WING THERMAL ANTI-ICING SYSTEM - ADJUSTMENT/TEST

EFFECTIVITY: ALL

1. General

A. This section gives the procedures to do the functional check of the pressure sensors (pressure switches or pressure transducers) of the wing thermal anti-icing system and the functional test of the wing thermal anti-icing system.

B. The pressure sensors are made up of the overpressure switch and:

Table 501

PRE-MOD. S.B.145-30-0022	POST-MOD. S.B.145-30-0022
Low pressure switches	Low pressure transducers
Differential pressure switch	Asymmetry pressure transducer

Table 502

PRE-MOD. S.B.145-30-0026	POST-MOD. S.B.145-30-0026
Piccolo pressure-drop switch	Piccolo burst pressure transducer

C. 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*
30-11-00-700-801-A ♦	PRESSURE SENSORS OF THE WING THERMAL ANTI-ICING SYSTEM - FUNCTIONAL CHECK	ALL
30-11-00-700-802-A	WING THERMAL ANTI-ICING SYSTEM - FUNCTIONAL TEST	ALL

TASK 30-11-00-700-801-A
EFFECTIVITY: ALL

2. PRESSURE SENSORS OF THE WING THERMAL ANTI-ICING SYSTEM - FUNCTIONAL CHECK

A. General

(1) This check is done on a bench.

B. References

REFERENCE	*DESIGNATION*
ACMM 30-10-00	-
ACMM 30-11-12	-
ACMM 30-11-13	-
AMM MPP 06-41-01/100	-
AMM TASK 28-41-00-200-801-A/600	-
AMM TASK 30-11-02-000-801-A/400	LOW PRESSURE SWITCH - REMOVAL
AMM TASK 30-11-02-400-801-A/400	LOW PRESSURE SWITCH - INSTALLATION
AMM TASK 30-11-03-000-801-A/400	OVERPRESSURE SWITCH - REMOVAL
AMM TASK 30-11-03-400-801-A/400	OVERPRESSURE SWITCH - INSTALLATION
AMM TASK 30-11-04-000-801-A/400	PICCOLO PRESSURE-DROP SWITCH - REMOVAL
AMM TASK 30-11-04-400-801-A/400	PICCOLO PRESSURE-DROP SWITCH - INSTALLATION
AMM TASK 30-11-06-000-801-A/400	DIFFERENTIAL PRESSURE SWITCH - REMOVAL
AMM TASK 30-11-06-400-801-A/400	DIFFERENTIAL PRESSURE SWITCH - INSTALLATION
AMM TASK 30-11-11-000-801-A/400	LOW PRESSURE TRANSDUCER - REMOVAL
AMM TASK 30-11-11-400-801-A/400	LOW PRESSURE TRANSDUCER - INSTALLATION
AMM TASK 30-11-12-000-801-A/400	BURST PRESSURE TRANSDUCER - REMOVAL
AMM TASK 30-11-12-400-801-A/400	BURST PRESSURE TRANSDUCER - INSTALLATION
AMM TASK 30-11-13-000-801-A/400	ASYMMETRY PRESSURE TRANSDUCER - REMOVAL
AMM TASK 30-11-13-400-801-A/400	ASYMMETRY PRESSURE TRANSDUCER - INSTALLATION
S.B.145-30-0016	-
S.B.145-30-0019	-
S.B.145-30-0022	-
S.B.145-30-0026	-
SB145-30-0022	-

C. Zones and Accesses

ZONE	*PANEL/DOOR*	*LOCATION*
191	191EL	Wing-to-fuselage fairing
191	191FR	Wing-to-fuselage fairing

(Continued)

ZONE	PANEL/DOOR	LOCATION
192	192AL	Center lower fairing
192	192BR	Center lower fairing

D. Tools and Equipment

ITEM	DESCRIPTION	PURPOSE	QTY
Commercially available	Bottle of nitrogen with pressure gauge or compressed air source with pressure gauge	To do the check	
GSE 050	Multimeter, digital	To do the check	
Commercially available	Pressure gauge with scale up to 3 psi and accuracy of ± 0.05 psi	To measure the pressure at differential pressure switch	

E. Auxiliary Items

Not Applicable

F. Consumable Materials

Not Applicable

G. Expandable Parts

Not Applicable

H. Persons Recommended

QTY	FUNCTION	PLACE
1	Does the task	On the bench

I. Preparation

SUBTASK 841-002-A

(1) Remove access panels 191EL, 191FR and 192AL or 192BR, as applicable (AMM MPP 06-41-01/100).

(2) Remove the landing-light housing lenses.

(3) Remove the overpressure switches from the aircraft (AMM TASK 30-11-03-000-801-A/400).

(4) (PRE-MOD. SB145-30-0022) Remove the switches from the aircraft (AMM TASK 30-11-02-000-801-A/400), (AMM TASK 30-11-04-000-801-A/400), and (AMM TASK 30-11-06-000-801-A/400) as applicable.

(5) (POST-MOD. SB145-30-0022 and POST-MOD. SB 145-30-0026) Remove the transducers from the aircraft (AMM TASK 30-11-11-000-801-A/400), (AMM TASK 30-11-12-000-801-A/400), and (AMM TASK 30-11-13-000-801-A/400) as applicable.

J. Functionally Check Pressure Sensors of the Wing Thermal Anti-Icing System (Bench Test) (Figure 501) (Figure 502) (Figure 503) (Figure 504) (Figure 505)

SUBTASK 720-002-A

(1) Do the check of the overpressure switch as follows:

(a) (PRE-MOD. S.B.145-30-0016 or PN 12949-2 installed)

CAUTION: BE CAREFUL NOT TO APPLY A PRESSURE HIGHER THAN THE SPECIFIED VALUE. OVERPRESSURE CAN CAUSE DAMAGE TO THE EQUIPMENT.

1 Apply a pressure of 21 psi to the overpressure switch. Slowly increase the pressure to 25 psi.

- There is continuity between pins A and B of the overpressure switch at 23 ± 2 psi.

2 Decrease the pressure to the overpressure switch down to 19 ± 2 psi.

- There is continuity between pins B and C of the overpressure switch in this range.

(b) (POST-MOD. S.B.145-30-0016 or PN 12949-3 or PN 12949-4 installed)

CAUTION: BE CAREFUL NOT TO APPLY A PRESSURE HIGHER THAN THE SPECIFIED VALUE. OVERPRESSURE CAN CAUSE DAMAGE TO THE EQUIPMENT.

1 Apply a pressure of 23 psi to the overpressure switch. Slowly increase the pressure to 27 psi.

- There is continuity between pins A and B of the overpressure switch at 25 ± 2 psi.

2 Decrease the pressure to the overpressure switch down to 21 ± 2 psi.

- There is continuity between pins B and C of the overpressure switch in this range.

(2) (PRE-MOD. S.B.145-30-0022) Do the check of the low pressure switches as follows:

CAUTION: BE CAREFUL NOT TO APPLY A PRESSURE HIGHER THAN THE SPECIFIED VALUE. OVERPRESSURE CAN CAUSE DAMAGE TO THE EQUIPMENT.

(a) Apply a pressure of 15 psi to the switch. Slowly increase the pressure to 16 psi.

- There is continuity between pins A and B of the low pressure switch at 15.5 ± 0.5 psi.

(b) Decrease the pressure to the low pressure switch down to 14.5 ± 0.5 psi.

- There is continuity between pins B and C of the low pressure switch in this range.

(3) (POST-MOD. S.B.145-30-0022) Do the check of the low pressure transducers as follows:

Refer to the last revision of ACMM 30-10-00 (Kulite) to do the functional check of the low pressure transducers.

(4) (PRE-MOD. S.B.145-30-0019) Do the check of the piccolo pressure-drop switch as follows:

CAUTION: BE CAREFUL NOT TO APPLY A PRESSURE HIGHER THAN THE SPECIFIED VALUE. OVERPRESSURE CAN CAUSE DAMAGE TO THE EQUIPMENT.

(a) Apply a pressure of 2.3 psi to the piccolo pressure-drop switch. Slowly increase the pressure to 2.7 psi.

- There is continuity between pins 1 and 2 of the piccolo pressure-drop switch at 2.5 ± 0.2 psi.

(b) Decrease the pressure to the piccolo pressure-drop switch down to 1.0 psi.

- There is continuity between pins 2 and 4 of the piccolo pressure-drop switch.

(5) (POST-MOD. S.B.145-30-0019 and PRE-MOD. S.B. 145-30-0026) Do the check of the piccolo pressure-drop switch as follows:

CAUTION: BE CAREFUL NOT TO APPLY A PRESSURE HIGHER THAN THE SPECIFIED VALUE. OVERPRESSURE CAN CAUSE DAMAGE TO THE EQUIPMENT.

(a) Apply a pressure of 2.0 psi to the piccolo pressure-drop switch. Slowly increase the pressure to 5.9 psi.

- There is continuity between pins A and B of the piccolo pressure-drop switch at 5.9 psi.

(b) Decrease the pressure to the piccolo pressure-drop switch down to 5.6 ± 0.3 psi.

- There is continuity between pins B and C of the piccolo pressure-drop switch.

(6) (POST-MOD. S.B.145-30-0026) Do the check of the piccolo burst pressure transducers as follows:

Refer to the last revision of ACMM 30-11-12 (Kulite) to do the functional check of the piccolo pressure transducers.

(7) (PRE-MOD. S.B.145-30-0022) Do the check of the differential pressure switch as follows:

NOTE: When you apply pressure to port A, the measurement is made at connector A. See that connector A is on the opposite side of port A. When you apply pressure to port B, the measurement is made at connector B. See that connector B is on the opposite side of port B. Refer to Figure 502.

CAUTION: BE CAREFUL NOT TO APPLY A PRESSURE HIGHER THAN THE SPECIFIED VALUE. OVERPRESSURE CAN CAUSE DAMAGE TO THE EQUIPMENT.

(a) Apply a pressure of 1.8 psi to the differential pressure switch. Slowly increase the pressure to 2.2 psi.

- There is continuity between pins 1 and 2 of the differential pressure switch at 2.0 ± 0.2 psi.

(b) Decrease the pressure to the differential pressure switch down to 1.0 psi.

- There is continuity between pins 2 and 4 of the differential pressure switch.

(c) Do this procedure for the two sides of the differential pressure switch.

(8) (POST-MOD. S.B.145-30-0022) Do the check of the asymmetry pressure transducer as follows:

Refer to the last revision of ACMM 30-11-13 (Kulite) to do the functional check of the asymmetry pressure transducer.

K. Follow-on

SUBTASK 842-002-A

(1) Install the overpressure switches to the aircraft (AMM TASK 30-11-03-400-801-A/400).

(2) (PRE-MOD. S.B.145-30-0022) Install the pressure switches to the aircraft (AMM TASK 30-11-02-400-801-A/400), (AMM TASK 30-11-04-400-801-A/400), and (AMM TASK 30-11-06-400-801-A/400).

(3) (POST-MOD. S.B.145-30-0022) Install the pressure transducers to the aircraft (AMM TASK 30-11-11-400-801-A/400), (AMM TASK 30-11-12-400-801-A/400), and (AMM TASK 30-11-13-400-801-A/400).

(4) Install the landing-light housing lenses.

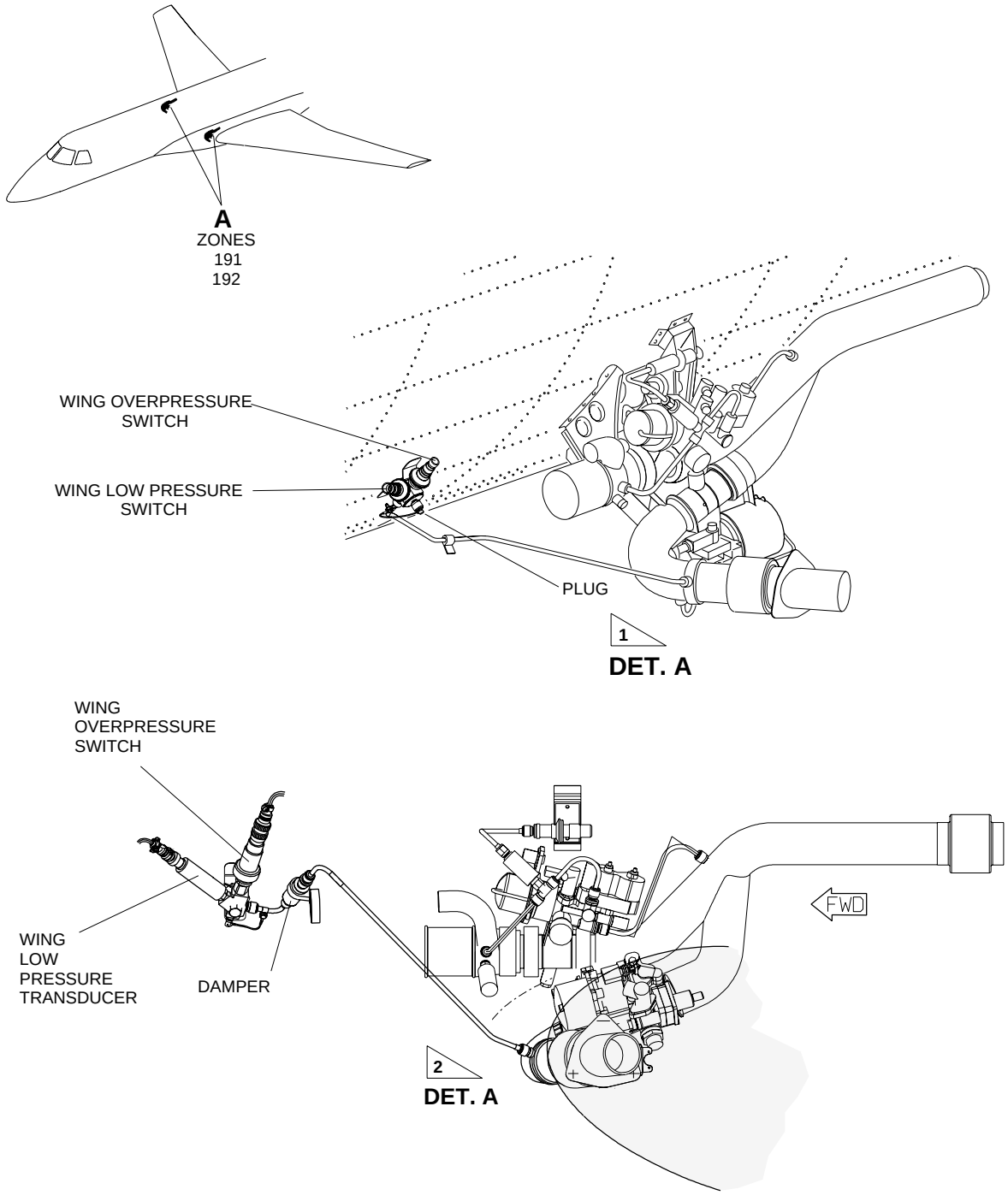
(5) Do an inspection on the fuel quantity indication harness (AMM TASK 28-41-00-200-801-A/600).

NOTE: The inspection of fuel quantity indication harness is a part of Critical Design Configuration Control Limitations (CDCCL) in the Airworthiness Limitations (Section 6) of the Maintenance Review Board Report (MRB).

(6) Install access panels 191EL, 191FR and 192AL or 192BR, as applicable (AMM MPP 06-41-01/100).

EFFECTIVITY: ALL

Pressure Sensors of the Wing Thermal Anti-Icing System - Location
Figure 501



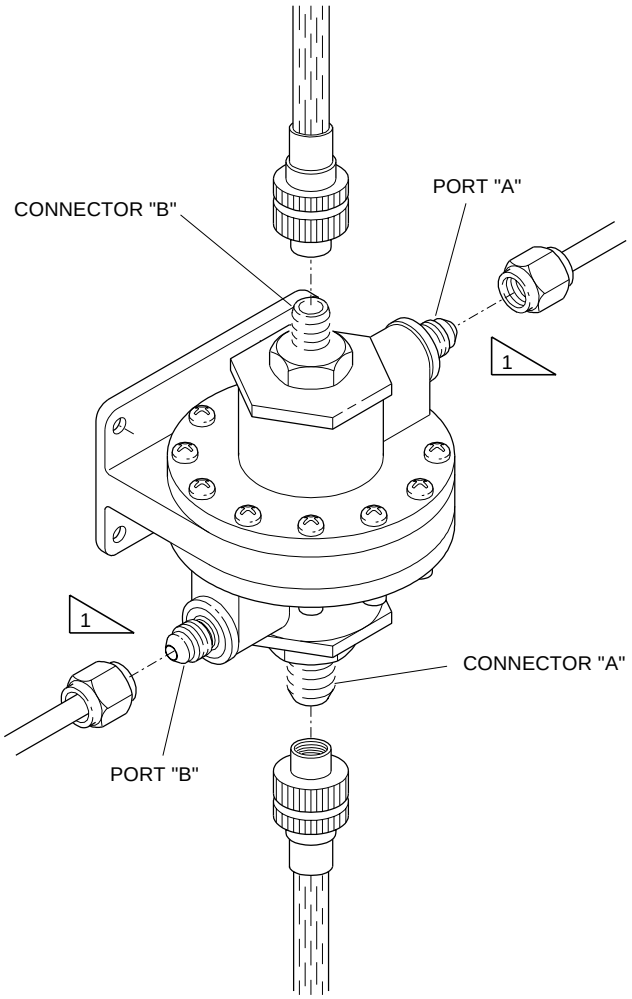
1 PRE-MOD S.B. 145-30-0022.

2 POST-MOD S.B. 145-30-0022.

145AMM300068.MCE B

EFFECTIVITY: ALL

Functional Check Set-Up Schematic for Differential Pressure Switch - Functional Check
Figure 502

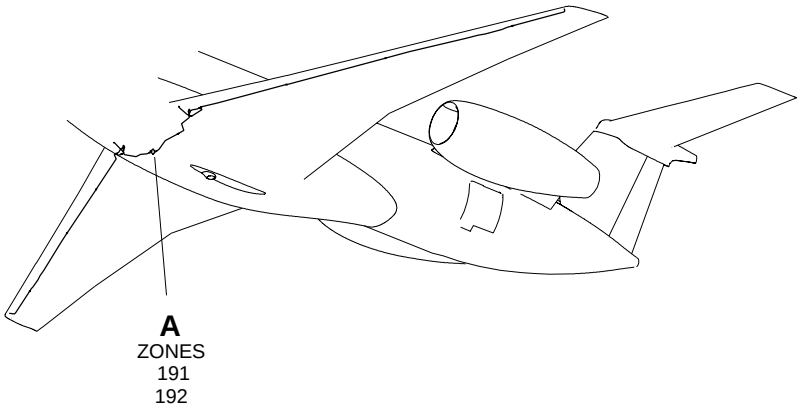


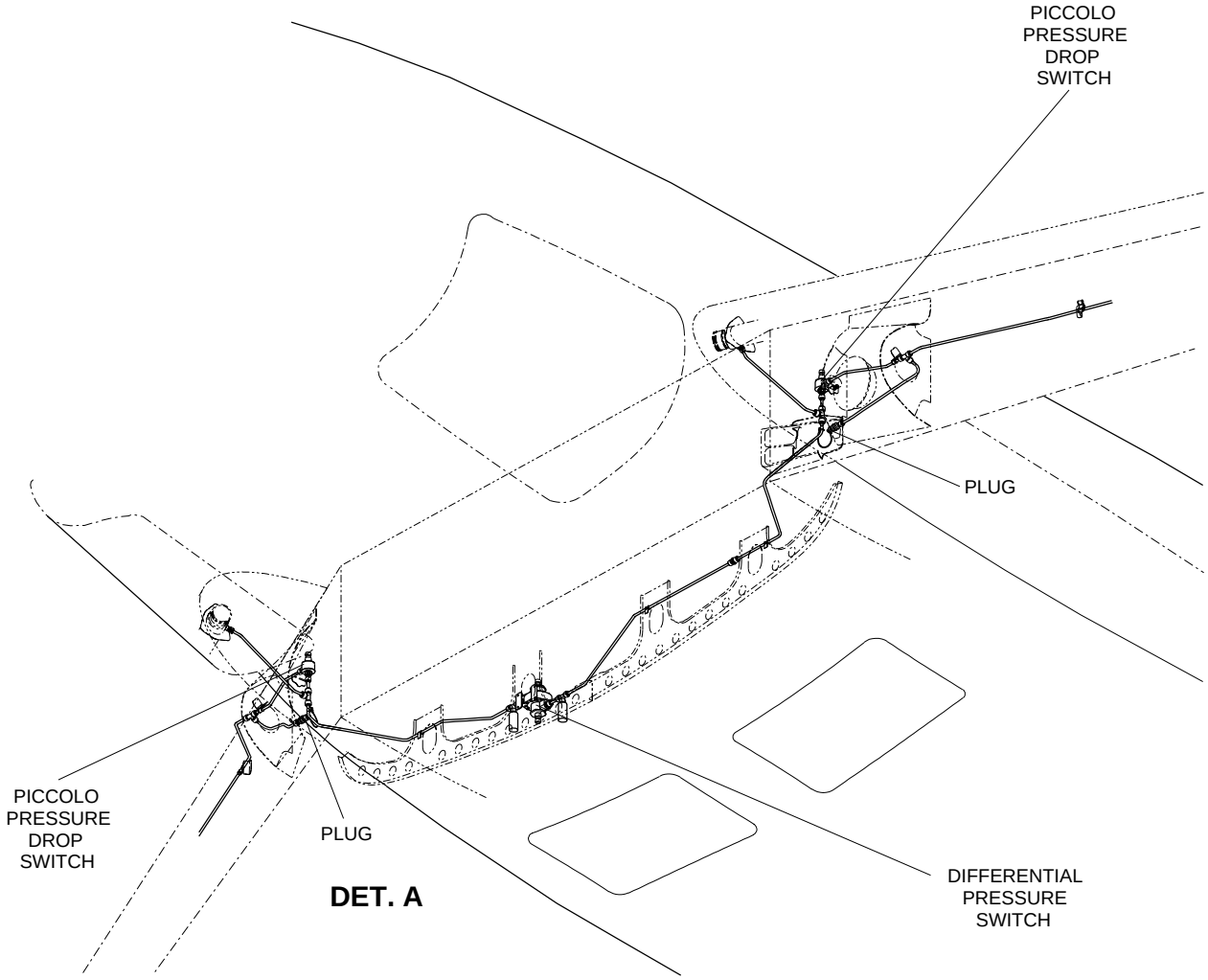
1 BE CAREFUL NOT TO APPLY A PRESSURE HIGHER THAN THE SPECIFIED VALUE. OVER PRESSURE CAN CAUSE DAMAGE TO THE EQUIPMENT.

EM145AMM300395A.DGN

EFFECTIVITY: PRE-MOD. S.B. 145-30-0019

Pressure Sensors of the Wing Thermal Anti-Icing System - Location
Figure 503

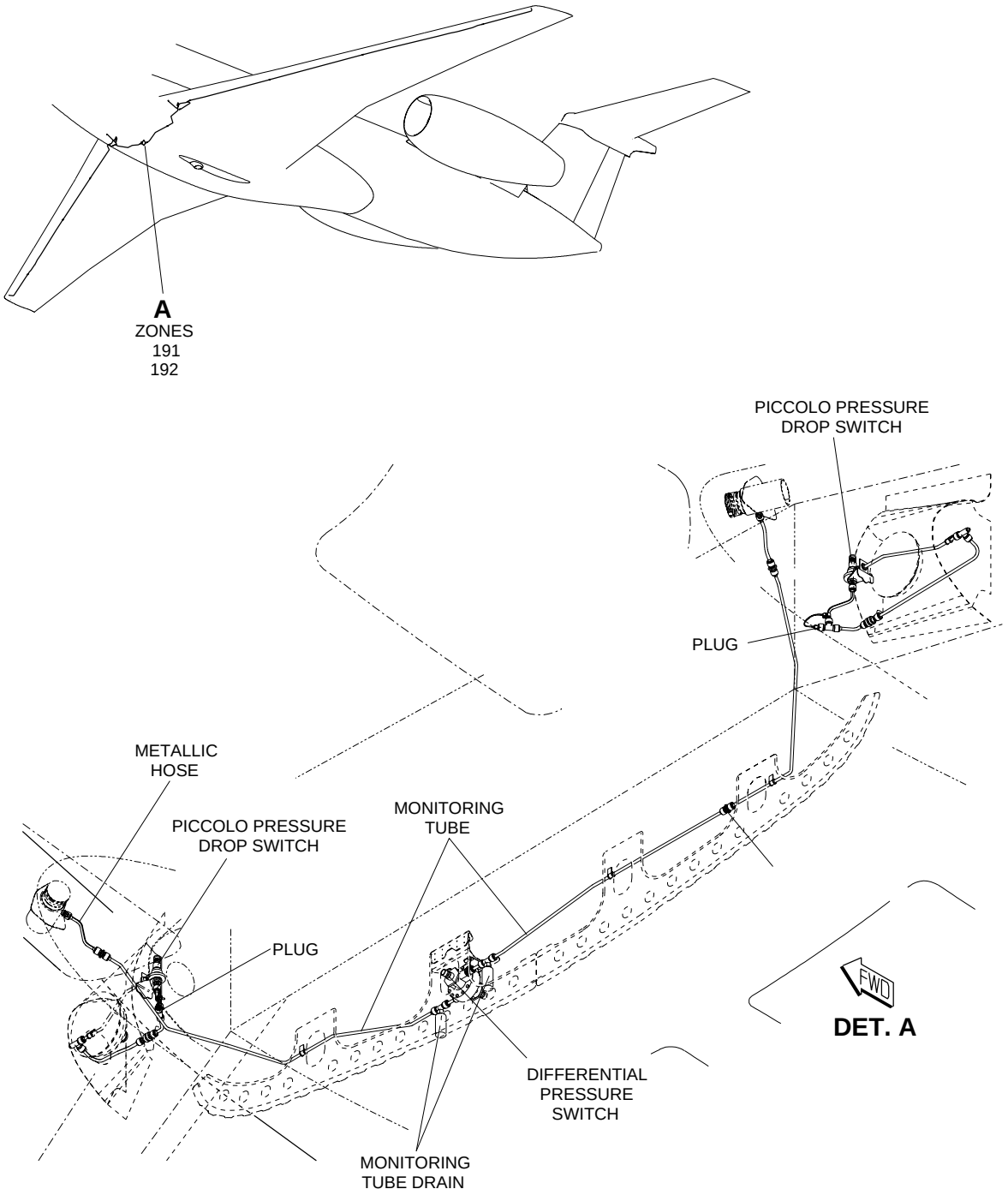




145AMM300015.MCE A

EFFECTIVITY: POST-MOD. S.B. 145-30-0019 AND PRE-MOD. S.B. 145-30-0022

Pressure Sensors of the Wing Thermal Anti-Icing System - Location
Figure 504

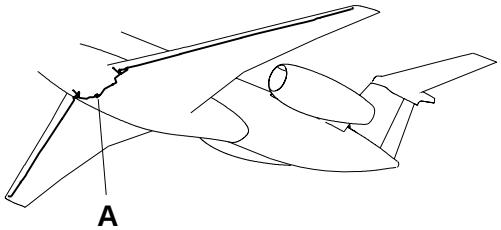


145AMM300069.MCE A

EFFECTIVITY: POST-MOD. S.B. 145-30-0022 AND S.B. 145-30-0026

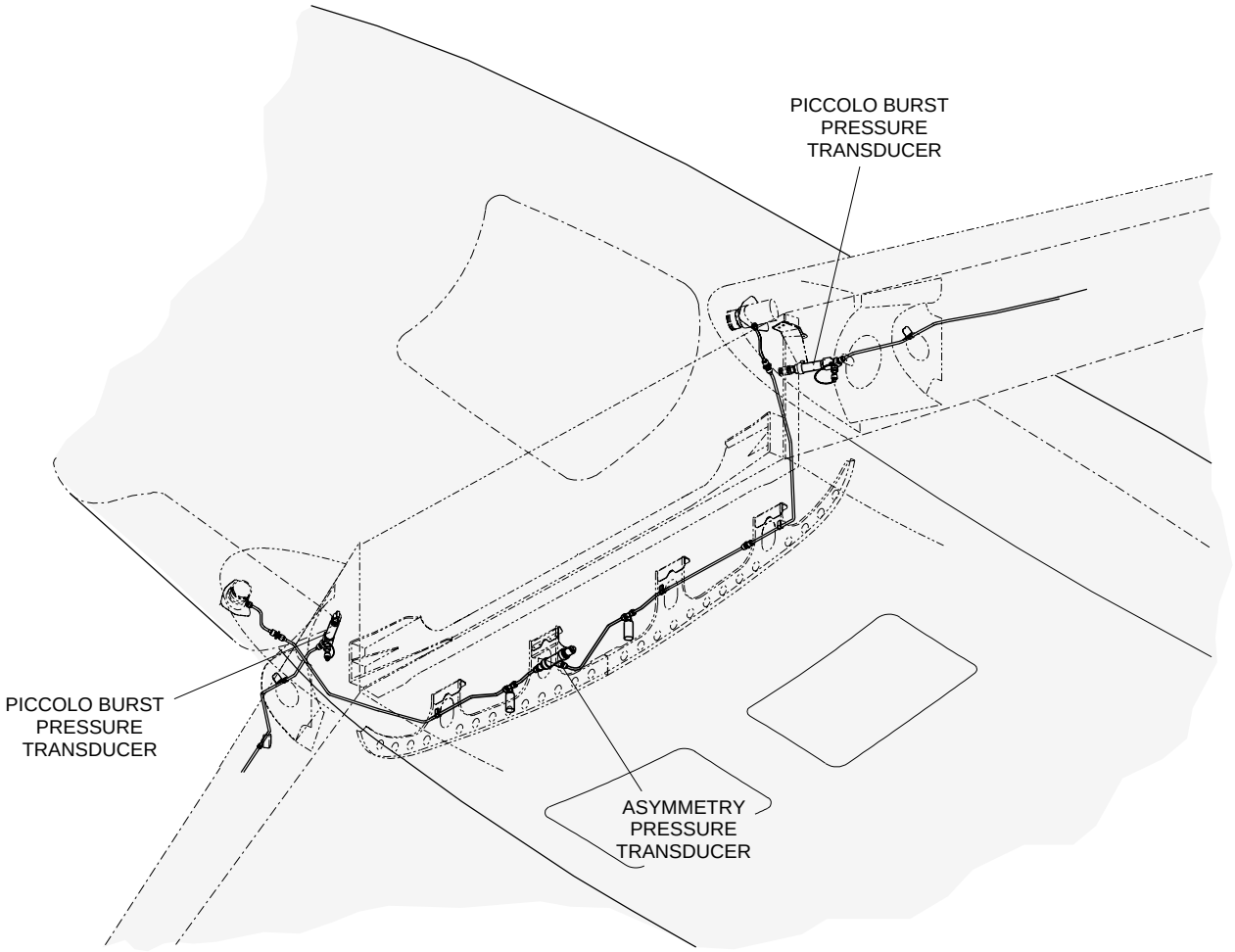
Pressure Sensors of the Wing Thermal Anti-Icing System - Location

Figure 505



A

ZONES
191
192



DET. A

145AMM300142.MCE

TASK 30-11-00-700-802-A
EFFECTIVITY: ALL

3. WING THERMAL ANTI-ICING SYSTEM - FUNCTIONAL TEST

A. General

(1) This task gives the procedures to do the check of the wing anti-ice valve outlet pressure and the piccolo tubes for integrity.

B. References

REFERENCE	*DESIGNATION*
AMM MPP 06-41-01/100	-
AMM TASK 30-11-01-000-801-A/400	WING ANTI-ICING VALVE - REMOVAL
AMM TASK 30-11-07-000-801-A/400	PICCOLO TUBES - REMOVAL
AMM TASK 30-11-09-700-801-A/500	WING ANTI-ICING SYSTEM MONITORING TUBES - LEAKAGE/TEST
AMM TASK 33-41-02-000-801-A/400	LANDING LIGHT LAMP - REMOVAL
AMM TASK 33-41-02-400-801-A/400	LANDING LIGHT LAMP - INSTALLATION
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
S.B.145-30-0016	-
S.B.145-30-0021	-
S.B.145-30-0022	-
S.B.145-36-0028	-

C. Zones and Accesses

ZONE	*PANEL/DOOR*	*LOCATION*
191	191EL	Wing-to-fuselage fairing
191	191FR	Wing-to-fuselage fairing

D. Tools and Equipment

ITEM	*DESCRIPTION*	*PURPOSE*	*QTY*
Commercially available	Pressure gauges	To measure the pressure of the wing valve outlet and the piccolo tube tip	

E. Auxiliary Items

Not Applicable

F. Consumable Materials

Not Applicable

G. Expandable Parts

Not Applicable

H. Persons Recommended

QTY	*FUNCTION*	*PLACE*
1	A - Does the task	Cockpit
1	B - Helps technician A	Wing
1	C - Helps technician A	Wing

I. Preparation

SUBTASK 841-003-A

(1) Remove access panels 191EL and 191FR (AMM MPP 06-41-01/100).

(2) Remove the landing light (AMM TASK 33-41-02-000-801-A/400).

J. Functionally Test Wing Thermal Anti-Icing System (Figure 506) (Figure 501) (Figure 503) (Figure 504) (Figure 505)

SUBTASK 720-003-A

WARNING: 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) NOTE: The hoses for the test must not be longer than 2000 mm (78.74 in) and their diameter must not be more than ¼ in.

Set the switches as follows:

- PACK 1 and PACK 2 - OFF
- XBLEED - CLOSED
- STAB - OFF
- WING - ON
- OVERRIDE - ALL

(2) NOTE: The steps below are applicable to the check of the LH wing.

(PRE-MOD. S.B.145-30-0022) Remove the plug from the manifold (overpressure and low pressure switches) in the LH wing-to-fuselage fairing and connect a pressure gauge to the test point.

(3) (POST-MOD. S.B.145-30-0022) Remove the plug from the manifold (overpressure and low pressure transducers) in the LH wing-to-fuselage fairing and connect a pressure gauge to the test point.

(4) (PRE-MOD. S.B.145-30-0022) Remove the plug from the test point of the piccolo pressure-drop switch (in the LH landing light compartment) and connect a pressure gauge to the test point.

(5) (POST-MOD. S.B.145-30-0022) Remove the plug from the test point of the piccolo burst pressure transducer (in the LH landing light compartment) and connect a pressure gauge to the test point.

(6) 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).

(7) Set the APU BLEED switch to ON.

CAUTION: DO NOT HOLD THE TEST SWITCH IN POSITION 1 OR 2 FOR MORE THAN 15 SECONDS.

(8) Set the TEST switch to 1 or 2 and hold it for 15 seconds.

(9) Do the check of the pressure at the anti-icing valve outlet as follows:

(a) Measure the pressure (pressure gauge installed at the manifold inside the wing-to-fuselage fairing) and write it.

Result:

1 (PRE-MOD. S.B.145-30-0016 or PN 12949-2 installed) The pressure value must be 18 ± 2 psig.

2 (POST-MOD. S.B.145-30-0016 or PN 12949-3 installed and PRE-MOD. S.B. 145-30-0021) The pressure value must be 19 ± 2 psig.

3 (POST-MOD. S.B.145-30-0021) The pressure value must be 18 ± 1.5 psig.

(10) If the pressure is not in the specified range, replace the LH wing anti-icing valve (AMM TASK 30-11-01-000-801-A/400) and go to item (9).

(11) If the pressure is in the range specified above, continue the test.

(12) Measure the pressure at the wing piccolo-tube tip (pressure gauge installed in the LH landing-light compartment) and write it.

(13) The pressure in the wing piccolo-tube tip must be more than 5.6 psig.

(14) If the pressure does not agree with the value in step 13, do a check for leakage in the connections, hose, and monitoring line (AMM TASK 30-11-09-700-801-A/500). If the problem continues, change the piccolo tube (AMM TASK 30-11-07-000-801-A/400) and do the test again.

(15) Set the APU BLEED switch to OFF.

(16) 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).

(17) Disconnect the pressure gauge from the test point of the manifold and install a plug in the manifold.

(18) Disconnect the pressure gauge of the test point (inside the LH landing compartment) and install a plug in the test point.

NOTE: The steps below are applicable to the check of the RH wing.

(19) Disconnect the electrical connector of the LH wing anti-icing valve.

(20) (PRE-MOD. S.B.145-30-0022) Remove the plug from the manifold (overpressure and low pressure switches) in the RH wing-to-fuselage fairing and connect a pressure gauge to the test point.

(21) (POST-MOD. S.B.145-30-0022) Remove the plug from the manifold (overpressure and low pressure transducers) in the RH wing-to-fuselage fairing and connect a pressure gauge to the test point.

(22) (PRE-MOD. S.B.145-30-0022) Remove the plug from the test point of the piccolo pressure-drop switch (in the RH landing light compartment) and connect a pressure gauge to the test point.

(23) (POST-MOD. S.B.145-30-0022) Remove the plug from the test point of the piccolo burst pressure transducer (in the RH landing light compartment) and connect a pressure gauge to the test point.

(24) Set the XBLEED switch to OPEN.

(25) 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).

(26) Set the APU BLEED switch to ON.

CAUTION: DO NOT HOLD THE TEST SWITCH AT POSITION 1 OR 2 FOR MORE THAN 15 SECONDS.

(27) Set the TEST switch to 1 or 2 and hold it for 15 seconds.

(28) Do the check of the pressure at the anti-icing valve outlet as follows:

(a) With the pressure gauge installed at the manifold inside the wing-to-fuselage fairing, measure the pressure and write it.

Result:

1 (PRE-MOD. S.B.145-30-0016 or PN 12949-2 installed) The pressure value must be 18 ± 2 psig.

2 (POST-MOD. S.B.145-30-0016 or PN 12949-3 installed and PRE-MOD. S.B. 145-30-0021) The pressure value must be 19 ± 2 psig.

3 (POST-MOD. S.B.145-30-0021 and PRE-MOD. S.B. 145-36-0028) The pressure value must be 18 ± 1.5 psig.

4 (POST-MOD. S.B.145-36-0028) The pressure value must be 19.5 ± 1.5 psig.

(29) If the regulated pressure is not in the specified range, replace the RH wing anti-icing valve (AMM TASK 30-11-01-000-801-A/400) and go to item (28).

(30) Measure the pressure at the wing piccolo tube tip (pressure gauge installed in the RH landing light compartment) and write it.

(31) The pressure in the piccolo tube tip must be more than 5.6 psig.

(32) If the pressure does not agree with the value in step 31, do a check for leakage in the connections, hose, and monitoring line (AMM TASK 30-11-09-700-801-A/500). If the problem continues, change the piccolo tube (AMM TASK 30-11-07-000-801-A/400) and do the test again.

(33) Set the APU BLEED switch to OFF.

(34) 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).

(35) Connect the electrical connector to the LH wing anti-icing valve.

(36) Disconnect the pressure gauge from the test point of the manifold and install a plug to the manifold.

(37) Disconnect the pressure gauge from the test point (in the RH landing compartment) and install a plug to the test point.

K. Follow-on

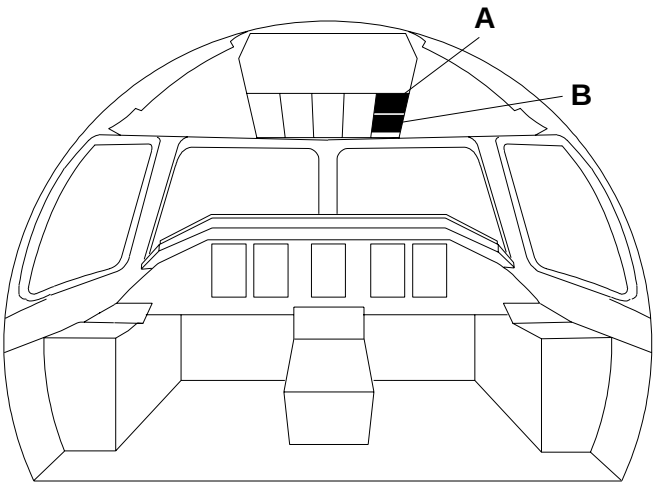
SUBTASK 842-003-A

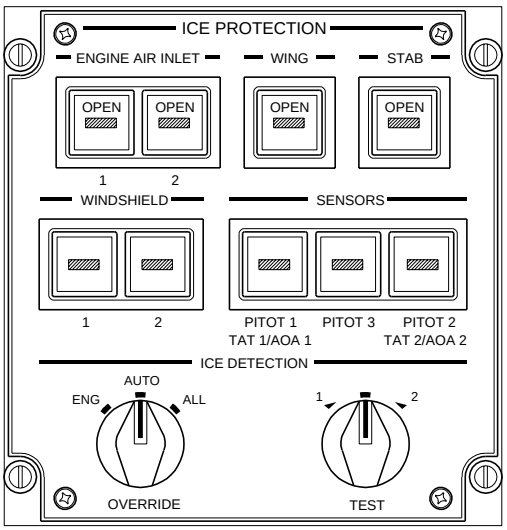
(1) Install access panels 191EL and 191FR (AMM MPP 06-41-01/100).

(2) Install the landing light covers (AMM TASK 33-41-02-400-801-A/400).

EFFECTIVITY: ALL

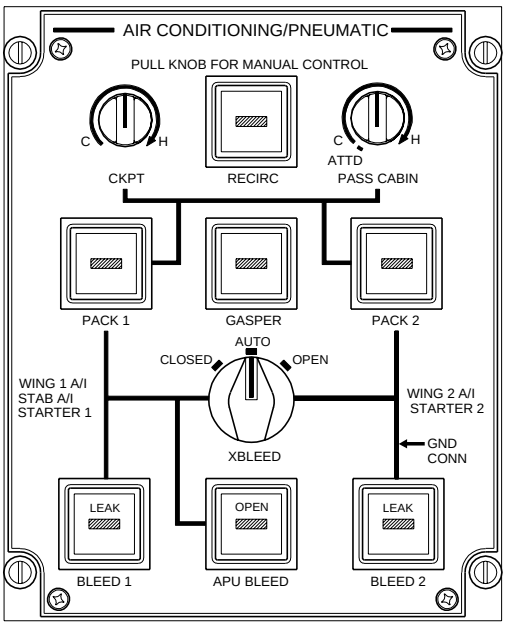
Wing Thermal Anti-Icing System - Functional Test
Figure 506





DET. A

ICE PROTECTION
PANEL



DET. B

AIR CONDITIONING/PNEUMATIC
PANEL

145AMM300064.MCE B