GPA Group plc

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CHAPTER 36 - PNEUMATICS

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CHAPTER 36 - PNEUMATICS

TABLE OF CONTENTS

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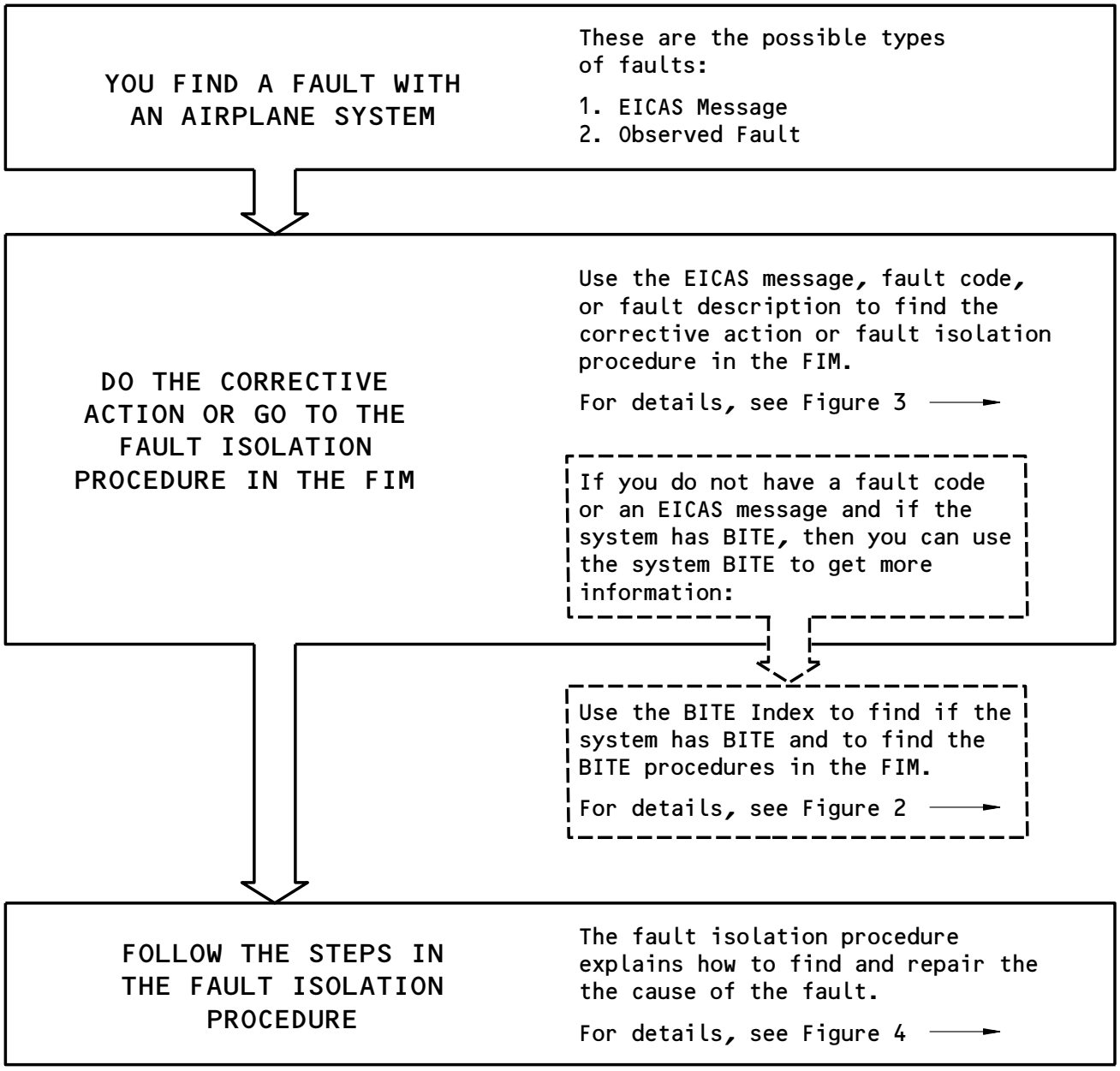

Basic Fault Isolation Process
Figure 1

H54417

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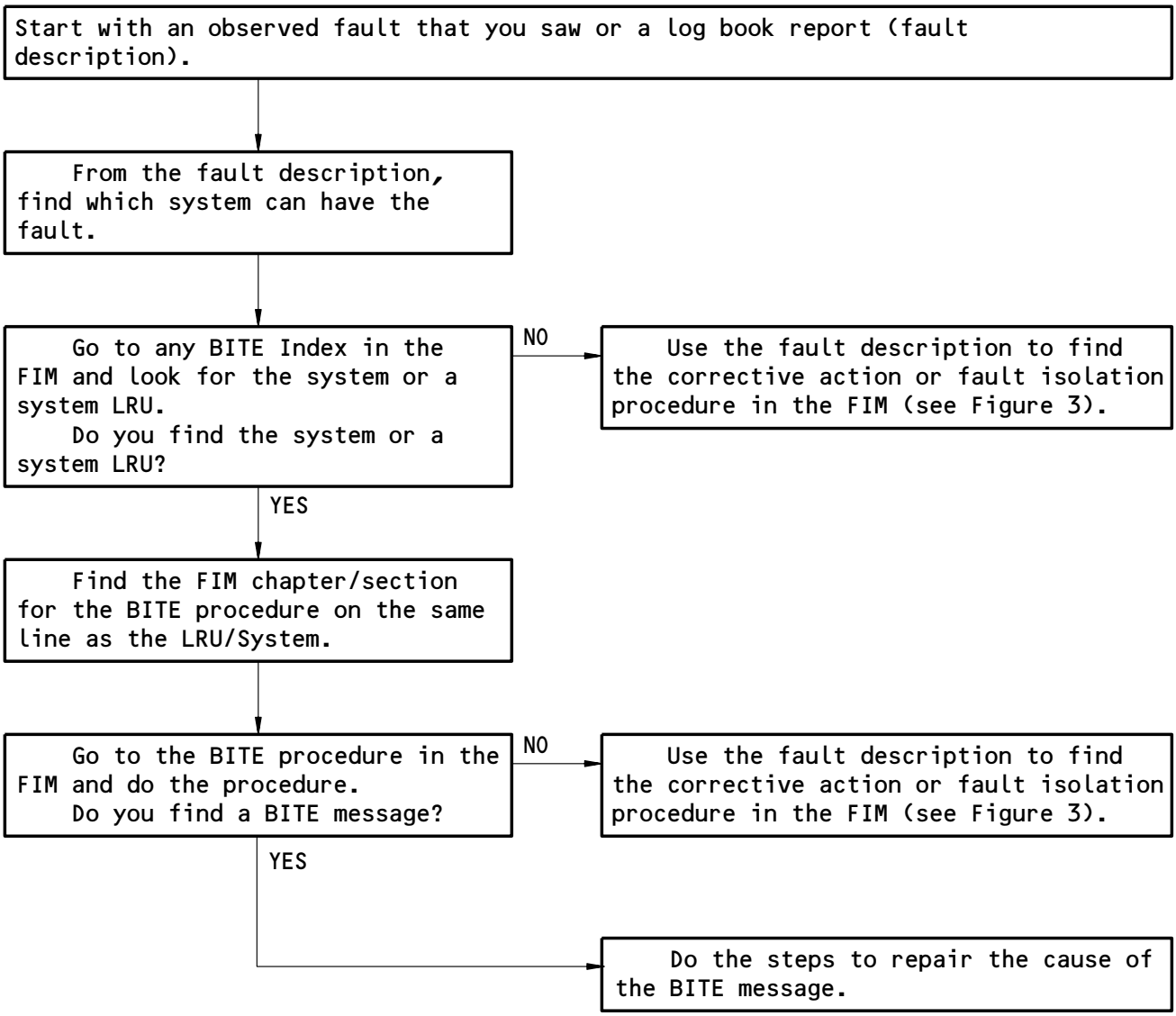

How to Get Fault Information from BITE
Figure 2

H54418

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IF YOU HAVE:	THEN DO THIS TO FIND THE CORRECTIVE ACTION OR FAULT ISOLATION PROCEDURE IN THE FIM:
FAULT CODE	1. The first two digits of the fault code are the FIM chapter that you need. Go to the Fault Code Index in that chapter and find the fault code. 2. Find the Fault Isolation Reference for the fault code and do the corrective action. If there is a FIM reference, then go to that fault isolation procedure in the FIM and do the steps in the procedure (see Figure 4).
EICAS MESSAGE TEXT (with no fault code)	1. If you know the chapter of the EICAS message, then go to the EICAS Messages section in that chapter and find the EICAS message. If you do not know the chapter of the EICAS message, then do these steps: A. Go to FIM EICAS MESSAGE LIST and find the EICAS message in the table. NOTE: The list follows the INTRODUCTION to the FIM. B. Find the chapter number on the same line as the EICAS message. Go to the EICAS Messages section in that chapter and find the EICAS message. 2. Do the corrective action in the "Procedure" column for the EICAS message. If there is a FIM reference, then go to that fault isolation procedure in the FIM and do the steps in the procedure (see Figure 4).
OBSERVED FAULT DESCRIPTION	1. Go to the Fault Code Diagram for the problem in the applicable chapter. 2. Do the fault analysis on the diagram and find the fault code. 3. The first two digits of the fault code are the FIM chapter that you need. Go to the Fault Code Index in that chapter and find the fault code. 4. Find the Fault Isolation Reference for the fault code and do the corrective action. If there is a FIM reference, then go to that fault isolation procedure in the FIM and do the steps in the procedure (see Figure 4).

How to Find the Corrective Action or Fault Isolation Procedure in the FIM
Figure 3

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ASSUMED CONDITIONS AT START OF TASK

- External electrical power is OFF
- Hydraulic power and pneumatic power are OFF
- Engines are shut down
- Circuit breakers for the system are closed
- No equipment in the system is deactivated

PREREQUISITES

- This box gives the steps to get the airplane from the normal shutdown condition to the configuration necessary to do the fault isolation procedure.
- The Prerequisites give procedure references, circuit breakers, and special tools and equipment requirements.

FAULT ISOLATION BLOCKS

- Start the fault isolation procedure at block 1 unless specified differently.
- Do the check to get an answer to the question in the box. Follow the arrow that applies to your answer. This will go to the next check.
- When you get to a box in the column at the right of the page, you have isolated that fault. Do the steps in that box to repair the cause of the fault.
- Make sure that fault is corrected to complete the procedure.

Do the Fault Isolation Procedure
Figure 4

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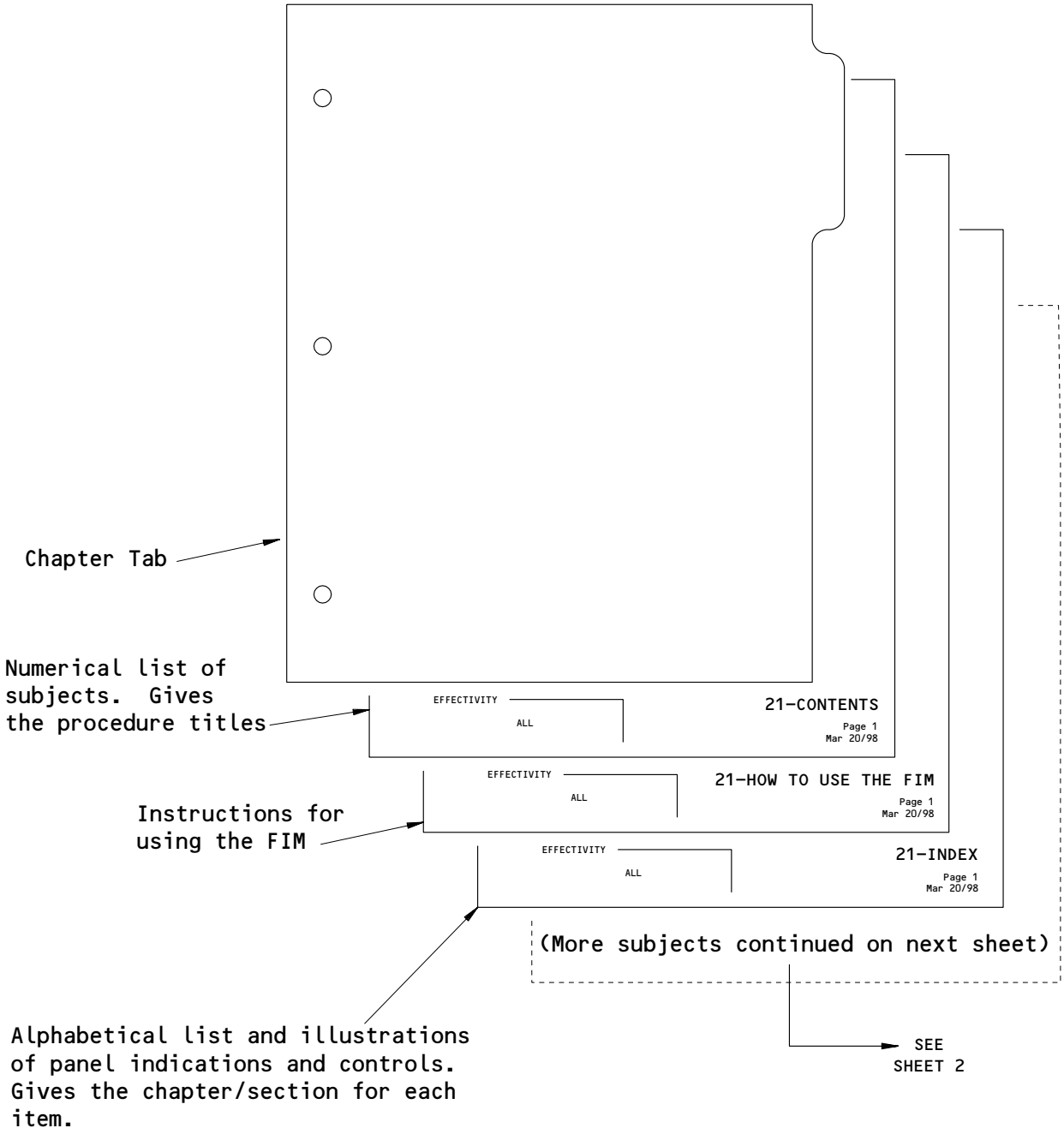

Subjects in Each FIM Chapter
Figure 5 (Sheet 1)

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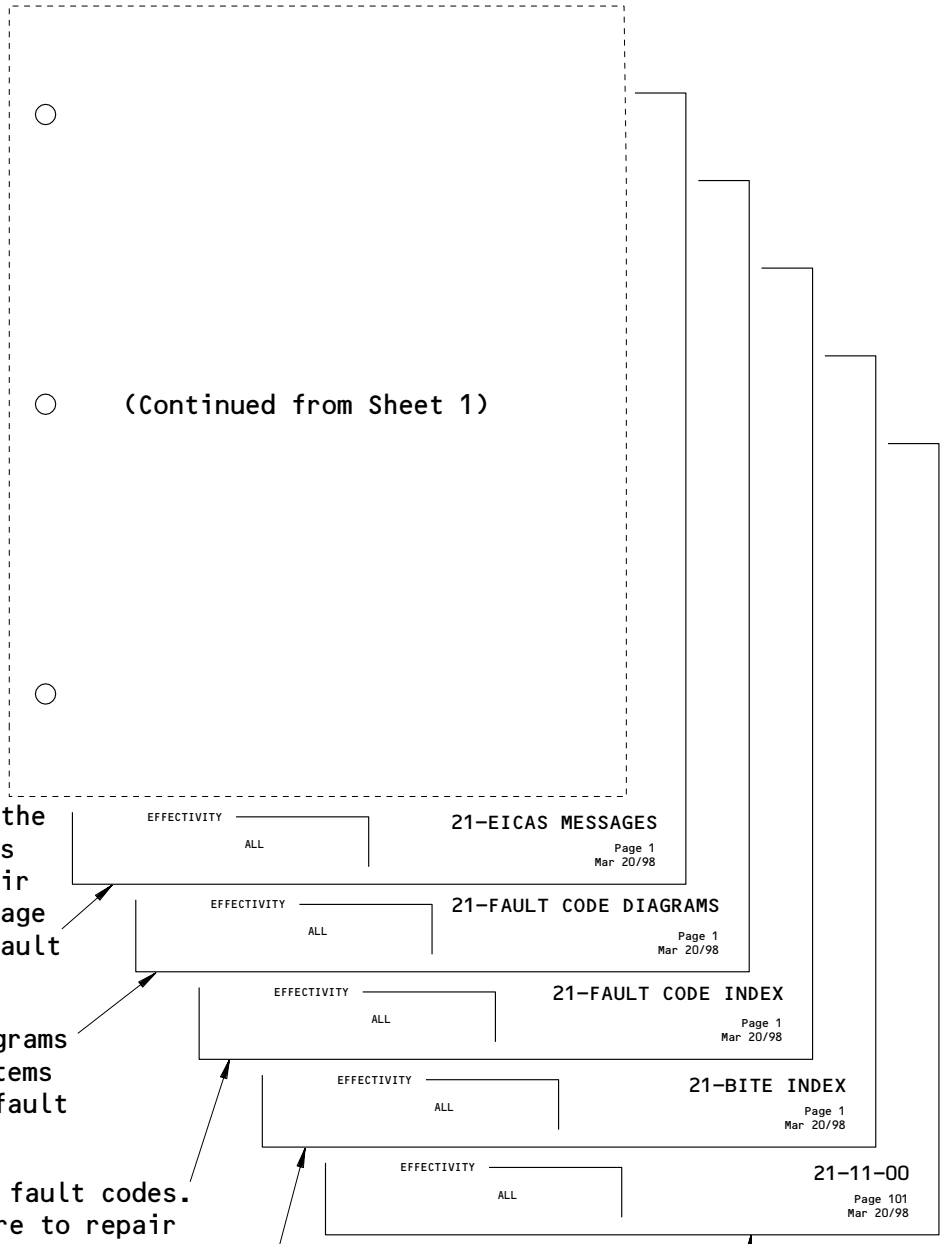

Alphabetical list of the EICAS messages. Gives the procedure to repair the cause of the message or a reference to a fault isolation procedure.

Failure analysis diagrams for the airplane systems to find the correct fault code for the fault.

Numerical list of fault codes. Gives the procedure to repair the cause of the fault or a reference to a fault isolation procedure.

Alphabetical list of all the LRUs/systems that have BITE. Gives the chapter/section for the BITE procedure.

Component index, component location, and fault isolation procedures for the systems in the chapter.

Subjects in Each FIM Chapter
Figure 5 (Sheet 2)

H54422

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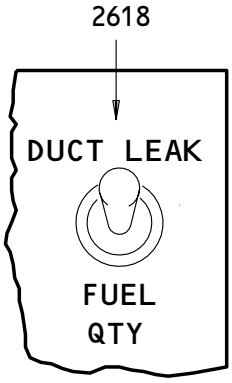
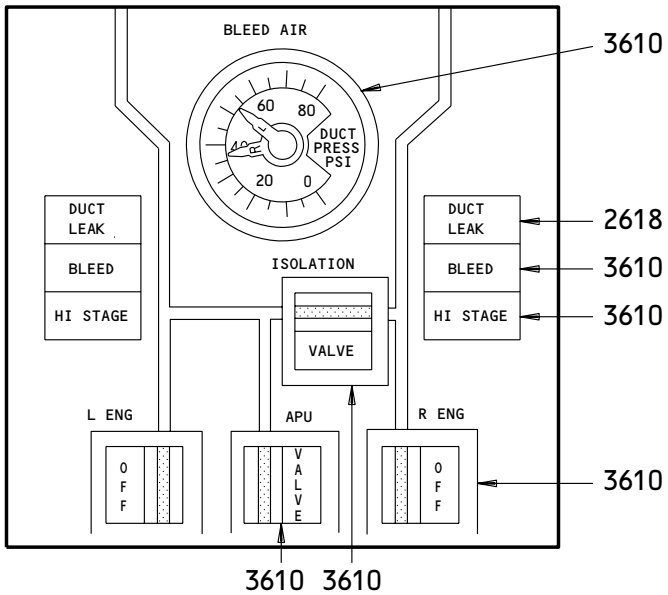


ACCESSORY PANEL



OVERHEAD PANEL

PNEUMATICS – INDEX

EFFECTIVITY

ALL

56826

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PNEUMATIC - EICAS MESSAGE LIST

1. General
   A. This procedure shows the EICAS message locations and gives a list of procedures to find the solution for each message.
      (1) EICAS Message Locations (Fig. 1)
         (a) Figure 1 shows the location of the EICAS display units and the area where the messages show on the display units.
         (b) Each message level has a different location. The location and color of each message level is also shown.
      (2) The EICAS MESSAGE LIST gives the message, level, and procedure for each message.
         (a) The EICAS MESSAGE column lists the messages alphabetically. Messages which start with L, R, or C are put together and alphabetized at L.
         (b) The LEVEL column gives all levels for each message as follows:
            A - Warning messages
            B - Caution messages
            C - Advisory messages
            S - Status messages
            M - Maintenance messages
         (c) The PROCEDURE column gives the steps that are necessary to remove the message and includes one or more of the procedures that follow:
            1) A Fault Isolation Manual procedure reference
            2) A Maintenance Manual procedure and reference
            3) Wiring checks and a Wiring Diagram Manual reference
            4) A reference to an EICAS message list in a different chapter.
            5) A reference to a FAULT CODE INDEX and specified fault codes
            6) A step to change the airplane configuration
         (d) The LIGHT column shows the associated light, on the P5 panel, for the EICAS message (Fig. 2).
         (e) The DESCRIPTION column gives a description of the EICAS message (Fig. 2)

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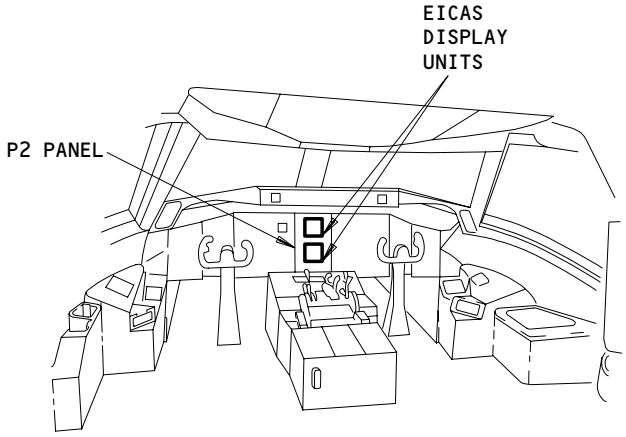
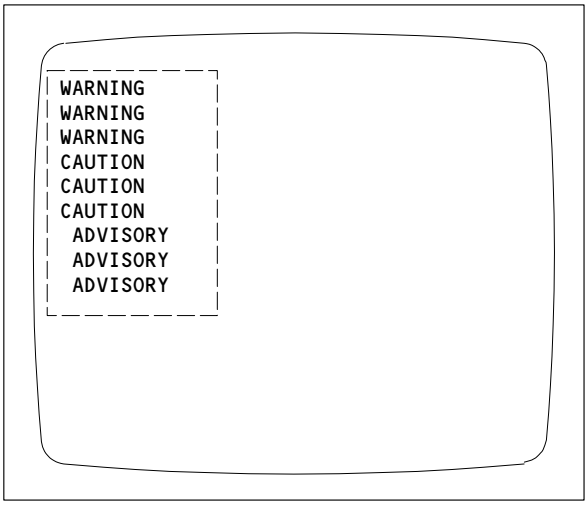
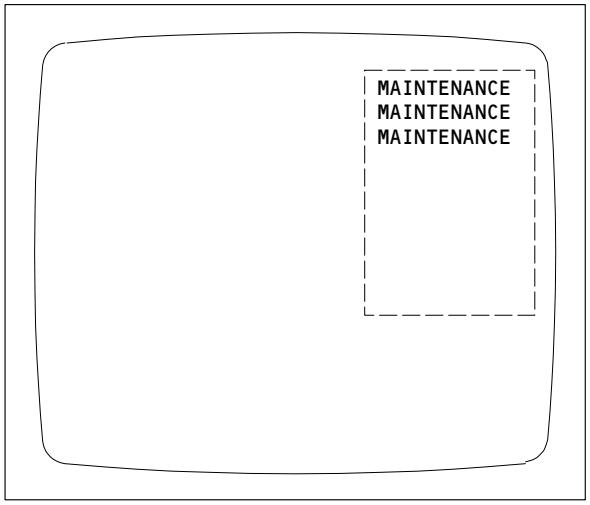


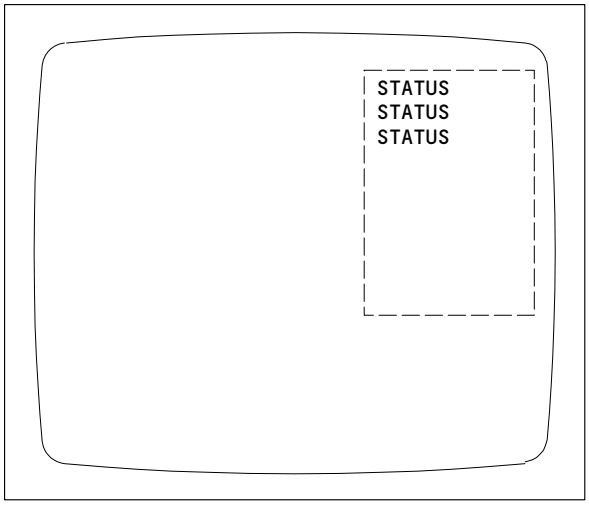
FLIGHT COMPARTMENT



ENGINE PRIMARY PAGE OR COMPACTED PAGE
(TOP DISPLAY UNIT)



ECS/MSG PAGE
(BOTTOM DISPLAY UNIT)



STATUS PAGE
(BOTTOM DISPLAY UNIT)

LEVEL	COLOR
A–WARNING	RED
B–CAUTION	YELLOW
C–ADVISORY	YELLOW
S–STATUS	WHITE
M–MAINTENANCE	WHITE

EICAS Message Locations
Figure 1

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EICAS MESSAGE	LIGHT	DESCRIPTION
APU BLEED VAL	VALVE	THE APU BLEED VALVE IS NOT IN ITS COMMANDED POSITION.
BLEED ISLN VAL	VALVE	THE BLEED ISOLATION VALVE IS NOT IN ITS COMMANDED POSITION.
(L,R) BLD DUCT LEAK	DUCT LEAK	A DUCT LEAK BETWEEN THE (LEFT,RIGHT) ENGINE OR APU AND THE ISOLATION VALVE.
(L,R) ENG BLEED OFF	OFF	THE LEFT/RIGHT ENGINE PRSOV IS CLOSED.
(L,R) ENG BLEED VAL	BLEED	A LEFT/RIGHT ENGINE BLEED AIR OVERHEAT CONDITION.
(L,R) ENG HI STAGE	HI STAGE	A LEFT/RIGHT ENGINE BLEED AIR OVERPRESSURE CONDITION.

EICAS MESSAGE LIST

Light Descriptions for EICAS Messages
Figure 2

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EICAS MESSAGE LIST		
EICAS MESSAGE	LEVEL	PROCEDURE
APU BLEED VAL	C	FIM 36-10-00/101, Fig. 114
BLEED ISLN VAL	C	FIM 36-10-00/101, Fig. 108
(L,R) BLD DUCT LEAK	B	FIM 36-10-00/101, Fig. 109 Check for leakage in the APU air supply duct (AMM 36-11-00/501)
(L,R) ENG BLEED OFF	C	FIM 36-10-00/101, Fig. 112, FIM 36-10-00/101, Fig. 112B, FIM 36-10-00/101, Fig. 113 FIM 36-10-00/101, Fig. 115,
(L,R) ENG BLEED VAL	B	FIM 36-10-00/101, Fig. 110
(L,R) ENG HI STAGE	C	FIM 36-10-00/101, Fig. 111

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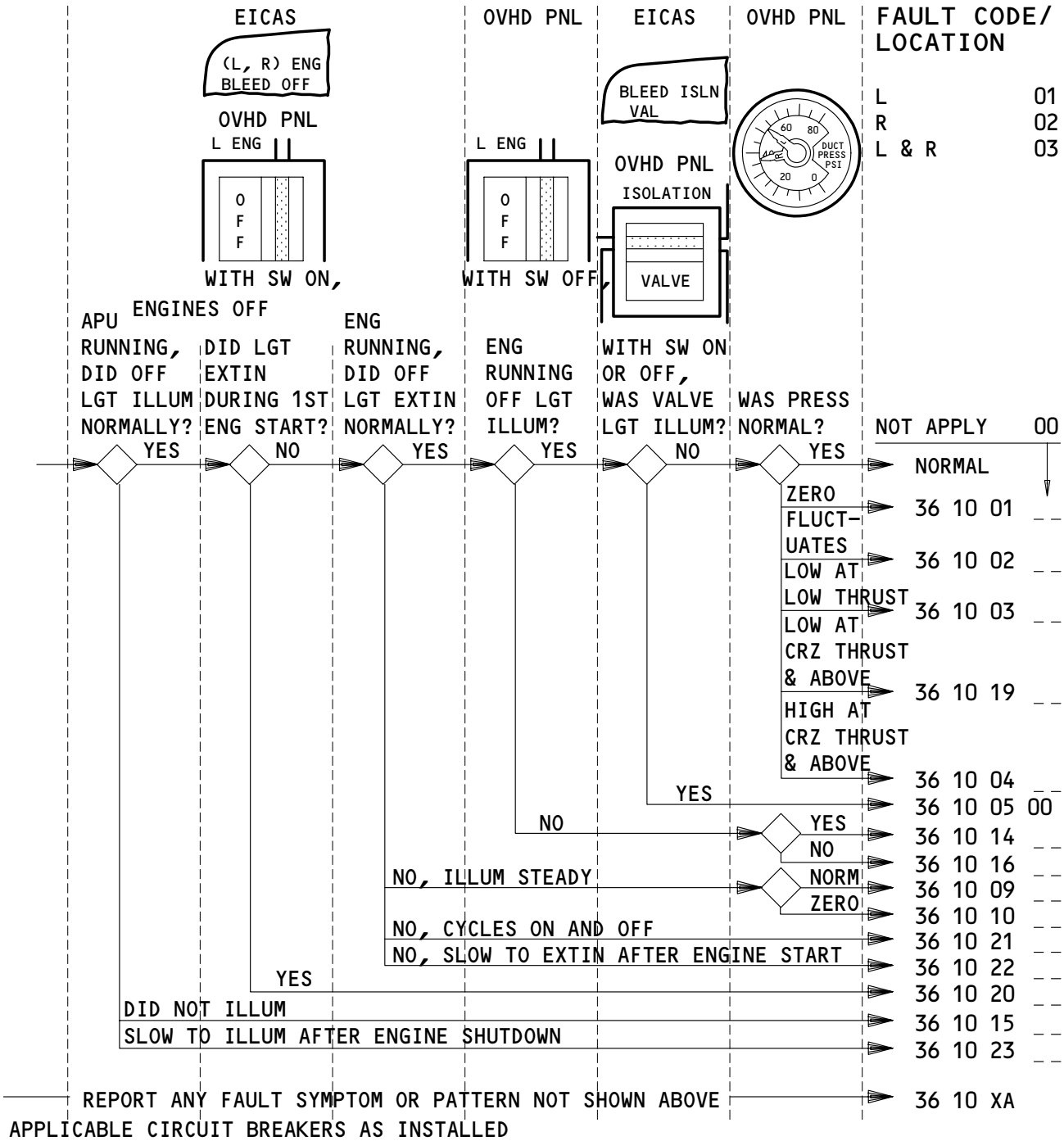

APPLICABLE CIRCUIT BREAKERS AS INSTALLED

11B2	ISOL (VALVE, VLV) CONT	11Q17	DUCT LEAK DET (LEFT,L)	11Q26	DUCT LEAK CONT
11B3	ISOL (VALVE, VLV) PWR	11Q18	HI STAGE SW OVER (LEFT,L)	11Q27	HI STG SW OVER R
11Q10	ENG (BLEED,BLD) L	11Q19	R ENG BLEED (CONT)	11Q27	R HI STG SW OVER
11Q15	DUCT PRESS IND PWR	11Q24	DUCT PRESS (IND, XMTR) (RIGHT,R)		
11Q16	DUCT PRESS (IND, XMTR) (LEFT,L)	11Q25	DUCT LEAK DET (RIGHT,R)		

ENGINE PNEUMATIC SUPPLY - FAULT CODES

EFFECTIVITY

ALL

36-FAULT CODE DIAGRAM

01

F80727

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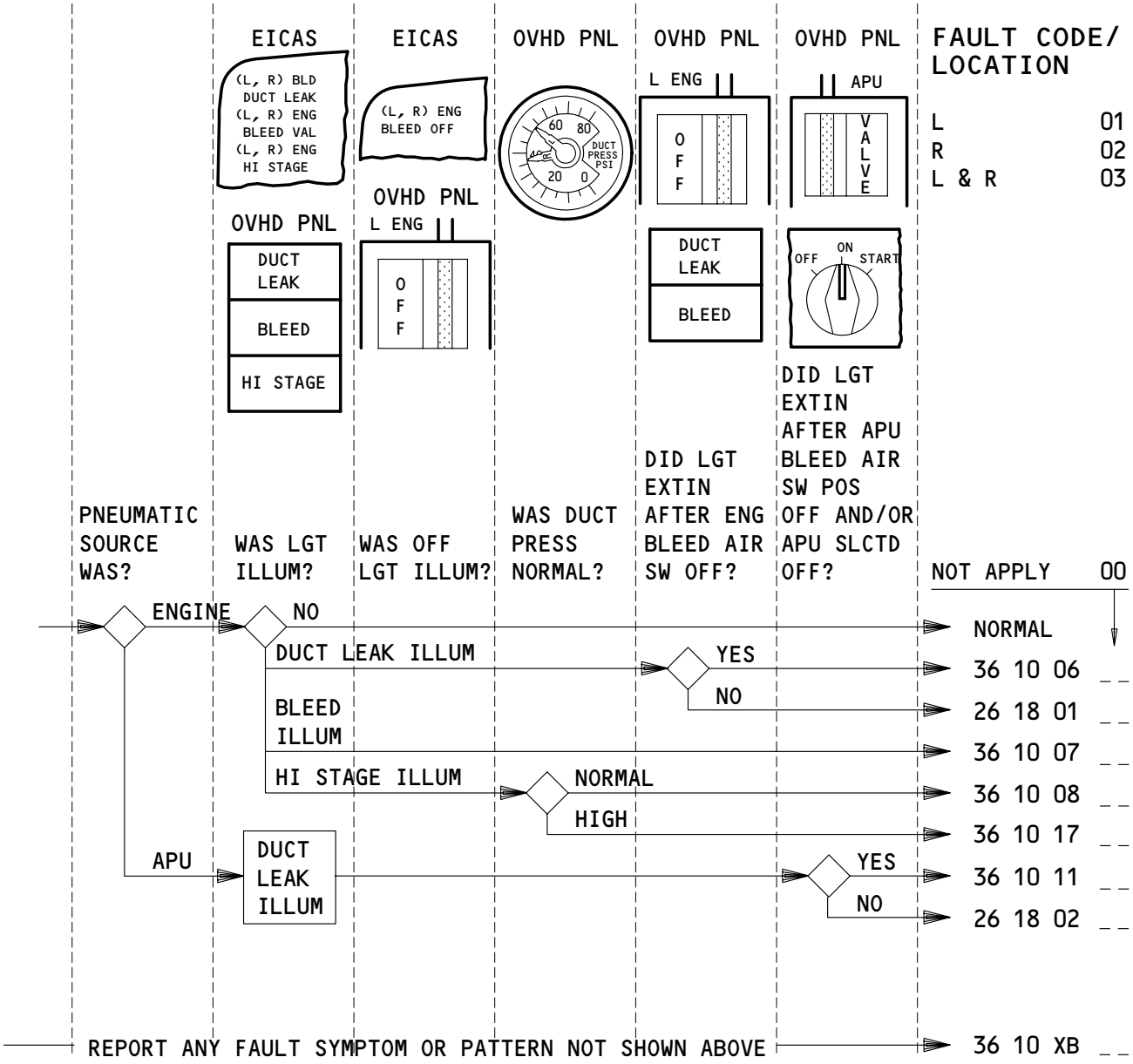

APPLICABLE CIRCUIT BREAKERS AS INSTALLED

11Q10	ENG (BLEED, BLD) L	11Q23	APU BLEED CONT
11Q17	DUCT LEAK DET (LEFT, L)	11Q25	DUCT LEAK DET (RIGHT, R)
11Q18	HI STAGE SW OVER (LEFT, L)	11Q26	DUCT LEAK CONT
11Q19	R ENG BLEED (CONT)	11Q27	HI STG SW OVER R
11Q22	APU BLEED PWR	11Q27	R HI STG SW OVER

DUCT LEAK, BLEED, HI STAGE LGTS – FAULT CODES

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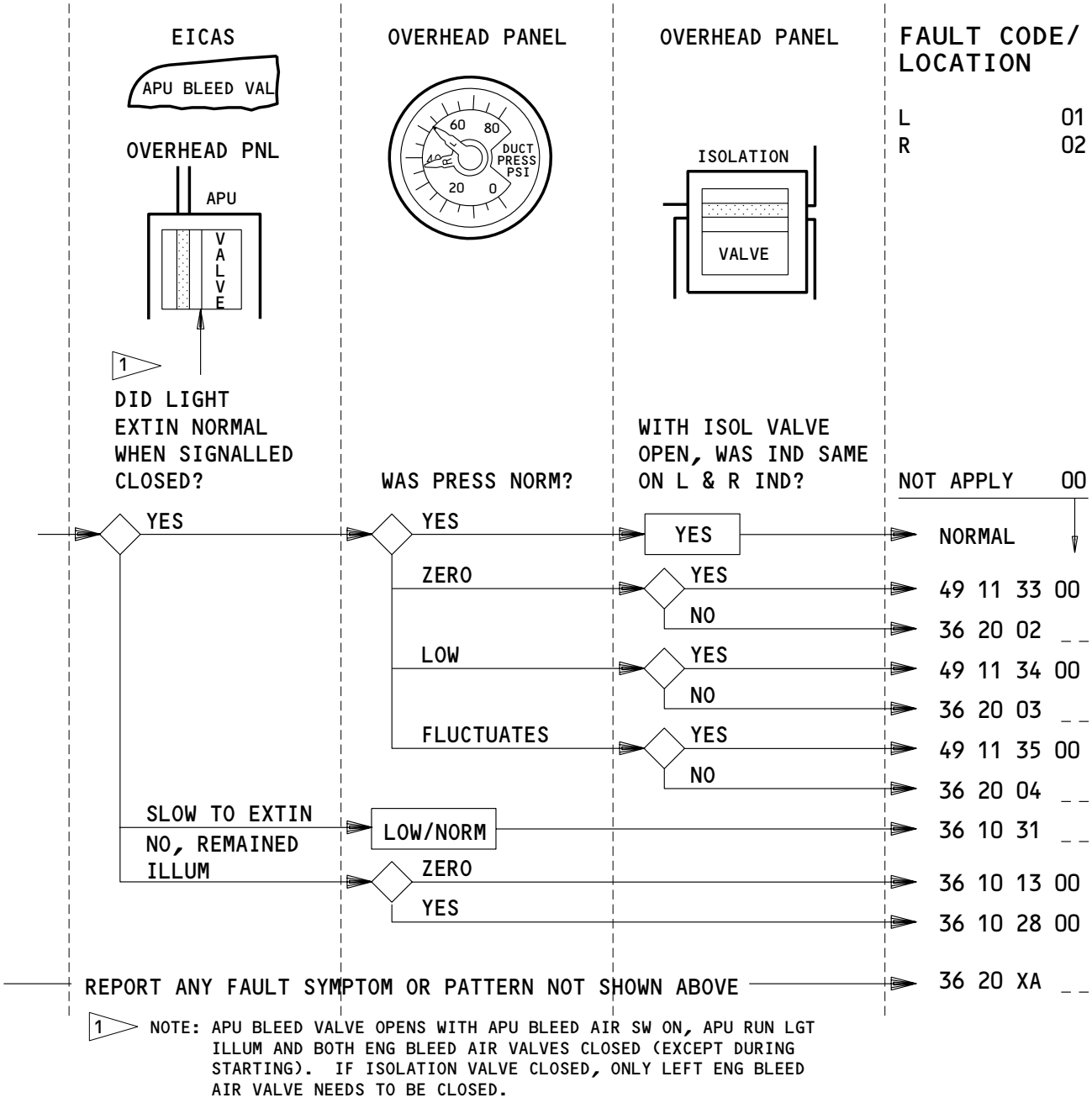

APPLICABLE CIRCUIT BREAKERS AS INSTALLED

11Q15	DUCT PRESS IND PWR	11Q23	APU BLEED CONT
11Q16	DUCT PRESS (IND, XMTR) (LEFT, L)	11Q24	DUCT PRESS (IND, XMTR) (RIGHT, R)
11Q17	DUCT LEAK DET (LEFT, L)	11Q25	DUCT LEAK DET (RIGHT, R)
11Q22	APU BLEED PWR	11Q26	DUCT LEAK CONT

APU PNEUMATIC SUPPLY – FAULT CODES

EFFECTIVITY

ALL

36-FAULT CODE DIAGRAM

F85901

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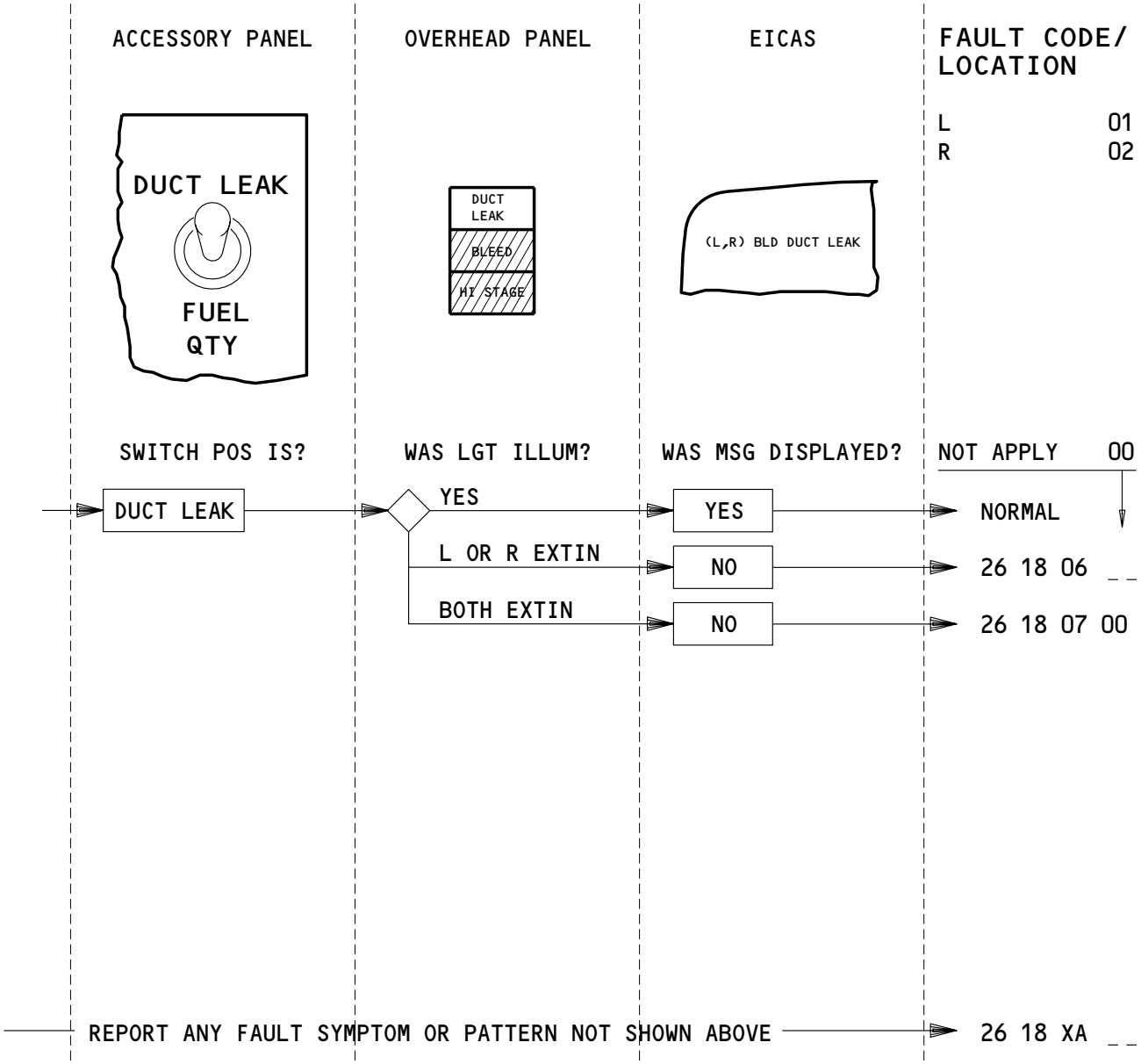

APPLICABLE CIRCUIT BREAKERS AS INSTALLED

11Q17	DUCT LEAK DET (LEFT, L)
11Q25	DUCT LEAK DET (RIGHT, R)
11Q26	DUCT LEAK CONT

DUCT LEAK TEST – FAULT CODES

EFFECTIVITY

ALL

36-FAULT CODE DIAGRAM

F85903

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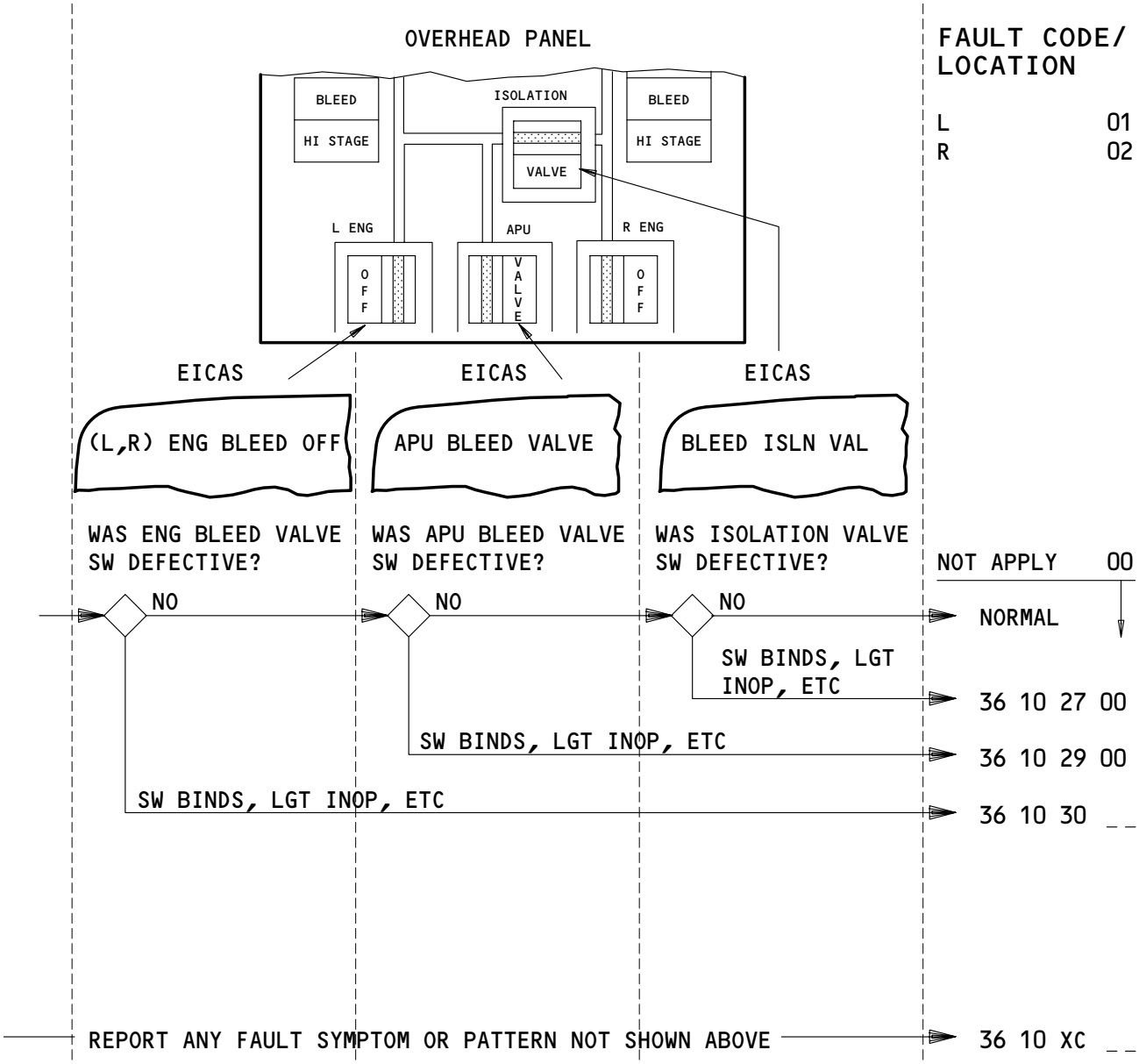

FAULT CODE/ LOCATION

L	01
R	02

APPLICABLE CIRCUIT BREAKERS

N/A

DEFECTIVE ENG, APU BLEED & ISOLATION VALVE SWITCHES – FAULT CODES

EFFECTIVITY

ALL

36-FAULT CODE DIAGRAM

290275

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FAULT CODE	LOG BOOK REPORT	FAULT ISOLATION REFERENCE
36 10 XA --	A (01=Left,02=Right,03=Left & Right) engine air supply problem was encountered by the flight crew which is not covered in the fault code diagrams.	SSM 36-11-01
36 10 XB --	A (01=Left,02=Right,03=Left and Right) light indication problem was encountered by the flight crew which is not covered in the fault code diagrams.	SSM 36-11-01
36 10 XC --	A (01=Left,02=Right,03=Left and Right) ENG, APU BLEED, or ISOLATION VALVE switch problem was encountered by the flight crew which is not covered in the fault code diagrams.	SSM 36-11-01, SSM 36-21-01
36 20 XA --	A (01=Left,02=Right) APU air supply problem was encountered by the flight crew which is not covered in the fault code diagrams.	SSM 36-21-01
36 10 01 --	(01=Left,02=Right,03=Left and Right) Duct pressure zero. Eng was running with bleed sw on.	FIM 36-10-00/101, Fig. 105, Block 1
36 10 02 --	(01=Left,02=Right,03=Left and Right) Duct pressure fluctuates between low and hi stage pressures, ____ to ____ psi.	FIM 36-10-00/101, Fig. 105, Block 1
36 10 03 --	(01=Left,02=Right) Engine duct pressure was low at low thrust. Pressure normal at CRZ thrust and above.	FIM 36-10-00/101, Fig. 106, Block 8
36 10 04 --	(01=Left,02=Right) Engine duct pressure was high at CRZ thrust and above. Pressure normal at low thrust.	FIM 36-10-00/101, Fig. 107, Block 1
36 10 05 00	EICAS msg BLEED ISLN VAL displayed. ISOLATION VALVE lgt on with sw (on, off).	FIM 36-10-00/101, Fig. 108, Block 1

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FAULT CODE	LOG BOOK REPORT	FAULT ISOLATION REFERENCE
36 10 06 --	EICAS msg (01=L,02=R) BLD DUCT LEAK displayed. (L,R) DUCT LEAK lgt on with eng supplying pneu system. Light off after bleed air valve closed.	FIM 36-10-00/101, Fig. 109, Block 1
36 10 07 --	EICAS msg (01=L,02=R) ENG BLEED VAL displayed. (L,R) BLEED lgt on.	FIM 36-10-00/101, Fig. 110, Block 1
36 10 08 --	EICAS msg (01=L,02=R) ENG HI STAGE displayed. (L,R) HI STAGE lgt on. Duct pressure normal.	FIM 36-10-00/101, Fig. 111, Block 1
36 10 09 --	EICAS msg (L,R) ENG BLEED OFF displayed. (01=Left,0=Right) Engine bleed air OFF lgt on with eng running and sw on. Duct pressure was normal.	FIM 36-10-00/101, Fig. 112, Block 1
36 10 10 --	EICAS msg (L,R) ENG BLEED OFF displayed. (01=Left,02=Right) Engine bleed air OFF lgt on with eng running and sw on. Duct pressure was zero.	FIM 36-10-00/101, Fig. 113, Block 1
36 10 11 --	EICAS msg (01=L,02=R,03=L&R) BLD DUCT LEAK displayed. (L,R) DUCT LEAK lgt on with APU supplying pneu sys lgt off after APU bleed valve closed.	Check for leakage in APU air supply ducting (AMM 36-11-00).
36 10 13 00	EICAS msg APU BLEED VAL displayed. APU bleed VALVE lgt on. Duct pressure was zero.	FIM 36-10-00/101, Fig. 114, Block 1
36 10 14 --	(01=L,02=R) Engine bleed air off, eng running, OFF lgt did not come on. Duct pressure was normal (zero psi).	FIM 36-10-00/101, Fig. 112B, Block 1
36 10 15 --	(01=Left,02=Right) Engine bleed air OFF lgt did not come on with sw on and only APU running. Duct pressure was zero to 5 psi.	FIM 36-10-00/101, Fig. 103, Block 1

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FAULT CODE	LOG BOOK REPORT	FAULT ISOLATION REFERENCE
36 10 16 --	(O1=L,O2=R) Engine bleed air off, eng running, OFF lgt did not come on. Duct pressure not normal, ____ psi.	FIM 36-10-00/101, Fig. 112A, Block 1
36 10 17 --	EICAS msg (O1=L,O2=R) ENG HI STAGE displayed. (L,R) HI STAGE lgt on. Duct pressure was high.	FIM 36-10-00/101, Fig. 111, Block 1, and FIM 36-10-00/101, Fig. 107, Block 1. NOTE: This is a multiple fault. Do each of the procedures listed above.
36 10 19 --	(O1=Left,O2=Right,O3=Left and Right) Duct pressure low at cruise thrust and above.	FIM 36-10-00/101, Fig. 106, Block 1
36 10 20 --	(O1=L,O2=R) Engine bleed air OFF lgt did not come on during 1st eng start.	FIM 36-10-00/101, Fig. 113A, Block 1
36 10 21 --	EICAS msg (L,R) ENG BLEED OFF and (O1=L,O2=R) eng bleed air OFF lgt cycles on and off.	Replace L(R) eng pressure regulating and shutoff valve V42 (V43)(AMM 36-11-09). If problem continues, replace L(R) high stage pilot M10292 (M10293) (AMM 36-11-08). If problem continues, replace L(R) flow control and shutoff valve V16 (V17)(AMM 21-51-01).
36 10 22 --	(O1=L,O2=R) Engine bleed air OFF lgt slow to go off after engine start.	Replace L(R) eng pressure regulating and shutoff valve V42 (V43)(AMM 36-11-09).
36 10 23 --	(O1=L,O2=R) Engine bleed air OFF lgt slow to come on after engine shutdown.	Replace L(R) pressure regulating and shutoff valve V42 (V43) (AMM 36-11-09).
36 10 24 --	(O1=L,O2=R) Engine slow to start using APU air. Duct press low, _____ psi. Start normal with opposite eng bleed air OFF.	FIM 36-10-00/101, Fig. 113B, Block 1

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FAULT CODE	LOG BOOK REPORT	FAULT ISOLATION REFERENCE
36 10 25 --	(01=L,02=R) Engine max N3 motoring speed low during srart. Duct pressure was low with start VLV open. Maximum motoring normal with opposite engine bleed OFF.	FIM 36-10-00/101, Fig. 113B, Block 1
36 10 27 00	ISOLATION VALVE switch/light was defective (sw binds, lgt inop, etc.).	Replace ISOLATION VALVE switch/light (S3) (AMM 33-13-00)
36 10 28 00	EICAS msg APU BLEED VAL displayed. APU bleed VALVE lgt on. Duct press was normal.	FIM 36-10-00/101, Fig. 114, Block 1
36 10 29 00	APU BLEED VALVE switch/light was defective (sw binds, lgt inop, etc.).	Replace defective APU BLEED VALVE switch/light (S2) (AMM 33-13-00).
36 10 30 --	(01=Left,02=Right,03=Both) ENG BLEED VALVE switch/light was defective (sw binds, lgt inop, etc.).	Replace defective (L,R) ENG BLEED VALVE switch/light (S1,S4) (AMM 33-13-00).
36 10 31 --	(01=Left,02=Right) APU Bleed VALVE light slow to go off. EICAS msg APU BLEED VAL displayed. Duct press was (low/norm).	Replace APU Shutoff Valve (V47) (AMM 36-11-10).
36 20 01 --	EICAS msg (01=L,02=R) ENG BLEED VAL displayed. (L,R) BLEED lgt on. Light remained on after bleed air vlv closed.	Replace (L,R) Air Supply Overheat Switch (S358,S359) (WDM 36-22-11).

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FAULT CODE	LOG BOOK REPORT	FAULT ISOLATION REFERENCE
36 20 02 --	(01=Left, 02=Right) Duct press zero with APU supplying pneu sys and isolation valve open. Pressure on other side was norm.	FIM 36-10-00/101, Fig. 103, Block 1
36 20 03 --	(01=Left,02=Right) Duct press low with APU supplying pneu sys and isolation vlv open. Pressure on other side was norm.	FIM 36-20-00/101, Fig. 103, Block 1
36 20 04 --	(01=Left,02=Right) Duct pressure fluctuates with APU supplying pneu sys and isolation vlv open. Pressure on other side norm.	FIM 36-20-00/101, Fig. 103, Block 1

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BITE Index

1. General
   A. Use this index to find the BITE procedure for the applicable LRU/System.
   B. The BITE procedure will provide the fault isolation instructions for the fault indications/LRU maintenance messages.

LRU/System Name	Acronym	FIM Reference
Air Data Computer	ADC	34-12
Air Data Inertial Reference Unit	ADIRU	34-26
Air Traffic Control Transponder	ATC	34-53
Airborne Vibration Monitor Signal Conditioner	AVM	77-31
Antiskid/Autobrake Control Unit		32-42
APU Fire Detection System		26-15
Automatic Direction Finder Receiver	ADF	34-57
APU Control Unit	ECU	49-11
Brake Temperature Monitor Unit		32-46
Bus Power Control Unit	BPCU	24-20
Cabin Pressure Controller		21-30
Digital Flight Data Acquisition Unit	DFDAU	31-31
Distance Measuring Equipment Interrogator	DME	34-55
Duct Leak (Wing and Body)		26-18
E/E Cooling Control Card (If cards installed)		21-58
ECS Bleed Configuration Card		36-10
Electronic Engine Control (RR Engines)	EEC	73-21
Electronic Engine Control Monitor Unit (PW Engines)	EECM	71-EPCS Message Index
Electronic Flight Instrument System	EFIS	34-22
Electronic Propulsion Control System (PW Engines)	EPCS	71-EPCS Message Index
Engine Fire/Overheat Detection System		26-11
Engine Indication and Crew Alerting System Computer	EICAS	31-41

Bite Index
Figure 1 (Sheet 1)

H55848

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LRU/System Name	Acronym	FIM Reference
Engine Turbine Cooling Overheat Detection System (RR Engines)		26-13
Enhanced Ground Proximity Warning Computer	EGPWC	34-46
Flap/Slat Accessory Module	FSAM	27-51
Flap/Slat Electronic Unit	FSEU	27-51
Flight Management Computer	FMC	34-61
Fuel Quantity Indicating System Processor	FQIS	28-41
Ground Proximity Warning Computer	GPWC	34-46
HF (High Frequency) Communication		23-11
Inertial Reference Unit	IRU	34-21
Instrument Comparator Unit	ICU	34-25
Instrument Landing System Receiver	ILS	34-31
Lower Cargo Compartment Smoke Detection System		26-16
Maintenance Control Display Panel	MCDP	22-00
PA (Passenger Address) Amplifier		23-31
Pack Standby Temperature Controller		21-51
Pack Temperature Controller		21-51
Passenger Entertainment System	PES	23-34
Power Supply Module (Control System Electronics Units)	PSM	27-09
Propulsion Discrete Interface Unit (PW Engines)	PDIU	73-21
Proximity Switch Electronics Unit	PSEU	32-09
Radio Altimeter Transmitter/Receiver	RA	34-33
Rudder Ratio Changer Module	RRCM	27-09
Spoiler Control Module	SCM	27-09
Stabilizer Position Module	SPM	27-48
Stabilizer Trim/Elevator Asymmetry Limit Module	SAM	27-09
Stall Warning Computer/Module (in Warning Electronic Unit)	SWC	27-32
Strut Overheat Detection System (RR Engines)		26-12

Bite Index
Figure 1 (Sheet 2)

BOEING PROPRIETARY - Copyright (C) - Unpublished Work - See title page for details.

LRU/System Name	Acronym	FIM Reference
Thrust Management Computer/Autothrottle	TMC	22-00
Traffic Alert and Collision Avoidance Computer	TCAS	34-45
VHF (Very High Frequency) Communication		23-12
VOR/Marker Beacon Receiver	VOR/MKR	34-51
Warning Electronic Unit BITE Module (Stall Warning)	WEU	27-32
Weather Radar Transceiver	WXR	34-43
Wheel Well Fire Detection		26-17
Window Heat Control Unit	WHCU	30-41
Yaw Damper Module	YDM	22-21
Yaw Damper/Stabilizer Trim Module	YSM	27-09
Zone Temperature Controller		21-60

Bite Index
Figure 1 (Sheet 3)

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DISTRIBUTION

COMPONENT	FIG. 102 SHT	QTY	ACCESS/AREA	REFERENCE
CARDS - (21-51-00/101)				
L PACK FLOW CONTROL, M863				
R PACK FLOW CONTROL, M864				
CARD - L ECS BLEED CONFIGURATION, M10313	6	1	119BL, MAIN EQUIP CTR, P50	36-11-12
CARD - R ECS BLEED CONFIGURATION, M10312	6	1	119BL, MAIN EQUIP CTR, P50	36-11-12
CIRCUIT BREAKERS -			FLT COMPT, P11	
CONT - R ENG BLEED, C1340		1	11Q19	*
CONT - APU BLEED, C1333		1	11Q23	*
CONT - ISOL VLV, C1338		1	11B2	*
DUCT PRESS IND PWR, C4221		1	11Q15	*
DUCT PRESS XMTR L, C1332		1	11Q16	*
DUCT PRESS XMTR R, C1342		1	11Q24	*
ENG BLEED L, C1339		1	11Q10	*
HI STAGE SW OVER L, C4196		1	11Q18	*
HI STG SW OVER R, C4197		1	11Q27	*
PWR - APU BLEED, C1336		1	11Q22	*
PWR - ISOL VLV, C1337		1	11B3	*
COMPUTERS - (31-41-00/101)				
EICAS L, M10181				
EICAS R, M10182				
CONNECTOR - PNEUMATIC GROUND	2	3	193JL,194FR, GROUND CONNECTOR ACCESS DOOR	36-11-03
CONTROLLER, REVERSE FLOW CHECK, M10550,M10551	5	2	433HR,443HL, STRUT ACCESS DOOR	36-11-18
LIGHT - BLEED, LEFT, YNNL003	2	1	FLT COMP, P5, BLEED AIR SUPPLY MODULE, M10259	*
LIGHT - BLEED, RIGHT, YNNL004	2	1	FLT COMPT, P5, BLEED AIR SUPPLY MODULE, M10259	*
LIGHT - DUCT LEAK, LEFT, YNNL001	2	1	FLT COMPT, P5, BLEED AIR SUPPLY MODULE, M10259	*
LIGHT - DUCT LEAK, RIGHT, YNNL002	2	1	FLT COMPT, P5, BLEED AIR SUPPLY MODULE, M10259	*
LIGHT - HI STAGE, LEFT, YNNL005	2	1	FLT COMPT, P5, BLEED AIR SUPPLY MODULE, M10259	*
LIGHT - HI STAGE, RIGHT, YNNL006	2	1	FLT COMPT, P5, BLEED AIR SUPPLY MODULE, M10259	*
MODULE - BLEED AIR SUPPLY, M01259	2	1	FLT COMPT, P5	*
PILOT - HIGH-STAGE, M10292,M10293	5	2	415AL,425AL,416AR,426AR, THRUST REVERSER COWL	36-11-08
PRECOOLER - AIR SUPPLY	4	2	433CL,443CR,433JR,443JL, PRECOOLER ACCESS PANELS 433HR,443HL, INTERMEDIATE PRESSURE CHECK VALVE ACCESS PANEL	36-11-15
RELAYS - (31-01-36/101)				
AUTO - L PRSOV/HP6, K10198				
CLOSED - L PRSOV, K10453				
CONT - L PRSOV/HP6, K10199				
OFF - L PRSOV/HP6, K10197				
OUT - L ENG, K10556				
OVRD - L ENG START/PRSOV, K10554				
OVRD - L PRSOV/HP6, K10435				
START - L AIR SUPPLY ENG, K10282				
START - L ENG, K10248				
RELAYS - (31-01-37/101)				
AIR/GND SYS 2, K10201				
AUTO - R PRSOV/HP6, K10205				
CLOSED - R PRSOV, K10454				
CONT - APU AIR SUPPLY,K23				
CONT - R PRSOV/HP6, K10206				

* SEE THE WDM EQUIPMENT LIST

Distribution - Component Index
Figure 101 (Sheet 1)

229905
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COMPONENT	FIG. 102 SHT	QTY	ACCESS/AREA	AMM REFERENCE
RELAY - (FIM 31-01-37/101) IND - AIR SUPPLY ISOLATION VALVE CLOSED, K21 IND - AIR SUPPLY ISOLATION VALVE OPEN, K22 OFF - R PRSOV/HP6, K10204 OUT - R ENG, K10444 OVERRIDE - APU AIR SUPPLY, K10280 OVRD - R PRSOV/HP6, K10436 OVRD - R ENG START/PRSOV, K10555 POS - APU AIR SUPPLY VLV CLOSED, K24 POS - R AIR SUPPLY VLV OPEN, K25 START - R AIR SUPPLY ENG, K10281 START - R ENG, K10251				
SENSOR - AIR SUPPLY OVERTEMPERATURE LIMITING	4	2	434AL,444AL, PRESSURE RELIEF STRUT DOOR	36-11-13
SENSOR - FAN AIR TEMPERATURE	4	2	433KR,433KL, HYDRAULIC FUEL, AND ELECTRONIC ACCESS STRUT PANEL	36-11-17
SWITCH - (FIM 26-21-00/101) L ENGINE FIRE, S37 R ENGINE FIRE, S38 SWITCH - (FIM 26-22-00/101) APU FIRE, S39				
SWITCH - AIR SUPPLY ALTITUDE, S10228,S10229	2	2	193HL,194ER, ECS BAY ACCESS DOOR	36-11-14
SWITCH/LIGHT - APU VALVE, YNNS002	2	1	FLT COMPT, P5, BLEED AIR SUPPLY MODULE, M10259	33-13-00
SWITCH/LIGHT - ISOLATION VALVE, YNNS003	2	1	FLT COMPT, P5, BLEED AIR SUPPLY MODULE, M10259	33-13-00
SWITCH/LIGHT - LEFT ENG OFF, YNNS001	2	1	FLT COMPT, P5, BLEED AIR SUPPLY MODULE, M10259	33-13-00
SWITCH/LIGHT - RIGHT ENG OFF, YNNS004	2	1	FLT COMPT, P5, BLEED AIR SUPPLY MODULE, M10259	33-13-00
VALVE - APU CHECK	1	1	194ER, ECS BAY ACCESS DOOR 1 144, RIGHT LANDING GEAR WHEEL WELL 2	36-11-11
VALVE - APU SHUTOFF, V47	1	1	313AL ELEVATOR ACCESS DOOR	36-11-10
VALVE - FAN AIR MODULATING	5	2	415AL,425AL,416AR,426AR, THRUST REVERSER COWL	36-11-16
VALVE - HIGH PRESSURE SHUTOFF	5	2	415AL,425AL,416AR,426AR, THRUST REVERSER COWL	36-11-07
VALVE - INTERMEDIATE PRESSURE CHECK	4	2	443HL,433HR, INTERMEDIATE PRESSURE CHECK VALVE ACCESS PANEL	36-11-06
VALVE - ISOLATION, V46	2	1	194ER, ECS BAY ACCESS DOOR	36-11-04
VALVE - PRESSURE REGULATING AND SHUTOFF, V42,V43	3	2	433LR,443LL, PRESSURE RELIEF STRUT DOOR	36-11-09

1 AIRPLANES WITH THE APU CHECK VALVE IN THE RIGHT ECS BAY.

2 AIRPLANES WITH THE APU CHECK VALVE IN THE RIGHT MAIN LANDING GEAR WHEEL WELL.

Distribution - Component Index
Figure 101 (Sheet 2)

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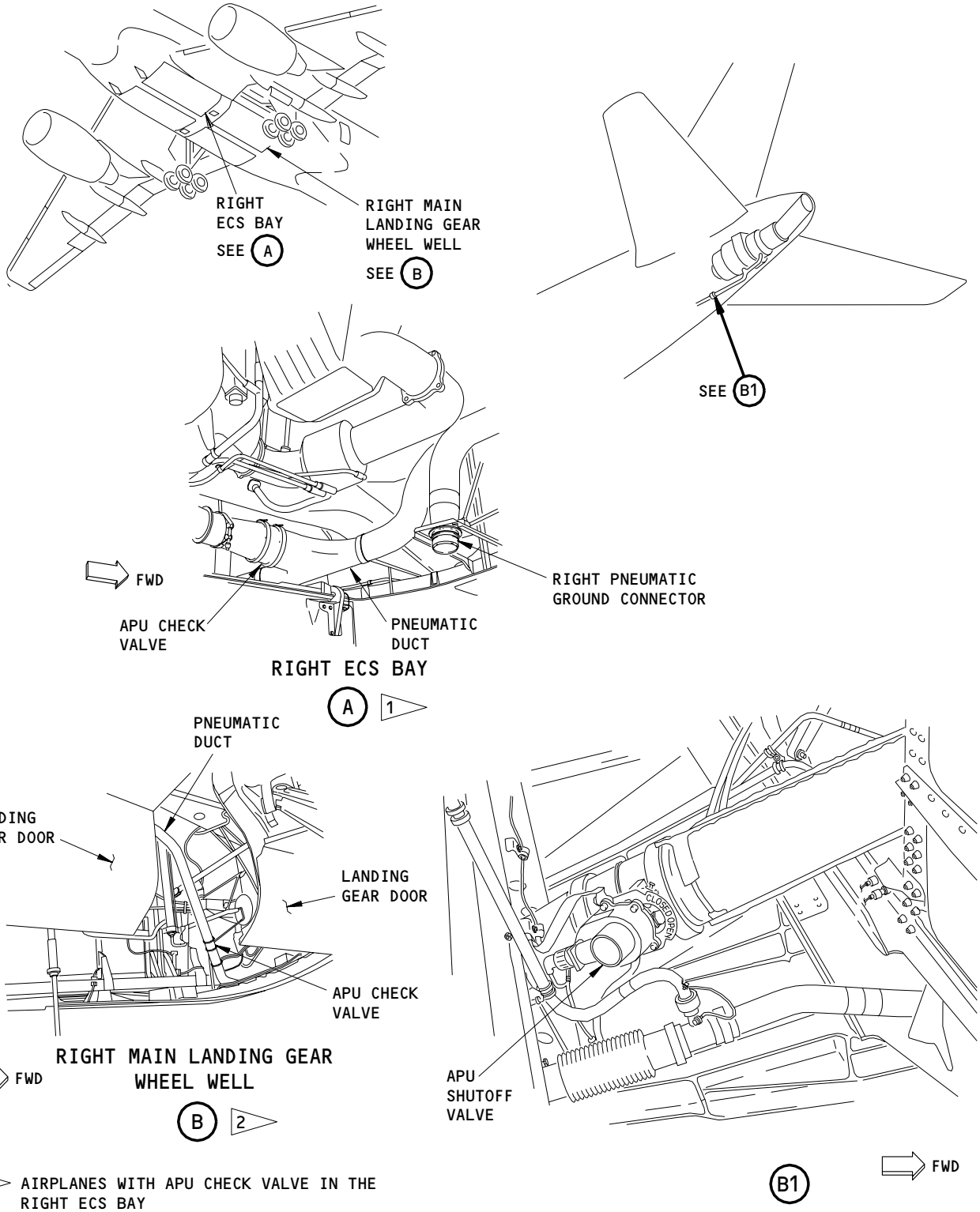

1 AIRPLANES WITH APU CHECK VALVE IN THE RIGHT ECS BAY

2 AIRPLANES WITH APU CHECK VALVE IN THE RIGHT MAIN LANDING GEAR WHEEL WELL

Distribution - Component Location
Figure 102 (Sheet 1)

G02535

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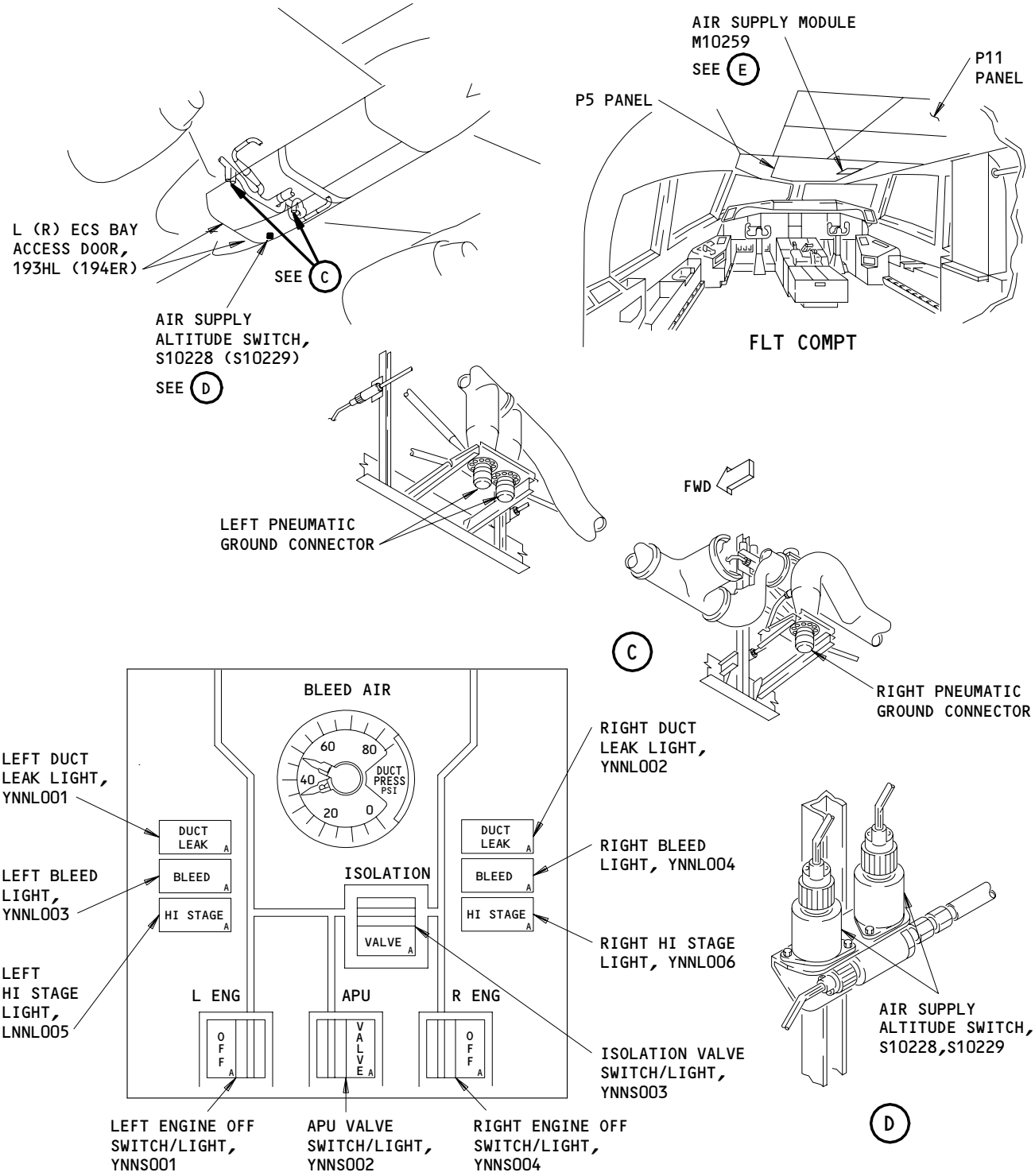

Component Location
Figure 102 (Sheet 2)

89581
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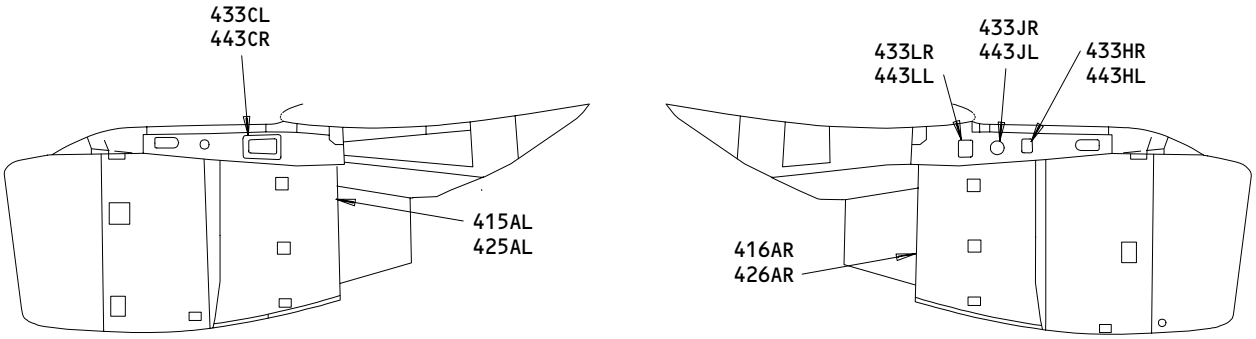
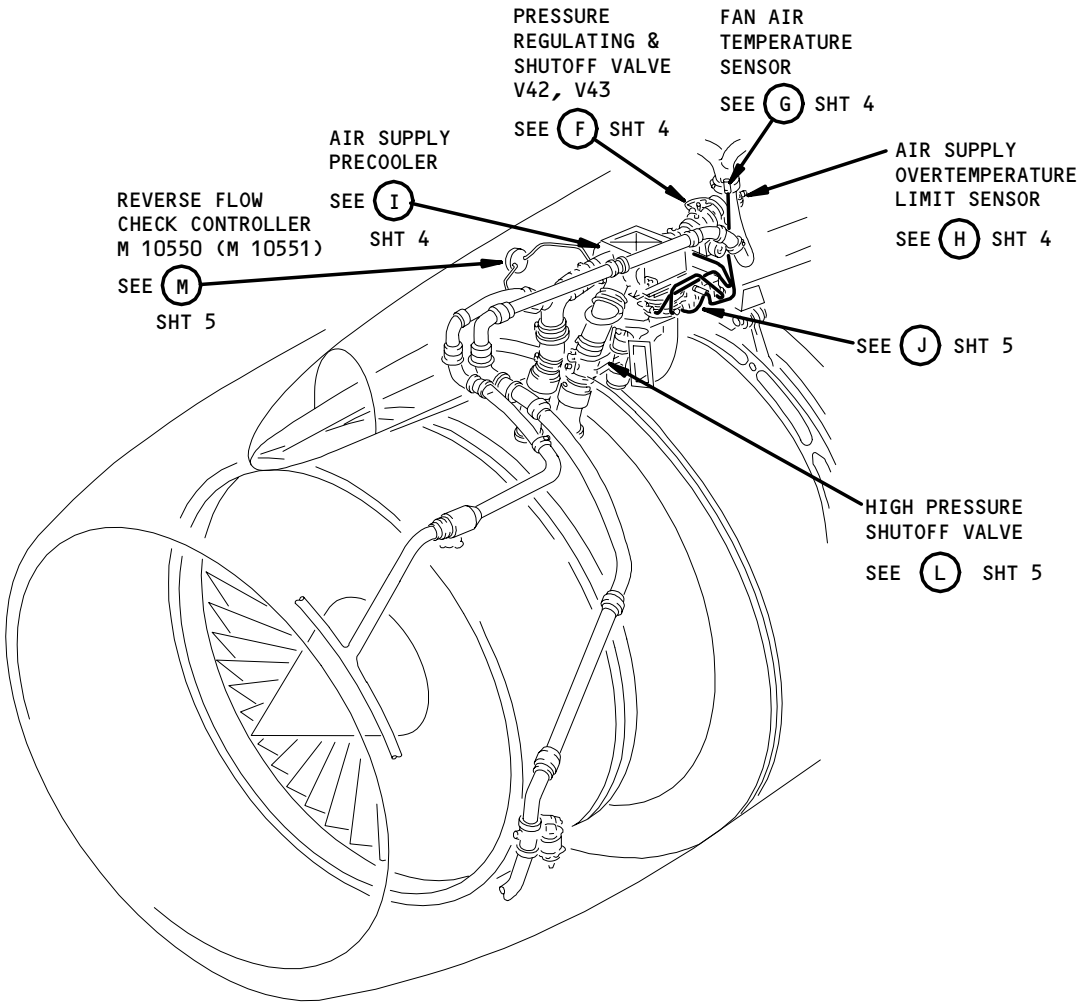


LEFT SIDE

RIGHT SIDE

NO. 1 ENGINE SHOWN, NO. 2 ENGINE SIMILAR BUT OPPOSITE.



ROLLS ROYCE RB211-535 (REF)

Component Location
Figure 102 (Sheet 3)

55694

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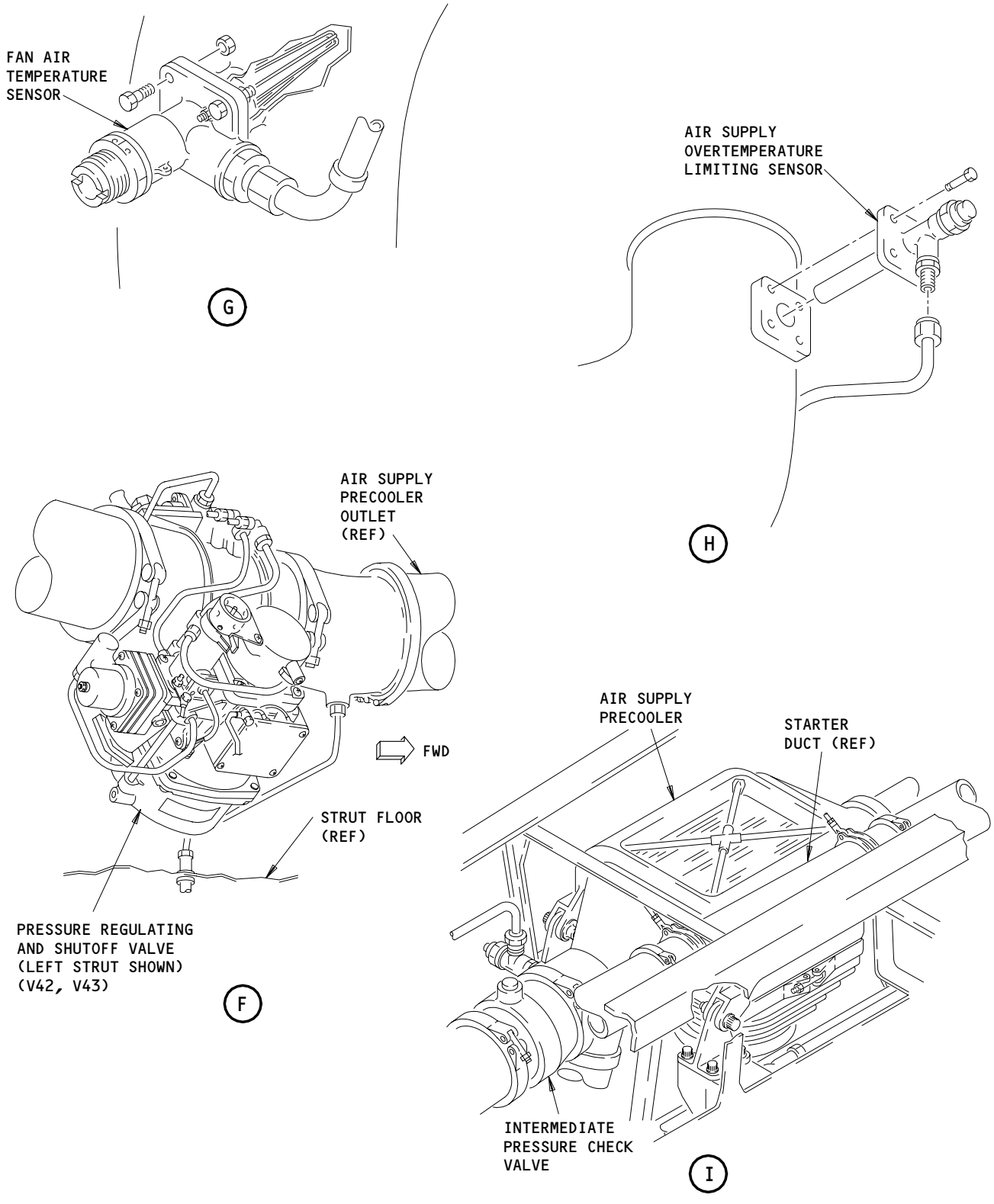

Component Location (Details from Sht 3)
Figure 102 (Sheet 4)

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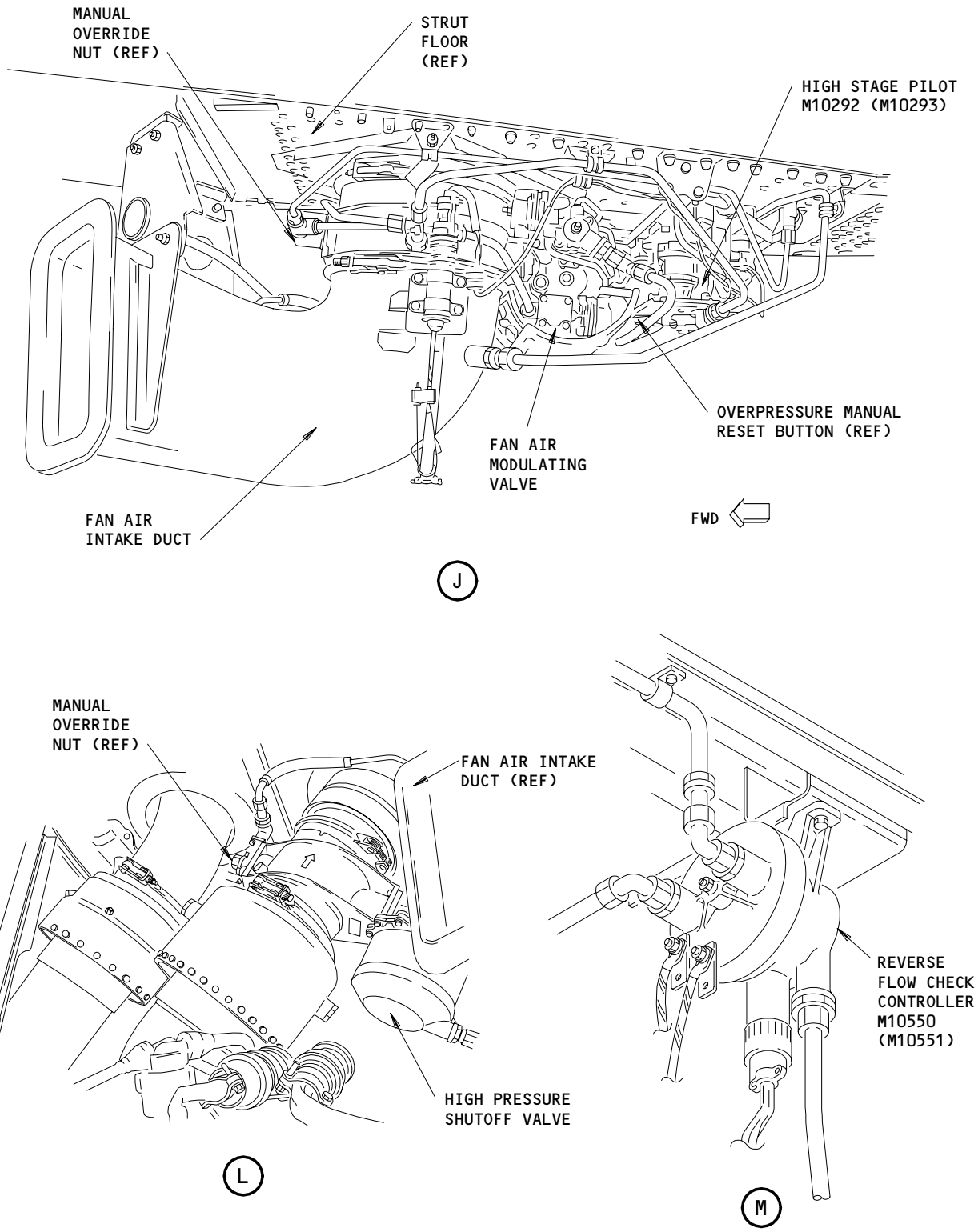

Component Location (Details from Sht 3)
Figure 102 (Sheet 5)

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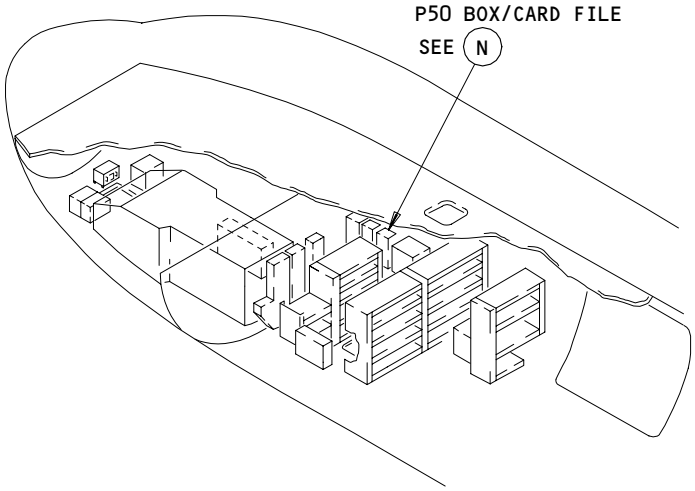
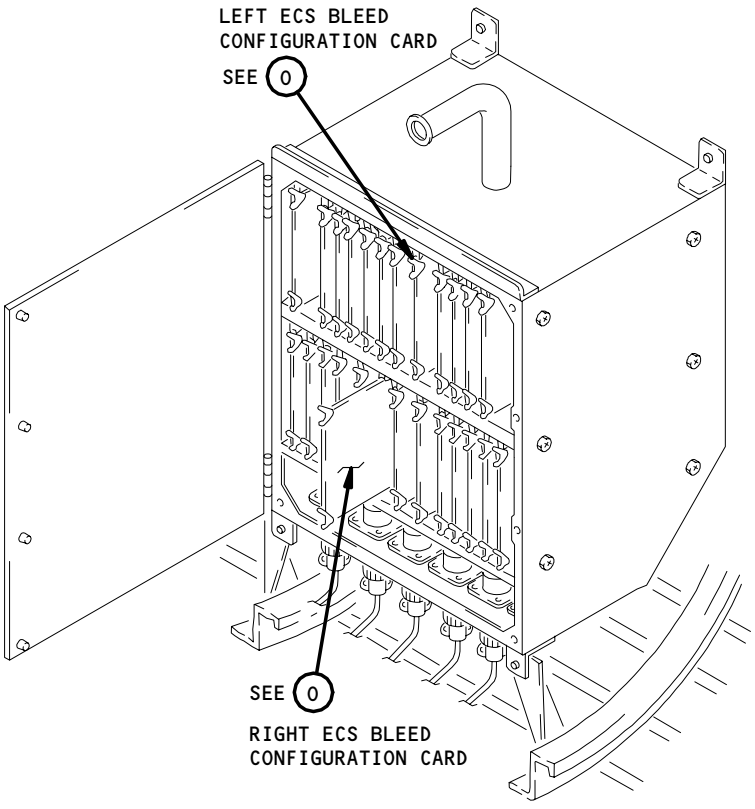
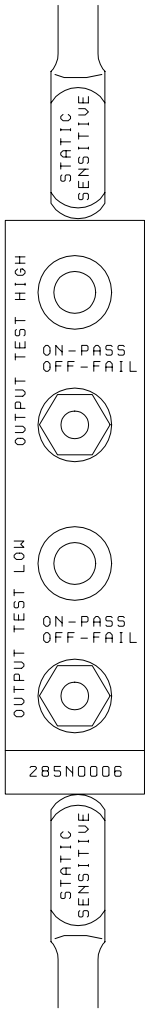




P50 BOX/CARD FILE
N



ECS BLEED CONFIGURATION CARD ASSEMBLY
M10313 (M10312)
O

Component Location
Figure 102 (Sheet 6)

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TEMP. AMBIENT_____F PRESS. AMBIENT_____IN HG

ENGINE GROUND RUN

☐ IDLE ☐ TAKE-OFF

☐ INTERMEDIATE ☐ REVERSE

TEMP_____WIND_____/_____BARO_____

FLIGHT OPERATIONS FLIGHT NO._____A/P_____

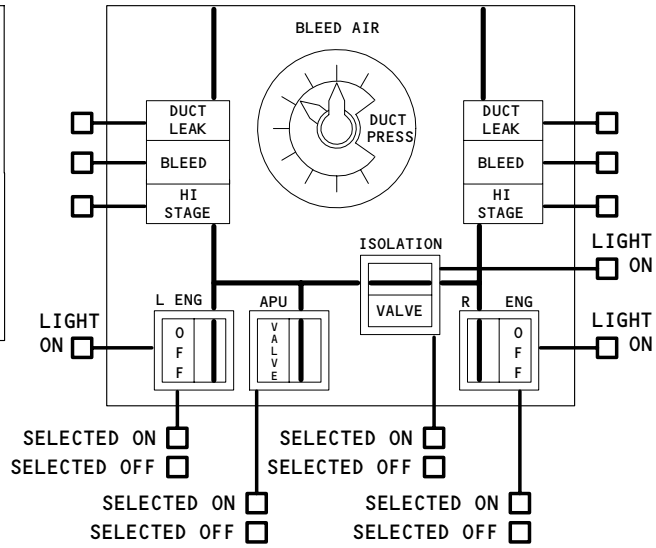
☐ TAKE-OFF ☐ REVERSE

☐ CLIMB ☐ IDLE

☐ CRUISE ☐ DESCENT

EPR_____

BLEED AIR SUPPLY CONTROL MODULE



ECS/MSG

	FLT DK	FWD	AFT
DUCT TEMP			
TRIM VALVE			
		L	R
PACK OUT			
TURB IN			
SEC HX OUT			
COMPR OUT			
PRIM HX OUT			
PRIM HX IN			
PRECOOL OUT			
DUCT PRESS			
PACK FLOW			
TEMP VALVE			
RAM IN DOOR			

☐ L ENG BLEED VAL
☐ R ENG BLEED VAL
☐ APU BLEED VAL
☐ BLEED ISLN VAL
☐ L ENG BLEED OFF
☐ R ENG BLEED OFF
☐ L ENG HI STAGE
☐ R ENG HI STAGE

PAGE 2

WRITE AUTO EVENT MESSAGE HERE:

_____

☐ AUTO EVENT
☐ MAN EVENT

RECORDED BY:

NAME_____DATE/TIME_____

OTHER INFO_____

_____

NOTE: KEEP A RECORD OF THE ABOVE INFORMATION FOR EACH ENGINE. THE INFORMATION WILL BE USED FOR COMPARISON PURPOSES.

757 - EICAS Maintenance and Engine Ground Run Form
Figure 102A

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L (R) ENG BLEED AIR "OFF" LIGHT DID NOT ILLUMINATE WITH SWITCH ON AND ENG NOT RUNNING.

PREREQUISITES
NONE

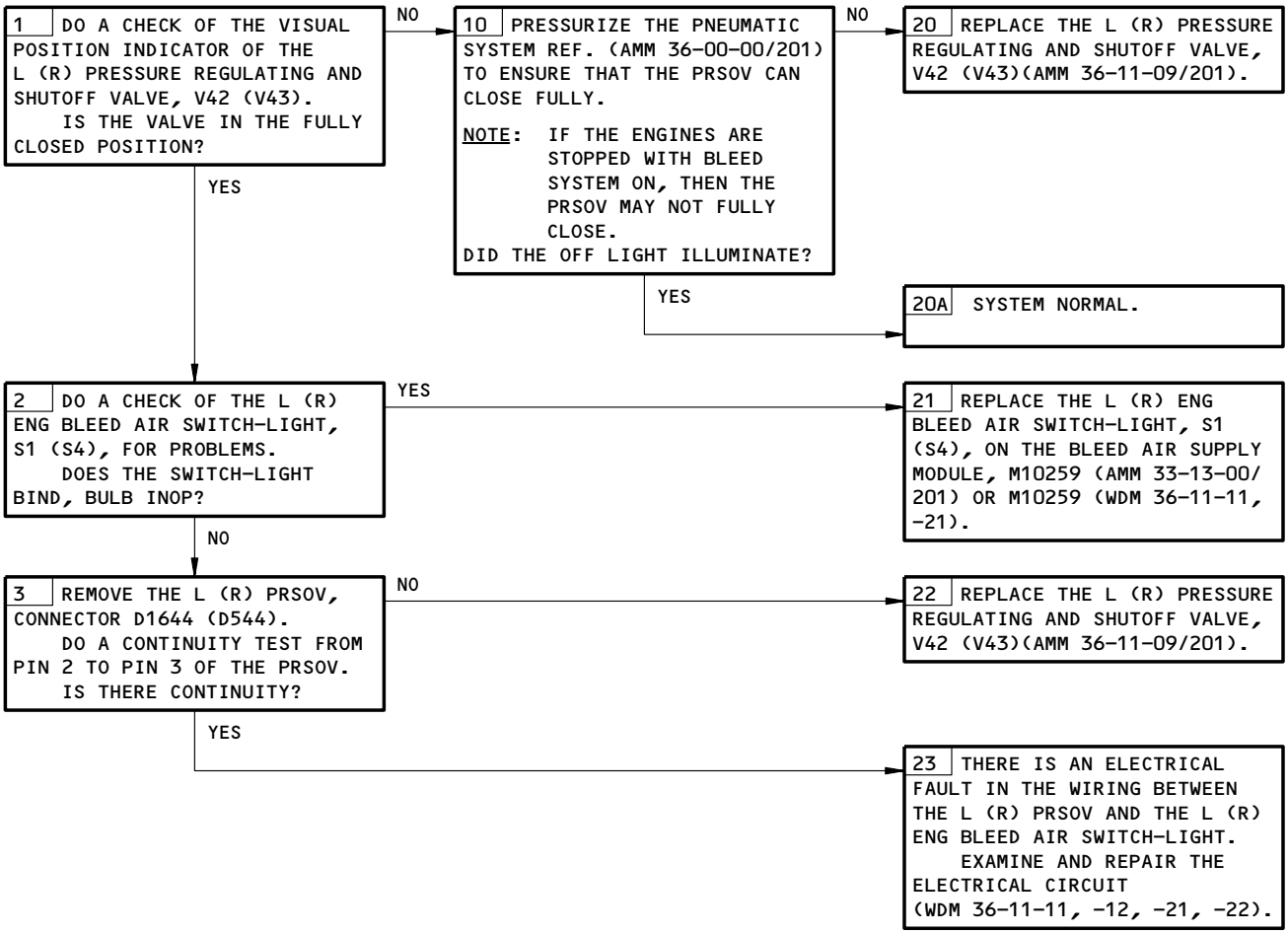
DESCRIPTION:

THE "OFF" LIGHT SHOULD COME ON WHEN THE PRSOV IS CLOSED. THE PRSOV SHOULD BE IN THE CLOSED POSITION WHEN THE ENGINE IS NOT RUNNING.

POSSIBLE CAUSES:

1. PRSOV (AMM 36-11-09/501)
2. ENG BLEED AIR SWITCH-LIGHT
3. ELECTRICAL WIRING FAULT.

FAULT ISOLATION:



L (R) ENG Bleed Air OFF Light Did Not Illuminate with Switch on and Engines Not Running.
Figure 103

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ECS BLEED CONFIG-URATION CARD BITE PROCEDURE

PREREQUISITES
ELECTRICAL POWER (MM 24-22-00)
CB'S: 11Q10,11Q19

1 AT L(R) ECS BLEED CONFIG-URATION CARD ASSEMBLY M10313 (M10312), IN P50 PANEL, PRESS OUTPUT "TEST LOW" PUSHBUTTON.
DOES "TEST LOW" LED INDI-CATOR LIGHT CONTINUOUSLY WHILE PUSHBUTTON IS DEPRESSED?

NO → 40 REPLACE L(R) ECS BLEED CONFIGURATION CARD ASSEMBLY M10313 (M10312)(MM 36-11-12).

YES

2 PRESS OUTPUT "TEST HIGH" PUSHBUTTON.
DOES "TEST HIGH" LED IN-DICATOR LIGHT CONTINUOUSLY WHILE PUSHBUTTON IS DEPRESSED?

NO → 41 REPLACE L(R) ECS BLEED CONFIGURATION CARD ASSEMBLY M10313 (M10312)(MM 36-11-12).

YES

3 SYSTEM NORMAL.

ECS Bleed Configuration Card Bite Procedure
Figure 104

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PREREQUISITES

MAKE SURE THE AIRPLANE IS IN THIS CONFIGURATION:
PNEUMATIC DUCT PRESSURE IS ZERO (AMM 36-00-00/201)

EQUIPMENT:
APU OR GROUND AIR SOURCE - LOW PRESSURE, 0-150 PSIG
NITROGEN SOURCE 0-100 PSIG

CONSUMABLE MATERIALS:
ANTISEIZE COMPOUND, HIGH TEMPERATURE - COMMERCIALLY AVAILABLE

L (R) DUCT PRESSURE FLUCTUATES

DESCRIPTION:

IT IS NORMAL FOR THE DUCT PRESSURE TO FLUCTUATE A FEW CYCLES AT CROSSOVER FROM LOW-STAGE BLEED AIR TO HIGH-STAGE BLEED AIR. CROSSOVER OCCURS AT LOW TO MID RANGE ENGINE POWER SETTINGS, THE EXACT EPR VARIES WITH AIRCRAFT ALTITUDE. IF THE DISCREPANCY WAS OBSERVED DURING DECENT OR A HOLDING CONDITION, IT MAY BE BECAUSE THE ENGINE POWER SETTING WAS RIGHT AT THE CROSSOVER SETPOINT (SEE SHEET 10 & 11).

FLUCTUATIONS THAT CONTINUE BEYOND NORMAL CROSSOVER ARE USUALLY CAUSED BY HIGH STAGE PILOT PROBLEM. A PROBLEM WITH THE REVERSE FLOW CHECK CONTROLLER (RFCC) CAN CAUSE FLUCTUATIONS AT ALL POWER SETTINGS OR ONLY LOW TO MID RANGE POWER SETTINGS, DEPENDING ON THE NATURE OF THE RFCC FAILURE. OTHER SYSTEM FAULTS CAN CAUSE FLUCTUATIONS DURING ALL PHASES OF OPERATION.

IF AT ALL POSSIBLE, EVERY EFFORT SHOULD BE MADE TO RUN THE AFFECTED ENGINE AND PNEUMATIC SYSTEM TO DUPLICATE THE PROBLEM PER AMM 36-11-00/501. THOROUGH DOCUMENTATION OF ENGINE EPR AT THE POINT OF DUCT PRESSURE FLUCTUATION, DUCT PRESSURE AND PRECOOLER OUT TEMPERATURE WILL GREATLY AID THE TROUBLESHOOTING EFFORT.

POSSIBLE CAUSES:

1. HIGH STAGE PILOT CROSSOVER (AMM 36-11-07/501)
2. REVERSE FLOW CHECK CONTROLLER (RFCC) (AMM 36-11-18/501)
3. HPSOV (AMM 36-11-07/501)
4. PRSOV (AMM 36-11-09/501)
5. SENSE LINE LEAKAGE TO INDICATION PRESSURE TRANSDUCERS, 450° SENSOR OR RFCC
6. DUCT PRESSURE TRANSDUCER OR INDICATOR.

FAULT ISOLATION:

1 IT IS NORMAL FOR THE DUCT PRESSURE TO FLUCTUATE A FEW CYCLES AT CROSSOVER FROM LOW-STAGE TO HIGH-STAGE ENGINE BLEED AIR.
CROSSOVER OCCURS AT LOW TO MID RANGE ENGINE POWER SETTINGS, THE EXACT EPR OF WHICH WILL VARY WITH ALTITUDE.
SEE SHEET 10 & 11 TO DETERMINE IF THE DUCT PRESSURE FLUCTUATION WAS A RESULT OF NORMAL CROSSOVER.
WAS THE DUCT PRESSURE FLUCTUATION CAUSED BY NORMAL CROSSOVER?

YES → 41 RETURN THE AIRCRAFT TO SERVICE.

NO → SEE SHEET 2 (BLOCK 2)

L (R) Duct Pressure Fluctuates
Figure 105 (Sheet 1)

A49878
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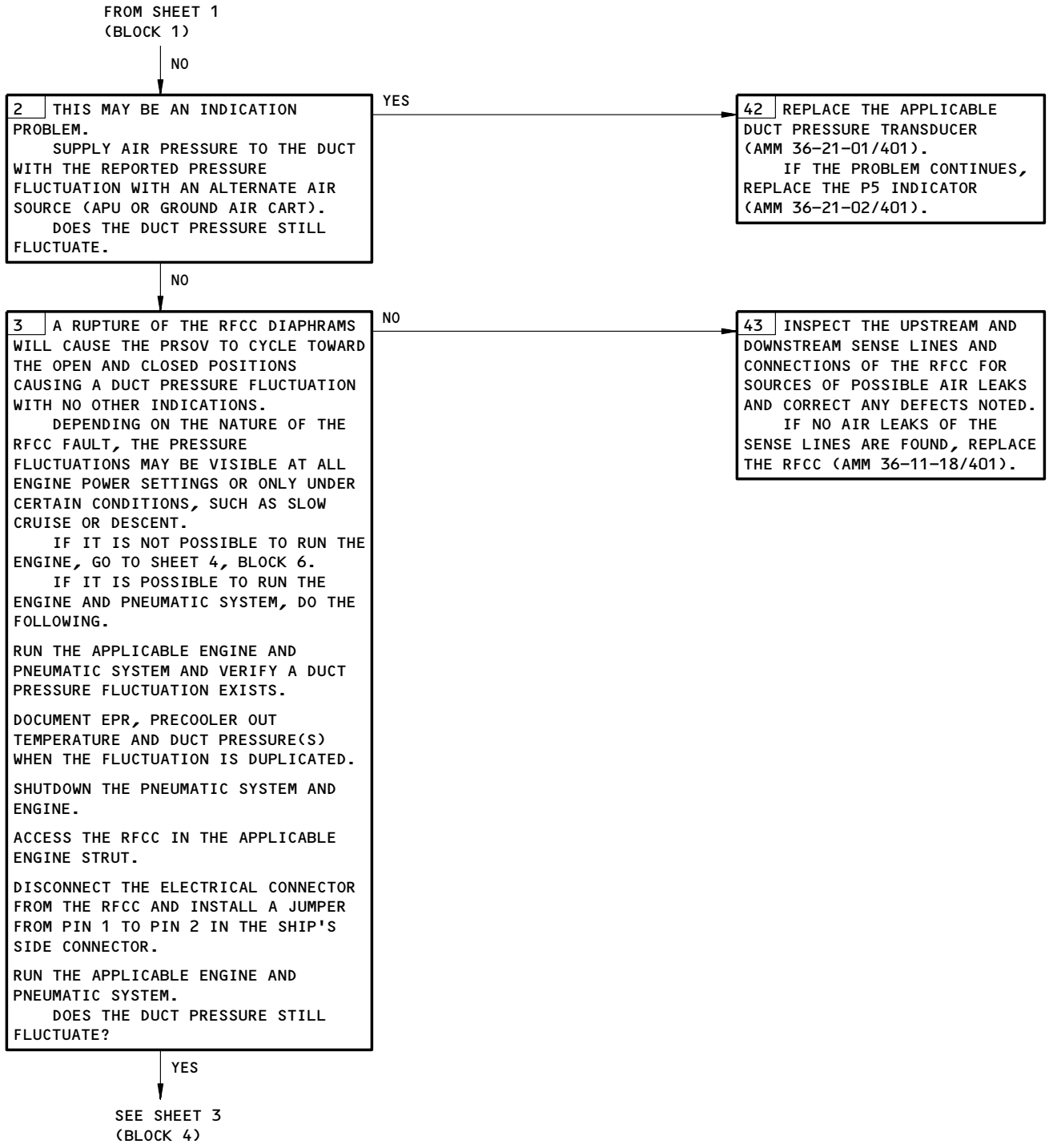

L (R) Duct Pressure Fluctuates
Figure 105 (Sheet 2)

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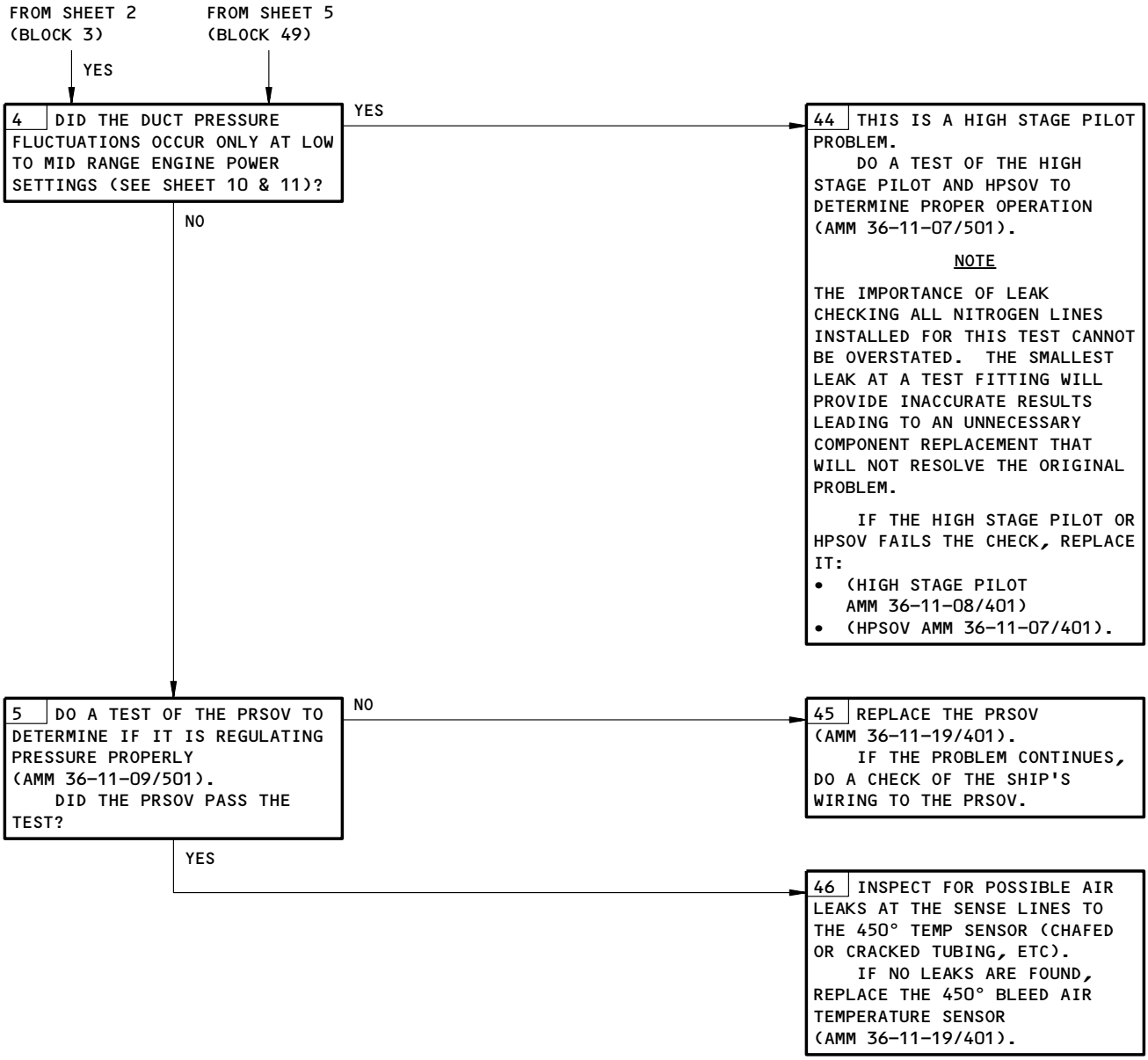

L (R) Duct Pressure Fluctuates
Figure 105 (Sheet 3)

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FROM SHEET 2
(BLOCK 3)

6 IF THE AFFECTED ENGINE AND PNEUMATIC SYSTEM CANNOT BE RUN FOR BLOCK 3, DO THE FOLLOWING:

REMOVE PNEUMATIC POWER (AMM 36-00-00/201).

OPEN THESE CIRCUIT BREAKERS ON THE P11 PANEL:
- APU BLEED CONT
- APU BLEED PWR

REMOVE THE ELECTRICAL CONNECTOR FOR THE REVERSE FLOW CHECK CONTROLLER (RFCC) AND INSTALL A JUMPER FROM PIN 1 TO PIN 2 OF THE SHIP'S SIDE CONNECTOR.

REMOVE THE APPLICABLE 450° TEMPERATURE SENSOR SENSE LINE (SEE SHEET 7).

INSTALL A NITROGEN SUPPLY SOURCE (PS) AND SUPPLY PRESSURE GAGE TO THE DISCONNECTED LINE.

INCREASE THE NITROGEN SUPPLY PRESSURE TO 10-20 PSIG AND MAKE SURE THE PRSOV OPENS.

SUPPLY PNEUMATIC POWER WITH THE APU OR GROUND SOURCE (AMM 36-00-00/201).

DISCONNECT THE APU SHUTOFF VALVE, CONNECTOR D1616.

INSTALL A JUMPER BETWEEN PIN 4 AND PIN 5 OF THE SHIP'S WIRING.

MANUALLY OPEN THE APU BLEED VALVE.

CLOSE THESE CIRCUIT BREAKERS ON THE P11 PANEL:
- APU BLEED CONT
- APU BLEED PWR

DO A CHECK OF THE RFCC UPSTREAM SENSE LINE (DO NOT DISCONNECT THE SENSE LINES) AND THE PRSOV DOWNSTREAM PRESSURE SENSE LINE.

IS THERE A LEAKAGE?

YES

47 REMOVE THE PNEUMATIC POWER.
DECREASE PS TO 0 PSIG.
REMOVE THE NITROGEN SOURCE AND SUPPLY PRESSURE GAGE.
APPLY ANTISEIZE COMPOUND TO THE 450° TEMPERATURE SENSOR SENSE LINE FITTING AND REINSTALL.
REMOVE THE JUMPER AND INSTALL THE APU BLEED VALVE CONNECTOR D1616.
REMOVE THE JUMPER AND INSTALL THE RFCC CONNECTOR.
REPAIR THE LEAKAGE.

NO

SEE SHEET 5
(BLOCK 7)

L (R) Duct Pressure Fluctuates
Figure 105 (Sheet 4)

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495186

FROM SHEET 4
(BLOCK 6)

NO

7 THE REVERSE FLOW CHECK CONTROLLER MAY BE BAD.
REMOVE THE JUMPER AND INSTALL THE CONNECTOR TO THE RFCC.
REMOVE THE PNEUMATIC POWER.
IF THE APU WAS USED, OPEN THESE CIRCUIT BREAKERS:
- APU BLEED CONT
- APU BLEED PWR

REMOVE THE JUMPER AND INSTALL THE APU BLEED VALVE CONNECTOR.
CLOSE THESE CIRCUIT BREAKERS:
- APU BLEED CONT
- APU BLEED PWR

DECREASE PS TO 0 PSIG.
REMOVE THE UPSTREAM AND DOWNSTREAM SENSE LINES TO THE RFCC (SEE SHEET 8 & 9).
INSTALL TEST LINES TO THE UPSTREAM AND DOWNSTREAM SENSE LINES.
PUSH THE APPLICABLE ENGINE BLEED AIR SWITCHLIGHT ON THE P5 PANEL TO THE "ON" POSITION.
USING LUNG POWER, BLOW IN THE DOWNSTREAM TEST LINE AND MONITOR THE PRSOV ON/OFF SOLENOID. THE SOLENOID SHOULD RETRACT.
BLOW IN THE UPSTREAM TEST LINE. THE SOLENOID SHOULD EXTEND AND STAY IN THE EXTENDED POSITION AFTER YOU STOP BLOWING.
DID THE ON/OFF SOLENOID STAY IN THE EXTENDED POSITION?

NO

48 REMOVE THE NITROGEN SOURCE AND SUPPLY PRESSURE GAGE.
REMOVE THE TEST LINES.
APPLY ANTISEIZE COMPOUND TO THE 450° TEMPERATURE SENSOR SENSE LINE FITTING AND REINSTALL.
REPLACE THE RFCC (AMM 36-11-18/401).

YES

49 REMOVE THE NITROGEN SOURCE AND SUPPLY PRESSURE GAGE.
REMOVE THE TEST LINES.
APPLY ANTISEIZE COMPOUND TO THE UPSTREAM AND DOWNSTREAM PRESSURE LINE FITTINGS AND REINSTALL TO THE RFCC.
GO TO SHEET 3, BLOCK 4.

L (R) Duct Pressure Fluctuates
Figure 105 (Sheet 5)

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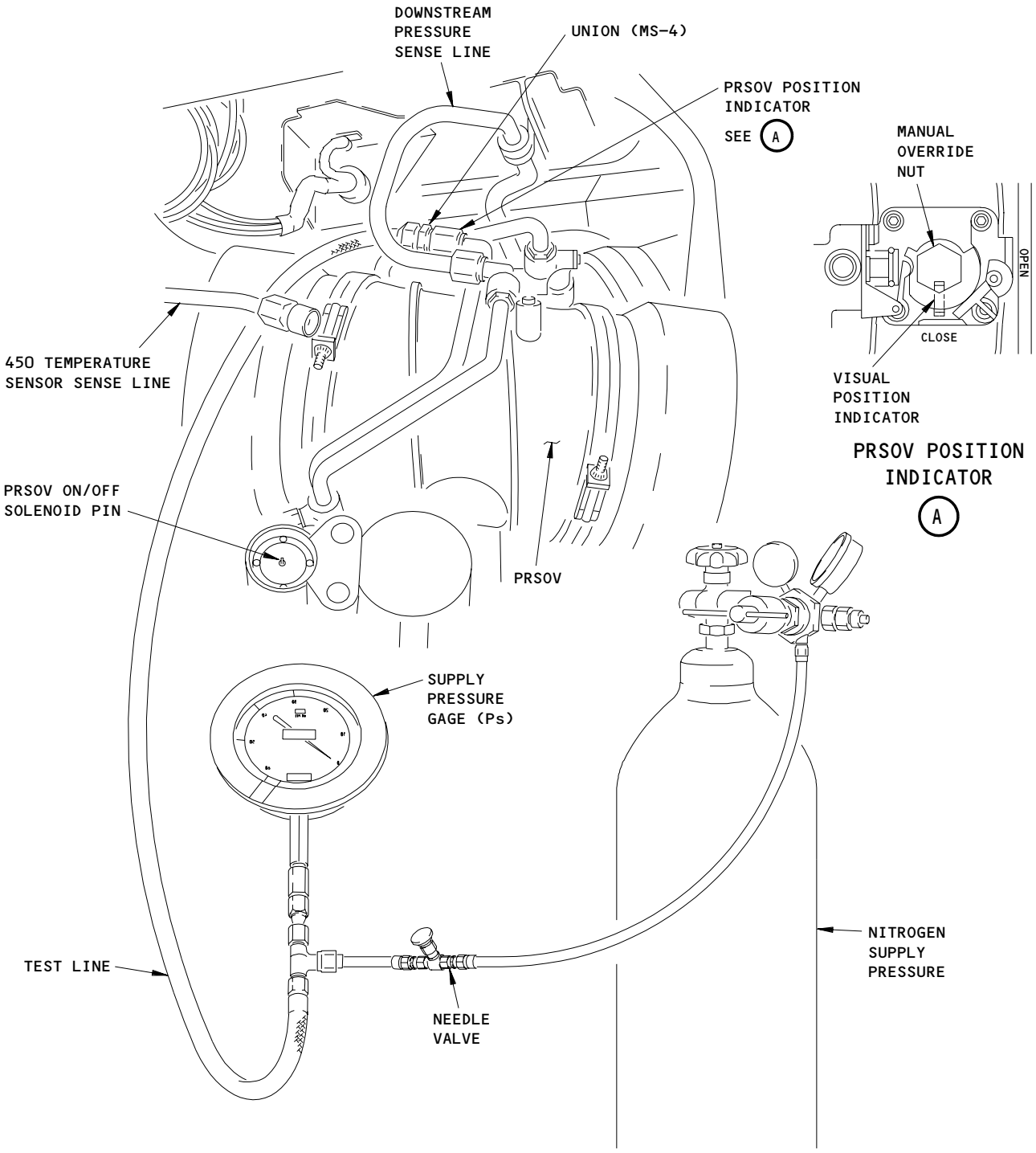

PRSOV TEST EQUIPMENT
(LEFT ENGINE)

L (R) Duct Pressure Fluctuates
Figure 105 (Sheet 6)

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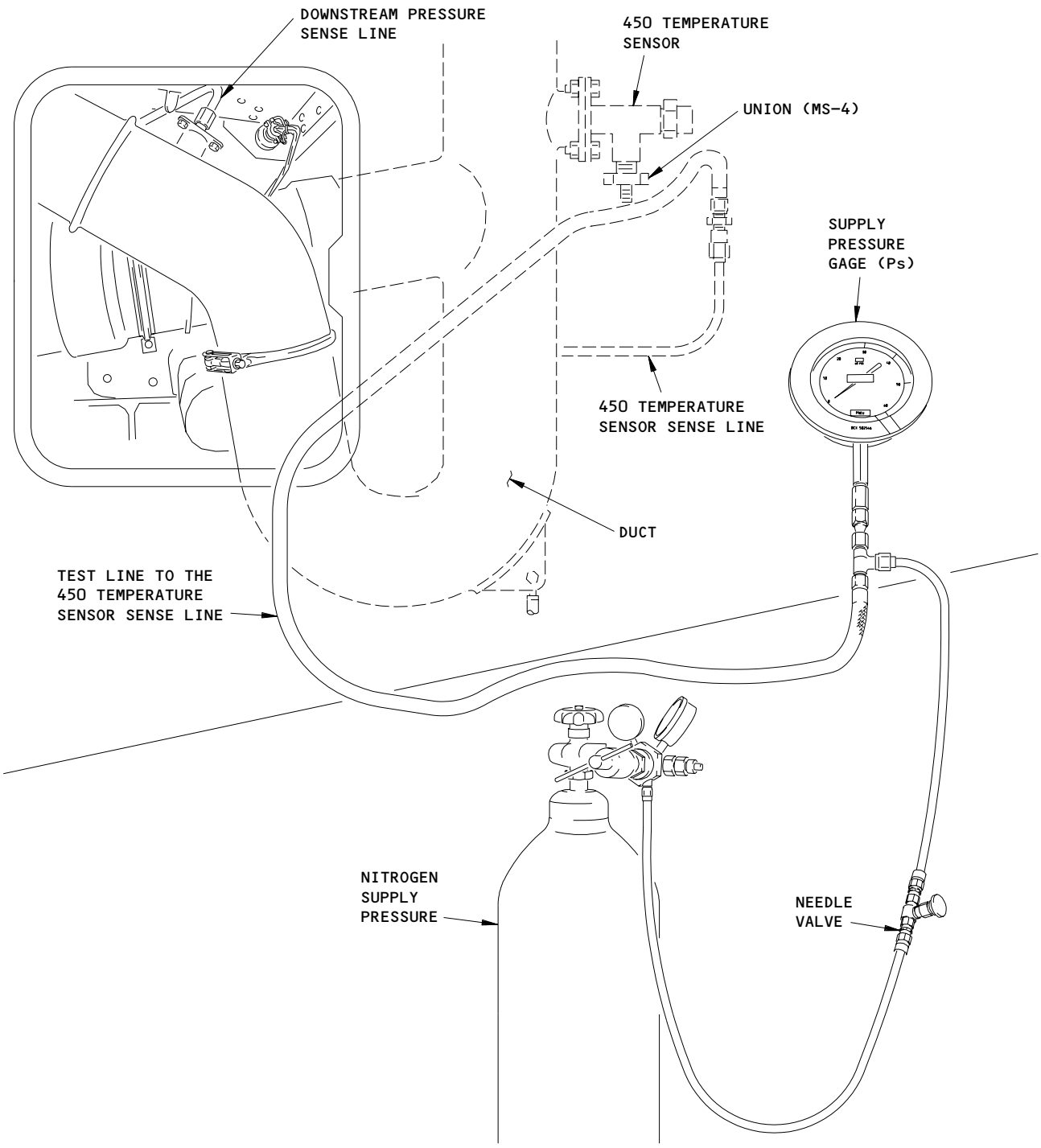

PRSOV TEST EQUIPMENT
(RIGHT ENGINE)

L (R) Duct Pressure Fluctuates
Figure 105 (Sheet 7)

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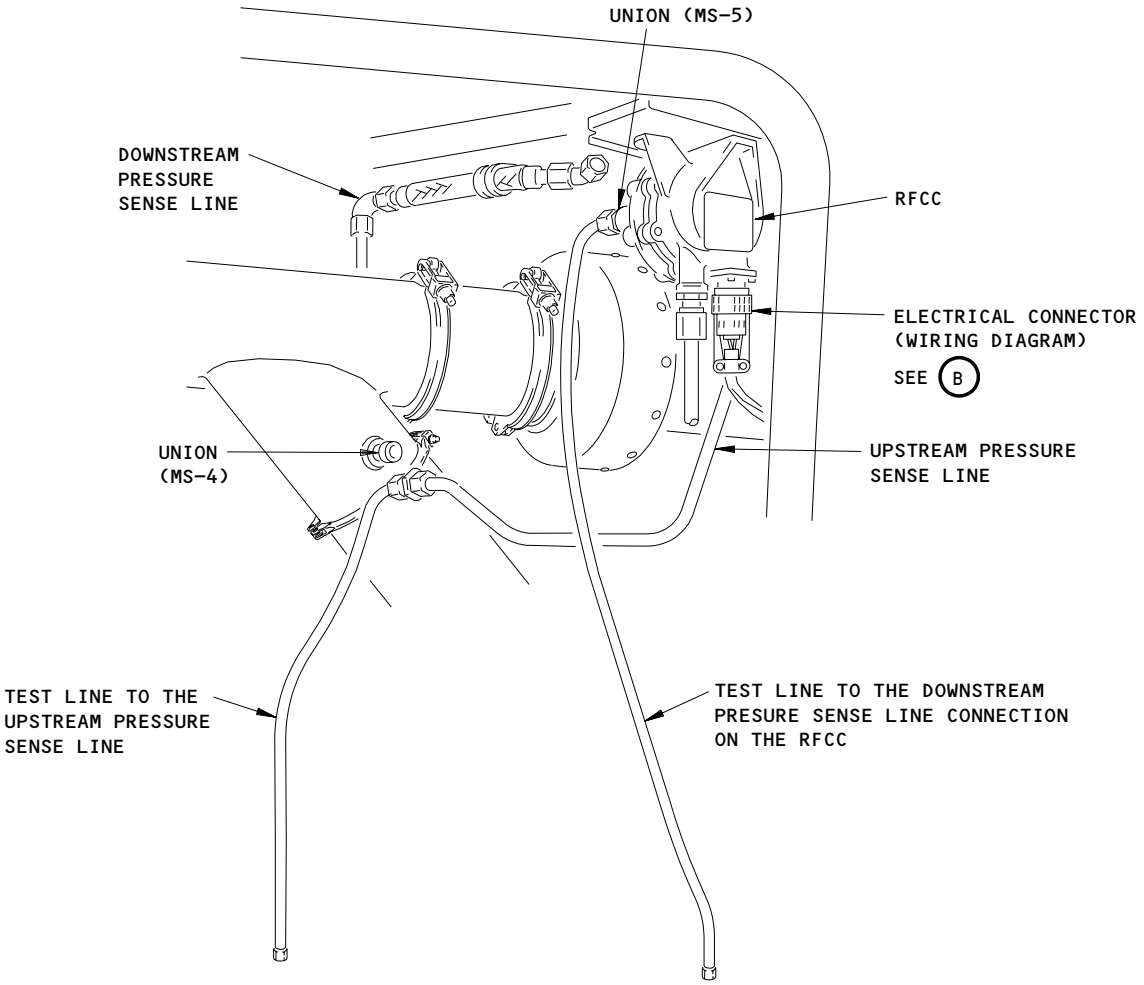
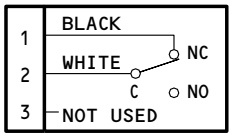


RFCC TEST EQUIPMENT
(LEFT ENGINE STRUT)



ELECTRICAL CONNECTOR
WIRING DIAGRAM
B

L (R) Duct Pressure Fluctuates
Figure 105 (Sheet 8)

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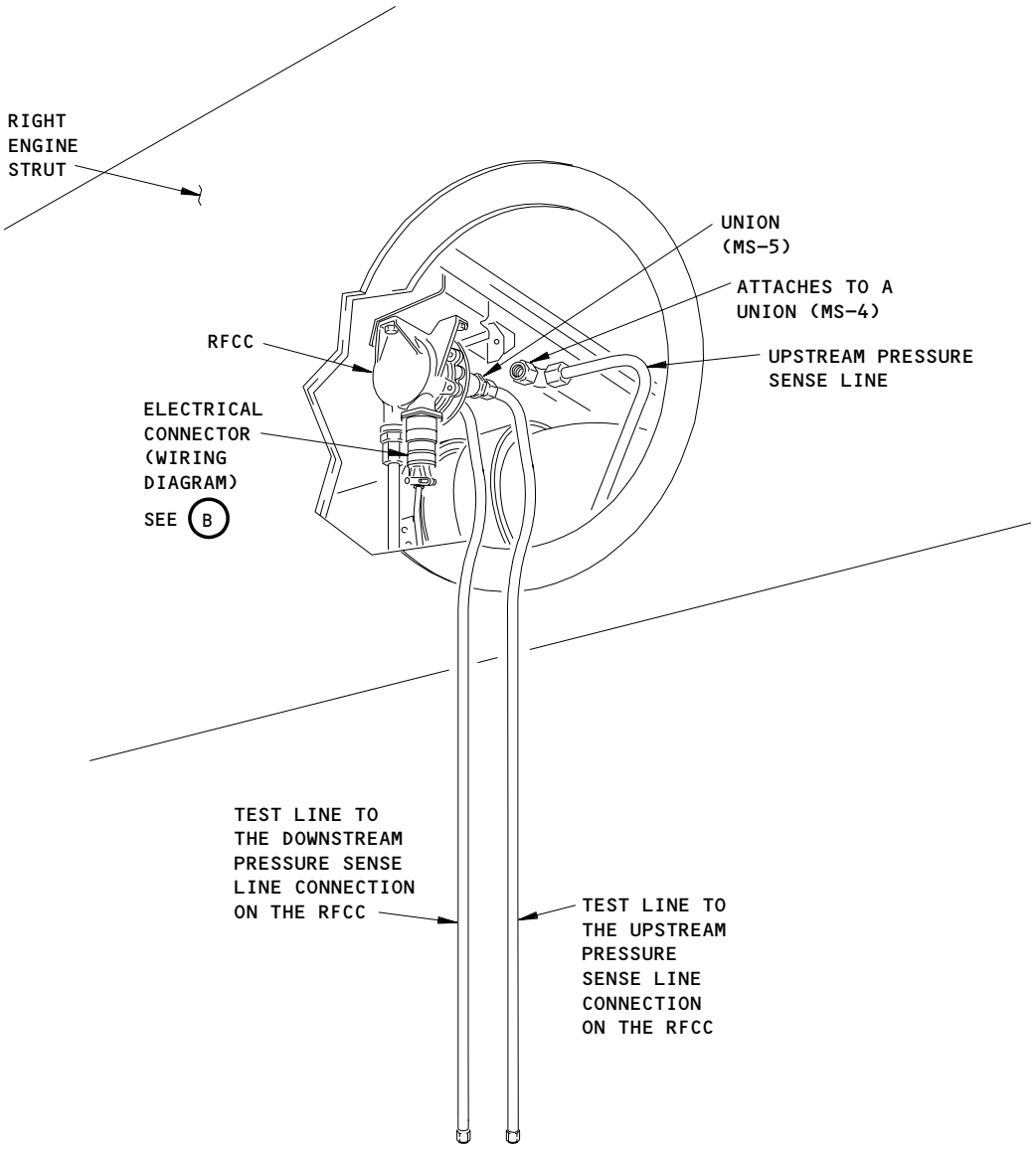

RFCC TEST EQUIPMENT
(RIGHT ENGINE STRUT)

L (R) Duct Pressure Fluctuates
Figure 105 (Sheet 9)

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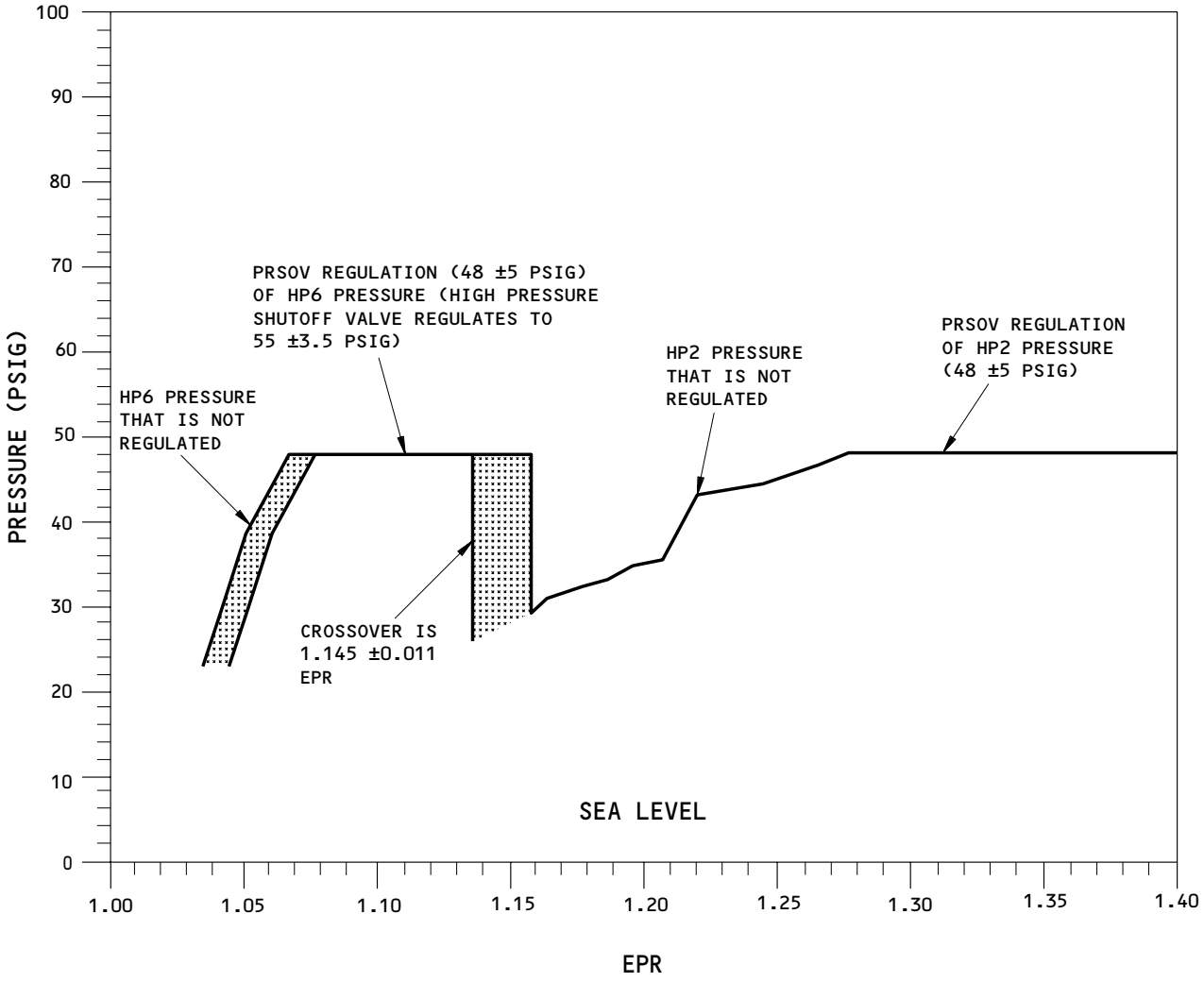

PRESSURE VS EPR

L (R) Duct Pressure Fluctuates
Figure 105 (Sheet 10)

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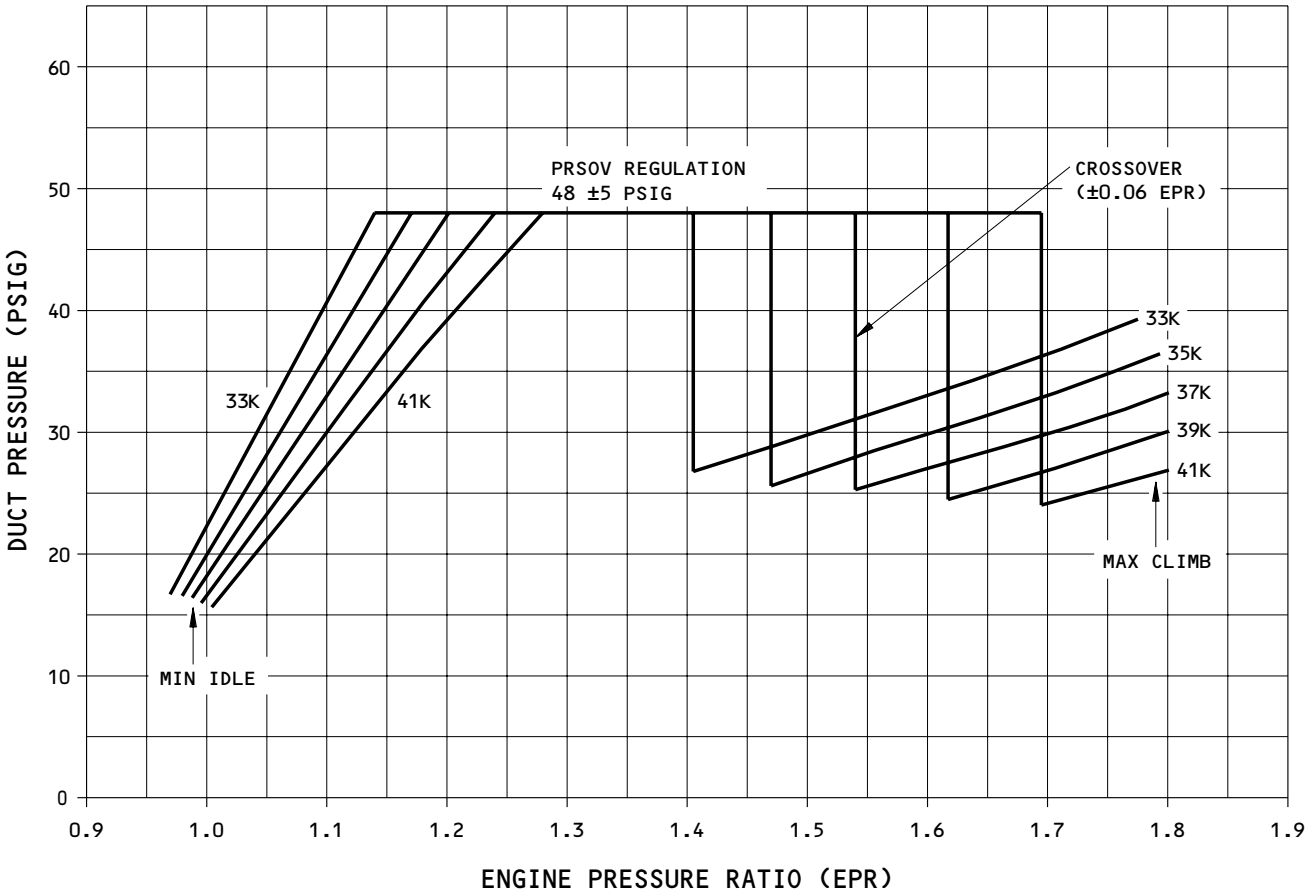

L (R) Duct Pressure Fluctuates
Figure 105 (Sheet 11)

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PREREQUISITES

MAKE SURE THE AIRPLANE IS IN THIS CONFIGURATION:
- PNEUMATIC DUCT PRESSURE IS ZERO (AMM 36-00-00/201)

EQUIPMENT:
- APU OR GROUND AIR SOURCE - LOW PRESSURE, 0-150 PSIG, COMMERCIALLY AVAILABLE
- NITROGEN SOURCE

CONSUMABLE MATERIALS:
- ANTISEIZE COMPOUND, HIGH TEMPERATURE - COMMERCIALLY AVAILABLE

NOTE: LOW DUCT PRESSURE CAN BE CAUSED BY THE BLEED SYSTEM CROSSOVER FROM LOW- TO HIGH-STAGE OCCURING AT A DIFFERENT TIME FOR THE LEFT AND RIGHT SIDES. THIS WILL GIVE THE INDICATION THAT ONE SIDE HAS A LOWER PRESSURE THAN THE OTHER SIDE. SHEET 11 SHOWS A GRAPH OF CROSSOVER PRESSURE VERSUS EPR FOR VARIOUS ALTITUDES. IF THE CROSSOVER OCCURRED WITHIN THE NORMAL RANGE, THE SYSTEM IS NORMAL AND NO ACTION IS REQUIRED. DO THIS PROCEDURE IF THE CROSSOVER OCCURRED ABOVE OR BELOW THE RANGE SHOWN OR IF THE PILOT REPORT DOES NOT APPEAR RELATED TO CROSSOVER.

Low Duct Pressure
Figure 106 (Sheet 1)

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LOW DUCT PRESSURE

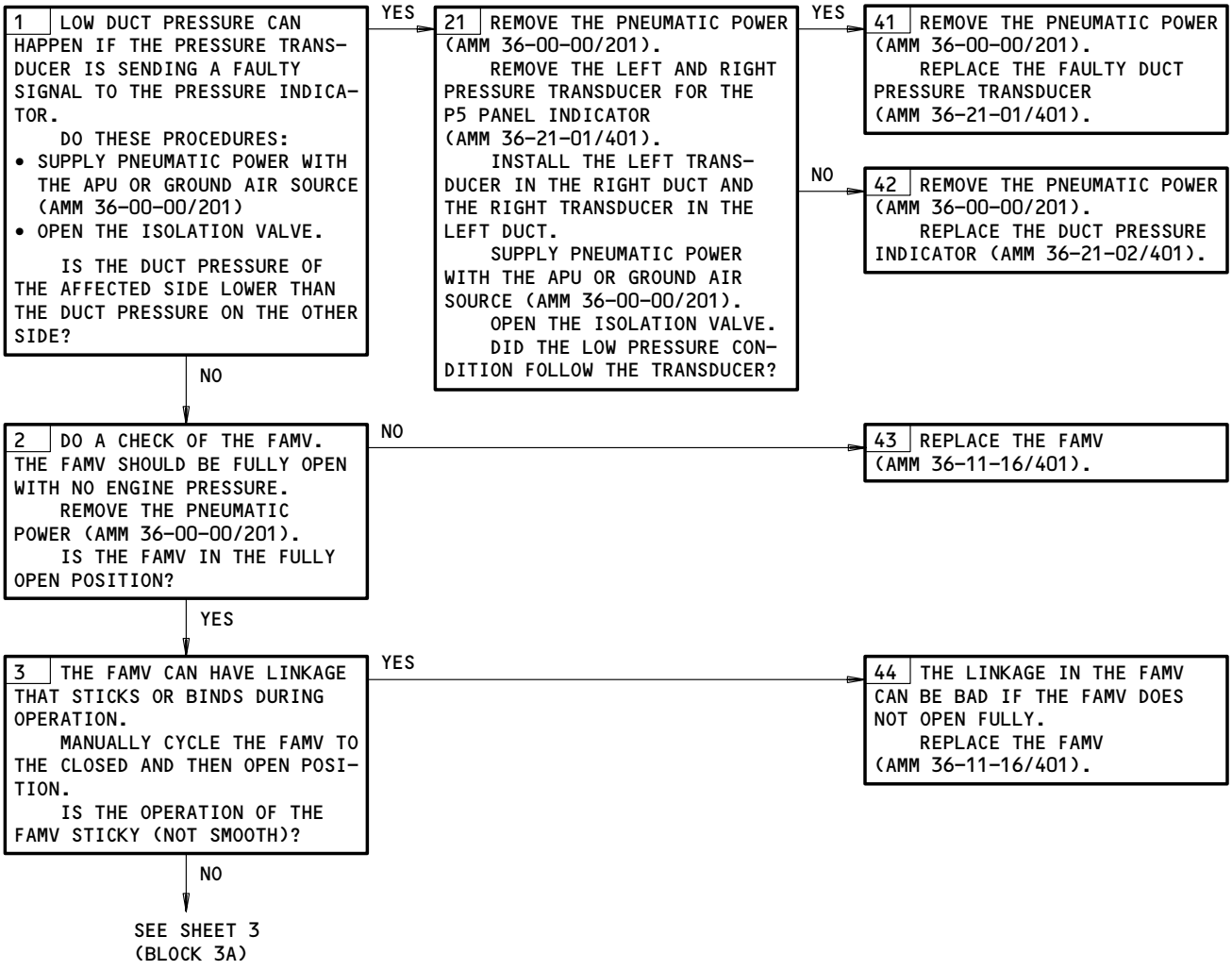
DESCRIPTION:

DUCT PRESSURE THAT IS LOWER THAN NORMAL FOR THE CONDITIONS SHOWN IN SHEETS 10 AND 11.

POSSIBLE CAUSES:

1. FAMV OR FATS (AMM 36-11-16/501)
2. PRSOV OR 450 TEMPERATURE SENSOR (AMM 36-11-09/501)
3. HPSOV (AMM 36-11-07/501)
4. HS PILOT (AMM 36-11-07/501)
5. SENSE LINE LEAKAGE OR DAMAGE
   - FAMV AND/OR FATS
   - PRSOV AND/OR 450 TEMPERATURE SENSOR
   - HPSOV AND/OR HS PILOT
6. CONTAMINATED PRECOOLER

FAULT ISOLATION:



Low Duct Pressure
Figure 106 (Sheet 2)

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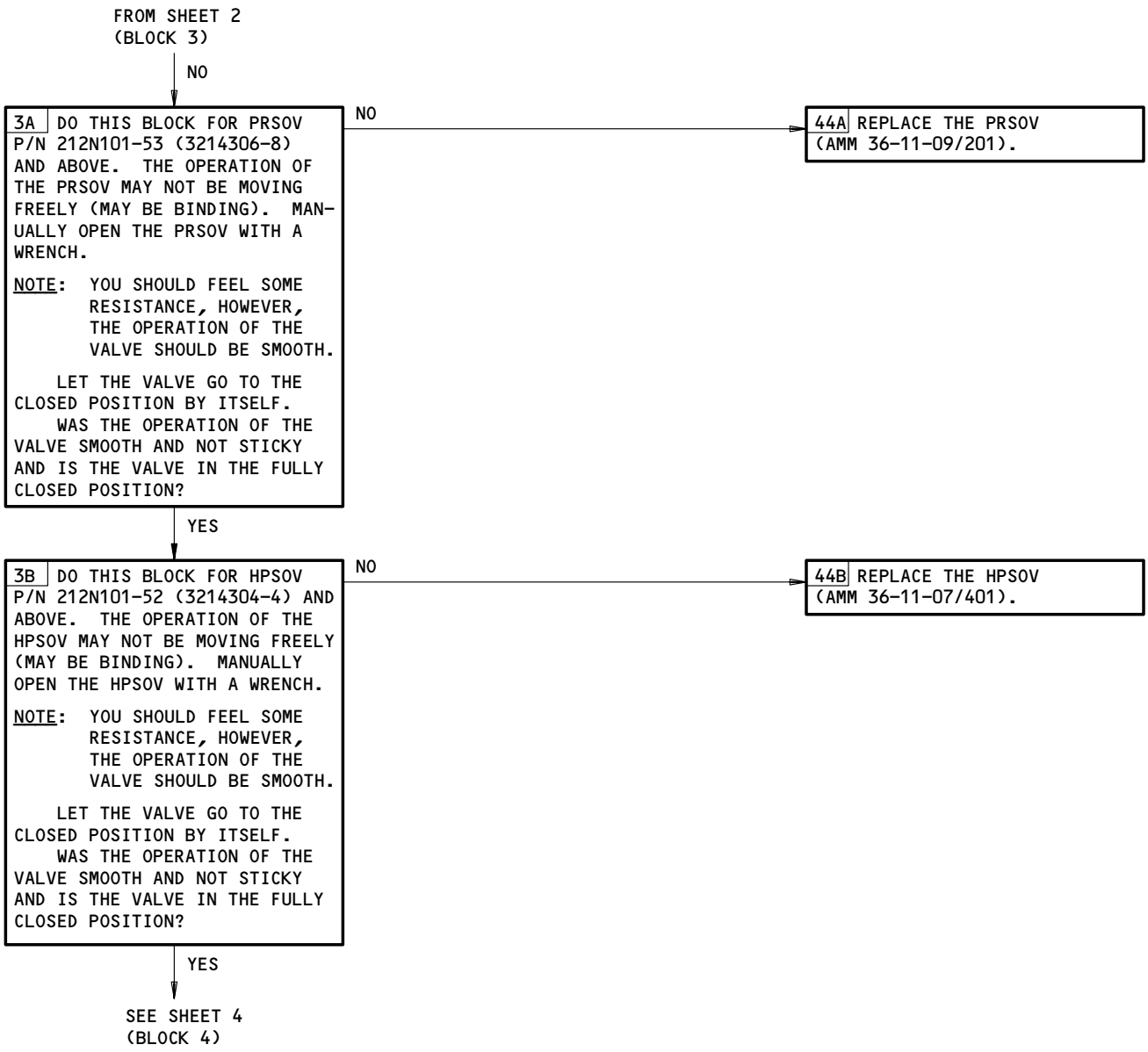

Low Duct Pressure
Figure 106 (Sheet 3)

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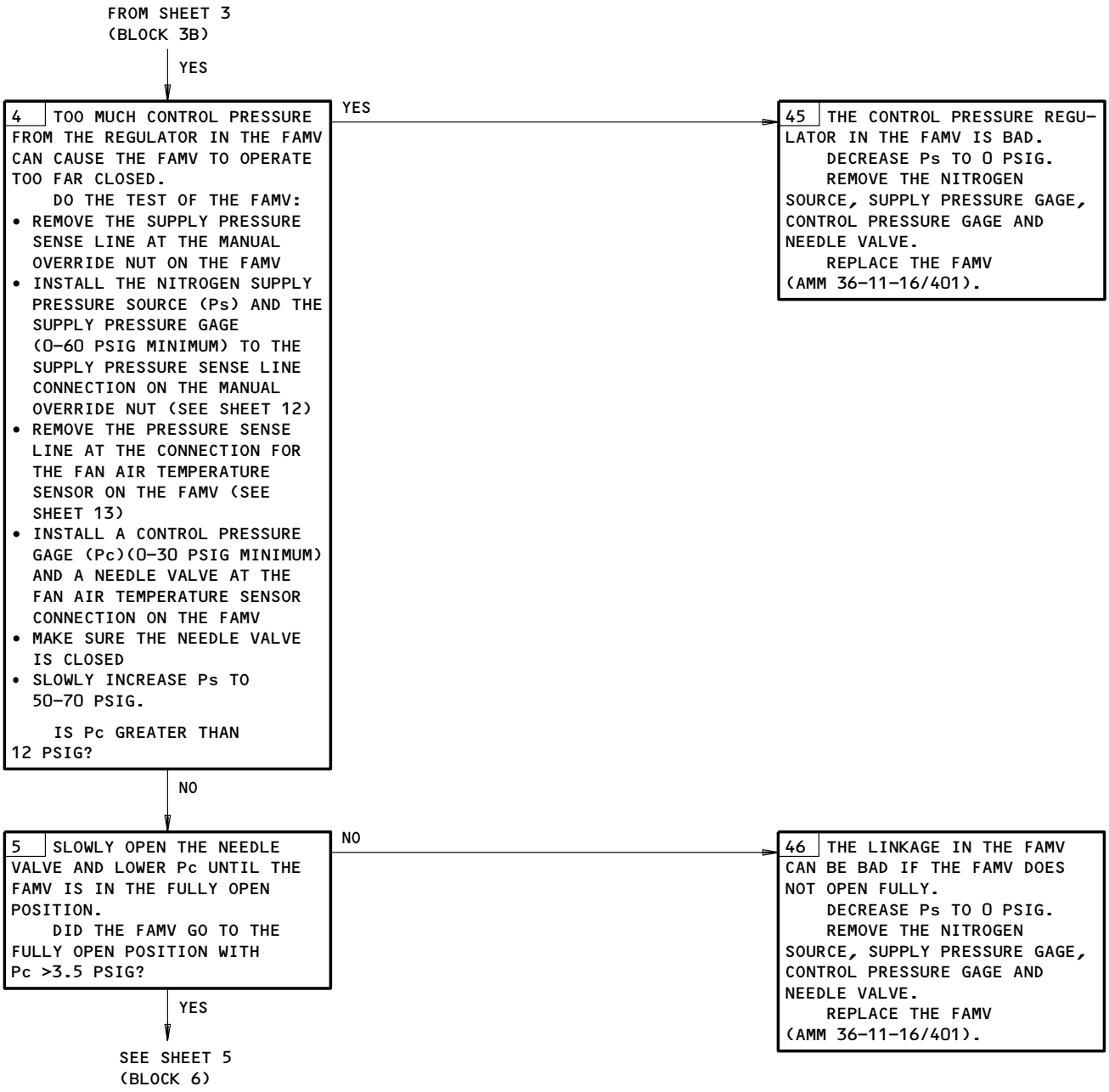

Low Duct Pressure
Figure 106 (Sheet 4)

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FROM SHEET 4
(BLOCK 5)

YES

6 THE FAMV IS SATISFACTORY. THE CONTROL PRESSURE TO THE PRSOV CAN BE TOO LOW TO CORRECTLY OPEN THE PRSOV.

DECREASE Ps TO 0 PSIG.

REMOVE THE NITROGEN SOURCE, SUPPLY PRESSURE GAGE, CONTROL PRESSURE GAGE AND NEEDLE VALVE.

APPLY ANTISEIZE COMPOUND TO THE FITTINGS FOR THE SENSE LINES. INSTALL THE SENSE LINES.

DO A CHECK OF THE CONTROL PRESSURE FOR THE PRSOV:

- REMOVE PNEUMATIC POWER (AMM 36-00-00/201)
- SUPPLY ELECTRICAL POWER (AMM 36-24-22/201)
- THERE ARE TWO METHODS YOU CAN USE TO ELECTRICALLY ENABLE THE PRSOV:
  - FOR METHOD 1 (RIGHT PRSOV) DO THESE STEPS:
    1. OPEN THIS CIRCUIT BREAKER, R ENG SPEED CARD, ON THE P11 PANEL AND ATTACH A DO-NOT-CLOSE TAG
    2. REMOVE THE ELECTRICAL CONNECTOR FROM THE R REVERSE FLOW CHECK CONTROLLER (RFCC)
    3. INSTALL A JUMPER BETWEEN PINS 1 AND 2 ON THE RFCC SHIPS CONNECTOR
    4. PUSH THE R ENG "OFF" SWITCH-LIGHT TO THE ON POSITION.
  - FOR METHOD 2 (LEFT PRSOV) DO THIS STEP:
    1. PULL THE ON/OFF SOLENOID PIN ON THE PRSOV TO THE EXTENDED POSITION.

OPEN THE ACCESS DOOR FOR THE PRSOV ON THE NACELLE STRUT.

FOR THE LEFT ENGINE,
REMOVE THE SENSE LINE FOR THE 450 TEMPERATURE SENSOR AT THE PRSOV.

FOR THE RIGHT ENGINE,
REMOVE THE SENSE LINE FOR THE 450 TEMPERATURE SENSOR.

INSTALL A NITROGEN SOURCE, NEEDLE VALVE AND A SUPPLY PRESSURE GAGE.

OPEN THE NEEDLE VALVE.

PRESSURIZE THE PNEUMATIC DUCT TO A MINIMUM OR 30 PSIG WITH THE APU OR GROUND SOURCE (AMM 36-00-00/201).

IF THE APU IS USED, DO THE STEPS THAT FOLLOW:

1. PUT THE APU BLEED SWITCH TO THE ON POSITION.
2. PRESSURE THE PNEUMATIC SYSTEM WITH THE APU (AMM 36-00-00/201).
   A. MONITOR THE DUCT PRESSURE INDICATOR.
3. OPEN THIS CIRCUIT BREAKER:

   11Q22, APU BLEED PWR

INCREASE Ps TO 10-25 PSIG UNTIL THE PRSOV IS OPEN.

SHUT THE NEEDLE VALVE.

FULLY BACK OFF THE REGULATOR ON THE NITROGEN SOURCE TO DECREASE THE NITROGEN SOURCE PRESSURE TO 0 PSIG.

DOES THE SUPPLY PRESSURE GAGE (Ps) SHOW LESS THAN 22 PSIG?

NO

SEE SHEET 7
(BLOCK 7)

YES

SEE SHEET 6
(BLOCK 22)

Low Duct Pressure
Figure 106 (Sheet 5)

A44728

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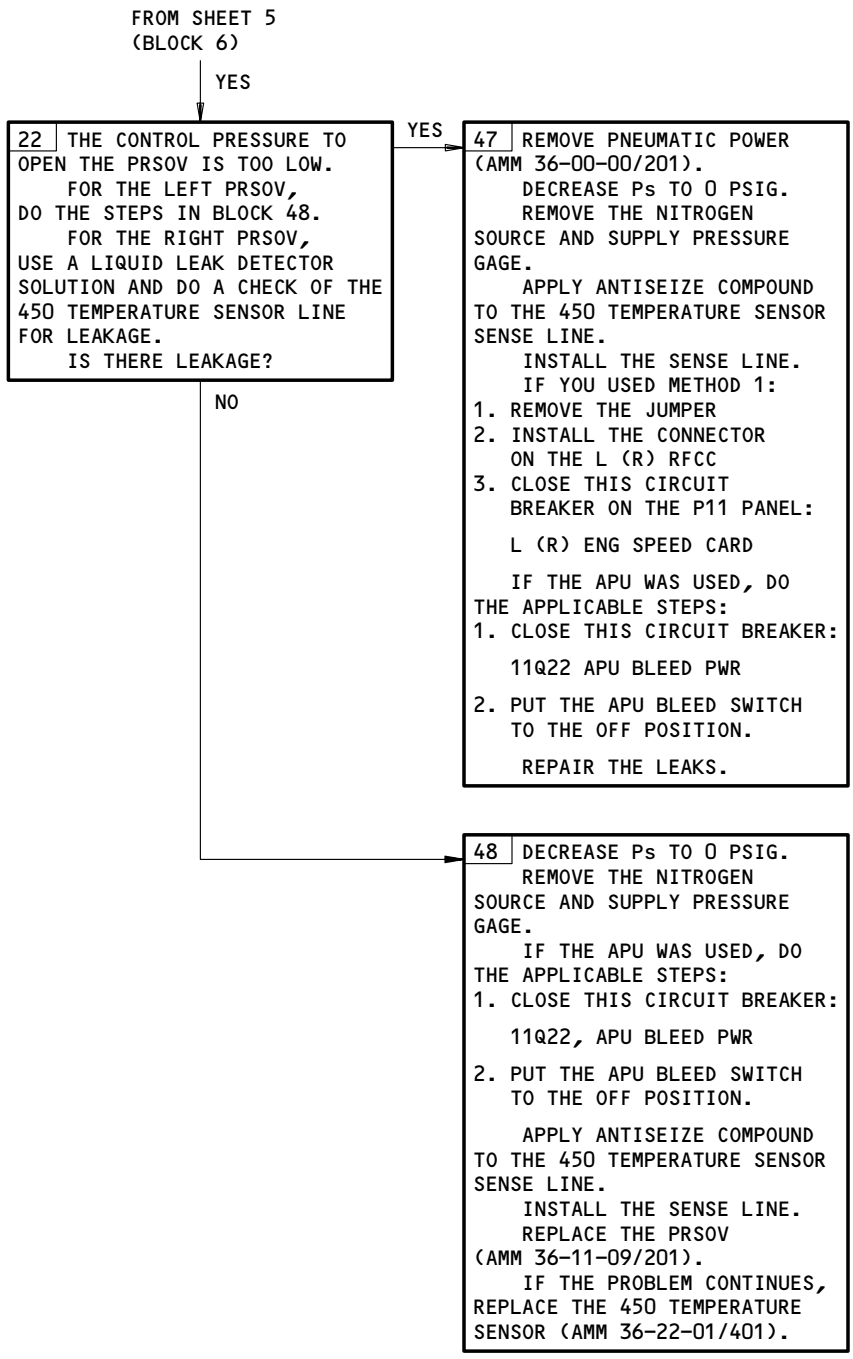

Low Duct Pressure
Figure 106 (Sheet 6)

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FROM SHEET 5
(BLOCK 6)

NO

7 REMOVE PNEUMATIC POWER (AMM 36-00-00/201).
DECREASE Ps TO 0 PSIG.
REMOVE THE NITROGEN SOURCE, SUPPLY PRESSURE GAGE.
IF THE APU WAS USED, DO THE APPLICABLE STEPS:
1. OPEN THIS CIRCUIT BREAKER:
11Q23, APU BLEED CONT
2. REMOVE THE JUMPER
3. INSTALL THE CONNECTOR
4. CLOSE THIS CIRCUIT BREAKER:
11Q23, APU BLEED CONT
FOR THE RIGHT PRSOV, DO THE STEP IN BLOCK 8.
FOR THE LEFT PRSOV, INSTALL THE NITROGEN SOURCE, SUPPLY PRESSURE GAGE TO THE 450 TEMPERATURE SENSOR SENSE LINE.
INCREASE Ps TO 10-15 PSIG.
USE A LIQUID LEAK DETECTOR SOLUTION AND DO A CHECK OF THE SENSE LINE AND 450 TEMPERATURE SENSOR FOR LEAKAGE.
NOTE: THERE CAN BE A SMALL AMOUNT OF LEAKAGE FROM THE 450 TEMPERATURE SENSOR.
IS THERE LEAKAGE?

YES

49 DECREASE Ps TO 0 PSIG.
REMOVE THE NITROGEN SOURCE AND SUPPLY PRESSURE GAGE.
APPLY ANTISEIZE COMPOUND TO THE 450 TEMPERATURE SENSOR SENSE LINE.
INSTALL THE SENSE LINE.
REPAIR THE LEAKAGE OR REPLACE THE 450 TEMPERATURE SENSOR (AMM 36-22-01/401).
IF THE PROBLEM CONTINUES, REPLACE THE PRSOV (AMM 36-11-09/201).

NO

8 THE CONTROL PRESSURE FOR THE PRSOV IS SATISFACTORY. THE HIGH-STAGE SYSTEM MAY NOT OPERATE CORRECTLY.
DO A CHECK OF THE POSITION OF THE HPSOV. THE HPSOV SHOULD BE FULLY CLOSED WITH NO ENGINE PRESSURE.
IS THE HPSOV IN THE FULLY CLOSED POSITION?

NO

50 REMOVE THE NITROGEN SOURCE, SENSE LINES AND GAGES.
APPLY ANTISEIZE COMPOUND AND INSTALL THE SENSE LINES.
REPLACE THE HPSOV (AMM 36-11-07/401).

YES

SEE SHEET 8
(BLOCK 9)

Low Duct Pressure
Figure 106 (Sheet 7)

A44855

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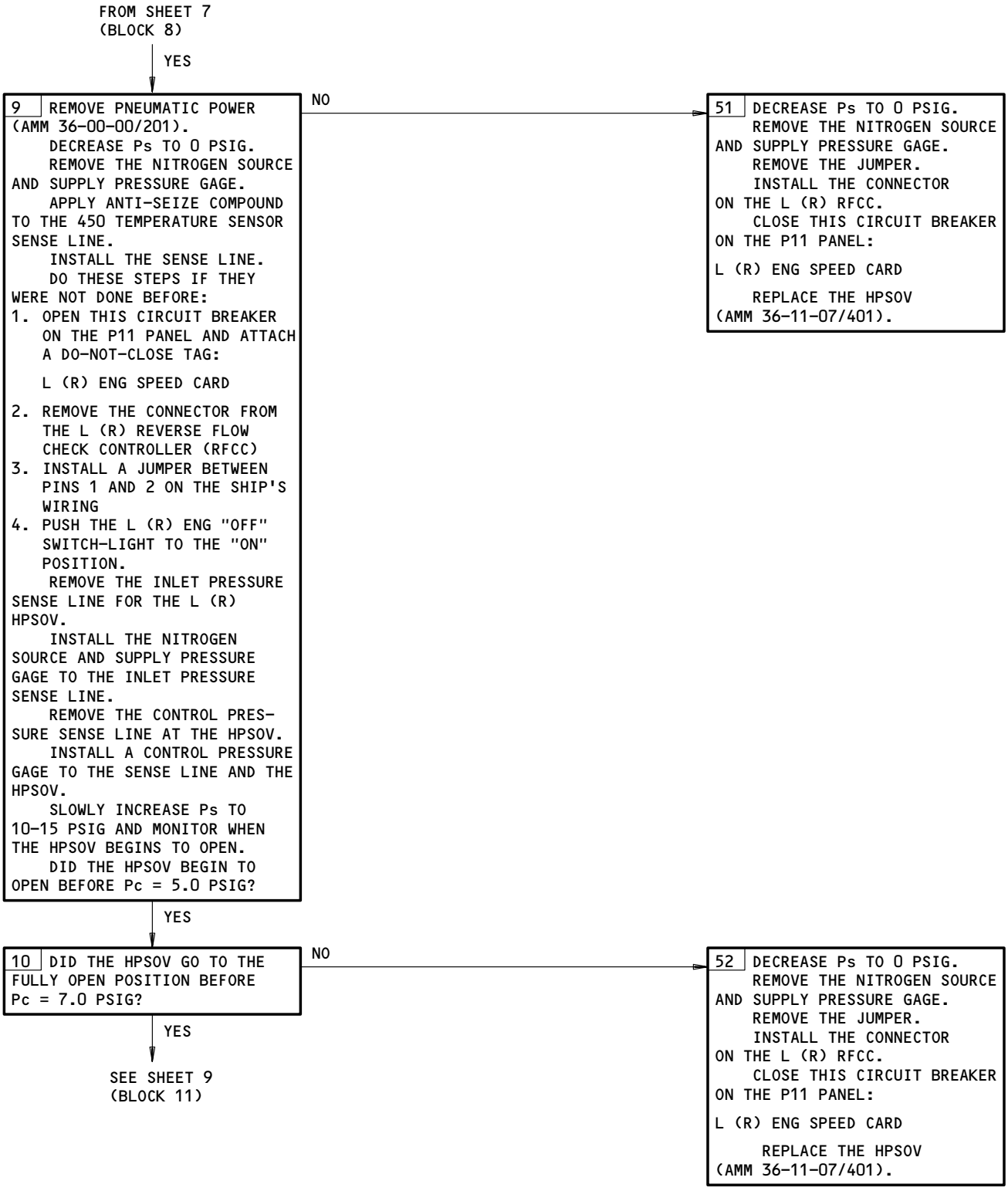

Low Duct Pressure
Figure 106 (Sheet 8)

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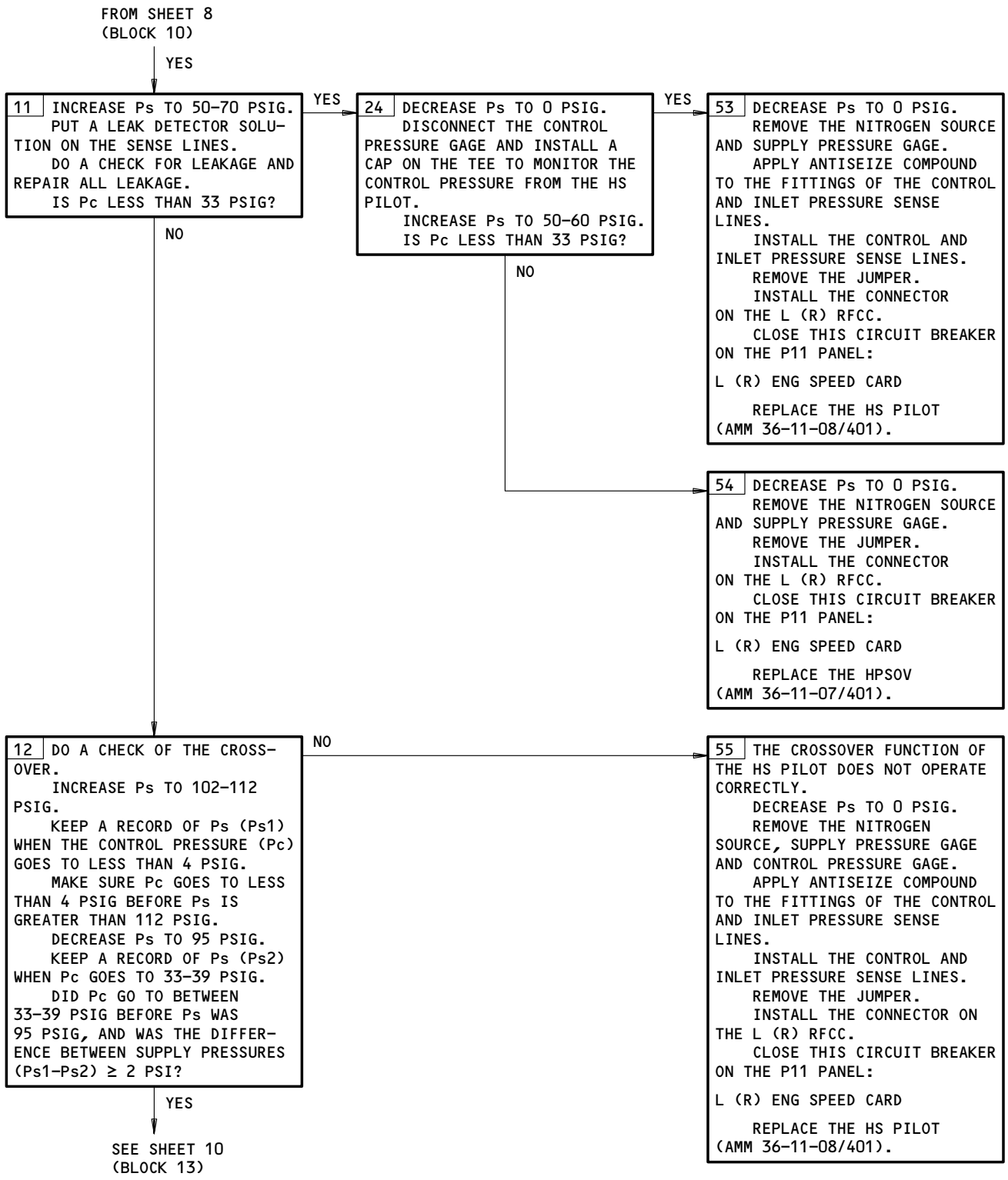

Low Duct Pressure
Figure 106 (Sheet 9)

A44888

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FROM SHEET 9
(BLOCK 12)

YES

13 DO A CHECK OF THE HIGH ALTITUDE CROSSOVER.
REMOVE CONNECTOR D2782 (D2592) TO THE L (R) 31,000 FT. ALTITUDE SWITCH, S10228 (S10229).
INSTALL A JUMPER BETWEEN PINS 2 AND 3 OF THE CONNECTOR.
INCREASE Ps TO 86-96 PSIG.
DID Pc GO TO LESS THAN 4 PSIG BEFORE Ps WAS >96 PSIG?

NO

25 THERE MAY BE AN ELECTRICAL PROBLEM.
REMOVE CONNECTOR D2780 (D2690) ON THE L (R) HS PILOT, M10292 (M10293). DO A CHECK FOR 26-30V DC ON PINS 8 AND 9 OF THE CONNECTOR.
IS THERE 26-30V DC?

NO

56 THERE IS AN ELECTRICAL WIRING PROBLEM.
EXAMINE AND REPAIR THE ELECTRICAL CIRCUIT FROM THE HS PILOT TO THE 13,000 FT. ALTITUDE SWITCH (WDM 36-11-11,-12).

YES

57 REPLACE THE HS PILOT (AMM 36-11-08/401).

YES

58 DECREASE Ps TO 0 PSIG.
REMOVE THE NITROGEN SOURCE, SUPPLY PRESSURE GAGE AND CONTROL PRESSURE GAGE.
APPLY ANTISEIZE COMPOUND TO THE FITTINGS OF THE CONTROL AND INLET PRESSURE SENSE LINES.
INSTALL THE CONTROL AND INLET PRESSURE SENSE LINES.
REMOVE THE JUMPER.
INSTALL THE CONNECTOR ON THE L (R) RFCC.
CLOSE THIS CIRCUIT BREAKER, L (R) ENG SPEED CARD, ON THE P11 PANEL.
REPLACE THE FAN AIR TEMPERATURE SENSOR (AMM 36-11-17/401) AND THE 450 TEMPERATURE SENSOR (AMM 36-22-01/401).
IF THE PROBLEM CONTINUES, REPLACE THE PRECOOLER (AMM 36-11-15/401).

Low Duct Pressure
Figure 106 (Sheet 10)

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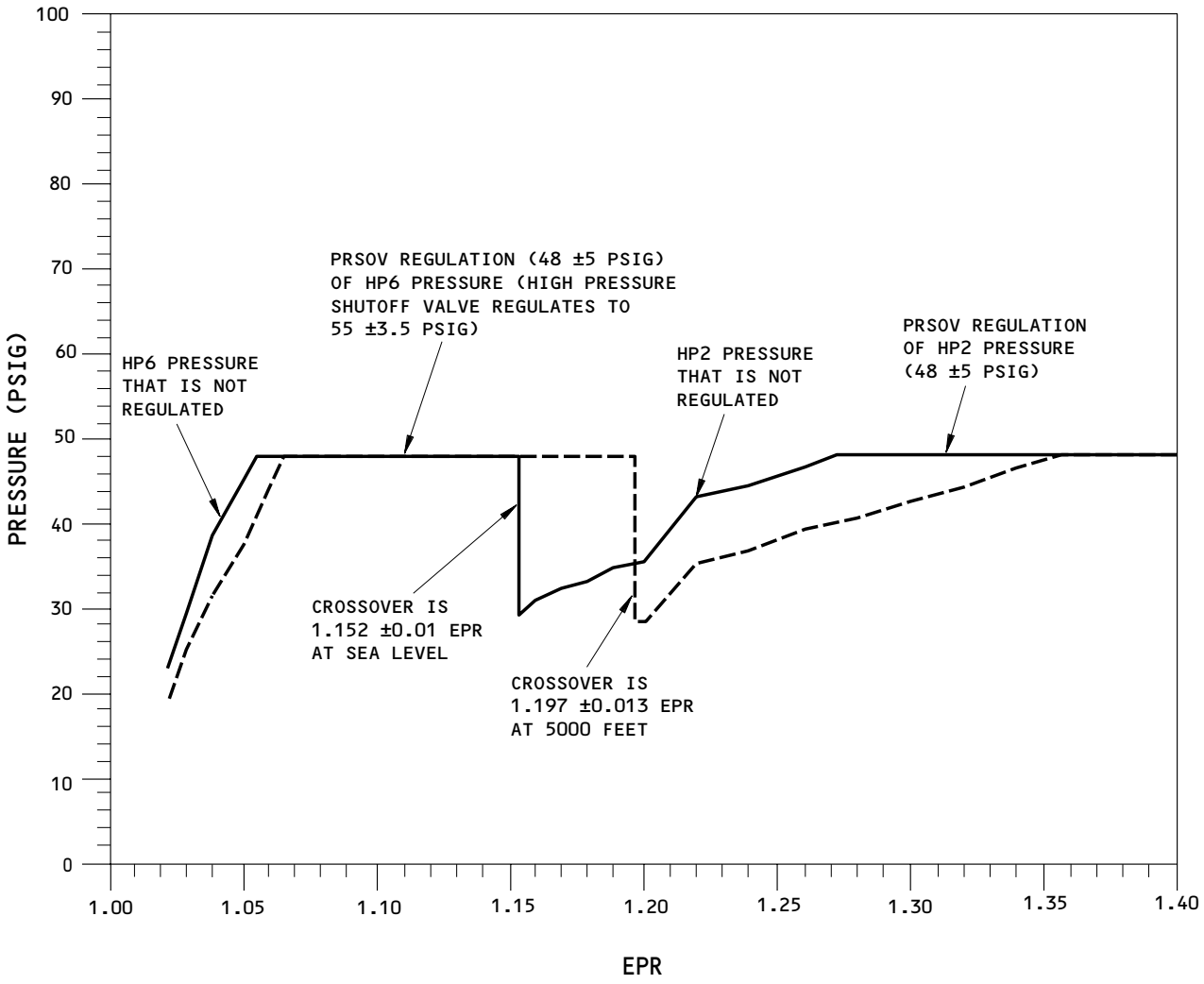

Low Duct Pressure
Figure 106 (Sheet 11)

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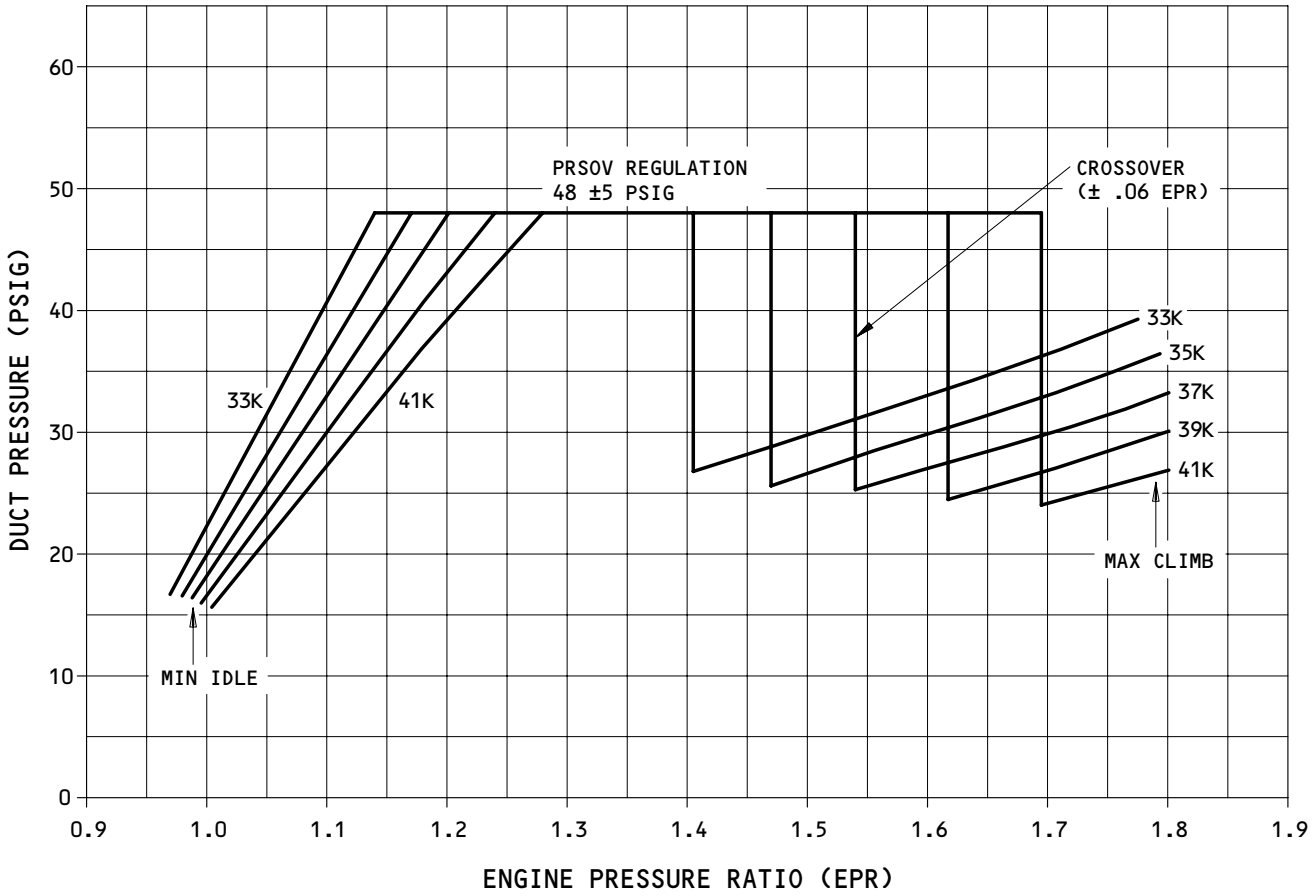

Low Duct Pressure
Figure 106 (Sheet 12)

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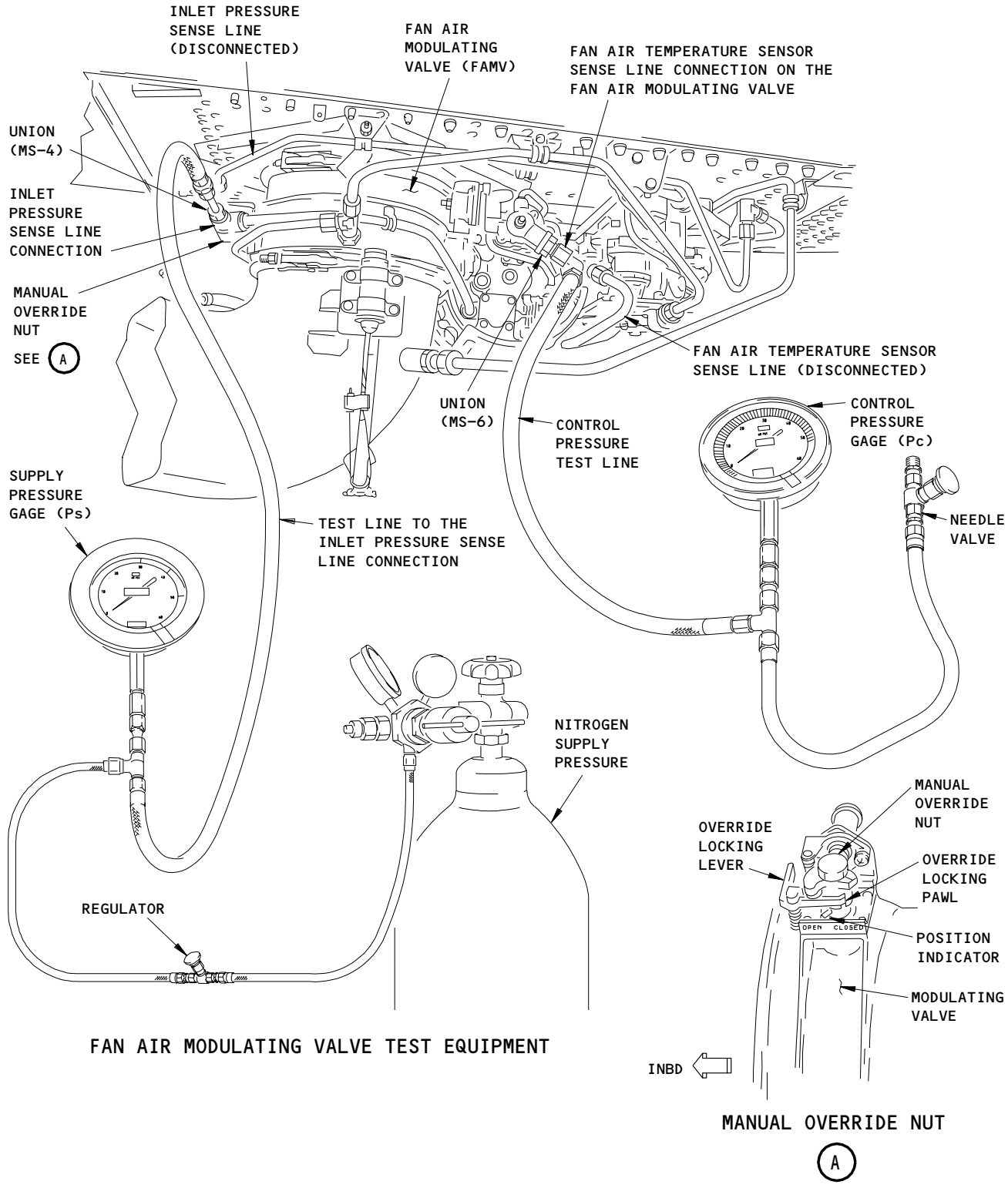

Low Duct Pressure
Figure 106 (Sheet 13)

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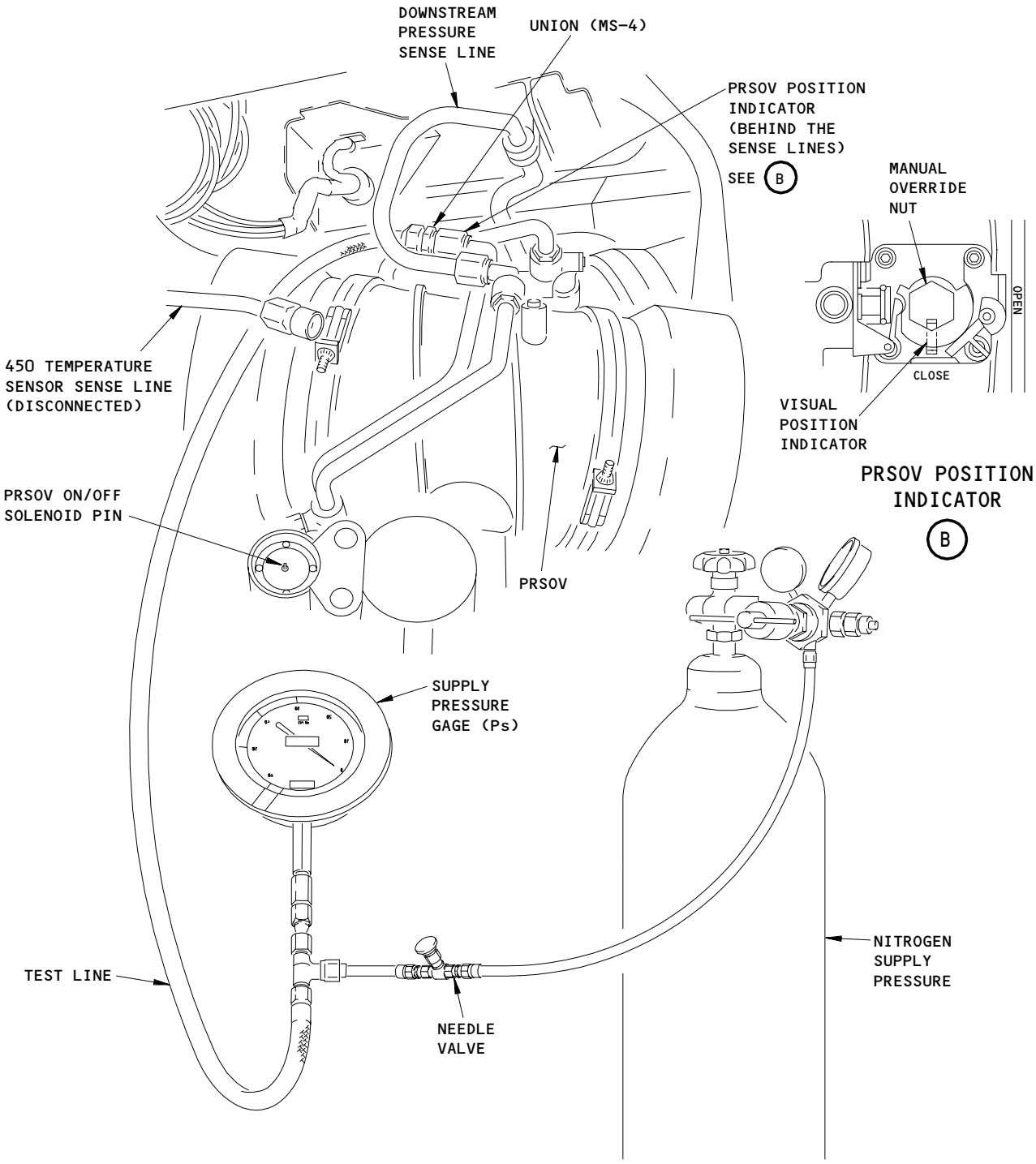

PRSOV TEST EQUIPMENT
(LEFT ENGINE)

Low Duct Pressure
Figure 106 (Sheet 14)

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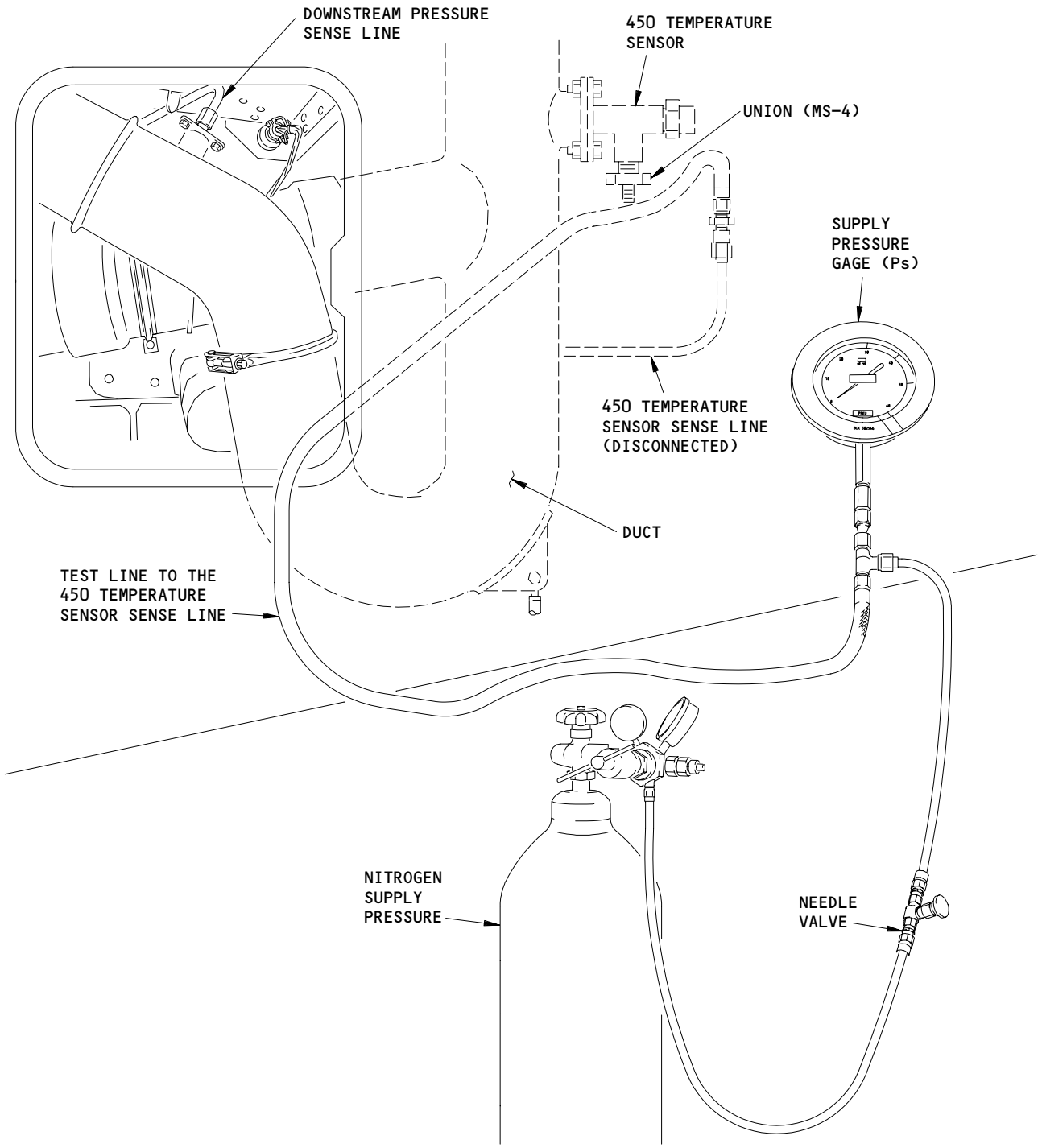

PRSOV TEST EQUIPMENT
(RIGHT ENGINE)

Low Duct Pressure
Figure 106 (Sheet 15)

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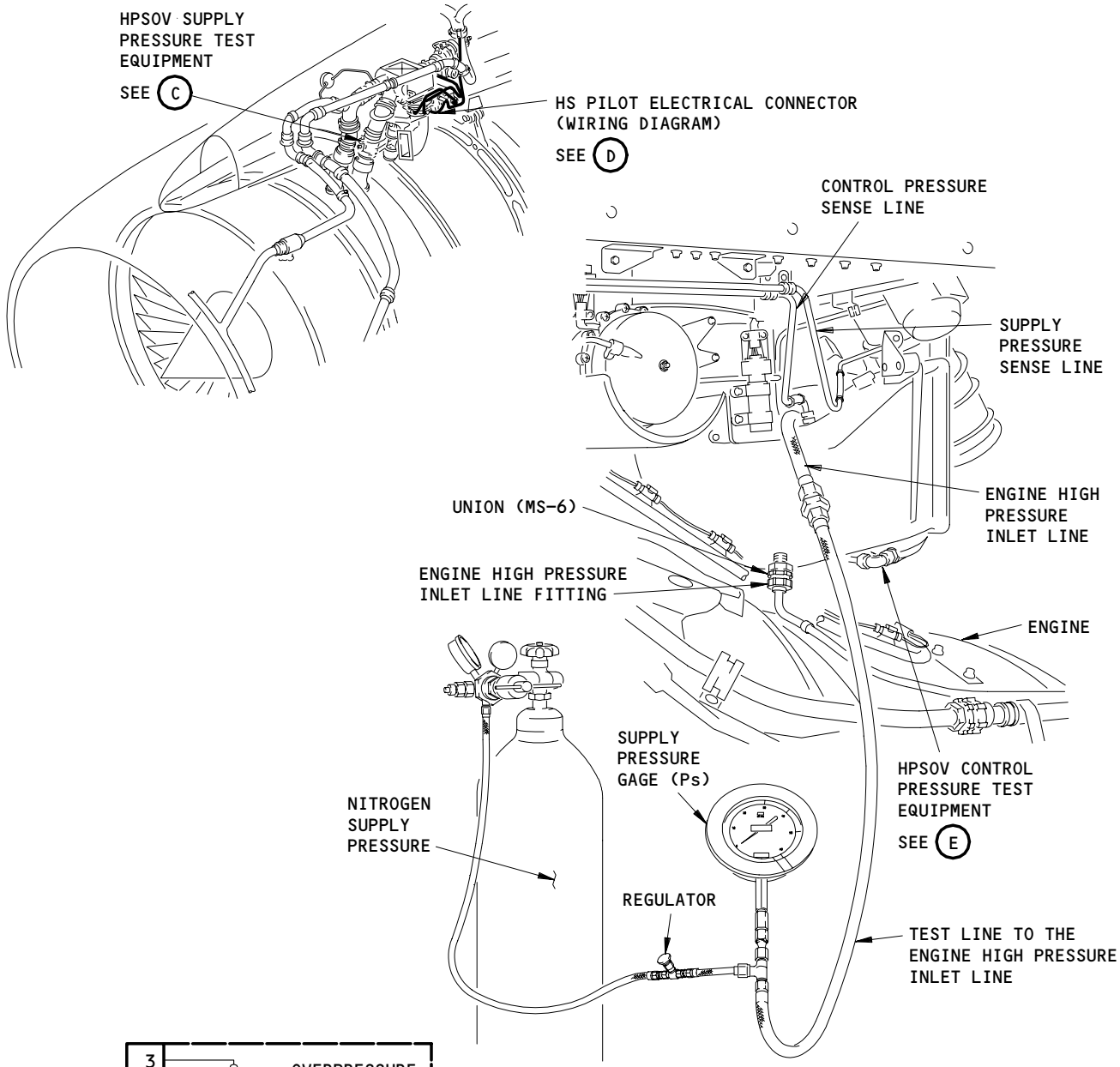

HPSOV SUPPLY PRESSURE TEST EQUIPMENT

C

HS PILOT ELECTRICAL CONNECTOR (WIRING DIAGRAM)

D

Low Duct Pressure
Figure 106 (Sheet 16)

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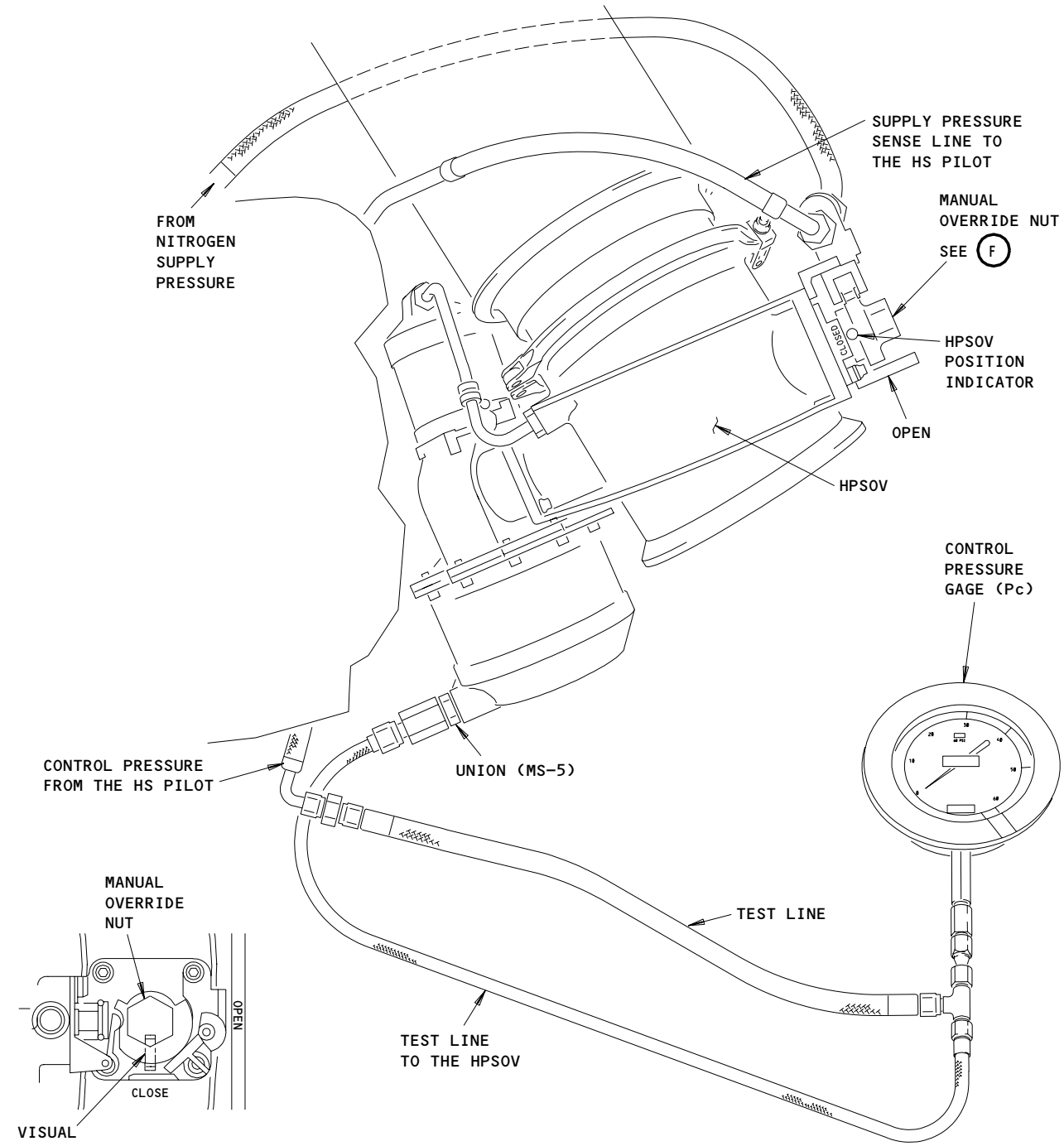

HPSOV CONTROL PRESSURE TEST EQUIPMENT

E

HPSOV POSITION INDICATOR

F

Low Duct Pressure
Figure 106 (Sheet 17)

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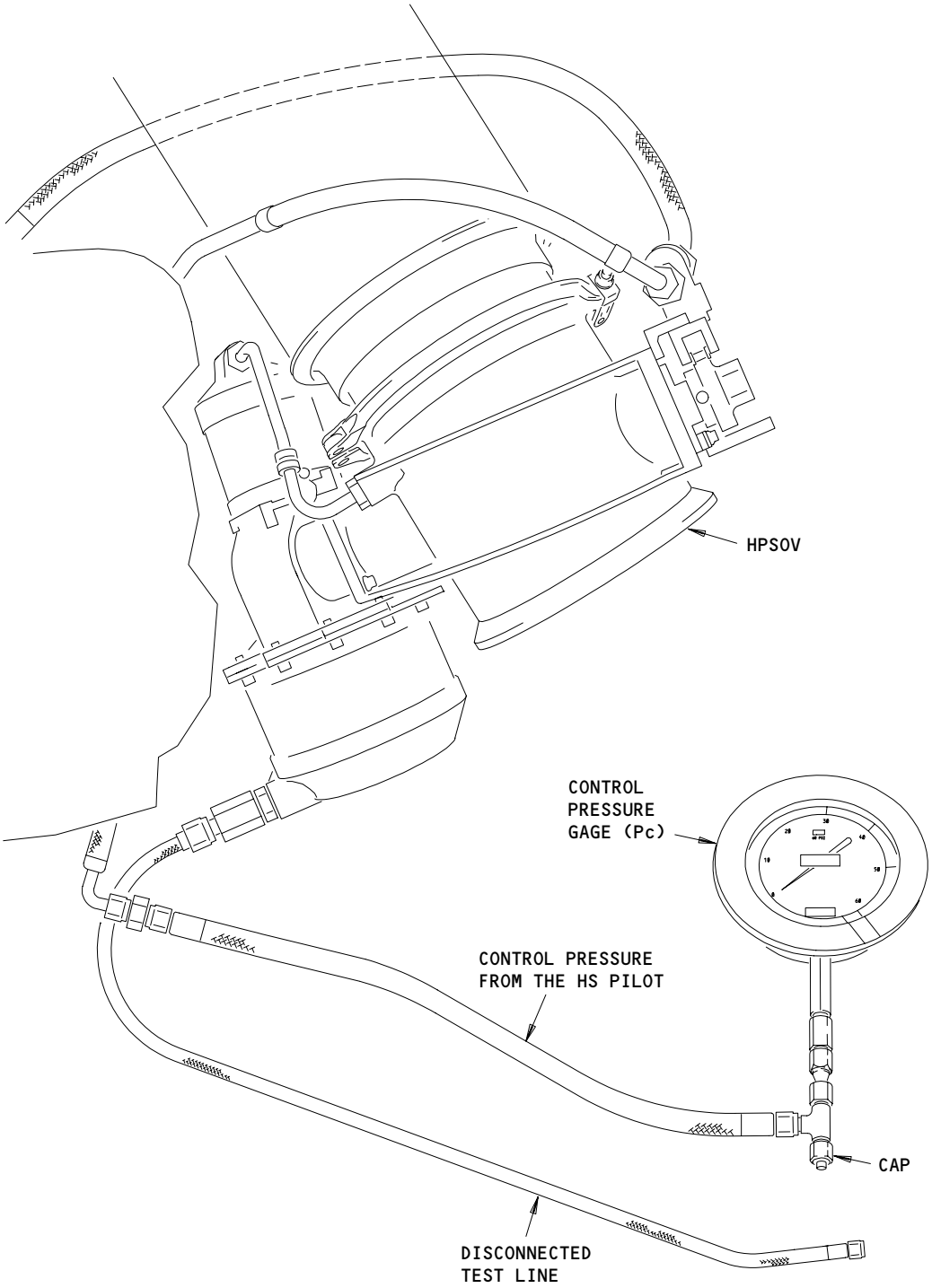

PRESSURE FROM THE HS PILOT

(E)

Low Duct Pressure
Figure 106 (Sheet 18)

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PREREQUISITES

ELECTRICAL POWER (MM 24-22-00)
ZERO PNEUMATIC POWER (MM 36-00-00)

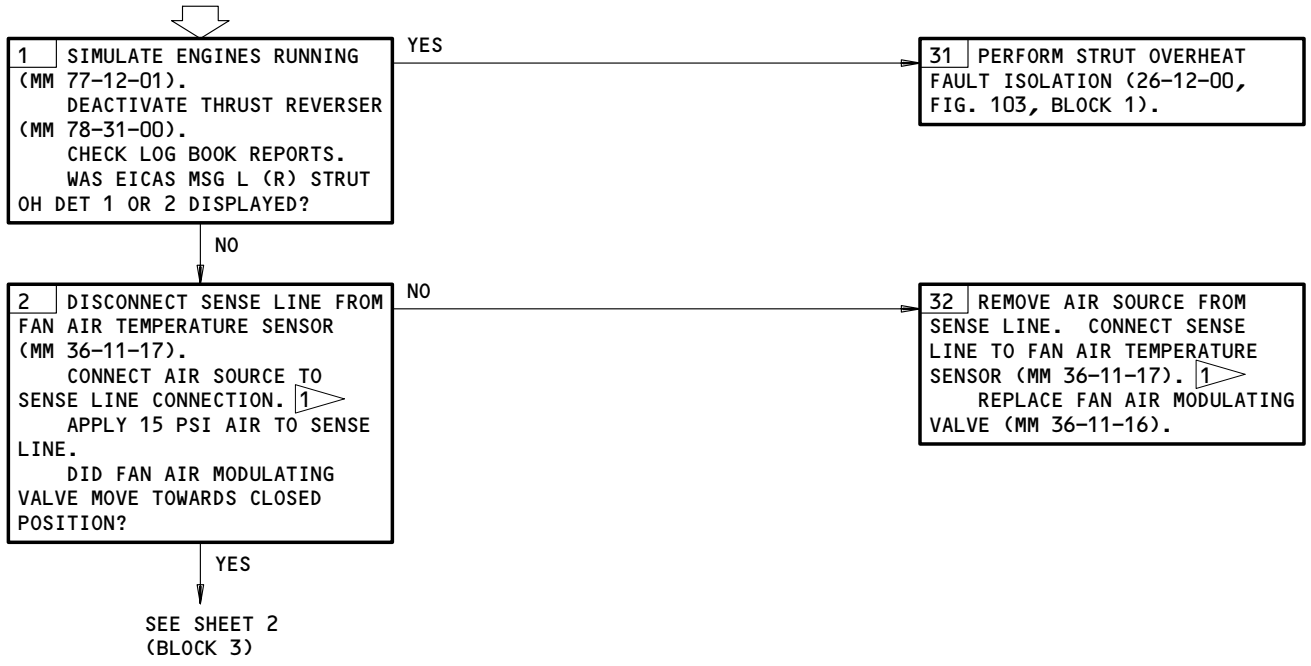
CB'S: 11Q10,11Q18,11Q19,11Q27

EQUIPMENT: AIR SOURCE 0-15 PSI, COMMERCIALLY AVAILABLE

CONSUMABLE MATERIALS: ANTISEIZE COMPOUND, HIGH TEMPERATURE - COMMERCIALLY AVAILABLE

WARNING: FAILURE TO DEACTIVATE THRUST REVERSER FOR GROUND MAINTENANCE COULD RESULT IN INADVERTENT THRUST REVERSER OPERATION WITH POSSIBLE INJURY TO PERSONNEL AND/OR DAMAGE TO EQUIPMENT.

L (R) DUCT PRESSURE LOW AT HIGH THRUST



1 PUT THE ANTISEIZE COMPOUND ON THE THREADS OF THE NUT AND NIPPLE.

L (R) Duct Pressure Low At High Thrust
Figure 106A (Sheet 1)

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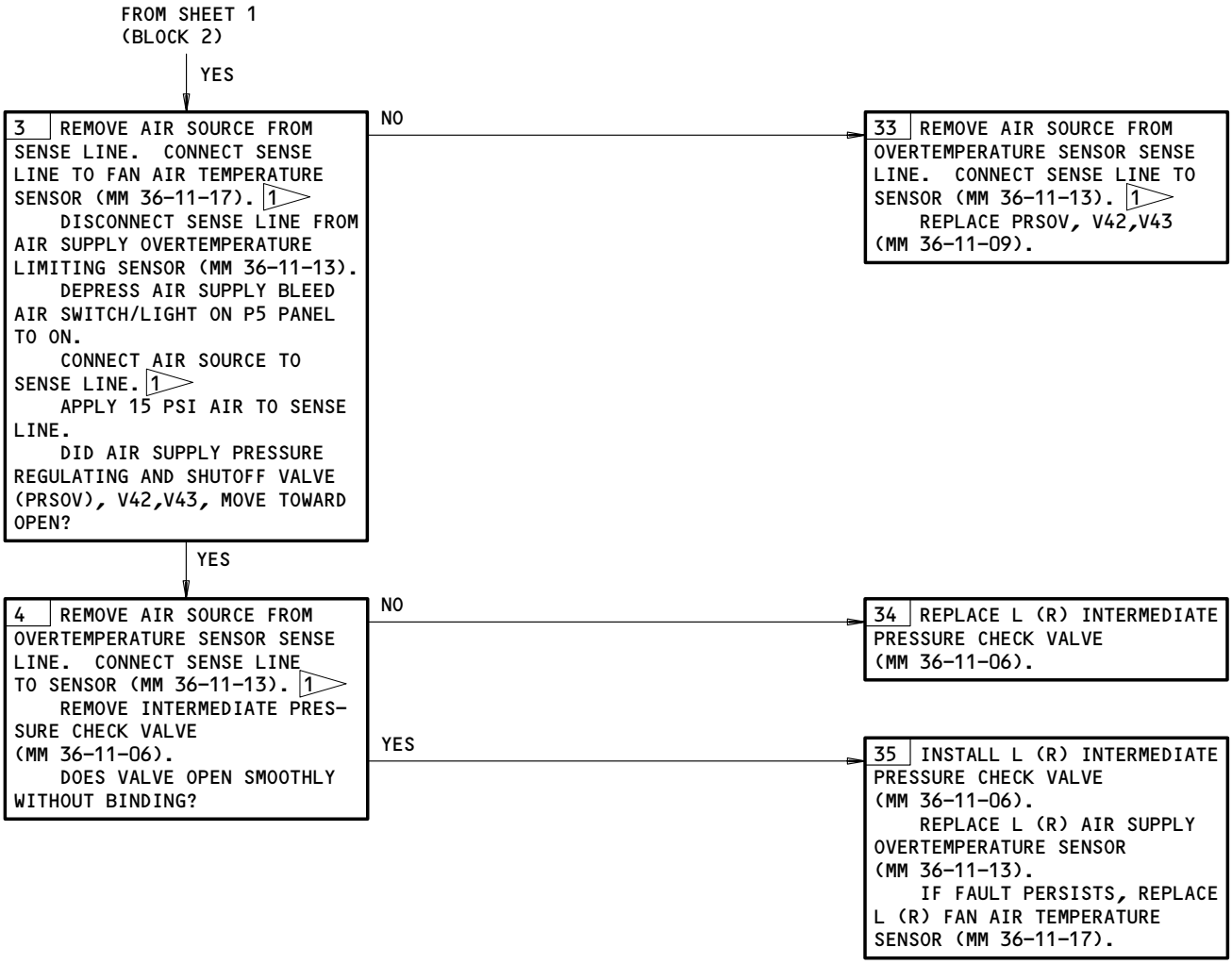

L (R) Duct Pressure Low at High Thrust
Figure 106A (Sheet 2)

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PREREQUISITES

MAKE SURE THE AIRPLANE IS IN THIS CONFIGURATION:
PNEUMATIC DUCT PRESSURE IS ZERO (AMM 36-00-00/201)

EQUIPMENT:
APU OR GROUND AIR SOURCE - LOW PRESSURE, 0-150 PSIG, COMMERCIALLY AVAILABLE

CONSUMABLE MATERIALS:
ANTISEIZE COMPOUND, HIGH TEMPERATURE - COMMERCIALLY AVAILABLE

NOTE: HIGH DUCT PRESSURE IS GREATER THAN 53 PSIG FOR THIS PROCEDURE. THE TWO MOST PROBABLE CAUSES ARE A FAULTY PRESSURE INDICATION OR A FAULTY PRSOV SYSTEM.

FOR A MORE COMPLETE DESCRIPTION OF DUCT PRESSURE VS. EPR, SEE THE GRAPHS AT THE END OF THIS PROCEDURE.

NOTE: HIGH DUCT PRESSURE CAN BE CAUSED BY THE BLEED SYSTEM CROSSOVER FROM LOW TO HIGH STAGE OCCURRING AT A DIFFERENT TIME FOR THE LEFT AND RIGHT SIDES. THIS WILL GIVE THE INDICATION THAT ONE SIDE HAS A HIGHER PRESSURE THAN THE OTHER SIDE. THERE IS A GRAPH OF CROSSOVER PRESSURE VERSUS EPR FOR VARIOUS ALTITUDES. IF THE CROSSOVER OCCURRED ABOVE OR BELOW THE RANGE SHOWN, DO THIS PROCEDURE: LOW DUCT PRESSURE (FIG. 106, BLOCK 13). IF THE CROSSOVER OCCURRED WITHIN THE NORMAL RANGE, THE SYSTEM IS NORMAL AND NO ACTION IS REQUIRED. DO THIS PROCEDURE IF THE PILOT REPORT DOES NOT APPEAR RELATED TO CROSSOVER.

DESCRIPTION:

DUCT PRESSURE THAT IS HIGHER THAN THE CONDITIONS SHOWN IN SHEETS 3 OR 4.

POSSIBLE CAUSES:

1. PRSOV (AMM 36-11-09/501)
2. DUCT PRESSURE TRANSDUCER OR INDICATOR.

FAULT ISOLATION:

High Duct Pressure
Figure 107 (Sheet 1)

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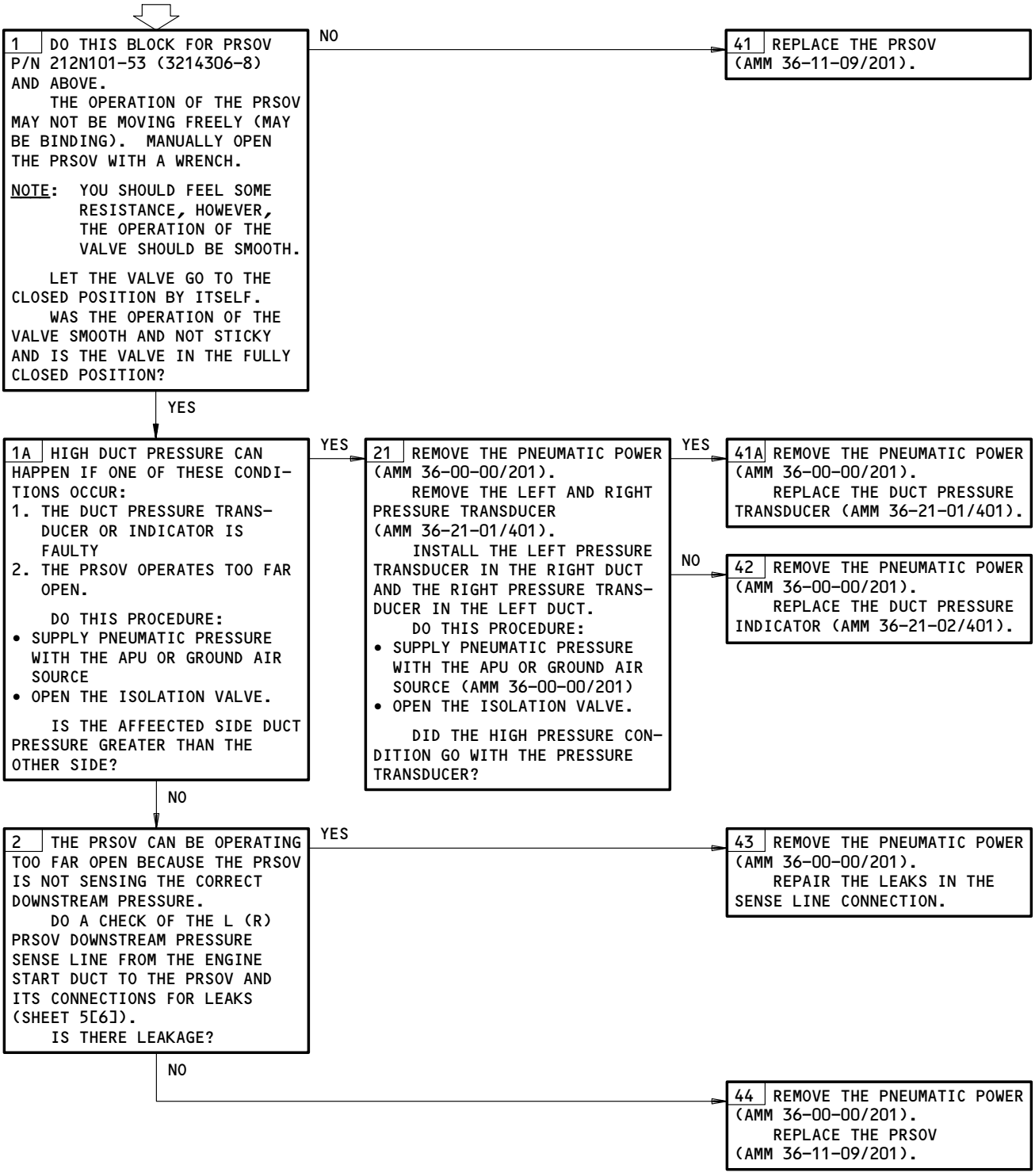
HIGH DUCT PRESSURE



High Duct Pressure
Figure 107 (Sheet 2)

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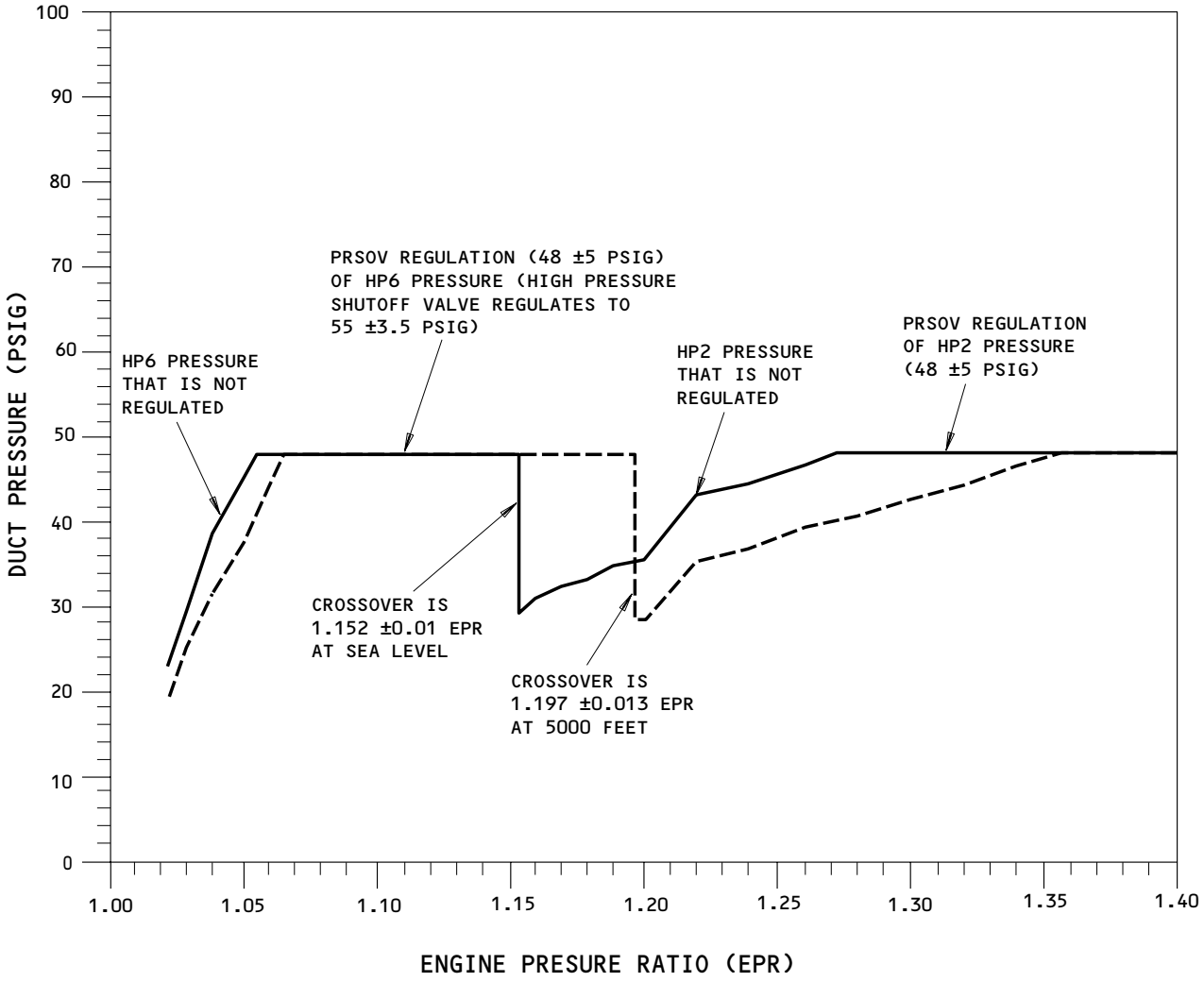

DUCT PRESSURE VS. EPR AT SEA LEVEL AND 5000 FEET

High Duct Pressure
Figure 107 (Sheet 3)

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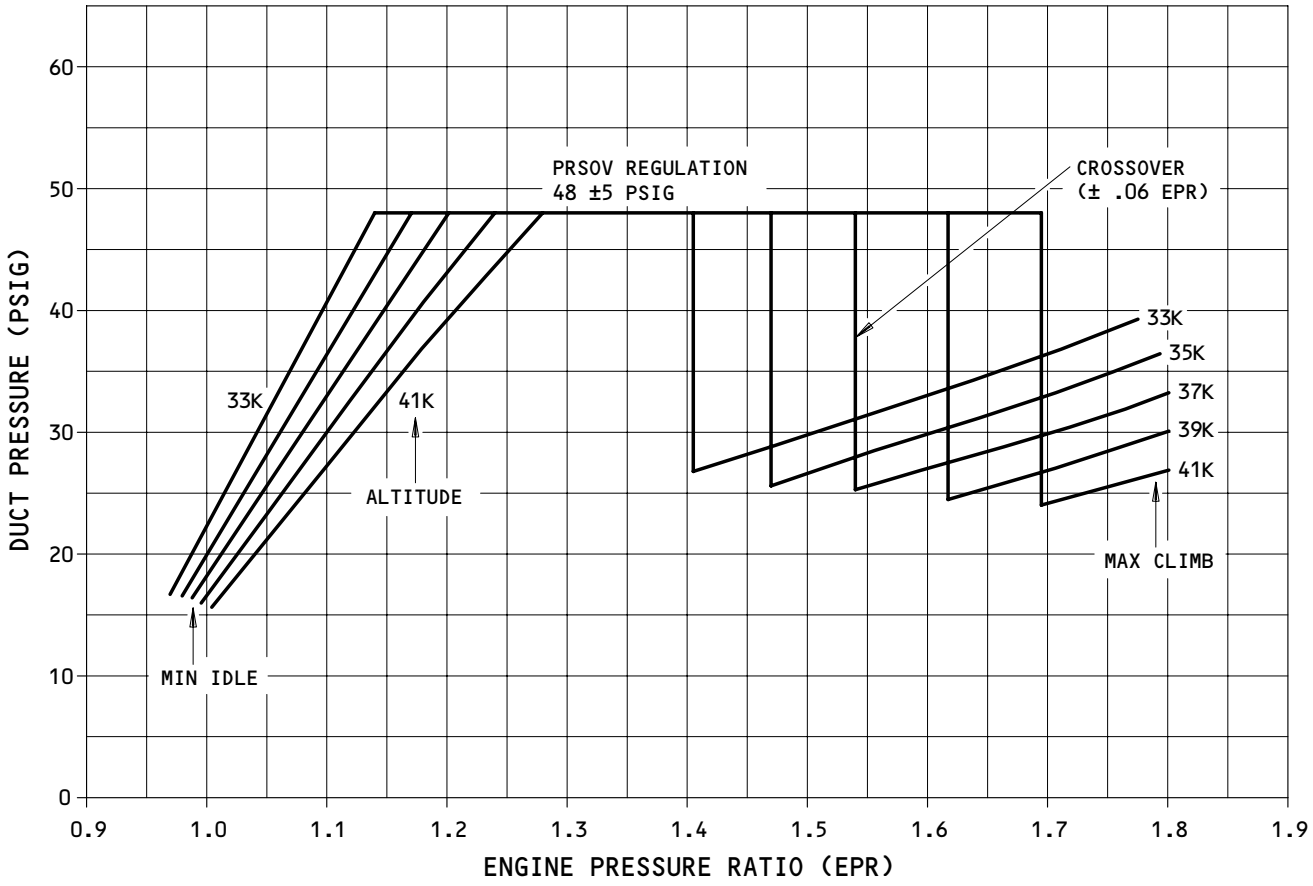

DUCT PRESSURE VS. EPR FOR VARIOUS ALTITUDES

High Duct Pressure
Figure 107 (Sheet 4)

A72484

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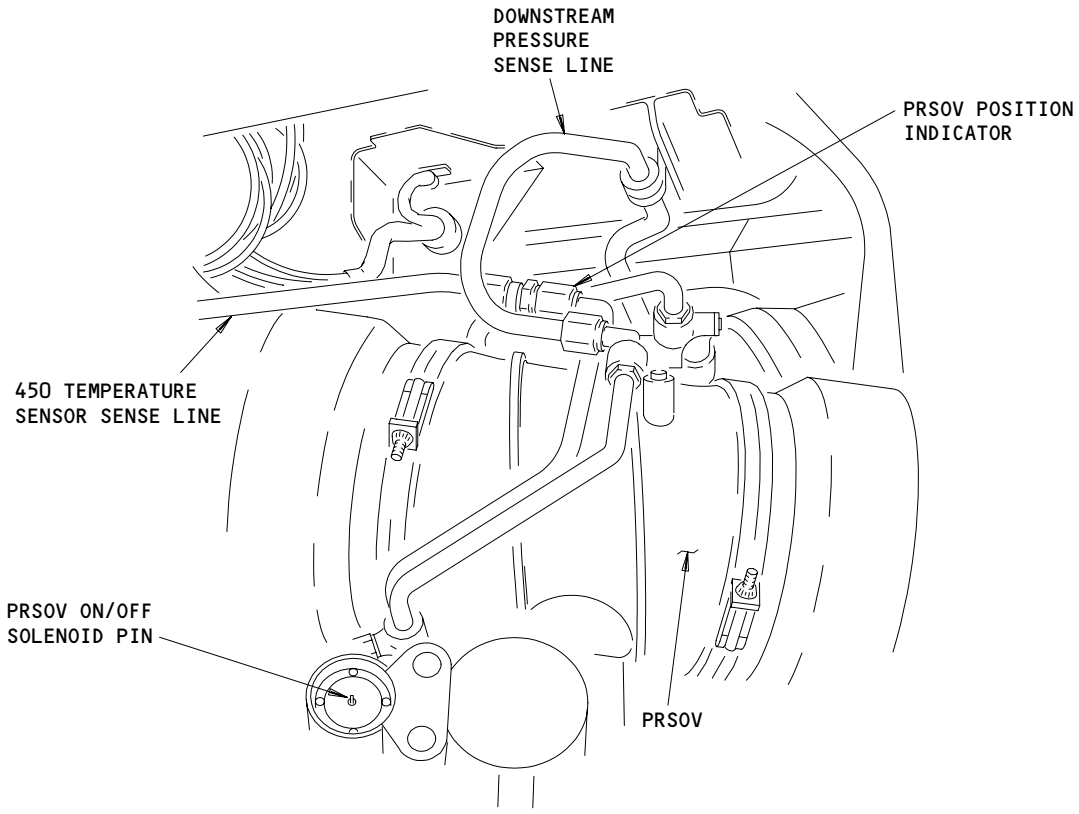

High Duct Pressure
Figure 107 (Sheet 5)

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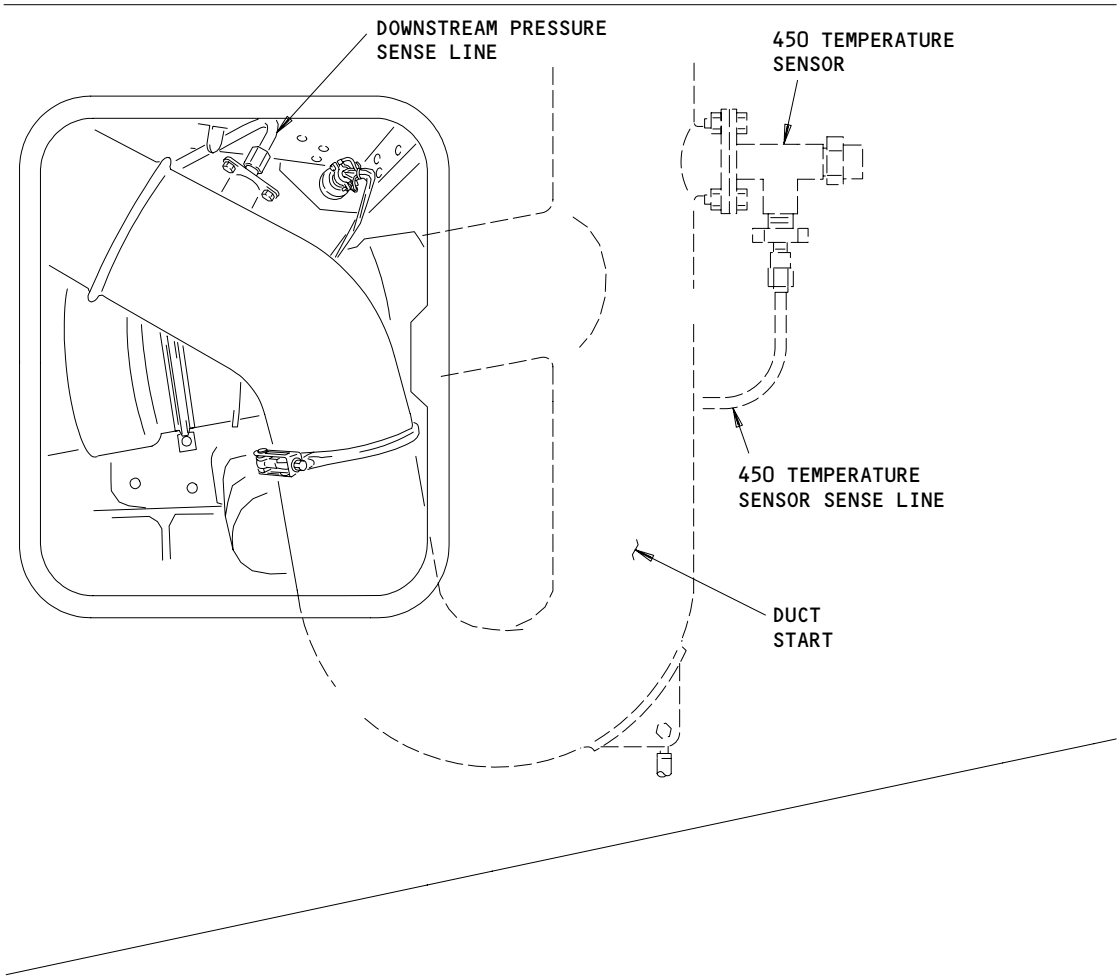

High Duct Pressure
Figure 107 (Sheet 6)

A47876

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ISOLATION VALVE "VALVE" LIGHT ILLUM WITH ISOLATION VALVE SWITCH OFF (ON). EICAS MESSAGE "BLEED ISLN VAL" DISPLAYED.

PREREQUISITES

MAKE SURE THESE CIRCUIT BREAKERS ARE CLOSED:
11B2,11B3

MAKE SURE THE AIRPLANE IS IN THIS CONFIGURATION:
ELECTRICAL POWER IS ON (AMM 24-22-00/201)

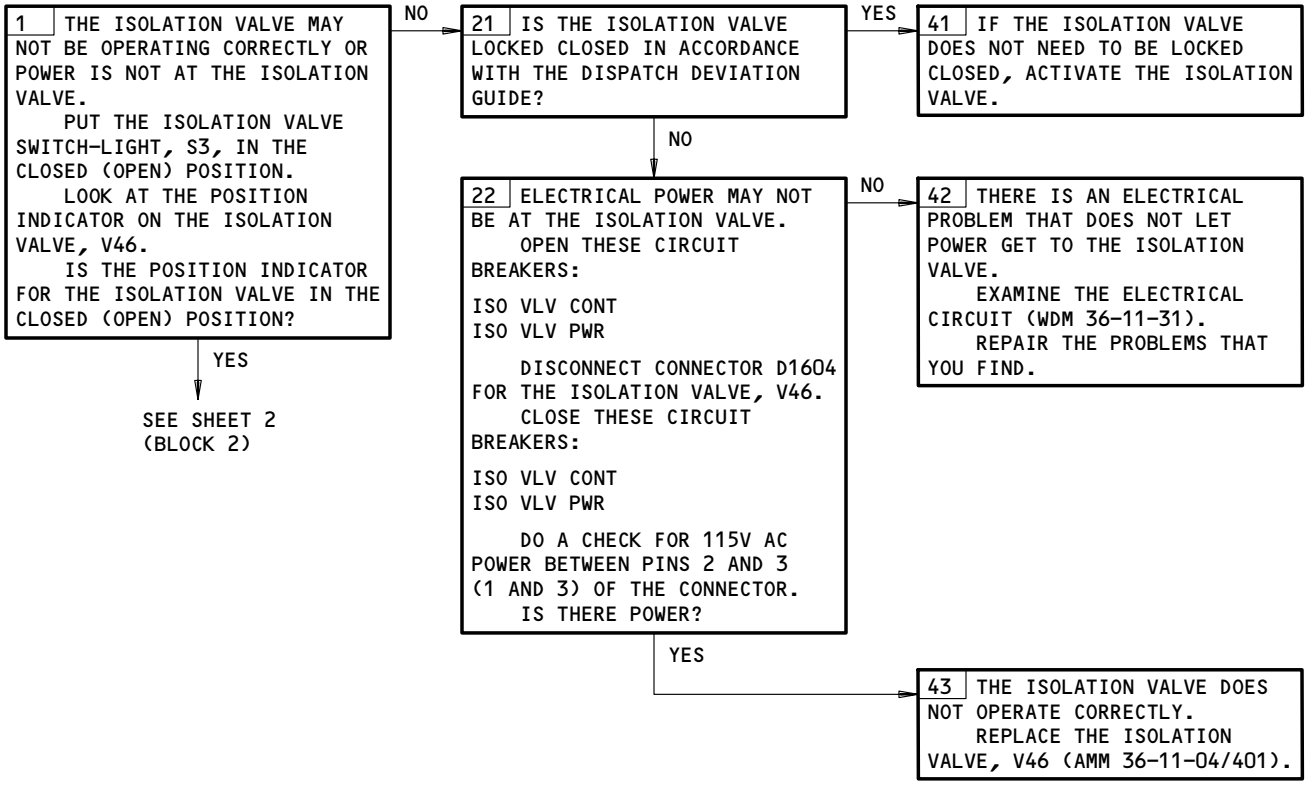
DESCRIPTION:

THE ISOLATION VALVE IS NOT IN THE POSITION IT WAS COMMANDED.

POSSIBLE CAUSES:

1. ISOLATION VALVE
2. ELECTRICAL WIRING PROBLEM (NO POWER TO THE ISOLATION VALVE OR THE INDICATON CIRCUIT).

FAULT ISOLATION:



Isolation Valve VALVE Light Illum with Isolation Valve Switch Off (On).
EICAS Message BLEED ISLN VAL Displayed.
Figure 108 (Sheet 1)

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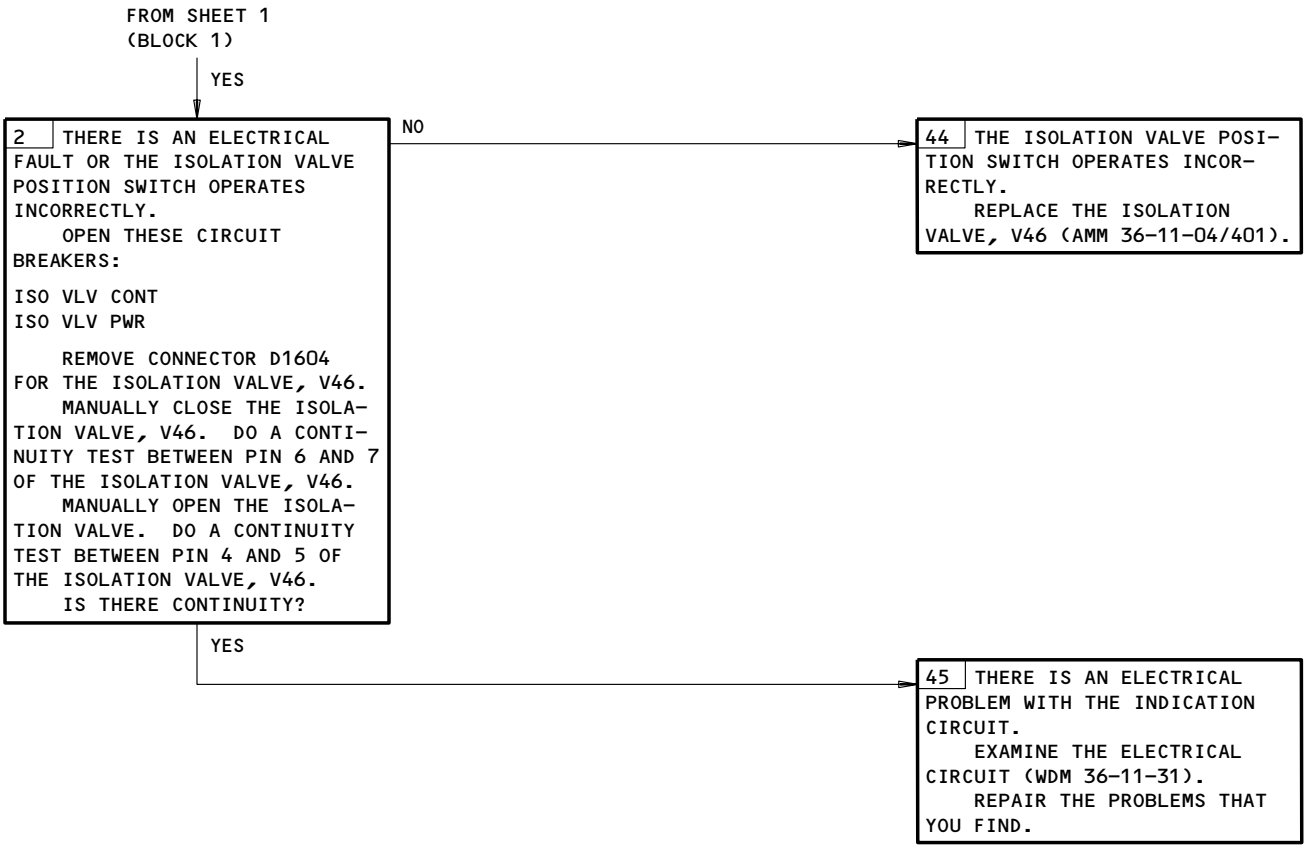

Isolation Valve VALVE Light Illum with Isolation Valve Switch Off (On).
EICAS Message BLEED ISLN VAL Displayed.
Figure 108 (Sheet 2)

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EICAS MSG "L(R) BLD DUCT LEAK" DISPLAYED. DUCT LEAK LIGHT ILLUM WITH ENGINE RUNNING. LIGHT EXTINGUISHED AFTER BLEED AIR VALVE CLOSED

PREREQUISITES

ELECTRICAL POWER (MM 24-22-00)
EICAS (MM 31-41-00)
MASTER DIM AND TEST (MM 33-16-00)
CB'S: 11Q26,11Q25,11Q17

1 PERFORM WING AND BODY DUCT LEAK DETECTION BITE PROCEDURE 26-18-00 FIG. 103 BLOCK 1. DID PROCEDURE IDENTIFY FAULT WITHIN DETECTION SYSTEM?

YES → 40 REPLACE INDICATED COMPONENT.

NO → 41 REPAIR DUCT LEAK BY RE-ALIGNING DUCT CLAMPS; OR RE-PLACING LEAKING DUCT SECTION (MM 36-11-01).

EICAS Msg L(R) BLD DUCT LEAK Displayed. Duct Leak Light Illum with Engine Running. Light Extinguished After Bleed Air Valve Closed.
Figure 109

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PREREQUISITES

MAKE SURE THE AIRPLANE IS IN THIS CONFIGURATION:
PNEUMATIC DUCT PRESSURE IS ZERO (AMM 36-00-00/201)
ELECTRICAL POWER IS ON (AMM 24-22-00/201)

EQUIPMENT:
NITROGEN SOURCE: LOW PRESSURE, 0-150 PSIG, COMMERCIALLY AVAILABLE

CONSUMABLE MATERIALS:
ANTISEIZE COMPOUND, HIGH TEMPERATURE - COMMERICALLY AVAILABLE

NOTE: IT IS NOT ABNORMAL FOR THE "BLEED" LIGHT TO COME ON WHEN ALL OF THESE CONDITIONS OCCUR:

- PNEUMATIC SYSTEM OPERATES WITH A SINGLE ENGINE PNEUMATIC SOURCE
  AND
- THE ISOLATION VALVE IS OPEN
  AND
- BOTH WING ANTI-ICE VALVES ARE OPEN.

BLEED Light Illuminated and EICAS Msg L (R) ENG BLEED VAL Displayed.
Figure 110 (Sheet 1)

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"BLEED" LIGHT ILLUMINATED AND EICAS MSG "L (R) ENG BLEED VAL" DISPLAYED.

DESCRIPTION:

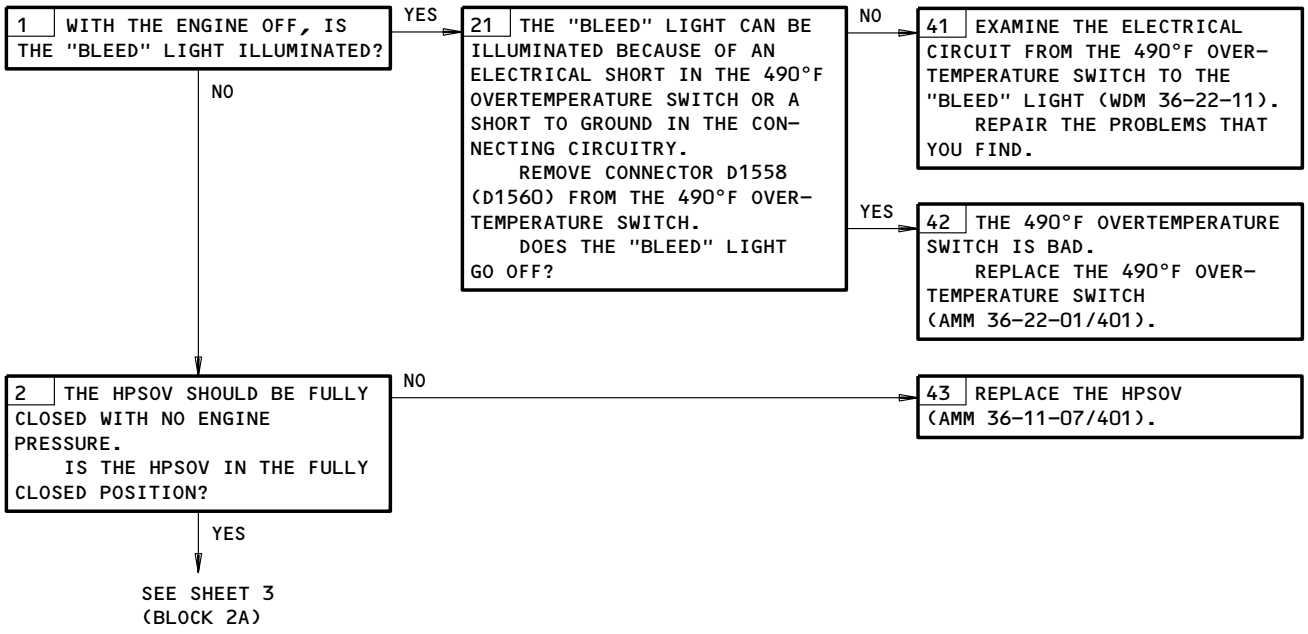
THERE IS AN OVERTEMPERATURE CONDITION AND THE PRSOV IS AUTOMATICALLY CLOSED.

POSSIBLE CAUSES:

THE "BLEED" LIGHT AND EICAS MESSAGE "L (R) ENG BLEED VAL" CAN COME ON IF ONE OF THESE CONDITIONS OCCUR:
1. THE 490°F OVERTEMPERATURE SWITCH IS OUT OF CALIBRATION, AN ELECTRICAL SHORT IN THE 490°F OVERTEMPERATURE SWITCH OR A SHORT IN THE CIRCUITRY
2. A PROBLEM IN THE FAN AIR MODULATING VALVE (FAMV) OR FAN AIR TEMPERATURE SENSOR (FATS)(AMM 36-11-16/501)
3. CONTINUOUS OPERATION FROM HIGH-STAGE PRESSURE
4. CONTAMINATION OF THE PRECOOLER
5. ELECTRICAL WIRING PROBLEM BETWEEN THE 490 OVERTEMPERATURE SWITCH AND BLEED LIGHT.

FOR AIRPLANES WITH -512 EICAS COMPUTER (ON THE ECS/MSG AUTO EVENT PAGE);
1. IF THE L (R) PRECOOLER OUT INDICATION RECORDED A TEMPERATURE OF 390°F, THE 490°F OVERTEMPERATURE SWITCH CAN BE THE CAUSE.
2. IF THE L (R) PRECOOLER OUT INDICATION RECORDED A TEMPERATURE ABOVE 490°F, THE FAMU OR HPSOV CAN BE THE CAUSE.

FAULT ISOLATION:



BLEED Light Illuminated and EICAS Msg L (R) ENG BLEED VAL Displayed.
Figure 110 (Sheet 2)

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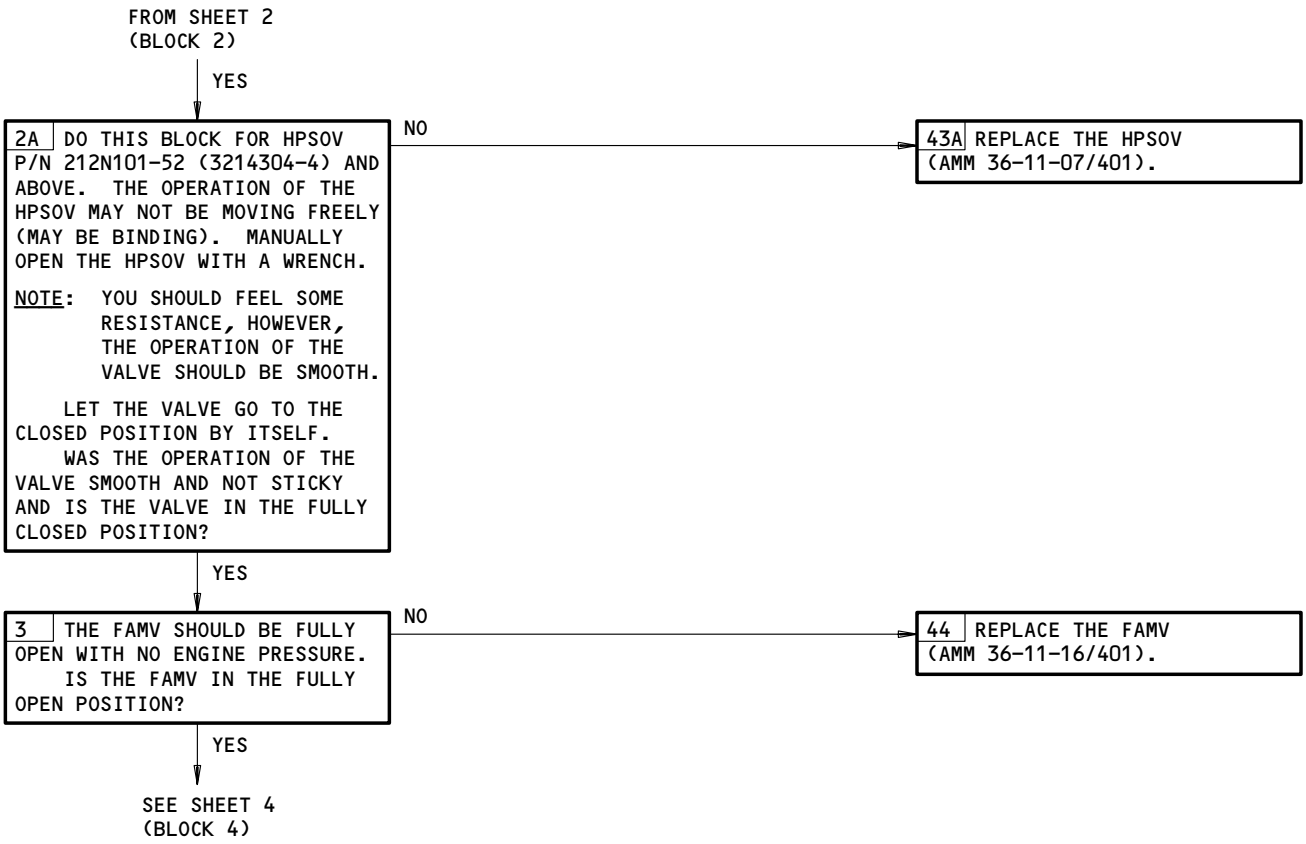

BLEED Light Illuminated and EICAS Msg L (R) ENG BLEED VAL Displayed.
Figure 110 (Sheet 3)

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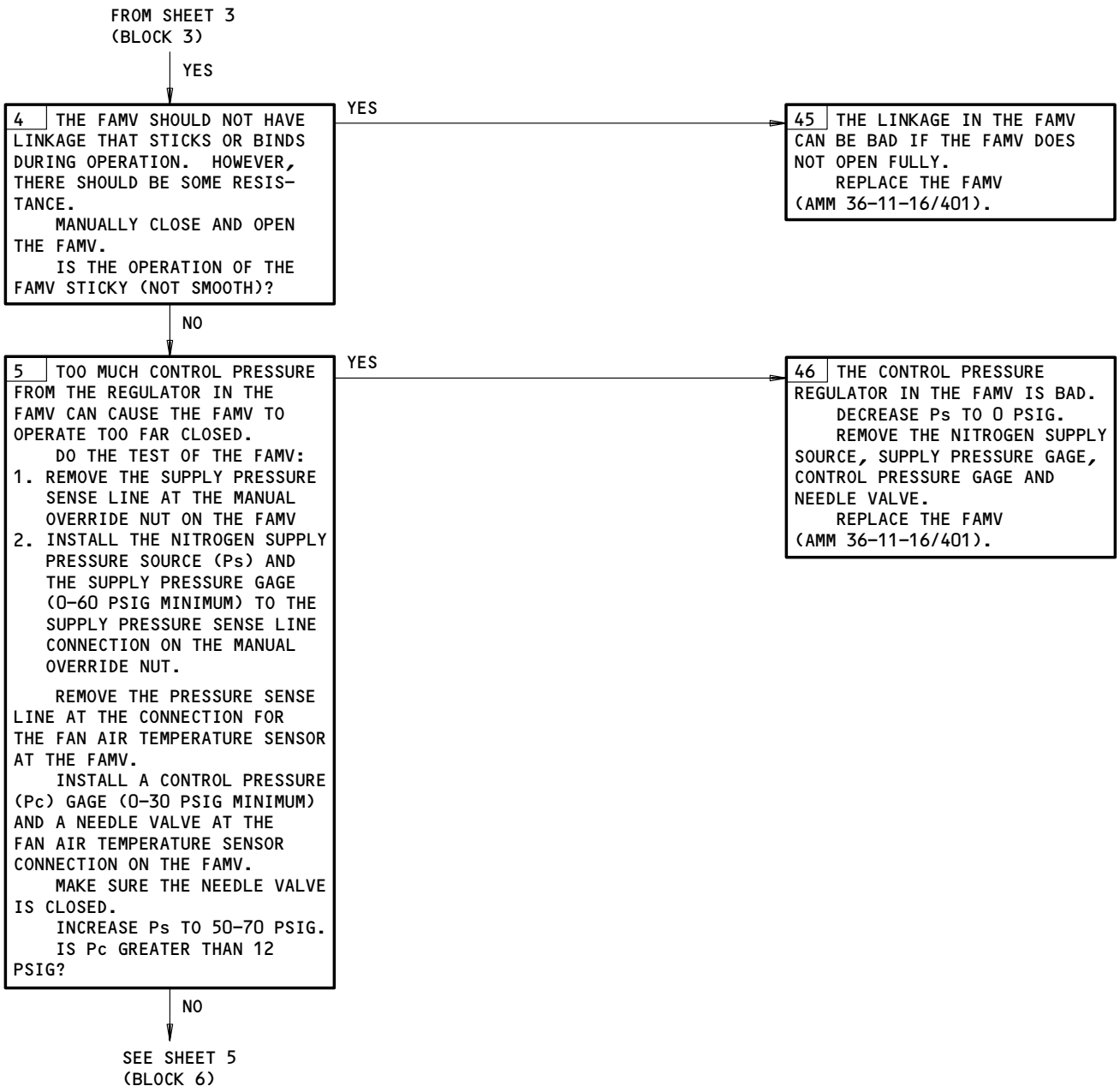

BLEED Light Illuminated and EICAS Msg L (R) ENG BLEED VAL Displayed.
Figure 110 (Sheet 4)

A14105

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FROM SHEET 4
(BLOCK 5)

NO

6 SLOWLY OPEN THE NEEDLE VALVE AND LOWER Pc UNTIL THE FAMV IS IN THE FULLY OPEN POSITION.
DID THE FAMV GO TO THE FULLY OPEN POSITION WITH Pc > 3.5 PSIG?

NO

47 THE LINKAGE IN THE FAMV CAN BE BAD IF THE FAMV DOES NOT OPEN FULLY.
DECREASE Ps TO 0 PSIG.
REMOVE THE NITROGEN SUPPLY SOURCE, SUPPLY PRESSURE GAGE, CONTROL PRESSURE GAGE AND NEEDLE VALVE.
REPLACE THE FAMV (AMM 36-11-16/401).

YES

48 THE PREVIOUS TESTS SHOW THE FAMV IS SATISFACTORY.
DECREASE Ps TO 0 PSIG.
REMOVE THE PRESSURE GAGES, NEEDLE VALVE AND NITROGEN SUPPLY.
APPLY ANTISEIZE COMPOUND TO THE SENSE LINE FITTINGS.
INSTALL THE FATS SENSE LINE AND THE SUPPLY PRESSURE SENSE LINE TO THE FAMV.
THE FAN AIR TEMPERATURE SENSOR CAN BE OUT OF CALIBRATION, WHICH CAN KEEP THE FAMV FROM OPENING CORRECTLY. IF THE FAMV DOES NOT OPEN CORRECTLY, THE AIR TEMPERATURE WILL INCREASE AND AT 450°F, THE 450 TEMPERATURE SENSOR WILL CAUSE THE PRSOV TO REDUCE PRESSURE. THE 490°F OVERTEMPERATURE SWITCH WILL ACTUATE TO SHUT THE PRSOV AT 490°F. THE TEST OF THE FAN AIR TEMPERATURE SENSOR, 450 TEMPERATURE SENSOR AND 490 OVERTEMPERATURE SWITCH ON-WING IS NOT PRACTICAL.
REPLACE THE FAN AIR TEMPERATURE SENSOR (AMM 36-11-17/401) AND THE 450 TEMPERATURE SENSOR (AMM 36-11-13/401).
IF THE PROBLEM CONTINUES, REPLACE THESE COMPONENTS IN THE LISTED ORDER:
1. 490 OVERTEMPERATURE SWITCH (AMM 36-21-02/401)
2. HPSOV (AMM 36-11-07/401)
3. PRECOOLER (AMM 36-11-15/401).

BLEED Light Illuminated and EICAS Msg L (R) ENG BLEED VAL Displayed.
Figure 110 (Sheet 5)

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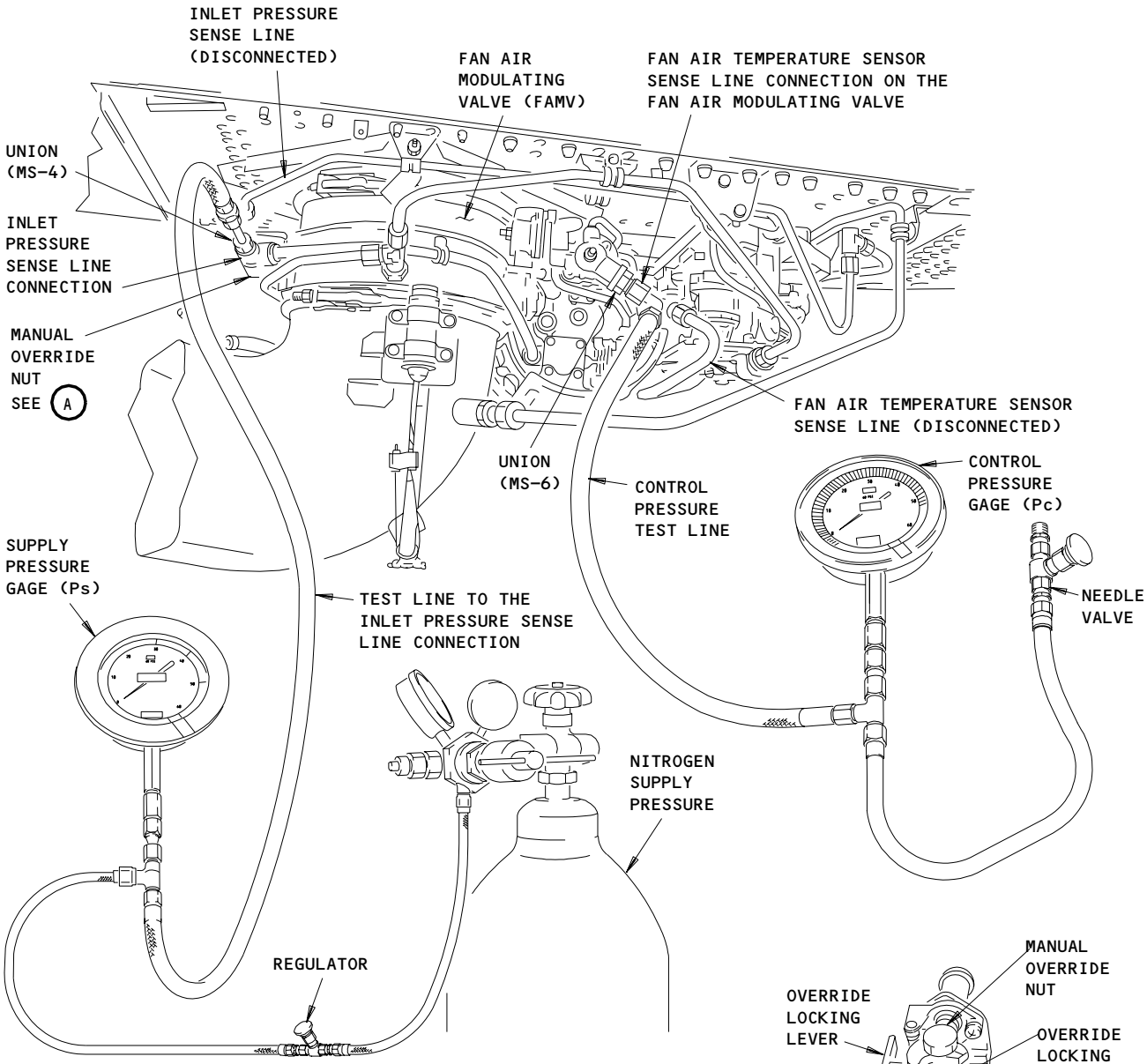
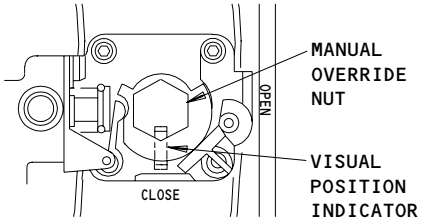
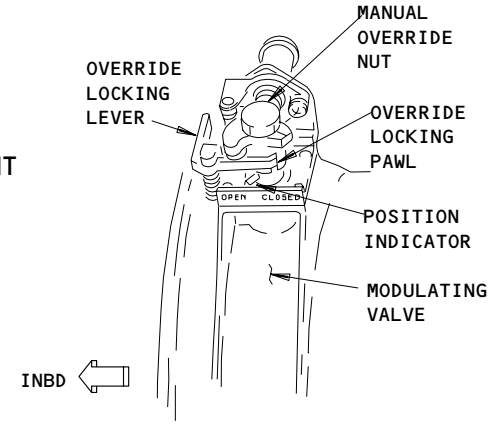


FAN AIR MODULATING VALVE TEST EQUIPMENT



HPSOV POSITION INDICATION



MANUAL OVERRIDE NUT

A

BLEED Light Illuminated and EICAS Msg L(R) ENG BLEED VAL Displayed.
Figure 110 (Sheet 6)

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EICAS MSG "L (R) ENG HI STAGE" DISPLAYED, "HI STAGE" LIGHT ILLUM, DURING FLIGHT OR GROUND RUN.

PREREQUISITES

MAKE SURE THE AIRPLANE IS IN THIS CONFIGURATION:
PNEUMATIC DUCT PRESSURE IS ZERO (AMM 36-00-00/201)
ELECTRICAL POWER IS ON (AMM 24-22-00/201)

EQUIPMENT:
NITROGEN SOURCE OR EQUIVALENT: LOW PRESSURE, 0-150 PSIG, COMMERCIALLY AVAILABLE

CONSUMABLE MATERIALS:
ANTISEIZE COMPOUND, HIGH TEMPERATURE - COMMERICALLY AVAILABLE

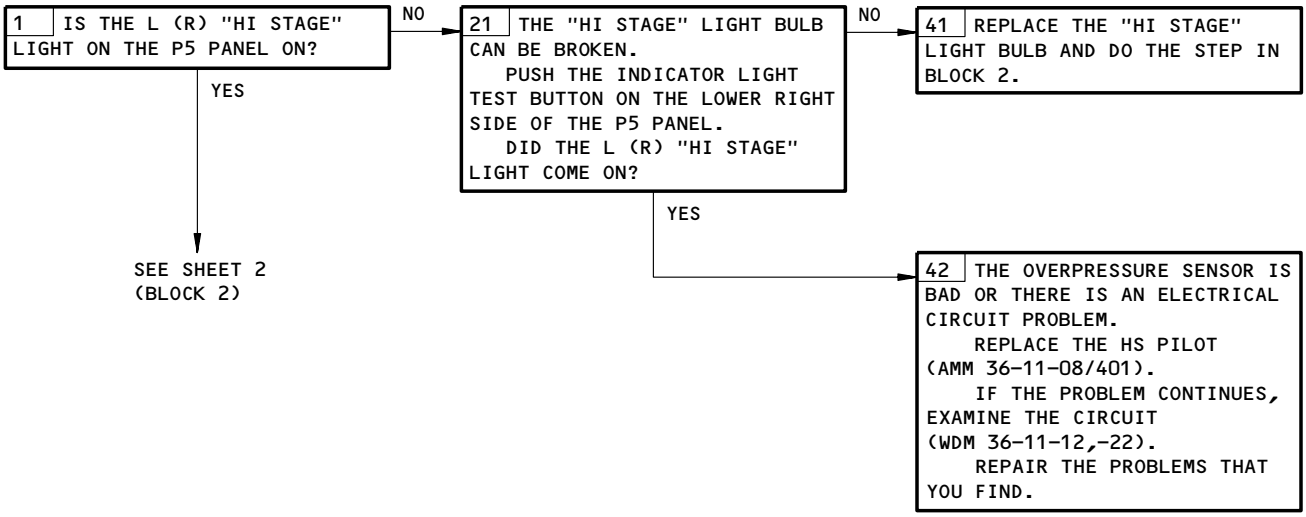
DESCRIPTION:

THE "HI STAGE" LIGHT AND EICAS MESSAGE APPEAR BECAUSE THE PNEUMATIC SYSTEM HAD AN OVERPRESSURE CONDITION. THE OVERPRESSURE CONDITION WILL CAUSE THE MANUAL RESET BUTTON ON THE HS PILOT TO EXTEND. THE "HI STAGE" LIGHT AND EICAS MESSAGE SHOULD STAY ON EVEN AFTER THE OVERPRESSURE CONDITION IS GONE.

POSSIBLE CAUSES:

1. HS PILOT (AMM 36-11-07/501)(OVEPRESSURE SENSOR IN THE HS PILOT)
2. HPSOV (AMM 36-11-07/501)(OPERATING TOO FAR OPEN)
3. ELECTRICAL WIRING PROBLEM
4. RELIEF VALVE

FAULT ISOLATION:



EICAS Msg L (R) ENG HI STAGE Displayed, HI STAGE Light Illum,
During Flight or Ground Run.
Figure 111 (Sheet 1)

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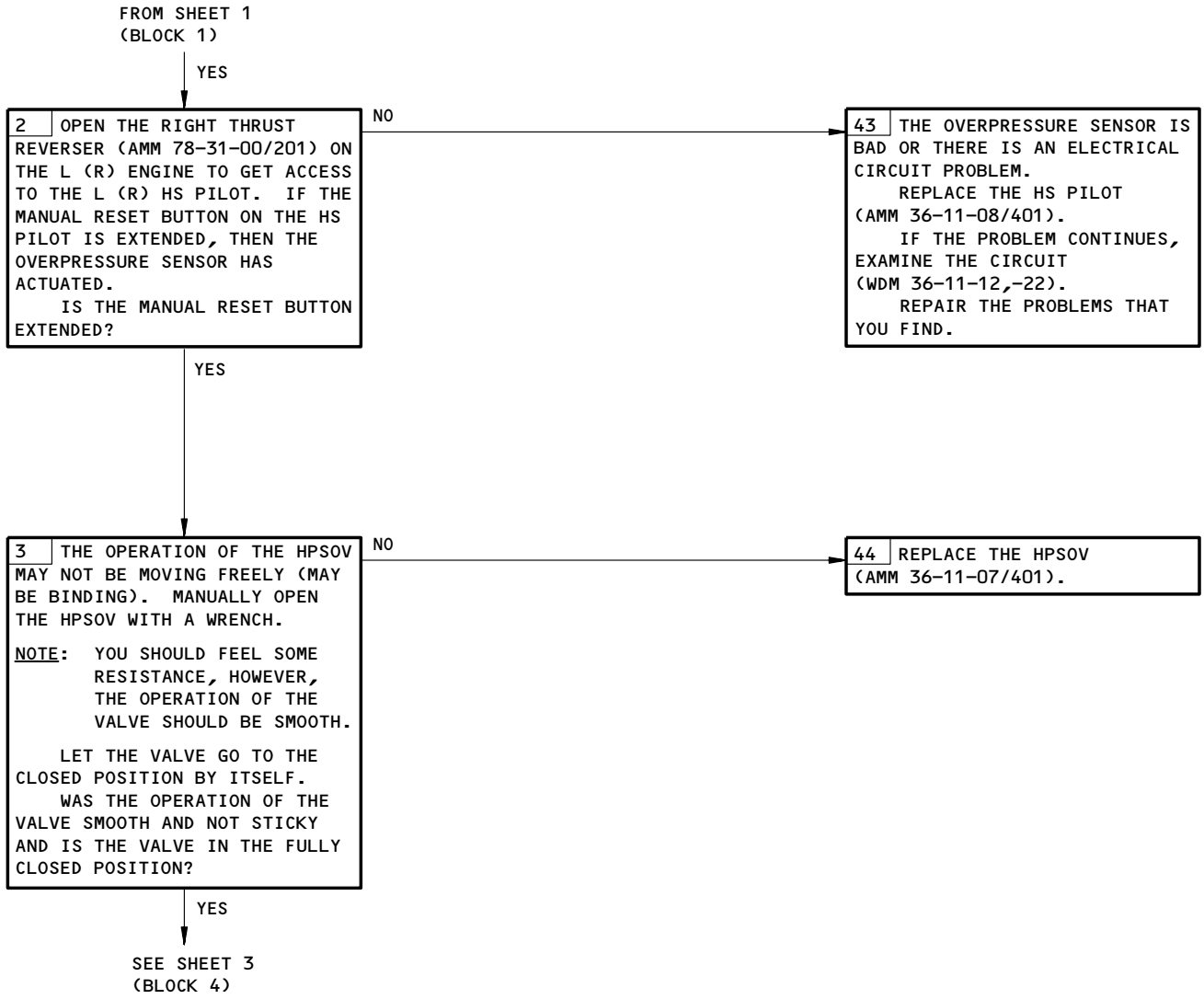

EICAS Msg L (R) ENG HI STAGE Displayed, HI STAGE Light Illum,
During Flight or Ground Run.
Figure 111 (Sheet 2)

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FROM SHEET 2
(BLOCK 3)

YES

4 THE OVERPRESSURE SENSOR IN THE HS PILOT MAY HAVE ACTUATED AT A PRESSURE BELOW THE DESIGN LIMIT OR BECAUSE OF AN ACTUAL OVERPRESSURE CONDITION CAUSED BY THE HPSOV OPERATING TOO FAR OPEN.

DO A TEST OF THE OVERPRESSURE SENSOR:

1. REMOVE PNEUMATIC POWER (AMM 36-00-00/201)
2. PUSH THE MANUAL RESET BUTTON IN
3. REMOVE THE DOWNSTREAM PRESSURE SENSE LINE AT THE HS PILOT
4. INSTALL A NITROGEN SOURCE AND PRESSURE GAGE (Ps) TO THE HS PILOT
5. SLOWLY INCREASE Ps TO 125-165 PSIG AND KEEP A RECORD OF Ps WHEN THE MANUAL RESET BUTTON EXTENDS.

DID THE MANUAL RESET BUTTON EXTEND WHEN Ps WAS 125-165 PSIG?

NO

45 THE OVERPRESSURE SENSOR IN THE HS PILOT IS OUT OF CALIBRATION.

REPLACE THE HS PILOT (AMM 36-11-08/401). 1

YES

46 THE OVERPRESSURE SENSOR IS SATISFACTORY, HOWEVER, THE HPSOV CAN BE OPERATING TOO FAR OPEN WHICH WOULD ALLOW THE HIGH PRESSURE FROM THE ENGINE TO BE PRESENT DOWNSTREAM FROM THE HPSOV.

REPLACE THE HPSOV (AMM 36-11-07/401) AND PUSH THE MANUAL RESET BUTTON IN.

IF THE PROBLEM CONTINUES, THE RELIEF VALVE CAN BE STUCK CLOSED. THE RELIEF VALVE IS INSTALLED TO PREVENT AN OVERPRESSURE CONDITION DUE TO NORMAL HPSOV PORT LEAKAGE.

REPLACE THE RELIEF VALVE (AMM 36-11-21/401).

IF THE PROBLEM CONTINUES, THE HS PILOT CAN BE BAD.

REPLACE THE HS PILOT (AMM 36-11-08/401).

1 THE HS PILOT WITH P/N 107460-10 OR LESS CAN CAUSE THE "HI STAGE" LIGHT TO COME ON INTERMITTENTLY DUE TO A FAULTY OVERPRESSURE SENSOR IN THE HS PILOT.

EICAS Msg L (R) ENG HI STAGE Displayed, HI STAGE Light Illum, During Flight or Ground Run.
Figure 111 (Sheet 3)

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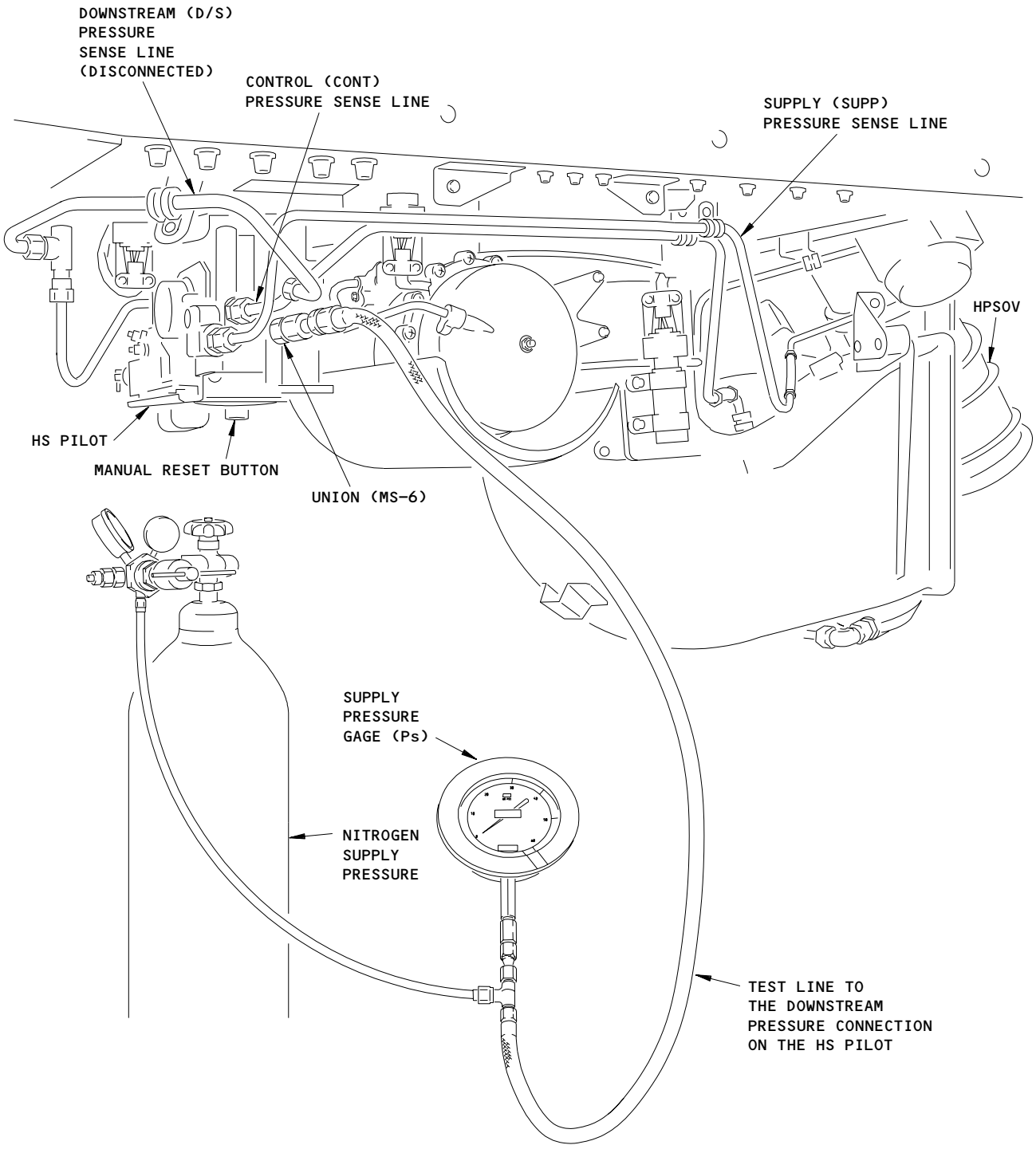
438835



HS PILOT OVERPRESSURE TEST EQUIPMENT

EICAS Msg "L(R) ENG HI STAGE" Displayed. HI STAGE Light Illum, During Flight or Ground Run.
Figure 111 (Sheet 4)

A13506

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EICAS MSG "L (R) ENG BLEED OFF" DISPLAYED. L (R) ENG "OFF" SWITCH-LIGHT ILLUMINATED. L (R) ENG "OFF" SWITCH SELECTED ON. DUCT PRESSURE IS NORMAL.

PREREQUISITES

MAKE SURE THE AIRPLANE IS IN THIS CONFIGURATION:
ELECTRICAL POWER IS ON (MM 24-22-00/201)
PNEUMATIC DUCT PRESSURE IS ZERO (MM 36-00-00/201)

NOTE: NO ACTION IS NECESSARY IF THE ABOVE INDICATION OCCURS WHEN THE PACK IS OFF AND THE L (R) ENG "OFF" SWITCH IS SELECTED ON. THIS CONDITION IS NORMAL BECAUSE THE PRSOV WILL TEND TO GO TO THE CLOSED POSITION WHEN THERE IS NO SYSTEM DEMAND.

1 REMOVE THE ELECTRICAL CONNECTOR D1644 (D544), FOR THE L (R) PRSOV. THE L (R) ENG "OFF" SWITCH-LIGHT SHOULD EXTINGUISH.
IS THE L (R) ENG "OFF" SWITCH-LIGHT STILL ON?

NO → 41 REPLACE THE L (R) PRSOV (MM 36-11-09/201).

YES → 42 THERE IS AN ELECTRICAL SHORT TO GROUND IN THE INDICATION CIRCUIT.
REPAIR THE ELECTRICAL CIRCUIT (WDM 36-11-11,-12,-21,-22).

EICAS Msg L (R) ENG BLEED OFF Displayed. L (R) Eng OFF Switch-Light Illuminated. L (R) Eng OFF Switch Selected On. Duct Pressure is Normal.
Figure 112

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PREREQUISITES

MAKE SURE THE AIRPLANE IS IN THIS CONFIGURATION:
- ELECTRICAL POWER IS ON (MM 24-22-00/201)
- PNEUMATIC DUCT PRESSURE IS ZERO (MM 36-00-00/201)

EQUIPMENT:
- VOLTMETER: 0-30V DC, COMMERCIALLY AVAILABLE

CONSUMABLE MATERIALS:
- ANTISEIZE COMPOUND, HIGH TEMPERATURE - COMMERCIALLY AVAILABLE

L (R) ENG "OFF" SWITCH SELECTED OFF. DUCT PRESSURE INDICATED.

1 WITH NO PNEUMATIC POWER, LOOK AT THE POSITION INDICATOR ON THE PRSOV (SHEET 3).
THE PRSOV SHOULD BE IN THE FULLY CLOSED POSITION.
IS THE PRSOV IN THE FULLY CLOSED POSITION?

NO → 41 REPLACE THE PRSOV (MM 36-11-09/201).

YES → SEE SHEET 2 (BLOCK 2)

L (R) Eng OFF Switch Selected Off. Duct Pressure Indicated.
Figure 112A (Sheet 1)

A09888

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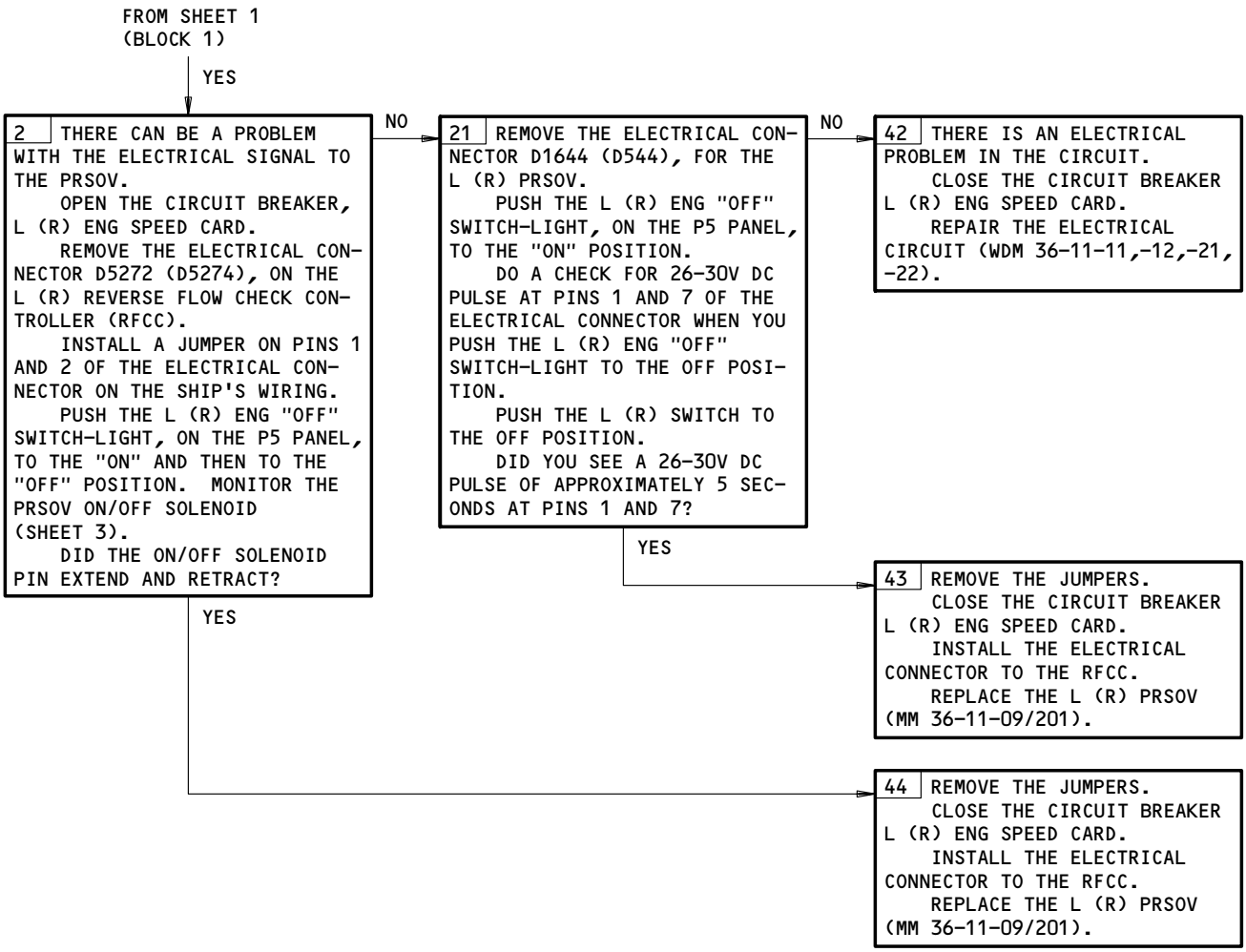

L (R) Eng OFF Switch Selected Off. Duct Pressure Indicated.
Figure 112A (Sheet 2)

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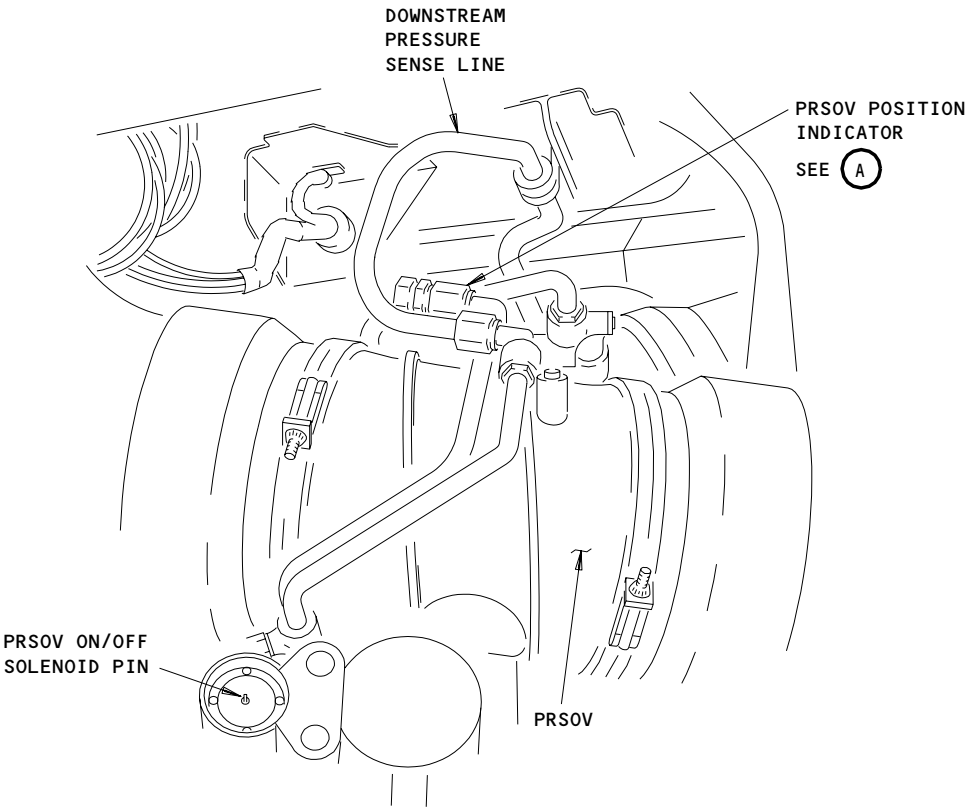
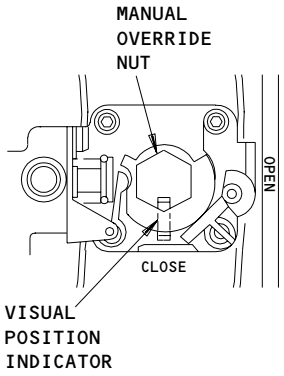


PRSOV TEST EQUIPMENT
(LEFT ENGINE)



PRSOV POSITION INDICATOR
A

L(R) Eng OFF Switch Selected Off. Duct Pressure Indicated.
Figure 112A (Sheet 3)

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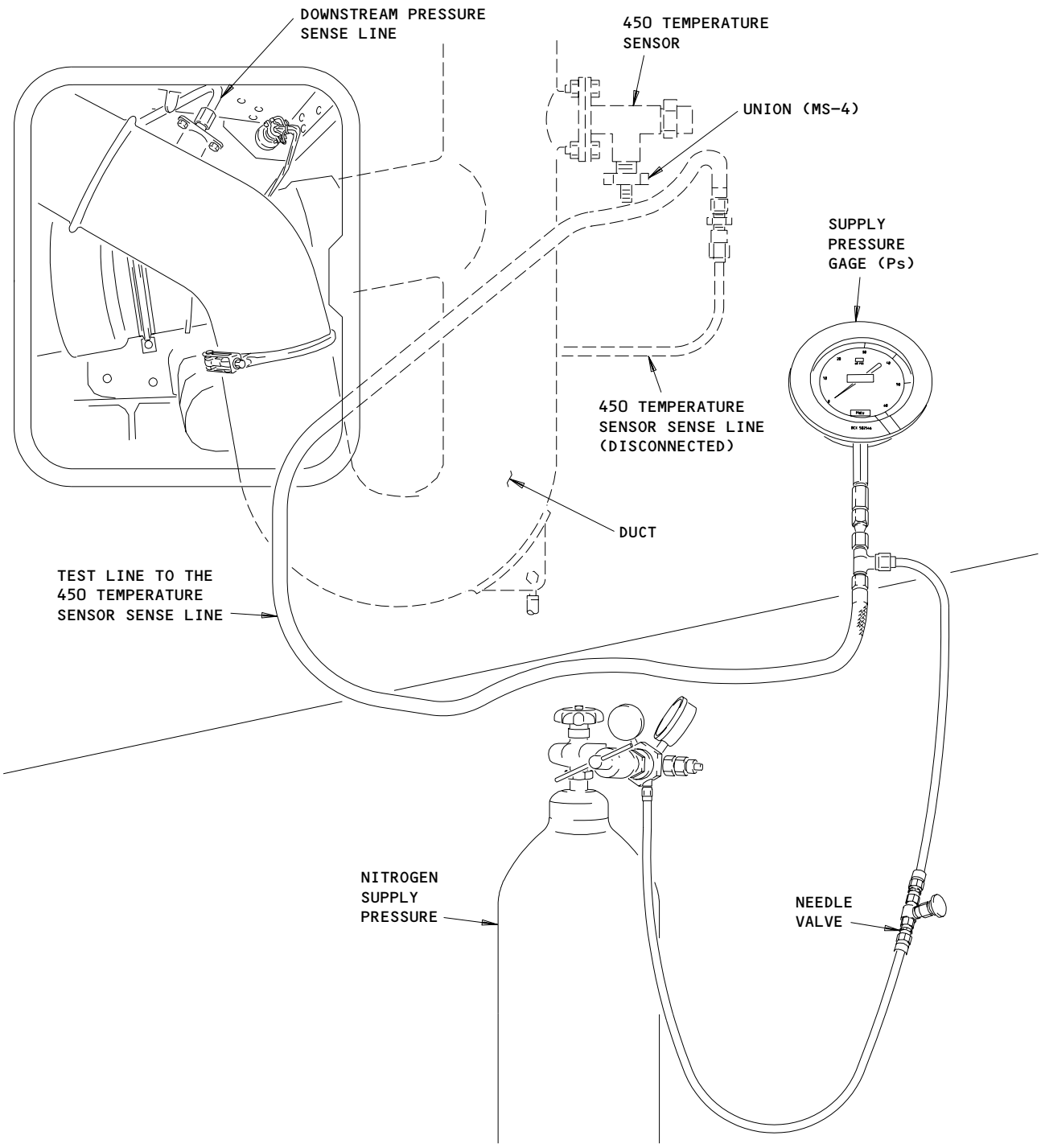

PRSOV TEST EQUIPMENT
(RIGHT ENGINE)

L(R) Eng OFF Switch Selected Off. Duct Pressure Indicated.
Figure 112A (Sheet 4)

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EICAS MSG "L (R) ENG BLEED OFF" DISPLAYED. L (R) ENG "OFF" SWITCH SELECTED OFF. DUCT PRESSURE IS ZERO. L (R) ENG "OFF" SWITCH-LIGHT IS NOT ILLUMINATED.

PREREQUISITES

MAKE SURE THE AIRPLANE IS IN THIS CONFIGURATION:
- PNEUMATIC DUCT PRESSURE IS ZERO (AMM 36-00-00/201)
- ELECTRICAL POWER IS ON (AMM 24-22-00/201)

DESCRIPTION:

WHEN THE L R) ENG BLEED "OFF" LIGHT ILLUMINATES, THE PRSOV IS IN THE CLOSED POSITION. SINCE THE EICAS MESSAGE IS SHOWN BUT THE "OFF" LIGHT IS NOT ILLUMINATED, THERE IS A PROBLEM WITH THE LIGHT BULB OR THE ELECTRICAL CIRCUIT TO THE LIBHT BULB.

POSSIBLE CAUSES:

1. LIGHT BULB
2. ELECTRICAL CIRCUIT.

FAULT ISOLATION:

2 THE "OFF" LIGHT BULB MAY BE BROKEN.
PUSH THE INDICATOR TEST BUTTON ON THE LOWER RIGHT SIDE OF THE P5 PANEL.
DID THE "OFF" LIGHT COME ON?

NO → 42 REPLACE THE LIGHT BULB.

YES → 43 THERE IS AN ELECTRICAL FAULT THAT WILL NOT LET THE "OFF" LIGHT ILLUMINATE BUT WILL CAUSE THE EICAS MESSAGE TO OCCUR.
REPAIR THE ELECTRICAL CIRCUIT (WDM 36-11-11,-12,-21,-22).

EICAS Msg L (R) ENG BLEED OFF Displayed. L (R) Eng OFF Switch Selected Off. Duct Pressure Is Zero. L (R) Eng OFF Switch-Light Is Not Illuminated.
Figure 112B

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EICAS MSG "L (R) ENG BLEED OFF" DISPLAYED. L (R) ENG "OFF" SWITCH-LIGHT ILLUMINATED. L (R) ENG "OFF" SWITCH SELECTED ON. DUCT PRESSURE IS ZERO.

PREREQUISITES

MAKE SURE THE AIRPLANE IS IN THIS CONFIGURATION:
- ELECTRICAL POWER IS ON (AMM 24-22-00/201)
- PNEUMATIC DUCT PRESSURE IS ZERO (AMM 36-00-00/201)

EQUIPMENT:
- NITROGEN SOURCE
- VOLTMETER - 0-30V DC, COMMERCIALLY AVAILABLE
- APU/GROUND AIR SOURCE

CONSUMABLE MATERIALS:
- ANTISEIZE COMPOUND, HIGH TEMPERATURE - COMMERCIALLY AVAILABLE

DESCRIPTION:

THE PRSOV IS IN THE CLOSED POSITION WHEN IT SHOULD BE OPEN.

POSSIBLE CAUSES:

1. PRSOV, PRSOV/PRSOV REGULATOR ADJUSTMENT/TEST (AMM 36-11-09/501)
2. AIR SUPPLY OVERTEMPERATURE LIMITING SENSOR (450°F)(AMM 36-11-13/401)
3. REVERSE FLOW CHECK CONTROL (RFCC), RFCC ADJUSTMENT/TEST (AMM 36-11-18/501)
4. SENSE LINE LEAKAGE
5. ELECTRICAL CIRCUIT PROBLEMS (WDM 36-11-11,-12,-21,22).

FAULT ISOLATION:

1 MAKE SURE THE PRSOV IS IN THE NORMAL "UNLOCKED" AND FULLY CLOSED POSITION.
THE PRSOV IS PNEUMATICALLY ACTUATED AND SPRING-LOADED CLOSED WHEN NO PNEUMATIC PRESSURE IS SUPPLIED.
LOOK AT THE POSITION INDICATOR ON THE MANUAL OVERRIDE NUT ON THE PRSOV.
IS THE PRSOV "UNLOCKED" AND FULLY CLOSED?

NO → 41 UNLOCK THE PRSOV IF THERE IS NO REASON FOR THE PRSOV TO BE LOCKED (DO A CHECK OF THE MEL).
TO UNLOCK THE PRSOV, PULL LOCKING LEVER OUT OF THE CLOSED LOCK DETENT THEN TURN THE MANUAL OVERRIDE NUT COUNTERCLOCKWISE.

YES

SEE SHEET 2
(BLOCK 1A)

EICAS Msg L (R) ENG BLEED OFF Displayed. L (R) Eng OFF Switch-Light Illuminated. L (R) Eng OFF Switch Selected On. Duct Pressure Is Zero.
Figure 113 (Sheet 1)

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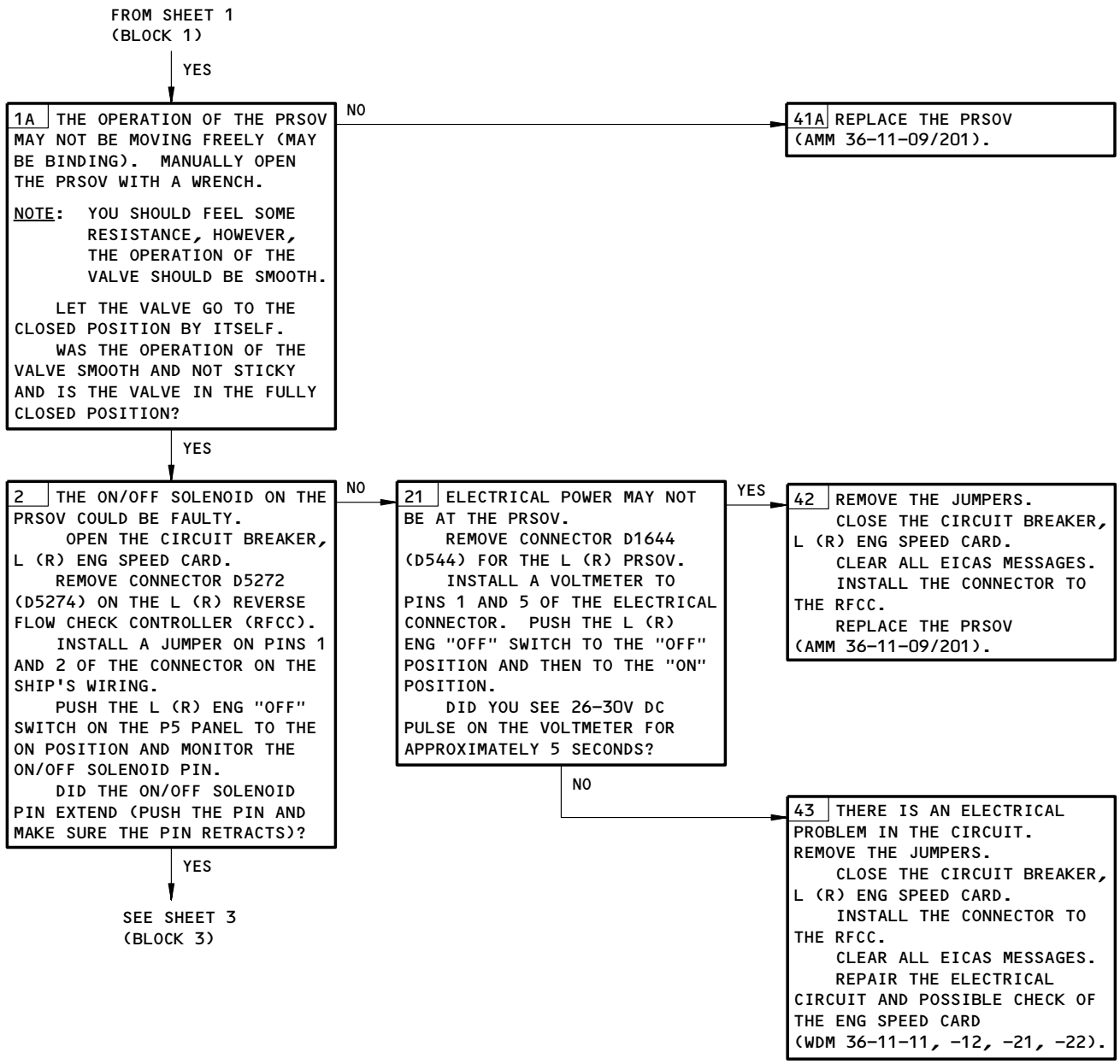

EICAS Msg L (R) ENG BLEED OFF Displayed. L (R) Eng OFF Switch-Light Illuminated. L (R) Eng OFF Switch Selected On. Duct Pressure Is Zero.
Figure 113 (Sheet 2)

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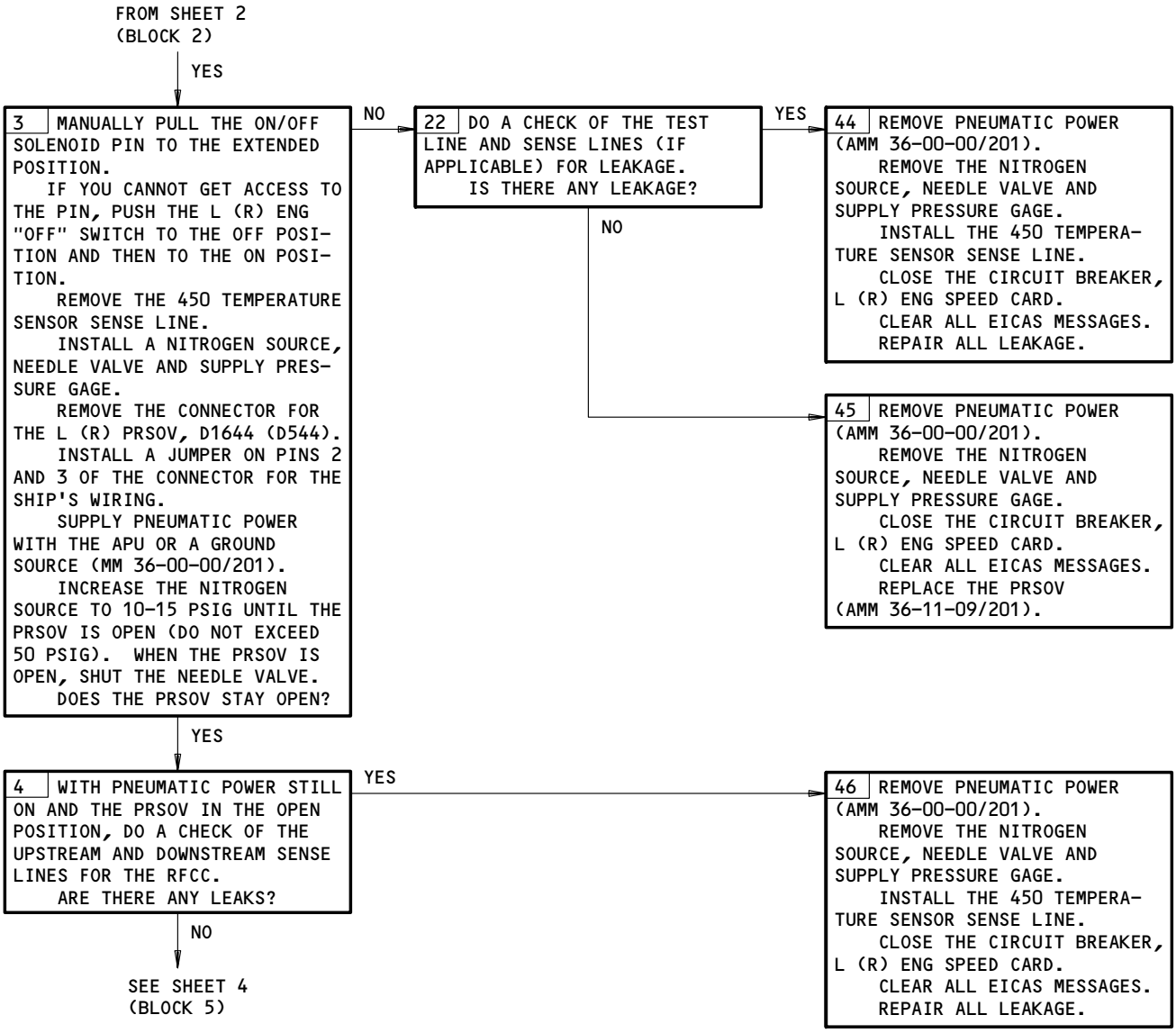

EICAS Msg L (R) ENG BLEED OFF Displayed. L (R) Eng OFF Switch-Light Illuminated.
L (R) Eng OFF Switch Selected On. Duct Pressure Is Zero.
Figure 113 (Sheet 3)

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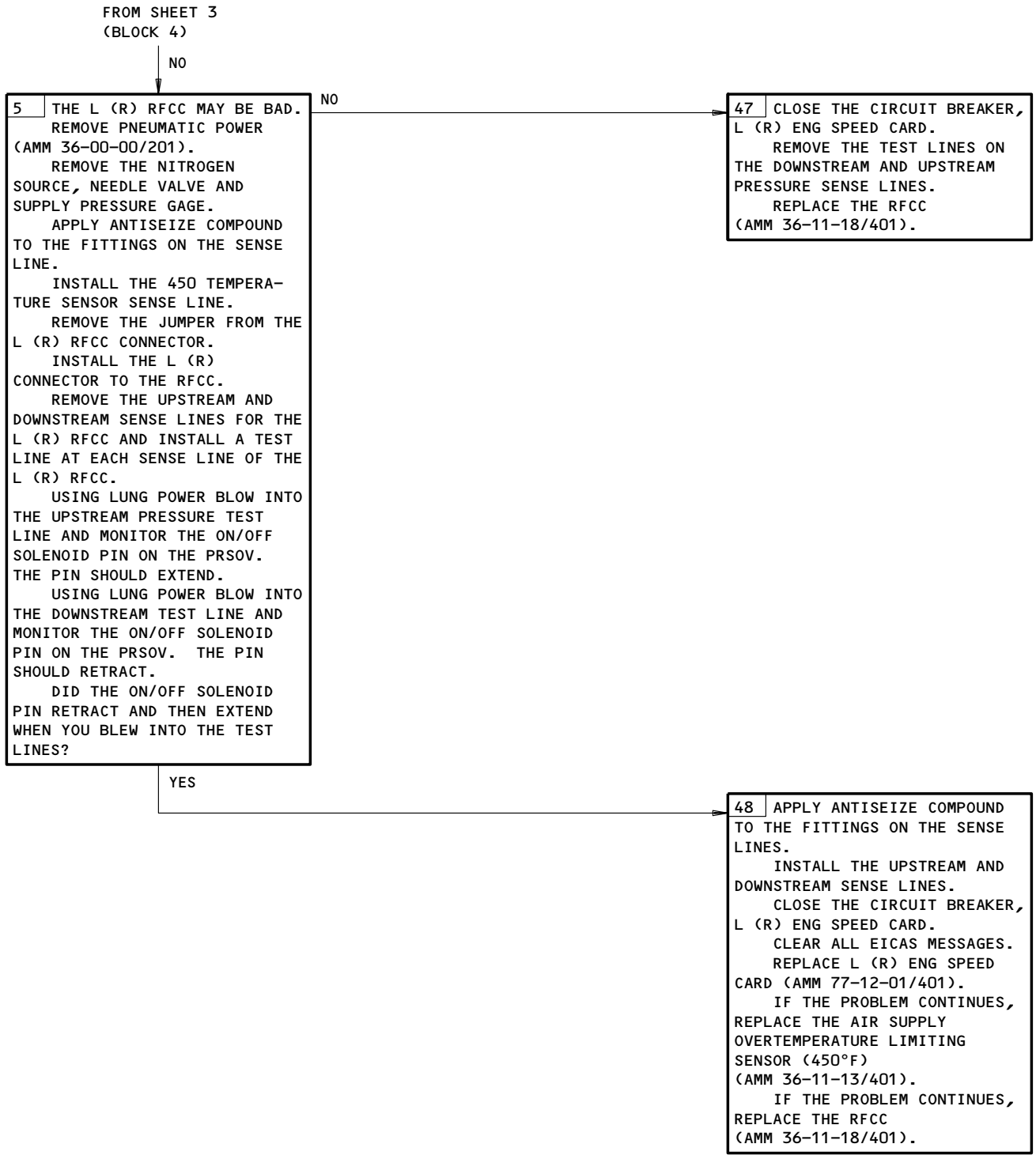

EICAS Msg L (R) ENG BLEED OFF Displayed. L (R) Eng OFF Switch-Light Illuminated. L (R) Eng OFF Switch Selected On. Duct Pressure Is Zero.
Figure 113 (Sheet 4)

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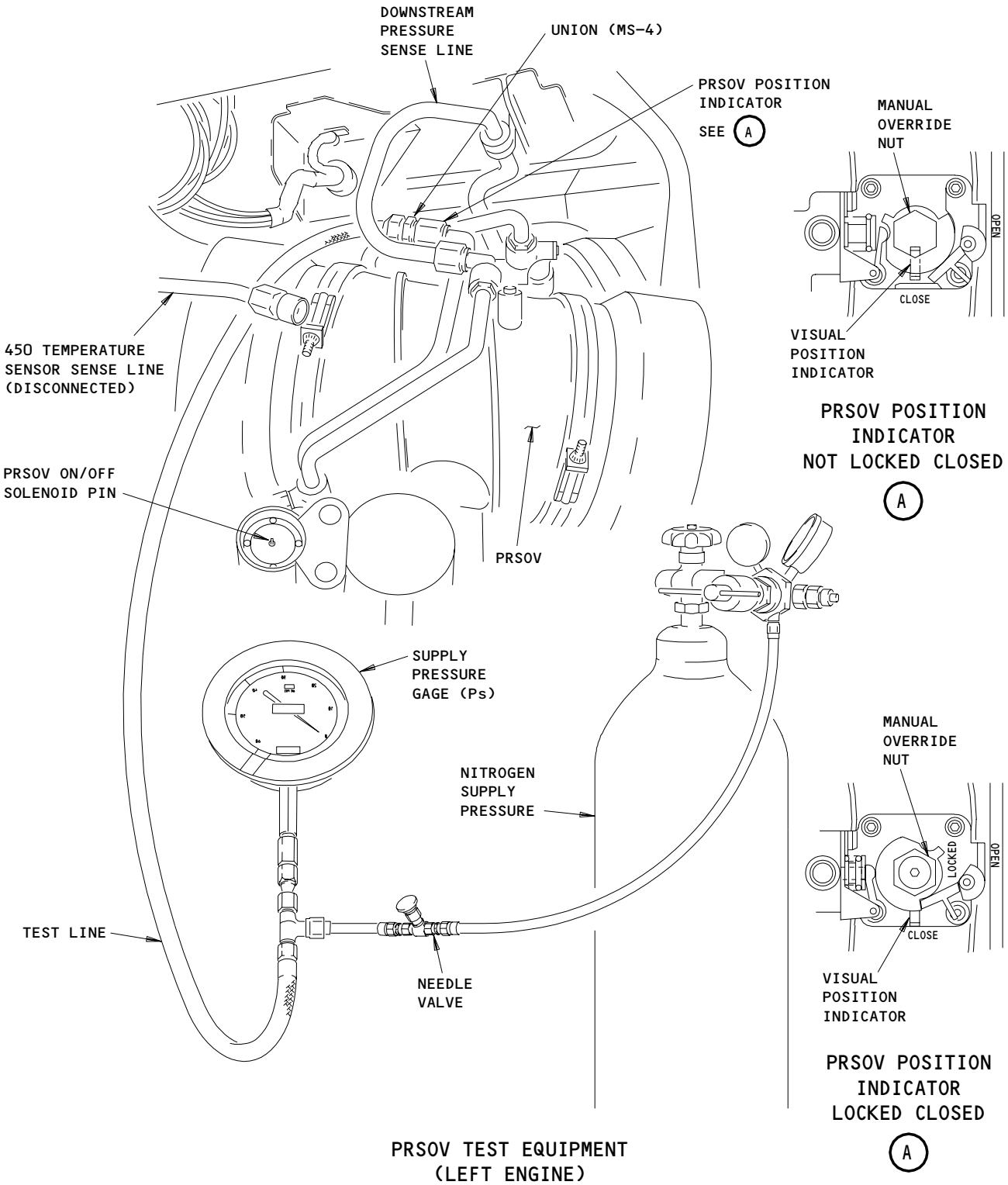

PRSOV TEST EQUIPMENT
(LEFT ENGINE)

EICAS Msg L(R) ENG BLEED OFF Displayed. L(R) Eng OFF Switch-Light Illuminated. L(R) Eng OFF Switch Selected On. Duct Pressure is Zero
Figure 113 (Sheet 5)

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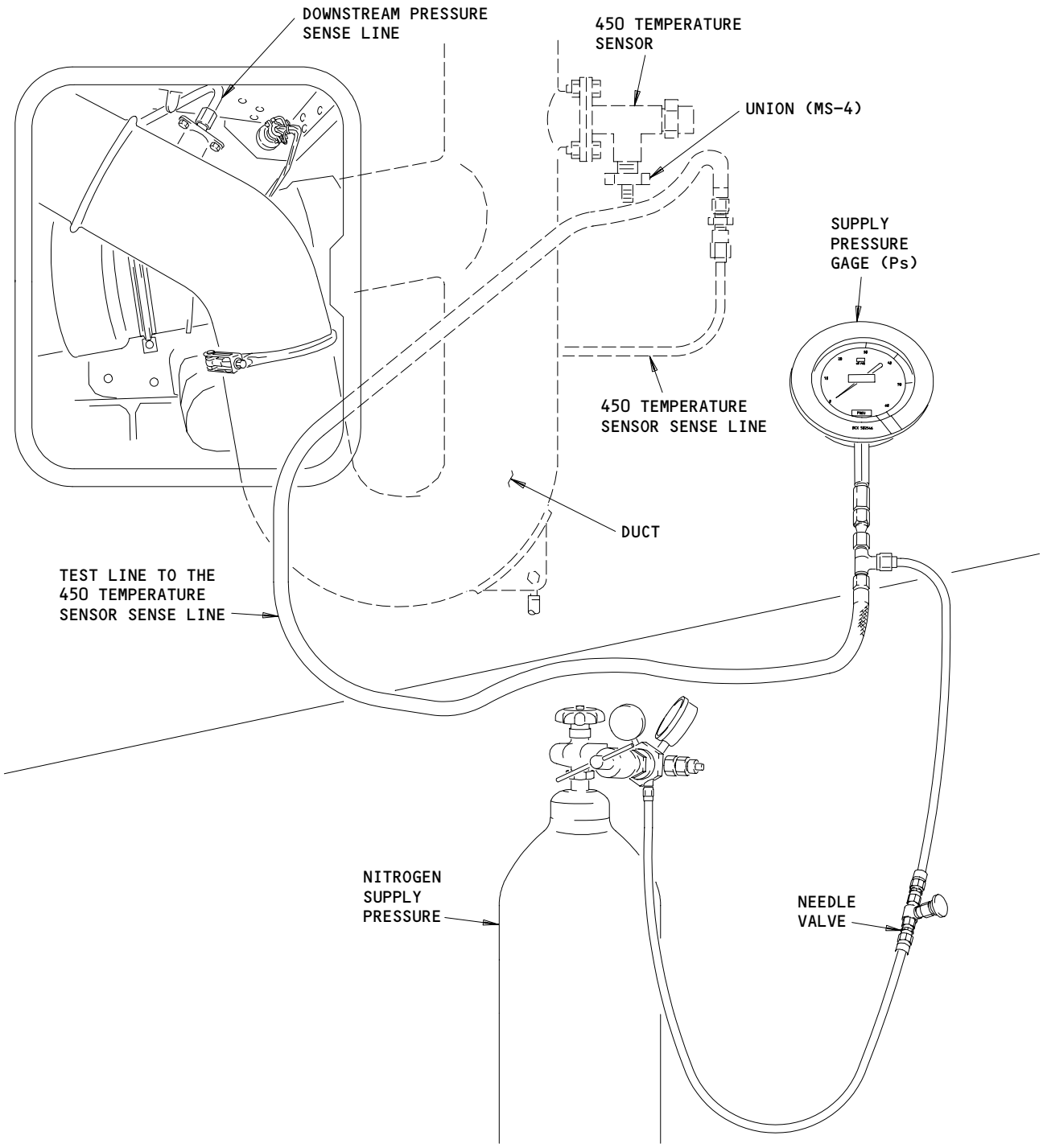

PRSOV TEST EQUIPMENT
(RIGHT ENGINE)

EICAS Msg L(R) ENG BLEED OFF Displayed. L(R) Eng OFF Switch-Light Illuminated. L(R) Eng OFF Switch Selected On. Duct Pressure is Zero
Figure 113 (Sheet 6)

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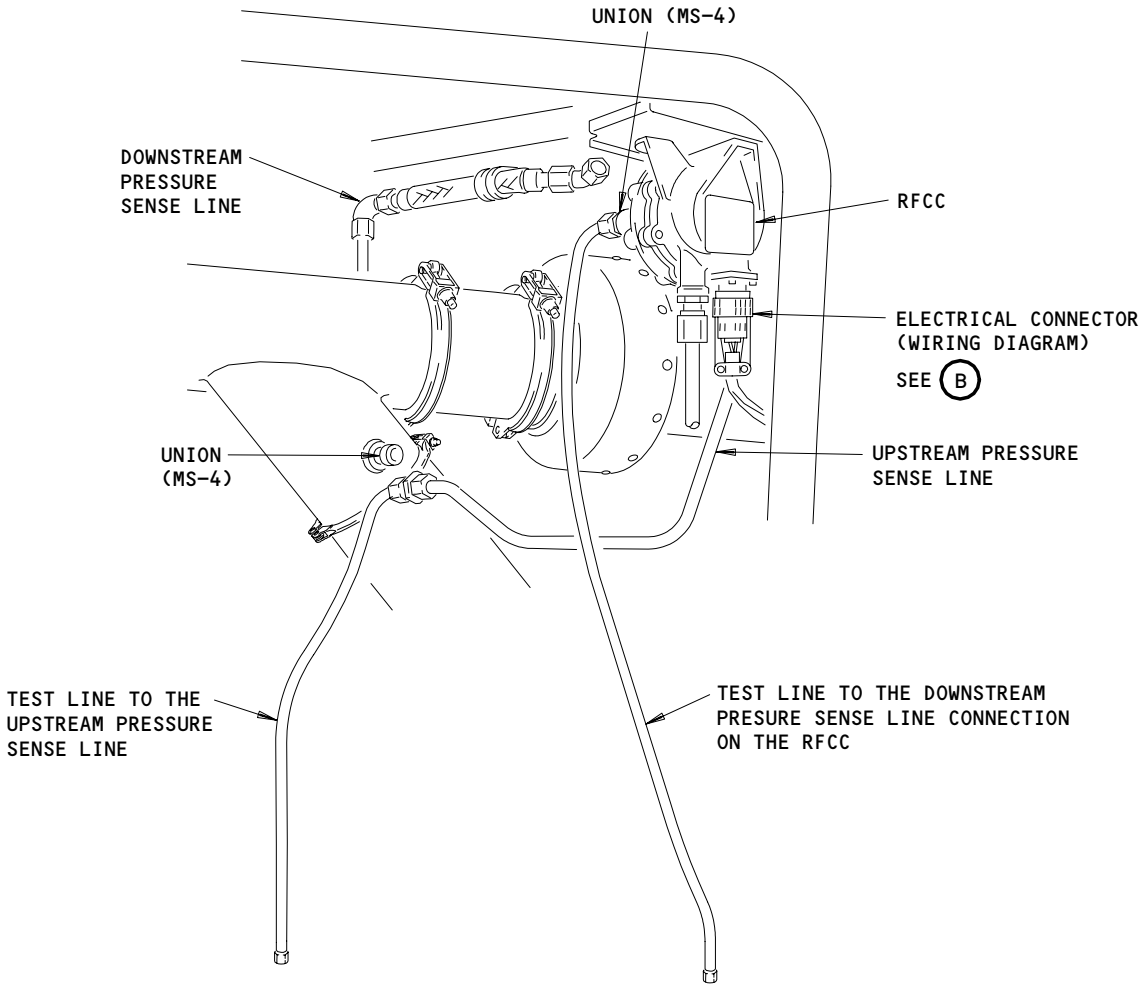
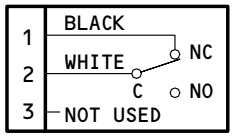


RFCC TEST EQUIPMENT
(LEFT ENGINE STRUT)



ELECTRICAL CONNECTOR
WIRING DIAGRAM
B

EICAS Msg L(R) ENG BLEED OFF Displayed. L(R) Eng OFF Switch-Light Illuminated. L(R) Eng OFF Switch Selected On. Duct Pressure is Zero
Figure 113 (Sheet 7)

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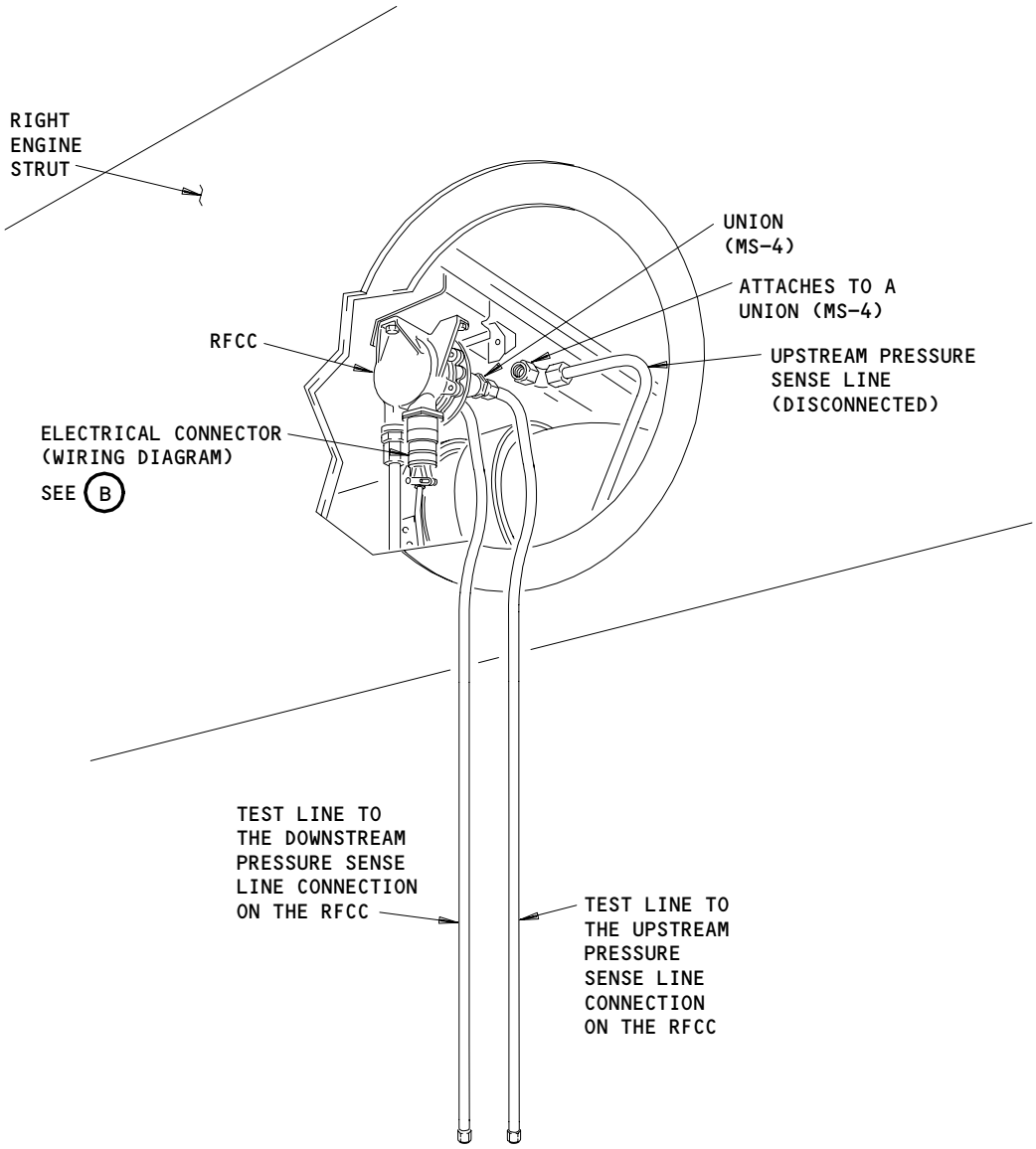

RFCC TEST EQUIPMENT
(RIGHT ENGINE STRUT)

EICAS Msg L(R) ENG BLEED OFF Displayed. L(R) Eng OFF Switch-Light Illuminated. L(R) Eng OFF Switch Selected On. Duct Pressure is Zero
Figure 113 (Sheet 8)

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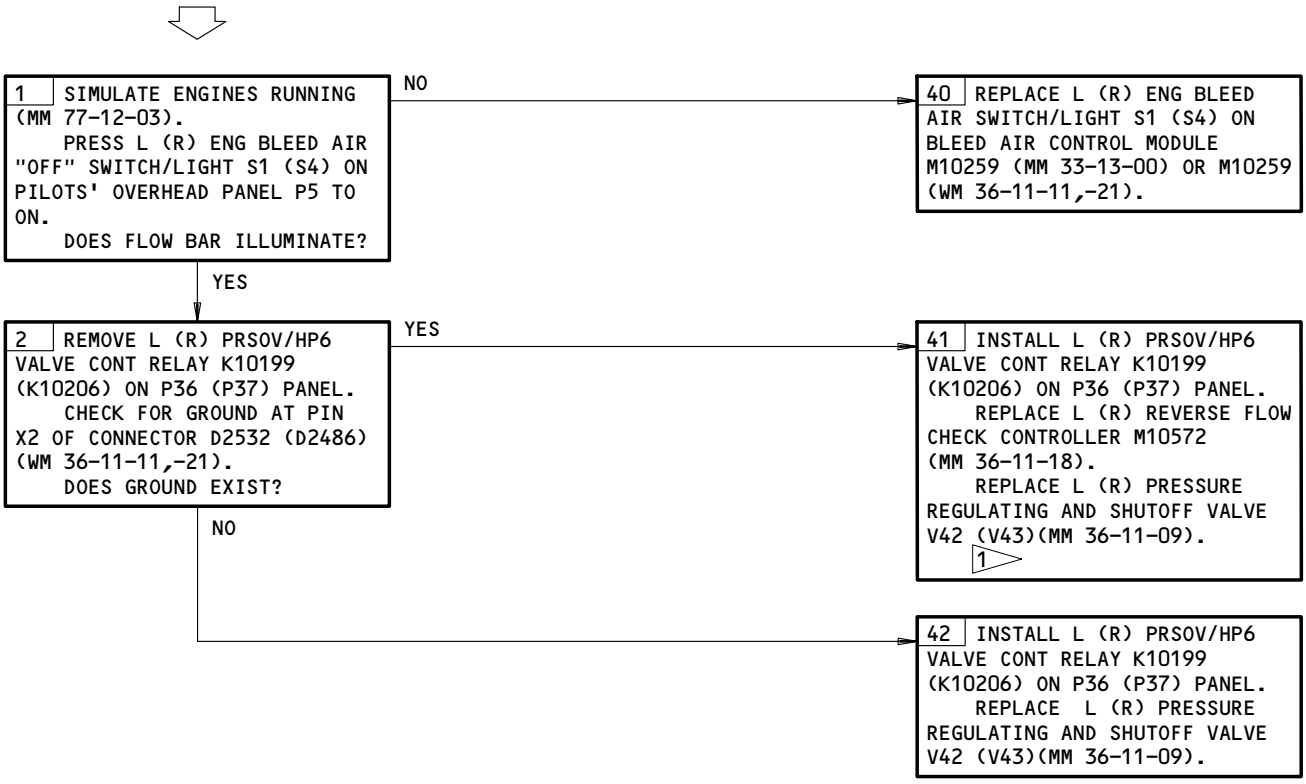
(L,R) ENG BLEED AIR "OFF" LIGHT DID NOT ILLUMINATE DURING ENGINE START

PREREQUISITES
ELECTRICAL POWER (MM 24-22-00)
PNEUMATIC POWER (MM 36-00-00)
CB'S: 11Q15,11Q16,11Q19,11Q24



1 NOTE: THIS IS A MULTIPLE FAILURE

(L,R) Eng Bleed Air OFF Light Did Not Illuminate During Engine Start
Figure 113A

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L (R) ENGINE RUNNING WITH ENG BLEED SELECTED ON. OPPOSITE ENGINE WILL NOT START. OPPOSITE ENGINE STARTS NORMALLY WITH BLEED SELECTED OFF.

PREREQUISITES

ELECTRICAL POWER (MM 24-22-00)
PNEUMATIC POWER (MM 36-00-00)
SIMULATE ENGINES RUNNING (MM 77-12-03)

CB'S: 11Q10,11Q19

1 REMOVE L (R) PRSOV/HP6 VALVE CONT RELAY K10199 (K10206) FROM L (R) MISC RELAY PANEL P36 (P37).
PRESS L (R) ENG BLEED AIR SWITCH/LIGHT ON P5 PANEL TO ON.
CHECK FOR GROUND AT PIN X2 OF CONNECTOR D2532 (D2486).
DOES GROUND EXIST?

NO → 21 INSTALL L (R) PRSOV/HP6 VALVE CONT RELAY K10199 (K10206) IN L (R) MISC RELAY PANEL P36 (P37).
REPLACE L (R) ENG PRESSURE REGULATING AND SHUTOFF VALVE V42 (V43)(MM 36-11-09).
IF FAULT PERSISTS, REPLACE L (R) PRSOV/HP6 VALVE CONT RELAY K10199 (K10206) (WM 36-11-11,-12).

YES → 22 INSTALL L (R) PRSOV/HP6 VALVE CONT RELAY K10199 (K10206) IN L (R) MISC RELAY PANEL P36 (P37).
REPLACE L (R) REVERSE FLOW CHECK CONTROLLER M10550 (M10551)(MM 36-11-18).

L (R) Engine Running With Eng Bleed Selected On. Opposite Engine Will Not Start. Opposite Engine Starts Normally With Bleed Selected Off.
Figure 113B

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EICAS MESSAGE "APU BLEED VAL" DISPLAYED. "VALVE" LIGHT ILLUMINATED.

PREREQUISITES

MAKE SURE THESE CIRCUIT BREAKERS ARE CLOSED:
11B2,11B3,11Q10,11Q19,11Q22,11Q23

MAKE SURE THE AIRPLANE IS IN THIS CONFIGURATION:
ELECTRICAL POWER IS ON (AMM 24-22-00/201)

EQUIPMENT:
APU

DESCRIPTION:

THE APU SHUTOFF VALVE IS NOT IN THE COMMANDED POSITION.

POSSIBLE CAUSES:

1. APU SHUTOFF VALVE
2. ELECTRICAL CIRCUIT PROBLEMS

FAULT ISOLATION:

1 THE APU SHUTOFF VALVE CAN BE BAD OR POWER IS NOT AT THE APU SHUTOFF VALVE.
REMOVE THE AUX POWER CONTROL UNIT, M206, FROM THE E-6 RACK.
INSTALL A JUMPER FROM PIN G5 OF THE SHIPS WIRING TO GROUND.
MAKE SURE THESE CIRCUIT BREAKERS ARE CLOSED:

APU, START - E6 RACK
APU, CONT - E6 RACK
APU, ALT CONT - P11 PANEL
APU, BLEED CONT - P11 PANEL
APU, BLEED PWR - P11 PANEL

PUT THE MAIN BATTERY SWITCH ON THE P5 PANEL TO THE ON POSITION.
PUT THE APU SWITCH ON THE P5 PANEL TO THE START POSITION AND RELEASE TO THE ON POSITION.
MAKE SURE THE LEFT AND RIGHT ENG OFF SWITCH-LIGHTS ARE "OFF".
PUSH THE APU SHUTOFF VALVE SWITCH-LIGHT ON THE P5 PANEL TO THE OPEN POSITION.
DID THE APU SHUTOFF VALVE OPEN?

NO → 21 LOOK AT THE POSITION INDICATION ON THE APU SHUTOFF VALVE.
IS THE APU SHUTOFF VALVE CLOSED AND LOCKED?

YES → 41 UNLOCK THE APU SHUTOFF VALVE IF THE MEL PERMITS.

NO → 22 POWER MAY NOT BE AT THE APU SHUTOFF VALVE.
OPEN THESE CIRCUIT BREAKERS:

11Q23 APU BLEED CONT
11Q22 APU BLEED PWR

DISCONNECT CONNECTOR D1616 FOR THE APU SHUTOFF VALVE.
CLOSE THESE CIRCUIT BREAKERS:

11Q23 APU BLEED CONT
11Q22 APU BLEED PWR

DO A CHECK FOR 115V AC POWER AT PINS 1 AND 3 OF THE ELECTRICAL CONNECTOR.
DID YOU SEE POWER?

NO → 42 THERE IS A PROBLEM IN THE ELECTRICAL CIRCUIT.
REMOVE THE JUMPER AND INSTALL THE AUX POWER CONTROL UNIT.
REPAIR THE ELECTRICAL CIRCUIT (WDM 36-11-41) AND INSTALL CONNECTOR D1616.

YES → 43 THERE IS A PROBLEM IN THE APU SHUTOFF VALVE.
REMOVE THE JUMPER AND INSTALL THE AUX POWER CONTROL UNIT.
REPLACE THE APU SHUTOFF VALVE (AMM 36-11-10/401).

YES → SEE SHEET 2 (BLOCK 2)

EICAS Message APU BLEED VAL Displayed. VALVE Light Illuminated.
Figure 114 (Sheet 1)

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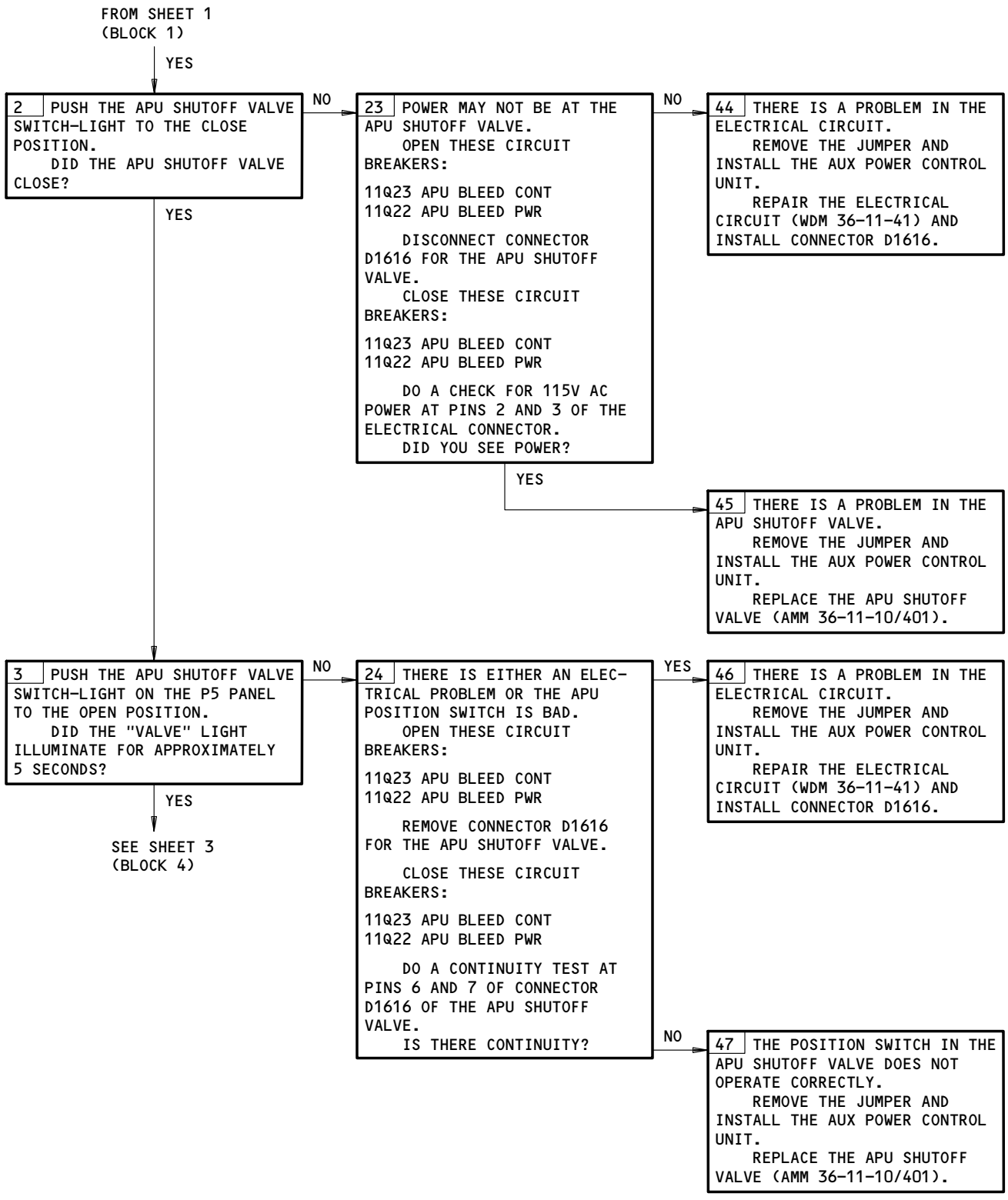

EICAS Message APU BLEED VAL Displayed. VALVE Light Illuminated.
Figure 114 (Sheet 2)

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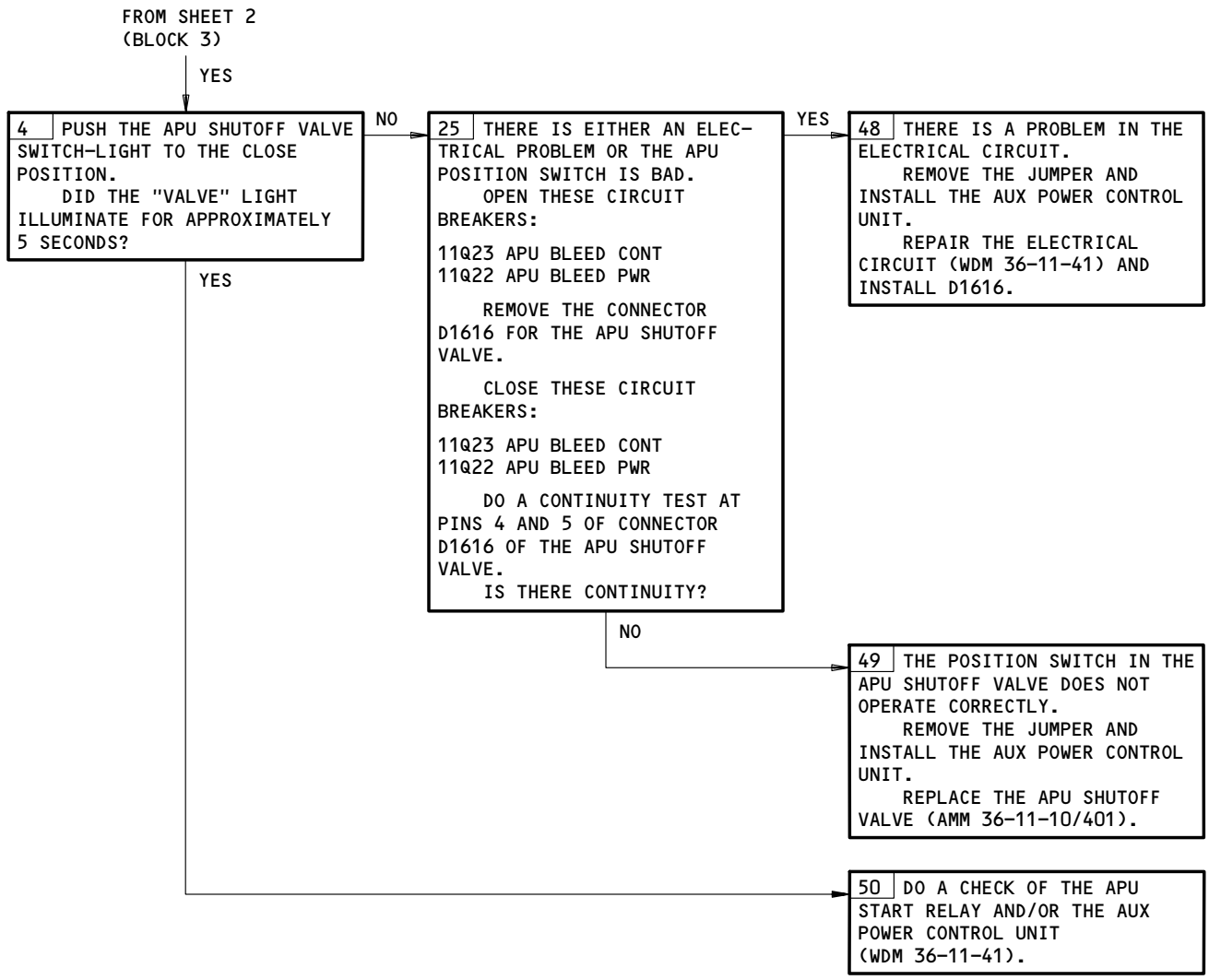

EICAS Message APU BLEED VAL Displayed. VALVE Light Illuminated.
Figure 114 (Sheet 3)

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EICAS MSG "L (R) ENG BLEED OFF" DISPLAYED. ENG BLEED AIR VALVE OFF LIGHT ILLUM WITH ENGINE RUNNING AND SWITCH ON. DUCT PRESSURE ZERO. LEFT CENTER TANK BOOST PUMP "PRESS" LIGHT ILLUM.

PREREQUISITES
NONE

DESCRIPTION:

THERE IS A PROBLEM WITH THE ENGINE SPEED SIGNAL USED BY THE BLEED SYSTEM (AND OTHER SYSTEMS).

POSSIBLE CAUSES:

1. N3 (HP) TACHOMETER TRANSMITTER
2. ELECTRICAL CIRCUIT PROBLEM
3. ENGINE SPEED CARD.

FAULT ISOLATION:

1 REMOVE THE L (R) ENGINE SPEED CARD, M10298 (M10311) (AMM 77-12-03/401).
DISCONNECT THE CONNECTOR D1338 FROM THE N3 (HP) TACHOMETER TRANSMITTER, M10152 (WDM 71-51-21 THRU 71-51-25).
DO A CONTINUITY TEST FROM PINS 1,2 ON CONNECTOR D2996 (D2838), TO PINS 1,2, ON CONNECTOR D1338 (WDM 71-51-21 THRU 71-51-25; 77-12-31).
IS THERE CONTINUITY?

YES → 41 REPLACE THE L (R) N3 (HP) TACHOMETER TRANSMITTER, M10152 (AMM 77-12-02/401).
IF THE PROBLEM CONTINUES, REPLACE THE L (R) ENGINE SPEED CARD, M10298 (M10311) (AMM 77-12-03/401).

NO → 42 REPAIR THE CIRCUIT FROM CONNECTOR D2996 (D2838), TO CONNECTOR D1338 (WDM 71-51-21 THRU 71-51-25; 77-12-31).

EICAS Msg L (R) ENG BLEED OFF Displayed. ENG Bleed Air Valve OFF Light Illum with Engine Running and Switch On. Duct Pressure Zero. Left Center Tank Boost Pump "Press" Light Illum.
Figure 115

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PNEUMATIC INDICATING

COMPONENT	FIG. 102 SHT	QTY	ACCESS/AREA	REFERENCE
CIRCUIT BREAKERS	1		FLT COMPT, P11	
DUCT PRESS IND - POWER, C4221		1	11Q15	*
DUCT PRESS IND - LEFT, C1332		1	11Q16	*
DUCT PRESS IND - RIGHT, C1342		1	11Q24	*
COMPUTER - (REF 31-41-00, FIG. 101)				
EICAS LEFT, M10181				
EICAS RIGHT, M10182				
INDICATOR - DUAL AIR SUPPLY DUCT PRESSURE, YNNN0001	1	1	FLT COMPT, P5, BLEED AIR SUPPLY MODULE, M10259	36-21-02
LIGHT - BLEED, LEFT, YNNL003	1	1	FLT COMPT, P5, BLEED AIR SUPPLY MODULE, M10259	*
LIGHT - BLEED, RIGHT, YNNL004	1	1	FLT COMPT, P5, BLEED AIR SUPPLY MODULE, M10259	*
MODULE - (REF 36-10-00, FIG. 101)				
BLEED AIR SUPPLY, M10259				
SENSOR - LEFT AIR SUPPLY PRECOOLER DISCHARGE TEMPERATURE, TS350	2	1	433KL, HYDRAULIC, FUEL AND ELECTRONIC ACCESS STRUT PANEL	36-22-02
SENSOR - RIGHT AIR SUPPLY PRECOOLER DISCHARGE TEMPERATURE, TS351	2	1	433KR, HYDRAULIC, FUEL AND ELECTRONIC ACCESS STRUT PANEL	36-22-02
SWITCH - LEFT AIR SUPPLY THERMAL OVERTEMPERATURE, S358	2	1	193HL, ECS BAY ACCESS DOOR	36-22-01
SWITCH - RIGHT AIR SUPPLY THERMAL OVERTEMPERATURE, S359	2	1	194ER, ECS BAY ACCESS DOOR	36-22-01
TRANSDUCER - LEFT DUCT PRESSURE, M1089	2	1	193HL, ECS BAY ACCESS DOOR	36-21-01
TRANSDUCER - RIGHT DUCT PRESSURE, M1088	2	1	194ER, ECS BAY ACCESS DOOR	36-21-01

* SEE THE WDM EQUIPMENT LIST

Pneumatic Indicating - Component Index
Figure 101

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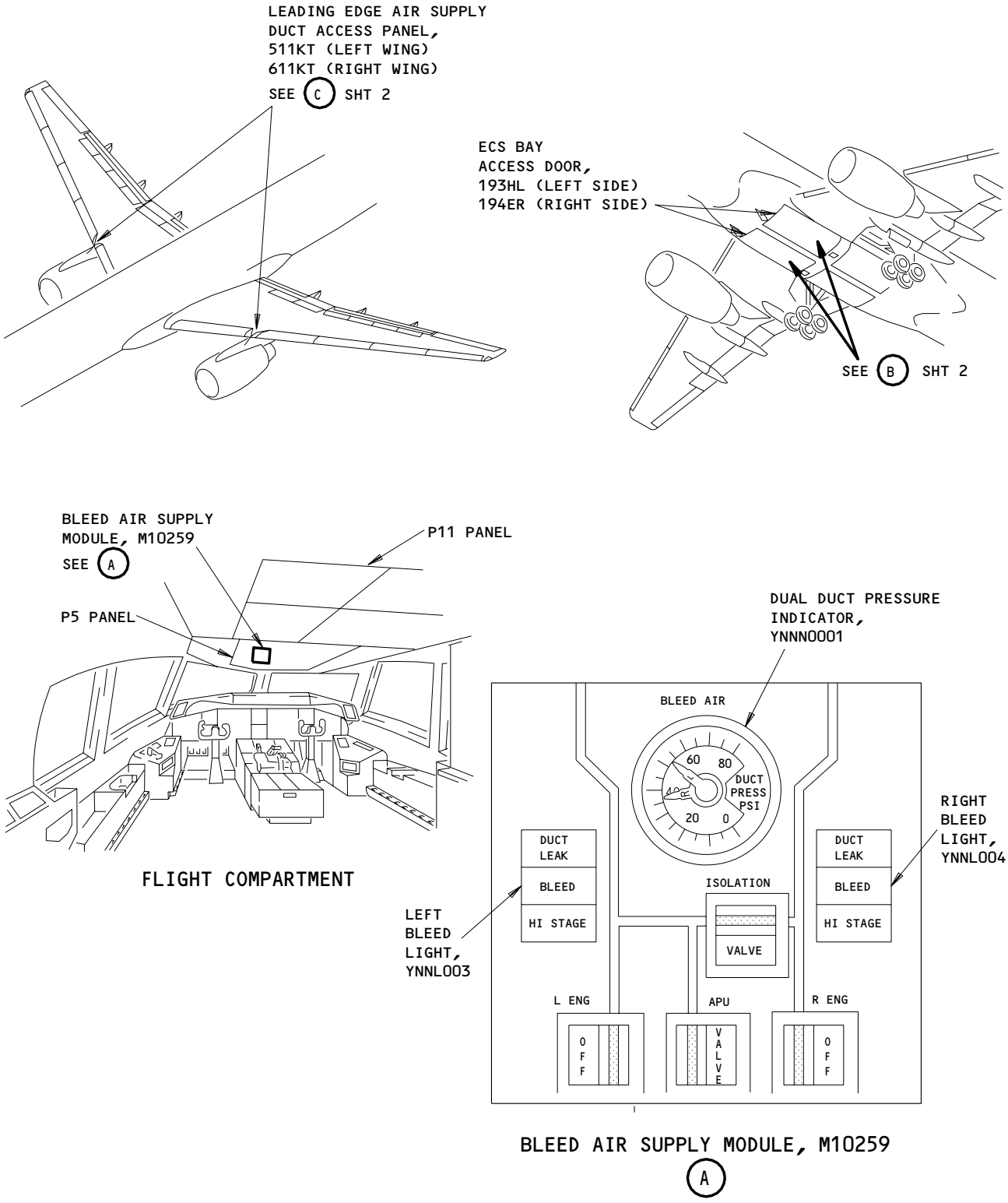

Pneumatic Indicating - Component Location
Figure 102 (Sheet 1)

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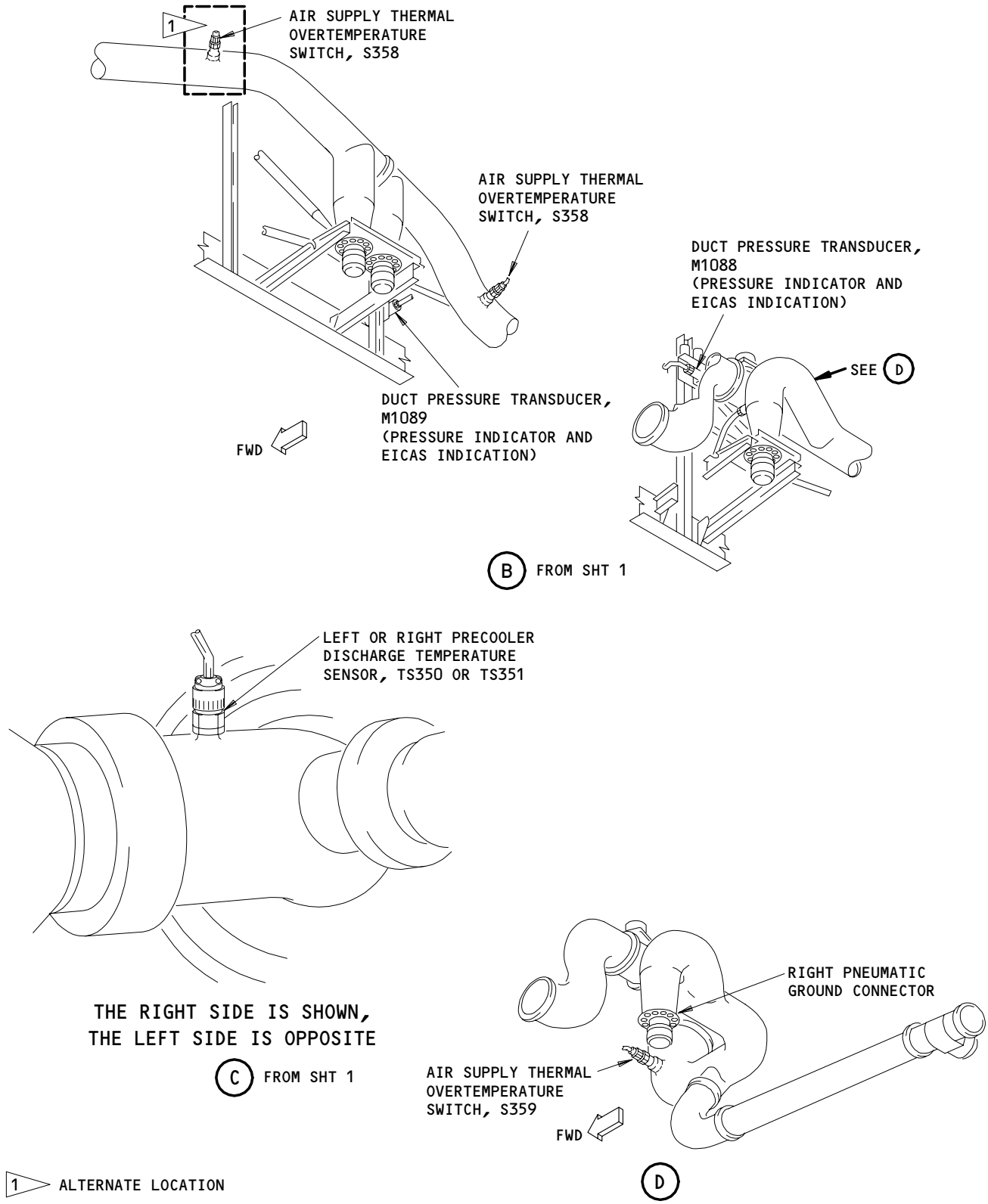

Pneumatic Indicating - Component Location
Figure 102 (Sheet 2)

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WITH THE APU AS SOURCE THE L (R) DUCT PRESS WAS (HIGH/LOW/FLUCTUATES) WITH THE ISOL VALVE OPEN. DUCT PRESS ON THE OTHER SIDE WAS NORM.

PREREQUISITES

MAKE SURE THESE SYSTEMS WILL OPERATE:
EICAS (MM 31-41-00/201)

MAKE SURE THESE CIRCUIT BREAKERS ARE CLOSED:
11B2,11B3,11Q15,11Q16,11Q24

MAKE SURE THE AIRPLANE IS IN THE CONFIGURATION THAT FOLLOWS:
ELECTRICAL POWER IS ON (MM 24-22-00/201)
PNEUMATIC POWER IS ON (MM 36-00-00/201)

1 ON THE RIGHT SIDE PANEL P61, PUSH THE ECS/MSG PUSH-BUTTON.
LOOK AT THE EICAS DUCT PRESSURE INDICATION ON THE LOWER EICAS DISPLAY.
IS THE DUCT PRESSURE ON THE EICAS DISPLAY THE SAME AS THE DUCT PRESSURE ON THE DUCT PRESSURE INDICATOR?

YES → 21 REPLACE THE L (R) DUCT PRESSURE TRANSDUCERS M1089 (M1088)(MM 36-21-01/401).

NO → 22 REPLACE THE DUCT PRESSURE INDICATOR YNNN001 (MM 36-21-02/401).

With the APU As Source the L (R) Duct Press was (High/Low/Fluctuates) With the Isol Valve Open. Duct Press On the Other Side Was Norm.
Figure 103

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