

CHAPTER

78

EXHAUST

(CFM56 ENGINES (CFM56-7))

**737-600/700/800/900
FAULT ISOLATION MANUAL**
**CHAPTER 78
EXHAUST**

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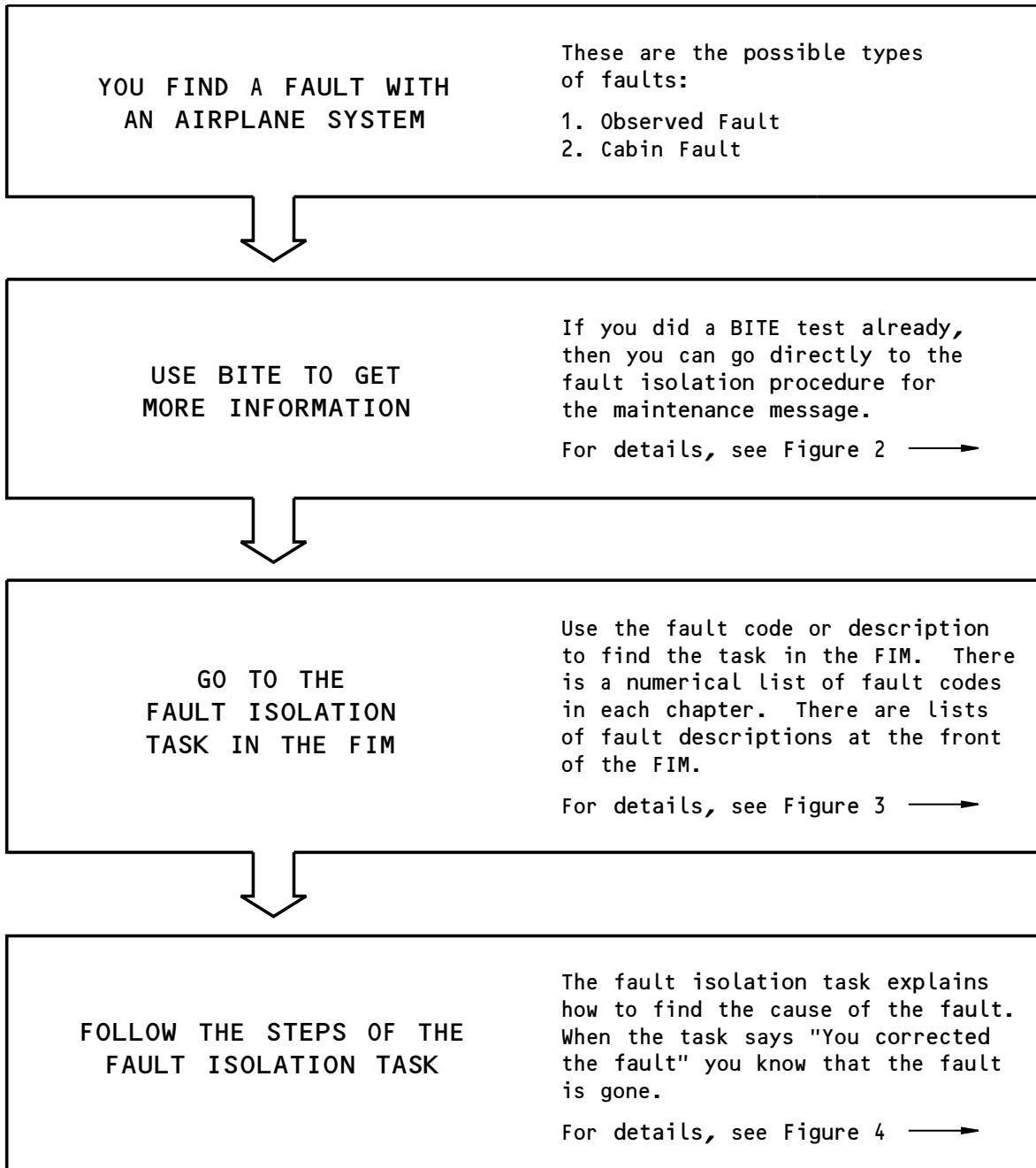
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G04902 S0000148576_V1

**Basic Fault Isolation Process
Figure 1**

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78-HOW TO USE THE FIM

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

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.

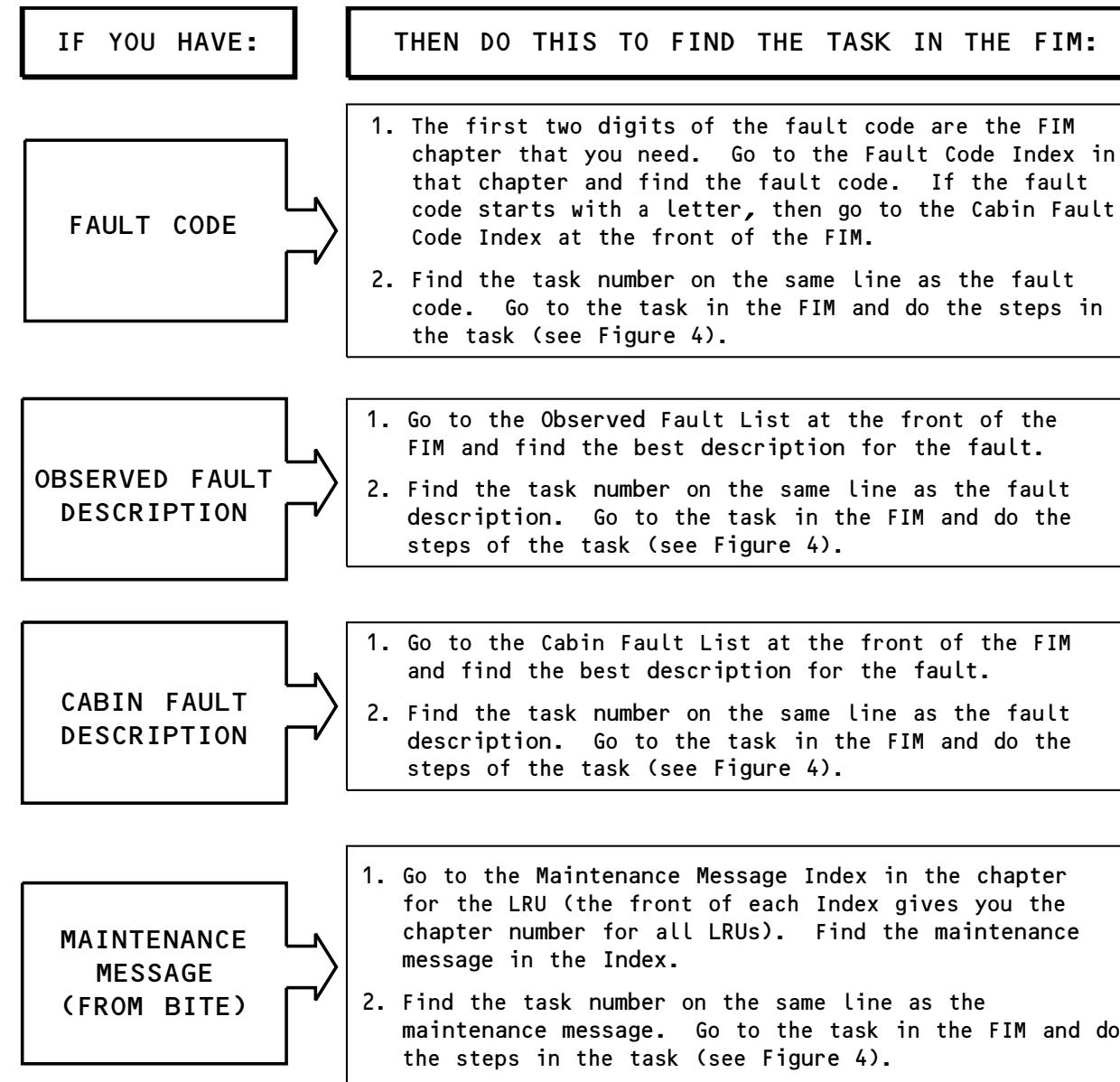
Find the maintenance message for the applicable LRU or system in the Index. Then find the task number on the same line as the maintenance message. Go to the task in the FIM and do the steps of the task (see Figure 4).

G04950 S0000148578_V1

Getting Fault Information from BITE
Figure 2EFFECTIVITY
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78-HOW TO USE THE FIM

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



G04979 S0000148579_V2

**Finding the Fault Isolation Task in the FIM
Figure 3**

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78-HOW TO USE THE FIM

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

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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78-HOW TO USE THE FIM

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

Alphabetical list of all observed faults. Gives the fault code and a FIM task number for each fault.

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OBSERVED FAULT LIST
ALPHABETICAL
Page 1
Oct 05/96

List of all observed faults in order by ATA system. Gives the fault code and a FIM task number for each fault.

EFFECTIVITY ————— ALL
OBSERVED FAULT LIST
SYSTEM ORDER
Page 1
Oct 05/96

List of all cabin faults arranged in order by cabin function. Gives the fault code and a FIM task number for each fault.

EFFECTIVITY ————— ALL
CABIN FAULT LIST
Page 1
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EFFECTIVITY ————— ALL
CABIN FAULT CODE INDEX
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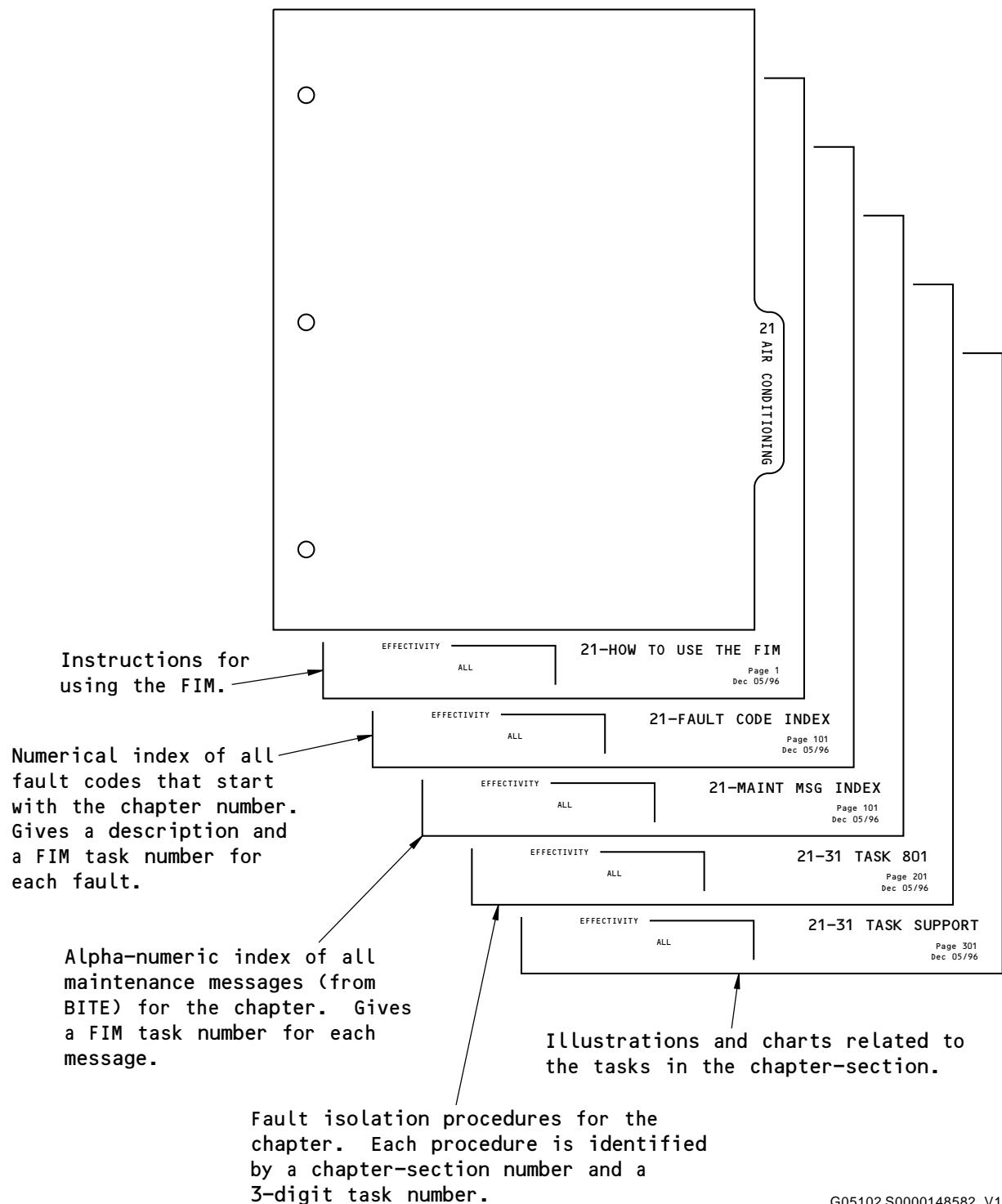
Numerical list of all cabin faults in order by fault code. Gives a FIM task reference for each fault.

G05066 S0000148581_V1

**Subjects at Front of FIM
Figure 5**

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


G05102 S0000148582_V1

**Subjects in Each FIM Chapter
Figure 6**

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78-HOW TO USE THE FIM

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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

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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 System	A/T	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 - Forward	CEU - FWD	26
Cargo Electronic Unit - Lower	CEU - LOWER	26
Cargo Electronic Unit - Main Aft	CEU - MAIN AFT	26
Cargo Electronic Unit - Main Forward	CEU - MAIN FWD	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 INTRROGTR	34
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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
Flap/Slat Electronics Unit	FSEU	27
Flight Data Acquisition Unit	FDAU	31
Flight Management Computer System	FMCS	34
Fuel Quantity Indicating System	FQIS	28

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Generator Control Unit - 2	GCU - 2	24
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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
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

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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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LRU/SYSTEM	MAINTENANCE MESSAGE	GO TO FIM TASK
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	V148 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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LRU/SYSTEM	MAINTENANCE MESSAGE	GO TO FIM TASK
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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LRU/SYSTEM	MAINTENANCE MESSAGE	GO TO FIM TASK
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 806
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:
- 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.
 - 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.
 - Release the T/R STOW FAULTS Switch.
 - Do these steps to show the current maintenance messages.
 - Push and hold the FAULT RESET button for a minimum of two seconds.
 - Wait for at least 30 seconds.
 - Record the current maintenance messages.
 - 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.
 - If a single maintenance message shows, then do the applicable FIM Task.
 - If more than one maintenance message shows, then do the FIM Task for that combination of maintenance messages.
 - If some or all of the maintenance messages do not show again, then there was an intermittent fault.
 - 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:
- 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.
 - 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.
 - Release the T/R DEPLOY FAULTS Switch.
 - Do these steps to show the current maintenance messages.
 - 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).
 - If the T/R does not extend, make sure that the Reverse Thrust Lever stays in the EXTEND (DEPLOY) position to reset the EAU.
 - Push and hold the FAULT RESET button for a minimum of two seconds.
 - 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).

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

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LRU/SYSTEM	MAINTENANCE MESSAGE	GO TO FIM TASK
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	V148 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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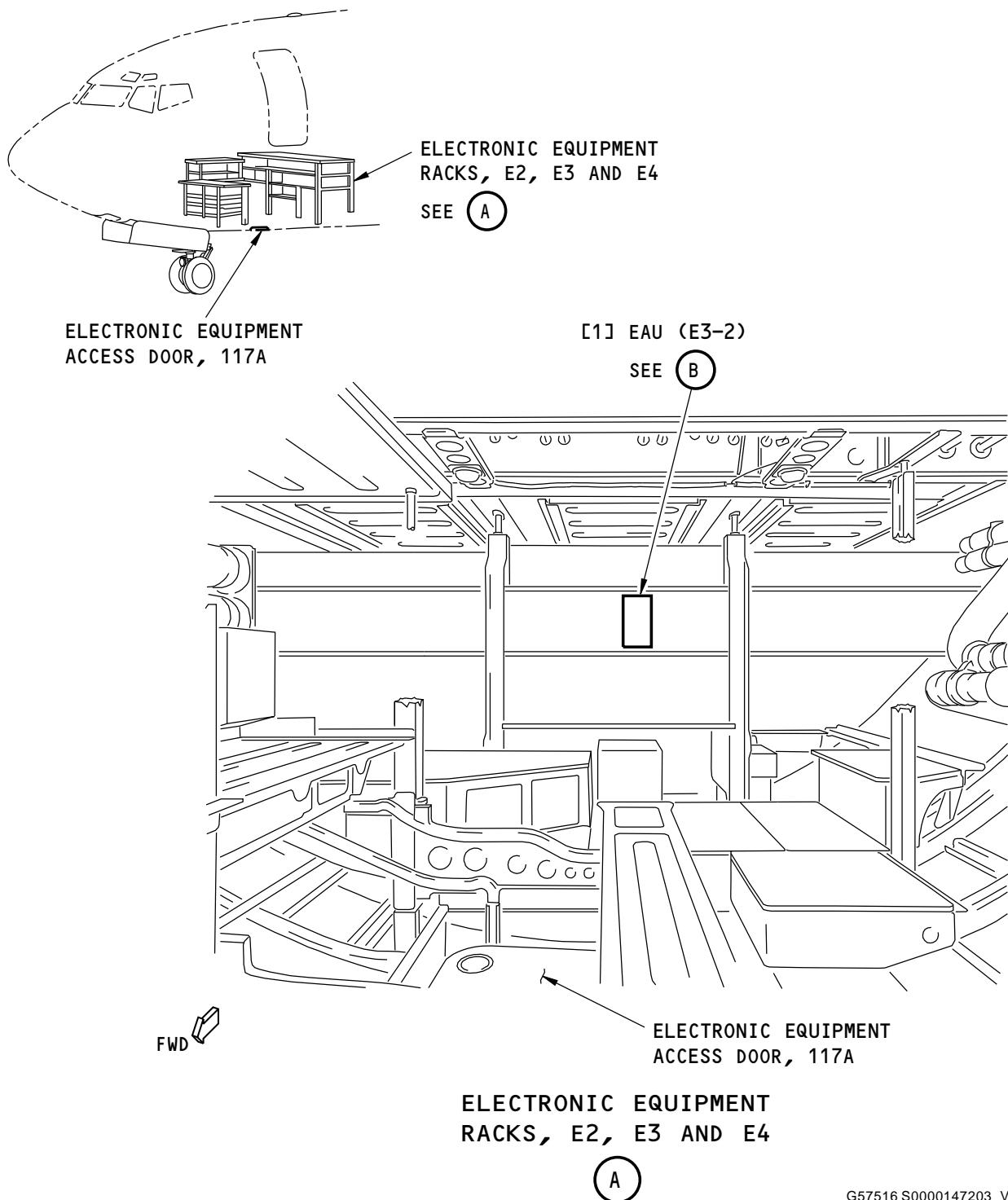
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LRU/SYSTEM	MAINTENANCE MESSAGE	GO TO FIM TASK
EAU/TR STOW-ENG 2	S836 R SLEEVE LOCK SENSOR	78-31 TASK 816
EAU/TR STOW-ENG 2	S839 DIR CONT VALVE SENSOR	78-31 TASK 811
EAU/TR STOW-ENG 2	V148 + V150 L and R SLEEVE SYNC LOCK PWR Messages	78-32 TASK 813
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 —

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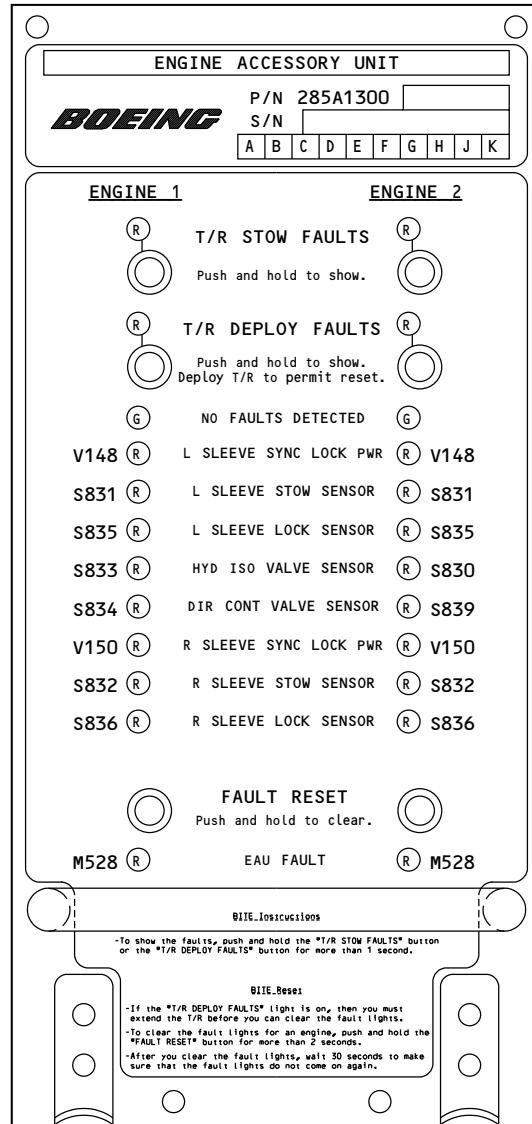
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Engine Accessory Unit (EAU) BITE Procedure
Figure 201/78-31-00-990-810-F00 (Sheet 1 of 3)

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ENGINE ACCESSORY UNIT

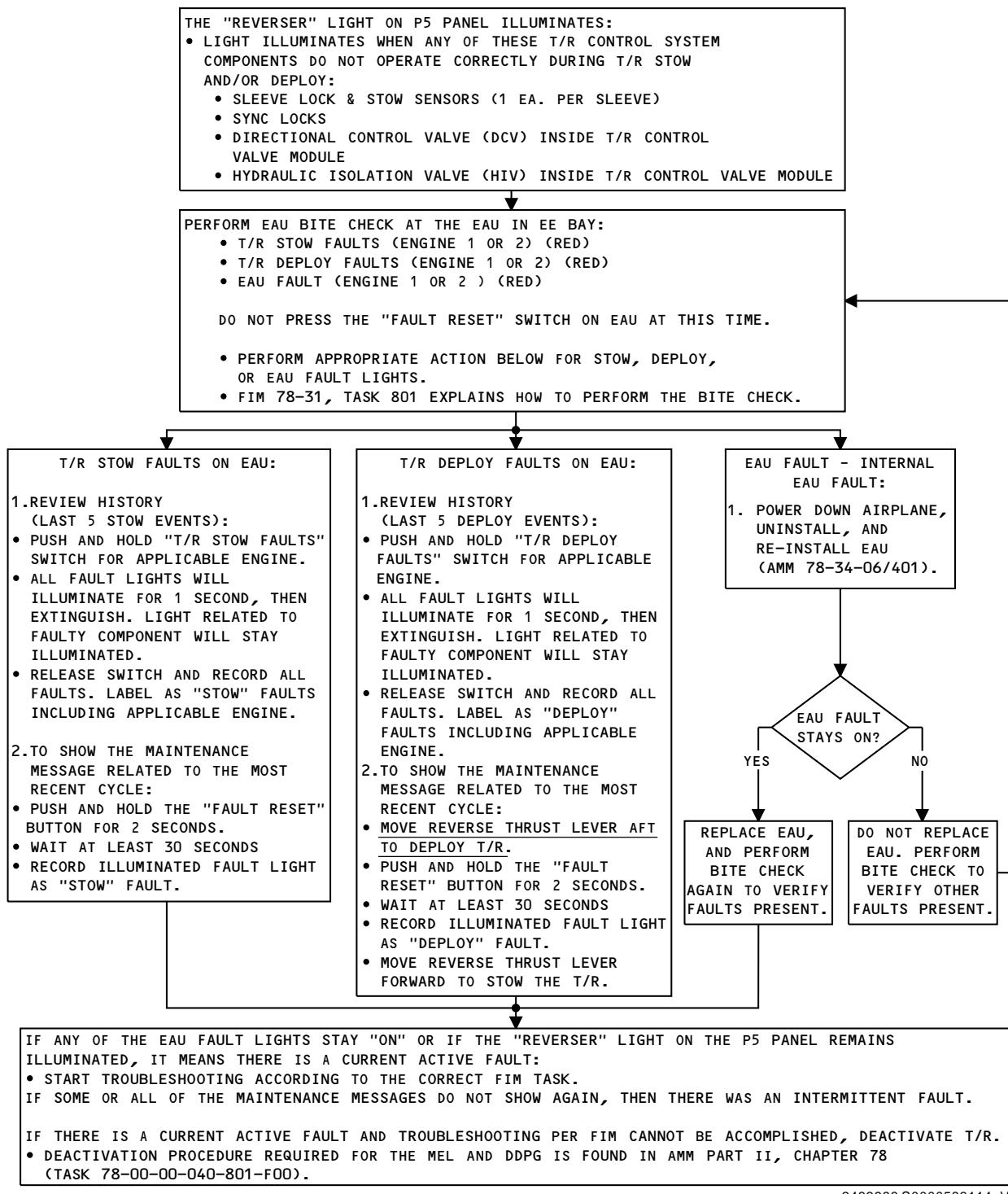
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**Engine Accessory Unit (EAU) BITE Procedure
Figure 201/78-31-00-990-810-F00 (Sheet 2 of 3)**

EFFECTIVITY
AKS ALL

78-31 TASK 801

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


2483998 S0000583114_V1

**Engine Accessory Unit (EAU) BITE Procedure
Figure 201/78-31-00-990-810-F00 (Sheet 3 of 3)**
EFFECTIVITY
AKS ALL**78-31 TASK 801**

**737-600/700/800/900
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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

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) SSM 78-36-11
- (2) SSM 78-36-21
- (3) WDM 78-36-11
- (4) WDM 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 DEPLOY position for the T/R.

B. Possible Causes

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

EFFECTIVITY

AKS ALL

78-31 TASKS 802-803

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- (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

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 and Simplified Schematic (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

WARNING: 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.
 - (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

EFFECTIVITY
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- 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

- (d) Do a check for ground at the applicable T/R 1 (T/R 2) CVM, M1173 (M1174) connector D3054 (D3058) as follows:

ENG-1 WIRE HARNESS

T/R 1 CVM		
D3054		Resistance
pin 6	Ground	CONTINUITY

 EFFECTIVITY
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ENG-2 WIRE HARNESS**T/R 2 CVM****D3058**

pin 6 Ground

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 GROUND

Resistance

OPEN CIRCUIT

pin 9 GROUND

OPEN CIRCUIT

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

pin 8 pin 9

EAU**D1458B****Resistance**

OPEN CIRCUIT

EAU**D1458B**

pin 8 GROUND

Resistance

OPEN CIRCUIT

pin 9 GROUND

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:

T/R 1 CVM**M1173****D3054**

pin 5 pin 6

M1173**D3054**

pin 7 pin 6

Resistance

38.9 - 42.9 Ohms

33.8 - 37.8 Ohms

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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 \leq 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).

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) aft to the EXTENDED (deployed) 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 S834 (S839) DIR CONT VALVE SENSOR Fault Light on the EAU is OFF, then you corrected the problem.

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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 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:

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) 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 DEPLOY position for the T/R.
- (3) The T/R must go through a DEPLOY and STOW 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.

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

<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 and Simplified Schematic (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

WARNING: 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:

T/R 1 CVM

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

T/R 2 CVM

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

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- 1) Make sure that the difference between the two Resistance measurements is \leq 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:
 - 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.

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- | (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**

D3054	Resistance
pin 3	Ground

Resistance
CONTINUITY

ENG-2 WIRE HARNESS**T/R 2 CVM**

D3058	Resistance
pin 3	Ground

Resistance
CONTINUITY

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

ENG-1 WIRE HARNESS

EAU	EAU	
D1458A	D1458A	Resistance
pin 43	pin 44	OPEN CIRCUIT

Resistance
OPEN CIRCUIT

EAU

D1458A	Resistance
pin 43	GROUND
pin 44	GROUND

Resistance
OPEN CIRCUIT
OPEN CIRCUIT

ENG-2 WIRE HARNESS

EAU	EAU	
D1458B	D1458B	Resistance
pin 43	pin 44	OPEN CIRCUIT

Resistance
OPEN CIRCUIT

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EAU**D1458B**

	Resistance
pin 43	GROUND
pin 44	GROUND

- (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 aft to the EXTENDED (deployed) 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.

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 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:

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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 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 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 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) 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 (Figure 302, Figure 303)
- (2) Simplified Schematic (Figure 302, Figure 303)
- (3) WDM 78-36-11
- (4) WDM 78-36-21
- (5) SSM 78-36-11
- (6) SSM 78-36-21

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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.
 - 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 Lockout Handle Assembly Replacement, AMM TASK 78-31-03-300-801-F01.
 - 2) If the Manual Lockout Handle is broken, replace it. This is the task: Manual Lockout Handle Assembly Replacement, AMM TASK 78-31-03-300-801-F01.
 - 3) Do the Repair Confirmation at the end of this task.
 - (b) If the Manual Lockout Handle is satisfactory, 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.

- (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) 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.

EFFECTIVITY
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L SLPS**D30008**

pin 1	pin 4
pin 1	pin 5

L SLPS**D30008****Resistance**

Value in Ohms
Value in Ohms

- (e) Do these checks:

L SLPS**D30008**

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) 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.

- (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:

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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	
D30208	
pin 1	GND

Resistance
CONTINUITY

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	EAU	
D1458A	D1458A	
pin 28	pin 27	Resistance OPEN CIRCUIT

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

ENG-2 WIRE HARNESS

EAU	EAU	
D1458B	D1458B	
pin 28	pin 27	Resistance OPEN CIRCUIT

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

EFFECTIVITY
AKS ALL

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- (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.

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 S835 L 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 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.

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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 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 ————

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) 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 (Figure 302, Figure 303)
- (2) Simplified Schematic (Figure 302, Figure 303)
- (3) WDM 78-36-11
- (4) WDM 78-36-21
- (5) SSM 78-36-11
- (6) SSM 78-36-21

EFFECTIVITY
AKS ALL

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D633A103-AKS

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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.
- (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 (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) LeftSSPS 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 \leq 2 Ohms.

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

- (e) Do these checks:

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

- (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

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- 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).
 - 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

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ENG-2 WIRE HARNESS**L T/R SLEEVE****D30402**

pin 1 GND

Resistance

CONTINUITY

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

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

pin 14 pin 15

EAU**D1458A****Resistance**

OPEN CIRCUIT

EAU**D1458A**

pin 14 GND

Resistance

OPEN CIRCUIT

pin 15 GND

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

pin 14 pin 15

EAU**D1458B****Resistance**

OPEN CIRCUIT

EAU**D1458B**

pin 14 GND

Resistance

OPEN CIRCUIT

pin 15 GND

- (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

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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 applicable ENG-1 (ENG-2) SSPS connector D30002 from the respective Strut Receptacle D30202 (D30402).
- (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.

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- (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

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 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

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 (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.

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 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.

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WARNING: 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 78-32-61).
 - 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) 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 28 VDC at pin 18 of the EAU Receptacle D1458A.
 - (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 18 of the EAU Receptacle, continue.
- (7) Do a check for 28 VDC at pin A1 of the Sync Lock Latch Relay Receptacle D10634.
 - (a) If you find 28 VDC, do these wiring checks (WDM 78-32-51):

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

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

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L T/R SLEEVE**SYNC LOCK****D1008**

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 28 VDC at pin A1 of the Sync Lock Latch Relay Receptacle, do these wiring checks (WDM 78-32-51):

SYNC LOCK**JUNCTN 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 78-32-61).

(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 L SLEEVE SYNC LOCK POWER Fault Light on the EAU is OFF, then you corrected the problem.

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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 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..

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 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 DEPLOY 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

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

 EFFECTIVITY
 AKS ALL

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D. Related Data

- (1) Component Location (Figure 302, Figure 303)
- (2) Simplified Schematic (Figure 302, 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.

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 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 Lockout Handle Assembly Replacement, AMM TASK 78-31-03-300-801-F01.
 - 2) If the Manual Lockout Handle is broken, replace it. This is the task: Manual Lockout Handle Assembly Replacement, AMM TASK 78-31-03-300-801-F01.
 - 3) Do the Repair Confirmation at the end of this task.
 - (b) If the Manual Lockout Handle is satisfactory, 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.

- (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) 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.

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- 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
pin 4	GND
pin 5	GND

- (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):

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- (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	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		
D30210		Resistance
pin 1	GND	CONTINUITY

ENG-2 WIRE HARNESS

R T/R SLEEVE		
D30410		Resistance
pin 1	GND	CONTINUITY

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

ENG-1 WIRE HARNESS

EAU	EAU	
D1458A	D1458A	Resistance
pin 40	pin 39	OPEN CIRCUIT

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

ENG-2 WIRE HARNESS

EAU	EAU	
D1458B	D1458B	Resistance
pin 40	pin 39	OPEN CIRCUIT

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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.
- (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) 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:

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- (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.

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 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 ————

809. T/R DEPLOY FAULT - 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 STOW 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) EAU, M528

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	4	C01003	ENGINE 1 THRUST REVERSER IND

D. Related Data

- (1) Component Location (Figure 302, Figure 303)
- (2) Simplified Schematic (Figure 302, Figure 303)
- (3) WDM 78-36-11

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- (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.
- (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 (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 theSSPS 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	R SSPS	Resistance
D30006	D30006	Resistance
pin 1	pin 7	Value in Ohms
pin 1	pin 8	Value in Ohms

- (e) Do these checks:

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

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- (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

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:

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ENG-1 WIRE HARNESS**RT/R SLEEVE****D30206**

pin 1 GND

**Resistance
CONTINUITY****ENG-2 WIRE HARNESS****R T/R SLEEVE****D30406**

pin 1 GND

**Resistance
CONTINUITY**

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

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

pin 52 pin 53

EAU**D1458A****Resistance**

OPEN CIRCUIT

EAU**D1458A**

pin 52 GND

Resistance

OPEN CIRCUIT

pin 53 GND

OPEN CIRCUIT

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

pin 52 pin 53

EAU**D1458B****Resistance**

OPEN CIRCUIT

EAU**D1458B**

pin 52 GND

Resistance

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.
 - 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

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- (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 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.

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 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.

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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 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 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

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 (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.

EFFECTIVITY

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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 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.

WARNING: 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 EXTENDED (DEPLOYED) 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:
 - 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 28 VDC at pin 30 of the wire harness connector, D1458A, to structure ground (WDM 78-32-51).
 - (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 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 78-32-51):

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

R T/R SLEEVE
SYNC LOCK
D1016
 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 28 VDC at pin B1 of the Sync Lock Latch Relay Receptacle, do these wiring checks (WDM 78-32-51):

SYNC LOCK	JUNCTN BOX
LATCH RLY	J22
D10634	D40672P
pin B1	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, R479 (WDM 78-32-61).
- (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.

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- 1) Make sure that the Reverse Thrust Lever is UP and AFT in the EXTENDED (DEPLOYED) 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..

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 DCVposition does not agree with the commanded STOW position for the Thrust Reverser (T/R).

B. Possible Causes

- (1) Wiring between the Control Valve Module and the EAU
- (2) T/R 1 (T/R 2) CVM, M1173 (M1174)
- (3) T/R 1 (T/R 2) Autothrottle Switchpack Assembly, M1766 (M1767)
- (4) EAU, M528

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

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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

D. Related Data

- (1) Component Location and Simplified Schematic (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

WARNING: 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 ENG-1 (ENG-2) Control Valve Module, 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 Control Valve Module M1173 (M1174):

NOTE: The Control Valve Module is in the Main Gear Wheel Well on the keel beam. The ENG-1 Control Valve Module, M1173 is on the left side and the ENG-1 Control Valve Module, 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) Control Valve Module.
 - (d) Examine the ENG-1 (ENG-2) Wire Harness and Control Valve Module Receptacle (Standard Engine Wiring and Equipment Check, AMM TASK 70-70-01-200-801-F00).
 - 1) If the Control Valve Module Receptacle is damaged, then replace the T/R 1 (T/R 2) Control Valve Module 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.

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- (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, 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) Control Valve Module.
 - (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

- (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 6

ENG-2 WIRE HARNESS

T/R 2 CVM	Resistance
D3058	CONTINUITY

pin 6

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

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ENG-1 WIRE HARNESS

EAU	EAU	
D1458A	D1458A	Resistance
pin 8	pin 9	OPEN CIRCUIT

EAU		
D1458A		Resistance
pin 8	GROUND	OPEN CIRCUIT
pin 9	GROUND	OPEN CIRCUIT

ENG-2 WIRE HARNESS

EAU	EAU	
D1458B	D1458B	Resistance
pin 8	pin 9	OPEN CIRCUIT

EAU		
D1458B		Resistance
pin 8	GROUND	OPEN CIRCUIT
pin 9	GROUND	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) T/R Control Valve Module, 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 T/R 1 (T/R 2) Control Valve Module Receptacle, D3054 (D3058) as follows:

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 \leq 7 Ohms.

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- a) If the Resistance is not in the specified limits, then replace the Control Valve Module. 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 ENG-1 (ENG-2) Electrical Connector D3054 (D3058) is connected to the Control Valve Module.
 - (b) Make sure that all connectors that were disconnected to do an electrical check between the Control Valve Module 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.

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 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:

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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) the T/R.
- (b) Operate the T/R through an EXTEND and RETRACT cycle.
- (c) Make sure that the REVERSER Fault 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 P5 Panel in the Flight Compartment 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 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 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 a DEPLOY and STOW 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 the EAU
- (2) T/R 1 (T/R 2) T/R CVM, M1173 (M1174)

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

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

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

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

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

AKS ALL

- (5) EAU, M528

EFFECTIVITY
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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

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

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 (Figure 308)
- (2) Simplified Schematic (Figure 306, 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) Do the Engine Accessory Unit (EAU) BITE Procedure, 78-31 TASK 801 to show the current maintenance messages.

F. Fault Isolation Procedure

- (1) 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 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 the ENG-1 (ENG-2) CVM, M1173 (M1174) as follows (WDM 78-36-11, WDM 78-36-21):

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- (a) Visually examine the ENG-1 (ENG-2) Wire Harness Electrical Connector D3054 (D3058), at the applicable CVMM1173 (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:
 - 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.
 - (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

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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		
D3054		Resistance

pin 3 Ground CONTINUITY

ENG-2 WIRE HARNESS

T/R 2 CVM		
D3058		Resistance

pin 3 Ground CONTINUITY

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

ENG-1 WIRE HARNESS

EAU	EAU	
D1458A	D1458A	Resistance

pin 43 pin 44 OPEN CIRCUIT

EAU		
D1458A		Resistance

pin 43 GROUND OPEN CIRCUIT

pin 44 GROUND OPEN CIRCUIT

ENG-2 WIRE HARNESS

EAU	EAU	
D1458B	D1458B	Resistance

pin 43 pin 44 OPEN CIRCUIT

EAU		
D1458B		Resistance

pin 43 GROUND OPEN CIRCUIT

pin 44 GROUND 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):

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- (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	M1173	
D3054	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	M1174	
D3058	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 \leq 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.
- (6) Open this circuit breaker:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
B	7	C01266	ENGINE 1 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 and D11134 and the Autothrottle Switchpack Receptacles.

AKS 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).

AKS 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.

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- (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, 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: 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 Autothrottle Switchpack, M1766 ENG 1 or M1767 ENG 2:

T/R-1 ARM SWITCH

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

T/R-2 ARM SWITCH

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

- (b) Alternate Method 2 - Load Light:
- 1) Remove connector D11130 (D11134) and install a jumper between pin 8 of 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

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

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
C	7	C00277	ENGINE 2 THRUST REVERSER CONT

- 3) 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:
 - <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.

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- 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

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:

AKS 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.
 - b) 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

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

- 2) Replace the Autothrottle Switchpack Assembly, M1766 Eng-1 or M1767 Eng-2. 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.

AKS ALL

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

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

- (11) Replace the EAU. 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.

G. Repair Confirmation

- (1) Do these steps:
 - (a) Make sure that the T/R 1 (T/R 2) Autothrottle Switchpack Electrical Connector M1766 (M1767) is connected to the Electrical Connector, D11130 (D11134).
 - (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 (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) 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) aft to the RETRACT (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 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 (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) 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 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 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 —

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 STOW position for the T/R position.

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

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 (Figure 302, Figure 303)
- (2) Simplified Schematic (Figure 302, Figure 303)
- (3) WDM 78-36-11
- (4) WDM 78-36-21

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- (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.

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 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 78-31-03-300-801-F01.
 - 2) If the Manual Lockout Handle is broken, replace it. This is the task: (AMM TASK 78-31-03-300-801-F01)
 - 3) Do the Repair Confirmation at the end of this task.
 - (b) If the Manual Lockout Handle is satisfactory, 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.

- (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) 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.

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- (d) Measure and record the SLPS Resistance between the pins indicated below:
NOTE: The difference between the two Resistance measurements should be \leq 2 Ohms.

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.
- (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.

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- (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	Resistance
pin 1	CONTINUITY

ENG-2 WIRE HARNESS

L T/R SLEEVE	Resistance
D30408	Resistance
pin 1	CONTINUITY

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

ENG-1 WIRE HARNESS

EAU	EAU	Resistance
D1458A	D1458A	OPEN CIRCUIT
pin 28	pin 27	

EAU	Resistance
D1458A	OPEN CIRCUIT
pin 28	
pin 27	OPEN CIRCUIT

ENG-2 WIRE HARNESS

EAU	EAU	Resistance
D1458B	D1458B	OPEN CIRCUIT
pin 28	pin 27	

EAU	Resistance
D1458B	OPEN CIRCUIT
pin 28	
pin 27	OPEN CIRCUIT

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- (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.

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 S835 L 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 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.

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

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 (Figure 302, Figure 303)
- (2) Simplified Schematic (Figure 302, Figure 303)
- (3) WDM 78-36-11
- (4) WDM 78-36-21

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- (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.
- (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 (Figure 302, 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) LeftSSPS 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 \leq 2 Ohms.

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

- (e) Do these checks:

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

- (f) If the Resistance checks are not satisfactory, then replace the applicable ENG-1 (ENG-2) Left SSPS, S831. These are the tasks:

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- 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).
 - 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:

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ENG-1 WIRE HARNESS**L T/R SLEEVE****D30202**

pin 1 GND

**Resistance
CONTINUITY****ENG-2 WIRE HARNESS****L T/R SLEEVE****D30402**

pin 1 GND

**Resistance
CONTINUITY**

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

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

pin 14 pin 15

EAU**D1458A****Resistance
OPEN CIRCUIT****EAU****D1458A**

pin 14 GND

**Resistance
OPEN CIRCUIT
OPEN CIRCUIT**

pin 15 GND

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

pin 14 pin 15

EAU**D1458B****Resistance
OPEN CIRCUIT****EAU****D1458B**

pin 14 GND

**Resistance
OPEN CIRCUIT
OPEN CIRCUIT**

pin 15 GND

- (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

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- (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 from the respective Strut Receptacle D30202 (D30402).
 - (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.

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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.
- (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 - L SLEEVE SYNC LOCK POWER
 - (b) ENGINE 2 - L SLEEVE SYNC LOCK POWER
- (2) This fault light indicates that there is power to the sync lock on the left thrust reverser sleeve which does not agree with the commanded stow position of the thrust reverser.
 - (a) If the sync lock has power, that is the indication that it is in the unlocked position.

B. Possible Causes

- (1) Sync lock latch relay, R477 (Eng 1) or R479 (Eng 2)
- (2) EAU, M528.

C. Circuit Breakers

- (1) For engine 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

- (2) For engine 2, 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) Simplified Schematic (Figure 304, Figure 305)
- (2) SSM 78-32-51
- (3) SSM 78-32-61
- (4) WDM 78-32-51
- (5) WDM 78-32-61

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E. Initial Evaluation

- (1) Do these steps to find out if the message is still active:
 - (a) If not already done, do the EAU BITE steps to show the current maintenance messages (Engine Accessory Unit (EAU) BITE Procedure, 78-31 TASK 801).
 - (b) If one of these maintenance messages is the only maintenance message that shows, then do the Fault Isolation Procedure below.
 - (c) If the maintenance message does not show on the EAU, then the Initial Evaluation has shown that the fault is not active at this time and you have an intermittent fault.
 - 1) If you cannot find the fault at this time, then the Fault Isolation Procedure cannot isolate the fault.
 - 2) For an intermittent fault you must use your judgment, your airline policies, and the Possible Causes list to make the decision if you will try to correct the fault.
 - 3) If you will try to correct the fault, it is recommended that you do these steps:
 - a) Do the visual checks of the electrical connectors in the applicable fault isolation procedure below.
 - b) Use the WDM references to identify intermediate electrical connections in the wire harness and do a visual check.
 - c) If you find no problems, then replace components as listed in the Possible Causes List above.
 - 4) Monitor the airplane on the subsequent flight.

F. Fault Isolation Procedure

- (1) Do these steps to prepare for the fault isolation procedure:
 - (a) Make sure that the thrust reverser is in the fully retracted (stowed) position.
 - (b) For engine 1, open this 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	7	C01266	ENGINE 1 THRUST REVERSER SYNC LOCK

- (c) For engine 2, 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

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.

- (d) Do this task: Thrust Reverser Deactivation For Ground Maintenance, AMM TASK 78-31-00-040-802-F00.
- (2) Do the applicable tasks to replace the sync lock latch relay (SWPM Ch 20).
 - (a) For engine 1, replace the sync lock latch relay, R477 at the J22 junction box.

NOTE: The J22 junction box is in the nose gear wheel well on the left side.

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- (b) For engine 2, replace the sync lock latch relay, R479 at the J24 junction box.
NOTE: The J24 junction box is in the nose gear wheel well on the right side.
- (c) Do the Repair Confirmation at the end of this task.
- (d) If the Repair Confirmation is not satisfactory, then continue.

(3) 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) Prepare for the procedure:

- (a) For engine 1, 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

- (b) For engine 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

- (c) 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) Wait for at least 30 seconds.
- 3) If the L SLEEVE SYNC LOCK POWER fault light on the EAU is off, then you corrected the fault.

(2) After the fault is corrected, do these steps to put the airplane back to its usual condition:

- (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) Operate the thrust reverser through an extend and retract cycle.
- (c) Make sure that the REVERSER fault 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.
- (d) Wait for at least 30 seconds.
- (e) Make sure that the REVERSER fault light on the P5 panel in the flight compartment stays off.

— END OF TASK —

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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 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

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 (Figure 302, Figure 303)
- (2) Simplified Schematic (Figure 302, 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.

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 Locking Actuator.
 - (a) On the ULHA, make sure 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 Lockout Handle Assembly Replacement, AMM TASK 78-31-03-300-801-F01.
- 2) If the Manual Lockout Handle is broken, replace it. This is the task: Manual Lockout Handle Assembly Replacement, AMM TASK 78-31-03-300-801-F01.
- 3) Do the Repair Confirmation at the end of this task.
- (b) If the Manual Lockout Handle is satisfactory, 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.

- (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) 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
pin 4	GND
pin 5	GND

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- (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	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:

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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****D1458A**

pin 40 pin 39

EAU**D1458A****Resistance**

OPEN CIRCUIT

EAU**D1458A**

pin 40 GND

Resistance

OPEN CIRCUIT

pin 39 GND

OPEN CIRCUIT

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

pin 40 pin 39

EAU**D1458B****Resistance**

OPEN CIRCUIT

EAU**D1458B**

pin 40 GND

Resistance

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. 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, D30010, is connected to the respective Strut Receptacle D30210 (D30410).

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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 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 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 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 —

EFFECTIVITY
AKS ALL

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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 STOW 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) 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 (Figure 302, Figure 303)
- (2) Simplified Schematic (Figure 302, Figure 303)
- (3) SSM 78-36-11
- (4) SSM 78-36-21
- (5) WDM 78-36-11
- (6) WDM 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.
- (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 (Figure 302, Figure 303).
 - (a) If the roller is damaged, worn, or has flat spots, then replace the damaged hardware.

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- 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:

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

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

- (e) Do these checks:

R SSPS		Resistance
D30006		
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:

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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 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

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 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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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 S832 R 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 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.

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 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 —

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 - R SLEEVE SYNC LOCK POWER
 - (b) ENGINE 2 - R SLEEVE SYNC LOCK POWER

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- (2) This fault light indicates that there is power to the sync lock on the right thrust reverser sleeve which does not agree with the commanded stow position of the thrust reverser.
- (a) If the sync lock has power, that is the indication that it is in the unlocked position.

B. Possible Causes

- (1) Sync lock latch relay, R477 (Eng 1) or R479 (Eng 2)
- (2) EAU, M528.

C. Circuit Breakers

- (1) For engine 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

- (2) For engine 2, 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) Simplified Schematic (Figure 304, Figure 305)
- (2) SSM 78-32-51
- (3) SSM 78-32-61
- (4) WDM 78-32-51
- (5) WDM 78-32-61

E. Initial Evaluation

- (1) Do these steps to find out if the message is still active:
- (a) If not already done, do the EAU BITE steps to show the current maintenance messages (Engine Accessory Unit (EAU) BITE Procedure, 78-31 TASK 801).
 - (b) If one of these maintenance messages is the only maintenance message that shows, then do the Fault Isolation Procedure below.
 - (c) If the maintenance message does not show on the EAU, then the Initial Evaluation has shown that the fault is not active at this time and you have an intermittent fault.
 - 1) If you cannot find the fault at this time, then the Fault Isolation Procedure cannot isolate the fault.
 - 2) For an intermittent fault you must use your judgment, your airline policies, and the Possible Causes list to make the decision if you will try to correct the fault.
 - 3) If you will try to correct the fault, it is recommended that you do these steps:
 - a) Do the visual checks of the electrical connectors in the applicable fault isolation procedure below.
 - b) Use the WDM references to identify intermediate electrical connections in the wire harness and do a visual check.
 - c) If you find no problems, then replace components as listed in the Possible Causes List above.
 - 4) Monitor the airplane on the subsequent flight.

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F. Fault Isolation Procedure

- (1) Do these steps to prepare for the fault isolation procedure:
 - (a) Make sure that the thrust reverser is in the fully retracted (stowed) position.
 - (b) For engine 1, open this 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	7	C01266	ENGINE 1 THRUST REVERSER SYNC LOCK

- (c) For engine 2, 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

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.

- (d) Do this task: Thrust Reverser Deactivation For Ground Maintenance, AMM TASK 78-31-00-040-802-F00.
- (2) Do the applicable tasks to replace the sync lock latch relay (SWPM Ch 20).
 - (a) For engine 1, replace the sync lock latch relay, R477 at the J22 junction box.
NOTE: The J22 junction box is in the nose gear wheel well on the left side.
 - (b) For engine 2, replace the sync lock latch relay, R479 at the J24 junction box.
NOTE: The J24 junction box is in the nose gear wheel well on the right side.
 - (c) Do the Repair Confirmation at the end of this task.
 - (d) If the Repair Confirmation is not satisfactory, then continue.
- (3) 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) For engine 1, 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

- (b) For engine 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

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- (c) Do these steps to reset the T/R STOW FAULTS light to determine if the fault is corrected:
 - 1) Push and hold the FAULT RESET button for a minimum of two seconds.
 - 2) Wait for at least 30 seconds to make sure that the fault lights do not come on again.
 - 3) If the R SLEEVE SYNC LOCK POWER fault light on the EAU is off, then you corrected the fault.
- (2) After the fault is corrected, do these steps to put the airplane back to its usual condition:
 - (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) Operate the thrust reverser through an extend and retract cycle.
 - (c) Make sure that the REVERSER fault 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.
 - (d) Wait for at least 30 seconds.
 - (e) Make sure that the REVERSER fault light on the P5 panel in the flight compartment stays off.

 — 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 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 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

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 (Figure 304, Figure 305)
- (2) WDM 78-32-61
- (3) SSM 78-32-61

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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.

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 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.

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.
- (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

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

	SYNC LOCK	L T/R SLEEVE
EAU	LATCH RLY	SYNC LOCK
D1458B	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	TERM BLOCK
LATCH RLY	D40692P
D10638	
pin A1	pin 13

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

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- 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 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 V148 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.

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

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 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 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

 EFFECTIVITY
 AKS ALL

78-31 TASKS 819-820

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

(Continued)

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) Simplified Schematic (Figure 304, 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:
 - 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.

EFFECTIVITY
AKS ALL

78-31 TASK 820

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

- (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):

	SYNC LOCK	R T/R SLEEVE
EAU	LATCH RLY	SYNC LOCK
D1458B	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		TERM BLOCK
LATCH RLY		D40692P
D10638		
pin B1		pin 9

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.

 EFFECTIVITY
 AKS ALL

78-31 TASK 820

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- (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.
- (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 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 V150 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.

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.

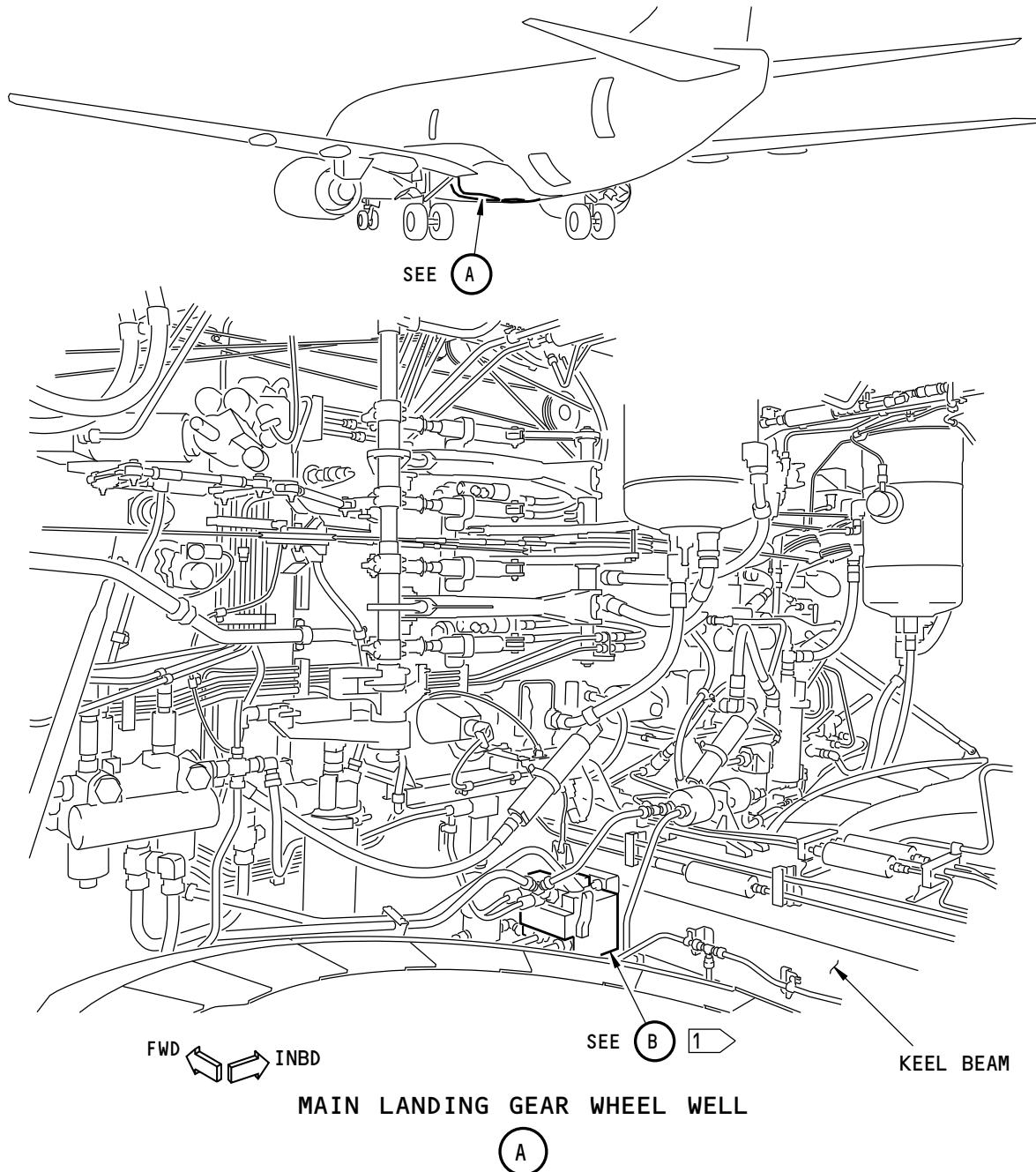
- (2) After you correct the problem, do these steps to put the airplane back to its usual condition:
 - (a) Do a check of the Right Sync Lock, do this task: Sync Lock Operational Test, AMM TASK 78-31-00-700-803-F00.
 - (b) Make sure that the REVERSER Fault Light on the Flight Compartment P5 Panel stays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

— END OF TASK —

EFFECTIVITY
AKS ALL

78-31 TASK 820

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



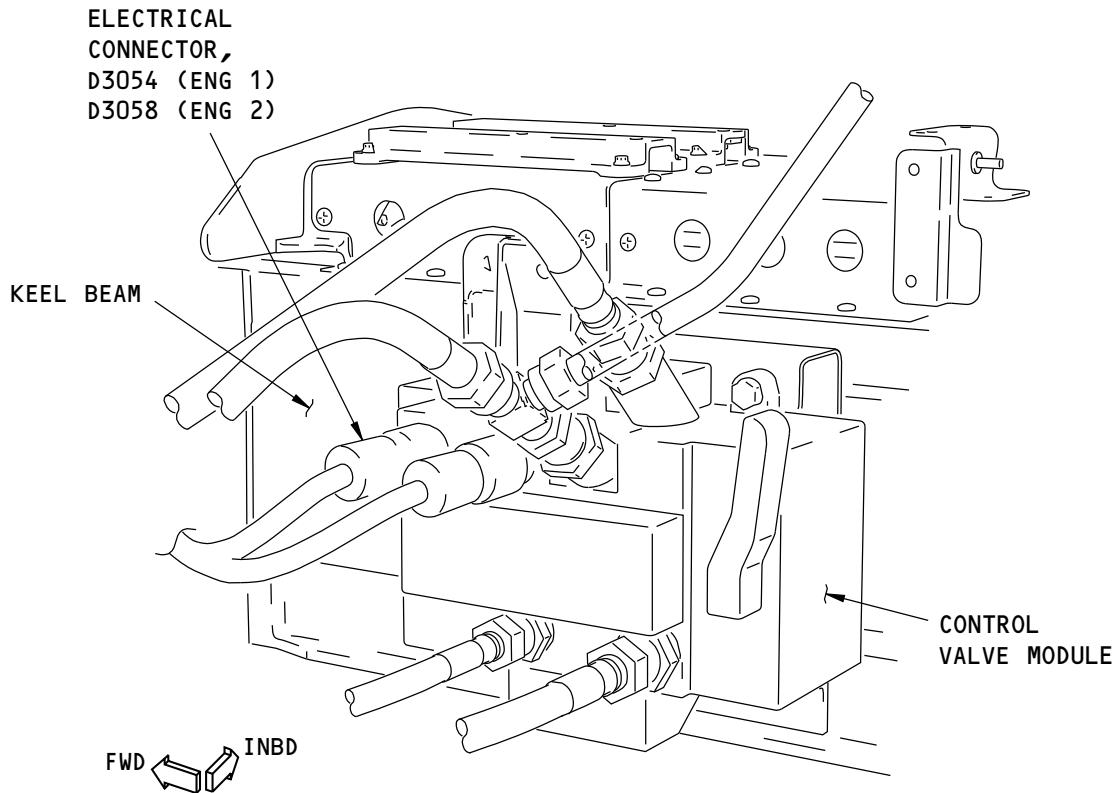
1 ENGINE 1 CONTROL VALVE MODULE IS SHOWN,
ENGINE 2 CONTROL VALVE MODULE IS ON THE RIGHT SIDE OF THE KEEL BEAM
AND IS SIMILAR TO ENGINE 1.

H42896 S0006746398_V1

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

EFFECTIVITY
AKS ALL

78-31 TASK SUPPORT

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

B

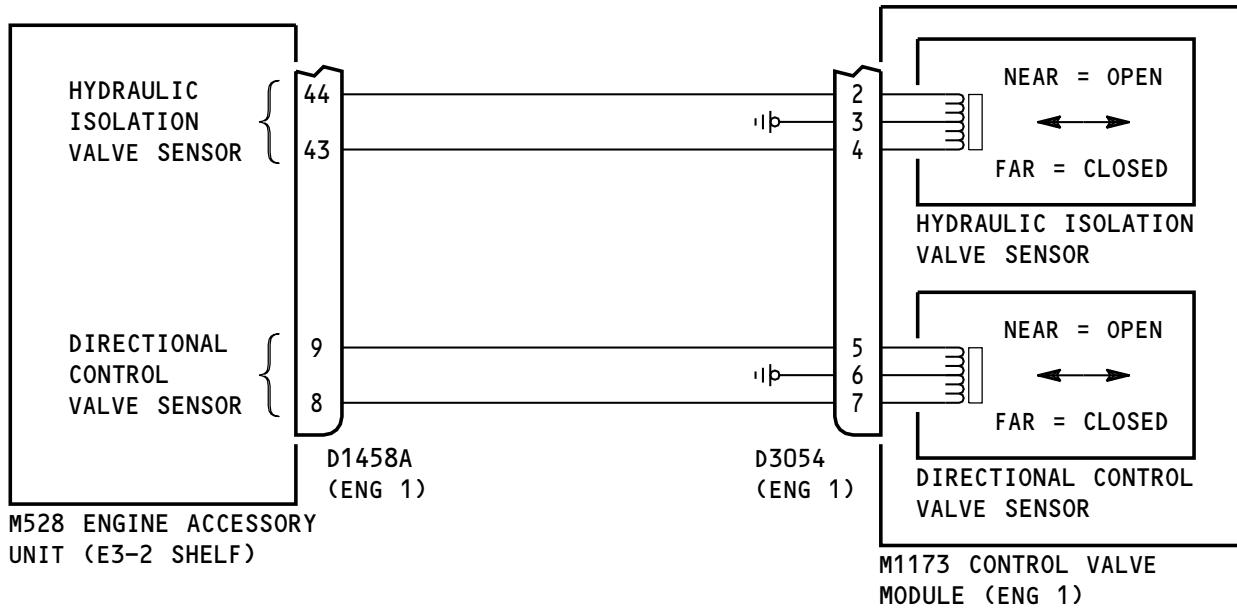
H43043 S0006746399_V1

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

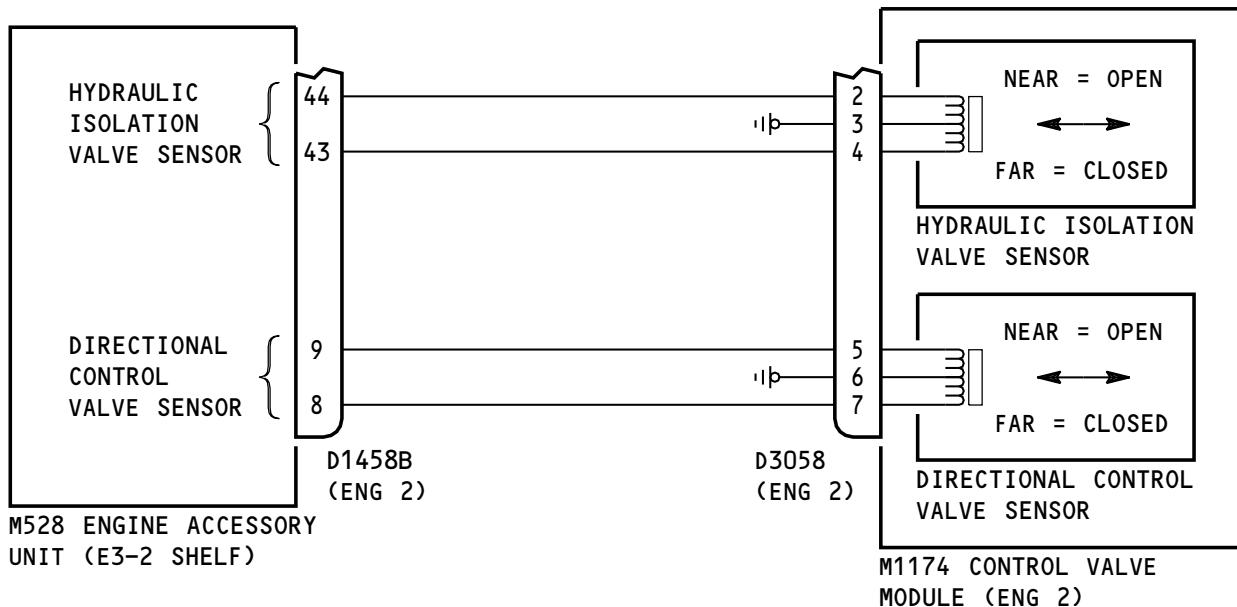
78-31 TASK SUPPORT

D633A103-AKS

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Feb 15/2013



ENGINE 1



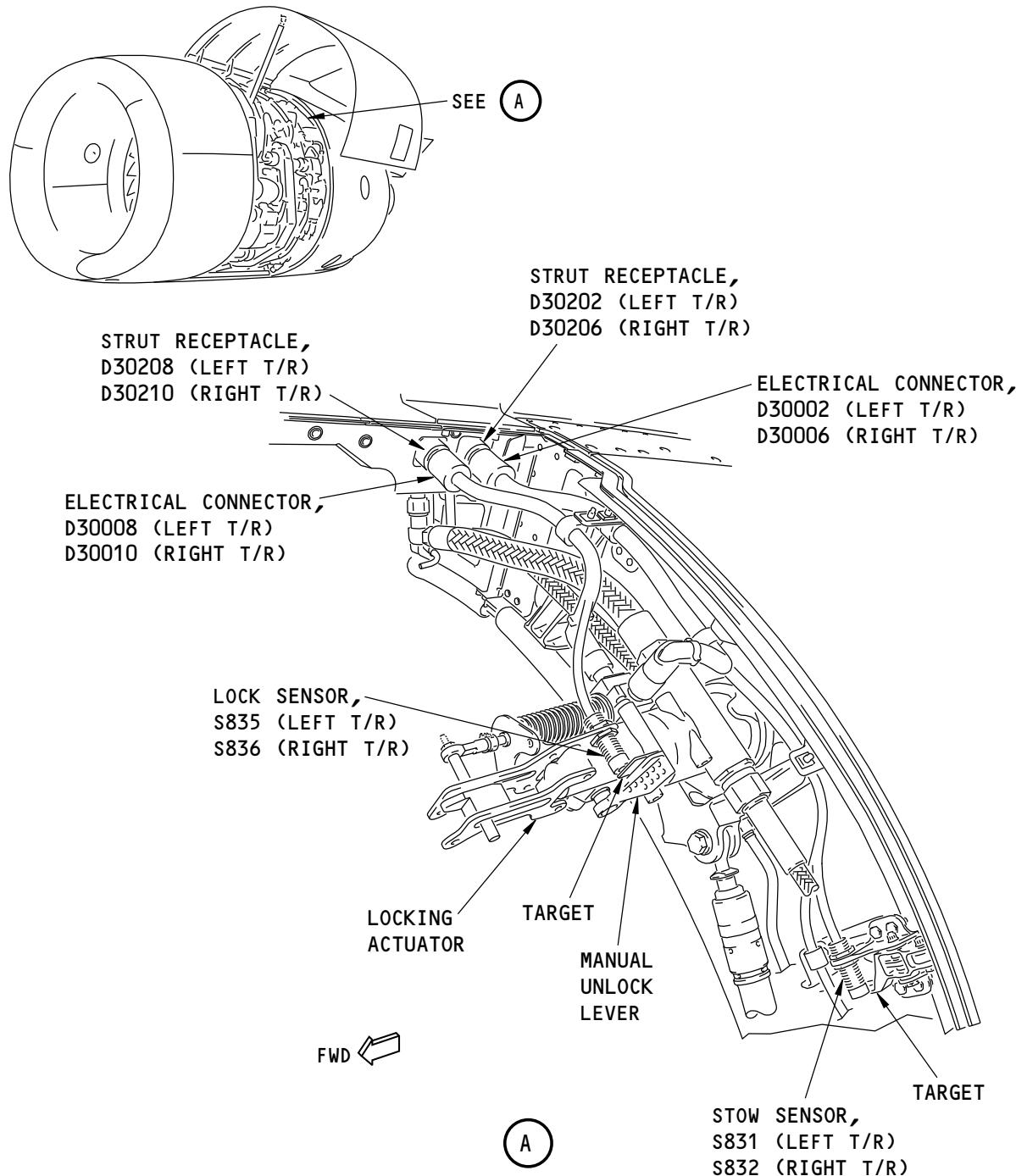
ENGINE 2

H43045 S0006746400_V1

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

EFFECTIVITY
AKS ALL

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FAULT ISOLATION MANUAL

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)

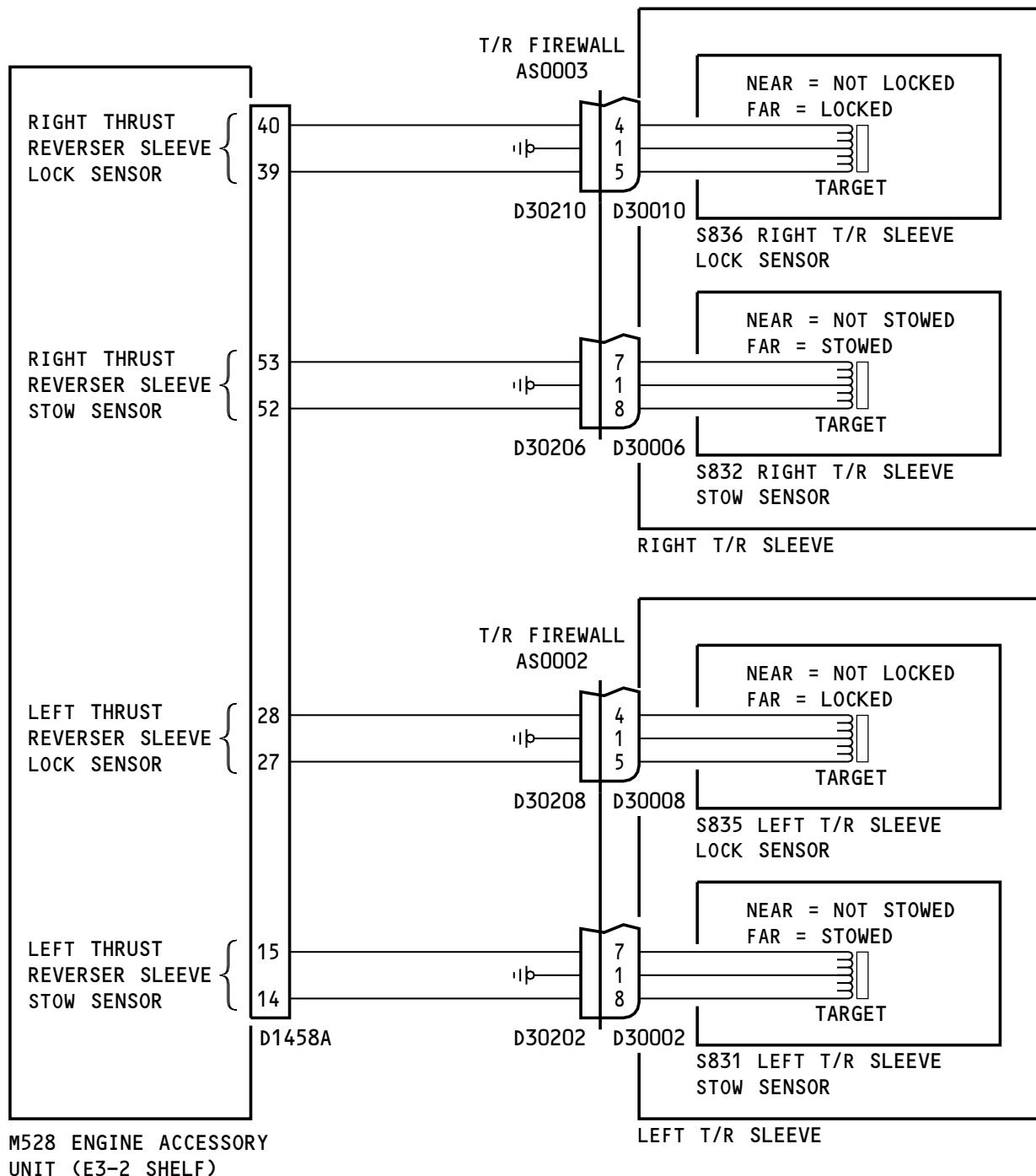
EFFECTIVITY
AKS ALL

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

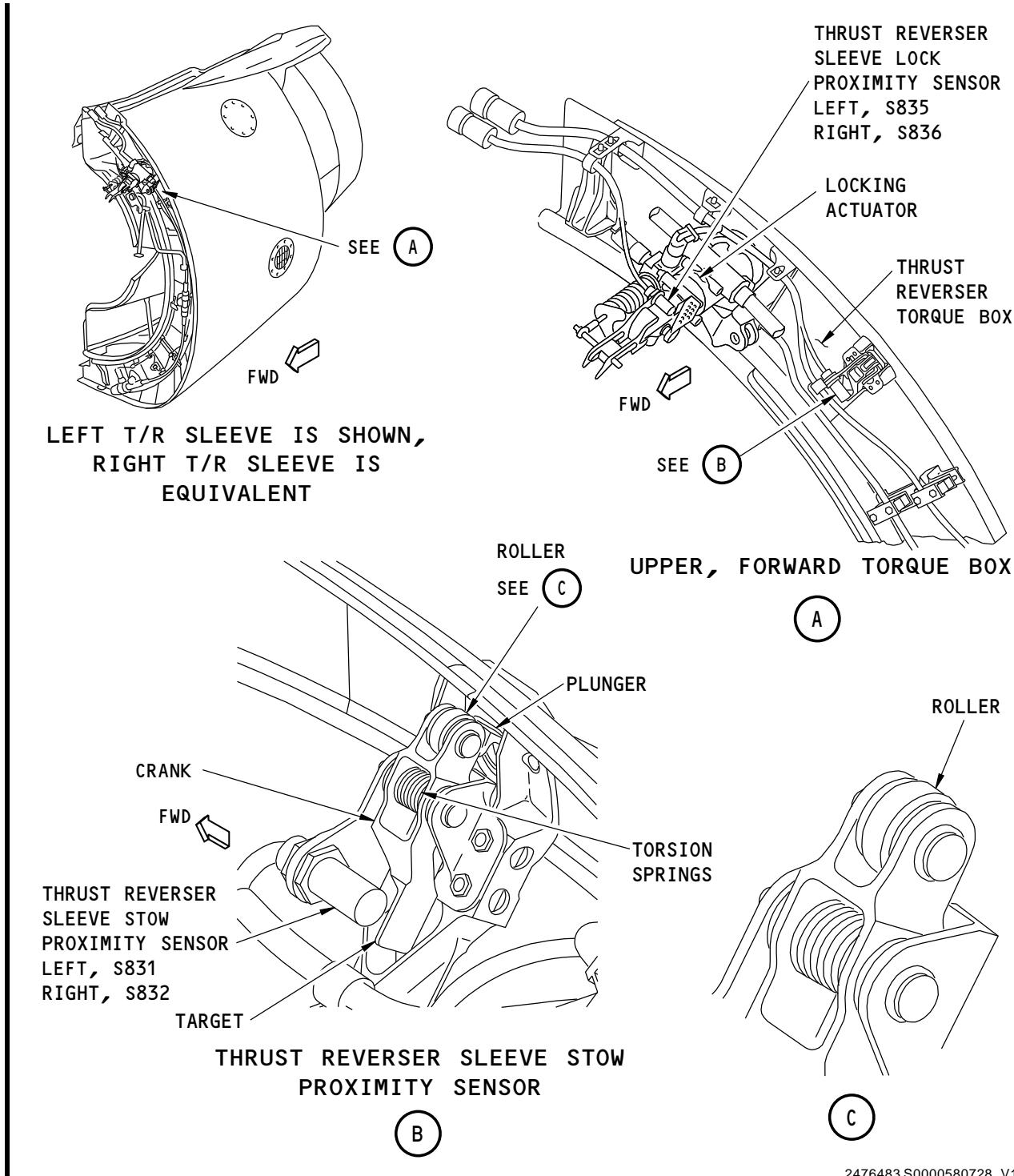


H44238 S0006746402_V1

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

EFFECTIVITY
AKS ALL

78-31 TASK SUPPORT

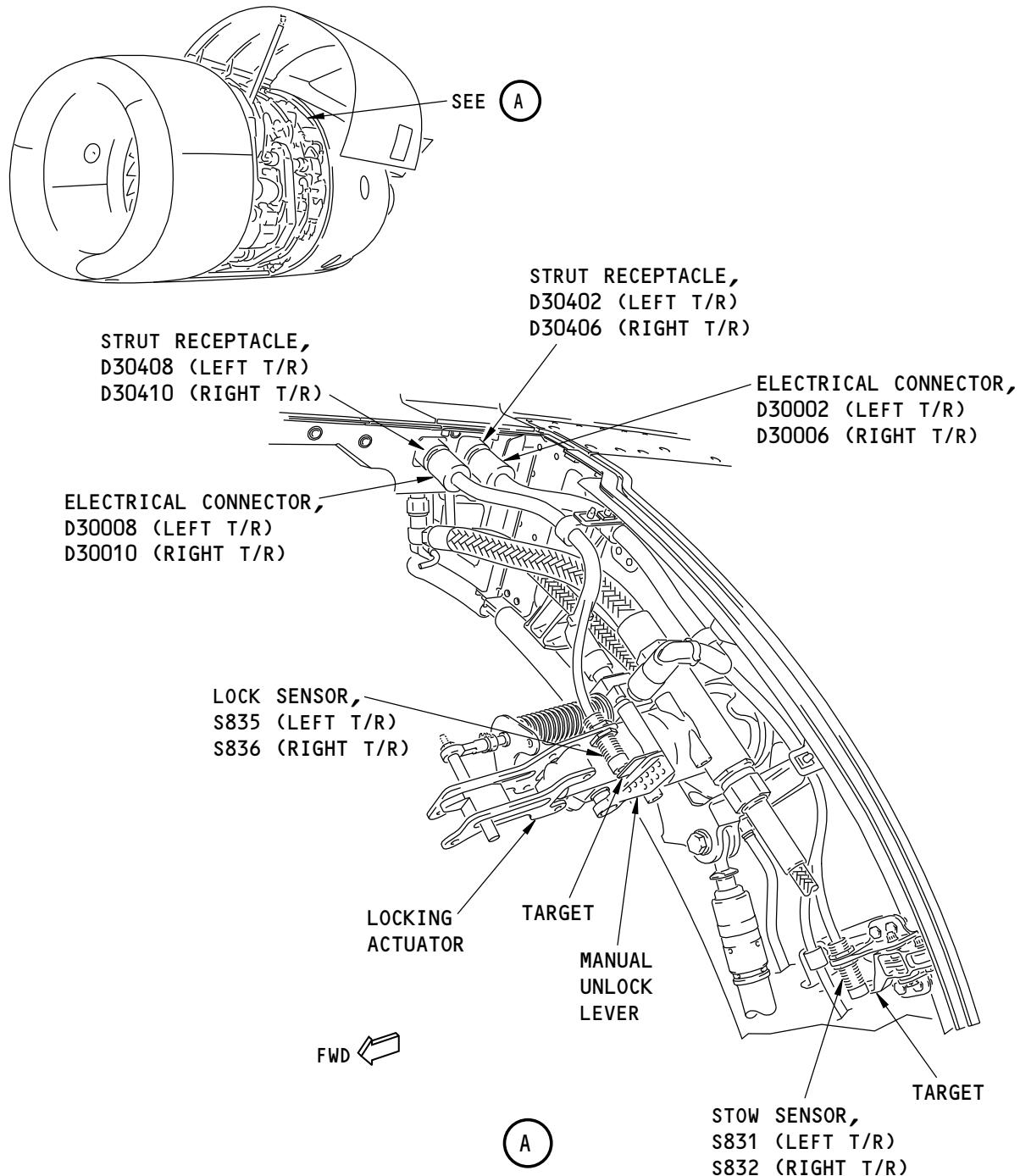


2476483 S0000580728_V1

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

EFFECTIVITY
AKS ALL

78-31 TASK SUPPORT



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

H44218 S0006746403_V1

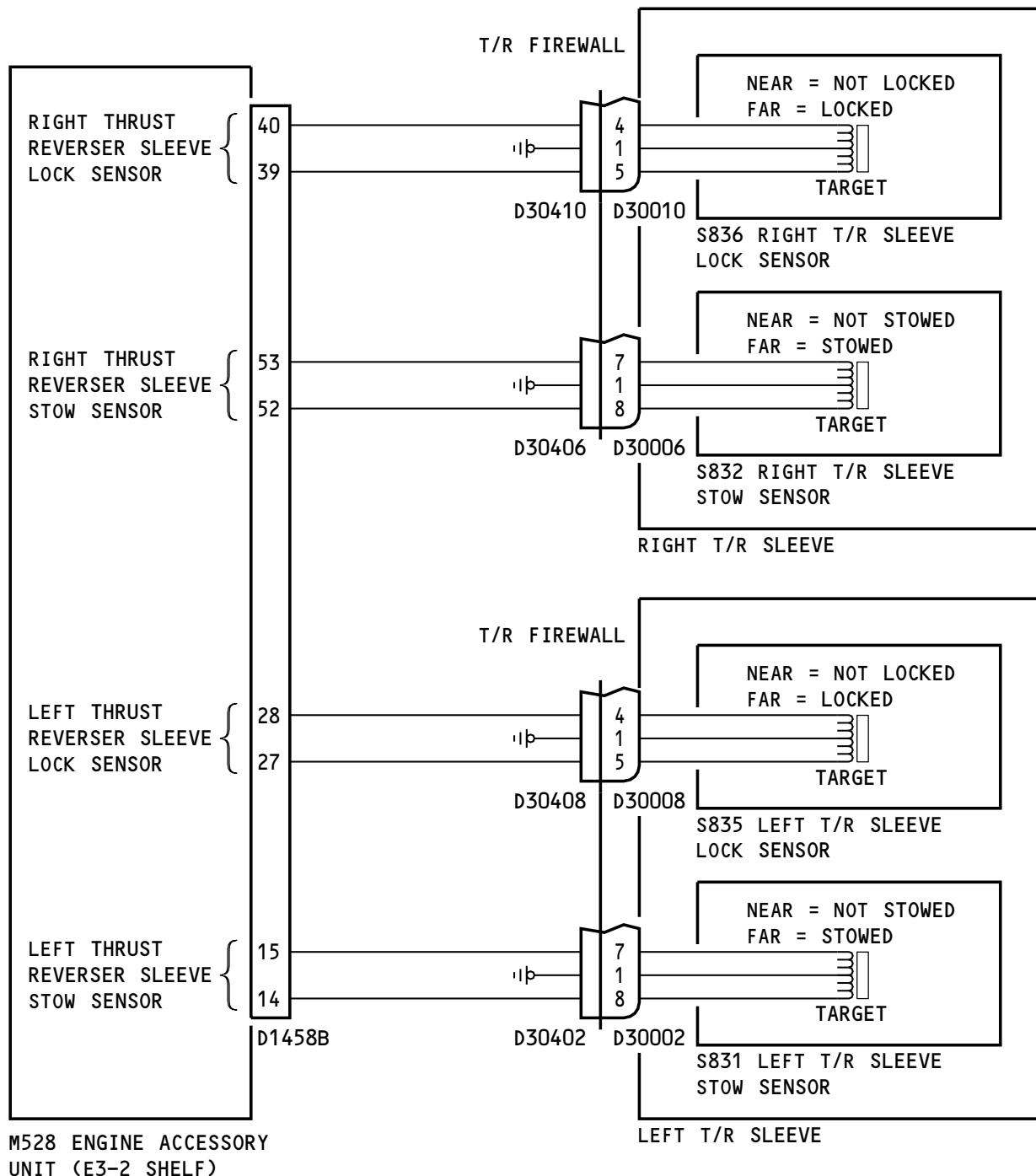
Engine 2 Sleeve Lock and Stow Sensor and Simplified Schematic
Figure 303/78-31-00-990-803-F00 (Sheet 1 of 3)

EFFECTIVITY
AKS ALL

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D633A103-AKS

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

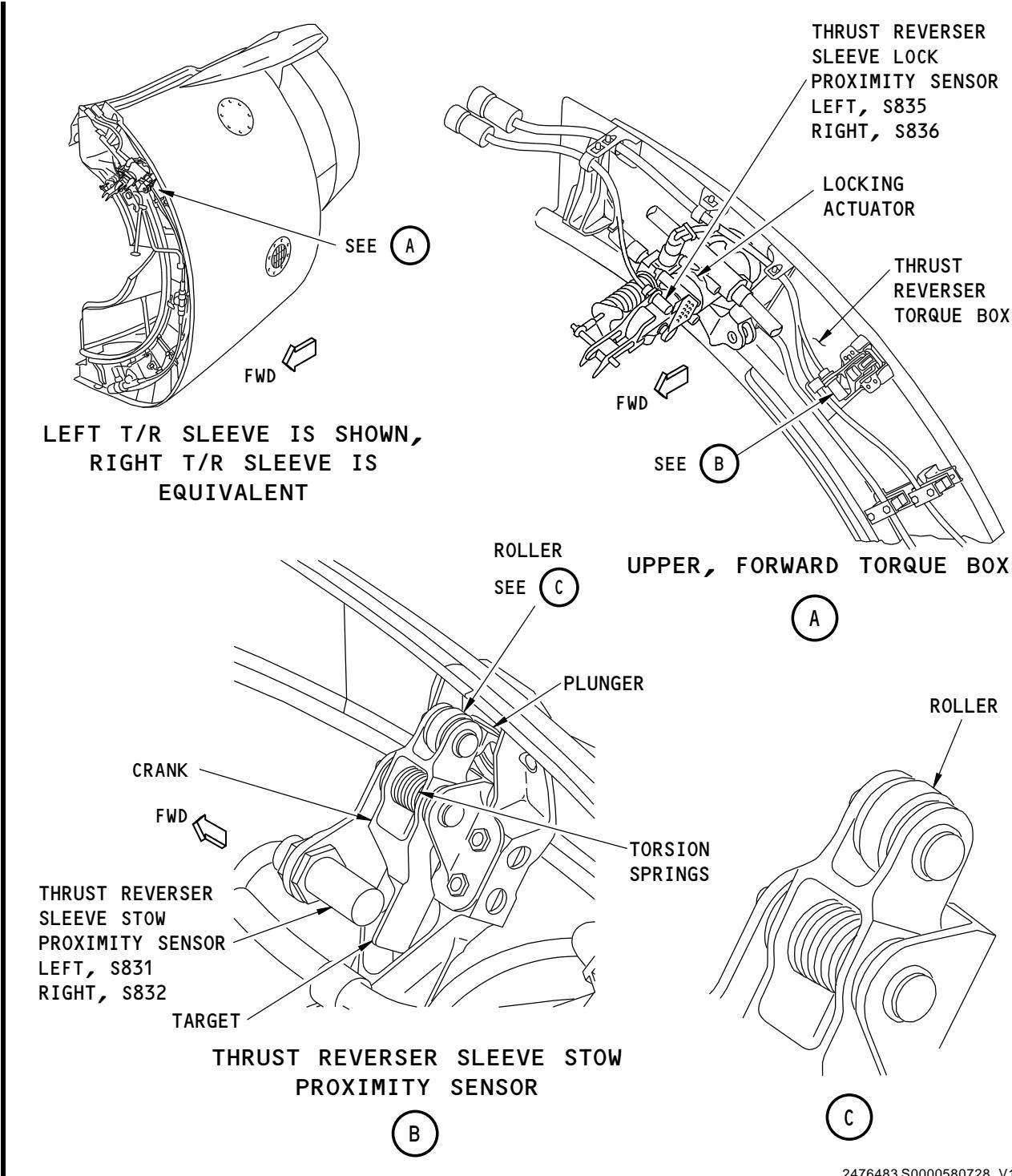


H44248 S0006746404_V1

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

EFFECTIVITY
AKS ALL

78-31 TASK SUPPORT

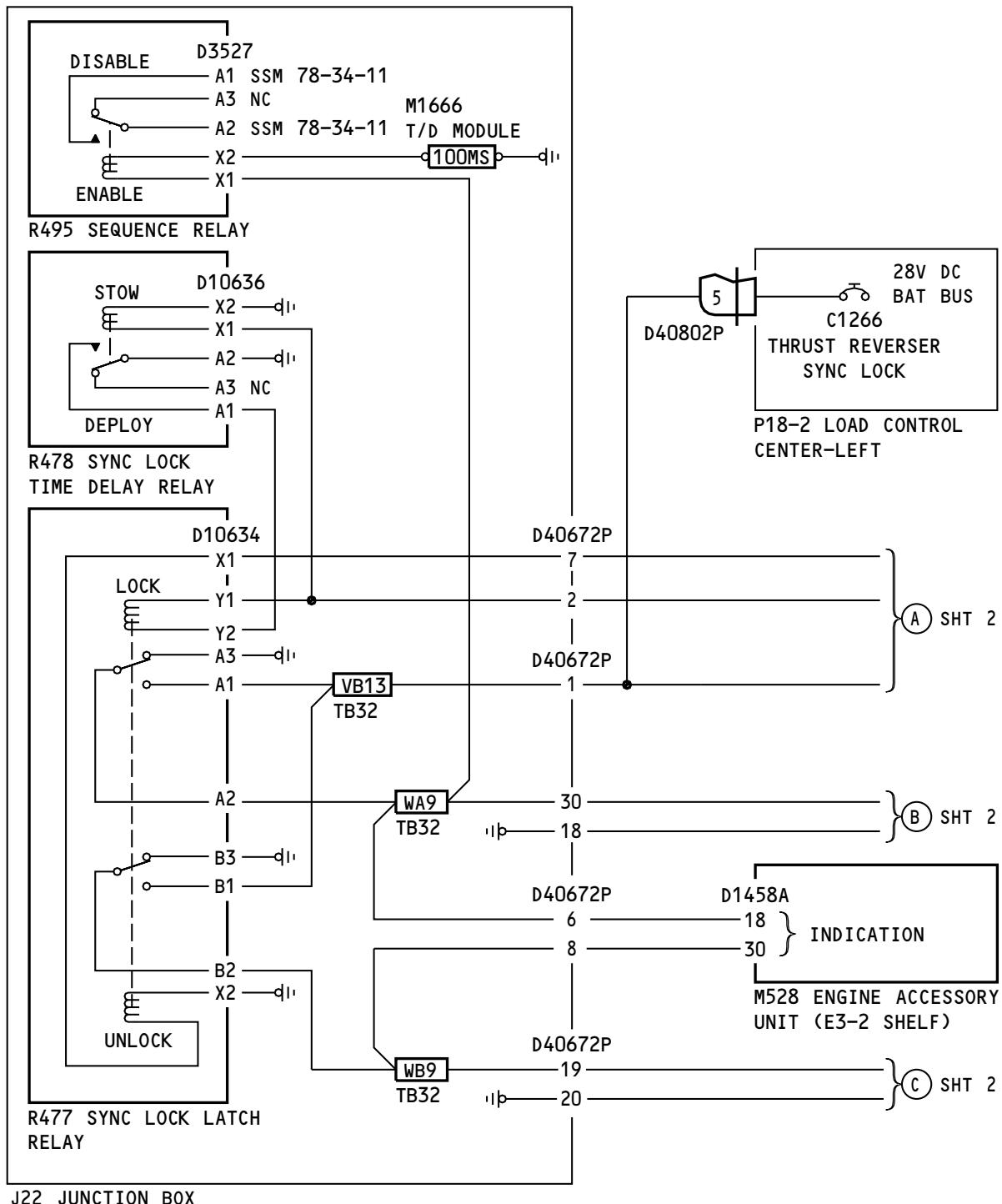


2476483 S0000580728_V1

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

EFFECTIVITY
AKS ALL

78-31 TASK SUPPORT

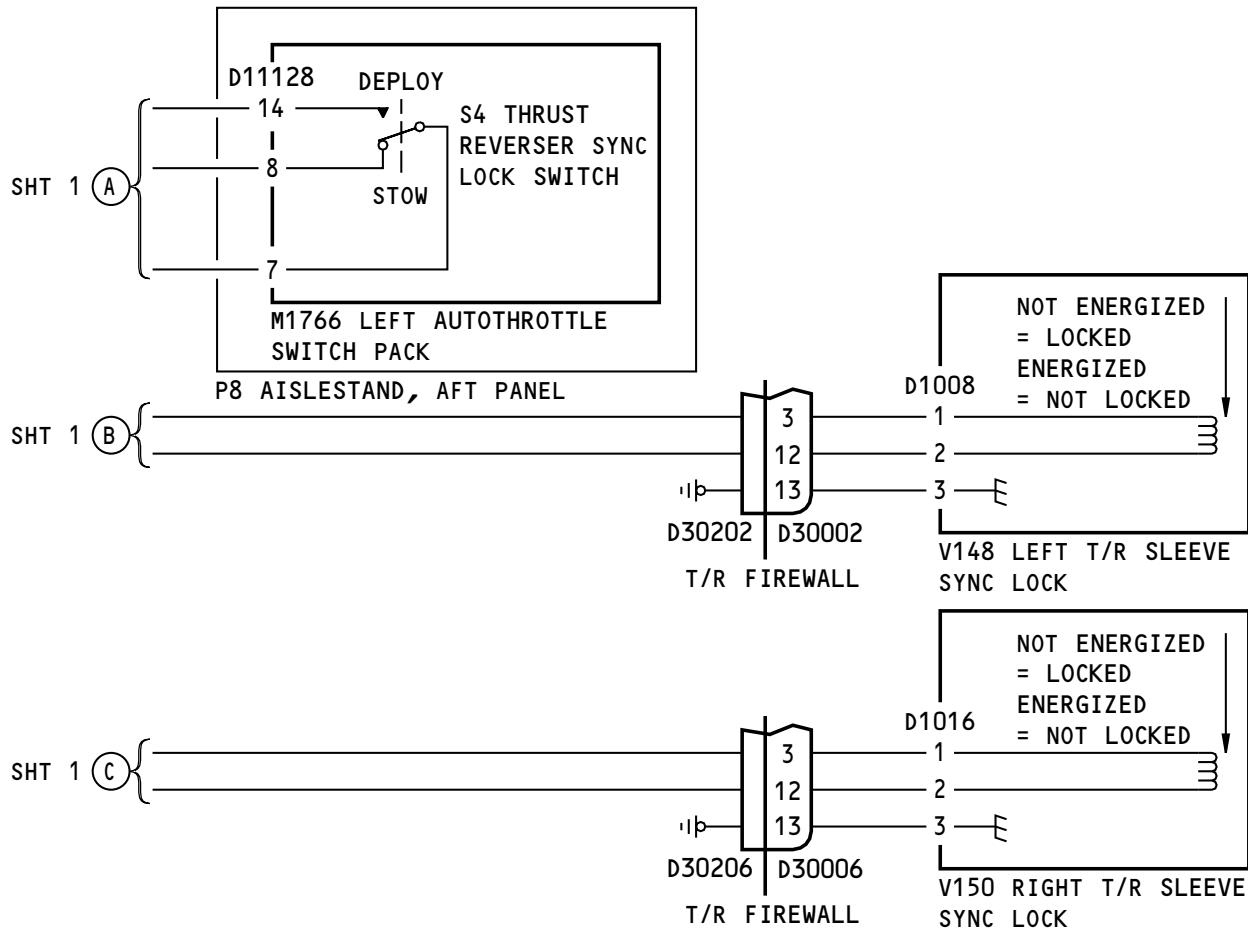


H41977 S0006746405_V1

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

EFFECTIVITY
AKS ALL

78-31 TASK SUPPORT

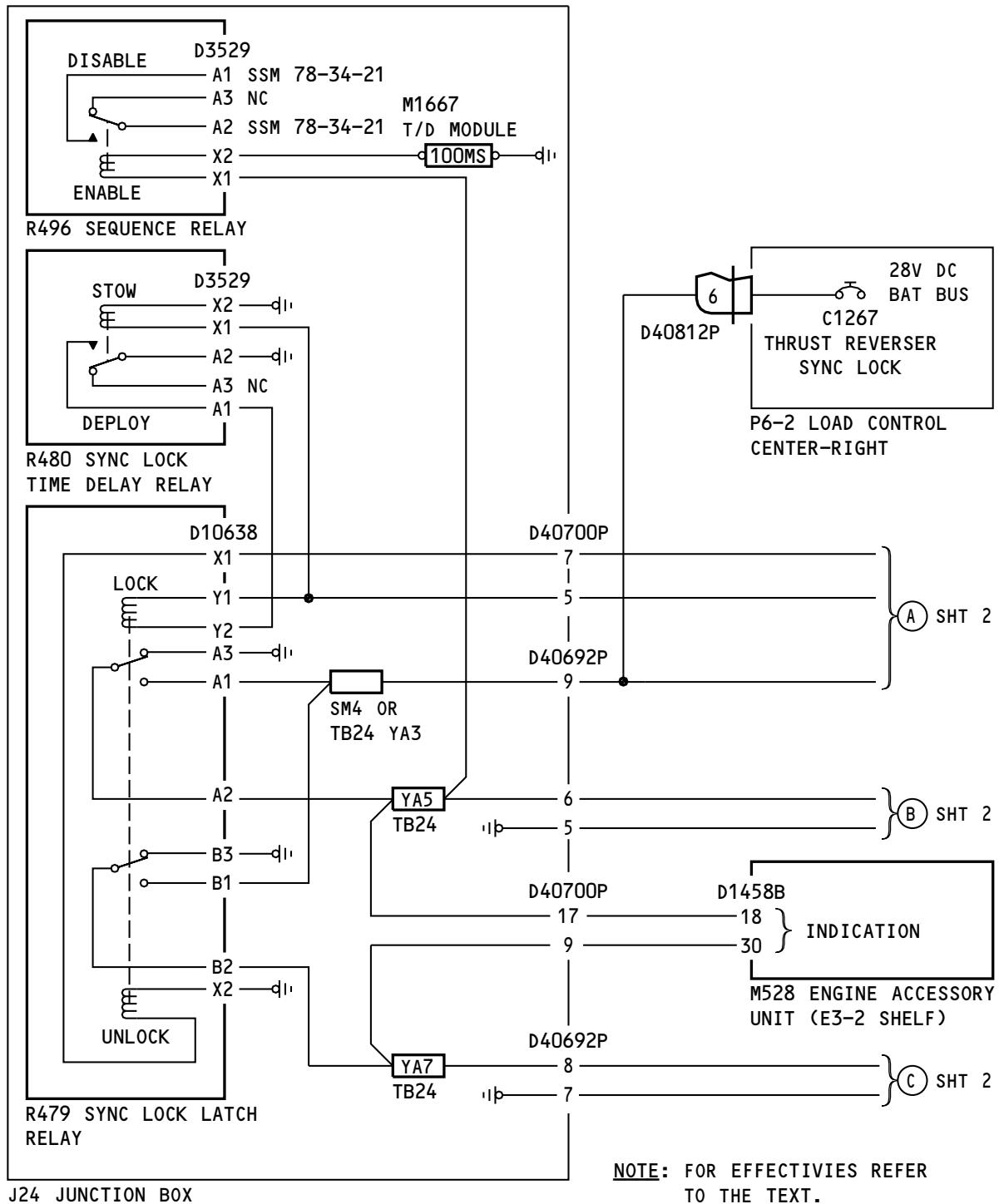


H43840 S0006746406_V1

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

EFFECTIVITY
AKS ALL**78-31 TASK SUPPORT**

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

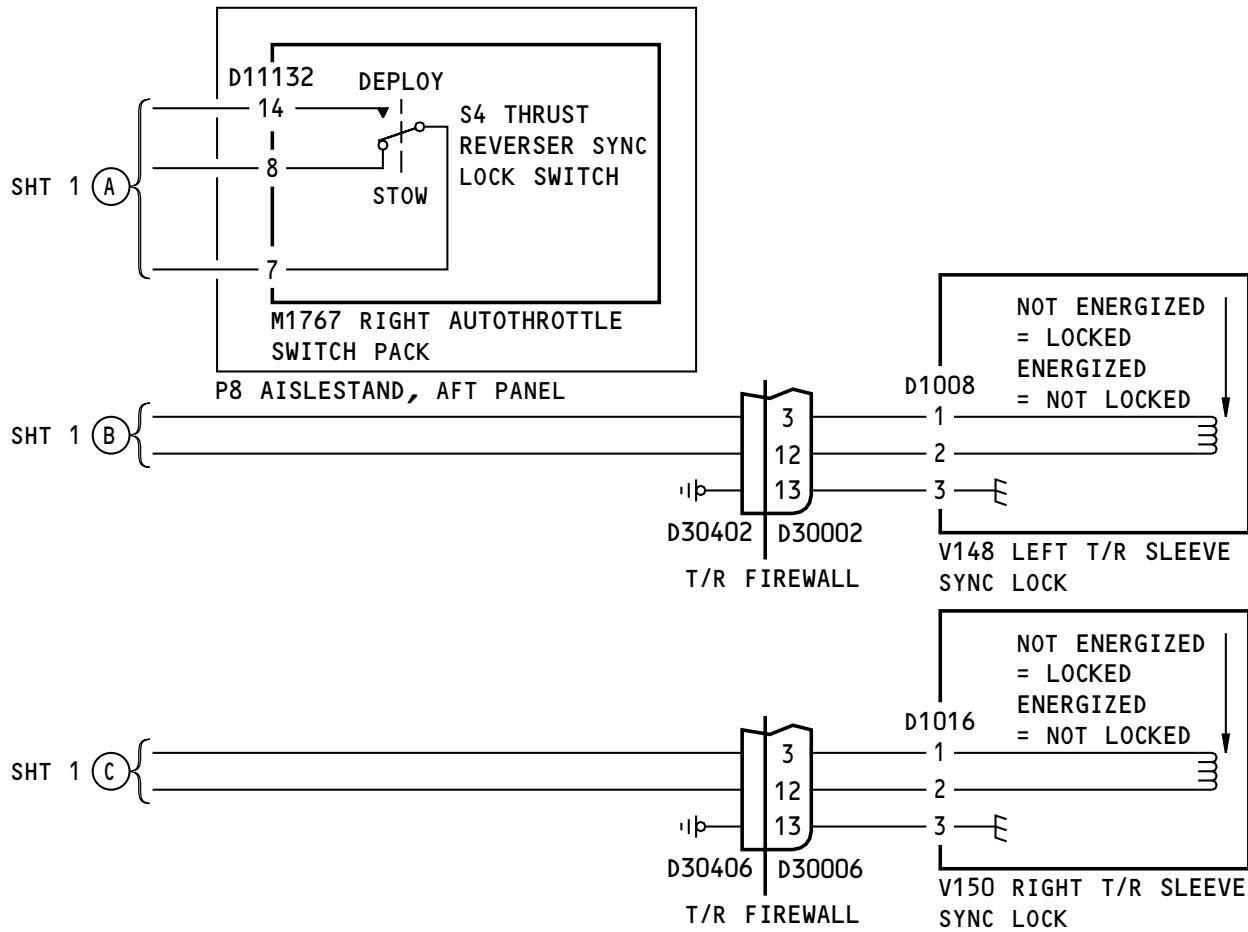


H43843 S0006746407_V1

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

EFFECTIVITY
AKS ALL

78-31 TASK SUPPORT

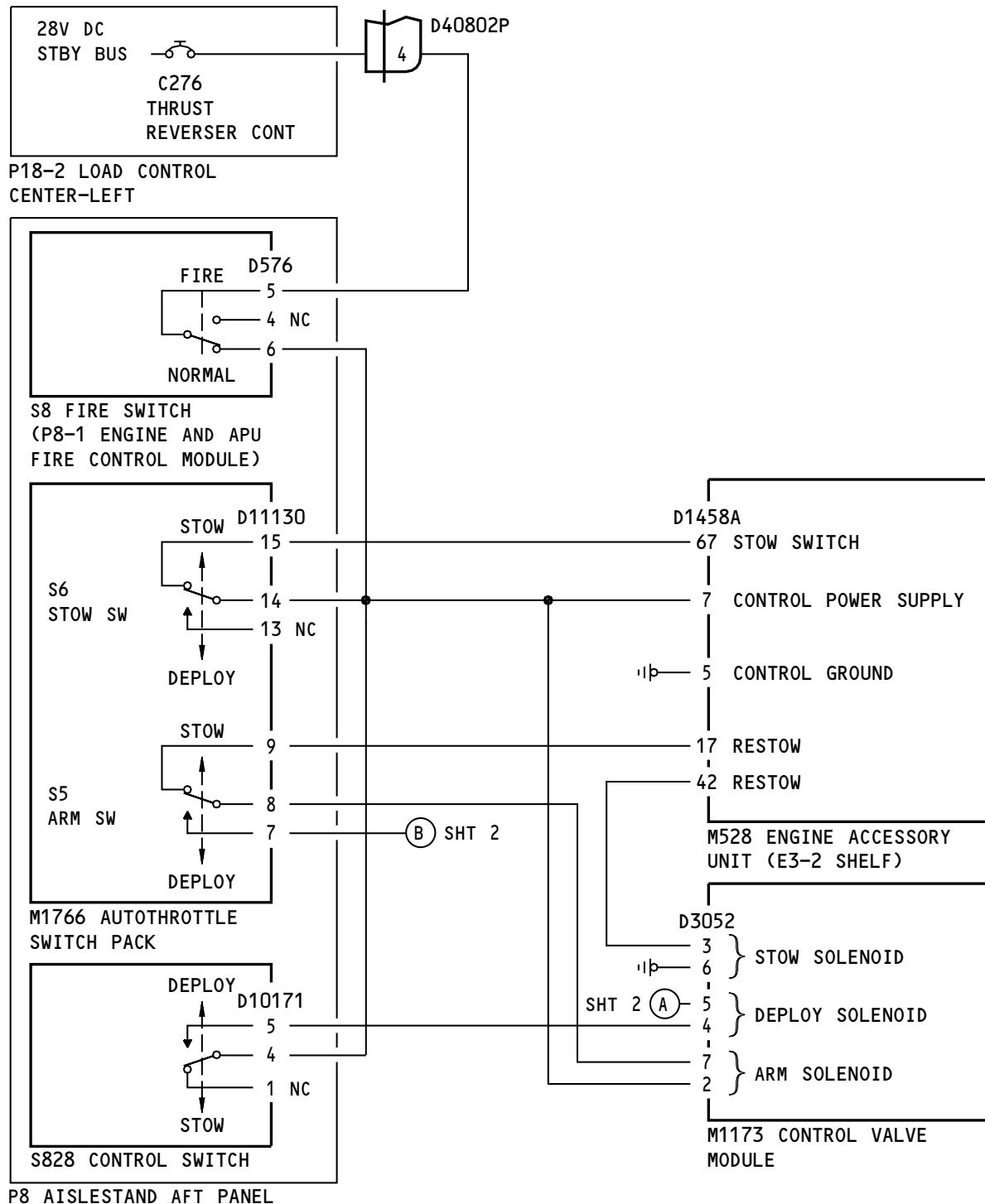


H42403 S0006746408_V1

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

EFFECTIVITY
AKS ALL

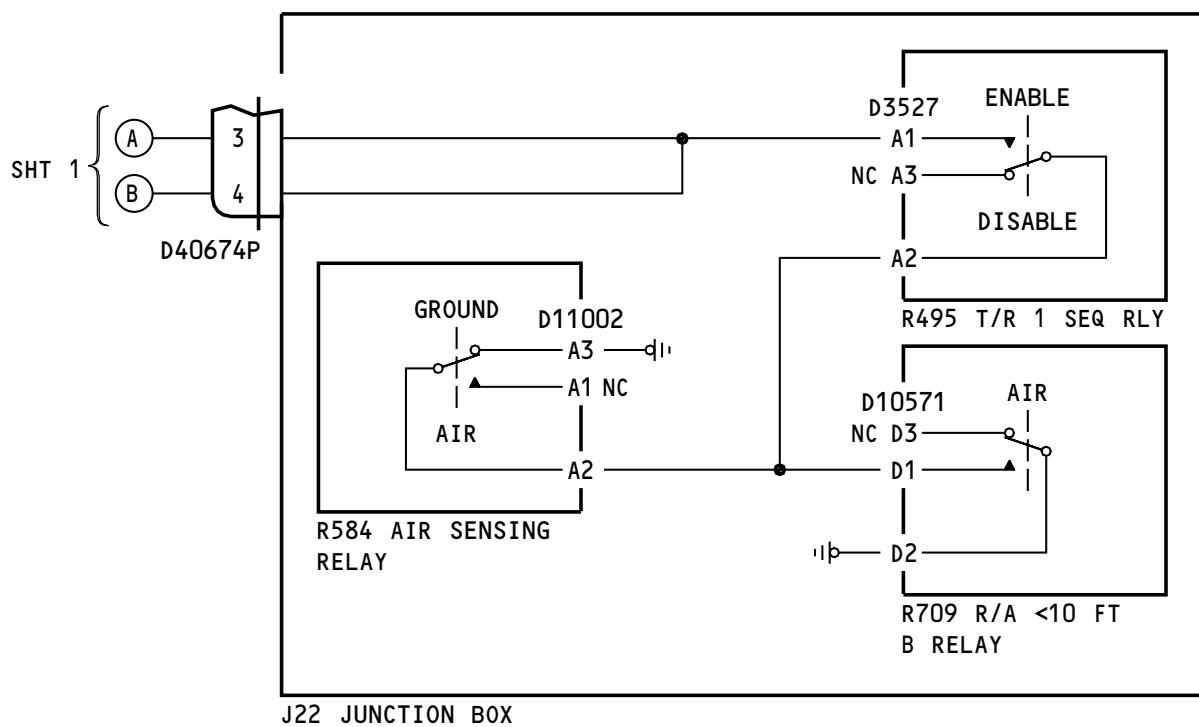
78-31 TASK SUPPORT

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FAULT ISOLATION MANUAL

H68089 S0006746409_V1

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

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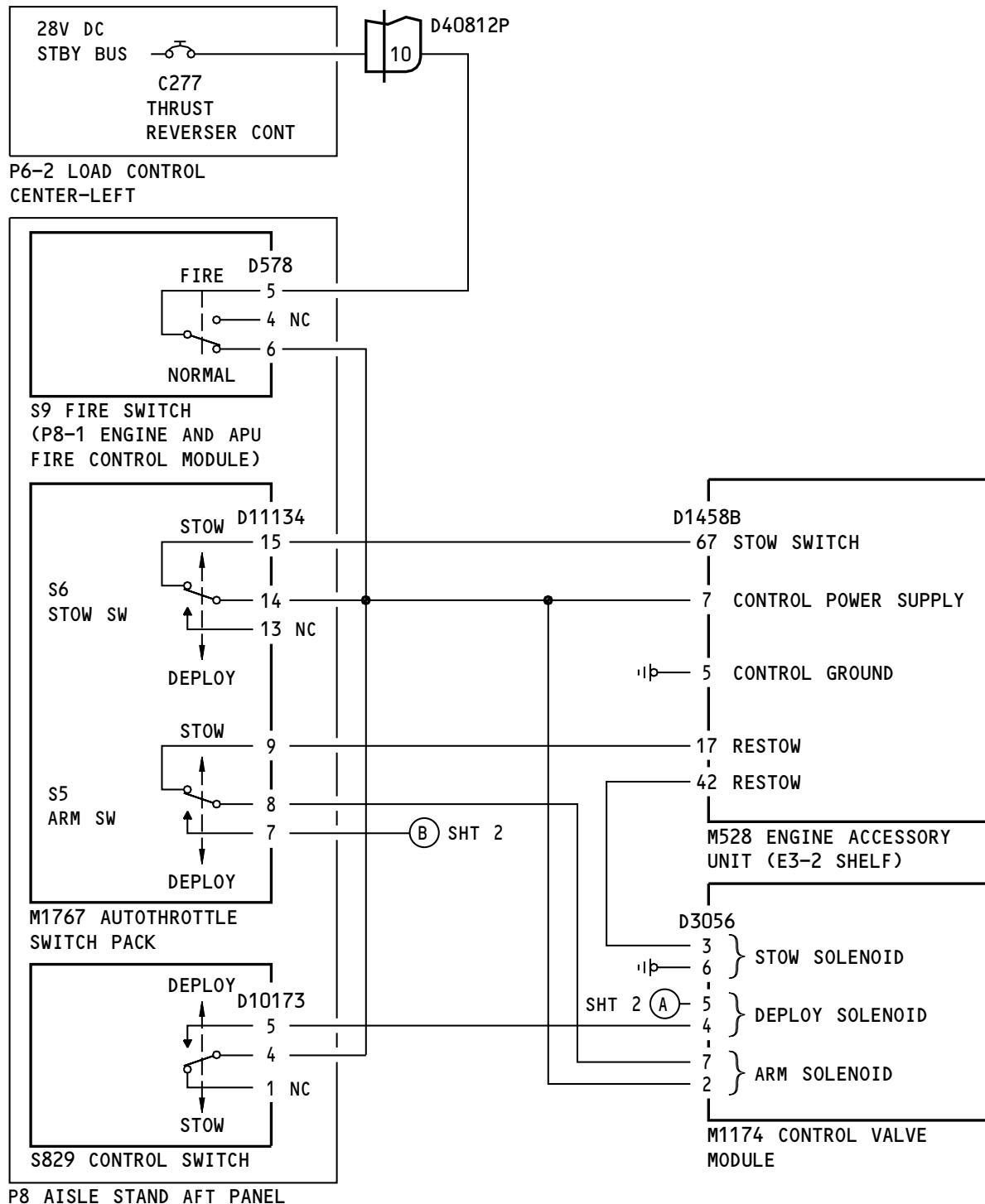
H68091 S0006746410_V1

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

EFFECTIVITY
AKS ALL

78-31 TASK SUPPORT

DE000A100 ALK2

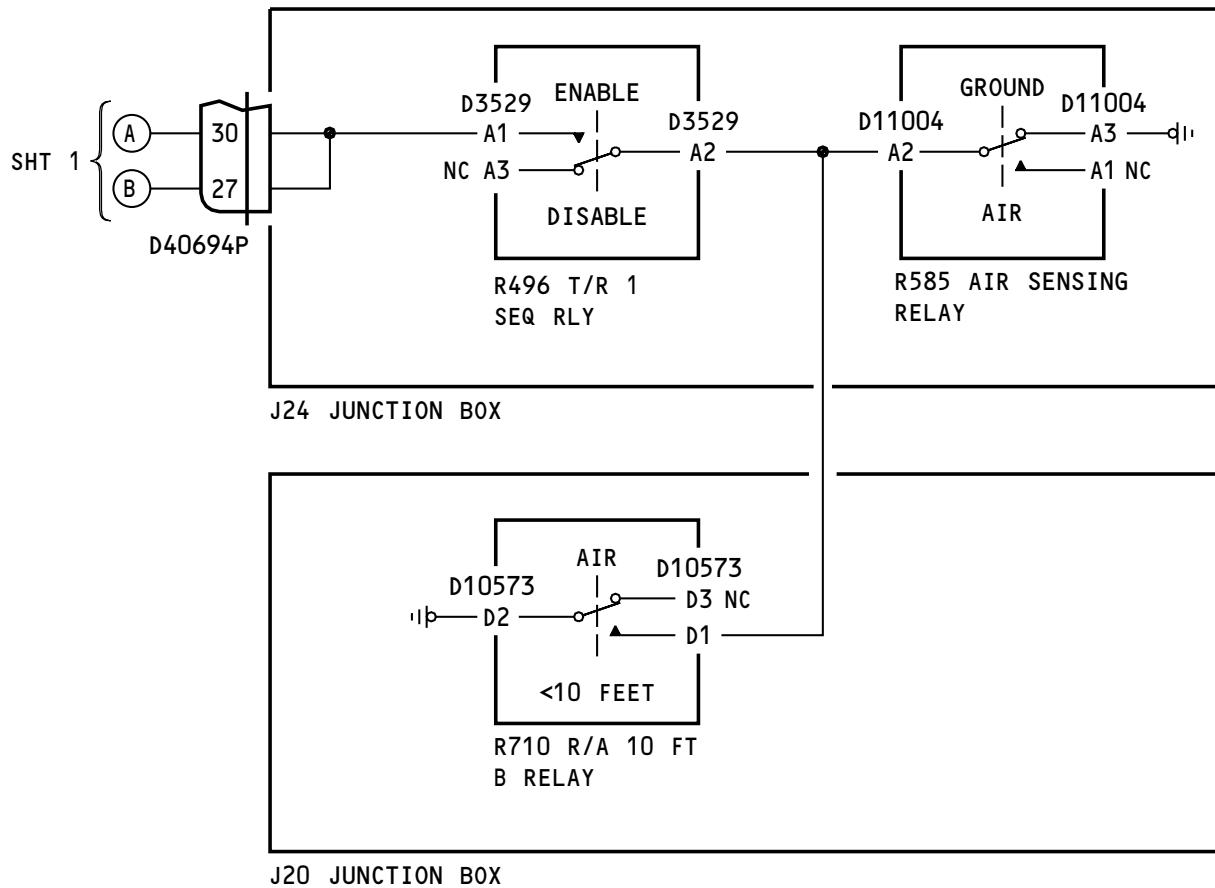
737-600/700/800/900
FAULT ISOLATION MANUAL

H68094 S0006746411_V1

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

EFFECTIVITY
AKS ALL**78-31 TASK SUPPORT**

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



H68095 S0006746412_V1

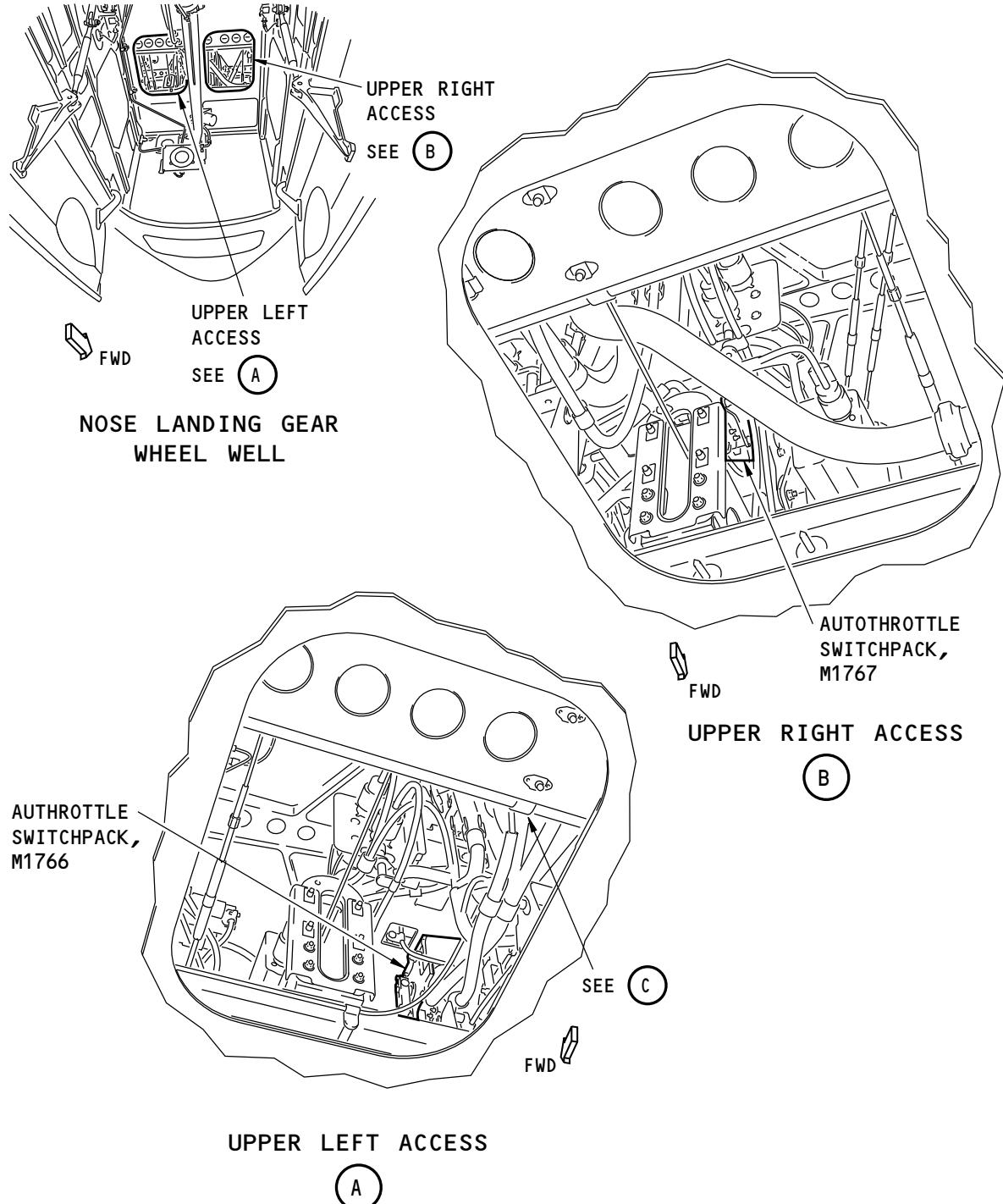
**Engine 2 Thrust Reverser Control Simplified Schematic
Figure 307/78-31-00-990-807-F00 (Sheet 2 of 2)**

EFFECTIVITY
AKS ALL

78-31 TASK SUPPORT

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FAULT ISOLATION MANUAL

H68096 S0006746413_V1

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

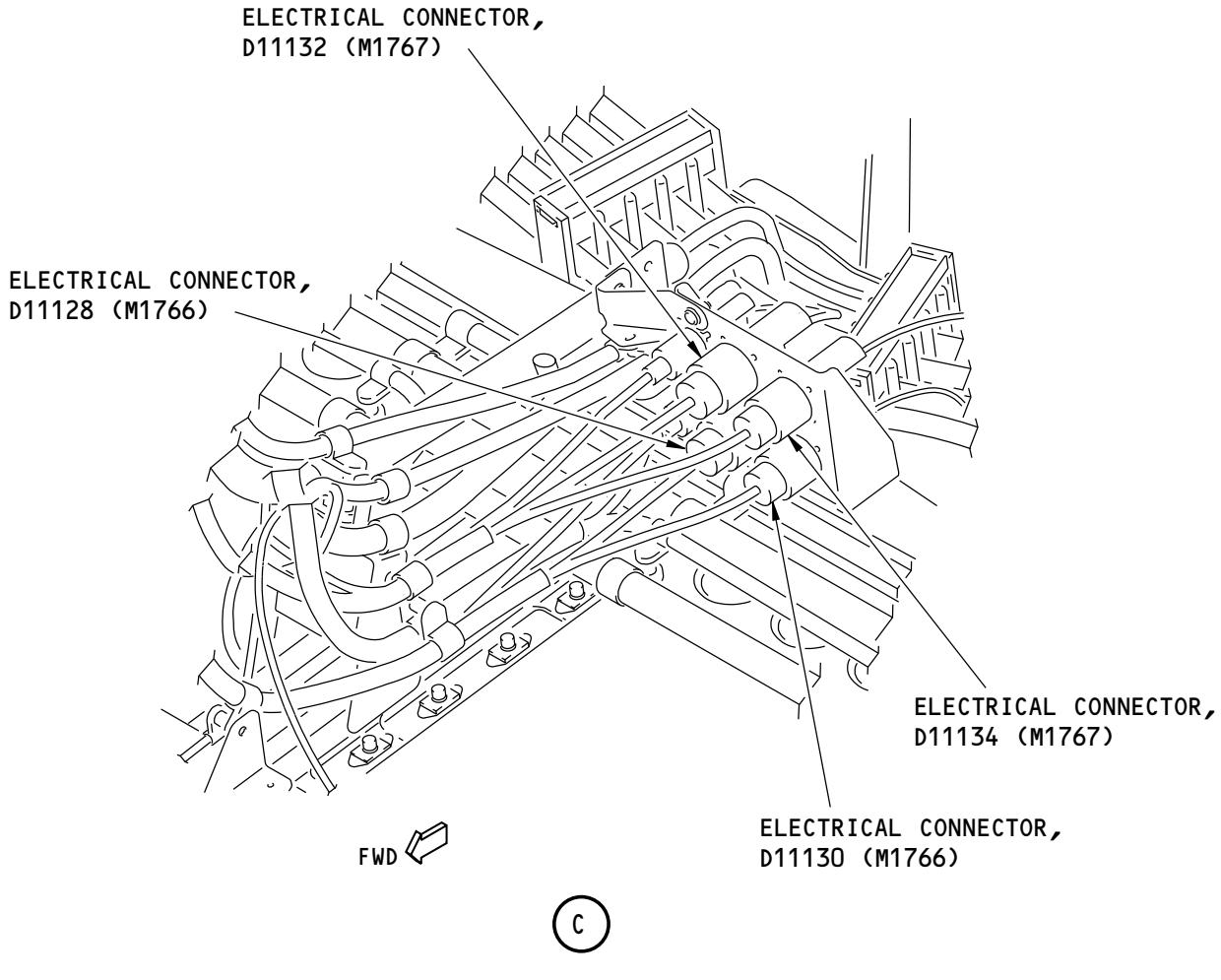
EFFECTIVITY
AKS ALL

78-31 TASK SUPPORT

D633A103-AKS

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



H68097 S0006746414_V1

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

EFFECTIVITY
AKS ALL

78-31 TASK SUPPORT

D633A103-AKS

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

805. T/R STOW FAULTS - All stow messages, but EAU FAULT message - Fault Isolation

A. Description

- (1) This task is for this combination of maintenance messages for Engine 1:
 - (a) ENGINE 1 - L SLEEVE SYNC LOCK PWR
 - (b) ENGINE 1 - L SLEEVE STOW SENSOR
 - (c) ENGINE 1 - L SLEEVE LOCK SENSOR
 - (d) ENGINE 1 - HYD ISO VALVE SENSOR
 - (e) ENGINE 1 - DIR CONT VALVE SENSOR
 - (f) ENGINE 1 - R SLEEVE SYNC LOCK PWR
 - (g) ENGINE 1 - R SLEEVE STOW SENSOR
 - (h) ENGINE 1 - R SLEEVE LOCK SENSOR.
- (2) This task is for this combination of maintenance messages for Engine 2:
 - (a) ENGINE 2 - L SLEEVE SYNC LOCK PWR
 - (b) ENGINE 2 - L SLEEVE STOW SENSOR
 - (c) ENGINE 2 - L SLEEVE LOCK SENSOR
 - (d) ENGINE 2 - HYD ISO VALVE SENSOR
 - (e) ENGINE 2 - DIR CONT VALVE SENSOR
 - (f) ENGINE 2 - R SLEEVE SYNC LOCK PWR
 - (g) ENGINE 2 - R SLEEVE STOW SENSOR
 - (h) ENGINE 2 - R SLEEVE LOCK SENSOR.
- (3) This combination of maintenance messages indicates that there could be an erroneous stow command signal to the EAU when the thrust reverser was deployed.
 - (a) This is caused by a fault in the stow switch (S6) if it is not adjusted correctly or if it has failed in the stow position.
 - (b) If the EAU is reset, this fault can be cleared from the EAU before it is corrected and the thrust reverser will deploy and stow one time and then the maintenance messages will show again.
 - (c) If the EAU is not reset, the thrust reverser will not deploy.

NOTE: No fault in the EAU will cause the thrust reverser not to deploy.

B. Possible Causes

- (1) Stow Switch, S6.

NOTE: The stow switch, S6, is installed on the autothrottle switchpack, M1766 (Eng 1) or M1767 (Eng 2).

- (2) EAU, M528

C. Circuit Breakers

- (1) For engine 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	5	C00276	ENGINE 1 THRUST REVERSER CONT

EFFECTIVITY
AKS ALL

78-32 TASK 805

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

- (2) For engine 2, 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	7	C00277	ENGINE 2 THRUST REVERSER CONT

D. Related Data

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

E. Fault Isolation Procedure

- (1) Do these steps to find out if the maintenance messages are still active:

(a) Reset the EAU:

- 1) Push and hold the FAULT RESET button for a minimum of two seconds.
- 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 thrust reverser 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.
 - (d) If the maintenance messages do not show, 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 to make the decision if you will try to correct the fault.
 - 2) If you will try to correct the fault, it is recommended that you do these steps:
 - a) Do the visual checks of the electrical connectors in the applicable fault isolation procedure below.
 - b) Use the WDM references to identify intermediate electrical connections in the wire harness and do a visual check.
 - c) If you find no problems, then replace components as listed in the Possible Causes List above.
 - 3) Monitor the airplane on the subsequent flight.
 - (e) If the maintenance messages do show, then do the fault isolation procedure below.
 - (f) If a different combination of maintenance messages show, then do the applicable fault isolation task for that combination of maintenance messages.
- (2) Do these steps to prepare for the fault isolation procedure:

EFFECTIVITY

AKS ALL

78-32 TASK 805

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

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) For engine 1 or 2, 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

- (c) For engine 1, make sure that this circuit breaker is open and safety tag is attached:

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

- (d) For engine 2, make sure that this circuit breaker is open and safety tag is attached:

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

- (e) Make sure that the applicable reverse thrust lever is forward and down in the retracted (stow) position.

- (3) Visually examine the electrical connector for the autothrottle switchpack, M1766 (Eng 1) or M1767 (Eng 2), and the electrical connector, D11130 (Eng 1) or D11134 (Eng 2):

NOTE: The stow switch, S6, is installed on the autothrottle switchpack, M1766 (Eng 1) or M1767 (Eng 2).

- (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) For engine 1, disconnect the electrical connector for the autothrottle switchpack, M1766, from the electrical connector, D11130.
- (d) For engine 2, disconnect the electrical connector for the autothrottle switchpack, M1767, from the electrical connector, D11134.
- (e) 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.
 - b) If the Repair Confirmation was not satisfactory, then open the circuit breakers above and continue.
 - 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.
 - a) If the Repair Confirmation is not satisfactory, then open the circuit breakers above and continue.

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- (f) If you did not find a problem, then continue.
- (4) Do an electrical check of the stow switch, S6:
- Remove the DO-NOT-OPERATE tag and move the applicable reverse thrust lever up and aft to the extend (deploy) position.
 - Do the electrical check between these pins of the electrical connector for the autothrottle switchpack, M1766 (Eng 1) or M1767 (Eng 2), through the stow switch, S6:

ENGINE 1
AUTO
THROTTLE
SWITCHPACK

CONNECTOR	D11130P	D11130P	CONTINUITY
	PIN 14	PIN 15	NO
	PIN 13	PIN 14	YES

ENGINE 2
AUTO
THROTTLE
SWITCHPACK

CONNECTOR	D11134P	D11134P	CONTINUITY
	PIN 14	PIN 15	NO
	PIN 13	PIN 14	YES

- Move the applicable reverse thrust lever forward and down to the retracted (stow) position and attach the DO-NOT-OPERATE tag.
- If the continuity is not correct:

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

- Do the steps in the Switch Adjustment paragraph in the Switch Installation procedure (AMM TASK 76-11-07-400-801-F00) to adjust the stow switch, S6.
 - Do the Repair Confirmation at the end of this task.
<1> If the Repair Confirmation is not satisfactory, then continue.
 - 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.

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

- 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.

AKS ALL

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

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- a) If the Repair Confirmation is not satisfactory, then continue.
- (e) If the continuity is correct, then continue.
- (5) 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.

F. Repair Confirmation

- (1) Do these steps:

- (a) Make sure that the electrical connector for the autothrottle switchpack, M1766 (Eng 1) or M1767 (Eng 2), at the electrical connector, D11130 (Eng 1) or D11134 (Eng 2), is correctly connected.
- (b) Do this task: Thrust Reverser Activation After Ground Maintenance, AMM TASK 78-31-00-440-803-F00.
- (c) For engine 1 or 2, 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) For engine 1, 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	5	C00276	ENGINE 1 THRUST REVERSER CONT

- (e) For engine 2, make sure that this circuit breaker is closed:

F/O Electrical System Panel, P6-2

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

- (f) 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.

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.

- (g) Operate the thrust reverser through an extend and retract cycle.
- (h) 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.
- (i) If the REVERSER fault light stays off, then you corrected the fault.
- (j) If the REVERSER fault light stays on, then do this step:

EFFECTIVITY
AKS ALL

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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 the Thrust Reverser Deactivation For Ground Maintenance task (AMM TASK 78-31-00-040-802-F00), and then continue with the fault isolation procedure.

———— 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 the Sync Locks unlocked and the Isolation Valve opened. The Directional Control Valve did not go to the deploy position and the Locking Actuators did not unlock. The Thrust Reverser did not deploy.

B. Possible Causes

- (1) Control Valve Module (CVM), M1173 (Eng 1) or M1174 (Eng 2)
- (2) Control Switch, S828 (Eng 1) or S829 (Eng 2)
- (3) Wiring

C. Circuit Breakers

- (1) For engine 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	5	C00276	ENGINE 1 THRUST REVERSER CONT

- (2) For engine 2, 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	7	C00277	ENGINE 2 THRUST REVERSER CONT

EFFECTIVITY
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D. Related Data

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

- (1) Do these steps to prepare for the 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.

- (a) Do this task: Thrust Reverser Deactivation For Ground Maintenance, AMM TASK 78-31-00-040-802-F00.
- (b) Move the Reverse Thrust Lever 1 (2) UP and AFT to the EXTENDED (deployed) position.
- (2) Visually examine the electrical connector, D3052 (Eng 1) or D3056 (Eng 2) at the Control Valve Module (CVM) M1173 (Eng 1) or M1174 (Eng 2):

NOTE: The Control Valve Module is in the Main Gear Wheel Well on the Keel Beam. M1173 is on the left side of the Keel Beam and M1174 is on the right side of the Keel Beam.

 - (a) See if the electrical connector, D3052 (Eng 1) or D3056 (Eng 2), is correctly connected to the CVM.
 - (b) Disconnect the electrical connector, D3052 (Eng 1) or D3056 (Eng 2), from the CVM.
 - (c) Visually examine the 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 CVM M1173 (Eng 1) or M1174 (Eng 2). 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 (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.
 - a) If the Repair Confirmation is not satisfactory, then continue.
 - (d) If you did not find a problem, then continue.

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- (3) For engine 1, 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	5	C00276	ENGINE 1 THRUST REVERSER CONT

- (4) For engine 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	7	C00277	ENGINE 2 THRUST REVERSER CONT

- (5) Do a check for 28 VDC at pin 4 to pin 5 (ground) of the applicable electrical connector, D3052 (Eng 1) or D3056 (Eng 2).

- (a) If there is voltage, then replace the CVM, M1173 (Eng 1) or M1174 (Eng 2). 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.

- a) For engine 1, if the Repair Confirmation is not satisfactory, then remove the safety tag, close the following circuit breaker 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

- b) For engine 2, if the Repair Confirmation is not satisfactory, then remove the safety tag, close 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	7	C00277	ENGINE 2 THRUST REVERSER CONT

- (b) If there is no voltage, then continue.

- (6) Do a check for 28 VDC from pin 4 of D3052 (Eng 1) or D3056 (Eng 2) to structure ground.

- (a) If there is voltage, then do these steps:

- 1) For engine 1, open this 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	5	C00276	ENGINE 1 THRUST REVERSER CONT

- 2) For engine 2, 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	7	C00277	ENGINE 2 THRUST REVERSER CONT

- 3) For engine 1, examine and repair or replace the wiring between pin 5 of the electrical connector, D3052, and terminal block TB22 YB1 (SWPM Ch 20).

NOTE: Terminal block TB22 YB1 is in the J22 junction box.

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- a) Do the Repair Confirmation at the end of this task.
- 4) For engine 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 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 there is no voltage, then do these steps and continue:

- 1) For engine 1, open this 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	5	C00276	ENGINE 1 THRUST REVERSER CONT

- 2) For engine 2, 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	7	C00277	ENGINE 2 THRUST REVERSER CONT

- 3) Re-connect the electrical connector, D3052 (Eng 1) or D3056 (Eng 2), at the CVM.

- (7) Do a check of the Control Switch, S828 (Eng 1) or S829 (Eng 2) adjustment. Do this task: Control Switch Adjustment and Test, AMM TASK 78-34-04-700-801-F00.
 - (a) If the adjustment is not correct, then do the steps to adjust the Control Switch.
 - 1) Do the Repair Confirmation at the end of this task.
 - (b) If the adjustment is correct, then continue.
- (8) Visually examine the electrical connector for the Control Switch, S828 (Eng 1) and S829 (Eng 2), and the electrical connector, D10171 (Eng 1) or D10173 (Eng 2):
 - (a) To get access to the connector, remove the lower panel from the left side of the P8 aisle stand.
 - (b) See if the electrical connector is correctly connected, and continue.
 - (c) Disconnect the electrical connector for the Control Switch, S828 (Eng 1) and S829 (Eng 2), from the electrical connector, D10171 (Eng 1) or D10173 (Eng 2).
 - (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 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.
 - (e) If you did not find a problem, then continue.
- (9) For engine 1, 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	5	C00276	ENGINE 1 THRUST REVERSER CONT

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- (10) For engine 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	7	C00277	ENGINE 2 THRUST REVERSER CONT

- (11) Do a check for 28 VDC at pin 4 of D10171 (Eng 1) or D10173 (Eng 2) to structure ground.

- (a) If there is voltage, then do these steps:

- 1) For engine 1, open this 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	5	C00276	ENGINE 1 THRUST REVERSER CONT

- 2) For engine 2, 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	7	C00277	ENGINE 2 THRUST REVERSER CONT

- 3) Examine and repair or replace the wiring between pin 5 of D10171 (Eng 1) or D10173 (Eng 2) and pin 4 of D3052 (Eng 1) or D3056 (Eng 2) (SWPM Ch 20).

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

- (b) For engine 1, if there is no voltage, then open the following 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	5	C00276	ENGINE 1 THRUST REVERSER CONT

- (c) For engine 2, if there is no voltage, then open the following 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	7	C00277	ENGINE 2 THRUST REVERSER CONT

- (12) Examine and repair or replace the wiring as follows (SWPM Ch 20):

- (a) For engine 1, examine and repair or replace the wiring between pin 4 of D10171 and splice SM18.
- (b) For engine 2, examine and repair or replace the wiring between pin 4 of D10173 splice SP968.
- 1) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

- (1) Do these steps:

- (a) Make sure that the D3052 (Eng 1) or D3056 (Eng 2) connector at the CVM is correctly connected.
- (b) Make sure that the electrical connector for the Control Switch, S828 (Eng 1) and S829 (Eng 2), at the electrical connector, D10171 (Eng 1) or D10173 (Eng 2), is correctly connected.


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- (c) Move the Reverse Thrust Lever 1 (2) FWD and DOWN to the RETRACTED (stowed) position.
- (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 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.
 - 5) If the Thrust Reverser (T/R) does not deploy, make sure that the thrust reverser is deactivated again before you continue with the 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.

- 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 1 (2) 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 fault is corrected, do these steps:
 - (a) Move the Reverse Thrust Lever 1 (2) FWD and DOWN to RETRACT (stow) the thrust reverser.
 - (b) Operate the thrust reverser through an extend and retract cycle.
 - (c) Make sure that the REVERSER fault 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 P5 panel in the flight compartment stays off.
 - (f) Re-install the P8 aisle stand cover.

— END OF TASK —

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**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 Engine 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 Engine 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 Directional Control Valve 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) Control Valve Module, M1173 (M1174)

AKS 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 or T/R 2 Arm Switch, S5, is installed on the Left Autothrottle Switchpack, M1766 or Right Autothrottle Switchpack, M1767.

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

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

AKS 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	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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D. Related Data

- (1) Component Location (Figure 301, Figure 308)
- (2) Simplified Schematic (Figure 302, 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

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) Move the Reverse Thrust Lever 1 (2) UP and AFT to the EXTENDED (deployed) position.
- (2) Visually examine the ENG-1 (ENG-2) electrical connector, D3052 (D3056) at the Control Valve Module 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.

- (a) See if the electrical connector, D3052 (D3056) is correctly connected to the ENG-1 (ENG-2) CVM, M1173 (M1174), and continue.
 - (b) Disconnect the electrical connector, D3052 (D3056) from the ENG-1 (ENG-2) CVM, M1173 (M1174).
 - (c) Visually examine the ENG-1 (ENG-2) CVM, M1173 (M1174) Receptacle and Wire Harness Connector (AMM TASK 70-70-01-200-801-F00).
 - 1) If the Receptacle at the Control Valve Module is damaged, then replace the ENG-1 (ENG-2) CVM. These are the tasks:
 - Control Valve Module Installation, AMM TASK 78-34-01-400-801-F00
 - Control Valve Module Removal, AMM TASK 78-34-01-000-801-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.
 - (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

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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

- (4) Do a check for 28 VDC from pin 2 to pin 7 (ground) of the applicable ENG-1 (ENG-2) electrical connector, D3052 (D3056).
- (a) If there is voltage, 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.
- (b) If there is no voltage, then continue.
- (5) Do a check for 28 VDC from pin 2 of connector D3052 (D3056) to structure ground.
- (a) If there is no voltage, 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 pin 2 of D3052 (Eng 1) or D3056 (Eng 2) at the Control Valve Module and terminal block TB3201 YA29 (Eng 1) or TB3201 YB29 (Eng 2) (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 there is voltage, 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 electrical connector, D3052 (Eng 1) or D3056 (Eng 2).

- (6) Visually examine the electrical connector for the Autothrottle Switchpack, M1766 (Eng 1) or M1767 (Eng 2), and the electrical connector, D11130 (Eng 1) or D11134 (Eng 2):

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

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- (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 electrical connector D11130 (D11134) from the T/R 1 (T/R 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, 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.
- (7) Do an electrical check of the T/R 1 (T/R 2) Arm Switch, S5, 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: 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 Autothrottle Switchpack, M1766 ENG 1 or M1767 ENG 2:

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

- (b) Alternate Method 2 - Load Light:

- 1) Remove connector D11130 (D11134) and install a jumper between pin 8 of 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 9 of the ENG-1 (ENG-2) Autothrottle Switchpack, M1766 (M1767) Receptacle and Airplane Ground.
- 3) 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

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
C	7	C00277	ENGINE 2 THRUST REVERSER CONT

- 4) Operate the Reverse Thrust Lever 1 (2) through an EXTEND (deploy) and RETRACT (stow) cycle and monitor the Load Light as follows:
 - a) 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 is not illuminated.

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- <1> If the Load Light is dim, flickering, or illuminated, the T/R 1 or T/R 2 Arm Switch, S5 is malfunctioning.
- b) 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 is illuminated.
- <1> If the Load Light is dim, flickering, or not illuminated, the T/R 1 or 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

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 or T/R 2 Arm Switch, S5 shows that the Switch is malfunctioning, do these steps:

AKS 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.
 - b) 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

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

- 2) Replace the Autothrottle Switchpack Assembly, M1766 Eng-1 or M1767 Eng-2. 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.

AKS ALL

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

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

- (8) Do a check for 28 VDC from pin 8 of the D11130 (Eng 1) or D11134 (Eng 2) to structure ground.
- (a) If there is voltage, then do these steps:

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- 1) 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	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) For engine 1, examine and repair or replace the wiring between pin 7 of the electrical connector, D11130, and terminal block TB22 YB1.

NOTE: Terminal block TB22 YB1 is in the J22 junction box.

- 3) For engine 2, examine and repair or replace the wiring between pin 7 of the electrical connector, D11134, and splice SM15.

NOTE: Splice SM15 is in the J24 junction box in the nose gear wheel well on the right side.

- (b) If there is no voltage, 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

- (9) Examine and repair the wiring between pin 8 of the D11130 (Eng 1) or D11134 (Eng 2) and pin 7 of D3052 (Eng 1) or D3056 (Eng 2) at the Control Valve Module (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 ENG-1 (ENG-2) connector D3052 (D3056) at the Control Valve Module is correctly connected.
- (b) Make sure that the electrical connector for the ENG-1 (ENG-2) Arm Switch, M1766 (M1767), at the electrical connector, D11130 (Eng 1) or D11134 (Eng 2), is correctly connected.
- (c) Move the Reverse Thrust Lever 1 (2) FWD and DOWN to the RETRACTED (stowed) position.
- (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.



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

- (2) After the fault is corrected, do these steps:
 - (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 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 Engine 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 Engine 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) Broken or binding Manual Lockout Handle on the Upper Locking Hydraulic Actuator (ULHA)
- (2) SLPS Target

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- (3) Left T/R Sleeve is not completely retracted
- (4) SLPS, S835
- (5) ULHA
- (6) Wiring
- (7) Engine Accessory Unit (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 (Figure 304, Figure 305)
- (2) Simplified Schematic (Figure 304, 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: 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 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 Lockout Handle Assembly Replacement, AMM TASK 78-31-03-300-801-F01).
- 2) If the Manual Lockout Handle is broken, it. This is the task: (Manual Lockout Handle Assembly Replacement, AMM TASK 78-31-03-300-801-F01)
- 3) Do the Repair Confirmation at the end of this task.
- (b) If the Manual Lockout Handle is satisfactory, 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.

- (3) Do this task: Thrust Reverser Deactivation For Ground Maintenance, AMM TASK 78-31-00-040-802-F00.
- (4) Do this task: Open the Fan Cowl Panels, AMM TASK 71-11-02-010-801-F00.
- (5) 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 or AW0258R)
 - D39921 and D39923 (ENG-1) or D39922 and D39924 (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 harness connectors.
 - 3) Do the Repair Confirmation at the end of this task.
- (6) Do a check of the Target for the Left SLPS to see if it is in the UNLOCKED position or if it is 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) If the Target is bent, 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.
 - (b) If the Target on the Manual Unlock Handle is in the UNLOCKED position, then continue.
- (7) Do this check of the rod end of the Hydraulic Actuators:
 - (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 in the limits, then replace the applicable actuator. These are the tasks:

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- 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 Left T/R to go to the fully RETRACTED (stowed) position:
- (a) Make sure that the T/R is deactivated.
 - (b) Do the Thrust Reverser Operation - Extend (Manual Procedure), AMM TASK 78-31-00-980-803-F00.
 - (c) 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 this task: 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, then continue.
- (9) 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.

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L SLPS**D30008**

pin 1	pin 4
pin 1	pin 5

L SLPS**D30008****Resistance**

Value in Ohms
Value in Ohms

- (e) Do these checks:

L SLPS**D30008**

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) 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.

- (10) 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.

- (11) 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:

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ENG-1 WIRE HARNESS

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

ENG-2 WIRE HARNESS

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

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

ENG-1 WIRE HARNESS

L T/R SLEEVE	
D30208	
pin 1	GND

Resistance
CONTINUITY

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	EAU	
D1458A	D1458A	
pin 27	pin 28	Resistance OPEN CIRCUIT

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

ENG-2 WIRE HARNESS

EAU	EAU	
D1458B	D1458B	
pin 27	pin 28	Resistance OPEN CIRCUIT

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

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- (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.
- (12) 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) 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.

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) 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 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 S835 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:

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 Linear Variable Differential Transformer (LVDT)s 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 —

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) Broken or binding Manual Unlock Handle on the ULHA
 - (2) SLPS target
 - (3) Right T/R Sleeve is not completely retracted
 - (4) SLPS, S836
 - (5) ULHA
 - (6) Wiring
 - (7) 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

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(Continued)

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
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 (Figure 304, Figure 305)
- (2) Simplified Schematic (Figure 304, 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: 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 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 78-31-03-300-801-F01).
 - 2) If the Manual Lockout Handle is broken, replace it. This is the task: (AMM TASK 78-31-03-300-801-F01)
 - 3) Do the Repair Confirmation at the end of this task.
 - (b) If the Manual Lockout Handle is satisfactory, 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.

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

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- (4) Do this task: Open the Fan Cowl Panels, AMM TASK 71-11-02-010-801-F00.
- (5) Visually examine these harness connectors (WDM 78-36-11, WDM 78-36-21):
 - D30082 and D30084 (ENG-1) or D30182 and D301844 (ENG-2) at the Wing to Strut Seal (AW0258L or AW0258R)
 - D39921 and D39923 (ENG-1) or D39922 and D39924 (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 harness connectors.
 - 3) Do the Repair Confirmation at the end of this task.
- (6) Do a check of the Target for Right SLPS to see if it is in the UNLOCKED position or if it is 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) If the Target is bent or broken, 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.
 - (b) If the Target on the Manual Unlock Handle is in the UNLOCKED position, then continue.
- (7) Do this check of the rod end of the Hydraulic Actuators:
 - (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)
 - 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) Make sure that the T/R is deactivated.
 - (b) Do the Thrust Reverser Operation - Extend (Manual Procedure), AMM TASK 78-31-00-980-803-F00.
 - (c) Examine the tracks and sliders for unwanted material.
 - 1) If there is unwanted material, then clean the tracks and sliders.

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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.

- 2) Do the Thrust Reverser Operation - Retract (Power Procedure), AMM TASK 78-31-00-980-806-F00.
 - a) 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.
 - b) If the Manual Lockout Handle goes to the LOCKED position, then do the Repair Confirmation at the end of this task.
 - 3) If there is no unwanted material in the tracks or on the sliders, then continue.
- (9) 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) Right 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 \leq 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
pin 4	GND
pin 5	GND

- (f) If the Resistance checks are not satisfactory, then replace the applicable ENG-1 (ENG-2) Right SLPS, S836. These are the tasks:

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- 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.
- (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) 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.
- (11) 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 | R T/R SLEEVE |
| D1458A | D30210 |
| pin 39 | pin 5 |
| pin 40 | pin 4 |
- ENG-2 WIRE HARNESS**
- | | |
|------------------|---------------------|
| EAU | R T/R SLEEVE |
| D1458B | D30410 |
| pin 39 | pin 5 |
| pin 40 | pin 4 |
- (d) Do a check for ground at the applicable Strut Receptacle D30210 (D30410) as follows:

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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****D1458A**

pin 39 pin 40

**Resistance
OPEN CIRCUIT****EAU****D1458A**

pin 39 GND

**Resistance
OPEN CIRCUIT
OPEN CIRCUIT**

pin 40 GND

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

pin 39 pin 40

**Resistance
OPEN CIRCUIT****EAU****D1458B**

pin 39 GND

**Resistance
OPEN CIRCUIT
OPEN CIRCUIT**

pin 40 GND

- (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.

- (12) 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) Right SLPS connector, D30010, is connected to the respective Strut Receptacle D30210 (D30410).

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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.

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 the 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 S836 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 S836 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.
 - (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 Procedure for that maintenance message.
 - (b) If no maintenance messages show, the electrical connections for the LVDTs are correct.

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- (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) EAU, M528

C. Circuit Breakers

- (1) For engine 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	4	C01003	ENGINE 1 THRUST REVERSER IND

D. Related Data

- (1) Component Location (Figure 304, Figure 305)
- (2) Simplified Schematic (Figure 304, 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.

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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.
- (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.
- (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).

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- 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	L T/R SSPS	Resistance
D30002	D30002	
pin 7	pin 1	Ohms
pin 8	pin 1	Ohms

ENGINE-2

L T/R SSPS	L T/R SSPS	Resistance
D30008	D30008	
pin 7	pin 1	Ohms
pin 8	pin 1	Ohms

- 1) Make sure that the difference between the two Resistance measurements is \leq 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 Left T/R SSPS connector as follows:

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ENG-1 WIRE HARNESS

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

ENG-1 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		Resistance
Left T/R SSPS	D30202	
pin 1	Ground	CONTINUITY

ENG-2 WIRE HARNESS		Resistance
L T/R SPSS	D30402	
pin 1	Ground	CONTINUITY

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

ENG-1 WIRE HARNESS		Resistance
EAU	EAU	
D1458A	D1458A	OPEN CIRCUIT
pin 14	pin 15	

EAU	Resistance
D1458A	OPEN CIRCUIT
pin 14	GROUND
pin 15	GROUND

ENG-2 WIRE HARNESS		Resistance
EAU	EAU	
D1458B	D1458B	OPEN CIRCUIT
pin 14	pin 15	

EAU	Resistance
D1458B	OPEN CIRCUIT
pin 14	GROUND
pin 15	GROUND

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- (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) 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.

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 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.
- (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.

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- (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 - R SLEEVE STOW SENSOR
 - (b) ENGINE 1 - HYD ISO VALVE SENSOR.
- (2) This task is for this combination of maintenance messages for Engine 2:
 - (a) ENGINE 2 - R SLEEVE STOW SENSOR
 - (b) ENGINE 2 - HYD ISO VALVE SENSOR.
- (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 activated.

B. Possible Causes

- (1) Sleeve stow proximity sensor target
- (2) Sleeve stow proximity sensor plunger
- (3) Sleeve stow proximity sensor, S832
- (4) EAU, M528.

C. Circuit Breakers

- (1) For engine 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	4	C01003	ENGINE 1 THRUST REVERSER IND

- (2) For engine 2, 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	8	C01004	ENGINE 2 THRUST REVERSER IND

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D. Related Data

- (1) Component Location (Figure 304, Figure 305)
- (2) Simplified Schematic (Figure 304, Figure 305)
- (3) SSM 78-36-11
- (4) SSM 78-36-21
- (5) WDM 78-36-11
- (6) WDM 78-36-21

E. Initial Evaluation

- (1) Do these steps to find out if the message is still active:
 - (a) If not already done, do the EAU BITE steps to show the current maintenance messages (Engine Accessory Unit (EAU) BITE Procedure, 78-31 TASK 801).
 - (b) If other maintenance messages show with this combination of maintenance messages on the EAU, then do the applicable fault isolation task for that combination of maintenance messages.
 - (c) If these maintenance messages are the only maintenance messages that show, then do the Fault Isolation Procedure below.
 - (d) If the maintenance message does not show on the EAU, then the Initial Evaluation has shown that the fault is not active at this time and you have an intermittent fault.
 - 1) If you cannot find the fault at this time, then the Fault Isolation Procedure cannot isolate the fault.
 - 2) For an intermittent fault you must use your judgment, your airline policies, and the Possible Causes list to make the decision if you will try to correct the fault.
 - 3) If you will try to correct the fault, it is recommended that you do these steps:
 - a) Do the visual checks of the electrical connectors in the applicable fault isolation procedure below.
 - b) Use the WDM references to identify intermediate electrical connections in the wire harness and do a visual check.
 - c) If you find no problems, then replace components as listed in the Possible Causes List above.
 - 4) Monitor the airplane on the subsequent flight.

F. Fault Isolation Procedure

- (1) Do these steps to prepare for the 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.

- (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.
- (2) Visually examine these harness connectors:
 - (a) Electrical connectors D30040 and D30042 (Eng 1) or D30140 and D30142 (Eng 2) at the wing to strut seal (AW0258L or AW0258R).

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- 1) Disconnect the connectors to make sure that the pins are clean and in good condition.
 - a) If the connectors are not satisfactory, then repair or replace them.
- 2) Re-connect the harness connectors.
- (b) Electrical connectors D39917 and D39919 (Eng 1) or D39918 and D39920 (Eng 2) at the wing to body pressure seal.
 - 1) Disconnect the connectors to make sure that the pins are clean and in good condition.
 - a) If the connectors are not satisfactory, then repair or replace them.
 - 2) Re-connect the harness connectors.
- (c) Do the Repair Confirmation at the end of this task.
 - 1) If the Repair Confirmation is not satisfactory, then continue.
- (3) Do a check of the target for right sleeve stow proximity sensor to see if it is in the locked (target far) or unlocked (target near) position:

NOTE: The sleeve stow proximity sensor 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 sleeve stow proximity sensor 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 target.

 - 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 Repair Confirmation was not satisfactory, then continue.
 - (b) If the target is in the locked position, then continue.
 - (4) Do a check to see if the target for right sleeve stow proximity sensor is bent or broken.
 - (a) If the target is bent or broken, then replace the target.
 - 1) Do the Repair Confirmation at the end of this task.
 - a) If the Repair Confirmation was not satisfactory, then continue.
 - (b) If the target is not bent or broken, then continue.
 - (5) Examine the EAU:
 - (a) For engine 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
B	6	C01412	ENGINE 1 THRUST REVERSER INTLK
B	7	C01266	ENGINE 1 THRUST REVERSER SYNC LOCK

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- (b) For engine 2, open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

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

- (c) Do this task: Engine Accessory Unit Removal, AMM TASK 78-34-06-000-801-F00.
 (d) Visually examine the harness connector D1458A (Eng 1) or D1458B (Eng 2) and the EAU receptacle.
 1) If the EAU receptacle is damaged, then 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.
 b) For engine 1, if the Repair Confirmation is not satisfactory, then open the circuit breakers, attach safety tags and continue

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	6	C01412	ENGINE 1 THRUST REVERSER INTLK
B	7	C01266	ENGINE 1 THRUST REVERSER SYNC LOCK

- c) For engine 2, if the Repair Confirmation is not satisfactory, then open the circuit breakers, attach safety tags 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
C	6	C01413	ENGINE 2 THRUST REVERSER INTLK
C	8	C01004	ENGINE 2 THRUST REVERSER IND

- 2) If the wire harness connector is damaged, then repair or replace it.

NOTE: Refer to the Standard Wiring Practices Manual, Chapter 20.

- a) Do the Repair Confirmation at the end of this task.
 b) For engine 1, if the Repair Confirmation is not satisfactory, then open the circuit breakers, attach safety tags and continue

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	6	C01412	ENGINE 1 THRUST REVERSER INTLK
B	7	C01266	ENGINE 1 THRUST REVERSER SYNC LOCK


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- c) For engine 2, if the Repair Confirmation is not satisfactory, then open the circuit breakers, attach safety tags 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
C	6	C01413	ENGINE 2 THRUST REVERSER INTLK
C	8	C01004	ENGINE 2 THRUST REVERSER IND

- (e) If no problems are found, then continue.

- (6) Examine the wires between the EAU and the applicable Right T/R Sleeve Stow Sensor, S832:

- (a) Measure the resistance at the applicable EAU wire harness connector, D1458A (Eng 1) or D1458B (Eng 2), as follows:

- 1) Record the resistance between Pin 52 and airplane ground.
 - 2) Record the resistance between Pin 53 and airplane ground.
 - 3) Make sure that the difference between the two resistance measurements is less than or equal to 2 ohms.
- a) If the resistance is in the limits, then 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.

- b) Do the Repair Confirmation at the end of this task.
 c) For engine 1, if the Repair Confirmation is not satisfactory, then open the circuit breakers, attach safety tags and continue

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	6	C01412	ENGINE 1 THRUST REVERSER INTLK
B	7	C01266	ENGINE 1 THRUST REVERSER SYNC LOCK

- d) For engine 2, if the Repair Confirmation is not satisfactory, then open the circuit breakers, attach safety tags 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
C	6	C01413	ENGINE 2 THRUST REVERSER INTLK
C	8	C01004	ENGINE 2 THRUST REVERSER IND

- 4) If the resistance is not within the limits, then continue.

- (7) Examine the D30006 harness connector at the applicable engine strut receptacle, D30206 (Eng 1) or D30406 (Eng 2):

- (a) Make sure that the D30006 connector is correctly connected to the strut receptacle.
 (b) Disconnect the D30006 connector from the strut receptacle, D30206 (Eng 1) or D30406 (Eng 2).
 (c) Visually examine the D30006 connector and the strut receptacle.

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- 1) If the connector or the receptacle is damaged, then repair or replace it.

NOTE: Refer to the (SWPM Chapter 20).

- Do the Repair Confirmation at the end of this task.
- For engine 1, if the Repair Confirmation is not satisfactory, then open the circuit breakers, attach safety tags and continue

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	6	C01412	ENGINE 1 THRUST REVERSER INTLK
B	7	C01266	ENGINE 1 THRUST REVERSER SYNC LOCK

- For engine 2, if the Repair Confirmation is not satisfactory, then open the circuit breakers, attach safety tags 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
C	6	C01413	ENGINE 2 THRUST REVERSER INTLK
C	8	C01004	ENGINE 2 THRUST REVERSER IND

- 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.

- For engine 1, if the Repair Confirmation is not satisfactory, then open the circuit breakers, attach safety tags and continue

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	6	C01412	ENGINE 1 THRUST REVERSER INTLK
B	7	C01266	ENGINE 1 THRUST REVERSER SYNC LOCK

- For engine 2, if the Repair Confirmation is not satisfactory, then open the circuit breakers, attach safety tags 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
C	6	C01413	ENGINE 2 THRUST REVERSER INTLK
C	8	C01004	ENGINE 2 THRUST REVERSER IND

- If no problems are found, then continue.

- (8) Examine the Right T/R Sleeve Stow Sensor, S832:

- (a) Measure the resistance at the Right T/R Sleeve Stow Sensor, S832:

- Record the resistance between Pin 7 and Pin 1.
- Record the resistance between Pin 8 and Pin 1.
- Make sure that the difference between the two resistance measurements is less than or equal to 2 ohms.

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- 4) If the resistance is in the limits, then examine and repair the wires between the EAU and the applicable engine strut receptacle, D30206 (Eng 1) or D30406 (Eng 2).
- Do the Repair Confirmation at the end of this task.
 - For engine 1, if the Repair Confirmation is not satisfactory, then open the circuit breakers, attach safety tags and continue

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	6	C01412	ENGINE 1 THRUST REVERSER INTLK
B	7	C01266	ENGINE 1 THRUST REVERSER SYNC LOCK

- For engine 2, if the Repair Confirmation is not satisfactory, then open the circuit breakers, attach safety tags 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
C	6	C01413	ENGINE 2 THRUST REVERSER INTLK
C	8	C01004	ENGINE 2 THRUST REVERSER IND

- 5) If the resistance is not in the limits, then replace the Right T/R Sleeve Stow Sensor, 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.

- Do the Repair Confirmation at the end of this task.
- If the Repair Confirmation is not satisfactory, then open the circuit breakers, attach safety tags 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
C	6	C01413	ENGINE 2 THRUST REVERSER INTLK
C	8	C01004	ENGINE 2 THRUST REVERSER IND

- (9) 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.

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

G. Repair Confirmation

- (1) Do these steps:

- If it is necessary, then, do this task: Engine Accessory Unit Installation, AMM
TASK 78-34-06-400-801-F00.

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- (b) Make sure that the electrical connector, D30006, is connected to the strut receptacle.
- (c) Do this task: Thrust Reverser Activation After Ground Maintenance, AMM TASK 78-31-00-440-803-F00.
- (d) For engine 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	4	C01003	ENGINE 1 THRUST REVERSER IND
B	6	C01412	ENGINE 1 THRUST REVERSER INTLK
B	7	C01266	ENGINE 1 THRUST REVERSER SYNC LOCK

- (e) For engine 2, remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

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

- (f) 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.

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.

- (g) Operate the thrust reverser through an extend and retract cycle.
- (h) 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.
- (i) Wait for at least 30 seconds.
- (j) If the REVERSER fault light stays off, then you corrected the fault.
- (k) If the REVERSER fault light stays on, then do this 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.

- 1) Do the Thrust Reverser Deactivation For Ground Maintenance task (AMM TASK 78-31-00-040-802-F00), and then continue with the fault isolation procedure.
- (2) After the fault is corrected, do these steps:
 - (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.

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- (b) Do this task: Close the Fan Cowl Panels, AMM TASK 71-11-02-410-801-F00.

———— 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

AKS 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.

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

- (2) T/R 1 Autothrottle Switch Pack Assembly, M1766

AKS 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) 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

D. Related Data

- (1) Component Location (Figure 308)
- (2) Simplified Schematic (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.

———— EFFECTIVITY ————

AKS ALL

78-32 TASKS 811-812

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

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 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 Left (Right) Sleeve Sync Lock as follows (WDM 78-32-51):

NOTE: These steps make sure that the Time Delay function of the Relay R478, is within tolerance.

- (a) Open the Fan Cowl Panels, AMM TASK 71-11-02-010-801-F00.
- (b) Disconnect electrical connector D1008 or D1016 from the T/R 1 Left or Right Sleeve Sync Lock V148 or V150.
- (c) Connect a Voltmeter or a 28 VDC Light between pins 1 and 2 at connector D1008 (D1016).
- (d) Close this circuit breaker:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
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B	7	C01266	ENGINE 1 THRUST REVERSER SYNC LOCK
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- (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 28 VDC.
 - (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 pins 1 and 2 of connector D1008 or D1016.
 - 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>
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B	7	C01266	ENGINE 1 THRUST REVERSER SYNC LOCK
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- b) Replace the T/R 1 Sync Lock Time Delay Relay, R478.
- c) Re-connect electrical connector D1008 or D1016 to the applicable Sleeve Sync Lock.
- d) 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.

- (3) Open this circuit breaker:

CAPT Electrical System Panel, P18-2

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

78-32 TASK 812

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- (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.
- (5) Disconnect the electrical connector D11128 from the Autothrottle Switchpack, M1766.
- (6) Visually examine connector M1766 and the Autothrottle Switchpack Receptacle.

AKS 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.

AKS 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 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.
 - (c) If you did not find a problem, then continue.
- (7) Do an electrical check of the T/R 1 Sync Lock Switch, S4, which is installed on the Left 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 Switchpack:

L A/T Switchpack	L A/T Switchpack	CONTINUITY
Receptacle	Receptacle	
pin 7	pin 8	YES
pin 7	pin 14	NO

- (b) Alternate Method 2 - Load Light:

- 1) Remove connector D11128 and install a jumper between pin 7 of connector D11128 and pin 7 of the Left Autothrottle Switchpack, M1766 Receptacle.
- 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) Install a Load Light (lamp, STD-12563) between pin 14 of the Left Autothrottle Switchpack, M1766 Receptacle and Airplane Ground.
 - 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 illuminated.
 - <a> If the Load Light is dim, flickering, or not illuminated, the T/R 1 Sync Lock Switch, S4 is malfunctioning.

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- 4) Remove the Load Light (lamp, STD-12563) from pin 14 and install between pin 8 of the Left Autothrottle Switchpack, M1766 Receptacle 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 illuminated.
 - <a> If the Load Light is dim, flickering, or not illuminated, the T/R 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:

AKS 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

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

- 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.

AKS ALL

- (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.

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- (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>
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B	7	C01266	ENGINE 1 THRUST REVERSER SYNC LOCK
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- (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>
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B	7	C01266	ENGINE 1 THRUST REVERSER SYNC LOCK
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- 2) Do a wiring check as follows:

Load CTRL	RLY R478
Center-L	SOCKET
D40802P	D10636
pin 5	pin X1

RLY R478**SOCKET****D10636**

pin X2 Ground

- 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.
 - (b) If there is voltage between pins X1 and X2, do a check for 28V DC between pins A1 and A2 (Gnd) of the Relay Connector D10636.
 - 1) If there is voltage between pins A1 and A2, do these steps:
 - a) Open this circuit breaker and install safety tag:
 - 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):

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- (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 between pins Y1 and Y2 of the T/R 1 Sync Lock Latch Relay Receptacle.
- 1) If there is voltage, then do these steps:
 - a) Replace the T/R 1 Sync Lock Latch Relay.
 - 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	RLY R478
SOCKET	SOCKET
D10634	D10636
pin Y2	pin A1

RLY R478	
SOCKET	
D10636	
pin A2	Ground

RLY R477	
SOCKET	TERM BLOCK
D10634	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.

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<c> 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.
- (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 ————

EFFECTIVITY
AKS ALL

78-32 TASK 812

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

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

AKS 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.

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

- (2) T/R 2 Autothrottle Switch Pack Assembly, M1767

AKS ALL

- (3) T/R 2 Sync Lock Time Delay Relay, R480
- (4) T/R 2 Sync Lock Latch Relay, R479
- (5) Wiring

C. Circuit Breaker

- (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 (Figure 308)
- (2) Simplified Schematic (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

WARNING: 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 Left (Right) Sleeve Sync Lock as follows (WDM 78-32-61):

NOTE: These steps make sure that the Time Delay function of the Relay R480, is within tolerance.

- (a) Open the Fan Cowl Panels, AMM TASK 71-11-02-010-801-F00.
- (b) Disconnect electrical connector D1008 or D1016 from the T/R 2 Left or Right Sleeve Sync Lock V148 or V150.
- (c) Connect a Voltmeter or a 28 VDC Light between pins 1 and 2 at connector D1008 (D1016).
- (d) Close this circuit breaker:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
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C	5	C01267	ENGINE 2 THRUST REVERSER SYNC LOCK
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- (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 28 VDC.
 - (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 pins 1 and 2 of connector D1008 or D1016.
 - 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>
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C	5	C01267	ENGINE 2 THRUST REVERSER SYNC LOCK
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- b) Replace the T/R 2 Sync Lock Time Delay Relay, R480.
 - c) Re-connect electrical connector D1008 or D1016 to the applicable Sleeve Sync Lock.
 - d) 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.
- (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>
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C	5	C01267	ENGINE 2 THRUST REVERSER SYNC LOCK
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EFFECTIVITY
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78-32 TASK 813

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- (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.
- (5) Disconnect the electrical connector D11132 from the Autothrottle Switchpack, M1767.
- (6) Visually examine connector M1767 and the Autothrottle Switchpack Receptacle.

AKS 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.

AKS 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 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.
 - (c) If you did not find a problem, then continue.
- (7) 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:

R A/T	R A/T	CONTINUITY
Switchpack	Switchpack	
Receptacle	Receptacle	
pin 7	pin 8	YES
pin 7	pin 14	NO

- (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:
 - <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.

EFFECTIVITY
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- 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 stays illuminated.
 - <a> If the Load Light is dim, flickering, or not illuminated, the T/R 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:

AKS 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

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

- 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.

AKS ALL

- (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.

- (8) Remove the access panel from the J24 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 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.

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- (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 28 VDC at pin 5 of the electrical connector, D40700P, 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 pin 5 of D40700P and pin 8 of D11132 or pin 7 of D11132 and the 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 the following circuit breaker, attach 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 28 VDC at pin 5 of the electrical connector, D40700P, to structure ground (WDM 78-32-61).

- (a) If there is no voltage, then do these steps:

- 1) 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 wiring between pin 5 of D40700P and pin 8 of D11132 or pin 7 of D11132 and the 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 the following circuit breaker, attach 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 28 VDC to the coil for the Sync Lock Time Delay Relay (WDM 78-32-61):

- (a) Remove the Sync Lock Time Delay Relay, R480.

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- (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 28 VDC between pins X1 and X2 (ground) at the receptacle for the Sync Lock Time Delay Relay, R480.
- (d) If there is no voltage, then do a check for 28 VDC at pin X1 to structure ground.
- 1) If there is voltage at pin X1, then open the following circuit breaker, attach 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.
 - b) If the Repair Confirmation was not satisfactory, then continue.
- 3) If there is no voltage at pin X1, then open the following 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 pin X1 and pin 5 of the electrical connector, D40700P (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 28 VDC between pin A1 and A2 (ground) at the receptacle for the sync lock time delay relay, R480 (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.

(b) If there is no voltage, then continue.

- (14) Do a check for 28 VDC at pin A1 at the receptacle for the Sync Lock Time Delay Relay, R480 to structure ground (WDM 78-32-61).

(a) If there is voltage, then do these steps:

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- 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 pin A2 for the Sync Lock Time Delay Relay, R480 (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 (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 28 VDC at pin Y1 at the receptacle for the Sync Lock Latch Relay, R479, to structure ground.

- (d) If there is voltage, then do an electrical check at Y2 to structure ground.

- 1) If there is continuity, then open the following 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 the following circuit breaker and attach 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 pin Y2 of the Sync Lock Latch Relay, R479 and pin A1 at the Sync Lock Time Delay Relay, R480.

- 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 pin Y1 of the Sync Lock Latch Relay, R479, 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.
- (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.

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- (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.

B. Possible Causes

AKS 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.

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

- (2) T/R 1 Autothrottle Switch Pack Assembly, M1766

AKS ALL

- (3) T/R 1 Sync Lock Latch Relay, R477
- (4) Wiring

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

D. Related Data

- (1) Component Location (Figure 308)
- (2) Simplified Schematic (Figure 306)
- (3) WDM 78-32-51
- (4) SSM 78-32-51

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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.

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.

WARNING: 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 electrical connectors for the Left Autothrottle Switchpack, M1766, and the electrical connector, D11128 (WDM 78-32-51):

NOTE: The Sync Lock Switch, S4, is installed on the Left Autothrottle Switchpack, M1766.

- (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) Make sure that the electrical connectors are correctly connected.
- (c) Disconnect the electrical connector for the Left Autothrottle Switchpack, M1766, from the electrical connector, D11128.
- (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 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 1 Sync Lock Switch, S4, which is installed on the Left 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 Switchpack:

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L A/T	L A/T	CONTINUITY
Switchpack	Switchpack	
Receptacle	Receptacle	
pin 7	pin 8	YES
pin 7	pin 14	NO

(b) Alternate Method 2 - Load Light:

- 1) Remove connector D11128 and install a jumper between pin 7 of connector D11128 and pin 7 of the Left Autothrottle Switchpack, M1766 Receptacle.
- 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 pin 14 of the Left Autothrottle Switchpack, M1766 Receptacle and Airplane Ground.
 - 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 illuminated.
 - <a> If the Load Light is dim, flickering, or not illuminated, the T/R 1 Sync Lock Switch, S4 is malfunctioning.
- 4) Remove the Load Light (lamp, STD-12563) from pin 14 and install between pin 8 of the Left Autothrottle Switchpack, M1766 Receptacle 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 illuminated.
 - <a> If the Load Light is dim, flickering, or not illuminated, 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:

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- 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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**AKS 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

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

- 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.

- (4) Do a check for 28 VDC at pin 7 of the electrical connector, D11128, to structure ground (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 7 of the electrical connector, D11128, and the circuit breaker (SWPM 20-24-00).
 - a) Do the Repair Confirmation at the end of this task.

- (b) If there is voltage, then open the following 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 J22 junction box is in the nose gear wheel well on the left side.

- (a) Remove the access cover from the J22 junction box.
- (b) Remove the Sync Lock Latch Relay, R477.
- (c) Check for continuity from pin X1 to structure ground.
 - 1) If there is continuity, then do these steps:
 - a) Examine and repair or replace the wire between pin X1 and pin 14 of the electrical connector, D11128, (SWPM Ch 20).

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- b) Do the Repair Confirmation at the end of this task.
- 2) If there is no continuity, then remove the safety tag, close the following 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 28 VDC 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 the following 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) Check for continuity from pin X2 to structure ground at the Sync Lock Latch Relay, R477 (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 the following 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) Do a check for 28 VDC from pin B1 to structure ground at the Sync Lock Latch 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 terminal block TB32 YB13 and terminal block TB1806 VB15 (SWPM Ch 20).

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- 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.

WARNING: 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.

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 the fault is corrected, do a check of the Sync Locks:

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- (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.

B. Possible Causes

AKS 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.

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

- (2) T/R 2 Autothrottle Switch Pack Assembly, M1767

AKS ALL

- (3) T/R 2 Sync Lock Latch Relay, R479
- (4) Wiring

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 (Figure 308)
- (2) Simplified Schematic (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.

EFFECTIVITY

AKS ALL

78-32 TASKS 814-815

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

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.

WARNING: 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 2 Up and AFT to the EXTEND (deploy) position.
- (2) Visually examine the electrical connectors for the Right Autothrottle Switchpack, M1767, and the 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 electrical connector for the Right Autothrottle Switchpack, M1767, from the electrical connector, D11132.
- (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 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:

R A/T Switchpack	R A/T Receptacle	CONTINUITY
pin 7	pin 8	YES
pin 7	pin 14	NO

- (b) Alternate Method 2 - Load Light:

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- 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

<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 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:
 - <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 stays illuminated.
 - <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:

AKS 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

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

- 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.

AKS ALL

- (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.

- (4) Do a check for 28 VDC at pin 7 of the electrical connector, D11132, 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 pin 7 of the electrical connector, D11132, and the circuit breaker (SWPM Ch 20).

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

- (b) If there is voltage, then open the following 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 J24 junction box is in the nose gear wheel well on the right side.

- (a) Remove the access cover from the J24 junction box.

- (b) Remove the Sync Lock Latch Relay, R479.

- (c) Check for continuity from pin X1 to structure ground.

- 1) If there is continuity, then do these steps:

- a) Examine and repair or replace the wire between pin X1 and pin 14 of the electrical connector, D11132, (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 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

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AKS ALL

78-32 TASK 815

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- (6) Do a check for 28 VDC 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>
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C	5	C01267	ENGINE 2 THRUST REVERSER SYNC LOCK
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- 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.

- (b) If there is voltage, then open the following 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>
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C	5	C01267	ENGINE 2 THRUST REVERSER SYNC LOCK
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- (7) Do a check for continuity from pin X2 to structure ground at the Sync Lock Latch Relay, R479 (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 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>
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C	5	C01267	ENGINE 2 THRUST REVERSER SYNC LOCK
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- (8) Do a check for 28 VDC from pin B1 to structure ground at the Sync Lock Latch 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>
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C	5	C01267	ENGINE 2 THRUST REVERSER SYNC LOCK
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- 2) Examine and repair or replace the wire between splice SM4 and terminal block TB606 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
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EFFECTIVITY
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- 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.

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 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.

WARNING: 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.

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 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 maintenance messages for Engine 1:
 - (a) ENGINE 1 - S831 L SLEEVE STOW SENSOR



78-32 TASKS 815-816

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FAULT ISOLATION MANUAL**

- (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
 - (f) ENGINE 1 - S836 R SLEEVE LOCK 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 - 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 Thrust Reverser 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
 - ENG-2: 78-10102
- (6) This combination of maintenance messages can also indicate that the thrust reversers 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:

- (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

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- ENG-2: 78-21522
- ENG-2: 78-10102

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.

- 1) If only one or a combination of the maintenance messages listed above shows, then operate the Thrust Reverser 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.
- 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 (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 —

EFFECTIVITY
AKS ALL

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**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 maintenance messages for Engine 1:
 - (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 maintenance messages for Engine 2:
 - (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 Thrust Reverser 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
 - ENG-2: 78-10102
- (6) This combination of maintenance messages can also indicate that the Thrust Reversers 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:
 - (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

EFFECTIVITY
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- ENG-1: 78-10101
- ENG-2: 78-31522
- ENG-2: 78-11522
- ENG-2: 78-21522
- ENG-2: 78-10102

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.

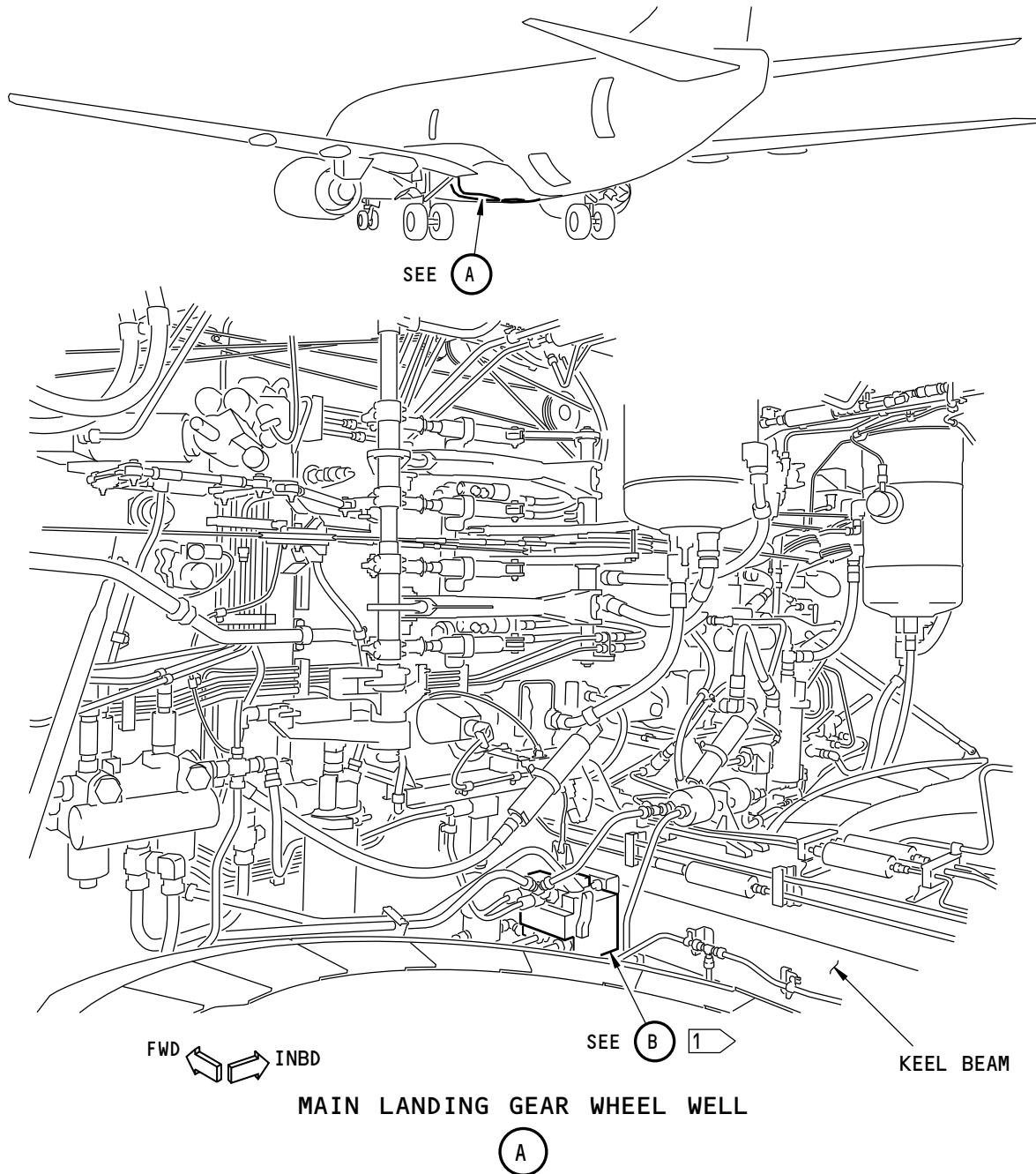
- 1) If only one or a combination of the maintenance messages listed above shows, then operate the Thrust Reverser through an EXTEND (deploy) and RETRACT (stow) cycle.
 - a) If the ENGINE CONTROL and REVERSER Lights go OFF, then this occurrence was caused by the slow movement of the Reverse Thrust Lever 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:
 - 1) Push and hold the FAULT RESET button for a minimum of two seconds.
 - 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 Thrust Reverser 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 —

EFFECTIVITY
AKS ALL

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FAULT ISOLATION MANUAL**



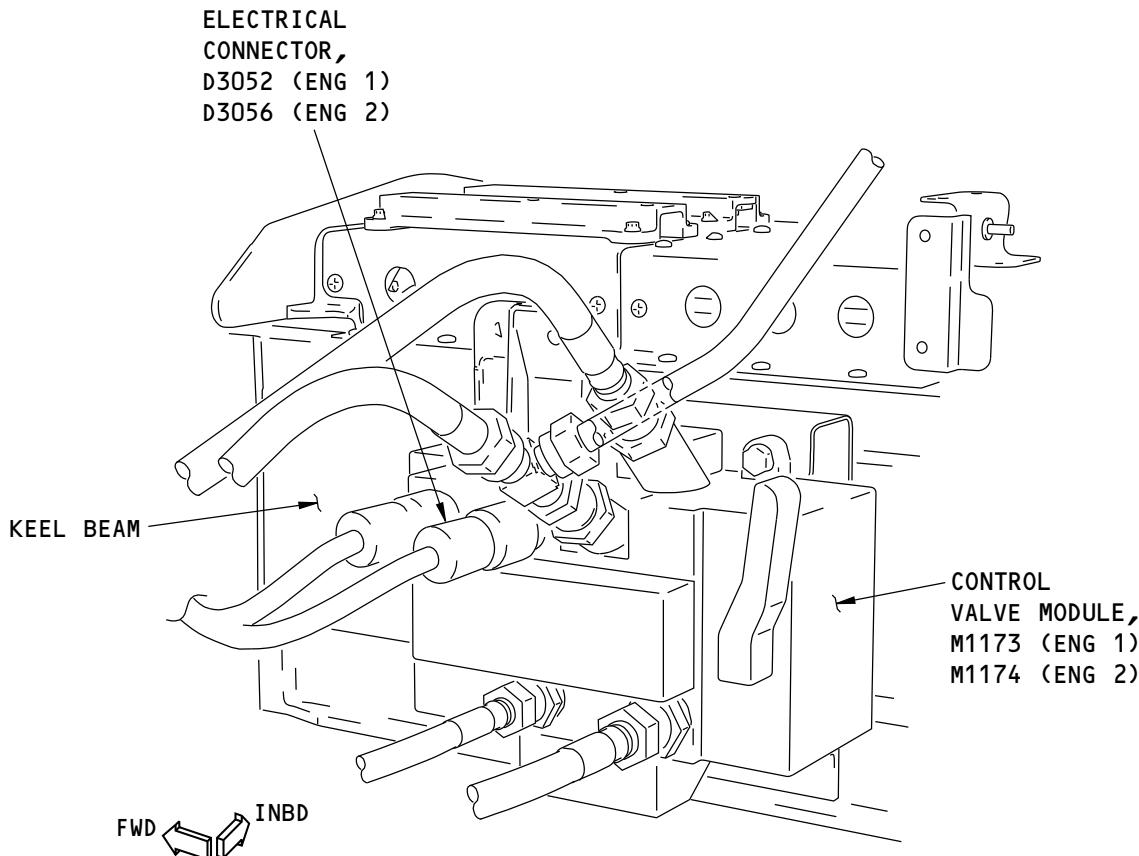
1 ENGINE 1 CONTROL VALVE MODULE IS SHOWN,
ENGINE 2 CONTROL VALVE MODULE IS ON THE RIGHT SIDE OF THE KEEL BEAM
AND IS EQUIVALENT TO ENGINE 1.

H62343 S0006746436_V1

Control Valve Module
Figure 301/78-32-00-990-801-F00 (Sheet 1 of 2)

EFFECTIVITY
AKS ALL

78-32 TASK SUPPORT



(B)

H62351 S0006746437_V1

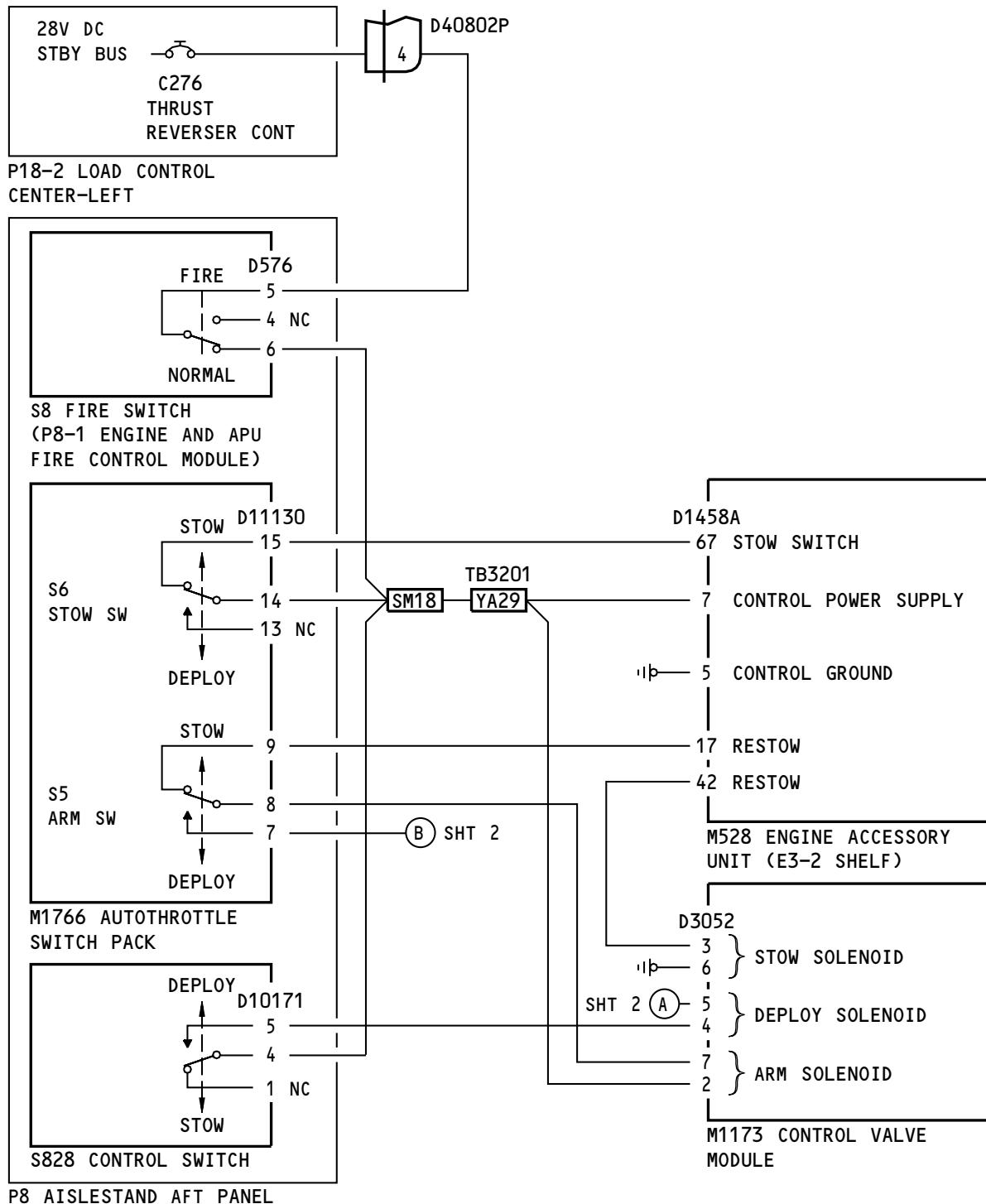
Control Valve Module
Figure 301/78-32-00-990-801-F00 (Sheet 2 of 2)

EFFECTIVITY
AKS ALL

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D633A103-AKS

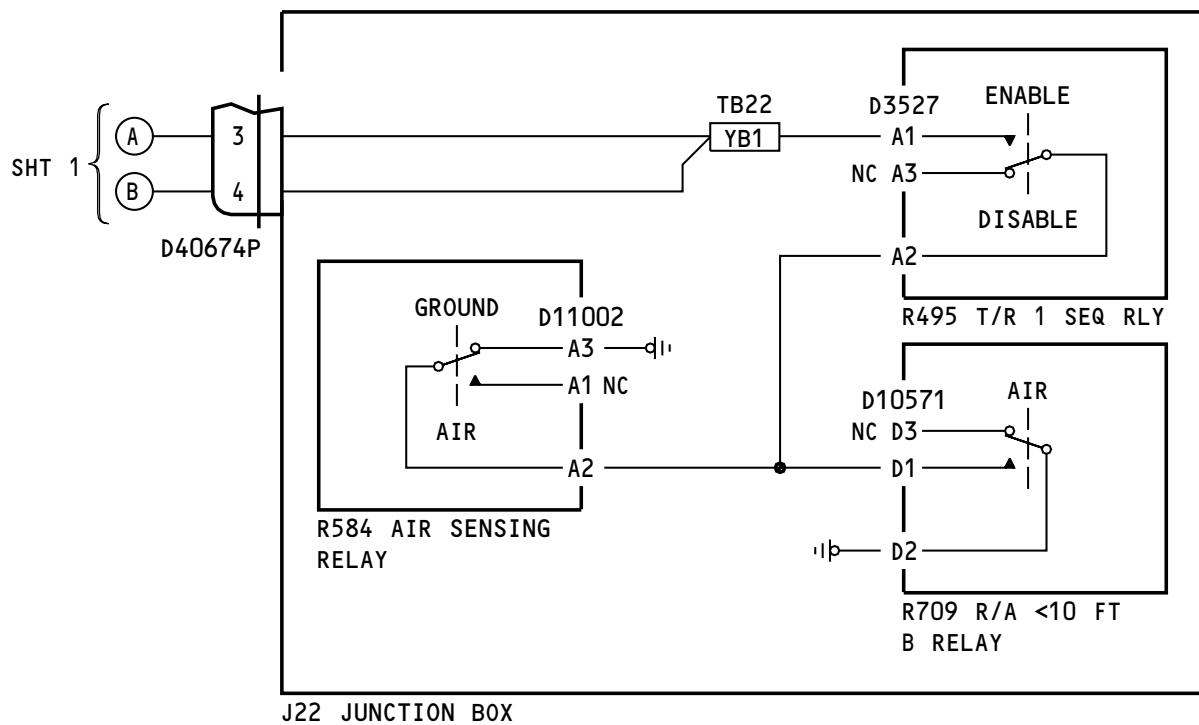
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H62358 S0006746438_V1

Engine 1 Thrust Reverser Control Simplified Schematic
Figure 302/78-32-00-990-802-F00 (Sheet 1 of 2)EFFECTIVITY
AKS ALL

78-32 TASK SUPPORT



H62388 S0006746439_V1

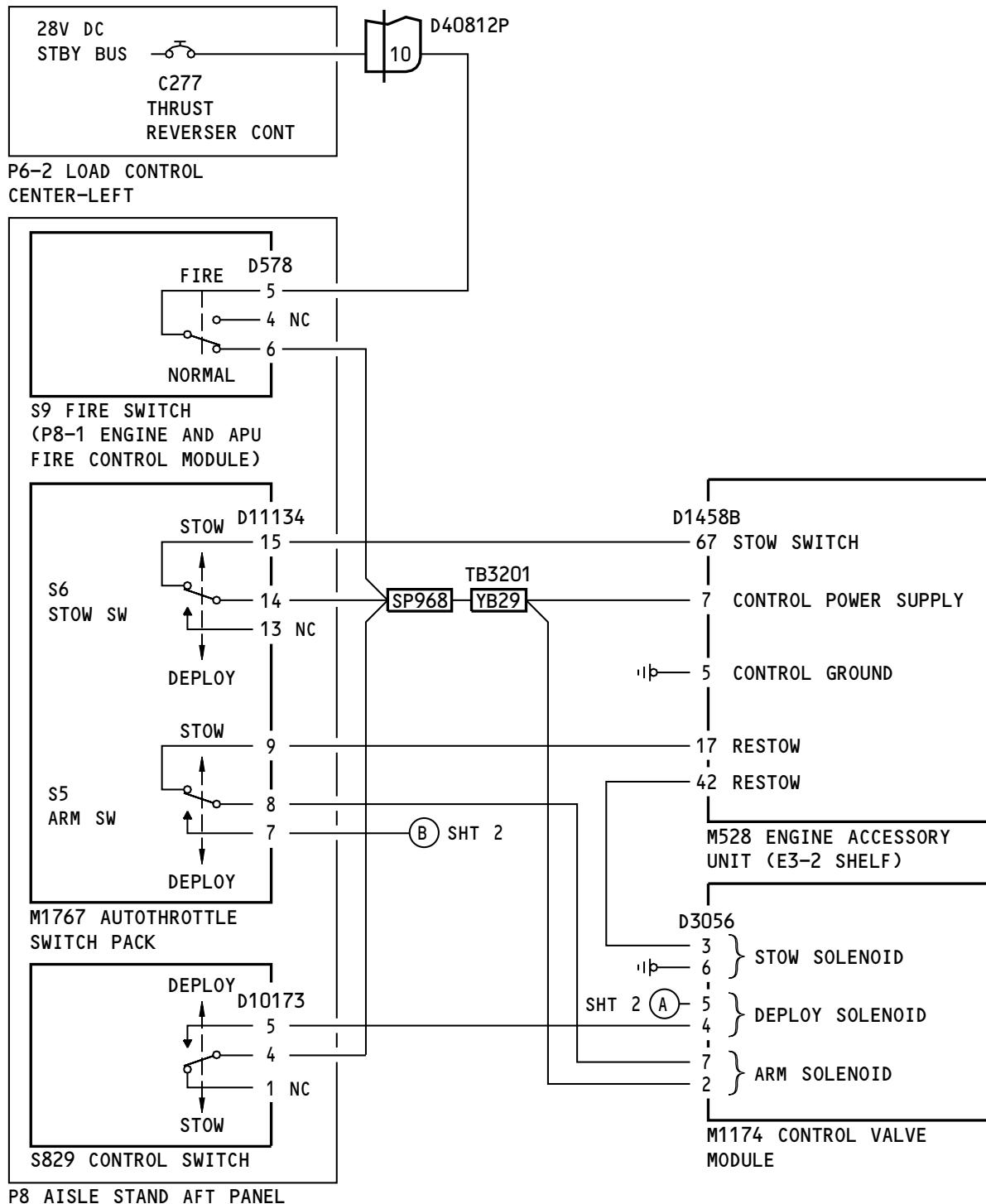
Engine 1 Thrust Reverser Control Simplified Schematic
 Figure 302/78-32-00-990-802-F00 (Sheet 2 of 2)

EFFECTIVITY
 AKS ALL

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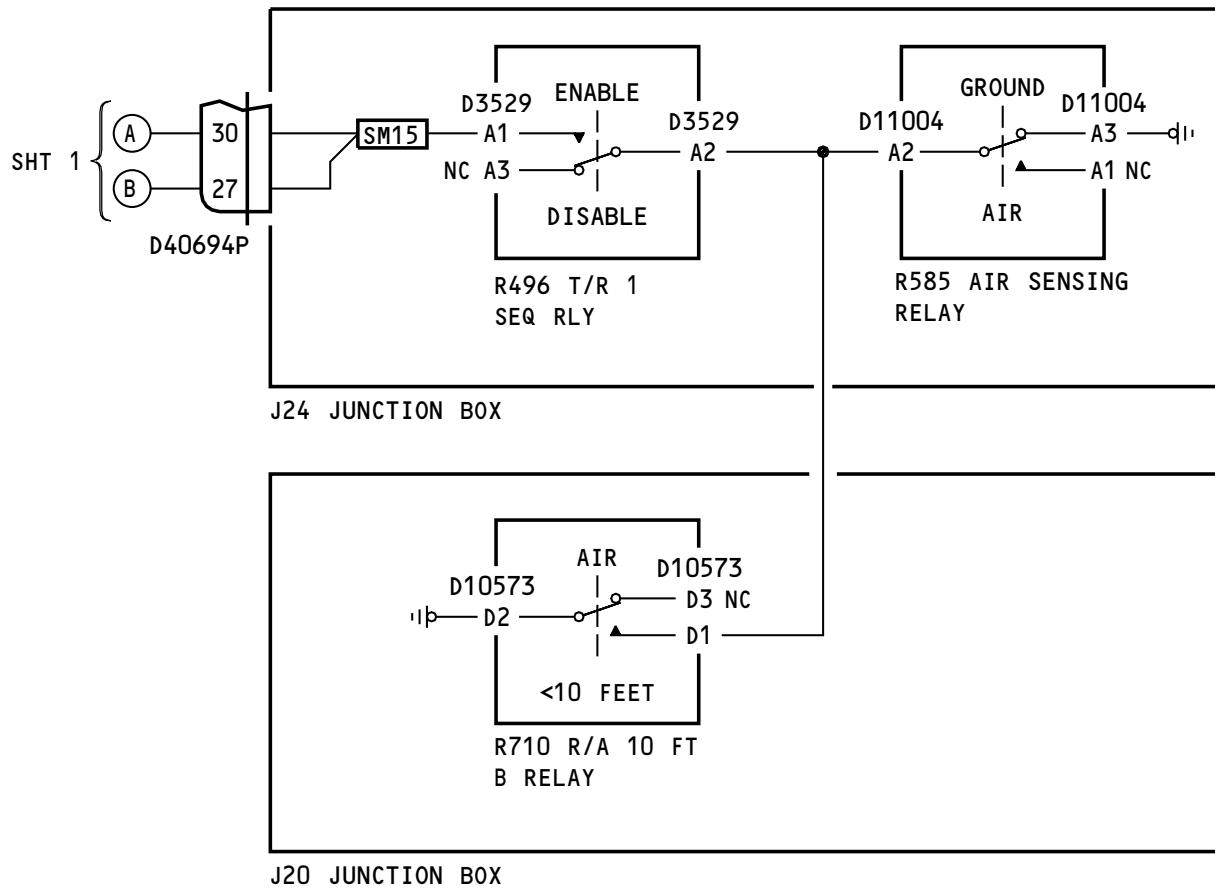
737-600/700/800/900
FAULT ISOLATION MANUAL

H62396 S0006746440_V1

Engine 2 Thrust Reverser Control Simplified Schematic
Figure 303/78-32-00-990-803-F00 (Sheet 1 of 2)EFFECTIVITY
AKS ALL

78-32 TASK SUPPORT

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



H63237 S0006746441_V1

**Engine 2 Thrust Reverser Control Simplified Schematic
Figure 303/78-32-00-990-803-F00 (Sheet 2 of 2)**

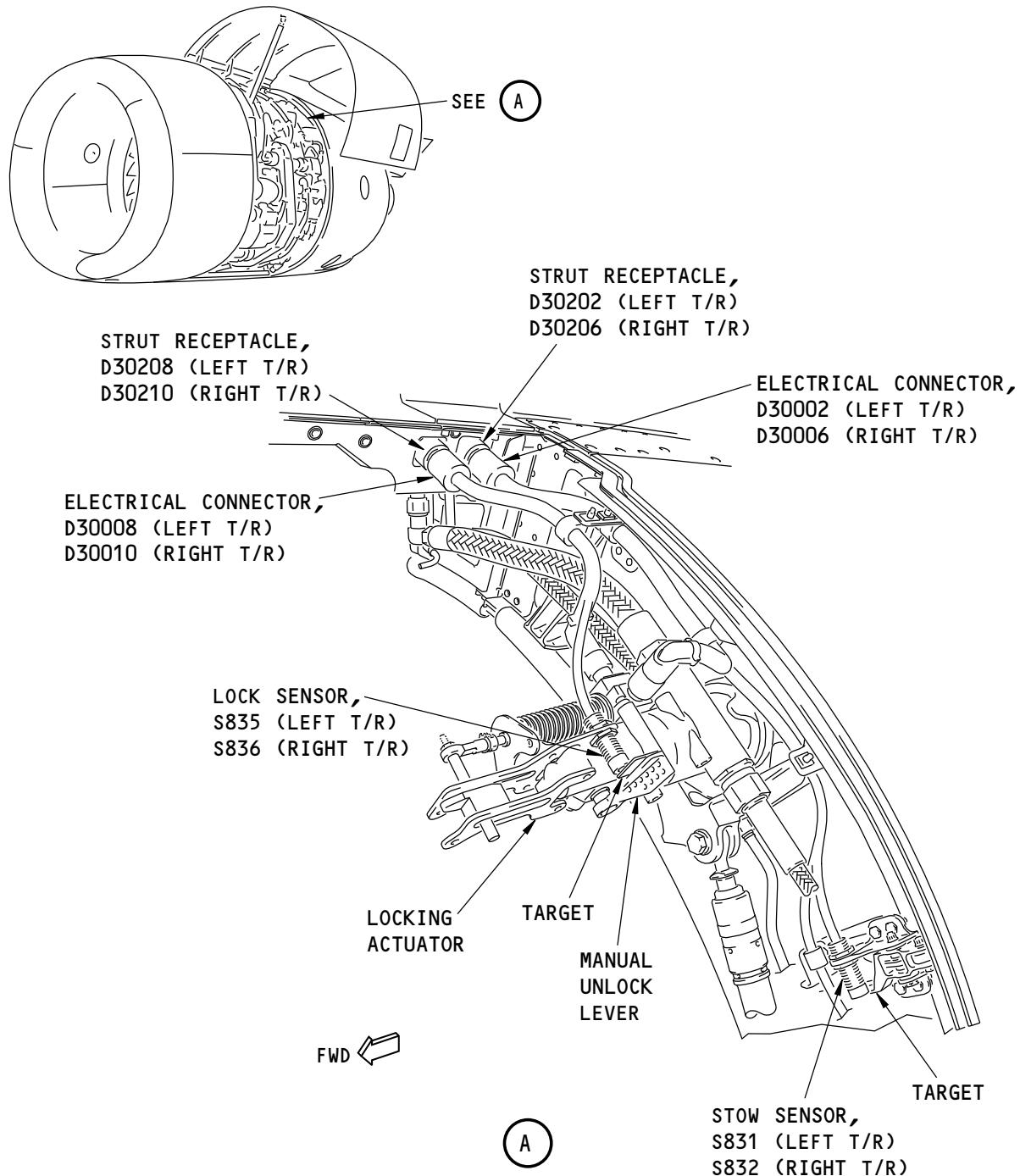
EFFECTIVITY
AKS ALL

78-32 TASK SUPPORT

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FAULT ISOLATION MANUAL**



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

H62925 S0006746444_V1

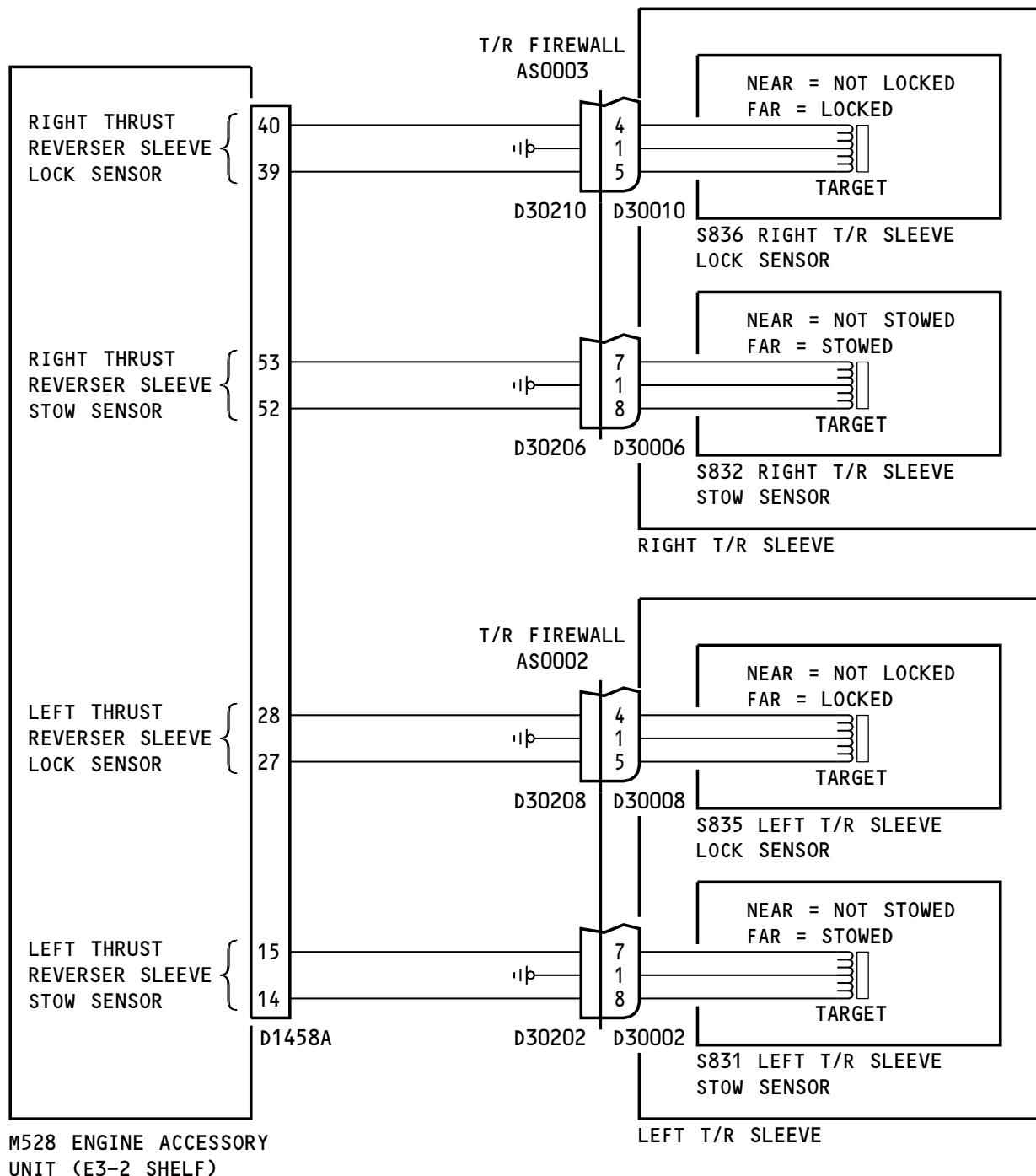
**Engine 1 Sleeve Lock and Stow Sensor and Simplified Schematic
Figure 304/78-32-00-990-805-F00 (Sheet 1 of 2)**

EFFECTIVITY
AKS ALL

78-32 TASK SUPPORT

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



H62953 S0006746445_V1

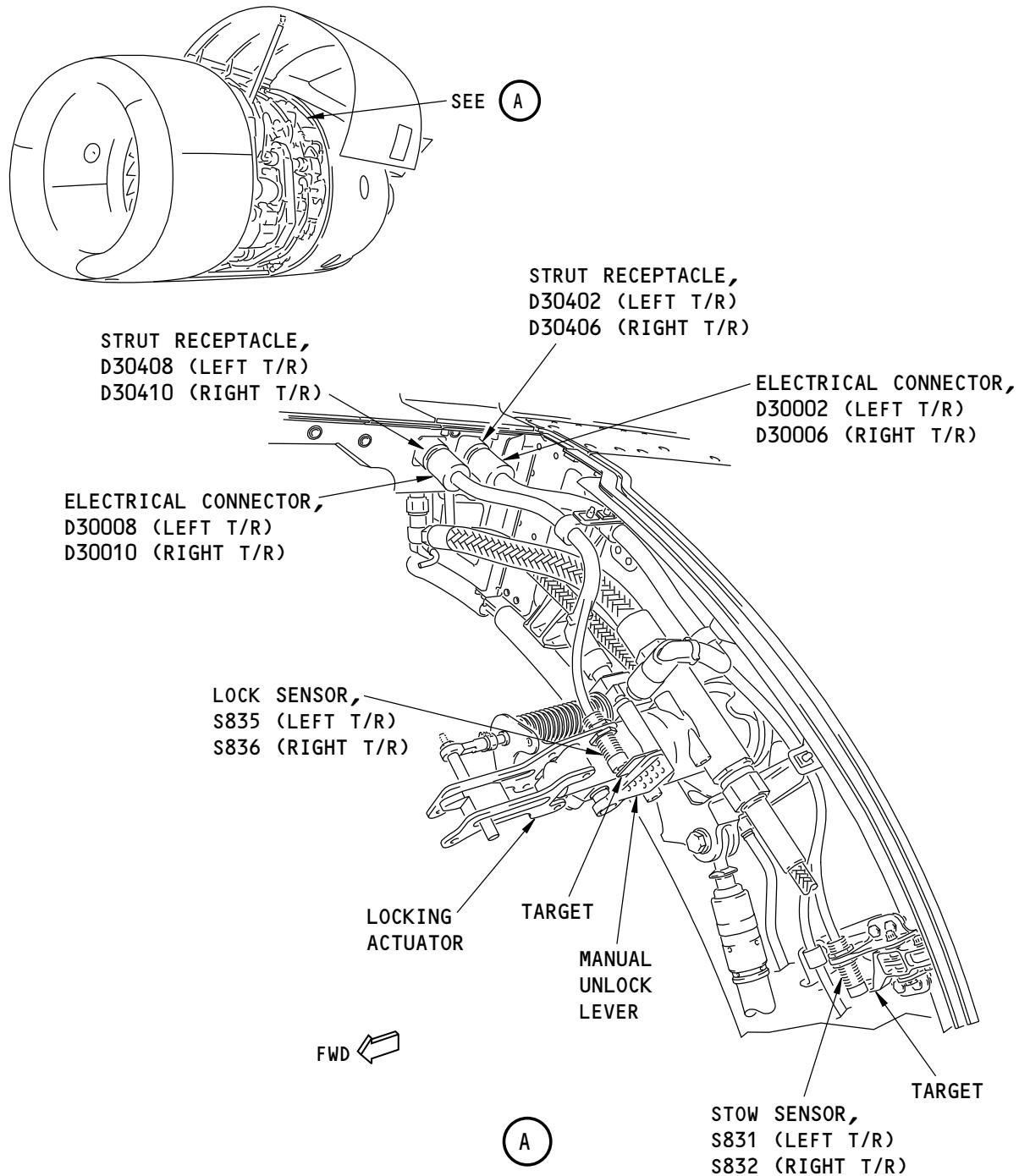
**Engine 1 Sleeve Lock and Stow Sensor and Simplified Schematic
Figure 304/78-32-00-990-805-F00 (Sheet 2 of 2)**

EFFECTIVITY
AKS ALL

78-32 TASK SUPPORT

D633A103-AKS

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FAULT ISOLATION MANUAL**



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

H62964 S0006746446_V1

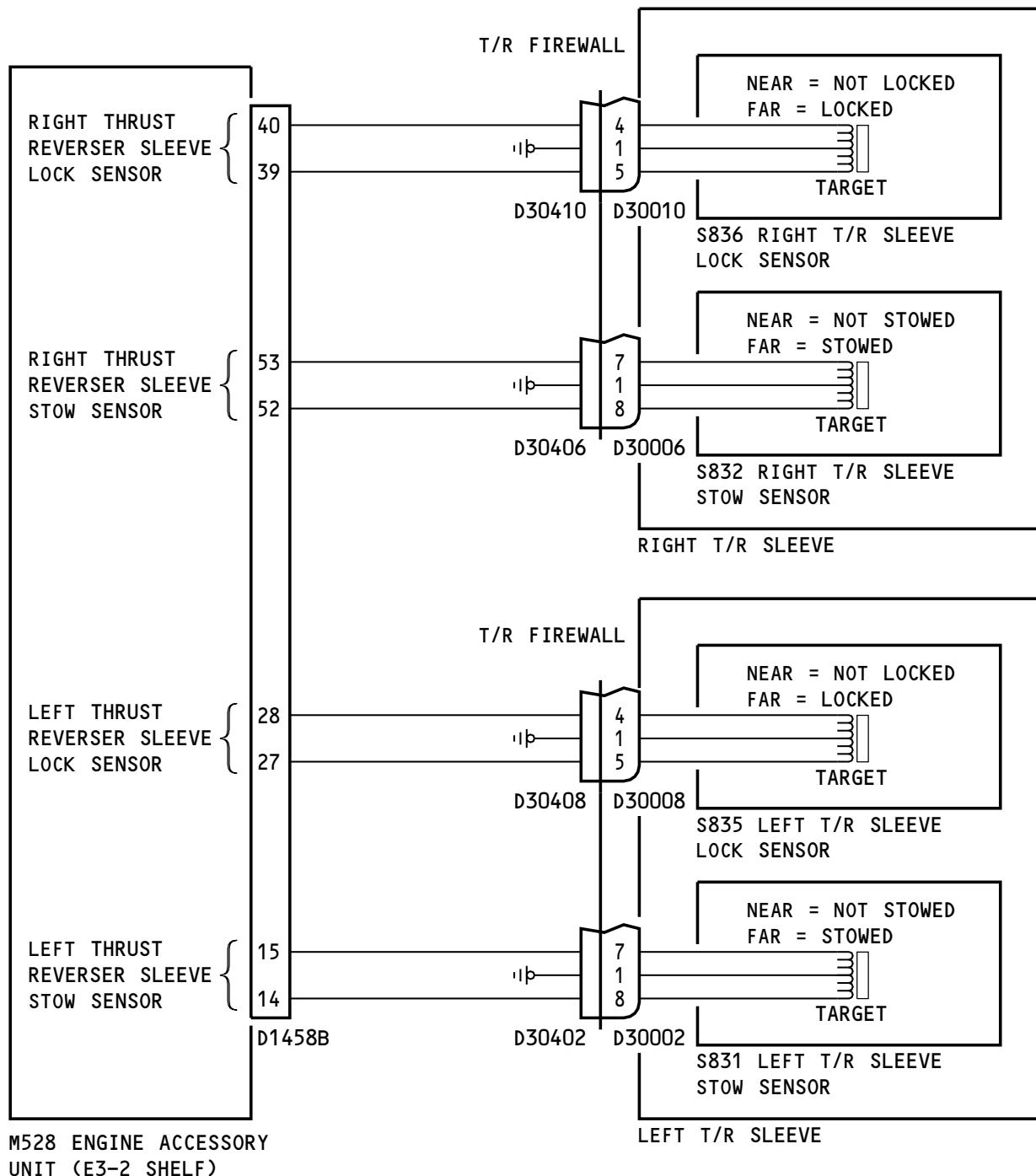
**Engine 2 Sleeve Lock and Stow Sensor and Simplified Schematic
Figure 305/78-32-00-990-806-F00 (Sheet 1 of 2)**

EFFECTIVITY
AKS ALL

78-32 TASK SUPPORT

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



H63018 S0006746447_V1

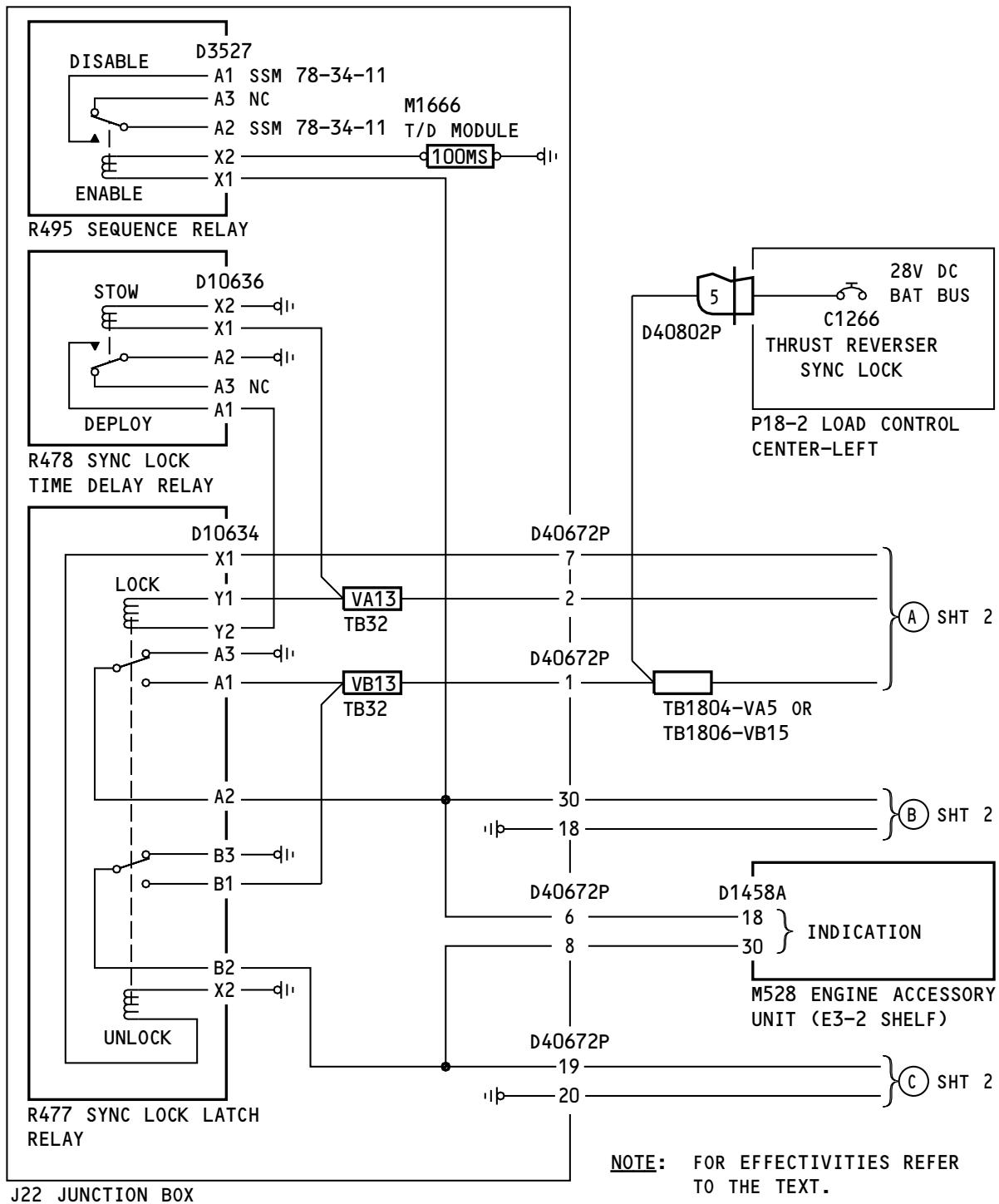
**Engine 2 Sleeve Lock and Stow Sensor and Simplified Schematic
Figure 305/78-32-00-990-806-F00 (Sheet 2 of 2)**

EFFECTIVITY
AKS ALL

78-32 TASK SUPPORT

D633A103-AKS

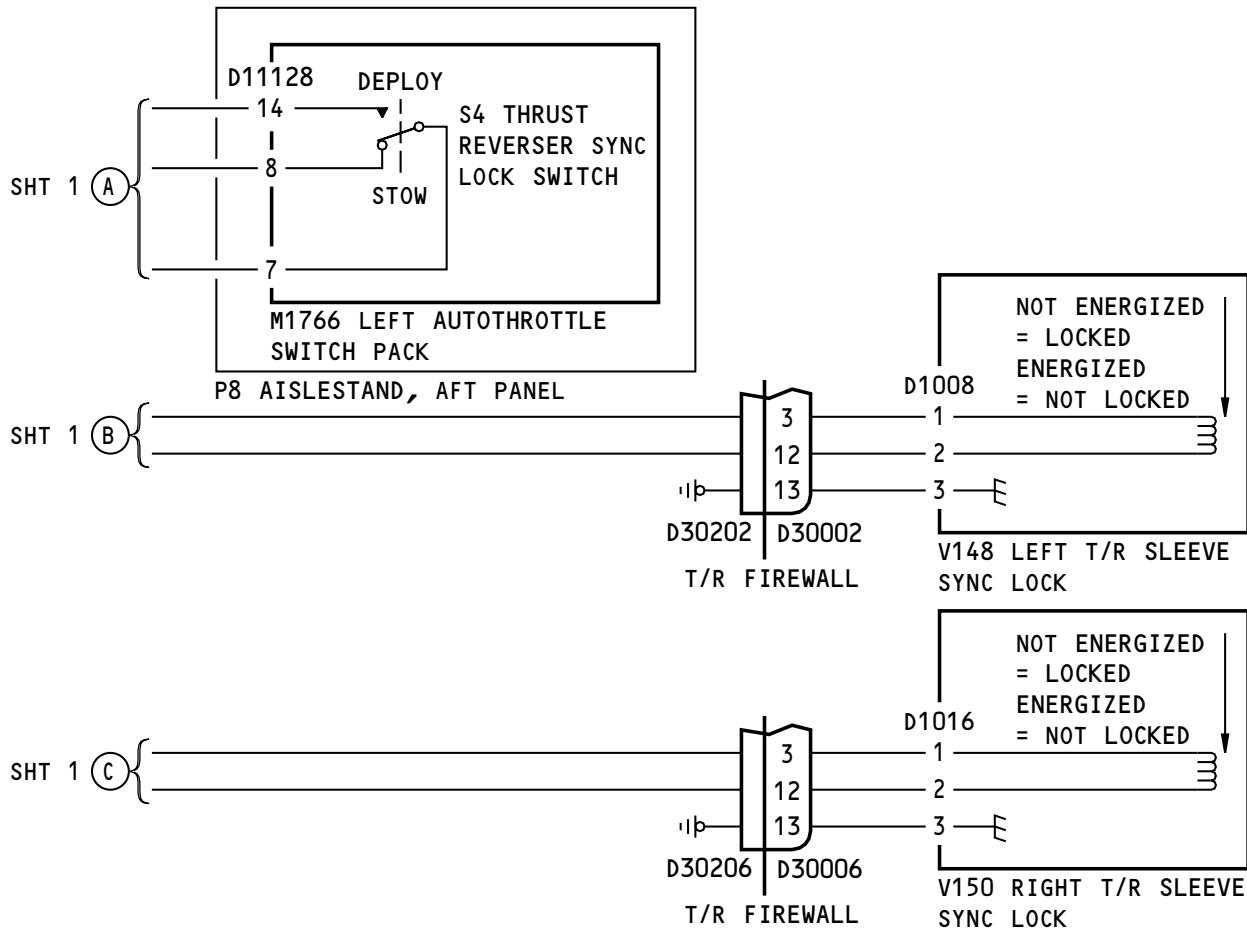
**737-600/700/800/900
FAULT ISOLATION MANUAL**



**Engine 1 Thrust Reverser Sync Lock Simplified Schematic
Figure 306/78-32-00-990-807-F00 (Sheet 1 of 2)**

EFFECTIVITY
AKS ALL

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H63085 S0006746449_V1

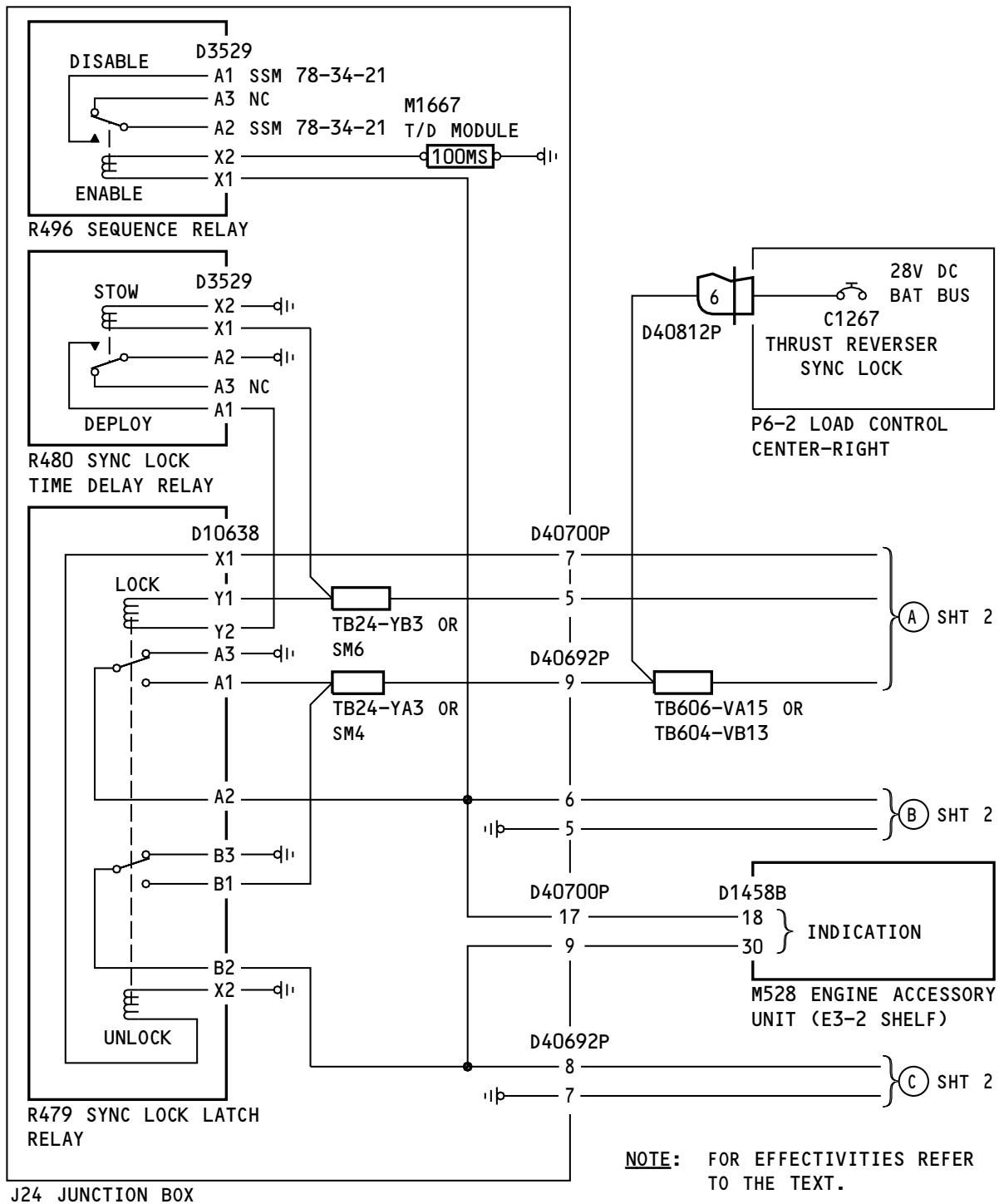
Engine 1 Thrust Reverser Sync Lock Simplified Schematic
Figure 306/78-32-00-990-807-F00 (Sheet 2 of 2)

EFFECTIVITY
AKS ALL

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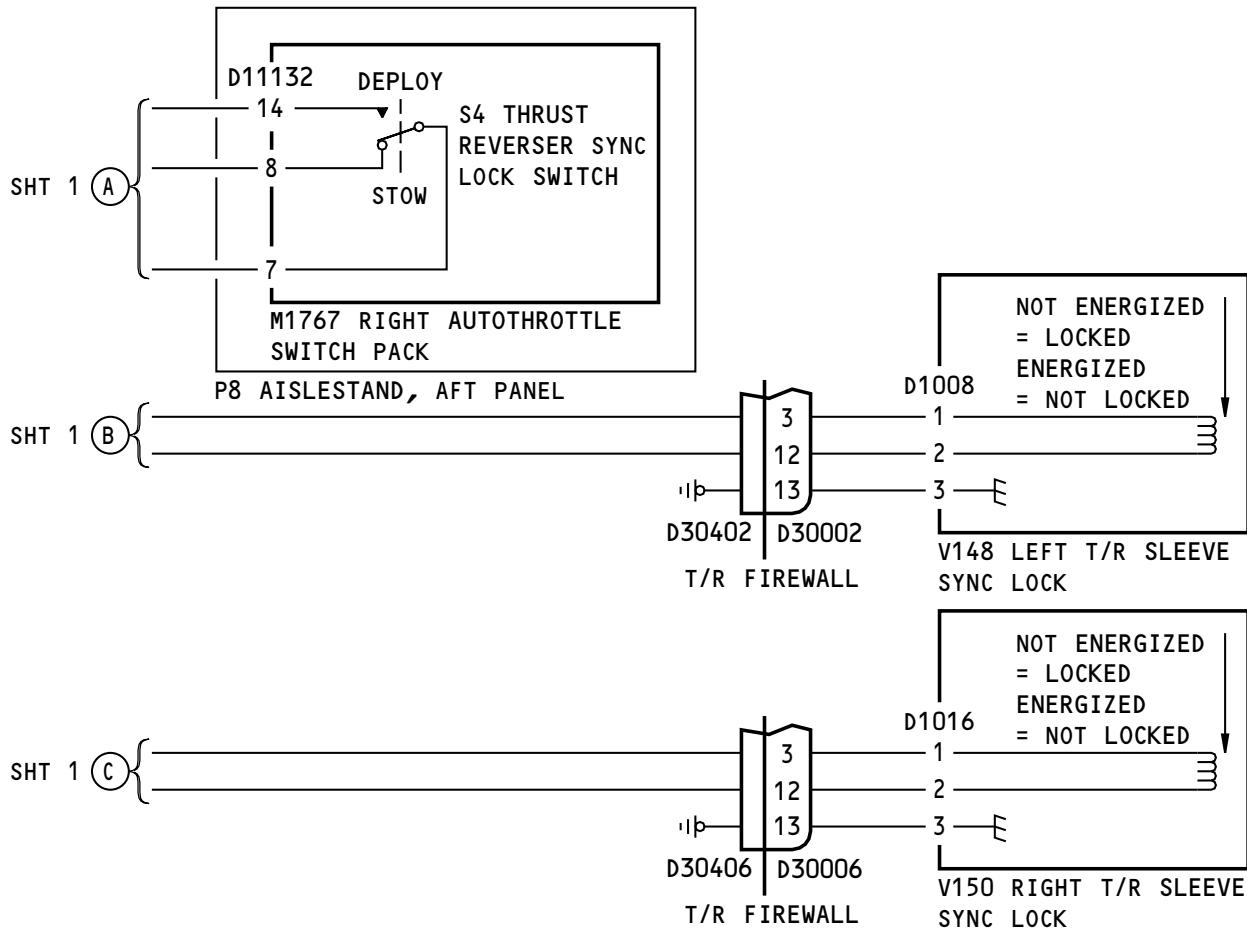
D633A103-AKS

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FAULT ISOLATION MANUAL

H63121 S0006746450_V1

Engine 2 Thrust Reverser Sync Lock Simplified Schematic
Figure 307/78-32-00-990-808-F00 (Sheet 1 of 2)EFFECTIVITY
AKS ALL

78-32 TASK SUPPORT

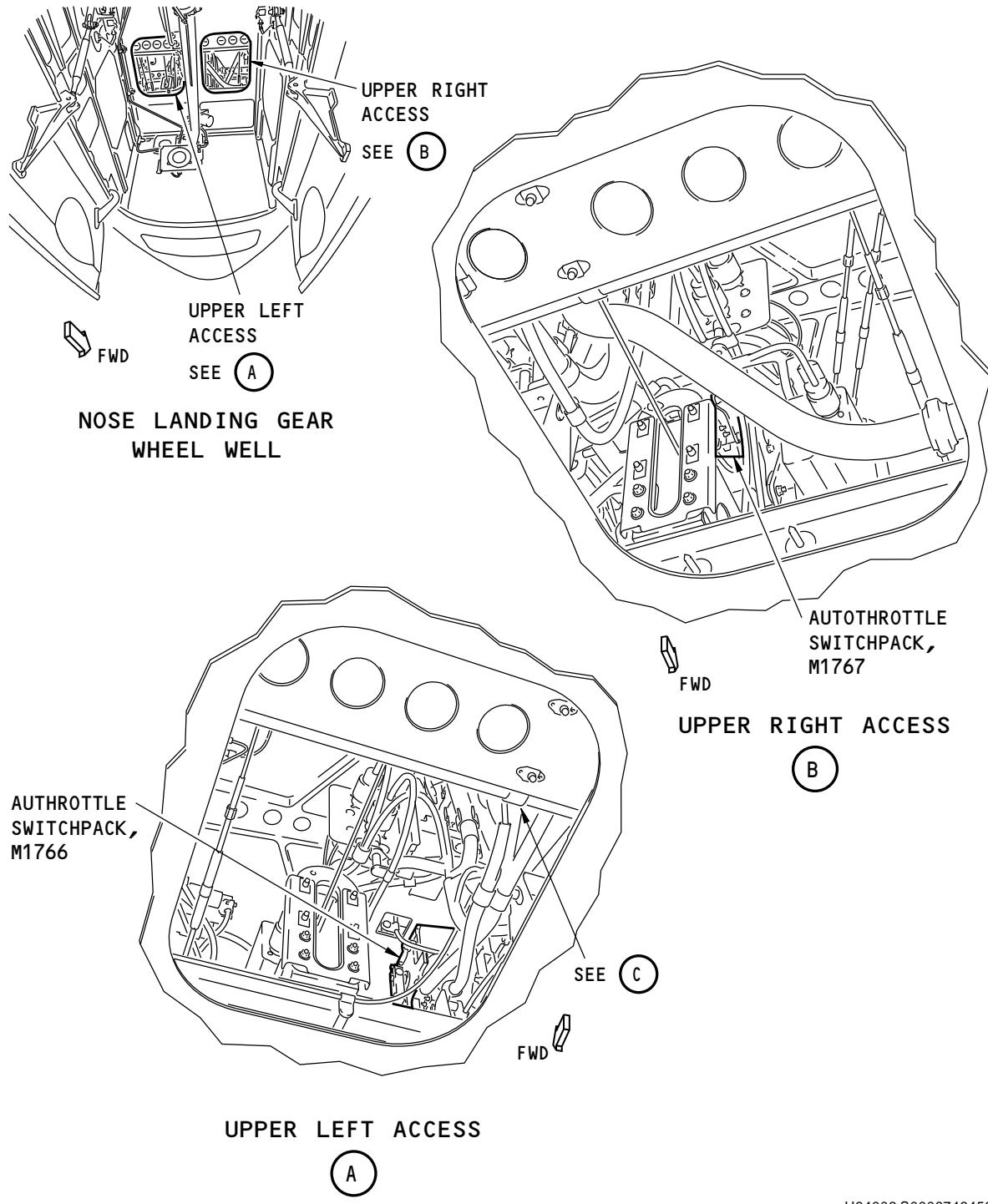


H63221 S0006746451_V1

Engine 2 Thrust Reverser Sync Lock Simplified Schematic
Figure 307/78-32-00-990-808-F00 (Sheet 2 of 2)

EFFECTIVITY
AKS ALL

78-32 TASK SUPPORT

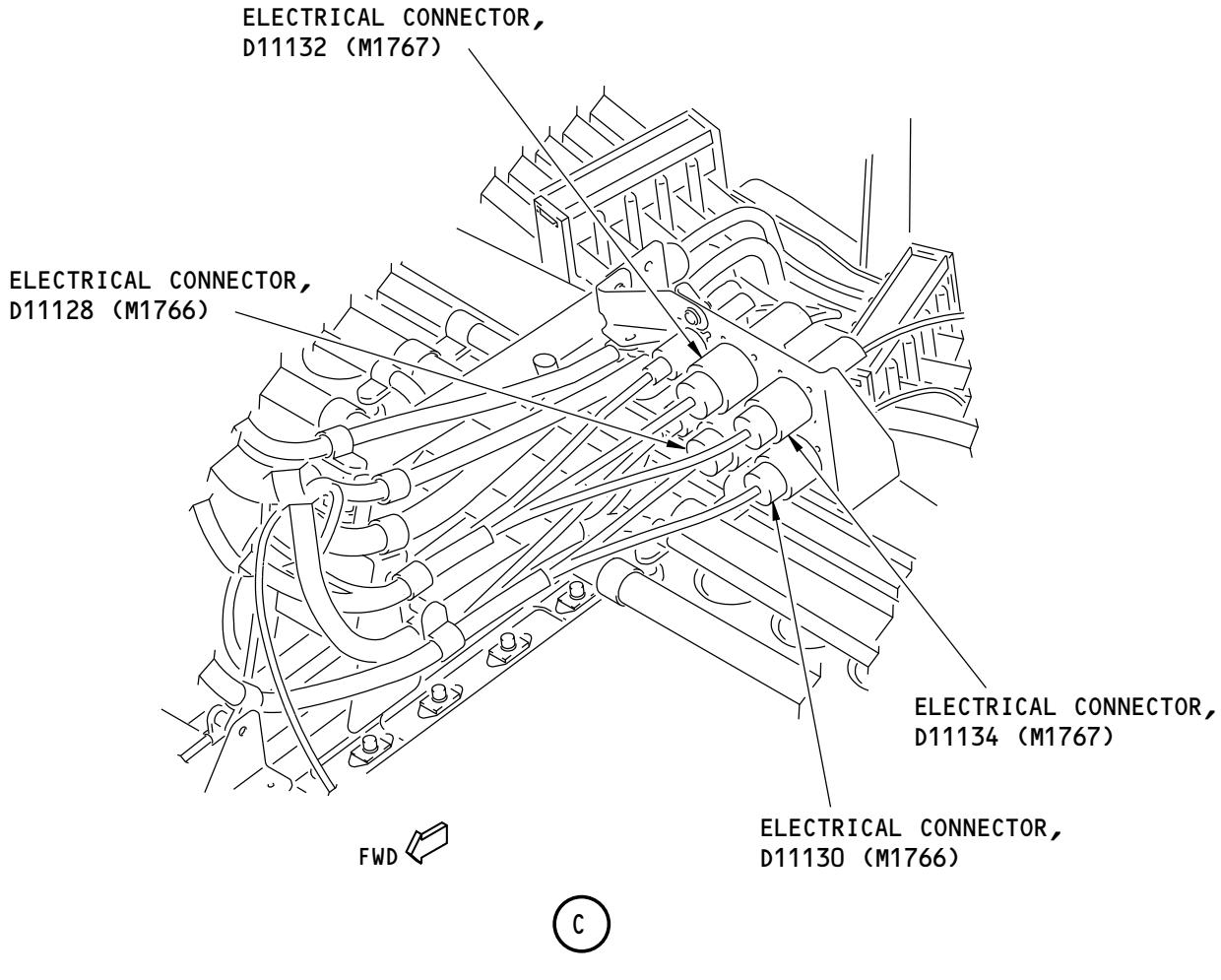
737-600/700/800/900
FAULT ISOLATION MANUAL

H64006 S0006746452_V1

Autothrottle Switchpack
Figure 308/78-32-00-990-809-F00 (Sheet 1 of 2)

EFFECTIVITY
AKS ALL**78-32 TASK SUPPORT**

D633A103-AKS

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

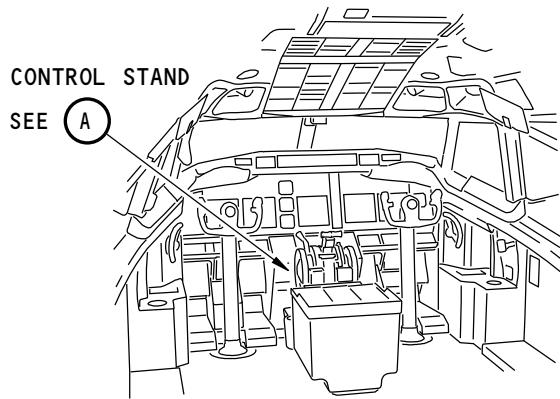
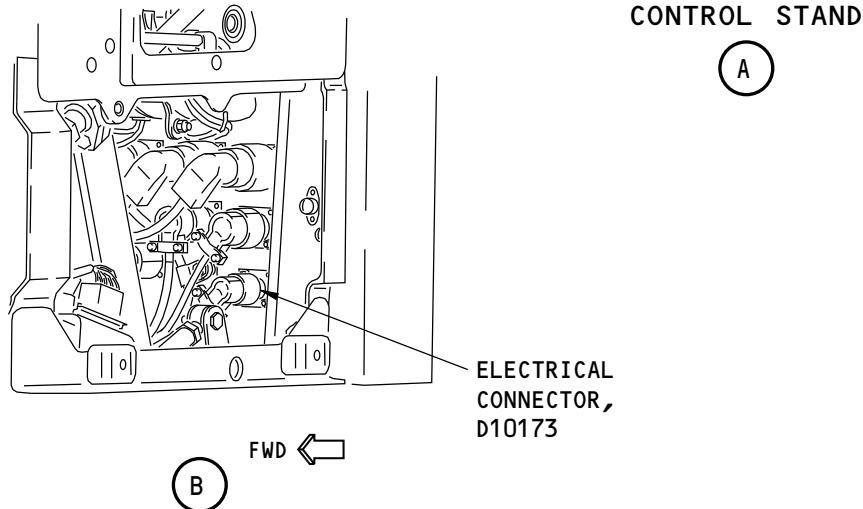
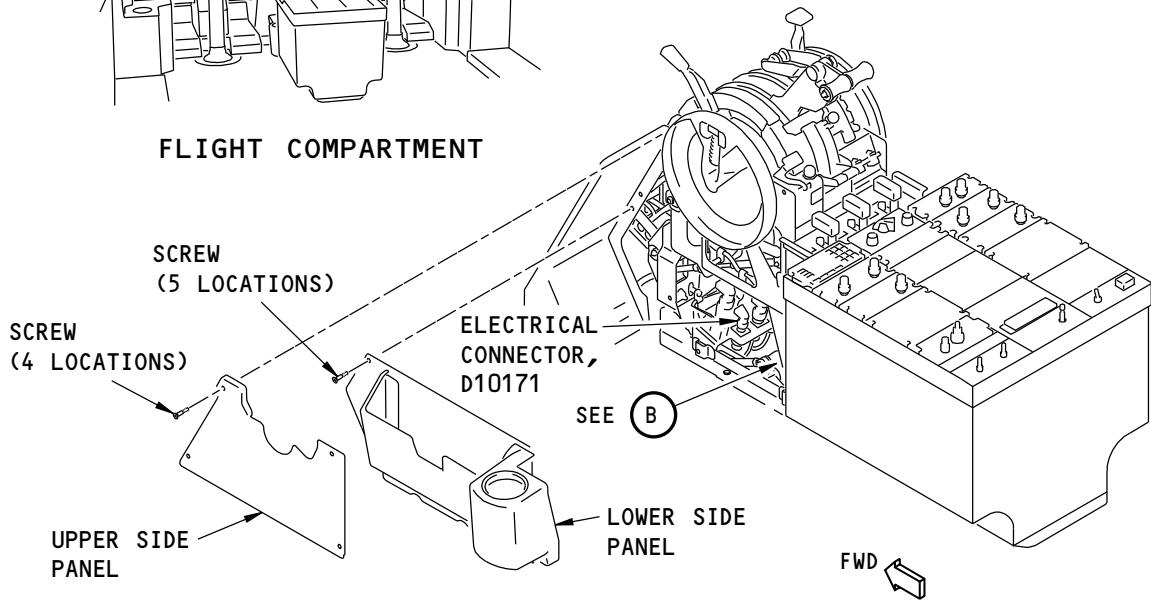
H64432 S0006746453_V1

Autothrottle Switchpack
Figure 308/78-32-00-990-809-F00 (Sheet 2 of 2)

EFFECTIVITY
AKS ALL**78-32 TASK SUPPORT**

D633A103-AKS

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

**FLIGHT COMPARTMENT**

H63772 S0006746454_V1

**Control Switch Electrical Connectors
Figure 309/78-32-00-990-810-F00**

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

801. REVERSER Light On - Thrust Reverser Operation Normal - Fault Isolation

A. Description

- (1) The Thrust Reverser (T/R) operates normal, 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 between the REVERSER light and the EAU is shorted to ground

C. Circuit Breakers

- (1) For engine 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	4	C01003	ENGINE 1 THRUST REVERSER IND

- (2) For engine 2, 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	8	C01004	ENGINE 2 THRUST REVERSER IND

D. Related Data

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

E. Initial Evaluation

- (1) Do a check of the REVERSER light on the P5 overhead panel in the flight compartment.
 - (a) If the REVERSER light is ON, then do the Fault Isolation Procedure below.
 - (b) If the REVERSER light is not ON, then the Initial Evaluation has shown that the fault is not active at this time and you have an intermittent problem.
 - 1) If you cannot find the problem at this time, then the Fault Isolation Procedure cannot isolate the fault.
 - 2) For an intermittent problem you must use your judgment, your airline policies, and the Possible Causes list to make the decision if you will try to correct the problem.
 - 3) If you will try to correct the problem, it is recommended that you do these steps:
 - a) Do the visual checks of the electrical connectors in the applicable fault isolation procedure below.
 - b) Use the WDM references to identify intermediate electrical connections in the wire harness and do a visual check.
 - c) If you find no problems, then replace components as listed in the Possible Causes List above.
 - 4) Monitor the airplane on the subsequent flight.

EFFECTIVITY
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78-34 TASK 801

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

F. Fault Isolation Procedure

- (1) Do the EAU BITE Procedure, (Engine Accessory Unit (EAU) BITE Procedure, 78-31 TASK 801).
 - (a) If there are maintenance messages that show, then do the applicable fault isolation task for those maintenance messages.
 - (b) If no maintenance messages show, but the REVERSER light is ON, then continue.
- (2) Do these steps to prepare for the Fault Isolation Procedure:
 - (a) Open these 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	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 check at the EAU to find a wire that is shorted to ground between the EAU and the REVERSER light:
 - (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 (Eng 1) or D1458B (Eng 2), 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 (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.
 - (c) If you did not find a problem and the REVERSER light is not on when the EAU is not installed, then install a new EAU, M528 (AMM TASK 78-34-06-400-801-F00).
 - 1) Do the Repair Confirmation at the end of this task.
 - (d) If you did not find a problem and the REVERSER light is on when the EAU is not installed, then continue.
- (4) Do this check of the wiring (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 D2952 (D3172) from the applicable Eng-1 (Eng-2) Power Management Control Panel, P5-68.
 - (c) Examine the wiring between the EAU, M528 and the Power Management Control Panel, P5-68 as follows:

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78-34 TASK 801

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	EAU CONNECTOR	P5-68 CONNECTOR	
ENG 1	D1458A PIN 55	D2952 PIN 19	RESISTANCE CONTINUITY
ENG 2	D1458B PIN 55	D3172 PIN 19	RESISTANCE CONTINUITY

- (d) If the electrical checks are not satisfactory, then do the applicable tasks to repair the wiring (SWPM Ch 20).
- 1) Re-install the EAU, do this 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) Do these steps to prepare for the procedure:
- (a) 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

- (2) Make sure that the EAU, M528, is installed; do this task: Engine Accessory Unit Installation, AMM TASK 78-34-06-400-801-F00.
- (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 corrected the problem.
 - (b) If the REVERSER light stays ON, then do the following:

Open these 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	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. 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 ————

EFFECTIVITY
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78-34 TASK 801

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FAULT ISOLATION MANUAL

802. T/R Deploy Commanded - REV Message Shows Amber, Engine Does Not Go to Full Reverse Thrust - Fault Isolation

A. This task is for these observed fault descriptions:

- (1) REV message shows amber, reverse thrust lever moves to full reverse thrust, but engine does not go to full reverse thrust
- (2) REV message shows amber, reverse thrust lever does not move to full reverse thrust.

B. Description

- (1) This is an indication that one or both of the thrust reverser sleeves did not completely deploy.

C. Possible Causes

- (1) Hydraulic actuator
- (2) Hydraulic deploy (pressure) line.

D. Fault Isolation Procedure

- (1) Do these steps to prepare for the fault isolation procedure:
 - (a) Do this task: Thrust Reverser Normal Operation Test, AMM TASK 78-31-00-700-801-F00.
 - 1) If the left and the right thrust reverser sleeves do not completely extend (deploy), then do the Fault Isolation Procedure for each thrust reverser sleeve.
 - 2) If only one of the thrust reverser sleeves do not completely extend (deploy), then do the Fault Isolation Procedure for that thrust reverser sleeve.

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) Do this task: Thrust Reverser Deactivation For Ground Maintenance, AMM TASK 78-31-00-040-802-F00.
- (c) Do this task: Open the Fan Cowl Panels, AMM TASK 71-11-02-010-801-F00.
- (2) If both the left and right thrust reverser sleeves do not completely extend (deploy), then do a check for a hydraulic leak in the main gear wheel well and the strut.
 - (a) Make sure that the hydraulic pressure tubing and connectors to the control valve module do not have a leak.

NOTE: The control valve module is in the main gear wheel well on the keel beam. The control valve module for Engine 1 is on the left side and the control valve module for Engine 2 is on the right side.

- (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 forward end of the strut has a drain tube that drains at the 6:00 o'clock position on the fan cowl.
- (c) 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.
 - a) If the Repair Confirmation is not satisfactory, then continue and do the fault isolation for each of the thrust reverser sleeves.

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78-34 TASK 802

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- (d) If there are no hydraulic leaks, then continue and do the fault isolation for each of the thrust reverser sleeves.
- (3) Do these steps for the applicable thrust reverser sleeve, if only one of the thrust reverser sleeves did not completely extend (deploy) and for each of the thrust reverser sleeves if both sleeves did not completely extend:
 - (a) Do a check for a hydraulic leak at the strut connection and the hydraulic pressure tubing on the torque box of the applicable thrust reverser.
 - 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.
 - b) If the Repair Confirmation is not satisfactory, then continue.
 - (b) If there are no hydraulic leaks, then continue.
 - (4) 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 hydraulic actuator (AMM TASK 78-31-03-000-803-F00).
 - a) Do the Repair Confirmation at the end of this task.

E. Repair Confirmation

- (1) Do these steps to prepare for the procedure:
 - (a) If not already done, do this task: Thrust Reverser Operation - Retract (Manual Procedure), AMM TASK 78-31-00-980-804-F00.
 - (b) 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.

- (2) Operate the thrust reverser through an extend and retract cycle.
 - (a) If the thrust reverser sleeves completely extend (deploy), then you corrected the fault.
 - (b) If the thrust reverser sleeves do not completely extend (deploy), do the step that follows and then continue with the fault isolation:

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.
- (3) After the fault is corrected, 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 ————

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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 thrust reverser interlock voltage to the EEC is out of range.
- (2) This can also be an indication that the rod assembly that connects to the interlock latch and interlock solenoid is out of adjustment, has interference or 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 fault.

B. Possible Causes

- (1) EEC, M1818
- (2) Rod assembly
- (3) Interlock latch
- (4) Interlock solenoid.

C. Fault Isolation Procedure

- (1) Do this task: EEC BITE Procedure, 73-00 TASK 801.
 - (a) Look for these interlock maintenance message numbers:
 - 1) 78-11531, 78-11532, 78-21531, 78-21532, 78-31531, 78-31532.
 - (b) Look for INTERNAL EEC maintenance messages.
 - (c) If one of these maintenance messages show, then go to the applicable fault isolation task for that maintenance message first.
 - (d) If one of these maintenance messages do not show, then continue.
- (2) Do a check of the rod assembly that connects to the interlock latch and interlock solenoid.
 - (a) Make sure that the thrust levers are in the idle position.
 - 1) Attach DO-NOT-OPERATE tags.
 - (b) Make sure that the reverse thrust levers are in the fully forward and down (stowed) position.
 - 1) Attach DO-NOT-OPERATE tags.
 - (c) For engine 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	6	C01412	ENGINE 1 THRUST REVERSER INTLK

- (d) For engine 2, open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	6	C01413	ENGINE 2 THRUST REVERSER INTLK
C	7	C00277	ENGINE 2 THRUST REVERSER CONT

- (e) To get access to the rod assembly, remove the applicable access cover from the overhead in the nose gear wheel well.

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FAULT ISOLATION MANUAL**

- (f) Examine the rod assembly and interlock latch area for interference or damaged components.
 - (g) Make sure that the jam nuts on the rod assembly are not loose.
 - (h) Make sure that the nut at the end of the rod assembly that connects to the interlock solenoid is not loose.
 - (i) Make sure that the bolt at the end of the rod assembly that connects to the interlock latch is not loose.
 - 1) If interference is found, then remove the interference.
 - 2) If there are damaged components or loose fasteners, then do the steps in the referenced procedure to replace components and to tighten the fasteners (AMM TASK 76-11-06-440-801-F00).
 - a) Do the Repair Confirmation at the end of this task.
 - b) If the Repair Confirmation is not satisfactory, then continue.
 - (j) If you do not find a problem, then continue.
- (3) Replace the thrust reverser interlock solenoid.
- 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.

D. Repair Confirmation

- (1) Do these steps to prepare for the procedure:
- (a) For engine 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

- (b) For engine 2, remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	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 corrected the fault.
- (3) After the fault is corrected, 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 tags from the thrust levers.
- (c) Remove the DO-NOT-OPERATE tags from the reverse thrust levers.

 END OF TASK

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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. This task is for these observed fault descriptions:

- (1) Time to extend thrust reverser too slow (more than 3 seconds)
- (2) Time to retract thrust reverser too slow (more than 5 seconds).

B. Description

- (1) Pilot reported that the thrust reverser was slow to fully extend or completely retract.

NOTE: If the movement of the thrust reverser to the stowed position is more than 10 seconds, then there can also be EAU maintenance messages (T/R Stow Faults - all messages, but L and R SYNC LOCK PWR and EAU FAULT messages (78-32 TASK 816)).

C. Possible Causes

- (1) Hydraulic leak
- (2) Unwanted material in the thrust reverser track
- (3) Hydraulic actuator
- (4) Sync shaft

D. Fault Isolation Procedure

- (1) Do these steps to prepare for the fault isolation procedure:
 - (a) Do this task: Thrust Reverser Normal Operation Test, AMM TASK 78-31-00-700-801-F00.
 - 1) If the left and the right thrust reverser sleeves take more than 3 seconds to extend (deploy) or 5 seconds to retract (stow), then do the Fault Isolation Procedure for each thrust reverser sleeve.
 - 2) If only one of the thrust reverser sleeves takes more than 3 seconds to extend (deploy) or 5 seconds to retract (stow), then do the Fault Isolation Procedure for that thrust reverser sleeve.

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

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- (c) Do this task: Open the Fan Cowl Panels, AMM TASK 71-11-02-010-801-F00.
- (2) If both the left and right thrust reverser 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 control valve module do not have a leak.

NOTE: The control valve module is in the main gear wheel well on the keel beam. The control valve module for Engine 1 is on the left side and the control valve module for Engine 2 is on the right side.
 - (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 forward end of the strut has a drain tube that drains at the 6:00 o'clock position on the fan cowl.
 - (c) 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.
 - a) If the Repair Confirmation is not satisfactory, then continue and do the fault isolation for each of the thrust reverser sleeves.
 - (d) If there are no hydraulic leaks, then continue and do the fault isolation for each of the thrust reverser sleeves.
- (3) Do these steps if only one of the thrust reverser sleeves takes longer than the limits to extend or retract and for each of the thrust reverser sleeves if both of the thrust reverser 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 thrust reverser.
 - 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.
 - b) If the Repair Confirmation is not satisfactory, then continue.
 - (b) If there are no hydraulic leaks, then continue.
- (4) Do this check for unwanted material in the tracks that will not let the applicable thrust reverser sleeve move smoothly:
 - (a) Make sure that the thrust reverser is deactivated.
 - (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 unwanted material.
 - 1) If there is unwanted material, then clean the tracks and sliders.
 - a) Do the Repair Confirmation at the end of this task.
 - b) If the Repair Confirmation is not satisfactory, then continue.
 - (d) If there is no unwanted material in the tracks or on the sliders, then continue.
- (5) With the thrust reverser 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.

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- (b) Examine the hydraulic actuators for hydraulic leaks.
 - 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) If the Repair Confirmation is not satisfactory, then continue.
 - 2) If there is a hydraulic leak, then replace the hydraulic actuator.
 - a) Do this task: Thrust Reverser Hydraulic Actuator Removal (Selection), AMM TASK 78-31-03-000-804-F00.
 - b) Do this task: Thrust Reverser Hydraulic Actuator Installation (Selection), AMM TASK 78-31-03-400-804-F00.
 - c) Do the Repair Confirmation at the end of this task.
 - d) If the Repair Confirmation is not satisfactory, then continue.
 - (c) If there are no hydraulic leaks, damage, loose bolts or gimbal pins, then continue.
- (6) Do this check of the hydraulic actuators at the rod end:
 - (a) Make sure that the reverse thrust lever is aft in the extended (deployed) 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.

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.

- (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 thrust reverser 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 end has damage or loose nuts, or there are damaged attachment fittings, then tighten the nuts or replace the attachment fittings or actuator.
 - a) Do the Repair Confirmation at the end of this task.
 - b) If the Repair Confirmation is not satisfactory, then re-install the access covers and continue.
 - (g) If there is no damage or loose nuts, then re-install the access covers and continue.
- (7) Do a check for hydraulic actuator with internal damage, or a damaged sync shaft or a sync shaft that is not installed correctly, or a sync shaft that is missing:
 - (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.

 - 1) Examine the sync shafts for damage.
 - 2) If a sync shaft is missing, replace the sync shaft.

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- a) Do this task: Sync Shaft Installation, AMM TASK 78-31-04-400-801-F00.
- b) Do the Repair Confirmation at the end of this task.
- 3) If a sync shaft is damaged, then replace the sync shaft.
 - a) Do this task: Sync Shaft Installation, AMM TASK 78-31-04-400-801-F00.
 - b) Do the Repair Confirmation at the end of this task.
 - c) If the Repair Confirmation is not satisfactory, then continue.
- 4) If a sync shaft was not installed correctly, then re-install the sync shaft correctly.

NOTE: The sync shaft should not be twisted when it is installed.

- a) Do this task: Sync Shaft Installation, AMM TASK 78-31-04-400-801-F00.
- b) Do the Repair Confirmation at the end of this task.
- c) If the Repair Confirmation is not satisfactory, then continue.

- (b) If the sync shafts are not the cause of the stopped or slow thrust reverser movement, do these steps to replace all three hydraulic actuators:

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 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 applicable tasks: Thrust Reverser Hydraulic Actuator Removal (Selection), AMM TASK 78-31-03-000-804-F00.

NOTE: Do a bench test of the removed actuators with component maintenance tool B78014, Rod-End and Stroke Stop, Locking and Non-locking Thrust Reverser Actuator Test Fixture. 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 suppliers component maintenance instructions.

- 2) Do the applicable tasks: Thrust Reverser Hydraulic Actuator Installation (Selection), AMM TASK 78-31-03-400-804-F00.
- 3) Do the Repair Confirmation at the end of this task.

E. Repair Confirmation

- (1) Do these steps to prepare for the procedure:
 - (a) Make sure that the sync shafts are installed.
 - (b) Do this task: Thrust Reverser Activation After Ground Maintenance, AMM TASK 78-31-00-440-803-F00.
- (2) Operate the thrust reverser through an extend and retract cycle.
 - (a) If the thrust reverser sleeves extend (deploy) in 3 seconds or less and retract (stow) in 5 seconds or less, then you corrected the fault.

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- 1) Do this task: Thrust Reverser Deactivation For Ground Maintenance, AMM TASK 78-31-00-040-802-F00.
- (3) After the fault is corrected, do these steps to put the airplane back to its usual condition:
 - (a) Make sure that the access covers on the thrust reverser sleeves are installed.
 - (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 thrust reverser 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 there are maintenance messages that show, then go to the applicable fault isolation task for those maintenance messages to correct the fault.
 - 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 policies, the Fault Isolation Procedure, and the Possible Causes list to make the decision if you will try to correct the fault.
 - 2) Monitor the airplane on the subsequent flight.

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 Did Not Deploy, REV Message Does Not Show, Reverse Thrust Lever Does Not Move to Full Reverse Thrust

A. Description

- (1) The pilot reports that the thrust reverser did not deploy.

B. Possible Causes

- (1) Control circuit breaker, C276 (Eng 1) or C277 (Eng 2)
- (2) Linkage rod between the autothrottle switchpack, M1766 (Eng 1) or M1767 (Eng 2) and the resolver M1819 (Eng 1) or M1822 (Eng 2).
- (3) Sequence relay, R495 (Eng 1) or R496 (Eng 2)
- (4) Fire switch, S8 (Eng 1) or S9 (Eng 2)
- (5) Thrust reverser control circuit with 0.10 second time delay module, M1666 (Eng 1) / M1667 (Eng 2);

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- (6) Wiring

C. Circuit Breaker

- (1) For Engine 1:

- (a) This is the primary circuit breaker related to the fault:

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

- (2) For Engine 2:

- (a) 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	7	C00277	ENGINE 2 THRUST REVERSER CONT

D. Related Data

- (1) Simplified Schematic (Figure 302, Figure 303)
- (2) Simplified Schematic (Figure 304, Figure 305)
- (3) SSM 78-32-51
- (4) SSM 78-32-61
- (5) SSM 78-34-11
- (6) SSM 78-34-21
- (7) WDM 78-32-51
- (8) WDM 78-32-61
- (9) WDM 78-34-11
- (10) WDM 78-34-21

E. Fault Isolation Procedure

- (1) Do a check of the thrust reverser system, do this task: Thrust Reverser Normal Operation Test, AMM TASK 78-31-00-700-801-F00.
 - (a) Do this task: Engine Accessory Unit (EAU) BITE Procedure, 78-31 TASK 801.
 - (b) If the thrust reverser did not extend (deploy) and only the NO FAULTS DETECTED maintenance message shows on the EAU, then do the fault isolation steps below.
 - (c) If the thrust reverser did extend and no maintenance messages show on the EAU, 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 to make the decision if you will try to correct the fault.
 - 2) If you will try to correct the fault, it is recommended that you do these steps:
 - a) Do the visual checks of the electrical connectors in the applicable fault isolation procedure below.
 - b) Use the WDM references to identify intermediate electrical connections in the wire harness and do a visual check.

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- c) If you find no problems, then replace components as listed in the Possible Causes List above.
- 3) Monitor the airplane on the subsequent flight.
- (2) Do these steps to do a check of the linkage (rod) between the autothrottle switchpack, M1766 (Eng 1) or M1767 (Eng 2), and the resolver, M1819 (Eng 1) or M1822 (Eng 2):
 - (a) For Engine 1:
 - 1) Open this 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	7	C01266	ENGINE 1 THRUST REVERSER SYNC LOCK

- (b) For Engine 2:

- 1) 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

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.

- (c) Do this task: Thrust Reverser Deactivation For Ground Maintenance, AMM TASK 78-31-00-040-802-F00.
- (d) Do the steps in the Switch Check and Adjustment, AMM TASK 76-11-07-820-801-F00 to adjust the length of the linkage (rod) to get the correct TRA values for all switches of the Autothrottle Switchpack Assembly.
 - 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.
 - b) If the Repair Confirmation is not satisfactory, then open the circuit breakers above and continue.
 - (e) If the linkage (rod) length is correct, then continue.
- (3) Move the reverse thrust lever up and aft to the extend (deploy) position.
- (4) Do this check of the sync lock circuit for 28 VDC to the coil of the T/R sequence relay, R495 (Eng 1) or R496 (Eng 2):

NOTE: For Engine 1, the T/R sequence relay is in the J22 junction box in the nose gear wheel well on the left side.

NOTE: For Engine 2, the T/R sequence relay is in the J24 junction box in the nose gear wheel well on the right side.

 - (a) Remove the T/R sequence relay, R495 (Eng 1) or R496 (Eng 2).
 - (b) For Engine 1:

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- 1) Close these circuit breakers:

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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	7	C01266	ENGINE 1 THRUST REVERSER SYNC LOCK

- (c) For Engine 2:

- 1) Close these circuit breakers:

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

- (d) Do a check for 28 VDC from pin X1 to structure ground at the receptacle for the T/R sequence relay, R495 (Eng 1) or R496 (Eng 2).

- 1) If there is no voltage at pin X1, then open the circuit breakers above, and examine and repair the wiring between pin X1 and terminal block TB32 WA9 (Eng 1) or TB24 YA5 (Eng 2) (SWPM Ch 20).
- a) Do the Repair Confirmation at the end of this task.
 - b) If the Repair Confirmation is not satisfactory, then close the circuit breakers above and continue.

- (e) If there is voltage, then continue.

- (5) Do a check for 28 VDC between pins A1 and A2 (ground) at the receptacle for the T/R sequence relay, R495 (Eng 1) or R496 (Eng 2).

- (a) If there is voltage, then open the circuit breakers above and continue.

- 1) Replace the T/R sequence relay, R495 (Eng 1) or R496 (Eng 2) (SWPM Ch 20).

- a) Do the Repair Confirmation at the end of this task.
- b) If the Repair Confirmation is not satisfactory, then open the circuit breakers above and continue.

- 2) Replace the T/R time delay module M1666 (Eng 1) or M1667 (Eng 2) (SWPM Ch 20).

- a) Do the Repair Confirmation at the end of this task.
- b) If the Repair Confirmation is not satisfactory, then open the circuit breakers above and continue.

- 3) Examine and repair the ground wire from pin X2 (SWPM Ch 20).

- a) Do the Repair Confirmation at the end of this task.
- b) If the Repair Confirmation is not satisfactory, then open the circuit breakers above and continue.

- (b) If there is no voltage, then continue.

- (6) Do a check for 28 VDC at pin A1 to structure ground.

- (a) If there is voltage at A1, then examine and repair the wire between pin A2 and terminal block TB22 YB11 (Eng 1) or TB24 YB7 (Eng 2) (SWPM Ch 20).

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

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- a) If the Repair Confirmation is not satisfactory, then continue.
- (b) If there is no voltage, then continue.
- (7) Do this check for 28 VDC:
 - (a) For Engine 1, Do a check for 28 VDC between the terminal block TB22 YB01 and structure ground.
 - (b) For Engine 2, Do a check for 28 VDC between the terminal block SM15 and structure ground.
 - 1) If there is 28 VDC at the terminal block, then examine and repair the wire between the terminal block and pin A1 of the T/R sequence relay (SWPM Ch 20).
 - a) Do the Repair Confirmation at the end of this task.
 - b) If the Repair Confirmation is not satisfactory, then open the circuit breaker above and continue.
 - (c) If there is not 28 VDC at the terminal block, then re-install the T/R sequence relay, open the circuit breakers above and continue.
- (8) Visually examine the electrical connector, D576 (Eng 1) or D578 (Eng 2), for the fire switch at the P8-1 Engine and APU fire control panel.
 - (a) To get access to the connector, remove the four bolts from the P8-1 Engine and APU fire control panel that is on the control stand (AMM TASK 26-00-01-000-801).
 - (b) See if the electrical connector is correctly connected to the junction box receptacle, and continue.
 - (c) Disconnect the electrical connector.
 - (d) Visually examine the junction box receptacle and wire harness connector (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.
 - b) If the Repair Confirmation is not satisfactory, then open the circuit breaker above and continue.
 - 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.
 - a) If the Repair Confirmation is not satisfactory, then open the circuit breaker above and continue.
 - (e) If you do not find a problem, then continue.
- (9) Do an electrical check through the S8 (Eng 1) or S9 (Eng 2) fire switch between these pins of the fire switch electrical connector:

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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 fire switch (SWPM Ch 20).
 - 1) Do the Repair Confirmation at the end of this task.
 - a) If the Repair Confirmation is not satisfactory, then close the circuit breaker above and continue.
 - (b) If the continuity is correct, then close the circuit breaker above and continue.
- (10) Do a check for 28 VDC at the electrical connector, D576 (Eng 1) or D578 (Eng 2), from pin 5 to structure ground.
 - (a) If there is no voltage at pin 5, then open the circuit breaker above, and examine and repair the wire from pin 5 and the circuit breaker C276 (Eng 1) or C277 (Eng 2) (SWPM Ch 20).
 - 1) Do the Repair Confirmation at the end of this task.
 - (b) If there is voltage at pin 5, then open the circuit breaker above, and examine and repair the wiring between pin 6 and terminal block TB3201 YA29 (Eng 1) or YB29 (Eng 2) (SWPM Ch 20).
 - 1) Do the Repair Confirmation at the end of this task.

F. 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 T/R sequence relay 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.
 - (d) For Engine 1:
 - 1) 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

- (e) For Engine 2:

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- 1) 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

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.

- (f) Do these steps to reset the T/R DEPLOY FAULTS light.

- 1) Move the reverse thrust lever 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 fault.
- 5) If the thrust reverser does not deploy, make sure that the thrust reverser is deactivated again before you continue with the fault isolation.

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 fault is corrected, do these steps:

- (a) Move the reverse thrust lever forward and down to retract (stow) the thrust reverser.
- (b) Operate the thrust reverser through an extend and retract cycle.
- (c) Make sure that the REVERSER fault 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.
- (d) Wait for at least 30 seconds.
- (e) Make sure that the REVERSER fault light on the P5 panel in the flight compartment stays off.
- (f) Do this task: Engine and APU Fire Control Panel Installation, AMM TASK 26-00-01-400-801.

— END OF TASK —

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808. Thrust Reverser Stow - REVERSER Light Does Not Come On Momentarily During Stow - Thrust Reverser Operation Normal - Fault Isolation

A. Description

- (1) The thrust reverser operates normal, 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) Lamp
- (2) Light assembly
- (3) EAU, M528
- (4) Wiring

C. Circuit Breakers

- (1) For engine 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	4	C01003	ENGINE 1 THRUST REVERSER IND

- (2) For engine 2, 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	8	C01004	ENGINE 2 THRUST REVERSER IND

D. Related Data

- (1) Simplified Schematic (Figure 301)
- (2) SSM 78-36-11
- (3) SSM 78-36-21
- (4) WDM 78-36-11
- (5) WDM 78-36-21

E. Initial Evaluation

- (1) Operate the thrust reverser through a deploy and stow cycle to do a check of the REVERSER light on the P5 overhead panel in the flight compartment:
 - (a) Do this task: Thrust Reverser Normal Operation Test, AMM TASK 78-31-00-700-801-F00.
 - (b) If the REVERSER light did 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.
 - (c) If the REVERSER light did come 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.
 - 1) If you cannot find the fault at this time, then the Fault Isolation Procedure cannot isolate the fault.
 - 2) For an intermittent fault you must use your judgment, your airline policies, and the Possible Causes list to make the decision if you will try to correct the fault.
 - 3) If you will try to correct the fault, it is recommended that you do these steps:

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- a) Do the visual checks of the electrical connectors in the applicable fault isolation procedure below.
 - b) Use the WDM references to identify intermediate electrical connections in the wire harness and do a visual check.
 - c) If you find no problems, then replace components as listed in the Possible Causes List above.
- 4) Monitor the airplane on the subsequent flight.

F. Fault Isolation Procedure

- (1) Do the lamp test for the REVERSER light.
 - (a) If the REVERSER light does not come on, then, 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 does come on, then continue.
- (2) Do the lamp test for the EAU, M528:
 - (a) Push and hold the T/R STOW FAULTS or the T/R DEPLOY FAULTS switches on the EAU for Engine 1 and Engine 2.

NOTE: All of the fault lights will come on for one second. After one second, all of the lights will go off but, 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, then, 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 do come on for one second, then continue.
- (3) Do an electrical check at the EAU:
 - (a) For engine 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	4	C01003	ENGINE 1 THRUST REVERSER IND

- (b) For engine 2, 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	8	C01004	ENGINE 2 THRUST REVERSER IND

- (c) Remove the EAU, M528. To remove it, do this task: Engine Accessory Unit Removal, AMM TASK 78-34-06-000-801-F00.
- (d) Visually examine the wire harness connector, D1458A (Eng 1) or D1458B (Eng 2), 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.
 - a) Do this task: Engine Accessory Unit Installation, AMM TASK 78-34-06-400-801-F00.
 - b) Do the Repair Confirmation at the end of this task.

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- c) If the Repair Confirmation is not satisfactory, then close the circuit breakers above and continue.
- 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.
 - b) If the Repair Confirmation is not satisfactory, then close the circuit breakers above and continue.
- 3) If you did not find a problem, then close the circuit breakers above and continue.
- (4) Put a jumper between pins 55 and 3 of the D1458A (Eng 1) or D1458B (Eng 2) electrical connector.
 - (a) If the REVERSER light comes on, then replace the EAU, M528.
 - 1) Do this task: Engine Accessory Unit Installation, AMM TASK 78-34-06-400-801-F00.
 - a) Do the Repair Confirmation at the end of this task.
 - b) If the Repair Confirmation is not satisfactory, then open the circuit breaker above and continue.
 - (b) If the REVERSER light does not come on, then open the circuit breaker above and continue.
 - (5) Do this check of the wiring:
 - (a) Remove the power management control panel, P5-68.
 - (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 (AMM TASK 78-34-06-400-801-F00).
 - 3) Re-install the power management control panel, P5-68.
 - 4) Do the Repair Confirmation at the end of this task.
- (d) If there is continuity, then replace the power management control panel, P5-68
 - 1) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

- (1) Do these steps to prepare for the procedure:
 - (a) For engine 1, remove the safety tag and close this circuit breaker:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
B	4	C01003	ENGINE 1 THRUST REVERSER IND


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- (b) For engine 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	8	C01004	ENGINE 2 THRUST REVERSER IND

- (c) Make sure that the EAU is installed; do this task: Engine Accessory Unit Installation, AMM TASK 78-34-06-400-801-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.

- (2) Operate the thrust reverser 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 corrected the fault.

———— END OF TASK ————

809. All Lights Do Not Come On During the BITE Procedure - Fault Isolation

A. Description

- (1) All of the lights did not come on for one second when the T/R STOW FAULTS or the T/R DEPLOY FAULTS button was pushed during the EAU BITE check.

B. Possible Causes

- (1) Circuit breaker, C1003 (Eng 1) or C1004 (Eng 2)
 (2) Wiring between the circuit breaker and pin 1 of the EAU
 (3) EAU, M528

C. Circuit Breakers

- (1) For engine 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	4	C01003	ENGINE 1 THRUST REVERSER IND

- (2) For engine 2, 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	8	C01004	ENGINE 2 THRUST REVERSER IND

D. Related Data

- (1) Simplified Schematic (Figure 301)
 (2) SSM 78-36-11
 (3) SSM 78-36-21
 (4) WDM 78-36-11
 (5) WDM 78-36-21

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E. Fault Isolation Procedure

- (1) Do the lamp test for the EAU, M528:
- Push and hold the T/R STOW FAULTS or the T/R DEPLOY FAULTS switches on the EAU for Engine 1 and Engine 2.
NOTE: All of the fault lights must come on for one second.
 - If only some of the fault lights do not come on for one second, then 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
 1) Do the Repair Confirmation at the end of this task.
 - If the Repair Confirmation is not satisfactory, then continue.

- (2) Do an electrical check at the EAU:

- (a) For Engine 1, do this task:

- 1) Open this 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	4	C01003	ENGINE 1 THRUST REVERSER IND

- (b) For Engine 2, do the following:

- 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	8	C01004	ENGINE 2 THRUST REVERSER IND

- (c) Remove the EAU, M528. To remove it, do this task: Engine Accessory Unit Removal, AMM TASK 78-34-06-000-801-F00.
- (d) Visually examine the wire harness connector, D1458A (Eng 1) or D1458B (Eng 2), and the EAU receptacle (AMM TASK 70-70-01-200-801-F00).
- If the pins on the EAU are damaged, then install a new EAU, M528.
 - Do this task: Engine Accessory Unit Installation, AMM TASK 78-34-06-400-801-F00.
 - Do the Repair Confirmation at the end of this task.
 - If the Repair Confirmation is not satisfactory, then close the circuit breakers above and continue.
 - If the wire harness connector is damaged, then do the applicable tasks to repair or replace the connector (SWPM Ch 20).
 - Do the Repair Confirmation at the end of this task.
 - If the Repair Confirmation is not satisfactory, then close the circuit breakers above and continue.
 - If you did not find a problem, then close the circuit breakers above and continue.

- (3) Do this check for 28 VDC to the EAU:

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- (a) Do a check for 28 VDC between pin 1 of the electrical connector D1458A (Eng 1) or D1458B (Eng 2) and structure ground.
 - 1) If there is not 28 VDC at pin 1, then do these steps:
 - a) Open the circuit breakers above.
 - b) Examine and repair the wiring between pin 1 and the circuit breaker, C1003 (Eng1) or C1004 (Eng 2) (SWPM Ch 20).
 - c) Do the Repair Confirmation at the end of this task.
 - 2) If there is 28 VDC at pin 1, then continue:
- (4) Install a new EAU, M528. To install it, do this 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 is installed. To install it, do this task: Engine Accessory Unit Installation, AMM TASK 78-34-06-400-801-F00.
 - (b) For Engine 1, do the following:
 - 1) 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	4	C01003	ENGINE 1 THRUST REVERSER IND

- (c) For Engine 2, do the following:

- 1) 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	8	C01004	ENGINE 2 THRUST REVERSER IND

- (d) Do this lamp test for the EAU:

- 1) Push and hold the T/R STOW FAULTS or the T/R DEPLOY FAULTS switches on the EAU for Engine 1 and Engine 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 out, but the green NO FAULTS DETECTED light.

- (e) If all of the lights come on for one second and then go out, but the green NO FAULTS DETECTED light, then you corrected the fault.

- (2) After the fault is corrected, do these steps to complete the task:

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) Operate the thrust reverser through an extend (deploy) and retract (stow) cycle.

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- (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 ————

————— EFFECTIVITY ————
AKS ALL

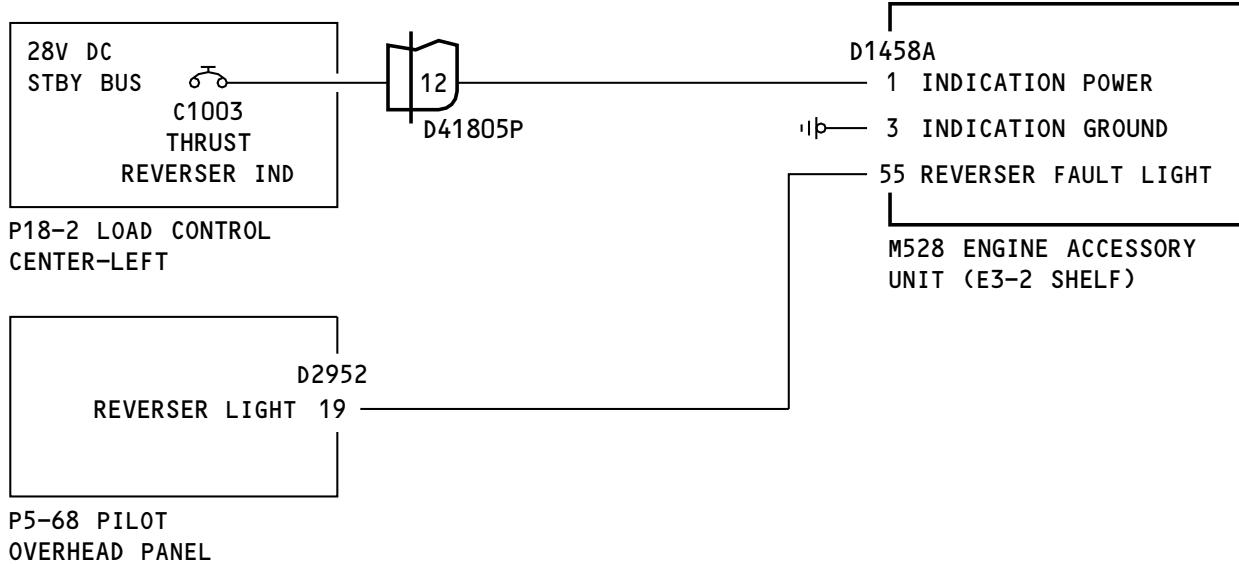
78-34 TASK 809

D633A103-AKS

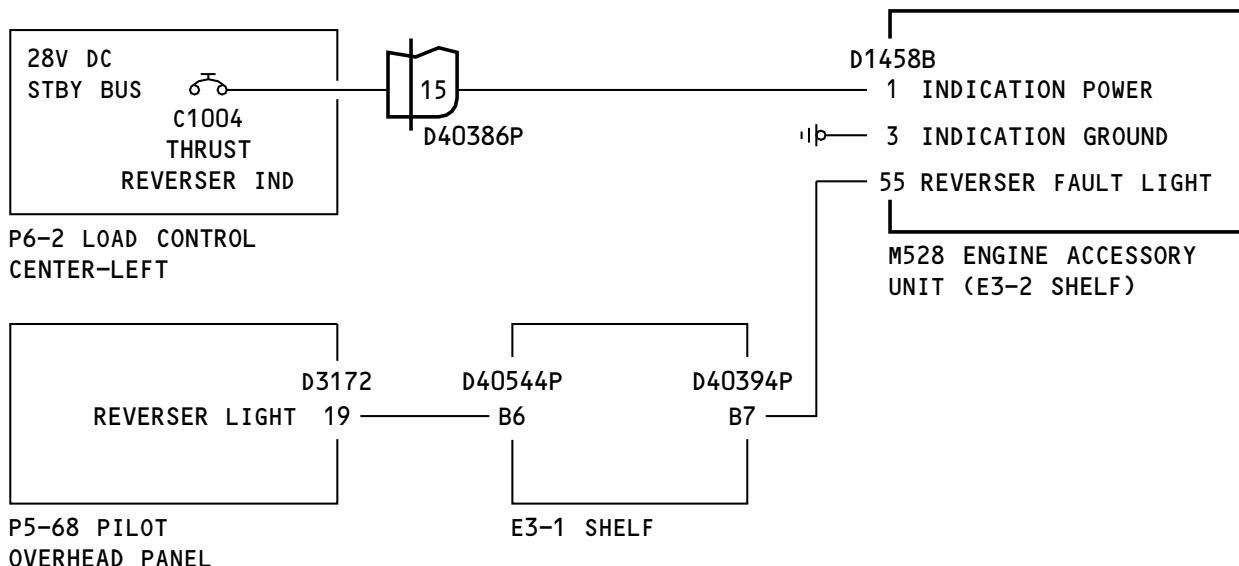
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ENGINE 1

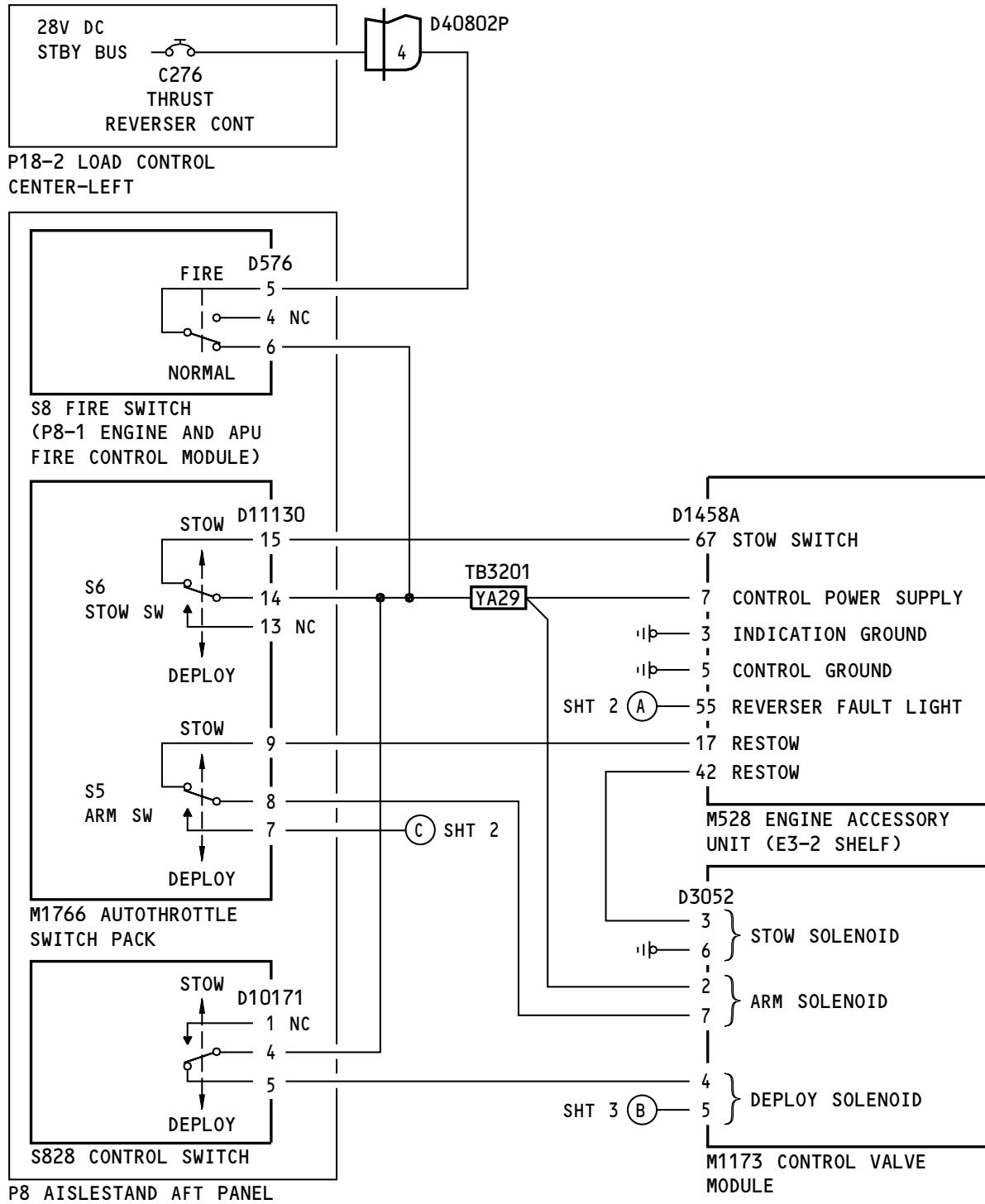


H35489 S0006746470_V1

**Thrust Reverser Indication Simplified Schematic
Figure 301/78-34-00-990-801-F00**

EFFECTIVITY
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78-34 TASK SUPPORT

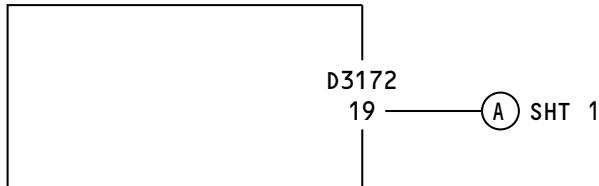
**737-600/700/800/900
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**Engine 1 Thrust Reverser Control Simplified Schematic
Figure 302/78-34-00-990-802-F00 (Sheet 1 of 2)**

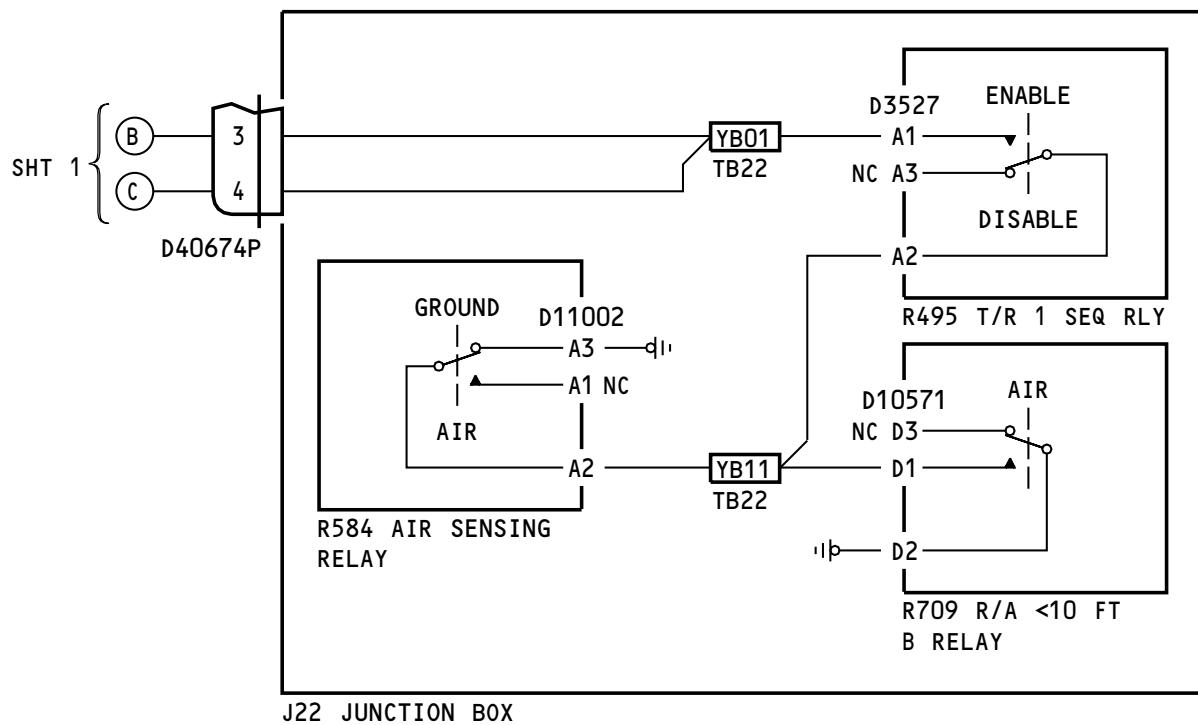
EFFECTIVITY
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78-34 TASK SUPPORT

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



P5-68 PILOT OVERHEAD
PANEL (FWD AND AFT)



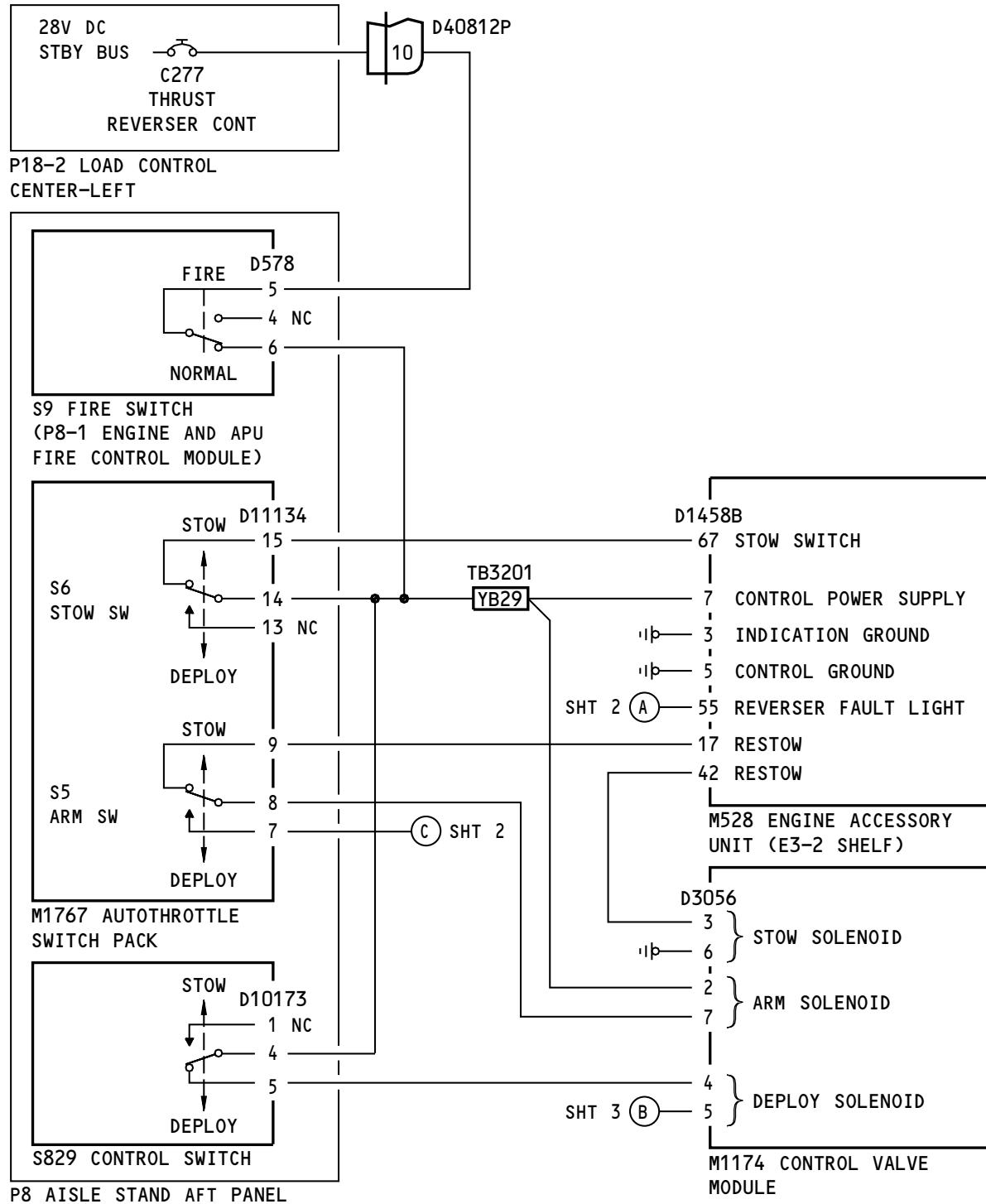
H35490 S0006746472_V1

**Engine 1 Thrust Reverser Control Simplified Schematic
Figure 302/78-34-00-990-802-F00 (Sheet 2 of 2)**

EFFECTIVITY
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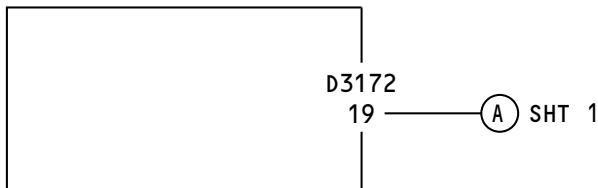
H38380 S0006746473_V1

Engine 2 Thrust Reverser Control Simplified Schematic (AIRPLANES WITH SPLICE SM15)
Figure 303/78-34-00-990-803-F00 (Sheet 1 of 2)

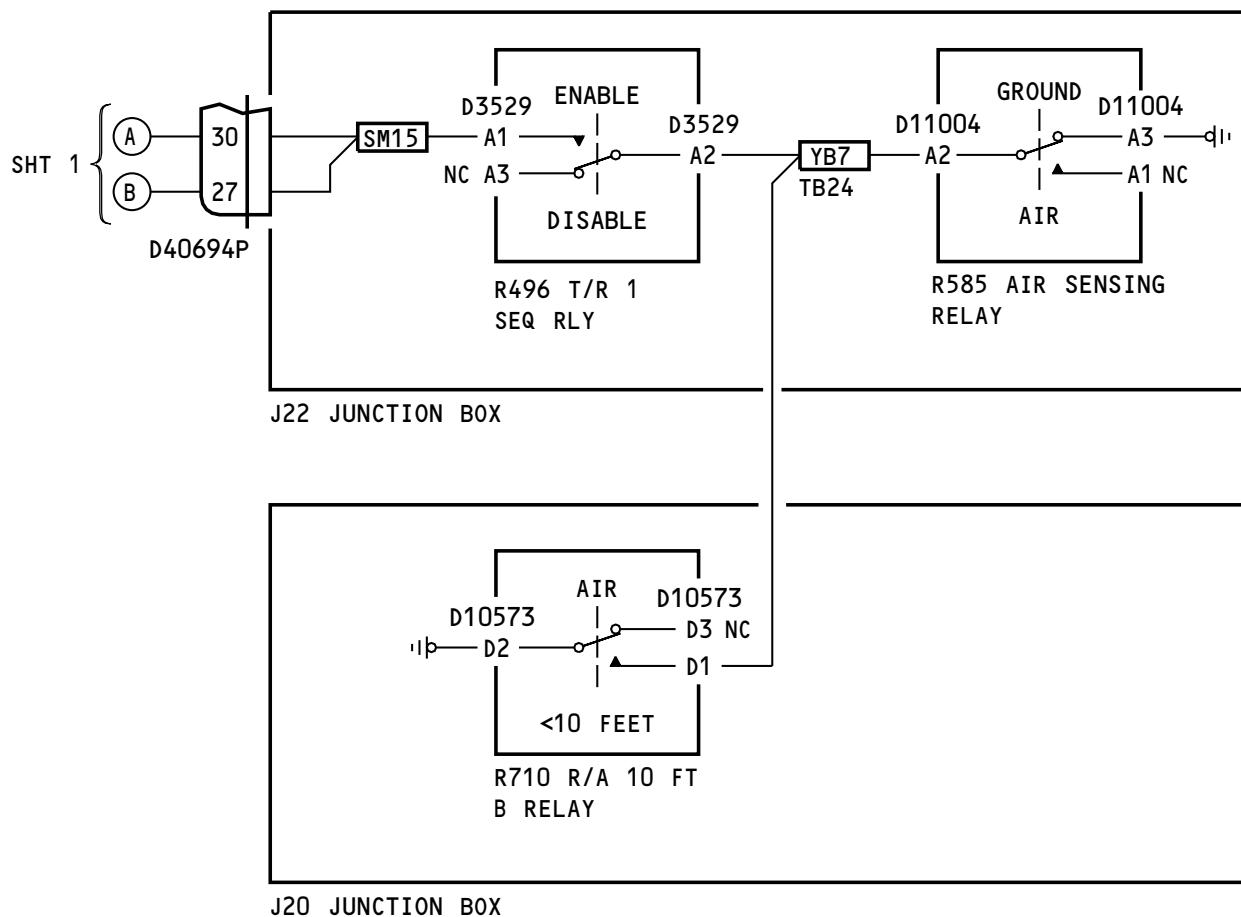
EFFECTIVITY
AKS ALL

78-34 TASK SUPPORT

**737-600/700/800/900
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P5-68 PILOT OVERHEAD
PANEL (FWD AND AFT)

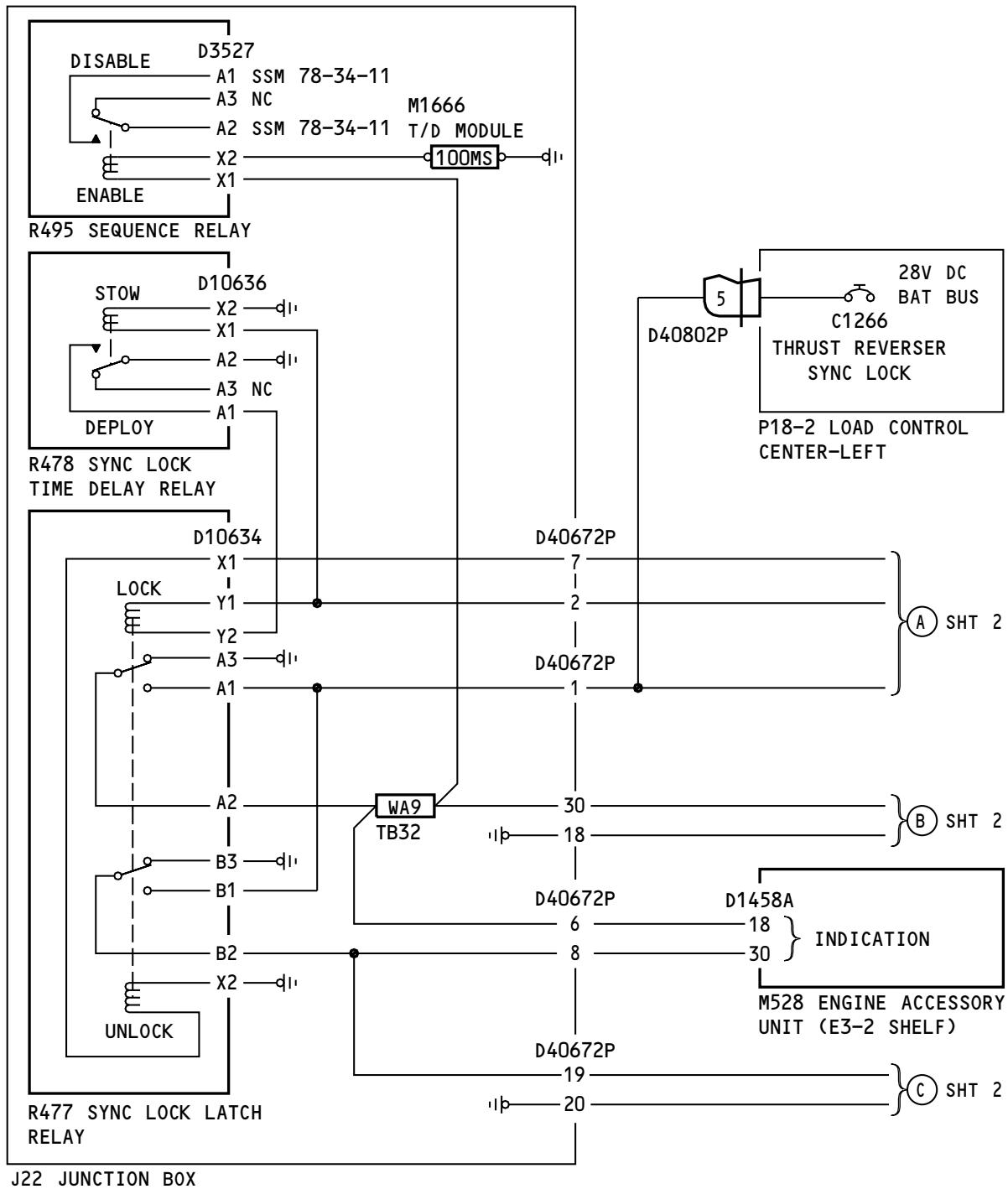


H38384 S0006746474_V1

Engine 2 Thrust Reverser Control Simplified Schematic (AIRPLANES WITH SPLICE SM15)
Figure 303/78-34-00-990-803-F00 (Sheet 2 of 2)

EFFECTIVITY
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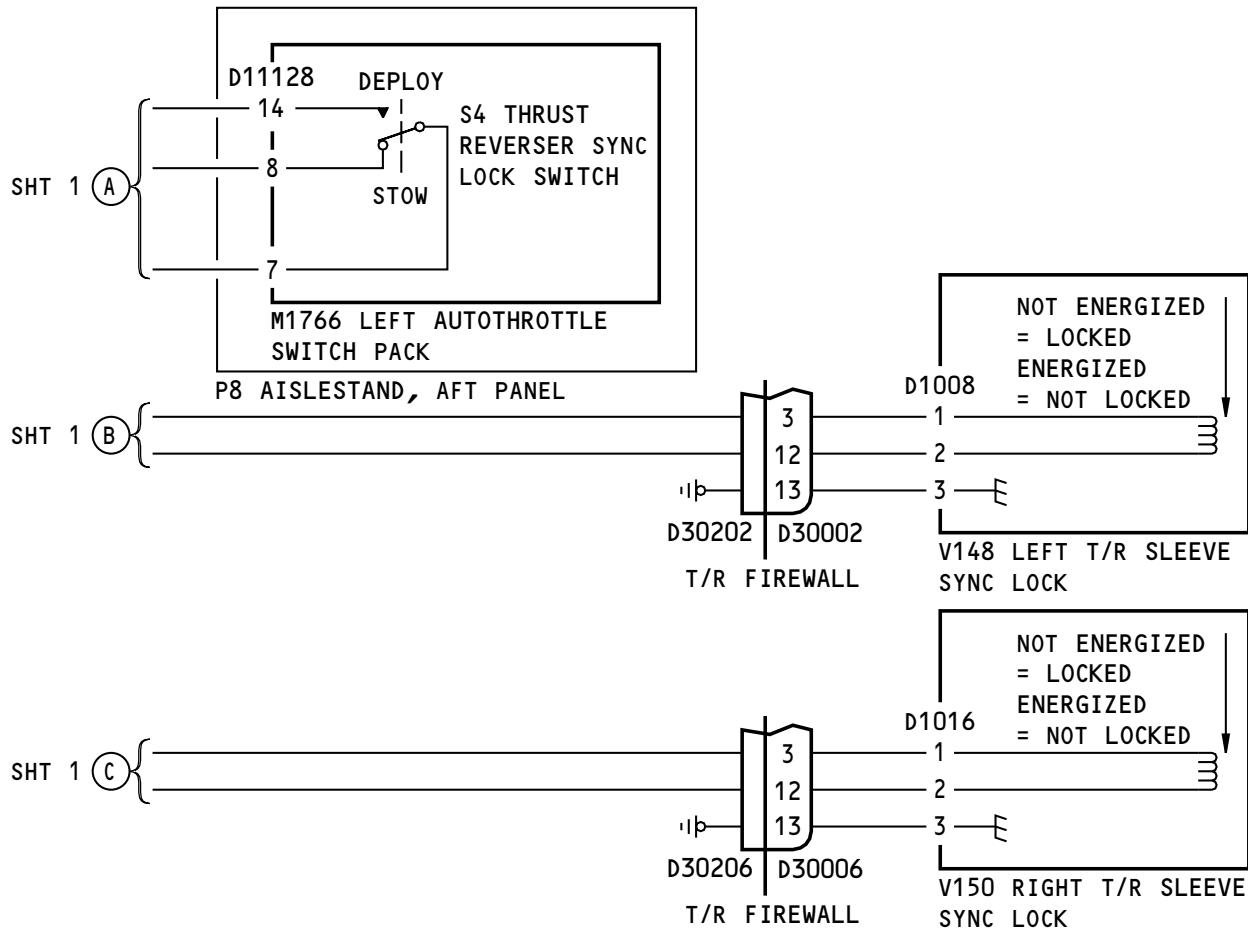


H36524 S0006746477_V1

Engine 1 Thrust Reverser Sync Lock Simplified Schematic
Figure 304/78-34-00-990-805-F00 (Sheet 1 of 2)

EFFECTIVITY
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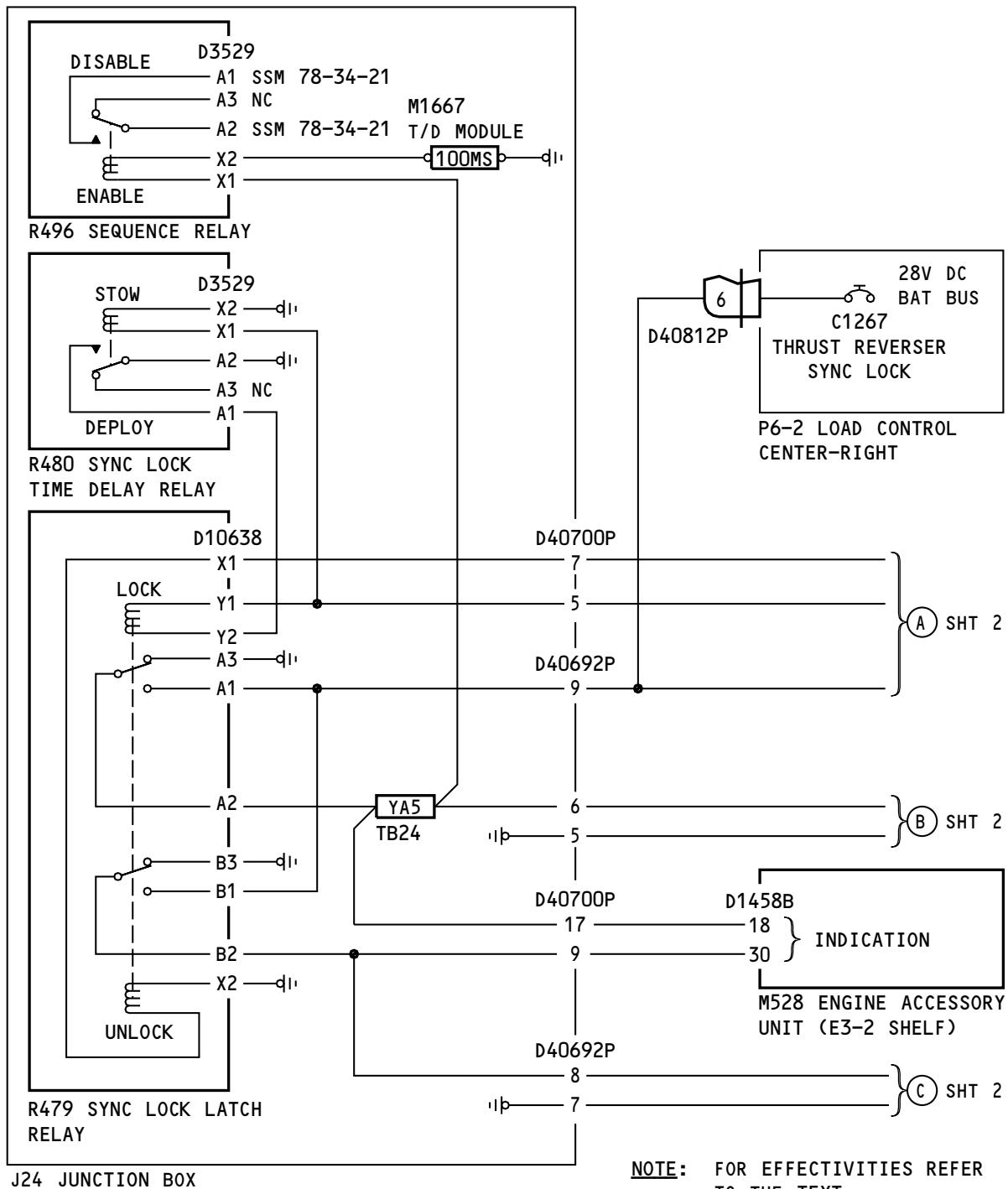
H36526 S0006746478_V1

Engine 1 Thrust Reverser Sync Lock Simplified Schematic
Figure 304/78-34-00-990-805-F00 (Sheet 2 of 2)

EFFECTIVITY
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78-34 TASK SUPPORT

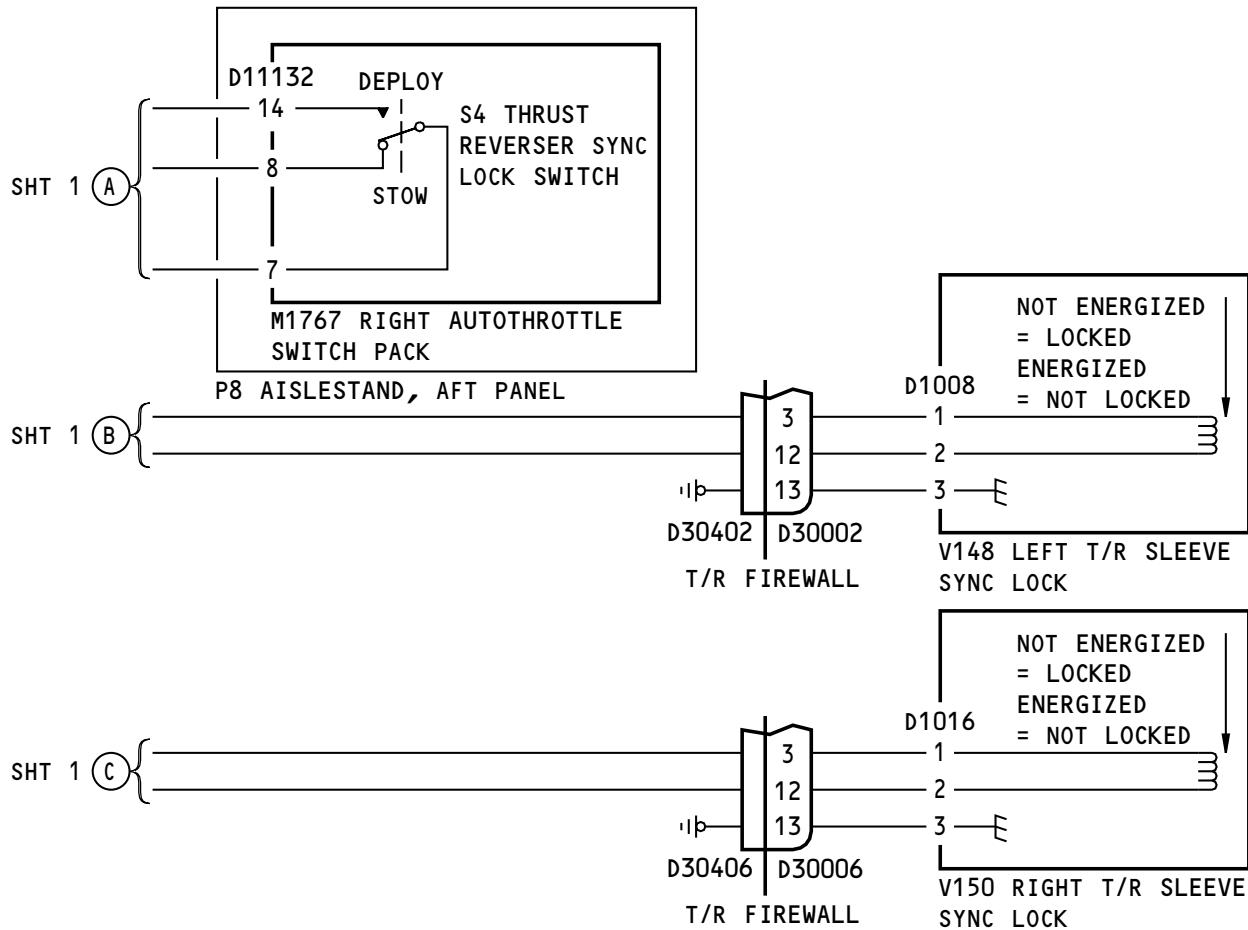
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**Engine 2 Thrust Reverser Sync Lock Simplified Schematic
Figure 305/78-34-00-990-806-F00 (Sheet 1 of 2)**

EFFECTIVITY
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H75887 S0006746480_V1

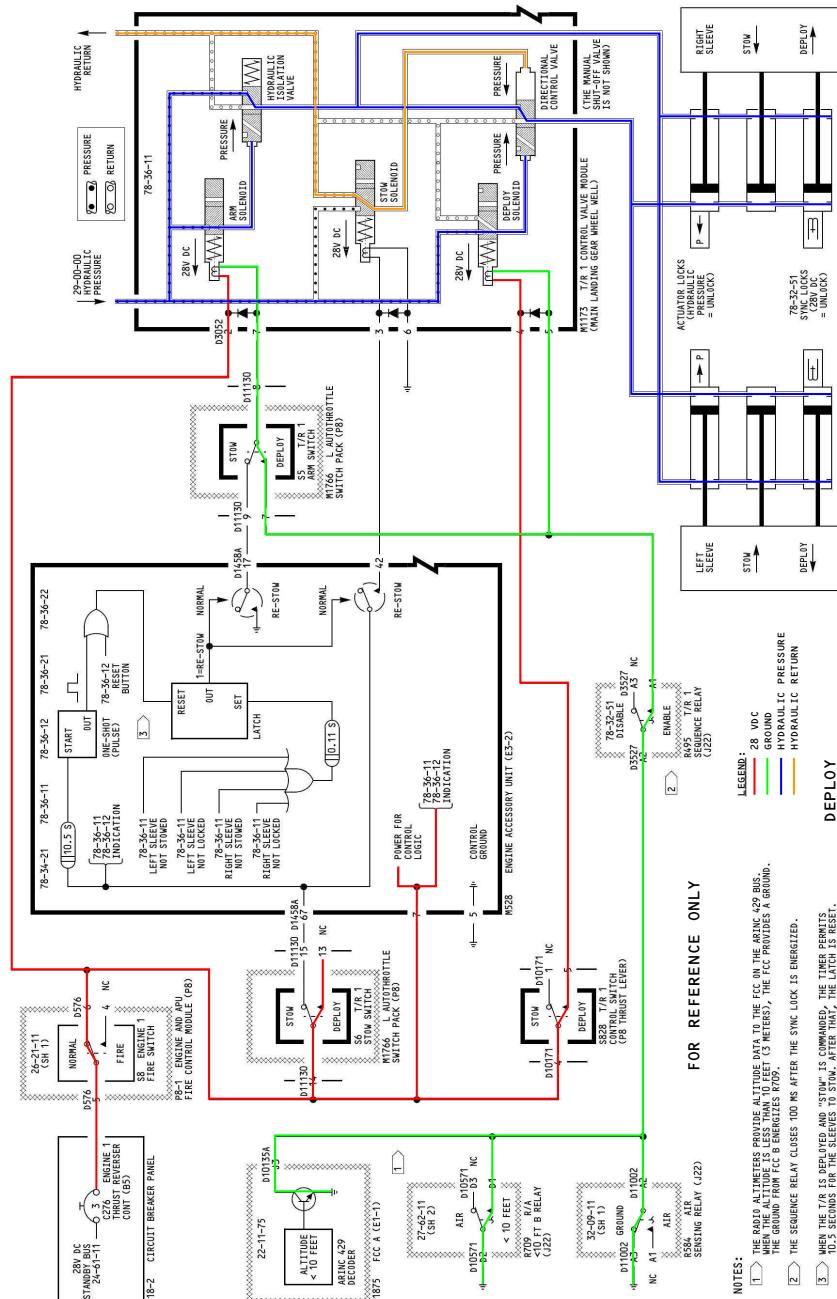
Engine 2 Thrust Reverser Sync Lock Simplified Schematic
Figure 305/78-34-00-990-806-F00 (Sheet 2 of 2)

EFFECTIVITY
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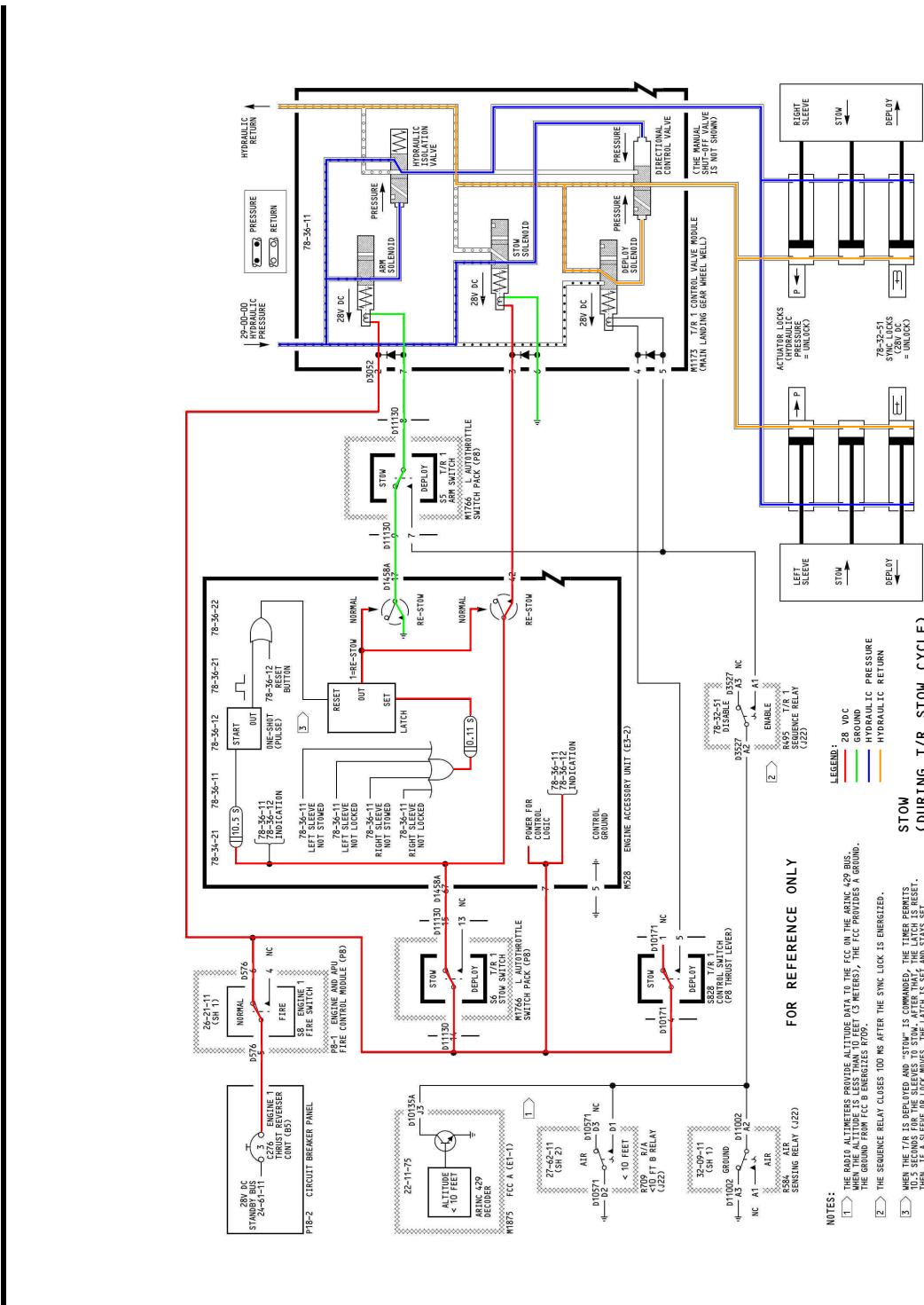
737-600/700/800/900
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2503723 S00000589082_V1

Engine 1 Thrust Reverser Hydraulic Control System Simplified Schematic
Figure 306/78-34-00-990-807-F00 (Sheet 1 of 3)EFFECTIVITY
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78-34 TASK SUPPORT

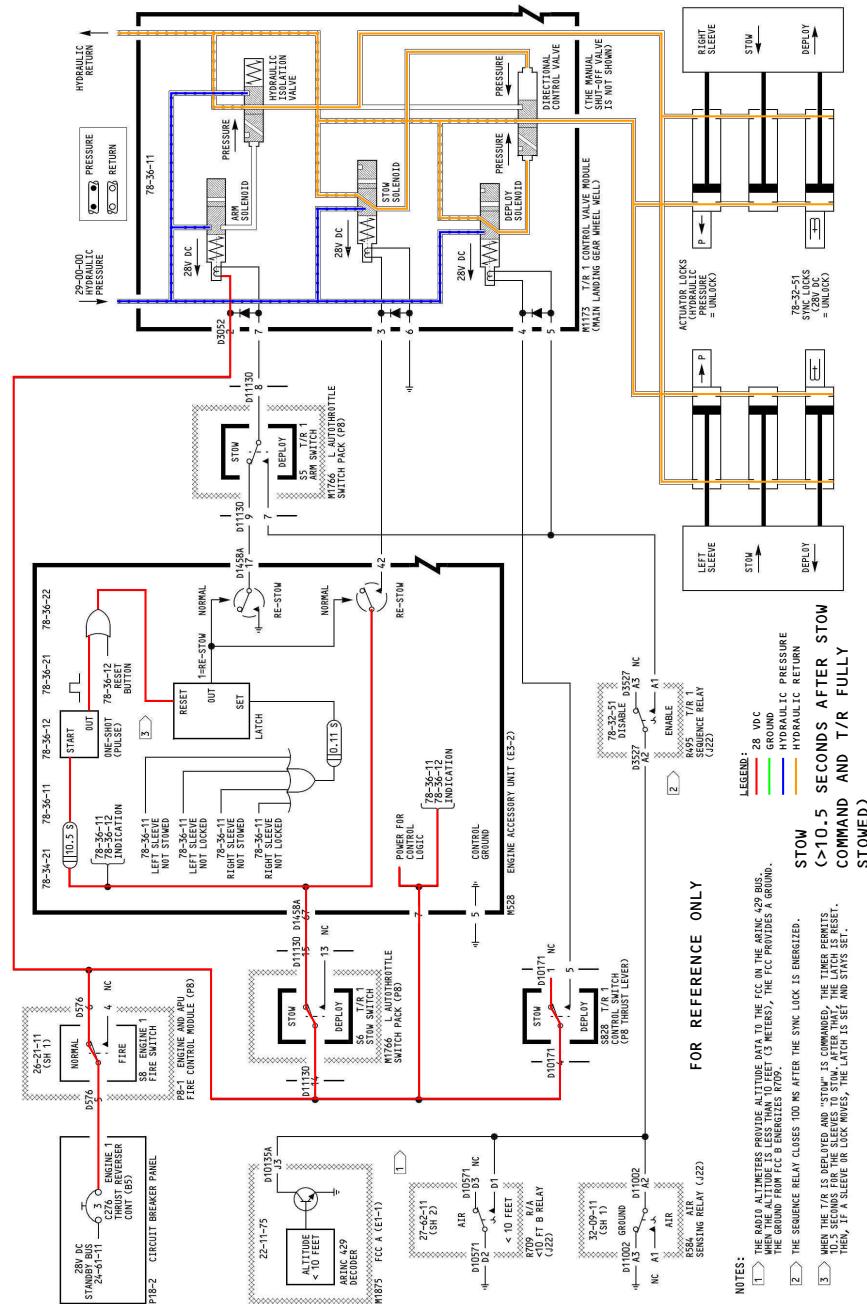
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737-600/700/800/900
FAULT ISOLATION MANUALEngine 1 Thrust Reverser Hydraulic Control System Simplified Schematic
Figure 306/78-34-00-990-807-F00 (Sheet 2 of 3)EFFECTIVITY
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FAULT ISOLATION MANUAL

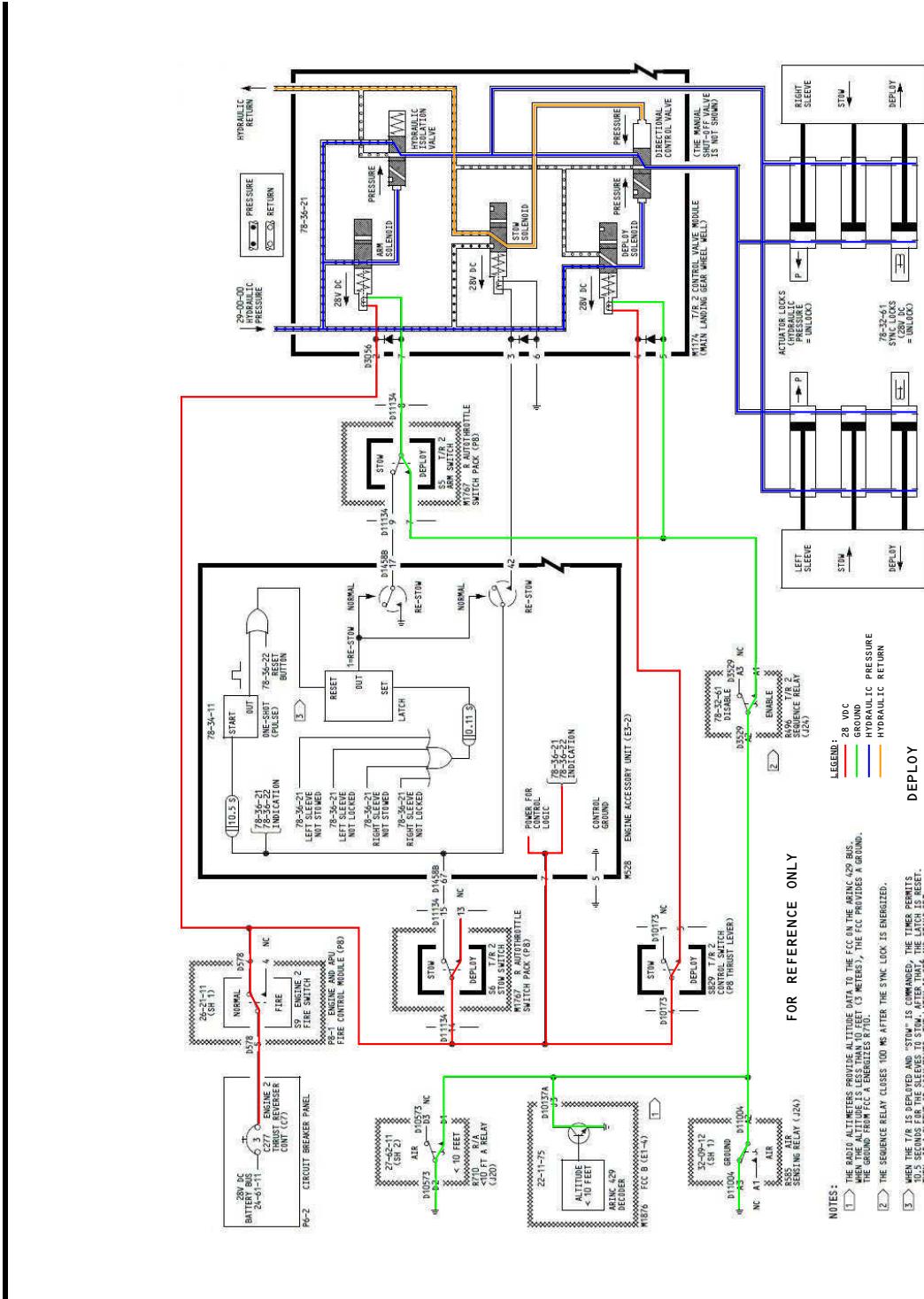
2504090 S00000589084_V1

Engine 1 Thrust Reverser Hydraulic Control System Simplified Schematic
Figure 306/78-34-00-990-807-F00 (Sheet 3 of 3)EFFECTIVITY
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78-34 TASK SUPPORT

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

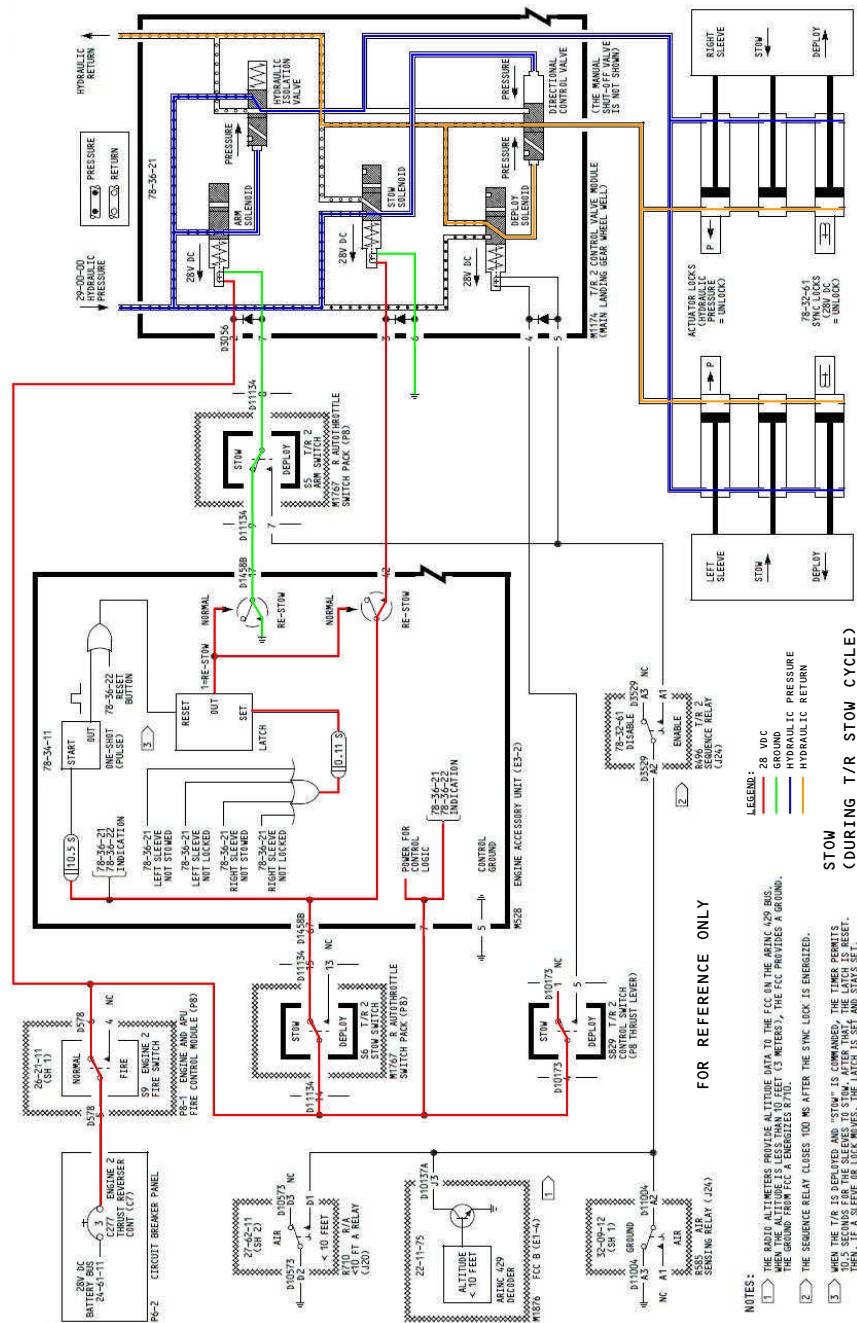
2504733 S0000589352_V1

Engine 2 Thrust Reverser Hydraulic Control System Simplified Schematic
Figure 307/78-34-00-990-808-F00 (Sheet 1 of 3)EFFECTIVITY
AKS ALL

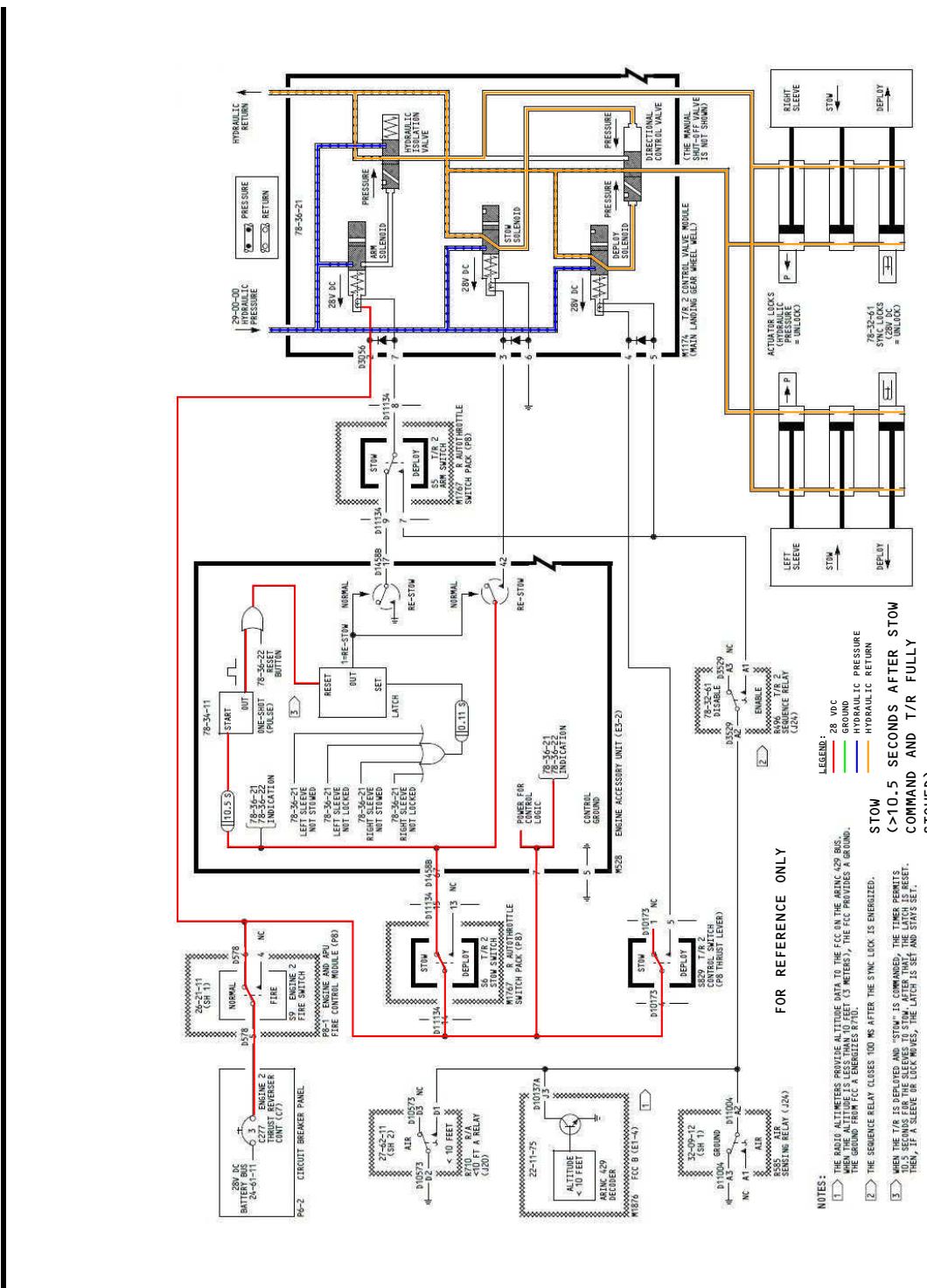
78-34 TASK SUPPORT

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

2504738 S00000589353_V1

Engine 2 Thrust Reverser Hydraulic Control System Simplified Schematic
Figure 307/78-34-00-990-808-F00 (Sheet 2 of 3)EFFECTIVITY
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78-34 TASK SUPPORT

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FAULT ISOLATION MANUALEngine 2 Thrust Reverser Hydraulic Control System Simplified Schematic
Figure 307/78-34-00-990-808-F00 (Sheet 3 of 3)EFFECTIVITY
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78-34 TASK SUPPORT

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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 (Figure 301)
- (2) Simplified Schematic (Figure 302, 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 tags and close these 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, then do the step below and continue the Fault Isolation Procedure at the subsequent step:

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- 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

— END OF TASK —

802. Left Thrust Reverser Sleeve Position Signal is Out of Range - Fault Isolation

A. Description

- (1) This task is for these maintenance message numbers:
- (a) 78-11481, 78-11482, 78-21481, 78-21482, 78-31481, and 78-31482.
 - (b) For the maintenance message 78-X148Y; where X = EEC Channel (1=Channel A, 2=Channel B, 3=Dual Channel), and Y = Engine Position (1=Eng 1, 2=Eng 2), do the fault isolation procedure for the applicable channel:
 - 1) If X=1, then do the Fault Isolation Procedure for channel A.
 - 2) If X=2, then do the Fault Isolation Procedure for channel B.
 - 3) If X=1 and 2 (two messages), or X=3, do the Fault Isolation Procedure for channel A and B.
- (2) This fault is reported when the EEC has electrical power.
- (3) This maintenance message can be set by one of these four conditions:
- (a) The EEC senses that the left thrust reverser position signal is less than -5.0 percent or greater than 112.0 percent.
 - (b) The EEC senses that the left thrust reverser position signal level of V1 or V2 is less than 0.313 VRMS or greater than 7.205 VRMS.
 - (c) The EEC senses that the sum of the left thrust reverser 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.
- (4) FADEC 2;
- Channel A and Channel B;
- (a) Also, because the Channel A excitation circuit for the left thrust reverser (TRL) position 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 fault messages for all three systems.

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- (b) Also, because the Channel B excitation circuit for the left thrust reverser (TRL) position LVDT, variable stator vane (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 fault messages for all three systems.
- (5) FADEC 3;
Channel A and Channel B;
 - (a) Also, because the Channel A excitation circuit for the left thrust reverser (TRL) position LVDT, high pressure turbine active clearance control (HPTACC) position LVDT and the right thrust reverser (TRR) position LVDT are from a common source in the EEC, a short in one of the three excitation circuits can set Channel A fault messages for all three systems.
 - (b) Also, because the Channel B excitation circuit for the left thrust reverser (TRL) position LVDT, low pressure turbine active clearance control (LPTACC) position LVDT and the right thrust reverser (TRR) position LVDT are from a common source in the EEC, a short in one of the three excitation circuits can set Channel B fault messages for all three systems.

B. Possible Causes

- (1) LVDT, T396
- (2) Wiring between the LVDT (linear variable differential transformer) and the EEC
- (3) EEC, M1818
- (4) Thrust reverser hydraulic actuator damage or hydraulic actuator not rigged correctly at installation.

C. Circuit Breakers

- (1) For engine 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	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

- (2) For engine 2, 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	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 (Figure 301, Figure 304)
- (2) Simplified Schematic (Figure 304)
- (3) SSM 78-35-11
- (4) SSM 78-35-21
- (5) WDM 78-35-11
- (6) WDM 78-35-21

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E. Initial Evaluation

- (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 rodend on the LVDT or misadjusted shims for the LVDT rodend 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.
 - 1) Do this task: Upper Locking Hydraulic Actuator Removal, AMM TASK 78-31-03-000-801-F00.
 - 2) Do this task: 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, do these tasks to repair the installation or replace the LVDT.
 - 1) Do this task: LVDT Removal, AMM TASK 78-36-02-000-801-F00.
 - 2) Do this task: LVDT Installation, AMM TASK 78-36-02-400-801-F00.
 - (g) Do this task: Linear Variable Differential Transformer (LVDT) - Adjustment, AMM TASK 78-36-02-820-801-F00.
 - (h) Do the Repair Confirmation at the end of this task.
 - (i) If the Repair Confirmation is not satisfactory, then continue.
 - (2) Manually extend and retract the thrust reverser sleeve to make sure the thrust reverser sleeve moves smoothly and the hydraulic actuators and sync shafts are not jammed.
 - (a) Do this task: Thrust Reverser Operation - Extend (Manual Procedure), AMM TASK 78-31-00-980-803-F00.
 - (b) Do this task: Thrust Reverser Operation - Retract (Manual Procedure), AMM TASK 78-31-00-980-804-F00.
 - (c) If the thrust reverser sleeve does not move smoothly or can not move, do the fault isolation 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.
- (d) Do the Repair Confirmation at the end of this task.
 - (e) If the Repair Confirmation is not satisfactory, then continue.



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(3) To find the FADEC version, do this task FADEC 2 or FADEC 3 Identification, AMM TASK 73-21-00-700-810-F00

(4) Do this task: EEC BITE Procedure, 73-00 TASK 801.

(a) FADEC 2;

If two or more of the maintenance messages in the groups of maintenance messages listed below also show, then do the applicable Fault Isolation Procedure:

NOTE: These messages can be caused by a short in the excitation circuit for the LVDTs for the left thrust reverser, the variable stator vane (VSV), the variable bleed valve (VBV), or the fuel metering valve (FMV). For more information see the Description section.

1) 78-11481, 75-10391 and 75-10441 (Engine 1, Ch A)

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.

2) 78-11482, 75-10392 and 75-10442 (Engine 2, Ch A)

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.

3) 78-21481, 73-20341 and 75-20391 (Engine 1, Ch B)

a) 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.

4) 78-21482, 73-20342 and 75-20392 (Engine 2, Ch B).

a) 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;

If two or more of the maintenance messages in the groups of maintenance messages listed below also show, then do the applicable Fault Isolation Procedure:

NOTE: These messages can be caused by a short in the excitation circuit for the LVDTs for the left thrust reverser (TRL), the low pressure turbine active clearance control (LPTACC), the high pressure turbine active clearance control (HPTACC), or the right thrust reverser (TRR). For more information see the Description section.

1) 75-10361, 75-10491, 78-11481, and 78-11491 (Engine 1, Ch A)

a) Do this task: FADEC3 (Ch A) Excitation Group 3: HPTACC, Left and Right T/R LVDT Excitation Circuit Fault - Fault Isolation, 75-34 TASK 818.

2) 75-10362, 75-10492, 78-11482, and 78-11492 (Engine 2, Ch A)

a) Do this task: FADEC3 (Ch A) Excitation Group 3: HPTACC, Left and Right T/R LVDT Excitation Circuit Fault - Fault Isolation, 75-34 TASK 818.

3) 75-20541, 78-21481, and 78-21491 (Engine 2, Ch A)

a) Do this task: FADEC3 (Ch B) Excitation Group 3: LPTACC, Left and Right T/R LVDT Excitation Circuit Fault - Fault Isolation, 75-34 TASK 815.

4) 75-20542, 78-21482, and 78-21492 (Engine 2, Ch B)

a) Do this task: FADEC3 (Ch B) Excitation Group 3: LPTACC, Left and Right T/R LVDT Excitation Circuit Fault - Fault Isolation, 75-34 TASK 815.

(5) Do this task: EEC TEST, AMM TASK 73-21-00-700-804-F00.

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- (a) If only one of these maintenance messages show; 78-11481 (Ch A, Eng 1) 78-11482 (Ch A, Eng 2), 78-21481 (Ch B, Eng 1) or 78-21482 (Ch B, Eng 2) then do the Fault Isolation Procedure for the applicable channel.
- (b) If only one of these maintenance messages show; 78-31481 (Ch A and Ch B, Eng 1) or 78-31482 (Ch A and Ch B, Eng 2), then do the Fault Isolation Procedure for channel A and B.
- (c) 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 fault.
 - 1) If you cannot find the fault at this time, then the Fault Isolation Procedure cannot isolate the fault.
 - 2) For an intermittent fault you must use your judgment, your airline policies, and the Possible Causes list to make the decision if you will try to correct the fault.
 - 3) If you will try to correct the fault, it is recommended that you do these steps:
 - a) Do the visual checks of the electrical connectors in the applicable fault isolation procedure below.
 - b) Use the WDM references to identify intermediate electrical connections in the wire harness and do a visual check.
 - c) If you find no problems, then replace components as listed in the Possible Causes List above.
 - 4) Monitor the airplane on the subsequent flight.

F. Fault Isolation Procedure

- (1) Do the initial evaluation above to see if there is an LVDT excitation circuit fault, and if the fault is still active.
 NOTE: A fault in the excitation circuit of other LRUs could cause this fault. For more information, see the Description section.
- (2) Prepare for the procedure:
 - (a) For Engine 1, open these circuit breakers and attach 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

- (b) For Engine 2, open these circuit breakers and attach safety tags:

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

- (c) Do this task: Open the Fan Cowl Panels, AMM TASK 71-11-02-010-801-F00.
- (3) Visually examine the applicable electrical connector, D30072 (Ch A) or D30076 (Ch B) at the LVDT:

NOTE: There is an LVDT on each of the upper locking actuators on the torque box of the left and right thrust reversers 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.
 - b) If the Repair Confirmation is not satisfactory, then open the circuit breakers above and continue.
 - 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.
 - b) If the Repair Confirmation was not satisfactory, then open the circuit breakers above and continue.
 - 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.
 - a) If the Repair Confirmation is not satisfactory, then open the circuit breakers above and continue.
 - (d) If you did not find a problem, then continue.
- (4) Measure the resistance between these pins of the LVDT receptacle for Ch A or Ch B:
 - (a) If the temperature is different than 70 Degrees F (21 Degrees 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).
 - For Pins 1 to 2, $R = 450((234.5 + T)/254.5)$.
 - For Pins 3 to 5, $R = 93 ((234.5 + T)/254.5)$.
 - For Pins 5 to 4, $R = 53((234.5 + T)/254.5)$.
 - Calculate the range for each value of R, where Range = R +/- 15 percent.

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LVDT RECEPTACLE	D30072/D30076	D30072/D30076	RESISTANCE (70 DEG. F, 21 DEG C)
PIN 1	PIN 2	383 - 517 OHMS	
PIN 3	PIN 5	79 - 107 OHMS	
PIN 5	PIN 4	45 - 61 OHMS	
PIN 1	GROUND	> 10 MEGOHMS	
PIN 3	GROUND	> 10 MEGOHMS	
PIN 1	PIN 5	> 10 MEGOHMS	

- (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.
 - a) If the Repair Confirmation was not satisfactory, then open the circuit breakers above and continue.
 - (c) If the resistance is in the limits, then re-connect the electrical connectors, D30072 (Ch A) or D30076 (Ch B), and continue.
- (5) Visually examine the applicable electrical connector DP0303 (Ch A) or DP0404 (Ch B) at the EEC:
- (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.
 - b) If the Repair Confirmation is not satisfactory, then open the circuit breakers above and continue.
 - 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.
 - b) If the Repair Confirmation was not satisfactory, then open the circuit breakers above and continue.
 - 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.
 - a) If the Repair Confirmation is not satisfactory, then open the circuit breakers above and continue.

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- (d) If you did not find a problem, then continue.
- (6) 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:
- (a) If the temperature is different than 70 Degrees F (21 Degrees 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).
 - For Pins y to GG (Ch A) or AA to GG (Ch B), $R = 450((234.5 + T)/254.5)$.
 - For Pins BB to u (Ch A) or Pins x to u (Ch B), $R = 93((234.5 + T)/254.5)$.
 - For Pins u to CC (Ch A) or Pins u to y (Ch B), $R = 53((234.5 + T)/254.5)$.
 - Calculate the range for each value of R, where Range = R +/- 15 percent.

EEC-LVDT**WIRE****HARNESS****DP0303****DP0303****RESISTANCE (70 DEG. F, 21 DEG C)**

PIN y	PIN GG	383 - 517 OHMS
PIN BB	PIN u	79 - 107 OHMS
PIN u	PIN CC	45 - 61 OHMS
PIN y	GROUND	> 10 MEGOHMS
PIN BB	GROUND	> 10 MEGOHMS
PIN y	PIN u	> 10 MEGOHMS

EEC-LVDT**WIRE****HARNESS****DP0404****DP0404****RESISTANCE (70 DEG. F, 21 DEG C)**

PIN AA	PIN GG	383 - 517 OHMS
PIN x	PIN u	79 - 107 OHMS
PIN u	PIN y	45 - 61 OHMS
PIN AA	GROUND	> 10 MEGOHMS
PIN x	GROUND	> 10 MEGOHMS
PIN AA	PIN u	> 10 MEGOHMS

- (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 MW0303 (Ch A) or MW0304 (Ch B) wire harness, 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.
 - a) If the Repair Confirmation was not satisfactory, then open the circuit breakers above and continue.
- (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.

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- a) If the Repair Confirmation was not satisfactory, then open the circuit breakers above and continue.
- (7) 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.
 - 1) If the Repair Confirmation was not satisfactory, continue
 - (b) If the resistance is in the specified range and the fault 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.
 - b) If the Repair Confirmation is not satisfactory, then open the circuit breakers above and continue.
 - 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, Left and Right 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, Left and Right 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) Prepare for the procedure:
- (a) Make sure that the electrical connectors, DP0303 (Ch A) and DP0404 (Ch B) are correctly connected to the EEC.
 - (b) Make sure that the electrical connectors, D30072 (Ch A) and D30076 (Ch B) are correctly connected to the LVDT.

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- (c) Make sure that all connectors that were disconnected to do an electrical check between the LVDT and the EEC are correctly connected.
- (d) For Engine 1, do the following:
 - 1) Remove the safety tags and close these circuit breakers:

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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

- (e) For Engine 2, do the following:
 - 1) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	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

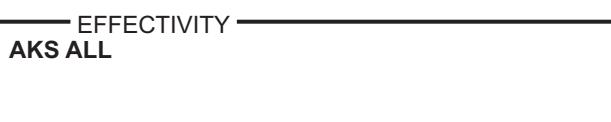
- (2) Do this task: EEC TEST, AMM TASK 73-21-00-700-804-F00.
 - (a) If the maintenance message does not show, then you corrected the fault.
- (3) Do this task: Close the Fan Cowl Panels, AMM TASK 71-11-02-410-801-F00.

———— END OF TASK ————

803. Right Thrust Reverser Sleeve Position Signal is Out of Range - Fault Isolation

A. Description

- (1) This task is for these maintenance message numbers:
 - (a) 78-11491, 78-11492, 78-21491, 78-21492, 78-31491, and 78-31492
 - (b) For the maintenance message 78-X149Y; where X = EEC Channel (1=Channel A, 2=Channel B, 3=Dual Channel), and Y = Engine Position (1=Eng 1, 2=Eng 2), then do the applicable Fault Isolation:
 - 1) If X=1, then do the Fault Isolation Procedure for channel A.
 - 2) If X=2, then do the Fault Isolation Procedure for channel B.
 - 3) If X=1 and 2 (two messages), or X=3, do the Fault Isolation Procedure for channel A and B.
- (2) This fault is reported when the EEC has electrical power.



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- (3) This message can be set by one of these four conditions:
- (a) The EEC senses that the right thrust reverser position signal is less than -5.0 percent or greater than 112.0 percent.
 - (b) The EEC senses that the right thrust reverser position signal level of V1 or V2 is less than 0.313 VRMS or greater than 7.205 VRMS.
 - (c) The EEC senses that the sum of the right thrust reverser 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.
- (4) FADEC 2;
- Channel A and Channel B
- (a) Also, because the Channel A excitation circuit for the right thrust reverser (TRR) position LVDT, high pressure turbine air clearance control (HPTACC) 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 A fault messages for all three systems.
 - (b) Also, because the Channel B excitation circuit for the right thrust reverser (TRR) position LVDT, high pressure turbine air clearance control (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 B fault messages for all three systems.
- (5) FADEC 3;
- Channel A and Channel B
- (a) Also, because the Channel A excitation circuit for the right thrust reverser (TRR) position LVDT, high pressure turbine air clearance control (HPTACC) position LVDT and the left thrust reverser (TRL) position LVDT are from a common source in the EEC, a short in one of the three excitation circuits can set Channel A fault messages for all three systems.
 - (b) Also, because the Channel B excitation circuit for the right thrust reverser (TRR) position LVDT, low pressure turbine air clearance control (LPTACC) position LVDT and the left thrust reverser (TRL) position LVDT are from a common source in the EEC, a short in one of the three excitation circuits can set Channel B fault messages for all three systems.

B. Possible Causes

- (1) LVDT, T397
- (2) Wiring between the LVDT (linear variable differential transformer) and the EEC
- (3) EEC, M1818
- (4) Thrust reverser hydraulic actuator damage or hydraulic actuator not rigged correctly at installation.

C. Circuit Breakers

- (1) For engine 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	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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- (2) For engine 2, 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>
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 (Figure 301, Figure 304)
- (2) Simplified Schematic (Figure 304)
- (3) SSM 78-35-11
- (4) SSM 78-35-21
- (5) WDM 78-35-11
- (6) WDM 78-35-21

E. Initial Evaluation

- (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 rodend on the LVDT or misadjusted shims for the LVDT rodend on the actuator spindle.
 - (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.
 - 1) Do this task: Upper Locking Hydraulic Actuator Removal, AMM TASK 78-31-03-000-801-F00.
 - 2) Do this task: 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, do these tasks to repair the installation or replace the LVDT.
 - 1) Do this task: LVDT Removal, AMM TASK 78-36-02-000-801-F00.
 - 2) Do this task: LVDT Installation, AMM TASK 78-36-02-400-801-F00.
 - (g) Do this task: Linear Variable Differential Transformer (LVDT) - Adjustment, AMM TASK 78-36-02-820-801-F00.
 - (h) Do the Repair Confirmation at the end of this task.
 - (i) If the Repair Confirmation is not satisfactory, then continue.
- (2) Manually extend and retract the thrust reverser sleeve to make sure the thrust reverser sleeve moves smoothly and the hydraulic actuators and sync shafts are not jammed.
 - (a) Do this task: Thrust Reverser Operation - Extend (Manual Procedure), AMM TASK 78-31-00-980-803-F00.

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- (b) Do this task: Thrust Reverser Operation - Retract (Manual Procedure), AMM TASK 78-31-00-980-804-F00.
- (c) If the thrust reverser sleeve does not move smoothly or can not move, do the fault isolation 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.

- (d) Do the Repair Confirmation at the end of this task.
- (e) If the Repair Confirmation is not satisfactory, then continue.
- (3) To find the FADEC version, do this task FADEC 2 or FADEC 3 Identification, AMM TASK 73-21-00-700-810-F00
- (4) Do this task: EEC BITE Procedure, 73-00 TASK 801.
 - (a) FADEC 2;

If two or more of the maintenance messages in the groups of maintenance messages listed below also show, then do the applicable Fault Isolation Procedure:

NOTE: These messages can be caused by a short in the excitation circuit for the LVDTs for the right thrust reverser (TRR), the transient bleed valve (TBV), the fuel metering valve (FMV), or the high pressure turbine air clearance control (HPTACC). For more information see the Description section.

 - 1) 78-11491, 73-10341, 75-10361 and 75-10491 (Engine 1, Ch A)
 - 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) 78-11492 75-10342, 75-10362 and 75-10492 (Engine 2, Ch A)
 - 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.
 - 3) 78-21491, 75-20361, 75-20491 and 75-20591 (Engine 1, Ch B)
 - a) 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.
 - 4) 78-21492, 75-20362, 75-20492 and 75-20592 (Engine 2, Ch B)
 - a) 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;

If two or more of the maintenance messages in the groups of maintenance messages listed below also show, then do the applicable Fault Isolation Procedure:

NOTE: These messages can be caused by a short in the excitation circuit for the LVDTs for the right thrust reverser (TRR), the transient bleed valve (TBV), the fuel metering valve (FMV), or the high pressure turbine air clearance control (HPTACC). For more information see the Description section.

- 1) 75-10361, 75-10491, 78-11481 and 78-11491 (Engine 1, Ch A)

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- a) Do this task: FADEC3 (Ch A) Excitation Group 3: HPTACC, Left and Right T/R LVDT Excitation Circuit Fault - Fault Isolation, 75-34 TASK 818.
- 2) 75-10362, 75-10492, 78-11482 and 78-11492 (Engine 2, Ch A)
 - a) Do this task: FADEC3 (Ch A) Excitation Group 3: HPTACC, Left and Right T/R LVDT Excitation Circuit Fault - Fault Isolation, 75-34 TASK 818.
- 3) 75-20541, 78-21481 and 78-21491 (Engine 1, Ch A)
 - a) Do this task: FADEC3 (Ch B) Excitation Group 3: LPTACC, Left and Right T/R LVDT Excitation Circuit Fault - Fault Isolation, 75-34 TASK 815.
- (c) 75-20542, 78-21482 and 78-21492 (Engine 2, Ch A)
 - 1) Do this task: FADEC3 (Ch B) Excitation Group 3: LPTACC, Left and Right T/R LVDT Excitation Circuit Fault - Fault Isolation, 75-34 TASK 815.
- (5) Do this task: EEC TEST, AMM TASK 73-21-00-700-804-F00.
 - (a) If only one of these maintenance message numbers show; 78-11491 (Ch A, Eng 1), 78-11492 (Ch A, Eng 2), 78-21491 (Ch B, Eng 1) or 78-21492 (Ch B, Eng 2), then do the Fault Isolation Procedure for the applicable channel.
 - (b) If only one of these maintenance message numbers show; 78-31491 (Ch A and Ch B, Eng 1) or 78-31492 (Ch A and Ch B, Eng 2), then do the Fault Isolation Procedure for channel A and B.
 - (c) 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 fault.
 - 1) If you cannot find the fault at this time, then the Fault Isolation Procedure cannot isolate the fault.
 - 2) For an intermittent fault you must use your judgment, your airline policies, and the Possible Causes list to make the decision if you will try to correct the fault.
 - 3) If you will try to correct the fault, it is recommended that you do these steps:
 - a) Do the visual checks of the electrical connectors in the applicable fault isolation procedure below.
 - b) Use the WDM references to identify intermediate electrical connections in the wire harness and do a visual check.
 - c) If you find no problems, then replace components as listed in the Possible Causes List above.
 - 4) Monitor the airplane on the subsequent flight.

F. Fault Isolation Procedure

- (1) Do the initial Evaluation above to see if there is an LVDT excitation circuit fault, and if the fault is still active.

NOTE: A fault in the excitation circuit of other LRUs could cause this fault. For more information, see the Description section.

- (2) Prepare for the procedure:
 - (a) For Engine 1, do the following:

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- 1) Open these 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

- (b) For Engine 2, do the following:

- 1) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
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

- (c) Do this task: Open the Fan Cowl Panels, AMM TASK 71-11-02-010-801-F00.

- (3) Visually examine the applicable electrical connector, D30074 (Ch A) or D30078 (Ch B) at the LVDT:

NOTE: There is an LVDT on each of the upper locking actuators on the torque box of the left and right thrust reverser on an engine.

- (a) See if the electrical connector, D30074 (Ch A) or D30078 (Ch B) is correctly connected to the LVDT, and continue.
- (b) Disconnect the electrical connector, D30074 (Ch A) or D30078 (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 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.
- b) If the Repair Confirmation is not satisfactory, then open the circuit breakers above and continue.

- 2) If a 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.

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- b) If the Repair Confirmation was not satisfactory, then open the circuit breakers above and continue.
 - 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.
 - a) If the Repair Confirmation is not satisfactory, then open the circuit breakers above and continue.
 - (d) If you did not find a problem, then continue.
- (4) Measure the resistance between these pins of the LVDT receptacle for Ch A or Ch B:
- (a) If the temperature is different than 70 Degrees F (21 Degrees 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).
 - For Pins 1 to 2, $R = 450((234.5 + T)/254.5)$.
 - For Pins 3 to 5, $R = 93 ((234.5 + T)/254.5)$.
 - For Pins 5 to 4, $R = 53((234.5 + T)/254.5)$.
 - Calculate the range for each value of R, where Range = $R \pm 15\%$ percent.

LVDT RECEPTACLE	D30074/D30078	D30074/D30078	RESISTANCE (70 DEG. F, 21 DEG C)
PIN 1	PIN 2	383 - 517 OHMS	
PIN 3	PIN 5	79 - 107 OHMS	
PIN 5	PIN 4	45 - 61 OHMS	
PIN 1	GROUND	> 10 MEGOHMS	
PIN 3	GROUND	> 10 MEGOHMS	
PIN 1	PIN 5	> 10 MEGOHMS	

- (b) 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.
 - a) If the Repair Confirmation was not satisfactory, then open the circuit breakers above and continue.
 - (c) If the resistance is in the range, then re-connect the electrical connectors, D30074 (Ch A) or D30078 (Ch B), and continue.
- (5) Visually examine the applicable electrical connector DP0303 (Ch A) or DP0404 (Ch B) at the EEC:
 - (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 an EEC receptacle is damaged, then replace the EEC, M1818. These are the tasks:
 - EEC Removal, AMM TASK 73-21-60-000-801-F00

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- EEC Installation, AMM TASK 73-21-60-400-801-F00
 - a) Do the Repair Confirmation at the end of this task.
 - b) If the Repair Confirmation is not satisfactory, then open the circuit breakers above and continue.
- 2) If a 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.
 - b) If the Repair Confirmation was not satisfactory, then open the circuit breakers above and continue.
- 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.
- a) If the Repair Confirmation is not satisfactory, then open the circuit breakers above and continue.
 - (d) If you did not find a problem, then continue.
- (6) Measure the resistance between these pins on the wire harness connector, DP0303 (Ch A) or DP0404 (Ch B) through the LVDT to do a check of the wire harnesses between the EEC and the LVDT:
- (a) If the temperature is different than 70 Degrees F (21 Degrees 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).
 - For Pins e to f (Ch A) or e to f (Ch B), $R = 450((234.5 + T)/254.5)$.
 - For Pins n to q (Ch A) or Pins m to p (Ch B), $R = 93((234.5 + T)/254.5)$
 - For Pins q to p (Ch A), or Pins p to n (Ch B), $R = 53((234.5 + T)/254.5)$.
 - Calculate the range for each value of R, where Range = R +/- 15 percent.

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EEC-LVDT WIRE HARNESS	DP0303	DP0303	RESISTANCE (70 DEG. F, 21 DEG C)
	PIN e	PIN f	383 - 517 OHMS
	PIN n	PIN q	79 - 107 OHMS
	PIN q	PIN p	45 - 61 OHMS
	PIN e	GROUND	> 10 MEGOHMS
	PIN n	GROUND	> 10 MEGOHMS
	PIN e	PIN q	> 10 MEGOHMS

EEC-LVDT WIRE HARNESS	DP0404	DP0404	RESISTANCE (70 DEG. F, 21 DEG C)
	PIN e	PIN f	383 - 517 OHMS
	PIN m	PIN p	79 - 107 OHMS
	PIN p	PIN n	45 - 61 OHMS
	PIN e	GROUND	> 10 MEGOHMS
	PIN m	GROUND	> 10 MEGOHMS
	PIN e	PIN p	> 10 MEGOHMS

- (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 MW0303 (Ch A) or MW0304 (Ch B) wire harness, 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, 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.
 - a) If the Repair Confirmation was not satisfactory, then open the circuit breakers above and continue.
- (c) If the resistance is in the 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.
 - a) If the Repair Confirmation was not satisfactory, then open the circuit breakers above and continue.
- (7) 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.
 - 1) If the Repair Confirmation was not satisfactory, then open the circuit breakers above and continue.

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- (8) If the resistance is in the specified range and the fault 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.

- (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.

2) If the Repair Confirmation is not satisfactory, then open the circuit breakers above and continue.

- (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, Left and Right 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, Left and Right 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) Prepare for the procedure:

- (a) Make sure that the electrical connectors, DP0303 (Ch A) and DP0404 (Ch B) are correctly connected to the EEC.
- (b) Make sure that the electrical connectors, D30074 (Ch A) and D30078 (Ch B) are correctly connected to the LVDT.
- (c) Make sure that all connectors that were disconnected to do an electrical check between the LVDT and the EEC are correctly connected.
- (d) For Engine 1, do the following:

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>
A	1	C00458	ENGINE 1 IGNITION RIGHT
A	3	C00153	ENGINE 1 IGNITION LEFT

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<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	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

- (e) For Engine 2, do the following:

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

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	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 fault.
- (3) Do this task: Close the Fan Cowl Panels, AMM TASK 71-11-02-410-801-F00.

END OF TASK**804. Left Thrust Reverser Sleeve Position Signals Disagree - Fault Isolation****A. Description**

- (1) This task is for these maintenance message numbers:
 - (a) 78-11501, 78-11502, 78-21501, 78-21502, 78-31501, and 78-31502.
 - (b) For the maintenance message 78-X150Y; where X = EEC Channel (1=Channel A, 2=Channel B, 3=Dual Channel), and Y = Engine Position (1=Eng 1, 2=Eng 2), then do the applicable Fault Isolation:
 - 1) If X=1 or 2, then do the Fault Isolation Procedure - Single Channel Fault.
 - 2) If X=1 and 2 (two messages), or X=3, do the Fault Isolation Procedure for channel A and B.
- (2) This fault is reported when the EEC 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 left thrust reverser position is greater than or equal to 12.0 percent.
- (4) This maintenance message will show as a single channel fault if there is an internal EEC problem.

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- (5) This maintenance message can show if there is a problem with the LVDT installation, the LVDT adjustment or the thrust reverser actuators or flexshafts.

B. Possible Causes

- (1) For a single channel fault:
 - (a) EEC, M1818.
- (2) For a dual channel fault:
 - (a) Thrust reverser fault
 - (b) LVDT, T396
 - (c) Wiring between the LVDT (linear variable differential transformer) and the EEC.

C. Circuit Breakers

- (1) For engine 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

- (2) For engine 2, 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	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 (Figure 301, Figure 304)
- (2) Simplified Schematic (Figure 304)
- (3) SSM 78-35-11
- (4) SSM 78-35-21
- (5) WDM 78-35-11
- (6) WDM 78-35-21

E. Initial Evaluation

- (1) Do these steps to find out if the 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 number 78-11501 (Ch A, Eng 1), 78-11502 (Ch A, Eng 2), 78-21501 (Ch B, Eng 1) or 78-21502 (Ch B, Eng 2) shows, then do the Fault Isolation Procedure - Single Channel Fault.
 - (c) If a dual channel maintenance message number 78-31501 (Ch A and Ch B, Eng 1) or 78-31502 (Ch A and Ch B, Eng 2) shows, then do the Fault Isolation Procedure - Dual Channel Fault.
 - (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 fault.

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- 1) If you cannot find the fault at this time, then the Fault Isolation Procedure cannot isolate the fault.
 - 2) For an intermittent fault you must use your judgment, your airline policies, and the Possible Causes list to make the decision if you will try to correct the fault.
 - 3) If you will try to correct the fault, it is recommended that you do these steps:
 - a) Do the visual checks of the electrical connectors in the applicable fault isolation procedure below.
 - b) Use the WDM references to identify intermediate electrical connections in the wire harness and do a visual check.
 - c) If you find no problems, then replace components as listed in the Possible Causes List above.
 - 4) Monitor the airplane on the subsequent flight.
- (2) 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 rodend on the LVDT or misadjusted shims for the LVDT rodend 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.
 - 1) Do this task: Upper Locking Hydraulic Actuator Removal, AMM TASK 78-31-03-000-801-F00.
 - 2) Do this task: 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, do these tasks to repair the installation or replace the LVDT.
 - 1) Do this task: LVDT Removal, AMM TASK 78-36-02-000-801-F00.
 - 2) Do this task: LVDT Installation, AMM TASK 78-36-02-400-801-F00.
 - (g) Do this task: Linear Variable Differential Transformer (LVDT) - Adjustment, AMM TASK 78-36-02-820-801-F00.
 - (h) Do the Repair Confirmation at the end of this task.
 - (i) If the Repair Confirmation is not satisfactory, then continue.
- (3) Manually extend and retract the thrust reverser sleeve to make sure the thrust reverser sleeve moves smoothly and the hydraulic actuators and sync shafts are not jammed.
- (a) Do this task: Thrust Reverser Operation - Extend (Manual Procedure), AMM TASK 78-31-00-980-803-F00.
 - (b) Do this task: Thrust Reverser Operation - Retract (Manual Procedure), AMM TASK 78-31-00-980-804-F00.

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- (c) If the thrust reverser sleeve does not move smoothly or can not move, do the fault isolation 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.

- (d) Do the Repair Confirmation at the end of this task.
 (e) If the Repair Confirmation is not satisfactory, then continue.
- (4) Do a check of the LDVT position values with the thrust reverser 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 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.
 (d) If the Repair Confirmation is not satisfactory, then continue.

F. Fault Isolation Procedure - Single Channel Fault

- (1) 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.
 (b) If the maintenance message, 78-31501 (Ch A and Ch B, Eng 1) or 78-31502 (Ch A and Ch B, Eng 2) shows, then do the Fault Isolation Procedure - Dual Channel Fault.

G. Fault Isolation Procedure - Dual Channel Fault

- (1) Prepare for the procedure:
- (a) Do the steps below for the channel which has sleeve position data that is not correct.
 (b) For Engine 1, do the following:
- 1) Open these 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

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<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

- (c) For Engine 2, do the following:

- 1) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
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) Do this task: Open the Fan Cowl Panels, AMM TASK 71-11-02-010-801-F00.

- (2) Visually examine the applicable electrical connector, D30072 (Ch A) or D30076 (Ch B) at the LVDT:

NOTE: There is an LVDT on each of the upper locking actuators on the torque box of the left and right thrust reverser 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 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.
 - b) If the Repair Confirmation is not satisfactory, then open the circuit breakers above and continue.
 - 2) If a 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.
 - b) If the Repair Confirmation was not satisfactory, then open the circuit breakers above and continue.
 - 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.
 - a) If the Repair Confirmation is not satisfactory, then open the circuit breakers above and continue.

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- (d) If you did not find a problem, then continue.
- (3) Measure the resistance between these pins of the LVDT receptacle for Ch A or Ch B:
- (a) If the temperature is different than 70 Degrees F (21 Degrees 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).
 - For Pins 1 to 2, $R = 450((234.5 + T)/254.5)$
 - For Pins 3 to 5, $R = 93 ((234.5 + T)/254.5)$.
 - For Pins 5 to 4, $R = 53((234.5 + T)/254.5)$.
 - Calculate the range for each value of R, where Range = $R +/- 15\%$ percent.

LVDT RECEPTACLE	D30072/D30076	D30072/D30076	RESISTANCE (70 DEG. F, 21 DEG C)
PIN 1	PIN 2	383 - 517 OHMS	
PIN 3	PIN 5	79 - 107 OHMS	
PIN 5	PIN 4	45 - 61 OHMS	
PIN 1	GROUND	> 10 MEGOHMS	
PIN 3	GROUND	> 10 MEGOHMS	
PIN 1	PIN 5	> 10 MEGOHMS	

- (b) 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.
- a) If the Repair Confirmation was not satisfactory, then open the circuit breakers above and continue.
- (c) If the resistance is in the range, then re-connect the electrical connector, D30072 (Ch A) or D30076 (Ch B), and continue.
- (4) Visually examine the applicable electrical connector, DP0303 (Ch A) or DP0404 (Ch B) at the EEC:
- (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 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.
- b) If the Repair Confirmation is not satisfactory, then open the circuit breakers above and continue.
- 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:

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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
 - a) Do the Repair Confirmation at the end of this task.
 - b) If the Repair Confirmation was not satisfactory, then open the circuit breakers above and continue.
 - 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.
 - a) If the Repair Confirmation is not satisfactory, then open the circuit breakers above and continue.
 - (d) If you did not find a problem, then continue.
- (5) 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:
- (a) If the temperature is different than 70 Degrees F (21 Degrees 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).
 - For Pins y to GG (Ch A) or AA to GG (Ch B), $R = 450((234.5 + T)/254.5)$.
 - For Pins BB to u (Ch A) or Pins x to u (Ch B), $R = 93((234.5 + T)/254.5)$.
 - For Pins u to CC (Ch A) or Pins u to y (Ch B), $R = 53((234.5 + T)/254.5)$.
 - Calculate the range for each value of R, where Range = R +/- 15 percent.

EEC-LVDT**WIRE****HARNESS****DP0303****DP0303****RESISTANCE (70 DEG. F, 21 DEG C)**

PIN y	PIN GG	383 - 517 OHMS
PIN BB	PIN u	79 - 107 OHMS
PIN u	PIN CC	45 - 61 OHMS
PIN y	GROUND	> 10 MEGOHMS
PIN BB	GROUND	> 10 MEGOHMS
PIN y	PIN u	> 10 MEGOHMS

EEC-LVDT**WIRE****HARNESS****DP0404****DP0404****RESISTANCE (70 DEG. F, 21 DEG C)**

PIN AA	PIN GG	383 - 517 OHMS
PIN x	PIN u	79 - 107 OHMS
PIN u	PIN y	45 - 61 OHMS
PIN AA	GROUND	> 10 MEGOHMS
PIN x	GROUND	> 10 MEGOHMS
PIN AA	PIN u	> 10 MEGOHMS

- (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 MW0303 (Ch A) or MW0304 (Ch B) wire harness, 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, 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.
 - a) If the Repair Confirmation was not satisfactory, then open the circuit breakers above and continue.
- (c) If the resistance is in the 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.
 - a) If the Repair Confirmation was not satisfactory, then open the circuit breakers above and continue.
- (6) 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.
 - 1) If the Repair Confirmation was not satisfactory, then open the circuit breakers above and continue.
- (7) 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) Prepare for the procedure:
 - (a) Make sure that the electrical connectors, DP0303 (Ch A) and DP0404 (Ch B) are correctly connected to the EEC.
 - (b) Make sure that the electrical connectors, D30072 (Ch A) and D30076 (Ch B) are correctly connected to the LVDT.
 - (c) Make sure that all connectors that were disconnected to do an electrical check between the LVDT and the EEC are correctly connected.
 - (d) For Engine 1, do the following:
 - 1) Remove the safety tags and close these circuit breakers:

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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

- (e) For Engine 2, do the following:


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

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	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 BITE Procedure, 73-00 TASK 801.
- (a) If the maintenance message does not show, then you corrected the fault.
- (3) Do this task: Close the Fan Cowl Panels, AMM TASK 71-11-02-410-801-F00.

— END OF TASK —

805. Right Thrust Reverser Sleeve Position Signals Disagree - Fault Isolation

A. Description

- (1) This task is for these maintenance message numbers:
 - (a) 78-11511, 78-11512, 78-21511, 78-21512, 78-31511, and 78-31512.
 - (b) For the maintenance message 78-X151Y; where X = EEC Channel (1=Channel A, 2=Channel B, 3=Dual Channel), and Y = Engine Position (1=Eng 1, 2=Eng 2), then do the applicable Fault Isolation:
 - 1) If X=1 or 2, then do the Fault Isolation Procedure - Single Channel Fault.
 - 2) If X=1 and 2 (two messages), or X=3, then do the Fault Isolation Procedure - Dual Channel Fault.
- (2) This fault is reported when the EEC 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 right thrust reverser position is greater than or equal to 12.0 percent.
- (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 LVDT installation, the LVDT adjustment or the thrust reverser actuators or flexshafts.

B. Possible Causes

- (1) For a single channel fault:
 - (a) EEC, M1818.
- (2) For a dual channel fault:
 - (a) Thrust reverser fault
 - (b) LVDT, T397
 - (c) Wiring between the LVDT (linear variable differential transformer) and the EEC

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C. Circuit Breakers

- (1) For engine 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	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

- (2) For engine 2, 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	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 (Figure 301, Figure 304)
- (2) Simplified Schematic (Figure 304)
- (3) SSM 78-35-11
- (4) SSM 78-35-21
- (5) WDM 78-35-11
- (6) WDM 78-35-21

E. Initial Evaluation

- (1) Do these steps to find out if the 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 number 78-11511 (Ch A, Eng 1), 78-11512 (Ch A, Eng 2), 78-21511 (Ch B, Eng 1) or 78-21512 (Ch B, Eng 2) shows, then do the Fault Isolation Procedure - Single Channel Fault.
 - (c) If a dual channel maintenance message number 78-31511 (Ch A and Ch B, Eng 1) or 78-31512 (Ch A and Ch B, Eng 2) shows, then do the Fault Isolation Procedure - Dual Channel Fault.
 - (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 fault.
 - 1) If you cannot find the fault at this time, then the Fault Isolation Procedure cannot isolate the fault.
 - 2) For an intermittent fault you must use your judgment, your airline policies, and the Possible Causes list to make the decision if you will try to correct the fault.
 - 3) If you will try to correct the fault, it is recommended that you do these steps:
 - a) Do the visual checks of the electrical connectors in the applicable fault isolation procedure below.
 - b) Use the WDM references to identify intermediate electrical connections in the wire harness and do a visual check.

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- c) If you find no problems, then replace components as listed in the Possible Causes List above.
- 4) Monitor the airplane on the subsequent flight.
- (2) 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 rodend on the LVDT or misadjusted shims for the LVDT rodend 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.
 - 1) Do this task: Upper Locking Hydraulic Actuator Removal, AMM TASK 78-31-03-000-801-F00.
 - 2) Do this task: 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, do these tasks to repair the installation or replace the LVDT.
 - 1) Do this task: LVDT Removal, AMM TASK 78-36-02-000-801-F00.
 - 2) Do this task: LVDT Installation, AMM TASK 78-36-02-400-801-F00.
 - (g) Do this task: Linear Variable Differential Transformer (LVDT) - Adjustment, AMM TASK 78-36-02-820-801-F00.
 - (h) Do the Repair Confirmation at the end of this task.
 - (i) If the Repair Confirmation is not satisfactory, then continue.
- (3) Manually extend and retract the thrust reverser sleeve to make sure the thrust reverser sleeve moves smoothly and the hydraulic actuators and sync shafts are not jammed.
 - (a) Do this task: Thrust Reverser Operation - Extend (Manual Procedure), AMM TASK 78-31-00-980-803-F00.
 - (b) Do this task: Thrust Reverser Operation - Retract (Manual Procedure), AMM TASK 78-31-00-980-804-F00.
 - (c) If the thrust reverser sleeve does not move smoothly or can not move, do the fault isolation 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.

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- (d) Do the Repair Confirmation at the end of this task.
- (e) If the Repair Confirmation is not satisfactory, then continue.
- (4) Do a check of the LDVT position values with the thrust reverser 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 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.
 - (d) If the Repair Confirmation is not satisfactory, then continue.

F. Fault Isolation Procedure - Single Channel Fault

- (1) If the fault 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.
 - (b) If the maintenance message, 78-31511 (Ch A and Ch B, Eng 1) or 78-31512 (Ch A and Ch B, Eng 2) shows, then do the Fault Isolation Procedure - Dual Channel Fault.

G. Fault Isolation Procedure - Dual Channel Fault

- (1) Prepare for the procedure:
 - (a) Do the steps below for the channel which has sleeve position data that is not correct.
 - (b) For Engine 1, do the following:
 - 1) Open these 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

- (c) For Engine 2, do the following:

- 1) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
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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<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
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) Do this task: Open the Fan Cowl Panels, AMM TASK 71-11-02-010-801-F00.
- (2) Visually examine the applicable electrical connector, D30074 (Ch A) or D30078 (Ch B) at the LVDT:
- NOTE: There is an LVDT on each of the upper locking actuators on the torque box of the left and right thrust reverser on an engine.
- (a) See if the electrical connector, D30074 (Ch A) or D30078 (Ch B) is correctly connected to the LVDT, and continue.
 - (b) Disconnect the electrical connector, D30074 (Ch A) or D30078 (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 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.
 - b) If the Repair Confirmation is not satisfactory, then open the circuit breakers above and continue.
 - 2) If a 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.
 - b) If the Repair Confirmation was not satisfactory, then open the circuit breakers above and continue.
 - 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.
 - a) If the Repair Confirmation is not satisfactory, then open the circuit breakers above and continue.
 - (d) If you did not find a problem, then continue.
 - (3) Measure the resistance between these pins of the LVDT receptacle for Ch A or Ch B:
 - (a) If the temperature is different than 70 Degrees F (21 Degrees 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).
 - For Pins 1 to 2, $R = 450((234.5 + T)/254.5)$.
 - For Pins 3 to 5, $R = 93 ((234.5 + T)/254.5)$.
 - For Pins 5 to 4, $R = 53((234.5 + T)/254.5)$
 - Calculate the range for each value of R, where Range = R +/- 15 percent.

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LVDT RECEPTACLE	D30074/D30078	D30074/D30078	RESISTANCE (70 DEG. F, 21 DEG C)
PIN 1	PIN 2		383 - 517 OHMS
PIN 3	PIN 5		79 - 107 OHMS
PIN 5	PIN 4		45 - 61 OHMS
PIN 1	GROUND		> 10 MEGOHMS
PIN 3	GROUND		> 10 MEGOHMS
PIN 1	PIN 5		> 10 MEGOHMS

- (b) 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.
 - a) If the Repair Confirmation was not satisfactory, then open the circuit breakers above and continue.
 - (c) If the resistance is in the range, then re-connect the electrical connector, D30074 (Ch A) or D30078 (Ch B), and continue.
- (4) Visually examine the electrical connector, DP0303 (Ch A) or DP0404 (Ch B) at the EEC:
- (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 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.
 - b) If the Repair Confirmation is not satisfactory, then open the circuit breakers above and continue.
 - 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.
 - b) If the Repair Confirmation was not satisfactory, then open the circuit breakers above and continue.
 - 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.
 - a) If the Repair Confirmation is not satisfactory, then open the circuit breakers above and continue.
 - (d) If you did not find a problem, then continue.

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- (5) Measure the resistance at these pins on the wire harness connectors, DP0303 (Ch A) and DP0404 (Ch B) to do a check of the wire harnesses between the EEC and the LVDT:
- (a) If the temperature is different than 70 Degrees F (21 Degrees 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).
 - For Pins e to f (Ch A) or e to f (Ch B), $R = 450((234.5 + T)/254.5)$.
 - For Pins n to q (Ch A) or Pins m to p (Ch B), $R = 93((234.5 + T)/254.5)$.
 - For Pins q to p (Ch A) or Pins p to n (Ch B), $R = 53((234.5 + T)/254.5)$.
 - Calculate the range for each value of R, where Range = $R \pm 15\%$ percent.

EEC-LVDT			RESISTANCE (70 DEG. F, 21 DEG C)
WIRE			
HARNESS	DP0303	DP0303	
PIN e	PIN f		383 - 517 OHMS
PIN n	PIN q		79 - 107 OHMS
PIN q	PIN p		45 - 61 OHMS
PIN e	GROUND		> 10 MEGOHMS
PIN n	GROUND		> 10 MEGOHMS
PIN e	PIN q		> 10 MEGOHMS

EEC-LVDT			RESISTANCE (70 DEG. F, 21 DEG C)
WIRE			
HARNESS	DP0404	DP0404	
PIN e	PIN f		383 - 517 OHMS
PIN m	PIN p		79 - 107 OHMS
PIN p	PIN n		45 - 61 OHMS
PIN e	GROUND		> 10 MEGOHMS
PIN m	GROUND		> 10 MEGOHMS
PIN e	PIN p		> 10 MEGOHMS

- (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 MW0303 (Ch A) or MW0304 (Ch B) wire harness, 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, 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.
 - a) If the Repair Confirmation was not satisfactory, then open the circuit breakers above and continue.
- (c) If the resistance is in the 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.

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- a) If the Repair Confirmation was not satisfactory, then open the circuit breakers above and continue.
- (6) 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.
- 1) If the Repair Confirmation was not satisfactory, then open the circuit breakers above and continue.
- (7) If the fault 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) Prepare for the procedure:
- (a) Make sure that the electrical connectors, DP0303 (Ch A) and DP0404 (Ch B) are correctly connected to the EEC.
 - (b) Make sure that the electrical connectors, D30074 (Ch A) and D30078 (Ch B) are correctly connected to the LVDT.
 - (c) Make sure that all connectors that were disconnected to do an electrical check between the LVDT and the EEC are correctly connected.
 - (d) For Engine 1, do the following:

- 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>
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

- (e) For Engine 2, do the following:

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

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	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

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<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
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 fault.
- (3) Do this task: Close the Fan Cowl Panels, AMM TASK 71-11-02-410-801-F00.

— END OF TASK —

806. The Reverser Control and Position Signals Disagree - Fault Isolation

A. Description

- (1) This task is for these maintenance message numbers:
 - (a) 78-11521, 78-11522, 78-21521, 78-21522, 78-31521, and 78-31522.
 - (b) If 78-11521 (Ch A, Eng 1), 78-11522 (Ch A, Eng 2), 78-21521 (Ch B, Eng 1) or 78-21522 (Ch B, Eng 2) shows, then do the Fault Isolation Procedure - Single Channel Fault.
 - 1) If a single channel fault is set, the EEC sensed a fault in only one of the channels because, it was not able to see the opposite channel's LVDT value. This would be due to an internal fault in the EEC.
 - 2) The REVERSER light or the REV light can also be on.
 - 3) If the thrust reverser is in the stowed position, the REVERSER light is on, and only the maintenance messages above show:
 - a) This can be an indication that the reverse thrust levers were moved too slowly from the extend (deploy) to the retract (stow) position (78-32 TASK 816).
 - b) This can also be an indication that the thrust reversers moved too slowly to the retract (stow) position (78-34 TASK 805).
 - (c) If 78-31521 (Ch A and Ch B, Eng 1) or 78-31522 (Ch A and Ch B, Eng 2) show, then do the Fault Isolation Procedure - Dual Channel Fault.
 - 1) The REVERSER light or the REV light can also be on.
 - 2) If the thrust reverser is in the stowed position, the REVERSER light is on, and only the maintenance messages above show:
 - a) This can be an indication that the reverse thrust levers were moved too slowly from the extend (deploy) to the retract (stow) position (78-32 TASK 816).
 - b) This can also be an indication that the thrust reversers moved too slowly to the retract (stow) position (78-34 TASK 805).
- (2) This fault is reported when the EEC has electrical power.
- (3) This maintenance message will show as a dual channel fault if the EEC senses that either one or both of the thrust reverser sleeves were deployed greater than 10 percent with the engine commanded in forward thrust.
- (4) This maintenance message can show if there is a problem with the LVDT installation, the LVDT adjustment or the thrust reverser actuators or flexshafts.

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B. Possible Causes

- (1) For a single channel fault:
 - (a) EEC, M1818
- (2) For a dual channel fault:
 - (a) Thrust reverser fault
 - (b) LVDT, T396 (Left T/R) or T397 (Right T/R)
 - (c) Wiring between the LVDT (linear variable differential transformer) and the EEC
 - (d) EEC, M1818

C. Circuit Breakers

- (1) For engine 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

- (2) For engine 2, 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	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) SSM 78-35-11
- (2) SSM 78-35-21
- (3) WDM 78-35-11
- (4) WDM 78-35-21

E. Initial Evaluation

- (1) Do these steps to find out if the 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 number 78-11521 (Ch A, Eng 1), 78-11522 (Ch A, Eng 2), 78-21521 (Ch B, Eng 1) or 78-21522 (Ch B, Eng 2) shows, then do the Fault Isolation Procedure - Single Channel Fault.
 - (c) If a dual channel maintenance message number 78-31521 (Ch A and Ch B, Eng 1) or 78-31522 (Ch A and Ch B, Eng 2) shows, then do the Fault Isolation Procedure - Dual Channel Fault.
 - (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 fault.
 - 1) If you cannot find the fault at this time, then the Fault Isolation Procedure cannot isolate the fault.



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- 2) For an intermittent fault you must use your judgment, your airline policies, and the Possible Causes list to make the decision if you will try to correct the fault.
 - 3) If you will try to correct the fault, it is recommended that you do these steps:
 - a) Do the visual checks of the electrical connectors in the applicable fault isolation procedure below.
 - b) Use the WDM references to identify intermediate electrical connections in the wire harness and do a visual check.
 - c) If you find no problems, then replace components as listed in the Possible Causes List above.
 - 4) Monitor the airplane on the subsequent flight.
- (2) 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 rodend on the LVDT or misadjusted shims for the LVDT rodend 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.
 - 1) Do this task: Upper Locking Hydraulic Actuator Removal, AMM TASK 78-31-03-000-801-F00.
 - 2) Do this task: 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, do these tasks to repair the installation or replace the LVDT.
 - 1) Do this task: LVDT Removal, AMM TASK 78-36-02-000-801-F00.
 - 2) Do this task: LVDT Installation, AMM TASK 78-36-02-400-801-F00.
 - (g) Do this task: Linear Variable Differential Transformer (LVDT) - Adjustment, AMM TASK 78-36-02-820-801-F00.
 - (h) Do the Repair Confirmation at the end of this task.
 - (i) If the Repair Confirmation is not satisfactory, then continue.
- (3) Manually extend and retract the thrust reverser sleeve to make sure the thrust reverser sleeve moves smoothly and the hydraulic actuators and sync shafts are not jammed.
- (a) Do this task: Thrust Reverser Operation - Extend (Manual Procedure), AMM TASK 78-31-00-980-803-F00.
 - (b) Do this task: Thrust Reverser Operation - Retract (Manual Procedure), AMM TASK 78-31-00-980-804-F00.

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- (c) If the thrust reverser sleeve does not move smoothly or can not move, do the fault isolation 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.

- (d) Do the Repair Confirmation at the end of this task.
 (e) If the Repair Confirmation is not satisfactory, then continue.

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 EAU maintenance message that shows to repair the thrust reverser.
- (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 to correct the fault.
 - 1) Do the Repair Confirmation at the end of this task.
 - 2) If the Repair Confirmation is not satisfactory, then continue.
 - (b) Do the Fault Isolation Procedure - Dual Channel Fault.

G. Fault Isolation Procedure - Dual 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 maintenance message that shows to repair the thrust reverser.
- (2) If the REVERSER light is not on, then do a check of the LVDTs:
 - (a) Do a check of the LDVT position values with the thrust reverser in the extended position and the retracted 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 LVDT. These are the tasks:
 - LVDT Removal, AMM TASK 78-36-02-000-801-F00
 - LVDT Installation, AMM TASK 78-36-02-400-801-F00
 - b) Do the Repair Confirmation at the end of this task.

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- c) If the Repair Confirmation is not satisfactory, then continue.
- (c) If the LVDT values for the two sleeves are in the limits and 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
 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 corrected the fault.

— 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 these maintenance message numbers:
 - (a) 78-11531, 78-11532, 78-21531, 78-21532, 78-31531, and 78-31532.
 - (b) For the maintenance message 78-X153Y; where X = EEC Channel (1=Channel A, 2=Channel B, 3=Dual Channel), and Y = Engine Position (1=Eng 1, 2=Eng 2), then do the applicable Fault Isolation:
 - 1) If X=1 or 2, then do the Fault Isolation Procedure - Single Channel Fault for the applicable channel.
 - 2) If X=1 and 2 (two messages), or X=3, then do the Fault Isolation Procedure - Dual Channel Fault.
- (2) This fault is reported when the EEC has electrical power.
- (3) This maintenance message is set when the EEC senses that the T/R interlock voltage is less than 10 VDC and the T/R interlock relay is open.

B. Possible Causes

- (1) For a single channel fault:
 - (a) For Engine 1,
 - 1) Wiring between the TB1882 YA7 and the EEC

NOTE: TB1882 YA7 is in the J48 junction box.
 - 2) EEC, M1818
 - 3) Interlock solenoid, V155
 - (b) For Engine 2,
 - 1) Wiring between the TB606 YA7 and the EEC
 - 2) EEC, M1818
 - 3) Interlock solenoid, V156
- (2) For a dual channel fault:
 - (a) For Engine 1,
 - 1) Interlock solenoid, V155
 - 2) Wiring between the 28 VDC STBY bus and the TB1882 YA7.

NOTE: TB1882 YA7 is in the J48 junction box.

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- (b) For Engine 2,
 - 1) Interlock solenoid, V156
 - 2) Wiring between the 28 VDC STBY bus and the TB606 YA7.

C. Circuit Breakers

- (1) For engine 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	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

- (2) For engine 2, 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	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 (Figure 301)
- (2) Simplified Schematic (Figure 302, Figure 303)
- (3) SSM 78-35-11
- (4) SSM 78-35-21
- (5) WDM 78-35-11
- (6) WDM 78-35-21

E. Initial Evaluation

- (1) Do these steps to find out if the 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 maintenance message number 78-11531 (Ch A, Eng 1), 78-11532 (Ch A, Eng 2), 78-21531 (Ch B, Eng 1) or 78-21532 (Ch B, Eng 2) shows, then do the Fault Isolation Procedure - Single Channel Fault for the applicable channel.
- (c) If maintenance message number 78-31531 (Ch A and Ch B, Eng 1) or 78-31532 (Ch A and Ch B, Eng 2) shows, then do the Fault Isolation Procedure - Dual Channel Fault.
- (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 fault.
 - 1) If you cannot find the fault at this time, then the Fault Isolation Procedure cannot isolate the fault.

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- 2) For an intermittent fault you must use your judgment, your airline policies, and the Possible Causes list to make the decision if you will try to correct the fault.
- 3) If you will try to correct the fault, it is recommended that you do these steps:
 - a) Do the visual checks of the electrical connectors in the applicable fault isolation procedure below.
 - b) Use the WDM references to identify intermediate electrical connections in the wire harness and do a visual check.
 - c) If you find no problems, then replace components as listed in the Possible Causes List above.
- 4) Monitor the airplane on the subsequent flight.

F. Fault Isolation Procedure - Single Channel Fault

- (1) Prepare for the procedure:

- (a) For Engine 1, do the following:
 - 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

- (b) For Engine 2, do the following:
 - 1) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
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

- (c) Do this task: Open the Fan Cowl Panels, AMM TASK 71-11-02-010-801-F00.
- (2) Visually examine the electrical connector, DP0303 (Ch A) or DP0404 (Ch B) at the EEC:
 - (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.

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- b) If the Repair Confirmation is not satisfactory, then open the circuit breakers above and continue.
- 2) 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
 - a) Do the Repair Confirmation at the end of this task.
 - b) If the Repair Confirmation was not satisfactory, then open the circuit breakers above and continue.
- 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.
 - a) If the Repair Confirmation is not satisfactory, then open the circuit breakers above and continue.
 - (d) If you did not find a problem, then continue.
- (3) Do this check for voltage to the EEC:
 - (a) For Engine 1, do the following:
 - 1) 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	6	C01412	ENGINE 1 THRUST REVERSER INTLK
 - (b) For Engine 2, do the following:
 - 1) 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	6	C01413	ENGINE 2 THRUST REVERSER INTLK
 - (c) Do a check for 28 VDC from pin C of the electrical connector, DP0303 (Ch A) or DP0404 (Ch B), to structure ground.
 - 1) If there is voltage and 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.
 - b) If the Repair Confirmation is not satisfactory, then open the circuit breakers above and continue.
 - 2) If there is no voltage, then open the circuit breaker above and continue.
 - (4) For Engine 1, do these steps:
 - (a) Look for an open wire between the EEC and the strut receptacle.
 - 1) For Channel A;
 - Look for an open wire between pin C of the electrical connector, DP0303, at the EEC and pin 9 at the strut receptacle, D30224.
 - 2) For Channel B;

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Look for an open wire between pin C of the electrical connector, DP0404, at the EEC and pin 33 at the strut receptacle, D30260.

- 3) If you find a problem, then replace the 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.
 - b) If the Repair Confirmation is not satisfactory, then open the circuit breakers above and continue.
- 4) If you do not find a problem, then open the circuit breaker above and continue.
- (b) Look for an open wire between the strut receptacle, pin 9 of D30224 (Ch A) or pin 33 of D30260 (Ch B), and the terminal block, TB1882 YA7.
NOTE: TB1882 YA7 is in junction box, J48.
 - 1) If you find a problem, then do the applicable tasks to repair or replace the wiring or connectors (SWPM Ch 20).
 - a) Do the Repair Confirmation at the end of this task.
- (5) For Engine 2, do these steps:
 - (a) Look for an open wire between the EEC and the strut receptacle.
 - 1) For Channel A;

Look for an open wire between pin C of the electrical connector, DP0303, at the EEC and pin 9 at the strut receptacle, D30424.
 - 2) For Channel B;

Look for an open wire between pin C of the electrical connector, DP0404, at the EEC and pin 33 at the strut receptacle, D30460.
 - 3) If you find a problem, then replace the 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.
 - b) If the Repair Confirmation is not satisfactory, then open the circuit breakers above and continue.
 - 4) If you do not find a problem, then open the circuit breaker above and continue.
 - (b) Look for an open wire between the strut receptacle, pin 9 of D30424 (Ch A) or pin 33 of D30460 (Ch B), and the terminal block, TB606 YA7.
 - 1) If you find a problem, then do the applicable tasks to repair or replace the wiring or connectors (SWPM Ch 20).
 - a) Do the Repair Confirmation at the end of this task.

G. Fault Isolation Procedure - Dual Channel Fault

- (1) Prepare for the procedure:
 - (a) For Engine 1, do the following:

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- 1) Open these 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	6	C01412	ENGINE 1 THRUST REVERSER INTLK

- (b) For Engine 2, do the following:

- 1) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
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

- (c) Do this task: Open the Fan Cowl Panels, AMM TASK 71-11-02-010-801-F00.

- (2) Visually examine the wire harness connector for the T/R interlock solenoid, V155 (Eng 1) or V156 (Eng 2), at the electrical connector, D10167 (Eng 1) or D10169 (Eng 2):

- (a) To get access to the connectors, remove the left access cover from the overhead in the nose gear wheel well.
- (b) See if the electrical connectors are correctly connected, and continue.
- (c) Disconnect the electrical connector for the T/R interlock solenoid, V155 (Eng 1) or V156 (Eng 2), from the electrical connector, D10167 (Eng 1) or D10169 (Eng 2).
- (d) Visually examine the electrical connectors (AMM TASK 70-70-01-200-801-F00).
 - 1) If the wire harness connector for the T/R interlock solenoid, V155 (Eng 1) or V156 (Eng 2) is damaged, then replace the interlock solenoid. 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.
 - b) If the Repair Confirmation was not satisfactory, then open the circuit breaker above and continue.
 - 2) If the wire harness electrical connector, D10167 (Eng 1) or D10169 (Eng 2), 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.
 - b) If the Repair Confirmation was not satisfactory, then open the circuit breaker above and continue.
 - 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.
 - a) If the Repair Confirmation is not satisfactory, then continue.

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- (e) If you did not find a problem, then continue.
- (3) Do this check for voltage at the electrical connector, D10167 (Eng 1) or D10169 (Eng 2):
 - (a) For Engine 1, do the following:
 - 1) Close this 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

- (b) For Engine 2, do the following:

- 1) Close this circuit breaker:

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) Do a check for 28 VDC from pin 2 of connector D10167 (Eng 1) or D10169 (Eng 2) to structure ground.

- 1) If there is no voltage at pin 2, then open this circuit breaker and do these steps:

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

- a) Examine and repair the wiring between the electrical connector, D10167 (Eng 1) or D20269 (Eng 2), and this circuit breaker:

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

- b) Do the Repair Confirmation at the end of this task.
 - c) If the Repair Confirmation was not satisfactory , then open 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	6	C01413	ENGINE 2 THRUST REVERSER INTLK

- 2) If there is voltage, then open 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	6	C01413	ENGINE 2 THRUST REVERSER INTLK

- (4) Do an electrical check of the T/R interlock solenoid, V155 (Eng 1) or V156 (Eng 2):
 - (a) Install a jumper between pin 2 of the electrical connector, D10167 (Eng 1) or D10169 (Eng 2) and pin 2 of the electrical connector for the T/R interlock solenoid, V155 (Eng 1) or V156 (Eng 2).

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- (b) Install a jumper between pin 3 of the electrical connector for the T/R interlock solenoid, V155 (Eng 1) or V156 (Eng 2) and structure ground.

NOTE: You will hear an audible "click" as soon as the circuit breakers are closed if the T/R interlock moves.

- (c) For Engine 1, do the following:

- 1) Close this 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

- (d) For Engine 2, do the following:

- 1) Close this circuit breaker:

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

- (e) Listen for the audible "click" of the T/R interlock.

NOTE: The audible "click" is the indication that the interlock moved.

- (f) If you do not hear the interlock "click", then replace the T/R interlock solenoid, V155 (Eng 1) or V156 (Eng 2). 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.

- a) If the Repair Confirmation was not satisfactory , then open 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	6	C01413	ENGINE 2 THRUST REVERSER INTLK

- (g) If you hear the interlock "click", then open the circuit breaker above and continue.

- (5) For Engine 1, do these steps:

- (a) Repair the wiring between pin 3 of the electrical connector, D10167 and the terminal block TB1882 YA7.

NOTE: TB1882 YA7 is in the junction box, J48.

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

- (6) For Engine 2, do these steps:

- (a) Repair the wiring between pin 3 of the electrical connector, D10169 and the terminal block TB606 YA7.

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

H. Repair Confirmation

- (1) Prepare for the procedure:

- (a) Make sure that the electrical connectors, DP0303 (Ch A) and DP0404 (Ch B) are correctly connected to the EEC.

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- (b) Make sure that the electrical connector for the V155 (Eng 1) or V156 (Eng 2) wire harness, is correctly connected to the D10167 (Eng 1) or D10169 (Eng 2) electrical connector.
- (c) Make sure that all connectors that were disconnected to do an electrical check between the EEC and the T/R interlock solenoid are correctly connected.
- (d) For Engine 1, do the following:
 - 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>
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

- (e) For Engine 2, do the following:
 - 1) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	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

- (2) 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 fault.
- (3) After the fault is corrected, then do the steps that follow to put the airplane back to its usual condition.

- (a) For Engine 1, do the following:

- 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>
A	1	C00458	ENGINE 1 IGNITION RIGHT
A	3	C00153	ENGINE 1 IGNITION LEFT

- (b) For Engine 2, do the following:

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

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	4	C00459	ENGINE 2 IGNITION RIGHT
D	6	C00151	ENGINE 2 IGNITION LEFT

- (c) Do this task: Close the Fan Cowl Panels, AMM TASK 71-11-02-410-801-F00.

———— END OF TASK ————

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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.
 - (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 Full Authority Digital Engine Control (FADEC)-2:
 - 1) 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).
 - 2) Because the Channel A Excitation Circuit for the Right T/R position LVDT, High Pressure Turbine (HPT) Active Clearance Control (ACC) 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 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)

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- 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 A 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)

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:

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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

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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

D. Related Data

- (1) Component Location (Figure 301, Figure 304)
- (2) Simplified Schematic (Figure 304)

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- (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 Fault Isolation Manual (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.
- 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.

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- a) 75-10361, 78-11541, 78-31541 (Engine 1, CH A): Do this task: FADEC3 (Ch A) Excitation Group 3: HPTACC, Left and Right 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, Left and Right 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, Left and Right 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, Left and Right 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 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 - Single Channel Fault

- (1) 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

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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

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- (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
 - Left 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).
 - 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

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- Right T/R Sleeve CH A Connector: D30074
 - Left 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	$R = 53 ((234.5+T)/ 254.5)$

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	pin 2	pin 1	383 - 517 Ω
pin 3	pin 5	pin 5	pin 3	79 - 107 Ω
pin 5	pin 4	pin 4	pin 5	45 - 61 Ω
pin 1	GND	GND	pin 1	> 10 MΩ
pin 3	GND	GND	pin 3	> 10 MΩ
pin 1	pin 5	pin 5	pin 2	> 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	LVDT
DP0303	D30072
pin Y	pin 1
pin GG	pin 2
pin BB	pin 3
pin U	pin 5
pin CC	pin 4

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LEFT T/R SLEEVE, CH B

EEC	LVDT
DP0404	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	LVDT
DP0303	D30074
pin E	pin 1
pin F	pin 2
pin N	pin 3
pin Q	pin 5
pin P	pin 4

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.

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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.

- (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

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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

- (a) Do this task: Open the Fan Cowl Panels, AMM TASK 71-11-02-010-801-F00.

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- (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
 - Left 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).
 - 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

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- Right T/R Sleeve CH A Connector: D30074
 - Left 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	$R = 53 ((234.5+T)/ 254.5)$

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	pin 2	pin 1	383 - 517 Ω
pin 3	pin 5	pin 5	pin 3	79 - 107 Ω
pin 5	pin 4	pin 4	pin 5	45 - 61 Ω
pin 1	GND	GND	pin 1	> 10 MΩ
pin 3	GND	GND	pin 3	> 10 MΩ
pin 1	pin 5	pin 5	pin 2	> 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	LVDT
DP0303	D30072
pin Y	pin 1
pin GG	pin 2
pin BB	pin 3
pin U	pin 5
pin CC	pin 4

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LEFT T/R SLEEVE, CH B

EEC	LVDT
DP0404	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	LVDT
DP0303	D30074
pin E	pin 1
pin F	pin 2
pin N	pin 3
pin Q	pin 5
pin P	pin 4

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.

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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, D30074 (CH A) and D30078 (CH B) are correctly connected to the LVDT, T396.
 - (b) Make sure that the Right T/R Sleeve electrical connectors, D30072 (CH A) and D30076 (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

<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

- (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.
 - (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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F/O Electrical System Panel, P6-2

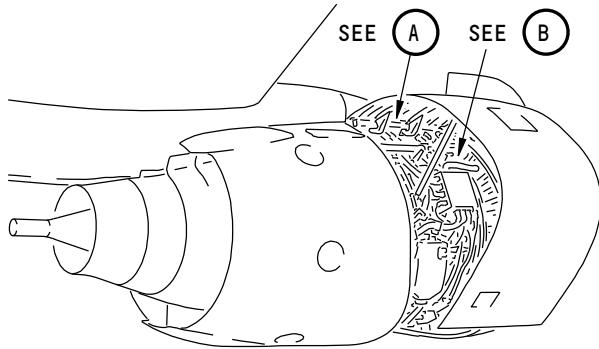
<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	5	C01267	ENGINE 2 THRUST REVERSER SYNC LOCK
C	6	C01413	ENGINE 2 THRUST REVERSER INTLK
C	7	C00277	ENGINE 2 THRUST REVERSER CONT
C	8	C01004	ENGINE 2 THRUST REVERSER IND
D	4	C00459	ENGINE 2 IGNITION RIGHT
D	6	C00151	ENGINE 2 IGNITION LEFT
D	7	C01391	ENGINE 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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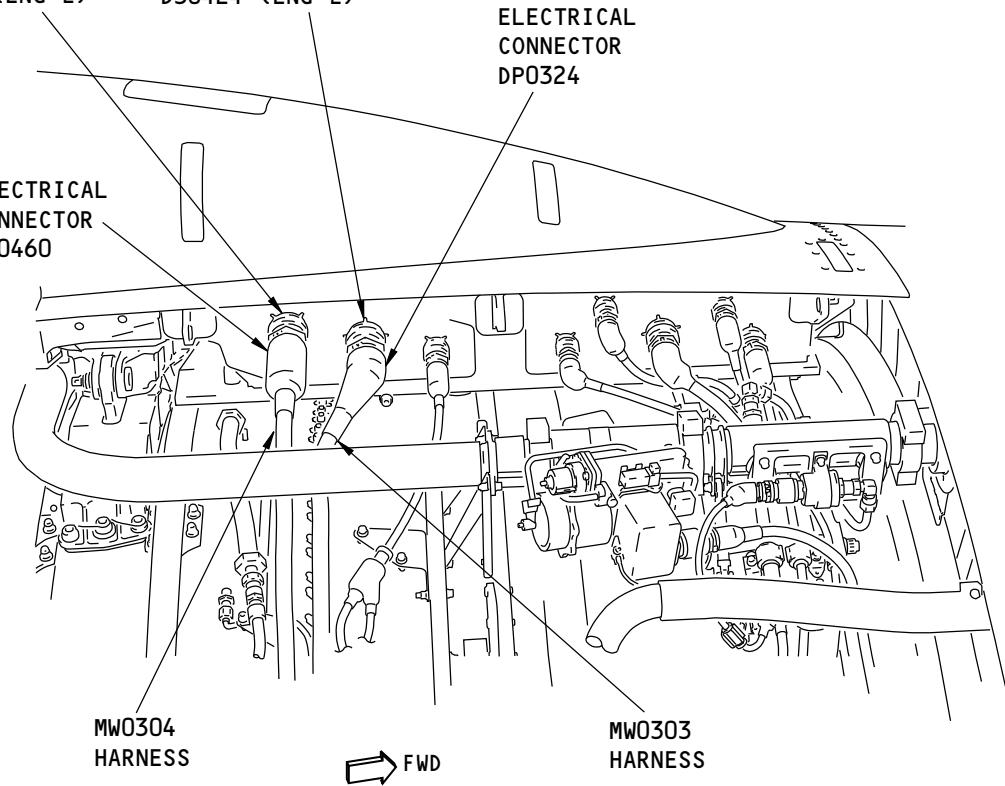
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STRUT RECEPTACLE
D30260 (ENG 1)
D30460 (ENG 2)

STRUT RECEPTACLE
D30224 (ENG 1)
D30424 (ENG 2)

ELECTRICAL
CONNECTOR
DP0324

ELECTRICAL
CONNECTOR
DP0460



A

H35167 S0006746525_V1

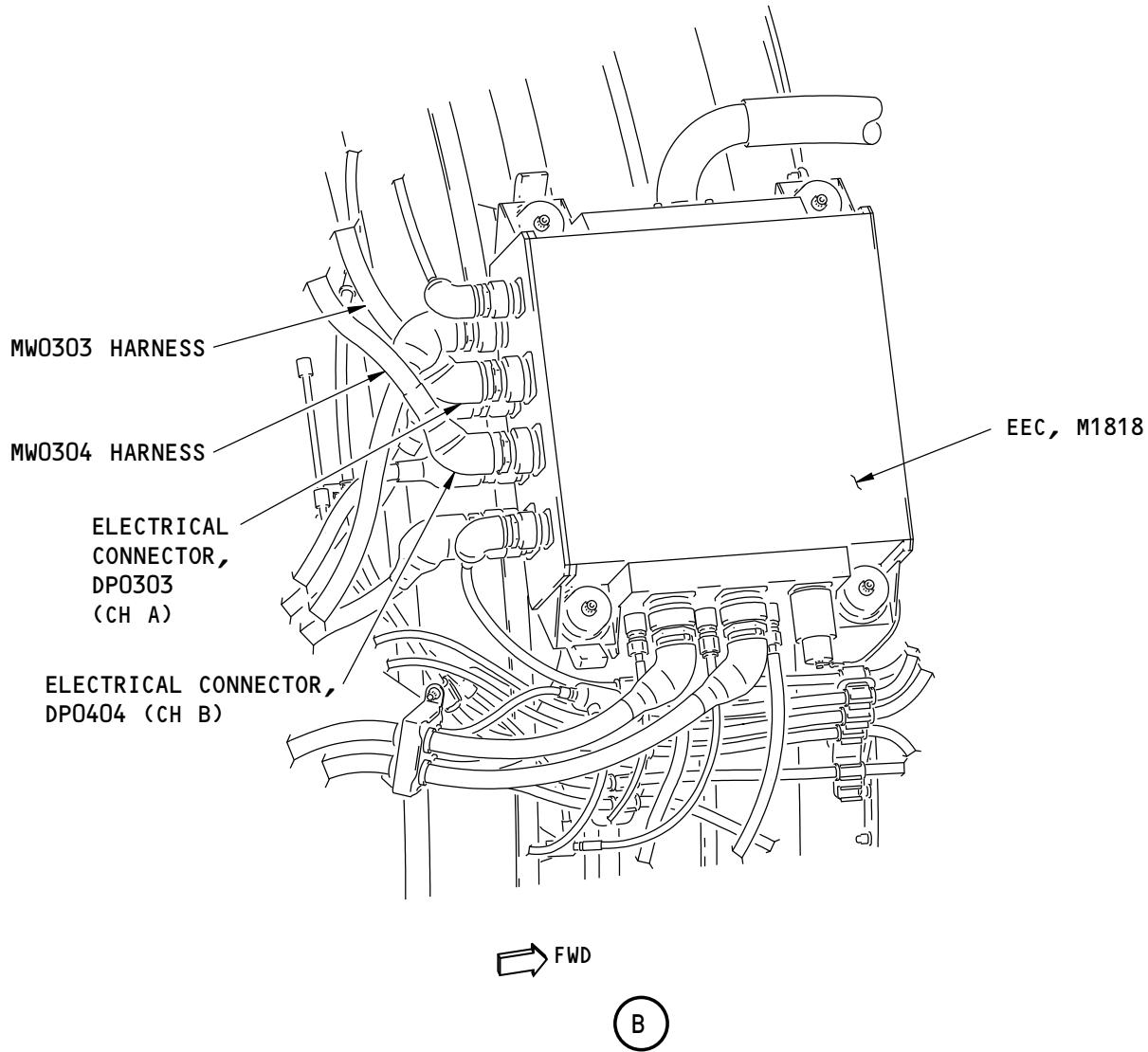
Electronic Engine Control Electrical Connectors
Figure 301/78-36-00-990-801-F00 (Sheet 1 of 2)

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H32837 S0006746526_V1

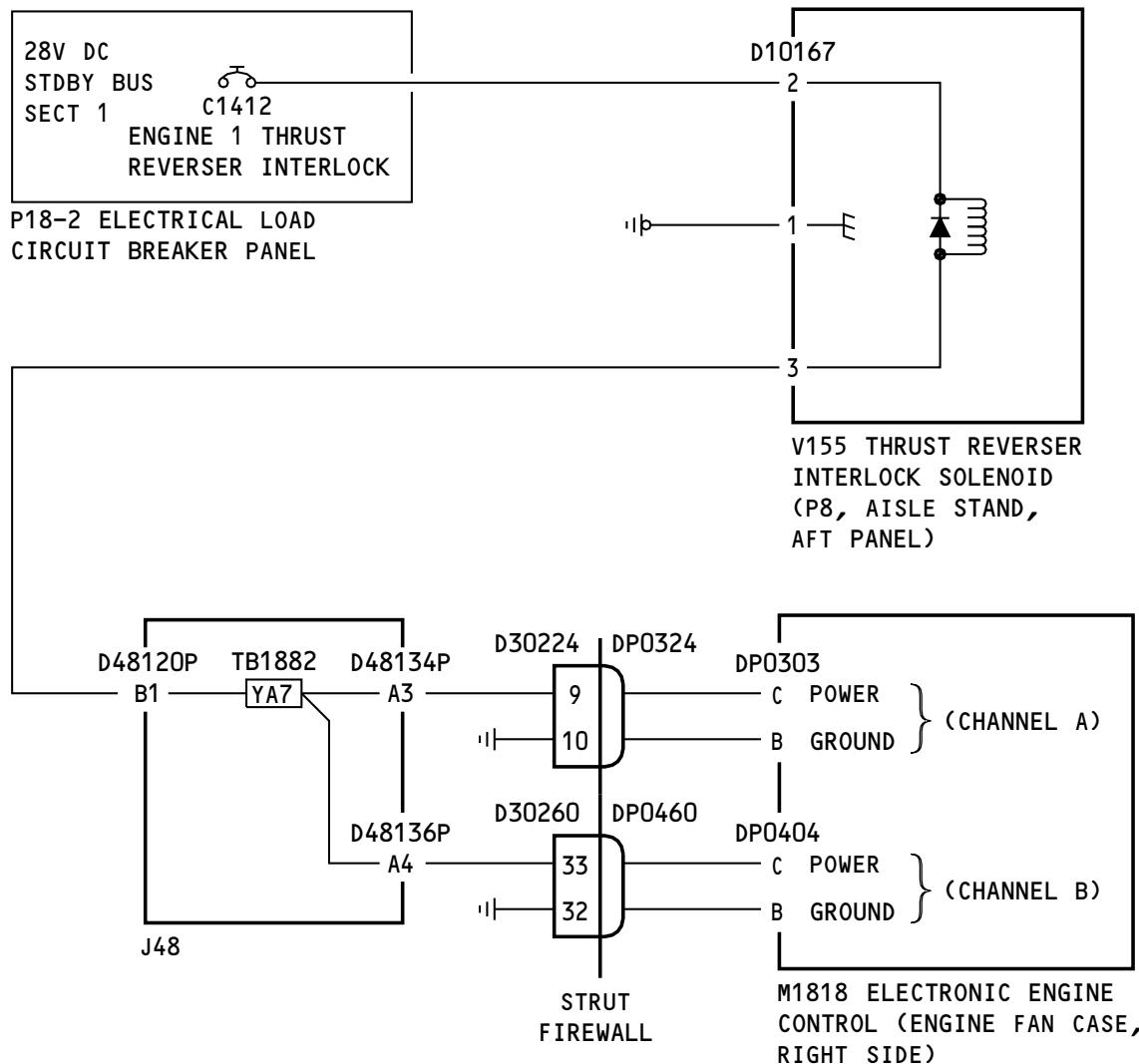
Electronic Engine Control Electrical Connectors
Figure 301/78-36-00-990-801-F00 (Sheet 2 of 2)

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H34723 S0006746527_V1

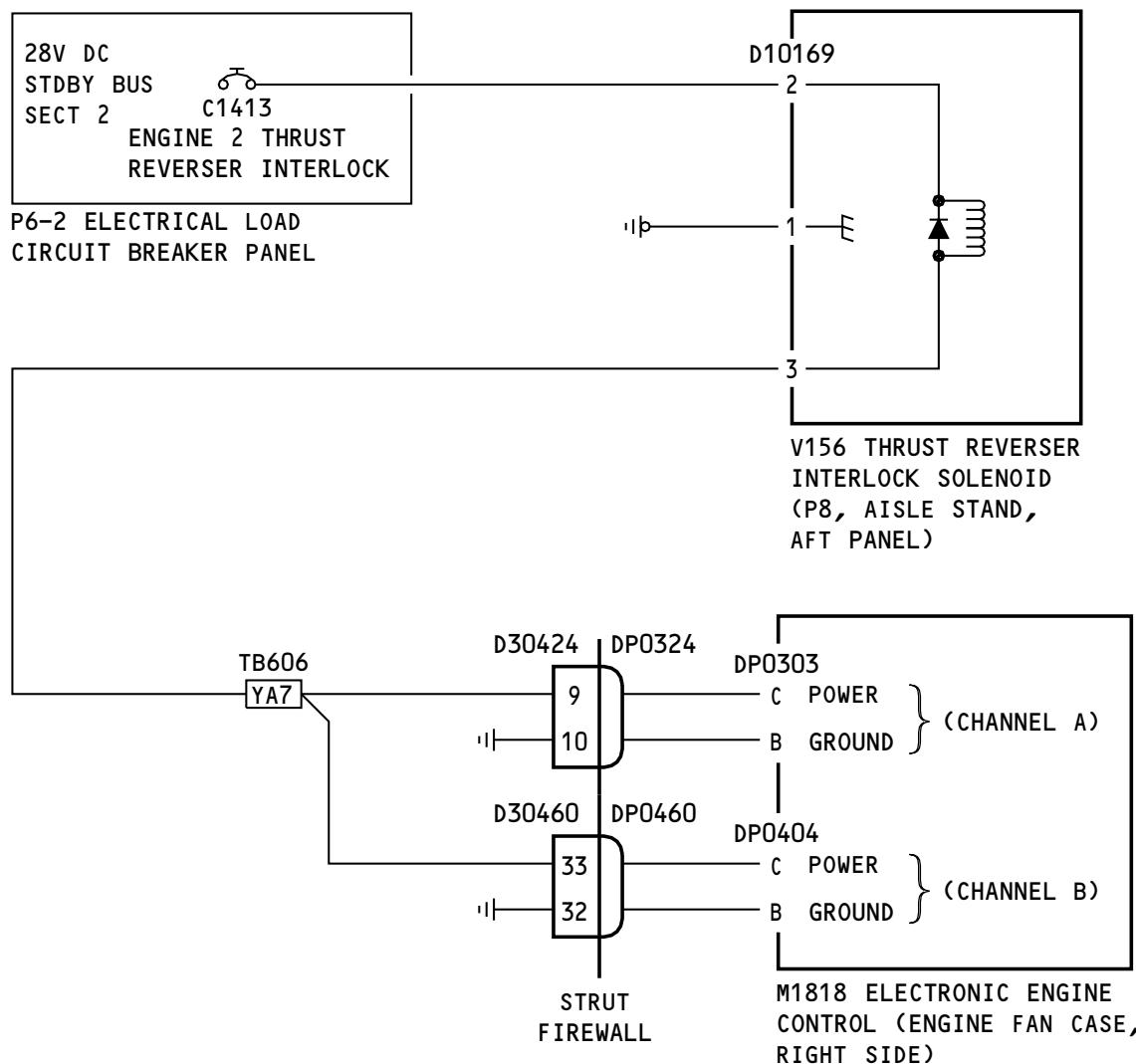
**Engine 1 Thrust Reverser Interlock Solenoid Simplified Schematic
Figure 302/78-36-00-990-802-F00**

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D633A103-AKS

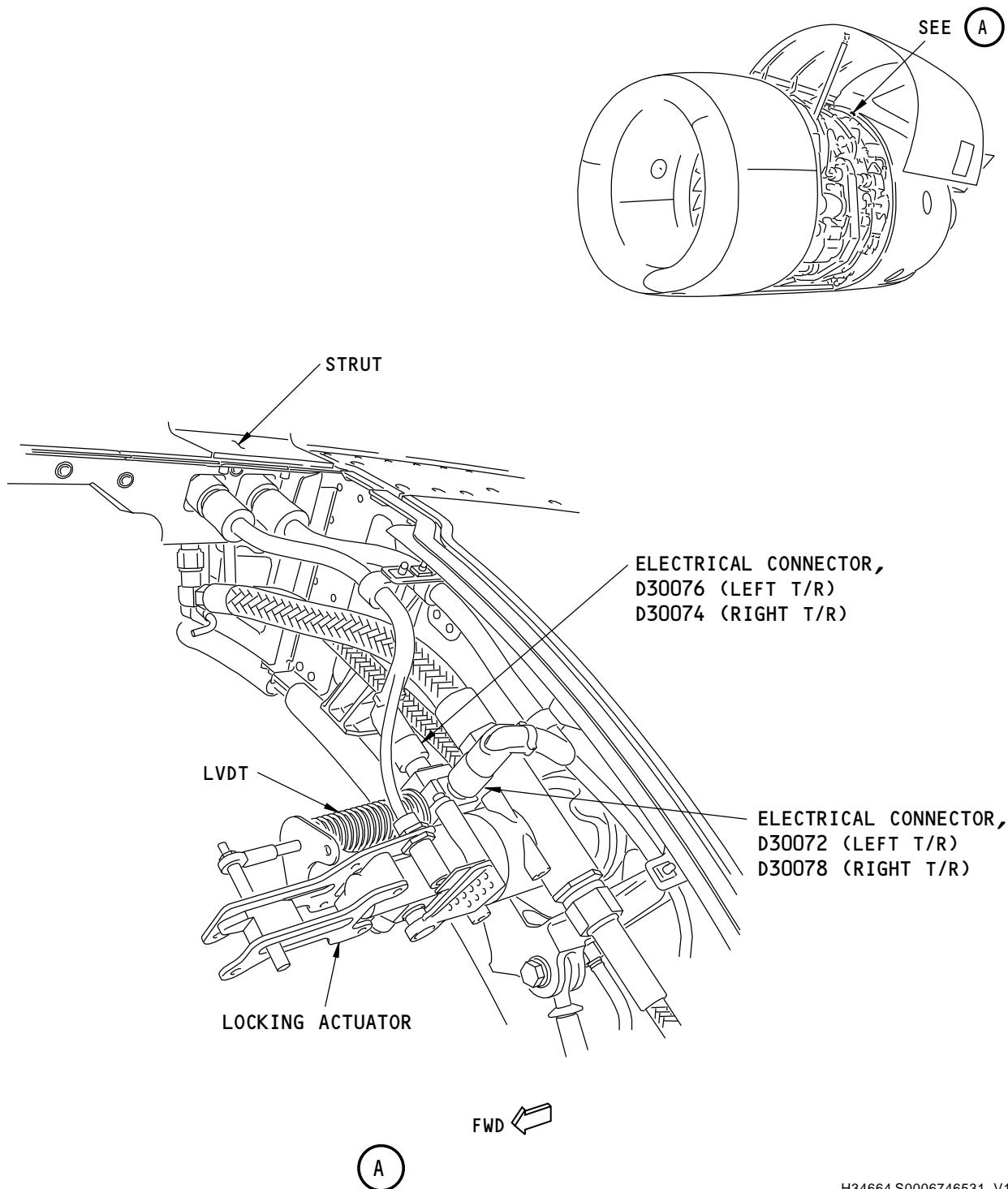


H34847 S0006746529_V1

Engine 2 Thrust Reverser Interlock Solenoid Simplified Schematic
Figure 303/78-36-00-990-804-F00

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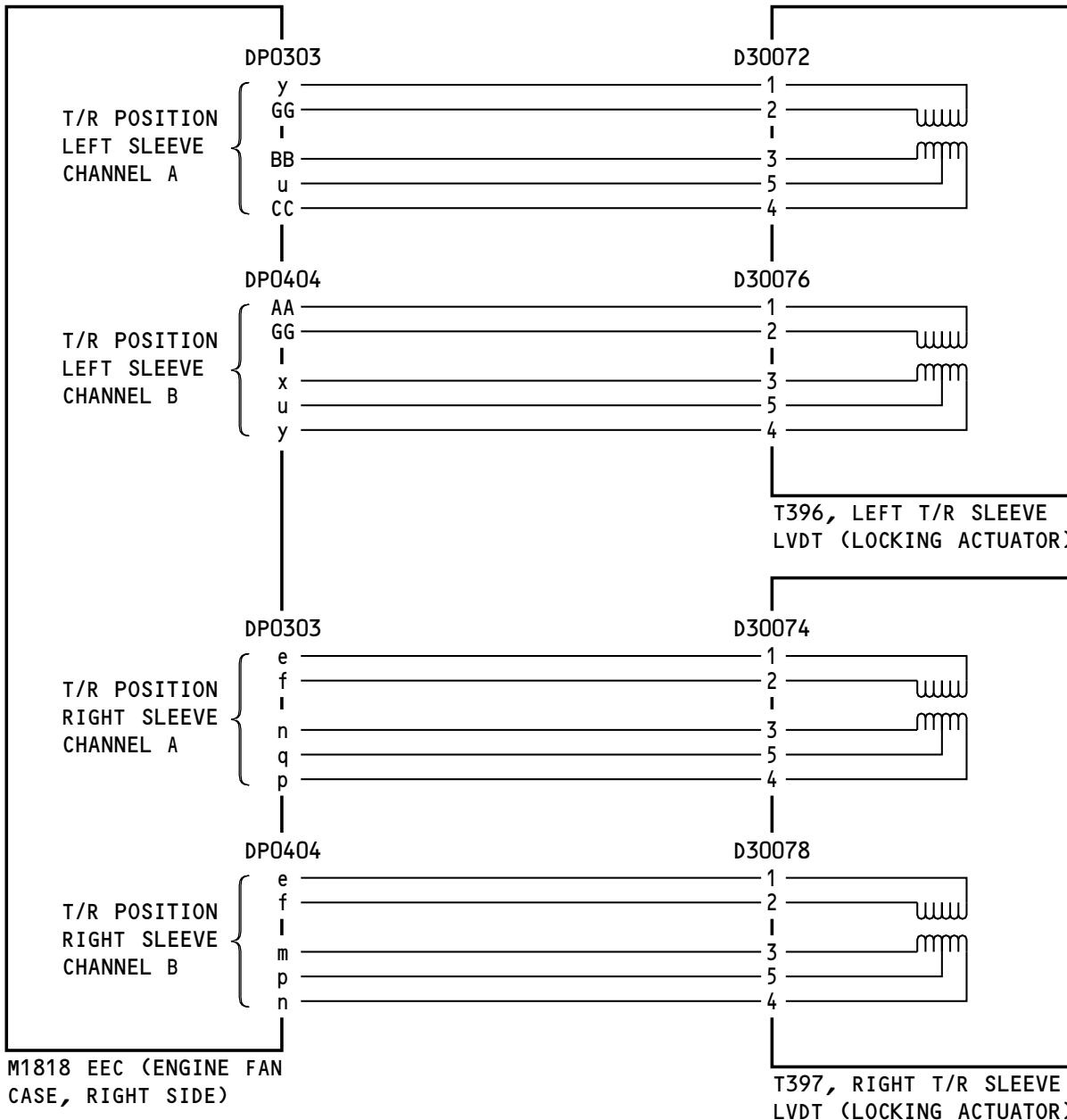
H34664 S0006746531_V1

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)**

EFFECTIVITY
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