WINDSHIELD HEATING SYSTEM - ADJUSTMENT/TEST

EFFECTIVITY: ALL

1. General

   A. This section gives the procedures to do the check of the windshield heating 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*
30-42-00-700-801-A ♦	WINDSHIELD HEATING - OPERATIONAL CHECK	ALL
30-42-00-700-802-A	WINDSHIELD HEATING - FUNCTIONAL TEST	POST-MOD S.B. 145-30-0033

TASK 30-42-00-700-801-A
EFFECTIVITY: ALL

2. WINDSHIELD HEATING - OPERATIONAL CHECK

A. General

(1) The function of this check is to make sure that the windshield heating operates correctly.

(2) High ambient temperatures and sunlight rays interfere with the WHS operation.

B. References

REFERENCE	*DESIGNATION*
AMM MPP 06-41-03/100	- COMPONENT LOCATION
AMM TASK 20-40-01-860-801-A/200	ENERGIZATION OF THE AIRCRAFT WITH AN EXTERNAL POWER SOURCE
S.B.145-30-0033	-

C. Zones and Accesses

ZONE	*PANEL/DOOR*	*LOCATION*
223	223LZ	Cockpit

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	Does the task	Cockpit

I. Preparation

SUBTASK 841-002-A

(1) Open access door 223LZ (AMM MPP 06-41-03/100).

(2) On the overhead Circuit Breaker Panel, make sure that these circuit breakers are closed:

- WSHLD TEMP 1 (Location tip: DC BUS 1/ICE AND RAIN PROTECTION/ WSHLD TEMP 1).
- WSHLD TEMP 2 (Location tip: SHED DC BUS 2/ WSHLD TEMP 2).

(3) Make sure that the WINDSHIELD 1 and WINDSHIELD 2 heating pushbuttons, on the overhead panel, are set at OFF.

(4) Do the steps below to do a check to see if the external windshield heated area is cold:

(a) Use a workstand (windshield) to get access to the work area.

(b) With the windshield heating system OFF, wipe all the external windshield area with a lint-free wiper cloth moist with clean water or water the windshield area with clean water to reduce the temperature.

NOTE: The windshields 1 and 2 become cold.

(5) Energize the aircraft with the External DC-Power Supply (AMM TASK 20-40-01-860-801-A/200).

J. Operationally Check Windshield Heating (Figure 501)

SUBTASK 710-002-A

(1) Simulate the W/S 1 (2) HEAT FAIL caution message as follows:

(a) (POST-MOD S.B.145-30-0033) Set the WINDSHIELD 1 heating pushbutton, on the overhead panel, to ON.

(b) Set the W/S HTG test switch, on the maintenance panel, to 1 and hold it.

Result:

1 The EICAS display shows the W/S 1 HEAT FAIL caution message.

2 The master CAUTION lights flash.

(c) Release the W/S HTG test switch.

Result:

1 On the EICAS display, the W/S 1 HEAT FAIL caution message goes out of view.

(d) Push a master CAUTION light.

Result:

1 The master CAUTION lights go off.

(e) (POST-MOD S.B.145-30-0033) Set the WINDSHIELD 1 heating pushbutton, on the overhead panel, to OFF.

(f) (POST-MOD S.B.145-30-0033) Set the WINDSHIELD 2 heating pushbutton, on the overhead panel, to ON.

(g) Set the W/S HTG test switch to 2 and hold it.

Result:

1 The EICAS display shows the W/S 2 HEAT FAIL caution message.

2 The master CAUTION lights flash.

(h) Release the W/S HTG test switch.

Result:

1 On the EICAS display, the W/S 2 HEAT FAIL caution message goes out of view.

(i) Push a master CAUTION light.

Result:

1 The master CAUTION lights go off.

(j) (POST-MOD S.B.145-30-0033) Set the WINDSHIELD 2 heating pushbutton, on the overhead panel, to OFF.

(2) Do the check of the windshield heating as follows:

CAUTION: IF THE W/S HEAT FAIL CAUTION MESSAGE COMES INTO VIEW ON THE EICAS WHILE YOU DO THIS STEP, TURN OFF THE SYSTEM IMMEDIATELY TO PREVENT DAMAGE TO THE WINDSHIELD.

(a) Set the WINDSHIELD 1 heating pushbutton, on the overhead panel, to ON. Wait 5 minutes minimum to continue the test.

NOTE: High ambient temperatures and sunlight rays interfere with the WHS operation

Result:

1 The left windshield becomes hot.

NOTE: Suggestions to do a check to see if the internal windshield area is hot:

1. Inside the cockpit, put one of your hands on the heated area and the other on the non heated area, so you can feel the difference between the temperatures.

2. Depending on the ambient temperature, inside the cockpit, visually you can see differences between he heated area and non-heated area. For example: fog only at the non-heated area, de-icing of the heated area, a clear heated area without ice, fog, and moisture when compare to the non-heated area.

3. You can use a infrared thermometer (laser digital thermometer) to monitor the temperature of the external windshield heat area.

2 On the WINDSHIELD 1 heating pushbutton, the striped bar goes off.

(b) Set the WINDSHIELD 1 heating pushbutton to OFF.

Result:

1 The left windshield becomes cool.

2 On the WINDSHIELD 1 heating pushbutton, the striped bar comes on.

(c) Set the WINDSHIELD 2 heating pushbutton, on the overhead panel, to ON. Wait 5 minutes minimum to continue the test.

NOTE: High ambient temperatures and sunlight rays interfere with the WHS operation

Result:

1 The right windshield becomes hot.

NOTE: Suggestions to do a check to see if the internal windshield area is hot:

1. Inside the cockpit, put one of your hands on the heated area and the other on the non heated area, so you can feel the difference between the temperatures.

2. Depending on the ambient temperature, inside the cockpit, visually you can see differences between he heated area and non-heated area. For example: fog only at the non-heated area, de-icing of the heated area, a clear heated area without ice, fog, and moisture when compare to the non-heated area.

3. You can use a infrared thermometer (laser digital thermometer) to monitor the temperature of the external windshield heat area.

2 On the WINDSHIELD 2 heating pushbutton, the striped bar goes off.

(d) Set the WINDSHIELD 2 heating pushbutton to OFF.

Result:

1 The right windshield becomes cool.

2 On the WINDSHIELD 2 heating pushbutton, the striped bar comes on.

K. Follow-on

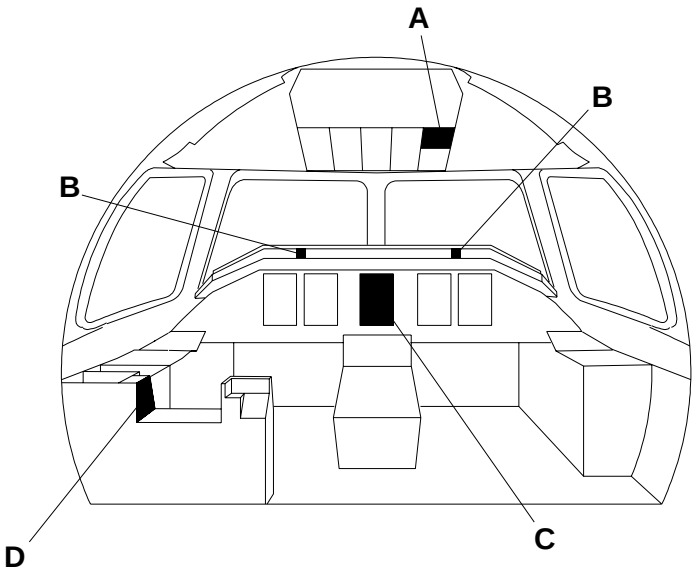
SUBTASK 842-002-A

(1) Close access door 223LZ (AMM MPP 06-41-03/100).

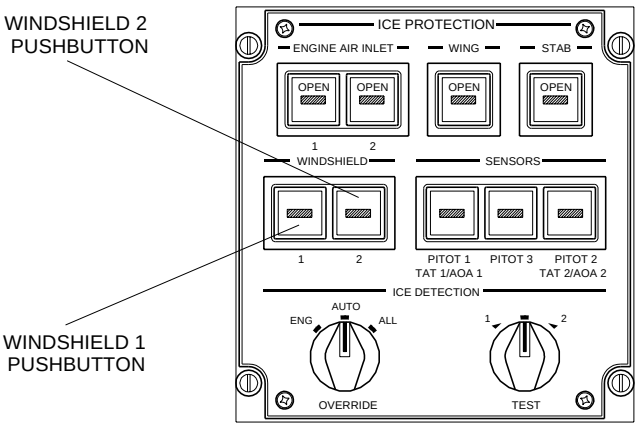
(2) Deenergize the aircraft (AMM TASK 20-40-01-860-801-A/200).

EFFECTIVITY: ALL

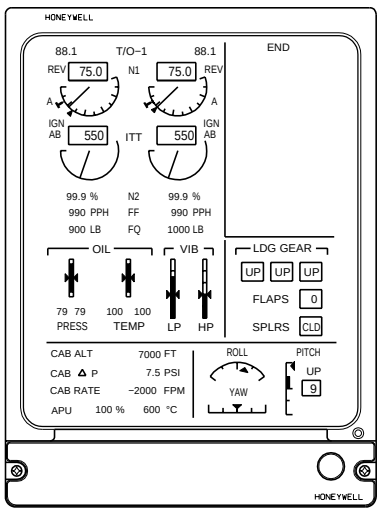
Windshield Heating - Operational Check
Figure 501



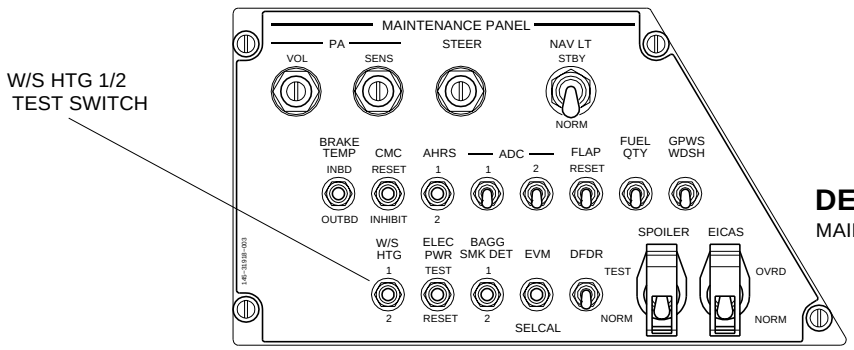
DET. B
MASTER CAUTION
LIGHT



DET. A
ICE PROTECTION PANEL



DET. C
EICAS DISPLAY



DET. D
MAINTENANCE PANEL

EM145AMM300399A.DGN

TASK 30-42-00-700-802-A
EFFECTIVITY: POST-MOD S.B. 145-30-0033

3. WINDSHIELD HEATING - FUNCTIONAL TEST

A. General

(1) The function of this check is to make sure that the windshield heating operates correctly.

B. References

REFERENCE	*DESIGNATION*
AMM MPP 06-41-02/100	-
AMM TASK 20-40-01-860-801-A/200	ENERGIZATION OF THE AIRCRAFT WITH AN EXTERNAL POWER SOURCE
AMM TASK 28-41-00-200-801-A/600	-
AMM TASK 53-01-01-000-801-A/400	COCKPIT FLOOR PANELS - REMOVAL
AMM TASK 53-01-01-400-801-A/400	COCKPIT FLOOR PANELS - INSTALLATION

C. Zones and Accesses

ZONE	*PANEL/DOOR*	*LOCATION*
221	221CF	LH side cockpit floor
222	222BF	RH side cockpit floor

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*
2	Do the task	Cockpit

I. Preparation

SUBTASK 841-003-A

(1) Remove panel 221CF to get access to windshield temperature controller 1 and panel 222BF to get access to windshield temperature controller 2 (AMM MPP 06-41-02/100) and (AMM TASK 53-01-01-000-801-A/400).

(2) On the overhead Circuit Breaker Panel, make sure that these circuit breakers are closed:

- WSHLD TEMP 1 (Location tip: DC BUS 1/ICE AND RAIN PROTECTION/ WSHLD TEMP 1).
- WSHLD TEMP 2 (Location tip: SHED DC BUS 2/ WSHLD TEMP 2).

(3) Make sure that the WINDSHIELD 1 and WINDSHIELD 2 heating pushbuttons, on the overhead panel, are set at OFF.

(4) Energize the aircraft with the External DC-Power Supply (AMM TASK 20-40-01-860-801-A/200).

J. Functionally Test Windshield Heating (Figure 501)

SUBTASK 720-002-A

(1) For the left windshield heating system functional test, do as follows:

CAUTION: IF THE W/S HEAT FAIL CAUTION MESSAGE COMES INTO VIEW ON THE EICAS WHILE YOU DO THIS STEP, TURN OFF THE SYSTEM IMMEDIATELY TO PREVENT DAMAGE TO THE WINDSHIELD.

(a) Set the WINDSHIELD 1 heating pushbutton, on the overhead panel, to ON.

Result:

1 The left windshield becomes hot.

(b) Measure the power output at pin B of the windshield temperature controller.

NOTE: Write down the maximum value of voltage that you got.

Result:

1 The power output must be between 0 and 18 V DC and decrease while the windshield temperature stabilizes.

(c) Set the WINDSHIELD 1 heating pushbutton to OFF.

Result:

1 The left windshield becomes cool.

NOTE: Wait until the windshield cools completely to continue the test.

(d) On the overhead panel, set the WINDSHIELD 1 heating and the STAB pushbutton to ON, and the OVERRIDE switch to ALL. Measure the power output at pin B of the windshield temperature controller.

NOTE: Write down the maximum value of voltage that you got.

Result:

1 The power output must be between 0 and 28 V DC and decrease while the windshield temperature stabilizes.

(e) On the overhead panel, set the WINDSHIELD 1 heating and the STAB pushbutton to OFF, and the OVERRIDE switch to AUTO.

Result:

1 The left windshield becomes cool.

NOTE: Wait until the windshield cools completely to continue the test.

(f) On the overhead panel, set the WINDSHIELD 1 heating to ON and ICE DETECTOR TEST SWITCH to 1. Measure the power output at pin B of the windshield temperature controller.

NOTE: Write down the maximum value of voltage that you got.

Result:

1 The power output must be between 0 and 28 V DC and decrease while the windshield temperature stabilizes.

(g) Set the WINDSHIELD 1 heating and the ICE DETECTOR TEST SWITCH to OFF.

Result:

1 The left windshield becomes cool.

NOTE: Wait until the windshield cools completely to continue the test.

(h) On the overhead panel, set the WINDSHIELD 1 heating to ON and ICE DETECTOR TEST SWITCH to 2. Measure the power output at pin B of the windshield temperature controller.

NOTE: Write down the maximum value of voltage that you got.

Result:

1 The power output must be between 0 and 28 V DC and decrease while the windshield temperature stabilizes.

(i) Set the WINDSHIELD 1 heating and the ICE DETECTOR TEST SWITCH to OFF.

Result:

1 The left windshield becomes cool.

(j) Compare the value got in item (b) with the values got in items (d), (f), and (h).

Result:

1 The values got in items (d), (f), and (h) must be greater than the value got in item (b).

(2) For the right windshield heating system functional test, do as follows:

CAUTION: IF THE W/S HEAT FAIL CAUTION MESSAGE COMES INTO VIEW ON THE EICAS WHILE YOU DO THIS STEP, TURN OFF THE SYSTEM IMMEDIATELY TO PREVENT DAMAGE TO THE WINDSHIELD.

(a) Set the WINDSHIELD 2 heating pushbutton, on the overhead panel, to ON.

Result:

1 The right windshield becomes hot.

(b) Measure the power output at pin B of the windshield temperature controller.

NOTE: Write down the maximum value of voltage that you got.

Result:

1 The power output must be between 0 and 18 V DC and decrease while the windshield temperature stabilizes.

(c) Set the WINDSHIELD 2 heating pushbutton to OFF.

Result:

1 The left windshield becomes cool.

NOTE: Wait until the windshield cools completely to continue the test.

(d) On the overhead panel, set the WINDSHIELD 2 heating and the STAB pushbutton to ON, and the OVERRIDE switch to ALL. Measure the power output at pin B of the windshield temperature controller.

NOTE: Write down the maximum value of voltage that you got.

Result:

1 The power output must be between 0 and 28 V DC and decrease while the windshield temperature stabilizes.

(e) On the overhead panel, set the WINDSHIELD 2 heating and the STAB pushbutton to OFF, and the OVERRIDE switch to AUTO.

Result:

1 The right windshield becomes cool.

NOTE: Wait until the windshield cools completely to continue the test.

(f) On the overhead panel, set the WINDSHIELD 2 heating to ON and ICE DETECTOR TEST SWITCH to 1. Measure the power output at pin B of the windshield temperature controller.

NOTE: Write down the maximum value of voltage that you got.

Result:

1 The power output must be between 0 and 28 V DC and decrease while the windshield temperature stabilizes.

(g) Set the WINDSHIELD 2 heating and the ICE DETECTOR TEST SWITCH to OFF.

Result:

1 The right windshield becomes cool.

NOTE: Wait until the windshield cools completely to continue the test.

(h) On the overhead panel, set the WINDSHIELD 2 heating to ON and ICE DETECTOR TEST SWITCH to 2. Measure the power output at pin B of the windshield temperature controller.

NOTE: Write down the maximum value of voltage that you got.

Result:

1 The power output must be between 0 and 28 V DC and decrease while the windshield temperature stabilizes.

(i) Set the WINDSHIELD 2 heating and the ICE DETECTOR TEST SWITCH to OFF.

Result:

1 The right windshield becomes cool.

(j) Compare the value got in item (b) with the values got in items (d), (f), and (h).

Result:

1 The values got in items (d), (f), and (h) must be greater than the value got in item (b).

K. Follow-on

SUBTASK 842-003-A

(1) 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).

(2) Install access panel 221CF for windshield temperature controller 1 and access panel 222BF for windshield temperature controller 2 (AMM MPP 06-41-02/100) and (AMM TASK 53-01-01-400-801-A/400).

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