

CHAPTER

75

AIR

(CFM56 ENGINES (CFM56-7))

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

CHAPTER 75 AIR

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109	Oct 15/2021		306	BLANK		202	Oct 15/2021	
110	BLANK		75-22 TASKS			203	Oct 15/2021	
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205	Oct 15/2021		206	Oct 15/2021		209	Oct 15/2022	
206	Oct 15/2021		207	Oct 15/2021		210	Oct 15/2021	
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210	Oct 15/2021		211	Oct 15/2021		214	Oct 15/2022	
211	Oct 15/2021		212	Oct 15/2021		215	Oct 15/2021	
212	Oct 15/2021		213	Oct 15/2021		216	Oct 15/2022	
213	Oct 15/2021		214	Oct 15/2021		217	Oct 15/2021	
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215	Oct 15/2021		216	Oct 15/2021		219	Oct 15/2021	
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301	Oct 15/2021		75-31 TASK SUPPORT			301	Oct 15/2021	
302	Oct 15/2021		301	Oct 15/2021		302	Oct 15/2021	
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202	Oct 15/2021		306	BLANK		75-33 TASKS		
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214	Oct 15/2021		211	Oct 15/2021		212	Oct 15/2021	
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216	Oct 15/2021		213	Oct 15/2021		214	Oct 15/2021	
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221	Oct 15/2021		218	Oct 15/2021		219	Oct 15/2021	
222	Feb 15/2023		219	Oct 15/2021		220	Oct 15/2021	
223	Feb 15/2023		220	Oct 15/2021		221	Oct 15/2021	
224	Feb 15/2023		221	Oct 15/2021		222	Oct 15/2021	

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224	Oct 15/2021		217	Oct 15/2021		R 253	Oct 15/2023	
225	Oct 15/2021		218	Oct 15/2021		R 254	Oct 15/2023	
226	Oct 15/2021		219	Oct 15/2021		R 255	Oct 15/2023	
227	Oct 15/2021		220	Oct 15/2021		O 256	Oct 15/2023	
228	Oct 15/2021		221	Oct 15/2021		O 257	Oct 15/2023	
229	Oct 15/2021		222	Oct 15/2021		O 258	Oct 15/2023	
230	Oct 15/2021		223	Oct 15/2021		O 259	Oct 15/2023	
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233	Oct 15/2021		226	Oct 15/2021		O 262	Oct 15/2023	
234	Oct 15/2021		227	Oct 15/2021		O 263	Oct 15/2023	
235	Oct 15/2021		228	Oct 15/2021		O 264	Oct 15/2023	
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301	Oct 15/2021		231	Oct 15/2021		O 267	Oct 15/2023	
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201	Oct 15/2021		238	Oct 15/2021		O 274	Oct 15/2023	
202	Oct 15/2021		239	Oct 15/2021		O 275	Oct 15/2023	
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209	Oct 15/2021		246	Oct 15/2021		O 282	Oct 15/2023	
210	Oct 15/2021		247	Oct 15/2021		O 283	Oct 15/2023	
211	Oct 15/2021		248	Oct 15/2021		O 284	Oct 15/2023	
212	Oct 15/2021		R 249	Oct 15/2023		O 285	Oct 15/2023	
213	Oct 15/2021		R 250	Oct 15/2023		O 286	Oct 15/2023	
214	Oct 15/2021		R 251	Oct 15/2023		O 287	Oct 15/2023	
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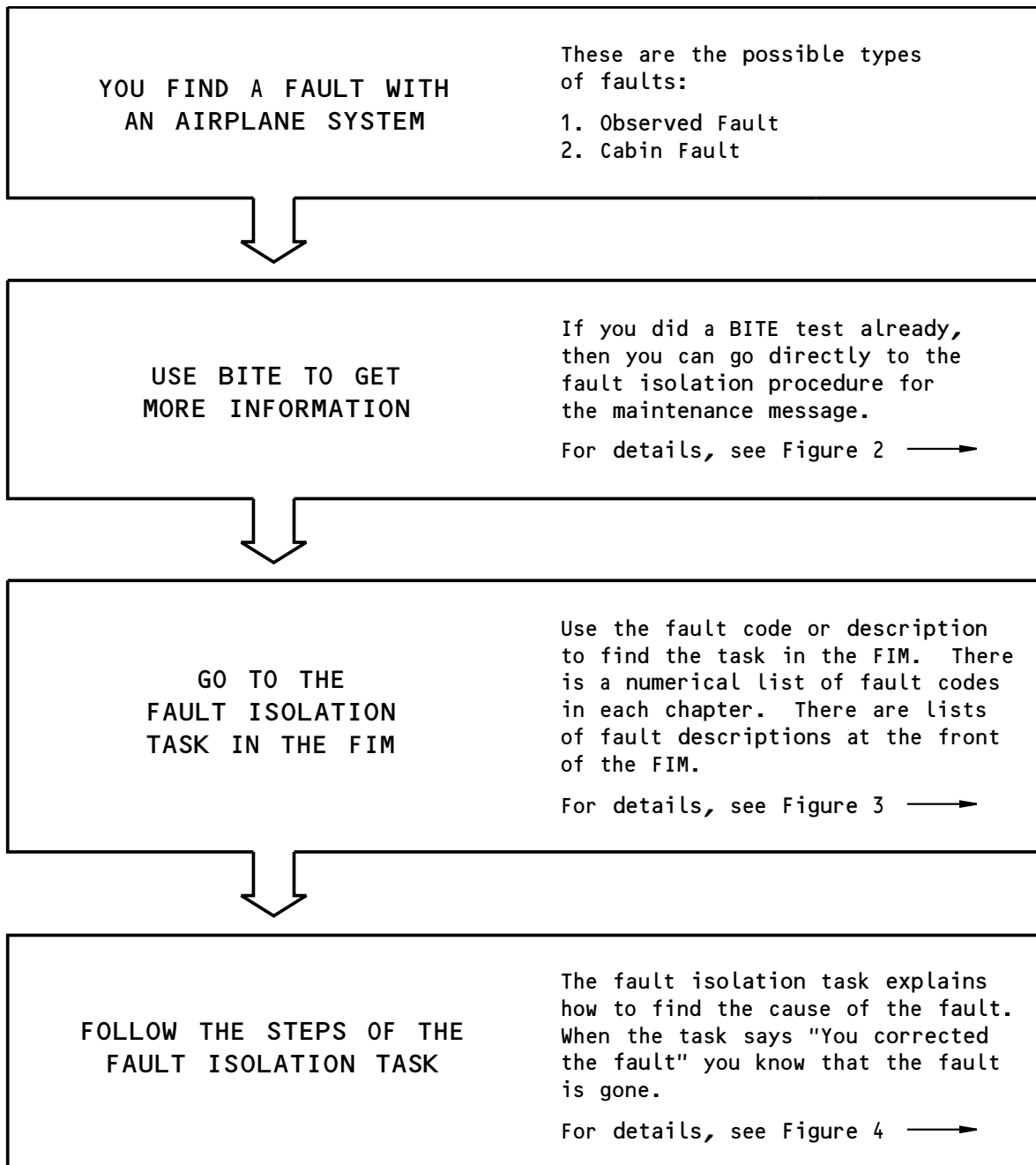
**737-600/700/800/900
FAULT ISOLATION MANUAL**

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O 290	Oct 15/2023		311	Oct 15/2021				
O 291	Oct 15/2023		312	Oct 15/2021				
O 292	Oct 15/2023		313	Oct 15/2021				
O 293	Oct 15/2023		314	Oct 15/2021				
O 294	Oct 15/2023		315	Oct 15/2021				
O 295	Oct 15/2023		316	Oct 15/2021				
O 296	Oct 15/2023		317	Oct 15/2021				
O 297	Oct 15/2023		318	Oct 15/2021				
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O 298.2	Oct 15/2023							
O 298.3	Oct 15/2023							
O 298.4	Oct 15/2023							
O 298.5	Oct 15/2023							
O 298.6	Oct 15/2023							
O 298.7	Oct 15/2023							
O 298.8	Oct 15/2023							
O 298.9	Oct 15/2023							
O 298.10	Oct 15/2023							
O 298.11	Oct 15/2023							
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O 298.15	Oct 15/2023							
O 298.16	Oct 15/2023							
75-34 TASK SUPPORT								
301	Oct 15/2021							
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303	Oct 15/2021							
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G04902 S0000148576_V1

**Basic Fault Isolation Process
Figure 1**

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75-HOW TO USE THE FIM

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

A maintenance message can be any of these:

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

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

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

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

G04950 S0000148578_V1

Getting Fault Information from BITE
Figure 2

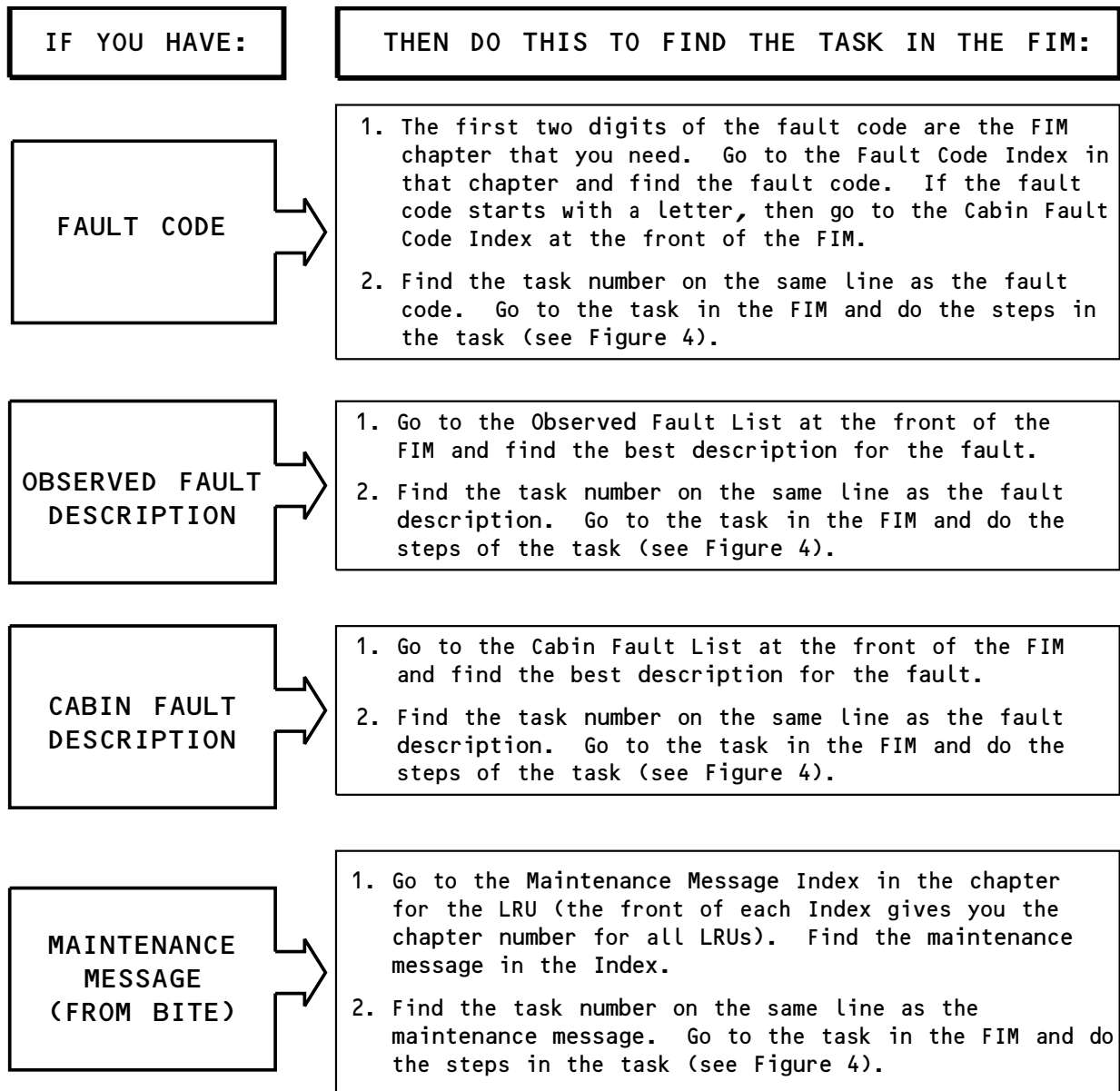
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G04979 S0000148579_V2

Finding the Fault Isolation Task in the FIM
Figure 3

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ASSUMED CONDITIONS AT START OF TASK

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

POSSIBLE CAUSES

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

INITIAL EVALUATION PARAGRAPH

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

FAULT ISOLATION STEPS

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

G05009 S0000148580_V3

Doing the Fault Isolation Task Figure 4

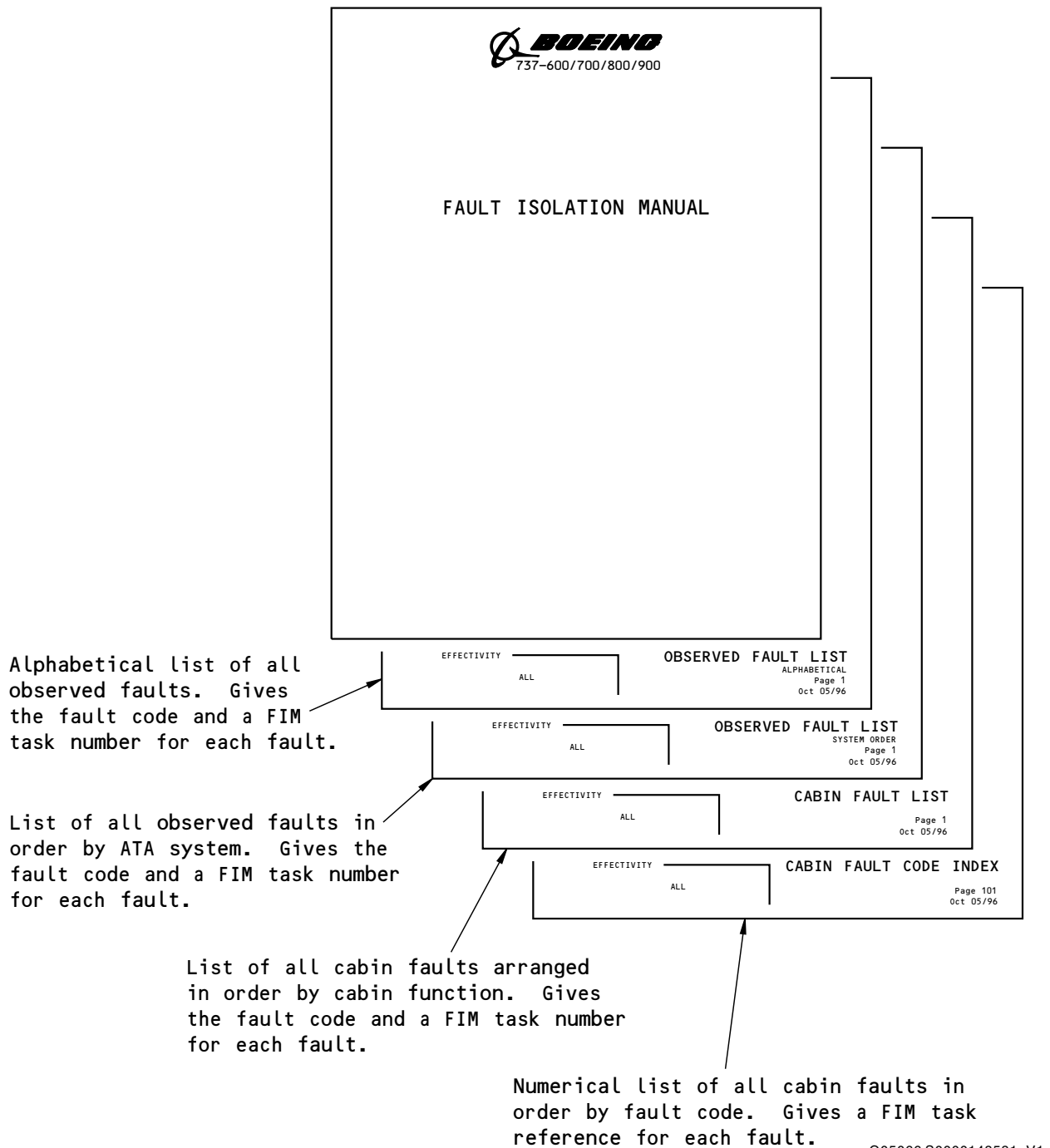
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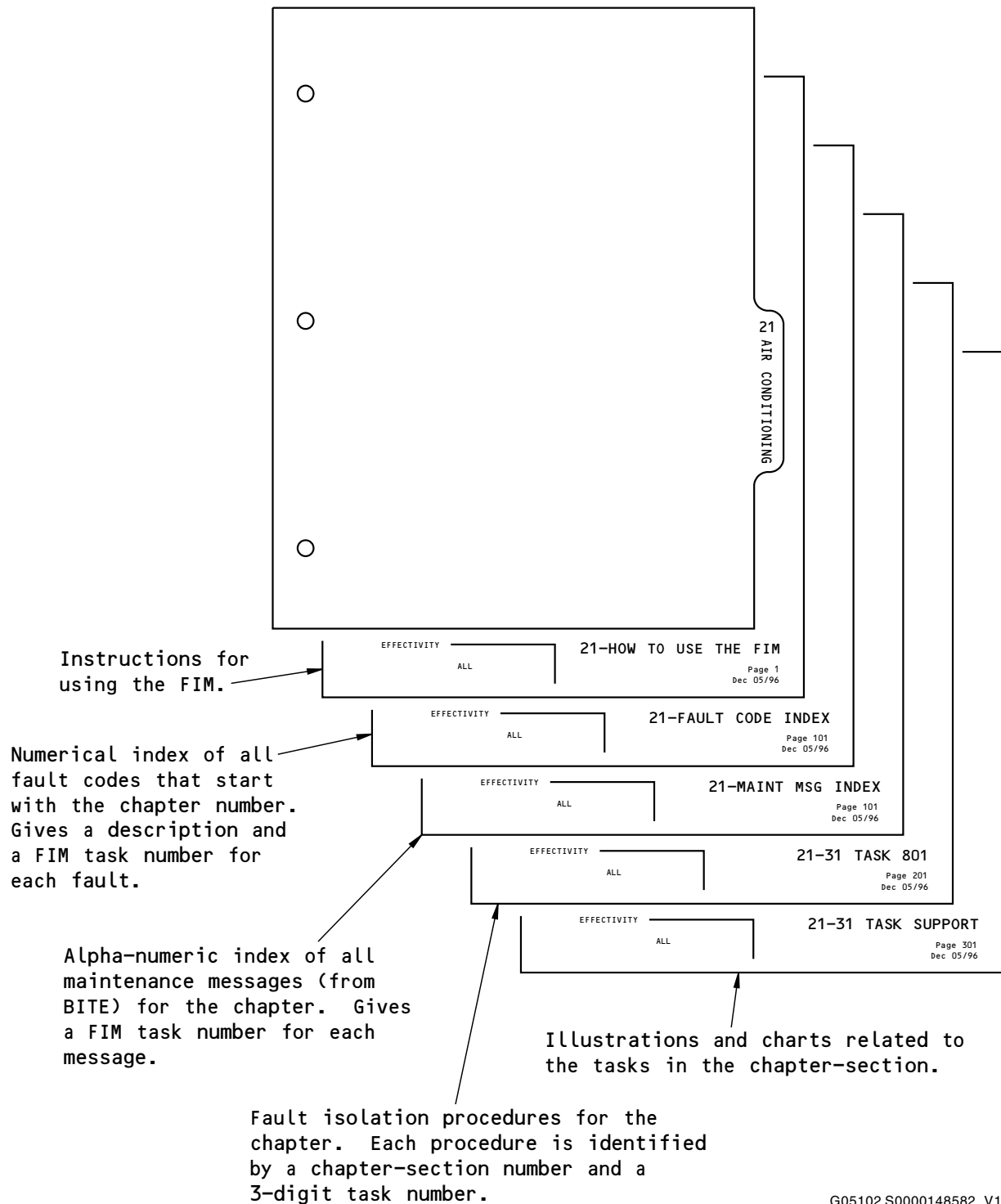
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G05102 S0000148582_V1

Subjects in Each FIM Chapter
Figure 6

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<u>LRU/SYSTEM</u>	<u>SHORT NAME</u>	<u>CHAPTER</u>
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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 Computer	A/T COMPUTER	22
Auxiliary Power Unit	APU	49
Auxiliary Power Unit Generator Control Unit	APU GCU	24
Bus Power Control Unit	BPCU	24
Cabin Pressure Controller	CAB PRESS CON	21
Cargo Electronic Unit - Lower Aft	CEU - LWR AFT	26
Cargo Electronic Unit - Lower Forward	CEU - LWR FWD	26
Cargo Electronic Unit - Main Aft	CEU - MAIN AFT	26
Cargo Fire Control Panel	CFCP	26
Common Display System	CDS	31
Compartment Overheat Detection Control Module	WING/BODY OHT	26
Digital Flight Control System	DFCS	22
Distance Measurement Equipment Interrogator	DME INTROGTR	34
Electrical Meters, Battery, and Galley Power Module	P5-13	24
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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
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Enhanced Digital Flight Control Computer-A	EDFCC-A	22
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Multi-Mode Receiver	MMR	34
Nitrogen Generation System BITE Display Unit	NGS	47
Pack Flow Temperature Controller	PFTC	21
Pack/Zone Temperature Controller - Left	PACK/ZN CON - L	21
Pack/Zone Temperature Controller - Right	PACK/ZN CON - R	21
Proximity Switch Electronics Unit	PSEU	32
Radio Altimeter Receiver/Transmitter	RADIO ALTIMTR	34
Satellite Communications System	SATCOM	23
Stall Management Yaw Damper Computer - 1	SMYD - 1	27
Stall Management Yaw Damper Computer - 2	SMYD - 2	27
Traffic Alert and Collision Avoidance System Computer	TCAS COMPUTER	34
VHF Omnidirectional Ranging Marker Beacon Receiver	VOR/MKR RCVR	34
Very High Frequency Transceiver	VHF XCVR	23
Waste Tank Logic Control Module	WASTE TANK	38
Weather Radar Receiver/Transmitter	WEATHER RADAR	34
Window Heat Control Unit - Left Forward	WHCU - L FWD	30
Window Heat Control Unit - Left Side	WHCU - L SIDE	30
Window Heat Control Unit - Right Forward	WHCU - R FWD	30
Window Heat Control Unit - Right Side	WHCU - R SIDE	30
Window Heat Control Unit 1 - Left Forward and Right Side	WHCU1 - L FWD/R SIDE	30
Window Heat Control Unit 2 - Right Forward and Left Side	WHCU2 - R FWD/L SIDE	30

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ENGINE - 1	75-10361 THE HPTACC POSITION SIGNAL IS OUT OF RANGE	75-21 TASK 802
ENGINE - 1	75-10371 THE HMU VSV CONTROL CURRENT IS OUT OF RANGE	75-31 TASK 801
ENGINE - 1	75-10381 THE VSV DEMAND AND POSITION SIGNALS DISAGREE	75-31 TASK 802
ENGINE - 1	75-10391 THE VSV POSITION SIGNAL IS OUT OF RANGE	75-31 TASK 803
ENGINE - 1	75-10401 THE VSV POSITION SIGNALS DISAGREE	75-31 TASK 804
ENGINE - 1	75-10411 THE HPTACC POSITION SIGNALS DISAGREE	75-21 TASK 803
ENGINE - 1	75-10421 THE HMU VBV CONTROL CURRENT IS OUT OF RANGE	75-32 TASK 804
ENGINE - 1	75-10431 THE VBV DEMAND AND POSITION SIGNALS DISAGREE	75-32 TASK 801
ENGINE - 1	75-10441 THE VBV POSITION SIGNAL IS OUT OF RANGE	75-32 TASK 802
ENGINE - 1	75-10451 THE VBV POSITION SIGNALS DISAGREE	75-32 TASK 803
ENGINE - 1	75-10461 THE HPTACC DEMAND AND POSITION SIGNALS DISAGREE	75-21 TASK 801
ENGINE - 1	75-10471 THE HMU HPTC CONTROL CURRENT IS OUT OF RANGE	75-21 TASK 804
ENGINE - 1	75-10481 THE HPTC DEMAND AND POSITION SIGNALS DISAGREE	75-21 TASK 801
ENGINE - 1	75-10491 THE HPTC POSITION SIGNAL IS OUT OF RANGE	75-21 TASK 802
ENGINE - 1	75-10501 THE HPTC POSITION SIGNALS DISAGREE	75-21 TASK 803
ENGINE - 1	75-10521 THE HMU LPTACC CONTROL CURRENT IS OUT OF RANGE	75-22 TASK 804
ENGINE - 1	75-10531 THE LPTACC DEMAND AND POSITION SIGNALS DISAGREE	75-22 TASK 801
ENGINE - 1	75-10541 THE LPTACC POSITION SIGNAL IS OUT OF RANGE	75-22 TASK 802
ENGINE - 1	75-10551 THE LPTACC POSITION SIGNALS DISAGREE	75-22 TASK 803
ENGINE - 1	75-10571 THE HMU TBV CONTROL CURRENT IS OUT OF RANGE	75-23 TASK 804
ENGINE - 1	75-10581 THE TBV DEMAND AND POSITION SIGNALS DISAGREE	75-23 TASK 801
ENGINE - 1	75-10591 THE TBV POSITION SIGNAL IS OUT OF RANGE	75-23 TASK 802
ENGINE - 1	75-10601 THE TBV POSITION SIGNALS DISAGREE	75-23 TASK 803
ENGINE - 1	75-10801 T25 SIGNALS DISAGREE	75-33 TASK 805

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ENGINE - 1	75-10831 THE T3 SIGNAL IS OUT OF RANGE	75-33 TASK 802
ENGINE - 1	75-10881 THE TCC SIGNAL IS OUT OF RANGE	75-33 TASK 803
ENGINE - 1	75-20291 THE HMU HPTACC CONTROL CURRENT IS OUT OF RANGE	75-21 TASK 804
ENGINE - 1	75-20361 THE HPTACC POSITION SIGNAL IS OUT OF RANGE	75-21 TASK 802
ENGINE - 1	75-20371 THE HMU VSV CONTROL CURRENT IS OUT OF RANGE	75-31 TASK 801
ENGINE - 1	75-20381 THE VSV DEMAND AND POSITION SIGNALS DISAGREE	75-31 TASK 802
ENGINE - 1	75-20391 THE VSV POSITION SIGNAL IS OUT OF RANGE	75-31 TASK 803
ENGINE - 1	75-20401 THE VSV POSITION SIGNALS DISAGREE	75-31 TASK 804
ENGINE - 1	75-20411 THE HPTACC POSITION SIGNALS DISAGREE	75-21 TASK 803
ENGINE - 1	75-20421 THE HMU VBV CONTROL CURRENT IS OUT OF RANGE	75-32 TASK 804
ENGINE - 1	75-20431 THE VBV DEMAND AND POSITION SIGNALS DISAGREE	75-32 TASK 801
ENGINE - 1	75-20441 THE VBV POSITION SIGNAL IS OUT OF RANGE	75-32 TASK 802
ENGINE - 1	75-20451 THE VBV POSITION SIGNALS DISAGREE	75-32 TASK 803
ENGINE - 1	75-20461 THE HPTACC DEMAND AND POSITION SIGNALS DISAGREE	75-21 TASK 801
ENGINE - 1	75-20471 THE HMU HPTC CONTROL CURRENT IS OUT OF RANGE	75-21 TASK 804
ENGINE - 1	75-20481 THE HPTC DEMAND AND POSITION SIGNALS DISAGREE	75-21 TASK 801
ENGINE - 1	75-20491 THE HPTC POSITION SIGNAL IS OUT OF RANGE	75-21 TASK 802
ENGINE - 1	75-20501 THE HPTC POSITION SIGNALS DISAGREE	75-21 TASK 803
ENGINE - 1	75-20521 THE HMU LPTACC CONTROL CURRENT IS OUT OF RANGE	75-22 TASK 804
ENGINE - 1	75-20531 THE LPTACC DEMAND AND POSITION SIGNALS DISAGREE	75-22 TASK 801
ENGINE - 1	75-20541 THE LPTACC POSITION SIGNAL IS OUT OF RANGE	75-22 TASK 802
ENGINE - 1	75-20551 THE LPTACC POSITION SIGNALS DISAGREE	75-22 TASK 803
ENGINE - 1	75-20571 THE HMU TBV CONTROL CURRENT IS OUT OF RANGE	75-23 TASK 804
ENGINE - 1	75-20581 THE TBV DEMAND AND POSITION SIGNALS DISAGREE	75-23 TASK 801

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ENGINE - 1	75-20591 THE TBV POSITION SIGNAL IS OUT OF RANGE	75-23 TASK 802
ENGINE - 1	75-20601 THE TBV POSITION SIGNALS DISAGREE	75-23 TASK 803
ENGINE - 1	75-20801 T25 SIGNALS DISAGREE	75-33 TASK 805
ENGINE - 1	75-20821 THE T25 SIGNAL IS OUT OF RANGE	75-33 TASK 801
ENGINE - 1	75-20831 THE T3 SIGNAL IS OUT OF RANGE	75-33 TASK 802
ENGINE - 1	75-20881 THE TCC SIGNAL IS OUT OF RANGE	75-33 TASK 803
ENGINE - 1	75-30291 THE HMU HPTACC CONTROL CURRENT IS OUT OF RANGE	75-21 TASK 804
ENGINE - 1	75-30361 THE HPTACC POSITION SIGNAL IS OUT OF RANGE	75-21 TASK 802
ENGINE - 1	75-30371 THE HMU VSV CONTROL CURRENT IS OUT OF RANGE	75-31 TASK 801
ENGINE - 1	75-30381 THE VSV DEMAND AND POSITION SIGNALS DISAGREE	75-31 TASK 802
ENGINE - 1	75-30391 THE VSV POSITION SIGNAL IS OUT OF RANGE	75-31 TASK 803
ENGINE - 1	75-30401 THE VSV POSITION SIGNALS DISAGREE	75-31 TASK 804
ENGINE - 1	75-30411 THE HPTACC POSITION SIGNALS DISAGREE	75-21 TASK 803
ENGINE - 1	75-30421 THE HMU VBV CONTROL CURRENT IS OUT OF RANGE	75-32 TASK 804
ENGINE - 1	75-30431 THE VBV DEMAND AND POSITION SIGNALS DISAGREE	75-32 TASK 801
ENGINE - 1	75-30441 THE VBV POSITION SIGNAL IS OUT OF RANGE	75-32 TASK 802
ENGINE - 1	75-30451 THE VBV POSITION SIGNALS DISAGREE	75-32 TASK 803
ENGINE - 1	75-30461 THE HPTACC DEMAND AND POSITION SIGNALS DISAGREE	75-21 TASK 801
ENGINE - 1	75-30471 THE HMU HPTC CONTROL CURRENT IS OUT OF RANGE	75-21 TASK 804
ENGINE - 1	75-30481 THE HPTC DEMAND AND POSITION SIGNALS DISAGREE	75-21 TASK 801
ENGINE - 1	75-30491 THE HPTC POSITION SIGNAL IS OUT OF RANGE	75-21 TASK 802
ENGINE - 1	75-30501 THE HPTC POSITION SIGNALS DISAGREE	75-21 TASK 803
ENGINE - 1	75-30521 THE HMU LPTACC CONTROL CURRENT IS OUT OF RANGE	75-22 TASK 804
ENGINE - 1	75-30531 THE LPTACC DEMAND AND POSITION SIGNALS DISAGREE	75-22 TASK 801
ENGINE - 1	75-30541 THE LPTACC POSITION SIGNAL IS OUT OF RANGE	75-22 TASK 802
ENGINE - 1	75-30551 THE LPTACC POSITION SIGNALS DISAGREE	75-22 TASK 803

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LRU/SYSTEM	MAINTENANCE MESSAGE	GO TO FIM TASK
ENGINE - 1	75-30571 THE HMU TBV CONTROL CURRENT IS OUT OF RANGE	75-23 TASK 804
ENGINE - 1	75-30581 THE TBV DEMAND AND POSITION SIGNALS DISAGREE	75-23 TASK 801
ENGINE - 1	75-30591 THE TBV POSITION SIGNAL IS OUT OF RANGE	75-23 TASK 802
ENGINE - 1	75-30601 THE TBV POSITION SIGNALS DISAGREE	75-23 TASK 803
ENGINE - 1	75-30801 T25 SIGNALS DISAGREE	75-33 TASK 805
ENGINE - 1	75-30821 THE T25 SIGNAL IS OUT OF RANGE	75-33 TASK 801
ENGINE - 1	75-30831 THE T3 SIGNAL IS OUT OF RANGE	75-33 TASK 802
ENGINE - 1	75-30881 THE TCC SIGNAL IS OUT OF RANGE	75-33 TASK 803
ENGINE - 2	75-10292 THE HMU HPTACC CONTROL CURRENT IS OUT OF RANGE	75-21 TASK 804
ENGINE - 2	75-10362 THE HPTACC POSITION SIGNAL IS OUT OF RANGE	75-21 TASK 802
ENGINE - 2	75-10372 THE HMU VSV CONTROL CURRENT IS OUT OF RANGE	75-31 TASK 801
ENGINE - 2	75-10382 THE VSV DEMAND AND POSITION SIGNALS DISAGREE	75-31 TASK 802
ENGINE - 2	75-10392 THE VSV POSITION SIGNAL IS OUT OF RANGE	75-31 TASK 803
ENGINE - 2	75-10402 THE VSV POSITION SIGNALS DISAGREE	75-31 TASK 804
ENGINE - 2	75-10412 THE HPTACC POSITION SIGNALS DISAGREE	75-21 TASK 803
ENGINE - 2	75-10422 THE HMU VBV CONTROL CURRENT IS OUT OF RANGE	75-32 TASK 804
ENGINE - 2	75-10432 HE VBV DEMAND AND POSITION SIGNALS DISAGREE	75-32 TASK 801
ENGINE - 2	75-10442 THE VBV POSITION SIGNAL IS OUT OF RANGE	75-32 TASK 802
ENGINE - 2	75-10452 THE VBV POSITION SIGNALS DISAGREE	75-32 TASK 803
ENGINE - 2	75-10462 THE HPTACC DEMAND AND POSITION SIGNALS DISAGREE	75-21 TASK 801
ENGINE - 2	75-10472 THE HMU HPTC CONTROL CURRENT IS OUT OF RANGE	75-21 TASK 804
ENGINE - 2	75-10482 THE HPTC DEMAND AND POSITION SIGNALS DISAGREE	75-21 TASK 801
ENGINE - 2	75-10492 THE HPTC POSITION SIGNAL IS OUT OF RANGE	75-21 TASK 802
ENGINE - 2	75-10502 THE HPTC POSITION SIGNALS DISAGREE	75-21 TASK 803
ENGINE - 2	75-10522 THE HMU LPTACC CONTROL CURRENT IS OUT OF RANGE	75-22 TASK 804
ENGINE - 2	75-10532 THE LPTACC DEMAND AND POSITION SIGNALS DISAGREE	75-22 TASK 801

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LRU/SYSTEM	MAINTENANCE MESSAGE	GO TO FIM TASK
ENGINE - 2	75-10542 THE LPTACC POSITION SIGNAL IS OUT OF RANGE	75-22 TASK 802
ENGINE - 2	75-10552 THE LPTACC POSITION SIGNALS DISAGREE	75-22 TASK 803
ENGINE - 2	75-10572 THE HMU TBV CONTROL CURRENT IS OUT OF RANGE	75-23 TASK 804
ENGINE - 2	75-10582 THE TBV DEMAND AND POSITION SIGNALS DISAGREE	75-23 TASK 801
ENGINE - 2	75-10592 THE TBV POSITION SIGNAL IS OUT OF RANGE	75-23 TASK 802
ENGINE - 2	75-10602 THE TBV POSITION SIGNALS DISAGREE	75-23 TASK 803
ENGINE - 2	75-10802 T25 SIGNALS DISAGREE	75-33 TASK 805
ENGINE - 2	75-10822 THE T25 SIGNAL IS OUT OF RANGE	75-33 TASK 801
ENGINE - 2	75-10832 THE T3 SIGNAL IS OUT OF RANGE	75-33 TASK 802
ENGINE - 2	75-10882 THE TCC SIGNAL IS OUT OF RANGE	75-33 TASK 803
ENGINE - 2	75-20292 THE HMU HPTACC CONTROL CURRENT IS OUT OF RANGE	75-21 TASK 804
ENGINE - 2	75-20362 THE HPTACC POSITION SIGNAL IS OUT OF RANGE	75-21 TASK 802
ENGINE - 2	75-20372 THE HMU VSV CONTROL CURRENT IS OUT OF RANGE	75-31 TASK 801
ENGINE - 2	75-20382 THE VSV DEMAND AND POSITION SIGNALS DISAGREE	75-31 TASK 802
ENGINE - 2	75-20392 THE VSV POSITION SIGNAL IS OUT OF RANGE	75-31 TASK 803
ENGINE - 2	75-20402 THE VSV POSITION SIGNALS DISAGREE	75-31 TASK 804
ENGINE - 2	75-20412 THE HPTACC POSITION SIGNALS DISAGREE	75-21 TASK 803
ENGINE - 2	75-20422 THE HMU VBV CONTROL CURRENT IS OUT OF RANGE	75-32 TASK 804
ENGINE - 2	75-20432 HE VBV DEMAND AND POSITION SIGNALS DISAGREE	75-32 TASK 801
ENGINE - 2	75-20442 THE VBV POSITION SIGNAL IS OUT OF RANGE	75-32 TASK 802
ENGINE - 2	75-20452 THE VBV POSITION SIGNALS DISAGREE	75-32 TASK 803
ENGINE - 2	75-20462 THE HPTACC DEMAND AND POSITION SIGNALS DISAGREE	75-21 TASK 801
ENGINE - 2	75-20472 THE HMU HPTC CONTROL CURRENT IS OUT OF RANGE	75-21 TASK 804
ENGINE - 2	75-20482 THE HPTC DEMAND AND POSITION SIGNALS DISAGREE	75-21 TASK 801
ENGINE - 2	75-20492 THE HPTC POSITION SIGNAL IS OUT OF RANGE	75-21 TASK 802
ENGINE - 2	75-20502 THE HPTC POSITION SIGNALS DISAGREE	75-21 TASK 803

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ENGINE - 2	75-20522 THE HMU LPTACC CONTROL CURRENT IS OUT OF RANGE	75-22 TASK 804
ENGINE - 2	75-20532 THE LPTACC DEMAND AND POSITION SIGNALS DISAGREE	75-22 TASK 801
ENGINE - 2	75-20542 THE LPTACC POSITION SIGNAL IS OUT OF RANGE	75-22 TASK 802
ENGINE - 2	75-20552 THE LPTACC POSITION SIGNALS DISAGREE	75-22 TASK 803
ENGINE - 2	75-20572 THE HMU TBV CONTROL CURRENT IS OUT OF RANGE	75-23 TASK 804
ENGINE - 2	75-20582 THE TBV DEMAND AND POSITION SIGNALS DISAGREE	75-23 TASK 801
ENGINE - 2	75-20592 THE TBV POSITION SIGNAL IS OUT OF RANGE	75-23 TASK 802
ENGINE - 2	75-20602 THE TBV POSITION SIGNALS DISAGREE	75-23 TASK 803
ENGINE - 2	75-20802 T25 SIGNALS DISAGREE	75-33 TASK 805
ENGINE - 2	75-20822 THE T25 SIGNAL IS OUT OF RANGE	75-33 TASK 801
ENGINE - 2	75-20832 THE T3 SIGNAL IS OUT OF RANGE	75-33 TASK 802
ENGINE - 2	75-20882 THE TCC SIGNAL IS OUT OF RANGE	75-33 TASK 803
ENGINE - 2	75-30292 THE HMU HPTACC CONTROL CURRENT IS OUT OF RANGE	75-21 TASK 804
ENGINE - 2	75-30362 THE HPTACC POSITION SIGNAL IS OUT OF RANGE	75-21 TASK 802
ENGINE - 2	75-30372 THE HMU VSV CONTROL CURRENT IS OUT OF RANGE	75-31 TASK 801
ENGINE - 2	75-30382 THE VSV DEMAND AND POSITION SIGNALS DISAGREE	75-31 TASK 802
ENGINE - 2	75-30392 THE VSV POSITION SIGNAL IS OUT OF RANGE	75-31 TASK 803
ENGINE - 2	75-30402 THE VSV POSITION SIGNALS DISAGREE	75-31 TASK 804
ENGINE - 2	75-30412 THE HPTACC POSITION SIGNALS DISAGREE	75-21 TASK 803
ENGINE - 2	75-30422 THE HMU VBV CONTROL CURRENT IS OUT OF RANGE	75-32 TASK 804
ENGINE - 2	75-30432 HE VBV DEMAND AND POSITION SIGNALS DISAGREE	75-32 TASK 801
ENGINE - 2	75-30442 THE VBV POSITION SIGNAL IS OUT OF RANGE	75-32 TASK 802
ENGINE - 2	75-30452 THE VBV POSITION SIGNALS DISAGREE	75-32 TASK 803
ENGINE - 2	75-30462 THE HPTACC DEMAND AND POSITION SIGNALS DISAGREE	75-21 TASK 801
ENGINE - 2	75-30472 THE HMU HPTC CONTROL CURRENT IS OUT OF RANGE	75-21 TASK 804

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LRU/SYSTEM	MAINTENANCE MESSAGE	GO TO FIM TASK
ENGINE - 2	75-30482 THE HPTC DEMAND AND POSITION SIGNALS DISAGREE	75-21 TASK 801
ENGINE - 2	75-30492 THE HPTC POSITION SIGNAL IS OUT OF RANGE	75-21 TASK 802
ENGINE - 2	75-30502 THE HPTC POSITION SIGNALS DISAGREE	75-21 TASK 803
ENGINE - 2	75-30522 THE HMU LPTACC CONTROL CURRENT IS OUT OF RANGE	75-22 TASK 804
ENGINE - 2	75-30532 THE LPTACC DEMAND AND POSITION SIGNALS DISAGREE	75-22 TASK 801
ENGINE - 2	75-30542 THE LPTACC POSITION SIGNAL IS OUT OF RANGE	75-22 TASK 802
ENGINE - 2	75-30552 THE LPTACC POSITION SIGNALS DISAGREE	75-22 TASK 803
ENGINE - 2	75-30572 THE HMU TBV CONTROL CURRENT IS OUT OF RANGE	75-23 TASK 804
ENGINE - 2	75-30582 THE TBV DEMAND AND POSITION SIGNALS DISAGREE	75-23 TASK 801
ENGINE - 2	75-30592 THE TBV POSITION SIGNAL IS OUT OF RANGE	75-23 TASK 802
ENGINE - 2	75-30602 THE TBV POSITION SIGNALS DISAGREE	75-23 TASK 803
ENGINE - 2	75-30802 T25 SIGNALS DISAGREE	75-33 TASK 805
ENGINE - 2	75-30822 THE T25 SIGNAL IS OUT OF RANGE	75-33 TASK 801
ENGINE - 2	75-30832 THE T3 SIGNAL IS OUT OF RANGE	75-33 TASK 802
ENGINE - 2	75-30882 THE TCC SIGNAL IS OUT OF RANGE	75-33 TASK 803

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801. HPTACC Demand and Position Signals Disagree - Fault Isolation

A. Description

- (1) This task is for these maintenance messages:
 - (a) 75-10461, 75-10462, 75-20461, 75-20462, 75-30461, 75-30462, 75-10481, 75-10482, 75-20481, 75-20482, 75-30481 and 75-30482.
- (2) The maintenance message numbers 75-X046Y or 75-X048Y; where X = EEC Channel (1=Channel A, 2=Channel B, 3=Dual Channel), and Y = Engine Position (1=Eng 1, 2=Eng 2).
 - (a) If X=1, do the Fault Isolation Procedure - Single Channel Fault for channel A.
 - (b) If X=2, do the Fault Isolation Procedure - Single Channel Fault for channel B.
 - (c) If X=1 and 2 (two messages), or X=3, then do the Fault Isolation Procedure - Dual Channel Fault.
- (3) This fault is reported on the active channel of the EEC when the engine is in operation.
- (4) You must do the Initial Evaluation to see if a dual channel maintenance message is set.
- (5) The EEC senses that the difference between HPTACC demand position and valid feedback from the HPTACC Actuator is more than 5%.
 - (a) There is no HPTACC Wrap Fault which is set on the active channel.

B. Possible Causes

- (1) For the Single Channel Maintenance Messages:
 - (a) HMU, M1823
 - (b) EEC, M1818
 - (c) J5 (Ch A) or J6 (Ch B) Wire Harness.
- (2) For the Dual Channel Maintenance Messages:
 - (a) HPTACC Valve, T515
 - (b) HMU, M1823
 - (c) 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

- (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>
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

D. Related Data

- (1) Component Location (75-21 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (75-21 TASK SUPPORT Figure 302)
- (3) (SSM 75-31-11)

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- (4) (SSM 75-31-21)
- (5) (WDM 73-25-11)
- (6) (WDM 75-31-11)
- (7) (WDM 75-31-21)

E. Initial Evaluation

- (1) Do these steps to find out if the fault is still active and if it is a dual channel fault:
 - (a) Do this task: Test 12 - Actuators Test, AMM TASK 71-00-00-700-807-F00.
 - (b) If you find these single channel maintenance messages, then do the Fault Isolation Procedure - Single Channel Fault for the applicable channel:
 - 1) 75-10461 (Eng 1, Ch A), 75-10462 (Eng 2, Ch A), 75-20461 (Eng 1, Ch B) or 75-20462 (Eng 2, Ch B)
 - 2) 75-10481 (Eng 1, Ch A), 75-10482 (Eng 2, Ch A), 75-20481 (Eng 1, Ch B) or 75-20482 (Eng 2, Ch B).
 - (c) If you find these dual channel maintenance messages, then do the Fault Isolation Procedure - Dual Channel Fault:
 - 1) 75-30461 (Ch A and B, Eng 1) or 75-30462 (Ch A and B, Eng 2)
 - 2) 75-30481 (Ch A and B, Eng 1) or 75-30482 (Ch A and B, Eng 2).
 - (d) If the maintenance message does not show on the FMCS CDU, then the Initial Evaluation has shown that the fault is not active at this time and you have an intermittent 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) OPTION 1; Disconnect and re-connect the electrical connectors at the HPTACC sensor and the T3 sensor three times.
NOTE: This action should clean any corrosion that is present on the connectors.
- b) OPTION 2; Do CFMI SB 73-064.

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- c) Do the visual checks of the electrical connectors in the applicable fault isolation procedure below.
- d) Use the WDM references to identify intermediate electrical connections in the wire harness and do a visual check.
- e) 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) Do the Initial Evaluation to see if this fault is a dual channel or an intermittent fault.
NOTE: During engine operation, the EEC reports the fault only on the active channel.

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(2) Do these steps to prepare for the procedure:

(a) For Engine 1

1) Open 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) For Engine 2,

1) Open 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
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) Examine the electrical connector, DP0501 (Ch A) or DP0601 (Ch B), at the HMU:

NOTE: The electrical connector, DP0501 (Ch A), is on the J5 wire harness. The electrical connector, DP0601 (Ch B), is on the J6 wire harness.

(a) See if the electrical connector, DP0501 (Ch A) or DP0601 (Ch B), is correctly connected to the HMU, and continue.

(b) Disconnect the electrical connector, DP0501 (Ch A) or DP0601 (Ch B), from the HMU.

(c) Visually examine the HMU receptacle and wire harness connector (AMM TASK 70-70-01-200-801-F00).

1) If an HMU receptacle is damaged, then replace the HMU, M1823. These are the tasks:

- HMU Removal, AMM TASK 73-21-10-000-801-F00
- HMU Installation, AMM TASK 73-21-10-400-801-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 harness connector is damaged, then replace the wire harness, J5 (Ch A) or J6 (Ch B). These are the tasks:

- Fan Wiring Harness Removal, AMM TASK 73-21-06-000-801-F00
- Fan Wiring Harness Installation, AMM TASK 73-21-06-400-801-F00
- a) Do the Repair Confirmation at the end of this task.
- b) If the Repair Confirmation is not satisfactory, then open the circuit 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.

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- 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) Examine the resistance of these pins of the applicable HMU receptacle:

Table 201

RECEPTACLE DP0501 DP0601	PINS	RESISTANCE
	PINS 23 TO 24	9 TO 22 OHMS
	PIN 23 TO THE CONNECTOR SHELL	GREATER THAN 10 MEGOHMS
	PIN 24 TO THE CONNECTOR SHELL	GREATER THAN 10 MEGOHMS

- (a) If the resistance is not in the specified range, then replace the HMU, M1823. These are the tasks:
 - HMU Removal, AMM TASK 73-21-10-000-801-F00
 - HMU Installation, AMM TASK 73-21-10-400-801-F00
 - 1) 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.
 - (b) If the resistance is in the specified range, then continue.
- (5) Connect the electrical connector, DP0501 (Ch A) or DP0601 (Ch B), to the HMU.
- (6) Examine the electrical connector, DP0505 (Ch A) or DP0606 (Ch B), at the EEC:

NOTE: The electrical connector, DP0505 (Ch A), is on the J5 wire harness. The electrical connector, DP0606 (Ch B), is on the J6 wire harness.

 - (a) See if the electrical connector, DP0505 (Ch A) or DP0606 (Ch B), is correctly connected to the EEC, and continue.
 - (b) Disconnect the electrical connector, DP0505 (Ch A) or DP0606 (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 the harness connector is damaged, then replace the wire harness, J5 (Ch A) or J6 (Ch B). These are the tasks:
 - Fan Wiring Harness Removal, AMM TASK 73-21-06-000-801-F00
 - Fan Wiring Harness Installation, AMM TASK 73-21-06-400-801-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.
 - 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.
- (7) Measure the resistance between these pins to examine the wires between the applicable EEC connector on the wire harness and the HMU:

NOTE: The electrical connector, DP0505 (Ch A), is on the J5 wire harness. The electrical connector, DP0606 (Ch B), is on the J6 wire harness.

Table 202

CONNECTOR DP0505 DP0606	PINS	RESISTANCE
	PINS X TO E	9 TO 22 OHMS
	PIN X TO THE CONNECTOR SHELL	GREATER THAN 10 MEGOHMS
	PIN E TO THE CONNECTOR SHELL	GREATER THAN 10 MEGOHMS

- (a) If the resistance is in the specified range 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.
 - a) If the Repair Confirmation is not satisfactory, then open the circuit breakers above and continue.
- (b) If the resistance is not in the specified range, then replace the wire harness, J5 (Ch A) or J6 (Ch B). These are the tasks:
 - Fan Wiring Harness Removal, AMM TASK 73-21-06-000-801-F00
 - Fan Wiring Harness Installation, AMM TASK 73-21-06-400-801-F00
 - 1) Do the Repair Confirmation at the end of this task.

G. Fault Isolation Procedure - Dual Channel Fault

- (1) Replace the HPTACC Valve, T515 (the most likely LRU from the dual channel Possible Causes list). These are the tasks:
 - HPTACC Valve Removal, AMM TASK 75-21-01-000-801-F00
 - HPTACC Valve Installation, AMM TASK 75-21-01-400-801-F00
 - (a) Do the Repair Confirmation at the end of this task.
 - (b) If the problem continues, replace the subsequent most likely LRU from the Possible Causes list.
 - 1) Do the Repair Confirmation at the end of this task.

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H. Repair Confirmation

- (1) Do these steps to prepare for the procedure:
 - (a) Make sure that the electrical connectors, DP0501 (Ch A) and DP0601 (Ch B), are correctly connected to the HMU.
 - (b) Make sure that the electrical connectors, DP0505 (Ch A) and DP0606 (Ch B), are correctly connected to the EEC.
 - (c) For Engine 1,
 - 1) 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

- (d) 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>
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: Test 12 - Actuators Test, AMM TASK 71-00-00-700-807-F00.
 - (a) If the maintenance message does not show, you corrected the problem.
- (3) Do this task: Close the Fan Cowl Panels, AMM TASK 71-11-02-410-801-F00.

— END OF TASK —

802. HPTACC Position Signal is Out of Range - Fault Isolation

A. Description

- (1) This task is for these maintenance messages:
 - (a) 75-10361, 75-10362, 75-20361, 75-20362, 75-30361, 75-30362, 75-10491, 75-10492, 75-20491, 75-20492, 75-30491 and 75-30492.
- (2) For the maintenance message 75-X036Y or 75-X049Y; 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 applicable Fault Isolation:
 - (a) If X=1, do the Fault Isolation Procedure - Single Channel Fault for channel A.
 - (b) If X=2, do the Fault Isolation Procedure - Single Channel Fault for channel B.
 - (c) If X=1 and 2 (two messages), or X=3, then do the Fault Isolation Procedure - Dual Channel Fault.
- (3) The EEC senses an out of range signal from the HPTACC Valve Position Transducer.
- (4) FADEC 2:

Channel A and Channel B;

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- (a) Also, because the Channel A excitation circuit for the high pressure turbine clearance control (HPTACC) position LVDT, the fuel metering valve (FMV) 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 high pressure turbine clearance control (HPTACC) position LVDT, the transient bleed valve (TBV) 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.
- (5) FADEC 3;
Channel A and Channel B;
- (a) Also, because the Channel A excitation circuit for the high pressure turbine clearance control (HPTACC) position LVDT, the left thrust reverser (TRL) 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 high pressure turbine 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 two excitation circuits can set Channel B fault messages for both systems.

B. Possible Causes

- (1) HPTACC Valve, T515
- (2) EEC, M1818
- (3) J9 (Ch A) or J10 (Ch B) Wire Harness.

C. Circuit Breakers

- (1) For Engine 1,
 - (a) 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

- (2) For Engine 2,
 - (a) 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>
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

D. Related Data

- (1) Component Location (75-21 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (75-21 TASK SUPPORT Figure 302)
- (3) (SSM 75-31-11)
- (4) (SSM 75-31-21)

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- (5) (WDM 73-22-11)
- (6) (WDM 75-31-11)
- (7) (WDM 75-31-21)

E. Initial Evaluation

- (1) To find the FADEC version, do this task FADEC 2 or FADEC 3 Identification, AMM TASK 73-21-00-700-810-F00
- (2) 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 LVDT's for the high pressure turbine clearance control (HPTACC), the fuel metering valve (FMV), the transient bleed valve (TBV) and the right thrust reverser (TRR). For more information see the Description section.

- 1) 75-10361, 75-10491, 73-10341 and 78-11491 (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) 75-10362, 75-10492, 73-10342 and 78-11492 (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) 75-20361, 75-20491, 75-20591, and 78-21491 (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) 75-20362, 75-20492, 75-20592 and 78-21492 (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 LVDT's for the high pressure turbine clearance control (HPTACC), the left thrust reverser (TRL), the right thrust reverser (TRR) and the transient bleed valve (TBV) . 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, L and R 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, L and R T/R LVDT Excitation Circuit Fault - Fault Isolation, 75-34 TASK 818.
- 3) 75-20361, 75-20491, and 75-20591 (Engine 1, Ch B)
 - a) Do this task: FADEC3 (Ch B) Excitation Group 4: HPTACC and TBV LVDT Excitation Circuit Fault - Fault Isolation, 75-34 TASK 816.
- 4) 75-20362, 75-20492, and 75-20592 (Engine 2, Ch B)

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- a) Do this task: FADEC3 (Ch B) Excitation Group 4: HPTACC and TBV LVDT Excitation Circuit Fault - Fault Isolation, 75-34 TASK 816.
- (3) Do these steps to find out if the fault is still active:
 - (a) Do this task: Test 12 - Actuators Test, AMM TASK 71-00-00-700-807-F00.
 - (b) If you find these single channel maintenance messages, then do the Fault Isolation Procedure - Single Channel Fault for the applicable channel:
 - 1) 75-10361 (Ch A, Eng 1), 75-10362 (Ch A, Eng 2), 75-20361 (Ch B, Eng 1) or 75-20362 (Ch B, Eng 2)
 - 2) 75-10491 (Ch A, Eng 1), 75-10492 (Ch A, Eng 2), 75-20491 (Ch B, Eng 1) or 75-20492 (Ch B, Eng 2).
 - (c) If you find one of these dual channel maintenance messages, then do the Fault Isolation Procedure - Dual Channel Fault:
 - 1) 75-30361 (Ch A and B, Eng 1) or 75-30362 (Ch A and B, Eng 2)
 - 2) 75-30491 (Ch A and B, Eng 1) or 75-30492 (Ch A and B, Eng 2).
 - (d) If the maintenance message does not show on the FMCS CDU, then the Initial Evaluation has shown that the fault is not active at this time and you have an intermittent 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 - Single Channel Fault

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

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

- (2) Do these steps to prepare for the procedure:

- (a) For Engine 1,

- 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) For Engine 2,

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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>
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



DO THESE SPECIFIED TASKS IN THE CORRECT SEQUENCE BEFORE YOU OPEN THE THRUST REVERSERS: RETRACT THE LEADING EDGE, DO THE DEACTIVATION PROCEDURES FOR THE LEADING EDGE AND THE THRUST REVERSERS (FOR GROUND MAINTENANCE), AND OPEN THE FAN COWL PANELS. IF YOU DO NOT OBEY THE ABOVE SEQUENCE, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (c) Do this task: Open the Thrust Reverser (Selection), AMM TASK 78-31-00-010-801-F00.
- (3) Examine the electrical connector, DP0903 (Ch A) or DP1003 (Ch B), at the HPTACC Valve:
- See if the electrical connector, DP0903 (Ch A) or DP1003 (Ch B), is correctly connected to the HPTACC Valve, and continue.
 - Disconnect the electrical connector, DP0903 (Ch A) or DP1003 (Ch B), from the HPTACC Valve.
 - Visually examine the HPTACC Valve receptacle and wire harness connector (AMM TASK 70-70-01-200-801-F00).
 - If the HPTACC Valve receptacle is damaged, then replace the HPTACC Valve, T515. These are the tasks:
 - HPTACC Valve Removal, AMM TASK 75-21-01-000-801-F00
 - HPTACC Valve Installation, AMM TASK 75-21-01-400-801-F00
 - Do the Repair Confirmation at the end of this task.
 - If the Repair Confirmation is not satisfactory, then open the circuit breakers above and continue.
 - If the harness connector is damaged, then replace the wire harness, J9 (Ch A) or J10 (Ch B). These are the tasks:
 - 3 O'clock Strut Harness Removal, AMM TASK 73-21-06-000-802-F00
 - 3 O'clock Strut Harness Installation, AMM TASK 73-21-06-400-802-F00
 - Do the Repair Confirmation at the end of this task.
 - If the Repair Confirmation is not satisfactory, then open the circuit breakers above and continue.
 - 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.
 - If the Repair Confirmation is not satisfactory, then open the circuit breakers above and continue.
 - If you did not find a problem, then continue.
- (4) Option 1 (Alternate);

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Do these steps to do a check of the HPTACC valve:

- (a) Measure the resistance between these pins at the applicable HPTACC valve receptacle, CH A or CH B:

Table 203

RECEPTACLE CH A CH B	PINS	RESISTANCE
	PINS 2 TO 3	0 TO 150 OHMS
	PINS 4 TO 5	0 TO 150 OHMS
	PINS 5 TO 6	0 TO 150 OHMS
	PIN 2 TO THE CONNECTOR SHELL	GREATER THAN 10 MEGOHMS
	PIN 3 TO THE CONNECTOR SHELL	GREATER THAN 10 MEGOHMS
	PIN 4 TO THE CONNECTOR SHELL	GREATER THAN 10 MEGOHMS
	PIN 5 TO THE CONNECTOR SHELL	GREATER THAN 10 MEGOHMS
	PIN 6 TO THE CONNECTOR SHELL	GREATER THAN 10 MEGOHMS

- (b) If the resistance is not in the specified range, then replace the HPTACC valve, T515.
These are the tasks:
- HPTACC Valve Removal, AMM TASK 75-21-01-000-801-F00
 - HPTACC Valve Installation, AMM TASK 75-21-01-400-801-F00
- 1) 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.

- (c) If the resistance is in the specified range, then continue.

- (5) Option 2 (Preferred);

Do these steps to isolate the HPTACC valve as the cause of the fault:

- (a) Connect the electrical connector, DP0903 HPTC-A (Ch A), to the HPTACC valve receptacle, CH B.
- (b) Connect the electrical connector, DP1003 HPTC-B (Ch B), to the HPTACC valve receptacle, CH A.
- (c) For Engine 1,
- 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

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<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	5	C01314	ENGINE 1 ALTN PWR CHAN A

(d) For Engine 2,

- 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
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

(e) Do this task: Test 12 - Actuators Test, AMM TASK 71-00-00-700-807-F00.

(f) For Engine 1,

- 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

(g) For Engine 2,

- 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>
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

(h) If the fault does not show, do these steps:

- 1) Re-connect the electrical connector, DP0903 HPTC-A (Ch A), to the HPTACC valve receptacle, CH A.
- 2) Re-connect the electrical connector, DP1003 HPTC-B (Ch B), to the HPTACC valve receptacle, CH B.
- 3) Do the Repair Confirmation at the end of this task.

(i) If fault shows on the other channel, then replace the HPTACC valve, T515. These are the tasks:

- HPTACC Valve Removal, AMM TASK 75-21-01-000-801-F00
- HPTACC Valve Installation, AMM TASK 75-21-01-400-801-F00

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

(j) If fault continues on the same channel, do these steps:

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- 1) Re-connect the electrical connector, DP0903 HPTC-A (Ch A), to the HPTACC valve receptacle, CH A.
- 2) Re-connect the electrical connector, DP1003 HPTC-B (Ch B), to the HPTACC valve receptacle, CH B.
- 3) Then continue.



MAKE SURE THAT YOU CONNECT THE CHANNEL A ELECTRICAL CONNECTOR TO THE LRU RECEPTACLE, CH A, AND THE CHANNEL B ELECTRICAL CONNECTOR TO THE LRU RECEPTACLE, CH B. THE ELECTRICAL CONNECTORS ARE INTERCHANGEABLE. LRU FAULTS AND OUTPUT DATA WILL SHOW ON THE WRONG CHANNELS.

- (6) If not already done, re-connect the electrical connector, DP0903 HPTC-A (Ch A), to the HPTACC valve receptacle, CH A and the electrical connector, DP1003 HPTC-B (Ch B), to the HPTACC valve receptacle, CH B.
- (7) Examine the electrical connector, DP0909 (Ch A) or DP1010 (Ch B), at the EEC:

NOTE: The electrical connector, DP0909 (Ch A), is on the J9 wire harness. The electrical connector, DP1010 (Ch B), is on the J10 wire harness.

 - (a) See if the electrical connector, DP0909 (Ch A) or DP1010 (Ch B), is correctly connected to the EEC, and continue.
 - (b) Disconnect the electrical connector, DP0909 (Ch A) or DP1010 (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 the harness connector is damaged, then replace the wire harness, J9 (Ch A) or J10 (Ch B). These are the tasks:
 - 3 O'clock Strut Harness Removal, AMM TASK 73-21-06-000-802-F00
 - 3 O'clock Strut Harness Installation, AMM TASK 73-21-06-400-802-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.
 - 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.
- (8) Measure the resistance at these pins of the applicable EEC connector, DP0909 (Ch A) or DP1010 (Ch B), on the wire harness through the HPTACC valve:

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Table 204

CONNECTOR	PINS	RESISTANCE
DP0909 CH A	PINS B TO U	0 TO 150 OHMS
	PINS C TO q	0 TO 150 OHMS
	PINS V TO q	0 TO 150 OHMS
	PIN B TO THE CONNECTOR SHELL	GREATER THAN 10 MEGOHMS
	PIN U TO THE CONNECTOR SHELL	GREATER THAN 10 MEGOHMS
	PIN C TO THE CONNECTOR SHELL	GREATER THAN 10 MEGOHMS
	PIN q TO THE CONNECTOR SHELL	GREATER THAN 10 MEGOHMS
	PIN V TO THE CONNECTOR SHELL	GREATER THAN 10 MEGOHMS
	PINS Y TO F	0 TO 150 OHMS
	PINS G TO t	0 TO 150 OHMS
DP1010 CH B	PINS Z TO t	0 TO 150 OHMS
	PIN Y TO THE CONNECTOR SHELL	GREATER THAN 10 MEGOHMS
	PIN F TO THE CONNECTOR SHELL	GREATER THAN 10 MEGOHMS
	PIN G TO THE CONNECTOR SHELL	GREATER THAN 10 MEGOHMS
	PIN Z TO THE CONNECTOR SHELL	GREATER THAN 10 MEGOHMS
	PIN t TO THE CONNECTOR SHELL	GREATER THAN 10 MEGOHMS

- (a) 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 Excitation Circuit Fault Isolation for the applicable channel.

 - a) For Channel A;

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do this task: FADEC2 (Ch A) Excitation Group 2: FMV, HPTC and T/R R Sleeve LVDT Excitation Circuit Fault - Fault Isolation, 75-34 TASK 807

b) 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

c) Do the Repair Confirmation at the end of this task.

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

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

3) FADEC 3

Do the applicable Excitation Circuit Fault Isolation for the applicable channel.

a) For Channel A;

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

b) For Channel B;

do this task: FADEC3 (Ch B) Excitation Group 4: HPTACC and TBV LVDT Excitation Circuit Fault - Fault Isolation, 75-34 TASK 816.

c) Do the Repair Confirmation at the end of this task.

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

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

(b) If the resistance is not in the specified range, then replace the wire harness, J9 (Ch A) or J10 (Ch B). These are the tasks:

- 3 O'clock Strut Harness Removal, AMM TASK 73-21-06-000-802-F00
- 3 O'clock Strut Harness Installation, AMM TASK 73-21-06-400-802-F00

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

G. Fault Isolation Procedure - Dual Channel Fault

(1) Do these steps to prepare for the procedure:

(a) For Engine 1,

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) For Engine 2,

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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>
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



DO THESE SPECIFIED TASKS IN THE CORRECT SEQUENCE BEFORE YOU OPEN THE THRUST REVERSERS: RETRACT THE LEADING EDGE, DO THE DEACTIVATION PROCEDURES FOR THE LEADING EDGE AND THE THRUST REVERSERS (FOR GROUND MAINTENANCE), AND OPEN THE FAN COWL PANELS. IF YOU DO NOT OBEY THE ABOVE SEQUENCE, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (c) Do this task: Open the Thrust Reverser (Selection), AMM TASK 78-31-00-010-801-F00.
- (2) Examine the electrical connectors, DP0903 (Ch A) and DP1003 (Ch B), at the HPTACC Valve:
- See if the electrical connectors, DP0903 (Ch A) and DP1003 (Ch B), are correctly connected to the HPTACC Valve, and continue.
 - Disconnect the electrical connectors, DP0903 (Ch A) and DP1003 (Ch B), from the HPTACC valve.
 - Visually examine the HPTACC valve receptacles and wire harness connectors (AMM TASK 70-70-01-200-801-F00).
 - If a HPTACC Valve receptacle is damaged, then replace the HPTACC valve, T515. These are the tasks:
 - HPTACC Valve Removal, AMM TASK 75-21-01-000-801-F00
 - HPTACC Valve Installation, AMM TASK 75-21-01-400-801-F00
 - Do the Repair Confirmation at the end of this task.
 - If the Repair Confirmation is not satisfactory, then open the circuit breakers above and continue.
 - If a harness connector is damaged, then replace the wire harness, J9 (Ch A) or J10 (Ch B). These are the tasks:
 - 3 O'clock Strut Harness Removal, AMM TASK 73-21-06-000-802-F00
 - 3 O'clock Strut Harness Installation, AMM TASK 73-21-06-400-802-F00
 - Do the Repair Confirmation at the end of this task.
 - If the Repair Confirmation is not satisfactory, then open the circuit breakers above and continue.
 - 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.
 - If the Repair Confirmation is not satisfactory, then open the circuit breakers above and continue.
 - If you did not find a problem, then continue.

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- (3) Measure the resistance between these pins at the HPTACC Valve receptacles, CH A and CH B:

Table 205

RECEPTACLE CH A CH B	PINS	RESISTANCE
	PINS 2 TO 3	0 TO 150 OHMS
	PINS 4 TO 5	0 TO 150 OHMS
	PINS 5 TO 6	0 TO 150 OHMS
	PINS 2 TO 4	GREATER THAN 10 MEGOHMS
	PIN 2 TO THE CONNECTOR SHELL	GREATER THAN 10 MEGOHMS
	PIN 3 TO THE CONNECTOR SHELL	GREATER THAN 10 MEGOHMS
	PIN 4 TO THE CONNECTOR SHELL	GREATER THAN 10 MEGOHMS
	PIN 5 TO THE CONNECTOR SHELL	GREATER THAN 10 MEGOHMS
	PIN 6 TO THE CONNECTOR SHELL	GREATER THAN 10 MEGOHMS

- (a) If the resistance is not in the specified range, then replace the HPTACC valve, T515. These are the tasks:
- HPTACC Valve Removal, AMM TASK 75-21-01-000-801-F00
 - HPTACC Valve Installation, AMM TASK 75-21-01-400-801-F00
- 1) 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.
- (b) If the resistance is in the specified range, then continue.



MAKE SURE THAT YOU CONNECT THE CHANNEL A ELECTRICAL CONNECTOR TO THE LRU RECEPTACLE, CH A, AND THE CHANNEL B ELECTRICAL CONNECTOR TO THE LRU RECEPTACLE, CH B. THE ELECTRICAL CONNECTORS ARE INTERCHANGEABLE. LRU FAULTS AND OUTPUT DATA WILL SHOW ON THE WRONG CHANNELS.

- (4) Connect the electrical connectors, DP0903 (Ch A) and DP1003 (Ch B), to the HPTACC valve receptacles, CH A and CH B.
- (5) Examine the electrical connectors, DP0909 (Ch A) and DP1010 (Ch B), at the EEC:
- NOTE:** The electrical connector, DP0909 (Ch A), is on the J9 wire harness. The electrical connector, DP1010 (Ch B), is on the J10 wire harness.
- (a) See if the electrical connectors, DP0909 (Ch A) and DP1010 (Ch B), are correctly connected to the EEC, and continue.

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- (b) Disconnect the electrical connectors, DP0909 (Ch A) and DP1010 (Ch B), from the EEC.
- (c) Visually examine the EEC receptacles and wire harness connectors (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 harness connector is damaged, then replace the wire harness, J9 (Ch A) or J10 (Ch B). These are the tasks:
 - 3 O'clock Strut Harness Removal, AMM TASK 73-21-06-000-802-F00
 - 3 O'clock Strut Harness Installation, AMM TASK 73-21-06-400-802-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.
 - 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.
- (6) Measure the resistance at these pins of the EEC connectors, DP0909 (Ch A) and DP1010 (Ch B), on the wire harnesses through the HPTACC valve:

Table 206

CONNECTOR	PINS	RESISTANCE
DP0909 CH A	PINS B TO U	0 TO 150 OHMS
	PINS C TO q	0 TO 150 OHMS
	PINS V TO q	0 TO 150 OHMS
	PINS B TO C	GREATER THAN 10 MEGOHMS
	PIN B TO THE CONNECTOR SHELL	GREATER THAN 10 MEGOHMS
	PIN U TO THE CONNECTOR SHELL	GREATER THAN 10 MEGOHMS
	PIN C TO THE CONNECTOR SHELL	GREATER THAN 10 MEGOHMS
	PIN V TO THE CONNECTOR SHELL	GREATER THAN 10 MEGOHMS
	PIN q TO THE CONNECTOR SHELL	GREATER THAN 10 MEGOHMS

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Table 206 (Continued)

CONNECTOR	PINS	RESISTANCE
DP1010 CH B	PINS Y TO F	0 TO 150 OHMS
	PINS G TO t	0 TO 150 OHMS
	PINS Z TO t	0 TO 150 OHMS
	PINS Y TO G	GREATER THAN 10 MEGOHMS
	PIN Y TO THE CONNECTOR SHELL	GREATER THAN 10 MEGOHMS
	PIN F TO THE CONNECTOR SHELL	GREATER THAN 10 MEGOHMS
	PIN G TO THE CONNECTOR SHELL	GREATER THAN 10 MEGOHMS
	PIN Z TO THE CONNECTOR SHELL	GREATER THAN 10 MEGOHMS
	PIN t TO THE CONNECTOR SHELL	GREATER THAN 10 MEGOHMS

- (a) If the resistance is not in the specified range, then replace the wire harness, J9 (Ch A) or J10 (Ch B). These are the tasks:
- 3 O'clock Strut Harness Removal, AMM TASK 73-21-06-000-802-F00
 - 3 O'clock Strut Harness Installation, AMM TASK 73-21-06-400-802-F00
- 1) 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.

- (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) Replace the HPTACC valve, T515. These are the tasks:
- HPTACC Valve Removal, AMM TASK 75-21-01-000-801-F00
 - HPTACC Valve Installation, AMM TASK 75-21-01-400-801-F00
- a) Do the Repair Confirmation at the end of this task.

H. Repair Confirmation

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

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MAKE SURE THAT YOU CONNECT THE CHANNEL A ELECTRICAL CONNECTOR TO THE LRU RECEPTACLE, CH A, AND THE CHANNEL B ELECTRICAL CONNECTOR TO THE LRU RECEPTACLE, CH B. THE ELECTRICAL CONNECTORS ARE INTERCHANGEABLE. LRU FAULTS AND OUTPUT DATA WILL SHOW ON THE WRONG CHANNELS.

- (a) Make sure that the electrical connectors, DP0903 (Ch A) and DP1003 (Ch B), are correctly connected to the HPTACC Valve.
- (b) Make sure that the electrical connectors, DP0909 (Ch A) and DP1010 (Ch B), are correctly connected to the EEC.
- (c) For Engine 1,
 - 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

- (d) For Engine 2,
 - 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
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

- (2) Do this task: Test 12 - Actuators Test, AMM TASK 71-00-00-700-807-F00.
 - (a) If the maintenance message does not show, you corrected the problem.



OBEY THE INSTRUCTIONS IN THE PROCEDURE TO CLOSE THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (3) Do this task: Close the Thrust Reverser (Selection), AMM TASK 78-31-00-010-804-F00.

— END OF TASK —

803. HPTACC Position Signals Disagree - Fault Isolation

A. Description

- (1) This task is for these maintenance messages:
 - (a) 75-10411, 75-10412, 75-20411, 75-20412, 75-30411, 75-30412, 75-10501, 75-10502, 75-20501, 75-20502, 75-30501 and 75-30502.
- (2) The maintenance messages 75-X041Y or 75-X050Y; where X = EEC Channel (1=Channel A, 2=Channel B, 3=Dual Channel), and Y = Engine Position (1=Eng 1, 2=Eng 2).

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- (a) If X=1, do the Fault Isolation Procedure - Single Channel Fault for channel A.
 - (b) If X=2, do the Fault Isolation Procedure - Single Channel Fault for channel B.
 - (c) If X=1 and 2 (two messages), or X=3, then do the Fault Isolation Procedure - Dual Channel Fault.
- (3) The EEC senses a difference that is greater than 8.7% between the two position sensors in the HPTACC Valve.
- (a) The positions that the EEC senses from Channel A and B are in a valid range.

B. Possible Causes

- (1) For the Single Channel Maintenance Messages:
 - (a) EEC (Internal Failure), M1818
 - (b) HPTACC Valve, T515.
- (2) For the Dual Channel Maintenance Messages:
 - (a) HPTACC Valve, T515
 - (b) EEC, M1818.

C. Circuit Breakers

- (1) For Engine 1,
 - (a) 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

- (2) For Engine 2,
 - (a) 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>
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

D. Related Data

- (1) Component Location (75-21 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (75-21 TASK SUPPORT Figure 302)
- (3) (SSM 75-31-11)
- (4) (SSM 75-31-21)
- (5) (WDM 73-22-11)
- (6) (WDM 75-31-11)
- (7) (WDM 75-31-21)

E. Initial Evaluation

- (1) Do these steps to find out if the fault is still active, and if another related maintenance message was set:

NOTE: This fault is normally reported by channel A and channel B. If the fault is reported by only a single channel, then an additional fault in the EEC is present.

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- (a) For RECENT FAULTS, do this task: EEC BITE Procedure, 73-00 TASK 801.
- (b) If maintenance message number 75-10361, 75-10362, 75-20361, 75-20362, 75-30361, 75-30362, 75-10491, 75-10492, 75-20491, 75-20492, 75-30491 or 75-30492 shows, then, do this task: HPTACC Position Signal is Out of Range - Fault Isolation, 75-21 TASK 802.
- (c) Do this task: Test 12 - Actuators Test, AMM TASK 71-00-00-700-807-F00.
- (d) If you find these single channel maintenance messages, then do the Fault Isolation Procedure - Single Channel Fault for the applicable channel:
 - 1) 75-10411 (Ch A, Eng 1), 75-10412 (Ch A, Eng 2), 75-20411 (Ch B, Eng 1) or 75-20412 (Ch B, Eng 2)
 - 2) 75-10501 (Ch A, Eng 1), 75-10502 (Ch A, Eng 2), 75-20501 (Ch B, Eng 1) or 75-20502 (Ch B, Eng 2).
- (e) If you find these dual channel maintenance messages, then do the Fault Isolation Procedure - Dual Channel Fault:
 - 1) 75-30411 (Ch A and B, Eng 1) or 75-30412 (Ch A and B, Eng 2)
 - 2) 75-30501 (Ch A and B, Eng 1) or 75-30502 (Ch A and B, Eng 2).
- (f) 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 - Single Channel Fault

- (1) Do this task: EEC TEST, AMM TASK 73-21-00-700-804-F00.
 - (a) Look for INTERNAL EEC FAULTs on the FMCS CDU.
 - (b) Do the Fault Isolation Procedures for the INTERNAL EEC FAULT that you found first.
 - 1) Do the Repair Confirmation at the end of this task.
 - (c) If the problem continues or an INTERNAL EEC FAULT did not show during the EEC test, do the Fault Isolation Procedure - Dual Channel Fault.

G. Fault Isolation Procedure - Dual Channel Fault

- (1) To identify if the "HPTACC position signal is out of range" or "HPTC position signal is out of range" fault is set, you must do the Initial Evaluation above.
- (2) Replace the HPTACC Valve, T515 (the most likely LRU from the dual channel Possible Causes list). These are the tasks:

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- HPTACC Valve Removal, AMM TASK 75-21-01-000-801-F00
- HPTACC Valve Installation, AMM TASK 75-21-01-400-801-F00
- (a) Do the Repair Confirmation at the end of this task.
- (b) If the problem continues, replace the subsequent most likely LRU from the Possible Causes list.
 - 1) Do the Repair Confirmation at the end of this task.

H. Repair Confirmation

- (1) Do this task: Test 12 - Actuators Test, AMM TASK 71-00-00-700-807-F00.
 - (a) If the maintenance message does not show, you corrected the problem.

— END OF TASK —

804. HMU HPTACC Control Current is Out of Range - Fault Isolation

A. Description

- (1) This task is for these maintenance messages:
 - (a) 75-10291, 75-10292, 75-20291, 75-20292, 75-30291, 75-30292, 75-10471, 75-10472, 75-20471, 75-20472, 75-30471 and 75-30472.
- (2) The maintenance messages 75-X029Y or 75-X047Y; where X = EEC Channel (1=Channel A, 2=Channel B, 3=Dual Channel), and Y = Engine Position (1=Eng 1, 2=Eng 2).
 - (a) If X=1, do the Fault Isolation Procedure for channel A.
 - (b) If X=2, do the Fault Isolation Procedure for channel B.
 - (c) If X=1 and 2 (two messages), or X=3, do the Fault Isolation Procedure for channel A and B.
- (3) The EEC detected that the return current from the HMU torque motor that controls the HPTACC system is not in the valid range; or, the absolute value of the difference between the calculated EEC output current and the sensed return current is greater than a specified value.

B. Possible Causes

- (1) HMU, M1823
- (2) EEC, M1818
- (3) J5 (Ch A) or J6 (Ch B) Wire Harness.

C. Circuit Breakers

- (1) For Engine 1,
 - (a) 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

- (2) For Engine 2,
 - (a) 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>
D	7	C01391	ENGINE 2 ALTN PWR CHAN B

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F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

D. Related Data

- (1) Component Location (75-21 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (75-21 TASK SUPPORT Figure 302)
- (3) (SSM 75-31-11)
- (4) (SSM 75-31-21)
- (5) (WDM 73-22-11)
- (6) (WDM 75-31-11)
- (7) (WDM 75-31-21)

E. Initial Evaluation

- (1) Do these steps to find out if the fault is still active:
 - (a) Do this task: Test 12 - Actuators Test, AMM TASK 71-00-00-700-807-F00.
 - (b) If you find these single channel maintenance messages, then do the Fault Isolation Procedure for the applicable channel:
 - 1) 75-10291 (Eng 1, Ch A), 75-10292 (Eng 2, Ch A), 75-20291 (Eng 1, Ch B) or 75-20292 (Eng 2, Ch B)
 - 2) 75-10471 (Eng 1, Ch A), 75-10472 (Eng 2, Ch A), 75-20471 (Eng 1, Ch B) or 75-20472 (Eng 2, Ch B).
 - (c) If you find these dual channel maintenance messages, then do the Fault Isolation Procedure for the two channels:
 - 1) 75-30291 (Ch A and B, Eng 1) or 75-30292 (Ch A and B, Eng 2)
 - 2) 75-30471 (Ch A and B, Eng 1) or 75-30472 (Ch A and B, Eng 2).
 - (d) If the maintenance message does not show on the FMCS CDU, then the Initial Evaluation has shown that the fault is not active at this time and you have an intermittent 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 procedure:

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(a) For Engine 1,

- 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) For Engine 2,

- 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>
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) Examine the electrical connector, DP0501 (Ch A) or DP0601 (Ch B), at the HMU:

NOTE: The electrical connector, DP0501 (Ch A), is on the J5 wire harness. The electrical connector, DP0601 (Ch B), is on the J6 wire harness.

- (a) See if the electrical connector, DP0501 (Ch A) or DP0601 (Ch B), is correctly connected to the HMU, and continue.
- (b) Disconnect the electrical connector, DP0501 (Ch A) or DP0601 (Ch B), from the HMU.
- (c) Visually examine the HMU receptacle and wire harness connector (AMM TASK 70-70-01-200-801-F00).
- 1) If the HMU receptacle is damaged, then replace the HMU, M1823. These are the tasks:
- HMU Removal, AMM TASK 73-21-10-000-801-F00
 - HMU Installation, AMM TASK 73-21-10-400-801-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 harness connector is damaged, then replace the wire harness, J5 (Ch A) or J6 (Ch B). These are the tasks:
- Fan Wiring Harness Removal, AMM TASK 73-21-06-000-801-F00
 - Fan Wiring Harness Installation, AMM TASK 73-21-06-400-801-F00
- a) Do the Repair Confirmation at the end of this task.
- b) If the Repair Confirmation is not satisfactory, then open the circuit 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.

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- 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 applicable HMU receptacle:

Table 207

RECEPTACLE DP0501 DP0601	PINS	RESISTANCE
	PINS 23 TO 24	9 TO 22 OHMS
	PIN 23 TO THE CONNECTOR SHELL	GREATER THAN 20 MEGOHMS
	PIN 24 TO THE CONNECTOR SHELL	GREATER THAN 20 MEGOHMS

- (a) If the resistance is not in the specified range, then replace the HMU, M1823. These are the tasks:
 - HMU Removal, AMM TASK 73-21-10-000-801-F00
 - HMU Installation, AMM TASK 73-21-10-400-801-F00
 - 1) 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.
 - (b) If the resistance is in the specified range, then continue.
 - (4) Connect the electrical connectors, DP0501 (Ch A) and DP0601 (Ch B), to the HMU.
 - (5) Examine the electrical connector, DP0505 (Ch A) or DP0606 (Ch B), at the EEC:

NOTE: The electrical connector, DP0505 (Ch A), is on the J5 wire harness. The electrical connector, DP0606 (Ch B), is on the J6 wire harness.

 - (a) See if the electrical connector, DP0505 (Ch A) or DP0606 (Ch B), is correctly connected to the EEC, and continue.
 - (b) Disconnect the electrical connector, DP0505 (Ch A) or DP0606 (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 the harness connector is damaged, then replace the wire harness, J5 (Ch A) or J6 (Ch B). These are the tasks:
 - Fan Wiring Harness Removal, AMM TASK 73-21-06-000-801-F00
 - Fan Wiring Harness Installation, AMM TASK 73-21-06-400-801-F00

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- 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) 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 to examine the wires between the EEC connectors on the wire harnesses and the HMU:

NOTE: The electrical connector, DP0505 (Ch A), is on the J5 wire harness. The electrical connector, DP0606 (Ch B), is on the J6 wire harness.

Table 208

CONNECTOR DP0505 DP0606	PINS	RESISTANCE
	PINS X TO E	9 TO 22 OHMS
	PIN X TO THE CONNECTOR SHELL	GREATER THAN 20 MEGOHMS
	PIN E TO THE CONNECTOR SHELL	GREATER THAN 20 MEGOHMS

- (a) If the resistance is in the specified range 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.
 - a) If the Repair Confirmation is not satisfactory, then open the circuit breakers above and continue.
- (b) If the resistance is not in the specified range, then replace the wire harness, J5 (Ch A) or J6 (Ch B). These are the tasks:
 - Fan Wiring Harness Removal, AMM TASK 73-21-06-000-801-F00
 - Fan Wiring Harness Installation, AMM TASK 73-21-06-400-801-F00
 - 1) 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, DP0501 (Ch A) and DP0601 (Ch B), are correctly connected at the HMU.
 - (b) Make sure that the electrical connectors, DP0505 (Ch A) and DP0606 (Ch B), are correctly connected at the EEC.
 - (c) For Engine 1,

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- 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

- (d) For Engine 2,

- 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
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

- (2) Do this task: Test 12 - Actuators Test, AMM TASK 71-00-00-700-807-F00.
 (a) If the maintenance message does not show, you corrected the problem.
 (3) Do this task: Close the Fan Cowl Panels, AMM TASK 71-11-02-410-801-F00.

————— **END OF TASK** —————

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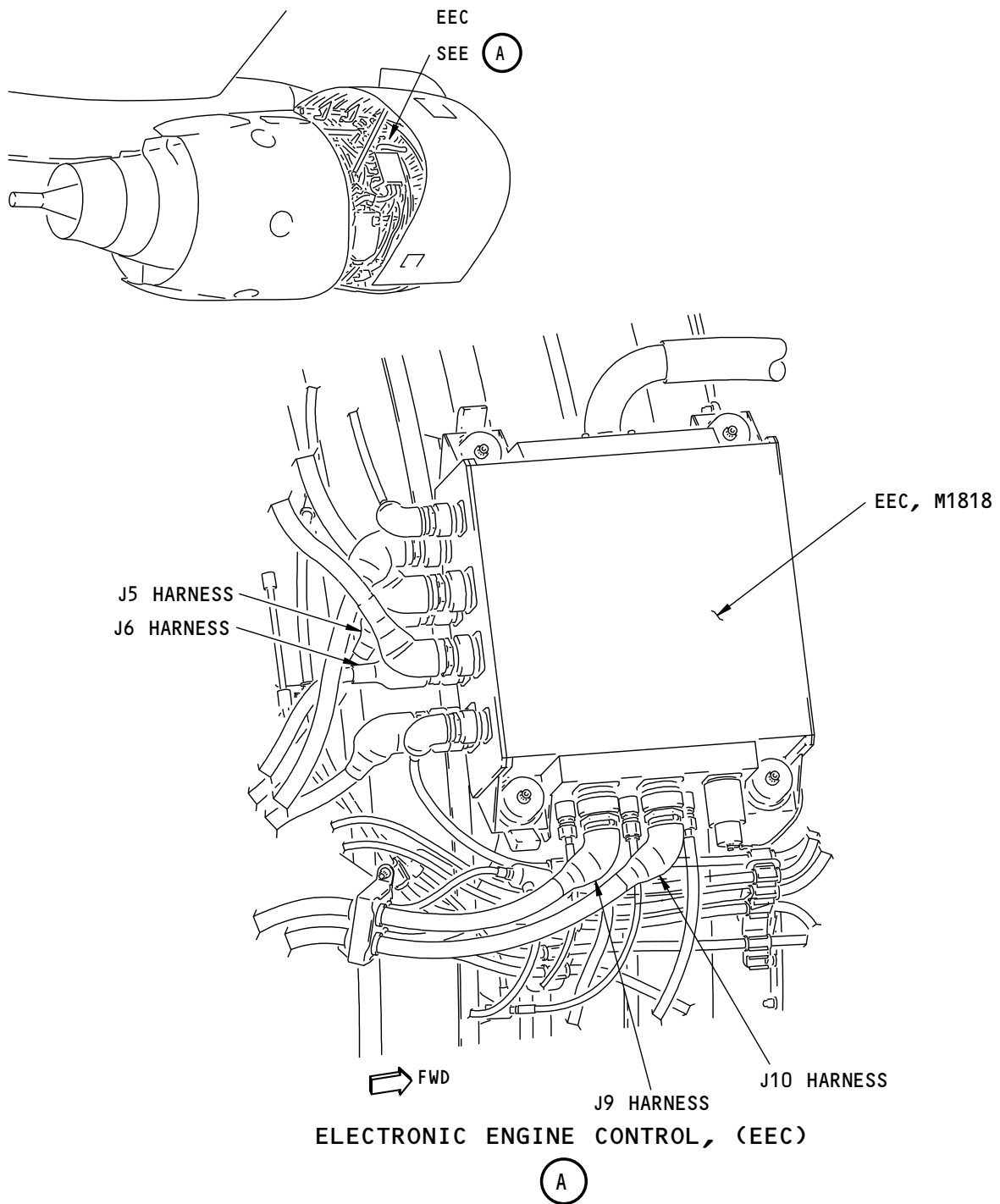
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ECCN 9E991 BOEING PROPRIETARY - See title page for details

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H36568 S0006745959_V1

High Pressure Turbine Active Clearance Control - Component Location
Figure 301/75-21-00-990-801-F00 (Sheet 1 of 4)

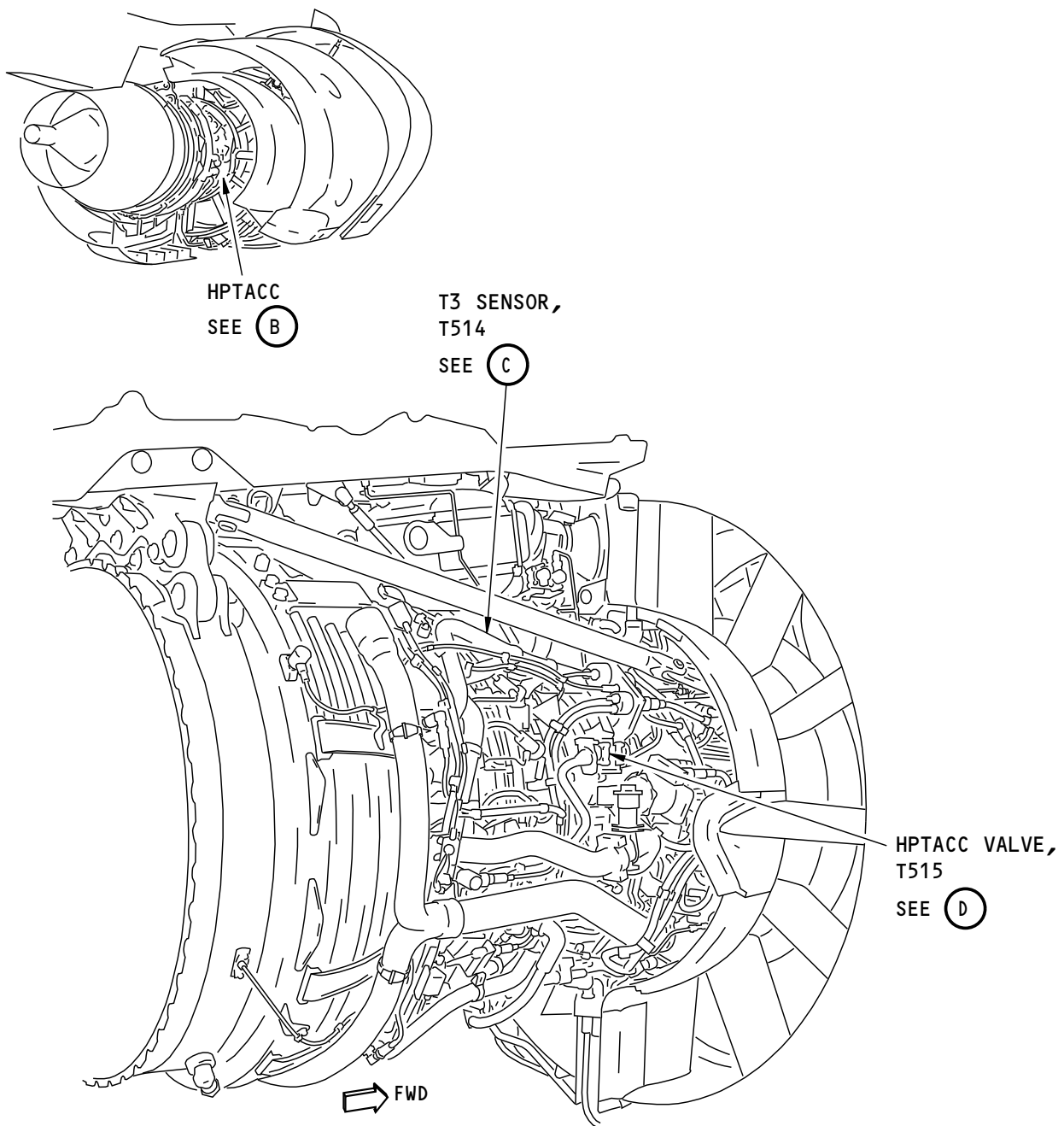
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HIGH PRESSURE TURBINE ACTIVE CLEARANCE CONTROL (HPTACC)

(B)

H36589 S0006745960_V2

High Pressure Turbine Active Clearance Control - Component Location
Figure 301/75-21-00-990-801-F00 (Sheet 2 of 4)

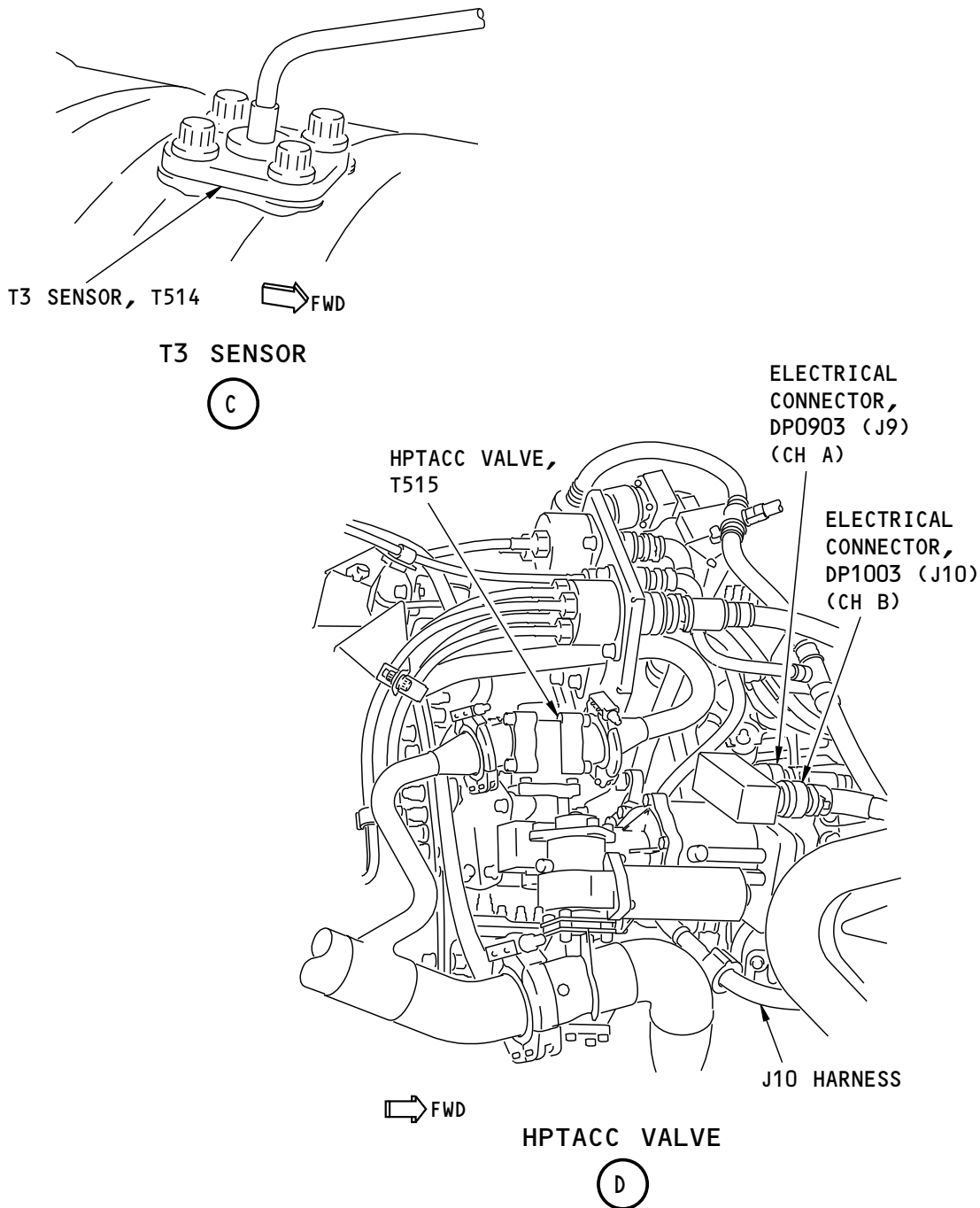
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H36694 S0006745961_V2

High Pressure Turbine Active Clearance Control - Component Location
Figure 301/75-21-00-990-801-F00 (Sheet 3 of 4)

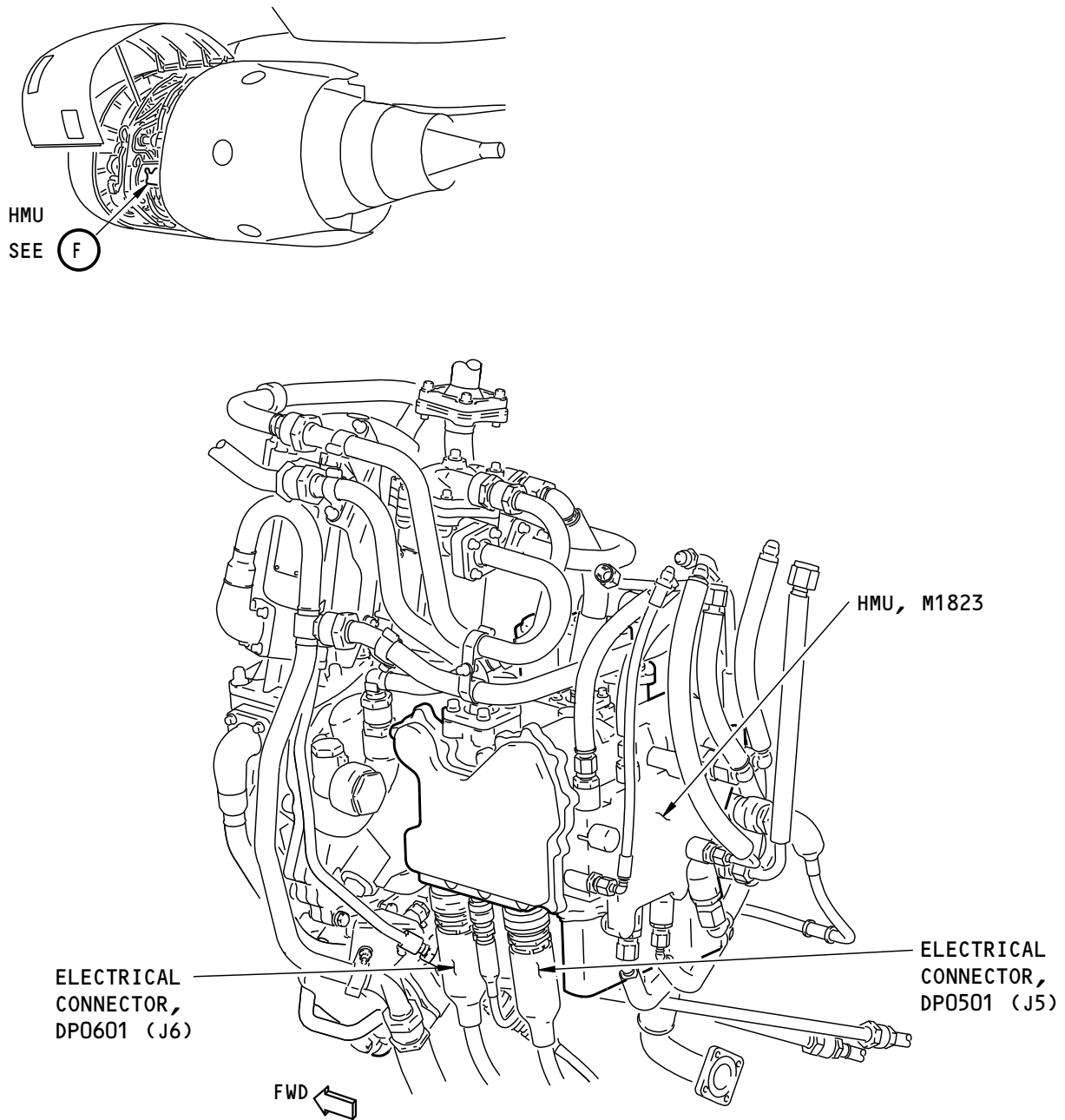
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HYDROMECHANICAL UNIT (HMU)

(F)

H36822 S0006745962_V1

High Pressure Turbine Active Clearance Control - Component Location
Figure 301/75-21-00-990-801-F00 (Sheet 4 of 4)

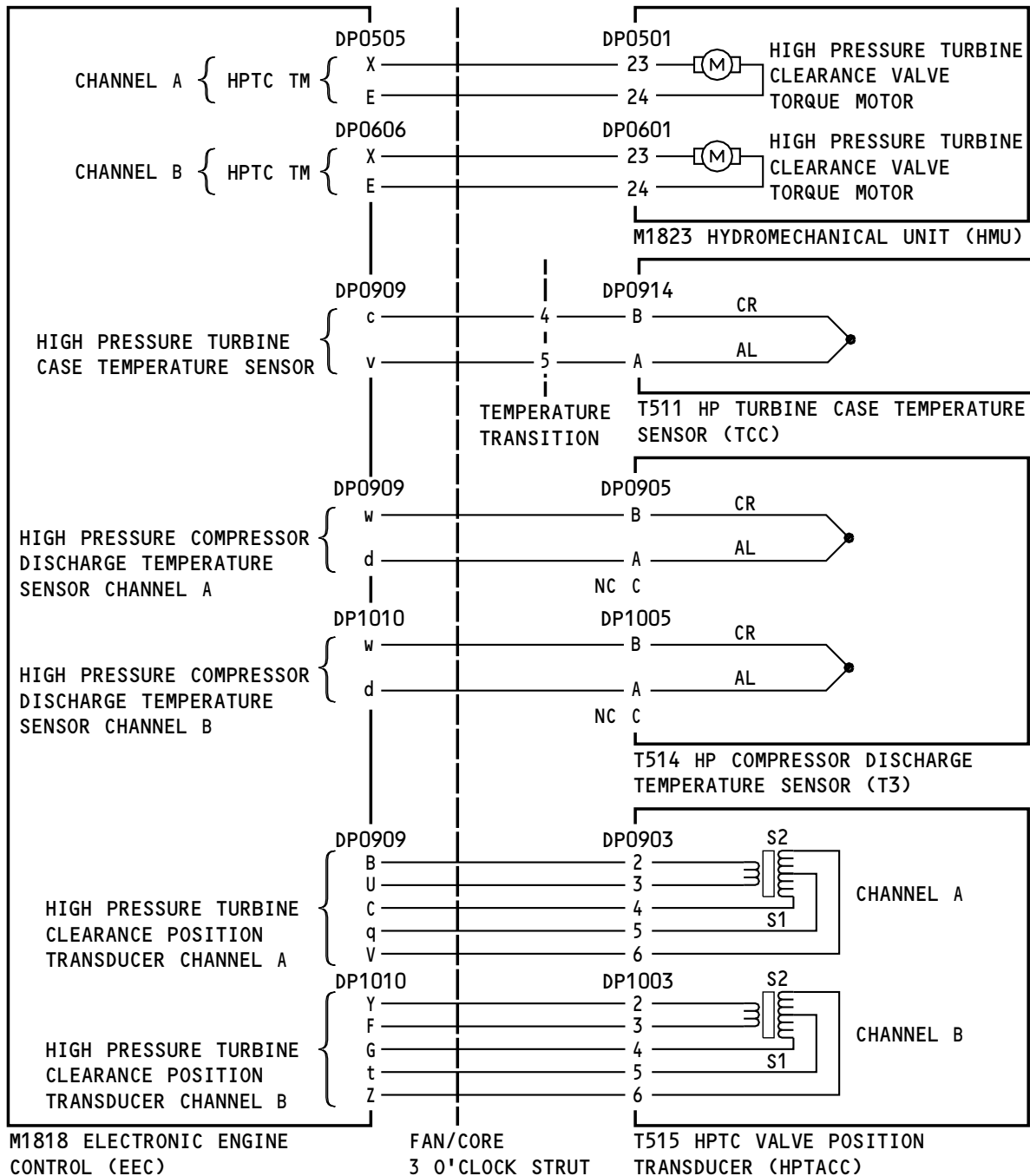
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NOTE: THE WDM/SSM ADD A DASH TO THE PIN LETTER TO DENOTE A LOWER CASE PIN, SUCH AS A- = a.

H37023 S0006745963_V1

High Pressure Turbine Active Clearance Control - Simplified Schematic
Figure 302/75-21-00-990-802-F00

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801. LPTACC Demand and Position Signals Disagree - Fault Isolation

A. Description

- (1) This task is for these maintenance message numbers:
 - (a) 75-10531, 75-10532, 75-20531, 75-20532, 75-30531 and 75-30532.
- (2) The maintenance messages 75-X053Y; where X = EEC Channel (1=Channel A, 2=Channel B, 3=Dual Channel), and Y = Engine Position (1=Eng 1, 2=Eng 2).
 - (a) If X=1, do the Fault Isolation Procedure - Single Channel Fault for channel A.
 - (b) If X=2, do the Fault Isolation Procedure - Single Channel Fault for channel B.
 - (c) If X=1 and 2 (two messages), or X=3, then do the Fault Isolation Procedure - Dual Channel Fault.
- (3) This fault is reported on the active channel of the EEC when the engine is in operation.
- (4) You must do the Initial Evaluation to see if a dual channel maintenance message, 75-30531 or 75-30532, is set.
- (5) The EEC senses that the absolute value of the difference between the LPTACC demand and valid position is greater than 5%.
 - (a) The LPTACC wrap fault is not set on the active channel.

B. Possible Causes

- (1) For the Single Channel Maintenance Messages:
 - (a) HMU, M1823
 - (b) EEC, M1818
 - (c) J5 (Ch A) or J6 (Ch B) wire harness.
- (2) For the Dual Channel Maintenance Messages:
 - (a) LPTACC valve, T516
 - (b) HMU, M1823
 - (c) 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

- (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>
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

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D. Related Data

- (1) Component Location (75-22 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (75-22 TASK SUPPORT Figure 302)
- (3) (SSM 75-31-11)
- (4) (SSM 75-31-21)
- (5) (WDM 73-22-11)
- (6) (WDM 75-31-11)
- (7) (WDM 75-31-21)

E. Initial Evaluation

- (1) Do these steps to find out if the fault is still active and if it is a dual channel fault:
 - (a) Do this task: Test 12 - Actuators Test, AMM TASK 71-00-00-700-807-F00.
 - (b) If maintenance messages 75-10531 (Ch A, Eng 1), 75-10532 (Ch A, Eng 2), 75-20531 (Ch B, Eng 1) or 75-20532 (Ch B, Eng 2) show, then do the Fault Isolation Procedure - Single Channel Fault for the applicable channel.
 - (c) If maintenance messages 75-30531 (Ch A and B, Eng 1) or 75-30532 (Ch A and B, Eng 2) show, 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.
 - 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) Do the Initial Evaluation to see if this fault is a dual channel fault.
NOTE: During engine operation, the EEC reports the fault only on the active channel.
- (2) Do these steps to prepare for the procedure:
 - (a) For Engine 1,
 - 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

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CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	5	C01314	ENGINE 1 ALTN PWR CHAN A

(b) For Engine 2,

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>
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) Examine the electrical connectors, DP0501 (Ch A) or DP0601 (Ch B), at the HMU:

(a) See if the electrical connector, DP0501 (Ch A) or DP0601 (Ch B), is correctly connected to the HMU, and continue.

(b) Disconnect the electrical connector, DP0501 (Ch A) or DP0601 (Ch B), from the HMU.

(c) Visually examine the HMU receptacle and wire harness connector (AMM TASK 70-70-01-200-801-F00).

1) If the HMU receptacle is damaged, then replace the HMU, M1823. These are the tasks:

• HMU Removal, AMM TASK 73-21-10-000-801-F00

• HMU Installation, AMM TASK 73-21-10-400-801-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 harness connector is damaged, then replace the wire harness, J5 (Ch A) or J6 (Ch B). These are the tasks:

• Fan Wiring Harness Removal, AMM TASK 73-21-06-000-801-F00

• Fan Wiring Harness Installation, AMM TASK 73-21-06-400-801-F00

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

b) If the Repair Confirmation is not satisfactory, then open the circuit 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 of these pins of the applicable HMU receptacle, DP0501 (Ch A) or DP0601 (Ch B):

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Table 201

RECEPTACLE DP0501 DP0601	PINS	RESISTANCE
	PINS 19 TO 38	10 TO 21 OHMS
	PIN 19 TO THE CONNECTOR SHELL	GREATER THAN 20 MEGOHMS
	PIN 38 TO THE CONNECTOR SHELL	GREATER THAN 20 MEGOHMS

- (a) If the resistance is not in the specified range, then replace the HMU, M1823. These are the tasks:
 - HMU Removal, AMM TASK 73-21-10-000-801-F00
 - HMU Installation, AMM TASK 73-21-10-400-801-F00
 - 1) Do the Repair Confirmation at the end of this task.
 - 2) If the Repair Confirmation is not satisfactory, then continue.
- (b) If the resistance is in the specified range, then continue.
 - 1) Re-connect the electrical connector, DP0501 (Ch A) or DP0601 (Ch B), to the HMU.
- (5) Examine the electrical connector, DP0505 (Ch A) or DP0606 (Ch B), at the EEC:

NOTE: The electrical connector, DP0505 (Ch A) is on the J5 wire harness. The electrical connector, DP0606 (Ch B) is on the J6 wire harness.

 - (a) See if the electrical connector, DP0505 (Ch A) or DP0606 (Ch B), is correctly connected to the EEC, and continue.
 - (b) Disconnect the electrical connector, DP0505 (Ch A) or DP0606 (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 continue.
 - 2) If the harness connector is damaged, then replace the wire harness, J5 (Ch A) or J6 (Ch B). These are the tasks:
 - Fan Wiring Harness Removal, AMM TASK 73-21-06-000-801-F00
 - Fan Wiring Harness Installation, AMM TASK 73-21-06-400-801-F00
 - a) Do the Repair Confirmation at the end of this task.
 - b) If the Repair Confirmation is not satisfactory, then continue.
 - 3) If the harness connector was not correctly connected and no other problems were found, then re-connect the harness connector to the EEC.
 - a) Do the Repair Confirmation at the end of this task.
 - b) If the Repair Confirmation is not satisfactory, then continue.
 - (d) If you did not find a problem, then continue.

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- (6) Measure the resistance between these pins to examine the wires between the applicable EEC connector on the wire harness through the HMU:

NOTE: The electrical connector, DP0505 (Ch A), is on the J5 wire harness. The electrical connector, DP0606 (Ch B), is on the J6 wire harness.

Table 202

CONNECTOR DP0505 DP0606	PINS	RESISTANCE
	PINS K TO L	10 TO 21 OHMS
	PIN K TO THE CONNECTOR SHELL	GREATER THAN 20 MEGOHMS
	PIN L TO THE CONNECTOR SHELL	GREATER THAN 20 MEGOHMS

- (a) If the resistance is not in the specified range, then replace the wire harness. These are the tasks:
- Fan Wiring Harness Removal, AMM TASK 73-21-06-000-801-F00
 - Fan Wiring Harness Installation, AMM TASK 73-21-06-400-801-F00
- 1) Do the Repair Confirmation at the end of this task.
- (b) If the resistance is in the specified range, then continue with the Fault Isolation Procedure - Dual Channel Fault.

G. Fault Isolation Procedure - Dual Channel Fault

- (1) Replace the LPTACC valve, T516 (the most likely LRU from the dual channel Possible Causes list). These are the tasks:
- LPTACC Valve Removal, AMM TASK 75-22-04-000-802-F00
 - LPTACC Valve Installation, AMM TASK 75-22-04-400-802-F00
- (a) Do the Repair Confirmation at the end of this task.
- (b) If the problem continues, then replace the subsequent most likely LRU from the Possible Causes list.
- 1) Do the Repair Confirmation at the end of this task.

H. Repair Confirmation

- (1) Do these steps to prepare for the procedure:
- (a) Make sure that the electrical connectors, DP0501 (Ch A) and DP0601 (Ch B), are correctly connected to the HMU.
- (b) Make sure that the electrical connectors, DP0505 (Ch A) and DP0606 (Ch B), are correctly connected to the EEC.
- (c) For Engine 1,
- 1) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
A	1	C00458	ENGINE 1 IGNITION RIGHT
A	3	C00153	ENGINE 1 IGNITION LEFT
A	4	C01390	ENGINE 1 ALTN PWR CHAN B

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CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	5	C01314	ENGINE 1 ALTN PWR CHAN A

(d) For Engine 2,

- 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
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

- (2) Do this task: Test 12 - Actuators Test, AMM TASK 71-00-00-700-807-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

802. LPTACC Position Signal is Out of Range - Fault Isolation**A. Description**

- (1) This task is for these Maintenance Message numbers:
 - (a) 75-10541, 75-10542, 75-20541, 75-20542, 75-30541 and 75-30542.
- (2) The Maintenance Messages 75-X054Y; where X = EEC Channel (1=Channel A, 2=Channel B, 3=Dual Channel), and Y = Engine Position (1=ENG-1, 2=ENG-2).
 - (a) If X=1, do the Fault Isolation Procedure - Single Channel Fault for channel A.
 - (b) If X=2, do the Fault Isolation Procedure - Single Channel Fault for channel B.
 - (c) If X=1 and 2 (two messages), or X=3, then do the Fault Isolation Procedure - Dual Channel Fault.
- (3) The Electronic Engine Control (EEC), M1818, senses an out-of-range signal from the Low Pressure Turbine Active Clearance Control (LPTACC) Valve Position Transducer, T516.
- (4) FADEC 2:

Channel A and B

 - (a) The Channel A Excitation Circuits for the LPTACC Valve, T516, position Linear Variable Differential Transformer (LVDT) and the Transient Bleed Valve (TBV) position LVDT are from a common source in the EEC, M1818, a short in one of the two Excitation Circuits can set Channel A Fault Messages for the two systems.
 - (b) The Channel B Excitation Circuits for the Variable Bleed Valve (VBV) position LVDT and the LPTACC Valve, T516, position LVDT are from a common source in the EEC, M1818, a short in one of the two Excitation Circuits can set Channel B Fault Messages for the two systems.
- (5) FADEC 3:

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The Channel A Excitation Circuits for the LPTACC Valve, T516, position LVDT and the TBV position LVDT are from a common source in the EEC, M1818, a short in one of the two Excitation Circuits can set Channel A Fault Messages for both the two systems.

- (6) The Channel B Excitation Circuits for the Thrust Reverser Right (TRR) position LVDT, the Thrust Reverser Left (TRL) position LVDT and the LPTACC Valve, T516, position LVDT are from a common source in the EEC, M1818, a short in one of the three Excitation Circuits can set Channel B Fault Messages for all three systems.

B. Possible Causes

- (1) LPTACC Valve, T516
- (2) EEC, M1818
- (3) Wiring

C. Circuit Breakers

- (1) These are the primary Circuit Breakers related to the fault:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	1	C00458	ENGINE 1 IGNITION RIGHT
A	3	C00153	ENGINE 1 IGNITION LEFT
A	4	C01390	ENGINE 1 ALTN PWR CHAN B
A	5	C01314	ENGINE 1 ALTN PWR CHAN A

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
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

D. Related Data

- (1) Component Location (75-22 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (75-22 TASK SUPPORT Figure 302)
- (3) WDM 73-22-11
- (4) WDM 75-31-11
- (5) WDM 75-31-21
- (6) SSM 75-31-11
- (7) SSM 75-31-21

E. Initial Evaluation

- (1) To find the Full Authority Digital Engine Control (FADEC) version, do this task: FADEC 2 or FADEC 3 Identification, AMM TASK 73-21-00-700-810-F00.
- (2) Do this task: EEC BITE Procedure, 73-00 TASK 801.
 - (a) FADEC 2:

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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 LVDT's for the LPTACC, the TBV, or the VBV. For more information, see the Description section.

- 1) 75-10541 and 75-10591 (ENG-1, Ch A)
 - a) Do this task: FADEC2/FADEC3 (Ch A) Excitation Group 4: LPTC and TBV LVDT Excitation Circuit Fault - Fault Isolation, 75-34 TASK 811.
- 2) 75-10542 and 75-10592 (ENG-2, Ch A)
 - a) Do this task: FADEC2/FADEC3 (Ch A) Excitation Group 4: LPTC and TBV LVDT Excitation Circuit Fault - Fault Isolation, 75-34 TASK 811.
- 3) 75-20541 and 75-20441 (ENG-1, Ch B)
 - a) Do this task: FADEC2 (Ch B) Excitation Group 3: VBV and LPTC LVDT Excitation Circuit Fault - Fault Isolation, 75-34 TASK 812.
- 4) 75-20542 and 75-20442 (ENG-2, Ch B).
 - a) Do this task: FADEC2 (Ch B) Excitation Group 3: VBV and LPTC LVDT Excitation Circuit Fault - Fault Isolation, 75-34 TASK 812.

(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 LVDT's for the LPTACC, the TBV, the TRR, or the TRL. For more information, see the Description section.

- 1) 75-10541, and 75-10591 (ENG-1, Ch A)
 - a) Do this task: FADEC2/FADEC3 (Ch A) Excitation Group 4: LPTC and TBV LVDT Excitation Circuit Fault - Fault Isolation, 75-34 TASK 811.
 - 2) 75-10542 and 75-1059 (ENG-2, Ch A)
 - a) Do this task: FADEC2/FADEC3 (Ch A) Excitation Group 4: LPTC and TBV LVDT Excitation Circuit Fault - Fault Isolation, 75-34 TASK 811.
 - 3) 75-20541, 78-21481, and 78-21491 (ENG-1, Ch B)
 - a) Do this task: FADEC3 (Ch B) Excitation Group 3: LPTACC, L and R T/R LVDT Excitation Circuit Fault - Fault Isolation, 75-34 TASK 815.
 - 4) 75-20542, 78-21482, and 78-21492 (ENG-2, Ch B)
 - a) Do this task: FADEC3 (Ch B) Excitation Group 3: LPTACC, L and R T/R LVDT Excitation Circuit Fault - Fault Isolation, 75-34 TASK 815.
- (3) Do these steps to find out if the problem is still active:
- (a) Do this task: Test 12 - Actuators Test, AMM TASK 71-00-00-700-807-F00.
 - (b) If Maintenance Message numbers 75-10541 (Ch A, ENG-1), 75-10542 (Ch A, ENG-2), 75-20541 (Ch B, ENG-1) or 75-20542 (Ch B, ENG-2) show, then do the Fault Isolation Procedure - Single Channel Fault for the applicable channel.
 - (c) If Maintenance Message numbers 75-30541 (Ch A and B, ENG-1) or 75-30542 (Ch A and B, ENG-2) show, then do the Fault Isolation Procedure - Dual Channel Fault.

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- (d) If the Maintenance Message does not show on the Flight Management Computer System (FMCS) Control Display Unit (CDU), then the Initial Evaluation has shown that the problem 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 problem.
 - 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 Wiring Diagram Manual (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) Do the Initial Evaluation to see if there is an Excitation Circuit fault and if the fault is still active.
- NOTE: A fault in the Excitation Circuit of other Line Replaceable Unit (LRU)s could cause this fault. For more information, see the Description section.
- (2) Do these steps to prepare for the procedure:
- (a) Open these Circuit Breakers and install safety tags:

CAPT Electrical System Panel, P18-2

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

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
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A



DO THESE SPECIFIED TASKS IN THE CORRECT SEQUENCE BEFORE YOU OPEN THE THRUST REVERSERS: RETRACT THE LEADING EDGE, DO THE DEACTIVATION PROCEDURES FOR THE LEADING EDGE AND THE THRUST REVERSER (FOR GROUND MAINTENANCE), AND OPEN THE FAN COWL PANELS. IF YOU DO NOT OBEY THE ABOVE SEQUENCE, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (b) Do this task: Open the Thrust Reverser (Selection), AMM TASK 78-31-00-010-801-F00.

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- (3) Examine the Electrical Connector, DP0904 (Ch A) or DP1004 (Ch B), at the LPTACC Valve, T516:
 - (a) Make sure the Electrical Connector, DP0904 (Ch A) or DP1004 (Ch B), is correctly connected to the LPTACC Valve, T516, and continue.
 - (b) Disconnect the Electrical Connector, DP0904 (Ch A) or DP1004 (Ch B), from the LPTACC Valve, T516.
 - (c) Visually examine the LPTACC Valve Receptacle and Wire Harness Connector (Standard Engine Wiring and Equipment Check, AMM TASK 70-70-01-200-801-F00).
 - 1) If the LPTACC Valve Receptacle is damaged, then replace the LPTACC Valve, T516. These are the tasks:
 - LPTACC Valve Removal, AMM TASK 75-22-04-000-802-F00
 - LPTACC Valve Installation, AMM TASK 75-22-04-400-802-F00
 - a) Do the Repair Confirmation at the end of this task.
 - b) If the problem still exists, then open the Circuit Breakers above and continue.
 - 2) If the Harness Connector is damaged, then replace the Wire Harness, J9 (Ch A) or J10 (Ch B). These are the tasks:
 - 3 O'clock Strut Harness Removal, AMM TASK 73-21-06-000-802-F00
 - 3 O'clock Strut Harness Installation, AMM TASK 73-21-06-400-802-F00
 - a) Do the Repair Confirmation at the end of this task.
 - b) If the problem still exists, 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 problem still exists, then open the Circuit Breakers above and continue.
 - (d) If you did not find a problem, then continue.
- (4) Option 1 (Alternate):
Do these steps to do a check of the LPTACC Valve, T516:
 - (a) Measure the resistance between these pins at the applicable LPTACC Valve Receptacles, Ch A or Ch B:

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Ch A or Ch B	Ch A or Ch B	
LPTACC VALVE RECEPTACLE	LPTACC VALVE RECEPTACLE	RESISTANCE
pin 2	pin 3	80.75 - 109.25 Ω
pin 4	pin 5	85 - 115 Ω
pin 5	pin 6	85 - 115 Ω
pin 2	THE CONNECTOR SHELL	>20 M Ω
pin 3	THE CONNECTOR SHELL	>20 M Ω
pin 4	THE CONNECTOR SHELL	>20 M Ω
pin 5	THE CONNECTOR SHELL	>20 M Ω
pin 6	THE CONNECTOR SHELL	>20 M Ω

- (b) If the resistance is not in the specified range, then replace the LPTACC Valve, T516.
These are the tasks:

- LPTACC Valve Removal, AMM TASK 75-22-04-000-802-F00
- LPTACC Valve Installation, AMM TASK 75-22-04-400-802-F00.

1) 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.

(c) If the resistance is in the specified range, then continue.

(5) Option 2 (Preferred):

Do these steps to examine the operation of the LPTACC Valve, T516:

- (a) Connect the Electrical Connector, DP0904 (Ch A), to the Ch B Receptacle.
- (b) Connect the Electrical Connector, DP1004 (Ch B), to the Ch A Receptacle.
- (c) Remove the safety tags and close these Circuit Breakers:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
A	1	C00458	ENGINE 1 IGNITION RIGHT
A	3	C00153	ENGINE 1 IGNITION LEFT
A	4	C01390	ENGINE 1 ALTN PWR CHAN B
A	5	C01314	ENGINE 1 ALTN PWR CHAN A

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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
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

- (d) Do this task: Test 12 - Actuators Test, AMM TASK 71-00-00-700-807-F00.
- (e) 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

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
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

- (f) Do these steps if the problem does not show:
- 1) Re-connect the Electrical Connector, DP0904 (Ch A), to the Ch A Receptacle.
 - 2) Re-connect the Electrical Connector, DP1004 (Ch B), to the Ch B Receptacle.
 - 3) Do the Repair Confirmation at the end of this task.
- (g) If problem shows on the other channel, then replace the LPTACC Valve, T516. These are the tasks:
- LPTACC Valve Removal, AMM TASK 75-22-04-000-802-F00
 - LPTACC Valve Installation, AMM TASK 75-22-04-400-802-F00
- 1) Do the Repair Confirmation at the end of this task.
- (h) If problem continues on the same channel, then do these steps:
- 1) Re-connect the Electrical Connector, DP0904 (Ch A), to the Ch A Receptacle.
 - 2) Re-connect the Electrical Connector, DP1004 (Ch B), to the Ch B Receptacle.
 - 3) If you did not find a problem, then continue.



MAKE SURE THAT YOU CONNECT THE CHANNEL A CONNECTOR TO THE CHANNEL A LRU-RECEPTACLE. CONNECT CHANNEL B IN THE SAME PROCEDURE. THE ELECTRICAL CONNECTORS ARE INTERCHANGEABLE. MIXING UP THE WIRES CAN CAUSE LRU FAULTS AND OUTPUT DATA WILL SHOW ON THE WRONG CHANNELS.

- (6) If not already done, re-connect the Electrical Connector, DP0904 (Ch A), to the Receptacle, Ch A. and, the Electrical Connector, DP1004 (Ch B), to the Receptacle, Ch B.

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- (7) Examine the Electrical Connector, DP0909 (Ch A) or DP1010 (Ch B), at the EEC, M1818:

NOTE: The Electrical Connector, DP0909 (Ch A), is on the J9 Wire Harness. The Electrical Connector, DP1010 (Ch B), is on the J10 Wire Harness.

- (a) Make sure the Electrical Connector, DP0909 (Ch A) or DP1010 (Ch B), is correctly connected to the EEC, M1818, and continue.
- (b) Disconnect the Electrical Connector, DP0909 (Ch A) or DP1010 (Ch B), from the EEC, M1818.
- (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 problem still exists, then open the Circuit Breakers above and continue.
 - 2) If the Harness Connector is damaged, then replace the Wire Harness, J9 (Ch A) or J10 (Ch B). These are the tasks:
 - 3 O'clock Strut Harness Removal, AMM TASK 73-21-06-000-802-F00
 - 3 O'clock Strut Harness Installation, AMM TASK 73-21-06-400-802-F00
 - a) Do the Repair Confirmation at the end of this task.
 - b) If the problem still exists, 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 problem still exists, then open the Circuit Breakers above and continue.
 - (d) If you did not find a problem, then continue.
- (8) Measure the resistance between these pins to examine the wires between the applicable EEC Connector on the Wire Harness through the LPTACC Valve, T516:

NOTE: The Electrical Connector, DP0909 (Ch A), is on the J9 Wire Harness. The Electrical Connector, DP1010 (Ch B), is on the J10 Wire Harness.

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**ELECTRONIC ENGINE
CONTROL**

Ch A	Ch A	RESISTANCE
DP0909	DP0909	
pin Y	pin F	80.75 - 109.25 Ω
pin G	pin t	85 - 115 Ω
pin Z	pin t	85 - 115 Ω
pin Y	THE	>20 M Ω
	CONNECTOR	
	SHELL	
pin F	THE	>20 M Ω
	CONNECTOR	
	SHELL	
pin G	THE	>20 M Ω
	CONNECTOR	
	SHELL	
pin t	THE	>20 M Ω
	CONNECTOR	
	SHELL	
pin Z	THE	>20 M Ω
	CONNECTOR	
	SHELL	

**ELECTRONIC ENGINE
CONTROL**

Ch B	Ch B	RESISTANCE
DP1010	DP1010	
pin A	pin U	80.75 - 109.25 Ω
pin V	pin B	85 - 115 Ω
pin V	pin C	85 - 115 Ω
pin A	THE	>20 M Ω
	CONNECTOR	
	SHELL	
pin U	THE	>20 M Ω
	CONNECTOR	
	SHELL	
pin V	THE	>20 M Ω
	CONNECTOR	
	SHELL	
pin B	THE	>20 M Ω
	CONNECTOR	
	SHELL	
pin C	THE	>20 M Ω
	CONNECTOR	
	SHELL	

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- (a) If the resistance is in the specified range and the problem was found by the Initial Evaluation, then do one of these steps:

NOTE: Because an Excitation Circuit fault in a different system can set this fault, the replacement of the EEC, M1818, 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 problem still exists, then open the Circuit Breakers above and continue.

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- 2) FADEC 2:

Do the applicable LVDT Excitation Circuit Fault Isolation for the applicable channel:

- a) For Channel A:
Do this task: FADEC2/FADEC3 (Ch A) Excitation Group 4: LPTC and TBV LVDT Excitation Circuit Fault - Fault Isolation, 75-34 TASK 811.
- b) For Channel B:
Do this task: FADEC2 (Ch B) Excitation Group 3: VBV and LPTC LVDT Excitation Circuit Fault - Fault Isolation, 75-34 TASK 812.
- c) Do the Repair Confirmation at the end of this task.
- d) If the problem still exists, then open the Circuit Breakers above and continue.

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- 3) FADEC 3:

Do the applicable LVDT Excitation Circuit Fault Isolation for the applicable channel.

- a) For Channel A:
Do this task: FADEC2/FADEC3 (Ch A) Excitation Group 4: LPTC and TBV LVDT Excitation Circuit Fault - Fault Isolation, 75-34 TASK 811.
 - b) For Channel B:
Do this task: FADEC3 (Ch B) Excitation Group 3: LPTACC, L and R T/R LVDT Excitation Circuit Fault - Fault Isolation, 75-34 TASK 815.
 - c) Do the Repair Confirmation at the end of this task.
 - d) If the Repair Confirmation is not satisfactory, then open the Circuit Breakers above and continue.
- (b) If the resistance is not in the specified range, then replace the Wire Harness, J9 (Ch A) or J10 (Ch B). These are the tasks:
- 3 O'clock Strut Harness Removal, AMM TASK 73-21-06-000-802-F00
 - 3 O'clock Strut Harness Installation, AMM TASK 73-21-06-400-802-F00
- 1) Do the Repair Confirmation at the end of this task.

G. Fault Isolation Procedure - Dual Channel Fault

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

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- (a) Open these Circuit Breakers and install safety tags:

CAPT Electrical System Panel, P18-2

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

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
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A



DO THESE SPECIFIED TASKS IN THE CORRECT SEQUENCE BEFORE YOU OPEN THE THRUST REVERSERS: RETRACT THE LEADING EDGE, DO THE DEACTIVATION PROCEDURES FOR THE LEADING EDGE AND THE THRUST REVERSER (FOR GROUND MAINTENANCE), AND OPEN THE FAN COWL PANELS. IF YOU DO NOT OBEY THE ABOVE SEQUENCE, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (b) Do this task: Open the Thrust Reverser (Selection), AMM TASK 78-31-00-010-801-F00.
- (2) Examine the Electrical Connectors, DP0904 (Ch A) and DP1004 (Ch B), at the LPTACC Valve, T516:
- (a) Make sure the Electrical Connectors, DP0904 (Ch A) and DP1004 (Ch B), are correctly connected to the LPTACC Valve, T516, and continue.
 - (b) Disconnect the Electrical Connectors, DP0904 (Ch A) and DP1004 (Ch B), from the LPTACC Valve, T516.
 - (c) Visually examine the LPTACC Valve Receptacles and Wire Harness Connectors (AMM TASK 70-70-01-200-801-F00).
 - 1) If a LPTACC Valve Receptacle is damaged, then replace the LPTACC Valve, T516. These are the tasks:
 - LPTACC Valve Removal, AMM TASK 75-22-04-000-802-F00
 - LPTACC Valve Installation, AMM TASK 75-22-04-400-802-F00
 - a) Do the Repair Confirmation at the end of this task.
 - b) If the problem still exists, then open the Circuit Breakers above and continue.
 - 2) If a Harness Connector is damaged, then replace the Wire Harness, J9 (Ch A) or J10 (Ch B). These are the tasks:
 - 3 O'clock Strut Harness Removal, AMM TASK 73-21-06-000-802-F00
 - 3 O'clock Strut Harness Installation, AMM TASK 73-21-06-400-802-F00
 - a) Do the Repair Confirmation at the end of this task.
 - b) If the problem still exists, then open the Circuit Breakers above and continue.

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- 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 problem still exists, 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 at the LPTACC Valve Receptacles, Ch A and Ch B:

Ch A and Ch B**LPTACC VALVE
RECEPTACLE**

pin 2

pin 4

pin 5

pin 2

pin 2

Ch A and Ch B**LPTACC
VALVE****RECEPTACLE****RESISTANCE**

pin 3 80.75 - 109.25 Ω

pin 5 85 - 115 Ω

pin 6 85 - 115 Ω

pin 4 >20 M Ω

THE >20 M Ω

CONNECTOR

SHELL

pin 3 THE >20 M Ω

CONNECTOR

SHELL

pin 4 THE >20 M Ω

CONNECTOR

SHELL

pin 5 THE >20 M Ω

CONNECTOR

SHELL

pin 6 THE >20 M Ω

CONNECTOR

SHELL

- (a) If the resistance is not in the specified range, then replace the LPTACC Valve, T516. These are the tasks:
- LPTACC Valve Removal, AMM TASK 75-22-04-000-802-F00
 - LPTACC Valve Installation, AMM TASK 75-22-04-400-802-F00
- 1) Do the Repair Confirmation at the end of this task.
- a) If the problem still exists, then open the Circuit Breakers above and continue.
- (b) If the resistance is in the specified range, then do this step and continue.



MAKE SURE THAT YOU CONNECT THE CHANNEL A CONNECTOR TO THE CHANNEL A LRU-RECEPTACLE. CONNECT CHANNEL B IN THE SAME PROCEDURE. THE ELECTRICAL CONNECTORS ARE INTERCHANGEABLE. MIXING UP THE WIRES CAN CAUSE LRU FAULTS AND OUTPUT DATA WILL SHOW ON THE WRONG CHANNELS.

- 1) Re-connect the Electrical Connector, DP0904 LPTC-A to the LPTACC Valve Receptacle, Ch A. and, Electrical Connector, DP1004 LPTC-B to the Receptacle, Ch B.

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- (4) Examine the Electrical Connectors, DP0909 (Ch A) and DP1010 (Ch B), at the EEC, M1818:

NOTE: The Electrical Connector, DP0909 (Ch A), is on the J9 Wire Harness. The Electrical Connector, DP1010 (Ch B), is on the J10 Wire Harness.

- (a) Make sure the Electrical Connectors, DP0909 (Ch A) and DP1010 (Ch B), are correctly connected to the EEC, M1818, and continue.
- (b) Disconnect the Electrical Connectors, DP0909 (Ch A) and DP1010 (Ch B), from the EEC, M1818.
- (c) Visually examine the EEC Receptacles and Wire Harness Connectors (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 problem still exists, then open the Circuit Breakers above and continue.
 - 2) If a Harness Connector is damaged, then replace the Wire Harness, J9 (Ch A) or J10 (Ch B). These are the tasks:
 - 3 O'clock Strut Harness Removal, AMM TASK 73-21-06-000-802-F00
 - 3 O'clock Strut Harness Installation, AMM TASK 73-21-06-400-802-F00
 - a) Do the Repair Confirmation at the end of this task.
 - b) If the problem still exists, 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 problem still exists, then open the Circuit Breakers above and continue.
 - (d) If you did not find a problem, then continue.
- (5) Measure the resistance between these pins to examine the wires between the EEC Connectors on the Wire Harnesses through the LPTACC Valve, T516:

NOTE: The Electrical Connector, DP0909 (Ch A), is on the J9 Wire Harness. The Electrical Connector, DP1010 (Ch B), is on the J10 Wire Harness.

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ELECTRONIC ENGINE CONTROL

Ch A DP0909	Ch A DP0909	RESISTANCE
pin Y	pin F	80.75 - 109.25 Ω
pin G	pin t	85 - 115 Ω
pin Z	pin t	85 - 115 Ω
pin Y	pin G	>20 M Ω
pin Y	THE	>20 M Ω
	CONNECTOR	
	SHELL	
pin F	THE	>20 M Ω
	CONNECTOR	
	SHELL	
pin G	THE	>20 M Ω
	CONNECTOR	
	SHELL	
pin Z	THE	>20 M Ω
	CONNECTOR	
	SHELL	
pin t	THE	>20 M Ω
	CONNECTOR	
	SHELL	

ELECTRONIC ENGINE CONTROL

Ch B DP1010	Ch B DP1010	RESISTANCE
pin A	pin U	80.75 - 109.25 Ω
pin B	pin V	85 - 115 Ω
pin V	pin C	85 - 115 Ω
pin A	pin B	>20 M Ω
pin A	THE	>20 M Ω
	CONNECTOR	
	SHELL	
pin U	THE	>20 M Ω
	CONNECTOR	
	SHELL	
pin B	THE	>20 M Ω
	CONNECTOR	
	SHELL	
pin C	THE	>20 M Ω
	CONNECTOR	
	SHELL	
pin V	THE	>20 M Ω
	CONNECTOR	
	SHELL	

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- (a) If the resistance is not in the specified range, then replace the Wire Harness, J9 (Ch A) or J10 (Ch B). These are the tasks:
 - 3 O'clock Strut Harness Removal, AMM TASK 73-21-06-000-802-F00
 - 3 O'clock Strut Harness Installation, AMM TASK 73-21-06-400-802-F00
 - 1) Do the Repair Confirmation at the end of this task.
 - a) If the problem still exists, then open the Circuit Breakers above and continue.
- (b) If the resistance is in the specified range 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 these steps to prepare for the procedure:



CAUTION

MAKE SURE THAT YOU CONNECT THE CHANNEL A CONNECTOR TO THE CHANNEL A LRU-RECEPTACLE. CONNECT CHANNEL B IN THE SAME PROCEDURE. THE ELECTRICAL CONNECTORS ARE INTERCHANGEABLE. MIXING UP THE WIRES CAN CAUSE LRU FAULTS AND OUTPUT DATA WILL SHOW ON THE WRONG CHANNELS.

- (a) Make sure that the Electrical Connectors, DP0904 (Ch A) and DP1004 (Ch B), are correctly connected to the LPTACC Valve, T516.
- (b) Make sure that the Electrical Connectors, DP0909 (Ch A) and DP1010 (Ch B), are correctly connected to the EEC, M1818.
- (c) 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

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
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

- (2) Do this task: Test 12 - Actuators Test, AMM TASK 71-00-00-700-807-F00.
 - (a) If the Maintenance Message does not show, then you corrected the problem.
 - (b) If the problem still exists, continue the Fault Isolation Procedure at the subsequent step.

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OBEY THE INSTRUCTIONS IN THE PROCEDURE TO CLOSE THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (3) Do this task: Close the Thrust Reverser (Selection), AMM TASK 78-31-00-010-804-F00.

— END OF TASK —

803. LPTACC Position Signals Disagree - Fault Isolation

A. Description

- (1) This task is for these maintenance message numbers:
 - (a) 75-10551, 75-10552, 75-20551, 75-20552, 75-30551 and 75-30552.
- (2) The maintenance messages 75-X055Y; where X = EEC Channel (1=Channel A, 2=Channel B, 3=Dual Channel), and Y = Engine Position (1=Eng 1, 2=Eng 2).
 - (a) If X=1 or 2, do the Fault Isolation Procedure - Single Channel Fault for the applicable channel.
 - (b) If X=1 and 2 (two messages), or X=3, then do the Fault Isolation Procedure - Dual Channel Fault.
- (3) The EEC senses an absolute value of the difference between the position sensed by channel A and channel B is greater than 3.0 degrees.
 - (a) The positions that the EEC senses from Channel A and B are in a valid range.

B. Possible Causes

- (1) For the Single Channel Maintenance Messages:
 - (a) EEC (internal failure), M1818
 - (b) LPTACC valve, T516.
- (2) For the Dual Channel Maintenance Messages:
 - (a) LPTACC valve, T516
 - (b) EEC, M1818.

C. Circuit Breakers

- (1) For Engine 1,
 - (a) 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

- (2) For Engine 2,
 - (a) 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>
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

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D. Related Data

- (1) Component Location (75-22 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (75-22 TASK SUPPORT Figure 302)
- (3) (SSM 75-31-11)
- (4) (SSM 75-31-21)
- (5) (WDM 73-22-11)
- (6) (WDM 75-31-11)
- (7) (WDM 75-31-21)

E. Initial Evaluation

- (1) Do these steps to find out if the fault is still active, and if another related maintenance message was set:

NOTE: This fault is normally reported by channel A and channel B. If the fault is reported by only a single channel, then an additional fault in the EEC is present.

- (a) For RECENT FAULTS, do this task: EEC BITE Procedure, 73-00 TASK 801.
- (b) If maintenance message number 75-10541, 75-10542, 75-20541, 75-20542, 75-30541 or 75-30542 shows, then, do this task: LPTACC Position Signal is Out of Range - Fault Isolation, 75-22 TASK 802.
- (c) Do this task: Test 12 - Actuators Test, AMM TASK 71-00-00-700-807-F00.
- (d) If maintenance message numbers 75-10551 (Ch A, Eng 1), 75-10552 (Ch A, Eng 2), 75-20551 (Ch B, Eng 1) or 75-20552 (Ch B, Eng 2) show, then do the Fault Isolation Procedure - Single Channel Fault for the applicable channel.
- (e) If maintenance message numbers 75-30551 (Ch A and B, Eng 1) or 75-30552 (Ch A and B, Eng 2) show, then do the Fault Isolation Procedure - Dual Channel Fault.
- (f) 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 - Single Channel Fault

- (1) Do this task: EEC TEST, AMM TASK 73-21-00-700-804-F00.
 - (a) Look for INTERNAL EEC FAULTs on the CDU.
 - (b) Do the Fault Isolation Procedures for the INTERNAL EEC FAULT that you found first.
 - 1) Do the Repair Confirmation at the end of this task.

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- (c) If the problem continues or an INTERNAL EEC FAULT did not show during the EEC test, then do the Fault Isolation Procedure - Dual Channel Fault.

G. Fault Isolation Procedure - Dual Channel Fault

- (1) To identify if the "LPTACC position signal is out of range" fault is set, do the Initial Evaluation above.
- (2) Replace the LPTACC valve, T516 (the most likely LRU from the dual channel Possible Causes list). These are the tasks:
 - LPTACC Valve Removal, AMM TASK 75-22-04-000-802-F00
 - LPTACC Valve Installation, AMM TASK 75-22-04-400-802-F00
 - (a) Do the Repair Confirmation at the end of this task.
 - (b) If the problem continues, then replace the subsequent most likely LRU from the Possible Causes list.
 - 1) Do the Repair Confirmation at the end of this task.

H. Repair Confirmation

- (1) Do this task: Test 12 - Actuators Test, AMM TASK 71-00-00-700-807-F00.
 - (a) If the maintenance message does not show, then you corrected the fault.

————— END OF TASK —————

804. HMU LPTACC Control Current is Out of Range - Fault Isolation

A. Description

- (1) This task is for these maintenance message numbers:
 - (a) 75-10521, 75-10522, 75-20521, 75-20522, 75-30521 and 75-30522.
- (2) The maintenance messages 75-X052Y; where X = EEC Channel (1=Channel A, 2=Channel B, 3=Dual Channel), and Y = Engine Position (1=Eng 1, 2=Eng 2).
 - (a) If X=1 or 2, do the Fault Isolation Procedure for the applicable channel.
 - (b) If X=1 and 2 (two messages), or X=3, do the Fault Isolation Procedure for channel A and B.
- (3) The EEC detected that the return current from the HMU torque motor that controls the LPTACC system is not in the valid range.

B. Possible Causes

- (1) HMU, M1823
- (2) EEC, M1818
- (3) J5 (Ch A) or J6 (Ch B) wire harness.

C. Circuit Breakers

- (1) For Engine 1,
 - (a) 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

- (2) For Engine 2,

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- (a) 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>
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

D. Related Data

- (1) Component Location (75-22 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (75-22 TASK SUPPORT Figure 302)
- (3) (SSM 75-31-11)
- (4) (SSM 75-31-21)
- (5) (WDM 73-22-11)
- (6) (WDM 75-31-11)
- (7) (WDM 75-31-21)

E. Initial Evaluation

- (1) Do these steps to find out if the fault is still active:
 - (a) Do this task: Test 12 - Actuators Test, AMM TASK 71-00-00-700-807-F00.
 - (b) If maintenance message 75-10521 (Eng 1, Ch A), 75-10522 (Eng 2, Ch A), 75-20521 (Eng 1, Ch B), or 75-20522 (Eng 2, Ch B) shows, then do the Fault Isolation Procedure for the applicable channel.
 - (c) If maintenance message 75-30521 (Ch A and B, Eng 1) and 75-30522 (Ch A and B, Eng 2) shows, then do the Fault Isolation Procedure for the two channels.
 - (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.
 - 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 procedure:
 - (a) For Engine 1, do the following:

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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) For Engine 2,

- 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>
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) Examine the electrical connectors, DP0501 (Ch A) or DP0601 (Ch B), at the HMU:

NOTE: The electrical connector, DP0501 (Ch A), is on the J5 wire harness. The electrical connector, DP0601 (Ch B), is on the J6 wire harness.

- (a) See if the electrical connector, DP0501 (Ch A) or DP0601 (Ch B), is correctly connected to the HMU, and continue.
- (b) Disconnect the electrical connector, DP0501 (Ch A) or DP0601 (Ch B), from the HMU.
- (c) Visually examine the HMU receptacle and wire harness connector (AMM TASK 70-70-01-200-801-F00).
- 1) If the HMU receptacle is damaged, then replace the HMU, M1823. These are the tasks:
- HMU Removal, AMM TASK 73-21-10-000-801-F00
 - HMU Installation, AMM TASK 73-21-10-400-801-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 harness connector is damaged, then replace the wire harness, J5 (Ch A) or J6 (Ch B). These are the tasks:
- Fan Wiring Harness Removal, AMM TASK 73-21-06-000-801-F00
 - Fan Wiring Harness Installation, AMM TASK 73-21-06-400-801-F00
- a) Do the Repair Confirmation at the end of this task.
- b) If the Repair Confirmation is not satisfactory, then open the circuit 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.

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- (d) If you did not find a problem, then continue.
- (3) Measure the resistance between these pins of the applicable HMU receptacle for the electrical connectors, DP0501 (Ch A) or DP0601 (Ch B):

Table 203

RECEPTACLE DP0501 DP0601	PINS	RESISTANCE
	PINS 19 TO 38	10 TO 21 OHMS
	PIN 19 TO THE CONNECTOR SHELL	GREATER THAN 20 MEGOHMS
	PIN 38 TO THE CONNECTOR SHELL	GREATER THAN 20 MEGOHMS

- (a) If the resistance is not in the specified range, then replace the HMU, M1823. These are the tasks:
- HMU Removal, AMM TASK 73-21-10-000-801-F00
 - HMU Installation, AMM TASK 73-21-10-400-801-F00
- 1) 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.
- (b) If the resistance is in the specified range, then continue.
- 1) Re-connect the electrical connector, DP0501 (Ch A) or DP0601 (Ch B), to the HMU.
- (4) Examine the electrical connector, DP0505 (Ch A) or DP0606 (Ch B), at the EEC:
- NOTE:** The electrical connector, DP0505 (Ch A), is on the J5 wire harness. The electrical connector, DP0606 (Ch B), is on the J6 wire harness.
- (a) See if the electrical connector, DP0505 (Ch A) or DP0606 (Ch B), is correctly connected to the EEC, and continue.
- (b) Disconnect the electrical connector, DP0505 (Ch A) or DP0606 (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 the harness connector is damaged, then replace the wire harness, J5 (Ch A) or J6 (Ch B). These are the tasks:
- Fan Wiring Harness Removal, AMM TASK 73-21-06-000-801-F00
 - Fan Wiring Harness Installation, AMM TASK 73-21-06-400-801-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.
 - 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.
- (5) Measure the resistance between these pins to examine the wires between the EEC connector on the wire harness through the HMU:

NOTE: The electrical connector, DP0505 (Ch A), is on the J5 wire harness. The electrical connector, DP0606 (Ch B), is on the J6 wire harness.

Table 204

CONNECTOR DP0505 DP0606	PINS	RESISTANCE
	PINS K TO L	10 TO 21 OHMS
	PIN K TO THE CONNECTOR SHELL	GREATER THAN 20 MEGOHMS
	PIN L TO THE CONNECTOR SHELL	GREATER THAN 20 MEGOHMS

- (a) If the resistance is in the specified range 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.
 - a) If the Repair Confirmation is not satisfactory, then open the circuit breakers above and continue.
- (b) If the resistance is not in the specified range, then replace the wire harness, J5 (Ch A) or J6 (Ch B). These are the tasks:
 - Fan Wiring Harness Removal, AMM TASK 73-21-06-000-801-F00
 - Fan Wiring Harness Installation, AMM TASK 73-21-06-400-801-F00
 - 1) 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, DP0501 (Ch A) and DP0601 (Ch B), are correctly connected at the HMU.
 - (b) Make sure that the electrical connectors, DP0505 (Ch A) and DP0606 (Ch B), are correctly connected at the EEC.
 - (c) For Engine 1,

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- 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

- (d) For Engine 2,

- 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
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

- (2) Do this task: Test 12 - Actuators Test, AMM TASK 71-00-00-700-807-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** —————

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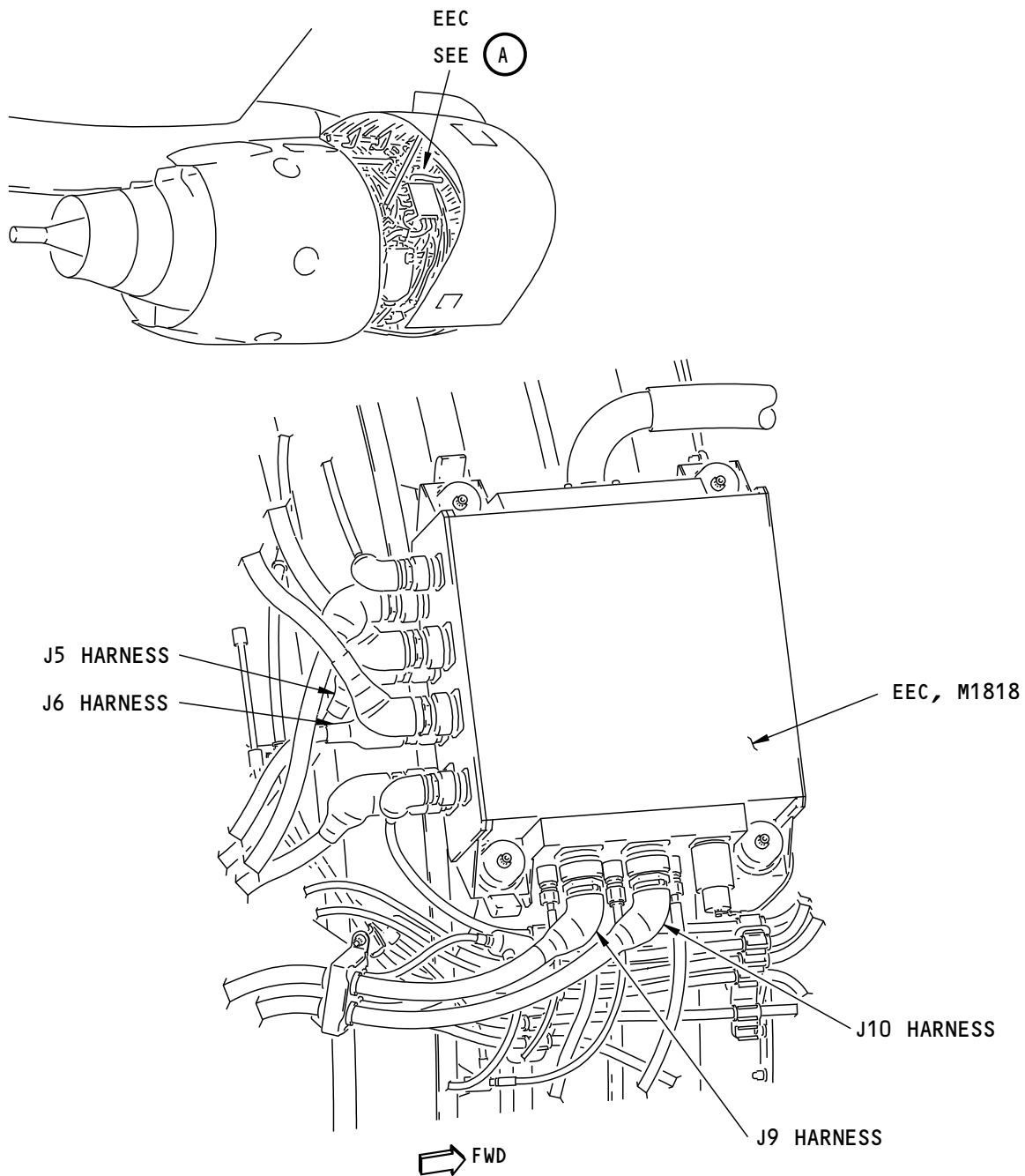
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ECCN 9E991 BOEING PROPRIETARY - See title page for details

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ELECTRONIC ENGINE CONTROL (EEC)

(A)

H34875 S0006745980_V1

Low Pressure Turbine Active Clearance Control - Component Location
Figure 301/75-22-00-990-801-F00 (Sheet 1 of 3)

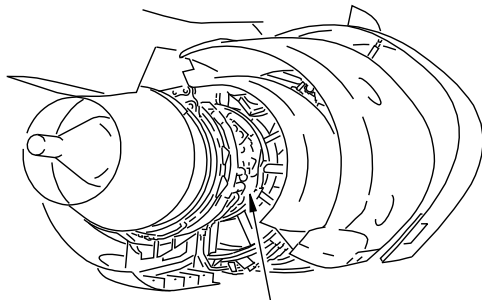
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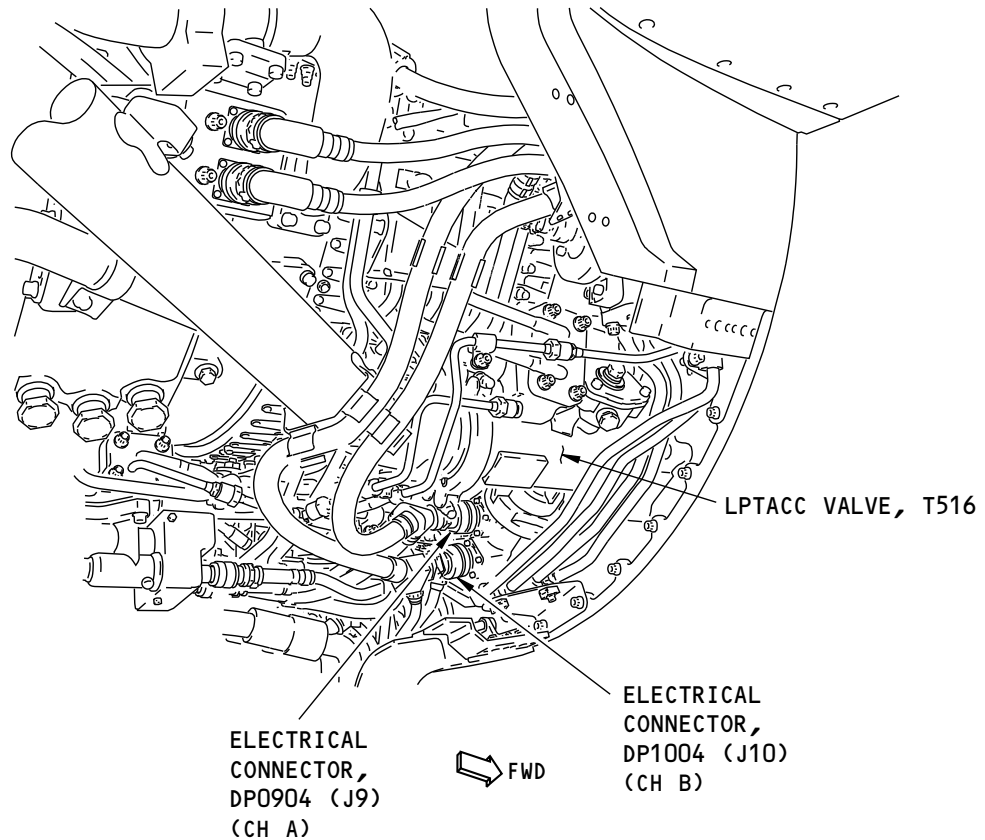
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LPTACC
SEE (B)



LOW PRESSURE TURBINE ACTIVE CLEARANCE CONTROL (LPTACC)

(B)

H34913 S0006745981_V1

Low Pressure Turbine Active Clearance Control - Component Location
Figure 301/75-22-00-990-801-F00 (Sheet 2 of 3)

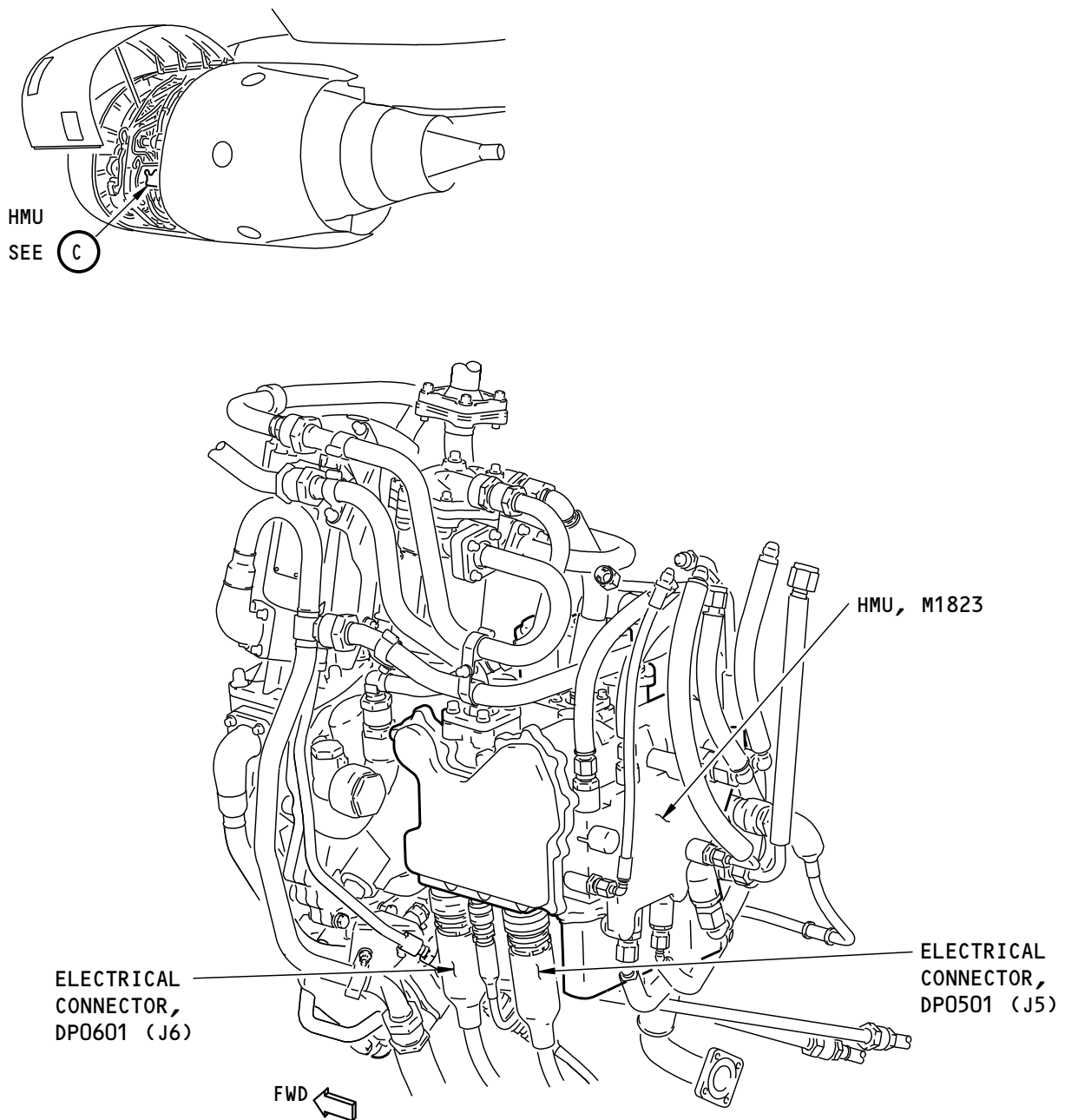
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HYDROMECHANICAL UNIT (HMU)

(C)

H34889 S0006745982_V1

Low Pressure Turbine Active Clearance Control - Component Location
Figure 301/75-22-00-990-801-F00 (Sheet 3 of 3)

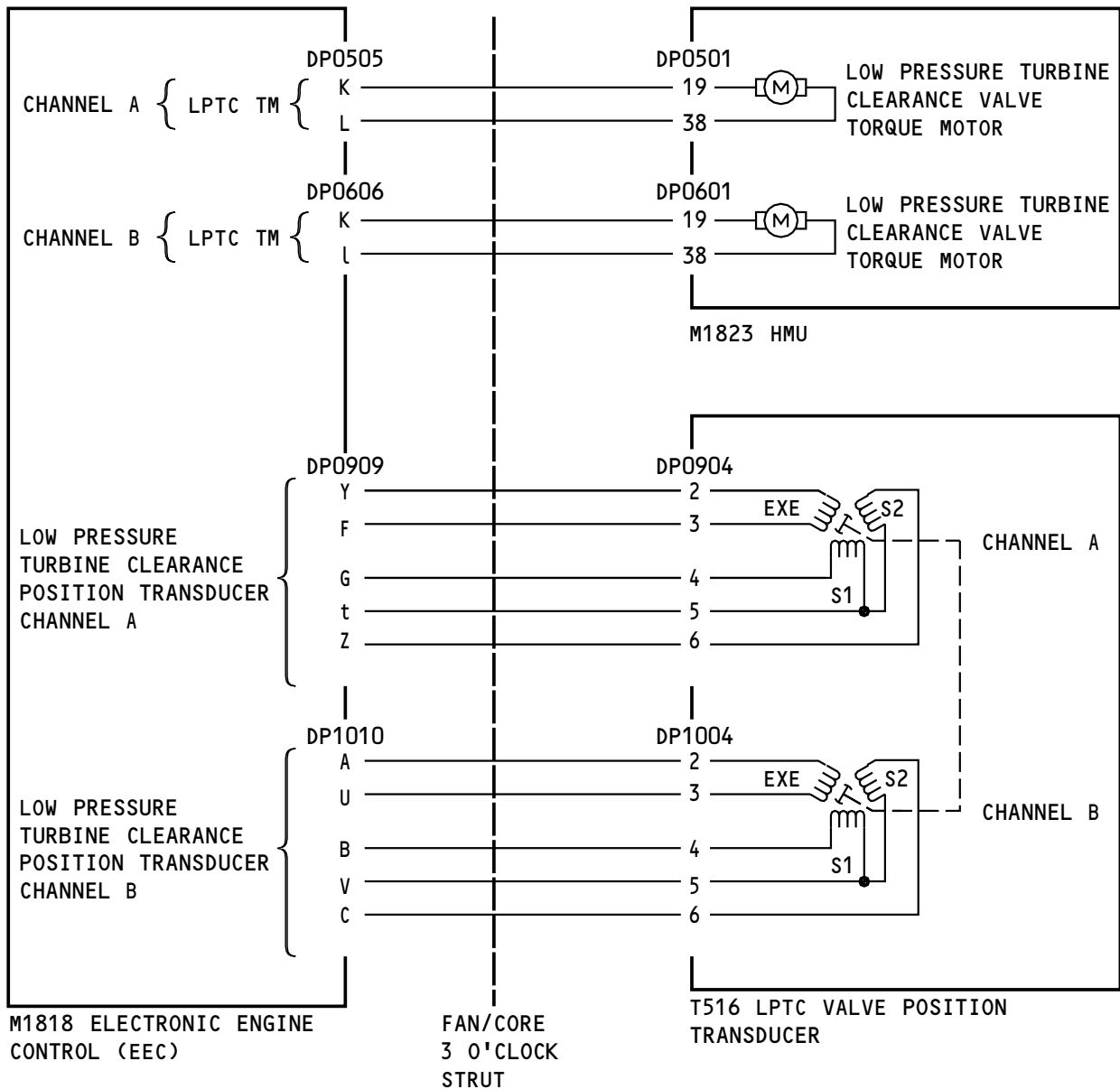
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1 THE WDM/SSM ADD A DASH TO THE PIN LETTER TO DENOTE A LOWER CASE PIN, SUCH AS A- = a.

H35001 S0006745983_V1

Low Pressure Turbine Active Clearance Control - Simplified Schematic
Figure 302/75-22-00-990-802-F00

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801. The TBV Demand and Position Signals Disagree - Fault Isolation

A. Description

- (1) This task is for these maintenance messages:

NOTE: The maintenance message number is in the format 75-X058Y, where:

X = EEC Channel (1=Channel A, 2=Channel B, 3=Dual Channel)

Y = Engine Position (1=ENG 1, 2=ENG 2)

- 75-10581 THE TBV DEMAND AND POSITION SIGNALS DISAGREE: ENG-1 CH A fault
 - 75-10582 THE TBV DEMAND AND POSITION SIGNALS DISAGREE: ENG-2 CH A fault
 - 75-20581 THE TBV DEMAND AND POSITION SIGNALS DISAGREE: ENG-1 CH B fault
 - 75-20582 THE TBV DEMAND AND POSITION SIGNALS DISAGREE: ENG-2 CH B fault
 - 75-30581 THE TBV DEMAND AND POSITION SIGNALS DISAGREE: ENG-1 Dual Channel fault
 - 75-30582 THE TBV DEMAND AND POSITION SIGNALS DISAGREE: ENG-2 Dual Channel fault
- (2) This fault is reported on the active channel of the EEC when the engine is in operation.
- (3) You must do the Initial Evaluation to see if a Dual Channel maintenance message, 75-30581 or 75-30582, is set.
- (4) The EEC senses that the absolute value of the difference between Transient Bleed Valve (TBV) Demand position and Valid Feedback position is greater than 10% between the two TBVs.
- (a) There is no TBV Wrap Fault on the active channel.

B. Possible Causes

- (1) For a Single Channel Maintenance Message:
- (a) HMU, M1823
 - (b) EEC, M1818
 - (c) J5 (CH A) or J6 (CH B) Wire Harness
 - (d) TBV, T519
- (2) For a Dual Channel Maintenance Message:
- (a) HMU, M1823
 - (b) EEC, M1818
 - (c) TBV, T519

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

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	7	C01391	ENGINE 2 ALTN PWR CHAN B

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<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

D. Related Data

- (1) Component Location 75-23 TASK SUPPORT Figure 301
- (2) Simplified Schematic 75-23 TASK SUPPORT Figure 302
- (3) SSM 75-31-12
- (4) SSM 75-31-22
- (5) WDM 73-22-11
- (6) WDM 75-31-12
- (7) WDM 75-31-22

E. Initial Evaluation

- (1) Do these steps to find out if the fault is still active and if it is a Dual Channel Fault.

NOTE: During engine operation, the EEC reports the fault only on the active channel.

- (a) Do the Test 12 - Actuators Test, AMM TASK 71-00-00-700-807-F00.

- 1) If a Single Channel A (B) maintenance message as indicated below shows, do the Fault Isolation Procedure - Single Channel Fault for the applicable channel.

- 75-10581
- 75-20581
- 75-10582
- 75-20582

- 2) If a Dual Channel maintenance message as indicated below shows, do the Fault Isolation Procedure - Dual Channel Fault.

- 75-30581
- 75-30582

- 3) If a combination of two single channel messages (one for each Engine) shows, this is also considered a Dual Channel Fault. Do the Fault Isolation Procedure - Dual Channel Fault.

- 75-10581 (ENG-1, CH A) and 75-20581 (ENG-1, CH B)
- 75-10582 (ENG-2, CH A) and 75-20582 (ENG-2, CH B)

- (b) 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.

- (c) If you cannot find the fault at this time, then the Fault Isolation Procedure cannot isolate the fault.

- 1) 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.

- 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.

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- 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 shown in the Possible Causes list above.
- 3) Monitor the airplane on the subsequent flight.

F. Fault Isolation Procedure - Single Channel Fault

- (1) Open the applicable ENG 1 (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

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
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) Examine the HMU CH-A (CH-B) Electrical Connector, DP0501 (DP0601) (WDM 75-31-12, WDM 75-31-22).

NOTE: The CH-A Electrical Connector, DP0501 is on the J5 Wire Harness. The CH-B Electrical Connector, DP0601 is on the J6 Wire Harness.

- (a) See if the applicable electrical connector is correctly connected to the HMU, and continue.
- (b) Disconnect the HMU CH-A (CH-B) Electrical Connector, DP0501 (DP0601).
- (c) Visually examine the HMU Receptacle and Wire Harness connector (Standard Engine Wiring and Equipment Check, AMM TASK 70-70-01-200-801-F00).
 - 1) If the HMU Receptacle is damaged, then replace the HMU, M1823. These are the tasks:
 - HMU Removal, AMM TASK 73-21-10-000-801-F00
 - HMU Installation, AMM TASK 73-21-10-400-801-F00
 - a) Do the Repair Confirmation at the end of this task.
 - 2) If the Harness Connector is damaged, then replace the applicable CH-A (CH-B Wire Harness, J5 (J6). These are the tasks:
 - Fan Wiring Harness Removal, AMM TASK 73-21-06-000-801-F00
 - Fan Wiring Harness Installation, AMM TASK 73-21-06-400-801-F00
 - a) Do the Repair Confirmation at the end of this task.
 - 3) If the connector was not correctly connected and there was no other problem, 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.

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- (4) Do a Resistance check at the applicable HMU CH-A (CH-B) Receptacle as follows (WDM 75-31-12, WDM 75-31-22):

HMU CH-A RECEPTACLE

DP0501

pin 20	pin 40	9 to 21 Ohms
pin 20	Connector Shell	More than 10 Megohms
pin 40	Connector Shell	More than 10 Megohms

HMU CH-A RECEPTACLE

DP0501

RESISTANCE

HMU CH-B RECEPTACLE

DP0601

pin 20	pin 40	9 to 21 Ohms
pin 20	Connector Shell	More than 10 Megohms
pin 40	Connector Shell	More than 10 Megohms

HMU CH-B RECEPTACLE

DP0601

RESISTANCE

- (a) If the Resistance is not in the specified range, then replace the HMU, M1823. These are the tasks:
- HMU Removal, AMM TASK 73-21-10-000-801-F00
 - HMU Installation, AMM TASK 73-21-10-400-801-F00
- 1) Do the Repair Confirmation at the end of this task.
- (b) If the Resistance is in the specified range, then continue.
- (5) Connect the CH-A (CH-B) Electrical Connector, DP0501 (DP0601) to the HMU.
- (6) Examine the EEC CH-A (CH-B) Electrical Connector, DP0505 (DP0606) (WDM 75-31-12, WDM 75-31-22).
- NOTE:** The CH-A Electrical Connector, DP0505 is on the J5 Wire Harness. The CH-B Electrical Connector, DP0606 is on the J6 Wire Harness.
- (a) See if the CH-A (CH-B) Electrical Connector, DP0505 (DP0606) is correctly connected to the EEC, and continue.
- (b) Disconnect the applicable CH-A (CH-B) Electrical Connector, DP0505 (DP0606) from the EEC.
- (c) Visually examine the EEC Receptacle and Wire Harness connector (Standard Engine Wiring and Equipment Check, AMM TASK 70-70-01-200-801-F00).
- 1) If the EEC Receptacle is damaged, then replace the EEC, M1818. These are the tasks:
- EEC Removal, AMM TASK 73-21-60-000-801-F00
 - EEC Installation, AMM TASK 73-21-60-400-801-F00
- a) Do the Repair Confirmation at the end of this task.
- 2) If the Harness Connector is damaged, then replace the CH-A (CH-B) Wire Harness, J5 (J6). These are the tasks:
- Fan Wiring Harness Removal, AMM TASK 73-21-06-000-801-F00
 - Fan Wiring Harness Installation, AMM TASK 73-21-06-400-801-F00
- a) Do the Repair Confirmation at the end of this task.

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- 3) If the connector was not correctly connected and there was no other problem, 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.
- (7) Do a Resistance check at the applicable EEC CH-A (CH-B) Connector to examine the wiring from the EEC through the HMU as follows (WDM 75-31-12, WDM 75-31-22):

EEC CH-A RECEPTACLE DP0505

pin F
pin F
pin Y

EEC CH-A RECEPTACLE DP0505

pin Y
Connector Shell
Connector Shell

RESISTANCE

9 to 21 Ohms
More than 10 Megohms
More than 10 Megohms

EEC CH-B RECEPTACLE DP0606

pin F
pin F
pin Y

EEC CH-B RECEPTACLE DP0606

pin Y
Connector Shell
Connector Shell

RESISTANCE

9 to 21 Ohms
More than 10 Megohms
More than 10 Megohms

- (a) If the Resistance is in the specified range, 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.
- (b) If the Resistance is not in the specified range, then replace the CH-A (CH-B) Wire Harness, J5 (J6). These are the tasks:
- Fan Wiring Harness Removal, AMM TASK 73-21-06-000-801-F00
 - Fan Wiring Harness Installation, AMM TASK 73-21-06-400-801-F00
- (8) Do the Repair Confirmation at the end of this task.
- (a) If the problem continues, replace the subsequent most likely LRU from the Possible Causes List.
- 1) Do the Repair Confirmation at the end of this task.

G. Fault Isolation Procedure - Dual Channel Fault

- (1) Replace the HMU, M1823 (the most likely LRU from the Dual Channel Possible Causes List). These are the tasks:
- HMU Removal, AMM TASK 73-21-10-000-801-F00
 - HMU Installation, AMM TASK 73-21-10-400-801-F00
- (a) Do the Repair Confirmation at the end of this task.
- (b) If the problem continues, replace the subsequent most likely LRU from the Possible Causes List.
- 1) Do the Repair Confirmation at the end of this task.

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H. Repair Confirmation

- (1) Make sure that the electrical connector, DP0501 (CH A) or DP0601 (CH B), is correctly connected to the HMU.
- (2) Make sure that the electrical connector, DP0505 (CH A) or DP0606 (CH B), is correctly connected to the EEC.
- (3) Remove the safety tags and close the applicable ENG 1 (2) circuit breakers:

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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

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
D	4	C00459	ENGINE 2 IGNITION RIGHT
D	6	C00151	ENGINE 2 IGNITION LEFT
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

- (4) Do this task: Test 12 - Actuators Test, AMM TASK 71-00-00-700-807-F00.
 - (a) If the maintenance message does not show, 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 open the circuit breakers that you closed above and continue the Fault Isolation Procedure at the subsequent step.

— END OF TASK —

802. The TBV Position Signal is Out of Range - Fault Isolation

A. Description

- (1) This task is for these maintenance messages:
 - (a) 75-10591, 75-10592, 75-20591, 75-20592, 75-30591, and 75-30592.
- (2) For the maintenance messages 75-X059Y; 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 applicable Fault Isolation Procedure:
 - (a) If X=1, do the Fault Isolation Procedure - Single Channel Fault for channel A.
 - (b) If X=2, do the Fault Isolation Procedure - Single Channel Fault for channel B.
 - (c) If X=1 and 2 (two messages), or X=3, then do the Fault Isolation Procedure - Dual Channel Fault.
- (3) The Electronic Engine Control (EEC) senses that the position signal from the Transient Bleed Valve (TBV) is less than -3.0% or is greater than 105.0%.
- (4) FADEC 2, Channel A and Channel B:
 - (a) Also, because the Channel A excitation circuit for the Low Pressure Turbine Active Clearance Control (LPTACC) position Linear Variable Differential Transformer (LVDT) and the TBV position LVDT are from a common source in the EEC, a short in one of the two excitation circuits can set Channel A fault messages for the two systems.

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- (b) Also, because the Channel B excitation circuit for the TBV position LVDT, the High Pressure Turbine Active Clearance Control (HPTACC) position LVDT and the Thrust Reverser Right (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.
- (5) FADEC 3, Channel A and Channel B:
 - (a) Also, because the Channel A excitation circuit for the LPTACC position LVDT and the TBV position LVDT are from a common source in the EEC, a short in one of the two excitation circuits can set Channel A fault messages for the two systems.
 - (b) Also, because the Channel B excitation circuit for the TBV position LVDT and the HPTACC position LVDT are from a common source in the EEC, a short in one of the two excitation circuits can set Channel B fault messages for the two systems.

B. Possible Causes

- (1) TBV, T519
- (2) EEC, M1818
- (3) J9 (Ch A) or J10 (Ch B) Wire Harness

C. Circuit Breakers

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

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	1	C00458	ENGINE 1 IGNITION RIGHT
A	3	C00153	ENGINE 1 IGNITION LEFT
A	4	C01390	ENGINE 1 ALTN PWR CHAN B
A	5	C01314	ENGINE 1 ALTN PWR CHAN A

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
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

D. Related Data

- (1) Component Location (75-23 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (75-23 TASK SUPPORT Figure 302)
- (3) SSM 75-31-12
- (4) SSM 75-31-22
- (5) WDM 73-22-11
- (6) WDM 75-31-12
- (7) WDM 75-31-22

E. Initial Evaluation

- (1) To find the Full Authority Digital Engine Control (FADEC) version, do the FADEC 2 or FADEC 3 Identification, AMM TASK 73-21-00-700-810-F00.
- (2) Do this task: EEC BITE Procedure, 73-00 TASK 801.

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- (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 LPTACC, TBV, HPTACC or the TRR. For more information see the Description section.

- 1) 75-10541 and 75-10591 (Engine 1, Ch A)
 - a) Do this task: FADEC2/FADEC3 (Ch A) Excitation Group 4: LPTC and TBV LVDT Excitation Circuit Fault - Fault Isolation, 75-34 TASK 811.
- 2) 75-10542 and 75-10592 (Engine 2, Ch A)
 - a) Do this task: FADEC2/FADEC3 (Ch A) Excitation Group 4: LPTC and TBV LVDT Excitation Circuit Fault - Fault Isolation, 75-34 TASK 811.
- 3) 73-20361, 75-20491, 75-20541 and 78-11491 (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) 73-20362, 75-20492, 75-20542 and 78-11492 (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.

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- (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 LPTACC, TBV, or HPTACC. For more information see the Description section.

- 1) 75-10541 and 75-10591 (Engine 1, Ch A)
 - a) Do this task: FADEC2/FADEC3 (Ch A) Excitation Group 4: LPTC and TBV LVDT Excitation Circuit Fault - Fault Isolation, 75-34 TASK 811.
- 2) 75-10542 and 75-10592 (Engine 2, Ch A)
 - a) Do this task: FADEC2/FADEC3 (Ch A) Excitation Group 4: LPTC and TBV LVDT Excitation Circuit Fault - Fault Isolation, 75-34 TASK 811.
- 3) 75-20361, 75-20491 and 75-20541 (Engine 1, Ch B)
 - a) Do this task: FADEC3 (Ch B) Excitation Group 4: HPTACC and TBV LVDT Excitation Circuit Fault - Fault Isolation, 75-34 TASK 816.
- 4) 75-20362, 75-20492 and 75-20542 (Engine 2, Ch B).
 - a) Do this task: FADEC3 (Ch B) Excitation Group 4: HPTACC and TBV LVDT Excitation Circuit Fault - Fault Isolation, 75-34 TASK 816.

- (3) Do these steps to find out if the fault is still active:

- (a) Do this task: Test 12 - Actuators Test, AMM TASK 71-00-00-700-807-F00.
- (b) If maintenance messages 75-10591 (Ch A, Eng 1), 75-10592 (Ch A, Eng 2), 75-20591 (Ch B, Eng 1) or 75-20592 (Ch B, Eng 2) show, do the Fault Isolation Procedure - Single Channel Fault for the applicable channel.
- (c) If maintenance messages 75-30591 (Ch A and B, Eng 1) or 75-30592 (Ch A and B, Eng 2) show, do the Fault Isolation Procedure - Dual Channel Fault.

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- (d) If the maintenance message does not show on the Flight Management Computer System (FMCS) Control Display Unit (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 problem.
 - 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 Wiring Diagram Manual (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) Do the Initial Evaluation to see if there is an excitation circuit fault and if the fault is still active.
- NOTE:** A fault in the excitation circuit of other Line Replaceable Unit (LRU)s could cause this fault. For more information, see the Description section.
- (2) Do these steps to prepare for the procedure:
- (a) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-2

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

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
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A



WARNING

DO THESE SPECIFIED TASKS IN THE CORRECT SEQUENCE BEFORE YOU OPEN THE THRUST REVERSER: RETRACT THE LEADING EDGE, DO THE DEACTIVATION PROCEDURES FOR THE LEADING EDGE AND THE THRUST REVERSER (FOR GROUND MAINTENANCE), AND OPEN THE FAN COWL PANELS. IF YOU DO NOT OBEY THIS SEQUENCE, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (b) Do this task: Open the Thrust Reverser (Selection), AMM TASK 78-31-00-010-801-F00.

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- (3) Examine the electrical connector, DP0907 (Ch A) or DP1007 (Ch B), at the TBV, T519:

NOTE: The electrical connector DP0907 is on the J9 wire harness. The electrical connector DP1007 is on the J10 wire harness.

- (a) See if the electrical connector, DP0907 (Ch A) or DP1007 (Ch B), is correctly connected to the TBV, T519, and continue.
 - (b) Disconnect the electrical connector, DP0907 (Ch A) or DP1007 (Ch B), from the TBV, T519.
 - (c) Visually examine the TBV receptacle and wire harness connector (Standard Engine Wiring and Equipment Check, AMM TASK 70-70-01-200-801-F00).
 - 1) If the TBV receptacle is damaged, then replace the TBV, T519. These are the tasks:
 - Transient Bleed Valve Removal, AMM TASK 75-23-01-000-801-F00
 - Transient Bleed Valve Installation, AMM TASK 75-23-01-400-801-F00
 - a) Do the Repair Confirmation at the end of this task.
 - 2) If the harness connector is damaged, then replace the wire harness, J9 (Ch A) or J10 (Ch B). These are the tasks:
 - 3 O'clock Strut Harness Removal, AMM TASK 73-21-06-000-802-F00
 - 3 O'clock Strut Harness Installation, AMM TASK 73-21-06-400-802-F00
 - 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, 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) Option 1 (Alternate); Measure the resistance between these contacts on at the applicable TBV receptacle, CH A (DP0907) or CH B (DP1007) (WDM 75-31-12, WDM 75-31-22):

NOTE: The electrical connector DP0907 is on the J9 wire harness. The electrical connector DP1007 is on the J10 wire harness.

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TBV**RECEPTACLE****DP0907****DP0907**

pin 2		pin 3	0 - 150 Ω
pin 4		pin 5	0 - 150 Ω
pin 5		pin 6	0 - 150 Ω
pin 2	.....	connector shell	> 10 M Ω
pin 3	.....	connector shell	> 10 M Ω
pin 4	.....	connector shell	> 10 M Ω
pin 5	.....	connector shell	> 10 M Ω
pin 6	.....	connector shell	> 10 M Ω

TBV**RECEPTACLE****DP1007****DP1007**

pin 2	.....	pin 3	0 - 150 Ω
pin 4	.....	pin 5	0 - 150 Ω
pin 5	.....	pin 6	0 - 150 Ω
pin 2	.....	connector shell	> 10 M Ω
pin 3	.....	connector shell	> 10 M Ω
pin 4	.....	connector shell	> 10 M Ω
pin 5	.....	connector shell	> 10 M Ω
pin 6	.....	connector shell	> 10 M Ω

- (b) If the resistance is not in the specified range, then replace the TBV, T519. These are the tasks:
- Transient Bleed Valve Removal, AMM TASK 75-23-01-000-801-F00
 - Transient Bleed Valve Installation, AMM TASK 75-23-01-400-801-F00
- 1) Do the Repair Confirmation at the end of this task.
- (c) If the resistance is in the specified range, then continue with Option 2 (Preferred) procedure.
- (5) Option 2, (Preferred); Do these steps to examine the operation of the TBV:
- (a) Connect the electrical connector, DP0907 TBV-A (Ch A), to the receptacle, CH B.
 - (b) Connect the electrical connector, DP1007 TBV-B (Ch B), to the receptacle, CH A.
 - (c) 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

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
D	7	C01391	ENGINE 2 ALTN PWR CHAN B

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<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

- (d) Do this task: Test 12 - Actuators Test, AMM TASK 71-00-00-700-807-F00.
- (e) 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

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
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

- (f) Do these steps if the fault does not show:
- 1) Re-connect the electrical connector, DP0907 TBV-A (Ch A), to the receptacle, CH A.
 - 2) Re-connect the electrical connector, DP1007 TBV-B (Ch B), to the receptacle, CH B.
 - 3) Do the Repair Confirmation at the end of this task.
- (g) If fault shows on the other channel, then replace the TBV, T519. These are the tasks:
- Transient Bleed Valve Removal, AMM TASK 75-23-01-000-801-F00
 - Transient Bleed Valve Installation, AMM TASK 75-23-01-400-801-F00
- 1) Do the Repair Confirmation at the end of this task.
- (h) If fault continues on the same channel, do these steps:
- 1) Re-connect the electrical connector, DP0907 TBV-A (Ch A), to the receptacle, CH A.
 - 2) Re-connect the electrical connector, DP1007 TBV-B (Ch B), to the receptacle, CH B.
 - 3) If you did not find a problem, then continue.



MAKE SURE THAT YOU CONNECT THE CHANNEL A CONNECTOR TO THE CHANNEL A LRU-RECEPTACLE. CONNECT CHANNEL B IN THE SAME PROCEDURE. THE ELECTRICAL CONNECTORS ARE INTERCHANGEABLE. MIXING UP THE WIRES CAN CAUSE LRU FAULTS AND OUTPUT DATA WILL SHOW ON THE WRONG CHANNELS.

- (6) If not already done, re-connect the electrical connector, DP0907 TBV-A (Ch A), to the receptacle, CH A; and, the electrical connector, DP1007 TBV-B (Ch B), to the receptacle, CH B.

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- (7) Examine the electrical connector, DP0909 (Ch A) or DP1010 (Ch B), at the EEC, M1818:

NOTE: The electrical connector, DP0909 (Ch A), is on the J9 wire harness. The electrical connector, DP1010 (Ch B), is on the J10 wire harness.

- (a) See if the electrical connector, DP0909 (Ch A) or DP1010 (Ch B), is correctly connected to the EEC, and continue.
 - (b) Disconnect the electrical connector, DP0909 (Ch A) or DP1010 (Ch B), from the EEC.
 - (c) Visually examine the EEC receptacle and wire harness connector (Standard Engine Wiring and Equipment Check, AMM TASK 70-70-01-200-801-F00).
 - 1) If the EEC receptacle is damaged, then replace the EEC, M1818. These are the tasks:
 - EEC Removal, AMM TASK 73-21-60-000-801-F00
 - EEC Installation, AMM TASK 73-21-60-400-801-F00
 - a) Do the Repair Confirmation at the end of this task.
 - 2) If the harness connector is damaged, then replace the wire harness, J9 (Ch A) or J10 (Ch B). These are the tasks:
 - Fan Wiring Harness Removal, AMM TASK 73-21-06-000-801-F00
 - Fan Wiring Harness Installation, AMM TASK 73-21-06-400-801-F00
 - 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.
 - (d) If you did not find a problem, then continue.
- (8) Measure the resistance between these contacts to examine the wires between the applicable EEC connector, DP0909 (Ch A) or DP1010 (Ch B), on the wire harness through the TBV, T519 (WDM 75-31-12, WDM 75-31-22):

NOTE: The electrical connector DP0909 is on the J9 wire harness. The electrical connector DP1010 is on the J10 wire harness.

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EEC**CONNECTOR****DP0909****DP0909**

pin E		pin X	0 - 150 Ω
pin D		pin r	0 - 150 Ω
pin W		pin r	0 - 150 Ω
pin E	.....	connector shell	> 10 M Ω
pin X	.....	connector shell	> 10 M Ω
pin D	.....	connector shell	> 10 M Ω
pin W	.....	connector shell	> 10 M Ω
pin r	.....	connector shell	> 10 M Ω

EEC**CONNECTOR****DP1010****DP1010**

pin E	.....	pin X	0 - 150 Ω
pin D	.....	pin r	0 - 150 Ω
pin W	.....	pin r	0 - 150 Ω
pin E	.....	connector shell	> 10 M Ω
pin X	.....	connector shell	> 10 M Ω
pin D	.....	connector shell	> 10 M Ω
pin W	.....	connector shell	> 10 M Ω
pin r	.....	connector shell	> 10 M Ω

- (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.

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- 2) FADEC 2, do the applicable LVDT Excitation Circuit Fault isolation for the applicable channel:
 - a) For Channel A, do this task: FADEC2/FADEC3 (Ch A) Excitation Group 4: LPTC and TBV LVDT Excitation Circuit Fault - Fault Isolation, 75-34 TASK 811.
 - b) 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.

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- 3) FADEC 3, do the applicable LVDT Excitation Circuit Fault isolation for the applicable channel:
 - a) For the Channel A, do this task: FADEC2/FADEC3 (Ch A) Excitation Group 4: LPTC and TBV LVDT Excitation Circuit Fault - Fault Isolation, 75-34 TASK 811.

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- b) For the Channel B, do this task: FADEC3 (Ch B) Excitation Group 4: HPTACC and TBV LVDT Excitation Circuit Fault - Fault Isolation, 75-34 TASK 816.
- c) Do the Repair Confirmation at the end of this task.
- (c) If the resistance is not in the specified range, then replace the wire harness, J9 (Ch A) or J10 (Ch B). These are the tasks:
 - Fan Wiring Harness Removal, AMM TASK 73-21-06-000-801-F00
 - Fan Wiring Harness Installation, AMM TASK 73-21-06-400-801-F00
- 1) Do the Repair Confirmation at the end of this task.

G. Fault Isolation Procedure - Dual Channel Fault

- (1) Do these steps to prepare for the procedure:
 - (a) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-2

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

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
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A



WARNING

DO THESE SPECIFIED TASKS IN THE CORRECT SEQUENCE BEFORE YOU OPEN THE THRUST REVERSER: RETRACT THE LEADING EDGE, DO THE DEACTIVATION PROCEDURES FOR THE LEADING EDGE AND THE THRUST REVERSER (FOR GROUND MAINTENANCE), AND OPEN THE FAN COWL PANELS. IF YOU DO NOT OBEY THIS SEQUENCE, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (b) Do this task: Open the Thrust Reverser (Selection), AMM TASK 78-31-00-010-801-F00.
- (2) Examine the electrical connectors, DP0907 (Ch A) and DP1007 (Ch B), at the TBV:
 - (a) See if the electrical connectors, DP0907 (Ch A) and DP1007 (Ch B), are correctly connected to the TBV, and continue.
 - (b) Disconnect the electrical connectors, DP0907 (Ch A) and DP1007 (Ch B), from the TBV.
 - (c) Visually examine the TBV receptacles and wire harness connectors (Standard Engine Wiring and Equipment Check, AMM TASK 70-70-01-200-801-F00).
 - 1) If a TBV receptacle is damaged, then replace the TBV, T519. These are the tasks:
 - Transient Bleed Valve Removal, AMM TASK 75-23-01-000-801-F00
 - Transient Bleed Valve Installation, AMM TASK 75-23-01-400-801-F00
 - a) Do the Repair Confirmation at the end of this task.

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- 2) If a harness connector is damaged, then replace the wire harness, J9 (Ch A) or J10 (Ch B). These are the tasks:
 - 3 O'clock Strut Harness Removal, AMM TASK 73-21-06-000-802-F00
 - 3 O'clock Strut Harness Installation, AMM TASK 73-21-06-400-802-F00
 - 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.
- (d) If you did not find a problem, then continue.
- (3) Measure the resistance between these contacts of the electrical connectors DP0907 (Ch A) and DP1007 (Ch B) at the TBV receptacles (WDM 75-31-12, WDM 75-31-22):

TBV

RECEPTACLE	DP0907	DP0907	
	pin 2	pin 3	0 - 150 Ω
	pin 4	pin 5	0 - 150 Ω
	pin 5	pin 6	0 - 150 Ω
	pin 2	connector shell	> 10 M Ω
	pin 3	connector shell	> 10 M Ω
	pin 4	connector shell	> 10 M Ω
	pin 5	connector shell	> 10 M Ω
	pin 6	connector shell	> 10 M Ω

TBV

RECEPTACLE	DP1007	DP1007	
	pin 2	pin 3	0 - 150 Ω
	pin 4	pin 5	0 - 150 Ω
	pin 5	pin 6	0 - 150 Ω
	pin 2	connector shell	> 10 M Ω
	pin 3	connector shell	> 10 M Ω
	pin 4	connector shell	> 10 M Ω
	pin 5	connector shell	> 10 M Ω
	pin 6	connector shell	> 10 M Ω

- (b) If the resistance value is not in the specified range, then replace the TBV, T519. These are the tasks:
 - Transient Bleed Valve Removal, AMM TASK 75-23-01-000-801-F00
 - Transient Bleed Valve Installation, AMM TASK 75-23-01-400-801-F00
 - 1) Do the Repair Confirmation at the end of this task.
- (c) If the resistance value is in the specified range, then continue.

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MAKE SURE THAT YOU CONNECT THE CHANNEL A CONNECTOR TO THE CHANNEL A LRU-RECEPTACLE. CONNECT CHANNEL B IN THE SAME PROCEDURE. THE ELECTRICAL CONNECTORS ARE INTERCHANGEABLE. MIXING UP THE WIRES CAN CAUSE LRU FAULTS AND OUTPUT DATA WILL SHOW ON THE WRONG CHANNELS.

- (4) Connect the electrical connector, DP0907 (Ch A) and DP1007 (Ch B), to the TBV receptacles, CH A and CH B.
- (5) Examine the electrical connectors, DP0909 (Ch A) and DP1010 (Ch B), at the EEC, M1818:
NOTE: The electrical connector DP0909 is on the J9 wire harness. The electrical connector DP1010 is on the J10 wire harness.
 - (a) See if the electrical connectors, DP0909 (Ch A) and DP1010 (Ch B), are correctly connected to the EEC, M1818, and continue.
 - (b) Disconnect the electrical connectors, DP0909 (Ch A) and DP1010 (Ch B), from the EEC, M1818.
 - (c) Visually examine the EEC receptacles and wire harness connectors (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 harness connector is damaged, then replace the wire harness, J9 (Ch A) or J10 (Ch B). These are the tasks:
 - 3 O'clock Strut Harness Removal, AMM TASK 73-21-06-000-802-F00
 - 3 O'clock Strut Harness Installation, AMM TASK 73-21-06-400-802-F00
 - 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.
 - (d) If you did not find a problem, then continue.
- (6) Measure the resistance between these contacts to examine the wires between the EEC connectors, DP0909 (Ch A) and DP1010 (Ch B), on the wire harnesses through the TBV, T519 (WDM 75-31-12, WDM 75-31-22):
NOTE: The electrical connector DP0909 is on the J9 wire harness. The electrical connector DP1010 is on the J10 wire harness.

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EEC**CONNECTORS****DP0909****DP0909**

pin E		pin X	0 - 150 Ω
pin D		pin r	0 - 150 Ω
pin W		pin r	0 - 150 Ω
pin E	.....	connector shell	> 10 M Ω
pin X	.....	connector shell	> 10 M Ω
pin D	.....	connector shell	> 10 M Ω
pin W	.....	connector shell	> 10 M Ω
pin r	.....	connector shell	> 10 M Ω

EEC**CONNECTOR****DP1010****DP1010**

pin E	.....	pin X	0 - 150 Ω
pin D	.....	pin r	0 - 150 Ω
pin W	.....	pin r	0 - 150 Ω
pin E	.....	connector shell	> 10 M Ω
pin X	.....	connector shell	> 10 M Ω
pin D	.....	connector shell	> 10 M Ω
pin W	.....	connector shell	> 10 M Ω
pin r	.....	connector shell	> 10 M Ω

- (b) If the resistance is in the specified range 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.
- (c) If the resistance is not in the specified range, then replace the wire harness, J9 (Ch A) or J10 (Ch B). These are the tasks:
- 3 O'clock Strut Harness Removal, AMM TASK 73-21-06-000-802-F00
 - 3 O'clock Strut Harness Installation, AMM TASK 73-21-06-400-802-F00
 - 1) Do the Repair Confirmation at the end of this task.

H. Repair Confirmation

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

**CAUTION**

MAKE SURE THAT YOU CONNECT THE CHANNEL A CONNECTOR TO THE CHANNEL A LRU-RECEPTACLE. CONNECT CHANNEL B IN THE SAME PROCEDURE. THE ELECTRICAL CONNECTORS ARE INTERCHANGEABLE. MIXING UP THE WIRES CAN CAUSE LRU FAULTS AND OUTPUT DATA WILL SHOW ON THE WRONG CHANNELS.

- (a) Make sure that the electrical connectors, DP0907 (Ch A) and DP1007 (Ch B), is correctly connected to the TBV, T519.
- (b) Make sure that the electrical connectors, DP0909 (Ch A) and DP1010 (Ch B), is correctly connected to the EEC, M1818.

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- (c) 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

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
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

- (2) Do this task: Test 12 - Actuators Test, AMM TASK 71-00-00-700-807-F00.
 (a) If the maintenance message does not show, you corrected the problem.



OBEY THE INSTRUCTIONS IN THE PROCEDURE TO CLOSE THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

- 1) Do this task: Close the Thrust Reverser (Selection), AMM TASK 78-31-00-010-804-F00.
 (b) If the maintenance message still shows, then do the following and continue the Fault Isolation Procedure at the subsequent step.
 1) If these circuit breakers are closed, then open them 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

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
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

————— END OF TASK —————

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803. The TBV Position Signals Disagree - Fault Isolation

A. Description

- (1) This task is for these maintenance messages:
 - (a) 75-10601, 75-10602, 75-20601, 75-20602, 75-30601 and 75-30602.
- (2) The maintenance messages 75-X060Y; where X = EEC Channel (1=Channel A, 2=Channel B, 3=Dual Channel), and Y = Engine Position (1=Eng 1, 2=Eng 2).
 - (a) If X=1 or 2, do the Fault Isolation Procedure - Single Channel Fault for the applicable channel.
 - (b) If X=1 and 2 (two messages), or X=3, then do the Fault Isolation Procedure - Dual Channel Fault.
- (3) The EEC senses a difference that is greater than 8.7% between the two position sensors in the TBV.
 - (a) The values from the two channels are in a valid range.

B. Possible Causes

- (1) For the Single Channel maintenance messages:
 - (a) EEC (Internal Failure), M1818
 - (b) TBV, T519.
- (2) For the Dual Channel maintenance messages:
 - (a) TBV, T519
 - (b) EEC, M1818.

C. Circuit Breakers

- (1) For Engine 1,
 - (a) 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

- (2) For Engine 2,
 - (a) 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>
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

D. Related Data

- (1) Component Location (75-23 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (75-23 TASK SUPPORT Figure 302)
- (3) (SSM 75-31-12)
- (4) (SSM 75-31-22)
- (5) (WDM 73-22-11)
- (6) (WDM 75-31-12)

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(7) (WDM 75-31-22)

E. Initial Evaluation

- (1) Do these steps to find out if the fault is still active, and if another related maintenance message was set:

NOTE: This fault is normally reported by channel A and channel B. If the fault is reported by only a single channel, then an additional fault in the EEC is present.

- (a) For RECENT FAULTS, do this task: EEC BITE Procedure, 73-00 TASK 801.
- (b) If maintenance message number 75-10591, 75-10592, 75-20591, 75-20592, 75-30591 or 75-30592 shows, then, do this task: The TBV Position Signal is Out of Range - Fault Isolation, 75-23 TASK 802.
- (c) Do this task: Test 12 - Actuators Test, AMM TASK 71-00-00-700-807-F00.
- (d) If maintenance message 75-10601 (Ch A, Eng1), 75-10602 (Ch A, Eng 2), 75-20601 (Ch B, Eng 1) or 75-20602 (Ch B, Eng 2), shows, do the Fault Isolation Procedure - Single Channel Fault for the applicable channel.
- (e) If maintenance message 75-30601 (Eng 1) or 75-30602 (Eng 2) shows, do the Fault Isolation Procedure - Dual Channel Fault.
- (f) 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 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.

F. Fault Isolation Procedure - Single Channel Fault

- (1) Do this task: EEC TEST, AMM TASK 73-21-00-700-804-F00.
 - (a) Look for INTERNAL EEC FAULTs on the CDU.
 - (b) Do the Fault Isolation Procedures for the INTERNAL EEC FAULT that you found first.
 - 1) Do the Repair Confirmation at the end of this task.
 - (c) If the problem continues or an INTERNAL EEC FAULT did not show during the EEC test, do the Fault Isolation Procedure - Dual Channel Fault.

G. Fault Isolation Procedure - Dual Channel Fault

- (1) To identify if the "TBV position signal is out of range" fault is set, do the Initial Evaluation above.
- (2) Replace the TBV, T519 (the most likely LRU from the dual channel Possible Causes list). These are the tasks:

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- Transient Bleed Valve Removal, AMM TASK 75-23-01-000-801-F00
- Transient Bleed Valve Installation, AMM TASK 75-23-01-400-801-F00
- (a) Do the Repair Confirmation at the end of this task.
- (b) If the problem continues, replace the subsequent most likely LRU from the Possible Causes list.
 - 1) Do the Repair Confirmation at the end of this task.

H. Repair Confirmation

- (1) Do this task: Test 12 - Actuators Test, AMM TASK 71-00-00-700-807-F00.
 - (a) If the maintenance message does not show, you corrected the problem.

— END OF TASK —

804. The HMU TBV Control Current is Out of Range - Fault Isolation

A. Description

- (1) This task is for these maintenance messages:
 - (a) 75-10571, 75-10572, 75-20571, 75-20572, 75-30571 and 75-30572.
- (2) For the maintenance message 75-X057Y; 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 applicable Fault Isolation:
 - (a) If X=1, do the Fault Isolation Procedure for channel A.
 - (b) If X=2, do the Fault Isolation Procedure for channel B.
 - (c) If X=1 and 2 (two messages), or X=3, do the Fault Isolation Procedure for channel A and B.
- (3) The EEC detected that the return current from the HMU torque motor that controls the TBV system is not in the valid range; or, absolute value of the difference between the calculated EEC output current and the sensed return current is greater than specified value.

B. Possible Causes

- (1) HMU, M1823
- (2) EEC, M1818
- (3) J5 (Ch A) or J6 (Ch B) Wire Harness.

C. Circuit Breakers

- (1) For Engine 1,
 - (a) 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

- (2) For Engine 2,
 - (a) 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>
D	7	C01391	ENGINE 2 ALTN PWR CHAN B

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<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

D. Related Data

- (1) Component Location (75-23 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (75-23 TASK SUPPORT Figure 302)
- (3) (SSM 75-31-11)
- (4) (SSM 75-31-21)
- (5) (WDM 73-22-11)
- (6) (WDM 75-31-12)
- (7) (WDM 75-31-22)

E. Initial Evaluation

- (1) Do these steps to find out if the fault is still active:
 - (a) Do this task: Test 12 - Actuators Test, AMM TASK 71-00-00-700-807-F00.
 - (b) If maintenance messages, 75-10571 (Ch A, Eng 1), 75-10572 (Ch A, Eng 2), 75-20571 (Ch B, Eng 1), 75-20572 (Ch B, Eng 2), 75-30571 (Ch A and B, Eng 1) or 75-30572 (Ch A and B, Eng 2) shows, do the Fault Isolation Procedure for the applicable channel or channels.
 - (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 these steps to prepare for the procedure:
 - (a) For Engine 1,
 - 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

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<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
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) For Engine 2,

- 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>
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) Examine the electrical connectors, DP0501 (Ch A) or DP0601 (Ch B), at the HMU:

NOTE: The electrical connector, DP0501 (Ch A), is on the J5 wire harness. The electrical connector, DP0601 (Ch B), is on the J6 wire harness.

- (a) See if the electrical connectors, DP0501 (Ch A) or DP0601 (Ch B), is correctly connected to the HMU, and continue.
- (b) Disconnect the electrical connectors, DP0501 (Ch A) or DP0601 (Ch B), from the HMU.
- (c) Visually examine the HMU receptacle and wire harness connector (AMM TASK 70-70-01-200-801-F00).
 - 1) If the HMU receptacle is damaged, then replace the HMU, M1823. These are the tasks:
 - HMU Removal, AMM TASK 73-21-10-000-801-F00
 - HMU Installation, AMM TASK 73-21-10-400-801-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 harness connector is damaged, then replace the wire harness, J5 (Ch A) or J6 (Ch B). These are the tasks:
 - Fan Wiring Harness Removal, AMM TASK 73-21-06-000-801-F00
 - Fan Wiring Harness Installation, AMM TASK 73-21-06-400-801-F00
 - a) Do the Repair Confirmation at the end of this task.
 - b) If the Repair Confirmation is not satisfactory, then open the circuit 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.

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- (3) Measure the resistance between these pins of the applicable HMU receptacle, DP0501 (Ch A) or DP0601 (Ch B):

Table 201

RECEPTACLE DP0501 DP0601	PINS	RESISTANCE
	PINS 20 TO 40	9 TO 21 OHMS
	PIN 20 TO THE CONNECTOR SHELL	GREATER THAN 10 MEGOHMS
	PIN 40 TO THE CONNECTOR SHELL	GREATER THAN 10 MEGOHMS

- (a) If the resistance is not in the specified range, then replace the HMU, M1823. These are the tasks:
- HMU Removal, AMM TASK 73-21-10-000-801-F00
 - HMU Installation, AMM TASK 73-21-10-400-801-F00
- 1) 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.
- (b) If you do not find a problem, then continue.
- (4) Connect the electrical connector, DP0501 (Ch A) or DP0601 (Ch B), to the HMU.
- (5) Examine the electrical connector, DP0505 (Ch A) or DP0606 (Ch B), at the EEC:
- NOTE: The electrical connector, DP0505 (Ch A), is on the J5 wire harness. The electrical connector, DP0606 (Ch B), is on the J6 wire harness.
- (a) See if the electrical connector, DP0505 (Ch A) or DP0606 (Ch B), is correctly connected to the EEC, and continue.
- (b) Disconnect the electrical connector, DP0505 (Ch A) or DP0606 (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 the harness connector is damaged, then replace the wire harness, J5 (Ch A) or J6 (Ch B). These are the tasks:
- Fan Wiring Harness Removal, AMM TASK 73-21-06-000-801-F00
 - Fan Wiring Harness Installation, AMM TASK 73-21-06-400-801-F00
- a) Do the Repair Confirmation at the end of this task.
- b) If the Repair Confirmation is not satisfactory, then open the circuit breakers above and continue.

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- 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 to examine the wires between the EEC connectors on the wire harnesses through the HMU:

NOTE: The electrical connector, DP0505 (Ch A), is on the J5 wire harness. The electrical connector, DP0606 (Ch B), is on the J6 wire harness.

Table 202

CONNECTOR DP0505 DP0606	PINS	RESISTANCE
	PINS F TO Y	9 TO 21 OHMS
	PIN F TO THE CONNECTOR SHELL	GREATER THAN 20 MEGOHMS
	PIN Y TO THE CONNECTOR SHELL	GREATER THAN 20 MEGOHMS

- (a) If the resistance is in the specified range 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.
 - a) If the Repair Confirmation is not satisfactory, then open the circuit breakers above and continue.
- (b) If the resistance is not in the specified range, then replace the wire harness, J5 (Ch A) or J6 (Ch B). These are the tasks:
 - Fan Wiring Harness Removal, AMM TASK 73-21-06-000-801-F00
 - Fan Wiring Harness Installation, AMM TASK 73-21-06-400-801-F00
 - 1) 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, DP0501 (Ch A) and DP0601 (Ch B), are correctly connected at the HMU.
 - (b) Make sure that the electrical connectors, DP0505 (Ch A) and DP0606 (Ch B), are correctly connected at the EEC.
 - (c) For Engine 1,
 - 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

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CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	3	C00153	ENGINE 1 IGNITION LEFT
A	4	C01390	ENGINE 1 ALTN PWR CHAN B
A	5	C01314	ENGINE 1 ALTN PWR CHAN A

(d) For Engine 2,

- 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
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

- (2) Do this task: Test 12 - Actuators Test, AMM TASK 71-00-00-700-807-F00.
 - (a) If the maintenance message does not show, you corrected the problem.
- (3) Do this task: Close the Fan Cowl Panels, AMM TASK 71-11-02-410-801-F00.

———— **END OF TASK** ————

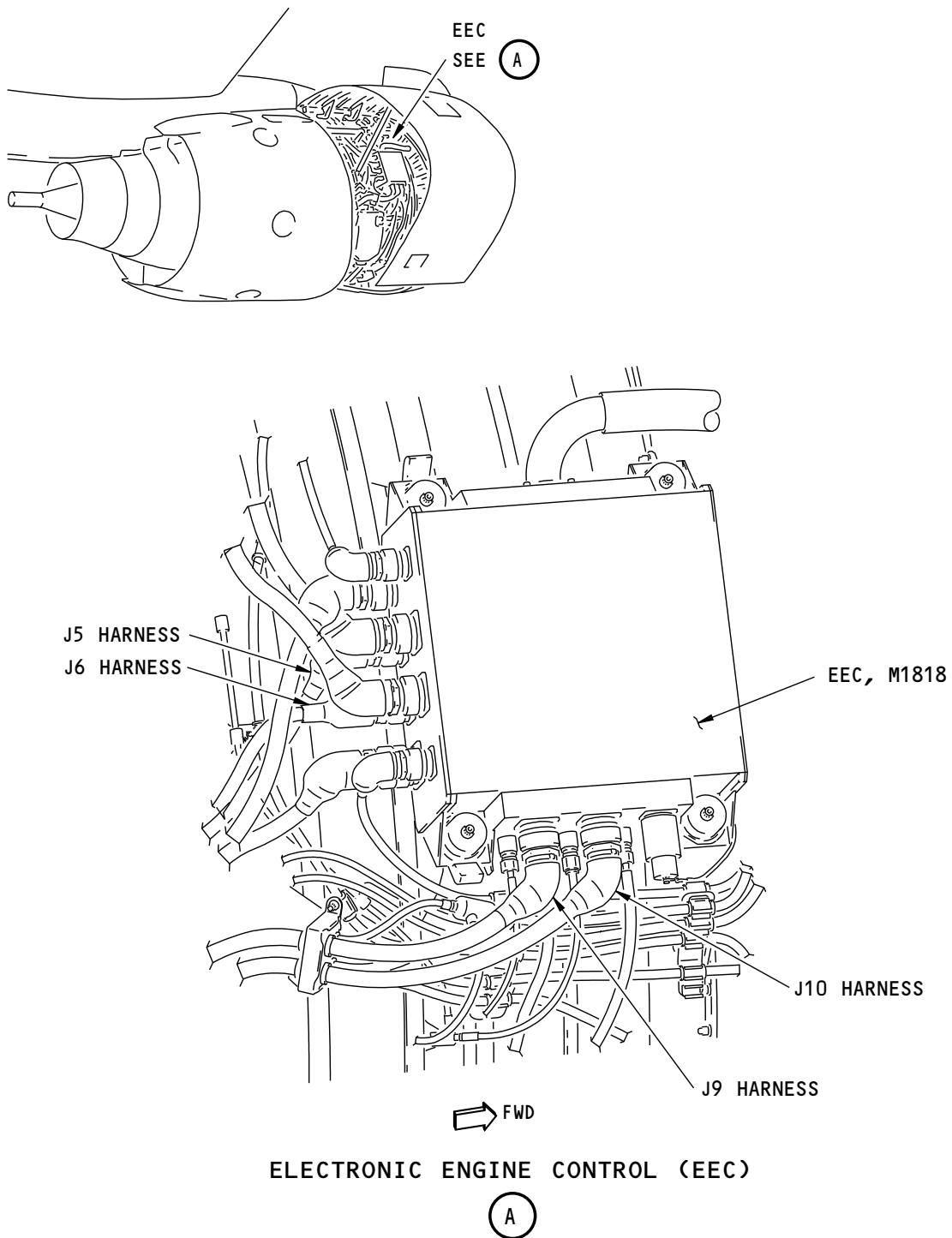
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H37201 S0006746008_V1

Transient Bleed - Component Location
Figure 301/75-23-00-990-801-F00 (Sheet 1 of 3)

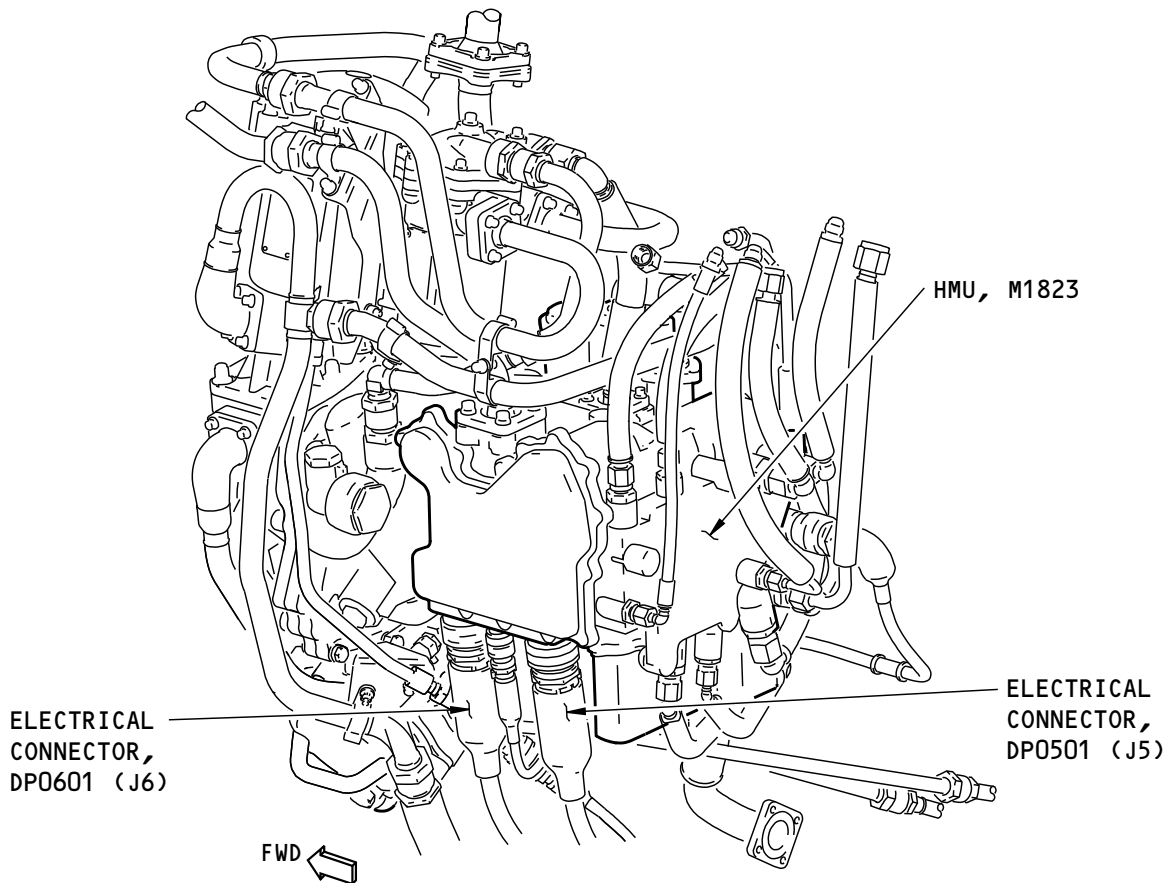
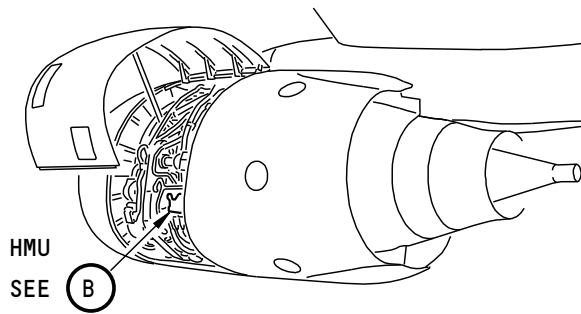
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HYDROMECHANICAL UNIT (HMU)

(B)

H37209 S0006746009_V1

Transient Bleed - Component Location
Figure 301/75-23-00-990-801-F00 (Sheet 2 of 3)

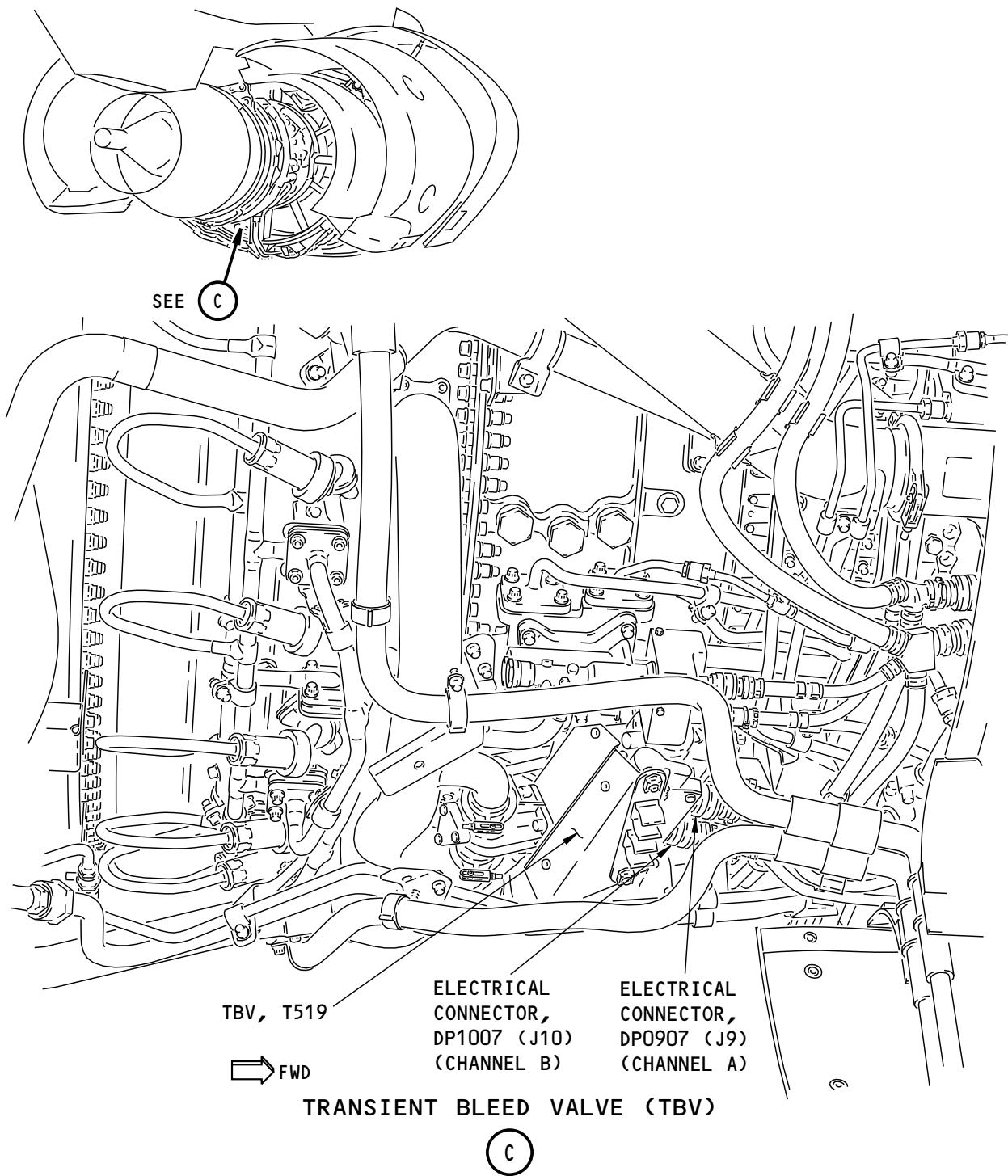
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H45798 S0006746010_V2

Transient Bleed - Component Location
Figure 301/75-23-00-990-801-F00 (Sheet 3 of 3)

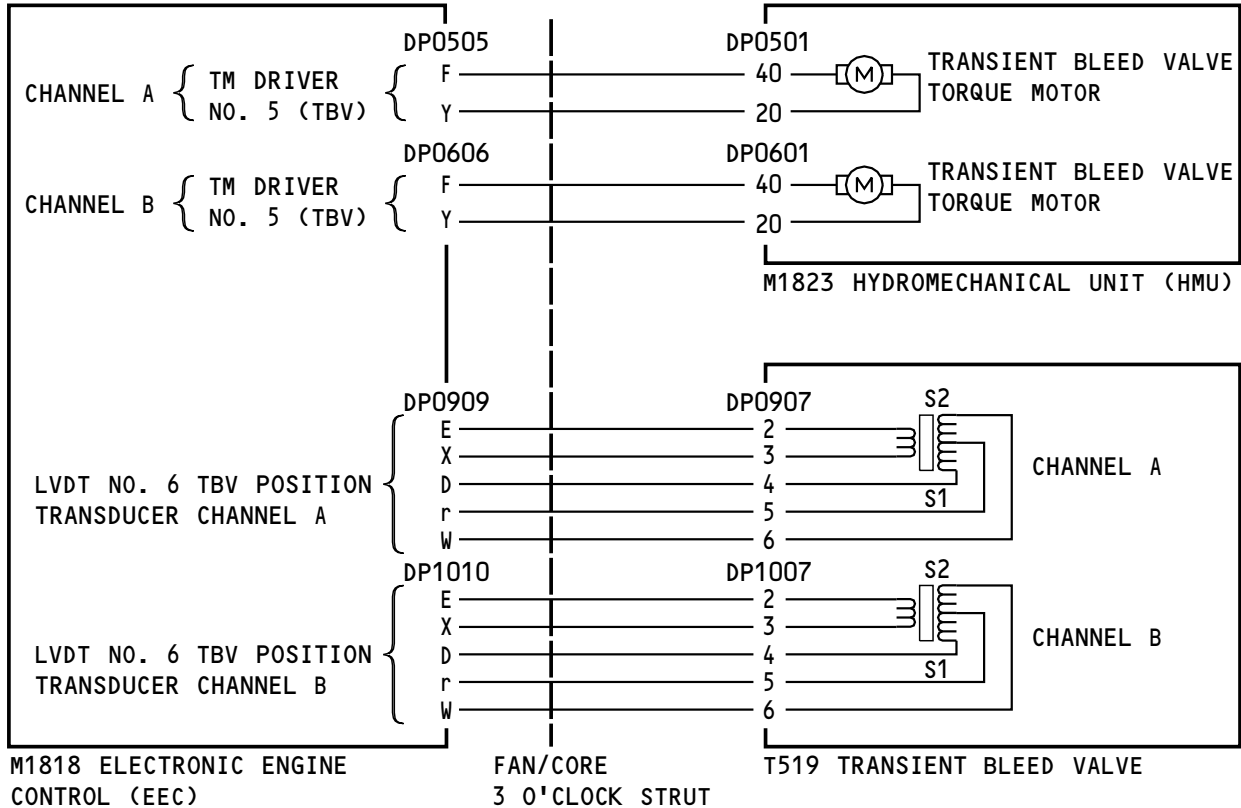
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NOTE: THE WDM/SSM ADD A DASH TO THE PIN LETTER TO DENOTE A LOWER CASE PIN, SUCH AS A- = a.

H37262 S0006746013_V1

Transient Bleed - Simplified Schematic
Figure 302/75-23-00-990-802-F00

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801. HMU VSV Control Current is Out of Range - Fault Isolation

A. Description

- (1) This task is for these maintenance message numbers:
 - (a) 75-10371, 75-10372, 75-20371, 75-20372, 75-30371 and 75-30372.
- (2) The maintenance messages 75-X037Y; where X = EEC Channel (1=Channel A, 2=Channel B, 3=Dual Channel), and Y = Engine Position (1=Eng 1, 2=Eng 2).
 - (a) If X=1, do the Fault Isolation Procedure for channel A.
 - (b) If X=2, do the Fault Isolation Procedure for channel B.
 - (c) If X=1 and 2 (two messages), or X=3, do the Fault Isolation Procedure for channel A and B.
- (3) The EEC detected that the return current from the HMU torque motor that controls the VSV system is not in the valid range; or, the difference between the calculated EEC output current and the sensed return current is greater than a specified value.

B. Possible Causes

- (1) HMU, M1823
- (2) EEC, M1818
- (3) J5 (Ch A) or J6 (Ch B) wire harness.

C. Circuit Breakers

- (1) For Engine 1,
 - (a) 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

- (2) For Engine 2,
 - (a) 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>
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

D. Related Data

- (1) Component Location (75-31 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (75-31 TASK SUPPORT Figure 302)
- (3) (SSM 75-31-12)
- (4) (SSM 75-31-22)
- (5) (WDM 73-25-11)
- (6) (WDM 75-31-12)
- (7) (WDM 75-31-22)

E. Initial Evaluation

- (1) Do these steps to find out if the fault is still active:

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- (a) Do this task: Test 12 - Actuators Test, AMM TASK 71-00-00-700-807-F00.
- (b) If maintenance message 75-10371 (Eng 1, Ch A), 75-10372 (Eng 2, Ch A), 75-20371 (Eng 1, Ch B), or 75-20372 (Eng 2, Ch B) shows, then do the Fault Isolation Procedure for the applicable channel.
- (c) If maintenance message 75-30371 (Ch A and B, Eng 1) or 75-30372 (Ch A and B, Eng2) shows, then do the Fault Isolation Procedure for the two channels.
- (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.
 - 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 procedure:

- (a) For Engine 1,

- 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) For Engine 2,

- 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>
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) Examine the electrical connectors, DP0501 (Ch A) or DP0601 (Ch B), at the HMU:

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- (a) See if the electrical connectors, DP0501 (Ch A) or DP0601 (Ch B), is correctly connected to the HMU, and continue.
- (b) Disconnect the electrical connectors, DP0501 (Ch A) or DP0601 (Ch B), from the HMU.
- (c) Visually examine the HMU receptacle and wire harness connector (AMM TASK 70-70-01-200-801-F00).
 - 1) If the HMU receptacle is damaged, replace the HMU, M1823. These are the tasks:
 - HMU Removal, AMM TASK 73-21-10-000-801-F00
 - HMU Installation, AMM TASK 73-21-10-400-801-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 harness connector is damaged, replace the wire harness, J5 (Ch A) or J6 (Ch B). These are the tasks:
 - Fan Wiring Harness Removal, AMM TASK 73-21-06-000-801-F00
 - Fan Wiring Harness Installation, AMM TASK 73-21-06-400-801-F00
 - a) Do the Repair Confirmation at the end of this task.
 - b) If the Repair Confirmation is not satisfactory, then open the circuit breakers above and continue.
 - 3) If the harness connector was not correctly connected and no other problems were found, 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 at the HMU receptacle, DP0501 (Ch A) or DP0601 (Ch B):

Table 201

CONNECTOR DP0501 DP0601	PINS	RESISTANCE
	PINS 25 TO 26	10 TO 24 OHMS
	PIN 25 TO THE CONNECTOR SHELL	GREATER THAN 20 MEGOHMS
	PIN 26 TO THE CONNECTOR SHELL	GREATER THAN 20 MEGOHMS

- (a) If the resistance is not in the specified range, replace the HMU, M1823. These are the tasks:
 - HMU Removal, AMM TASK 73-21-10-000-801-F00
 - HMU Installation, AMM TASK 73-21-10-400-801-F00
 - 1) 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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- (b) If you do not find a problem, then continue.
- (4) Connect the electrical connector, DP0501 (Ch A) or DP0601 (Ch B), to the HMU.
- (5) Examine the electrical connector, DP0505 (Ch A) or DP0606 (Ch B), at the EEC:
- NOTE:** The electrical connector, DP0505 (Ch A), is on the J5 wire harness. The electrical connector, DP0606 (Ch B), is on the J6 wire harness.
- (a) See if the electrical connector, DP0505 (Ch A) or DP0606 (Ch B), is correctly connected to the EEC, and continue.
- (b) Disconnect the electrical connector, DP0505 (Ch A) or DP0606 (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, 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 the harness connector is damaged, replace the wire harness, J5 (Ch A) or J6 (Ch B). These are the tasks:
 - Fan Wiring Harness Removal, AMM TASK 73-21-06-000-801-F00
 - Fan Wiring Harness Installation, AMM TASK 73-21-06-400-801-F00
 - a) Do the Repair Confirmation at the end of this task.
 - b) If the Repair Confirmation is not satisfactory, then open the circuit breakers above and continue.
 - 3) If the harness connector was not correctly connected and no other problems were found, 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 to examine the wires between the EEC connector, DP0505 (Ch A) or DP0606 (Ch B), on the wire harness through the HMU:

NOTE: The electrical connector, DP0505 (Ch A), is on the J5 wire harness. The electrical connector, DP0606 (Ch B), is on the J6 wire harness.

Table 202

CONNECTOR DP0505 DP0606	PINS	RESISTANCE
	PINS M TO b	10 TO 24 OHMS
	PIN M TO THE CONNECTOR SHELL	GREATER THAN 20 MEGOHMS
	PIN b TO THE CONNECTOR SHELL	GREATER THAN 20 MEGOHMS

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- (a) If the resistance is in the specified range 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.
- (b) If the resistance is not in the specified range, replace the wire harness, J5 (Ch A) or J6 (Ch B). These are the tasks:
 - Fan Wiring Harness Removal, AMM TASK 73-21-06-000-801-F00
 - Fan Wiring Harness Installation, AMM TASK 73-21-06-400-801-F00
 - 1) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

- (1) Do these steps to prepare for the procedure:
 - (a) Make sure that the electrical connectors, DP0501 (Ch A) and DP0601 (Ch B), are correctly connected at the HMU.
 - (b) Make sure that the electrical connectors, DP0505 (Ch A) and DP0606 (Ch B), are correctly connected at the EEC.
 - (c) For Engine 1,
 - 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

- (d) For Engine 2,
 - 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
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

- (2) Do this task: Test 12 - Actuators Test, AMM TASK 71-00-00-700-807-F00.
 - (a) If the maintenance message does not show, you corrected the problem.
- (3) Do this task: Close the Fan Cowl Panels, AMM TASK 71-11-02-410-801-F00.

————— **END OF TASK** —————

802. VSV Demand and Position Signals Disagree - Fault Isolation

A. Description

- (1) This task is for these maintenance message numbers:
 - (a) 75-10381, 75-10382, 75-20381, 75-20382, 75-30381 and 75-30382.

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- (2) The maintenance messages 75-X038Y; where X = EEC Channel (1=Channel A, 2=Channel B, 3=Dual Channel), and Y = Engine Position (1=Eng 1, 2=Eng 2).
 - (a) If X=1, do the Fault Isolation Procedure - Single Channel Fault for channel A.
 - (b) If X=2, do the Fault Isolation Procedure - Single Channel Fault for channel B.
 - (c) If X=1 and 2 (two messages), or X=3, then do the Fault Isolation Procedure - Dual Channel Fault.
- (3) This fault is reported on the active channel of the EEC when the engine is in operation.
- (4) You must do the Initial Evaluation to see if a dual channel maintenance message, 75-30381 or 75-30382, is set.
- (5) The difference between the VSV demand and the valid position signal is more than 5%.
NOTE: There is no VSV wrap fault on the active channel.

B. Possible Causes

- (1) For a Single Channel Fault:
 - (a) HMU, M1823
 - (b) EEC, M1818
 - (c) J5 (Ch A) or J6 (Ch B) wire harness.
- (2) For a Dual Channel Fault:
 - (a) HMU, M1823
 - (b) VSV actuation system
 - (c) Left (Ch B) VSV Actuator, T518 or Right (Ch A) VSV Actuator, T517
 - (d) EEC, M1818.

C. Circuit Breakers

- (1) For Engine 1,
 - (a) 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

- (2) For Engine 2,
 - (a) 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>
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

D. Related Data

- (1) Component Location (75-31 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (75-31 TASK SUPPORT Figure 302)
- (3) (SSM 75-31-12)
- (4) (SSM 75-31-22)
- (5) (WDM 73-25-11)

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- (6) (WDM 75-31-12)
- (7) (WDM 75-31-22)

E. Initial Evaluation

- (1) Do these steps to find out if the fault is still active and if it is a dual channel fault:
 - (a) Do this task: Test 12 - Actuators Test, AMM TASK 71-00-00-700-807-F00.
 - (b) If maintenance messages 75-10381 (Ch A, Eng 1), 75-10382 (Ch A, Eng 2), 75-20381 (Ch B, Eng 1) or 75-20382 (Ch B, Eng 2) show, then do the Fault Isolation Procedure - Single Channel Fault for the applicable channel.
 - (c) If maintenance messages 75-30381 (Ch A and B, Eng 1) or 75-30382 (Ch A and B, Eng 2) show, 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.
 - 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) Do the Initial Evaluation to see if this fault is a dual channel fault.
NOTE: During engine operation, the EEC reports the fault only on the active channel.
- (2) Prepare for the procedure:
 - (a) For Engine 1,
 - 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) For Engine 2,
 - 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>
D	4	C00459	ENGINE 2 IGNITION RIGHT

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F/O Electrical System Panel, P6-2

<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

- (c) Do this task: Open the Fan Cowl Panels, AMM TASK 71-11-02-010-801-F00.
- (3) Examine the electrical connector, DP0501 (Ch A) or DP0601 (Ch B), at the HMU:
- (a) See if the electrical connector, DP0501 (Ch A) or DP0601 (Ch B), is correctly connected to the HMU, and continue.
 - (b) Disconnect the electrical connector, DP0501 (Ch A) or DP0601 (Ch B), from the HMU.
 - (c) Visually examine the HMU receptacle and wire harness connector (AMM TASK 70-70-01-200-801-F00).
 - 1) If the HMU receptacle is damaged, replace the HMU, M1823. These are the tasks:
 - HMU Removal, AMM TASK 73-21-10-000-801-F00
 - HMU Installation, AMM TASK 73-21-10-400-801-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 harness connector is damaged, then replace the wire harness, J5 (Ch A) or J6 (Ch B). These are the tasks:
 - Fan Wiring Harness Removal, AMM TASK 73-21-06-000-801-F00
 - Fan Wiring Harness Installation, AMM TASK 73-21-06-400-801-F00
 - a) Do the Repair Confirmation at the end of this task.
 - b) If the Repair Confirmation is not satisfactory, then open the circuit breakers above and continue.
 - 3) If the harness connector was not correctly connected and no other problems were found, 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 do not find a problem, then continue.
- (4) Examine the resistance of these pins of the applicable HMU receptacle, DP0501 (Ch A) or DP0601 (Ch B):

Table 203

CONNECTOR DP0501 DP0601	PINS	RESISTANCE
	PINS 26 TO 25	10 TO 24 OHMS
	PIN 26 TO THE CONNECTOR SHELL	GREATER THAN 10 MEGOHMS

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Table 203 (Continued)

CONNECTOR DP0501 DP0601	PINS	RESISTANCE
	PIN 25 TO THE CONNECTOR SHELL	GREATER THAN 10 MEGOHMS

- (a) If the resistance is not in the specified range, then replace the HMU, M1823. These are the tasks:
- HMU Removal, AMM TASK 73-21-10-000-801-F00
 - HMU Installation, AMM TASK 73-21-10-400-801-F00
- 1) 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.
- (b) If the resistance is in the specified range, then re-connect the electrical connector, DP0501 (Ch A) or DP0601 (Ch B), to the HMU and continue.
- (5) Examine the electrical connector, DP0505 (Ch A) or DP0606 (Ch B), at the EEC:
- NOTE: The electrical connector, DP0505 (Ch A), is on the J5 wire harness. The electrical connector, DP0606, (Ch B) is on the J6 wire harness.
- (a) See if the electrical connector, DP0505 (Ch A) or DP0606 (Ch B), is correctly connected to the EEC, and continue.
- (b) Disconnect the electrical connector, DP0505 (Ch A) or DP0606 (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 the harness connector is damaged, then replace the wire harness, J5 (Ch A) or J6 (Ch B). These are the tasks:
- Fan Wiring Harness Removal, AMM TASK 73-21-06-000-801-F00
 - Fan Wiring Harness Installation, AMM TASK 73-21-06-400-801-F00
- a) Do the Repair Confirmation at the end of this task.
- b) If the Repair Confirmation is not satisfactory, then open the circuit breakers above and continue.
- 3) If the harness connector was not correctly connected and no other problems were found, then re-connect the connector and do the Repair Confirmation at the end 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 between these pins to examine the wires between the applicable EEC connector, DP0505 (Ch A) or DP0606 (Ch B), on the wire harness through the HMU:

NOTE: The electrical connector, DP0505 (Ch A), is on the J5 wire harness. The electrical connector, DP0606 (Ch B), is on the J6 wire harness.

Table 204

CONNECTOR DP0505 DP0606	PINS	RESISTANCE
	PINS M TO b	10 TO 24 OHMS
	PIN M TO THE CONNECTOR SHELL	GREATER THAN 10 MEGOHMS
	PIN b TO THE CONNECTOR SHELL	GREATER THAN 10 MEGOHMS

- (a) If the resistance is not in the specified range, then replace the wire harness, J5 (Ch A) or J6 (Ch B). These are the tasks:
- Fan Wiring Harness Removal, AMM TASK 73-21-06-000-801-F00
 - Fan Wiring Harness Installation, AMM TASK 73-21-06-400-801-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) If the resistance is in the specified range 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.

G. Fault Isolation Procedure - Dual Channel Fault

- (1) Do these steps to prepare for the procedure:
- (a) For Engine 1,
- 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) For Engine 2,

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- 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>
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



WARNING

DO THESE SPECIFIED TASKS IN THE CORRECT SEQUENCE BEFORE YOU OPEN THE THRUST REVERSERS: RETRACT THE LEADING EDGE, DO THE DEACTIVATION PROCEDURES FOR THE LEADING EDGE AND THE THRUST REVERSERS (FOR GROUND MAINTENANCE), AND OPEN THE FAN COWL PANELS. IF YOU DO NOT OBEY THE ABOVE SEQUENCE, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (c) Do this task: Open the Thrust Reverser (Selection), AMM TASK 78-31-00-010-801-F00.
- (2) Do a visual check of the electrical harness, fuel tubes, VSV actuator, VSV lever arms, actuation rings and bellcrank assemblies for loose fasteners and components, damage and signs of fuel leakage.
 - (a) If you find loose fasteners and components, damage or signs of fuel leakage, then repair or replace components as it is necessary.
 - 1) Do the Repair Confirmation at the end of this task.
 - 2) If the Repair Confirmation is not satisfactory, then continue.
 - (b) If you do not find loose fasteners and components, damage or signs of fuel leakage, then continue.
- (3) Do this task: Test 12 - Actuators Test, AMM TASK 71-00-00-700-807-F00.

NOTE: As an Alternate, do the VSV Actuation System - Manual Operation (AMM TASK 75-31-00-790-801-F00).

- (a) As you do the Actuator Test, watch the VSV system move.
- (b) Make sure that the VSV system moves freely and smoothly.
- (c) If the VSV system does not moves freely and smoothly, then replace one of the VSV actuators.

- 1) These are the tasks:

- Left VSV Actuator Removal, AMM TASK 75-31-01-000-801-F00
- Left VSV Actuator Installation, AMM TASK 75-31-01-400-801-F00

- 2) These are the tasks:

- Right VSV Actuator Removal, AMM TASK 75-31-01-000-802-F00
- Right VSV Actuator Installation, AMM TASK 75-31-01-400-802-F00

- 3) Do this task: Test 12 - Actuators Test, AMM TASK 71-00-00-700-807-F00.

NOTE: As an Alternate, do the VSV Actuation System - Manual Operation (AMM TASK 75-31-00-790-801-F00).

- a) As you do the Actuator Test, watch the VSV system move.
- b) Make sure that the VSV system moves freely and smoothly.

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- 4) If VSV actuation system still does not move freely, then replace the other VSV actuator.
 - a) These are the tasks:
 - Left VSV Actuator Removal, AMM TASK 75-31-01-000-801-F00
 - Left VSV Actuator Installation, AMM TASK 75-31-01-400-801-F00
 - b) These are the tasks:
 - Right VSV Actuator Removal, AMM TASK 75-31-01-000-802-F00
 - Right VSV Actuator Installation, AMM TASK 75-31-01-400-802-F00
- 5) Do this task: Test 12 - Actuators Test, AMM TASK 71-00-00-700-807-F00.
NOTE: As an Alternate, do the VSV Actuation System - Manual Operation (AMM TASK 75-31-00-790-801-F00).
 - a) As you do the Actuator Test, watch the VSV system move.
 - b) Make sure that the VSV system moves freely and smoothly.
- 6) If the VSV system moves freely and smoothly, do the Repair Confirmation at the end of this task.
 - a) If the Repair Confirmation is not satisfactory, then continue.
- (d) If the VSV actuation system moves freely then continue.
- (4) Replace the HMU, M1823. These are the tasks:
 - HMU Removal, AMM TASK 73-21-10-000-801-F00
 - HMU Installation, AMM TASK 73-21-10-400-801-F00
 - (a) Do the Repair Confirmation at the end of this task.
 - (b) If the Repair Confirmation is not satisfactory, then replace the subsequent most likely LRU from the Possible Causes List.

H. Repair Confirmation

- (1) Do these steps to prepare for the procedure:
 - (a) If you did the manual operation of the VSV Actuation System, then put the airplane back to its usual condition (AMM TASK 75-31-00-790-801-F00).
 - (b) Make sure that the electrical connectors, DP0501 (Ch A) and DP0601 (Ch B), are correctly connected at the HMU.
 - (c) Make sure that the electrical connectors, DP0505 (Ch A) and DP0606 (Ch B), are correctly connected at the EEC.
 - (d) For Engine 1,
 - 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

- (e) For Engine 2,

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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>
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: Test 12 - Actuators Test, AMM TASK 71-00-00-700-807-F00.
 - (a) If the maintenance message does not show, then you corrected the fault.



OBEY THE INSTRUCTIONS IN THE PROCEDURE TO CLOSE THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (3) Do this task: Close the Thrust Reverser (Selection), AMM TASK 78-31-00-010-804-F00.

————— **END OF TASK** —————

803. VSV Position Signal is Out of Range - Fault Isolation

A. Description

- (1) This task is for these maintenance messages:
 - (a) 75-10391, 75-10392, 75-20391, 75-20392, 75-30391 and 75-30392.
- (2) The maintenance messages 75-X039Y; where X = EEC Channel (1=Channel A, 2=Channel B, 3=Dual Channel), and Y = Engine Position (1=Eng 1, 2=Eng 2).
 - (a) If X=1, do the Fault Isolation Procedure - Single Channel Fault for channel A.
 - (b) If X=2, do the Fault Isolation Procedure - Single Channel Fault for channel B.
 - (c) If X=1 and 2 (two messages), or X=3, then do the Fault Isolation Procedure - Dual Channel Fault.
- (3) The EEC detects that the VSV position signal (LVDT) indicates a position that is not in the valid range.
- (4) FADEC 2:

Channel A and Channel B;

 - (a) Also, because the Channel A excitation circuit for the variable stator vane (VSV) position LVDT, the variable bleed valve (VBV) 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 variable stator vane (VSV) position LVDT, the fuel metering valve (FMV) 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.
- (5) FADEC 3;

Channel A and Channel B;

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- (a) Also, because the Channel A and Channel B excitation circuit for the variable stator vane (VSV) position LVDT, the variable bleed valve (VBV) 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 or Channel B fault messages for all three systems.

B. Possible Causes

- (1) Left (Ch B) VSV Actuator, T518 or Right (Ch A) VSV Actuator, T517
- (2) EEC, M1818
- (3) J9 (Ch A) or J10 (Ch B) Wire Harness.

C. Circuit Breakers

- (1) For Engine 1,
 - (a) 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

- (2) For Engine 2,
 - (a) 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>
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

D. Related Data

- (1) Component Location (75-31 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (75-31 TASK SUPPORT Figure 302)
- (3) (SSM 75-31-12)
- (4) (SSM 75-31-22)
- (5) (WDM 73-25-11)
- (6) (WDM 75-31-12)
- (7) (WDM 75-31-22)

E. Initial Evaluation

- (1) To find the FADEC version, do this task FADEC 2 or FADEC 3 Identification, AMM TASK 73-21-00-700-810-F00
- (2) 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 LVDT's for the variable stator vane (VSV), the fuel metering valve (FMV), the variable bleed valve (VBV) or the left thrust reverser (TRL). For more information see the Description section.

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- 1) 75-10391, 75-10441 and 78-11481 (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) 75-10392, 75-10442 and 78-11482 (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) 75-20391, 73-20341 and 78-21481 (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) 75-20392, 73-20342 and 78-21482 (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 LVDT's for the variable stator vane (VSV), the fuel metering valve (FMV), or the variable bleed valve (VBV). For more information see the Description section.

- 1) 75-10391, 75-10441, and 73-10341 (Engine 1, Ch A).
 - a) Do this task: FADEC3 (Ch A) Excitation Group 2: VSV, VBV and FMV (Channel A) LVDT Excitation Circuit Fault - Fault Isolation, 75-34 TASK 817.
 - 2) 75-10392, 75-10442, and 73-10342 (Engine 2, Ch A).
 - a) Do this task: FADEC3 (Ch A) Excitation Group 2: VSV, VBV and FMV (Channel A) LVDT Excitation Circuit Fault - Fault Isolation, 75-34 TASK 817.
 - 3) 75-20391, 75-20441, and 73-20341 (Engine 1, Ch B).
 - a) Do this task: FADEC3 (Ch B) Excitation Group 2: VSV, VBV and FMV (Channel B) LVDT Excitation Circuit Fault - Fault Isolation, 75-34 TASK 819.
 - 4) 75-20392, 75-20442, and 73-20342 (Engine 2, Ch B).
 - a) Do this task: FADEC3 (Ch B) Excitation Group 2: VSV, VBV and FMV (Channel B) LVDT Excitation Circuit Fault - Fault Isolation, 75-34 TASK 819.
- (3) Do these steps to find out if the fault is still active:
- (a) Do this task: Test 12 - Actuators Test, AMM TASK 71-00-00-700-807-F00.
 - (b) If maintenance messages 75-10391, 75-10392, 75-20391, 75-20392, 75-30391 and 75-30392 show, then do the Fault Isolation Procedure for the applicable channel or channels.
 - (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:

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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 Initial Evaluation to see if there is an excitation circuit fault and if the fault is still active.

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

- (2) Do these steps to prepare for the procedure:

- (a) For Engine 1,

- 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) For Engine 2,

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

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
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



WARNING

OBEY THE INSTRUCTIONS IN THE PROCEDURE TO OPEN THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (c) Do this task: Open the Thrust Reverser (Selection), AMM TASK 78-31-00-010-801-F00.
- (3) Examine the electrical connector, DP0902 (Ch A) or DP1002 (Ch B), at the applicable VSV Actuator:

NOTE: Channel A is for the right actuator and Channel B is for the left actuator.

- (a) See if the electrical connector, DP0902 (Ch A) or DP1002, is correctly connected to the applicable VSV Actuator, and continue.
- (b) Disconnect the electrical connector, DP0902 (Ch A) or DP1002 (Ch B), from the VSV Actuator.
- (c) Visually examine the VSV receptacle and wire harness connector (AMM TASK 70-70-01-200-801-F00).

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- 1) If the VSV Actuator receptacle is damaged, replace the applicable VSV Actuator, T517 or T518:
 - a) For Ch B:

These are the tasks:

Left VSV Actuator Removal, AMM TASK 75-31-01-000-801-F00

Left VSV Actuator Installation, AMM TASK 75-31-01-400-801-F00
 - b) For Ch A:

These are the tasks:

Right VSV Actuator Removal, AMM TASK 75-31-01-000-802-F00

Right VSV Actuator Installation, AMM TASK 75-31-01-400-802-F00
 - c) Do the Repair Confirmation at the end of this task.
 - d) If the Repair Confirmation is not satisfactory, then open the circuit breakers above and continue.
- 2) If the harness connector is damaged, replace the wire harness, J9 (Ch A) or J10 (Ch B). These are the tasks:

3 O'clock Strut Harness Removal, AMM TASK 73-21-06-000-802-F00

3 O'clock Strut Harness Installation, AMM TASK 73-21-06-400-802-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.
- 3) If the harness connector was not correctly connected and no other problems were found, 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 contacts at the VSV actuator receptacle:
NOTE: DP0902 (Ch A) is on the right VSV actuator and DP1002 (Ch B) is on the left VSV actuator.

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VSV**ACTUATOR****RECEPTACLE****DP0902****DP0902**

PIN 2	PIN 3	400 - 600 OHMS
PIN 4	PIN 5	100 - 180 OHMS
PIN 5	PIN 6	100 - 180 OHMS
PIN 2	PIN 4	MORE THAN 10 MEGOHMS
PIN 2	CONNECTOR SHELL	MORE THAN 10 MEGOHMS
PIN 3	CONNECTOR SHELL	MORE THAN 10 MEGOHMS
PIN 4	CONNECTOR SHELL	MORE THAN 10 MEGOHMS
PIN 5	CONNECTOR SHELL	MORE THAN 10 MEGOHMS
PIN 6	CONNECTOR SHELL	MORE THAN 10 MEGOHMS

VSV**ACTUATOR****RECEPTACLE****DP1002****DP1002**

PIN 2	PIN 3	400 - 600 OHMS
PIN 4	PIN 5	100 - 180 OHMS
PIN 5	PIN 6	100 - 180 OHMS
PIN 2	PIN 4	MORE THAN 10 MEGOHMS
PIN 2	CONNECTOR SHELL	MORE THAN 10 MEGOHMS
PIN 3	CONNECTOR SHELL	MORE THAN 10 MEGOHMS
PIN 4	CONNECTOR SHELL	MORE THAN 10 MEGOHMS
PIN 5	CONNECTOR SHELL	MORE THAN 10 MEGOHMS
PIN 6	CONNECTOR SHELL	MORE THAN 10 MEGOHMS

- (b) If the resistance is not in the specified range, replace the applicable VSV Actuator, T517 or T518.

- 1) For Ch B:

These are the tasks:

Left VSV Actuator Removal, AMM TASK 75-31-01-000-801-F00

Left VSV Actuator Installation, AMM TASK 75-31-01-400-801-F00

- 2) For Ch A:

These are the tasks:

Right VSV Actuator Removal, AMM TASK 75-31-01-000-802-F00

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Right VSV Actuator Installation, AMM TASK 75-31-01-400-802-F00

- 3) 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.
 - (c) If the resistance value is in the specified range, then continue.
- (5) Connect the electrical connectors, DP0902 (Ch A) or DP1002 (Ch B), to the VSV actuators.
- (6) Examine the electrical connector, DP0909 (Ch A) or DP1010 (Ch B), at the EEC:

NOTE: The electrical connector, DP0909 (Ch A), is on the J9 wire harness. The electrical connector, DP1010 (Ch B), is on the J10 wire harness.

 - (a) See if the electrical connector, DP0909 (Ch A) or DP1010 (Ch B), is correctly connected to the EEC, and continue.
 - (b) Disconnect the electrical connector, DP0909 (Ch A) or DP1010 (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, 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 the harness connector is damaged, replace the wire harness, J9 (Ch A) or J10 (Ch B). These are the tasks:
3 O'clock Strut Harness Removal, AMM TASK 73-21-06-000-802-F00
3 O'clock Strut Harness Installation, AMM TASK 73-21-06-400-802-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.
 - 3) If the harness connector was not correctly connected and no other problems were found, 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.
 - (7) Measure the resistance between these contacts to examine the wires between the applicable EEC connector on the wire harness through the VSV actuator:

NOTE: The electrical connector, DP0909 (Ch A) is on the J9 wire harness. The electrical connector, DP1010 (Ch B) is on the J10 wire harness.

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EEC**CONNECTOR****DP0909****DP0909**

PIN P	PIN k	400 - 600 OHMS
PIN N	PIN z	100 - 180 OHMS
PIN h	PIN z	100 - 180 OHMS
PIN k	PIN N	MORE THAN 10 MEGOHMS
PIN P	CONNECTOR SHELL	MORE THAN 10 MEGOHMS
PIN k	CONNECTOR SHELL	MORE THAN 10 MEGOHMS
PIN N	CONNECTOR SHELL	MORE THAN 10 MEGOHMS
PIN z	CONNECTOR SHELL	MORE THAN 10 MEGOHMS
PIN h	CONNECTOR SHELL	MORE THAN 10 MEGOHMS

EEC**CONNECTOR****DP1010****DP1010**

PIN N	PIN h	400 - 600 OHMS
PIN P	PIN z	100 - 180 OHMS
PIN k	PIN z	100 - 180 OHMS
PIN h	PIN P	MORE THAN 10 MEGOHMS
PIN N	CONNECTOR SHELL	MORE THAN 10 MEGOHMS
PIN h	CONNECTOR SHELL	MORE THAN 10 MEGOHMS
PIN P	CONNECTOR SHELL	MORE THAN 10 MEGOHMS
PIN z	CONNECTOR SHELL	MORE THAN 10 MEGOHMS
PIN k	CONNECTOR SHELL	MORE THAN 10 MEGOHMS

- (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;

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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 2: VSV, VBV and FMV
(Channel A) LVDT Excitation Circuit Fault - Fault Isolation, 75-34 TASK 817.

- b) For Channel B:

Do this task: FADEC3 (Ch B) Excitation Group 2: VSV, VBV and FMV
(Channel B) LVDT Excitation Circuit Fault - Fault Isolation, 75-34 TASK 819.

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

- (c) If the resistance is not in the specified range, replace the wire harness, J9 (Ch A) or J10 (Ch B). These are the tasks:

3 O'clock Strut Harness Removal, AMM TASK 73-21-06-000-802-F00

3 O'clock Strut Harness Installation, AMM TASK 73-21-06-400-802-F00

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

G. Repair Confirmation

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

- (a) Make sure that the electrical connectors, DP0909 (Ch A) and DP1010 (Ch B), are correctly connected at the EEC.
- (b) Make sure that the electrical connectors, DP0902 (Ch A) or DP1002 (Ch B), are correctly connected at the applicable VSV actuator.
- (c) For Engine 1,
- 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

- (d) For Engine 2,

- 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

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F/O Electrical System Panel, P6-2

<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: Test 12 - Actuators Test, AMM TASK 71-00-00-700-807-F00.
 (a) If the maintenance message does not show, you corrected the problem.



OBEY THE INSTRUCTIONS IN THE PROCEDURE TO CLOSE THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (3) Do this task: Close the Thrust Reverser (Selection), AMM TASK 78-31-00-010-804-F00.

———— **END OF TASK** ————

804. VSV Position Signals Disagree - Fault Isolation

A. Description

- (1) This task is for these maintenance messages:
 (a) 75-10401, 75-10402, 75-20401, 75-20402, 75-30401 and 75-30402.
- (2) The maintenance messages 75-X040Y; where X = Electronic Engine Control (EEC) Channel (1=Channel A, 2=Channel B, 3=Dual Channel), and Y = Engine Position (1=Eng 1, 2=Eng 2).
 (a) If X=1 or 2, do the Fault Isolation Procedure - Single Channel Fault for the applicable channel.
 (b) If X=1 and 2 (two messages), or X=3, then do the Fault Isolation Procedure - Dual Channel Fault.
- (3) If only the single channel maintenance message shows, there is an internal EEC problem.
- (4) You must do the Initial Evaluation to see if another Variable Stator Vane (VSV) signal fault maintenance messages is set; or, if the fault is intermittent.
- (5) The difference between the VSV position signal for Ch A and Ch B is greater than 0.3 inches.
 (a) The two signals (Ch A and Ch B) are in the valid range.

B. Possible Causes

- (1) For the Single Channel maintenance messages:
 (a) EEC (internal failure), M1818
 (b) VSV actuation system.
- (2) For the Dual Channel maintenance message:
 (a) Left (Ch B) VSV actuator, T518 or right (Ch A) VSV actuator, T517
 (b) J9 (Ch A) or J10 (Ch B) wire harness
 (c) VSV actuation system
 (d) EEC, M1818.

C. Circuit Breakers

- (1) For Engine 1,

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- (a) 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

- (2) For Engine 2,

- (a) 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>
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

D. Related Data

- (1) Component Location (75-31 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (75-31 TASK SUPPORT Figure 302)
- (3) (SSM 75-31-12)
- (4) (SSM 75-31-22)
- (5) (WDM 73-25-11)
- (6) (WDM 75-31-12)
- (7) (WDM 75-31-22)

E. Initial Evaluation

- (1) Do these steps to find out if the fault is still active, and if another related maintenance message was set:

NOTE: This fault is normally reported by channel A and channel B. If the fault is reported by only a single channel, then an additional fault in the EEC is present.

- (a) For RECENT FAULTS, do this task: EEC BITE Procedure, 73-00 TASK 801.
- (b) If maintenance message number 75-10391, 75-10392, 75-20391, 75-20392, 75-30391 or 75-30392 shows, then, do this task: VSV Position Signal is Out of Range - Fault Isolation, 75-31 TASK 803.
- (c) Do this task: Test 12 - Actuators Test, AMM TASK 71-00-00-700-807-F00.
- (d) If maintenance message numbers 75-10401 (Ch A, Eng 1), 75-10402 (Ch A, Eng 2), 75-20401 (Ch B, Eng 1), or 75-20402 (Ch B, Eng 2) show, then do the Fault Isolation Procedure - Single Channel Fault.
- (e) If maintenance message numbers 75-30401 (Ch A and B, Eng 1) or 75-30402 (Ch A and B, Eng 2) show, then do the Fault Isolation Procedure - Dual Channel Fault.
- (f) If the maintenance message does not show on the Flight Management Computer System (FMCS) Control Display Unit (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:

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- a) Do the visual checks of the electrical connectors in the applicable fault isolation procedure below.
 - b) Use the Wiring Diagram Manual (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) Do this task: EEC TEST, AMM TASK 73-21-00-700-804-F00.
 - (a) Look for INTERNAL EEC FAULTs on the CDU.
 - (b) Do the Fault Isolation Procedures for the INTERNAL EEC FAULT that you found first.
 - 1) 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.
 - (c) If the problem continues or an INTERNAL EEC FAULT did not show during the EEC test, do the Fault Isolation Procedure - Dual Channel Fault.

G. Fault Isolation Procedure - Dual Channel Fault

- (1) To identify if the "VSV position signal is out of range" fault is set, do the Initial Evaluation above.
- (2) Do these steps to prepare for the procedure:
 - (a) For Engine 1,
 - 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) For Engine 2,
 - 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>
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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DO THESE SPECIFIED TASKS IN THE CORRECT SEQUENCE BEFORE YOU OPEN THE THRUST REVERSER: RETRACT THE LEADING EDGE, DO THE DEACTIVATION PROCEDURES FOR THE LEADING EDGE AND THE THRUST REVERSER (FOR GROUND MAINTENANCE), AND OPEN THE FAN COWL PANELS. IF YOU DO NOT OBEY THIS SEQUENCE, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (c) Do this task: Open the Thrust Reverser (Selection), AMM TASK 78-31-00-010-801-F00.
- (3) Do a visual check of the VSV system for broken or damaged VSV actuators, VSV lever arms, actuation rings and bellcrank assemblies for loose fasteners and components, and damage.
 - (a) If you find loose fasteners and components, or damage, then repair or replace the applicable components; or, replace the engine. These are the tasks:
 - Power Plant - Removal, AMM TASK 71-00-02-000-801-F00
 - Power Plant - Installation, AMM TASK 71-00-02-400-801-F00
 - 1) If you repaired or replaced components, 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) If you do not find loose fasteners and components, or damage, then continue.
- (4) Examine the electrical connectors, DP0902 (Ch A) and DP1002 (Ch B), at the applicable VSV actuator:

NOTE: Channel A is for the right actuator and Channel B is for the left actuator.

- (a) See if the electrical connectors, DP0902 (Ch A) and DP1002 (Ch B), are correctly connected to the applicable VSV actuator, and continue.
- (b) Disconnect the electrical connectors, DP0902 (Ch A) and DP1002 (Ch B), from the applicable VSV actuator.
- (c) Visually examine the VSV actuator receptacles and wire harness connector (AMM TASK 70-70-01-200-801-F00).
 - 1) If a VSV actuator receptacle is damaged, then replace the applicable VSV actuator, T518 or T517.
 - a) These are the tasks:
 - Left VSV Actuator Removal, AMM TASK 75-31-01-000-801-F00
 - Left VSV Actuator Installation, AMM TASK 75-31-01-400-801-F00
 - b) These are the tasks:
 - Right VSV Actuator Removal, AMM TASK 75-31-01-000-802-F00
 - Right VSV Actuator Installation, AMM TASK 75-31-01-400-802-F00
 - c) Do the Repair Confirmation at the end of this task.
 - d) 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 wire harness, J9 (Ch A) or J10 (Ch B). These are the tasks:
 - 3 O'clock Strut Harness Removal, AMM TASK 73-21-06-000-802-F00
 - 3 O'clock Strut Harness Installation, AMM TASK 73-21-06-400-802-F00

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- 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) If a harness connector was not correctly connected and no other problems were 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 do not find a problem, then continue.
- (5) Measure the resistance between these contacts at the VSV actuator receptacles:
- NOTE: DP0902 (Ch A) is on the right VSV actuator and DP1002 (Ch B) is on the left VSV actuator.

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VSV**ACTUATOR****RECEPTACLE****DP0902****DP0902**

PIN 2	PIN 3	400 - 600 OHMS
PIN 4	PIN 5	100 - 180 OHMS
PIN 5	PIN 6	100 - 180 OHMS
PIN 2	PIN 4	MORE THAN 10 MEGOHMS
PIN 2	CONNECTOR SHELL	MORE THAN 10 MEGOHMS
PIN 3	CONNECTOR SHELL	MORE THAN 10 MEGOHMS
PIN 4	CONNECTOR SHELL	MORE THAN 10 MEGOHMS
PIN 5	CONNECTOR SHELL	MORE THAN 10 MEGOHMS
PIN 6	CONNECTOR SHELL	MORE THAN 10 MEGOHMS

VSV**ACTUATOR****RECEPTACLE****DP1002****DP1002**

PIN 2	PIN 3	400 - 600 OHMS
PIN 4	PIN 5	100 - 180 OHMS
PIN 5	PIN 6	100 - 180 OHMS
PIN 2	PIN 4	MORE THAN 10 MEGOHMS
PIN 2	CONNECTOR SHELL	MORE THAN 10 MEGOHMS
PIN 3	CONNECTOR SHELL	MORE THAN 10 MEGOHMS
PIN 4	CONNECTOR SHELL	MORE THAN 10 MEGOHMS
PIN 5	CONNECTOR SHELL	MORE THAN 10 MEGOHMS
PIN 6	CONNECTOR SHELL	MORE THAN 10 MEGOHMS

- (b) If the resistance is not in the specified range, then replace the applicable VSV actuator, T518 or T517.

- 1) These are the tasks:

- Left VSV Actuator Removal, AMM TASK 75-31-01-000-801-F00
- Left VSV Actuator Installation, AMM TASK 75-31-01-400-801-F00

- 2) These are the tasks:

- Right VSV Actuator Removal, AMM TASK 75-31-01-000-802-F00
- Right VSV Actuator Installation, AMM TASK 75-31-01-400-802-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.
 - c) If the resistance value is in the specified range, then re-connect the electrical connectors, DP0902 (Ch A) and DP1002 (Ch B), to the applicable VSV actuator and continue.
- (6) Examine the electrical connectors, DP0909 (Ch A) and DP1010 (Ch B), at the EEC:

NOTE: The electrical connector, DP0909 (Ch A), is on the J9 wire harness. The electrical connector, DP1010 (Ch B), is on the J10 wire harness.

 - a) See if the electrical connectors, DP0909 (Ch A) and DP1010 (Ch B), are correctly connected to the EEC, and continue.
 - b) Disconnect the electrical connectors, DP0909 (Ch A) and DP1010 (Ch B), from the EEC.
 - c) Visually examine the EEC receptacles and wire harness connectors (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 harness connector is damaged, then replace the wire harness, J9 (Ch A) or J10 (Ch B). These are the tasks:
 - 3 O'clock Strut Harness Removal, AMM TASK 73-21-06-000-802-F00
 - 3 O'clock Strut Harness Installation, AMM TASK 73-21-06-400-802-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.
 - 3) If a harness connector was not correctly connected and no other problems were 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 do not find a problem, then continue.
- (7) Measure the resistance between these contacts to examine the wires between the EEC connectors on the wire harnesses through the VSV actuators:

NOTE: The electrical connector, DP0909 (Ch A) is on the J9 wire harness. The electrical connector, DP1010 (Ch B) is on the J10 wire harness.

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EEC**CONNECTOR****DP0909****DP0909**

PIN P	PIN k	400 - 600 OHMS
PIN N	PIN z	100 - 180 OHMS
PIN h	PIN z	100 - 180 OHMS
PIN P	PIN N	MORE THAN 10 MEGOHMS
PIN P	CONNECTOR SHELL	MORE THAN 10 MEGOHMS
PIN k	CONNECTOR SHELL	MORE THAN 10 MEGOHMS
PIN N	CONNECTOR SHELL	MORE THAN 10 MEGOHMS
PIN z	CONNECTOR SHELL	MORE THAN 10 MEGOHMS
PIN h	CONNECTOR SHELL	MORE THAN 10 MEGOHMS

EEC**CONNECTOR****DP1010****DP1010**

PIN N	PIN h	400 - 600 OHMS
PIN P	PIN z	100 - 180 OHMS
PIN k	PIN z	100 - 180 OHMS
PIN N	PIN P	MORE THAN 10 MEGOHMS
PIN N	CONNECTOR SHELL	MORE THAN 10 MEGOHMS
PIN h	CONNECTOR SHELL	MORE THAN 10 MEGOHMS
PIN P	CONNECTOR SHELL	MORE THAN 10 MEGOHMS
PIN z	CONNECTOR SHELL	MORE THAN 10 MEGOHMS
PIN k	CONNECTOR SHELL	MORE THAN 10 MEGOHMS

- (b) If the resistance is not in the specified range, then replace the wire harness, J9 (Ch A) or J10 (Ch B). These are the tasks:
- 3 O'clock Strut Harness Removal, AMM TASK 73-21-06-000-802-F00
 - 3 O'clock Strut Harness Installation, AMM TASK 73-21-06-400-802-F00
- 1) Do the Repair Confirmation at the end of this task.
- (c) If the resistance is in the specified range, then continue.
- (8) Do this task: Test 12 - Actuators Test, AMM TASK 71-00-00-700-807-F00.

NOTE: As an Alternate, do the VSV Actuation System - Manual Operation (AMM TASK 75-31-00-790-801-F00).

- (a) As you do the Actuator Test, watch the VSV system move.
- (b) Make sure that the VSV system moves freely and smoothly.

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- (c) If the VSV system does not move freely and smoothly, then replace one of the VSV actuators.
- 1) These are the tasks:
 - Left VSV Actuator Removal, AMM TASK 75-31-01-000-801-F00
 - Left VSV Actuator Installation, AMM TASK 75-31-01-400-801-F00
 - 2) These are the tasks:
 - Right VSV Actuator Removal, AMM TASK 75-31-01-000-802-F00
 - Right VSV Actuator Installation, AMM TASK 75-31-01-400-802-F00
 - 3) Do this task: Test 12 - Actuators Test, AMM TASK 71-00-00-700-807-F00.
NOTE: As an Alternate, do the VSV Actuation System - Manual Operation (AMM TASK 75-31-00-790-801-F00).
 - a) As you do the Actuator Test, watch the VSV system move.
 - b) Make sure that the VSV system moves freely and smoothly.
 - 4) If VSV actuation system still does not move freely, then replace the other VSV actuator.
 - a) These are the tasks:
 - Left VSV Actuator Removal, AMM TASK 75-31-01-000-801-F00
 - Left VSV Actuator Installation, AMM TASK 75-31-01-400-801-F00
 - b) These are the tasks:
 - Right VSV Actuator Removal, AMM TASK 75-31-01-000-802-F00
 - Right VSV Actuator Installation, AMM TASK 75-31-01-400-802-F00
 - 5) Do this task: Test 12 - Actuators Test, AMM TASK 71-00-00-700-807-F00.
NOTE: As an Alternate, do the VSV Actuation System - Manual Operation (AMM TASK 75-31-00-790-801-F00).
 - a) As you do the Actuator Test, watch the VSV system move.
 - b) Make sure that the VSV system moves freely and smoothly.
 - 6) If the VSV system moves freely and smoothly, then do the Repair Confirmation at the end of this task.
 - a) If the Repair Confirmation is not satisfactory, then continue.
- (d) If the VSV actuation system moves freely then continue.
- (9) If the fault was found by the Initial Evaluation, then replace the EEC, M1818 (the most likely LRU from the dual channel Possible Causes list). 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) Do these steps to prepare for the procedure:
 - (a) Make sure that the electrical connectors, DP0909 (Ch A) and DP1010 (Ch B), are correctly connected to the EEC.
 - (b) Make sure that the electrical connectors, DP0902 (Ch A) and DP1002 (Ch B), are correctly connected to the applicable VSV actuators.

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ECCN 9E991 BOEING PROPRIETARY - See title page for details

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(c) For Engine 1,

- 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

(d) For Engine 2,

- 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
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

(2) Do this task: Test 12 - Actuators Test, AMM TASK 71-00-00-700-807-F00.

- (a) If the maintenance message does not show, you corrected the problem.



OBEY THE INSTRUCTIONS IN THE PROCEDURE TO CLOSE THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

(3) Do this task: Close the Thrust Reverser (Selection), AMM TASK 78-31-00-010-804-F00.

————— **END OF TASK** —————

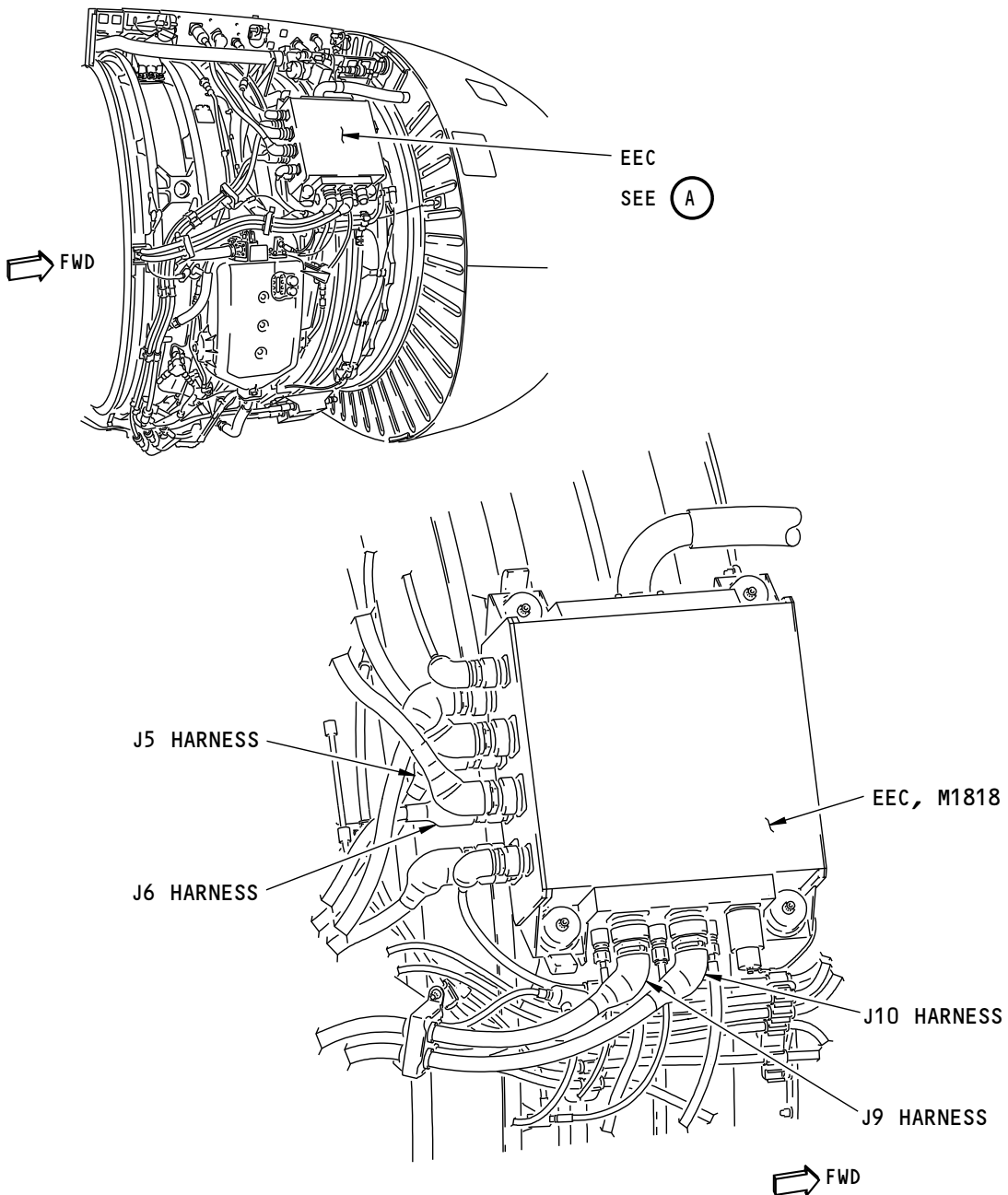
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ELECTRONIC ENGINE CONTROL, (EEC)

(A)

H38177 S0006746032_V1

Variable Stator Vane - Component Location
Figure 301/75-31-00-990-801-F00 (Sheet 1 of 4)

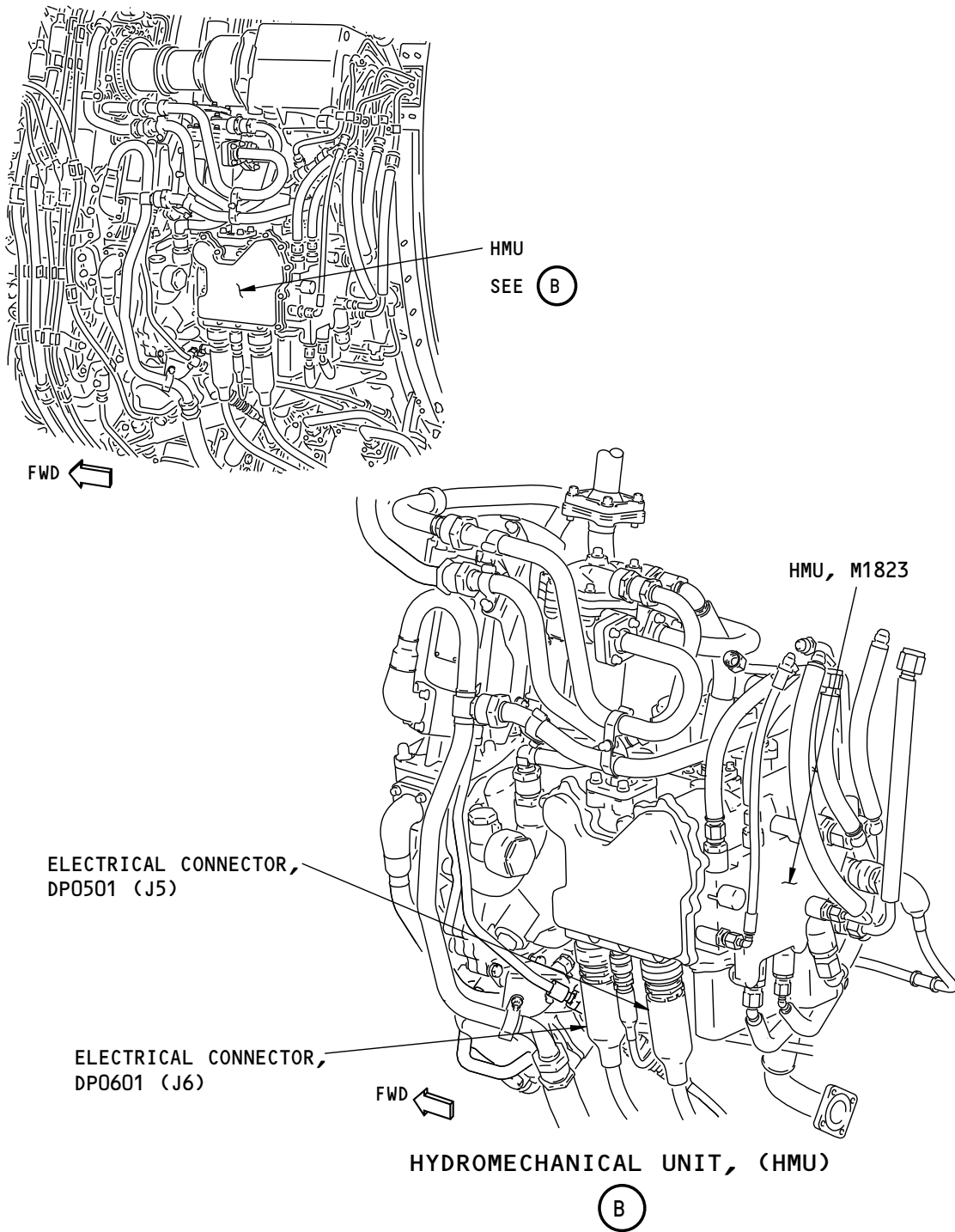
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H38178 S0006746033_V1

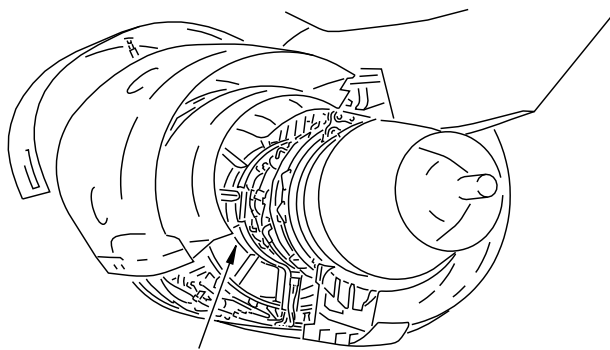
Variable Stator Vane - Component Location
Figure 301/75-31-00-990-801-F00 (Sheet 2 of 4)

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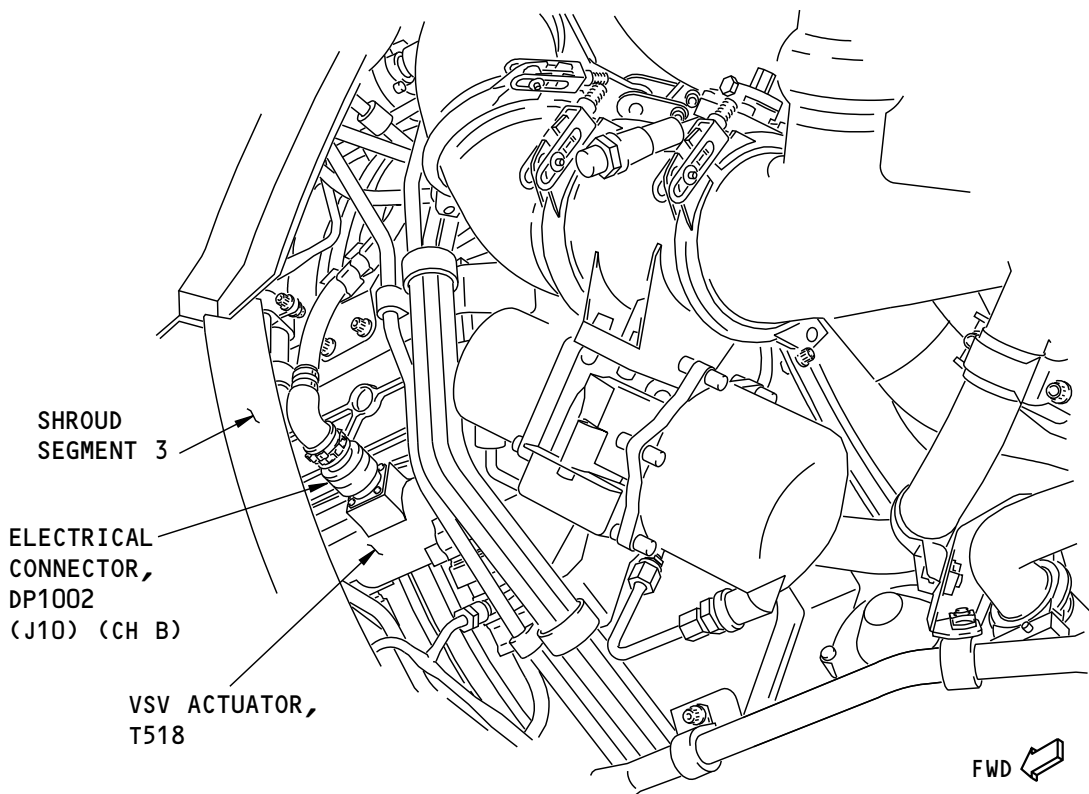
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VSV
ACTUATOR

SEE (C)



SHROUD
SEGMENT 3

ELECTRICAL
CONNECTOR,
DP1002
(J10) (CH B)

VSV ACTUATOR,
T518

FWD 

LEFT VSV ACTUATOR

(C)

H41835 S0006746034_V1

Variable Stator Vane - Component Location
Figure 301/75-31-00-990-801-F00 (Sheet 3 of 4)

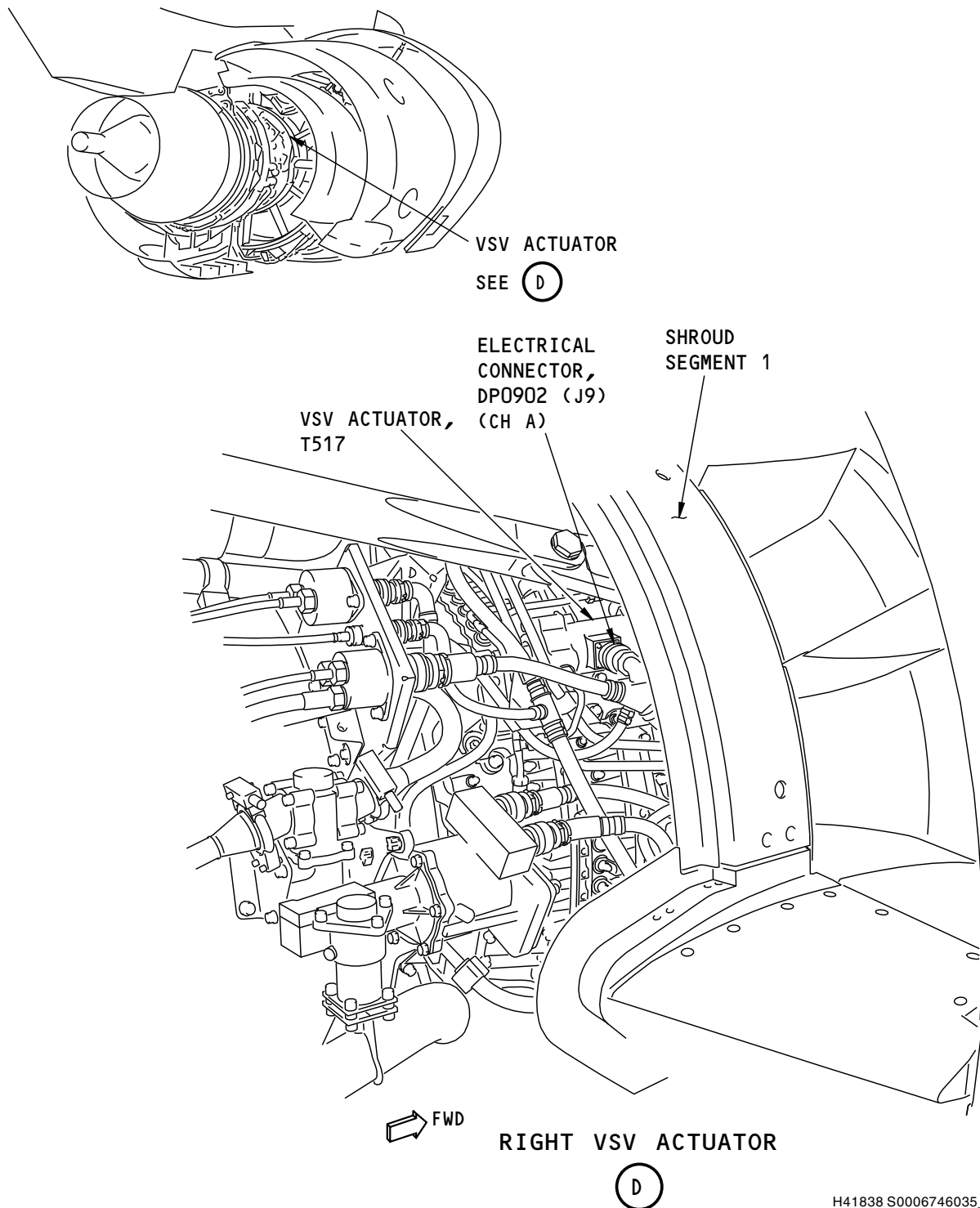
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H41838 S0006746035_V1

Variable Stator Vane - Component Location
Figure 301/75-31-00-990-801-F00 (Sheet 4 of 4)

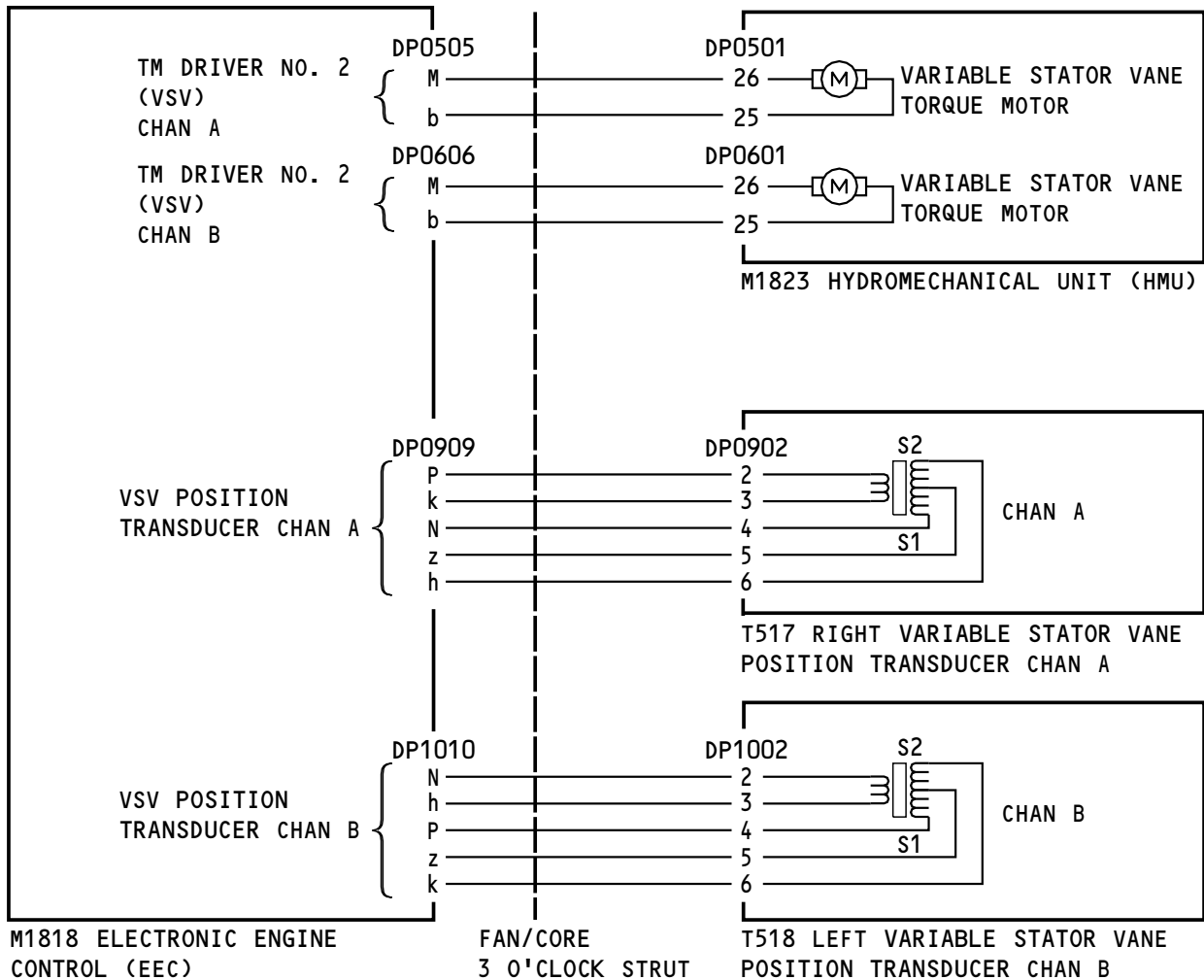
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NOTE: THE WDM/SSM ADD A DASH TO THE PIN LETTER TO DENOTE A LOWER CASE PIN, SUCH AS A- = a.

H38226 S0006746036_V1

Variable Stator Vane - System Schematic
Figure 302/75-31-00-990-802-F00

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801. VBV Demand and Position Signals Disagree - Fault Isolation

A. Description

- (1) This task is for these maintenance messages:
 - (a) 75-10431, 75-10432, 75-20431, 75-20432, 75-30431 and 75-30432.
- (2) The maintenance message 75-X043Y; where X = EEC Channel (1=Channel A, 2=Channel B, 3=Dual Channel), and Y = Engine Position (1=Eng 1, 2=Eng 2).
 - (a) If X=1, do the Fault Isolation Procedure - Single Channel Fault for channel A.
 - (b) If X=2, do the Fault Isolation Procedure - Single Channel Fault for channel B.
 - (c) If X=1 and 2 (two messages), or X=3, then do the Fault Isolation Procedure - Dual Channel Fault.
- (3) This fault is reported on the active channel of the EEC when the engine is in operation.
- (4) You must do the Initial Evaluation to see if the dual channel maintenance messages, 75-30431 or 75-30432, is set.
- (5) The absolute value of the difference between VBV demand and valid position is not in the valid range.
 - (a) There is no VBV wrap fault on the active channel.

B. Possible Causes

- (1) For the single channel maintenance messages:
 - (a) HMU, M1823
 - (b) EEC, M1818
 - (c) J5 (Ch A) or J6 (Ch B) Wire Harness.
- (2) For the dual channel maintenance messages:
 - (a) VBV actuation system
 - (b) Left (Ch B) or right (Ch A) VBV actuator, T520
 - (c) HMU, M1823
 - (d) EEC, M1818.

C. Circuit Breakers

- (1) For Engine 1,
 - (a) 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

- (2) For Engine 2,
 - (a) 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>
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

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D. Related Data

- (1) Component Location (75-32 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (75-32 TASK SUPPORT Figure 302)
- (3) (SSM 75-31-12)
- (4) (SSM 75-31-22)
- (5) (WDM 73-25-11)
- (6) (WDM 75-31-12)
- (7) (WDM 75-31-22)

E. Initial Evaluation

- (1) Do these steps to find out if the fault is still active and if it is a dual channel fault:
 - (a) Do this task: Test 12 - Actuators Test, AMM TASK 71-00-00-700-807-F00.
 - (b) If maintenance message 75-10431 (Eng 1, Ch A), 75-20431 (Eng 1, Ch B), 75-10432 (Eng 2, Ch A), or 75-20432 (Eng 2, Ch B) shows, do the Fault Isolation Procedure - Single Channel Fault for the applicable channel.
 - (c) If maintenance message 75-30431 or 75-30432 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.
 - c) If you find no problems, then replace components as listed in the Possible Causes list above.
 - d) Perform an idle engine run.
 - 4) Monitor the airplane on the subsequent flight.

F. Fault Isolation Procedure - Single Channel Fault

- (1) Do the Initial Evaluation to see if this fault is a dual channel fault.
NOTE: During engine operation, the EEC reports the fault only on the active channel.
- (2) Do these steps to prepare for the procedure:
 - (a) For Engine 1,
 - 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

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(Continued)

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) For Engine 2,

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>
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) Examine the electrical connector, DP0501 (Ch A) or DP0601 (Ch B), at the HMU:

(a) See if the electrical connector, DP0501 (Ch A) or DP0601 (Ch B), is correctly connected to the HMU, and continue.

(b) Disconnect the electrical connector, DP0501 (Ch A) or DP0601 (Ch B), from the HMU.

(c) Visually examine the HMU receptacle and wire harness connector (AMM TASK 70-70-01-200-801-F00).

1) If the HMU receptacle is damaged, then replace the HMU, M1823. These are the tasks:

• HMU Removal, AMM TASK 73-21-10-000-801-F00

• HMU Installation, AMM TASK 73-21-10-400-801-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 harness connector is damaged, then replace the wire harness, J5 (Ch A) or J6 (Ch B). These are the tasks:

• Fan Wiring Harness Removal, AMM TASK 73-21-06-000-801-F00

• Fan Wiring Harness Installation, AMM TASK 73-21-06-400-801-F00

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

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

3) If the harness connector was not correctly connected and no other problems were 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) Examine the resistance of these pins of the applicable HMU receptacle, DP0501 (Ch A) or DP0601 (Ch B):

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Table 201

RECEPTACLE DP0501 DP0601	PINS	RESISTANCE
	PINS 30 TO 29	10 TO 24 OHMS
	PIN 30 TO THE CONNECTOR SHELL	GREATER THAN 20 MEGOHMS
	PIN 29 TO THE CONNECTOR SHELL	GREATER THAN 20 MEGOHMS

- (a) If the resistance is not in the specified range, then replace the HMU, M1823. These are the tasks:
- HMU Removal, AMM TASK 73-21-10-000-801-F00
 - HMU Installation, AMM TASK 73-21-10-400-801-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) If the resistance is in the specified range, then continue.
- 1) Re-connect the electrical connector, DP0501 (Ch A) or DP0601 (Ch B), to the HMU.
- (5) Examine the electrical connector, DP0505 (Ch A) or DP0606 (Ch B), at the EEC:
- NOTE: The electrical connector, DP0505 (Ch A), is on the J5 wire harness. The electrical connector, DP0606, (Ch B) is on the J6 wire harness.
- (a) See if the electrical connector, DP0505 (Ch A) or DP0606 (Ch B), is correctly connected to the EEC, and continue.
- (b) Disconnect the electrical connector, DP0505 (Ch A) or DP0606 (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 the harness connector is damaged, replace the wire harness, J5 (Ch A) or J6 (Ch B). These are the tasks:
 - Fan Wiring Harness Removal, AMM TASK 73-21-06-000-801-F00
 - Fan Wiring Harness Installation, AMM TASK 73-21-06-400-801-F00
 - a) Do the Repair Confirmation at the end of this task.
 - b) If the Repair Confirmation is not satisfactory, then open the circuit breakers above and continue.
 - 3) If the harness connector was not correctly connected and no other problems were found, then re-connect the harness connector to the EEC.

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- 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 to examine the wires between the applicable EEC connector, DP0505 (Ch A) or DP0606 (Ch B), on the wire harness through the HMU:

NOTE: The electrical connector, DP0505 (Ch A), is on the J5 wire harness. The electrical connector, DP0606 (Ch B), is on the J6 wire harness.

Table 202

CONNECTOR DP0505 DP0606	PINS	RESISTANCE
	PINS Z TO h	10 TO 24 OHMS
	PIN Z TO THE CONNECTOR SHELL	GREATER THAN 20 MEGOHMS
	PIN h TO THE CONNECTOR SHELL	GREATER THAN 20 MEGOHMS

- (a) If the resistance is in the specified range 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.
- (b) If the resistance is not in the specified range, then continue with the Fault Isolation Procedure - Dual Channel Fault.

G. Fault Isolation Procedure - Dual Channel Fault

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

- (a) For Engine 1,

- 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) For Engine 2,

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

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
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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DO THESE SPECIFIED TASKS IN THE CORRECT SEQUENCE BEFORE YOU OPEN THE THRUST REVERSERS: RETRACT THE LEADING EDGE, DO THE DEACTIVATION PROCEDURES FOR THE LEADING EDGE AND THE THRUST REVERSER (FOR GROUND MAINTENANCE), AND OPEN THE FAN COWL PANELS. IF YOU DO NOT OBEY THE ABOVE SEQUENCE, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (c) Do this task: Open the Thrust Reverser (Selection), AMM TASK 78-31-00-010-801-F00.
- (2) Do this task: VBV Ring Guide Pads Inspection, AMM TASK 75-32-00-200-801-F00.
 - (a) If a problem was found and repaired, then do the Repair Confirmation at the end of this task
 - 1) If the Repair Confirmation was not satisfactory, then continue.
 - (b) If no problem was found, then continue.
- (3) Do this task: VBV Actuation System - Manual Operation, AMM TASK 75-32-00-730-801-F00.
 - (a) Make sure that the VBV actuation system moves freely and smoothly.
 - (b) If the VBV actuation system moves freely or the fault continues, then replace the HMU, M1823. These are the tasks:
 - HMU Removal, AMM TASK 73-21-10-000-801-F00
 - HMU Installation, AMM TASK 73-21-10-400-801-F00
 - (c) If the VBV actuation system does not move freely and smoothly, then examine the VBV actuation system.
 - 1) Do a general visual examination of the VBV actuation system:
 - a) Repair or replace the damage that you find.
 - b) Do this task: VBV Actuation System - Manual Operation, AMM TASK 75-32-00-730-801-F00.
 - 2) If the VBV actuation system moves freely and smoothly, do the Repair Confirmation at the end of this task.
 - 3) If the VBV actuation system still does not move freely, replace one of the VBV actuators:
 - a) These are the tasks:
 - Left VBV Actuator Removal, AMM TASK 75-32-02-000-801-F00
 - Left VBV Actuator Installation, AMM TASK 75-32-02-400-801-F00
 - b) These are the tasks:
 - Right VBV Actuator Removal, AMM TASK 75-32-02-000-802-F00
 - Right VBV Actuator Installation, AMM TASK 75-32-02-400-802-F00
 - 4) Do this task: VBV Actuation System - Manual Operation, AMM TASK 75-32-00-730-801-F00.
 - 5) If the fault continues, replace the other VBV actuator:
 - a) These are the tasks:
 - Left VBV Actuator Removal, AMM TASK 75-32-02-000-801-F00
 - Left VBV Actuator Installation, AMM TASK 75-32-02-400-801-F00

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- b) These are the tasks:
 - Right VBV Actuator Removal, AMM TASK 75-32-02-000-802-F00
 - Right VBV Actuator Installation, AMM TASK 75-32-02-400-802-F00
- c) Do the Repair Confirmation at the end of this task.

H. Repair Confirmation

- (1) Do these steps to prepare for the procedure:
 - (a) If you did the manual operation of the VBV actuation system, then put the engine back to its usual condition (AMM TASK 75-32-00-730-801-F00).
 - (b) Make sure that the electrical connectors, DP0501 (Ch A) and DP0601 (Ch B), are correctly connected to the HMU.
 - (c) Make sure that the electrical connectors, DP0505 (Ch A) and DP0606 (Ch B), are correctly connected to the EEC.
 - (d) For Engine 1,
 - 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

- (e) For Engine 2,
 - 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
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

- (2) Do this task: Test 12 - Actuators Test, AMM TASK 71-00-00-700-807-F00.
 - (a) If the maintenance message does not show, then you corrected the fault.



OBEY THE INSTRUCTIONS IN THE PROCEDURE TO CLOSE THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (3) Do this task: Close the Thrust Reverser (Selection), AMM TASK 78-31-00-010-804-F00.

————— **END OF TASK** —————

802. VBV Position Signal is Out of Range - Fault Isolation

A. Description

- (1) This task is for these maintenance messages:
 - (a) 75-10441, 75-10442, 75-20441, 75-20442, 75-30441 and 75-30442.

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- (2) The maintenance messages 75-X044Y; where X = EEC Channel (1=Channel A, 2=Channel B, 3=Dual Channel), and Y = Engine Position (1=Eng 1, 2=Eng 2).
 - (a) If X=1, then do the Fault Isolation Procedure for channel A.
 - (b) If X=2, then do the Fault Isolation Procedure for channel B.
 - (c) If X=1 and 2 (two messages), or X=3, do the Fault Isolation Procedure for channel A and B.
- (3) The EEC sense that the VBV position signal is out of the valid range.
- (4) FADEC 2;

Channel A and Channel B;

 - (a) Also, because the Channel A excitation circuit for the variable bleed valve (VBV) position LVDT, variable stator vane (VSV) 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 variable bleed valve (VBV) position LVDT and the low pressure turbine active clearance control valve (LPTACC) position LVDT are from a common source in the EEC, a short in one of the two excitation circuits can set Channel B fault messages for the two systems.
- (5) FADEC 3;

Channel A and B;

Also, because the Channel A and Channel B excitation circuit for the variable bleed valve (VBV) position LVDT, the variable stator valve (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 two excitation circuits can set Channel A or Channel B fault messages for all three systems.

B. Possible Causes

- (1) Left (Ch B) or right (Ch A) VBV actuator, T520
 - (2) EEC, M1818
 - (3) J9 (Ch A) or J10 (Ch B) Wire Harness.
- NOTE: For more information, see the Description section.

C. Circuit Breakers

- (1) For Engine 1,
 - (a) 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

- (2) For Engine 2,
 - (a) 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>
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

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D. Related Data

- (1) Component Location (75-32 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (75-32 TASK SUPPORT Figure 302)
- (3) (SSM 75-31-12)
- (4) (SSM 75-31-22)
- (5) (WDM 73-25-11)
- (6) (WDM 75-31-12)
- (7) (WDM 75-31-22)

E. Initial Evaluation

- (1) To find the FADEC version, do this task FADEC 2 or FADEC 3 Identification, AMM TASK 73-21-00-700-810-F00
- (2) Do this task: EEC BITE Procedure, 73-00 TASK 801.
 - (a) AND FADEC2;

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 LVDT's for the variable bleed valve (VBV), the variable stator vane (VSV), the low pressure turbine active clearance control valve (LPTACC) or the left thrust reverser (TRL). For more information see the Description section.

- 1) 75-10441, 75-10391 and 78-11481 (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) 75-10442, 75-10392 and 78-11482 (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) 75-20441 and 75-20541 (Engine 1, Ch B)
 - a) Do this task: FADEC2 (Ch B) Excitation Group 3: VBV and LPTC LVDT Excitation Circuit Fault - Fault Isolation, 75-34 TASK 812.
- 4) 75-20442 and 75-20542 (Engine 2, Ch B).
 - a) Do this task: FADEC2 (Ch B) Excitation Group 3: VBV and LPTC LVDT Excitation Circuit Fault - Fault Isolation, 75-34 TASK 812.

- (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 LVDT's for the variable bleed valve (VBV), the variable stator vane (VSV) or the fuel metering valve (FMV). For more information see the Description section.

- 1) 75-10441, 75-10391 and 73-10341 (Engine 1, Ch A)
 - a) Do this task: FADEC3 (Ch A) Excitation Group 2: VSV, VBV and FMV (Channel A) LVDT Excitation Circuit Fault - Fault Isolation, 75-34 TASK 817.
- 2) 75-10442, 75-10392, and 73-10342 (Engine 2, Ch A).
 - a) Do this task: FADEC3 (Ch A) Excitation Group 2: VSV, VBV and FMV (Channel A) LVDT Excitation Circuit Fault - Fault Isolation, 75-34 TASK 817.

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- 3) 75-20441, 75-20391 and 73-20341 (Engine 1, Ch B)
 - a) Do this task: FADEC3 (Ch B) Excitation Group 2: VSV, VBV and FMV (Channel B) LVDT Excitation Circuit Fault - Fault Isolation, 75-34 TASK 819.
- 4) 75-20442, 75-20392 and 73-20342 (Engine 2, Ch B)
 - a) Do this task: FADEC3 (Ch B) Excitation Group 2: VSV, VBV and FMV (Channel B) LVDT Excitation Circuit Fault - Fault Isolation, 75-34 TASK 819.
- (3) Do these steps to find out if the fault is still active:
 - (a) Do this task: Test 12 - Actuators Test, AMM TASK 71-00-00-700-807-F00.
 - (b) If maintenance message 75-10441 (Eng 1, Ch A), 75-10442 (Eng 2, Ch A), 75-20441 (Eng 1, Ch B), 75-20442 (Eng 2, Ch B), 75-30441 (Eng 1, Ch A and B) and 75-30442 (Eng 2, Ch A and B) shows, then do the Fault Isolation Procedure for the applicable channel or channels.
 - (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 to see if there is an excitation circuit fault and if the fault is still active.
NOTE: A fault in the excitation circuit of other LRU's could cause this fault. For more information, see the Description section.

- (2) Do these steps to prepare for the procedure:

- (a) For Engine 1,

- 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) For Engine 2,

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

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Row	Col	Number	Name
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



DO THESE SPECIFIED TASKS IN THE CORRECT SEQUENCE BEFORE YOU OPEN THE THRUST REVERSERS: RETRACT THE LEADING EDGE, DO THE DEACTIVATION PROCEDURES FOR THE LEADING EDGE AND THE THRUST REVERSERS (FOR GROUND MAINTENANCE), AND OPEN THE FAN COWL PANELS. IF YOU DO NOT OBEY THE ABOVE SEQUENCE, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (c) Do this task: Open the Thrust Reverser (Selection), AMM TASK 78-31-00-010-801-F00.
- (3) Examine the electrical connector, DP0908 (Ch A) or DP1008 (Ch B), at the applicable VBV Actuator:

NOTE: Channel A is for the right actuator and Channel B is for the left actuator.

- (a) See if the electrical connector, DP0908 (Ch A) or DP1008 (Ch B), is correctly connected to the applicable VBV actuator, and continue.
- (b) Disconnect the electrical connector, DP0908 (Ch A) or DP1008 (Ch B), from the VBV actuator.
- (c) Visually examine the VBV actuator receptacle and wire harness connector (AMM TASK 70-70-01-200-801-F00).
 - 1) If the VBV actuator receptacle is damaged, then replace the applicable VBV actuator, T520:
 - a) For Ch B:

These are the tasks:

 - Left VBV Actuator Removal, AMM TASK 75-32-02-000-801-F00
 - Left VBV Actuator Installation, AMM TASK 75-32-02-400-801-F00
 - b) For Ch A:

These are the tasks:

 - Right VBV Actuator Removal, AMM TASK 75-32-02-000-802-F00
 - Right VBV Actuator Installation, AMM TASK 75-32-02-400-802-F00
 - c) Do the Repair Confirmation at the end of this task.
 - d) If the Repair Confirmation is not satisfactory, then open the circuit breakers above and continue.
 - 2) If the harness connector is damaged, then replace the wire harness, J9 (Ch A) or J10 (Ch B). These are the tasks:
 - 3 O'clock Strut Harness Removal, AMM TASK 73-21-06-000-802-F00
 - 3 O'clock Strut Harness Installation, AMM TASK 73-21-06-400-802-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.
 - 3) If the harness connector was not correctly connected and no other problems were 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 at the VBV actuator receptacle, DP0908 (Ch A) or DP1008 (Ch B):

NOTE: Channel A is for the right actuator and channel B is for the left actuator.

Table 203

RECEPTACLE DP0908 DP1008	PINS	RESISTANCE
	PINS 1 TO 2	250 TO 320 OHMS
	PINS 4 TO 3	100 TO 130 OHMS
	PINS 4 TO 5	100 TO 130 OHMS
	PIN 1 TO 3	GREATER THAN 20 MEGOHMS
	PIN 1 TO THE CONNECTOR SHELL	GREATER THAN 20 MEGOHMS
	PIN 2 TO THE CONNECTOR SHELL	GREATER THAN 20 MEGOHMS
	PIN 3 TO THE CONNECTOR SHELL	GREATER THAN 20 MEGOHMS
	PIN 4 TO THE CONNECTOR SHELL	GREATER THAN 20 MEGOHMS
	PIN 5 TO THE CONNECTOR SHELL	GREATER THAN 20 MEGOHMS

- (a) If the resistance value is not in the specified range, then replace the applicable VBV actuator, T520:
 - 1) For Ch B:

These are the tasks:

 - Left VBV Actuator Removal, AMM TASK 75-32-02-000-801-F00
 - Left VBV Actuator Installation, AMM TASK 75-32-02-400-801-F00
 - 2) For Ch A:

These are the tasks:

 - Right VBV Actuator Removal, AMM TASK 75-32-02-000-802-F00
 - Right VBV Actuator Installation, AMM TASK 75-32-02-400-802-F00
 - 3) Do the Repair Confirmation at the end of this task.

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- 4) If the Repair Confirmation is not satisfactory, then open the circuit breakers above and continue.
- (b) If the resistance value is in the specified range, then continue.
- (5) Connect the electrical connector, DP0908 (Ch A) or DP1008 (Ch B), to the applicable VBV actuator.
- (6) Examine the electrical connector, DP0909 (Ch A) or DP1010 (Ch B), at the EEC:
NOTE: The electrical connector, DP0909 (Ch A), is on the J9 wire harness. The electrical connector, DP1010 (Ch B), is on the J10 wire harness.
 - (a) See if the electrical connector, DP0909 (Ch A) or DP1010 (Ch B), is correctly connected to the EEC, and continue.
 - (b) Disconnect the electrical connector, DP0909 (Ch A) or DP1010 (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 the harness connector is damaged, then replace the wire harness, J9 (Ch A) or J10 (Ch B). These are the tasks:
 - 3 O'clock Strut Harness Removal, AMM TASK 73-21-06-000-802-F00
 - 3 O'clock Strut Harness Installation, AMM TASK 73-21-06-400-802-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.
 - 3) If the harness connector was not correctly connected and no other problems were 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.
 - (7) Measure the resistance between these pins to examine the wires between the applicable EEC connector, DP0909 (Ch A) or DP1010 (Ch B), on the wire harness through the VBV actuator:
NOTE: The electrical connector, DP0909 (Ch A) is on the J9 wire harness. The electrical connector, DP1010 (Ch B) is on the J10 wire harness.

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Table 204

CONNECTOR	PINS	RESISTANCE
DP0909 (Ch A)	PINS R TO m	250 TO 320 OHMS
	PINS AA TO GG	100 TO 130 OHMS
	PINS BB TO GG	100 TO 130 OHMS
	PIN R TO AA	GREATER THAN 20 MEGOHMS
	PIN R TO THE CONNECTOR SHELL	GREATER THAN 20 MEGOHMS
	PIN m TO THE CONNECTOR SHELL	GREATER THAN 20 MEGOHMS
	PIN AA TO THE CONNECTOR SHELL	GREATER THAN 20 MEGOHMS
	PIN GG TO THE CONNECTOR SHELL	GREATER THAN 20 MEGOHMS
	PIN BB TO THE CONNECTOR SHELL	GREATER THAN 20 MEGOHMS
DP1010 (Ch B)	PINS S TO n	250 TO 320 OHMS
	PINS AA TO m	100 TO 130 OHMS
	PINS AA TO R	100 TO 130 OHMS
	PIN S TO m	GREATER THAN 20 MEGOHMS
	PIN S TO THE CONNECTOR SHELL	GREATER THAN 20 MEGOHMS
	PIN n TO THE CONNECTOR SHELL	GREATER THAN 20 MEGOHMS
	PIN AA TO THE CONNECTOR SHELL	GREATER THAN 20 MEGOHMS
	PIN m TO THE CONNECTOR SHELL	GREATER THAN 20 MEGOHMS
	PIN R TO THE CONNECTOR SHELL	GREATER THAN 20 MEGOHMS

- (a) If the resistance is not in the specified range, then replace the wire harness, J9 (Ch A) or J10 (Ch B). These are the tasks:
- 3 O'clock Strut Harness Removal, AMM TASK 73-21-06-000-802-F00
 - 3 O'clock Strut Harness Installation, AMM TASK 73-21-06-400-802-F00
- 1) Do the Repair Confirmation at the end of this task.
- (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.

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- 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.

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- 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 3: VBV and LPTC LVDT Excitation Circuit Fault - Fault Isolation, 75-34 TASK 812
 - c) Do the Repair Confirmation at the end of this task.

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- 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 2: VSV, VBV and FMV (Channel A) LVDT Excitation Circuit Fault - Fault Isolation, 75-34 TASK 817.
 - b) For Channel B;

Do this task: FADEC3 (Ch B) Excitation Group 2: VSV, VBV and FMV (Channel B) LVDT Excitation Circuit Fault - Fault Isolation, 75-34 TASK 819.
 - c) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

- (1) Do these steps to prepare for the procedure:
 - (a) Make sure that the electrical connectors, DP0908 (Ch A) and DP1008 (Ch B), are correctly connected to the applicable VBV actuator.
 - (b) Make sure that the electrical connectors, DP0909 (Ch A) and DP1010 (Ch B), are correctly connected to the EEC.
 - (c) For Engine 1,
 - 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

- (d) For Engine 2,

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- 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>
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: Test 12 - Actuators Test, AMM TASK 71-00-00-700-807-F00.
 - (a) If the maintenance message does not show, then you corrected the fault.



OBEY THE INSTRUCTIONS IN THE PROCEDURE TO CLOSE THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (3) Do this task: Close the Thrust Reverser (Selection), AMM TASK 78-31-00-010-804-F00.

————— **END OF TASK** —————

803. VBV Position Signals Disagree - Fault Isolation

A. Description

- (1) This task is for these maintenance messages:
 - (a) 75-10451, 75-10452, 75-20451, 75-20452, 75-30451 and 75-30452.
- (2) The maintenance messages 75-X045Y; where X = EEC Channel (1=Channel A, 2=Channel B, 3=Dual Channel), and Y = Engine Position (1=Eng 1, 2=Eng 2).
 - (a) If X=1 or 2, do the Fault Isolation Procedure - Single Channel Fault.
 - (b) If X=1 and 2 (two messages), or X=3, then do the Fault Isolation Procedure - Dual Channel Fault.
- (3) The dual channel maintenance message, 75-30451 and 75-30452. If a single channel maintenance message shows, there is an additional internal EEC problem.
 - (a) The single channel message can only be caused by a problem in the cross channel data link, that is internal to the EEC. If there is an intermittent cross channel data link problem, a single channel and a dual channel message can show at the same time.
- (4) This fault is reported when the EEC has electrical power.
- (5) You must do the Initial Evaluation to see if another VBV signal fault maintenance messages is set; or, if the fault is intermittent.
- (6) The absolute value of the difference between the position sensed by channel A and channel B is greater than 4 degrees and the two LVDT signals are in range.
 - (a) The two signals of the VBV actuator LVDT's are in a valid range.

B. Possible Causes

- (1) For the Single Channel maintenance messages:
 - (a) EEC (internal failure), M1818
 - (b) Left (Ch B) or Right (Ch A) VBV actuator, T520
 - (c) VBV actuation system.
- (2) For the Dual Channel maintenance messages:

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- (a) Left (Ch B) or right (Ch A) VBV actuator, T520
- (b) VBV actuation system
- (c) EEC, M1818.

C. Circuit Breakers

- (1) For Engine 1,

- (a) 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

- (2) For Engine 2,

- (a) 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>
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

D. Related Data

- (1) Component Location (75-32 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (75-32 TASK SUPPORT Figure 302)
- (3) (SSM 75-31-12)
- (4) (SSM 75-31-22)
- (5) (WDM 73-25-11)
- (6) (WDM 75-31-12)
- (7) (WDM 75-31-22)

E. Initial Evaluation

- (1) Do these steps to find out if the fault is still active, and if another related maintenance message was set:

NOTE: This fault should always be reported as a dual channel fault. If the fault is reported as a single channel, then an additional internal EEC fault is present.

- (a) Do this task: EEC BITE Procedure, 73-00 TASK 801.
- (b) If maintenance message 75-10441, 75-10442, 75-20441, 75-20442, 75-30441 or 75-30442 shows, then, do this task: VBV Position Signal is Out of Range - Fault Isolation, 75-32 TASK 802.
- (c) Do this task: Test 12 - Actuators Test, AMM TASK 71-00-00-700-807-F00.
- (d) If maintenance messages 75-10451 (Ch A, Eng 1), 75-10452 (Ch A, Eng 2), 75-20451 (Ch B, Eng 1) or 75-20452 (Ch B, Eng 2) shows, then do the Fault Isolation Procedure - Single Channel Fault.
- (e) If maintenance messages 75-30451 (Ch A and B, Eng 1) or 75-30452 (Ch A and B, Eng 2) shows, then do the Fault Isolation Procedure - Dual Channel Fault.

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- (f) 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 - Single Channel Fault

- (1) Do this task: EEC TEST, AMM TASK 73-21-00-700-804-F00.
 - (a) Look for INTERNAL EEC FAULT maintenance messages on the CDU.
 - (b) If you find an INTERNAL EEC FAULT maintenance message, then do the Fault Isolation Procedure for the INTERNAL EEC FAULT maintenance message that you found first.
 - 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.
 - (c) If the problem continues or an INTERNAL EEC FAULT maintenance message did not show during the EEC test, then do the Fault Isolation Procedure - Dual Channel Fault.

G. Fault Isolation Procedure - Dual Channel Fault

- (1) To identify if the "VBV position signal is out of range" fault is set, do the Initial Evaluation above.
- (2) Do these steps to prepare for the procedure:
 - (a) For Engine 1,
 - 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) For Engine 2,
 - 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>
D	4	C00459	ENGINE 2 IGNITION RIGHT

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F/O Electrical System Panel, P6-2

<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



DO THESE SPECIFIED TASKS IN THE CORRECT SEQUENCE BEFORE YOU OPEN THE THRUST REVERSERS: RETRACT THE LEADING EDGE, DO THE DEACTIVATION PROCEDURES FOR THE LEADING EDGE AND THE THRUST REVERSERS (FOR GROUND MAINTENANCE), AND OPEN THE FAN COWL PANELS. IF YOU DO NOT OBEY THE ABOVE SEQUENCE, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (c) Do this task: Open the Thrust Reverser (Selection), AMM TASK 78-31-00-010-801-F00.
- (3) Do these steps to examine the VBV actuation system:
- (a) Do this task: VBV Ring Guide Pads Inspection, AMM TASK 75-32-00-200-801-F00.
- 1) If a problem was found and repaired, then do the Repair Confirmation at the end of this task
 - a) If the Repair Confirmation was not satisfactory, then continue.
 - 2) If no problem was found, then continue.
- (b) If it is necessary, remove the number 4 and 10 fan duct panels (AMM TASK 72-23-07-000-801-F00).
- NOTE: The number 4 panel is between the fan frame struts 4 and 5. The number 10 panel is between the fan frame struts 10 and 11.
- (c) Visually examine these VBV actuation components for damage:
- 1) VBV actuator arm
 - 2) Actuation linkage
 - 3) Actuation bellcrank.
- (d) If you find damage, then repair or replace the applicable components; or replace the engine. These are the tasks:
- Power Plant - Removal, AMM TASK 71-00-02-000-801-F00
 - Power Plant - Installation, AMM TASK 71-00-02-400-801-F00
- 1) If you repaired or replaced components, then 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.
- (e) Install the number 4 and 10 fan duct panels (AMM TASK 72-23-07-400-801-F00).
- (f) If you do not find a problem, then continue.
- (4) Examine the electrical connectors, DP0908 (Ch A) and DP1008 (Ch B), at the applicable VBV Actuators:

NOTE: Channel A is for the right actuator and Channel B is for the left actuator.

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- (a) See if the electrical connectors, DP0908 (Ch A) and DP1008 (Ch B), are correctly connected to the applicable VBV actuator, and continue.
- (b) Disconnect the electrical connectors, DP0908 (Ch A) and DP1008 (Ch B), from the VBV actuators.
- (c) Visually examine the VBV actuator receptacles and wire harness connectors (AMM TASK 70-70-01-200-801-F00).
 - 1) If a VBV actuator receptacle is damaged, then replace the applicable VBV actuator, T520:
 - a) For Ch B:

These are the tasks:

 - Left VBV Actuator Removal, AMM TASK 75-32-02-000-801-F00
 - Left VBV Actuator Installation, AMM TASK 75-32-02-400-801-F00
 - b) For Ch A:

These are the tasks:

 - Right VBV Actuator Removal, AMM TASK 75-32-02-000-802-F00
 - Right VBV Actuator Installation, AMM TASK 75-32-02-400-802-F00
 - c) Do the Repair Confirmation at the end of this task.
 - d) 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 wire harness, J9 (Ch A) or J10 (Ch B). These are the tasks:
 - 3 O'clock Strut Harness Removal, AMM TASK 73-21-06-000-802-F00
 - 3 O'clock Strut Harness Installation, AMM TASK 73-21-06-400-802-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.
 - 3) If a harness connector was not correctly connected and no other problems were found, then re-connect the connector and do the Repair Confirmation at the end of this task.
 - 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.
- (d) If you did not find a problem, then continue.
- (5) Measure the resistance between these pins of the VBV actuator receptacles, DP0908 (Ch A) and DP1008 (Ch B):

NOTE: Channel A is for the right actuator and Channel B is for the left actuator.

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FOR VERSIONS 7074-100 AND 7074-200

RECEPTACLE DP0908, DP1008	RECEPTACLE, CH A OR CH B		RECEPTACLE, CH A OR CH B	RESISTANCE
	FROM	TO		
	PIN 1	PIN 2		258 - 316 Ω
	PIN 3	PIN 4		104 - 127 Ω
	PIN 4	PIN 5		104 - 127 Ω
	PIN 1	PIN 3		>20 M Ω
	PIN 1	THE CONNECTOR SHELL		>20 M Ω
	PIN 2	THE CONNECTOR SHELL		>20 M Ω
	PIN 3	THE CONNECTOR SHELL		>20 M Ω
	PIN 4	THE CONNECTOR SHELL		>20 M Ω
	PIN 5	THE CONNECTOR SHELL		>20 M Ω

FOR VERSIONS 7074-300 AND 1226400

RECEPTACLE DP0908, DP1008	RECEPTACLE, CH A OR CH B		RECEPTACLE, CH A OR CH B	RESISTANCE
	FROM	TO		
	PIN 1	PIN 2		261 - 319 Ω
	PIN 3	PIN 4		115 - 141 Ω
	PIN 4	PIN 5		115 - 141 Ω
	PIN 1	PIN 3		>20 M Ω
	PIN 1	THE CONNECTOR SHELL		>20 M Ω
	PIN 2	THE CONNECTOR SHELL		>20 M Ω
	PIN 3	THE CONNECTOR SHELL		>20 M Ω
	PIN 4	THE CONNECTOR SHELL		>20 M Ω
	PIN 5	THE CONNECTOR SHELL		>20 M Ω

- (a) If the resistance value is not in the specified range, then replace the applicable VBV actuator, T520.
- 1) These are the tasks:
 - Left VBV Actuator Removal, AMM TASK 75-32-02-000-801-F00
 - Left VBV Actuator Installation, AMM TASK 75-32-02-400-801-F00
 - 2) These are the tasks:

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- Right VBV Actuator Removal, AMM TASK 75-32-02-000-802-F00
- Right VBV Actuator Installation, AMM TASK 75-32-02-400-802-F00
 - a) Do the Repair Confirmation at the end of this task.
 - b) If the Repair Confirmation is not satisfactory, then continue.
- (b) If the resistance value is in the specified range or the fault continues, then replace one of the VBV actuators.
 - 1) These are the tasks:
 - Left VBV Actuator Removal, AMM TASK 75-32-02-000-801-F00
 - Left VBV Actuator Installation, AMM TASK 75-32-02-400-801-F00
 - 2) These are the tasks:
 - Right VBV Actuator Removal, AMM TASK 75-32-02-000-802-F00
 - Right VBV Actuator Installation, AMM TASK 75-32-02-400-802-F00
 - a) Do the Repair Confirmation at the end of this task.
 - b) If the Repair Confirmation is not satisfactory, then replace a subsequent LRU from the Possible Causes list.
 - c) Do the Repair Confirmation at the end of this task.

H. Repair Confirmation

- (1) Do these steps to prepare for the procedure:
 - (a) Make sure that the electrical connectors, DP0908 (Ch A) and DP1008 (Ch B), are correctly connected to the VBV.
 - (b) For Engine 1,
 - 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

- (c) For Engine 2,
 - 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
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

- (2) Do this task: Test 12 - Actuators Test, AMM TASK 71-00-00-700-807-F00.
 - (a) If the maintenance message does not show, then you corrected the fault.

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OBEY THE INSTRUCTIONS IN THE PROCEDURE TO CLOSE THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (3) Do this task: Close the Thrust Reverser (Selection), AMM TASK 78-31-00-010-804-F00.

END OF TASK

804. HMU VBV Control Current is Out of Range - Fault Isolation

A. Description

- (1) This task is for these maintenance messages:
 - (a) 75-10421, 75-10422, 75-20421, 75-20422, 75-30421 and 75-30422.
- (2) The maintenance messages 75-X042Y; where X = EEC Channel (1=Channel A, 2=Channel B, 3=Dual Channel), and Y = Engine Position (1=Eng 1, 2=Eng 2).
 - (a) If X=1, do the Fault Isolation Procedure for channel A.
 - (b) If X=2, do the Fault Isolation Procedure for channel B.
 - (c) If X=1 and 2 (two messages), or X=3, do the Fault Isolation Procedure for channel A and B.
- (3) The EEC detected that the return current from the HMU torque motor that controls the VBV system is not in the valid range; or, the difference in the calculated EEC output current and the sensed return current for the VBV is greater than a specified value.

B. Possible Causes

- (1) HMU, M1823
- (2) EEC, M1818
- (3) J5 (Ch A) or J6 (Ch B) Wire Harness.

C. Circuit Breakers

- (1) For Engine 1,
 - (a) 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

- (2) For Engine 2,
 - (a) 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>
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

D. Related Data

- (1) Component Location (75-32 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (75-32 TASK SUPPORT Figure 302)

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- (3) (SSM 75-31-12)
- (4) (SSM 75-31-22)
- (5) (WDM 73-25-11)
- (6) (WDM 75-31-12)
- (7) (WDM 75-31-22)

E. Initial Evaluation

- (1) Do these steps to find out if the fault is still active:
 - (a) Do this task: Test 12 - Actuators Test, AMM TASK 71-00-00-700-807-F00.
 - (b) If maintenance message 75-10421 (Eng 1, Ch A), 75-20421 (Eng 1, Ch B), 75-10422 (Eng 2, Ch A), or 75-20422 (Eng 2, Ch B) shows, then do the Fault Isolation Procedure for the applicable channel.
 - (c) If maintenance message 75-30421 and 75-30422 shows, then do the Fault Isolation Procedure for the two channels.
 - (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.
 - 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 procedure:
 - (a) For Engine 1,
 - 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) For Engine 2,

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- 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>
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) Examine the electrical connector, DP0501 (Ch A) or DP0601 (Ch B), at the HMU:
- (a) See if the electrical connector, DP0501 (Ch A) or DP0601 (Ch B), is correctly connected to the HMU, and continue.
 - (b) Disconnect the electrical connector, DP0501 (Ch A) or DP0601 (Ch B), from the HMU.
 - (c) Visually examine the HMU receptacle and wire harness connector (AMM TASK 70-70-01-200-801-F00).
 - 1) If the HMU receptacle is damaged, then replace the HMU, M1823. These are the tasks:
 - HMU Removal, AMM TASK 73-21-10-000-801-F00
 - HMU Installation, AMM TASK 73-21-10-400-801-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 harness connector is damaged, then replace the wire harness, J5 (Ch A) or J6 (Ch B). These are the tasks:
 - Fan Wiring Harness Removal, AMM TASK 73-21-06-000-801-F00
 - Fan Wiring Harness Installation, AMM TASK 73-21-06-400-801-F00
 - a) Do the Repair Confirmation at the end of this task.
 - b) If the Repair Confirmation is not satisfactory, then open the circuit breakers above and continue.
 - 3) If the harness connector was not correctly connected and no other problems were 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 at the HMU receptacles, DP0501 (Ch A) or DP0601 (Ch B):

Table 205

RECEPTACLE DP0501 DP0601	PINS	RESISTANCE
	PINS 29 TO 30	10 TO 24 OHMS

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Table 205 (Continued)

RECEPTACLE DP0501 DP0601	PINS	RESISTANCE
	PIN 29 TO THE CONNECTOR SHELL	GREATER THAN 20 MEGOHMS
	PIN 30 TO THE CONNECTOR SHELL	GREATER THAN 20 MEGOHMS

- (a) If the resistance is not in the specified range, then replace the HMU, M1823. These are the tasks:
- HMU Removal, AMM TASK 73-21-10-000-801-F00
 - HMU Installation, AMM TASK 73-21-10-400-801-F00
- 1) 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.
- (b) If you do not find a problem, then continue.
- 1) Re-connect the electrical connectors, DP0501 (Ch A) and DP0601 (Ch B), to the HMU.
- (4) Examine the electrical connector, DP0505 (Ch A) or DP0606 (Ch B), at the EEC:
- NOTE:** The electrical connector, DP0505 (Ch A), is on the J5 wire harness. The electrical connector, DP0606 (Ch B), is on the J6 wire harness.
- (a) See if the electrical connector, DP0505 (Ch A) or DP0606 (Ch B), is correctly connected to the EEC, and continue.
- (b) Disconnect the electrical connector, DP0505 (Ch A) or DP0606 (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 the harness connector is damaged, then replace the wire harness, J5 (Ch A) or J6 (Ch B). These are the tasks:
- Fan Wiring Harness Removal, AMM TASK 73-21-06-000-801-F00
 - Fan Wiring Harness Installation, AMM TASK 73-21-06-400-801-F00
- a) Do the Repair Confirmation at the end of this task.
- b) If the Repair Confirmation is not satisfactory, then open the circuit breakers above and continue.

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- 3) If the harness connector was not correctly connected and no other problems were 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 between these pins to examine the wires between the EEC connectors, DP0505 (Ch A) and DP0606 (Ch B), on the wire harness through the HMU:

NOTE: The electrical connector, DP0505 (Ch A), is on the J5 wire harness. The electrical connector, DP0606 (Ch B), is on the J6 wire harness.

Table 206

CONNECTOR DP0505 DP0606	PINS	RESISTANCE
	PINS Z TO h	10 TO 24 OHMS
	PIN Z TO THE CONNECTOR SHELL	GREATER THAN 20 MEGOHMS
	PIN h TO THE CONNECTOR SHELL	GREATER THAN 20 MEGOHMS

- (a) If the resistance is in the specified range 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.
- (b) If the resistance is not in the specified range, then replace the wire harness, J5 (Ch A) or J6 (Ch B). These are the tasks:
 - Fan Wiring Harness Removal, AMM TASK 73-21-06-000-801-F00
 - Fan Wiring Harness Installation, AMM TASK 73-21-06-400-801-F00
 - 1) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

- (1) Do these steps to prepare for the procedure:
 - (a) Make sure that the electrical connectors, DP0501 (Ch A) and DP0601 (Ch B), are correctly connected at the HMU.
 - (b) Make sure that the electrical connectors, DP0505 (Ch A) and DP0606 (Ch B), are correctly connected at the EEC.
 - (c) For Engine 1,
 - 1) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
A	1	C00458	ENGINE 1 IGNITION RIGHT
A	3	C00153	ENGINE 1 IGNITION LEFT

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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

(d) For Engine 2,

- 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
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

- (2) Do this task: Test 12 - Actuators Test, AMM TASK 71-00-00-700-807-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** ————

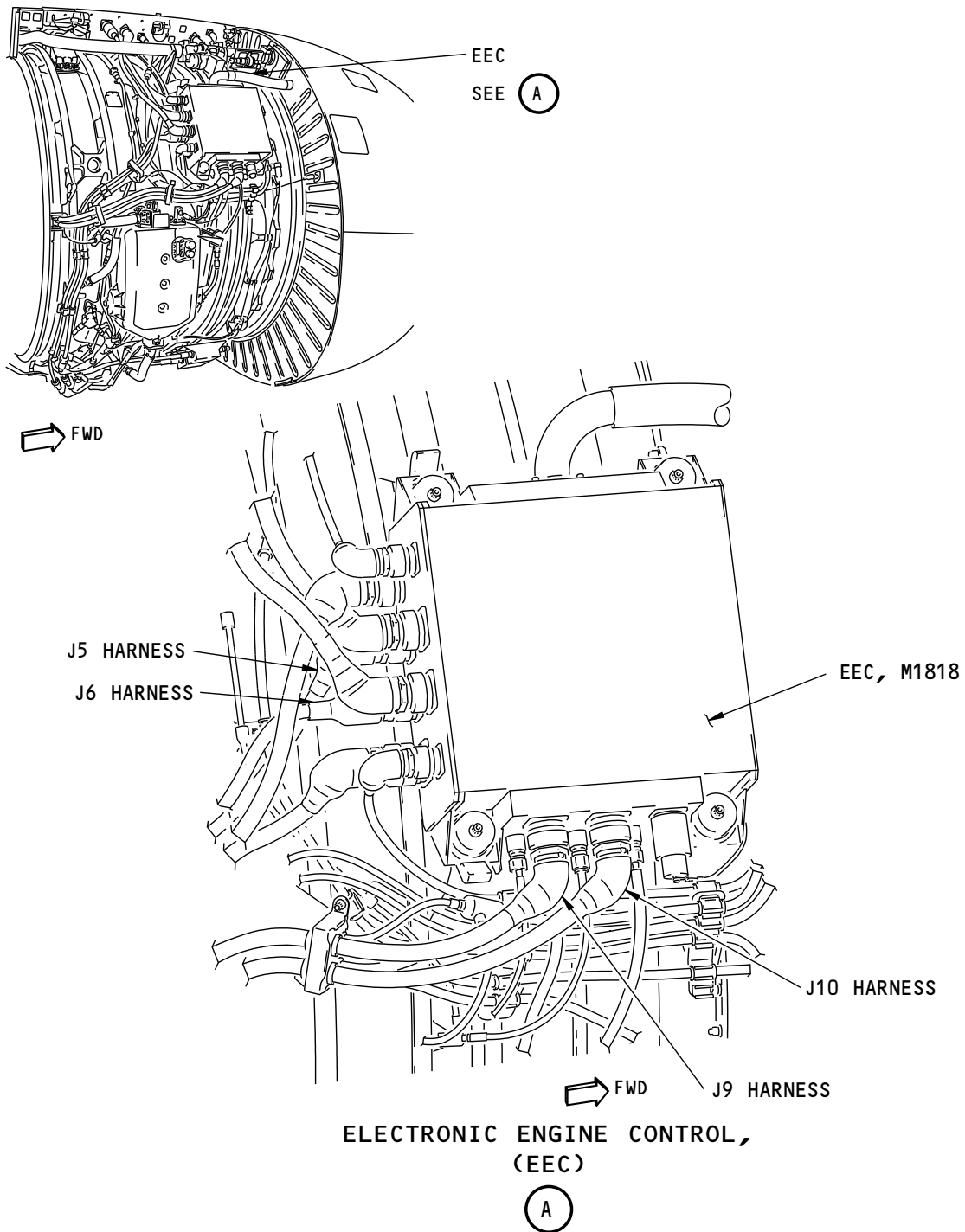
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Variable Bleed Valve - Component Location
Figure 301/75-32-00-990-801-F00 (Sheet 1 of 4)

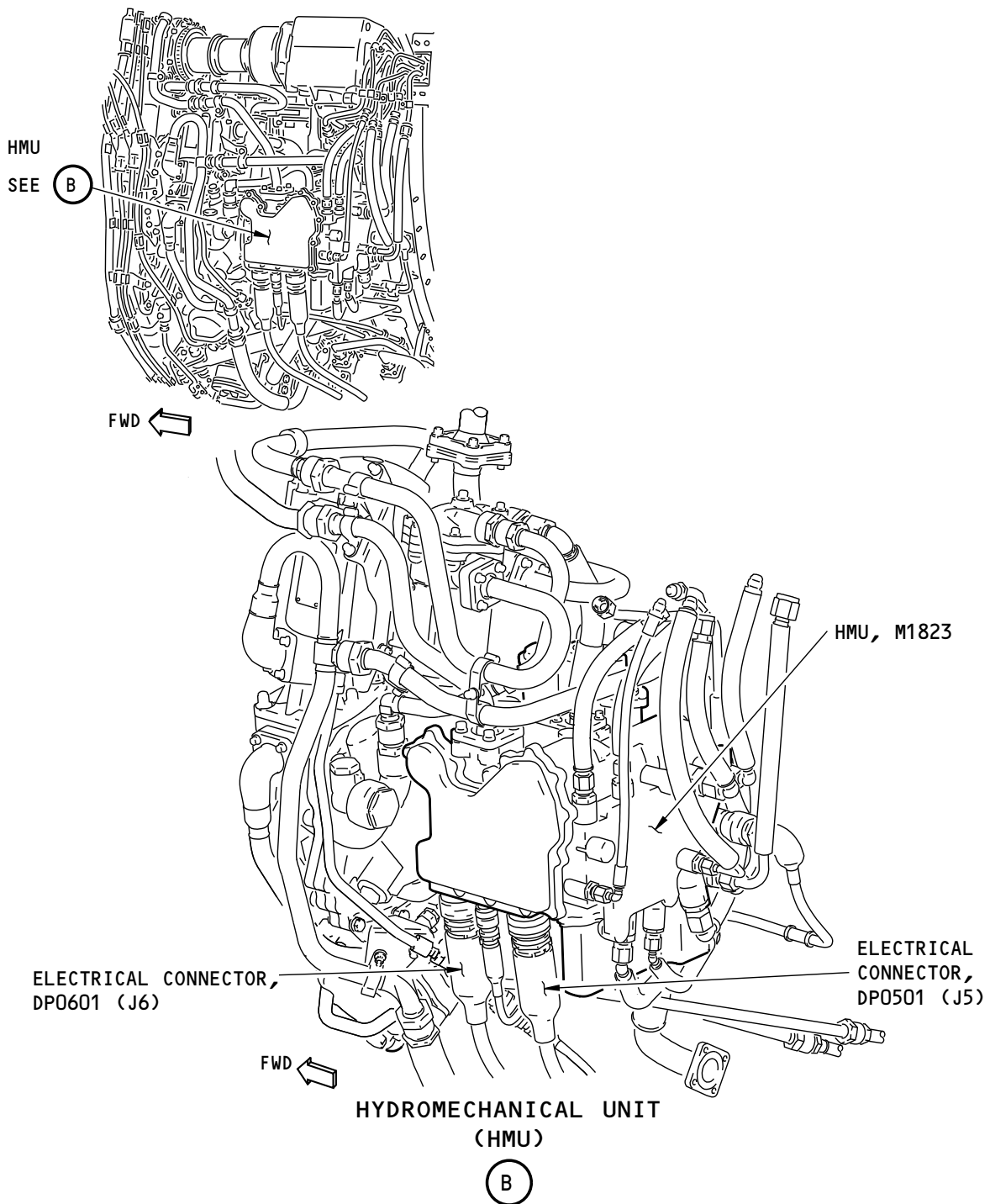
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Variable Bleed Valve - Component Location
Figure 301/75-32-00-990-801-F00 (Sheet 2 of 4)

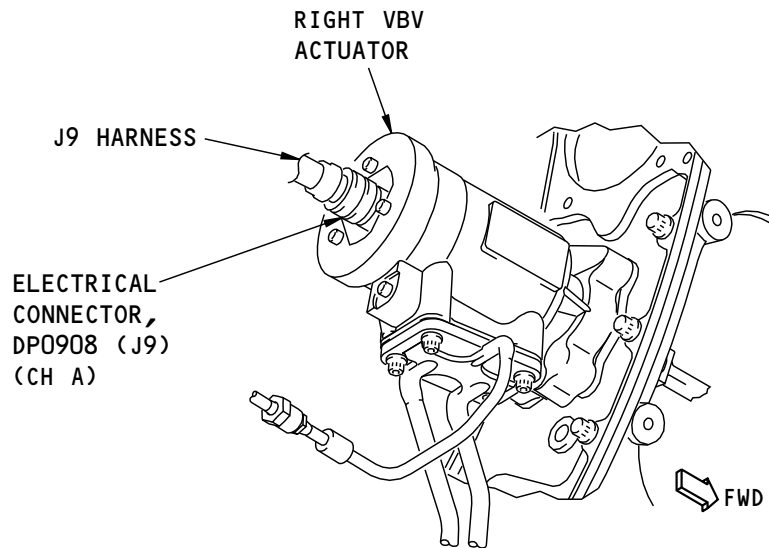
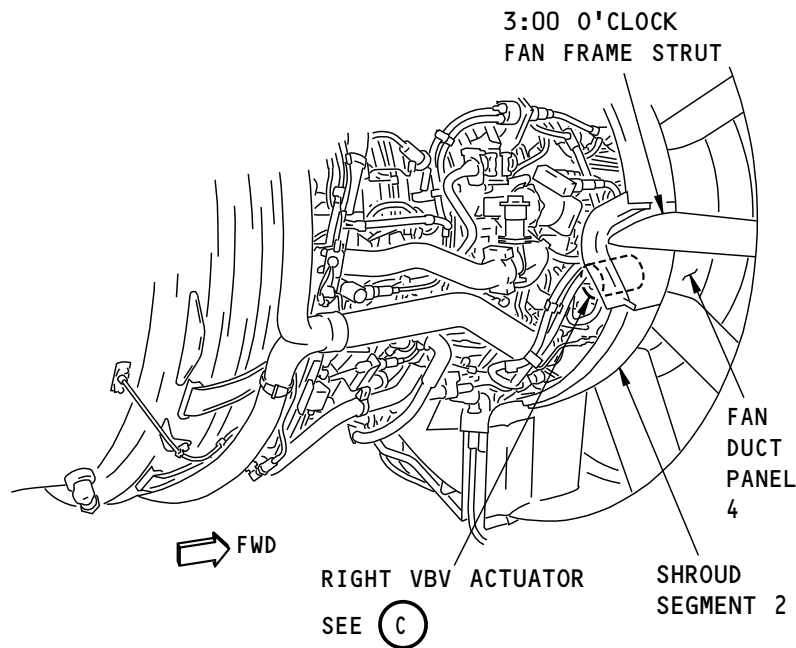
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RIGHT VBV ACTUATOR

(C)

H40098 S0006746054_V1

Variable Bleed Valve - Component Location
Figure 301/75-32-00-990-801-F00 (Sheet 3 of 4)

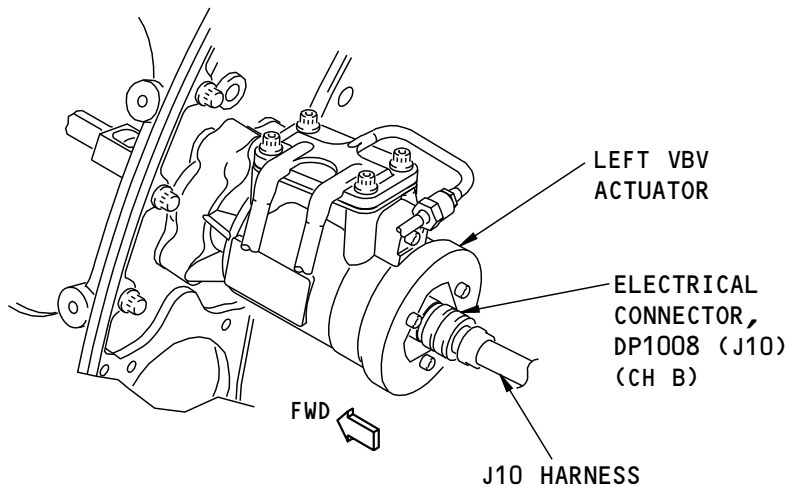
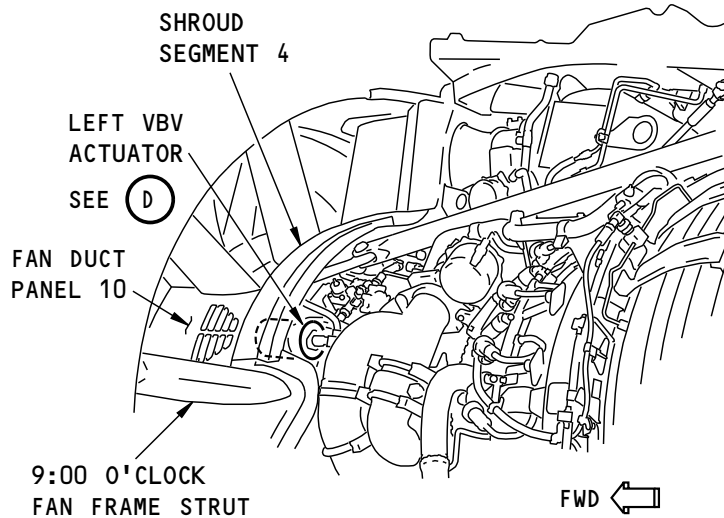
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LEFT VBV ACTUATOR

(D)

H40995 S0006746055_V1

Variable Bleed Valve - Component Location
Figure 301/75-32-00-990-801-F00 (Sheet 4 of 4)

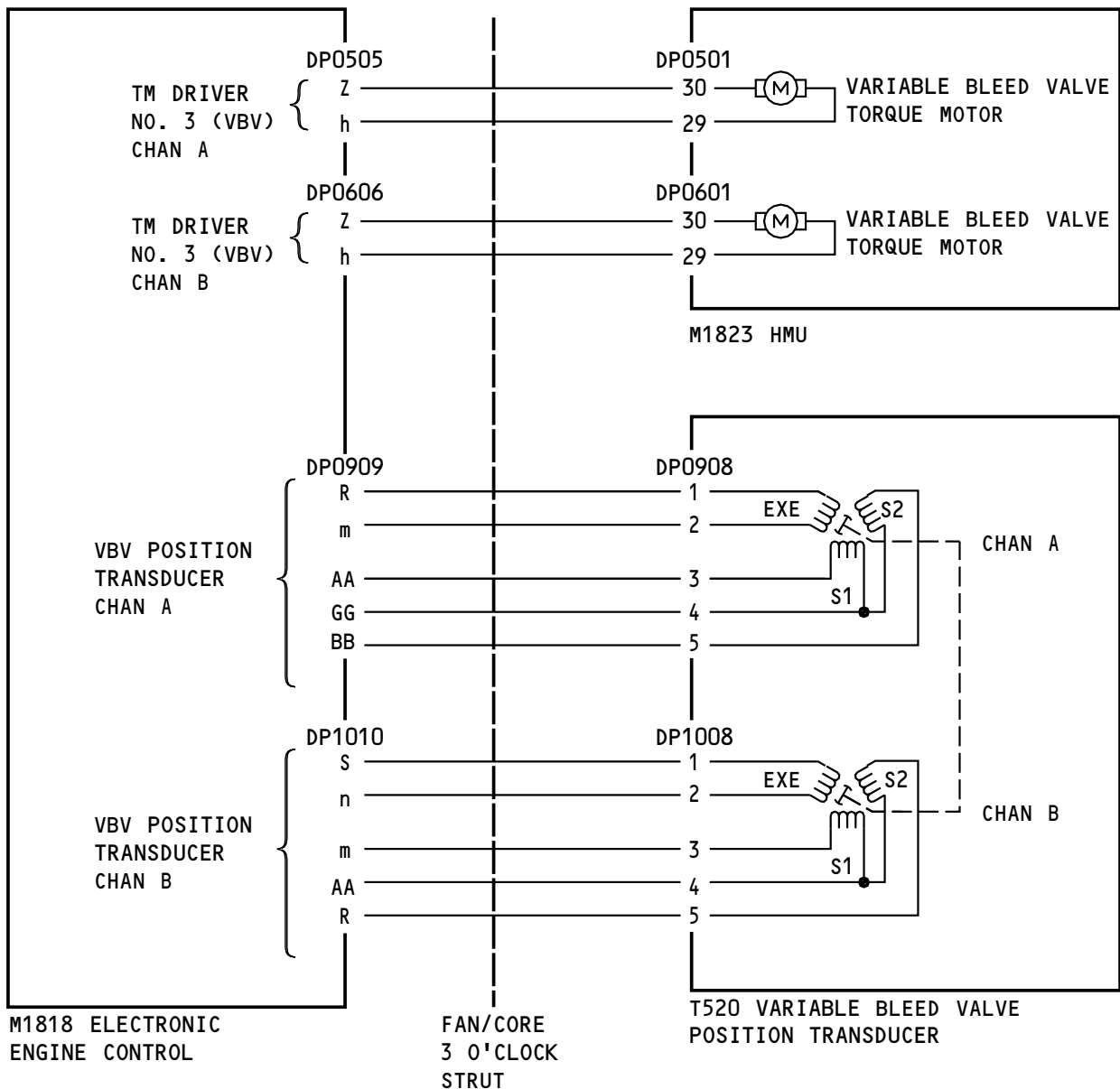
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NOTE: THE WDM/SSM ADD A DASH TO THE PIN LETTER TO DENOTE A LOWER CASE PIN, SUCH AS A- =a.

H40241 S0006746056_V1

Variable Bleed Valve - System Schematic
Figure 302/75-32-00-990-802-F00

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801. T25 Signal is Out of Range - Fault Isolation

A. Description

- (1) This task is for these maintenance messages:
 - (a) 75-10821, 75-10822, 75-20821, 75-20822, 75-30821 and 75-30822.
- (2) The maintenance messages 75-X082Y; where X = EEC Channel (1=Channel A, 2=Channel B, 3=Dual Channel), and Y = Engine Position (1=Eng 1, 2=Eng 2).
 - (a) If X=1, then do the Fault Isolation Procedure - Single Channel Fault for channel A.
 - (b) If X=2, then do the Fault Isolation Procedure - Single Channel Fault for channel B.
 - (c) If X=1 and 2 (two messages), or X=3, then do the Fault Isolation Procedure - Dual Channel Fault.
- (3) The EEC senses an out of range signal from the T25 sensor.

B. Possible Causes

- (1) T25 sensor, T513
- (2) EEC, M1818
- (3) J9 (Ch A) or J10 (Ch B) wire harness.

C. Circuit Breakers

- (1) For Engine 1,
 - (a) 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

- (2) For Engine 2,
 - (a) 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>
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

D. Related Data

- (1) Component Location (75-33 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (75-33 TASK SUPPORT Figure 302)
- (3) (SSM 75-31-11)
- (4) (SSM 75-31-21)
- (5) (WDM 75-31-11)
- (6) (WDM 75-31-21)

E. Initial Evaluation

- (1) Do these steps to find out if the fault is still active:
 - (a) Do this task: EEC TEST, AMM TASK 73-21-00-700-804-F00.

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- (b) If message number 75-10821, 75-10822, 75-20821 or 75-20822 show, do the Fault Isolation Procedure - Single Channel Fault for the applicable channel.
- (c) If message number 75-30821 or 75-30822 show, 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.
 - c) If you find no problems, then replace components as listed in the Possible Causes list above.
 - 4) Monitor the aircraft on the subsequent flight.

F. Fault Isolation Procedure - Single Channel Fault

- (1) Do these steps to prepare for the procedure:
 - (a) For Engine 1,
 - 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) For Engine 2,
 - 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>
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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DO THESE SPECIFIED TASKS IN THE CORRECT SEQUENCE BEFORE YOU OPEN THE THRUST REVERSERS: RETRACT THE LEADING EDGE, DO THE DEACTIVATION PROCEDURES FOR THE LEADING EDGE AND THE THRUST REVERSERS (FOR GROUND MAINTENANCE), AND OPEN THE FAN COWL PANELS. IF YOU DO NOT OBEY THE ABOVE SEQUENCE, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (c) Do this task: Open the Thrust Reverser (Selection), AMM TASK 78-31-00-010-801-F00.
- (2) Examine the electrical connector, DP0909 (Ch A) or DP1010 (Ch B), at the EEC:
- NOTE:** The electrical connector, DP0909 (Ch A), is on the J9 wire harness. The electrical connector, DP1010 (Ch B), is on the J10 wire harness.
- (a) See if the electrical connector, DP0909 (Ch A) or DP1010 (Ch B), is correctly connected to the EEC, and continue.
 - (b) Disconnect the electrical connector, DP0909 (Ch A) or DP1010 (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 the harness connector is damaged, then replace the wire harness, J9 (Ch A) or J10 (Ch B). These are the tasks:
 - 3 O'clock Strut Harness Removal, AMM TASK 73-21-06-000-802-F00
 - 3 O'clock Strut Harness Installation, AMM TASK 73-21-06-400-802-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.
 - 3) If the harness connector was not correctly connected and no other problems were 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 contacts to examine the wires between the applicable EEC connector, DP0909 (Ch A) or DP1010 (Ch B), on the wire harness through the T25 sensor:
- NOTE:** The electrical connector DP0909 is on the J9 wire harness. The electrical connector DP1010 is on the J10 wire harness.

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DP0909

PIN M

PIN M

PIN L

DP0909

PIN L 156 - 339 OHMS

CONNECTOR SHELL MORE THAN 20 MEGOHMS

CONNECTOR SHELL MORE THAN 20 MEGOHMS

DP1010

PIN FF

PIN FF

PIN x

DP1010

x 156 - 339 OHMS

CONNECTOR SHELL MORE THAN 20 MEGOHMS

CONNECTOR SHELL MORE THAN 20 MEGOHMS

- (b) If the resistance is in the specified range 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.
- (c) If the resistance is not in the specified range, then continue.
- (4) Examine the electrical connector, DP0910 (Ch A) or DP1009 (Ch B), at the T25 Sensor:
- (a) See if the electrical connector, DP0910 (Ch A) or DP1009 (Ch B), is correctly connected to the T25 Sensor, and continue.
- (b) Disconnect the electrical connector, DP0910 (Ch A) or DP1009 (Ch B), from the T25 Sensor.
- (c) Visually examine the T25 Sensor receptacle and wire harness connector (AMM TASK 70-70-01-200-801-F00).
- 1) If the T25 Sensor receptacle is damaged, then replace the T25 sensor, T513. These are the tasks:
- PT25 Sensor Removal, AMM TASK 73-21-02-000-801-F00
 - PT25 Sensor Installation, AMM TASK 73-21-02-400-801-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 harness connector is damaged, then replace the wire harness, J9 (Ch A) or J10 (Ch B). These are the tasks:
- 3 O'clock Strut Harness Removal, AMM TASK 73-21-06-000-802-F00
 - 3 O'clock Strut Harness Installation, AMM TASK 73-21-06-400-802-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.
- 3) If the harness connector was not correctly connected and no other problems were found, then re-connect the connector and do the Repair Confirmation at the end of this task.

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- a) If the Repair Confirmation is not satisfactory, then open the circuit breakers above and continue.
- 4) If you did not find a problem, then continue.
- (5) Option 1 (Alternate); Do these steps to do a check of the T25 sensor:
- (a) Measure the resistance between these contacts for CH A or CH B at the applicable T25 sensor receptacle:

T25 SENSOR RECEPTACLE

CH A	CH A	
PIN 1	PIN 2	156 - 339 OHMS
PIN 1	CONNECTOR SHELL	MORE THAN 20 MEGOHMS
PIN 2	CONNECTOR SHELL	MORE THAN 20 MEGOHMS

T25 SENSOR RECEPTACLE

CH B	CH B	
PIN 1	PIN 2	156 - 339 OHMS
PIN 1	CONNECTOR SHELL	MORE THAN 20 MEGOHMS
PIN 2	CONNECTOR SHELL	MORE THAN 20 MEGOHMS

- (b) If the resistance is not in the specified range, then replace the T25 sensor, T513. These are the tasks:
- PT25 Sensor Removal, AMM TASK 73-21-02-000-801-F00
 - PT25 Sensor Installation, AMM TASK 73-21-02-400-801-F00
- 1) 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.
- (c) If the resistance is in the specified range, then continue with Option 2 (Preferred).
- (6) Option 2 (Preferred);
- Do these steps to isolate the T25 sensor as the cause of the fault:
- (a) Connect the electrical connector, DP0910 T25-A (Ch A), on the T25 sensor receptacle, CH B.
- (b) Connect the electrical connector, DP1009 T25-B (Ch B), on the T25 sensor receptacle, CH A.
- (c) For Engine 1,
- 1) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
A	1	C00458	ENGINE 1 IGNITION RIGHT
A	3	C00153	ENGINE 1 IGNITION LEFT
A	4	C01390	ENGINE 1 ALTN PWR CHAN B
A	5	C01314	ENGINE 1 ALTN PWR CHAN A

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(d) For Engine 2,

- 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
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

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

(f) For Engine 1,

- 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

(g) For Engine 2,

- 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>
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

(h) If the fault does not show, then do these steps:

- 1) Re-connect the electrical connector, DP0910 T25-A (Ch A), on the T25 sensor receptacle, CH A.
- 2) Re-connect the electrical connector, DP1009 T25-B (Ch B), on the T25 sensor receptacle, CH B.
- 3) Do the Repair Confirmation at the end of this task.

(i) If the fault shows on the other channel, then replace the T25 sensor, T513. These are the tasks:

- PT25 Sensor Removal, AMM TASK 73-21-02-000-801-F00
- PT25 Sensor Installation, AMM TASK 73-21-02-400-801-F00

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

(j) If fault continues on the same channel, then do these steps:

- 1) Re-connect the electrical connector, DP0910 T25-A (Ch A), on the T25 sensor receptacle, CH A.
- 2) Re-connect the electrical connector, DP1009 T25-B (Ch B), on the T25 sensor receptacle, CH B.

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- 3) 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 Repair Confirmation is not satisfactory, then open the circuit breakers above and continue.
- 4) If fault continues, then replace the wire harness. These are the tasks:
 - 3 O'clock Strut Harness Removal, AMM TASK 73-21-06-000-802-F00
 - 3 O'clock Strut Harness Installation, AMM TASK 73-21-06-400-802-F00
 - a) Do the Repair Confirmation at the end of this task.

G. Fault Isolation Procedure - Dual Channel Fault

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

- (a) For Engine 1,

- 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) For Engine 2,

- 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>
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



DO THESE SPECIFIED TASKS IN THE CORRECT SEQUENCE BEFORE YOU OPEN THE THRUST REVERSERS: RETRACT THE LEADING EDGE, DO THE DEACTIVATION PROCEDURES FOR THE LEADING EDGE AND THE THRUST REVERSERS (FOR GROUND MAINTENANCE), AND OPEN THE FAN COWL PANELS. IF YOU DO NOT OBEY THE ABOVE SEQUENCE, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (c) Do this task: Open the Thrust Reverser (Selection), AMM TASK 78-31-00-010-801-F00.
- (2) Examine the electrical connectors, DP0910 (Ch A) and DP1009 (Ch B), at the T25 sensor:
 - (a) See if the electrical connectors, DP0910 (Ch A) and DP1009 (Ch B), are correctly connected to the T25 sensor, and continue.

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- (b) Disconnect the electrical connectors, DP0910 (Ch A) and DP1009 (Ch B), from the T25 sensor.
- (c) Visually examine the T25 Sensor receptacles and electrical wire harness connectors (AMM TASK 70-70-01-200-801-F00).
 - 1) If a T25 sensor receptacle is damaged, then replace the T25 sensor, T513. These are the tasks:
 - PT25 Sensor Removal, AMM TASK 73-21-02-000-801-F00
 - PT25 Sensor Installation, AMM TASK 73-21-02-400-801-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 harness connector , DP0910 (Ch A) and DP1009 (Ch B), is damaged, then replace the wire harness J9 (Ch A), J10 (Ch B). These are the tasks:
 - 3 O'clock Strut Harness Removal, AMM TASK 73-21-06-000-802-F00
 - 3 O'clock Strut Harness Installation, AMM TASK 73-21-06-400-802-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.
 - 3) If a harness connector was not correctly connected and no other problems were 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 contacts for CH A and CH B on the T25 sensor receptacles:

T25 SENSOR RECEPTACLE

CH A	CH A	
PIN 1	PIN 2	156 - 339 OHMS
PIN 1	CONNECTOR SHELL	MORE THAN 20 MEGOHMS
PIN 2	CONNECTOR SHELL	MORE THAN 20 MEGOHMS

T25 SENSOR RECEPTACLE

CH B	CHB	
PIN 1	PIN 2	156 - 339 OHMS
PIN 1	CONNECTOR SHELL	MORE THAN 20 MEGOHMS
PIN 2	CONNECTOR SHELL	MORE THAN 20 MEGOHMS

- (b) If the resistance is not in the specified range, then replace the T25 sensor, T513. These are the tasks:
 - PT25 Sensor Removal, AMM TASK 73-21-02-000-801-F00

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- PT25 Sensor Installation, AMM TASK 73-21-02-400-801-F00
 - 1) 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.
 - (c) If the resistance is in the specified range, then continue.



MAKE SURE THAT YOU CONNECT THE CHANNEL A ELECTRICAL CONNECTOR TO THE T25 SENSOR RECEPTACLE, CH A, AND THE CHANNEL B ELECTRICAL CONNECTOR TO THE T25 SENSOR RECEPTACLE, CH B. THE ELECTRICAL CONNECTORS ARE INTERCHANGEABLE. T25 SENSOR FAULTS AND OUTPUT DATA WILL SHOW ON THE WRONG CHANNELS.

- 1) Re-connect the electrical connectors, DP0910 (Ch A) and DP1009 (Ch B), to the T25 sensor.
- (4) Examine the electrical connectors, DP0909 (Ch A) and DP1010 (Ch B), at the EEC:

NOTE: The electrical connector, DP0909 is on the J9 wire harness. The electrical connector, DP1010 is on the J10 wire harness.

 - (a) See if the electrical connectors, DP0909 (Ch A) and DP1010 (Ch B), are correctly connected to the EEC, and continue.
 - (b) Disconnect the electrical connectors, DP0909 (Ch A) and DP1010 (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 harness connector is damaged, then replace the wire harness, J9 (Ch A) or J10 (Ch B). These are the tasks:
 - 3 O'clock Strut Harness Removal, AMM TASK 73-21-06-000-802-F00
 - 3 O'clock Strut Harness Installation, AMM TASK 73-21-06-400-802-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.
 - 3) If the harness connector was not correctly connected and no other problems were 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 between these contacts to examine the wires between the EEC connectors, DP0909 (Ch A) and DP1010 (Ch B), on the wire harnesses through the T25 sensor:

NOTE: The electrical connector DP0909 is on the J9 wire harness. The electrical connector DP1010 is on the J10 wire harness.

EEC

CONNECTORS	DP0909	DP0909	
	PIN M	PIN L	156 - 339 OHMS
	PIN M	CONNECTOR SHELL	MORE THAN 20 MEGOHMS
	PIN L	CONNECTOR SHELL	MORE THAN 20 MEGOHMS

EEC

CONNECTOR	DP1010	DP1010	
	PIN FF	x	156 - 339 OHMS
	PIN FF	CONNECTOR SHELL	MORE THAN 20 MEGOHMS
	PIN x	CONNECTOR SHELL	MORE THAN 20 MEGOHMS

- (b) If the resistance is not in the specified range, then replace the wire harness. These are the tasks:
- 3 O'clock Strut Harness Removal, AMM TASK 73-21-06-000-802-F00
 - 3 O'clock Strut Harness Installation, AMM TASK 73-21-06-400-802-F00
 - 1) Do the Repair Confirmation at the end of this task.
- (c) If the resistance is in the specified range 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) Prepare for the procedure:



CAUTION

MAKE SURE THAT YOU CONNECT THE CHANNEL A ELECTRICAL CONNECTOR TO THE T25 SENSOR RECEPTACLE, CH A, AND THE CHANNEL B ELECTRICAL CONNECTOR TO THE T25 SENSOR RECEPTACLE, CH B. THE ELECTRICAL CONNECTORS ARE INTERCHANGEABLE. T25 SENSOR FAULTS AND OUTPUT DATA WILL SHOW ON THE WRONG CHANNELS.

- (a) Make sure that the electrical connectors, DP0910 (Ch A) and DP1009 (Ch B), are connected at the T25 sensor.
- (b) Make sure that the electrical connectors, DP0909 (Ch A) and DP1010 (Ch B), are connected at the EEC.
- (c) For Engine 1,

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- 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

- (d) For Engine 2,

- 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
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, you corrected the fault.



OBEY THE INSTRUCTIONS IN THE PROCEDURE TO CLOSE THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (3) Do this task: Close the Thrust Reverser (Selection), AMM TASK 78-31-00-010-804-F00.

————— **END OF TASK** —————

802. T3 Signal is Out of Range - Fault Isolation

A. Description

- (1) This task is for these maintenance messages:
- (a) 75-10831, 75-10832, 75-20831, 75-20832, 75-30831 and 75-30832.
- (2) The maintenance messages 75-X083Y; where X = EEC Channel (1=Channel A, 2=Channel B, 3=Dual Channel), and Y = Engine Position (1=Eng 1, 2=Eng 2).
- (a) If X=1, then do the Fault Isolation Procedure - Single Channel Fault for channel A.
- (b) If X=2, then do the Fault Isolation Procedure - Single Channel Fault for channel B.
- (c) If X=1 and 2 (two messages), or X=3, then do the Fault Isolation Procedure - Dual Channel Fault.
- (3) The EEC senses an out of range signal from the T3 sensor.

B. Possible Causes

- (1) T3 sensor, T514
- (2) EEC, M1818
- (3) J9 (Ch A) or J10 (Ch B) wire harness.

C. Circuit Breakers

- (1) For Engine 1,

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- (a) 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

- (2) For Engine 2,

- (a) 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>
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

D. Related Data

- (1) Component Location (75-33 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (75-33 TASK SUPPORT Figure 302)
- (3) (SSM 75-31-11)
- (4) (SSM 75-31-21)
- (5) (WDM 73-22-11)
- (6) (WDM 75-31-11)
- (7) (WDM 75-31-21)

E. Initial Evaluation

- (1) Do this task: EEC BITE Procedure, 73-00 TASK 801.
 - (a) Look for these maintenance message numbers: 73-10121, 73-10122, 73-20121, 73-20122, 73-30121 or 73-30122 on the same channel as 75-10831, 75-10832, 75-20831, 75-20832, 75-30831 or 75-30832.

NOTE: The maintenance messages 73-X012Y; where X = EEC Channel (1=Channel A, 2=Channel B, 3=Dual Channel), and Y = Engine Position (1=Eng 1, 2=Eng 2).

 - 1) If maintenance message 73-X012Y is present, 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) When you do the post-installation test, see if maintenance message 75-X083Y is present.
 - b) If maintenance message 75-X083Y is still present, then do the applicable Fault Isolation Procedure below.
 - 2) If maintenance message 73-X012Y is not present, then continue.
- (2) Do these steps to find out if the fault is still active:
 - (a) Do this task: EEC TEST, AMM TASK 73-21-00-700-804-F00.
 - (b) If maintenance message 75-10831, 75-10832, 75-20831, or 75-20832 show, do the Fault Isolation Procedure - Single Channel Fault for the applicable channel.
 - (c) If maintenance message 75-30831 or 75-30832 show, do the Fault Isolation Procedure - Dual Channel Fault.

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- (d) If the maintenance message does not show on the FMCS CDU, then the Initial Evaluation has shown that the fault is not active at this time and you have an intermittent 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) Disconnect and reconnect the T3 sensor electrical connector three times or complete CFMI SB 73-064.

NOTE: The installation of the connector three time will clean corrosion from the pins.

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- b) Do the visual checks of the electrical connectors in the applicable fault isolation procedure below.
- c) Use the WDM references to identify intermediate electrical connections in the wire harness and do a visual check.
- d) 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) You must do the Initial Evaluation to see if an internal EEC fault is set.
- (2) Do these steps to prepare for the procedure:
 - (a) For Engine 1,
 - 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) For Engine 2,
 - 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>
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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DO THESE SPECIFIED TASKS IN THE CORRECT SEQUENCE BEFORE YOU OPEN THE THRUST REVERSERS: RETRACT THE LEADING EDGE, DO THE DEACTIVATION PROCEDURES FOR THE LEADING EDGE AND THE THRUST REVERSERS (FOR GROUND MAINTENANCE), AND OPEN THE FAN COWL PANELS. IF YOU DO NOT OBEY THE ABOVE SEQUENCE, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (c) Do this task: Open the Thrust Reverser (Selection), AMM TASK 78-31-00-010-801-F00.
- (3) Examine the electrical connector, DP0905 (Ch A) or DP1005 (Ch B), at the T3 sensor:
 - (a) See if the electrical connector, DP0905 (Ch A) or DP1005 (Ch B), is correctly connected to the T3 sensor, and continue.
 - (b) Disconnect the electrical connector, DP0905 (Ch A) or DP1005 (Ch B), from the T3 sensor.
 - (c) Visually examine the T3 receptacle and wire harness connector (AMM TASK 70-70-01-200-801-F00).
 - 1) If the T3 receptacle is damaged, then replace the T3 sensor, T514. These are the tasks:
 - T3 Sensor Removal, AMM TASK 73-21-07-000-801-F00
 - T3 Sensor Installation, AMM TASK 73-21-07-400-801-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 harness connector is damaged, then replace the wire harness, J9 (Ch A) or J10 (Ch B). These are the tasks:
 - 3 O'clock Strut Harness Removal, AMM TASK 73-21-06-000-802-F00
 - 3 O'clock Strut Harness Installation, AMM TASK 73-21-06-400-802-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.
 - 3) If the harness connector was not correctly connected and no other problems were 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) Option 1 (Alternate);
Do these steps to do a check of the T3 sensor:
 - (a) Measure the resistance between these pins at the applicable T3 sensor receptacle, CH A or CH B:

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Table 201

RECEPTACLE CH A CH B	PINS	RESISTANCE
	PINS A TO B	1 TO 10 OHMS
	PIN A TO THE CONNECTOR SHELL	GREATER THAN 20 MEGOHMS
	PIN B TO THE CONNECTOR SHELL	GREATER THAN 20 MEGOHMS

- (b) If the resistance is not in the specified range, then replace the T3 sensor, T514. These are the tasks:
- T3 Sensor Removal, AMM TASK 73-21-07-000-801-F00
 - T3 Sensor Installation, AMM TASK 73-21-07-400-801-F00
- 1) 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.
- (c) If the resistance is in the specified range, then continue with Option 2 (Preferred).
- (5) Option 2, Preferred);
- Do these steps to isolate the T3 sensor as the cause of the fault:
- (a) Connect the electrical connector, DP0905 T3-A (Ch A), on the T3 sensor receptacle, CH B.
- (b) Connect the electrical connector, DP1005 T3-B (Ch B), on the T3 sensor receptacle, CH A.
- (c) For Engine 1,
- 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 |
- (d) For Engine 2,
- 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 |
| D | 7 | C01391 | ENGINE 2 ALTN PWR CHAN B |
| D | 8 | C01315 | ENGINE 2 ALTN PWR CHAN A |
- (e) Do this task: EEC TEST, AMM TASK 73-21-00-700-804-F00.
- (f) For Engine 1,

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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

- (g) For Engine 2,

- 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>
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

- (h) If fault shows on the other channel, then replace the T3 sensor, T514. These are the tasks:

- T3 Sensor Removal, AMM TASK 73-21-07-000-801-F00
- T3 Sensor Installation, AMM TASK 73-21-07-400-801-F00

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

- (i) If the fault does not show, then do these steps:

- 1) Re-connect the electrical connector, DP0905 T3-A (Ch A), on the T3 sensor receptacle, CH A.
- 2) Re-connect the electrical connector, DP1005 T3-B (Ch B), on the T3 sensor receptacle, CH B.
- 3) Do the Repair Confirmation at the end of this task.

- (j) If fault continues on the same channel, then do these steps and continue:

- 1) Re-connect the electrical connector, DP0905 T3-A (Ch A), on the T3 sensor receptacle, CH A.
- 2) Re-connect the electrical connector, DP1005 T3-B (Ch B), on the T3 sensor receptacle, CH B.

- (6) Examine the electrical connector, DP0909 (Ch A) or DP1010 (Ch B), at the EEC:

NOTE: The electrical connector, DP0909 (Ch A), is on the J9 wire harness. The electrical connector, DP1010 (Ch B), is on the J10 wire harness.

- (a) See if the electrical connector, DP0909 (Ch A) or DP1010 (Ch B), is correctly connected to the EEC, and continue.
- (b) Disconnect the electrical connector, DP0909 (Ch A) or DP1010 (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

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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 the harness connector is damaged, then replace the wire harness, J9 (Ch A) or J10 (Ch B). These are the tasks:
 - 3 O'clock Strut Harness Removal, AMM TASK 73-21-06-000-802-F00
 - 3 O'clock Strut Harness Installation, AMM TASK 73-21-06-400-802-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.
- 3) If the harness connector was not correctly connected and no other problems were 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.
- (7) Measure the resistance between these pins to examine the wires between the applicable EEC connector, DP0909 (Ch A) or DP1010 (Ch B), on the wire harness through the T3 sensor:
NOTE: The electrical connector, DP0909 (Ch A), is on the J9 wire harness. The electrical connector, DP1010 (Ch B), is on the J10 wire harness.

Table 202

CONNECTOR DP0909 DP1010	PINS	RESISTANCE
	PINS w TO d	1 TO 10 OHMS
	PIN w TO THE CONNECTOR SHELL	GREATER THAN 20 MEGOHMS
	PIN d TO THE CONNECTOR SHELL	GREATER THAN 20 MEGOHMS

- (a) If the resistance is in the specified range 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.
 - a) If the Repair Confirmation is not satisfactory, then open the circuit breakers above and continue.
- (b) If the resistance is not in the specified range, then replace the wire harness, J9 (Ch A) or J10 (Ch B). These are the tasks:
 - 3 O'clock Strut Harness Removal, AMM TASK 73-21-06-000-802-F00
 - 3 O'clock Strut Harness Installation, AMM TASK 73-21-06-400-802-F00
 - 1) Do the Repair Confirmation at the end of this task.

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G. Fault Isolation Procedure - Dual Channel Fault

- (1) You must do the Initial Evaluation to see if an internal EEC fault is set.
- (2) Do these steps to prepare for the procedure:
 - (a) For Engine 1,
 - 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) For Engine 2,
 - 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>
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



WARNING

DO THESE SPECIFIED TASKS IN THE CORRECT SEQUENCE BEFORE YOU OPEN THE THRUST REVERSERS: RETRACT THE LEADING EDGE, DO THE DEACTIVATION PROCEDURES FOR THE LEADING EDGE AND THE THRUST REVERSERS (FOR GROUND MAINTENANCE), AND OPEN THE FAN COWL PANELS. IF YOU DO NOT OBEY THE ABOVE SEQUENCE, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (c) Do this task: Open the Thrust Reverser (Selection), AMM TASK 78-31-00-010-801-F00.
- (3) Examine the electrical connectors, DP0905 (Ch A) and DP1005 (Ch B), at the T3 sensor:
 - (a) See if the electrical connectors, DP0905 (Ch A) and DP1005 (Ch B), are correctly connected to the T3 sensor, and continue.
 - (b) Disconnect the electrical connectors, DP0905 (Ch A) and DP1005 (Ch B), from the T3 sensor.
 - (c) Visually examine the T3 receptacles and wire harness connectors (AMM TASK 70-70-01-200-801-F00).
 - 1) If a T3 receptacle is damaged, then replace the T3 sensor, T514. These are the tasks:
 - T3 Sensor Removal, AMM TASK 73-21-07-000-801-F00
 - T3 Sensor Installation, AMM TASK 73-21-07-400-801-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.

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- 2) If a harness connector is damaged, then replace the wire harness, J9 (Ch A) or J10 (Ch B). These are the tasks:
 - 3 O'clock Strut Harness Removal, AMM TASK 73-21-06-000-802-F00
 - 3 O'clock Strut Harness Installation, AMM TASK 73-21-06-400-802-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.
- 3) If the harness connector was not correctly connected and no other problems were 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 at the applicable receptacles on the T3 sensor:

Table 203

RECEPTACLE CH A CH B	PINS	RESISTANCE
	PINS A TO B	1 TO 10 OHMS
	PIN A TO THE CONNECTOR SHELL	GREATER THAN 20 MEGOHMS
	PIN B TO THE CONNECTOR SHELL	GREATER THAN 20 MEGOHMS

- (a) If the resistance is not in the specified range, then replace the T3 sensor, T514. These are the tasks:
 - T3 Sensor Removal, AMM TASK 73-21-07-000-801-F00
 - T3 Sensor Installation, AMM TASK 73-21-07-400-801-F00
 - 1) 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.
- (b) If the resistance is in the specified range, then continue.



MAKE SURE THAT YOU CONNECT THE CHANNEL A ELECTRICAL CONNECTOR TO THE T3 SENSOR RECEPTACLE, CH A, AND THE CHANNEL B ELECTRICAL CONNECTOR TO THE T3 SENSOR RECEPTACLE, CH B. THE ELECTRICAL CONNECTORS ARE INTERCHANGEABLE. T3 SENSOR FAULTS AND OUTPUT DATA WILL SHOW ON THE WRONG CHANNELS.

- 1) Re-connect the electrical connector, DP0905 T3-A to the T3 sensor receptacle, Ch A; and, electrical connector, DP1005 T3-B to the T3 sensor receptacle, Ch B.
- (5) Examine the electrical connectors, DP0909 (Ch A) and DP1010 (Ch B), at the EEC:

NOTE: The electrical connector, DP0909 (Ch A), is on the J9 wire harness. The electrical connector, DP1010 (Ch B), is on the J10 wire harness.

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- (a) See if the electrical connectors, DP0909 (Ch A) and DP1010 (Ch B), are correctly connected to the EEC, and continue.
- (b) Disconnect the electrical connectors, DP0909 (Ch A) and DP1010 (Ch B), from the EEC.
- (c) Visually examine the EEC receptacles and wire harness connectors (AMM TASK 70-70-01-200-801-F00).
 - 1) If a 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 harness connector is damaged, then replace the wire harness, J9 (Ch A) or J10 (Ch B). These are the tasks:
 - 3 O'clock Strut Harness Removal, AMM TASK 73-21-06-000-802-F00
 - 3 O'clock Strut Harness Installation, AMM TASK 73-21-06-400-802-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.
 - 3) If the harness connector was not correctly connected and no other problems were 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 to examine the wires between the EEC connectors, DP0909 (Ch A) or DP1010 (Ch B), on the wire harnesses through the T3 sensor:
NOTE: The electrical connector, DP0909 (Ch A), is on the J9 wire harness. The electrical connector, DP1010 (Ch B), is on the J10 wire harness.

Table 204

CONNECTOR DP0909 DP1010	PINS	RESISTANCE
	PINS w TO d	1 TO 10 OHMS
	PIN w TO THE CONNECTOR SHELL	GREATER THAN 20 MEGOHMS
	PIN d TO THE CONNECTOR SHELL	GREATER THAN 20 MEGOHMS

- (a) If the resistance is not in the specified range, then replace the wire harness, J9 (Ch A) or J10 (Ch B). These are the tasks:
 - 3 O'clock Strut Harness Removal, AMM TASK 73-21-06-000-802-F00
 - 3 O'clock Strut Harness Installation, AMM TASK 73-21-06-400-802-F00

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- 1) 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.
- (b) If the resistance is in the specified range 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 these steps to prepare for the procedure:



CAUTION

MAKE SURE THAT YOU CONNECT THE CHANNEL A ELECTRICAL CONNECTOR TO THE T3 SENSOR RECEPTACLE, CH A, AND THE CHANNEL B ELECTRICAL CONNECTOR TO THE T3 SENSOR RECEPTACLE, CH B. THE ELECTRICAL CONNECTORS ARE INTERCHANGEABLE. T3 SENSOR FAULTS AND OUTPUT DATA WILL SHOW ON THE WRONG CHANNELS.

- (a) Make sure that the electrical connector, DP0905 T3-A (Ch A) and DP1005 T3-B (Ch B), is correctly connected to the T3 sensor.
- (b) Make sure that the electrical connector, DP0909 (Ch A) and DP1010 (Ch B), is correctly connected to the EEC.
- (c) For Engine 1,
 - 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

- (d) For Engine 2,
 - 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
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.

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OBEY THE INSTRUCTIONS IN THE PROCEDURE TO CLOSE THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (3) Do this task: Close the Thrust Reverser (Selection), AMM TASK 78-31-00-010-804-F00.

END OF TASK

803. TCC Signal is Out of Range - Fault Isolation

A. Description

- (1) This task is for these maintenance messages:
 - (a) 75-10881, 75-10882, 75-20881, 75-20882, 75-30881 and 75-30882.
 - (b) The maintenance messages 75-X088Y; where X = EEC Channel (1=Channel A, 2=Channel B, 3=Dual Channel), and Y = Engine Position (1=Eng 1, 2=Eng 2).
 - 1) If X=1 or 2, do the Fault Isolation Procedure - Single Channel Fault.
 - 2) If X=3, do the Fault Isolation Procedure - Dual Channel Fault.
 - (c) The maintenance message should show on the two channels of the EEC, if a single channel fault shows, there is an internal failure of the EEC.
- (2) The EEC senses an out of range signal from the HP Turbine Case Temperature (HPTCC) sensor. The signal is received by Channel A in the EEC and also sent to Channel B.

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NOTE: This message will not show.

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B. Possible Causes

- (1) For the single channel maintenance messages:
 - (a) EEC, M1818.
- (2) For the dual channel maintenance messages:
 - (a) HP Turbine Case Temperature (HPTCC) sensor, T511
 - (b) EEC, M1818
 - (c) CJ9 or J9 wire harness.

C. Circuit Breakers

- (1) For Engine 1,
 - (a) 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

- (2) For Engine 2,

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- (a) 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>
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

D. Related Data

- (1) Component Location (75-33 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (75-33 TASK SUPPORT Figure 302)
- (3) (SSM 75-31-11)
- (4) (SSM 75-31-21)
- (5) (WDM 73-22-11)
- (6) (WDM 75-31-11)
- (7) (WDM 75-31-21)

E. Initial Evaluation

- (1) Do this task: EEC BITE Procedure, 73-00 TASK 801.
 - (a) Look for these maintenance message numbers: 73-10121, 73-10122, 73-20121, 73-20122, 73-30121 or 73-30122 on the same channel as 75-10881, 75-10882, 75-20881, 75-20882, 75-30881 or 75-30882.

NOTE: The maintenance messages 73-X012Y; where X = EEC Channel (1=Channel A, 2=Channel B, 3=Dual Channel), and Y = Engine Position (1=Eng 1, 2=Eng 2).

 - 1) If maintenance message 73-X012Y is present, 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) When you do the post-installation test, see if maintenance message 75-X088Y is present.
 - b) If maintenance message 75-X088Y is still present, then do the applicable Fault Isolation Procedure below.
 - 2) If maintenance message 73-X012Y is not present, then continue.
- (2) Do these steps to find out if the fault is still active:
 - (a) Do this task: EEC TEST, AMM TASK 73-21-00-700-804-F00.
 - (b) If maintenance messages 75-10881, 75-10882, 75-20881, 75-20882, show, do the Fault Isolation Procedure - Single Channel Fault.
 - (c) If maintenance messages 75-30881 and 75-30882 show, 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.

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- 3) If you will try to correct the fault, it is recommended that you do these steps:

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- a) Disconnect and reconnect the T3 sensor electrical connector three times or complete CFMI SB 73-064.

NOTE: The installation of the connector three time will clean corrosion from the pins.

SIA ALL

- b) Do the visual checks of the electrical connectors in the applicable fault isolation procedure below.
- c) Use the WDM references to identify intermediate electrical connections in the wire harness and do a visual check.
- d) 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) 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.

G. Fault Isolation Procedure - Dual Channel Fault

- (1) You must do the Initial Evaluation to see if an internal EEC fault is set.
- (2) Do these steps to prepare for the procedure:

- (a) For Engine 1,
- 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) For Engine 2,
- 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>
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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FAULT ISOLATION MANUAL**


DO THESE SPECIFIED TASKS IN THE CORRECT SEQUENCE BEFORE YOU OPEN THE THRUST REVERSERS: RETRACT THE LEADING EDGE, DO THE DEACTIVATION PROCEDURES FOR THE LEADING EDGE AND THE THRUST REVERSERS (FOR GROUND MAINTENANCE), AND OPEN THE FAN COWL PANELS. IF YOU DO NOT OBEY THE ABOVE SEQUENCE, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (c) Do this task: Open the Thrust Reverser (Selection), AMM TASK 78-31-00-010-801-F00.
- (3) Examine the electrical connector, DP0914, at the HP Turbine Case Temperature (HPTCC) sensor:
- See if the electrical connector, DP0914, is correctly connected to the HPTCC sensor, and continue.
 - Disconnect the electrical connector, DP0914, from the HPTCC sensor.
 - Visually examine the HPTCC receptacle and wire harness connector (AMM TASK 70-70-01-200-801-F00).
 - If the HPTCC receptacle is damaged, then replace the HPTCC sensor, T511. These are the tasks:
 - HPTCC Sensor Removal, AMM TASK 73-21-70-010-801-F00
 - HPTCC Sensor Installation, AMM TASK 73-21-70-400-801-F00
 - Do the Repair Confirmation at the end of this task.
 - If the Repair Confirmation is not satisfactory, then open the circuit breakers above and continue.
 - If the harness connector is damaged, then replace the CJ9 wire harness. These are the tasks:
 - Core Engine Harness Removal, AMM TASK 73-21-06-000-803-F00
 - Core Engine Harness Installation, AMM TASK 73-21-06-400-803-F00
 - Do the Repair Confirmation at the end of this task.
 - If the Repair Confirmation is not satisfactory, then open the circuit breakers above and continue.
 - If the harness connector was not correctly connected and no other problems were found, then re-connect the connector and do the Repair Confirmation at the end of this task.
 - If the Repair Confirmation is not satisfactory, then open the circuit breakers above and continue.
 - If you did not find a problem, then continue.
- (4) Measure the resistance between these pins at the HP Turbine Case Temperature (HPTCC) sensor receptacle:

Table 205

RECEPTACLE DP0914	PINS	RESISTANCE
	PINS A TO B	0.5 TO 10 OHMS
	PIN A TO THE CONNECTOR SHELL	GREATER THAN 10 MEGOHMS

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Table 205 (Continued)

RECEPTACLE DP0914	PINS	RESISTANCE
	PIN B TO THE CONNECTOR SHELL	GREATER THAN 10 MEGOHMS

- (a) If the resistance is not in the specified range, then replace the HPTCC sensor, T511. These are the tasks:
- HPTCC Sensor Removal, AMM TASK 73-21-70-010-801-F00
 - HPTCC Sensor Installation, AMM TASK 73-21-70-400-801-F00
- 1) 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.
- (b) If the resistance is in the specified range, then continue.
- 1) Re-connect the electrical connector, DP0914, on the HPTCC sensor.
- (5) Examine the electrical connector, DP0909, at the EEC:
- NOTE: The electrical connector, DP0909, is on the J9 wire harness at the EEC.
- (a) See if the electrical connector, DP0909, is correctly connected to the EEC, and continue.
- (b) Disconnect the electrical connector, DP0909, 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 the harness connector is damaged, then replace the J9 wire harness. These are the tasks:
- 3 O'clock Strut Harness Removal, AMM TASK 73-21-06-000-802-F00
 - 3 O'clock Strut Harness Installation, AMM TASK 73-21-06-400-802-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.
- 3) If the harness connector was not correctly connected and no other problems were 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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- (6) Measure the resistance between these pins to examine the wires between the EEC connector DP0909 on the wire harness through the HP Turbine Case Temperature (HPTCC) sensor:

NOTE: The electrical connector, DP0909, is on the J9 wire harness at the EEC.

Table 206

CONNECTOR DP0909	PINS	RESISTANCE
	PINS c TO v	0.5 TO 10 OHMS
	PIN c TO THE CONNECTOR SHELL	GREATER THAN 10 MEGOHMS
	PIN v TO THE CONNECTOR SHELL	GREATER THAN 10 MEGOHMS

- (a) If the resistance is in the specified range 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.
- a) If the Repair Confirmation is not satisfactory, then open the circuit breakers above and continue.
- (b) If the resistance is not in the specified range, then continue.
- (7) Examine the electrical connection, DP0911 to DP0901, at the CJ9 junction box:
- NOTE: The CJ9 junction box is at the 2:00 o'clock position on the engine core.
- (a) See if the electrical connectors, DP0911 to DP0901, are correctly connected, and continue.
- (b) Disconnect the electrical connector, DP0911, from electrical connector, DP0901.
- (c) Visually examine the two electrical harness connectors (AMM TASK 70-70-01-200-801-F00).
- 1) If the electrical connector, DP0911, is damaged, then replace the CJ9 wire harness. These are the tasks:
- Core Engine Harness Removal, AMM TASK 73-21-06-000-803-F00
 - Core Engine Harness Installation, AMM TASK 73-21-06-400-803-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 DP0901 connector is damaged, then replace the J9 wire harness. These are the tasks:
- 3 O'clock Strut Harness Removal, AMM TASK 73-21-06-000-802-F00
 - 3 O'clock Strut Harness Installation, AMM TASK 73-21-06-400-802-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.

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- 3) If the harness connector was not correctly connected and no other problems were 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.
- (8) Measure the resistance through the HP Turbine Case Temperature (HPTCC) sensor from these pins of the DP0911 connector on the CJ9 wire harness:

Table 207

CONNECTOR DP0911	PINS	RESISTANCE
	PINS 4 TO 5	0.5 TO 10 OHMS
	PIN 4 TO THE CONNECTOR SHELL	GREATER THAN 10 MEGOHMS
	PIN 5 TO THE CONNECTOR SHELL	GREATER THAN 10 MEGOHMS

- (a) If the resistance is in the specified range, then replace the J9 wire harness. These are the tasks:
 - 3 O'clock Strut Harness Removal, AMM TASK 73-21-06-000-802-F00
 - 3 O'clock Strut Harness Installation, AMM TASK 73-21-06-400-802-F00
 - 1) 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.
- (b) If the resistance is not in the specified range, then replace the CJ9 Wire Harness. These are the tasks:
 - Core Engine Harness Removal, AMM TASK 73-21-06-000-803-F00
 - Core Engine Harness Installation, AMM TASK 73-21-06-400-803-F00
 - 1) Do the Repair Confirmation at the end of this task.

H. Repair Confirmation

- (1) Do these steps to prepare for the procedure:
 - (a) Make sure that the electrical connector, DP0914, is correctly connected to the HPTCC sensor.
 - (b) Make sure that the electrical connector, DP0901, is correctly connected to the junction box connector, DP0911.
 - (c) Make sure that the electrical connector, DP0909, is correctly connected to the EEC.
 - (d) For Engine 1,
 - 1) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
A	1	C00458	ENGINE 1 IGNITION RIGHT
A	3	C00153	ENGINE 1 IGNITION LEFT
A	4	C01390	ENGINE 1 ALTN PWR CHAN B

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<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	5	C01314	ENGINE 1 ALTN PWR CHAN A

(e) For Engine 2,

- 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
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.



OBEY THE INSTRUCTIONS IN THE PROCEDURE TO CLOSE THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (3) Do this task: Close the Thrust Reverser (Selection), AMM TASK 78-31-00-010-804-F00.

————— **END OF TASK** —————

805. T25 Signals Disagree - Fault Isolation**A. Description**

- (1) This task is for these maintenance messages:
 - (a) 75-10801, 75-10802, 75-20801, 75-20802, 75-30801 and 75-30802.
- (2) The maintenance messages 75-X080Y; where X = EEC Channel (1=Channel A, 2=Channel B, 3=Dual Channel), and Y = Engine Position (1=Eng 1, 2=Eng 2).
 - (a) If X=1, then do the Fault Isolation Procedure - Single Channel Fault for channel A.
 - (b) If X=2, then do the Fault Isolation Procedure - Single Channel Fault for channel B.
 - (c) If X=1 and 2 (two messages), or X=3, then do the Fault Isolation Procedure - Dual Channel Fault.
- (3) The EEC senses that the T25 signals disagree.

B. Possible Causes

- (1) For a single channel fault:
 - (a) EEC Internal Failure, M1818
 - (b) T25 sensor, T513
- (2) For a dual channel fault:
 - (a) T25 sensor, T513
 - (b) EEC, M1818
 - (c) J9 (CH A) or J10 (CH B) wire harness

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C. Circuit Breakers

- (1) For Engine 1,
 - (a) 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

- (2) For Engine 2,
 - (a) 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>
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

D. Related Data

- (1) Component Location (75-33 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (75-33 TASK SUPPORT Figure 302)
- (3) (SSM 75-31-11)
- (4) (SSM 75-31-21)
- (5) (WDM 75-31-11)
- (6) (WDM 75-31-21)

E. Initial Evaluation

- (1) Do these steps to find out if the fault is still active:
 - (a) Do this task: EEC BITE Procedure, 73-00 TASK 801.
 - 1) Record the INTERNAL EEC FAULTS that show on the FMCS CDU.
NOTE: This message should show as a dual channel fault. If a single channel fault is found, then there is also an internal EEC problem.
 - (b) If message number 75-10801, 75-10802, 75-20801, or 75-20802 show, do the Fault Isolation Procedure - Single Channel Fault for the applicable channel.
 - (c) If message number 75-30801 or 75-30802 show, 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.

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- 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 aircraft on the subsequent flight.

F. Fault Isolation Procedure - Single Channel Fault

- (1) If you found a single channel fault during the Initial Evaluation, then there is an internal EEC problem.
 - (a) Do the corrective action for the internal EEC faults that you found during the Initial Evaluation.
 - 1) Do the Repair Confirmation at the end of this task.
 - (b) If no Internal EEC faults were found during the Initial Evaluation, then do the corrective action for the dual channel fault below.

G. Fault Isolation Procedure - Dual Channel Fault

- (1) Do these steps to prepare for the procedure:
 - (a) For Engine 1,
 - 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) For Engine 2,
 - 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>
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



DO THESE SPECIFIED TASKS IN THE CORRECT SEQUENCE BEFORE YOU OPEN THE THRUST REVERSERS: RETRACT THE LEADING EDGE, DO THE DEACTIVATION PROCEDURES FOR THE LEADING EDGE AND THE THRUST REVERSERS (FOR GROUND MAINTENANCE), AND OPEN THE FAN COWL PANELS. IF YOU DO NOT OBEY THE ABOVE SEQUENCE, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (c) Do this task: Open the Thrust Reverser (Selection), AMM TASK 78-31-00-010-801-F00.
- (2) Examine the electrical connector, DP0910 (Ch A) and DP1009 (Ch B), at the T25 Sensor:
 - (a) See if the electrical connector, DP0910 (Ch A) and DP1009 (Ch B), is correctly connected to the T25 Sensor, and continue.

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- (b) Disconnect the electrical connector, DP0910 (Ch A) and DP1009 (Ch B), from the T25 Sensor.
- (c) Visually examine the T25 Sensor receptacle and wire harness connector (AMM TASK 70-70-01-200-801-F00).
 - 1) If the T25 Sensor receptacle is damaged, then replace the T25 sensor, T513. These are the tasks:
 - PT25 Sensor Removal, AMM TASK 73-21-02-000-801-F00
 - PT25 Sensor Installation, AMM TASK 73-21-02-400-801-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 harness connector is damaged, then replace the wire harness, J9 (Ch A) or J10 (Ch B). These are the tasks:
 - 3 O'clock Strut Harness Removal, AMM TASK 73-21-06-000-802-F00
 - 3 O'clock Strut Harness Installation, AMM TASK 73-21-06-400-802-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.
 - 3) If the harness connector was not correctly connected and no other problems were 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.
 - 4) If you did not find a problem, then continue.
- (3) Do these steps to do a check of the T25 sensor:
 - (a) Measure the resistance between these pins at the applicable T25 sensor receptacle, CH A and CH B:

**T25 SENSOR
RECEPTACLE**

CH A		CH A
PIN 1	.....	PIN 2

RESISTANCE AGREES
WITH CH B +/- 4
OHMS

**T25 SENSOR
RECEPTACLE**

CH B		CH B
PIN 1	.....	PIN 2

RESISTANCE AGREES
WITH CH A +/- 4 OHMS

- (b) If the resistance is not in the specified range, then replace the T25 sensor, T513. These are the tasks:
 - PT25 Sensor Removal, AMM TASK 73-21-02-000-801-F00
 - PT25 Sensor Installation, AMM TASK 73-21-02-400-801-F00
 - 1) Do the Repair Confirmation at the end of this task.

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- a) If the Repair Confirmation is not satisfactory, then open the circuit breakers above and continue.
- (c) If the resistance is in the specified range, then do these steps:

**CAUTION**

MAKE SURE THAT YOU CONNECT THE DP0910 (CH A) CONNECTOR TO THE CHANNEL A RECEPTACLE ON THE T25 SENSOR AND THE DP1009 (CH B) TO THE CHANNEL B RECEPTACLE ON THE T25 SENSOR. THE CONNECTORS ARE INTERCHANGEABLE. IF THE CONNECTORS ARE NOT INSTALLED CORRECTLY, THE FAULT WILL SHOW FOR THE OPPOSITE CHANNEL.

- 1) Connect the electrical connector, DP0910 T25-A (Ch A), on the T25 sensor receptacle, CH A.
 - 2) Connect the electrical connector, DP1009 T25-B (Ch B), on the T25 sensor receptacle, CH B.
- (4) Examine the electrical connector, DP0909 (Ch A) and DP1010 (Ch B), at the EEC:
- NOTE:** The electrical connector, DP0909 (Ch A), is on the J9 wire harness. The electrical connector, DP1010 (Ch B), is on the J10 wire harness.
- (a) See if the electrical connector, DP0909 (Ch A) and DP1010 (Ch B), is correctly connected to the EEC, and continue.
 - (b) Disconnect the electrical connector, DP0909 (Ch A) and DP1010 (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 the harness connector is damaged, then replace the wire harness, J9 (Ch A) or J10 (Ch B). These are the tasks:
 3 O'clock Strut Harness Removal, AMM TASK 73-21-06-000-802-F00
 3 O'clock Strut Harness Installation, AMM TASK 73-21-06-400-802-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.
 - 3) If the harness connector was not correctly connected and no other problems were 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 between these pins to examine the wires between the applicable EEC connector, DP0909 (Ch A) or DP1010 (Ch B), on the wire harness through the T25 sensor:

NOTE: The electrical connector DP0909 is on the J9 wire harness. The electrical connector DP1010 is on the J10 wire harness.

EEC**CONNECTOR****DP 0909****DP0909**

PIN M PIN L

RESISTANCE AGREES
WITH CH B +/- 4
OHMS

EEC**CONNECTOR****DP1010****DP1010**

PIN FF PIN x

RESISTANCE AGREES
WITH CH A +/- 4 OHMS

- (b) If the resistance is not in the specified range, then replace the applicable wire harness (J9-CH A or J10-CH B). These are the tasks:
- 3 O'clock Strut Harness Removal, AMM TASK 73-21-06-000-802-F00
- 3 O'clock Strut Harness Installation, AMM TASK 73-21-06-400-802-F00
- 1) Do the Repair Confirmation at the end of this task.
- (c) If the resistance is in the specified range 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) Prepare for the Repair Confirmation:

**CAUTION**

MAKE SURE THAT THE CHANNEL A AND CHANNEL B ELECTRICAL CONNECTORS ARE CONNECT TO THE CORRECT RECEPTACLES ON THE T25 SENSOR AND THE EEC. THE CONNECTORS ARE INTERCHANGEABLE. IF THE CONNECTORS ARE NOT INSTALLED CORRECTLY, THE FAULT WILL SHOW FOR THE OPPOSITE CHANNEL.

- (a) Make sure that these electrical connectors are correctly installed:
- 1) Make sure that the electrical connector, DP0910 T25-A (Ch A), is correctly connected to the T25 sensor receptacle, CH A.
 - 2) Make sure that the electrical connector, DP1009 T25-B (Ch B), is correctly connected to the T25 sensor receptacle, CH B.
 - 3) Make sure that the electrical connector, DP0910 J9 (Ch A), is correctly connected to the EEC receptacle, CH A (J9).
 - 4) Make sure that the electrical connector, DP1009 J10 (Ch B), is correctly connected to the EEC receptacle, CH B (J10).
- (b) For Engine 1,

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- 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

- (c) For Engine 2,

- 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
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 have corrected the fault.



OBEY THE INSTRUCTIONS IN THE PROCEDURE TO CLOSE THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, THEN INJURIES TO PERSONS AND DAMAGE TO THE EQUIPMENT CAN OCCUR.

- (3) Do this task: Close the Thrust Reverser (Selection), AMM TASK 78-31-00-010-804-F00.

————— **END OF TASK** —————

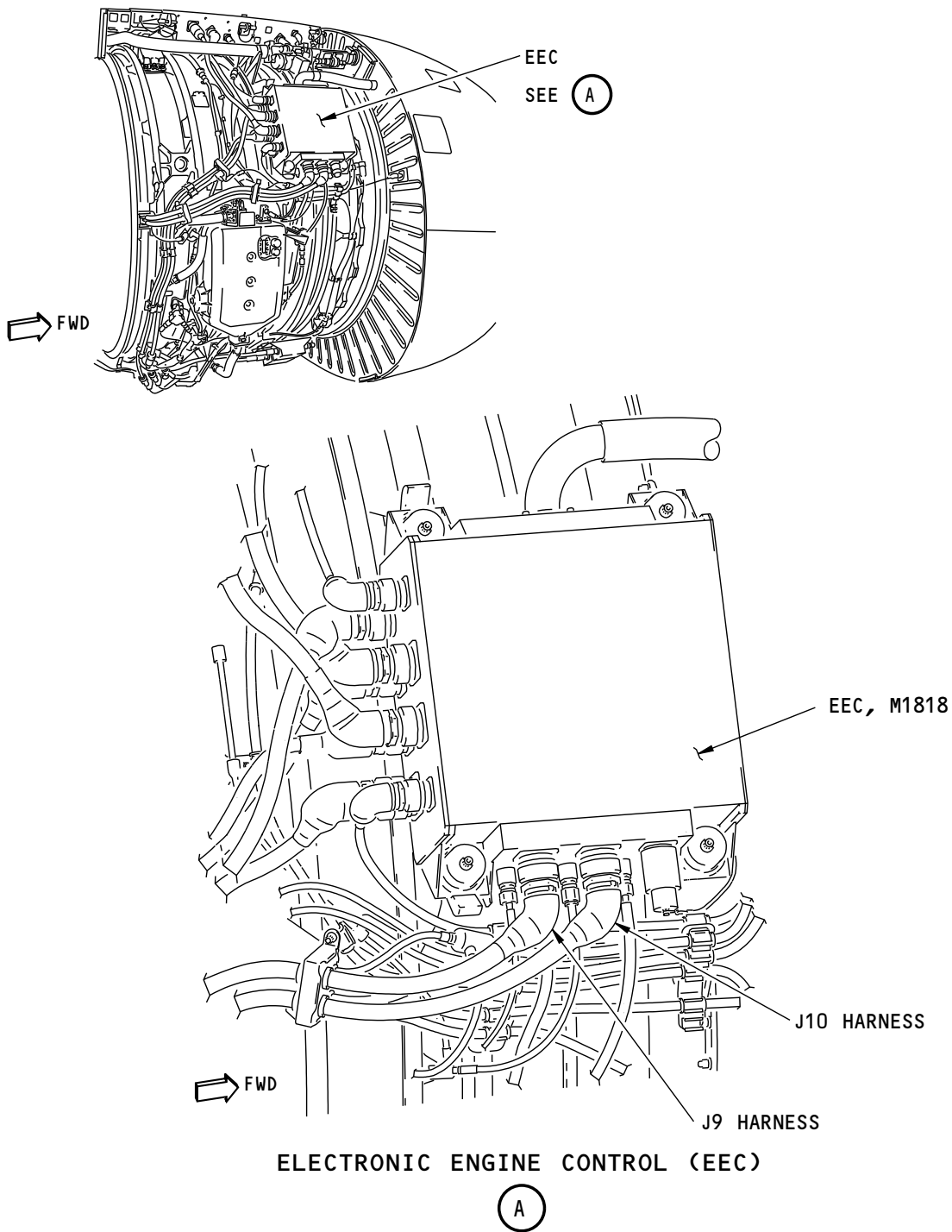
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H38364 S0006746082_V1

Temperature Sensor - Component Location
Figure 301/75-33-00-990-801-F00 (Sheet 1 of 4)

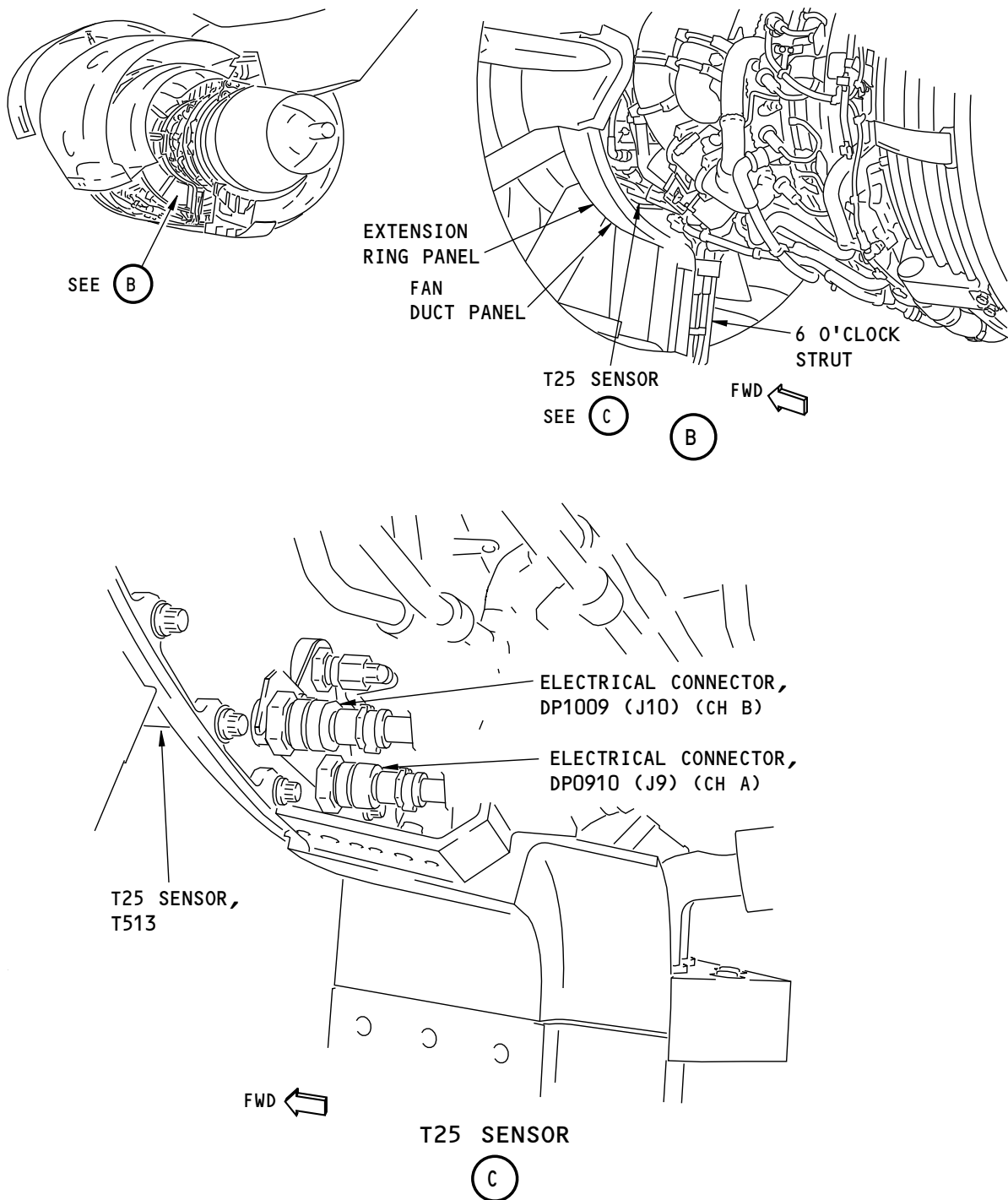
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H38493 S0006746083_V1

Temperature Sensor - Component Location
Figure 301/75-33-00-990-801-F00 (Sheet 2 of 4)

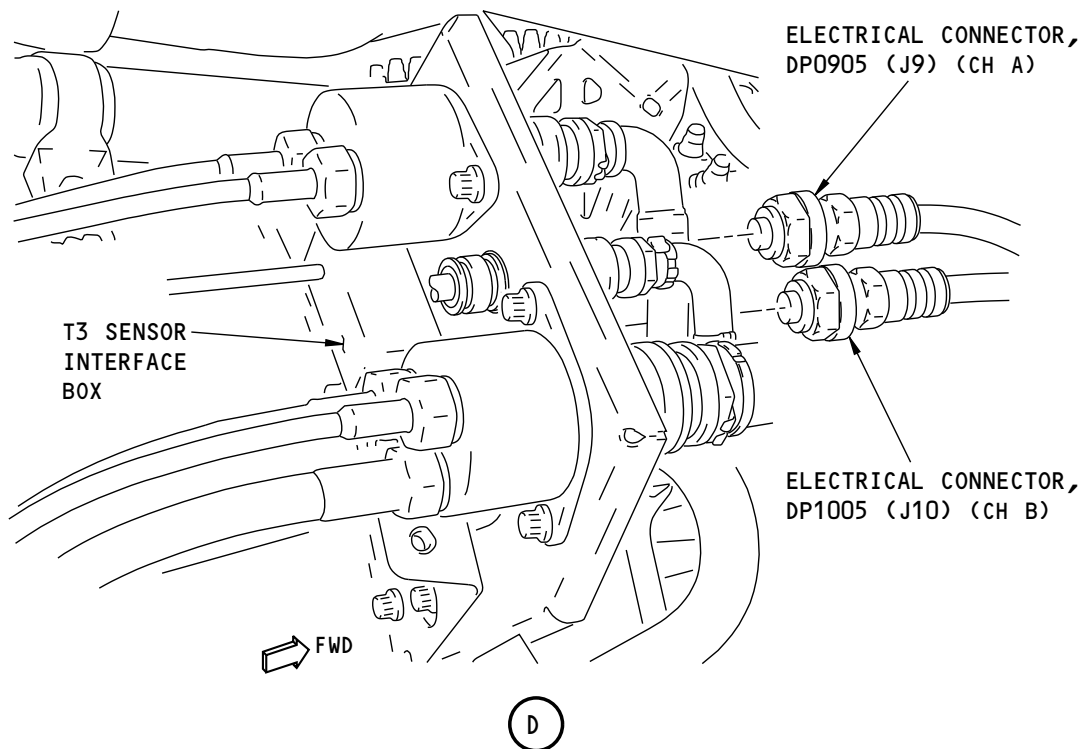
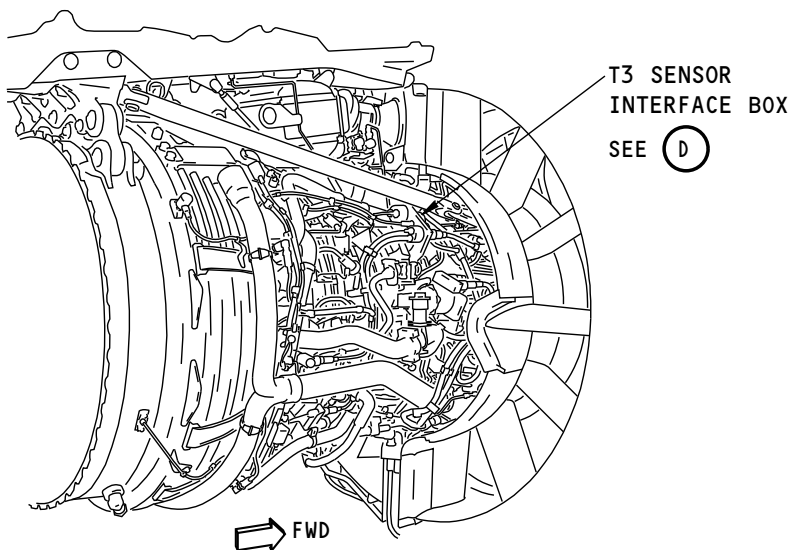
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H39218 S0006746084_V1

Temperature Sensor - Component Location
Figure 301/75-33-00-990-801-F00 (Sheet 3 of 4)

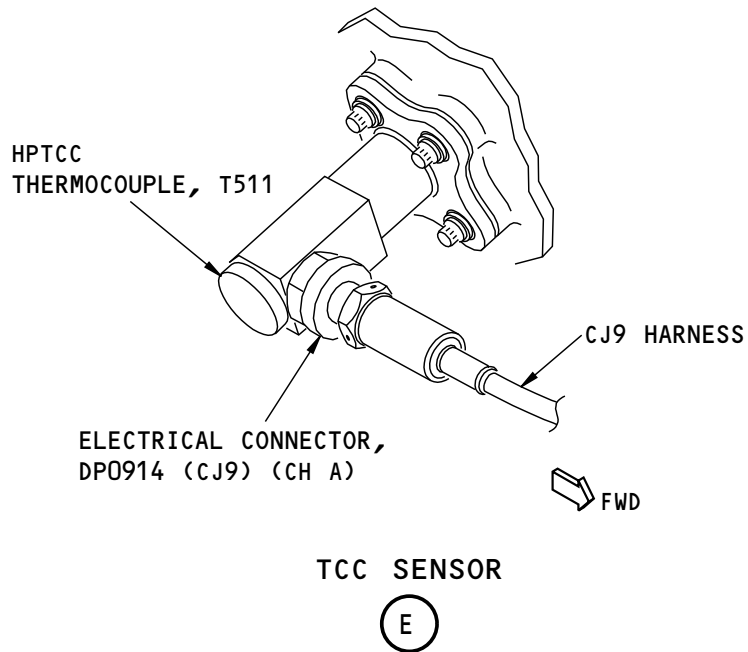
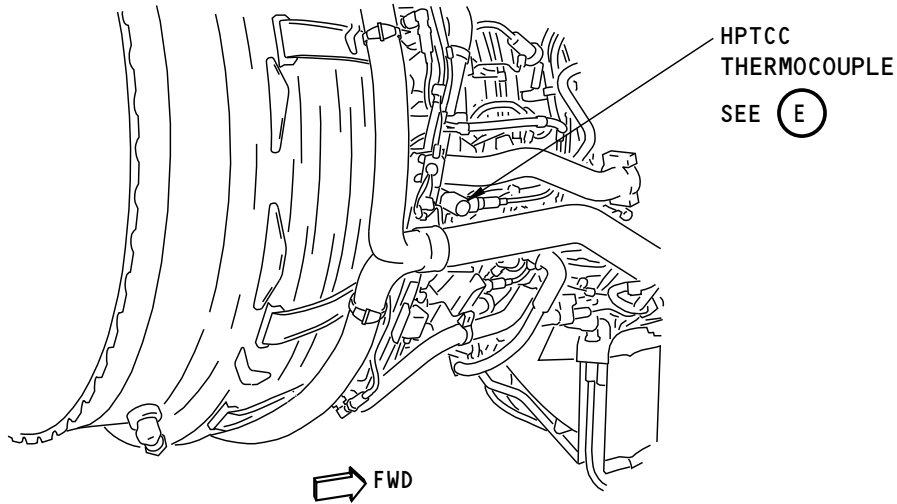
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H42413 S0006746085_V1

Temperature Sensor - Component Location
Figure 301/75-33-00-990-801-F00 (Sheet 4 of 4)

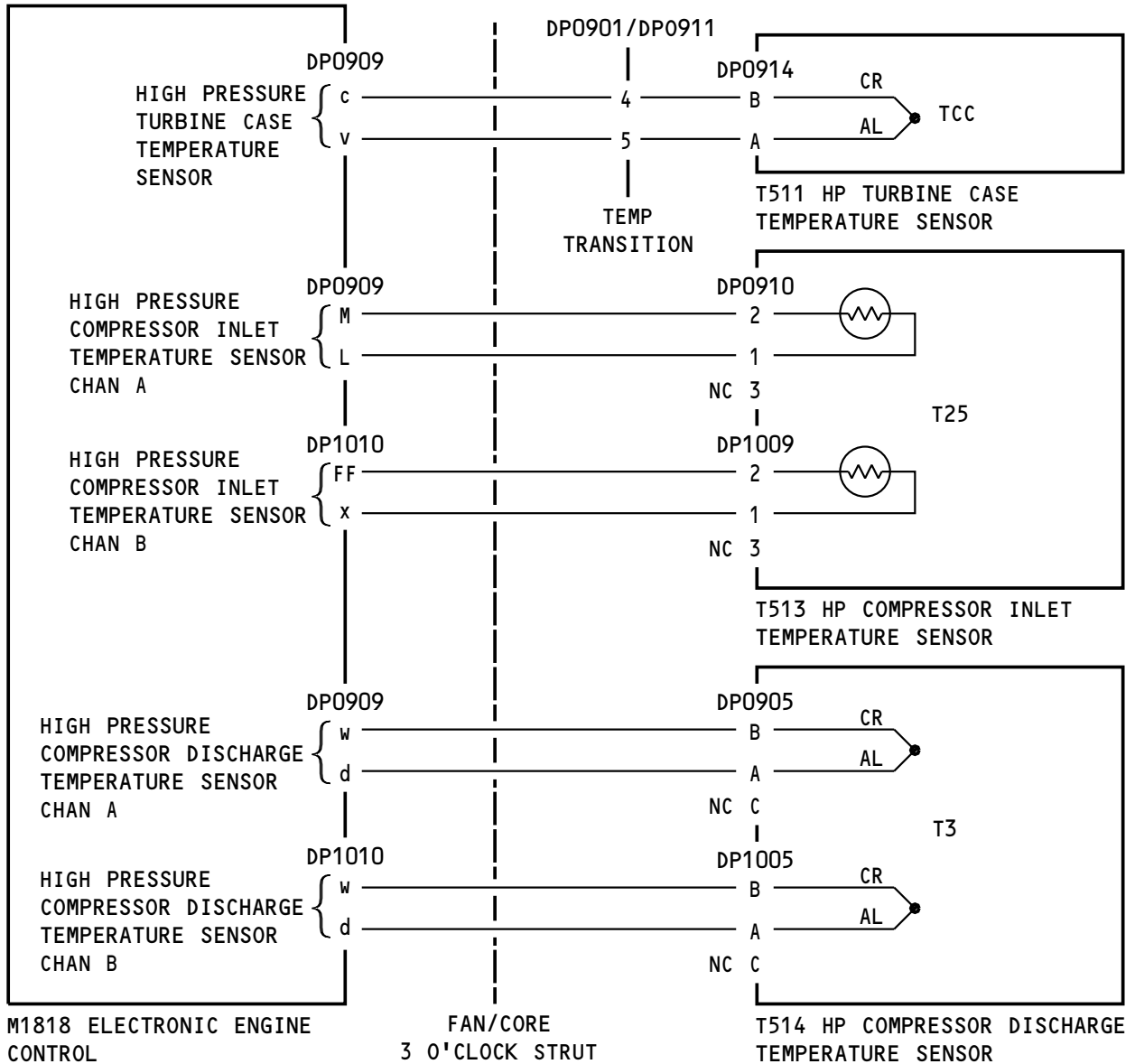
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NOTE: THE WDM/SSM ADD A DASH TO THE PIN NUMBER TO DENOTE A LOWER CASE PIN, SUCH AS A- = a.

H40745 S0006746086_V1

Temperature Sensor - Simplified Schematic
Figure 302/75-33-00-990-802-F00

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805. FADEC2 (Ch A) Excitation Group 3: VSV, VBV and T/R L Sleeve LVDT Excitation Circuit Fault - Fault Isolation

A. Description

- (1) This task is for these groups of maintenance messages:
 - (a) Engine 1: 75-10391, 75-10441, 78-11481, 78-11541, and 78-31541
 - (b) Engine 2: 75-10392, 75-10442, 78-11482, 78-11542, and 78-31542.
- (2) The EEC detects a fault in the linear variable differential transformer (LVDT) excitation circuit (Ch A) for the variable stator vane (VSV), variable bleed valve (VBV) or thrust reverser (T/R) left sleeve.

B. Possible Causes

- (1) Right VSV actuator, T517
- (2) Right VBV actuator, T520
- (3) T/R Left Sleeve LVDT, T396
- (4) J9 wire harness
- (5) Wiring between the T/R Left Sleeve LVDT and the EEC
- (6) EEC, M1818.

C. Circuit Breakers

- (1) For Engine 1,
 - (a) 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,
 - (a) 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 (75-34 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (75-34 TASK SUPPORT Figure 302)
- (3) (SSM 75-31-12)
- (4) (SSM 75-31-22)
- (5) (SSM 78-35-11)
- (6) (SSM 78-35-21)
- (7) (WDM 75-31-12)
- (8) (WDM 75-31-22)

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- (9) (WDM 78-35-11)
- (10) (WDM 78-35-21)

E. Initial Evaluation

- (1) Do these two steps to find out if the messages are still active:
 - (a) Do this task: EEC TEST, AMM TASK 73-21-00-700-804-F00.
NOTE: Message 78-1148Y is detected by this test.
 - (b) Do this task: Test 12 - Actuators Test, AMM TASK 71-00-00-700-807-F00.
NOTE: Messages 75-1039Y and 75-1044Y are detected by this test.
- (2) If one of these groups of maintenance message numbers shows, then do the Fault Isolation Procedure below for the applicable engine:
 - (a) 75-10391, 75-10441, 78-11481, 78-11541, and 78-31541 (Engine 1)
 - (b) 75-10392, 75-10442, 78-11482, 78-11542, and 78-31542 (Engine 2).
 - (c) If the maintenance messages do 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 these steps to prepare for the procedure:
 - (a) For Engine 1,
 - 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	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,

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

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
C	5	C01267	ENGINE 2 THRUST REVERSER SYNC LOCK
C	6	C01413	ENGINE 2 THRUST REVERSER INTLK
C	7	C00277	ENGINE 2 THRUST REVERSER CONT
C	8	C01004	ENGINE 2 THRUST REVERSER IND
D	4	C00459	ENGINE 2 IGNITION RIGHT
D	6	C00151	ENGINE 2 IGNITION LEFT
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A



DO THESE SPECIFIED TASKS IN THE CORRECT SEQUENCE BEFORE YOU OPEN THE THRUST REVERSERS: RETRACT THE LEADING EDGE, DO THE DEACTIVATION PROCEDURES FOR THE LEADING EDGE AND THE THRUST REVERSERS (FOR GROUND MAINTENANCE), AND OPEN THE FAN COWL PANELS. IF YOU DO NOT OBEY THE ABOVE SEQUENCE, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (c) Do this task: Open the Thrust Reverser (Selection), AMM TASK 78-31-00-010-801-F00.
- (2) Examine the electrical connector, DP0909 (Ch A), at the EEC:

NOTE: The electrical connector, DP0909 (Ch A), is on the J9 wire harness.

- (a) See if the electrical connector, DP0909 (Ch A), is correctly connected to the EEC, and continue.
- (b) Disconnect the electrical connector, DP0909 (Ch A), 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 the harness connector is damaged, then replace the wire harness, J9 (Ch A). These are the tasks:
- 3 O'clock Strut Harness Removal, AMM TASK 73-21-06-000-802-F00
 - 3 O'clock Strut Harness Installation, AMM TASK 73-21-06-400-802-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.
- 3) If the harness connector was not correctly connected and no other problems were found, then re-connect the harness connector to the EEC and do the Repair Confirmation at the end of this task.

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- 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 these steps to find a possible short in the excitation circuit for the right VSV actuator LVDT (referred to as the VSV LVDT):
 - (a) Measure the resistance at these pins on the wire harness connector, DP0909 through the VSV LVDT:

Table 201

CONNECTOR DP0909	PINS	RESISTANCE
	PINS P TO k	400 TO 600 OHMS
	PIN P TO ALL OTHER PINS	GREATER THAN 10 MEGOHMS
	PIN P TO THE CONNECTOR SHELL	GREATER THAN 10 MEGOHMS

- (b) If the resistance is not in the specified range, then re-connect the electrical connector, DP0909 (Ch A), to the EEC and do the Fault Isolation Procedure - VSV Actuator Excitation Circuit below.
 - (c) If the resistance is in the specified range, then continue.
- (4) Do these steps to find a possible short in the excitation circuit for the right VBV actuator LVDT (referred to as the VBV LVDT):
 - (a) Measure the resistance at these pins on the wire harness connector, DP0909 through the VBV LVDT:

Table 202

CONNECTOR DP0909	PINS	RESISTANCE
	PINS R TO m	250 TO 320 OHMS
	PIN R TO ALL OTHER PINS	GREATER THAN 10 MEGOHMS
	PIN R TO THE CONNECTOR SHELL	GREATER THAN 10 MEGOHMS

- (b) If the resistance is not in the specified range, then re-connect the electrical connector, DP0909 (Ch A), to the EEC and do the Fault Isolation Procedure - VBV Actuator Excitation Circuit below.
 - (c) If the resistance is in the specified range, then re-connect the electrical connector, DP0909 (Ch A), to the EEC and continue.
- (5) Examine the electrical connector DP0303 (Ch A), at the EEC:

NOTE: The electrical connector, DP0303 (Ch A), is on the MW0303 wire harness.

 - (a) See if the electrical connector, DP0303 (Ch A), is correctly connected to the EEC, and continue.
 - (b) Disconnect the electrical connector, DP0303 (Ch A), from the EEC.
 - (c) Visually examine the EEC receptacle and wire harness connector (AMM TASK 70-70-01-200-801-F00).

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- 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 the wire harness connector is damaged, then replace the wire harness, MW0303 (Ch A). 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 harness connector was not correctly connected and no other problems were found, then re-connect the harness connector to the EEC 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) Do these steps to find a possible short in the excitation circuit for the T/R LVDT on the left thrust reverser:
 - (a) Measure the resistance at these pins on the wire harness connector, DP0303 through the T/R LVDT:
 - 1) If the temperature is different than 70 Degrees F (20 Degrees C), use the formula that follows 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), $R = 450((234.5 + T)/254.5)$

Table 203

CONNECTOR DP0303	PINS	RESISTANCE at 70 DEGREES F
	PINS y TO GG	383 TO 517 OHMS
	PIN y TO ALL OTHER PINS	GREATER THAN 10 MEGOHMS
	PIN y TO THE CONNECTOR SHELL	GREATER THAN 10 MEGOHMS

- (b) If the resistance is not in the specified range, then re-connect the electrical connector, DP0303 (Ch A), to the EEC and do the Fault Isolation Procedure - T/R LVDT Excitation Circuit below.
- (c) If the resistance is in the specified range, then continue.
- (7) If the resistance is in the specified range for the VSV actuator, the VBV actuator and the T/R LVDT and the fault was found by the Initial Evaluation, then replace the EEC, M1818. These are the tasks:

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- EEC Removal, AMM TASK 73-21-60-000-801-F00
 - EEC Installation, AMM TASK 73-21-60-400-801-F00
- (a) Do the Repair Confirmation at the end of this task.

G. Fault Isolation Procedure - VSV Actuator Excitation Circuit

- (1) Examine the electrical connector, DP0902 (Ch A), at the VSV actuator:

NOTE: Channel A is for the right actuator.

- (a) See if the electrical connector, DP0902 (Ch A), is correctly connected to the VSV actuator, and continue.
 - (b) Disconnect the electrical connector, DP0902 (Ch A), from the VSV actuator.
 - (c) Visually examine the VSV actuator receptacle and wire harness connector (AMM TASK 70-70-01-200-801-F00).
 - 1) If the VSV Actuator receptacle is damaged, then replace the VSV actuator (Ch A), T517. These are the tasks:
 - Right VSV Actuator Removal, AMM TASK 75-31-01-000-802-F00
 - Right VSV Actuator Installation, AMM TASK 75-31-01-400-802-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 harness connector is damaged, then replace the wire harness, J9 (Ch A). These are the tasks:
 - 3 O'clock Strut Harness Removal, AMM TASK 73-21-06-000-802-F00
 - 3 O'clock Strut Harness Installation, AMM TASK 73-21-06-400-802-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.
 - 3) If the harness connector was not correctly connected and no other problems were found, then re-connect the harness connector to the VSV actuator 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.
- (2) Measure the resistance between these pins at the VSV actuator receptacle (Ch A):

Table 204

RECEPTACLE (CH A)	PINS	RESISTANCE
	PINS 2 TO 3	400 TO 600 OHMS
	PIN 2 TO THE CONNECTOR SHELL	GREATER THAN 10 MEGOHMS

- (a) If the resistance is not in the specified range, then replace the right VSV Actuator (Ch A), T517. These are the tasks:
 - Right VSV Actuator Removal, AMM TASK 75-31-01-000-802-F00

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- Right VSV Actuator Installation, AMM TASK 75-31-01-400-802-F00

1) 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.

(b) If the resistance is in the specified range, then replace the wire harness, J9 (Ch A). These are the tasks:

- 3 O'clock Strut Harness Removal, AMM TASK 73-21-06-000-802-F00
- 3 O'clock Strut Harness Installation, AMM TASK 73-21-06-400-802-F00

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

H. Fault Isolation Procedure - VBV Actuator Excitation Circuit

(1) Examine the electrical connector, DP0908 (Ch A), at the VBV actuator:

NOTE: Channel A is for the right actuator.

(a) See if the electrical connector, DP0908 (Ch A), is correctly connected to the VBV actuator, and continue.

(b) Disconnect the electrical connector, DP0908 (Ch A), from the VBV actuator.

(c) Visually examine the VBV Actuator receptacle and wire harness connector (AMM TASK 70-70-01-200-801-F00).

1) If the VBV Actuator receptacle is damaged, then replace the VBV actuator (Ch A), T520. These are the tasks:

- Right VBV Actuator Removal, AMM TASK 75-32-02-000-802-F00
- Right VBV Actuator Installation, AMM TASK 75-32-02-400-802-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 harness connector is damaged, then replace the wire harness, J9 (Ch A). These are the tasks:

- 3 O'clock Strut Harness Removal, AMM TASK 73-21-06-000-802-F00
- 3 O'clock Strut Harness Installation, AMM TASK 73-21-06-400-802-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.

3) If the harness connector was not correctly connected and no other problems were found, then re-connect the harness connector to the VBV actuator 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.

(2) Measure the resistance between these pins at the VBV actuator receptacle (Ch A):

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Table 205

RECEPTACLE (CH A)	PINS	RESISTANCE
	PINS 1 TO 2	250 TO 320 OHMS
	PIN 1 TO THE CONNECTOR SHELL	GREATER THAN 10 MEGOHMS

- (a) If the resistance is not in the specified range, then replace the VBV Actuator (Ch A), T520. These are the tasks:
 - Right VBV Actuator Removal, AMM TASK 75-32-02-000-802-F00
 - Right VBV Actuator Installation, AMM TASK 75-32-02-400-802-F00
 - 1) 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.
- (b) If the resistance is in the specified range, then replace the wire harness, J9 (Ch A). These are the tasks:
 - 3 O'clock Strut Harness Removal, AMM TASK 73-21-06-000-802-F00
 - 3 O'clock Strut Harness Installation, AMM TASK 73-21-06-400-802-F00
 - 1) Do the Repair Confirmation at the end of this task.

I. Fault Isolation Procedure - T/R LVDT Excitation Circuit

- (1) Examine the electrical connector, D30072 (Ch A), at the T/R LVDT on the left thrust reverser:

NOTE: There is an T/R LVDT on the upper locking actuator on the torque box of the left thrust reverser on an engine.

- (a) See if the electrical connector, D30072 (Ch A), is correctly connected to the T/R LVDT, and continue.
- (b) Disconnect the electrical connector, D30072 (Ch A), from the T/R LVDT.
- (c) Visually examine the T/R LVDT receptacle and wire harness connector (AMM TASK 70-70-01-200-801-F00).
 - 1) If the T/R LVDT receptacle is damaged, then replace the T/R 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 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 harness connector was not correctly connected, and no other problems were found, then re-connect the harness connector to the T/R LVDT and do the Repair Confirmation at the end of this task.

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- 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.
- (2) Measure the resistance between these pins at the T/R LVDT receptacle (Ch A):
 - (a) If the temperature is different than 70 Degrees F (20 Degrees C), use the formula that follows 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 (Ch A), $R = 450((234.5 + T)/254.5)$

Table 206

RECEPTACLE (CH A)	PINS	RESISTANCE at 70 DEGREES F
	PINS 1 TO 2	383 to 517 OHMS
	PIN 1 TO THE AIRPLANE GROUND	GREATER THAN 10 MEGOHMS

- (b) If the resistance is not in the specified range, then replace the T/R 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 specified range, then examine and repair the wires and connectors between the EEC and the T/R LVDT.
 - 1) If you find a problem with the MW0303 (Ch A), 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
 - 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 you find a problem between the strut receptacle and T/R LVDT, then do the tasks to repair or replace the wiring (SWPM Ch 20).
 - a) Do the Repair Confirmation at the end of this task.

J. Repair Confirmation

- (1) Do these steps to prepare for the procedure:
 - (a) Make sure that the electrical connector, DP0909 (Ch A), is correctly connected to the EEC.
 - (b) Make sure that the electrical connector, DP0303 (Ch A), is correctly connected to the EEC.
 - (c) Make sure that the electrical connector, DP0902 (Ch A), is correctly connected to the right VSV actuator.

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- (d) Make sure that the electrical connector, DP0908 (Ch A), is correctly connected to the right VBV actuator.
- (e) Make sure that the electrical connector, D30072 (Ch A), is correctly connected to the T/R LVDT.
- (f) Make sure that all connectors that were disconnected to do an electrical check between the T/R LVDT and the EEC are correctly connected.
- (g) For Engine 1,
 - 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

- (h) For Engine 2,
 - 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 78-11481 or 78-11482 does not show, then you corrected the fault. Do this test to make sure that no other faults occurred during the fault isolation procedure:
 - 1) Do this task: Test 12 - Actuators Test, AMM TASK 71-00-00-700-807-F00.
 - a) If there is a fault, then go to the fault isolation task for the maintenance message that shows.



WARNING

OBEY THE INSTRUCTIONS IN THE PROCEDURE TO CLOSE THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (3) Do this task: Close the Thrust Reverser (Selection), AMM TASK 78-31-00-010-804-F00.

— END OF TASK —

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**806. FADEC2 (Ch B) Excitation Group 2: FMV, VSV and T/R L Sleeve LVDT Excitation Circuit Fault -
Fault Isolation**

A. Description

- (1) This task is for these groups of maintenance messages:
 - (a) Engine 1: 73-20341, 75-20391, 78-21481, 78-21541, and 78-31541
 - (b) Engine 2: 73-20342, 75-20392, 78-21482, 78-21542, and 78-31542.
- (2) The EEC detects a fault in the linear variable differential transformer (LVDT) excitation circuit (Ch B) for the fuel metering valve (integral to the hydromechanical unit (HMU)), variable stator vane (VSV) or thrust reverser (T/R).

B. Possible Causes

- (1) Fuel Metering Valve (Integral to the HMU, M1823)
- (2) Left VSV actuator, T518
- (3) T/R L Sleeve LVDT, T396
- (4) J6 wire harness
- (5) J10 wire harness
- (6) Wiring between the T/R LVDT and the EEC
- (7) EEC, M1818.

C. Circuit Breakers

- (1) For Engine 1,
 - (a) 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,
 - (a) 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 (75-34 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (75-34 TASK SUPPORT Figure 302)
- (3) (SSM 73-25-11)
- (4) (SSM 73-25-21)
- (5) (SSM 75-31-12)
- (6) (SSM 75-31-22)
- (7) (SSM 78-35-11)

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- (8) (SSM 78-35-21)
- (9) (WDM 73-25-11)
- (10) (WDM 73-25-21)
- (11) (WDM 75-31-12)
- (12) (WDM 75-31-22)
- (13) (WDM 78-35-11)
- (14) (WDM 78-35-21)

E. Initial Evaluation

- (1) Do these two steps to find out if the messages are still active:
 - (a) Do this task: EEC TEST, AMM TASK 73-21-00-700-804-F00.
NOTE: Message 78-2148Y is detected by this test.
 - (b) Do this task: Test 12 - Actuators Test, AMM TASK 71-00-00-700-807-F00.
NOTE: Messages 73-2034Y and 75-2039Y are detected by this test.
- (2) If one of these groups of maintenance message numbers shows, then do the Fault Isolation Procedure below for the applicable engine:
 - (a) 73-20341, 75-20391, 78-21481, 78-21541, and 78-31541 (Engine 1)
 - (b) 73-20342, 75-20392, 78-21482, 78-21542, and 78-31542 (Engine 2).
 - (c) If the maintenance messages do 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 these steps to prepare for the procedure:
 - (a) For Engine 1,
 - 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

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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

(b) For Engine 2,

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



DO THESE SPECIFIED TASKS IN THE CORRECT SEQUENCE BEFORE YOU OPEN THE THRUST REVERSERS: RETRACT THE LEADING EDGE, DO THE DEACTIVATION PROCEDURES FOR THE LEADING EDGE AND THE THRUST REVERSERS (FOR GROUND MAINTENANCE), AND OPEN THE FAN COWL PANELS. IF YOU DO NOT OBEY THE ABOVE SEQUENCE, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

(c) Do this task: Open the Thrust Reverser (Selection), AMM TASK 78-31-00-010-801-F00.

(2) Examine the electrical connector, DP0606 (Ch B), at the EEC:

NOTE: The electrical connector, DP0606 (Ch B), is on the J6 wire harness.

- (a) See if electrical connector, DP0606 (Ch B), is correctly connected to the EEC, and continue.
- (b) Disconnect the electrical connector, DP0606 (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.

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- 2) If the harness connector is damaged, then replace the wire harness, J6 (Ch B). These are the tasks:
 - Fan Wiring Harness Removal, AMM TASK 73-21-06-000-801-F00
 - Fan Wiring Harness Installation, AMM TASK 73-21-06-400-801-F00
 - a) Do the Repair Confirmation at the end of this task.
 - b) If the Repair Confirmation is not satisfactory, then open the circuit breakers above and continue.
- 3) If the harness connector was not correctly connected and no other problems were found, then re-connect the harness connector to the EEC 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 these steps to find a possible short in the excitation circuit for the FMV LVDT in the HMU:
 - (a) Measure the resistance at these pins on the wire harness connector, DP0606 through the FMV LVDT:

Table 207

CONNECTOR DP0606	PINS	RESISTANCE
	PINS T TO U	50 TO 72 OHMS
	PIN T TO ALL OTHER PINS	GREATER THAN 10 MEGOHMS
	PIN T TO THE CONNECTOR SHELL	GREATER THAN 10 MEGOHMS

- (b) If the resistance is not in the specified range, then re-connect the electrical connector, DP0606 (Ch B), to the EEC and do the Fault Isolation Procedure - FMV Excitation Circuit below.
- (c) If the resistance is in the specified range, then re-connect the electrical connector, DP0606 (Ch B), to the EEC and continue.
- (4) Examine the electrical connector, DP1010 (Ch B), at the EEC:

NOTE: The electrical connector, DP1010 (Ch B), is on the J10 wire harness.

 - (a) See if the electrical connector, DP1010 (Ch B), is correctly connected to the EEC, and continue.
 - (b) Disconnect the electrical connector, DP1010 (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.

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- 2) If the harness connector is damaged, then replace the wire harness, J10 (Ch B). These are the tasks:
 - 3 O'clock Strut Harness Removal, AMM TASK 73-21-06-000-802-F00
 - 3 O'clock Strut Harness Installation, AMM TASK 73-21-06-400-802-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.
- 3) If the harness connector was not correctly connected and no other problems were found, then re-connect the harness connector to the EEC 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) Do these steps to find a possible short in the excitation circuit for the left VSV actuator LVDT (referred to as the VSV LVDT):
 - (a) Measure the resistance at these pins on the wire harness connector, DP1010 through the VSV LVDT:

Table 208

CONNECTOR DP1010	PINS	RESISTANCE
	PINS N TO h	400 TO 600 OHMS
	PIN N TO ALL OTHER PINS	GREATER THAN 10 MEGOHMS
	PIN N TO THE CONNECTOR SHELL	GREATER THAN 10 MEGOHMS

- (b) If the resistance is not in the specified range, then re-connect the electrical connector, DP1010 (Ch B), to the EEC and do the Fault Isolation Procedure - VSV Actuator Excitation Circuit below.
- (c) If the resistance is in the specified range, then re-connect the electrical connector, DP1010 (Ch B), to the EEC and continue.
- (6) Examine the electrical connector, DP0404 (Ch B), at the EEC:

NOTE: The electrical connector, DP0404 (Ch B), is on the MW0304 wire harness.

 - (a) See if the electrical connector, DP0404 (Ch B), is correctly connected to the EEC, and continue.
 - (b) Disconnect the electrical connector, 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 wire harness, 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 harness connector was not correctly connected and no other problems were found, then re-connect the harness connector to the EEC 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.
- (7) Do these steps to find a possible short in the excitation circuit for the T/R LVDT on the left thrust reverser:
 - (a) Measure the resistance at these pins on the wire harness connector, DP0404 through the T/R LVDT:
 - 1) If the temperature is different than 70 Degrees F (20 Degrees C), use the formula that follows to calculate the acceptable range of resistance:
 - For these pin sets, calculate R at ambient temperature T (in Degrees C only).
For Pins AA to GG (Ch B), $R = 450((234.5 + T)/254.5)$

Table 209

CONNECTOR DP0404	PINS	RESISTANCE at 70 DEGREES F
	PINS AA TO GG	383 TO 517 OHMS
	PIN AA TO ALL OTHER PINS	GREATER THAN 10 MEGOHMS
	PIN AA TO THE CONNECTOR SHELL	GREATER THAN 10 MEGOHMS

- (b) If the resistance is not in the specified range, then re-connect the electrical connector, DP0404 (Ch B), to the EEC and do the Fault Isolation Procedure - T/R LVDT Excitation Circuit below.
 - (c) If the resistance is in the specified range, then continue.
 - (8) If the resistance is in the specified range for the FMV, the VSV actuator and the T/R LVDT, 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

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G. Fault Isolation Procedure - FMV Excitation Circuit

- (1) Examine the electrical connector, DP0601 (Ch B), at the HMU:
 - (a) See if electrical connector, DP0601 (Ch B), is correctly connected to the HMU, and continue.
 - (b) Disconnect the electrical connector, DP0601 (Ch B), from the HMU.
 - (c) Visually examine the HMU receptacle and wire harness connector (AMM TASK 70-70-01-200-801-F00).
 - 1) If the HMU receptacle is damaged, then replace the HMU, M1823. These are the tasks:
 - HMU Removal, AMM TASK 73-21-10-000-801-F00
 - HMU Installation, AMM TASK 73-21-10-400-801-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 harness connector is damaged, then replace the wire harness, J6 (Ch B). These are the tasks:
 - Fan Wiring Harness Removal, AMM TASK 73-21-06-000-801-F00
 - Fan Wiring Harness Installation, AMM TASK 73-21-06-400-801-F00
 - a) Do the Repair Confirmation at the end of this task.
 - b) If the Repair Confirmation is not satisfactory, then open the circuit breakers above and continue.
 - 3) If the harness connector was not correctly connected and no other problems were found, then re-connect the harness connector to the HMU 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.
- (2) Measure the resistance between these pins at the HMU receptacle, DP0601:

Table 210

RECEPTACLE DP0601	PINS	RESISTANCE
	PINS 16 TO 34	50 TO 72 OHMS
	PIN 16 TO THE CONNECTOR SHELL	GREATER THAN 10 MEGOHMS

- (a) If the resistance is not in the specified range, then replace the HMU, M1823. These are the tasks:
 - HMU Removal, AMM TASK 73-21-10-000-801-F00
 - HMU Installation, AMM TASK 73-21-10-400-801-F00
 - 1) 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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- (b) If the resistance is in the specified range, then replace the wire harness, J6 (Ch B). These are the tasks:
- Fan Wiring Harness Removal, AMM TASK 73-21-06-000-801-F00
 - Fan Wiring Harness Installation, AMM TASK 73-21-06-400-801-F00
- 1) Do the Repair Confirmation at the end of this task.

H. Fault Isolation Procedure - VSV Actuator Excitation Circuit

- (1) Examine the electrical connector, DP1002 (Ch B), at the VSV actuator:

NOTE: Channel B is for the left actuator.

- (a) See if the electrical connector, DP1002 (Ch B), is correctly connected to the VSV actuator, and continue.
- (b) Disconnect the electrical connector, DP1002 (Ch B), from the VSV actuator.
- (c) Visually examine the VSV Actuator receptacle and wire harness connector (AMM TASK 70-70-01-200-801-F00).
- 1) If the VSV Actuator receptacle is damaged, then replace the left VSV Actuator (Ch B), T518. These are the tasks:
 - Left VSV Actuator Removal, AMM TASK 75-31-01-000-801-F00
 - Left VSV Actuator Installation, AMM TASK 75-31-01-400-801-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 harness connector is damaged, then replace the wire harness, J10 (Ch B). These are the tasks:
 - 3 O'clock Strut Harness Removal, AMM TASK 73-21-06-000-802-F00
 - 3 O'clock Strut Harness Installation, AMM TASK 73-21-06-400-802-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.
 - 3) If the harness connector was not correctly connected and no other problems were found, then re-connect the harness connector to the VSV actuator 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.
- (2) Measure the resistance between these pins at the VSV actuator receptacle (Ch B):

Table 211

RECEPTACLE (CH B)	PINS	RESISTANCE
	PINS 2 TO 3	400 TO 600 OHMS
	PIN 2 TO THE CONNECTOR SHELL	GREATER THAN 10 MEGOHMS

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- (a) If the resistance is not in the specified range, then replace the left VSV Actuator (Ch B), T518. These are the tasks:
 - Left VSV Actuator Removal, AMM TASK 75-31-01-000-801-F00
 - Left VSV Actuator Installation, AMM TASK 75-31-01-400-801-F00
 - 1) 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.
- (b) If the resistance is in the specified range, then replace the wire harness, J10 (Ch B). These are the tasks:
 - 3 O'clock Strut Harness Removal, AMM TASK 73-21-06-000-802-F00
 - 3 O'clock Strut Harness Installation, AMM TASK 73-21-06-400-802-F00
 - 1) Do the Repair Confirmation at the end of this task.

I. Fault Isolation Procedure - T/R L Sleeve LVDT Excitation Circuit

- (1) Examine the electrical connector, D30076 (Ch B), at the T/R LVDT on the left thrust reverser:

NOTE: There is an T/R LVDT on the upper locking actuator on the torque box of the left thrust reverser on an engine.

 - (a) See if the electrical connector, D30076 (Ch B), is correctly connected to the T/R LVDT, and continue.
 - (b) Disconnect the electrical connector, D30076 (Ch B), from the T/R LVDT.
 - (c) Visually examine the T/R LVDT receptacle and wire harness connector (AMM TASK 70-70-01-200-801-F00).
 - 1) If the T/R LVDT receptacle is damaged, then replace the T/R 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 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 harness connector was not correctly connected, and no other problems were found, then re-connect the harness connector to the T/R LVDT 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.
- (2) Measure the resistance between these pins at the T/R LVDT receptacle (Ch B):
 - (a) If the temperature is different than 70 Degrees F (20 Degrees C), use the formula that follows to calculate the acceptable range of resistance:
 - For these pin sets, calculate R at ambient temperature T (in Degrees C only).

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or Pins 1 to 2, $R = 450((234.5 + T)/254.5)$

Table 212

RECEPTACLE (CH B)	PINS	RESISTANCE at 70 DEGREES F
	PINS 1 TO 2	383 to 517 OHMS
	PIN 1 TO THE AIRPLANE GROUND	GREATER THAN 10 MEGOHMS

- (b) If the resistance is not in the specified range, then replace the T/R 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 specified range, then examine and repair the wires and connectors between the EEC and the T/R LVDT.
- 1) If you find a problem with the 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
- 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 you find a problem between the strut receptacle and T/R LVDT, then do the tasks to repair or replace the wiring (SWPM Ch 20).
- a) Do the Repair Confirmation at the end of this task.

J. Repair Confirmation

- (1) Do these steps to prepare for the procedure:
- (a) Make sure that the electrical connector, DP0606 (Ch B), is correctly connected to the EEC.
 - (b) Make sure that the electrical connector, DP1010 (Ch B), is correctly connected at the EEC.
 - (c) Make sure that the electrical connector, DP0404 (Ch B), is correctly connected to the EEC.
 - (d) Make sure that the electrical connector, DP0601 (Ch B), is correctly connected at the HMU.
 - (e) Make sure that the electrical connector, DP1002 (Ch B), is correctly connected at the VSV actuator.
 - (f) Make sure that the electrical connector, D30076 (Ch B), is correctly connected to the T/R LVDT.
 - (g) Make sure that all connectors that were disconnected to do an electrical check between the T/R LVDT and the EEC are correctly connected.

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(h) For Engine 1,

- 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

(i) For Engine 2,

- 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 78-21481 or 78-21482 does not show, then you corrected the fault. Do this test to make sure that no other faults occurred during the fault isolation procedure:

- 1) Do this task: Test 12 - Actuators Test, AMM TASK 71-00-00-700-807-F00.
- a) If there is a fault, then go to the fault isolation task for the maintenance message that shows.



OBEY THE INSTRUCTIONS IN THE PROCEDURE TO CLOSE THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (3) Do this task: Close the Thrust Reverser (Selection), AMM TASK 78-31-00-010-804-F00.

————— END OF TASK —————

807. FADEC2 (Ch A) Excitation Group 2: FMV, HPTC and T/R R Sleeve LVDT Excitation Circuit Fault - Fault Isolation

A. Description

- (1) This task is for these groups of Maintenance Messages:

(a) Engine 1: 73-10341, 75-10491, 78-11491, 78-11541, and 78-31541

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- (b) Engine 2: 73-10342, 75-10492, 78-11492, 78-11542, and 78-31542
- (c) Engine 1: 73-10341, 75-10361, 78-11491, 78-11541, and 78-31541
- (d) Engine 2: 73-10342, 75-10362, 78-11492/ 78-11542, and 78-31542.
- (2) This problem is reported on the active channel of the Electronic Engine Control (EEC), M1818, when the EEC, M1818, is ON.
- (3) The EEC, M1818, detects a short in the Linear Variable Differential Transformer (LVDT) Excitation Circuit (Ch A) for the Fuel Metering Valve (FMV) (Integral to the Hydro-Mechanical Unit (HMU), M1823), High Pressure Turbine Clearance Valve (HPTCV), T515 or R Thrust Reverser (T/R) Sleeve, LVDT, T397.

B. Possible Causes

- (1) FMV (Integral to the HMU, M1823)
- (2) HPTCV, T515
- (3) R T/R Sleeve LVDT, T397
- (4) Wiring
- (5) EEC, M1818.

C. Circuit Breakers

- (1) These are the 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) WDM 73-25-11
- (2) WDM 73-25-21
- (3) WDM 75-31-11
- (4) WDM 75-31-21
- (5) WDM 78-35-11
- (6) WDM 78-35-21
- (7) SSM 73-25-11
- (8) SSM 73-25-21
- (9) SSM 75-31-11
- (10) SSM 75-31-21
- (11) SSM 78-35-11
- (12) SSM 78-35-21

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E. Initial Evaluation

- (1) Do these two steps to find out if the Maintenance Messages are still active:
 - (a) Do this task: EEC TEST, AMM TASK 73-21-00-700-804-F00.
NOTE: Message 78-1149Y is detected by this test.
 - (b) Do this task: Test 12 - Actuators Test, AMM TASK 71-00-00-700-807-F00.
NOTE: Messages 73-1034Y and 75-1049Y are detected by this test.
NOTE: Messages 73-1034Y and 75-1036Y are detected by this test.
- (2) If one of these groups of Maintenance Message numbers shows, then do the Fault Isolation Procedure for the applicable Engine:
 - (a) 73-10341, 75-10491, 78-11491, 78-11541, and 78-31541 (Engine 1)
 - (b) 73-10342, 75-10492, 78-11492, 78-11542, and 78-31542 (Engine 2)
 - (c) 73-10341, 75-10361, 78-11491, 78-11541, and 78-31541 (Engine 1)
 - (d) 73-10342, 75-10362, 78-11492, 78-11542, and 78-31542 (Engine 2).
 - (e) If the Maintenance Messages do not show on the Flight Management Computer System (FMCS) Control Display Unit (CDU), then the Initial Evaluation has shown that the problem 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 problem.
 - 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.
 - b) Use the Wiring Diagram Manual references to identify intermediate electrical connections in the wiring 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:
 - (a) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-2

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



DO THESE SPECIFIED TASKS IN THE CORRECT SEQUENCE BEFORE YOU OPEN THE THRUST REVERSERS: RETRACT THE LEADING EDGE, DO THE DEACTIVATION PROCEDURES FOR THE LEADING EDGE AND THE THRUST REVERSERS (FOR GROUND MAINTENANCE), AND OPEN THE FAN COWL PANELS. IF YOU DO NOT OBEY THE ABOVE SEQUENCE, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (b) Do this task: Open the Thrust Reverser (Selection), AMM TASK 78-31-00-010-801-F00.
- (2) At the EEC, M1818, examine the Electrical Connector, DP0505:
- NOTE: The Electrical Connector, DP0505 (Ch A), is on the J5 Wiring Harness.
- (a) See if the Electrical Connector, DP0505 (Ch A), is correctly connected to the EEC, M1818, and continue.
- (b) Disconnect the Electrical Connector, DP0505 (Ch A), from the EEC, M1818.
- (c) At the EEC, M1818, examine the receptacle and Harness Connector (AMM TASK 70-70-01-200-801-F00).
- 1) If the 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 the Harness Connector, J5 (Ch A) is damaged, then replace it. These are the tasks:
 - Fan Wiring Harness Removal, AMM TASK 73-21-06-000-801-F00
 - Fan Wiring Harness Installation, AMM TASK 73-21-06-400-801-F00
 - a) Do the Repair Confirmation at the end of this task.
 - 3) If the Harness Connector, J5 (Ch A) was not correctly connected and no other problems were found, connect it to the EEC, M1818.
 - a) Do the Repair Confirmation at the end of this task.
- (3) Do this check of the wiring (WDM 73-25-11):
- (a) At these pins on the Harness Connector, DP0505 measure the resistance through the FMV:

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EEC		EEC	
DP0505		DP0505	
pin T		pin U	50-72 Ω
pin T		pin C	> 10 M Ω
pin T		pin V	> 10 M Ω
pin T		pin A	> 10 M Ω
pin T	.....	pin B	> 10 M Ω
pin T	.....	pin A-	> 10 M Ω
pin T	.....	pin J	> 10 M Ω
pin T	.....	pin H	> 10 M Ω
pin T	.....	pin G	> 10 M Ω
pin T	.....	pin C-	> 10 M Ω
pin T	.....	pin N	> 10 M Ω
pin T	.....	connector shell	> 10 M Ω

- (b) If the resistance is not in the specified range, then connect the Electrical Connector, DP0505 (Ch A), to the EEC, M1818, and do the Fault Isolation Procedure - FMV Excitation Circuit.
 - (c) If the resistance is in the specified range, connect the Electrical Connector, DP0505 (Ch A), to the EEC, M1818, and then continue.
- (4) At the EEC, M1818, examine the Electrical Connector, DP0909:
- NOTE:** The Electrical Connector, DP0909 (Ch A), is on the J9 Wiring Harness.
- (a) See if the Electrical Connector, DP0909 (Ch A), is correctly connected to the EEC, M1818, and continue.
 - (b) Disconnect the Electrical Connector, DP0909 (Ch A), from the EEC, M1818.
 - (c) At the EEC, M1818, examine the receptacle and Harness Connector (AMM TASK 70-70-01-200-801-F00).
 - 1) If the receptacle is damaged, 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 the Harness Connector J9 (Ch A) is damaged, replace it. These are the tasks:
 - 3 O'clock Strut Harness Removal, AMM TASK 73-21-06-000-802-F00
 - 3 O'clock Strut Harness Installation, AMM TASK 73-21-06-400-802-F00
 - a) Do the Repair Confirmation at the end of this task.
 - 3) If the Harness Connector was not correctly connected and no other problems were found, connect the Harness Connector to the EEC, M1818.
 - a) Do the Repair Confirmation at the end of this task.
- (5) Do this check of the wiring (WDM 75-31-11):
- (a) At these pins on the Harness Connector, DP0909 measure the resistance through the HPTCV, T515:

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HPTCPT DP0909

pin B		pin U	0-150 Ω
pin B		pin C	> 10 MΩ
pin B		pin Q-	> 10 MΩ
pin B		pin V	> 10 MΩ
pin B	.....	connector shell	> 10 MΩ

HPTCPT DP0909

- (b) If the resistance is not in the specified range, connect the Electrical Connector, DP0909 (Ch A), to the EEC, M1818, and do the Fault Isolation Procedure - HPTCV, M1823, Excitation Circuit.
- (c) If the resistance is in the specified range, connect the Electrical Connector, DP0909 (Ch A), to the EEC, M1818, and continue.
- (6) At the EEC, M1818, examine the Electrical Connector DP0303:
NOTE: The Electrical Connector, DP0303 (Ch A), is on the MW0303 Wiring Harness.
- (a) See if the Electrical Connector, DP0303 (Ch A), is correctly connected to the EEC, M1818, and continue.
- (b) Disconnect the Electrical Connector, DP0303 (Ch A), from the EEC, M1818.
- (c) At the EEC, M1818, examine the receptacle and Harness Connector (AMM TASK 70-70-01-200-801-F00).
- 1) If the receptacle is damaged, 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 the Harness Connector is damaged, replace it. 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 the Harness Connector was not correctly connected and no other problems were found, then connect the Harness Connector to the EEC, M1818.
 - a) Do the Repair Confirmation at the end of this task.
- (7) Do this check of the wiring (WDM 78-35-11):
- (a) At these pins on the Harness Connector, DP0303 measure the resistance through the R T/R Sleeve LVDT, T397:
- NOTE:** If the Ambient Temperature is different than 70°F (21°C), use the indicated formula in the table below to calculate the acceptable Resistance Range at Ambient Temperature T (in °C).

CH A

pin	pin	RESISTANCE
E	F	$R=450 \left(\frac{234.5 + T}{254.5} \right)$

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T/R POSITION R SLEEVE (CH A) DP0303	T/R POSITION R SLEEVE (CH A) DP0303	
pin E-	pin F-	383-517 Ω
pin E-	pin N-	> 10 M Ω
pin E-	pin Q-	> 10 M Ω
pin E-	pin P-	> 10 M Ω
pin E-	connector shell	> 10 M Ω

- (b) If the resistance is not in the specified range, connect the Electrical Connector, DP0303 (Ch A), to the EEC, M1818, and do the Fault Isolation Procedure - T/R LVDT Excitation Circuit.
- (c) If the resistance is in the specified range, then continue.
- (8) If the resistance is in the specified range for the FMV, HPTCV, T515, and the R T/R Sleeve LVDT, T397, replace it. These are the tasks:
- EEC Removal, AMM TASK 73-21-60-000-801-F00
 - EEC Installation, AMM TASK 73-21-60-400-801-F00
- (a) Do the Repair Confirmation at the end of this task.

G. Fault Isolation Procedure - FMV Excitation Circuit

- (1) At the HMU, M1823, examine the Electrical Connector, DP0501:
- (a) See if the Electrical Connector, DP0501 (Ch A), is correctly connected to the HMU, M1823, and continue.
- (b) Disconnect the Electrical Connector, DP0501 (Ch A), from the HMU, M1823.
- (c) At the HMU, M1823, examine the receptacle and Harness Connector (AMM TASK 70-70-01-200-801-F00).
- 1) If the receptacle is damaged, replace the HMU, M1823. These are the tasks:
 - HMU Removal, AMM TASK 73-21-10-000-801-F00
 - HMU Installation, AMM TASK 73-21-10-400-801-F00

a) Do the Repair Confirmation at the end of this task.
 - 2) If the Harness Connector is damaged, replace the Wiring Harness, J5 (Ch A). These are the tasks:
 - Fan Wiring Harness Removal, AMM TASK 73-21-06-000-801-F00
 - Fan Wiring Harness Installation, AMM TASK 73-21-06-400-801-F00

a) Do the Repair Confirmation at the end of this task.
 - 3) If the Harness Connector was not correctly connected and no other problems were found, connect the Harness Connector to the HMU, M1823.

a) Do the Repair Confirmation at the end of this task.
- (2) Do this check of the wiring (WDM 73-25-21):
- (3) At the HMU, M1823, receptacle (Ch A), measure the resistance between these pins:

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HYDROMECHANICAL**UNIT****DP0501**

pin 16

pin 16

HYDROMECHANICAL**UNIT****DP0501**pin 34 50-72 Ω connector shell > 10 M Ω

- (a) If the resistance is not in the specified range, replace the HMU, M1823. These are the tasks:
- HMU Removal, AMM TASK 73-21-10-000-801-F00
 - HMU Installation, AMM TASK 73-21-10-400-801-F00
 - 1) Do the Repair Confirmation at the end of this task.
- (b) If the resistance is in the specified range, replace the Wiring Harness, J5 (Ch A). These are the tasks:
- Fan Wiring Harness Removal, AMM TASK 73-21-06-000-801-F00
 - Fan Wiring Harness Installation, AMM TASK 73-21-06-400-801-F00
 - 1) Do the Repair Confirmation at the end of this task.

H. Fault Isolation Procedure - HPTACC Valve Excitation Circuit

- (1) At the HPTCV, T515, examine the Electrical Connector, DP0903:
- (a) See if the Electrical Connector, DP0903 (Ch A), is correctly connected to the HPTCV, T515, and continue.
- (b) Disconnect the Electrical Connector, DP0903 (Ch A), from the HPTCV, T515.
- (c) At the HPTCV, T515, examine the receptacle and Harness Connector (AMM TASK 70-70-01-200-801-F00).
- 1) If the receptacle is damaged, replace the HPTCV, T515. These are the tasks:
- HPTACC Valve Removal, AMM TASK 75-21-01-000-801-F00
 - HPTACC Valve Installation, AMM TASK 75-21-01-400-801-F00
 - a) Do the Repair Confirmation at the end of this task.
- 2) If the Harness Connector is damaged, replace the Wire Harness, J9 (Ch A). These are the tasks:
- 3 O'clock Strut Harness Removal, AMM TASK 73-21-06-000-802-F00
 - 3 O'clock Strut Harness Installation, AMM TASK 73-21-06-400-802-F00
 - a) Do the Repair Confirmation at the end of this task.
- 3) If the connector was not correctly connected and no other problems were found, connect the Harness Connector to the HPTCV, T515.
- a) Do the Repair Confirmation at the end of this task.
- (2) Do this check of the wiring (WDM 73-31-11):
- (3) At the HPTCV, T515, receptacle, (Ch A), measure the resistance between these pins:

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HPTC VALVE POSITION TRANSDUCER DP0903

pin 2 pin 3 0-150 Ω
 pin 2 connector shell > 10 M Ω

HPTC VALVE POSITION TRANSDUCER DP0903

- (a) If the resistance is not in the specified range, replace the HPTCV, T515. These are the tasks:
 - HPTACC Valve Removal, AMM TASK 75-21-01-000-801-F00
 - HPTACC Valve Installation, AMM TASK 75-21-01-400-801-F00
 - 1) Do the Repair Confirmation at the end of this task.
- (b) If the resistance is in the specified range, replace the Wiring Harness, J9 (Ch A). These are the tasks:
 - 3 O'clock Strut Harness Removal, AMM TASK 73-21-06-000-802-F00
 - 3 O'clock Strut Harness Installation, AMM TASK 73-21-06-400-802-F00
 - 1) Do the Repair Confirmation at the end of this task.

I. Fault Isolation Procedure - T/R LVDT Excitation Circuit

- (1) At the R T/R Sleeve LVDT, T397, examine the Electrical Connector, D30074:

NOTE: There is an T/R LVDT on the Upper Locking Actuator on the Torque Box of the R T/R on each Engine.

- (a) See if the Electrical Connector, D30074 (Ch A), is correctly connected to the R T/R Sleeve LVDT, T397.
 - (b) Disconnect the Electrical Connector, D30074 (Ch A), from the R T/R Sleeve LVDT, T397.
 - (c) At the R T/R Sleeve LVDT, T397, examine the receptacle and Harness Connector (AMM TASK 70-70-01-200-801-F00).
 - 1) If the receptacle is damaged, then replace the R T/R Sleeve LVDT, T397. These are the tasks:
 - LVDT Removal, AMM TASK 78-36-02-000-801-F00
 - LVDT Installation, AMM TASK 78-36-02-400-801-F00
 - a) Do the Repair Confirmation at the end of this task.
 - 2) If the Harness Connector is damaged, repair the connector as follows (SWPM Ch 20).
 - a) Do the Repair Confirmation at the end of this task.
 - 3) If the Harness Connector was not correctly connected, and no other problems were found, connect the Harness Connector to the R T/R Sleeve LVDT, T397.
 - a) Do the Repair Confirmation at the end of this task.
- (2) Do this check of the wiring (WDM 78-35-11):
 - (3) At the R T/R Sleeve LVDT, T397 receptacle (Ch A), measure the resistance between these pins:

NOTE: If the Ambient Temperature is different than 70°F (21°C), use the indicated formula in the table below to calculate the acceptable Resistance Range at Ambient Temperature T (in °C).

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CH A

pin	pin	RESISTANCE
1	2	$R=450 \left(\frac{234.5 + T}{254.5} \right)$

**RIGHT T/R
SLEEVE LVDT
D30074**

pin 1 pin 2 383-517 Ω
 pin 1 airplane ground > 10 M Ω

**RIGHT T/R
SLEEVE LVDT
D30074**

- (b) If the resistance is not in the specified range, then replace the R T/R Sleeve LVDT, T397. These are the tasks:
- LVDT Removal, AMM TASK 78-36-02-000-801-F00
 - LVDT Installation, AMM TASK 78-36-02-400-801-F00
- 1) Do the Repair Confirmation at the end of this task.
- (c) If the resistance is in the specified range, examine and repair the wiring and connectors between the EEC, M1818, and the R T/R Sleeve LVDT, T397.
- 1) If you find a problem with the MW0303 (Ch A), Wiring Harness, replace it. These are the tasks:
- Nacelle Wiring Harnesses Removal, AMM TASK 71-51-03-000-801-F00
 - Nacelle Wiring Harnesses Installation, AMM TASK 71-51-03-400-801-F00
- a) Do the Repair Confirmation at the end of this task.
- 2) If you find a problem between the strut receptacle and R T/R Sleeve LVDT, T397, repair the wiring as follows (SWPM Ch 20).
- a) Do the Repair Confirmation at the end of this task.

J. Repair Confirmation

- (1) Do these steps:
- (a) Make sure that the Electrical Connector, DP0505 (Ch A), is correctly connected to the EEC, M1818.
 - (b) Make sure that the Electrical Connector, DP0909 (Ch A), is correctly connected at the EEC, M1818.
 - (c) Make sure that the Electrical Connector, DP0303 (Ch A), is correctly connected to the EEC, M1818.
 - (d) Make sure that the Electrical Connector, DP0501 (Ch A), is correctly connected at the HMU, M1823.
 - (e) Make sure that the Electrical Connector, DP0903 (Ch A), is correctly connected at the HPTCV, T515.
 - (f) Make sure that the Electrical Connector, DP30074 (Ch A), is correctly connected to the R T/R Sleeve LVDT, T397.
 - (g) Make sure that all connectors that were disconnected to do an electrical check between the R T/R Sleeve LVDT, T397 and the EEC, M1818, are correctly connected.

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- (h) 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

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 78-11491 or 78-11492 does not show, then you corrected the problem. Do this test to make sure that no other problems occurred during the Fault Isolation Procedure:
- 1) Do this task: Test 12 - Actuators Test, AMM TASK 71-00-00-700-807-F00.
- a) If there is a problem, then go to the Fault Isolation Procedure for the Maintenance Message that shows.



OBEY THE INSTRUCTIONS IN THE PROCEDURE TO CLOSE THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (3) Do this task: Close the Thrust Reverser (Selection), AMM TASK 78-31-00-010-804-F00.
- (4) If the problem still exists, continue the Fault Isolation Procedure at the subsequent step.
- (a) Do these steps:

Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-2

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

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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	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

————— **END OF TASK** —————

808. **FADEC2 (Ch B) Excitation Group 4: HPTCV, TBV and T/R R Sleeve LVDT Excitation Circuit Fault - Fault Isolation**

A. Description

- (1) This task is for these groups of Maintenance Messages:
 - (a) Engine 1: 75-20491, 75-20591, 78-21491, 78-21541, and 78-31541
 - (b) Engine 2: 75-20492, 75-20592, 78-21492, 78-21542, and 78-31542
 - (c) Engine 1: 75-20361, 75-20591, 78-21491, 78-21541, and 78-31541
 - (d) Engine 2: 75-20362, 75-20592, 78-21492, 78-21542, and 78-31542.
- (2) This problem is reported on the active channel of the EEC, M1818, when the EEC, M1818, is ON.
- (3) The EEC detects a problem in the LVDT Excitation Circuit (Ch B) for the HPTCV, T515, Transient Bleed Valve (TBV), T519, or R T/R Sleeve, LVDT, T397.

B. Possible Causes

- (1) HPTCV, T515
- (2) TBV, T519
- (3) R T/R Sleeve LVDT, T397
- (4) Wiring
- (5) EEC, M1818

C. Circuit Breakers

- (1) These are the 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

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CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
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) WDM 75-31-11
- (2) WDM 75-31-12
- (3) WDM 75-31-21
- (4) WDM 75-31-22
- (5) WDM 78-35-11
- (6) WDM 78-35-21
- (7) SSM 75-31-11
- (8) SSM 75-31-12
- (9) SSM 75-31-21
- (10) SSM 75-31-22
- (11) SSM 78-35-11
- (12) SSM 78-35-21

E. Initial Evaluation

- (1) Do these two steps to find out if the Maintenance Messages are still active:
 - (a) Do this task: EEC TEST, AMM TASK 73-21-00-700-804-F00.
NOTE: Message 78-2149Y is detected by this test.
 - (b) Do this task: Test 12 - Actuators Test, AMM TASK 71-00-00-700-807-F00.
NOTE: Messages 75-2049Y and 75-2059Y are detected by this test.
NOTE: Messages 75-2036Y and 75-2059Y are detected by this test.
- (2) If one of these groups of Maintenance Message numbers shows, then do the Fault Isolation Procedure for the applicable Engine:
 - (a) 75-20491, 75-20591 and 78-21491 (Engine 1)
 - (b) 75-20492, 75-20592 and 78-21492 (Engine 2)
 - (c) 75-20361, 75-20591 and 78-21491 (Engine 1)
 - (d) 75-20362, 75-20592 and 78-11492 (Engine 2)
 - (e) If the Maintenance Messages do not show on the FMCS CDU, then the Initial Evaluation has shown that the problem is not active at this time and you have an intermittent problem.

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- 1) If you cannot find the problem at this time, then the Fault Isolation Procedure cannot isolate the problem.
- 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.
 - b) Use the Wiring Diagram Manual references to identify intermediate electrical connections in the wiring 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) 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	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



DO THESE SPECIFIED TASKS IN THE CORRECT SEQUENCE BEFORE YOU OPEN THE THRUST REVERSER: RETRACT THE LEADING EDGE, DEACTIVATE THE LEADING EDGE, DEACTIVATE THE THRUST REVERSER (FOR GROUND MAINTENANCE), AND OPEN THE FAN COWL PANEL. IF YOU DO NOT OBEY THE ABOVE SEQUENCE, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (a) Do this task: Open the Thrust Reverser (Selection), AMM TASK 78-31-00-010-801-F00.
- (2) At the EEC, M1818, examine the Electrical Connector, DP1010 (Ch B):

NOTE: The Electrical Connector, DP1010 (Ch B), is on the J10 Wiring Harness.

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- (a) See if the Electrical Connector, DP1010 (Ch B), is correctly connected to the EEC, M1818.
- (b) Disconnect the Electrical Connector, DP1010 (Ch B), from the EEC, M1818.
- (c) At the EEC, M1818, examine the receptacle and Harness Connector (AMM TASK 70-70-01-200-801-F00).
 - 1) If the receptacle is damaged, 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 the Harness Connector, J5 (Ch B) is damaged, then replace it. These are the tasks:
 - 3 O'clock Strut Harness Removal, AMM TASK 73-21-06-000-802-F00
 - 3 O'clock Strut Harness Installation, AMM TASK 73-21-06-400-802-F00
 - a) Do the Repair Confirmation at the end of this task.
 - 3) If the Harness Connector, J5 (Ch B) was not correctly connected and no other problems were found, connect it to the EEC, M1818.
 - a) Do the Repair Confirmation at the end of this task.
- (3) Do this check of the wiring (WDM 75-31-11):
 - (a) At these pins on the Harness Connector, DP1010 measure the resistance through the HPTCV, T515.

HPTCPT DP1010

pin Y	.....	pin F	0 - 150 Ω
pin Y	.....	pin G	> 10 M Ω
pin Y	.....	pin T-	> 10 M Ω
pin Y	.....	pin Z	> 10 M Ω
pin Y	.....	connector shell	> 10 M Ω

HPTCPT DP1010

- (b) If the resistance is not in the specified range, then connect the Electrical Connector, DP1010 (Ch B), to the EEC, M1818 and do the Fault Isolation Procedure - HPTACC Valve Excitation Circuit.
- (c) If the resistance is in the specified range, then continue.
- (4) Do this check of the wiring (WDM 75-31-12):
 - (a) At these pins on the Harness Connector, DP1010 measure the resistance through the TBV, T519.

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TBV POSITION TRANSDUCER DP1010

pin E
pin E
pin E
pin E
pin E

TBV POSITION TRANSDUCER DP1010

pin X 67 - 85 Ω
pin D > 10 MΩ
pin R- > 10 MΩ
pin W > 10 MΩ
connector shell > 10 MΩ

- (b) If the resistance is not in the specified range, connect the Electrical Connector, DP1010 (Ch B), to the EEC, M1818 , and do the Fault Isolation Procedure - TBV Excitation Circuit.
- (c) If the resistance is in the specified range, connect the Electrical Connector, DP1010 (Ch B), to the EEC, M1818 , and continue.
- (5) At the EEC, M1818, examine the Electrical Connector DP0404 (Ch B):
NOTE: The Electrical Connector, DP0404 (Ch B), is on the MW0304 Wiring Harness.
- (a) See if the Electrical Connector, DP0404 (Ch B), is correctly connected to the EEC, M1818, and continue.
- (b) Disconnect the Electrical Connector, DP0404 (Ch B), from the EEC, M1818.
- (c) At the EEC, M1818, examine the receptacle and Harness Connector (AMM TASK 70-70-01-200-801-F00).
- 1) If the 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 the Harness Connector is damaged, replace it. 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 the Harness Connector was not correctly connected and no other problems were found, connect the Harness Connector to the EEC, M1818 .
 - a) Do the Repair Confirmation at the end of this task.
- (6) Do this check of the wiring (WDM 78-35-11):
- (a) At these pins on the Harness Connector, DP0404 measure the resistance through the R T/R LVDT:
- NOTE:** If the Ambient Temperature is different than 70°F (21°C), use the indicated formula in the table below to calculate the acceptable Resistance Range at Ambient Temperature T (in °C).

CH B

pin	pin	RESISTANCE
E-	F-	$R=450 ((234.5 + T)/254.5)$

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T/R POSITION R SLEEVE (CH B) DP0303	T/R POSITION R SLEEVE (CH B) DP0303	
pin E-	pin F-	383 - 517 Ω
pin E-	pin M-	> 10 M Ω
pin E-	pin P-	> 10 M Ω
pin E-	pin N-	> 10 M Ω
pin E-	connector shell	> 10 M Ω

- (b) If the resistance is not as specified, connect the Electrical Connector, DP0404 (Ch B), to the EEC, M1818, and do the Fault Isolation Procedure - T/R LVDT Excitation Circuit.
- (c) If the resistance is as specified, then continue.
- (7) If the resistance is in the specified range for the HPTCV, T515, the TBV, T519 and the R T/R LVDT, replace the EEC, M1818. These are the tasks:
 - EEC Removal, AMM TASK 73-21-60-000-801-F00
 - EEC Installation, AMM TASK 73-21-60-400-801-F00
- (a) Do the Repair Confirmation at the end of this task.

G. Fault Isolation Procedure - HPTACC Valve Excitation Circuit

- (1) At the HPTCV, T515, examine the Electrical Connector, DP1003 (Ch B):
 - (a) See if the Electrical Connector, DP1003 (Ch B), is correctly connected to the HPTCV, T515.
 - (b) Disconnect the Electrical Connector, DP1003 (Ch B), from the HPTCV, T515.
 - (c) At the HPTCV, T515, examine the receptacle and Harness Connector (AMM TASK 70-70-01-200-801-F00):
 - 1) If the receptacle is damaged, replace the HPTCV, T515. These are the tasks:
 - HPTACC Valve Removal, AMM TASK 75-21-01-000-801-F00
 - HPTACC Valve Installation, AMM TASK 75-21-01-400-801-F00
 - a) Do the Repair Confirmation at the end of this task.
 - 2) If the Harness Connector is damaged, replace the Wiring Harness, J10 (Ch B). These are the tasks:
 - 3 O'clock Strut Harness Removal, AMM TASK 73-21-06-000-802-F00
 - 3 O'clock Strut Harness Installation, AMM TASK 73-21-06-400-802-F00
 - a) Do the Repair Confirmation at the end of this task.
 - 3) If the Connector was not correctly connected and no other problems were found, connect the Harness Connector to the HPTCV, T515.
 - a) Do the Repair Confirmation at the end of this task.
- (2) Do this check of the wiring (WDM 75-31-21):
- (3) At the HPTCV, (Ch B), T515, measure the resistance between these pins:

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HPTC VALVE POSITION TRANSDUCER DP1003

pin 2 pin 3 0 - 150 Ω
 pin 2 connector shell > 10 M Ω

HPTC VALVE POSITION TRANSDUCER DP1003

- (b) If the resistance is not in the specified range, replace the HPTCV, T515. These are the tasks:
- HPTACC Valve Removal, AMM TASK 75-21-01-000-801-F00
 - HPTACC Valve Installation, AMM TASK 75-21-01-400-801-F00
 - 1) Do the Repair Confirmation at the end of this task.
- (c) If the resistance is in the specified range, replace the Wiring Harness, J10 (Ch B). These are the tasks:
- 3 O'clock Strut Harness Removal, AMM TASK 73-21-06-000-802-F00
 - 3 O'clock Strut Harness Installation, AMM TASK 73-21-06-400-802-F00
 - 1) Do the Repair Confirmation at the end of this task.

H. Fault Isolation Procedure - TBV Excitation Circuit

- (1) At the TBV, T519, examine the Electrical Connector, DP1007 (Ch B):

NOTE: The Electrical Connector, DP1007 (Ch B), is on the J10 Wiring Harness.

- (a) See if the Electrical Connector, DP1007 (Ch B), is correctly connected to the TBV, T519.
- (b) Disconnect the Electrical Connector, DP1007 (Ch B), from the TBV, T519.
- (c) At the TBV, T519 examine the receptacle and Harness Connector (AMM TASK 70-70-01-200-801-F00).
- 1) If the receptacle is damaged, replace the TBV, T519. These are the tasks:
 - Transient Bleed Valve Removal, AMM TASK 75-23-01-000-801-F00
 - Transient Bleed Valve Installation, AMM TASK 75-23-01-400-801-F00
 - a) Do the Repair Confirmation at the end of this task.
 - 2) If the Harness Connector is damaged, replace the Wiring Harness, J10 (Ch B). These are the tasks:
 - 3 O'clock Strut Harness Removal, AMM TASK 73-21-06-000-802-F00
 - 3 O'clock Strut Harness Installation, AMM TASK 73-21-06-400-802-F00
 - 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, connect the Harness Connector to the T/R LVDT.
 - a) Do the Repair Confirmation at the end of this task.
- (2) Do this check of the wiring (WDM 75-31-22):
- (3) At the TBV, T519, receptacle, (Ch B), measure the resistance between these pins:

NOTE: The Electrical Connector, DP1007 (Ch B), is on the J10 Wiring Harness.

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**TBV (CH B)
DP1007**

 pin 2
 pin 2

**TBV (CH B)
DP1007**

 pin 3 67 - 85 Ω
 connector shell > 10 M Ω

- (b) If the resistance is not in the specified range, replace the TBV, T519. These are the tasks:
- Transient Bleed Valve Removal, AMM TASK 75-23-01-000-801-F00
 - Transient Bleed Valve Installation, AMM TASK 75-23-01-400-801-F00
 - 1) Do the Repair Confirmation at the end of this task.
- (c) If the resistance is in the specified range, replace the Wiring Harness, J10 (Ch B). These are the tasks:
- 3 O'clock Strut Harness Removal, AMM TASK 73-21-06-000-802-F00
 - 3 O'clock Strut Harness Installation, AMM TASK 73-21-06-400-802-F00
 - 1) Do the Repair Confirmation at the end of this task.

I. Fault Isolation Procedure - T/R Right Sleeve LVDT Excitation Circuit

- (1) At the R T/R Sleeve LVDT, T397, examine the Electrical Connector, D30078 (Ch B):

NOTE: There is an T/R LVDT on the Upper Locking Actuator on the Torque Box of the R T/R on each Engine.

- (a) See if the Electrical Connector, D30078 (Ch B), is correctly connected to the R T/R, LVDT, T397, and continue.
- (b) Disconnect the Electrical Connector, D30078 (Ch B), from the R T/R, LVDT, T397.
- (c) At the R T/R, LVDT, T397, examine the receptacle and Harness Connector (AMM TASK 70-70-01-200-801-F00).
- 1) If the receptacle is damaged, replace the R T/R, LVDT, T397. These are the tasks:
 - LVDT Removal, AMM TASK 78-36-02-000-801-F00
 - LVDT Installation, AMM TASK 78-36-02-400-801-F00
 - a) Do the Repair Confirmation at the end of this task.
 - 2) If the Harness Connector is damaged, then do the tasks to repair or replace the connector (SWPM Ch 20).
 - a) Do the Repair Confirmation at the end of this task.
 - 3) If the Harness Connector was not correctly connected, and no other problems were found, connect the Harness Connector to the R T/R, LVDT, T397.
 - a) Do the Repair Confirmation at the end of this task.
- (2) Do this check of the wiring (WDM 78-35-11):
- (3) At the R T/R, LVDT, T397, receptacle (Ch B), measure the resistance between these pins:
- NOTE: If the Ambient Temperature is different than 70°F (21°C), use the indicated formula in the table below to calculate the acceptable Resistance Range at Ambient Temperature T (in °C).

pin	pin	RESISTANCE
1	2	$R=450 \left(\frac{234.5 + T}{254.5} \right)$

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**RIGHT T/R
SLEEVE LVDT
D30074**

pin 1 pin 2 383 - 517 Ω
 pin 1 airplane ground > 10 M Ω

**RIGHT T/R
SLEEVE LVDT
D30074**

- (b) If the resistance is not in the specified range, replace the R T/R, 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.
- (c) If the resistance is in the specified range, examine and repair the wires and connectors between the EEC, M1818 and the R T/R, LVDT T397.
- 1) If you find a problem with the Wiring Harness, MW0304 (Ch B), replace it. These are the tasks:
- Nacelle Wiring Harnesses Removal, AMM TASK 71-51-03-000-801-F00
 - Nacelle Wiring Harnesses Installation, AMM TASK 71-51-03-400-801-F00
 - a) Do the Repair Confirmation at the end of this task.
- 2) If you find a problem between the strut receptacle and R T/R, LVDT, T397, repair or replace the wiring (SWPM Ch 20).
- a) Do the Repair Confirmation at the end of this task.

J. Repair Confirmation

- (1) Do these steps:
- (a) Make sure that the Electrical Connector, DP1010 (Ch B), is correctly connected at the EEC, M1818.
 - (b) Make sure that the Electrical Connector, DP0404 (Ch B), is correctly connected to the EEC, M1818.
 - (c) Make sure that the Electrical Connector, DP1003 (Ch B), is correctly connected at the HPTCV, T515.
 - (d) Make sure that the Electrical Connector, DP1007 (Ch B), is correctly connected at the TBV, T519.
 - (e) Make sure that the Electrical Connector, D30078 (Ch B), is correctly connected to the T/R, LVDT, T397.
 - (f) Make sure that all connectors that were disconnected to do an electrical check between the R T/R Sleeve LVDT, T397 and the EEC, M1818 are correctly connected.
 - (g) 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

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<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	5	C00276	ENGINE 1 THRUST REVERSER CONT
B	6	C01412	ENGINE 1 THRUST REVERSER INTLK
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 78-21491 or 78-21492 does not show, then you corrected the problem. Do this test to make sure that no other problems occurred during the Fault Isolation Procedure:
 - 1) Do this task: Test 12 - Actuators Test, AMM TASK 71-00-00-700-807-F00.
 - a) If there is a problem, then go to the Fault Isolation Procedure for the Maintenance Message that shows.
- (3) Do this task: Close the Thrust Reverser (Selection), AMM TASK 78-31-00-010-804-F00.
- (4) If the problem still exists, continue the Fault Isolation Procedure at the subsequent step.
 - (a) Do these steps:

Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-2

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

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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
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

— **END OF TASK** —

811. **FADEC2/FADEC3 (Ch A) Excitation Group 4: LPTC and TBV LVDT Excitation Circuit Fault - Fault Isolation**

A. Description

- (1) This task is for these groups of maintenance messages:
 - (a) Engine 1: 75-10541 and 75-10591
 - (b) Engine 2: 75-10542 and 75-10592.
- (2) This fault is reported on the active channel of the EEC when the EEC is powered.
- (3) The EEC detects a fault in the linear variable differential transducer (LVDT) excitation circuit (Ch A) for the low pressure turbine active clearance control valve (LPTACC), or the transient bleed valve (TBV).

B. Possible Causes

- (1) LPTACC valve, T516
- (2) TBV, T519
- (3) J9 wire harness
- (4) EEC, M1818.

C. Circuit Breakers

- (1) For Engine 1,
 - (a) 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

- (2) For Engine 2,
 - (a) 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>
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

D. Related Data

- (1) Component Location (75-34 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (75-34 TASK SUPPORT Figure 302)
- (3) (SSM 75-31-11)

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- (4) (SSM 75-31-12)
- (5) (SSM 75-31-21)
- (6) (SSM 75-31-22)
- (7) (WDM 73-22-11)
- (8) (WDM 75-31-11)
- (9) (WDM 75-31-12)
- (10) (WDM 75-31-21)
- (11) (WDM 75-31-22)

E. Initial Evaluation

- (1) Do this task: Test 12 - Actuators Test, AMM TASK 71-00-00-700-807-F00.
- (2) If one of these groups of maintenance message numbers shows, then do the Fault Isolation Procedure below for the applicable engine:
 - (a) 75-10541, and 75-10591 (Engine 1)
 - (b) 75-10542, and 75-10592 (Engine 2).
- (c) If the maintenance messages do 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 these steps to prepare for the procedure:
 - (a) For Engine 1,
 - 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) For Engine 2,

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- 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>
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



DO THESE SPECIFIED TASKS IN THE CORRECT SEQUENCE BEFORE YOU OPEN THE THRUST REVERSERS: RETRACT THE LEADING EDGE, DO THE DEACTIVATION PROCEDURES FOR THE LEADING EDGE AND THE THRUST REVERSERS (FOR GROUND MAINTENANCE), AND OPEN THE FAN COWL PANELS. IF YOU DO NOT OBEY THE ABOVE SEQUENCE, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (c) Do this task: Open the Thrust Reverser (Selection), AMM TASK 78-31-00-010-801-F00.
- (2) Examine the electrical connector, DP0909 (Ch A), at the EEC:
- NOTE: The electrical connector, DP0909 (Ch A), is on the J9 wire harness.
- (a) See if the electrical connector, DP0909 (Ch A), is correctly connected to the EEC, and continue.
- (b) Disconnect the electrical connector, DP0909 (Ch A), 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 the harness connector is damaged, then replace the wire harness, J9 (Ch A). These are the tasks:
- 3 O'clock Strut Harness Removal, AMM TASK 73-21-06-000-802-F00
 - 3 O'clock Strut Harness Installation, AMM TASK 73-21-06-400-802-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.
- 3) If the harness connector was not correctly connected and no other problems were found, then re-connect the harness connector to the EEC 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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- (3) Do these steps to find a possible short in the excitation circuit for the LPTACC valve LVDT:
- (a) Measure the resistance at these pins on the wire harness connector, DP0909 through the LPTACC valve LVDT:

Table 213

CONNECTOR DP0909	PINS	RESISTANCE
	PINS Y TO F	85 TO 105 OHMS
	PIN Y TO ALL OTHER PINS	GREATER THAN 20 MEGOHMS
	PIN Y TO THE CONNECTOR SHELL	GREATER THAN 20 MEGOHMS

- (b) If the resistance is not in the specified range, then re-connect the electrical connector, DP0909 (Ch A), to the EEC and do the Fault Isolation Procedure - LPTACC Valve Excitation Circuit below.
- (c) If the resistance is in the specified range, then continue.
- (4) Do these steps to find a possible short in the excitation circuit for the TBV LVDT:
- (a) Measure the resistance at these pins on the wire harness connector, DP0909 through the TBV LVDT:

Table 214

CONNECTOR DP0909	PINS	RESISTANCE
	PINS E TO X	67 TO 85 OHMS
	PIN E TO ALL OTHER PINS	GREATER THAN 10 MEGOHMS
	PIN E TO THE CONNECTOR SHELL	GREATER THAN 10 MEGOHMS

- (b) If the resistance is not in the specified range, then re-connect the electrical connector, DP0909 (Ch A), to the EEC and do the Fault Isolation Procedure - TBV Excitation Circuit below.
- (c) If the resistance is in the specified range, then re-connect the electrical connector, DP0909 (Ch A), to the EEC and continue.
- (5) If the resistance is in the specified range for the LPTACC and the TBV LVDT, 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.

G. Fault Isolation Procedure - LPTACC Valve Excitation Circuit

- (1) Examine the electrical connector, DP0904 (Ch A), at the LPTACC valve:
- (a) See if the electrical connector, DP0904 (Ch A), is correctly connected to the LPTACC valve, and continue.
- (b) Disconnect the electrical connector, DP0904 (Ch A), from the LPTACC valve.
- (c) Visually examine the LPTACC valve receptacle and wire harness connector (AMM TASK 70-70-01-200-801-F00).

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- 1) If the LPTACC valve receptacle is damaged, then replace the LPTACC valve, T516. These are the tasks:
 - LPTACC Valve Removal, AMM TASK 75-22-04-000-802-F00
 - LPTACC Valve Installation, AMM TASK 75-22-04-400-802-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 harness connector is damaged, then replace the wire harness, J9 (Ch A). These are the tasks:
 - 3 O'clock Strut Harness Removal, AMM TASK 73-21-06-000-802-F00
 - 3 O'clock Strut Harness Installation, AMM TASK 73-21-06-400-802-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.
- 3) If the connector was not correctly connected and no other problem was found, then re-connect the harness connector to the LPTACC valve LVDT 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.
- (2) Measure the resistance between these pins at the LPTACC valve receptacle, CH A:

Table 215

RECEPTACLE CH A	PINS	RESISTANCE
	PINS 2 TO 3	85 TO 105 OHMS
	PIN 2 TO THE CONNECTOR SHELL	GREATER THAN 20 MEGOHMS

- (a) If the resistance is not in the specified range, then replace the LPTACC Valve, T516. These are the tasks:
 - LPTACC Valve Removal, AMM TASK 75-22-04-000-802-F00
 - LPTACC Valve Installation, AMM TASK 75-22-04-400-802-F00
 - 1) 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.
- (b) If the resistance is in the specified range, then replace the wire harness, J9 (Ch A). These are the tasks:
 - 3 O'clock Strut Harness Removal, AMM TASK 73-21-06-000-802-F00
 - 3 O'clock Strut Harness Installation, AMM TASK 73-21-06-400-802-F00
 - 1) Do the Repair Confirmation at the end of this task.

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H. Fault Isolation Procedure - TBV Excitation Circuit

- (1) Examine the electrical connector, DP0907 (Ch A), at the TBV:

NOTE: The electrical connector, DP0907 (Ch A), is on the J9 wire harness.

- (a) See if the electrical connector, DP0907 (Ch A), is correctly connected to the TBV, and continue.
- (b) Disconnect the electrical connector, DP0907 (Ch A), from the TBV.
- (c) Visually examine the TBV receptacle and wire harness connector (AMM TASK 70-70-01-200-801-F00).
 - 1) If the TBV receptacle is damaged, then replace the TBV, T519. These are the tasks:
 - Transient Bleed Valve Removal, AMM TASK 75-23-01-000-801-F00
 - Transient Bleed Valve Installation, AMM TASK 75-23-01-400-801-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 harness connector is damaged, then replace the wire harness, J9 (Ch A). These are the tasks:
 - Fan Wiring Harness Removal, AMM TASK 73-21-06-000-801-F00
 - Fan Wiring Harness Installation, AMM TASK 73-21-06-400-801-F00
 - a) Do the Repair Confirmation at the end of this task.
 - b) If the Repair Confirmation is not satisfactory, then open the circuit breakers above and continue.
 - 3) If the connector was not correctly connected and no other problem was found, then re-connect the harness connector to the TBV LVDT 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.

- (2) Measure the resistance between these pins at the TBV receptacle, CH A:

NOTE: The electrical connector, DP0907 (Ch A), is on the J9 wire harness.

Table 216

RECEPTACLE CH A	PINS	RESISTANCE
	PINS 2 TO 3	67 TO 85 OHMS
	PIN 2 TO THE CONNECTOR SHELL	GREATER THAN 10 MEGOHMS

- (a) If the resistance is not in the specified range, then replace the TBV, T519. These are the tasks:
 - Transient Bleed Valve Removal, AMM TASK 75-23-01-000-801-F00
 - Transient Bleed Valve Installation, AMM TASK 75-23-01-400-801-F00
 - 1) Do the Repair Confirmation at the end of this task.

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- a) If the Repair Confirmation is not satisfactory, then open the circuit breakers above and continue.
- (b) If the resistance is in the specified range, then replace the wire harness, J9 (Ch A). These are the tasks:
 - 3 O'clock Strut Harness Removal, AMM TASK 73-21-06-000-802-F00
 - 3 O'clock Strut Harness Installation, AMM TASK 73-21-06-400-802-F00
- 1) Do the Repair Confirmation at the end of this task.

I. Repair Confirmation

- (1) Do these steps to prepare for the procedure:
 - (a) Make sure that the electrical connector, DP0909 (Ch A), is correctly connected at the EEC.
 - (b) Make sure that the electrical connector, DP0904 (Ch A), is correctly connected at the LPTACC Valve.
 - (c) Make sure that the electrical connector, DP0907 (Ch A), is correctly connected at the TBV.
 - (d) For Engine 1,
 - 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

- (e) For Engine 2,
 - 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
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

- (2) Do this task: Test 12 - Actuators Test, AMM TASK 71-00-00-700-807-F00.
 - (a) If the maintenance message does not show, then you corrected the fault.



OBEY THE INSTRUCTIONS IN THE PROCEDURE TO CLOSE THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (3) Do this task: Close the Thrust Reverser (Selection), AMM TASK 78-31-00-010-804-F00.

————— **END OF TASK** —————

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812. FADEC2 (Ch B) Excitation Group 3: VBV and LPTC LVDT Excitation Circuit Fault - Fault Isolation

A. Description

- (1) This task is for these groups of maintenance messages:
 - (a) Engine 1: 75-20441 and 75-20541
 - (b) Engine 2: 75-20442 and 75-20542.
- (2) This fault is reported on the active channel of the EEC when the EEC is powered.
- (3) The EEC detects a fault in the Linear Variable Differential Transducer (LVDT) excitation circuit (Ch B) for the Left Variable Bleed Valve (VBV), or the Low Pressure Turbine Active Clearance Control (LPTACC) Valve.

B. Possible Causes

- (1) Left VBV Actuator, T542
- (2) LPTACC Valve, T516
- (3) J10 wire harness
- (4) EEC, M1818

C. Circuit Breakers

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

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	1	C00458	ENGINE 1 IGNITION RIGHT
A	3	C00153	ENGINE 1 IGNITION LEFT
A	4	C01390	ENGINE 1 ALTN PWR CHAN B
A	5	C01314	ENGINE 1 ALTN PWR CHAN A

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
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

D. Related Data

- (1) Component Location (75-34 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (75-34 TASK SUPPORT Figure 302)
- (3) SSM 75-31-11
- (4) SSM 75-31-12
- (5) SSM 75-31-21
- (6) SSM 75-31-22
- (7) WDM 73-22-11
- (8) WDM 75-31-11
- (9) WDM 75-31-12
- (10) WDM 75-31-21
- (11) WDM 75-31-22

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E. Initial Evaluation

- (1) Do this task: Test 12 - Actuators Test, AMM TASK 71-00-00-700-807-F00.
- (2) If one of these groups of maintenance message numbers shows, then do the Fault Isolation Procedure below for the applicable engine:
 - (a) 75-20441, and 75-20541 (Engine 1)
 - (b) 75-20442, and 75-20542 (Engine 2).
 - (c) If the maintenance messages do not show on the FMCS Communications Management Unit (CMU), 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 Wiring Diagram Manual (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 procedure:
 - (a) For Engine 1,
 - 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) For Engine 2,
 - 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>
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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**WARNING**

DO THESE SPECIFIED TASKS IN THE CORRECT SEQUENCE BEFORE YOU OPEN THE THRUST REVERSERS: RETRACT THE LEADING EDGE, DO THE DEACTIVATION PROCEDURES FOR THE LEADING EDGE AND THE THRUST REVERSER (FOR GROUND MAINTENANCE), AND OPEN THE FAN COWL PANELS. IF YOU DO NOT OBEY THE ABOVE SEQUENCE, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (c) Do this task: Open the Thrust Reverser (Selection), AMM TASK 78-31-00-010-801-F00.
- (2) Examine the electrical connector, DP1010 (Ch B), at the EEC:
- NOTE:** The electrical connector, DP1010 (Ch B), is on the J10 wire harness.
- (a) Make sure that the electrical connector, DP1010 (Ch B), is correctly connected to the EEC.
- (b) Disconnect the electrical connector, DP1010 (Ch B), from the EEC.
- (c) Visually examine the EEC receptacle and wire harness connector (AMM TASK 70-70-01-200-801-F00).
- 1) If the EEC receptacle is damaged, then replace the EEC, M1818. These are the tasks:
 - EEC Removal, AMM TASK 73-21-60-000-801-F00
 - EEC Installation, AMM TASK 73-21-60-400-801-F00
 - a) Do the Repair Confirmation at the end of this task.
 - 2) If the harness connector is damaged, then replace the wire harness, J10 (Ch B). These are the tasks:
 - 3 O'clock Strut Harness Removal, AMM TASK 73-21-06-000-802-F00
 - 3 O'clock Strut Harness Installation, AMM TASK 73-21-06-400-802-F00
 - a) Do the Repair Confirmation at the end of this task.
 - 3) If the harness connector was not correctly connected and no other problems were found, then re-connect the harness connector to the EEC and do the Repair Confirmation at the end of this task.
- (d) If you did not find a problem, then continue.
- (3) Do these steps to find a possible short in the excitation circuit for the Left VBV Actuator LVDT (referred to as the VBV LVDT):
- (a) Measure the resistance at these pins on the wire harness connector, DP1010:

Table 217

CONNECTOR DP1010	PINS	RESISTANCE
	PINS S TO n	250 TO 320 OHMS
	PIN S TO ALL OTHER PINS	GREATER THAN 20 MEGOHMS
	PIN S TO THE CONNECTOR SHELL	GREATER THAN 20 MEGOHMS

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- 1) If the resistance is not in the specified range, then re-connect the electrical connector, DP1010 (Ch B), to the EEC and do the Fault Isolation Procedure - Left VBV Excitation Circuit below.
- 2) If the resistance is in the specified range, then re-connect the electrical connector, DP1010 (Ch B), to the EEC and continue.
- (4) Do these steps to find a possible short in the excitation circuit for the LPTACC Valve LVDT:
 - (a) Measure the resistance at these pins on the wire harness connector, DP1010:

Table 218

CONNECTOR DP1010	PINS	RESISTANCE
	PINS A TO U	85 TO 105 OHMS
	PIN A TO ALL OTHER PINS	GREATER THAN 20 MEGOHMS
	PIN A TO THE CONNECTOR SHELL	GREATER THAN 20 MEGOHMS

- 1) If the resistance is not in the specified range, then re-connect the electrical connector, DP1010 (Ch B), to the EEC and do the Fault Isolation Procedure - LPTACC Valve Excitation Circuit below.
- 2) If the resistance is in the specified range, then continue.
- (5) If the resistance is in the specified range for the VBV and the LPTACC Valve LVDT, 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.

G. Fault Isolation Procedure - Left VBV Actuator Excitation Circuit

- (1) Examine the electrical connector, DP1008 (Ch B), at the VBV:

NOTE: The electrical connector, DP1008 (Ch B), is on the J10 wire harness.

 - (a) Make sure that the electrical connector, DP1008 (Ch B), is correctly connected to the VBV.
 - (b) Disconnect the electrical connector, DP1008 (Ch B), from the VBV.
 - (c) Visually examine the VBV receptacle and wire harness connector (AMM TASK 70-70-01-200-801-F00).
 - 1) If the VBV receptacle is damaged, then replace the VBV, T542. These are the tasks:
 - Left VBV Actuator Removal, AMM TASK 75-32-02-000-801-F00
 - Left VBV Actuator Installation, AMM TASK 75-32-02-400-801-F00
 - a) Do the Repair Confirmation at the end of this task.
 - 2) If the harness connector is damaged, then replace the wire harness, J10 (Ch B). These are the tasks:
 - Fan Wiring Harness Removal, AMM TASK 73-21-06-000-801-F00
 - Fan Wiring Harness Installation, AMM TASK 73-21-06-400-801-F00
 - a) Do the Repair Confirmation at the end of this task.

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- 3) If the connector was not correctly connected and no other problem was found, then re-connect the harness connector to the VBV LVDT and do the Repair Confirmation at the end of this task.
- (d) If you did not find a problem, then continue.
- (2) Measure the resistance between these pins at the VBV receptacle (Ch B):
NOTE: The electrical connector, DP1008 (Ch B), is on the J10 wire harness.

Table 219

RECEPTACLE (CH B)	PINS	RESISTANCE
	PINS 1 TO 2	250 TO 320 OHMS
	PIN 2 TO THE CONNECTOR SHELL	GREATER THAN 20 MEGOHMS

- (a) If the resistance is not in the specified range, then replace the VBV, T542. These are the tasks:
 - Left VBV Actuator Removal, AMM TASK 75-32-02-000-801-F00
 - Left VBV Actuator Installation, AMM TASK 75-32-02-400-801-F00
 - 1) Do the Repair Confirmation at the end of this task.
- (b) If the resistance is in the specified range, then replace the wire harness, J10 (Ch B). These are the tasks:
 - 3 O'clock Strut Harness Removal, AMM TASK 73-21-06-000-802-F00
 - 3 O'clock Strut Harness Installation, AMM TASK 73-21-06-400-802-F00
 - 1) Do the Repair Confirmation at the end of this task.

H. Fault Isolation Procedure - LPTACC Valve Excitation Circuit

- (1) Examine the electrical connector, DP1004 (Ch B), at the LPTACC Valve:
 - (a) Make sure that the electrical connector, DP1004 (Ch B), is correctly connected to the LPTACC Valve.
 - (b) Disconnect the electrical connector, DP1004 (Ch B), from the LPTACC Valve.
 - (c) Visually examine the LPTACC Valve receptacle and wire harness connector (AMM TASK 70-70-01-200-801-F00).
 - 1) If the LPTACC Valve receptacle is damaged, then replace the LPTACC Valve, T516. These are the tasks:
 - LPTACC Valve Removal, AMM TASK 75-22-04-000-802-F00
 - LPTACC Valve Installation, AMM TASK 75-22-04-400-802-F00
 - a) Do the Repair Confirmation at the end of this task.
 - 2) If the harness connector is damaged, then replace the wire harness, J10 (Ch B). These are the tasks:
 - 3 O'clock Strut Harness Removal, AMM TASK 73-21-06-000-802-F00
 - 3 O'clock Strut Harness Installation, AMM TASK 73-21-06-400-802-F00
 - 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 harness connector to the LPTACC Valve LVDT and do the Repair Confirmation at the end of this task.

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- (d) If you did not find a problem, then continue.
- (2) Measure the resistance between these pins at the LPTACC Valve receptacle (Ch B):

Table 220

RECEPTACLE (CH B)	PINS	RESISTANCE
	PINS 2 TO 3	85 TO 105 OHMS
	PIN 2 TO THE CONNECTOR SHELL	GREATER THAN 20 MEGOHMS

- (a) If the resistance is not in the specified range, then replace the LPTACC Valve, T516.
These are the tasks:
- LPTACC Valve Removal, AMM TASK 75-22-04-000-802-F00
 - LPTACC Valve Installation, AMM TASK 75-22-04-400-802-F00
- 1) Do the Repair Confirmation at the end of this task.
- (b) If the resistance is in the specified range, then replace the wire harness, J10 (Ch B).
These are the tasks:
- 3 O'clock Strut Harness Removal, AMM TASK 73-21-06-000-802-F00
 - 3 O'clock Strut Harness Installation, AMM TASK 73-21-06-400-802-F00
- 1) Do the Repair Confirmation at the end of this task.

I. Repair Confirmation

- (1) Do these steps to prepare for the procedure:
- (a) Make sure that the electrical connector, DP1010 (Ch B), is correctly connected at the EEC.
- (b) Make sure that the electrical connector, DP1008 (Ch B), is correctly connected at the VBV.
- (c) Make sure that the electrical connector, DP1004 (Ch B), is correctly connected at the LPTACC Valve.
- (d) For Engine 1,
- 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

- (e) For Engine 2,
- 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
D	7	C01391	ENGINE 2 ALTN PWR CHAN B

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F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

- (2) Do this task: Test 12 - Actuators Test, AMM TASK 71-00-00-700-807-F00.
- (a) If the maintenance message does not show, then you corrected the problem.



OBEY THE INSTRUCTIONS IN THE PROCEDURE TO CLOSE THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

- 1) Do this task: Close the Thrust Reverser (Selection), AMM TASK 78-31-00-010-804-F00.
- (b) If the maintenance message shows, then open the circuit breakers above and continue the applicable Fault Isolation Procedure at the subsequent step.

— END OF TASK —

813. FADEC2/FADEC3 (Ch A) Excitation Group 1: Thrust Lever Angle Resolver and PEO (CH A) LVDT Excitation Circuit Fault - Fault Isolation

A. Description

- (1) This task is for these groups of maintenance messages:
- (a) Engine 1: 73-11451 and 79-11091
- (b) Engine 2: 73-11452 and 79-11092.
- (2) The EEC detects a possible short in the thrust lever angle resolver (CH A) or the linear variable differential transducer (LVDT) excitation circuit for the engine oil pressure (PEO) (Ch A).

B. Possible Causes

- (1) Thrust Lever Angle Resolver, M1819 (Eng 1) or M1822 (Eng 2)
- (2) Adjustment of the applicable thrust lever angle resolver
- (3) Oil pressure sensor, T429
- (4) The wires and connectors between the resolver and the EEC
- (5) J7 (Ch A) wire harness
- (6) EEC, M1818.

C. Circuit Breakers

- (1) For Engine 1,
- (a) 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

- (2) For Engine 2,

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- (a) 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>
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

D. Related Data

- (1) Component Location (75-34 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (75-34 TASK SUPPORT Figure 302)
- (3) (SSM 73-21-21)
- (4) (SSM 79-32-11)
- (5) (WDM 73-21-21)
- (6) (WDM 79-32-11)

E. Initial Evaluation

- (1) Do these two steps to find out if the messages are still active:
 - (a) Do this task: T/R LEVER INTLK (Interlock) TEST, AMM TASK 73-21-00-700-805-F00.
NOTE: Message 73-1145Y is detected by this test.
 - (b) Do this task: EEC TEST, AMM TASK 73-21-00-700-804-F00.
NOTE: Messages 79-1109Y are detected by this test.
- (2) If one of these groups of maintenance message numbers shows, then do the Fault Isolation Procedure below for the applicable engine:
 - (a) 73-11451, and 79-11091 (Engine 1)
 - (b) 73-11452, and 79-11092 (Engine 2).
 - (c) If the maintenance messages do 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) Prepare for the procedure:
 - (a) For engine 1,

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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) For Engine 2,

- 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>
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) Examine the electrical connector on the wire harness, MW0303 (J3, Ch A) at the EEC:

NOTE: The electrical connector, MW0303 (Ch A), is on the J3 wire harness.

- (a) See if the electrical connector, DP0303 (J3, Ch A) is correctly connected to the EEC, and then continue.
- (b) Disconnect the electrical connector, DP0303 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 the harness connector is damaged, then replace the wire harness, MW0303 (J3, Ch A). 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 harness connector to the EEC 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) Do these steps to find a possible short in the excitation circuit for the thrust lever angle resolver:
- (a) Measure the resistance at these pins on the wire harness connector, DP0303 through the thrust lever angle resolver:

Table 221

CONNECTOR DP0303	PINS	RESISTANCE
	PINS G TO F	125 TO 175 OHMS
	PINS G TO d	GREATER THAN 10 MEGOHMS
	PINS G TO J	GREATER THAN 10 MEGOHMS
	PINS G TO b	GREATER THAN 10 MEGOHMS
	PINS G TO H	GREATER THAN 10 MEGOHMS
	PIN G TO THE CONNECTOR SHELL	GREATER THAN 10 MEGOHMS

- (b) If the resistance is not in the specified range, then re-connect the electrical connector, DP0303 (Ch A), to the EEC and do the Fault Isolation Procedure - Thrust Lever Angle Resolver Excitation Circuit below.
- (c) If the resistance is in the specified range, then re-connect the electrical connector, DP0303 (Ch A), to the EEC and continue.
- (4) Examine the electrical connectors, DP0707 (Ch A), at the EEC:
- NOTE:** The electrical connector, DP0707 (Ch A), is on the J7 wire harness.
- (a) See if the electrical connector, DP0707 (Ch A), is correctly connected to the EEC, and then continue.
- (b) Disconnect the electrical connector, DP0707 (Ch A), 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 the harness connector is damaged, then replace the wire harness, J7 (Ch A). These are the tasks:
 - Fan Wiring Harness Removal, AMM TASK 73-21-06-000-801-F00
 - Fan Wiring Harness Installation, AMM TASK 73-21-06-400-801-F00
 - a) Do the Repair Confirmation at the end of this task.
 - b) If the Repair Confirmation is not satisfactory, then open the circuit breakers above and continue.

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- 3) If the connector was not correctly connected and no other problem was found, then re-connect the harness connector to the EEC 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) Do these steps to find a possible short in the excitation circuit for the PEO Sensor LVDT:
 - (a) Measure the resistance at these pins on the wire harness connector, DP0707:

Table 222

CONNECTOR DP0707	PINS	RESISTANCE
	PINS a TO A	14 TO 24 OHMS
	PINS a TO b	GREATER THAN 20 MEGOHMS
	PINS a TO B	GREATER THAN 20 MEGOHMS
	PINS a TO c	GREATER THAN 20 MEGOHMS
	PIN a TO THE CONNECTOR SHELL	GREATER THAN 20 MEGOHMS

- (b) If the resistance is not in the specified range, then re-connect the electrical connector, DP0707 (Ch A), to the EEC and do the Fault Isolation Procedure - PEO Sensor Excitation Circuit below.
- (c) If the resistance is in the specified range, then re-connect the electrical connector, DP0707 (Ch A), to the EEC and continue.
- (6) If the resistance is in the specified range for the Thrust Lever Angle Resolver and the PEO Sensor LVDT, 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.

G. Fault Isolation Procedure - Thrust Lever Angle Resolver Excitation Circuit

- (1) Examine the electrical connector on the wire harness, MW0303 (J3, Ch A) at the strut:
 - (a) See if the electrical connector, D30224 (Eng 1, Ch A) or D30424 (Eng 2, Ch A) is correctly connected to the strut, and then continue.
 - (b) Disconnect the electrical connector, D30224 (Ch A) or D30424 (Ch A) from the strut.
 - (c) Visually examine the strut receptacle and wire harness connector (AMM TASK 70-70-01-200-801-F00).
 - 1) If the strut receptacle is damaged, then repair or replace the receptacle (AMM TASK 70-70-01-200-801-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.

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- 2) If the harness connector is damaged, then replace the wire harness, MW0303 (J3, Ch A). 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 harness connector to the thrust lever angle resolver 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.
- (2) Measure the resistance between these pins at the applicable strut receptacle, D30224 (Eng 1, Ch A) or D30424 (Eng 2, Ch A) through the thrust lever angle resolver:

Table 223

RECEPTACLES	PINS	RESISTANCE
D30224 & D30424	PINS 6 TO 7	125 TO 175 OHMS
	PINS 6 TO 18	GREATER THAN 10 MEGOHMS
	PINS 6 TO 34	GREATER THAN 10 MEGOHMS
	PINS 6 TO 17	GREATER THAN 10 MEGOHMS
	PINS 6 TO 33	GREATER THAN 10 MEGOHMS
	PIN 6 TO THE AIRPLANE GROUND	GREATER THAN 10 MEGOHMS

- (a) If the resistance is in the limits, then replace the wire harness MW0303 (J3, Ch A). 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.
 - a) If the Repair Confirmation is not satisfactory, then open the circuit breakers above and continue.
- (b) If the resistance is not in the specified range, examine the wires between the strut receptacle and the thrust lever angle resolver (AMM TASK 70-70-01-200-801-F00).
 - 1) If the wiring is not satisfactory, repair the wiring (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.

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- 2) If the wiring is satisfactory, replace the applicable thrust lever angle resolver, M1819 (Eng 1) or M1822 (Eng 2). These are the tasks:
 - Thrust Lever Angle Resolver and Autothrottle Brake Assembly Removal, AMM TASK 76-11-05-000-801-F00
 - Thrust Lever Angle Resolver and Autothrottle Brake Assembly Installation, AMM TASK 76-11-05-400-801-F00
- a) Do the Repair Confirmation at the end of this task.

H. Fault Isolation Procedure - PEO Sensor Excitation Circuit

- (1) Examine the electrical connector, DP0705 (Ch A), at the oil pressure sensor:
 - (a) See if the electrical connector, DP0705 (Ch A), is correctly connected to the oil pressure sensor, and then continue.
 - (b) Disconnect the electrical connector, DP0705 (Ch A), from the oil pressure sensor.
 - (c) Visually examine the oil pressure sensor receptacle and wire harness connector (AMM TASK 70-70-01-200-801-F00).
 - 1) If an oil pressure sensor receptacle is damaged, then replace the oil pressure sensor, T429. These are the tasks:
 - Oil Pressure Sensor Removal, AMM TASK 79-32-01-000-801-F00
 - Oil Pressure Sensor Installation, AMM TASK 79-32-01-400-801-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 wire harness, J7 (Ch A). These are the tasks:
 - Fan Wiring Harness Removal, AMM TASK 73-21-06-000-801-F00
 - Fan Wiring Harness Installation, AMM TASK 73-21-06-400-801-F00
 - a) Do the Repair Confirmation at the end of this task.
 - b) If the Repair Confirmation is not satisfactory, then open the circuit breakers above and continue.
 - 3) If the connector was not correctly connected and no other problem was found, then re-connect the harness connector to the PEO sensor 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.
- (2) Measure the resistance between these pins at the oil pressure sensor receptacle:

Table 224

RECEPTACLE CH A	PINS	RESISTANCE
	PINS 1 TO 2	14 TO 24 OHMS
	PINS 1 TO 3	GREATER THAN 20 MEGOHMS
	PINS 1 TO 4	GREATER THAN 20 MEGOHMS

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Table 224 (Continued)

RECEPTACLE CH A	PINS	RESISTANCE
	PINS 1 TO 5	GREATER THAN 20 MEGOHMS
	PIN 1 TO THE RECEPTACLE SHELL	GREATER THAN 20 MEGOHMS
(a) If the resistance is not in the specified range, then replace the oil pressure sensor, T429. These are the tasks:		
• Oil Pressure Sensor Removal, AMM TASK 79-32-01-000-801-F00 • Oil Pressure Sensor Installation, AMM TASK 79-32-01-400-801-F00		
1) 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.		
(b) If the resistance is in the specified range, then replace the wire harness, J7 (Ch A). These are the tasks:		
• Fan Wiring Harness Removal, AMM TASK 73-21-06-000-801-F00 • Fan Wiring Harness Installation, AMM TASK 73-21-06-400-801-F00		
1) Do the Repair Confirmation at the end of this task.		

I. Repair Confirmation

- (1) Prepare for the procedure:
 - (a) Make sure that the electrical connectors, DP0303 (Ch A), is connected at the EEC.
 - (b) Make sure that the electrical connector, D30224 (Eng 1) or D30424 (Eng 2), is connected at the strut.
 - (c) Make sure that the electrical connectors, DP0707 (Ch A), is connected at the EEC.
 - (d) Make sure that the electrical connectors, DP0705 (Ch A), is connected at the PEO Sensor.
 - (e) For Engine 1,
 - 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

- (f) For Engine 2,
 - 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
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

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- (2) Do this task: T/R LEVER INTLK (Interlock) TEST, AMM TASK 73-21-00-700-805-F00.
 - (a) If the maintenance message 73-11451 or 73-11452 does not show, then you corrected the fault.
 - (b) If there is a fault, then go to the fault isolation task for the maintenance message that shows.
- (3) Do this task: EEC TEST, AMM TASK 73-21-00-700-804-F00.
 - (a) If the maintenance message 79-11091 or 79-11092 does not show, then you corrected the fault.
 - (b) If there is a fault, then go to the fault isolation task for the maintenance message that shows.
- (4) Do this task: Close the Fan Cowl Panels, AMM TASK 71-11-02-410-801-F00.

END OF TASK

814. FADEC2/FADEC3 (Ch B) Excitation Group 1: Thrust Lever Angle Resolver and PEO (CH B) LVDT Excitation Circuit Fault - Fault Isolation

A. Description

- (1) This task is for these groups of maintenance messages:
 - (a) Engine 1: 73-21451 and 79-21091
 - (b) Engine 2: 73-21452 and 79-21092.
- (2) The EEC detects a possible short in the thrust lever angle resolver (CH B) or the linear variable differential transducer (LVDT) excitation circuit for the engine oil pressure (PEO) (Ch B).

B. Possible Causes

- (1) Thrust Lever Angle Resolver, M1819 (Eng 1) or M1822 (Eng 2)
- (2) Adjustment of the applicable thrust lever angle resolver
- (3) Oil pressure sensor, T429
- (4) The wires and connectors between the resolver and the EEC
- (5) J8 (Ch B) wire harness
- (6) EEC, M1818.

C. Circuit Breakers

- (1) For Engine 1,
 - (a) 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

- (2) For Engine 2,
 - (a) 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>
D	7	C01391	ENGINE 2 ALTN PWR CHAN B

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F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

D. Related Data

- (1) Component Location (75-34 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (75-34 TASK SUPPORT Figure 302)
- (3) (SSM 73-21-21)
- (4) (SSM 79-32-11)
- (5) (WDM 73-21-21)
- (6) (WDM 79-32-11)

E. Initial Evaluation

- (1) Do these two steps to find out if the messages are still active:
 - (a) Do this task: T/R LEVER INTLK (Interlock) TEST, AMM TASK 73-21-00-700-805-F00.
NOTE: Message 73-2145Y is detected by this test.
 - (b) Do this task: EEC TEST, AMM TASK 73-21-00-700-804-F00.
NOTE: Messages 79-2109Y are detected by this test.
- (2) If one of these groups of maintenance message numbers shows, then do the Fault Isolation Procedure below for the applicable engine:
 - (a) 73-21451, and 79-21091 (Engine 1)
 - (b) 73-21452, and 79-21092 (Engine 2).
 - (c) If the maintenance messages do 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) Prepare for the procedure:
 - (a) For Engine 1,

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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) For Engine 2,

- 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>
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) Examine the electrical connector on the wire harness, MW0404 at the EEC:

NOTE: The electrical connector, MW0404 (Ch B), is on the J4 wire harness.

- (a) See if the electrical connector, DP0404 is correctly connected to the EEC, and then continue.

- (b) Disconnect the electrical connector, DP0404 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 the harness connector is damaged, then replace the wire harness, MW0404 (J4, 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 harness connector to the EEC 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) Do these steps to find a possible short in the excitation circuit for the thrust lever angle resolver:
- (a) Measure the resistance at these pins on the wire harness connector, DP0404 through the thrust lever angle resolver:

Table 225**CONNECTORS
DP0404****PINS****RESISTANCE**

PINS G TO F	125 TO 175 OHMS
PINS G TO d	GREATER THAN 10 MEGOHMS
PINS G TO J	GREATER THAN 10 MEGOHMS
PINS G TO b	GREATER THAN 10 MEGOHMS
PINS G TO H	GREATER THAN 10 MEGOHMS
PIN G TO THE CONNECTOR SHELL	GREATER THAN 10 MEGOHMS

- (b) If the resistance is not in the specified range, then re-connect the electrical connector, DP0404 (Ch B), to the EEC and do the Fault Isolation Procedure - Thrust Lever Angle Resolver Excitation Circuit below.
- (c) If the resistance is in the specified range, then re-connect the electrical connector, DP0404 (Ch B), to the EEC and continue.
- (4) Examine the electrical connector, DP0808 (Ch B), at the EEC:
- NOTE:** The electrical connector, DP0808 (Ch B), is on the J8 wire harness.
- (a) See if the electrical connector, DP0808 (Ch B), is correctly connected to the EEC, and then continue.
- (b) Disconnect the electrical connector, DP0808 (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 harness connector is damaged, then replace the wire harness, J8 (Ch B). These are the tasks:
 - Fan Wiring Harness Removal, AMM TASK 73-21-06-000-801-F00
 - Fan Wiring Harness Installation, AMM TASK 73-21-06-400-801-F00
 - a) Do the Repair Confirmation at the end of this task.
 - b) If the Repair Confirmation is not satisfactory, then open the circuit breakers above and continue.

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- 3) If the connector was not correctly connected and no other problem was found, then re-connect the harness connector to the EEC 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) Do these steps to find a possible short in the excitation circuit for the PEO Sensor LVDT:
 - (a) Measure the resistance at these pins on the wire harness connector, DP0808:

Table 226

CONNECTOR DP0808	PINS	RESISTANCE
	PINS a TO A	14 TO 24 OHMS
	PINS a TO b	GREATER THAN 20 MEGOHMS
	PINS a TO B	GREATER THAN 20 MEGOHMS
	PINS a TO c	GREATER THAN 20 MEGOHMS
	PIN a TO THE CONNECTOR SHELL	GREATER THAN 20 MEGOHMS

- (b) If the resistance is not in the specified range, then re-connect the electrical connector, DP0808 (Ch B), to the EEC and do the Fault Isolation Procedure - PEO Sensor Excitation Circuit below.
- (c) If the resistance is in the specified range, then re-connect the electrical connector, DP0404 (Ch B), to the EEC and continue.
- (6) If the resistance is in the specified range for the thrust lever angle resolver and the PEO Sensor LVDT, 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.

G. Fault Isolation Procedure - Thrust Lever Angle Resolver Excitation Circuit

- (1) Examine the electrical connector on the wire harness, MW0304 (J4, Ch B) at the strut:
 - (a) See if the electrical connector, D30260 (Eng 1, Ch B) or D30460 (Eng 2, Ch B) is correctly connected to the strut, and then continue.
 - (b) Disconnect the electrical connector, D30260 (Ch B) or D30460 (Ch B) from the strut.
 - (c) Visually examine the strut receptacle and wire harness connector (AMM TASK 70-70-01-200-801-F00).
 - 1) If the strut receptacle is damaged, then repair or replace the receptacle (AMM TASK 70-70-01-200-801-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.
 - 2) If the harness connector is damaged, then replace the wire harness, MW0304 (J4, 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

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- 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 harness connector to the thrust lever angle resolver 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.
- (2) Measure the resistance between these pins at the applicable strut receptacle; Engine 1 D30260 (Ch B) or Engine 2 D30460 (Ch B) through the thrust lever angle resolver:

Table 227

RECEPTACLES	PINS	RESISTANCE
D30260 & D30460	PINS 11 TO 25	125 TO 175 OHMS
	PINS 11 TO 12	GREATER THAN 10 MEGOHMS
	PINS 11 TO 26	GREATER THAN 10 MEGOHMS
	PINS 11 TO 13	GREATER THAN 10 MEGOHMS
	PINS 11 TO 27	GREATER THAN 10 MEGOHMS
	PIN 11 TO THE RECEPTACLE SHELL	GREATER THAN 10 MEGOHMS

- (a) If the resistance is in the limits, then replace the wire harness MW0304 (J4, Ch B). These are the tasks:
 - Nacelle Wiring Harnesses Removal, AMM TASK 71-51-03-000-801-F00
 - Nacelle Wiring Harnesses Installation, AMM TASK 71-51-03-400-801-F00
 - 1) Do the Repair Confirmation at the end of this task.
 - a) If the Repair Confirmation is not satisfactory, then open the circuit breakers above and continue.
- (b) If the resistance is not in the specified range, examine the wires between the strut receptacle and the applicable thrust lever angle resolver.
 - 1) If the wiring is not satisfactory, repair the wiring (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) If the wiring is satisfactory, replace the applicable thrust lever angle resolver, M1819 (Eng 1) or M1822 (Eng 2). These are the tasks:
 - Thrust Lever Angle Resolver and Autothrottle Brake Assembly Removal, AMM TASK 76-11-05-000-801-F00

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- Thrust Lever Angle Resolver and Autothrottle Brake Assembly Installation, AMM TASK 76-11-05-400-801-F00

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

H. Fault Isolation Procedure - PEO Sensor Excitation Circuit

- (1) Examine the electrical connector, DP0805 (Ch B), at the oil pressure sensor:
 - (a) See if the electrical connector, DP0805 (Ch B), is correctly connected to the oil pressure sensor, and then continue.
 - (b) Disconnect the electrical connector, DP0805 (Ch B), from the oil pressure sensor.
 - (c) Visually examine the oil pressure sensor receptacle and wire harness connector (AMM TASK 70-70-01-200-801-F00).
 - 1) If an oil pressure sensor receptacle is damaged, replace the oil pressure sensor, T429. These are the tasks:
 - Oil Pressure Sensor Removal, AMM TASK 79-32-01-000-801-F00
 - Oil Pressure Sensor Installation, AMM TASK 79-32-01-400-801-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 wire harness, J8 (Ch B). These are the tasks:
 - Fan Wiring Harness Removal, AMM TASK 73-21-06-000-801-F00
 - Fan Wiring Harness Installation, AMM TASK 73-21-06-400-801-F00
 - a) Do the Repair Confirmation at the end of this task.
 - b) If the Repair Confirmation is not satisfactory, then open the circuit breakers above and continue.
 - 3) If the connector was not correctly connected and no other problem was found, then re-connect the harness connector to the PEO sensor 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.
- (2) Measure the resistance between these pins at the oil pressure sensor receptacle:

Table 228

RECEPTACLE CH B	PINS	RESISTANCE
	PINS 1 TO 2	14 TO 24 OHMS
	PINS 1 TO 3	GREATER THAN 20 MEGOHMS
	PINS 1 TO 4	GREATER THAN 20 MEGOHMS
	PINS 1 TO 5	GREATER THAN 20 MEGOHMS
	PIN 1 TO THE RECEPTACLE SHELL	GREATER THAN 20 MEGOHMS

- (a) If the resistance is not in the specified range, then replace the oil pressure sensor, T429. These are the tasks:

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- Oil Pressure Sensor Removal, AMM TASK 79-32-01-000-801-F00
- Oil Pressure Sensor Installation, AMM TASK 79-32-01-400-801-F00
- 1) 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.
- (b) If the resistance is in the specified range, then replace the wire harness, J8 (Ch B). These are the tasks:
 - Fan Wiring Harness Removal, AMM TASK 73-21-06-000-801-F00
 - Fan Wiring Harness Installation, AMM TASK 73-21-06-400-801-F00
- 1) Do the Repair Confirmation at the end of this task.

I. Repair Confirmation

- (1) Prepare for the procedure:
 - (a) Make sure that the electrical connectors, DP0404 (Ch B), is connected at the EEC.
 - (b) Make sure that the electrical connector, D30260 (Eng 1) and D30460 (Eng 2), is connected at the strut.
 - (c) Make sure that the electrical connectors, DP0808 (Ch B), is connected at the EEC.
 - (d) Make sure that the electrical connectors, DP0805 (Ch B), is connected at the PEO Sensor.
 - (e) For Engine 1,
 - 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

- (f) For Engine 2,
 - 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
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 73-21451 or 73-21452 does not show, then you corrected the fault.
 - (b) If there is a fault, then go to the fault isolation task for the maintenance message that shows.
- (3) Do this task: EEC TEST, AMM TASK 73-21-00-700-804-F00.

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- (a) If the maintenance message 79-21091 or 79-21092 does not show, then you corrected the fault.
- (b) If there is a fault, then go to the fault isolation task for the maintenance message that shows.
- (4) Do this task: Close the Fan Cowl Panels, AMM TASK 71-11-02-410-801-F00.

————— **END OF TASK** —————

815. FADEC3 (Ch B) Excitation Group 3: LPTACC, L and R T/R LVDT Excitation Circuit Fault - Fault Isolation

A. Description

- (1) This task is for these groups of Maintenance Messages:
 - (a) Engine 1: 75-20541, 78-21481, 78-21491, 78-21541, and 78-31541
 - (b) Engine 2: 73-20542, 78-21482, 78-21492, 78-21542, and 78-31542.
- (2) The EEC, M1818, detects a problem in the LVDT Excitation Circuit (Ch B) for the Low Pressure Turbine Clearance (LPTC) Valve Position Transducer and the L and R T/R.

B. Possible Causes

- (1) LPTC Valve Position Transducer, T516
- (2) L T/R LVDT, T396
- (3) R T/R LVDT, T397
- (4) Wiring
- (5) EEC, M1818

C. Circuit Breakers

- (1) These are the 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) WDM 78-35-11
- (2) WDM 78-35-21
- (3) WDM 75-31-21
- (4) SSM 78-35-11
- (5) SSM 78-35-21
- (6) SSM 75-31-21

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E. Initial Evaluation

- (1) Do these two steps to find out if the Maintenance Messages are still active:
 - (a) Do this task: EEC TEST, AMM TASK 73-21-00-700-804-F00.
NOTE: Messages 78-2148Y and 78-2149Y are detected by this test.
 - (b) Do this task: Test 12 - Actuators Test, AMM TASK 71-00-00-700-807-F00.
NOTE: Message 75-2054Y is detected by this test.
- (2) If one of these groups of Maintenance Message numbers shows, then do the Fault Isolation Procedure for the applicable Engine:
 - (a) 75-20541, 78-21481, 78-21491 78-21541, and 78-31541 (Engine 1)
 - (b) 75-20542, 78-21482, 78-21492 78-21542, and 78-31542 (Engine 2)
 - (c) If the Maintenance Messages do not show on the FMCS CDU, then the Initial Evaluation has shown that the problem 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 problem.
 - 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.
 - b) Use the Wiring Diagram Manual references to identify intermediate electrical connections in the wiring 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) 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	4	C01003	ENGINE 1 THRUST REVERSER IND
B	5	C00276	ENGINE 1 THRUST REVERSER CONT
B	6	C01412	ENGINE 1 THRUST REVERSER INTLK
B	7	C01266	ENGINE 1 THRUST REVERSER SYNC LOCK

F/O Electrical System Panel, P6-2

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

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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
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

**WARNING**

OBEY THE INSTRUCTIONS IN THIS PROCEDURE WHEN YOU OPEN THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT CAN OCCUR.

- (a) Do this task: Open the Thrust Reverser (Selection), AMM TASK 78-31-00-010-801-F00.
- (2) At the EEC, M1818, examine the Electrical Connector, DP1010 (Ch B):

NOTE: The Electrical Connector, DP1010 (Ch B), is on the J10 Wiring Harness.

- (a) See if the Electrical Connector, DP1010 (Ch B), is correctly connected to the EEC, M1818, and continue.
- (b) Disconnect the Electrical Connector, DP1010 (Ch B), from the EEC, M1818.
- (c) At the EEC, M1818, examine the receptacle and Harness Connector (AMM TASK 70-70-01-200-801-F00).
- 1) If the receptacle is damaged, 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 the Harness Connector is damaged, replace the Wiring Harness, J10 (Ch B). These are the tasks:
 - 3 O'clock Strut Harness Removal, AMM TASK 73-21-06-000-802-F00
 - 3 O'clock Strut Harness Installation, AMM TASK 73-21-06-400-802-F00
 - a) Do the Repair Confirmation at the end of this task.
 - 3) If the Harness Connector was not correctly connected and no other problems were found, connect the Harness Connector to the EEC, M1818.
 - a) Do the Repair Confirmation at the end of this task.
- (3) Do this check of the wiring (WDM 75-31-21):
- (a) At the Harness Connector, DP1010 measure the resistance through the Low Pressure Turbine Cooling (LPTC) Valve Position Transducer, T516:

EEC		EEC	
DP1010		DP1010	
pin A		pin U	85-105 Ω
pin A		pin B	> 20 MΩ
pin A		pin V	> 20 MΩ
pin A		pin C	> 20 MΩ
pin A		connector shell	> 20 MΩ

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- (b) If the resistance is not in the specified range, connect the Electrical Connector, DP1010 (Ch B), to the EEC, M1818, and do the Fault Isolation Procedure - LPTACC Valve Excitation Circuit.
- (c) If the resistance is in the specified range, connect the Electrical Connector, DP1010 (Ch B), to the EEC, M1818, and continue.
- (4) At the EEC, M1818, examine the Electrical Connector, DP0404 (Ch B):
- NOTE: The Electrical Connector, DP0404 (Ch B), is on the MW0304 Wiring Harness.
- (a) See if Electrical Connector, DP0404 (Ch B), is correctly connected to the EEC, EEC, and continue.
- (b) Disconnect the Electrical Connector, DP0404 (Ch B), from the EEC, EEC.
- (c) At the EEC, M1818, examine the receptacle and Harness Connector (AMM TASK 70-70-01-200-801-F00).
- 1) If the receptacle is damaged, 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 the Harness Connector is damaged, replace the Wiring Harness, MW0304 (Ch B). These are the tasks:
 - Nacelle Wiring Harnesses Removal, AMM TASK 71-51-03-000-801-F00
 - Nacelle Wiring Harnesses Installation, AMM TASK 71-51-03-400-801-F00
 - a) Do the Repair Confirmation at the end of this task.
 - 3) If the Harness Connector was not correctly connected and no other problems were found, connect the Harness Connector to the EEC, M1818.
 - a) Do the Repair Confirmation at the end of this task.
- (5) Do this check of the wiring (WDM 78-35-11):
- (a) At the Harness Connector, DP0404 measure the resistance through the R T/R LVDT, T396:
- NOTE: If the Ambient Temperature is different than 70°F (21°C), use the indicated formula in the table below to calculate the acceptable Resistance Range at Ambient Temperature T (in °C).

CH B

pin	pin	RESISTANCE
AA	GG	$R=450 \left(\frac{234.5 + T}{254.5} \right)$

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T/R POSITION L SLEEVE (CH B) DP0404	T/R POSITION L SLEEVE (CH B) DP0404	
pin AA	pin GG	383-517 Ω
pin AA	pin X-	> 10 MΩ
pin AA	pin U-	> 10 MΩ
pin AA	pin Y-	> 10 MΩ
pin AA	connector shell	> 10 MΩ

- (b) If the resistance is not in the specified range, connect the Electrical Connector, DP0404 (Ch B), to the EEC, M1818 and do the Fault Isolation Procedure - L T/R LVDT Excitation Circuit.
- (c) If the resistance is in the specified range, then continue.
- (6) Do this check of the wiring (WDM 78-35-11):
- (a) At the Harness connector, DP0404 measure the resistance through the R T/R LVDT, T397:

NOTE: If the Ambient Temperature is different than 70°F (21°C), use the indicated formula in the table below to calculate the acceptable Resistance Range at Ambient Temperature T (in °C).

pin	pin	RESISTANCE
E-	F-	$R=450 ((234.5 + T)/254.5)$

EEC DP0404	ECC DP0404	
pin E-	pin F-	383-517 Ω
pin E-	pin M-	> 10 MΩ
pin E-	pin P-	> 10 MΩ
pin E-	pin N-	> 10 MΩ
pin E-	connector shell	> 10 MΩ

- (b) If the resistance is not in the specified range, connect the Electrical Connector, DP0404 (Ch B), to the EEC, M1818, and do the Fault Isolation Procedure - R T/R LVDT Excitation Circuit.
- (c) If the resistance is in the specified range, then continue.
- (7) If the resistance is in the specified range for the LPTC Valve Position Transducer, T516, the L and R T/R LVDT, 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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G. Fault Isolation Procedure - LPTACC Valve Excitation Circuit

- (1) At the LPTC Valve Position Transducer, T516, examine the Electrical Connector, DP1004 (Ch B):
 - (a) See if the Electrical Connector, DP1004 (Ch B), is correctly connected to the LPTC Valve Position Transducer, T516, and continue.
 - (b) Disconnect the Electrical Connector, DP1004 (Ch B), from the LPTC Valve Position Transducer, T516.
 - (c) At the LPTC Valve Position Transducer, T516, examine the receptacle and Harness Connector (AMM TASK 70-70-01-200-801-F00).
 - 1) If the receptacle is damaged, replace the LPTC Valve Position Transducer, T516. These are the tasks:
 - LPTACC Valve Removal, AMM TASK 75-22-04-000-802-F00
 - LPTACC Valve Installation, AMM TASK 75-22-04-400-802-F00
 - a) Do the Repair Confirmation at the end of this task.
 - 2) If the Harness Connector is damaged, replace the Wiring Harness, J10 (Ch B). These are the tasks:
 - 3 O'clock Strut Harness Removal, AMM TASK 73-21-06-000-802-F00
 - 3 O'clock Strut Harness Installation, AMM TASK 73-21-06-400-802-F00
 - 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, connect the Harness Connector to the LPTC Valve Position Transducer, T516.
 - a) Do the Repair Confirmation at the end of this task.
- (2) Do this check of the wiring (WDM 75-31-21):

**LPTC VALVE
POSITION
TRANSDUCER
DP1004**

pin 2	pin 3	85-105 Ω
pin 2	connector shell	> 20 M Ω

**LPTC VALVE
POSITION
TRANSDUCER
DP1004**

- (a) If the resistance is not in the specified range, replace the LPTC Valve Position Transducer, T516. These are the tasks:
 - LPTACC Valve Removal, AMM TASK 75-22-04-000-802-F00
 - LPTACC Valve Installation, AMM TASK 75-22-04-400-802-F00
 - 1) Do the Repair Confirmation at the end of this task.
- (b) If the resistance is in the specified range, replace the Wiring Harness, J10 (Ch B). These are the tasks:
 - 3 O'clock Strut Harness Removal, AMM TASK 73-21-06-000-802-F00
 - 3 O'clock Strut Harness Installation, AMM TASK 73-21-06-400-802-F00
 - 1) Do the Repair Confirmation at the end of this task.

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H. Fault Isolation Procedure - Left T/R LVDT Excitation Circuit

- (1) At the L T/R LVDT, T396, examine the Electrical Connector, D30076 (Ch B):

NOTE: There is an T/R LVDT on the Upper Locking Actuator on the Torque Box of the L T/R on each Engine.

- (a) See if the Electrical Connector, D30076 (Ch B), is correctly connected to the L T/R LVDT, T396.
 - (b) Disconnect the Electrical Connector, D30076 (Ch B), from the L T/R LVDT, T396.
 - (c) At the L T/R LVDT, T396 examine the receptacle and Harness Connector (AMM TASK 70-70-01-200-801-F00).
 - 1) If the receptacle is damaged, replace the L T/R LVDT, T396. These are the tasks:
 - LVDT Removal, AMM TASK 78-36-02-000-801-F00
 - LVDT Installation, AMM TASK 78-36-02-400-801-F00
 - a) Do the Repair Confirmation at the end of this task.
 - 2) If the Harness Connector is damaged, then do the tasks to repair or replace the connector (SWPM Ch 20).
 - a) Do the Repair Confirmation at the end of this task.
 - 3) If the Harness Connector was not correctly connected, and no other problems were found, connect the Harness Connector to the L T/R LVDT, T396.
 - a) Do the Repair Confirmation at the end of this task.
- (2) Do this check of the wiring (WDM 78-35-11):
- (3) At the T/R L Sleeve LVDT, T396 receptacle (Ch B), measure the resistance between these pins:

NOTE: If the Ambient Temperature is different than 70°F (21°C), use the indicated formula in the table below to calculate the acceptable Resistance Range at Ambient Temperature T (in °C).

pin	pin	RESISTANCE
1	2	$R=450 ((234.5 + T)/254.5)$

T/R L SLEEVE LVDT D30076

pin 1 pin 2 383-517 Ω
 pin 1 airplane ground > 10 MΩ

T/R L SLEEVE LVDT D30076

- (b) If the resistance is not in the specified range, replace the L T/R LVDT, T396. These are the tasks:
 - LVDT Removal, AMM TASK 78-36-02-000-801-F00
 - LVDT Installation, AMM TASK 78-36-02-400-801-F00
 - 1) Do the Repair Confirmation at the end of this task.
- (c) If the resistance is in the specified range, examine and repair the wires and connectors between the EEC, M1818, and the L T/R LVDT, T396.
 - 1) If you find a problem with the MW0304 (Ch B), Wiring Harness, replace it. 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.
- 2) If you find a problem between the strut receptacle and L T/R LVDT, T396, then do the tasks to repair or replace the wiring (SWPM Ch 20).
 - a) Do the Repair Confirmation at the end of this task.

I. Fault Isolation Procedure - R T/R LVDT Excitation Circuit

- (1) At the R T/R LVDT, T397, examine the Electrical Connector, D30078 (Ch B):

NOTE: There is a T/R LVDT on the Upper Locking Actuator on the Torque Box of the R T/R on each Engine.

- (a) See if the Electrical Connector, D30078 (Ch B), is correctly connected to the R T/R LVDT, T397.
- (b) Disconnect the Electrical Connector, D30078 (Ch B), from the R T/R LVDT, T397.
- (c) At the R T/R LVDT, T397 examine the receptacle and Harness Connector (AMM TASK 70-70-01-200-801-F00).
 - 1) If the receptacle is damaged, replace the R T/R LVDT, T397. These are the tasks:
 - LVDT Removal, AMM TASK 78-36-02-000-801-F00
 - LVDT Installation, AMM TASK 78-36-02-400-801-F00
 - a) Do the Repair Confirmation at the end of this task.
 - 2) If the Harness Connector is damaged, then do the tasks to repair or replace the connector (SWPM Ch 20).
 - a) Do the Repair Confirmation at the end of this task.
 - 3) If the Harness Connector was not correctly connected, and no other problems were found, connect the Harness Connector to the R T/R LVDT, T397.
 - a) Do the Repair Confirmation at the end of this task.
- (2) Do this check of the wiring (WDM 78-35-11)
- (3) At the R T/R LVDT, T397 receptacle (Ch B), measure the resistance between these pins:

NOTE: If the Ambient Temperature is different than 70°F (21°C), use the indicated formula in the table below to calculate the acceptable Resistance Range at Ambient Temperature T (in °C).

CH B

pin	pin	RESISTANCE
1	2	$R=450 \left(\frac{234.5 + T}{254.5} \right)$

**T/R R SLEEVE
LVDT
D30078**

pin 1

pin 1

**T/R R SLEEVE
LVDT
D30078**

pin 2

airplane ground

383-517 Ω

> 10 MΩ

- (b) If the resistance is not in the specified range, replace the R T/R LVDT, T397. These are the tasks:

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- LVDT Removal, AMM TASK 78-36-02-000-801-F00
- LVDT Installation, AMM TASK 78-36-02-400-801-F00
- 1) Do the Repair Confirmation at the end of this task.
- (c) If the resistance is in the specified range, examine and repair the wires and connectors between the EEC, M1818, and the R T/R LVDT, T397.
 - 1) If you find a problem with the MW0304 (Ch B), Wiring Harness, then replace it.
These are the tasks:
 - Nacelle Wiring Harnesses Removal, AMM TASK 71-51-03-000-801-F00
 - Nacelle Wiring Harnesses Installation, AMM TASK 71-51-03-400-801-F00
 - a) Do the Repair Confirmation at the end of this task.
 - 2) If you find a problem between the strut receptacle and R T/R LVDT, T397, then do the tasks to repair or replace the wiring (SWPM Ch 20).
 - a) Do the Repair Confirmation at the end of this task.

J. Repair Confirmation

- (1) Do these steps:
 - (a) Make sure that the Electrical Connector, DP1010 (Ch B), is correctly connected to the EEC, M1818.
 - (b) Make sure that the Electrical Connector, DP0404 (Ch B), is correctly connected to the EEC, M1818.
 - (c) Make sure that the Electrical Connector, DP1004 (Ch B), is correctly connected at the LPTC Valve Position Transducer, T516.
 - (d) Make sure that the Electrical Connector, D30076 (Ch B), is correctly connected at the L T/R LVDT, T396
 - (e) Make sure that the Electrical Connector, D30078 (Ch B), is correctly connected to the R T/R LVDT, T397.
 - (f) Make sure that all connectors that were disconnected to do an electrical check between the L and R T/R Sleeve LVDT and the EEC, M1818 are correctly connected.
 - (g) 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

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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

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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

- (2) Do this task: EEC TEST, AMM TASK 73-21-00-700-804-F00.
- (a) If the Maintenance Message 78-21481, 78-21482, 78-21491 or 78-21492 does not show, then you corrected the problem. Do this test to make sure that no other problems occurred during the Fault Isolation Procedure:
- 1) Do this task: Test 12 - Actuators Test, AMM TASK 71-00-00-700-807-F00.
- a) If there is a problem, then go to the Fault Isolation Task for the Maintenance Message that shows.



OBEY THE INSTRUCTIONS IN THIS PROCEDURE WHEN YOU CLOSE THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT CAN OCCUR.

- (3) Do this task: Close the Thrust Reverser (Selection), AMM TASK 78-31-00-010-804-F00.
- (4) If the problem still exists, continue the Fault Isolation Procedure at the subsequent step.
- (a) Do these steps:
- Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	1	C00458	ENGINE 1 IGNITION RIGHT
A	3	C00153	ENGINE 1 IGNITION LEFT
A	4	C01390	ENGINE 1 ALTN PWR CHAN B
A	5	C01314	ENGINE 1 ALTN PWR CHAN A
B	4	C01003	ENGINE 1 THRUST REVERSER IND
B	5	C00276	ENGINE 1 THRUST REVERSER CONT
B	6	C01412	ENGINE 1 THRUST REVERSER INTLK
B	7	C01266	ENGINE 1 THRUST REVERSER SYNC LOCK

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	5	C01267	ENGINE 2 THRUST REVERSER SYNC LOCK
C	6	C01413	ENGINE 2 THRUST REVERSER INTLK
C	7	C00277	ENGINE 2 THRUST REVERSER CONT
C	8	C01004	ENGINE 2 THRUST REVERSER IND
D	4	C00459	ENGINE 2 IGNITION RIGHT
D	6	C00151	ENGINE 2 IGNITION LEFT
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

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— END OF TASK —

816. FADEC3 (Ch B) Excitation Group 4: HPTACC and TBV LVDT Excitation Circuit Fault - Fault Isolation

A. Description

- (1) This task is for these groups of maintenance messages:
 - (a) Engine 1: 75-20491 and 75-20591
 - (b) Engine 2: 75-20492 and 75-20592.
 - (c) Engine 1: 75-20361 and 75-20591
 - (d) Engine 2: 75-20362 and 75-20592.
- (2) This fault is reported on the active channel of the EEC when the EEC is powered.
- (3) The EEC detects a fault in the linear variable differential transformer (LVDT) excitation circuit (Ch B) for the high pressure turbine active clearance control (HPTACC) and the transient bleed valve (TBV).

B. Possible Causes

- (1) HPTACC valve, T515
- (2) TBV, T519
- (3) J10 wire harness
- (4) EEC, M1818.

C. Circuit Breakers

- (1) For Engine 1,
 - (a) 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

- (2) For Engine 2,
 - (a) 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>
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

D. Related Data

- (1) Component Location (75-34 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (75-34 TASK SUPPORT Figure 302)
- (3) (SSM 75-31-11)
- (4) (SSM 75-31-12)
- (5) (SSM 75-31-21)
- (6) (SSM 75-31-22)

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- (7) (WDM 75-31-11)
- (8) (WDM 75-31-12)
- (9) (WDM 75-31-21)
- (10) (WDM 75-31-22)

E. Initial Evaluation

- (1) Do these two steps to find out if the messages are still active:
 - (a) Do this task: Test 12 - Actuators Test, AMM TASK 71-00-00-700-807-F00.
NOTE: Messages 75-2049Y and 75-2059Y are detected by this test.
NOTE: Messages 75-2036Y and 75-2059Y are detected by this test.
- (2) If one of these groups of maintenance message numbers shows, then do the Fault Isolation Procedure below for the applicable engine:
 - (a) 75-20491 and 75-20591 (Engine 1)
 - (b) 75-20492 and 75-20592 (Engine 2)
 - (c) 75-20361 and 75-20591 (Engine 1).
 - (d) 75-20362 and 75-20592 (Engine 2).
 - (e) If the maintenance messages do 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 these steps to prepare for the procedure:
 - (a) For Engine 1,
 - 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) For Engine 2,

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- 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>
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



WARNING

OBEY THE INSTRUCTIONS IN THIS PROCEDURE WHEN YOU OPEN THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT CAN OCCUR.

- (c) Do this task: Open the Thrust Reverser (Selection), AMM TASK 78-31-00-010-801-F00.
- (2) Examine the electrical connector, DP1010 (Ch B), at the EEC:
- NOTE: The electrical connector, DP1010 (Ch B), is on the J10 wire harness.
- (a) See if the electrical connector, DP1010 (Ch B), is correctly connected to the EEC, and continue.
- (b) Disconnect the electrical connector, DP1010 (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 the harness connector is damaged, then replace the wire harness, J10 (Ch B). These are the tasks:
- 3 O'clock Strut Harness Removal, AMM TASK 73-21-06-000-802-F00
 - 3 O'clock Strut Harness Installation, AMM TASK 73-21-06-400-802-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.
- 3) If the harness connector was not correctly connected and no other problems were found, then re-connect the harness connector to the EEC 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 these steps to find a possible short in the excitation circuit for the HPTACC valve LVDT:
- (a) Measure the resistance at these pins on the wire harness connector, DP1010 through the HPTACC valve LVDT:

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Table 229**CONNECTOR DP1010****PINS****RESISTANCE**

PINS Y TO F

67 TO 85 OHMS

PIN Y TO ALL OTHER PINS

GREATER THAN
10 MEGOHMS

PIN Y TO THE CONNECTOR SHELL

GREATER THAN
10 MEGOHMS

- (b) If the resistance is not in the specified range, then re-connect the electrical connector, DP1010 (Ch B), to the EEC and do the Fault Isolation Procedure - HPTACC Valve Excitation Circuit below.
- (c) If the resistance is in the specified range, then continue.
- (4) Do these steps to find a possible short in the excitation circuit for the TBV LVDT:
 - (a) Measure the resistance at these pins on the wire harness connector, DP1010 through the TBV LVDT:

Table 230**CONNECTOR DP1010****PINS****RESISTANCE**

PINS E TO X

67 TO 85 OHMS

PIN E TO ALL OTHER PINS

GREATER THAN
10 MEGOHMS

PIN E TO THE CONNECTOR SHELL

GREATER THAN
10 MEGOHMS

- (b) If the resistance is not in the specified range, then re-connect the electrical connector, DP1010 (Ch B), to the EEC and do the Fault Isolation Procedure - TBV Excitation Circuit below.
- (c) If the resistance is in the specified range, then re-connect the electrical connector, DP1010 (Ch B), to the EEC and continue.
- (5) If the resistance is in the specified range for the HPTACC valve and the TBV LVDT, 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.

G. Fault Isolation Procedure - HPTACC Valve Excitation Circuit

- (1) Examine the electrical connector, DP1003 (Ch B), at the HPTACC valve:
 - (a) See if the electrical connector, DP1003 (Ch B), is correctly connected to the HPTACC valve, and continue.
 - (b) Disconnect the electrical connector, DP1003 (Ch B), from the HPTACC valve.
 - (c) Visually examine the HPTACC Valve receptacle and wire harness connector (AMM TASK 70-70-01-200-801-F00).
 - 1) If the HPTACC valve receptacle is damaged, then replace the HPTACC Valve, T515. These are the tasks:
 - HPTACC Valve Removal, AMM TASK 75-21-01-000-801-F00

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- HPTACC Valve Installation, AMM TASK 75-21-01-400-801-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 harness connector is damaged, then replace the wire harness, J10 (Ch B). These are the tasks:
 - 3 O'clock Strut Harness Removal, AMM TASK 73-21-06-000-802-F00
 - 3 O'clock Strut Harness Installation, AMM TASK 73-21-06-400-802-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.
- 3) If the connector was not correctly connected and no other problems were found, then re-connect the harness connector to the HPTACC valve 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.
- (2) Measure the resistance between these pins at the HPTACC valve receptacle, CH B:

Table 231

RECEPTACLE CH B	PINS	RESISTANCE
	PINS 2 TO 3	67 TO 85 OHMS
	PIN 2 TO THE CONNECTOR SHELL	GREATER THAN 10 MEGOHMS

- (a) If the resistance is not in the specified range, then replace the HPTACC Valve, T515. These are the tasks:
 - HPTACC Valve Removal, AMM TASK 75-21-01-000-801-F00
 - HPTACC Valve Installation, AMM TASK 75-21-01-400-801-F00
 - 1) 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.
- (b) If the resistance is in the specified range, then replace the wire harness, J10 (Ch B). These are the tasks:
 - 3 O'clock Strut Harness Removal, AMM TASK 73-21-06-000-802-F00
 - 3 O'clock Strut Harness Installation, AMM TASK 73-21-06-400-802-F00
 - 1) Do the Repair Confirmation at the end of this task.

H. Fault Isolation Procedure - TBV Excitation Circuit

- (1) Examine the electrical connector, DP1007 (Ch B), at the TBV:

NOTE: The electrical connector, DP1007 (Ch B), is on the J10 wire harness.

 - (a) See if the electrical connector, DP1007 (Ch B), is correctly connected to the TBV.
 - (b) Disconnect the electrical connector, DP1007 (Ch B), from the TBV.

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- (c) Visually examine the TBV receptacle and wire harness connector (AMM TASK 70-70-01-200-801-F00).
- 1) If the TBV receptacle is damaged, then replace the TBV, T519. These are the tasks:
 - Transient Bleed Valve Removal, AMM TASK 75-23-01-000-801-F00
 - Transient Bleed Valve Installation, AMM TASK 75-23-01-400-801-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 harness connector is damaged, then replace the wire harness, J10 (Ch B). These are the tasks:
 - Fan Wiring Harness Removal, AMM TASK 73-21-06-000-801-F00
 - Fan Wiring Harness Installation, AMM TASK 73-21-06-400-801-F00
 - a) Do the Repair Confirmation at the end of this task.
 - b) If the Repair Confirmation is not satisfactory, then open the circuit breakers above and continue.
 - 3) If the connector was not correctly connected and no other problem was found, then re-connect the harness connector to the T/R LVDT 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.
- (2) Measure the resistance between these pins at the TBV receptacle, CH B:
- NOTE: The electrical connector, DP1007 (Ch B), is on the J10 wire harness.

Table 232

RECEPTACLE CH B	PINS	RESISTANCE
	PINS 2 TO 3	67 TO 85 OHMS
	PIN 2 TO THE CONNECTOR SHELL	GREATER THAN 10 MEGOHMS

- (a) If the resistance is not in the specified range, then replace the TBV, T519. These are the tasks:
- Transient Bleed Valve Removal, AMM TASK 75-23-01-000-801-F00
 - Transient Bleed Valve Installation, AMM TASK 75-23-01-400-801-F00
- 1) 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.
- (b) If the resistance is in the specified range, then replace the wire harness, J10 (Ch B). These are the tasks:
- 3 O'clock Strut Harness Removal, AMM TASK 73-21-06-000-802-F00
 - 3 O'clock Strut Harness Installation, AMM TASK 73-21-06-400-802-F00
- 1) Do the Repair Confirmation at the end of this task.

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I. Repair Confirmation

- (1) Do these steps to prepare for the procedure:
 - (a) Make sure that the electrical connector, DP1010 (Ch B), is correctly connected at the EEC.
 - (b) Make sure that the electrical connector, DP1003 (Ch B), is correctly connected at the HPTACC valve.
 - (c) Make sure that the electrical connector, DP1007 (Ch B), is correctly connected at the TBV.
 - (d) For Engine 1,
 - 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

- (e) For Engine 2,
 - 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
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

- (2) Do this task: Test 12 - Actuators Test, AMM TASK 71-00-00-700-807-F00.
 - (a) If there is a fault, then go to the fault isolation task for the maintenance message that shows.



OBEY THE INSTRUCTIONS IN THIS PROCEDURE WHEN YOU CLOSE THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT CAN OCCUR.

- (3) Do this task: Close the Thrust Reverser (Selection), AMM TASK 78-31-00-010-804-F00.

————— **END OF TASK** —————

817. FADEC3 (Ch A) Excitation Group 2: VSV, VBV and FMV (Channel A) LVDT Excitation Circuit Fault - Fault Isolation

A. Description

- (1) This task is for these groups of maintenance messages:
 - (a) Engine 1: 75-10391, 75-10441 and 73-10341
 - (b) Engine 2: 75-10392, 75-10442 and 73-10342.

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- (2) The EEC detects a fault in the linear variable differential transformer (LVDT) excitation circuit (Ch A) for the variable stator vane (VSV), the variable bleed valve (VBV) and the fuel metering valve (FMV) (integral to the HMU).

B. Possible Causes

- (1) Right VSV actuator, T517
- (2) Right VBV actuator, T520
- (3) Fuel Metering Valve (Integral to the HMU, M1823)
- (4) J9 wire harness
- (5) J5 wire harness
- (6) EEC, M1818.

C. Circuit Breakers

- (1) For Engine 1,
 - (a) 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) For Engine 2,
 - 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>
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

D. Related Data

- (1) Component Location (75-34 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (75-34 TASK SUPPORT Figure 302)
- (3) (SSM 73-25-11)
- (4) (SSM 73-25-21)
- (5) (SSM 75-31-12)
- (6) (SSM 75-31-22)
- (7) (WDM 73-25-11)
- (8) (WDM 73-25-21)
- (9) (WDM 75-31-12)
- (10) (WDM 75-31-22)

E. Initial Evaluation

- (1) Do these two steps to find out if the messages are still active:
 - (a) Do this task: Test 12 - Actuators Test, AMM TASK 71-00-00-700-807-F00.
NOTE: Messages 73-1034Y, 75-1039Y and 75-1044Y are detected by this test.

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- (2) If one of these groups of maintenance message numbers shows, then do the Fault Isolation Procedure below for the applicable engine:
- (a) 73-10341, 75-10391 and 75-10441 (Engine 1)
 - (b) 73-10342, 75-10392 and 75-10442 (Engine 2)
 - (c) If the maintenance messages do 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 these steps to prepare for the procedure:
- (a) For Engine 1,
 - 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) For Engine 2,
 - 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>
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



WARNING

OBEY THE INSTRUCTIONS IN THIS PROCEDURE WHEN YOU OPEN THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT CAN OCCUR.

- (c) Do this task: Open the Thrust Reverser (Selection), AMM TASK 78-31-00-010-801-F00.

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- (2) Examine the electrical connector, DP0909 (Ch A), at the EEC:

NOTE: The electrical connector, DP0909 (Ch A), is on the J9 wire harness.

- (a) See if the electrical connector, DP0909 (Ch A), is correctly connected to the EEC, and continue.
 - (b) Disconnect the electrical connector, DP0909 (Ch A), 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 the harness connector is damaged, then replace the wire harness, J9 (Ch A). These are the tasks:
 - 3 O'clock Strut Harness Removal, AMM TASK 73-21-06-000-802-F00
 - 3 O'clock Strut Harness Installation, AMM TASK 73-21-06-400-802-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.
 - 3) If the harness connector was not correctly connected and no other problems were found, then re-connect the harness connector to the EEC 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 these steps to find a possible short in the excitation circuit for the right VSV actuator LVDT (referred to as the VSV LVDT):
- (a) Measure the resistance at these pins on the wire harness connector, DP0909 through the VSV LVDT:

Table 233

CONNECTOR DP0909	PINS	RESISTANCE
	PINS P TO k	400 TO 600 OHMS
	PIN P TO ALL OTHER PINS	GREATER THAN 10 MEGOHMS
	PIN P TO THE CONNECTOR SHELL	GREATER THAN 10 MEGOHMS

- (b) If the resistance is not in the specified range, then re-connect the electrical connector, DP0909 (Ch A), to the EEC and do the Fault Isolation Procedure - VSV Actuator Excitation Circuit below.
- (c) If the resistance is in the specified range, then continue.

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- (4) Do these steps to find a possible short in the excitation circuit for the right VBV actuator LVDT (referred to as the VBV LVDT):
- (a) Measure the resistance at these pins on the wire harness connector, DP0909 through the VBV LVDT:

Table 234

CONNECTOR DP0909	PINS	RESISTANCE
	PINS R TO m	250 TO 320 OHMS
	PIN R TO ALL OTHER PINS	GREATER THAN 10 MEGOHMS
	PIN R TO THE CONNECTOR SHELL	GREATER THAN 10 MEGOHMS

- (b) If the resistance is not in the specified range, then re-connect the electrical connector, DP0909 (Ch A), to the EEC and do the Fault Isolation Procedure - VBV Actuator Excitation Circuit below.
 - (c) If the resistance is in the specified range, then re-connect the electrical connector, DP0909 (Ch A), to the EEC and continue.
- (5) Examine the electrical connector, DP0505 (Ch A), at the EEC:
- NOTE:** The electrical connector, DP0505 (Ch A), is on the J5 wire harness.
- (a) See if the electrical connector, DP0505 (Ch A), is correctly connected to the EEC, and continue.
 - (b) Disconnect the electrical connector, DP0505 (Ch A), 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 the harness connector is damaged, then replace the wire harness, J5 (Ch A). These are the tasks:
 - Fan Wiring Harness Removal, AMM TASK 73-21-06-000-801-F00
 - Fan Wiring Harness Installation, AMM TASK 73-21-06-400-801-F00
 - a) Do the Repair Confirmation at the end of this task.
 - b) If the Repair Confirmation is not satisfactory, then open the circuit breakers above and continue.
 - 3) If the harness connector was not correctly connected and no other problems were found, then re-connect the harness connector to the EEC 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) Do these steps to find a possible short in the excitation circuit for the FMV LVDT in the HMU:
 - (a) Measure the resistance at these pins on the wire harness connector, DP0505 through the FMV LVDT:

Table 235

CONNECTOR DP0505	PINS	RESISTANCE
	PINS T TO U	50 TO 72 OHMS
	PIN T TO ALL OTHER PINS	GREATER THAN 10 MEGOHMS
	PIN T TO THE CONNECTOR SHELL	GREATER THAN 10 MEGOHMS

- (b) If the resistance is not in the specified range, then re-connect the electrical connector, DP0505 (Ch A), to the EEC and do the Fault Isolation Procedure - FMV Excitation Circuit below.
- (c) If the resistance is in the specified range, re-connect the electrical connector, DP0505 (Ch A), to the EEC and then continue.
- (7) If the resistance is in the specified range for the VSV actuator, the VBV actuator and the FMV, 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.

G. Fault Isolation Procedure - VSV Actuator Excitation Circuit

- (1) Examine the electrical connector, DP0902 (Ch A), at the VSV actuator:

NOTE: Channel A is for the right actuator.

- (a) See if the electrical connector, DP0902 (Ch A), is correctly connected to the VSV actuator, and continue.
- (b) Disconnect the electrical connector, DP0902 (Ch A), from the VSV actuator.
- (c) Visually examine the VSV actuator receptacle and wire harness connector (AMM TASK 70-70-01-200-801-F00).
 - 1) If the VSV Actuator receptacle is damaged, then replace the VSV actuator (Ch A), T517. These are the tasks:
 - Right VSV Actuator Removal, AMM TASK 75-31-01-000-802-F00
 - Right VSV Actuator Installation, AMM TASK 75-31-01-400-802-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 harness connector is damaged, then replace the wire harness, J9 (Ch A). These are the tasks:
 - 3 O'clock Strut Harness Removal, AMM TASK 73-21-06-000-802-F00
 - 3 O'clock Strut Harness Installation, AMM TASK 73-21-06-400-802-F00

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- 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) If the harness connector was not correctly connected and no other problems were found, then re-connect the harness connector to the VSV actuator 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.
- (2) Measure the resistance between these pins at the VSV actuator receptacle (Ch A):

Table 236

RECEPTACLE (CH A)	PINS	RESISTANCE
	PINS 2 TO 3	400 TO 600 OHMS
	PIN 2 TO THE CONNECTOR SHELL	GREATER THAN 10 MEGOHMS

- (a) If the resistance is not in the specified range, then replace the right VSV Actuator (Ch A), T517. These are the tasks:
 - Right VSV Actuator Removal, AMM TASK 75-31-01-000-802-F00
 - Right VSV Actuator Installation, AMM TASK 75-31-01-400-802-F00
 - 1) 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.
- (b) If the resistance is in the specified range, then replace the wire harness, J9 (Ch A). These are the tasks:
 - 3 O'clock Strut Harness Removal, AMM TASK 73-21-06-000-802-F00
 - 3 O'clock Strut Harness Installation, AMM TASK 73-21-06-400-802-F00
 - 1) Do the Repair Confirmation at the end of this task.

H. Fault Isolation Procedure - VBV Actuator Excitation Circuit

- (1) Examine the electrical connector, DP0908 (Ch A), at the VBV actuator:

NOTE: Channel A is for the right actuator.

 - (a) See if the electrical connector, DP0908 (Ch A), is correctly connected to the VBV actuator, and continue.
 - (b) Disconnect the electrical connector, DP0908 (Ch A), from the VBV actuator.
 - (c) Visually examine the VBV Actuator receptacle and wire harness connector (AMM TASK 70-70-01-200-801-F00).
 - 1) If the VBV Actuator receptacle is damaged, then replace the VBV actuator (Ch A), T520. These are the tasks:
 - Right VBV Actuator Removal, AMM TASK 75-32-02-000-802-F00
 - Right VBV Actuator Installation, AMM TASK 75-32-02-400-802-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 harness connector is damaged, then replace the wire harness, J9 (Ch A). These are the tasks:
 - 3 O'clock Strut Harness Removal, AMM TASK 73-21-06-000-802-F00
 - 3 O'clock Strut Harness Installation, AMM TASK 73-21-06-400-802-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.
- 3) If the harness connector was not correctly connected and no other problems were found, then re-connect the harness connector to the VBV actuator 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.
- (2) Measure the resistance between these pins at the VBV actuator receptacle (Ch A):

Table 237

RECEPTACLE (CH A)	PINS	RESISTANCE
	PINS 1 TO 2	250 TO 320 OHMS
	PIN 1 TO THE CONNECTOR SHELL	GREATER THAN 10 MEGOHMS

- (a) If the resistance is not in the specified range, then replace the VBV Actuator (Ch A), T520. These are the tasks:
 - Right VBV Actuator Removal, AMM TASK 75-32-02-000-802-F00
 - Right VBV Actuator Installation, AMM TASK 75-32-02-400-802-F00
 - 1) 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.
- (b) If the resistance is in the specified range, then replace the wire harness, J9 (Ch A). These are the tasks:
 - 3 O'clock Strut Harness Removal, AMM TASK 73-21-06-000-802-F00
 - 3 O'clock Strut Harness Installation, AMM TASK 73-21-06-400-802-F00
 - 1) Do the Repair Confirmation at the end of this task.

I. Fault Isolation Procedure - FMV Excitation Circuit

- (1) Examine the electrical connector, DP0501 (Ch A), at the HMU:
 - (a) See if the electrical connector, DP0501 (Ch A), is correctly connected to the HMU, and continue.
 - (b) Disconnect the electrical connector, DP0501 (Ch A), from the HMU.
 - (c) Visually examine the HMU receptacle and wire harness connector (AMM TASK 70-70-01-200-801-F00).

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- 1) If the HMU receptacle is damaged, then replace the HMU, M1823. These are the tasks:
 - HMU Removal, AMM TASK 73-21-10-000-801-F00
 - HMU Installation, AMM TASK 73-21-10-400-801-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 harness connector is damaged, then replace the wire harness, J5 (Ch A). These are the tasks:
 - Fan Wiring Harness Removal, AMM TASK 73-21-06-000-801-F00
 - Fan Wiring Harness Installation, AMM TASK 73-21-06-400-801-F00
 - a) Do the Repair Confirmation at the end of this task.
 - b) If the Repair Confirmation is not satisfactory, then open the circuit breakers above and continue.
- 3) If the harness connector was not correctly connected and no other problems were found, then re-connect the harness connector to the HMU 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.
- (2) Measure the resistance between these pins at the HMU receptacle (Ch A):

Table 238

RECEPTACLE (CH A)	PINS	RESISTANCE
	PINS 16 TO 34	50 TO 72 OHMS
	PIN 16 TO THE CONNECTOR SHELL	GREATER THAN 10 MEGOHMS

- (a) If the resistance is not in the specified range, then replace the HMU, M1823. These are the tasks:
 - HMU Removal, AMM TASK 73-21-10-000-801-F00
 - HMU Installation, AMM TASK 73-21-10-400-801-F00
 - 1) 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.
- (b) If the resistance is in the specified range, then replace the wire harness, J5 (Ch A). These are the tasks:
 - Fan Wiring Harness Removal, AMM TASK 73-21-06-000-801-F00
 - Fan Wiring Harness Installation, AMM TASK 73-21-06-400-801-F00
 - 1) Do the Repair Confirmation at the end of this task.

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J. Repair Confirmation

- (1) Do these steps to prepare for the procedure:
 - (a) Make sure that the electrical connector, DP0909 (Ch A), is correctly connected at the EEC.
 - (b) Make sure that the electrical connector, DP0505 (Ch A), is correctly connected at the EEC.
 - (c) Make sure that the electrical connector, DP0902 (Ch A), is correctly connected at the right VSV actuator.
 - (d) Make sure that the electrical connector, DP0908 (Ch A), is correctly connected at the right VBV actuator.
 - (e) Make sure that the electrical connector, DP0501 (Ch A), is correctly connected at the HMU.
 - (f) For Engine 1,
 - 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

- (g) For Engine 2,
 - 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
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

- (2) Do this task: Test 12 - Actuators Test, AMM TASK 71-00-00-700-807-F00.
 - (a) If there is a fault, then go to the fault isolation task for the maintenance message that shows.



OBEY THE INSTRUCTIONS IN THIS PROCEDURE WHEN YOU CLOSE THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT CAN OCCUR.

- (3) Do this task: Close the Thrust Reverser (Selection), AMM TASK 78-31-00-010-804-F00.

————— **END OF TASK** —————

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818. FADEC3 (Ch A) Excitation Group 3: HPTACC, L and R T/R LVDT Excitation Circuit Fault - Fault Isolation

A. Description

- (1) This task is for these groups of Maintenance Messages:
 - (a) Engine 1: 75-10491, 78-11481, 78-11491, 78-11541, and 78-31541
 - (b) Engine 2: 75-10492, 78-11482, 78-11492, 78-11542, and 78-31542
 - (c) Engine 1: 75-10361, 78-11481, 78-11491, 78-11541, and 78-31541
 - (d) Engine 2: 75-10362, 78-11482, 78-11492, 78-11542, and 78-31542.
- (2) The EEC, M1818 detects a problem in the LVDT Excitation Circuit (Ch A) for the High Pressure Turbine Clearance (HPTC) Valve Position Transducer and the L and R T/R.

B. Possible Causes

- (1) HPTC Valve Position Transducer, T515
- (2) R T/R LVDT, T397
- (3) L T/R LVDT, T396
- (4) Wiring
- (5) EEC, M1818

C. Circuit Breakers

- (1) These are the Circuit Breakers related 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) WDM 78-35-11
- (2) WDM 78-35-21
- (3) WDM 75-31-21
- (4) SSM 78-35-11
- (5) SSM 78-35-21
- (6) SSM 75-31-21

E. Initial Evaluation

- (1) Do these two steps to find out if the Maintenance Messages are still active:
 - (a) Do this task: EEC TEST, AMM TASK 73-21-00-700-804-F00.

NOTE: Messages 78-1148Y and 78-1149Y are detected by this test.

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- (b) Do this task: Test 12 - Actuators Test, AMM TASK 71-00-00-700-807-F00.

NOTE: Message 75-1049Y is detected by this test.

NOTE: Messages 75-1036Y is detected by this test.

- (2) If one of these groups of Maintenance Message numbers shows, then do the Fault Isolation Procedure for the applicable Engine:
- (a) 75-10491, 78-11481, 78-11491, 78-11541, and 78-31541 (Engine 1)
 - (b) 75-10492, 78-11482, 78-11492, 78-11542, and 78-31542 (Engine 2)
 - (c) 75-10361, 78-11481, 78-11491, 78-11541, and 78-31541 (Engine 1)
 - (d) 75-10362, 78-11482, 78-11492, 78-11542, and 78-31542 (Engine 2).
 - (e) If the Maintenance Messages do not show on the FMCS CDU, then the Initial Evaluation has shown that the problem 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 problem.
 - 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.
 - b) Use the Wiring Diagram Manual references to identify intermediate electrical connections in the wiring harness and do a visual check.
 - c) If you find no problems, then replace components as listed in the Possible Causes list.
 - 4) Monitor the Airplane on the subsequent flight.

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	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

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F/O Electrical System Panel, P6-2

<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

**WARNING**

OBEY THE INSTRUCTIONS IN THIS PROCEDURE WHEN YOU OPEN THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT CAN OCCUR.

- (a) Do this task: Open the Thrust Reverser (Selection), AMM TASK 78-31-00-010-801-F00.
- (2) At the EEC, M1818, examine the Electrical Connector, DP0909 (Ch A):

NOTE: The Electrical Connector, DP0909 (Ch A), is on the J9 Wiring Harness.

- (a) See if the Electrical Connector, DP0909 (Ch A), is correctly connected to the EEC, M1818, and continue.
- (b) Disconnect the Electrical Connector, DP0909 (Ch A), from the EEC, M1818.
- (c) At the EEC, M1818 examine the receptacle and Harness Connector (AMM TASK 70-70-01-200-801-F00).
- 1) If the 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 the Harness Connector is damaged, replace the Wiring Harness, J9 (Ch A). These are the tasks:
 - 3 O'clock Strut Harness Removal, AMM TASK 73-21-06-000-802-F00
 - 3 O'clock Strut Harness Installation, AMM TASK 73-21-06-400-802-F00
 - a) Do the Repair Confirmation at the end of this task.
 - 3) If the Harness Connector was not correctly connected and no other problems were found, connect the Harness Connector to the EEC, M1818.
 - a) Do the Repair Confirmation at the end of this task.
- (3) Do this check of the wiring (WDM 78-35-11):
- (a) At the Harness Connector, DP0303 measure the resistance through the R T/R LVDT, T397:
- NOTE: If the Ambient Temperature is different than 70°F (21°C), use the indicated formula in the table below to calculate the acceptable Resistance Range at Ambient Temperature T (in °C).

CH A

pin	pin	RESISTANCE
E-	F-	$R=450 \left(\frac{234.5 + T}{254.5} \right)$

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T/R POSITION R SLEEVE (CH A) DP0303	T/R POSITION R SLEEVE (CH A) DP0303	
pin E-	pin F-	383-517Ω
pin E-	pin N-	> 10 MΩ
pin E-	pin Q-	> 10 MΩ
pin E-	pin P-	> 10 MΩ
pin E-	connector shell	> 10 MΩ

- (b) If the resistance is not in the specified range, connect the Electrical Connector, DP0303 (Ch A), to the EEC, M1818 and do the Fault Isolation Procedure - R T/R LVDT Excitation Circuit.
- (c) If the resistance is in the specified range, then continue.
- (4) Do this check of the wiring (WDM 78-35-11):
- (a) At the Harness Connector, DP0303 measure the resistance through the L T/R LVDT, T396:

NOTE: If the Ambient Temperature is different than 70°F (21°C), use the indicated formula in the table below to calculate the acceptable Resistance Range at Ambient Temperature T (in °C).

CH A		
pin	pin	RESISTANCE
Y-	GG	$R=450 ((234.5 + T)/254.5)$

T/R POSITION L SLEEVE (CH A) DP0303	T/R POSITION L SLEEVE (CH A) DP0303	
pin Y-	pin GG	383-517 Ω
pin Y-	pin BB	> 10 MΩ
pin Y-	pin U-	> 10 MΩ
pin Y-	pin CC	> 10 MΩ
pin Y-	connector shell	> 10 MΩ

- (b) If the resistance is not in the specified range, connect the Electrical Connector, DP0303 (Ch A), to the EEC, M1818 and do the Fault Isolation Procedure - L T/R LVDT Excitation Circuit.
- (c) If the resistance is in the specified range, then continue.
- (5) If the resistance is in the specified range for the HPTC Valve Position Transducer, T515, and the L and R T/R LVDT and the problem was found by the Initial Evaluation, 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 - HPTACC Valve Excitation Circuit

- (1) At the HPTC Valve Position Transducer, T515, examine the Electrical Connector, DP0903 (Ch A):
 - (a) See if the Electrical Connector, DP0903 (Ch A), is correctly connected to the HPTC Valve Position Transducer, T515, and continue.
 - (b) Disconnect the Electrical Connector, DP0903 (Ch A), from the HPTC Valve Position Transducer, T515.
 - (c) At the HPTC Valve Position Transducer, T515 examine the receptacle and Harness Connector (AMM TASK 70-70-01-200-801-F00).
 - 1) If the receptacle is damaged, replace the HPTC Valve Position Transducer, T515. These are the tasks:
 - HPTACC Valve Removal, AMM TASK 75-21-01-000-801-F00
 - HPTACC Valve Installation, AMM TASK 75-21-01-400-801-F00
 - a) Do the Repair Confirmation at the end of this task.
 - 2) If the Harness Connector is damaged, replace the Wiring Harness, J9 (Ch A). These are the tasks:
 - 3 O'clock Strut Harness Removal, AMM TASK 73-21-06-000-802-F00
 - 3 O'clock Strut Harness Installation, AMM TASK 73-21-06-400-802-F00
 - a) Do the Repair Confirmation at the end of this task.
 - 3) If the Connector was not correctly connected and no other problems were found, connect the Harness Connector to the HPTC Valve Position Transducer, T515.
 - a) Do the Repair Confirmation at the end of this task.
- (2) Do this check of the wiring (WDM 75-31-21):

**HPTC VALVE
POSITION
TRANSDUCER
DP0903**

pin 2	pin 3	0 - 150 Ω
pin 2	connector shell	> 10 M Ω

**HPTC VALVE
POSITION
TRANSDUCER
DP0903**

- (a) If the resistance is not in the specified range, replace the HPTC Valve Position Transducer, T515. These are the tasks:
 - HPTACC Valve Removal, AMM TASK 75-21-01-000-801-F00
 - HPTACC Valve Installation, AMM TASK 75-21-01-400-801-F00
 - 1) Do the Repair Confirmation at the end of this task.
- (b) If the resistance is in the specified range, replace the Wiring Harness, J9 (Ch A). These are the tasks:
 - 3 O'clock Strut Harness Removal, AMM TASK 73-21-06-000-802-F00
 - 3 O'clock Strut Harness Installation, AMM TASK 73-21-06-400-802-F00
 - 1) Do the Repair Confirmation at the end of this task.

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H. Fault Isolation Procedure - R T/R LVDT Excitation Circuit

- (1) At the R T/R LVDT, T397, examine the Electrical Connector, D30074 (Ch A):

NOTE: There is a T/R LVDT on the Upper Locking Actuator on the Torque Box of the R T/R on an Engine.

- (a) See if the Electrical Connector, D30074 (Ch A), is correctly connected to the R T/R LVDT, T397.
 - (b) Disconnect the Electrical Connector, D30074 (Ch A), from the R T/R LVDT, T397.
 - (c) At the R T/R LVDT, T397, examine the receptacle and Harness Connector (AMM TASK 70-70-01-200-801-F00).
 - 1) If the receptacle is damaged, replace the R T/R LVDT, T397. These are the tasks:
 - LVDT Removal, AMM TASK 78-36-02-000-801-F00
 - LVDT Installation, AMM TASK 78-36-02-400-801-F00
 - a) Do the Repair Confirmation at the end of this task.
 - 2) If the Harness Connector is damaged, then do the tasks to repair or replace the connector (SWPM Ch 20).
 - a) Do the Repair Confirmation at the end of this task.
 - 3) If the Harness Connector was not correctly connected, and no other problems were found, connect the Harness Connector to the R T/R LVDT, T397.
 - a) Do the Repair Confirmation at the end of this task.
- (2) Do this check of the wiring (WDM 78-35-11):

NOTE: If the Ambient Temperature is different than 70°F (21°C), use the indicated formula in the table below to calculate the acceptable Resistance Range at Ambient Temperature T (in °C).

CH A		
pin	pin	RESISTANCE
1	2	$R=450 ((234.5 + T)/254.5)$

T/R POSITION R SLEEVE (CH A) D30074	T/R POSITION R SLEEVE (CH A) D30074	
pin 1	pin 2	383-517 Ω
pin 1	airplane ground	> 10 M Ω

- (b) If the resistance is not in the specified range, replace the R T/R 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.
- (c) If the resistance is in the specified range, examine and repair the wires and connectors between the EEC, M1818 and the R T/R LVDT, T397.
 - 1) If you find a problem with the MW0303 (Ch A), Wiring Harness, then replace it. 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.
- 2) If you find a problem between the strut receptacle and R T/R LVDT, then do the tasks to repair or replace the wiring (SWPM Ch 20).
 - a) Do the Repair Confirmation at the end of this task.

I. Fault Isolation Procedure - L T/R LVDT Excitation Circuit

- (1) At the L T/R LVDT, T396, examine the Electrical Connector, D30072 (Ch A):

NOTE: There is an T/R LVDT on the Upper Locking Actuator on the Torque Box of the L T/R on each Engine.

- (a) See if the Electrical Connector, D30072 (Ch A), is correctly connected to the L T/R LVDT, T396, and continue.
 - (b) Disconnect the Electrical Connector, D30072 (Ch A), from the L T/R LVDT, T396.
 - (c) At the L T/R LVDT, T396 examine the receptacle and Harness Connector (AMM TASK 70-70-01-200-801-F00).
 - 1) If the receptacle is damaged, replace the L T/R LVDT, T396. These are the tasks:
 - LVDT Removal, AMM TASK 78-36-02-000-801-F00
 - LVDT Installation, AMM TASK 78-36-02-400-801-F00
 - a) Do the Repair Confirmation at the end of this task.
 - 2) If the Harness Connector is damaged, then do the tasks to repair or replace the connector (SWPM Ch 20).
 - a) Do the Repair Confirmation at the end of this task.
 - 3) If the Harness Connector was not correctly connected, and no other problems were found, connect the Harness Connector to the L T/R LVDT, T396.
 - a) Do the Repair Confirmation at the end of this task.
- (2) Do this check of the wiring (WDM 78-35-11):
- NOTE:** If the Ambient Temperature is different than 70°F (21°C), use the indicated formula in the table below to calculate the acceptable Resistance Range at Ambient Temperature T (in °C).

CH A

pin	pin	RESISTANCE
1	2	$R=450 \left(\frac{234.5 + T}{254.5} \right)$

T/R POSITION L SLEEVE (CH A) D30072

pin 1 pin 2 383-517 Ω
 pin 1 airplane ground > 10 MΩ

T/R POSITION L SLEEVE (CH A) D30072

- (b) If the resistance is not in the specified range, replace the L T/R LVDT, T396. These are the tasks:

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- LVDT Removal, AMM TASK 78-36-02-000-801-F00
- LVDT Installation, AMM TASK 78-36-02-400-801-F00
- 1) Do the Repair Confirmation at the end of this task.
- (c) If the resistance is in the specified range, examine and repair the wires and connectors between the EEC, M1818 and the L T/R LVDT, T396.
 - 1) If you find a problem with the MW0303 (Ch A), Wiring Harness, then replace it.
These are the tasks:
 - Nacelle Wiring Harnesses Removal, AMM TASK 71-51-03-000-801-F00
 - Nacelle Wiring Harnesses Installation, AMM TASK 71-51-03-400-801-F00
 - a) Do the Repair Confirmation at the end of this task.
 - 2) If you find a problem between the strut receptacle and L T/R LVDT, then do the tasks to repair or replace the wiring (SWPM Ch 20).
 - a) Do the Repair Confirmation at the end of this task.

J. Repair Confirmation

- (1) Do these steps:
 - (a) Make sure that the Electrical Connector, DP0909 (Ch A), is correctly connected to the EEC, M1818.
 - (b) Make sure that the Electrical Connector, DP0303 (Ch A), is correctly connected to the EEC, M1818.
 - (c) Make sure that the Electrical Connector, DP0903 (Ch A), is correctly connected at the HPTC Valve Position Transducer, T515.
 - (d) Make sure that the Electrical Connector, D30074 (Ch A), is correctly connected to the R T/R LVDT, T397
 - (e) Make sure that the Electrical Connector, D30072 (Ch A), is correctly connected to the L T/R LVDT, T396.
 - (f) Make sure that all connectors that were disconnected to do an electrical check between the L and R T/R Sleeve LVDT and the EEC, M1818, are correctly connected.
 - (g) 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

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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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	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 78-11481, 78-11482, 78-11491 or 78-11492 does not show, then you corrected the problem. Do this test to make sure that no other problems occurred during the Fault Isolation Procedure:
- 1) Do this task: Test 12 - Actuators Test, AMM TASK 71-00-00-700-807-F00.
- a) If there is a problem, then go to the Fault Isolation Procedure for the Maintenance Message that shows.



OBEY THE INSTRUCTIONS IN THIS PROCEDURE WHEN YOU CLOSE THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT CAN OCCUR.

- (3) Do this task: Close the Thrust Reverser (Selection), AMM TASK 78-31-00-010-804-F00.
- (4) If the problem still exists, continue the Fault Isolation Procedure at the subsequent step.
- (a) Do these steps:
- Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	1	C00458	ENGINE 1 IGNITION RIGHT
A	3	C00153	ENGINE 1 IGNITION LEFT
A	4	C01390	ENGINE 1 ALTN PWR CHAN B
A	5	C01314	ENGINE 1 ALTN PWR CHAN A
B	4	C01003	ENGINE 1 THRUST REVERSER IND
B	5	C00276	ENGINE 1 THRUST REVERSER CONT
B	6	C01412	ENGINE 1 THRUST REVERSER INTLK
B	7	C01266	ENGINE 1 THRUST REVERSER SYNC LOCK

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	5	C01267	ENGINE 2 THRUST REVERSER SYNC LOCK
C	6	C01413	ENGINE 2 THRUST REVERSER INTLK
C	7	C00277	ENGINE 2 THRUST REVERSER CONT
C	8	C01004	ENGINE 2 THRUST REVERSER IND
D	4	C00459	ENGINE 2 IGNITION RIGHT
D	6	C00151	ENGINE 2 IGNITION LEFT
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

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— END OF TASK —

819. FADEC3 (Ch B) Excitation Group 2: VSV, VBV and FMV (Channel B) LVDT Excitation Circuit Fault - Fault Isolation

A. Description

- (1) This task is for these groups of maintenance messages:
 - (a) Engine 1: 73-20341, 75-20391 and 75-20441
 - (b) Engine 2: 73-20342, 75-20392 and 75-20442.
- (2) The EEC detects a fault in the linear variable differential transformer (LVDT) excitation circuit (Ch B) for the fuel metering valve (FMV) (integral to the HMU) the variable stator vane (VSV) or the left variable bleed valve (VBV).

B. Possible Causes

- (1) Fuel Metering Valve (Integral to the HMU, M1823)
- (2) Left VSV actuator, T518
- (3) Left VBV actuator, T542
- (4) J6 wire harness
- (5) J10 wire harness
- (6) EEC, M1818.

C. Circuit Breakers

- (1) For Engine 1,
 - (a) 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

- (2) For Engine 2,
 - (a) 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>
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

D. Related Data

- (1) Component Location (75-34 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (75-34 TASK SUPPORT Figure 302)
- (3) (SSM 73-25-11)
- (4) (SSM 73-25-21)
- (5) (SSM 75-31-12)
- (6) (SSM 75-31-22)
- (7) (WDM 73-25-11)

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- (8) (WDM 73-25-21)
- (9) (WDM 75-31-12)
- (10) (WDM 75-31-22)

E. Initial Evaluation

- (1) Do these two steps to find out if the messages are still active:
 - (a) Do this task: Test 12 - Actuators Test, AMM TASK 71-00-00-700-807-F00.
NOTE: Messages 73-2034Y, 75-2039Y and 75-2044Y are detected by this test.
- (2) If one of these groups of maintenance message numbers shows, then do the Fault Isolation Procedure below for the applicable engine:
 - (a) 73-20341, 75-20391 and 75-20441 (Engine 1)
 - (b) 73-20342, 75-20392 and 75-20442 (Engine 2)
 - (c) If the maintenance messages do 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 these steps to prepare for the procedure:
 - (a) For Engine 1,
 - 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) For Engine 2,
 - 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>
D	4	C00459	ENGINE 2 IGNITION RIGHT
D	6	C00151	ENGINE 2 IGNITION LEFT

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F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

**WARNING**

OBEY THE INSTRUCTIONS IN THIS PROCEDURE WHEN YOU OPEN THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT CAN OCCUR.

- (c) Do this task: Open the Thrust Reverser (Selection), AMM TASK 78-31-00-010-801-F00.
- (2) Examine the electrical connector, DP0606 (Ch B), at the EEC:
- NOTE:** The electrical connector, DP0606 (Ch B), is on the J6 wire harness.
- (a) See if electrical connector, DP0606 (Ch B), is correctly connected to the EEC, and continue.
 - (b) Disconnect the electrical connector, DP0606 (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 the harness connector is damaged, then replace the wire harness, J6 (Ch B). These are the tasks:
 - Fan Wiring Harness Removal, AMM TASK 73-21-06-000-801-F00
 - Fan Wiring Harness Installation, AMM TASK 73-21-06-400-801-F00
 - a) Do the Repair Confirmation at the end of this task.
 - b) If the Repair Confirmation is not satisfactory, then open the circuit breakers above and continue.
 - 3) If the harness connector was not correctly connected and no other problems were found, then re-connect the harness connector to the EEC 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 these steps to find a possible short in the excitation circuit for the FMV LVDT in the HMU:
- (a) Measure the resistance at these pins on the wire harness connector, DP0606 through the FMV LVDT:

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Table 239

CONNECTOR DP0606**PINS****RESISTANCE**

PINS T TO U

50 TO 72 OHMS

PIN T TO ALL OTHER PINS

GREATER THAN
10 MEGOHMS

PIN T TO THE CONNECTOR SHELL

GREATER THAN
10 MEGOHMS

- (b) If the resistance is not in the specified range, then re-connect the electrical connector, DP0606 (Ch B), to the EEC and do the Fault Isolation Procedure - FMV Excitation Circuit below.
- (c) If the resistance is in the specified range, then re-connect the electrical connector, DP0606 (Ch B), to the EEC and continue.
- (4) Examine the electrical connector, DP1010 (Ch B), at the EEC:
- NOTE:** The electrical connector, DP1010 (Ch B), is on the J10 wire harness.
- (a) See if the electrical connector, DP1010 (Ch B), is correctly connected to the EEC, and continue.
- (b) Disconnect the electrical connector, DP1010 (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 the harness connector is damaged, then replace the wire harness, J10 (Ch B). These are the tasks:
 - 3 O'clock Strut Harness Removal, AMM TASK 73-21-06-000-802-F00
 - 3 O'clock Strut Harness Installation, AMM TASK 73-21-06-400-802-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.
 - 3) If the harness connector was not correctly connected and no other problems were found, then re-connect the harness connector to the EEC 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) Do these steps to find a possible short in the excitation circuit for the left VSV actuator LVDT (referred to as the VSV LVDT):

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- (a) Measure the resistance at these pins on the wire harness connector, DP1010 through the VSV LVDT:

Table 240

CONNECTOR DP1010	PINS	RESISTANCE
	PINS N TO h	400 TO 600 OHMS
	PIN N TO ALL OTHER PINS	GREATER THAN 10 MEGOHMS
	PIN N TO THE CONNECTOR SHELL	GREATER THAN 10 MEGOHMS

- (b) If the resistance is not in the specified range, then re-connect the electrical connector, DP1010 (Ch B), to the EEC and do the Fault Isolation Procedure - VSV Actuator Excitation Circuit below.
- (c) If the resistance is in the specified range, then re-connect the electrical connector, DP1010 (Ch B), to the EEC and continue.

G. Fault Isolation Procedure - FMV Excitation Circuit

- (1) Examine the electrical connector, DP0601 (Ch B), at the HMU:
 - (a) See if electrical connector, DP0601 (Ch B), is correctly connected to the HMU, and continue.
 - (b) Disconnect the electrical connector, DP0601 (Ch B), from the HMU.
 - (c) Visually examine the HMU receptacle and wire harness connector (AMM TASK 70-70-01-200-801-F00).
 - 1) If the HMU receptacle is damaged, then replace the HMU, M1823. These are the tasks:
 - HMU Removal, AMM TASK 73-21-10-000-801-F00
 - HMU Installation, AMM TASK 73-21-10-400-801-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 harness connector is damaged, then replace the wire harness, J6 (Ch B). These are the tasks:
 - Fan Wiring Harness Removal, AMM TASK 73-21-06-000-801-F00
 - Fan Wiring Harness Installation, AMM TASK 73-21-06-400-801-F00
 - a) Do the Repair Confirmation at the end of this task.
 - b) If the Repair Confirmation is not satisfactory, then open the circuit breakers above and continue.
 - 3) If the harness connector was not correctly connected and no other problems were found, then re-connect the harness connector to the HMU 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.
- (2) Measure the resistance between these pins at the HMU receptacle, DP0601:

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Table 241

RECEPTACLE DP0601

PINS

RESISTANCE

PINS 16 TO 34

50 TO 72 OHMS

PIN 16 TO THE CONNECTOR SHELL

GREATER THAN
10 MEGOHMS

- (a) If the resistance is not in the specified range, then replace the HMU, M1823. These are the tasks:
- HMU Removal, AMM TASK 73-21-10-000-801-F00
 - HMU Installation, AMM TASK 73-21-10-400-801-F00
 - 1) 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.
- (b) If the resistance is in the specified range, then replace the wire harness, J6 (Ch B). These are the tasks:
- Fan Wiring Harness Removal, AMM TASK 73-21-06-000-801-F00
 - Fan Wiring Harness Installation, AMM TASK 73-21-06-400-801-F00
 - 1) Do the Repair Confirmation at the end of this task.

H. Fault Isolation Procedure - VSV Actuator Excitation Circuit

- (1) Examine the electrical connector, DP1002 (Ch B), at the VSV actuator:

NOTE: Channel B is for the left actuator.

- (a) See if the electrical connector, DP1002 (Ch B), is correctly connected to the VSV actuator, and continue.
- (b) Disconnect the electrical connector, DP1002 (Ch B), from the VSV actuator.
- (c) Visually examine the VSV Actuator receptacle and wire harness connector (AMM TASK 70-70-01-200-801-F00).
- 1) If the VSV Actuator receptacle is damaged, then replace the left VSV Actuator (Ch B), T518. These are the tasks:
 - Left VSV Actuator Removal, AMM TASK 75-31-01-000-801-F00
 - Left VSV Actuator Installation, AMM TASK 75-31-01-400-801-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 harness connector is damaged, then replace the wire harness, J10 (Ch B). These are the tasks:
 - 3 O'clock Strut Harness Removal, AMM TASK 73-21-06-000-802-F00
 - 3 O'clock Strut Harness Installation, AMM TASK 73-21-06-400-802-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.

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- 3) If the harness connector was not correctly connected and no other problems were found, then re-connect the harness connector to the VSV actuator 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.
- (2) Measure the resistance between these pins at the VSV actuator receptacle (Ch B):

Table 242

RECEPTACLE (CH B)	PINS	RESISTANCE
	PINS 2 TO 3	400 TO 600 OHMS
	PIN 2 TO THE CONNECTOR SHELL	GREATER THAN 10 MEGOHMS

- (a) If the resistance is not in the specified range, then replace the left VSV Actuator (Ch B), T518. These are the tasks:
 - Left VSV Actuator Removal, AMM TASK 75-31-01-000-801-F00
 - Left VSV Actuator Installation, AMM TASK 75-31-01-400-801-F00
 - 1) 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.
- (b) If the resistance is in the specified range, then replace the wire harness, J10 (Ch B). These are the tasks:
 - 3 O'clock Strut Harness Removal, AMM TASK 73-21-06-000-802-F00
 - 3 O'clock Strut Harness Installation, AMM TASK 73-21-06-400-802-F00
 - 1) Do the Repair Confirmation at the end of this task.

I. Fault Isolation Procedure - VBV Excitation Circuit

- (1) Examine the electrical connector, DP1008 (Ch B), at the VBV:

NOTE: The electrical connector, DP1008 (Ch B), is on the J10 wire harness.

 - (a) See if the electrical connector, DP1008 (Ch B), is correctly connected to the VBV, and continue.
 - (b) Disconnect the electrical connector, DP1008 (Ch B), from the VBV.
 - (c) Visually examine the VBV receptacle and wire harness connector (AMM TASK 70-70-01-200-801-F00).
 - 1) If the VBV receptacle is damaged, then replace the VBV, T542. These are the tasks:
 - Left VBV Actuator Removal, AMM TASK 75-32-02-000-801-F00
 - Left VBV Actuator Installation, AMM TASK 75-32-02-400-801-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 harness connector is damaged, then replace the wire harness, J10 (Ch B). These are the tasks:

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- Fan Wiring Harness Removal, AMM TASK 73-21-06-000-801-F00
- Fan Wiring Harness Installation, AMM TASK 73-21-06-400-801-F00
 - a) Do the Repair Confirmation at the end of this task.
 - b) If the Repair Confirmation is not satisfactory, then open the circuit breakers above and continue.
- 3) If the connector was not correctly connected and no other problem was found, then re-connect the harness connector to the VBV LVDT 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.
- (2) Measure the resistance between these pins at the VBV receptacle (Ch B):
NOTE: The electrical connector, DP1008 (Ch B), is on the J10 wire harness.

Table 243

RECEPTACLE (CH B)	PINS	RESISTANCE
	PINS 1 TO 2	250 TO 320 OHMS
	PIN 2 TO THE CONNECTOR SHELL	GREATER THAN 20 MEGOHMS

- (a) If the resistance is not in the specified range, then replace the applicable VBV, T520. These are the tasks:
 - Left VBV Actuator Removal, AMM TASK 75-32-02-000-801-F00
 - Left VBV Actuator Installation, AMM TASK 75-32-02-400-801-F00
 - 1) 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.
- (b) If the resistance is in the specified range, then replace the wire harness, J10 (Ch B). These are the tasks:
 - 3 O'clock Strut Harness Removal, AMM TASK 73-21-06-000-802-F00
 - 3 O'clock Strut Harness Installation, AMM TASK 73-21-06-400-802-F00
 - 1) Do the Repair Confirmation at the end of this task.

J. Repair Confirmation

- (1) Do these steps to prepare for the procedure:
 - (a) Make sure that the electrical connector, DP0606 (Ch B), is correctly connected at the EEC.
 - (b) Make sure that the electrical connector, DP1010 (Ch B), is correctly connected at the EEC.
 - (c) Make sure that the electrical connector, DP0601 (Ch B), is correctly connected at the HMU.
 - (d) Make sure that the electrical connector, DP1002 (Ch B), is correctly connected at the left VSV actuator.

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- (e) Make sure that the electrical connector, DP1008 (Ch B), is correctly connected at the left VBV actuator.
- (f) For Engine 1,
- 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

- (g) For Engine 2,
- 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
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

- (2) Do this task: Test 12 - Actuators Test, AMM TASK 71-00-00-700-807-F00.
- (a) If there is a fault, then go to the fault isolation task for the maintenance message that shows.



OBEY THE INSTRUCTIONS IN THIS PROCEDURE WHEN YOU CLOSE THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT CAN OCCUR.

- (3) Do this task: Close the Thrust Reverser (Selection), AMM TASK 78-31-00-010-804-F00.

————— **END OF TASK** —————

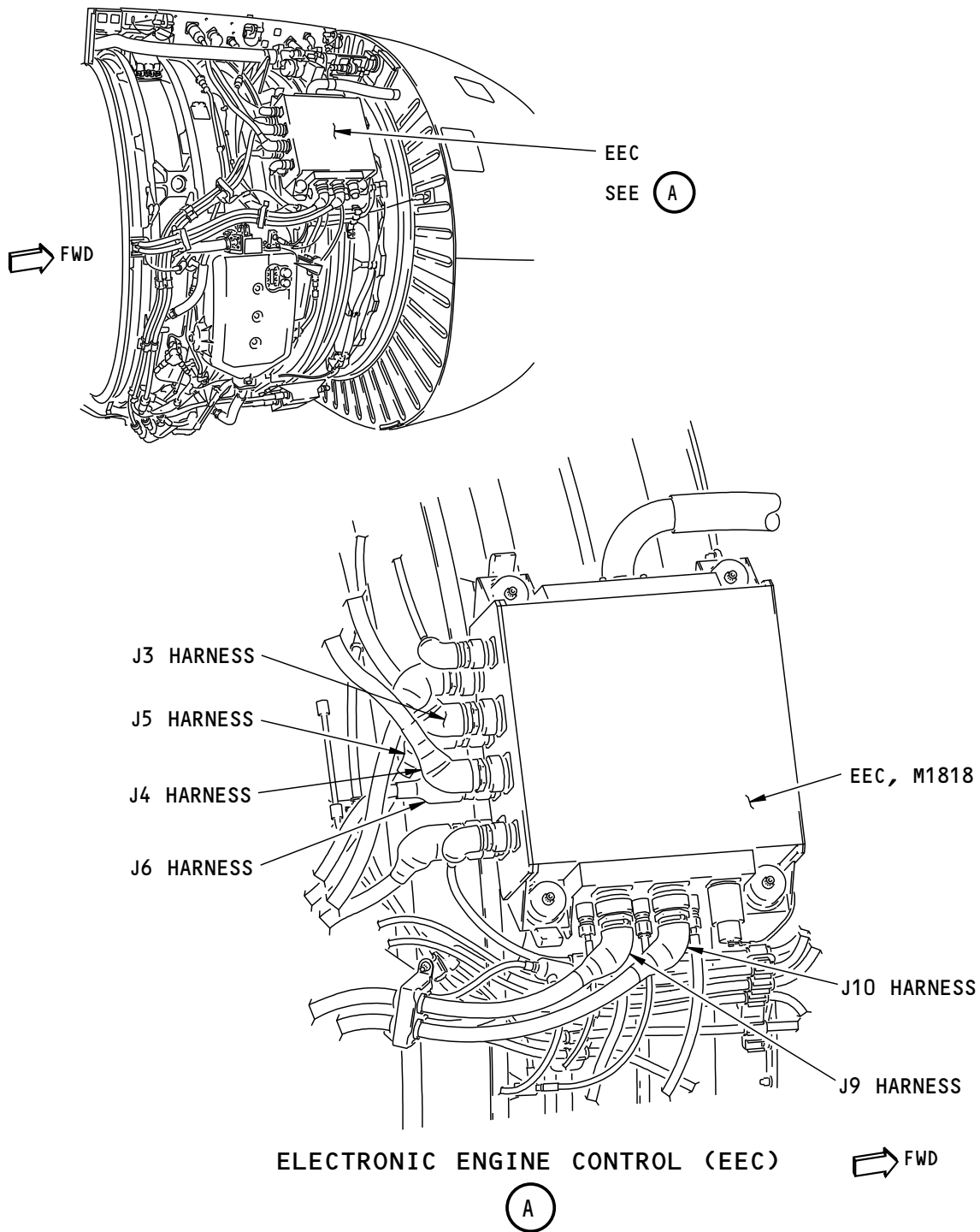
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H56016 S0006746162_V1

LVDT Excitation Circuit - Component Location
Figure 301/75-34-00-990-801-F00 (Sheet 1 of 11)

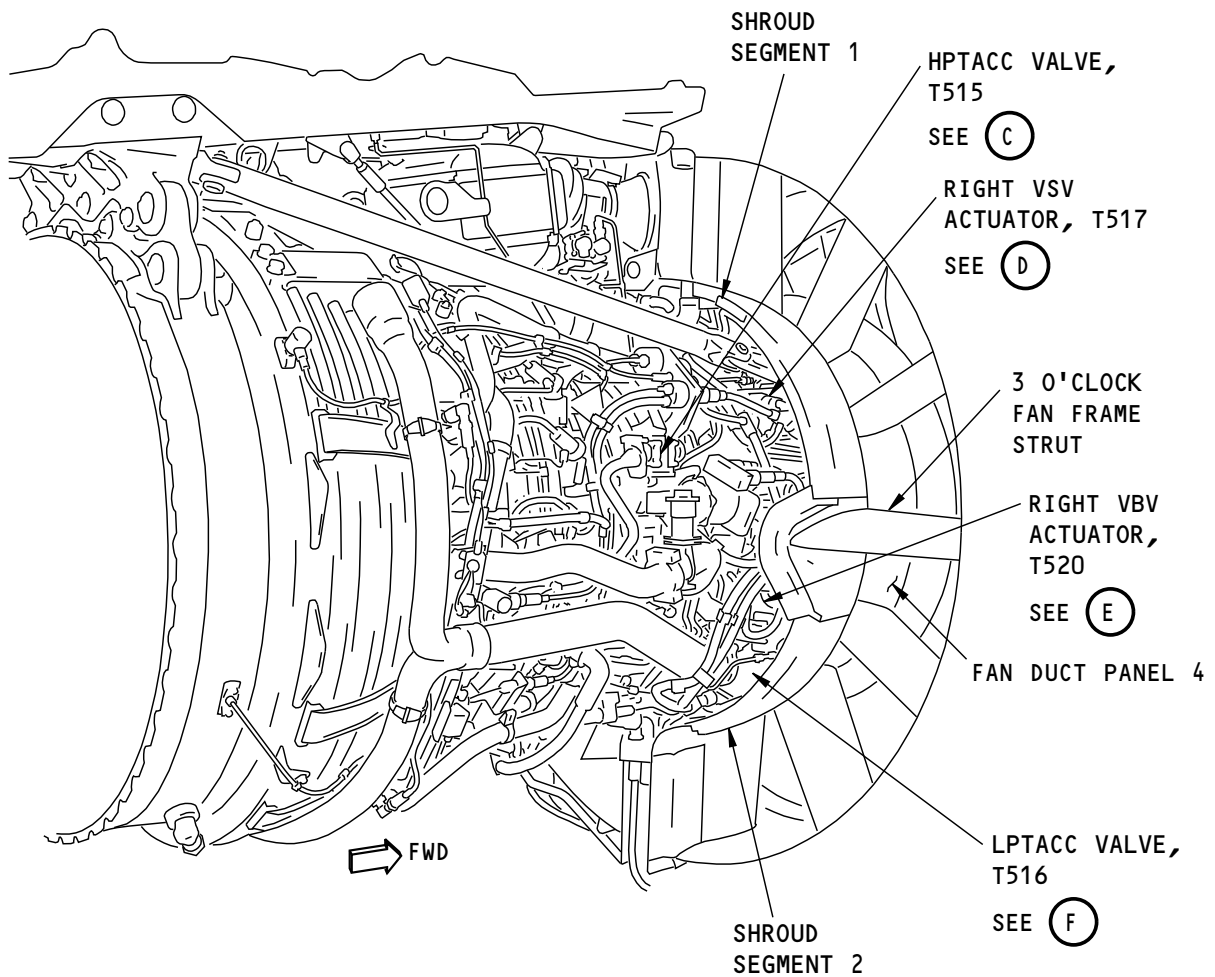
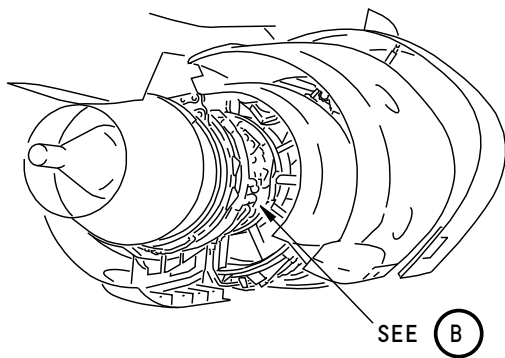
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(B)

H56050 S0006746163_V1

LVDT Excitation Circuit - Component Location
Figure 301/75-34-00-990-801-F00 (Sheet 2 of 11)

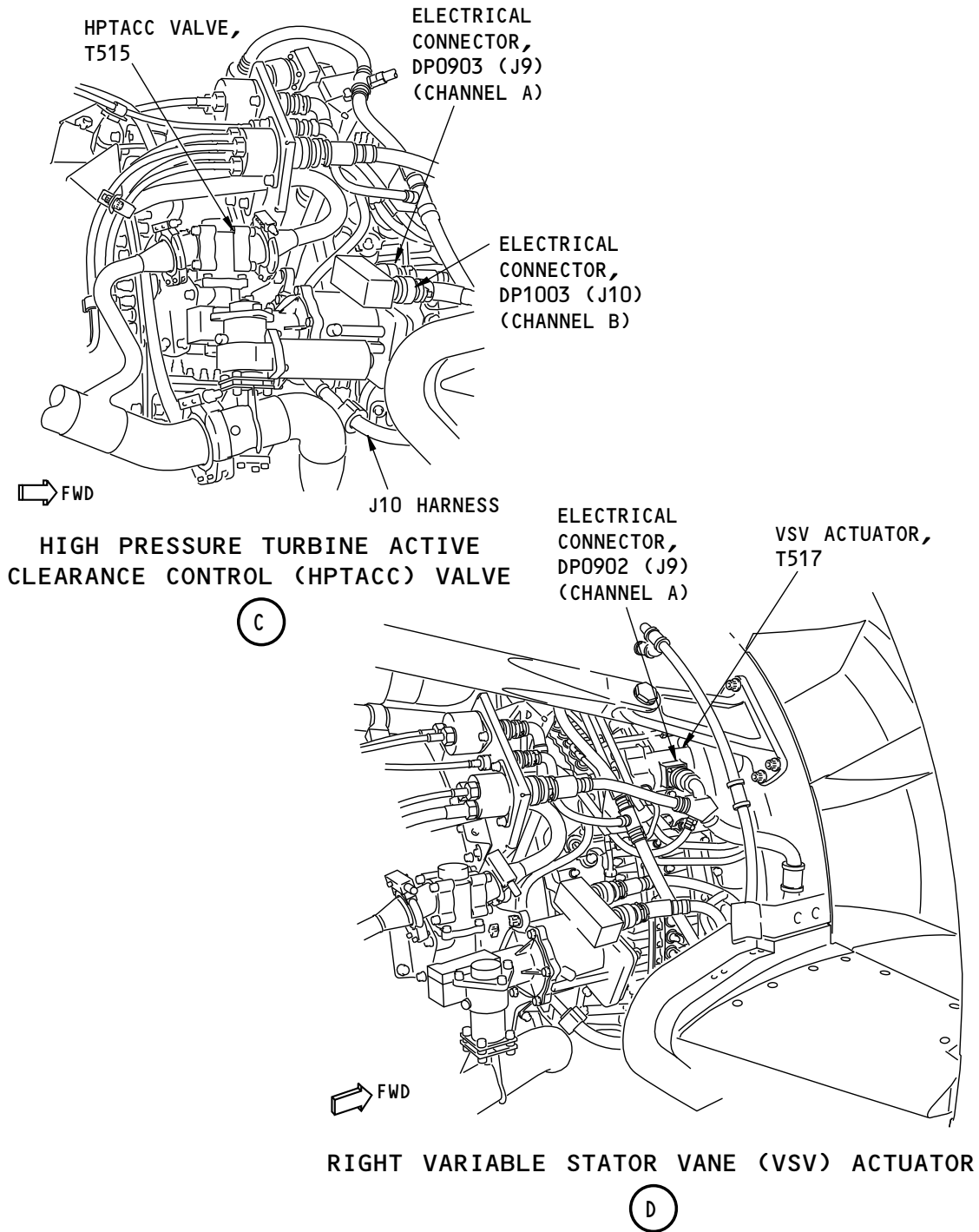
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H56557 S0006746164_V1

LVDT Excitation Circuit - Component Location
Figure 301/75-34-00-990-801-F00 (Sheet 3 of 11)

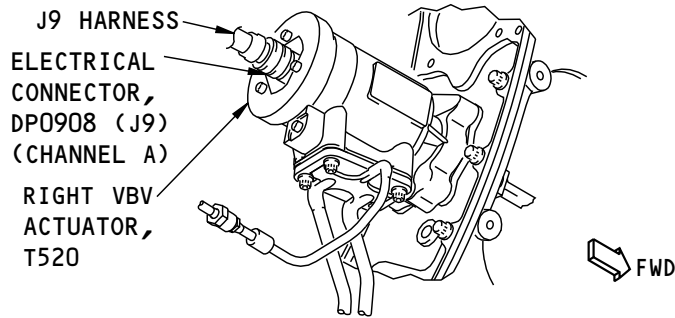
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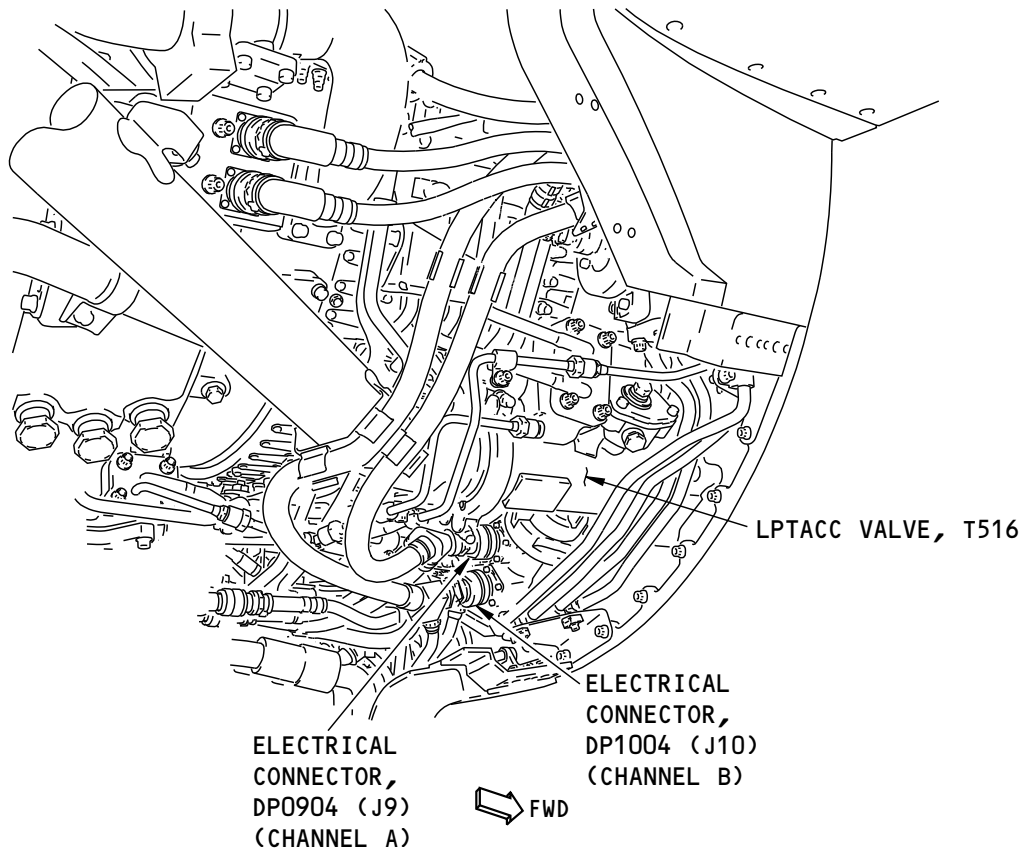
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RIGHT VARIABLE BLEED VALVE (VBV) ACTUATOR

E



LOW PRESSURE TURBINE ACTIVE CLEARANCE CONTROL (LPTACC) VALVE

F

H56613 S0006746165_V1

LVDT Excitation Circuit - Component Location
Figure 301/75-34-00-990-801-F00 (Sheet 4 of 11)

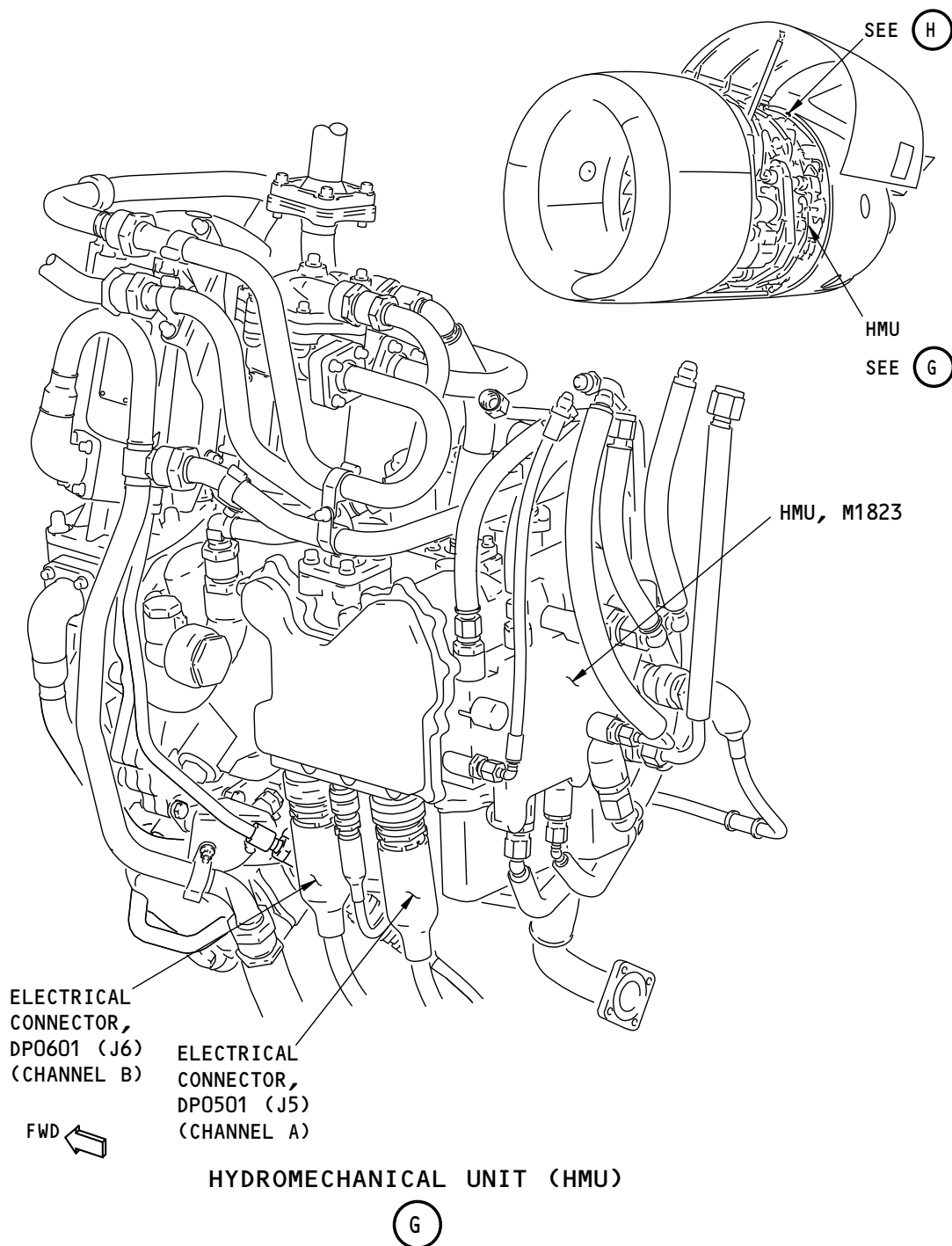
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H56823 S0006746166_V1

LVDT Excitation Circuit - Component Location
Figure 301/75-34-00-990-801-F00 (Sheet 5 of 11)

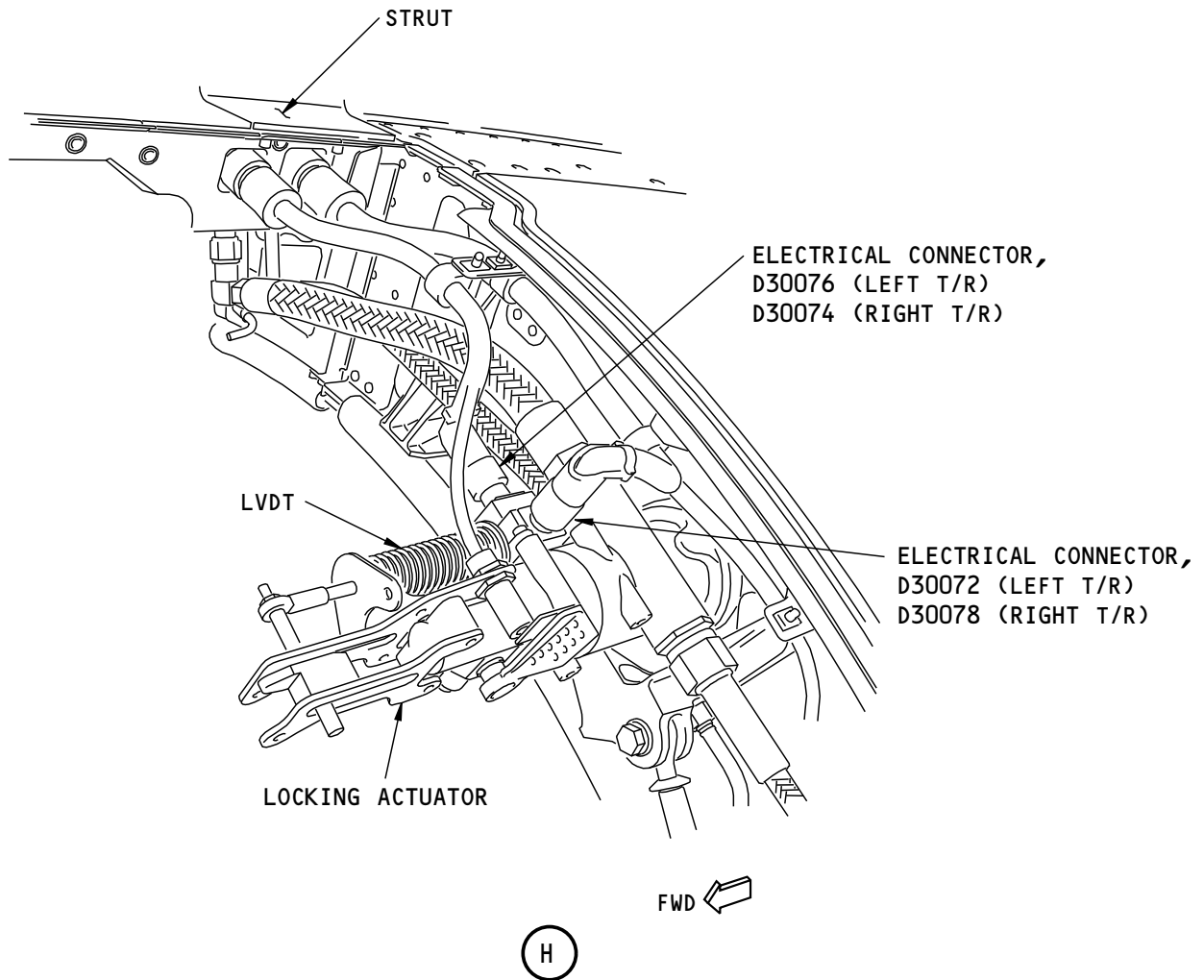
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H56838 S0006746167_V1

LVDT Excitation Circuit - Component Location
Figure 301/75-34-00-990-801-F00 (Sheet 6 of 11)

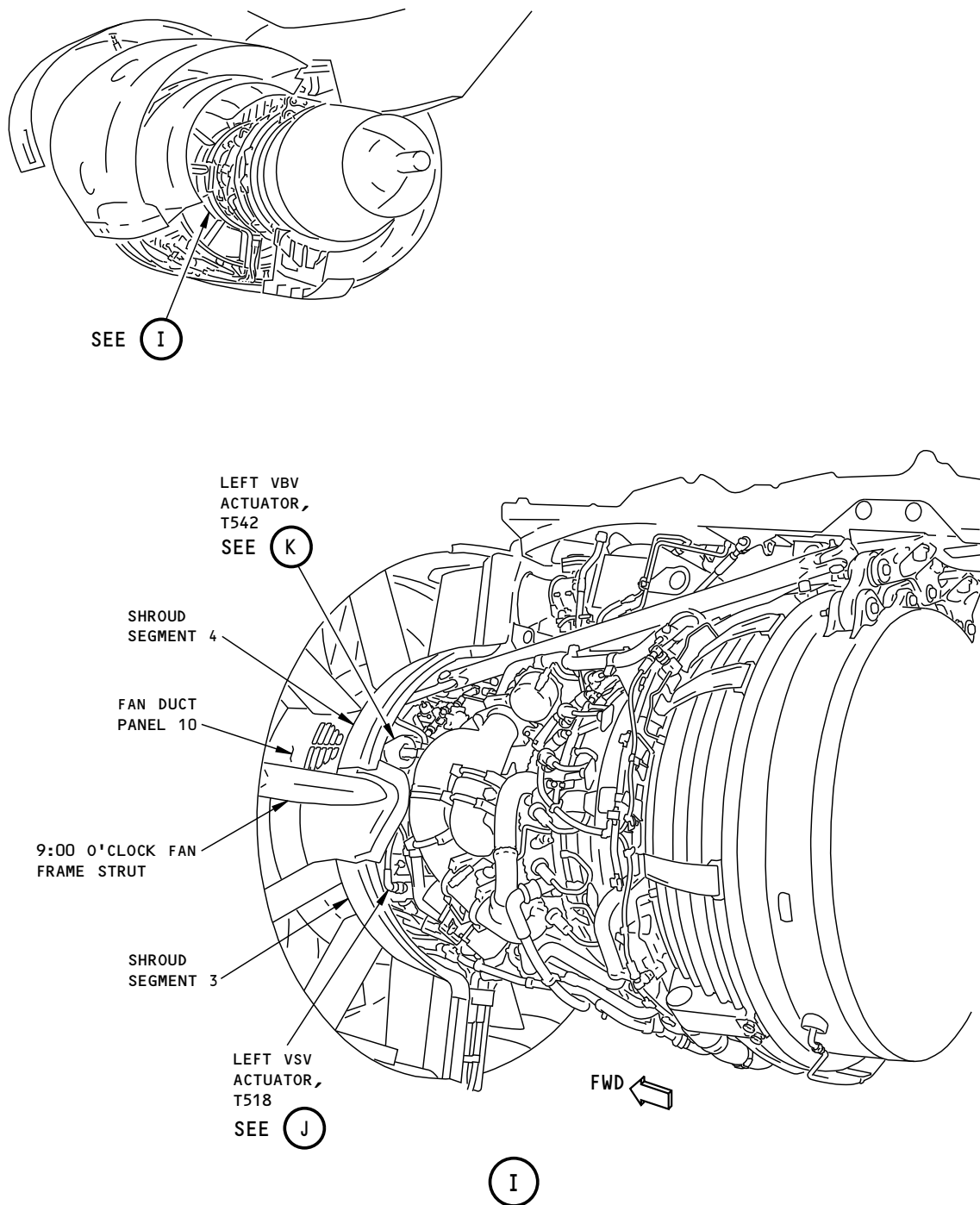
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H56925 S0006746168_V2

LVDT Excitation Circuit - Component Location
Figure 301/75-34-00-990-801-F00 (Sheet 7 of 11)

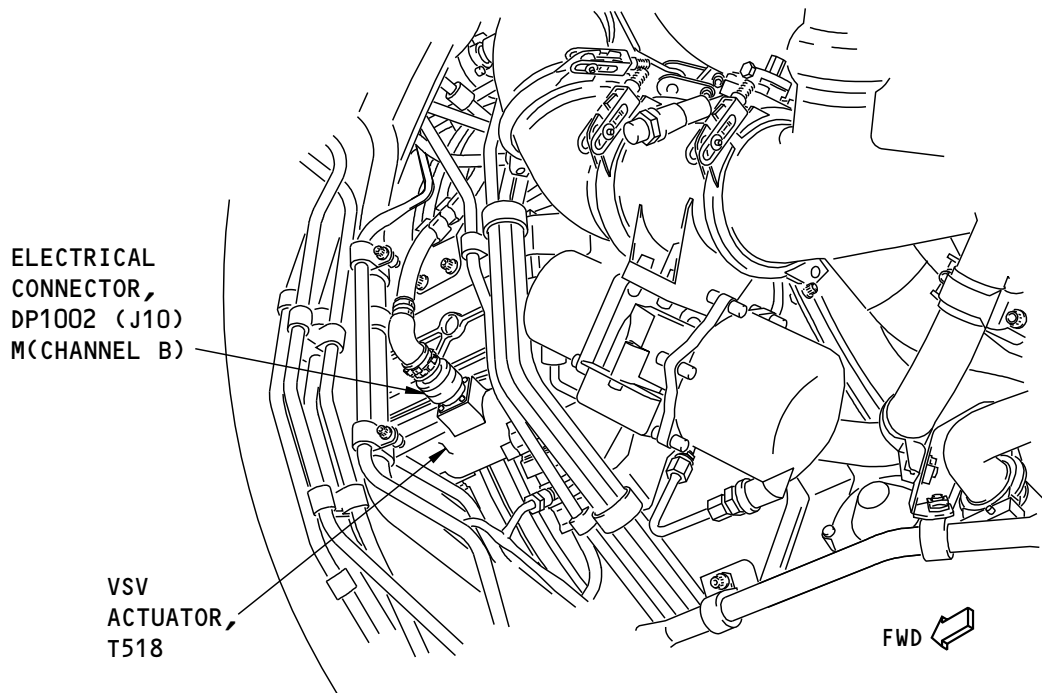
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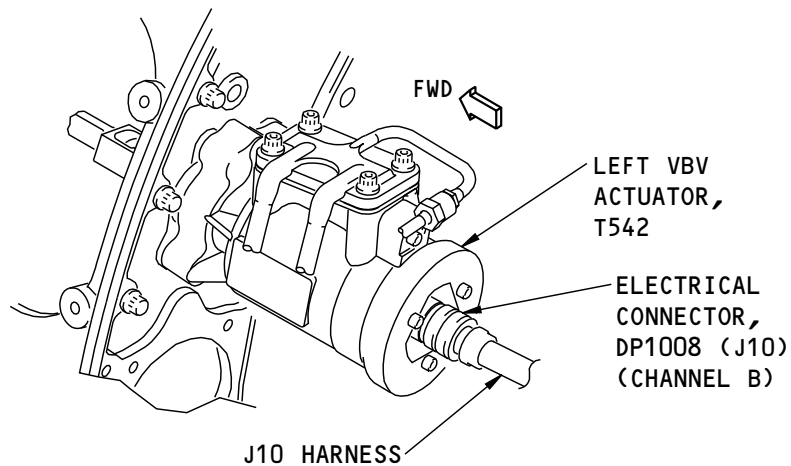
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LEFT VARIABLE STATOR VANE (VSV) ACTUATOR

J



LEFT VARIABLE BLEED VALVE (VBV) ACTUATOR

K

H56956 S0006746169_V2

LVDT Excitation Circuit - Component Location
Figure 301/75-34-00-990-801-F00 (Sheet 8 of 11)

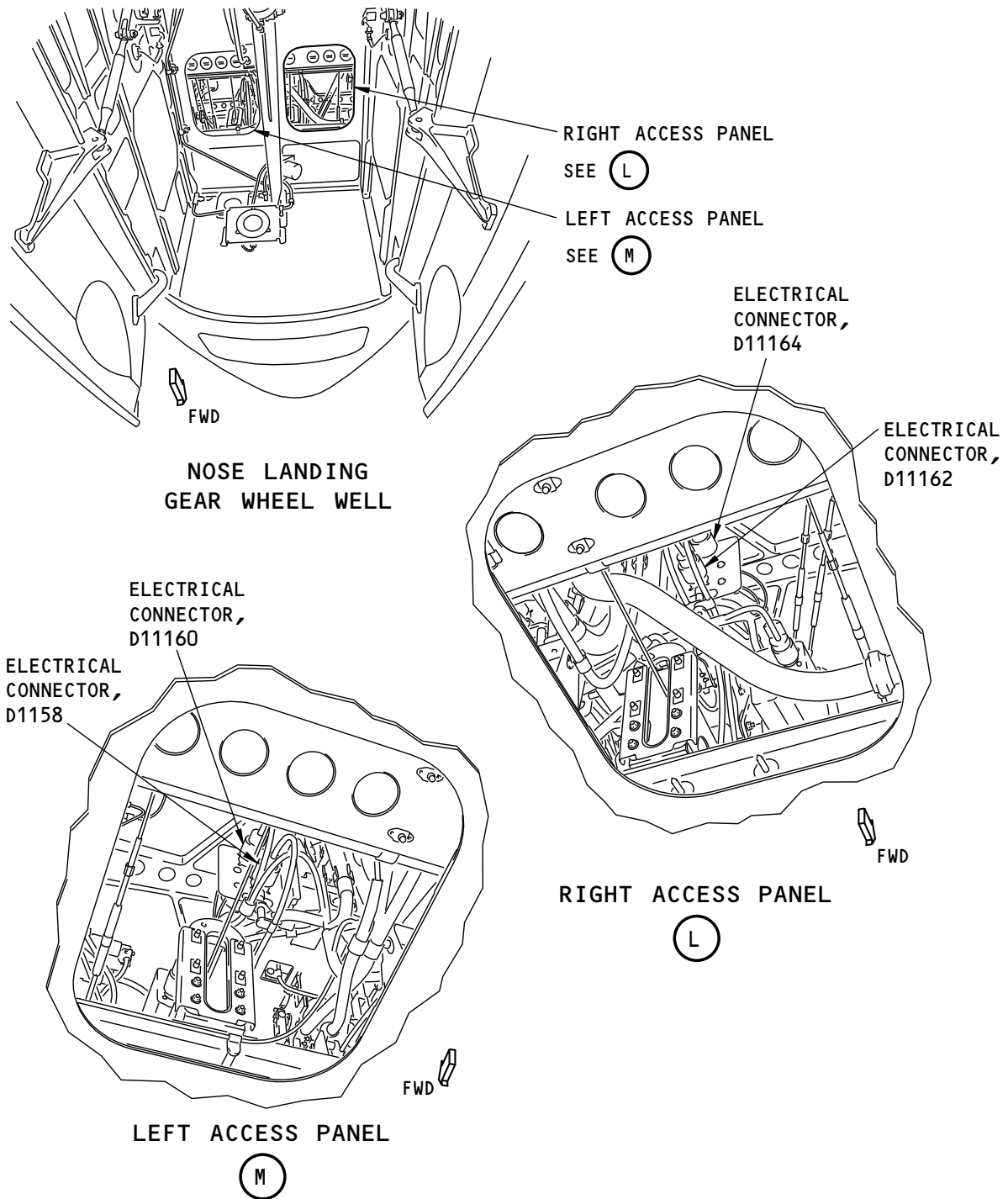
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H56990 S0006746170_V1

LVDT Excitation Circuit - Component Location
Figure 301/75-34-00-990-801-F00 (Sheet 9 of 11)

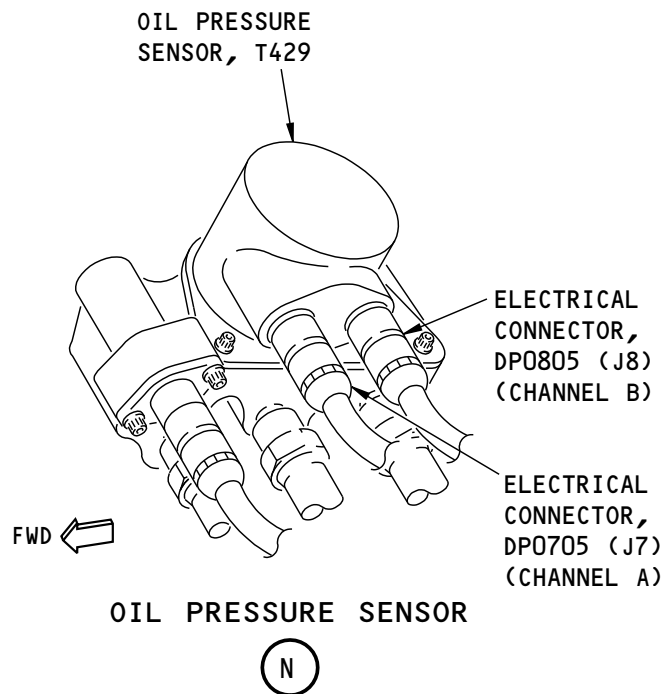
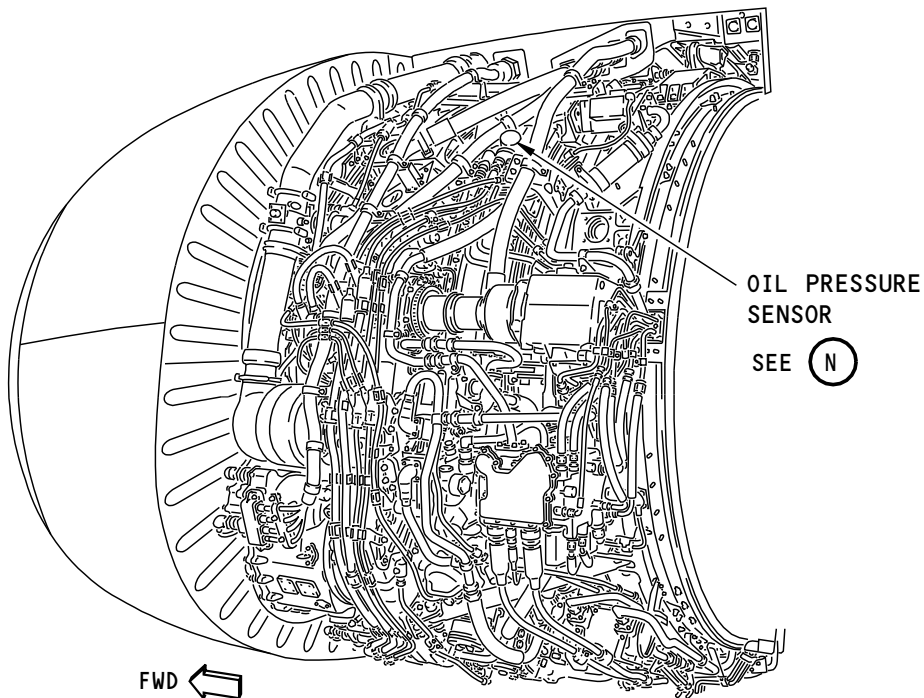
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H57000 S0006746171_V1

LVDT Excitation Circuit - Component Location
Figure 301/75-34-00-990-801-F00 (Sheet 10 of 11)

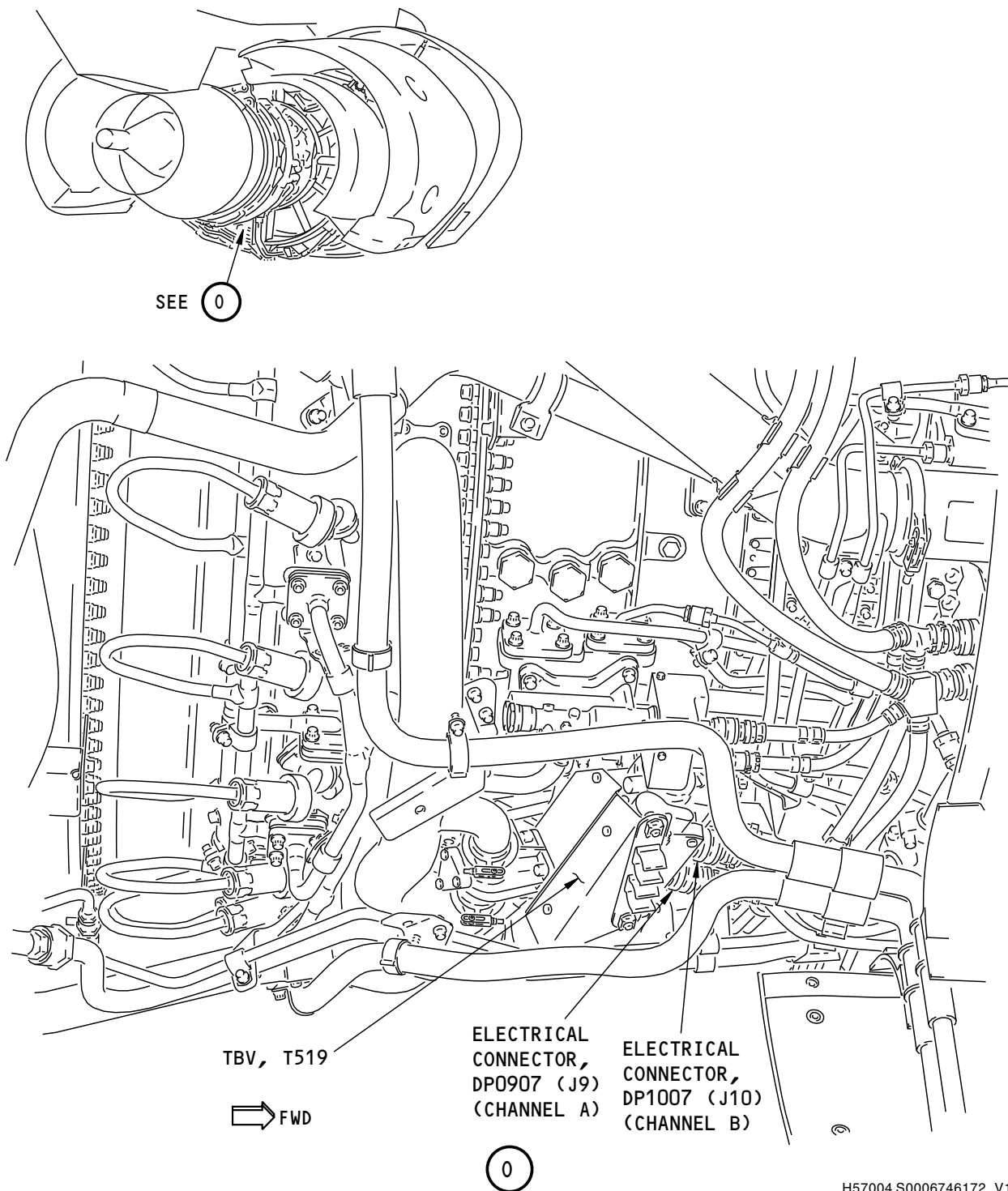
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H57004 S0006746172_V1

LVDT Excitation Circuit - Component Location
Figure 301/75-34-00-990-801-F00 (Sheet 11 of 11)

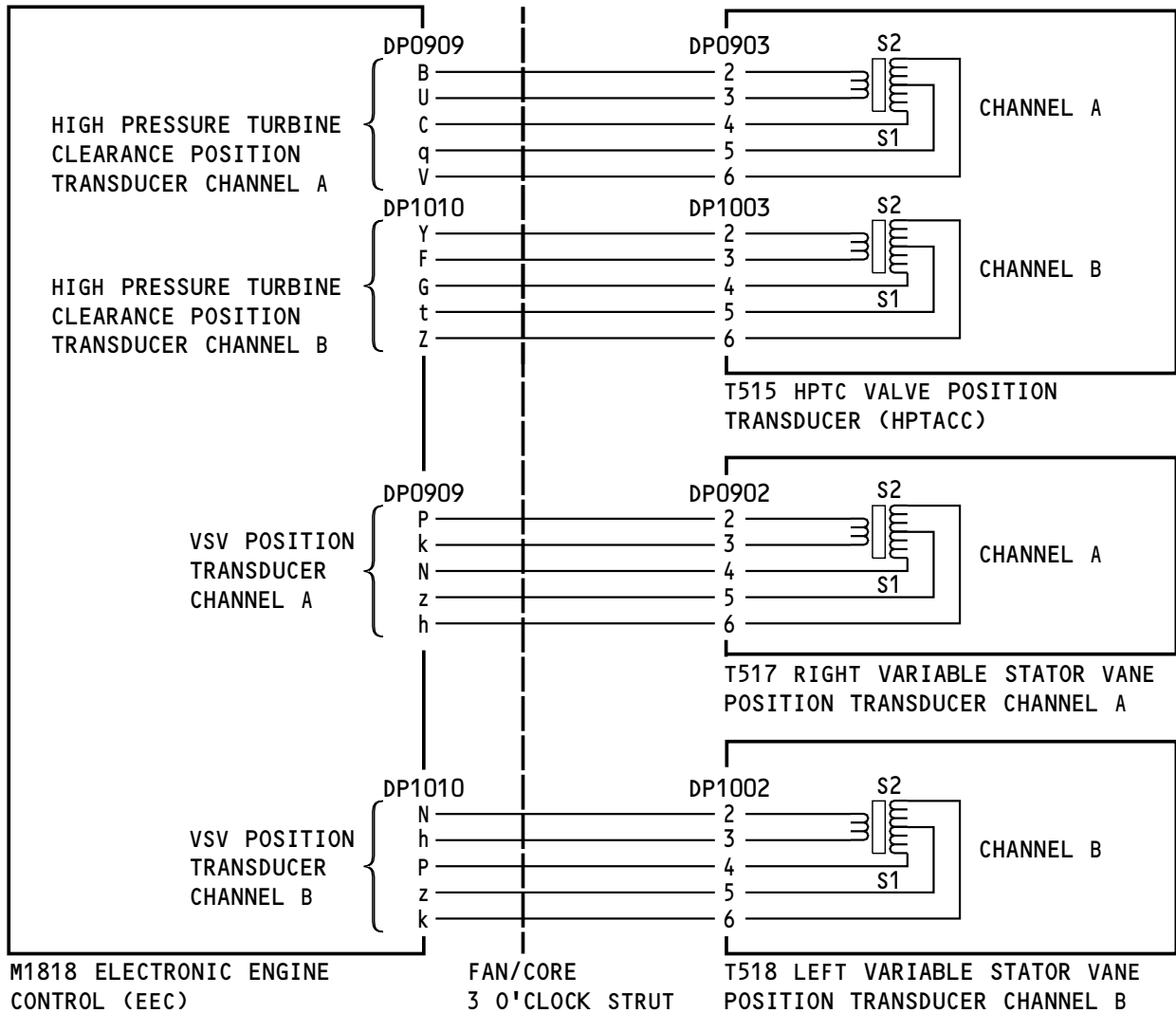
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NOTE: THE WDM/SSM ADD A DASH TO THE PIN LETTER TO DENOTE A LOWER CASE PIN, SUCH AS A- = a.

H57239 S0006746175_V1

LVDT Excitation Circuit - Simplified Schematic
Figure 302/75-34-00-990-802-F00 (Sheet 1 of 8)

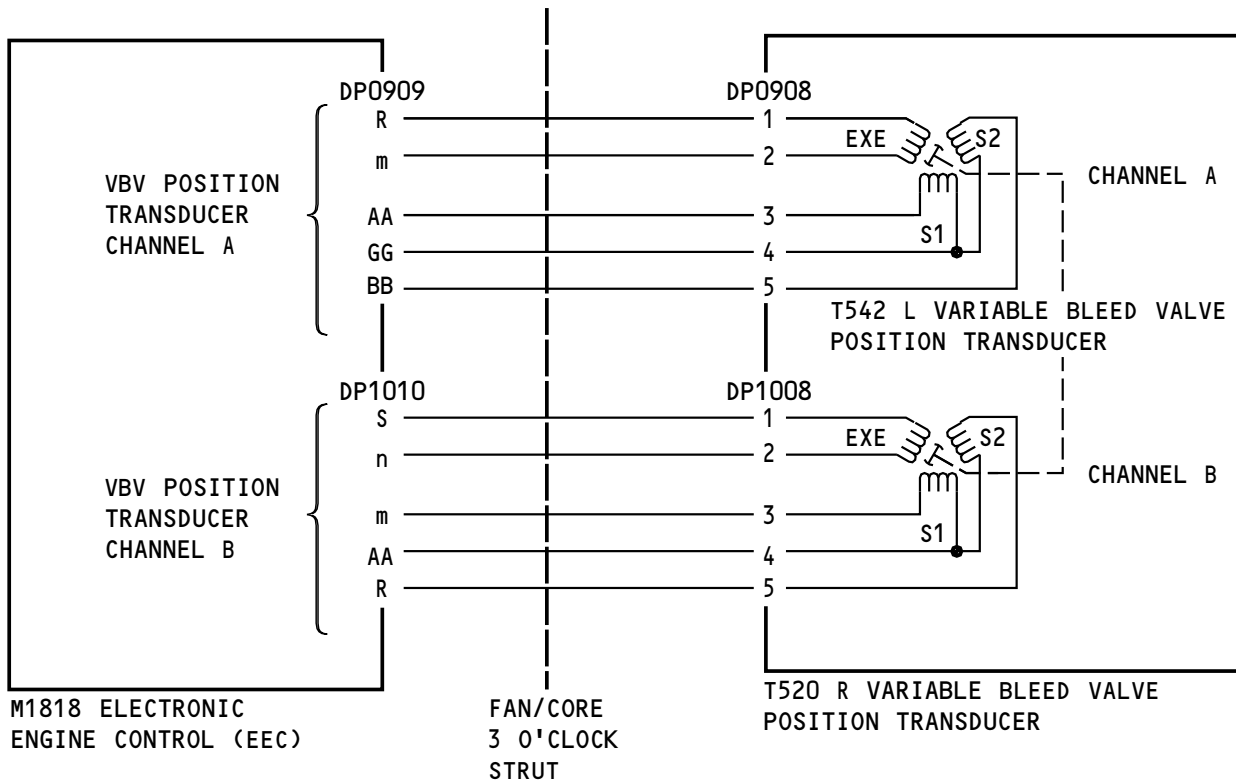
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NOTE: THE WDM/SSM ADD A DASH TO THE PIN LETTER TO DENOTE A LOWER CASE PIN, SUCH AS A- = a.

H57233 S0006746176_V2

LVDT Excitation Circuit - Simplified Schematic
Figure 302/75-34-00-990-802-F00 (Sheet 2 of 8)

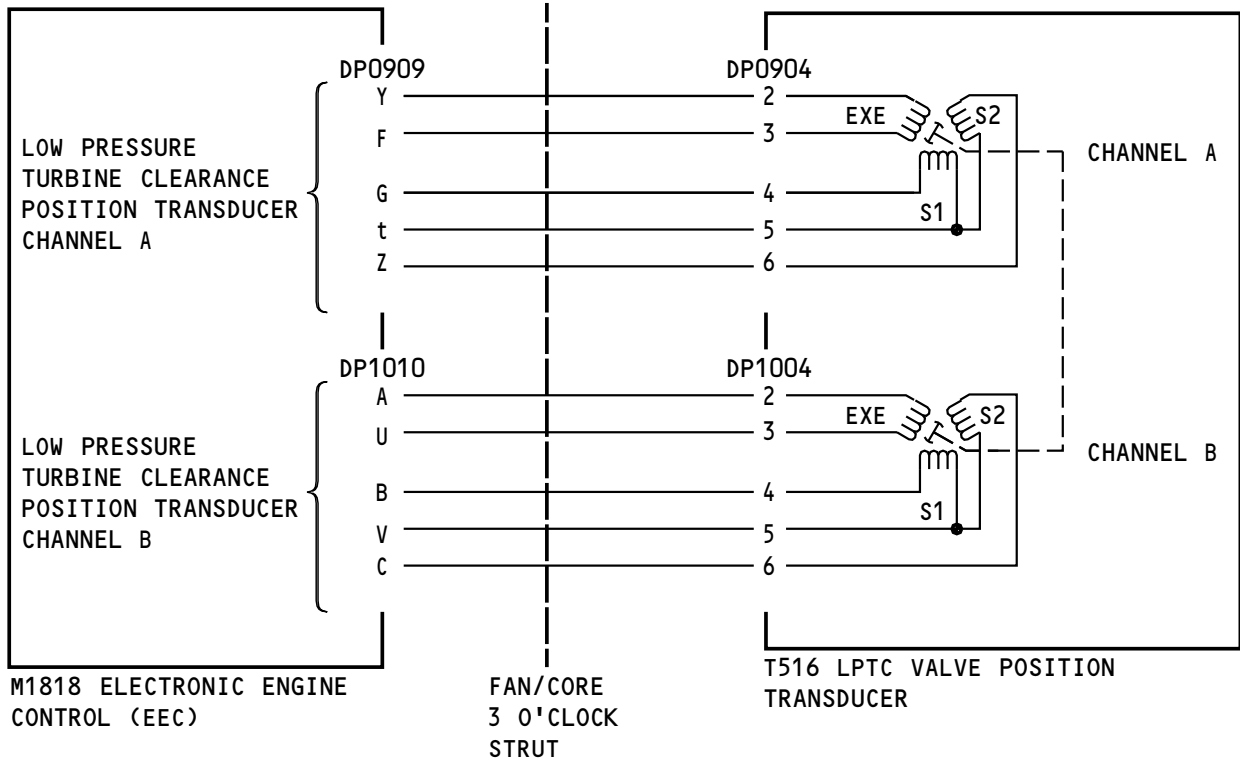
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NOTE: THE WDM/SSM ADD A DASH TO THE PIN LETTER TO DENOTE A LOWER CASE PIN, SUCH AS A- = a.

H57243 S0006746177_V1

LVDT Excitation Circuit - Simplified Schematic
Figure 302/75-34-00-990-802-F00 (Sheet 3 of 8)

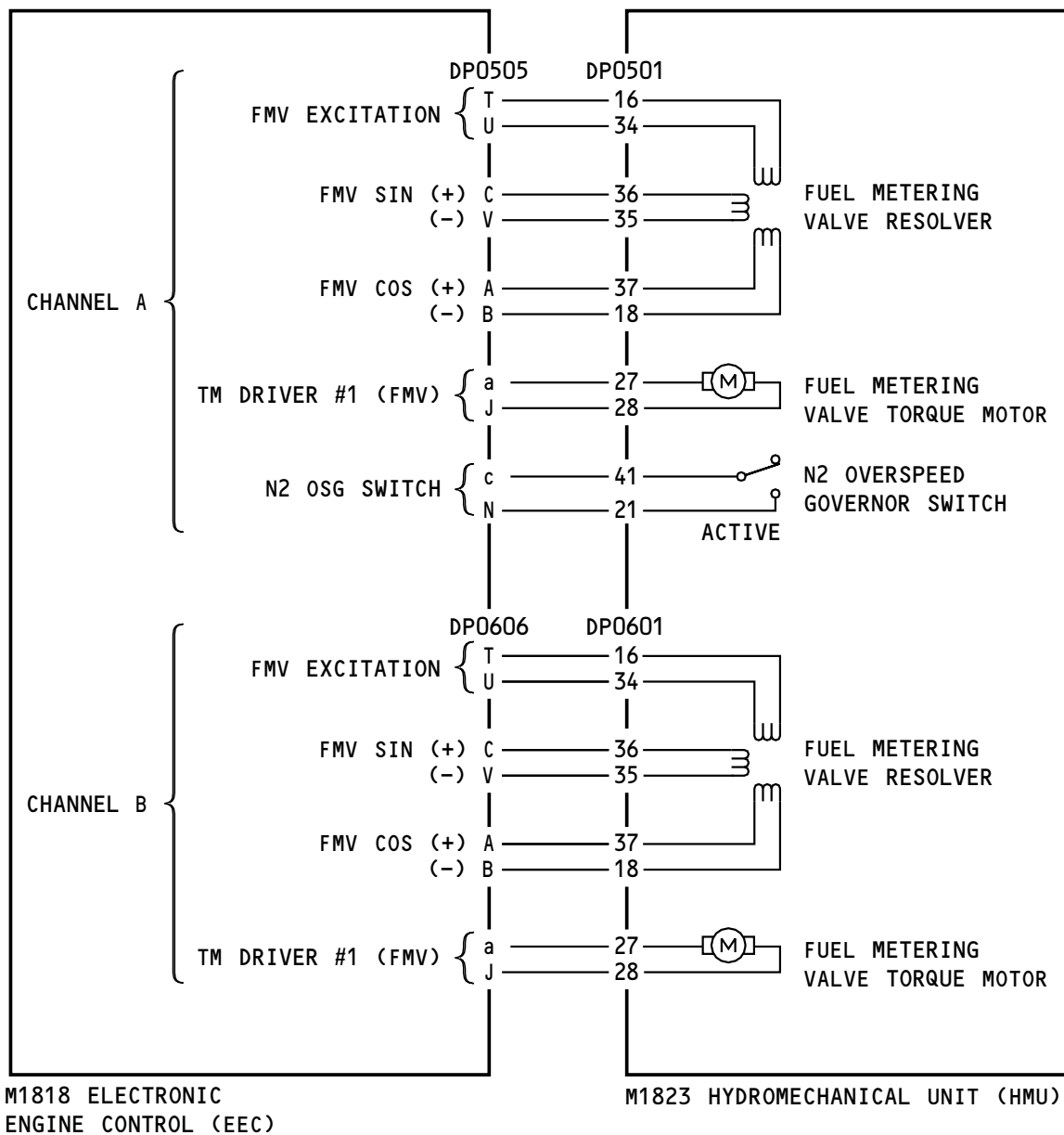
EFFECTIVITY
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NOTE: THE WDM/SSM ADD A DASH TO THE PIN LETTER TO DENOTE A LOWER CASE PIN, SUCH AS A- = a.

H57236 S0006746178_V1

LVDT Excitation Circuit - Simplified Schematic
Figure 302/75-34-00-990-802-F00 (Sheet 4 of 8)

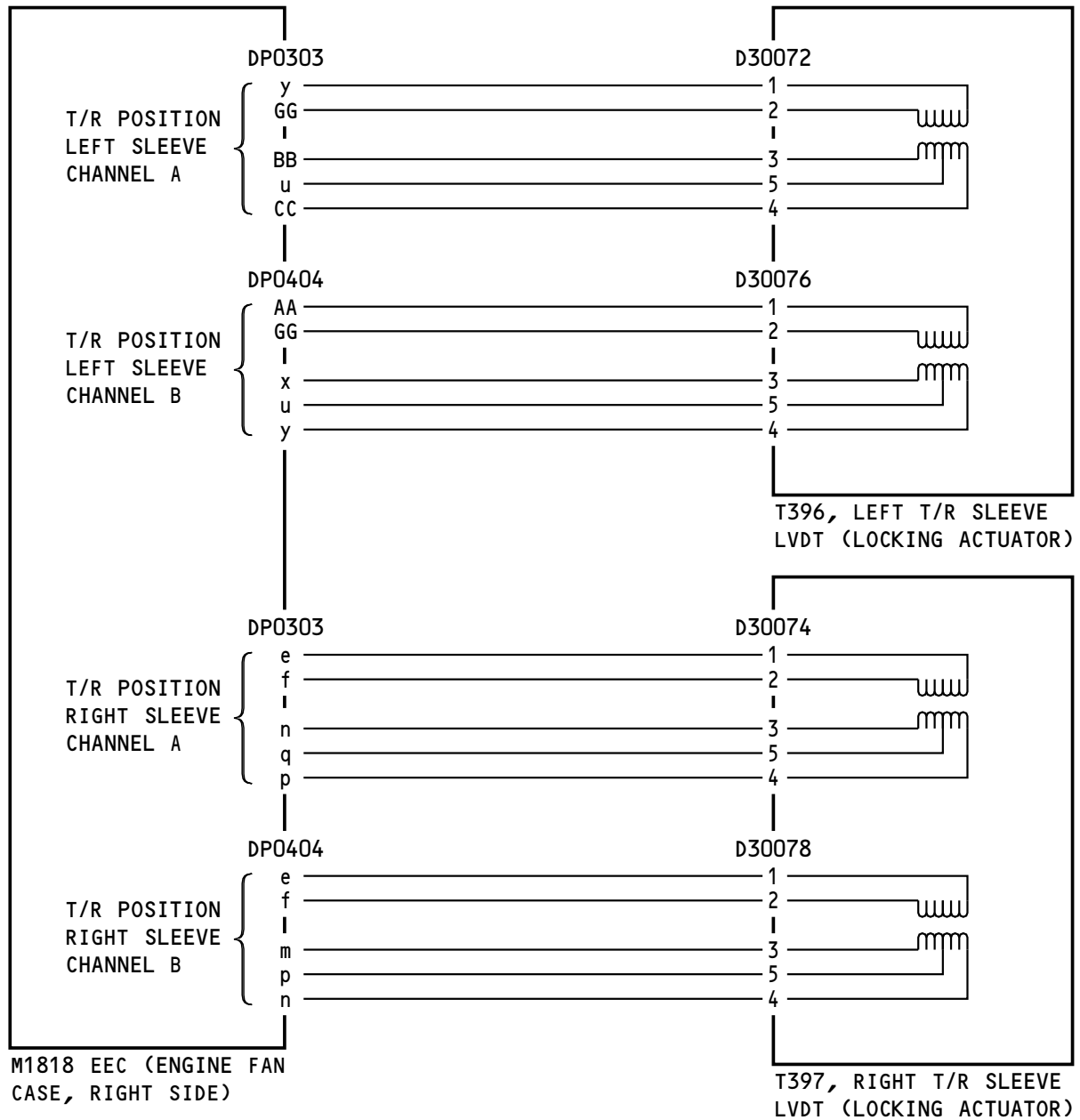
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NOTE: THE WDM/SSM ADD A DASH TO THE PIN NUMBER TO DENOTE A LOWER CASE PIN, SUCH AS A- = a.

H57235 S0006746179_V2

LVDT Excitation Circuit - Simplified Schematic
Figure 302/75-34-00-990-802-F00 (Sheet 5 of 8)

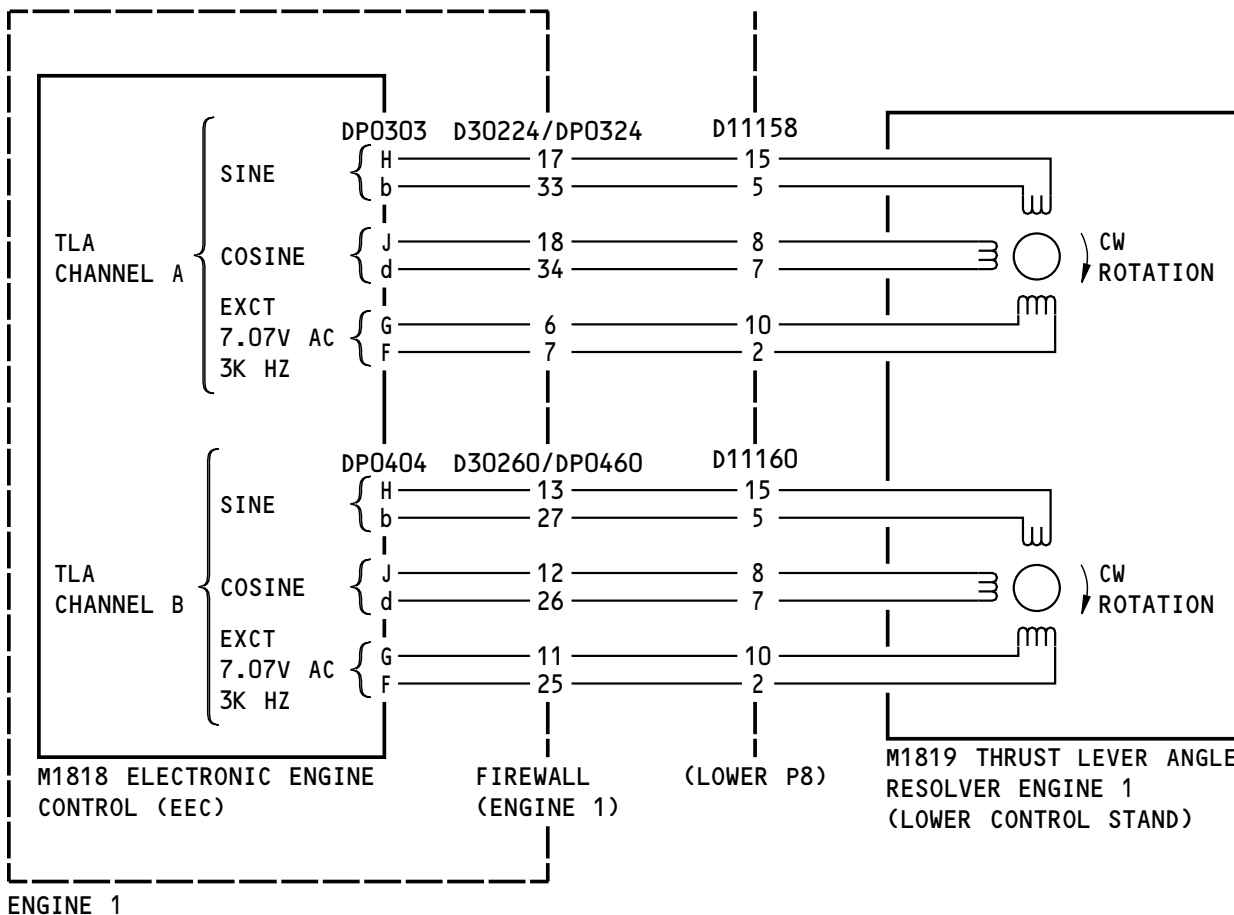
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NOTE: THE WDM/SSM ADD A DASH TO THE PIN LETTER TO DENOTE A LOWER CASE PIN, SUCH AS A- = a.

H57244 S0006746180_V1

LVDT Excitation Circuit - Simplified Schematic
Figure 302/75-34-00-990-802-F00 (Sheet 6 of 8)

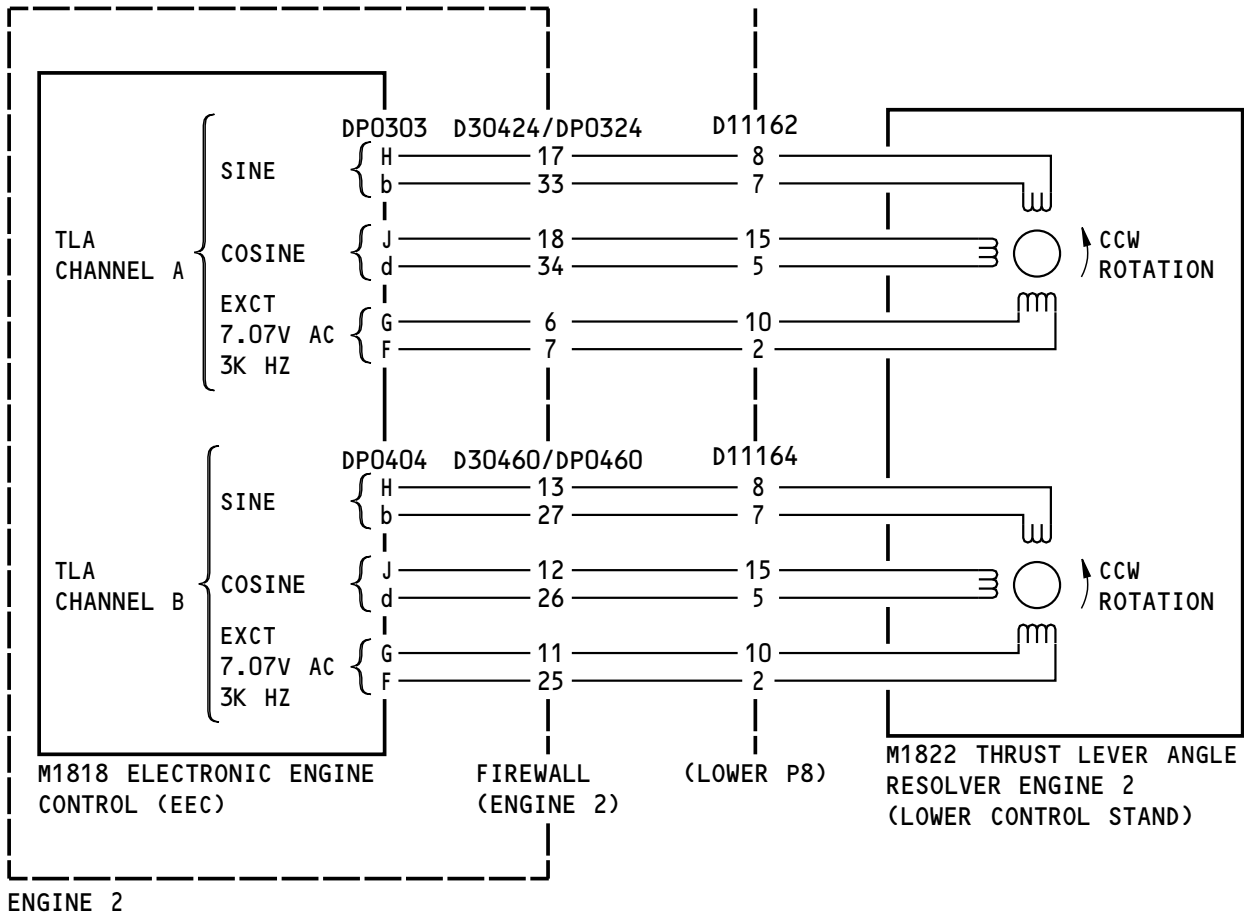
EFFECTIVITY
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NOTE: THE WDM/SSM ADD A DASH TO THE PIN LETTER TO DENOTE A LOWER CASE PIN, SUCH AS A- = a.

H57245 S0006746181_V1

LVDT Excitation Circuit - Simplified Schematic
Figure 302/75-34-00-990-802-F00 (Sheet 7 of 8)

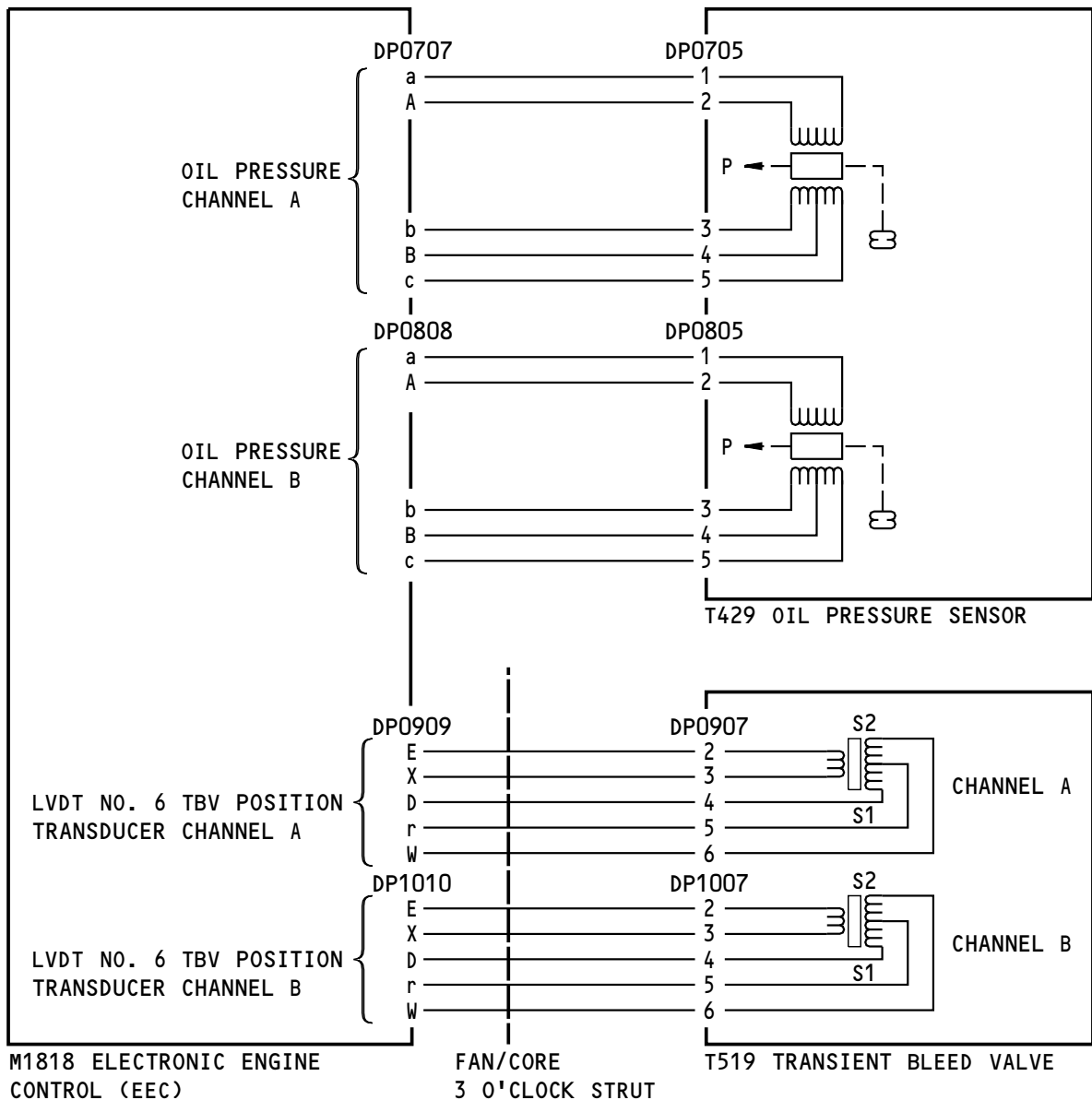
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NOTE: THE WDM/SSM ADD A DASH TO THE PIN LETTER TO DENOTE A LOWER CASE PIN, SUCH AS A- = a.

H57248 S0006746182_V1

LVDT Excitation Circuit - Simplified Schematic
Figure 302/75-34-00-990-802-F00 (Sheet 8 of 8)

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