ENGINE BLEED VALVE - ADJUSTMENT/TEST

EFFECTIVITY: AIRCRAFT EQUIPPED WITH PRESSURE REGULATOR SHUT-OFF VALVE

1. General

A. This section gives the procedures to do the functional / operational test of the engine bleed valves.

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*
36-11-05-700-801-A	ENGINE BLEED VALVES - FUNCTIONAL TEST	AIRCRAFT EQUIPPED WITH PRESSURE REGULATOR SHUT-OFF VALVE
36-11-05-700-802-A	ENGINE BLEED VALVES - OPERATIONAL TEST	AIRCRAFT EQUIPPED WITH PRESSURE REGULATOR SHUT-OFF VALVE
36-11-05-700-804-A	Engine Bleed Valves - Functional Test	AIRCRAFT EQUIPPED WITH PRESSURE REGULATOR SHUT-OFF VALVE

TASK 36-11-05-700-801-A
EFFECTIVITY: AIRCRAFT EQUIPPED WITH PRESSURE REGULATOR SHUT-OFF VALVE

2. ENGINE BLEED VALVES - FUNCTIONAL TEST

A. General

(1) This task gives the procedure to do the check on the engine bleed valves for correct outlet pressure in the LH and RH systems.

B. References

REFERENCE	*DESIGNATION*
AMM MPP 06-43-00/100	- COMPONENT LOCATION
AMM MPP 71-00-00/200	- MAINTENANCE PRACTICES
AMM TASK 20-40-01-860-801-A/200	ENERGIZATION OF THE AIRCRAFT WITH AN EXTERNAL POWER SOURCE
AMM TASK 30-00-00-700-802-A/500	ANTI-ICING SYSTEM - OPERATIONAL TEST
AMM TASK 36-00-00-700-803-A/500	AIR BLEED SYSTEM - OPERATIONAL TEST

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 387	Hose and manometer assembly	To measure the pressure in the servo line duct.	
Commercially available	Analogical Pressure Gauges, 0 to 150 psi	To measure the pressure in the system.	
Commercially available	Stopwatch	To measure the time in which the A/ICE system can be on in the ground operation.	

E. Auxiliary Items

ITEM	*DESCRIPTION*	*PURPOSE*	*QTY*
Commercially available	Ladder	To get access to the work area	2
Commercially available	High Temperature Flexible Hose - Fitting and flared according to AS4395-4	To install the pressure gauges at the servo line ports.	1

F. Consumable Materials

Not Applicable

G. Expandable Parts

Not Applicable

H. Persons Recommended

QTY	*FUNCTION*	*PLACE*
1	A - Prepares the aircraft for this task	Inside the aircraft
1	B - Does digital reading on the gauges	Outside the aircraft

I. Preparation (Figure 501)

SUBTASK 841-002-A

(1) Do these steps for the LH and RH bleed systems.

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

(b) Disconnect the caps (2) from the ports (1).

(c) Connect hoses with pressure gauges to the ports (1) of the servo lines.

NOTE: The hoses for the test must have a length of approximately 5,000 mm (196.85 in) and their diameter must not be greater than 6.35 mm (¼ in).

J. Functionally Test the Engine Bleed Valve (Figure 501)

SUBTASK 720-002-A

WARNING:
- **DO ALL ASSEMBLIES BEFORE YOU START THIS TASK.**
- **USE PRECAUTIONS AND OBEY OPERATION LIMITATIONS FOR THE ENGINE GROUND OPERATION DURING THE AIRCRAFT MAINTENANCE(AMM MPP 71-00-00/200).**
- **DO NOT TOUCH THE DUCTS OR COMPONENTS OF THE ANTI-ICING SYSTEM IMMEDIATELY AFTER THE SYSTEM IS TURNED OFF. THE HIGH AIR TEMPERATURE CAN CAUSE INJURY TO PERSONS.**

(1) Do the operational test of the Anti-Icing System (AMM TASK 30-00-00-700-802-A/500) and at the same time:

(a) Read the pressures on the pressure gauges connected to the port (1) of the LH and RH servo lines.

Result:

1 The pressure must be 65 ± 7 psig.

(2) If the pressure is not in the specified range, do the operational test of the air bleed system (AMM TASK 36-00-00-700-803-A/500), and do the troubleshooting again.

(3) If the pressure is in the above specified range, complete the task as follows.

K. Follow-on (Figure 501)

SUBTASK 842-002-A

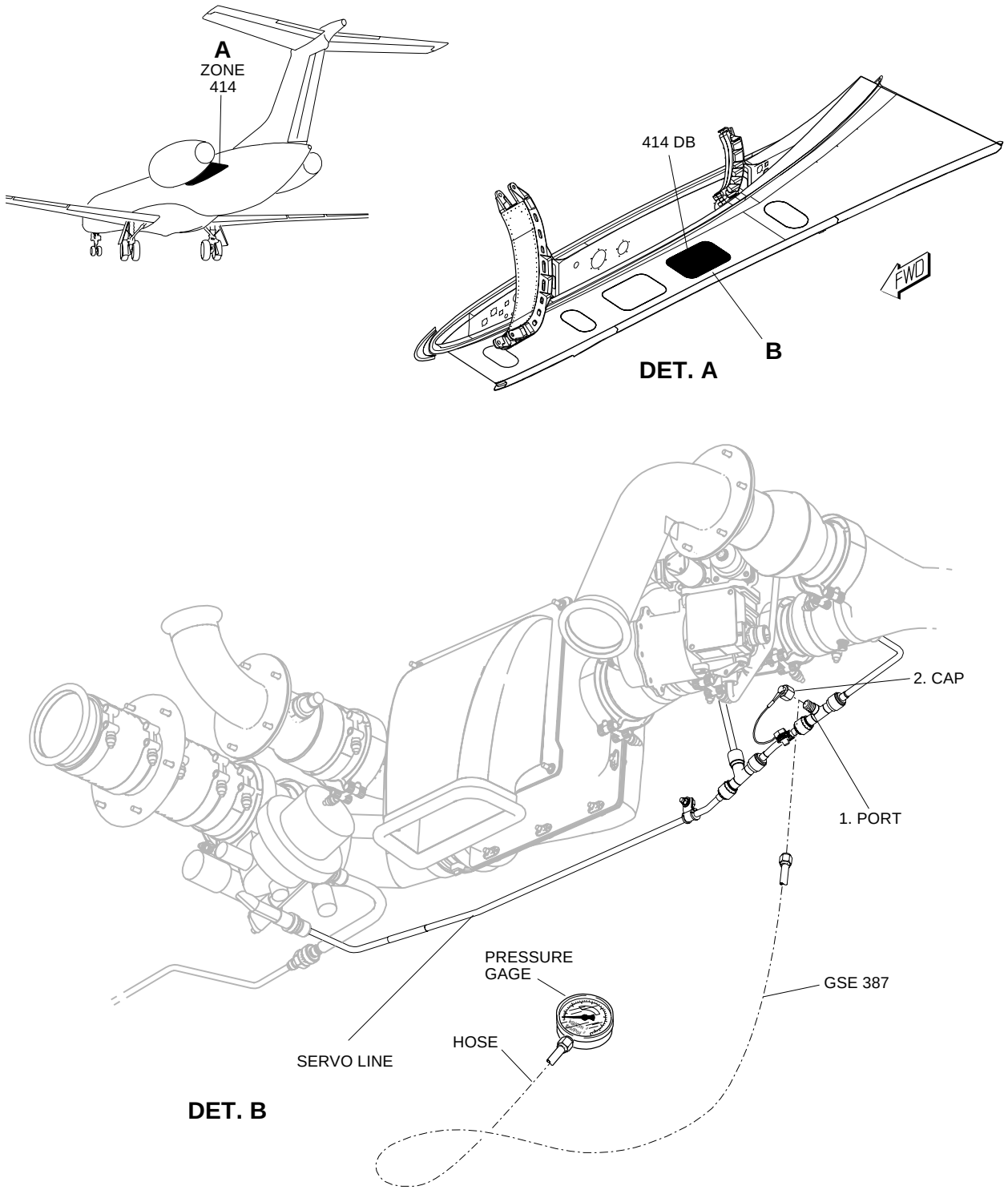
(1) De-energize the aircraft AMM TASK 20-40-01-860-801-A/200.

(2) Disconnect the hoses from the ports (1) of the servo lines.

(3) Connect the caps (2) to the ports (1) and torque to 135 to 150 lb.in.

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

EFFECTIVITY: AIRCRAFT EQUIPPED WITH PRESSURE REGULATOR SHUT-OFF VALVE
Functional Test - Engine Bleed Valve
Figure 501



145AMM360241.MCE B

TASK 36-11-05-700-802-A
EFFECTIVITY: AIRCRAFT EQUIPPED WITH PRESSURE REGULATOR SHUT-OFF VALVE

3. ENGINE BLEED VALVES - OPERATIONAL TEST

A. General

(1) This task gives the procedure to do the check on the engine bleed valves for the correct position of the switch, as related to the indication message.

B. References

REFERENCE	*DESIGNATION*
AMM MPP 71-00-00/200	- MAINTENANCE PRACTICES
AMM TASK 49-10-00-910-802-A/200	APU - START
AMM TASK 49-10-00-910-803-A/200	APU - SHUTDOWN
AMM TASK 49-13-00-910-802-A/200	APU - START
AMM TASK 49-13-00-910-803-A/200	APU - SHUTDOWN
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

C. Zones and Accesses

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

D. Tools and Equipment

Not Applicable

E. Auxiliary Items

Not Applicable

F. Consumable Materials

Not Applicable

G. Expandable Parts

Not Applicable

H. Persons Recommended

QTY	*FUNCTION*	*PLACE*
1	A - Prepares the aircraft for this task	Inside the aircraft

I. Preparation (Figure 502)

SUBTASK 841-003-A

(1) Start the APU (AMM TASK 49-10-00-910-802-A/200 for APU T-62T-40C11 or AMM TASK 49-13-00-910-802-A/200 for APU T-62T-40C14).

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

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

(4) Make sure that the LH and RH thrust levers in the IDLE position.

(5) On the overhead circuit breaker panel, open these circuit breakers and put 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).

(6) Make sure that the BLEED 1/2 VLV CLSD and PACK 1/2 VLV CLSD messages are on the EICAS.

(7) On the AIR CONDITIONING/PNEUMATIC control panel, push APU BLEED pushbutton (light go on).

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

J. Operational Test the Engine Bleed Valve (Figure 502)

SUBTASK 710-002-A

WARNING: USE PRECAUTIONS AND OBEY OPERATION LIMITATIONS FOR THE ENGINE GROUND OPERATION DURING THE AIRCRAFT MAINTENANCE (AMM MPP 71-00-00/200).

(1) Do the test to LH side as follows:

(a) On the AIR CONDITIONING/PNEUMATIC control panel on the overhead panel, push the PACK 1 pushbutton. (striped bar light off).

Result:

1 The PACK 1 pushbutton light goes off.

2 The PACK 2 VLV CLSD advisory message comes into view, on the EICAS.

(b) 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.

2 On the APU BLEED pushbutton, the legend OPEN goes off.

3 The BLD 2 VLV CLSD advisory message must come into view, on the EICAS.

(c) 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.

2 On the APU BLEED pushbutton, the legend OPEN comes on.

3 The BLD 1/2 VLV CLSD advisory message comes into view, on the EICAS.

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

Result:

1 The PACK 1/2 VLV CLSD advisory message comes into view, on the EICAS.

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

(2) Do the test to RH side as follows:

(a) On the AIR CONDITIONING/PNEUMATIC control panel on the overhead panel, push the PACK 2 pushbutton. (striped bar light off).

Result:

1 The PACK 2 pushbutton light comes off.

2 Wait approximately 15 seconds and look at the EICAS display.

3 The PACK 1 VLV CLSD advisory message comes into view, on the EICAS.

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

Result:

1 The BLEED 2 pushbutton light comes off.

2 Wait approximately 5 seconds and look at the APU BLEED pushbutton.

3 On the APU BLEED pushbutton, the legend OPEN goes off.

4 The BLD 1 VLV CLSD advisory message must come into view, on the EICAS.

(c) 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.

2 On the APU BLEED pushbutton, the legend OPEN comes on.

3 The BLD 1/2 VLV CLSD advisory message comes into view, on the EICAS.

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

Result:

1 The PACK 1/2 VLV CLSD advisory message comes into view, on the EICAS.

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

K. Follow-on (Figure 502)

SUBTASK 842-003-A

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

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

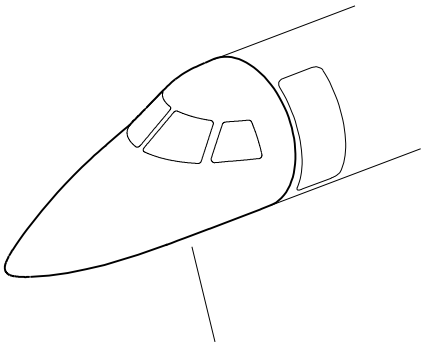
- AIR/GND A (Location tip: DC BUS 1 / LDG GEAR / AIR/GND A).
- AIR/GND B (Location tip: ESSENTIAL DC BUS 1 / LDG GEAR / AIR/GND B).
- AIR/GND C (Location tip: DC BUS 2 / LDG GEAR / AIR/GND C).
- AIR/GND D (Location tip: ESSENTIAL DC BUS 2 / LDG GEAR / AIR/GND D).

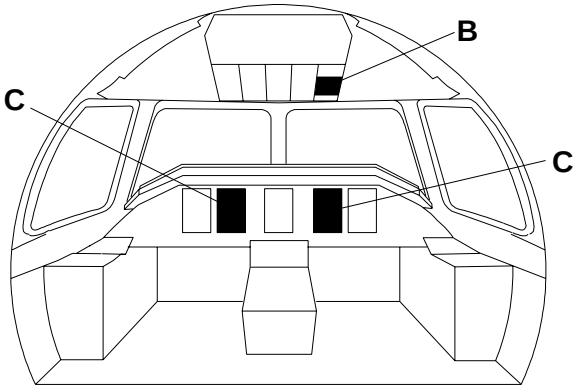
(3) On the AIR CONDITIONING/PNEUMATIC control panel, release APU BLEED pushbutton (light go off).

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

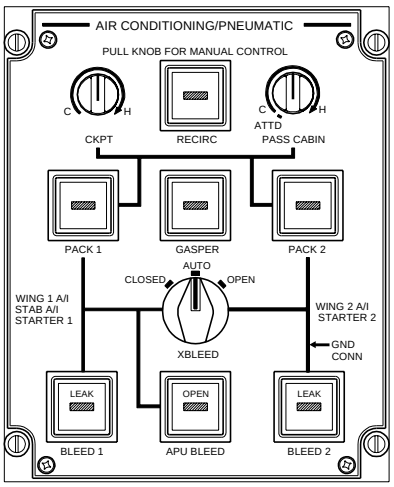
(5) Stop the APU (AMM TASK 49-10-00-910-803-A/200 for APU T-62T-40C11 or AMM TASK 49-13-00-910-803-A/200 for APU T-62T-40C14).

EFFECTIVITY: AIRCRAFT EQUIPPED WITH PRESSURE REGULATOR SHUT-OFF VALVE
Operational Test of the Air Bleed System
Figure 502

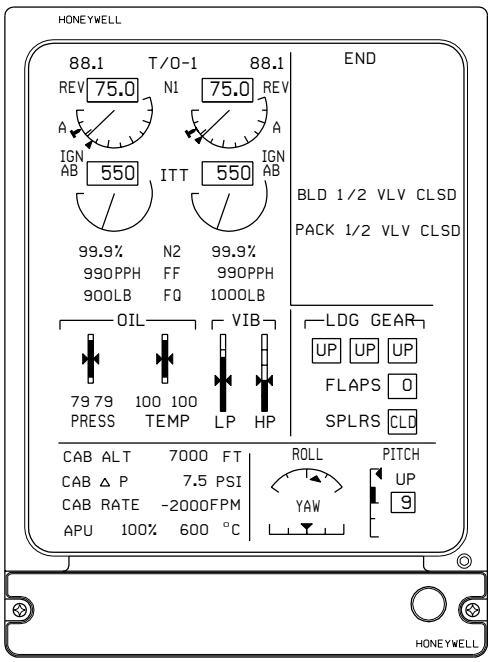




DET. A



DET. B



EICAS DISPLAY

DET. B

145AMM360361.MCE

TASK 36-11-05-700-804-A
EFFECTIVITY: AIRCRAFT EQUIPPED WITH PRESSURE REGULATOR SHUT-OFF VALVE

4. Engine Bleed Valves - Functional Test

A. General

(1) This task gives the procedure to do a check on the engine bleed valves for the correct outlet pressure, in the LH and RH systems.

B. References

REFERENCE	*DESIGNATION*
AMM MPP 06-43-00/100	- COMPONENT LOCATION
AMM MPP 36-11-02/400	- REMOVAL/INSTALLATION
AMM MPP 36-11-05/400	- REMOVAL/INSTALLATION
AMM MPP 71-00-00/200	- MAINTENANCE PRACTICES
AMM TASK 20-40-01-860-801-A/200	ENERGIZATION OF THE AIRCRAFT WITH AN EXTERNAL POWER SOURCE
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

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 387	Hose and manometer assembly	To measure the pressure in the servo line duct.	
Commercially available	Pressure Gauges, 0 to 150 psi	To measure the pressure in the system.	
Commercially available	Stopwatch	To measure the time during which A/ICE system can be on in the ground operation.	

E. Auxiliary Items

ITEM	*DESCRIPTION*	*PURPOSE*	*QTY*
Commercially available	Ladder	To get access to the work area	2
Commercially available	High Temperature Flexible Hose - Fitting and flared according to AS4395-4	To install the pressure gauges at the servo line ports.	2
Commercially available	Flashlight	To make the inspection	1
Commercially available	Inspection mirror	To inspect the related areas	1

F. Consumable Materials

Not Applicable

G. Expandable Parts

Not Applicable

H. Persons Recommended

QTY	*FUNCTION*	*PLACE*
1	A - Prepares the aircraft for this task	Inside the aircraft
1	B - Does digital reading on the gauges	Outside the aircraft

I. Preparation (Figure 503)

SUBTASK 841-010-A

(1) Do these steps for the LH and RH bleed systems.

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

(b) Disconnect the caps (2) from the ports (1).

(c) Connect hoses with pressure gauges to the ports (1) of the servo lines.

NOTE: The hoses for the test must have a length of approximately 5,000 mm (196.85 in) and their diameter must not be greater than 6.35 mm (¼ in).

J. Functionally Test the Engine Bleed Valve (Figure 503)

SUBTASK 720-007-A

WARNING:
- **DO ALL ASSEMBLIES BEFORE YOU START THIS TASK.**
- **USE PRECAUTIONS AND OBEY OPERATION LIMITATIONS FOR THE ENGINE GROUND OPERATION DURING THE AIRCRAFT MAINTENANCE(AMM MPP 71-00-00/200).**
- **STAY AT A SAFE DISTANCE FROM THE ENGINE IN OPERATION.**
- **DO NOT TOUCH THE DUCTS OR COMPONENTS OF THE ANTI-ICING SYSTEM IMMEDIATELY AFTER THE SYSTEM IS TURNED OFF. THE HIGH AIR TEMPERATURE CAN CAUSE INJURY TO PERSONS.**

(1) Start the engines (AMM TASK 71-00-01-910-801-A/200).

(2) Make sure that these pushbuttons are set as follows:

(a) BLEED 1 and 2 pushbuttons - ON.

(b) PACK 1 and PACK 2 pushbuttons - ON

(c) XBLEED pushbutton - AUTO.

(d) WING pushbutton - ON.

(e) STAB pushbutton - ON.

(f) ENGINE AIR INLET pushbuttons - ON

(3) Set the thrust levers to the % of N2 given in Table 501.

NOTE: The % of N2 considers the Barometric Altitude and Static Air Temperature (SAT) displayed on the MFD.

Table 501 - DEFINITION OF VALUE OF %N2

Barometric Altitude [ft]:	SAT > 0°C	SAT < 0°C
≤5000FT	89 %N2	83% N2
>5000FT	90 %N2	85% N2

(4) Set the OVERRIDE switch to ALL.

NOTE: The OPEN inscriptions in the engine anti-icing pushbuttons will come on.

CAUTION: • DO NOT HOLD THE ICE DETECTION/TEST SWITCH AT POSITIONS 1 OR 2 FOR MORE THAN 15 SECONDS.
• DO NOT DO THIS TEST MORE THAN TWO TIMES TO PREVENT AN OVERHEATING CONDITION AT THE WING AND EMPENNAGE LEADING EDGES. IF IT IS NECESSARY TO DO THE TEST AGAIN, STOP UNTIL THE LEADING EDGES GET THE AMBIENT TEMPERATURE AGAIN.

(5) Set the TEST switch, on the overhead panel, to 1 or 2 and hold it for 15 seconds and at the same time:

(a) The EICAS display shows these messages:

- ICE DET 1/2 FAIL (caution).
- ICE CONDITION (advisory).

1 The OPEN inscriptions in the anti-icing pushbuttons are on.

(b) Push one of the master CAUTION lights.

- The master CAUTION lights go off.

(c) Read pressures on the pressure gauges connected to the port of the LH and RH servo lines and write it. Use Table 502

Table 502 - PRESSURE VALUES

	LH servo line port	RH servo line port
Regulated Pressure (psig)		

(6) Release the TEST switch.

- On the EICAS display, the messages go out of view.
- The OPEN inscription in the wing and stab anti-icing pushbuttons go off.

(7) If the regulated pressure of Table 502 is above 72 psig, replace the applicable bleed valve (AMM MPP 36-11-05/400) and do the test again.

(8) If the regulated pressure of Table 502 is 72 psig or below, complete the task as follows.

(9) Set the OVERRIDE switch to AUTO.

- The OPEN inscriptions in the engine anti-icing pushbuttons go off.

(10) Set the engine to idle.

(11) Set the APU pushbutton to OFF.

(12) Do an inspection in the OPEN / CLOSED position indicator of the Engine bleed Valves. Refer to (Figure 504).

NOTE: Use a flashlight and an inspection mirror to examine the areas.

- The LH and RH Bleed Valve is full open at this condition by ensuring the position indicator points to a location between the "P" and "E" in the word, "OPEN". Refer to (Figure 504).

(13) Compare the position of the engine bleed valve and the pressure values of the Table 502. Do as follows:

(a) If the regulated pressure of Table 502 is below 58 psig, and engine bleed valve indicator point to a location between the "P" and "E" in the word "OPEN", replace the High Stage Valve AMM MPP 36-11-02/400 and do the test again.

(b) If the regulated pressure of Table 502 is below 58 psig, and engine bleed valve indicator did not point to a location between the "P" and "E" in the word "OPEN", replace the applicable bleed valve AMM MPP 36-11-05/400 and do the test again.

(c) If the regulated pressure of Table 502 is below 58 psig, and BLEED FAIL message is shown on EICAS display, proceed with troubleshooting following FIM, and do the test again.

(d) If the regulated pressure of Table 502 is in the range of 65 ± 7 psig and engine bleed valve indicator did not point to a location between the "P" and "E" in the word "OPEN" replace the applicable bleed valve AMM MPP 36-11-05/400 and do the test again.

(e) If the regulated pressure of Table 502 is in the range of 65 ± 7 psig and engine bleed valve indicator point to a location between the "P" and "E" in the word "OPEN", complete the task as follows.

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

K. Follow-on (Figure 503)

SUBTASK 842-010-A

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

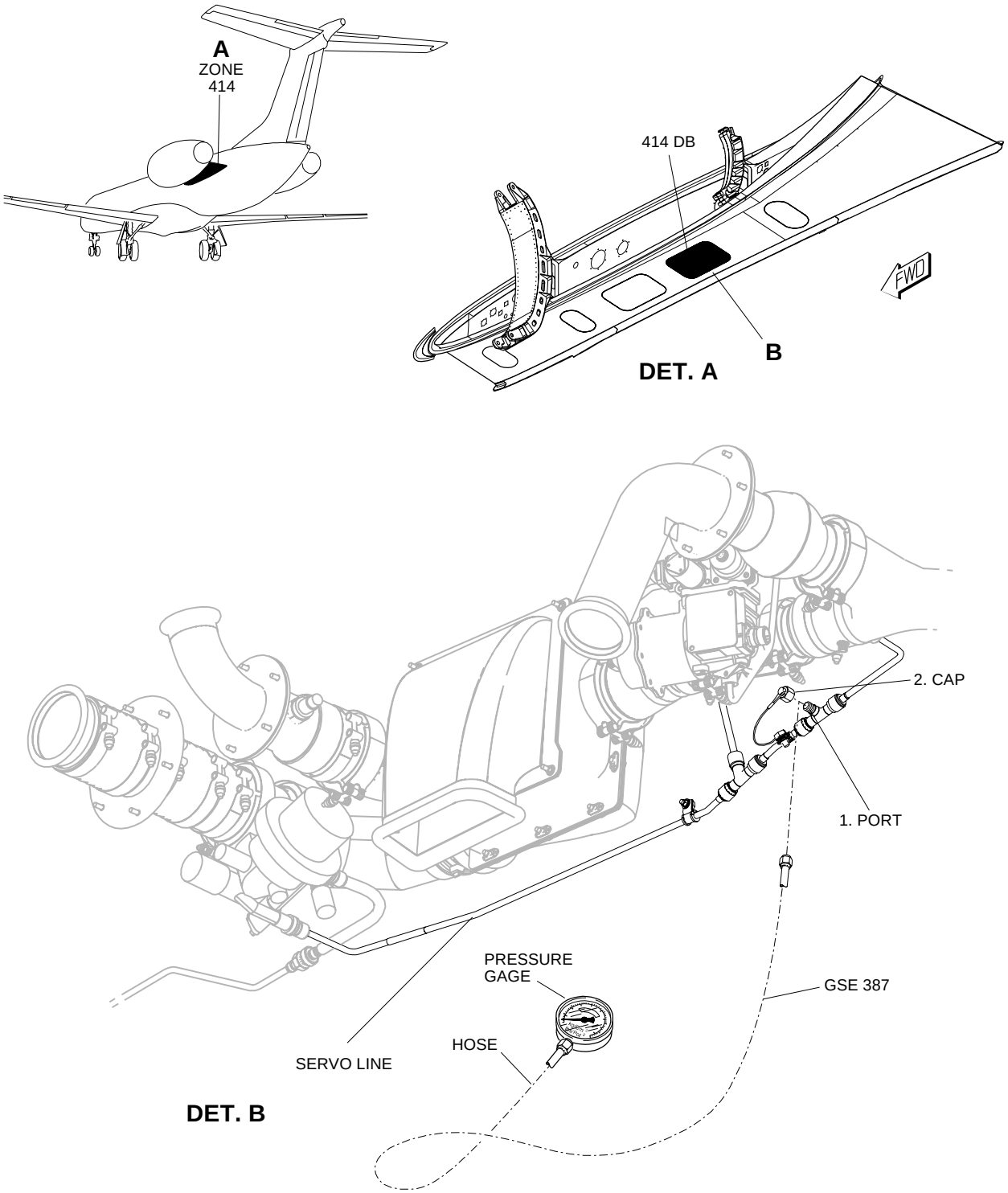
(2) Disconnect the hoses from the ports (1) of the servo lines.

(3) Connect the caps (2) to the ports (1) and torque to 135 to 150 lb.in.

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

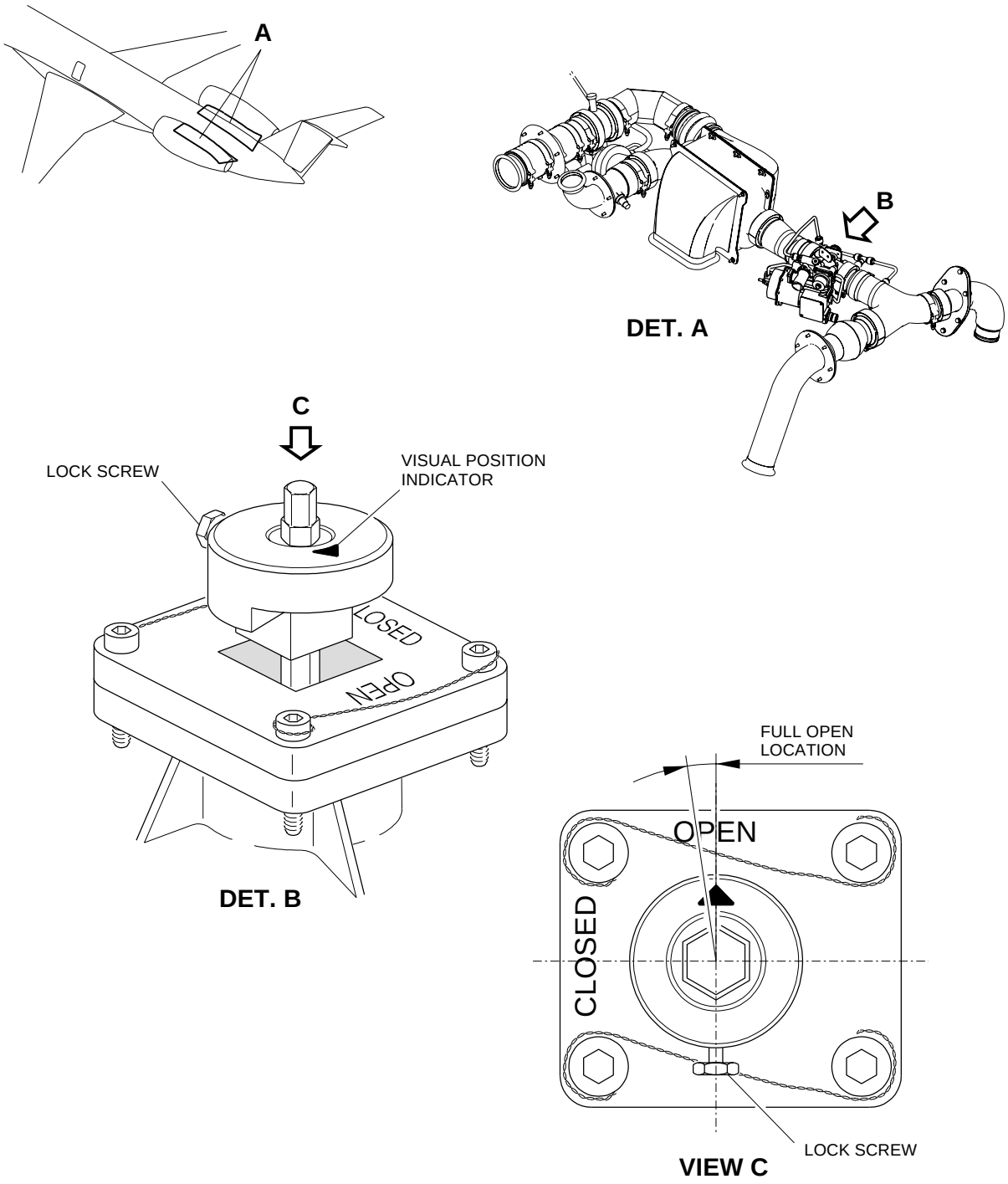
(5) Put the aircraft back to its initial configuration

EFFECTIVITY: AIRCRAFT EQUIPPED WITH PRESSURE REGULATOR SHUT-OFF VALVE
Functional Test - Engine Bleed Valve
Figure 503



EM145AMM360597A.DGN

EFFECTIVITY: AIRCRAFT EQUIPPED WITH PRESSURE REGULATOR SHUT-OFF VALVE
Engine Bleed Valve - Position Indicator
Figure 504



EM145AMM360686A.DGN