

CHAPTER

78

EXHAUST

(CFM56 ENGINES (CFM56-7))

737-600/700/800/900 FAULT ISOLATION MANUAL

CHAPTER 78 EXHAUST

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3	Oct 15/2021		221	Oct 15/2021		O 257	Oct 15/2023	
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R 104	Oct 15/2023		232	Feb 15/2022		O 268	Oct 15/2023	
105	Oct 15/2021		233	Feb 15/2022		O 269	Oct 15/2023	
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107	Oct 15/2021		235	Feb 15/2022		O 271	Oct 15/2023	
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203	Oct 15/2021		240	Feb 15/2022		O 276	Oct 15/2023	
R 204	Oct 15/2023		241	Feb 15/2022		O 277	Oct 15/2023	
205	Oct 15/2021		242	Feb 15/2022		O 278	Oct 15/2023	
206	Oct 15/2021		243	Feb 15/2022		O 279	Oct 15/2023	
207	Oct 15/2021		244	Feb 15/2022		O 280	Oct 15/2023	
208	Oct 15/2021		245	Feb 15/2022		O 281	Oct 15/2023	
209	Oct 15/2021		246	Feb 15/2022		O 282	Oct 15/2023	
210	Oct 15/2021		247	Feb 15/2022		O 283	Oct 15/2023	
211	Oct 15/2021		R 248	Oct 15/2023		O 284	Oct 15/2023	
212	Oct 15/2021		249	Feb 15/2022		O 285	Oct 15/2023	
213	Oct 15/2021		250	Feb 15/2022		O 286	Oct 15/2023	
214	Oct 15/2021		251	Feb 15/2022		O 287	Oct 15/2023	
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A = Added, R = Revised, D = Deleted, O = Overflow, C = Customer Originated Change

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O 292	Oct 15/2023		209	Feb 15/2022		245	Oct 15/2021	
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O 294	Oct 15/2023		211	Oct 15/2021		247	Oct 15/2021	
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303	Oct 15/2021		219	Oct 15/2021		255	Oct 15/2021	
304	Oct 15/2021		220	Oct 15/2021		256	Oct 15/2021	
305	Oct 15/2021		221	Oct 15/2021		257	Oct 15/2021	
306	Oct 15/2021		222	Oct 15/2021		258	Oct 15/2021	
307	Oct 15/2021		223	Oct 15/2021		259	Oct 15/2021	
308	Oct 15/2021		224	Oct 15/2021		260	Oct 15/2021	
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310	Oct 15/2021		226	Oct 15/2021		262	Oct 15/2021	
311	Oct 15/2021		227	Oct 15/2021		263	Feb 15/2023	
312	Oct 15/2021		228	Oct 15/2021		264	Oct 15/2021	
313	Oct 15/2021		229	Oct 15/2021		265	Oct 15/2021	
314	Oct 15/2021		230	Oct 15/2021		266	Oct 15/2021	
315	Oct 15/2021		231	Oct 15/2021		267	Oct 15/2021	
316	Oct 15/2021		232	Oct 15/2021		268	Feb 15/2023	
317	Oct 15/2021		233	Oct 15/2021		269	Feb 15/2023	
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319	Oct 15/2021		235	Oct 15/2021		271	Oct 15/2021	
320	BLANK		236	Oct 15/2021		272	Oct 15/2021	
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201	Jun 15/2022		238	Oct 15/2021		274	Feb 15/2022	
202	Oct 15/2021		239	Oct 15/2021		275	Feb 15/2022	
203	Jun 15/2022		240	Oct 15/2021		276	Feb 15/2022	
204	Jun 15/2022		241	Oct 15/2021		277	Feb 15/2022	
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78-32 TASK SUPPORT			218	Oct 15/2021		205	Oct 15/2021	
301	Oct 15/2021		219	Oct 15/2021		206	Oct 15/2021	
302	Oct 15/2021		220	Oct 15/2021		207	Oct 15/2021	
303	Oct 15/2021		221	Oct 15/2021		208	Oct 15/2021	
304	Oct 15/2021		222	Oct 15/2021		209	Oct 15/2021	
305	Oct 15/2021		223	Oct 15/2021		210	Oct 15/2021	
306	Oct 15/2021		224	Oct 15/2021		211	Oct 15/2021	
307	Oct 15/2021		225	Oct 15/2021		212	Oct 15/2021	
308	Oct 15/2021		226	Oct 15/2021		213	Oct 15/2021	
309	Oct 15/2021		227	Oct 15/2021		214	Oct 15/2021	
310	Oct 15/2021		228	Oct 15/2021		215	Oct 15/2021	
311	Oct 15/2021		229	Oct 15/2021		216	Oct 15/2021	
312	Oct 15/2021		230	Oct 15/2021		217	Oct 15/2021	
313	Oct 15/2021		231	Oct 15/2021		218	Oct 15/2021	
314	Oct 15/2021		232	Oct 15/2021		219	Oct 15/2021	
315	Oct 15/2021		78-34 TASK SUPPORT			220	Oct 15/2021	
316	Oct 15/2021		301	Oct 15/2021		221	Oct 15/2021	
317	Oct 15/2021		302	Oct 15/2021		222	Oct 15/2021	
318	BLANK		303	Oct 15/2021		223	Oct 15/2021	
78-34 TASKS			304	Oct 15/2021		224	Oct 15/2021	
201	Oct 15/2021		305	Oct 15/2021		225	Oct 15/2021	
202	Oct 15/2021		306	Oct 15/2021		226	Oct 15/2021	
203	Oct 15/2021		307	Oct 15/2021		227	Oct 15/2021	
204	Oct 15/2021		308	Oct 15/2021		228	Oct 15/2021	
205	Oct 15/2021		309	Oct 15/2021		229	Oct 15/2021	
206	Oct 15/2021		310	Oct 15/2021		230	Oct 15/2021	
207	Oct 15/2021		311	Oct 15/2021		231	Oct 15/2021	
208	Oct 15/2021		312	Oct 15/2021		232	Oct 15/2021	
209	Oct 15/2021		313	Oct 15/2021		233	Oct 15/2021	
210	Oct 15/2021		314	Oct 15/2021		234	Oct 15/2021	
211	Oct 15/2021		315	Oct 15/2021		235	Oct 15/2021	
212	Oct 15/2021		316	BLANK		236	Oct 15/2021	
213	Oct 15/2021		78-36 TASKS			237	Oct 15/2021	
214	Oct 15/2021		201	Oct 15/2021		238	Oct 15/2021	
215	Oct 15/2021		202	Oct 15/2021		239	Oct 15/2021	
216	Oct 15/2021		203	Oct 15/2021				

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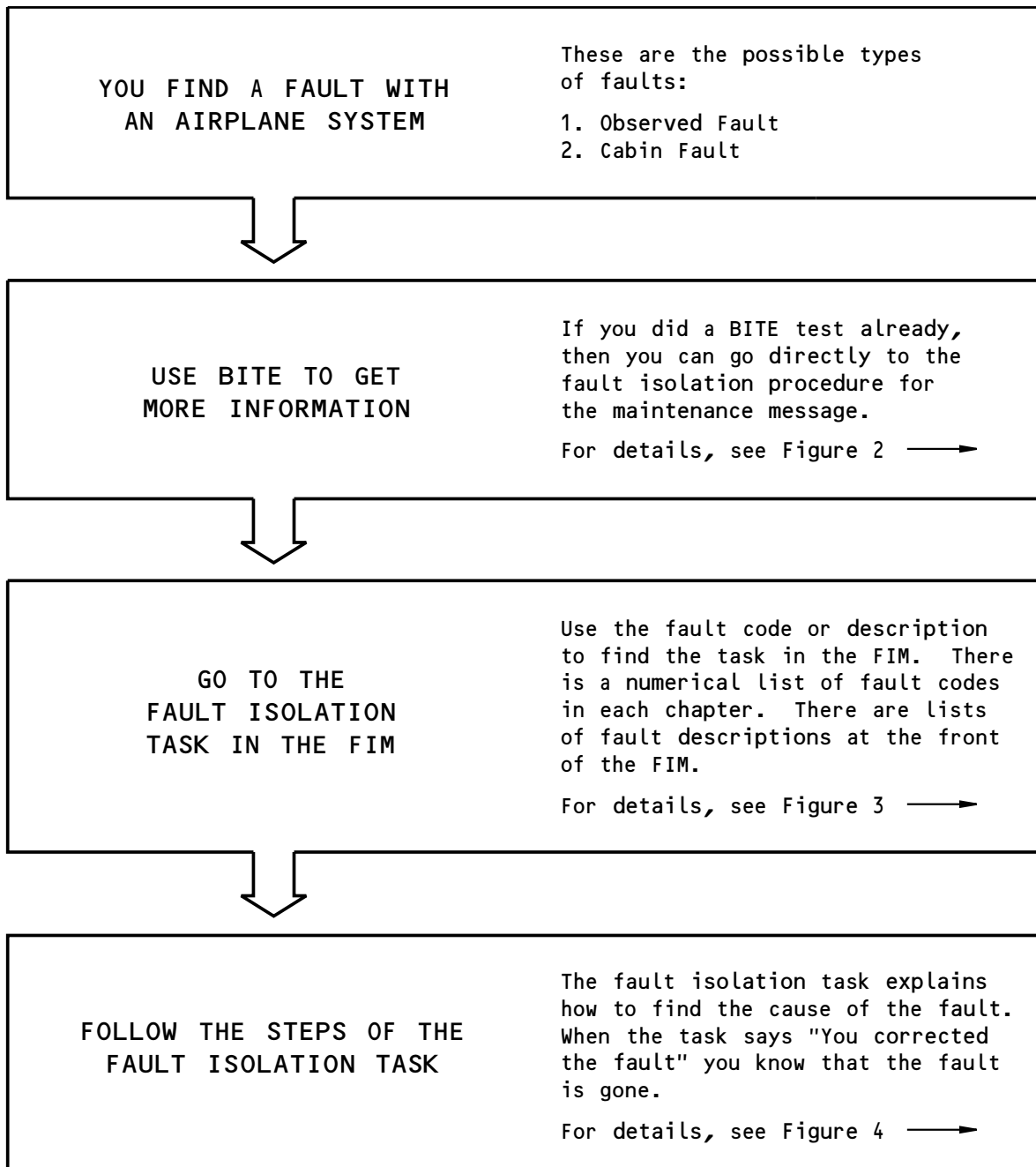
**737-600/700/800/900
FAULT ISOLATION MANUAL**

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241	Oct 15/2021							
242	Oct 15/2021							
243	Oct 15/2021							
244	Oct 15/2021							
245	Oct 15/2021							
246	Oct 15/2021							
247	Oct 15/2021							
248	Oct 15/2021							
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250	Oct 15/2021							
251	Oct 15/2021							
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253	Oct 15/2021							
254	Oct 15/2021							
255	Oct 15/2021							
256	Oct 15/2021							
257	Oct 15/2021							
258	Oct 15/2021							
259	Oct 15/2021							
260	Oct 15/2021							
261	Oct 15/2021							
262	Oct 15/2021							
263	Oct 15/2021							
264	Oct 15/2021							
78-36 TASK SUPPORT								
301	Oct 15/2021							
302	Oct 15/2021							
303	Oct 15/2021							
304	Oct 15/2021							
305	Oct 15/2021							
306	Oct 15/2021							

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**737-600/700/800/900
FAULT ISOLATION MANUAL**

G04902 S0000148576_V1

**Basic Fault Isolation Process
Figure 1**

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Some airplane systems have built-in test equipment (BITE). IF the system finds a fault when you do a BITE test, it will give you a maintenance message.

A maintenance message can be any of these:

- a code
- a text message
- a light
- an indication.

To find the fault isolation task for a maintenance message, go to the Maintenance Message Index in the chapter for the applicable system.

If you do not know which chapter is the correct one, look at the list at the front of any Maintenance Message Index. For each system or component (LRU) that has BITE, this list gives the chapter number where you can find the Index that you need.

Find the maintenance message for the applicable LRU or system in the Index. Then find the task number on the same line as the maintenance message. Go to the task in the FIM and do the steps of the task (see Figure 4).

G04950 S0000148578_V1

Getting Fault Information from BITE
Figure 2

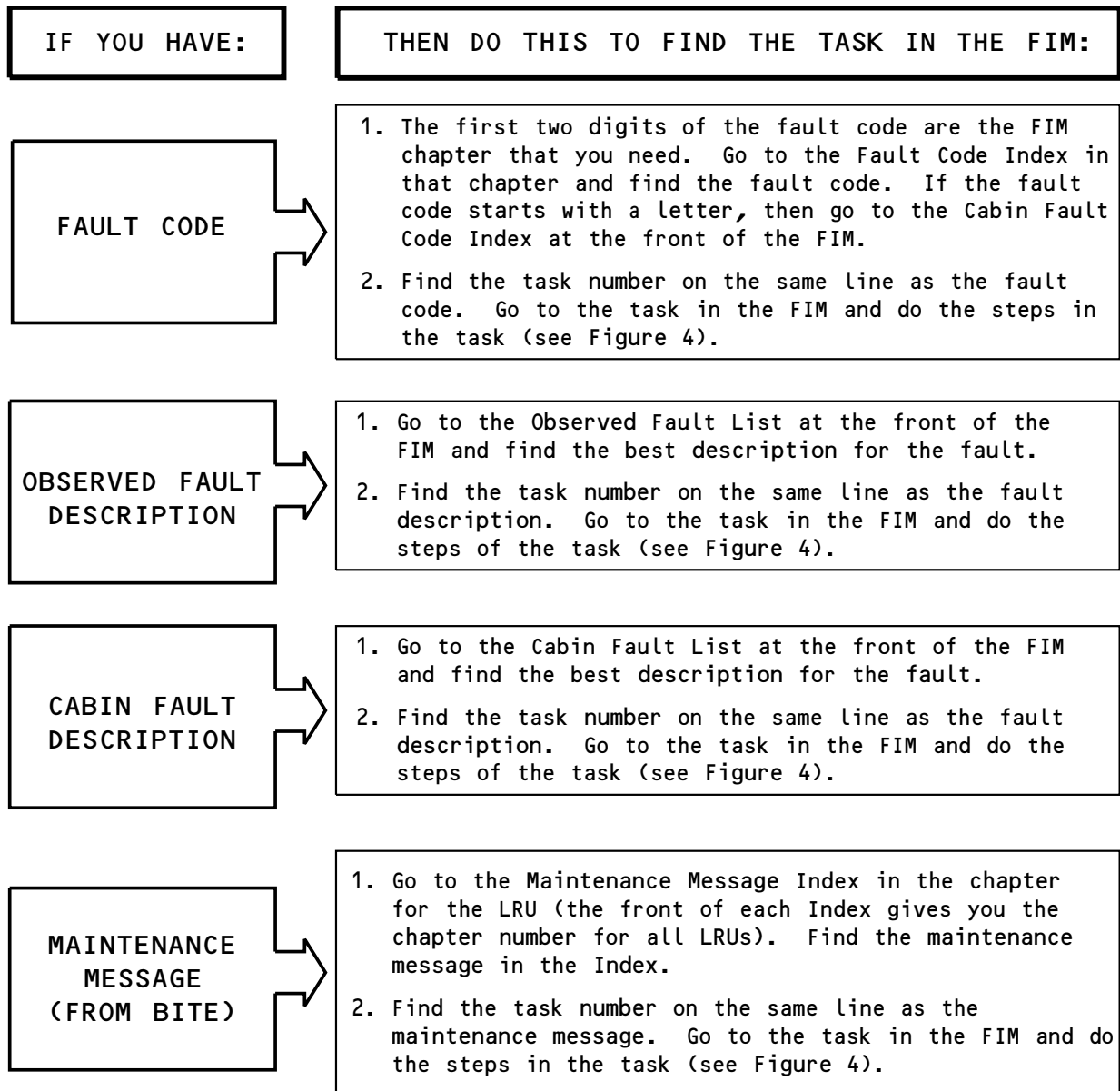
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G04979 S0000148579_V2

Finding the Fault Isolation Task in the FIM
Figure 3

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ASSUMED CONDITIONS AT START OF TASK

- External electrical power is ON
- Hydraulic power and pneumatic power are OFF
- Engines are shut down
- No equipment in the system is deactivated

POSSIBLE CAUSES

- The list of possible causes has the most likely cause first and the least likely cause last.
- You can use the maintenance records of your airline to determine if the fault occurred before. Compare the list of possible causes to the past maintenance actions. This will help prevent repetition of the same maintenance actions.

INITIAL EVALUATION PARAGRAPH

- The primary purpose of the Initial Evaluation paragraph at the start of the task is to help you find out if you can detect the fault right now:
 - If you cannot detect the fault right now, then the task cannot isolate the fault and the Initial Evaluation paragraph will say that there was an intermittent fault.
 - If you have an intermittent fault, you must use your judgement (and follow your airline's policy) to decide which maintenance action to take. Then monitor the airplane to see if the fault happens again on subsequent flights.
- The Initial Evaluation paragraph can also help you find out which Fault Isolation Procedure to use to isolate and correct the fault.

FAULT ISOLATION STEPS

- The FIM task steps are presented in a specified order. The "If... then" statements will guide you along a logical path. But if you do not plan to follow the FIM task exactly, make sure that you read it before you start to isolate the fault. Some FIM procedures start with important steps that have an effect on the other steps in the procedure.
- When you are at the endpoint of the path, the step says "...you corrected the fault." Complete the step and exit the procedure.

G05009 S0000148580_V3

Doing the Fault Isolation Task Figure 4

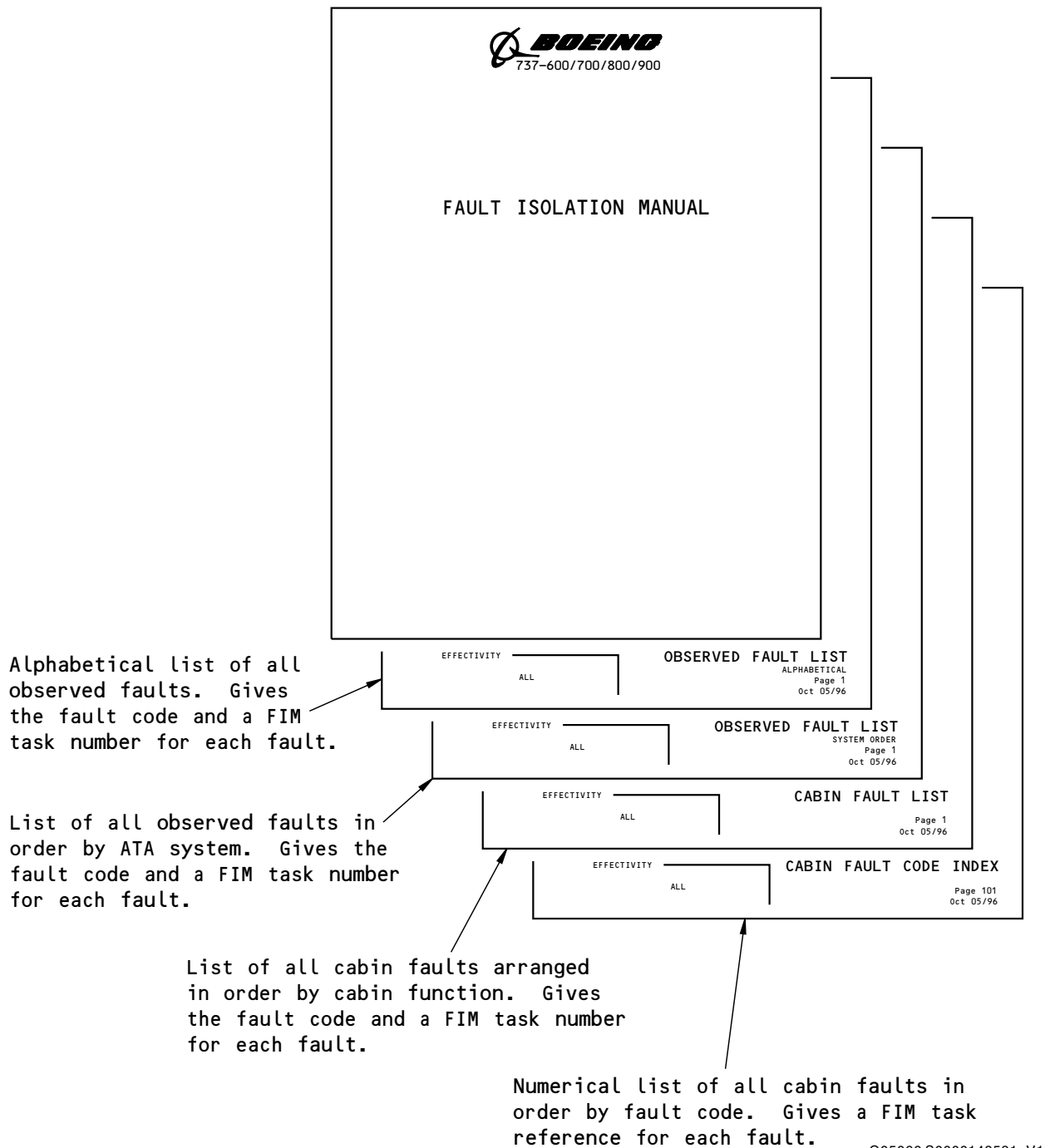
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Subjects at Front of FIM
Figure 5

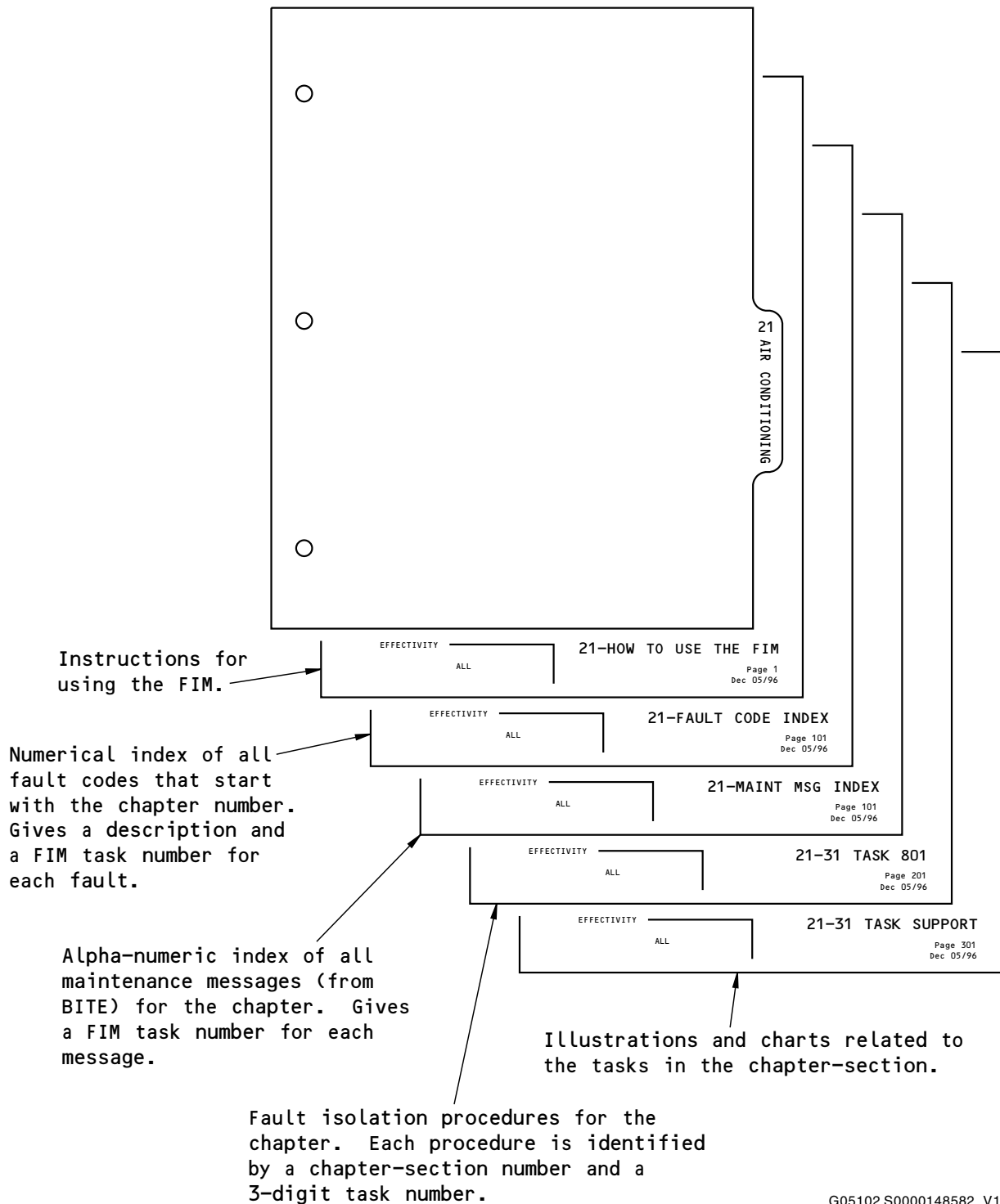
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G05102 S0000148582_V1

**Subjects in Each FIM Chapter
Figure 6**

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FAULT ISOLATION MANUAL**

FAULT CODE	FAULT DESCRIPTION	GO TO FIM TASK
780 020 51	REVERSER light: light ON, Thrust Reverser operates normally - engine 1.	78-34 TASK 801
780 020 52	REVERSER light: light ON, Thrust Reverser operates normally - engine 2.	78-34 TASK 801
780 030 51	Thrust Reverser Deploy: REV message does not show, thrust reverser does not deploy, and reverse thrust lever does not move to full reverse thrust - engine 1.	78-34 TASK 807
780 030 52	Thrust Reverser Deploy: REV message does not show, thrust reverser does not deploy, and reverse thrust lever does not move to full reverse thrust - engine 2.	78-34 TASK 807
780 040 51	Thrust Reverser Deploy: REV message shows amber, reverse thrust lever moves to full reverse thrust but engine does not go to full reverse thrust - engine 1.	78-34 TASK 802
780 040 52	Thrust Reverser Deploy: REV message shows amber, reverse thrust lever moves to full reverse thrust but engine does not go to full reverse thrust - engine 2.	78-34 TASK 802
780 050 51	Thrust Reverser Deploy: REV message shows amber, reverse thrust lever does not move to full reverse thrust - engine 1.	78-34 TASK 802
780 050 52	Thrust Reverser Deploy: REV message shows amber, reverse thrust lever does not move to full reverse thrust - engine 2.	78-34 TASK 802
780 060 51	Thrust Reverser Deploy: REV message shows green, reverse thrust lever does not move to full reverse thrust - engine 1.	78-34 TASK 803
780 060 52	Thrust Reverser Deploy: REV message shows green, reverse thrust lever does not move to full reverse thrust - engine 2.	78-34 TASK 803
780 065 51	Thrust Reverser Deploy: REV message shows green, reverse thrust lever moves to full reverse thrust but engine does not go to full reverse thrust - engine 1.	78-34 TASK 804
780 065 52	Thrust Reverser Deploy: REV message shows green, reverse thrust lever moves to full reverse thrust but engine does not go to full reverse thrust - engine 2.	78-34 TASK 804
780 070 51	Thrust Reverser Deploy: time to extend thrust reverser too slow (more than 3 seconds) - engine 1.	78-34 TASK 805
780 070 52	Thrust Reverser Deploy: time to extend thrust reverser too slow (more than 3 seconds) - engine 2.	78-34 TASK 805
780 080 51	Thrust Reverser Stow: REV message shows amber or green, ENG CONTROL light on, REVERSER light off - engine 1.	78-36 TASK 806
780 080 52	Thrust Reverser Stow: REV message shows amber or green, ENG CONTROL light on, REVERSER light off - engine 2.	78-36 TASK 806
780 090 51	Thrust Reverser Stow: REV message shows amber or green, ENG CONTROL light off, REVERSER light on - engine 1.	78-34 TASK 806
780 090 52	Thrust Reverser Stow: REV message shows amber or green, ENG CONTROL light off, REVERSER light on - engine 2.	78-34 TASK 806

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FAULT CODE	FAULT DESCRIPTION	GO TO FIM TASK
780 100 51	Thrust Reverser Stow: REVERSER Light does not come ON momentarily during stow; Thrust Reverser operates normally - engine 1.	78-34 TASK 808
780 100 52	Thrust Reverser Stow: REVERSER Light does not come ON momentarily during stow; Thrust Reverser operates normally - engine 2.	78-34 TASK 808
780 105 51	Thrust Reverser Stow: REV message shows green, ENG CONTROL light off, REVERSER light on - engine 1.	78-34 TASK 806
780 105 52	Thrust Reverser Stow: REV message shows green, ENG CONTROL light off, REVERSER light on - engine 2.	78-34 TASK 806
780 110 51	Thrust Reverser Stow: time to retract thrust reverser too slow (more than 5 seconds) - engine 1.	78-34 TASK 805
780 110 52	Thrust Reverser Stow: time to retract thrust reverser too slow (more than 5 seconds) - engine 2.	78-34 TASK 805
780 200 00	EAU BITE: Lights (all) do not come on during the BITE procedure.	78-34 TASK 809
780 201 48	Thrust Reverser Deploy: Reverse Thrust Levers set to Full Reverse Thrust, but ENG-1 and ENG-2 T/R Sleeves do not deploy - engine 1 and engine 2.	78-34 TASK 810

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<u>LRU/SYSTEM</u>	<u>SHORT NAME</u>	<u>CHAPTER</u>
Air Data Inertial Reference System	ADIRS	34
Air Traffic Controller Transponder - 1 (Left)	ATC XPDR - 1 (L)	34
Air Traffic Controller Transponder - 2 (Right)	ATC XPDR - 2 (R)	34
Airborne Vibration Monitor System Signal Conditioner	AVM SIG COND	77
Antiskid Control Unit	ANTISKID	32
Attendant Control Panel	ACP	23
Automatic Direction Finder Receiver - 1	ADF RECVR - 1	34
Automatic Direction Finder Receiver - 2	ADF RECVR - 2	34
Autothrottle Computer	A/T COMPUTER	22
Auxiliary Power Unit	APU	49
Auxiliary Power Unit Generator Control Unit	APU GCU	24
Bus Power Control Unit	BPCU	24
Cabin Pressure Controller	CAB PRESS CON	21
Cargo Electronic Unit - Lower Aft	CEU - LWR AFT	26
Cargo Electronic Unit - Lower Forward	CEU - LWR FWD	26
Cargo Electronic Unit - Main Aft	CEU - MAIN AFT	26
Cargo Fire Control Panel	CFCP	26
Common Display System	CDS	31
Compartment Overheat Detection Control Module	WING/BODY OHT	26
Digital Flight Control System	DFCS	22
Distance Measurement Equipment Interrogator	DME INTROGTR	34
Electrical Meters, Battery, and Galley Power Module	P5-13	24
Electronic Engine Controller - 1	ENGINE - 1	73
Electronic Engine Controller - 2	ENGINE - 2	73
Emergency Locator Transmitter	ELT	23
Engine Accessory Unit	EAU	78
Engine Accessory Unit/TR DEPLOY ENG 1	EAU/TR DPLOY-ENG 1	78
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Engine Accessory Unit/TR STOW ENG 1	EAU/TR STOW-ENG 1	78
Engine Accessory Unit/TR STOW ENG 2	EAU/TR STOW-ENG 2	78
Engine and Auxiliary Power Unit Fire Detection Control Module	ENG/APU FIRE	26
Enhanced Digital Flight Control Computer-A	EDFCC-A	22
Enhanced Digital Flight Control System	EDFCS	22
Flap/Slat Electronics Unit	FSEU	27
Flight Data Acquisition Unit	FDAU	31

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<u>LRU/SYSTEM</u>	<u>SHORT NAME</u>	<u>CHAPTER</u>
Flight Management Computer System	FMCS	34
Fuel Quantity Indicating System	FQIS	28
Generator Control Unit - 1	GCU - 1	24
Generator Control Unit - 2	GCU - 2	24
Ground Proximity Computer	GROUND PROX	34
High Frequency Transceiver	HF XCVR	23
Multi-Mode Receiver	MMR	34
Nitrogen Generation System BITE Display Unit	NGS	47
Pack Flow Temperature Controller	PFTC	21
Pack/Zone Temperature Controller - Left	PACK/ZN CON - L	21
Pack/Zone Temperature Controller - Right	PACK/ZN CON - R	21
Proximity Switch Electronics Unit	PSEU	32
Radio Altimeter Receiver/Transmitter	RADIO ALTIMTR	34
Satellite Communications System	SATCOM	23
Stall Management Yaw Damper Computer - 1	SMYD - 1	27
Stall Management Yaw Damper Computer - 2	SMYD - 2	27
Traffic Alert and Collision Avoidance System Computer	TCAS COMPUTER	34
VHF Omnidirectional Ranging Marker Beacon Receiver	VOR/MKR RCVR	34
Very High Frequency Transceiver	VHF XCVR	23
Waste Tank Logic Control Module	WASTE TANK	38
Weather Radar Receiver/Transmitter	WEATHER RADAR	34
Window Heat Control Unit - Left Forward	WHCU - L FWD	30
Window Heat Control Unit - Left Side	WHCU - L SIDE	30
Window Heat Control Unit - Right Forward	WHCU - R FWD	30
Window Heat Control Unit - Right Side	WHCU - R SIDE	30
Window Heat Control Unit 1 - Left Forward and Right Side	WHCU1 - L FWD/R SIDE	30
Window Heat Control Unit 2 - Right Forward and Left Side	WHCU2 - R FWD/L SIDE	30

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LRU/SYSTEM	MAINTENANCE MESSAGE	GO TO FIM TASK
EAU/TR DPLOY-ENG 1	S831 L SLEEVE STOW SENSOR	78-31 TASK 806
EAU/TR DPLOY-ENG 1	S832 R SLEEVE STOW SENSOR	78-31 TASK 809
EAU/TR DPLOY-ENG 1	S833 + (S831 + S832 + S835 + S836) HYD ISO VALVE SENSOR and ALL SLEEVE STOW and SLEEVE LOCK SENSOR Messages	78-32 TASK 807
EAU/TR DPLOY-ENG 1	S833 HYD ISO VALVE SENSOR	78-31 TASK 804
EAU/TR DPLOY-ENG 1	S834 + (S831 + S832 + S835 + S836) DIR CONT VALVE SENSOR and All SLEEVE STOW SENSOR and SLEEVE LOCK SENSOR Messages	78-32 TASK 806
EAU/TR DPLOY-ENG 1	S834 DIR CONT VALVE SENSOR	78-31 TASK 803
EAU/TR DPLOY-ENG 1	S835 L SLEEVE LOCK SENSOR	78-31 TASK 805
EAU/TR DPLOY-ENG 1	S836 R SLEEVE LOCK SENSOR	78-31 TASK 808
EAU/TR DPLOY-ENG 1	V148 + V150 L and R SLEEVE SYNC LOCK PWR messages	78-32 TASK 814
EAU/TR DPLOY-ENG 1	V148 L SLEEVE SYNC LOCK PWR	78-31 TASK 807
EAU/TR DPLOY-ENG 1	V150 R SLEEVE SYNC LOCK PWR	78-31 TASK 810
EAU/TR DPLOY-ENG 2	S830 + (S831 + S832 + S835 + S836) HYD ISO VALVE SENSOR and All SLEEVE STOW and SLEEVE LOCK SENSOR Messages	78-32 TASK 807
EAU/TR DPLOY-ENG 2	S830 HYD ISO VALVE SENSOR	78-31 TASK 804
EAU/TR DPLOY-ENG 2	S831 L SLEEVE STOW SENSOR	78-31 TASK 806
EAU/TR DPLOY-ENG 2	S832 R SLEEVE STOW SENSOR	78-31 TASK 809
EAU/TR DPLOY-ENG 2	S835 L SLEEVE LOCK SENSOR	78-31 TASK 805
EAU/TR DPLOY-ENG 2	S836 R SLEEVE LOCK SENSOR	78-31 TASK 808
EAU/TR DPLOY-ENG 2	S839 + (S831 + S832 + S835 + S836) DIR CONT VALVE SENSOR and All SLEEVE STOW SENSOR and SLEEVE LOCK SENSOR Messages	78-32 TASK 806
EAU/TR DPLOY-ENG 2	S839 DIR CONT VALVE SENSOR	78-31 TASK 803
EAU/TR DPLOY-ENG 2	V148 + V150 L and R SLEEVE SYNC LOCK PWR Messages	78-32 TASK 815
EAU/TR DPLOY-ENG 2	V148 L SLEEVE SYNC LOCK PWR	78-31 TASK 819
EAU/TR DPLOY-ENG 2	V150 R SLEEVE SYNC LOCK PWR	78-31 TASK 820
EAU/TR STOW-ENG 1	All Messages except L and R SLEEVE SYNC LOCK PWR and EAU FAULT Messages	78-32 TASK 816
EAU/TR STOW-ENG 1	All STOW Messages except EAU FAULT	78-32 TASK 805
EAU/TR STOW-ENG 1	S831 L SLEEVE STOW SENSOR	78-31 TASK 814
EAU/TR STOW-ENG 1	S832 R SLEEVE STOW SENSOR	78-31 TASK 817
EAU/TR STOW-ENG 1	S833 + S831 HYD ISO VALVE SENSOR and L SLEEVE STOW SENSOR Messages	78-32 TASK 810

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EAU/TR STOW-ENG 1	S833 + S835 HYD ISO VALVE SENSOR and L SLEEVE LOCK SENSOR Messages	78-32 TASK 808
EAU/TR STOW-ENG 1	S833 + S836 HYD ISO VALVE SENSOR and R SLEEVE LOCK SENSOR Messages	78-32 TASK 809
EAU/TR STOW-ENG 1	S833 HYD ISO VALVE SENSOR	78-31 TASK 812
EAU/TR STOW-ENG 1	S834 DIR CONT VALVE SENSOR	78-31 TASK 811
EAU/TR STOW-ENG 1	S835 L SLEEVE LOCK SENSOR	78-31 TASK 813
EAU/TR STOW-ENG 1	S836 R SLEEVE LOCK SENSOR	78-31 TASK 816
EAU/TR STOW-ENG 1	V148 + V150 L and R SLEEVE SYNC LOCK PWR Messages	78-32 TASK 812
EAU/TR STOW-ENG 1	V148 L SLEEVE SYNC LOCK PWR	78-31 TASK 815
EAU/TR STOW-ENG 1	V150 R SLEEVE SYNC LOCK PWR	78-31 TASK 818
EAU/TR STOW-ENG 2	All Messages except L and R SLEEVE SYNC LOCK PWR and EAU FAULT Messages	78-32 TASK 816
EAU/TR STOW-ENG 2	All STOW Messages except EAU FAULT	78-32 TASK 805
EAU/TR STOW-ENG 2	S830 + S831 HYD ISO VALVE SENSOR and L SLEEVE STOW SENSOR Messages	78-32 TASK 810
EAU/TR STOW-ENG 2	S830 + S832 HYD ISO VALVE SENSOR and R SLEEVE STOW SENSOR Messages	78-32 TASK 811
EAU/TR STOW-ENG 2	S830 + S835 HYD ISO VALVE SENSOR and L SLEEVE LOCK SENSOR Messages	78-32 TASK 808
EAU/TR STOW-ENG 2	S830 + S836 HYD ISO VALVE SENSOR and R SLEEVE LOCK SENSOR Messages	78-32 TASK 809
EAU/TR STOW-ENG 2	S830 HYD ISO VALVE SENSOR	78-31 TASK 812
EAU/TR STOW-ENG 2	S831 L SLEEVE STOW SENSOR	78-31 TASK 814
EAU/TR STOW-ENG 2	S832 R SLEEVE STOW SENSOR	78-31 TASK 817
EAU/TR STOW-ENG 2	S835 L SLEEVE LOCK SENSOR	78-31 TASK 813
EAU/TR STOW-ENG 2	S836 R SLEEVE LOCK SENSOR	78-31 TASK 816
EAU/TR STOW-ENG 2	S839 DIR CONT VALVE SENSOR	78-31 TASK 811
EAU/TR STOW-ENG 2	V148 + V150 L and R SLEEVE SYNC LOCK PWR Messages	78-32 TASK 813
EAU/TR STOW-ENG 2	V148 L SLEEVE SYNC LOCK PWR	78-31 TASK 815
EAU/TR STOW-ENG 2	V150 R SLEEVE SYNC LOCK PWR	78-31 TASK 818
EAU	M528 EAU FAULT	78-31 TASK 802
ENGINE - 1	78-11471 T/R LEVER INTLK VOLTAGE NOT AVAILABLE. OPEN GROUND CIRCUIT	78-36 TASK 801
ENGINE - 1	78-11481 THE L REVERSER SLEEVE POSITION SIGNAL IS OUT OF RANGE	78-36 TASK 802

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ENGINE - 1	78-11491 THE R REVERSER SLEEVE POSITION SIGNAL IS OUT OF RANGE	78-36 TASK 803
ENGINE - 1	78-11501 THE L REVERSER SLEEVE POSITION SIGNALS DISAGREE	78-36 TASK 804
ENGINE - 1	78-11511 THE R REVERSER SLEEVE POSITION SIGNALS DISAGREE	78-36 TASK 805
ENGINE - 1	78-11521 THE REVERSER CONTROL AND POSITION SIGNALS DISAGREE	78-36 TASK 806
ENGINE - 1	78-11531 THE T/R LEVER INTLK VOLTAGE INPUT TO THE EEC IS OUT OF RANGE	78-36 TASK 807
ENGINE - 1	78-11541 EACH REVERSER SLEEVE HAS ONE POSITION SIGNAL OUT OF RANGE	78-36 TASK 808
ENGINE - 1	78-21471 T/R LEVER INTLK VOLTAGE NOT AVAILABLE. OPEN GROUND CIRCUIT	78-36 TASK 801
ENGINE - 1	78-21481 THE L REVERSER SLEEVE POSITION SIGNAL IS OUT OF RANGE	78-36 TASK 802
ENGINE - 1	78-21491 THE R REVERSER SLEEVE POSITION SIGNAL IS OUT OF RANGE	78-36 TASK 803
ENGINE - 1	78-21501 THE L REVERSER SLEEVE POSITION SIGNALS DISAGREE	78-36 TASK 804
ENGINE - 1	78-21511 THE R REVERSER SLEEVE POSITION SIGNALS DISAGREE	78-36 TASK 805
ENGINE - 1	78-21521 THE REVERSER CONTROL AND POSITION SIGNALS DISAGREE	78-36 TASK 806
ENGINE - 1	78-21531 THE T/R LEVER INTLK VOLTAGE INPUT TO THE EEC IS OUT OF RANGE	78-36 TASK 807
ENGINE - 1	78-21541 EACH REVERSER SLEEVE HAS ONE POSITION SIGNAL OUT OF RANGE	78-36 TASK 808
ENGINE - 1	78-31471 T/R LEVER INTLK VOLTAGE NOT AVAILABLE. OPEN GROUND CIRCUIT	78-36 TASK 801
ENGINE - 1	78-31481 THE L REVERSER SLEEVE POSITION SIGNAL IS OUT OF RANGE	78-36 TASK 802
ENGINE - 1	78-31491 THE R REVERSER SLEEVE POSITION SIGNAL IS OUT OF RANGE	78-36 TASK 803
ENGINE - 1	78-31501 THE L REVERSER SLEEVE POSITION SIGNALS DISAGREE	78-36 TASK 804
ENGINE - 1	78-31511 THE R REVERSER SLEEVE POSITION SIGNALS DISAGREE	78-36 TASK 805
ENGINE - 1	78-31521 THE REVERSER CONTROL AND POSITION SIGNALS DISAGREE	78-36 TASK 806

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ENGINE - 1	78-31531 THE T/R LEVER INTLK VOLTAGE INPUT TO THE EEC IS OUT OF RANGE	78-36 TASK 807
ENGINE - 1	78-31541 EACH REVERSER SLEEVE HAS ONE POSITION SIGNAL OUT OF RANGE	78-36 TASK 808
ENGINE - 2	78-11472 T/R LEVER INTLK VOLTAGE NOT AVAILABLE. OPEN GROUND CIRCUIT	78-36 TASK 801
ENGINE - 2	78-11482 THE L REVERSER SLEEVE POSITION SIGNAL IS OUT OF RANGE	78-36 TASK 802
ENGINE - 2	78-11492 THE R REVERSER SLEEVE POSITION SIGNAL IS OUT OF RANGE	78-36 TASK 803
ENGINE - 2	78-11502 THE L REVERSER SLEEVE POSITION SIGNALS DISAGREE	78-36 TASK 804
ENGINE - 2	78-11512 THE R REVERSER SLEEVE POSITION SIGNALS DISAGREE	78-36 TASK 805
ENGINE - 2	78-11522 THE REVERSER CONTROL AND POSITION SIGNALS DISAGREE	78-36 TASK 806
ENGINE - 2	78-11532 THE T/R LEVER INTLK VOLTAGE INPUT TO THE EEC IS OUT OF RANGE	78-36 TASK 807
ENGINE - 2	78-11542 EACH REVERSER SLEEVE HAS ONE POSITION SIGNAL OUT OF RANGE	78-36 TASK 808
ENGINE - 2	78-21472 T/R LEVER INTLK VOLTAGE NOT AVAILABLE. OPEN GROUND CIRCUIT	78-36 TASK 801
ENGINE - 2	78-21482 THE L REVERSER SLEEVE POSITION SIGNAL IS OUT OF RANGE	78-36 TASK 802
ENGINE - 2	78-21492 THE R REVERSER SLEEVE POSITION SIGNAL IS OUT OF RANGE	78-36 TASK 803
ENGINE - 2	78-21502 THE L REVERSER SLEEVE POSITION SIGNALS DISAGREE	78-36 TASK 804
ENGINE - 2	78-21512 THE R REVERSER SLEEVE POSITION SIGNALS DISAGREE	78-36 TASK 805
ENGINE - 2	78-21522 THE REVERSER CONTROL AND POSITION SIGNALS DISAGREE	78-36 TASK 806
ENGINE - 2	78-21532 THE T/R LEVER INTLK VOLTAGE INPUT TO THE EEC IS OUT OF RANGE	78-36 TASK 807
ENGINE - 2	78-21542 EACH REVERSER SLEEVE HAS ONE POSITION SIGNAL OUT OF RANGE	78-36 TASK 808
ENGINE - 2	78-31472 T/R LEVER INTLK VOLTAGE NOT AVAILABLE. OPEN GROUND CIRCUIT	78-36 TASK 801
ENGINE - 2	78-31482 THE L REVERSER SLEEVE POSITION SIGNAL IS OUT OF RANGE	78-36 TASK 802

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LRU/SYSTEM	MAINTENANCE MESSAGE	GO TO FIM TASK
ENGINE - 2	78-31492 THE R REVERSER SLEEVE POSITION SIGNAL IS OUT OF RANGE	78-36 TASK 803
ENGINE - 2	78-31502 THE L REVERSER SLEEVE POSITION SIGNALS DISAGREE	78-36 TASK 804
ENGINE - 2	78-31512 THE R REVERSER SLEEVE POSITION SIGNALS DISAGREE	78-36 TASK 805
ENGINE - 2	78-31522 THE REVERSER CONTROL AND POSITION SIGNALS DISAGREE	78-36 TASK 806
ENGINE - 2	78-31532 THE T/R LEVER INTLK VOLTAGE INPUT TO THE EEC IS OUT OF RANGE	78-36 TASK 807
ENGINE - 2	78-31542 EACH REVERSER SLEEVE HAS ONE POSITION SIGNAL OUT OF RANGE	78-36 TASK 808

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801. Engine Accessory Unit (EAU) BITE Procedure

A. General

- (1) The EAU monitors the Sleeve Stow and Lock Proximity Sensors, the Hydraulic Isolation Valve (HIV) and Directional Control Valve (DCV) Proximity Sensors, and the voltage input to each Sync Lock. The EAU BITE Procedure shows if one or more of these inputs are not in their commanded state by the illumination of the Fault Lights.
- (2) You do the Engine Accessory Unit (EAU), M528 BITE Test at the EAU Front Panel. The EAU is on the E3-2 Shelf in the Electronic Equipment (EE) Compartment.
- (3) The EAU Front Panel has Fault Lights for Engine 1 and Engine 2, and maintenance messages for each light.
- (4) The EAU has these maintenance messages:
 - (a) ENG 1 (ENG 2) V148 (V148) L SLEEVE SYNC LOCK PWR
 - (b) ENG 1 (ENG 2) S831 (S831) L SLEEVE STOW SENSOR
 - (c) ENG 1 (ENG 2) S835 (S835) L SLEEVE LOCK SENSOR
 - (d) ENG 1 (ENG 2) S833 (S830) HYD ISO VALVE SENSOR
 - (e) ENG 1 (ENG 2) S834 (S839) DIR CONT VALVE SENSOR
 - (f) ENG 1 (ENG 2) V150 (V150) R SLEEVE SYNC LOCK PWR
 - (g) ENG 1 (ENG 2) S832 (S832) SLEEVE STOW SENSOR
 - (h) ENG 1 (ENG 2) S836 (S836) R SLEEVE LOCK SENSOR
 - (i) ENG 1 (ENG 2) NO FAULTS DETECTED
 - (j) ENG 1 (ENG 2) EAU FAULT
- (5) The EAU Front Panel also includes these items for Engine 1 and Engine 2:
 - (a) T/R STOW FAULTS Light and Switch
 - (b) T/R DEPLOY FAULTS Light and Switch
 - (c) FAULT RESET Switch
- (6) Faults that occur when the Thrust Reverser (T/R) is commanded to stow are STOW FAULTS and will cause the T/R STOW FAULTS Light to come ON.
- (7) Faults that occur when the T/R is commanded to deploy are DEPLOY FAULTS and will cause the T/R DEPLOY FAULTS Light to come ON.
- (8) The EAU FAULT Light will come ON if there is an internal fault in the EAU.
- (9) The EAU keeps faults in memory for the last five DEPLOY and STOW cycles. All of the data is shown together, and all of the data is cleared when the EAU is reset.
- (10) After a STOW Fault is corrected, the REVERSER Fault Light on the Flight Compartment P5-68 Panel will go OFF. However, the T/R STOW FAULTS Light will stay ON until the EAU is reset.
- (11) After a DEPLOY Fault is corrected, the REVERSER Fault Light on the Flight Compartment P5-68 Panel and the T/R DEPLOY Fault Light will stay ON until the EAU is reset. The T/R must be in the DEPLOY position to reset the DEPLOY Faults in the EAU.

B. BITE Procedure

- (1) Refer to Figure 201, Sheet 3 for a Simplified BITE Procedure Summary.
- (2) If the EAU FAULT Light is ON, then replace the EAU, M528. These are the tasks:
 - Engine Accessory Unit Removal, AMM TASK 78-34-06-000-801-F00
 - Engine Accessory Unit Installation, AMM TASK 78-34-06-400-801-F00

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- (3) If the T/R STOW FAULTS Light is ON, then do these steps to do the EAU BITE Procedure:
- (a) Push and hold the T/R STOW FAULTS Switch on the EAU for the applicable engine.
NOTE: All the Fault Lights will come ON for one second. After one second, all the lights will go OFF except for the light or a combination of lights that indicates a fault.
 - (b) Record the maintenance messages that are related to the lights.
NOTE: Always record the EAU faults to help you identify the correct Fault Isolation Manual (FIM) Task(s) to troubleshoot the system now and for future isolation of possible intermittent faults.
 - (c) Release the T/R STOW FAULTS Switch.
 - (d) Do these steps to show the current maintenance messages.
 - 1) Push and hold the FAULT RESET button for a minimum of two seconds.
 - 2) Wait for at least 30 seconds.
 - 3) Record the current maintenance messages.
 - (e) Refer to the table at the end of this task to find the applicable FIM Task(s) for the maintenance message(s) that you recorded.
 - 1) If a single maintenance message shows, then do the applicable FIM Task.
 - 2) If more than one maintenance message shows, then do the FIM Task for that combination of maintenance messages.
 - (f) If some or all of the maintenance messages do not show again, then there was an intermittent fault.
 - 1) For an intermittent fault, you must use your judgment, your airline policies, the Fault Isolation Procedure, and the Possible Causes List in the Fault Isolation Procedure to make the decision if you will try to correct the problem.
- (4) If the T/R DEPLOY FAULTS Light is ON, then do these steps to do the EAU BITE Procedure:
- (a) Push and hold the T/R DEPLOY FAULTS Switch on the EAU for the applicable engine.
NOTE: All the Fault Lights will come ON for one second. After one second, all the lights will go OFF, except for the light or a combination of lights that indicates a fault.
NOTE: Because the EAU stores faults for the last five DEPLOY and STOW cycles, there can also be maintenance messages for intermittent faults that will show.
 - (b) Record the maintenance messages that are related to the lights.
NOTE: Always record the EAU faults to help you identify the correct FIM Task(s) to troubleshoot the system now and for future isolation of possible intermittent faults.
 - (c) Release the T/R DEPLOY FAULTS Switch.
 - (d) Do these steps to show the current maintenance messages.
 - 1) Move the Reverse Thrust Lever AFT to EXTEND (DEPLOY) the T/R (Thrust Reverser Operation - Extend (Selection), AMM TASK 78-31-00-980-801-F00).
NOTE: Some faults in the Thrust Reverser System will not let the T/R extend (deploy).
 - a) If the T/R does not extend, make sure that the Reverse Thrust Lever stays in the EXTEND (DEPLOY) position to reset the EAU.
 - 2) Push and hold the FAULT RESET button for a minimum of two seconds.
 - 3) Wait for at least 30 seconds.

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- 4) Record the current maintenance messages.
- 5) Refer to the table at the end of this task to find the applicable FIM Task(s) for the maintenance message(s) that you recorded.
 - a) If a single maintenance message shows, then do the applicable FIM Task.
 - b) If more than one maintenance message shows, then do the FIM Task for that combination of maintenance messages.
- 6) If some or all of the maintenance messages do not show again, then there was an intermittent fault.
 - a) For an intermittent fault, you must use your judgment, your airline policies, the Fault Isolation Procedure, and the Possible Causes List in the Fault Isolation Procedure to make the decision if you will try to correct the fault.
- 7) Move the Reverse Thrust Lever FWD to the RETRACT (STOW) position (Thrust Reverser Operation - Retract (Selection), AMM TASK 78-31-00-980-802-F00).

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EAU/TR DPLOY-ENG 1	S831 L SLEEVE STOW SENSOR	78-31 TASK 806
EAU/TR DPLOY-ENG 1	S832 R SLEEVE STOW SENSOR	78-31 TASK 809
EAU/TR DPLOY-ENG 1	S833 + (S831 + S832 + S835 + S836) HYD ISO VALVE SENSOR and ALL SLEEVE STOW and SLEEVE LOCK SENSOR Messages	78-32 TASK 807
EAU/TR DPLOY-ENG 1	S833 HYD ISO VALVE SENSOR	78-31 TASK 804
EAU/TR DPLOY-ENG 1	S834 + (S831 + S832 + S835 + S836) DIR CONT VALVE SENSOR and All SLEEVE STOW SENSOR and SLEEVE LOCK SENSOR Messages	78-32 TASK 806
EAU/TR DPLOY-ENG 1	S834 DIR CONT VALVE SENSOR	78-31 TASK 803
EAU/TR DPLOY-ENG 1	S835 L SLEEVE LOCK SENSOR	78-31 TASK 805
EAU/TR DPLOY-ENG 1	S836 R SLEEVE LOCK SENSOR	78-31 TASK 808
EAU/TR DPLOY-ENG 1	V148 + V150 L and R SLEEVE SYNC LOCK PWR messages	78-32 TASK 814
EAU/TR DPLOY-ENG 1	V148 L SLEEVE SYNC LOCK PWR	78-31 TASK 807
EAU/TR DPLOY-ENG 1	V150 R SLEEVE SYNC LOCK PWR	78-31 TASK 810
EAU/TR DPLOY-ENG 2	S830 + (S831 + S832 + S835 + S836) HYD ISO VALVE SENSOR and All SLEEVE STOW and SLEEVE LOCK SENSOR Messages	78-32 TASK 807
EAU/TR DPLOY-ENG 2	S830 HYD ISO VALVE SENSOR	78-31 TASK 804
EAU/TR DPLOY-ENG 2	S831 L SLEEVE STOW SENSOR	78-31 TASK 806
EAU/TR DPLOY-ENG 2	S832 R SLEEVE STOW SENSOR	78-31 TASK 809
EAU/TR DPLOY-ENG 2	S835 L SLEEVE LOCK SENSOR	78-31 TASK 805
EAU/TR DPLOY-ENG 2	S836 R SLEEVE LOCK SENSOR	78-31 TASK 808
EAU/TR DPLOY-ENG 2	S839 + (S831 + S832 + S835 + S836) DIR CONT VALVE SENSOR and All SLEEVE STOW SENSOR and SLEEVE LOCK SENSOR Messages	78-32 TASK 806
EAU/TR DPLOY-ENG 2	S839 DIR CONT VALVE SENSOR	78-31 TASK 803

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EAU/TR DPLOY-ENG 2	V148 + V150 L and R SLEEVE SYNC LOCK PWR Messages	78-32 TASK 815
EAU/TR DPLOY-ENG 2	V148 L SLEEVE SYNC LOCK PWR	78-31 TASK 819
EAU/TR DPLOY-ENG 2	V150 R SLEEVE SYNC LOCK PWR	78-31 TASK 820
EAU/TR STOW-ENG 1	All Messages except L and R SLEEVE SYNC LOCK PWR and EAU FAULT Messages	78-32 TASK 816
EAU/TR STOW-ENG 1	All STOW Messages except EAU FAULT	78-32 TASK 805
EAU/TR STOW-ENG 1	S831 L SLEEVE STOW SENSOR	78-31 TASK 814
EAU/TR STOW-ENG 1	S832 R SLEEVE STOW SENSOR	78-31 TASK 817
EAU/TR STOW-ENG 1	S833 + S831 HYD ISO VALVE SENSOR and L SLEEVE STOW SENSOR Messages	78-32 TASK 810
EAU/TR STOW-ENG 1	S833 + S832 HYD ISO VALVE SENSOR and R SLEEVE STOW SENSOR Messages	78-32 TASK 811
EAU/TR STOW-ENG 1	S833 + S835 HYD ISO VALVE SENSOR and L SLEEVE LOCK SENSOR Messages	78-32 TASK 808
EAU/TR STOW-ENG 1	S833 + S836 HYD ISO VALVE SENSOR and R SLEEVE LOCK SENSOR Messages	78-32 TASK 809
EAU/TR STOW-ENG 1	S833 HYD ISO VALVE SENSOR	78-31 TASK 812
EAU/TR STOW-ENG 1	S834 DIR CONT VALVE SENSOR	78-31 TASK 811
EAU/TR STOW-ENG 1	S835 L SLEEVE LOCK SENSOR	78-31 TASK 813
EAU/TR STOW-ENG 1	S836 R SLEEVE LOCK SENSOR	78-31 TASK 816
EAU/TR STOW-ENG 1	V148 + V150 L and R SLEEVE SYNC LOCK PWR Messages	78-32 TASK 812
EAU/TR STOW-ENG 1	V148 L SLEEVE SYNC LOCK PWR	78-31 TASK 815
EAU/TR STOW-ENG 1	V150 R SLEEVE SYNC LOCK PWR	78-31 TASK 818
EAU/TR STOW-ENG 2	All Messages except L and R SLEEVE SYNC LOCK PWR and EAU FAULT Messages	78-32 TASK 816
EAU/TR STOW-ENG 2	All STOW Messages except EAU FAULT	78-32 TASK 805
EAU/TR STOW-ENG 2	S830 + S831 HYD ISO VALVE SENSOR and L SLEEVE STOW SENSOR Messages	78-32 TASK 810
EAU/TR STOW-ENG 2	S830 + S832 HYD ISO VALVE SENSOR and R SLEEVE STOW SENSOR Messages	78-32 TASK 811
EAU/TR STOW-ENG 2	S830 + S835 HYD ISO VALVE SENSOR and L SLEEVE LOCK SENSOR Messages	78-32 TASK 808
EAU/TR STOW-ENG 2	S830 + S836 HYD ISO VALVE SENSOR and R SLEEVE LOCK SENSOR Messages	78-32 TASK 809
EAU/TR STOW-ENG 2	S830 HYD ISO VALVE SENSOR	78-31 TASK 812
EAU/TR STOW-ENG 2	S831 L SLEEVE STOW SENSOR	78-31 TASK 814
EAU/TR STOW-ENG 2	S832 R SLEEVE STOW SENSOR	78-31 TASK 817
EAU/TR STOW-ENG 2	S835 L SLEEVE LOCK SENSOR	78-31 TASK 813

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EAU/TR STOW-ENG 2	S836 R SLEEVE LOCK SENSOR	78-31 TASK 816
EAU/TR STOW-ENG 2	S839 DIR CONT VALVE SENSOR	78-31 TASK 811
EAU/TR STOW-ENG 2	V148 + V150 L and R SLEEVE SYNC LOCK PWR Messages	78-32 TASK 813
EAU/TR STOW-ENG 2	V148 L SLEEVE SYNC LOCK PWR	78-31 TASK 815
EAU/TR STOW-ENG 2	V150 R SLEEVE SYNC LOCK PWR	78-31 TASK 818
EAU	M528 EAU FAULT	78-31 TASK 802

————— **END OF TASK** —————

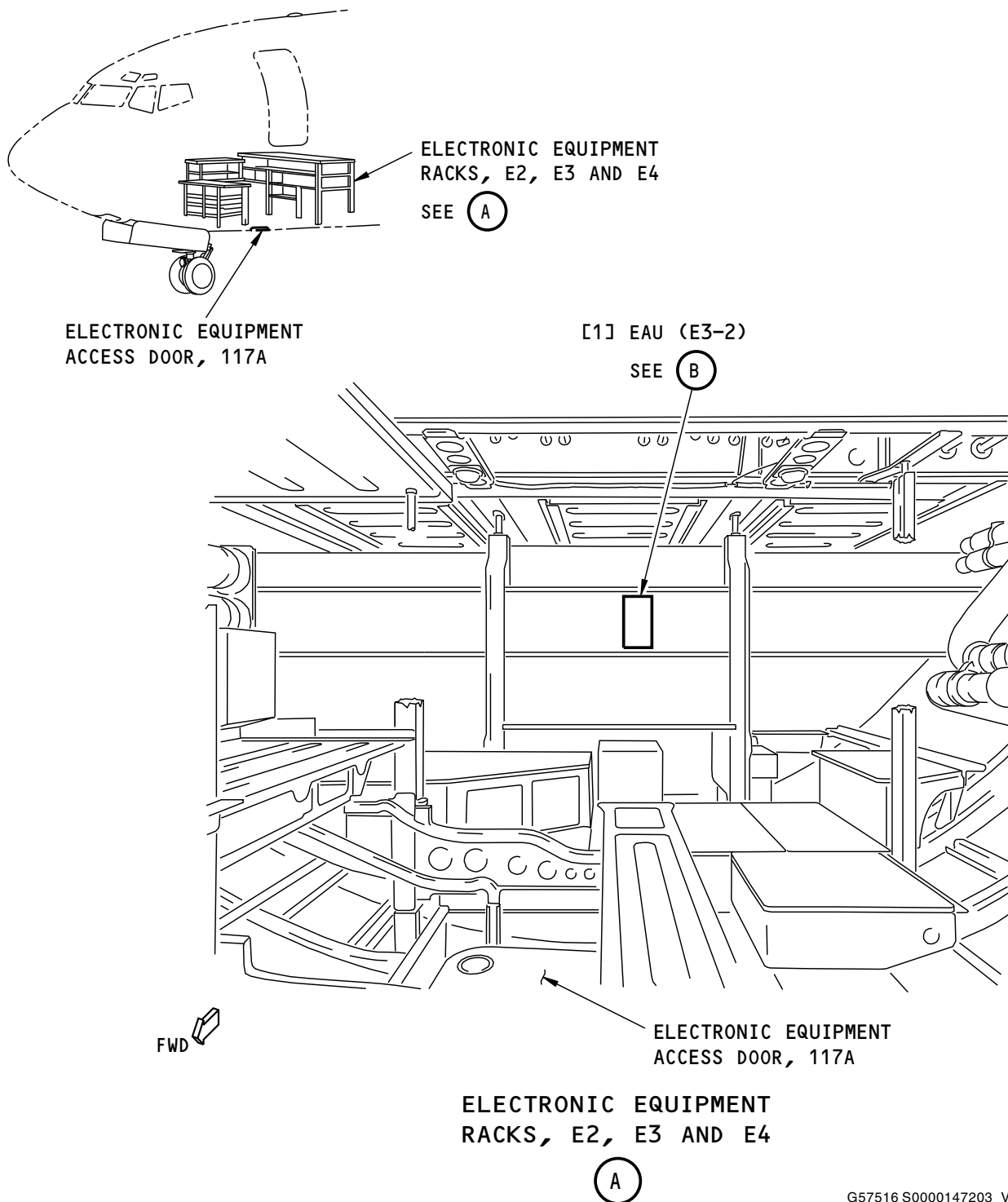
EFFECTIVITY
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G57516 S0000147203_V1

Engine Accessory Unit (EAU) BITE Procedure
Figure 201/78-31-00-990-810-F00 (Sheet 1 of 3)

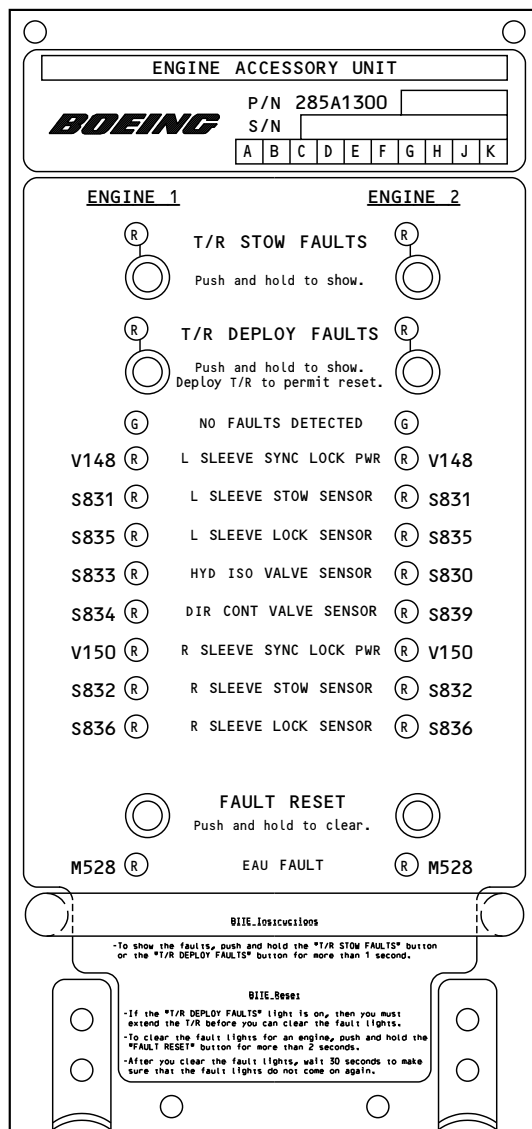
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ENGINE ACCESSORY UNIT

(B)

G57520 S0000147204_V1

Engine Accessory Unit (EAU) BITE Procedure
Figure 201/78-31-00-990-810-F00 (Sheet 2 of 3)

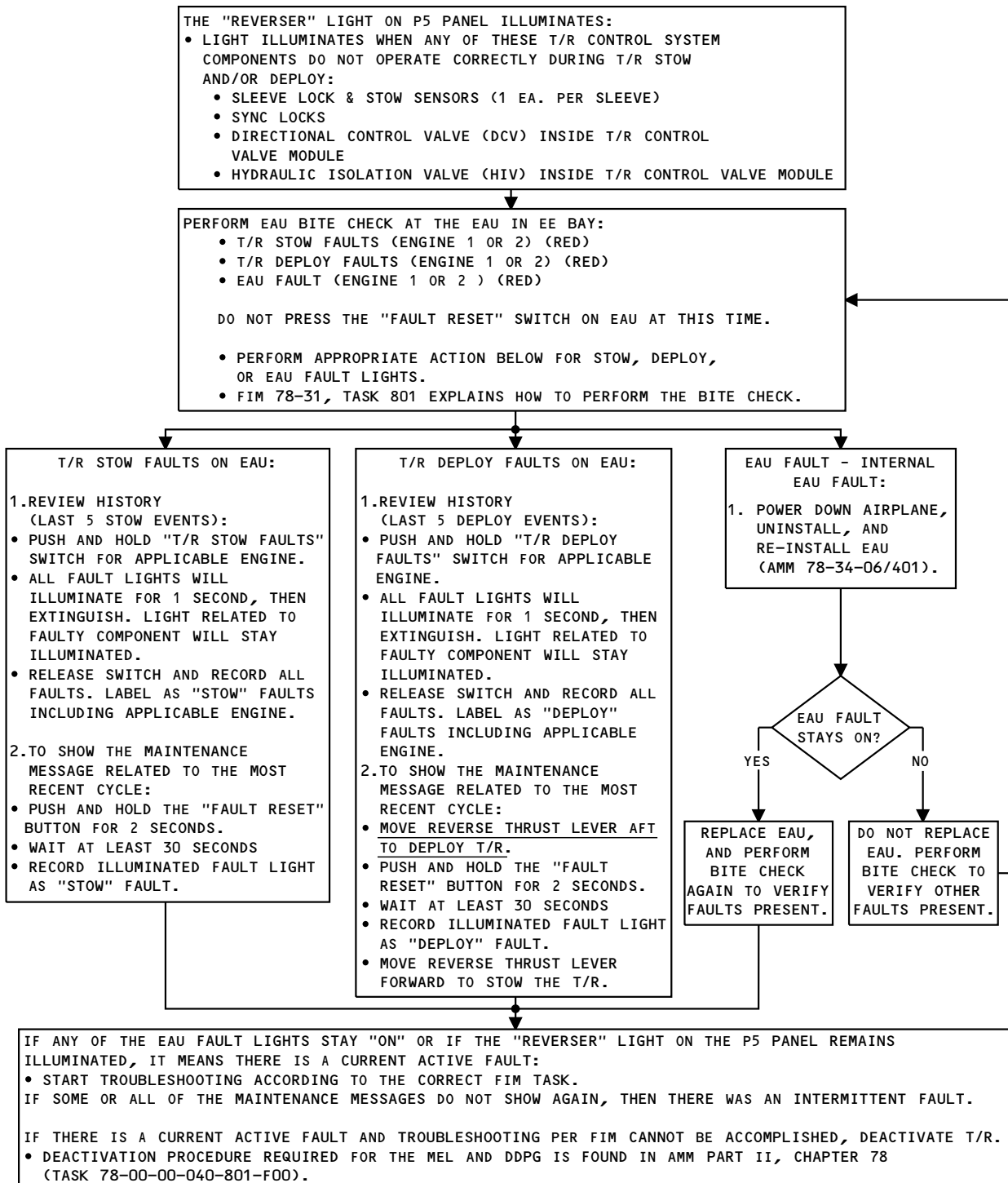
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2483998 S0000583114_V1

Engine Accessory Unit (EAU) BITE Procedure
Figure 201/78-31-00-990-810-F00 (Sheet 3 of 3)

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802. M528 EAU FAULT - Fault Isolation

A. Description

- (1) This task is for this EAU maintenance message:
 - (a) M528 EAU FAULT
- (2) This maintenance message indicates that there is an EAU internal fault.

B. Possible Causes

- (1) EAU, M528

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	4	C01003	ENGINE 1 THRUST REVERSER IND
B	5	C00276	ENGINE 1 THRUST REVERSER CONT
B	7	C01266	ENGINE 1 THRUST REVERSER SYNC LOCK

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	5	C01267	ENGINE 2 THRUST REVERSER SYNC LOCK
C	7	C00277	ENGINE 2 THRUST REVERSER CONT
C	8	C01004	ENGINE 2 THRUST REVERSER IND

D. Related Data

- (1) WDM 78-36-11
- (2) WDM 78-36-21
- (3) SSM 78-36-11
- (4) SSM 78-36-21

E. Fault Isolation Procedure

- (1) Replace the EAU, M528. These are the tasks:
 - Engine Accessory Unit Removal, AMM TASK 78-34-06-000-801-F00
 - Engine Accessory Unit Installation, AMM TASK 78-34-06-400-801-F00
- (a) Do the Engine Accessory Unit (EAU) BITE Procedure, 78-31 TASK 801.
 - 1) If the EAU FAULT Light on the EAU is OFF, then you corrected the problem.

————— **END OF TASK** —————

803. T/R DEPLOY FAULTS - DIR CONT VALVE SENSOR - Fault Isolation

A. Description

- (1) This task is for these single T/R DEPLOY FAULTS that show on the Engine Accessory Unit (EAU) Front Panel:
 - (a) ENGINE 1 - S834 DIR CONT VALVE SENSOR
 - (b) ENGINE 2 - S839 DIR CONT VALVE SENSOR
- (2) These Fault Lights indicate that the Directional Control Valve (DCV) position does not agree with the commanded EXTEND (deploy) position for the T/R.

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B. Possible Causes

- (1) Wiring between the Control Valve Module (CVM) and the EAU
- (2) T/R 1 (T/R 2) CVM, M1173 (M1174)
- (3) EAU, M528

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	4	C01003	ENGINE 1 THRUST REVERSER IND
B	5	C00276	ENGINE 1 THRUST REVERSER CONT
B	6	C01412	ENGINE 1 THRUST REVERSER INTLK
B	7	C01266	ENGINE 1 THRUST REVERSER SYNC LOCK

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	5	C01267	ENGINE 2 THRUST REVERSER SYNC LOCK
C	6	C01413	ENGINE 2 THRUST REVERSER INTLK
C	7	C00277	ENGINE 2 THRUST REVERSER CONT
C	8	C01004	ENGINE 2 THRUST REVERSER IND

D. Related Data

- (1) Component Location and Simplified Schematic (78-31 TASK SUPPORT Figure 301)
- (2) WDM 78-36-11
- (3) WDM 78-36-21
- (4) SSM 78-36-11
- (5) SSM 78-36-21

E. Initial Evaluation

- (1) Do the Engine Accessory Unit (EAU) BITE Procedure, 78-31 TASK 801 to show the current maintenance messages.

F. Fault Isolation Procedure

DO THE DEACTIVATION PROCEDURE TO PREVENT THE OPERATION OF THE THRUST REVERSER. THE ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

- (1) Do this task: Thrust Reverser Deactivation For Ground Maintenance, AMM TASK 78-31-00-040-802-F00.
- (2) Examine the ENG-1 (ENG-2) Wire Harness and connectors between the EAU, M528 and the T/R 1 (T/R 2) CVM, M1173 (M1174) as follows (WDM 78-36-11, WDM 78-36-21):
 - (a) Visually examine the ENG-1 (ENG-2) Wire Harness Electrical Connector, D3054 (D3058), at the applicable T/R 1 (T/R 2) CVM, M1173 (M1174):

NOTE: The CVM is in the Main Gear Wheel Well on the keel beam. The ENG-1 CVM, M1173 is on the left side and the ENG-2 CVM, M1174 is on the right side.

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- (b) Remove the EAU. This is the task: Engine Accessory Unit Removal, AMM TASK 78-34-06-000-801-F00.
- (c) Disconnect the Electrical Connector D3054 (D3058) from the applicable T/R 1 (T/R 2) CVM, M1173 (M1174).
- (d) Examine the ENG-1 (ENG-2) Wire Harness and T/R 1 (T/R 2) CVM Receptacle (Standard Engine Wiring and Equipment Check, AMM TASK 70-70-01-200-801-F00).
 - 1) If the CVM Receptacle is damaged, replace the T/R 1 (T/R 2) CVM, M1173 (M1174). These are the tasks.
 - Control Valve Module Removal, AMM TASK 78-34-01-000-801-F00
 - Control Valve Module Installation, AMM TASK 78-34-01-400-801-F00
 - a) Do the Repair Confirmation at the end of this task.
 - 2) If the Wire Harness or connector is damaged, do the applicable tasks to repair or replace the connector and/or harness (SWPM Ch 20).
 - a) Do the Repair Confirmation at the end of this task.
- (e) Visually examine the ENG-1 (ENG-2) Wire Harness Connector, D1458A (D1458B) and the EAU Receptacle (AMM TASK 70-70-01-200-801-F00).
 - 1) If the EAU Receptacle is damaged, then replace the EAU, M528. These are the tasks:
 - Engine Accessory Unit Removal, AMM TASK 78-34-06-000-801-F00
 - Engine Accessory Unit Installation, AMM TASK 78-34-06-400-801-F00
 - a) Do the Repair Confirmation at the end of this task.
 - 2) If the Wire Harness Connector is damaged, then do the applicable tasks to repair or replace the connector (SWPM Ch 20).
 - a) Do the Repair Confirmation at the end of this task.
- (f) If you did not find a problem, then continue.
- (3) Do the electrical checks that follow (WDM 78-36-11, WDM 78-36-21):
 - (a) Remove the EAU. This is the task: Engine Accessory Unit Removal, AMM TASK 78-34-06-000-801-F00.
 - (b) Disconnect the Electrical Connector D3054 (D3058) from the applicable T/R 1 (T/R 2) CVM, M1173 (M1174).
 - (c) Do a continuity check between the EAU Receptacle D1458A (D1458B) and the T/R 1 (T/R 2) CVM Connector D3054 (D3058) as follows:

ENG-1 WIRE HARNESS

EAU	T/R 1 CVM
D1458A	D3054
pin 8	pin 7
pin 9	pin 5

ENG-2 WIRE HARNESS

EAU	T/R 2 CVM
D1458B	D3058
pin 8	pin 7
pin 9	pin 5

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- (d) Do a check for ground at the applicable T/R 1 (T/R 2) CVM connector D3054 (D3058) as follows:

ENG-1 WIRE HARNESS

T/R 1 CVM

D3054

pin 6 GND

Resistance
CONTINUITY

ENG-2 WIRE HARNESS

T/R 2 CVM

D3058

pin 6 GND

Resistance
CONTINUITY

- (e) Do these electrical checks at the EAU Receptacle D1458A (D1458B):

ENG-1 WIRE HARNESS

EAU

D1458A

pin 8 pin 9

EAU

D1458A

Resistance
OPEN CIRCUIT

EAU

D1458A

pin 8 GND

pin 9 GND

Resistance
OPEN CIRCUIT
OPEN CIRCUIT

ENG-2 WIRE HARNESS

EAU

D1458B

pin 8 pin 9

EAU

D1458B

Resistance
OPEN CIRCUIT

EAU

D1458B

pin 8 GND

pin 9 GND

Resistance
OPEN CIRCUIT
OPEN CIRCUIT

- (f) If the electrical checks are not satisfactory, do the applicable tasks to repair the wiring (SWPM Ch 20).
- 1) Do the Repair Confirmation at the end of this task.
- (g) If the electrical checks are satisfactory, then continue.
- (4) Examine the applicable T/R 1 (T/R 2) CVM, M1173 (M1174) as follows (WDM 78-36-11, WDM 78-36-21):
- (a) If not already disconnected, then disconnect connector D3054 (D3058) from the applicable T/R 1 (T/R 2) CVM, M1173 (M1174).
 - (b) Measure the Resistance at the applicable T/R 1 (T/R 2) CVM Receptacle, D3054 (D3058) as follows:

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T/R 1 CVM

M1173 D3054	M1173 D3054	Resistance
pin 5	pin 6	38.9 - 42.9 Ohms
pin 7	pin 6	33.8 - 37.8 Ohms

T/R 2 CVM

M1174 D3058	M1174 D3058	Resistance
pin 5	pin 6	38.9 - 42.9 Ohms
pin 7	pin 6	33.8 - 37.8 Ohms

- 1) Make sure that the difference between the two Resistance measurements is ≤ 7 Ohms.
 - a) If the Resistance is not in the specified limits, then replace the CVM. These are the tasks:
 - Control Valve Module Removal, AMM TASK 78-34-01-000-801-F00
 - Control Valve Module Installation, AMM TASK 78-34-01-400-801-F00

<1> Do the Repair Confirmation at the end of this task.
 - b) If the Resistance is in the specified limits, then continue.
- (5) Replace the EAU. These are the tasks:
 - Engine Accessory Unit Removal, AMM TASK 78-34-06-000-801-F00
 - Engine Accessory Unit Installation, AMM TASK 78-34-06-400-801-F00

(a) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

- (1) Do these steps:
 - (a) Make sure that the Electrical Connector, D3054 (D3058) is connected to the T/R 1 (T/R 2) CVM, M1173 (M1174).
 - (b) Make sure that all connectors that were disconnected to do an electrical check between the CVM and the EAU are correctly connected.
 - (c) If the EAU is not installed, then install it (Engine Accessory Unit Installation, AMM TASK 78-34-06-400-801-F00).



KEEP PERSONNEL AND EQUIPMENT AWAY FROM THE AREA AROUND THE THRUST REVERSERS. THE THRUST REVERSERS EXTEND AND RETRACT QUICKLY. INJURIES TO PERSONNEL, AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (d) Do this task: Thrust Reverser Activation After Ground Maintenance, AMM TASK 78-31-00-440-803-F00.
- (e) Do these steps to reset the T/R DEPLOY FAULTS Light.
 - 1) Move the Reverse Thrust Lever 1 (2) UP and AFT to the EXTEND (deploy) position.
 - 2) Push and hold the FAULT RESET button for a minimum of two seconds.
 - 3) Wait for at least 30 seconds.

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- 4) If the S834 (S839) DIR CONT VALVE SENSOR Fault Light on the EAU is OFF, then you corrected the problem.



DO THE DEACTIVATION PROCEDURE TO PREVENT THE OPERATION OF THE THRUST REVERSER. THE ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

- 5) If the S834 (S839) DIR CONT VALVE SENSOR Fault Light on the EAU is ON, then deactivate the T/R (Thrust Reverser Deactivation For Ground Maintenance, AMM TASK 78-31-00-040-802-F00) and continue the Fault Isolation Procedure at the subsequent step.

- (2) After you correct the problem, do these steps to put the airplane back to its usual condition:



KEEP PERSONNEL AND EQUIPMENT AWAY FROM THE AREA AROUND THE THRUST REVERSERS. THE THRUST REVERSERS EXTEND AND RETRACT QUICKLY. INJURIES TO PERSONNEL, AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (a) Move the Reverse Thrust Lever 1 (2) FWD and DOWN to retract (stow) the T/R.
- (b) Operate the T/R through an EXTEND and RETRACT cycle.
- (c) Make sure that the REVERSER Fault Light on the Flight Compartment P5 Panel comes ON for approximately 10 seconds after the Reverse Thrust Lever 1 (2) is moved to the RETRACT (stow) position and then goes OFF.
- (d) Wait for at least 30 seconds.
- (e) Make sure that the REVERSER Fault Light on the Flight Compartment P5 Panel stays OFF.

————— END OF TASK —————

804. T/R DEPLOY FAULTS - HYD ISO VALVE SENSOR - Fault Isolation

A. Description

- (1) This task is for these single EAU maintenance messages:
 - (a) ENGINE 1 - S833 HYD ISO VALVE SENSOR
 - (b) ENGINE 2 - S830 HYD ISO VALVE SENSOR
- (2) This maintenance message indicates that the Hydraulic Isolation Valve position does not agree with the commanded EXTEND (deploy) position for the T/R.
- (3) The T/R must go through a EXTEND and RETRACT cycle to show the maintenance message again after the EAU is reset.

B. Possible Causes

- (1) T/R 1 (T/R 2) CVM, M1173 (M1174)

NOTE: The Hydraulic Isolation valve is spring loaded to the closed position. The HYD ISO VALVE SENSOR fault can be set if the valve closes when the T/R is extended (deployed). This can be caused by the loss of hydraulic pressure (the removal of hydraulic power during maintenance), or the loss of the electrical signal to the ARM Solenoid of the CVM. If you think there was a loss of the electrical signal, then do the T/R DEPLOY FAULTS - HYD ISO VALVE SENSOR and All SLEEVE STOW and SLEEVE LOCK SENSOR Messages - Fault Isolation, 78-32 TASK 807.

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- (2) Wiring between the CVM and the EAU
- (3) EAU, M528

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	4	C01003	ENGINE 1 THRUST REVERSER IND
B	5	C00276	ENGINE 1 THRUST REVERSER CONT
B	6	C01412	ENGINE 1 THRUST REVERSER INTLK
B	7	C01266	ENGINE 1 THRUST REVERSER SYNC LOCK

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	5	C01267	ENGINE 2 THRUST REVERSER SYNC LOCK
C	6	C01413	ENGINE 2 THRUST REVERSER INTLK
C	7	C00277	ENGINE 2 THRUST REVERSER CONT
C	8	C01004	ENGINE 2 THRUST REVERSER IND

D. Related Data

- (1) Component Location and Simplified Schematic (78-31 TASK SUPPORT Figure 301)
- (2) WDM 78-36-11
- (3) WDM 78-36-21
- (4) SSM 78-36-11
- (5) SSM 78-36-21

E. Initial Evaluation

- (1) Do the Engine Accessory Unit (EAU) BITE Procedure, 78-31 TASK 801 to show the current maintenance messages.

F. Fault Isolation Procedure



DO THE DEACTIVATION PROCEDURE TO PREVENT THE OPERATION OF THE THRUST REVERSER. THE ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

- (1) Do this task: Thrust Reverser Deactivation For Ground Maintenance, AMM TASK 78-31-00-040-802-F00.
- (2) Examine the applicable T/R 1 (T/R 2) CVM, M1173 (M1174) as follows (WDM 78-36-11, WDM 78-36-21):
 - (a) If not already disconnected, then disconnect connector D3054 (D3058) from the applicable T/R 1 (T/R 2) CVM, M1173 (M1174).
 - (b) Measure the Resistance at the applicable T/R 1 (T/R 2) CVM Receptacle, D3054 (D3058) as follows:

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T/R 1 CVM

M1173 D3054	M1173 D3054	Resistance
pin 2	pin 3	38.9 - 42.9 Ohms
pin 4	pin 3	33.8 - 37.8 Ohms

T/R 2 CVM

M1174 D3058	M1174 D3058	Resistance
pin 2	pin 3	38.9 - 42.9 Ohms
pin 4	pin 3	33.8 - 37.8 Ohms

- 1) Make sure that the difference between the two Resistance measurements is ≤ 7 Ohms.
 - a) If the Resistance is not in the specified limits, then replace the CVM. These are the tasks:
 - Control Valve Module Removal, AMM TASK 78-34-01-000-801-F00
 - Control Valve Module Installation, AMM TASK 78-34-01-400-801-F00

<1> Do the Repair Confirmation at the end of this task.
 - b) If the Resistance is in the specified limits, then continue.
- (3) Examine the ENG-1 (ENG-2) Wire Harness and connectors between the EAU, M528 and the ENG-1 (ENG-2) CVM, M1173 (M1174) as follows (WDM 78-36-11, WDM 78-36-21):
 - (a) Visually examine the ENG-1 (ENG-2) Wire Harness Electrical Connector D3054 (D3058), at the applicable CVM, M1173 (M1174):

NOTE: The CVM is in the Main Gear Wheel Well on the keel beam. The ENG-1 CVM, M1173 is on the left side and the ENG-2 CVM, M1174 is on the right side.
 - (b) Remove the EAU. This is the task: Engine Accessory Unit Removal, AMM TASK 78-34-06-000-801-F00.
 - (c) Disconnect the ENG-1 (ENG-2) Electrical Connector, D3054 (D3058) from the applicable T/R CVM.
 - (d) Examine the ENG-1 (ENG-2) Wire Harness and CVM Receptacle (Standard Engine Wiring and Equipment Check, AMM TASK 70-70-01-200-801-F00).
 - 1) If the CVM Receptacle is damaged, then replace the T/R 1 (T/R 2) CVM, M1173 (M1174). These are the tasks.
 - Control Valve Module Removal, AMM TASK 78-34-01-000-801-F00
 - Control Valve Module Installation, AMM TASK 78-34-01-400-801-F00

a) Do the Repair Confirmation at the end of this task.
 - 2) If the Wire Harness or connector is damaged, do the applicable tasks to repair or replace the connector and/or harness (SWPM Ch 20).

a) Do the Repair Confirmation at the end of this task.
 - (e) Visually examine the ENG-1 (ENG-2) Wire Harness Connector, D1458A (D1458B) and the EAU Receptacle (AMM TASK 70-70-01-200-801-F00).
 - 1) If the EAU Receptacle is damaged, then replace the EAU, M528. These are the tasks:

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- Engine Accessory Unit Removal, AMM TASK 78-34-06-000-801-F00
- Engine Accessory Unit Installation, AMM TASK 78-34-06-400-801-F00
 - a) Do the Repair Confirmation at the end of this task.
- 2) If the Wire Harness Connector is damaged, do the applicable tasks to repair or replace the connector (SWPM Ch 20).
 - a) Do the Repair Confirmation at the end of this task.
- (f) If you did not find a problem, then continue.
- (4) Do the electrical checks that follow (WDM 78-36-11, WDM 78-36-21):
 - (a) Remove the EAU. This is the task: Engine Accessory Unit Removal, AMM TASK 78-34-06-000-801-F00.
 - (b) Disconnect the Electrical Connector D3054 (D3058) from the applicable T/R 1 (T/R 2) CVM, M1173 (M1174).
 - (c) Do a continuity check between the EAU Receptacle D1458A (D1458B) and the T/R 1 (T/R 2) CVM Connector D3054 (D3058) as follows:

ENG-1 WIRE HARNESS

EAU	T/R 1 CVM
D1458A	D3054
pin 43	pin 4
pin 44	pin 2

ENG-2 WIRE HARNESS

EAU	T/R 2 CVM
D1458B	D3058
pin 43	pin 4
pin 44	pin 2

- (d) Do a check for ground at the applicable T/R 1 (T/R 2) CVM Connector, D3054 (D3058) as follows:

ENG-1 WIRE HARNESS

T/R 1 CVM		Resistance
D3054		CONTINUITY
pin 3	GND	

ENG-2 WIRE HARNESS

T/R 2 CVM		Resistance
D3058		CONTINUITY
pin 3	GND	

- (e) Do these electrical checks at the EAU Receptacle, D1458A (D1458B):

ENG-1 WIRE HARNESS

EAU	EAU	Resistance
D1458A	D1458A	OPEN CIRCUIT
pin 43	pin 44	

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EAU**D1458A**

pin 43 GND
pin 44 GND

Resistance

OPEN CIRCUIT
OPEN CIRCUIT

ENG-2 WIRE HARNESS**EAU****D1458B**

pin 43 EAU

EAU**D1458B**

pin 44

Resistance

OPEN CIRCUIT

EAU**D1458B**

pin 43 GND
pin 44 GND

Resistance

OPEN CIRCUIT
OPEN CIRCUIT

- (f) If the electrical checks are not satisfactory, then do the applicable tasks to repair the wiring (SWPM Ch 20).
- 1) Do the Repair Confirmation at the end of this task.
- (g) If the electrical checks are satisfactory, then continue.
- (5) Replace the EAU. These are the tasks:
- Engine Accessory Unit Removal, AMM TASK 78-34-06-000-801-F00
 - Engine Accessory Unit Installation, AMM TASK 78-34-06-400-801-F00
- (a) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

- (1) Do these steps:
- (a) Make sure that the Electrical Connector, D3054 (D3058) is connected to the T/R 1 (T/R 2) CVM, M1173 (M1174)
 - (b) Make sure that all connectors that were disconnected to do an electrical check between the CVM and the EAU are correctly connected.
 - (c) If the EAU is not installed, then install it (Engine Accessory Unit Installation, AMM TASK 78-34-06-400-801-F00).

**WARNING**

KEEP PERSONNEL AND EQUIPMENT AWAY FROM THE AREA AROUND THE THRUST REVERSERS. THE THRUST REVERSERS EXTEND AND RETRACT QUICKLY. INJURIES TO PERSONNEL, AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (d) Do this task: Thrust Reverser Activation After Ground Maintenance, AMM TASK 78-31-00-440-803-F00.
- (e) Do these steps to reset the T/R DEPLOY FAULTS Light.
- 1) Move the Reverse Thrust Lever 1 (2) UP and AFT to the EXTEND (deploy) position.
 - 2) Push and hold the FAULT RESET button for a minimum of two seconds.
 - 3) Wait for at least 30 seconds.

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- 4) If the S833 (S830) HYD ISO VALVE SENSOR Fault Light on the EAU is OFF, then you corrected the problem.



DO THE DEACTIVATION PROCEDURE TO PREVENT THE OPERATION OF THE THRUST REVERSER. THE ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

- 5) If the S833 (S830) HYD ISO VALVE SENSOR Fault Light on the EAU is ON, then deactivate the T/R (Thrust Reverser Deactivation For Ground Maintenance, AMM TASK 78-31-00-040-802-F00) and continue the Fault Isolation Procedure at the subsequent step.

- (2) After you correct the problem, do these steps to put the airplane back to its usual condition:



KEEP PERSONNEL AND EQUIPMENT AWAY FROM THE AREA AROUND THE THRUST REVERSERS. THE THRUST REVERSERS EXTEND AND RETRACT QUICKLY. INJURIES TO PERSONNEL, AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (a) Move the Reverse Thrust Lever forward and down to RETRACT (stow) the T/R.
- (b) Operate the T/R through an EXTEND and RETRACT cycle.
- (c) Make sure that the REVERSER Fault Light on the Flight Compartment P5 Panel comes ON for approximately 10 seconds after the Reverse Thrust Lever 1 (2) is moved to the RETRACT (stow) position and then goes OFF.
- (d) Wait for at least 30 seconds.
- (e) Make sure that the REVERSER Fault Light on the Flight Compartment P5 Panel stays OFF.

————— **END OF TASK** —————

805. T/R DEPLOY FAULTS - L SLEEVE LOCK SENSOR - Fault Isolation

A. Description

- (1) This task is for these single EAU maintenance messages:
 - (a) ENGINE 1 - S835 L SLEEVE LOCK SENSOR
 - (b) ENGINE 2 - S835 L SLEEVE LOCK SENSOR
- (2) This Fault Light indicates that the position of the Left T/R Sleeve does not agree with the commanded EXTEND (deploy) position for the T/R.

B. Possible Causes

- (1) Broken or binding Manual Lockout Handle on the Upper Locking Hydraulic Actuator (ULHA)
- (2) Left Sleeve Lock Proximity Sensor (SLPS), S835
- (3) Wiring between the Left SLPS and the EAU
- (4) ULHA
- (5) EAU, M528

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C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
B	4	C01003	ENGINE 1 THRUST REVERSER IND
B	5	C00276	ENGINE 1 THRUST REVERSER CONT
B	6	C01412	ENGINE 1 THRUST REVERSER INTLK
B	7	C01266	ENGINE 1 THRUST REVERSER SYNC LOCK

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
C	5	C01267	ENGINE 2 THRUST REVERSER SYNC LOCK
C	6	C01413	ENGINE 2 THRUST REVERSER INTLK
C	7	C00277	ENGINE 2 THRUST REVERSER CONT
C	8	C01004	ENGINE 2 THRUST REVERSER IND

D. Related Data

- (1) Component Location (78-31 TASK SUPPORT Figure 302, 78-31 TASK SUPPORT Figure 303)
- (2) Simplified Schematic (78-31 TASK SUPPORT Figure 302, 78-31 TASK SUPPORT Figure 303)
- (3) WDM 78-36-11
- (4) WDM 78-36-21
- (5) SSM 78-36-11
- (6) SSM 78-36-21

E. Initial Evaluation

- (1) Do the Engine Accessory Unit (EAU) BITE Procedure, 78-31 TASK 801 to show the current maintenance messages.

F. Fault Isolation Procedure



KEEP PERSONNEL AND EQUIPMENT AWAY FROM THE AREA AROUND THE THRUST REVERSERS. THE THRUST REVERSERS EXTEND AND RETRACT QUICKLY. INJURIES TO PERSONNEL, AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (1) Do this task: Open the Fan Cowl Panels, AMM TASK 71-11-02-010-801-F00.
- (2) Operate the T/R through an EXTEND and RETRACT cycle while another person monitors the Lockout Handle on the ULHA.
 - (a) On the ULHA, make sure that the Manual Lockout Handle is not binding or broken.
 - 1) If the Manual Lockout Handle is binding, examine and replace the shim as necessary, and make sure that the assembly gaps are satisfactory as specified in the shim installation paragraph of Manual Unlock Handle Assembly Replacement, AMM TASK 78-31-03-300-804-F00.
 - 2) If the Manual Lockout Handle is broken, replace it. This is the task: Manual Unlock Handle Assembly Replacement, AMM TASK 78-31-03-300-804-F00.
 - 3) Do the Repair Confirmation at the end of this task.
 - (b) If the Manual Lockout Handle is satisfactory, then continue.

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- (3) Do the Sleeve Lock Proximity Sensor Adjustment and Test, AMM TASK 78-34-03-800-801-F00 for the applicable ENG-1 (ENG-2) Left SLPS, S835.
- (a) If the SLPS is not in the limits, then adjust the sensor.
 - 1) Do the Repair Confirmation at the end of this task.
 - (b) If the SLPS is in the limits, then continue.
- (4) Do this task: Thrust Reverser Upper Locking Actuator - Integrity Test, AMM TASK 78-31-03-700-801-F00.
- (a) If the thrust reverser sleeve starts to deploy, replace the ULHA. These are the tasks:
Upper Locking Hydraulic Actuator Removal, AMM TASK 78-31-03-000-801-F00.
Upper Locking Hydraulic Actuator - Installation, AMM TASK 78-31-03-400-801-F00.
 - 1) Do the repair confirmation at the end of this task.
 - a) If the actuator locks prevent actuator movement, then continue.
- (5) Examine the applicable ENG-1 (ENG-2) Left SLPS as follows (WDM 78-36-11, WDM 78-36-21):
- (a) See if the electrical connector D30008 is correctly connected to the Strut Receptacle.
 - (b) Disconnect the applicable ENG-1 (ENG-2) Left SLPS connector D30008 from the respective Strut Receptacle D30208 (D30408).
 - (c) Visually examine the Strut Receptacle and the SLPS connector for damage.
 - 1) If the Strut Receptacle or the SLPS connector is damaged, do the applicable tasks to repair or replace the connector(s) as necessary (SWPM Ch 20).
 - a) Do the Repair Confirmation at the end of this task.
 - 2) If a connector was not correctly connected and no other problem was found, then re-connect the connector and do the Repair Confirmation at the end of this task.
 - (d) Measure and record the SLPS Resistance between the pins indicated below:
NOTE: The difference between the two Resistance measurements should be ≤ 2 Ohms.

L SLPS		L SLPS	Resistance
D30008		D30008	
pin 1	.....	pin 4	Value in Ohms
pin 1	.....	pin 5	Value in Ohms

- (e) Do these checks:

L SLPS		Resistance
D30008		
pin 1	 GND	OPEN CIRCUIT
pin 4	 GND	OPEN CIRCUIT
pin 5	 GND	OPEN CIRCUIT

- (f) If the Resistance checks are not satisfactory, then replace the applicable ENG-1 (ENG-2) Left SLPS, S835. These are the tasks:
- Thrust Reverser Sleeve Lock Proximity Sensor - Removal, AMM TASK 78-34-03-000-801-F00
 - Thrust Reverser Sleeve Lock Proximity Sensor - Installation, AMM TASK 78-34-03-400-801-F00

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- 1) Do the Repair Confirmation at the end of this task.
- (6) Examine the ENG-1 (ENG-2) Wire Harness and connectors between the EAU, M528 and the ENG-1 (ENG-2) Left SLPS, S835 (WDM 78-36-11, WDM 78-36-21)
 - (a) Disconnect the applicable ENG-1 (ENG-2) SLPS connector D30008 from the respective Strut Receptacle D30208 (D30408).
 - (b) Remove the EAU. This is the task: Engine Accessory Unit Removal, AMM TASK 78-34-06-000-801-F00.
 - (c) Visually examine the ENG-1 (ENG-2) Wire Harness Connector, D1458A (D1458B) and the EAU Receptacle (AMM TASK 70-70-01-200-801-F00).
 - 1) If the EAU Receptacle is damaged, then replace the EAU, M528. These are the tasks:
 - Engine Accessory Unit Removal, AMM TASK 78-34-06-000-801-F00
 - Engine Accessory Unit Installation, AMM TASK 78-34-06-400-801-F00
 - a) Do the Repair Confirmation at the end of this task.
 - 2) If the ENG-1 (ENG-2) Wire Harness or connector is damaged, do the applicable tasks to repair or replace the connector and/or harness as necessary (SWPM Ch 20).
 - a) Do the Repair Confirmation at the end of this task.
- (7) Do the wiring checks that follow (WDM 78-36-11, WDM 78-36-21):
 - (a) Disconnect the applicable ENG-1 (ENG-2) SLPS connector D30008 from the respective Strut Receptacle D30208 (D30408).
 - (b) Remove the EAU. This is the task: Engine Accessory Unit Removal, AMM TASK 78-34-06-000-801-F00.
 - (c) Do a continuity check between the EAU Receptacle D1458A (D1458B) and the ENG-1 (ENG-2) Left T/R Sleeve Strut Receptacle D30208 (D30408) as follows:

ENG-1 WIRE HARNESS

EAU	L T/R SLEEVE
D1458A	D30208
pin 28	pin 4
pin 27	pin 5

ENG-2 WIRE HARNESS

EAU	L T/R SLEEVE
D1458B	D30408
pin 28	pin 4
pin 27	pin 5

- (d) Do a check for ground at the applicable Strut Receptacle D30208 (D30408) as follows:

ENG-1 WIRE HARNESS

L T/R SLEEVE	Resistance
D30208	CONTINUITY
pin 1	GND

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ENG-2 WIRE HARNESS

L T/R SLEEVE

D30408

pin 1 GND

Resistance

CONTINUITY

- (e) Do these checks at the EAU Receptacle D1458A (D1458B):

ENG-1 WIRE HARNESS

EAU

D1458A

pin 28 pin 27

EAU

D1458A

Resistance

OPEN CIRCUIT

EAU

D1458A

pin 28 GND

pin 27 GND

Resistance

OPEN CIRCUIT

OPEN CIRCUIT

ENG-2 WIRE HARNESS

EAU

D1458B

pin 28 pin 27

EAU

D1458B

Resistance

OPEN CIRCUIT

EAU

D1458B

pin 28 GND

pin 27 GND

Resistance

OPEN CIRCUIT

OPEN CIRCUIT

- (f) If the wiring checks are not satisfactory, do the applicable tasks to repair the wiring (SWPM Ch 20).
- 1) Do the Repair Confirmation at the end of this task.
- (g) If the wiring checks are satisfactory, then continue.
- (8) Replace the EAU, M528. These are the tasks:
- Engine Accessory Unit Removal, AMM TASK 78-34-06-000-801-F00
 - Engine Accessory Unit Installation, AMM TASK 78-34-06-400-801-F00
- (a) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

- (1) Do these steps:
- (a) Make sure that the ENG-1 (ENG-2) Left SLPS connector D30008 is connected to the respective Strut Receptacle D30208 (D30408).
 - (b) Make sure that all connectors that were disconnected to do an electrical check between the Strut Receptacle and the EAU are correctly connected.
 - (c) If the EAU is not installed, do this task: Engine Accessory Unit Installation, AMM TASK 78-34-06-400-801-F00.
 - (d) Do this task: Thrust Reverser Activation After Ground Maintenance, AMM TASK 78-31-00-440-803-F00.

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MAKE SURE THAT THERE ARE NO PERSONS OR EQUIPMENT IN THE AREA OF THE THRUST REVERSER. MOVEMENT OF THE THRUST REVERSER CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (e) Do these steps to reset the T/R DEPLOY FAULTS Light.
- 1) Move the Reverse Thrust Lever 1 (2) UP and AFT to the EXTEND (deploy) position.
 - 2) Push and hold the FAULT RESET button for a minimum of two seconds.
 - 3) Wait for at least 30 seconds.
 - 4) If the S835 L SLEEVE LOCK SENSOR Fault Light on the EAU is OFF, then you corrected the problem.



DO THE DEACTIVATION PROCEDURE TO PREVENT THE OPERATION OF THE THRUST REVERSER. THE ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

- 5) If the S835 L SLEEVE LOCK SENSOR Fault Light on the EAU is ON, deactivate the T/R (Thrust Reverser Deactivation For Ground Maintenance, AMM TASK 78-31-00-040-802-F00) and continue the Fault Isolation Procedure at the subsequent step.
- (2) After you correct the problem, do these steps to put the airplane back to its usual condition:
- (a) Do the EEC TEST, AMM TASK 73-21-00-700-804-F00.
- NOTE: This check will make sure that the electrical connections for the Linear Variable Differential Transformer (LVDT)s are correct.
- 1) If a maintenance message shows, do the applicable Fault Isolation Procedure for that maintenance message.
 - 2) If no maintenance messages show, the electrical connections for the LVDTs are correct.



MAKE SURE THAT THERE ARE NO PERSONS OR EQUIPMENT IN THE AREA OF THE THRUST REVERSER. MOVEMENT OF THE THRUST REVERSER CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (b) Operate the T/R through an EXTEND and RETRACT cycle.
- (c) Make sure that the REVERSER Fault Light on the Flight Compartment P5 Panel comes ON for approximately 10 seconds after the Reverse Thrust Lever 1 (2) is moved to the RETRACT (stow) position and then goes OFF.
- (d) Wait for at least 30 seconds.
- (e) Make sure that the REVERSER Fault Light on the Flight Compartment P5 Panel stays OFF.
- (f) Do this task: Close the Fan Cowl Panels, AMM TASK 71-11-02-410-801-F00.

————— **END OF TASK** —————

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806. T/R DEPLOY FAULTS - L SLEEVE STOW SENSOR - Fault Isolation

A. Description

- (1) This task is for these single EAU maintenance messages:
 - (a) ENGINE 1 - S831 L SLEEVE STOW SENSOR
 - (b) ENGINE 2 - S831 L SLEEVE STOW SENSOR
- (2) This Fault Light indicates that the Sleeve Stow Proximity Sensor (SSPS) senses that the Left T/R Sleeve position does not agree with the commanded DEPLOY position for the T/R.

B. Possible Causes

- (1) SSPS Roller
- (2) Wiring between the Left SSPS and the EAU
- (3) Left SSPS, S831
- (4) ENG-1 (ENG-2) T/R Left Sleeve Sync Lock, V148
- (5) EAU, M528

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	4	C01003	ENGINE 1 THRUST REVERSER IND

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	8	C01004	ENGINE 2 THRUST REVERSER IND

D. Related Data

- (1) Component Location (78-31 TASK SUPPORT Figure 302, 78-31 TASK SUPPORT Figure 303)
- (2) Simplified Schematic (78-31 TASK SUPPORT Figure 302, 78-31 TASK SUPPORT Figure 303)
- (3) WDM 78-36-11
- (4) WDM 78-36-21
- (5) SSM 78-36-11
- (6) SSM 78-36-21

E. Initial Evaluation

- (1) Do the Engine Accessory Unit (EAU) BITE Procedure, 78-31 TASK 801 to show the current maintenance messages.

F. Fault Isolation Procedure



DO THE DEACTIVATION PROCEDURE TO PREVENT THE OPERATION OF THE THRUST REVERSER. THE ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

- (1) Do this task: Thrust Reverser Deactivation For Ground Maintenance, AMM TASK 78-31-00-040-802-F00.
- (2) Do this task: Open the Fan Cowl Panels, AMM TASK 71-11-02-010-801-F00.

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- (3) Do an inspection of the SSPS Roller Assembly (78-31 TASK SUPPORT Figure 302).
- (a) If the roller is damaged, worn, or has flat spots, then replace the damaged hardware.
- 1) Do the Repair Confirmation at the end of this task.
- (b) If you do not find any problems with the Roller Assembly hardware, then continue.
- (4) Examine the applicable ENG-1 (ENG-2) Left SSPS as follows (WDM 78-36-11, WDM 78-36-21):
- (a) See if the electrical connector D30002 is correctly connected to the Strut Receptacle.
- (b) Disconnect the applicable ENG-1 (ENG-2) Left SSPS connector D30002 from the respective Strut Receptacle D30202 (D30402).
- (c) Visually examine the Strut Receptacle and the SSPS connector for damage.
- 1) If the Strut Receptacle or the SSPS connector is damaged, do the applicable tasks to repair or replace the connector(s) as necessary (SWPM Ch 20).
- a) Do the Repair Confirmation at the end of this task.
- 2) If a connector was not correctly connected and no other problem was found, then re-connect the connector and do the Repair Confirmation at the end of this task.
- (d) Measure and record the SSPS Resistance between the pins indicated below:

NOTE: The difference between the two Resistance measurements should be ≤ 2 Ohms.

L SSPS		L SSPS	
D30002		D30002	Resistance
pin 1	.....	pin 7	Value in Ohms
pin 1	.....	pin 8	Value in Ohms

- (e) Do these checks:

L SSPS		
D30002		Resistance
pin 1	 GND	OPEN CIRCUIT
pin 7	 GND	OPEN CIRCUIT
pin 8	 GND	OPEN CIRCUIT

- (f) If the Resistance checks are not satisfactory, then replace the applicable ENG-1 (ENG-2) Left SSPS, S831. These are the tasks:
- Thrust Reverser Sleeve Stow Proximity Sensor Removal, AMM TASK 78-34-02-000-801-F00
 - Thrust Reverser Sleeve Stow Proximity Sensor Installation, AMM TASK 78-34-02-400-801-F00
- 1) Do the Repair Confirmation at the end of this task.
- (5) Examine the ENG-1 (ENG-2) Wire Harness and connectors between the EAU, M528 and the ENG-1 (ENG-2) Left SSPS, S831 (WDM 78-36-11, WDM 78-36-21).
- (a) Disconnect the applicable ENG-1 (ENG-2) SSPS connector D30002 from the respective Strut Receptacle D30202 (D30402).
- (b) Remove the EAU. This is the task: Engine Accessory Unit Removal, AMM TASK 78-34-06-000-801-F00.
- (c) Visually examine the ENG-1 (ENG-2) Wire Harness Connector, D1458A (D1458B) and the EAU Receptacle (AMM TASK 70-70-01-200-801-F00).

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- 1) If the EAU Receptacle is damaged, then replace the EAU, M528. These are the tasks:
 - Engine Accessory Unit Removal, AMM TASK 78-34-06-000-801-F00
 - Engine Accessory Unit Installation, AMM TASK 78-34-06-400-801-F00
 - a) Do the Repair Confirmation at the end of this task.
 - 2) If the ENG-1 (ENG-2) Wire Harness or connector is damaged, do the applicable tasks to repair or replace the connector and/or harness as necessary (SWPM Ch 20).
 - a) Do the Repair Confirmation at the end of this task.
- (6) Do the wiring checks that follow (WDM 78-36-11, WDM 78-36-21):
- (a) Disconnect the applicable ENG-1 (ENG-2) SSPS connector D30002 from the respective Strut Receptacle D30202 (D30402).
 - (b) Remove the EAU. This is the task: Engine Accessory Unit Removal, AMM TASK 78-34-06-000-801-F00.
 - (c) Do a continuity check between the EAU Receptacle D1458A (D1458B) and the ENG-1 (ENG-2) Left T/R Sleeve Strut Receptacle D30202 (D30402) as follows:

ENG-1 WIRE HARNESS

EAU	L T/R SLEEVE
D1458A	D30202
pin 15	pin 7
pin 14	pin 8

ENG-2 WIRE HARNESS

EAU	L T/R SLEEVE
D1458B	D30402
pin 15	pin 7
pin 14	pin 8

- (d) Do a check for ground at the applicable Strut Receptacle D30208 (D30408) as follows:

ENG-1 WIRE HARNESS

L T/R SLEEVE		Resistance
D30202		CONTINUITY
pin 1	GND	

ENG-2 WIRE HARNESS

L T/R SLEEVE		Resistance
D30402		CONTINUITY
pin 1	GND	

- (e) Do these checks at the EAU Receptacle D1458A (D1458B):

ENG-1 WIRE HARNESS

EAU	EAU	Resistance
D1458A	D1458A	OPEN CIRCUIT
pin 14	pin 15	

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EAU**D1458A**

pin 14 GND
pin 15 GND

Resistance

OPEN CIRCUIT
OPEN CIRCUIT

ENG-2 WIRE HARNESS**EAU****D1458B**

pin 14 pin 15

EAU**D1458B****Resistance**

OPEN CIRCUIT

EAU**D1458B**

pin 14 GND
pin 15 GND

Resistance

OPEN CIRCUIT
OPEN CIRCUIT

- (f) If the wiring checks are not satisfactory, do the applicable tasks to repair the wiring (SWPM Ch 20).
 - 1) Do the Repair Confirmation at the end of this task.
- (g) If the wiring checks are satisfactory, then continue.
- (7) Do the Stow Sensor Adjustment and Test, AMM TASK 78-34-02-700-801-F00 for the applicable ENG-1 (ENG-2) Left SSPS, S831.
 - (a) If the SSPS is not in the limits, then adjust the sensor.
 - 1) Do the Repair Confirmation at the end of this task.
 - (b) If the SSPS is in the limits, then continue.
- (8) If you have not already replaced it, replace the Left SSPS, S831. These are the tasks:
 - Thrust Reverser Sleeve Stow Proximity Sensor Removal, AMM TASK 78-34-02-000-801-F00
 - Thrust Reverser Sleeve Stow Proximity Sensor Installation, AMM TASK 78-34-02-400-801-F00
 - (a) Do the Repair Confirmation at the end of this task.
- (9) If you have not already replaced it, replace the Left Sync Lock, V148. These are the tasks:
 - Thrust Reverser Sync Lock Removal, AMM TASK 78-34-10-000-801-F00
 - Thrust Reverser Sync Lock Installation, AMM TASK 78-34-10-400-801-F00
 - (a) Do the Repair Confirmation at the end of this task.
- (10) Replace the EAU, M528. These are the tasks:
 - Engine Accessory Unit Removal, AMM TASK 78-34-06-000-801-F00
 - Engine Accessory Unit Installation, AMM TASK 78-34-06-400-801-F00
 - (a) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

- (1) Do these steps:
 - (a) Make sure that the applicable ENG-1 (ENG-2) SSPS connector D30002 from the respective Strut Receptacle D30202 (D30402).

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- (b) Make sure that all connectors that were disconnected to do an electrical check between the Strut Receptacle and the EAU are correctly connected.
- (c) If the EAU is not installed, do this task: Engine Accessory Unit Installation, AMM TASK 78-34-06-400-801-F00.
- (d) Do this task: Thrust Reverser Activation After Ground Maintenance, AMM TASK 78-31-00-440-803-F00.

**WARNING**

MAKE SURE THAT THERE ARE NO PERSONS OR EQUIPMENT IN THE AREA OF THE THRUST REVERSER. MOVEMENT OF THE THRUST REVERSER CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (e) Do these steps to reset the T/R DEPLOY FAULTS Light.
 - 1) Move the Reverse Thrust Lever 1 (2) UP and AFT to the EXTEND (deploy) position.
 - 2) Push and hold the FAULT RESET button for a minimum of two seconds.
 - 3) Wait for at least 30 seconds.
 - 4) If the S831 L SLEEVE STOW SENSOR Fault Light on the EAU is OFF, then you corrected the problem.

**WARNING**

DO THE DEACTIVATION PROCEDURE TO PREVENT THE OPERATION OF THE THRUST REVERSER. THE ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

- 5) If the S831 L SLEEVE STOW SENSOR Fault Light on the EAU is ON, deactivate the T/R (Thrust Reverser Deactivation For Ground Maintenance, AMM TASK 78-31-00-040-802-F00) and continue the Fault Isolation Procedure at the subsequent step.
- (2) After you correct the problem, do these steps to put the airplane back to its usual condition:
 - (a) Do this task: EEC TEST, AMM TASK 73-21-00-700-804-F00.

NOTE: This check will make sure that the electrical connections for the LVDTs are correct.

 - 1) If a maintenance message shows, do the applicable Fault Isolation Task for that maintenance message.
 - 2) If no maintenance messages show, the electrical connections for the LVDT are correct.

**WARNING**

MAKE SURE THAT THERE ARE NO PERSONS OR EQUIPMENT IN THE AREA OF THE THRUST REVERSER. MOVEMENT OF THE THRUST REVERSER CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (b) Operate the Thrust Reverser through an EXTEND and RETRACT cycle.
- (c) Make sure that the REVERSER Fault Light on the Flight Compartment P5 Panel comes ON for approximately 10 seconds after the Reverse Thrust Lever 1 (2) is moved to the RETRACT (stow) position and then goes OFF.
- (d) Wait for at least 30 seconds.

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- (e) Make sure that the REVERSER Fault Light on the Flight Compartment P5 Panel stays OFF.
- (f) Do this task: Close the Fan Cowl Panels, AMM TASK 71-11-02-410-801-F00.

END OF TASK

807. Engine 1 T/R DEPLOY FAULTS - L SLEEVE SYNC LOCK PWR - Fault Isolation

A. Description

- (1) This task is for this single EAU maintenance message:
 - (a) ENGINE 1 - V148 L SLEEVE SYNC LOCK POWER
- (2) This Fault Light indicates that there is no power to the Sync Lock on the Left Thrust Reverser Sleeve, which does not agree with the commanded EXTEND (deploy) position of the T/R.
 - (a) If the Sync Lock has no power, that is the indication that it is in the locked position.

B. Possible Causes

- (1) Wiring
- (2) Sync Lock Latch Relay (SLLR), R477
- (3) EAU, M528

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	4	C01003	ENGINE 1 THRUST REVERSER IND
B	5	C00276	ENGINE 1 THRUST REVERSER CONT
B	6	C01412	ENGINE 1 THRUST REVERSER INTLK
B	7	C01266	ENGINE 1 THRUST REVERSER SYNC LOCK

D. Related Data

- (1) Simplified Schematic (78-31 TASK SUPPORT Figure 304)
- (2) WDM 78-32-51
- (3) SSM 78-32-51

E. Initial Evaluation

- (1) Do the Engine Accessory Unit (EAU) BITE Procedure, 78-31 TASK 801.
- (2) Do a check of the Left Sync Lock: Sync Lock Operational Test, AMM TASK 78-31-00-700-803-F00.

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F. Fault Isolation Procedure



DO THE SYNC LOCK OPERATIONAL TEST AFTER THE FAULT IS CORRECTED TO DO A CHECK OF THE SYNC LOCKS. IF THERE WAS A LOSS OF ELECTRICAL POWER WHEN THE THRUST REVERSER WAS IN TRANSIT, THE SYNC LOCKS COULD BE DAMAGED. IF YOU DO NOT DO THIS TEST AND THE THRUST REVERSER IS RETURNED TO SERVICE, IT IS POSSIBLE THAT THE SYNC LOCKS CAN NOT LOCK THE THRUST REVERSER IN THE RETRACT POSITION.

- (1) To determine if the Left T/R Sleeve will DEPLOY, do this task: Thrust Reverser Operation - Extend (Power Procedure), AMM TASK 78-31-00-980-805-F00.
 - (a) If the Left Thrust Reverser Sleeve does not extend, then continue.



DO THE DEACTIVATION PROCEDURE TO PREVENT THE OPERATION OF THE THRUST REVERSER. THE ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

- (2) With the T/R in the EXTEND (deploy), do this task: Thrust Reverser Deactivation For Ground Maintenance, AMM TASK 78-31-00-040-802-F00.
- (3) Examine the EAU, M528 as follows:
 - (a) Remove the EAU. This is the task: Engine Accessory Unit Removal, AMM TASK 78-34-06-000-801-F00.
 - (b) Visually examine the Wire Harness Connector, D1458A and the EAU Receptacle (AMM TASK 70-70-01-200-801-F00) (WDM 78-32-51).
 - 1) If the pins on the EAU Receptacle are damaged, then replace the EAU, M528. These are the tasks:
 - Engine Accessory Unit Removal, AMM TASK 78-34-06-000-801-F00
 - Engine Accessory Unit Installation, AMM TASK 78-34-06-400-801-F00
 - a) Do the Repair Confirmation at the end of this task.
 - 2) If the Wire Harness Connector is damaged, do the applicable tasks to repair or replace the connector (SWPM Ch 20).
 - a) Do the Repair Confirmation at the end of this task.
 - (c) If you did not find a problem, then continue.
- (4) 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>
B	7	C01266	ENGINE 1 THRUST REVERSER SYNC LOCK

- (5) Make sure that the Reverse Thrust Lever is up and aft in the EXTEND (deploy) position.
- (6) Do a check for 28V DC at pin 18 of the EAU Receptacle, D1458A.
 - (a) If you find 28V DC, replace the EAU, M528. These are the tasks:
 - Engine Accessory Unit Removal, AMM TASK 78-34-06-000-801-F00
 - Engine Accessory Unit Installation, AMM TASK 78-34-06-400-801-F00
 - 1) Do the Repair Confirmation at the end of this task.

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- (b) If you do not find 28V DC at pin 18 of the EAU Receptacle, then continue.
- (7) Do a check for 28V DC at pin A1 of the Sync Lock Latch Relay Receptacle, D10634.
- (a) If you find 28V DC, do these wiring checks (WDM 78-32-51):

EAU	SYNC LOCK	L T/R SLEEVE
D1458A	LATCH RLY	SYNC LOCK
	D10634	D1008
pin 18	pin A2	pin 1

L T/R SLEEVE
SYNC LOCK
D1008

pin 2	GND GD522-DC
pin 3	GND GD1230-DC

- 1) Repair the problems that you find.
 - 2) Install the EAU. This is the task: Engine Accessory Unit Installation, AMM TASK 78-34-06-400-801-F00.
 - 3) Do the Repair Confirmation at the end of this task.
- (b) If you do not find 28V DC at pin A1 of the Sync Lock Latch Relay Receptacle, do these wiring checks (WDM 78-32-51):

SYNC LOCK	JUNCTION BOX
LATCH RLY	J22
D10634	D40672P
pin A1	pin 1

SYNC LOCK
LATCH RLY
D10634

pin A3	GND GD542-DC

- 1) Repair the problems that you find.
 - 2) Install the EAU. This is the task: Engine Accessory Unit Installation, AMM TASK 78-34-06-400-801-F00.
 - 3) Do the Repair Confirmation at the end of this task.
- (8) Replace the Sync Lock Latch Relay, R477 (WDM 78-32-51).
- (a) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

- (1) Do these steps:
- (a) Do this task: Thrust Reverser Activation After Ground Maintenance, AMM TASK 78-31-00-440-803-F00.

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MAKE SURE THAT THERE ARE NO PERSONS OR EQUIPMENT IN THE AREA OF THE THRUST REVERSER. MOVEMENT OF THE THRUST REVERSER CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (b) Do these steps to reset the T/R DEPLOY FAULTS light.
- 1) Make sure that the Reverse Thrust Lever is up and aft in the EXTEND (deploy) position.
 - 2) Push and hold the FAULT RESET button for a minimum of two seconds.
 - 3) Wait for at least 30 seconds.
 - 4) If the L SLEEVE SYNC LOCK POWER Fault Light on the EAU is OFF, then you corrected the problem.



DO THE DEACTIVATION PROCEDURE TO PREVENT THE OPERATION OF THE THRUST REVERSER. THE ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

- 5) If the L SLEEVE SYNC LOCK POWER Fault Light on the EAU is ON, deactivate the T/R (Thrust Reverser Deactivation For Ground Maintenance, AMM TASK 78-31-00-040-802-F00) and continue the Fault Isolation Procedure at the subsequent step.



DO THE SYNC LOCK OPERATIONAL TEST AFTER THE FAULT IS CORRECTED TO DO A CHECK OF THE SYNC LOCKS. IF THERE WAS A LOSS OF ELECTRICAL POWER WHEN THE THRUST REVERSER WAS IN TRANSIT, THE SYNC LOCKS COULD BE DAMAGED. IF YOU DO NOT DO THIS TEST AND THE THRUST REVERSER IS RETURNED TO SERVICE, IT IS POSSIBLE THAT THE SYNC LOCKS CAN NOT LOCK THE THRUST REVERSER IN THE RETRACT POSITION.

- (2) After you correct the problem, do these steps to put the airplane back to its usual condition:
- (a) Do a check of the Left Sync Lock, do this task: Sync Lock Operational Test, AMM TASK 78-31-00-700-803-F00.
 - (b) Make sure that the REVERSER Fault Light on the Flight Compartment P5 Panel stays OFF.

— END OF TASK —

808. T/R DEPLOY FAULTS - R SLEEVE LOCK SENSOR - Fault Isolation

A. Description

- (1) This task is for these single EAU maintenance messages:
 - (a) ENGINE 1 - S836 R SLEEVE LOCK SENSOR
 - (b) ENGINE 2 - S836 R SLEEVE LOCK SENSOR
- (2) This Fault Light indicates that the position of the Right T/R Sleeve does not agree with the commanded EXTEND (deploy) position for the T/R.

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B. Possible Causes

- (1) Broken or binding Manual Lockout Handle on the ULHA
- (2) Right SLPS, S836
- (3) Wiring between the Right SLPS and the EAU.
- (4) ULHA
- (5) EAU, M528

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	4	C01003	ENGINE 1 THRUST REVERSER IND
B	5	C00276	ENGINE 1 THRUST REVERSER CONT
B	6	C01412	ENGINE 1 THRUST REVERSER INTLK
B	7	C01266	ENGINE 1 THRUST REVERSER SYNC LOCK

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	5	C01267	ENGINE 2 THRUST REVERSER SYNC LOCK
C	6	C01413	ENGINE 2 THRUST REVERSER INTLK
C	7	C00277	ENGINE 2 THRUST REVERSER CONT
C	8	C01004	ENGINE 2 THRUST REVERSER IND

D. Related Data

- (1) Component Location (78-31 TASK SUPPORT Figure 302, 78-31 TASK SUPPORT Figure 303)
- (2) Simplified Schematic (78-31 TASK SUPPORT Figure 302, 78-31 TASK SUPPORT Figure 303)
- (3) WDM 78-36-11
- (4) WDM 78-36-21
- (5) SSM 78-36-11
- (6) SSM 78-36-21

E. Initial Evaluation

- (1) Do the Engine Accessory Unit (EAU) BITE Procedure, 78-31 TASK 801 to show the current maintenance messages.

F. Fault Isolation Procedure**WARNING**

KEEP PERSONNEL AND EQUIPMENT AWAY FROM THE AREA AROUND THE THRUST REVERSERS. THE THRUST REVERSERS EXTEND AND RETRACT QUICKLY. INJURIES TO PERSONNEL, AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (1) Do this task: Open the Fan Cowl Panels, AMM TASK 71-11-02-010-801-F00.
- (2) Operate the T/R through an EXTEND and RETRACT cycle while another person monitors the Lockout Handle on the ULHA.
 - (a) On the ULHA, make sure that the Manual Lockout Handle is not binding or broken.

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- 1) If the Manual Lockout Handle is binding, examine and replace the shim as necessary, and make sure that the assembly gaps are satisfactory as specified in the shim installation paragraph of Manual Unlock Handle Assembly Replacement, AMM TASK 78-31-03-300-804-F00.
- 2) If the Manual Lockout Handle is broken, replace it. This is the task: Manual Unlock Handle Assembly Replacement, AMM TASK 78-31-03-300-804-F00.
- 3) Do the Repair Confirmation at the end of this task.
- (b) If the Manual Lockout Handle is satisfactory, then continue.
- (3) Do the Sleeve Lock Proximity Sensor Adjustment and Test, AMM TASK 78-34-03-800-801-F00 for the applicable ENG-1 (ENG-2) Right SLPS, S836.
 - (a) If the SLPS is not in the limits, then adjust the sensor.
 - 1) Do the Repair Confirmation at the end of this task.
 - (b) If the SLPS is in the limits, then continue.
- (4) Do this task: Thrust Reverser Upper Locking Actuator - Integrity Test, AMM TASK 78-31-03-700-801-F00.
 - (a) If the thrust reverser sleeve starts to deploy, replace the ULHA. These are the tasks: Upper Locking Hydraulic Actuator Removal, AMM TASK 78-31-03-000-801-F00. Upper Locking Hydraulic Actuator - Installation, AMM TASK 78-31-03-400-801-F00.
 - 1) Do the Repair Confirmation at the end of this task.
 - a) If the actuator locks prevent actuator movement, then continue.
- (5) Examine the applicable ENG-1 (ENG-2) Right SLPS as follows (WDM 78-36-11, WDM 78-36-21):
 - (a) See if the electrical connector D30010 is correctly connected to the Strut Receptacle.
 - (b) Disconnect the applicable ENG-1 (ENG-2) Left SLPS connector D30010 from the respective Strut Receptacle D30210 (D30410).
 - (c) Visually examine the Strut Receptacle and the SLPS connector for damage.
 - 1) If the Strut Receptacle or the SLPS connector is damaged, do the applicable tasks to repair or replace the connector(s) as necessary (SWPM Ch 20).
 - a) Do the Repair Confirmation at the end of this task.
 - 2) If a connector was not correctly connected and no other problem was found, then re-connect the connector and do the Repair Confirmation at the end of this task.
 - (d) Measure and record the SLPS Resistance between the pins indicated below:
NOTE: The difference between the two Resistance measurements should be ≤ 2 Ohms.

R SLPS	R SLPS	Resistance
D30010	D30010	
pin 1	pin 4	Value in Ohms
pin 1	pin 5	Value in Ohms

- (e) Do these checks:

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R SLPS**D30010**

pin 1		GND
pin 4		GND
pin 5		GND

Resistance

OPEN CIRCUIT
OPEN CIRCUIT
OPEN CIRCUIT

- (f) If the Resistance checks are not satisfactory, then replace the applicable ENG-1 (ENG-2) Right SLPS, S836. These are the tasks:
- Thrust Reverser Sleeve Lock Proximity Sensor - Removal, AMM TASK 78-34-03-000-801-F00
 - Thrust Reverser Sleeve Lock Proximity Sensor - Installation, AMM TASK 78-34-03-400-801-F00
- 1) Do the Repair Confirmation at the end of this task.
- (6) Examine the ENG-1 (ENG-2) Wire Harness and connectors between the EAU, M528 and the ENG-1 (ENG-2) Right SLPS, S836 (WDM 78-36-11, WDM 78-36-21)
- (a) Disconnect the applicable ENG-1 (ENG-2) SLPS connector D30010 from the respective Strut Receptacle D30210 (D30410).
- (b) Remove the EAU. This is the task: Engine Accessory Unit Removal, AMM TASK 78-34-06-000-801-F00.
- (c) Visually examine the ENG-1 (ENG-2) Wire Harness Connector, D1458A (D1458B) and the EAU Receptacle (AMM TASK 70-70-01-200-801-F00).
- 1) If the EAU Receptacle is damaged, then replace the EAU, M528. These are the tasks:
- Engine Accessory Unit Removal, AMM TASK 78-34-06-000-801-F00
 - Engine Accessory Unit Installation, AMM TASK 78-34-06-400-801-F00
- a) Do the Repair Confirmation at the end of this task.
- 2) If the ENG-1 (ENG-2) Wire Harness or connector is damaged, do the applicable tasks to repair or replace the connector and/or harness as necessary (SWPM Ch 20).
- a) Do the Repair Confirmation at the end of this task.
- (7) Do the wiring checks that follow (WDM 78-36-11, WDM 78-36-21):
- (a) Disconnect the applicable ENG-1 (ENG-2) SLPS connector D30008 from the respective Strut Receptacle D30208 (D30408).
- (b) Remove the EAU. This is the task: Engine Accessory Unit Removal, AMM TASK 78-34-06-000-801-F00.
- (c) Do a continuity check between the EAU Receptacle D1458A (D1458B) and the ENG-1 (ENG-2) Right T/R Sleeve Strut Receptacle D30210 (D30410) as follows:

ENG-1 WIRE HARNESS**EAU****D1458A**

pin 40		pin 4
pin 39		pin 5

R T/R SLEEVE**D30210**

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ENG-2 WIRE HARNESS

EAU	R T/R SLEEVE
D1458B	D30410
pin 40	pin 4
pin 39	pin 5

- (d) Do a check for ground at the applicable Strut Receptacle D30210 (D30410) as follows:

ENG-1 WIRE HARNESS

L T/R SLEEVE

D30210

pin 1	GND	Resistance
		CONTINUITY

ENG-2 WIRE HARNESS

R T/R SLEEVE

D30410

pin 1	GND	Resistance
		CONTINUITY

- (e) Do these checks at the EAU Receptacle D1458A (D1458B):

ENG-1 WIRE HARNESS

EAU	EAU	Resistance
D1458A	D1458A	
pin 40	pin 39	OPEN CIRCUIT

EAU		Resistance
D1458A		
pin 40	GND	OPEN CIRCUIT
pin 39	GND	OPEN CIRCUIT

ENG-2 WIRE HARNESS

EAU	EAU	Resistance
D1458B	D1458B	
pin 40	pin 39	OPEN CIRCUIT

EAU		Resistance
D1458B		
pin 40	GND	OPEN CIRCUIT
pin 39	GND	OPEN CIRCUIT

- (f) If the wiring checks are not satisfactory, do the applicable tasks to repair the wiring (SWPM Ch 20).
- 1) Do the Repair Confirmation at the end of this task.
- (g) If the wiring checks are satisfactory, then continue.
- (8) Replace the EAU, M528. These are the tasks:
- Engine Accessory Unit Removal, AMM TASK 78-34-06-000-801-F00
 - Engine Accessory Unit Installation, AMM TASK 78-34-06-400-801-F00

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- (a) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

- (1) Do these steps:

- (a) Make sure that the ENG-1 (ENG-2) Right SLPS connector, D30010, is connected to the respective Strut Receptacle D30210 (D30410).
- (b) Make sure that all connectors that were disconnected to do an electrical check between the Strut Receptacle and the EAU are correctly connected.
- (c) If the EAU is not installed, do this task: Engine Accessory Unit Installation, AMM TASK 78-34-06-400-801-F00.
- (d) Do this task: Thrust Reverser Activation After Ground Maintenance, AMM TASK 78-31-00-440-803-F00.



WARNING

MAKE SURE THAT THERE ARE NO PERSONS OR EQUIPMENT IN THE AREA OF THE THRUST REVERSER. MOVEMENT OF THE THRUST REVERSER CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (e) Do these steps to reset the T/R DEPLOY FAULTS Light.

- 1) Move the Reverse Thrust Lever 1 (2) UP and AFT to the EXTEND (deploy) position.
- 2) Push and hold the FAULT RESET button for a minimum of two seconds.
- 3) Wait for at least 30 seconds.
- 4) If the S836 R SLEEVE LOCK SENSOR Fault Light on the EAU is OFF, then you corrected the problem.



WARNING

DO THE DEACTIVATION PROCEDURE TO PREVENT THE OPERATION OF THE THRUST REVERSER. THE ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

- 5) If the S836 R SLEEVE LOCK SENSOR Fault Light on the EAU is ON, deactivate the T/R (Thrust Reverser Deactivation For Ground Maintenance, AMM TASK 78-31-00-040-802-F00) and continue the Fault Isolation Procedure at the subsequent step.

- (2) After you correct the problem, do these steps to put the airplane back to its usual condition:

- (a) Do the EEC TEST, AMM TASK 73-21-00-700-804-F00.

NOTE: This check will make sure that the electrical connections for the LVDTs are correct.

- 1) If a maintenance message shows, do the applicable Fault Isolation Task for that maintenance message.
- 2) If no maintenance messages show, the electrical connections for the LVDTs are correct.

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MAKE SURE THAT THERE ARE NO PERSONS OR EQUIPMENT IN THE AREA OF THE THRUST REVERSER. MOVEMENT OF THE THRUST REVERSER CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (b) Operate the T/R through an EXTEND and RETRACT cycle.
- (c) Make sure that the REVERSER Fault Light on the Flight Compartment P5 Panel comes ON for approximately 10 seconds after the Reverse Thrust Lever 1 (2) is moved to the RETRACT (stow) position and then goes OFF.
- (d) Wait for at least 30 seconds.
- (e) Make sure that the REVERSER Fault Light on the Flight Compartment P5 Panel stays OFF.
- (f) Do this task: Close the Fan Cowl Panels, AMM TASK 71-11-02-410-801-F00.

————— **END OF TASK** —————

809. T/R DEPLOY FAULTS - R SLEEVE STOW SENSOR - Fault Isolation

A. Description

- (1) This task is for these single EAU maintenance messages:
 - (a) ENGINE 1 - S832 R SLEEVE STOW SENSOR
 - (b) ENGINE 2 - S832 R SLEEVE STOW SENSOR
- (2) This Fault Light indicates that the position of the Right T/R Sleeve does not agree with the commanded EXTEND (deploy) position for the T/R.

B. Possible Causes

- (1) SSPS Roller
- (2) Wiring between the Right SSPS and the EAU
- (3) Right SSPS, S832
- (4) ENG-1 (ENG-2) T/R Right Sleeve Sync Lock, V150
- (5) EAU, M528

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	4	C01003	ENGINE 1 THRUST REVERSER IND
B	5	C00276	ENGINE 1 THRUST REVERSER CONT
B	6	C01412	ENGINE 1 THRUST REVERSER INTLK
B	7	C01266	ENGINE 1 THRUST REVERSER SYNC LOCK

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	5	C01267	ENGINE 2 THRUST REVERSER SYNC LOCK
C	6	C01413	ENGINE 2 THRUST REVERSER INTLK
C	7	C00277	ENGINE 2 THRUST REVERSER CONT
C	8	C01004	ENGINE 2 THRUST REVERSER IND

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D. Related Data

- (1) Component Location (78-31 TASK SUPPORT Figure 302, 78-31 TASK SUPPORT Figure 303)
- (2) Simplified Schematic (78-31 TASK SUPPORT Figure 302, 78-31 TASK SUPPORT Figure 303)
- (3) WDM 78-36-11
- (4) WDM 78-36-21
- (5) SSM 78-36-11
- (6) SSM 78-36-21

E. Initial Evaluation

- (1) Do the Engine Accessory Unit (EAU) BITE Procedure, 78-31 TASK 801 to show the current maintenance messages.

F. Fault Isolation Procedure



DO THE DEACTIVATION PROCEDURE TO PREVENT THE OPERATION OF THE THRUST REVERSER. THE ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

- (1) Do this task: Thrust Reverser Deactivation For Ground Maintenance, AMM TASK 78-31-00-040-802-F00.
- (2) Do this task: Open the Fan Cowl Panels, AMM TASK 71-11-02-010-801-F00.
- (3) Do an inspection of the SSPS Roller Assembly (78-31 TASK SUPPORT Figure 303).
 - (a) If the roller is damaged, worn, or has flat spots, then replace the damaged hardware.
 - 1) Do the Repair Confirmation at the end of this task.
 - (b) If you do not find a problem with the Roller Assembly hardware, then continue.
- (4) Examine the applicable ENG-1 (ENG-2) Right SSPS as follows (WDM 78-36-11, WDM 78-36-21):
 - (a) See if the electrical connector D30006 is correctly connected to the Strut Receptacle.
 - (b) Disconnect the applicable ENG-1 (ENG-2) Right SSPS connector D30006 from the respective Strut Receptacle D30206 (D30406).
 - (c) Visually examine the Strut Receptacle and the SSPS connector for damage.
 - 1) If the Strut Receptacle or the SSPS connector is damaged, do the applicable tasks to repair or replace the connector(s) as necessary (SWPM Ch 20).
 - a) Do the Repair Confirmation at the end of this task.
 - 2) If a connector was not correctly connected and no other problem was found, then re-connect the connector and do the Repair Confirmation at the end of this task.
 - (d) Measure and record the SSPS Resistance between the pins indicated below:

R SSPS
D30006

pin 1
pin 1

R SSPS
D30006

pin 7
pin 8

Resistance

Value in Ohms
Value in Ohms

- (e) Do these checks:

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R SSPS**D30006**

pin 1		GND
pin 7		GND
pin 8		GND

Resistance

OPEN CIRCUIT
OPEN CIRCUIT
OPEN CIRCUIT

- (f) If the Resistance checks are not satisfactory, then replace the applicable ENG-1 (ENG-2) Right SSPS, S832. These are the tasks:
- Thrust Reverser Sleeve Stow Proximity Sensor Removal, AMM TASK 78-34-02-000-801-F00
 - Thrust Reverser Sleeve Stow Proximity Sensor Installation, AMM TASK 78-34-02-400-801-F00
- 1) Do the Repair Confirmation at the end of this task.
- (5) Examine the ENG-1 (ENG-2) Wire Harness and connectors between the EAU, M528 and the ENG-1 (ENG-2) Right SSPS, S832 (WDM 78-36-11, WDM 78-36-21).
- (a) Disconnect the applicable ENG-1 (ENG-2) SSPS connector D30006 from the respective Strut Receptacle D30206 (D30406).
- (b) Remove the EAU. This is the task: Engine Accessory Unit Removal, AMM TASK 78-34-06-000-801-F00.
- (c) Visually examine the ENG-1 (ENG-2) Wire Harness Connector, D1458A (D1458B) and the EAU Receptacle (AMM TASK 70-70-01-200-801-F00).
- 1) If the EAU Receptacle is damaged, then replace the EAU, M528. These are the tasks:
- Engine Accessory Unit Removal, AMM TASK 78-34-06-000-801-F00
 - Engine Accessory Unit Installation, AMM TASK 78-34-06-400-801-F00
- a) Do the Repair Confirmation at the end of this task.
- 2) If the ENG-1 (ENG-2) Wire Harness or connector is damaged, do the applicable tasks to repair or replace the connector and/or harness as necessary (SWPM Ch 20).
- a) Do the Repair Confirmation at the end of this task.
- (6) Do the wiring checks that follow (WDM 78-36-11, WDM 78-36-21):
- (a) Disconnect the applicable ENG-1 (ENG-2) SSPS connector D30006 from the respective Strut Receptacle D30206 (D30406).
- (b) Remove the EAU. This is the task: Engine Accessory Unit Removal, AMM TASK 78-34-06-000-801-F00.
- (c) Do a continuity check between the EAU Receptacle D1458A (D1458B) and the ENG-1 (ENG-2) Right T/R Sleeve Strut Receptacle D30206 (D30406) as follows:

ENG-1 WIRE HARNESS

EAU	R T/R SLEEVE
D1458A	D30206
pin 53	 pin 7
pin 52	 pin 8

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ENG-2 WIRE HARNESS

EAU	R T/R SLEEVE
D1458B	D30406
pin 53	pin 7
pin 52	pin 8

- (d) Do a check for ground at the applicable Strut Receptacle D30208 (D30408) as follows:

ENG-1 WIRE HARNESS

RT/R SLEEVE	
D30206	Resistance
pin 1	CONTINUITY
GND	

ENG-2 WIRE HARNESS

R T/R SLEEVE	
D30406	Resistance
pin 1	CONTINUITY
GND	

- (e) Do these checks at the EAU Receptacle D1458A (D1458B):

ENG-1 WIRE HARNESS

EAU	EAU	Resistance
D1458A	D1458A	
pin 52	pin 53	OPEN CIRCUIT

EAU		Resistance
D1458A		
pin 52	GND	OPEN CIRCUIT
pin 53	GND	OPEN CIRCUIT

ENG-2 WIRE HARNESS

EAU	EAU	Resistance
D1458B	D1458B	
pin 52	pin 53	OPEN CIRCUIT

EAU		Resistance
D1458B		
pin 52	GND	OPEN CIRCUIT
pin 53	GND	OPEN CIRCUIT

- (f) If the wiring checks are not satisfactory, do the applicable tasks to repair the wiring (SWPM Ch 20).
- 1) Do the Repair Confirmation at the end of this task.
- (g) If the wiring checks are satisfactory, then continue.
- (7) Do the Stow Sensor Adjustment and Test, AMM TASK 78-34-02-700-801-F00 for the applicable ENG-1 (ENG-2) Right SSPS, S832.
- (a) If the SSPS is not in the limits, then adjust the sensor.

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- 1) Do the Repair Confirmation at the end of this task.
- (b) If the SSPS is in the limits, then continue.
- (8) If you have not already replaced it, replace the Right SSPS, S832. These are the tasks:
 - Thrust Reverser Sleeve Stow Proximity Sensor Removal, AMM TASK 78-34-02-000-801-F00
 - Thrust Reverser Sleeve Stow Proximity Sensor Installation, AMM TASK 78-34-02-400-801-F00
- (a) Do the Repair Confirmation at the end of this task.
- (9) If you have not already replaced it, replace the Right Sync Lock, V150. These are the tasks:
 - Thrust Reverser Sync Lock Removal, AMM TASK 78-34-10-000-801-F00
 - Thrust Reverser Sync Lock Installation, AMM TASK 78-34-10-400-801-F00
- (a) Do the Repair Confirmation at the end of this task.
- (10) Replace the EAU, M528. These are the tasks:
 - Engine Accessory Unit Removal, AMM TASK 78-34-06-000-801-F00
 - Engine Accessory Unit Installation, AMM TASK 78-34-06-400-801-F00
- (a) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

- (1) Do these steps:
 - (a) Make sure that the ENG-1 (ENG-2) Right SSPS connector, D30006, is connected to the respective Strut Receptacle D30206 (D30406).
 - (b) Make sure that all connectors that were disconnected to do an electrical check between the Strut Receptacle and the EAU are correctly connected.
 - (c) If the EAU is not installed, do the Engine Accessory Unit Installation, AMM TASK 78-34-06-400-801-F00.
 - (d) Do the Thrust Reverser Activation After Ground Maintenance, AMM TASK 78-31-00-440-803-F00.



WARNING

MAKE SURE THAT THERE ARE NO PERSONS OR EQUIPMENT IN THE AREA OF THE THRUST REVERSER. MOVEMENT OF THE THRUST REVERSER CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (e) Do these steps to reset the T/R DEPLOY FAULTS Light.
 - 1) Move the Reverse Thrust Lever 1 (2) UP and AFT to the EXTEND (deploy) position.
 - 2) Push and hold the FAULT RESET button for a minimum of two seconds.
 - 3) Wait for at least 30 seconds.
 - 4) If the S832 R SLEEVE STOW SENSOR Fault Light on the EAU is OFF, then you corrected the problem.

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DO THE DEACTIVATION PROCEDURE TO PREVENT THE OPERATION OF THE THRUST REVERSER. THE ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

- 5) If the S832 R SLEEVE STOW SENSOR Fault Light on the EAU is ON, deactivate the T/R (Thrust Reverser Deactivation For Ground Maintenance, AMM TASK 78-31-00-040-802-F00) and continue the Fault Isolation Procedure at the subsequent step.
- (2) After you correct the problem, do these steps to put the airplane back to its usual condition:
 - (a) Do this task: EEC TEST, AMM TASK 73-21-00-700-804-F00.

NOTE: This check will make sure that the electrical connections for the LVDTs are correct.

 - 1) If a maintenance message shows, do the applicable Fault Isolation Task for that maintenance message.
 - 2) If no maintenance messages show, the electrical connections for the LVDTs are correct.



MAKE SURE THAT THERE ARE NO PERSONS OR EQUIPMENT IN THE AREA OF THE THRUST REVERSER. MOVEMENT OF THE THRUST REVERSER CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (b) Operate the Thrust Reverser through an EXTEND and RETRACT cycle.
- (c) Make sure that the REVERSER Fault Light on the Flight Compartment P5 Panel comes ON for approximately 10 seconds after the Reverse Thrust Lever 1 (2) is moved to the RETRACT (stow) position and then goes OFF.
- (d) Wait for at least 30 seconds.
- (e) Make sure that the REVERSER Fault Light on the Flight Compartment P5 Panel stays OFF.
- (f) Do this task: Close the Fan Cowl Panels, AMM TASK 71-11-02-410-801-F00.

— END OF TASK —

810. Engine 1 T/R DEPLOY FAULTS - R SLEEVE SYNC LOCK PWR - Fault Isolation

A. Description

- (1) This task is for this single EAU maintenance message:
 - (a) ENGINE 1 - V150 R SLEEVE SYNC LOCK POWER
- (2) This Fault Light indicates that there is no power to the Sync Lock on the Right Thrust Reverser Sleeve which does not agree with the commanded EXTEND (deploy) position of the T/R.
 - (a) If the Sync Lock has no power, that is the indication that it is in the locked position.

B. Possible Causes

- (1) Wiring
- (2) SLLR, R477
- (3) EAU, M528

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C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

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Row	Col	Number	Name
B	4	C01003	ENGINE 1 THRUST REVERSER IND
B	5	C00276	ENGINE 1 THRUST REVERSER CONT
B	6	C01412	ENGINE 1 THRUST REVERSER INTLK
B	7	C01266	ENGINE 1 THRUST REVERSER SYNC LOCK

D. Related Data

- (1) Simplified Schematic (78-31 TASK SUPPORT Figure 304)
- (2) WDM 78-32-51
- (3) SSM 78-32-51

E. Initial Evaluation

- (1) Do the Engine Accessory Unit (EAU) BITE Procedure, 78-31 TASK 801
- (2) Do a check of the Right Sync Lock: Sync Lock Operational Test, AMM TASK 78-31-00-700-803-F00.

F. Fault Isolation Procedure



DO THE SYNC LOCK OPERATIONAL TEST AFTER THE FAULT IS CORRECTED TO DO A CHECK OF THE SYNC LOCKS. IF THERE WAS A LOSS OF ELECTRICAL POWER WHEN THE THRUST REVERSER WAS IN TRANSIT, THE SYNC LOCKS COULD BE DAMAGED. IF YOU DO NOT DO THIS TEST AND THE THRUST REVERSER IS RETURNED TO SERVICE, IT IS POSSIBLE THAT THE SYNC LOCKS CAN NOT LOCK THE THRUST REVERSER IN THE RETRACT POSITION.

- (1) To determine if the Right T/R Sleeve will deploy, do this task: Thrust Reverser Operation - Extend (Power Procedure), AMM TASK 78-31-00-980-805-F00.
 - (a) If the Right T/R Sleeve does not extend, then continue.



DO THE DEACTIVATION PROCEDURE TO PREVENT THE OPERATION OF THE THRUST REVERSER. THE ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

- (2) With the T/R in the EXTEND (deploy), do this task: Thrust Reverser Deactivation For Ground Maintenance, AMM TASK 78-31-00-040-802-F00.
 - (a) Keep the Reverse Thrust Lever up and aft in the EXTEND (deploy) position.
- (3) Examine the EAU, M528 as follows:
 - (a) Remove the EAU. This is the task: Engine Accessory Unit Removal, AMM TASK 78-34-06-000-801-F00.
 - (b) Visually examine the Wire Harness Connector, D1458A and the EAU Receptacle (AMM TASK 70-70-01-200-801-F00) (WDM 78-32-51).
 - 1) If the pins on the EAU Receptacle are damaged, then replace the EAU, M528. These are the tasks:

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- Engine Accessory Unit Removal, AMM TASK 78-34-06-000-801-F00
- Engine Accessory Unit Installation, AMM TASK 78-34-06-400-801-F00
 - a) Do the Repair Confirmation at the end of this task.
- 2) If the Wire Harness Connector is damaged, do the applicable tasks to repair or replace the connector (SWPM Ch 20).
 - a) Do the Repair Confirmation at the end of this task.
- (c) If you did not find a problem, then continue.
- (4) 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>
B	7	C01266	ENGINE 1 THRUST REVERSER SYNC LOCK

- (5) Make sure that the Reverse Thrust Lever is up and aft in the EXTEND (deploy) position.
- (6) Do a check for 28V DC at pin 30 of the Wire Harness Connector, D1458A, to structure ground (WDM 78-32-51).
 - (a) If you find 28V DC, replace the EAU, M528. These are the tasks:
 - Engine Accessory Unit Removal, AMM TASK 78-34-06-000-801-F00
 - Engine Accessory Unit Installation, AMM TASK 78-34-06-400-801-F00
 - 1) Do the Repair Confirmation at the end of this task.
 - (b) If you do not find 28V DC at pin 30 of the EAU Receptacle, then continue.
- (7) Do a check for 28V DC at pin B1 of the Sync Lock Latch Relay Receptacle, D10634.
 - (a) If you find 28V DC, do these wiring checks (WDM 78-32-51):

EAU	SYNC LOCK	R T/R SLEEVE
D1458A	LATCH RLY	SYNC LOCK
D1016	D10634	D1016
pin 30	pin B2	pin 1

R T/R SLEEVE SYNC LOCK D1016

pin 2	GND GD522-DC
pin 3	GND GD1230-DC

- 1) Repair the problems that you find.
- 2) Install the EAU. This is the task: Engine Accessory Unit Installation, AMM TASK 78-34-06-400-801-F00.
- 3) Do the Repair Confirmation at the end of this task.
- (b) If you do not find 28V DC at pin B1 of the Sync Lock Latch Relay Receptacle, do these wiring checks (WDM 78-32-51):

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**SYNC LOCK
LATCH RLY
D10634**
pin B1

**JUNCTION BOX
J22
D40672P**
pin 1

**SYNC LOCK
LATCH RLY
D10634**
pin B3

GND GD542-DC

- 1) Repair the problems that you find.
 - 2) Install the EAU. This is the task: Engine Accessory Unit Installation, AMM TASK 78-34-06-400-801-F00.
 - 3) Do the Repair Confirmation at the end of this task.
- (8) Replace the Sync Lock Latch Relay, R477 (WDM 78-32-51).
- (a) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

- (1) Do these steps:
- (a) Do this task: Thrust Reverser Activation After Ground Maintenance, AMM TASK 78-31-00-440-803-F00.



WARNING

MAKE SURE THAT THERE ARE NO PERSONS OR EQUIPMENT IN THE AREA OF THE THRUST REVERSER. MOVEMENT OF THE THRUST REVERSER CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (b) Do these steps to reset the T/R DEPLOY FAULTS Light.
- 1) Make sure that the Reverse Thrust Lever is up and aft in the EXTEND (deploy) position.
 - 2) Push and hold the FAULT RESET button for a minimum of two seconds.
 - 3) Wait for at least 30 seconds.
 - 4) If the R SLEEVE SYNC LOCK POWER Fault Light on the EAU is OFF, then you corrected the problem.



WARNING

DO THE DEACTIVATION PROCEDURE TO PREVENT THE OPERATION OF THE THRUST REVERSER. THE ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

- 5) If the R SLEEVE SYNC LOCK POWER Fault Light on the EAU is ON, deactivate the T/R (Thrust Reverser Deactivation For Ground Maintenance, AMM TASK 78-31-00-040-802-F00) and continue the Fault Isolation Procedure at the subsequent step.

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**CAUTION**

DO THE SYNC LOCK OPERATIONAL TEST AFTER THE FAULT IS CORRECTED TO DO A CHECK OF THE SYNC LOCKS. IF THERE WAS A LOSS OF ELECTRICAL POWER WHEN THE THRUST REVERSER WAS IN TRANSIT, THE SYNC LOCKS COULD BE DAMAGED. IF YOU DO NOT DO THIS TEST AND THE THRUST REVERSER IS RETURNED TO SERVICE, IT IS POSSIBLE THAT THE SYNC LOCKS CAN NOT LOCK THE THRUST REVERSER IN THE RETRACT POSITION.

- (2) After you correct the problem, do these steps to put the airplane back to its usual condition:
 - (a) Do the Sync Lock Operational Test, AMM TASK 78-31-00-700-803-F00.
 - (b) Make sure that the REVERSER Fault Light on the Flight Compartment P5 Panel stays OFF.

————— **END OF TASK** —————

811. T/R STOW FAULTS - DIR CONT VALVE SENSOR - Fault Isolation

A. Description

- (1) This task is for these single EAU maintenance messages:
 - (a) ENGINE 1 - S834 DIR CONT VALVE SENSOR
 - (b) ENGINE 2 - S839 DIR CONT VALVE SENSOR
- (2) This Fault Light indicates that the DCV position does not agree with the commanded RETRACT (stow) position for the T/R.

B. Possible Causes

- (1) Wiring between the CVM and the EAU
- (2) T/R 1 (T/R 2) CVM, M1173 (M1174)
- (3) ENG-1 (ENG-2) T/R Control Switch, S828 (S829)
- (4) ENG-1 (ENG-2) T/R Control Switch Actuation Spring 69-78782
- (5) Wiring to the ENG-1 (ENG-2) T/R Control Switch, S828 (S829)

SIA ALL; AUTOTHROTTLE SWITCHPACK WITH REPLACEABLE SWITCHES P/N 254A1150-1, -2, -7, -8, -9, -10

- (6) T/R 1 (T/R 2) Stow Switch, S6

NOTE: The Stow Switch, S6, is installed on the Autothrottle Switchpack, M1766 (M1767)

SIA ALL; AUTOTHROTTLE SWITCHPACK WITH INTEGRATED SWITCHES P/N 254A1150-11, -12, -13, -14, -15, -16

- (7) T/R 1 (T/R 2) Autothrottle Switchpack Assembly, M1766 (M1767)

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- (8) EAU, M528

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	4	C01003	ENGINE 1 THRUST REVERSER IND
B	5	C00276	ENGINE 1 THRUST REVERSER CONT

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CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	6	C01412	ENGINE 1 THRUST REVERSER INTLK
B	7	C01266	ENGINE 1 THRUST REVERSER SYNC LOCK

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	5	C01267	ENGINE 2 THRUST REVERSER SYNC LOCK
C	6	C01413	ENGINE 2 THRUST REVERSER INTLK
C	7	C00277	ENGINE 2 THRUST REVERSER CONT
C	8	C01004	ENGINE 2 THRUST REVERSER IND

D. Related Data

- (1) Component Location and Simplified Schematic (78-31 TASK SUPPORT Figure 301)
- (2) WDM 78-34-11
- (3) WDM 78-34-21
- (4) WDM 78-36-11
- (5) WDM 78-36-21
- (6) SSM 78-34-11
- (7) SSM 78-34-21
- (8) SSM 78-36-11
- (9) SSM 78-36-21

E. Initial Evaluation

- (1) Do the Engine Accessory Unit (EAU) BITE Procedure, 78-31 TASK 801 to show the current maintenance messages.

F. Fault Isolation Procedure

DO THE DEACTIVATION PROCEDURE TO PREVENT THE OPERATION OF THE THRUST REVERSER. THE ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

- (1) Do this task: Thrust Reverser Deactivation For Ground Maintenance, AMM TASK 78-31-00-040-802-F00.
- (2) Examine the ENG-1 (ENG-2) Wire Harness and electrical connectors between the EAU, M528 and the ENG-1 (ENG-2) CVM, M1173 (M1174) as follows (WDM 78-36-11, WDM 78-36-21):
 - (a) Visually examine the ENG-1 (ENG-2) Wire Harness electrical connector D3054 (D3058), at the applicable CVM, M1173 (M1174):

NOTE: The CVM is in the Main Gear Wheel Well on the keel beam. The ENG-1 CVM, M1173 is on the left side and the ENG-2 CVM, M1174 is on the right side.
 - (b) Remove the EAU. This is the task: Engine Accessory Unit Removal, AMM TASK 78-34-06-000-801-F00.
 - (c) Disconnect the electrical connector D3054 (D3058) from the applicable T/R 1 (T/R 2) CVM.

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- (d) Examine the ENG-1 (ENG-2) Wire Harness and CVM Receptacle (Standard Engine Wiring and Equipment Check, AMM TASK 70-70-01-200-801-F00).
- 1) If the CVM Receptacle is damaged, then replace the T/R 1 (T/R 2) CVM, M1173 (M1174). These are the tasks:
 - Control Valve Module Removal, AMM TASK 78-34-01-000-801-F00
 - Control Valve Module Installation, AMM TASK 78-34-01-400-801-F00
 - a) Do the Repair Confirmation at the end of this task.
 - 2) If the Wire Harness or electrical connector is damaged, do the applicable tasks to repair or replace the electrical connector and/or Wire Harness (SWPM Ch 20).
 - a) Do the Repair Confirmation at the end of this task.
- (e) Visually examine the ENG-1 (ENG-2) Wire Harness electrical connector D1458A (D1458B) and the EAU Receptacle (Standard Engine Wiring and Equipment Check, AMM TASK 70-70-01-200-801-F00).
- 1) If the EAU Receptacle is damaged, then replace the EAU, M528. These are the tasks:
 - Engine Accessory Unit Removal, AMM TASK 78-34-06-000-801-F00
 - Engine Accessory Unit Installation, AMM TASK 78-34-06-400-801-F00
 - a) Do the Repair Confirmation at the end of this task.
 - 2) If the Wire Harness electrical connector is damaged, do the applicable tasks to repair or replace the electrical connector (SWPM Ch 20).
 - a) Do the Repair Confirmation at the end of this task.
- (f) If you did not find a problem, then continue.
- (3) Do the electrical checks that follow (WDM 78-36-11, WDM 78-36-21):
- (a) Remove the EAU. This is the task: Engine Accessory Unit Removal, AMM TASK 78-34-06-000-801-F00.
 - (b) Disconnect the electrical connector D3054 (D3058) from the applicable T/R 1 (T/R 2) CVM.
 - (c) Do a continuity check between the EAU Receptacle D1458A (D1458B) and the T/R-1 (T/R-2) CVM electrical connector D3054 (D3058) as follows:

ENG-1 WIRE HARNESS

EAU	T/R 1 CVM
D1458A	D3054
pin 8	pin 7
pin 9	pin 5

ENG-2 WIRE HARNESS

EAU	T/R 2 CVM
D1458B	D3058
pin 8	pin 7
pin 9	pin 5

- (d) Do a check for ground at the applicable T/R CVM electrical connector D3054 (D3058) as follows:

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ENG-1 WIRE HARNESS

T/R 1 CVM

D3054

pin 6 GND

Resistance
CONTINUITY

ENG-2 WIRE HARNESS

T/R 2 CVM

D3058

pin 6 GND

Resistance
CONTINUITY

- (e) Do these electrical checks at the EAU Receptacle D1458A (D1458B):

ENG-1 WIRE HARNESS

EAU

D1458A

pin 8 pin 9

EAU

D1458A

Resistance
OPEN CIRCUIT

EAU

D1458A

pin 8 GND

pin 9 GND

Resistance
OPEN CIRCUIT
OPEN CIRCUIT

ENG-2 WIRE HARNESS

EAU

D1458B

pin 8 pin 9

EAU

D1458B

Resistance
OPEN CIRCUIT

EAU

D1458B

pin 8 GND

pin 9 GND

Resistance
OPEN CIRCUIT
OPEN CIRCUIT

- (f) If the electrical checks are not satisfactory, then do the applicable tasks to repair the wiring (SWPM Ch 20).
- 1) Do the Repair Confirmation at the end of this task.
- (g) If the electrical checks are satisfactory, continue.
- (4) Examine the applicable T/R 1 (T/R 2) CVM, M1173 (M1174) as follows (WDM 78-36-11, WDM 78-36-21):
- (a) If not already disconnected, disconnect the electrical connector D3054 (D3058) from the applicable CVM.
 - (b) Measure the Resistance at the applicable T/R 1 (T/R 2) CVM Receptacle, D3054 (D3058) as follows:

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T/R 1 CVM

M1173	M1173	
D3054	D3054	Resistance
pin 5	pin 6	38.9 - 42.9 Ohms
pin 7	pin 6	33.8 - 37.8 Ohms

T/R 2 CVM

M1174	M1174	
D3058	D3058	Resistance
pin 5	pin 6	38.9 - 42.9 Ohms
pin 7	pin 6	33.8 - 37.8 Ohms

- 1) Make sure that the difference between the two Resistance measurements is ≤ 7 Ohms.
 - a) If the Resistance is not in the specified limits, then replace the CVM. These are the tasks:
 - Control Valve Module Removal, AMM TASK 78-34-01-000-801-F00
 - Control Valve Module Installation, AMM TASK 78-34-01-400-801-F00

<1> Do the Repair Confirmation at the end of this task.
 - b) If the Resistance is in the specified limits, then continue.
- (5) Do a check of the ENG-1 (ENG-2) T/R Control Switch Actuation Spring 69-78782. This is the task: Actuation Spring Free Angle Check, AMM TASK 78-34-11-200-801-F00.
 - (a) Adjust or replace as necessary the ENG-1 (ENG-2) T/R Control Switch, S828 (S829). These are the tasks:
 - Control Switch Adjustment and Test, AMM TASK 78-34-04-700-801-F00
 - Control Switch Removal, AMM TASK 78-34-04-000-801-F00
 - Control Switch Installation, AMM TASK 78-34-04-400-801-F00
 - (b) Do the Repair Confirmation at the end of this task.
- (6) Do these electrical checks (WDM 78-34-11, WDM 78-34-21):
 - (a) Remove the ENG-1 (ENG-2) electrical connector D10171P (D10173P).
 - (b) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	5	C00276	ENGINE 1 THRUST REVERSER CONT

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	7	C00277	ENGINE 2 THRUST REVERSER CONT

ENG-1

S828	S828	
D10171P	D10171P	Voltage
pin 4	pin 5	28V DC

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ENG-2

S829	S829	
D10173P	D10173P	Voltage
pin 4	pin 5	28V DC

- 1) If there is no voltage, then do these electrical checks:

ENG-1

S828	S828
D10171P	
pin 4	GND

ENG-2

S829	S829
D10173P	
pin 4	GND

- a) If there is no voltage, then repair the wiring between pin 4 of the electrical connector D10171P (D10173P) and the electrical connector D40802P, pin 4 (D40812P, pin 10) (SWPM Ch 20).

<1> Do the Repair Confirmation at the end of this task.

- b) If there is voltage, then repair the wiring between pin 5 of the electrical connector D10171P (D10173P) and pin 4 of the electrical connector D3052 (D3056) (SWPM Ch 20).

<1> Do the Repair Confirmation at the end of this task.

- 2) If there is voltage, continue.

- (7) Do an electrical check of the T/R 1 (T/R 2) Stow Switch, S6, which is installed on the T/R 1 (T/R 2) Autothrottle Switchpack, M1766 (M1767) as follows (WDM 78-34-11, WDM 78-34-21):

NOTE: A Stow Switch with dirty contacts can cause intermittent problems. Sometimes, a continuity check through the Stow Switch is not a satisfactory check. Therefore, you can also use the alternate Load Light method to troubleshoot a defective Stow Switch.

- (a) Method 1 - Continuity Check through the ENG-1 (ENG-2) Autothrottle Switchpack, M1766 (M1767):

T/R-1 STOW SWITCH

L A/T	L A/T	
Switchpack	Switchpack	
Receptacle	Receptacle	CONTINUITY
pin 14	pin 15	YES

T/R-2 STOW SWITCH

R A/T	R A/T	
Switchpack	Switchpack	
Receptacle	Receptacle	CONTINUITY
pin 14	pin 15	YES

- (b) Alternate Method 2 - Load Light:

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- 1) Remove the electrical connector D11130 (D11134) and install a jumper between pin 14 of the electrical connector D11130 (D11134) and pin 14 of the ENG-1 (ENG-2) Autothrottle Switchpack, M1766 (M1767) Receptacle.
- 2) Remove the safety tag and close the applicable circuit breaker(s):

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	5	C00276	ENGINE 1 THRUST REVERSER CONT

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	7	C00277	ENGINE 2 THRUST REVERSER CONT

- 3) Install a Load Light (lamp, STD-12563) between pin 15 of the ENG-1 (ENG-2) Autothrottle Switchpack, M1766 (M1767) Receptacle and Airplane Ground.
 - a) With the Reverse Thrust Lever 1 (2) to the RETRACT (stow) position, shake the Reverse Thrust Lever 1 (2) and make sure that the Load Light stays illuminated.

<1> If the Load Light is dim, flickering, or not illuminated, the T/R 1 (T/R 2) Stow Switch, S6 is malfunctioning.
- 4) Open the applicable circuit breaker(s) and install safety tag(s):

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	5	C00276	ENGINE 1 THRUST REVERSER CONT

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	7	C00277	ENGINE 2 THRUST REVERSER CONT

- (c) If the electrical check of the T/R 1 (T/R 2) Stow Switch, S6 shows that the Switch is malfunctioning, do these steps:

SIA ALL; AUTOTHROTTLE SWITCHPACK WITH REPLACEABLE SWITCHES P/N 254A1150-1, -2, -7, -8, -9, -10

- 1) Adjust the Stow Switch, S6 per the applicable steps in the Autothrottle Switchpack Switch Installation, AMM TASK 76-11-07-400-801-F00.
 - a) Do the Repair Confirmation at the end of this task.
 - b) If the Repair Confirmation is not satisfactory, clean the Stow Switch, S6. This is the task:
 - Switch Test and Cleaning, AMM TASK 76-11-07-820-802-F00

<1> Do the Repair Confirmation at the end of this task.
 - c) If the Repair Confirmation is not satisfactory, replace the Stow Switch, S6. These are the tasks:
 - Autothrottle Switchpack Switch Removal, AMM TASK 76-11-07-020-801-F00
 - Autothrottle Switchpack Switch Installation, AMM TASK 76-11-07-400-801-F00

<1> Do the Repair Confirmation at the end of this task.

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SIA ALL; AUTOTHROTTLE SWITCHPACK WITH INTEGRATED SWITCHES P/N 254A1150-11, -12, -13, -14, -15, -16

- 2) Clean the applicable ENG-1 (ENG-2) Autothrottle Switchpack Assembly, M1766 (M1767). This is the task:
 - Switch Test and Cleaning, AMM TASK 76-11-07-820-802-F00
 - a) Do the Repair Confirmation at the end of this task.
- 3) Replace the applicable ENG-1 (ENG-2) Autothrottle Switchpack Assembly, M1766 (M1767). These are the tasks:
 - Autothrottle Switchpack Assembly - Installation, AMM TASK 76-11-07-400-802-F00
 - Autothrottle Switchpack Assembly - Removal, AMM TASK 76-11-07-020-802-F00
 - a) Do the Repair Confirmation at the end of this task.

SIA ALL

- (d) If the electrical check of the T/R 1 or T/R 2 Stow Switch, S6 shows that the Switch is not malfunctioning, then re-connect the electrical connector D11130 (D11134) and continue.

NOTE: If you used the Load Light method, remove the jumper and the Load Light, then re-connect the electrical connector D11130 (D11134) and continue.

- (8) Replace the EAU. These are the tasks:
 - Engine Accessory Unit Removal, AMM TASK 78-34-06-000-801-F00
 - Engine Accessory Unit Installation, AMM TASK 78-34-06-400-801-F00
 - (a) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

- (1) Do these steps:
 - (a) Make sure that the ENG-1 (ENG-2) electrical connector D3054 (D3058) is connected to the CVM.
 - (b) Make sure that all electrical connectors that were disconnected to do an electrical check between the CVM and the EAU are correctly connected.
 - (c) If the EAU is not installed, install it (Engine Accessory Unit Installation, AMM TASK 78-34-06-400-801-F00).



WARNING

KEEP PERSONNEL AND EQUIPMENT AWAY FROM THE AREA AROUND THE THRUST REVERSERS. THE THRUST REVERSERS EXTEND AND RETRACT QUICKLY. INJURIES TO PERSONNEL, AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (d) Do this task: Thrust Reverser Activation After Ground Maintenance, AMM TASK 78-31-00-440-803-F00.
- (e) Do these steps to reset the T/R STOW FAULTS Light.
 - 1) Move the Reverse Thrust Lever 1 (2) forward and down to the RETRACT (stow) position.
 - 2) Push and hold the FAULT RESET Button for a minimum of two seconds.
 - 3) Wait for at least 30 seconds.
 - 4) If the DIR CONT VALVE SENSOR Fault Light on the EAU is OFF, then you corrected the problem.

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DO THE DEACTIVATION PROCEDURE TO PREVENT THE OPERATION OF THE THRUST REVERSER. THE ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

- 5) If the DIR CONT VALVE SENSOR Fault Light on the EAU is ON, deactivate the T/R (Thrust Reverser Deactivation For Ground Maintenance, AMM TASK 78-31-00-040-802-F00) and continue the Fault Isolation Procedure at the subsequent step.
- (2) After you correct the problem, do these steps to put the airplane back to its usual condition:



KEEP PERSONNEL AND EQUIPMENT AWAY FROM THE AREA AROUND THE THRUST REVERSERS. THE THRUST REVERSERS EXTEND AND RETRACT QUICKLY. INJURIES TO PERSONNEL, AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (a) Move the Reverse Thrust Lever 1 (2) forward and down to RETRACT (stow) the T/R.
- (b) Operate the T/R through an EXTEND and RETRACT cycle.
- (c) Make sure that the REVERSER Fault on the on the Flight Compartment Panel, P5 comes ON for approximately 10 seconds after the Reverse Thrust Lever 1 (2) is moved to the RETRACT (stow) position and then goes OFF.
- (d) Wait for at least 30 seconds.
- (e) Make sure that the REVERSER Fault Light on the Flight Compartment Panel, P5 stays OFF.

————— END OF TASK —————

812. T/R STOW FAULTS - HYD ISO VALVE SENSOR - Fault Isolation

A. Description

- (1) This task is for these single EAU maintenance messages:
 - (a) ENGINE 1 - S833 HYD ISO VALVE SENSOR
 - (b) ENGINE 2 - S830 HYD ISO VALVE SENSOR
- (2) This maintenance message indicates that the Hydraulic Isolation Valve position does not agree with the commanded RETRACT (stow) position for the T/R.
 - (a) This can be caused by a fault in the Arm Switch, S5 if it is not adjusted correctly or if it has failed in the EXTEND (deploy) position.
 - (b) When the EAU is reset, if the fault is in the Arm Switch, S5, it can be cleared from the EAU before it is corrected. However, the maintenance message will show again when the T/R is commanded to stow a subsequent time.
 - (c) The T/R must go through an EXTEND and RETRACT cycle to show the maintenance message again after the EAU is reset.

B. Possible Causes

- (1) Wiring between the T/R 1 (T/R 2) CVM and EAU
- (2) T/R 1 (T/R 2) T/R CVM, M1173 (M1174)

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- (3) T/R 1 (T/R 2) Arm Switch, S5

NOTE: The Arm Switch, S5, is installed on the Autothrottle Switchpack, M1766 (M1767)

SIA ALL; AUTOTHROTTLE SWITCHPACK WITH INTEGRATED SWITCHES P/N 254A1150-11, -12, -13, -14, -15, -16

- (4) T/R 1 (T/R 2) Autothrottle Switchpack Assembly, M1766 (M1767)

SIA ALL

- (5) EAU, M528

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	4	C01003	ENGINE 1 THRUST REVERSER IND
B	5	C00276	ENGINE 1 THRUST REVERSER CONT
B	6	C01412	ENGINE 1 THRUST REVERSER INTLK
B	7	C01266	ENGINE 1 THRUST REVERSER SYNC LOCK

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	5	C01267	ENGINE 2 THRUST REVERSER SYNC LOCK
C	6	C01413	ENGINE 2 THRUST REVERSER INTLK
C	7	C00277	ENGINE 2 THRUST REVERSER CONT
C	8	C01004	ENGINE 2 THRUST REVERSER IND

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	16	C01345	LANDING GEAR AUTOBRAKE BITE CONT 2
A	18	C00583	LANDING GEAR AUTOBRAKE BITE CONT 1

D. Related Data

- (1) Component Location (78-31 TASK SUPPORT Figure 308)
- (2) Simplified Schematic (78-31 TASK SUPPORT Figure 306, 78-31 TASK SUPPORT Figure 307)
- (3) WDM 78-34-11
- (4) WDM 78-34-21
- (5) WDM 78-36-11
- (6) WDM 78-36-21
- (7) SSM 78-34-11
- (8) SSM 78-34-21
- (9) SSM 78-36-11
- (10) SSM 78-36-21

E. Initial Evaluation

- (1) To show the current maintenance messages, do this task: Engine Accessory Unit (EAU) BITE Procedure, 78-31 TASK 801.

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F. Fault Isolation Procedure

- (1) Open the applicable Circuit Breaker and install safety tag:

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
A	16	C01345	LANDING GEAR AUTOBRAKE BITE CONT 2
A	18	C00583	LANDING GEAR AUTOBRAKE BITE CONT 1



DO THE DEACTIVATION PROCEDURE TO PREVENT THE OPERATION OF THE THRUST REVERSER. THE ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

- (2) Do this task: Thrust Reverser Deactivation For Ground Maintenance, AMM TASK 78-31-00-040-802-F00.
- (3) Examine the ENG-1 (ENG-2) wire harness and connectors between the EAU, M528 and ENG-1 (ENG-2) CVM, M1173 (M1174) as follows (WDM 78-36-11, WDM 78-36-21):
- Visually examine the ENG-1 (ENG-2) wire harness electrical connector, D3054 (D3058) at the applicable CVM, M1173 (M1174):

NOTE: The CVM is in the main gear wheel well on the keel beam. The ENG-1 CVM, M1173 is on the left side and ENG-2 CVM, M1174 is on the right side.
 - Remove the EAU. This is the task: Engine Accessory Unit Removal, AMM TASK 78-34-06-000-801-F00.
 - Disconnect the ENG-1 (ENG-2) electrical connector, D3054 (D3058) from the applicable T/R CVM, M1173 (M1174).
 - Examine the ENG-1 (ENG-2) wire harness and CVM receptacle (Standard Engine Wiring and Equipment Check, AMM TASK 70-70-01-200-801-F00).
 - If the CVM receptacle is damaged, then replace the T/R 1 (T/R 2) CVM, M1173 (M1174). These are the tasks.
 - Control Valve Module Removal, AMM TASK 78-34-01-000-801-F00
 - Control Valve Module Installation, AMM TASK 78-34-01-400-801-F00
 - Do the Repair Confirmation at the end of this task.
 - If the wire harness or connector is damaged, do the applicable tasks to repair or replace the connector and/or harness (SWPM Ch 20).
 - Do the Repair Confirmation at the end of this task.
 - Visually examine the ENG-1 (ENG-2) wire harness connector, D1458A (D1458B) and EAU receptacle (AMM TASK 70-70-01-200-801-F00).
 - If the EAU receptacle is damaged, then replace the EAU, M528. These are the tasks:
 - Engine Accessory Unit Removal, AMM TASK 78-34-06-000-801-F00
 - Engine Accessory Unit Installation, AMM TASK 78-34-06-400-801-F00
 - Do the Repair Confirmation at the end of this task.
 - If the wire harness connector is damaged, do the applicable tasks to repair or replace the connector (SWPM Ch 20).
 - Do the Repair Confirmation at the end of this task.

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- (f) If you did not find a problem, then continue.
- (4) Do the electrical checks that follow (WDM 78-36-11, WDM 78-36-21):
- (a) Remove the EAU. This is the task: Engine Accessory Unit Removal, AMM TASK 78-34-06-000-801-F00.
 - (b) Disconnect the electrical connector, D3054 (D3058) from the applicable T/R 1 (T/R 2) CVM.
 - (c) Do a continuity check between the EAU receptacle, D1458A (D1458B) and T/R 1 (T/R 2) CVM connector, D3054 (D3058) as follows:

ENG-1 WIRE HARNESS

EAU	T/R 1 CVM
D1458A	D3054
pin 43	pin 4
pin 44	pin 2

ENG-2 WIRE HARNESS

EAU	T/R 2 CVM
D1458B	D3058
pin 43	pin 4
pin 44	pin 2

- (d) Do a check for ground at the applicable T/R CVM connector, D3054 (D3058) as follows:

ENG-1 WIRE HARNESS

T/R 1 CVM		Resistance
D3054		CONTINUITY
pin 3	GND	

ENG-2 WIRE HARNESS

T/R 2 CVM		Resistance
D3058		CONTINUITY
pin 3	GND	

- (e) Do these electrical checks at the EAU receptacle, D1458A (D1458B):

ENG-1 WIRE HARNESS

EAU	EAU	Resistance
D1458A	D1458A	OPEN CIRCUIT
pin 43	pin 44	

EAU		Resistance
D1458A		OPEN CIRCUIT
pin 43	GND	
pin 44	GND	OPEN CIRCUIT

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ENG-2 WIRE HARNESS

EAU D1458B	EAU D1458B	Resistance
pin 43	pin 44	OPEN CIRCUIT

EAU D1458B		Resistance
pin 43	GND	OPEN CIRCUIT
pin 44	GND	OPEN CIRCUIT

- (f) If the electrical checks are not satisfactory, then do the applicable tasks to repair the wiring (SWPM Ch 20).
- 1) Do the Repair Confirmation at the end of this task.
- (g) If the electrical checks are satisfactory, continue.
- (5) Examine the applicable T/R 1 (T/R 2) CVM, M1173 (M1174) as follows (WDM 78-36-11, WDM 78-36-21):
- (a) If not already disconnected, disconnect connector, D3054 (D3058) from the applicable CVM.
- (b) Measure the resistance at the applicable ENG-1 (ENG-2) CVM receptacle, D3054 (D3058) as follows:

T/R 1 CVM

M1173 D3054	M1173 D3054	Resistance
pin 2	pin 3	38.9 - 42.9 Ohms
pin 4	pin 3	33.8 - 37.8 Ohms

T/R 2 CVM

M1174 D3058	M1174 D3058	Resistance
pin 2	pin 3	38.9 - 42.9 Ohms
pin 4	pin 3	33.8 - 37.8 Ohms

- 1) Make sure that the difference between the two resistance measurements is less than 7 ohms.
- a) If the resistance is not in the specified limits, then replace the CVM. These are the tasks:
- Control Valve Module Removal, AMM TASK 78-34-01-000-801-F00
 - Control Valve Module Installation, AMM TASK 78-34-01-400-801-F00
- <1> Do the Repair Confirmation at the end of this task.
- b) If the resistance is in the specified limits, then continue.

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- (6) Open the applicable circuit breaker(s) and install safety tag(s):

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	7	C01266	ENGINE 1 THRUST REVERSER SYNC LOCK

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	5	C01267	ENGINE 2 THRUST REVERSER SYNC LOCK

- (7) Remove the access cover from the left side of the nose gear wheel well overhead to get access to the T/R 1 (T/R 2) Autothrottle Switchpack.
- (8) Disconnect the electrical connector, D11130 (D11134) from the T/R 1 (T/R 2) Autothrottle Switchpack, M1766 (M1767).
- (9) Visually examine connectors, D11130 (D11134) and T/R 1 (T/R 2) Autothrottle Switchpack receptacles.

SIA ALL; AUTOTHROTTLE SWITCHPACK WITH REPLACEABLE SWITCHES P/N 254A1150-1, -2, -7, -8, -9, -10

NOTE: The Arm Switch, S5, is installed on the T/R 1 (T/R 2) Autothrottle Switchpack, M1766 (M1767).

SIA ALL

- (a) If an electrical connector is damaged, then do the applicable tasks to repair or replace the connector (SWPM Ch 20).
- 1) Do the Repair Confirmation at the end of this task.
- (b) If a connector was not correctly connected and no other problem was found, then re-connect the connector and do the Repair Confirmation at the end of this task.
- (c) If you did not find a problem, then continue.
- (10) Do an electrical check of the T/R 1 (T/R 2) Arm Switch, S5, that installed on the T/R 1 (T/R 2) Autothrottle Switchpack, M1766 (M1767) as follows (WDM 78-34-11, WDM 78-34-21):
- NOTE: An Arm Switch with dirty contacts can cause intermittent problems. Sometimes, a continuity check through the Arm Switch is not a satisfactory check. Therefore, you can also use the alternate Load Light method to troubleshoot a defective Arm Switch.
- (a) Method 1 - continuity check through the ENG-1 (ENG-2) Autothrottle Switchpack, M1766 (M1767):

T/R-1 ARM SWITCH

L A/T Switchpack Receptacle	L A/T Switchpack Receptacle	CONTINUITY
pin 7	pin 8	NO
pin 8	pin 9	YES

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T/R-2 ARM SWITCH

R A/T Switchpack Receptacle	R A/T Switchpack Receptacle	CONTINUITY
pin 7	pin 8	NO
pin 8	pin 9	YES

(b) Alternate Method 2 - Load Light:

- 1) Disconnect the electrical connector, D11130 (D11134) and install a jumper between pin 8 of the electrical connector, D11130 (D11134) and pin 8 of the ENG-1 (ENG-2) Autothrottle Switchpack, M1766 (M1767) receptacle.
- 2) Remove the safety tag and close the applicable circuit breaker(s):

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	5	C00276	ENGINE 1 THRUST REVERSER CONT

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	7	C00277	ENGINE 2 THRUST REVERSER CONT

- 3) Install the Load Light (lamp, STD-12563) between pin 7 of the ENG-1 (ENG-2) Autothrottle Switchpack, M1766 (M1767) receptacle and airplane ground.
 - a) Move the Reverse Thrust Lever 1 (2) to the EXTEND (deploy) position and monitor the Load Light as follows:
 - <1> With the Reverse Thrust Lever 1 (2) in the EXTEND (deploy) position, shake the Reverse Thrust Lever 1 (2) and make sure that the Load Light stays illuminated.
 - <a> If the Load Light is dim, flickering, or not illuminated, the T/R 1 (T/R 2) Arm Switch, S5 is malfunctioning.
- 4) Remove the Load Light (lamp, STD-12563) from pin 7 and install between pin 9 of the ENG-1 (ENG-2) Autothrottle Switchpack, M1766 (M1767) receptacle and airplane ground.
 - a) Move the Reverse Thrust Lever 1 (2) to the RETRACT (stow) position and monitor the Load Light as follows:
 - <1> With the Reverse Thrust Lever 1 (2) in the RETRACT (stow) position, shake the Reverse Thrust Lever 1 (2) and make sure that the Load Light stays illuminated.
 - <a> If the Load Light is dim, flickering, or not illuminated, the T/R 1 (T/R 2) Arm Switch, S5 is malfunctioning.
- 5) Open the applicable circuit breaker(s) and install safety tag(s):

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	5	C00276	ENGINE 1 THRUST REVERSER CONT

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F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	7	C00277	ENGINE 2 THRUST REVERSER CONT

- (c) If the electrical check of the T/R 1 (T/R 2) Arm Switch, S5 shows that the switch is malfunctioning, do these steps:

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- 1) Adjust the Arm Switch, S5 per the applicable steps in the Autothrottle Switchpack Switch Installation, AMM TASK 76-11-07-400-801-F00 .
 - a) Do the Repair Confirmation at the end of this task.
 - b) If the Repair Confirmation is not satisfactory, clean the Arm Switch, S5. This is the task:
 - Switch Test and Cleaning, AMM TASK 76-11-07-820-802-F00

<1> Do the Repair Confirmation at the end of this task.
 - c) If the Repair Confirmation is not satisfactory, replace the Arm Switch, S5. These are the tasks:
 - Autothrottle Switchpack Switch Removal, AMM TASK 76-11-07-020-801-F00
 - Autothrottle Switchpack Switch Installation, AMM TASK 76-11-07-400-801-F00

<1> Do the Repair Confirmation at the end of this task.

SIA ALL; AUTOTHROTTLE SWITCHPACK WITH INTEGRATED SWITCHES P/N 254A1150-11, -12, -13, -14, -15, -16

- 2) Clean the ENG-1 (ENG-2) Autothrottle Switchpack, M1766 (M1767). This is the task:
 - Switch Test and Cleaning, AMM TASK 76-11-07-820-802-F00
 - a) Do the Repair Confirmation at the end of this task.
- 3) Replace the ENG-1 (ENG-2) Autothrottle Switchpack, M1766 (M1767). These are the tasks:
 - Autothrottle Switchpack Assembly - Installation, AMM TASK 76-11-07-400-802-F00
 - Autothrottle Switchpack Assembly - Removal, AMM TASK 76-11-07-020-802-F00
 - a) Do the Repair Confirmation at the end of this task.

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- (d) If the electrical check of the T/R 1 (T/R 2) Arm Switch, S5 shows that the Switch is not malfunctioning, then connect electrical connector, D11130 (D11134) and continue.

NOTE: If you used the Load Light method, remove the jumper and the Load Light, then connect electrical connector, D11130 (D11134) and continue.

- (11) Replace the EAU. These are the tasks:
- Engine Accessory Unit Removal, AMM TASK 78-34-06-000-801-F00
 - Engine Accessory Unit Installation, AMM TASK 78-34-06-400-801-F00.
- (a) Do the Repair Confirmation at the end of this task.

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G. Repair Confirmation

- (1) Do these steps:
 - (a) Make sure that the electrical connector, D11130 (D11134) is connected to the T/R 1 (T/R 2) Autothrottle Switchpack, M1766 (M1767).
 - (b) Make sure that the electrical connector, D3054 (D3058) is connected to the T/R 1 (T/R 2) CVM.
 - (c) If the EAU is not installed, install it (AMM TASK 78-34-06-400-801-F00)



WARNING

KEEP PERSONNEL AND EQUIPMENT AWAY FROM THE AREA AROUND THE THRUST REVERSERS. THE THRUST REVERSERS EXTEND AND RETRACT QUICKLY. INJURIES TO PERSONNEL, AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (d) Do this task: Thrust Reverser Activation After Ground Maintenance, AMM TASK 78-31-00-440-803-F00.
- (e) Remove the safety tag and close the applicable Circuit Breaker::

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	16	C01345	LANDING GEAR AUTOBRAKE BITE CONT 2
A	18	C00583	LANDING GEAR AUTOBRAKE BITE CONT 1

- (f) Do these steps to reset the T/R STOW FAULTS Light.
 - 1) Move the Reverse Thrust Lever 1 (2) forward and down to the RETRACT (stow) position.
 - 2) Push and hold the FAULT RESET button for a minimum of two seconds.
 - 3) Wait for at least 30 seconds.
 - 4) If the S833 (S830) HYD ISO VALVE SENSOR Fault Light on the EAU is OFF, then you corrected the problem.
 - 5) If the S833 (S830) HYD ISO VALVE SENSOR Fault Light on the EAU is still ON, do these steps:
 - a) Open the applicable 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>
A	16	C01345	LANDING GEAR AUTOBRAKE BITE CONT 2
A	18	C00583	LANDING GEAR AUTOBRAKE BITE CONT 1



WARNING

DO THE DEACTIVATION PROCEDURE TO PREVENT THE OPERATION OF THE THRUST REVERSER. THE ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

- b) Deactivate the T/R (AMM TASK 78-31-00-040-802-F00) and continue the Fault Isolation Procedure at the subsequent step.
- (2) After you correct the problem, do these steps to put the airplane back to its usual condition:

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KEEP PERSONNEL AND EQUIPMENT AWAY FROM THE AREA AROUND THE THRUST REVERSERS. THE THRUST REVERSERS EXTEND AND RETRACT QUICKLY. INJURIES TO PERSONNEL, AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (a) Move the Reverse Thrust Lever 1 (2) forward and down to the RETRACT (stow) position.
- (b) Operate the T/R through an EXTEND and RETRACT cycle.
- (c) Make sure that the REVERSER Fault Light, on the P5 forward overhead panel, comes ON for approximately 10 seconds after the Reverse Thrust Lever 1 (2) is moved to the RETRACT (stow) position and then goes OFF.
- (d) Wait for at least 30 seconds.
- (e) Make sure that the REVERSER Fault Light, on the P5 forward overhead panel, stays OFF.

————— END OF TASK —————

813. T/R STOW FAULTS - L SLEEVE LOCK SENSOR - Fault Isolation

A. Description

- (1) This task is for these single EAU maintenance messages:
 - (a) ENGINE 1 - S835 L SLEEVE LOCK SENSOR
 - (b) ENGINE 2 - S835 L SLEEVE LOCK SENSOR
- (2) This Fault Light indicates that the position of the Left T/R Sleeve does not agree with the commanded RETRACT (stow) position for the T/R.

B. Possible Causes

- (1) Broken or binding Manual Unlock Handle on the ULHA
- (2) Left SLPS, S835
- (3) Wiring between the Left SLPS and the EAU.
- (4) EAU, M528

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	4	C01003	ENGINE 1 THRUST REVERSER IND
B	5	C00276	ENGINE 1 THRUST REVERSER CONT
B	6	C01412	ENGINE 1 THRUST REVERSER INTLK
B	7	C01266	ENGINE 1 THRUST REVERSER SYNC LOCK

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	5	C01267	ENGINE 2 THRUST REVERSER SYNC LOCK
C	6	C01413	ENGINE 2 THRUST REVERSER INTLK
C	7	C00277	ENGINE 2 THRUST REVERSER CONT
C	8	C01004	ENGINE 2 THRUST REVERSER IND

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D. Related Data

- (1) Component Location (78-31 TASK SUPPORT Figure 302, 78-31 TASK SUPPORT Figure 303)
- (2) Simplified Schematic (78-31 TASK SUPPORT Figure 302, 78-31 TASK SUPPORT Figure 303)
- (3) WDM 78-36-11
- (4) WDM 78-36-21
- (5) SSM 78-36-11
- (6) SSM 78-36-21

E. Initial Evaluation

- (1) Do the Engine Accessory Unit (EAU) BITE Procedure, 78-31 TASK 801 to show the current maintenance messages.

F. Fault Isolation Procedure



KEEP PERSONNEL AND EQUIPMENT AWAY FROM THE AREA AROUND THE THRUST REVERSERS. THE THRUST REVERSERS EXTEND AND RETRACT QUICKLY. INJURIES TO PERSONNEL, AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (1) Do this task: Open the Fan Cowl Panels, AMM TASK 71-11-02-010-801-F00.
- (2) Operate the T/R through an EXTEND and RETRACT cycle while another person monitors the Lockout Handle on the ULHA.
 - (a) On the ULHA, make sure the Manual Lockout Handle is not binding or broken.
 - 1) If the Manual Lockout Handle is binding, examine and replace the shim as necessary, and make sure that the assembly gaps are satisfactory as specified in the shim installation paragraph of AMM TASK 78-31-03-300-804-F00.
 - 2) If the Manual Lockout Handle is broken, replace it. This is the task: (AMM TASK 78-31-03-300-804-F00)
 - 3) Do the Repair Confirmation at the end of this task.
 - (b) If the Manual Lockout Handle is satisfactory, then continue.



DO THE DEACTIVATION PROCEDURE TO PREVENT THE OPERATION OF THE THRUST REVERSER. THE ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

- (3) Do this task: Thrust Reverser Deactivation For Ground Maintenance, AMM TASK 78-31-00-040-802-F00.
- (4) Do the Sleeve Lock Proximity Sensor Adjustment and Test, AMM TASK 78-34-03-800-801-F00 for the applicable ENG-1 (ENG-2) Left SLPS, S835.
 - (a) If the SLPS is not in the limits, then adjust the sensor.
 - 1) Do the Repair Confirmation at the end of this task.
 - (b) If the SLPS is in the limits, then continue.
- (5) Do this task: Thrust Reverser Upper Locking Actuator - Integrity Test, AMM TASK 78-31-03-700-801-F00.
 - (a) If the thrust reverser sleeve starts to deploy, replace the ULHA. These are the tasks: Upper Locking Hydraulic Actuator Removal, AMM TASK 78-31-03-000-801-F00.

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Upper Locking Hydraulic Actuator - Installation, AMM TASK 78-31-03-400-801-F00.

- 1) Do the repair confirmation at the end of this task.
 - a) If the actuator locks prevent actuator movement, then continue.
- (6) Examine the applicable ENG-1 (ENG-2) Left SLPS as follows (WDM 78-36-11, WDM 78-36-21):
 - (a) See if the electrical connector D30008 is correctly connected to the Strut Receptacle.
 - (b) Disconnect the applicable ENG-1 (ENG-2) Left SLPS connector D30008 from the respective Strut Receptacle D30208 (D30408).
 - (c) Visually examine the Strut Receptacle and the SLPS connector for damage.
 - 1) If the Strut Receptacle or the SLPS connector is damaged, do the applicable tasks to repair or replace the connector(s) as necessary (SWPM Ch 20).
 - a) Do the Repair Confirmation at the end of this task.
 - 2) If a connector was not correctly connected and no other problem was found, then re-connect the connector and do the Repair Confirmation at the end of this task.
 - (d) Measure and record the SLPS Resistance between the pins indicated below:

L SLPS D30008	L SLPS D30008	Resistance
pin 1	pin 4	Value in Ohms
pin 1	pin 5	Value in Ohms

- (e) Do these checks:

L SLPS D30008	Resistance
pin 1 GND	OPEN CIRCUIT
pin 4 GND	OPEN CIRCUIT
pin 5 GND	OPEN CIRCUIT

- (f) If the Resistance checks are not satisfactory, then replace the applicable ENG-1 (ENG-2) Left SLPS, S835. These are the tasks:
 - Thrust Reverser Sleeve Lock Proximity Sensor - Removal, AMM TASK 78-34-03-000-801-F00
 - Thrust Reverser Sleeve Lock Proximity Sensor - Installation, AMM TASK 78-34-03-400-801-F00
 - 1) Do the Repair Confirmation at the end of this task.
- (7) Examine the ENG-1 (ENG-2) Wire Harness and connectors between the EAU, M528 and the ENG-1 (ENG-2) Left SLPS, S835 (WDM 78-36-11, WDM 78-36-21)
 - (a) Disconnect the applicable ENG-1 (ENG-2) SLPS connector D30008 from the respective Strut Receptacle D30208 (D30408).
 - (b) Remove the EAU. This is the task: Engine Accessory Unit Removal, AMM TASK 78-34-06-000-801-F00.
 - (c) Visually examine the ENG-1 (ENG-2) Wire Harness Connector, D1458A (D1458B) and the EAU Receptacle (AMM TASK 70-70-01-200-801-F00).

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- 1) If the EAU Receptacle is damaged, then replace the EAU, M528. These are the tasks:
 - Engine Accessory Unit Removal, AMM TASK 78-34-06-000-801-F00
 - Engine Accessory Unit Installation, AMM TASK 78-34-06-400-801-F00
 - a) Do the Repair Confirmation at the end of this task.
 - 2) If the ENG-1 (ENG-2) Wire Harness or connector is damaged, do the applicable tasks to repair or replace the connector and/or harness as necessary (SWPM Ch 20).
 - a) Do the Repair Confirmation at the end of this task.
- (8) Do the wiring checks that follow (WDM 78-36-11, WDM 78-36-21):
- (a) Disconnect the applicable ENG-1 (ENG-2) SLPS connector D30008 from the respective Strut Receptacle D30208 (D30408).
 - (b) Remove the EAU. This is the task: Engine Accessory Unit Removal, AMM TASK 78-34-06-000-801-F00.
 - (c) Do a continuity check between the EAU Receptacle D1458A (D1458B) and the ENG-1 (ENG-2) Left T/R Sleeve Strut Receptacle D30208 (D30408) as follows:
NOTE: The difference between the two Resistance measurements should be ≤ 2 Ohms.

ENG-1 WIRE HARNESS

EAU	L T/R SLEEVE
D1458A	D30208
pin 28	pin 4
pin 27	pin 5

ENG-2 WIRE HARNESS

EAU	L T/R SLEEVE
D1458B	D30408
pin 28	pin 4
pin 27	pin 5

- (d) Do a check for ground at the applicable Strut Receptacle D30208 (D30408) as follows:

ENG-1 WIRE HARNESS

L T/R SLEEVE		Resistance
D30208		CONTINUITY
pin 1	GND	

ENG-2 WIRE HARNESS

L T/R SLEEVE		Resistance
D30408		CONTINUITY
pin 1	GND	

- (e) Do these checks at the EAU Receptacle D1458A (D1458B):

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ENG-1 WIRE HARNESS

EAU	EAU	Resistance
D1458A	D1458A	
pin 28	pin 27	OPEN CIRCUIT

EAU		Resistance
D1458A		
pin 28	GND	OPEN CIRCUIT
pin 27	GND	OPEN CIRCUIT

ENG-2 WIRE HARNESS

EAU	EAU	Resistance
D1458B	D1458B	
pin 28	pin 27	OPEN CIRCUIT

EAU		Resistance
D1458B		
pin 28	GND	OPEN CIRCUIT
pin 27	GND	OPEN CIRCUIT

- (f) If the wiring checks are not satisfactory, do the applicable tasks to repair the wiring (SWPM Ch 20).
- 1) Do the Repair Confirmation at the end of this task.
- (g) If the wiring checks are satisfactory, then continue.
- (9) Replace the EAU, M528. These are the tasks:
- Engine Accessory Unit Removal, AMM TASK 78-34-06-000-801-F00
 - Engine Accessory Unit Installation, AMM TASK 78-34-06-400-801-F00
- (a) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

- (1) Do these steps:
- (a) Make sure that the ENG-1 (ENG-2) Left SLPS connector D30008 is connected to the respective Strut Receptacle D30208 (D30408).
 - (b) Make sure that all connectors that were disconnected to do an electrical check between the Strut Receptacle and the EAU are correctly connected.
 - (c) If the EAU is not installed, do this task: Engine Accessory Unit Installation, AMM TASK 78-34-06-400-801-F00.
 - (d) Do this task: Thrust Reverser Activation After Ground Maintenance, AMM TASK 78-31-00-440-803-F00.



WARNING

MAKE SURE THAT THERE ARE NO PERSONS OR EQUIPMENT IN THE AREA OF THE THRUST REVERSER. MOVEMENT OF THE THRUST REVERSER CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (e) Do these steps to reset the T/R STOW FAULTS Light.

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- 1) Move the Reverse Thrust Lever 1 (2) FWD and DOWN to the RETRACT (stow) position.
- 2) Push and hold the FAULT RESET button for a minimum of two seconds.
- 3) Wait for at least 30 seconds.
- 4) If the S835 L SLEEVE LOCK SENSOR Fault Light on the EAU is OFF, then you corrected the problem.



DO THE DEACTIVATION PROCEDURE TO PREVENT THE OPERATION OF THE THRUST REVERSER. THE ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

- 5) If the S835 L SLEEVE LOCK SENSOR Fault Light on the EAU is ON, deactivate the T/R (Thrust Reverser Deactivation For Ground Maintenance, AMM TASK 78-31-00-040-802-F00) and continue the Fault Isolation Procedure at the subsequent step.
- (2) After you correct the problem, do these steps to put the airplane back to its usual condition:
- (a) Do the EEC TEST, AMM TASK 73-21-00-700-804-F00.
- NOTE: This check will make sure that the electrical connections for the LVDTs are correct.
- 1) If a maintenance message shows, do the applicable Fault Isolation Procedure for that maintenance message.
 - 2) If no maintenance messages show, the electrical connections for the LVDTs are correct.



MAKE SURE THAT THERE ARE NO PERSONS OR EQUIPMENT IN THE AREA OF THE THRUST REVERSER. MOVEMENT OF THE THRUST REVERSER CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (b) Operate the Thrust Reverser through an EXTEND and RETRACT cycle.
- (c) Make sure that the REVERSER Fault Light on the Flight Compartment P5 Panel comes ON for approximately 10 seconds after the Reverse Thrust Lever 1 (2) is moved to the RETRACT (stow) position and then goes OFF.
- (d) Wait for at least 30 seconds.
- (e) Make sure that the REVERSER Fault Light on the Flight Compartment P5 Panel stays OFF.
- (f) Do this task: Close the Fan Cowl Panels, AMM TASK 71-11-02-410-801-F00.

————— **END OF TASK** —————

814. T/R STOW FAULTS - L SLEEVE STOW SENSOR - Fault Isolation

A. Description

- (1) This task is for these single EAU maintenance messages:
 - (a) ENGINE 1 - S831 L SLEEVE STOW SENSOR
 - (b) ENGINE 2 - S831 L SLEEVE STOW SENSOR

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- (2) This Fault Light indicates that the position of the Left T/R Sleeve does not agree with the commanded RETRACT (stow) position for the T/R.

B. Possible Causes

- (1) SSPS Roller
- (2) Wiring between the Left SSPS and the EAU
- (3) Left SSPS, S831.
- (4) EAU, M528

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	4	C01003	ENGINE 1 THRUST REVERSER IND
B	5	C00276	ENGINE 1 THRUST REVERSER CONT
B	6	C01412	ENGINE 1 THRUST REVERSER INTLK
B	7	C01266	ENGINE 1 THRUST REVERSER SYNC LOCK

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	5	C01267	ENGINE 2 THRUST REVERSER SYNC LOCK
C	6	C01413	ENGINE 2 THRUST REVERSER INTLK
C	7	C00277	ENGINE 2 THRUST REVERSER CONT
C	8	C01004	ENGINE 2 THRUST REVERSER IND

D. Related Data

- (1) Component Location/Simplified Schematic (78-31 TASK SUPPORT Figure 302, 78-31 TASK SUPPORT Figure 303)
- (2) WDM 78-36-11
- (3) WDM 78-36-21
- (4) SSM 78-36-11
- (5) SSM 78-36-21

E. Initial Evaluation

- (1) Do the Engine Accessory Unit (EAU) BITE Procedure, 78-31 TASK 801 to show the current maintenance messages.

F. Fault Isolation Procedure



DO THE DEACTIVATION PROCEDURE TO PREVENT THE OPERATION OF THE THRUST REVERSER. THE ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

- (1) Do this task: Thrust Reverser Deactivation For Ground Maintenance, AMM TASK 78-31-00-040-802-F00.
- (2) Do this task: Open the Fan Cowl Panels, AMM TASK 71-11-02-010-801-F00.

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- (3) Do an inspection of the SSPS Roller Assembly (78-31 TASK SUPPORT Figure 302, 78-31 TASK SUPPORT Figure 303).
- (a) If the roller is damaged, worn, or has flat spots, then replace the damaged hardware.
- 1) Do the Repair Confirmation at the end of this task.
- (b) If you do not find any problems with the Roller Assembly hardware, then continue.
- (4) Examine the applicable ENG-1 (ENG-2) Left SSPS as follows (WDM 78-36-11, WDM 78-36-21):
- (a) See if the electrical connector D30002 is correctly connected to the Strut Receptacle.
- (b) Disconnect the applicable ENG-1 (ENG-2) Left SSPS connector D30002 from the respective Strut Receptacle D30202 (D30402).
- (c) Visually examine the Strut Receptacle and the SSPS connector for damage.
- 1) If the Strut Receptacle or the SSPS connector is damaged, do the applicable tasks to repair or replace the connector(s) as necessary (SWPM Ch 20).
- a) Do the Repair Confirmation at the end of this task.
- 2) If a connector was not correctly connected and no other problem was found, then re-connect the connector and do the Repair Confirmation at the end of this task.
- (d) Measure and record the SSPS Resistance between the pins indicated below:
- NOTE: The difference between the two Resistance measurements should be ≤ 2 Ohms.

L SSPS		L SSPS	
D30002		D30002	Resistance
pin 1	.....	pin 7	Value in Ohms
pin 1	.....	pin 8	Value in Ohms

- (e) Do these checks:

L SSPS		
D30002		Resistance
pin 1	 GND	OPEN CIRCUIT
pin 7	 GND	OPEN CIRCUIT
pin 8	 GND	OPEN CIRCUIT

- (f) If the Resistance checks are not satisfactory, then replace the applicable ENG-1 (ENG-2) Left SSPS, S831. These are the tasks:
- Thrust Reverser Sleeve Stow Proximity Sensor Removal, AMM TASK 78-34-02-000-801-F00
 - Thrust Reverser Sleeve Stow Proximity Sensor Installation, AMM TASK 78-34-02-400-801-F00
- 1) Do the Repair Confirmation at the end of this task.
- (5) Examine the ENG-1 (ENG-2) Wire Harness and connectors between the EAU, M528 and the ENG-1 (ENG-2) Left SSPS, S831 (WDM 78-36-11, WDM 78-36-21).
- (a) Disconnect the applicable ENG-1 (ENG-2) SSPS connector D30002 from the respective Strut Receptacle D30202 (D30402).
- (b) Remove the EAU. This is the task: Engine Accessory Unit Removal, AMM TASK 78-34-06-000-801-F00.

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- (c) Visually examine the ENG-1 (ENG-2) Wire Harness Connector, D1458A (D1458B) and the EAU Receptacle (AMM TASK 70-70-01-200-801-F00).
- 1) If the EAU Receptacle is damaged, then replace the EAU, M528. These are the tasks:
 - Engine Accessory Unit Removal, AMM TASK 78-34-06-000-801-F00
 - Engine Accessory Unit Installation, AMM TASK 78-34-06-400-801-F00
 - a) Do the Repair Confirmation at the end of this task.
 - 2) If the ENG-1 (ENG-2) Wire Harness or connector is damaged, do the applicable tasks to repair or replace the connector and/or harness as necessary (SWPM Ch 20).
 - a) Do the Repair Confirmation at the end of this task.
- (6) Do the wiring checks that follow (WDM 78-36-11, WDM 78-36-21):
- (a) Disconnect the applicable ENG-1 (ENG-2) SSPS connector D30002 from the respective Strut Receptacle D30202 (D30402).
 - (b) Remove the EAU. This is the task: Engine Accessory Unit Removal, AMM TASK 78-34-06-000-801-F00.
 - (c) Do a continuity check between the EAU Receptacle D1458A (D1458B) and the ENG-1 (ENG-2) Left T/R Sleeve Strut Receptacle D30202 (D30402) as follows:
NOTE: The difference between the two Resistance measurements should be ≤ 2 Ohms.

ENG-1 WIRE HARNESS

EAU	L T/R SLEEVE
D1458A	D30202
pin 15	pin 7
pin 14	pin 8

ENG-2 WIRE HARNESS

EAU	L T/R SLEEVE
D1458B	D30402
pin 15	pin 7
pin 14	pin 8

- (d) Do a check for ground at the applicable Strut Receptacle D30208 (D30408) as follows:

ENG-1 WIRE HARNESS

L T/R SLEEVE		Resistance
D30202		CONTINUITY
pin 1	GND	

ENG-2 WIRE HARNESS

L T/R SLEEVE		Resistance
D30402		CONTINUITY
pin 1	GND	

- (e) Do these checks at the EAU Receptacle D1458A (D1458B):

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ENG-1 WIRE HARNESS

EAU	EAU	Resistance
D1458A	D1458A	
pin 14	pin 15	OPEN CIRCUIT

EAU		Resistance
D1458A		
pin 14	GND	OPEN CIRCUIT
pin 15	GND	OPEN CIRCUIT

ENG-2 WIRE HARNESS

EAU	EAU	Resistance
D1458B	D1458B	
pin 14	pin 15	OPEN CIRCUIT

EAU		Resistance
D1458B		
pin 14	GND	OPEN CIRCUIT
pin 15	GND	OPEN CIRCUIT

- (f) If the wiring checks are not satisfactory, do the applicable tasks to repair the wiring (SWPM Ch 20).
- 1) Do the Repair Confirmation at the end of this task.
- (g) If the wiring checks are satisfactory, then continue.
- (7) Do the Stow Sensor Adjustment and Test, AMM TASK 78-34-02-700-801-F00 for the applicable ENG-1 (ENG-2) Left SSPS, S831.
- (a) If the SSPS is not in the limits, then adjust the sensor.
 - 1) Do the Repair Confirmation at the end of this task.
 - (b) If the SSPS is in the limits, then continue.
- (8) If you have not already replaced it, replace the Left SSPS, S831. These are the tasks:
- Thrust Reverser Sleeve Stow Proximity Sensor Removal, AMM TASK 78-34-02-000-801-F00
 - Thrust Reverser Sleeve Stow Proximity Sensor Installation, AMM TASK 78-34-02-400-801-F00
- (a) Do the Repair Confirmation at the end of this task.
- (9) Replace the EAU, M528. These are the tasks:
- Engine Accessory Unit Removal, AMM TASK 78-34-06-000-801-F00
 - Engine Accessory Unit Installation, AMM TASK 78-34-06-400-801-F00
- (a) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

- (1) Do these steps:
 - (a) Make sure that the applicable ENG-1 (ENG-2) SSPS connector D30002 is correctly connected to the respective Strut Receptacle D30202 (D30402).

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- (b) Make sure that all connectors that were disconnected to do an electrical check between the Strut Receptacle and the EAU are correctly connected.
- (c) If the EAU is not installed, do this task: Engine Accessory Unit Installation, AMM TASK 78-34-06-400-801-F00.
- (d) Do this task: Thrust Reverser Activation After Ground Maintenance, AMM TASK 78-31-00-440-803-F00.

**WARNING**

MAKE SURE THAT THERE ARE NO PERSONS OR EQUIPMENT IN THE AREA OF THE THRUST REVERSER. MOVEMENT OF THE THRUST REVERSER CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (e) Do these steps to reset the T/R STOW FAULTS Light.
 - 1) Move the Reverse Thrust Lever 1 (2) FWD and DOWN to the RETRACT (stow) position.
 - 2) Push and hold the FAULT RESET button for a minimum of two seconds.
 - 3) Wait for at least 30 seconds.
 - 4) If the S831 L SLEEVE STOW SENSOR Fault Light on the EAU is OFF, then you corrected the problem.

**WARNING**

DO THE DEACTIVATION PROCEDURE TO PREVENT THE OPERATION OF THE THRUST REVERSER. THE ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

- 5) If the S831 L SLEEVE STOW SENSOR Fault Light on the EAU is ON, deactivate the T/R (Thrust Reverser Deactivation For Ground Maintenance, AMM TASK 78-31-00-040-802-F00) and continue the Fault Isolation Procedure at the subsequent step.
- (2) After you correct the problem, do these steps to put the airplane back to its usual condition:
 - (a) Do this task: EEC TEST, AMM TASK 73-21-00-700-804-F00.

NOTE: This check will make sure that the electrical connections for the LVDTs are correct.

- 1) If a maintenance message shows, do the applicable Fault Isolation Task for that maintenance message.
- 2) If no maintenance messages show, the electrical connections for the LVDTs are correct.

**WARNING**

MAKE SURE THAT THERE ARE NO PERSONS OR EQUIPMENT IN THE AREA OF THE THRUST REVERSER. MOVEMENT OF THE THRUST REVERSER CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (b) Operate the Thrust Reverser through an EXTEND and RETRACT cycle.
- (c) Make sure that the REVERSER Fault Light on the Flight Compartment P5 Panel comes ON for approximately 10 seconds after the Reverse Thrust Lever 1 (2) is moved to the RETRACT (stow) position and then goes OFF.
- (d) Wait for at least 30 seconds.

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- (e) Make sure that the REVERSER Fault Light on the Flight Compartment P5 Panel stays OFF.
- (f) Do this task: Close the Fan Cowl Panels, AMM TASK 71-11-02-410-801-F00.

END OF TASK

815. T/R STOW FAULTS - L SLEEVE SYNC LOCK PWR - Fault Isolation

A. Description

- (1) This task is for these single EAU maintenance messages:
 - (a) ENGINE 1 - V148 L SLEEVE SYNC LOCK PWR
 - (b) ENGINE 2 - V148 L SLEEVE SYNC LOCK PWR
- (2) This Fault Light indicates that there is power to the Left T/R Sleeve Sync Lock, which does not agree with the commanded RETRACT (stow) position of the T/R.
 - (a) This is an indication that the Sync Lock is in the UNLOCKED position.

B. Possible Causes

- (1) ENG-1 (ENG-2) SLLR, R477 (R479)
- (2) EAU, M528

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	4	C01003	ENGINE 1 THRUST REVERSER IND
B	5	C00276	ENGINE 1 THRUST REVERSER CONT
B	6	C01412	ENGINE 1 THRUST REVERSER INTLK
B	7	C01266	ENGINE 1 THRUST REVERSER SYNC LOCK

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<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	5	C01267	ENGINE 2 THRUST REVERSER SYNC LOCK
C	6	C01413	ENGINE 2 THRUST REVERSER INTLK
C	7	C00277	ENGINE 2 THRUST REVERSER CONT
C	8	C01004	ENGINE 2 THRUST REVERSER IND

D. Related Data

- (1) Simplified Schematic (78-31 TASK SUPPORT Figure 304, 78-31 TASK SUPPORT Figure 305)
- (2) WDM 78-32-51
- (3) WDM 78-32-61
- (4) SSM 78-32-51
- (5) SSM 78-32-61

E. Initial Evaluation

- (1) Do the Engine Accessory Unit (EAU) BITE Procedure, 78-31 TASK 801 to show the current maintenance messages.

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F. Fault Isolation Procedure

- (1) Make sure that the T/R is in the fully RETRACT (stow) position.



DO THE DEACTIVATION PROCEDURE TO PREVENT THE OPERATION OF THE THRUST REVERSER. THE ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

- (2) Do this task: Thrust Reverser Deactivation For Ground Maintenance, AMM TASK 78-31-00-040-802-F00.
- (3) Replace the ENG-1 (ENG-2) SLLR, R477 (R479) at the J22 (J24) Junction Box (WDM 78-32-51, WDM 78-32-61) (SWPM Ch 20).
NOTE: The J22 (J24) Junction Box is in the Nose Gear Wheel Well on the Left (Right) side.
 - (a) Do the Repair Confirmation at the end of this task.
- (4) Replace the EAU. These are the tasks:
 - Engine Accessory Unit Removal, AMM TASK 78-34-06-000-801-F00
 - Engine Accessory Unit Installation, AMM TASK 78-34-06-400-801-F00
 - (a) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

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

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	7	C01266	ENGINE 1 THRUST REVERSER SYNC LOCK

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	5	C01267	ENGINE 2 THRUST REVERSER SYNC LOCK

- (2) Do these steps to reset the T/R STOW FAULTS Fault Light to determine if the problem is corrected:
 - (a) Push and hold the FAULT RESET button for a minimum of two seconds.
 - (b) Wait for at least 30 seconds.
 - (c) If the V148 L SLEEVE SYNC LOCK PWR Fault Light on the EAU is OFF, then you corrected the problem.
 - 1) Do these steps to put the airplane back to its usual condition:
 - a) Activate the T/R. This is the task: Thrust Reverser Activation After Ground Maintenance, AMM TASK 78-31-00-440-803-F00.



MAKE SURE THAT THERE ARE NO PERSONS OR EQUIPMENT IN THE AREA OF THE THRUST REVERSER. MOVEMENT OF THE THRUST REVERSER CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- b) Operate the T/R through an EXTEND and RETRACT cycle.

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- c) Make sure that the REVERSER Fault Light on the P5 Panel in the Flight Compartment comes ON for approximately 10 seconds after the Reverse Thrust Lever 1 (2) is moved to the RETRACT (stow) position and then goes OFF.
 - d) Wait for at least 30 seconds.
 - e) Make sure that the REVERSER Fault Light on the Flight Compartment P5 Panel stays OFF.
- (d) If the V148 L SLEEVE SYNC LOCK PWR Fault Light on the EAU is ON, deactivate the T/R (Thrust Reverser Deactivation For Ground Maintenance, AMM TASK 78-31-00-040-802-F00) and continue the Fault Isolation Procedure at the subsequent step.

————— **END OF TASK** —————

816. T/R STOW FAULTS - R SLEEVE LOCK SENSOR - Fault Isolation

A. Description

- (1) This task is for these single EAU maintenance messages:
 - (a) ENGINE 1 - S836 R SLEEVE LOCK SENSOR
 - (b) ENGINE 2 - S836 R SLEEVE LOCK SENSOR
- (2) This Fault Light indicates that the position of the Right T/R Sleeve does not agree with the commanded RETRACT (stow) position for the T/R position.

B. Possible Causes

- (1) Broken or binding Manual Lockout Handle on the ULHA
- (2) Right SLPS, S836
- (3) Wiring between the Right SLPS and the EAU.
- (4) EAU, M528

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	4	C01003	ENGINE 1 THRUST REVERSER IND
B	5	C00276	ENGINE 1 THRUST REVERSER CONT
B	6	C01412	ENGINE 1 THRUST REVERSER INTLK
B	7	C01266	ENGINE 1 THRUST REVERSER SYNC LOCK

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	5	C01267	ENGINE 2 THRUST REVERSER SYNC LOCK
C	6	C01413	ENGINE 2 THRUST REVERSER INTLK
C	7	C00277	ENGINE 2 THRUST REVERSER CONT
C	8	C01004	ENGINE 2 THRUST REVERSER IND

D. Related Data

- (1) Component Location (78-31 TASK SUPPORT Figure 302, 78-31 TASK SUPPORT Figure 303)
- (2) Simplified Schematic (78-31 TASK SUPPORT Figure 302, 78-31 TASK SUPPORT Figure 303)

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- (3) WDM 78-36-11
- (4) WDM 78-36-21
- (5) SSM 78-36-11
- (6) SSM 78-36-21

E. Initial Evaluation

- (1) Do the Engine Accessory Unit (EAU) BITE Procedure, 78-31 TASK 801 to show the current maintenance messages.

F. Fault Isolation Procedure



KEEP PERSONNEL AND EQUIPMENT AWAY FROM THE AREA AROUND THE THRUST REVERSERS. THE THRUST REVERSERS EXTEND AND RETRACT QUICKLY. INJURIES TO PERSONNEL, AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (1) Do this task: Open the Fan Cowl Panels, AMM TASK 71-11-02-010-801-F00.
- (2) Operate the T/R through an EXTEND and RETRACT cycle while another person monitors the Lockout Handle on the ULHA.
 - (a) On the ULHA, make sure the Manual Lockout Handle is not binding or broken.
 - 1) If the Manual Lockout Handle is binding, examine and replace the shim as necessary, and make sure that the assembly gaps are satisfactory as specified in the shim installation paragraph of Manual Unlock Handle Assembly Replacement, AMM TASK 78-31-03-300-804-F00.
 - 2) If the Manual Lockout Handle is broken, replace it. This is the task: Manual Unlock Handle Assembly Replacement, AMM TASK 78-31-03-300-804-F00.
 - 3) Do the Repair Confirmation at the end of this task.
 - (b) If the Manual Lockout Handle is satisfactory, then continue.



DO THE DEACTIVATION PROCEDURE TO PREVENT THE OPERATION OF THE THRUST REVERSER. THE ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

- (3) Do this task: Thrust Reverser Deactivation For Ground Maintenance, AMM TASK 78-31-00-040-802-F00.
- (4) Do the Sleeve Lock Proximity Sensor Adjustment and Test, AMM TASK 78-34-03-800-801-F00 for the applicable ENG-1 (ENG-2) Right SLPS, S836.
 - (a) If the SLPS is not in the limits, then adjust the sensor.
 - 1) Do the Repair Confirmation at the end of this task.
 - (b) If the SLPS is in the limits, then continue.
- (5) Do this task: Thrust Reverser Upper Locking Actuator - Integrity Test, AMM TASK 78-31-03-700-801-F00.
 - (a) If the thrust reverser sleeve starts to deploy, replace the ULHA. These are the tasks:
 - Upper Locking Hydraulic Actuator Removal, AMM TASK 78-31-03-000-801-F00.
 - Upper Locking Hydraulic Actuator - Installation, AMM TASK 78-31-03-400-801-F00.
 - 1) Do the repair confirmation at the end of this task.

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- a) If the actuator locks prevent actuator movement, then continue.
- (6) Examine the applicable ENG-1 (ENG-2) Right SLPS as follows (WDM 78-36-11, WDM 78-36-21):
- (a) See if the electrical connector D30010 is correctly connected to the Strut Receptacle.
 - (b) Disconnect the applicable ENG-1 (ENG-2) Left SLPS connector D30010 from the respective Strut Receptacle D30210 (D30410).
 - (c) Visually examine the Strut Receptacle and the SLPS connector for damage.
 - 1) If the Strut Receptacle or the SLPS connector is damaged, do the applicable tasks to repair or replace the connector(s) as necessary (SWPM Ch 20).
 - a) Do the Repair Confirmation at the end of this task.
 - 2) If a connector was not correctly connected and no other problem was found, then re-connect the connector and do the Repair Confirmation at the end of this task.
 - (d) Measure and record the SLPS Resistance between the pins indicated below:
NOTE: The difference between the two Resistance measurements should be ≤ 2 Ohms.

R SLPS	R SLPS	Resistance
D30010	D30010	
pin 1	pin 4	Value in Ohms
pin 1	pin 5	Value in Ohms

- (e) Do these checks:

R SLPS		Resistance
D30010		
pin 1	GND	OPEN CIRCUIT
pin 4	GND	OPEN CIRCUIT
pin 5	GND	OPEN CIRCUIT

- (f) If the Resistance checks are not satisfactory, then replace the applicable ENG-1 (ENG-2) Right SLPS, S836. These are the tasks:
- Thrust Reverser Sleeve Lock Proximity Sensor - Removal, AMM TASK 78-34-03-000-801-F00
 - Thrust Reverser Sleeve Lock Proximity Sensor - Installation, AMM TASK 78-34-03-400-801-F00
- 1) Do the Repair Confirmation at the end of this task.
- (7) Examine the ENG-1 (ENG-2) Wire Harness and connectors between the EAU, M528 and the ENG-1 (ENG-2) Right SLPS, S836 (WDM 78-36-11, WDM 78-36-21)
- (a) Disconnect the applicable ENG-1 (ENG-2) SLPS connector D30010 from the respective Strut Receptacle D30210 (D30410).
 - (b) Remove the EAU. This is the task: Engine Accessory Unit Removal, AMM TASK 78-34-06-000-801-F00.
 - (c) Visually examine the ENG-1 (ENG-2) Wire Harness Connector, D1458A (D1458B) and the EAU Receptacle (AMM TASK 70-70-01-200-801-F00).
 - 1) If the EAU Receptacle is damaged, then replace the EAU, M528. These are the tasks:
 - Engine Accessory Unit Removal, AMM TASK 78-34-06-000-801-F00

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- Engine Accessory Unit Installation, AMM TASK 78-34-06-400-801-F00
 - a) Do the Repair Confirmation at the end of this task.
- 2) If the ENG-1 (ENG-2) Wire Harness or connector is damaged, do the applicable tasks to repair or replace the connector and/or harness as necessary (SWPM Ch 20).
 - a) Do the Repair Confirmation at the end of this task.
- (8) Do the wiring checks that follow (WDM 78-36-11, WDM 78-36-21):
 - (a) Disconnect the applicable ENG-1 (ENG-2) SLPS connector D30008 from the respective Strut Receptacle D30208 (D30408).
 - (b) Remove the EAU. This is the task: Engine Accessory Unit Removal, AMM TASK 78-34-06-000-801-F00.
 - (c) Do a continuity check between the EAU Receptacle D1458A (D1458B) and the ENG-1 (ENG-2) Right T/R Sleeve Strut Receptacle D30210 (D30410) as follows:
NOTE: The difference between the two Resistance measurements should be ≤ 2 Ohms.

ENG-1 WIRE HARNESS

EAU	R T/R SLEEVE
D1458A	D30210
pin 40	pin 4
pin 39	pin 5

ENG-2 WIRE HARNESS

EAU	R T/R SLEEVE
D1458B	D30410
pin 40	pin 4
pin 39	pin 5

- (d) Do a check for ground at the applicable Strut Receptacle D30210 (D30410) as follows:

ENG-1 WIRE HARNESS

L T/R SLEEVE		Resistance
D30210		CONTINUITY
pin 1	GND	

ENG-2 WIRE HARNESS

R T/R SLEEVE		Resistance
D30410		CONTINUITY
pin 1	GND	

- (e) Do these checks at the EAU Receptacle D1458A (D1458B):

ENG-1 WIRE HARNESS

EAU	EAU	Resistance
D1458A	D1458A	OPEN CIRCUIT
pin 40	pin 39	

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EAU**D1458A**

pin 40		GND
pin 39		GND

Resistance

OPEN CIRCUIT
OPEN CIRCUIT

ENG-2 WIRE HARNESS**EAU****D1458B**

pin 40		pin 39

EAU**D1458B****Resistance**

OPEN CIRCUIT

EAU**D1458B**

pin 40	.....	GND
pin 39	.....	GND

Resistance

OPEN CIRCUIT
OPEN CIRCUIT

- (f) If the wiring checks are not satisfactory, do the applicable tasks to repair the wiring (SWPM Ch 20).
- 1) Do the Repair Confirmation at the end of this task.
- (g) If the wiring checks are satisfactory, then continue.
- (9) Replace the EAU, M528. These are the tasks:
- Engine Accessory Unit Removal, AMM TASK 78-34-06-000-801-F00
 - Engine Accessory Unit Installation, AMM TASK 78-34-06-400-801-F00
- (a) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

- (1) Do these steps:
- (a) Make sure that the ENG-1 (ENG-2) Right SLPS connector, D30010, is connected to the respective Strut Receptacle D30210 (D30410).
- (b) Make sure that all connectors that were disconnected to do an electrical check between the Strut Receptacle and the EAU are correctly connected.
- (c) If the EAU is not installed, do this task: Engine Accessory Unit Installation, AMM TASK 78-34-06-400-801-F00.
- (d) Do this task: Thrust Reverser Activation After Ground Maintenance, AMM TASK 78-31-00-440-803-F00.

**WARNING**

MAKE SURE THAT THERE ARE NO PERSONS OR EQUIPMENT IN THE AREA OF THE THRUST REVERSER. MOVEMENT OF THE THRUST REVERSER CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (e) Do these steps to reset the T/R STOW FAULTS Light.
- 1) Move the Reverse Thrust Lever 1 (2) FWD and DOWN to the RETRACT (stow) position.
- 2) Push and hold the FAULT RESET button for a minimum of two seconds.
- 3) Wait for at least 30 seconds.

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- 4) If the S836 R SLEEVE LOCK SENSOR Fault Light on the EAU is OFF, then you corrected the problem.



DO THE DEACTIVATION PROCEDURE TO PREVENT THE OPERATION OF THE THRUST REVERSER. THE ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

- 5) If the S836 R SLEEVE LOCK SENSOR fault light on the EAU is ON, deactivate the T/R (Thrust Reverser Deactivation For Ground Maintenance, AMM TASK 78-31-00-040-802-F00) and continue the Fault Isolation Procedure at the subsequent step.
- (2) After you correct the problem, do these steps to put the airplane back to its usual condition:
- (a) Do the EEC TEST, AMM TASK 73-21-00-700-804-F00.

NOTE: This check will make sure that the electrical connections for the LVDTs correct.

- 1) If a maintenance message shows, do the applicable fault isolation task for that maintenance message.
- 2) If no maintenance messages show, the electrical connections for the LVDTs are correct.



MAKE SURE THAT THERE ARE NO PERSONS OR EQUIPMENT IN THE AREA OF THE THRUST REVERSER. MOVEMENT OF THE THRUST REVERSER CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (b) Operate the T/R through an EXTEND and RETRACT cycle.
- (c) Make sure that the REVERSER Fault Light on the Flight Compartment P5 Panel comes ON for approximately 10 seconds after the Reverse Thrust Lever is moved to the RETRACT (stow) position and then goes OFF.
- (d) Wait for at least 30 seconds.
- (e) Make sure that the REVERSER Fault Light on the Flight Compartment P5 Panel stays OFF.
- (f) Do this task: Close the Fan Cowl Panels, AMM TASK 71-11-02-410-801-F00.

— END OF TASK —

817. T/R STOW FAULTS - R SLEEVE STOW SENSOR - Fault Isolation

A. Description

- (1) This task is for these single EAU maintenance messages:
- (a) ENGINE 1 - S832 R SLEEVE STOW SENSOR
- (b) ENGINE 2 - S832 R SLEEVE STOW SENSOR
- (2) This Fault Light indicates that the position of the Right T/R Sleeve does not agree with the commanded RETRACT (stow) position for the T/R.

B. Possible Causes

- (1) SSPS Roller
- (2) Wiring between the Right SSPS and the EAU

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- (3) Right SSPS, S832
- (4) EAU, M528

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	4	C01003	ENGINE 1 THRUST REVERSER IND
B	5	C00276	ENGINE 1 THRUST REVERSER CONT
B	6	C01412	ENGINE 1 THRUST REVERSER INTLK
B	7	C01266	ENGINE 1 THRUST REVERSER SYNC LOCK

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	5	C01267	ENGINE 2 THRUST REVERSER SYNC LOCK
C	6	C01413	ENGINE 2 THRUST REVERSER INTLK
C	7	C00277	ENGINE 2 THRUST REVERSER CONT
C	8	C01004	ENGINE 2 THRUST REVERSER IND

D. Related Data

- (1) Component Location (78-31 TASK SUPPORT Figure 302, 78-31 TASK SUPPORT Figure 303)
- (2) Simplified Schematic (78-31 TASK SUPPORT Figure 302, 78-31 TASK SUPPORT Figure 303)
- (3) WDM 78-36-11
- (4) WDM 78-36-21
- (5) SSM 78-36-11
- (6) SSM 78-36-21

E. Initial Evaluation

- (1) Do the Engine Accessory Unit (EAU) BITE Procedure, 78-31 TASK 801 to show the current maintenance messages.

F. Fault Isolation Procedure



DO THE DEACTIVATION PROCEDURE TO PREVENT THE OPERATION OF THE THRUST REVERSER. THE ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

- (1) Do this task: Thrust Reverser Deactivation For Ground Maintenance, AMM TASK 78-31-00-040-802-F00.
- (2) Do this task: Open the Fan Cowl Panels, AMM TASK 71-11-02-010-801-F00.
- (3) Do an inspection of the SSPS Roller Assembly (78-31 TASK SUPPORT Figure 302, 78-31 TASK SUPPORT Figure 303).
 - (a) If the roller is damaged, worn, or has flat spots, then replace the damaged hardware.
 - 1) Do the Repair Confirmation at the end of this task.
 - (b) If you do not find a problem with the Roller Assembly hardware, then continue.

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- (4) Examine the applicable ENG-1 (ENG-2) Right SSPS as follows (WDM 78-36-11, WDM 78-36-21):
- (a) See if the electrical connector D30006 is correctly connected to the Strut Receptacle.
 - (b) Disconnect the applicable ENG-1 (ENG-2) Right SSPS connector D30006 from the respective Strut Receptacle D30206 (D30406).
 - (c) Visually examine the Strut Receptacle and the SSPS connector for damage.
 - 1) If the Strut Receptacle or the SSPS connector is damaged, do the applicable tasks to repair or replace the connector(s) as necessary (SWPM Ch 20).
 - a) Do the Repair Confirmation at the end of this task.
 - 2) If a connector was not correctly connected and no other problem was found, then re-connect the connector and do the Repair Confirmation at the end of this task.
 - (d) Measure and record the SSPS Resistance between the pins indicated below:
NOTE: The difference between the two Resistance measurements should be ≤ 2 Ohms.

R SSPS D30006	R SSPS D30006	Resistance
pin 1	pin 7	Value in Ohms
pin 1	pin 8	Value in Ohms

- (e) Do these checks:

R SSPS D30006		Resistance
pin 1	GND	OPEN CIRCUIT
pin 7	GND	OPEN CIRCUIT
pin 8	GND	OPEN CIRCUIT

- (f) If the Resistance checks are not satisfactory, then replace the applicable ENG-1 (ENG-2) Right SSPS, S832. These are the tasks:
- Thrust Reverser Sleeve Stow Proximity Sensor Removal, AMM TASK 78-34-02-000-801-F00
 - Thrust Reverser Sleeve Stow Proximity Sensor Installation, AMM TASK 78-34-02-400-801-F00
- 1) Do the Repair Confirmation at the end of this task.
- (5) Examine the ENG-1 (ENG-2) Wire Harness and connectors between the EAU, M528 and the ENG-1 (ENG-2) Right SSPS, S832 (WDM 78-36-11, WDM 78-36-21).
- (a) Disconnect the applicable ENG-1 (ENG-2) SSPS connector D30006 from the respective Strut Receptacle D30206 (D30406).
 - (b) Remove the EAU. This is the task: Engine Accessory Unit Removal, AMM TASK 78-34-06-000-801-F00.
 - (c) Visually examine the ENG-1 (ENG-2) Wire Harness Connector, D1458A (D1458B) and the EAU Receptacle (AMM TASK 70-70-01-200-801-F00).
 - 1) If the EAU Receptacle is damaged, then replace the EAU, M528. These are the tasks:
 - Engine Accessory Unit Removal, AMM TASK 78-34-06-000-801-F00
 - Engine Accessory Unit Installation, AMM TASK 78-34-06-400-801-F00

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- a) Do the Repair Confirmation at the end of this task.
- 2) If the ENG-1 (ENG-2) Wire Harness or connector is damaged, do the applicable tasks to repair or replace the connector and/or harness as necessary (SWPM Ch 20).
 - a) Do the Repair Confirmation at the end of this task.
- (6) Do the wiring checks that follow (WDM 78-36-11, WDM 78-36-21):
 - (a) Disconnect the applicable ENG-1 (ENG-2)SSPS connector D30006 from the respective Strut Receptacle D30206 (D30406).
 - (b) Remove the EAU. This is the task: Engine Accessory Unit Removal, AMM TASK 78-34-06-000-801-F00.
 - (c) Do a continuity check between the EAU Receptacle D1458A (D1458B) and the ENG-1 (ENG-2) Right T/R Sleeve Strut Receptacle D30206 (D30406) as follows:
NOTE: The difference between the two Resistance measurements should be ≤ 2 Ohms.

ENG-1 WIRE HARNESS

EAU	R T/R SLEEVE
D1458A	D30206
pin 53	pin 7
pin 52	pin 8

ENG-2 WIRE HARNESS

EAU	R T/R SLEEVE
D1458B	D30406
pin 53	pin 7
pin 52	pin 8

- (d) Do a check for ground at the applicable Strut Receptacle D30208 (D30408) as follows:

ENG-1 WIRE HARNESS

RT/R SLEEVE	Resistance
D30206	CONTINUITY
pin 1	GND

ENG-2 WIRE HARNESS

R T/R SLEEVE	Resistance
D30406	CONTINUITY
pin 1	GND

- (e) Do these checks at the EAU Receptacle D1458A (D1458B):

ENG-1 WIRE HARNESS

EAU	EAU	Resistance
D1458A	D1458A	OPEN CIRCUIT
pin 52	pin 53	

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EAU**D1458A**

pin 52		GND
pin 53		GND

Resistance

OPEN CIRCUIT
OPEN CIRCUIT

ENG-2 WIRE HARNESS**EAU****D1458B**

pin 52		pin 53

EAU**D1458B****Resistance**

OPEN CIRCUIT

EAU**D1458B**

pin 52	.....	GND
pin 53	.....	GND

Resistance

OPEN CIRCUIT
OPEN CIRCUIT

- (f) If the wiring checks are not satisfactory, do the applicable tasks to repair the wiring (SWPM Ch 20).
 - 1) Do the Repair Confirmation at the end of this task.
- (g) If the wiring checks are satisfactory, then continue.
- (7) Do the Stow Sensor Adjustment and Test, AMM TASK 78-34-02-700-801-F00 for the applicable ENG-1 (ENG-2) Right SSPS, S832.
 - (a) If the SSPS is not in the limits, then adjust the sensor.
 - 1) Do the Repair Confirmation at the end of this task.
 - (b) If the SSPS is in the limits, then continue.
- (8) If you have not already replaced it, replace the Right SSPS, S832. These are the tasks:
 - Thrust Reverser Sleeve Stow Proximity Sensor Removal, AMM TASK 78-34-02-000-801-F00
 - Thrust Reverser Sleeve Stow Proximity Sensor Installation, AMM TASK 78-34-02-400-801-F00
 - (a) Do the Repair Confirmation at the end of this task.
- (9) Replace the EAU, M528. These are the tasks:
 - Engine Accessory Unit Removal, AMM TASK 78-34-06-000-801-F00
 - Engine Accessory Unit Installation, AMM TASK 78-34-06-400-801-F00
 - (a) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

- (1) Do these steps:
 - (a) Make sure that the ENG-1 (ENG-2) Right SSPS connector, D30006, is correctly connected to the respective Strut Receptacle D30206 (D30406).
 - (b) Make sure that all connectors that were disconnected to do an electrical check between the Strut Receptacle and the EAU are correctly connected.
 - (c) If the EAU is not installed, do the Engine Accessory Unit Installation, AMM TASK 78-34-06-400-801-F00.
 - (d) Do the Thrust Reverser Activation After Ground Maintenance, AMM TASK 78-31-00-440-803-F00.

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MAKE SURE THAT THERE ARE NO PERSONS OR EQUIPMENT IN THE AREA OF THE THRUST REVERSER. MOVEMENT OF THE THRUST REVERSER CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (e) Do these steps to reset the T/R STOW FAULTS Light.
- 1) Move the Reverse Thrust Lever 1 (2) FWD and DOWN to the RETRACT (stow) position.
 - 2) Push and hold the FAULT RESET button for a minimum of two seconds.
 - 3) Wait for at least 30 seconds.
 - 4) If the S832 R SLEEVE STOW SENSOR Fault Light on the EAU is OFF, then you corrected the problem.



DO THE DEACTIVATION PROCEDURE TO PREVENT THE OPERATION OF THE THRUST REVERSER. THE ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

- 5) If the S832 R SLEEVE STOW SENSOR Fault Light on the EAU is ON, deactivate the T/R (Thrust Reverser Deactivation For Ground Maintenance, AMM TASK 78-31-00-040-802-F00) and continue the Fault Isolation Procedure at the subsequent step.
- (2) After you correct the problem, do these steps to put the airplane back to its usual condition:
- (a) Do this task: EEC TEST, AMM TASK 73-21-00-700-804-F00.
- NOTE: This check will make sure that the electrical connections for the LVDTs are correct.
- 1) If a maintenance message shows, do the applicable Fault Isolation Task for that maintenance message.
 - 2) If no maintenance messages show, the electrical connections for the LVDTs are correct.



MAKE SURE THAT THERE ARE NO PERSONS OR EQUIPMENT IN THE AREA OF THE THRUST REVERSER. MOVEMENT OF THE THRUST REVERSER CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (b) Operate the Thrust Reverser through an EXTEND and RETRACT cycle.
- (c) Make sure that the REVERSER Fault Light on the Flight Compartment P5 Panel comes ON for approximately 10 seconds after the Reverse Thrust Lever is moved to the RETRACT (stow) position and then goes OFF.
- (d) Wait for at least 30 seconds.
- (e) Make sure that the REVERSER Fault Light on the Flight Compartment P5 Panel stays OFF.
- (f) Do this task: Close the Fan Cowl Panels, AMM TASK 71-11-02-410-801-F00.

————— **END OF TASK** —————

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818. T/R STOW FAULTS - R SLEEVE SYNC LOCK PWR - Fault Isolation

A. Description

- (1) This task is for this single EAU maintenance message:
 - (a) ENGINE 1 - V150 R SLEEVE SYNC LOCK POWER
 - (b) ENGINE 2 - V150 R SLEEVE SYNC LOCK POWER
- (2) This Fault Light indicates that there is power to the Right T/R Sleeve Sync Lock, which does not agree with the commanded RETRACT (stow) position of the T/R.
 - (a) This is an indication that the Sync Lock is in the UNLOCKED position.

B. Possible Causes

- (1) ENG-1 (ENG-2) SLLR, R477 (R479)
- (2) EAU, M528

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	4	C01003	ENGINE 1 THRUST REVERSER IND
B	5	C00276	ENGINE 1 THRUST REVERSER CONT
B	6	C01412	ENGINE 1 THRUST REVERSER INTLK
B	7	C01266	ENGINE 1 THRUST REVERSER SYNC LOCK

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	5	C01267	ENGINE 2 THRUST REVERSER SYNC LOCK
C	6	C01413	ENGINE 2 THRUST REVERSER INTLK
C	7	C00277	ENGINE 2 THRUST REVERSER CONT
C	8	C01004	ENGINE 2 THRUST REVERSER IND

D. Related Data

- (1) Simplified Schematic (78-31 TASK SUPPORT Figure 304, 78-31 TASK SUPPORT Figure 305)
- (2) WDM 78-32-51
- (3) WDM 78-32-61
- (4) SSM 78-32-51
- (5) SSM 78-32-61

E. Initial Evaluation

- (1) Do the Engine Accessory Unit (EAU) BITE Procedure, 78-31 TASK 801 to show the current maintenance messages.

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F. Fault Isolation Procedure

- (1) Make sure that the T/R is in the fully RETRACT (stow) position.



DO THE DEACTIVATION PROCEDURE TO PREVENT THE OPERATION OF THE THRUST REVERSER. THE ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

- (2) Do this task: Thrust Reverser Deactivation For Ground Maintenance, AMM TASK 78-31-00-040-802-F00.
- (3) Replace the ENG-1 (ENG-2) SLLR, R477 (R479) at the J22 (J24) Junction Box (WDM 78-32-51, WDM 78-32-61) (SWPM Ch 20).
NOTE: The J22 (J24) junction box is in the Nose Gear Wheel Well on the Left (Right) side.
 - (a) Do the Repair Confirmation at the end of this task.
- (4) Replace the EAU. These are the tasks:
 - Engine Accessory Unit Removal, AMM TASK 78-34-06-000-801-F00
 - Engine Accessory Unit Installation, AMM TASK 78-34-06-400-801-F00
 - (a) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

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

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	7	C01266	ENGINE 1 THRUST REVERSER SYNC LOCK

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	5	C01267	ENGINE 2 THRUST REVERSER SYNC LOCK

- (2) Do these steps to reset the T/R STOW FAULTS Fault Light to determine if the problem is corrected:
 - (a) Push and hold the FAULT RESET button for a minimum of two seconds.
 - (b) Wait for at least 30 seconds.
 - (c) If the V150 R SLEEVE SYNC LOCK PWR Fault Light on the EAU is OFF, then you corrected the problem.
 - 1) Do these steps to put the airplane back to its usual condition:
 - a) Activate the T/R. This is the task: Thrust Reverser Activation After Ground Maintenance, AMM TASK 78-31-00-440-803-F00.



MAKE SURE THAT THERE ARE NO PERSONS OR EQUIPMENT IN THE AREA OF THE THRUST REVERSER. MOVEMENT OF THE THRUST REVERSER CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- b) Operate the T/R through an EXTEND and RETRACT cycle.

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- c) Make sure that the REVERSER Fault Light on the P5 Panel in the Flight Compartment comes ON for approximately 10 seconds after the Reverse Thrust Lever 1 (2) is moved to the RETRACT (stow) position and then goes OFF.
 - d) Wait for at least 30 seconds.
 - e) Make sure that the REVERSER Fault Light on the Flight Compartment P5 Panel stays OFF.
- (d) If the V150 R SLEEVE SYNC LOCK PWR Fault Light on the EAU is ON, deactivate the T/R (Thrust Reverser Deactivation For Ground Maintenance, AMM TASK 78-31-00-040-802-F00) and continue the Fault Isolation Procedure at the subsequent step.

————— **END OF TASK** —————

819. Engine 2 T/R DEPLOY FAULTS - L SLEEVE SYNC LOCK PWR - Fault Isolation

A. Description

- (1) This task is for this single EAU maintenance message:
 - (a) ENGINE 2 - V148 L SLEEVE SYNC LOCK PWR
- (2) This Fault Light indicates that there is no power to the Sync Lock on the Left Thrust Reverser Sleeve, which does not agree with the commanded EXTEND (deploy) position of the T/R.
 - (a) If the Sync Lock has no power, that is the indication that it is in the locked position.

B. Possible Causes

- (1) Wiring
- (2) Sync Lock Latch Relay, R479

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	5	C01267	ENGINE 2 THRUST REVERSER SYNC LOCK
C	6	C01413	ENGINE 2 THRUST REVERSER INTLK
C	7	C00277	ENGINE 2 THRUST REVERSER CONT
C	8	C01004	ENGINE 2 THRUST REVERSER IND

D. Related Data

- (1) Simplified Schematic (78-31 TASK SUPPORT Figure 304, 78-31 TASK SUPPORT Figure 305)
- (2) WDM 78-32-61
- (3) SSM 78-32-61

E. Initial Evaluation

- (1) Do the Engine Accessory Unit (EAU) BITE Procedure, 78-31 TASK 801.
- (2) Do a check of the Left Sync Lock: Sync Lock Operational Test, AMM TASK 78-31-00-700-803-F00.

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F. Fault Isolation Procedure



DO THE SYNC LOCK OPERATIONAL TEST AFTER THE FAULT IS CORRECTED TO DO A CHECK OF THE SYNC LOCKS. IF THERE WAS A LOSS OF ELECTRICAL POWER WHEN THE THRUST REVERSER WAS IN TRANSIT, THE SYNC LOCKS COULD BE DAMAGED. IF YOU DO NOT DO THIS TEST AND THE THRUST REVERSER IS RETURNED TO SERVICE, IT IS POSSIBLE THAT THE SYNC LOCKS CAN NOT LOCK THE THRUST REVERSER IN THE RETRACT POSITION.

- (1) To determine if the Left Thrust Reverser Sleeve will deploy, do this task: Thrust Reverser Operation - Extend (Power Procedure), AMM TASK 78-31-00-980-805-F00.
 - (a) If the Left Thrust Reverser Sleeve does not extend, then continue.



DO THE DEACTIVATION PROCEDURE TO PREVENT THE OPERATION OF THE THRUST REVERSER. THE ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

- (2) With the T/R in the EXTEND (deploy) position, do this task: Thrust Reverser Deactivation For Ground Maintenance, AMM TASK 78-31-00-040-802-F00.
- (3) Examine the EAU, M528 as follows:
 - (a) Remove the EAU. This is the task: Engine Accessory Unit Removal, AMM TASK 78-34-06-000-801-F00.
 - (b) Visually examine the wire harness connector, D1458B, and the EAU Receptacle (AMM TASK 70-70-01-200-801-F00) (WDM 78-32-61).
 - 1) If the pins on the EAU Receptacle are damaged, then replace the EAU, M528. These are the tasks:
 - Engine Accessory Unit Removal, AMM TASK 78-34-06-000-801-F00
 - Engine Accessory Unit Installation, AMM TASK 78-34-06-400-801-F00
 - a) Do the Repair Confirmation at the end of this task.
 - 2) If the wire harness connector is damaged, do the applicable tasks to repair or replace the connector (SWPM Ch 20).
 - a) Do the Repair Confirmation at the end of this task.
 - (c) If you did not find a problem, then continue.
- (4) Close this circuit breaker:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	5	C01267	ENGINE 2 THRUST REVERSER SYNC LOCK

- (5) Make sure that the Reverse Thrust Lever is UP and AFT in the EXTEND (deploy) position.
- (6) Do a check for 28 VDC at pin 18 of the EAU Receptacle D1458B.
 - (a) If you find 28 VDC, replace the EAU, M528. These are the tasks:
 - Engine Accessory Unit Removal, AMM TASK 78-34-06-000-801-F00
 - Engine Accessory Unit Installation, AMM TASK 78-34-06-400-801-F00
 - 1) Do the Repair Confirmation at the end of this task.

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- (b) If you do not find 28 VDC at pin 18 of the EAU Receptacle, continue.
- (7) Do a check for 28 VDC at pin A1 of the Sync Lock Latch Relay Receptacle D10638.
- (a) If you find 28 VDC, do these wiring checks (WDM 78-32-61):

EAU	SYNC LOCK	L T/R SLEEVE
D1458B	LATCH RLY	SYNC LOCK
	D10638	D1008
pin 18	pin A2	pin 1

L T/R SLEEVE
SYNC LOCK
D1008

pin 2 GND GD534-DC

- 1) Repair the problems that you find.
 - 2) Install the EAU. This is the task: Engine Accessory Unit Installation, AMM TASK 78-34-06-400-801-F00.
 - 3) Do the Repair Confirmation at the end of this task.
- (b) If you do not find 28 VDC at pin A1 of the Sync Lock Latch Relay Receptacle, do these wiring checks (WDM 78-32-61):

SYNC LOCK	JUNCTION BOX
LATCH RLY	J24
D10638	D40692P
pin A1	pin 9 (or pin 13) as applicable

SYNC LOCK
LATCH RLY
D10638

pin A3 GND GD534-DC

- 1) Repair the problems that you find.
 - 2) Install the EAU. This is the task: Engine Accessory Unit Installation, AMM TASK 78-34-06-400-801-F00.
 - 3) Do the Repair Confirmation at the end of this task.
- (8) Replace the Sync Lock Latch Relay, R479 (WDM 78-32-61).
- (a) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

- (1) Do these steps:



WARNING

MAKE SURE THAT THERE ARE NO PERSONS OR EQUIPMENT IN THE AREA OF THE THRUST REVERSER. MOVEMENT OF THE THRUST REVERSER CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (a) Do this task: Thrust Reverser Activation After Ground Maintenance, AMM TASK 78-31-00-440-803-F00.

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- (b) Do these steps to reset the T/R DEPLOY FAULTS Light.
- 1) Make sure that the Reverse Thrust Lever is UP and AFT in the EXTEND (deploy) position.
 - 2) Push and hold the FAULT RESET button for a minimum of two seconds.
 - 3) Wait for at least 30 seconds.
 - 4) If the V148 L SLEEVE SYNC LOCK PWR Fault Light on the EAU is OFF, then you corrected the problem.



DO THE DEACTIVATION PROCEDURE TO PREVENT THE OPERATION OF THE THRUST REVERSER. THE ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

- 5) If the V148 L SLEEVE SYNC LOCK PWR Fault Light on the EAU is ON, deactivate the T/R (Thrust Reverser Deactivation For Ground Maintenance, AMM TASK 78-31-00-040-802-F00) and continue the Fault Isolation Procedure at the subsequent step.



DO THE SYNC LOCK OPERATIONAL TEST AFTER THE FAULT IS CORRECTED TO DO A CHECK OF THE SYNC LOCKS. IF THERE WAS A LOSS OF ELECTRICAL POWER WHEN THE THRUST REVERSER WAS IN TRANSIT, THE SYNC LOCKS COULD BE DAMAGED. IF YOU DO NOT DO THIS TEST AND THE THRUST REVERSER IS RETURNED TO SERVICE, IT IS POSSIBLE THAT THE SYNC LOCKS CAN NOT LOCK THE THRUST REVERSER IN THE RETRACT POSITION.

- (2) After you correct the problem, do these steps to put the airplane back to its usual condition:
 - (a) Do the Sync Lock Operational Test, AMM TASK 78-31-00-700-803-F00.
 - (b) Make sure that the REVERSER Fault Light on the Flight Compartment P5 Panel stays OFF.

— END OF TASK —

820. Engine 2 T/R DEPLOY FAULTS - R SLEEVE SYNC LOCK PWR - Fault Isolation

A. Description

- (1) This task is for this single EAU maintenance message:
 - (a) ENGINE 2 - V150 R SLEEVE SYNC LOCK PWR
- (2) This Fault Light indicates that there is no power to the Sync Lock on the Right Thrust Reverser Sleeve which does not agree with the commanded EXTEND (deploy) position of the T/R.
 - (a) If the Sync Lock has no power, that is the indication that it is in the locked position.

B. Possible Causes

- (1) Wiring
- (2) Sync Lock Latch Relay, R479

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C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
C	5	C01267	ENGINE 2 THRUST REVERSER SYNC LOCK
C	6	C01413	ENGINE 2 THRUST REVERSER INTLK
C	7	C00277	ENGINE 2 THRUST REVERSER CONT
C	8	C01004	ENGINE 2 THRUST REVERSER IND

D. Related Data

- (1) Simplified Schematic (78-31 TASK SUPPORT Figure 304, 78-31 TASK SUPPORT Figure 305)
 (2) WDM 78-32-61
 (3) SSM 78-32-61

E. Initial Evaluation

- (1) Do the Engine Accessory Unit (EAU) BITE Procedure, 78-31 TASK 801
 (2) Do a check of the Right Sync Lock: Sync Lock Operational Test, AMM TASK 78-31-00-700-803-F00.

F. Fault Isolation Procedure



CAUTION

DO THE SYNC LOCK OPERATIONAL TEST AFTER THE FAULT IS CORRECTED TO DO A CHECK OF THE SYNC LOCKS. IF THERE WAS A LOSS OF ELECTRICAL POWER WHEN THE THRUST REVERSER WAS IN TRANSIT, THE SYNC LOCKS COULD BE DAMAGED. IF YOU DO NOT DO THIS TEST AND THE THRUST REVERSER IS RETURNED TO SERVICE, IT IS POSSIBLE THAT THE SYNC LOCKS CAN NOT LOCK THE THRUST REVERSER IN THE RETRACT POSITION.

- (1) To determine if the Right Thrust Reverser Sleeve will deploy, do this task: Thrust Reverser Operation - Extend (Power Procedure), AMM TASK 78-31-00-980-805-F00.
 (a) If the Right Thrust Reverser Sleeve does not extend, then continue.



WARNING

DO THE DEACTIVATION PROCEDURE TO PREVENT THE OPERATION OF THE THRUST REVERSER. THE ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

- (2) With the T/R in the EXTEND (deploy) position, do this task: Thrust Reverser Deactivation For Ground Maintenance, AMM TASK 78-31-00-040-802-F00.
 (a) Keep the Reverse Thrust Lever UP and AFT in the EXTEND (deploy) position.
 (3) Examine the EAU, M528 as follows:
 (a) Remove the EAU. This is the task: Engine Accessory Unit Removal, AMM TASK 78-34-06-000-801-F00.
 (b) Visually examine the wire harness connector, D1458B, and the EAU Receptacle (AMM TASK 70-70-01-200-801-F00) (WDM 78-32-61).
 1) If the pins on the EAU Receptacle are damaged, then replace the EAU, M528.
 These are the tasks:

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- Engine Accessory Unit Removal, AMM TASK 78-34-06-000-801-F00
- Engine Accessory Unit Installation, AMM TASK 78-34-06-400-801-F00
 - a) Do the Repair Confirmation at the end of this task.
- 2) If the wire harness connector is damaged, do the applicable tasks to repair or replace the connector (SWPM Ch 20).
 - a) Do the Repair Confirmation at the end of this task.
- (c) If you did not find a problem, then continue.
- (4) Close this circuit breaker:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	5	C01267	ENGINE 2 THRUST REVERSER SYNC LOCK

- (5) Make sure that the Reverse Thrust Lever is UP and AFT in the EXTEND (deploy) position.
- (6) Do a check for 28 VDC at pin 30 of the EAU Receptacle D1458B.
 - (a) If you find 28 VDC, replace the EAU, M528. These are the tasks:
 - Engine Accessory Unit Removal, AMM TASK 78-34-06-000-801-F00
 - Engine Accessory Unit Installation, AMM TASK 78-34-06-400-801-F00
 - 1) Do the Repair Confirmation at the end of this task.
 - (b) If you do not find 28 VDC at pin 30 of the EAU Receptacle, continue.
- (7) Do a check for 28 VDC at pin B1 of the Sync Lock Latch Relay Receptacle D10638.
 - (a) If you find 28 VDC, do these wiring checks (WDM 78-32-61):

EAU	SYNC LOCK	R T/R SLEEVE
D1458B	LATCH RLY	SYNC LOCK
D10638	D10638	D1016
pin 30	pin B2	pin 1

R T/R SLEEVE SYNC LOCK D1016

pin 2 GND GD534-DC

- 1) Repair the problems that you find.
- 2) Install the EAU. This is the task: Engine Accessory Unit Installation, AMM TASK 78-34-06-400-801-F00.
- 3) Do the Repair Confirmation at the end of this task.
- (b) If you do not find 28 VDC at pin B1 of the Sync Lock Latch Relay Receptacle, do these wiring checks (WDM 78-32-61):

SYNC LOCK	JUNCTION BOX
LATCH RLY	J24
D10638	D40692P
pin B1	pin 9 (or pin 13) as applicable

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SYNC LOCK LATCH RLY D10638

pin B3 GND GD534-DC

- 1) Repair the problems that you find.
- 2) Install the EAU. This is the task: Engine Accessory Unit Installation, AMM TASK 78-34-06-400-801-F00.
- 3) Do the Repair Confirmation at the end of this task.
- (8) Replace the Sync Lock Latch Relay, R479 (WDM 78-32-61).
 - (a) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

- (1) Do these steps:



MAKE SURE THAT THERE ARE NO PERSONS OR EQUIPMENT IN THE AREA OF THE THRUST REVERSER. MOVEMENT OF THE THRUST REVERSER CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (a) Do this task: Thrust Reverser Activation After Ground Maintenance, AMM TASK 78-31-00-440-803-F00.
- (b) Do these steps to reset the T/R DEPLOY FAULTS Light.
 - 1) Make sure that the Reverse Thrust Lever is UP and AFT in the EXTEND (deploy) position.
 - 2) Push and hold the FAULT RESET button for a minimum of two seconds.
 - 3) Wait for at least 30 seconds.
 - 4) If the V150 R SLEEVE SYNC LOCK PWR Fault Light on the EAU is OFF, then you corrected the problem.



DO THE DEACTIVATION PROCEDURE TO PREVENT THE OPERATION OF THE THRUST REVERSER. THE ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

- 5) If the V150 L SLEEVE SYNC LOCK PWR Fault Light on the EAU is ON, deactivate the T/R (Thrust Reverser Deactivation For Ground Maintenance, AMM TASK 78-31-00-040-802-F00) and continue the Fault Isolation Procedure at the subsequent step.

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**737-600/700/800/900
FAULT ISOLATION MANUAL****CAUTION**

DO THE SYNC LOCK OPERATIONAL TEST AFTER THE FAULT IS CORRECTED TO DO A CHECK OF THE SYNC LOCKS. IF THERE WAS A LOSS OF ELECTRICAL POWER WHEN THE THRUST REVERSER WAS IN TRANSIT, THE SYNC LOCKS COULD BE DAMAGED. IF YOU DO NOT DO THIS TEST AND THE THRUST REVERSER IS RETURNED TO SERVICE, IT IS POSSIBLE THAT THE SYNC LOCKS CAN NOT LOCK THE THRUST REVERSER IN THE RETRACT POSITION.

- (2) After you correct the problem, do these steps to put the airplane back to its usual condition:
- (a) Do a check of the Right Sync Lock, do this task: Sync Lock Operational Test, AMM TASK 78-31-00-700-803-F00.
 - (b) Make sure that the REVERSER Fault Light on the Flight Compartment P5 Panel stays OFF.

———— **END OF TASK** ————

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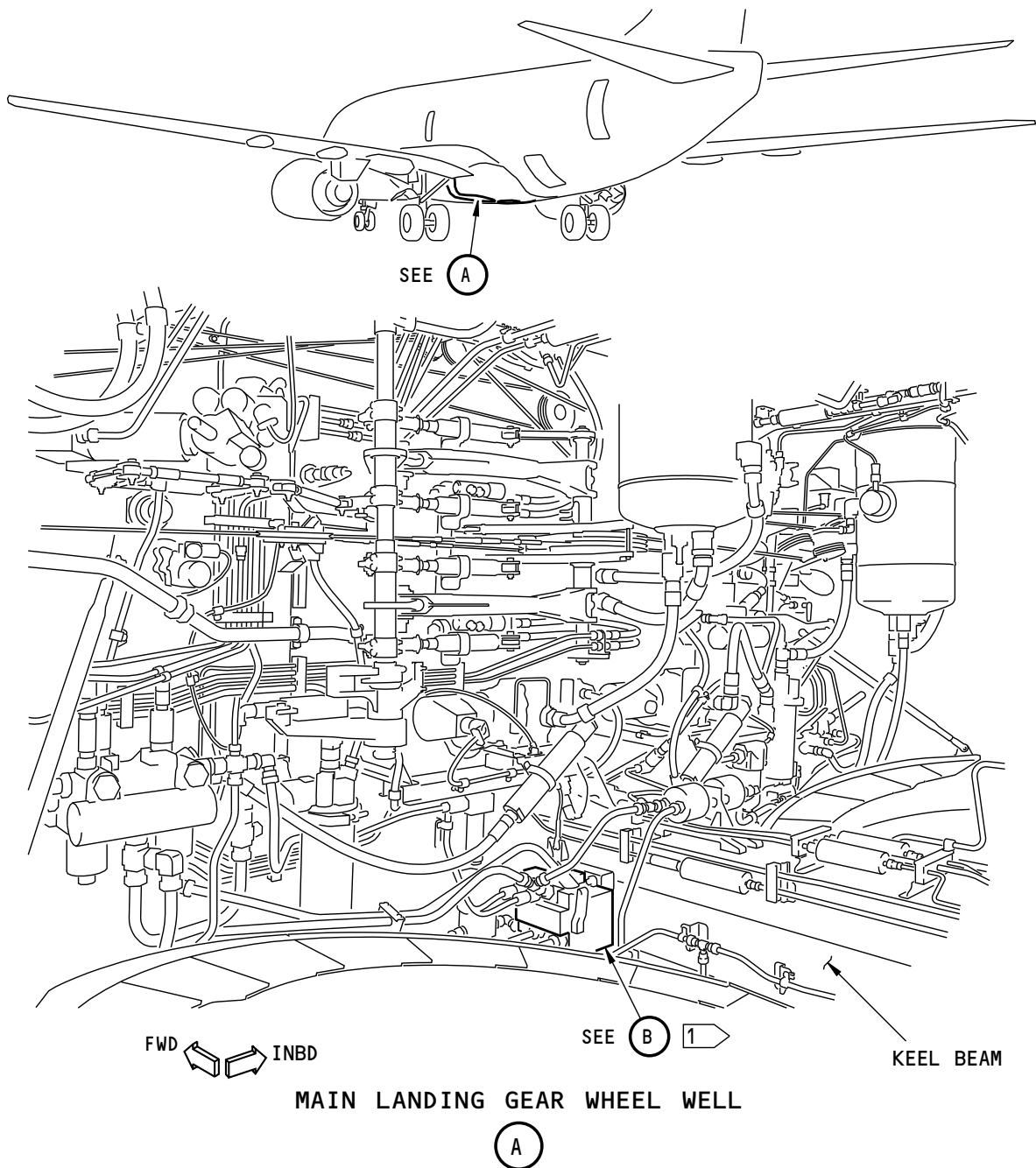
78-31 TASK 820

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ECCN 9E991 BOEING PROPRIETARY - See title page for details

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1 ENGINE 1 CONTROL VALVE MODULE IS SHOWN,
ENGINE 2 CONTROL VALVE MODULE IS ON THE RIGHT SIDE OF THE KEEL BEAM
AND IS SIMILIAR TO ENGINE 1.

H42896 S0006746398_V1

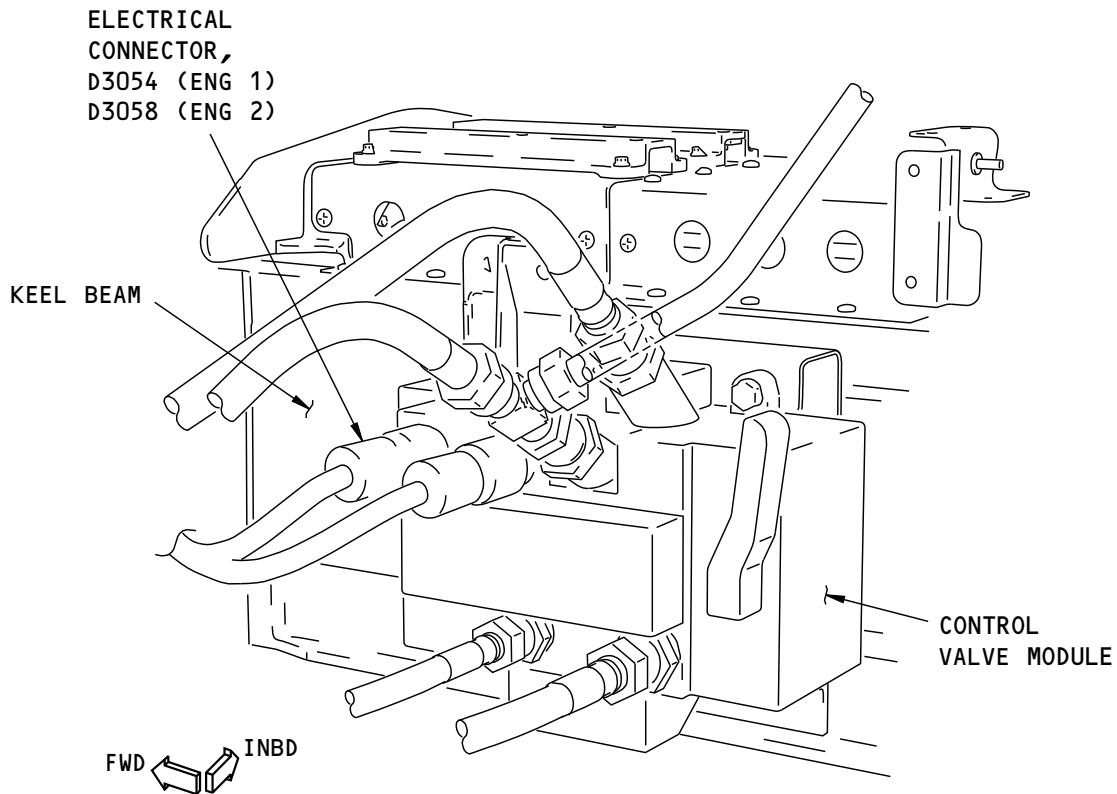
Control Valve Module and Simplified Schematic
Figure 301/78-31-00-990-801-F00 (Sheet 1 of 3)

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(B)

H43043 S0006746399_V1

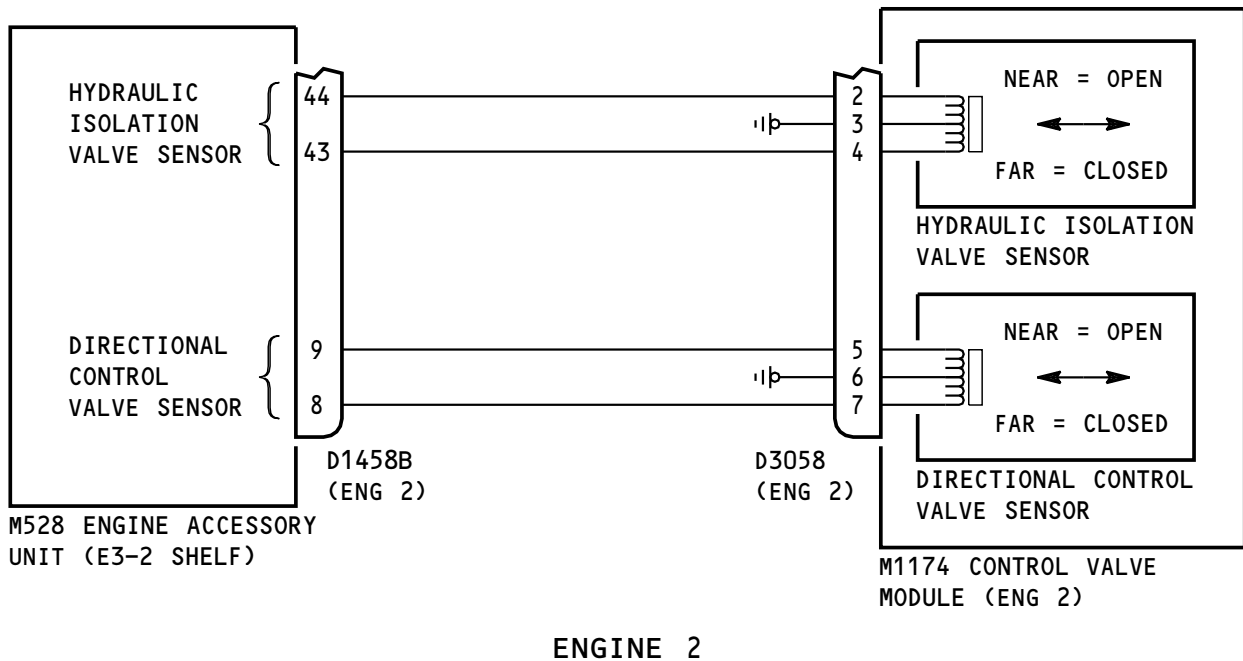
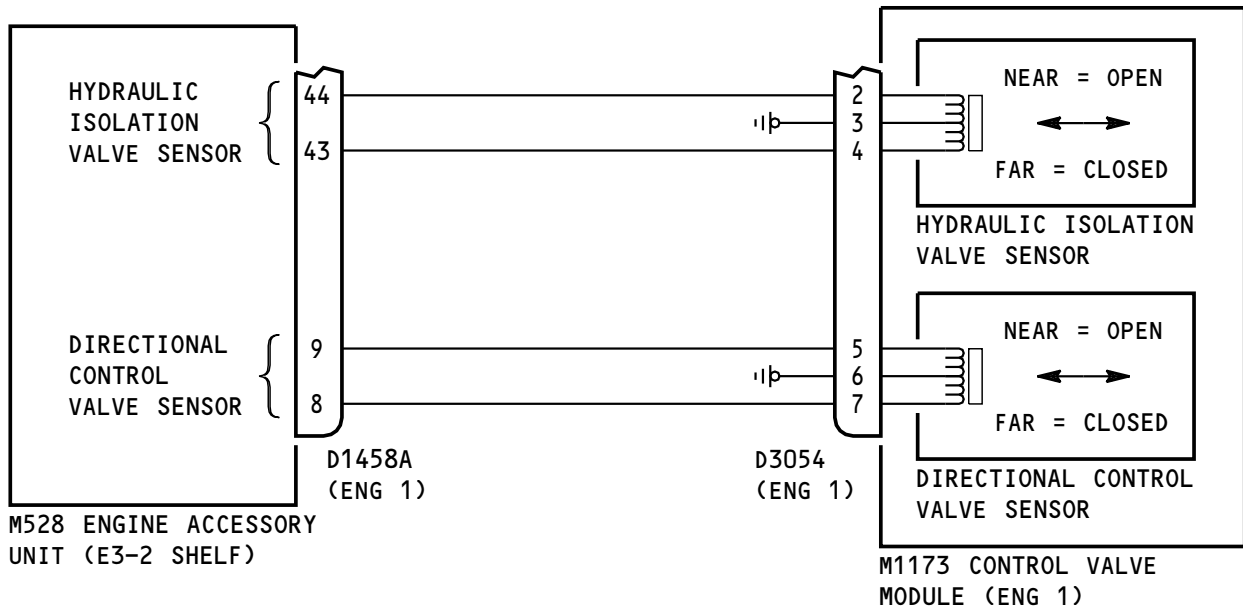
Control Valve Module and Simplified Schematic
Figure 301/78-31-00-990-801-F00 (Sheet 2 of 3)

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FAULT ISOLATION MANUAL**


H43045 S0006746400_V1

Control Valve Module and Simplified Schematic
Figure 301/78-31-00-990-801-F00 (Sheet 3 of 3)

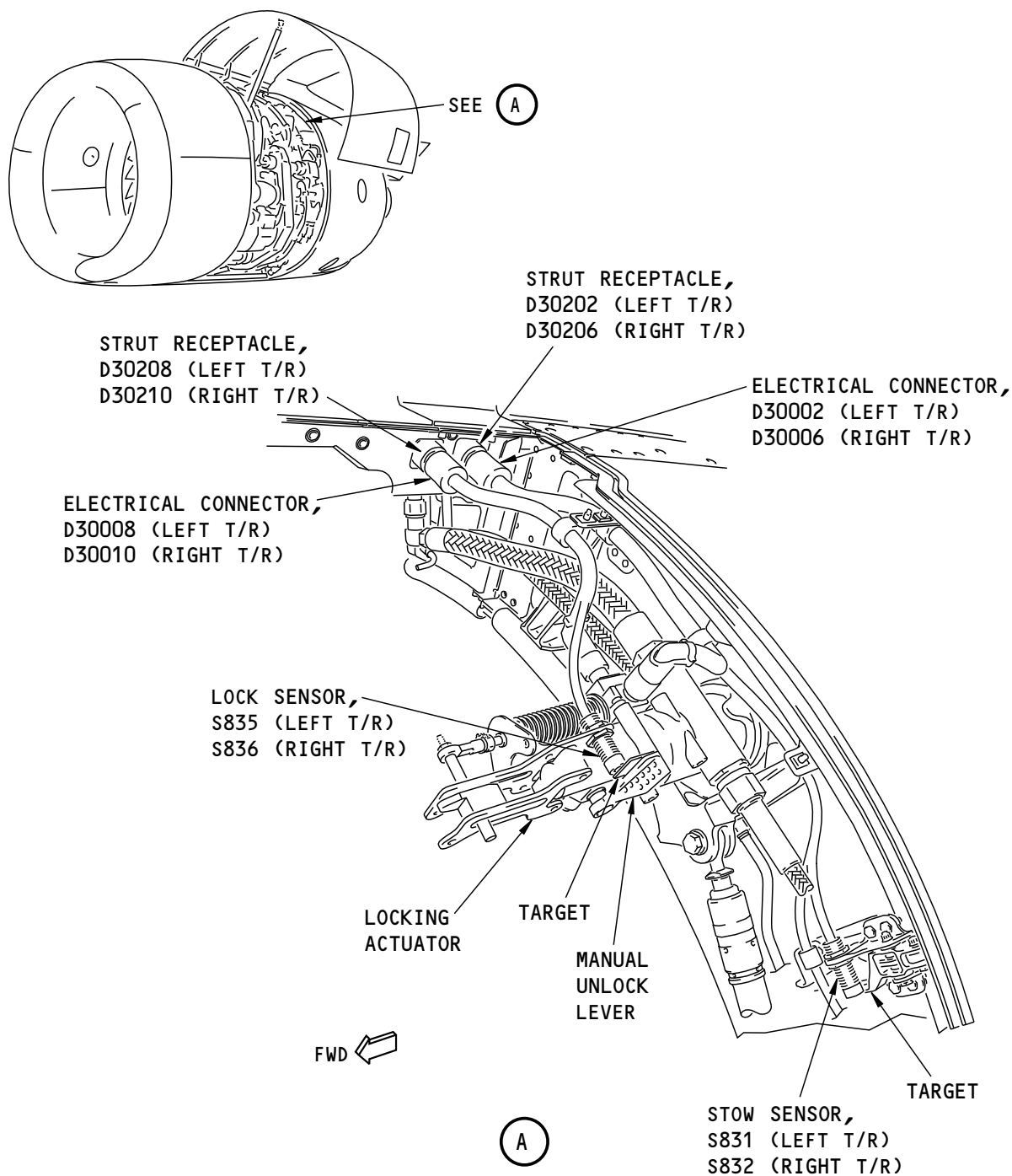
EFFECTIVITY
SIA ALL

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NOTE: LEFT THRUST REVERSER IS SHOWN,
RIGHT THRUST REVERSER IS EQUIVALENT.

H44216 S0006746401_V1

Engine 1 Sleeve Lock and Stow Sensor and Simplified Schematic
Figure 302/78-31-00-990-802-F00 (Sheet 1 of 3)

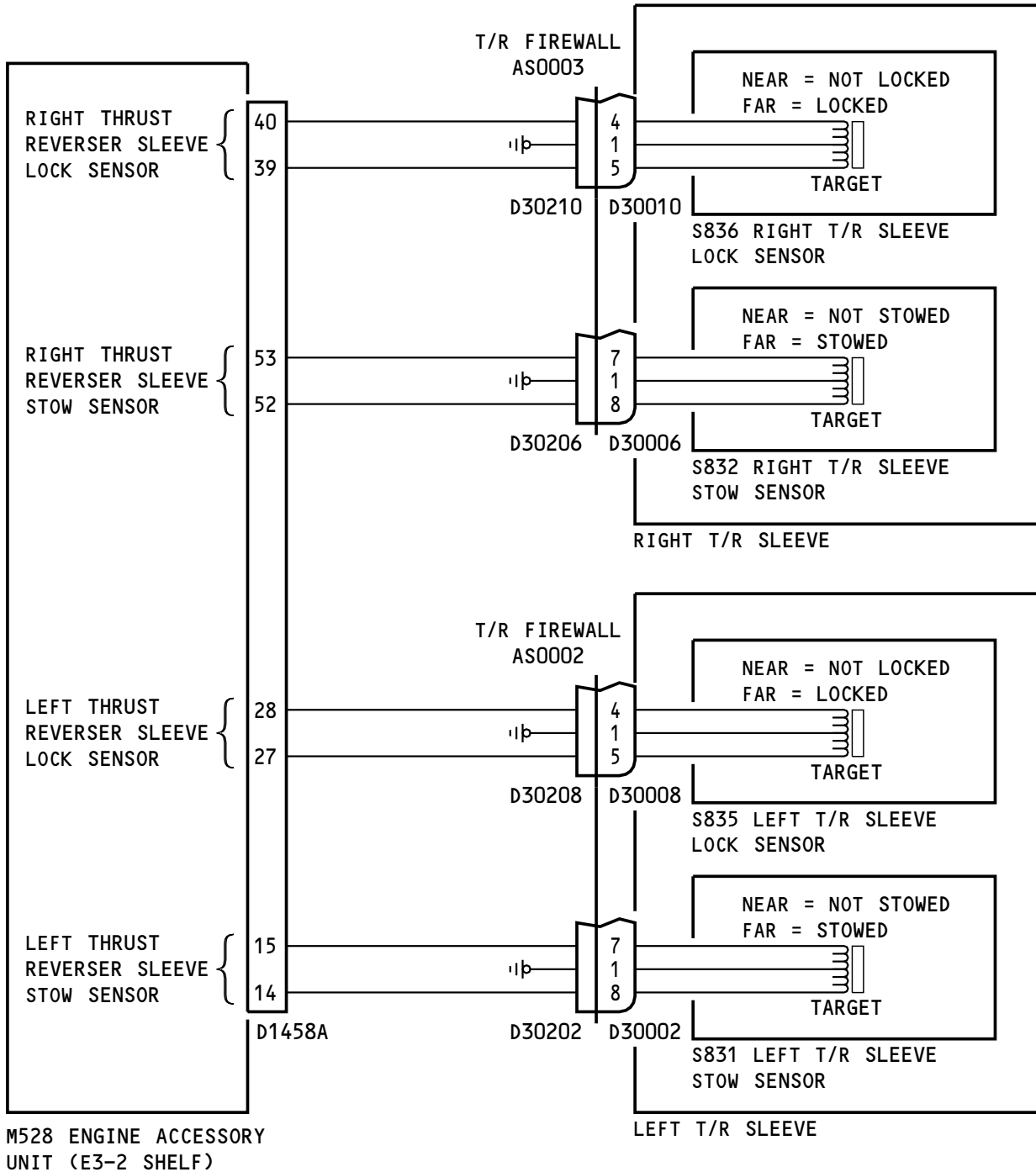
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H44238 S0006746402_V1

Engine 1 Sleeve Lock and Stow Sensor and Simplified Schematic
Figure 302/78-31-00-990-802-F00 (Sheet 2 of 3)

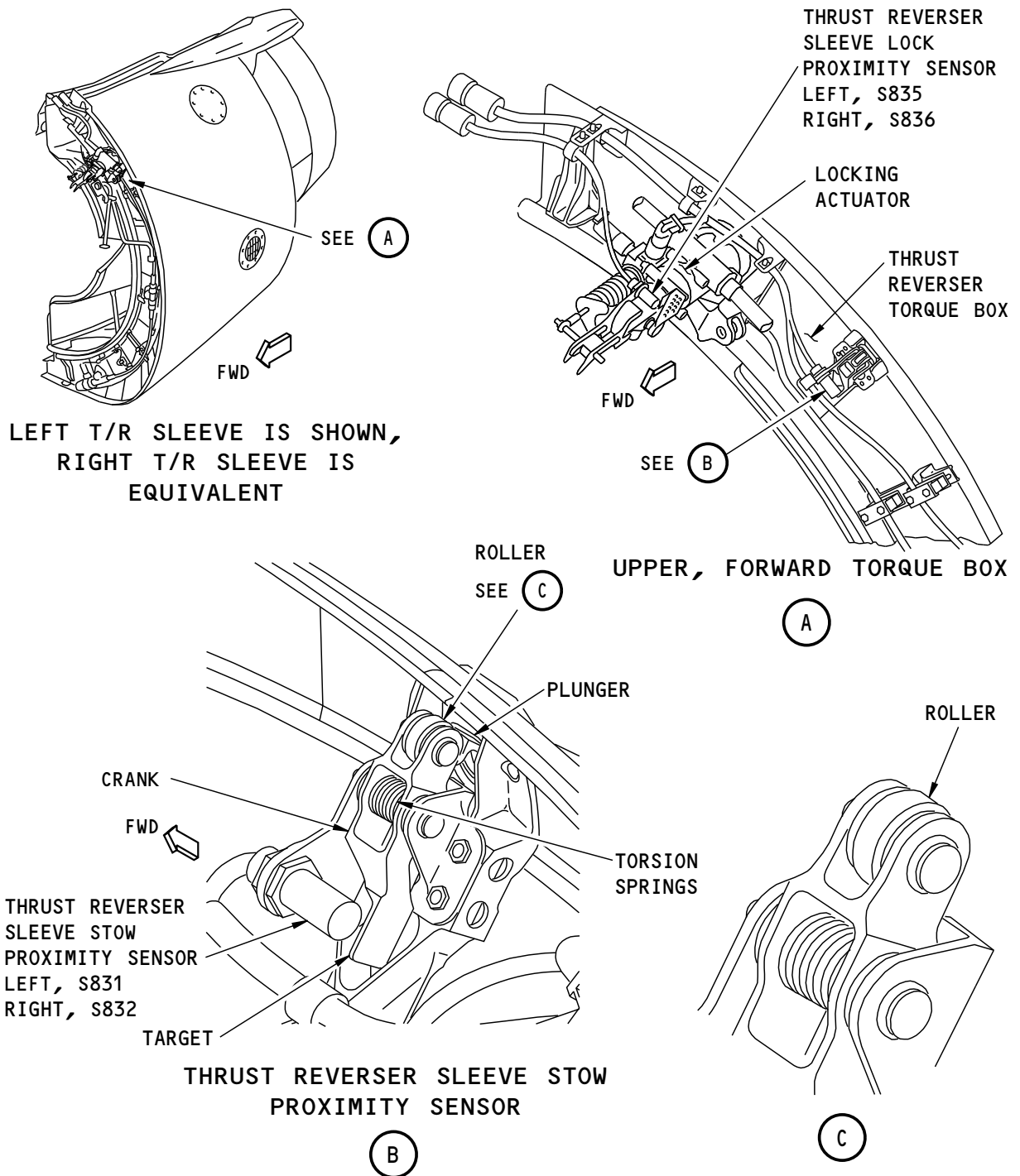
EFFECTIVITY
SIA ALL

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2476483 S0000580728_V1

Engine 1 Sleeve Lock and Stow Sensor and Simplified Schematic
Figure 302/78-31-00-990-802-F00 (Sheet 3 of 3)

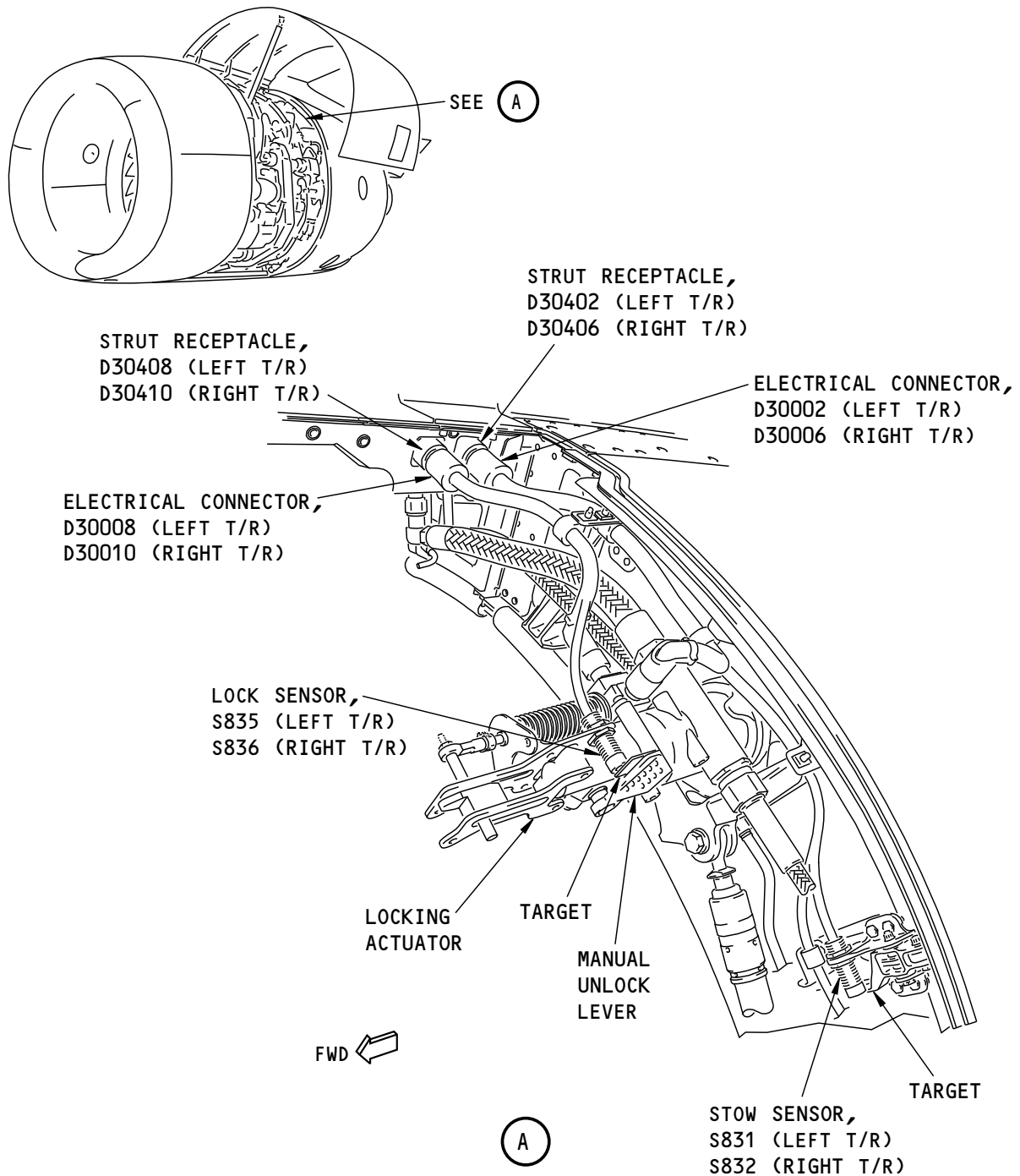
EFFECTIVITY
SIA ALL

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NOTE: LEFT THRUST REVERSER IS SHOWN,
RIGHT THRUST REVERSER IS EQUIVALENT.

H44218 S0006746403_V1

Engine 2 Sleeve Lock and Stow Sensor and Simplified Schematic
Figure 303/78-31-00-990-803-F00 (Sheet 1 of 3)

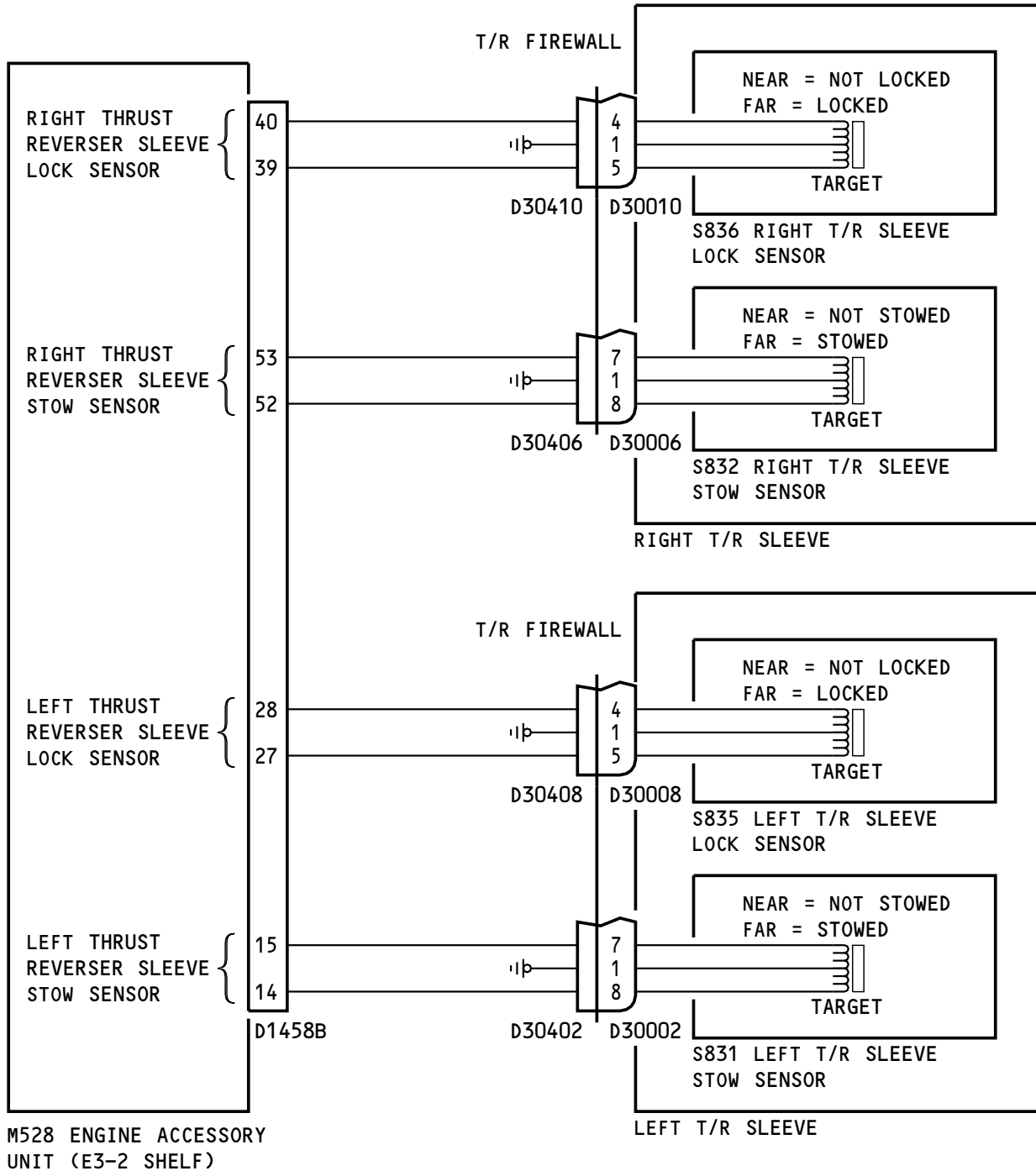
EFFECTIVITY
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H44248 S0006746404_V1

Engine 2 Sleeve Lock and Stow Sensor and Simplified Schematic
Figure 303/78-31-00-990-803-F00 (Sheet 2 of 3)

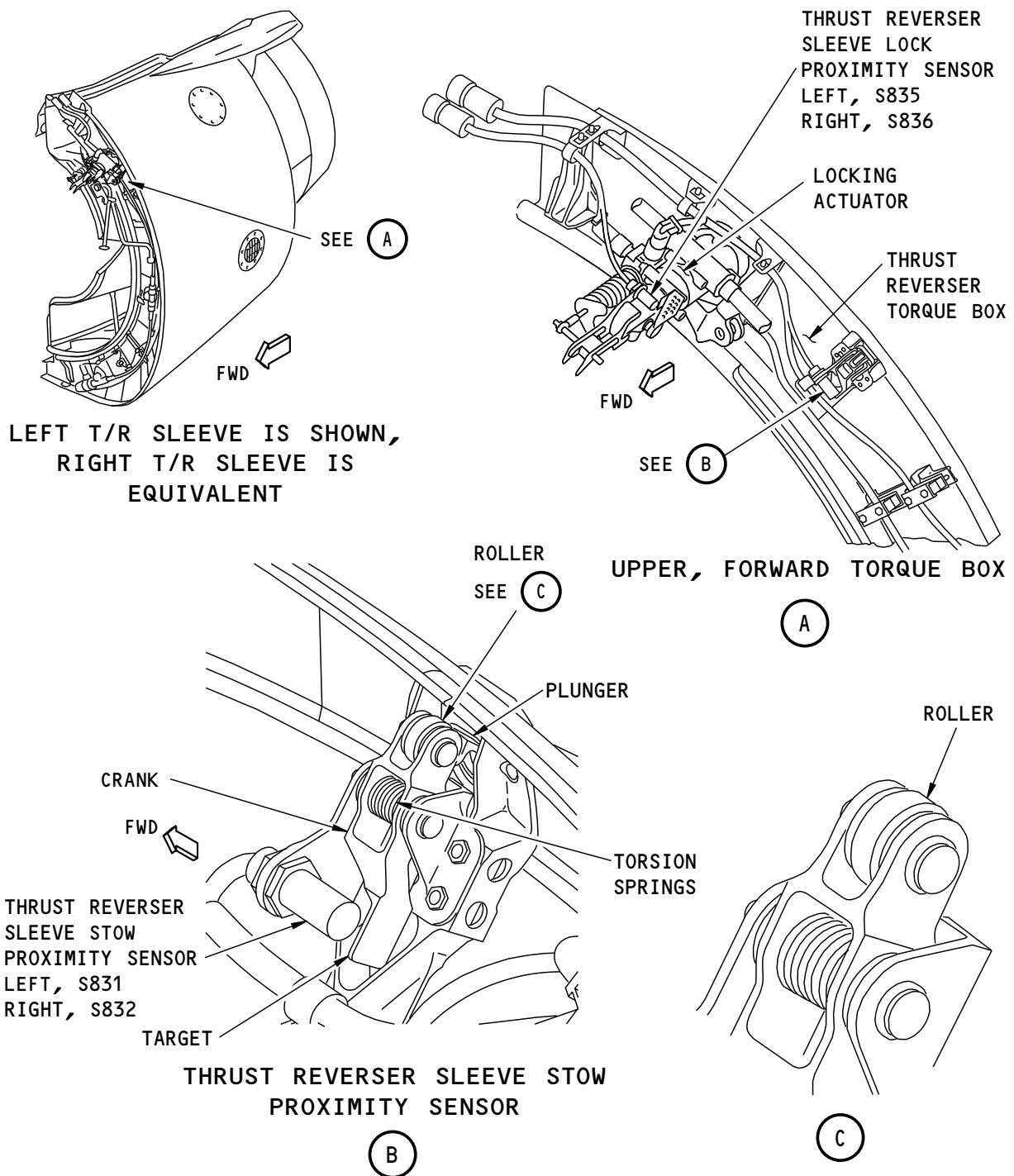
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2476483 S0000580728_V1

Engine 2 Sleeve Lock and Stow Sensor and Simplified Schematic
Figure 303/78-31-00-990-803-F00 (Sheet 3 of 3)

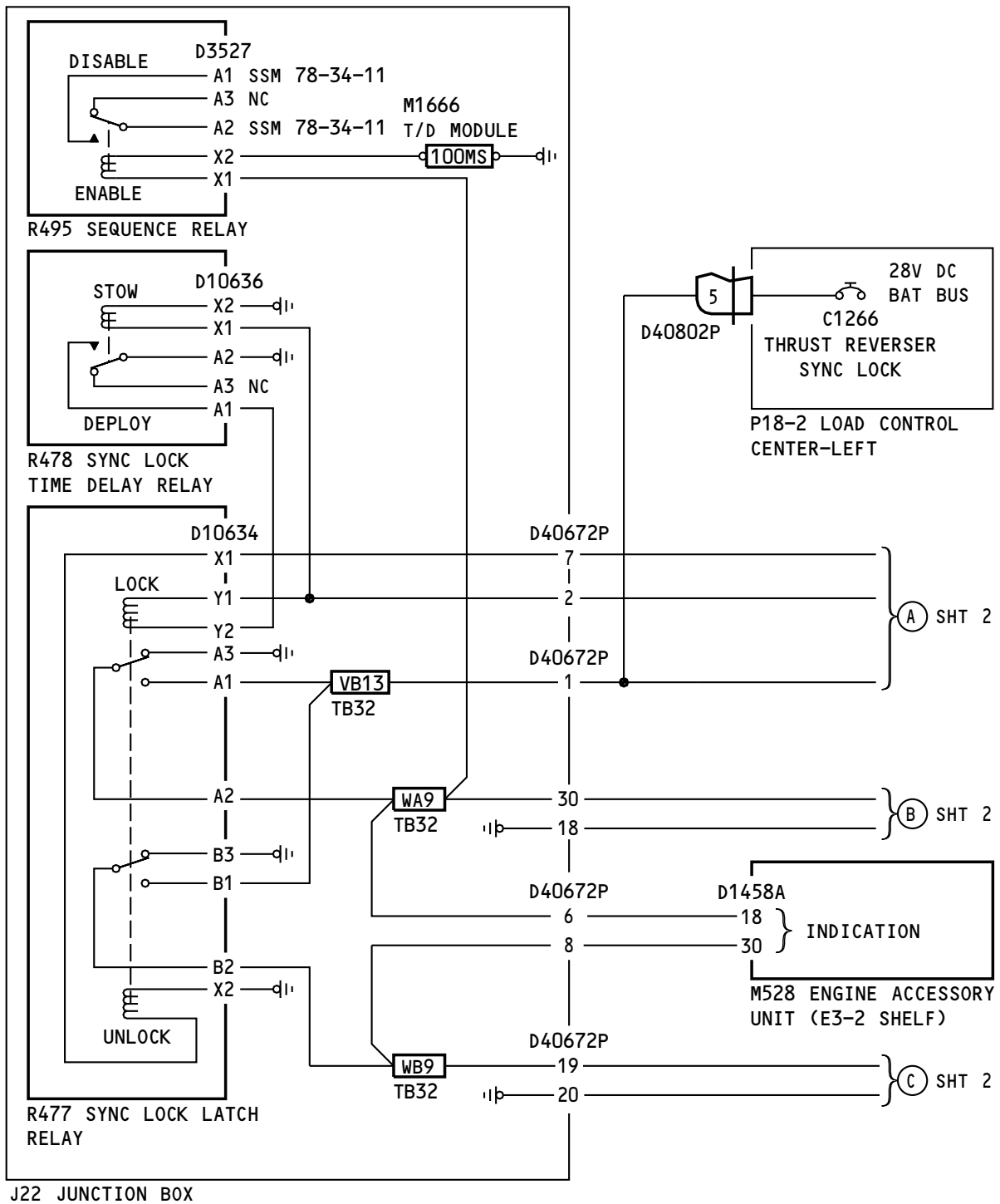
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H41977 S0006746405_V1

Engine 1 Thrust Reverser Sync Lock Simplified Schematic
Figure 304/78-31-00-990-804-F00 (Sheet 1 of 2)

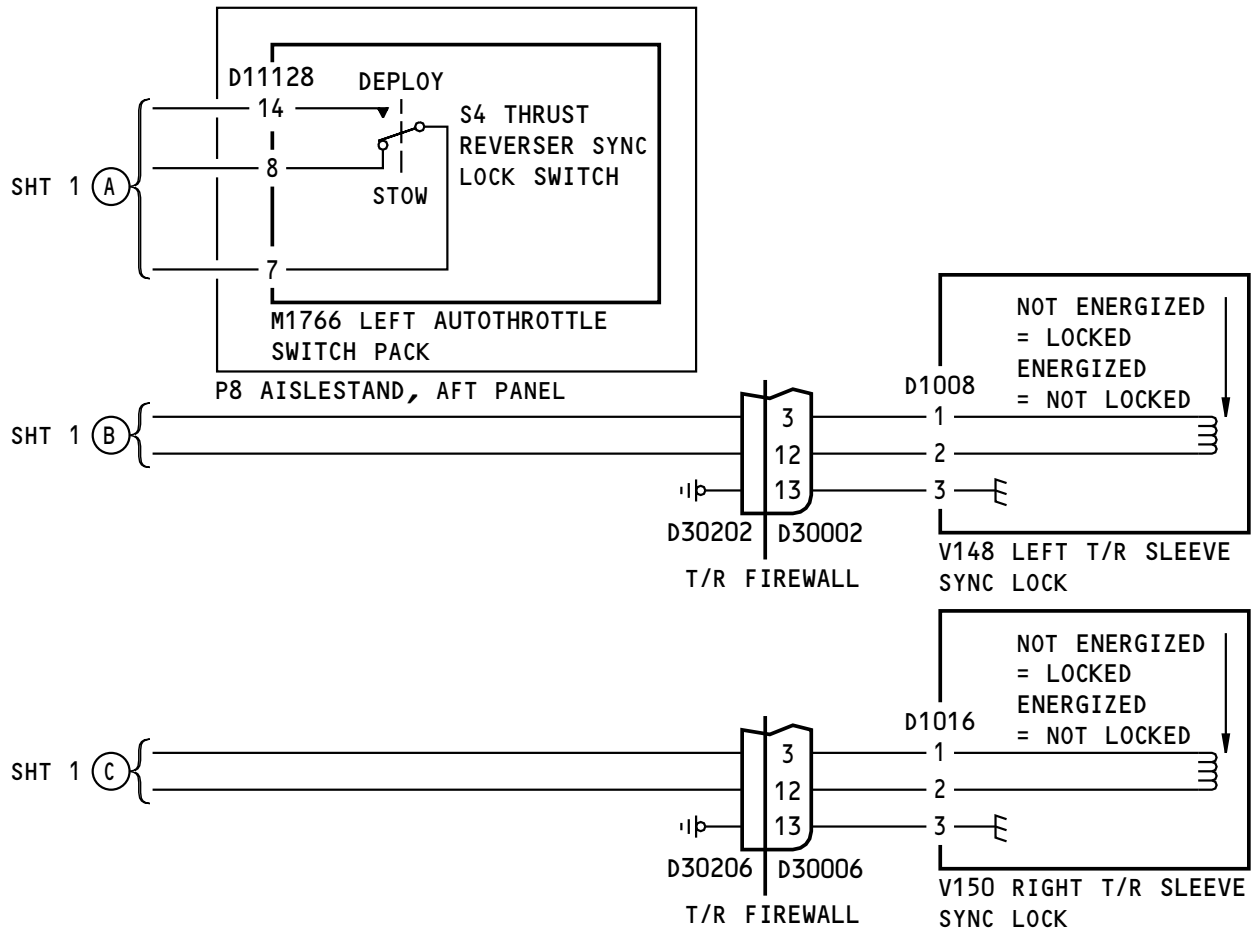
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SIA ALL

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H43840 S0006746406_V1

Engine 1 Thrust Reverser Sync Lock Simplified Schematic
Figure 304/78-31-00-990-804-F00 (Sheet 2 of 2)

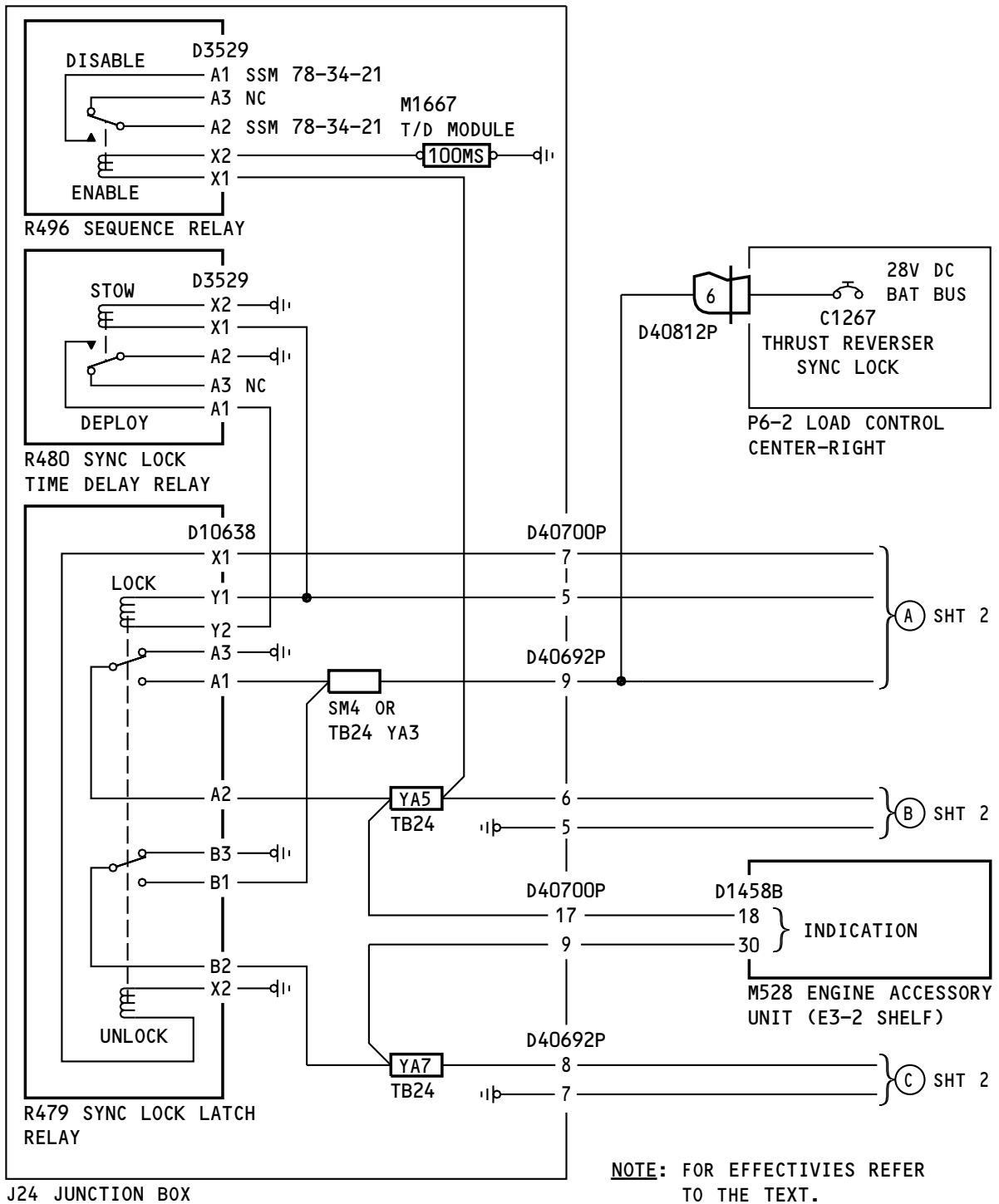
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H43843 S0006746407_V1

Engine 2 Thrust Reverser Sync Lock Simplified Schematic
Figure 305/78-31-00-990-805-F00 (Sheet 1 of 2)

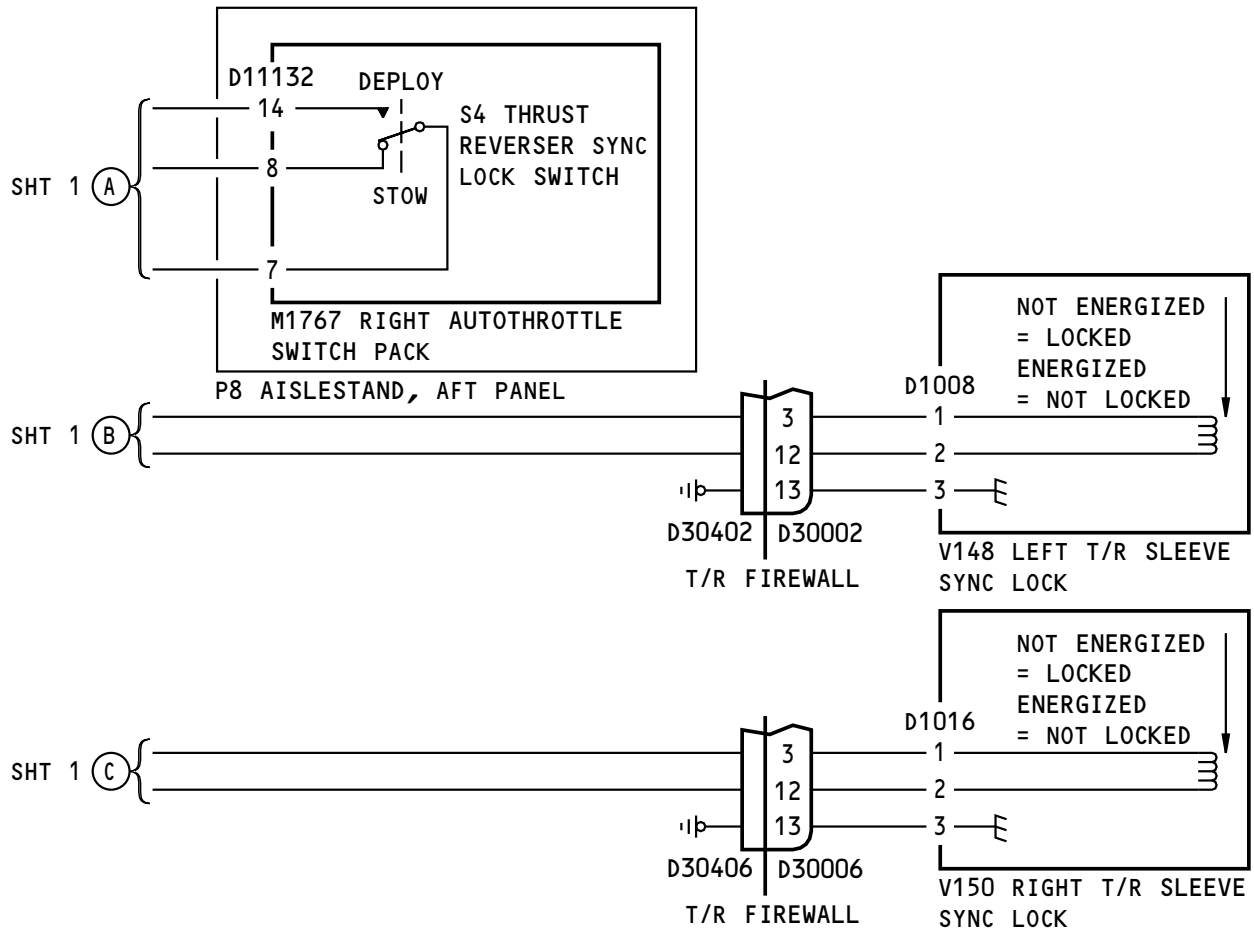
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SIA ALL

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H42403 S0006746408_V1

Engine 2 Thrust Reverser Sync Lock Simplified Schematic
Figure 305/78-31-00-990-805-F00 (Sheet 2 of 2)

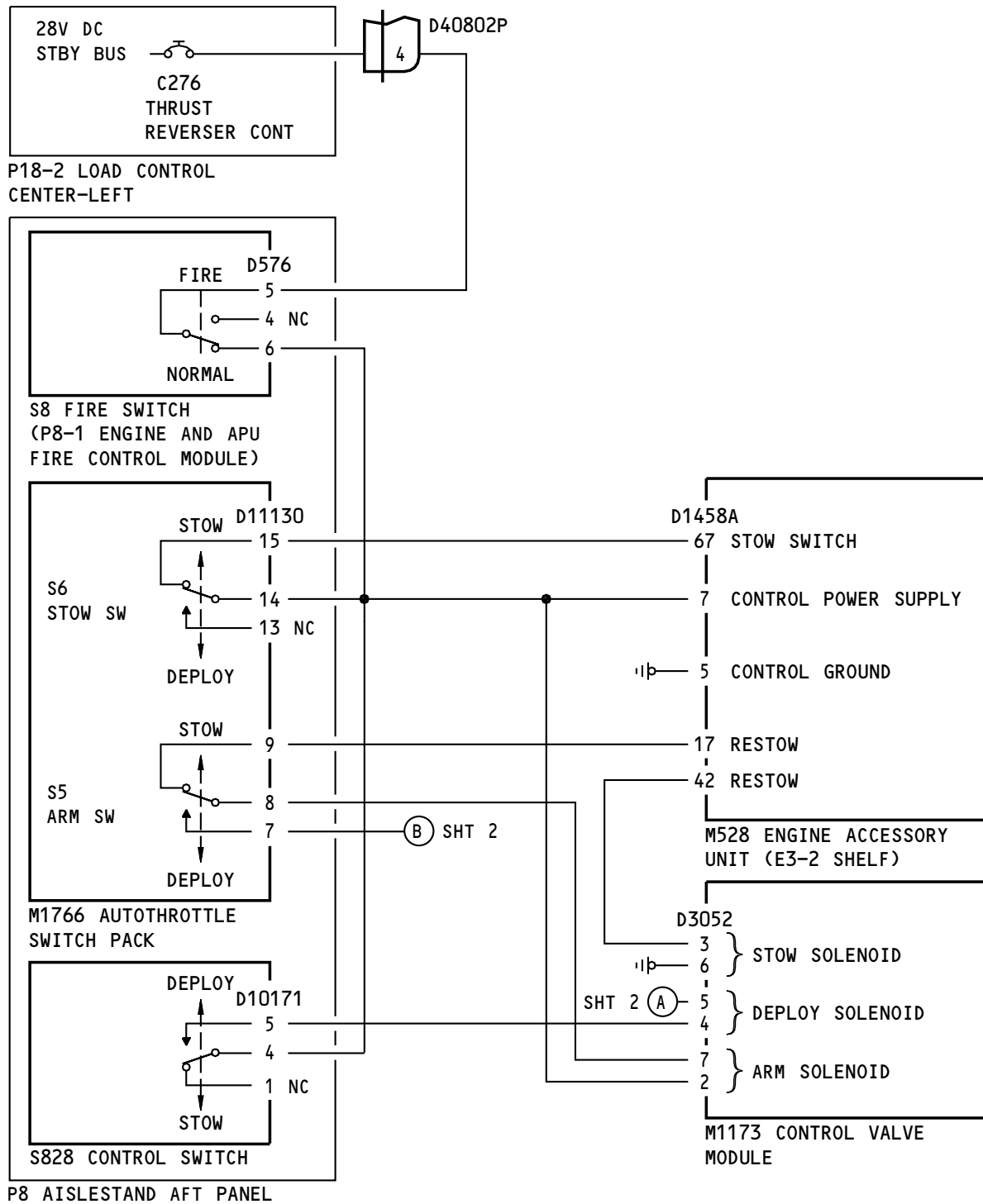
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H68089 S0006746409_V1

Engine 1 Thrust Reverser Control Simplified Schematic
Figure 306/78-31-00-990-806-F00 (Sheet 1 of 2)

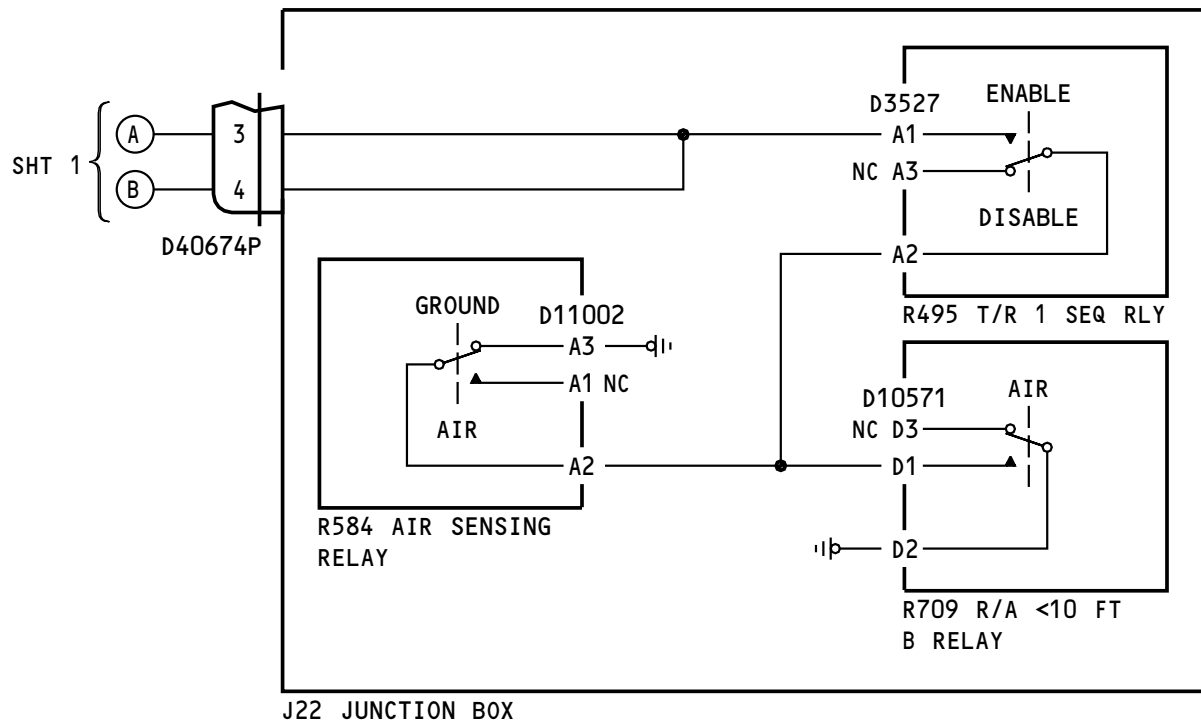
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H68091 S0006746410_V1

Engine 1 Thrust Reverser Control Simplified Schematic
Figure 306/78-31-00-990-806-F00 (Sheet 2 of 2)

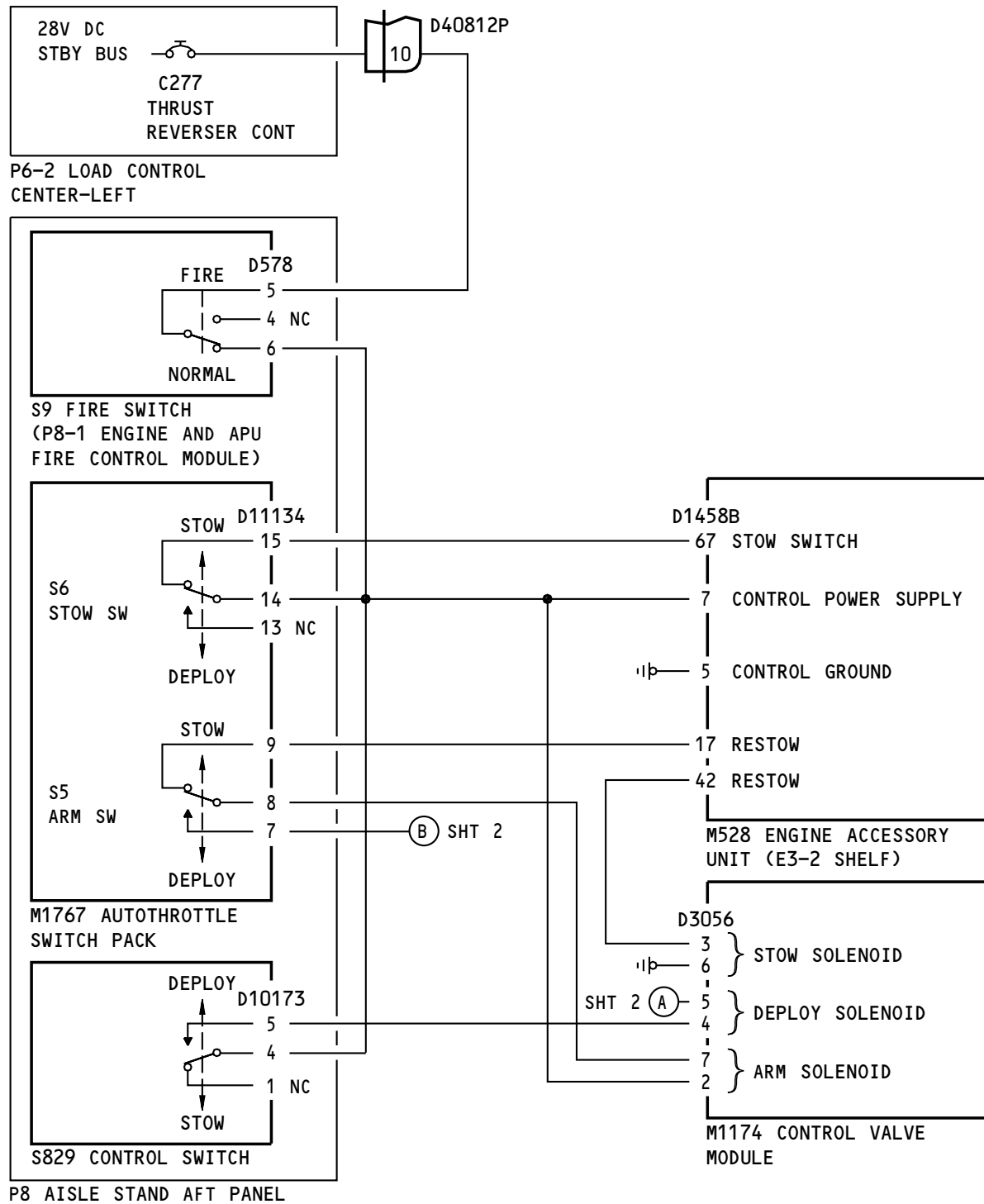
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FAULT ISOLATION MANUAL**



H68094 S0006746411_V1

Engine 2 Thrust Reverser Control Simplified Schematic
Figure 307/78-31-00-990-807-F00 (Sheet 1 of 2)

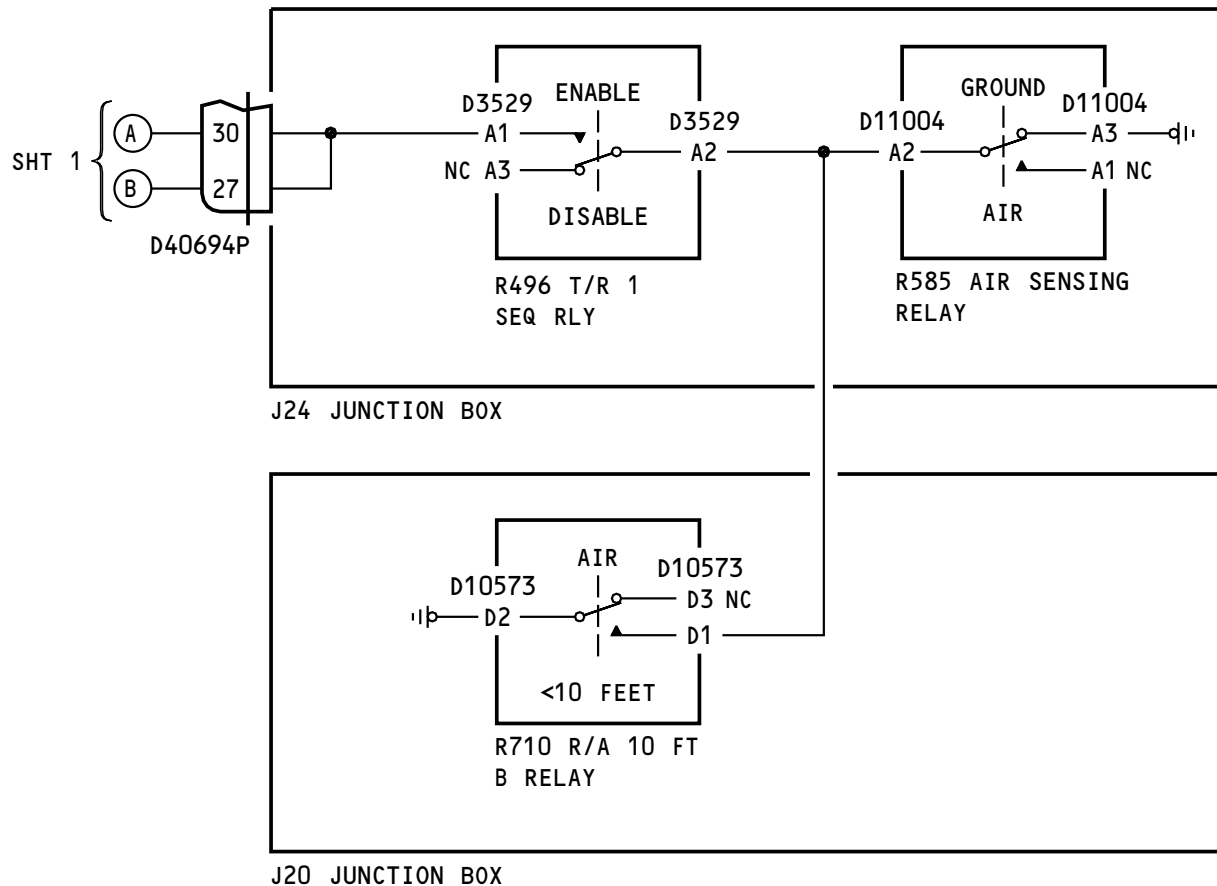
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H68095 S0006746412_V1

Engine 2 Thrust Reverser Control Simplified Schematic
Figure 307/78-31-00-990-807-F00 (Sheet 2 of 2)

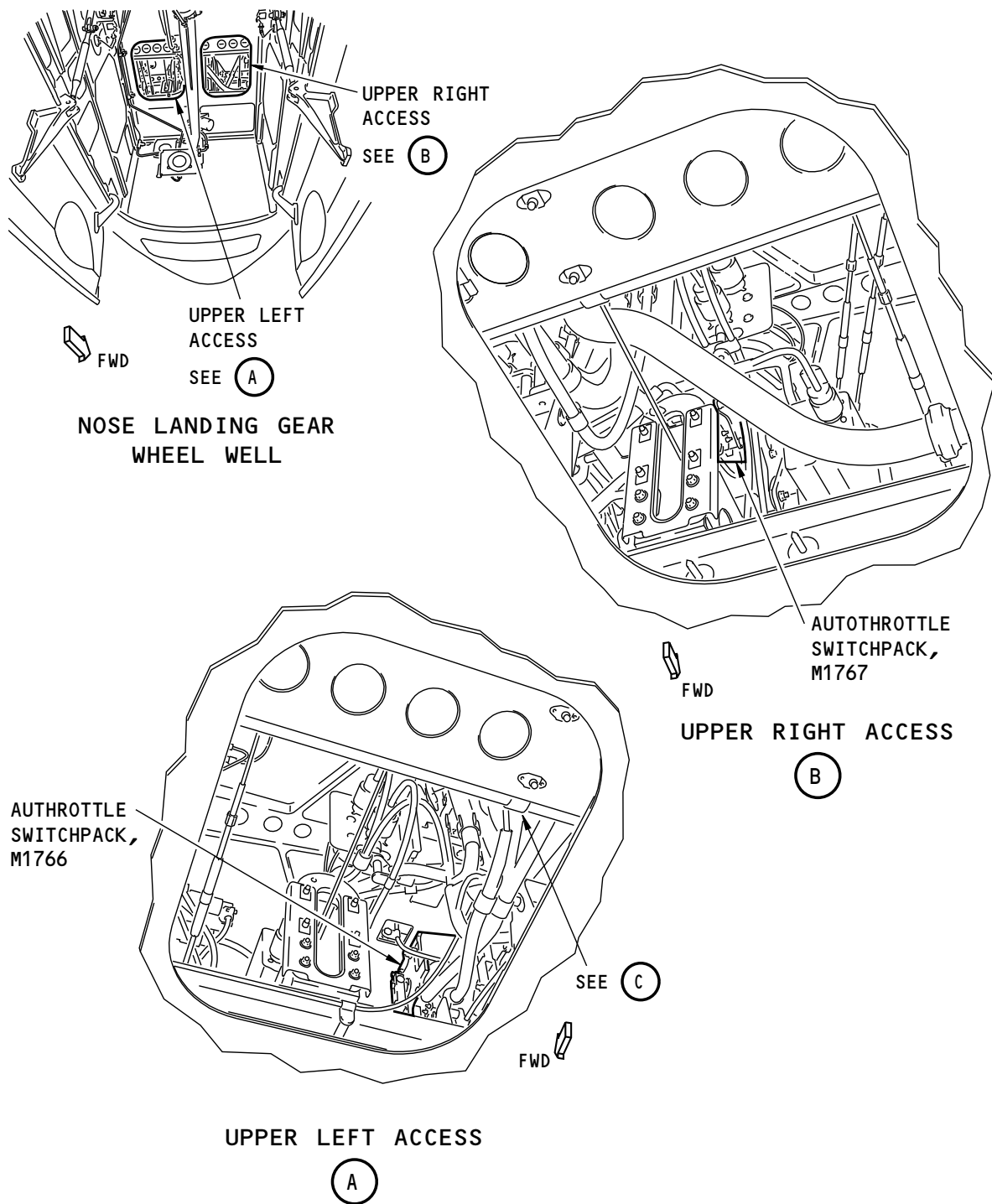
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H68096 S0006746413_V1

Autothrottle Switchpack
Figure 308/78-31-00-990-808-F00 (Sheet 1 of 2)

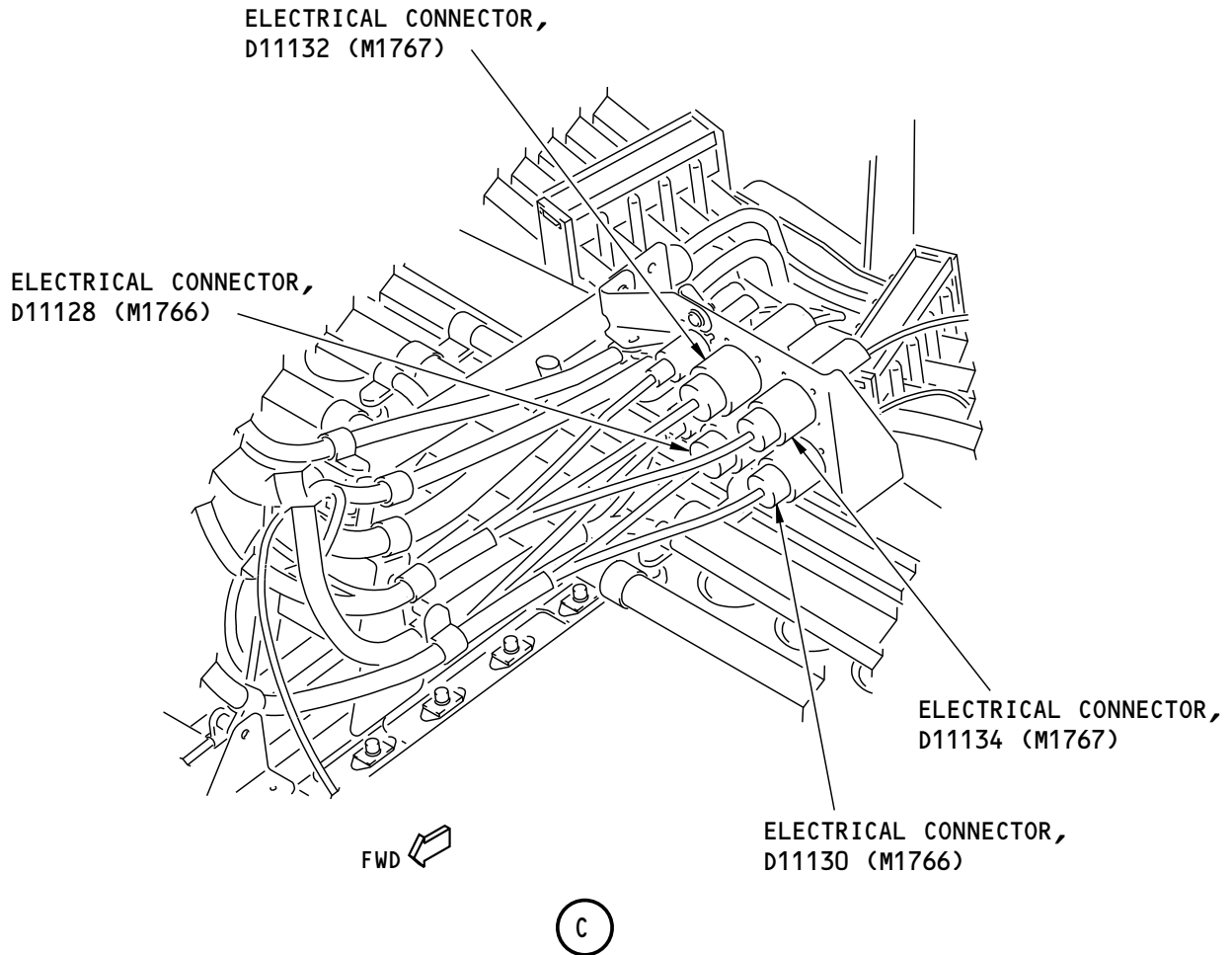
EFFECTIVITY
SIA ALL

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H68097 S0006746414_V1

Autothrottle Switchpack
Figure 308/78-31-00-990-808-F00 (Sheet 2 of 2)

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FAULT ISOLATION MANUAL**

805. T/R STOW FAULTS - All STOW Messages, except the EAU FAULT Message - Fault Isolation

A. Description

- (1) This task is for this combination of maintenance messages for Engine 1:
 - (a) ENGINE 1 - V148 L SLEEVE SYNC LOCK PWR
 - (b) ENGINE 1 - S831 L SLEEVE STOW SENSOR
 - (c) ENGINE 1 - S835 L SLEEVE LOCK SENSOR
 - (d) ENGINE 1 - S833 HYD ISO VALVE SENSOR
 - (e) ENGINE 1 - S834 DIR CONT VALVE SENSOR
 - (f) ENGINE 1 - V150 R SLEEVE SYNC LOCK PWR
 - (g) ENGINE 1 - S832 R SLEEVE STOW SENSOR
 - (h) ENGINE 1 - S836 R SLEEVE LOCK SENSOR
- (2) This task is for this combination of maintenance messages for Engine 2:
 - (a) ENGINE 2 - V148 L SLEEVE SYNC LOCK PWR
 - (b) ENGINE 2 - S831 L SLEEVE STOW SENSOR
 - (c) ENGINE 2 - S835 L SLEEVE LOCK SENSOR
 - (d) ENGINE 2 - S830 HYD ISO VALVE SENSOR
 - (e) ENGINE 2 - S839 DIR CONT VALVE SENSOR
 - (f) ENGINE 2 - V150 R SLEEVE SYNC LOCK PWR
 - (g) ENGINE 2 - S832 R SLEEVE STOW SENSOR
 - (h) ENGINE 2 - S836 R SLEEVE LOCK SENSOR
- (3) This combination of maintenance messages indicates that there could be an erroneous RETRACT (stow) command signal to the Engine Accessory Unit (EAU) when the Thrust Reverser (T/R) was EXTENDED (deployed).
 - (a) This is caused by a problem in the Stow Switch, S6, if it is not adjusted correctly or if it has failed in the RETRACT (stow) position.
 - (b) If the EAU is reset, this fault can be cleared from the EAU before it is corrected and the T/R will EXTEND (deploy) and RETRACT (stow) one time and the maintenance messages will show again.
 - (c) If the EAU is not reset, the T/R will not deploy.

NOTE: No fault in the EAU will cause the T/R not to EXTEND (deploy).

NOTE: If the T/R is deployed and stowed in under 14 seconds, then the S834 and S839 will not illuminate.

B. Possible Causes

- (1) Stow Switch, S6

NOTE: Stow Switch, S6 is installed on the ENG-1 (ENG-2) Auto throttle Switchpack (AS), M1766 (M1767).
- (2) EAU, M528
- (3) ENG-1 (ENG-2) Autothrottle Switchpack, M1766 (M1767)
- (4) Wiring

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C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	4	C01003	ENGINE 1 THRUST REVERSER IND
B	5	C00276	ENGINE 1 THRUST REVERSER CONT
B	6	C01412	ENGINE 1 THRUST REVERSER INTLK
B	7	C01266	ENGINE 1 THRUST REVERSER SYNC LOCK

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	5	C01267	ENGINE 2 THRUST REVERSER SYNC LOCK
C	6	C01413	ENGINE 2 THRUST REVERSER INTLK
C	7	C00277	ENGINE 2 THRUST REVERSER CONT
C	8	C01004	ENGINE 2 THRUST REVERSER IND

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	16	C01345	LANDING GEAR AUTOBRAKE BITE CONT 2
A	18	C00583	LANDING GEAR AUTOBRAKE BITE CONT 1

D. Related Data

- (1) Component Location (78-32 TASK SUPPORT Figure 308)
- (2) Simplified Schematic (78-32 TASK SUPPORT Figure 302, 78-32 TASK SUPPORT Figure 303)
- (3) WDM 78-34-11
- (4) WDM 78-34-21
- (5) SSM 78-34-11
- (6) SSM 78-34-21

E. Initial Evaluation

- (1) Do the Engine Accessory Unit (EAU) BITE Procedure, 78-31 TASK 801 to see if the maintenance messages are still active.

F. Fault Isolation Procedure



DO THE DEACTIVATION PROCEDURE TO PREVENT THE OPERATION OF THE THRUST REVERSER. THE ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

- (1) Do this task: Thrust Reverser Deactivation For Ground Maintenance, AMM TASK 78-31-00-040-802-F00.
- (2) Open these circuit breakers:

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	16	C01345	LANDING GEAR AUTOBRAKE BITE CONT 2
A	18	C00583	LANDING GEAR AUTOBRAKE BITE CONT 1

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- (3) Make sure that the applicable Reverse Thrust Lever is forward and down in the RETRACT (stow) position.
- (4) Visually examine the electrical connector for the ENG-1 (ENG-2) Autothrottle Switchpack, M1766 (M1767), and the electrical connector, D11130 (D11134) (WDM 78-34-11, WDM 78-34-21):

NOTE: The Stow Switch, S6 is installed on the ENG-1 (ENG-2) AS, M1766 (M1767).

 - (a) Remove the access cover from the left side of the Nose Gear Wheel Well Overhead to get access to the connectors.
 - (b) See if the electrical connectors are correctly connected, and continue.
 - (c) Disconnect the electrical connector, D11130 (D11134) from the ENG-1 (ENG-2) Autothrottle Switchpack, M1766 (M1767).
 - (d) Visually examine the electrical connectors (AMM TASK 70-70-01-200-801-F00).
 - 1) If an electrical connector is damaged, then do the applicable tasks to repair or replace the connector (SWPM Ch 20).
 - a) Do the Repair Confirmation at the end of this task.
 - 2) If the connector was not correctly connected, and no other problem was found, then re-connect the connector and do the Repair Confirmation at the end of this task.
- (5) Do an electrical check of the Stow Switch, S6 (WDM 78-34-11, WDM 78-34-21):
 - (a) Remove the DO-NOT-OPERATE tag and move the applicable Reverse Thrust Lever UP and AFT to the EXTEND (deploy) position.
 - (b) Do the electrical check between these pins of the electrical connector for the ENG-1 (ENG-2) Autothrottle Switchpack, M1766 (M1767), through the Stow Switch, S6:

	AUTOTHROTTLE SW	AUTOTHROTTLE SW	
ENG-1	D11130P	D11130P	CONTINUITY
	pin 14	pin 15	NO
	pin 13	pin 14	YES
ENG-2	D11134P	D11134P	CONTINUITY
	pin 14	pin 15	NO
	pin 13	pin 14	YES

- (c) Move the applicable Reverse Thrust Lever forward and down to the RETRACT (stow) position and attach the DO-NOT-OPERATE tag.
- (d) If the continuity is not correct:

SIA ALL; AUTOTHROTTLE SWITCHPACK WITH REPLACEABLE SWITCHES P/N 254A1150-1, -2, -7, -8, -9, -10

- 1) Do the steps in the Switch Adjustment Paragraph of the Switch Installation Procedure (AMM TASK 76-11-07-400-801-F00) to adjust the Stow Switch, S6.
 - a) Do the Repair Confirmation at the end of this task.
 - b) Replace the Stow Switch, S6. These are the tasks:
 - Autothrottle Switchpack Switch Removal, AMM TASK 76-11-07-020-801-F00
 - Autothrottle Switchpack Switch Installation, AMM TASK 76-11-07-400-801-F00

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SIA ALL; AUTOTHROTTLE SWITCHPACK WITH INTEGRATED SWITCHES P/N 254A1150-11, -12, -13, -14, -15, -16

- 2) Replace the ENG-1 (ENG-2) Autothrottle Switchpack Assembly, M1766 (M1767). These are the tasks:
 - Autothrottle Switchpack Assembly - Installation, AMM TASK 76-11-07-400-802-F00
 - Autothrottle Switchpack Assembly - Removal, AMM TASK 76-11-07-020-802-F00

SIA ALL

- 3) Do the Repair Confirmation at the end of this task.
- (e) If the continuity is correct, then continue.
- (6) Replace the EAU, M528. These are the tasks:
 - Engine Accessory Unit Removal, AMM TASK 78-34-06-000-801-F00
 - Engine Accessory Unit Installation, AMM TASK 78-34-06-400-801-F00
- (a) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

- (1) Do these steps:
 - (a) Make sure that the ENG-1 (ENG-2) Autothrottle Switchpack electrical connector, D11130 (D11134) is correctly connected.
 - (b) Do this task: Thrust Reverser Activation After Ground Maintenance, AMM TASK 78-31-00-440-803-F00.
 - (c) 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>
A	16	C01345	LANDING GEAR AUTOBRAKE BITE CONT 2
A	18	C00583	LANDING GEAR AUTOBRAKE BITE CONT 1

- (d) Do this step to reset the T/R STOW FAULTS light:
 - 1) Push and hold the FAULT RESET button for a minimum of two seconds.



MAKE SURE THAT THERE ARE NO PERSONS OR EQUIPMENT IN THE AREA OF THE THRUST REVERSER. MOVEMENT OF THE THRUST REVERSER CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (e) Operate the T/R through an EXTEND and RETRACT cycle.
- (f) Make sure that the REVERSER Fault Light on the P5 panel in the flight compartment comes ON for approximately 10 seconds after the Reverse Thrust Lever is moved to the RETRACT (stow) position and then goes OFF.
 - 1) Wait for at least 30 seconds.
- (g) If the REVERSER Fault Light stays OFF, then you corrected the problem.
- (h) If the REVERSER Fault Flight stays ON, then do these steps:

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- 1) 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>
A	16	C01345	LANDING GEAR AUTOBRAKE BITE CONT 2
A	18	C00583	LANDING GEAR AUTOBRAKE BITE CONT 1



DO THE DEACTIVATION PROCEDURE TO PREVENT THE OPERATION OF THE THRUST REVERSER. THE ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

- 2) Do the Thrust Reverser Deactivation For Ground Maintenance task (AMM TASK 78-31-00-040-802-F00), and then continue the Fault Isolation Procedure at the subsequent step.

— END OF TASK —

806. T/R DEPLOY FAULTS - DIR CONT VALVE SENSOR and All SLEEVE STOW and SLEEVE LOCK SENSOR messages - Fault Isolation

A. Description

- (1) This task is for this combination of maintenance messages:
 - (a) For Engine 1:
 - 1) ENGINE 1 - S831 L SLEEVE STOW SENSOR
 - 2) ENGINE 1 - S835 L SLEEVE LOCK SENSOR
 - 3) ENGINE 1 - S834 DIR CONT VALVE SENSOR
 - 4) ENGINE 1 - S832 R SLEEVE STOW SENSOR
 - 5) ENGINE 1 - S836 R SLEEVE LOCK SENSOR.
 - (b) For Engine 2:
 - 1) ENGINE 2 - S831 L SLEEVE STOW SENSOR
 - 2) ENGINE 2 - S835 L SLEEVE LOCK SENSOR
 - 3) ENGINE 2 - S839 DIR CONT VALVE SENSOR
 - 4) ENGINE 2 - S832 R SLEEVE STOW SENSOR
 - 5) ENGINE 2 - S836 R SLEEVE LOCK SENSOR.
- (2) This combination of Fault Lights indicates that:
 - (a) The Sync Locks unlocked and the Isolation Valve opened.
 - (b) The Directional Control Valve (DCV) did not go to the DEPLOY position and the Locking Actuators did not unlock.
 - (c) The T/R did not deploy.

B. Possible Causes

- (1) ENG-1 (ENG-2) T/R Control Switch Actuation Spring 69-78782
- (2) ENG-1 (ENG-2) T/R Control Switch, S828 (S829)
- (3) ENG-1 (ENG-2) Control Valve Module (CVM), M1173 (M1174)
- (4) Wiring

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C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	5	C00276	ENGINE 1 THRUST REVERSER CONT

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	7	C00277	ENGINE 2 THRUST REVERSER CONT

D. Related Data

- (1) Component Location (78-32 TASK SUPPORT Figure 301, 78-32 TASK SUPPORT Figure 309)
- (2) Simplified Schematic (78-32 TASK SUPPORT Figure 302, 78-32 TASK SUPPORT Figure 303)
- (3) WDM 78-34-11
- (4) WDM 78-34-21
- (5) SSM 78-34-11
- (6) SSM 78-34-21

E. Initial Evaluation

- (1) Do the Engine Accessory Unit (EAU) BITE Procedure, 78-31 TASK 801 to show the current maintenance messages.

F. Fault Isolation Procedure



DO THE DEACTIVATION PROCEDURE TO PREVENT THE OPERATION OF THE THRUST REVERSER. THE ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

- (1) Do this task: Thrust Reverser Deactivation For Ground Maintenance, AMM TASK 78-31-00-040-802-F00.
- (2) Do a check of the ENG-1 (ENG-2) T/R Control Switch Actuation Spring 69-78782. This is the task: Actuation Spring Free Angle Check, AMM TASK 78-34-11-200-801-F00.
 - (a) Adjust or replace as necessary the ENG-1 (ENG-2) T/R Control Switch, S828 (S829). These are the tasks:
 - Control Switch Adjustment and Test, AMM TASK 78-34-04-700-801-F00
 - Control Switch Removal, AMM TASK 78-34-04-000-801-F00
 - Control Switch Installation, AMM TASK 78-34-04-400-801-F00
 - (b) Do the Repair Confirmation at the end of this task.
- (3) Move the Reverse Thrust Lever 1 (2) UP and AFT to the EXTEND (deploy) position.
- (4) Disconnect the electrical connector D10171 (D10173) from the ENG-1 (ENG-2) T/R Control Switch, S828 (S829).
 - (a) To get access to the electrical connector, remove the lower panel from the left side of the Aisle Stand, P8.

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- (5) Remove the safety tag and close the applicable circuit breaker(s):

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	5	C00276	ENGINE 1 THRUST REVERSER CONT

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	7	C00277	ENGINE 2 THRUST REVERSER CONT

- (6) Do a check for 28V DC at pin 4 of the ENG-1 (ENG-2) T/R Control Switch electrical connector D10171 (D10173) (WDM 78-34-11, WDM 78-34-21).
- (a) If you find voltage, then do these steps:
- 1) Replace the applicable ENG-1 (ENG-2) T/R Control Switch, S828 (S829). These are the tasks:
 - Control Switch Removal, AMM TASK 78-34-04-000-801-F00
 - Control Switch Installation, AMM TASK 78-34-04-400-801-F00
 - a) Do the Repair Confirmation at the end of this task.
 - 2) Examine and repair or replace the wiring between pin 4 of the ENG-1 (ENG-2) Control Switch electrical connector D10171 (D10173) and pin C of the T/R Control Switch, S828 (S829)(SWPM Ch 20).
 - a) Do the Repair Confirmation at the end of this task.
 - 3) Examine and repair or replace the wiring between pin 5 of the ENG-1 (ENG-2) Control Switch electrical connector D10171 (D10173) and pin NO of the T/R Control Switch, S828 (S829)(SWPM Ch 20).
 - a) Do the Repair Confirmation at the end of this task.
- (7) Do a check for 28V DC at pin 4 of the ENG-1 (ENG-2) CVM electrical connector D3052 (D3056) (WDM 78-34-11, WDM 78-34-21).
- (a) If you find voltage, then do these steps:
- 1) Replace the applicable ENG-1 (ENG-2) CVM, M1173 (M1174). These are the tasks:
 - Control Valve Module Removal, AMM TASK 78-34-01-000-801-F00
 - Control Valve Module Installation, AMM TASK 78-34-01-400-801-F00
 - a) Do the Repair Confirmation at the end of this task.
- (8) Visually examine the electrical connector for the ENG-1 (ENG-2) T/R Control Switch, S828 (S829), and the ENG-1 (ENG-2) electrical connector D10171 (D10173) (Standard Engine Wiring and Equipment Check, AMM TASK 70-70-01-200-801-F00).
- (a) To get access to the electrical connector, remove the lower panel from the left side of the Aisle Stand, P8.
 - (b) If an electrical connector is damaged, then do the applicable tasks to repair or replace the electrical connector (SWPM Ch 20).
 - 1) Do the Repair Confirmation at the end of this task.
 - (c) If an electrical connector was not correctly connected, and no other problem was found, then re-connect the electrical connector and do the Repair Confirmation at the end of this task.
 - (d) If you did not find a problem, then continue.

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- (9) Disconnect the electrical connector D3052 (D3056) from the ENG-1 (ENG-2) CVM, M1173 (M1174) (AMM TASK 70-70-01-200-801-F00).

NOTE: The CVM is in the Main Gear Wheel Well on the keel beam. The ENG-1 CVM, M1173 is on the left side and the ENG-2 CVM, M1174 is on the right side.

- (a) Visually examine the applicable CVM Receptacle and Wire Harness electrical connector.
- 1) If the CVM Receptacle is damaged, then replace the ENG-1 (ENG-2) CVM M1173 (M1174). These are the tasks:
 - Control Valve Module Removal, AMM TASK 78-34-01-000-801-F00
 - Control Valve Module Installation, AMM TASK 78-34-01-400-801-F00
 - a) Do the Repair Confirmation at the end of this task.
 - 2) If the Wire Harness electrical connector is damaged, then do the applicable tasks to repair or replace the electrical connector (SWPM Ch 20).
 - a) Do the Repair Confirmation at the end of this task.
 - 3) If the electrical connector was not correctly connected, and no other problem was found, then re-connect the electrical connector and do the Repair Confirmation at the end of this task.
- (b) If you did not find a problem, then continue.
- (10) If connected, disconnect the electrical connector D10171 (D10173) from the ENG-1 (ENG-2) T/R Control Switch, S828 (S829).
- (11) If connected, disconnect the electrical connector D3052 (D3056) from the ENG-1 (ENG-2) CVM, M1173 (M1174) (Standard Engine Wiring and Equipment Check, AMM TASK 70-70-01-200-801-F00).
- (12) Examine the wiring as follows:
- (a) ENG-1 CONTROL Wiring checks (WDM 78-34-11):

CTRL SW S828**D10171P**

pin 5 pin 4

CVM**D3052****CVM****D3052**

pin 5 term YB1

TERM BLOCK**TB22****CTRL SW, S828****D10171P**

pin 4 SM18

SPLICE

- (b) ENG-2 CONTROL Wiring Checks (WDM 78-34-21):

NOTE: Splice SM15 is in the Junction Box, J24 in the Nose Gear Wheel Well, on the right side.

CTRL SW S829**D10173P**

pin 5 pin 4

CVM**D3056**

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CVM**D3056****SPLICE**

pin 5 SM15

CTRL SW, S829**D10173P****SPLICE**

pin 4 SP968

- (c) Repair the problems that you find (SWPM Ch 20).
- (d) Re-connect the electrical connector D10171 (D10173) to the ENG-1 (ENG-2) T/R Control Switch, S828 (S829).
- (e) Re-connect the electrical connector D3052 (D3056) to the ENG-1 (ENG-2) CVM, M1173 (M1174) (Standard Engine Wiring and Equipment Check, AMM TASK 70-70-01-200-801-F00).
- (f) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

- (1) Do these steps:
 - (a) Make sure that the D3052 (D3056) connector is correctly connected at the ENG-1 (ENG-2) CVM.
 - (b) Make sure that the electrical connector D10171 (D10173) is correctly connected to the ENG-1 (ENG-2) T/R Control Switch, S828 (S829).
 - (c) Move the Reverse Thrust Lever 1 (2) FWD and DOWN to the RETRACT (stow) position.

**WARNING**

MAKE SURE THAT THERE ARE NO PERSONS OR EQUIPMENT IN THE AREA OF THE THRUST REVERSER. MOVEMENT OF THE THRUST REVERSER CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (d) Do this task: Thrust Reverser Activation After Ground Maintenance, AMM TASK 78-31-00-440-803-F00.
- (e) Do these steps to reset the T/R DEPLOY FAULTS Light.
 - 1) Move the Reverse Thrust Lever 1 (2) UP and AFT to EXTEND (deploy) the Thrust Reverser.
 - 2) Push and hold the FAULT RESET Button for a minimum of two seconds.
 - 3) Wait for at least 30 seconds.
 - 4) If the Fault Lights on the EAU are OFF, then you corrected the problem.

**WARNING**

DO THE DEACTIVATION PROCEDURE TO PREVENT THE OPERATION OF THE THRUST REVERSER. THE ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

- 5) If the T/R does not deploy, deactivate the T/R (Thrust Reverser Deactivation For Ground Maintenance, AMM TASK 78-31-00-040-802-F00) and continue the Fault Isolation Procedure at the subsequent step.

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- a) Make sure that the Reverse Thrust Lever 1 (2) is UP and AFT in the EXTEND (deploy) position.



MAKE SURE THAT THERE ARE NO PERSONS OR EQUIPMENT IN THE AREA OF THE THRUST REVERSER. MOVEMENT OF THE THRUST REVERSER CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (2) After you correct the problem, do these steps:
- (a) Move the Reverse Thrust Lever 1 (2) FWD and DOWN to the RETRACT (stow) position.
 - (b) Operate the T/R through an EXTEND and RETRACT cycle.
 - (c) Make sure that the REVERSER Fault Light on the Flight Compartment Panel, P5 comes ON for approximately 10 seconds after the Reverse Thrust Lever is moved to the RETRACT (stow) position and then goes OFF.
 - (d) Wait for at least 30 seconds.
 - (e) Make sure that the REVERSER Fault Light on the Flight Compartment Panel, P5 stays OFF.
 - (f) Re-install the Aisle Stand, P8 Cover.

————— **END OF TASK** —————

807. T/R DEPLOY FAULTS - HYD ISO VALVE SENSOR and All SLEEVE STOW and SLEEVE LOCK SENSOR Messages - Fault Isolation

A. Description

- (1) This task is for this combination of Maintenance Messages:
- (a) For ENG-1:
 - 1) ENGINE 1 - S831 L SLEEVE STOW SENSOR
 - 2) ENGINE 1 - S835 L SLEEVE LOCK SENSOR
 - 3) ENGINE 1 - S833 HYD ISO VALVE SENSOR
 - 4) ENGINE 1 - S832 R SLEEVE STOW SENSOR
 - 5) ENGINE 1 - S836 R SLEEVE LOCK SENSOR.
 - (b) For ENG-2:
 - 1) ENGINE 2 - S831 L SLEEVE STOW SENSOR
 - 2) ENGINE 2 - S835 L SLEEVE LOCK SENSOR
 - 3) ENGINE 2 - S830 HYD ISO VALVE SENSOR
 - 4) ENGINE 2 - S832 R SLEEVE STOW SENSOR
 - 5) ENGINE 2 - S836 R SLEEVE LOCK SENSOR.
- (2) This combination of Fault Lights indicates that the Sync Locks did UNLOCK and the DCV did go to the deploy position. The Isolation Valve did not OPEN and the Locking Actuators did not UNLOCK.
- (3) The T/R did not deploy.

B. Possible Causes

- (1) ENG-1 (ENG-2) CVM, M1173 (M1174)

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SIA ALL; AUTOTHROTTLE SWITCHPACK WITH REPLACEABLE SWITCHES P/N 254A1150-1, -2, -7, -8, -9, -10

- (2) T/R 1 (2) Arm Switch, S5

NOTE: The T/R 1 (2) Arm Switch, S5, is installed on the L (R) Autothrottle Switchpack, M1766 (M1767).

SIA ALL; AUTOTHROTTLE SWITCHPACK WITH INTEGRATED SWITCHES P/N 254A1150-11, -12, -13, -14, -15, -16

- (3) T/R 1 (2) Autothrottle Switchpack Assembly, M1766 (M1767)

SIA ALL

- (4) Wiring

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	4	C01003	ENGINE 1 THRUST REVERSER IND
B	5	C00276	ENGINE 1 THRUST REVERSER CONT
B	6	C01412	ENGINE 1 THRUST REVERSER INTLK
B	7	C01266	ENGINE 1 THRUST REVERSER SYNC LOCK

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	5	C01267	ENGINE 2 THRUST REVERSER SYNC LOCK
C	6	C01413	ENGINE 2 THRUST REVERSER INTLK
C	7	C00277	ENGINE 2 THRUST REVERSER CONT
C	8	C01004	ENGINE 2 THRUST REVERSER IND

D. Related Data

- (1) Component Location (78-32 TASK SUPPORT Figure 301, 78-32 TASK SUPPORT Figure 308)
- (2) Simplified Schematic (78-32 TASK SUPPORT Figure 302, 78-32 TASK SUPPORT Figure 303)
- (3) WDM 78-34-11
- (4) WDM 78-34-21
- (5) SSM 78-34-11
- (6) SSM 78-34-21

E. Initial Evaluation

- (1) Do the Engine Accessory Unit (EAU) BITE Procedure, 78-31 TASK 801 to show the current Maintenance Messages.

F. Fault Isolation Procedure



DO THE DEACTIVATION PROCEDURE TO PREVENT THE OPERATION OF THE THRUST REVERSER. THE ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

- (1) Do this task: Thrust Reverser Deactivation For Ground Maintenance, AMM TASK 78-31-00-040-802-F00.

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- (a) Move the Reverse Thrust Lever 1 (2) UP and AFT to the EXTEND (deploy) position.
- (2) Visually examine the ENG-1 (ENG-2) Electrical Connector, D3052 (D3056) at the ENG-1 (ENG-2) CVM, M1173 (M1174) as follows (WDM 78-34-11, WDM 78-34-21):

NOTE: The CVM is in the Main Gear Wheel Well on the Keel Beam. The ENG-1 CVM, M1173 is on the Left Side and the ENG-2 CVM, M1174 is on the Right Side.

- (a) Disconnect the Electrical Connector, D3052 (D3056) from the ENG-1 (ENG-2) CVM, M1173 (M1174).
- (b) Visually examine the ENG-1 (ENG-2) CVM Receptacle and Wire Harness Connector (AMM TASK 70-70-01-200-801-F00).
- 1) If the Receptacle at the CVM is damaged, then replace the ENG-1 (ENG-2) CVM, M1173 (M1174). These are the tasks:
 - Control Valve Module Removal, AMM TASK 78-34-01-000-801-F00
 - Control Valve Module Installation, AMM TASK 78-34-01-400-801-F00
 - a) Do the Repair Confirmation at the end of this task.
 - 2) If the Wire Harness Connector is damaged, then do the applicable tasks to repair or replace the connector, D3052 (D3056) (SWPM Ch 20).
 - a) Do the Repair Confirmation at the end of this task.
 - 3) If you do not find a problem, then re-connect the connector, D3052 (D3056) and continue.
- (3) Remove the safety locks and close the applicable circuit breaker(s):

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	5	C00276	ENGINE 1 THRUST REVERSER CONT
B	7	C01266	ENGINE 1 THRUST REVERSER SYNC LOCK

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	5	C01267	ENGINE 2 THRUST REVERSER SYNC LOCK
C	7	C00277	ENGINE 2 THRUST REVERSER CONT

- (4) Do a Voltage check at the applicable ENG-1 (ENG-2) Electrical Connector, D3052 (D3056), as follows (WDM 78-34-11, WDM 78-34-21):

	CVM	CVM	
ENG-1	D3052	D3052	VOLTAGE
	pin 2	pin 7 (GND)	28V DC
ENG-2	D3056	D3056	VOLTAGE
	pin 2	pin 7 (GND)	28V DC

- (a) If you find 28V DC, then replace the ENG-1 (ENG-2) CVM, M1173 (M1174). These are the tasks:
- Control Valve Module Removal, AMM TASK 78-34-01-000-801-F00
 - Control Valve Module Installation, AMM TASK 78-34-01-400-801-F00
 - 1) Do the Repair Confirmation at the end of this task.

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- (b) If you do not find 28V DC, then continue.
- (5) If necessary, remove the safety locks and close the applicable circuit breaker(s):

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	5	C00276	ENGINE 1 THRUST REVERSER CONT

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	7	C00277	ENGINE 2 THRUST REVERSER CONT

- (6) Do a check for 28V DC from connector D3052 (D3056), pin 2 to Structure Ground (WDM 78-34-11, WDM 78-34-21).

ENG-1	CVM		
	D3052		VOLTAGE
	pin 2	 GND	28V DC
ENG-2	D3056		VOLTAGE
	pin 2	 GND	28V DC

- (a) If you do not find 28V DC, then do these steps:
- 1) Open the applicable circuit breaker(s) and install safety tags:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	5	C00276	ENGINE 1 THRUST REVERSER CONT

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	7	C00277	ENGINE 2 THRUST REVERSER CONT

- 2) Examine and repair or replace the wiring between the ENG-1 (ENG-2) CVM, connector D3052 (D3056), pin 2 and the ENG-1 (ENG-2) Terminal Block TB3201, pin YA29 (pin YB29) (SWPM Ch 20).

NOTE: The Terminal Block, TB3201 is in the Electronic Equipment Compartment on the E3-2 Shelf.

- a) Do the Repair Confirmation at the end of this task.
- (b) If you find 28V DC, then do these steps and continue:
- 1) Open the applicable circuit breaker(s) and install safety tags:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	5	C00276	ENGINE 1 THRUST REVERSER CONT

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	7	C00277	ENGINE 2 THRUST REVERSER CONT

- 2) Re-connect the ENG-1 (ENG-2) Electrical Connector, D3052 (D3056).

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- (7) Visually examine the ENG-1 (ENG-2) Electrical Connector, D11130 (D11134) at the T/R 1 (2) Autothrottle Switchpack, M1766 (M1767), as follows (WDM 78-34-11, WDM 78-34-21):

NOTE: The Arm Switch, S5, is installed on the T/R 1 (2) Autothrottle Switchpack, M1766 (M1767).

- (a) To get access to the connectors, remove the access cover from the Left Side of the Overhead in the Nose Gear Wheel Well.
 - (b) Disconnect the Electrical Connector, D11130 (D11134) from the T/R 1 (2) Autothrottle Switchpack, M1766 (M1767).
 - (c) Visually examine the Electrical Connector (AMM TASK 70-70-01-200-801-F00).
 - 1) If the Electrical Connector is damaged, do the applicable tasks to repair or replace the connector, D11130 (D11134) (SWPM Ch 20).
 - a) Do the Repair Confirmation at the end of this task.
 - 2) If you do not find a problem, then re-connect the connector, D11130 (D11134) and continue.
- (8) Do an electrical check of the T/R 1 (2) Arm Switch, S5, which is installed on the T/R 1 (2) Autothrottle Switchpack, M1766 (M1767), as follows (WDM 78-34-11, WDM 78-34-21):
- NOTE:** An Arm Switch with dirty contacts can cause intermittent problems. Sometimes, a continuity check through the Arm Switch is not a satisfactory check. Therefore, you can also use the alternate Load Light method to troubleshoot a defective Arm Switch.

- (a) Method 1 - Continuity Check:

T/R-1 ARM SWITCH

L A/T Switchpack Receptacle	L A/T Switchpack Receptacle	CONTINUITY
pin 7	pin 8	YES
pin 8	pin 9	NO

T/R-2 ARM SWITCH

R A/T Switchpack Receptacle	R A/T Switchpack Receptacle	CONTINUITY
pin 7	pin 8	YES
pin 8	pin 9	NO

- (b) Alternate Method 2 - Load Light:
- 1) Remove connector D11130 (D11134).
 - a) Install a jumper between the connector D11130 (D11134), pin 8 and the ENG-1 (ENG-2) Autothrottle Switchpack Receptacle, pin 8.
 - 2) Remove the safety tag and close the applicable circuit breaker(s):

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
B	5	C00276	ENGINE 1 THRUST REVERSER CONT

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F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	7	C00277	ENGINE 2 THRUST REVERSER CONT

- 3) Install a Load Light (lamp, STD-12563) between the ENG-1 (ENG-2) Autothrottle Switchpack Receptacle, pin 7 and Airplane Ground.
 - a) Move the Reverse Thrust Lever 1 (2) to the EXTEND (deploy) position and monitor the Load Light as follows:
 - <1> With the Reverse Thrust Lever 1 (2) in the EXTEND (deploy) position, shake the Reverse Thrust Lever 1 (2) and make sure that the Load Light stays ON.
 - <a> If the Load Light is dim, flickering, or OFF, the T/R 1 (2) Arm Switch, S5, is malfunctioning.
- 4) Remove the Load Light (lamp, STD-12563) from pin 7 and install between the ENG-1 (ENG-2) Autothrottle Switchpack, Receptacle pin 9 and Airplane Ground.
 - a) Move the Reverse Thrust Lever 1 (2) to the RETRACT (stow) position and monitor the Load Light as follows:
 - <1> With the Reverse Thrust Lever 1 (2) in the RETRACT (stow) position, shake the Reverse Thrust Lever 1 (2) and make sure that the Load Light stays ON.
 - <a> If the Load Light is dim, flickering, or OFF, the T/R 1 (2) Arm Switch, S5, is malfunctioning.
- 5) Open the applicable circuit breaker(s) and install safety tag(s):

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	5	C00276	ENGINE 1 THRUST REVERSER CONT

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	7	C00277	ENGINE 2 THRUST REVERSER CONT

- (c) If the electrical check of the T/R 1 (2) Arm Switch, S5, shows that the Switch is malfunctioning, do these steps:

SIA ALL; AUTOTHROTTLE SWITCHPACK WITH REPLACEABLE SWITCHES P/N 254A1150-1, -2, -7, -8, -9, -10

- 1) Adjust the Arm Switch, S5, per the applicable steps in the Autothrottle Switchpack Switch Installation, AMM TASK 76-11-07-400-801-F00 .
 - a) Do the Repair Confirmation at the end of this task.
- 2) Replace the Arm Switch, S5. These are the tasks:
 - Autothrottle Switchpack Switch Removal, AMM TASK 76-11-07-020-801-F00
 - Autothrottle Switchpack Switch Installation, AMM TASK 76-11-07-400-801-F00
 - a) Do the Repair Confirmation at the end of this task.

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SIA ALL; AUTOTHROTTLE SWITCHPACK WITH INTEGRATED SWITCHES P/N 254A1150-11, -12, -13, -14, -15, -16

- 3) Replace the applicable ENG-1 (ENG-2) Autothrottle Switchpack Assembly, M1766 (M1767). These are the tasks:
 - Autothrottle Switchpack Assembly - Removal, AMM TASK 76-11-07-020-802-F00
 - Autothrottle Switchpack Assembly - Installation, AMM TASK 76-11-07-400-802-F00
- a) Do the Repair Confirmation at the end of this task.

SIA ALL

- (d) If the electrical check of the T/R 1 (2) Arm Switch, S5, shows that the Switch is not malfunctioning, then connect the Electrical Connector, D11130 (D11134) and continue.
NOTE: If you used the Load Light method, remove the jumper and the Load Light, then connect the Electrical Connector, D11130 (D11134) and continue.
- (e) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	5	C00276	ENGINE 1 THRUST REVERSER CONT

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	7	C00277	ENGINE 2 THRUST REVERSER CONT

- (9) Do a check for 28V DC from the Electrical Connector D11130 (D11134), pin 8 to Structure Ground (WDM 78-34-11, WDM 78-34-21).

T/R-1 ARM SWITCH

L A/T

Switchpack

D11130

pin 8 GND

VOLTAGE

28V DC

T/R-2 ARM SWITCH

R A/T

Switchpack

D11134

pin 8 GND

VOLTAGE

28V DC

- (a) If you find 28V DC, then do these steps:
 - 1) Open the applicable circuit breaker(s) and install safety tag(s):

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	5	C00276	ENGINE 1 THRUST REVERSER CONT

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	7	C00277	ENGINE 2 THRUST REVERSER CONT

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- 2) For ENG-1, examine and repair or replace the wiring between the Electrical Connector D11130, pin 7 and Terminal Block TB22, pin YB1.

NOTE: Terminal Block TB22, pin YB1 is in the J22 Junction Box.

- a) Do the Repair Confirmation at the end of this task.

- 3) For ENG-2, examine and repair or replace the wiring between the Electrical Connector D11134, pin 7 and Splice SM15.

NOTE: Splice SM15 is in the J24 Junction Box in the Nose Gear Wheel well on the Right Side.

- a) Do the Repair Confirmation at the end of this task.

- (b) If you do not find 28V DC, then open the applicable circuit breaker(s), install safety tag(s) and continue:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	5	C00276	ENGINE 1 THRUST REVERSER CONT

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	7	C00277	ENGINE 2 THRUST REVERSER CONT

- (c) Examine and repair the wiring between connector D11130 (D11134), pin 8 and the ENG-1 (ENG-2) CVM Connector D3052 (D3056), pin 7 (WDM 78-34-11, WDM 78-34-21).

- 1) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

- (1) Do these steps:

- Make sure that the ENG-1 (ENG-2) Connector, D3052 (D3056) at the ENG-1 (ENG-2) CVM, M1173 (M1174) is correctly connected.
- Make sure that the ENG-1 (ENG-2) Connector, D11130 (D11134) at the T/R 1 (2) Autothrottle Switchpack, M1766 (M1767) is correctly connected.
- Move the Reverse Thrust Lever 1 (2) FWD and DOWN to the RETRACT (stow) position.
- Do this task: Thrust Reverser Activation After Ground Maintenance, AMM TASK 78-31-00-440-803-F00.



WARNING

MAKE SURE THAT THERE ARE NO PERSONS OR EQUIPMENT IN THE AREA OF THE THRUST REVERSER. MOVEMENT OF THE THRUST REVERSER CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (e) Do these steps to reset the T/R DEPLOY FAULTS Light:
- Move the Reverse Thrust Lever 1 (2) UP and AFT to EXTEND (deploy) the T/R.
 - Push and hold the FAULT RESET button for a minimum of two seconds.
 - Wait for at least 30 seconds.
 - If the Fault Lights on the EAU are OFF, then you have corrected the problem.

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DO THE DEACTIVATION PROCEDURE TO PREVENT THE OPERATION OF THE THRUST REVERSER. THE ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

- 5) If the T/R does not deploy, deactivate the T/R (Thrust Reverser Deactivation For Ground Maintenance, AMM TASK 78-31-00-040-802-F00) and continue the Fault Isolation Procedure at the subsequent step.
 - a) Make sure that the Reverse Thrust Lever 1 (2) is UP and AFT in the EXTEND (deploy) position.



MAKE SURE THAT THERE ARE NO PERSONS OR EQUIPMENT IN THE AREA OF THE THRUST REVERSER. MOVEMENT OF THE THRUST REVERSER CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (2) If you have corrected the problem, do these steps to put the Airplane back to its usual condition:
 - (a) Move the Reverse Thrust Lever 1 (2) FWD and DOWN to the RETRACT (stow) position.
 - (b) Operate the T/R through an EXTEND and RETRACT cycle.
 - (c) Make sure that the REVERSER Fault Light on the Flight Compartment P5 Panel comes ON for approximately 10 seconds after the Reverse Thrust Lever is moved to the RETRACT (stow) position and then goes OFF.
 - (d) Wait for at least 30 seconds.
 - (e) Make sure that the REVERSER Fault Light on the Flight Compartment P5 Panel stays OFF.

————— **END OF TASK** —————

808. T/R STOW FAULTS - HYD ISO VALVE SENSOR and L SLEEVE LOCK SENSOR messages - Fault Isolation

A. Description

- (1) This task is for this combination of Maintenance Messages for ENG-1:
 - (a) ENGINE 1 - S835 L SLEEVE LOCK SENSOR
 - (b) ENGINE 1 - S833 HYD ISO VALVE SENSOR
- (2) This task is for this combination of Maintenance Messages for ENG-2:
 - (a) ENGINE 2 - S835 L SLEEVE LOCK SENSOR
 - (b) ENGINE 2 - S830 HYD ISO VALVE SENSOR
- (3) These Fault Lights indicate that the position of the Sleeve Lock Proximity Sensor (SLPS) on the Left T/R Sleeve does not agree with the commanded STOW position for the T/R and the Hydraulic Isolation Valve Sensor indicates that the AUTO RESTOW function is activated.

B. Possible Causes

- (1) Upper Locking Hydraulic Actuator (ULHA) Manual Lockout Handle
- (2) Wiring
- (3) SLPS Target

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- (4) ULHA
- (5) T/R Hydraulic Actuator
- (6) Left SLPS, S835
- (7) L (R) Engine T/R Sync Shafts
- (8) EAU, M528

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	4	C01003	ENGINE 1 THRUST REVERSER IND
B	5	C00276	ENGINE 1 THRUST REVERSER CONT
B	6	C01412	ENGINE 1 THRUST REVERSER INTLK
B	7	C01266	ENGINE 1 THRUST REVERSER SYNC LOCK

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	5	C01267	ENGINE 2 THRUST REVERSER SYNC LOCK
C	6	C01413	ENGINE 2 THRUST REVERSER INTLK
C	7	C00277	ENGINE 2 THRUST REVERSER CONT
C	8	C01004	ENGINE 2 THRUST REVERSER IND

D. Related Data

- (1) 78-32 TASK SUPPORT Figure 304
- (2) 78-32 TASK SUPPORT Figure 305
- (3) WDM 78-36-11
- (4) WDM 78-36-21
- (5) SSM 78-36-11
- (6) SSM 78-36-21

E. Initial Evaluation

- (1) Do the Engine Accessory Unit (EAU) BITE Procedure, 78-31 TASK 801 to show the current Maintenance Message(s).
 - (a) If the Maintenance Message(s) does not show, then there was an intermittent fault.
 - (b) If the Maintenance Message(s) does show, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure



KEEP PERSONNEL AND EQUIPMENT AWAY FROM THE AREA AROUND THE THRUST REVERSERS. THE THRUST REVERSERS EXTEND AND RETRACT QUICKLY. INJURIES TO PERSONNEL, AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (1) Do the T/R Upper Locking Actuator Integrity test. This is the task: Thrust Reverser Upper Locking Actuator - Integrity Test, AMM TASK 78-31-03-700-801-F00.
 - (a) If the thrust reverser sleeve starts to deploy, replace the ULHA. These are the tasks:
 - Upper Locking Hydraulic Actuator Removal, AMM TASK 78-31-03-000-801-F00

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- Upper Locking Hydraulic Actuator - Installation, AMM TASK 78-31-03-400-801-F00
 - 1) Do the Repair Confirmation at the end of this task.
- (b) If the actuator locks prevent actuator movement, then continue.
- (2) Operate the T/R through an EXTEND and RETRACT cycle while another person monitors the Lockout Handle on the ULHA. Make sure that the Manual Lockout Handle is not binding or broken.
 - (a) Do the Fan Cowl Panels opening. This is the task: Open the Fan Cowl Panels, AMM TASK 71-11-02-010-801-F00.
 - (b) If the Manual Lockout Handle is binding or broken, do these steps:
 - 1) If the Manual Lockout Handle is binding, examine and replace the shim as necessary.
NOTE: Make sure that the assembly gaps are satisfactory.
 - 2) If the Manual Lockout Handle is broken, replace it.
 - 3) Do the Repair Confirmation at the end of this task.
 - (c) If the Manual Lockout Handle is satisfactory, then continue.
- (3) Visually examine these Electrical harness connectors (WDM 78-36-11, WDM 78-36-21):
 - D30082 and D30084 (ENG-1) or D30182 and D30184 (ENG-2) at the Wing to Strut Seal AW0258L (AW0258R)
 - D39921 and D39923 (ENG-1) or D39922 and D39924 (ENG-2) at the Wing to Body Pressure Seal

**WARNING**

DO THE DEACTIVATION PROCEDURE TO PREVENT THE OPERATION OF THE THRUST REVERSER. THE ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

- (a) Do this task: Thrust Reverser Deactivation For Ground Maintenance, AMM TASK 78-31-00-040-802-F00.
- (b) Disconnect the connectors to make sure that the pins are clean and in good condition.
 - 1) If the connectors are not satisfactory, then repair or replace them as necessary (SWPM Chapter 20).
 - a) Re-connect the harness connectors
 - b) Do the Repair Confirmation at the end of this task.
 - 2) If the connectors are satisfactory, then continue.
- (4) Do a check of the Target for the Left SLPS, S835 to see if it is in the UNLOCKED position, out of adjustment, or bent:

NOTE: The SLPS and Target are on the ULHA on the Torque Box of the Left T/R. The Target is on the Manual Unlock Handle.

 - (a) Inspect the condition of the SLPS, S835.
 - 1) If the Target is out of adjustment, adjust the Target. This is the task: Sleeve Lock Proximity Sensor Adjustment and Test, AMM TASK 78-34-03-800-801-F00.
 - a) Do the Repair Confirmation at the end of this task.
 - (b) If the Target on the Manual Unlock Handle is in the UNLOCKED position, then continue.
- (5) Do this check of the Hydraulic Actuator Rod Ends:

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- (a) Remove the three access covers from the Left T/R Sleeve to get access to the Hydraulic Actuator Rod Ends.
 - For the ULHA, make sure that the distance between the Gland Nut and the Rod Stop is 0.007 in. (0.18 mm) to 0.033 in. (0.84 mm)
 - For the Middle and Lower Non-Locking Actuators, make sure that the distance between the Gland Nut and the Rod Stop is not more than 0.060 in. (1.524 mm)
 - 1) If the distance is not within the limits, then replace the applicable Actuator. These are the tasks:
 - Thrust Reverser Hydraulic Actuator Removal (Selection), AMM TASK 78-31-03-000-804-F00
 - Thrust Reverser Hydraulic Actuator Installation (Selection), AMM TASK 78-31-03-400-804-F00
 - a) Do the Repair Confirmation at the end of this task.
 - 2) If the distance is in the limits, then re-install the covers and continue.
- (6) Do a check for unwanted material in the Track that will not permit the Left T/R to go to the fully RETRACTED (stowed) position:
 - (a) Do the Thrust Reverser Operation - Extend (Manual Procedure), AMM TASK 78-31-00-980-803-F00.
 - (b) Examine the Tracks and Sliders for unwanted material.
 - 1) If there is unwanted material, then clean the Tracks and Sliders.

**WARNING**

MAKE SURE THAT THERE ARE NO PERSONS OR EQUIPMENT IN THE AREA OF THE THRUST REVERSER. MOVEMENT OF THE THRUST REVERSER CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- a) Do the Thrust Reverser Operation - Retract (Power Procedure), AMM TASK 78-31-00-980-806-F00.
 - b) If the Manual Lockout Handle is in the UNLOCKED position, then replace the ULHA. These are the tasks:
 - Upper Locking Hydraulic Actuator Removal, AMM TASK 78-31-03-000-801-F00
 - Upper Locking Hydraulic Actuator - Installation, AMM TASK 78-31-03-400-801-F00
 - <1> Do the Repair Confirmation at the end of this task.
 - c) If the Manual Lockout Handle goes to the LOCKED position, then do the Repair Confirmation at the end of this task.
- 2) If there is no unwanted material in the Tracks or on the Sliders, do this step then continue.
 - a) Do the Thrust Reverser Operation - Retract (Power Procedure), AMM TASK 78-31-00-980-806-F00.

- (7) Examine the wiring of the ENG-1 (ENG-2) Left SLPS, S835 as follows (WDM 78-36-11, WDM 78-36-21):
 - (a) Disconnect the ENG-1 (ENG-2) Left SLPS connector, D30008 from the Strut receptacle, D30208 (D30408) at the T/R FIREWALL AS0002 (AS0002R).

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- (b) Visually examine the Strut receptacle and the SLPS connector for damage.
- 1) If the strut receptacle or the SLPS connector is damaged, do the applicable tasks to repair or replace the connector(s) as necessary (SWPM Ch 20).
 - a) Re-connect the connectors.
 - b) Do the Repair Confirmation at the end of this task.
 - 2) If the connectors are satisfactory, then continue.
- (c) Measure and record the SLPS Resistance between the pins indicated below:
- NOTE: The difference between the two Resistance measurements should be $\leq 2 \Omega$.

L SLPS		L SLPS	
D30008		D30008	Resistance
pin 1	.....	pin 4	Value in Ω
pin 1	.....	pin 5	Value in Ω

- (d) Do these wiring checks for an open circuit:

L SLPS	
D30008	
pin 1	 GND
pin 4	 GND
pin 5	 GND

- 1) If the wiring checks above are not satisfactory, then replace the ENG-1 (ENG-2) Left SLPS, S835. These are the tasks:
 - Thrust Reverser Sleeve Lock Proximity Sensor - Removal, AMM TASK 78-34-03-000-801-F00
 - Thrust Reverser Sleeve Lock Proximity Sensor - Installation, AMM TASK 78-34-03-400-801-F00
 - a) Do the Repair Confirmation at the end of this task.
 - 2) If the wiring checks above are satisfactory, then continue.
- (8) Examine the ENG-1 (ENG-2) wire harness and connectors between the EAU, M528 and the ENG-1 (ENG-2) Left SLPS, S835 (WDM 78-36-11, WDM 78-36-21).
- (a) Remove the EAU, M528. This is the task: Engine Accessory Unit Removal, AMM TASK 78-34-06-000-801-F00.
 - (b) Visually examine the ENG-1 (ENG-2) wire harness connector, D1458A (D1458B) and the EAU receptacle (Standard Engine Wiring and Equipment Check, AMM TASK 70-70-01-200-801-F00).
 - 1) If the EAU receptacle is damaged, then do these steps:
 - a) Replace the EAU, M528. This is the task: Engine Accessory Unit Installation, AMM TASK 78-34-06-400-801-F00.
 - b) Do the Repair Confirmation at the end of this task.
 - 2) If the ENG-1 (ENG-2) wire harness or connector is damaged, do these steps:
 - a) Do the applicable tasks to repair or replace the connector and/or wire harness as necessary (SWPM Ch 20).
 - b) Do the Repair Confirmation at the end of this task.

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- 3) If the EAU receptacle and the ENG-1 (ENG-2) wire harness connectors are satisfactory, then continue.
- (9) Do the following wiring checks (WDM 78-36-11, WDM 78-36-21):
- (a) Disconnect the ENG-1 (ENG-2) SLPS connector, D30008, from the Strut receptacle D30208 (D30408).
 - (b) Do a continuity check between the EAU receptacle D1458A (D1458B) and the ENG-1 (ENG-2) Left T/R Sleeve Strut receptacle D30208 (D30408), as follows:

ENG-1 Wire Harness

EAU	T/R FIREWALL
D1458A	AS0002
	D30208
pin 27	pin 5
pin 28	pin 4
GND	pin 1

ENG-2 Wire Harness

EAU	T/R FIREWALL
D1458B	AS0002R
	D30408
pin 27	pin 5
pin 28	pin 4
GND	pin 1

- (c) Do these wiring checks at the EAU receptacle D1458A (D1458B) to verify an open circuit:

ENG-1 Wire Harness

EAU	EAU
D1458A	D1458A
pin 27	pin 28

EAU	
D1458A	
pin 27	GND
pin 28	GND

ENG-2 Wire Harness

EAU	EAU
D1458B	D1458B
pin 27	pin 28

EAU	
D1458B	
pin 27	GND
pin 28	GND

- (d) Repair the problems that you find (SWPM Ch 20).
- 1) Do the Repair Confirmation at the end of this task.

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- (e) If the wiring checks are satisfactory, then continue.
- (10) Examine the Upper and Lower Sync Shafts for the applicable L (R) Engine T/R. This is the task: Sync Shaft - Inspection/Check, AMM TASK 78-31-04-200-801-F00.
 - (a) If necessary, replace the applicable Sync Shaft. These are the tasks:
 - Sync Shaft Removal, AMM TASK 78-31-04-000-801-F00
 - Sync Shaft Installation, AMM TASK 78-31-04-400-801-F00
 - (b) Do the Repair Confirmation at the end of this task.
- (11) Replace the EAU, M528. These are the tasks:
 - Engine Accessory Unit Removal, AMM TASK 78-34-06-000-801-F00
 - Engine Accessory Unit Installation, AMM TASK 78-34-06-400-801-F00
- (a) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

- (1) Do these steps:
 - (a) Make sure that the ENG-1 (ENG-2) Left SLPS connector, D30008, is connected to the Strut receptacle, D30208 (D30408).
 - (b) Make sure that all connectors that were disconnected to do an electrical check between the Strut receptacle and the EAU are correctly connected.
 - (c) If the EAU, M528, is not installed, do this task: Engine Accessory Unit Installation, AMM TASK 78-34-06-400-801-F00.



WARNING

KEEP PERSONNEL AND EQUIPMENT AWAY FROM THE AREA AROUND THE THRUST REVERSERS. THE THRUST REVERSERS EXTEND AND RETRACT QUICKLY. INJURIES TO PERSONNEL, AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (d) If the T/R is deactivated, activate the T/R. This is the task: Thrust Reverser Activation After Ground Maintenance, AMM TASK 78-31-00-440-803-F00.
- (e) Do these steps to reset the T/R STOW FAULTS Light:
 - 1) Push and hold the FAULT RESET button for a minimum of two seconds.
 - 2) Operate the Thrust Reverser through an EXTEND and RETRACT cycle.
 - 3) Wait for at least 30 seconds.
 - 4) If the S835 L SLEEVE STOW SENSOR and S833 (S830) HYD ISO VALVE SENSOR Fault Lights on the EAU are ON, continue the Fault Isolation Procedure at the subsequent step.
 - 5) If the S835 L SLEEVE STOW SENSOR and S833 (S830) HYD ISO VALVE SENSOR Fault Lights on the EAU are OFF, then have you corrected the problem.
- (2) After you correct the problem, do these steps to put the airplane back to its usual condition:



WARNING

KEEP PERSONNEL AND EQUIPMENT AWAY FROM THE AREA AROUND THE THRUST REVERSERS. THE THRUST REVERSERS EXTEND AND RETRACT QUICKLY. INJURIES TO PERSONNEL, AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (a) Move the Reverse Thrust Lever 1 (Lever 2) FORWARD and DOWN to the RETRACT (stow) position.

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- (b) Operate the T/R through an EXTEND and RETRACT cycle.
 - (c) Make sure that the REVERSER Fault Light on the Flight Compartment Panel, P5, turns ON for approximately 10 seconds after the Reverse Thrust Lever 1 (Lever 2) is moved to the RETRACT (stow) position and then goes OFF.
 - (d) Wait for at least 30 seconds.
 - (e) Make sure that the REVERSER Fault Light on the Flight Compartment Panel, P5, stays OFF.
- (3) Do the EEC Test. This is the task: EEC TEST, AMM TASK 73-21-00-700-804-F00.
- NOTE: This check will make sure that the Electrical Connections for the Linear Variable Differential Transformer (LVDT) are correct.
- (a) If a Maintenance Message shows, do the applicable Fault Isolation Procedure for that Maintenance Message.
 - (b) If no Maintenance Messages show, the Electrical Connections for the LVDT are correct.
- (4) Close the Fan Cowl Panels. This is the task: Close the Fan Cowl Panels, AMM TASK 71-11-02-410-801-F00.

————— **END OF TASK** —————

809. T/R STOW FAULTS - HYD ISO VALVE SENSOR and R SLEEVE LOCK SENSOR messages - Fault Isolation

A. Description

- (1) This task is for this combination of Maintenance Messages for Engine 1:
 - (a) ENGINE 1 - S836 R SLEEVE LOCK SENSOR
 - (b) ENGINE 1 - S833 HYD ISO VALVE SENSOR
- (2) This task is for this combination of Maintenance Messages for Engine 2:
 - (a) ENGINE 2 - S836 R SLEEVE LOCK SENSOR
 - (b) ENGINE 2 - S830 HYD ISO VALVE SENSOR
- (3) These Fault Lights indicate that the position of the SLPS on the Right T/R Sleeve does not agree with the commanded STOW position for the T/R and the Hydraulic Isolation Valve Sensor indicates that the AUTO RESTOW function is activated.

B. Possible Causes

- (1) ULHA Manual Lockout Handle
- (2) Wiring
- (3) SLPS Target
- (4) ULHA
- (5) T/R Hydraulic Actuator
- (6) SLPS, S836
- (7) L (R) Engine T/R Sync Shafts
- (8) EAU, M528

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C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
B	4	C01003	ENGINE 1 THRUST REVERSER IND
B	5	C00276	ENGINE 1 THRUST REVERSER CONT
B	6	C01412	ENGINE 1 THRUST REVERSER INTLK
B	7	C01266	ENGINE 1 THRUST REVERSER SYNC LOCK

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
C	5	C01267	ENGINE 2 THRUST REVERSER SYNC LOCK
C	6	C01413	ENGINE 2 THRUST REVERSER INTLK
C	7	C00277	ENGINE 2 THRUST REVERSER CONT
C	8	C01004	ENGINE 2 THRUST REVERSER IND

D. Related Data

- (1) 78-32 TASK SUPPORT Figure 304
- (2) 78-32 TASK SUPPORT Figure 305
- (3) WDM 78-36-11
- (4) WDM 78-36-21
- (5) SSM 78-36-11
- (6) SSM 78-36-21

E. Initial Evaluation

- (1) Do the Engine Accessory Unit (EAU) BITE Procedure, 78-31 TASK 801 to show the current Maintenance Message(s).
 - (a) If the Maintenance Message(s) does not show, then there was an intermittent fault.
 - (b) If the Maintenance Message(s) does show, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure



KEEP PERSONNEL AND EQUIPMENT AWAY FROM THE AREA AROUND THE THRUST REVERSERS. THE THRUST REVERSERS EXTEND AND RETRACT QUICKLY. INJURIES TO PERSONNEL, AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (1) Do this task: Open the Fan Cowl Panels, AMM TASK 71-11-02-010-801-F00.
- (2) Operate the T/R through an EXTEND and RETRACT cycle while another person monitors the Manual Lockout Handle on the ULHA. Make sure that the Manual Lockout Handle is not binding or broken
 - (a) If the Manual Lockout Handle is binding or broken, then do these steps:
 - 1) If the Manual Lockout Handle is binding, examine and replace the shim as necessary.

NOTE: Make sure that the assembly gaps are satisfactory (Manual Unlock Handle Assembly Replacement, AMM TASK 78-31-03-300-804-F00).

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- 2) If the Manual Lockout Handle is broken, replace it. This is the task: Manual Unlock Handle Assembly Replacement, AMM TASK 78-31-03-300-804-F00.
- 3) Do the Repair Confirmation at the end of this task.
- (b) If the Manual Lockout Handle is satisfactory, then continue.



DO THE DEACTIVATION PROCEDURE TO PREVENT THE OPERATION OF THE THRUST REVERSER. THE ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

- (3) Do this task: Thrust Reverser Deactivation For Ground Maintenance, AMM TASK 78-31-00-040-802-F00.
- (4) Visually examine these Wire Harness Connectors (WDM 78-36-11, WDM 78-36-21):
 - D30082 and D30084 (ENG-1) or D30182 and D30184 (ENG-2) at the Wing to Strut Seal AW0258L (AW0258R).
 - D39921 and D39923 (ENG-1) or D39922 and D39924 (ENG-2) at the Wing to Body Pressure Seal AC0520 (AD0520).
 - (a) Disconnect the connectors to make sure that the pins are clean and in good condition.
 - 1) If the connectors are not satisfactory, then repair or replace them as necessary (SWPM Chapter 20).
 - a) Re-connect the Harness Connectors.
 - b) Do the Repair Confirmation at the end of this task.
 - 2) If the connectors are satisfactory, then continue.
- (5) Do a check of the Target for Right SLPS to see if it is in the UNLOCKED position, out of adjustment, or bent:

NOTE: The SLPS and Target are on the ULHA on the Torque Box of the Right T/R. The Target is on the Manual Unlock Handle.

 - (a) Inspect the condition of the SLPS.
 - 1) If the Target is out of adjustment, adjust the Target. This is the task: Sleeve Lock Proximity Sensor Adjustment and Test, AMM TASK 78-34-03-800-801-F00.
 - a) Do the Repair Confirmation at the end of this task.
 - (b) If the Target on the Manual Unlock Handle is in the UNLOCKED position, then continue.
- (6) Do this task: Thrust Reverser Upper Locking Actuator - Integrity Test, AMM TASK 78-31-03-700-801-F00.
 - (a) If the thrust reverser sleeve starts to deploy, replace the ULHA. These are the tasks:
 - Upper Locking Hydraulic Actuator Removal, AMM TASK 78-31-03-000-801-F00
 - Upper Locking Hydraulic Actuator - Installation, AMM TASK 78-31-03-400-801-F00
 - 1) Do the Repair Confirmation at the end of this task.
 - (b) If the actuator locks prevent actuator movement, then continue.
- (7) Do this check of the Hydraulic Actuator Rod Ends:
 - (a) Remove the three access covers from the Right T/R Sleeve to get access to the Hydraulic Actuator Rod Ends.
 - For the ULHA, make sure that the distance between the Gland Nut and the Rod Stop is 0.007 in. (0.18 mm) to 0.033 in. (0.84 mm)

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- For the Middle and Lower Non-Locking Actuators, make sure that the distance between the Gland Nut and the Rod Stop is not more than 0.060 in. (1.524 mm)
- 1) If the distance is not in the limits, then replace the applicable Actuator. These are the tasks:
 - Thrust Reverser Hydraulic Actuator Removal (Selection), AMM TASK 78-31-03-000-804-F00
 - Thrust Reverser Hydraulic Actuator Installation (Selection), AMM TASK 78-31-03-400-804-F00
 - a) Do the Repair Confirmation at the end of this task.
- 2) If the distance is in the limits, then re-install the covers and continue.
- (8) Do a check for unwanted material in the Track that will not permit the Right T/R to go to the fully RETRACTED (stowed) position:
 - (a) Do this task: Thrust Reverser Operation - Extend (Manual Procedure), AMM TASK 78-31-00-980-803-F00.
 - (b) Examine the Tracks and Sliders for unwanted material.
 - 1) If there is unwanted material, then clean the Tracks and Sliders.

**WARNING**

KEEP PERSONNEL AND EQUIPMENT AWAY FROM THE AREA AROUND THE THRUST REVERSERS. THE THRUST REVERSERS EXTEND AND RETRACT QUICKLY. INJURIES TO PERSONNEL, AND DAMAGE TO EQUIPMENT CAN OCCUR.

- a) Do this task: Thrust Reverser Operation - Retract (Power Procedure), AMM TASK 78-31-00-980-806-F00.
 - <1> If the Manual Lockout Handle is in the UNLOCKED position, then replace the ULHA. These are the tasks:
 - Upper Locking Hydraulic Actuator Removal, AMM TASK 78-31-03-000-801-F00
 - Upper Locking Hydraulic Actuator - Installation, AMM TASK 78-31-03-400-801-F00
 - <a> Do the Repair Confirmation at the end of this task.
 - <2> If the Manual Lockout Handle goes to the LOCKED position, then do the Repair Confirmation at the end of this task.
- 2) If there is no unwanted material in the Tracks or on the Sliders, then continue.
 - a) Do this task: Thrust Reverser Operation - Retract (Power Procedure), AMM TASK 78-31-00-980-806-F00.
- (9) Examine the wiring of the ENG-1 (ENG-2) Right SLPS as follows (WDM 78-36-11, WDM 78-36-21):
 - (a) Disconnect the ENG-1 (ENG-2) Right SLPS Connector D30010 from the Strut Receptacle D30210 (D30410) at the T/R FIREWALL AS0003 (AS0003R).
 - (b) Visually examine the Strut Receptacle and the SLPS Connector for damage.
 - 1) If the Strut Receptacle or the SLPS Connector(s) are damaged, do the applicable tasks to repair or replace the Connector(s), as necessary (SWPM Ch 20).
 - a) Re-connect the Connectors.
 - b) Do the Repair Confirmation at the end of this task.

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2) If the Connectors are satisfactory, then continue.

(c) Measure and record the SLPS Resistance between the pins indicated below:

NOTE: The difference between the two Resistance measurements should be $\leq 2 \Omega$.

R SLPS	R SLPS	Resistance
D30010	D30010	
pin 1	pin 4	Value in Ohms
pin 1	pin 5	Value in Ohms

(d) Do these wiring checks for an open circuit:

R SLPS	
D30010	
pin 1	GND
pin 4	GND
pin 5	GND

1) If the wiring checks above are not satisfactory, then replace the ENG-1 (ENG-2) Right SLPS, S836. These are the tasks:

- Thrust Reverser Sleeve Lock Proximity Sensor - Removal, AMM TASK 78-34-03-000-801-F00
- Thrust Reverser Sleeve Lock Proximity Sensor - Installation, AMM TASK 78-34-03-400-801-F00

a) Do the Repair Confirmation at the end of this task.

2) If the wiring checks above are satisfactory, then continue.

(10) Examine the ENG-1 (ENG-2) Wire Harness and Connectors between the EAU, M528 and the ENG-1 (ENG-2) Right SLPS, S836 (WDM 78-36-11, WDM 78-36-21).

(a) Remove the EAU, M528. This is the task: Engine Accessory Unit Removal, AMM TASK 78-34-06-000-801-F00.

(b) Visually examine the ENG-1 (ENG-2) Wire Harness Connector, D1458A (D1458B) and the EAU Receptacle (Standard Engine Wiring and Equipment Check, AMM TASK 70-70-01-200-801-F00).

1) If the EAU Receptacle is damaged, then replace the EAU, M528. This is the task: Engine Accessory Unit Installation, AMM TASK 78-34-06-400-801-F00.

a) Do the Repair Confirmation at the end of this task.

2) If the ENG-1 (ENG-2) Wire Harness or Connector is damaged, do the applicable tasks to repair or replace the Connector and/or Wire Harness as necessary (SWPM Ch 20).

a) Do the Repair Confirmation at the end of this task.

3) If the EAU Receptacle and the ENG-1 (ENG-2) Wire Harness Connectors are satisfactory, then continue.

(11) Do the wiring checks that follow (WDM 78-36-11, WDM 78-36-21):

(a) Disconnect the ENG-1 (ENG-2) SLPS Connector, D30010, from the Strut Receptacle, D30210 (D30410).

(b) Do a continuity check between the EAU Receptacle D1458A (D1458B) and the ENG-1 (ENG-2) Right T/R Sleeve Strut Receptacle D30210 (D30410) as follows:

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ENG-1 Wire Harness

EAU	T/R FIREWALL
D1458A	AS0003
	D30210
pin 39	pin 5
pin 40	pin 4
GND	pin 1

ENG-2 Wire Harness

EAU	T/R FIREWALL
D1458B	AS0003R
	D30410
pin 39	pin 5
pin 40	pin 4
GND	pin 1

- (c) Do these wiring checks at the EAU Receptacle D1458A (D1458B) to verify an open circuit:

ENG-1 Wire Harness

EAU	EAU
D1458A	D1458A
pin 39	pin 40

EAU	
D1458A	
pin 39	GND
pin 40	GND

ENG-2 Wire Harness

EAU	EAU
D1458B	D1458B
pin 39	pin 40

EAU	
D1458B	
pin 39	GND
pin 40	GND

- (d) Repair the problems that you find (SWPM Ch 20).
- 1) Do the Repair Confirmation at the end of this task.
- (e) If the wiring checks are satisfactory, then continue.
- (12) Examine the Upper and Lower Sync Shafts for the applicable L (R) Engine T/R. This is the task: Sync Shaft - Inspection/Check, AMM TASK 78-31-04-200-801-F00.
- (a) If necessary, replace the applicable Sync Shaft. These are the tasks:
- Sync Shaft Removal, AMM TASK 78-31-04-000-801-F00

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- Sync Shaft Installation, AMM TASK 78-31-04-400-801-F00
- (b) Do the Repair Confirmation at the end of this task.
- (13) Replace the EAU, M528. These are the tasks:
 - Engine Accessory Unit Removal, AMM TASK 78-34-06-000-801-F00
 - Engine Accessory Unit Installation, AMM TASK 78-34-06-400-801-F00
- (a) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

- (1) Do these steps:
 - (a) Make sure that the ENG-1 (ENG-2) Right SLPS Connector, D30010, is connected to the Strut Receptacle, D30210 (D30410).
 - (b) Make sure that all connectors that were disconnected to do an electrical check between the Strut Receptacle and the EAU are correctly connected.
 - (c) If the EAU, M528, is not installed, do this task: Engine Accessory Unit Installation, AMM TASK 78-34-06-400-801-F00.



KEEP PERSONNEL AND EQUIPMENT AWAY FROM THE AREA AROUND THE THRUST REVERSERS. THE THRUST REVERSERS EXTEND AND RETRACT QUICKLY. INJURIES TO PERSONNEL, AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (d) If the T/R is deactivated, activate the T/R. This is the task: Thrust Reverser Activation After Ground Maintenance, AMM TASK 78-31-00-440-803-F00.
- (e) Do these steps to reset the T/R STOW FAULTS Light:
 - 1) Push and hold the FAULT RESET button for a minimum of two seconds.
 - 2) Operate the Thrust Reverser through an EXTEND and RETRACT cycle.
 - 3) Wait for at least 30 seconds.
 - 4) If the S835 L SLEEVE STOW SENSOR and S833 (S830) HYD ISO VALVE SENSOR Fault Lights on the EAU are ON, continue the Fault Isolation Procedure at the subsequent step.
 - 5) If the S835 L SLEEVE STOW SENSOR and S833 (S830) HYD ISO VALVE SENSOR Fault Lights on the EAU are OFF, then you have corrected the problem.
- (2) After you correct the problem, do these steps to put the airplane back to its usual condition:



KEEP PERSONNEL AND EQUIPMENT AWAY FROM THE AREA AROUND THE THRUST REVERSERS. THE THRUST REVERSERS EXTEND AND RETRACT QUICKLY. INJURIES TO PERSONNEL, AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (a) Move the Reverse Thrust Lever 1 (Lever 2) forward and down to RETRACT (stow) position.
- (b) Operate the T/R through an EXTEND and RETRACT cycle.
- (c) Make sure that the REVERSER Fault Light on the PLT OVHD PNL, P5, comes ON for approximately 10 seconds after the Reverse Thrust Lever 1 (Lever 2) is moved to the RETRACT (stow) position and then goes OFF.
- (d) Wait for at least 30 seconds.

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- (e) Make sure that the REVERSER Fault Light on the PLT OVHD PNL, P5, stays OFF.
- (3) Do this task: EEC TEST, AMM TASK 73-21-00-700-804-F00.
NOTE: This check will make sure that the electrical connections for the LVDTs are correct.
 - (a) If a maintenance message shows, do the applicable Fault Isolation Procedure for that Maintenance Message.
 - (b) If no Maintenance Messages show, the Electrical Connections for the LVDTs are correct.
- (4) Do this task: Close the Fan Cowl Panels, AMM TASK 71-11-02-410-801-F00.

———— **END OF TASK** ————

810. T/R STOW FAULTS - HYD ISO VALVE SENSOR and L SLEEVE STOW SENSOR messages - Fault Isolation

A. Description

- (1) This task is for this combination of maintenance messages for Engine 1:
 - (a) ENGINE 1 - S831 L SLEEVE STOW SENSOR
 - (b) ENGINE 1 - S833 HYD ISO VALVE SENSOR
- (2) This task is for this combination of maintenance messages for Engine 2:
 - (a) ENGINE 2 - S831 L SLEEVE STOW SENSOR
 - (b) ENGINE 2 - S830 HYD ISO VALVE SENSOR
- (3) These fault lights indicate that the position of the Sleeve Stow Proximity Sensor on the Left Thrust Reverser Sleeve does not agree with the commanded stow position for the Thrust Reverser and the Hydraulic Isolation Valve Sensor indicates that the Auto Restow Function is activated.

B. Possible Causes

- (1) Sleeve Stow Proximity Sensor Target
- (2) Sleeve Stow Proximity Sensor Plunger
- (3) Sleeve Stow Proximity Sensor, S831
- (4) L (R) Engine T/R Sync Shafts
- (5) EAU, M528

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	4	C01003	ENGINE 1 THRUST REVERSER IND
B	7	C01266	ENGINE 1 THRUST REVERSER SYNC LOCK

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	5	C01267	ENGINE 2 THRUST REVERSER SYNC LOCK
C	8	C01004	ENGINE 2 THRUST REVERSER IND

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D. Related Data

- (1) 78-32 TASK SUPPORT Figure 304
- (2) 78-32 TASK SUPPORT Figure 305
- (3) WDM 78-36-11
- (4) WDM 78-36-21
- (5) SSM 78-36-11
- (6) SSM 78-36-21

E. Initial Evaluation

- (1) Do the Engine Accessory Unit (EAU) BITE Procedure, 78-31 TASK 801 to show the current maintenance messages.

F. Fault Isolation Procedure



DO THE DEACTIVATION PROCEDURE TO PREVENT THE OPERATION OF THE THRUST REVERSER. THE ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

- (1) Do this task: Thrust Reverser Deactivation For Ground Maintenance, AMM TASK 78-31-00-040-802-F00.
- (2) Do this task: Open the Fan Cowl Panels, AMM TASK 71-11-02-010-801-F00.
- (3) Visually examine these Electrical Harness Connectors:
 - D30040 and D30042 (ENG-1) or D30140 and D30142 (ENG-2) at the Wing to Strut Seal (AW0258L or AW0258R).
 - D39917 and D39919 (ENG-1) or D39918 and D39920 (ENG-2) at the Wing to Body Pressure Seal.
- (a) Disconnect the connectors to make sure that the pins are clean and in good condition.
 - 1) If the connectors are not satisfactory, then repair or replace them as necessary (SWPM Chapter 20).
 - 2) Re-connect the connectors.
 - 3) Do the Repair Confirmation at the end of this task.
- (4) Do a check of the Target for the Left Sleeve Stow Proximity Sensor (SSPS) to see if it is in the LOCKED (Target Far) or UNLOCKED (Target Near) position:

NOTE: The SSPS and Target are on the Torque Box of the Left Thrust Reverser.

 - (a) If the Target is in the UNLOCKED (Target Near) position, then do a check of the plunger for the Left SSPS target.

NOTE: The plunger is on the inner wall of the outer cowl on the Thrust Reverser. As the Thrust Reverser is retracted (stowed), the plunger moves through an access hole in the Torque Box and applies pressure on the target to keep it away from the sensor.

 - 1) Manually extend the Thrust Reverser approximately 10.0 inches (254.0 mm).
 - 2) If the plunger is bent or broken, then replace the plunger.
 - a) Do the Repair Confirmation at the end of this task.
 - (b) If the target is in the LOCKED position, then continue.

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- (5) Do a check to see if the target for the Left SSPS is bent.
 - (a) If the target is bent or broken, then replace the target.
 - 1) Do the Repair Confirmation at the end of this task.
 - (b) If the target is not bent or broken, then continue.
- (6) Examine the ENG-1 (ENG-2) Wire Harness and connectors between the EAU, M528 and the Left T/R SSPS, S831 as follows (WDM 78-36-11, WDM 78-36-21):
 - (a) Remove the EAU. This is the task: Engine Accessory Unit Removal, AMM TASK 78-34-06-000-801-F00.
 - (b) Disconnect the Electrical Connector the D30002 connector at the applicable Engine ENG-1 (ENG-2) Strut Receptacle, D30202 (D30402).
 - (c) Visually examine the wire harness, the D30002 connector and the applicable Engine ENG-1 (ENG-2) Strut Receptacle, D30202 (D30402).
 - 1) If the wire harness, connector or the receptacle is damaged, then repair or replace as necessary (SWPM Ch 20).
 - a) Do the Repair Confirmation at the end of this task.
 - (d) Visually examine the ENG-1 (ENG-2) Wire Harness Connector, D1458A (D1458B) and the EAU Receptacle (AMM TASK 70-70-01-200-801-F00).
 - 1) If the EAU Receptacle is damaged, then replace the EAU, M528. These are the tasks:
 - Engine Accessory Unit Removal, AMM TASK 78-34-06-000-801-F00
 - Engine Accessory Unit Installation, AMM TASK 78-34-06-400-801-F00
 - a) Do the Repair Confirmation at the end of this task.
 - 2) If a Wire Harness Connector is damaged, do the applicable tasks to repair or replace the connector (SWPM Ch 20).
 - a) Do the Repair Confirmation at the end of this task.
 - (e) If you did not find a problem, then continue.
- (7) Examine the Left T/R SSPS, S831 as follows (WDM 78-36-11, WDM 78-36-21):
 - (a) Measure the Resistance at the Left T/R SSPS, Receptacle as follows:

ENGINE-1

L T/R SSPS D30002	L T/R SSPS D30002	Resistance
pin 7	pin 1	Ohms
pin 8	pin 1	Ohms

ENGINE-2

L T/R SSPS D30002	L T/R SSPS D30002	Resistance
pin 7	pin 1	Ohms
pin 8	pin 1	Ohms

- 1) Make sure that the difference between the two Resistance measurements is ≤ 2 Ohms.

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- a) If the Resistance is not in the specified limits, then replace the SSPS. These are the tasks:
- Thrust Reverser Sleeve Stow Proximity Sensor Removal, AMM TASK 78-34-02-000-801-F00
 - Thrust Reverser Sleeve Stow Proximity Sensor Installation, AMM TASK 78-34-02-400-801-F00
- <1> Do the Repair Confirmation at the end of this task.
- b) If the Resistance is in the specified limits, then continue.
- (8) Do the Electrical checks that follow(WDM 78-36-11, WDM 78-36-21):
- (a) Do a continuity check between the EAU Receptacle D1458A (D1458B) and the Left T/R SSPS connector as follows:

ENG-1 WIRE HARNESS

EAU	L T/R SSPS
D1458A	D30202
pin 14	pin 8
pin 15	pin 7

ENG-2 WIRE HARNESS

EAU	L T/R SSPS
D1458B	D30402
pin 14	pin 8
pin 15	pin 7

- (b) Do a check for ground at the applicable SSPS connector as follows:

ENG-1 WIRE HARNESS

Left T/R SSPS	Resistance
D30202	CONTINUITY
pin 1	Ground

ENG-2 WIRE HARNESS

L T/R SPSS	Resistance
D30402	CONTINUITY
pin 1	Ground

- (c) Do these electrical checks at the EAU Receptacle D1458A (D1458B):

ENG-1 WIRE HARNESS

EAU	EAU	Resistance
D1458A	D1458A	OPEN CIRCUIT
pin 14	pin 15	

EAU	Resistance
D1458A	OPEN CIRCUIT
pin 14	GROUND
pin 15	GROUND

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ENG-2 WIRE HARNESS

EAU		EAU	Resistance
D1458B		D1458B	
pin 14		pin 15	OPEN CIRCUIT
EAU			Resistance
D1458B			
pin 14	.....	GROUND	OPEN CIRCUIT
pin 15	.....	GROUND	OPEN CIRCUIT

- (d) If the electrical checks are not satisfactory, then do the applicable tasks to repair the wiring (SWPM Ch 20).
- 1) Do the Repair Confirmation at the end of this task.
- (e) If the electrical checks are satisfactory, continue.
- (9) Examine the Upper and Lower Sync Shafts for the applicable L (R) Engine T/R. This is the task: Sync Shaft - Inspection/Check, AMM TASK 78-31-04-200-801-F00.
- (a) If necessary, replace the applicable Sync Shaft. These are the tasks:
 - Sync Shaft Removal, AMM TASK 78-31-04-000-801-F00
 - Sync Shaft Installation, AMM TASK 78-31-04-400-801-F00
 - (b) Do the Repair Confirmation at the end of this task.
- (10) Replace the EAU. These are the tasks:
- Engine Accessory Unit Removal, AMM TASK 78-34-06-000-801-F00
 - Engine Accessory Unit Installation, AMM TASK 78-34-06-400-801-F00
- (a) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

- (1) Do these steps:
 - (a) If necessary, then, do this task: Engine Accessory Unit Installation, AMM TASK 78-34-06-400-801-F00.
 - (b) Make sure that the electrical connector, D30002, is connected to the Strut Receptacle.



WARNING

KEEP PERSONNEL AND EQUIPMENT AWAY FROM THE AREA AROUND THE THRUST REVERSERS. THE THRUST REVERSERS EXTEND AND RETRACT QUICKLY. INJURIES TO PERSONNEL, AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (c) Do this task: Thrust Reverser Activation After Ground Maintenance, AMM TASK 78-31-00-440-803-F00.
- (d) Do these steps to reset the T/R STOW FAULTS Light.
 - 1) Push and hold the FAULT RESET button for a minimum of two seconds.
 - 2) Operate the Thrust Reverser through an EXTEND and RETRACT cycle.
 - 3) Wait for at least 30 seconds.
 - 4) If the S831 L SLEEVE STOW SENSOR and S833 (S830) HYD ISO VALVE SENSOR Fault Lights on the EAU are OFF, then you corrected the problem.

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DO THE DEACTIVATION PROCEDURE TO PREVENT THE OPERATION OF THE THRUST REVERSER. THE ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

- 5) If the S831 L SLEEVE STOW SENSOR and S833 (S830) HYD ISO VALVE SENSOR Fault Lights on the EAU are ON, deactivate the T/R (Thrust Reverser Deactivation For Ground Maintenance, AMM TASK 78-31-00-040-802-F00) and continue the Fault Isolation Procedure at the subsequent step.
- (2) After you correct the problem, do these steps to put the airplane back to its usual condition:



KEEP PERSONNEL AND EQUIPMENT AWAY FROM THE AREA AROUND THE THRUST REVERSERS. THE THRUST REVERSERS EXTEND AND RETRACT QUICKLY. INJURIES TO PERSONNEL, AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (a) Move the Reverse Thrust Lever 1 (2) forward and down to RETRACT (stow) position.
 - (b) Operate the T/R through an EXTEND and RETRACT cycle.
 - (c) Make sure that the REVERSER Fault Light on the Flight Compartment P5 Panel comes ON for approximately 10 seconds after the Reverse Thrust Lever 1 (2) is moved to the RETRACT (stow) position and then goes OFF.
 - (d) Wait for at least 30 seconds.
 - (e) Make sure that the REVERSER Fault Light on the Flight Compartment P5 Panel stays OFF.
 - (3) Do this task: EEC TEST, AMM TASK 73-21-00-700-804-F00.
- NOTE:** This check will make sure that the electrical connections for the Linear Variable Differential Transducer (LVDT)s are correct.
- (a) If a maintenance message shows, do the applicable fault isolation task for that maintenance message.
 - (b) If no maintenance messages show, the electrical connections for the LVDTs are correct.
 - (4) Do this task: Close the Fan Cowl Panels, AMM TASK 71-11-02-410-801-F00.

————— **END OF TASK** —————

811. T/R STOW FAULTS - HYD ISO VALVE SENSOR and R SLEEVE STOW SENSOR messages - Fault Isolation

A. Description

- (1) This task is for this combination of maintenance messages for Engine 1:
 - (a) ENGINE 1 - S832 R SLEEVE STOW SENSOR
 - (b) ENGINE 1 - S833 HYD ISO VALVE SENSOR
- (2) This task is for this combination of maintenance messages for Engine 2:
 - (a) ENGINE 2 - S832 R SLEEVE STOW SENSOR
 - (b) ENGINE 2 - S830 HYD ISO VALVE SENSOR

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- (3) These fault lights indicate that the position of the Sleeve Stow Proximity Sensor on the Right Thrust Reverser Sleeve does not agree with the commanded stow position for the Thrust Reverser and the Hydraulic Isolation Valve Sensor indicates that the Auto Restow Function is activated.

B. Possible Causes

- (1) Sleeve Stow Proximity Sensor Target
- (2) Sleeve Stow Proximity Sensor Plunger
- (3) Sleeve Stow Proximity Sensor, S832
- (4) L (R) Engine T/R Sync Shafts
- (5) EAU, M528

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	4	C01003	ENGINE 1 THRUST REVERSER IND
B	7	C01266	ENGINE 1 THRUST REVERSER SYNC LOCK

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	5	C01267	ENGINE 2 THRUST REVERSER SYNC LOCK
C	8	C01004	ENGINE 2 THRUST REVERSER IND

D. Related Data

- (1) 78-32 TASK SUPPORT Figure 304
- (2) 78-32 TASK SUPPORT Figure 305
- (3) WDM 78-36-11
- (4) WDM 78-36-21
- (5) SSM 78-36-11
- (6) SSM 78-36-21

E. Initial Evaluation

- (1) Do the Engine Accessory Unit (EAU) BITE Procedure, 78-31 TASK 801 to show the current maintenance messages.

F. Fault Isolation Procedure



WARNING

DO THE DEACTIVATION PROCEDURE TO PREVENT THE OPERATION OF THE THRUST REVERSER. THE ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

- (1) Do this task: Thrust Reverser Deactivation For Ground Maintenance, AMM TASK 78-31-00-040-802-F00.
 - (a) Do this task: Thrust Reverser Deactivation For Ground Maintenance, AMM TASK 78-31-00-040-802-F00.
 - (b) Do this task: Open the Fan Cowl Panels, AMM TASK 71-11-02-010-801-F00.

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- (2) Do this task: Open the Fan Cowl Panels, AMM TASK 71-11-02-010-801-F00.
- (3) Visually examine these Electrical Harness Connectors:
 - D30040 and D30042 (ENG-1) or D30140 and D30142 (ENG-2) at the Wing to Strut Seal (AW0258L or AW0258R).
 - D39917 and D39919 (ENG-1) or D39918 and D39920 (ENG-2) at the Wing to Body Pressure Seal.
- (a) Disconnect the connectors to make sure that the pins are clean and in good condition.
 - 1) If the connectors are not satisfactory, then repair or replace them as necessary (SWPM Chapter 20).
 - 2) Re-connect the connectors.
 - 3) Do the Repair Confirmation at the end of this task.

- (4) Do a check of the Target for the Right SSPS to see if it is in the LOCKED (Target Far) or UNLOCKED (Target Near) position:

NOTE: The SSPS and Target are on the Torque Box of the Right Thrust Reverser.

- (a) If the Target is in the UNLOCKED (Target Near) position, then do a check of the plunger for the Right SSPS target.

NOTE: The plunger is on the inner wall of the outer cowl on the Thrust Reverser. As the Thrust Reverser is retracted (stowed), the plunger moves through an access hole in the Torque Box and applies pressure on the target to keep it away from the sensor.

- 1) Manually extend the Thrust Reverser approximately 10.0 inches (254.0 mm).
 - 2) If the plunger is bent or broken, then replace the plunger.
 - a) Do the Repair Confirmation at the end of this task.
 - (b) If the target is in the LOCKED position, then continue.
- (5) Do a check to see if the target for the Right SSPS is bent.
 - (a) If the target is bent or broken, then replace the target.
 - 1) Do the Repair Confirmation at the end of this task.
 - (b) If the target is not bent or broken, then continue.
- (6) Examine the ENG-1 (ENG-2) Wire Harness and connectors between the EAU, M528 and the Right T/R SSPS, S832 as follows (WDM 78-36-11, WDM 78-36-21):
 - (a) Remove the EAU. This is the task: Engine Accessory Unit Removal, AMM TASK 78-34-06-000-801-F00.
 - (b) Disconnect the Electrical Connector the D30002 connector at the applicable Engine ENG-1 (ENG-2) Strut Receptacle, D30202 (D30402).
 - (c) Visually examine the wire harness, the D30002 connector and the applicable Engine ENG-1 (ENG-2) Strut Receptacle, D30202 (D30402).
 - 1) If the wire harness, connector or the receptacle is damaged, then repair or replace as necessary (SWPM Ch 20).
 - a) Do the Repair Confirmation at the end of this task.
 - (d) Visually examine the ENG-1 (ENG-2) Wire Harness Connector, D1458A (D1458B) and the EAU Receptacle (AMM TASK 70-70-01-200-801-F00).
 - 1) If the EAU Receptacle is damaged, then replace the EAU, M528. These are the tasks:

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- Engine Accessory Unit Removal, AMM TASK 78-34-06-000-801-F00
- Engine Accessory Unit Installation, AMM TASK 78-34-06-400-801-F00
 - a) Do the Repair Confirmation at the end of this task.
- 2) If a Wire Harness Connector is damaged, do the applicable tasks to repair or replace the connector (SWPM Ch 20).
 - a) Do the Repair Confirmation at the end of this task.
- (e) If you did not find a problem, then continue.
- (7) Examine the Right T/R SSPS, S832 as follows (WDM 78-36-11, WDM 78-36-21):
 - (a) Measure the Resistance at the Right T/R SSPS, Receptacle as follows:

ENGINE-1

R T/R SSPS D30006	R T/R SSPS D30006	Resistance
pin 7	pin 1	Ohms
pin 8	pin 1	Ohms

ENGINE-2

R T/R SSPS D30006	R T/R SSPS D30006	Resistance
pin 7	pin 1	Ohms
pin 8	pin 1	Ohms

- 1) Make sure that the difference between the two Resistance measurements is ≤ 2 Ohms.
 - a) If the Resistance is not in the specified limits, then replace the SSPS. These are the tasks:
 - Thrust Reverser Sleeve Stow Proximity Sensor Removal, AMM TASK 78-34-02-000-801-F00
 - Thrust Reverser Sleeve Stow Proximity Sensor Installation, AMM TASK 78-34-02-400-801-F00

<1> Do the Repair Confirmation at the end of this task.
 - b) If the Resistance is in the specified limits, then continue.
- (8) Do the Electrical checks that follow (WDM 78-36-11, WDM 78-36-21):
 - (a) Do a continuity check between the EAU Receptacle D1458A (D1458B) and the Right T/R SSPS connector as follows:

ENG-1 WIRE HARNESS

EAU D1458A	R T/R SSPS D30206
pin 52	pin 8
pin 53	pin 7

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ENG-2 WIRE HARNESS

EAU	R T/R SSPS
D1458B	D30406
pin 52	pin 8
pin 53	pin 7

- (b) Do a check for ground at the applicable SSPS connector as follows:

ENG-1 WIRE HARNESS

R T/R SSPS		Resistance
D30206		CONTINUITY
pin 1	Ground	

ENG-2 WIRE HARNESS

R T/R SPSS		Resistance
D30406		CONTINUITY
pin 1	Ground	

- (c) Do these electrical checks at the EAU Receptacle D1458A (D1458B):

ENG-1 WIRE HARNESS

EAU	EAU	Resistance
D1458A	D1458A	OPEN CIRCUIT
pin 52	pin 53	

EAU		Resistance
D1458A		OPEN CIRCUIT
pin 52	GROUND	OPEN CIRCUIT
pin 53	GROUND	OPEN CIRCUIT

ENG-2 WIRE HARNESS

EAU	EAU	Resistance
D1458B	D1458B	OPEN CIRCUIT
pin 52	pin 53	

EAU		Resistance
D1458B		OPEN CIRCUIT
pin 52	GROUND	OPEN CIRCUIT
pin 53	GROUND	OPEN CIRCUIT

- (d) If the electrical checks are not satisfactory, then do the applicable tasks to repair the wiring (SWPM Ch 20).
- 1) Do the Repair Confirmation at the end of this task.
- (e) If the electrical checks are satisfactory, continue.
- (9) Examine the Upper and Lower Sync Shafts for the applicable L (R) Engine T/R. This is the task: Sync Shaft - Inspection/Check, AMM TASK 78-31-04-200-801-F00.
- (a) If necessary, replace the applicable Sync Shaft. These are the tasks:

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- Sync Shaft Removal, AMM TASK 78-31-04-000-801-F00
 - Sync Shaft Installation, AMM TASK 78-31-04-400-801-F00
- (b) Do the Repair Confirmation at the end of this task.
- (10) Replace the EAU. These are the tasks:
- Engine Accessory Unit Removal, AMM TASK 78-34-06-000-801-F00
 - Engine Accessory Unit Installation, AMM TASK 78-34-06-400-801-F00
- (a) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

- (1) Do these steps:
- (a) If necessary, then, do this task: Engine Accessory Unit Installation, AMM TASK 78-34-06-400-801-F00.
- (b) Make sure that the electrical connector, D30006, is connected to the Strut Receptacle.



WARNING

KEEP PERSONNEL AND EQUIPMENT AWAY FROM THE AREA AROUND THE THRUST REVERSERS. THE THRUST REVERSERS EXTEND AND RETRACT QUICKLY. INJURIES TO PERSONNEL, AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (c) Do this task: Thrust Reverser Activation After Ground Maintenance, AMM TASK 78-31-00-440-803-F00.
- (d) Do these steps to reset the T/R STOW FAULTS Light.
- 1) Push and hold the FAULT RESET button for a minimum of two seconds.
 - 2) Operate the Thrust Reverser through an EXTEND and RETRACT cycle.
 - 3) Wait for at least 30 seconds.
 - 4) If the S832 R SLEEVE STOW SENSOR and S833 (S830) HYD ISO VALVE SENSOR Fault Lights on the EAU are OFF, then you corrected the problem.



WARNING

DO THE DEACTIVATION PROCEDURE TO PREVENT THE OPERATION OF THE THRUST REVERSER. THE ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

- 5) If the S832 R SLEEVE STOW SENSOR and S833 (S830) HYD ISO VALVE SENSOR Fault Lights on the EAU are ON, deactivate the T/R (Thrust Reverser Deactivation For Ground Maintenance, AMM TASK 78-31-00-040-802-F00) and continue the Fault Isolation Procedure at the subsequent step.
- (2) After you correct the problem, do these steps to put the airplane back to its usual condition:



WARNING

KEEP PERSONNEL AND EQUIPMENT AWAY FROM THE AREA AROUND THE THRUST REVERSERS. THE THRUST REVERSERS EXTEND AND RETRACT QUICKLY. INJURIES TO PERSONNEL, AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (a) Move the Reverse Thrust Lever 1 (2) forward and down to RETRACT (stow) position.
- (b) Operate the T/R through an EXTEND and RETRACT cycle.

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- (c) Make sure that the REVERSER Fault Light on the Flight Compartment P5 Panel comes ON for approximately 10 seconds after the Reverse Thrust Lever 1 (2) is moved to the RETRACT (stow) position and then goes OFF.
 - (d) Wait for at least 30 seconds.
 - (e) Make sure that the REVERSER Fault Light on the Flight Compartment P5 Panel stays OFF.
- (3) Do this task: EEC TEST, AMM TASK 73-21-00-700-804-F00.
- NOTE: This check will make sure that the electrical connections for the LVDTs are correct.
- (a) If a maintenance message shows, do the applicable fault isolation task for that maintenance message.
 - (b) If no maintenance messages show, the electrical connections for the LVDTs are correct.

— END OF TASK —

812. Engine 1 - T/R STOW FAULTS - L and R SLEEVE SYNC LOCK PWR Messages - Fault Isolation

A. Description

- (1) This task is for this combination of EAU Maintenance Messages:
 - (a) ENGINE 1 - V148 L SLEEVE SYNC LOCK PWR
 - (b) ENGINE 1 - V150 R SLEEVE SYNC LOCK PWR.
- (2) This Fault Light indicates that there is power to the Sync Locks which does not agree with the commanded STOW position of the T/R.
 - (a) If the Sync Locks have power, that is the indication that they are in the UNLOCKED position.
- (3) The T/R operates normally.

B. Possible Causes

SIA ALL; AUTOTHROTTLE SWITCHPACK WITH REPLACEABLE SWITCHES P/N 254A1150-1, -2, -7, -8, -9, -10

- (1) T/R 1 Sync Lock Switch, S4

NOTE: The T/R 1 Sync Lock Switch, S4, is installed on the Left Autothrottle Switchpack, M1766.

SIA ALL; AUTOTHROTTLE SWITCHPACK WITH INTEGRATED SWITCHES P/N 254A1150-11, -12, -13, -14, -15, -16

- (2) T/R 1 Autothrottle Switchpack Assembly, M1766

SIA ALL

- (3) T/R 1 Sync Lock Time Delay Relay, R478
- (4) T/R 1 Sync Lock Latch Relay, R477
- (5) Wiring

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	4	C01003	ENGINE 1 THRUST REVERSER IND
B	5	C00276	ENGINE 1 THRUST REVERSER CONT

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CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	6	C01412	ENGINE 1 THRUST REVERSER INTLK
B	7	C01266	ENGINE 1 THRUST REVERSER SYNC LOCK

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	6	C00148	ANTI-ICE & RAIN ENG 1 & WING CONT
B	6	C00149	ANTI-ICE & RAIN ENGINE 2 CONTROL
C	7	C01678	WEATHER RADAR RT RIGHT

F/O Electrical System Panel, P6-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	13	C00120	WEATHER RADAR RT

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	9	C00440	FLIGHT CONTROL AUTO SPEED BRAKE
C	5	C01267	ENGINE 2 THRUST REVERSER SYNC LOCK
C	6	C01413	ENGINE 2 THRUST REVERSER INTLK
C	7	C00277	ENGINE 2 THRUST REVERSER CONT
C	8	C01004	ENGINE 2 THRUST REVERSER IND

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	16	C01345	LANDING GEAR AUTOBRAKE BITE CONT 2
A	18	C00583	LANDING GEAR AUTOBRAKE BITE CONT 1
C	18	C01398	LANDING GEAR TAKEOFF WARNING CUTOFF
D	18	C00451	LANDING GEAR AURAL WARN

D. Related Data

- (1) Component Location (78-32 TASK SUPPORT Figure 308)
- (2) Simplified Schematic (78-32 TASK SUPPORT Figure 306)
- (3) WDM 78-32-51
- (4) SSM 78-32-51

E. Initial Evaluation

- (1) Do the Engine Accessory Unit (EAU) BITE Procedure, 78-31 TASK 801 to show the current Maintenance Messages.

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F. Fault Isolation Procedure



DO THE DEACTIVATION PROCEDURE TO PREVENT THE OPERATION OF THE THRUST REVERSER. THE ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

- (1) Do this task: Thrust Reverser Deactivation For Ground Maintenance, AMM TASK 78-31-00-040-802-F00.
- (2) Do a Voltage check at the T/R 1 L (R) Sleeve Sync Lock, V148 (V150), as follows (WDM 78-32-51):

NOTE: These steps make sure that the Time Delay function of the T/R 1 Sync Lock Time Delay Relay, R478, is within tolerance.

 - (a) Do this task: Open the Fan Cowl Panels, AMM TASK 71-11-02-010-801-F00.
 - (b) Disconnect Electrical Connector D1008(D1016) from the T/R1 L (R) Sleeve Sync Lock V148 (V150).
 - (c) Connect a Voltmeter or a 28VDC Light between Electrical Connector D1008 (D1016) pins 1 and 2.
 - (d) Close this circuit breaker:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	7	C01266	ENGINE 1 THRUST REVERSER SYNC LOCK

- (e) Move the Reverse Thrust Lever 1 UP and AFT to the EXTEND (deploy) position.
 - 1) Make sure that the Light comes ON or the Voltmeter reads approximately 28V DC.
- (f) Quickly move the Reverse Thrust Lever 1 FWD and DOWN to the RETRACT (stow) position.

NOTE: This step starts the STOW command and the timer in Relay R478.
- (g) Make a record of the elapsed time between the STOW command and the time that power was removed from Electrical Connector D1008 (D1016), pins 1 and 2.
 - 1) If power was ON for more than 20 seconds, then do these steps:
 - a) 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>
B	7	C01266	ENGINE 1 THRUST REVERSER SYNC LOCK

- b) Replace the T/R 1 Sync Lock Time Delay Relay, R478.
 - c) Re-connect Electrical Connector D1008 (D1016) to the applicable Sleeve Sync Lock.
 - d) Do this task: Close the Fan Cowl Panels, AMM TASK 71-11-02-410-801-F00.
 - e) Do the Repair Confirmation at the end of this task.
- 2) If power was not ON for more than 20 seconds, continue.

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- (3) Open this circuit breaker:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	7	C01266	ENGINE 1 THRUST REVERSER SYNC LOCK

- (4) Remove the access cover from the Left Side of the Nose Gear Wheel Well Overhead to get access to the T/R 1 Autothrottle Switchpack, M1766.
- (5) Disconnect the Electrical Connector D11128 from the Autothrottle Switchpack, M1766.
- (6) Visually examine connector D11128 and the Autothrottle Switchpack Receptacle.

SIA ALL; AUTOTHROTTLE SWITCHPACK WITH REPLACEABLE SWITCHES P/N 254A1150-1, -2, -7, -8, -9, -10

NOTE: The Sync Lock Switch, S4, is installed on the Autothrottle Switchpack, M1766.

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- (a) If an Electrical Connector is damaged, then do the applicable tasks to repair or replace the connector, D11128 (SWPM Ch 20).
- 1) Do the Repair Confirmation at the end of this task.
- (b) If the connector was not correctly connected, and no other problem was found, then re-connect the connector, D11128.
- 1) Do the Repair Confirmation at the end of this task.
- (7) Do an electrical check of the T/R 1 Sync Lock Switch, S4, which is installed on the L Autothrottle Switchpack, M1766 as follows (WDM 78-32-51):

NOTE: A Sync Lock Switch with dirty contacts can cause intermittent problems. Sometimes, a continuity check through the Sync Lock Switch is not a satisfactory check. Therefore, you can also use the Alternate Load Light Method to troubleshoot a defective Sync Lock Switch.

- (a) Method 1 - Continuity Check through the L Autothrottle Switchpack, M1766:

L A/T Switchpack Receptacle	L A/T Switchpack Receptacle	CONTINUITY
pin 7	pin 8	YES
pin 7	pin 14	NO

- (b) Alternate Method 2 - Load Light:
- 1) Remove Connector D11128.
 - a) Install a jumper between Connector D11128, pin 7 of and the L Autothrottle Switchpack Receptacle, pin 7.
 - 2) Remove the safety tag and close this circuit breaker:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	7	C01266	ENGINE 1 THRUST REVERSER SYNC LOCK

- 3) Install a Load Light (lamp, STD-12563) between L Autothrottle Switchpack Receptacle, pin 14 of the and Airplane Ground.

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- a) Move the Reverse Thrust Lever 1 to the EXTEND (deploy) position and monitor the Load Light as follows:
 - <1> With the Reverse Thrust Lever 1 in the EXTEND (deploy) position, shake the Reverse Thrust Lever 1 and make sure that the Load Light stays ON.
 - <a> If the Load Light is dim, flickering, or OFF, then the T/R 1 Sync Lock Switch, S4 is malfunctioning.
- 4) Remove the Load Light (lamp, STD-12563) from pin 14 and install between the L Autothrottle Switchpack Receptacle, pin 8 and Airplane Ground.
 - a) Move the Reverse Thrust Lever 1 to the RETRACT (stow) position and monitor the Load Light as follows:
 - <1> With the Reverse Thrust Lever 1 in the RETRACT (stow) position, shake the Reverse Thrust Lever 1 and make sure that the Load Light stays ON.
 - <a> If the Load Light is dim, flickering, or OFF, then the T/R 1 Sync Lock Switch, S4 is malfunctioning.
- 5) Open this circuit breaker and install safety lock:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	7	C01266	ENGINE 1 THRUST REVERSER SYNC LOCK

- (c) If the electrical check of the T/R 1 Sync Lock Switch, S4 shows that the Switch is malfunctioning, do these steps:

SIA ALL; AUTOTHROTTLE SWITCHPACK WITH REPLACEABLE SWITCHES P/N 254A1150-1, -2, -7, -8, -9, -10

- 1) Adjust the Sync Lock Switch, S4 per the applicable steps in the Autothrottle Switchpack Switch Installation, AMM TASK 76-11-07-400-801-F00 .
 - a) Do the Repair Confirmation at the end of this task.
 - b) Replace the Sync Lock Switch, S4. These are the tasks:
 - Autothrottle Switchpack Switch Removal, AMM TASK 76-11-07-020-801-F00
 - Autothrottle Switchpack Switch Installation, AMM TASK 76-11-07-400-801-F00
 - <1> Do the Repair Confirmation at the end of this task.

SIA ALL; AUTOTHROTTLE SWITCHPACK WITH INTEGRATED SWITCHES P/N 254A1150-11, -12, -13, -14, -15, -16

- 2) Replace the Autothrottle Switchpack Assembly, M1766. These are the tasks:
 - Autothrottle Switchpack Assembly - Installation, AMM TASK 76-11-07-400-802-F00
 - Autothrottle Switchpack Assembly - Removal, AMM TASK 76-11-07-020-802-F00
 - a) Do the Repair Confirmation at the end of this task.

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- (d) If the electrical check of the T/R 1 Sync Lock Switch, S4 shows that the Switch is not malfunctioning, then connect Electrical Connector, D11128, and continue.

NOTE: If you used the Load Light method, remove the jumper and the Load Light, then connect Electrical Connector D11128 and continue.

- (8) Remove the access panel from the J22 Junction Box and do a visual examination of the Electrical Connector, D40672P and the J22 Junction Box Receptacle (AMM TASK 70-70-01-200-801-F00).

NOTE: The J22 Junction Box is on the Left side of the Nose Gear Wheel Well.

- (a) If a Junction Box Receptacle or Wire Harness Connector is damaged, then do the applicable tasks to repair or replace the Connector(s) (SWPM Chapter 20).
- 1) Do the Repair Confirmation at the end of this task.
- (b) If a connector was not correctly connected and no other problem was found, then re-connect the Connector and do the Repair Confirmation at the end of this task.
- (c) If you did not find a problem, then re-connect the connector, D40672P, to the J22 Junction Box Receptacle and continue.
- (9) Remove the T/R 1 Sync Lock Time Delay Relay, R478.
- (10) Remove the safety tag and close this circuit breaker:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	7	C01266	ENGINE 1 THRUST REVERSER SYNC LOCK

- (11) Do a check for 28V DC between pins X1 and X2 (GND) of the Relay Connector, D10636 (WDM 78-32-51).
- (a) If there is no Voltage, then do these steps:
- 1) 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>
B	7	C01266	ENGINE 1 THRUST REVERSER SYNC LOCK

- 2) Do a wiring check as follows:

Load CTRL	T/R 1 SYNC
Center-L	LOCK T/D RLY
D40802P	R478 SOCKET
D10636	D10636
pin 5	pin X1

T/R 1 SYNC	
LOCK T/D RLY	
R478 SOCKET	
D10636	
pin X2	GND

- a) If you find problems, repair the wiring as necessary (SWPM Ch 20).
- <1> Re-install the T/R 1 Sync Lock Time Delay Relay, R478.
 - <2> Do the Repair Confirmation at the end of this task.

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- (b) If there is Voltage between pins X1 and X2, do a check for 28V DC on the T/R 1 Sync Lock Time Delay Relay, R478, Connector D10636 between pins A1 and A2 (GND).

- 1) If there is Voltage between pins A1 and A2, do these steps:

- a) 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>
B	7	C01266	ENGINE 1 THRUST REVERSER SYNC LOCK

- b) Replace the T/R 1 Sync Lock Time Delay Relay, R478.

- c) Do the Repair Confirmation at the end of this task.

- 2) If there is no Voltage between pins A1 and A2, continue.

- (12) Do this check of the T/R 1 Sync Lock Latch Relay, R477 (WDM 78-32-51):

- (a) 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>
B	7	C01266	ENGINE 1 THRUST REVERSER SYNC LOCK

- (b) Re-install the T/R 1 Sync Lock Time Delay Relay, R478.

- (c) Remove the T/R 1 Sync Lock Latch Relay, R477.

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

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	7	C01266	ENGINE 1 THRUST REVERSER SYNC LOCK

- (e) Wait for at least 18 seconds.

- (f) Do a check for 28V DC at the T/R 1 Sync Lock Latch Relay Receptacle between pins Y1 and Y2.

- 1) If there is Voltage, then do these steps:

- a) Replace the T/R 1 Sync Lock Latch Relay, R477.

- b) Do the Repair Confirmation at the end of this task.

- 2) If there is no Voltage, then do these steps:

- a) 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>
B	7	C01266	ENGINE 1 THRUST REVERSER SYNC LOCK

- b) Remove the T/R 1 Sync Lock Time Delay Relay, R478 and do a wiring check as follows:

RLY R477
SOCKET
D10634
pin Y2

RLY R478
SOCKET
D10636
pin A1

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**T/R 1 SYNC
LOCK T/D RLY,
R478
D10636**
pin A2 GND

T/R 1 SYNC LOCK LATCH RLY, R477 D10634	TERMINAL BLOCK TB32
pin Y1	pin VA13

- <1> If you find problems, repair the wiring as necessary (SWPM Ch 20).
- <a> Install the T/R 1 Sync Lock Time Delay Relay, R478.
- Install the T/R 1 Sync Lock Latch Relay, R477.
- <c> Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

- (1) Do these steps:
- Make sure that all connectors that were disconnected to do an electrical check are correctly connected.
 - Make sure that the Relays that were removed to do an electrical check are re-installed.



WARNING

KEEP PERSONNEL AND EQUIPMENT AWAY FROM THE AREA AROUND THE THRUST REVERSERS. THE THRUST REVERSERS EXTEND AND RETRACT QUICKLY. INJURIES TO PERSONNEL, AND DAMAGE TO EQUIPMENT CAN OCCUR.

- Do this task: Thrust Reverser Activation After Ground Maintenance, AMM TASK 78-31-00-440-803-F00.
- Do these steps to reset the T/R STOW FAULTS Light.
 - Operate the T/R through an EXTEND and RETRACT cycle.
 - Push and hold the FAULT RESET button for a minimum of two seconds.
 - Wait for at least 30 seconds.
 - If the V148 L SLEEVE SYNC LOCK PWR and V150 R SLEEVE SYNC LOCK PWR Fault Lights on the EAU are OFF, then you corrected the problem.



WARNING

DO THE DEACTIVATION PROCEDURE TO PREVENT THE OPERATION OF THE THRUST REVERSER. THE ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

- If the V148 L SLEEVE SYNC LOCK PWR and V150 R SLEEVE SYNC LOCK PWR Fault Lights on the EAU are still ON, deactivate the T/R (Thrust Reverser Deactivation For Ground Maintenance, AMM TASK 78-31-00-040-802-F00) and continue the Fault Isolation Procedure at the subsequent step.

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- (2) If you have corrected the problem, do these steps to put the Airplane back to its usual condition:

**WARNING**

KEEP PERSONNEL AND EQUIPMENT AWAY FROM THE AREA AROUND THE THRUST REVERSERS. THE THRUST REVERSERS EXTEND AND RETRACT QUICKLY. INJURIES TO PERSONNEL, AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (a) Operate the T/R through an EXTEND and RETRACT cycle.
- (b) Make sure that the REVERSER Fault Light on the Flight Compartment P5 Panel comes ON for approximately 10 seconds after the Reverse Thrust Lever is moved to the RETRACT (stow) position and then goes OFF.
- (c) Wait for at least 30 seconds.
- (d) Make sure that the REVERSER Fault Light on the Flight Compartment P5 Panel stays OFF.

————— **END OF TASK** —————

813. Engine 2 - T/R STOW FAULTS - L and R SLEEVE SYNC LOCK PWR messages - Fault Isolation

A. Description

- (1) This task is for this combination of EAU Maintenance Messages:
 - (a) ENGINE 2 - V148 L SLEEVE SYNC LOCK PWR
 - (b) ENGINE 2 - V150 R SLEEVE SYNC LOCK PWR.
- (2) This Fault Light indicates that there is power to the Sync Locks which does not agree with the commanded STOW position of the T/R.
 - (a) If the Sync Locks have power, that is the indication that they are in the UNLOCKED position.
- (3) The T/R operates normally.

B. Possible Causes

SIA ALL; AUTOTHROTTLE SWITCHPACK WITH REPLACEABLE SWITCHES P/N 254A1150-1, -2, -7, -8, -9, -10

- (1) T/R 2 Sync Lock Switch, S4

NOTE: The T/R 2 Sync Lock Switch, S4, is installed on the R Autothrottle Switchpack, M1767.

SIA ALL; AUTOTHROTTLE SWITCHPACK WITH INTEGRATED SWITCHES P/N 254A1150-11, -12, -13, -14, -15, -16

- (2) T/R 2 Autothrottle Switchpack Assembly, M1767

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- (3) T/R 2 Sync Lock Time Delay Relay, R480
- (4) T/R 2 Sync Lock Latch Relay, R479
- (5) Wiring

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C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	4	C01003	ENGINE 1 THRUST REVERSER IND
B	5	C00276	ENGINE 1 THRUST REVERSER CONT
B	6	C01412	ENGINE 1 THRUST REVERSER INTLK
B	7	C01266	ENGINE 1 THRUST REVERSER SYNC LOCK

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	6	C00148	ANTI-ICE & RAIN ENG 1 & WING CONT
B	6	C00149	ANTI-ICE & RAIN ENGINE 2 CONTROL
C	7	C01678	WEATHER RADAR RT RIGHT

F/O Electrical System Panel, P6-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	13	C00120	WEATHER RADAR RT

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	9	C00440	FLIGHT CONTROL AUTO SPEED BRAKE
C	5	C01267	ENGINE 2 THRUST REVERSER SYNC LOCK
C	6	C01413	ENGINE 2 THRUST REVERSER INTLK
C	7	C00277	ENGINE 2 THRUST REVERSER CONT
C	8	C01004	ENGINE 2 THRUST REVERSER IND

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	16	C01345	LANDING GEAR AUTOBRAKE BITE CONT 2
A	18	C00583	LANDING GEAR AUTOBRAKE BITE CONT 1
C	18	C01398	LANDING GEAR TAKEOFF WARNING CUTOFF
D	18	C00451	LANDING GEAR AURAL WARN

D. Related Data

- (1) Component Location (78-32 TASK SUPPORT Figure 308)
- (2) Simplified Schematic (78-32 TASK SUPPORT Figure 307)
- (3) WDM 78-32-61
- (4) SSM 78-32-61

E. Initial Evaluation

- (1) Do the Engine Accessory Unit (EAU) BITE Procedure, 78-31 TASK 801 to show the current Maintenance Messages.

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F. Fault Isolation Procedure



DO THE DEACTIVATION PROCEDURE TO PREVENT THE OPERATION OF THE THRUST REVERSER. THE ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

- (1) Do this task: Thrust Reverser Deactivation For Ground Maintenance, AMM TASK 78-31-00-040-802-F00.
- (2) Do a Voltage check at the T/R 2 L(R) Sleeve Sync Lock Time Delay Relay, R480, as follows (WDM 78-32-61):

NOTE: These steps make sure that the Time Delay function of the T/R 2 L (R) Sleeve Sync Lock Time Delay Relay, R480, is within tolerance.

 - (a) Do this task: Open the Fan Cowl Panels, AMM TASK 71-11-02-010-801-F00.
 - (b) Disconnect Electrical Connector D1008 (D1016) from the T/R 2 L(R) Sleeve Sync Lock V148 (V150).
 - (c) Connect a Voltmeter or a 28V DC Light at Electrical Connector D1008 (D1016) between pins 1 and 2 .
 - (d) Close this circuit breaker:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	5	C01267	ENGINE 2 THRUST REVERSER SYNC LOCK

- (e) Move the Reverse Thrust Lever 2 UP and AFT to the EXTEND (deploy) position.
 - 1) Make sure that the Light comes ON or the Voltmeter reads approximately 28VDC.
- (f) Quickly move the Reverse Thrust Lever 2 FWD and DOWN to the RETRACT (stow) position.

NOTE: This step starts the STOW command and the timer in Relay R480.
- (g) Make a record of the elapsed time between the STOW command and the time that power was removed from Electrical Connector D1008 (D1016) pins 1 and 2.
 - 1) If power was ON for more than 20 seconds, then do these steps:
 - 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>
C	5	C01267	ENGINE 2 THRUST REVERSER SYNC LOCK

- b) Replace the T/R 2 Sync Lock Time Delay Relay, R480.
 - c) Re-connect Electrical Connector D1008 (D1016) to the applicable Sleeve Sync Lock.
 - d) Do this task: Close the Fan Cowl Panels, AMM TASK 71-11-02-410-801-F00.
 - e) Do the Repair Confirmation at the end of this task.
- 2) If power was not ON for more than 20 seconds, continue.

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- (3) 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	5	C01267	ENGINE 2 THRUST REVERSER SYNC LOCK

- (4) Remove the access cover from the Left Side of the Nose Gear Wheel Well Overhead to get access to the T/R 2 Autothrottle Switchpack, M1767.
- (5) Disconnect the Electrical Connector D11132 from the Autothrottle Switchpack, M1767.
- (6) Visually examine Connector D11132 and the Autothrottle Switchpack Receptacle.

SIA ALL; AUTOTHROTTLE SWITCHPACK WITH REPLACEABLE SWITCHES P/N 254A1150-1, -2, -7, -8, -9, -10

NOTE: The Sync Lock Switch, S4, is installed on the Autothrottle Switchpack, M1767.

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- (a) If an Electrical Connector is damaged, then do the applicable tasks to repair or replace the Connector, D11132 (SWPM Ch 20).
- 1) Do the Repair Confirmation at the end of this task.
- (b) If the connector was not correctly connected, and no other problem was found, then re-connect the connector, D11132.
- 1) Do the Repair Confirmation at the end of this task.
- (7) Do an electrical check of the T/R 2 Sync Lock Switch, S4, on the R Autothrottle Switchpack, M1767 as follows (WDM 78-32-61):

NOTE: A Sync Lock Switch with dirty contacts can cause intermittent problems. Sometimes, a continuity check through the Sync Lock Switch is not a satisfactory check. Therefore, you can also use the Alternate Load Light Method to troubleshoot a defective Sync Lock Switch.

- (a) Method 1 - Continuity Check through the R Autothrottle Switchpack, M1767:

R A/T Switchpack Receptacle	R A/T Switchpack Receptacle	CONTINUITY
pin 7	pin 8	YES
pin 7	pin 14	NO

- (b) Alternate Method 2 - Load Light:
- 1) Remove connector D11132.
 - a) Install a jumper between connector D11132 pin 7 of and the R Autothrottle Switchpack Receptacle, pin 7.
 - 2) Remove the safety tag and close this circuit breaker:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	5	C01267	ENGINE 2 THRUST REVERSER SYNC LOCK

- 3) Install a Load Light (lamp, STD-12563) between the R Autothrottle Switchpack Receptacle, pin 14 of the and Airplane Ground.

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- a) Move the Reverse Thrust Lever 2 to the EXTEND (deploy) position and monitor the Load Light as follows:
 - <1> With the Reverse Thrust Lever 2 in the EXTEND (deploy) position, shake the Reverse Thrust Lever 2 and make sure that the Load Light stays ON.
 - <a> If the Load Light is dim, flickering, or not ON, then the T/R 2 Sync Lock Switch, S4 is malfunctioning.
- 4) Remove the Load Light (lamp, STD-12563) from pin 14 and install between pin 8 of the R Autothrottle Switchpack, M1767 Receptacle and Airplane Ground.
 - a) Move the Reverse Thrust Lever 2 to the RETRACT (stow) position and monitor the Load Light as follows:
 - <1> With the Reverse Thrust Lever 2 in the RETRACT (stow) position, shake the Reverse Thrust Lever 2 and make sure that the Load Light stays ON.
 - <a> If the Load Light is dim, flickering, or not ON, then the T/R 2 Sync Lock Switch, S4 is malfunctioning.
- 5) Open this circuit breaker and install safety lock:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	5	C01267	ENGINE 2 THRUST REVERSER SYNC LOCK

- (c) If the electrical check of the T/R 2 Sync Lock Switch, S4 shows that the Switch is malfunctioning, do these steps:

SIA ALL; AUTOTHROTTLE SWITCHPACK WITH REPLACEABLE SWITCHES P/N 254A1150-1, -2, -7, -8, -9, -10

- 1) Adjust the Sync Lock Switch, S4 per the applicable steps in the Autothrottle Switchpack Switch Installation, AMM TASK 76-11-07-400-801-F00.
 - a) Do the Repair Confirmation at the end of this task.
 - b) Replace the Sync Lock Switch, S4. These are the tasks:
 - Autothrottle Switchpack Switch Removal, AMM TASK 76-11-07-020-801-F00
 - Autothrottle Switchpack Switch Installation, AMM TASK 76-11-07-400-801-F00

SIA ALL; AUTOTHROTTLE SWITCHPACK WITH INTEGRATED SWITCHES P/N 254A1150-11, -12, -13, -14, -15, -16

- 2) Replace the Autothrottle Switchpack Assembly, M1767. These are the tasks:
 - Autothrottle Switchpack Assembly - Installation, AMM TASK 76-11-07-400-802-F00
 - Autothrottle Switchpack Assembly - Removal, AMM TASK 76-11-07-020-802-F00
 - a) Do the Repair Confirmation at the end of this task.

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- (d) If the electrical check of the T/R 2 Sync Lock Switch, S4 shows that the Switch is not malfunctioning, then connect Electrical Connector D11132 and continue.

NOTE: If you used the Load Light Method, remove the jumper and the Load Light, then connect Electrical Connector D11132 and continue.

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- (8) Remove the access panel from the J24 Junction Box and do a visual examination of the electrical connector, D40700P and the J24 Junction Box Receptacle (Standard Engine Wiring and Equipment Check, AMM TASK 70-70-01-200-801-F00).

NOTE: The J24 Junction Box is on the right side of the Nose Gear Wheel Well.

- (a) If a Junction Box Receptacle or Wire Harness Connector is damaged, then do the applicable tasks to repair or replace the connector(s) (SWPM Chapter 20).
 - 1) Do the Repair Confirmation at the end of this task.
 - (b) If a connector was not correctly connected and no other problem was found, then re-connect the connector and do the Repair Confirmation at the end of this task.
 - (c) If you did not find a problem, then re-connect the connector D40700P to the J24 Junction Box Receptacle and continue.
- (9) Remove the safety tag and close this circuit breaker:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	5	C01267	ENGINE 2 THRUST REVERSER SYNC LOCK

- (10) Do a check for 28V DC at the Electrical Connector, D40700P, pin 5 to Structure Ground (WDM 78-32-61).

- (a) If there is no Voltage, then do these steps:
 - 1) 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	5	C01267	ENGINE 2 THRUST REVERSER SYNC LOCK

- 2) Examine and repair the wiring between connector D40700P, pin 5 and connector D11132, pin 8 or connector D11132, pin 7 and Terminal Block TB606, VA15 (SWPM 20-24-00).
 - a) Do the Repair Confirmation at the end of this task.
- (b) If there is voltage, then open this circuit breaker, install a safety tag, reconnect the electrical connector, D40700P, and continue:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	5	C01267	ENGINE 2 THRUST REVERSER SYNC LOCK

- (11) Do a check for 28V DC at the Electrical Connector, D40700P, pin 5 to Structure Ground (WDM 78-32-61).

- (a) If there is no Voltage, then do these steps:
 - 1) 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	5	C01267	ENGINE 2 THRUST REVERSER SYNC LOCK

- 2) Examine and repair the wiring between connector D40700P, pin 5 and connector D11132, pin 8 or connector D11132, pin 7 and the Terminal Block, TB606, VA15 (SWPM 20-24-00).

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- a) Do the Repair Confirmation at the end of this task.
- (b) If there is voltage, then open this circuit breaker, install a safety tag, reconnect the electrical connector, D40700P, and continue:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	5	C01267	ENGINE 2 THRUST REVERSER SYNC LOCK

- (12) Do this check for 28V DC to the coil for the Sync Lock Time Delay Relay, R480 (WDM 78-32-61):

- (a) Remove the Sync Lock Time Delay Relay, R480.
- (b) Remove the safety tag and close this circuit breaker:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	5	C01267	ENGINE 2 THRUST REVERSER SYNC LOCK

- (c) Do a check for 28V DC between Sync Lock Time Delay Relay Receptacle, pins X1 and X2 (Ground).
- (d) If there is no Voltage, then do a check for 28V DC at pin X1 to Structure Ground.
 - 1) If there is voltage at pin X1, then open this circuit breaker, and install a safety tag:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	5	C01267	ENGINE 2 THRUST REVERSER SYNC LOCK

- 2) Examine and repair the Ground Wire from pin X2 (SWPM 20-24-00).
 - a) Do the Repair Confirmation at the end of this task.
- 3) If there is no voltage at pin X1, then open this circuit breaker:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	5	C01267	ENGINE 2 THRUST REVERSER SYNC LOCK

- 4) Examine and repair the wiring between Sync Lock Time Delay Relay Receptacle, pin X1 and Electrical Connector, D40700P, pin 5 (SWPM Chapter 20).
 - a) Do the Repair Confirmation at the end of this task.
- (e) If there is Voltage, then continue.
- (13) Do a check for 28V DC between Sync Lock Time Delay Relay Receptacle pin A1 and pin A2 (ground) (WDM 78-32-61).

- (a) If there is Voltage, then do these steps:

- 1) 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	5	C01267	ENGINE 2 THRUST REVERSER SYNC LOCK

- 2) Replace the Sync Lock Time Delay Relay, R480.
 - a) Do the Repair Confirmation at the end of this task.

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- (b) If there is no Voltage, then continue.
- (14) Do a check for 28V DC at the Sync Lock Time Delay Relay Receptacle, pin A1 to Structure Ground (WDM 78-32-61).

- (a) If there is Voltage, then do these steps:

- 1) 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	5	C01267	ENGINE 2 THRUST REVERSER SYNC LOCK

- 2) Examine and repair the Ground Wire from the Sync Lock Time Delay Relay R480, pin A2 (SWPM 20-24-00).

- a) Do the Repair Confirmation at the end of this task.

- (b) If there is no Voltage, then do these steps and continue:

- 1) 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	5	C01267	ENGINE 2 THRUST REVERSER SYNC LOCK

- 2) Re-install the Sync Lock Time Delay Relay, R480.

- (15) Do this check of the Sync Lock Latch Relay, R479 (WDM 78-32-61):

- (a) Remove the Sync Lock Latch Relay, R479.

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

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	5	C01267	ENGINE 2 THRUST REVERSER SYNC LOCK

- (c) Do a check for 28V DC at the Sync Lock Latch Relay Receptacle, pin Y1 to Structure Ground.

- (d) If there is Voltage, then do a continuity check from pin Y2 to Structure Ground.

- 1) If there is continuity, then open this circuit breaker:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	5	C01267	ENGINE 2 THRUST REVERSER SYNC LOCK

- 2) Replace the Sync Lock Latch Relay, R479.

- a) Do the Repair Confirmation at the end of this task.

- 3) If there is no continuity, then open this circuit breaker and install a safety tag:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	5	C01267	ENGINE 2 THRUST REVERSER SYNC LOCK

- 4) Examine and repair the wire between the Sync Lock Latch Relay, R479, pin Y2 of and the Sync Lock Time Delay Relay, R480, pin A1.

- a) Do the Repair Confirmation at the end of this task.

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- (e) If there is no voltage, then open the following circuit breaker and continue:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	5	C01267	ENGINE 2 THRUST REVERSER SYNC LOCK

- (16) Do the applicable tasks to repair or replace the wiring (SWPM Ch 20).
- (a) Repair or replace the wiring between the Sync Lock Latch Relay, R479, pin Y1 and the Splice SM6.
- 1) Install the Sync Lock Latch Relay, R479.
- a) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

- (1) Do these steps:
- (a) Make sure that all connectors that were disconnected to do an electrical check are correctly connected.
- (b) Make sure that the Relays that were removed to do an electrical check are re-installed.



WARNING

KEEP PERSONNEL AND EQUIPMENT AWAY FROM THE AREA AROUND THE THRUST REVERSERS. THE THRUST REVERSERS EXTEND AND RETRACT QUICKLY. INJURIES TO PERSONNEL, AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (c) Do this task: Thrust Reverser Activation After Ground Maintenance, AMM TASK 78-31-00-440-803-F00.
- (d) Do these steps to reset the T/R STOW FAULTS Light.
- 1) Operate the T/R through an EXTEND and RETRACT cycle.
- 2) Push and hold the FAULT RESET button for a minimum of two seconds.
- 3) Wait for at least 30 seconds.
- 4) If the V148 L SLEEVE SYNC LOCK PWR and V150 R SLEEVE SYNC LOCK PWR Fault Lights on the EAU are OFF, then you corrected the problem.



WARNING

DO THE DEACTIVATION PROCEDURE TO PREVENT THE OPERATION OF THE THRUST REVERSER. THE ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

- 5) If the V148 L SLEEVE SYNC LOCK PWR and V150 R SLEEVE SYNC LOCK PWR Fault Lights on the EAU are still ON, deactivate the T/R (Thrust Reverser Deactivation For Ground Maintenance, AMM TASK 78-31-00-040-802-F00) and continue the Fault Isolation Procedure at the subsequent step.
- (2) After you correct the problem, do these steps to put the Airplane back to its usual condition:



WARNING

KEEP PERSONNEL AND EQUIPMENT AWAY FROM THE AREA AROUND THE THRUST REVERSERS. THE THRUST REVERSERS EXTEND AND RETRACT QUICKLY. INJURIES TO PERSONNEL, AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (a) Operate the T/R through an EXTEND and RETRACT cycle.

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- (b) Make sure that the REVERSER Fault Light on the Flight Compartment P5 Panel comes ON for approximately 10 seconds after the Thrust Reverser Lever is moved to the RETRACT (stow) position and then goes OFF.
- (c) Wait for at least 30 seconds.
- (d) Make sure that the REVERSER Fault Light on the Flight Compartment P5 Panel stays OFF.

————— **END OF TASK** —————

814. Engine 1 - T/R DEPLOY FAULTS - L and R SLEEVE SYNC LOCK PWR Messages - Fault Isolation

A. Description

- (1) This task is for this combination of EAU maintenance messages:
 - (a) ENGINE 1 - V 148 L SLEEVE SYNC LOCK PWR
 - (b) ENGINE 1 - V 150 R SLEEVE SYNC LOCK PWR.
- (2) This Fault Light indicates that there is no power to the Sync Locks which does not agree with the commanded DEPLOY position of the T/R.
 - (a) If the Sync Locks have no power, that is the indication that they are in the locked position.
 - (b) The T/R will not deploy, unless the Sync Locks are damaged.

NOTE: If there was a loss of power while the T/R was in transit, the locking mechanism in the sync lock could shear. Without the locking mechanism the thrust reverser would deploy.
- (3) If the T/R was deployed and failed to stow, then the stow switch on the autothrottle switchpack could have failed. Replace the stow switch or the autothrottle switchpack, whichever is applicable to the airplane configuration.

B. Possible Causes

SIA ALL; AUTOTHROTTLE SWITCHPACK WITH REPLACEABLE SWITCHES P/N 254A1150-1, -2, -7, -8, -9, -10

- (1) T/R 1 Sync Lock Switch, S4

NOTE: The T/R 1 Sync Lock Switch, S4, is installed on the Left Autothrottle Switchpack, M1766.

SIA ALL; AUTOTHROTTLE SWITCHPACK WITH INTEGRATED SWITCHES P/N 254A1150-11, -12, -13, -14, -15, -16

- (2) T/R 1 Autothrottle Switch Pack Assembly, M1766

SIA ALL

- (3) T/R 1 Sync Lock Latch Relay, R477
- (4) Wiring
- (5) T/R 1 Stow Switch, S6

NOTE: The T/R 1 Stow Switch, S6, is installed on the Left Autothrottle Switchpack, M1766.

C. Circuit Breakers

- (1) This is the primary circuit breaker related to the fault:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	7	C01266	ENGINE 1 THRUST REVERSER SYNC LOCK

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D. Related Data

- (1) Component Location (78-32 TASK SUPPORT Figure 308)
- (2) Simplified Schematic (78-32 TASK SUPPORT Figure 306)
- (3) WDM 78-32-51
- (4) SSM 78-32-51

E. Initial Evaluation

- (1) Do the Engine Accessory Unit (EAU) BITE Procedure, 78-31 TASK 801 to show the current Maintenance Messages.
- (2) Do this task: Sync Lock Operational Test, AMM TASK 78-31-00-700-803-F00.
- (3) If the Maintenance Message shows, do the Fault Isolation Procedure below.
- (4) If the Maintenance Message does not show, then it is not active at this time and you had an intermittent problem.

F. Fault Isolation Procedure



DO THE SYNC LOCK OPERATIONAL TEST AFTER THE FAULT IS CORRECTED TO DO A CHECK OF THE SYNC LOCKS. IF THERE WAS A LOSS OF ELECTRICAL POWER WHEN THE THRUST REVERSER WAS IN TRANSIT, THE SYNC LOCKS COULD BE DAMAGED. IF YOU DO NOT DO THIS TEST AND THE THRUST REVERSER IS RETURNED TO SERVICE, IT IS POSSIBLE THAT THE SYNC LOCKS CAN NOT LOCK THE THRUST REVERSER IN THE RETRACT POSITION.



DO THE DEACTIVATION PROCEDURE TO PREVENT THE OPERATION OF THE THRUST REVERSER. THE ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

- (1) Do this task: Thrust Reverser Deactivation For Ground Maintenance, AMM TASK 78-31-00-040-802-F00.
 - (a) Move the Reverse Thrust Lever 1 UP and AFT to the EXTEND (deploy) Position.
- (2) Visually examine the Left Autothrottle Switch Pack Electrical Connector, D11128 (WDM 78-32-51):

NOTE: The Sync Lock Switch, S4, is installed on the Left Autothrottle Switch Pack, M1766.

- (a) To get access to the Electrical Connectors, remove the Access Cover from the Left Side of the Overhead in the Nose Gear Wheel Well.
- (b) Disconnect the Left Autothrottle Switchpack Electrical Connector, D11128.
- (c) Visually examine the Electrical Connector (Standard Engine Wiring and Equipment Check, AMM TASK 70-70-01-200-801-F00).
 - 1) If the Electrical Connector is damaged, then do the applicable tasks to repair or replace the connector (SWPM Ch 20).
 - a) Do the Repair Confirmation at the end of this task.
 - 2) If no problem was found, then continue.

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- (3) Do an electrical check of the T/R 1 Sync Lock Switch, S4, as follows (WDM 78-32-51).

NOTE: A Sync Lock Switch with dirty contacts can cause intermittent problems. Sometimes, a continuity check through the Sync Lock Switch is not a satisfactory check. Therefore, you can also use the alternate Load Light method to troubleshoot a defective Sync Lock Switch.

- (a) Method 1 - Continuity Check through the Left Autothrottle Switch Pack:

L A/T Switchpack Receptacle	L A/T Switchpack Receptacle	CONTINUITY
pin 7	pin 8	NO
pin 7	pin 14	YES

- (b) Method 2 - Load Light (Alternate):

- 1) Disconnect connector D11128 and install a jumper between the connector D11128, pin 7 and the Left Autothrottle Switchpack Receptacle, pin 7.
- 2) Remove the safety tag and close this circuit breaker:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
B	7	C01266	ENGINE 1 THRUST REVERSER SYNC LOCK

- 3) At the Autothrottle Switchpack, M1766, install a lamp, STD-12563 between the switch receptacle, pin 14 and Structure Ground.
 - a) Move the REVERSE THRUST LEVER 1 to the EXTEND (deploy) position and monitor the lamp, STD-12563 as follows:
 - <1> With the Reverse Thrust Lever 1 in the EXTEND (deploy) position, shake the REVERSE THRUST LEVER 1 and make sure that the lamp, STD-12563 stays ON.
 - <a> If the lamp, STD-12563 is dim, flickering, or OFF, the T/R 1 Sync Lock Switch, S4 is malfunctioning.
- 4) Remove the Load Light (lamp, STD-12563) from pin 14 and install it between the Left Autothrottle Switchpack Receptacle, pin 8 and Structure Ground.
 - a) Move the REVERSE THRUST LEVER 1 to the RETRACT (stow) position and monitor the lamp, STD-12563 as follows:
 - <1> With the REVERSE THRUST LEVER 1 in the RETRACT (stow) position, shake the REVERSE THRUST LEVER 1 and make sure that the Load Light (lamp, STD-12563) stays ON.
 - <a> If the lamp, STD-12563 is dim, flickering, or OFF, the T/R 1 Sync Lock Switch, S4 is malfunctioning.
- (c) If the wiring checks or the Load Light method show a problem with the Left Autothrottle Switch Pack or the T/R 1 Sync Lock Switch, do these steps:

SIA ALL; AUTOTHROTTLE SWITCHPACK WITH REPLACEABLE SWITCHES P/N 254A1150-1, -2, -7, -8, -9, -10

- 1) Adjust the Sync Lock Switch, S4 per the applicable steps in the Autothrottle Switchpack Switch Installation, AMM TASK 76-11-07-400-801-F00 .
 - a) Do the Repair Confirmation at the end of this task.

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**SIA ALL; AUTOTHROTTLE SWITCHPACK WITH REPLACEABLE SWITCHES P/N 254A1150-1, -2, -7, -8, -9, -10
(Continued)**

- b) If the Repair Confirmation is not satisfactory. replace the Sync Lock Switch, S4. These are the tasks:
 - Autothrottle Switchpack Switch Removal, AMM TASK 76-11-07-020-801-F00
 - Autothrottle Switchpack Switch Installation, AMM TASK 76-11-07-400-801-F00
- c) Do the Repair Confirmation at the end of this task.

SIA ALL; AUTOTHROTTLE SWITCHPACK WITH INTEGRATED SWITCHES P/N 254A1150-11, -12, -13, -14, -15, -16

- 2) Replace the Autothrottle Switchpack Assembly, M1766. These are the tasks:
 - Autothrottle Switchpack Assembly - Removal, AMM TASK 76-11-07-020-802-F00
 - Autothrottle Switchpack Assembly - Installation, AMM TASK 76-11-07-400-802-F00
- a) Do the Repair Confirmation at the end of this task.

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- (d) If the electrical check of the T/R 1 Sync Lock Switch, S4 shows that the switch is not malfunctioning, then continue.

NOTE: If you used the Load Light method, then remove the jumper and the Load Light, and continue.

- (4) At the connector D11128, do a check for 28V DC between pin 7 and Structure Ground (WDM 78-32-51).
 - (a) If there is no voltage, do these steps:
 - 1) 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>
B	7	C01266	ENGINE 1 THRUST REVERSER SYNC LOCK

- 2) Examine the wiring between the connector D11128, pin 7 and ENGINE 1 THRUST REVERSER SYNC LOCK Circuit Breaker, C01266 (WDM 78-32-51).
 - a) If you find problems with the wiring, do these steps:
 - <1> Repair the problems that you find (SWPM 20-24-00).
 - <2> Do the Repair Confirmation at the end of this task.

- (b) If there is voltage, then open this circuit breaker, attach a safety tag and continue:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	7	C01266	ENGINE 1 THRUST REVERSER SYNC LOCK

- (5) Do an electrical check at the Sync Lock Latch Relay, R477 (WDM 78-32-51).

NOTE: The Junction Box, J22, is located in the Nose Gear Wheel Well, on the left side.

- (a) At the Junction Box, J22, remove the access cover.
- (b) Remove the Sync Lock Latch Relay, R477.

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- (c) Do a check for continuity from pin X1 to Structure Ground.
- 1) If there is continuity, then do these steps:
 - a) At the Electrical Connector, D11128, examine and repair/replace the wire between pin X1 and pin 14 (SWPM Ch 20).
 - b) Do the Repair Confirmation at the end of this task.
 - 2) If there is no continuity, then remove the safety tag, close this circuit breaker and continue:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	7	C01266	ENGINE 1 THRUST REVERSER SYNC LOCK

- (6) Do a check for 28V DC from pin X1 to structure ground at the Sync Lock Relay, R477 (WDM 78-32-51).
- (a) If there is no voltage, then do these steps:
- 1) 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>
B	7	C01266	ENGINE 1 THRUST REVERSER SYNC LOCK

- 2) Examine and repair or replace the wire between pin X1 and pin 14 of the electrical connector, D11128.
 - a) Do the Repair Confirmation at the end of this task.
- (b) If there is voltage, then open this circuit breaker, attach a safety tag and continue:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	7	C01266	ENGINE 1 THRUST REVERSER SYNC LOCK

- (7) At the Sync Lock Latch Relay, R477, do a check for continuity from pin X2 to structure ground (WDM 78-32-51).
- (a) If there is no continuity, then do these steps:
- 1) Examine and repair or replace the wire between pin X2 and Ground (SWPM Ch 20).
 - a) Do the Repair Confirmation at the end of this task.
 - (b) If there is continuity, then remove the safety tag, close this circuit breaker and continue:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	7	C01266	ENGINE 1 THRUST REVERSER SYNC LOCK

- (8) At the Sync Lock Latch Relay, R477, do a check for 28V DC from pin B1 to structure ground (WDM 78-32-51).
- (a) If there is no voltage, then do these steps:

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- 1) 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>
B	7	C01266	ENGINE 1 THRUST REVERSER SYNC LOCK

- 2) Examine and repair or replace the wire between Terminal Block TB32, term YB13 and Terminal Block TB1806, term VB15 (SWPM Ch 20).

- a) Do the Repair Confirmation at the end of this task.

- (b) If there is voltage, then do these steps:

- 1) 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>
B	7	C01266	ENGINE 1 THRUST REVERSER SYNC LOCK

- 2) Replace the Sync Lock Relay, R477 (SWPM Ch 20).

- a) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

- (1) Do these steps:

- (a) Make sure that the electrical connector, M1766, is correctly connected.
 - (b) Make sure that the Sync Lock Latch Relay, R477, is installed.
 - (c) Move the Reverse Thrust Lever 1 FWD and DOWN to the RETRACT (stow) position.



WARNING

MAKE SURE THAT THERE ARE NO PERSONS OR EQUIPMENT IN THE AREA OF THE THRUST REVERSER. MOVEMENT OF THE THRUST REVERSER CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (d) Do this task: Thrust Reverser Activation After Ground Maintenance, AMM TASK 78-31-00-440-803-F00.
- (e) Do these steps to reset the T/R DEPLOY FAULTS Light.
 - 1) Move the Reverse Thrust Lever 1 UP and AFT to EXTEND (deploy) the T/R.
 - 2) Push and hold the FAULT RESET button for a minimum of two seconds.
 - 3) Wait for at least 30 seconds.
 - 4) If the V148 L SLEEVE SYNC LOCK PWR and V150 R SLEEVE SYNC LOCK PWR Fault Lights on the EAU are OFF, then you corrected the problem.

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DO THE DEACTIVATION PROCEDURE TO PREVENT THE OPERATION OF THE THRUST REVERSER. THE ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

- 5) If the V148 L SLEEVE SYNC LOCK PWR and V150 R SLEEVE SYNC LOCK PWR Fault Lights on the EAU are still ON, or if the T/R does not deploy, deactivate the T/R (Thrust Reverser Deactivation For Ground Maintenance, AMM TASK 78-31-00-040-802-F00), move the Reverse Thrust Lever 1 UP and AFT to the EXTEND (deploy) position and continue the Fault Isolation Procedure at the subsequent step.



DO THE SYNC LOCK OPERATIONAL TEST AFTER THE FAULT IS CORRECTED TO DO A CHECK OF THE SYNC LOCKS. IF THERE WAS A LOSS OF ELECTRICAL POWER WHEN THE THRUST REVERSER WAS IN TRANSIT, THE SYNC LOCKS COULD BE DAMAGED. IF YOU DO NOT DO THIS TEST AND THE THRUST REVERSER IS RETURNED TO SERVICE, IT IS POSSIBLE THAT THE SYNC LOCKS CAN NOT LOCK THE THRUST REVERSER IN THE RETRACT POSITION.

- (2) After the fault is corrected, do a check of the Sync Locks:
 - (a) Do this task: Sync Lock Operational Test, AMM TASK 78-31-00-700-803-F00.

————— END OF TASK —————

815. Engine 2 - T/R DEPLOY FAULTS - L and R SLEEVE SYNC LOCK PWR Messages - Fault Isolation

A. Description

- (1) This task is for this combination of EAU maintenance messages:
 - (a) ENGINE 2 - V 148 L SLEEVE SYNC LOCK PWR
 - (b) ENGINE 2 - V 150 R SLEEVE SYNC LOCK PWR.
- (2) This Fault Light indicates that there is no power to the Sync Locks which does not agree with the commanded deploy position of the T/R.
 - (a) If the Sync Locks have no power, that is the indication that they are in the locked position.
 - (b) The T/R will not deploy, unless the Sync Locks are damaged.

NOTE: If there was a loss of power while the T/R was in transit, the locking mechanism in the sync lock could shear. Without the locking mechanism the T/R would deploy.
- (3) If the T/R was deployed and failed to stow, then the stow switch on the autothrottle switchpack could have failed. Replace the stow switch or the autothrottle switchpack, whichever is applicable to the airplane configuration.

B. Possible Causes

SIA ALL; AUTOTHROTTLE SWITCHPACK WITH REPLACEABLE SWITCHES P/N 254A1150-1, -2, -7, -8, -9, -10

- (1) T/R 2 Sync Lock Switch, S4

NOTE: The T/R 2 Sync Lock Switch, S4, is installed on the Right Autothrottle Switchpack, M1767.

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SIA ALL; AUTOTHROTTLE SWITCHPACK WITH INTEGRATED SWITCHES P/N 254A1150-11, -12, -13, -14, -15, -16

- (2) T/R 2 Autothrottle Switch Pack Assembly, M1767

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- (3) T/R 2 Sync Lock Latch Relay, R479
(4) Wiring
(5) T/R 2 Stow Switch, S6

NOTE: Note: The T/R 2 Stow Switch, S6, is installed on the Right Autothrottle Switchpack, M1767.

C. Circuit Breakers

- (1) This is the primary circuit breaker related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	5	C01267	ENGINE 2 THRUST REVERSER SYNC LOCK

D. Related Data

- (1) Component Location (78-32 TASK SUPPORT Figure 308)
(2) Simplified Schematic (78-32 TASK SUPPORT Figure 307)
(3) WDM 78-32-61
(4) SSM 78-32-61

E. Initial Evaluation

- (1) Do the Engine Accessory Unit (EAU) BITE Procedure, 78-31 TASK 801 to show the current maintenance messages.
(2) Do the Sync Lock Operational Test, AMM TASK 78-31-00-700-803-F00.
(3) If the Maintenance Message shows, do the Fault Isolation Procedure below.
(4) If the Maintenance Message does not show, then it is not active at this time and you had an intermittent problem.

F. Fault Isolation Procedure



DO THE SYNC LOCK OPERATIONAL TEST AFTER THE FAULT IS CORRECTED TO DO A CHECK OF THE SYNC LOCKS. IF THERE WAS A LOSS OF ELECTRICAL POWER WHEN THE THRUST REVERSER WAS IN TRANSIT, THE SYNC LOCKS COULD BE DAMAGED. IF YOU DO NOT DO THIS TEST AND THE THRUST REVERSER IS RETURNED TO SERVICE, IT IS POSSIBLE THAT THE SYNC LOCKS CAN NOT LOCK THE THRUST REVERSER IN THE RETRACT POSITION.



DO THE DEACTIVATION PROCEDURE TO PREVENT THE OPERATION OF THE THRUST REVERSER. THE ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

- (1) Do this task: Thrust Reverser Deactivation For Ground Maintenance, AMM TASK 78-31-00-040-802-F00.

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- (a) Move the Reverse Thrust Lever 2 Up and AFT to the EXTEND (deploy) position.
- (2) Visually examine the electrical connectors for the Right Autothrottle Switchpack, M1767, and electrical connector, D11132 (WDM 78-32-61):

NOTE: The Sync Lock Switch, S4, is installed on the Right Autothrottle Switchpack, M1767.

- (a) To get access to the connectors, remove the access cover from the left side of the overhead in the Nose Gear Wheel Well.
- (b) See if the electrical connectors are correctly connected, and continue.
- (c) Disconnect the Right Autothrottle Switchpack Electrical Connector, D11132.
- (d) Visually examine the electrical connector (AMM TASK 70-70-01-200-801-F00).
 - 1) If the electrical connector is damaged, then do the applicable tasks to repair or replace the connector (SWPM Ch 20).
 - a) Do the Repair Confirmation at the end of this task.
 - 2) If the connector was not correctly connected, and no other problem was found, then connect the connector and do the Repair Confirmation at the end of this task.
- (e) If you did not find a problem, then continue.
- (3) Do an electrical check of the T/R 2 Sync Lock Switch, S4, which is installed on the Right Autothrottle Switchpack, M1767 as follows (WDM 78-32-61):

NOTE: A Sync Lock Switch with dirty contacts can cause intermittent problems. Sometimes, a continuity check through the Sync Lock Switch is not a satisfactory check. Therefore, you can also use the alternate Load Light method to troubleshoot a defective Sync Lock Switch.

- (a) Method 1 - Continuity Check through the Switchpack:
 - 1) Disconnect the connector D11132.
 - 2) With the Right Autothrottle Switch Pack in the EXTEND (deploy) position, do a check for continuity as follows:

R A/T Switchpack Receptacle	R A/T Switchpack Receptacle	CONTINUITY
pin 7	pin 8	NO
pin 7	pin 14	YES

- (b) Alternate Method 2 - Load Light:
 - 1) Remove connector D11132 and install a jumper between pin 7 of connector D11132 and pin 7 of the Right Autothrottle Switchpack, M1767 Receptacle.
 - 2) Remove the safety tag and close this circuit breaker:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
C	5	C01267	ENGINE 2 THRUST REVERSER SYNC LOCK

- 3) Install a Load Light (lamp, STD-12563) between pin 14 of the Right Autothrottle Switchpack, M1767 Receptacle and Airplane Ground.
 - a) Move the Reverse Thrust Lever 2 to the EXTEND (deploy) position and monitor the Load Light as follows:

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- <1> With the Reverse Thrust Lever 2 in the EXTEND (deploy) position, shake the Reverse Thrust Lever 2 and make sure that the Load Light stays illuminated.
- <a> If the Load Light is dim, flickering, or not illuminated, the T/R 2 Sync Lock Switch, S4 is malfunctioning.
- 4) Remove the Load Light (lamp, STD-12563) from pin 14 and install between pin 8 of the Right Autothrottle Switchpack, M1767 Receptacle and Airplane Ground.
- a) Move the Reverse Thrust Lever 2 to the RETRACT (stow) position and monitor the Load Light as follows:
- <1> With the Reverse Thrust Lever 2 in the RETRACT (stow) position, shake the Reverse Thrust Lever 2 and make sure that the Load Light (lamp, STD-12563) stays ON.
- <a> If the Load Light is dim, flickering, or not illuminated, the T/R 2 Sync Lock Switch, S4 is malfunctioning.
- 5) Open this circuit breaker and install safety lock:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	5	C01267	ENGINE 2 THRUST REVERSER SYNC LOCK

- (c) If the electrical check of the T/R 2 Sync Lock Switch, S4 shows that the Switch is malfunctioning, do these steps:

SIA ALL; AUTOTHROTTLE SWITCHPACK WITH REPLACEABLE SWITCHES P/N 254A1150-1, -2, -7, -8, -9, -10

- 1) Adjust the Sync Lock Switch, S4 per the applicable steps in the Autothrottle Switchpack Switch Installation, AMM TASK 76-11-07-400-801-F00 .
- a) Do the Repair Confirmation at the end of this task.
- b) If the Repair Confirmation is not satisfactory, replace the Sync Lock Switch, S4. These are the tasks:
- Autothrottle Switchpack Switch Removal, AMM TASK 76-11-07-020-801-F00
 - Autothrottle Switchpack Switch Installation, AMM TASK 76-11-07-400-801-F00

SIA ALL; AUTOTHROTTLE SWITCHPACK WITH INTEGRATED SWITCHES P/N 254A1150-11, -12, -13, -14, -15, -16

- 2) Replace the Autothrottle Switchpack Assembly, M1767. These are the tasks:
- Autothrottle Switchpack Assembly - Installation, AMM TASK 76-11-07-400-802-F00
 - Autothrottle Switchpack Assembly - Removal, AMM TASK 76-11-07-020-802-F00
- a) Do the Repair Confirmation at the end of this task.

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- (d) If the electrical check of the T/R 2 Sync Lock Switch, S4 shows that the Switch is not malfunctioning, then continue.

NOTE: If you used the Load Light method, then remove the jumper and the Load Light, and continue.

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- (4) At the connector D11132, do a check for 28V DC between pin 7 and Structure Ground (WDM 78-32-61).

- (a) If there is no voltage, then do these steps:

- 1) 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	5	C01267	ENGINE 2 THRUST REVERSER SYNC LOCK

- 2) Examine the wiring between the connector D11132, pin 7 and ENGINE 2 THRUST REVERSER SYNC LOCK Circuit Breaker, C01267 (WDM 78-32-51).

- a) If you find problems with the wiring, do these steps:

<1> Repair the problems that you find (SWPM 20-24-00).

<2> Do the Repair Confirmation at the end of this task.

- (b) If there is voltage, then open this circuit breaker, attach a safety tag and continue:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	5	C01267	ENGINE 2 THRUST REVERSER SYNC LOCK

- (5) Do an electrical check at the Sync Lock Latch Relay, R479 (WDM 78-32-61).

NOTE: The Junction Box, J24, is in the Nose Gear Wheel Well on the right side.

- (a) At the Junction Box, J24, remove the access cover.

- (b) Remove the Sync Lock Latch Relay, R479.

- (c) Do a check for continuity from pin X1 to Structure Ground.

- 1) If there is continuity, then do these steps:

- a) At the Electrical Connector, D11132, examine and repair/replace the wire between pin X1 and pin 14 (SWPM Ch 20).

- b) Do the Repair Confirmation at the end of this task.

- 2) If there is no continuity, then remove the safety tag, close this circuit breaker and continue:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	5	C01267	ENGINE 2 THRUST REVERSER SYNC LOCK

- (6) Do a check for 28V DC from pin X1 to structure ground at the Sync Lock Relay, R479 (WDM 78-32-61).

- (a) If there is no voltage, then do these steps:

- 1) 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	5	C01267	ENGINE 2 THRUST REVERSER SYNC LOCK

- 2) Examine and repair or replace the wire between pin X1 and pin 14 of the electrical connector, D11132.

- a) Do the Repair Confirmation at the end of this task.

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- (b) If there is voltage, then open this circuit breaker, attach a safety tag and continue:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	5	C01267	ENGINE 2 THRUST REVERSER SYNC LOCK

- (7) At the Sync Lock Latch Relay, R479, do a check for continuity from pin X2 to structure ground (WDM 78-32-61).

- (a) If there is no continuity, then do these steps:

- 1) Examine and repair or replace the wire between pin X2 and ground (SWPM Ch 20).
 - a) Do the Repair Confirmation at the end of this task.
- 2) If there is continuity, then remove the safety tag, close this circuit breaker and continue:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	5	C01267	ENGINE 2 THRUST REVERSER SYNC LOCK

- (8) At the Sync Lock Latch Relay, R479, do a check for 28V DC from pin B1 to structure ground (WDM 78-32-61).

- (a) If there is no voltage, then do these steps:

- 1) 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	5	C01267	ENGINE 2 THRUST REVERSER SYNC LOCK

- 2) Examine and repair or replace the wire between Splice SM4 and Terminal Block TB606, term VA15 (SWPM Ch 20).
 - a) Do the Repair Confirmation at the end of this task.

- (b) If there is voltage, then do these steps:

- 1) 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	5	C01267	ENGINE 2 THRUST REVERSER SYNC LOCK

- 2) Replace the Sync Lock Relay, R479 (SWPM Ch 20).
 - a) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

- (1) Do these steps:

- (a) Make sure that the electrical connector, M1767, is correctly connected.
- (b) Make sure that the Sync Lock Latch Relay, R479, is installed.
- (c) Move the Reverse Thrust Lever 2 FWD and DOWN to the RETRACT (stow) position.

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MAKE SURE THAT THERE ARE NO PERSONS OR EQUIPMENT IN THE AREA OF THE THRUST REVERSER. MOVEMENT OF THE THRUST REVERSER CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (d) Do this task: Thrust Reverser Activation After Ground Maintenance, AMM TASK 78-31-00-440-803-F00.
- (e) Do these steps to reset the T/R DEPLOY FAULTS Light.
 - 1) Move the Reverse Thrust Lever 2 UP and AFT to EXTEND (deploy) the T/R.
 - 2) Push and hold the FAULT RESET button for a minimum of two seconds.
 - 3) Wait for at least 30 seconds.
 - 4) If the V148 L SLEEVE SYNC LOCK PWR and V150 R SLEEVE SYNC LOCK PWR Fault Lights on the EAU are OFF, then you corrected the problem.



DO THE DEACTIVATION PROCEDURE TO PREVENT THE OPERATION OF THE THRUST REVERSER. THE ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

- 5) If the V148 L SLEEVE SYNC LOCK PWR and V150 R SLEEVE SYNC LOCK PWR Fault Lights on the EAU are ON, or if the T/R does not deploy, deactivate the T/R (Thrust Reverser Deactivation For Ground Maintenance, AMM TASK 78-31-00-040-802-F00), move the Reverse Thrust Lever 2 UP and AFT to the EXTEND (deploy) position and continue the Fault Isolation Procedure at the subsequent step.



DO THE SYNC LOCK OPERATIONAL TEST AFTER THE FAULT IS CORRECTED TO DO A CHECK OF THE SYNC LOCKS. IF THERE WAS A LOSS OF ELECTRICAL POWER WHEN THE THRUST REVERSER WAS IN TRANSIT, THE SYNC LOCKS COULD BE DAMAGED. IF YOU DO NOT DO THIS TEST AND THE THRUST REVERSER IS RETURNED TO SERVICE, IT IS POSSIBLE THAT THE SYNC LOCKS CAN NOT LOCK THE THRUST REVERSER IN THE RETRACT POSITION.

- (2) After the fault is corrected, do a check of the Sync Locks:
 - (a) Do this task: Sync Lock Operational Test, AMM TASK 78-31-00-700-803-F00.

— END OF TASK —

816. T/R STOW FAULTS - All STOW Messages except L and R SLEEVE SYNC LOCK PWR and EAU FAULT Messages - Fault Isolation

A. Description

- (1) This task is for this combination of ENG-1 Maintenance Messages:
 - (a) ENGINE 1 - S831 L SLEEVE STOW SENSOR
 - (b) ENGINE 1 - S835 L SLEEVE LOCK SENSOR
 - (c) ENGINE 1 - S833 HYD ISO VALVE SENSOR
 - (d) ENGINE 1 - S834 DIR CONT VALVE SENSOR
 - (e) ENGINE 1 - S832 R SLEEVE STOW SENSOR

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- (f) ENGINE 1 - S836 R SLEEVE LOCK SENSOR
- (2) This task is for this combination of ENG-2 Maintenance Messages:
 - (a) ENGINE 2 - S831 L SLEEVE STOW SENSOR
 - (b) ENGINE 2 - S835 L SLEEVE LOCK SENSOR
 - (c) ENGINE 2 - S830 HYD ISO VALVE SENSOR
 - (d) ENGINE 2 - S839 DIR CONT VALVE SENSOR
 - (e) ENGINE 2 - S832 R SLEEVE STOW SENSOR
 - (f) ENGINE 2 - S836 R SLEEVE LOCK SENSOR
- (3) The T/R is in the RETRACT (stow) position.
- (4) This combination of Maintenance Messages indicates that the Reverse Thrust Levers were moved too slowly from the EXTEND (deploy) to the RETRACT (stow) position.
- (5) The Electronic Engine Control (EEC) BITE can also show these recent Maintenance Messages:
 - ENG-1: 78-31521
 - ENG-1: 78-11521
 - ENG-1: 78-21521
 - ENG-1: 78-10101
 - ENG-2: 78-31522
 - ENG-2: 78-11522
 - ENG-2: 78-21522
 - ENG-2: 78-10102
- (6) This combination of Maintenance Messages can also indicate that the ENG-1 (ENG-2) T/R retracted (stowed) too slowly.

B. Possible Causes

- (1) The Reverse Thrust Levers were moved too slowly from the EXTEND (deploy) to the RETRACT (stow) position
- (2) ENG-1 (ENG-2) Control Switch Actuator Spring
- (3) ENG-1 (ENG-2) Control Switch, S828 (S829)

C. Fault Isolation Procedure

- (1) If the ENGINE CONTROL and REVERSER Lights are ON, do these steps:
 - (a) Do the EEC BITE Procedure, 73-00 TASK 801.
 - (b) Make sure that only the Maintenance Messages that follow show:
NOTE: One or a combination of these Maintenance Messages can show.
 - ENG-1: 78-31521
 - ENG-1: 78-11521
 - ENG-1: 78-21521
 - ENG-1: 78-10101
 - ENG-2: 78-31522
 - ENG-2: 78-11522
 - ENG-2: 78-21522

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- ENG-2: 78-10102



MAKE SURE THAT THERE ARE NO PERSONS OR EQUIPMENT IN THE AREA OF THE THRUST REVERSER. MOVEMENT OF THE THRUST REVERSER CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- 1) If only one or a combination of the Maintenance Messages indicated above show, then operate the T/R through an EXTEND (deploy) and RETRACT (stow) cycle.
 - a) If the ENGINE CONTROL and REVERSER Lights go OFF, then this occurrence was caused by the slow movement of the Reverse Thrust Lever from the EXTEND to the RETRACT position. Do these steps to reset the EAU:
 - <1> Push and hold the FAULT RESET button for a minimum of two seconds.
 - <2> Wait for at least 30 seconds.
 - b) If the ENGINE CONTROL and REVERSER Lights do not go OFF, then do this task: Time to Extend or Retract the Thrust Reverser Too Slow - Fault Isolation, 78-34 TASK 805.
 - 2) If other Maintenance Messages show, then do the applicable Fault Isolation Procedure for that Maintenance Message or combination of Maintenance Messages.
- (2) If only the REVERSER Lights are OFF, do these steps to find out if the Maintenance Messages are still active:
- (a) Reset the EAU as follows:
 - 1) Push and hold the FAULT RESET button for a minimum of two seconds.
 - 2) Wait for at least 30 seconds.



MAKE SURE THAT THERE ARE NO PERSONS OR EQUIPMENT IN THE AREA OF THE THRUST REVERSER. MOVEMENT OF THE THRUST REVERSER CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (b) Operate the T/R through an EXTEND (deploy) and RETRACT (stow) cycle.
 - (c) Push and hold the T/R STOW FAULTS Switch on the EAU to show the Maintenance Messages.
 - 1) If the Maintenance Messages do not show, then this occurrence was caused by the slow movement of the Reverse Thrust Lever from the EXTEND to the RETRACT position.
 - 2) If a different combination of Maintenance Messages shows, then refer to the 78-MAINT MSG INDEX and do the applicable Fault Isolation Procedure for the Maintenance Messages that show.
- (3) Do a check of the ENG-1 (ENG-2) Thrust Reverser Control Switch Spring . This is the task: Actuation Spring Free Angle Check, AMM TASK 78-34-11-200-801-F00.
- (a) If necessary, then replace the Thrust Reverser Control Switch Spring. These are the tasks:
 - Actuation Spring Removal, AMM TASK 78-34-11-000-801-F00
 - Actuation Spring Installation, AMM TASK 78-34-11-400-801-F00

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- 1) Do the EEC BITE Procedure, 73-00 TASK 801.
 - a) If the Maintenance Message does not show, then you have corrected the problem.
 - b) If the Maintenance Message still shows, then continue.
- (4) Adjust or replace as necessary the ENG-1 (ENG-2) T/R Control Switch, S828 (S829). These are the tasks:
 - Control Switch Adjustment and Test, AMM TASK 78-34-04-700-801-F00
 - Control Switch Removal, AMM TASK 78-34-04-000-801-F00
 - Control Switch Installation, AMM TASK 78-34-04-400-801-F00
- (a) Do the EEC BITE Procedure, 73-00 TASK 801.
 - 1) If the Maintenance Message does not show, then you have corrected the problem.
 - 2) If the Maintenance Message still shows, then continue.

— END OF TASK —

817. T/R STOW FAULTS - All STOW Messages except DIR CONT VALVE SENSOR, L and R SLEEVE SYNC LOCK PWR and EAU FAULT Messages - Fault Isolation

A. Description

- (1) This task is for this combination of ENG-1 Maintenance Messages:
 - (a) ENGINE 1 - S831 L SLEEVE STOW SENSOR
 - (b) ENGINE 1 - S835 L SLEEVE LOCK SENSOR
 - (c) ENGINE 1 - S833 HYD ISO VALVE SENSOR
 - (d) ENGINE 1 - S832 R SLEEVE STOW SENSOR
 - (e) ENGINE 1 - S836 R SLEEVE LOCK SENSOR
- (2) This task is for this combination of ENG-2 Maintenance Messages:
 - (a) ENGINE 2 - S831 L SLEEVE STOW SENSOR
 - (b) ENGINE 2 - S835 L SLEEVE LOCK SENSOR
 - (c) ENGINE 2 - S830 HYD ISO VALVE SENSOR
 - (d) ENGINE 2 - S832 R SLEEVE STOW SENSOR
 - (e) ENGINE 2 - S836 R SLEEVE LOCK SENSOR
- (3) The T/R is in the RETRACT (stow) position.
- (4) This combination of Maintenance Messages indicates that the Reverse Thrust Levers were moved too slowly from the EXTEND (deploy) to the RETRACT (stow) position.
- (5) The EEC BITE can also show these recent Maintenance Messages:
 - ENG-1: 78-31521
 - ENG-1: 78-11521
 - ENG-1: 78-21521
 - ENG-1: 78-10101
 - ENG-2: 78-31522
 - ENG-2: 78-11522
 - ENG-2: 78-21522

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- ENG-2: 78-10102

(6) This combination of Maintenance Messages can also indicate that the ENG-1 (ENG-2) T/R retracted (stowed) too slowly.

B. Possible Causes

(1) The Reverse Thrust Levers were moved too slowly from the EXTEND (deploy) to the RETRACT (stow) position.

C. Fault Isolation Procedure

(1) If the ENGINE CONTROL and REVERSER Lights are ON, do these steps:

- Do the EEC BITE Procedure, 73-00 TASK 801.
- Make sure that only the Maintenance Messages that follow show:

NOTE: One or a combination of these Maintenance Messages can show.

- ENG-1: 78-31521
- ENG-1: 78-11521
- ENG-1: 78-21521
- ENG-1: 78-10101
- ENG-2: 78-31522
- ENG-2: 78-11522
- ENG-2: 78-21522
- ENG-2: 78-10102



MAKE SURE THAT THERE ARE NO PERSONS OR EQUIPMENT IN THE AREA OF THE THRUST REVERSER. MOVEMENT OF THE THRUST REVERSER CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- If only one or a combination of the Maintenance Messages indicated above shows, then operate the T/R through an EXTEND (deploy) and RETRACT (stow) cycle.
 - If the ENGINE CONTROL and REVERSER Lights go OFF, then this occurrence was caused by the slow movement of the Reverse Thrust Lever from the EXTEND to the RETRACT position. Do these steps to reset the EAU:
 - Push and hold the FAULT RESET button for a minimum of two seconds.
 - Wait for at least 30 seconds.
 - If the ENGINE CONTROL and REVERSER Lights do not go OFF, then do this task: Time to Extend or Retract the Thrust Reverser Too Slow - Fault Isolation, 78-34 TASK 805.
 - If other Maintenance Messages show, then do the applicable Fault Isolation Procedure for that Maintenance Message or combination of Maintenance Messages.
- (2) If only the REVERSER Lights are OFF, do these steps to find out if the Maintenance Messages are still active:
- Reset the EAU:
 - Push and hold the FAULT RESET button for a minimum of two seconds.

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- 2) Wait for at least 30 seconds.

**WARNING**

MAKE SURE THAT THERE ARE NO PERSONS OR EQUIPMENT IN THE AREA OF THE THRUST REVERSER. MOVEMENT OF THE THRUST REVERSER CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (b) Operate the T/R through an EXTEND (deploy) and RETRACT (stow) cycle.
- (c) Push and hold the T/R STOW FAULTS Switch on the EAU to show the Maintenance Messages.
- 1) If the Maintenance Messages do not show, then this occurrence was caused by the slow movement of the Reverse Thrust Lever from the EXTEND to the RETRACT position.
 - 2) If a different combination of Maintenance Messages show, then refer to the 78-MAINT MSG INDEX and do the applicable Fault Isolation Procedure for the Maintenance Messages that show.

———— **END OF TASK** ————

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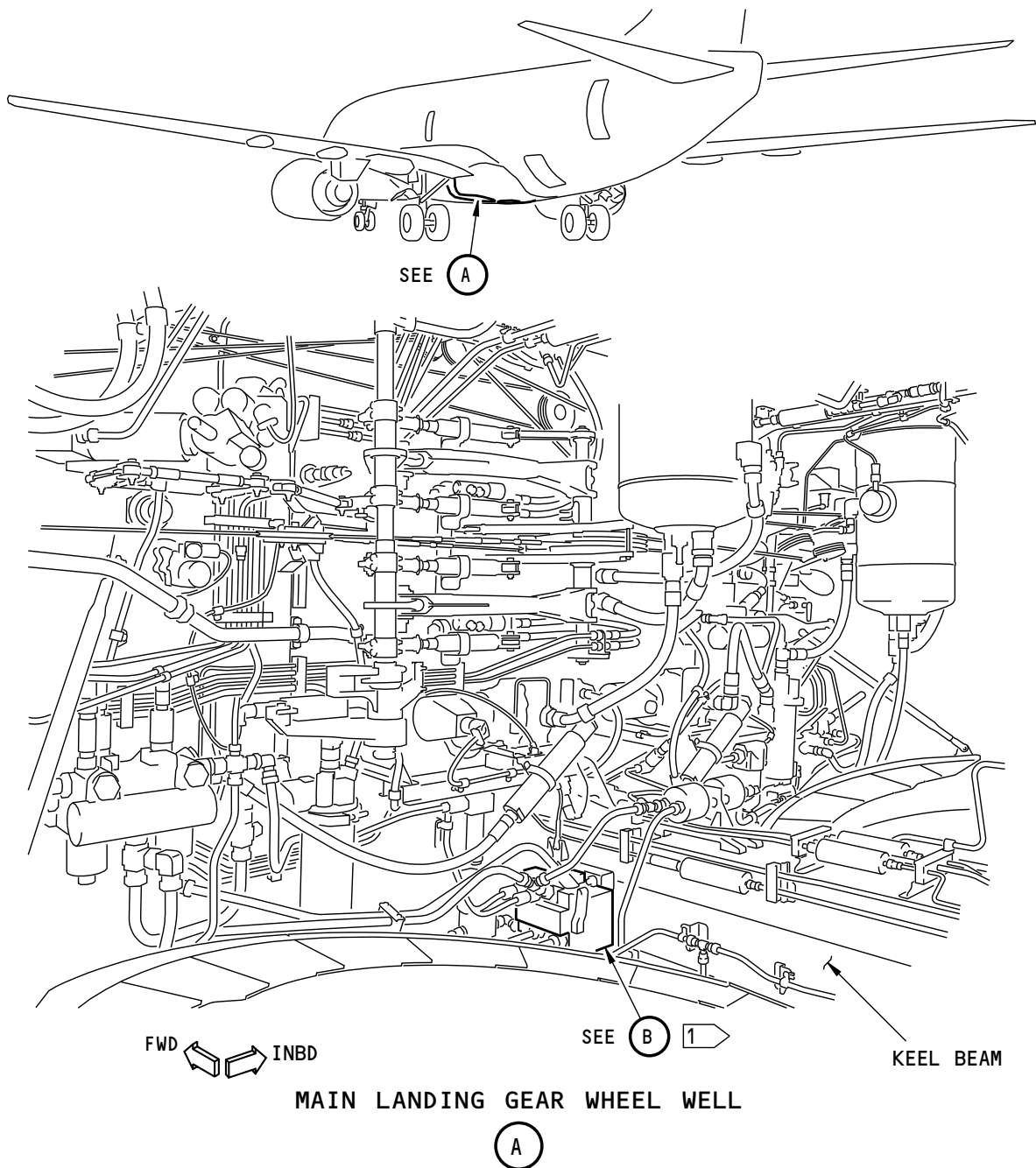
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ECCN 9E991 BOEING PROPRIETARY - See title page for details

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1 ENGINE 1 CONTROL VALVE MODULE IS SHOWN,
ENGINE 2 CONTROL VALVE MODULE IS ON THE RIGHT SIDE OF THE KEEL BEAM
AND IS EQUIVALENT TO ENGINE 1.

H62343 S0006746436_V1

Control Valve Module
Figure 301/78-32-00-990-801-F00 (Sheet 1 of 2)

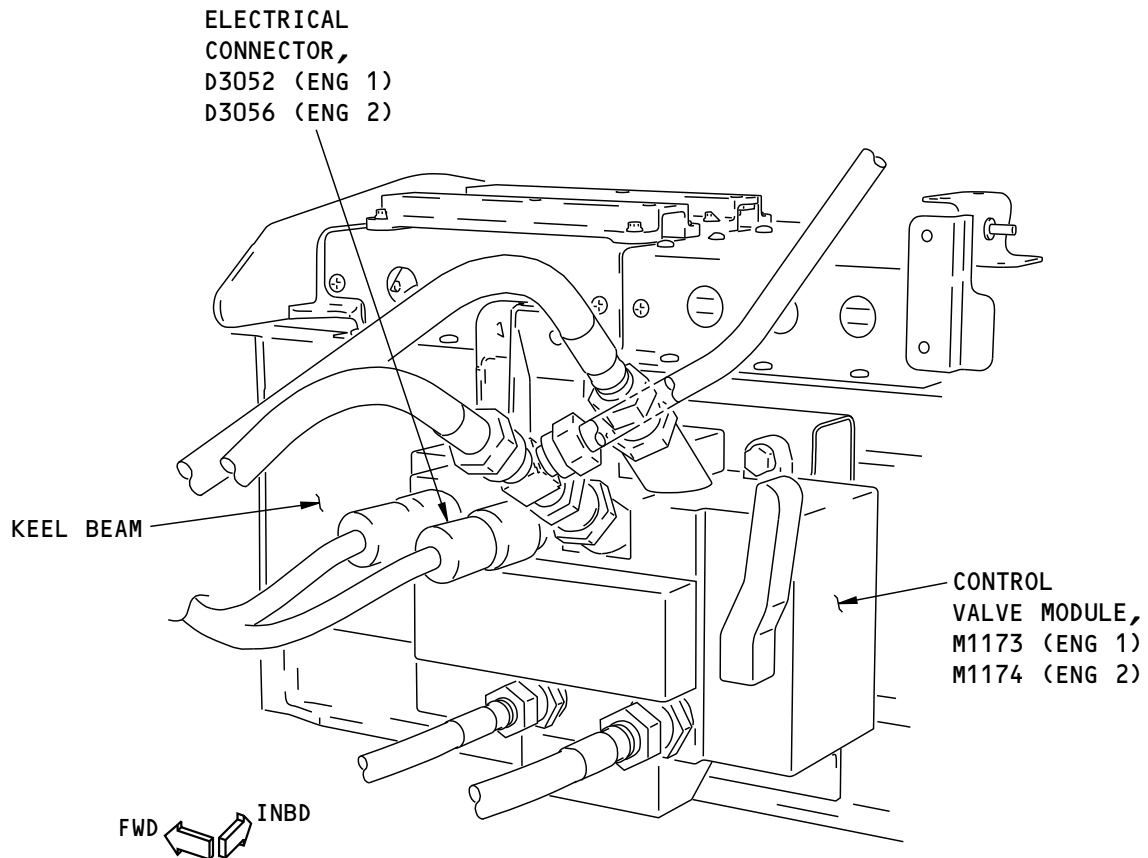
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(B)

H62351 S0006746437_V1

Control Valve Module
Figure 301/78-32-00-990-801-F00 (Sheet 2 of 2)

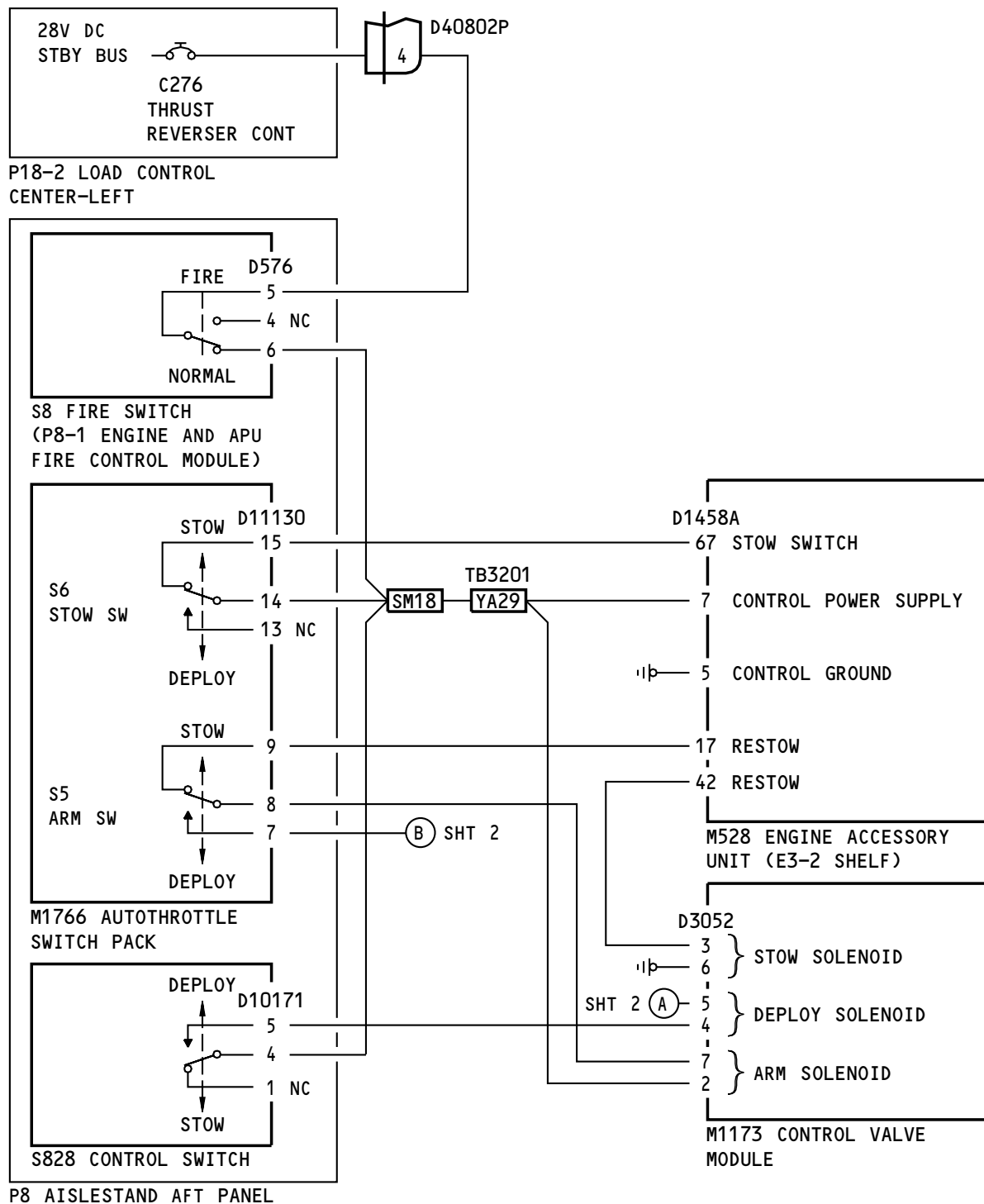
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Engine 1 Thrust Reverser Control Simplified Schematic
Figure 302/78-32-00-990-802-F00 (Sheet 1 of 2)

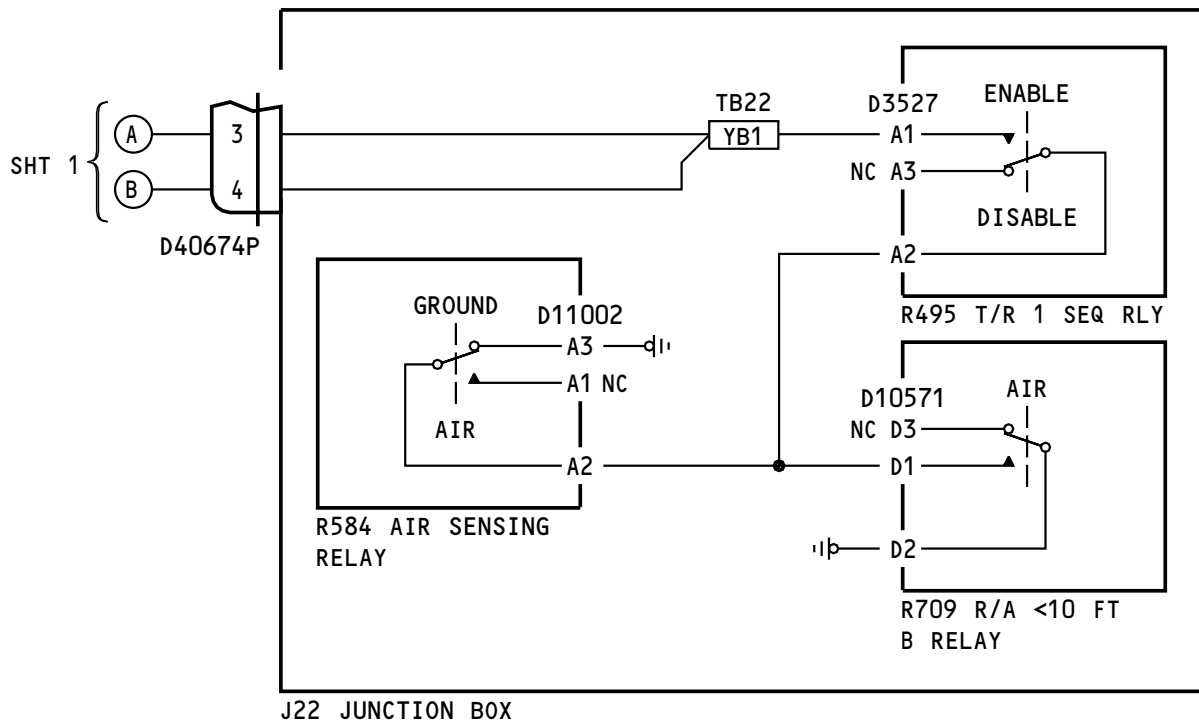
EFFECTIVITY
SIA ALL

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H62388 S0006746439_V1

Engine 1 Thrust Reverser Control Simplified Schematic
Figure 302/78-32-00-990-802-F00 (Sheet 2 of 2)

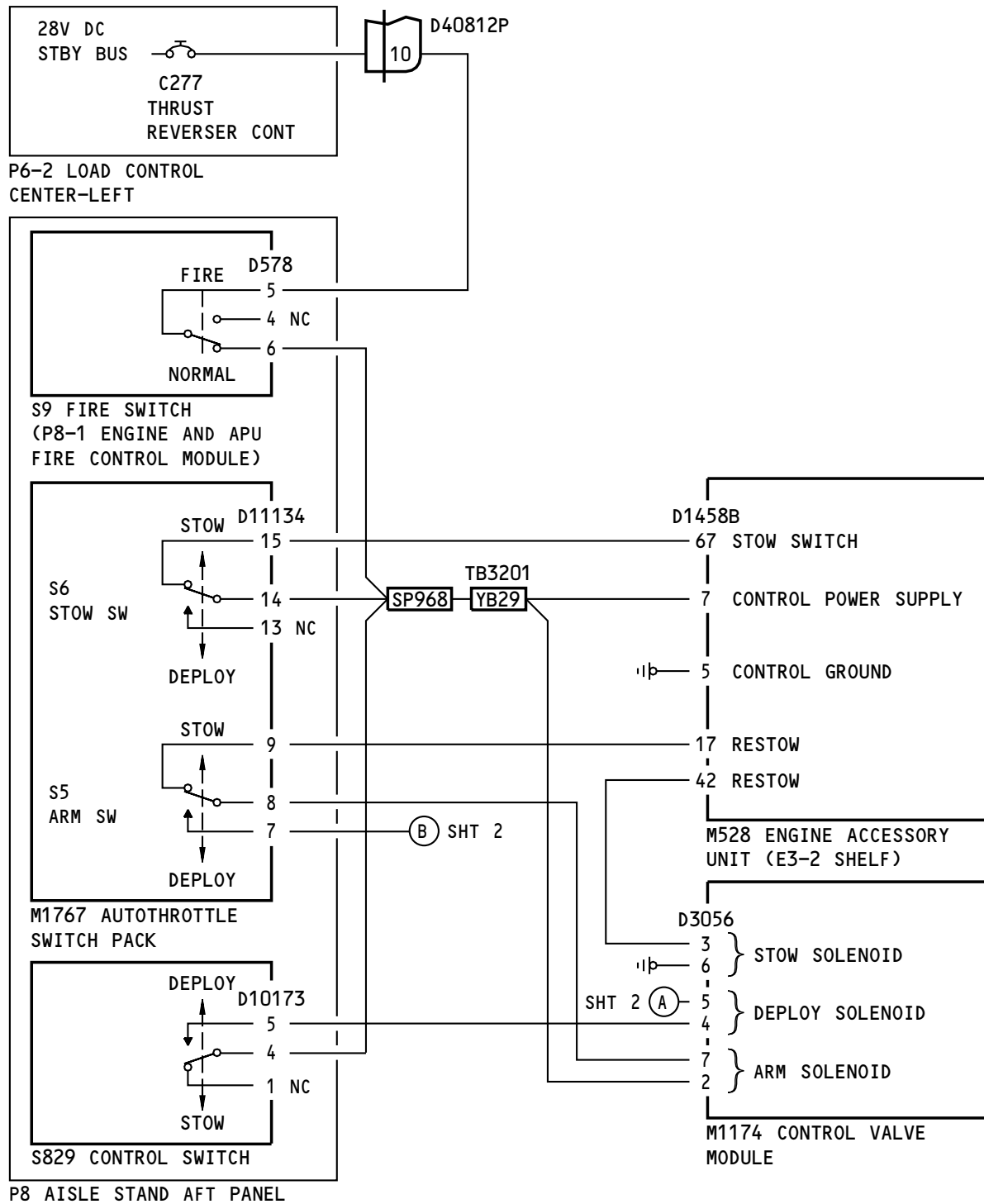
EFFECTIVITY
SIA ALL

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H62396 S0006746440_V1

Engine 2 Thrust Reverser Control Simplified Schematic
Figure 303/78-32-00-990-803-F00 (Sheet 1 of 2)

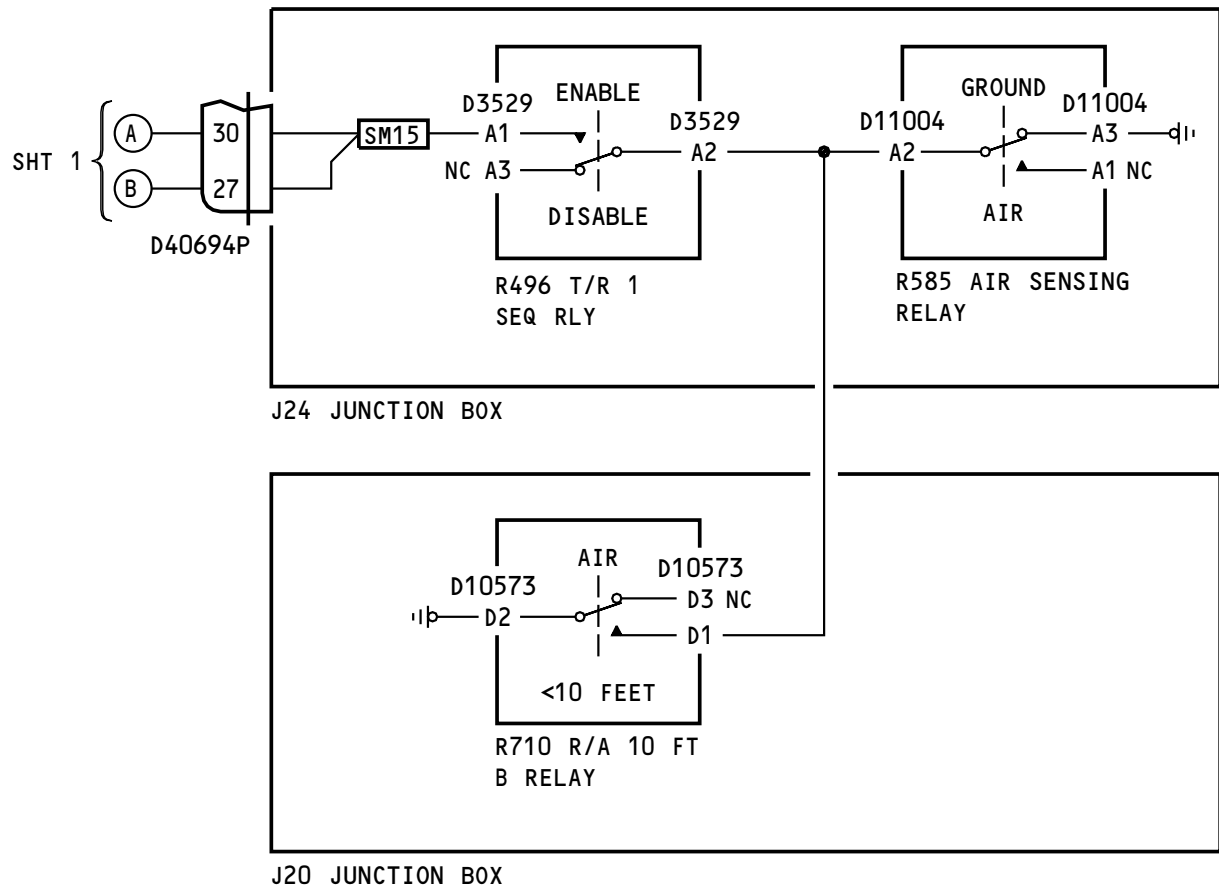
EFFECTIVITY
SIA ALL

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H63237 S0006746441_V1

Engine 2 Thrust Reverser Control Simplified Schematic
Figure 303/78-32-00-990-803-F00 (Sheet 2 of 2)

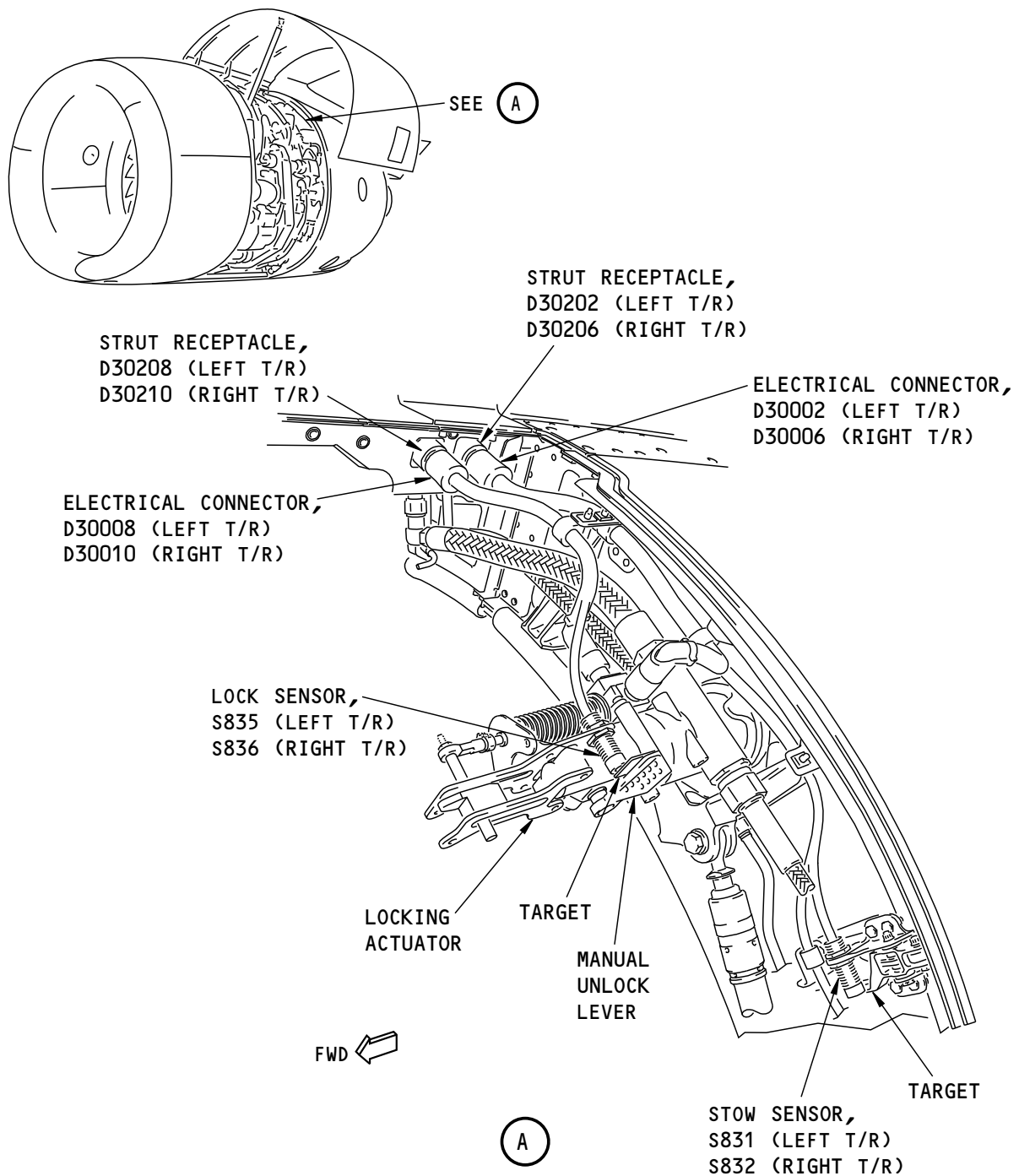
EFFECTIVITY
SIA ALL

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NOTE: LEFT THRUST REVERSER IS SHOWN,
RIGHT THRUST REVERSER IS EQUIVALENT.

H62925 S0006746444_V1

Engine 1 Sleeve Lock and Stow Sensor and Simplified Schematic
Figure 304/78-32-00-990-805-F00 (Sheet 1 of 2)

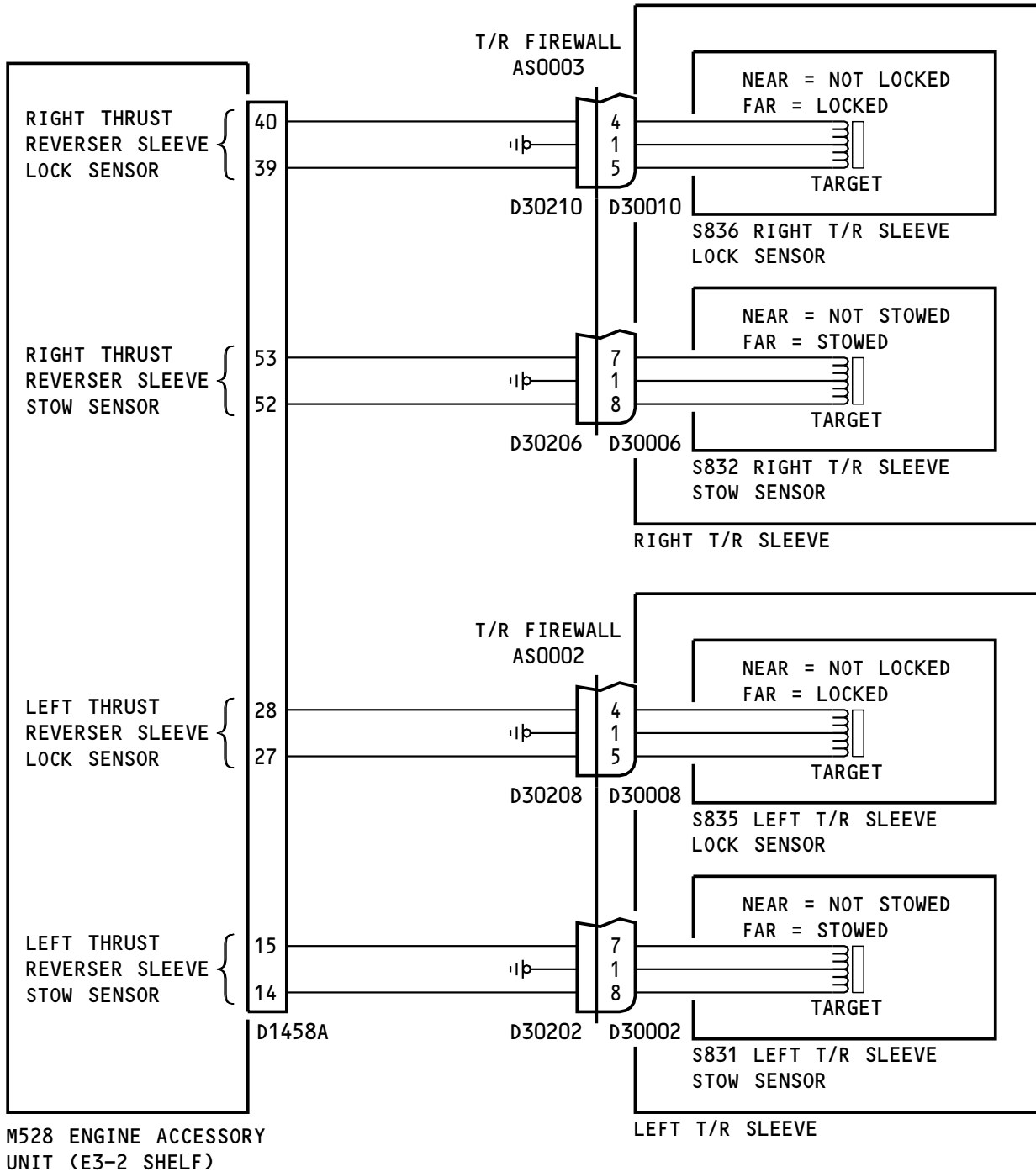
EFFECTIVITY
SIA ALL

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H62953 S0006746445_V1

Engine 1 Sleeve Lock and Stow Sensor and Simplified Schematic
Figure 304/78-32-00-990-805-F00 (Sheet 2 of 2)

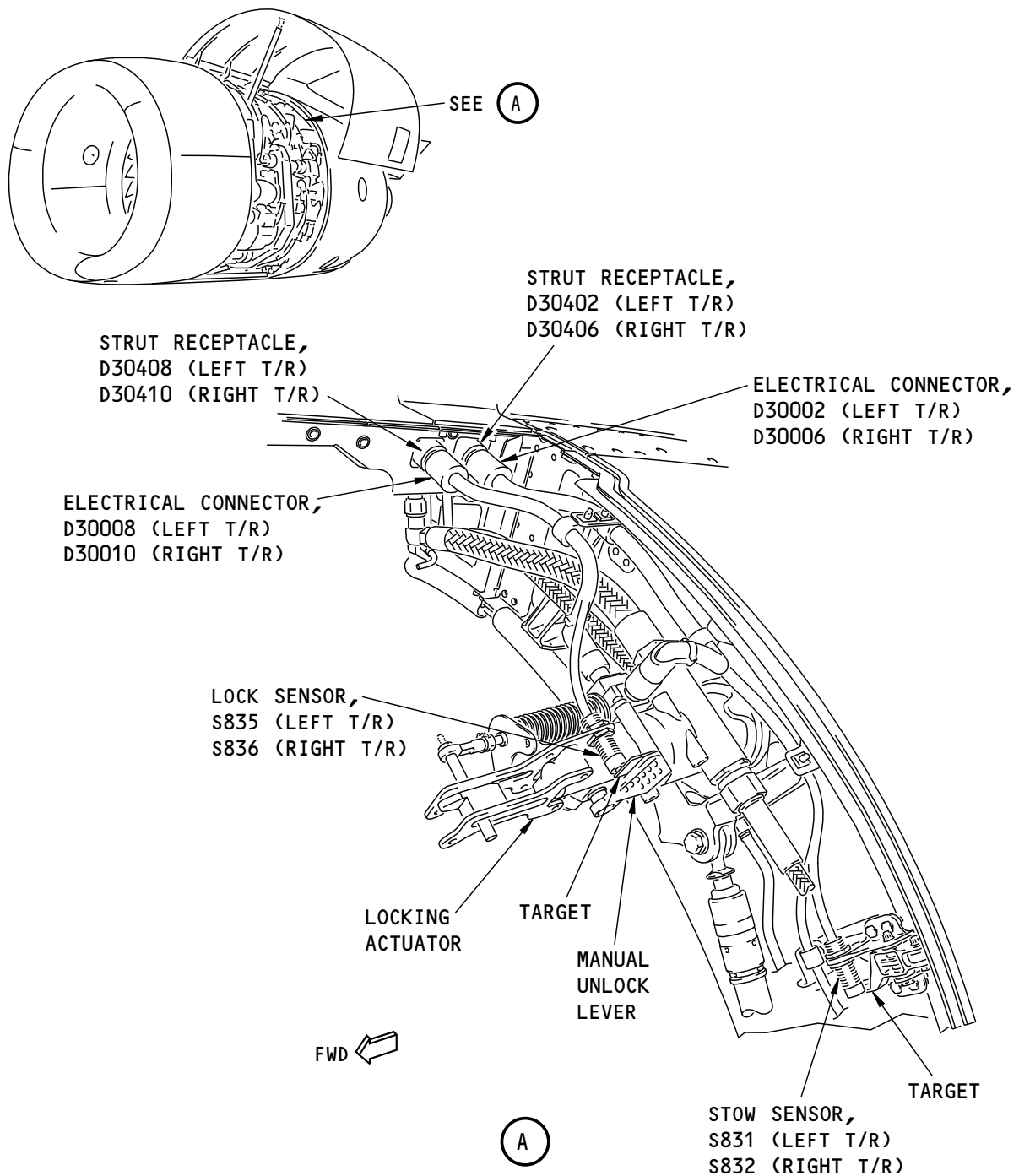
EFFECTIVITY
SIA ALL

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NOTE: LEFT THRUST REVERSER IS SHOWN,
RIGHT THRUST REVERSER IS EQUIVALENT.

H62964 S0006746446_V1

Engine 2 Sleeve Lock and Stow Sensor and Simplified Schematic
Figure 305/78-32-00-990-806-F00 (Sheet 1 of 2)

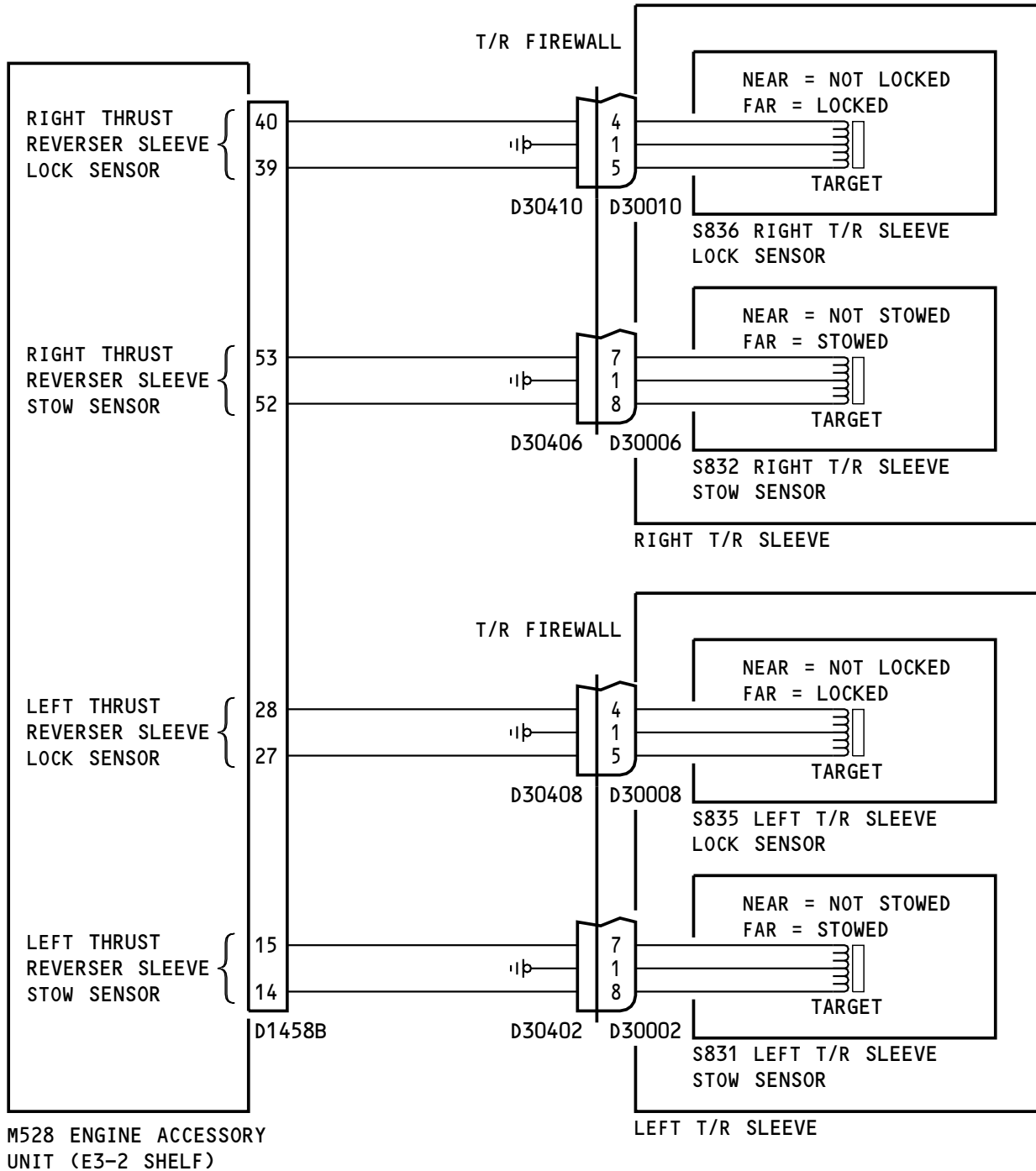
EFFECTIVITY
SIA ALL

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H63018 S0006746447_V1

Engine 2 Sleeve Lock and Stow Sensor and Simplified Schematic
Figure 305/78-32-00-990-806-F00 (Sheet 2 of 2)

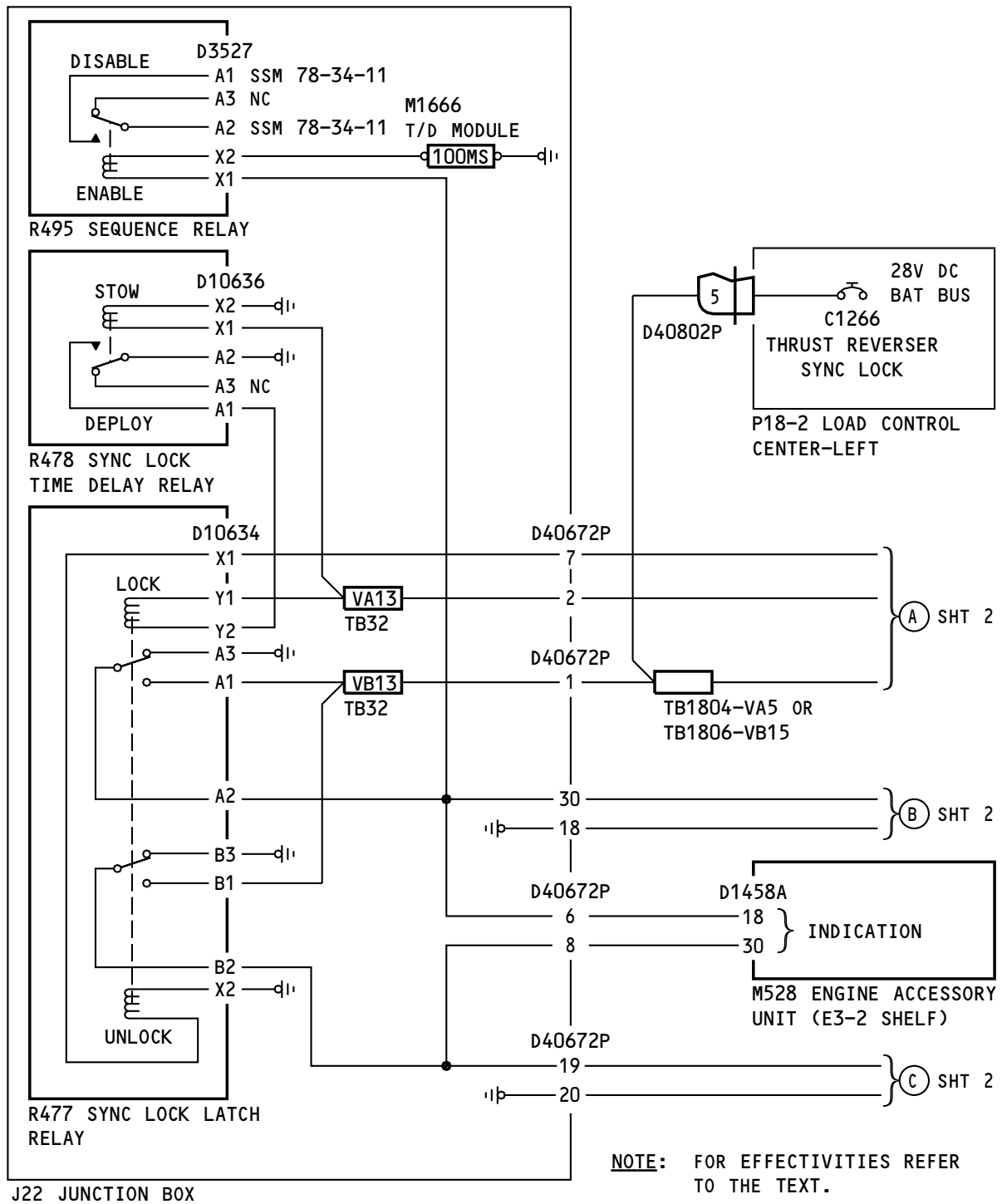
EFFECTIVITY
SIA ALL

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H63074 S0006746448_V1

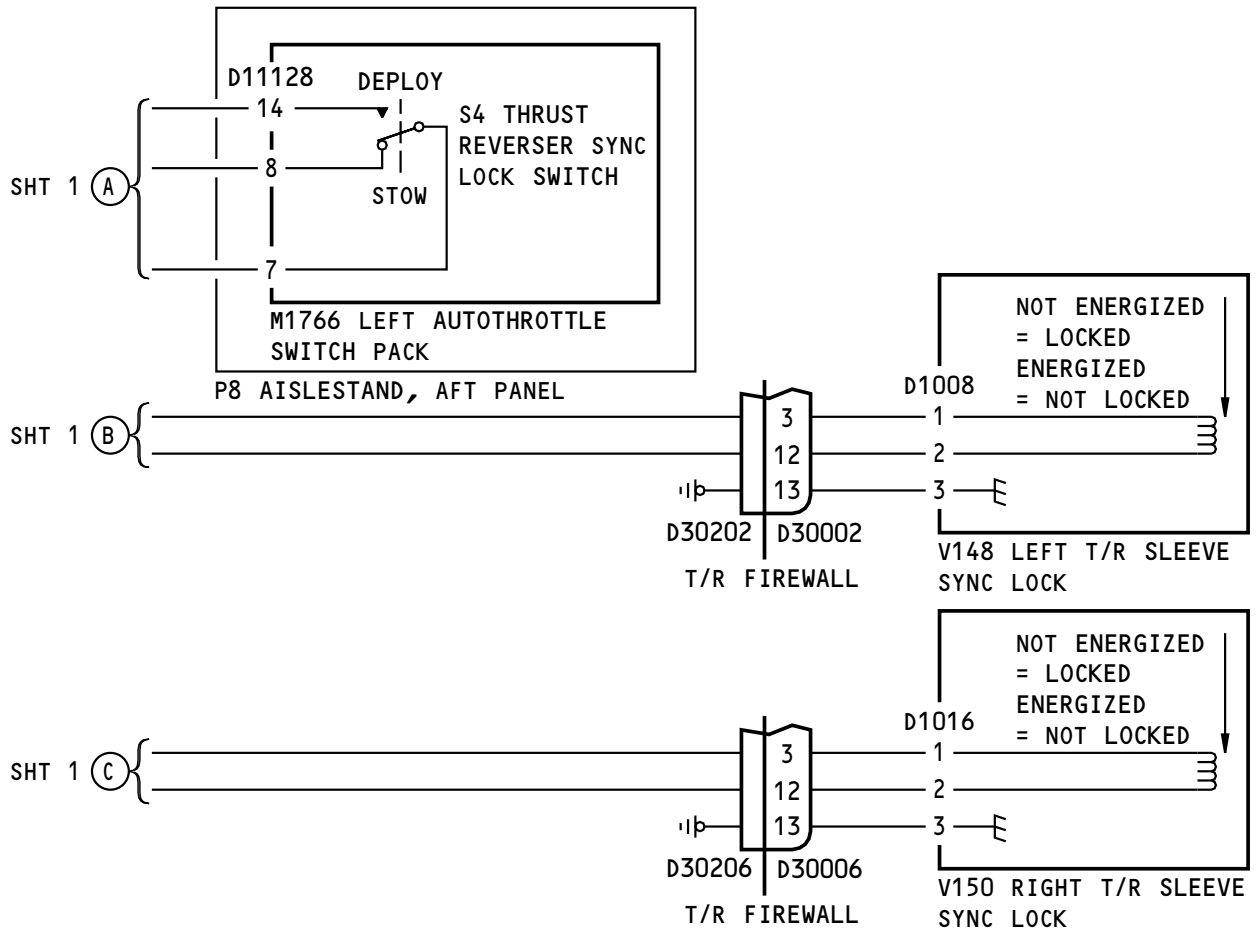
Engine 1 Thrust Reverser Sync Lock Simplified Schematic
Figure 306/78-32-00-990-807-F00 (Sheet 1 of 2)

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H63085 S0006746449_V1

Engine 1 Thrust Reverser Sync Lock Simplified Schematic
Figure 306/78-32-00-990-807-F00 (Sheet 2 of 2)

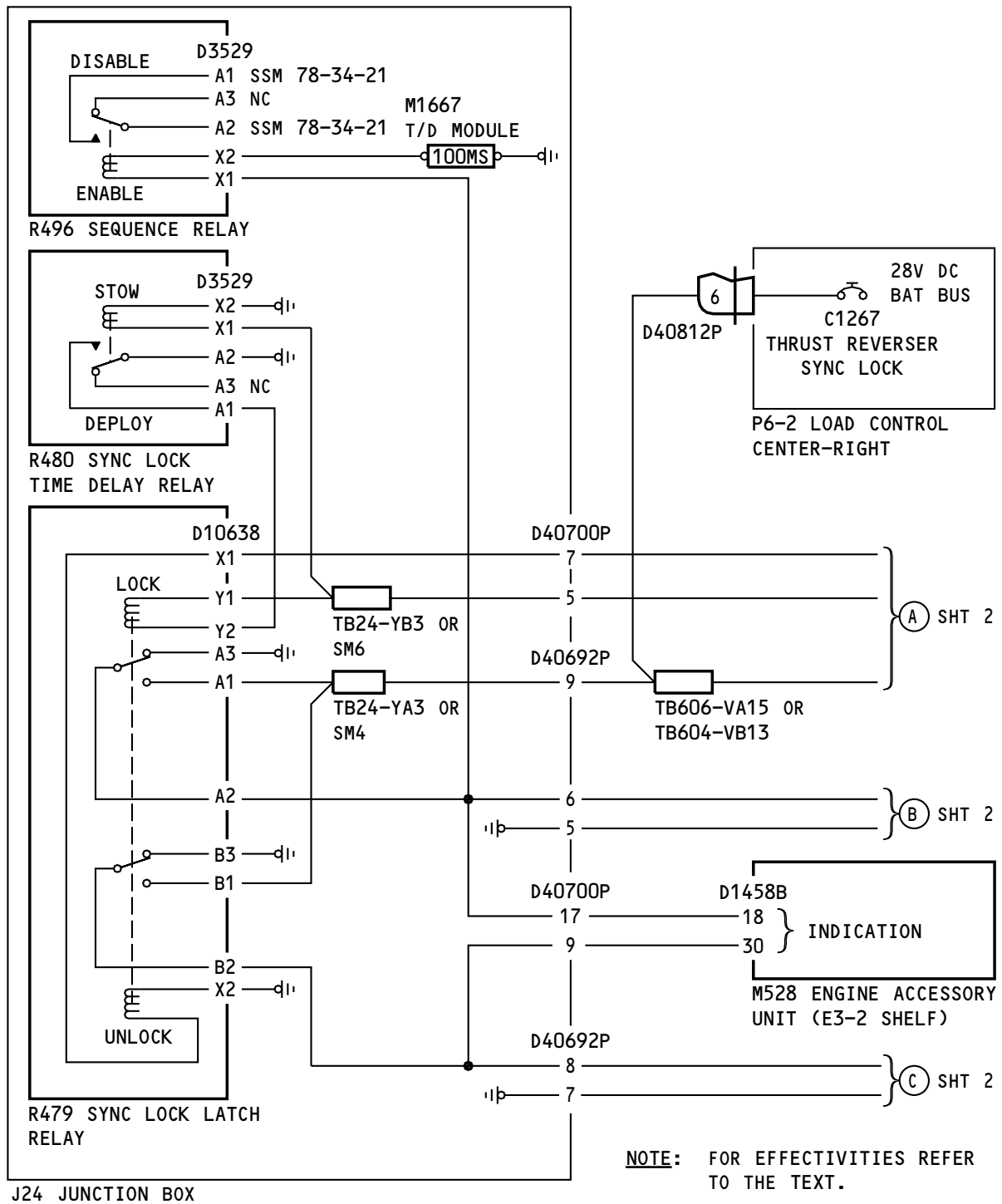
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Engine 2 Thrust Reverser Sync Lock Simplified Schematic
Figure 307/78-32-00-990-808-F00 (Sheet 1 of 2)

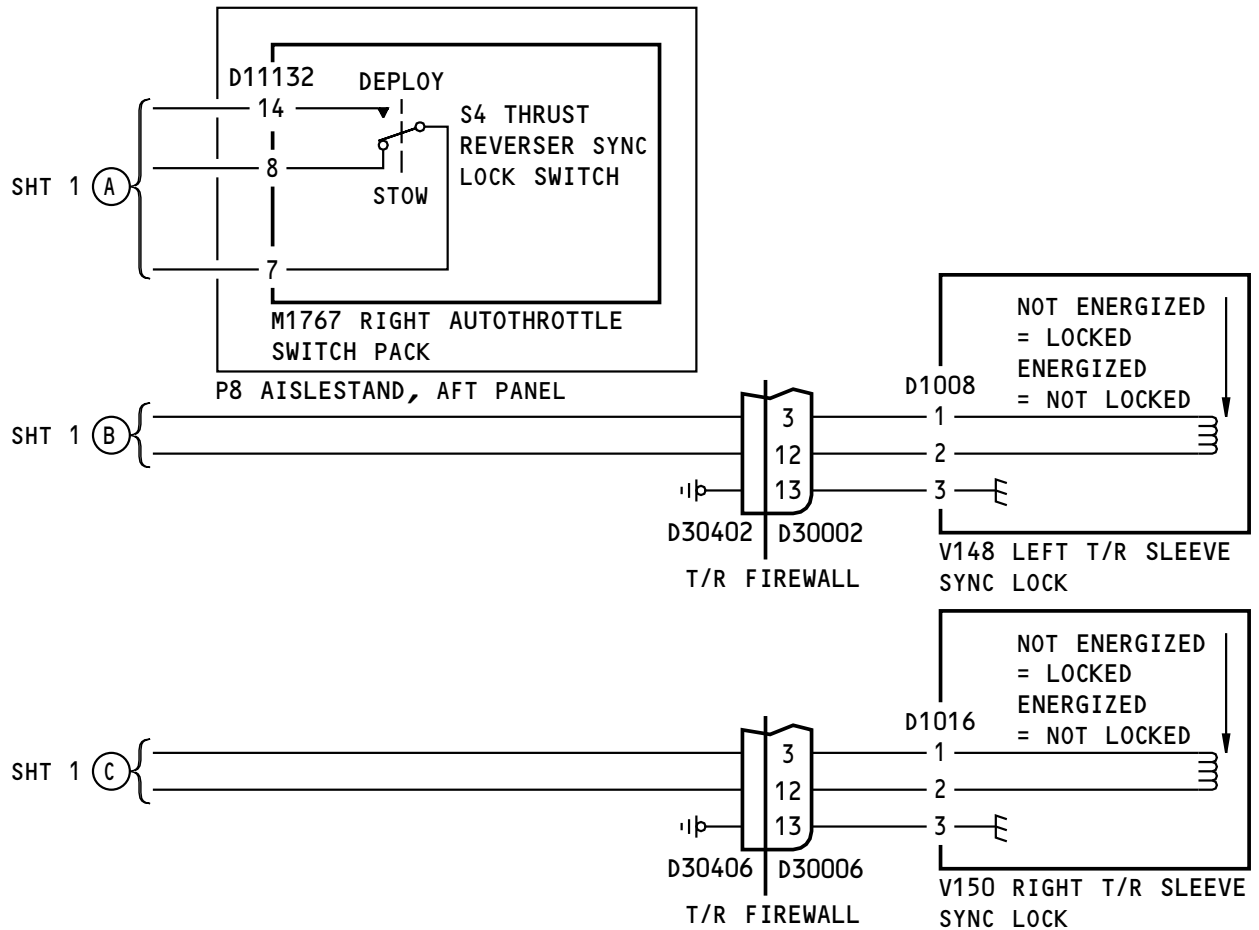
EFFECTIVITY
SIA ALL

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H63221 S0006746451_V1

Engine 2 Thrust Reverser Sync Lock Simplified Schematic
Figure 307/78-32-00-990-808-F00 (Sheet 2 of 2)

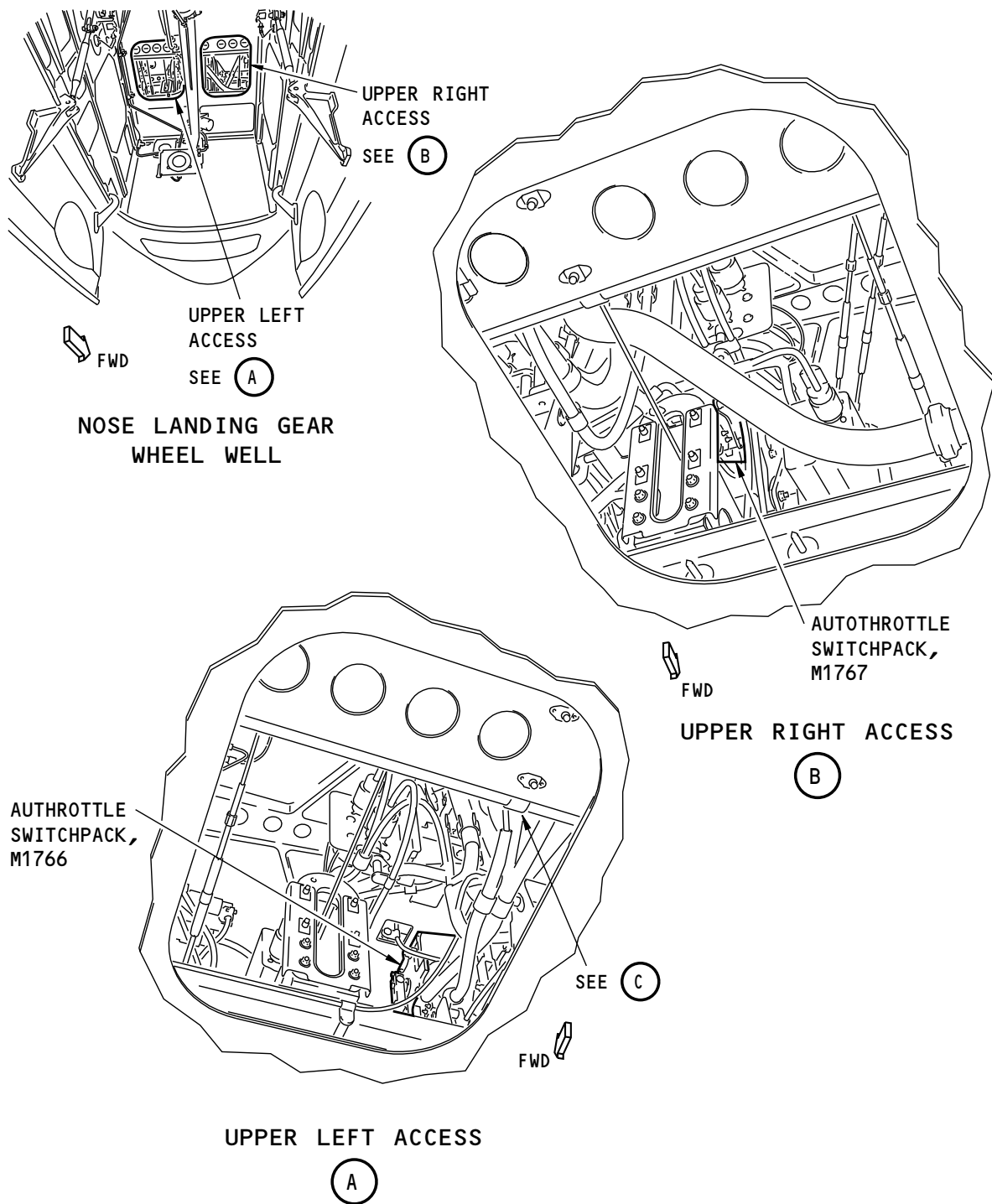
EFFECTIVITY
SIA ALL

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H64006 S0006746452_V1

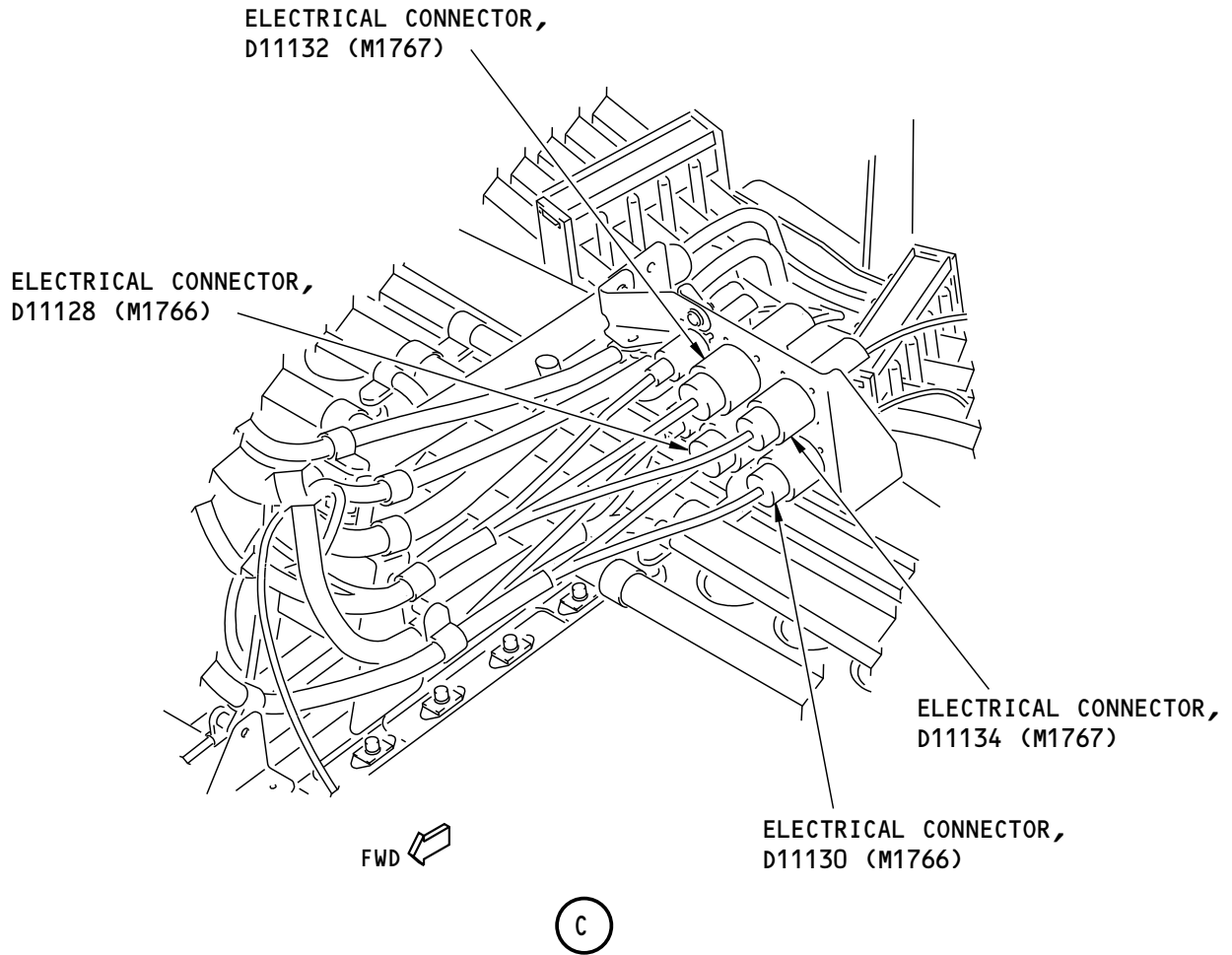
Autothrottle Switchpack
Figure 308/78-32-00-990-809-F00 (Sheet 1 of 2)

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H64432 S0006746453_V1

Autothrottle Switchpack
Figure 308/78-32-00-990-809-F00 (Sheet 2 of 2)

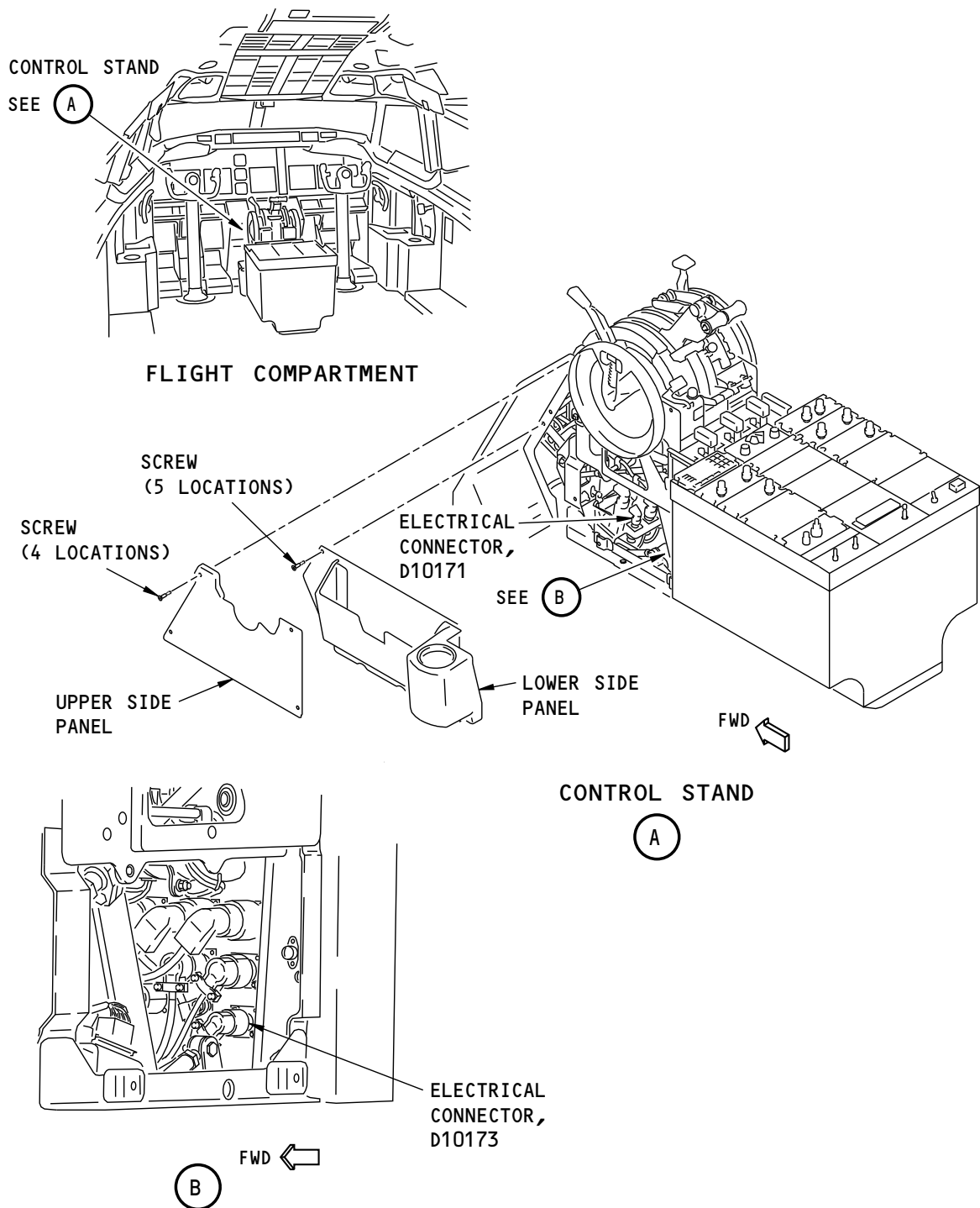
EFFECTIVITY
SIA ALL

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H63772 S0006746454_V1

Control Switch Electrical Connectors
Figure 309/78-32-00-990-810-F00

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801. REVERSER Light is ON with Thrust Reverser Operation Normal - Fault Isolation

A. Description

- (1) The Thrust Reverser (T/R) operates normally, but the REVERSER Light stays ON when the T/R is in the stowed position.

B. Possible Causes

- (1) Engine Accessory Unit (EAU), M528
- (2) Wiring

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	4	C01003	ENGINE 1 THRUST REVERSER IND
B	5	C00276	ENGINE 1 THRUST REVERSER CONT
B	7	C01266	ENGINE 1 THRUST REVERSER SYNC LOCK

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	5	C01267	ENGINE 2 THRUST REVERSER SYNC LOCK
C	7	C00277	ENGINE 2 THRUST REVERSER CONT
C	8	C01004	ENGINE 2 THRUST REVERSER IND

D. Related Data

- (1) Component Location and Simplified Schematic (78-34 TASK SUPPORT Figure 301)
- (2) WDM 78-36-11
- (3) WDM 78-36-21
- (4) SSM 78-36-11
- (5) SSM 78-36-21

E. Initial Evaluation

- (1) Do a check of the REVERSER Light on the P5 Overhead Panel in the Flight Compartment, as follows:
 - (a) Do the Engine Accessory Unit (EAU) BITE Procedure, 78-31 TASK 801.
 - 1) If Maintenance Messages show, then do the applicable Fault Isolation Procedures for those Maintenance Messages.
 - 2) If no Maintenance Messages show, but the REVERSER Light is ON, then do the Fault Isolation Procedure below.
 - 3) If the REVERSER Light is not ON, then the Initial Evaluation has shown that the fault is not active at this time and you had an intermittent fault.

F. Fault Isolation Procedure

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

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	4	C01003	ENGINE 1 THRUST REVERSER IND

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F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	8	C01004	ENGINE 2 THRUST REVERSER IND

- (2) Visually examine the wiring between the EAU, M528 and the REVERSER Light, as follows:
- (a) Remove the EAU, M528. This is the task: Engine Accessory Unit Removal, AMM TASK 78-34-06-000-801-F00.
 - (b) Visually examine the ENG-1 (ENG-2) EAU Connector, D1458A (D1458B) and the EAU Receptacle (AMM TASK 70-70-01-200-801-F00).
 - 1) If the pins on the EAU are damaged, then install a new EAU, M528. This is the task: Engine Accessory Unit Installation, AMM TASK 78-34-06-400-801-F00.
 - a) Do the Repair Confirmation at the end of this task.
 - 2) If the Connector is damaged, then do the applicable tasks to repair or replace the Connector, D1458A (D1458B)(SWPM Ch 20).
 - a) Do the Repair Confirmation at the end of this task.
 - (c) If you do not find a problem and the REVERSER Light is not ON when the EAU is not installed, then install a new EAU, M528. This is the task: Engine Accessory Unit Installation, AMM TASK 78-34-06-400-801-F00.
 - 1) Do the Repair Confirmation at the end of this task.
 - (d) If you do not find a problem and the REVERSER Light is ON when the EAU is not installed, then continue.
- (3) Do a check of the wiring between the EAU, M528 and the ENG-1 (ENG-2) Power Management Control Module, P5-68, as follows (WDM 78-36-11, WDM 78-36-21):
- (a) Disconnect the Electrical Connector, D2952 (D3172) from the applicable ENG-1 (ENG-2) Power Management Control Module, P5-68.
 - (b) Examine the wiring, as follows:

	EAU	P5-68	
ENG-1	D1458A	D2952	RESISTANCE
	pin 55	pin 19	CONTINUITY
ENG-2	D1458B	D3172	RESISTANCE
	pin 55	pin 19	CONTINUITY

- (c) If you find a problem in the wiring, do the applicable tasks to repair the wiring (SWPM Ch 20).
 - 1) Re-install the EAU, M528. This is the task: Engine Accessory Unit Installation, AMM TASK 78-34-06-400-801-F00.
 - 2) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

- (1) Make sure that the EAU, M528 is installed. If it is not, do this task: Engine Accessory Unit Installation, AMM TASK 78-34-06-400-801-F00.

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

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	4	C01003	ENGINE 1 THRUST REVERSER IND

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	8	C01004	ENGINE 2 THRUST REVERSER IND

- (3) Do this task: Engine Accessory Unit (EAU) BITE Procedure, 78-31 TASK 801.
- (a) If the REVERSER Light is OFF and the Green NO FAULTS DETECTED Light on the EAU comes ON, then you have corrected the problem.
- (b) If the REVERSER Light stays ON, then do these steps:
- Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	4	C01003	ENGINE 1 THRUST REVERSER IND

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	8	C01004	ENGINE 2 THRUST REVERSER IND

- 1) Remove the EAU, M528. This is the task: Engine Accessory Unit Removal, AMM TASK 78-34-06-000-801-F00.
- a) Continue the Fault Isolation Procedure at the subsequent step.

— END OF TASK —

802. T/R Deploy Commanded, REV Message Shows Amber and Engine Does Not Go to Full Reverse Thrust - Fault Isolation

A. Description

- (1) This task is for these Observed Faults:
- (a) REV Message shows Amber, Reverse Thrust Lever moves to FULL REVERSE THRUST, but Engine does not go to FULL REVERSE THRUST.
- (b) REV Message shows Amber, Reverse Thrust Lever does not move to FULL REVERSE THRUST.
- (2) This is an indication that one or both of the L (R) T/R Sleeves did not completely deploy.

B. Possible Causes

- (1) Hydraulic Leak
- (2) Hydraulic Actuator
- (3) T/R L (R) Sleeve Sync Lock V148 (V150)

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C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	1	C00458	ENGINE 1 IGNITION RIGHT
A	3	C00153	ENGINE 1 IGNITION LEFT
B	4	C01003	ENGINE 1 THRUST REVERSER IND
B	5	C00276	ENGINE 1 THRUST REVERSER CONT
B	6	C01412	ENGINE 1 THRUST REVERSER INTLK
B	7	C01266	ENGINE 1 THRUST REVERSER SYNC LOCK
B	8	C01103	ENGINE 1 START VALVE

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	9	C00440	FLIGHT CONTROL AUTO SPEED BRAKE
C	4	C00154	ENGINE 2 START VALVE
C	5	C01267	ENGINE 2 THRUST REVERSER SYNC LOCK
C	6	C01413	ENGINE 2 THRUST REVERSER INTLK
C	7	C00277	ENGINE 2 THRUST REVERSER CONT
C	8	C01004	ENGINE 2 THRUST REVERSER IND
D	4	C00459	ENGINE 2 IGNITION RIGHT
D	6	C00151	ENGINE 2 IGNITION LEFT

D. Related Data

- (1) SSM 78-31-00

E. Initial Evaluation

- (1) Do this task: Thrust Reverser Normal Operation Test, AMM TASK 78-31-00-700-801-F00.
- (a) If the L (R) T/R Sleeves do not completely EXTEND (deploy), then do the Fault Isolation Procedure for each T/R Sleeve.
- (b) If only one of the L (R) T/R Sleeves does not completely EXTEND (deploy), then do the Fault Isolation Procedure for that T/R Sleeve.

F. Fault Isolation Procedure



DO THE DEACTIVATION PROCEDURE TO PREVENT THE OPERATION OF THE THRUST REVERSER. THE ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

- (1) Do this task: Thrust Reverser Deactivation For Ground Maintenance, AMM TASK 78-31-00-040-802-F00.
- (2) Do this task: Open the Fan Cowl Panels, AMM TASK 71-11-02-010-801-F00.
- (3) If both the L (R) T/R Sleeves do not completely EXTEND (deploy), then do a check for a hydraulic leak in the Main Gear Wheel Well and the Strut.

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- (a) Make sure that the Hydraulic Pressure tubing and connectors to the ENG-1 (ENG-2) Control Valve Module (CVM), M1173 (M1174) do not have a leak.

NOTE: The CVM is in the Main Gear Wheel Well on the Keel Beam. The CVM for ENG-1 is on the Left Side and the CVM for ENG-2 is on the Right Side.

- 1) If there is a hydraulic leak, then repair, replace or tighten the connections or tubing.
 - a) Do the Repair Confirmation at the end of this task.
- 2) If there is no leak, then continue.

- (b) Do a check for a hydraulic leak in the Strut:

- 1) Make sure that the drain hole at the Aft End of the Strut does not leak hydraulic fluid.
- 2) Make sure that the drain tube at the 6:00 o'clock position on the Fan Cowl does not leak hydraulic fluid.

NOTE: The Fwd End of the Strut has a drain tube that drains at the 6:00 o'clock position on the Fan Cowl.

- a) If there is a hydraulic leak, then repair, replace or tighten the connections or tubing.

<1> Do the Repair Confirmation at the end of this task.
- b) If there are no hydraulic leaks, then continue and do the Fault Isolation Procedure for each of the T/R Sleeves.

- (4) Do these steps for the applicable L (R) T/R Sleeve, if only one of the T/R Sleeves does not completely EXTEND (deploy) and for each of the T/R Sleeves if both Sleeves do not completely EXTEND:

- (a) Do a check for a hydraulic leak at the Strut connection and at the hydraulic pressure tubing on the Torque Box of the applicable T/R.
 - 1) If there is a hydraulic leak, then repair, replace or tighten the connections or tubing.
 - a) Do the Repair Confirmation at the end of this task.
 - 2) If there are no hydraulic leaks, then continue.

- (5) Do this check of the Hydraulic Actuators at the Torque Box:

- (a) Do this task: Thrust Reverser Operation - Extend (Manual Procedure), AMM TASK 78-31-00-980-803-F00.

- (b) Examine the Hydraulic Actuators for hydraulic leaks.

- 1) If there is a hydraulic leak, then replace the applicable Hydraulic Actuator(s). These are the tasks:
 - Thrust Reverser Hydraulic Actuator Removal (Selection), AMM TASK 78-31-03-000-804-F00
 - Thrust Reverser Hydraulic Actuator Installation (Selection), AMM TASK 78-31-03-400-804-F00
 - a) Do the Repair Confirmation at the end of this task.

- (6) Interchange the T/R L Sleeve Sync Lock, V148 with T/R R Sleeve Sync Lock, V150.

- (a) Verify which T/R Sleeve Sync Lock causes a problem.

- 1) Replace the defective T/R Sleeve Sync Lock. These are the tasks:
 - Thrust Reverser Sync Lock Removal, AMM TASK 78-34-10-000-801-F00
 - Thrust Reverser Sync Lock Installation, AMM TASK 78-34-10-400-801-F00

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- a) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

- (1) If not already done, do this task: Thrust Reverser Operation - Retract (Manual Procedure), AMM TASK 78-31-00-980-804-F00.
- (2) Do this task: Thrust Reverser Activation After Ground Maintenance, AMM TASK 78-31-00-440-803-F00.



MAKE SURE THAT THERE ARE NO PERSONS OR EQUIPMENT IN THE AREA OF THE THRUST REVERSER. MOVEMENT OF THE THRUST REVERSER CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (3) Operate the T/R through an EXTEND and RETRACT cycle.
 - (a) If the L (R) Sleeves completely EXTEND (deploy), then you have corrected the problem.
 - (b) If the L (R) Sleeves do not completely EXTEND (deploy), do the step that follows and then continue with the Fault Isolation Procedure at the subsequent step:



DO THE DEACTIVATION PROCEDURE TO PREVENT THE OPERATION OF THE THRUST REVERSER. THE ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

- 1) Do this task: Thrust Reverser Deactivation For Ground Maintenance, AMM TASK 78-31-00-040-802-F00.
- (4) If you have corrected the problem, do this step to put the Airplane back to its usual condition:
 - (a) Do this task: Close the Fan Cowl Panels, AMM TASK 71-11-02-410-801-F00.

— END OF TASK —

803. T/R Deploy Commanded - REV Message Shows Green, Reverse Thrust Lever Does Not Move to Full Reverse Thrust - Fault Isolation

A. Description

- (1) This can be an indication that the T/R Interlock Voltage to the Electronic Engine Control (EEC) is out of range.
- (2) This can also be an indication that the L (R) Rod Assembly that connects to the L (R) Interlock Latch and T/R 1 (2) Interlock Solenoid, V155 (V156) is out of adjustment, has interference, has loose fasteners or that the internal mechanism of the Interlock Solenoid can not move freely.
- (3) This can also be an indication that there is an internal EEC problem.

B. Possible Causes

- (1) L (R) Rod Assembly
- (2) T/R 1 (2) Interlock Solenoid, V155 (V156)

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	1	C00458	ENGINE 1 IGNITION RIGHT

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CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	3	C00153	ENGINE 1 IGNITION LEFT
B	5	C00276	ENGINE 1 THRUST REVERSER CONT
B	6	C01412	ENGINE 1 THRUST REVERSER INTLK
B	8	C01103	ENGINE 1 START VALVE

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	9	C00440	FLIGHT CONTROL AUTO SPEED BRAKE
C	4	C00154	ENGINE 2 START VALVE
C	6	C01413	ENGINE 2 THRUST REVERSER INTLK
C	7	C00277	ENGINE 2 THRUST REVERSER CONT
D	4	C00459	ENGINE 2 IGNITION RIGHT
D	6	C00151	ENGINE 2 IGNITION LEFT

D. Initial Evaluation

- (1) Do this task: EEC BITE Procedure, 73-00 TASK 801.
 - (a) Also, look for these "THE T/R LEVER INTLK VOLTAGE INPUT TO THE EEC IS OUT OF RANGE" Maintenance Messages:
 - 78-11531 (CH A, ENG-1)
 - 78-11532 (CH A, ENG-2)
 - 78-21531 (CH B, ENG-1)
 - 78-21532 (CH B, ENG-2)
 - 78-31531 (CH A and CH B, ENG-1)
 - 78-31532 (CH A and CH B, ENG-2)
 - (b) Look for INTERNAL EEC Maintenance Messages.
 - (c) If one of these Maintenance Messages show, then go to the applicable Fault Isolation Procedure for that Maintenance Message first.
 - (d) If one of these Maintenance Messages do not show, then continue with the Fault Isolation Procedure below.

E. Fault Isolation Procedure

- (1) Do a check of the L (R) Rod Assembly that connects to the L (R) Interlock Latch and T/R 1 (2) Interlock Solenoid, V155 (V156), as follows:
 - (a) Make sure that the Thrust Levers are in the IDLE position.
 - 1) Attach a DO NOT OPERATE tag, STD-858 to each of the Thrust Levers.
 - (b) Make sure that the Reverse Thrust Levers are in the fully FWD and DOWN (stowed) position.
 - 1) Attach a DO NOT OPERATE tag, STD-858 to each of the Reverse Thrust Levers.

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

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<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	5	C00276	ENGINE 1 THRUST REVERSER CONT
B	6	C01412	ENGINE 1 THRUST REVERSER INTLK

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<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	6	C01413	ENGINE 2 THRUST REVERSER INTLK
C	7	C00277	ENGINE 2 THRUST REVERSER CONT

- (d) To get access to the L (R) Rod Assembly, remove the applicable Access Cover from the Overhead in the Nose Gear Wheel Well.
- (e) Examine the applicable Rod Assembly and Interlock Latch area for interference or damaged components, as follows:
- 1) Make sure that the Jam Nuts on the Rod Assembly are not loose.
 - 2) Make sure that the nut at the end of the Rod Assembly that connects to the T/R 1 (2) Interlock Solenoid, V155 (V156) is not loose.
 - 3) Make sure that the bolt at the end of the Rod Assembly that connects to the Interlock Latch is not loose.
 - a) If you find interference, then remove the interference.
 - b) If you find damaged components or loose fasteners, then do the applicable steps to replace components and tighten the fasteners (AMM TASK 76-11-06-440-801-F00).
- <1> Do the Repair Confirmation at the end of this task.
- c) If you do not find a problem, then continue.
- (2) Replace the T/R 1 (2) Interlock Solenoid, V155 (V156). These are the tasks:
- Reverse Thrust Interlock Solenoid Removal, AMM TASK 76-11-06-000-801-F00
 - Reverse Thrust Interlock Solenoid Installation, AMM TASK 76-11-06-440-801-F00
- (a) Do the Repair Confirmation at the end of this task.

F. Repair Confirmation

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

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	5	C00276	ENGINE 1 THRUST REVERSER CONT
B	6	C01412	ENGINE 1 THRUST REVERSER INTLK

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	6	C01413	ENGINE 2 THRUST REVERSER INTLK
C	7	C00277	ENGINE 2 THRUST REVERSER CONT

- (2) Do this task: Thrust Reverser Normal Operation Test, AMM TASK 78-31-00-700-801-F00.
- (a) If the Reverse Thrust Lever moves to FULL REVERSE THRUST, then you have corrected the problem.

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- (b) If the Reverse Thrust Lever does not move to FULL REVERSE THRUST, then continue the Fault Isolation Procedure at the subsequent step.
- (3) If you have corrected the problem, do these steps to put the Airplane back to its usual condition:
 - (a) Install the Access Cover that was removed in the Nose Gear Wheel Well.
 - (b) Remove the DO NOT OPERATE tag, STD-858 from each of the Thrust Levers.
 - (c) Remove the DO NOT OPERATE tag, STD-858 from each of the Reverse Thrust Levers.

————— **END OF TASK** —————

804. T/R Deploy Commanded - REV Message Shows Green, Reverse Thrust Lever Moves to Full Reverse Thrust, but Engine Does Not Go to Full Reverse Thrust - Fault Isolation

A. Description

- (1) This is an indication that there is an internal EEC fault.

B. Possible Causes

- (1) EEC, M1818

C. Fault Isolation Procedure

- (1) Do this task: EEC BITE Procedure, 73-00 TASK 801.
 - (a) Look for INTERNAL EEC Maintenance Messages.
 - (b) If an INTERNAL EEC Maintenance Message shows, then go to the applicable Fault Isolation Task for that Maintenance Message.

————— **END OF TASK** —————

805. Time to Extend or Retract the Thrust Reverser Too Slow - Fault Isolation

A. Description

- (1) This task is for these Observed Faults:
 - (a) Time to EXTEND T/R is too slow (more than 3 seconds).
 - (b) Time to RETRACT T/R is too slow (more than 5 seconds).
 - (c) Pilot report shows that the T/R was slow to fully EXTEND or completely RETRACT.

NOTE: If the movement of the T/R to the stowed position is more than 10 seconds, then there can also be EAU Maintenance Messages.

Refer to T/R STOW FAULTS - All STOW Messages except L and R SLEEVE SYNC LOCK PWR and EAU FAULT Messages - Fault Isolation, 78-32 TASK 816.

B. Possible Causes

- (1) Hydraulic Leak
- (2) Blockage/Debris
- (3) T/R Hydraulic Actuator
- (4) Sync Shaft

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C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

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<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	1	C00458	ENGINE 1 IGNITION RIGHT
A	3	C00153	ENGINE 1 IGNITION LEFT
B	8	C01103	ENGINE 1 START VALVE

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	9	C00440	FLIGHT CONTROL AUTO SPEED BRAKE
C	4	C00154	ENGINE 2 START VALVE
D	4	C00459	ENGINE 2 IGNITION RIGHT
D	6	C00151	ENGINE 2 IGNITION LEFT

D. Initial Evaluation

- (1) Do this task: Thrust Reverser Normal Operation Test, AMM TASK 78-31-00-700-801-F00.
- (a) If the L (R) T/R Sleeves take more than 3 seconds to EXTEND (deploy) or 5 seconds to RETRACT (stow), then do the Fault Isolation Procedure for each T/R Sleeve.
- (b) If only one of the T/R Sleeves takes more than 3 seconds to EXTEND (deploy) or 5 seconds to RETRACT (stow), then do the Fault Isolation Procedure for that T/R Sleeve.

E. Fault Isolation Procedure



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- (1) Do this task: Thrust Reverser Deactivation For Ground Maintenance, AMM TASK 78-31-00-040-802-F00.
- (2) Do this task: Open the Fan Cowl Panels, AMM TASK 71-11-02-010-801-F00.
- (3) If both the L (R) T/R Sleeves take more than 3 seconds to EXTEND (deploy) or 5 seconds to RETRACT (stow), then do a check for a hydraulic leak in the Main Gear Wheel Well and the Strut.
- (a) Make sure that the hydraulic tubing and connectors to the ENG-1 (ENG-2) T/R CVM, M1173 (M1174) do not have a leak.
- NOTE:** The CVM is in the Main Gear Wheel Well on the Keel Beam. The CVM for ENG-1 is on the Left Side and the CVM for ENG-2 is on the Right Side.
- 1) If there is a hydraulic leak, then repair, replace or tighten the connections or tubing.
- a) Do the Repair Confirmation at the end of this task.
- 2) If there is no leak, then continue.
- (b) Do a check for a hydraulic leak in the Strut:
- 1) Make sure that the drain hole at the Aft End of the Strut does not leak hydraulic fluid.

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- 2) Make sure that the drain tube at the 6:00 o'clock position on the Fan Cowl does not leak hydraulic fluid.

NOTE: The Fwd End of the Strut has a drain tube that drains at the 6:00 o'clock position on the Fan Cowl.

- a) If there is a hydraulic leak, then repair, replace or tighten the connections or tubing.
 - <1> Do the Repair Confirmation at the end of this task.
 - b) If there are no hydraulic leaks, then continue and do the Fault Isolation Procedure for each of the T/R Sleeves.
- (4) Do these steps if only one of the T/R Sleeves takes longer than the limits to EXTEND or RETRACT and for each of the T/R Sleeves if both of the T/R Sleeves take longer than the limits:
- (a) Do a check for a hydraulic leak at the Strut connection and the tubing on the Torque Box of the applicable T/R.
 - 1) If there is a hydraulic leak, then repair, replace or tighten the connections or tubing.
 - a) Do the Repair Confirmation at the end of this task.
 - 2) If there are no hydraulic leaks, then continue.
- (5) Do this check for blockage/debris in the tracks that will not let the applicable T/R Sleeve move smoothly:
- (a) Make sure that the T/R is deactivated. This is the task: Thrust Reverser Deactivation For Ground Maintenance, AMM TASK 78-31-00-040-802-F00.
 - (b) Do this task: Thrust Reverser Operation - Extend (Manual Procedure), AMM TASK 78-31-00-980-803-F00.
 - (c) Examine the tracks and sliders for blockage/debris.
 - 1) If there is blockage/debris, then clean the tracks and sliders.
 - a) Do the Repair Confirmation at the end of this task.
 - 2) If there is no blockage/debris, then continue.
- (6) With the applicable T/R extended, do this check of the Hydraulic Actuators at the Torque Box:
- (a) Examine the Hydraulic Actuator Attachment Fitting on the Aft Side of the Torque Box for damage and loose bolts or gimbal pins.
 - 1) If there is damage, loose bolts or gimbal pins, then tighten the bolts or replace the attachment fittings.
 - a) Do the Repair Confirmation at the end of this task.
 - (b) Examine the Hydraulic Actuators for hydraulic leaks.
 - 1) If there is a hydraulic leak, then replace the applicable Hydraulic Actuator(s). These are the tasks:
 - Thrust Reverser Hydraulic Actuator Removal (Selection), AMM TASK 78-31-03-000-804-F00
 - Thrust Reverser Hydraulic Actuator Installation (Selection), AMM TASK 78-31-03-400-804-F00
 - a) Do the Repair Confirmation at the end of this task.
 - (c) If there are no hydraulic leaks, damage, loose bolts or gimbal pins, then continue.
- (7) Do this check of the Hydraulic Actuators at the Rod End:

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- (a) Make sure that the Reverse Thrust Lever is AFT in the EXTEND (deploy) position.
- (b) Do this task: Thrust Reverser Activation After Ground Maintenance, AMM TASK 78-31-00-440-803-F00.
- (c) Do this task: Thrust Reverser Operation - Retract (Power Procedure), AMM TASK 78-31-00-980-806-F00.



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- (d) Do this task: Thrust Reverser Deactivation For Ground Maintenance, AMM TASK 78-31-00-040-802-F00.
- (e) Remove the three access covers from the applicable T/R Sleeve to get access to the Actuator Rod Ends.
- (f) Examine the Actuator Rod End area for damage, loose nuts or damaged attachment fittings.
 - 1) If the Actuator Rod Ends have loose nuts or there are damaged attachment fittings, then tighten the nuts or replace the attachment fittings.
 - a) Do the Repair Confirmation at the end of this task.
 - 2) If there is damage at the Actuator Rod Ends, then replace the applicable Hydraulic Actuator(s). These are the tasks:
 - Thrust Reverser Hydraulic Actuator Removal (Selection), AMM TASK 78-31-03-000-804-F00
 - Thrust Reverser Hydraulic Actuator Installation (Selection), AMM TASK 78-31-03-400-804-F00
 - a) Do the Repair Confirmation at the end of this task.
 - 3) If there is no damage or loose nuts, then re-install the access covers and continue.
- (8) Do a check for a Hydraulic Actuator with internal damage, a damaged Sync Shaft, a Sync Shaft that is not installed correctly, or a Sync Shaft that is missing, as follows:
 - (a) Do this task: Sync Shaft Removal, AMM TASK 78-31-04-000-801-F00.

NOTE: If the Sync Shaft is installed incorrectly (twisted), when one end of the Sync Shaft is removed from the Actuator it will turn suddenly to align itself with the opposite end that is still installed in the other Actuator.
 - (b) Examine the Sync Shafts, as follows:
 - 1) If a Sync Shaft is damaged, then replace the Sync Shaft. This is the task: Sync Shaft Installation, AMM TASK 78-31-04-400-801-F00.
 - a) Do the Repair Confirmation at the end of this task.
 - 2) If a Sync Shaft was not installed correctly, then re-install the Sync Shaft correctly. This is the task: Sync Shaft Installation, AMM TASK 78-31-04-400-801-F00.

NOTE: The Sync Shaft should not be twisted when it is installed.

 - a) Do the Repair Confirmation at the end of this task.
 - 3) If a Sync Shaft is missing, replace the Sync Shaft. This is the task: Sync Shaft Installation, AMM TASK 78-31-04-400-801-F00.
 - a) Do the Repair Confirmation at the end of this task.

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- (c) If the Sync Shafts are not the cause of the stopped or slow T/R movement, then replace all three Hydraulic Actuators. These are the tasks:

NOTE: There can be internal damage in the Locking Actuator or one of the Non-Locking Actuators which causes it to bind or jam.

NOTE: An Actuator can be incorrectly rigged when it was installed. The Rod End on one of the Hydraulic Actuators could have been turned during installation.

If the Rod End was turned, the Actuator length was changed so that the Actuator is not synchronized to move the same distance as the other two Actuators.

This Actuator will move more or less than the other Actuators, which can cause more friction in the Actuator and the extension and/or retraction time to increase.

- Thrust Reverser Hydraulic Actuator Removal (Selection), AMM TASK 78-31-03-000-804-F00
- Thrust Reverser Hydraulic Actuator Installation (Selection), AMM TASK 78-31-03-400-804-F00

NOTE: Do a bench test of the removed Actuators with the rod end and stroke stop test fixture, SPL-5359. Use a 0.196 in. (4.978 mm) to 0.2 in. (5.1 mm) square drive, and a torque meter, STD-7422 to turn the Worm Shaft in the Hydraulic Actuator; this is where the Sync Shafts are inserted.

The Hydraulic Actuator should EXTEND and RETRACT in the test fixture with torque of 2.0 in-lb (0.2 N·m). The Actuator should move easily if there is no internal damage.

The test fixture can also be used to set the full retracted length of the Actuator for the Actuator installation. Use the supplier's Component Maintenance instructions.

- 1) Do the Repair Confirmation at the end of this task.

F. Repair Confirmation

- (1) Make sure that the Sync Shafts are installed.
- (2) Do this task: Thrust Reverser Activation After Ground Maintenance, AMM TASK 78-31-00-440-803-F00.
- (3) Operate the applicable T/R through an EXTEND and RETRACT cycle.
 - (a) If the T/R Sleeves EXTEND (deploy) in 3 seconds or less and RETRACT (stow) in 5 seconds or less, then you have corrected the problem.
 - (b) If the problem still exists, do the step that follows and then continue with the Fault Isolation Procedure at the subsequent step:



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- 1) Do this task: Thrust Reverser Deactivation For Ground Maintenance, AMM TASK 78-31-00-040-802-F00.
- (4) If you have corrected the problem, do these steps to put the Airplane back to its usual condition:
 - (a) Make sure that the Access Covers on the T/R Sleeves are installed.

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- (b) Do this task: Close the Fan Cowl Panels, AMM TASK 71-11-02-410-801-F00.

— END OF TASK —

806. T/R Stow Commanded - REV Message Shows Amber or Green, ENG CONTROL Light OFF and REVERSER Light ON - Fault Isolation

A. Description

- (1) This is an indication that the T/R did not completely RETRACT(stow) and LOCK.

B. Fault Isolation Procedure

- (1) Do this task: Engine Accessory Unit (EAU) BITE Procedure, 78-31 TASK 801.
- (a) If Maintenance Messages show, then go to the applicable Fault Isolation task for those Maintenance Messages to correct the problem.
- 1) Do the Repair Confirmation at the end of this task.
- (b) If no Maintenance Messages show, then there was an intermittent fault.
- 1) For an intermittent fault, you must use your judgment, your Airline's Policies, and the Fault Isolation Procedure to make the decision, if you will try to correct the problem.
- 2) Monitor the Airplane on the subsequent flight(s).

C. Repair Confirmation

- (1) Do this task: Engine Accessory Unit (EAU) BITE Procedure, 78-31 TASK 801.
- (a) If the REVERSER Light and the REV Light are OFF, then you corrected the problem.

— END OF TASK —

807. T/R Does Not Deploy, REV Message Does Not Show and Reverse Thrust Lever Does Not Move to Full Reverse Thrust - Fault Isolation

A. Description

- (1) The Pilot record shows that the T/R does not deploy.

B. Possible Causes

- (1) Autothrottle Switchpack and Resolver Linkage Rod
- (2) Wiring
- (3) ENG-1 (ENG-2) Sequence Relay, R495 (R496)
- (4) T/R 1 (2) Time Delay Module, M1666 (M1667)
- (5) ENG-1 (ENG-2) Fire Switch, S8 (S9)

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

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<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	4	C01003	ENGINE 1 THRUST REVERSER IND
B	5	C00276	ENGINE 1 THRUST REVERSER CONT
B	6	C01412	ENGINE 1 THRUST REVERSER INTLK
B	7	C01266	ENGINE 1 THRUST REVERSER SYNC LOCK

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<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	5	C01267	ENGINE 2 THRUST REVERSER SYNC LOCK
C	6	C01413	ENGINE 2 THRUST REVERSER INTLK
C	7	C00277	ENGINE 2 THRUST REVERSER CONT
C	8	C01004	ENGINE 2 THRUST REVERSER IND

D. Related Data

- (1) Simplified Schematic (78-34 TASK SUPPORT Figure 302, 78-34 TASK SUPPORT Figure 303)
- (2) Simplified Schematic (78-34 TASK SUPPORT Figure 304, 78-34 TASK SUPPORT Figure 305)
- (3) WDM 78-32-51
- (4) WDM 78-32-61
- (5) WDM 78-34-11
- (6) WDM 78-34-21
- (7) SSM 78-32-51
- (8) SSM 78-32-61
- (9) SSM 78-34-11
- (10) SSM 78-34-21

E. Initial Evaluation

- (1) Do a check of the T/R System. This is the task: Thrust Reverser Normal Operation Test, AMM TASK 78-31-00-700-801-F00.
- (2) Do this task: Engine Accessory Unit (EAU) BITE Procedure, 78-31 TASK 801.
 - (a) If the T/R does EXTEND and no Maintenance Messages show on the EAU, M528, then there was an intermittent fault.
 - (b) If the T/R does not EXTEND (deploy) and only the NO FAULTS DETECTED Maintenance Message shows on the EAU, M528, then do the Fault Isolation steps below.

F. Fault Isolation Procedure

- (1) Do these steps to do a check of the Linkage Rod between the ENG-1 (ENG-2) Autothrottle Switchpack, M1766 (M1767), and the ENG-1 (ENG-2) Resolver, M1819 (M1822):



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- (a) Do this task: Thrust Reverser Deactivation For Ground Maintenance, AMM TASK 78-31-00-040-802-F00.
- (b) Adjust the length of the Linkage Rod for the correct TRA Values for all switches of the Autothrottle Switchpack Assembly. This is the task: Switch Check and Adjustment, AMM TASK 76-11-07-820-801-F00.
 - 1) If the Linkage Rod Length is not correct, then do the applicable steps in the procedure to adjust the Linkage.
 - a) Do the Repair Confirmation at the end of this task.
- (c) If the Linkage Rod Length is correct, then continue.

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- (2) Move the Reverse Thrust Lever UP and AFT to the EXTEND (deploy) position.
- (3) Do this check of the Sync Lock Circuit for 28V DC to the coil of the ENG-1 (ENG-2) Sequence Relay, R495 (R496) (WDM 78-32-51, WDM 78-32-61, WDM 78-34-11, WDM 78-34-21):

NOTE: For ENG-1 (ENG-2), the T/R Sequence Relay is in the J22 (J24) Junction Box in the Nose Gear Wheel Well on the Left (Right) side.

- (a) Remove the ENG-1 (ENG-2) Sequence Relay, R495 (R496).
- (b) Remove the safety locks and close these circuit breakers:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	5	C00276	ENGINE 1 THRUST REVERSER CONT
B	7	C01266	ENGINE 1 THRUST REVERSER SYNC LOCK

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<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	5	C01267	ENGINE 2 THRUST REVERSER SYNC LOCK
C	7	C00277	ENGINE 2 THRUST REVERSER CONT

- (c) Do a check for 28V DC at the ENG-1 (ENG-2) Sequence Relay, R495 (R496), pin X1 to Structure Ground (WDM 78-32-51, WDM 78-32-61).
 - 1) If there is no Voltage at the ENG-1 (ENG-2) Sequence Relay, R495 (R496), pin X1, then open the circuit breakers above, and examine and repair the wiring between pin X1 and ENG-1 (ENG-2) Terminal Block TB32 (TB24), term WA9 (YA5) (SWPM Ch 20).
 - a) Do the Repair Confirmation at the end of this task.
 - (d) If there is Voltage, then continue.
- (4) Do a check for 28V DC between the ENG-1 (ENG-2) Sequence Relay, R495 (R496), pin A1 and pin A2.
 - (a) If there is voltage, then do these steps:

- 1) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	5	C00276	ENGINE 1 THRUST REVERSER CONT
B	7	C01266	ENGINE 1 THRUST REVERSER SYNC LOCK

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<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	5	C01267	ENGINE 2 THRUST REVERSER SYNC LOCK
C	7	C00277	ENGINE 2 THRUST REVERSER CONT

- 2) Replace the ENG-1 (ENG-2) Sequence Relay, R495 (R496) (SWPM Ch 20).
 - a) Do the Repair Confirmation at the end of this task.
- 3) Replace the T/R 1 (2) Time Delay Module, M1666 (M1667) (SWPM Ch 20).
 - a) Do the Repair Confirmation at the end of this task.
- 4) Examine and repair the Ground Wire from ENG-1 (ENG-2) Sequence Relay, R495 (R496), pin X2 (SWPM Ch 20).

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- a) Do the Repair Confirmation at the end of this task.
- (b) If there is no Voltage, then continue.
- (5) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	5	C00276	ENGINE 1 THRUST REVERSER CONT
B	7	C01266	ENGINE 1 THRUST REVERSER SYNC LOCK

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	5	C01267	ENGINE 2 THRUST REVERSER SYNC LOCK
C	7	C00277	ENGINE 2 THRUST REVERSER CONT

- (6) Do a check for 28V DC at ENG-1 (ENG-2) Sequence Relay, R495 (R496), pin A1 to Structure Ground (WDM 78-34-11, WDM 78-34-21).
 - (a) If there is Voltage at A1, then examine and repair the wire between ENG-1 (ENG-2) Sequence Relay, R495 (R496), pin A2 and ENG-1 (ENG-2) Terminal Block TB22 (TB24), term YB11 (YB7) (SWPM Ch 20).
 - 1) Do the Repair Confirmation at the end of this task.
 - (b) If there is no Voltage, then continue.
- (7) Do this check for 28V DC:
 - (a) For Engine 1, do a check for 28V DC between the Terminal Block TB22, term YB1 and Structure Ground (WDM 78-34-11).
 - (b) For Engine 2, do a check for 28V DC between the Splice SM15 and Structure Ground (WDM 78-34-21).
 - 1) If you find 28V DC, then examine and repair the wire between the SM15 and T/R Sequence Relay, R496, pin A1 (SWPM Ch 20).
 - a) Do the Repair Confirmation at the end of this task.
 - (c) If you do not find 28V DC at the Splice (or Terminal Block), then re-install the ENG-1 (ENG-2) Sequence Relay, R495 (R496), and continue.
- (8) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	5	C00276	ENGINE 1 THRUST REVERSER CONT
B	7	C01266	ENGINE 1 THRUST REVERSER SYNC LOCK

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	5	C01267	ENGINE 2 THRUST REVERSER SYNC LOCK
C	7	C00277	ENGINE 2 THRUST REVERSER CONT

- (9) At the P8-1 Engine and APU Fire Control Panel, visually examine the ENG-1 (ENG-2) Electrical Connector, D576 (D578), for the ENG-1 (ENG-2) Fire Switch, S8 (S9) (WDM 78-34-11, WDM 78-34-21).

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- (a) To get access to the ENG-1 (ENG-2) Electrical Connector, D576 (D578), remove the four bolts from the P8-1 Engine and APU Fire Control Panel that is on the Control Stand (Engine and APU Fire Control Panel Removal, AMM TASK 26-00-01-000-801).
- (b) See if the ENG-1 (ENG-2) Electrical Connector, D576 (D578), is correctly connected to the Junction Box Receptacle, and continue.
- (c) Disconnect the ENG-1 (ENG-2) Electrical Connector, D576 (D578).
- (d) Visually examine the Junction Box Receptacle and ENG-1 (ENG-2) Wire Harness Connector, D576 (D578) (Standard Engine Wiring and Equipment Check, AMM TASK 70-70-01-200-801-F00).
 - 1) If a Junction Box Receptacle or Wire Harness Connector is damaged, then do the applicable tasks to repair or replace the connector (SWPM Ch 20).
 - a) Do the Repair Confirmation at the end of this task.
 - 2) If a connector is not correctly connected and no other problem exists, then re-connect the ENG-1 (ENG-2) Electrical Connector, D576 (D578), and do the Repair Confirmation at the end of this task.
- (e) If you do not find a problem, then continue.
- (10) At the Engine and APU Fire Control Panel, P8-1, do an electrical check through the ENG-1 (ENG-2) Fire Switch, S8 (S9) as follows (WDM 78-34-11, WDM 78-34-21):

ENGINE 1

FIRE SWITCH	S8	S8	CONTINUITY
	pin 5	pin 6	YES
	pin 5	pin 4	NO

ENGINE 2

FIRE SWITCH	S9	S9	CONTINUITY
	pin 5	pin 6	YES
	pin 5	pin 4	NO

- (a) If the continuity is not correct, then replace the ENG-1 (ENG-2) Fire Switch, S8 (S9) (SWPM Ch 20).
 - 1) Do the Repair Confirmation at the end of this task.
- (b) If the continuity is correct, then continue.
- (11) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	5	C00276	ENGINE 1 THRUST REVERSER CONT
B	7	C01266	ENGINE 1 THRUST REVERSER SYNC LOCK

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	5	C01267	ENGINE 2 THRUST REVERSER SYNC LOCK
C	7	C00277	ENGINE 2 THRUST REVERSER CONT

- (12) Do a check for 28V DC at the ENG-1 (ENG-2) Electrical Connector, D576 (D578), pin 5 to Structure Ground (WDM 78-34-11, WDM 78-34-21).

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- (a) If there is no Voltage, then open the circuit breakers above, and examine and repair the wire from the ENG-1 (ENG-2) Electrical Connector, D576 (D578), pin 5, to the ENGINE-1 (ENGINE-2) THRUST REVERSER CONT circuit breaker, C276 (C277) (SWPM Ch 20).
 - 1) Do the Repair Confirmation at the end of this task.
- (b) If there is voltage at the ENG-1 (ENG-2) Electrical Connector, D576 (D578), pin 5, open the circuit breakers above, and examine and repair the wiring between pin 6 and ENG-1 (ENG-2) Terminal Block TB3201, term YA29 (TB3201, term YB29) (SWPM Ch 20).
 - 1) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

- (1) Do these steps:
 - (a) Make sure that all Connectors that were disconnected to do an electrical check are correctly connected.
 - (b) Make sure that the ENG-1 (ENG-2) Sequence Relay, R495 (R496), that was removed to do an electrical check is re-installed.
 - (c) Do this task: Thrust Reverser Activation After Ground Maintenance, AMM TASK 78-31-00-440-803-F00.

**WARNING**

MAKE SURE THAT THERE ARE NO PERSONS OR EQUIPMENT IN THE AREA OF THE THRUST REVERSER. MOVEMENT OF THE THRUST REVERSER CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (d) Do these steps to reset the T/R DEPLOY FAULTS light.
 - 1) Move the Reverse Thrust Lever UP and AFT to EXTEND (deploy) the T/R.
 - 2) Push and hold the FAULT RESET button for a minimum of two seconds.
 - 3) Wait for at least 30 seconds.
 - 4) If the Fault Lights on the EAU are OFF, then you corrected the problem.
 - 5) If the T/R does not deploy, do the steps below and continue the Fault Isolation Procedure at the subsequent step:

**WARNING**

DO THE DEACTIVATION PROCEDURE TO PREVENT THE OPERATION OF THE THRUST REVERSER. THE ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

- a) Do this task: Thrust Reverser Deactivation For Ground Maintenance, AMM TASK 78-31-00-040-802-F00.
- b) Make sure that the Reverse Thrust Lever is UP and AFT in the EXTEND (deploy) position.
- c) Continue with the Fault Isolation Procedure.

**WARNING**

MAKE SURE THAT THERE ARE NO PERSONS OR EQUIPMENT IN THE AREA OF THE THRUST REVERSER. MOVEMENT OF THE THRUST REVERSER CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (2) After the problem is corrected, do these steps:

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- (a) Move the Reverse Thrust Lever forward and down to RETRACT (stow) the T/R.
- (b) Operate the T/R through an EXTEND (deploy) and RETRACT (stow) cycle.
- (c) On the P5 Panel (in the Flight Compartment), make sure that the REVERSER Light comes ON for approximately 10 seconds after the Reverse Thrust Lever is moved to the RETRACT (stow) position and then goes OFF.
- (d) Wait for at least 30 seconds.
- (e) On the P5 Panel (in the Flight Compartment), make sure that the REVERSER Light stays OFF.
- (f) Do this task: Engine and APU Fire Control Panel Installation, AMM TASK 26-00-01-400-801.

————— **END OF TASK** —————

808. Thrust Reverser Stow - REVERSER Light Does Not Come ON Momentarily During Stow - Thrust Reverser Operation Normal - Fault Isolation

A. Description

- (1) The T/R operates correctly, but the REVERSER Light does not come ON for approximately 10 seconds after the Reverse Thrust Lever is moved to the RETRACT (stow) position.

B. Possible Causes

- (1) Wiring
- (2) EAU, M00528
- (3) Power Management Control Module, P5-68

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	4	C01003	ENGINE 1 THRUST REVERSER IND
B	5	C00276	ENGINE 1 THRUST REVERSER CONT
B	7	C01266	ENGINE 1 THRUST REVERSER SYNC LOCK

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	5	C01267	ENGINE 2 THRUST REVERSER SYNC LOCK
C	7	C00277	ENGINE 2 THRUST REVERSER CONT
C	8	C01004	ENGINE 2 THRUST REVERSER IND

D. Related Data

- (1) T/R Indication Simplified Schematic (78-34 TASK SUPPORT Figure 301)
- (2) WDM 78-36-11
- (3) WDM 78-36-21
- (4) SSM 78-36-11
- (5) SSM 78-36-21

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E. Initial Evaluation

- (1) Operate the T/R through a deploy and stow cycle to do a check of the REVERSER Light on the P5 Overhead Panel in the Flight Compartment. This is the task: Thrust Reverser Normal Operation Test, AMM TASK 78-31-00-700-801-F00.
 - (a) If the REVERSER Light comes ON for approximately 10 seconds after the Reverse Thrust Lever is moved to the RETRACT (stow) position, then the Initial Evaluation has shown that the fault is not active at this time and you have an intermittent fault.
 - (b) If the REVERSER Light does not come ON for approximately 10 seconds after the Reverse Thrust Lever is moved to the RETRACT (stow) position, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

- (1) Do the Lamp Test for the REVERSER Light. This is the task: Thrust Reverser Normal Operation Test, AMM TASK 78-31-00-700-801-F00.
 - (a) If the REVERSER Light does not come ON, do this task: Flight Compartment Lighting Problem - Fault Isolation, 33-10 TASK 801.
 - 1) Do the Repair Confirmation at the end of this task.
 - (b) If the REVERSER Light comes ON, then continue.
- (2) Do the Lamp Test for the EAU, M00528:
 - (a) Push and hold the T/R STOW FAULTS or the T/R DEPLOY FAULTS Switches on the EAU for ENG-1 and ENG-2.

NOTE: All of the Fault Lights will come ON for one second. After one second, all of the Lights will go OFF except for the Lights that indicate a fault, or a combination of faults, or that no faults were detected.
 - (b) Make sure that all of the Fault Lights will come ON for one second and then go OFF.
 - (c) If all of the Fault Lights do not come ON for one second, do this task: All Lights Do Not Come ON During the BITE Procedure - Fault Isolation, 78-34 TASK 809.
 - (d) If all of the Fault Lights come ON for one second, then continue.
- (3) Do a wiring check at the EAU, M00528 (WDM 78-36-11, WDM 78-36-21):
 - (a) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	4	C01003	ENGINE 1 THRUST REVERSER IND

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	8	C01004	ENGINE 2 THRUST REVERSER IND

- (b) Remove the EAU, M00528. This is the task: Engine Accessory Unit Removal, AMM TASK 78-34-06-000-801-F00.
- (c) Visually examine the ENG-1 (ENG-2) Wire Harness Connector, D1458A (D1458B), and the EAU Receptacle (Standard Engine Wiring and Equipment Check, AMM TASK 70-70-01-200-801-F00).
 - 1) If the pins on the EAU are damaged, then install a new EAU, M00528. This is the task: Engine Accessory Unit Installation, AMM TASK 78-34-06-400-801-F00.
 - a) Do the Repair Confirmation at the end of this task.

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- 2) If the Wire Harness Connector is damaged, then do the applicable tasks to repair or replace the Connector (SWPM Ch 20).
 - a) Do the Repair Confirmation at the end of this task.
- (4) Put a jumper between ENG-1 Connector D1458A, pin 55 and ENG-1 Connector D1458A, pin 3 or ENG-2 Connector D1458B, pin 55 and ENG-2 Connector D1458B, pin 3 (WDM 78-36-11, WDM 78-36-21).
 - (a) If the REVERSER Light comes ON, then install a new EAU, M00528. This is the task: Engine Accessory Unit Installation, AMM TASK 78-34-06-400-801-F00.
 - 1) Do the Repair Confirmation at the end of this task.
 - (b) If the REVERSER Light does not come ON, continue.
- (5) Do this check of the wiring (WDM 78-36-11, WDM 78-36-21):
 - (a) Remove the P5-68 Power Management Control Module.
 - (b) Do a check for an open circuit between these pins:

	EAU CONNECTOR	P5-68 CONNECTOR
ENG 1	D1458A	D2952
	pin 55	pin 19
ENG 2	D1458B	D3172
	pin 55	pin 19

- (c) If there is an open circuit, then do these steps:
 - 1) Repair the wiring.
 - 2) Re-install the EAU, M00528. This is the task: Engine Accessory Unit Installation, AMM TASK 78-34-06-400-801-F00.
 - 3) Re-install the P5-68 Power Management Control Module.
 - 4) Do the Repair Confirmation at the end of this task.
- (d) If there is continuity, then replace the P5-68 Power Management Control Module.
 - 1) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

- (1) Make sure that the EAU, M00528 is installed. Do this task: Engine Accessory Unit Installation, AMM TASK 78-34-06-400-801-F00.
- (2) Remove the safety locks and close these circuit breakers:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	4	C01003	ENGINE 1 THRUST REVERSER IND

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	8	C01004	ENGINE 2 THRUST REVERSER IND

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MAKE SURE THAT THERE ARE NO PERSONS OR EQUIPMENT IN THE AREA OF THE THRUST REVERSER. MOVEMENT OF THE THRUST REVERSER CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (3) Operate the T/R through a deploy and stow cycle to do a check of the REVERSER Light.
 - (a) If the REVERSER Light comes ON for approximately 10 seconds after the Reverse Thrust Lever is moved to the RETRACT (stow) position and then goes OFF, then you have corrected the problem.
- (4) If the problem still exists, open the Circuit Breakers below and continue the Fault Isolation Procedure at the subsequent step.
 - (a) Open these circuit breakers and install safety locks:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	4	C01003	ENGINE 1 THRUST REVERSER IND

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	8	C01004	ENGINE 2 THRUST REVERSER IND

————— END OF TASK —————

809. All Lights Do Not Come ON During the BITE Procedure - Fault Isolation

A. Description

- (1) All of the lights do not come ON for one second when the T/R STOW FAULTS or the T/R DEPLOY FAULTS button is pushed during the EAU BITE Check.

B. Possible Causes

- (1) EAU, M528
- (2) Wiring

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	4	C01003	ENGINE 1 THRUST REVERSER IND
B	5	C00276	ENGINE 1 THRUST REVERSER CONT
B	7	C01266	ENGINE 1 THRUST REVERSER SYNC LOCK

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	5	C01267	ENGINE 2 THRUST REVERSER SYNC LOCK
C	7	C00277	ENGINE 2 THRUST REVERSER CONT
C	8	C01004	ENGINE 2 THRUST REVERSER IND

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D. Related Data

- (1) Simplified Schematic (78-34 TASK SUPPORT Figure 301)
- (2) WDM 78-36-11
- (3) WDM 78-36-21
- (4) SSM 78-36-11
- (5) SSM 78-36-21

E. Fault Isolation Procedure

- (1) Do the Lamp Test for the EAU, M528. This is the task: Thrust Reverser Engine Accessory Unit (EAU) Test, AMM TASK 78-31-00-700-804-F00:
 - (a) Push and hold the T/R STOW FAULTS or the T/R DEPLOY FAULTS Switches on the EAU, M528 for ENG-1 and ENG-2.
NOTE: All of the Fault Lights must come ON for one second.
 - (b) If only some of the Fault Lights do not come ON for one second, then replace the EAU, M528. These are the tasks:
 - Engine Accessory Unit Removal, AMM TASK 78-34-06-000-801-F00
 - Engine Accessory Unit Installation, AMM TASK 78-34-06-400-801-F00
 - 1) Do the Repair Confirmation at the end of this task.
 - (c) If all of the Fault Lights do not come ON for one second, then continue.
- (2) Do an electrical check at the EAU, M528 as follows (WDM 78-36-11, WDM 78-36-21):
 - (a) Remove the EAU, M528. This is the task: Engine Accessory Unit Removal, AMM TASK 78-34-06-000-801-F00.
 - (b) Visually examine the ENG-1 (ENG-2) Wire Harness Connector, D1458A (D1458B), and the EAU Receptacle (Standard Engine Wiring and Equipment Check, AMM TASK 70-70-01-200-801-F00).
 - 1) If the pins on the EAU are damaged, then install a new EAU, M528. This is the task: Engine Accessory Unit Installation, AMM TASK 78-34-06-400-801-F00.
 - a) Do the Repair Confirmation at the end of this task.
 - 2) If the ENG-1 (ENG-2) Wire Harness Connector, D1458A (D1458B), is damaged, then do the applicable tasks to repair or replace the Connector (SWPM Ch 20).
 - a) Do the Repair Confirmation at the end of this task.
- (3) Do this check for 28V DC to the EAU, M528 (WDM 78-36-11, WDM 78-36-21):
 - (a) Close these circuit breakers:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	4	C01003	ENGINE 1 THRUST REVERSER IND
B	5	C00276	ENGINE 1 THRUST REVERSER CONT
B	7	C01266	ENGINE 1 THRUST REVERSER SYNC LOCK

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	5	C01267	ENGINE 2 THRUST REVERSER SYNC LOCK
C	7	C00277	ENGINE 2 THRUST REVERSER CONT

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F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	8	C01004	ENGINE 2 THRUST REVERSER IND

- (b) Do a check for 28V DC between the ENG-1 (ENG-2) Electrical Connector, D1458A (D1458B), pin 1 and Structure Ground.

- 1) If there is not 28V DC at the ENG-1 (ENG-2) Electrical Connector, D1458A (D1458B), pin 1, then do these steps:

- a) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	4	C01003	ENGINE 1 THRUST REVERSER IND

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	8	C01004	ENGINE 2 THRUST REVERSER IND

- b) Examine and repair the wiring between the ENG-1 (ENG-2) Connector D1458A (D1458B), pin 1 and the ENGINE 1 (ENGINE 2) THRUST REVERSER IND Circuit Breaker, C1003 (C1004) (SWPM Ch 20).

- c) Do the Repair Confirmation at the end of this task.

- 2) If there is 28V DC at the ENG-1 (ENG-2) Connector, D1458A (D1458B), pin 1, then continue.

- (4) Install a new EAU, M528. This is the task: Engine Accessory Unit Installation, AMM TASK 78-34-06-400-801-F00.

- (a) Do the Repair Confirmation at the end of this task.

F. Repair Confirmation

- (1) Do these steps:

- (a) Make sure that the EAU, M528 is installed. This is the task: Engine Accessory Unit Installation, AMM TASK 78-34-06-400-801-F00.

- (b) Do this Lamp Test for the EAU, M528 (Thrust Reverser Engine Accessory Unit (EAU) Test, AMM TASK 78-31-00-700-804-F00):

- 1) Push and hold the T/R STOW FAULTS or the T/R DEPLOY FAULTS Switches on the EAU, M528 for ENG-1 and ENG-2.

NOTE: All of the Fault Lights must come ON for one second.

- 2) Make sure that all of the Fault Lights come ON for one second.

- 3) After one second, make sure that all of the Lights go OFF, except for the Green NO FAULTS DETECTED Light.

- (c) If all of the Lights come ON for one second and then go OFF, except for the Green NO FAULTS DETECTED Light, then you have corrected the problem.

- (d) If the problem still exists, continue the Fault Isolation Procedure at the subsequent step.

- (2) After the problem is corrected, do these steps to complete the task:

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MAKE SURE THAT THERE ARE NO PERSONS OR EQUIPMENT IN THE AREA OF THE THRUST REVERSER. MOVEMENT OF THE THRUST REVERSER CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (a) Operate the T/R through an EXTEND (deploy) and RETRACT (stow) cycle.
- (b) Make sure that the REVERSER Light on the P5 Panel comes ON for approximately 10 seconds after the REVERSE THRUST Lever is moved to the RETRACT (stow) position and then goes OFF.

————— **END OF TASK** —————

810. Reverse Thrust Levers are set to Full Reverse Thrust, but ENG-1 and ENG-2 T/R Sleeves Do Not Deploy - Fault Isolation
A. Description

- (1) This task is for this Observed Fault:
 - (a) The ENG-1 and ENG-2 Reverse Thrust Levers are set to Full Reverse Thrust, but both ENG-1 and ENG-2 T/R Sleeves do not deploy.

B. Possible Causes

- (1) Wiring

SIA ALL; AUTOTHROTTLE SWITCHPACK WITH REPLACEABLE SWITCHES P/N 254A1150-1, -2, -7, -8, -9, -10

- (2) T/R 1 (T/R 2) Arm Switch, S5

NOTE: The T/R 1 (T/R 2) Arm Switch, S5, is installed on the Left (Right) Autothrottle Switchpack, M1766 (M1767).

SIA ALL; AUTOTHROTTLE SWITCHPACK WITH INTEGRATED SWITCHES P/N 254A1150-11, -12, -13, -14, -15, -16

- (3) T/R 1 (T/R 2) Autothrottle Switch Pack Assembly, M1766 (M1767)

SIA ALL

- (4) ENG-1 (ENG-2) T/R Control Switch Actuation Spring 69-78782
- (5) ENG-1 (ENG-2) T/R Control Switch, S828 (S829)

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	5	C00276	ENGINE 1 THRUST REVERSER CONT

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	7	C00277	ENGINE 2 THRUST REVERSER CONT

D. Related Data

- (1) Sheet 1 of 78-34 TASK SUPPORT Figure 306
- (2) Sheet 1 of 78-34 TASK SUPPORT Figure 307

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- (3) WDM 78-34-11
- (4) WDM 78-34-21
- (5) SSM 78-34-11
- (6) SSM 78-34-21

E. Initial Evaluation

- (1) Do this task: Thrust Reverser Normal Operation Test, AMM TASK 78-31-00-700-801-F00.
 - (a) If the ENG-1 (ENG-2) T/R does not deploy, then do the Fault Isolation Procedure below.
 - (b) If the ENG-1 (ENG-2) T/R deploys correctly, then there could be an intermittent problem. Do The Fault Isolation Procedure below.

NOTE: A Sync Lock Switch with dirty contacts can cause intermittent problems.

F. Fault Isolation Procedure



DO THE DEACTIVATION PROCEDURE TO PREVENT THE OPERATION OF THE THRUST REVERSER. THE ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

- (1) Do this task: Thrust Reverser Deactivation For Ground Maintenance, AMM TASK 78-31-00-040-802-F00.
 - (a) Move the Reverse Thrust Lever 1 (2) UP and AFT to the EXTENDED (deployed) position.
- (2) Do these electrical checks on the applicable ENG-1 (ENG-2) electrical connector D3052 (D3056) at the Arm Solenoid of the CVM, M1173 (M1174) (WDM 78-34-11, WDM 78-34-21):

NOTE: The CVM is in the Main Gear Wheel Well on the keel beam. The ENG-1 CVM, M1173 is on the left side and the ENG-2 CVM, M1174 is on the right side.

- (a) Remove the safety locks and close the applicable circuit breaker(s):

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	5	C00276	ENGINE 1 THRUST REVERSER CONT

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	7	C00277	ENGINE 2 THRUST REVERSER CONT

- (b) Disconnect the electrical connector D3052 (D3056) from the ENG-1 (ENG-2) CVM, M1173 (M1174).
- (c) Do a check for 28V DC as follows:

ENG-1 CVM

D3052	D3052	Voltage
pin 2	pin 7	28V DC

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78-34 TASK 810

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ENG-2 CVM

D3056	D3056	Voltage
pin 2	pin 7	28 V DC

- 1) If you do not find 28V DC, then do this electrical check from pin 7 of the electrical connector D3052 (D3056) to Structure Ground.

NOTE: An Arm Switch with dirty contacts can cause intermittent problems. Sometimes, a continuity check through the Arm Switch is not a satisfactory check. Therefore, you can also use the Alternate Load Light method to troubleshoot a defective Arm Switch.

- a) Method 1 - Do a continuity check from pin 7 of the electrical connector D3052 (D3056) to Structure Ground.
- <1> If you do not find continuity then lightly tap on the Autothrottle Switch Pack Assembly, M1766 (M1767).
 - <a> If continuity at pin 7 becomes present while lightly tapping on the Autothrottle Switch Pack Assembly, M1766 (M1767) then the T/R 1 (T/R 2) Arm Switch, S5 is malfunctioning.
 - <2> If you find continuity, then repair the wiring between pin 2 of the electrical connector D3052 (D3056) and the ENGINE 1 (2) THRUST REVERSER CONT Circuit Breaker, C00276 (C00277) (WDM 78-34-11, WDM 78-34-21).
 - <a> Do the Repair Confirmation at the end of this task.
- b) Alternate Method - 2 Load Light:
- <1> Remove the electrical connector D11130 (D11134) and install a jumper between pin 8 of the electrical connector D11130 (D11134) and pin 8 of the ENG-1 (ENG-2) Autothrottle Switchpack, M1766 (M1767) Receptacle.
 - <2> Install a Load Light (lamp, STD-12563) between pin 7 of the ENG-1 (ENG-2) Autothrottle Switchpack, M1766 (M1767) Receptacle and Airplane Ground.
 - <a> Move the Reverse Thrust Lever 1 (2) to the EXTEND (deploy) position and monitor the Load Light as follows:
 - I. With the Reverse Thrust Lever 1 (2) in the EXTEND (deploy) position, shake the Reverse Thrust Lever 1 (2) and make sure that the Load Light stays illuminated.
 - II. If the Load Light is dim, flickering, or not illuminated, the T/R 1 (T/R 2) Arm Switch, S5 is malfunctioning.
 - <3> Remove the Load Light (lamp, STD-12563) from pin 7 and install it between pin 9 of the ENG-1 (ENG-2) Autothrottle Switchpack, M1766 (M1767) Receptacle and Airplane Ground.
 - <a> Move the Reverse Thrust Lever 1 (2) to the RETRACT (stow) position and monitor the Load Light as follows:
 - I. With the Reverse Thrust Lever 1 (2) in the RETRACT (stow) position, shake the Reverse Thrust Lever 1 (2) and make sure that the Load Light stays illuminated.

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- II. If the Load Light is dim, flickering, or not illuminated, the T/R 1 (T/R 2) Arm Switch, S5 is malfunctioning.
- c) If the electrical check of the T/R 1 (T/R 2) Arm Switch, S5 shows that the Switch is malfunctioning, do these steps:

SIA ALL; AUTOTHROTTLE SWITCHPACK WITH REPLACEABLE SWITCHES P/N 254A1150-1, -2, -7, -8, -9, -10

- <1> Adjust the Arm Switch, S5 per the applicable steps in the Autothrottle Switchpack Switch Installation, AMM TASK 76-11-07-400-801-F00.
- <a> Do the Repair Confirmation at the end of this task.
- If the Repair Confirmation is not satisfactory, replace the Arm Switch, S5. These are the tasks:
- Autothrottle Switchpack Switch Removal, AMM TASK 76-11-07-020-801-F00
 - Autothrottle Switchpack Switch Installation, AMM TASK 76-11-07-400-801-F00

SIA ALL; AUTOTHROTTLE SWITCHPACK WITH INTEGRATED SWITCHES P/N 254A1150-11, -12, -13, -14, -15, -16

- <2> Replace the ENG-1 (ENG-2) Autothrottle Switchpack Assembly, M1766 (M1767). These are the tasks:
- Autothrottle Switchpack Assembly - Installation, AMM TASK 76-11-07-400-802-F00
 - Autothrottle Switchpack Assembly - Removal, AMM TASK 76-11-07-020-802-F00
- <a> Do the Repair Confirmation at the end of this task.

SIA ALL

- 2) If you find 28V DC between pins 2 and 7 of the applicable ENG-1 (ENG-2) CVM electrical connector, then continue.
- (3) Do this electrical check at the applicable CVM Deploy Solenoid (WDM 78-34-11, WDM 78-34-21) as follows:
- (a) Remove the safety locks and close the applicable circuit breaker(s):

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	5	C00276	ENGINE 1 THRUST REVERSER CONT

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	7	C00277	ENGINE 2 THRUST REVERSER CONT

- (b) Do a check for 28V DC as follows:

ENG-1 CVM

D3052	D3052	Voltage
pin 4	pin 5	28V DC

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ENG-2 CVM

D3056	D3056	Voltage
pin 4	pin 5	28V DC

- (c) If you do not find 28V DC, then do a check for 28V DC from pin 4 of the electrical connector D3052 (D3056) to Structure Ground.

- 1) If you find 28V DC, then do these steps:
- a) Open the applicable circuit breaker(s) and install safety tags:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	5	C00276	ENGINE 1 THRUST REVERSER CONT

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	7	C00277	ENGINE 2 THRUST REVERSER CONT

- b) For ENG-1, examine and repair or replace the wiring between pin 5 of the electrical connector D3052, and Terminal Block TB22, term YB1 (SWPM Ch 20).

NOTE: Terminal Block TB22, term YB1 is in the Junction Box, J22.

<1> Do the Repair Confirmation at the end of this task.

- c) For ENG-2, examine and repair or replace the wiring between pin 5 of the electrical connector D3056, and Splice SM15 (SWPM Ch 20).

NOTE: Splice SM15 is in the Junction Box, J24 in the Nose Gear Wheel Well on the right side.

<1> Do the Repair Confirmation at the end of this task.

- 2) If you do not find 28V DC, then do these steps:

- a) Open the applicable circuit breaker(s) and install safety tags:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	5	C00276	ENGINE 1 THRUST REVERSER CONT

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	7	C00277	ENGINE 2 THRUST REVERSER CONT

- b) Re-connect the electrical connector D3052 (D3056) to the ENG-1 (ENG-2) CVM.

- c) Do a check of the ENG-1 (ENG-2) T/R Control Switch Actuation Spring 69-78782. This is the task: Actuation Spring Free Angle Check, AMM TASK 78-34-11-200-801-F00.

<1> Adjust or replace as necessary the ENG-1 (ENG-2) T/R Control Switch, S828 (S829). These are the tasks:

- Control Switch Adjustment and Test, AMM TASK 78-34-04-700-801-F00

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- Control Switch Removal, AMM TASK 78-34-04-000-801-F00
- Control Switch Installation, AMM TASK 78-34-04-400-801-F00

<2> Do the Repair Confirmation at the end of this task.

- 3) If the problem continues, examine and repair or replace the wiring as follows (SWPM Ch 20):
 - a) For ENG-1, examine and repair or replace the wiring between pin 4 of the electrical connector D10171 and Splice SM18.
 - b) For ENG-2, examine and repair or replace the wiring between pin 4 of the electrical connector D10173 and Splice SP968.
 - c) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

- (1) Do these steps:
 - (a) Make sure that the electrical connector D3052 (D3056) is correctly connected to the ENG-1 (ENG-2) CVM, M1173 (M1174).
 - (b) Make sure that the electrical connector D10171 (D10173) is correctly connected to the ENG-1 (ENG-2) T/R Control Switch, S828 (S829).
 - (c) Move the Reverse Thrust Lever 1 (2) FWD and DOWN to the RETRACT (stow) position.



WARNING

MAKE SURE THAT THERE ARE NO PERSONS OR EQUIPMENT IN THE AREA OF THE THRUST REVERSER. MOVEMENT OF THE THRUST REVERSER CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (d) Do this task: Thrust Reverser Activation After Ground Maintenance, AMM TASK 78-31-00-440-803-F00.
- (e) Do these steps to reset the T/R DEPLOY FAULTS Light at the EAU, M528 if necessary.
 - 1) Move the Reverse Thrust Lever 1 (2) UP and AFT to EXTEND (deploy) the Thrust Reverser.
 - 2) Push and hold the FAULT RESET Button for a minimum of two seconds.
 - 3) Wait for at least 30 seconds.
 - 4) If the Fault Lights on the EAU, M528 are OFF, then you corrected the problem.



WARNING

DO THE DEACTIVATION PROCEDURE TO PREVENT THE OPERATION OF THE THRUST REVERSER. THE ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

- 5) If the T/R does not deploy, deactivate the T/R (Thrust Reverser Deactivation For Ground Maintenance, AMM TASK 78-31-00-040-802-F00) and continue the Fault Isolation Procedure at the subsequent step.
 - a) Make sure that the Reverse Thrust Lever 1 (2) is UP and AFT in the EXTEND (deploy) position.

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MAKE SURE THAT THERE ARE NO PERSONS OR EQUIPMENT IN THE AREA OF THE THRUST REVERSER. MOVEMENT OF THE THRUST REVERSER CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (2) After you correct the problem, do these steps:
- (a) Move the Reverse Thrust Lever 1 (2) FWD and DOWN to the RETRACT (stow) position.
 - (b) Operate the T/R through an EXTEND and RETRACT cycle.
 - (c) Make sure that the REVERSER Fault Light on the Flight Compartment Panel, P5 comes ON for approximately 10 seconds after the Reverse Thrust Lever is moved to the RETRACT (stow) position and then goes OFF.
 - (d) Wait for at least 30 seconds.
 - (e) Make sure that the REVERSER Fault Light on the Flight Compartment Panel, P5 stays OFF.
 - (f) Re-install the Aisle Stand, P8 Cover.

———— **END OF TASK** ————

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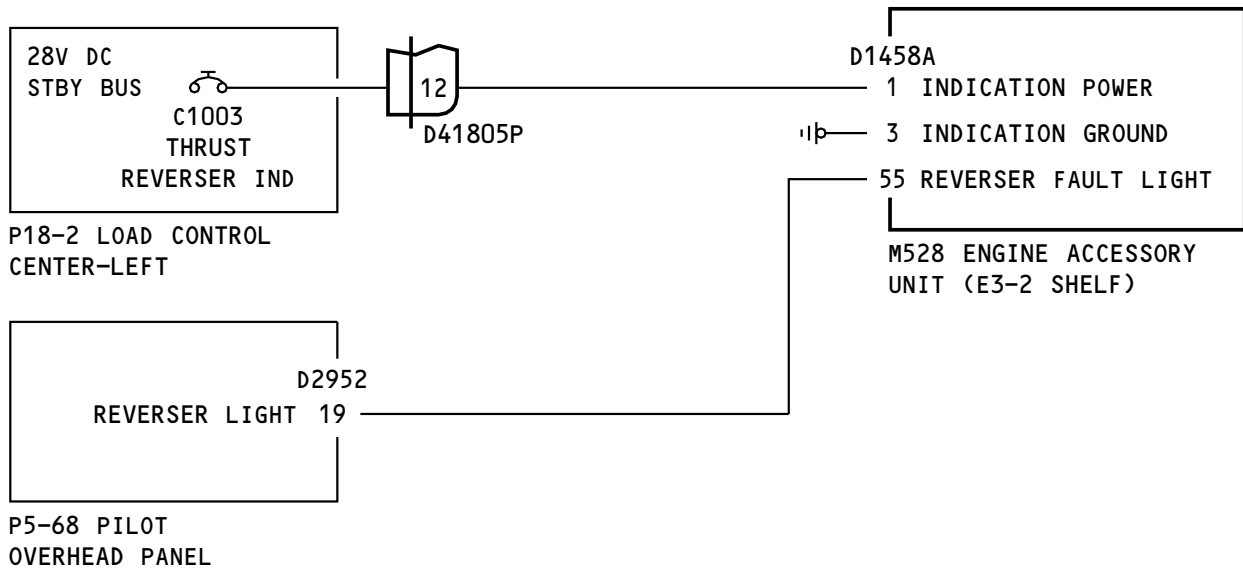
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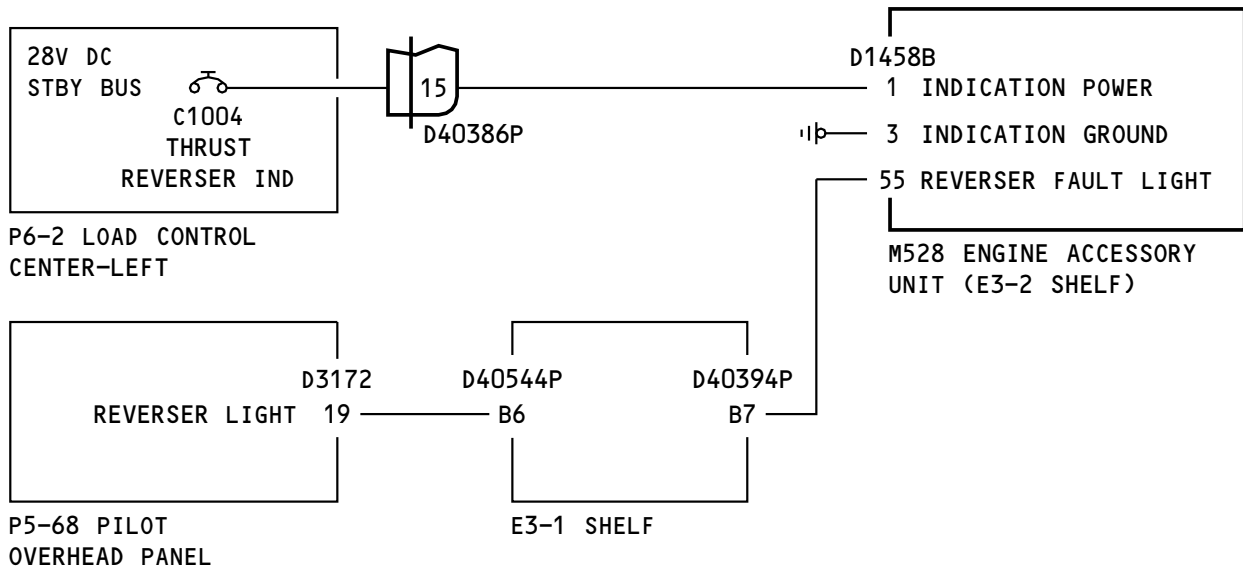
ECCN 9E991 BOEING PROPRIETARY - See title page for details

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ENGINE 1



ENGINE 2

H35489 S0006746470_V1

Thrust Reverser Indication Simplified Schematic
Figure 301/78-34-00-990-801-F00

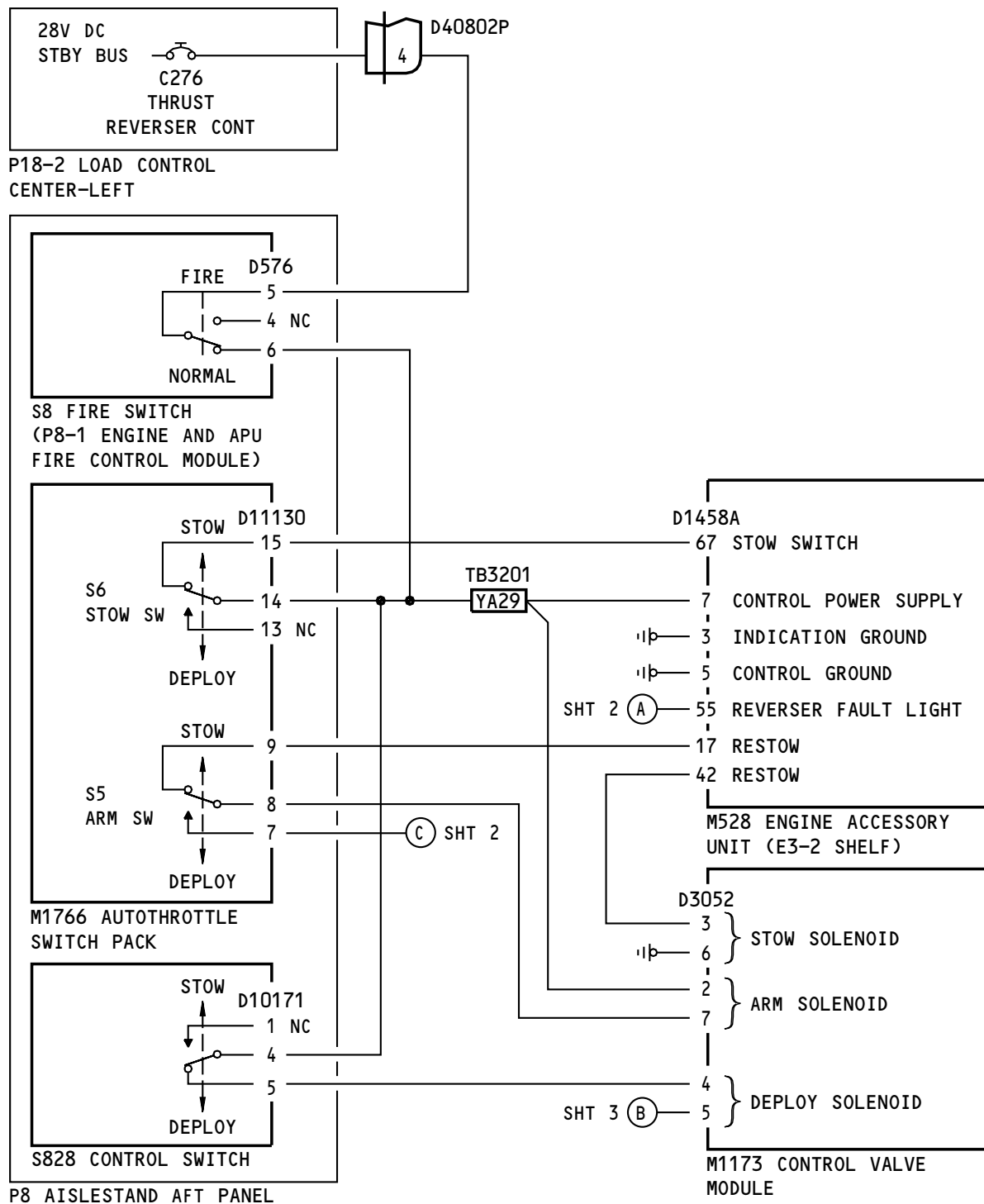
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H75903 S0006746471_V1

Engine 1 Thrust Reverser Control Simplified Schematic
Figure 302/78-34-00-990-802-F00 (Sheet 1 of 2)

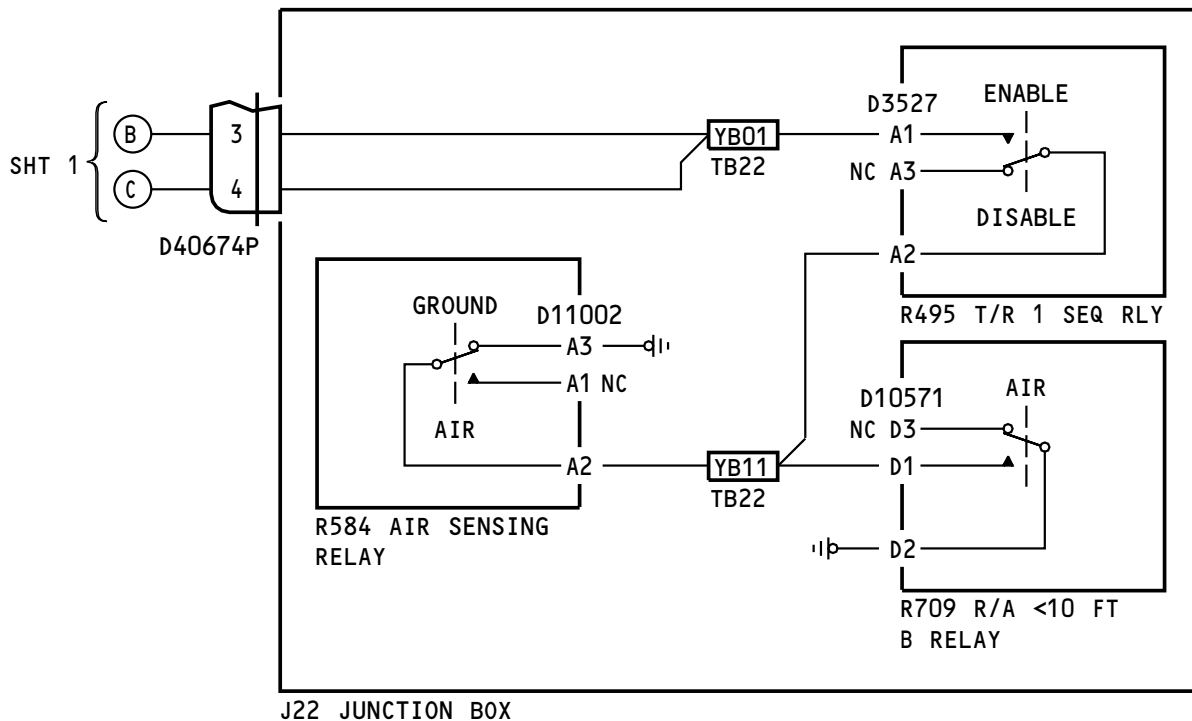
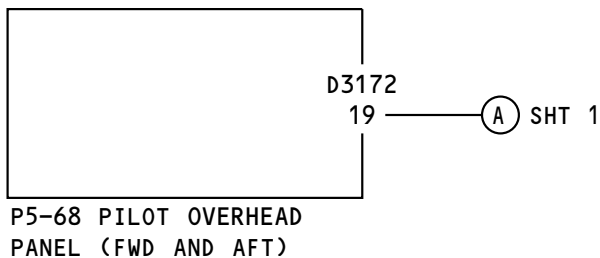
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H35490 S0006746472_V1

Engine 1 Thrust Reverser Control Simplified Schematic
Figure 302/78-34-00-990-802-F00 (Sheet 2 of 2)

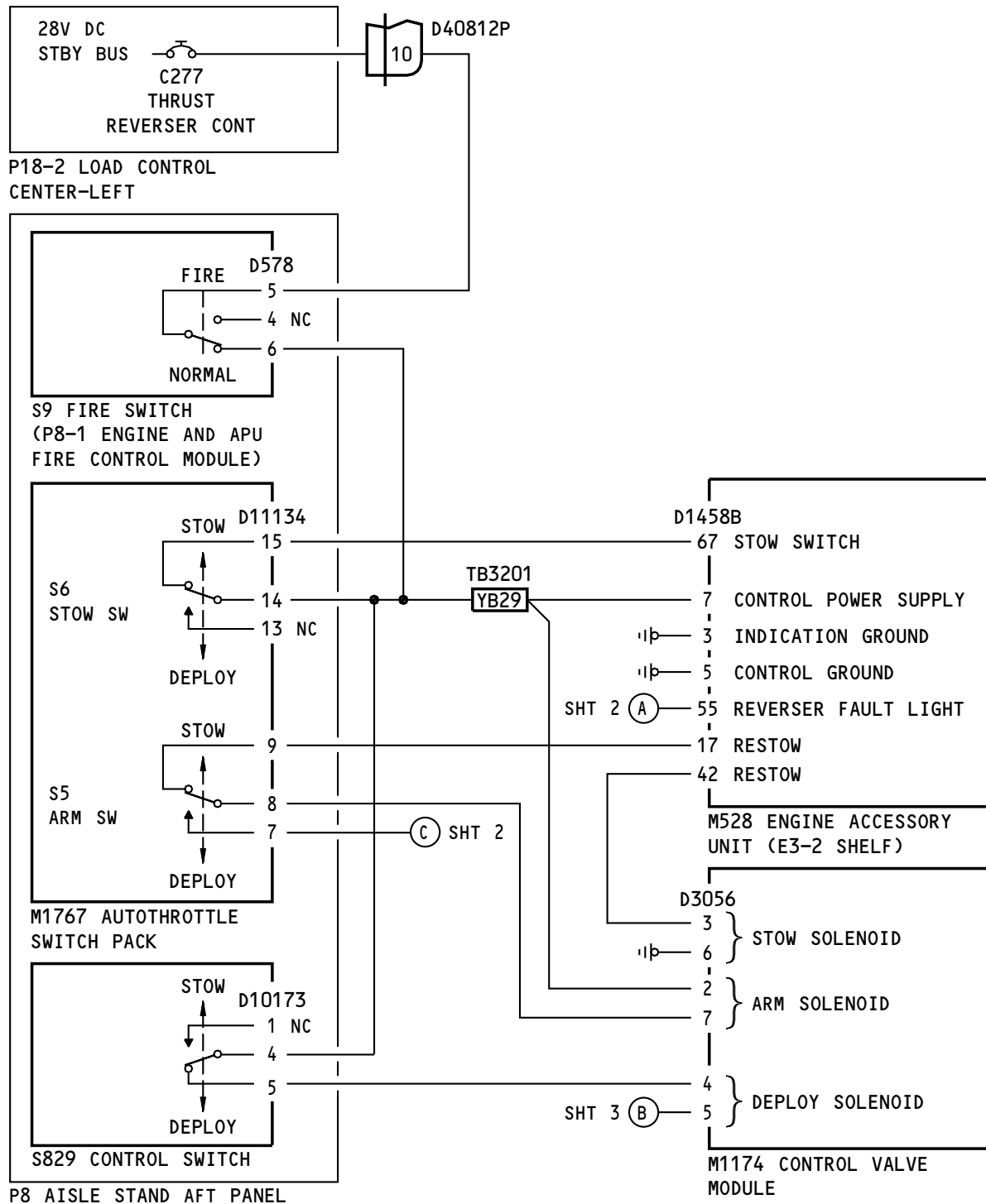
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H38380 S0006746473_V1

Engine 2 Thrust Reverser Control Simplified Schematic (AIRPLANES WITH SPLICE SM15)
Figure 303/78-34-00-990-803-F00 (Sheet 1 of 2)

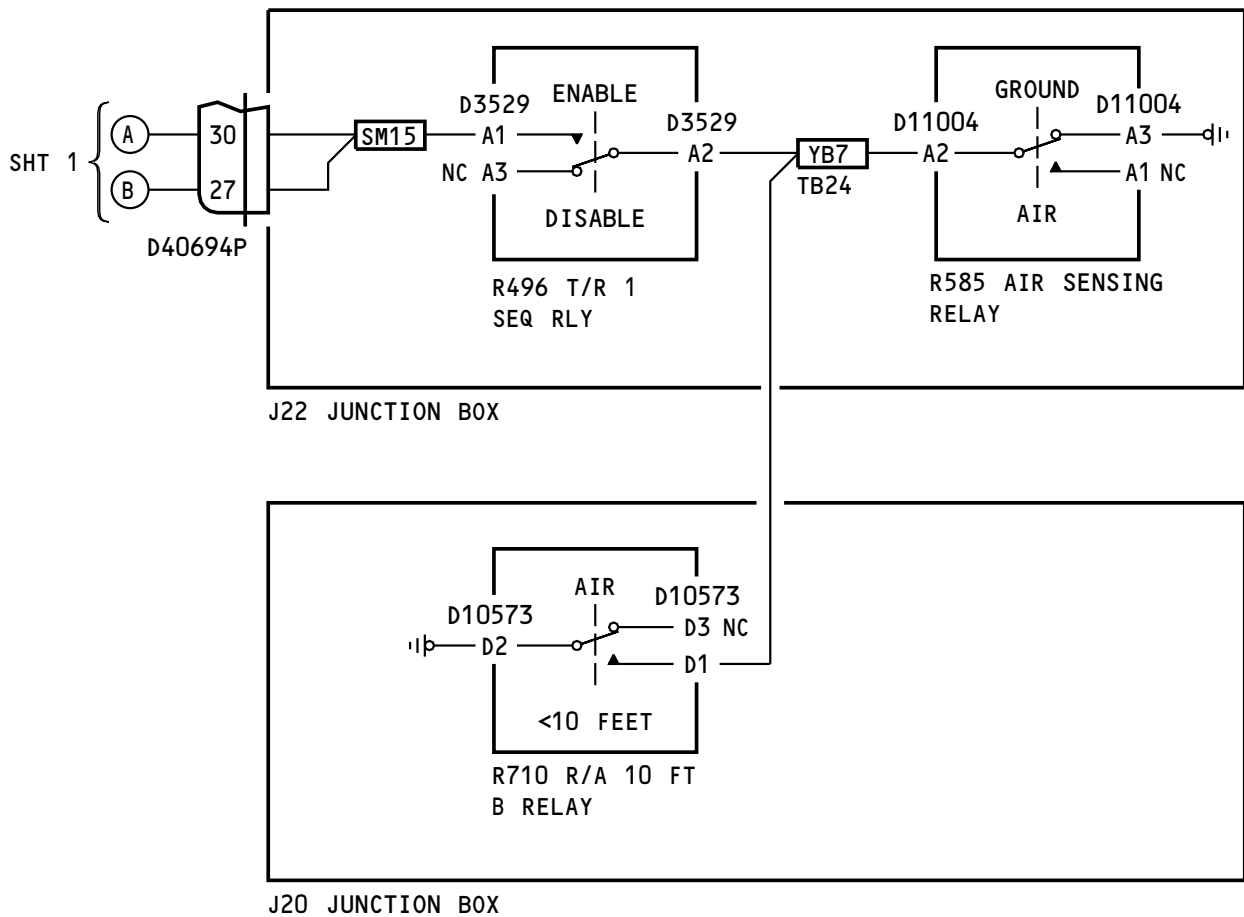
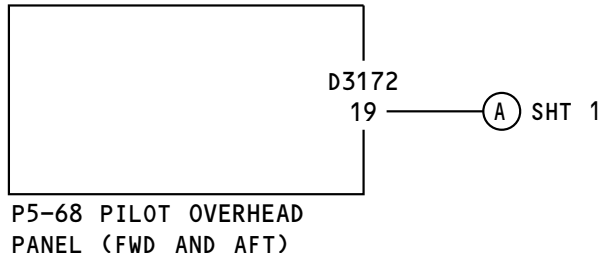
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H38384 S0006746474_V1

Engine 2 Thrust Reverser Control Simplified Schematic (AIRPLANES WITH SPLICE SM15)
Figure 303/78-34-00-990-803-F00 (Sheet 2 of 2)

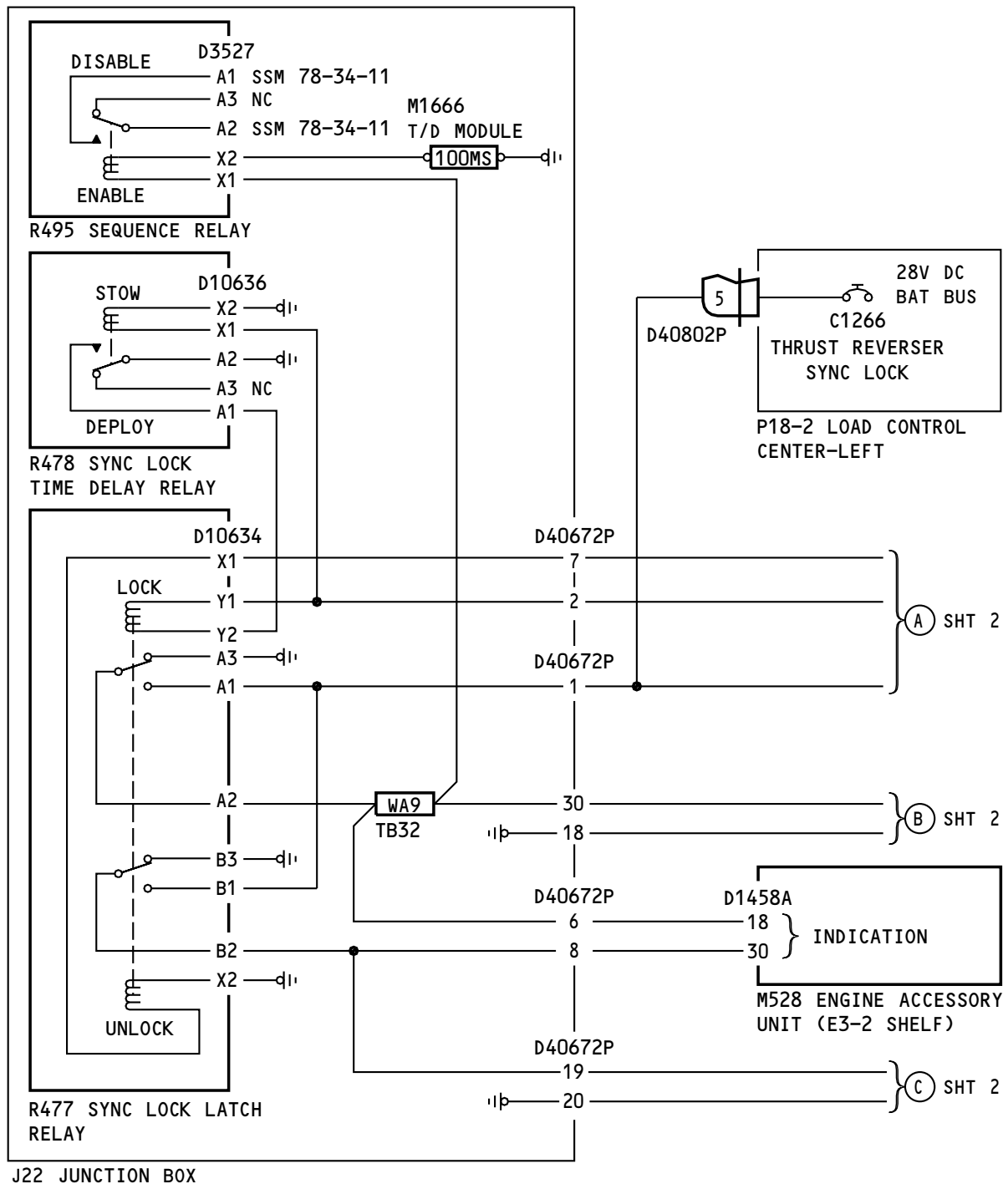
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J22 JUNCTION BOX

H36524 S0006746477_V1

Engine 1 Thrust Reverser Sync Lock Simplified Schematic
Figure 304/78-34-00-990-805-F00 (Sheet 1 of 2)

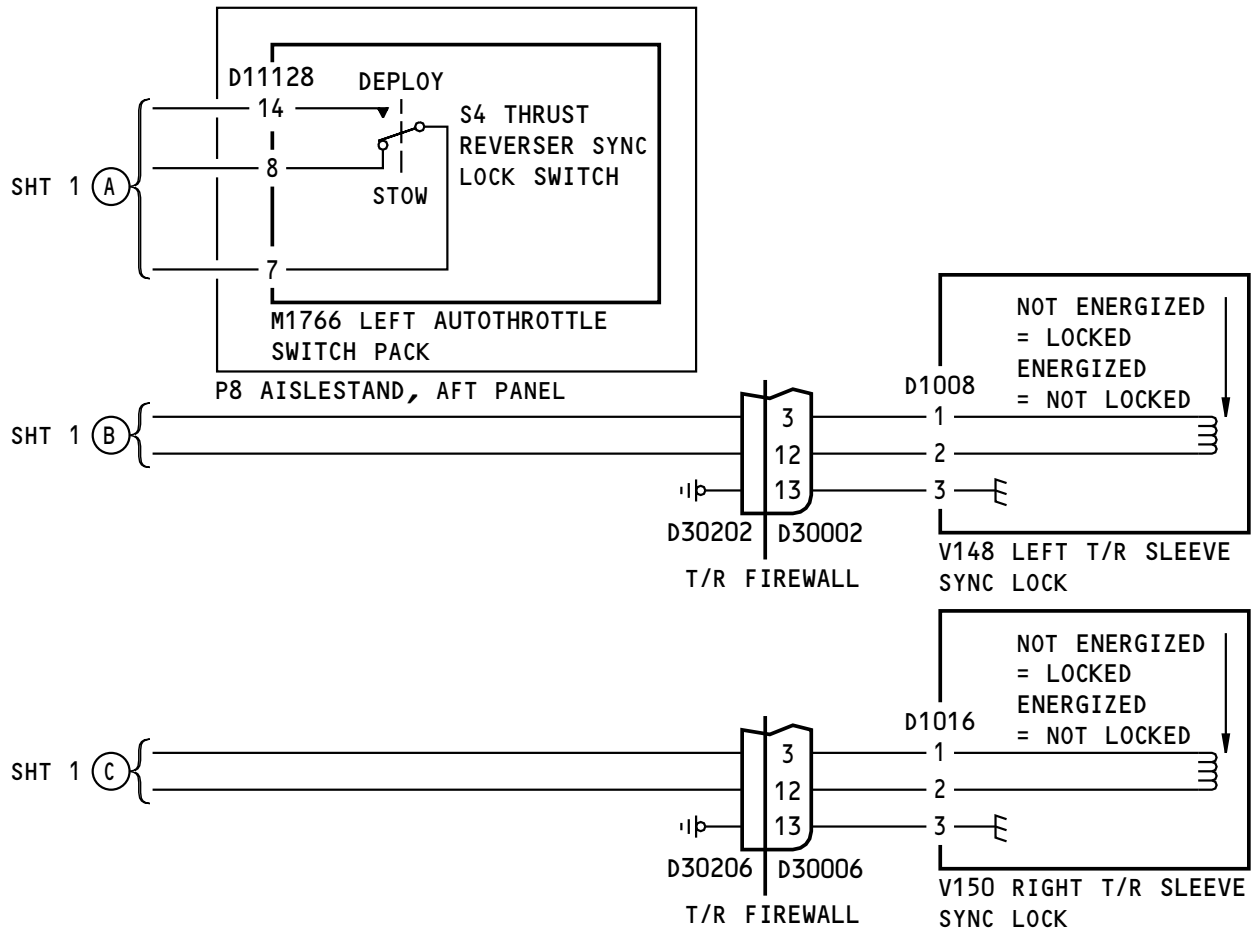
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H36526 S0006746478_V1

Engine 1 Thrust Reverser Sync Lock Simplified Schematic
Figure 304/78-34-00-990-805-F00 (Sheet 2 of 2)

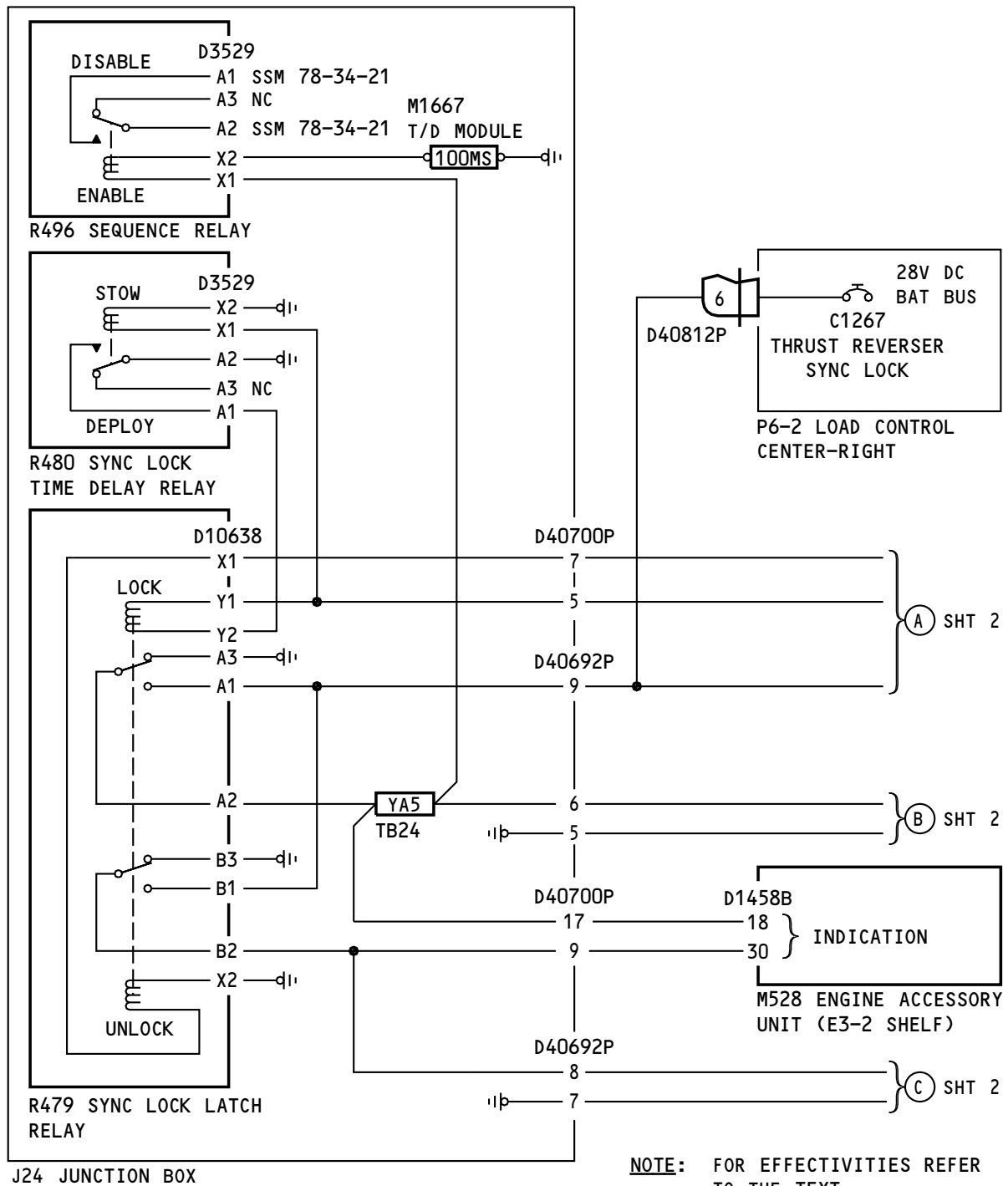
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NOTE: FOR EFFECTIVITIES REFER TO THE TEXT.

H75890 S0006746479_V1

Engine 2 Thrust Reverser Sync Lock Simplified Schematic
Figure 305/78-34-00-990-806-F00 (Sheet 1 of 2)

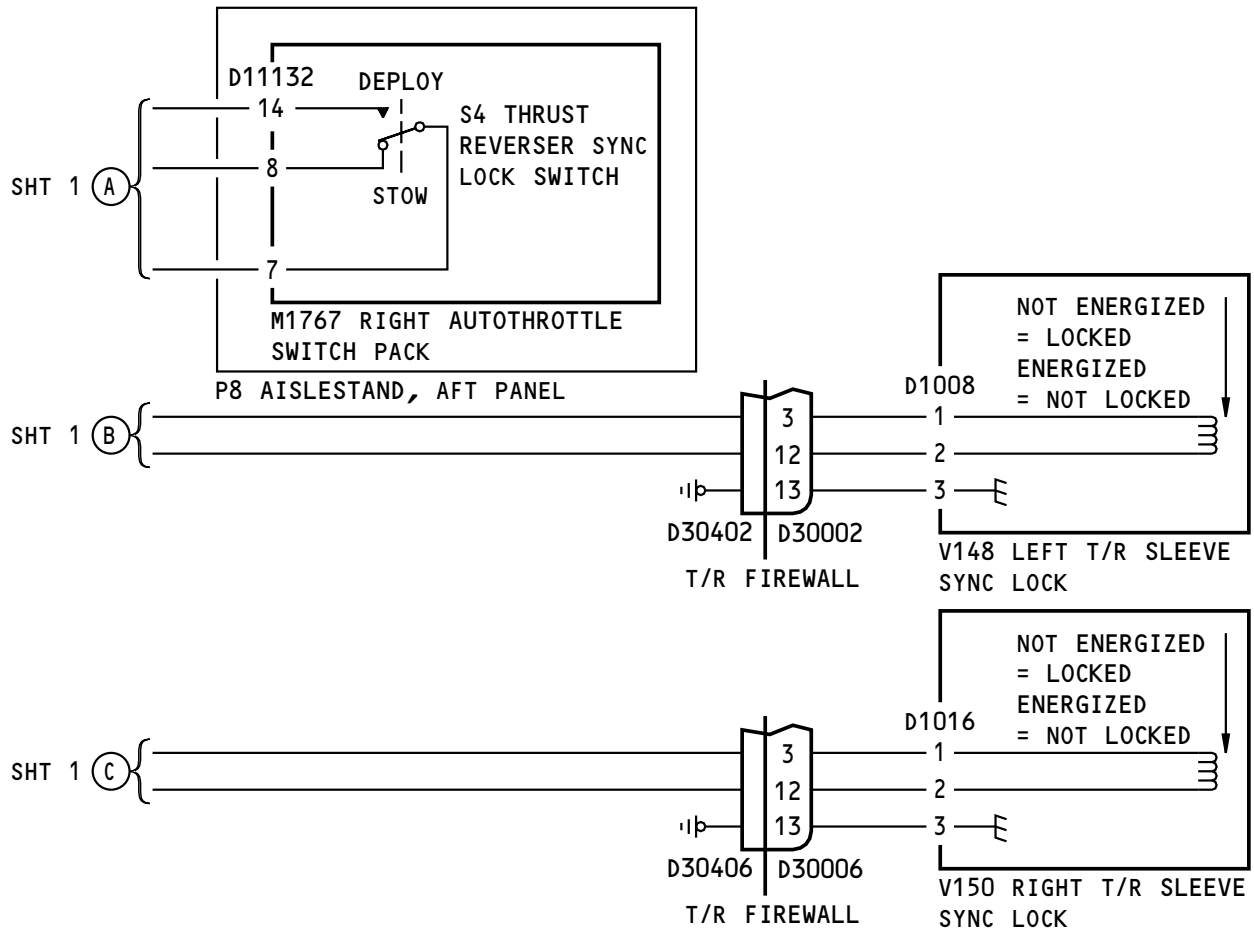
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H75887 S0006746480_V1

Engine 2 Thrust Reverser Sync Lock Simplified Schematic
Figure 305/78-34-00-990-806-F00 (Sheet 2 of 2)

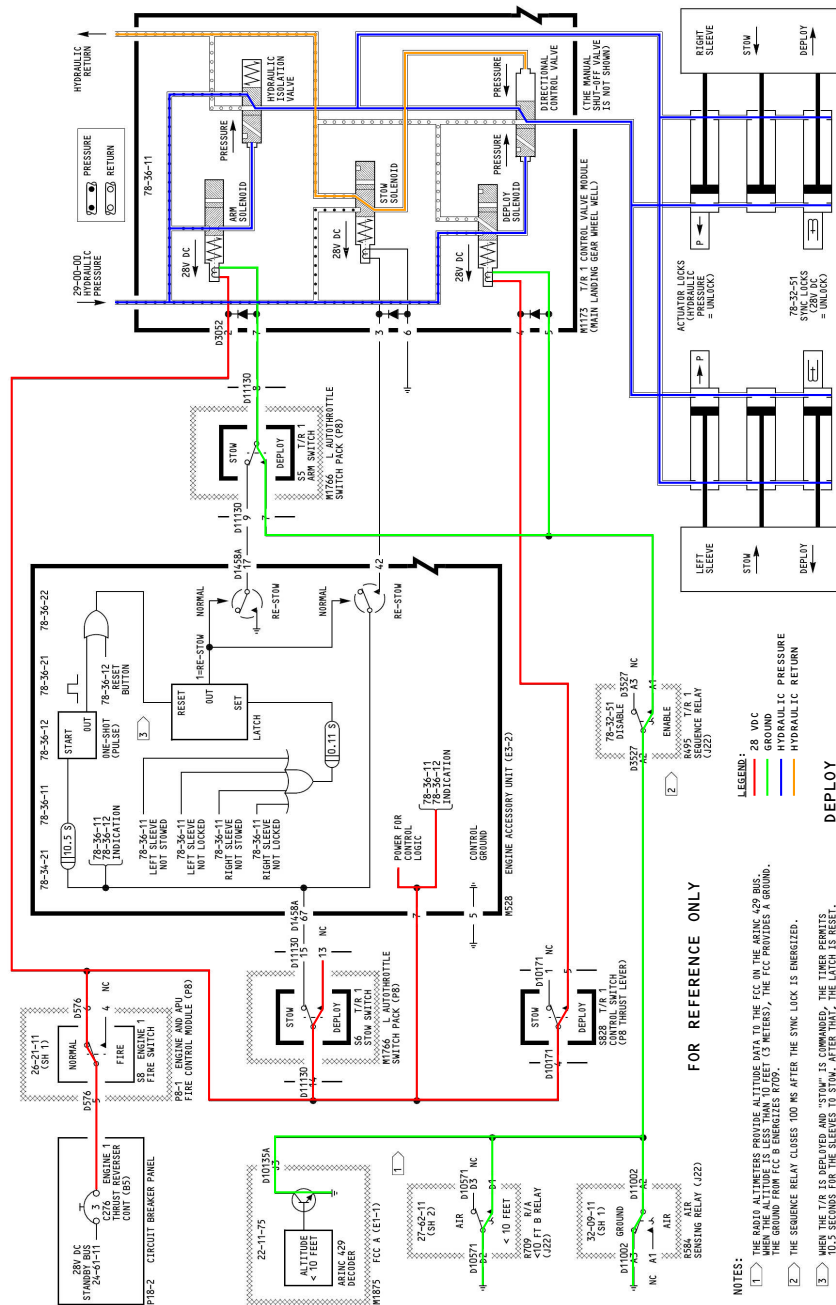
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Engine 1 Thrust Reverser Hydraulic Control System Simplified Schematic
Figure 306/78-34-00-990-807-F00 (Sheet 1 of 3)

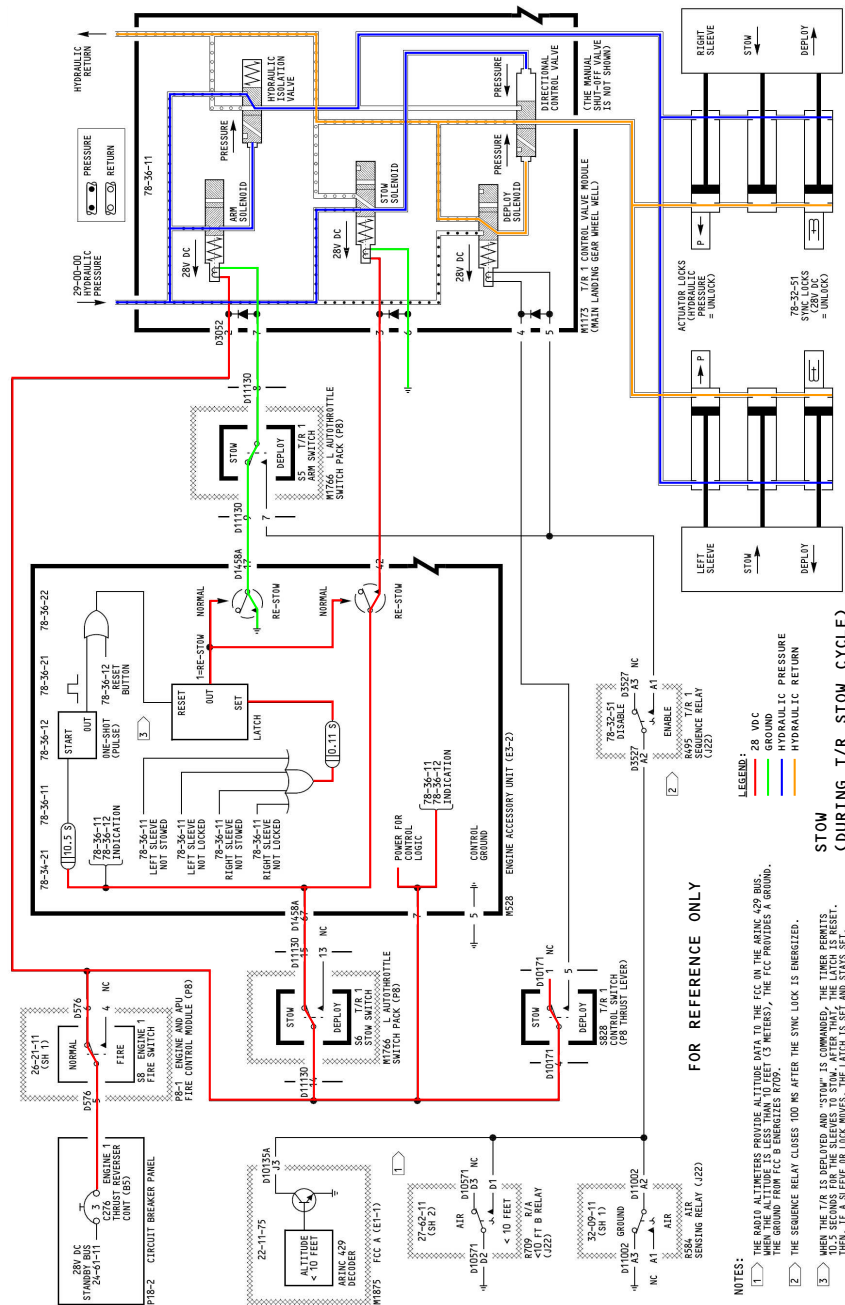
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Engine 1 Thrust Reverser Hydraulic Control System Simplified Schematic
Figure 306/78-34-00-990-807-F00 (Sheet 2 of 3)

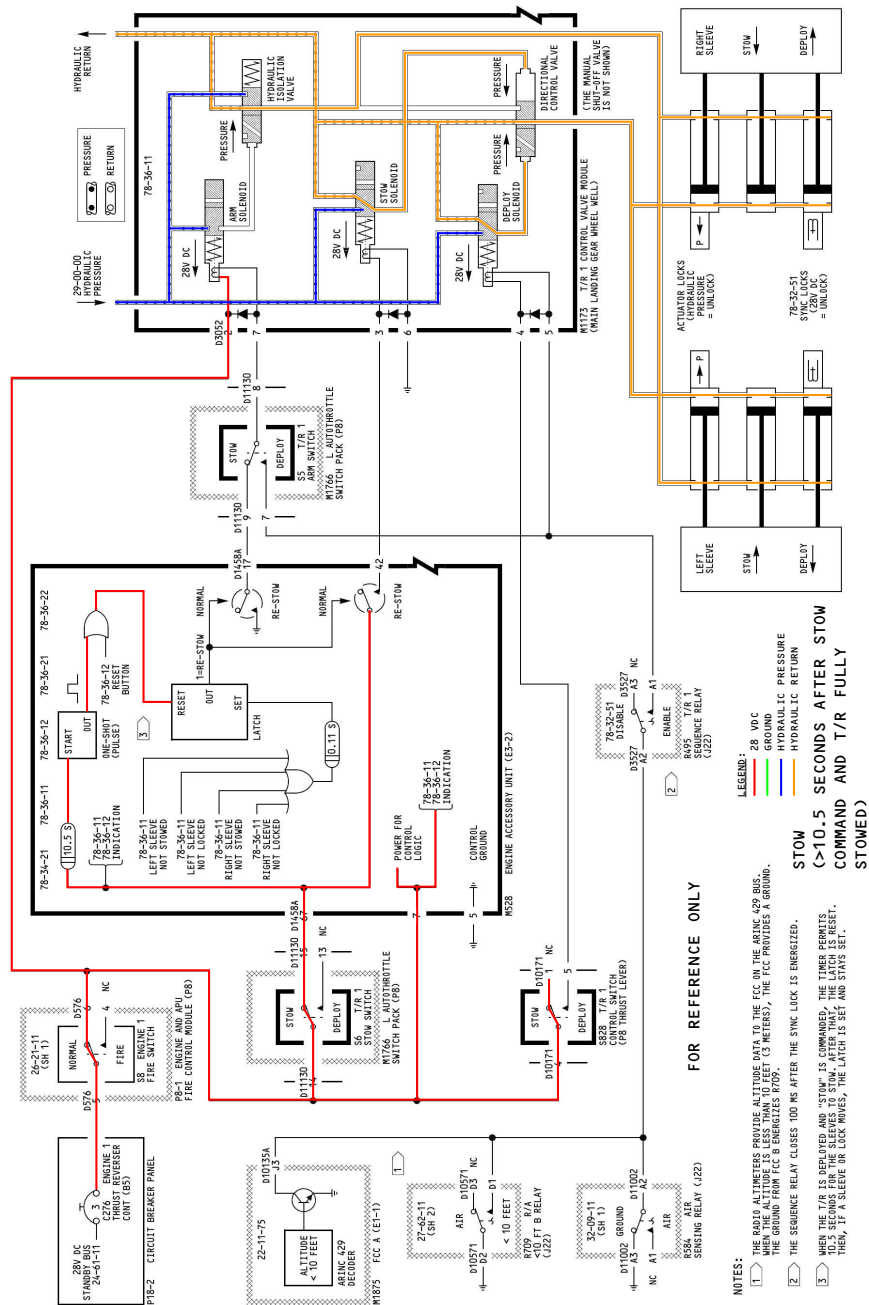
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Engine 1 Thrust Reverser Hydraulic Control System Simplified Schematic
Figure 306/78-34-00-990-807-F00 (Sheet 3 of 3)

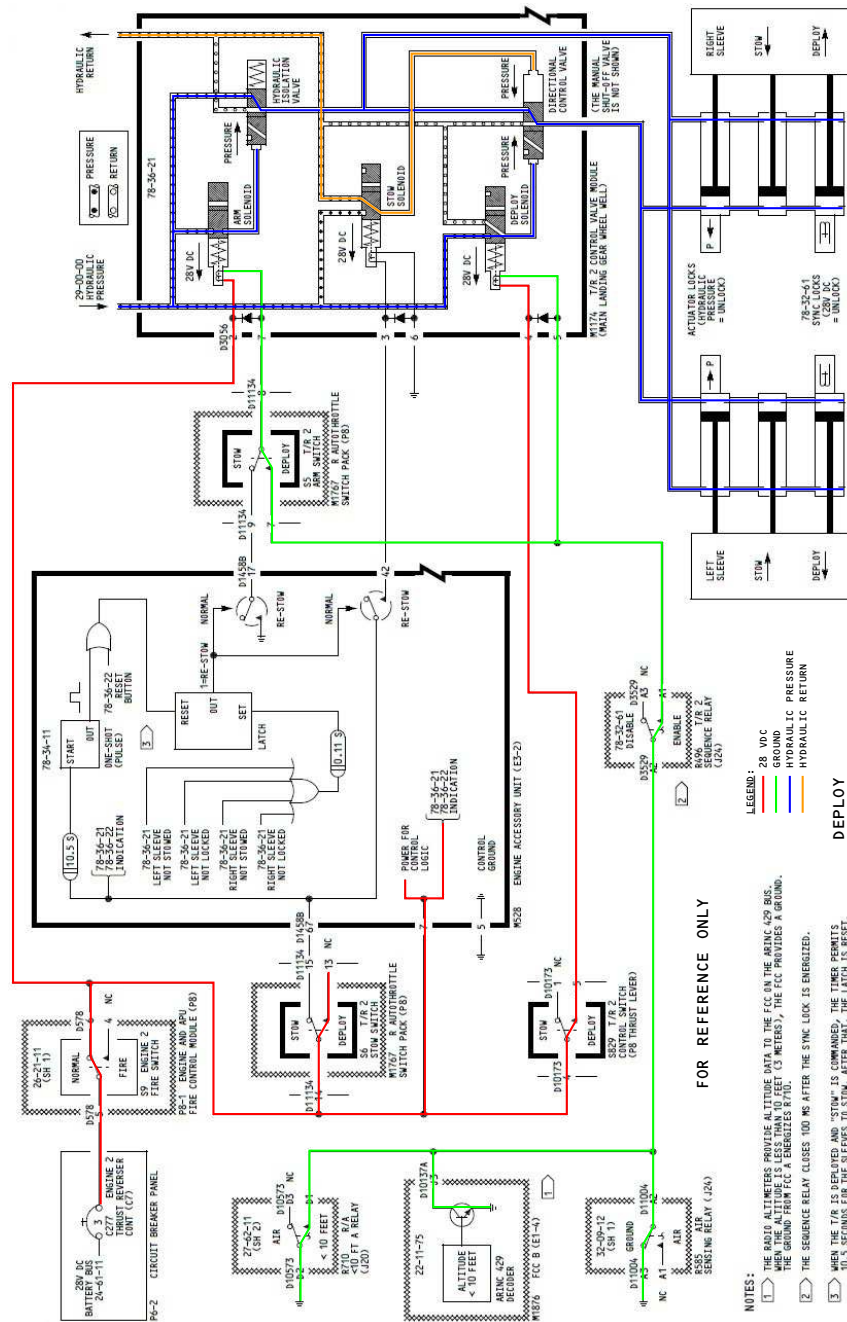
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Engine 2 Thrust Reverser Hydraulic Control System Simplified Schematic
Figure 307/78-34-00-990-808-F00 (Sheet 1 of 3)

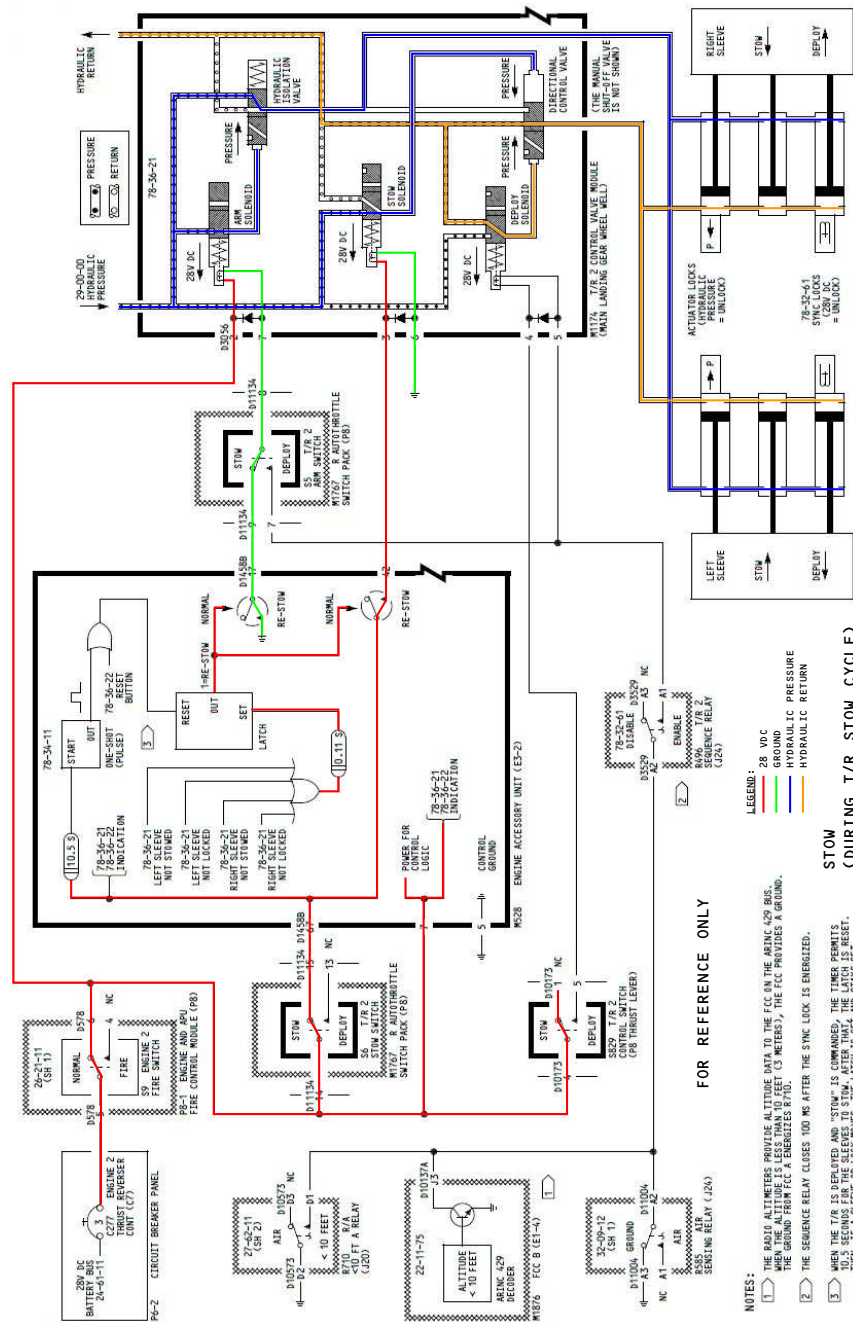
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Engine 2 Thrust Reverser Hydraulic Control System Simplified Schematic
Figure 307/78-34-00-990-808-F00 (Sheet 2 of 3)

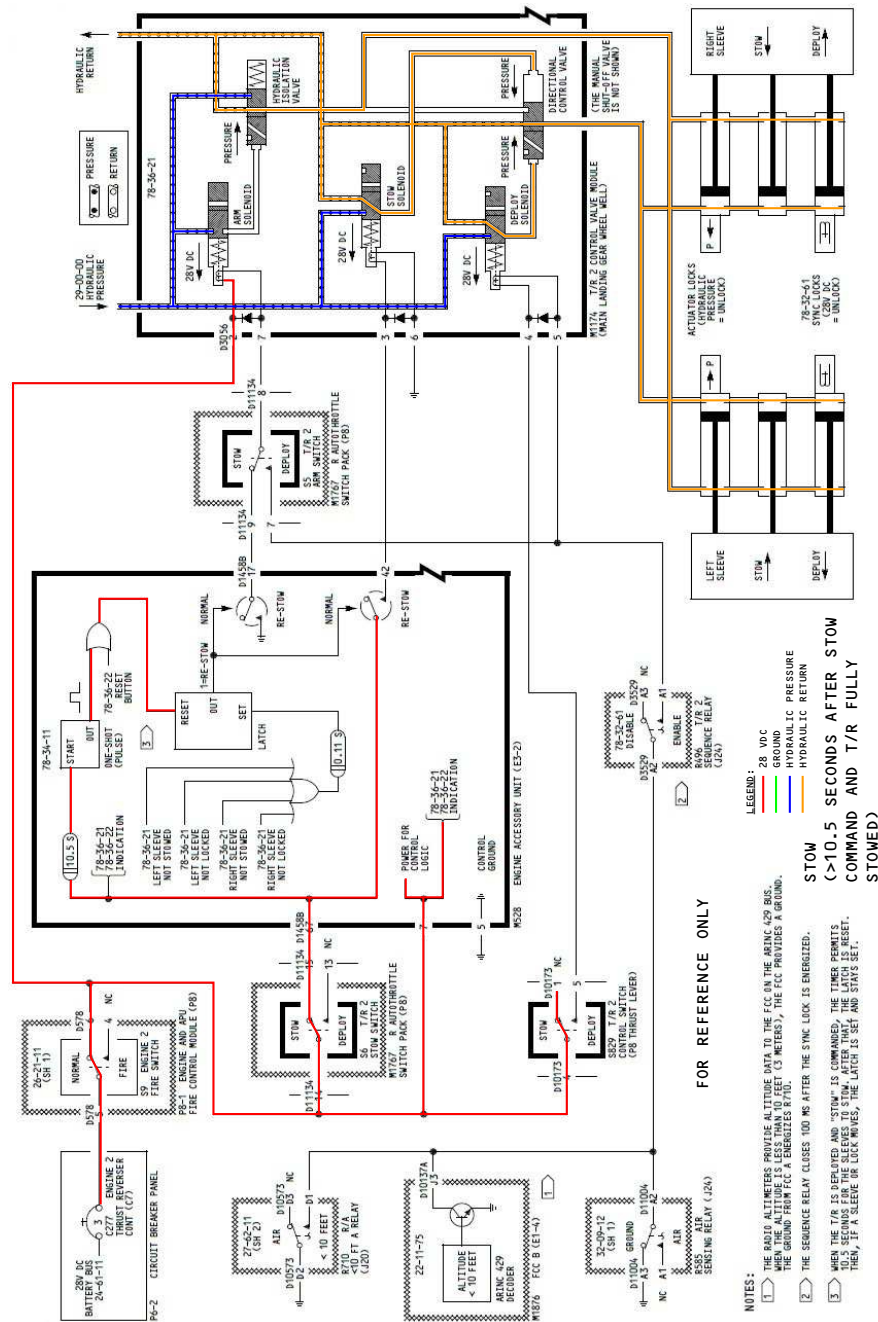
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Engine 2 Thrust Reverser Hydraulic Control System Simplified Schematic
Figure 307/78-34-00-990-808-F00 (Sheet 3 of 3)

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801. T/R LEVER INTLK VOLTAGE NOT AVAILABLE. OPEN GROUND CIRCUIT - Fault Isolation

A. Description

- (1) This task is for the T/R LEVER INTLK VOLTAGE NOT AVAILABLE. OPEN GROUND CIRCUIT maintenance message with these associated message numbers:
 - (a) 78-11471: ENG-1 Electronic Engine Control (EEC) CH A fault
 - (b) 78-11472: ENG-2 EEC CH A fault
 - (c) 78-21471: ENG-1 EEC CH B fault
 - (d) 78-21472: ENG-2 EEC CH B fault
 - (e) 78-31471: ENG-1 EEC CH A and CH B fault
 - (f) 78-31472: ENG-2 EEC CH A and CH B fault
- (2) This fault shows when the EEC has Electrical Power.
- (3) This maintenance message shows when the Thrust Reverser (T/R) Interlock Voltage is in range and the EEC senses that the T/R Interlock Relay is closed.

B. Possible Causes

- (1) Ground Wiring
- (2) ENG-1 (ENG-2) EEC, M1818

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	4	C01390	ENGINE 1 ALTN PWR CHAN B
A	5	C01314	ENGINE 1 ALTN PWR CHAN A
B	6	C01412	ENGINE 1 THRUST REVERSER INTLK

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	6	C01413	ENGINE 2 THRUST REVERSER INTLK
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

D. Related Data

- (1) Component Location (78-36 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (78-36 TASK SUPPORT Figure 302, 78-36 TASK SUPPORT Figure 303)
- (3) WDM 78-35-11
- (4) WDM 78-35-21
- (5) SSM 78-35-11
- (6) SSM 78-35-21

E. Initial Evaluation

- (1) Do this task: T/R LEVER INTLK (Interlock) TEST, AMM TASK 73-21-00-700-805-F00.
 - (a) If a single CH A or CH B maintenance message shows, then do the Fault Isolation Procedure below for the applicable channel.

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- (b) If a Dual Channel maintenance message shows, then do the Fault Isolation Procedure below for Channel A and Channel B.
- (c) If the maintenance message does not show on the Flight Management Computer System (FMCS) Control Display Unit (CDU), then it is not active at this time and you have an intermittent problem.

F. Fault Isolation Procedure

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

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	1	C00458	ENGINE 1 IGNITION RIGHT
A	3	C00153	ENGINE 1 IGNITION LEFT
A	4	C01390	ENGINE 1 ALTN PWR CHAN B
A	5	C01314	ENGINE 1 ALTN PWR CHAN A
B	6	C01412	ENGINE 1 THRUST REVERSER INTLK

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	6	C01413	ENGINE 2 THRUST REVERSER INTLK
D	4	C00459	ENGINE 2 IGNITION RIGHT
D	6	C00151	ENGINE 2 IGNITION LEFT
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

- (2) Do this task: Open the Fan Cowl Panels, AMM TASK 71-11-02-010-801-F00.
- (3) Disconnect and visually examine the EEC CH A (CH B) Wire Harness Connector DP0303 (DP0404) and associated EEC Receptacle (WDM 78-35-11, WDM 78-35-21) (Standard Engine Wiring and Equipment Check, AMM TASK 70-70-01-200-801-F00):
 - (a) If the EEC Receptacle is damaged, then replace the EEC, M1818. These are the tasks:
 - EEC Removal, AMM TASK 73-21-60-000-801-F00
 - EEC Installation, AMM TASK 73-21-60-400-801-F00
 - 1) Do the Repair Confirmation at the end of this task.
 - (b) If the wire harness connector is damaged, then replace the applicable CH A (CH B) Wire Harness MW0303 (MW0304). These are the tasks:
 - Nacelle Wiring Harnesses Removal, AMM TASK 71-51-03-000-801-F00
 - Nacelle Wiring Harnesses Installation, AMM TASK 71-51-03-400-801-F00
 - 1) Do the Repair Confirmation at the end of this task.
 - (c) If a connector was not correctly connected and no other problem was found, then re-connect the connector and do the Repair Confirmation at the end of this task.
 - (d) If you did not find a problem, then continue.
- (4) Examine the Ground Wiring for the applicable ENG-1 (ENG-2) EEC Channel(s) as follows (WDM 78-35-11, WDM 78-35-21):

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EEC CHANNEL A

EEC Connector

DP0303

pin B GND

EEC CHANNEL B

EEC Connector

DP0404

pin B GND

- (a) If you find a problem with the CH A (CH B) Wire Harness MW0303 (MW0304), then repair or replace the it as necessary. These are the tasks:
 - Nacelle Wiring Harnesses Removal, AMM TASK 71-51-03-000-801-F00
 - Nacelle Wiring Harnesses Installation, AMM TASK 71-51-03-400-801-F00
 - 1) Do the Repair Confirmation at the end of this task.
- (b) If the wiring is OK, then replace the applicable EEC, M1818. These are the tasks:
 - EEC Removal, AMM TASK 73-21-60-000-801-F00
 - EEC Installation, AMM TASK 73-21-60-400-801-F00
 - 1) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

- (1) Make sure that the CH A and CH B electrical connectors, DP0303 and DP0404 are correctly connected to the EEC.
- (2) Remove the safety tag and close the applicable ENG 1 (ENG 2) circuit breakers:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	1	C00458	ENGINE 1 IGNITION RIGHT
A	3	C00153	ENGINE 1 IGNITION LEFT
A	4	C01390	ENGINE 1 ALTN PWR CHAN B
A	5	C01314	ENGINE 1 ALTN PWR CHAN A
B	6	C01412	ENGINE 1 THRUST REVERSER INTLK

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	6	C01413	ENGINE 2 THRUST REVERSER INTLK
D	4	C00459	ENGINE 2 IGNITION RIGHT
D	6	C00151	ENGINE 2 IGNITION LEFT
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

- (3) Do this task: T/R LEVER INTLK (Interlock) TEST, AMM TASK 73-21-00-700-805-F00.
 - (a) If the maintenance message does not show, then you corrected the problem.
 - 1) Do this task: Close the Fan Cowl Panels, AMM TASK 71-11-02-410-801-F00.
 - (b) If the maintenance message still shows, do this step:

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- 1) Open the applicable ENG 1 (ENG 2) circuit breakers below and continue the Fault Isolation Procedure at the subsequent step:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	1	C00458	ENGINE 1 IGNITION RIGHT
A	3	C00153	ENGINE 1 IGNITION LEFT
A	4	C01390	ENGINE 1 ALTN PWR CHAN B
A	5	C01314	ENGINE 1 ALTN PWR CHAN A
B	6	C01412	ENGINE 1 THRUST REVERSER INTLK

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	6	C01413	ENGINE 2 THRUST REVERSER INTLK
D	4	C00459	ENGINE 2 IGNITION RIGHT
D	6	C00151	ENGINE 2 IGNITION LEFT
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

————— END OF TASK —————

802. Left Thrust Reverser Sleeve Position Signal is Out of Range - Fault Isolation

A. Description

- (1) This task is for the L REVERSER SLEEVE POSITION SIGNAL IS OUT OF RANGE with these associated message numbers:

- (a) 78-11481: ENG-1 EEC CH A fault
- (b) 78-11482: ENG-2 EEC CH A fault
- (c) 78-21481: ENG-1 EEC CH B fault
- (d) 78-21482: ENG-2 EEC CH B fault
- (e) 78-31481: ENG-1 EEC CH A and CH B fault

NOTE: If there is a Dual Channel maintenance message, then one T/R Sleeve on an engine has a Channel A fault and the other sleeve has a Channel B fault. Do the EEC BITE Procedure, 73-00 TASK 801 and review the RECENT FAULTS to find which channel on each sleeve has a fault.

- (f) 78-31482: ENG-2 EEC CH A and CH B fault

NOTE: If there is a Dual Channel maintenance message, then one T/R Sleeve on an engine has a Channel A fault and the other sleeve has a Channel B fault. Do the EEC BITE Procedure, 73-00 TASK 801 and review the RECENT FAULTS to find which channel on each sleeve has a fault.

- (2) These maintenance messages are set when one or more of the conditions that follow is true:
 - (a) The EEC senses that the Left T/R Position Signal is less than -5.0 % or greater than 112.0 %.
 - (b) The EEC senses that the Left T/R Reverser Position Signal Level of V1 or V2 is less than 0.313 Voltage Root Mean Square (VRMS) or greater than 7.205 VRMS.
 - (c) The EEC senses that the sum of the Left T/R Position Signals V1, V2 is less than 2.0 VRMS or greater than 4.5 VRMS.

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- (d) The EEC has an internal failure of its input circuitry.
- (3) Full Authority Digital Engine Control (FADEC) 2:
 - (a) Because the Channel A Excitation Circuit for the Left T/R position Linear Variable Differential Transformer (LVDT), Variable Stator Vane (VSV) position LVDT and the Variable Bleed Valve (VBV) position LVDT are from a common source in the EEC, a short in one of the three Excitation Circuits can set Channel A maintenance messages for all three systems (FADEC2 CH A Excitation Group 3).
 - (b) Because the Channel B Excitation Circuit for the Left T/R position LVDT, VSV position LVDT and the Fuel Metering Valve (FMV) position LVDT are from a common source in the EEC, a short in one of the three Excitation Circuits can set Channel B maintenance messages for all three systems. (FADEC2 CH B Excitation Group 2)
- (4) FADEC 3:
 - (a) Because the Channel A Excitation Circuit for the Left T/R LVDT, High Pressure Turbine (HPT) Active Clearance Control (ACC) LVDT, and the Right T/R LVDT are from a common source in the EEC, a short in one of the three Excitation Circuits can set Channel A maintenance messages for all three systems (FADEC3 CH A Excitation Group 3).
 - (b) Because the Channel B Excitation Circuit for the Left T/R LVDT, Low Pressure Turbine (LPT) ACC LVDT, and the Right T/R LVDT are from a common source in the EEC, a short in one of the three Excitation Circuits can set Channel B maintenance messages for all three systems (FADEC3 CH B Excitation Group 3)
- (5) These maintenance messages show when the EEC has Electrical Power.

B. Possible Causes

- (1) Left T/R Sleeve LVDT, T396
- (2) ENG-1 (ENG-2) EEC, M1818
- (3) T/R Hydraulic Actuator damage
- (4) T/R Hydraulic Actuator out of adjustment
- (5) Wiring

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	1	C00458	ENGINE 1 IGNITION RIGHT
A	3	C00153	ENGINE 1 IGNITION LEFT
A	4	C01390	ENGINE 1 ALTN PWR CHAN B
A	5	C01314	ENGINE 1 ALTN PWR CHAN A
B	4	C01003	ENGINE 1 THRUST REVERSER IND
B	5	C00276	ENGINE 1 THRUST REVERSER CONT
B	6	C01412	ENGINE 1 THRUST REVERSER INTLK

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	5	C01267	ENGINE 2 THRUST REVERSER SYNC LOCK
C	6	C01413	ENGINE 2 THRUST REVERSER INTLK
C	7	C00277	ENGINE 2 THRUST REVERSER CONT

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<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	8	C01004	ENGINE 2 THRUST REVERSER IND
D	4	C00459	ENGINE 2 IGNITION RIGHT
D	6	C00151	ENGINE 2 IGNITION LEFT
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

D. Related Data

- (1) Component Location and Simplified Schematic (78-36 TASK SUPPORT Figure 301, 78-36 TASK SUPPORT Figure 304)
- (2) WDM 78-35-11
- (3) WDM 78-35-21
- (4) SSM 78-35-11
- (5) SSM 78-35-21

E. Initial Evaluation

- (1) Do the FADEC 2 or FADEC 3 Identification, AMM TASK 73-21-00-700-810-F00 to find the FADEC version.
- (2) Do the EEC BITE Procedure, 73-00 TASK 801.
 - (a) FADEC-2:
 - 1) If two or more of the maintenance messages in the groups indicated below also show, then do the applicable Fault Isolation Manual (FIM) Task:
NOTE: These messages can be caused by a short in the Excitation Circuit for the LVDTs of the Left T/R, the VSV, the VBV, the FMV. For more information refer to the Description Section.
 - a) 78-11481, 75-10391 and 75-10441 (ENG-1, CH A): Do this task: FADEC2 (Ch A) Excitation Group 3: VSV, VBV and T/R L Sleeve LVDT Excitation Circuit Fault - Fault Isolation, 75-34 TASK 805.
 - b) 78-11482, 75-10392 and 75-10442 (ENG-2, CH A): Do this task: FADEC2 (Ch A) Excitation Group 3: VSV, VBV and T/R L Sleeve LVDT Excitation Circuit Fault - Fault Isolation, 75-34 TASK 805.
 - c) 78-21481, 73-20341 and 75-20391 (ENG-1, CH B): Do this task: FADEC2 (Ch B) Excitation Group 2: FMV, VSV and T/R L Sleeve LVDT Excitation Circuit Fault - Fault Isolation, 75-34 TASK 806.
 - d) 78-21482, 73-20342 and 75-20392 (ENG-2, CH B): Do this task: FADEC2 (Ch B) Excitation Group 2: FMV, VSV and T/R L Sleeve LVDT Excitation Circuit Fault - Fault Isolation, 75-34 TASK 806.
 - (b) FADEC-3:
 - 1) If two or more of the maintenance messages in the groups indicated below also show, then do the applicable FIM Task:
NOTE: These messages can be caused by a short in the shared Excitation Circuit for the LVDTs of the Left T/R Sleeve, the LPT ACC, the HPT ACC or the Right T/R. For more information refer to the Description Section.

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- a) 75-10361, 75-10491, 78-11481, and 78-11491 (ENG-1, CH A): Do this task: FADEC3 (Ch A) Excitation Group 3: HPTACC, L and R T/R LVDT Excitation Circuit Fault - Fault Isolation, 75-34 TASK 818.
 - b) 75-10362, 75-10492, 78-11482, and 78-11492 (ENG-2, CH A): Do this task: FADEC3 (Ch A) Excitation Group 3: HPTACC, L and R T/R LVDT Excitation Circuit Fault - Fault Isolation, 75-34 TASK 818.
 - c) 75-20541, 78-21481, and 78-21491 (ENG-2, CH B): Do this task: FADEC3 (Ch B) Excitation Group 3: LPTACC, L and R T/R LVDT Excitation Circuit Fault - Fault Isolation, 75-34 TASK 815.
 - d) 75-20542, 78-21482, and 78-21492 (ENG-2, CH B): Do this task: FADEC3 (Ch B) Excitation Group 3: LPTACC, L and R T/R LVDT Excitation Circuit Fault - Fault Isolation, 75-34 TASK 815.
- (c) If only maintenance messages indicated in the Description of this Task show, then do this task: EEC TEST, AMM TASK 73-21-00-700-804-F00.
- 1) If only a single CH A or CH B maintenance message shows, then do the Fault Isolation Procedure for the applicable channel.
 - 78-11481 (CH A, ENG-1)
 - 78-11482 (CH A, ENG-2)
 - 78-21481 (CH B, ENG-1)
 - 78-21482 (CH B, ENG-2)
 - 2) If only a Dual Channel maintenance message shows, then do the Fault Isolation Procedure for Channel A and B.
 - 78-31481 (CH A and CH B, ENG-1)
 - 78-31482 (CH A and CH B, ENG-2)
 - 3) If the maintenance message does not show on the FMCS CDU, then it is not active at this time and you have an intermittent problem.

F. Fault Isolation Procedure

- (1) Examine the Left T/R Sleeve LVDT installation on the applicable Locking Actuator.
 - (a) Look for wear or grooves on the LVDT barrel.
 - 1) Wear or grooves more than 0.025 in. (0.635 mm) is not permitted.

NOTE: The wear/grooves on the barrel could cause the LVDT spring to bind and jam.
 - (b) Look for a bent shaft and misaligned Rod end on the LVDT or misadjusted shims for the LVDT Rod end on the Upper Locking Hydraulic Actuator (ULHA) Spindle.
 - (c) Look for missing fasteners that attach the LVDT to the ULHA body or the Actuator Feedback Spindle.
 - (d) Look for a problem with the ULHA at the Feedback Spindle and the Actuator Side Plates.
 - (e) If there are missing or broken parts on the ULHA, then replace the ULHA. These are the tasks:
 - Upper Locking Hydraulic Actuator Removal, AMM TASK 78-31-03-000-801-F00
 - Upper Locking Hydraulic Actuator - Installation, AMM TASK 78-31-03-400-801-F00
 - (f) If there is wear or grooves more than the limit, missing or broken parts on the LVDT, repair the installation or replace the Left T/R Sleeve LVDT, T396. These are the applicable tasks:

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- LVDT Removal, AMM TASK 78-36-02-000-801-F00
- LVDT Installation, AMM TASK 78-36-02-400-801-F00
- Linear Variable Differential Transformer (LVDT) - Adjustment, AMM TASK 78-36-02-820-801-F00

(g) If you did not find a problem, then continue.

(2) Manually extend and retract the Left T/R Sleeve to make sure that the it moves smoothly and the Hydraulic Actuators and Sync Shafts are not jammed. These are the tasks:

- Thrust Reverser Operation - Extend (Manual Procedure), AMM TASK 78-31-00-980-803-F00
- Thrust Reverser Operation - Retract (Manual Procedure), AMM TASK 78-31-00-980-804-F00

(a) If the T/R Sleeve does not move smoothly or can not move, go to Time to Extend or Retract the Thrust Reverser Too Slow - Fault Isolation, 78-34 TASK 805.

NOTE: There can be internal damage in the Locking Actuator or one of the Non-locking Actuators which causes it to bind or jam.

NOTE: Any actuator can be incorrectly rigged when it was installed. The rod end on one of the hydraulic actuators could have been turned during installation. If the rod end was turned, the actuator internal length was changed so that the actuator is not synchronized to move the same distance as the other two actuators. This actuator will move more or less than the other actuators which can cause more friction in the actuator and the extension and/or retraction time to increase.

1) Do the Repair Confirmation at the end of this task.

(3) Open the applicable ENG 1 (ENG 2) circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	1	C00458	ENGINE 1 IGNITION RIGHT
A	3	C00153	ENGINE 1 IGNITION LEFT
A	4	C01390	ENGINE 1 ALTN PWR CHAN B
A	5	C01314	ENGINE 1 ALTN PWR CHAN A
B	4	C01003	ENGINE 1 THRUST REVERSER IND
B	5	C00276	ENGINE 1 THRUST REVERSER CONT
B	6	C01412	ENGINE 1 THRUST REVERSER INTLK

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	5	C01267	ENGINE 2 THRUST REVERSER SYNC LOCK
C	6	C01413	ENGINE 2 THRUST REVERSER INTLK
C	7	C00277	ENGINE 2 THRUST REVERSER CONT
C	8	C01004	ENGINE 2 THRUST REVERSER IND
D	4	C00459	ENGINE 2 IGNITION RIGHT
D	6	C00151	ENGINE 2 IGNITION LEFT
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

(4) Do this task: Open the Fan Cowl Panels, AMM TASK 71-11-02-010-801-F00.

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- (5) Visually examine the applicable electrical connector, D30072 (CH A) or D30076 (CH B) at the LVDT (WDM 78-35-11, WDM 78-35-21):

NOTE: There is an LVDT on each of the ULHA on the Torque Box of the Left and Right T/Rs on an engine.

- (a) See if the electrical Connector, D30072 (CH A) or D30076 (CH B) is correctly connected to the LVDT, and continue.
 - (b) Disconnect the electrical Connector, D30072 (CH A) or D30076 (CH B) from the LVDT.
 - (c) Visually examine the LVDT Receptacle and Wire Harness Connector (AMM TASK 70-70-01-200-801-F00).
 - 1) If the LVDT Receptacle is damaged, then replace the LVDT, T396. These are the tasks:
 - LVDT Removal, AMM TASK 78-36-02-000-801-F00
 - LVDT Installation, AMM TASK 78-36-02-400-801-F00
 - a) Do the Repair Confirmation at the end of this task.
 - 2) If the Wire Harness Connector is damaged, then do the applicable tasks to repair or replace the connector (SWPM Ch 20).
 - a) Do the Repair Confirmation at the end of this task.
 - 3) If the connector was not correctly connected, and no other problem was found, then re-connect the connector and do the Repair Confirmation at the end of this task.
- (6) Measure the Resistance between these pins of the LVDT Receptacle for CH A or CH B (WDM 78-35-11, WDM 78-35-21):
- (a) If the Temperature is different than 70°F (21°C), do the steps that follow to calculate the acceptable Resistance Range:
 - For these pin sets, calculate R at Ambient Temperature T (in Degrees C only).

CH-A or CH-B

pin	pin	RESISTANCE
pin 1	pin 2	$R = 450 ((234.5 + T)/254.5)$
pin 3	pin 5	$R = 93 ((234.5 + T)/254.5)$
pin 5	pin 4	$R = 53 ((234.5 + T)/254.5)$

- Calculate the range for each value of R, where Range = $R \pm 15\%$.

LVDT T396 RECEPTACLE

D30072/D30076	D30072/ D30076	Resistance (70 °F, 21 °C)
pin 1	pin 2	383 - 517 Ω
pin 3	pin 5	79 - 107 Ω
pin 5	pin 4	45 - 61 Ω
pin 1	GND	> 10 MΩ
pin 3	GND	> 10 MΩ
pin 1	pin 5	> 10 MΩ

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- (b) If the Resistance is not in the specified limits, then replace the LVDT, T396. These are the tasks:
- LVDT Removal, AMM TASK 78-36-02-000-801-F00
 - LVDT Installation, AMM TASK 78-36-02-400-801-F00
 - 1) Do the Repair Confirmation at the end of this task.
- (c) If the Resistance is in the limits, then re-connect the electrical connectors, D30072 (CH A) or D30076 (CH B), and continue.
- (7) Visually examine the applicable electrical connector, DP0303 (CH A) or DP0404 (CH B) at the EEC (WDM 78-35-11, WDM 78-35-21):
- (a) See if the electrical connector, DP0303 (CH A) or DP0404 (CH B) is correctly connected to the EEC, and continue.
- (b) Disconnect the electrical connector, DP0303 (CH A) or DP0404 (CH B) from the EEC.
- (c) Visually examine the EEC Receptacle and Wire Harness Connector (AMM TASK 70-70-01-200-801-F00).
- 1) If the EEC Receptacle is damaged, then replace the EEC, M1818. These are the tasks:
- EEC Removal, AMM TASK 73-21-60-000-801-F00
 - EEC Installation, AMM TASK 73-21-60-400-801-F00
 - a) Do the Repair Confirmation at the end of this task.
- 2) If a Wire Harness Connector is damaged, then replace the applicable Wire Harness, MW0303 (CH A) or MW0304 (CH B). These are the tasks:
- Nacelle Wiring Harnesses Removal, AMM TASK 71-51-03-000-801-F00
 - Nacelle Wiring Harnesses Installation, AMM TASK 71-51-03-400-801-F00
 - a) Do the Repair Confirmation at the end of this task.
- 3) If a connector was not correctly connected and no other problem was found, then re-connect the connector and do the Repair Confirmation at the end of this task.
- (8) Measure the Resistance at these pins on the Wire Harness Connector, DP0303 (CH A) or DP0404 (CH B) to do a check of the wire harnesses between the EEC and the LVDT (WDM 78-35-11, WDM 78-35-21):
- (a) If the Temperature is different than 70°F (21°C), do the steps that follow to calculate the acceptable Range of Resistance:
- For these pin sets, calculate R at Ambient Temperature T (in Degrees C only).

L T/R (CH-A)

pin	pin	RESISTANCE
y	GG	$R = 450 ((234.5 + T) / 254.5)$
BB	u	$R = 93 ((234.5 + T) / 254.5)$
u	CC	$R = 53 ((234.5 + T) / 254.5)$

L T/R (CH-B)

pin	pin	RESISTANCE
AA	GG	$R = 450 ((234.5 + T) / 254.5)$

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L T/R (CH-B) (Continued)

pin	pin	RESISTANCE
x	u	$R = 93 \left(\frac{(234.5 + T)}{254.5} \right)$
u	y	$R = 53 \left(\frac{(234.5 + T)}{254.5} \right)$

- Calculate the range for each value of R, where Range = $R \pm 15\%$.

EEC CH-A	DP0303	DP0303	Resistance (70 °F, 21 °C)
	pin y	pin GG	383 - 517 Ω
	pin BB	pin u	79 - 107 Ω
	pin u	pin CC	45 - 61 Ω
	pin Y	GND	> 10 M Ω
	pin BB	GND	> 10 M Ω
	pin y	pin u	> 10 M Ω

EEC CH-B	DP0404	DP0404	Resistance (70 °F, 21 °C)
	pin AA	pin GG	383 - 517 Ω
	pin x	pin u	79 - 107 Ω
	pin u	pin y	45 - 61 Ω
	pin AA	GND	> 10 M Ω
	pin x	GND	> 10 M Ω
	pin AA	pin u	> 10 M Ω

- (b) If the Resistance is not in the specified range, then examine and repair the wires and connectors between the EEC and the LVDT.
 - 1) If you find a problem with the Wire Harness, MW0303 (CH A) or MW0304 (CH B), then replace the wire harness. These are the tasks:
 - Nacelle Wiring Harnesses Removal, AMM TASK 71-51-03-000-801-F00
 - Nacelle Wiring Harnesses Installation, AMM TASK 71-51-03-400-801-F00
 - 2) If you find a problem between the Strut Receptacle and LVDT, do the applicable tasks to repair or replace the wiring (SWPM Ch 20).
 - 3) Do the Repair Confirmation at the end of this task.
- (c) If the Resistance is in the specified range, then re-connect the electrical connector, DP0303 (CH A) or DP0404 (CH B), and, do this task: Linear Variable Differential Transformer (LVDT) - Adjustment, AMM TASK 78-36-02-820-801-F00.
 - 1) Do the Repair Confirmation at the end of this task.
- (9) Replace the LVDT, T396. These are the tasks:
 - LVDT Removal, AMM TASK 78-36-02-000-801-F00
 - LVDT Installation, AMM TASK 78-36-02-400-801-F00
- (a) Do the Repair Confirmation at the end of this task.

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- (b) If the resistance is in the specified range and the problem was found by the Initial Evaluation, then do one of these steps:

NOTE: Because an excitation circuit fault in a different system can set this fault, the replacement of the EEC will not necessarily correct this fault.

- 1) Replace the EEC, M1818. These are the tasks:

- EEC Removal, AMM TASK 73-21-60-000-801-F00
- EEC Installation, AMM TASK 73-21-60-400-801-F00
- a) Do the Repair Confirmation at the end of this task.

- 2) FADEC 2:

Do the applicable LVDT Excitation Circuit Fault Isolation for the applicable channel:

- a) For Channel A:

Do this task: FADEC2 (Ch A) Excitation Group 3: VSV, VBV and T/R L Sleeve LVDT Excitation Circuit Fault - Fault Isolation, 75-34 TASK 805

- b) For Channel B:

Do this task: FADEC2 (Ch B) Excitation Group 2: FMV, VSV and T/R L Sleeve LVDT Excitation Circuit Fault - Fault Isolation, 75-34 TASK 806

- c) Do the Repair Confirmation at the end of this task.

- 3) FADEC 3:

Do the applicable LVDT Excitation Circuit Fault Isolation for the applicable channel:

- a) For Channel A:

Do this task: FADEC3 (Ch A) Excitation Group 3: HPTACC, L and R T/R LVDT Excitation Circuit Fault - Fault Isolation, 75-34 TASK 818.

- b) For Channel B:

Do this task: FADEC3 (Ch B) Excitation Group 3: LPTACC, L and R T/R LVDT Excitation Circuit Fault - Fault Isolation, 75-34 TASK 815.

- c) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

- (1) Make sure that the CH A (CH B) Electrical Connectors DP0303 (DP0404) are correctly connected to the EEC, M1818:
- (2) Make sure that the CH A (CH B) Electrical Connectors, D30072 (D30076) are correctly connected to the Left T/R Sleeve LVDT, T396.
- (3) Make sure that all connectors that were disconnected to do an electrical check between the LVDT and the EEC are correctly connected.
- (4) Remove the safety tag and close the applicable ENG 1 (ENG 2) circuit breakers:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
A	1	C00458	ENGINE 1 IGNITION RIGHT
A	3	C00153	ENGINE 1 IGNITION LEFT
A	4	C01390	ENGINE 1 ALTN PWR CHAN B
A	5	C01314	ENGINE 1 ALTN PWR CHAN A
B	4	C01003	ENGINE 1 THRUST REVERSER IND
B	5	C00276	ENGINE 1 THRUST REVERSER CONT

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<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	6	C01412	ENGINE 1 THRUST REVERSER INTLK

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	5	C01267	ENGINE 2 THRUST REVERSER SYNC LOCK
C	6	C01413	ENGINE 2 THRUST REVERSER INTLK
C	7	C00277	ENGINE 2 THRUST REVERSER CONT
C	8	C01004	ENGINE 2 THRUST REVERSER IND
D	4	C00459	ENGINE 2 IGNITION RIGHT
D	6	C00151	ENGINE 2 IGNITION LEFT
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

(5) Do this task: EEC TEST, AMM TASK 73-21-00-700-804-F00.

(a) If the maintenance message does not show, then you corrected the problem.

1) Do this task: Close the Fan Cowl Panels, AMM TASK 71-11-02-410-801-F00.

(b) If the maintenance message still shows, do this step:

1) Open the applicable ENG 1 (ENG 2) circuit breakers below and continue the Fault Isolation Procedure at the subsequent step:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	1	C00458	ENGINE 1 IGNITION RIGHT
A	3	C00153	ENGINE 1 IGNITION LEFT
A	4	C01390	ENGINE 1 ALTN PWR CHAN B
A	5	C01314	ENGINE 1 ALTN PWR CHAN A
B	4	C01003	ENGINE 1 THRUST REVERSER IND
B	5	C00276	ENGINE 1 THRUST REVERSER CONT
B	6	C01412	ENGINE 1 THRUST REVERSER INTLK

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	5	C01267	ENGINE 2 THRUST REVERSER SYNC LOCK
C	6	C01413	ENGINE 2 THRUST REVERSER INTLK
C	7	C00277	ENGINE 2 THRUST REVERSER CONT
C	8	C01004	ENGINE 2 THRUST REVERSER IND
D	4	C00459	ENGINE 2 IGNITION RIGHT
D	6	C00151	ENGINE 2 IGNITION LEFT
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

— END OF TASK —

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803. Right Thrust Reverser Sleeve Position Signal is Out of Range - Fault Isolation

A. Description

- (1) This task is for the R REVERSER SLEEVE POSITION SIGNAL IS OUT OF RANGE with these associated message numbers:

- (a) 78-11491: ENG-1 EEC CH A fault
- (b) 78-11492: ENG-2 EEC CH A fault
- (c) 78-21491: ENG-1 EEC CH B fault
- (d) 78-21492: ENG-2 EEC CH B fault
- (e) 78-31491: ENG-1 EEC CH A and CH B fault

NOTE: If there is a Dual Channel maintenance message, then one T/R Sleeve on an engine has a Channel A fault and the other sleeve has a Channel B fault. Do the EEC BITE Procedure, 73-00 TASK 801 and review the RECENT FAULTS to find which channel on each sleeve has a fault.

- (f) 78-31492: ENG-2 EEC CH A and CH B fault

NOTE: If there is a Dual Channel maintenance message, then one T/R Sleeve on an engine has a Channel A fault and the other sleeve has a Channel B fault. Do the EEC BITE Procedure, 73-00 TASK 801 and review the RECENT FAULTS to find which channel on each sleeve has a fault.

- (2) These maintenance messages are set when one or more of the conditions that follow is true:

- (a) The EEC senses that the Right T/R Position Signal is less than -5.0 % or greater than 112.0 %.
- (b) The EEC senses that the Right T/R Reverser Position Signal Level of V1 or V2 is less than 0.313 Voltage Root Mean Square (VRMS) or greater than 7.205 VRMS.
- (c) The EEC senses that the sum of the Right T/R Position Signals V1, V2 is less than 2.0 VRMS or greater than 4.5 VRMS.
- (d) The EEC has an internal failure of its input circuitry.

- (3) FADEC 2:

- (a) Because the Channel A Excitation Circuit for the Right T/R Position LVDT, High Pressure Turbine Active Clearance Control (HPTACC) Position LVDT and the FMV Position LVDT are from a common source in the EEC, a short in one of the three Excitation Circuits can set Channel A maintenance messages for all three systems.
- (b) Because the Channel A Excitation Circuit for the Right T/R Position LVDT, HPTACC Position LVDT and the Transient Bleed Valve (TBV) Position LVDT are from a common source in the EEC, a short in one of the three Excitation Circuits can set Channel A maintenance messages for all three systems.

- (4) FADEC 3:

- (a) Because the Channel A Excitation Circuit for the Right T/R LVDT, HPT ACC LVDT, and the Left T/R LVDT are from a common source in the EEC, a short in one of the three Excitation Circuits can set Channel A maintenance messages for all three systems.
- (b) Because the Channel B Excitation Circuit for the Right T/R LVDT, Low Pressure Turbine Active Clearance Control (LPTACC) LVDT, and the Left T/R LVDT are from a common source in the EEC, a short in one of the three Excitation Circuits can set Channel B maintenance messages for all three systems.

- (5) These maintenance messages show when the EEC has Electrical Power.

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B. Possible Causes

- (1) T/R Locking Hydraulic Actuator
- (2) Right T/R Sleeve LVDT, T397
- (3) ENG-1 (ENG-2) EEC, M1818
- (4) T/R Hydraulic Actuator damage
- (5) T/R Hydraulic Actuator out of adjustment
- (6) Wiring

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	1	C00458	ENGINE 1 IGNITION RIGHT
A	3	C00153	ENGINE 1 IGNITION LEFT
A	4	C01390	ENGINE 1 ALTN PWR CHAN B
A	5	C01314	ENGINE 1 ALTN PWR CHAN A
B	4	C01003	ENGINE 1 THRUST REVERSER IND
B	5	C00276	ENGINE 1 THRUST REVERSER CONT
B	6	C01412	ENGINE 1 THRUST REVERSER INTLK

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	5	C01267	ENGINE 2 THRUST REVERSER SYNC LOCK
C	6	C01413	ENGINE 2 THRUST REVERSER INTLK
C	7	C00277	ENGINE 2 THRUST REVERSER CONT
C	8	C01004	ENGINE 2 THRUST REVERSER IND
D	4	C00459	ENGINE 2 IGNITION RIGHT
D	6	C00151	ENGINE 2 IGNITION LEFT
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

D. Related Data

- (1) Component Location and Simplified Schematic (78-36 TASK SUPPORT Figure 301, 78-36 TASK SUPPORT Figure 304)
- (2) WDM 78-35-11
- (3) WDM 78-35-21
- (4) SSM 78-35-11
- (5) SSM 78-35-21

E. Initial Evaluation

- (1) Do the FADEC 2 or FADEC 3 Identification, AMM TASK 73-21-00-700-810-F00 to find the FADEC version.
- (2) Do the EEC BITE Procedure, 73-00 TASK 801.
 - (a) FADEC-2:

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- 1) If two or more of the maintenance messages in the groups indicated below also show, then do the applicable FIM Task:

NOTE: These messages can be caused by a short in the Excitation Circuit for the LVDTs of the Left T/R, the VSV, the VBV, the FMV. For more information refer to the Description Section.

- a) 78-11491, 73-10341, 75-10361 and 75-10491 (ENG-1, CH A): Do this task: FADEC2 (Ch A) Excitation Group 2: FMV, HPTC and T/R R Sleeve LVDT Excitation Circuit Fault - Fault Isolation, 75-34 TASK 807.
- b) 78-11492, 73-10342, 75-10362 and 75-10492 (ENG-2, CH A): Do this task: FADEC2 (Ch A) Excitation Group 2: FMV, HPTC and T/R R Sleeve LVDT Excitation Circuit Fault - Fault Isolation, 75-34 TASK 807.
- c) 78-21491, 73-20361, 75-20491 and 75-20591 (ENG-1, CH B): Do this task: FADEC2 (Ch B) Excitation Group 4: HPTC, TBV and T/R R Sleeve LVDT Excitation Circuit Fault - Fault Isolation, 75-34 TASK 808.
- d) 78-21492, 73-20362, 75-20492 and 75-20592 (ENG-2, CH B): Do this task: FADEC2 (Ch B) Excitation Group 4: HPTC, TBV and T/R R Sleeve LVDT Excitation Circuit Fault - Fault Isolation, 75-34 TASK 808.

(b) FADEC-3:

- 1) If two or more of the maintenance messages in the groups indicated below also show, then do the applicable FIM Task:

NOTE: These messages can be caused by a short in the shared Excitation Circuit for the LVDTs of the Left T/R Sleeve, the LPT ACC, the HPT ACC or the Right T/R. For more information refer to the Description Section.

- a) 75-10361, 75-10491, 78-11481, and 78-11491 (ENG-1, CH A): Do this task: FADEC3 (Ch A) Excitation Group 3: HPTACC, L and R T/R LVDT Excitation Circuit Fault - Fault Isolation, 75-34 TASK 818.
- b) 75-10362, 75-10492, 78-11482, and 78-11492 (ENG-2, CH A): Do this task: FADEC3 (Ch A) Excitation Group 3: HPTACC, L and R T/R LVDT Excitation Circuit Fault - Fault Isolation, 75-34 TASK 818.
- c) 75-20541, 78-21481, and 78-21491 (ENG-2, CH B): Do this task: FADEC3 (Ch B) Excitation Group 3: LPTACC, L and R T/R LVDT Excitation Circuit Fault - Fault Isolation, 75-34 TASK 815.
- d) 75-20542, 78-21482, and 78-21492 (ENG-2, CH B): Do this task: FADEC3 (Ch B) Excitation Group 3: LPTACC, L and R T/R LVDT Excitation Circuit Fault - Fault Isolation, 75-34 TASK 815.

- (c) If only maintenance messages indicated in the Description of this Task show, then do this task: EEC TEST, AMM TASK 73-21-00-700-804-F00.

- 1) If only a single CH A or CH B maintenance message shows, then do the Fault Isolation Procedure for the applicable channel.
 - 78-11491 (CH A, ENG-1)
 - 78-11492 (CH A, ENG-2)
 - 78-21491 (CH B, ENG-1)
 - 78-21492 (CH B, ENG-2)
- 2) If only a Dual Channel maintenance message shows, then do the Fault Isolation Procedure for Channel A and B.

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- 78-31491 (CH A and CH B, ENG-1)
 - 78-31492 (CH A and CH B, ENG-2)
- 3) If the maintenance message does not show on the FMCS CDU, then it is not active at this time and you have an intermittent problem.

F. Fault Isolation Procedure

- (1) Examine the Right T/R Sleeve LVDT, T397 installation on the applicable Locking Actuator.
 - (a) Look for wear or grooves on the LVDT Barrel.
 - 1) Wear or grooves more than 0.025 in. (0.635 mm) are not permitted.

NOTE: The wear/grooves on the Barrel could cause the LVDT Spring to bind and jam.
 - (b) Look for a bent shaft and misaligned Rod end on the LVDT or misadjusted shims for the LVDT Rod end on the ULHA Spindle.
 - (c) Look for missing fasteners that attach the LVDT to the ULHA body or the Actuator Feedback Spindle.
 - (d) Look for a problem with the ULHA at the Feedback Spindle and the Actuator Side Plates.
 - (e) If there are missing or broken parts on the ULHA, then replace the ULHA. These are the tasks:
 - Upper Locking Hydraulic Actuator Removal, AMM TASK 78-31-03-000-801-F00
 - Upper Locking Hydraulic Actuator - Installation, AMM TASK 78-31-03-400-801-F00
 - (f) If there is wear or grooves more than the limit, missing or broken parts on the LVDT, repair the installation or replace the Right T/R Sleeve LVDT, T397. These are the applicable tasks:
 - LVDT Removal, AMM TASK 78-36-02-000-801-F00
 - LVDT Installation, AMM TASK 78-36-02-400-801-F00
 - Linear Variable Differential Transformer (LVDT) - Adjustment, AMM TASK 78-36-02-820-801-F00
 - 1) Do the Repair Confirmation at the end of this task.
- (2) Manually extend and retract the Right T/R Sleeve to make sure that the it moves smoothly and the Hydraulic Actuators and Sync Shafts are not jammed. These are the tasks:
 - Thrust Reverser Operation - Extend (Manual Procedure), AMM TASK 78-31-00-980-803-F00
 - Thrust Reverser Operation - Retract (Manual Procedure), AMM TASK 78-31-00-980-804-F00
 - (a) If the Right T/R Sleeve does not move smoothly or can not move, do the FIM Task: Time to Extend or Retract the Thrust Reverser Too Slow - Fault Isolation, 78-34 TASK 805.

NOTE: There can be internal damage in the Locking Actuator or one of the Non-Locking Actuators which causes it to bind or jam.

NOTE: Any Actuator can be incorrectly rigged when it was installed. The Rod End on one of the Hydraulic Actuators could have been turned during installation. If the Rod End was turned, the Actuator internal length was changed so that the Actuator is not synchronized to move the same distance as the other two Actuators. This Actuator will move more or less than the other Actuators which can cause more friction in the Actuator and the extension and/or retraction time to increase.

 - 1) Do the Repair Confirmation at the end of this task.

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- (3) Open the applicable ENG 1 (ENG 2) circuit breakers and install safety tags:

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<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	1	C00458	ENGINE 1 IGNITION RIGHT
A	3	C00153	ENGINE 1 IGNITION LEFT
A	4	C01390	ENGINE 1 ALTN PWR CHAN B
A	5	C01314	ENGINE 1 ALTN PWR CHAN A
B	4	C01003	ENGINE 1 THRUST REVERSER IND
B	5	C00276	ENGINE 1 THRUST REVERSER CONT
B	6	C01412	ENGINE 1 THRUST REVERSER INTLK
B	7	C01266	ENGINE 1 THRUST REVERSER SYNC LOCK

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	5	C01267	ENGINE 2 THRUST REVERSER SYNC LOCK
C	6	C01413	ENGINE 2 THRUST REVERSER INTLK
C	7	C00277	ENGINE 2 THRUST REVERSER CONT
C	8	C01004	ENGINE 2 THRUST REVERSER IND
D	4	C00459	ENGINE 2 IGNITION RIGHT
D	6	C00151	ENGINE 2 IGNITION LEFT
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

- (4) Do this task: Open the Fan Cowl Panels, AMM TASK 71-11-02-010-801-F00.
- (5) Visually examine the applicable CH A (CH B) Electrical Connector, D30074 (D30078) at the R T/R Sleeve LVDT, T397, as follows:

NOTE: There is an LVDT on each of the Upper Locking Actuators on the Torque Box of the L(R) T/R Sleeves on an Engine.

- (a) Disconnect the CH A (CH B) Electrical Connector, D30074 (D30078) from the LVDT.
- (b) Visually examine the LVDT Receptacle and the Electrical Connector (AMM TASK 70-70-01-200-801-F00).
- 1) If an LVDT Receptacle is damaged, then replace the Right T/R Sleeve LVDT, T397. These are the tasks:
 - LVDT Removal, AMM TASK 78-36-02-000-801-F00
 - LVDT Installation, AMM TASK 78-36-02-400-801-F00
 - a) Do the Repair Confirmation at the end of this task.
 - 2) If a Connector is damaged, then do the applicable tasks to repair or replace the applicable CH A (CH B) Connector, D30074 (D30078) (SWPM Ch 20).
 - a) Do the Repair Confirmation at the end of this task.
 - 3) If you do not find a problem, continue.
- (6) Examine the Right T/R Sleeve LVDT, T397, as follows (WDM 78-35-11, WDM 78-35-21):

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- (a) Measure the Resistance between these pins of the Right T/R Sleeve LVDT Receptacle for CH A (CH B):

NOTE: If the Ambient Temperature is different than 70°F (21°C), use the indicated formulas in the table below to calculate the acceptable Resistance Range R at Ambient Temperature T (in °C only).

Calculate the range for each value of R, where Range = $R \pm 15\%$.

CH A or CH B

pin	pin	RESISTANCE
1	2	$R = 450 ((234.5+T)/ 254.5)$
3	5	$R = 93 ((234.5+T)/ 254.5)$
5	4	$R = 53 ((234.5+T)/ 254.5)$

LVDT T397 RECEPTACLE

T397	T397	RESISTANCE (70 °F, 21 °C)
pin 1	pin 2	383 - 517 Ω
pin 3	pin 5	79 - 107 Ω
pin 5	pin 4	45 - 61 Ω
pin 1	GND	> 10 M Ω
pin 3	GND	> 10 M Ω
pin 1	pin 5	> 10 M Ω

- 1) If the Resistance is not in the specified range, then replace the Right T/R Sleeve LVDT, T397. These are the tasks:
 - LVDT Removal, AMM TASK 78-36-02-000-801-F00
 - LVDT Installation, AMM TASK 78-36-02-400-801-F00
 - a) Do the Repair Confirmation at the end of this task.
- (b) If the Resistance is in the range, then re-connect the CH A (CH B) Electrical Connector, D30074 (D30078), and continue.
- (7) Visually examine the applicable CH A (CH B) EEC Electrical Connector, DP0303 (DP0404), as follows:
 - (a) Disconnect the Electrical Connector from the EEC, M1818.
 - (b) Visually examine the EEC Receptacle and the Electrical Connector (AMM TASK 70-70-01-200-801-F00).
 - 1) If an EEC Receptacle is damaged, then replace the EEC, M1818. These are the tasks:
 - EEC Removal, AMM TASK 73-21-60-000-801-F00
 - EEC Installation, AMM TASK 73-21-60-400-801-F00
 - a) Do the Repair Confirmation at the end of this task.
 - 2) If a Connector is damaged, then replace the applicable CH A (CH B) Wire Harness, MW0303 (MW0304). These are the tasks:
 - Nacelle Wiring Harnesses Removal, AMM TASK 71-51-03-000-801-F00
 - Nacelle Wiring Harnesses Installation, AMM TASK 71-51-03-400-801-F00

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- a) Do the Repair Confirmation at the end of this task.
- 3) If you do not find a problem, continue.
- (8) Do a check of the Wire Harnesses between the EEC, M1818 and the R T/R Sleeve LVDT, T397, as follows (WDM 78-35-11, WDM 78-35-21):
 - (a) Measure the Resistance between these pins on the CH A (CH B) Connector, DP0303 (DP0404):

NOTE: If the Ambient Temperature is different than 70°F (21°C), use the indicated formulas in the table below to calculate the acceptable Resistance Range R at Ambient Temperature T (in °C only).

Calculate the range for each value of R, where Range = $R \pm 15\%$.

CH A

pin	pin	RESISTANCE
e	f	$R = 450 ((234.5+T)/ 254.5)$
n	q	$R = 93 ((234.5+T)/ 254.5)$
q	p	$R = 53 ((234.5+T)/ 254.5)$

CH B

pin	pin	RESISTANCE
e	f	$R = 450 ((234.5+T)/ 254.5)$
m	p	$R = 93 ((234.5+T)/ 254.5)$
p	n	$R = 53 ((234.5+T)/ 254.5)$

EEC CH A	DP0303	DP0303	RESISTANCE (70 °F, 21 °C)
	pin e	pin f	383 - 517 Ω
	pin n	pin q	79 - 107 Ω
	pin q	pin p	45 - 61 Ω
	pin e	GND	> 10 MΩ
	pin n	GND	> 10 MΩ
	pin e	pin q	> 10 MΩ

EEC CH-B	DP0404	DP0404	RESISTANCE (70 °F, 21 °C)
	pin e	pin f	383 - 517 Ω
	pin m	pin p	79 - 107 Ω
	pin p	pin n	45 - 61 Ω
	pin e	GND	> 10 MΩ
	pin m	GND	> 10 MΩ
	pin e	pin p	> 10 MΩ

- 1) If the Resistance is not in the specified range, then examine and repair the wires and Connectors between the EEC, M1818 and the Right T/R Sleeve LVDT, T397.
 - a) If you find a problem with the CH A (CH B) Wire Harness, MW0303 (MW0304), then replace the Wire Harness. These are the tasks:

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- Nacelle Wiring Harnesses Removal, AMM TASK 71-51-03-000-801-F00
 - Nacelle Wiring Harnesses Installation, AMM TASK 71-51-03-400-801-F00
- b) If you find a problem between the Strut Receptacle and LVDT, then do the applicable tasks to repair or replace the wiring (SWPM Ch 20).
- <1> Do the Repair Confirmation at the end of this task.
- 2) If the Resistance is in the range, then re-connect the CH A (CH B) Electrical Connector, DP0303 (DP0404) and do this task: Linear Variable Differential Transformer (LVDT) - Adjustment, AMM TASK 78-36-02-820-801-F00.
- a) Do the Repair Confirmation at the end of this task.
- (9) Replace the Right T/R Sleeve LVDT, T397. These are the tasks:
- LVDT Removal, AMM TASK 78-36-02-000-801-F00
 - LVDT Installation, AMM TASK 78-36-02-400-801-F00
- (a) Do the Repair Confirmation at the end of this task.
- (10) If the Resistance is in the specified range and the problem was found by the Initial Evaluation, then do one of these steps:
- NOTE:** An Excitation Circuit Fault in a different system can set this fault, therefore the replacement of the EEC will not necessarily correct this problem.
- (a) Replace the EEC, M1818. These are the tasks:
- EEC Removal, AMM TASK 73-21-60-000-801-F00
 - EEC Installation, AMM TASK 73-21-60-400-801-F00
- 1) Do the Repair Confirmation at the end of this task.
- (b) FADEC 2:
- Do the applicable LVDT Excitation Circuit Fault Isolation for the applicable Channel.
- 1) For Channel A:
- Do this task: FADEC2 (Ch A) Excitation Group 2: FMV, HPTC and T/R R Sleeve LVDT Excitation Circuit Fault - Fault Isolation, 75-34 TASK 807.
- 2) For Channel B:
- Do this task: FADEC2 (Ch B) Excitation Group 4: HPTC, TBV and T/R R Sleeve LVDT Excitation Circuit Fault - Fault Isolation, 75-34 TASK 808.
- 3) Do the Repair Confirmation at the end of this task.
- (c) FADEC 3:
- Do the applicable LVDT Excitation Circuit Fault Isolation for the applicable Channel.
- 1) For Channel A:
- Do this task: FADEC3 (Ch A) Excitation Group 3: HPTACC, L and R T/R LVDT Excitation Circuit Fault - Fault Isolation, 75-34 TASK 818.
- 2) For Channel B:
- Do this task: FADEC3 (Ch B) Excitation Group 3: LPTACC, L and R T/R LVDT Excitation Circuit Fault - Fault Isolation, 75-34 TASK 815.
- 3) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

- (1) Make sure that the CH A (CH B) Electrical Connectors, DP0303 (DP0404) are correctly connected to the EEC, M1818.

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- (2) Make sure that the CH A (CH B) Electrical Connectors, D30074 (D30078) are correctly connected to the Right T/R Sleeve LVDT, T397.
- (3) Make sure that all Connectors that were disconnected to do an electrical check between the LVDT and the EEC are correctly connected.
- (4) Remove the safety tag and close the applicable ENG 1 (ENG 2) circuit breakers:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	1	C00458	ENGINE 1 IGNITION RIGHT
A	3	C00153	ENGINE 1 IGNITION LEFT
A	4	C01390	ENGINE 1 ALTN PWR CHAN B
A	5	C01314	ENGINE 1 ALTN PWR CHAN A
B	4	C01003	ENGINE 1 THRUST REVERSER IND
B	5	C00276	ENGINE 1 THRUST REVERSER CONT
B	6	C01412	ENGINE 1 THRUST REVERSER INTLK

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	5	C01267	ENGINE 2 THRUST REVERSER SYNC LOCK
C	6	C01413	ENGINE 2 THRUST REVERSER INTLK
C	7	C00277	ENGINE 2 THRUST REVERSER CONT
C	8	C01004	ENGINE 2 THRUST REVERSER IND
D	4	C00459	ENGINE 2 IGNITION RIGHT
D	6	C00151	ENGINE 2 IGNITION LEFT
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

- (5) Do this task: EEC TEST, AMM TASK 73-21-00-700-804-F00.
 - (a) If the maintenance message does not show, then you corrected the problem.
 - 1) Do this task: Close the Fan Cowl Panels, AMM TASK 71-11-02-410-801-F00.
 - (b) If the maintenance message still shows, do this step:
 - 1) Open the applicable ENG 1 (ENG 2) circuit breakers below and continue the Fault Isolation Procedure at the subsequent step:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	1	C00458	ENGINE 1 IGNITION RIGHT
A	3	C00153	ENGINE 1 IGNITION LEFT
A	4	C01390	ENGINE 1 ALTN PWR CHAN B
A	5	C01314	ENGINE 1 ALTN PWR CHAN A
B	4	C01003	ENGINE 1 THRUST REVERSER IND
B	5	C00276	ENGINE 1 THRUST REVERSER CONT
B	6	C01412	ENGINE 1 THRUST REVERSER INTLK

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	5	C01267	ENGINE 2 THRUST REVERSER SYNC LOCK
C	6	C01413	ENGINE 2 THRUST REVERSER INTLK

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F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	7	C00277	ENGINE 2 THRUST REVERSER CONT
C	8	C01004	ENGINE 2 THRUST REVERSER IND
D	4	C00459	ENGINE 2 IGNITION RIGHT
D	6	C00151	ENGINE 2 IGNITION LEFT
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

———— **END OF TASK** ————

804. Left Thrust Reverser Sleeve Position Signals Disagree - Fault Isolation**A. Description**

- (1) This task is for the L REVERSER SLEEVE POSITION SIGNAL IS OUT OF RANGE with these associated message numbers:

- (a) 78-11501: ENG-1 EEC CH A fault
- (b) 78-11502: ENG-2 EEC CH A fault
- (c) 78-21501: ENG-1 EEC CH B fault
- (d) 78-21502: ENG-2 EEC CH B fault
- (e) 78-31501: ENG-1 EEC CH A and CH B fault

NOTE: If there is a Dual Channel maintenance message, then one T/R Sleeve on an engine has a Channel A fault and the other sleeve has a Channel B fault. Do the EEC BITE Procedure, 73-00 TASK 801 and review the RECENT FAULTS to find which channel on each sleeve has a fault.

- (f) 78-31502: ENG-2 EEC CH A and CH B fault

NOTE: If there is a Dual Channel maintenance message, then one T/R Sleeve on an engine has a Channel A fault and the other sleeve has a Channel B fault. Do the EEC BITE Procedure, 73-00 TASK 801 and review the RECENT FAULTS to find which channel on each sleeve has a fault.

- (2) This Maintenance Message will show as a Dual Channel Fault if the EEC, M1818 senses that the absolute value of the difference between Channel A and B of the Left T/R position is greater than or equal to 12.0 %.
- (3) This Maintenance Message will show as a Single Channel Fault if there is an internal EEC problem.
- (4) This Maintenance Message can show if there is a problem with the Left T/R LVDT installation, the LVDT adjustment, the T/R Actuators or Flexshafts.
- (5) These maintenance messages show when the EEC has Electrical Power.

B. Possible Causes

- (1) For a Single Channel Fault:
 - (a) EEC, M1818
- (2) For a Dual Channel Fault:
 - (a) Left T/R LVDT, T396
 - (b) Wiring

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C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	1	C00458	ENGINE 1 IGNITION RIGHT
A	3	C00153	ENGINE 1 IGNITION LEFT
A	4	C01390	ENGINE 1 ALTN PWR CHAN B
A	5	C01314	ENGINE 1 ALTN PWR CHAN A
B	4	C01003	ENGINE 1 THRUST REVERSER IND
B	5	C00276	ENGINE 1 THRUST REVERSER CONT
B	6	C01412	ENGINE 1 THRUST REVERSER INTLK
B	7	C01266	ENGINE 1 THRUST REVERSER SYNC LOCK

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	5	C01267	ENGINE 2 THRUST REVERSER SYNC LOCK
C	6	C01413	ENGINE 2 THRUST REVERSER INTLK
C	7	C00277	ENGINE 2 THRUST REVERSER CONT
C	8	C01004	ENGINE 2 THRUST REVERSER IND
D	4	C00459	ENGINE 2 IGNITION RIGHT
D	6	C00151	ENGINE 2 IGNITION LEFT
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

D. Related Data

- (1) Component Location and Simplified Schematic (78-36 TASK SUPPORT Figure 301, 78-36 TASK SUPPORT Figure 304)
- (2) WDM 78-35-11
- (3) WDM 78-35-21
- (4) SSM 78-35-11
- (5) SSM 78-35-21

E. Initial Evaluation

- (1) Do these steps to find out if the Maintenance Message is still active:
 - (a) Do this task: EEC TEST, AMM TASK 73-21-00-700-804-F00.
 - (b) If a Single Channel Maintenance Message shows, then do the "Fault Isolation Procedure - Single Channel Fault" below.
 - 78-11501 (CH A, ENG-1)
 - 78-11502 (CH A, ENG-2)
 - 78-21501 (CH B, ENG-1)
 - 78-21502 (CH B, ENG-2)
 - (c) If a Dual Channel Maintenance Message shows, then do the "Fault Isolation Procedure - Dual Channel Fault" below.
 - 78-31501 (CH A and CH B, ENG-1)
 - 78-31502 (CH A and CH B, ENG-2)

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- (d) If the Maintenance Message does not show on the FMCS CDU, then the Initial Evaluation has shown that the fault is not active at this time and you have an intermittent problem.

F. Fault Isolation Procedure - Single Channel Fault

- (1) Replace the EEC, M1818. These are the tasks:
- EEC Removal, AMM TASK 73-21-60-000-801-F00
 - EEC Installation, AMM TASK 73-21-60-400-801-F00
- (a) Do the Repair Confirmation at the end of this task.

G. Fault Isolation Procedure - Dual Channel Fault

- (1) Examine the LVDT installation on the applicable Locking Actuator.
- (a) Look for wear or grooves on the LVDT Barrel.
- 1) Wear or grooves more than 0.025 in. (0.635 mm) are not permitted.
- NOTE: The wear/grooves on the Barrel could cause the LVDT Spring to bind and jam.
- (b) Look for a bent shaft and misaligned rod end on the LVDT or misadjusted shims for the LVDT Rod End on the Actuator Spindle on the Locking Actuator.
- (c) Look for missing fasteners that attach the LVDT, T396 to the Locking Actuator Body or the Actuator Feedback Spindle.
- (d) Look for a problem with the Locking Actuator at the Feedback Spindle and the Side Plates on the Actuator.
- (e) If there are missing or broken parts on the Locking Actuator, replace the Locking Actuator. These are the tasks:
- Upper Locking Hydraulic Actuator Removal, AMM TASK 78-31-03-000-801-F00
 - Upper Locking Hydraulic Actuator - Installation, AMM TASK 78-31-03-400-801-F00
- (f) If there is wear or grooves more than the limit, missing or broken parts on the LVDT, repair the installation or replace the Left T/R Sleeve LVDT, T396. These are the applicable tasks:
- LVDT Removal, AMM TASK 78-36-02-000-801-F00
 - LVDT Installation, AMM TASK 78-36-02-400-801-F00
 - Linear Variable Differential Transformer (LVDT) - Adjustment, AMM TASK 78-36-02-820-801-F00
- 1) Do the Repair Confirmation at the end of this task.
- (2) Manually extend and retract the T/R Sleeve to make sure the T/R Sleeve moves smoothly and the Hydraulic Actuators and Sync Shafts are not jammed. These are the tasks:
- Thrust Reverser Operation - Extend (Manual Procedure), AMM TASK 78-31-00-980-803-F00
 - Thrust Reverser Operation - Retract (Manual Procedure), AMM TASK 78-31-00-980-804-F00

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- (a) If the T/R Sleeve does not move smoothly or can not move, go to Time to Extend or Retract the Thrust Reverser Too Slow - Fault Isolation, 78-34 TASK 805.

NOTE: There can be internal damage in the Locking Actuator or one of the Non-Locking Actuators which causes it to bind or jam.

NOTE: Any Actuator can be incorrectly rigged when it was installed. The Rod End on one of the Hydraulic Actuators could have been turned during installation. If the Rod End was turned, the Actuator Internal Length was changed so that the Actuator is not synchronized to move the same distance as the other two Actuators. This Actuator will move more or less than the other Actuators which can cause more friction in the Actuator and the extension and/or retraction time to increase.

- (b) Do the Repair Confirmation at the end of this task.
- (3) Do a check of the LVDT Position Values with the T/R in the EXTEND position and the RETRACT position and adjust the LVDT as necessary.
- (a) Do this task: Thrust Reverser Linear Variable Differential Transformer (LVDT) Test, AMM TASK 78-31-00-700-806-F00.
- 1) Make a record of the T/R Sleeve position data which can be used later in the procedure.
- (b) If necessary, do this task: Linear Variable Differential Transformer (LVDT) - Adjustment, AMM TASK 78-36-02-820-801-F00.
- 1) Do the Repair Confirmation at the end of this task.
- (c) Do the Repair Confirmation at the end of this task.
- (4) Do the steps below for the Channel which has Sleeve Position Data that is not correct.
- (a) Open the applicable ENG 1 (ENG 2) circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	1	C00458	ENGINE 1 IGNITION RIGHT
A	3	C00153	ENGINE 1 IGNITION LEFT
A	4	C01390	ENGINE 1 ALTN PWR CHAN B
A	5	C01314	ENGINE 1 ALTN PWR CHAN A
B	4	C01003	ENGINE 1 THRUST REVERSER IND
B	5	C00276	ENGINE 1 THRUST REVERSER CONT
B	6	C01412	ENGINE 1 THRUST REVERSER INTLK
B	7	C01266	ENGINE 1 THRUST REVERSER SYNC LOCK

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	5	C01267	ENGINE 2 THRUST REVERSER SYNC LOCK
C	6	C01413	ENGINE 2 THRUST REVERSER INTLK
C	7	C00277	ENGINE 2 THRUST REVERSER CONT
C	8	C01004	ENGINE 2 THRUST REVERSER IND
D	4	C00459	ENGINE 2 IGNITION RIGHT
D	6	C00151	ENGINE 2 IGNITION LEFT
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

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- (b) Do this task: Open the Fan Cowl Panels, AMM TASK 71-11-02-010-801-F00.
- (5) Visually examine the applicable CH A (CH B) Electrical Connector, D30072 (D30076), at the LVDT, T396 (WDM 78-35-11, WDM 78-35-21):
- NOTE:** There is a LVDT on each of the Upper Locking Actuators on the Torque Box of the L and R Engine T/R.
- (a) See if the CH A (CH B) Electrical Connector, D30072 (D30076) is correctly connected to the LVDT, T396, and continue.
- 1) If the Electrical Connector is not correctly connected, correctly connect the CH A (CH B) Electrical Connector, D30072 (D30076).
 - 2) Do the Repair Confirmation at the end of this task.
- (b) Disconnect the CH A (CH B) Electrical Connector, D30072 (D30076), from the LVDT, T396.
- (c) Visually examine the LVDT, T396 Receptacle and Wire Harness Connector (Standard Engine Wiring and Equipment Check, AMM TASK 70-70-01-200-801-F00).
- 1) If an LVDT Receptacle is damaged, then replace the LVDT, T396. These are the tasks:
 - LVDT Removal, AMM TASK 78-36-02-000-801-F00
 - LVDT Installation, AMM TASK 78-36-02-400-801-F00
 - a) Do the Repair Confirmation at the end of this task.
 - 2) If a Wire Harness Connector is damaged, then do the applicable tasks to repair or replace the CH A (CH B) Electrical Connector, D30072 (D30076) (SWPM Ch 20).
 - a) Do the Repair Confirmation at the end of this task.
 - 3) If a Connector was not correctly connected, and no other problem was found, then re-connect the CH A (CH B) Electrical Connector, D30072 (D30076) and do the Repair Confirmation at the end of this task.
- (d) If you did not find a problem, then continue.
- (6) Measure the Resistance between these pins of the LVDT, T396 Receptacle for CH A or CH B (WDM 78-35-11, WDM 78-35-21):

NOTE: If the Ambient Temperature is different than 70°F (21°C), use the indicated formulas in the table below to calculate the acceptable Resistance Range R at Ambient Temperature T (in °C only). Calculate the range for each value of R, where Range = R ±15%.

Ch A or Ch B

pin	pin	RESISTANCE
1	2	$R = 450((234.5 + T)/254.5)$
3	5	$R = 93((234.5 + T)/254.5)$
5	4	$R = 53((234.5 + T)/254.5)$

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LVDT, T396 RECEPTACLE	D30072/D30076	D30072/D30076	RESISTANCE (70 DEG. F, 21 DEG C)
	pin 1	pin 2	383 - 517 Ω
	pin 3	pin 5	79 - 107 Ω
	pin 5	pin 4	45 - 61 Ω
	pin 1	GND	> 10 M Ω
	pin 3	GND	> 10 M Ω
	pin 1	pin 5	> 10 M Ω

- (a) If the Resistance is not in the specified range, then replace the LVDT, T396. These are the tasks:
 - LVDT Removal, AMM TASK 78-36-02-000-801-F00
 - LVDT Installation, AMM TASK 78-36-02-400-801-F00
 - 1) Do the Repair Confirmation at the end of this task.
- (b) If the Resistance is in the range, then re-connect the CH A (CH B) Electrical Connector, D30072 (D30076), and continue.
- (7) Visually examine the applicable CH A (CH B) Electrical Connector, D30072 (D30076), at the EEC, M1818:
 - (a) See if the CH A (CH B) Electrical Connector, D30072 (D30076), is correctly connected to the EEC, M1818, and continue.
 - 1) If the Electrical Connector is not correctly connected, correctly connect the CH A (CH B) Electrical Connector, D30072 (D30076).
 - 2) Do the Repair Confirmation at the end of this task.
 - (b) Disconnect the CH A (CH B) Electrical Connector, DP0303 (DP0404), from the EEC, M1818.
 - (c) Visually examine the EEC, M1818 Receptacle and Wire Harness Connector (Standard Engine Wiring and Equipment Check, AMM TASK 70-70-01-200-801-F00).
 - 1) If an EEC Receptacle is damaged, then replace the EEC, M1818. These are the tasks:
 - EEC Removal, AMM TASK 73-21-60-000-801-F00
 - EEC Installation, AMM TASK 73-21-60-400-801-F00
 - a) Do the Repair Confirmation at the end of this task.
 - 2) If a Wire Harness Connector is damaged, then replace the applicable CH A (CH B) Wire Harness, MW0303 (MW0304). These are the tasks:
 - Nacelle Wiring Harnesses Removal, AMM TASK 71-51-03-000-801-F00
 - Nacelle Wiring Harnesses Installation, AMM TASK 71-51-03-400-801-F00
 - a) Do the Repair Confirmation at the end of this task.
 - 3) If a Connector was not correctly connected and no other problem was found, then re-connect the connector and do the Repair Confirmation at the end of this task.

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- (8) Measure the Resistance at these pins on the CH A (CH B) Wire Harness Connector, DP0303 (DP0404), to do a check of the Wire Harnesses between the EEC, M1818 and the LVDT, T396 (WDM 78-35-11, WDM 78-35-21):

NOTE: If the Ambient Temperature is different than 70°F (21°C), use the indicated formulas in the table below to calculate the acceptable Resistance Range R at Ambient Temperature T (in °C only). Calculate the range for each value of R, where Range = R ±15%.

DP0303 (CH-A)

pin	pin	RESISTANCE
y	GG	$R = 450 \left(\frac{(234.5 + T)}{254.5} \right)$
BB	u	$R = 93 \left(\frac{(234.5 + T)}{254.5} \right)$
u	CC	$R = 53 \left(\frac{(234.5 + T)}{254.5} \right)$

DP0404 (CH-B)

pin	pin	RESISTANCE
AA	GG	$R = 450 \left(\frac{(234.5 + T)}{254.5} \right)$
x	u	$R = 93 \left(\frac{(234.5 + T)}{254.5} \right)$
u	y	$R = 53 \left(\frac{(234.5 + T)}{254.5} \right)$

EEC CH-A

DP0303

pin y	pin GG
pin BB	pin u
pin u	pin CC
pin y	GROUND
pin BB	GROUND
pin y	pin u

RESISTANCE (70 °F, 21 °C)

383 - 517 Ω
79 - 107 Ω
45 - 61 Ω
> 10 MΩ
> 10 MΩ
> 10 MΩ

EEC CH-B

DP0404

pin AA	pin GG
pin x	pin u
pin u	pin y
pin AA	GROUND
pin x	GROUND
pin AA	pin u

RESISTANCE (70 °F, 21 °C)

383 - 517 Ω
79 - 107 Ω
45 - 61 Ω
> 10 MΩ
> 10 MΩ
> 10 MΩ

- (a) If the Resistance is not in the specified range, then examine and repair the wires and connectors between the EEC, M1818 and the LVDT, T396.
- 1) If you find a problem with the CH A (CH B) Wire Harness, MW0303 (MW0304), then replace the Wire Harness. These are the tasks:
 - Nacelle Wiring Harnesses Removal, AMM TASK 71-51-03-000-801-F00
 - Nacelle Wiring Harnesses Installation, AMM TASK 71-51-03-400-801-F00

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- 2) If you find a problem between the Strut Receptacle and LVDT, T396, then do the applicable tasks to repair or replace the wiring SWPM Ch 20.
- 3) Do the Repair Confirmation at the end of this task.
- (b) If the Resistance is in the range, then re-connect the CH A (CH B) Electrical Connector, DP0303 (DP0404), and do this task: Linear Variable Differential Transformer (LVDT) - Adjustment, AMM TASK 78-36-02-820-801-F00.
 - 1) Do the Repair Confirmation at the end of this task.
- (9) Replace the LVDT, T396. These are the tasks:
 - LVDT Removal, AMM TASK 78-36-02-000-801-F00
 - LVDT Installation, AMM TASK 78-36-02-400-801-F00
- (a) Do the Repair Confirmation at the end of this task.
- (10) If the fault was found by the Initial Evaluation, then replace the EEC, M1818. These are the tasks:
 - EEC Removal, AMM TASK 73-21-60-000-801-F00
 - EEC Installation, AMM TASK 73-21-60-400-801-F00
- (a) Do the Repair Confirmation at the end of this task.

H. Repair Confirmation

- (1) Make sure that the CH A (CH B) Electrical Connector, D30072 (D30076), are correctly connected to the EEC, M1818.
- (2) Make sure that the CH A (CH B) Electrical Connector, D30072 (D30076), are correctly connected to the LVDT, T396.
- (3) Make sure that all Connectors that were disconnected to do an electrical check between the LVDT, T396 and the EEC, M1818 are correctly connected.
- (4) Remove the safety tag and close the applicable ENG 1 (ENG 2) circuit breakers:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	1	C00458	ENGINE 1 IGNITION RIGHT
A	3	C00153	ENGINE 1 IGNITION LEFT
A	4	C01390	ENGINE 1 ALTN PWR CHAN B
A	5	C01314	ENGINE 1 ALTN PWR CHAN A
B	4	C01003	ENGINE 1 THRUST REVERSER IND
B	5	C00276	ENGINE 1 THRUST REVERSER CONT
B	6	C01412	ENGINE 1 THRUST REVERSER INTLK
B	7	C01266	ENGINE 1 THRUST REVERSER SYNC LOCK

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	5	C01267	ENGINE 2 THRUST REVERSER SYNC LOCK
C	6	C01413	ENGINE 2 THRUST REVERSER INTLK
C	7	C00277	ENGINE 2 THRUST REVERSER CONT
C	8	C01004	ENGINE 2 THRUST REVERSER IND
D	4	C00459	ENGINE 2 IGNITION RIGHT
D	6	C00151	ENGINE 2 IGNITION LEFT
D	7	C01391	ENGINE 2 ALTN PWR CHAN B

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<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

- (5) Do this task: EEC BITE Procedure, 73-00 TASK 801.
- (a) If the Maintenance Message does not show, then you have corrected the fault.
- 1) Do this task: Close the Fan Cowl Panels, AMM TASK 71-11-02-410-801-F00.
- (b) If the maintenance message still shows, do this step:
- Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	1	C00458	ENGINE 1 IGNITION RIGHT
A	3	C00153	ENGINE 1 IGNITION LEFT
A	4	C01390	ENGINE 1 ALTN PWR CHAN B
A	5	C01314	ENGINE 1 ALTN PWR CHAN A
B	3	C01312	ENGINE 1 RUN/PWR
B	4	C01003	ENGINE 1 THRUST REVERSER IND
B	5	C00276	ENGINE 1 THRUST REVERSER CONT
B	6	C01412	ENGINE 1 THRUST REVERSER INTLK
B	7	C01266	ENGINE 1 THRUST REVERSER SYNC LOCK

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	5	C01313	ENGINE 2 RUN/PWR
C	5	C01267	ENGINE 2 THRUST REVERSER SYNC LOCK
C	6	C01413	ENGINE 2 THRUST REVERSER INTLK
C	7	C00277	ENGINE 2 THRUST REVERSER CONT
C	8	C01004	ENGINE 2 THRUST REVERSER IND
D	4	C00459	ENGINE 2 IGNITION RIGHT
D	6	C00151	ENGINE 2 IGNITION LEFT
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

- 1) Open the applicable ENG 1 (ENG 2) circuit breakers below and continue the Fault Isolation Procedure at the subsequent step:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	1	C00458	ENGINE 1 IGNITION RIGHT
A	3	C00153	ENGINE 1 IGNITION LEFT
A	4	C01390	ENGINE 1 ALTN PWR CHAN B
A	5	C01314	ENGINE 1 ALTN PWR CHAN A
B	3	C01312	ENGINE 1 RUN/PWR
B	4	C01003	ENGINE 1 THRUST REVERSER IND
B	5	C00276	ENGINE 1 THRUST REVERSER CONT
B	6	C01412	ENGINE 1 THRUST REVERSER INTLK
B	7	C01266	ENGINE 1 THRUST REVERSER SYNC LOCK

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<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	5	C01313	ENGINE 2 RUN/PWR
C	5	C01267	ENGINE 2 THRUST REVERSER SYNC LOCK
C	6	C01413	ENGINE 2 THRUST REVERSER INTLK
C	7	C00277	ENGINE 2 THRUST REVERSER CONT
C	8	C01004	ENGINE 2 THRUST REVERSER IND
D	4	C00459	ENGINE 2 IGNITION RIGHT
D	6	C00151	ENGINE 2 IGNITION LEFT
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

———— **END OF TASK** ————

805. Right Thrust Reverser Sleeve Position Signals Disagree - Fault Isolation**A. Description**

- (1) This task is for the L REVERSER SLEEVE POSITION SIGNAL IS OUT OF RANGE with these associated message numbers:

- (a) 78-11511: ENG-1 EEC CH A fault
- (b) 78-11512: ENG-2 EEC CH A fault
- (c) 78-21511: ENG-1 EEC CH B fault
- (d) 78-21512: ENG-2 EEC CH B fault
- (e) 78-31511: ENG-1 EEC CH A and CH B fault

NOTE: If there is a Dual Channel maintenance message, then one T/R Sleeve on an engine has a Channel A fault and the other sleeve has a Channel B fault. Do the EEC BITE Procedure, 73-00 TASK 801 and review the RECENT FAULTS to find which channel on each sleeve has a fault.

- (f) 78-31512: ENG-2 EEC CH A and CH B fault

NOTE: If there is a Dual Channel maintenance message, then one T/R Sleeve on an engine has a Channel A fault and the other sleeve has a Channel B fault. Do the EEC BITE Procedure, 73-00 TASK 801 and review the RECENT FAULTS to find which channel on each sleeve has a fault.

- (2) This fault is reported when the EEC, M1818 has electrical power.
- (3) This Maintenance Message will show as a Dual Channel Fault if the EEC senses that the absolute value of the difference between Channel A and B of the R T/R position is greater than or equal to 12.0 %.
- (4) This Maintenance Message will show as a Single Channel Fault if there is an internal EEC problem.
- (5) This Maintenance Message can show if there is a problem with the Right T/R LVDT, T397, installation, the LVDT, T397 adjustment, the T/R Actuators or Flexshafts.

B. Possible Causes

- (1) For a Single Channel Fault:
 - (a) EEC, M1818
- (2) For a Dual Channel Fault:

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- (a) Right T/R LVDT, T397
- (b) Wiring

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	1	C00458	ENGINE 1 IGNITION RIGHT
A	3	C00153	ENGINE 1 IGNITION LEFT
A	4	C01390	ENGINE 1 ALTN PWR CHAN B
A	5	C01314	ENGINE 1 ALTN PWR CHAN A
B	4	C01003	ENGINE 1 THRUST REVERSER IND
B	5	C00276	ENGINE 1 THRUST REVERSER CONT
B	6	C01412	ENGINE 1 THRUST REVERSER INTLK
B	7	C01266	ENGINE 1 THRUST REVERSER SYNC LOCK

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	5	C01267	ENGINE 2 THRUST REVERSER SYNC LOCK
C	6	C01413	ENGINE 2 THRUST REVERSER INTLK
C	7	C00277	ENGINE 2 THRUST REVERSER CONT
C	8	C01004	ENGINE 2 THRUST REVERSER IND
D	4	C00459	ENGINE 2 IGNITION RIGHT
D	6	C00151	ENGINE 2 IGNITION LEFT
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

D. Related Data

- (1) Component Location and Simplified Schematic (78-36 TASK SUPPORT Figure 301, 78-36 TASK SUPPORT Figure 304)
- (2) WDM 78-35-11
- (3) WDM 78-35-21
- (4) SSM 78-35-11
- (5) SSM 78-35-21

E. Initial Evaluation

- (1) Do these steps to find out if the Maintenance Message is still active:
 - (a) Do this task: EEC TEST, AMM TASK 73-21-00-700-804-F00.
 - (b) If a Single Channel Maintenance Message shows, then do the "Fault Isolation Procedure - Single Channel Fault" below.
 - 78-11511 (CH A, ENG-1)
 - 78-11512 (CH A, ENG-2)
 - 78-21511 (CH B, ENG-1)
 - 78-21512 (CH B, ENG-2)
 - (c) If a Dual Channel Maintenance Message shows, then do the "Fault Isolation Procedure - Dual Channel Fault" below.

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- 78-31511 (CH A and CH B, ENG-1)
 - 78-31512 (CH A and CH B, ENG-2)
- (d) If the Maintenance Message does not show on the FMCS CDU, then the Initial Evaluation has shown that the fault is not active at this time and you have an intermittent problem.

F. Fault Isolation Procedure - Single Channel Fault

- (1) Replace the EEC, M1818. These are the tasks:
- EEC Removal, AMM TASK 73-21-60-000-801-F00
 - EEC Installation, AMM TASK 73-21-60-400-801-F00
- (a) Do the Repair Confirmation at the end of this task.

G. Fault Isolation Procedure - Dual Channel Fault

- (1) Examine the LVDT installation on the applicable Locking Actuator.
- (a) Look for wear or grooves on the LVDT Barrel.
- 1) Wear or grooves more than 0.025 in. (0.635 mm) are not permitted.
- NOTE: The wear/grooves on the barrel could cause the LVDT spring to bind and jam.
- (b) Look for a bent shaft and misaligned Rod End on the LVDT or misadjusted shims for the LVDT Rod End on the Actuator Spindle on the Locking Actuator.
- (c) Look for missing fasteners that attach the LVDT to the Locking Actuator body or the Actuator Feedback Spindle.
- (d) Look for a problem with the Locking Actuator at the Feedback Spindle and the side plates on the Actuator.
- (e) If there are missing or broken parts on the Locking Actuator, replace the Locking Actuator. These are the tasks:
- Upper Locking Hydraulic Actuator Removal, AMM TASK 78-31-03-000-801-F00
 - Upper Locking Hydraulic Actuator - Installation, AMM TASK 78-31-03-400-801-F00
- (f) If there is wear or grooves more than the limit, missing or broken parts on the LVDT, repair the installation or replace the Right T/R Sleeve LVDT, T397. These are the applicable tasks:
- LVDT Removal, AMM TASK 78-36-02-000-801-F00
 - LVDT Installation, AMM TASK 78-36-02-400-801-F00
 - Linear Variable Differential Transformer (LVDT) - Adjustment, AMM TASK 78-36-02-820-801-F00
- 1) Do the Repair Confirmation at the end of this task.
- (2) Manually extend and retract the T/R Sleeve to make sure the T/R Sleeve moves smoothly and the Hydraulic Actuators and Sync Shafts are not jammed. These are the tasks:
- Thrust Reverser Operation - Extend (Manual Procedure), AMM TASK 78-31-00-980-803-F00
 - Thrust Reverser Operation - Retract (Manual Procedure), AMM TASK 78-31-00-980-804-F00

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- (a) If the T/R Sleeve does not move smoothly or can not move, go to Time to Extend or Retract the Thrust Reverser Too Slow - Fault Isolation, 78-34 TASK 805.

NOTE: There can be internal damage in the Locking Actuator or one of the Non-Locking Actuators which causes it to bind or jam.

NOTE: Any Actuator can be incorrectly rigged when it was installed. The Rod End on one of the Hydraulic Actuators could have been turned during installation. If the Rod End was turned, the Actuator Internal Length was changed so that the Actuator is not synchronized to move the same distance as the other two Actuators. This Actuator will move more or less than the other Actuators which can cause more friction in the Actuator and the extension and/or retraction time to increase.

- (b) Do the Repair Confirmation at the end of this task.
- (3) Do a check of the LVDT Position Values with the T/R in the EXTENDED position and the RETRACTED position and adjust the LVDT as necessary.
- (a) Do this task: Thrust Reverser Linear Variable Differential Transformer (LVDT) Test, AMM TASK 78-31-00-700-806-F00.
- 1) Make a record of the T/R Sleeve position data which can be used later in the procedure.
- (b) If it is necessary, do this task: Linear Variable Differential Transformer (LVDT) - Adjustment, AMM TASK 78-36-02-820-801-F00.
- (c) Do the Repair Confirmation at the end of this task.
- (4) Do the steps below for the Channel which has T/R Sleeve position data that is not correct.
- (a) Open the applicable ENG 1 (ENG 2) circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	1	C00458	ENGINE 1 IGNITION RIGHT
A	3	C00153	ENGINE 1 IGNITION LEFT
A	4	C01390	ENGINE 1 ALTN PWR CHAN B
A	5	C01314	ENGINE 1 ALTN PWR CHAN A
B	4	C01003	ENGINE 1 THRUST REVERSER IND
B	5	C00276	ENGINE 1 THRUST REVERSER CONT
B	6	C01412	ENGINE 1 THRUST REVERSER INTLK
B	7	C01266	ENGINE 1 THRUST REVERSER SYNC LOCK

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	5	C01267	ENGINE 2 THRUST REVERSER SYNC LOCK
C	6	C01413	ENGINE 2 THRUST REVERSER INTLK
C	7	C00277	ENGINE 2 THRUST REVERSER CONT
C	8	C01004	ENGINE 2 THRUST REVERSER IND
D	4	C00459	ENGINE 2 IGNITION RIGHT
D	6	C00151	ENGINE 2 IGNITION LEFT
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

- (b) Do this task: Open the Fan Cowl Panels, AMM TASK 71-11-02-010-801-F00.

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- (5) Visually examine the applicable CH-A (CH-B) Electrical Connector, D30074 (D30078), at the LVDT, T397 (WDM 78-35-21, WDM 78-35-11):

NOTE: There is an LVDT on each of the Upper Locking Actuators on the Torque Box of the Left and Right T/R on an Engine.

- (a) See if the CH-A (CH-B) Electrical Connector, D30074 (D30078), is correctly connected to the LVDT, T397, and continue.
 - 1) If the Electrical Connector is not correctly connected, correctly connect the CH-A (CH-B) Electrical Connector, D30074 (D30078).
 - 2) Do the Repair Confirmation at the end of this task.
 - (b) Disconnect the CH-A (CH-B) Electrical Connector, D30074 (D30078) from the LVDT, T397.
 - (c) Visually examine the LVDT, T397 Receptacle and Wire Harness Connector (Standard Engine Wiring and Equipment Check, AMM TASK 70-70-01-200-801-F00).
 - 1) If an LVDT Receptacle is damaged, then replace the LVDT, T397. These are the tasks:
 - LVDT Removal, AMM TASK 78-36-02-000-801-F00
 - LVDT Installation, AMM TASK 78-36-02-400-801-F00
 - a) Do the Repair Confirmation at the end of this task.
 - 2) If a Wire Harness Connector is damaged, then do the applicable tasks to repair or replace the CH-A (CH-B) Electrical Connector, D30074 (D30078) (SWPM Ch 20).
 - a) Do the Repair Confirmation at the end of this task.
 - 3) If a connector was not correctly connected, and no other problem was found, then re-connect the CH-A (CH-B) Electrical Connector, D30074 (D30078), and do the Repair Confirmation at the end of this task.
 - (d) If you did not find a problem, then continue.
- (6) Measure the Resistance between these pins of the LVDT, T397 Receptacle for CH-A or CH-B:
- NOTE:** If the Ambient Temperature is different than 70°F (21°C), use the indicated formulas in the table below to calculate the acceptable Resistance Range R at Ambient Temperature T (in °C only). Calculate the range for each value of R, where Range = R ±15%.

D30074 (CH-A) or D30078 (CH-B)

pin	pin	Resistance
1	2	$R = 450((234.5 + T)/254.5)$
3	5	$R = 93((234.5 + T)/254.5)$
5	4	$R = 53((234.5 + T)/254.5)$

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LVDT, T397 RECEPTACLE	D30074/D30078	D30074/D30078	RESISTANCE (70 DEG. F, 21 DEG C)
	pin 1	pin 2	383 - 517 Ω
	pin 3	pin 5	79 - 107 Ω
	pin 5	pin 4	45 - 61 Ω
	pin 1	GND	> 10 M Ω
	pin 3	GND	> 10 M Ω
	pin 1	pin 5	> 10 M Ω

- (a) If the Resistance is not in the specified range, then replace the LVDT, T397. These are the tasks:
 - LVDT Removal, AMM TASK 78-36-02-000-801-F00
 - LVDT Installation, AMM TASK 78-36-02-400-801-F00
 - 1) Do the Repair Confirmation at the end of this task.
- (b) If the Resistance is in the range, then re-connect the CH-A (CH-B) Electrical Connector, D30074 (D30078), and continue.
- (7) Visually examine the CH-A (CH-B) Electrical Connector, D30074 (D30078) at the EEC, M1818:
 - (a) See if the CH-A (CH-B) Electrical Connector, D30074 (D30078) is correctly connected to the EEC, M1818, and continue.
 - 1) If the Electrical Connector is not correctly connected, correctly connect the CH-A (CH-B) Electrical Connector, D30074 (D30078).
 - 2) Do the Repair Confirmation at the end of this task.
 - (b) Disconnect the CH-A (CH-B) Electrical Connector, DP0303 (DP0404) from the EEC, M1818.
 - (c) Visually examine the EEC, M1818 Receptacle and Wire Harness Connector (AMM TASK 70-70-01-200-801-F00).
 - 1) If an EEC Receptacle is damaged, then replace the EEC, M1818. These are the tasks:
 - EEC Removal, AMM TASK 73-21-60-000-801-F00
 - EEC Installation, AMM TASK 73-21-60-400-801-F00
 - a) Do the Repair Confirmation at the end of this task.
 - 2) If a Wire Harness Connector is damaged, then replace the applicable CH-A (CH-B) Wire Harness, MW0303 (MW0304). These are the tasks:
 - Nacelle Wiring Harnesses Removal, AMM TASK 71-51-03-000-801-F00
 - Nacelle Wiring Harnesses Installation, AMM TASK 71-51-03-400-801-F00
 - a) Do the Repair Confirmation at the end of this task.
 - 3) If a connector was not correctly connected and no other problem was found, then re-connect the connector and do the Repair Confirmation at the end of this task.

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- (8) Measure the Resistance at these pins on the CH-A (CH-B) Wire Harness Connector, DP0303 (DP0404), to do a check of the Wire Harnesses between the EEC, M1818 and the LVDT, T397 (WDM 78-35-11, WDM 78-35-21):

NOTE: If the Ambient Temperature is different than 70°F (21°C), use the indicated formulas in the table below to calculate the acceptable Resistance Range R at Ambient Temperature T (in °C only). Calculate the range for each value of R, where Range = R ±15%.

DP0303 (CH-A)

pin	pin	Resistance
e	f	$R = 450((234.5 + T)/254.5)$
n	q	$R = 93((234.5 + T)/254.5)$
q	p	$R = 53((234.5 + T)/254.5)$

DP0404 (CH-B)

pin	pin	Resistance
e	f	$R = 450((234.5 + T)/254.5)$
m	p	$R = 93((234.5 + T)/254.5)$
p	n	$R = 53((234.5 + T)/254.5)$

EEC CH-A

DP0303

pin e	.....	pin f
pin n	.....	pin q
pin q	.....	pin p
pin e	.....	GND
pin n	.....	GND
pin e	.....	pin q

DP0303

RESISTANCE (70 °F, 21 °C)

383 - 517 Ω
79 - 107 Ω
45 - 61 Ω
> 10 MΩ
> 10 MΩ
> 10 MΩ

EEC CH-B

DP0404

pin e	.....	pin f
pin m	.....	pin p
pin p	.....	pin n
pin e	.....	GND
pin m	.....	GND
pin e	.....	pin p

DP0404

RESISTANCE (70 °F, 21 °C)

383 - 517 Ω
79 - 107 Ω
45 - 61 Ω
> 10 MΩ
> 10 MΩ
> 10 MΩ

- (a) If the Resistance is not in the specified range, then examine and repair the wires and connectors between the EEC, M1818 and the LVDT, T397.
- 1) If you find a problem with the CH-A (CH-B) Wire Harness, MW0303 (MW0304), then replace the Wire Harness. These are the tasks:
 - Nacelle Wiring Harnesses Removal, AMM TASK 71-51-03-000-801-F00
 - Nacelle Wiring Harnesses Installation, AMM TASK 71-51-03-400-801-F00

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- 2) If you find a problem between the Strut Receptacle and LVDT, T397, then do the applicable tasks to repair or replace the wiring (SWPM Ch 20).
 - a) Do the Repair Confirmation at the end of this task.
- (b) If the Resistance is in the range, then re-connect the CH-A (CH-B) Electrical Connector, DP0303 (DP0404), and, do this task: Linear Variable Differential Transformer (LVDT) - Adjustment, AMM TASK 78-36-02-820-801-F00.
 - 1) Do the Repair Confirmation at the end of this task.
- (9) Replace the LVDT, T397. These are the tasks:
 - LVDT Removal, AMM TASK 78-36-02-000-801-F00
 - LVDT Installation, AMM TASK 78-36-02-400-801-F00
 - (a) Do the Repair Confirmation at the end of this task.
- (10) If the problem was found in the Initial Evaluation, then replace the EEC, M1818. These are the tasks:
 - EEC Removal, AMM TASK 73-21-60-000-801-F00
 - EEC Installation, AMM TASK 73-21-60-400-801-F00
 - (a) Do the Repair Confirmation at the end of this task.

H. Repair Confirmation

- (1) Make sure that the CH-A (CH-B) Electrical Connector, DP0303 (DP0404), are correctly connected to the EEC, M1818.
- (2) Make sure that the CH-A (CH-B) Electrical Connectors, D30074 (D30078) are correctly connected to the LVDT, T397.
- (3) Make sure that all Connectors that were disconnected to do an electrical check between the LVDT, T397 and the EEC, M1818 are correctly connected.
- (4) Remove the safety tag and close the applicable ENG 1 (ENG 2) circuit breakers:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	1	C00458	ENGINE 1 IGNITION RIGHT
A	3	C00153	ENGINE 1 IGNITION LEFT
A	4	C01390	ENGINE 1 ALTN PWR CHAN B
A	5	C01314	ENGINE 1 ALTN PWR CHAN A
B	4	C01003	ENGINE 1 THRUST REVERSER IND
B	5	C00276	ENGINE 1 THRUST REVERSER CONT
B	6	C01412	ENGINE 1 THRUST REVERSER INTLK
B	7	C01266	ENGINE 1 THRUST REVERSER SYNC LOCK

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	5	C01267	ENGINE 2 THRUST REVERSER SYNC LOCK
C	6	C01413	ENGINE 2 THRUST REVERSER INTLK
C	7	C00277	ENGINE 2 THRUST REVERSER CONT
C	8	C01004	ENGINE 2 THRUST REVERSER IND
D	4	C00459	ENGINE 2 IGNITION RIGHT
D	6	C00151	ENGINE 2 IGNITION LEFT
D	7	C01391	ENGINE 2 ALTN PWR CHAN B

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<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

(5) Do this task: EEC TEST, AMM TASK 73-21-00-700-804-F00.

(a) If the Maintenance Message does not show, then you have corrected the problem.

1) Do this task: Close the Fan Cowl Panels, AMM TASK 71-11-02-410-801-F00.

(b) If the maintenance message still shows, do this step:

1) Open the applicable ENG 1 (ENG 2) circuit breakers below and continue the Fault Isolation Procedure at the subsequent step:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	1	C00458	ENGINE 1 IGNITION RIGHT
A	3	C00153	ENGINE 1 IGNITION LEFT
A	4	C01390	ENGINE 1 ALTN PWR CHAN B
A	5	C01314	ENGINE 1 ALTN PWR CHAN A
B	4	C01003	ENGINE 1 THRUST REVERSER IND
B	5	C00276	ENGINE 1 THRUST REVERSER CONT
B	6	C01412	ENGINE 1 THRUST REVERSER INTLK
B	7	C01266	ENGINE 1 THRUST REVERSER SYNC LOCK

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<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	5	C01267	ENGINE 2 THRUST REVERSER SYNC LOCK
C	6	C01413	ENGINE 2 THRUST REVERSER INTLK
C	7	C00277	ENGINE 2 THRUST REVERSER CONT
C	8	C01004	ENGINE 2 THRUST REVERSER IND
D	4	C00459	ENGINE 2 IGNITION RIGHT
D	6	C00151	ENGINE 2 IGNITION LEFT
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

END OF TASK

806. The Reverser Control and Position Signals Disagree - Fault Isolation**A. Description**

(1) This task is for the REVERSER CONTROL AND POSITION SIGNALS DISAGREE maintenance message with these associated message numbers:

- (a) 78-11521: ENG-1 EEC CH A fault
- (b) 78-11522: ENG-2 EEC CH A fault
- (c) 78-21521: ENG-1 EEC CH B fault
- (d) 78-21522: ENG-2 EEC CH B fault
- (e) 78-31521: ENG-1 EEC CH A and CH B fault
- (f) 78-31522: ENG-2 EEC CH A and CH B fault

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- (2) If a Single Channel Fault is set, the EEC senses a problem in only one of the channels because it was not able to see the opposite channel's LVDT value. This is due to an EEC internal fault.
 - (a) The REVERSER Light or the REV Light can also be ON.
 - (b) If a Single Channel Fault is set, the ENG-1 (ENG-2) T/R is in the stowed position and the REVERSER Light is ON, this can be an indication that the Reverse Thrust Levers were moved too slowly from the EXTEND (deploy) to the RETRACT (stow) position. Refer to T/R STOW FAULTS - All STOW Messages except L and R SLEEVE SYNC LOCK PWR and EAU FAULT Messages - Fault Isolation, 78-32 TASK 816.
 - (c) This can also be an indication that the ENG-1 (ENG-2) T/R moved too slowly to the RETRACT (stow) position. Refer to Time to Extend or Retract the Thrust Reverser Too Slow - Fault Isolation, 78-34 TASK 805.
- (3) If a Dual Channel Fault is set:
 - (a) The REVERSER Light or the REV Light can also be ON.
 - (b) If the ENG-1 (ENG-2) T/R is in the stowed position and the REVERSER Light is ON, this can be an indication that the Reverse Thrust Levers were moved too slowly from the EXTEND (deploy) to the RETRACT (stow) position. Refer to T/R STOW FAULTS - All STOW Messages except L and R SLEEVE SYNC LOCK PWR and EAU FAULT Messages - Fault Isolation, 78-32 TASK 816.
 - (c) This can also be an indication that the ENG-1 (ENG-2) T/R moved too slowly to the RETRACT (stow) position. Refer to Time to Extend or Retract the Thrust Reverser Too Slow - Fault Isolation, 78-34 TASK 805.
- (4) These maintenance messages show when the EEC has Electrical Power.
- (5) These maintenance messages will show as a Dual Channel Fault if the EEC senses that either one or both of the L (R) T/R Sleeves were deployed more than 10 % with the Engine commanded in FORWARD THRUST.
- (6) These maintenance messages can show if there is a problem with the LVDT installation, the LVDT adjustment, or the T/R Actuators or Flexshafts.

B. Possible Causes

- (1) L (R) Locking Hydraulic Actuator
- (2) L (R) T/R Sleeve LVDT, T396 (T397)
- (3) ENG-1 (ENG-2) EEC, M1818

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	1	C00458	ENGINE 1 IGNITION RIGHT
A	3	C00153	ENGINE 1 IGNITION LEFT
A	4	C01390	ENGINE 1 ALTN PWR CHAN B
A	5	C01314	ENGINE 1 ALTN PWR CHAN A
B	4	C01003	ENGINE 1 THRUST REVERSER IND
B	5	C00276	ENGINE 1 THRUST REVERSER CONT
B	6	C01412	ENGINE 1 THRUST REVERSER INTLK
B	7	C01266	ENGINE 1 THRUST REVERSER SYNC LOCK
B	8	C01103	ENGINE 1 START VALVE

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<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	9	C00440	FLIGHT CONTROL AUTO SPEED BRAKE
C	4	C00154	ENGINE 2 START VALVE
C	5	C01267	ENGINE 2 THRUST REVERSER SYNC LOCK
C	6	C01413	ENGINE 2 THRUST REVERSER INTLK
C	7	C00277	ENGINE 2 THRUST REVERSER CONT
C	8	C01004	ENGINE 2 THRUST REVERSER IND
D	4	C00459	ENGINE 2 IGNITION RIGHT
D	6	C00151	ENGINE 2 IGNITION LEFT
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

D. Related Data

- (1) WDM 78-35-11
- (2) WDM 78-35-21
- (3) SSM 78-35-11
- (4) SSM 78-35-21

E. Initial Evaluation

- (1) Do these steps to find out if the Maintenance Message is still active:
 - (a) Do this task: T/R LEVER INTLK (Interlock) TEST, AMM TASK 73-21-00-700-805-F00.
 - (b) If a Single Channel Maintenance Message shows, then do the "Fault Isolation Procedure - Single Channel Fault" below.
 - 78-11521 (CH A, ENG-1)
 - 78-11522 (CH A, ENG-2)
 - 78-21521 (CH B, ENG-1)
 - 78-21522 (CH B, ENG-2)
 - (c) If a Dual Channel Maintenance Message shows, then do the "Fault Isolation Procedure - Dual Channel Fault" below.
 - 78-31521 (CH A and CH B, ENG-1)
 - 78-31522 (CH A and CH B, ENG-2)
 - (d) If the Maintenance Message does not show on the FMCS CDU, then the Initial Evaluation has shown that the fault is not active at this time and you have an intermittent problem.

F. Fault Isolation Procedure - Single Channel Fault

- (1) If the REVERSER Light is ON, then do this task: Engine Accessory Unit (EAU) BITE Procedure, 78-31 TASK 801.
 - (a) Go to the applicable Fault Isolation Task for the Engine Accessory Unit (EAU) Maintenance Message that shows to correct the ENG-1 (ENG-2) T/R.
- (2) If the REVERSER Light is not ON, then look for internal EEC faults. Do this task: EEC BITE Procedure, 73-00 TASK 801.
 - (a) If you find internal EEC faults, then go to the applicable Fault Isolation Task(s) to correct the problem.

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- 1) Do the Repair Confirmation at the end of this task.

G. Fault Isolation Procedure - Dual Channel Fault

- (1) Examine the Left (Right) T/R Sleeve LVDT T396 (T397) installation on the applicable L (R) Locking Actuator.
 - (a) Look for wear or grooves on the LVDT Barrel.
 - 1) Wear or grooves more than 0.025 in. (0.635 mm) are not permitted.
NOTE: The wear/grooves on the Barrel could cause the LVDT Spring to bind and jam.
 - (b) Look for a bent Shaft and a misaligned Rod End on the LVDT or misadjusted Shims for the LVDT Rod End on the Actuator Spindle on the Locking Actuator.
 - (c) Look for missing fasteners that attach the LVDT to the Locking Actuator Body or the Actuator Feedback Spindle.
 - (d) Look for a problem with the Locking Actuator at the Feedback Spindle and the Side Plates on the Actuator.
 - 1) If there are missing or broken parts on the Locking Actuator, replace the applicable L (R) Locking Actuator. These are the tasks:
 - Upper Locking Hydraulic Actuator Removal, AMM TASK 78-31-03-000-801-F00
 - Upper Locking Hydraulic Actuator - Installation, AMM TASK 78-31-03-400-801-F00
 - 2) If there is wear or grooves that are more than the specified limit and missing or broken parts on the LVDT, repair the installation or replace the applicable L (R) T/R Sleeve LVDT, T396 (T397). These are the applicable tasks:
 - LVDT Removal, AMM TASK 78-36-02-000-801-F00
 - LVDT Installation, AMM TASK 78-36-02-400-801-F00
 - Linear Variable Differential Transformer (LVDT) - Adjustment, AMM TASK 78-36-02-820-801-F00
 - a) Do the Repair Confirmation at the end of this task.
 - (e) If you do not find problems in the LVDT installation, continue.
- (2) Manually extend and retract the L (R) T/R Sleeves to make sure the Sleeves move smoothly and the Hydraulic Actuators and Sync Shafts are not jammed. These are the tasks:
 - Thrust Reverser Operation - Extend (Manual Procedure), AMM TASK 78-31-00-980-803-F00
 - Thrust Reverser Operation - Retract (Manual Procedure), AMM TASK 78-31-00-980-804-F00
 - (a) If the L (R) T/R Sleeves does not move smoothly or can not move, go to Time to Extend or Retract the Thrust Reverser Too Slow - Fault Isolation, 78-34 TASK 805.
NOTE: There can be internal damage in the Locking Actuator or one of the Non-Locking Actuators which causes it to bind or jam.
NOTE: Any Actuator can be incorrectly rigged when it was installed. The Rod End on one of the Hydraulic Actuators could have been turned during installation. If the Rod End was turned, the Actuator internal length was changed so that the Actuator is not synchronized to move the same distance as the other two Actuators. This Actuator will move more or less than the other Actuators which can cause more friction in the Actuator and the extension and/or retraction time to increase.
 - (b) Do the Repair Confirmation at the end of this task.

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- (3) If the REVERSER Light is ON, then do this task: Engine Accessory Unit (EAU) BITE Procedure, 78-31 TASK 801.
 - (a) Go to the applicable Fault Isolation Task for the Maintenance Message that shows to repair the ENG-1 (ENG-2) T/R.
- (4) If the REVERSER Light is not ON, then do a check of the L (R) T/R Sleeve LVDT, T396 (T397), as follows:
 - (a) Do a check of the LDVT Position Values with the applicable T/R in the EXTEND position and the RETRACT position.
 - 1) Do this task: Thrust Reverser Linear Variable Differential Transformer (LVDT) Test, AMM TASK 78-31-00-700-806-F00.
 - (b) If an LVDT value is not in the specified range, then do the LVDT adjustment for the applicable Sleeve.
 - 1) Do this task: Linear Variable Differential Transformer (LVDT) - Adjustment, AMM TASK 78-36-02-820-801-F00.
 - a) If you are unable to adjust the LVDT within the limits, then replace the L (R) T/R Sleeve LVDT, T396 (T397). These are the tasks:
 - LVDT Removal, AMM TASK 78-36-02-000-801-F00
 - LVDT Installation, AMM TASK 78-36-02-400-801-F00
 - <1> Do the Repair Confirmation at the end of this task.
 - (c) If the LVDT values for the L (R) T/R Sleeves are in the limits and the problem was found by the Initial Evaluation, then replace the applicable ENG-1 (ENG-2) EEC, M1818. These are the tasks:
 - EEC Removal, AMM TASK 73-21-60-000-801-F00
 - EEC Installation, AMM TASK 73-21-60-400-801-F00
 - 1) Do the Repair Confirmation at the end of this task.

H. Repair Confirmation

- (1) Do this task: T/R LEVER INTLK (Interlock) TEST, AMM TASK 73-21-00-700-805-F00.
 - (a) If the Maintenance Message does not show, then you have corrected the problem.
 - (b) If the Maintenance Message shows, then continue the Fault Isolation Procedure at the subsequent step.

————— END OF TASK —————

807. T/R Lever Interlock Voltage Input to the EEC is Out of Range - Fault Isolation

A. Description

- (1) This task is for the T/R LEVER INTLK VOLTAGE INPUT TO THE EEC IS OUT OF RANGE maintenance message with these associated message numbers:
 - (a) 78-11531: ENG-1 EEC CH A fault
 - (b) 78-11532: ENG-2 EEC CH A fault
 - (c) 78-21531: ENG-1 EEC CH B fault
 - (d) 78-21532: ENG-2 EEC CH B fault
 - (e) 78-31531: ENG-1 EEC CH A and CH B fault
 - (f) 78-31532: ENG-2 EEC CH A and CH B fault

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- (2) These maintenance messages show when the EEC senses that the T/R Interlock Voltage is less than 10V DC and the T/R Interlock Relay is open.
- (3) These maintenance messages show when the EEC has Electrical Power.

B. Possible Causes

- (1) Wiring
- (2) ENG-1 (ENG-2) T/R Interlock Solenoid, V155 (V156)
- (3) EEC, M1818

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	4	C01390	ENGINE 1 ALTN PWR CHAN B
A	5	C01314	ENGINE 1 ALTN PWR CHAN A
B	6	C01412	ENGINE 1 THRUST REVERSER INTLK

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<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	6	C01413	ENGINE 2 THRUST REVERSER INTLK
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

D. Related Data

- (1) Component Location (78-36 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (78-36 TASK SUPPORT Figure 302, 78-36 TASK SUPPORT Figure 303)
- (3) WDM 78-35-11
- (4) WDM 78-35-21
- (5) SSM 78-35-11
- (6) SSM 78-35-21

E. Initial Evaluation

- (1) Do these steps to find out if the Maintenance Message is still active:
 - (a) Do this task: T/R LEVER INTLK (Interlock) TEST, AMM TASK 73-21-00-700-805-F00.
NOTE: If the Reverse Thrust Lever can move to the FULL REVERSE Thrust position and is not blocked at the REVERSE Idle mechanical position by the interlock, then there is a short to ground.

NOTE: If the Reverse Thrust Lever can not move to the FULL REVERSE Thrust position because it is blocked at the REVERSE Idle mechanical position by the interlock, then there is an open circuit.
 - (b) If a Single Channel Maintenance Message shows, then do the "Fault Isolation Procedure - Single Channel Fault" below.
 - 78-11531 (CH A, ENG-1)
 - 78-11532 (CH A, ENG-2)
 - 78-21531 (CH B, ENG-1)
 - 78-21532 (CH B, ENG-2)

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- (c) If a Dual Channel Maintenance Message shows, then do the "Fault Isolation Procedure - Dual Channel Fault" below.
 - 78-31531 (CH A and CH B, ENG-1)
 - 78-31532 (CH A and CH B, ENG-2)
- (d) If the Maintenance Message does not show on the FMCS CDU, then the Initial Evaluation has shown that the fault is not active at this time and you have an intermittent problem.

F. Fault Isolation Procedure - Single Channel Fault

- (1) Open the applicable ENG 1 (ENG 2) circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	1	C00458	ENGINE 1 IGNITION RIGHT
A	3	C00153	ENGINE 1 IGNITION LEFT
A	4	C01390	ENGINE 1 ALTN PWR CHAN B
A	5	C01314	ENGINE 1 ALTN PWR CHAN A
B	6	C01412	ENGINE 1 THRUST REVERSER INTLK

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	6	C01413	ENGINE 2 THRUST REVERSER INTLK
D	4	C00459	ENGINE 2 IGNITION RIGHT
D	6	C00151	ENGINE 2 IGNITION LEFT
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

- (2) Do this task: Open the Fan Cowl Panels, AMM TASK 71-11-02-010-801-F00.
- (3) See if the CH-A (CH-B) Electrical Connector, DP0303 (DP0404) is correctly connected to the EEC, and continue (WDM 78-35-11, WDM 78-35-21).
- (4) Visually examine the CH-A (CH-B) Electrical Connector, DP0303 (DP0404) at the EEC.
- (5) Disconnect the CH-A (CH-B) Electrical Connector, DP0303 (DP0404) from the EEC.
- (6) Visually examine the EEC Receptacle and Wire Harness Connector (Standard Engine Wiring and Equipment Check, AMM TASK 70-70-01-200-801-F00).
 - (a) If the EEC Receptacle is damaged, then replace the EEC, M1818. These are the tasks:
 - EEC Removal, AMM TASK 73-21-60-000-801-F00
 - EEC Installation, AMM TASK 73-21-60-400-801-F00
 - 1) Do the Repair Confirmation at the end of this task.
 - (b) If the wire harness connector is damaged, then replace the applicable wire harness, MW0303 (CH A) or MW0304 (CH B). These are the tasks:
 - Nacelle Wiring Harnesses Removal, AMM TASK 71-51-03-000-801-F00
 - Nacelle Wiring Harnesses Installation, AMM TASK 71-51-03-400-801-F00
 - 1) Do the Repair Confirmation at the end of this task.
 - (c) If a connector was not correctly connected and no other problem was found, then re-connect the connector and do the Repair Confirmation at the end of this task.
- (7) Disconnect the CH-A (CH-B) Electrical Connector, DP0303 (DP0404) from the EEC.

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- (8) Remove the safety tags and close the applicable ENG 1 (ENG 2) circuit breakers:

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<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	6	C01412	ENGINE 1 THRUST REVERSER INTLK

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	6	C01413	ENGINE 2 THRUST REVERSER INTLK

- (9) Do a Voltage check as follows (WDM 78-35-11, WDM 78-35-21):

ENGINE-1

CH-A	EEC	EEC	VOLTAGE
	DP0303	DP0303	
	pin C	pin B	28V DC
CH-B	DP0404	DP0404	VOLTAGE
	pin C	pin B	
			28V DC

ENGINE-2

CH-A	EEC	EEC	VOLTAGE
	DP0303	DP0303	
	pin C	pin B	28V DC
CH-B	DP0404	DP0404	VOLTAGE
	pin C	pin B	
			28V DC

- (a) If you find 28V DC, then replace the EEC, M1818. These are the tasks:

- EEC Removal, AMM TASK 73-21-60-000-801-F00
- EEC Installation, AMM TASK 73-21-60-400-801-F00
- 1) Do the Repair Confirmation at the end of this task.

- (b) If you do not find 28V DC, then examine the wiring as follows:

ENGINE-1

CH-A	EEC RECPT	STRUT RECPT	TERM BLOCK
	DP0303	DP0324/D30224	TB1802 (or TB1882)
	pin C	pin 9	term YA19 (or YA7)
CH-B	DP0404	DP0460/D30260	TB1802 (or TB1882)
	pin C	pin 33	term YB7 (or YA7)
CH-A	EEC		
	DP0303		
	pin B	GND	
CH-B	DP0404		
	pin B	GND	

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ENGINE-2

	EEC RECPT	STRUT RECPT	TERM BLOCK
CH-A	DP0303 pin C	DP0324/D30424 pin 9	TB602 (or TB606) term YB7 (or YA7)
CH-B	DP0404 pin C	DP0460/D30460 pin 33	TB602 (or TB606) term YB7 (or YA7)
CH-A	EEC DP0303 pin B	GND	
CH-B	DP0404 pin B	GND	

- 1) If you find a problem in the Wire Harness between the EEC Receptacle and the Strut Receptacle, replace the applicable CH-A (CH-B) Harness, MW0303 (MW0304). These are the tasks:
 - Nacelle Wiring Harnesses Removal, AMM TASK 71-51-03-000-801-F00
 - Nacelle Wiring Harnesses Installation, AMM TASK 71-51-03-400-801-F00
 - a) Do the Repair Confirmation at the end of this task.
- 2) If you find a problem in the wiring between the Strut Receptacle and the Terminal Block(s) or Ground, do the applicable tasks to repair or replace the wiring and/or connectors (SWPM Ch 20).
 - a) Do the Repair Confirmation at the end of this task.

G. Fault Isolation Procedure - Dual Channel Fault

- (1) Open the applicable ENG 1 (ENG 2) circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
A	1	C00458	ENGINE 1 IGNITION RIGHT
A	3	C00153	ENGINE 1 IGNITION LEFT
A	4	C01390	ENGINE 1 ALTN PWR CHAN B
A	5	C01314	ENGINE 1 ALTN PWR CHAN A
B	6	C01412	ENGINE 1 THRUST REVERSER INTLK

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
C	6	C01413	ENGINE 2 THRUST REVERSER INTLK
D	4	C00459	ENGINE 2 IGNITION RIGHT
D	6	C00151	ENGINE 2 IGNITION LEFT
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

- (2) Do this task: Open the Fan Cowl Panels, AMM TASK 71-11-02-010-801-F00.
- (3) Remove the Left Access Cover from the Overhead in the Nose Gear Wheel Well to get access to the Interlock Solenoid Connector, D10167 (D10169).

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- (4) See if the electrical connectors are correctly connected, and continue.
- (5) Visually examine the ENG-1 (ENG-2) T/R Interlock Solenoid Connectors (WDM 78-35-11, WDM 78-35-21):
 - (a) If the ENG-1 (ENG-2) Interlock Solenoid Connector is damaged, then replace the applicable Interlock Solenoid, V155 (V156). These are the tasks:
 - Reverse Thrust Interlock Solenoid Removal, AMM TASK 76-11-06-000-801-F00
 - Reverse Thrust Interlock Solenoid Installation, AMM TASK 76-11-06-440-801-F00
 - 1) Do the Repair Confirmation at the end of this task.
 - (b) If the ENG-1 (ENG-2) Wire Harness Electrical Connector, D10167 (D10169) is damaged, then do the applicable tasks to repair or replace the connector (SWPM Ch 20).
 - 1) Do the Repair Confirmation at the end of this task.
- (6) If a connector was not correctly connected, and no other problem was found, then re-connect the connector.
 - (a) Do the Repair Confirmation at the end of this task.
- (7) Disconnect the ENG-1 (ENG-2) T/R Interlock Solenoid Connector D10167 (D10169) (WDM 78-35-11, WDM 78-35-21).
- (8) Remove the safety tag and close the applicable ENG 1 (ENG 2) circuit breaker:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	6	C01412	ENGINE 1 THRUST REVERSER INTLK

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<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	6	C01413	ENGINE 2 THRUST REVERSER INTLK

- (9) Do a Voltage check as follows (WDM 78-35-11, WDM 78-35-21):

ENGINE-1

INTLK SOLENOID D10167	INTLK SOLENOID D10167	VOLTAGE
pin 2	pin 1	28V DC

ENGINE-2

INTLK SOLENOID D10169	INTLK SOLENOID D10169	VOLTAGE
pin 2	pin 1	28V DC

- (a) If you do not find 28V DC, then examine the wiring as follows:

ENGINE-1

INTLK SOL D10167	LCC-L (P18) D40802P
pin 2	pin 9

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ENGINE-2

INTLK SOL D10169 pin 2	LCC-R (P6) D40812P pin 16

- 1) Repair the problems that you find (SWPM Ch 20).
- 2) Do the Repair Confirmation at the end of this task.
- (b) If you find 28V DC, continue.
- (10) Do an electrical check of the ENG-1 (ENG-2) T/R Interlock Solenoid, V155 (V156) as follows:
 - (a) Install a jumper between pin 2 of the ENG-1 (ENG-2) Wire Harness Connector, D10167 (D10169) and pin 2 of the ENG-1 (ENG-2) T/R Interlock Solenoid Connector.
 - (b) Install a jumper between pin 3 of the ENG-1 (ENG-2) T/R Interlock Solenoid Connector and Structure Ground.

NOTE: You will hear an audible "click" as soon as the applicable circuit breaker is closed if the T/R Interlock moves.

- (c) Remove the safety tag and close the applicable ENG 1 (ENG 2) circuit breaker:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	6	C01412	ENGINE 1 THRUST REVERSER INTLK

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	6	C01413	ENGINE 2 THRUST REVERSER INTLK

- (d) Listen for the audible "click" of the T/R Interlock.
- NOTE:** The audible "click" is the indication that the interlock moved.
- 1) If you do not hear the audible "click", then replace the ENG-1 (ENG-2) T/R Interlock Solenoid, V155 (V156). These are the tasks:
 - Reverse Thrust Interlock Solenoid Removal, AMM TASK 76-11-06-000-801-F00
 - Reverse Thrust Interlock Solenoid Installation, AMM TASK 76-11-06-440-801-F00
 - a) Do the Repair Confirmation at the end of this task.
- 2) If you hear the audible "click", then continue.
- (11) Open the applicable ENG 1 (ENG 2) circuit breaker and install a safety tag:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	6	C01412	ENGINE 1 THRUST REVERSER INTLK

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	6	C01413	ENGINE 2 THRUST REVERSER INTLK

- (12) Examine the wiring as follows:

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ENGINE-1

INTLK V155

TERM BLOCK

D10167

TB1802 (or
TB1882)

pin 3 term YA19 (or YA7)

ENGINE-2

INTLK V156

TERM BLOCK

D10169

TB602 (or
TB606)

pin 3 term YB7 (or YA7)

- (a) Repair the problems that you find (SWPM Ch 20).
- (b) Do the Repair Confirmation at the end of this task.

H. Repair Confirmation

- (1) Make sure that the CH A (CH B) Electrical Connectors, DP0303 (DP0404) are correctly connected to the EEC, M1818 (WDM 78-35-11, WDM 78-35-21).
- (2) Make sure that the ENG-1 (ENG-2) T/R Interlock Solenoid Connector D10167 (D10169) is correctly connected to the applicable Interlock Solenoid (WDM 78-35-11, WDM 78-35-21).
- (3) Make sure that all connectors that were disconnected to do an electrical check are correctly connected.
- (4) Remove the safety tag and close the applicable ENG 1 (ENG 2) circuit breakers:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	1	C00458	ENGINE 1 IGNITION RIGHT
A	3	C00153	ENGINE 1 IGNITION LEFT
A	4	C01390	ENGINE 1 ALTN PWR CHAN B
A	5	C01314	ENGINE 1 ALTN PWR CHAN A
B	6	C01412	ENGINE 1 THRUST REVERSER INTLK

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	6	C01413	ENGINE 2 THRUST REVERSER INTLK
D	4	C00459	ENGINE 2 IGNITION RIGHT
D	6	C00151	ENGINE 2 IGNITION LEFT
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

- (5) Do this task: T/R LEVER INTLK (Interlock) TEST, AMM TASK 73-21-00-700-805-F00.
 - (a) If the maintenance message does not show, then you corrected the problem.
 - 1) Do this task: Close the Fan Cowl Panels, AMM TASK 71-11-02-410-801-F00.
 - (b) If the maintenance message still shows, do this step:

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- 1) Open the applicable ENG 1 (ENG 2) circuit breakers below and continue the Fault Isolation Procedure at the subsequent step:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	1	C00458	ENGINE 1 IGNITION RIGHT
A	3	C00153	ENGINE 1 IGNITION LEFT
A	4	C01390	ENGINE 1 ALTN PWR CHAN B
A	5	C01314	ENGINE 1 ALTN PWR CHAN A
B	6	C01412	ENGINE 1 THRUST REVERSER INTLK

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	6	C01413	ENGINE 2 THRUST REVERSER INTLK
D	4	C00459	ENGINE 2 IGNITION RIGHT
D	6	C00151	ENGINE 2 IGNITION LEFT
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

————— END OF TASK —————

808. EACH REVERSER SLEEVE HAS ONE POSITION SIGNAL OUT OF RANGE - Fault Isolation

A. Description

- (1) This task is for the EACH REVERSER SLEEVE HAS ONE POSITION SIGNAL OUT OF RANGE maintenance message with these associated message numbers:

- (a) 78-11541: ENG-1 EEC CH A fault
- (b) 78-11542: ENG-2 EEC CH A fault
- (c) 78-21541: ENG-1 EEC CH B fault
- (d) 78-21542: ENG-2 EEC CH B fault
- (e) 78-31541: ENG-1 EEC CH A and CH B fault

NOTE: If there is a Dual Channel maintenance message, then one T/R Sleeve on an engine has a Channel A fault and the other sleeve has a Channel B fault. Do the EEC BITE Procedure, 73-00 TASK 801 and review the RECENT FAULTS to find which channel on each sleeve has a fault.

- (f) 78-31542: ENG-2 EEC CH A and CH B Fault

NOTE: If there is a Dual Channel maintenance message, then one T/R Sleeve on an engine has a Channel A fault and the other sleeve has a Channel B fault. Do the EEC BITE Procedure, 73-00 TASK 801 and review the RECENT FAULTS to find which channel on each sleeve has a fault.

- (2) These maintenance messages show when the EEC has Electrical Power.
- (3) This maintenance message(s) is(are) set when one or more of the conditions that follow are true:
 - (a) The EEC senses that both the Left and Right T/R positions are less than -5.0 % or greater than 112.0 %.
 - (b) The EEC senses that both the Left and Right T/R position signal level of V1 or V2 are either less than 0.313 VRMS or greater than 7.205 VRMS.

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- (c) The EEC senses that the sum of the Left and Right T/R position signals V1, V2 is less than 2.0 VRMS or greater than 4.5 VRMS.
- (d) The EEC has an internal failure of its input circuitry.
- (e) For FADEC-2:
 - 1) Because the Channel A Excitation Circuit for the Left T/R position LVDT, VSV position LVDT and the VBV position LVDT are from a common source in the EEC, a short in one of the three Excitation Circuits can set Channel A maintenance messages for all three systems (FADEC2 CH A Excitation Group 3).
 - 2) Because the Channel A Excitation Circuit for the Right T/R position LVDT, HPT ACC position LVDT and the FMV position LVDT are from a common source in the EEC, a short in one of the three Excitation Circuits can set Channel A maintenance messages for all three systems (FADEC2 CH A Excitation Group 2).
 - 3) Because the Channel B Excitation Circuit for the Left T/R position LVDT, VSV position LVDT and the FMV position LVDT are from a common source in the EEC, a short in one of the three Excitation Circuits can set Channel B maintenance messages for all three systems. (FADEC2 CH B Excitation Group 2).
 - 4) Because the Channel B Excitation Circuit for the Right T/R position LVDT, HPT ACC position LVDT and the Transient Bleed Valve (TBV) position LVDT are from a common source in the EEC, a short in one of the three Excitation Circuits can set Channel B maintenance messages for all three systems. (FADEC2 CH B Excitation Group 4).
- (f) For FADEC-3:
 - 1) Because the Channel A Excitation Circuit for the Left T/R LVDT, HPT ACC LVDT, and the Right T/R LVDT are from a common source in the EEC, a short in one of the three Excitation Circuits can set Channel A maintenance messages for all three systems (FADEC3 CH A Excitation Group 3).
 - 2) Because the Channel B Excitation Circuit for the Left T/R LVDT, LPT ACC LVDT, and the Right T/R LVDT are from a common source in the EEC, a short in one of the three Excitation Circuits can set Channel B maintenance messages for all three systems (FADEC3 CH B Excitation Group 3).

B. Possible Causes

- (1) Left T/R LVDT, T396
- (2) Right T/R LVDT, T397
- (3) Wiring
- (4) EEC, M1818

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	1	C00458	ENGINE 1 IGNITION RIGHT
A	3	C00153	ENGINE 1 IGNITION LEFT
A	4	C01390	ENGINE 1 ALTN PWR CHAN B
A	5	C01314	ENGINE 1 ALTN PWR CHAN A
B	4	C01003	ENGINE 1 THRUST REVERSER IND
B	5	C00276	ENGINE 1 THRUST REVERSER CONT

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CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	6	C01412	ENGINE 1 THRUST REVERSER INTLK
B	7	C01266	ENGINE 1 THRUST REVERSER SYNC LOCK

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	5	C01267	ENGINE 2 THRUST REVERSER SYNC LOCK
C	6	C01413	ENGINE 2 THRUST REVERSER INTLK
C	7	C00277	ENGINE 2 THRUST REVERSER CONT
C	8	C01004	ENGINE 2 THRUST REVERSER IND
D	4	C00459	ENGINE 2 IGNITION RIGHT
D	6	C00151	ENGINE 2 IGNITION LEFT
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

D. Related Data

- (1) Component Location (78-36 TASK SUPPORT Figure 301, 78-36 TASK SUPPORT Figure 304)
- (2) Simplified Schematic (78-36 TASK SUPPORT Figure 304)
- (3) WDM 78-35-11
- (4) WDM 78-35-21
- (5) SSM 78-35-11
- (6) SSM 78-35-21

E. Initial Evaluation

- (1) Do the FADEC 2 or FADEC 3 Identification, AMM TASK 73-21-00-700-810-F00 to find the FADEC version.
- (2) Do the EEC BITE Procedure, 73-00 TASK 801.
 - (a) FADEC-2:
 - 1) If two or more of the maintenance messages in the groups indicated below also show, then do the applicable FIM Task:

NOTE: These messages can be caused by a short in the shared Excitation Circuit for the Left T/R Sleeve, the Right T/R Sleeve, the VSV, the VBV, the FMV, or the HPT ACC. For more information refer to the Description Section.

 - a) 78-11541, 78-31541, 75-10391, 75-10441 (Engine 1, CH A): Do this task: FADEC2 (Ch A) Excitation Group 3: VSV, VBV and T/R L Sleeve LVDT Excitation Circuit Fault - Fault Isolation, 75-34 TASK 805.
 - b) 78-11542, 78-31542, 75-10392, 75-10442 (Engine 2, CH A): Do this task: FADEC2 (Ch A) Excitation Group 3: VSV, VBV and T/R L Sleeve LVDT Excitation Circuit Fault - Fault Isolation, 75-34 TASK 805.
 - c) 78-21541, 78-31541, 73-20341, 75-20391 (Engine 1, CH B): Do this task: FADEC2 (Ch B) Excitation Group 2: FMV, VSV and T/R L Sleeve LVDT Excitation Circuit Fault - Fault Isolation, 75-34 TASK 806.

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- d) 78-21542, 78-31542, 73-20342, 75-20392 (Engine 2, CH B): Do this task: FADEC2 (Ch B) Excitation Group 2: FMV, VSV and T/R L Sleeve LVDT Excitation Circuit Fault - Fault Isolation, 75-34 TASK 806.
- e) 78-21541, 78-31541, 73-20341, 75-20361 (Engine 1, CH A): Do this task: FADEC2 (Ch A) Excitation Group 2: FMV, HPTC and T/R R Sleeve LVDT Excitation Circuit Fault - Fault Isolation, 75-34 TASK 807.
- f) 78-21542, 78-31542, 73-20342, 75-20362 (Engine 2, CH A): Do this task: FADEC2 (Ch A) Excitation Group 2: FMV, HPTC and T/R R Sleeve LVDT Excitation Circuit Fault - Fault Isolation, 75-34 TASK 807.
- g) 78-21541, 78-31541, 75-20361, 75-20591 (Engine 1, CH B): Do this task: FADEC2 (Ch B) Excitation Group 4: HPTC, TBV and T/R R Sleeve LVDT Excitation Circuit Fault - Fault Isolation, 75-34 TASK 808.
- h) 78-21542, 78-31542, 73-20362, 75-20592 (Engine 2, CH B): Do this task: FADEC2 (Ch B) Excitation Group 4: HPTC, TBV and T/R R Sleeve LVDT Excitation Circuit Fault - Fault Isolation, 75-34 TASK 808.

(b) FADEC-3:

- 1) If two or more of the maintenance messages in the groups indicated below also show, then do the applicable FIM Task:

NOTE: These messages can be caused by a short in the Excitation Circuit for the LVDT of the Left T/R LVDT, the LPT ACC, the HPT ACC or the Right T/R. For more information refer to the Description Section.

- a) 75-10361, 78-11541, 78-31541 (Engine 1, CH A): Do this task: FADEC3 (Ch A) Excitation Group 3: HPTACC, L and R T/R LVDT Excitation Circuit Fault - Fault Isolation, 75-34 TASK 818.
 - b) 75-10362, 78-11542, 78-31542 (Engine 2, CH A): Do this task: FADEC3 (Ch A) Excitation Group 3: HPTACC, L and R T/R LVDT Excitation Circuit Fault - Fault Isolation, 75-34 TASK 818.
 - c) 75-20541, 78-21541, 78-31541 (Engine 1, CH B): Do this task: FADEC3 (Ch B) Excitation Group 3: LPTACC, L and R T/R LVDT Excitation Circuit Fault - Fault Isolation, 75-34 TASK 815.
 - d) 75-20542, 78-21542, 78-31542 (Engine 2, CH B): Do this task: FADEC3 (Ch B) Excitation Group 3: LPTACC, L and R T/R LVDT Excitation Circuit Fault - Fault Isolation, 75-34 TASK 815.
- (c) If only maintenance messages indicated in the Description of this Task show, then do this task: EEC TEST, AMM TASK 73-21-00-700-804-F00.
- 1) If a single CH A or CH B maintenance message shows, then do the Fault Isolation Procedure - Single Channel Fault below.
 - 2) If a Dual Channel maintenance message shows, then do the Fault Isolation Procedure - Dual Channel Fault below.
 - 3) If the maintenance message does not show on the FMCS CDU, then it is not active at this time and you have an intermittent problem.

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F. Fault Isolation Procedure - Single Channel Fault

- (1) Open the applicable ENG 1 (ENG 2) circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
A	1	C00458	ENGINE 1 IGNITION RIGHT
A	3	C00153	ENGINE 1 IGNITION LEFT
A	4	C01390	ENGINE 1 ALTN PWR CHAN B
A	5	C01314	ENGINE 1 ALTN PWR CHAN A
B	4	C01003	ENGINE 1 THRUST REVERSER IND
B	5	C00276	ENGINE 1 THRUST REVERSER CONT
B	6	C01412	ENGINE 1 THRUST REVERSER INTLK
B	7	C01266	ENGINE 1 THRUST REVERSER SYNC LOCK

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
C	5	C01267	ENGINE 2 THRUST REVERSER SYNC LOCK
C	6	C01413	ENGINE 2 THRUST REVERSER INTLK
C	7	C00277	ENGINE 2 THRUST REVERSER CONT
C	8	C01004	ENGINE 2 THRUST REVERSER IND
D	4	C00459	ENGINE 2 IGNITION RIGHT
D	6	C00151	ENGINE 2 IGNITION LEFT
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

- (2) For the applicable ENG-1 (ENG-2), examine the CH A (CH B) Wire Harness MW0303 (MW0304) and connectors at the EEC and Left (Right) T/R Sleeve as follows (WDM 78-35-11, WDM 78-35-21):
- CH A EEC Connector: DP0303
 - CH B EEC Connector: DP0404
 - Left T/R Sleeve CH A LVDT Connector: D30072
 - Left T/R Sleeve CH B LVDT Connector: D30076
 - Right T/R Sleeve CH A LVDT Connector: D30074
 - Right T/R Sleeve CH B LVDT Connector: D30078
- (a) Disconnect the CH A (CH B) electrical connector from the applicable T/R Sleeve LVDT, T396 (T397).
- (b) Visually examine the applicable CH A (CH B) electrical connector at the LVDT:
- NOTE:** There is an LVDT on each of the Upper Locking Actuators on the Torque Box of the Left and Right T/R of each engine.
- 1) If the LVDT Receptacle is damaged, then replace the applicable LVDT, T396 (T397). These are the tasks:
 - LVDT Removal, AMM TASK 78-36-02-000-801-F00
 - LVDT Installation, AMM TASK 78-36-02-400-801-F00
 - a) Do the Repair Confirmation at the end of this task.
 - 2) If the wire harness connector is damaged, then do the applicable tasks to repair or replace the CH A (CH B) connector (SWPM Ch 20).

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- a) Do the Repair Confirmation at the end of this task.
- (c) Disconnect the CH A (CH B) connector DP0303 (DP0404), from the EEC, M1818.
- (d) Visually examine the applicable EEC Receptacle and wire harness connector (Standard Engine Wiring and Equipment Check, AMM TASK 70-70-01-200-801-F00).
 - 1) If an EEC Receptacle is damaged, then replace the EEC, M1818. These are the tasks:
 - EEC Removal, AMM TASK 73-21-60-000-801-F00
 - EEC Installation, AMM TASK 73-21-60-400-801-F00
 - a) Do the Repair Confirmation at the end of this task.
 - 2) If a wire harness connector is damaged, then replace the applicable CH A (CH B) Wire Harness, MW0303 (MW0304). These are the tasks:
 - Nacelle Wiring Harnesses Removal, AMM TASK 71-51-03-000-801-F00
 - Nacelle Wiring Harnesses Installation, AMM TASK 71-51-03-400-801-F00
 - a) Do the Repair Confirmation at the end of this task.
 - 3) If a connector was not correctly connected and no other problem was found, then re-connect the connector and do the Repair Confirmation at the end of this task.
- (3) Examine the applicable ENG-1 Left (Right) T/R Sleeve LVDT or (ENG-2) Left (Right) T/R Sleeve LVDT (WDM 78-35-11, WDM 78-35-21).
 - (a) For the Left or Right T/R Sleeve LVDT, disconnect the applicable CH A (CH B) connector:
 - Left T/R Sleeve CH A Connector: D30072
 - Left T/R Sleeve CH B Connector: D30076
 - Right T/R Sleeve CH A Connector: D30074
 - Right T/R Sleeve CH B Connector: D30078
 - (b) Measure the Resistance at the applicable LVDT Receptacle as follows:

NOTE: If the Ambient Temperature is different than 70°F (21°C), use the indicated formulas in the table below to calculate the acceptable Resistance Range at Ambient Temperature T (in °C only).

Calculate the range for each value of R, where Range = $R \pm 15\%$.

CH A or CH B

pin	pin	RESISTANCE
1	2	$R = 450 ((234.5+T)/ 254.5)$
3	5	$R = 93 ((234.5+T)/ 254.5)$
5	4	$R = 53 ((234.5+T)/ 254.5)$

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L or R T/R SLEEVE LVDT RECEPTACLE	L or R T/R SLEEVE LVDT RECEPTACLE	RESISTANCE (70 °F, 21 °C)
pin 1	pin 2	383 - 517 Ω
pin 3	pin 5	79 - 107 Ω
pin 5	pin 4	45 - 61 Ω
pin 1	GND	> 10 MΩ
pin 3	GND	> 10 MΩ
pin 1	pin 5	> 10 MΩ

- 1) If the LVDT Resistances are not in the specified range, then replace the applicable LVDT, T396 (T397). These are the tasks:
 - LVDT Removal, AMM TASK 78-36-02-000-801-F00
 - LVDT Installation, AMM TASK 78-36-02-400-801-F00
 - a) Do the Repair Confirmation at the end of this task.
- 2) If the LVDT Resistances are in the specified range, then do the applicable wiring checks as follows (WDM 78-35-11, WDM 78-35-21):

LEFT T/R SLEEVE, CH A

EEC DP0303	LVDT D30072
pin y	pin 1
pin GG	pin 2
pin BB	pin 3
pin u	pin 5
pin CC	pin 4

LEFT T/R SLEEVE, CH B

EEC DP0404	LVDT D30076
pin AA	pin 1
pin GG	pin 2
pin x	pin 3
pin u	pin 5
pin y	pin 4

RIGHT T/R SLEEVE, CH A

EEC DP0303	LVDT D30074
pin e	pin 1
pin f	pin 2
pin n	pin 3
pin q	pin 5
pin p	pin 4

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RIGHT T/R SLEEVE, CH B

EEC	LVDT
DP0404	D30078
pin e	pin 1
pin f	pin 2
pin m	pin 3
pin p	pin 5
pin n	pin 4

- a) If you find a problem, repair or replace the applicable wire harness as necessary (SWPM Ch 20).
 - Nacelle Wiring Harnesses Removal, AMM TASK 71-51-03-000-801-F00
 - Nacelle Wiring Harnesses Installation, AMM TASK 71-51-03-400-801-F00
- <1> Do the Repair Confirmation at the end of this task.
- (4) Replace the Left (Right) T/R LVDT, T396 (T397). These are the tasks:
 - LVDT Removal, AMM TASK 78-36-02-000-801-F00
 - LVDT Installation, AMM TASK 78-36-02-400-801-F00
- (a) Do the Repair Confirmation at the end of this task.
- (5) Replace the EEC, M1818. These are the tasks:
 - EEC Removal, AMM TASK 73-21-60-000-801-F00
 - EEC Installation, AMM TASK 73-21-60-400-801-F00
- (a) Do the Repair Confirmation at the end of this task.

G. Fault Isolation Procedure - Dual Channel Fault

- (1) Do the EEC BITE Procedure, 73-00 TASK 801 and look for long time faults.

NOTE: Because this is a Dual Channel maintenance message, the LVDT on one Thrust Reverser Sleeve on an engine has a Channel A Fault and the LVDT on the other sleeve has a Channel B Fault. When you identify which LVDT Channel has a fault on one of the two sleeves, then the LVDT on the other sleeve has a fault in the opposite channel.

- (a) For Engine 1, look for these messages:
 - 1) If you find 78-11481 (CH A) or 78-21491 (CH B):
 - a) Do the Fault Isolation Procedure for Channel A for the Left T/R Sleeve and Channel B for the Right T/R Sleeve.
 - 2) If you find 78-21481 (CH B) or 78-11491 (CH A):
 - a) Do the Fault Isolation Procedure for Channel B for the Left T/R Sleeve and Channel A for the Right T/R Sleeve.
- (b) For Engine 2, look for these messages:
 - 1) If you find 78-11482 (CH A) or 78-21492 (CH B):
 - a) Do the Fault Isolation Procedure for Channel A for the Left T/R Sleeve and Channel B for the Right T/R Sleeve.
 - 2) If you find 78-21482 (CH B) or 78-11492 (CH A):
 - a) Do the Fault Isolation Procedure for Channel B for the Left T/R Sleeve and Channel A for the Right T/R Sleeve.

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- (2) Open the applicable ENG 1 (ENG 2) circuit breakers and install safety tags:

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<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	1	C00458	ENGINE 1 IGNITION RIGHT
A	3	C00153	ENGINE 1 IGNITION LEFT
A	4	C01390	ENGINE 1 ALTN PWR CHAN B
A	5	C01314	ENGINE 1 ALTN PWR CHAN A
B	4	C01003	ENGINE 1 THRUST REVERSER IND
B	5	C00276	ENGINE 1 THRUST REVERSER CONT
B	6	C01412	ENGINE 1 THRUST REVERSER INTLK
B	7	C01266	ENGINE 1 THRUST REVERSER SYNC LOCK

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	5	C01267	ENGINE 2 THRUST REVERSER SYNC LOCK
C	6	C01413	ENGINE 2 THRUST REVERSER INTLK
C	7	C00277	ENGINE 2 THRUST REVERSER CONT
C	8	C01004	ENGINE 2 THRUST REVERSER IND
D	4	C00459	ENGINE 2 IGNITION RIGHT
D	6	C00151	ENGINE 2 IGNITION LEFT
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

- (a) Do this task: Open the Fan Cowl Panels, AMM TASK 71-11-02-010-801-F00.
- (3) For the applicable ENG-1 (ENG-2), examine the CH A (CH B) Wire Harness MW0303 (MW0304) and connectors at the EEC and Left (Right) T/R Sleeve as follows (WDM 78-35-11, WDM 78-35-21):
- CH A EEC Connector: DP0303
 - CH B EEC Connector: DP0404
 - Left T/R Sleeve CH A LVDT Connector: D30072
 - Left T/R Sleeve CH B LVDT Connector: D30076
 - Right T/R Sleeve CH A LVDT Connector: D30074
 - Right T/R Sleeve CH B LVDT Connector: D30078
- (a) Disconnect the CH A (CH B) electrical connector from the applicable T/R Sleeve LVDT, T396 (T397).
- (b) Visually examine the applicable CH A (CH B) electrical connector at the LVDT:
- NOTE:** There is an LVDT on each of the Upper Locking Actuators on the Torque Box of the Left and Right T/R of each engine.
- 1) If the LVDT Receptacle is damaged, then replace the applicable LVDT, T396 (T397). These are the tasks:
 - LVDT Removal, AMM TASK 78-36-02-000-801-F00
 - LVDT Installation, AMM TASK 78-36-02-400-801-F00
 - a) Do the Repair Confirmation at the end of this task.
 - 2) If the wire harness connector is damaged, then do the applicable tasks to repair or replace the CH A (CH B) connector (SWPM Ch 20).

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- a) Do the Repair Confirmation at the end of this task.
- (c) Disconnect the CH A (CH B) connector DP0303 (DP0404), from the EEC, M1818.
- (d) Visually examine the applicable EEC Receptacle and wire harness connector (Standard Engine Wiring and Equipment Check, AMM TASK 70-70-01-200-801-F00).
 - 1) If an EEC Receptacle is damaged, then replace the EEC, M1818. These are the tasks:
 - EEC Removal, AMM TASK 73-21-60-000-801-F00
 - EEC Installation, AMM TASK 73-21-60-400-801-F00
 - a) Do the Repair Confirmation at the end of this task.
 - 2) If a wire harness connector is damaged, then replace the applicable CH A (CH B) Wire Harness, MW0303 (MW0304). These are the tasks:
 - Nacelle Wiring Harnesses Removal, AMM TASK 71-51-03-000-801-F00
 - Nacelle Wiring Harnesses Installation, AMM TASK 71-51-03-400-801-F00
 - a) Do the Repair Confirmation at the end of this task.
 - 3) If a connector was not correctly connected and no other problem was found, then re-connect the connector and do the Repair Confirmation at the end of this task.
- (4) Examine the applicable ENG-1 Left (Right) T/R Sleeve LVDT or (ENG-2) Left (Right) T/R Sleeve LVDT (WDM 78-35-11, WDM 78-35-21).
 - (a) For the Left or Right T/R Sleeve LVDT, disconnect the applicable CH A (CH B) connector:
 - Left T/R Sleeve CH A Connector: D30072
 - Left T/R Sleeve CH B Connector: D30076
 - Right T/R Sleeve CH A Connector: D30074
 - Right T/R Sleeve CH B Connector: D30078
 - (b) Measure the Resistance at the applicable LVDT Receptacle as follows:

NOTE: If the Ambient Temperature is different than 70°F (21°C), use the indicated formulas in the table below to calculate the acceptable Resistance Range at Ambient Temperature T (in °C only).

Calculate the range for each value of R, where Range = $R \pm 15\%$.

CH A or CH B

pin	pin	RESISTANCE
1	2	$R = 450 ((234.5+T)/ 254.5)$
3	5	$R = 93 ((234.5+T)/ 254.5)$
5	4	$R = 53 ((234.5+T)/ 254.5)$

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L or R T/R SLEEVE LVDT RECEPTACLE	L or R T/R SLEEVE LVDT RECEPTACLE	RESISTANCE (70 °F, 21 °C)
pin 1	pin 2	383 - 517 Ω
pin 3	pin 5	79 - 107 Ω
pin 5	pin 4	45 - 61 Ω
pin 1	GND	> 10 MΩ
pin 3	GND	> 10 MΩ
pin 1	pin 5	> 10 MΩ

- 1) If the LVDT Resistances are not in the specified range, then replace the applicable LVDT, T396 (T397). These are the tasks:
 - LVDT Removal, AMM TASK 78-36-02-000-801-F00
 - LVDT Installation, AMM TASK 78-36-02-400-801-F00
 - a) Do the Repair Confirmation at the end of this task.
- 2) If the LVDT Resistances are in the specified range, then do the applicable wiring checks as follows (WDM 78-35-11, WDM 78-35-21):

LEFT T/R SLEEVE, CH A

EEC DP0303	LVDT D30072
pin y	pin 1
pin GG	pin 2
pin BB	pin 3
pin u	pin 5
pin CC	pin 4

LEFT T/R SLEEVE, CH B

EEC DP0404	LVDT D30076
pin AA	pin 1
pin GG	pin 2
pin x	pin 3
pin u	pin 5
pin y	pin 4

RIGHT T/R SLEEVE, CH A

EEC DP0303	LVDT D30074
pin e	pin 1
pin f	pin 2
pin n	pin 3
pin q	pin 5
pin p	pin 4

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RIGHT T/R SLEEVE, CH B

EEC	LVDT
DP0404	D30078
pin e	pin 1
pin f	pin 2
pin m	pin 3
pin p	pin 5
pin n	pin 4

- a) If you find a problem, repair or replace the applicable wire harness as necessary (SWPM Ch 20).
 - Nacelle Wiring Harnesses Removal, AMM TASK 71-51-03-000-801-F00
 - Nacelle Wiring Harnesses Installation, AMM TASK 71-51-03-400-801-F00
- <1> Do the Repair Confirmation at the end of this task.
- (5) Replace the Left (Right) T/R LVDT, T396 (T397). These are the tasks:
 - LVDT Removal, AMM TASK 78-36-02-000-801-F00
 - LVDT Installation, AMM TASK 78-36-02-400-801-F00
- (a) Do the Repair Confirmation at the end of this task.
- (6) Replace the Left (Right) T/R Sleeve LVDT, T396 (T397). These are the tasks:
 - LVDT Removal, AMM TASK 78-36-02-000-801-F00
 - LVDT Installation, AMM TASK 78-36-02-400-801-F00
- (a) Do the Repair Confirmation at the end of this task.
- (7) Replace the EEC, M1818. These are the tasks:
 - EEC Removal, AMM TASK 73-21-60-000-801-F00
 - EEC Installation, AMM TASK 73-21-60-400-801-F00
- (a) Do the Repair Confirmation at the end of this task.

H. Repair Confirmation

- (1) Make sure that the electrical connectors DP0303 (CH A) and DP0404 (CH B) are correctly connected to the EEC, M1818:
 - (a) Make sure that the Left T/R Sleeve electrical connectors, D30072 (CH A) and D30076 (CH B) are correctly connected to the LVDT, T396.
 - (b) Make sure that the Right T/R Sleeve electrical connectors, D30074 (CH A) and D30078 (CH B) are correctly connected to the LVDT, T397.
 - (c) Remove the safety tag and close the applicable ENG 1 (ENG 2) circuit breakers:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
A	1	C00458	ENGINE 1 IGNITION RIGHT
A	3	C00153	ENGINE 1 IGNITION LEFT
A	4	C01390	ENGINE 1 ALTN PWR CHAN B
A	5	C01314	ENGINE 1 ALTN PWR CHAN A
B	4	C01003	ENGINE 1 THRUST REVERSER IND
B	5	C00276	ENGINE 1 THRUST REVERSER CONT

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CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	6	C01412	ENGINE 1 THRUST REVERSER INTLK
B	7	C01266	ENGINE 1 THRUST REVERSER SYNC LOCK

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	5	C01267	ENGINE 2 THRUST REVERSER SYNC LOCK
C	6	C01413	ENGINE 2 THRUST REVERSER INTLK
C	7	C00277	ENGINE 2 THRUST REVERSER CONT
C	8	C01004	ENGINE 2 THRUST REVERSER IND
D	4	C00459	ENGINE 2 IGNITION RIGHT
D	6	C00151	ENGINE 2 IGNITION LEFT
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

- (2) Do this task: EEC TEST, AMM TASK 73-21-00-700-804-F00.
- (a) If the maintenance message does not show, then you corrected the problem.
- 1) Do this task: Close the Fan Cowl Panels, AMM TASK 71-11-02-410-801-F00.
- (b) If the maintenance message still shows, do this step:
- 1) Open the applicable ENG 1 (ENG 2) circuit breakers below and continue the Fault Isolation Procedure at the subsequent step:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	1	C00458	ENGINE 1 IGNITION RIGHT
A	3	C00153	ENGINE 1 IGNITION LEFT
A	4	C01390	ENGINE 1 ALTN PWR CHAN B
A	5	C01314	ENGINE 1 ALTN PWR CHAN A
B	4	C01003	ENGINE 1 THRUST REVERSER IND
B	5	C00276	ENGINE 1 THRUST REVERSER CONT
B	6	C01412	ENGINE 1 THRUST REVERSER INTLK
B	7	C01266	ENGINE 1 THRUST REVERSER SYNC LOCK

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	5	C01267	ENGINE 2 THRUST REVERSER SYNC LOCK
C	6	C01413	ENGINE 2 THRUST REVERSER INTLK
C	7	C00277	ENGINE 2 THRUST REVERSER CONT
C	8	C01004	ENGINE 2 THRUST REVERSER IND
D	4	C00459	ENGINE 2 IGNITION RIGHT
D	6	C00151	ENGINE 2 IGNITION LEFT
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

- (3) Do this task: Close the Fan Cowl Panels, AMM TASK 71-11-02-410-801-F00.

————— **END OF TASK** —————

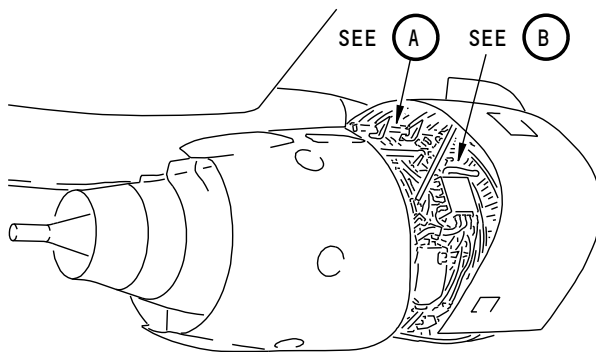
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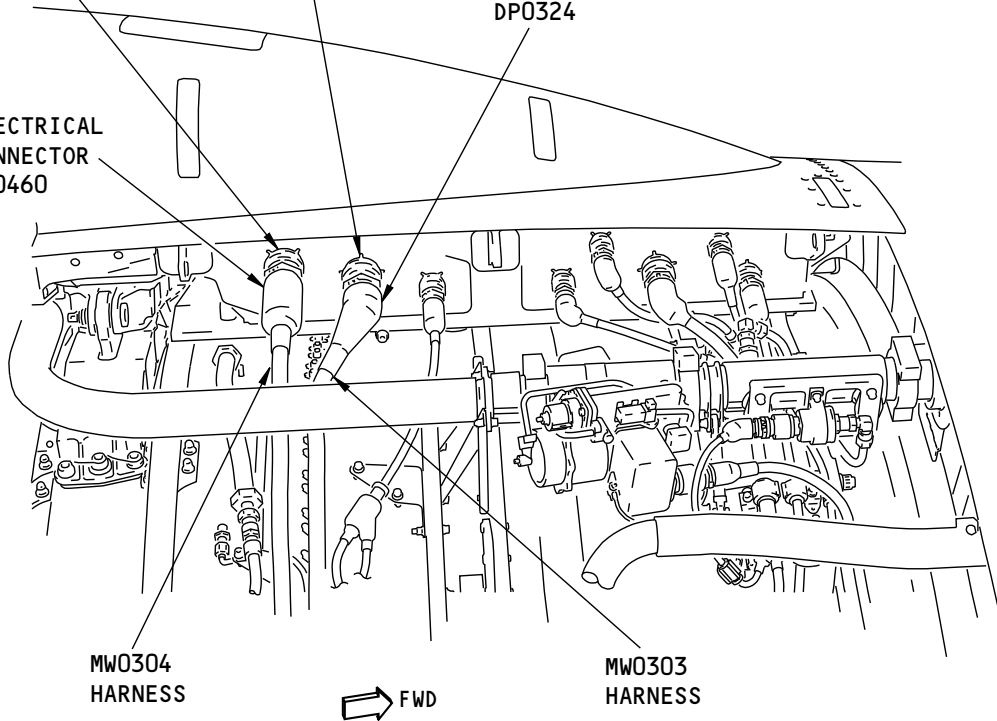


STRUT RECEPTACLE
D30260 (ENG 1)
D30460 (ENG 2)

STRUT RECEPTACLE
D30224 (ENG 1)
D30424 (ENG 2)

ELECTRICAL
CONNECTOR
DP0324

ELECTRICAL
CONNECTOR
DP0460



A

H35167 S0006746525_V1

Electronic Engine Control Electrical Connectors
Figure 301/78-36-00-990-801-F00 (Sheet 1 of 2)

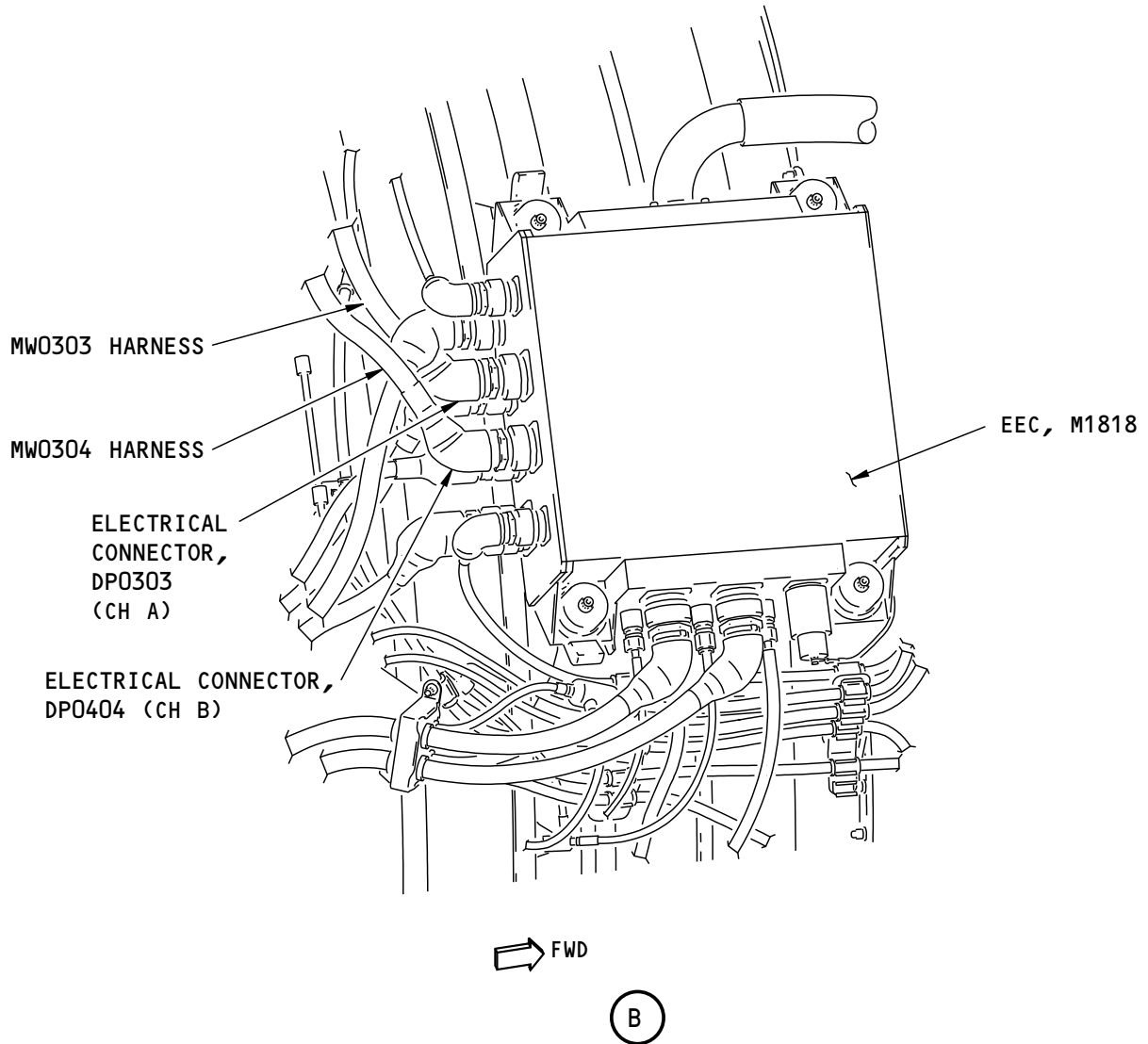
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H32837 S0006746526_V1

**Electronic Engine Control Electrical Connectors
Figure 301/78-36-00-990-801-F00 (Sheet 2 of 2)**

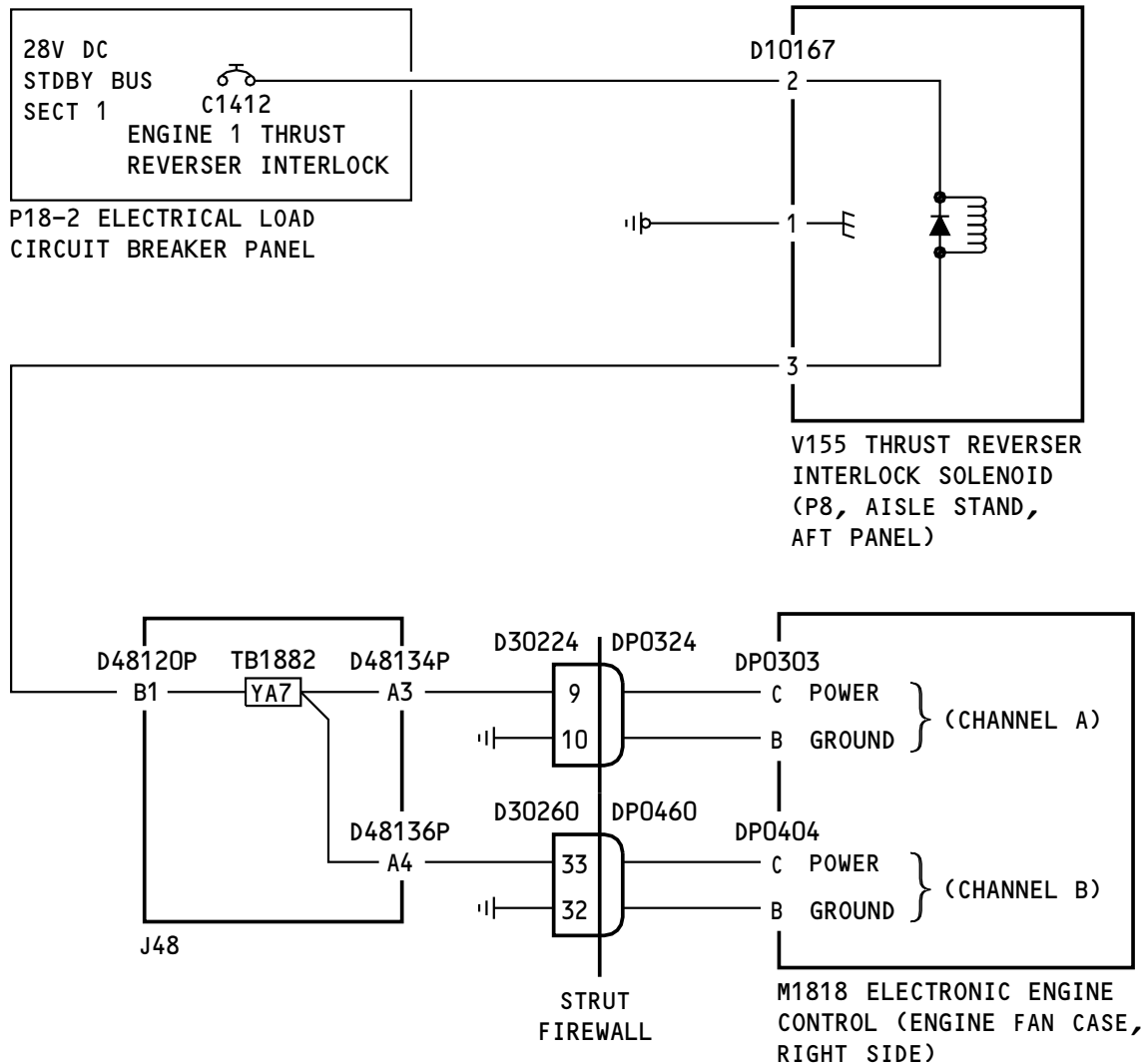
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H34723 S0006746527_V1

Engine 1 Thrust Reverser Interlock Solenoid Simplified Schematic
Figure 302/78-36-00-990-802-F00

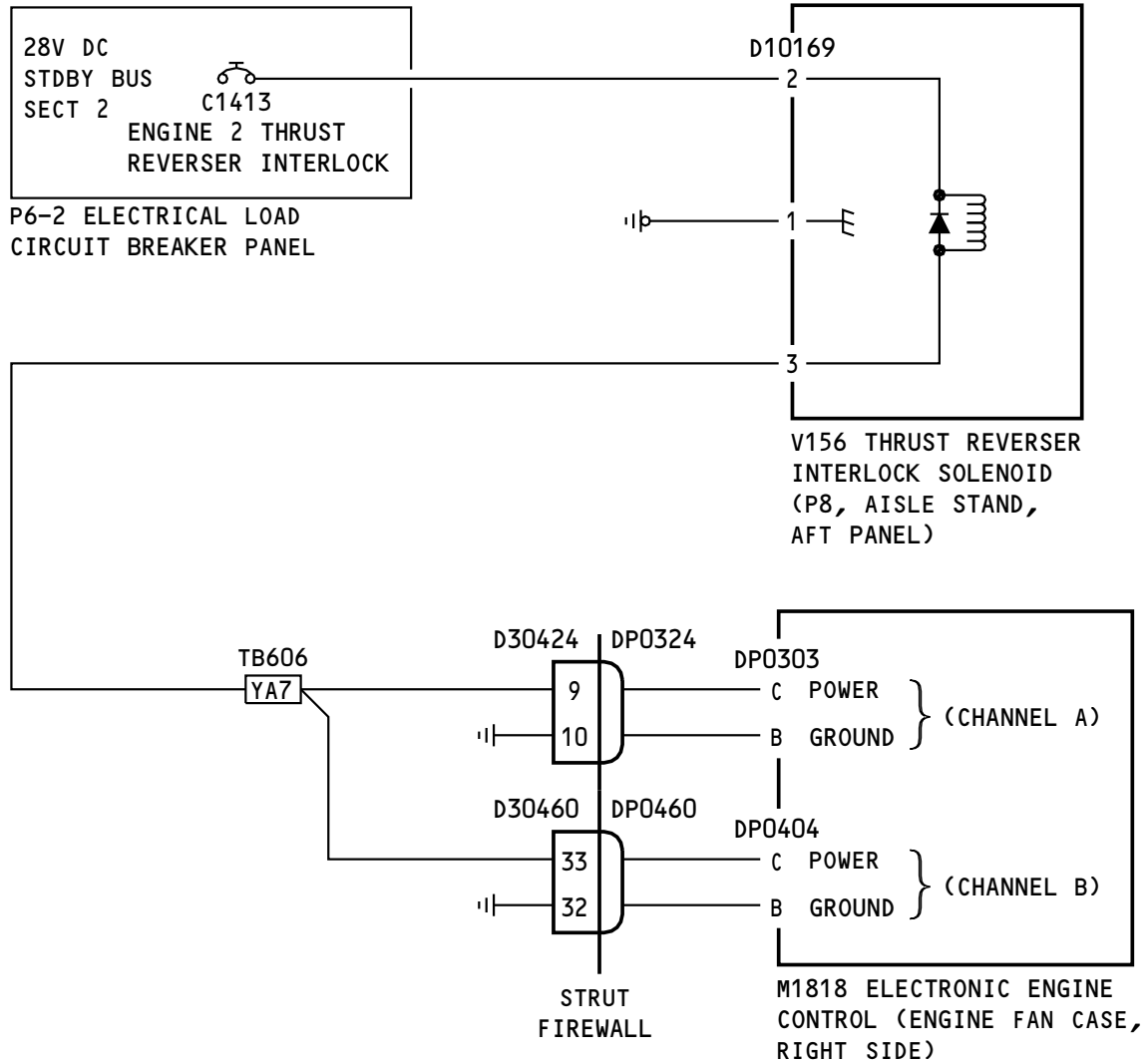
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H34847 S0006746529_V1

Engine 2 Thrust Reverser Interlock Solenoid Simplified Schematic
Figure 303/78-36-00-990-804-F00

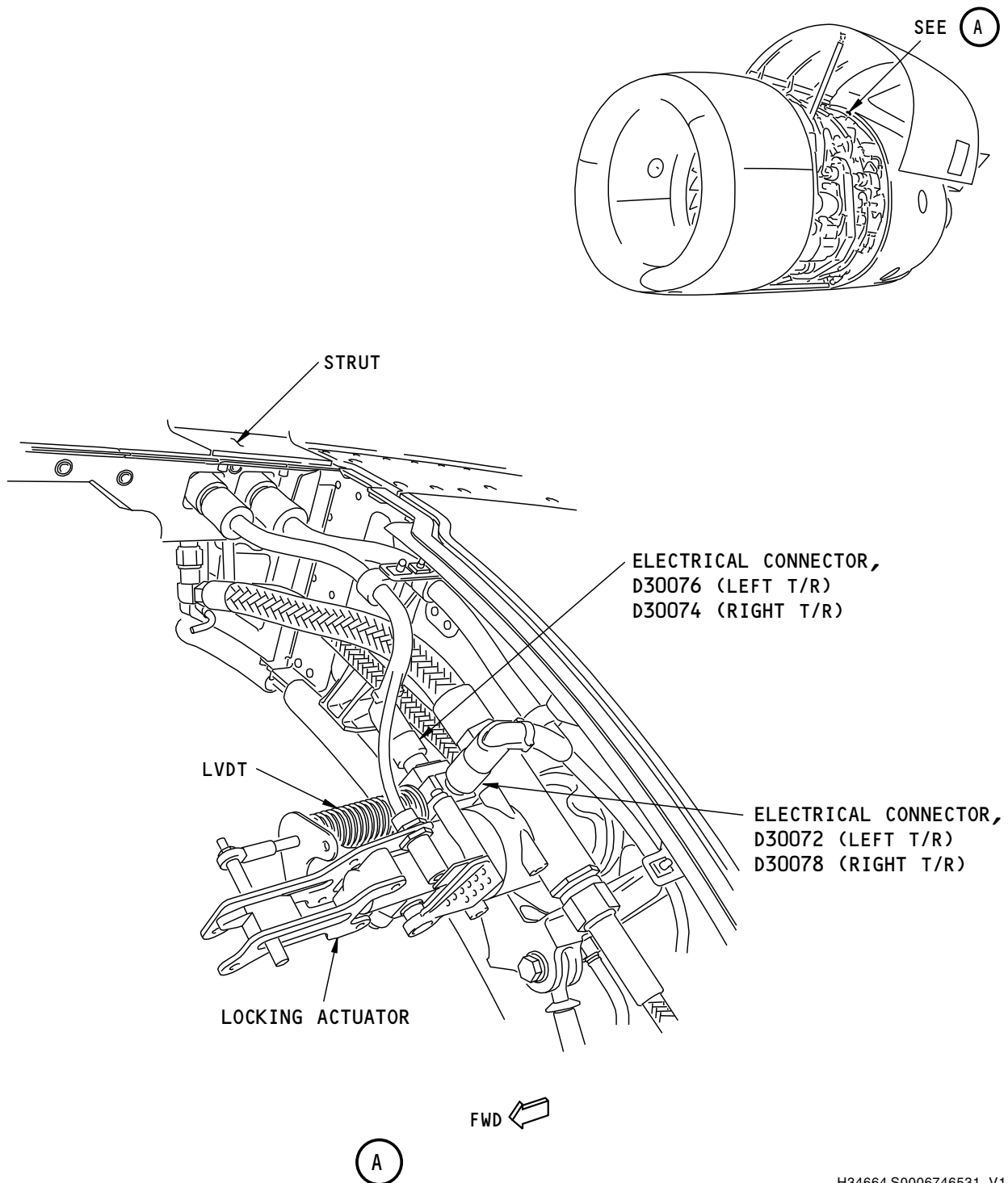
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H34664 S0006746531_V1

Thrust Reverser LVDT and Simplified Schematic (Engine 1 and 2)
Figure 304/78-36-00-990-806-F00 (Sheet 1 of 2)

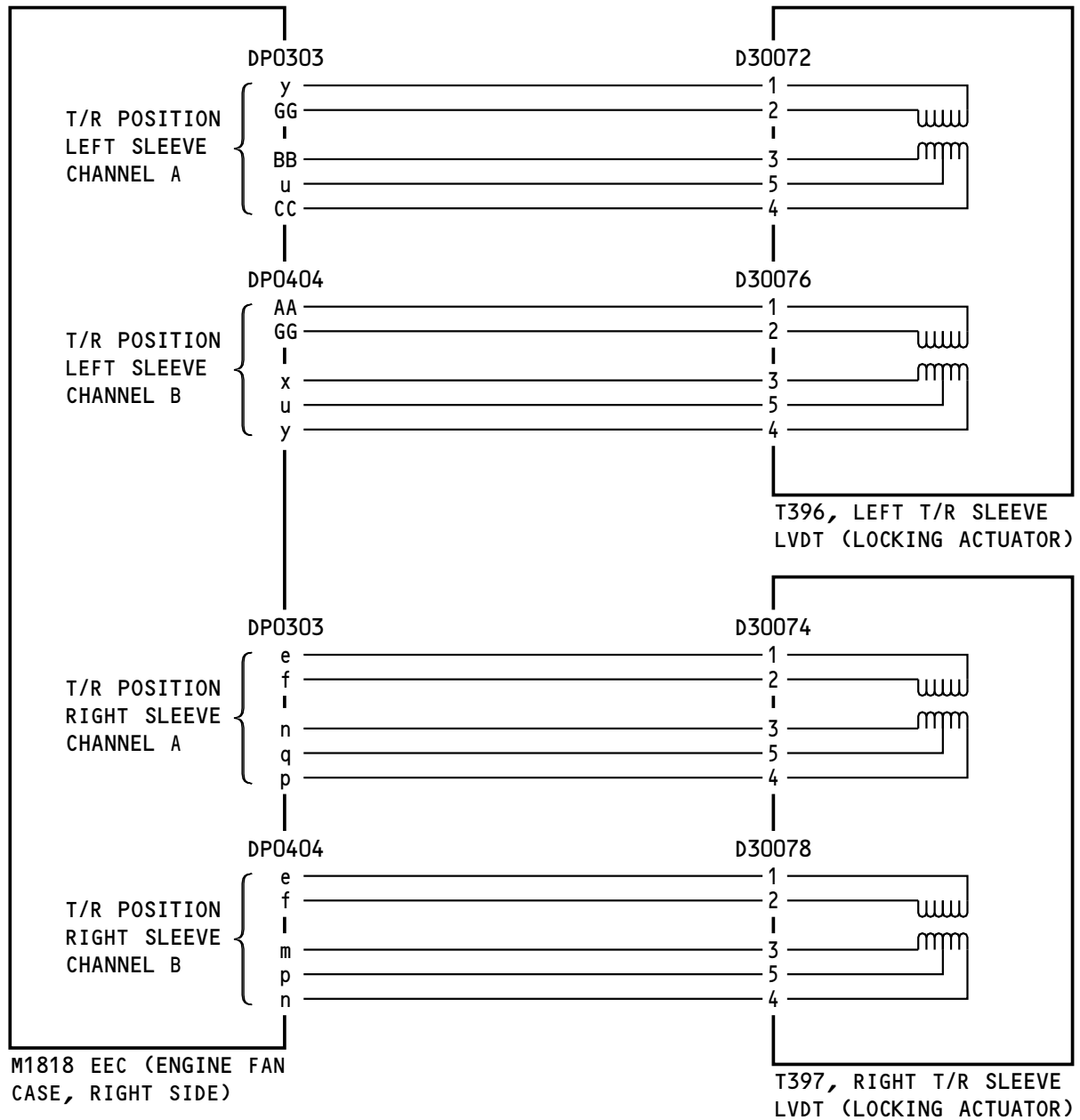
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NOTE: THE WDM/SSM ADD A DASH TO THE PIN NUMBER TO DENOTE A LOWER CASE PIN, SUCH AS A- = a.

1418167 S0000252611_V2

Thrust Reverser LVDT and Simplified Schematic (Engine 1 and 2)
Figure 304/78-36-00-990-806-F00 (Sheet 2 of 2)

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