INDICATING - ADJUSTMENT/TEST

EFFECTIVITY: ALL

1. General

A. This section gives the procedures to do the operational and functional checks of the air-bleed-system.

B. The procedures in this section are given in the sequence below. The tasks identified with (♦) are part of the Scheduled Maintenance Requirements Document (SMRD).

TASK NUMBER	*DESCRIPTION*	*EFFECTIVITY*
36-20-00-700-801-A ♦	BLEED VALVE INDICATION FUNCTION - OPERATIONAL CHECK	ALL
36-20-00-700-802-A ♦	DIFFERENTIAL PRESSURE PROTECTION FUNCTION - FUNCTIONAL CHECK	AIRCRAFT WITH DIFFERENTIAL PRESSURE SWITCH ACTIVATED OR PRE-MOD SB 145-36-A018
36-20-00-700-803-A ♦	OVERTEMPERATURE WARNING CIRCUIT - FUNCTIONAL CHECK	ALL

TASK 36-20-00-700-801-A
EFFECTIVITY: ALL

2. BLEED VALVE INDICATION FUNCTION - OPERATIONAL CHECK

A. General

(1) This operational check is applicable to the LH and RH air bleed systems.

B. References

REFERENCE	*DESIGNATION*
AMM MPP 06-43-00/100	- COMPONENT LOCATION
AMM TASK 20-13-02-000-801-A/400	RELAYS - REMOVAL (TYPICAL)
AMM TASK 20-13-02-400-801-A/400	RELAYS - INSTALLATION (TYPICAL)
AMM TASK 20-40-01-860-801-A/200	ENERGIZATION OF THE AIRCRAFT WITH AN EXTERNAL POWER SOURCE
AMM TASK 25-12-08-000-801-A/400	-
AMM TASK 25-12-08-400-801-A/400	-
AMM TASK 30-11-15-700-801-A/500	WING ANTI-ICING VALVE COMMAND RELAY - OPERATIONAL CHECK
AMM TASK 36-11-07-000-801-A/400	HIGH-STAGE PRESSURE SWITCH - REMOVAL
AMM TASK 36-11-07-400-801-A/400	HIGH-STAGE PRESSURE SWITCH - INSTALLATION
AMM TASK 71-00-01-910-801-A/200	ENGINE START PROCEDURE (NORMAL)
AMM TASK 71-00-01-910-804-A/200	ENGINE STOP PROCEDURE
WM 30-10-50	-

C. Zones and Accesses

ZONE	*PANEL/DOOR*	*LOCATION*
412	412BT	LH engine upper cowling
422	422BT	RH engine upper cowling

D. Tools and Equipment

Not Applicable

E. Auxiliary Items

ITEM	*DESCRIPTION*	*PURPOSE*	*QTY*
Commercially available	Ladder	To get access to the work area	2

F. Consumable Materials

Not Applicable

G. Expandable Parts

Not Applicable

H. Persons Recommended

QTY	*FUNCTION*	*PLACE*
1	Does the task	In the cockpit and outside the aircraft, at the two engines

I. Preparation

SUBTASK 841-002-A

(1) If the jumper is in the engine, do as follows (Refer to Figure 501, Sheet 2):

(a) Remove access panels 412BT and 422BT (AMM MPP 06-43-00/100).

(b) Disconnect the electrical connectors at the high-stage pressure switch (AMM TASK 36-11-07-000-801-A/400).

(c) Put a jumper between pins B and C of the electric connector of the aircraft electrical harness, disconnected in step (b).

(d) Energize the aircraft (AMM TASK 20-40-01-860-801-A/200).

CAUTION: DO NOT DO THE ANTI-ICING SYSTEM TEST DURING THE OPERATIONAL TEST OF THE AIR BLEED SYSTEM (SUBTASK 36-00-00-710-001-A00), DAMAGE CAN OCCUR BECAUSE THE WING A/I VLV CMD RELAY IS REMOVED.

(e) Make sure that the MFD is on and set the ECS page.

(f) Go to step (3).

(2) If the jumper is in the relay box, do as follows (Refer to Figure 501, Sheet 3 and Sheet 4):

WARNING: AFTER THE JUMPERS ARE INSTALLED AND WHILE THE AIRCRAFT IS ENERGIZED, DO NOT TOUCH THE RH AUXILIARY RELAY SUPPORT. IT CAN CAUSE INJURY TO PERSONS.

(a) Remove the RH complementing console, referred to as panel 224ERW (AMM TASK 25-12-08-000-801-A/400 RH Complementing Console - Removal).

(b) On the ICE AND RAIN PROTECTION control panel, on the overhead panel, open the WING circuit breaker.

(c) Remove relay K0528 (WING A/I VLV CMD) installed on the RH auxiliary relay support (AMM TASK 20-13-02-000-801-A/400 Relays - Removal) (WM 30-10-50).

(d) Put a jumper between contact pins A2 and A1 of socket relay XK0528.

(e) Put a jumper between contact pins C2 and C3 of socket relay XK0528.

(f) Put a jumper between contact pins D2 and D1 of socket relay XK0528.

(g) On the ICE AND RAIN PROTECTION control panel, on the overhead panel, close the WING circuit breaker.

(h) Energize the aircraft (AMM TASK 20-40-01-860-801-A/200).

CAUTION: DO NOT DO THE ANTI-ICING SYSTEM TEST DURING THE OPERATIONAL TEST OF THE AIR BLEED SYSTEM (SUBTASK 36-00-00-710-001-A00), DAMAGE CAN OCCUR BECAUSE THE WING A/I VLV CMD RELAY IS REMOVED.

(i) Make sure that the MFD is on and set the ECS page.

(3) Do the engine start procedure (AMM TASK 71-00-01-910-801-A/200).

(4) Set the OVERRIDE knob on the ICE DETECTOR panel to AUTO position.

(5) On the overhead circuit breaker panel, open these circuit breakers and attach DO-NOT-CLOSE tags to them:

- AIR/GND A (Location tip: DC BUS 1 / LDG GEAR / AIR/GND A).
- AIR/GND B (Location tip: ESSENTIAL DC BUS 1 / LDG GEAR / AIR/GND B).
- AIR/GND C (Location tip: DC BUS 2 / LDG GEAR / AIR/GND C).
- AIR/GND D (Location tip: ESSENTIAL DC BUS 2 / LDG GEAR / AIR/GND D).

(6) The BLD 1/2 VLV CLSD advisory message must come into view on the EICAS.

J. Operationally Check Bleed Valve Indicating Function (Figure 501)

SUBTASK 710-002-A

(1) Do the test as follows:

(a) On the AIR CONDITIONING/PNEUMATIC control panel on the overhead panel, push the BLEED 1 pushbutton.

Result:

1 The BLEED 1 pushbutton light goes off.

(b) On the AIR CONDITIONING/PNEUMATIC control panel on the overhead panel, make sure that the BLEED 2 pushbutton is released (striped bar light on).

(c) On the AIR CONDITIONING/PNEUMATIC control panel on the overhead panel, move the XBLEED rotary switch to the OPEN position.

(d) On the AIR CONDITIONING/PNEUMATIC control panel on the overhead panel, push the PACK 1 and PACK 2 pushbuttons.

Result:

1 The PACK 1 and PACK 2 pushbutton lights go off.

(e) Put the LH thrust lever (LH engine) to position ± 90% N2 (65°).

(f) Stop for two minutes and look at the Bleed Temp indicator on the MFD.

Result:

1 The Bleed Temp Indicator on the MFD must be at the green scale (system operational).

NOTE: If the bleed system is not operational, refer to the related procedure in the Fault Isolation Manual (FIM).

(g) Put the LH thrust lever (LH engine) to the idle position.

(h) On the AIR CONDITIONING/PNEUMATIC control panel on the overhead panel, release the BLEED 1 pushbutton.

Result:

1 The BLEED 1 pushbutton light comes on.

(i) On the AIR CONDITIONING/PNEUMATIC control panel on the overhead panel, push the BLEED 2 pushbutton.

Result:

1 The BLEED 2 pushbutton light goes off.

(j) On the AIR CONDITIONING/PNEUMATIC control panel on the overhead panel, make sure that the XBLEED rotary switch is at the OPEN position.

(k) On the AIR CONDITIONING/PNEUMATIC control panel on the overhead panel, make sure that the PACK 1 and PACK 2 lights stay off.

(l) Put the RH thrust lever (RH engine) to position ± 90% N2 (65°).

(m) Stop for two minutes and look at the Bleed Temp indicator on the MFD.

Result:

1 The Bleed Temp Indicator on the MFD must be at the green scale (system operational).

NOTE: If the bleed system is not operational, refer to the related procedure in the Fault Isolation Manual (FIM).

(n) Put the RH thrust lever (RH engine) to the idle position.

(o) On the AIR CONDITIONING/PNEUMATIC control panel on the overhead panel, release PACK 1 and PACK 2 pushbuttons.

Result:

1 The PACK 1 and PACK 2 pushbutton lights come on.

(p) On the AIR CONDITIONING/PNEUMATIC control panel on the overhead panel, move the XBLEED rotary switch to the AUTO position.

(q) On the AIR CONDITIONING/PNEUMATIC control panel on the overhead panel, release the BLEED 2 pushbutton.

Result:

1 The BLEED 2 pushbutton light comes on.

K. Follow-on

SUBTASK 842-002-A

(1) Stop the engine (AMM TASK 71-00-01-910-804-A/200).

(2) Set the OVERRIDE knob on the ICE DETECTOR panel to ALL position.

(3) On the overhead circuit breaker panel, close these circuit breakers and remove the DO-NOT-CLOSE tags from them:

- AIR/GND A (Location tip: DC BUS 1 / LDG GEAR / AIR/GND A).
- AIR/GND B (Location tip: ESSENTIAL DC BUS 1 / LDG GEAR / AIR/GND B).
- AIR/GND C (Location tip: DC BUS 2 / LDG GEAR / AIR/GND C).

- AIR/GND D (Location tip: ESSENTIAL DC BUS 2 / LDG GEAR / AIR/GND D).

(4) If the jumper is in the engine, remove it. Refer to Figure 501, Sheet 2.

WARNING: DO NOT TOUCH THE DUCTS OR COMPONENTS OF THE AIR BLEED SYSTEM IMMEDIATELY AFTER THE SYSTEM IS TURNED OFF. THE HIGH AIR TEMPERATURE CAN CAUSE INJURY TO YOU.

(a) Remove the jumper from pins B and C of the electric connector of the aircraft electrical harness.

(b) Connect the electric connectors to the High-Stage Pressure Switch (AMM TASK 36-11-07-400-801-A/400).

(c) Install access panels 412BT and 422BT (AMM MPP 06-43-00/100).

(5) If the jumper is in the relay box, remove it. Refer to Figure 501, Sheet 3 and Sheet 4.

WARNING: BEFORE YOU REMOVE THE JUMPERS AND INSTALL THE WING A/I VLV CMD RELAY, DEENERGIZE THE AIRCRAFT. THIS IS TO PREVENT INJURY TO PERSONS AND/OR DAMAGE TO THE RH AUXILIARY RELAY SUPPORT.

(a) On the ICE AND RAIN PROTECTION control panel, on the overhead panel, open the WING circuit breaker.

(b) Remove the jumper installed between contact pins A2 and A1, the jumper installed between pins C2 and C3, and the jumper installed between contact D2 and D1 of socket relay XK0528.

(c) Install relay K0528, WING A/I VLV CMD, on the RH auxiliary relay support (AMM TASK 20-13-02-400-801-A/400 Relays - Installation) (WM 30-10-50).

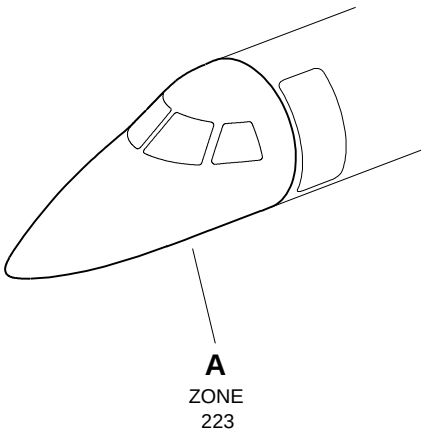
(d) On the ICE AND RAIN PROTECTION control panel, on the overhead panel, close the WING circuit breaker.

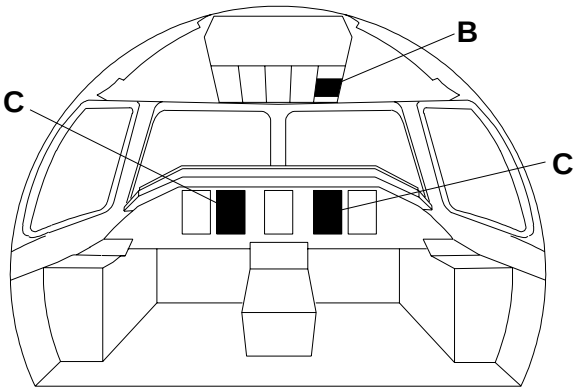
(e) Install the RH complementing console, panel 224ERW (AMM TASK 25-12-08-400-801-A/400 RH Complementing Console - Installation).

(f) Do an operational test of the Wing Thermal Anti-Icing System (AMM TASK 30-11-15-700-801-A/500).

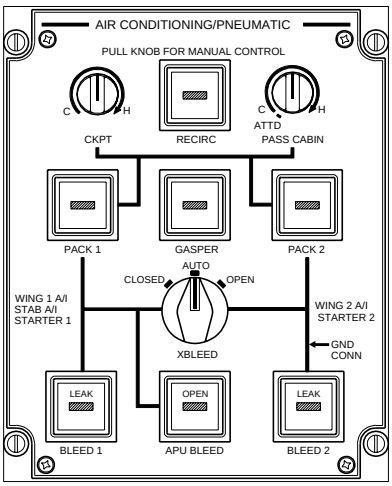
EFFECTIVITY: ALL

Operational Check of the Bleed Valve Indicating Function
Figure 501 - Sheet 1

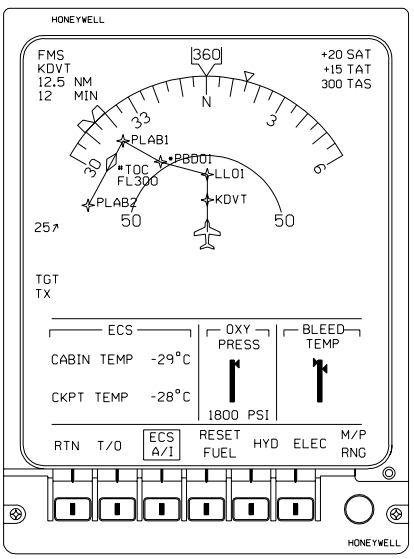




DET. A



DET. B



DET. C

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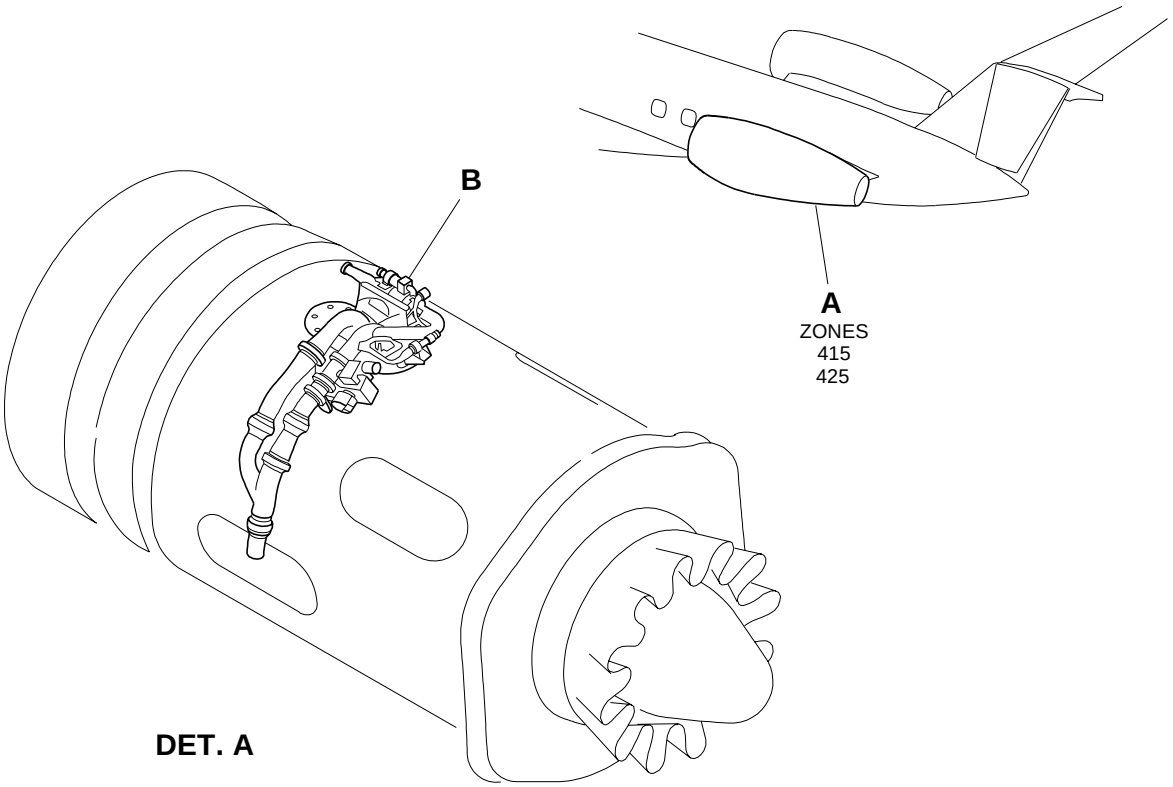
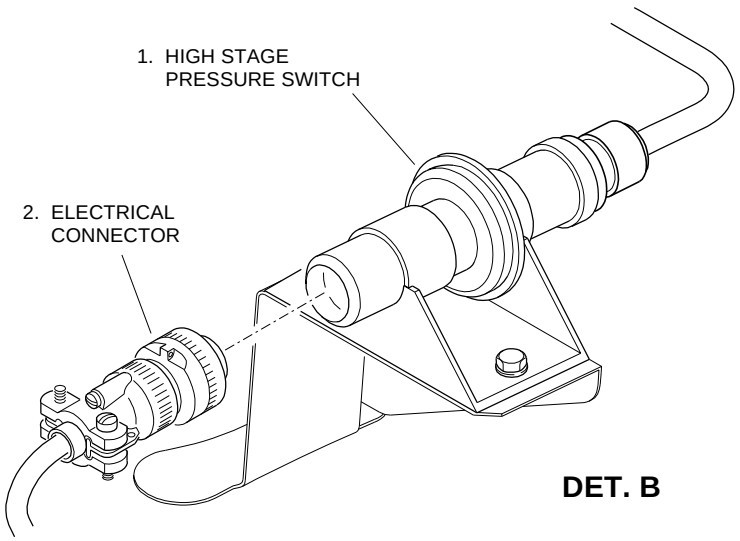
EFFECTIVITY: ALL

Operational Check of the Bleed Valve Indicating Function
Figure 501 - Sheet 2





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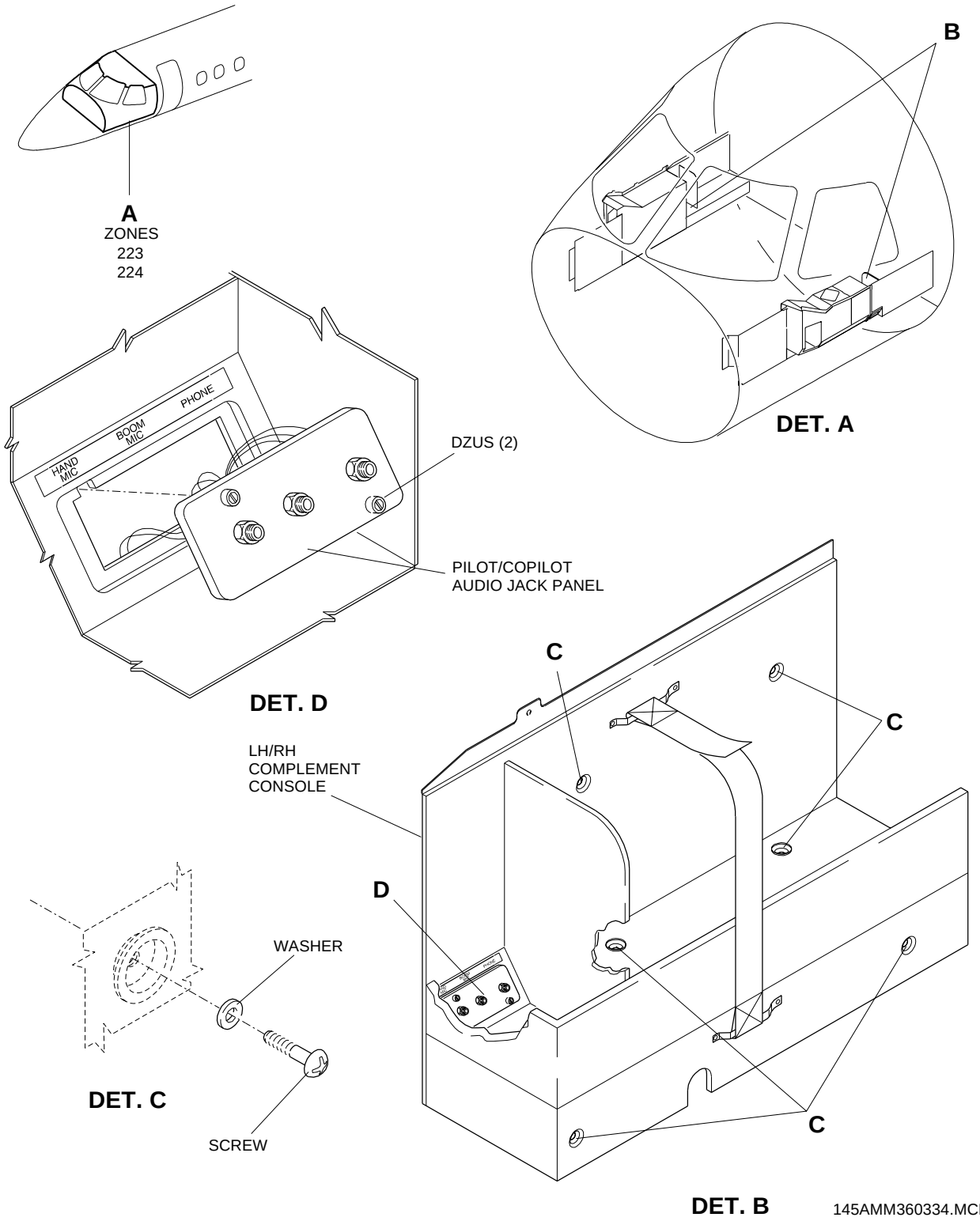
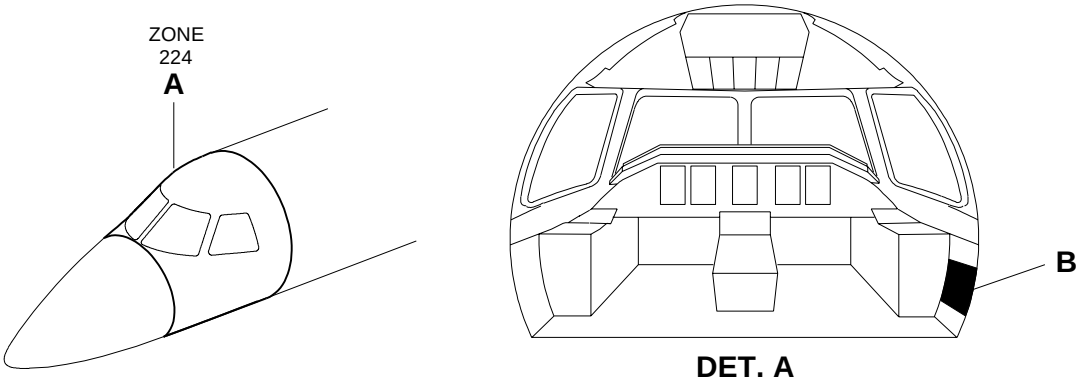
EFFECTIVITY: ALL

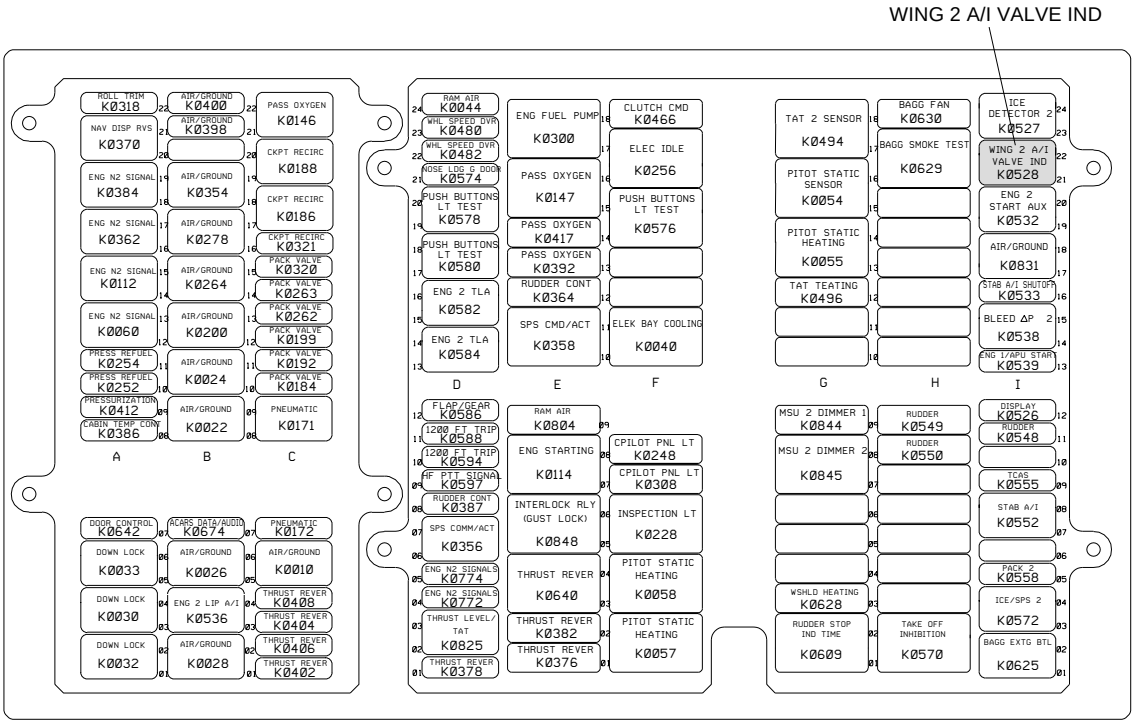
Operational Check of the Bleed Valve Indicating Function
Figure 501 - Sheet 3



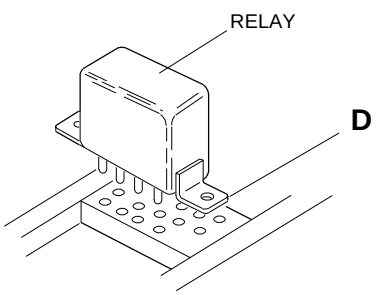
EFFECTIVITY: ALL

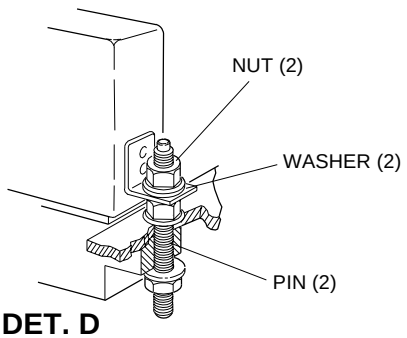
Operational Check of the Bleed Valve Indicating Function
Figure 501 - Sheet 4





RIGHT RELAY
SUPPORT





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TASK 36-20-00-700-802-A
EFFECTIVITY: AIRCRAFT WITH DIFFERENTIAL PRESSURE SWITCH ACTIVATED OR PRE-MOD SB 145-36-A018

3. DIFFERENTIAL PRESSURE PROTECTION FUNCTION - FUNCTIONAL CHECK

A. General

(1) This functional check is applicable to the LH and RH air bleed systems.

(2) The SB 145-36-A018 deactivates the differential pressure switch. The SB 145-36-0018 deactivates and removes the differential pressure switch. This test is applicable only to aircraft with differential pressure switch activated. You must not do this procedure for aircraft with differential pressure switch deactivated.

B. References

REFERENCE	*DESIGNATION*
AMM MPP 06-43-00/100	- COMPONENT LOCATION
AMM TASK 20-13-02-000-801-A/400	RELAYS - REMOVAL (TYPICAL)
AMM TASK 20-13-02-400-801-A/400	RELAYS - INSTALLATION (TYPICAL)
AMM TASK 20-40-01-860-801-A/200	ENERGIZATION OF THE AIRCRAFT WITH AN EXTERNAL POWER SOURCE
WM 36-11-50	-
WM 36-11-51	-

C. Zones and Accesses

ZONE	*PANEL/DOOR*	*LOCATION*
414	414DB	LH pylon
424	424DB	RH pylon

D. Tools and Equipment

ITEM	*DESCRIPTION*	*PURPOSE*	*QTY*
GSE 028	Nitrogen Service Regulator	To regulate the pressure supplied to the system	
Commercially available	Nitrogen cylinder - To supply 250 psi	To pressurize the bleed air line	
Commercially available	Pressure Gage, 0 to 160 psi	To measure the pressure	
GSE 050	Multimeter - Digital	To measure the voltage	
GSE 044	Headset - Ramp Handling	To communication	

E. Auxiliary Items

ITEM	*DESCRIPTION*	*PURPOSE*	*QTY*
Commercially available	Ladder	To get access to the work area	1

F. Consumable Materials

Not Applicable

G. Expandable Parts

Not Applicable

H. Persons Recommended

QTY	*FUNCTION*	*PLACE*
1	A - Does the task	Inside and outside the aircraft
1	B - Helps technician A	Inside and outside the aircraft

I. Preparation

SUBTASK 841-003-A

(1) Open access panels 414DB and 424DB (AMM MPP 06-43-00/100).

(2) On the overhead circuit breaker panel, make sure that these circuit breakers are closed:

- HSV 1 (Location tip: DC BUS 1 / AIR COND/PNEU / HSV1).
- HSV 2 (Location tip: DC BUS 2 / AIR COND/PNEU / HSV2).

(3) Remove BLEED ΔP relays K0537 and K0538 (AMM TASK 20-13-02-000-801-A/400).

(4) Energize the aircraft (AMM TASK 20-40-01-860-801-A/200).

J. Functionally Check Differential Pressure Protection Function (Figure 502)

SUBTASK 720-002-A

(1) Do the steps below for the LH side.

(2) Remove the tube (1).

(3) Install the tee (2) and hose with a pressure gage (3).

(4) Connect the nitrogen service regulator (GSE 028) to the nitrogen cylinder (4).

(5) Connect the nitrogen service regulator to the tee (2).

(6) Slowly apply pressure and stop until the pressure stabilizes at 15 psi.

(7) On the overhead panel, Air Conditioning/Pneumatic, set pushbuttons BLEED 1 and BLEED 2 to on.

(8) With a multimeter, make sure that there is 28 V DC at pins X1/X2 of relay K0537 (WM 36-11-50) for the LH side and/or relay K0538 (WM 36-11-51) for the RH side.

(9) Depressurize the LH side.

(10) Remove the pressure gage (3) and tee (2).

(11) Install the tube (1).

(12) Do steps (2) to (8) for the RH side.

(13) Depressurize the RH side.

(14) Remove the pressure gage (3) and tee (2).

(15) Install the tube (1).

K. Follow-on

SUBTASK 842-003-A

(1) Deenergize the aircraft (AMM TASK 20-40-01-860-801-A/200).

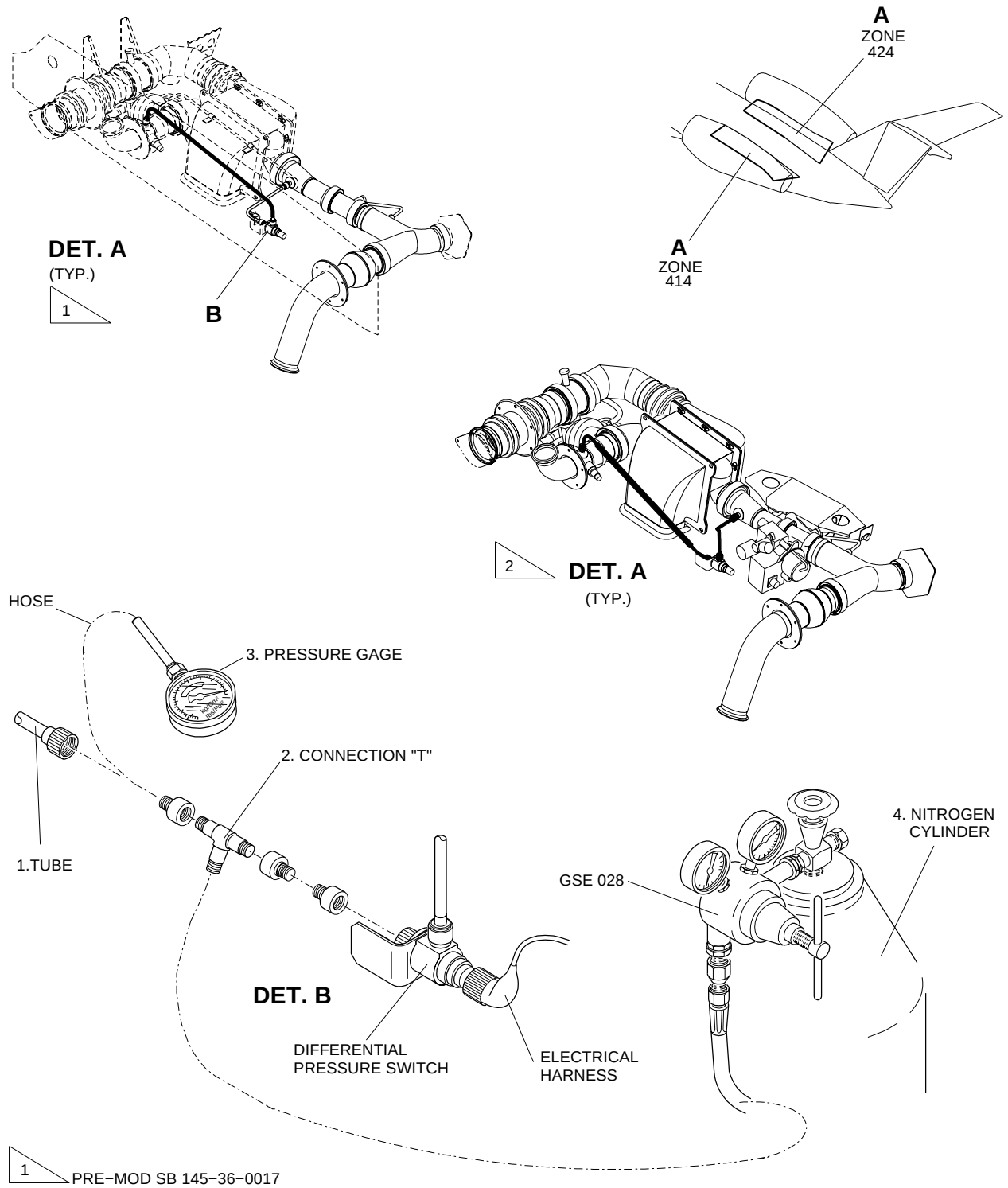
(2) Install BLEED ΔP relays K0537 and K0538 (AMM TASK 20-13-02-400-801-A/400).

(3) Close access panels 414DB and 424DB (AMM MPP 06-43-00/100).

EFFECTIVITY: AIRCRAFT WITH DIFFERENTIAL PRESSURE SWITCH ACTIVATED OR PRE-MOD SB 145-36-A018

Functional Check of the Differential Pressure Protection Function

Figure 502



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TASK 36-20-00-700-803-A
EFFECTIVITY: ALL

4. OVERTEMPERATURE WARNING CIRCUIT - FUNCTIONAL CHECK

A. General

(1) This functional check is applicable to the LH and RH air-bleed-system warning circuits.

B. References

REFERENCE	*DESIGNATION*
AMM TASK 20-40-01-860-801-A/200	ENERGIZATION OF THE AIRCRAFT WITH AN EXTERNAL POWER SOURCE
AMM TASK 25-51-04-000-801-A/400	BAGGAGE-COMPARTMENT FLOOR LINING - REMOVAL
AMM TASK 25-51-04-400-801-A/400	BAGGAGE-COMPARTMENT FLOOR LINING - INSTALLATION

C. Zones and Accesses

ZONE	*PANEL/DOOR*	*LOCATION*
270	271BF	Baggage-compartment floor panel

D. Tools and Equipment

ITEM	*DESCRIPTION*	*PURPOSE*	*QTY*
GSE 044	Headset - Ramp Handling	For communication	

E. Auxiliary Items

ITEM	*DESCRIPTION*	*PURPOSE*	*QTY*
Commercially available	Ladder	To get access to the work area	1

F. Consumable Materials

Not Applicable

G. Expandable Parts

Not Applicable

H. Persons Recommended

QTY	*FUNCTION*	*PLACE*
1	A - Does the task	Location where the temperature sensor is installed
1	B - Helps technician A	Cockpit

I. Preparation

SUBTASK 841-004-A

(1) Energize the aircraft (AMM TASK 20-40-01-860-801-A/200).

(2) Remove the baggage-compartment floor lining and panel 271BF (AMM TASK 25-51-04-000-801-A/400).

J. Functionally Check the Overtemperature Warning Circuit (Figure 503)

SUBTASK 720-003-A

(1) Remove the connectors (2) P1933 and P1934 from the temperature sensor (1).

(2) On the overhead panel, Air Conditioning/Pneumatic, set the BLEED 1 and BLEED 2 pushbuttons to ON.

(3) Select the ECS page on the MFD display.

(4) Do the check for the LH side as follows:

(a) Install a resistor with resistance R220 Ω on the connector P1933 at pins 1, 2, 3, and 4.

NOTE: There is no power specified for the resistor.

(b) On the MFD, the BLEED TEMP bug will be in the red scale for the LH side.

Result:

1 The EICAS display shows the BLD 1 OVTEMP warning message.

2 The master WARNING lights flash.

(c) Push the master WARNING light.

Result:

1 The master WARNING lights go off.

(d) Remove the resistor from the connector.

Result:

1 On the EICAS display, the BLD 1 OVTEMP warning message goes out of view.

(5) Do the check for the RH side as follows:

(a) Install a resistor with resistance of R220 Ω on the connector P1934 at pins 1, 2, 3, and 4.

NOTE: There is no power specified for the resistor.

(b) On the MFD, the BLEED TEMP bug will be in the red scale on the RH side.

Result:

1 The EICAS display shows the BLD 2 OVTEMP warning message.

2 The master WARNING lights flash.

(c) Push on of the master WARNING lights.

Result:

1 The master WARNING lights go off.

(d) Remove the resistor from the connector.

Result:

1 On the EICAS display, the BLD 2 OVTEMP warning message goes out of view.

(6) On the overhead panel, Air Conditioning/Pneumatic, set the BLEED 1 and BLEED 2 pushbuttons to off.

(7) Install the connectors in the outlet temperature sensors.

K. Follow-on

SUBTASK 842-004-A

(1) Deenergize the aircraft (AMM TASK 20-40-01-860-801-A/200).

(2) Install the baggage-compartment floor lining, as applicable (AMM TASK 25-51-04-400-801-A/400).

EFFECTIVITY: ALL

Functional Check of the Overtemperature Warning Circuit
Figure 503