT REF key on the CDU keyboard.
- (b) <INDEX
- (c) MAINT>
- (d) <DFCS
- (e) <EXTENDED MAINTENANCE
- (f) <RIGGING
- (g) <CWS
- (h) <CONTINUE
- (i) Do the instructions shown on the CDU.
- (j) Push the LSK adjacent to <PITCH CWS.
- (k) Do the instructions shown on the CDU.

NOTE: Do not apply force to the control column for tests 55.01, 55.02, and 55.03. The control column must be at neutral for these tests.



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SUBTASK 22-11-92-980-001

- (9) Do these steps to set the B dimension (Figure 501):

NOTE: The B dimension is measured between the center of the upper and lower Gimbal pins on the stabilizer trim jackscrew. To do this, one person must be in the tail of the airplane with a headset and the other person in the flight compartment

- (a) Make sure that the main stabilizer trim cutout switch on the control stand is in the NORMAL position.

WARNING: STAY AWAY FROM THE STABILIZER TRIM WHEEL ON THE CONTROL STAND IF YOU USE THE STABILIZER TRIM SWITCH ON THE CONTROL WHEEL. THE STABILIZER TRIM SWITCH CAN CAUSE THE STABILIZER TRIM WHEEL TO TURN VERY FAST. INJURY TO PERSONS MAY OCCUR IF YOU TOUCH IT WHEN IT TURNS.

- (b) Set the B dimension to 39.89 ± 0.01 inches (1013.21 ± 0.25 millimeters).

NOTE: This B dimension is equivalent to the horizontal stabilizer at 4 units of trim (zero degrees).

- (c) Use the trammel bar, SPL-1677, to measure the B dimension.

- 1) Make sure that the B dimension is $39.89 (+/- 0.01)$ inches ($1013.21 +/- .25$ mm).

SUBTASK 22-11-92-740-002

- (10) Push the LSK adjacent to <CONTINUE to show test 55.02 PITCH CWS SENSOR RIGGING.

NOTE: You can use the procedure that follows to adjust the captain's or first officer's pitch force transducer. Test 55.02 is for the captain's pitch force transducer, if it is necessary. After you complete the adjustment procedure for the captain's pitch force transducer, push the LSK adjacent to <CONTINUE on the CDU. The CDU display will show test 55.03. Test 55.03 is for the adjustment of the first officer's pitch force transducer, if it is necessary.

F. Prepare for Adjustment

SUBTASK 22-11-92-020-001

- (1) Do these steps to prepare for the adjustment:

- (a) Install rig pin E-1, from the rig pin kit, SPL-1585, in the left forward quadrant.

NOTE: The rig pin E-1 must go through easily and freely.

- (b) Remove the lockwire from the mass balance weight [4]. To remove it, do this task: Lockwire, Cotter Pins, and Lockrings - Removal, TASK 20-10-44-000-801.

- (c) Remove the bolts [2], washers [3] and the mass weight balance [4] from the elevator forward quadrant assembly.

- (d) Remove the bolt [6], washer [10], nut [11], and bushing [9] from the adjustable rod end [7] of the applicable pitch force transducer [1].

G. Pitch Force Transducer Adjustment

SUBTASK 22-11-92-020-002

- (1) Move the adjustable rod end [7] of the pitch force transducer [1] out of the quadrant assembly attachment point.

- (a) Record the null voltage shown on the CDU.

- (b) Make sure the null voltage shown on the CDU is less than 0.080 VAC.

NOTE: If the null voltage is more than 0.080 VAC, make sure no external force is applied to the transducer.



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- (c) Remove the lockwire from the lockscrew on the captain's (or first officer's) pitch force transducer [1].
- (d) Loosen the locknut [8] so the fine adjust nut [12] can be turned.
- (e) Adjust the pitch force transducer [1] so the adjustable rod end [7] can be installed.
NOTE: For coarse adjustment, turn the rod end. For a fine adjustment, turn the adjusting nut.
- (f) Loosely install the bolt [6], bushing [9], washer [10], and nut [11].
- (g) Make sure the null voltage shown on the CDU is within 0.040 VAC of the value you recorded earlier.
- (h) Remove the bolt [15], washer [14], and nut [13].
NOTE: The bolt [15] is forward of the pitch force transducer on the captain's side. The bolt [15] is aft of the pitch force transducer on the first officer's side.
- (i) Install the rig pin E-2 (captain's) or the rig pin E-3 (first officer's) through the hole where the bolt [15] was.
 - 1) Make sure that the rig pin E-2 (captain's) or the rig pin E-3 (first officer's), from the rig pin kit, SPL-1585, can be freely inserted.

SUBTASK 22-11-92-420-001

- (2) Do these steps to install the adjustable rod end [7] of the pitch force transducer [1]:
 - (a) Tighten the nut [11] on the adjustable rod end [7].
 - (b) Tighten the locknut [8] on the fine adjustment nut [12] for the pitch force transducer [1].
 - (c) Install the lockwire for the locknut [8], fine adjustment nut [12], and on pitch force transducer [1]. To install it, do this task: Lockwire, Cotter Pins, and Lockrings - Installation, TASK 20-10-44-400-801.

SUBTASK 22-11-92-840-001

- (3) Do these steps:
 - (a) Remove the rig pins E-2 or E-3, from the rig pin kit, SPL-1585, from the quadrant assemblies.
 - (b) Install the bolt [15], washer [14], and nut [13].
 - (c) Install the mass balance weight with the bolts, washers, nuts and lockwire. To install it, do this task: Lockwire, Cotter Pins, and Lockrings - Installation, TASK 20-10-44-400-801.
 - (d) Remove the rig pins E-1 and E-5, from the rig pin kit, SPL-1585, from the quadrant assemblies.

SUBTASK 22-11-92-710-001

- (4) Do this check on the pitch force transducers [1]:
 - (a) Move the control columns lightly until the system is in the center.
 - (b) Make sure that the A and B voltages on the CDU display are less than 0.20 VAC.
 - (c) Make sure that the difference between the A and B voltages is less than 0.20 VAC.
 - 1) If the voltage is larger than 0.20 VAC, do a check on the control quadrant and bearings of the structure. If they are satisfactory, then do a check of the cable tension for elevator control cables EA and EB. To do the check, do this task: Elevator Control Cables EA and EB and Pitch Force Transducers - Adjustment, TASK 27-31-00-820-801.



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SUBTASK 22-11-92-410-001

- (5) Close this access door:

Number Name/Location

318BR Tailcone Access Door

SUBTASK 22-11-92-410-002

- (6) Close this access door:

Number Name/Location

112A Forward Access Door

SUBTASK 22-11-92-010-004

- (7) Close this access door:

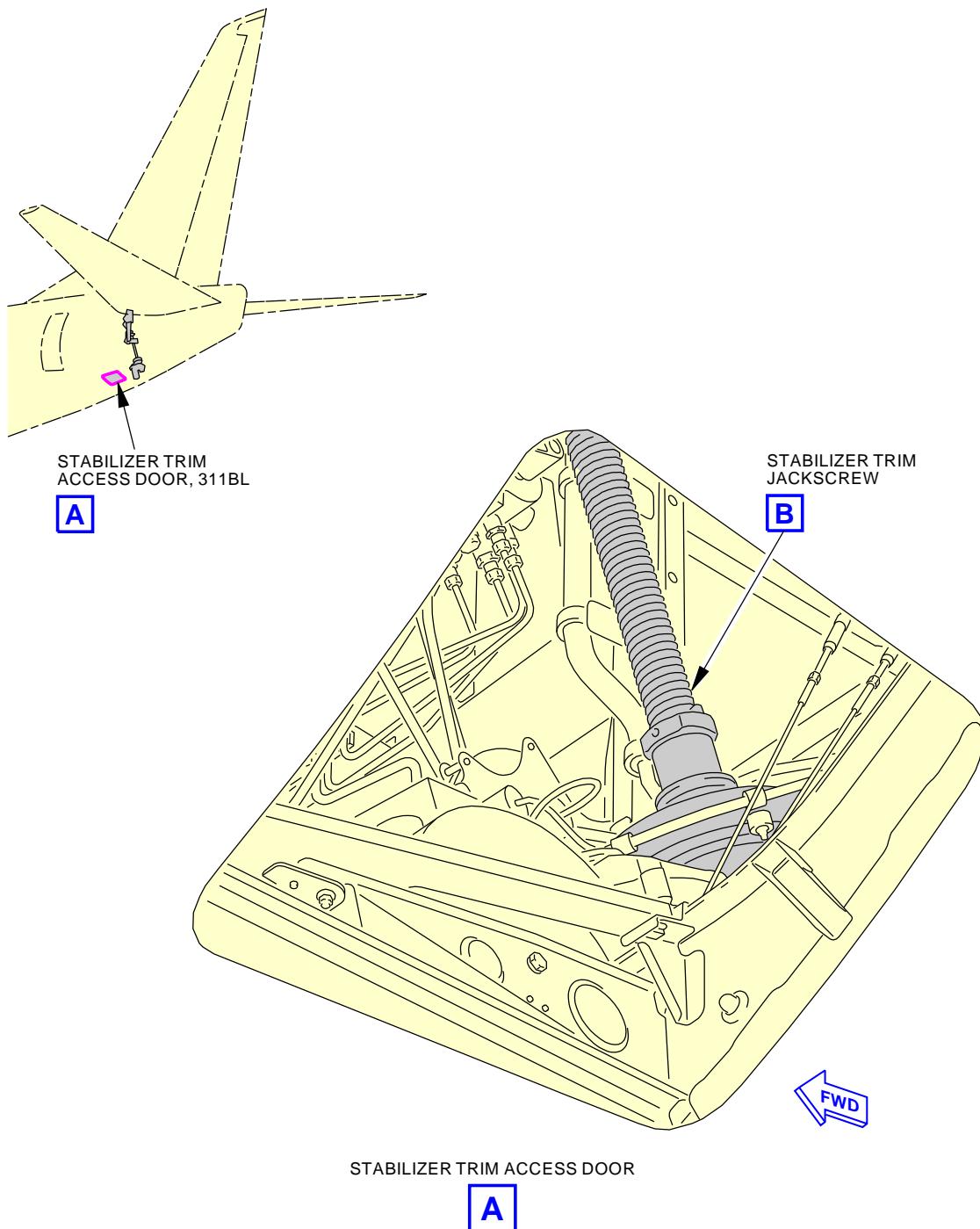
Number Name/Location

311BL Stabilizer Trim Access Door

———— END OF TASK ————

EFFECTIVITY
AKS ALL

22-11-92



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Stabilizer Trim Jackscrew Setting
Figure 501/22-11-92-990-801 (Sheet 1 of 2)

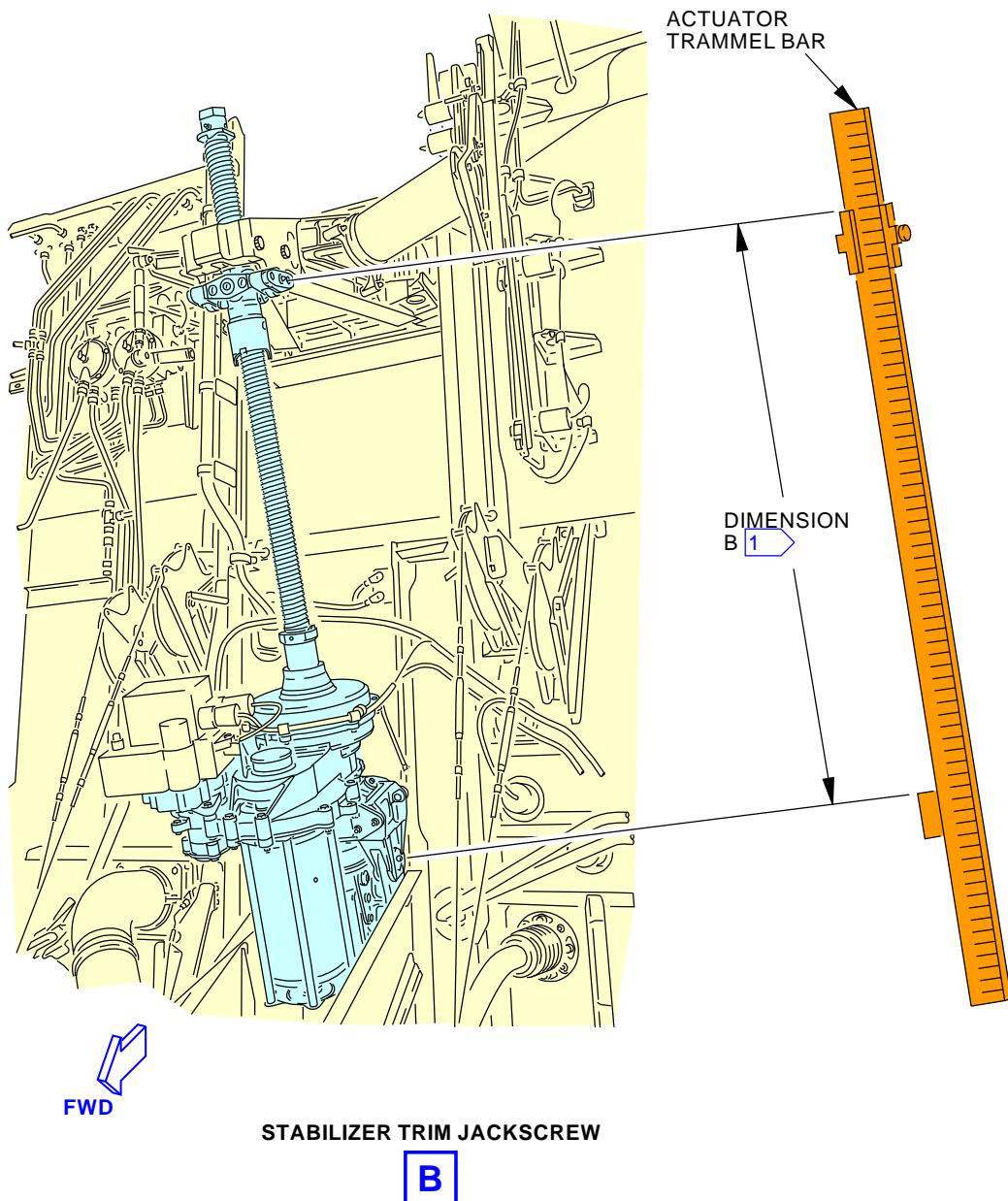
EFFECTIVITY
AKS ALL

22-11-92

D633A101-AKS

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**NOTE:**

THE STABILIZER TRIM JACKSCREW IS SHOWN
WITH THE STABILIZER LEADING EDGE AT
ZERO DEGREE.

- 1** THE DIMENSION B IS MEASURED BETWEEN THE
CENTER OF THE UPPER AND LOWER GIMBAL PINS.

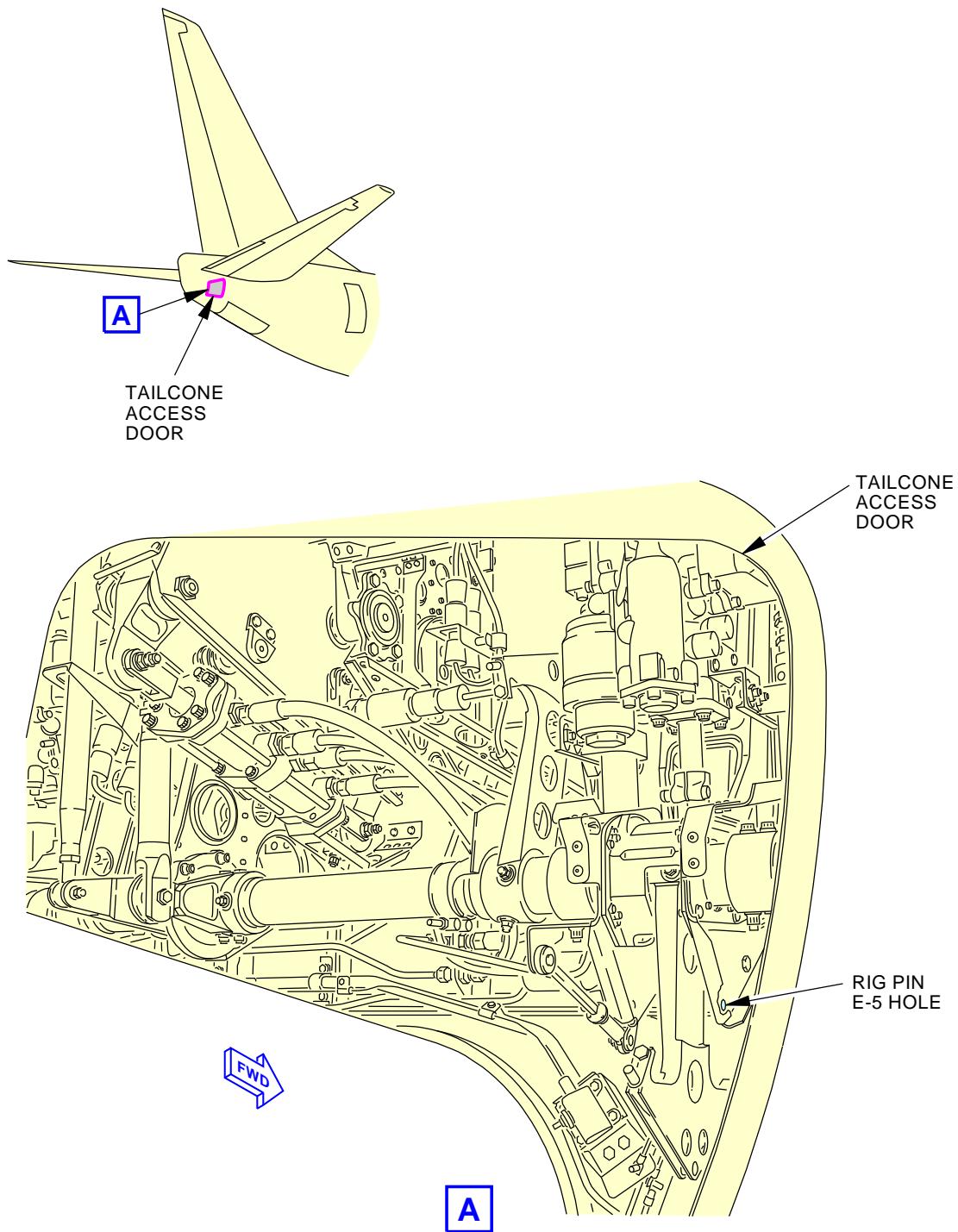
G22884 S0006564145_V2

Stabilizer Trim Jackscrew Setting
Figure 501/22-11-92-990-801 (Sheet 2 of 2)

EFFECTIVITY
AKS ALL

D633A101-AKS

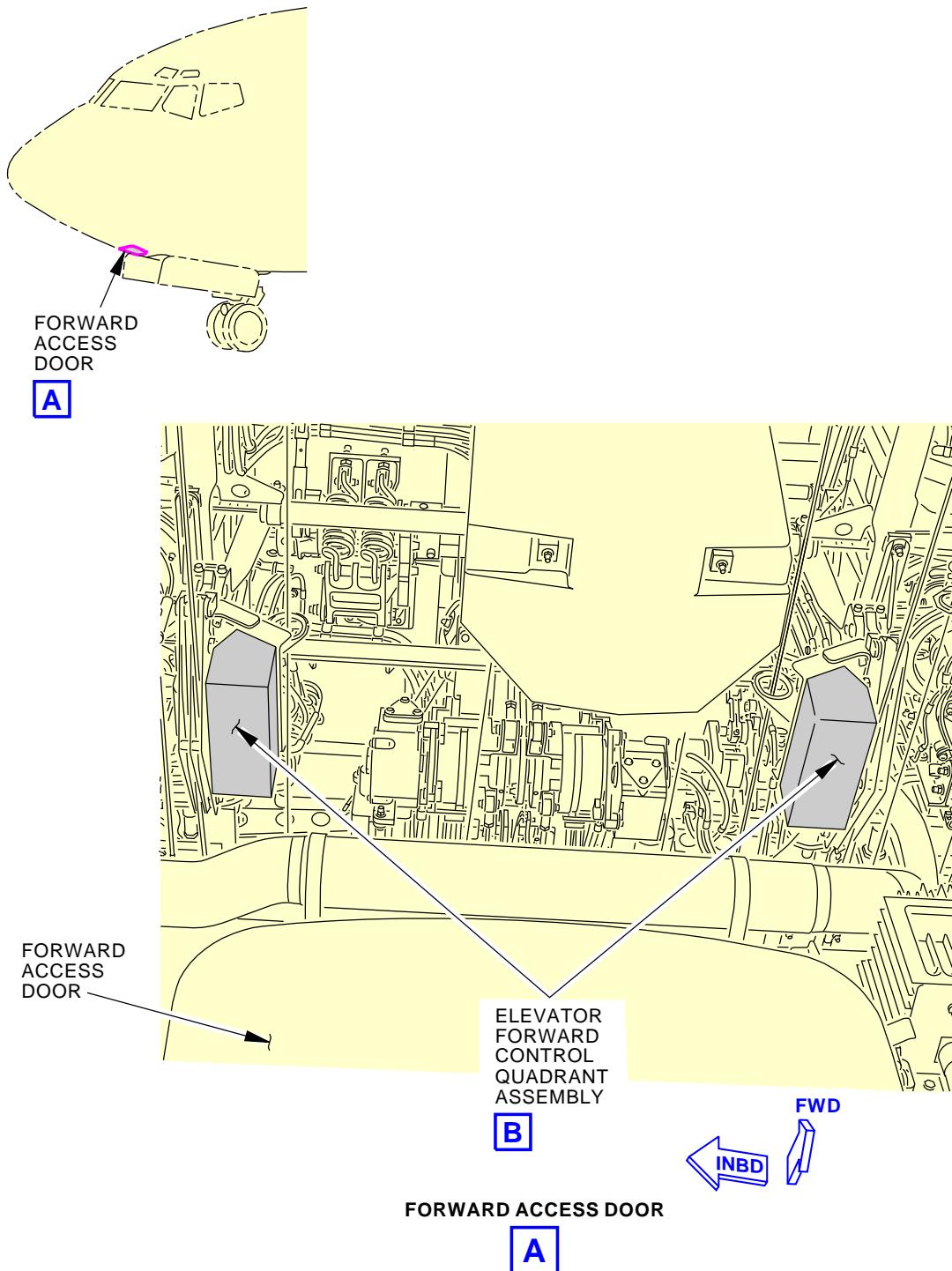
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**Elevator Rig Pin Installation
Figure 502/22-11-92-990-802**EFFECTIVITY
AKS ALL**22-11-92**

D633A101-AKS



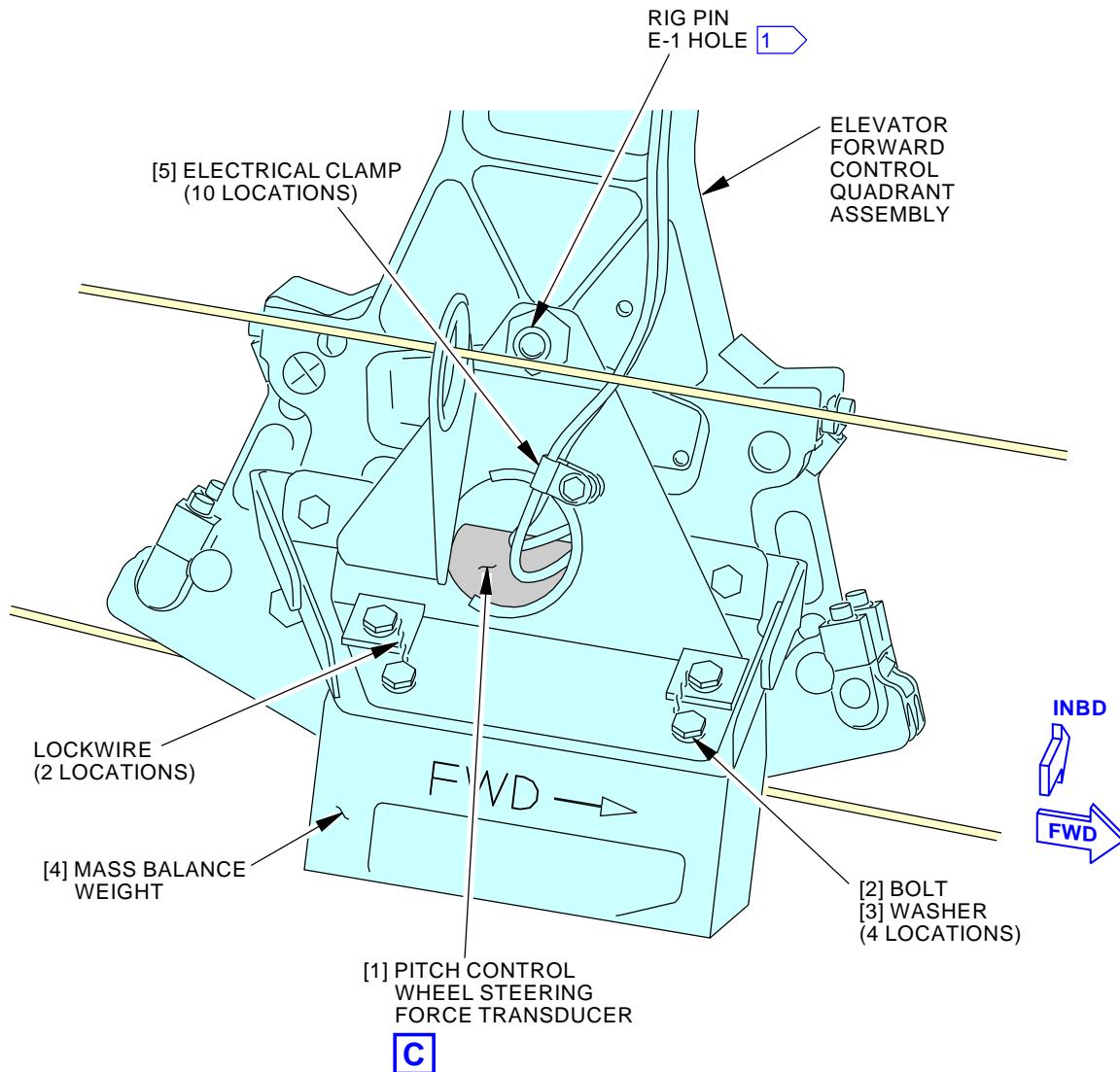
G22900 S0006564147_V2

Elevator Forward Control Quadrant Assembly Installation
Figure 503/22-11-92-990-803 (Sheet 1 of 4)

EFFECTIVITY
AKS ALL

22-11-92

D633A101-AKS



1 THE HOLE FOR RIG PIN E-1 IS IN THE LEFT SIDE OF THE ELEVATOR CONTROL QUADRANT ASSEMBLY. THE HOLE IN THE RIGHT SIDE IS NOT A RIG PIN HOLE.

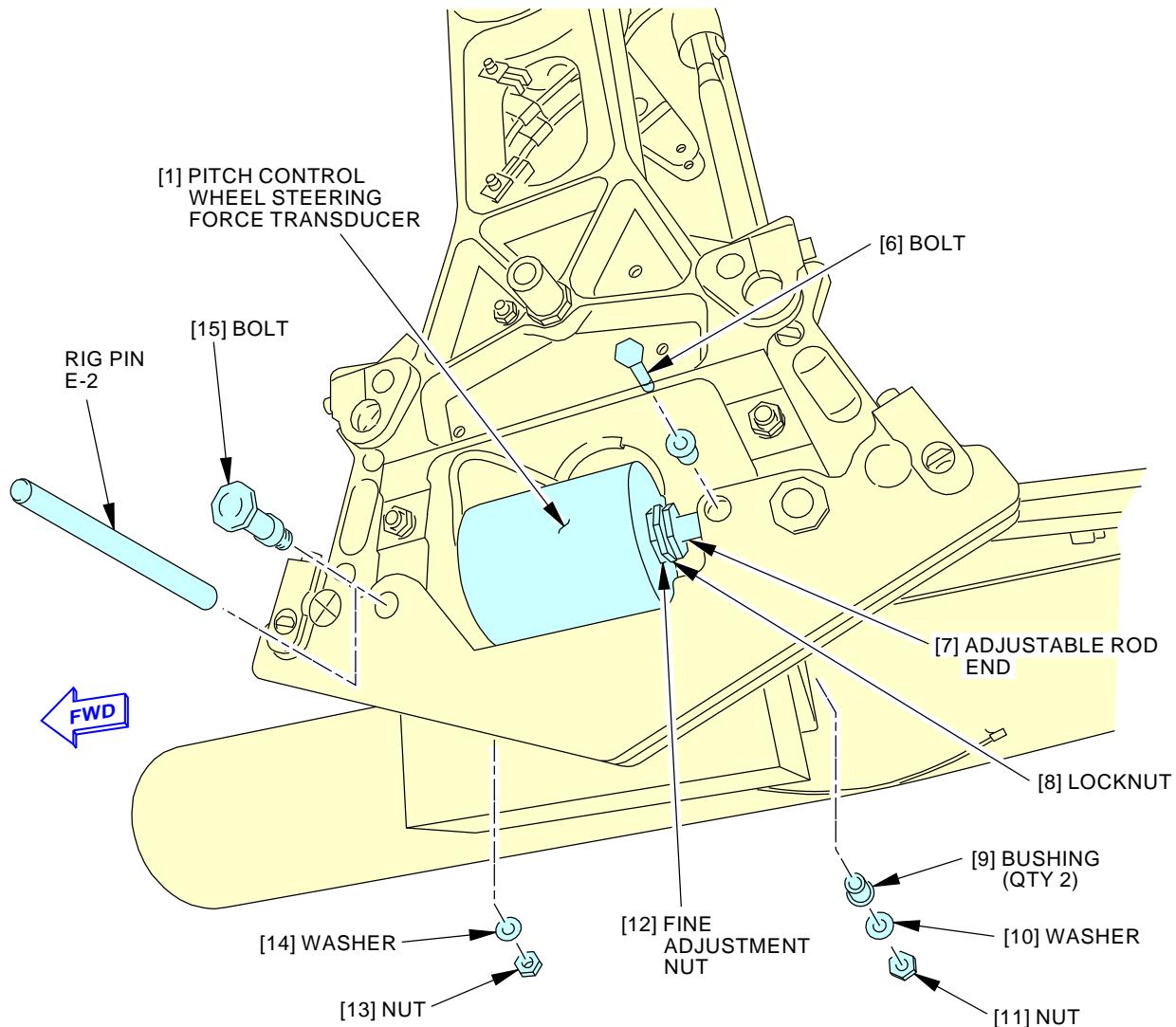
G23221 S0006564148_V2

**Elevator Forward Control Quadrant Assembly Installation
Figure 503/22-11-92-990-803 (Sheet 2 of 4)**

EFFECTIVITY
AKS ALL

22-11-92

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PITCH CONTROL WHEEL STEERING FORCE TRANSDUCER
(LEFT SIDE SHOWN)**C**

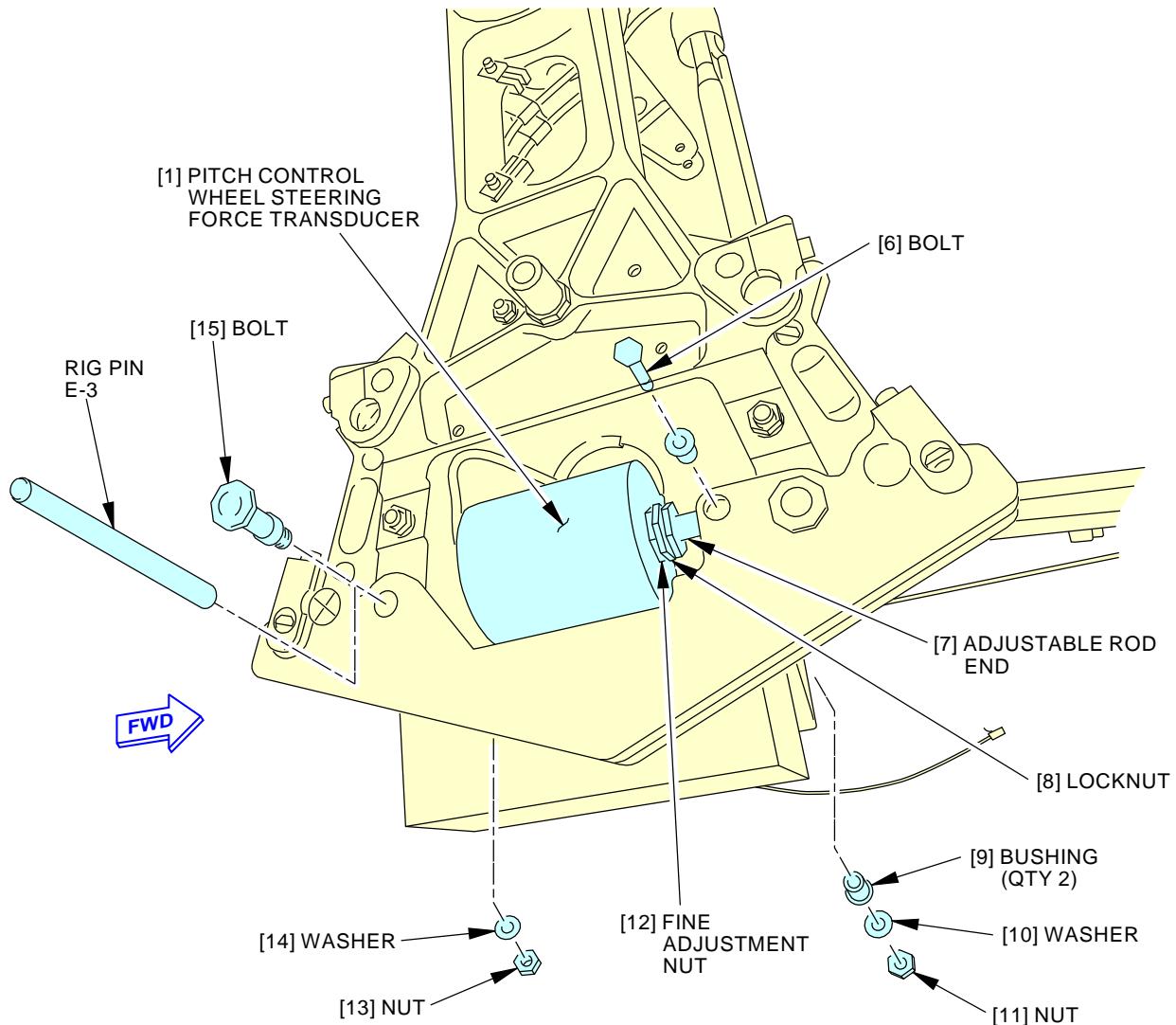
G22953 S0006564149_V2

Elevator Forward Control Quadrant Assembly Installation
Figure 503/22-11-92-990-803 (Sheet 3 of 4)

EFFECTIVITY
AKS ALL

D633A101-AKS

22-11-92



**PITCH CONTROL WHEEL STEERING FORCE TRANSDUCER
(RIGHT SIDE SHOWN)**

C

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**Elevator Forward Control Quadrant Assembly Installation
Figure 503/22-11-92-990-803 (Sheet 4 of 4)**

EFFECTIVITY
AKS ALL

22-11-92

D633A101-AKS



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TASK 22-11-92-730-801

3. Pitch Force Transducer Test

A. References

Reference	Title
24-22-00-860-812	Remove Electrical Power (P/B 201)
29-11-00-860-801	Hydraulic System A or B Pressurization (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
COM-1557	Gauge - Force Part #: DG-200 Supplier: 92456 Part #: FDIX 100 Supplier: 0BFD9 Part #: FDIX 50 Supplier: 0BFD9 Part #: LG-050 Supplier: 92456 Part #: LG-100 Supplier: 92456 Opt Part #: DPP-500G Supplier: 92456 Opt Part #: DPPH-150 Supplier: 92456 Opt Part #: DPPH-200 Supplier: 92456 Opt Part #: DPPH-50 Supplier: 92456 Opt Part #: FDI 100 Supplier: 0BFD9 Opt Part #: FDI 50 Supplier: 0BFD9 Opt Part #: FDV 100 Supplier: 0BFD9 Opt Part #: FDV 50 Supplier: 0BFD9

C. Pitch Force Transducer Test - DFCS BITE

SUBTASK 22-11-92-860-004

WARNING: KEEP PERSONS AND EQUIPMENT AWAY FROM THE FLIGHT CONTROL SURFACES. THE AILERONS, ELEVATORS, RUDDER, FLAPS, SLATS, SPOILERS, STABILIZER AND NOSE GEAR CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (1) Supply hydraulic power to hydraulic systems A and B. To supply hydraulic power, do this task: Hydraulic System A or B Pressurization, TASK 29-11-00-860-801.

SUBTASK 22-11-92-980-002

- (2) Do these steps to put the control wheel to the center:

NOTE: The power control units must be serviceable for the correct adjustment of the cables in relation to the roll force transducer.

- (a) Turn the control wheel clockwise 30 degrees.
- (b) Turn the control wheel counter-clockwise 30 degrees.
- (c) Slowly turn the control wheel to the center.

SUBTASK 22-11-92-860-005

- (3) Attach the DO-NOT-OPERATE tags to the control columns.

SUBTASK 22-11-92-860-006

- (4) Set the aileron trim to 0.0 unit.

EFFECTIVITY
AKS ALL

D633A101-AKS

22-11-92



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SUBTASK 22-11-92-860-007

- (5) Set the autopilot stab trim cutout switch, on the control stand, to the CUTOUT position.

SUBTASK 22-11-92-860-008

- (6) Make sure that the VHF NAV and IRS switches, on the P5 forward overhead panel, are in the NORMAL positions.

SUBTASK 22-11-92-860-009

- (7) Set the left and right IRS select switches, on the P5 aft overhead panel, to the ALIGN or NAV position.

SUBTASK 22-11-92-740-003

- (8) Make these selections to access the PITCH CWS test:
- (a) Push the INIT REF key on the CDU keyboard.
 - (b) <INDEX
 - (c) MAINT>
 - (d) <DFCS
 - (e) <EXTENDED MAINTENANCE
 - (f) <RIGGING
 - (g) <CWS
 - (h) <PITCH CWS
 - (i) Do the preparation steps as shown on the CDU display.
 - (j) <CONTINUE

D. Pitch Force Transducer - Manual Test

SUBTASK 22-11-92-480-001

- (1) Connect the force gauge, COM-1557 to the center hub of the captain's control column.

SUBTASK 22-11-92-730-002

- (2) Do the steps shown on the CDU to complete the test:
- (a) Make sure that the values for the A side and B side are between the limits that show on the CDU display.

SUBTASK 22-11-92-080-001

- (3) Remove the force gauge, COM-1557 from the control wheels.

E. Pitch Force Transducer Interface Test - DFCS BITE

SUBTASK 22-11-92-740-004

- (1) Make these selections on the CDU to do a transducer interface test:
- (a) Push the INIT REF key on the CDU keyboard.
 - (b) <INDEX
 - (c) MAINT>
 - (d) <DFCS
 - (e) <LRU REPLACEMENT TESTS
 - (f) <CHANNEL A AND B
 - (g) Push the NEXT PAGE key on the CDU keyboard.
 - (h) <PITCH SENS
 - (i) Do the preparation steps as shown on the CDU.



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- (j) <CONTINUE
- (k) Make sure that the test is completed with no failure.
- (l) Push the INIT REF key on the CDU keyboard to get out of the BITE.

F. Put the Airplanes Back to Its Initial Condition

SUBTASK 22-11-92-860-010

- (1) Do this task: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805.

SUBTASK 22-11-92-860-011

- (2) Do this task: Remove Electrical Power, TASK 24-22-00-860-812.

———— END OF TASK ————

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YAW DAMPER SYSTEM - ADJUSTMENT/TEST

1. General

- A. The yaw damper function is inside the same unit as the stall management function. The two functions are together in the stall management yaw damper (SMYD) computers. There are two SMYD computers (M1747 and M1748) on the E2 electronic equipment rack, shelf number 2, in the main equipment center.
- B. This procedure has these tasks:
 - (1) Yaw Damper System - Operational Test
 - (2) Yaw Damper System - System Test

TASK 22-23-00-710-801

2. Yaw Damper System - Operational Test

A. General

- (1) This procedure does a self-test of SMYD 1 and SMYD 2.

B. References

Reference	Title
24-22-00-860-811	Supply Electrical Power (P/B 201)
24-22-00-860-814	Remove External Power (P/B 201)
34-61-00-400-801	Setting Zero Fuel Weight (P/B 201)

C. Location Zones

Zone	Area
117	Electrical and Electronics Compartment - Left

D. Access Panels

Number	Name/Location
117A	Electronic Equipment Access Door

E. Procedure

SUBTASK 22-23-00-860-001

- (1) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

SUBTASK 22-23-00-010-001

- (2) Open this access door:

Number	Name/Location
117A	Electronic Equipment Access Door

SUBTASK 22-23-00-860-013

- (3) Do this task to enter the zero fuel weight: Setting Zero Fuel Weight, TASK 34-61-00-400-801

SUBTASK 22-23-00-860-002

- (4) Push the ON/OFF key on the Stall Management Yaw Damper (SMYD) Computers (E3-2).

NOTE: SMYD BITE will operate only when the engines are off or when the flaps are up and the airspeed is less than 60 knots.

SUBTASK 22-23-00-740-003

- (5) Do the Stall Management Yaw Damper Computer 1 self-test:

(a) Make sure that the display shows EXISTING FAULTS?

(b) Push and release the down arrow key until the display shows GROUND TESTS?

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- (c) Push the YES key on the keypad.
 - 1) Make sure that the display shows SELF TEST?
- (d) Push the YES key on the keypad.
 - 1) Make sure that the display shows TEST IN PROGRESS.
- (e) When the self-test is completed, make sure that the display shows SMYD LRU OK.

SUBTASK 22-23-00-740-004

- (6) Do the Stall Management Yaw Damper Computer 2 self-test:
 - (a) Make sure that the display shows EXISTING FAULTS?
 - (b) Push and release the down arrow key until the display shows GROUND TESTS?
 - (c) Push the YES key on the keypad.
 - 1) Make sure that the display shows SELF TEST?
 - (d) Push the YES key on the keypad.
 - 1) Make sure that the display shows TEST IN PROGRESS.
 - (e) When the self-test is completed, make sure that the display shows SMYD LRU OK.

SUBTASK 22-23-00-010-002

- (7) Close this access door:

Number Name/Location

117A Electronic Equipment Access Door

SUBTASK 22-23-00-860-003

- (8) Do this task: Remove External Power, TASK 24-22-00-860-814.

———— END OF TASK ————

TASK 22-23-00-710-802

3. Yaw Damper System - System Test

A. General

- (1) This procedure does a test of the interface between SMYD 1 and the main rudder power control unit and SMYD 2 and the standby rudder power control unit. It also does an interlock and light test.

B. References

Reference	Title
24-22-00-860-813	Supply External Power (P/B 201)
24-22-00-860-814	Remove External Power (P/B 201)
27-21-00-800-801	Rudder Hydraulic System A, B, or Standby Pressurization (P/B 201)
27-21-00-800-802	Pressure from the Rudder Hydraulic Systems A, B, and Standby - Deactivation (P/B 201)
34-21-00-820-801	Air Data Inertial Reference System - Alignment from the FMC CDU (P/B 201)
34-21-00-820-802	Air Data Inertial Reference System - Alignment from the ISDU (P/B 201)
34-61-00-400-801	Setting Zero Fuel Weight (P/B 201)

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C. Location Zones

Zone	Area
117	Electrical and Electronics Compartment - Left
211	Flight Compartment - Left
212	Flight Compartment - Right

D. Access Panels

Number	Name/Location
117A	Electronic Equipment Access Door

E. Prepare for the Test

SUBTASK 22-23-00-860-004

- (1) Do this task: Supply External Power, TASK 24-22-00-860-813.

SUBTASK 22-23-00-860-005

WARNING: KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT CONTROL SURFACES. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

- (2) Do this task: Rudder Hydraulic System A, B, or Standby Pressurization, TASK 27-21-00-800-801.

SUBTASK 22-23-00-010-003

- (3) Open this access door:

Number	Name/Location
117A	Electronic Equipment Access Door

SUBTASK 22-23-00-860-008

- (4) Open this circuit breaker and install safety tag:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
D	6	C01354	YAW DAMPER 2 DC

SUBTASK 22-23-00-820-001

- (5) Align ADIRS. To align it, do this task: Air Data Inertial Reference System - Alignment from the ISDU, TASK 34-21-00-820-802 or Air Data Inertial Reference System - Alignment from the FMC CDU, TASK 34-21-00-820-801.

SUBTASK 22-23-00-860-014

- (6) Do this task to enter the zero fuel weight:Setting Zero Fuel Weight, TASK 34-61-00-400-801

F. Stall Management Yaw Damper Computer Servo Test

SUBTASK 22-23-00-730-002

- (1) Do the Stall Management Yaw Damper Computer 1 servo test:

- (a) Push the ON/OFF key on Stall Management Yaw Damper (SMYD) Computer 1 (E3-2).

NOTE: SMYD BITE will operate only when the engines are off or when the flaps are up and the airspeed is less than 60 knots.

- (b) Make sure that the display shows EXISTING FAULTS?

- (c) Push and release the down arrow key until the display shows GROUND TESTS?

- (d) Push the YES key on the keypad.



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- (e) Push and release the down arrow key until the display shows SERVO TEST?
NOTE: The display will show some warnings.
- (f) Push the YES key on the keypad.
- (g) Make sure that the display shows these indications:
NOTE: These indications are displayed for a short period of time. It is not necessary to read each word of the indications.
 - 1) WARNING! WARNING!
 - 2) RUDDER MOVEMENT
 - 3) RUDDER CLEARED?
- (h) Make sure that all personnel are clear of the rudder.
- (i) Push the YES key on the keypad.
 - 1) Make sure that the display shows SYS B HYD ON?
 - 2) Make sure that HYD PUMPS B switch on the P5 panel is ON.
- (j) Push the YES key on the keypad.
 - 1) Make sure that the display shows FLT CTRL B ON?
 - 2) Make sure that the FLT CONTROL B switch on the P5 overhead panel is set to ON.
- (k) Push the YES key on the keypad.
 - 1) Make sure that the display shows YAW DMPR ENGAGED?

WARNING: THE STEPS THAT FOLLOW WILL CAUSE THE RUDDER TO MOVE. MAKE SURE THAT ALL PERSONS AND EQUIPMENT ARE CLEAR OF THE RUDDER BEFORE YOU DO THESE STEPS. RUDDER MOVEMENT CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

- (l) Set the yaw damper engage switch on the P5 overhead panel to ON.
- (m) Push the YES key on the keypad.
 - 1) Make sure that the display shows ZERO COMMAND?
- (n) Push the YES key on the keypad.
- (o) Make sure that the display shows this indication:
 - 1) RUDDER MOVING
- (p) After approximately ten seconds, make sure that the display shows these indications:
 - 1) YD cmd 0.0 ±0.2
 - 2) LVDT 0.0 ±0.2
 - 3) END ZERO COMMAND?
- (q) Push the YES key on the keypad.
- (r) Make sure that the display shows these indications:
NOTE: These indications are displayed for a short period of time. It is not necessary to read each word of the indications.
 - 1) RUDDER MOVING
 - 2) TEST EXITING
 - 3) ZERO COMMAND?
- (s) Push the down arrow key on the keypad.

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- 1) Make sure that the display shows SWEEP TEST?
- (t) Push the YES key on the keypad.
- (u) After approximately two seconds, make sure that the display shows this indication:
 - 1) RUD CMD LEFT
- (v) After approximately ten seconds, make sure that the display shows this indication:
 - 1) YD LVDT XXXXX

NOTE: The Xs are a number. You can ignore the value of the number.
- (w) After approximately two seconds, make sure that the display shows this indication:
 - 1) RUD CMD RIGHT
- (x) After approximately ten seconds, make sure that the display shows this indication:
 - 1) YD LVDT XXXXX

NOTE: The Xs are a number. You can ignore the value of the number.
- (y) After approximately two seconds, make sure that the display shows this indication:
 - 1) RUD CMD ZERO
- (z) After approximately ten seconds, make sure that the display shows these indications in sequence:
 - 1) YD LVDT XXXXX

NOTE: The Xs are a number. You can ignore the value of the number.

 - 2) TEST PASSED
- (aa) Set the FLT CONTROL B switch on the P5 overhead panel to OFF.
 - 1) Make sure that the yaw damper engage switch on the P5 overhead panel disengages.
 - 2) Make sure that the YAW DAMPER light on the P5 overhead panel comes on.
- (ab) Set the FLT CONTROL B switch on the P5 overhead panel to ON.
- (ac) Set the yaw damper engage switch on the P5 overhead panel to ON.
- (ad) Open this circuit breaker and install safety tag:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	7	C00286	YAW DAMPER 1 DC

- 1) Make sure that the yaw damper engage switch on the P5 overhead panel disengages.
- (ae) Push the ON/OFF switch on the Stall Management Yaw Damper (SMYD) Computer 1.
 - 1) Make sure that the display shows TURN OFF DISPLAY?
- (af) Push the YES key on the keypad.
- (ag) Remove the safety tag and close this circuit breaker:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	6	C01354	YAW DAMPER 2 DC

SUBTASK 22-23-00-730-003

- (2) Do the Stall Management Yaw Damper Computer 2 servo test:

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- (a) Push the ON/OFF key on Stall Management Yaw Damper (SMYD) Computer 2 (E3-2).
NOTE: SMYD BITE will operate only when the engines are off or when the flaps are up and the airspeed is less than 60 knots.
- (b) Make sure that the display shows EXISTING FAULTS?
- (c) Push and release the down arrow key until the display shows GROUND TESTS?
- (d) Push the YES key on the keypad.
- (e) Push and release the down arrow key until the display shows SERVO TEST?
NOTE: The display will show some warnings.
- (f) Push the YES key on the keypad.
- (g) Make sure that the display shows these indications:
NOTE: These indications are displayed for a short period of time. It is not necessary to read each word of the indications.
 - 1) WARNING! WARNING!
 - 2) RUDDER MOVEMENT
 - 3) RUDDER CLEARED?
- (h) Make sure that all personnel are clear of the rudder.
- (i) Push the YES key on the keypad.
 - 1) Make sure that the display shows FLT CTRL A STBY?
 - 2) Make sure that the FLT CONTROL A switch on the P5 overhead panel is set to STBY RUD.
- (j) Push the YES key on the keypad.
 - 1) Make sure that the display shows FLT CTRL B STBY?
 - 2) Make sure that the FLT CONTROL B switch on the P5 overhead panel is set to STBY RUD.
- (k) Push the YES key on the keypad.
 - 1) Make sure that the display shows YAW DMPR ENGAGED?

WARNING: THE STEPS THAT FOLLOW WILL CAUSE THE RUDDER TO MOVE. MAKE SURE THAT ALL PERSONS AND EQUIPMENT ARE CLEAR OF THE RUDDER BEFORE YOU DO THESE STEPS. RUDDER MOVEMENT CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

- (l) Set the yaw damper engage switch on the P5 overhead panel to ON.
- (m) Push the YES key on the keypad.
 - 1) Make sure that the display shows ZERO COMMAND?
- (n) Push the YES key on the keypad.
- (o) Make sure that the display shows this indication:
 - 1) RUDDER MOVING
- (p) After approximately ten seconds, make sure that the display shows these indications:
 - 1) YD cmd 0.0 ±0.2
 - 2) YD LVDT 0.0 ±0.2
 - 3) END ZERO COMMAND?
- (q) Push the YES key on the keypad.

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- (r) Make sure that the display shows these indications:

NOTE: These indications are displayed for a short period of time. It is not necessary to read each word of the indications.

- 1) RUDDER MOVING
- 2) TEST EXITING
- 3) ZERO COMMAND?

- (s) Push the down arrow key on the keypad.

- 1) Make sure that the display shows SWEEP TEST?

- (t) Push the YES key on the keypad.

- (u) After approximately two seconds, make sure that the display shows this indication:

- 1) RUD CMD LEFT

- (v) After approximately ten seconds, make sure that the display shows this indication:

- 1) YD LVDT XXXXX

NOTE: The Xs are a number. You can ignore the value of the number.

- (w) After approximately two seconds, make sure that the display shows this indication:

- 1) RUD CMD RIGHT

- (x) After approximately ten seconds, make sure that the display shows this indication:

- 1) YD LVDT XXXXX

NOTE: The Xs are a number. You can ignore the value of the number.

- (y) After approximately two seconds, make sure that the display shows this indication:

- 1) RUD CMD ZERO

- (z) After approximately ten seconds, make sure that the display shows these indications in sequence:

- 1) YD LVDT XXXXX

NOTE: The Xs are a number. You can ignore the value of the number.

- 2) TEST PASSED

- (aa) Set the FLT CONTROL A switch on the P5 overhead panel to ON.

- 1) Make sure that the yaw damper engage switch on the P5 overhead panel disengages.

- 2) Make sure that the YAW DAMPER light on the P5 overhead panel comes on.

- (ab) Set the FLT CONTROL A switch on the P5 overhead panel to STBY RUD.

- (ac) Set the yaw damper engage switch on the P5 overhead panel to ON.

- (ad) Open this circuit breaker and install safety tag:

CAPT Electrical System Panel, P18-1

Row Col Number Name

D 6 C01354 YAW DAMPER 2 DC

- 1) Make sure that the yaw damper engage switch on the P5 overhead panel disengages.

- (ae) Push the ON/OFF switch on the Stall Management Yaw Damper (SMYD) Computer 2.

- 1) Make sure that the display shows TURN OFF DISPLAY?

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- (af) Push the YES key on the keypad.
- (ag) Set the FLT CONTROL A and the FLT CONTROL B switches on the P5 overhead panel to ON.

G. Interlock and Light Test

SUBTASK 22-23-00-730-001

- (1) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	6	C01354	YAW DAMPER 2 DC
D	7	C00286	YAW DAMPER 1 DC

- (a) Set the yaw damper engage switch on the P5 overhead panel to ON.
- (b) Make sure that the YAW DAMPER disengage light on the P5 overhead panel is off.
- (c) Push and hold the YAW DAMPER disengage light.
 - 1) Make sure that the YAW DAMPER disengage light comes on.
- (d) Release the YAW DAMPER disengage light.
 - 1) Make sure that the YAW DAMPER disengage light goes out.
- (e) Set the LIGHTS switch on the P1 main instrument panel to TEST and make sure that these lights come on:
 - 1) The left and right MASTER CAUTION lights on the ends of the P7 glareshield panel.
 - 2) The FLT CONT light on the left end of the P7 glareshield panel.
 - 3) The YAW DAMPER disengage light on the P5 overhead panel.

NOTE: Ignore other indications.
- (f) Set the yaw damper engage switch on the P5 overhead panel to OFF.
- (g) Set the LIGHTS switch on the P1 main instrument panel to BRT.

H. Put the Airplane Back to Its Usual Condition

SUBTASK 22-23-00-010-004

- (1) Close this access door:

<u>Number</u>	<u>Name/Location</u>
117A	Electronic Equipment Access Door

SUBTASK 22-23-00-860-006

WARNING: KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT CONTROL SURFACES. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

- (2) Do this task: Pressure from the Rudder Hydraulic Systems A, B, and Standby - Deactivation, TASK 27-21-00-800-802.

SUBTASK 22-23-00-730-004

- (3) Set the two mode select switches on the IRS MSU to the OFF position.



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SUBTASK 22-23-00-860-007

- (4) Do this task: Remove External Power, TASK 24-22-00-860-814.

———— END OF TASK ————

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STANDBY RUDDER POWER CONTROL UNIT (PCU) SOLENOID AND ELECTROHYDRAULIC SERVO VALVES - REMOVAL/INSTALLATION

1. General

- A. This procedure has these tasks:
 - (1) The removal of the standby rudder power control unit (PCU) solenoid and electrohydraulic servo valves.
 - (2) The installation of the standby rudder PCU solenoid and electrohydraulic servo valves.
- B. The standby rudder PCU solenoid and electrohydraulic servo valves are located on the standby rudder PCU in the vertical fin. The standby rudder PCU is above the main rudder PCU.

TASK 22-23-11-000-801

2. Standby Rudder PCU Solenoid and Electrohydraulic Servo Valves - Removal

(Figure 401)

A. References

Reference	Title
27-21-00-800-802	Pressure from the Rudder Hydraulic Systems A, B, and Standby - Deactivation (P/B 201)

B. Location Zones

Zone	Area
211	Flight Compartment - Left
324	Vertical Fin - Rear Spar To Trailing Edge

C. Access Panels

Number	Name/Location
324DR	Vertical Fin, Trailing Edge Access

D. Prepare for the Removal

SUBTASK 22-23-11-860-007

- (1) Do this task: Pressure from the Rudder Hydraulic Systems A, B, and Standby - Deactivation, TASK 27-21-00-800-802.

SUBTASK 22-23-11-860-008

- (2) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
C	7	C00285	YAW DAMPER AC
D	6	C01354	YAW DAMPER 2 DC
D	7	C00286	YAW DAMPER 1 DC

SUBTASK 22-23-11-010-003

- (3) Find this access panel:

Number Name/Location

324DR Vertical Fin, Trailing Edge Access

- (a) Remove the screws [1] and the skin panel [2] on the right side of the vertical fin to get access to the standby rudder PCU:



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E. Procedure

SUBTASK 22-23-11-020-001

- (1) Do these steps to remove the solenoid valve [3]:
 - (a) Remove the bolts [4] that attach the solenoid valve [3] to the standby rudder PCU.
 - (b) Remove the solenoid valve [3].
 - (c) Remove the gasket plate [9].
 - (d) Remove the o-ring [7].
 - (e) Put plugs on the standby rudder PCU ports.

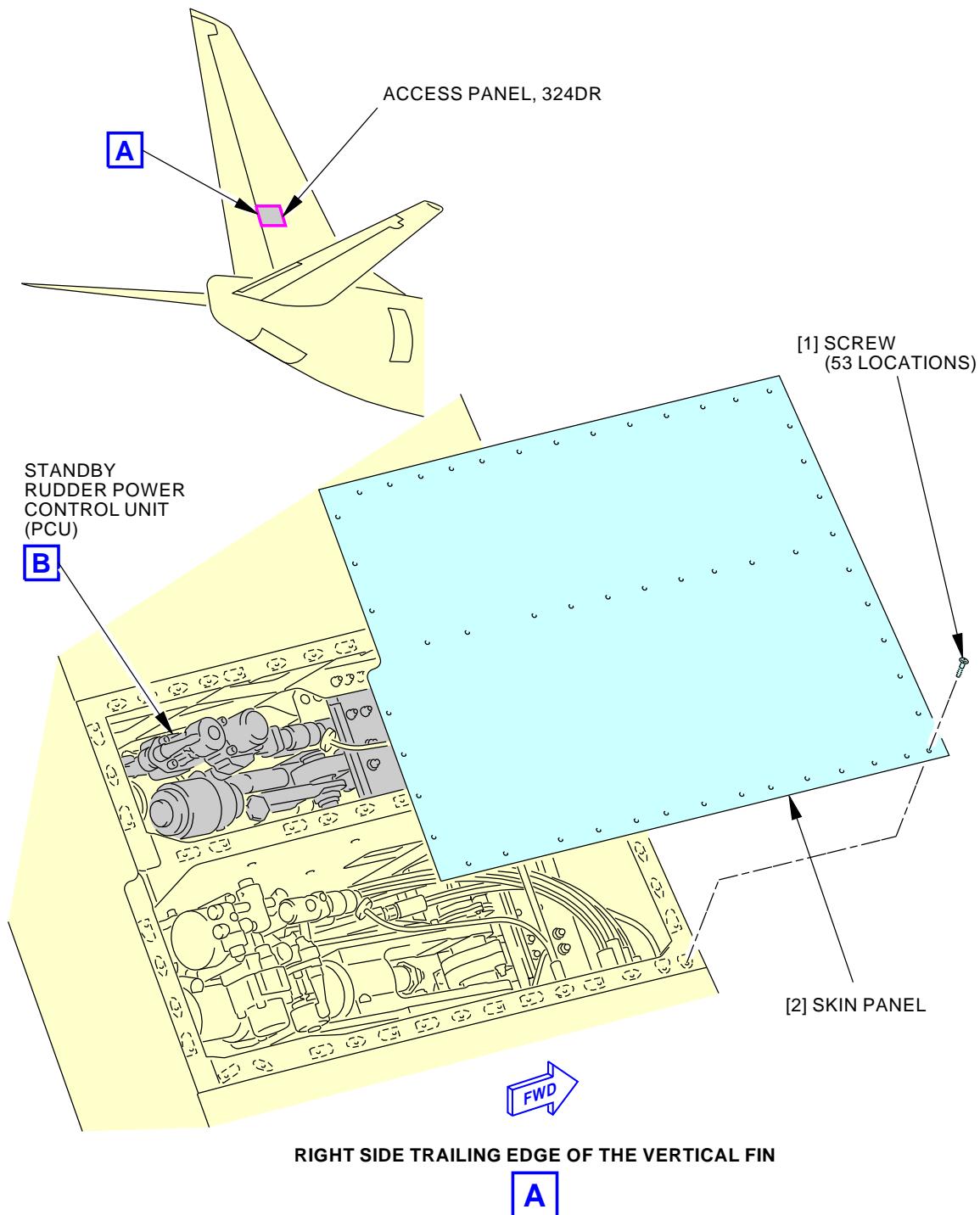
SUBTASK 22-23-11-020-002

- (2) Do these steps to remove the electrohydraulic servo valve [5]:
 - (a) Remove the bolts [6] that attach the electrohydraulic servo valve [5] to the standby rudder PCU.
 - (b) Remove the electrohydraulic servo valve [5].
 - (c) Remove the gasket plate [8].
 - (d) Remove the o-ring [7].
 - (e) Put plugs on the standby rudder PCU ports.

———— END OF TASK ————

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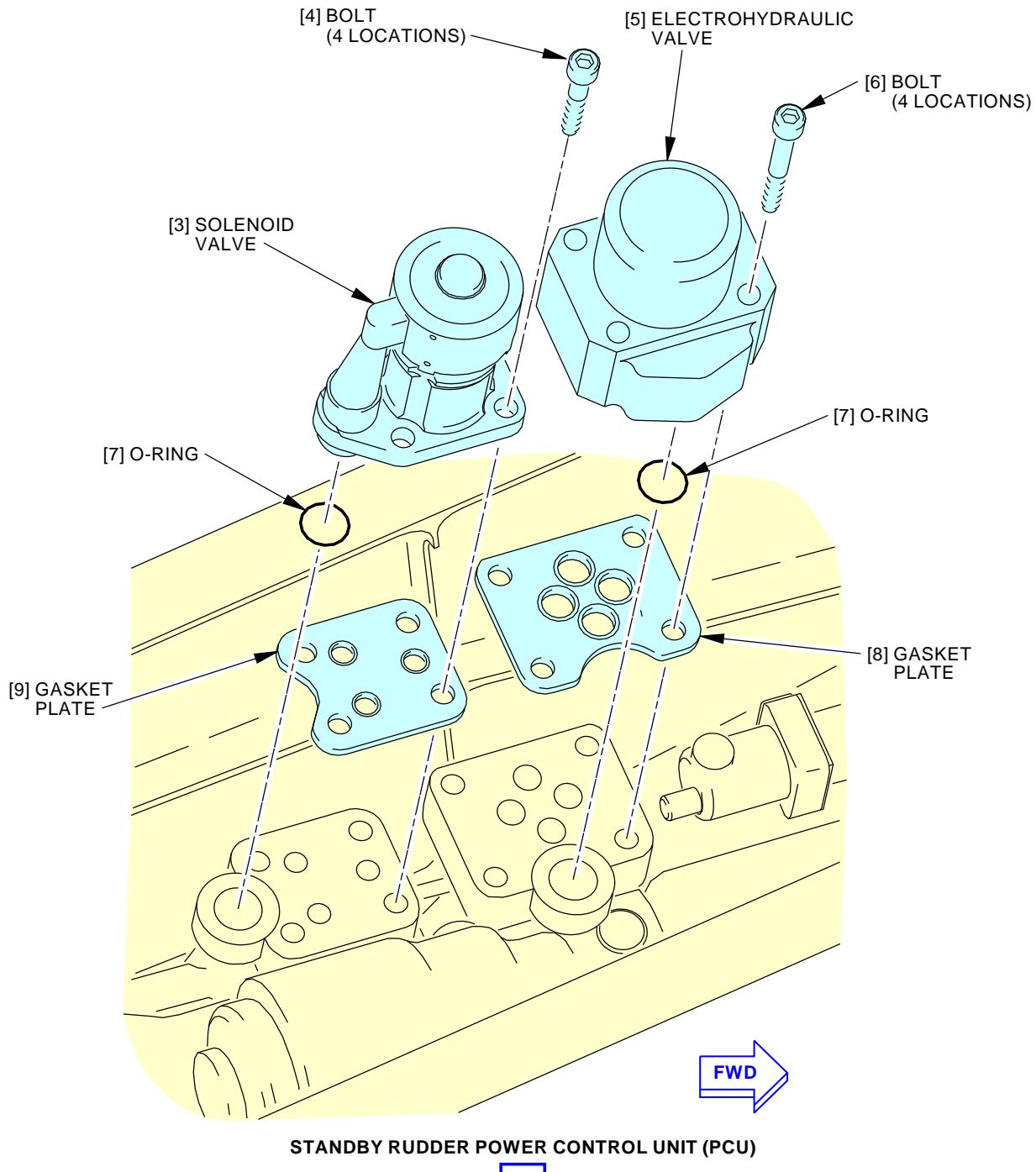
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Standby Rudder PCU Solenoid and Electrohydraulic Valves Installation
Figure 401/22-23-11-990-801 (Sheet 1 of 2)

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Standby Rudder PCU Solenoid and Electrohydraulic Valves Installation
Figure 401/22-23-11-990-801 (Sheet 2 of 2)

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TASK 22-23-11-400-801

3. **Standby Rudder PCU Solenoid and Electrohydraulic Servo Valves - Installation**
(Figure 401)

A. References

Reference	Title
22-23-11-740-801	Rudder Solenoid and Electrohydraulic Servo Valves - Installation Test (P/B 501)
24-22-00-860-814	Remove External Power (P/B 201)
27-21-00-800-802	Pressure from the Rudder Hydraulic Systems A, B, and Standby - Deactivation (P/B 201)

B. Consumable Materials

Reference	Description	Specification
D00153	Fluid - Hydraulic Fluid, Fire Resistant (Interchangeable And Intermixable With BMS 3-11 Type V)	BMS3-11 Type IV
G01048	Lockwire - MS20995C32, Corrosion Resistant Steel - 0.032 Inch (0.8128 mm) Diameter	NASM20995

C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
3	Solenoid valve	27-21-24-01-266	AKS ALL
5	Electrohydraulic servo valve	27-21-24-01-130	AKS ALL
7	O-ring	27-21-24-01-260	AKS ALL
		27-21-24-01-280	AKS ALL
		27-21-24-01-290	AKS ALL
		27-21-24-01-300	AKS ALL
		27-21-24-01-340	AKS ALL
		27-21-24-01-355	AKS ALL

D. Location Zones

Zone	Area
211	Flight Compartment - Left
324	Vertical Fin - Rear Spar To Trailing Edge

E. Access Panels

Number	Name/Location
324DR	Vertical Fin, Trailing Edge Access

F. Prepare for the Installation

SUBTASK 22-23-11-860-009

- (1) Do this task: Pressure from the Rudder Hydraulic Systems A, B, and Standby - Deactivation, TASK 27-21-00-800-802.

SUBTASK 22-23-11-860-010

- (2) Make sure that these circuit breakers are open and have safety tags:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
C	7	C00285	YAW DAMPER AC

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(Continued)

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	6	C01354	YAW DAMPER 2 DC
D	7	C00286	YAW DAMPER 1 DC

SUBTASK 22-23-11-010-004

- (3) Find this access panel:

Number Name/Location

324DR Vertical Fin, Trailing Edge Access

- (a) Remove the screws [1] and the skin panel [2] on the right side of the vertical fin to get access to the standby rudder PCU:

G. Procedure

SUBTASK 22-23-11-020-003

- (1) Do these steps to install the solenoid valve [3]:

- (a) Remove the plugs on the standby rudder PCU ports.
- (b) Replace the gasket plate [9].
- (c) Replace the o-ring [7] if it is damaged.
- (d) Lubricate the o-ring [7] with hydraulic fluid, D00153.
- (e) Install the o-ring [7].
- (f) Install the gasket plate [8].
- (g) Install the solenoid valve [3].
- (h) Install the bolts [4] that attach the solenoid valve [3] to the standby rudder PCU.
- (i) Tighten the bolts [4] to 54 in-lb (6.1 N·m) - 72 in-lb (8.1 N·m).
- (j) Install the MS20995C32 lockwire, G01048 on the bolts [4].

SUBTASK 22-23-11-020-004

- (2) Do these steps to install the electrohydraulic servo valve [5]:

- (a) Remove the plugs on the standby rudder PCU ports.
- (b) Replace the gasket plate [8].
- (c) Replace the o-ring [7] if it is damaged.
- (d) Lubricate the o-ring [7] with hydraulic fluid, D00153.
- (e) Install the o-ring [7].
- (f) Install the gasket plate [8].
- (g) Install the electrohydraulic servo valve [5].
- (h) Install the bolts [6] that attach the electrohydraulic servo valve [5] to the standby rudder PCU.
- (i) Tighten the bolts [6] to 54 in-lb (6.1 N·m) - 72 in-lb (8.1 N·m).
- (j) Install the MS20995C32 lockwire, G01048 on the bolts [6].

SUBTASK 22-23-11-710-001

- (3) Do this task: Rudder Solenoid and Electrohydraulic Servo Valves - Installation Test, TASK 22-23-11-740-801.

EFFECTIVITY
AKS ALL

22-23-11



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H. Put the Airplane Back to Its Usual Condition

SUBTASK 22-23-11-010-005

- (1) Install the screws [1] and the skin panel [2] in this location to close access to the standby rudder PCU:

- (a) Install the skin panel [2] to the correct access panel:

Number Name/Location

324DR Vertical Fin, Trailing Edge Access

NOTE: The skin panel that contains the access panels is on the left side of the vertical fin. Do not remove this skin panel. Remove the skin panel on the right side of the vertical fin at the same level.

SUBTASK 22-23-11-860-012

- (2) Do this task: Remove External Power, TASK 24-22-00-860-814.

———— END OF TASK ————

EFFECTIVITY
AKS ALL

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STANDBY RUDDER POWER CONTROL UNIT (PCU) SOLENOID AND ELECTROHYDRAULIC SERVO
VALVES - ADJUSTMENT/TEST

1. General

- A. This procedure has this task:
 - (1) An installation test of the standby rudder power control unit (PCU) solenoid and electrohydraulic servo valves.
- B. The rudder solenoid and electrohydraulic servo valves are located on the standby rudder PCU in the vertical fin.

TASK 22-23-11-740-801

2. Rudder Solenoid and Electrohydraulic Servo Valves - Installation Test

A. General

- (1) The installation test makes sure that the solenoid and electrohydraulic servo valves are installed correctly.

B. References

Reference	Title
24-22-00-860-813	Supply External Power (P/B 201)
24-22-00-860-814	Remove External Power (P/B 201)
27-21-00-800-801	Rudder Hydraulic System A, B, or Standby Pressurization (P/B 201)
27-21-00-800-802	Pressure from the Rudder Hydraulic Systems A, B, and Standby - Deactivation (P/B 201)

C. Location Zones

Zone	Area
117	Electrical and Electronics Compartment - Left
118	Electrical and Electronics Compartment - Right

D. Access Panels

Number	Name/Location
117A	Electronic Equipment Access Door

E. Installation Test

SUBTASK 22-23-11-860-001

- (1) Do this task: Supply External Power, TASK 24-22-00-860-813.

SUBTASK 22-23-11-860-002

WARNING: KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT CONTROL SURFACES. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

- (2) Do this task: Rudder Hydraulic System A, B, or Standby Pressurization, TASK 27-21-00-800-801.

SUBTASK 22-23-11-010-001

- (3) Open this access door:

Number	Name/Location
117A	Electronic Equipment Access Door

EFFECTIVITY
AKS ALL

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SUBTASK 22-23-11-860-004

- (4) Do the Stall Management Yaw Damper Computer 2 servo test:
- (a) Push the ON/OFF key on Stall Management Yaw Damper (SMYD) Computer 2 (E3-2).
NOTE: SMYD BITE will operate only when the engines are off or when the flaps are up and the airspeed is less than 60 knots.
 - (b) Make sure that the display shows EXISTING FAULTS?
 - (c) Push and release the down arrow key until the display shows GROUND TESTS?
 - (d) Push the YES key on the keypad.
 - (e) Push and release the down arrow key until the display shows SERVO TEST?
NOTE: The display will show some warnings.
 - (f) Push the YES key on the keypad.
 - (g) Make sure that the display shows these indications:
 - 1) WARNING! WARNING!
 - 2) RUDDER MOVEMENT
 - 3) RUDDER CLEAR?
 - (h) Make sure that all personnel are clear of the rudder.
 - (i) Push the YES key on the keypad.
 - 1) Make sure that the display shows FLT CTRL A STBY?
 - 2) Make sure that the FLT CONTROL A switch on the P5 overhead panel is set to STBY RUD.
 - (j) Push the YES key on the keypad.
 - 1) Make sure that the display shows FLT CTRL B STBY?
 - 2) Make sure that the FLT CONTROL B switch on the P5 overhead panel is set to STBY RUD.
 - (k) Push the YES key on the keypad.
 - 1) Make sure that the display shows YAW DMPR ENGAGED?

WARNING: THE STEPS THAT FOLLOW WILL CAUSE THE RUDDER TO MOVE. MAKE SURE THAT ALL PERSONS AND EQUIPMENT ARE CLEAR OF THE RUDDER BEFORE YOU DO THESE STEPS. RUDDER MOVEMENT CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

- (l) Set the yaw damper engage switch on the P5 overhead panel to ON.
- (m) Push the YES key on the keypad.
 - 1) Make sure that the display shows ZERO COMMAND?
- (n) Push the YES key on the keypad.
- (o) Make sure that the display shows this indication:
 - 1) RUDDER MOVING
- (p) After approximately ten seconds, make sure that the display shows these indications:
 - 1) YD 0.0 ±0.2
 - 2) LVDT 0.0 ±0.2
 - 3) END ZERO COMMAND?

EFFECTIVITY
AKS ALL

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- (q) Push the YES key on the keypad.
- (r) Make sure that the display shows these indications:
 - 1) RUDDER MOVING
 - 2) TEST EXITING
 - 3) ZERO COMMAND?
- (s) Push and release the down arrow key until the display shows SWEEP TEST?
- (t) Push the YES key on the keypad.
- (u) After approximately two seconds, make sure that the display shows this indication:
 - 1) RUDDER CMD LEFT
- (v) After approximately ten seconds, make sure that the display shows this indication:
 - 1) LVDT XXXXX

NOTE: The Xs are a number. You can ignore the value of the number.
- (w) After approximately two seconds, make sure that the display shows this indication:
 - 1) RUDDER CMD RIGHT
- (x) After approximately ten seconds, make sure that the display shows this indication:
 - 1) LVDT XXXXX

NOTE: The Xs are a number. You can ignore the value of the number.
- (y) After approximately two seconds, make sure that the display shows this indication:
 - 1) RUDDER CMD ZERO
- (z) After approximately ten seconds, make sure that the display shows these indications in sequence:
 - 1) LVDT XXXXX

NOTE: The Xs are a number. You can ignore the value of the number.

 - 2) TEST PASSED
 - 3) TEST EXITING
 - 4) ZERO COMMAND?
- (aa) Push the ON/OFF switch on the Stall Management Yaw Damper (SMYD) Computer 2.
 - 1) Make sure that the display shows TURN OFF DISPLAY?
- (ab) Push the YES key on the keypad.
- (ac) Set the FLT CONTROL A and the FLT CONTROL B switches on the P5 overhead panel to ON.

SUBTASK 22-23-11-860-005

WARNING: KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT CONTROL SURFACES. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

- (5) Do this task: Pressure from the Rudder Hydraulic Systems A, B, and Standby - Deactivation, TASK 27-21-00-800-802.

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AKS ALL

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SUBTASK 22-23-11-010-002

- (6) Close this access panel:

Number Name/Location

117A Electronic Equipment Access Door

SUBTASK 22-23-11-860-006

- (7) Do this task: Remove External Power, TASK 24-22-00-860-814.

———— END OF TASK ————

EFFECTIVITY
AKS ALL

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MAIN RUDDER POWER CONTROL UNIT (PCU) SOLENOID AND ELECTROHYDRAULIC SERVO VALVES
- REMOVAL/INSTALLATION

1. General

- A. This procedure has these tasks:
- (1) The removal of the main rudder power control unit (PCU) solenoid and electrohydraulic servo valves.
 - (2) The installation of the main rudder PCU solenoid and electrohydraulic servo valves.
- B. The main rudder PCU solenoid and electrohydraulic servo valves are located on the main rudder PCU in the vertical fin. The main rudder PCU is below the standby rudder PCU.

TASK 22-23-21-000-801

2. Main Rudder PCU Solenoid and Electrohydraulic Servo Valves - Removal

(Figure 401)

A. References

Reference	Title
27-21-00-800-802	Pressure from the Rudder Hydraulic Systems A, B, and Standby - Deactivation (P/B 201)

B. Location Zones

Zone	Area
211	Flight Compartment - Left
324	Vertical Fin - Rear Spar To Trailing Edge

C. Access Panels

Number	Name/Location
324DR	Vertical Fin, Trailing Edge Access

D. Prepare for the Removal

SUBTASK 22-23-21-860-006

- (1) Do this task: Pressure from the Rudder Hydraulic Systems A, B, and Standby - Deactivation, TASK 27-21-00-800-802.

SUBTASK 22-23-21-860-007

- (2) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
C	7	C00285	YAW DAMPER AC
D	6	C01354	YAW DAMPER 2 DC
D	7	C00286	YAW DAMPER 1 DC

SUBTASK 22-23-21-010-003

- (3) Find this access panel:

Number Name/Location

324DR Vertical Fin, Trailing Edge Access

- (a) Remove the screws [1] and the skin panel [2] on the right side of the vertical fin to get access to the main rudder PCU:

EFFECTIVITY
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E. Procedure

SUBTASK 22-23-21-020-001

- (1) Do these steps to remove the solenoid valve [4]:
 - (a) Remove the bolts [5] that attach the solenoid valve [4] to the main rudder PCU.
 - (b) Remove the solenoid valve [4].
 - (c) Remove the gasket plate [3].
 - (d) Remove and discard the o-ring [8].
 - (e) Put plugs on the main rudder PCU ports to avoid hydraulic fluid contamination.

SUBTASK 22-23-21-020-002

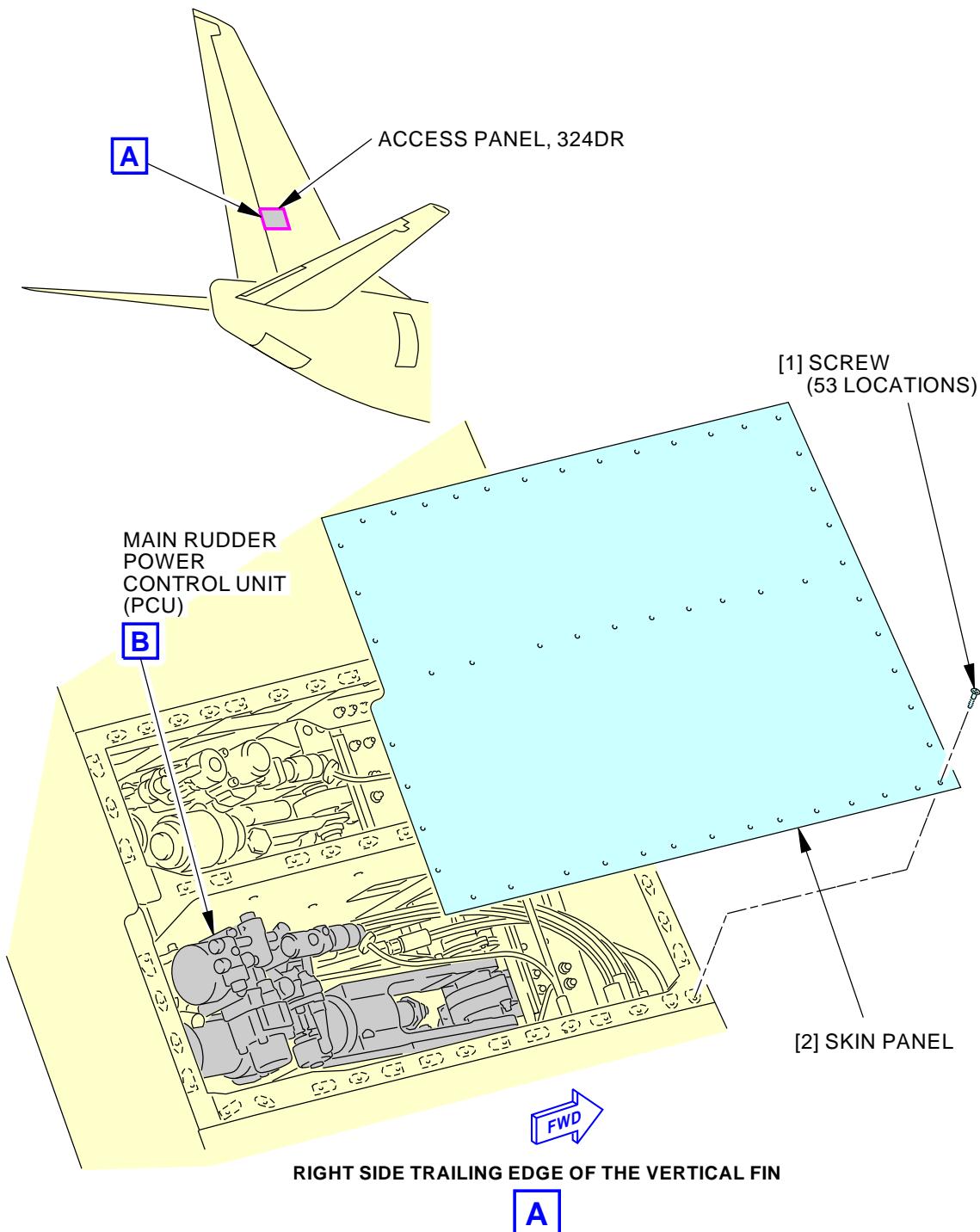
- (2) Do these steps to remove the electrohydraulic servo valve [6]:
 - (a) Remove the bolts [7] that attach the electrohydraulic servo valve [6] to the main rudder PCU.
 - (b) Remove the electrohydraulic servo valve [6].
 - (c) Remove the gasket plate [9].
 - (d) Remove and discard the o-ring [8].
 - (e) Put plugs on the main rudder PCU ports to avoid hydraulic fluid contamination.

———— END OF TASK ————



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Main Rudder PCU Solenoid and Electrohydraulic Servo Valves Installation
Figure 401/22-23-21-990-801 (Sheet 1 of 2)

EFFECTIVITY
AKS ALL

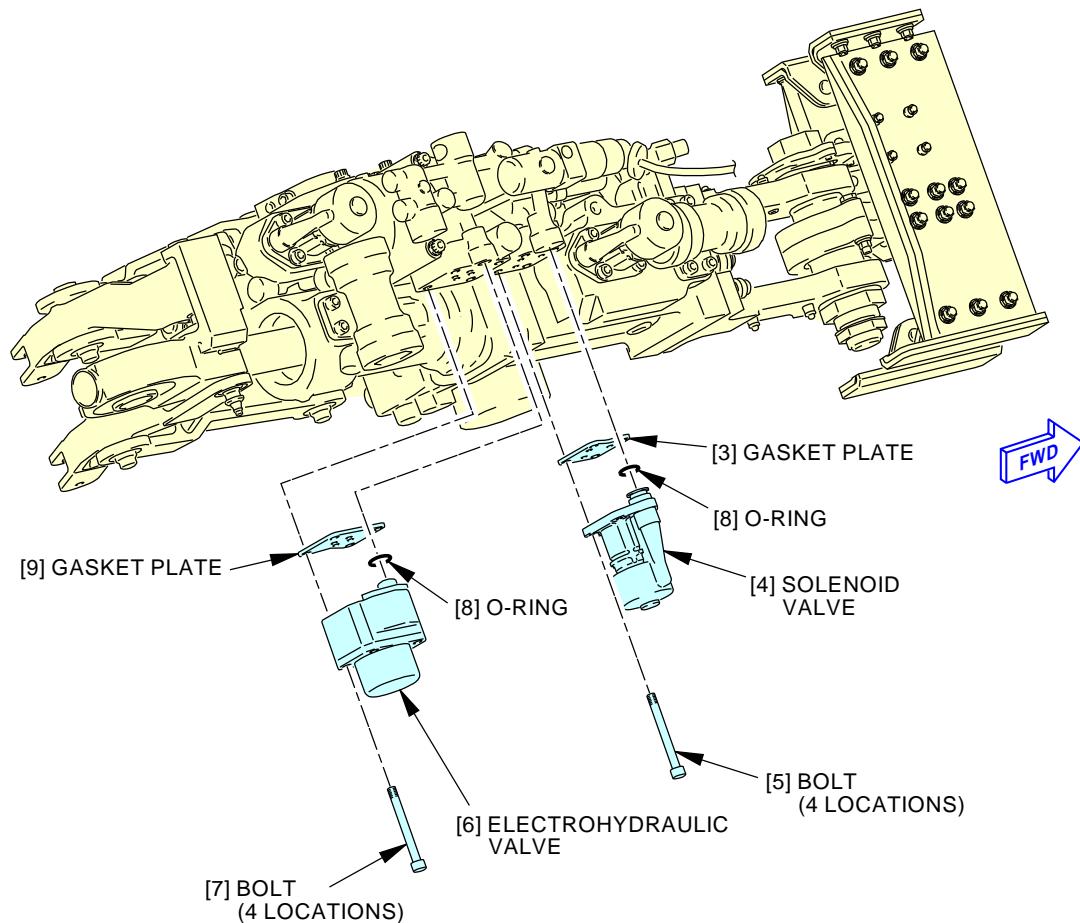
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MAIN RUDDER POWER CONTROL UNIT (PCU)

B

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Main Rudder PCU Solenoid and Electrohydraulic Servo Valves Installation
Figure 401/22-23-21-990-801 (Sheet 2 of 2)

EFFECTIVITY
AKS ALL

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TASK 22-23-21-400-801

3. Main Rudder PCU Solenoid and Electrohydraulic Servo Valves - Installation
(Figure 401)

A. References

Reference	Title
22-23-21-740-801	Rudder Solenoid and Electrohydraulic Servo Valves - Post Installation Test (P/B 501)
24-22-00-860-814	Remove External Power (P/B 201)
27-21-00-800-802	Pressure from the Rudder Hydraulic Systems A, B, and Standby - Deactivation (P/B 201)

B. Consumable Materials

Reference	Description	Specification
D00153	Fluid - Hydraulic Fluid, Fire Resistant (Interchangeable And Intermixable With BMS 3-11 Type V)	BMS3-11 Type IV
G01048	Lockwire - MS20995C32, Corrosion Resistant Steel - 0.032 Inch (0.8128 mm) Diameter	NASM20995

C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
4	Solenoid valve	27-21-91-02-330	AKS ALL
		27-21-91-02-332	AKS ALL
6	Electrohydraulic servo valve	27-21-91-02-230	AKS ALL
		27-21-91-02-232	AKS ALL
		27-21-91-02-300	AKS ALL
		27-21-91-02-302	AKS ALL
8	O-ring	27-21-91-02-226	AKS ALL
		27-21-91-02-296	AKS ALL
		27-21-91-02-328	AKS ALL

D. Location Zones

Zone	Area
211	Flight Compartment - Left
324	Vertical Fin - Rear Spar To Trailing Edge

E. Access Panels

Number	Name/Location
324DR	Vertical Fin, Trailing Edge Access

F. Prepare for the Installation

SUBTASK 22-23-21-860-008

- (1) Do this task: Pressure from the Rudder Hydraulic Systems A, B, and Standby - Deactivation, TASK 27-21-00-800-802.



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SUBTASK 22-23-21-860-009

- (2) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	7	C00285	YAW DAMPER AC
D	6	C01354	YAW DAMPER 2 DC
D	7	C00286	YAW DAMPER 1 DC

SUBTASK 22-23-21-010-004

- (3) Find this access panel:

Number Name/Location

324DR Vertical Fin, Trailing Edge Access

- (a) Remove the screws [1] and the skin panel [2] on the right side of the vertical fin to get access to the main rudder PCU:

G. Procedure

SUBTASK 22-23-21-020-003

- (1) Do these steps to install the solenoid valve [4]:

- (a) Remove the plugs on the main rudder PCU ports.
- (b) Replace the gasket plate [3].
- (c) Lubricate the o-ring [8] with hydraulic fluid, D00153.
- (d) Install the o-ring [8].
- (e) Install the gasket plate [3].
- (f) Install the solenoid valve [4].
- (g) Install the bolts [5] that attach the solenoid valve [4] to the main rudder PCU.
- (h) Tighten the bolts [5] to 54 in-lb (6.1 N·m) - 72 in-lb (8.1 N·m).
- (i) Install the MS20995C32 lockwire, G01048 on the bolts [5].

SUBTASK 22-23-21-020-004

- (2) Do these steps to install the electrohydraulic servo valve [6]:

- (a) Remove the plugs on the main rudder PCU ports.
- (b) Replace the gasket plate [9].
- (c) Replace the o-ring [8] if it is damaged.
- (d) Lubricate the o-ring [8] with hydraulic fluid, D00153.
- (e) Install the o-ring [8].
- (f) Install the gasket plate [9].
- (g) Install the electrohydraulic servo valve [6].
- (h) Install the bolts [7] that attach the electrohydraulic servo valve [6] to the main rudder PCU.
- (i) Tighten the bolts [7] to 54 in-lb (6.1 N·m) - 72 in-lb (8.1 N·m).
- (j) Install the MS20995C32 lockwire, G01048 on the bolts [7].



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H. Solenoid and Electrohydraulic Valves Installation Test

SUBTASK 22-23-21-710-001

- (1) Do this task: Rudder Solenoid and Electrohydraulic Servo Valves - Post Installation Test, TASK 22-23-21-740-801.

I. Put the Airplane Back to Its Usual Condition

SUBTASK 22-23-21-010-005

- (1) Install the skin panel [2] to the correct access panel:

Number Name/Location

324DR Vertical Fin, Trailing Edge Access

- (a) Install the screws [1] and the skin panel [2] on the right side of the vertical fin to close access to the main rudder PCU:

NOTE: The skin panel that contains the access panels is on the left side of the vertical fin. Do not remove this skin panel. Remove the skin panel on the right side of the vertical fin at the same level.

SUBTASK 22-23-21-860-010

- (2) Do this task: Remove External Power, TASK 24-22-00-860-814.

———— END OF TASK ————

EFFECTIVITY
AKS ALL

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MAIN RUDDER POWER CONTROL UNIT (PCU) SOLENOID AND ELECTROHYDRAULIC SERVO VALVES
- ADJUSTMENT/TEST

1. General

- A. This procedure has this task:
 - (1) An installation test of the main rudder power control unit (PCU) solenoid and electrohydraulic servo valves.
- B. The rudder solenoid and electrohydraulic servo valves are located on the main rudder PCU in the vertical fin.

TASK 22-23-21-740-801

2. Rudder Solenoid and Electrohydraulic Servo Valves - Post Installation Test

A. General

- (1) The post installation test makes sure that the solenoid and electrohydraulic servo valves are installed correctly.

B. References

Reference	Title
24-22-00-860-813	Supply External Power (P/B 201)
24-22-00-860-814	Remove External Power (P/B 201)
27-21-00-800-801	Rudder Hydraulic System A, B, or Standby Pressurization (P/B 201)
27-21-00-800-802	Pressure from the Rudder Hydraulic Systems A, B, and Standby - Deactivation (P/B 201)
34-21-00-820-801	Air Data Inertial Reference System - Alignment from the FMC CDU (P/B 201)
34-21-00-820-802	Air Data Inertial Reference System - Alignment from the ISDU (P/B 201)
34-61-00-400-801	Setting Zero Fuel Weight (P/B 201)

C. Location Zones

Zone	Area
117	Electrical and Electronics Compartment - Left
118	Electrical and Electronics Compartment - Right

D. Access Panels

Number	Name/Location
117A	Electronic Equipment Access Door

E. Post Installation Test

SUBTASK 22-23-21-860-001

- (1) Do this task: Supply External Power, TASK 24-22-00-860-813.

SUBTASK 22-23-21-860-002

WARNING: KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT CONTROL SURFACES. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

- (2) Do this task: Rudder Hydraulic System A, B, or Standby Pressurization, TASK 27-21-00-800-801.

EFFECTIVITY
AKS ALL

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SUBTASK 22-23-21-860-003

- (3) Make sure that these circuit breakers are closed:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	7	C00285	YAW DAMPER AC
D	6	C01354	YAW DAMPER 2 DC
D	7	C00286	YAW DAMPER 1 DC

SUBTASK 22-23-21-010-001

- (4) Open this access door:

Number Name/Location

117A	Electronic Equipment Access Door
------	----------------------------------

SUBTASK 22-23-21-820-001

- (5) Align ADIRS. To align it, do this task: Air Data Inertial Reference System - Alignment from the ISDU, TASK 34-21-00-820-802 or Air Data Inertial Reference System - Alignment from the FMC CDU, TASK 34-21-00-820-801.

SUBTASK 22-23-21-860-012

- (6) Do this task to enter the zero fuel weight: Setting Zero Fuel Weight, TASK 34-61-00-400-801.

SUBTASK 22-23-21-740-001

- (7) Do the Stall Management Yaw Damper Computer 1 servo test:

- (a) Push the ON/OFF key on Stall Management Yaw Damper (SMYD) Computer 1 (E3-2).

NOTE: SMYD BITE will operate only when the engines are off or when the flaps are up and the airspeed is less than 60 knots.

- (b) Make sure that the display shows EXISTING FAULTS?

- (c) Push and release the down arrow key until the display shows GROUND TESTS?

- (d) Push the YES key on the keypad.

- (e) Push and release the down arrow key until the display shows SERVO TEST?

NOTE: The display will show some warnings.

- (f) Push the YES key on the keypad.

- (g) Make sure that the display shows these indications:

1) WARNING! WARNING!

2) RUDDER MOVEMENT

3) RUDDER CLEAR?

- (h) Make sure that all personnel are clear of the rudder.

- (i) Push the YES key on the keypad.

1) Make sure that the display shows SYS B HYD ON?

2) Make sure that HYD PUMPS B switch on the P5 panel is ON.

- (j) Push the YES key on the keypad.

1) Make sure that the display shows FLT CONT B ON?

2) Make sure that the FLT CONTROL B switch on the P5 overhead panel is set to ON.

- (k) Push the YES key on the keypad.

1) Make sure that the display shows YAW DMPR ENGAGED?

EFFECTIVITY
AKS ALL

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WARNING: THE STEPS THAT FOLLOW WILL CAUSE THE RUDDER TO MOVE. MAKE SURE THAT ALL PERSONS AND EQUIPMENT ARE CLEAR OF THE RUDDER BEFORE YOU DO THESE STEPS. RUDDER MOVEMENT CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

- (l) Set the yaw damper engage switch on the P5 overhead panel to ON.
- (m) Push the YES key on the keypad.
 - 1) Make sure that the display shows ZERO COMMAND?
- (n) Push the YES key on the keypad.
- (o) Make sure that the display shows this indication:
 - 1) RUDDER MOVING
- (p) After approximately ten seconds, make sure that the display shows these indications:
 - 1) YD 0.0 ±0.2
 - 2) LVDT 0.0 ±0.2
 - 3) END ZERO COMMAND?
- (q) Push the YES key on the keypad.
- (r) Make sure that the display shows these indications:
 - 1) RUDDER MOVING
- (s) Push and release the down arrow key until the display shows SWEEP TEST?
- (t) Push the YES key on the keypad.
- (u) After approximately two seconds, make sure that the display shows this indication:
 - 1) RUDDER CMD LEFT
- (v) After approximately ten seconds, make sure that the display shows this indication:
 - 1) LVDT XXXXX

NOTE: The Xs are a number. You can ignore the value of the number.
- (w) After approximately two seconds, make sure that the display shows this indication:
 - 1) RUDDER CMD RIGHT
- (x) After approximately ten seconds, make sure that the display shows this indication:
 - 1) LVDT XXXXX

NOTE: The Xs are a number. You can ignore the value of the number.
- (y) After approximately two seconds, make sure that the display shows this indication:
 - 1) RUDDER CMD ZERO
- (z) After approximately ten seconds, make sure that the display shows these indications in sequence:
 - 1) LVDT XXXXX
 - NOTE: The Xs are a number. You can ignore the value of the number.
 - 2) TEST PASSED
- (aa) Push the ON/OFF switch on the Stall Management Yaw Damper (SMYD) Computer 1.
 - 1) Make sure that the display shows TURN OFF DISPLAY?
- (ab) Push the YES key on the keypad.

EFFECTIVITY
AKS ALL

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SUBTASK 22-23-21-860-004

WARNING: KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT CONTROL SURFACES. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

- (8) Do this task: Pressure from the Rudder Hydraulic Systems A, B, and Standby - Deactivation, TASK 27-21-00-800-802.

SUBTASK 22-23-21-010-002

- (9) Close this access door:

Number Name/Location

117A Electronic Equipment Access Door

SUBTASK 22-23-21-860-005

- (10) Do this task: Remove External Power, TASK 24-22-00-860-814.

———— END OF TASK ————

EFFECTIVITY
AKS ALL

22-23-21

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AUTOTHROTTLE SYSTEM - MAINTENANCE PRACTICES

1. General

- A. This procedure has these tasks:
- (1) Autothrottle System Deactivation.
 - (2) Autothrottle System Activation.

TASK 22-31-00-040-801

2. Autothrottle System - Deactivation

A. General

- (1) This procedure removes electrical power to the Autothrottle System.

B. References

Reference	Title
24-22-00-860-811	Supply Electrical Power (P/B 201)

C. Tools/Equipment

Reference	Description
STD-858	Tag - DO NOT OPERATE

D. Location Zones

Zone	Area
112	Area Forward of Nose Landing Gear Wheel Well
117	Electrical and Electronics Compartment - Left
118	Electrical and Electronics Compartment - Right
211	Flight Compartment - Left
212	Flight Compartment - Right

E. Procedure

SUBTASK 22-31-00-860-016

- (1) Open this circuit breaker and install safety tag:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
E	1	C00721	AUTOTHROTTLE DC 1

SUBTASK 22-31-00-860-017

- (2) Make sure engine start levers are in cutoff position and attach DO NOT OPERATE tag, STD-858.

F. Autothrottle System - Tryout

NOTE: This tryout is to make sure the Autothrottle system is in a zero energy state.

SUBTASK 22-31-00-860-020

- (1) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

SUBTASK 22-31-00-860-018

- (2) Make sure that this circuit breaker is open and has safety tag:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
E	1	C00721	AUTOTHROTTLE DC 1

EFFECTIVITY	AKS ALL
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SUBTASK 22-31-00-700-001

(3) Do these steps:

- (a) Push the INIT REF key on the FMC CDU keyboard.
 - (b) Push the line select key (LSK) adjacent to INDEX.
 - (c) Push the LSK adjacent to MAINT.
 - (d) Push the LSK adjacent to A/T.
- 1) Make sure the autothrottle warning lights on the autoflight status annunciators (P1 and P3 panels) do not come on.

———— END OF TASK ————

TASK 22-31-00-440-801

3. Autothrottle System - Activation

A. General

- (1) This procedure adds electrical power to the Autothrottle System.

B. Location Zones

Zone	Area
112	Area Forward of Nose Landing Gear Wheel Well
117	Electrical and Electronics Compartment - Left
118	Electrical and Electronics Compartment - Right
211	Flight Compartment - Left
212	Flight Compartment - Right

C. Procedure

SUBTASK 22-31-00-860-019

- (1) Remove the safety tag and close this circuit breaker:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
E	1	C00721	AUTOTHROTTLE DC 1

———— END OF TASK ————

EFFECTIVITY
AKS ALL

22-31-00



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AUTOTHROTTLE SYSTEM - ADJUSTMENT/TEST

1. General

- A. This procedure contains scheduled maintenance task data.
- B. This procedure has these tasks:
 - (1) The autothrottle system operational test.
 - (2) The autothrottle system test.

TASK 22-31-00-710-801

2. Autothrottle System - Operational Test

A. General

- (1) The operational test uses autothrottle BITE to do a fast check of the system. Use the flight management computer control display unit (FMC CDU) on the P9 panel to do the BITE procedure.

NOTE: The A/T - P/RST and the A/P - P/RST lights will stay on during Autothrottle BITE testing.

- (2) Use the CURRENT STATUS test in autothrottle BITE to do the operational test.

B. References

Reference	Title
24-22-00-860-812	Remove Electrical Power (P/B 201)
24-22-00-860-813	Supply External Power (P/B 201)

C. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

D. Procedure

SUBTASK 22-31-00-860-001

- (1) Do this task: Supply External Power, TASK 24-22-00-860-813.

SUBTASK 22-31-00-860-003

- (2) Make sure that the IRS-L and IRS-R mode select switches on the P5 panel are not in the OFF position.

SUBTASK 22-31-00-860-014

- (3) Set the Captain and Center panel light control to full bright.

SUBTASK 22-31-00-740-001

- (4) Do this BITE test:

- (a) Push the INIT REF key on the FMC CDU keyboard.
- (b) Push the line select key (LSK) adjacent to INDEX.
- (c) Push the LSK adjacent to MAINT.
- (d) Push the LSK adjacent to A/T.

- 1) Make sure the autothrottle warning lights on the autoflight status annunciators (P1 and P3 panels) come on continuously.



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CAUTION: MAKE SURE THAT ENGINE START LEVERS ARE IN CUTOFF. IF THE ENGINE START LEVERS ARE NOT IN CUTOFF, THE ENGINE START SEQUENCE CAN OCCUR.

- (e) Push the LSK adjacent to CURRENT STATUS.
- (f) Do the instructions on the CDU.
- (g) Push the LSK adjacent to CONTINUE.
 - 1) Make sure that TEST IN PROGRESS shows on the CDU.
 - 2) Make sure that the A/T switch on the P7 panel automatically goes back to OFF.
 - 3) Make sure that NO FAULTS shows on the CDU when the test is completed.
- (h) Push the LSK adjacent to INDEX.
- (i) Do the instructions on the CDU.
- (j) Push the LSK adjacent to CONTINUE.
 - 1) Make sure that A/T BITE TEST index shows.
- (k) Push the LSK adjacent to INDEX.
- (l) Push the INIT REF key on the FMC CDU keyboard.
- (m) If the autothrottle warning lights flash, push the front of the lights to turn them off.

NOTE: The autothrottle warning lights are on the autoflight status annunciators on the P1 and P3 panels.

SUBTASK 22-31-00-860-004

- (5) If IRS outputs are no longer necessary, set the IRS-L and IRS-R mode select switches on the P5 panel to OFF.

SUBTASK 22-31-00-860-005

- (6) Do this task: Remove Electrical Power, TASK 24-22-00-860-812.

———— END OF TASK ————

TASK 22-31-00-710-802

3. Autothrottle System - System Test

A. General

- (1) The system test uses autothrottle BITE to make sure the system operates correctly. Use the flight management computer control display unit (FMC CDU) on the P9 panel to do the BITE procedures.

NOTE: The A/T - P/RST and the A/P - P/RST light will stay on during Autothrottle BITE testing.

- (2) Use the INTERACTIVE tests in autothrottle BITE to do the system test.

B. References

Reference	Title
24-22-00-860-812	Remove Electrical Power (P/B 201)
24-22-00-860-813	Supply External Power (P/B 201)

C. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

EFFECTIVITY
AKS ALL

22-31-00

D633A101-AKS

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D. Procedure

SUBTASK 22-31-00-860-006

- (1) Do this task: Supply External Power, TASK 24-22-00-860-813.

SUBTASK 22-31-00-710-001

- (2) Unless you have completed it, do this task: Autothrottle System - Operational Test, TASK 22-31-00-710-801.

SUBTASK 22-31-00-860-008

- (3) Make sure that the IRS-L and IRS-R mode select switches on the P5 panel are not in the OFF position.

SUBTASK 22-31-00-860-015

- (4) Set the Captain and Center panel light control to full bright.

E. Mode annunciation test

SUBTASK 22-31-00-740-002

- (1) Do these steps for the mode annunciation test:

- (a) Push the INIT REF key on the FMC CDU keyboard.
- (b) Push the line select key (LSK) adjacent to INDEX.
- (c) Push the LSK adjacent to MAINT.
- (d) Push the LSK adjacent to A/T.

NOTE: The two autothrottle warning lights come on during BITE.

- (e) Push the LSK adjacent to INTERACTIVE.
- (f) Push the LSK adjacent to MODE ANNUNCIATION.
- (g) Follow the instructions on the CDU.
- (h) Push the LSK adjacent to INTERACTIVE.
- (i) Push the LSK adjacent to MODE ANNUNCIATION.
- (j) Set the displays source switch on the P5 panel to ALL ON 1.
 - 1) Make sure that N1 shows on the captain's and first officer's outboard display on the P1 panel.
- (k) Push the LSK adjacent to YES.
 - 1) Make sure that FMC SPD shows on the captain's and first officer's outboard display on the P1 panel.
- (l) Set the displays source switch on the P5 panel to ALL ON 2.
- (m) Push the LSK adjacent to YES.
 - 1) Make sure that RETARD shows on the captain's and first officer's outboard display on the P1 panel.
- (n) Push the LSK adjacent to YES.
 - 1) Make sure that MCP SPD shows on the captain's and first officer's outboard display on the P1 panel.
- (o) Push the LSK adjacent to YES.
- (p) Set the displays source switch on the P5 panel to AUTO.
- (q) Push the LSK adjacent to YES.



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- 1) Make sure that TEST shows on the captain's and first officer's outboard display on the P1 panel.
- (r) Push the LSK adjacent to YES.
 - 1) Make sure that A/T LIM shows on the engine display.
- (s) Push the LSK adjacent to YES.
 - 1) Make sure that ARM shows on the captain's and first officer's outboard display on the P1 panel.
- (t) Push the LSK adjacent to YES.
 - 1) Make sure that GA shows on the captain's and first officer's outboard display on the P1 panel.
- (u) Push the LSK adjacent to YES.
 - 1) Make sure that THR HLD shows on the captain's and first officer's outboard display on the P1 panel.
- (v) Push the LSK adjacent to YES.
- (w) Push the LSK adjacent to INDEX to return to the INTERACTIVE INDEX page.

F. Input discretes test

SUBTASK 22-31-00-740-003

- (1) Do these steps for the input discretes test:
 - (a) Push the LSK adjacent to INPUT DISCRETES.
 - (b) Follow the instructions on the CDU.
NOTE: This test checks numerous inputs of the A/T system. If a fault does occur during the tests troubleshooting tips will be displayed at test completion.
 - (c) Make sure that TEST PASSED shows on the CDU.
 - (d) Push the LSK adjacent to INDEX to return to the INTERACTIVE INDEX page.

G. Disengage/warnings test

SUBTASK 22-31-00-740-004

- (1) Do these steps for the disengage/warnings test:
 - (a) Push the LSK adjacent to DISENG/WARNINGS.
 - (b) Follow these instructions shown on the CDU:
 - 1) Set the autothrottle switch to ARM.
 - 2) Push and release the A/T disengage thumb switch on thrust lever number 1.
 - a) Make sure that the autothrottle switch goes to OFF and the captain's and first officer's autothrottle warning lights flash.
NOTE: The autothrottle warning lights are on the autoflight status annunciators on the P1 and P3 panels. When one light comes on, the other light goes out in a continuous sequence of flashes.
 - 3) Set the autothrottle switch to ARM.
 - 4) Push and release the A/T disengage thumb switch on thrust lever number 2.
 - a) Make sure that the autothrottle switch goes to OFF and the captain's and first officer's autothrottle warning lights flash.
 - 5) Set the autothrottle switch to ARM.

EFFECTIVITY	AKS ALL
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- 6) Push the LSK adjacent to PRESS.
 - a) Make sure that the autothrottle switch goes to OFF and the captain's and first officer's autothrottle warning lights flash.
- (c) Follow these instructions shown on the CDU:
 - 1) Set the autothrottle switch to ARM.
 - 2) Disengage the autothrottle.
 - a) Make sure that the captain's and first officer's autothrottle warning lights flash.
 - 3) Push the captain's autothrottle warning light.
 - a) Make sure that the autothrottle warning lights go out.
 - 4) Set the autothrottle switch to ARM.
 - 5) Push the LSK adjacent to PRESS.
 - a) Make sure that the captain's and first officer's autothrottle warning lights flash.
 - 6) Push the first officer's autothrottle warning light.
 - a) Make sure that the autothrottle warning lights go out.
 - 7) Set the autothrottle switch to ARM.
 - 8) Push the LSK adjacent to PRESS.
 - a) Make sure that the captain's and first officer's autothrottle warning lights flash.
 - 9) Push and release the A/T disengage thumb switch on thrust lever number 1.
 - a) Make sure that the autothrottle warning lights go out.
 - 10) Set the autothrottle switch to ARM.
 - 11) Push the LSK adjacent to PRESS.
 - a) Make sure that the captain's and first officer's autothrottle warning lights flash.
 - 12) Push and release the A/T disengage thumb switch on thrust lever number 2.
 - a) Make sure that the autothrottle warning lights go out.
 - b) Make sure that TEST PASSED shows on the CDU.
 - 13) Push the LSK adjacent to INDEX.
 - a) Make sure that the A/T BITE TEST INTERACTIVE page shows on the CDU.

H. Servo motor test

SUBTASK 22-31-00-860-011

- (1) Do these steps for the servo motor test:
 - (a) Push the LSK adjacent to THROTTLE TESTS.

CAUTION: MAKE SURE THAT ENGINE START LEVERS ARE IN CUTOFF. IF THE ENGINE START LEVERS ARE NOT IN CUTOFF, THE ENGINE START SEQUENCE CAN OCCUR.

- (b) Do the instructions on the CDU.
 - (c) Set the engine start switches to CONT.
 - (d) Set the throttle levers to idle.
 - (e) Push the LSK adjacent to CONTINUE.

SUBTASK 22-31-00-740-008

- (2) Push the LSK adjacent to SERVO MOTOR TEST.

EFFECTIVITY
AKS ALL

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- (a) Do the instructions on the CDU.
NOTE: Make sure that the throttle levers are set to idle and the autothrottle is engaged.
- (b) Push the LSK adjacent to CONTINUE.
 - 1) Make sure that TEST IN PROGRESS is replaced by NO FAULTS when the test is completed.
NOTE: No corrective action is required if only maintenance messages 22-31762, 22-31763, 22-31790 and/or 22-31791 show with no other maintenance messages on the CDU display. This is a nuisance fault.
- (c) Push the LSK adjacent to INDEX.
 - 1) Make sure that the A/T BITE TEST INTERACTIVE THROTTLE TESTS page shows on the CDU.
- (d) Push the LSK adjacent to INDEX again.
- (e) Do the instructions on the CDU.
- (f) Push the LSK adjacent to CONTINUE.
 - 1) Make sure that the A/T BITE TEST INTERACTIVE page shows on the CDU.

I. Range check

SUBTASK 22-31-00-860-012

- (1) Do these steps for the range check:
 - (a) Push the LSK adjacent to THROTTLE TESTS.
CAUTION: MAKE SURE THAT ENGINE START LEVERS ARE IN CUTOFF. IF THE ENGINE START LEVERS ARE NOT IN CUTOFF, THE ENGINE START SEQUENCE CAN OCCUR.
 - (b) Do the instructions on the CDU.
 - (c) Push the LSK adjacent to CONTINUE.

SUBTASK 22-31-00-740-009

- (2) Push the LSK adjacent to RANGE CHECK.
 - (a) Do the instructions on the CDU.
 - (b) Push the LSK adjacent to INDEX.
 - 1) Make sure that the A/T BITE TEST INTERACTIVE THROTTLE TESTS page shows on the CDU.
 - (c) Push the LSK adjacent to INDEX again.
 - (d) Do the instructions on the CDU.
 - (e) Push the LSK adjacent to CONTINUE.
 - 1) Make sure that the A/T BITE TEST INTERACTIVE page shows on the CDU.

J. Torque test

SUBTASK 22-31-00-860-013

- (1) Do these steps for the torque test:
 - (a) Push the LSK adjacent to THROTTLE TESTS.



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CAUTION: MAKE SURE THAT ENGINE START LEVERS ARE IN CUTOFF. IF THE ENGINE START LEVERS ARE NOT IN CUTOFF, THE ENGINE START SEQUENCE CAN OCCUR.

- (b) Do the instructions on the CDU.
- (c) Push the LSK adjacent to CONTINUE.

SUBTASK 22-31-00-740-007

- (2) Push the LSK adjacent to TORQUE TEST.
 - (a) Do the instructions on the CDU.
 - (b) Push the LSK adjacent to CONTINUE.
 - 1) Make sure that the torque does not exceed 11 in-oz while the thrust levers are moving.
 - 2) Make sure that the torque does not exceed 17 in-oz while motors are driving the thrust levers against the aft stop.
 - (c) Push the LSK adjacent to INDEX.
 - 1) Make sure that the A/T BITE TEST INTERACTIVE THROTTLE TESTS page shows on the CDU.
 - (d) Push the LSK adjacent to INDEX again.
 - (e) Do the instructions on the CDU.
 - (f) Push the LSK adjacent to CONTINUE.
 - (g) Push the LSK adjacent to INDEX.
 - (h) Push the LSK adjacent to INDEX again.
 - (i) Make sure that the MAIN BITE INDEX page shows on the CDU.

K. Identification/configuration test

SUBTASK 22-31-00-740-006

- (1) Do these steps for the identification/configuration test:
 - (a) Push the LSK adjacent to A/T.
 - 1) Make sure that the A/T BITE TEST page shows on the CDU.
 - (b) Push the LSK adjacent to IDENT/CONFIG.
 - 1) Make sure the CDU options page shows:

A/T BITE TEST
CONFIG
*OPTIONS SELECTED
(Applicable Model)
AIRPLANE CNFG
AKS 001-004 PRE SB 737-22-1295
ALT ALERT OPT 2
AKS 005-999; AKS 001-004 POST SB 737-22-1295
ALT ALERT OPT 3

EFFECTIVITY

AKS ALL

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AKS 005-999; AKS 001-004 POST SB 737-22-1295 (Continued)

(Continued)

A/T BITE TEST	
AKS ALL	A/S WARN
AKS 009-999	CWS OVERRIDE
AKS ALL	

- 2) Push the Next Page key until you see all the pages.

A/T BITE TEST	
	CONFIG
	*OPTIONS SELECTED
	CWS WARN
	DUAL CHAN
	INHIBIT G/S BEFORE LOC
AKS 014, 019, 026-999	
	MMR/GLS
AKS ALL	
	HDG SEL TOGA
	FMC LNAV
	SPD/ALT INTERVENTION
	EDFCS
	BL-01
	CAT IIIB AIRPLANE
	OPC ENABLED (if applicable)
	A/T OPER DISABLED (if applicable)
	WINGLETS INSTALLED
	SHORT FIELD PERF
	USE EXTERNAL A/T (if applicable)

- (c) Push the LSK adjacent to INDEX.

- 1) Make sure that the A/T BITE TEST INTERACTIVE page shows on the CDU.

- (d) Push the INIT REF key on the FMC CDU keyboard.

SUBTASK 22-31-00-860-009

- (2) If IRS outputs are no longer necessary, set the IRS-L and IRS-R mode select switches on the P5 panel to OFF.

EFFECTIVITY
AKS ALL

22-31-00

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SUBTASK 22-31-00-860-010

- (3) Do this task: Remove Electrical Power, TASK 24-22-00-860-812.

———— END OF TASK ——

EFFECTIVITY
AKS ALL

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AUTOTHROTTLE DISENGAGE SWITCH - REMOVAL/INSTALLATION

1. General

- A. This procedure has two tasks:
- (1) A removal of the autothrottle disengage switch (S113 or S114).
 - (2) An installation of the autothrottle disengage switch.
 - (3) The autothrottle disengage switches are installed in the handles of the forward thrust levers.

TASK 22-31-51-000-801

2. Autothrottle Disengage Switch Removal

(Figure 401)

A. Location Zones

<u>Zone</u>	<u>Area</u>
211	Flight Compartment - Left
212	Flight Compartment - Right

B. Prepare for the Removal

SUBTASK 22-31-51-860-001

- (1) Open this circuit breaker and install safety tag:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	1	C00721	AUTOTHROTTLE DC 1

C. Autothrottle Disengage Switch Removal

SUBTASK 22-31-51-020-001

- (1) Remove the snap ring [1] from the knob [6].

SUBTASK 22-31-51-020-002

- (2) Remove the retainer [2].

SUBTASK 22-31-51-020-003

- (3) Remove the O-ring [3].

SUBTASK 22-31-51-020-004

- (4) Remove the autothrottle disengage switch [7] from the knob [6].

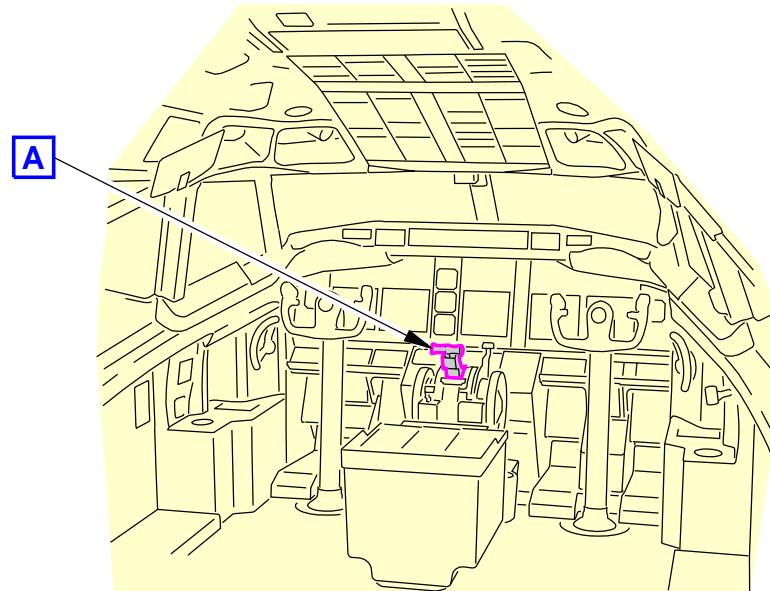
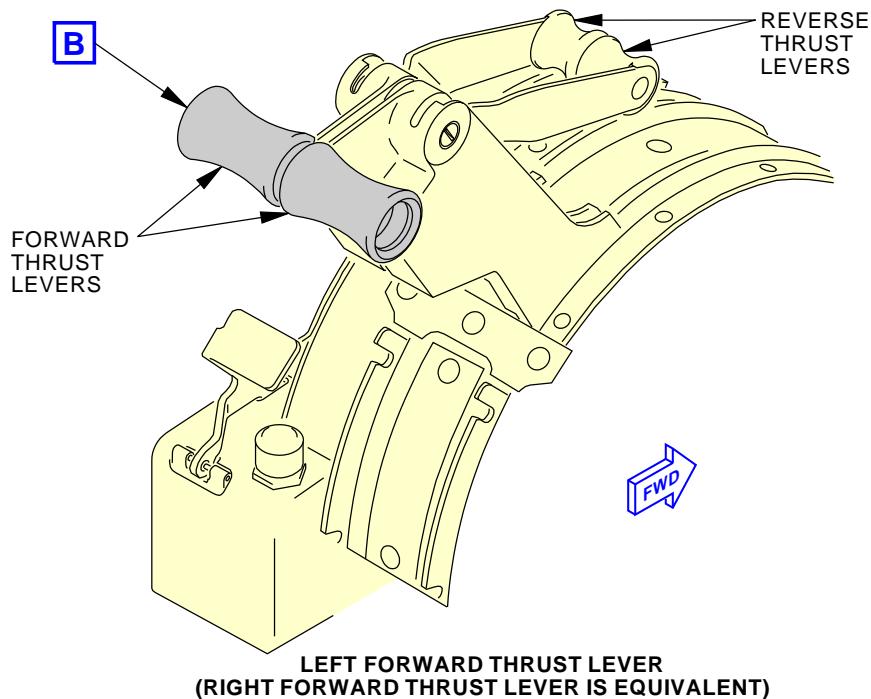
SUBTASK 22-31-51-020-005

- (5) Remove the screws [4] that attach the electrical terminal lugs [5] to the autothrottle disengage switch [7].

———— END OF TASK ————



22-31-51

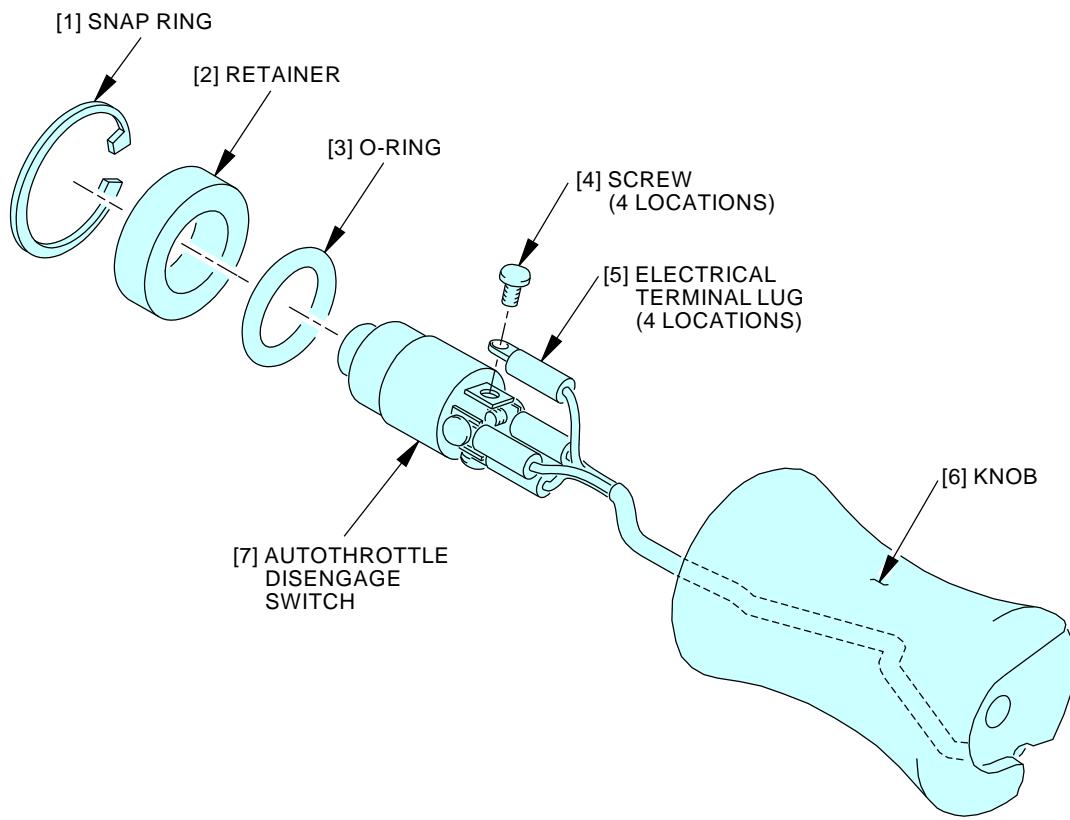

FLIGHT COMPARTMENT

**LEFT FORWARD THRUST LEVER
(RIGHT FORWARD THRUST LEVER IS EQUIVALENT)**
A

G48570 S0006564188_V2

**Autothrottle Disengage Switch Installation
Figure 401/22-31-51-990-801 (Sheet 1 of 2)**

 EFFECTIVITY
AKS ALL
22-31-51

D633A101-AKS



B

G49441 S0006564189_V2

Autothrottle Disengage Switch Installation
Figure 401/22-31-51-990-801 (Sheet 2 of 2)

EFFECTIVITY
AKS ALL

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TASK 22-31-51-400-801

3. Autothrottle Disengage Switch Installation

(Figure 401)

A. References

Reference	Title
24-22-00-860-812	Remove Electrical Power (P/B 201)
24-22-00-860-813	Supply External Power (P/B 201)

B. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
7	Disengage switch	22-31-51-03-030	AKS ALL

C. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

D. Autothrottle Disengage Switch Installation

SUBTASK 22-31-51-862-001

- (1) Make sure that this circuit breaker is open and has safety tag:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
E	1	C00721	AUTOTHROTTLE DC 1

SUBTASK 22-31-51-020-006

- (2) Install the screws [4] that attach the electrical terminal lugs [5] to the autothrottle disengage switch [7].

SUBTASK 22-31-51-420-001

- (3) Install the autothrottle disengage switch [7] into the knob [6].

SUBTASK 22-31-51-420-002

- (4) Install the O-ring [3] on the autothrottle disengage switch [7].

SUBTASK 22-31-51-420-003

- (5) Install the retainer [2] on the autothrottle disengage switch [7].

SUBTASK 22-31-51-420-004

- (6) Install the snap ring [1].

E. Installation test

SUBTASK 22-31-51-860-002

- (1) Do this task: Supply External Power, TASK 24-22-00-860-813.

SUBTASK 22-31-51-860-018

- (2) Remove the safety tag and close this circuit breaker:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
E	1	C00721	AUTOTHROTTLE DC 1

SUBTASK 22-31-51-860-005

- (3) Push the INIT REF key on the FMC CDU keyboard.

EFFECTIVITY
AKS ALL

22-31-51



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SUBTASK 22-31-51-860-006

- (4) Push the line select key (LSK) adjacent to INDEX.

SUBTASK 22-31-51-860-007

- (5) Push the LSK adjacent to MAINT.

SUBTASK 22-31-51-860-008

- (6) Push the LSK adjacent to A/T.

NOTE: The two autothrottle warning lights come on during BITE.

SUBTASK 22-31-51-860-009

- (7) Push the LSK adjacent to INTERACTIVE.

SUBTASK 22-31-51-860-010

- (8) Push the LSK adjacent to INPUT DISCRETES TEST.

SUBTASK 22-31-51-860-011

- (9) Follow the instructions on the CDU.

SUBTASK 22-31-51-860-012

- (10) Push the NEXT PAGE key on the CDU.

- (a) Push and hold the A/T disengage thumb switch on thrust lever number 1.

- 1) Make sure that the CDU indication adjacent to THRUST LEVER DISENG SW changes from NOT PRESSED to PRESSED.

- (b) Release the A/T disengage thumb switch on thrust lever number 1.

- 1) Make sure that the CDU indication adjacent to THRUST LEVER DISENG SW changes from PRESSED to NOT PRESSED.

- (c) Push and hold the A/T disengage thumb switch on thrust lever number 2.

- 1) Make sure that the CDU indication adjacent to THRUST LEVER DISENG SW changes from NOT PRESSED to PRESSED.

- (d) Release the A/T disengage thumb switch on thrust lever number 2.

- 1) Make sure that the CDU indication adjacent to THRUST LEVER DISENG SW changes from PRESSED to NOT PRESSED.

SUBTASK 22-31-51-860-013

- (11) Push the LSK adjacent to INDEX.

SUBTASK 22-31-51-860-014

- (12) Push the LSK adjacent to INDEX again.

SUBTASK 22-31-51-860-015

- (13) Do the instructions on the CDU.

SUBTASK 22-31-51-860-016

- (14) Push the LSK adjacent to CONTINUE.

SUBTASK 22-31-51-860-017

- (15) Push the LSK adjacent to INDEX.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 22-31-51-860-004

- (1) Do this task: Remove Electrical Power, TASK 24-22-00-860-812.

———— END OF TASK ————

EFFECTIVITY
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AUTOTHROTTLE BRAKE ASSEMBLY - REMOVAL/INSTALLATION

1. General

- A. This procedure has two tasks:
- (1) A removal of the autothrottle brake assembly.
 - (2) An installation of the autothrottle brake assembly.

TASK 22-31-81-000-801

2. Autothrottle Brake Assembly - Removal

(Figure 401)

A. General

- (1) There are two autothrottle brake assemblies on an airplane.
- (2) The autothrottle brake assemblies are installed on the autothrottle assembly. The autothrottle assembly is located inside the forward access door.

B. References

Reference	Title
22-31-91-020-801	Autothrottle Servo Motor and Gearbox Removal (P/B 401)
76-11-05-000-801-F00	Thrust Lever Angle Resolver and Autothrottle Brake Assembly Removal (P/B 401)

C. Location Zones

Zone	Area
112	Area Forward of Nose Landing Gear Wheel Well
211	Flight Compartment - Left
212	Flight Compartment - Right

D. Prepare for the Removal

SUBTASK 22-31-81-000-001

- (1) Remove the associated autothrottle servo motor and gearbox. To remove it, do this task: Autothrottle Servo Motor and Gearbox Removal, TASK 22-31-91-020-801.

SUBTASK 22-31-81-010-001

- (2) Remove the associated autothrottle resolver. To remove it, do this task: Thrust Lever Angle Resolver and Autothrottle Brake Assembly Removal, TASK 76-11-05-000-801-F00.

E. Autothrottle Brake Assembly Removal

SUBTASK 22-31-81-020-001

- (1) Do these steps to disconnect the thrust lever connecting rod [6]:
 - (a) Remove the cotter pin [3].
 - (b) Remove the bolt [1], washer [5], and nut [4] that holds the thrust lever connecting rod [6] to the brake assembly [2].

SUBTASK 22-31-81-020-002

- (2) Remove the bolt [10], washer [9], and nut [8] to disconnect the control rod [11].

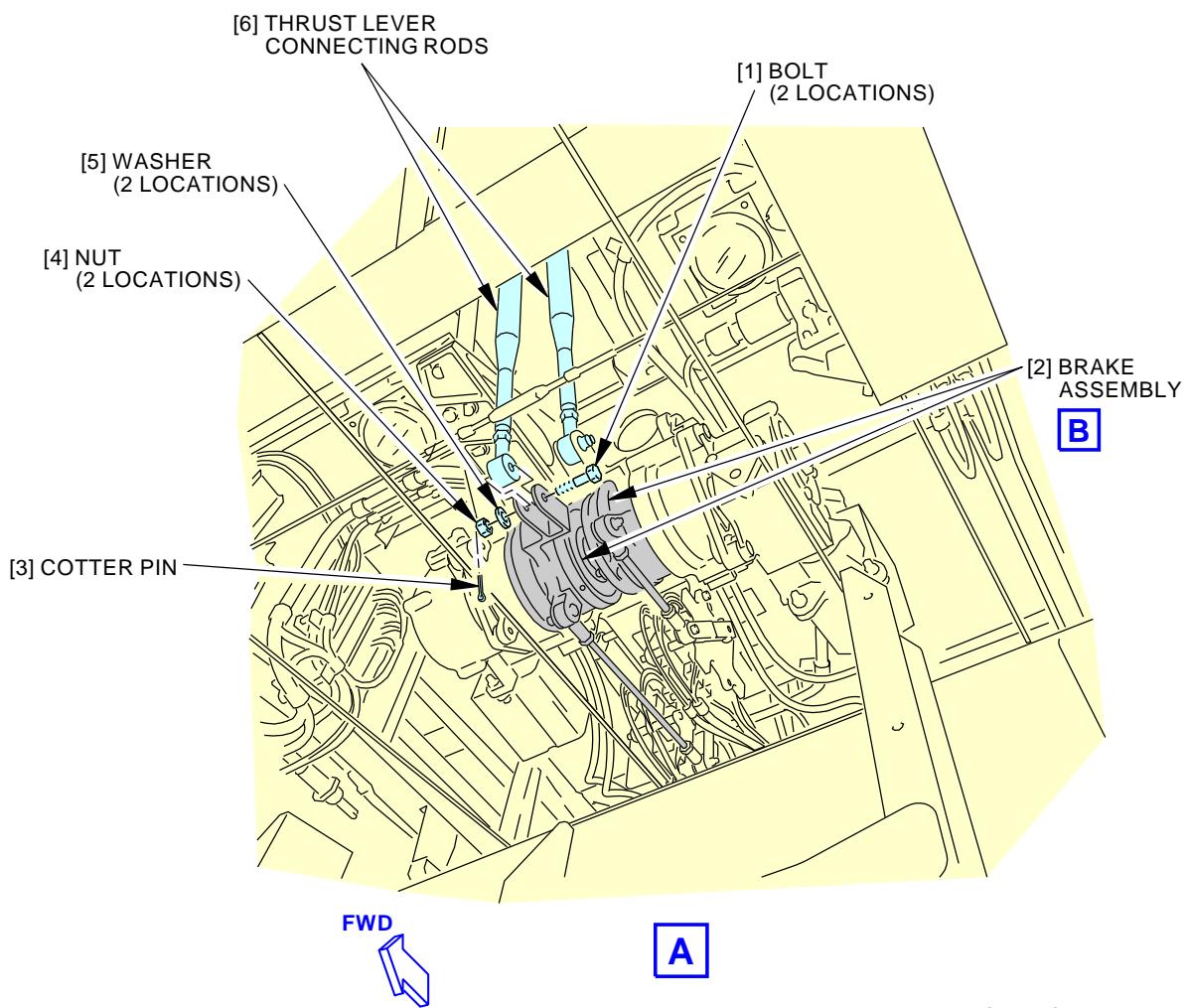
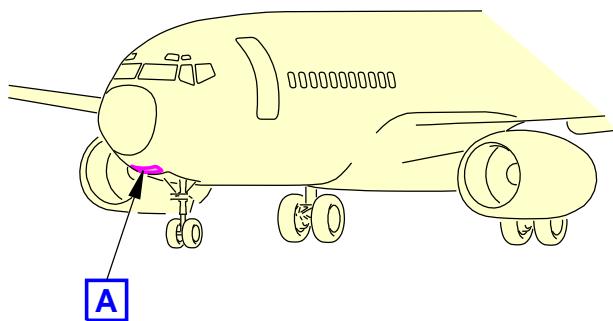
SUBTASK 22-31-81-010-002

- (3) Slide the brake assembly [2] off the shaft [7].

———— END OF TASK ————

EFFECTIVITY
AKS ALL

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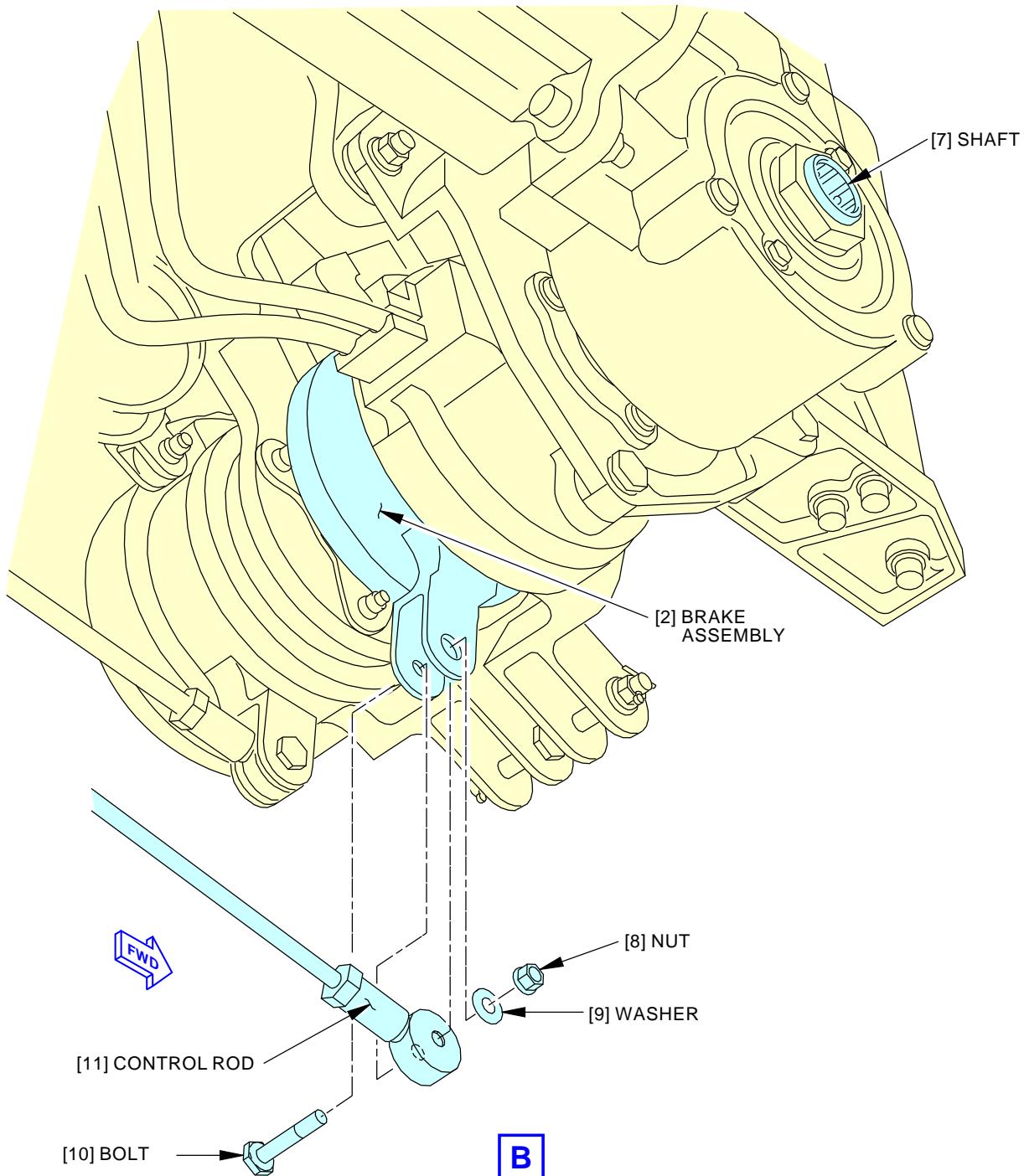
Brake Assembly Installation
Figure 401/22-31-81-990-801 (Sheet 1 of 2)

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Brake Assembly Installation
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TASK 22-31-81-400-801

3. Autothrottle Brake Assembly - Installation

(Figure 401)

A. References

Reference	Title
22-31-91-400-801	Autothrottle Servo Motor and Gearbox Installation (P/B 401)
76-11-05-400-801-F00	Thrust Lever Angle Resolver and Autothrottle Brake Assembly Installation (P/B 401)

B. Consumable Materials

Reference	Description	Specification
D00013	Grease - Aircraft And Instrument Grease	MIL-PRF-23827 (NATO G-354) (Supersedes MIL-G-23827)
D00015	Grease - Aircraft Bearing (Use BMS 3-24 until existing stocks are depleted, BMS 3-33 supersedes BMS 3-24)	BMS3-24 (Superseded by BMS3-33)

C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
2	Brake assembly	22-31-81-01-105	AKS ALL
		22-31-81-02-105	AKS ALL

D. Location Zones

Zone	Area
112	Area Forward of Nose Landing Gear Wheel Well
210	Subzone - Control Compartment - Body Station 178.00 to Body Station 259.50

E. Autothrottle Brake Assembly Installation

SUBTASK 22-31-81-420-001

- (1) Do these steps to install the brake assembly [2]:
 - (a) Apply grease, D00013 or grease, D00015 to the shaft [7].
 - (b) Install the brake assembly [2] on the autothrottle shaft [7].
 - (c) Attach the control rod [11] to the brake assembly [2] with the bolt [10], washer [9], and nut [8].
 - (d) Install the bolt [1] with its head on the inboard side of the thrust lever connecting rod [6].
 - (e) Install the nut [4] and washer [5].
 - 1) Install the cotter pin [3].

SUBTASK 22-31-81-400-001

- (2) Install the autothrottle resolver. To install it, do this task: Thrust Lever Angle Resolver and Autothrottle Brake Assembly Installation, TASK 76-11-05-400-801-F00.

SUBTASK 22-31-81-400-002

- (3) Install the autothrottle servo motor and gearbox. To install it, do this task: Autothrottle Servo Motor and Gearbox Installation, TASK 22-31-91-400-801.

— END OF TASK —

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AUTO THROTTLE SERVO MOTOR AND GEARBOX - REMOVAL/INSTALLATION

1. General

- A. This procedure has two tasks:
 - (1) A removal of the autothrottle servo motor and the gearbox.
 - (2) An installation of the autothrottle servo motor and the gearbox.
- B. The autothrottle servo motors (M1836 and M1837) are accessed thru opening the forward access door.

TASK 22-31-91-020-801

2. Autothrottle Servo Motor and Gearbox Removal

(Figure 401)

A. General

- (1) The autothrottle servo motor (referred to as the servo motor) is installed on the gearbox of the autothrottle assembly.
- (2) The gearbox is installed on the autothrottle assembly.
- (3) The servo motor and the gearbox can also be removed and installed as a unit. To remove both as a unit, do not remove the servo motor from the gearbox.

B. Location Zones

Zone	Area
112	Area Forward of Nose Landing Gear Wheel Well
211	Flight Compartment - Left
212	Flight Compartment - Right

C. Access Panels

Number	Name/Location
112A	Forward Access Door

D. Prepare for the Removal

SUBTASK 22-31-91-860-001

- (1) Open this circuit breaker and install safety tag:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
E	1	C00721	AUTOTHROTTLE DC 1

SUBTASK 22-31-91-860-010

- (2) Attach the DO-NOT-OPERATE tags to the thrust levers.

SUBTASK 22-31-91-010-001

- (3) To gain access to the autothrottle servo motor,

Open this access door:

Number	Name/Location
112A	Forward Access Door

E. Autothrottle Servo Motor Removal

SUBTASK 22-31-91-020-001

- (1) Remove the electrical connector [7] from the servo motor [6].

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SUBTASK 22-31-91-020-002

- (2) Remove the servo motor [6] from the gearbox [1]:
 - (a) Remove the screws [8], nuts [10], and washers [9] that hold the servo motor [6] to the gearbox [1].
 - (b) Remove the servo motor [6].

F. Gearbox Removal

SUBTASK 22-31-91-020-003

- (1) Remove the gearbox [1] from the support bracket:
 - (a) Remove the screw [4] and washer [3] from the ramp plug [2].
 - (b) Remove the ramp plug [2].
 - (c) Remove the bolts [5] and washers [11] from the gearbox [1].
 - (d) Remove the gearbox [1].

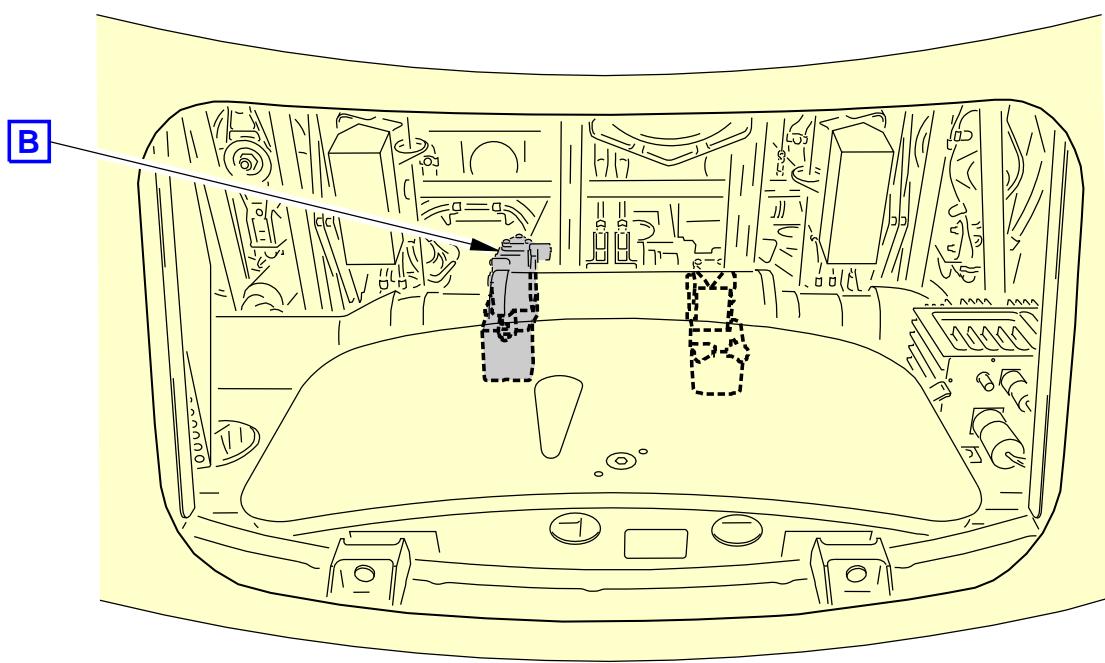
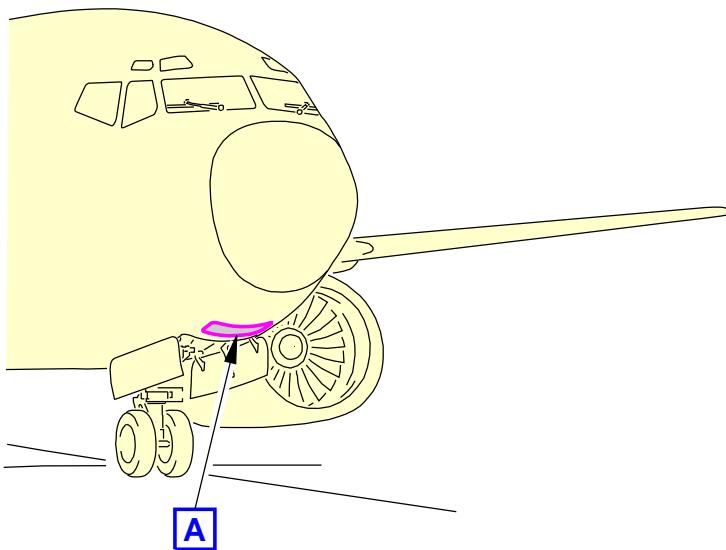
———— END OF TASK ————

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↑
**F
W
D**

FORWARD ACCESS DOOR

A

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Autothrottle Servo Motor and Gearbox Installation
Figure 401/22-31-91-990-801 (Sheet 1 of 2)

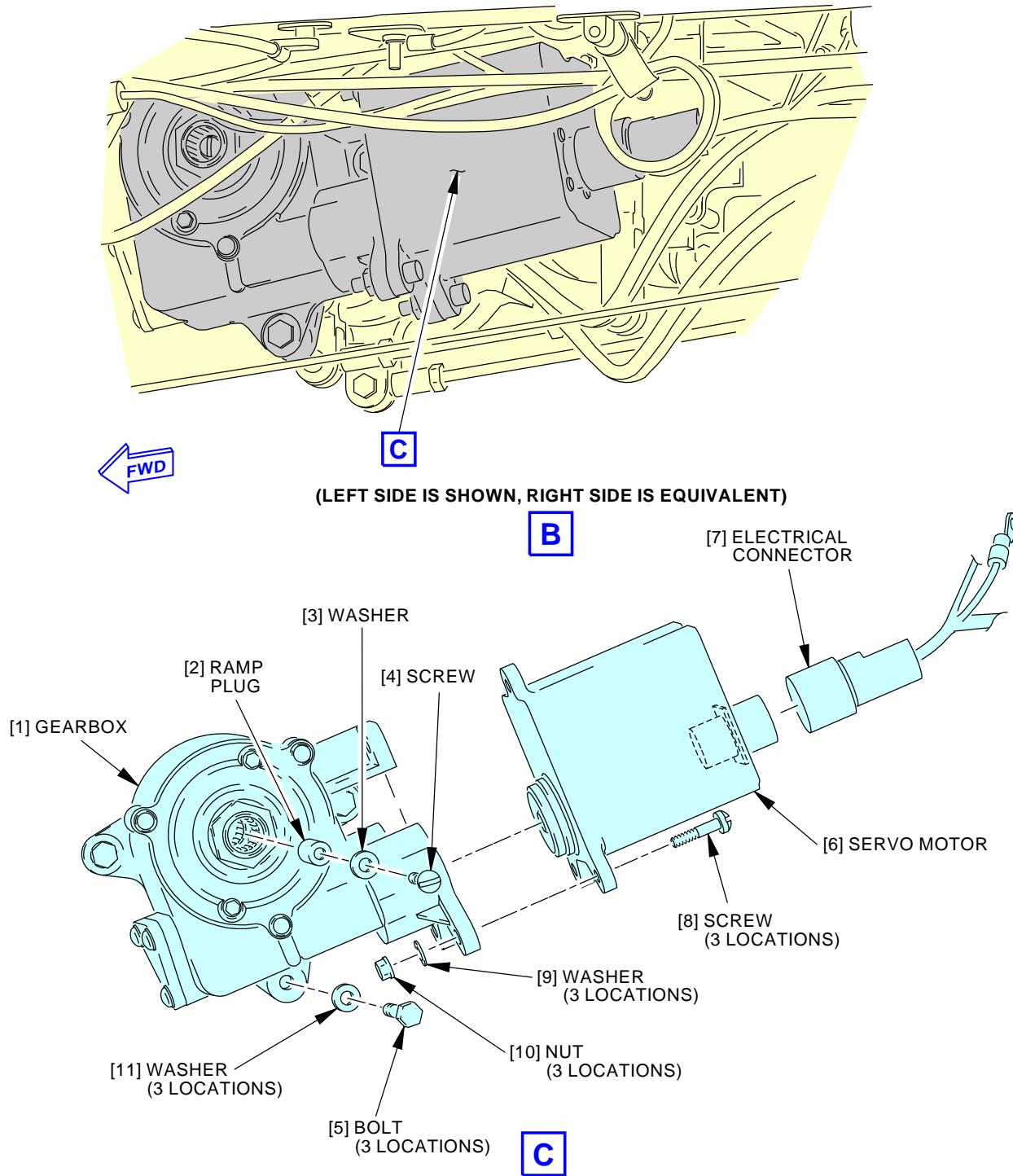
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Autothrottle Servo Motor and Gearbox Installation
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TASK 22-31-91-400-801

3. Autothrottle Servo Motor and Gearbox Installation

(Figure 401)

A. References

Reference	Title
22-31-00-710-802	Autothrottle System - System Test (P/B 501)
24-22-00-860-813	Supply External Power (P/B 201)
24-22-00-860-814	Remove External Power (P/B 201)

B. Consumable Materials

Reference	Description	Specification
D00633	Grease - Aircraft General Purpose	BMS3-33

C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Gearbox	22-31-81-01-020	AKS ALL
		22-31-81-02-020	AKS ALL
		22-31-91-02-120	AKS ALL
6	Servo motor	22-31-91-01-025	AKS ALL

D. Location Zones

Zone	Area
112	Area Forward of Nose Landing Gear Wheel Well
211	Flight Compartment - Left
212	Flight Compartment - Right

E. Access Panels

Number	Name/Location
112A	Forward Access Door

F. Gearbox Installation

SUBTASK 22-31-91-640-001

- (1) Apply grease, D00633 on all mating surfaces before you assemble the mechanism.

SUBTASK 22-31-91-420-001

- (2) Align the gearbox spline on the splined shaft and set the gearbox [1] against the support frame.

SUBTASK 22-31-91-420-002

- (3) Install the bolts [5], and washers [11] on the gearbox [1].

SUBTASK 22-31-91-420-003

- (4) Align the spline teeth of the ramp plug [2] with the spline teeth of the shaft so that the adjacent ramp faces make contact with each other.

NOTE: A properly installed ramp plug will have the end of the ramp plug approximately even with the spline relief on the gearbox worm gear. If the end of the ramp plug is too high or below the spline relief, adjust it as follows: remove the ramp plug, turn it, and engage the ramp plug spline again.

SUBTASK 22-31-91-420-004

- (5) Install the screw [4] with the washer [3] through the ramp plug [2]:
 - (a) Tighten the screw [4] to 25 in-lb (2.8 N·m)-35 in-lb (4.0 N·m).



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G. Autothrottle Servo Motor Installation

SUBTASK 22-31-91-640-002

- (1) Apply grease, D00633 on all mating surfaces before you assemble the mechanism.

SUBTASK 22-31-91-420-005

CAUTION: YOU MUST INSTALL THE SERVO MOTOR CAREFULLY. THIS WILL PREVENT DAMAGE TO THE SPLINE SHAFT ON THE SERVO MOTOR.

- (2) Install the servo motor [6] on the gearbox [1].

SUBTASK 22-31-91-420-007

- (3) Install the screws [8], washers [9], and nuts [10] that hold the servo motor [6] to the gearbox [1].

SUBTASK 22-31-91-420-008

- (4) Connect the electrical connector [7] to the servo motor [6].

SUBTASK 22-31-91-410-001

- (5) Close this access door:

Number Name/Location

112A Forward Access Door

SUBTASK 22-31-91-860-003

- (6) Remove the safety tag and close this circuit breaker:

CAPT Electrical System Panel, P18-1

Row Col Number Name

E 1 C00721 AUTOTHROTTLE DC 1

H. Installation Test

SUBTASK 22-31-91-860-004

- (1) Do this task: Supply External Power, TASK 24-22-00-860-813.

SUBTASK 22-31-91-860-006

- (2) Make sure that the IRS-L and IRS-R mode select switches on the P5 overhead panel are not in the OFF position.

SUBTASK 22-31-91-740-001

- (3) Do this BITE test:

- Push the INIT REF key on the FMC CDU keyboard.
- Push the line select key (LSK) adjacent to INDEX.
- Push the LSK adjacent to MAINT.
- Push the LSK adjacent to A/T.

- 1) Make sure the autothrottle warning lights on the autoflight status annunciators (P1 and P3 panels) come on continuously.

CAUTION: MAKE SURE THAT ENGINE START LEVERS ARE IN CUTOFF. IF THE ENGINE START LEVERS ARE NOT IN CUTOFF, THE ENGINE START SEQUENCE CAN OCCUR.

- Push the LSK adjacent to CURRENT STATUS.
- Do the instructions on the CDU.
- Push the LSK adjacent to CONTINUE.

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- 1) Make sure that TEST IN PROGRESS shows on the CDU.
- 2) Make sure that the A/T switch on the P7 panel automatically goes back to OFF.
- 3) Make sure that NO FAULTS shows on the CDU when the test is completed.
- (h) Push the LSK adjacent to INDEX.
- (i) Do the instructions on the CDU.
- (j) Push the LSK adjacent to CONTINUE.
- 1) Make sure that A/T BITE TEST index shows.

SUBTASK 22-31-91-700-001

- (4) Do the Servo motor test (TASK 22-31-00-710-802).
 - (a) Push the LSK adjacent to INDEX.
 - (b) Push the INIT REF key on the FMC CDU keyboard.

SUBTASK 22-31-91-860-007

- (5) If IRS outputs are no longer necessary, set the IRS-L and IRS-R mode select switches on the P5 overhead panel to OFF.

SUBTASK 22-31-91-860-011

- (6) Remove the DO-NOT-OPERATE tags on the thrust levers.

SUBTASK 22-31-91-860-008

- (7) Do this task: Remove External Power, TASK 24-22-00-860-814.

———— END OF TASK ————



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