

## COOLING PACK SYSTEM - ADJUSTMENT/TEST

*EFFECTIVITY: ACFT MODEL(S) EMB-145*

### 1. General

- A. This section gives the procedures to do the operational check of the ECS OFF signal from the FADEC. It also gives the procedures to do the operational test and the functional check of the cooling packs.
- 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
21-51-00-700-801-A ◆	ECS OFF SIGNAL - OPERATIONAL CHECK	ACFT MODEL(S) EMB-145
21-51-00-700-802-A	COOLING PACK SYSTEM - OPERATIONAL TEST	ACFT MODEL(S) EMB-145
21-51-00-700-803-A ◆	COOLING PACK SYSTEM - FUNCTIONAL CHECK	ACFT MODEL(S) EMB-145

TASK 21-51-00-700-801-A

EFFECTIVITY: ACFT MODEL(S) EMB-145

2. ECS OFF SIGNAL - OPERATIONAL CHECK

A. General

(1) This task gives the instructions to do the check of the ECS OFF signal from the FADEC.

B. References

REFERENCE	DESIGNATION
AMM MPP 06-41-01/100	-
AMM SDS 34-52-00/1	
AMM SDS 76-12-00/1	
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	-

C. Zones and Accesses

ZONE	PANEL/DOOR	LOCATION
191	191KL	LH side of the forward wing-to-fuselage fairing
191	191FR	Forward wing-to-fuselage fairing

D. Tools and Equipment

ITEM	DESCRIPTION	PURPOSE	QTY
GSE 044	Headset - Ramp	To permit communication between the technicians	
GSE 128	Air Data Kit	To permit interface between GSE 129 and the aircraft, if applicable	
GSE 129	Pitot/Static-System Test Set	To supply static and total pressures, if applicable	

E. Auxiliary Items

ITEM	DESCRIPTION	PURPOSE	QTY
Commercially available	Test Lamp (28 VDC)	To make sure that the ECS OFF signal was sent	2

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	Outside the aircraft

I. Preparation (Figure 501) (Figure 502)

SUBTASK 841-027-A

- (1) Connect the ramp interphone to permit communication between the technicians.
- (2) On the overhead circuit breaker panel, open the START 1 and START 2 circuit breakers and attach DO-NOT-CLOSE tags to them.
- (3) On the overhead circuit breaker panel, open the PACK 1 and PACK 2 circuit breakers.
- (4) Remove access panels 191KL and 191FR (AMM MPP 06-41-01/100).
- (5) Disconnect electrical connector P0075 from the LH pack valve and electrical connector P0076 from the RH pack valve.
- (6) Install the test lamps between pins A and B of electrical connectors P0075 and P0076.
- (7) On the overhead circuit breaker panel, close the PACK 1 and PACK 2 circuit breakers.
- (8) Energize the aircraft with the external DC power supply ( AMM TASK 20-40-01-860-801-A/200).
- (9) On the overhead circuit breaker panel, make sure the FADEC 1A, FADEC 1B, FADEC 2A and FADEC 2B circuit breakers are in the closed position.
- (10) Make sure that the thrust levers are in the IDLE position.
- (11) On the EICAS display, make sure that one of these thrust rating mode messages is shown: T/O-1 or T/O or T/O RSV or ET/O or ET/O RSV (AMM SDS 76-12-00/1).

J. Operationally Check Cooling Pack System to Verify ECS OFF Signal (Figure 501) (Figure 502) (Figure 503) (Figure 504)

SUBTASK 710-016-B

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

- NOTE:**
- For the temperature limits for the ECS OFF signal activation, refer to Figure 503.
  - On aircraft with AE 3007 A and A1/1 engine models, the ECS OFF signal will be activated at temperatures (TAT) above – 18°C (– 0.4°F) (graphic areas 1 and 2).
  - On aircraft with other AE 3007 engine models, the ECS OFF signal will be activated at temperatures (TAT) above 19°C (66°F) at sea level; then it decreases linearly to – 5°C (23°F) at 9,700 ft (graphic area 1). If the result of

"Ambient Temperature X Pressure Altitude" is out of the envelope (1), refer to [Figure 503](#). Do step (2).

- (1) Do the check as follows:
  - (a) On the AIR CONDITIONING/PNEUMATIC control panel, on the overhead panel, set the PACK 1 and PACK 2 pushbuttons to ON. Refer to [Figure 501](#) DET. C.  
Result:
    - 1 Make sure that the test lamps come on.
  - (b) On the overhead circuit breaker panel, open the FADEC 1B and FADEC 2B circuit breakers.  
Result:
    - 1 Make sure that the test lamps stay on.
  - (c) On the control pedestal, set the thrust levers to the THRUST SET position (engines stopped). Refer to [Figure 501](#) DET. B.  
Result:
    - 1 Make sure that the test lamps go off.  
NOTE: If the test lamps stay on, go to step (2).
  - (d) Set the thrust levers to the IDLE position. Refer to [Figure 501](#) DET. B.  
Result:
    - 1 Make sure that the test lamps stay off.
  - (e) On the overhead circuit breaker panel, close the FADEC 1B and FADEC 2B circuit breakers.  
Result:
    - 1 Make sure that the test lamps stay off.
  - (f) On the AIR CONDITIONING/PNEUMATIC control panel, on the overhead panel, set the PACK 1 and PACK 2 pushbuttons to OFF and then set them to ON again. Refer to [Figure 501](#) DET. C.  
Result:
    - 1 Make sure that the test lamps come on.
  - (g) On the overhead circuit breaker panel, open the FADEC 1A and FADEC 2A circuit breakers.  
Result:
    - 1 Make sure that the test lamps stay on.
  - (h) On the control pedestal, set the thrust levers to the THRUST SET position (engines stopped). Refer to [Figure 501](#) DET. B.  
Result:
    - 1 Make sure that the test lamps go off.  
NOTE: If the test lamps stay on, go to step (2).
  - (i) Set the thrust levers to the IDLE position. Refer to [Figure 501](#) DET. B.  
Result:
    - 1 Make sure that the test lamps stay off.
  - (j) On the overhead circuit breaker panel, close the FADEC 1A and FADEC 2A circuit breakers.

Result:

1 Make sure that the test lamps stay off.

- (k) On the AIR CONDITIONING/PNEUMATIC control panel, on the overhead panel, set the PACK 1 and PACK 2 pushbuttons to OFF and then set them to ON again. Refer to [Figure 501](#) DET. C.

Result:

1 Make sure that the test lamps come on.

- (2) Under the condition "Ambient Temperature X Pressure Altitude" out of the graphic area 1 of the ECS OFF SIGNAL ENVELOPE ([Figure 503](#)), refer to [Figure 504](#) and do as follows:

**CAUTION:** TO PREVENT CONTAMINATION OF THE SYSTEM, MAKE SURE THAT THERE ARE NO FOREIGN MATERIALS IN THE STATIC PRESSURE PORTS OR IN THE ADAPTERS, BEFORE THE CONNECTION OF THE TEST SET.

- (a) Connect the output static port of the test set to anemometric static ports 2 and 4 (or to anemometric static ports 1 and 3). Refer to [Figure 504](#) DET. C.

**NOTE:** This procedure can cause interference with the local air traffic during simulations of altitude with the anemometric bench test. To prevent this, make sure that the transponder is on the STANDBY condition ([AMM SDS 34-52-00/1](#)).

- (b) Connect the adapters (or adhesive tape) to seal anemometric static ports 1 and 3 (or 2 and 4) and attach REMOVE-BEFORE-FLIGHT tags to them. Refer to [Figure 504](#) DET. D.

- (c) On the overhead circuit breaker panel, open the PRESS CONTROL circuit breaker and attach a DO-NOT-CLOSE tag to it (Location tip: DC BUS 1/AIR COND/ PNEU/PRESS CONTROL).

- (d) Set the altitude of the PITOT/STATIC SYSTEM TEST SET to make the "Ambient Temperature X Pressure Altitude" value to be in the envelope (1). Refer to [Figure 503](#) and do step (1) again.

**NOTE:** Make sure that the altitude is not more than 9700ft and the climb rate is not more than 3500 ft/min on the PITOT/STATIC SYSTEM TEST SET and the PFD.

- (e) After step (1) is completed, remove the adapters, PITOT/STATIC SYSTEM TEST SET, and REMOVE-BEFORE-FLIGHT tag or adhesive tape. Refer to [Figure 504](#).

- (f) On the overhead circuit breaker panel, close the PRESS CONTROL circuit breaker and remove the DO-NOT-CLOSE tag.

K. Follow-on ([Figure 501](#)) ([Figure 502](#))

*SUBTASK 842-027-A*

- (1) Deenergize the aircraft ( [AMM TASK 20-40-01-860-801-A/200](#)).
- (2) On the overhead circuit breaker panel, open the PACK 1 and PACK 2 circuit breakers.

- (3) Remove the test lamps.
- (4) Connect electrical connector P0075 to the LH pack valve and electrical connector P0076 to the RH pack valve.
- (5) Do an inspection on the fuel quantity indication harness (AMM TASK 28-41-00-200-801-A/600).

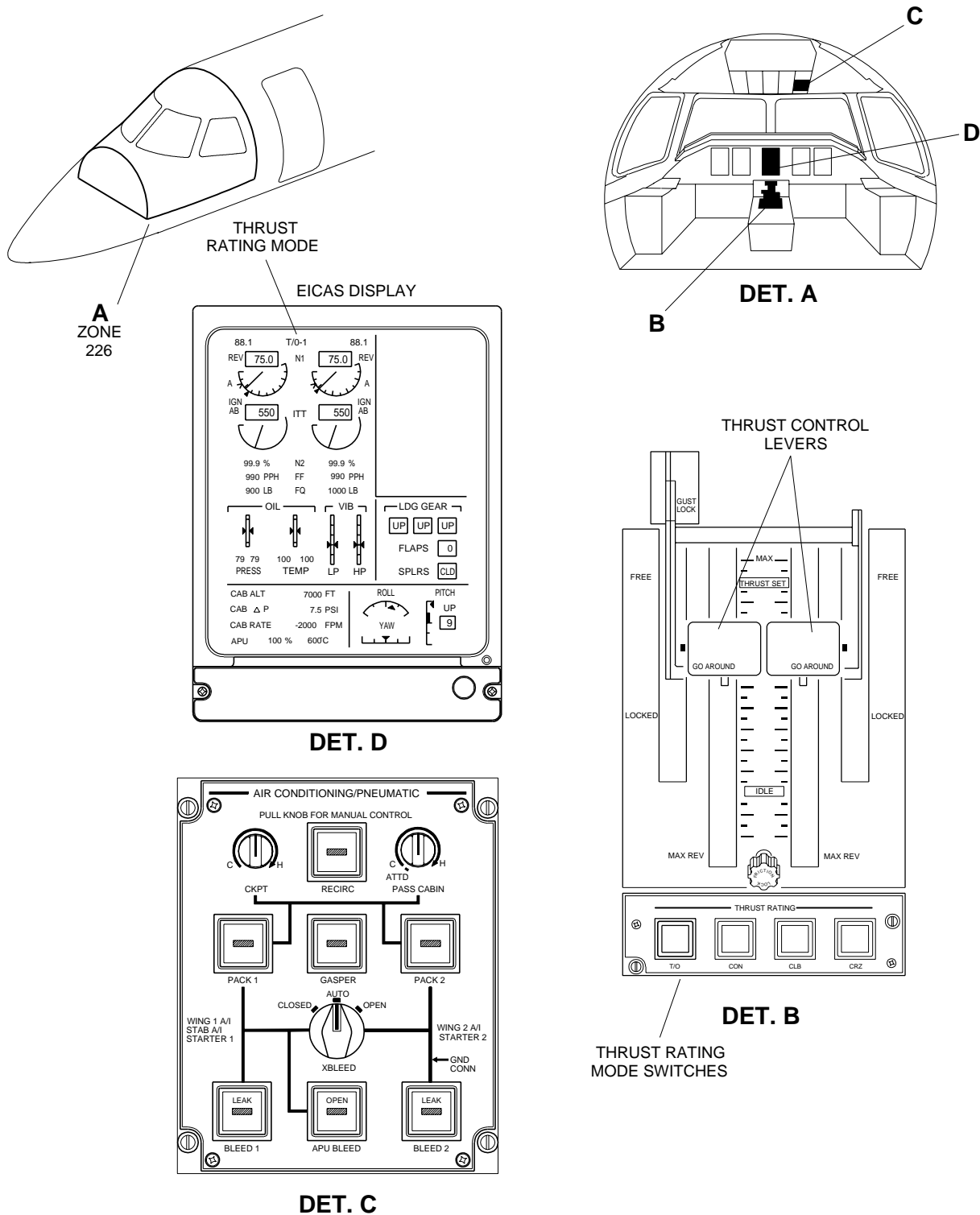
NOTE: The inspection of fuel quantity indication harness is a part of Critical Design Configuration Control Limitations (CDCCL) in the Airworthiness Limitations (Section 6) of the Maintenance Review Board Report (MRB).

- (6) Install access panels 191KL and 191FR (AMM MPP 06-41-01/100).
- (7) On the overhead circuit breaker panel, close the PACK 1 and PACK 2 circuit breakers.
- (8) On the overhead circuit breaker panel, close the START 1 and START 2 circuit breakers and remove the DO-NOT-CLOSE tag.
- (9) Disconnect the ramp interphone.

EFFECTIVITY: ACFT MODEL(S) EMB-145

ECS OFF Signal - Operational Check

Figure 501

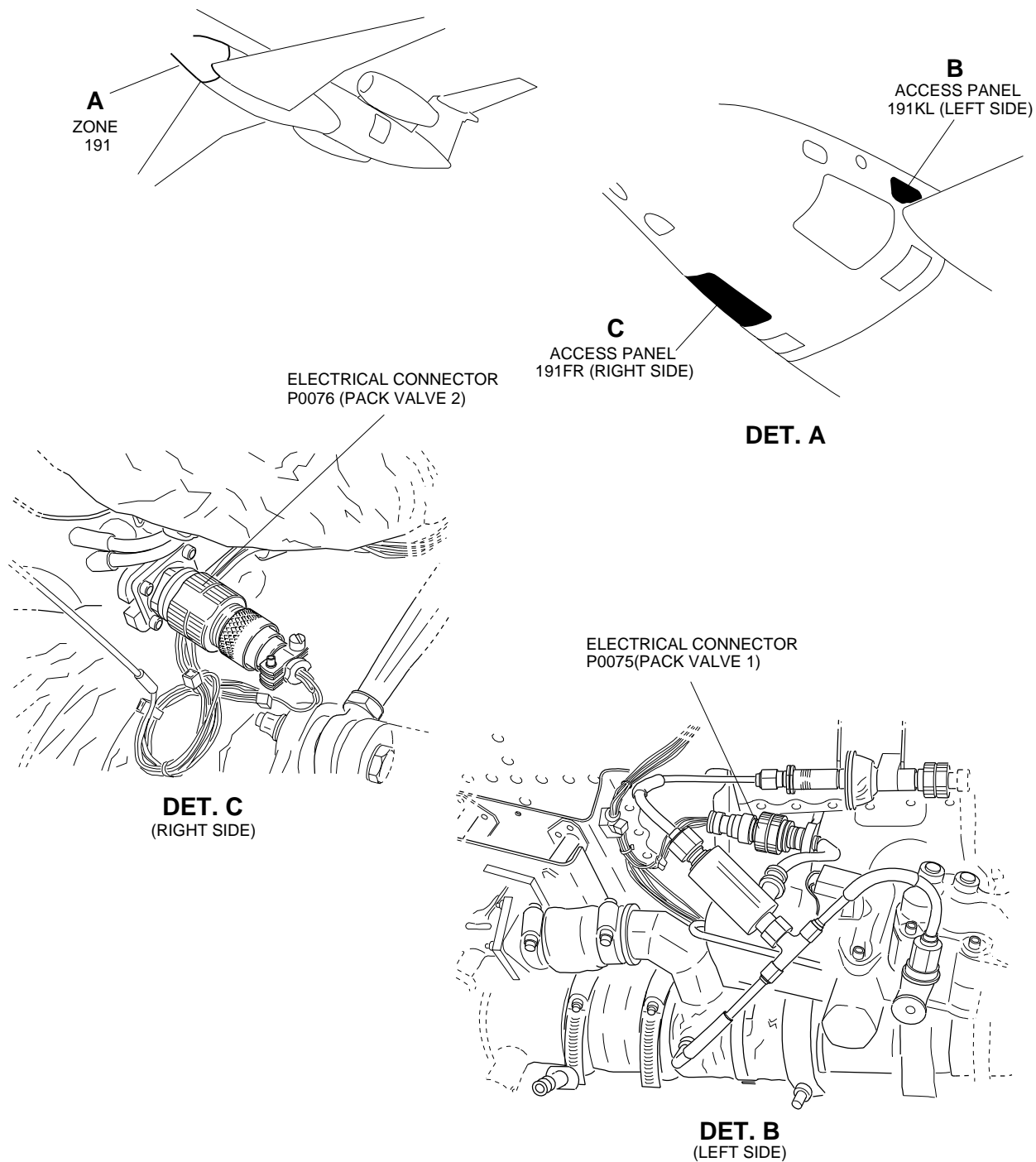


145AMM210035.MCE E

EFFECTIVITY: ACFT MODEL(S) EMB-145

ECS OFF Signal - Operational Check - Electrical Connector Locations

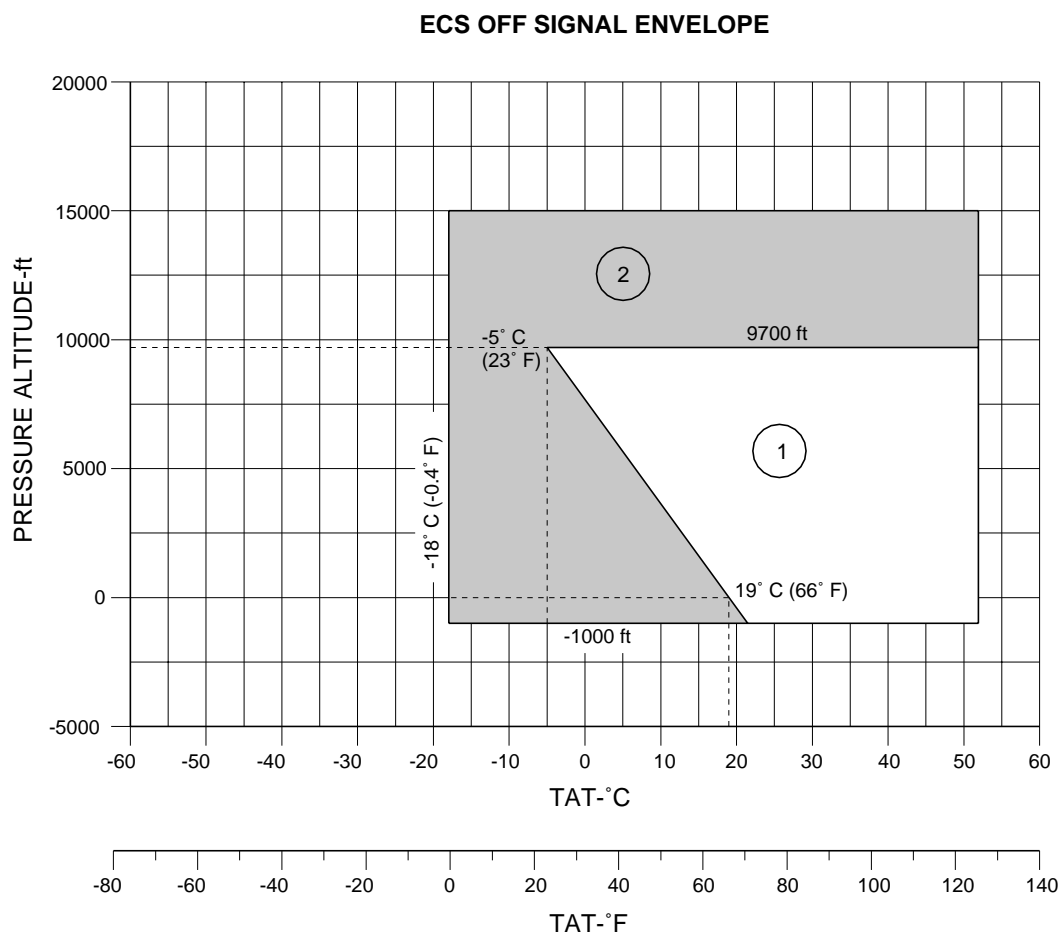
Figure 502



145AMM210219.MCE A



EFFECTIVITY: ACFT MODEL(S) EMB-145  
ECS OFF Signal Envelope  
Figure 503

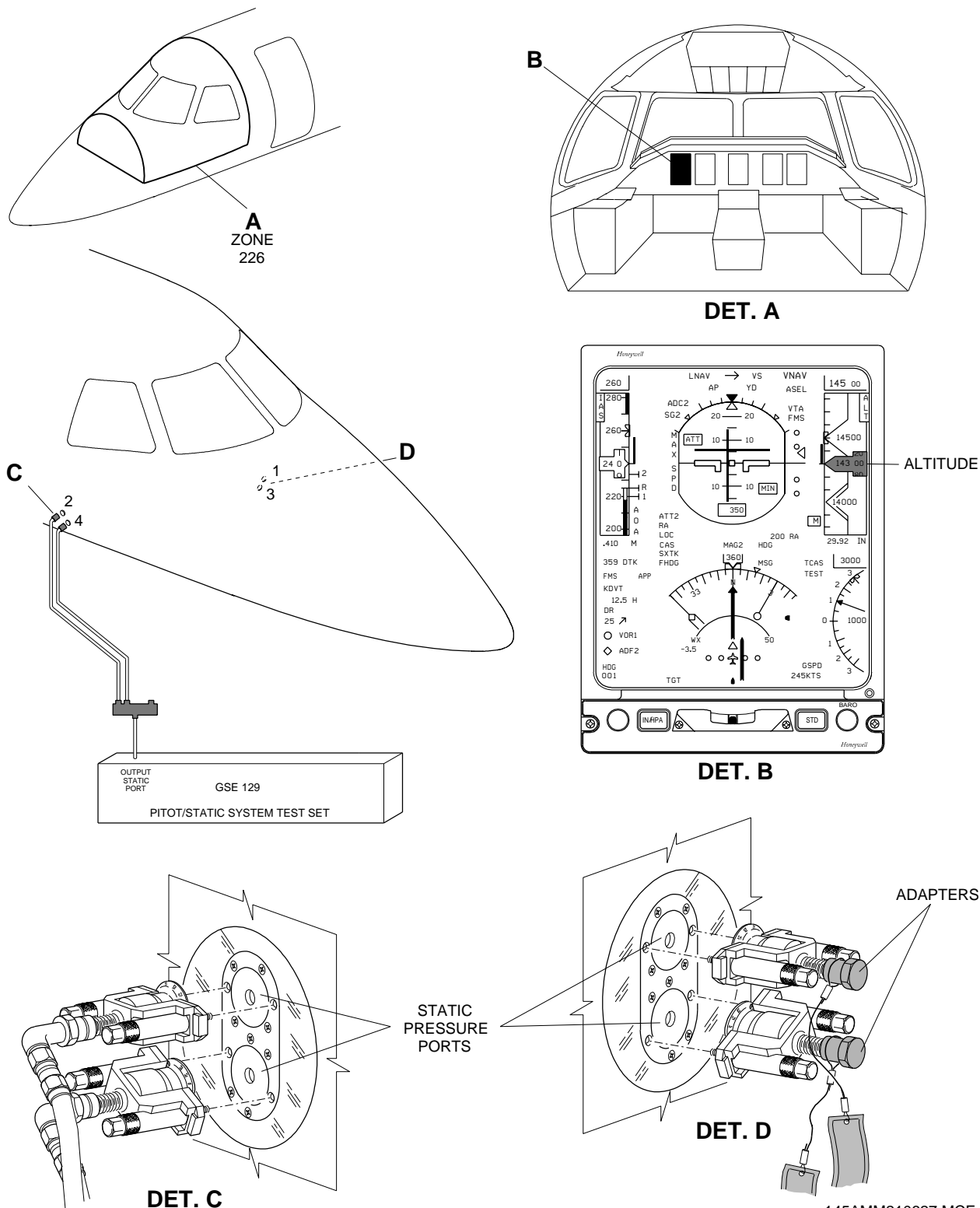


145AMM210355.MCE

EFFECTIVITY: ACFT MODEL(S) EMB-145

ECS OFF Signal - Pitot/Static System Test Set - Connection/Disconnection

Figure 504



TASK 21-51-00-700-802-A

EFFECTIVITY: ACFT MODEL(S) EMB-145

### 3. COOLING PACK SYSTEM - OPERATIONAL TEST

#### A. General

- (1) This task gives the procedures to do the operational test of the LH and RH cooling packs.
- (2) The gasper fan always operates when the aircraft is energized on the ground. There will be airflow through the gaspers independently of the GASPER switch position.

#### B. References

REFERENCE	DESIGNATION
<a href="#">AMM TASK 36-00-00-860-801-A/200</a>	PNEUMATIC ENERGY - AIR BLEED THROUGH ONE OF THE ENGINES
<a href="#">AMM TASK 36-00-00-860-802-A/200</a>	PNEUMATIC ENERGY - AIR BLEED THROUGH THE APU

#### C. Zones and Accesses

Not Applicable

#### 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 841-028-B**

- (1) Supply the pneumatic energy ( [AMM TASK 36-00-00-860-801-A/200](#)) or ( [AMM TASK 36-00-00-860-802-A/200](#)).

#### J. Operational Test of the Cooling Pack System (Figure 501)

**SUBTASK 710-017-B**

- (1) Do the operational test as follows:
  - (a) On the AIR CONDITIONING/PNEUMATIC control panel on the overhead panel, set the pushbuttons as follows:

- PACK 1 - ON.
- PACK 2 - OFF.
- RECIRC - OFF.
- GASPER - OFF.

Result:

1 Air flows through the general outlets.

- (b) On the AIR CONDITIONING/PNEUMATIC control panel on the overhead panel, set the PACK 1 pushbutton to OFF.

Result:

1 The airflow through the general outlets stops.

- (c) On the AIR CONDITIONING/PNEUMATIC control panel on the overhead panel, set the pushbuttons as follows:

- PACK 2 - ON.
- RECIRC - OFF.
- GASPER - OFF.

Result:

1 Air flows through the general outlets.

- (d) Set the PACK 2 pushbutton to OFF.

Result:

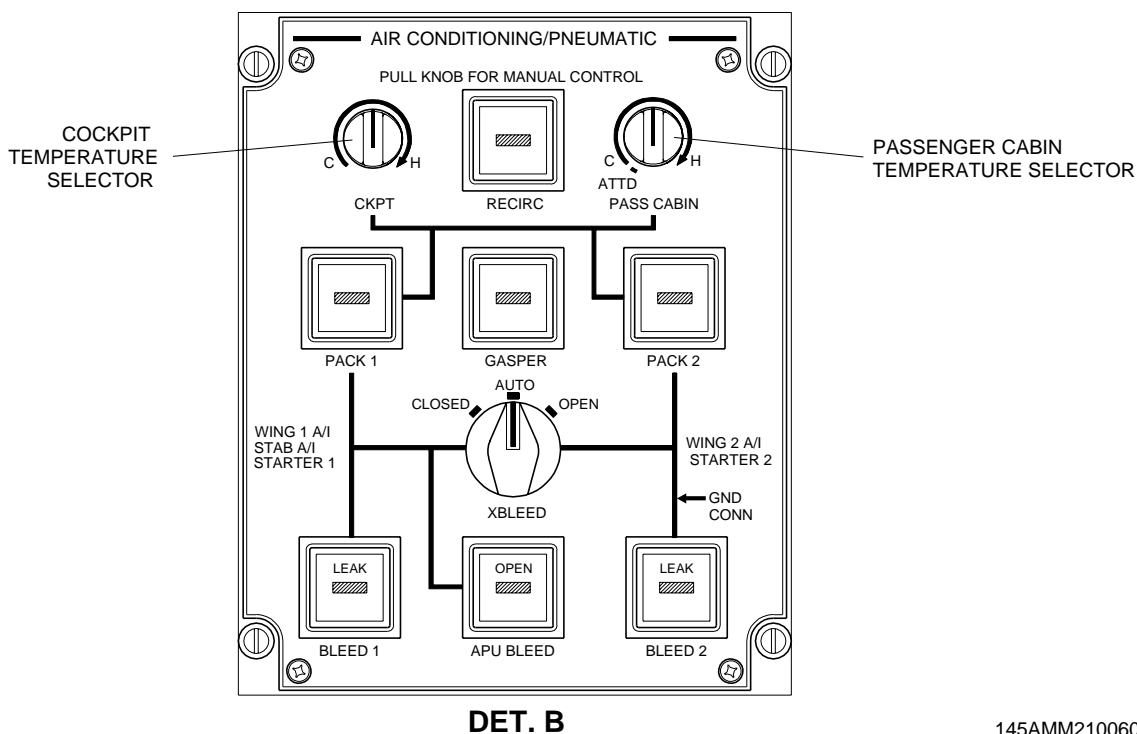
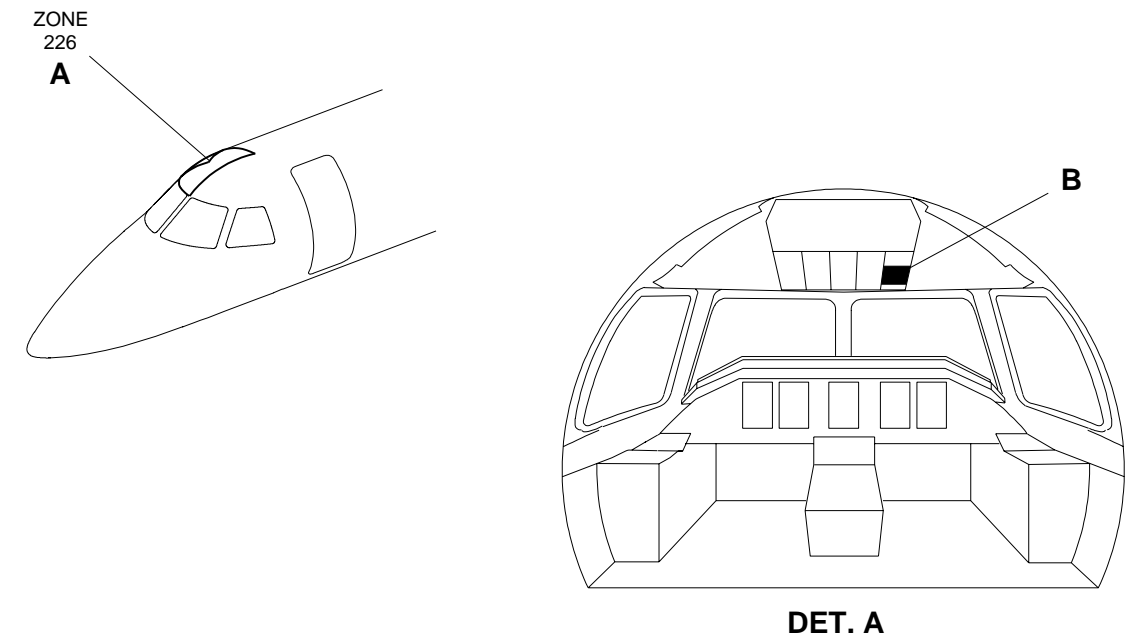
1 The airflow through the general outlets stops.

K. Follow-on

*SUBTASK 842-028-B*

- (1) Stop the pneumatic energy supply ( [AMM TASK 36-00-00-860-801-A/200](#)) or ( [AMM TASK 36-00-00-860-802-A/200](#)).

EFFECTIVITY: ACFT MODEL(S) EMB-145  
Cooling Pack System - Operational Test  
Figure 505



145AMM210060.MCE B

TASK 21-51-00-700-803-A

EFFECTIVITY: ACFT MODEL(S) EMB-145

#### 4. COOLING PACK SYSTEM - FUNCTIONAL CHECK

##### A. General

(1) This task gives the instructions to do the functional check of the cooling pack system.

##### B. References

REFERENCE	DESIGNATION
AMM MPP 06-41-01/100	-
<a href="#">AMM TASK 20-40-01-860-801-A/200</a>	ENERGIZATION OF THE AIRCRAFT WITH AN EXTERNAL POWER SOURCE
AMM TASK 28-41-00-200-801-A/600	-
<a href="#">S.B.145-21-0012</a>	-

##### C. Zones and Accesses

ZONE	PANEL/DOOR	LOCATION
191	191KL	LH side of the forward wing-to-fuselage fairing
191	191FR	Forward wing-to-fuselage fairing

##### D. Tools and Equipment

ITEM	DESCRIPTION	PURPOSE	QTY
<a href="#">GSE 044</a>	Headset - Ramp	To permit communication between the technicians	
<a href="#">GSE 050</a>	Multimeter - Digital	To measure the voltage	

##### 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	Outside the aircraft

I. Preparation (Figure 506) (Figure 507)

SUBTASK 841-029-A

- (1) Aircraft on ground.
- (2) Connect the ramp interphone to permit communication between the technicians.
- (3) Keep the main door closed.
- (4) On the overhead circuit breaker panel, open the PACK 1, PACK 2, and WING circuit breakers.
- (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) Remove access panels 191KL and 191FR (AMM MPP 06-41-01/100).
- (7) Disconnect electrical connectors P0075 from the LH pack valve, P0076 from the RH pack valve, and P0981 from the LH wing anti-icing valve.
- (8) Energize the aircraft with the external DC power supply ( AMM TASK 20-40-01-860-801-A/200).

J. Functionally Check Cooling Pack System (PRE-MOD. S.B. 145-36-0028) (Figure 506) (Figure 507)

SUBTASK 720-016-A

EFFECTIVITY: PRE-MOD. S.B. 145-36-0028

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

- (1) Do the check as follows:
  - (a) On the overhead circuit breaker panel, close the PACK 1 circuit breaker.
  - (b) On the AIR CONDITIONING/PNEUMATIC control panel on the overhead panel, set the PACK 1 pushbutton to ON.
  - (c) On the P0075 connector, measure the voltage between A (-) and B (+) pins.  
Result:  
1 The voltage must be  $28 \pm 2$  V DC.
  - (d) On the P0075 connector, measure the voltage between A (-) and C (+) pins.  
Result:  
1 The voltage must be  $28 \pm 2$  V DC.
  - (e) On the overhead circuit breaker panel, close the WING circuit breaker.
  - (f) On the ICE PROTECTION control panel on the overhead panel, set the WING pushbutton to ON.
  - (g) On the P0981 connector, make a jumper from E pin to F pin.

- (h) On the P0075 connector, measure the voltage between the A (-) and B (+) pins.  
Result:  
1 The voltage must be  $28 \pm 2$  V DC.
- (i) On the P0075 connector, measure the voltage between the A (-) and C (+) pins.  
Result:  
1 The voltage must be  $28 \pm 2$  V DC.
- (j) On the overhead circuit breaker panel, close the PACK 2 circuit breaker.
- (k) On the AIR CONDITIONING/PNEUMATIC control panel on the overhead panel, set the PACK 2 pushbutton to ON.
- (l) On the P0076 connector, make a jumper from E pin to F pin.
- (m) On the P0075 connector, measure the voltage between the A (-) and B (+) pins.  
Result:  
1 The voltage must be 0 V DC.
- (n) On the P0075 connector, measure the voltage between the A (-) and C (+) pins.  
Result:  
1 The voltage must be 0 V DC.
- (o) On the P0076 connector, measure the voltage between the A (-) and B (+) pins.  
Result:  
1 The voltage must be  $28 \pm 2$  V DC.
- (p) On the P0076 connector, measure the voltage between the A (-) and C (+) pins.  
Result:  
1 For aircraft PRE-MOD. [S.B.145-21-0012](#), the voltage must be  $28 \pm 2$  V DC.  
2 For aircraft POST-MOD. [S.B.145-21-0012](#), the voltage must be 0 V DC.

K. Functionally Check Cooling Pack System (POST-MOD. S.B. 145-36-0028) ([Figure 506](#)) ([Figure 507](#))

SUBTASK 720-017-A

EFFECTIVITY: POST-MOD. S.B. 145-36-0028

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

- (1) Do the check as follows:
  - (a) On the overhead circuit breaker panel, close the PACK 1 circuit breaker.
  - (b) On the AIR CONDITIONING/PNEUMATIC control panel on the overhead panel, set the PACK 1 pushbutton to ON.
  - (c) On the P0075 connector, measure the voltage between A (-) and B (+) pins.  
Result:  
1 The voltage must be  $28 \pm 2$  V DC.
  - (d) On the P0075 connector, measure the voltage between A (-) and C (+) pins.  
Result:  
1 The voltage must be  $28 \pm 2$  V DC.



- (e) On the overhead circuit breaker panel, close the WING circuit breaker.
- (f) On the ICE PROTECTION control panel on the overhead panel, set the WING pushbutton to ON.
- (g) On the P0981 connector, make a jumper from E pin to F pin.
- (h) On the P0075 connector, measure the voltage between the A (-) and B (+) pins.  
Result:  
1 The voltage must be  $28 \pm 2$  V DC.
- (i) On the P0075 connector, measure the voltage between the A (-) and C (+) pins.  
Result:  
1 The voltage must be  $28 \pm 2$  V DC.
- (j) On the overhead circuit breaker panel, close the PACK 2 circuit breaker.
- (k) On the AIR CONDITIONING/PNEUMATIC control panel on the overhead panel, set the PACK 2 pushbutton to ON.
- (l) On the P0076 connector, make a jumper from E pin to F pin.
- (m) On the ICE PROTECTION control panel on the overhead panel, set the STAB pushbutton to ON.

**NOTE:** Make sure that the STAB circuit breaker is closed, on the overhead circuit breaker panel.

- (n) On the ICE PROTECTION control panel on the overhead panel, set the OVERRIDE switch to ALL position.
- (o) On the ICE PROTECTION control panel on the overhead panel, set the TEST switch to 1 or 2 position.
- (p) On the P0075 connector, measure the voltage between the A (-) and B(+) pins.  
Result:  
1 The voltage must be 0 V DC.
- (q) On the ICE PROTECTION control panel on the overhead panel, release the TEST switch.
- (r) On the ICE PROTECTION control panel on the overhead panel, return the OVERRIDE switch to AUTO position.
- (s) On the ICE PROTECTION control panel on the overhead panel, set the STAB pushbutton to OFF.
- (t) On the P0075 connector, measure the voltage between the A (-) and C (+) pins.  
Result:  
1 The voltage must be 0 V DC.
- (u) On the P0076 connector, measure the voltage between the A (-) and B (+) pins.  
Result:  
1 The voltage must be  $28 \pm 2$  V DC.
- (v) On the P0076 connector, measure the voltage between the A (-) and C (+) pins.  
Result:  
1 For aircraft PRE-MOD. [S.B.145-21-0012](#), the voltage must be  $28 \pm 2$  V DC.  
2 For aircraft POST-MOD. [S.B.145-21-0012](#), the voltage must be 0 V DC.

- L. Follow-on (Figure 506) (Figure 505)

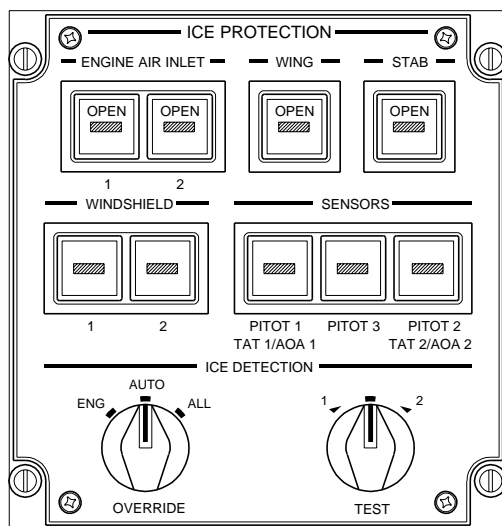
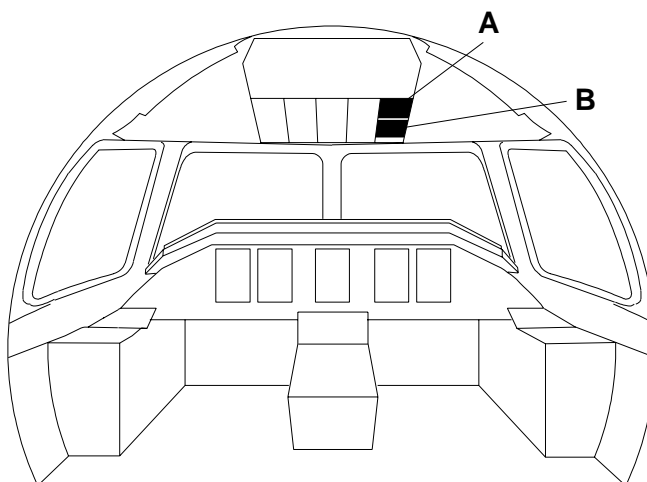
*SUBTASK 842-029-A*

- (1) Remove the jumpers from electrical connectors P0076 and P0981.
- (2) Deenergize the aircraft ( [AMM TASK 20-40-01-860-801-A/200](#)).
- (3) On the overhead circuit breaker panel, open the PACK 1, PACK 2, and WING circuit breakers.
- (4) Connect electrical connectors P0075 to the LH pack valve, P0076 to the RH pack valve, and P0981 to the LH wing anti-icing valve.
- (5) Do an inspection on the fuel quantity indication harness (AMM TASK 28-41-00-200-801-A/600).

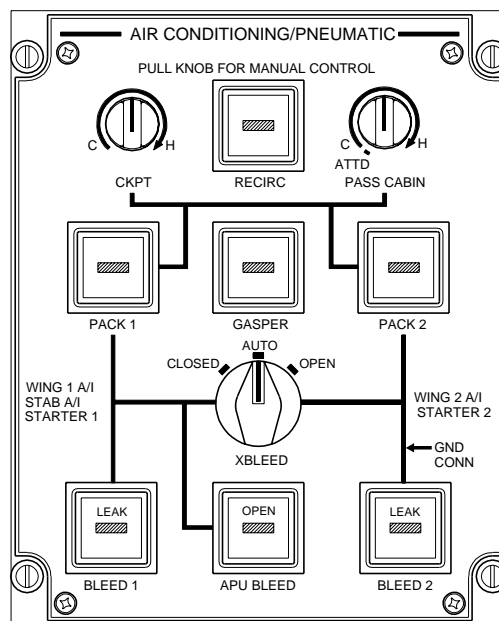
NOTE: The inspection of fuel quantity indication harness is a part of Critical Design Configuration Control Limitations (CDCCL) in the Airworthiness Limitations (Section 6) of the Maintenance Review Board Report (MRB).

- (6) Install access panels 191KL and 191FR (AMM MPP 06-41-01/100).
- (7) On the overhead circuit breaker panel, close the PACK 1, PACK 2, and WING circuit breakers.
- (8) Disconnect the ramp interphone.

EFFECTIVITY: ACFT MODEL(S) EMB-145  
Cooling Pack System - Functional Check  
Figure 506



**DET. A**  
ICE PROTECTION  
PANEL



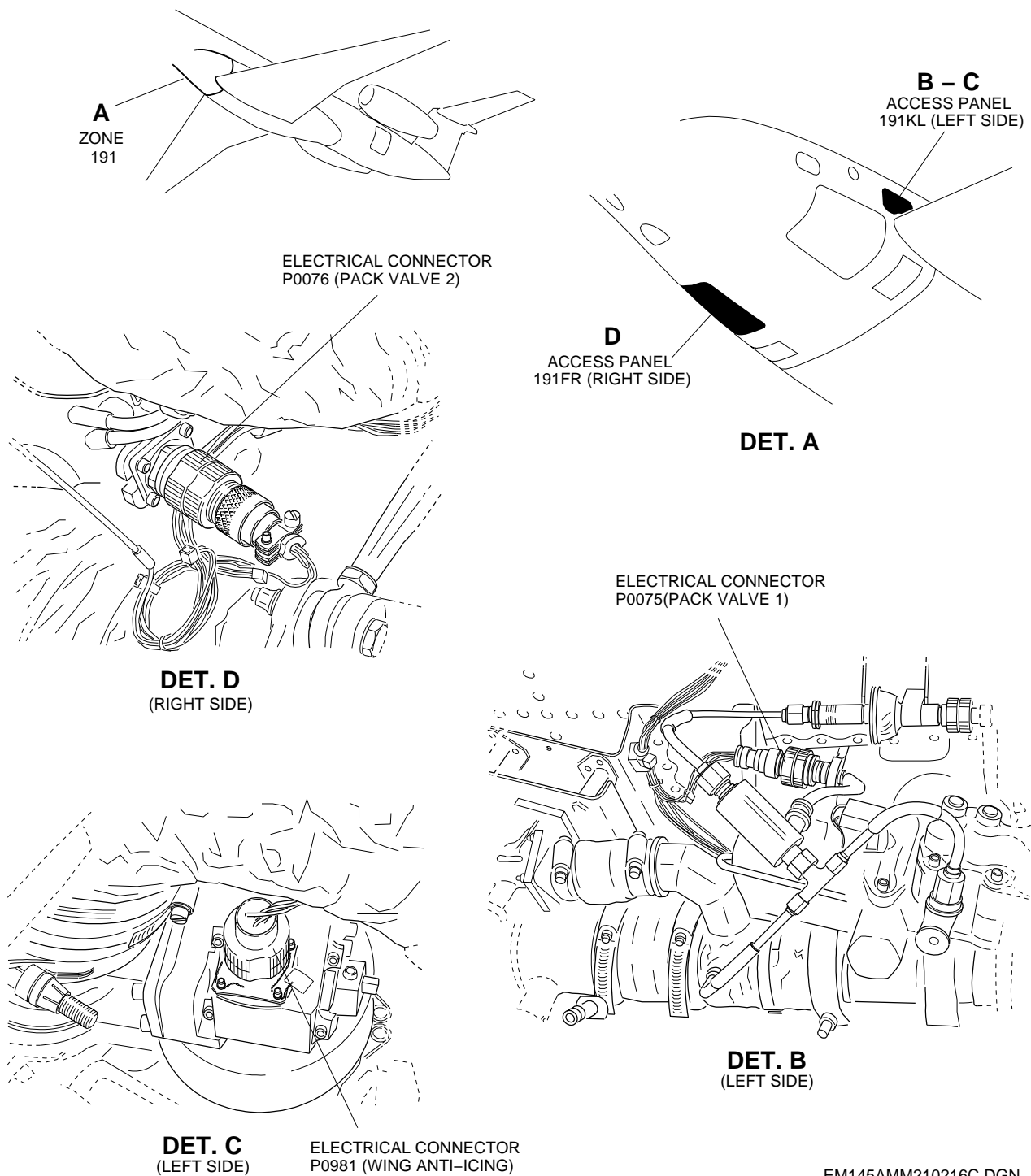
**DET. B**  
AIR CONDITIONING/PNEUMATIC  
PANEL

145AMM300064.MCE B

EFFECTIVITY: ACFT MODEL(S) EMB-145

Cooling Pack System - Functional Check - Electrical Connector Locations

Figure 507



EM145AMM210216C.DGN