

CHAPTER

30

**ICE AND RAIN
PROTECTION**



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Coil Cord - Inspection TASK 30-41-00-200-801			601	SIA ALL
<u>CONTROL CABIN WINDOW ANTI-ICE SYSTEM - REPAIRS</u>	30-41-00		801	SIA ALL
Control Cabin Window Temperature Sensor - Repairs TASK 30-41-00-420-801			801	SIA ALL
<u>WINDOW HEAT CONTROL UNIT - MAINTENANCE PRACTICES</u>	30-41-11		201	SIA ALL
Window Heat Control Unit (WHCU) Override Mode Activation/Deactivation TASK 30-41-11-440-801			201	SIA ALL
<u>WINDOW HEAT CONTROL UNIT - REMOVAL/INSTALLATION</u>	30-41-11		401	SIA ALL
Window Heat Control Unit (WHCU) Removal TASK 30-41-11-000-801			401	SIA ALL
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Window Heat Control Unit - System Test TASK 30-41-11-710-801			501	SIA ALL
<u>WINDOW HEAT CONDUCTIVE COATING AND SENSOR - ADJUSTMENT/TEST</u>	30-41-21		501	SIA ALL
Check the Electrical Resistance of the Window Heat Film TASK 30-41-21-000-801			501	SIA ALL
Measure the Resistance of the Window Temperature Sensors TASK 30-41-21-760-801			504	SIA ALL
Measure the Insulation Resistance and Dielectric Absorption Ratio of the Control Cabin Windows TASK 30-41-21-700-801			509	SIA ALL
<u>WINDOW THERMAL SWITCH - REMOVAL/INSTALLATION</u>	30-41-31		401	SIA ALL
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<u>WINDSHIELD WIPER SYSTEM - MAINTENANCE PRACTICES</u>	30-42-00		201	SIA ALL
Windshield Wiper System - Deactivation TASK 30-42-00-040-801			201	SIA ALL
Windshield Wiper System - Activation TASK 30-42-00-440-801			204	SIA ALL
<u>WINDSHIELD WIPER SYSTEM - ADJUSTMENT/TEST</u>	30-42-00		501	SIA ALL
Windshield Wiper System - Operational Test TASK 30-42-00-700-801			501	SIA ALL
<u>WINDSHIELD WIPER BLADE - REMOVAL/INSTALLATION</u>	30-42-11		401	SIA ALL
Windshield Wiper Blade Removal TASK 30-42-11-020-801			401	SIA ALL

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<u>WINDSHIELD WIPER BLADE - INSPECTION/CHECK</u>	30-42-11		601	SIA ALL
Windshield Wiper Blade Inspection/Check TASK 30-42-11-200-801			601	SIA ALL
<u>WINDSHIELD WIPER MOTOR/CONVERTER - REMOVAL/INSTALLATION</u>	30-42-21		401	SIA ALL
Wiper Motor/Converter Removal TASK 30-42-21-000-801			401	SIA ALL
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Hydrophobic Coating Maintenance Practices TASK 30-43-00-800-801			201	SIA ALL
<u>WATER AND DRAIN ANTI-ICE SYSTEM - MAINTENANCE PRACTICES</u>	30-71-00		201	SIA ALL
Water and Drain Operation with 115 Volts on the Ground TASK 30-71-00-800-801			201	SIA ALL
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<u>GRAY WATER DRAIN LINE HEATER - REMOVAL/INSTALLATION</u>	30-71-02		401	SIA ALL
Gray Water Drain Line Heater Removal TASK 30-71-02-000-801			401	SIA ALL
Gray Water Drain Line Heater Installation TASK 30-71-02-400-801			405	SIA ALL
<u>WASTE DRAIN LINE HEATER - REMOVAL/INSTALLATION</u>	30-71-03		401	SIA ALL
Waste Drain Line Heater Removal TASK 30-71-03-000-801			401	SIA ALL
Waste Drain Line Heater Installation TASK 30-71-03-400-801			404	SIA ALL
<u>WASTE TANK RINSE FITTING HEATER - REMOVAL/INSTALLATION</u>	30-71-04		401	SIA ALL
Waste Tank Rinse Fitting Heater Removal TASK 30-71-04-000-801			401	SIA ALL
Waste Tank Rinse Fitting Heater Installation TASK 30-71-04-400-801			404	SIA ALL

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Drain Mast Heater Replacement TASK 30-71-05-900-801			201	SIA ALL
<u>HEATED POTABLE WATER HOSES - REMOVAL/INSTALLATION</u>	30-71-06		401	SIA ALL
Heated Potable Water Hose Removal TASK 30-71-06-000-801			401	SIA ALL
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ICE AND RAIN PROTECTION - DDG MAINTENANCE PROCEDURES

1. **General**

- A. This procedure has the maintenance tasks for the Master Minimum Equipment List (MMEL) maintenance requirements as shown in the Dispatch Deviations Guide (DDG). These tasks prepare the airplane for flight with systems/components that are inoperative.
- B. This procedure also has the tasks that put the airplane back to its usual condition.
- C. These are the tasks for the components in the ice and rain protection system.
 - (1) DDG 30-11-01A Wing Anti-Ice Valves Closed Inoperative - Preparation
 - (2) DDG 30-11-01A Wing Anti-Ice Valves Closed Inoperative - Restoration
 - (3) DDG 30-11-01B Wing Anti-Ice Valves Open Inoperative - Preparation
 - (4) DDG 30-11-01B Wing Anti-Ice Valves Open Inoperative - Restoration
 - (5) DDG 30-11-02 Wing Anti-Ice Valve Lights Inoperative - Preparation
 - (6) DDG 30-11-02 Wing Anti-Ice Valve Lights Inoperative - Restoration
 - (7) DDG 30-21-01A Engine Anti-Ice Valves Closed Inoperative - Preparation
 - (8) DDG 30-21-01A Engine Anti-Ice Valves Closed Inoperative - Restoration
 - (9) DDG 30-21-01B Engine Anti-Ice Valves Open Inoperative - Preparation
 - (10) DDG 30-21-01B Engine Anti-Ice Valves Open Inoperative - Restoration
 - (11) DDG 30-31-05-01 Pitot Probe Heater Lights Inoperative - Preparation
 - (12) DDG 30-31-05-01 Pitot Probe Heater Lights Inoperative - Restoration
 - (13) DDG 30-31-05-02 Total Air Temperature Probe Heater Light Inoperative - Preparation
 - (14) DDG 30-31-05-02 Total Air Temperature Probe Heater Light Inoperative - Restoration
 - (15) DDG 30-31-06 Alpha Vane Heater Light Inoperative - Preparation
 - (16) DDG 30-31-06 Alpha Vane Heater Light Inoperative - Restoration
 - (17) DDG 30-42-01 Windshield Wiper Systems Inoperative - Preparation
 - (18) DDG 30-42-01 Windshield Wiper Systems Inoperative - Restoration
 - (19) DDG 30-71-01 Drain Mast Heater Inoperative - Preparation
 - (20) DDG 30-71-01 Drain Mast Heater Inoperative - Restoration

TASK 30-00-00-040-801

2. **DDG 30-11-01A Wing Anti-Ice Valves Closed Inoperative - Preparation**

(Figure 901)

A. General

- (1) This task gives the maintenance steps which prepare the airplane for flight with one wing anti-ice valve inoperative.
- (2) The location of the wing anti-ice valve relative to the engine exhaust area prohibits personnel from accessing the valve when the associated engine is running.

B. References

Reference	Title
27-81-00-040-801	Leading Edge Flaps and Slats - Deactivation (P/B 201)
27-81-00-440-801	Leading Edge Flaps and Slats - Activation (P/B 201)

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C. Location Zones

Zone	Area
522	Left Wing - Slat No. 4
622	Right Wing - Slat No. 5

D. Access Panels

Number	Name/Location
521AB	Outboard Leading Edge Blowout Door - Slat Station 20
621AB	Outboard Leading Edge Blowout Door - Slat Station 20

E. Prepare to Dispatch With a Wing Anti-Ice Valve Closed

SUBTASK 30-00-00-840-001

- (1) Prepare to close the wing anti-ice valve:



WARNING

OBEY THE PROCEDURE TO DEACTIVATE LEADING EDGE SLATS. DAMAGE TO EQUIPMENT AND INJURIES TO PERSONNEL CAN OCCUR.

- (a) Deactivate the leading edge slats (TASK 27-81-00-040-801).
- (b) Make sure that the WING ANTI-ICE switch is in OFF position.
- (c) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
A	1	C04012	ANTI-ICE & RAIN WING ANTI-ICE VALVE
B	2	C04063	ANTI-ICE & RAIN WING ANTI-ICE VALVE-L
B	4	C04064	ANTI-ICE & RAIN WING ANTI-ICE VALVE-R

- (d) For the left wing anti-ice valve, open this access panel:

Number	Name/Location
521AB	Outboard Leading Edge Blowout Door - Slat Station 20

- (e) For the right wing anti-ice valve, open this access panel:

Number	Name/Location
621AB	Outboard Leading Edge Blowout Door - Slat Station 20

SUBTASK 30-00-00-020-001

- (2) Disconnect, cap and stow the electrical connector from the left or right wing anti-ice valve.
- (a) Make sure that the applicable wing anti-ice L VALVE and R VALVE lights on the P5 overhead panel are ON.

SUBTASK 30-00-00-040-001

- (3) Make sure that the arrow on the visual position indicator points to the CLOSED position.

SUBTASK 30-00-00-480-003

- (4) Install the manual lock bolt in the lock hole on the applicable wing anti-ice valve in the CLOSED position.

NOTE: To avoid damage, tighten the manual lock bolt by hand prior to applying torque with a wrench.

- (a) Torque the manual lock bolt to 19 in-lb (2.1 N·m) - 21 in-lb (2.4 N·m).

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SUBTASK 30-00-00-840-002

- (5) Return the airplane to its usual condition with the left or right wing anti-ice valve locked and in the CLOSED position:

- (a) For the left wing anti-ice valve, close this access panel:

<u>Number</u>	<u>Name/Location</u>

521AB	Outboard Leading Edge Blowout Door - Slat Station 20

- (b) For the right wing anti-ice valve, close this access panel:

<u>Number</u>	<u>Name/Location</u>

621AB	Outboard Leading Edge Blowout Door - Slat Station 20

- (c) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	1	C04012	ANTI-ICE & RAIN WING ANTI-ICE VALVE
B	2	C04063	ANTI-ICE & RAIN WING ANTI-ICE VALVE-L
B	4	C04064	ANTI-ICE & RAIN WING ANTI-ICE VALVE-R



WARNING

OBEY THE PROCEDURE TO ACTIVATE LEADING EDGE SLATS. DAMAGE TO EQUIPMENT AND INJURIES TO PERSONNEL CAN OCCUR.

- (d) Activate the leading edge slats (TASK 27-81-00-440-801).

SUBTASK 30-00-00-860-045

- (6) Install an INOP placard on the WING ANTI-ICE switch.

————— **END OF TASK** —————

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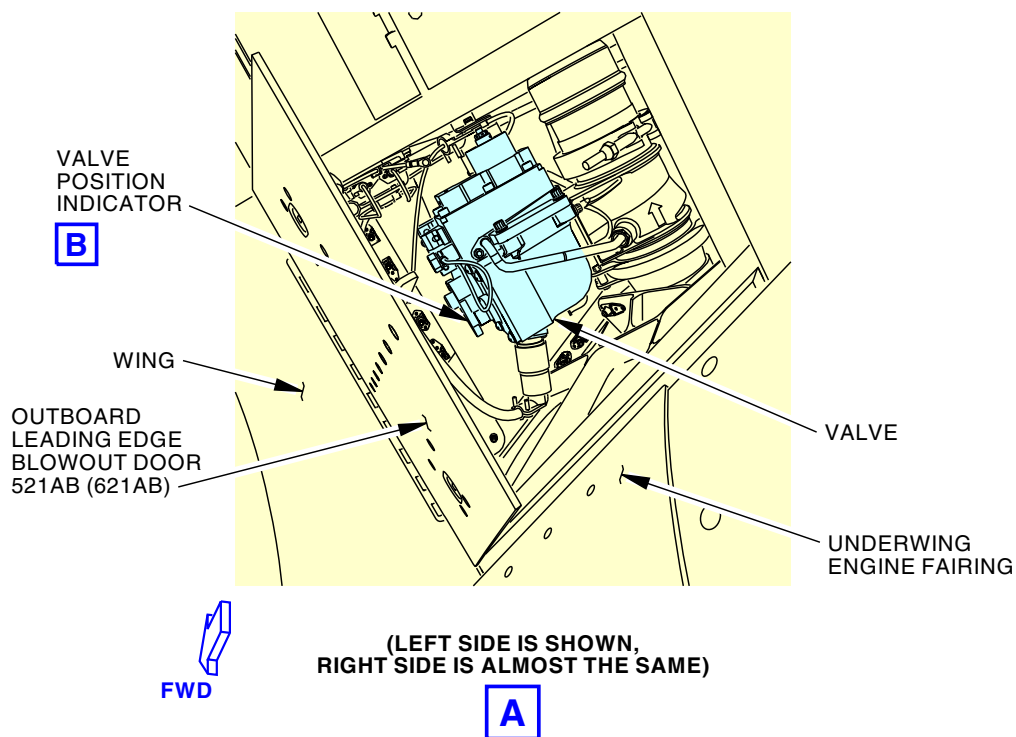
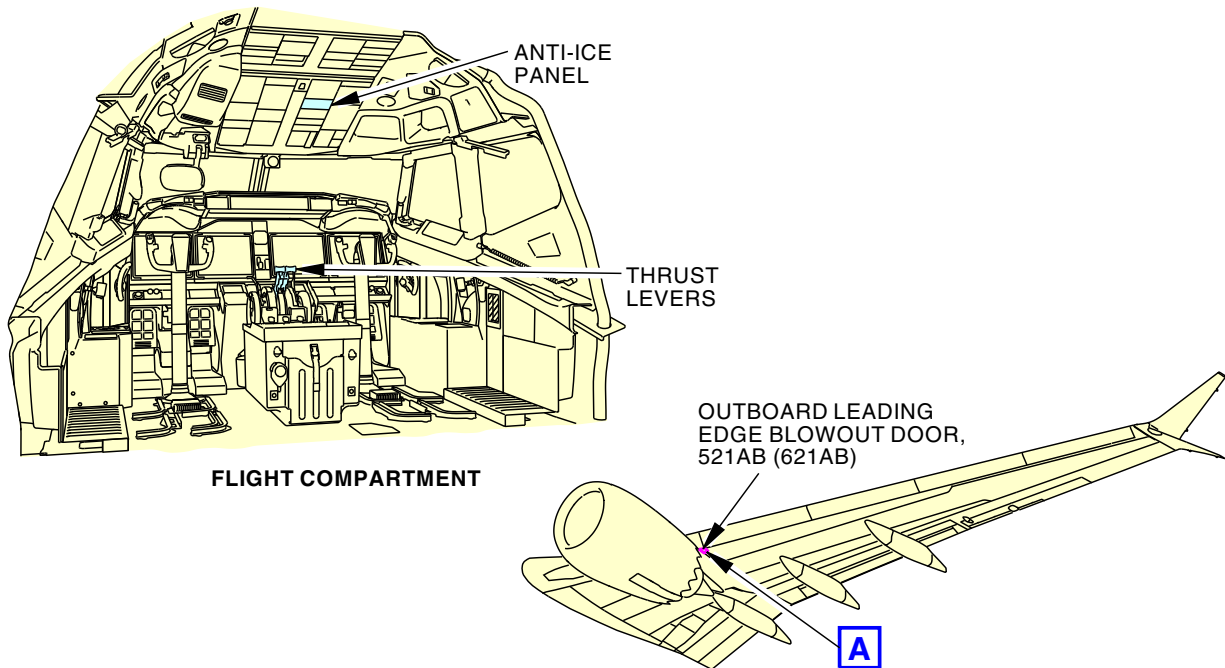
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2413878 S00061533654_V3

Wing Anti-Ice Valve
Figure 901/30-00-00-990-801 (Sheet 1 of 2)

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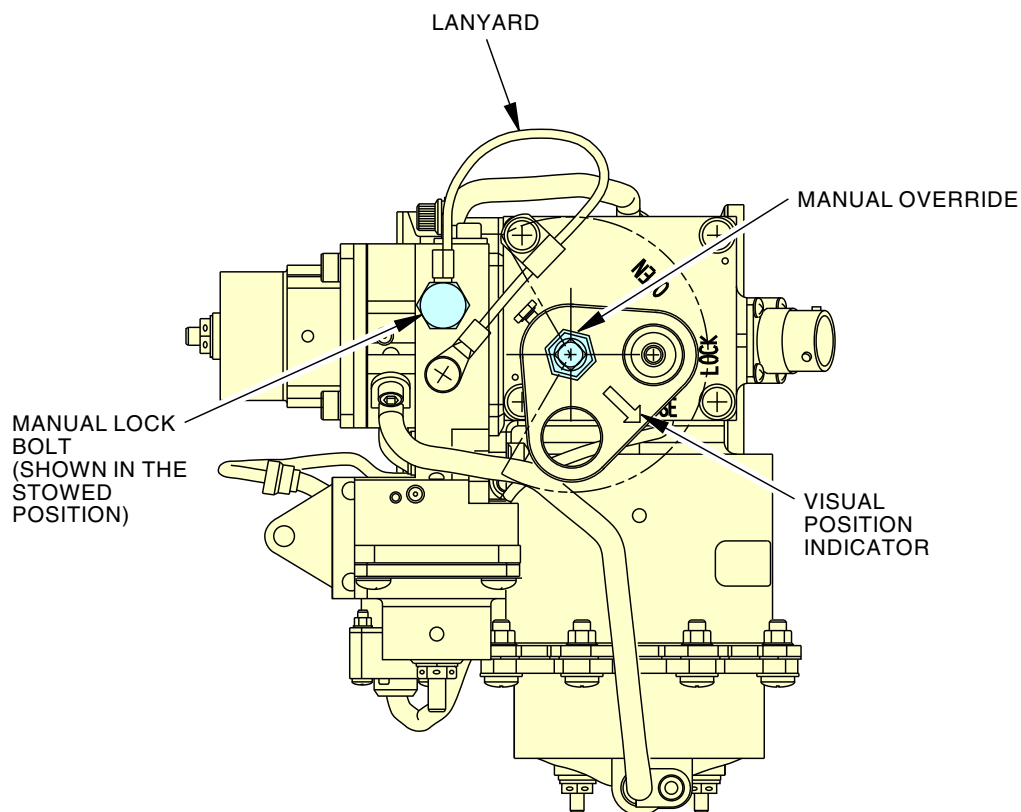
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VALVE POSITION INDICATOR

B

2521536 S0000593324_V2

Wing Anti-Ice Valve
Figure 901/30-00-00-990-801 (Sheet 2 of 2)

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TASK 30-00-00-440-801

3. **DDG 30-11-01A Wing Anti-Ice Valves Closed Inoperative - Restoration**

(Figure 901)

A. General

- (1) This task puts the airplane back to its usual condition after operation with one wing anti-ice valve inoperative.

B. References

Reference	Title
20-60-07-910-802	Inspection, Cleaning and Sealing of Electrical Connectors (P/B 201)
27-81-00-040-801	Leading Edge Flaps and Slats - Deactivation (P/B 201)
27-81-00-440-801	Leading Edge Flaps and Slats - Activation (P/B 201)

C. Location Zones

Zone	Area
522	Left Wing - Slat No. 4
622	Right Wing - Slat No. 5

D. Access Panels

Number	Name/Location
521AB	Outboard Leading Edge Blowout Door - Slat Station 20
621AB	Outboard Leading Edge Blowout Door - Slat Station 20

E. Activate the Wing Anti-Ice Valve

SUBTASK 30-00-00-860-005

- (1) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
A	1	C04012	ANTI-ICE & RAIN WING ANTI-ICE VALVE
B	2	C04063	ANTI-ICE & RAIN WING ANTI-ICE VALVE-L
B	4	C04064	ANTI-ICE & RAIN WING ANTI-ICE VALVE-R

SUBTASK 30-00-00-860-006

- (2) Set the WING ANTI-ICE switch on the anti-ice panel on the P5 overhead panel in the flight compartment to OFF.

SUBTASK 30-00-00-860-007



WARNING

OBEY THE PROCEDURE TO DEACTIVATE LEADING EDGE SLATS. DAMAGE TO EQUIPMENT AND INJURIES TO PERSONNEL CAN OCCUR.

- (3) Deactivate the leading edge slats (TASK 27-81-00-040-801).

SUBTASK 30-00-00-010-001

- (4) For the left wing, open this access panel:

Number	Name/Location
521AB	Outboard Leading Edge Blowout Door - Slat Station 20

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SUBTASK 30-00-00-010-002

- (5) For the right wing, open this access panel:

<u>Number</u>	<u>Name/Location</u>
621AB	Outboard Leading Edge Blowout Door - Slat Station 20

SUBTASK 30-00-00-080-003



MAKE SURE THAT THE LANYARD IS IN THE CORRECT DIRECTION. IF THE LANYARD ROUTING IS NOT CORRECT, THE LANYARD CAN BIND AND PREVENT THE VALVE FROM MOVING TO THE COMMANDED POSITION. DAMAGE TO EQUIPMENT CAN OCCUR.

- (6) Remove the manual lock bolt from the visual position indicator.
(a) Stow the manual lock bolt on the valve.

SUBTASK 30-00-00-440-008

- (7) Make sure that the arrow on the visual position indicator points to the CLOSED position.

SUBTASK 30-00-00-910-001

- (8) Inspect the electrical connector (TASK 20-60-07-910-802).

SUBTASK 30-00-00-420-001

- (9) Connect the electrical connector to the wing anti-ice valve.

SUBTASK 30-00-00-860-008

- (10) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	1	C04012	ANTI-ICE & RAIN WING ANTI-ICE VALVE
B	2	C04063	ANTI-ICE & RAIN WING ANTI-ICE VALVE-L
B	4	C04064	ANTI-ICE & RAIN WING ANTI-ICE VALVE-R

F. Put the Airplane Back to Its Usual Condition

SUBTASK 30-00-00-410-001

- (1) For the left wing, close this access panel:

<u>Number</u>	<u>Name/Location</u>
521AB	Outboard Leading Edge Blowout Door - Slat Station 20

SUBTASK 30-00-00-410-002

- (2) For the right wing, close this access panel:

<u>Number</u>	<u>Name/Location</u>
621AB	Outboard Leading Edge Blowout Door - Slat Station 20

SUBTASK 30-00-00-440-001



OBEY THE PROCEDURE TO ACTIVATE LEADING EDGE SLATS. DAMAGE TO EQUIPMENT AND INJURIES TO PERSONNEL CAN OCCUR.

- (3) Activate the leading edge slats (TASK 27-81-00-440-801).

SUBTASK 30-00-00-860-044

- (4) Remove the INOP placard from the WING ANTI-ICE switch.

————— END OF TASK —————

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TASK 30-00-00-040-810

4. DDG 30-11-01B Wing Anti-Ice Valves Open Inoperative - Preparation

(Figure 901)

A. General

- (1) This task gives the maintenance steps which prepare the airplane for flight with a wing anti-ice valve open inoperative.
- (2) The location of the wing anti-ice valve relative to the engine exhaust area prohibits personnel from accessing the valve when the associated engine is running.

B. References

Reference	Title
27-81-00-040-801	Leading Edge Flaps and Slats - Deactivation (P/B 201)
27-81-00-440-801	Leading Edge Flaps and Slats - Activation (P/B 201)
71-00-00-910-802-G00	Start the Engine (Selection) (P/B 201)

C. Location Zones

Zone	Area
522	Left Wing - Slat No. 4
622	Right Wing - Slat No. 5

D. Access Panels

Number	Name/Location
521AB	Outboard Leading Edge Blowout Door - Slat Station 20
621AB	Outboard Leading Edge Blowout Door - Slat Station 20

E. Prepare to Dispatch With the Left Wing Anti-Ice Valve Locked Open

SUBTASK 30-00-00-850-001

- (1) To open the left valve when APU bleed air will be used to start the engine, do these steps:

NOTE: After initial dispatch per this step, it is necessary to repeat it for the subsequent flights.



WARNING

OBEY THE PROCEDURE TO DEACTIVATE LEADING EDGE SLATS. DAMAGE TO EQUIPMENT AND INJURIES TO PERSONNEL CAN OCCUR.

- (a) Deactivate the leading edge slats (TASK 27-81-00-040-801).
- (b) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
A	1	C04012	ANTI-ICE & RAIN WING ANTI-ICE VALVE
B	2	C04063	ANTI-ICE & RAIN WING ANTI-ICE VALVE-L

- (c) For the left wing anti-ice valve, open this access panel:

Number	Name/Location
521AB	Outboard Leading Edge Blowout Door - Slat Station 20

- (d) Disconnect, cap and stow the electrical connector from the left wing anti-ice valve.
 - 1) Make sure that the left wing anti-ice L VALVE light on the P5 overhead panel is ON.
- (e) Move the visual position indicator on the left wing anti-ice valve to the CLOSED position.

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KEEP CLEAR OF ENGINE DANGER AREA. ENGINE INTAKE AND EXHAUST CAN CAUSE INJURY TO PERSONNEL AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (f) Make sure that all personnel are cleared from the right engine danger area.
- (g) Start the right engine (TASK 71-00-00-910-802-G00).
- (h) Set the ISOLATION VALVE switch on the P5 overhead panel to CLOSE and APU BLEED air switch to OFF to depressurize the left pneumatic duct.
- (i) Loosen the manual lock bolt from the stowed position on the valve.
- (j) After the pneumatic duct is depressurized, move the visual position indicator on the left wing anti-ice valve to the OPEN position.
- (k) Install the manual lock bolt to the lock position on the valve:
NOTE: To avoid damage, tighten the manual lock bolt by hand prior to applying torque with a wrench.
 - 1) Use a wrench to hold the wing anti-ice valve in the open position.
 - 2) Install the manual lock bolt.
 - 3) Tighten the manual lock bolt to 19 in-lb (2.1 N·m) - 21 in-lb (2.4 N·m).
- (l) For the left wing anti-ice valve, close this access panel:

<u>Number</u>	<u>Name/Location</u>
521AB	Outboard Leading Edge Blowout Door - Slat Station 20
- (m) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	1	C04012	ANTI-ICE & RAIN WING ANTI-ICE VALVE
B	2	C04063	ANTI-ICE & RAIN WING ANTI-ICE VALVE-L



OBEY THE PROCEDURE TO ACTIVATE LEADING EDGE SLATS. DAMAGE TO EQUIPMENT AND INJURIES TO PERSONNEL CAN OCCUR.

- (n) Activate the leading edge slats (TASK 27-81-00-440-801).



KEEP CLEAR OF ENGINE DANGER AREA. ENGINE INTAKE AND EXHAUST CAN CAUSE INJURY TO PERSONNEL AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (o) Make sure that the personnel have been cleared from the engine danger area.
NOTE: Notify the flight deck the left engine may be started (using engine crossbleed start).

SUBTASK 30-00-00-850-002

- (2) To open the left valve when ground service air will be used to start the engine, do these steps:

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WARNING

OBEY THE PROCEDURE TO DEACTIVATE LEADING EDGE SLATS. DAMAGE TO EQUIPMENT AND INJURIES TO PERSONNEL CAN OCCUR.

- (a) Deactivate the leading edge slats (TASK 27-81-00-040-801).
- (b) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	1	C04012	ANTI-ICE & RAIN WING ANTI-ICE VALVE
B	2	C04063	ANTI-ICE & RAIN WING ANTI-ICE VALVE-L

- (c) For the left wing anti-ice valve, open this access panel:

<u>Number</u>	<u>Name/Location</u>

521AB	Outboard Leading Edge Blowout Door - Slat Station 20

- (d) Disconnect, cap and stow the electrical connector from the left wing anti-ice valve.
 - 1) Make sure that the left wing anti-ice L VALVE light on the P5 overhead panel is ON.
- (e) Loosen the manual lock bolt from the stowed position in the valve.
- (f) Move the visual position indicator on the left wing anti-ice valve to the OPEN position.
- (g) Install the manual lock bolt to the lock position on the valve:

NOTE: To avoid damage, tighten the manual lock bolt by hand prior to applying torque with a wrench.

- 1) Use a wrench to hold the wing anti-ice valve in the open position.
- 2) Install the manual lock bolt.
- 3) Tighten the manual lock bolt to 19 in-lb (2.1 N·m) - 21 in-lb (2.4 N·m).

- (h) For the left wing anti-ice valve, close this access panel:

<u>Number</u>	<u>Name/Location</u>

521AB	Outboard Leading Edge Blowout Door - Slat Station 20

- (i) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	1	C04012	ANTI-ICE & RAIN WING ANTI-ICE VALVE
B	2	C04063	ANTI-ICE & RAIN WING ANTI-ICE VALVE-L



WARNING

OBEY THE PROCEDURE TO ACTIVATE LEADING EDGE SLATS. DAMAGE TO EQUIPMENT AND INJURIES TO PERSONNEL CAN OCCUR.

- (j) Activate the leading edge slats (TASK 27-81-00-440-801).

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KEEP CLEAR OF ENGINE DANGER AREA. ENGINE INTAKE AND EXHAUST CAN CAUSE INJURY TO PERSONNEL AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (k) Make sure that the personnel have been cleared from the engine danger area.

NOTE: Notify the flight deck the right engine may be started (isolation valve closed) and the left engine may be started (using crossbleed start).

SUBTASK 30-00-00-480-001

- (3) Put an INOP ON placard on the WING ANTI-ICE switch on the P5 overhead panel.

F. Prepare to Dispatch With the Right Wing Anti-Ice Valve Locked Open

SUBTASK 30-00-00-850-003

- (1) To open the right valve when APU bleed air will be used to start the engine, do these steps:



OBEY THE PROCEDURE TO DEACTIVATE LEADING EDGE SLATS. DAMAGE TO EQUIPMENT AND INJURIES TO PERSONNEL CAN OCCUR.

- (a) Deactivate the leading edge slats (TASK 27-81-00-040-801).
(b) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	1	C04012	ANTI-ICE & RAIN WING ANTI-ICE VALVE
B	4	C04064	ANTI-ICE & RAIN WING ANTI-ICE VALVE-R

- (c) For the right wing anti-ice valve, open this access panel:

<u>Number</u>	<u>Name/Location</u>
621AB	Outboard Leading Edge Blowout Door - Slat Station 20

- (d) Disconnect, cap and stow the electrical connector from the right wing anti-ice valve.
- 1) Make sure that the right wing anti-ice R VALVE light on the P5 overhead panel is ON.
- (e) Loosen the manual lock bolt from the stowed position in the valve.
- (f) Move the visual position indicator on the right wing anti-ice valve to the OPEN position.
- (g) Install the manual lock bolt to the lock position on the valve:
- NOTE: To avoid damage, tighten the manual lock bolt by hand prior to applying torque with a wrench.
- 1) Use a wrench to hold the wing anti-ice valve in the open position.
- 2) Install the manual lock bolt.
- 3) Tighten the lock bolt to 19 in-lb (2.1 N·m) - 21 in-lb (2.4 N·m).
- (h) For the right wing anti-ice valve, close this access panel:

<u>Number</u>	<u>Name/Location</u>
621AB	Outboard Leading Edge Blowout Door - Slat Station 20

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- (i) Remove the safety tags and close these circuit breakers:

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<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	1	C04012	ANTI-ICE & RAIN WING ANTI-ICE VALVE
B	4	C04064	ANTI-ICE & RAIN WING ANTI-ICE VALVE-R



OBEY THE PROCEDURE TO ACTIVATE LEADING EDGE SLATS. DAMAGE TO EQUIPMENT AND INJURIES TO PERSONNEL CAN OCCUR.

- (j) Activate the leading edge slats (TASK 27-81-00-440-801).



KEEP CLEAR OF ENGINE DANGER AREA. ENGINE INTAKE AND EXHAUST CAN CAUSE INJURY TO PERSONNEL AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (k) Make sure that the personnel are clear of engine danger area.

NOTE: Notify the flight deck the left engine may be started (isolation valve closed) and then the right engine may be started (using crossbleed start).

SUBTASK 30-00-00-850-004

- (2) To open the right valve when ground service air will be used to start the engine, do these steps:

NOTE: After initial dispatch per this step, it is necessary to repeat it for the subsequent flights.



OBEY THE PROCEDURE TO DEACTIVATE LEADING EDGE SLATS. DAMAGE TO EQUIPMENT AND INJURIES TO PERSONNEL CAN OCCUR.

- (a) Deactivate the leading edge slats (TASK 27-81-00-040-801).
(b) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	1	C04012	ANTI-ICE & RAIN WING ANTI-ICE VALVE
B	4	C04064	ANTI-ICE & RAIN WING ANTI-ICE VALVE-R

- (c) For the right wing anti-ice valve, open this access panel:

<u>Number</u>	<u>Name/Location</u>
621AB	Outboard Leading Edge Blowout Door - Slat Station 20

- (d) Disconnect, cap and stow the electrical connector from the right wing anti-ice valve.
1) Make sure that the right wing anti-ice R VALVE light on the P5 overhead panel is ON.
(e) Move the visual position indicator on the right wing anti-ice valve to the CLOSED position.

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KEEP CLEAR OF ENGINE DANGER AREA. ENGINE INTAKE AND EXHAUST CAN CAUSE INJURY TO PERSONNEL AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (f) Make sure that all personnel are cleared from the left engine danger area.
- (g) Start the left engine (TASK 71-00-00-910-802-G00).
- (h) Remove the ground air source from the airplane.
- (i) Set the ISOLATION VALVE switch to CLOSE and depressurize the right pneumatic duct.
- (j) Loosen the manual lock bolt from the stowed position in the valve.
- (k) After the pneumatic duct is depressurized, move the visual position indicator right wing anti-ice valve to the OPEN position.
- (l) Install the manual lock bolt to the lock position on the valve:

NOTE: To avoid damage, tighten the manual lock bolt by hand prior to applying torque with a wrench.

- 1) Use a wrench to hold the wing anti-ice valve in the open position.
 - 2) Install the manual lock bolt.
 - 3) Tighten the lock bolt to 19 in-lb (2.1 N·m) - 21 in-lb (2.4 N·m).
- (m) For the right anti-ice valve, close this access panel:

Number Name/Location

621AB Outboard Leading Edge Blowout Door - Slat Station 20

- (n) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
A	1	C04012	ANTI-ICE & RAIN WING ANTI-ICE VALVE
B	4	C04064	ANTI-ICE & RAIN WING ANTI-ICE VALVE-R



WARNING

OBEY THE PROCEDURE TO ACTIVATE LEADING EDGE SLATS. DAMAGE TO EQUIPMENT AND INJURIES TO PERSONNEL CAN OCCUR.

- (o) Activate the leading edge slats (TASK 27-81-00-440-801).



WARNING

KEEP CLEAR OF ENGINE DANGER AREA. ENGINE INTAKE AND EXHAUST CAN CAUSE INJURY TO PERSONNEL AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (p) Make sure that personnel have been cleared from the right engine danger area.

NOTE: Notify the flight deck the right engine may be started (using engine crossbleed).

SUBTASK 30-00-00-480-002

- (3) Put an INOP ON placard on the WING ANTI-ICE switch on the P5 overhead panel.

————— **END OF TASK** —————

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TASK 30-00-00-440-810

5. **DDG 30-11-01B Wing Anti-Ice Valves Open Inoperative - Restoration**

(Figure 901)

A. General

- (1) This task puts the airplane back to its usual condition after operation with the wing anti-ice valves inoperative.

B. References

Reference	Title
20-60-07-910-802	Inspection, Cleaning and Sealing of Electrical Connectors (P/B 201)
27-81-00-040-801	Leading Edge Flaps and Slats - Deactivation (P/B 201)
27-81-00-440-801	Leading Edge Flaps and Slats - Activation (P/B 201)

C. Location Zones

Zone	Area
522	Left Wing - Slat No. 4
622	Right Wing - Slat No. 5

D. Access Panels

Number	Name/Location
521AB	Outboard Leading Edge Blowout Door - Slat Station 20
621AB	Outboard Leading Edge Blowout Door - Slat Station 20

E. Activate the Wing Anti-Ice Valve

SUBTASK 30-00-00-860-014

- (1) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
A	1	C04012	ANTI-ICE & RAIN WING ANTI-ICE VALVE
B	2	C04063	ANTI-ICE & RAIN WING ANTI-ICE VALVE-L
B	4	C04064	ANTI-ICE & RAIN WING ANTI-ICE VALVE-R

SUBTASK 30-00-00-860-015

- (2) Set the WING ANTI-ICE switch on the anti-ice panel on the P5 overhead panel in the flight compartment to OFF.

SUBTASK 30-00-00-040-002



WARNING

OBEY THE PROCEDURE TO DEACTIVATE LEADING EDGE SLATS. DAMAGE TO EQUIPMENT AND INJURIES TO PERSONNEL CAN OCCUR.

- (3) Deactivate the leading edge slats (TASK 27-81-00-040-801).

SUBTASK 30-00-00-010-011

- (4) For the left wing, open this access panel:

Number	Name/Location
521AB	Outboard Leading Edge Blowout Door - Slat Station 20

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SUBTASK 30-00-00-010-012

- (5) For the right wing, open this access panel:

<u>Number</u>	<u>Name/Location</u>
621AB	Outboard Leading Edge Blowout Door - Slat Station 20

SUBTASK 30-00-00-020-008



MAKE SURE THAT THE LANYARD IS IN THE CORRECT DIRECTION. IF THE LANYARD ROUTING IS NOT CORRECT, THE LANYARD CAN BIND AND PREVENT THE VALVE FROM MOVING TO THE COMMANDED POSITION. DAMAGE TO EQUIPMENT CAN OCCUR.

- (6) Remove the manual lock bolt from the lock position for the applicable wing anti-ice valve:
- (a) Use a wrench to hold the wing anti-ice valve in the open position.
 - (b) Remove the manual lock bolt.
 - (c) Make sure that to stow the manual lock bolt on the applicable wing anti-ice valve.

SUBTASK 30-00-00-860-039

- (7) Make sure that the arrow on the visual position indicator points to the CLOSE position.

SUBTASK 30-00-00-910-002

- (8) Inspect the electrical connector. Do this task: Inspection, Cleaning and Sealing of Electrical Connectors, TASK 20-60-07-910-802.

SUBTASK 30-00-00-420-002

- (9) Connect the electrical connector to the wing anti-ice valve.

SUBTASK 30-00-00-860-016

- (10) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	1	C04012	ANTI-ICE & RAIN WING ANTI-ICE VALVE
B	2	C04063	ANTI-ICE & RAIN WING ANTI-ICE VALVE-L
B	4	C04064	ANTI-ICE & RAIN WING ANTI-ICE VALVE-R

F. Put the Airplane Back to Its Usual Condition

SUBTASK 30-00-00-010-013

- (1) For the left wing, close this access panel:

<u>Number</u>	<u>Name/Location</u>
521AB	Outboard Leading Edge Blowout Door - Slat Station 20

SUBTASK 30-00-00-010-014

- (2) For the right wing, close this access panel:

<u>Number</u>	<u>Name/Location</u>
621AB	Outboard Leading Edge Blowout Door - Slat Station 20

SUBTASK 30-00-00-440-003



OBEY THE PROCEDURE TO ACTIVATE LEADING EDGE SLATS. DAMAGE TO EQUIPMENT AND INJURIES TO PERSONNEL CAN OCCUR.

- (3) Activate the leading edge slats (TASK 27-81-00-440-801).

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SUBTASK 30-00-00-860-046

- (4) Remove the INOP ON placard from the WING ANTI-ICE switch.

————— END OF TASK —————

TASK 30-00-00-040-802

6. DDG 30-11-02 Wing Anti-Ice Valve Lights Inoperative - Preparation

A. General

- (1) This task gives the maintenance steps which prepare the airplane for flight with the wing anti-ice valve position lights inoperative.
- (2) This procedure tests the valve connected to the failed position light. If both position lights are failed, both valves must be tested.

B. References

Reference	Title
27-81-00-040-801	Leading Edge Flaps and Slats - Deactivation (P/B 201)
27-81-00-440-801	Leading Edge Flaps and Slats - Activation (P/B 201)
36-00-00-860-801	Supply Pressure to the Pneumatic System (Selection) (P/B 201)
36-00-00-860-806	Remove Pressure from the Pneumatic System (P/B 201)

C. Location Zones

Zone	Area
522	Left Wing - Slat No. 4
622	Right Wing - Slat No. 5

D. Access Panels

Number	Name/Location
521AB	Outboard Leading Edge Blowout Door - Slat Station 20
621AB	Outboard Leading Edge Blowout Door - Slat Station 20

E. Prepare to Test the Wing Anti-Ice Valve Position Lights

SUBTASK 30-00-00-860-009



WARNING

OBEY THE PROCEDURE TO DEACTIVATE LEADING EDGE SLATS. DAMAGE TO EQUIPMENT AND INJURIES TO PERSONNEL CAN OCCUR.

- (1) Deactivate the leading edge slats (TASK 27-81-00-040-801).

SUBTASK 30-00-00-860-051

- (2) Do this task: Supply Pressure to the Pneumatic System (Selection), TASK 36-00-00-860-801.

SUBTASK 30-00-00-010-003

- (3) For the left wing anti-ice valve, open this access panel:

<u>Number</u>	<u>Name/Location</u>
521AB	Outboard Leading Edge Blowout Door - Slat Station 20

SUBTASK 30-00-00-010-004

- (4) For the right wing anti-ice valve, open this access panel:

<u>Number</u>	<u>Name/Location</u>
621AB	Outboard Leading Edge Blowout Door - Slat Station 20

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F. Test the Wing Anti-Ice Valve Position Lights

SUBTASK 30-00-00-710-001

- (1) Set the WING ANTI-ICE switch on the P5 overhead panel to the ON position.

SUBTASK 30-00-00-710-002

- (2) Make sure that the position indicator on the left and right wing anti-ice valve indicates OPEN.

SUBTASK 30-00-00-710-003

- (3) Set the WING ANTI-ICE switch to the OFF position.

SUBTASK 30-00-00-710-004

- (4) Make sure that the position indicator on the left and right wing anti-ice valve indicates CLOSED.

SUBTASK 30-00-00-930-004

- (5) Attach an INOP placard to the applicable L VALVE and R VALVE lights.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 30-00-00-010-005

- (1) For the left wing anti-ice valve, close this access panel:

<u>Number</u>	<u>Name/Location</u>
521AB	Outboard Leading Edge Blowout Door - Slat Station 20

SUBTASK 30-00-00-010-006

- (2) For the right wing anti-ice valve, close this access panel:

<u>Number</u>	<u>Name/Location</u>
621AB	Outboard Leading Edge Blowout Door - Slat Station 20

SUBTASK 30-00-00-860-052

- (3) Do this task: Remove Pressure from the Pneumatic System, TASK 36-00-00-860-806.

SUBTASK 30-00-00-440-002



OBEY THE PROCEDURE TO ACTIVATE LEADING EDGE SLATS. DAMAGE TO EQUIPMENT AND INJURIES TO PERSONNEL CAN OCCUR.

- (4) Activate the leading edge slats (TASK 27-81-00-440-801).

————— END OF TASK —————

TASK 30-00-00-440-802

7. DDG 30-11-02 Wing Anti-Ice Valve Lights Inoperative - Restoration

A. General

- (1) This task puts the airplane back to its usual condition after operation with the wing anti-ice valve position lights inoperative.

B. Location Zones

<u>Zone</u>	<u>Area</u>
522	Left Wing - Slat No. 4
622	Right Wing - Slat No. 5

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C. Procedure

SUBTASK 30-00-00-020-003

- (1) Remove the INOP placard from the applicable L VALVE or R VALVE light.

————— END OF TASK —————

TASK 30-00-00-040-803

8. **DDG 30-21-01A Engine Anti-Ice Valves Closed Inoperative - Preparation**

(Figure 902)

A. General

- (1) This task gives the maintenance steps which prepare the airplane for flight with one engine anti-ice valve inoperative.
- (2) The engine anti-ice valve can be deactivated by locking them closed.

B. References

Reference	Title
71-11-04-010-801-G00	Open the Fan Cowl Panels (Selection) (P/B 201)
71-11-04-410-801-G00	Close the Fan Cowl Panels (Selection) (P/B 201)
78-31-00-010-801-G00	Open the Thrust Reverser (Selection) (P/B 201)
78-31-00-010-802-G00	Close the Thrust Reverser (Selection) (P/B 201)

C. Tools/Equipment

Reference	Description
STD-858	Tag - DO NOT OPERATE

D. Location Zones

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

E. Access Panels

Number	Name/Location
413	Left Fan Cowl, Engine 1
415	Left Thrust Reverser, Engine 1
424	Right Fan Cowl, Engine 2
426	Right Thrust Reverser, Engine 2

F. Prepare to Lock the Applicable Engine Anti-Ice Valve Closed

SUBTASK 30-00-00-850-005

- (1) Do these steps to make sure that the ENGINE START switch and the START LEVER switch are not operated:
 - (a) Make sure that the applicable ENGINE START switch, on the P5 overhead panel, is in the AUTO or OFF position.
 - 1) Put a DO NOT OPERATE tag, STD-858, on the applicable ENGINE START switch.
 - (b) Make sure that the applicable START LEVER switch, on the P10 control stand, is in the CUTOFF position.
 - 1) Put a DO NOT OPERATE tag, STD-858, on the applicable START LEVER switch.

SUBTASK 30-00-00-860-037

- (2) For the left engine anti-ice valve, do this step:

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- (a) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	6	C00148	ANTI-ICE & RAIN ENG 1 & WING CONT
A	7	C01001	ANTI-ICE & RAIN ENG 1 COWL AI VALVE

SUBTASK 30-00-00-860-038

- (3) For the right engine anti-ice valve, do this step:

- (a) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	7	C01002	ANTI-ICE & RAIN ENG 2 COWL AI VALVE

F/O Electrical System Panel, P6-5

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	11	C04082	ANTI-ICE & RAIN ENGINE 2 CONTROL

SUBTASK 30-00-00-010-009

- (4) On the applicable engine, open the outboard fan cowl panel (TASK 71-11-04-010-801-G00).

- (a) Open these access panels:

<u>Number</u>	<u>Name/Location</u>
413	Left Fan Cowl, Engine 1
424	Right Fan Cowl, Engine 2

SUBTASK 30-00-00-010-010

- (5) On the applicable engine, open the outboard thrust reverser panel (TASK 78-31-00-010-801-G00).

- (a) Open these access panels:

<u>Number</u>	<u>Name/Location</u>
415	Left Thrust Reverser, Engine 1
426	Right Thrust Reverser, Engine 2

G. Lock Applicable Engine Anti-Ice Valve Closed

SUBTASK 30-00-00-480-004

- (1) Install an INOP placard on the applicable ENG ANTI-ICE switch.

SUBTASK 30-00-00-020-009

- (2) Disconnect, cap, and stow the electrical connector from the applicable engine anti-ice valve.

SUBTASK 30-00-00-860-010

- (3) Lock applicable engine anti-ice valve closed:

- (a) Loosen the retaining fastener on the manual locking assembly.
- (b) Move the hex shaft to the CLOSED position.
- (c) Slide the locking assembly up the shaft into the recess in the cover plate.
- (d) Tighten the retaining fastener.

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H. Put the Airplane Back to Its Usual Condition

SUBTASK 30-00-00-410-006

- (1) On the applicable engine, close the outboard thrust reverser panel (TASK 78-31-00-010-802-G00).

- (a) Close these access panels:

<u>Number</u>	<u>Name/Location</u>
415	Left Thrust Reverser, Engine 1
426	Right Thrust Reverser, Engine 2

SUBTASK 30-00-00-410-005

- (2) On the applicable engine, close the outboard fan cowl panel (TASK 71-11-04-410-801-G00).

- (a) Close these access panels:

<u>Number</u>	<u>Name/Location</u>
413	Left Fan Cowl, Engine 1
424	Right Fan Cowl, Engine 2

SUBTASK 30-00-00-860-040

- (3) For the left engine anti-ice valve, do this step:

- (a) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	6	C00148	ANTI-ICE & RAIN ENG 1 & WING CONT
A	7	C01001	ANTI-ICE & RAIN ENG 1 COWL AI VALVE

SUBTASK 30-00-00-860-041

- (4) For the right engine anti-ice valve, do this step:

- (a) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	7	C01002	ANTI-ICE & RAIN ENG 2 COWL AI VALVE

F/O Electrical System Panel, P6-5

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	11	C04082	ANTI-ICE & RAIN ENGINE 2 CONTROL

SUBTASK 30-00-00-840-003

- (5) Do these steps to remove the DO NOT OPERATE tags, STD-858, from the applicable ENGINE START switch and START LEVER switch:

- (a) On the P5 overhead panel, remove the DO NOT OPERATE tag, STD-858, from the applicable ENGINE START switch.
- (b) On the P10 control stand, remove the DO NOT OPERATE tag, STD-858, from the applicable START LEVER switch.

————— END OF TASK —————

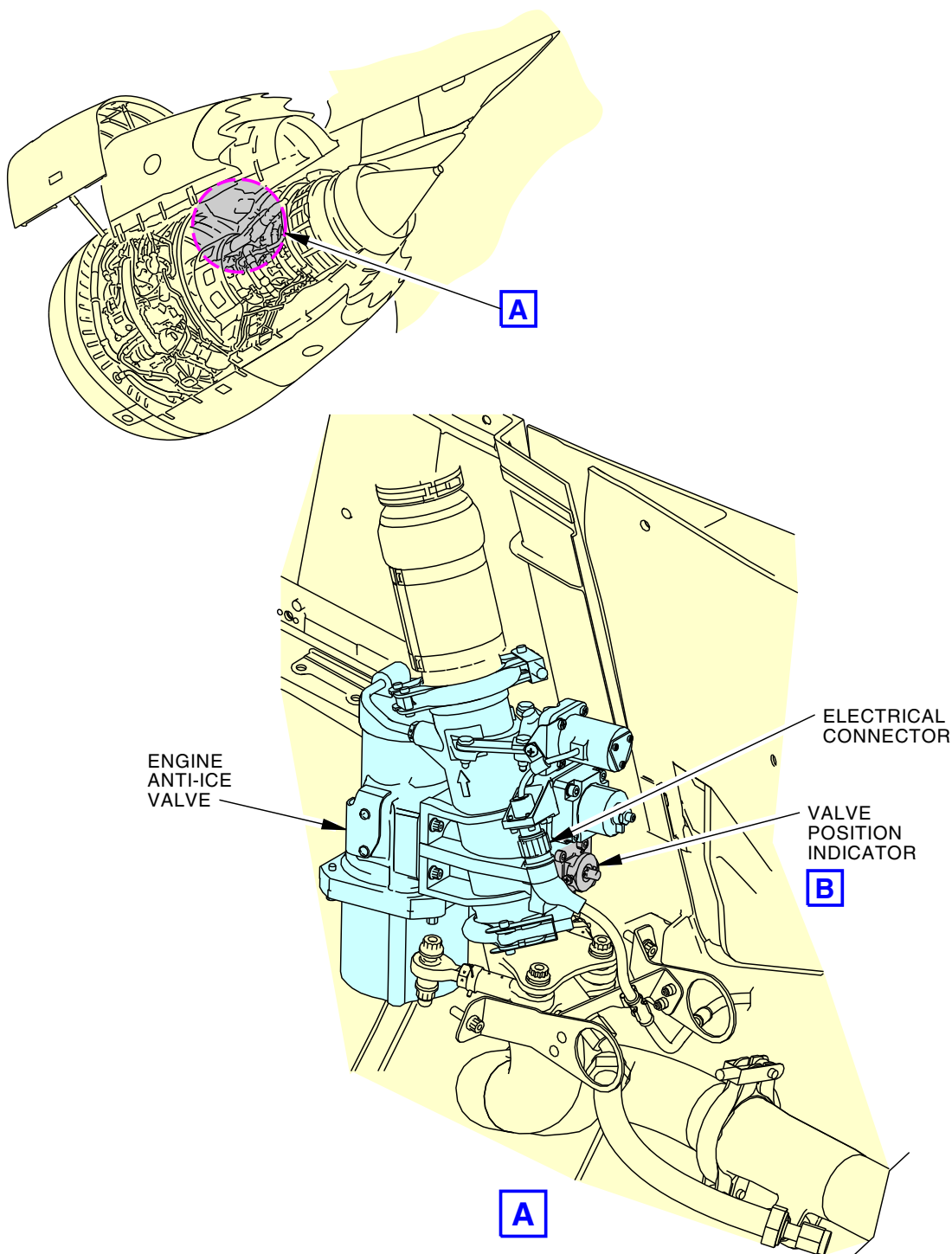
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2413880 S00061533660_V2

Engine Anti-Ice Valve
Figure 902/30-00-00-990-802 (Sheet 1 of 2)

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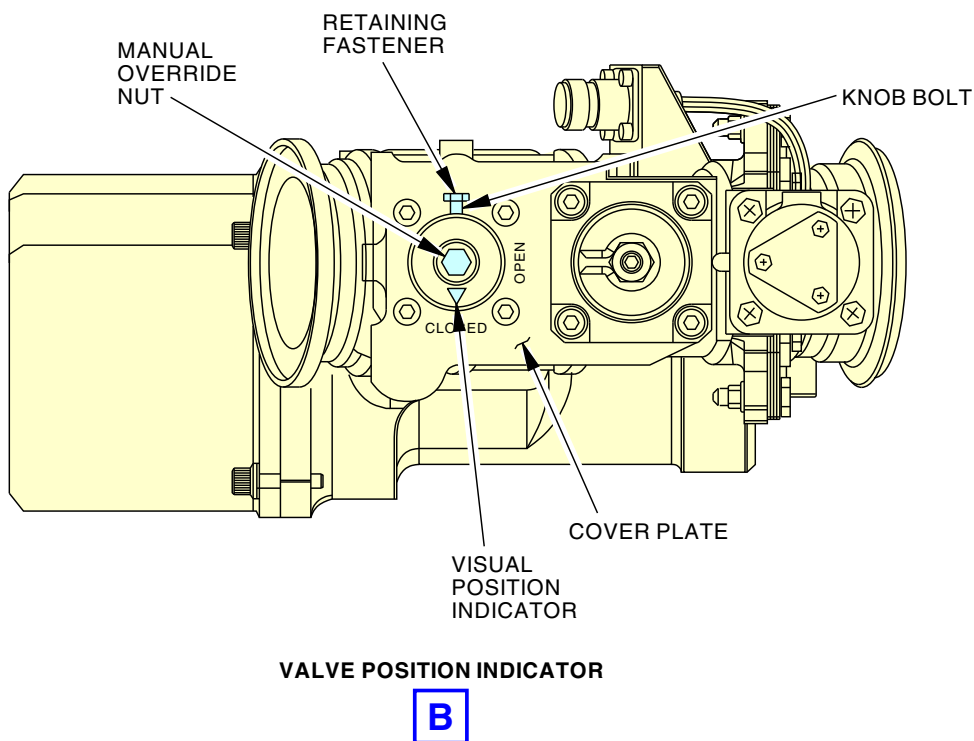
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Engine Anti-Ice Valve
Figure 902/30-00-00-990-802 (Sheet 2 of 2)

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TASK 30-00-00-440-803

9. **DDG 30-21-01A Engine Anti-Ice Valves Closed Inoperative - Restoration**

(Figure 902)

A. General

- (1) This task puts the airplane back to its usual condition after operation with the engine anti-ice systems inoperative.

B. References

Reference	Title
71-11-04-010-801-G00	Open the Fan Cowl Panels (Selection) (P/B 201)
71-11-04-410-801-G00	Close the Fan Cowl Panels (Selection) (P/B 201)
78-31-00-010-801-G00	Open the Thrust Reverser (Selection) (P/B 201)
78-31-00-010-802-G00	Close the Thrust Reverser (Selection) (P/B 201)

C. Tools/Equipment

Reference	Description
STD-858	Tag - DO NOT OPERATE

D. Location Zones

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

E. Access Panels

Number	Name/Location
413	Left Fan Cowl, Engine 1
415	Left Thrust Reverser, Engine 1
424	Right Fan Cowl, Engine 2
426	Right Thrust Reverser, Engine 2

F. Prepare to Unlock the Applicable Engine Anti-Ice Valve

SUBTASK 30-00-00-850-006

- (1) Do these steps to make sure that the ENGINE START switch and the START LEVER switch are not operated:
- (a) Make sure that the applicable ENGINE START switch, on the P5 overhead panel, is in the AUTO or OFF position.
- 1) Put a DO NOT OPERATE tag, STD-858, on the applicable ENGINE START switch.
- (b) Make sure that the applicable START LEVER switch, on the P10 control stand, is in the CUTOFF position.
- 1) Put a DO NOT OPERATE tag, STD-858, on the applicable START LEVER switch.

SUBTASK 30-00-00-860-047

- (2) For the left engine anti-ice valve, do this step:
- (a) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
A	6	C00148	ANTI-ICE & RAIN ENG 1 & WING CONT
A	7	C01001	ANTI-ICE & RAIN ENG 1 COWL AI VALVE

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SUBTASK 30-00-00-860-048

- (3) For the right engine anti-ice valve, do this step:
- (a) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	7	C01002	ANTI-ICE & RAIN ENG 2 COWL AI VALVE

F/O Electrical System Panel, P6-5

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	11	C04082	ANTI-ICE & RAIN ENGINE 2 CONTROL

SUBTASK 30-00-00-010-017

- (4) On the applicable engine, open the outboard fan cowl panel (TASK 71-11-04-010-801-G00).
- (a) Open these access panels:

<u>Number</u>	<u>Name/Location</u>
413	Left Fan Cowl, Engine 1
424	Right Fan Cowl, Engine 2

SUBTASK 30-00-00-010-018

- (5) On the applicable engine, open the outboard thrust reverser panel (TASK 78-31-00-010-801-G00).
- (a) Open these access panels:

<u>Number</u>	<u>Name/Location</u>
415	Left Thrust Reverser, Engine 1
426	Right Thrust Reverser, Engine 2

G. Unlock Applicable Engine Anti-Ice Valve

SUBTASK 30-00-00-860-017

- (1) Unlock applicable engine anti-ice valve:
- (a) Loosen the retaining fastener on the manual locking assembly.
- (b) Slide the locking assembly out of the cover plate recess.
- (c) Tighten the retaining fastener.

SUBTASK 30-00-00-420-008

- (2) Connect the electrical connector to the engine anti-ice valve.

SUBTASK 30-00-00-860-018

- (3) For the left engine anti-ice valve, do this step:
- (a) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	6	C00148	ANTI-ICE & RAIN ENG 1 & WING CONT
A	7	C01001	ANTI-ICE & RAIN ENG 1 COWL AI VALVE

SUBTASK 30-00-00-860-019

- (4) For the right engine anti-ice valve, do this step:

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- (a) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	7	C01002	ANTI-ICE & RAIN ENG 2 COWL AI VALVE

F/O Electrical System Panel, P6-5

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	11	C04082	ANTI-ICE & RAIN ENGINE 2 CONTROL

SUBTASK 30-00-00-080-004

- (5) Remove the INOP placard from the applicable ENG ANTI-ICE switch.

H. Put the Airplane Back to it's Usual Condition

SUBTASK 30-00-00-410-010

- (1) On the applicable engine, close the outboard thrust reverser panel (TASK 78-31-00-010-802-G00).

- (a) Close these access panels:

<u>Number</u>	<u>Name/Location</u>
415	Left Thrust Reverser, Engine 1
426	Right Thrust Reverser, Engine 2

SUBTASK 30-00-00-410-009

- (2) On the applicable engine, close the outboard fan cowl panel (TASK 71-11-04-410-801-G00).

- (a) Close these access panels:

<u>Number</u>	<u>Name/Location</u>
413	Left Fan Cowl, Engine 1
424	Right Fan Cowl, Engine 2

SUBTASK 30-00-00-840-004

- (3) Do these steps to remove the DO NOT OPERATE tags, STD-858, from the applicable ENGINE START switch and START LEVER switch:

- (a) On the P5 overhead panel, remove the DO NOT OPERATE tag, STD-858, from the applicable ENGINE START switch.
- (b) On the P10 control stand, remove the DO NOT OPERATE tag, STD-858, from the applicable START LEVER switch.

————— **END OF TASK** —————

TASK 30-00-00-040-811

10. DDG 30-21-01B Engine Anti-Ice Valves Open Inoperative - Preparation

(Figure 902, Figure 903)

A. General

- (1) This task gives the maintenance steps which prepare the airplane for flight with the engine anti-ice valve inoperative.

B. References

<u>Reference</u>	<u>Title</u>
31-65-00-750-801	Fault Interrogation for a Maintenance Message (P/B 201)

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Reference	Title
36-00-00-040-803	DDG 36-11-04-01 High Pressure Shutoff Valves (HPSOV) Inoperative - Preparation (P/B 901)
36-00-00-860-807	Pneumatic Valve Inoperative (P/B 201)
71-11-04-010-801-G00	Open the Fan Cowl Panels (Selection) (P/B 201)
71-11-04-410-801-G00	Close the Fan Cowl Panels (Selection) (P/B 201)
78-31-00-010-801-G00	Open the Thrust Reverser (Selection) (P/B 201)
78-31-00-010-802-G00	Close the Thrust Reverser (Selection) (P/B 201)

C. Tools/Equipment

Reference	Description
STD-858	Tag - DO NOT OPERATE

D. Location Zones

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

E. Access Panels

Number	Name/Location
413	Left Fan Cowl, Engine 1
415	Left Thrust Reverser, Engine 1
424	Right Fan Cowl, Engine 2
426	Right Thrust Reverser, Engine 2

F. Prepare to Lock the Applicable Engine Anti-Ice Valve Open

SUBTASK 30-00-00-850-007

- (1) Do these steps to make sure that the ENGINE START switch and the START LEVER switch are not operated:
 - (a) Make sure that the applicable ENGINE START switch, on the P5 overhead panel, is in the AUTO or OFF position.
 - 1) Put a DO NOT OPERATE tag, STD-858, on the applicable ENGINE START switch.
 - (b) Make sure that the applicable START LEVER switch, on the P10 control stand, is in the CUTOFF position.
 - 1) Put a DO NOT OPERATE tag, STD-858, on the applicable START LEVER switch.

SUBTASK 30-00-00-010-023

- (2) On the applicable engine, open the outboard fan cowl panel (TASK 71-11-04-010-801-G00).
 - (a) Open these access panels:

Number	Name/Location
413	Left Fan Cowl, Engine 1
424	Right Fan Cowl, Engine 2

SUBTASK 30-00-00-010-024

- (3) On the applicable engine, open the outboard thrust reverser panel (TASK 78-31-00-010-801-G00).

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- (a) Open these access panels:

<u>Number</u>	<u>Name/Location</u>
415	Left Thrust Reverser, Engine 1
426	Right Thrust Reverser, Engine 2

G. Lock the Applicable Engine Anti-Ice Valve Open

SUBTASK 30-00-00-860-028

- (1) For the left engine anti-ice valve, do this step:

- (a) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	6	C00148	ANTI-ICE & RAIN ENG 1 & WING CONT
A	7	C01001	ANTI-ICE & RAIN ENG 1 COWL AI VALVE

SUBTASK 30-00-00-860-029

- (2) For the right engine anti-ice valve, do this step:

- (a) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	7	C01002	ANTI-ICE & RAIN ENG 2 COWL AI VALVE

F/O Electrical System Panel, P6-5

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	11	C04082	ANTI-ICE & RAIN ENGINE 2 CONTROL

SUBTASK 30-00-00-860-030

- (3) Lock the applicable engine anti-ice valve in the open position (Figure 902, View B):

- (a) Loosen the retaining screw on the manual locking assembly.
- (b) Move the hex shaft to the OPEN position.
- (c) Slide the locking assembly up the shaft into the recess in the cover plate.
- (d) Tighten the retaining screw.

NOTE: Dispatching with an engine anti-ice valve inoperative open will cause the associated COWL VALVE light to come on and the applicable Thermal Anti-Ice (TAI) indication to come on amber.

- (e) Disconnect, cap and stow the electrical connector from the over pressure switch (Figure 903).

SUBTASK 30-00-00-480-005

- (4) Install INOP placards on the applicable position light and ENG ANTI-ICE switch.

H. Lock the Applicable High Pressure Shutoff Valve Closed

SUBTASK 30-00-00-040-003

- (1) Do this task: DDG 36-11-04-01 High Pressure Shutoff Valves (HPSOV) Inoperative - Preparation, TASK 36-00-00-040-803.

- (a) Make sure that the Pneumatic Valve Inoperative, TASK 36-00-00-860-807, is completed.

NOTE: This will cause the BLEED HPSOV L or BLEED HPSOV R status message to be annunciated.

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SUBTASK 30-00-00-040-009

- (2) Extinguish the MAINT light for the BLEED HPSOV L/R status message, do this task: Fault Interrogation for a Maintenance Message, TASK 31-65-00-750-801.

I. Put the Airplane Back to Its Usual Condition

SUBTASK 30-00-00-860-042

- (1) For the left engine anti-ice valve, do this step:
 - (a) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	6	C00148	ANTI-ICE & RAIN ENG 1 & WING CONT
A	7	C01001	ANTI-ICE & RAIN ENG 1 COWL AI VALVE

SUBTASK 30-00-00-860-043

- (2) For the right engine anti-ice valve, do this step:
 - (a) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	7	C01002	ANTI-ICE & RAIN ENG 2 COWL AI VALVE

F/O Electrical System Panel, P6-5

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	11	C04082	ANTI-ICE & RAIN ENGINE 2 CONTROL

SUBTASK 30-00-00-410-014

- (3) On the applicable engine, close the outboard thrust reverser panel (TASK 78-31-00-010-802-G00).
 - (a) Close these access panels:

<u>Number</u>	<u>Name/Location</u>
415	Left Thrust Reverser, Engine 1
426	Right Thrust Reverser, Engine 2

SUBTASK 30-00-00-410-013

- (4) On the applicable engine, close the outboard cowl panel (TASK 71-11-04-410-801-G00).
 - (a) Close these access panels:

<u>Number</u>	<u>Name/Location</u>
413	Left Fan Cowl, Engine 1
424	Right Fan Cowl, Engine 2

SUBTASK 30-00-00-840-005

- (5) Do these steps to remove the DO NOT OPERATE tags, STD-858, from the applicable ENGINE START switch and START LEVER switch:
 - (a) On the P5 overhead panel, remove the DO NOT OPERATE tag, STD-858, from the applicable ENGINE START switch.
 - (b) On the P10 control stand, remove the DO NOT OPERATE tag, STD-858, from the applicable START LEVER switch.

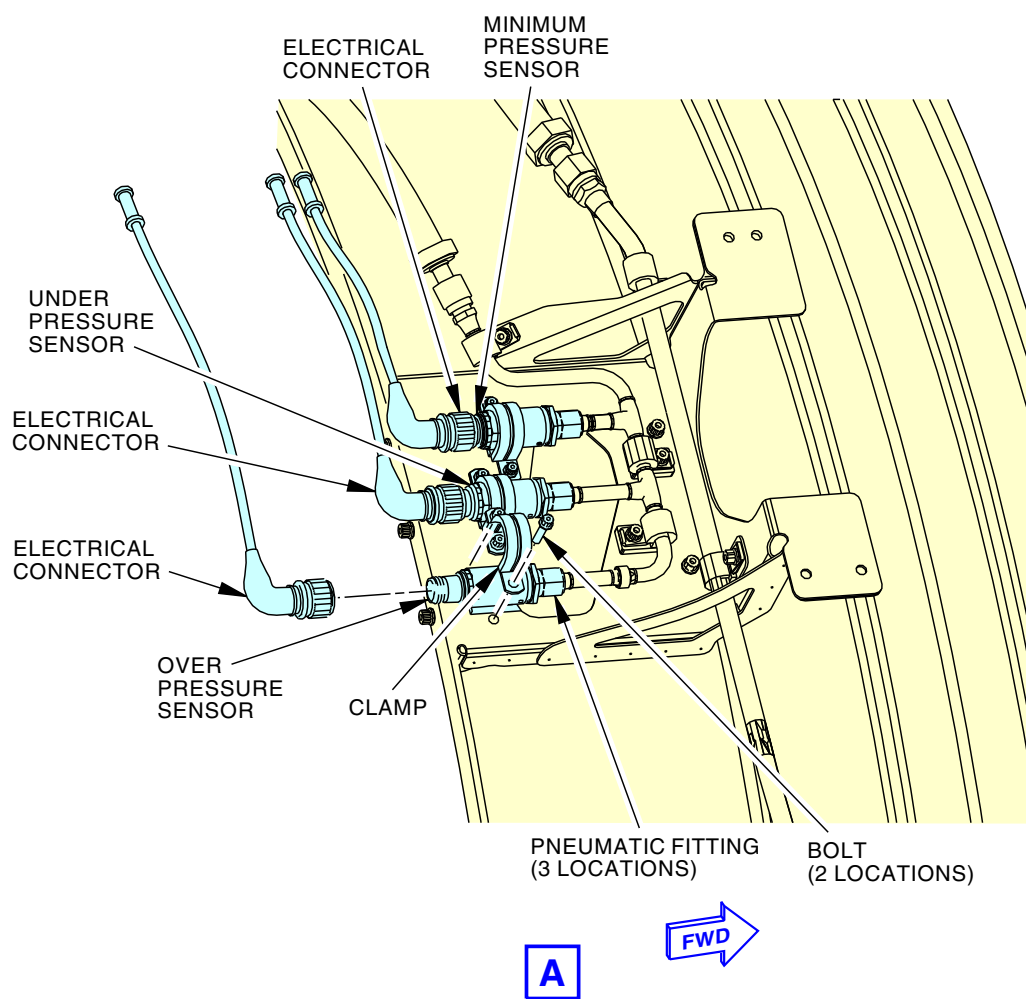
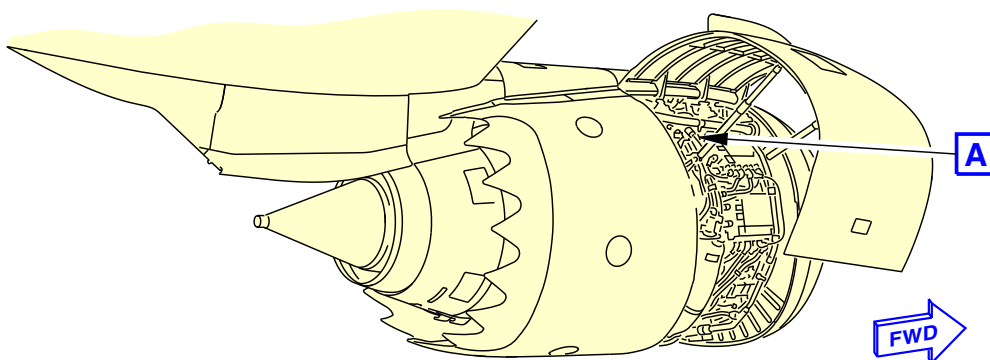
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Engine Anti-Ice Pressure Sensors
Figure 903/30-00-00-990-806 (Sheet 1 of 2)

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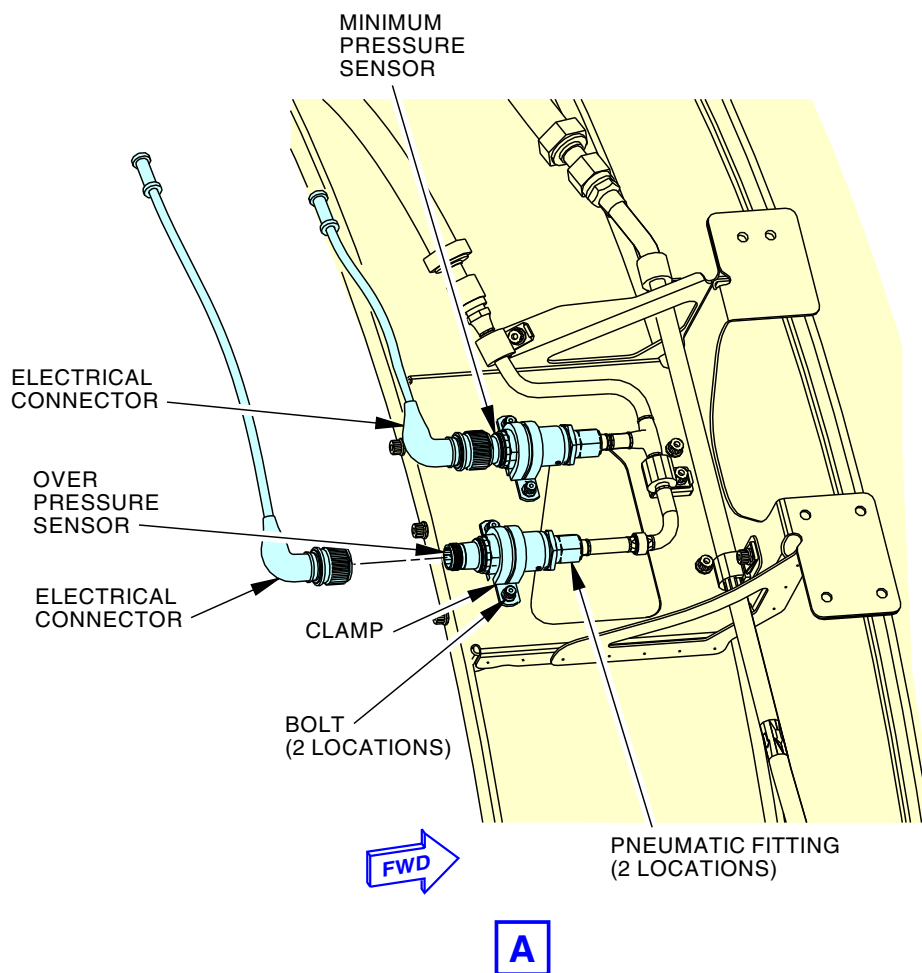
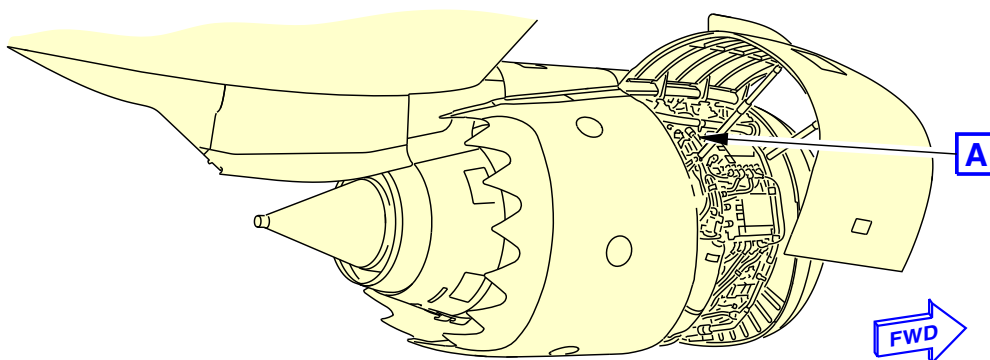
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Engine Anti-Ice Pressure Sensors
Figure 903/30-00-00-990-806 (Sheet 2 of 2)

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TASK 30-00-00-440-811

11. **DDG 30-21-01B Engine Anti-Ice Valves Open Inoperative - Restoration**

(Figure 902, Figure 903)

A. General

- (1) This task puts the airplane back to its usual condition after operation with the engine anti-ice valve inoperative.

B. References

Reference	Title
36-00-00-440-802	DDG 36-11-04-01 High Pressure Shutoff Valves (HPSOV) Inoperative - Restoration (P/B 901)
71-11-04-010-801-G00	Open the Fan Cowl Panels (Selection) (P/B 201)
71-11-04-410-801-G00	Close the Fan Cowl Panels (Selection) (P/B 201)
78-31-00-010-801-G00	Open the Thrust Reverser (Selection) (P/B 201)
78-31-00-010-802-G00	Close the Thrust Reverser (Selection) (P/B 201)

C. Tools/Equipment

Reference	Description
STD-858	Tag - DO NOT OPERATE

D. Location Zones

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

E. Access Panels

Number	Name/Location
413	Left Fan Cowl, Engine 1
415	Left Thrust Reverser, Engine 1
424	Right Fan Cowl, Engine 2
426	Right Thrust Reverser, Engine 2

F. Prepare to Unlock the Applicable Engine Anti-Ice Valve

SUBTASK 30-00-00-850-008

- (1) Do these steps to make sure that the ENGINE START switch and the START LEVER switch are not operated:
- (a) Make sure that the applicable ENGINE START switch, on the P5 overhead panel, is in the AUTO or OFF position.
 - 1) Put a DO NOT OPERATE tag, STD-858, on the applicable ENGINE START switch.
 - (b) Make sure that the applicable START LEVER switch, on the P10 control stand, is in the CUTOFF position.
 - 1) Put a DO NOT OPERATE tag, STD-858, on the applicable START LEVER switch.

SUBTASK 30-00-00-010-027

- (2) On the applicable engine, open the outboard fan cowl panel (TASK 71-11-04-010-801-G00).
- (a) Open these access panels:

<u>Number</u>	<u>Name/Location</u>
413	Left Fan Cowl, Engine 1

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(Continued)

<u>Number</u>	<u>Name/Location</u>
424	Right Fan Cowl, Engine 2

SUBTASK 30-00-00-010-028

- (3) On the applicable engine, open the outboard thrust reverser panel (TASK 78-31-00-010-801-G00).
- (a) Open these access panels:

<u>Number</u>	<u>Name/Location</u>
415	Left Thrust Reverser, Engine 1
426	Right Thrust Reverser, Engine 2

G. Unlock the Applicable Engine Anti-Ice Valve

SUBTASK 30-00-00-860-049

- (1) For the left engine anti-ice valve, do this step:
- (a) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	6	C00148	ANTI-ICE & RAIN ENG 1 & WING CONT
A	7	C01001	ANTI-ICE & RAIN ENG 1 COWL AI VALVE

SUBTASK 30-00-00-860-050

- (2) For the right engine anti-ice valve, do this step:
- (a) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	7	C01002	ANTI-ICE & RAIN ENG 2 COWL AI VALVE

F/O Electrical System Panel, P6-5

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	11	C04082	ANTI-ICE & RAIN ENGINE 2 CONTROL

SUBTASK 30-00-00-860-032

- (3) Unlock applicable engine anti-ice valve:
- (a) Loosen the retaining screw on the manual locking assembly (Figure 902, View B).
- (b) Slide the locking assembly out of the cover plate recess.
- (c) Tighten the retaining screw.

SUBTASK 30-00-00-080-005

- (4) Remove and unstow the cap on the electrical connector.

SUBTASK 30-00-00-480-006

- (5) Connect the electrical connector to the over pressure switch (Figure 903).

SUBTASK 30-00-00-860-033

- (6) Do this task: DDG 36-11-04-01 High Pressure Shutoff Valves (HPSOV) Inoperative - Restoration, TASK 36-00-00-440-802.

SUBTASK 30-00-00-860-035

- (7) For the left engine anti-ice valve, do this step:

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- (a) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	6	C00148	ANTI-ICE & RAIN ENG 1 & WING CONT
A	7	C01001	ANTI-ICE & RAIN ENG 1 COWL AI VALVE

SUBTASK 30-00-00-860-036

- (8) For the right engine anti-ice valve, do this step:

- (a) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	7	C01002	ANTI-ICE & RAIN ENG 2 COWL AI VALVE

F/O Electrical System Panel, P6-5

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	11	C04082	ANTI-ICE & RAIN ENGINE 2 CONTROL

SUBTASK 30-00-00-080-002

- (9) Remove the INOP placards from the applicable position light and ENG ANTI-ICE switch.

H. Put the Airplane Back to Its Usual Condition

SUBTASK 30-00-00-410-018

- (1) On the applicable engine, close the outboard thrust reverser panel (TASK 78-31-00-010-802-G00).

- (a) Close these access panels:

<u>Number</u>	<u>Name/Location</u>
415	Left Thrust Reverser, Engine 1
426	Right Thrust Reverser, Engine 2

SUBTASK 30-00-00-410-017

- (2) On the applicable engine, close the outboard fan cowl panel (TASK 71-11-04-410-801-G00).

- (a) Close these access panels:

<u>Number</u>	<u>Name/Location</u>
413	Left Fan Cowl, Engine 1
424	Right Fan Cowl, Engine 2

SUBTASK 30-00-00-840-006

- (3) Do these steps to remove the DO NOT OPERATE tags, STD-858, from the applicable ENGINE START switch and START LEVER switch:

- (a) On the P5 overhead panel, remove the DO NOT OPERATE tag, STD-858, from the applicable ENGINE START switch.
- (b) On the P10 control stand, remove the DO NOT OPERATE tag, STD-858, from the applicable START LEVER switch.

————— **END OF TASK** —————

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TASK 30-00-00-040-805

12. DDG 30-31-05-01 Pitot Probe Heater Lights Inoperative - Preparation

A. General

- (1) This task gives the maintenance steps which prepare the airplane for flight with a pitot probe heater light inoperative.

B. References

Reference	Title
24-22-00-860-803	Supply External Power (P/B 201)

C. Location Zones

Zone	Area
200	Upper Half of Fuselage

D. Procedure

SUBTASK 30-00-00-710-005

- (1) Make sure that the pitot probe heater associated with the light operates:
- (a) Make sure that the covers are removed from all air data probes and vanes.
 - (b) Make sure that to supply external power (TASK 24-22-00-860-803).



DO NOT TOUCH AIR DATA SENSORS WHEN HOT. A HOT AIR DATA SENSOR CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT CAN OCCUR.



DO NOT HEAT THE AIR DATA SENSORS LONGER THEN NECESSARY. HEAT DAMAGE TO THE AIR DATA SENSORS CAN OCCUR.

- (c) Set the applicable PROBE HEAT switch to the ON position.
- (d) Make sure that the applicable pitot probe gets warm.
- (e) Set the applicable PROBE HEAT switch to the AUTO position.

SUBTASK 30-00-00-930-005

- (2) Put an INOP placard adjacent to the affected sensor heater light.

————— END OF TASK —————

TASK 30-00-00-440-805

13. DDG 30-31-05-01 Pitot Probe Heater Lights Inoperative — Restoration

A. General

- (1) This task puts the airplane back to its usual condition after operation with a pitot probe heater light inoperative.

B. Location Zones

Zone	Area
200	Upper Half of Fuselage

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C. Procedure

SUBTASK 30-00-00-930-006

- (1) Remove the INOP placard from the affected light.

————— END OF TASK —————

TASK 30-00-00-040-806

14. DDG 30-31-05-02 Total Air Temperature (TAT) Probe Heater Light Inoperative - Preparation

A. General

- (1) This task gives the maintenance steps which prepare the airplane for flight with a Total Air Temperature (TAT) probe heater light inoperative.

B. References

Reference	Title
24-22-00-860-803	Supply External Power (P/B 201)

C. Location Zones

Zone	Area
200	Upper Half of Fuselage

D. Procedure

SUBTASK 30-00-00-710-006

- (1) Make sure that the TAT probe heater associated with the light operates:
- (a) Make sure that the covers are removed from all air data probes and vanes.
 - (b) Station a ground observer at the associated vane heater and establish communications.
 - (c) Make sure that to supply external power (TASK 24-22-00-860-803).



DO NOT TOUCH AIR DATA SENSORS WHEN HOT. A HOT AIR DATA SENSOR CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT CAN OCCUR.



DO NOT HEAT THE AIR DATA SENSORS LONGER THEN NECESSARY. HEAT DAMAGE TO THE AIR DATA SENSORS CAN OCCUR.

- (d) Set the applicable PROBE HEAT switch to the ON position.
- (e) For the aspirated TAT probe, momentarily press and hold the TAT TEST switch.
- (f) Make sure that the applicable TAT probe gets warm.
- (g) Set the applicable PROBE HEAT switch to the AUTO position.

SUBTASK 30-00-00-930-007

- (2) Put an INOP placard on the affected sensor heater light.

————— END OF TASK —————

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TASK 30-00-00-440-806

15. DDG 30-31-05-02 Total Air Temperature (TAT) Probe Heater Light Inoperative - Restoration

A. General

- (1) This task put the airplane back to its usual condition after operation with a TAT probe heater light inoperative.

B. Location Zones

Zone	Area

200	Upper Half of Fuselage

C. Procedure

SUBTASK 30-00-00-930-008

- (1) Remove the INOP placard from the affected light.

————— END OF TASK —————

TASK 30-00-00-040-807

16. DDG 30-31-06 Alpha Vane Heater Light Inoperative - Preparation

A. General

- (1) This task gives the maintenance steps which prepare the airplane for flight with the alpha vane heater light inoperative.

B. References

Reference	Title

24-22-00-860-803	Supply External Power (P/B 201)

C. Location Zones

Zone	Area

200	Upper Half of Fuselage

D. Procedure

SUBTASK 30-00-00-710-007

- (1) Make sure that the vane heater associated with the light operates:
- (a) Make sure that the covers are removed from air data probes and vanes.
 - (b) Make sure that to establish communications with a ground observer at associated vane heater.
 - (c) Make sure that to supply external power (TASK 24-22-00-860-803).



WARNING

DO NOT TOUCH THE VANE. THE VANE CAN GET VERY HOT. A HOT VANE CAN CAUSE INJURIES TO PERSONNEL.



CAUTION

DO NOT OPERATE THE HEATER FOR A LONGER TIME THAN IS NECESSARY TO DO THE TEST. YOU CAN DECREASE THE LIFE OF THE HEATER.

- (d) Set the applicable PROBE HEAT switch to the ON position.
- (e) Make sure that the applicable vane gets warm
- (f) Set the applicable PROBE HEAT switch to the AUTO position.

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SUBTASK 30-00-00-930-009

- (2) Put an INOP placard on the affected sensor heater light.

————— END OF TASK —————

TASK 30-00-00-440-807

17. DDG 30-31-06 Alpha Vane Heater Light Inoperative - Restoration

A. General

- (1) This task puts the airplane back to its usual condition after operation with the alpha vane heater light inoperative.

B. Location Zones

Zone	Area
200	Upper Half of Fuselage

C. Procedure

SUBTASK 30-00-00-440-005

- (1) Remove the INOP placard from the affected light.

————— END OF TASK —————

TASK 30-00-00-040-808

18. DDG 30-42-01 Windshield Wiper System Inoperative - Preparation

A. General

- (1) This task gives the maintenance steps which prepare the airplane for flight with windshield wiper systems inoperative.

NOTE: This maintenance procedure is optional.

B. References

Reference	Title
30-42-31-000-801	Windshield Wiper Arm Removal (P/B 401)
30-42-31-400-801	Windshield Wiper Arm Installation (P/B 401)

C. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

D. Procedure

SUBTASK 30-00-00-930-010

- (1) Put an INOP placard on the wiper switch.

SUBTASK 30-00-00-020-007

- (2) If the wiper blade obstructs forward vision, do these tasks:
- (a) Windshield Wiper Arm Removal, TASK 30-42-31-000-801.
 - (b) Windshield Wiper Arm Installation, TASK 30-42-31-400-801.

NOTE: It is only necessary to put the wiper arm in the parked position and to apply the appropriate downward force on the wiper blade. The steps related to the sweep of the wiper arm are not necessary.

————— END OF TASK —————

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TASK 30-00-00-440-808

19. DDG 30-42-01 Windshield Wiper System Inoperative - Restoration

A. General

- (1) This task puts the airplane back to its usual condition after operation with the windshield wiper system inoperative.

B. Location Zones

Zone	Area

211	Flight Compartment - Left
212	Flight Compartment - Right

C. Procedure

SUBTASK 30-00-00-440-006

- (1) Remove the INOP placard from the windshield wiper switch.

————— END OF TASK —————

TASK 30-00-00-040-809

20. DDG 30-71-01 Drain Mast Heaters Inoperative - Preparation

A. General

- (1) This task gives the maintenance steps which prepare the airplane for flight with the drain mast heater inoperative.

B. Location Zones

Zone	Area

191	Lower Wing-To-Body Fairing - Forward of Wing Box
240	Subzone - Passenger Compartment - Body Station 663.75 to Body Station 1016.00

C. Turn off water supply to associated components and deactivate inoperative drain mast heaters

SUBTASK 30-00-00-210-001

- (1) Close the associated water supply shutoff valves (lavatory, galley, or fountain).

SUBTASK 30-00-00-040-004

- (2) Deactivate inoperative drain mast heater(s):
- (a) For an inoperative forward drain mast heater, disconnect, cap, and stow wire 0243-20 from terminal block TB2201.
 - (b) For an inoperative aft drain mast heater, disconnect, cap, and stow wire 0244-20 from terminal block TB2201.

SUBTASK 30-00-00-865-001

- (3) Open these circuit breakers and install safety locks:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
E	3	C00234	HEATERS DRAIN MAST GND
E	4	C00700	HEATERS DRAIN MAST AIR

SUBTASK 30-00-00-040-006

- (4) Install an INOP placard adjacent to the affected light.

————— END OF TASK —————

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TASK 30-00-00-440-809

21. **DDG 30-71-01 Drain Mast Heaters Inoperative - Restoration**

A. General

- (1) This task puts the airplane back to its usual condition after operation with the drain mast heater inoperative.

B. Location Zones

Zone	Area
191	Lower Wing-To-Body Fairing - Forward of Wing Box
240	Subzone - Passenger Compartment - Body Station 663.75 to Body Station 1016.00

C. Turn on water supply to associated components and activate drain mast heaters

SUBTASK 30-00-00-865-002

- (1) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
E	3	C00234	HEATERS DRAIN MAST GND
E	4	C00700	HEATERS DRAIN MAST AIR

SUBTASK 30-00-00-010-029

- (2) Open the water supply shutoff valves.

D. Drain Mast Heater Repair

SUBTASK 30-00-00-440-007

- (1) Remove the INOP placard from the affected light.

———— **END OF TASK** ————

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ENGINE AND WING ANTI-ICE PANEL - REMOVAL/INSTALLATION

1. **General**

- A. This procedure has these tasks:
- (1) Engine and Wing Anti-Ice Panel Removal
 - (2) Engine and Wing Anti-Ice Panel Installation

TASK 30-00-01-000-801

2. **Engine and Wing Anti-Ice Panel Removal**

(Figure 401)

A. **General**

- (1) This task gives instructions to remove the Engine and Wing Anti-Ice Panel.

B. **References**

Reference	Title
20-40-12-000-802	ESDS Handling for Metal Encased Unit Removal (P/B 201)

C. **Tools/Equipment**

Reference	Description
STD-858	Tag - DO NOT OPERATE

D. **Location Zones**

Zone	Area
212	Flight Compartment - Right

E. **Prepare for the Engine and Wing Anti-Ice Panel Removal**

SUBTASK 30-00-01-860-001

- (1) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
A	1	C04012	ANTI-ICE & RAIN WING ANTI-ICE VALVE
A	6	C00148	ANTI-ICE & RAIN ENG 1 & WING CONT
A	7	C01001	ANTI-ICE & RAIN ENG 1 COWL AI VALVE
B	2	C04063	ANTI-ICE & RAIN WING ANTI-ICE VALVE-L
B	4	C04064	ANTI-ICE & RAIN WING ANTI-ICE VALVE-R
B	7	C01002	ANTI-ICE & RAIN ENG 2 COWL AI VALVE

SUBTASK 30-00-01-040-001

- (2) Do these steps to deactivate the Wing Thermal Anti-Ice System:
 - (a) Set the WING ANTI-ICE switch on the P5-11 engine and wing anti-ice panel, to the OFF position.
 - (b) Make sure that the L VALVE and R VALVE lights are off.
 - (c) Install DO NOT OPERATE tag, STD-858 on the WING ANTI-ICE switch on the P5-11 engine and wing anti-ice panel.

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SUBTASK 30-00-01-910-001



DO NOT TOUCH THE CONNECTOR PINS, OR OTHER CONDUCTORS. IF YOU TOUCH THESE CONDUCTORS, ELECTROSTATIC DISCHARGE CAN CAUSE DAMAGE TO THE COMPONENTS.

- (3) Do this task: ESDS Handling for Metal Encased Unit Removal, TASK 20-40-12-000-802.

SUBTASK 30-00-01-010-001

- (4) Open the P5 overhead panel.
(a) Loosen the quarter-turn fasteners on the bottom corners of the P5 overhead panel.



HOLD THE PANEL TIGHTLY BEFORE YOU RELEASE THE LATCH. THE PANEL IS HEAVY. INJURIES CAN OCCUR IF IT HITS YOU.

- (b) Release the panel safety latch.

F. Engine and Wing Anti-Ice Panel Removal

SUBTASK 30-00-01-020-001



DO NOT TOUCH OVERHEAD PANEL TERMINALS. HIGH VOLTAGE MAY BE PRESENT AND CAUSE INJURY TO PERSONNEL OR DAMAGE TO EQUIPMENT CAN OCCUR.

- (1) Disconnect the connector [3] from the engine and wing anti-ice module [1].

SUBTASK 30-00-01-020-002

- (2) Release the quarter-turn fasteners [2] which attach the engine and wing anti-ice module [1] to the P5 overhead panel.

SUBTASK 30-00-01-020-003

- (3) Remove the engine and wing anti-ice module [1].

SUBTASK 30-00-01-410-003

- (4) If necessary, close the P5 overhead panel.



HOLD THE PANEL TIGHTLY BEFORE YOU RELEASE THE LATCH. THE PANEL IS HEAVY. INJURIES CAN OCCUR IF IT HITS YOU.

- (a) Raise the P5 overhead panel.
(b) Make sure that the safety latch is in the proper position.
(c) Tighten the quarter-turn fasteners on the bottom corners of the P5 overhead panel.

————— END OF TASK —————

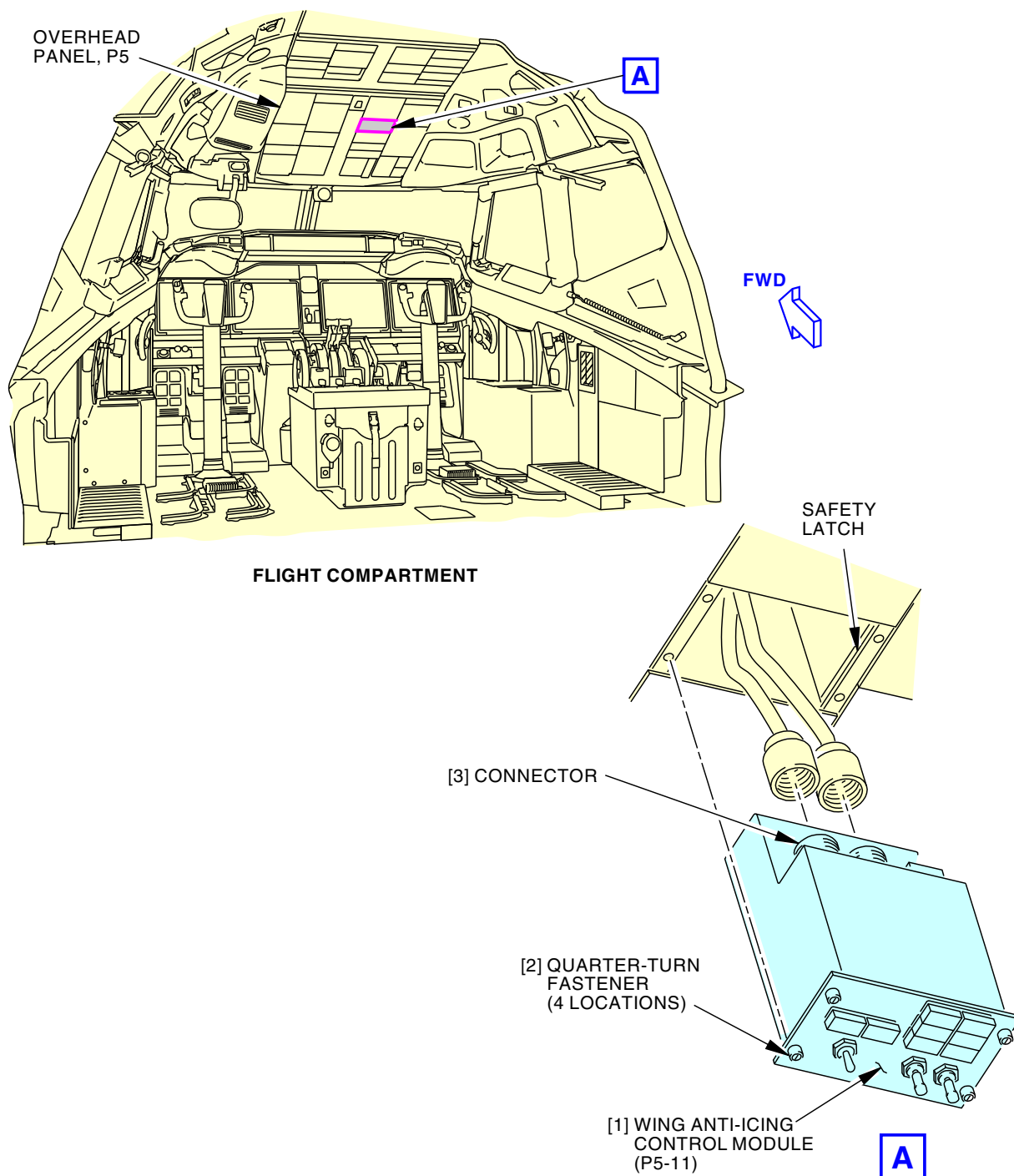
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2413900 S00061533726_V2

Wing Anti-Icing Control Module Installation
Figure 401/30-00-01-990-801

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TASK 30-00-01-400-801

3. Engine and Wing Anti-Ice Panel Installation

(Figure 401)

A. General

- (1) This task gives instructions to install the Engine and Wing Anti-Ice Panel.

B. References

Reference	Title
20-40-12-400-802	ESDS Handling for Metal Encased Unit Installation (P/B 201)
30-00-01-710-801	Engine and Wing Thermal Anti-Ice Panel (P5-11) Test (P/B 501)

C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Engine and wing anti-ice module	30-00-01-01-050	SIA ALL

D. Prepare for the Engine and Wing Anti-Ice Panel Installation

SUBTASK 30-00-01-910-002



CAUTION

DO NOT TOUCH THE CONNECTOR PINS, OR OTHER CONDUCTORS. IF YOU TOUCH THESE CONDUCTORS, ELECTROSTATIC DISCHARGE CAN CAUSE DAMAGE TO THE COMPONENTS.

- (1) Do this task: ESDS Handling for Metal Encased Unit Installation, TASK 20-40-12-400-802.

SUBTASK 30-00-01-010-002

- (2) If necessary, open the P5 overhead panel.
(a) Loosen the quarter-turn fasteners on the bottom corners of the P5 overhead panel.



WARNING

HOLD THE PANEL TIGHTLY BEFORE YOU RELEASE THE LATCH. THE PANEL IS HEAVY. INJURIES CAN OCCUR IF IT HITS YOU.

- (b) Release the panel safety latch.

E. Engine and Wing Anti-Ice Panel Installation

SUBTASK 30-00-01-420-001

- (1) Install the engine and wing anti-ice module [1] in the P5 overhead panel.

SUBTASK 30-00-01-420-002

- (2) Turn the quarter-turn fasteners [2] to attach the engine and wing anti-ice module [1].

SUBTASK 30-00-01-420-003



WARNING

DO NOT TOUCH OVERHEAD PANEL TERMINALS. HIGH VOLTAGE MAY BE PRESENT AND CAUSE INJURY TO PERSONNEL OR DAMAGE TO EQUIPMENT CAN OCCUR.

- (3) Attach the connectors [3] to the engine and wing anti-ice module [1].

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SUBTASK 30-00-01-410-001



CAUTION

DO NOT BEND OR TWIST WIRE BUNDLE. DAMAGE TO THE WIRE BUNDLE CAN OCCUR.

- (4) Do these steps to close the P5 overhead panel:
- (a) Raise the P5 overhead panel.



WARNING

HOLD THE PANEL TIGHTLY BEFORE YOU RELEASE THE LATCH. THE PANEL IS HEAVY. INJURIES CAN OCCUR IF IT HITS YOU.

- (b) Make sure that the safety latch is in the proper position.
- (c) Tighten the quarter-turn fasteners on the bottom corners of the P5 overhead panel.

F. Engine and Wing Anti-Ice Panel Installation Test

SUBTASK 30-00-01-860-003

- (1) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	1	C04012	ANTI-ICE & RAIN WING ANTI-ICE VALVE
A	6	C00148	ANTI-ICE & RAIN ENG 1 & WING CONT
A	7	C01001	ANTI-ICE & RAIN ENG 1 COWL AI VALVE
B	2	C04063	ANTI-ICE & RAIN WING ANTI-ICE VALVE-L
B	4	C04064	ANTI-ICE & RAIN WING ANTI-ICE VALVE-R
B	7	C01002	ANTI-ICE & RAIN ENG 2 COWL AI VALVE

SUBTASK 30-00-01-440-001

- (2) Do the step to activate Wing Thermal Anti-Ice System:
- (a) Remove DO NOT OPERATE tag from the WING ANTI-ICE switch on the P5-11 engine and wing anti-ice panel.

SUBTASK 30-00-01-710-001

- (3) Do the Engine and Wing Thermal Anti-Ice Panel (P5-11) Test (TASK 30-00-01-710-801).

————— END OF TASK —————

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ENGINE AND WING ANTI-ICE PANEL - ADJUSTMENT/TEST

1. General

- A. This procedure contains a task to do a test of the engine and wing anti-ice panel (P5-11).

TASK 30-00-01-710-801

2. Engine and Wing Thermal Anti-Ice Panel (P5-11) Test

(Figure 501)

A. General

- (1) This test makes sure that the Engine and Wing Anti-Ice Panel (P5-11) is operating properly.

B. References

Reference	Title
36-00-00-860-802	Supply Pressure to the Pneumatic System with an External Ground Air Source (P/B 201)
36-00-00-860-803	Supply Pressure to the Pneumatic System with the APU (P/B 201)
36-00-00-860-805	Supply Pressure Upstream of the PRSOV with Engines Off (P/B 201)
36-00-00-860-806	Remove Pressure from the Pneumatic System (P/B 201)
71-11-04-010-801-G00	Open the Fan Cowl Panels (Selection) (P/B 201)
71-11-04-410-801-G00	Close the Fan Cowl Panels (Selection) (P/B 201)
IFIM and do the applicable procedure(s)	Interactive Fault Isolation Manual

C. Tools/Equipment

Reference	Description
STD-4931	Jumper - Electrical
STD-6286	Jumper Wire

D. Location Zones

Zone	Area
212	Flight Compartment - Right

E. Prepare for the Tests

SUBTASK 30-00-01-860-006

- (1) Supply pneumatic pressure for the TAI ducts:
- (a) To use the APU to pressurize the TAI duct, do this task: Supply Pressure to the Pneumatic System with the APU, TASK 36-00-00-860-803.
 - (b) To use an external air supply to pressurize the TAI duct, do this task: Supply Pressure to the Pneumatic System with an External Ground Air Source, TASK 36-00-00-860-802.
 - (c) Put the BLEED 1 and 2 switches on the air conditioning panel in the OFF position.
 - (d) Put the L PACK AND R PACK switches on the air conditioning panel in the OFF position.
 - (e) Make sure that the ISOLATION VALVE switch is in the OPEN or the AUTO position.

SUBTASK 30-00-01-010-003

- (2) For the applicable engine, open the right fan cowl panel (TASK 71-11-04-010-801-G00).

SUBTASK 30-00-01-860-007

- (3) Make sure that the thrust levers are in the IDLE position.

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F. Wing Anti-Ice Switch and Indication Test

SIA 015-999; SIA 001-014 POST SB 737-30A1083

SUBTASK 30-00-01-860-018

(1) Do a check of the valve lights on the engine wing anti-ice panel:

- (a) Push and release the L VALVE and R VALVE lights on the P5-11 panel.
1) Make sure that each light comes on then goes off.
- (b) Open this circuit breaker:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	7	C01001	ANTI-ICE & RAIN ENG 1 COWL AI VALVE

- (c) Push and release the L VALVE light on the P5-11 panel.
1) Make sure that the light comes on then goes off.
- (d) Close this circuit breaker:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	7	C01001	ANTI-ICE & RAIN ENG 1 COWL AI VALVE

- (e) Open this circuit breaker:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	6	C00148	ANTI-ICE & RAIN ENG 1 & WING CONT

- (f) Push and release the L VALVE light on the P5-11 panel.
1) Make sure that the light comes on then goes off.
- (g) Close this circuit breaker:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	6	C00148	ANTI-ICE & RAIN ENG 1 & WING CONT

- (h) Open this circuit breaker:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	7	C01002	ANTI-ICE & RAIN ENG 2 COWL AI VALVE

- (i) Push and release the R VALVE light on the P5-11 panel.
1) Make sure that the light comes on then goes off.
- (j) Close this circuit breaker:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	7	C01002	ANTI-ICE & RAIN ENG 2 COWL AI VALVE

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SIA 015-999; SIA 001-014 POST SB 737-30A1083 (Continued)

- (k) Open this circuit breaker:

F/O Electrical System Panel, P6-5

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	11	C04082	ANTI-ICE & RAIN ENGINE 2 CONTROL

- (l) Push and release the R VALVE light on the P5-11 panel.

1) Make sure that the light comes on then goes off.

- (m) Close this circuit breaker:

F/O Electrical System Panel, P6-5

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	11	C04082	ANTI-ICE & RAIN ENGINE 2 CONTROL

- (n) If the L VALVE or R VALVE light does not come on, go to IFIM and do the applicable procedure(s).

SIA 001-014 PRE SB 737-30A1083

SUBTASK 30-00-01-860-008

- (2) Push and release the L VALVE and R VALVE lights on the P5-11 panel.

(a) Make sure that each light comes on then goes off.

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SUBTASK 30-00-01-860-009

- (3) Make sure that the engine and wing anti-ice panel commands the anti-icing valves open:

(a) Put the WING ANTI-ICE switch in the ON position.

1) Make sure that the L VALVE and R VALVE lights are on until 6 seconds, then extinguish.

NOTE: During this time the MASTER CAUTION and ANTI-ICE annunciator should remain extinguished.

SUBTASK 30-00-01-720-001

- (4) Do a check of the thrust switch inputs to the engine and wing anti-ice panel:

(a) Put the thrust levers in the full throttle position.

1) Make sure that the duct pressure increases.

(b) Put the thrust levers in the IDLE position.

1) Make sure that the duct pressure decreases.

SUBTASK 30-00-01-860-010

- (5) Make sure that the engine and wing anti-ice panel commands the anti-icing valves closed:

(a) Put the WING ANTI-ICE switch in the OFF position.

1) Make sure that the L VALVE and R VALVE lights are on until 6 seconds, then extinguish.

NOTE: During this time the MASTER CAUTION and ANTI-ICE annunciator should remain extinguished.

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G. Engine Anti-Ice Switches and Indication Test

SUBTASK 30-00-01-860-011

- (1) Push and release the COWL VALVE, COWL ANTI-ICE, ENG CORE VALVE lights on the P5-11 panel.
 - (a) Make sure that each light comes on and then goes off.

SUBTASK 30-00-01-860-017

- (2) Do this task: Supply Pressure Upstream of the PRSOV with Engines Off, TASK 36-00-00-860-805.

SUBTASK 30-00-01-860-013

- (3) Make sure that the engine and wing anti-ice panel commands the cowl anti-icing valves open:



CAUTION

DO NOT KEEP THE COWL TAI VALVE OPEN FOR MORE THAN THE SPECIFIED TIME WHEN THE TEMPERATURE IS MORE THAN THE SPECIFIED LIMIT. DAMAGE TO THE INLET COWL CAN OCCUR.

- (a) Put the ENG ANTI-ICE 1 switch in the ON position.

NOTE: If the outside air temperature is more than 50°F (10°C), operate the engine anti-ice system for 30 seconds or less.

- 1) Make sure that the left COWL VALVE light is on until 6 seconds, then extinguish.

NOTE: During this time the MASTER CAUTION and ANTI-ICE annunciator should remain extinguished.

- (b) Put the ENG ANTI-ICE 2 switch in the ON position.

NOTE: If the outside air temperature is more than 50°F (10°C), operate the engine anti-ice system for 30 seconds or less.

- 1) Make sure that the right COWL VALVE light is on until 6 seconds, then extinguish.

NOTE: During this time the MASTER CAUTION and ANTI-ICE annunciator should remain extinguished.

SUBTASK 30-00-01-720-002

- (4) Do a check of the cowl thermal anti-ice (TAI) duct pressure switch inputs to the engine and wing anti-ice panel:
 - (a) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	6	C00148	ANTI-ICE & RAIN ENG 1 & WING CONT
A	7	C01001	ANTI-ICE & RAIN ENG 1 COWL AI VALVE

- (b) Remove the electrical connector from the left cowl TAI duct pressure switch.
- (c) Connect a Jumper Wire, STD-6286 (or equivalent electrical jumper, STD-4931) between pins 1 and 2 of the electrical connector.
 - 1) Make sure that the left COWL ANTI-ICE lights is on.
- (d) Remove the Jumper Wire, STD-6286.
- (e) Connect the electrical connector to the pressure switch.
 - 1) Put the ENG ANTI-ICE 1 switch in the OFF position.
 - 2) Make sure that the left COWL ANTI-ICE light is off.

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- (f) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	6	C00148	ANTI-ICE & RAIN ENG 1 & WING CONT
A	7	C01001	ANTI-ICE & RAIN ENG 1 COWL AI VALVE

- (g) Open this circuit breaker and install safety tag:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	7	C01002	ANTI-ICE & RAIN ENG 2 COWL AI VALVE

- (h) Remove the electrical connector from the right cowl TAI duct pressure switch.
- (i) Connect a Jumper Wire, STD-6286 (or equivalent electrical jumper, STD-4931) between pins 1 and 2 of the electrical connector.
- 1) Make sure that the right COWL ANTI-ICE light is on.
- (j) Remove the Jumper Wire, STD-6286.
- (k) Connect the electrical connector to the pressure switch.
- 1) Put the ENG ANTI-ICE 2 switch in the OFF position.
- 2) Make sure that the right COWL ANTI-ICE light is off.
- (l) Remove the safety tag and close this circuit breaker:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	7	C01002	ANTI-ICE & RAIN ENG 2 COWL AI VALVE

SUBTASK 30-00-01-860-014

- (5) Make sure that the engine and wing anti-ice panel commands the cowl anti-icing valves closed:
- (a) Put the ENG ANTI-ICE 1 switch in the OFF position.
- 1) Make sure that the left COWL VALVE light is on until 6 seconds, then extinguish.
- NOTE: During this time the MASTER CAUTION and ANTI-ICE annunciator should remain extinguished.
- (b) Put the ENG ANTI-ICE 2 switch in the OFF position.
- 1) Make sure that the right COWL VALVE light is on until 6 seconds, then extinguish.
- NOTE: During this time the MASTER CAUTION and ANTI-ICE annunciator should remain extinguished.

H. Put the Airplane Back to Its Usual Condition

SUBTASK 30-00-01-410-002

- (1) Close the right fan cowl panel (TASK 71-11-04-410-801-G00).

SUBTASK 30-00-01-860-015

- (2) Do this task: Remove Pressure from the Pneumatic System, TASK 36-00-00-860-806.

———— **END OF TASK** ————

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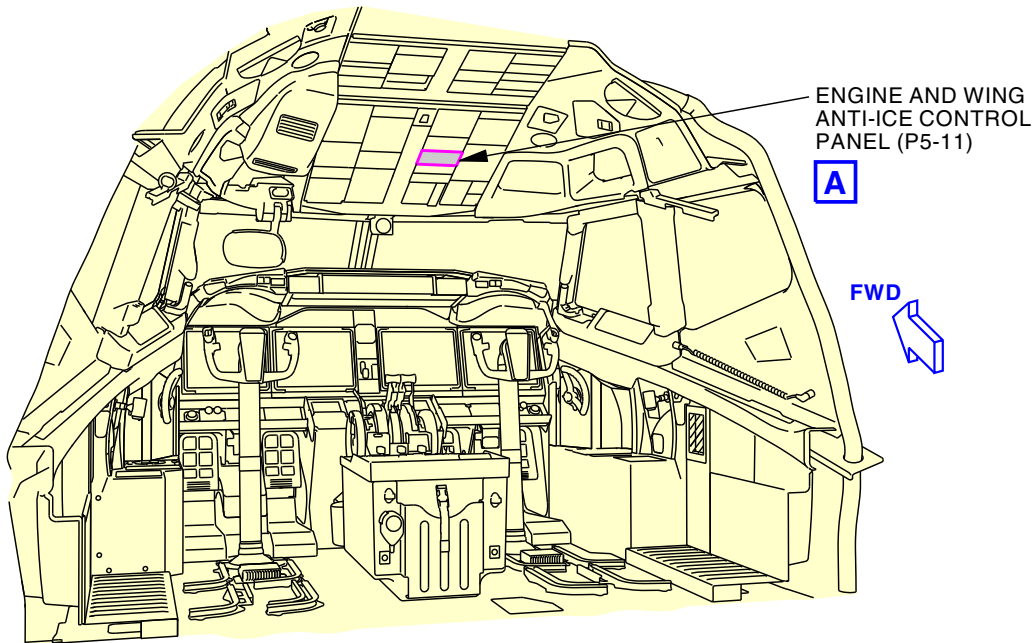
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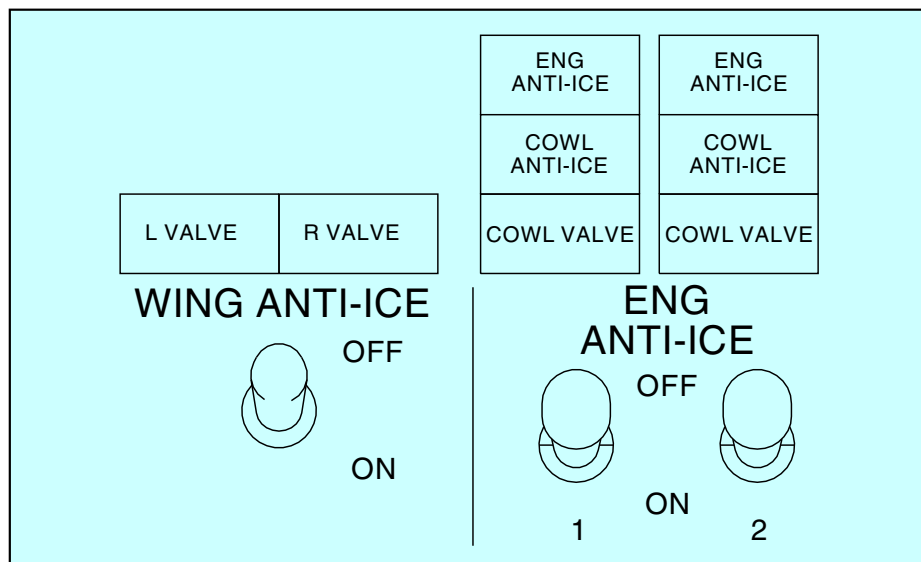
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FLIGHT COMPARTMENT



ENGINE AND WING ANTI-ICE CONTROL PANEL (P5-11)



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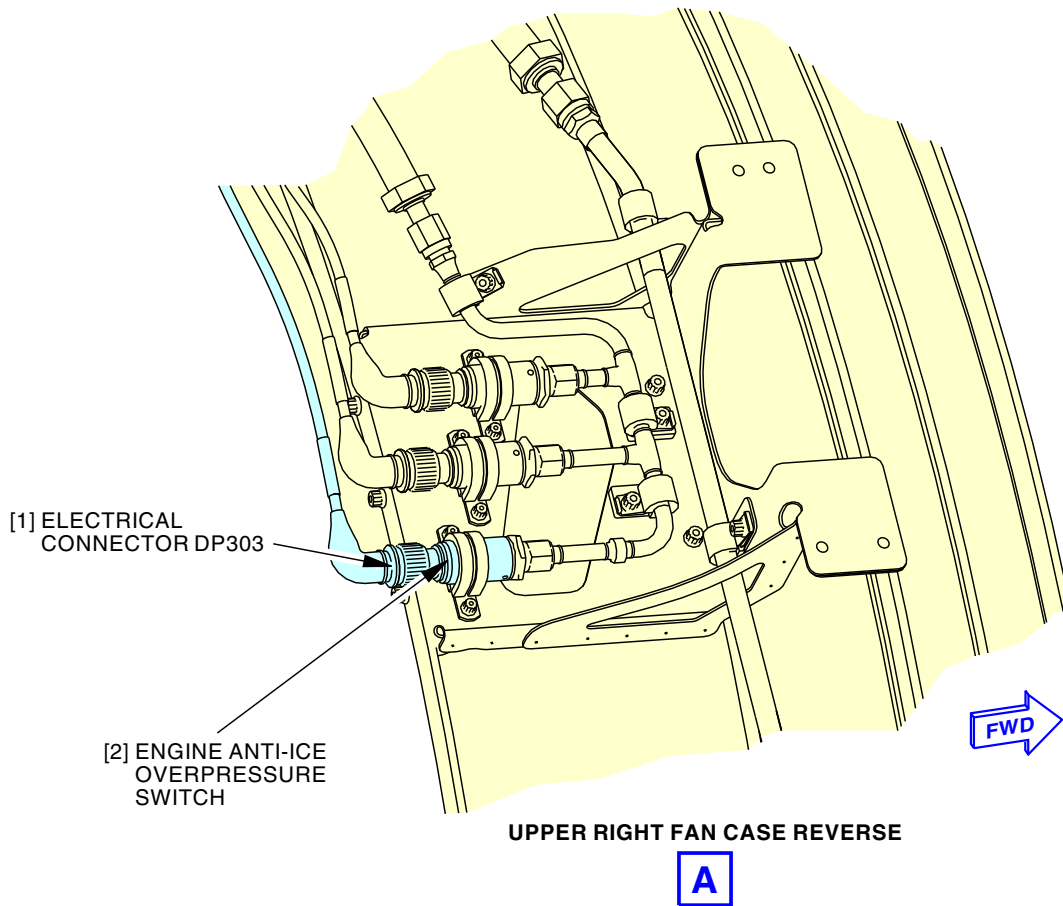
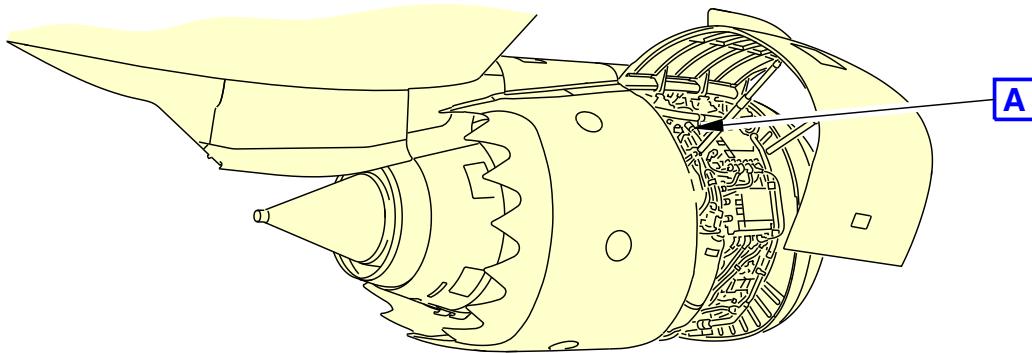
Engine and Wing Anti-Ice Control Panel Test Figure 501/30-00-01-990-802 (Sheet 1 of 2)

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Engine and Wing Anti-Ice Control Panel Test
Figure 501/30-00-01-990-802 (Sheet 2 of 2)

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WINDOW/PITOT HEAT MODULE (P5-9) - REMOVAL/INSTALLATION

1. General

- A. The window/pitot heat module is on the flight crew's overhead panel. The module contains lights and switches used for the Window Anti-Ice and Air Data Sensor Anti-Ice system.
- B. This procedure has these tasks:
 - (1) Window/Pitot Heat Module (P5-9) Removal
 - (2) Window/Pitot Heat Module (P5-9) Installation.

TASK 30-00-02-000-801

2. Window/Pitot Heat Module (P5-9) Removal

(Figure 401)

A. General

- (1) This task gives instructions to remove the Window/Pitot Heat Module (P5-9).
- (2) The Window/Pitot Heat Module is on the flight crew's overhead panel. The module contains lights and switches used for the Window Anti-Ice and Air Data Sensor Anti-Ice System.

B. References

Reference	Title
20-40-12-000-802	ESDS Handling for Metal Encased Unit Removal (P/B 201)

C. Location Zones

Zone	Area
212	Flight Compartment - Right

D. Prepare for the Window/Pitot Module (P5-9) Removal

SUBTASK 30-00-02-860-001

- (1) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
C	1	C00523	HEATERS CAPT PITOT
C	2	C00238	HEATERS TEMP PROBE
C	3	C01072	HEATERS ALPHA VANE LEFT
C	4	C00236	HEATERS ELEV PITOT LEFT
D	3	C01071	HEATERS ALPHA VANE RIGHT
D	4	C00237	HEATERS ELEV PITOT RIGHT
D	5	C00525	HEATERS F/O PITOT
D	6	C00524	HEATERS AUX PITOT
D	8	C01946	PROBE AUTO HEAT CAPT
D	9	C01947	PROBE AUTO HEAT F/O

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
F	16	C00570	PROBE INDICATION F/O
F	18	C00569	PROBE INDICATION CAPT

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F/O Electrical System Panel, P6-5

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	8	C00394	WINDOW HEAT POWER RIGHT FRONT
B	9	C00392	WINDOW HEAT POWER LEFT SIDE
B	20	C00393	WINDOW HEAT POWER RIGHT SIDE
B	21	C00228	WINDOW HEAT POWER LEFT FRONT

SUBTASK 30-00-02-910-001



DO NOT TOUCH THE CONNECTOR PINS, OR OTHER CONDUCTORS. IF YOU TOUCH THESE CONDUCTORS, ELECTROSTATIC DISCHARGE CAN CAUSE DAMAGE TO THE COMPONENTS.

- (2) Do this task: ESDS Handling for Metal Encased Unit Removal, TASK 20-40-12-000-802.

SUBTASK 30-00-02-010-001

- (3) Open the P5 overhead panel assembly.
(a) Loosen the quarter turn fasteners on the bottom corners of the P5 panel.



SUPPORT THE OVERHEAD PANEL BEFORE THE RELEASE OF SAFETY LATCHES. THE OVERHEAD PANEL IS HEAVY AND CAN SWING FREE DAMAGING THE PANEL AND EQUIPMENT.

- (b) Release the panel safety latches.

E. Window/Pitot Heat Module (P5-9) Removal

SUBTASK 30-00-02-020-001



DO NOT TOUCH OVERHEAD PANEL TERMINALS. HIGH VOLTAGE MAY BE PRESENT AND CAUSE INJURY TO PERSONNEL OR DAMAGE TO EQUIPMENT CAN OCCUR.

- (1) Remove the connectors from the window/pitot heat module [1].

SUBTASK 30-00-02-020-002

- (2) Loosen the quarter turn fasteners which hold the window/pitot heat module [1] in position.

SUBTASK 30-00-02-020-003

- (3) Remove the window/pitot heat module [1] from the P5 overhead panel.

————— **END OF TASK** —————

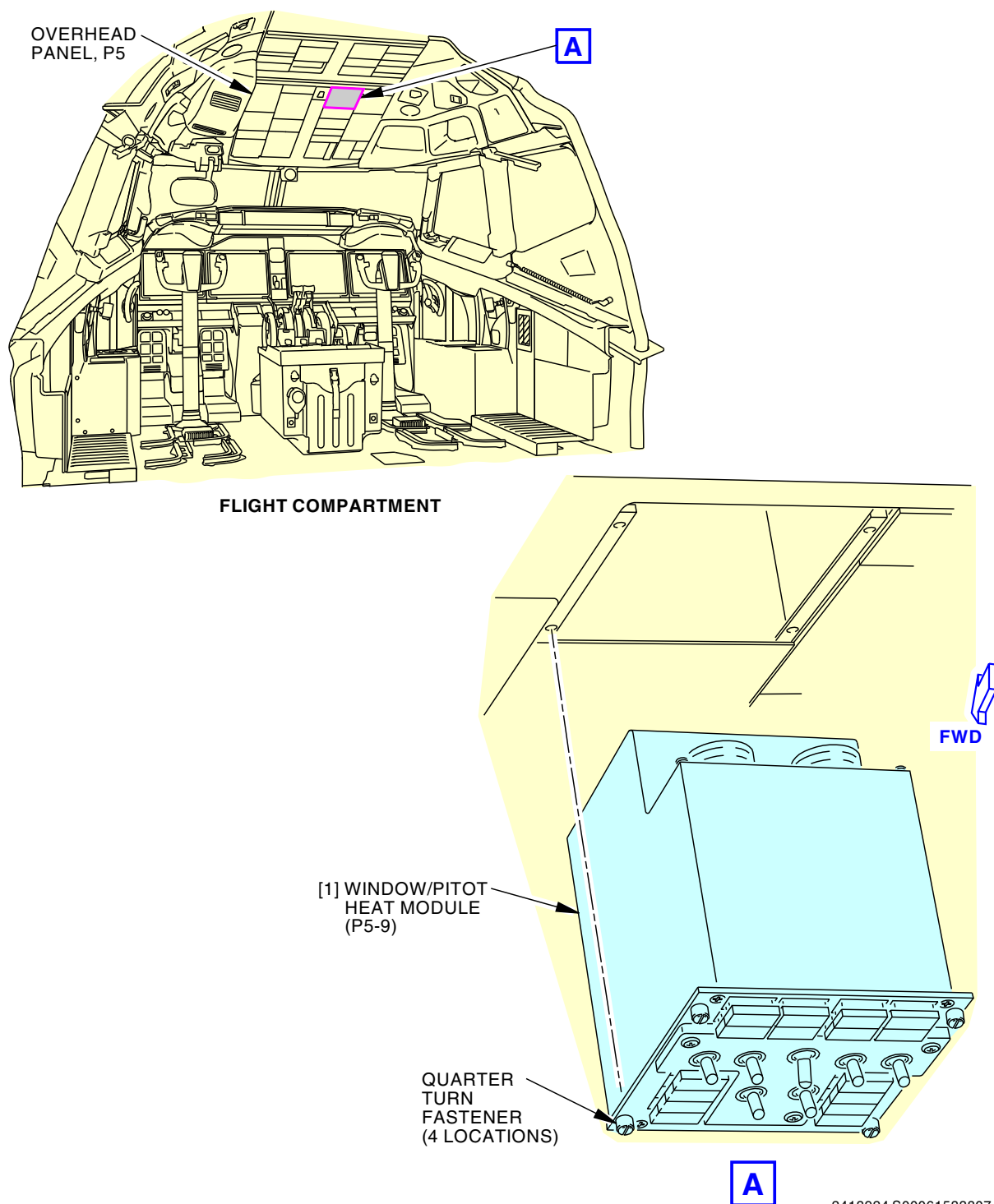
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Window/Pitot Heat Module Installation
Figure 401/30-00-02-990-801

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TASK 30-00-02-400-801

3. Window/Pitot Heat Module (P5-9) Installation

(Figure 401)

A. General

- (1) This task gives instructions to install the Window/Pitot Heat Module (P5-9).

B. References

Reference	Title
20-40-12-400-802	ESDS Handling for Metal Encased Unit Installation (P/B 201)
30-31-00-730-801	Pitot Probe, AOA Sensor, and TAT Probe Heater - System Test (P/B 501)

C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Window/pitot heat module	30-00-02-01-050	SIA ALL

D. Location Zones

Zone	Area
212	Flight Compartment - Right

E. Prepare for the Windows/Pitot Heat Module (P5-9) Installation

SUBTASK 30-00-02-910-002



DO NOT TOUCH THE CONNECTOR PINS, OR OTHER CONDUCTORS. IF YOU TOUCH THESE CONDUCTORS, ELECTROSTATIC DISCHARGE CAN CAUSE DAMAGE TO THE COMPONENTS.

- (1) Do this task: ESDS Handling for Metal Encased Unit Installation, TASK 20-40-12-400-802.

F. Window/Pitot Heat Module (P5-9) Installation

SUBTASK 30-00-02-420-001

- (1) Install the window/pitot heat module [1] in the overhead panel (P5).

SUBTASK 30-00-02-420-002

- (2) Tighten the quarter turn fasteners.

SUBTASK 30-00-02-420-003



DO NOT TOUCH OVERHEAD PANEL TERMINALS. HIGH VOLTAGE MAY BE PRESENT AND CAUSE INJURY TO PERSONNEL OR DAMAGE TO EQUIPMENT CAN OCCUR.

- (3) Attach the connectors to the window/pitot heat module [1].

SUBTASK 30-00-02-410-001



TO PREVENT CHAFING OR DAMAGE TO WIRE HARNESSSES, MAKE CERTAIN THAT WIRING IS ROUTED PROPERLY DURING INSTALLATION OF GLARESHEILD.

- (4) Do these steps to close the P5 overhead panel assembly:
- (a) Make sure that the safety latches are in the correct position to enable the P5 panel to be closed.

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- (b) Raise the P5 overhead panel assembly.
- (c) Tighten the quarter turn fasteners on the bottom corners of the P5 panel.

G. Window/Pitot Heat Module (P5-9) Installation Test

SUBTASK 30-00-02-860-003

- (1) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	1	C00523	HEATERS CAPT PITOT
C	2	C00238	HEATERS TEMP PROBE
C	3	C01072	HEATERS ALPHA VANE LEFT
C	4	C00236	HEATERS ELEV PITOT LEFT
D	3	C01071	HEATERS ALPHA VANE RIGHT
D	4	C00237	HEATERS ELEV PITOT RIGHT
D	5	C00525	HEATERS F/O PITOT
D	6	C00524	HEATERS AUX PITOT
D	8	C01946	PROBE AUTO HEAT CAPT
D	9	C01947	PROBE AUTO HEAT F/O

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
F	16	C00570	PROBE INDICATION F/O
F	18	C00569	PROBE INDICATION CAPT

F/O Electrical System Panel, P6-5

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	8	C00394	WINDOW HEAT POWER RIGHT FRONT
B	9	C00392	WINDOW HEAT POWER LEFT SIDE
B	20	C00393	WINDOW HEAT POWER RIGHT SIDE
B	21	C00228	WINDOW HEAT POWER LEFT FRONT

SUBTASK 30-00-02-760-001

- (2) Push the MASTER DIM AND TEST switch.
 - (a) Make sure that all the lights on the window/pitot heat module [1] come on.

SUBTASK 30-00-02-710-001

- (3) Put the PITOT & PROBE HEAT switches to the ON position.
 - (a) Make sure that the pitot heat indications on the module go off.



WARNING

DO NOT TOUCH PITOT PROBE WHEN HOT. A HOT PITOT PROBE CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (b) Make sure that the pitot probes get hot.

NOTE: The pitot probe temperatures can reach 800°F (427°C) in still air.

You can do a check for heat by spraying the probe with water and watching for steam.

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SUBTASK 30-00-02-860-004

- (4) Put the PITOT & PROBE HEAT switches to the AUTO position.

SUBTASK 30-00-02-860-005

- (5) Make sure that the pitot heat indications on the module come on.

SUBTASK 30-00-02-860-006

- (6) Put the WINDOW HEAT switches to the ON position.

NOTE: Do not do the power test when all ON lights are on.

SUBTASK 30-00-02-710-002

- (7) Select the OVERHEAT position on the POWER AND OVERHEAT TEST switch, S7.

- (a) Make sure that the OVERHEAT lights come on.

SUBTASK 30-00-02-860-008

- (8) Set the WINDOW HEAT and POWER AND OVERHEAT TEST switches to the off position.

SUBTASK 30-00-02-710-003

- (9) Do this task: Pitot Probe, AOA Sensor, and TAT Probe Heater - System Test,
TASK 30-31-00-730-801.

———— **END OF TASK** ————

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WING THERMAL ANTI-ICE - MAINTENANCE PRACTICES

1. **General**

- A. This procedure has these tasks:
- (1) Wing Thermal Anti-Ice Deactivation
 - (2) Wing Thermal Anti-Ice Activation

TASK 30-11-00-040-801

2. **Wing Thermal Anti-Ice Deactivation**

A. **General**

- (1) This task will deactivate the power to the wing thermal anti-ice systems.

B. **Tools/Equipment**

Reference	Description
STD-858	Tag - DO NOT OPERATE

C. **Location Zones**

Zone	Area
212	Flight Compartment - Right
510	Subzone - Left Wing: Leading Edge, Fwd of Front Spar, Inbd of Strut and Nacelle Gap Cover Area
520	Subzone - Left Wing: Leading Edge, Fwd of Front Spar, Outboard of Strut and Nacelle Gap Cover Area
610	Subzone - Right Wing: Leading Edge, Forward of Front Spar, Inboard of Nacelle Strut, Including Gap Cover Area
620	Subzone - Right Wing: Leading Edge, Forward of Front Spar, Outboard of Nacelle Strut

D. **Procedure**

SUBTASK 30-11-00-020-001

- (1) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
A	1	C04012	ANTI-ICE & RAIN WING ANTI-ICE VALVE
A	6	C00148	ANTI-ICE & RAIN ENG 1 & WING CONT
A	7	C01001	ANTI-ICE & RAIN ENG 1 COWL AI VALVE
B	2	C04063	ANTI-ICE & RAIN WING ANTI-ICE VALVE-L
B	4	C04064	ANTI-ICE & RAIN WING ANTI-ICE VALVE-R
B	7	C01002	ANTI-ICE & RAIN ENG 2 COWL AI VALVE

E. **Wing Thermal Anti-Icing - Tryout**

NOTE: This tryout is to make sure that the power to the wing thermal anti-ice systems is in a zero energy state.

SUBTASK 30-11-00-210-001

- (1) Make sure that the WING ANTI-ICE switch on the engine and wing anti-ice control panel (P5-11) is in the OFF position.

SUBTASK 30-11-00-210-002

- (2) Make sure that the L VALVE and R VALVE lights on the control panel are off.

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SUBTASK 30-11-00-020-002

- (3) Push and release the L VALVE and R VALVE lights on the engine and wing anti-ice control panel (P5-11).
- (a) Make sure that each light stays off.

SUBTASK 30-11-00-420-001

- (4) Put the WING ANTI-ICE switch in the ON position.
- (a) Make sure that each light stays off.

SUBTASK 30-11-00-020-003

- (5) Put the WING ANTI-ICE switch in the OFF position.

SUBTASK 30-11-00-420-002

- (6) Put the ENG ANTI-ICE 1 switch in the ON position.
- (a) Make sure that the left COWL VALVE light stays off.

SUBTASK 30-11-00-020-004

- (7) Put the ENG ANTI-ICE 1 switch in the OFF position.

SUBTASK 30-11-00-420-003

- (8) Put the ENG ANTI-ICE 2 switch in the ON position.
- (a) Make sure that the right COWL VALVE light stays off.

SUBTASK 30-11-00-020-005

- (9) Put the ENG ANTI-ICE 2 switch in the OFF position.

SUBTASK 30-11-00-040-001

- (10) Install DO NOT OPERATE tags, STD-858 on the WING ANTI-ICE switch and on both ENG ANTI-ICE switches on the engine and wing anti-ice control panel (P5-11).

———— **END OF TASK** ————

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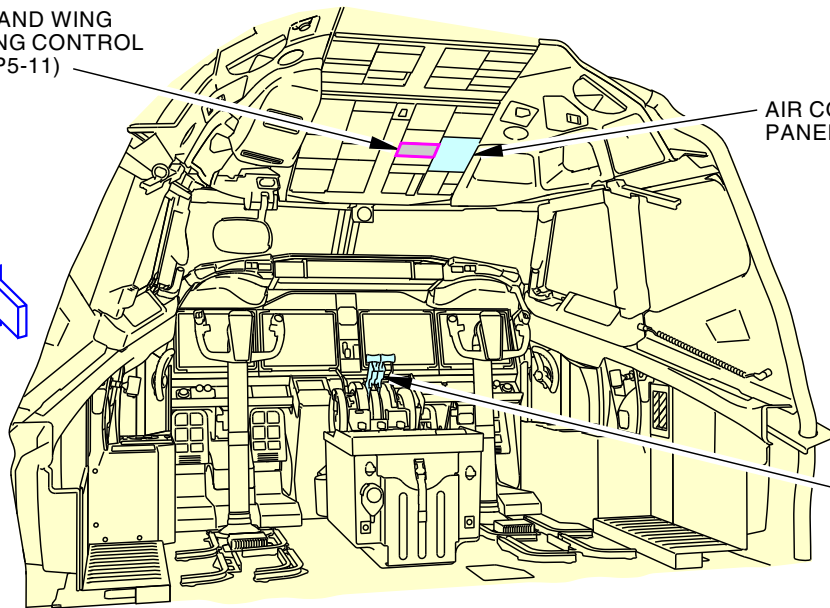
ENGINE AND WING
ANTI-ICING CONTROL
PANEL (P5-11)

A

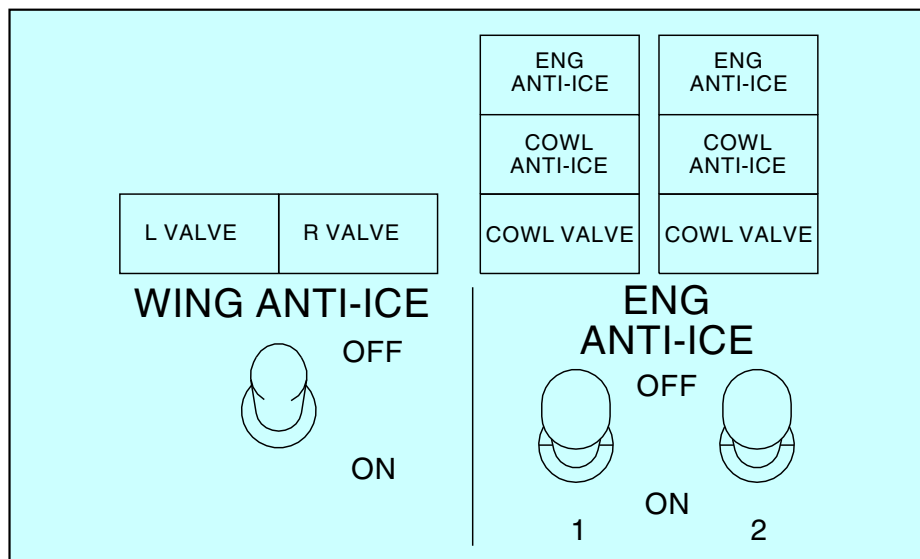
FWD


AIR CONDITIONING
PANEL

THRUST LEVERS



FLIGHT COMPARTMENT



ENGINE AND WING ANTI-ICE CONTROL PANEL (P5-11)

A

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Wing Thermal Anti-Icing
Figure 201/30-11-00-990-801

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TASK 30-11-00-440-801

3. Wing Thermal Anti-Ice Activation

(Figure 201)

A. General

- (1) This task will activate the power to the wing thermal anti-ice systems.

B. Location Zones

Zone	Area
212	Flight Compartment - Right
510	Subzone - Left Wing: Leading Edge, Fwd of Front Spar, Inbd of Strut and Nacelle Gap Cover Area
520	Subzone - Left Wing: Leading Edge, Fwd of Front Spar, Outboard of Strut and Nacelle Gap Cover Area
610	Subzone - Right Wing: Leading Edge, Forward of Front Spar, Inboard of Nacelle Strut, Including Gap Cover Area
620	Subzone - Right Wing: Leading Edge, Forward of Front Spar, Outboard of Nacelle Strut

C. Procedure

SUBTASK 30-11-00-440-001

- (1) Remove the DO-NOT-OPERATE tags on the WING ANTI-ICE, ENG ANTI-ICE 1 and ENG ANTI-ICE 2 switches on the engine and wing anti-ice control panel (P5-11).

SUBTASK 30-11-00-420-004

- (2) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
A	1	C04012	ANTI-ICE & RAIN WING ANTI-ICE VALVE
A	6	C00148	ANTI-ICE & RAIN ENG 1 & WING CONT
A	7	C01001	ANTI-ICE & RAIN ENG 1 COWL AI VALVE
B	2	C04063	ANTI-ICE & RAIN WING ANTI-ICE VALVE-L
B	4	C04064	ANTI-ICE & RAIN WING ANTI-ICE VALVE-R
B	7	C01002	ANTI-ICE & RAIN ENG 2 COWL AI VALVE

————— END OF TASK —————

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WING THERMAL ANTI-ICE - ADJUSTMENT/TEST

1. **General**

A. This procedure has these tasks:

- (1) Wing Thermal Anti-Ice - Operational Test
- (2) Wing Thermal Anti-Ice - Duct Leak Test

TASK 30-11-00-710-801

2. **Wing Thermal Anti-Ice - Operational Test**

(Figure 501)

A. **General**

- (1) This test makes sure that the Wing Anti-Ice System operates correctly. Specific tests for wing anti-ice components are contained in other procedures.

B. **References**

Reference	Title
32-09-00-840-801	Prepare to Put the Airplane in the Air Mode (P/B 201)
32-09-00-860-801	Put the Airplane in the Air Mode (P/B 201)
32-09-00-860-802	Return the Airplane to the Ground Mode (P/B 201)
36-00-00-860-801	Supply Pressure to the Pneumatic System (Selection) (P/B 201)
36-00-00-860-806	Remove Pressure from the Pneumatic System (P/B 201)

C. **Tools/Equipment**

Reference	Description
STD-4931	Jumper - Electrical
STD-6286	Jumper Wire

D. **Location Zones**

Zone	Area
212	Flight Compartment - Right
510	Subzone - Left Wing: Leading Edge, Fwd of Front Spar, Inbd of Strut and Nacelle Gap Cover Area
520	Subzone - Left Wing: Leading Edge, Fwd of Front Spar, Outboard of Strut and Nacelle Gap Cover Area
610	Subzone - Right Wing: Leading Edge, Forward of Front Spar, Inboard of Nacelle Strut, Including Gap Cover Area
620	Subzone - Right Wing: Leading Edge, Forward of Front Spar, Outboard of Nacelle Strut

E. **Access Panels**

Number	Name/Location
192CL	ECS Access Door
192CR	ECS Access Door
521AB	Outboard Leading Edge Blowout Door - Slat Station 20
621AB	Outboard Leading Edge Blowout Door - Slat Station 20

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F. Prepare for the Test

SUBTASK 30-11-00-010-001

- (1) Open these access panels:

<u>Number</u>	<u>Name/Location</u>
521AB	Outboard Leading Edge Blowout Door - Slat Station 20
621AB	Outboard Leading Edge Blowout Door - Slat Station 20

SUBTASK 30-11-00-860-001

- (2) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	7	C01678	WEATHER RADAR RT RIGHT

F/O Electrical System Panel, P6-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	13	C00120	WEATHER RADAR RT

SUBTASK 30-11-00-860-003

- (3) Make sure that the thrust levers are in the IDLE position.

SUBTASK 30-11-00-860-004

- (4) Make sure that the WING ANTI-ICE switch on the engine and wing anti-ice control panel (P5-11) is in the OFF position.

SUBTASK 30-11-00-210-003

- (5) Make sure that the L VALVE and R VALVE indicator lights on the control panel are off.

SUBTASK 30-11-00-860-005

- (6) Make sure that the wing anti-ice valves are closed.

NOTE: The wing anti-ice valve has a position indicator which shows whether the valve is open or closed.

G. Wing Anti Ice Switch and Indication Test

SUBTASK 30-11-00-870-001

 CAUTION	MAKE SURE THE ELECTRICAL POWER IS ON BEFORE YOU SUPPLY THE PNEUMATIC POWER AND REMOVE THE PNEUMATIC POWER BEFORE YOU REMOVE THE ELECTRICAL POWER. DAMAGE TO THE AIR CONDITIONING SYSTEM COULD OCCUR.

- (1) Do this task: Supply Pressure to the Pneumatic System (Selection), TASK 36-00-00-860-801.

SUBTASK 30-11-00-860-006

- (2) Push and release the L VALVE indicator light on the engine and wing anti-ice control panel (P5-11).

(a) Make sure that the light comes on then goes off.

SUBTASK 30-11-00-860-007

- (3) Push and release the R VALVE indicator light on the engine and wing anti-ice control panel (P5-11).

(a) Make sure that the light comes on then goes off.

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SUBTASK 30-11-00-860-008

- (4) Do this test to make sure that the engine and wing anti-ice panel commands the anti-ice valves open:

- (a) Put the WING ANTI-ICE switch in the ON position.
- (b) Make sure that the L VALVE and R VALVE lights are on for a maximum of 6 seconds then extinguish.

NOTE: During this time the MASTER CAUTION and ANTI-ICE annunciator should remain extinguished.

- (c) Make sure that the L VALVE and R VALVE lights stay off after 6 seconds.
- (d) Make sure that the two wing anti-ice valves are open.

SUBTASK 30-11-00-870-002

- (5) Do this task: Remove Pressure from the Pneumatic System, TASK 36-00-00-860-806.

- (a) Make sure that L VALVE, R VALVE lights and the master caution/ANTI-ICE six pack come on.

SUBTASK 30-11-00-720-002

- (6) Do this test to make sure that the wing anti-ice valves close when the left duct becomes too hot.

- (a) Open these circuit breakers:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	1	C04012	ANTI-ICE & RAIN WING ANTI-ICE VALVE
B	2	C04063	ANTI-ICE & RAIN WING ANTI-ICE VALVE-L
B	4	C04064	ANTI-ICE & RAIN WING ANTI-ICE VALVE-R

- (b) Disconnect the electrical connector, D738 from the left wing ground thermal anti-ice switch.
- (c) Close these circuit breakers:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	1	C04012	ANTI-ICE & RAIN WING ANTI-ICE VALVE
B	2	C04063	ANTI-ICE & RAIN WING ANTI-ICE VALVE-L
B	4	C04064	ANTI-ICE & RAIN WING ANTI-ICE VALVE-R

- (d) Connect a Jumper Wire, STD-6286 (or equivalent electrical jumper, STD-4931), between pins 1 and 2 of the electrical connector, D738.

- 1) Make sure that the L VALVE and R VALVE lights are on for a maximum of 6 seconds then extinguish.

NOTE: During this time the MASTER CAUTION and ANTI-ICE annunciator should extinguish. If they do not extinguish, it is necessary to push the MASTER CAUTION switch to reset.

- (e) Remove the Jumper Wire, STD-6286, from the electrical connector, D738.
- (f) Make sure that L VALVE, R VALVE lights and the master caution/ANTI-ICE six pack come on.

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- (g) Open these circuit breakers:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	1	C04012	ANTI-ICE & RAIN WING ANTI-ICE VALVE
B	2	C04063	ANTI-ICE & RAIN WING ANTI-ICE VALVE-L

- (h) Connect the electrical connector, D738 to the left wing ground thermal anti-ice switch.

- (i) Close these circuit breakers:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	1	C04012	ANTI-ICE & RAIN WING ANTI-ICE VALVE
B	2	C04063	ANTI-ICE & RAIN WING ANTI-ICE VALVE-L

SUBTASK 30-11-00-720-003

- (7) Do this test to make sure that the wing anti-ice valves close when the right duct becomes too hot:

- (a) Open these circuit breakers:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	1	C04012	ANTI-ICE & RAIN WING ANTI-ICE VALVE
B	2	C04063	ANTI-ICE & RAIN WING ANTI-ICE VALVE-L
B	4	C04064	ANTI-ICE & RAIN WING ANTI-ICE VALVE-R

- (b) Disconnect the electrical connector, D736 from the right wing ground thermal anti-ice switch.

- (c) Close these circuit breakers:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	1	C04012	ANTI-ICE & RAIN WING ANTI-ICE VALVE
B	2	C04063	ANTI-ICE & RAIN WING ANTI-ICE VALVE-L
B	4	C04064	ANTI-ICE & RAIN WING ANTI-ICE VALVE-R

- (d) Connect a Jumper Wire, STD-6286, between pins 1 and 2 of the electrical connector, D736.

- 1) Make sure that the L VALVE and R VALVE lights are on for a maximum of 6 seconds then extinguish.

NOTE: During this time the MASTER CAUTION and ANTI-ICE annunciator should remain extinguished. If they do not extinguish, it is necessary to push the MASTER CAUTION switch to reset.

- (e) Remove the Jumper Wire, STD-6286, from the electrical connector, D736.
(f) Make sure that L VALVE, R VALVE lights and the master caution/ANTI-ICE six pack come on.
(g) Open these circuit breakers:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	1	C04012	ANTI-ICE & RAIN WING ANTI-ICE VALVE
B	4	C04064	ANTI-ICE & RAIN WING ANTI-ICE VALVE-R

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- (h) Connect the electrical connector, D736 to the right wing ground thermal anti-ice switch.
- (i) Close these circuit breakers:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
A	1	C04012	ANTI-ICE & RAIN WING ANTI-ICE VALVE
B	4	C04064	ANTI-ICE & RAIN WING ANTI-ICE VALVE-R

SUBTASK 30-11-00-720-004

- (8) Do this check of the air mode transition:



WARNING

OBEY THE PROCEDURE THAT PUTS THE AIRPLANE IN THE AIR MODE. IF YOU DO THE PROCEDURE INCORRECTLY, INJURIES TO PERSONNEL, AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (a) Prepare to put the airplane in the air mode (TASK 32-09-00-840-801).
- (b) Put the airplane in the air mode (TASK 32-09-00-860-801).
 - 1) Make sure that the WING ANTI-ICE switch automatically turns to the OFF position.
 - 2) Make sure that the L VALVE and R VALVE lights immediately extinguish after the change to air mode.

NOTE: During this time the MASTER CAUTION and ANTI-ICE annunciator should remain extinguished. If they do not extinguish, it is necessary to push the MASTER CAUTION switch to reset.
- (c) Supply pneumatic pressure (Supply Pressure to the Pneumatic System (Selection), TASK 36-00-00-860-801).
- (d) Put the WING ANTI-ICE switch in the ON position.
 - 1) Make sure that the L VALVE and R VALVE lights are on for a maximum of 6 seconds then extinguish.

NOTE: During this time the MASTER CAUTION and ANTI-ICE annunciator should remain extinguished.
- (e) Return the airplane to the ground mode (TASK 32-09-00-860-802).

SUBTASK 30-11-00-860-009

- (9) Do these steps to make sure that the engine and wing anti-ice panel commands the anti-ice valves closed:
 - (a) Put the WING ANTI-ICE switch in the OFF position.
 - 1) Make sure that the L VALVE and R VALVE lights are on for a maximum of 6 seconds then extinguish.

NOTE: During this time the MASTER CAUTION and ANTI-ICE annunciator should remain extinguished.
 - 2) Make sure that the L VALVE and R VALVE lights go off after 6 seconds.

H. Wing Anti-Ice Valve Test with APU Pneumatic Air

SUBTASK 30-11-00-860-017

- (1) Do a test of the wing anti-ice valve with APU Bleed Pneumatic Air:

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- (a) Make sure that these circuit breakers are closed:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	1	C04012	ANTI-ICE & RAIN WING ANTI-ICE VALVE
B	2	C04063	ANTI-ICE & RAIN WING ANTI-ICE VALVE-L
B	4	C04064	ANTI-ICE & RAIN WING ANTI-ICE VALVE-R

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	1	C01399	PSEU PRI
D	2	C01400	PSEU ALTN

- (b) Make sure that the aircraft is in ground mode (TASK 32-09-00-860-802).
(c) Make sure that the engine throttle levers are at idle.
(d) Make sure that the L VALVE or R VALVE light is on when pressed.
(e) Make sure that the valve position indicator on the wing anti-ice valve is closed.
(f) Open these circuit breakers:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	8	C01103	ENGINE 1 START VALVE

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	4	C00154	ENGINE 2 START VALVE

- (g) Do these steps:

- 1) Open these access panels:

<u>Number</u>	<u>Name/Location</u>
192CL	ECS Access Door
192CR	ECS Access Door

- 2) Disconnect electrical connector D15830 - LEFT PACK FLOW CONTROL AND SHUT-OFF VALVE and D15834 - RIGHT PACK FLOW CONTROL AND SHUT-OFF VALVE.

NOTE: Disconnecting the connectors will preclude the PACKS from operation when the APU Bleed is On and PACKS are set to high.

- 3) Set the L PACK and R PACK switches to OFF.
4) Set the ENG 1 BLEED and ENG 2 BLEED switches in the OFF position.
5) Set the ISOLATION VALVE switch to the ON position.
6) Set the R PACK and L PACK switches to HIGH.

NOTE: The next step must be completed simultaneously to avoid surging the APU.



CAUTION

SET THE APU SWITCH TO ON AND ALLOW THE APU TO OPERATE FOR 5 MINUTES BEFORE THE APU BLEED AIR SWITCH TO ON. IF YOU DO NOT, DAMAGE TO THE APU CAN OCCUR.

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(CAUTION PRECEDES)



CAUTION

DO NOT OPERATE THE WING ANTI-ICE SYSTEM MORE THAN 30 SECONDS. DAMAGE TO THE AIRCRAFT CAN OCCUR.

- 7) Set the APU BLEED and WING ANTI-ICE switches to ON.
- 8) Make sure that the L VALVE and R VALVE lights are on momentarily, then off.



CAUTION

SET THE APU BLEED SWITCH OFF BEFORE THE WING ANTI-ICE SWITCH OFF TO AVOID A SURGE TO THE APU. DAMAGE TO THE APU CAN OCCUR.

- 9) Set the APU BLEED switch to the OFF position.
- 10) Set the WING ANTI-ICE switch to the OFF position.
- 11) Make sure that the L VALVE and R VALVE lights are on momentarily, then off.
- 12) Connect electrical connectors D15830 - LEFT PACK FLOW CONTROL AND SHUT-OFF VALVE and D15834 - RIGHT FLOW CONTROL AND SHUT-OFF VALVE.
- 13) Close these access panels:

<u>Number</u>	<u>Name/Location</u>
192CL	ECS Access Door
192CR	ECS Access Door

(h) Set the L PACK and R PACK switches to OFF.

(i) Close these circuit breakers:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	8	C01103	ENGINE 1 START VALVE

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	4	C00154	ENGINE 2 START VALVE

I. Put the Airplane Back to Its Usual Condition

SUBTASK 30-11-00-410-001

(1) Close these access panels:

<u>Number</u>	<u>Name/Location</u>
521AB	Outboard Leading Edge Blowout Door - Slat Station 20
621AB	Outboard Leading Edge Blowout Door - Slat Station 20

SUBTASK 30-11-00-860-011

(2) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	7	C01678	WEATHER RADAR RT RIGHT

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F/O Electrical System Panel, P6-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	13	C00120	WEATHER RADAR RT

————— END OF TASK —————

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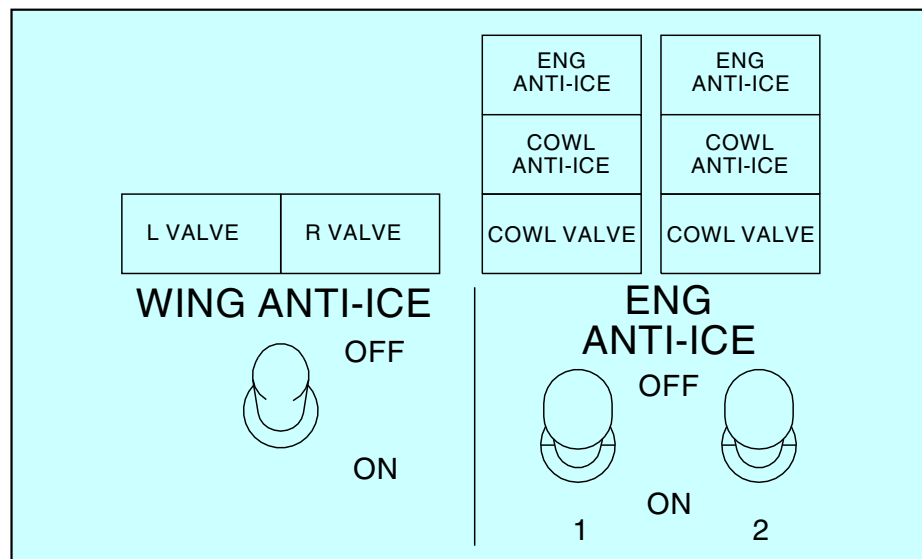
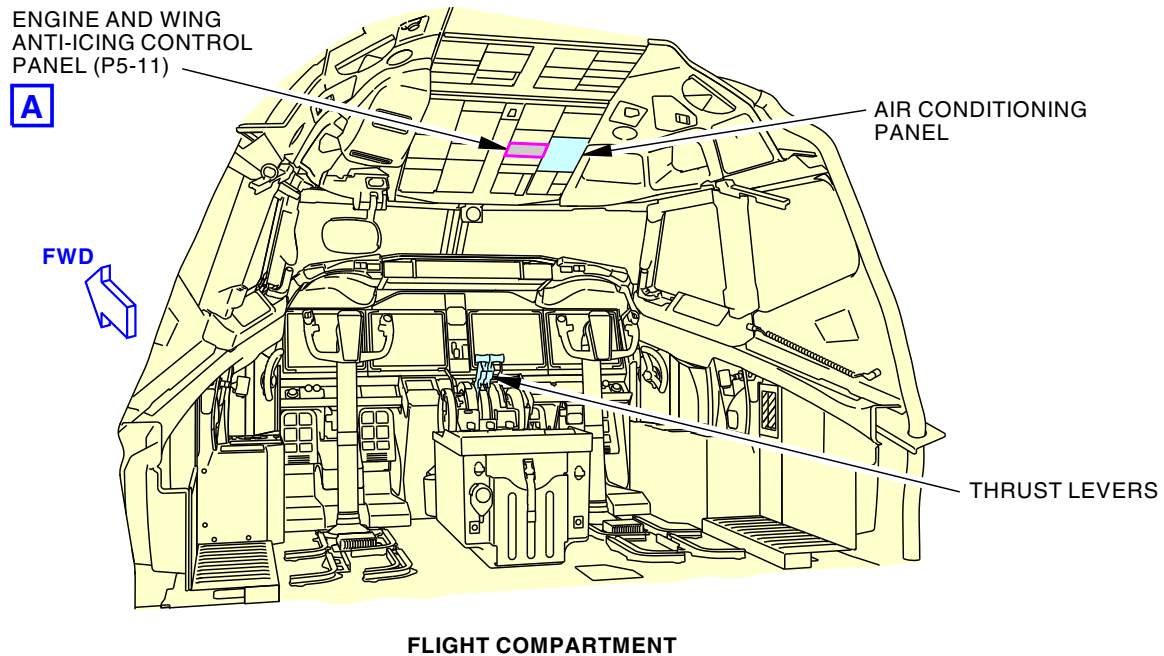
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ENGINE AND WING ANTI-ICE CONTROL PANEL (P5-11)

A

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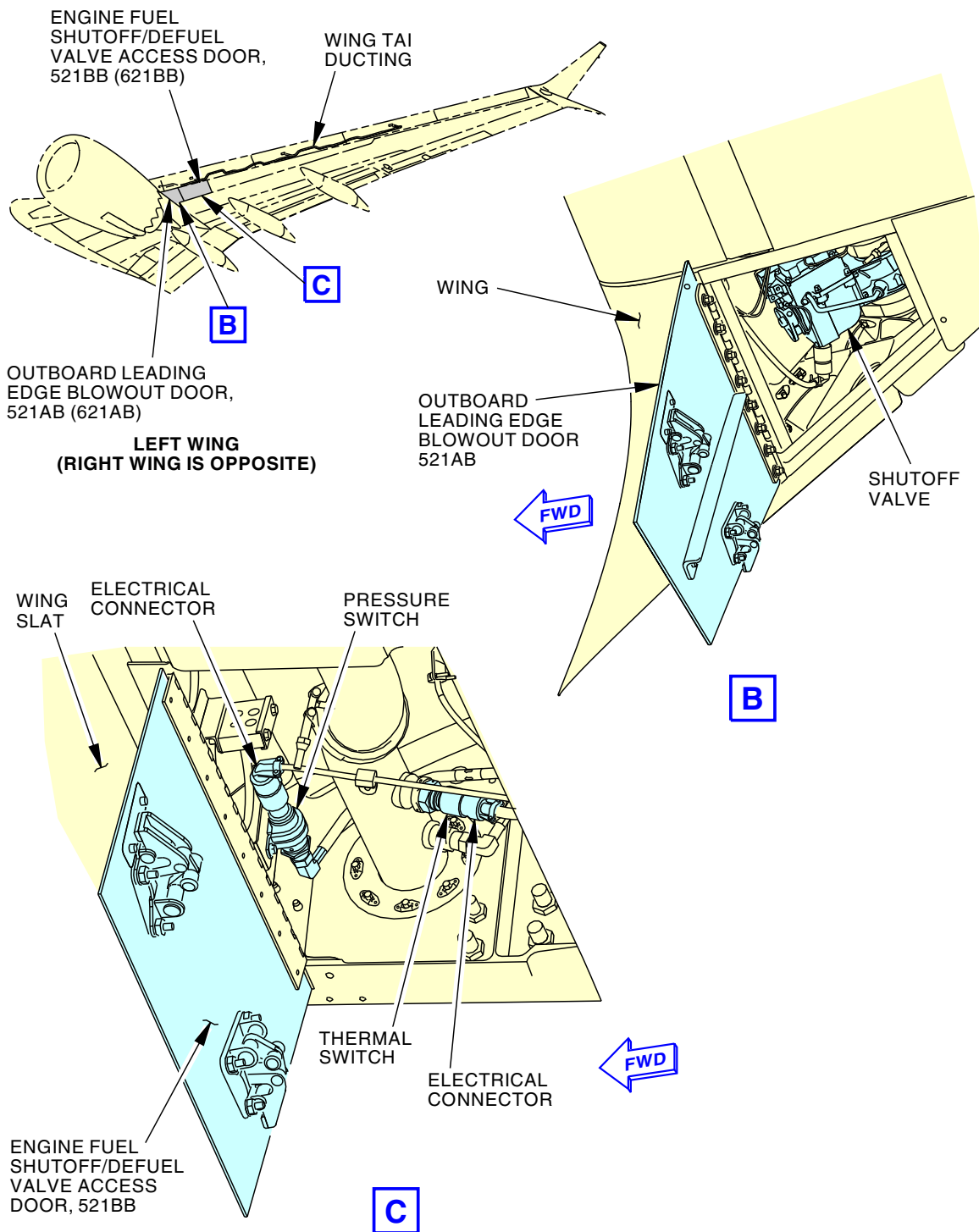
**Wing Thermal Anti-Ice Test
Figure 501/30-11-00-990-802 (Sheet 1 of 2)**

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2413883 S00061533681_V1

Wing Thermal Anti-Ice Test
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TASK 30-11-00-790-801

3. **Wing Thermal Anti-Ice - Duct Leak Test**

(Figure 501)

A. General

- (1) This test does a check for leaks in the wing anti-icing ducts in the fixed leading edge of the wings and in the telescoping ducts.
 - (a) A visual inspection of the ducts and connectors.
 - (b) A visual inspection for leaks at the clamp connectors and duct sleeves.
- (2) The Wing Thermal Anti-Ice Duct Leak Test is done with the following pneumatic sources:
 - Duct Leak Test with the APU
 - Duct Leak Test with the External Ground Source

B. References

Reference	Title
24-22-00-860-803	Supply External Power (P/B 201)
24-22-00-860-804	Remove External Power (P/B 201)
36-00-00-860-802	Supply Pressure to the Pneumatic System with an External Ground Air Source (P/B 201)
36-00-00-860-803	Supply Pressure to the Pneumatic System with the APU (P/B 201)
36-00-00-860-806	Remove Pressure from the Pneumatic System (P/B 201)

C. Tools/Equipment

Reference	Description
STD-12791	Ground Cart - Able To Supply 2000 cfm at 10 psi - Only Necessary if the APU or Engine Bleed Air Is Not Used

D. Location Zones

Zone	Area
510	Subzone - Left Wing: Leading Edge, Fwd of Front Spar, Inbd of Strut and Nacelle Gap Cover Area
520	Subzone - Left Wing: Leading Edge, Fwd of Front Spar, Outboard of Strut and Nacelle Gap Cover Area
610	Subzone - Right Wing: Leading Edge, Forward of Front Spar, Inboard of Nacelle Strut, Including Gap Cover Area
620	Subzone - Right Wing: Leading Edge, Forward of Front Spar, Outboard of Nacelle Strut

E. Access Panels

Number	Name/Location
521AB	Outboard Leading Edge Blowout Door - Slat Station 20
521AT	Outbd Leading Edge - Gap Cover Access
521CB	Lower Leading Edge Access Panel - Slat Station 50
521DB	Lower Leading Edge Access Panel - Slat Station 70
521EB	Lower Leading Edge Access Panel - Slat Station 91
521FB	Lower Leading Edge Access Panel - Slat Station 107
521GB	Lower Leading Edge Access Panel - Slat Station 125
521HB	Lower Leading Edge Access Panel - Slat Station 144

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Number	Name/Location
521JB	Lower Leading Edge Access Panel - Slat Station 161
521KB	Lower Leading Edge Access Panel - Slat Station 179
521LB	Lower Leading Edge Access Panel - Slat Station 208
521MB	Lower Leading Edge Access Panel - Slat Station 226
521NB	Lower Leading Edge Access Panel - Slat Station 244
521PB	Lower Leading Edge Access Panel - Slat Station 261
521QB	Lower Leading Edge Access Panel - Slat Station 280
521RB	Lower Leading Edge Access Panel - Slat Station 298
621AB	Outboard Leading Edge Blowout Door - Slat Station 20
621AT	Outbd Leading Edge - Gap Cover Access
621CB	Lower Leading Edge Access Panel - Slat Station 50
621DB	Lower Leading Edge Access Panel - Slat Station 70
621EB	Lower Leading Edge Access Panel - Slat Station 91
621FB	Lower Leading Edge Access Panel - Slat Station 107
621GB	Refuel Valve Door - Slat Station 125
621JB	Lower Leading Edge Access Panel - Slat Station 161
621KB	Lower Leading Edge Access Panel - Slat Station 179
621LB	Lower Leading Edge Access Panel - Slat Station 208
621MB	Lower Leading Edge Access Panel - Slat Station 226
621NB	Lower Leading Edge Access Panel - Slat Station 244
621PB	Lower Leading Edge Access Panel - Slat Station 261
621QB	Lower Leading Edge Access Panel - Slat Station 280
621RB	Lower Leading Edge Access Panel - Slat Station 298

F. Prepare for the Duct Leak Test

SUBTASK 30-11-00-860-012

- (1) If it necessary, supply external power (TASK 24-22-00-860-803).

SUBTASK 30-11-00-860-013

- (2) Make sure that the thrust levers are in the IDLE position.

SUBTASK 30-11-00-010-002

- (3) For the left wing, remove these applicable access panels:

Number	Name/Location
521AB	Outboard Leading Edge Blowout Door - Slat Station 20
521AT	Outbd Leading Edge - Gap Cover Access
521CB	Lower Leading Edge Access Panel - Slat Station 50
521DB	Lower Leading Edge Access Panel - Slat Station 70
521EB	Lower Leading Edge Access Panel - Slat Station 91
521FB	Lower Leading Edge Access Panel - Slat Station 107
521GB	Lower Leading Edge Access Panel - Slat Station 125
521HB	Lower Leading Edge Access Panel - Slat Station 144
521JB	Lower Leading Edge Access Panel - Slat Station 161
521KB	Lower Leading Edge Access Panel - Slat Station 179
521LB	Lower Leading Edge Access Panel - Slat Station 208
521MB	Lower Leading Edge Access Panel - Slat Station 226

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<u>Number</u>	<u>Name/Location</u>
521NB	Lower Leading Edge Access Panel - Slat Station 244
521PB	Lower Leading Edge Access Panel - Slat Station 261
521QB	Lower Leading Edge Access Panel - Slat Station 280
521RB	Lower Leading Edge Access Panel - Slat Station 298

SUBTASK 30-11-00-010-003

- (4) For the right wing, remove these applicable access panels:

<u>Number</u>	<u>Name/Location</u>
621AB	Outboard Leading Edge Blowout Door - Slat Station 20
621AT	Outbd Leading Edge - Gap Cover Access
621CB	Lower Leading Edge Access Panel - Slat Station 50
621DB	Lower Leading Edge Access Panel - Slat Station 70
621EB	Lower Leading Edge Access Panel - Slat Station 91
621FB	Lower Leading Edge Access Panel - Slat Station 107
621GB	Refuel Valve Door - Slat Station 125
621JB	Lower Leading Edge Access Panel - Slat Station 161
621KB	Lower Leading Edge Access Panel - Slat Station 179
621LB	Lower Leading Edge Access Panel - Slat Station 208
621MB	Lower Leading Edge Access Panel - Slat Station 226
621NB	Lower Leading Edge Access Panel - Slat Station 244
621PB	Lower Leading Edge Access Panel - Slat Station 261
621QB	Lower Leading Edge Access Panel - Slat Station 280
621RB	Lower Leading Edge Access Panel - Slat Station 298

G. Duct Leak Test with the APU

SUBTASK 30-11-00-210-004

- (1) Do a visual check of the wing thermal anti-icing duct and fittings.
- (a) Inspect for holes, cracks, and loose components.

SUBTASK 30-11-00-780-001

- (2) Supply pneumatic pressure for the ducts with the APU (TASK 36-00-00-860-803).
- (a) Put the BLEED 1 and 2 switches on the air conditioning panel to the OFF position.
- (b) Put the L PACK and R PACK switches on the air conditioning panel to the OFF position.
- (c) Make sure that the ISOLATION VALVE switch is in the OPEN or the AUTO position.

SUBTASK 30-11-00-860-014



SET THE APU SWITCH TO ON AND ALLOW THE APU TO OPERATE FOR 5 MINUTES BEFORE THE APU BLEED AIR SWITCH TO ON. IF YOU DO NOT, DAMAGE TO THE APU CAN OCCUR.

- (3) Put the WING ANTI-ICE switch to the ON position.

SUBTASK 30-11-00-200-001

- (4) Do this check for leaks from the TAI duct:

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WARNING

DO NOT TOUCH THE TAI DUCT. THE DUCT CAN GET HOT AND INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (a) Move your hand near the TAI duct to feel for leaks.
 - 1) Some leakage along duct seals and joints is satisfactory.
 - 2) Leaks which can be felt 12 in. (305 mm) or more away are not satisfactory.

SUBTASK 30-11-00-720-005

- (5) Put the WING ANTI-ICE switch to the OFF position.

H. Duct Leak Test with the External Ground Source

NOTE: A Duct Leak Test with the External Ground Source is done when the APU is not available.

SUBTASK 30-11-00-210-005

- (1) Do a visual check of the wing thermal anti-ice duct and fittings.
 - (a) Make sure that to inspect for holes, cracks, and loose components.

SUBTASK 30-11-00-420-005

- (2) Connect a high pressure hose to air inlet duct.
 - (a) Make sure that the ground cart, STD-12791 will supply a minimum of 12 psig (83 kPa) and 1000 SCFM.

SUBTASK 30-11-00-780-002

- (3) Supply pneumatic pressure to the air inlet duct with a ground cart, STD-12791 (TASK 36-00-00-860-802).
 - (a) Put the BLEED 1 and 2 switches on the air conditioning panel to the OFF position.
 - (b) Put the L PACK and R PACK switches on the air conditioning panel to the OFF position.
 - (c) Make sure that the ISOLATION VALVE switch is in the OPEN or the AUTO position.

SUBTASK 30-11-00-780-003

- (4) Make sure that to supply 21 psig (145 kPa) - 26 psig (179 kPa) air flow through the air inlet duct.

SUBTASK 30-11-00-860-018

- (5) Put the WING ANTI-ICE switch to the ON position.

SUBTASK 30-11-00-200-002

- (6) Do this check for leaks from the TAI duct:



WARNING

DO NOT TOUCH THE TAI DUCT. THE DUCT CAN GET HOT AND INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (a) Move your hand near the TAI duct to feel for leaks.
 - 1) Some leakage along duct seals and joints is satisfactory.
 - 2) Leaks which can be felt 12 in. (305 mm) or more away are not satisfactory.

SUBTASK 30-11-00-210-006

- (7) Make sure that there are no defective joint, duct bracket movement, or other duct defects.

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SUBTASK 30-11-00-210-007

- (8) Make sure that there are no sources of concentrated leakage at any of the joints or duct connections.
- (a) Do a close visual inspection when the system is under pressure.

SUBTASK 30-11-00-860-020

- (9) Reduce air flow to zero through the air inlet duct.

SUBTASK 30-11-00-860-019

- (10) Put the WING ANTI-ICE switch to the OFF position.

SUBTASK 30-11-00-020-006

- (11) Disconnect the high pressure hose from the air inlet duct.

I. Put the Airplane Back to Its Usual Condition

SUBTASK 30-11-00-860-015

- (1) Remove pneumatic pressure from the ducts (TASK 36-00-00-860-806).

SUBTASK 30-11-00-410-002

- (2) For the left wing, install these applicable access panels:

<u>Number</u>	<u>Name/Location</u>
521AB	Outboard Leading Edge Blowout Door - Slat Station 20
521AT	Outbd Leading Edge - Gap Cover Access
521CB	Lower Leading Edge Access Panel - Slat Station 50
521DB	Lower Leading Edge Access Panel - Slat Station 70
521EB	Lower Leading Edge Access Panel - Slat Station 91
521FB	Lower Leading Edge Access Panel - Slat Station 107
521GB	Lower Leading Edge Access Panel - Slat Station 125
521HB	Lower Leading Edge Access Panel - Slat Station 144
521JB	Lower Leading Edge Access Panel - Slat Station 161
521KB	Lower Leading Edge Access Panel - Slat Station 179
521LB	Lower Leading Edge Access Panel - Slat Station 208
521MB	Lower Leading Edge Access Panel - Slat Station 226
521NB	Lower Leading Edge Access Panel - Slat Station 244
521PB	Lower Leading Edge Access Panel - Slat Station 261
521QB	Lower Leading Edge Access Panel - Slat Station 280
521RB	Lower Leading Edge Access Panel - Slat Station 298

SUBTASK 30-11-00-410-003

- (3) For the right wing, install these applicable access panels:

<u>Number</u>	<u>Name/Location</u>
621AB	Outboard Leading Edge Blowout Door - Slat Station 20
621AT	Outbd Leading Edge - Gap Cover Access
621CB	Lower Leading Edge Access Panel - Slat Station 50
621DB	Lower Leading Edge Access Panel - Slat Station 70
621EB	Lower Leading Edge Access Panel - Slat Station 91
621FB	Lower Leading Edge Access Panel - Slat Station 107
621GB	Refuel Valve Door - Slat Station 125
621JB	Lower Leading Edge Access Panel - Slat Station 161
621KB	Lower Leading Edge Access Panel - Slat Station 179
621LB	Lower Leading Edge Access Panel - Slat Station 208

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<u>Number</u>	<u>Name/Location</u>
621MB	Lower Leading Edge Access Panel - Slat Station 226
621NB	Lower Leading Edge Access Panel - Slat Station 244
621PB	Lower Leading Edge Access Panel - Slat Station 261
621QB	Lower Leading Edge Access Panel - Slat Station 280
621RB	Lower Leading Edge Access Panel - Slat Station 298

SUBTASK 30-11-00-860-016

- (4) If it is necessary, remove external power (TASK 24-22-00-860-804).

———— **END OF TASK** ————

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WING THERMAL ANTI-ICE VALVE - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

- (1) A removal of the Wing Thermal Anti-Ice (WTAI) valve
- (2) An installation of the WTAI valve.

TASK 30-11-11-000-801

2. Wing Thermal Anti-Ice Valve Removal

(Figure 401)

A. General

- (1) This task has steps to remove the Wing Thermal Anti-Ice (WTAI) valve (referred to as valve [6] in this task).

B. References

Reference	Title
27-81-00-040-801	Leading Edge Flaps and Slats - Deactivation (P/B 201)
36-00-00-860-806	Remove Pressure from the Pneumatic System (P/B 201)

C. Location Zones

Zone	Area
520	Subzone - Left Wing: Leading Edge, Fwd of Front Spar, Outboard of Strut and Nacelle Gap Cover Area
620	Subzone - Right Wing: Leading Edge, Forward of Front Spar, Outboard of Nacelle Strut

D. Access Panels

Number	Name/Location
521AB	Outboard Leading Edge Blowout Door - Slat Station 20
621AB	Outboard Leading Edge Blowout Door - Slat Station 20

E. Prepare for the Removal

SUBTASK 30-11-11-040-001



DO THE DEACTIVATION PROCEDURE FOR THE LEADING EDGE SLATS. THE SLATS RETRACT QUICKLY. THIS CAN CAUSE INJURIES TO PERSONNEL OR DAMAGE TO EQUIPMENT.

- (1) Do this task: Leading Edge Flaps and Slats - Deactivation, TASK 27-81-00-040-801.

SUBTASK 30-11-11-860-001

- (2) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
A	1	C04012	ANTI-ICE & RAIN WING ANTI-ICE VALVE
B	2	C04063	ANTI-ICE & RAIN WING ANTI-ICE VALVE-L
B	4	C04064	ANTI-ICE & RAIN WING ANTI-ICE VALVE-R

SUBTASK 30-11-11-860-002

- (3) Make sure that pressure is removed from the pneumatic system (TASK 36-00-00-860-806).

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SUBTASK 30-11-11-010-001

- (4) Open the applicable wing access panels:

<u>Number</u>	<u>Name/Location</u>
521AB	Outboard Leading Edge Blowout Door - Slat Station 20
621AB	Outboard Leading Edge Blowout Door - Slat Station 20

F. Wing Thermal Anti-Ice Valve Removal

SUBTASK 30-11-11-020-001

- (1) Disconnect the electrical connector [1] from the valve [6].

SUBTASK 30-11-11-020-007

- (2) Remove the bonding jumper [11] from the valve [6].
- (a) Remove the nut [14], washers [13], and bolt [12].
- (b) Remove the bonding jumper [11].

SUBTASK 30-11-11-020-003

- (3) Remove the clamp [3] from the duct assembly (outboard) [2].

SUBTASK 30-11-11-020-004

- (4) Remove the coupling [4] from the duct assembly (inboard) [5].

SUBTASK 30-11-11-020-008

- (5) Remove the seal [15] from the duct assembly (inboard) [5].

SUBTASK 30-11-11-020-005

- (6) Remove the valve [6].

————— **END OF TASK** —————

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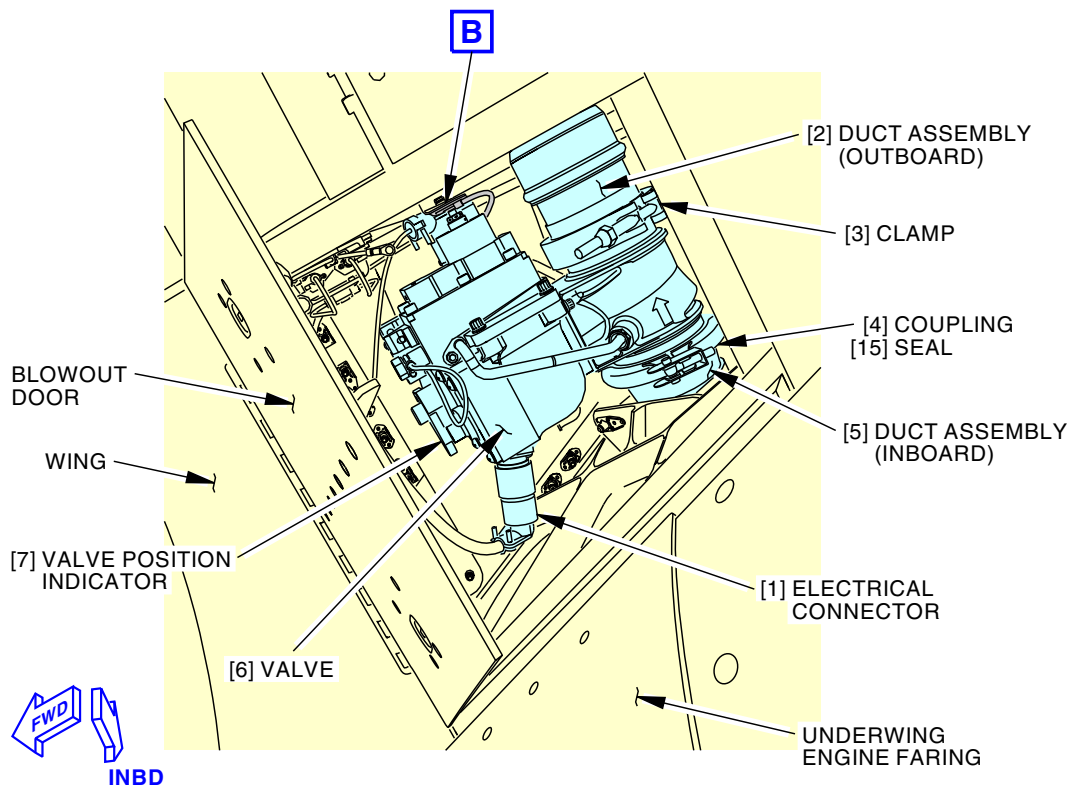
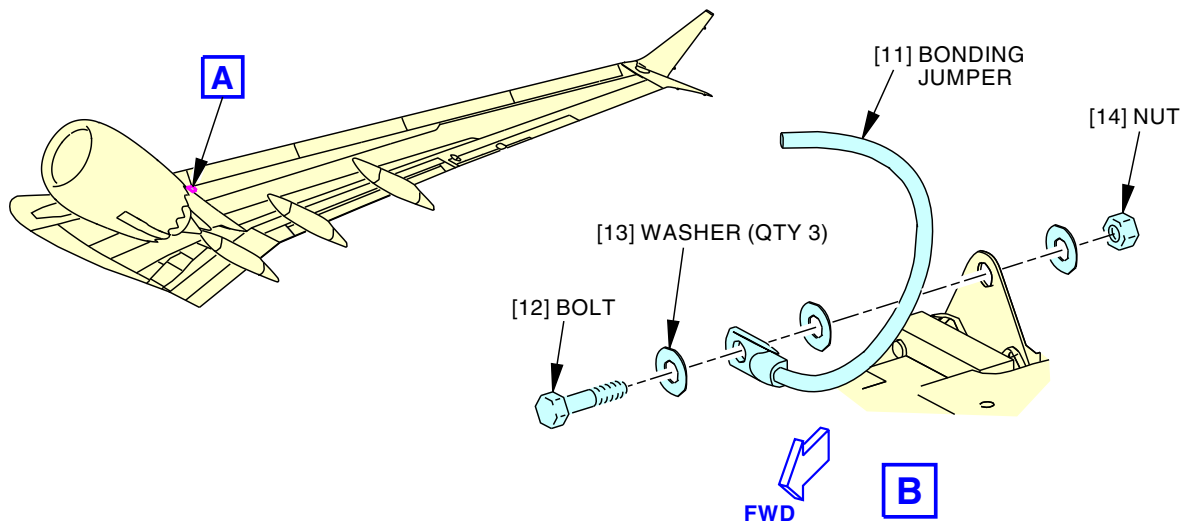
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(LEFT SIDE IS SHOWN, RIGHT SIDE IS ALMOST THE SAME)
(EXAMPLE)

A

2413884 S00061533686_V10

Wing Thermal Anti-Ice Valve Installation
Figure 401/30-11-11-990-801 (Sheet 1 of 2)

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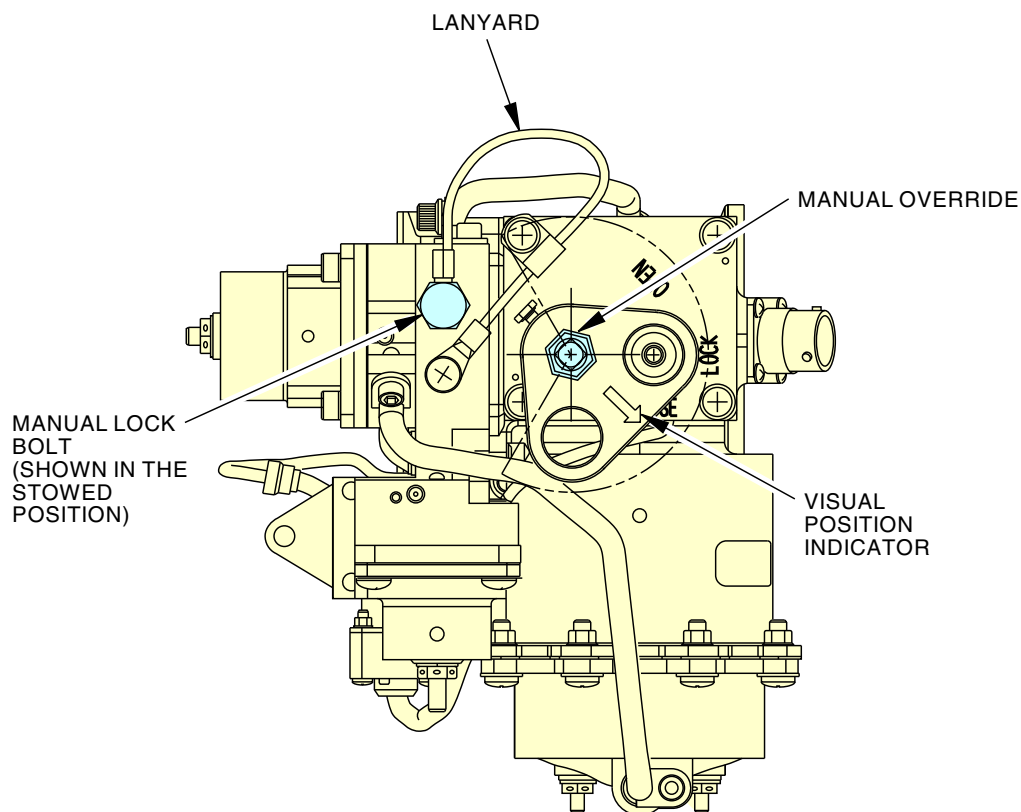
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VALVE POSITION INDICATOR

B

2521536 S0000593324_V2

Wing Thermal Anti-Ice Valve Installation
Figure 401/30-11-11-990-801 (Sheet 2 of 2)

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TASK 30-11-11-400-801

3. Wing Thermal Anti-Ice Valve Installation

(Figure 401)

A. General

- (1) This task has steps to install the Wing Thermal Anti-Ice (WTAI) valve (referred to as valve [6] in this task).

B. References

Reference	Title
27-81-00-440-801	Leading Edge Flaps and Slats - Activation (P/B 201)
30-11-11-710-801	Wing Thermal Anti Ice Valve Operational Test with APU Bleed Pneumatic Air (P/B 501)

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
COM-1550	Bonding Meter - Approved, Intrinsically Safe (Approved for use in Class I, Divisions I & II hazardous (classified) locations. Outside these hazardous locations, COM-614 can be used in lieu of COM-1550). Part #: 620LK Supplier: 1CRL2 Part #: M1 Supplier: 3AD17 Part #: M1B Supplier: 3AD17 Part #: T477W (C15292) Supplier: 06659

D. Consumable Materials

Reference	Description	Specification
D00189	Compound - Molykote 111 (Formerly Dow Corning 111, Valve Sealant and Lubricant)	
G50470	Compound - Electrical Insulating (Dow Corning 4)	SAE AS8660 (Supersedes MIL-S-8660)

E. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
6	Valve	30-11-11-01-010	SIA ALL
15	Seal	36-13-01-10-130	SIA ALL
		36-13-01-11-070	SIA ALL

F. Location Zones

Zone	Area
520	Subzone - Left Wing: Leading Edge, Fwd of Front Spar, Outboard of Strut and Nacelle Gap Cover Area
620	Subzone - Right Wing: Leading Edge, Forward of Front Spar, Outboard of Nacelle Strut

G. Access Panels

Number	Name/Location
521AB	Outboard Leading Edge Blowout Door - Slat Station 20

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(Continued)

Number	Name/Location

621AB	Outboard Leading Edge Blowout Door - Slat Station 20

H. Wing Thermal Anti-Ice Valve Installation

SUBTASK 30-11-11-420-001

(1) Put the valve [6] in its position.

(a) Make sure that the valve position indicator [7] access is sufficient.

SUBTASK 30-11-11-210-009

(2) Examine the seal [15].

(a) Make sure that the seal [15] does not have cracks, dents, or other damage.

(b) Replace the seal [15] if it is damaged.

SUBTASK 30-11-11-420-009

(3) Apply a coating of Molykote 111 Compound, D00189, or Compound, G50470, on the seal [15].

SUBTASK 30-11-11-020-009

(4) Install the seal [15] on the duct assembly (inboard) [5].

SUBTASK 30-11-11-420-002

(5) Install the coupling [4] to the duct assembly (inboard) [5].

(a) Orient the T-bolt down to allow access from below.

SUBTASK 30-11-11-420-003

(6) Install the clamp [3] to the duct assembly (outboard) [2].

(a) Orient the T-bolt down to allow access from below.

(b) Tighten the clamp [3] to 55.0 +5.0 / -0.0 in-lb (6.2 +0.6 / -0.0 N·m).

(c) Make sure that the retainer gap of the clamp [3] is 0.41 in. (10.4 mm) or less.

SUBTASK 30-11-11-420-004

(7) Install the bonding jumper [11] on the valve [6].

(a) Install the bolt [12], washers [13], bonding jumper [11], and nut [14] to the valve [6].

SUBTASK 30-11-11-760-001

(8) Measure the electrical bonding resistance between the bonding jumper [11] and airplane structure.

(a) Use an intrinsically safe approved bonding meter, COM-1550.

(b) Make sure that the electrical bonding resistance is 0.0025 ohm (2.5 milliohm) or less.

SUBTASK 30-11-11-420-005

(9) Connect the electrical connector [1] to the valve [6].

I. Wing Thermal Anti-Ice Valve Installation Test

SUBTASK 30-11-11-860-004

(1) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
A	1	C04012	ANTI-ICE & RAIN WING ANTI-ICE VALVE
B	2	C04063	ANTI-ICE & RAIN WING ANTI-ICE VALVE-L
B	4	C04064	ANTI-ICE & RAIN WING ANTI-ICE VALVE-R

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SUBTASK 30-11-11-210-001

- (2) Make sure that the valve position indicator [7] is closed.

SUBTASK 30-11-11-710-001

- (3) Do this task: Wing Thermal Anti Ice Valve Operational Test with APU Bleed Pneumatic Air, TASK 30-11-11-710-801.

- (a) Make sure that the lanyard does not interfere with the movement of the valve position indicator.
- 1) Adjust lanyard if any interference occurs when the valve position indicator moves from closed to open.

J. Put the Airplane Back to Its Usual Condition

SUBTASK 30-11-11-410-001

- (1) Close the applicable wing panels:

<u>Number</u>	<u>Name/Location</u>
521AB	Outboard Leading Edge Blowout Door - Slat Station 20
621AB	Outboard Leading Edge Blowout Door - Slat Station 20

SUBTASK 30-11-11-440-002



KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

- (2) Do this task: Leading Edge Flaps and Slats - Activation, TASK 27-81-00-440-801.

————— **END OF TASK** —————

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WING THERMAL ANTI-ICE VALVE - ADJUSTMENT/TEST

1. **General**

A. This procedure has these tasks:

- (1) Wing Thermal Anti-Ice Valve Operational Test with APU Bleed Pneumatic Air
- (2) Left Wing Thermal Anti-Ice Valve Health Check

TASK 30-11-11-710-801

2. **Wing Thermal Anti Ice Valve Operational Test with APU Bleed Pneumatic Air**

(Figure 501)

A. **General**

- (1) This test makes sure that the Wing Thermal Anti-Ice Valve operates with APU Bleed Pneumatic Air.

B. **References**

Reference	Title
27-81-00-040-801	Leading Edge Flaps and Slats - Deactivation (P/B 201)
27-81-00-440-801	Leading Edge Flaps and Slats - Activation (P/B 201)
32-09-00-860-802	Return the Airplane to the Ground Mode (P/B 201)
49-11-00-860-801	APU Starting and Operation (P/B 201)
49-11-00-860-802	APU Usual Shutdown (P/B 201)

C. **Location Zones**

Zone	Area
212	Flight Compartment - Right
520	Subzone - Left Wing: Leading Edge, Fwd of Front Spar, Outboard of Strut and Nacelle Gap Cover Area
620	Subzone - Right Wing: Leading Edge, Forward of Front Spar, Outboard of Nacelle Strut

D. **Access Panels**

Number	Name/Location
192CL	ECS Access Door
192CR	ECS Access Door
521AB	Outboard Leading Edge Blowout Door - Slat Station 20
621AB	Outboard Leading Edge Blowout Door - Slat Station 20

E. **Prepare for the Wing Thermal Anti-Ice Valve Operational Test with APU Bleed Pneumatic Air**

SUBTASK 30-11-11-040-004

- (1) Deactivate Leading Edge Slats (TASK 27-81-00-040-801).

SUBTASK 30-11-11-860-024

- (2) Start and operate the Auxiliary Power Unit (APU) (TASK 49-11-00-860-801).

SUBTASK 30-11-11-010-003

- (3) Open the applicable wing access panels:

Number	Name/Location
521AB	Outboard Leading Edge Blowout Door - Slat Station 20
621AB	Outboard Leading Edge Blowout Door - Slat Station 20

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F. Wing Thermal Anti-Ice Valve Operational Test with APU Bleed Pneumatic Air

SUBTASK 30-11-11-860-012

- (1) Make sure that these circuit breakers are closed:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	1	C04012	ANTI-ICE & RAIN WING ANTI-ICE VALVE
B	2	C04063	ANTI-ICE & RAIN WING ANTI-ICE VALVE-L
B	4	C04064	ANTI-ICE & RAIN WING ANTI-ICE VALVE-R

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	1	C01399	PSEU PRI
D	2	C01400	PSEU ALTN

SUBTASK 30-11-11-910-001

- (2) Make sure that the aircraft is in ground mode (TASK 32-09-00-860-802).

SUBTASK 30-11-11-860-013

- (3) Make sure that the engine throttle levers are at idle.

SUBTASK 30-11-11-210-003

- (4) Make sure that the L VALVE or R VALVE light is on when pressed.

SUBTASK 30-11-11-210-002

- (5) Make sure that the valve position indicator [2] on the valve [1] is closed.

SUBTASK 30-11-11-860-015

- (6) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	8	C01103	ENGINE 1 START VALVE

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	4	C00154	ENGINE 2 START VALVE

SUBTASK 30-11-11-010-004

- (7) Open these access panels:

<u>Number</u>	<u>Name/Location</u>
192CL	ECS Access Door
192CR	ECS Access Door

SUBTASK 30-11-11-020-006

- (8) Disconnect electrical connectors D15830 - LEFT PACK FLOW CONTROL AND SHUT-OFF VALVE and D15834 - RIGHT PACK FLOW CONTROL AND SHUT-OFF VALVE.

NOTE: Disconnect the connectors will preclude the PACKS from operation, when the APU Bleed is On.

SUBTASK 30-11-11-860-016

- (9) Set the L PACK and R PACK switches to OFF.

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SUBTASK 30-11-11-860-017

- (10) Set the ENG 1 BLEED and ENG 2 BLEED switches in the OFF position.

SUBTASK 30-11-11-860-018

- (11) Set the ISOLATION VALVE switch to the OPEN position.

SUBTASK 30-11-11-860-019

- (12) Set the R PACK and L PACK switches to HIGH.

NOTE: The next step must be completed simultaneously to avoid surging the APU.

SUBTASK 30-11-11-860-020



SET THE APU SWITCH TO ON AND ALLOW THE APU TO OPERATE FOR 5 MINUTES BEFORE THE APU BLEED AIR SWITCH TO ON. IF YOU DO NOT, DAMAGE TO THE APU CAN OCCUR.



DO NOT OPERATE THE WING ANTI-ICE SYSTEM MORE THAN 30 SECONDS. DAMAGE TO THE AIRCRAFT CAN OCCUR.

- (13) Set the WING ANTI-ICE switch to ON.
(a) Set the APU BLEED switch to ON.

SUBTASK 30-11-11-210-004

- (14) Make sure that the L VALVE and R VALVE lights are on momentarily, then off.

SUBTASK 30-11-11-210-006

- (15) Make sure that the valve position indicator [2] on the valve [1] is open.

SUBTASK 30-11-11-200-002



DO NOT TOUCH THE COWL TAI DUCTS OR TAI VALVE WHEN THEY ARE HOT. IF YOU ARE NOT CAREFUL, INJURIES TO PERSONS CAN OCCUR.

- (16) \
- Make sure that there is no leakage around the valve [1] and the adjacent ducts.
(a) If it is necessary, adjust the clamps to repair the leakage.

SUBTASK 30-11-11-860-021



SET THE APU BLEED SWITCH OFF BEFORE THE WING ANTI-ICE SWITCH OFF TO AVOID A SURGE TO THE APU. DAMAGE TO THE APU CAN OCCUR.

- (17) Set the APU BLEED and WING ANTI-ICE switch to the OFF position.

SUBTASK 30-11-11-210-005

- (18) Make sure that the L VALVE and R VALVE lights are on momentarily, then off.

SUBTASK 30-11-11-420-006

- (19) Connect electrical connectors D15830 - LEFT PACK FLOW CONTROL AND SHUT-OFF VALVE and D15834 - RIGHT PACK FLOW CONTROL AND SHUT-OFF VALVE.

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SUBTASK 30-11-11-410-003

- (20) Close these access panels:

<u>Number</u>	<u>Name/Location</u>
192CL	ECS Access Door
192CR	ECS Access Door

SUBTASK 30-11-11-860-022

- (21) Set the L PACK and R PACK switches to OFF.

SUBTASK 30-11-11-860-023

- (22) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	8	C01103	ENGINE 1 START VALVE

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	4	C00154	ENGINE 2 START VALVE

G. Put the Airplane in its Usual Condition

SUBTASK 30-11-11-410-002

- (1) Close the applicable wing access panels:

<u>Number</u>	<u>Name/Location</u>
521AB	Outboard Leading Edge Blowout Door - Slat Station 20
621AB	Outboard Leading Edge Blowout Door - Slat Station 20

SUBTASK 30-11-11-440-003

- (2) Activate leading edge slats (TASK 27-81-00-440-801).

SUBTASK 30-11-11-860-025

- (3) Do the APU Usual Shutdown (TASK 49-11-00-860-802).

————— **END OF TASK** —————

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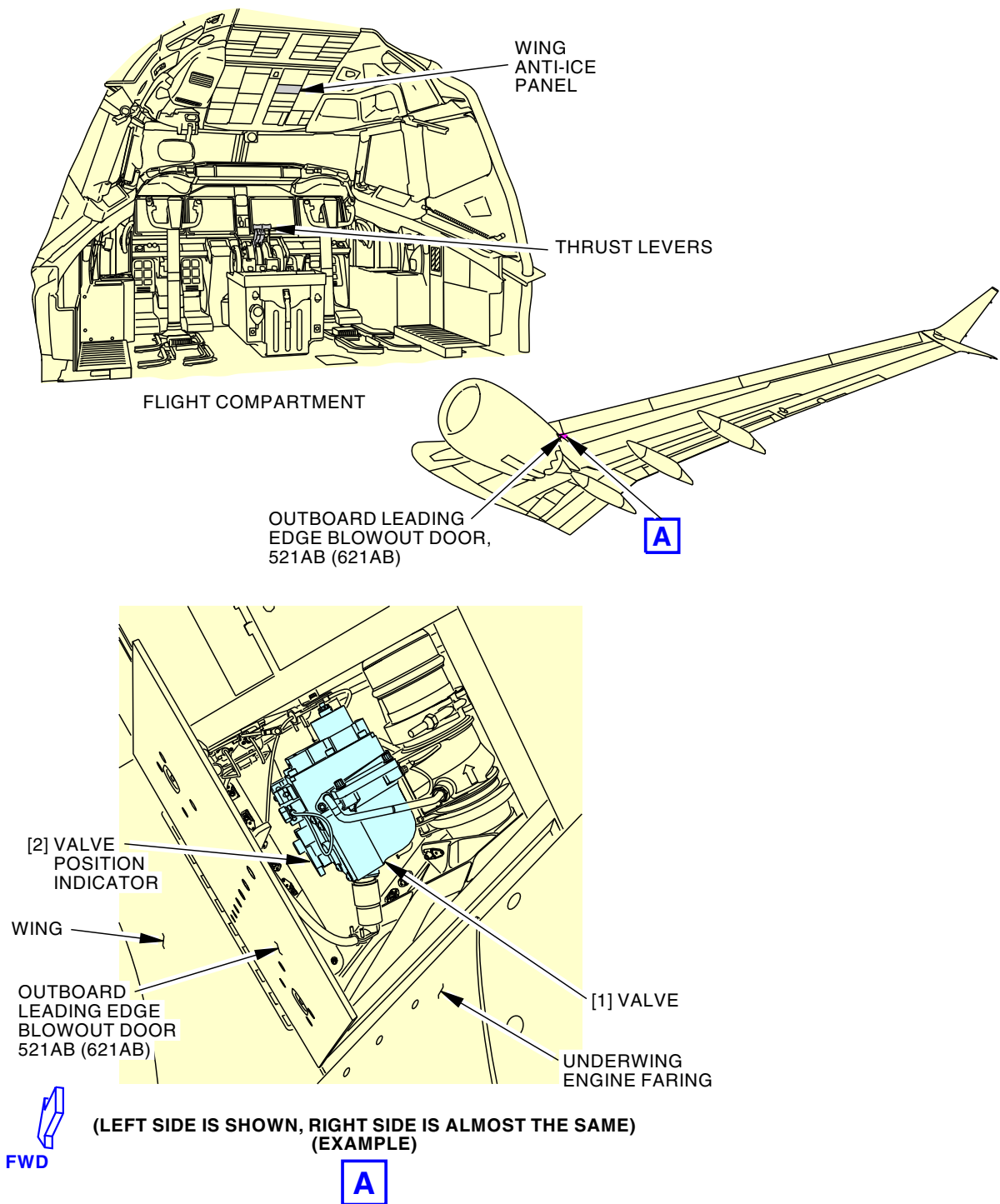
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Wing Thermal Anti-Ice Valve Operational Test with APU Bleed Pneumatic Air
Figure 501/30-11-11-990-802

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TASK 30-11-11-200-801

3. Left Wing Thermal Anti Ice Valve Health Check

(Figure 502)

A. General

- (1) This task gives the steps to do a health check of the left Wing Anti-Ice Valve (WAIV).
 - (a) When the WAIV switch is selected ON, most L VALVE light illuminations are caused by water or ice in the sense line. The left side valve is more vulnerable to internal sense line blockage because of the orientation of the sense line. This condition happens more often in the winter during colder operation.
- (2) This task has two parts:
 - (a) The first part does the operational cycle of the WAIV three (3) times.
 - 1) If the inlet tube has moisture or water in it, cycling the valve three (3) times can clear the blockage.
 - (b) The second part does an inspection of the inlet tube on the WAIV.
 - 1) A more detailed inspection of the inlet tube is needed if ice is present.

B. References

Reference	Title
20-10-44-000-801	Lockwire, Cotter Pins, and Lockrings - Removal (P/B 401)
20-10-44-400-801	Lockwire, Cotter Pins, and Lockrings - Installation (P/B 401)
27-81-00-040-801	Leading Edge Flaps and Slats - Deactivation (P/B 201)
27-81-00-440-801	Leading Edge Flaps and Slats - Activation (P/B 201)
32-09-00-860-802	Return the Airplane to the Ground Mode (P/B 201)
36-00-00-860-806	Remove Pressure from the Pneumatic System (P/B 201)
49-11-00-860-801	APU Starting and Operation (P/B 201)
49-11-00-860-802	APU Usual Shutdown (P/B 201)

C. Consumable Materials

Reference	Description	Specification
D00652	Lubricant - O-Ring - Parker Super-O-Lube	
G01048	Lockwire - MS20995C32, Corrosion Resistant Steel - 0.032 Inch (0.8128 mm) Diameter	NASM20995
G50225	Lockwire - MS20995C20, Corrosion Resistant Steel - 0.020 Inch (0.508 mm) Diameter	NASM20995

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
8	Packing	30-11-11-01-075	SIA ALL

E. Location Zones

Zone	Area
212	Flight Compartment - Right
520	Subzone - Left Wing: Leading Edge, Fwd of Front Spar, Outboard of Strut and Nacelle Gap Cover Area

F. Access Panels

Number	Name/Location
521AB	Outboard Leading Edge Blowout Door - Slat Station 20

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G. Prepare for the Wing Thermal Anti-Ice Valve Operational Test with APU Bleed Pneumatic Air

SUBTASK 30-11-11-040-007

- (1) Deactivate the Leading Edge (LE) slats (TASK 27-81-00-040-801).

SUBTASK 30-11-11-860-033

- (2) Start and operate the Auxiliary Power Unit (APU) (TASK 49-11-00-860-801).

SUBTASK 30-11-11-010-008

- (3) Open this wing access panel:

<u>Number</u>	<u>Name/Location</u>

521AB	Outboard Leading Edge Blowout Door - Slat Station 20

H. Operational Cycle of the Wing Thermal Anti-Ice Valve

SUBTASK 30-11-11-860-034

- (1) Make sure that these circuit breakers are closed:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	1	C04012	ANTI-ICE & RAIN WING ANTI-ICE VALVE
B	2	C04063	ANTI-ICE & RAIN WING ANTI-ICE VALVE-L

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	1	C01399	PSEU PRI
D	2	C01400	PSEU ALTN

SUBTASK 30-11-11-910-002

- (2) Make sure that the aircraft is in ground mode (TASK 32-09-00-860-802).

SUBTASK 30-11-11-860-035

- (3) Make sure that the engine throttle levers are at idle.

SUBTASK 30-11-11-210-007

- (4) Make sure that the L VALVE light is on when pressed.

SUBTASK 30-11-11-210-008

- (5) Make sure that the valve position indicator on the valve is closed.

SUBTASK 30-11-11-860-036

- (6) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	8	C01103	ENGINE 1 START VALVE

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	4	C00154	ENGINE 2 START VALVE

SUBTASK 30-11-11-860-037

- (7) Set the L PACK and R PACK switches to the OFF position.

SUBTASK 30-11-11-860-038

- (8) Set the ENG 1 BLEED and ENG 2 BLEED switches to the OFF position.

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SUBTASK 30-11-11-860-039

- (9) Set the ISOLATION VALVE switch to the CLOSE position.

SUBTASK 30-11-11-860-040

- (10) Do these steps to cycle the WAIV.

NOTE: A total of three (3) cycles is necessary to clear the moisture in the inlet tube. Run each valve operation for 5 seconds each to give the valve enough time to cycle, and to keep the total run time under the 30 seconds limit.

NOTE: The next step must be completed simultaneously to avoid surging the APU.



CAUTION

SET THE APU SWITCH TO ON AND ALLOW THE APU TO OPERATE FOR 5 MINUTES BEFORE THE APU BLEED AIR SWITCH TO ON. IF YOU DO NOT, DAMAGE TO THE APU CAN OCCUR.



CAUTION

DO NOT OPERATE THE WING ANTI-ICE SYSTEM MORE THAN 30 SECONDS. DAMAGE TO THE AIRCRAFT CAN OCCUR.

- (a) Set the WING ANTI-ICE switch to ON.
1) Set the APU BLEED switch to ON.
- (b) Make sure that the L VALVE light is on momentarily, then off.
NOTE: The R VALVE light will come on.
- (c) Make sure that the valve position indicator on the valve is open.



CAUTION

SET THE APU BLEED SWITCH OFF BEFORE THE WING ANTI-ICE SWITCH OFF TO AVOID A SURGE TO THE APU. DAMAGE TO THE APU CAN OCCUR.

- (d) Set the APU BLEED and WING ANTI-ICE switch to the OFF position.
- (e) Make sure that the L VALVE light is on momentarily, then off.

SUBTASK 30-11-11-860-041

- (11) Repeat the previous step (10)(a) - (10)(e) for two (2) more cycles.
- (a) Make sure that there are no existing faults related to the WAIV.
1) If a WAIV fault still shows, then continue to do the "Wing Thermal Anti-Ice Valve Inlet Tube Inspection" steps below.

SUBTASK 30-11-11-860-042

- (12) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	8	C01103	ENGINE 1 START VALVE

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	4	C00154	ENGINE 2 START VALVE

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SUBTASK 30-11-11-410-004

- (13) Close this wing access panel:

<u>Number</u>	<u>Name/Location</u>
521AB	Outboard Leading Edge Blowout Door - Slat Station 20

SUBTASK 30-11-11-440-004

- (14) Activate the LE slats (TASK 27-81-00-440-801).

SUBTASK 30-11-11-860-043

- (15) Do the APU Usual Shutdown (TASK 49-11-00-860-802).

I. Wing Thermal Anti-Ice Valve Inlet Tube Inspection

SUBTASK 30-11-11-040-006

 WARNING	DO THE DEACTIVATION PROCEDURE FOR THE LEADING EDGE SLATS. THE SLATS RETRACT QUICKLY. THIS CAN CAUSE INJURIES TO PERSONNEL OR DAMAGE TO EQUIPMENT.

- (1) Do this task: Leading Edge Flaps and Slats - Deactivation, TASK 27-81-00-040-801

SUBTASK 30-11-11-860-030

- (2) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	1	C04012	ANTI-ICE & RAIN WING ANTI-ICE VALVE
B	2	C04063	ANTI-ICE & RAIN WING ANTI-ICE VALVE-L

SUBTASK 30-11-11-860-031

- (3) Make sure that the pressure is removed from the pneumatic system (TASK 36-00-00-860-806).

SUBTASK 30-11-11-010-007

- (4) Open this access panel:

<u>Number</u>	<u>Name/Location</u>
521AB	Outboard Leading Edge Blowout Door - Slat Station 20

SUBTASK 30-11-11-020-011

- (5) Disconnect the electrical connector [3] from the left WAIV.

SUBTASK 30-11-11-020-012

- (6) Remove the inlet tube [4] on the left WAIV:
- (a) Remove the lockwire on the inlet tube nut [5] (TASK 20-10-44-000-801).
 - (b) Loosen the inlet tube nut [5] and remove the screw [6], tube retainer [7], and packing [8].

NOTE: Be careful when removing the inlet tube, the sensing probe may be loose and come out with the inlet tube.

NOTE: The packing can be discarded.

SUBTASK 30-11-11-200-001

- (7) Inspect the inlet tube [4] for moisture, water, or ice.
- (a) If moisture, water, or ice is found, use compressed air to clean out the tube.

SUBTASK 30-11-11-420-008

- (8) Reinstall the inlet tube [4] on the left WAIV as follow:
- (a) Install a new packing [8] on the inlet tube [4].

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- (b) Lubricate the packing [8] with Parker Super-O-Lube lubricant, D00652.
- (c) If the sensing probe was removed with the inlet tube [4], re-install with the sensing probe facing downstream.
- (d) Insert the inlet tube [4] loosely into valve body.
- (e) Insert the other end of inlet tube [4] into servo housing.
- (f) Install the tube retainer [7] and screw [6].
 - 1) Tighten the screw [6] to 11 in-lb (1.2 N·m) - 13 in-lb (1.5 N·m).
- (g) Tighten the inlet tube nut [5] to 100 in-lb (8.3 ft-lb) - 120 in-lb (13.6 N·m).
- (h) Install the MS20995C20 lockwire, G50225, or MS20995C32 lockwire, G01048, to the inlet tube nut [5] (TASK 20-10-44-400-801).
- (i) Connect the electrical connector [3] to the left WAIV.

SUBTASK 30-11-11-860-032

- (9) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	1	C04012	ANTI-ICE & RAIN WING ANTI-ICE VALVE
B	2	C04063	ANTI-ICE & RAIN WING ANTI-ICE VALVE-L

SUBTASK 30-11-11-860-044

- (10) Make sure that the valve position indicator is closed.

SUBTASK 30-11-11-870-001

- (11) Operate the WAIV for one cycle to make sure that there are no existing faults. Do these steps:
 - (a) Do the "Prepare for the Wing Thermal Anti-Ice Valve Operational Test with APU Bleed Pneumatic Air" section of this task.
 - (b) Do the "Operational Cycle of the Wing Thermal Anti-Ice Valve" section of this task.
NOTE: Only one operational cycle of the valve is needed.
 - (c) Make sure that there are no existing faults related to the WAIV.

———— **END OF TASK** ————

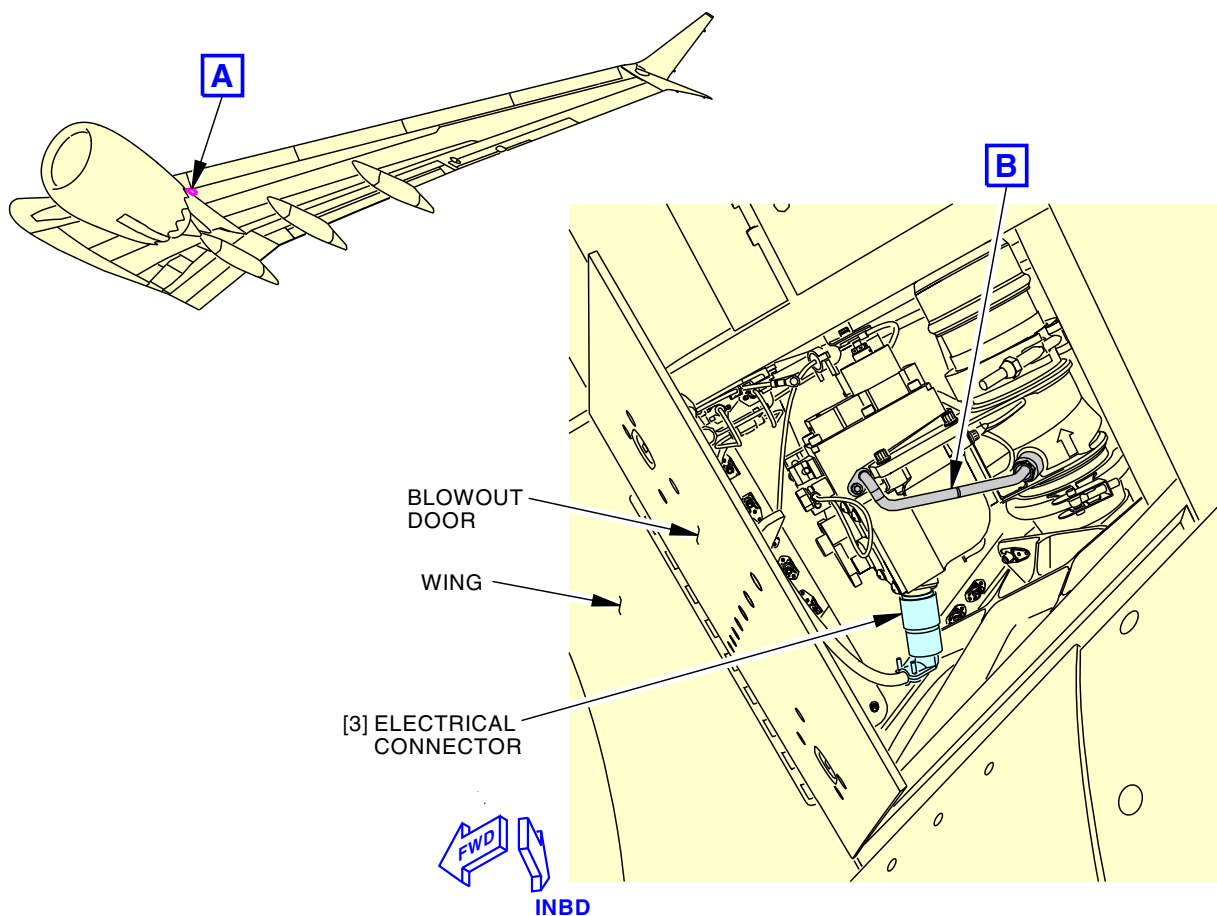
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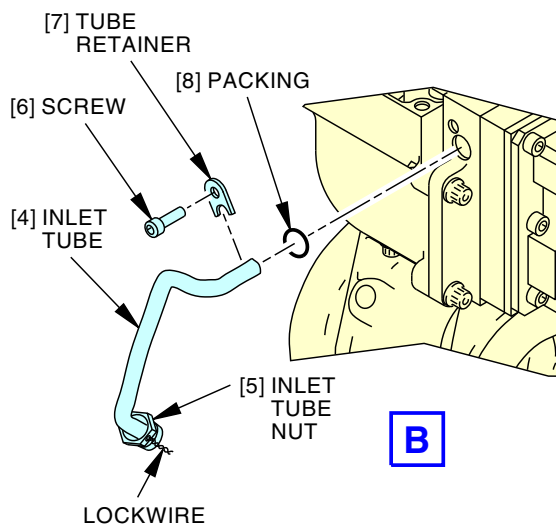
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(LEFT SIDE IS SHOWN, RIGHT SIDE IS ALMOST THE SAME)
(EXAMPLE)



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Wing Thermal Anti-Ice Valve Health Check
Figure 502/30-11-11-990-804

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WING THERMAL ANTI-ICE PRESSURE SWITCH - REMOVAL/INSTALLATION

1. **General**

A. This procedure has these tasks:

- (1) Wing Thermal Anti-Ice Pressure Switch Removal
- (2) Wing Thermal Anti-Ice Pressure Switch Installation.

TASK 30-11-12-000-801

2. **Wing Thermal Anti-Ice Pressure Switch Removal**

(Figure 401)

A. **General**

- (1) This task gives instructions to remove the Wing Thermal Anti-Ice Pressure Switch.

B. **References**

Reference	Title
27-81-00-040-801	Leading Edge Flaps and Slats - Deactivation (P/B 201)
36-00-00-860-806	Remove Pressure from the Pneumatic System (P/B 201)

C. **Tools/Equipment**

Reference	Description
STD-858	Tag - DO NOT OPERATE

D. **Location Zones**

Zone	Area
521	Left Wing - Leading Edge to Front Spar
621	Right Wing - Leading Edge to Front Spar

E. **Access Panels**

Number	Name/Location
521BB	Engine Fuel Valve Shutoff Access Panel - Slat Station 27
621BB	Engine Fuel Valve Shutoff Access Panel - Slat Station 27

F. **Prepare for the Removal of the Wing Thermal Anti-Ice Pressure Switch**

SUBTASK 30-11-12-420-001



WARNING

OBEY THE PROCEDURE TO DEACTIVATE LEADING EDGE SLATS. DAMAGE TO EQUIPMENT AND INJURIES TO PERSONNEL CAN OCCUR.

- (1) Deactivate the leading edge slats (TASK 27-81-00-040-801).

SUBTASK 30-11-12-040-002



WARNING

OBEY THE PROCEDURE TO REMOVE PRESSURE FROM THE PNEUMATIC SYSTEM. DAMAGE TO EQUIPMENT AND INJURIES TO PERSONNEL CAN OCCUR.

- (2) If the aircraft pneumatic system is pressurized, remove the pneumatic air from the system (TASK 36-00-00-860-806).



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SUBTASK 30-11-12-860-001

- (3) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	1	C04012	ANTI-ICE & RAIN WING ANTI-ICE VALVE
A	6	C00148	ANTI-ICE & RAIN ENG 1 & WING CONT

SUBTASK 30-11-12-040-001

- (4) Do these steps to deactivate the Wing Thermal Anti-Ice System:
- (a) Set the WING ANTI-ICE switch on the P5-11 engine and wing anti-ice panel, to the OFF position.
 - (b) Make sure that the L VALVE and R VALVE lights are off.
 - (c) Install DO NOT OPERATE tag, STD-858 on the WING ANTI-ICE switch on the P5-11 engine and wing anti-ice panel.

SUBTASK 30-11-12-010-001

- (5) Open these access panels:

<u>Number</u>	<u>Name/Location</u>
521BB	Engine Fuel Valve Shutoff Access Panel - Slat Station 27
621BB	Engine Fuel Valve Shutoff Access Panel - Slat Station 27

G. Wing Thermal Anti-Ice Pressure Switch Removal

SUBTASK 30-11-12-020-001

- (1) Remove the pressure line [5].

SUBTASK 30-11-12-020-002

- (2) Remove the connector [4].

SUBTASK 30-11-12-020-003

- (3) Remove the two screws [3] from the clamp [2].

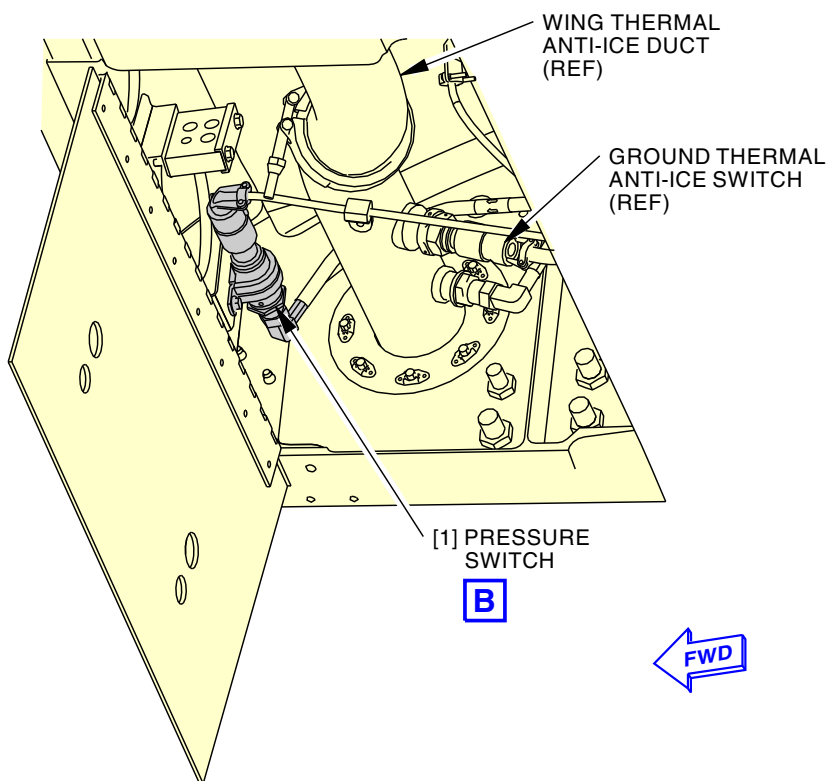
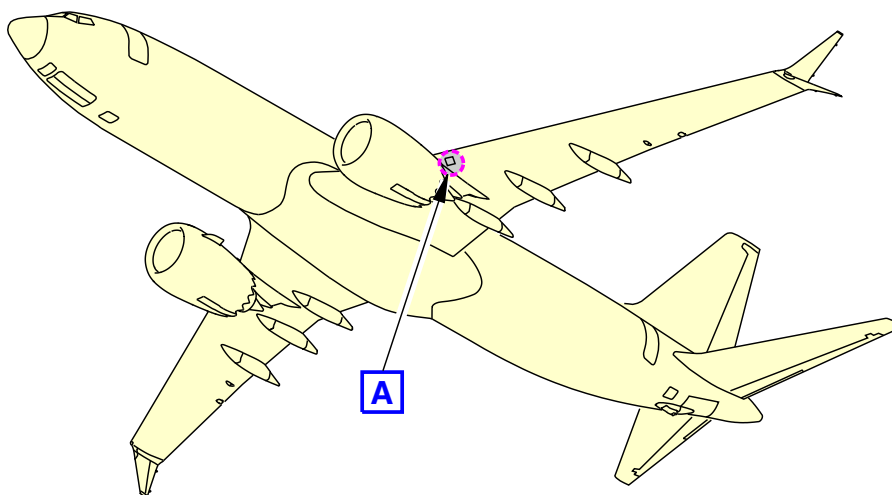
SUBTASK 30-11-12-020-004

- (4) Remove the wing thermal anti-ice pressure switch [1].

———— **END OF TASK** ————



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(LEFT WING IS SHOWN,
RIGHT WING IS ALMOST THE SAME)

A

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Wing Thermal Anti-Ice Pressure Switch Installation
Figure 401/30-11-12-990-801 (Sheet 1 of 2)

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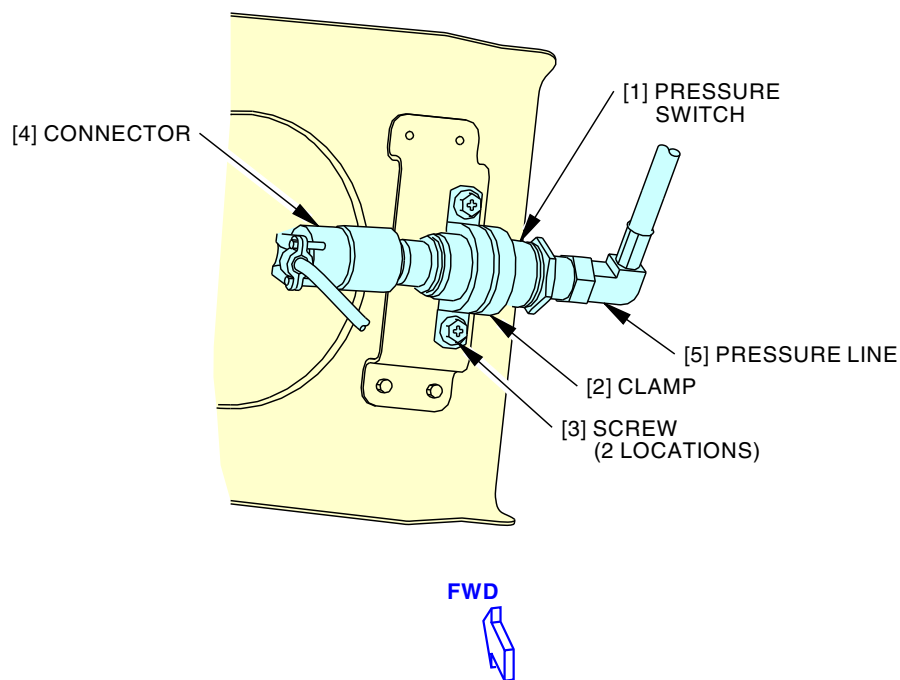
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(LEFT WING IS SHOWN,
RIGHT WING IS ALMOST THE SAME)

B

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Wing Thermal Anti-Ice Pressure Switch Installation
Figure 401/30-11-12-990-801 (Sheet 2 of 2)

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TASK 30-11-12-400-801

3. **Wing Thermal Anti-Ice Pressure Switch Installation**

(Figure 401)

A. General

- (1) This task gives instructions to install the Wing Thermal Anti-Ice Pressure Switch.

B. References

Reference	Title
27-81-00-440-801	Leading Edge Flaps and Slats - Activation (P/B 201)
32-09-00-860-801	Put the Airplane in the Air Mode (P/B 201)
32-09-00-860-802	Return the Airplane to the Ground Mode (P/B 201)

C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Pressure switch	30-11-12-01-030	SIA 001-005

D. Location Zones

Zone	Area
521	Left Wing - Leading Edge to Front Spar
621	Right Wing - Leading Edge to Front Spar

E. Access Panels

Number	Name/Location
521BB	Engine Fuel Valve Shutoff Access Panel - Slat Station 27
621BB	Engine Fuel Valve Shutoff Access Panel - Slat Station 27

F. Wing Thermal Anti-Ice Pressure Switch Installation

SUBTASK 30-11-12-420-002

- (1) Position the wing thermal anti-ice pressure switch [1] above the wing thermal anti-ice duct.

SUBTASK 30-11-12-420-003

- (2) Secure the wing thermal anti-ice pressure switch [1] with the clamp [2].

SUBTASK 30-11-12-420-004

- (3) Install the two screws [3] to the clamp [2].

SUBTASK 30-11-12-420-006

- (4) Connect the connector [4] to the wing thermal anti-ice pressure switch [1].

SUBTASK 30-11-12-420-007

- (5) Connect the pressure line [5] to the wing thermal anti-ice pressure switch [1].

G. Wing Thermal Anti-Ice Pressure Switch Installation Test

SUBTASK 30-11-12-860-004

- (1) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
A	1	C04012	ANTI-ICE & RAIN WING ANTI-ICE VALVE
A	6	C00148	ANTI-ICE & RAIN ENG 1 & WING CONT

SUBTASK 30-11-12-440-001

- (2) Do the step to activate Wing Thermal Anti-Ice System:

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- (a) Remove DO NOT OPERATE tag from the WING ANTI-ICE switch on the P5-11 engine and wing anti-ice panel.

SUBTASK 30-11-12-710-001

- (3) Do this test of the wing thermal anti-ice pressure switch:



WARNING

OBEY THE PROCEDURE THAT PUTS THE AIRPLANE IN THE AIR MODE. IF YOU DO THE PROCEDURE INCORRECTLY, INJURIES TO PERSONNEL, AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (a) Put the aircraft in air mode (TASK 32-09-00-860-801).
- (b) Set the WING ANTI-ICE switch to ON.
- (c) Make sure that the L VALVE and R VALVE lights come on for 6 seconds.
- (d) Make sure that the L VALVE, R VALVE, MASTER CAUTION, ANTI-ICE lights come on after 6 seconds.
- (e) Disconnect the connector [4] from the applicable wing thermal anti-ice pressure switch [1].
- (f) Install jumper from pins 1 and 2 (D15648 - Left Wing, D15646 - Right Wing) to connector [4].
- (g) Make sure that the applicable (L VALVE or R VALVE) light goes off.
- (h) Push to RESET the MASTER CAUTION indicator.
- (i) Set the WING ANTI-ICE switch to OFF.
- (j) Make sure that the applicable (L VALVE or R VALVE) light will come on.
- (k) Remove jumper from pins 1 and 2 (D15648 - Left Wing, D15646 - Right Wing).
- (l) Connect the connector [4] to the applicable wing thermal anti-ice pressure switch [1].
- (m) Make sure that the applicable (L VALVE or R VALVE) lights go off.
- (n) Push to RESET the MASTER CAUTION indicator.

H. Put the Airplane Back to its Usual Condition

SUBTASK 30-11-12-860-005

- (1) Return the Airplane to the Ground Mode (TASK 32-09-00-860-802).

SUBTASK 30-11-12-410-001

- (2) Close these access panels:

<u>Number</u>	<u>Name/Location</u>
521BB	Engine Fuel Valve Shutoff Access Panel - Slat Station 27
621BB	Engine Fuel Valve Shutoff Access Panel - Slat Station 27

SUBTASK 30-11-12-020-005



WARNING

OBEY THE PROCEDURE TO ACTIVATE LEADING EDGE SLATS. DAMAGE TO EQUIPMENT AND INJURIES TO PERSONNEL CAN OCCUR.

- (3) Activate leading edge slats (TASK 27-81-00-440-801).

———— **END OF TASK** ————

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WING ANTI-ICE GROUND OVERHEAT THERMAL SWITCH - REMOVAL/INSTALLATION

1. **General**

A. This procedure has these tasks:

- (1) Wing Anti-Ice Ground Overheat Thermal Switch Removal
- (2) Wing Anti-Ice Ground Overheat Thermal Switch Installation

TASK 30-11-21-000-801

2. **Wing Anti-Ice Ground Overheat Thermal Switch Removal**

(Figure 401)

A. **General**

- (1) This task gives instructions to remove the Wing Anti-Ice Ground Overheat Thermal Switch.

B. **References**

Reference	Title
27-81-00-040-801	Leading Edge Flaps and Slats - Deactivation (P/B 201)
36-00-00-860-806	Remove Pressure from the Pneumatic System (P/B 201)

C. **Tools/Equipment**

Reference	Description
STD-858	Tag - DO NOT OPERATE

D. **Location Zones**

Zone	Area
521	Left Wing - Leading Edge to Front Spar
621	Right Wing - Leading Edge to Front Spar

E. **Access Panels**

Number	Name/Location
521BB	Engine Fuel Valve Shutoff Access Panel - Slat Station 27
621BB	Engine Fuel Valve Shutoff Access Panel - Slat Station 27

F. **Prepare for the Removal**

SUBTASK 30-11-21-860-001



WARNING

OBEY THE PROCEDURE TO DEACTIVATE LEADING EDGE SLATS. DAMAGE TO EQUIPMENT AND INJURIES TO PERSONNEL CAN OCCUR.

- (1) Deactivate the leading edge slats (TASK 27-81-00-040-801).

SUBTASK 30-11-21-040-002



WARNING

OBEY THE PROCEDURE TO REMOVE PRESSURE FROM THE PNEUMATIC SYSTEM. DAMAGE TO EQUIPMENT AND INJURIES TO PERSONNEL CAN OCCUR.

- (2) If the aircraft pneumatic system is pressurized, remove the pneumatic air from the system (TASK 36-00-00-860-806).

SUBTASK 30-11-21-040-001

- (3) Do these steps to deactivate the Wing Thermal Anti-Ice System:

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- (a) Set the WING ANTI-ICE switch on the P5-11 engine and wing anti-ice panel, to the OFF position.
- (b) Make sure that the L VALVE and R VALVE lights are off.
- (c) Install DO NOT OPERATE tag, STD-858 on the WING ANTI-ICE switch on the P5-11 engine and wing anti-ice panel.

SUBTASK 30-11-21-860-002

- (4) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	1	C04012	ANTI-ICE & RAIN WING ANTI-ICE VALVE
B	2	C04063	ANTI-ICE & RAIN WING ANTI-ICE VALVE-L
B	4	C04064	ANTI-ICE & RAIN WING ANTI-ICE VALVE-R

SUBTASK 30-11-21-010-001

- (5) Open the applicable access panels:

<u>Number</u>	<u>Name/Location</u>
521BB	Engine Fuel Valve Shutoff Access Panel - Slat Station 27
621BB	Engine Fuel Valve Shutoff Access Panel - Slat Station 27

G. Wing Anti-Ice Ground Overheat Thermal Switch Removal

SUBTASK 30-11-21-020-004

- (1) Remove the lockwire [1] from the thermal switch [3].

SUBTASK 30-11-21-020-001

- (2) Disconnect the electrical connector [4] from the thermal switch [3].

SUBTASK 30-11-21-020-002

- (3) Remove the thermal switch [3].
 - (a) Discard the o-ring [2].

————— **END OF TASK** —————

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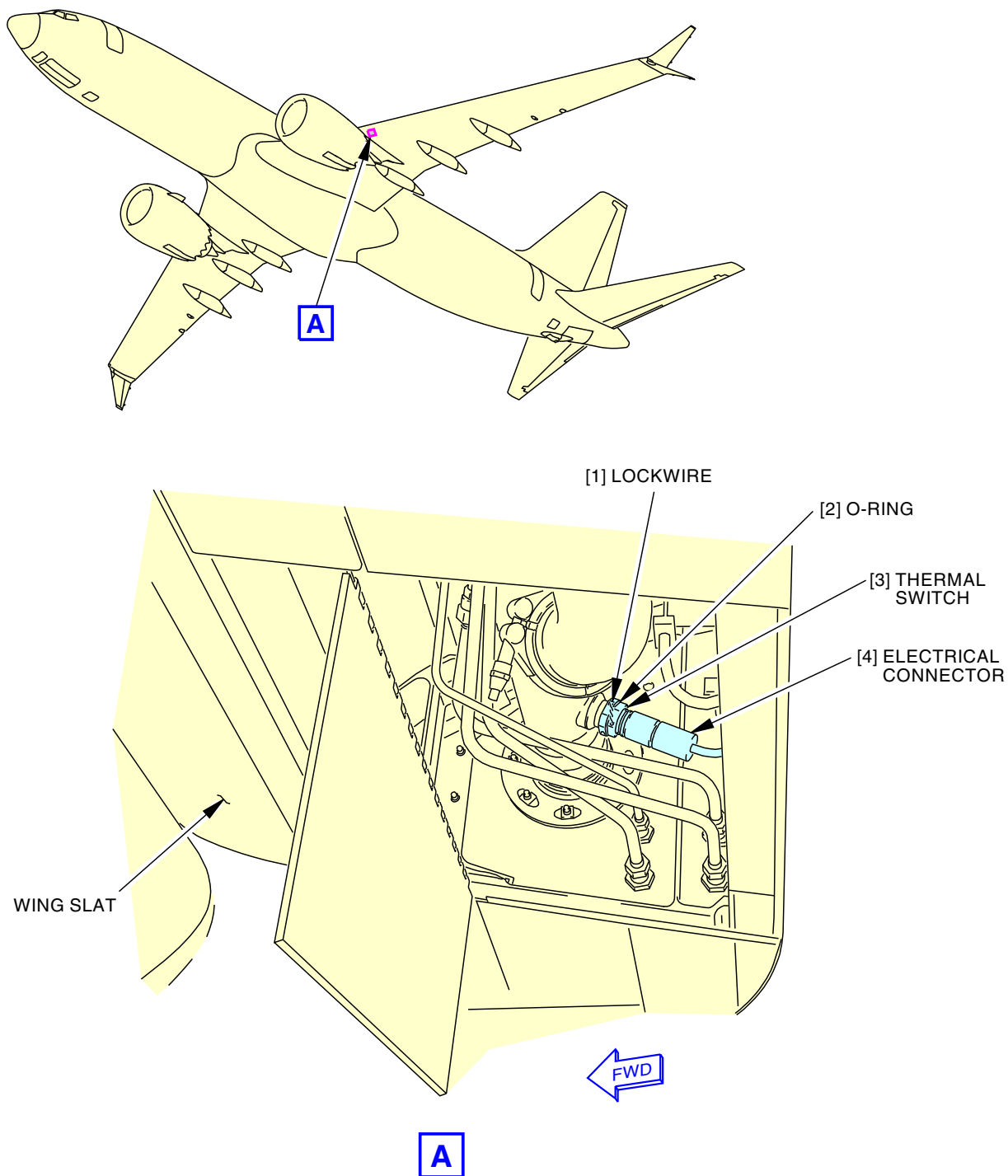
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Wing Anti-Ice Ground Overheat Thermal Switch Installation
Figure 401/30-11-21-990-801

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TASK 30-11-21-400-801

3. Wing Anti-Ice Ground Overheat Thermal Switch Installation

(Figure 401)

A. General

(1) This task gives instructions to install the Wing Anti-Ice Ground Overheat Thermal Switch.

B. References

Reference	Title
27-81-00-440-801	Leading Edge Flaps and Slats - Activation (P/B 201)

C. Consumable Materials

Reference	Description	Specification
D00010	Compound - Thread Antiseize, High Temperature	MIL-PRF-907

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
2	O-ring	30-11-21-01-010	SIA ALL
3	Thermal switch	30-11-21-01-015	SIA ALL

E. Location Zones

Zone	Area
521	Left Wing - Leading Edge to Front Spar
621	Right Wing - Leading Edge to Front Spar

F. Access Panels

Number	Name/Location
521BB	Engine Fuel Valve Shutoff Access Panel - Slat Station 27
621BB	Engine Fuel Valve Shutoff Access Panel - Slat Station 27

G. Wing Anti-Ice Ground Overheat Thermal Switch Installation

SUBTASK 30-11-21-860-003

(1) Make sure that these circuit breakers are open and have safety tags:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
A	1	C04012	ANTI-ICE & RAIN WING ANTI-ICE VALVE
B	2	C04063	ANTI-ICE & RAIN WING ANTI-ICE VALVE-L
B	4	C04064	ANTI-ICE & RAIN WING ANTI-ICE VALVE-R

SUBTASK 30-11-21-420-001

(2) Put compound, D00010, on the threads of the overheat thermal switch [3].

SUBTASK 30-11-21-420-002

(3) Install the new o-ring [2] on the thermal switch [3].

SUBTASK 30-11-21-400-001

(4) Install the thermal switch [3] into the duct boss.

(a) Tighten the thermal switch [3] to 90 ±10 in-lb (10 ±1 N·m).

SUBTASK 30-11-21-420-003

(5) Install the lockwire [1] on the thermal switch [3].

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SUBTASK 30-11-21-420-006

- (6) Connect the electrical connector [4] to the thermal switch [3].

SUBTASK 30-11-21-860-005

- (7) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	1	C04012	ANTI-ICE & RAIN WING ANTI-ICE VALVE
B	2	C04063	ANTI-ICE & RAIN WING ANTI-ICE VALVE-L
B	4	C04064	ANTI-ICE & RAIN WING ANTI-ICE VALVE-R

SUBTASK 30-11-21-440-001

- (8) Do the step to activate Wing Thermal Anti-Ice System:
- (a) Remove DO NOT OPERATE tag from the WING ANTI-ICE switch on the P5-11 engine and wing anti-ice panel.

H. Put the Airplane Back to Its Usual Condition

SUBTASK 30-11-21-410-001

- (1) Close the applicable panels:

<u>Number</u>	<u>Name/Location</u>
521BB	Engine Fuel Valve Shutoff Access Panel - Slat Station 27
621BB	Engine Fuel Valve Shutoff Access Panel - Slat Station 27

SUBTASK 30-11-21-840-001



OBEY THE PROCEDURE TO ACTIVATE LEADING EDGE SLATS. DAMAGE TO EQUIPMENT AND INJURIES TO PERSONNEL CAN OCCUR.

- (2) Activate leading edge slats (TASK 27-81-00-440-801).

————— **END OF TASK** —————

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WING ANTI-ICE TELESCOPING DUCT - REMOVAL/INSTALLATION

1. **General**

- A. This procedure has these tasks:
- (1) A removal of the wing anti-ice telescoping duct seal
 - (2) An installation of the wing anti-ice telescoping duct seal
 - (3) A removal of the wing anti-ice telescoping duct
 - (4) An installation of the wing anti-ice telescoping duct.
- B. The telescoping ducts connect the wing TAI manifold in the wing leading edge to each of the slat spray tubes. Each telescoping duct assembly has an inner and an outer duct. The inner duct attaches to the wing manifold and the outer duct attaches to the slat spray duct. There are seals between the inner and outer ducts and seals where the inner duct swivel in the fixed leading edge. The installation of all the telescoping ducts and seals are similar.
- C. For this procedure, the leading edge slats are installed in the extended position. To replace the seals with the slat removed, some steps of this procedure are not necessary.

TASK 30-11-31-000-801

2. **Wing Anti-Ice Telescoping Duct Seal Removal**

(Figure 401)

A. **General**

- (1) This task gives instructions to remove the Wing Anti-Ice Telescoping Duct Seal.

B. **References**

Reference	Title
27-81-00-480-801	Leading Edge Flap and Slat Locks Installation (P/B 201)
27-81-00-860-803	Leading Edge Flaps and Slats Extension (P/B 201)
57-41-02-000-801	Leading Edge Access Panel Removal (P/B 201)

C. **Tools/Equipment**

Reference	Description
STD-858	Tag - DO NOT OPERATE

D. **Location Zones**

Zone	Area
520	Subzone - Left Wing: Leading Edge, Fwd of Front Spar, Outboard of Strut and Nacelle Gap Cover Area
620	Subzone - Right Wing: Leading Edge, Forward of Front Spar, Outboard of Nacelle Strut

E. **Access Panels**

Number	Name/Location
521DB	Lower Leading Edge Access Panel - Slat Station 70
521KB	Lower Leading Edge Access Panel - Slat Station 179
521RB	Lower Leading Edge Access Panel - Slat Station 298
621DB	Lower Leading Edge Access Panel - Slat Station 70
621JB	Lower Leading Edge Access Panel - Slat Station 161
621QB	Lower Leading Edge Access Panel - Slat Station 280

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F. Prepare for the Removal

SUBTASK 30-11-31-040-001

- (1) Do these steps to deactivate the Wing Thermal Anti-Ice System:
 - (a) Set the WING ANTI-ICE switch on the P5-11 engine and wing anti-ice panel, to the OFF position.
 - (b) Make sure that the L VALVE and R VALVE lights are off.
 - (c) Install DO NOT OPERATE tag, STD-858 on the WING ANTI-ICE switch on the P5-11 engine and wing anti-ice panel.

SUBTASK 30-11-31-860-001



MAKE SURE THAT PERSONNEL AND EQUIPMENT STAY AWAY FROM THE LEADING EDGE SLATS, TRAILING EDGE FLAPS, AND DRIVE MECHANISMS. THE FLAPS, SLATS, AND DRIVE MECHANISMS MOVE QUICKLY. THIS CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

- (2) Extend the leading edge slat (TASK 27-81-00-860-803).

SUBTASK 30-11-31-860-002



INSTALL LEADING EDGE SLAT ACTUATOR LOCKS. LEADING EDGE SLATS CAN CAUSE INJURY TO PERSONNEL AND DAMAGE TO EQUIPMENT.

- (3) Install the leading edge slat actuator locks (TASK 27-81-00-480-801).

SUBTASK 30-11-31-010-005

- (4) To get access to the telescoping duct, remove these panels (TASK 57-41-02-000-801).
 - (a) For the left wing, open these access panels:

<u>Number</u>	<u>Name/Location</u>
521DB	Lower Leading Edge Access Panel - Slat Station 70
521KB	Lower Leading Edge Access Panel - Slat Station 179
521RB	Lower Leading Edge Access Panel - Slat Station 298
 - (b) For the right wing, open these access panels:

<u>Number</u>	<u>Name/Location</u>
621DB	Lower Leading Edge Access Panel - Slat Station 70
621JB	Lower Leading Edge Access Panel - Slat Station 161
621QB	Lower Leading Edge Access Panel - Slat Station 280

G. Wing Anti-Ice Telescoping Duct Seal Removal

SUBTASK 30-11-31-020-009



DO NOT LET OBJECTS GET IN THE HOUSING ASSEMBLY OF THE SLAT TRACK. THIS WILL HELP PREVENT A PUNCTURE OF THE HOUSING ASSEMBLY THAT COULD CAUSE A FUEL LEAK. THE FUEL LEAK COULD CAUSE A FIRE AND POSSIBLE DEATH OR INJURY TO PERSONNEL.

- (1) Do these steps to remove the supply ducts [6], bearing [10], and bearing [14]:
 - (a) Remove the bolt [16], bolt [17], bolt [18], and washers [15].
 - (b) Disconnect the clamp [5] from one side of the supply duct [6].
 - 1) Remove the section from the supply ducts [6].

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- (c) Remove the bearing [10] and bearing [14].

SUBTASK 30-11-31-020-010

- (2) Turn the inner telescoping duct [1] 90 degrees and lower the duct from the wing.

SUBTASK 30-11-31-020-011

- (3) Remove the O-ring [11], O-rings [12], or O-ring [13] from the swivel joint of the inner telescoping duct [1].

SUBTASK 30-11-31-020-012

- (4) Discard the O-ring [11], O-rings [12], and O-ring [13].

SUBTASK 30-11-31-020-002

- (5) Pull the inner telescoping duct [1] from the outer telescoping duct [26].

SUBTASK 30-11-31-020-003

- (6) Disassemble the telescoping duct seal.
- (a) Remove the lockwire [3].
 - (b) Loosen the cap nut [4].
 - (c) Remove the cap nut [4], back up rings [2], ring [7], seal [8], and retainer [9].

———— **END OF TASK** ————

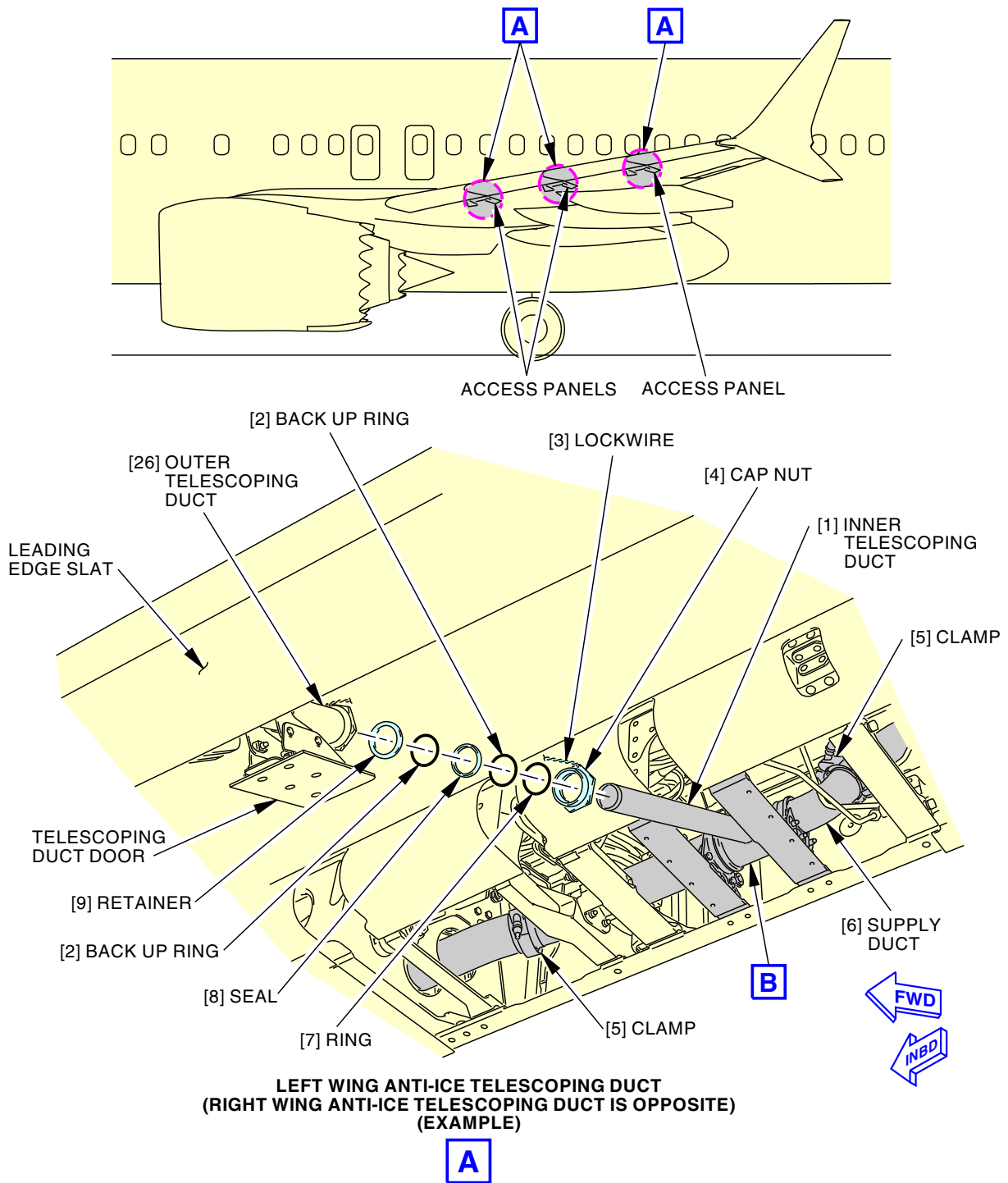
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Wing Anti-Icing Telescoping Duct Seal Installation
Figure 401/30-11-31-990-801 (Sheet 1 of 2)

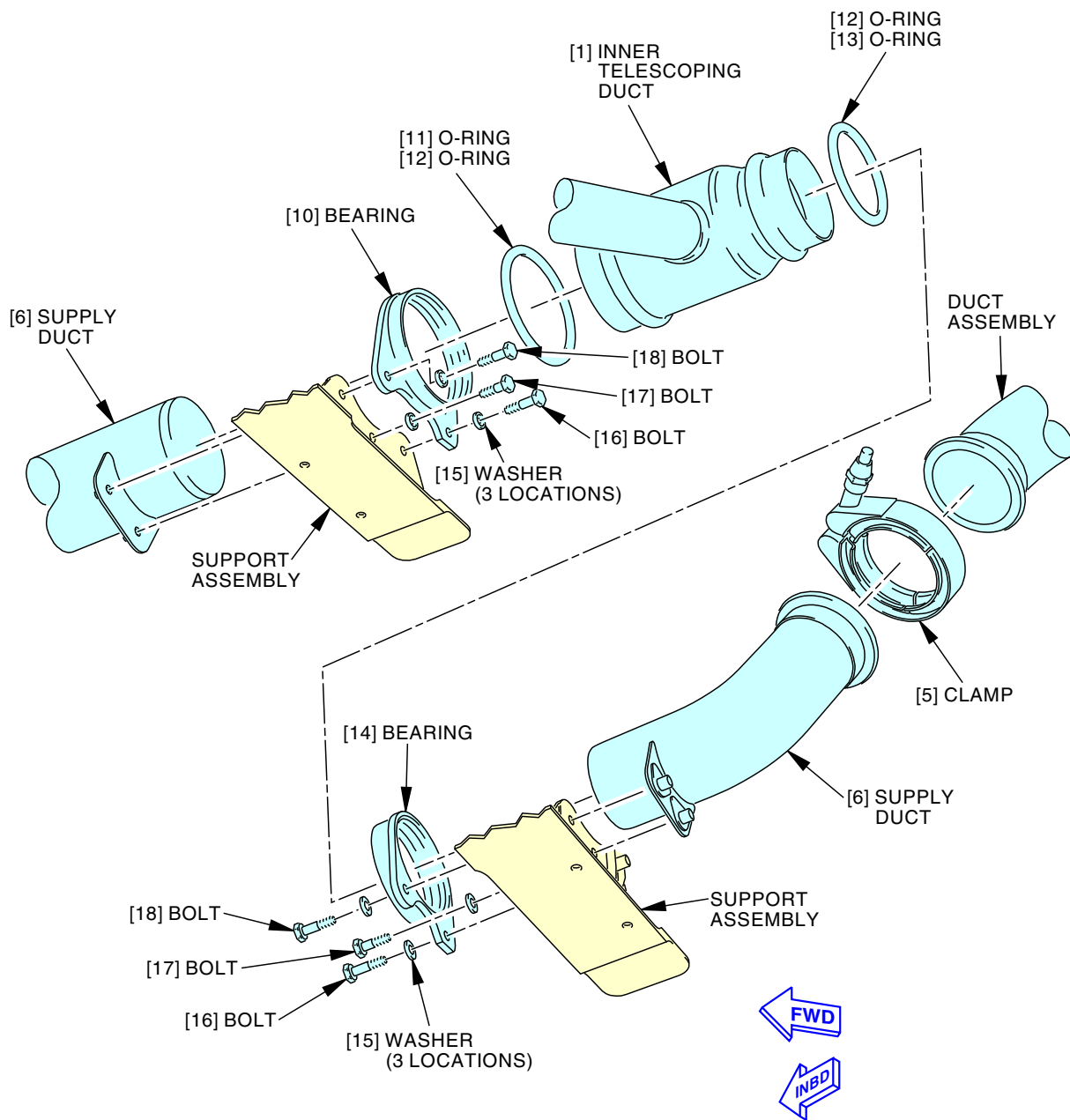
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Wing Anti-Icing Telescoping Duct Seal Installation
Figure 401/30-11-31-990-801 (Sheet 2 of 2)

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TASK 30-11-31-400-801

3. Wing Anti-Ice Telescoping Duct Seal Installation

(Figure 401)

A. General

(1) This task gives instructions to install the Wing Anti-Ice Telescoping Duct Seal.

B. References

Reference	Title
20-10-44-400-801	Lockwire, Cotter Pins, and Lockrings - Installation (P/B 401)
20-50-11-910-801	Standard Torque Values (P/B 201)
27-81-00-080-801	Leading Edge Flap and Slat Locks Removal (P/B 201)
27-81-00-480-801	Leading Edge Flap and Slat Locks Installation (P/B 201)
30-11-00-790-801	Wing Thermal Anti-Ice - Duct Leak Test (P/B 501)
57-41-02-400-801	Leading Edge Access Panel Installation (P/B 201)
SWPM 20-20-00	ELECTRICAL BONDING PROCESSES

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt.", which stands for Optional.

Reference	Description
COM-1550	Bonding Meter - Approved, Intrinsically Safe (Approved for use in Class I, Divisions I & II hazardous (classified) locations. Outside these hazardous locations, COM-614 can be used in lieu of COM-1550). Part #: 620LK Supplier: 1CRL2 Part #: M1 Supplier: 3AD17 Part #: M1B Supplier: 3AD17 Part #: T477W (C15292) Supplier: 06659

D. Consumable Materials

Reference	Description	Specification
A50231	Sealant - Pressure And Environmental - Chromate Type	BMS5-95 Class B
B00130	Alcohol - Isopropyl	TT-I-735
D00013	Grease - Aircraft And Instrument Grease	MIL-PRF-23827 (NATO G-354) (Supersedes MIL-G-23827)
D00189	Compound - Molykote 111 (Formerly Dow Corning 111, Valve Sealant and Lubricant)	
D00254	Compound - Silicone	SAE AS8660 (NATO S-736) (Supersedes MIL-S-8660)
G00034	Cotton Wiper - Process Cleaning Absorbent Wiper (Cheesecloth, Gauze)	AMS3819 Class 1 Grade A or B Form 1 (Supersede BMS15-5 CLA)
G50347	Lockwire - MS20995NC32, Monel - 0.032 Inch (0.8128 mm) Diameter	NASM20995

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Reference	Description	Specification
G50470	Compound - Electrical Insulating (Dow Corning 4)	SAE AS8660 (Supersedes MIL-S-8660)

E. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Inner telescoping duct	30-11-31-01-090	SIA ALL
		30-11-31-01-095	SIA ALL
		30-11-31-01-100	SIA ALL
8	Seal	30-11-31-10-020	SIA ALL
11	O-ring	30-11-31-02A-090	SIA ALL
12	O-ring	30-11-31-02A-090	SIA ALL
13	O-ring	30-11-31-02A-090	SIA ALL

F. Location Zones

Zone	Area
520	Subzone - Left Wing: Leading Edge, Fwd of Front Spar, Outboard of Strut and Nacelle Gap Cover Area
620	Subzone - Right Wing: Leading Edge, Forward of Front Spar, Outboard of Nacelle Strut

G. Access Panels

Number	Name/Location
521DB	Lower Leading Edge Access Panel - Slat Station 70
521KB	Lower Leading Edge Access Panel - Slat Station 179
521RB	Lower Leading Edge Access Panel - Slat Station 298
621DB	Lower Leading Edge Access Panel - Slat Station 70
621JB	Lower Leading Edge Access Panel - Slat Station 161
621QB	Lower Leading Edge Access Panel - Slat Station 280

H. Wing Anti-Ice Telescoping Duct Seal Installation

SUBTASK 30-11-31-860-003



WARNING

INSTALL LEADING EDGE SLAT ACTUATOR LOCKS. LEADING EDGE SLATS CAN CAUSE INJURY TO PERSONNEL AND DAMAGE TO EQUIPMENT.

- (1) If the actuator locks are not installed, do this task: Leading Edge Flap and Slat Locks Installation, TASK 27-81-00-480-801.

SUBTASK 30-11-31-420-001

- (2) Assemble the telescoping duct seal.
- (a) Put grease, D00013, on the inside diameter of the outer duct assembly.
 - (b) Put the retainer [9], back up rings [2], seal [8], ring [7], and cap nut [4] on the inner telescoping duct [1] in the correct sequence (Figure 401).
 - (c) Tighten the cap nut [4] to 250.0 in-lb (28.2 N·m) - 370.0 in-lb (41.8 N·m).
 - (d) Put the lockwire [3] (MS20995NC32 lockwire, G50347) on the cap nut [4] (TASK 20-10-44-400-801).

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SUBTASK 30-11-31-420-010

- (3) Apply Molykote 111 Compound, D00189, or Compound, G50470, to the new O-ring [11], new O-ring [12], and new O-ring [13].

SUBTASK 30-11-31-420-011

- (4) Install the new O-ring [11], new O-rings [12], or new O-ring [13], as necessary, on the swivel joint of the inner telescoping duct [1].

NOTE: If it is necessary use silicone compound, D00254, on the O-rings to make installation easier.

SUBTASK 30-11-31-420-012

- (5) Do these steps to install the inner telescoping duct [1]:
 - (a) Put the bearing [10] and bearing [14] on the ends of the inner telescoping duct [1].
 - (b) Put the inner telescoping duct [1] into position.
 - (c) Install the bolts [16] and washers [15].

NOTE: Do not tighten the bolts until after the supply duct is installed.

SUBTASK 30-11-31-420-013

- (6) Do these steps to install the supply duct [6]:
 - (a) Clean the mating surfaces of the supply duct [6] tab and support assembly (SWPM 20-20-00).
 - 1) Use cotton wiper, G00034, made moist with alcohol, B00130.
 - 2) Immediately dry the surfaces with a new cotton wiper, G00034.
 - (b) Apply a bead of sealant, A50231, along the top edge of the support assembly and bearings.
 - (c) Put the supply duct [6] into position.
 - (d) Install the bolts [17], bolts [18], and washers [15].
 - (e) Tighten the bolts [16], bolts [17], and bolts [18].
 - (f) Measure the electrical bonding resistance between the supply duct [6] tab and support assembly (SWPM 20-20-00).
 - 1) Use an intrinsically safe approved bonding meter, COM-1550.
 - 2) Make sure that the electrical bonding resistance is 0.00070 ohms (0.70 milliohms) or less.
 - (g) Fillet seal the supply duct [6] tab with sealant, A50231.
 - (h) Position the clamps [5] so that there is a clearance of at least 0.2 in. (5.1 mm) from any adjacent structure.
 - 1) Tighten the clamps [5] (TASK 20-50-11-910-801).

I. Wing Anti-Ice Telescoping Duct Seal Installation Test

SUBTASK 30-11-31-440-001

- (1) Do the step to activate Wing Thermal Anti-Ice System:
 - (a) Remove DO NOT OPERATE tag from the WING ANTI-ICE switch on the P5-11 engine and wing anti-ice panel.

SUBTASK 30-11-31-710-001

- (2) Do this task: Wing Thermal Anti-Ice - Duct Leak Test, TASK 30-11-00-790-801.

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J. Put the Airplane Back to Its Usual Condition

SUBTASK 30-11-31-410-006

(1) If it is necessary to install these panels, do this task: Leading Edge Access Panel Installation, TASK 57-41-02-400-801.

(a) For the left wing, close these access panels:

<u>Number</u>	<u>Name/Location</u>
521DB	Lower Leading Edge Access Panel - Slat Station 70
521KB	Lower Leading Edge Access Panel - Slat Station 179
521RB	Lower Leading Edge Access Panel - Slat Station 298

(b) For the right wing, close these access panels:

<u>Number</u>	<u>Name/Location</u>
621DB	Lower Leading Edge Access Panel - Slat Station 70
621JB	Lower Leading Edge Access Panel - Slat Station 161
621QB	Lower Leading Edge Access Panel - Slat Station 280

SUBTASK 30-11-31-440-002



REMOVE LEADING EDGE ACTUATOR LOCKS. LEADING EDGE SLATS CAN CAUSE INJURY TO PERSONNEL AND DAMAGE TO EQUIPMENT.

(2) Do this task: Leading Edge Flap and Slat Locks Removal, TASK 27-81-00-080-801.

————— END OF TASK —————

TASK 30-11-31-000-802

4. Wing Anti-Ice Telescoping Duct Removal

(Figure 402)

A. General

(1) This task gives instructions to remove the Wing Anti-Ice Telescoping Duct.

B. References

<u>Reference</u>	<u>Title</u>
27-81-00 P/B 201	LEADING EDGE FLAP AND SLAT CONTROL SYSTEM - MAINTENANCE PRACTICES
27-81-00-480-801	Leading Edge Flap and Slat Locks Installation (P/B 201)
27-81-00-860-803	Leading Edge Flaps and Slats Extension (P/B 201)
57-41-02-000-801	Leading Edge Access Panel Removal (P/B 201)

C. Tools/Equipment

<u>Reference</u>	<u>Description</u>
STD-858	Tag - DO NOT OPERATE

D. Location Zones

<u>Zone</u>	<u>Area</u>
520	Subzone - Left Wing: Leading Edge, Fwd of Front Spar, Outboard of Strut and Nacelle Gap Cover Area
620	Subzone - Right Wing: Leading Edge, Forward of Front Spar, Outboard of Nacelle Strut

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E. Access Panels

Number	Name/Location
521DB	Lower Leading Edge Access Panel - Slat Station 70
521KB	Lower Leading Edge Access Panel - Slat Station 179
521RB	Lower Leading Edge Access Panel - Slat Station 298
522CB	Slat No. 4 - Cove Skin
523CB	Slat No. 3 - Cove Skin
524CB	Slat No. 2 - Cove Skin
621DB	Lower Leading Edge Access Panel - Slat Station 70
621JB	Lower Leading Edge Access Panel - Slat Station 161
621QB	Lower Leading Edge Access Panel - Slat Station 280
622CB	Slat No. 5 - Cove Skin
623CB	Slat No. 6 - Cove Skin
624CB	Slat No. 7 - Cove Skin

F. Prepare for the Removal

SUBTASK 30-11-31-040-002

- (1) Do these steps to deactivate the Wing Thermal Anti-Ice System:
 - (a) Set the WING ANTI-ICE switch on the P5-11 engine and wing anti-ice panel, to the OFF position.
 - (b) Make sure that the L VALVE and R VALVE lights are off.
 - (c) Install DO NOT OPERATE tag, STD-858 on the WING ANTI-ICE switch on the P5-11 engine and wing anti-ice panel.

SUBTASK 30-11-31-860-004



MAKE SURE THAT PERSONNEL AND EQUIPMENT STAY AWAY FROM THE LEADING EDGE SLATS, TRAILING EDGE FLAPS, AND DRIVE MECHANISMS. THE FLAPS, SLATS, AND DRIVE MECHANISMS MOVE QUICKLY. THIS CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

- (2) Extend the leading edge slat to the intermediate position (extended position), do this task: Leading Edge Flaps and Slats Extension, TASK 27-81-00-860-803.

SUBTASK 30-11-31-420-003



INSTALL LEADING EDGE SLAT ACTUATOR LOCKS. LEADING EDGE SLATS CAN CAUSE INJURY TO PERSONNEL AND DAMAGE TO EQUIPMENT.

- (3) Install the leading edge slat actuator locks, do this task: Leading Edge Flap and Slat Locks Installation, TASK 27-81-00-480-801.

SUBTASK 30-11-31-010-006

- (4) To get access to the telescoping duct, remove these panels (TASK 57-41-02-000-801).
 - (a) For the left wing, open these access panels:

Number	Name/Location
521DB	Lower Leading Edge Access Panel - Slat Station 70
521KB	Lower Leading Edge Access Panel - Slat Station 179
521RB	Lower Leading Edge Access Panel - Slat Station 298

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- (b) For the right wing, open these access panels:

<u>Number</u>	<u>Name/Location</u>
621DB	Lower Leading Edge Access Panel - Slat Station 70
621JB	Lower Leading Edge Access Panel - Slat Station 161
621QB	Lower Leading Edge Access Panel - Slat Station 280

SUBTASK 30-11-31-020-004

- (5) Remove the bracket [39] from the outer telescoping duct [26].

- (a) Remove the nut [48], ground strap [40], washers [47], and bolt [46].
- (b) Remove the nut [42], washers [41], and bolt [38].
- (c) Remove the washers [45] and bolts [44].

NOTE: The following procedure is applicable to slats 2 through 7, unless otherwise stated.

SUBTASK 30-11-31-200-001



DO NOT LET OBJECTS GET IN THE HOUSING ASSEMBLY OF THE SLAT TRACK. THIS WILL HELP PREVENT A PUNCTURE OF THE HOUSING ASSEMBLY THAT COULD CAUSE A FUEL LEAK. THE FUEL LEAK COULD CAUSE A FIRE AND POSSIBLE DEATH OR INJURY TO PERSONNEL.

- (6) Keep clean and free of all unwanted objects (Foreign Object Debris (FOD)), the housing (can) assemblies of the slat main tracks, at all time.

G. Outer Telescoping Duct Removal

SUBTASK 30-11-31-010-003

- (1) Do these steps to remove the inner skin panel from the outer slat.

- (a) Remove the backup plates [28].

NOTE: The backup plates hold the assembly seal.

- (b) Remove the seal [20].
- (c) Remove the applicable cover panel [21]:

- 1) Open these access panels:

<u>Number</u>	<u>Name/Location</u>
522CB	Slat No. 4 - Cove Skin
523CB	Slat No. 3 - Cove Skin
524CB	Slat No. 2 - Cove Skin
622CB	Slat No. 5 - Cove Skin
623CB	Slat No. 6 - Cove Skin
624CB	Slat No. 7 - Cove Skin

SUBTASK 30-11-31-010-004

- (2) Do this step to remove the access door from the outer slat.

- (a) Remove the cover plate [22].

SUBTASK 30-11-31-020-005

- (3) Do these steps to remove the blade seal [24]:

- (a) Remove the retaining bolts [32].
- (b) Remove the washers [33], sleeves [34], springs [35], spacers [36], and spring retainers [37].

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SUBTASK 30-11-31-030-001

- (4) Remove the retaining bolts [25] and washers [43] from the spray duct [27] on both ends of the slat.

SUBTASK 30-11-31-030-002

- (5) Move the spray duct [27] out from the rib ends [31] until the outer telescoping duct [26], with the spray duct bearings [19], can be removed.
 - (a) Remove the outer telescoping duct [26].

NOTE: If there is not sufficient clearance between angle details of the leading edge to remove the duct, do a modification of the leading edge angles (PAGEBLOCK 27-81-00/201).

SUBTASK 30-11-31-030-003

- (6) Remove the spray duct bearings [19].

H. Inner Telescoping Duct Removal

SUBTASK 30-11-31-020-013



DO NOT LET OBJECTS GET IN THE HOUSING ASSEMBLY OF THE SLAT TRACK. THIS WILL HELP PREVENT A PUNCTURE OF THE HOUSING ASSEMBLY THAT COULD CAUSE A FUEL LEAK. THE FUEL LEAK COULD CAUSE A FIRE AND POSSIBLE DEATH OR INJURY TO PERSONNEL.

- (1) Do these steps to remove the supply duct [6], bearing [10], and bearing [14]:
 - (a) Remove the bolt [16], bolt [17], bolt [18], and washers [15].
 - (b) Disconnect the clamp [5] from one side of the supply duct [6].
 - 1) Remove the section from the supply ducts [6].
 - (c) Remove the bearing [10] and bearing [14].

SUBTASK 30-11-31-020-014

- (2) Turn the inner telescoping duct [1] 90 degrees and lower the duct from the wing.

SUBTASK 30-11-31-020-015

- (3) Remove the O-ring [11], O-rings [12], or O-ring [13] from the swivel joint of the inner telescoping duct [1].

SUBTASK 30-11-31-020-016

- (4) Discard the O-ring [11], O-rings [12], and O-ring [13].

————— **END OF TASK** —————

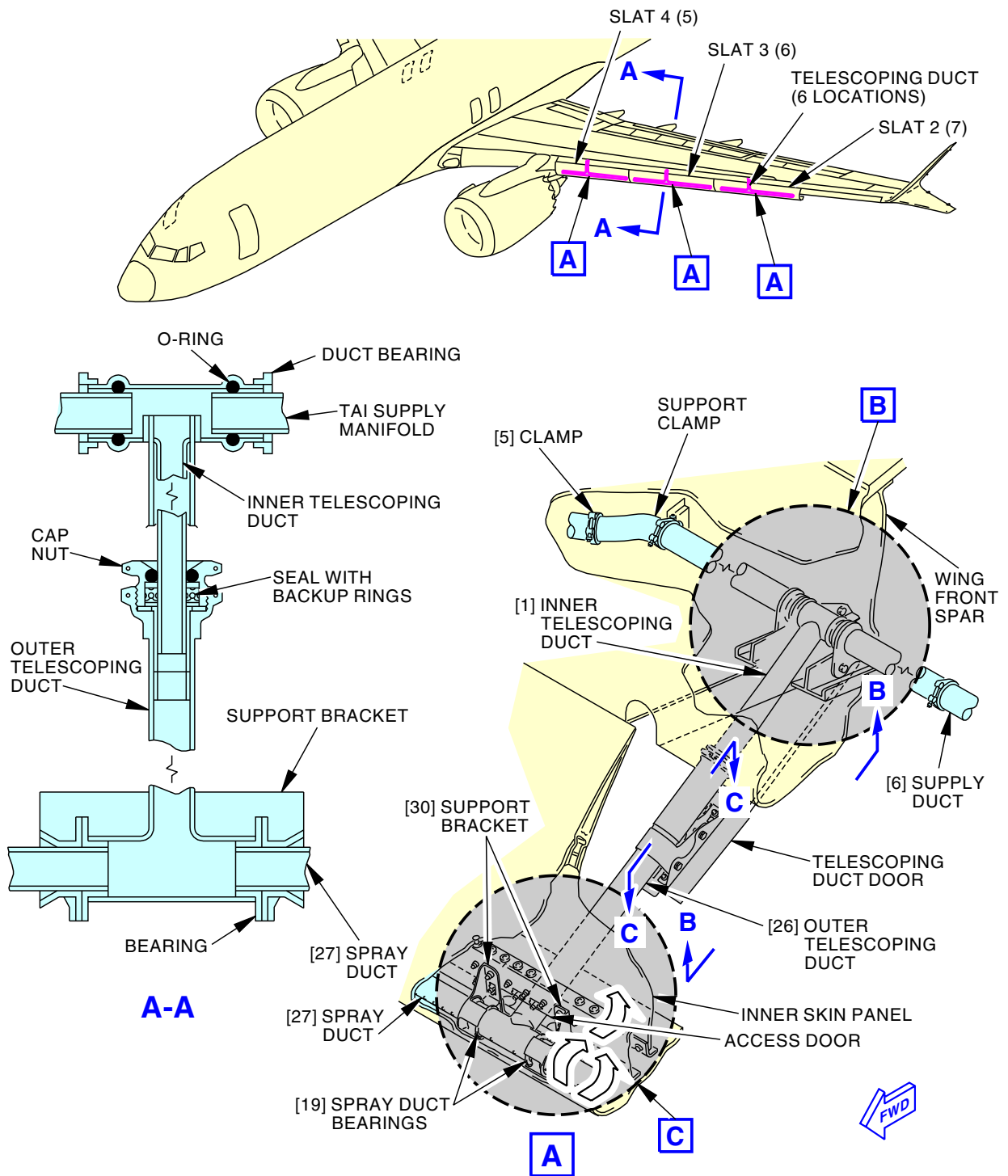
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2413894 S00061533714_V1

Wing Anti-Icing Telescoping Duct Installation
Figure 402/30-11-31-990-802 (Sheet 1 of 5)

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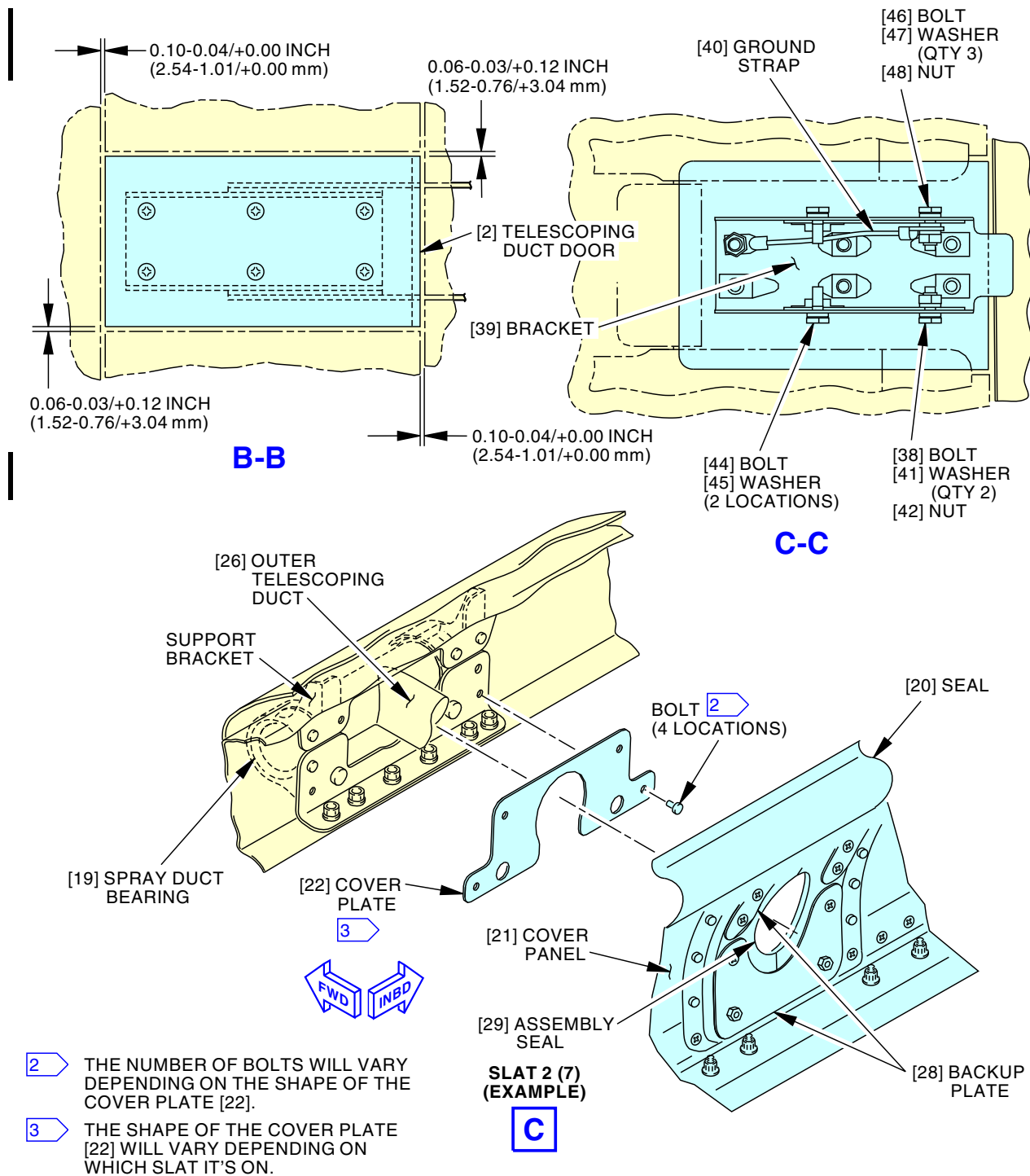
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2413895 S00061533715_V2

Wing Anti-Icing Telescoping Duct Installation
Figure 402/30-11-31-990-802 (Sheet 2 of 5)

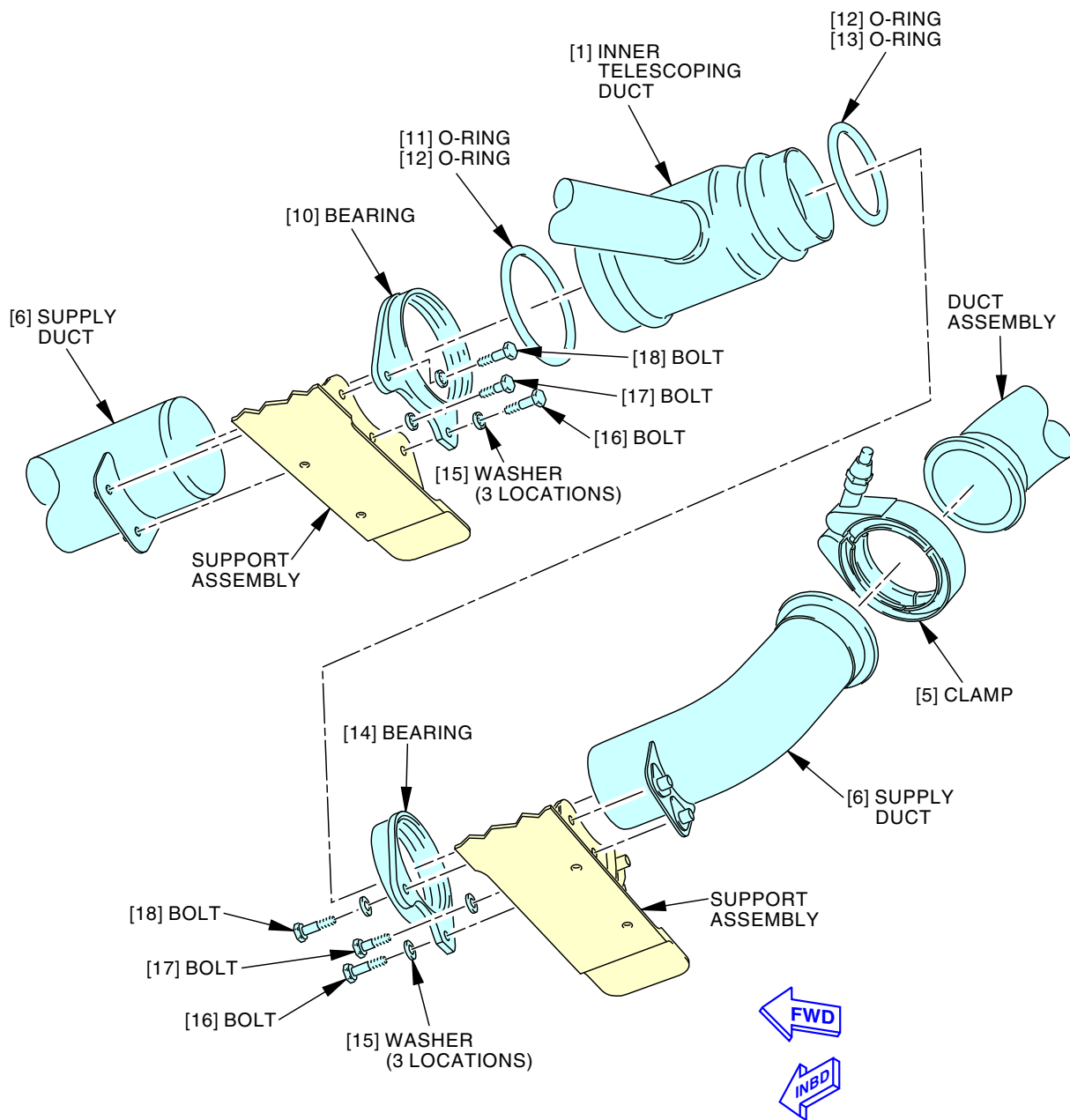
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B

2413893 S00061533711_V1

**Wing Anti-Icing Telescoping Duct Installation
Figure 402/30-11-31-990-802 (Sheet 3 of 5)**

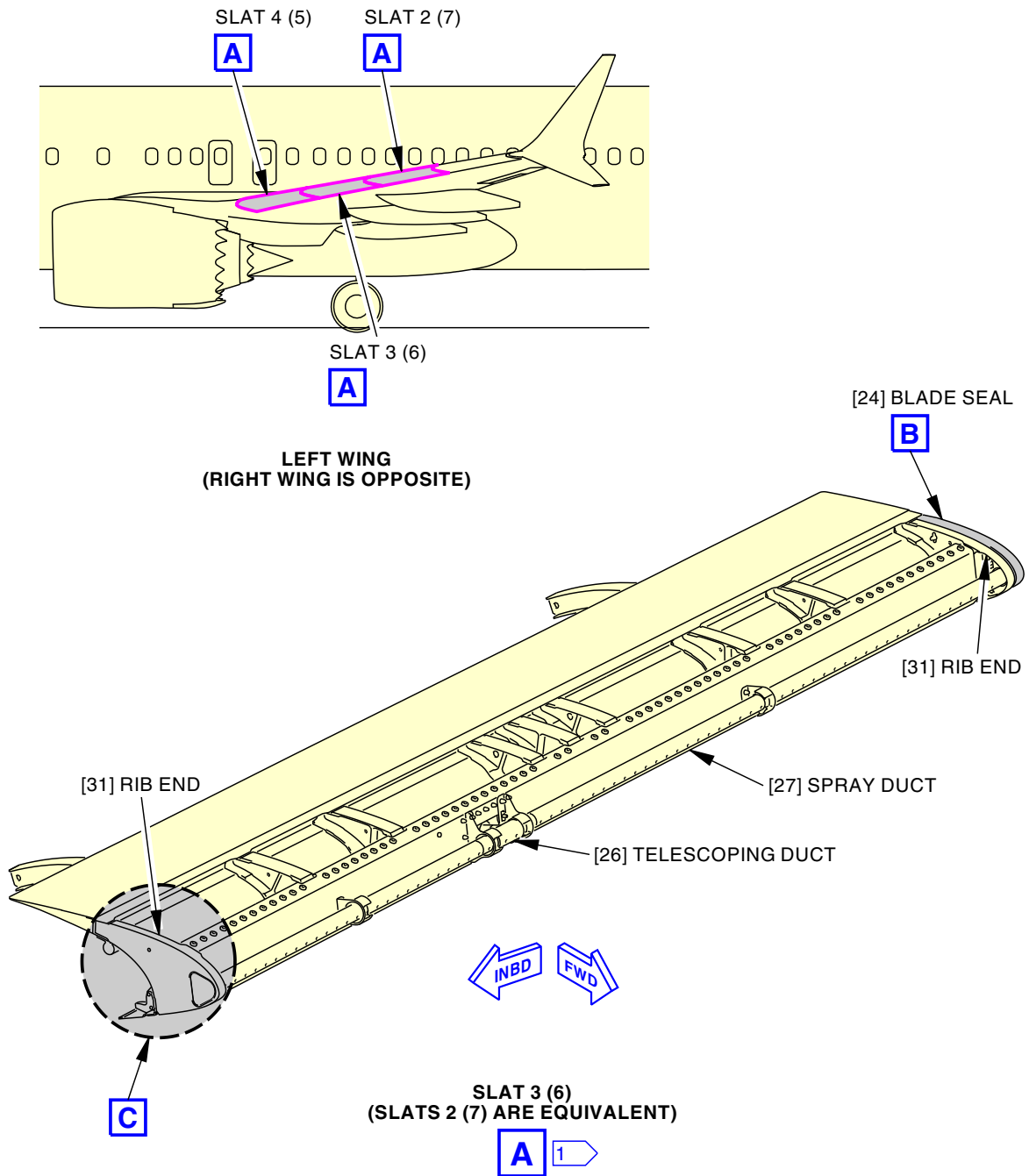
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1 SLAT 4 (5) HAVE THE BLADE SEAL [24] ON BOTH ENDS OF THE SLAT.

2413896 S00061533716_V1

**Wing Anti-Icing Telescoping Duct Installation
Figure 402/30-11-31-990-802 (Sheet 4 of 5)**

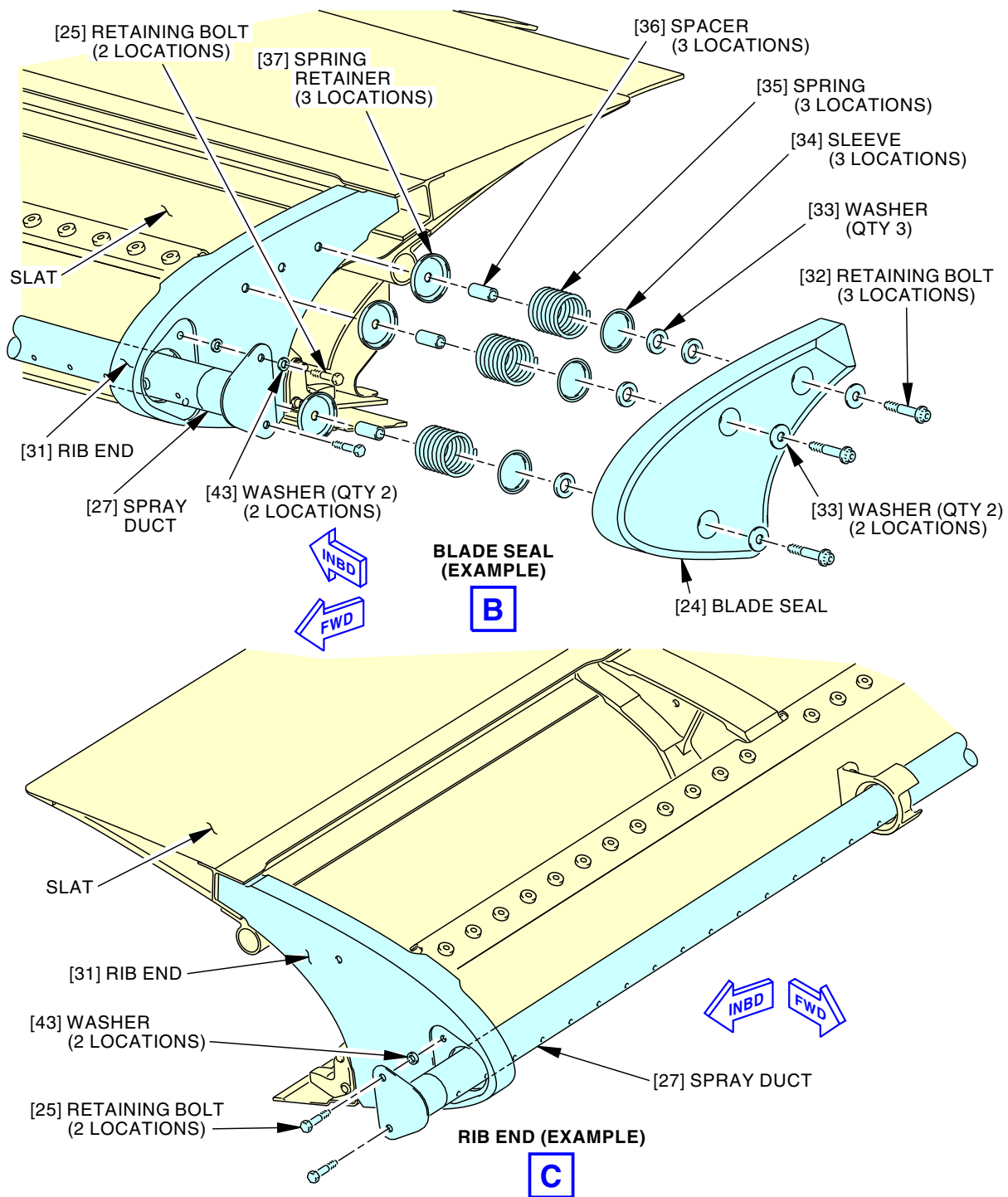
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Wing Anti-Icing Telescoping Duct Installation
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TASK 30-11-31-400-802

5. Wing Anti-Ice Telescoping Duct Installation

(Figure 402)

A. General

(1) This task gives instructions to install the Wing Anti-Ice Telescoping Duct.

B. References

Reference	Title
20-50-11-910-801	Standard Torque Values (P/B 201)
27-81-00-080-801	Leading Edge Flap and Slat Locks Removal (P/B 201)
27-81-00-480-801	Leading Edge Flap and Slat Locks Installation (P/B 201)
27-81-00-860-804	Leading Edge Flaps and Slats Retraction (P/B 201)
30-11-00-790-801	Wing Thermal Anti-Ice - Duct Leak Test (P/B 501)
57-41-02-400-801	Leading Edge Access Panel Installation (P/B 201)
SWPM 20-20-00	ELECTRICAL BONDING PROCESSES

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt.", which stands for Optional.

Reference	Description
COM-1550	Bonding Meter - Approved, Intrinsically Safe (Approved for use in Class I, Divisions I & II hazardous (classified) locations. Outside these hazardous locations, COM-614 can be used in lieu of COM-1550). Part #: 620LK Supplier: 1CRL2 Part #: M1 Supplier: 3AD17 Part #: M1B Supplier: 3AD17 Part #: T477W (C15292) Supplier: 06659

D. Consumable Materials

Reference	Description	Specification
A00160	Sealant - Firewall - Hydraulic Fluid Resistant	BMS5-63
A00900	Sealant - Silicone, RTV - Dow Corning 93-006-1RF (Formerly 93-006-1. Use until Stock depleted)	BMS5-175 Type I Class B-1/2
A50231	Sealant - Pressure And Environmental - Chromate Type	BMS5-95 Class B
B00130	Alcohol - Isopropyl	TT-I-735
C00528	Compound - Corrosion Preventive, Petroleum Hot Application (Soft Film)	MIL-C-11796 Class III
D00189	Compound - Molykote 111 (Formerly Dow Corning 111, Valve Sealant and Lubricant)	
D00254	Compound - Silicone	SAE AS8660 (NATO S-736) (Supersedes MIL-S-8660)

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Reference	Description	Specification
G00034	Cotton Wiper - Process Cleaning Absorbent Wiper (Cheesecloth, Gauze)	AMS3819 Class 1 Grade A or B Form 1 (Supersede BMS15-5 CL A)
G50470	Compound - Electrical Insulating (Dow Corning 4)	SAE AS8660 (Supersedes MIL-S-8660)

E. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Inner telescoping duct	30-11-31-01-090 30-11-31-01-095 30-11-31-01-100	SIA ALL SIA ALL SIA ALL
11	O-ring	30-11-31-02A-090	SIA ALL
12	O-ring	30-11-31-02A-090	SIA ALL
13	O-ring	30-11-31-02A-090	SIA ALL
26	Outer telescoping duct	27-81-21-60-755 27-81-21-60-760	SIA ALL SIA ALL

F. Location Zones

Zone	Area
520	Subzone - Left Wing: Leading Edge, Fwd of Front Spar, Outboard of Strut and Nacelle Gap Cover Area
620	Subzone - Right Wing: Leading Edge, Forward of Front Spar, Outboard of Nacelle Strut

G. Access Panels

Number	Name/Location
521DB	Lower Leading Edge Access Panel - Slat Station 70
521KB	Lower Leading Edge Access Panel - Slat Station 179
521RB	Lower Leading Edge Access Panel - Slat Station 298
522CB	Slat No. 4 - Cove Skin
523CB	Slat No. 3 - Cove Skin
524CB	Slat No. 2 - Cove Skin
621DB	Lower Leading Edge Access Panel - Slat Station 70
621JB	Lower Leading Edge Access Panel - Slat Station 161
621QB	Lower Leading Edge Access Panel - Slat Station 280
622CB	Slat No. 5 - Cove Skin
623CB	Slat No. 6 - Cove Skin
624CB	Slat No. 7 - Cove Skin

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H. Inner Telescoping Duct Installation

SUBTASK 30-11-31-420-004



INSTALL LEADING EDGE SLAT ACTUATOR LOCKS. LEADING EDGE SLATS CAN CAUSE INJURY TO PERSONNEL AND DAMAGE TO EQUIPMENT.

- (1) If the actuator locks are not installed, do this task: Leading Edge Flap and Slat Locks Installation, TASK 27-81-00-480-801.

SUBTASK 30-11-31-420-014

- (2) Apply Molykote 111 Compound, D00189, or Compound, G50470, to the new O-ring [11], new O-ring [12], and new O-ring [13].

SUBTASK 30-11-31-420-015

- (3) Install the new O-ring [11], new O-rings [12], or new O-ring [13], as necessary, on the swivel joint of the inner telescoping duct [1].

NOTE: If it is necessary use silicone compound, D00254, on the O-rings to make installation easier.

SUBTASK 30-11-31-420-016

- (4) Do these steps to install the inner telescoping duct [1]:
- (a) Put the bearing [10] and bearing [14] on the ends of the inner telescoping duct [1].
 - (b) Put the inner telescoping duct [1] into position.
 - (c) Install the bolts [16] and washers [15].

NOTE: Do not tighten the bolts until after the supply duct is installed.

SUBTASK 30-11-31-420-017

- (5) Do this steps to install the supply duct [6]:
- (a) Clean the mating surfaces of the supply duct [6] tab and support assembly (SWPM 20-20-00).
 - 1) Use cotton wiper, G00034, made moist with alcohol, B00130.
 - 2) Immediately dry the surfaces with a new cotton wiper, G00034.
 - (b) Apply a bead of sealant, A50231, along the top edge of the support assembly and the bearings.
 - (c) Put the supply duct [6] into position.
 - (d) Install the bolts [17], bolts [18], and washers [15].
 - (e) Tighten the bolts [16], bolts [17] and bolts [18].
 - (f) Measure the electrical bonding resistance between the supply duct [6] and support assembly (SWPM 20-20-00).
 - 1) Use an intrinsically safe approved bonding meter, COM-1550.
 - 2) Make sure that the electrical bonding resistance is 0.00070 ohms (0.70 milliohms) or less.
 - (g) Fillet seal the supply duct [6] tab with sealant, A50231.
 - (h) Position the clamps [5] so that there is a clearance of at least 0.2 in. (5.1 mm) from any adjacent structure.
 - 1) Tighten the clamps [5] (TASK 20-50-11-910-801).

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I. Outer Telescoping Duct Installation

SUBTASK 30-11-31-430-001

- (1) Put the spray duct bearings [19] on each end of the outer telescoping duct [26].

SUBTASK 30-11-31-430-002

- (2) Put the outer telescoping duct [26] into the support brackets [30].

SUBTASK 30-11-31-430-003

- (3) Do these steps to install the spray duct [27].
- (a) Clean the mating surfaces of the spray duct [27] flange, washers [43], and rib end [31].
 - 1) Use cotton wiper, G00034, made moist with alcohol, B00130.
 - 2) Immediately dry the surfaces with a new cotton wiper, G00034.
 - (b) Install the retaining bolts [25], washers [43], and spray duct [27].

SUBTASK 30-11-31-430-004

- (4) Measure the electrical bonding resistance between the spray duct [27] flange and rib end [31] (SWPM 20-20-00).
- (a) Use an intrinsically safe approved bonding meter, COM-1550.
 - (b) Make sure that the electrical bonding resistance is 0.00070 ohms (0.70 milliohms) or less.

SUBTASK 30-11-31-420-018

- (5) Fillet seal the spray duct [27] flange with Dow Corning 93-006-1 RF sealant, A00900, or sealant, A00160.

SUBTASK 30-11-31-420-006

- (6) Do these steps to install the blade seal [24]:
- (a) Connect the washers [33], sleeves [34], springs [35], spacers [36], and spring retainers [37] to the blade seal [24].
 - (b) Install the retaining bolts [32] to attach the blade seal [24].

SUBTASK 30-11-31-410-002

- (7) Do this step to install the access door:
- (a) Install the cover plate [22].

SUBTASK 30-11-31-410-003

- (8) Do these steps to install the inner skin panel of the outer slat:

- (a) Install the applicable cover panel [21]:

- 1) Close these access panels:

<u>Number</u>	<u>Name/Location</u>
522CB	Slat No. 4 - Cove Skin
523CB	Slat No. 3 - Cove Skin
524CB	Slat No. 2 - Cove Skin
622CB	Slat No. 5 - Cove Skin
623CB	Slat No. 6 - Cove Skin
624CB	Slat No. 7 - Cove Skin

- (b) Install the seal [20].
 - (c) Install the backup plates [28].
 - 1) Apply compound, C00528, to the hex bolt on the lower backup plate [28].

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J. Wing Anti-Ice Telescoping Duct Installation Test

SUBTASK 30-11-31-440-003

- (1) Do the step to activate Wing Thermal Anti-Ice System:
 - (a) Remove DO NOT OPERATE tag from the WING ANTI-ICE switch on the P5-11 engine and wing anti-ice panel.

SUBTASK 30-11-31-790-001

- (2) Do this task: Wing Thermal Anti-Ice - Duct Leak Test, TASK 30-11-00-790-801.

K. Put the Airplane Back to Its Usual Condition

SUBTASK 30-11-31-410-007

- (1) If it is necessary to install these panels, do this task: Leading Edge Access Panel Installation, TASK 57-41-02-400-801.

- (a) For the left wing, close these access panels:

<u>Number</u>	<u>Name/Location</u>
521DB	Lower Leading Edge Access Panel - Slat Station 70
521KB	Lower Leading Edge Access Panel - Slat Station 179
521RB	Lower Leading Edge Access Panel - Slat Station 298

- (b) For the right wing, close these access panels:

<u>Number</u>	<u>Name/Location</u>
621DB	Lower Leading Edge Access Panel - Slat Station 70
621JB	Lower Leading Edge Access Panel - Slat Station 161
621QB	Lower Leading Edge Access Panel - Slat Station 280

SUBTASK 30-11-31-420-007

- (2) Clean the mating surfaces of the ground strap [40] and bracket [39].
 - (a) Use cotton wiper, G00034, made moist with alcohol, B00130.
 - (b) Immediately dry the surfaces with a new cotton wiper, G00034.

SUBTASK 30-11-31-420-008

- (3) Install the bracket [39] to the outer telescoping duct [26].
 - (a) Install the bolts [44] and washers [45].
 - (b) Install the bolt [38], washers [41], and nut [42].
 - (c) Install the bolt [46], washers [47], ground strap [40], and nut [48].
 - (d) Adjust the vertical position of the bracket [39] to make sure that it is flush with the other access panels.
 - (e) Tighten the bolts [44], bolt [46], and bolt [38] after the vertical position of the bracket [39] is set.
 - (f) Do a bonding check for the ground strap [40].
 - 1) Measure the electrical bonding resistance between the door and duct (SWPM 20-20-00).
 - a) Use an intrinsically safe approved bonding meter, COM-1550.
 - b) Make sure that the electrical bonding resistance is 0.010 ohms (10 milliohms) or less.
 - (g) Apply sealant, A50231, to the terminal.

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SUBTASK 30-11-31-020-007



WARNING

REMOVE LEADING EDGE ACTUATOR LOCKS. LEADING EDGE SLATS CAN CAUSE INJURY TO PERSONNEL AND DAMAGE TO EQUIPMENT.

- (4) If the actuator locks are installed, do this task: Leading Edge Flap and Slat Locks Removal, TASK 27-81-00-080-801.

SUBTASK 30-11-31-860-005

- (5) Retract the slats to the full up position (TASK 27-81-00-860-804).

SUBTASK 30-11-31-410-005

- (6) Adjust the telescoping duct door [2], if needed, to get equal clearances on the inboard and outboard sides, and equal clearances on the forward and aft sides (Figure 402).

————— **END OF TASK** —————

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WING ANTI-ICE TELESCOPING DUCT - INSPECTION/CHECK

1. General

- A. This procedure refers to this task:
(1) Wing Anti-Ice Telescoping Duct Check

TASK 30-11-31-200-801

2. Wing Anti-Ice Telescoping Duct Check

(Figure 601)

A. **General**

- (1) This procedure has the wear limits for the inner telescoping duct of the anti-ice telescopic ducts. These ducts are installed on the leading edges for slats 1 through 6.

B. **References**

Reference	Title
27-81-00-080-801	Leading Edge Flap and Slat Locks Removal (P/B 201)
27-81-00-480-801	Leading Edge Flap and Slat Locks Installation (P/B 201)
30-11-31-000-801	Wing Anti-Ice Telescoping Duct Seal Removal (P/B 401)
30-11-31-400-801	Wing Anti-Ice Telescoping Duct Seal Installation (P/B 401)

C. **Location Zones**

Zone	Area
520	Subzone - Left Wing: Leading Edge, Fwd of Front Spar, Outboard of Strut and Nacelle Gap Cover Area
620	Subzone - Right Wing: Leading Edge, Forward of Front Spar, Outboard of Nacelle Strut

D. **Procedure**

SUBTASK 30-11-31-860-006



WARNING

MAKE SURE THAT ALL PERSONNEL AND EQUIPMENT ARE AWAY FROM THE SLATS. THE SLATS MOVE QUICKLY. INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (1) Do this task to extend the leading edge slats and lock them out: Leading Edge Flap and Slat Locks Installation, TASK 27-81-00-480-801.

SUBTASK 30-11-31-211-001

- (2) Examine the inner telescoping duct [1] for wear and use the Table 601 for reference.

Table 601/30-11-31-993-801 WEAR LIMIT CHART

	Max allowable wear damage of coating for Area I	Max allowable wear damage of coating for Area II
Coating total missing	4.00 in ² (2580.64 mm ²)	Unlimited
Max length of radial damage	1.00 in. (25.40 mm)	Unlimited
Max length of longitudinal damage	Unlimited	Unlimited

- (a) Only damage to the coating is allowed. Dents or damage to the base metal are not allowed.

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- (b) If the damage is more than the wear limits then replace the damaged duct (TASK 30-11-31-000-801 and TASK 30-11-31-400-801).

E. Put the airplane back to its usual condition

SUBTASK 30-11-31-860-007

- (1) Do this task to unlock the leading edge slats and retract them: Leading Edge Flap and Slat Locks Removal, TASK 27-81-00-080-801.

———— **END OF TASK** ————

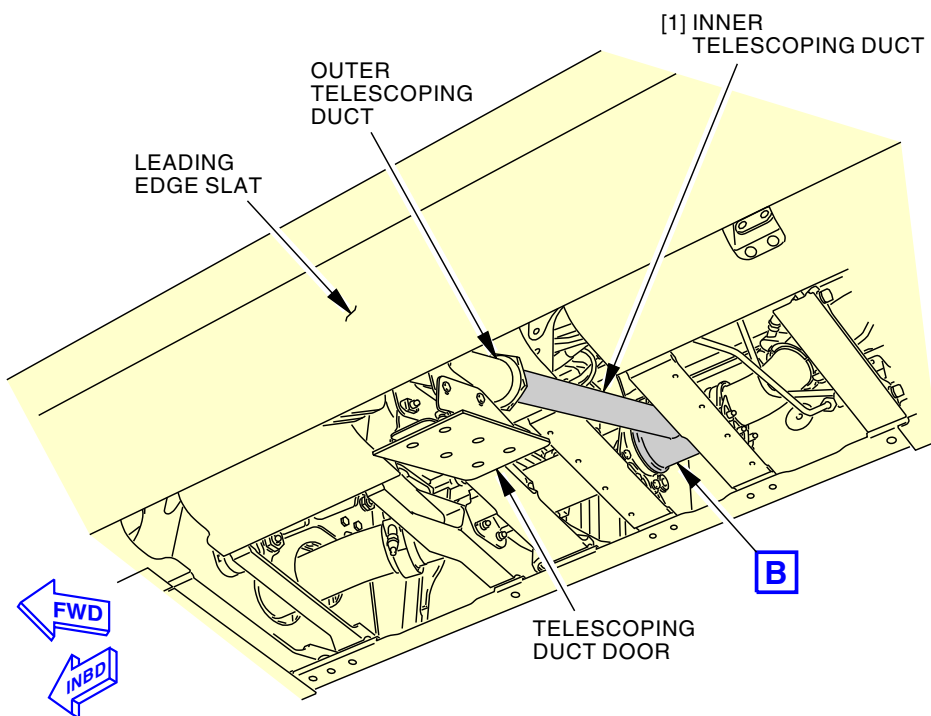
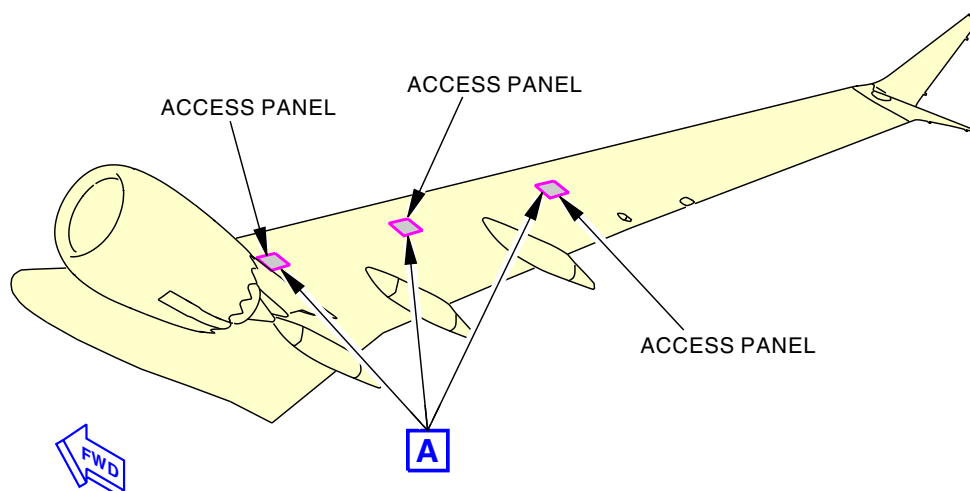
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LEFT WING ANTI-ICE TELESCOPING DUCT
(RIGHT WING ANTI-ICE TELESCOPING DUCT IS OPPOSITE) (EXAMPLE)

A

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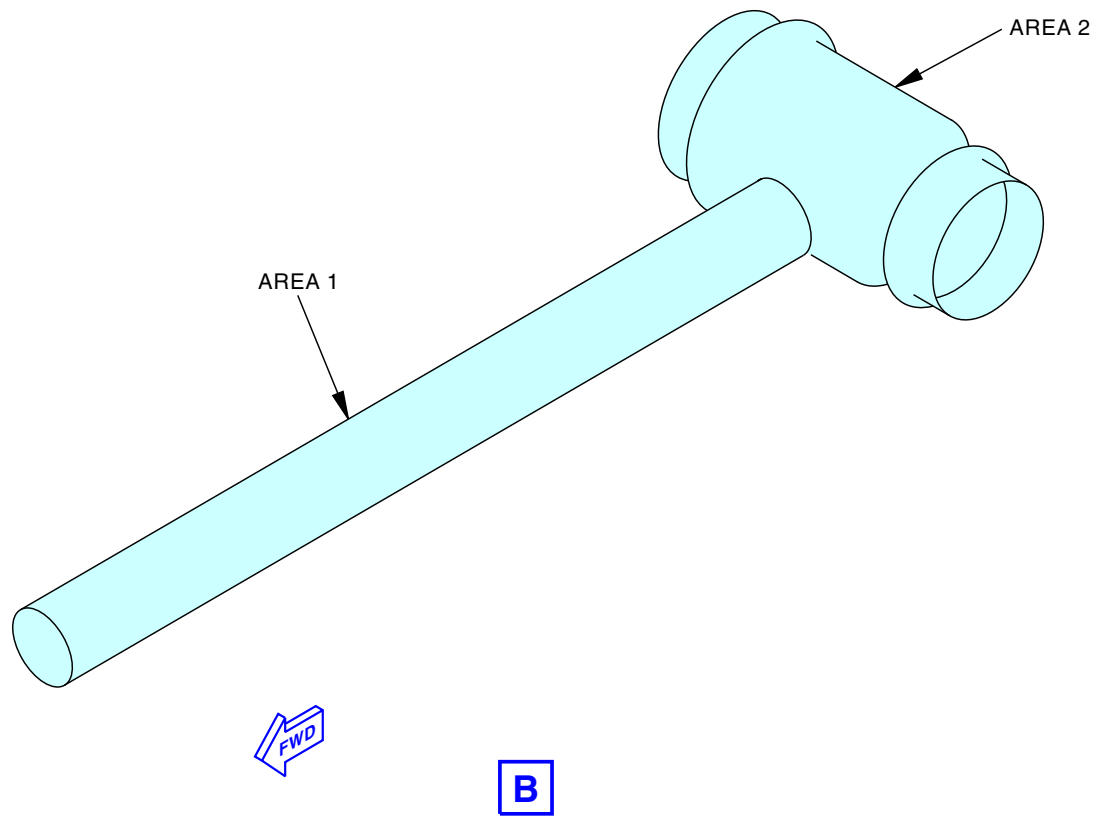
Wing Anti-Ice Telescoping Duct Inspection
Figure 601/30-11-31-990-803 (Sheet 1 of 2)

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Wing Anti-Ice Telescoping Duct Inspection
Figure 601/30-11-31-990-803 (Sheet 2 of 2)

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CONTROL STAND WING ANTI-ICE SWITCHES - REMOVAL/INSTALLATION

1. General

- A. This procedure refers to these tasks:
- (1) Control Stand Wing Anti-Ice Switches Removal
 - (2) Control Stand Wing Anti-Ice Switches Installation
- B. The Control Stand Wing Anti-Switches are part of the autothrottle switchpacks.

TASK 30-11-51-020-801

2. Control Stand Wing Anti-Ice Switches - Removal

(Figure 401)

A. General

- (1) This task gives instructions to remove the Control Stand Wing Anti-Ice Switches.
- (2) The Wing Anti-Ice Switches are located in the forward equipment center above the nose wheel well.

B. References

Reference	Title
76-11-07-020-801-G00	Autothrottle Switchpack Assembly Removal (P/B 401)

C. Tools/Equipment

Reference	Description
STD-858	Tag - DO NOT OPERATE

D. Location Zones

Zone	Area
113	Area Above and Outboard of Nose Landing Gear Wheel Well - Left
114	Area Above and Outboard of Nose Landing Gear Wheel Well - Right

E. Control Stand Wing Anti-Ice Switches Removal

SUBTASK 30-11-51-860-001

- (1) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
B	2	C04063	ANTI-ICE & RAIN WING ANTI-ICE VALVE-L
B	4	C04064	ANTI-ICE & RAIN WING ANTI-ICE VALVE-R

SUBTASK 30-11-51-040-001

- (2) Do these steps to deactivate the Wing Thermal Anti-Ice System:
 - (a) Set the WING ANTI-ICE switch on the P5-11 engine and wing anti-ice panel, to the OFF position.
 - (b) Make sure that the L VALVE and R VALVE lights are off.
 - (c) Install DO NOT OPERATE tag, STD-858 on the WING ANTI-ICE switch on the P5-11 engine and wing anti-ice panel.

SUBTASK 30-11-51-020-001

- (3) Remove the switches, S7 [1] (TASK 76-11-07-020-801-G00).

————— **END OF TASK** —————

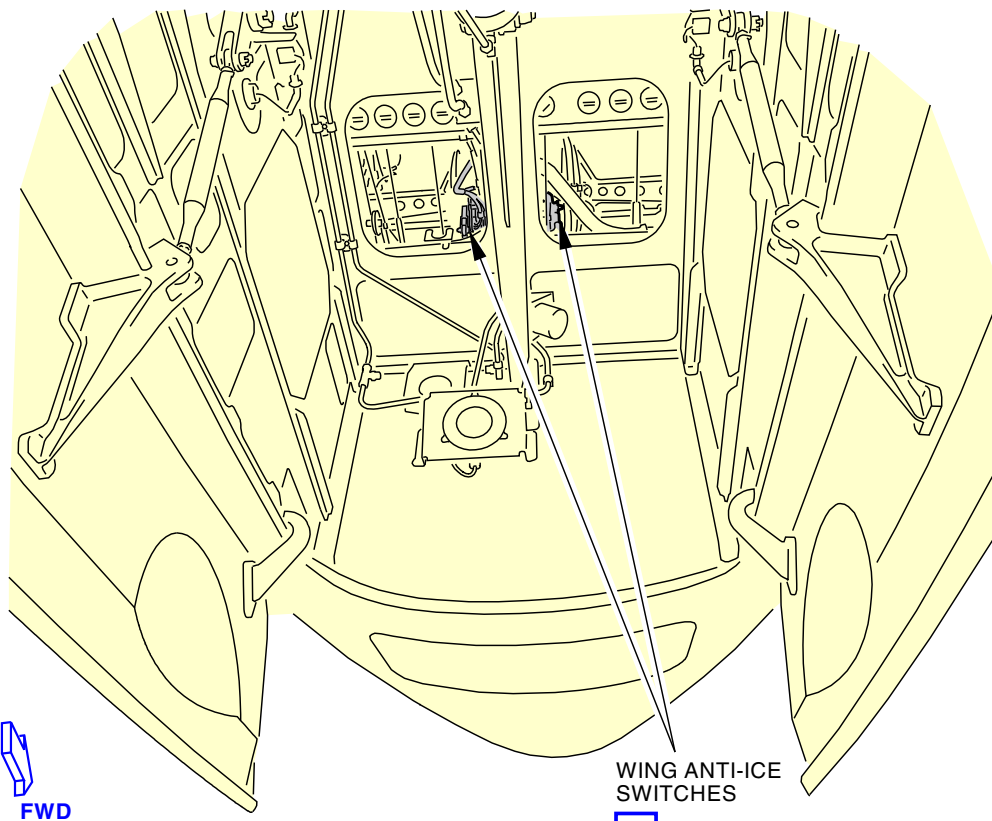
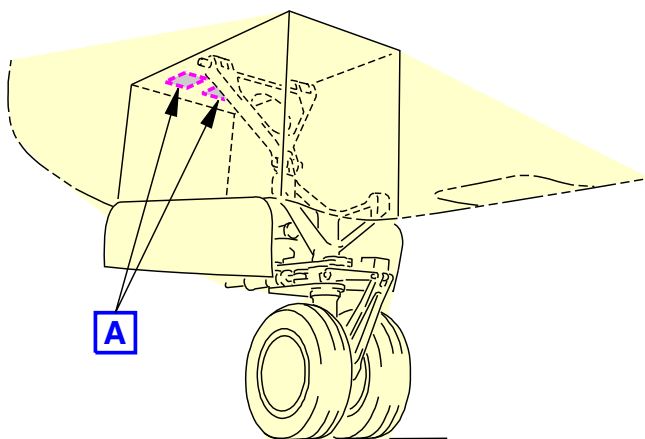
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FWD

WING ANTI-ICE
SWITCHES

NOSE LANDING GEAR WHEEL WELL

A

B

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Wing Anti-Ice Switches Installation
Figure 401/30-11-51-990-801 (Sheet 1 of 2)

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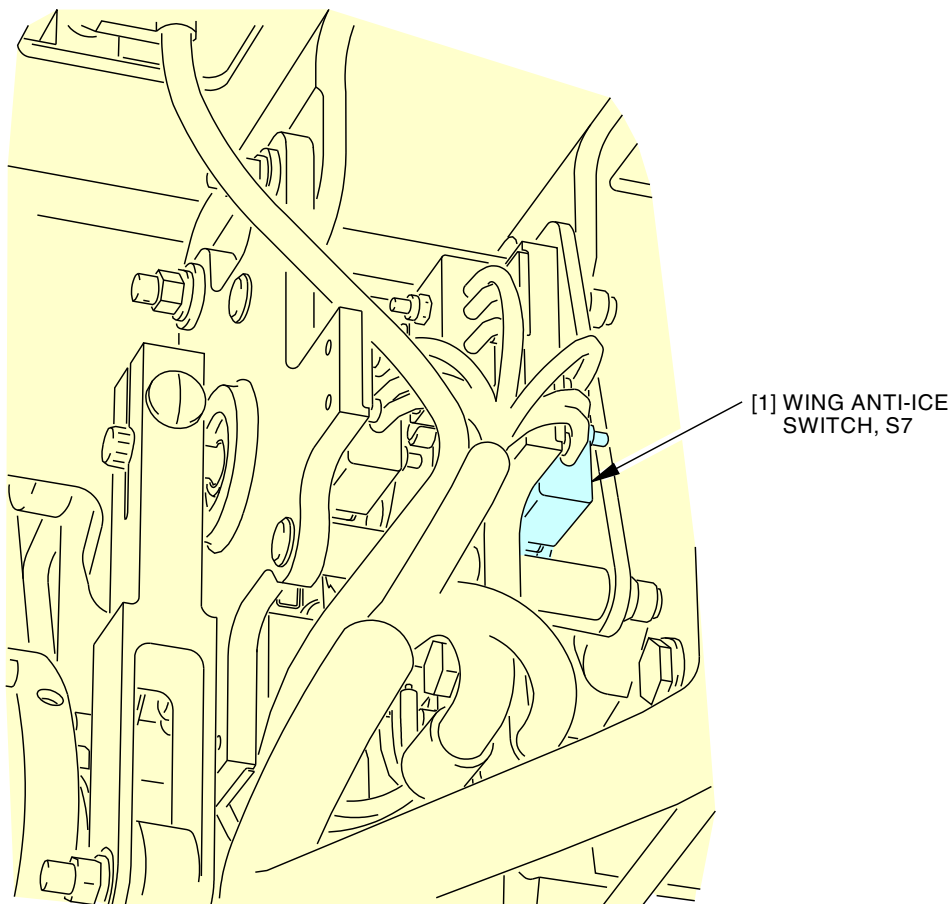
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(EXAMPLE)



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Wing Anti-Ice Switches Installation
Figure 401/30-11-51-990-801 (Sheet 2 of 2)

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TASK 30-11-51-420-801

3. **Control Stand Wing Anti-Ice Switches - Installation**

(Figure 401)

A. General

- (1) This task gives instructions to install the Control Stand Wing Anti-Ice Switches.
- (2) The Wing Anti-Ice Switches are located in the forward equipment center above the nose wheel well.

B. References

Reference	Title
76-11-07-400-802-G00	Autothrottle Switchpack Assembly Installation (P/B 401)

C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Switches, S7	76-11-07-01A-065	SIA ALL

D. Location Zones

Zone	Area
113	Area Above and Outboard of Nose Landing Gear Wheel Well - Left
114	Area Above and Outboard of Nose Landing Gear Wheel Well - Right
211	Flight Compartment - Left
212	Flight Compartment - Right

E. Control Stand Wing Anti-Ice Switches Installation

SUBTASK 30-11-51-860-002

- (1) Make sure that these circuit breakers are open and have safety tags:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
A	1	C04012	ANTI-ICE & RAIN WING ANTI-ICE VALVE
B	2	C04063	ANTI-ICE & RAIN WING ANTI-ICE VALVE-L
B	4	C04064	ANTI-ICE & RAIN WING ANTI-ICE VALVE-R

SUBTASK 30-11-51-420-001

- (2) Install the switches, S7 [1] (TASK 76-11-07-400-802-G00).

F. Control Stand Wing Anti-Ice Switches Installation Test

SUBTASK 30-11-51-860-003

- (1) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
B	2	C04063	ANTI-ICE & RAIN WING ANTI-ICE VALVE-L
B	4	C04064	ANTI-ICE & RAIN WING ANTI-ICE VALVE-R

SUBTASK 30-11-51-440-001

- (2) Do the step to activate Wing Thermal Anti-Ice System:
 - (a) Remove DO NOT OPERATE tag from the WING ANTI-ICE switch on the P5-11 engine and wing anti-ice panel.

SUBTASK 30-11-51-860-004

- (3) Make sure that the WING ANTI-ICE switch is in the OFF position.

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SUBTASK 30-11-51-860-005

- (4) Make sure that the thrust levers are in the idle position.

SUBTASK 30-11-51-860-006

- (5) Put the WING ANTI-ICE switch in the ON position.
(a) Make sure that the L VALVE and R VALVE lights are off.

SUBTASK 30-11-51-860-007

- (6) Advance thrust lever to greater than 60.
(a) Make sure that the L VALVE and R VALVE lights are on.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 30-11-51-860-008

- (1) Put the WING ANTI-ICE switch in the OFF position.

SUBTASK 30-11-51-860-009

- (2) Put the thrust levers in the idle position.

———— **END OF TASK** ————

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CONTROL STAND WING ANTI-ICE SWITCHES - ADJUSTMENT/TEST

1. General

- A. This procedure contains this task:
- (1) A test of the control stand wing anti-ice switches.

TASK 30-11-51-710-801

2. Control Stand Wing Anti-Ice Switches Test

(Figure 501)

A. **General**

- (1) This test makes sure that the control stand wing anti-ice switches are operating correctly.

B. **Location Zones**

Zone	Area

211	Flight Compartment - Left

212	Flight Compartment - Right

C. **Control Stand Wing Anti-Ice Switches Test**

SUBTASK 30-11-51-860-010



MAKE SURE THAT YOU OPEN THE CIRCUIT BREAKERS FOR THE WEATHER RADAR SYSTEM. THE FORWARD MOVEMENT OF A THRUST LEVER CAN CAUSE THE AUTOMATIC OPERATION OF THE SYSTEM. THE OPERATION OF THIS SYSTEM CAN CAUSE INJURIES TO PERSONNEL, AND DAMAGE TO EQUIPMENT.

- (1) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	13	C00120	WEATHER RADAR RT

SUBTASK 30-11-51-860-012

- (2) Push and release the L VALVE and R VALVE lights, on the P5-11 panel.

- (a) Make sure that each light comes on then goes off.

SUBTASK 30-11-51-860-013

- (3) Make sure that the thrust levers are in the IDLE position.

SUBTASK 30-11-51-860-014

- (4) Put the WING ANTI-ICE switch in the ON position.

- (a) Make sure that the L VALVE and R VALVE lights come on.

SUBTASK 30-11-51-740-001

- (5) Do these steps to display the Thrust Resolver Angle (TRA):

- (a) Get access to the MAX Display System (MDS) in the flight compartment.
- (b) Use the SELECTOR, on the P9-82 multi function panel, to make these selections:
 - 1) MAINT
 - 2) MAINT DATA PGS
 - 3) DISPLAY SELECTION
 - 4) 71 EPCS, DISPLAY.

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- (c) On the EPCS Page, the TRA will show for ENGINE 1 CH A and B, ENGINE 2 CH A and B.

SUBTASK 30-11-51-720-001

- (6) Monitor the L VALVE and R VALVE lights while you advance the left thrust lever.
- (a) Make sure that the L VALVE and R VALVE lights are off at a TRA of 60 +/- 2 degrees.
- (b) Make sure that the L VALVE and R VALVE lights are off at a TRA more than 62 degrees.

SUBTASK 30-11-51-860-015

- (7) Put the thrust lever back to the IDLE position.
- (a) Make sure that the L VALVE and R VALVE lights are on after approximately six seconds.

SUBTASK 30-11-51-720-002

- (8) Monitor the L VALVE and R VALVE lights while you advance the right thrust lever.
- (a) Make sure that the L VALVE and R VALVE lights are off at a TRA of 60 +/- 2 degrees.
- (b) Make sure that the L VALVE and R VALVE lights are off at a TRA more than 62 degrees.

SUBTASK 30-11-51-860-016

- (9) Put the thrust lever back to the IDLE position.
- (a) Make sure that the L VALVE and R VALVE lights are on after approximately six seconds.

SUBTASK 30-11-51-860-019

- (10) Put the WING ANTI-ICE switch in the OFF position.
- (a) Make sure that the L VALVE and R VALVE lights are off.

D. Put the Airplane Back to Its Usual Condition

SUBTASK 30-11-51-860-018

- (1) Remove the safety tag and close this circuit breaker:

F/O Electrical System Panel, P6-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	13	C00120	WEATHER RADAR RT

———— **END OF TASK** ————

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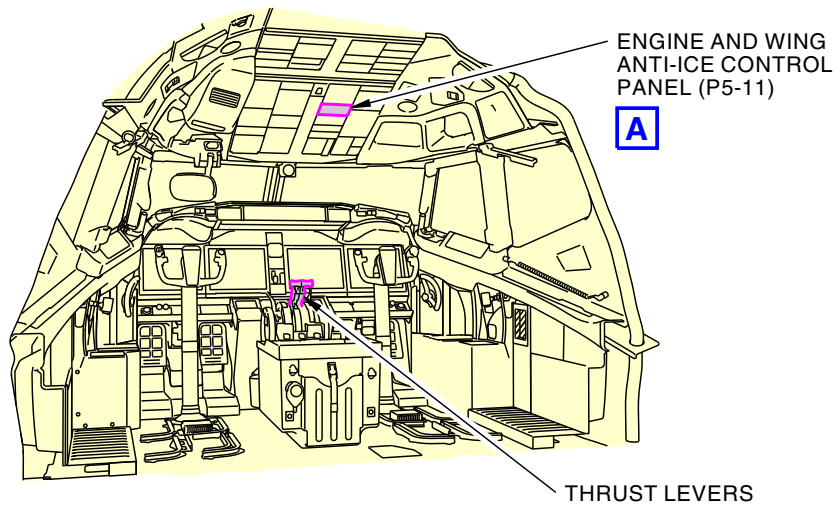
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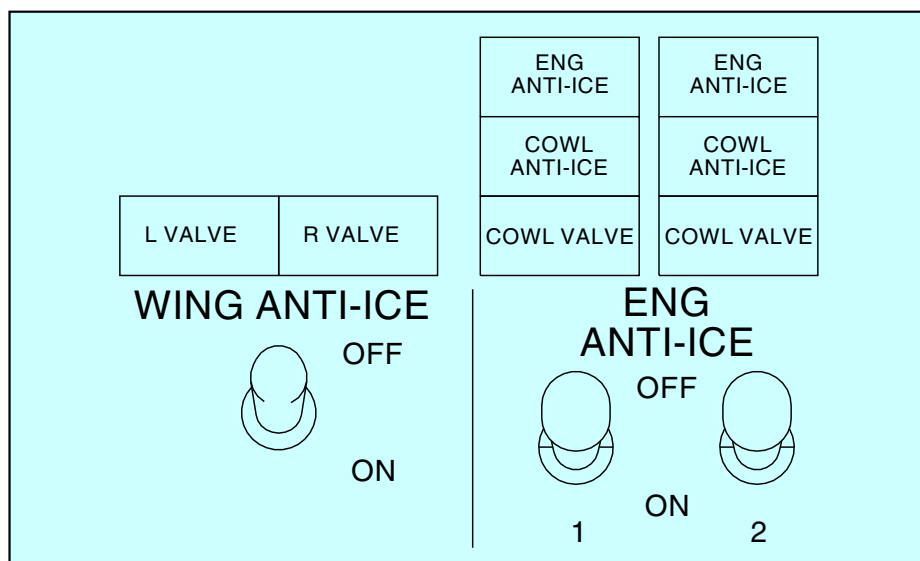
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FLIGHT COMPARTMENT



ENGINE AND WING ANTI-ICE CONTROL PANEL (P5-11)

A

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Control Stand Wing Anti-Ice Switches Test
Figure 501/30-11-51-990-802

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ENGINE ANTI-ICE SYSTEM - ADJUSTMENT/TEST

1. **General**

A. This procedure has these tasks:

- (1) Engine Anti-Ice System Operational Test.
- (2) Engine Anti-Icing Inhibit - Operational Test.

TASK 30-21-00-710-801

2. **Engine Anti-Ice System Operational Test**

(Figure 501)

A. **General**

- (1) This task gives the instructions do the operational test of the Engine Anti-Ice (EAI) system.
- (2) This test makes sure that the engine anti-ice system operates correctly.
- (3) The tests for the engine anti-ice components are given in procedures specific to those components.
- (4) EAI is the same as Thermal Anti-Ice (TAI).

B. **References**

Reference	Title
36-00-00-860-804	Supply Pressure to the Pneumatic System with One or Both Engines (P/B 201)
36-00-00-860-805	Supply Pressure Upstream of the PRSOV with Engines Off (P/B 201)
36-00-00-860-806	Remove Pressure from the Pneumatic System (P/B 201)
71-11-04-010-801-G00	Open the Fan Cowl Panels (Selection) (P/B 201)
71-11-04-410-801-G00	Close the Fan Cowl Panels (Selection) (P/B 201)

C. **Location Zones**

Zone	Area
212	Flight Compartment - Right
411	Engine 1 - Engine
421	Engine 2 - Engine

D. **Prepare for the Test**

SUBTASK 30-21-00-860-001

- (1) Do one of the following steps to supply pneumatic pressure for the ducts:
 - (a) Use the engines to pressurize the TAI duct, do this task: Supply Pressure to the Pneumatic System with One or Both Engines, TASK 36-00-00-860-804.
 - (b) Use the Auxiliary Power Unit (APU) or external air supply source to pressurize the TAI duct, do this task: Supply Pressure Upstream of the PRSOV with Engines Off, TASK 36-00-00-860-805.

E. **Engine Anti-Ice System Operational Test**

SUBTASK 30-21-00-860-002

- (1) Do this test of the COWL VALVE, COWL ANTI-ICE, and ENG ANTI-ICE lights:
 - (a) Push and release the COWL VALVE, COWL ANTI-ICE and ENG ANTI-ICE lights on the P5-11 engine and wing anti-ice panel.
 - (b) Make sure that each light comes on then goes off.

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SUBTASK 30-21-00-860-003

- (2) Make sure that the engine and wing anti-ice panel commands the EAI valves open:



CAUTION

DO NOT KEEP THE COWL TAI VALVE OPEN FOR MORE THAN THE SPECIFIED TIME WHEN THE TEMPERATURE IS MORE THAN THE SPECIFIED LIMIT. DAMAGE TO THE INLET COWL CAN OCCUR.

- (a) Put the ENG ANTI-ICE 1 switch in the ON position.
- 1) If the outside air temperature is more than 50°F (10°C), operate the engine anti-ice system for 30 seconds or less.
 - 2) There is no time limit for operation of the engine anti-ice system when the temperature is at or less than 50°F (10°C).
 - 3) Make sure that the left COWL VALVE light comes on within 6 seconds, then extinguishes.
NOTE: During this time the MASTER CAUTION and ANTI-ICE annunciator should remain extinguished.
 - 4) Make sure that the green TAI indication shows on the MAX Display System (MDS) display above the left N1 speed display.



CAUTION

DO NOT KEEP THE COWL TAI VALVE OPEN FOR MORE THAN THE SPECIFIED TIME WHEN THE TEMPERATURE IS MORE THAN THE SPECIFIED LIMIT. DAMAGE TO THE INLET COWL CAN OCCUR.

- (b) Put the ENG ANTI-ICE 2 switch in the ON position.
- 1) If the outside air temperature is more than 50°F (10°C), operate the engine anti-ice system for 30 seconds or less.
 - 2) There is no time limit for operation of the engine anti-ice system when the temperature is at or less than 50°F (10°C).
 - 3) Make sure that the right COWL VALVE light comes on within 6 seconds, then extinguishes.
NOTE: During this time the MASTER CAUTION and ANTI-ICE annunciator should remain extinguished.
 - 4) Make sure that the green TAI indication shows on the MDS display above the right N1 speed display.

SUBTASK 30-21-00-860-004

- (3) Make sure that the P5-11 engine and wing anti-ice panel commands the EAI valves closed:

- (a) Put the ENG ANTI-ICE 1 switch in the OFF position.
- 1) Make sure that the left COWL VALVE light comes on within 6 seconds, then extinguishes.
NOTE: During this time the MASTER CAUTION and ANTI-ICE annunciator should remain extinguished.
 - 2) Make sure that the green TAI indication on the MDS display above the left N1 speed display goes off.
- (b) Put the ENG ANTI-ICE 2 switch in the OFF position.

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- 1) Make sure that the right COWL VALVE light comes on within 6 seconds, then extinguishes.

NOTE: During this time the MASTER CAUTION and ANTI-ICE annunciator should remain extinguished.

- 2) Make sure that the green TAI indication on the MDS display above the right N1 speed display goes off.

SUBTASK 30-21-00-860-017

- (4) Remove pneumatic pressure, do this task: Remove Pressure from the Pneumatic System, TASK 36-00-00-860-806.

SUBTASK 30-21-00-010-004

- (5) Open the right fan cowl, do this task: Open the Fan Cowl Panels (Selection), TASK 71-11-04-010-801-G00.

SUBTASK 30-21-00-710-001

- (6) Do this test of the left engine anti-ice duct overpressure detection circuit:
 - (a) Disconnect the electrical connector DP303 [1] from the left engine anti-ice overpressure sensor [2].
 - (b) Connect a jumper wire between pins 1 and 2 of the electrical connector DP303 [1].
 - (c) Make sure that the left COWL ANTI-ICE light comes on after 6-10 seconds.
 - (d) Disconnect the jumper wire from the electrical connector DP303 [1].
 - (e) Make sure that the left COWL ANTI-ICE light goes off.
 - (f) Connect the electrical connector DP303 [1] to the engine anti-ice overpressure sensor [2].

SUBTASK 30-21-00-710-002

- (7) Do this test of the right engine anti-ice duct overpressure detection circuit:
 - (a) Disconnect the electrical connector DP303 [1] from the right engine anti-ice overpressure sensor [2].
 - (b) Connect a jumper wire between pins 1 and 2 of the electrical connector DP303 [1].
 - (c) Make sure that the right COWL ANTI-ICE light comes on after 6-10 seconds.
 - (d) Disconnect the jumper wire from the electrical connector DP303 [1].
 - (e) Make sure that the right COWL ANTI-ICE light goes off.
 - (f) Connect the electrical connector DP303 [1] to the engine anti-ice overpressure sensor [2].

SUBTASK 30-21-00-720-001

- (8) Do this test to make sure that the EAI fault is shown:
 - (a) Do a test of the left EAI system:
 - 1) Put the ENG ANTI-ICE 1 switch in the ON position.
 - 2) Make sure that the amber TAI indication shows on the MDS display above the left N1 speed display.
 - 3) Make sure that the left COWL VALVE light remains on after 6-10 seconds.
 - 4) Make sure that the ANTI-ICE and Master Caution annunciator lights illuminate after 5 seconds.
 - 5) Press the Master Caution light to reset the Master Caution.

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- 6) Put the ENG ANTI-ICE 1 switch in the OFF position.
 - 7) Make sure that the TAI indication on the MDS display above the left N1 display goes off.
 - 8) Make sure that the left COWL VALVE light goes off.
- (b) Do a test of the right EAI system:
- 1) Put the ENG ANTI-ICE 2 switch in the ON position.
 - 2) Make sure that the amber TAI indication on the MDS display shows above the right N1 speed display.
 - 3) Make sure that the right COWL VALVE light remains on after 6-10 seconds.
 - 4) Make sure that the ANTI-ICE and Master Caution annunciator lights illuminate after 5 seconds.
 - 5) Press the Master Caution light to reset the Master Caution.
 - 6) Put the ENG ANTI-ICE 2 switch in the OFF position.
 - 7) Make sure that the TAI indication on the MDS display above the right N1 display goes off.
 - 8) Make sure that the right COWL VALVE light goes off.

SUBTASK 30-21-00-860-016

- (9) Do this test to make sure that the ENG ANTI-ICE light illuminates when the Air Supply Control System (ASCS) inhibit is sent from the Integrated Air System Controller (IASC):

- (a) Do a test of the left ENG ANTI-ICE light:

- 1) Open this circuit breaker:

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	6	C04035	AIR COND BLEED AIR CONTROL PRIMARY LEFT

- 2) Make sure that the left ENG ANTI-ICE light on the P5-11 panel, Master Caution and ANTI-ICE annunciator lights are illuminated after 5 seconds.
- 3) Press either Master Caution light to reset Master Caution.
- 4) Close this circuit breaker:

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	6	C04035	AIR COND BLEED AIR CONTROL PRIMARY LEFT

- 5) Make sure that the left ENG ANTI-ICE light, on the P5-11 panel, is extinguished.

- (b) Do a test of the right ENG ANTI-ICE light:

- 1) Open this circuit breaker:

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	6	C04036	AIR COND BLEED AIR CONTROL PRIMARY RIGHT

- 2) Make sure that the right ENG ANTI-ICE light on the P5-11 panel, Master Caution and ANTI-ICE annunciator lights are illuminated after 5 seconds.
- 3) Press either Master Caution light to reset Master Caution.

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- 4) Close this circuit breaker:

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	6	C04036	AIR COND BLEED AIR CONTROL PRIMARY RIGHT

- 5) Make sure that the right ENG ANTI-ICE light, on the P5-11 panel, is extinguished.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 30-21-00-410-004

- (1) Close the right fan cowl, do this task: Close the Fan Cowl Panels (Selection),
TASK 71-11-04-410-801-G00.

————— END OF TASK —————

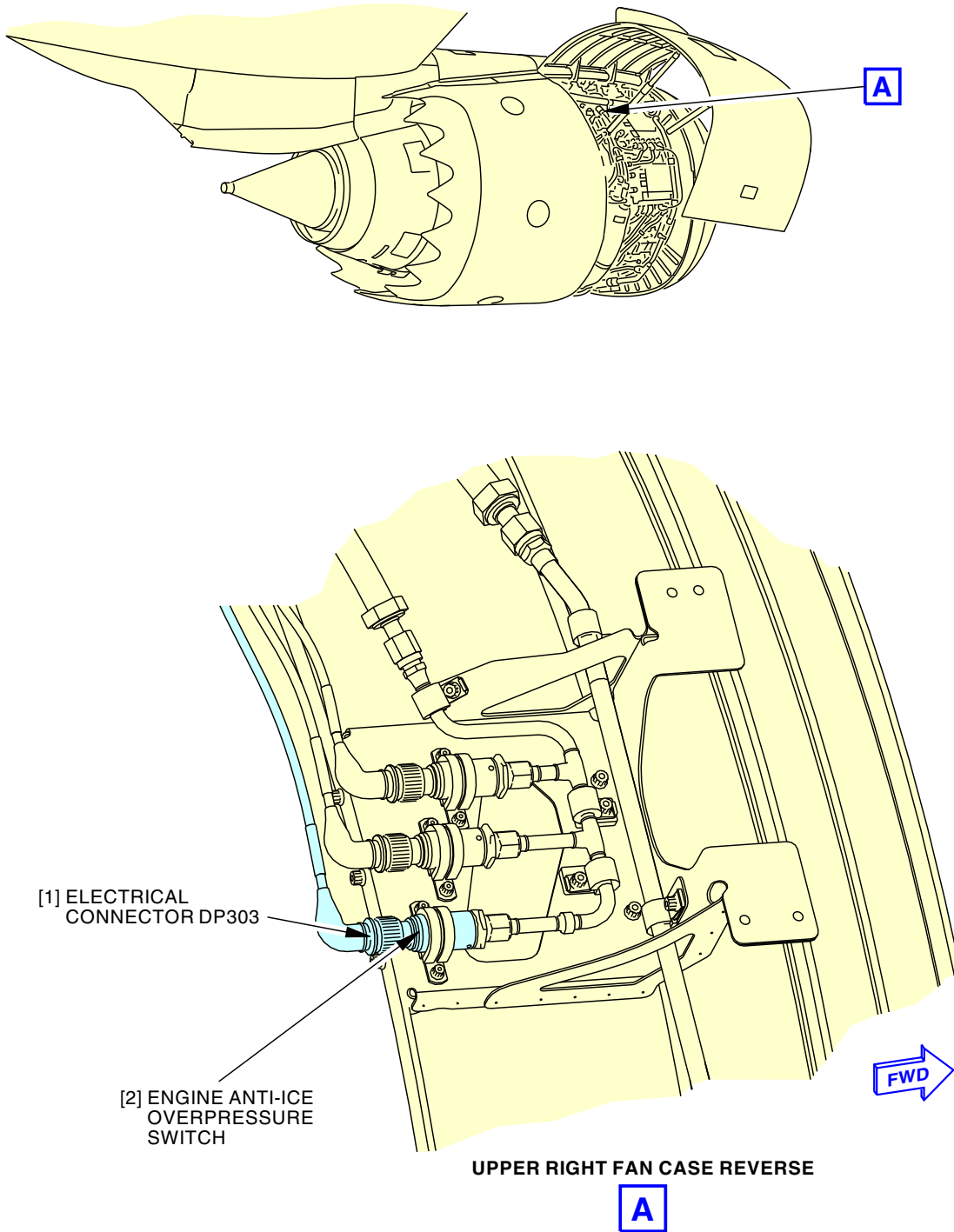
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Engine Anti-Ice System Operational Test
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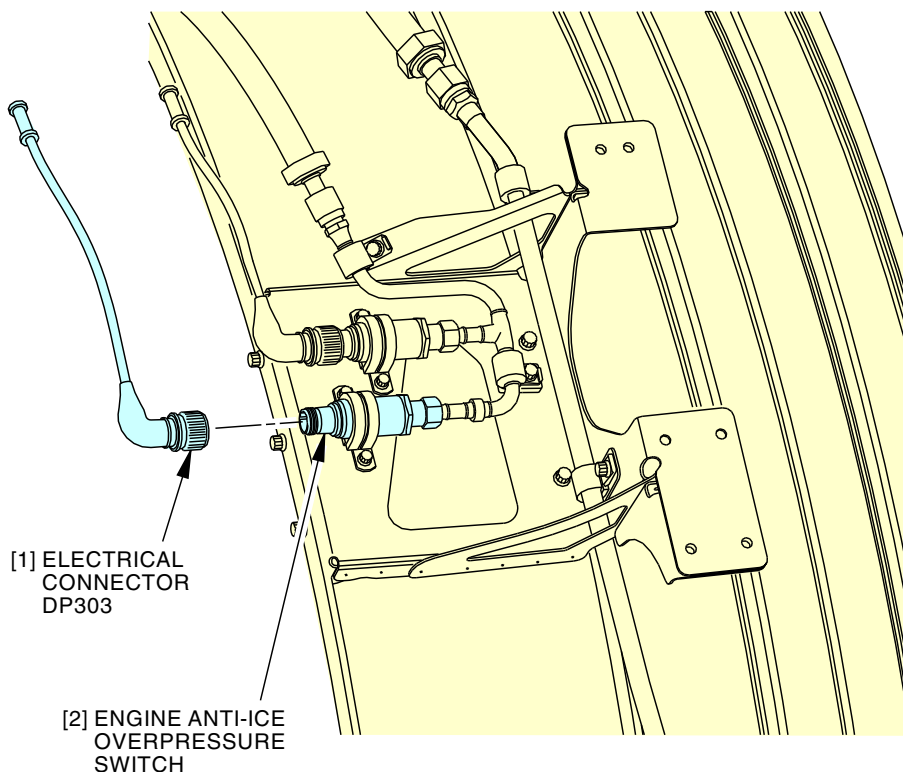
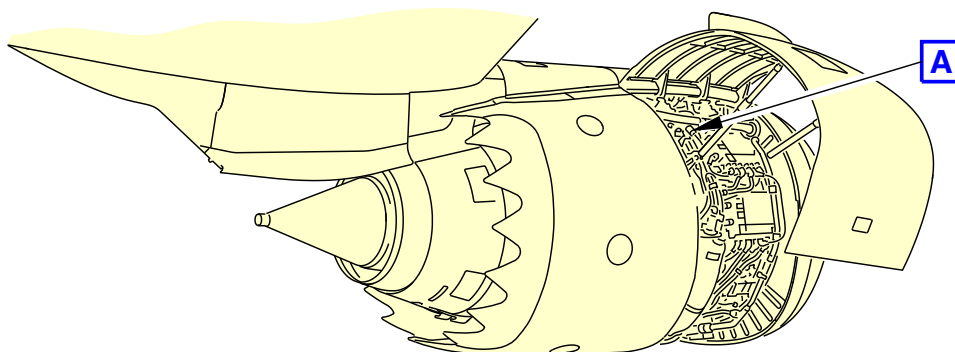
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UPPER RIGHT FAN CASE REVERSE

A



2821757 S0000652251_V1

Engine Anti-Ice System Operational Test
Figure 501/30-21-00-990-802 (Sheet 2 of 3)

EFFECTIVITY
SIA 006-999; SIA 001-005 POST SB 737-30-1074

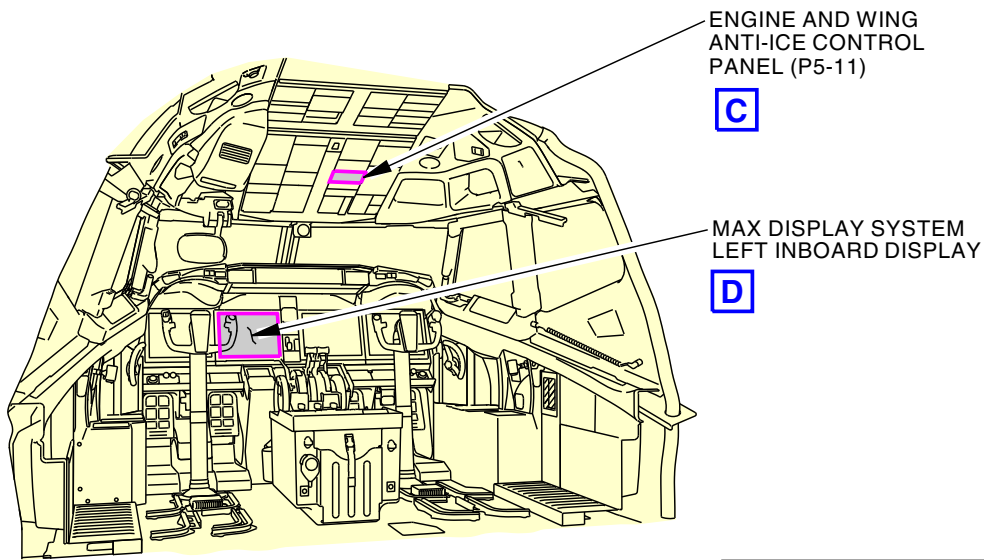
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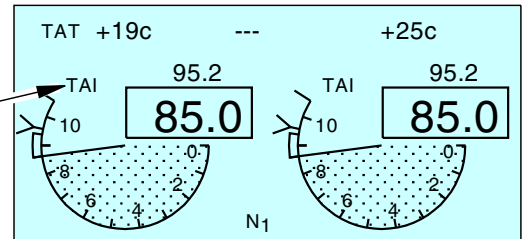
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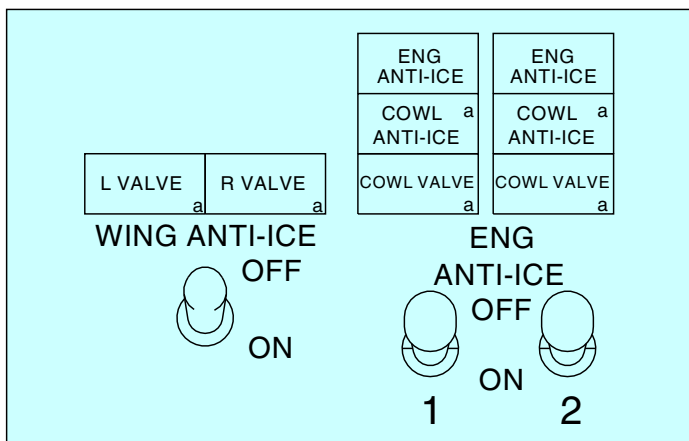


FLIGHT COMPARTMENT

ENGINE TAI
INDICATOR



MDS N1 DISPLAY



ENGINE AND WING ANTI-ICE CONTROL PANEL (P5-11)

C

2452274 S0000569530_V2

Engine Anti-Ice System Operational Test
Figure 501/30-21-00-990-802 (Sheet 3 of 3)

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TASK 30-21-00-710-802

3. **Engine Anti-Icing Inhibit - Operational Test**

(Figure 502)

NOTE: This procedure is a scheduled maintenance task.

A. General

- (1) This test does a manual check of the engine anti-icing inhibit function, when an engine overheat or fire occurs.

B. References

Reference	Title
71-11-04-010-801-G00	Open the Fan Cowl Panels (Selection) (P/B 201)
71-11-04-410-801-G00	Close the Fan Cowl Panels (Selection) (P/B 201)

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1655	Equipment - Test, APU/Engine Fire Detection System Part #: C26005-1 Supplier: 81205

D. Location Zones

Zone	Area
212	Flight Compartment - Right
411	Engine 1 - Engine
421	Engine 2 - Engine

E. Prepare for the Test

SUBTASK 30-21-00-860-008

- (1) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	21	C00396	FIRE PROT DETECTION MA WRN & CONT
A	22	C00407	FIRE PROTECTION DETECTION ENG 2
A	23	C00403	FIRE PROTECTION DETECTION APU
A	24	C00405	FIRE PROTECTION DETECTION ENG 1

SUBTASK 30-21-00-010-002

- (2) Open the fan cowl panels (TASK 71-11-04-010-801-G00).

SUBTASK 30-21-00-710-009

- (3) On Engine 1 (2), connect the test box equipment, SPL-1655, to the two terminal lugs (A/1 and B/2) of the MID Fan Fire Detector, M3060, and airplane ground.

NOTE: This test is written for Engine 1. The test is the same for Engine 2, except as noted by the data in parenthesis. Use the data in parenthesis to do the test for Engine 2.

- (a) Make sure that the test box equipment, SPL-1655, ENGINE LOOP A/1 and B/2 switch are set to NORMAL positions.
- (b) Connect one pair of alligator clips to each loop:
- 1) Connect one alligator clip to the responder bracket or to a ground lug.

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- 2) Connect the other alligator clip to the responder lug.

SUBTASK 30-21-00-860-014

- (4) Close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	21	C00396	FIRE PROT DETECTION MA WRN & CONT
A	22	C00407	FIRE PROTECTION DETECTION ENG 2
A	23	C00403	FIRE PROTECTION DETECTION APU
A	24	C00405	FIRE PROTECTION DETECTION ENG 1

SUBTASK 30-21-00-860-009

- (5) Make sure that the Engine 1 (2) ANTI-ICE switch on the P5-11 panel is in the ON position.

SUBTASK 30-21-00-860-010

- (6) Make sure that the Engine 1 (2) COWL VALVE light on the P5-11 panel comes on and stays on.
- (a) Make sure that the MASTER CAUTION lights and the ANTI-ICE annunciator light on the P7 panel come on.

SUBTASK 30-21-00-710-003

- (7) On the equipment, SPL-1655, rotate the Engine Loop A and B switches to OVHT.

NOTE: You have 20 seconds to do these steps.

- (a) On the P5-11 overhead panel, make sure that the COWL VALVE light for the Engine 1 (2) goes off.
- (b) On the P7 panel, make sure that the MASTER CAUTION lights and the OVHT DET annunciator light comes on.
- (c) On the P8-1 panel, make sure that the ENG 1 (2) OVERHEAT light comes on.

SUBTASK 30-21-00-710-004

- (8) After 20 seconds, make sure that the COWL VALVE light comes on.

SUBTASK 30-21-00-710-005

- (9) On the equipment, SPL-1655, rotate the Engine Loop A and B switches to NORMAL.

- (a) On the P7 panel, make sure that the OVHT DET annunciator light goes off.
- (b) On the P8-1 panel, make sure that the ENG 1 (2) OVERHEAT light goes off.
- (c) On the P7 panel, make sure that the MASTER CAUTION lights and the ANTI-ICE annunciator light stays on.

SUBTASK 30-21-00-860-011

- (10) Open and close these circuit breakers:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	6	C00148	ANTI-ICE & RAIN ENG 1 & WING CONT

F/O Electrical System Panel, P6-5

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	11	C04082	ANTI-ICE & RAIN ENGINE 2 CONTROL

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SUBTASK 30-21-00-710-006

- (11) Make sure that the Engine 1 (2) COWL VALVE light on the P5-11 panel comes on and stays on.

NOTE: After 6 seconds, the COWL VALVE light comes on. The engine anti-icing inhibit is cleared.

SUBTASK 30-21-00-710-007

- (12) Make sure the Engine 1 (2) ANTI-ICE switch on the P5-11 panel is in the OFF position.

SUBTASK 30-21-00-860-013

- (13) Open these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	21	C00396	FIRE PROT DETECTION MA WRN & CONT
A	22	C00407	FIRE PROTECTION DETECTION ENG 2
A	23	C00403	FIRE PROTECTION DETECTION APU
A	24	C00405	FIRE PROTECTION DETECTION ENG 1

SUBTASK 30-21-00-710-008

- (14) On Engine 1 (2), disconnect the test box equipment, SPL-1655, from the two terminal lugs (A/1 and B/2) of the MID Fan Fire Detector, M3060, and airplane ground.
- (a) Make sure that the MASTER CAUTION lights and the ANTI-ICE annunciator light on the P7 panel goes off.
- (b) If it is necessary, push the MASTER CAUTION lights to extinguish the MASTER CAUTION lights.

NOTE: This will reset the system for additional master caution conditions.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 30-21-00-860-015

- (1) Close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	21	C00396	FIRE PROT DETECTION MA WRN & CONT
A	22	C00407	FIRE PROTECTION DETECTION ENG 2
A	23	C00403	FIRE PROTECTION DETECTION APU
A	24	C00405	FIRE PROTECTION DETECTION ENG 1

SUBTASK 30-21-00-410-003

- (2) Close the fan cowl panels (TASK 71-11-04-410-801-G00).

————— **END OF TASK** —————

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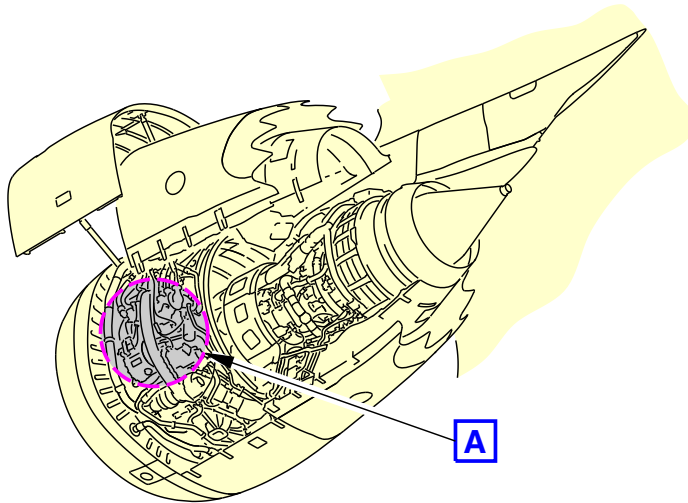
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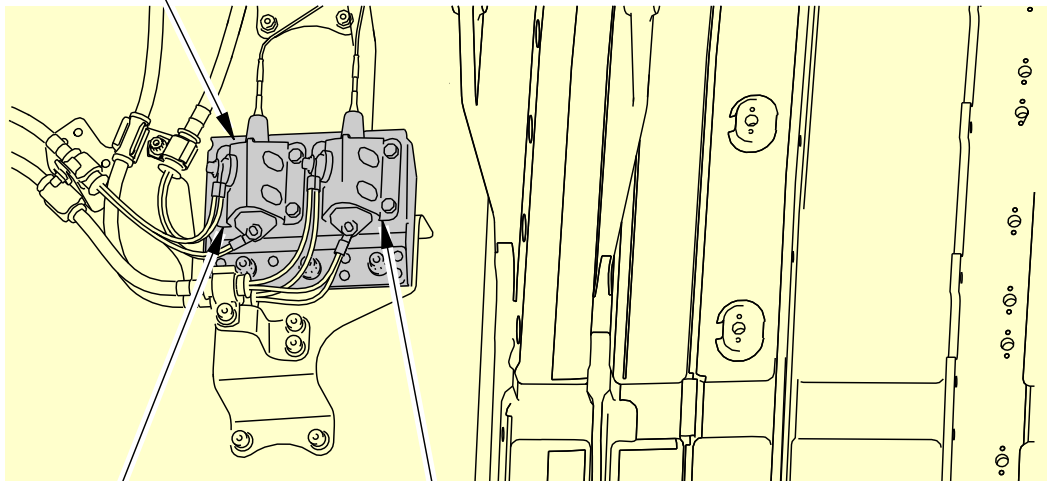
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LEFT MID FAN FIRE
DETECTOR ASSEMBLY



B

B



A

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Engine Anti-Icing Inhibit - Operational Test
Figure 502/30-21-00-990-803 (Sheet 1 of 2)

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ENGINE ANTI-ICE VALVE - REMOVAL/INSTALLATION

1. **General**

- A. This procedure has these tasks:
- (1) A removal of the engine anti-ice valve
 - (2) An installation of the engine anti-ice valve.

TASK 30-21-11-000-801

2. **Engine Anti-Ice Valve Removal**

(Figure 401)

A. **General**

- (1) This task gives instructions to remove the engine anti-ice valve.

B. **References**

Reference	Title
36-00-00-860-806	Remove Pressure from the Pneumatic System (P/B 201)
70-00-01-910-803-G00	Electrical Connector Disconnection and Connection (P/B 201)
71-11-04-010-801-G00	Open the Fan Cowl Panels (Selection) (P/B 201)
78-31-00-010-801-G00	Open the Thrust Reverser (Selection) (P/B 201)
78-31-00-040-801-G00	Thrust Reverser Deactivation For Ground Maintenance (P/B 201)

C. **Tools/Equipment**

Reference	Description
STD-664	Pliers - Teflon-jawed (or Equivalent Soft-Jawed)
STD-858	Tag - DO NOT OPERATE

D. **Location Zones**

Zone	Area
410	Subzone - Engine 1
420	Subzone - Engine 2

E. **Access Panels**

Number	Name/Location
413	Left Fan Cowl, Engine 1
414	Right Fan Cowl, Engine 1
415	Left Thrust Reverser, Engine 1
416	Right Thrust Reverser, Engine 1
423	Left Fan Cowl, Engine 2
424	Right Fan Cowl, Engine 2
425	Left Thrust Reverser, Engine 2
426	Right Thrust Reverser, Engine 2

F. **Prepare for the Removal**

SUBTASK 30-21-11-860-001

- (1) Do these steps to make sure that the ENGINE START switch and the START LEVER switch are not operated:
 - (a) Make sure that the applicable ENGINE START switch, on the P5 overhead panel, is in the AUTO or OFF position.

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- 1) Put a DO NOT OPERATE tag, STD-858, on the applicable ENGINE START switch.
- (b) Make sure that the applicable START LEVER switch, on the P10 control stand, is in the CUTOFF position.
 - 1) Put a DO NOT OPERATE tag, STD-858, on the applicable START LEVER switch.

SUBTASK 30-21-11-860-002

- (2) To remove the EAI valve [1] on the left engine, do this step:
 - (a) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	6	C00148	ANTI-ICE & RAIN ENG 1 & WING CONT
A	7	C01001	ANTI-ICE & RAIN ENG 1 COWL AI VALVE

SUBTASK 30-21-11-860-003



BE CAREFUL WHEN YOU WORK ON THE ENGINE COMPONENTS IMMEDIATELY AFTER THE ENGINE IS SHUTDOWN. THE ENGINE COMPONENTS CAN STAY HOT FOR UP TO ONE HOUR AND CAN CAUSE INJURY.

- (3) To remove the EAI valve [1] on the right engine, do this step:
 - (a) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	7	C01002	ANTI-ICE & RAIN ENG 2 COWL AI VALVE

F/O Electrical System Panel, P6-5

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	11	C04082	ANTI-ICE & RAIN ENGINE 2 CONTROL

SUBTASK 30-21-11-010-002

- (4) Do these tasks in sequence to safely open the left and right thrust reversers on the applicable engine:



DO THE DEACTIVATION PROCEDURE FOR THE THRUST REVERSER TO PREVENT THE OPERATION OF THE THRUST REVERSER. ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT.

- (a) Do this task: Thrust Reverser Deactivation For Ground Maintenance, TASK 78-31-00-040-801-G00.
- (b) Open the applicable left or right fan cowl panels (TASK 71-11-04-010-801-G00).
 - 1) Open these access panels:

<u>Number</u>	<u>Name/Location</u>
413	Left Fan Cowl, Engine 1
414	Right Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2
424	Right Fan Cowl, Engine 2

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WARNING

OBEY THE INSTRUCTIONS IN THE PROCEDURE TO OPEN THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (c) Open the applicable left or right thrust reversers (TASK 78-31-00-010-801-G00).

- 1) Open these access panels:

<u>Number</u>	<u>Name/Location</u>
415	Left Thrust Reverser, Engine 1
416	Right Thrust Reverser, Engine 1
425	Left Thrust Reverser, Engine 2
426	Right Thrust Reverser, Engine 2

SUBTASK 30-21-11-860-004

- (5) Do this task: Remove Pressure from the Pneumatic System, TASK 36-00-00-860-806.

SUBTASK 30-21-11-020-001

- (6) For increased access, it is an option to remove the 12 o'clock strut fairing [11] on the left or right side of the EAI valve [1] as follows:

NOTE: If the 12 o'clock strut fairing [11] is removed, it will be necessary to reapply fire wall sealant when the fairing is reinstalled. A minimum of 4 hours is required to cure the fire wall sealant.

- (a) Remove the flush head fasteners [10] from the 12 o'clock strut fairing [11].
(b) Remove the 12 o'clock strut fairing [11].

G. Engine Anti-Ice Valve Removal

SUBTASK 30-21-11-020-002



WARNING

BE CAREFUL WHEN YOU WORK ON THE ENGINE COMPONENTS IMMEDIATELY AFTER THE ENGINE IS SHUTDOWN. THE ENGINE COMPONENTS CAN STAY HOT FOR UP TO ONE HOUR AND CAN CAUSE INJURY.

- (1) Remove the EAI valve [1] as follows:



CAUTION

USE TEFLON-JAWED PLIERS TO LOOSEN ELECTRICAL CONNECTORS. DO NOT USE METAL-JAWED PLIERS. DAMAGE TO THE ELECTRICAL CONNECTORS COULD OCCUR.

- (a) Use teflon-jawed pliers, STD-664 to disconnect the electrical connector [4] from the EAI valve [1] (TASK 70-00-01-910-803-G00).



CAUTION

DO NOT PUSH THE VALVE INTO AND OUT OF THE DUCTING. IF YOU DO, DAMAGE CAN OCCUR.

- (b) Disconnect the V-retainer couplings [2] and carefully remove them.

NOTE: Pneumatic ducts expand when hot and it may be difficult to disengage the valve from the ducting when hot. Allow engine to cool before removing valve.

- (c) Remove the nuts [9], washers [8], bushings [7], bolts [5], and washers [6] that attach the EAI lower duct links to the EAI lower duct.

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- 1) Do not disconnect the forward end of the EAI lower duct links.
- 2) Do not adjust the EAI lower duct links to aid in removal or installation of the EAI valve [1].
- (d) Pull lower duct away from EAI valve [1].
- (e) Remove the EAI valve [1] from the engine.
- (f) Check the coupling seals [3] for visible damage.
 - 1) If damage is found, discard the coupling seals [3].

SUBTASK 30-21-11-480-001

- (2) Put protective covers on electrical connector [4] and the openings on the EAI ducts and the EAI valve [1].

———— **END OF TASK** ————

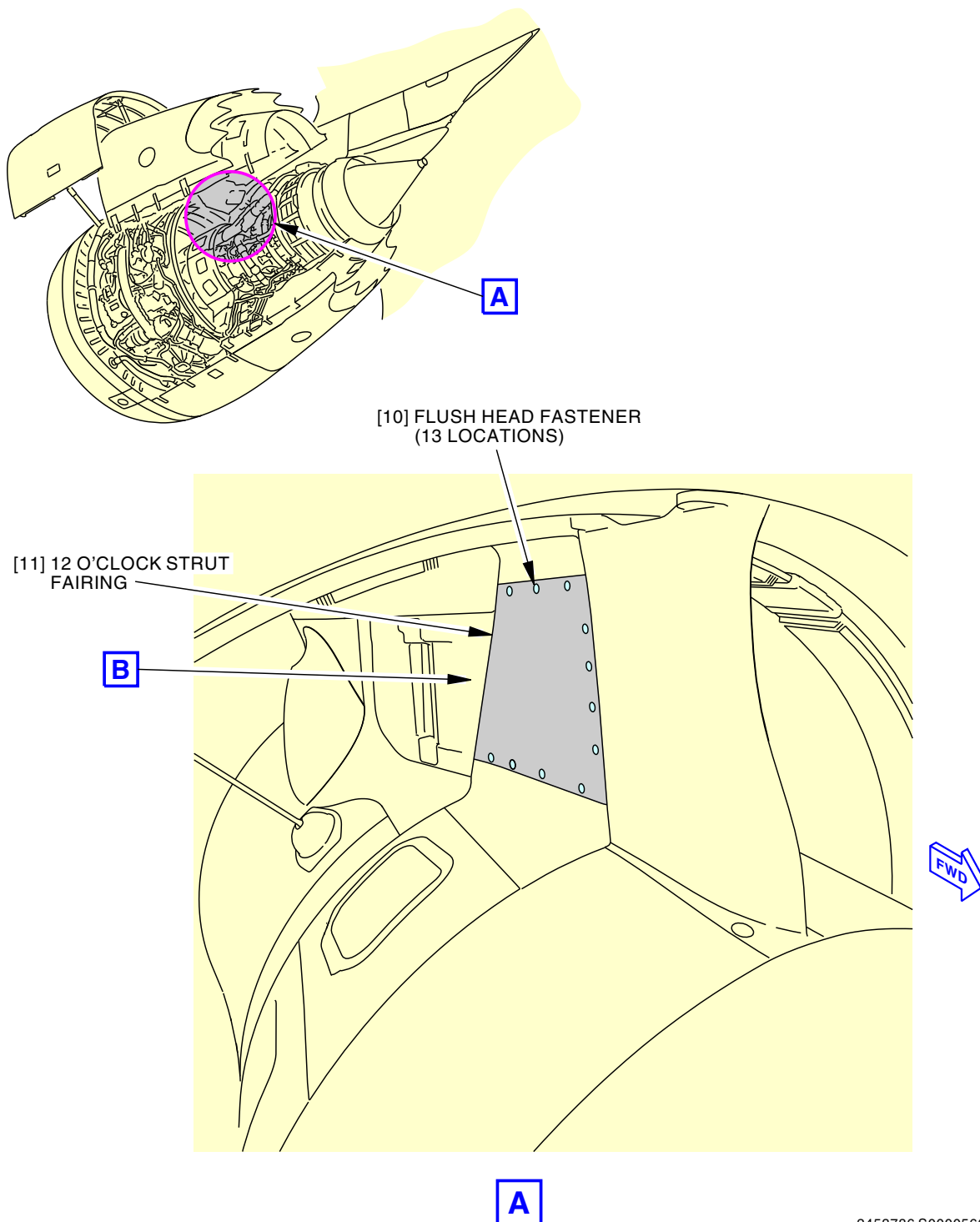
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Engine Anti-Ice Valve Installation
Figure 401/30-21-11-990-803 (Sheet 1 of 3)

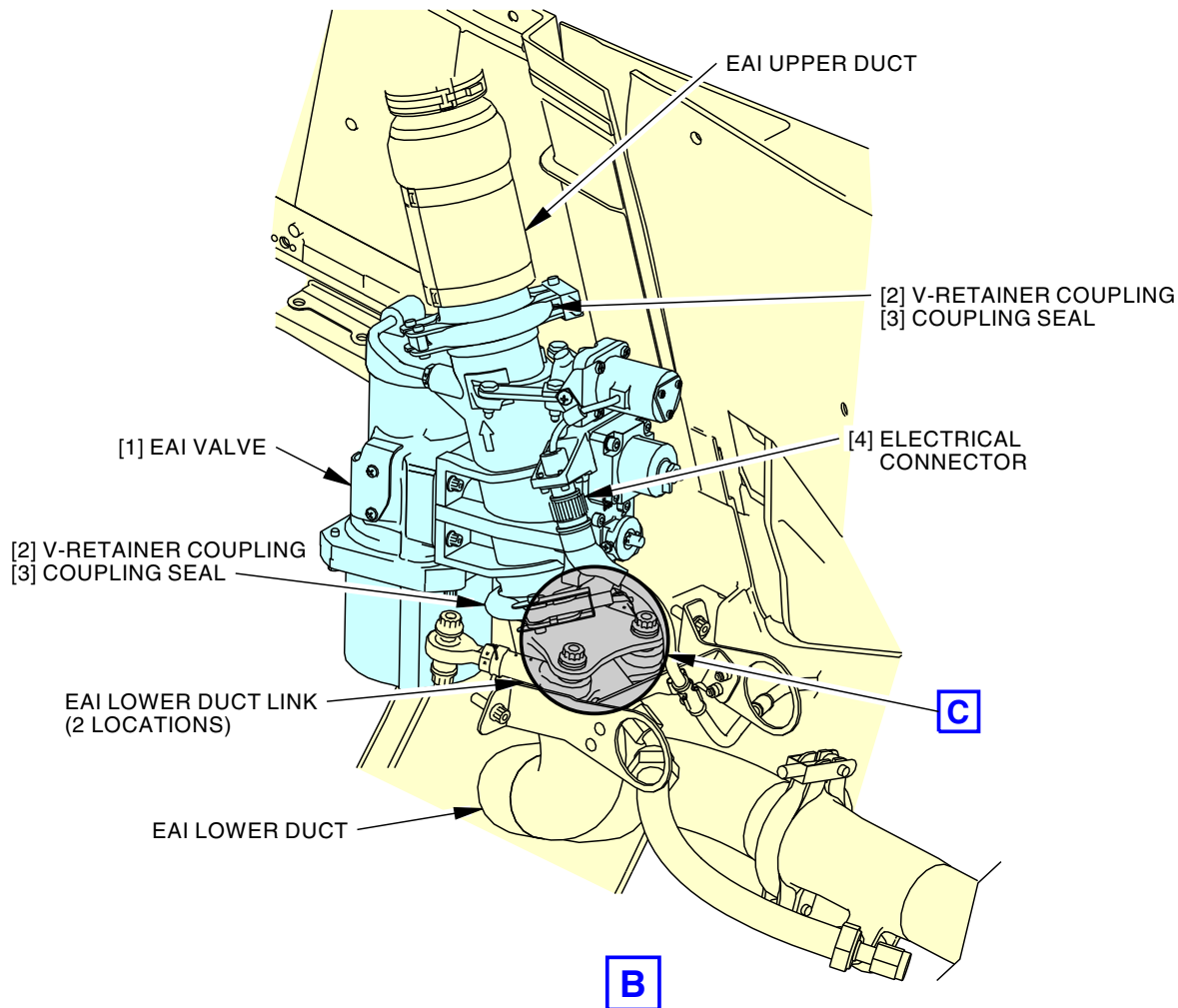
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Engine Anti-Ice Valve Installation
Figure 401/30-21-11-990-803 (Sheet 2 of 3)

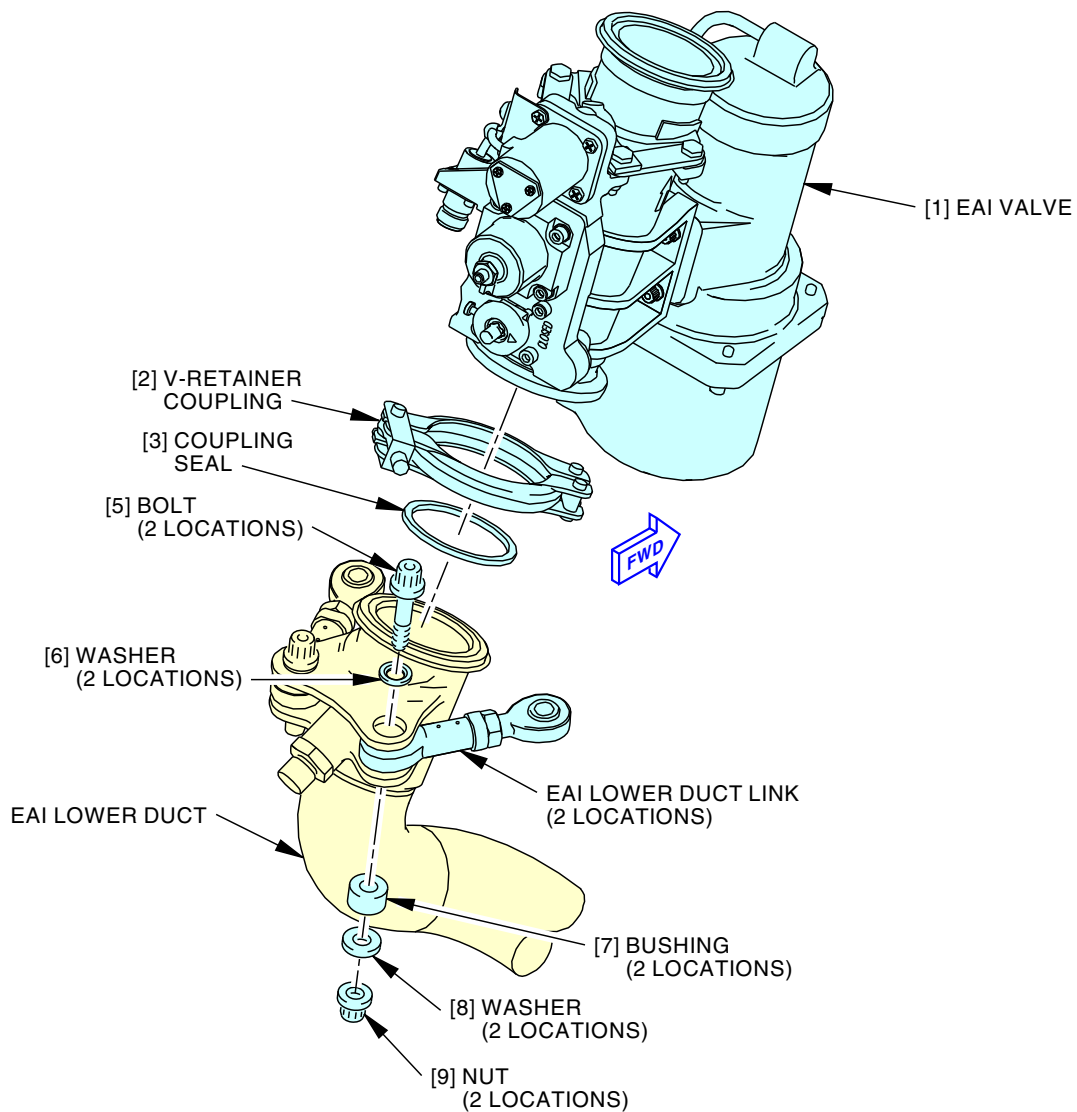
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Engine Anti-Ice Valve Installation
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TASK 30-21-11-400-801

3. Engine Anti-Ice Valve Installation

(Figure 401)

A. General

(1) This task gives instructions to install the engine anti-ice valve.

B. References

Reference	Title
36-00-00-860-805	Supply Pressure Upstream of the PRSOV with Engines Off (P/B 201)
36-00-00-860-806	Remove Pressure from the Pneumatic System (P/B 201)
70-00-01-910-803-G00	Electrical Connector Disconnection and Connection (P/B 201)
71-11-04-410-801-G00	Close the Fan Cowl Panels (Selection) (P/B 201)
78-31-00-010-802-G00	Close the Thrust Reverser (Selection) (P/B 201)
78-31-00-440-801-G00	Thrust Reverser Activation After Ground Maintenance (P/B 201)
SWPM 20-20-00	ELECTRICAL BONDING PROCESSES

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
COM-1550	Bonding Meter - Approved, Intrinsically Safe (Approved for use in Class I, Divisions I & II hazardous (classified) locations. Outside these hazardous locations, COM-614 can be used in lieu of COM-1550). Part #: 620LK Supplier: 1CRL2 Part #: M1 Supplier: 3AD17 Part #: M1B Supplier: 3AD17 Part #: T477W (C15292) Supplier: 06659
STD-664	Pliers - Teflon-jawed (or Equivalent Soft-Jawed)
STD-858	Tag - DO NOT OPERATE
STD-3906	Mallet - Rubber

D. Consumable Materials

Reference	Description	Specification
A00160	Sealant - Firewall - Hydraulic Fluid Resistant	BMS5-63
D00006	Compound - Antiseize Pure Nickel Special - Never-Seez NSBT	
G51249	Agent - Parting, Peelable	BAC5000

E. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	EAI valve	30-21-11-01-015	SIA ALL
3	Coupling seal	30-21-11-01-010	SIA ALL

F. Location Zones

Zone	Area
410	Subzone - Engine 1

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(Continued)

Zone	Area
420	Subzone - Engine 2

G. Access Panels

Number	Name/Location
413	Left Fan Cowl, Engine 1
414	Right Fan Cowl, Engine 1
415	Left Thrust Reverser, Engine 1
416	Right Thrust Reverser, Engine 1
423	Left Fan Cowl, Engine 2
424	Right Fan Cowl, Engine 2
425	Left Thrust Reverser, Engine 2
426	Right Thrust Reverser, Engine 2

H. Engine Anti-Ice Valve Installation

SUBTASK 30-21-11-420-001

- (1) Remove the protective covers from the EAI ducts and the EAI valve [1].

SUBTASK 30-21-11-210-002

- (2) Examine the EAI valve [1] and the EAI duct flanges for damage.
 - (a) Scratches, dents, and damage are not permitted.

SUBTASK 30-21-11-210-001

- (3) Examine the V-retainer couplings [2] for damage.
 - (a) Scratches, cracks, dents, and damage are not permitted.

SUBTASK 30-21-11-420-002

- (4) Do these steps to install the EAI valve [1]:
 - (a) Check the coupling seals [3] for visible damage.
 - 1) If damage is found, discard the coupling seals [3] and install new coupling seals [3].
 - (b) Put the coupling seals [3] between the EAI valve [1] and EAI ducts.
 - (c) Install the EAI valve [1] between the EAI ducts.
 - (d) Loosely install the V-retainer couplings [2] to attach the EAI valve [1] to the EAI ducts.
 - 1) Make sure that V-retainer couplings [2] are installed in their right position (View B, Figure 401).
 - 2) Adjust the position of the EAI valve [1] to maximize the clearance between the EAI valve [1] and the adjacent components.
 - 3) Make sure that the access to the EAI valve [1] lockout feature is maintained on the aft side.
 - (e) Attach the EAI lower duct links to the EAI lower duct as follows:
 - 1) Apply Never-Seez NSBT compound, D00006, to the threads and shanks of the bolts [5].
 - 2) Install the bolts [5], washers [6], bushings [7], washers [8], and nuts [9] to attach the EAI lower duct links to the EAI lower duct.
 - 3) Tighten the bolts [5] heads to 242 in-lb (27 N·m) - 258 in-lb (29 N·m) or tighten the nuts [9] to 194 in-lb (22 N·m) - 206 in-lb (23 N·m).

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CAUTION

MAKE SURE THAT INSTALLED COUPLINGS DO NOT APPLY A FORCE ON THE DUCTS OR ENGINE ANTI-ICE VALVE. DAMAGE TO THE DUCTS AND ENGINE ANTI-ICE VALVE CAN OCCUR



CAUTION

DO NOT APPLY FORCE TO THE DUCT VALVE INTERFACE WITH THE V CLAMP WITHOUT FLANGE ENGAGEMENT. DAMAGE TO THE EQUIPMENT CAN OCCUR.

- (f) Do these steps to tighten the V-retainer couplings [2]:
- 1) Tighten the V-retainer couplings [2] to 120 ± 5 in-lb (14 ± 1 N·m).
 - 2) Lightly tap the surface of each V-retainer coupling [2] with a rubber mallet, STD-3906.
 - 3) Tighten the V-retainer couplings [2] again to 120 ± 5 in-lb (14 ± 1 N·m).
 - 4) Continue the above steps until the nuts on the V-retainer couplings [2] do not turn and a torque of 120 ± 5 in-lb (14 ± 1 N·m) is reached.

SUBTASK 30-21-11-760-001

- (5) Measure the electrical bonding resistance between the EAI valve [1] and adjacent engine core case (SWPM 20-20-00).
- (a) Use an intrinsically safe approved bonding meter, COM-1550.
 - (b) Make sure that the resistance is 0.005 ohm (5.0 milliohms) or less.

SUBTASK 30-21-11-020-003

- (6) Connect the electrical connector [4] to the EAI valve [1] as follows:
- (a) Remove the protective cover from the electrical connector [4].
 - (b) Engage the electrical connector [4] to the receptacle.
 - (c) Tighten the electrical connector [4] with a teflon-jawed pliers, STD-664, to $\frac{1}{8}$ turn more (TASK 70-00-01-910-803-G00).

I. Engine Anti-Ice Valve Installation Test

SUBTASK 30-21-11-860-005

- (1) If the EAI valve [1] was installed on the left engine, do this step:
- (a) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	6	C00148	ANTI-ICE & RAIN ENG 1 & WING CONT
A	7	C01001	ANTI-ICE & RAIN ENG 1 COWL AI VALVE

SUBTASK 30-21-11-860-006

- (2) If the EAI valve [1] was installed on the right engine, do this step:
- (a) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	7	C01002	ANTI-ICE & RAIN ENG 2 COWL AI VALVE

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F/O Electrical System Panel, P6-5

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	11	C04082	ANTI-ICE & RAIN ENGINE 2 CONTROL

SUBTASK 30-21-11-860-007

- (3) Do these steps to remove the DO NOT OPERATE tags, STD-858, from the applicable ENGINE START switch and START LEVER switch:
- (a) On the P5 overhead panel, remove the DO NOT OPERATE tag, STD-858, from the applicable ENGINE START switch.
 - (b) On the P10 control stand, remove the DO NOT OPERATE tag, STD-858, from the applicable START LEVER switch.

SUBTASK 30-21-11-860-008



DO NOT KEEP THE COWL TAI VALVE OPEN FOR MORE THAN THE SPECIFIED TIME WHEN THE TEMPERATURE IS MORE THAN THE SPECIFIED LIMIT. DAMAGE TO THE INLET COWL CAN OCCUR.

- (4) If the outside air temperature is more than 50°F (10°C), operate the engine anti-ice system for 30 seconds or less.

NOTE: There is no time limit for operation of the engine anti-ice system when the temperature is at or less than 50°F (10°C).

SUBTASK 30-21-11-860-009

- (5) Use the Auxiliary Power Unit (APU) or external air supply source to pressurize the TAI duct, do this task: Supply Pressure Upstream of the PRSOV with Engines Off, TASK 36-00-00-860-805.

SUBTASK 30-21-11-860-010

- (6) Do this test of the COWL VALVE, COWL ANTI-ICE, and ENG ANTI-ICE lights:
- (a) Push and release the COWL VALVE, COWL ANTI-ICE, and ENG ANTI-ICE lights, on the P5-11 engine and wing anti-ice panel.
 - (b) Make sure that each light comes on and then goes off.

SUBTASK 30-21-11-210-003

- (7) Make sure that the P5-11 engine and wing anti-ice panel commands the EAI valves open:
- (a) Put the ENG ANTI-ICE 1 switch to the ON position.
 - 1) Make sure that the left COWL VALVE light comes on within 6 seconds then extinguishes.

NOTE: During this time the MASTER CAUTION and ANTI-ICE annunciator should remain extinguished.
 - 2) Make sure that the green TAI indication shows on the MAX Display System (MDS) display above the left N1 speed display.
 - (b) Put the ENG ANTI-ICE 2 switch to the ON position.
 - 1) Make sure that the right COWL VALVE light comes on within 6 seconds then extinguishes.

NOTE: During this time the MASTER CAUTION and ANTI-ICE annunciator should remain extinguished.
 - 2) Make sure that the green TAI indication shows on the MDS display above the right N1 speed display.

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SUBTASK 30-21-11-790-001



WARNING

DO NOT TOUCH THE COWL TAI DUCTS OR TAI VALVE WHEN THEY ARE HOT. IF YOU ARE NOT CAREFUL, INJURIES TO PERSONS CAN OCCUR.

- (8) Make sure that there is no leakage around the EAI valve [1] and the EAI ducts.
 - (a) If it is necessary, align the V-retainer couplings [2] to repair the leakage.

SUBTASK 30-21-11-210-004

- (9) Make sure that the P5-11 engine and wing anti-ice panel commands the EAI valves closed:
 - (a) Put the ENG ANTI-ICE 1 switch to the OFF position.
 - 1) Make sure that the left COWL VALVE light comes on within 6 seconds then extinguishes.

NOTE: During this time the MASTER CAUTION and ANTI-ICE annunciator should remain extinguished.
 - 2) Make sure that the green TAI indication on the MDS display above the left N1 speed display goes off.
 - (b) Put the ENG ANTI-ICE 2 switch to the OFF position.
 - 1) Make sure that the right COWL VALVE light comes on within 6 seconds then extinguishes.

NOTE: During this time the MASTER CAUTION and ANTI-ICE annunciator should remain extinguished.
 - 2) Make sure the green TAI indication on the MDS display above the right N1 speed display goes off.

J. Put the Airplane Back to Its Usual Condition

SUBTASK 30-21-11-860-011

- (1) Remove pneumatic pressure, do this task: Remove Pressure from the Pneumatic System, TASK 36-00-00-860-806.

SUBTASK 30-21-11-410-001

- (2) If it is removed, install the 12 o'clock strut fairing [11] on the left or right side of the EAI valve [1] with flush head fasteners [10].
 - (a) Tighten the flush head fasteners [10] to 80 ±2 in-lb (9 ±0 N·m).
 - (b) Fill the gaps between the 12 o'clock strut fairing [11] and the engine fittings as follows:
 - 1) Apply peelable parting agent, G51249, to the gaps between the strut fairing and engine kit fittings.
 - 2) Apply sealant, A00160, to fill the gaps and provide a flush surface to the T/R seals.

SUBTASK 30-21-11-410-004



WARNING

OBEY THE INSTRUCTIONS IN THE PROCEDURE TO CLOSE THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (3) Do these tasks in sequence to safely close the applicable left or right thrust reversers:
 - (a) Do this task: Close the Thrust Reverser (Selection), TASK 78-31-00-010-802-G00.

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- 1) Close these access panels:

<u>Number</u>	<u>Name/Location</u>
415	Left Thrust Reverser, Engine 1
416	Right Thrust Reverser, Engine 1
425	Left Thrust Reverser, Engine 2
426	Right Thrust Reverser, Engine 2

- (b) Do this task: Close the Fan Cowl Panels (Selection), TASK 71-11-04-410-801-G00.

- 1) Close these access panels:

<u>Number</u>	<u>Name/Location</u>
413	Left Fan Cowl, Engine 1
414	Right Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2
424	Right Fan Cowl, Engine 2

- (c) Do this task: Thrust Reverser Activation After Ground Maintenance, TASK 78-31-00-440-801-G00.

———— **END OF TASK** ————

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ENGINE ANTI-ICE DUCT - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

- (1) Engine Anti-Ice Duct Removal
- (2) Engine Anti-Ice Duct Installation.

TASK 30-21-12-000-801

2. Engine Anti-Ice Duct - Removal

(Figure 401)

A. **General**

- (1) This task gives instructions to remove the Engine Anti-Ice Duct.
 - (a) Upper BIFI Fan Case Duct Assembly.
 - (b) Upper Core Duct Assembly.
 - (c) Lower Core Duct Assembly.
- (2) Each duct section may be removed individually. It is not necessary to remove all duct sections.

NOTE: Pneumatic ducts expand when heated and it may be needed to fully cool the duct in order to remove tension on the component.

B. **References**

Reference	Title
30-21-11-000-801	Engine Anti-Ice Valve Removal (P/B 401)
36-00-00-860-806	Remove Pressure from the Pneumatic System (P/B 201)
71-00-02-000-801-G00	Power Plant - Removal (P/B 401)
71-11-04-010-801-G00	Open the Fan Cowl Panels (Selection) (P/B 201)
78-31-00-010-801-G00	Open the Thrust Reverser (Selection) (P/B 201)
78-31-00-040-801-G00	Thrust Reverser Deactivation For Ground Maintenance (P/B 201)

C. **Tools/Equipment**

Reference	Description
STD-858	Tag - DO NOT OPERATE

D. **Consumable Materials**

Reference	Description	Specification
D50250	Oil - Mouse Milk Penetrating Oil	

E. **Location Zones**

Zone	Area
410	Subzone - Engine 1
420	Subzone - Engine 2

F. **Access Panels**

Number	Name/Location
413	Left Fan Cowl, Engine 1
414	Right Fan Cowl, Engine 1
415	Left Thrust Reverser, Engine 1
416	Right Thrust Reverser, Engine 1

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Number	Name/Location
423	Left Fan Cowl, Engine 2
424	Right Fan Cowl, Engine 2
425	Left Thrust Reverser, Engine 2
426	Right Thrust Reverser, Engine 2

G. Prepare for the Removal

SUBTASK 30-21-12-860-001

- (1) Do these steps to make sure that the ENGINE START switch and the START LEVER switch are not operated:
 - (a) Make sure that the applicable ENGINE START switch, on the P5 overhead panel, is in the AUTO or OFF position.
 - 1) Put a DO NOT OPERATE tag, STD-858, on the applicable ENGINE START switch.
 - (b) Make sure that the applicable START LEVER switch, on the P10 control stand, is in the CUTOFF position.
 - 1) Put a DO NOT OPERATE tag, STD-858, on the applicable START LEVER switch.

SUBTASK 30-21-12-860-002

- (2) If you remove the Engine Anti-Ice Duct on the left engine, do this step:
 - (a) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
A	6	C00148	ANTI-ICE & RAIN ENG 1 & WING CONT
A	7	C01001	ANTI-ICE & RAIN ENG 1 COWL AI VALVE

SUBTASK 30-21-12-860-003

- (3) If you remove the Engine Anti-Ice Duct on the right engine, do this step:
 - (a) Open this circuit breaker and install safety tag:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
B	7	C01002	ANTI-ICE & RAIN ENG 2 COWL AI VALVE

SUBTASK 30-21-12-010-001

- (4) Do these tasks in sequence to safely open the left and right thrust reversers on the applicable engine:



WARNING

DO THE DEACTIVATION PROCEDURE FOR THE THRUST REVERSER TO PREVENT THE OPERATION OF THE THRUST REVERSER. ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT.

- (a) Do this task: Thrust Reverser Deactivation For Ground Maintenance, TASK 78-31-00-040-801-G00.
- (b) Open the applicable left or right fan cowl panels (TASK 71-11-04-010-801-G00).
 - 1) Open these access panels:

Number	Name/Location
413	Left Fan Cowl, Engine 1

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<u>Number</u>	<u>Name/Location</u>
414	Right Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2
424	Right Fan Cowl, Engine 2



WARNING

OBEY THE INSTRUCTIONS IN THE PROCEDURE TO OPEN THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

(c) Open the applicable left or right thrust reversers (TASK 78-31-00-010-801-G00).

1) Open these access panels:

<u>Number</u>	<u>Name/Location</u>
415	Left Thrust Reverser, Engine 1
416	Right Thrust Reverser, Engine 1
425	Left Thrust Reverser, Engine 2
426	Right Thrust Reverser, Engine 2

SUBTASK 30-21-12-910-001



WARNING

REMOVE THE PRESSURE FROM THE PNEUMATIC DUCTS BEFORE YOU REMOVE A PNEUMATIC SYSTEM COMPONENT. HOT HIGH PRESSURE AIR CAN CAUSE INJURIES TO PERSONNEL OR DAMAGE TO EQUIPMENT.

(5) Do this task: Remove Pressure from the Pneumatic System, TASK 36-00-00-860-806.

SUBTASK 30-21-12-020-001

(6) Remove the Engine Anti-Ice Valve (TASK 30-21-11-000-801).

SUBTASK 30-21-12-010-002

(7) Do this task: Power Plant - Removal, TASK 71-00-02-000-801-G00.

H. Upper BIFI Fan Case Duct Assembly

SUBTASK 30-21-12-020-002



WARNING

BE CAREFUL WHEN YOU WORK ON THE ENGINE COMPONENTS IMMEDIATELY AFTER THE ENGINE IS SHUTDOWN. THE ENGINE COMPONENTS CAN STAY HOT FOR UP TO ONE HOUR AND CAN CAUSE INJURY.

(1) Disconnect the EAI Pressure Switch Connector [1] from the Upper BIFI/Fan Case Duct Assembly [2].

NOTE: Pneumatic ducts expand when hot and it may be difficult to disengage the valve from the ducting when hot. Allow engine to cool before removing valve.

It may be needed to disconnect the tubing links to disengage the valve from the duct flanges.

Do not attempt to adjust the turn barrel links to aid in removal or installation of the valve.

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SUBTASK 30-21-12-020-003



CAUTION

DO NOT BENT OR TWIST THE FLEX JOINTS. DAMAGE TO THE FLEX JOINTS CAN OCCUR.

- (2) Disconnect the Upper BIFI/Fan Case Duct Assembly [2] from the EAI Inlet Duct:
 - (a) Remove the V-Retainer Coupling [3] and coupling seal [4] from the EAI Inlet Duct.
 - 1) Make sure to check the coupling seal [4] for cracks, dents, or other damage.
 - (b) Lubricate bolts [5] with the mouse milk penetrating oil, D50250.
 - 1) Make sure that bolts [5] soak for 15 - 30 minutes.
 - 2) Lightly tap on the bolts [5] with a hammer and metal drift.



CAUTION

DO NOT DROP THE DUCT WHEN YOU REMOVE THE BOLTS FROM THE LINK ASSEMBLY. DAMAGE TO THE DUCT CAN OCCUR.

- (c) Remove the bolts [5], washers [6], bushings [7], washers [8], and nuts [9] that attach the link assemblies to the Upper BIFI/Fan Case Duct Assembly [2].
- (d) Remove the bolts [11] that attach to the EAI Cap Seal Assembly [12].
- (e) Remove the V-Retainer Coupling [3] and coupling seal [4] that attach to the Engine Anti-Ice Valve.
 - 1) Make sure to check the coupling seal [4] for cracks, dents, or other damage.
- (f) Carefully pull the Upper BIFI/Fan Case Duct Assembly [2] from the EAI Valve [15].
- (g) Install the protective covers on all duct and valve openings to keep out unwanted material.

I. Upper Core Duct Assembly

SUBTASK 30-21-12-020-004

- (1) Disconnect the pressure connector [17] from the EAI Upper Core Duct Assembly [18].

SUBTASK 30-21-12-020-005



CAUTION

DO NOT BENT OR TWIST THE FLEX JOINTS. DAMAGE TO THE FLEX JOINTS CAN OCCUR.

- (2) Disconnect the EAI Upper Core Duct Assembly [18] from the EAI Lower Core Duct Assembly [19]:
 - (a) Lubricate bolts [5] with the mouse milk penetrating oil, D50250.
 - 1) Make sure that bolts [5] soak for 15 - 30 minutes.
 - 2) Lightly tap on the bolts [5] with a hammer and metal drift.

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CAUTION

DO NOT DROP THE DUCT WHEN YOU REMOVE THE BOLTS FROM THE LINK ASSEMBLY. DAMAGE TO THE DUCT CAN OCCUR.

- (b) Remove the bolts [5], washers [6], bushings [7], washers [8], and nuts [9] that attach the link assemblies to the EAI Upper Core Duct Assembly [18].
- (c) Remove the V-Retainer Coupling [3] and coupling seal [4] that attach the EAI Upper Core Duct Assembly [18] to the EAI Lower Core Duct Assembly [19].
 - 1) Make sure to check the coupling seal [4] for cracks, dents, or other damage.
- (d) Carefully pull the EAI Upper Core Duct Assembly [18] from the EAI Lower Core Duct Assembly [19].
- (e) Install the protective covers on all duct and valve openings to keep out unwanted material.

J. Lower Core Duct Assembly

SUBTASK 30-21-12-020-006



CAUTION

DO NOT BENT OR TWIST THE FLEX JOINTS. DAMAGE TO THE FLEX JOINTS CAN OCCUR.

- (1) Disconnect the EAI Lower Core Duct Assembly [19] from the ECS Duct:
 - (a) Lubricate bolt [5] with the mouse milk penetrating oil, D50250.
 - 1) Make sure that bolt [5] soak for 15 - 30 minutes.
 - 2) Lightly tap on the bolt [5] with a hammer and metal drift.



CAUTION

DO NOT DROP THE DUCT WHEN YOU REMOVE THE BOLTS FROM THE LINK ASSEMBLY. DAMAGE TO THE DUCT CAN OCCUR.

- (b) Remove the bolt [5], washer [6], bushing [7], washer [8], and nut [9] that attach the link assembly to the EAI Lower Core Duct Assembly [19].
- (c) Remove the V-Retainer Coupling [3] and coupling seal [4] from the ECS Duct.
 - 1) Make sure to check the coupling seal [4] for cracks, dents, or other damage.
- (d) Carefully pull the EAI Lower Core Duct Assembly [19] from the ECS Duct.
- (e) Install the protective covers on all duct and valve openings to keep out unwanted material.

————— **END OF TASK** —————

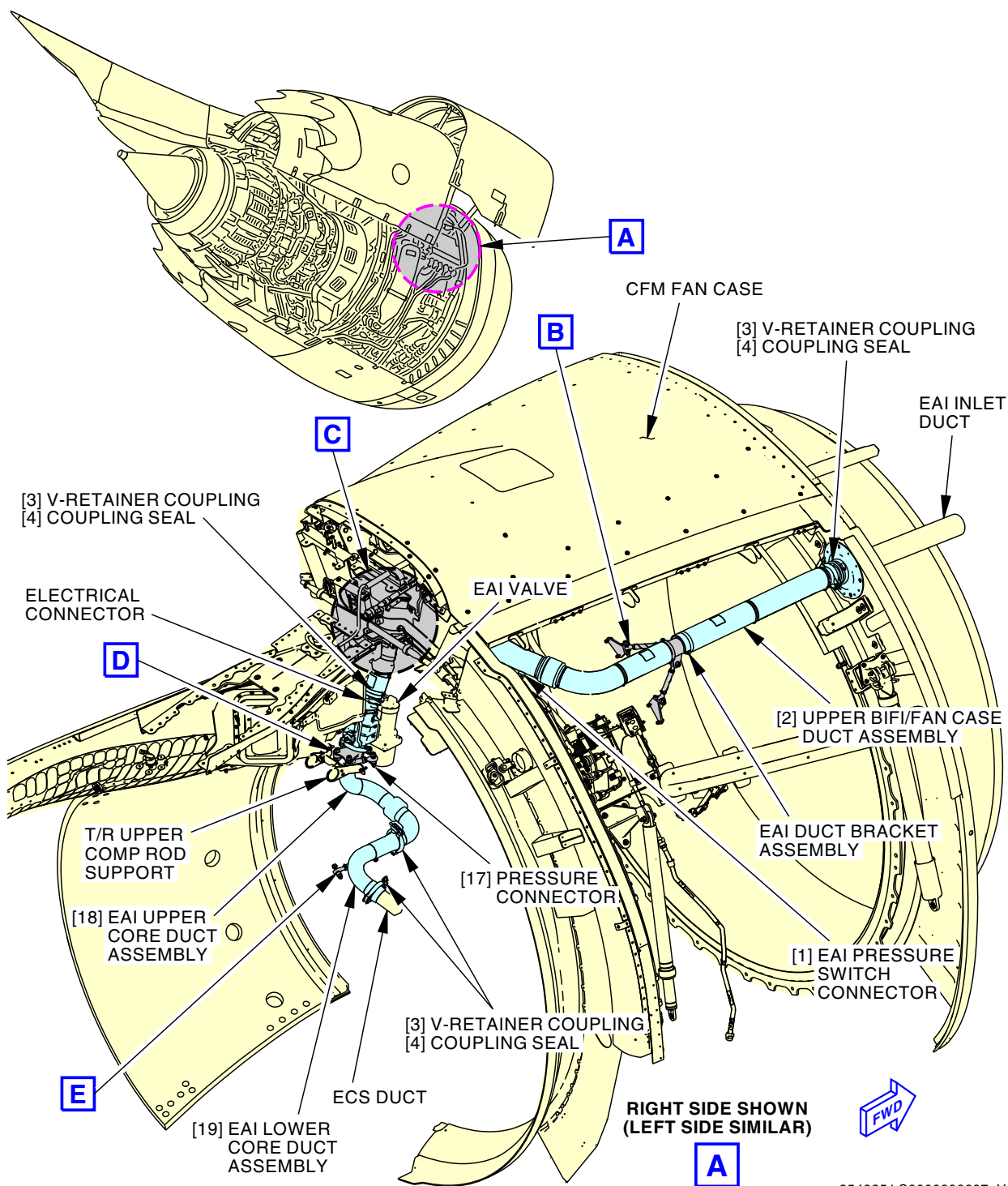
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Engine Anti-Ice Duct Assembly Installation
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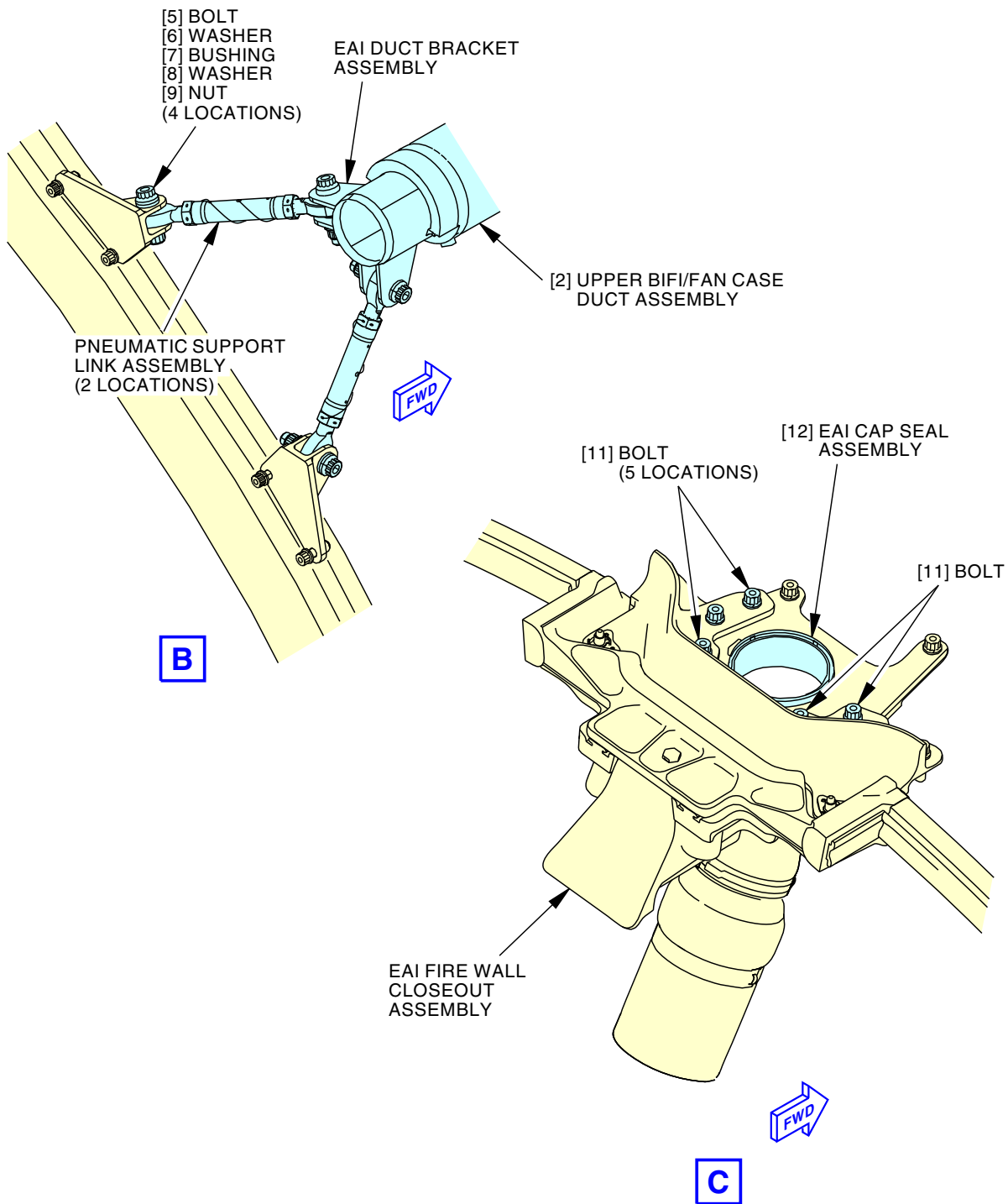
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Engine Anti-Ice Duct Assembly Installation
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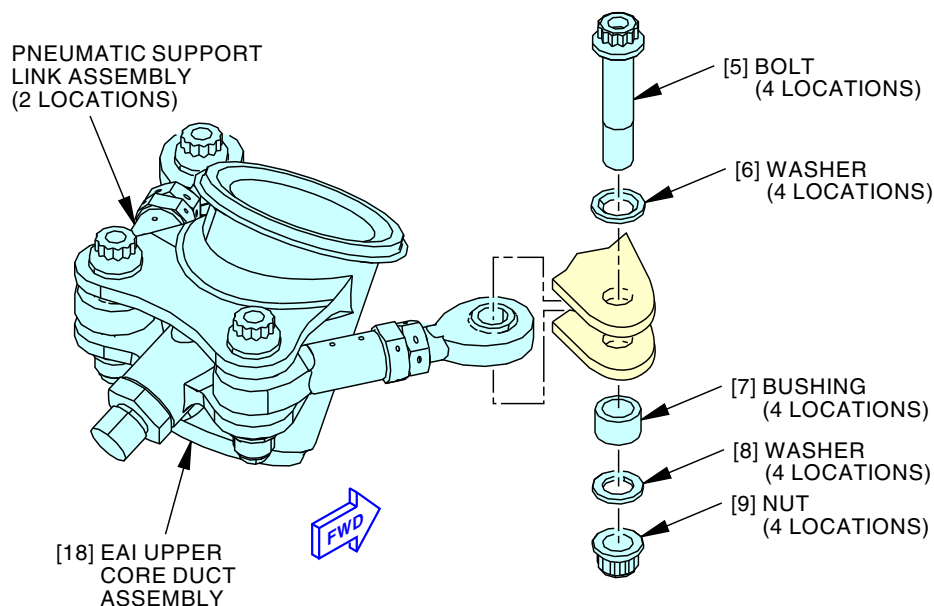
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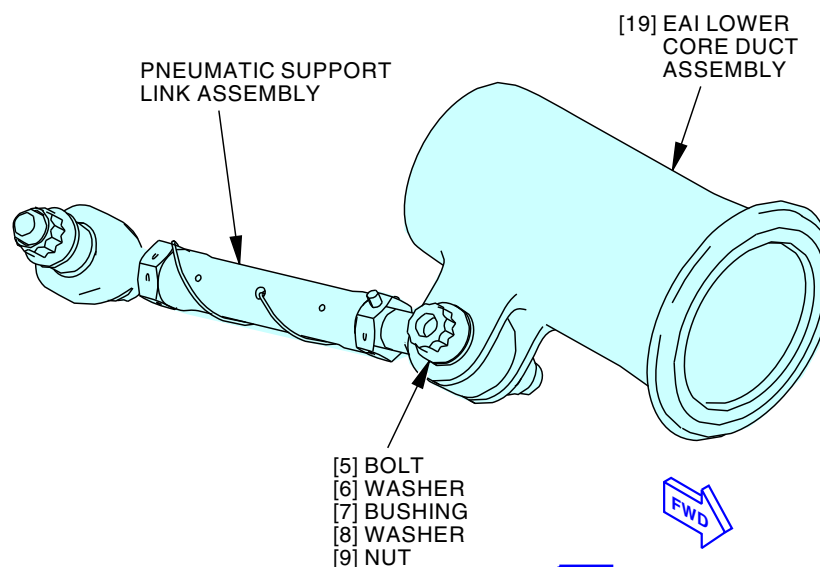
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E

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Engine Anti-Ice Duct Assembly Installation
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TASK 30-21-12-400-801

3. Engine Anti-Ice Duct - Installation

(Figure 401)

A. General

- (1) This task gives instructions to install the Engine Anti-Ice Duct.
 - (a) Lower Core Duct Assembly.
 - (b) Upper Core Duct Assembly.
 - (c) Upper BIFI Fan Case Duct Assembly.

B. References

Reference	Title
30-21-11-400-801	Engine Anti-Ice Valve Installation (P/B 401)
36-00-00-860-805	Supply Pressure Upstream of the PRSOV with Engines Off (P/B 201)
36-00-00-860-806	Remove Pressure from the Pneumatic System (P/B 201)
71-00-02-400-801-G00	Power Plant - Installation (P/B 401)
71-11-04-410-801-G00	Close the Fan Cowl Panels (Selection) (P/B 201)
78-31-00-010-802-G00	Close the Thrust Reverser (Selection) (P/B 201)
78-31-00-440-801-G00	Thrust Reverser Activation After Ground Maintenance (P/B 201)

C. Tools/Equipment

Reference	Description
STD-858	Tag - DO NOT OPERATE
STD-3906	Mallet - Rubber

D. Consumable Materials

Reference	Description	Specification
A00803	Sealant - Firewall - Hydraulic Fluid Resistant	BMS5-63 Type I
B00130	Alcohol - Isopropyl	TT-I-735
D00006	Compound - Antiseize Pure Nickel Special - Never-Seez NSBT	
G00034	Cotton Wiper - Process Cleaning Absorbent Wiper (Cheesecloth, Gauze)	AMS3819 Class 1 Grade A or B Form 1 (Supersede BMS15-5 CL A)
G50135	Leak Detector - Liquid, Non-Corrosive Soap Compound	MIL-PRF-25567

E. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
2	Upper BIFI/Fan Case Duct Assembly	30-21-12-01-360	SIA ALL
4	Coupling seal	30-21-12-01-355	SIA ALL
18	EAI Upper Core Duct Assembly	30-21-12-01-230	SIA ALL
19	EAI Lower Core Duct Assembly	30-21-12-01-220	SIA ALL

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F. Location Zones

Zone	Area
410	Subzone - Engine 1
420	Subzone - Engine 2

G. Access Panels

Number	Name/Location
413	Left Fan Cowl, Engine 1
414	Right Fan Cowl, Engine 1
415	Left Thrust Reverser, Engine 1
416	Right Thrust Reverser, Engine 1
423	Left Fan Cowl, Engine 2
424	Right Fan Cowl, Engine 2
425	Left Thrust Reverser, Engine 2
426	Right Thrust Reverser, Engine 2

H. Lower Core Duct Assembly

SUBTASK 30-21-12-420-001



DO NOT BENT OR TWIST THE FLEX JOINTS. DAMAGE TO THE FLEX JOINTS CAN OCCUR.

- (1) Connect the EAI Lower Core Duct Assembly [19] to the ECS Duct:
 - (a) Remove the protective covers from duct and valve openings.
 - (b) Carefully align the EAI Lower Core Duct Assembly [19] to the ECS Duct.
 - (c) Install the V-Retainer Coupling [3] and a new coupling seal [4] between the EAI Lower Core Duct Assembly [19] and ECS Duct.
 - 1) Make sure that there is no scratches, cuts, pits, and foreign material for the coupling seal [4] and V-Retainer Coupling [3].
 - (d) Use a rubber mallet, STD-3906, to lightly tap the EAI Lower Core Duct Assembly [19].
 - (e) Tighten the V-Retainer Coupling [3] to 120 ±5 in-lb (14 ±1 N·m).



BE CAREFUL NOT TO DROP THE DUCT WHEN YOU INSTALL THE BOLTS TO THE LINK ASSEMBLY. DAMAGE TO THE DUCT CAN OCCUR.

- (f) Install the bolt [5], washer [6], new bushing [7], washer [8], and nut [9] that attach the link assembly to the EAI Lower Core Duct Assembly [19].
 - 1) Apply Never-Seez NSBT compound, D00006, to the bolts [5].
 - 2) Adjust the jam nut on the link assemblies for length.
 - 3) Tighten the bolts [5] to 250 in-lb (28 N·m).
 - 4) Tighten the nuts [9] to 200 in-lb (23 N·m).

I. Upper Core Duct Assembly

SUBTASK 30-21-12-420-002

- (1) Connect the pressure connector [17] to the EAI Upper Core Duct Assembly [18].

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SUBTASK 30-21-12-420-003



CAUTION

DO NOT BENT OR TWIST THE FLEX JOINTS. DAMAGE TO THE FLEX JOINTS CAN OCCUR.

- (2) Connect the EAI Upper Core Duct Assembly [18] to the EAI Lower Core Duct Assembly [19]:
 - (a) Remove the protective covers from duct and valve openings.
 - (b) Carefully align the EAI Upper Core Duct Assembly [18] to the EAI Lower Core Duct Assembly [19].
 - (c) Install the V-Retainer Coupling [3] and a new coupling seal [4] between the EAI Upper Core Duct Assembly [18] and EAI Lower Core Duct Assembly [19].
 - 1) Make sure that there is no scratches, cuts, pits, and foreign material for the coupling seal [4] and V-Retainer Coupling [3].
 - (d) Use a rubber mallet, STD-3906 to lightly tap the EAI Upper Core Duct Assembly [18].
 - (e) Tighten the V-Retainer Coupling [3] to 120 $\pm$ 5 in-lb (14 $\pm$ 1 N·m).



CAUTION

BE CAREFUL NOT TO DROP THE DUCT WHEN YOU INSTALL THE BOLTS TO THE LINK ASSEMBLY. DAMAGE TO THE DUCT CAN OCCUR.

- (f) Install the bolts [5], washers [6], new bushings [7], washers [8], and nuts [9] that attach the link assemblies to the EAI Upper Core Duct Assembly [18].
 - 1) Apply Never-Seez NSBT compound, D00006, to the bolts [5].
 - 2) Adjust the jam nut on the link assemblies for length.
 - 3) Tighten the bolts [5] to 250 in-lb (28 N·m).
 - 4) Tighten the nuts [9] to 200 in-lb (23 N·m).

J. Upper BIFI Fan Case Duct Assembly

SUBTASK 30-21-12-420-004



CAUTION

DO NOT BENT OR TWIST THE FLEX JOINTS. DAMAGE TO THE FLEX JOINTS CAN OCCUR.

- (1) Connect the Upper BIFI/Fan Case Duct Assembly [2] to the EAI Inlet Duct:
 - (a) Remove the protective covers from duct and valve openings.
 - (b) Carefully align the Upper BIFI/Fan Case Duct Assembly [2] to the EAI Inlet Duct.
 - (c) Install the V-Retainer Coupling [3] and a new coupling seal [4] between the Upper BIFI/Fan Case Duct Assembly [2] and EAI Valve [15].
 - 1) Make sure that there is no scratches, cuts, pits, and foreign material for the coupling seal [4] and V-Retainer Coupling [3].
 - (d) Clean the bottom of the EAI Cap Seal Assembly [12] with alcohol, B00130.
 - 1) Make sure to wipe with a clean cotton wiper, G00034.
 - (e) Install the bolts [11] to the EAI Cap Seal Assembly [12].
 - (f) Apply a sealant, A00803, around the EAI Cap Seal Assembly [12].

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- (g) Install the V-Retainer Coupling [3] and a new coupling seal [4] to the EAI Inlet Duct.
- (h) Use a rubber mallet, STD-3906, to lightly tap the Upper BIFI/Fan Case Duct Assembly [2].
- (i) Tighten the V-Retainer Coupling [3] to 120 ±5 in-lb (14 ±1 N·m).



BE CAREFUL NOT TO DROP THE DUCT WHEN YOU INSTALL THE BOLTS TO THE LINK ASSEMBLY. DAMAGE TO THE DUCT CAN OCCUR.

- (j) Install the bolts [5], washers [6], new bushings [7], washers [8], and nuts [9] that attach the link assemblies to the Upper BIFI/Fan Case Duct Assembly [2].
 - 1) Apply Never-Seez NSBT compound, D00006, to the bolts [5].
 - 2) Adjust the jam nut on the link assemblies for length.
 - 3) Tighten the bolts [5] to 250 in-lb (28 N·m).
 - 4) Tighten the nuts [9] to 200 in-lb (23 N·m).

SUBTASK 30-21-12-420-005

- (2) Connect the EAI Pressure Switch Connector [1] to the Upper BIFI/Fan Case Duct Assembly [2].
 - (a) Tighten the end fitting of the EAI Pressure Switch Connector [1] to 270 ±14 in-lb (31 ±2 N·m).

K. Engine Anti-Ice Duct Installation Test

SUBTASK 30-21-12-420-007

- (1) Do this task: Power Plant - Installation, TASK 71-00-02-400-801-G00.

SUBTASK 30-21-12-420-006

- (2) Install the Engine Anti-Ice Valve (TASK 30-21-11-400-801).

SUBTASK 30-21-12-860-004

- (3) If you install the Engine Anti-Ice Duct on the left engine, do this step:
 - (a) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	6	C00148	ANTI-ICE & RAIN ENG 1 & WING CONT
A	7	C01001	ANTI-ICE & RAIN ENG 1 COWL AI VALVE

SUBTASK 30-21-12-860-005

- (4) If you install the Engine Anti-Ice Duct on the right engine, do this step:
 - (a) Remove the safety tag and close this circuit breaker:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	7	C01002	ANTI-ICE & RAIN ENG 2 COWL AI VALVE

SUBTASK 30-21-12-860-006

- (5) Do these steps to remove the DO NOT OPERATE tags, STD-858, from the applicable ENGINE START switch and START LEVER switch:
 - (a) On the P5 overhead panel, remove the DO NOT OPERATE tag, STD-858, from the applicable ENGINE START switch.

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- (b) On the P10 control stand, remove the DO NOT OPERATE tag, STD-858, from the applicable START LEVER switch.

SUBTASK 30-21-12-860-007

- (6) Use the APU or an external air supply source to pressurize the TAI duct (TASK 36-00-00-860-805).

SUBTASK 30-21-12-860-008

- (7) Put the applicable ENG ANTI-ICE switch on the P5-11 panel to the ON position.

SUBTASK 30-21-12-860-009

- (8) Make sure the position indicator on the applicable anti-ice valve points to the OPEN position.

SUBTASK 30-21-12-860-010



BE CAREFUL WHEN YOU PRESSURIZE THE PNEUMATIC DUCTS. IF THE DUCTS COME APART WHEN THEY ARE PRESSURIZED, THEY CAN CAUSE INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT.

- (9) Make sure that the bleed air system pressure is at 25 psig (172 kPa)-30 psig (207 kPa).

NOTE: If you use a pneumatic ground cart, it may be necessary to select the higher flow capacity on pneumatic ground cart.

SUBTASK 30-21-12-860-011

- (10) Do a check for concentrated air leakage at the joint or duct connection for the duct sections that were installed.

- (a) Small air leakage is satisfactory at the coupling joint.
(b) Repair all large air leakages.

NOTE: A large leakage is when you feel the airflow with your hand at a distance of 12 in. (30 cm) or more from a point on the duct joint.

SUBTASK 30-21-12-860-012

- (11) If the upper BIFI/Fan Case Duct Assembly was installed, apply leak detector, G50135, to the fitting at the EAI Pressure Switch Connector [1] to determine if the air leakage exists.

- (a) No leakage is permitted.

SUBTASK 30-21-12-860-013

- (12) Put the applicable ENG ANTI-ICE switch on the P5-11 panel to the OFF position.

SUBTASK 30-21-12-860-014

- (13) Make sure the position indicator on the applicable anti-ice valve points to the CLOSED position.

L. Put Airplane Back to Its Usual Condition

SUBTASK 30-21-12-710-001

- (1) Do this task: Remove Pressure from the Pneumatic System, TASK 36-00-00-860-806.

SUBTASK 30-21-12-410-001



OBEY THE INSTRUCTIONS IN THE PROCEDURE TO CLOSE THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (2) Do these tasks in sequence to safely close the applicable left or right thrust reversers:

- (a) Do this task: Close the Thrust Reverser (Selection), TASK 78-31-00-010-802-G00.

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- 1) Close these access panels:

<u>Number</u>	<u>Name/Location</u>
415	Left Thrust Reverser, Engine 1
416	Right Thrust Reverser, Engine 1
425	Left Thrust Reverser, Engine 2
426	Right Thrust Reverser, Engine 2

- (b) Do this task: Close the Fan Cowl Panels (Selection), TASK 71-11-04-410-801-G00.

- 1) Close these access panels:

<u>Number</u>	<u>Name/Location</u>
413	Left Fan Cowl, Engine 1
414	Right Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2
424	Right Fan Cowl, Engine 2

- (c) Do this task: Thrust Reverser Activation After Ground Maintenance, TASK 78-31-00-440-801-G00.

———— **END OF TASK** ————

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ENGINE ANTI-ICE PRESSURE SWITCH - REMOVAL/INSTALLATION

1. General

- A. This procedure has these tasks:
- (1) Engine Anti-Ice Pressure Switch Removal
 - (2) Engine Anti-Ice Pressure Switch Installation.

TASK 30-21-21-000-801

2. Engine Anti-Ice Pressure Switch Removal

(Figure 401)

A. **General**

- (1) This task gives the instructions to remove an engine anti-ice pressure switch.
- (2) This task is applicable to all pressure switches for the engine anti-ice system.

B. **References**

Reference	Title
70-00-01-910-803-G00	Electrical Connector Disconnection and Connection (P/B 201)
71-11-04-010-801-G00	Open the Fan Cowl Panels (Selection) (P/B 201)

C. **Tools/Equipment**

Reference	Description
STD-858	Tag - DO NOT OPERATE

D. **Location Zones**

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

E. **Access Panels**

Number	Name/Location
414	Right Fan Cowl, Engine 1
424	Right Fan Cowl, Engine 2

F. **Prepare for the Removal**

SUBTASK 30-21-21-860-001

- (1) Do these steps to make sure that the ENGINE START switch and the START LEVER switch are not operated:
 - (a) Make sure that the applicable ENGINE START switch, on the P5 overhead panel, is in the AUTO or OFF position.
 - 1) Put a DO NOT OPERATE tag, STD-858, on the applicable ENGINE START switch.
 - (b) Make sure that the applicable START LEVER switch, on the P10 control stand, is in the CUTOFF position.
 - 1) Put a DO NOT OPERATE tag, STD-858, on the applicable START LEVER switch.

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SUBTASK 30-21-21-860-002

- (2) For the No. 1 engine, open these circuit breakers:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	6	C00148	ANTI-ICE & RAIN ENG 1 & WING CONT
A	7	C01001	ANTI-ICE & RAIN ENG 1 COWL AI VALVE

SUBTASK 30-21-21-860-003

- (3) For the No. 2 engine, open these circuit breakers:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	7	C01002	ANTI-ICE & RAIN ENG 2 COWL AI VALVE

F/O Electrical System Panel, P6-5

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	11	C04082	ANTI-ICE & RAIN ENGINE 2 CONTROL

SUBTASK 30-21-21-010-001

- (4) On the applicable engine, open the right fan cowl panel (TASK 71-11-04-010-801-G00).

- (a) Open these access panels:

<u>Number</u>	<u>Name/Location</u>
414	Right Fan Cowl, Engine 1
424	Right Fan Cowl, Engine 2

G. Engine Anti-Ice Pressure Switch Removal

SUBTASK 30-21-21-020-001



BE CAREFUL WHEN YOU WORK ON THE ENGINE COMPONENTS IMMEDIATELY AFTER THE ENGINE IS SHUTDOWN. THE ENGINE COMPONENTS CAN STAY HOT FOR UP TO ONE HOUR AND CAN CAUSE INJURY.



USE TEFLON-JAWED PLIERS TO LOOSEN ELECTRICAL CONNECTORS. DO NOT USE METAL-JAWED PLIERS. DAMAGE TO THE ELECTRICAL CONNECTORS COULD OCCUR.

- (1) Disconnect the electrical connector from the pressure switch as follows (TASK 70-00-01-910-803-G00):

- (a) If you will remove the over pressure switch [1], disconnect the electrical connector [7].

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- (b) If you will remove the under pressure switch [2], disconnect the electrical connector [8].

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- (c) If you will remove the minimum pressure switch [3], disconnect the electrical connector [9].

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SUBTASK 30-21-21-020-002



CAUTION

USE TWO WRENCHES TO LOOSEN OR TIGHTEN THE FITTING. IF YOU TWIST THE TUBE OR FITTING, YOU CAN CAUSE DAMAGE TO THEM.

- (2) Remove the pneumatic fitting [4] from the pressure switch.

SUBTASK 30-21-21-020-003

- (3) Remove the two bolts [5] to loosen the clamp [6].

SUBTASK 30-21-21-020-004

- (4) Remove the clamp [6] and the pressure switch from the bracket.

SUBTASK 30-21-21-480-001

- (5) Install the protective covers on the electrical connector and the pneumatic fitting.

————— **END OF TASK** —————

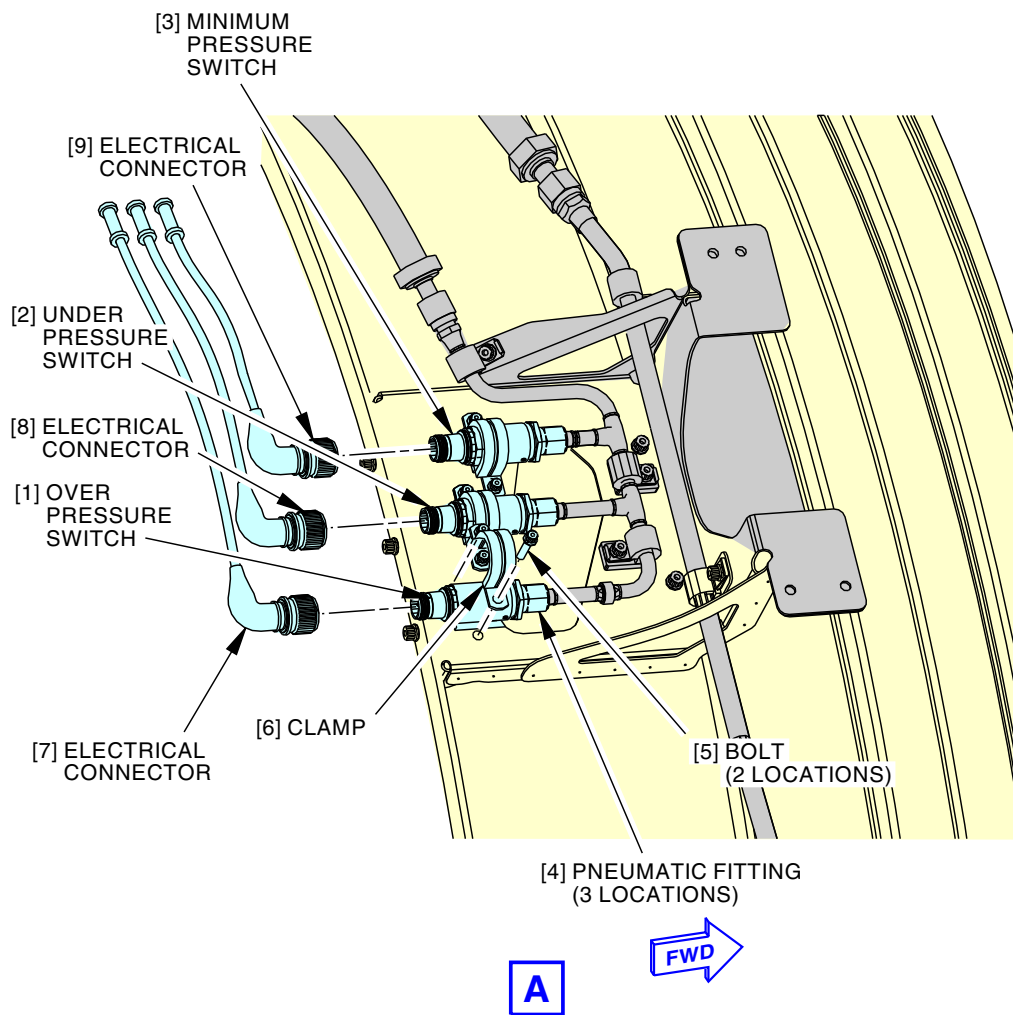
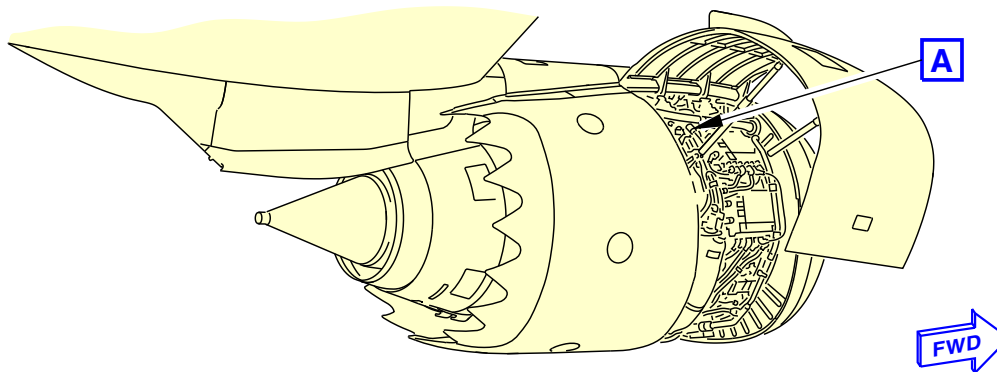
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Engine Anti-Ice Pressure Switch Installation
Figure 401/30-21-21-990-801 (Sheet 1 of 2)

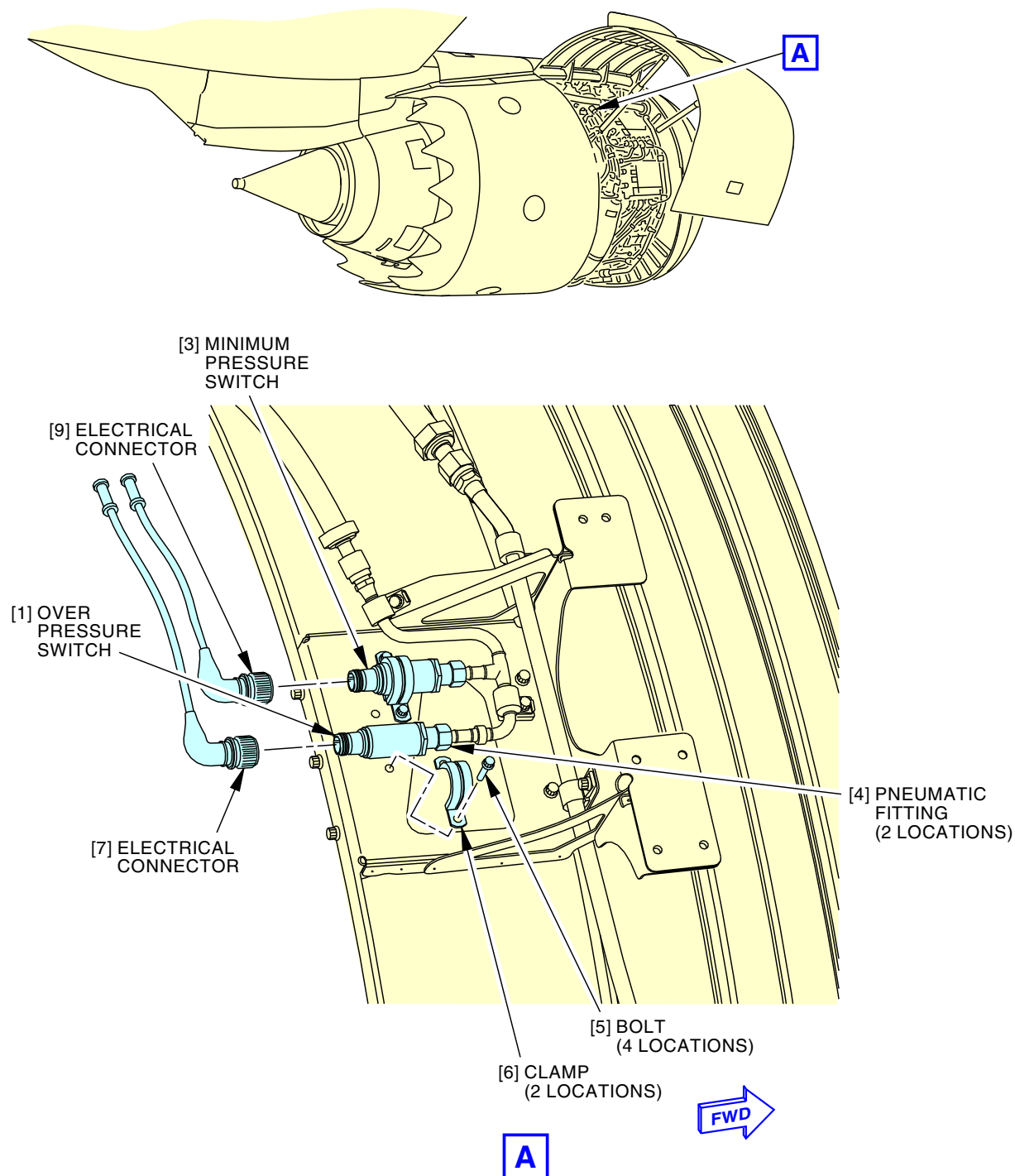
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Engine Anti-Ice Pressure Switch Installation
Figure 401/30-21-21-990-801 (Sheet 2 of 2)

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TASK 30-21-21-400-801

3. Engine Anti-Ice Pressure Switch Installation

(Figure 401)

A. General

- (1) This task gives the instructions to install an engine anti-ice pressure switch.
- (2) This task is applicable to all pressure switches for the engine anti-ice system.

B. References

Reference	Title
36-00-00-860-805	Supply Pressure Upstream of the PRSOV with Engines Off (P/B 201)
36-00-00-860-806	Remove Pressure from the Pneumatic System (P/B 201)
70-00-01-910-803-G00	Electrical Connector Disconnection and Connection (P/B 201)
71-11-04-410-801-G00	Close the Fan Cowl Panels (Selection) (P/B 201)

C. Tools/Equipment

Reference	Description
STD-664	Pliers - Teflon-jawed (or Equivalent Soft-Jawed)
STD-858	Tag - DO NOT OPERATE
STD-1010	Wrench - Strap

D. Consumable Materials

Reference	Description	Specification
D00006	Compound - Antiseize Pure Nickel Special - Never-Seez NSBT	
G50135	Leak Detector - Liquid, Non-Corrosive Soap Compound	MIL-PRF-25567

E. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Over pressure switch	30-21-21-01-075	SIA ALL
2	Under pressure switch	30-21-21-01-070	SIA 001-005
3	Minimum pressure switch	30-21-21-01-065	SIA ALL

F. Location Zones

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

G. Access Panels

Number	Name/Location
414	Right Fan Cowl, Engine 1
424	Right Fan Cowl, Engine 2

H. Engine Anti-Ice Pressure Switch Installation

SUBTASK 30-21-21-080-001

- (1) Remove the protective covers from the electrical connector and the pneumatic fitting.

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SUBTASK 30-21-21-420-001

- (2) Loosely install the pneumatic fitting [4] on the over pressure switch [1] or under pressure switch [2] or minimum pressure switch [3] that you will install.

SIA 006-999; SIA 001-005 POST SB 737-30-1074

SUBTASK 30-21-21-420-006

- (3) Loosely install the pneumatic fitting [4] on the over pressure switch [1] or minimum pressure switch [3] that you will install.

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SUBTASK 30-21-21-640-001

- (4) Lubricate the bolt shanks and threads on the two bolts [5] with Never-Seez NSBT compound, D00006.

SUBTASK 30-21-21-420-002

- (5) Loosely install the pressure switch on the bracket with a U-type clamp [6] and two bolts [5].
 - (a) Do not tighten the bolts [5] at this time.

NOTE: This will allow the switch to be properly position when you tighten the pneumatic fitting.

SUBTASK 30-21-21-420-003



USE TWO WRENCHES TO LOOSEN OR TIGHTEN THE FITTING. IF YOU TWIST THE TUBE OR FITTING, YOU CAN CAUSE DAMAGE TO THEM.

- (6) Tighten the pneumatic fitting [4] to the pressure switch to 270 $\pm$ 13 in-lb (31 $\pm$ 2 N·m).

SUBTASK 30-21-21-420-004

- (7) Tighten the two bolts [5] to 25 $\pm$ 1 in-lb (3 $\pm$ 0 N·m).

SUBTASK 30-21-21-420-005



MAKE SURE THAT THE ELECTRICAL CONNECTORS ARE CLEAN BEFORE YOU CONNECT THEM. DIRTY ELECTRICAL CONNECTORS CAN CAUSE THRUST REVERSER CONTROL AND INDICATION PROBLEMS.



USE PLIERS THAT HAVE TEFLON JAWS TO TIGHTEN THE ELECTRICAL CONNECTORS. DO NOT USE PLIERS THAT HAVE METAL JAWS. METAL JAWS CAN CAUSE DAMAGE TO THE ELECTRICAL CONNECTORS.

- (8) Connect the electrical connector to the pressure switch as follows (TASK 70-00-01-910-803-G00):

NOTE: Engage the connector to its mating interface and turn the knurled coupling ring while wiggling the backshell assembly.

- (a) If you will install the over pressure switch [1], connect the electrical connector [7].

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- (b) If you will install the under pressure switch [2], connect the electrical connector [8].

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- (c) If you will install the minimum pressure switch [3], connect the electrical connector [9].

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- (d) Use a teflon-jawed pliers, STD-664 or strap wrench, STD-1010 to tighten the electrical connector $\frac{1}{8}$ turn more or until pliers slippage occurs.

I. Engine Anti-Ice Pressure Switch Installation Test

SUBTASK 30-21-21-860-004

- (1) For the No. 1 engine, close these circuit breakers:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	6	C00148	ANTI-ICE & RAIN ENG 1 & WING CONT
A	7	C01001	ANTI-ICE & RAIN ENG 1 COWL AI VALVE

SUBTASK 30-21-21-860-005

- (2) For the No. 2 engine, close these circuit breakers:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	7	C01002	ANTI-ICE & RAIN ENG 2 COWL AI VALVE

F/O Electrical System Panel, P6-5

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	11	C04082	ANTI-ICE & RAIN ENGINE 2 CONTROL

SUBTASK 30-21-21-860-006

- (3) Do these steps to remove the DO NOT OPERATE tags, STD-858, from the applicable ENGINE START switch and START LEVER switch:
- (a) On the P5 overhead panel, remove the DO NOT OPERATE tag, STD-858, from the applicable ENGINE START switch.
 - (b) On the P10 control stand, remove the DO NOT OPERATE tag, STD-858, from the applicable START LEVER switch.

SUBTASK 30-21-21-860-007

- (4) Use the APU or an external air supply source to pressurize the TAI duct (TASK 36-00-00-860-805).

SUBTASK 30-21-21-860-008

- (5) Put the applicable ENG ANTI-ICE switch on the P5-11 panel to the ON position.

SUBTASK 30-21-21-860-009

- (6) Make sure that the position indicator on the applicable anti-ice valve points to the OPEN position.

SUBTASK 30-21-21-860-010



BE CAREFUL WHEN YOU PRESSURIZE THE PNEUMATIC DUCTS. IF THE DUCTS COME APART WHEN THEY ARE PRESSURIZED, THEY CAN CAUSE INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT.

- (7) Make sure that the bleed air system pressure is at 25 psig (172 kPa)-35 psig (241 kPa).

NOTE: If you use a pneumatic ground cart, it may be necessary to select the higher flow capacity on the pneumatic ground cart.

SUBTASK 30-21-21-860-011

- (8) Apply leak detector, G50135, to the pneumatic fitting [4] to determine if the air leakage exists.

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- (a) No leakage is permitted.

SUBTASK 30-21-21-860-012

- (9) Put the applicable ENG ANTI-ICE switch on the P5-11 panel to the OFF position.

SUBTASK 30-21-21-860-013

- (10) Make sure that the position indicator on the applicable engine anti-ice valve points to the CLOSED position.

J. Put Airplane Back to Its Usual Condition

SUBTASK 30-21-21-710-001

- (1) Do this task: Remove Pressure from the Pneumatic System, TASK 36-00-00-860-806.

SUBTASK 30-21-21-410-001

- (2) On the applicable engine, close the right fan cowl panel (TASK 71-11-04-410-801-G00).

- (a) Close these access panels:

<u>Number</u>	<u>Name/Location</u>
414	Right Fan Cowl, Engine 1
424	Right Fan Cowl, Engine 2

———— **END OF TASK** ————

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AIR DATA SENSOR ANTI-ICE - MAINTENANCE PRACTICES

1. General

A. This procedure has these tasks:

- (1) AOA Vane, Pitot, Elevator Pitot, Temperature Probes - Deactivation
- (2) AOA Vane, Pitot, Elevator Pitot, Temperature Probes - Activation
- (3) Pitot Probe, Angle of Attack (AOA) Sensor, and Total Air Temperature (TAT) Probe - Replacement

NOTE: The angle of attack (AOA) sensors are also referred to as alpha vanes.

TASK 30-31-00-040-801

2. AOA Vane, Pitot, Elevator Pitot, Temperature Probes - Deactivation

(Figure 201)

A. **General**

- (1) This procedure removes electrical power to the AOA Vane, Pitot, Elevator Pitot, and Temperature Probe systems.

B. **Location Zones**

Zone	Area
113	Area Above and Outboard of Nose Landing Gear Wheel Well - Left
114	Area Above and Outboard of Nose Landing Gear Wheel Well - Right
211	Flight Compartment - Left
212	Flight Compartment - Right
323	Vertical Fin - Front Spar To Rear Spar
324	Vertical Fin - Rear Spar To Trailing Edge

C. **Procedure**

SUBTASK 30-31-00-860-001



DO NOT TOUCH THE AIR DATA SENSORS. THE SENSORS CAN GET VERY HOT. THE SENSORS CAN BURN YOU.



REMOVE ALL CAPS AND COVERS FROM ALL AIR DATA SENSORS. THE SENSORS BECOME HOT. THIS CAN CAUSE DAMAGE TO THE COVERS.

- (1) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
C	1	C00523	HEATERS CAPT PITOT
C	2	C00238	HEATERS TEMP PROBE
C	3	C01072	HEATERS ALPHA VANE LEFT
C	4	C00236	HEATERS ELEV PITOT LEFT
D	3	C01071	HEATERS ALPHA VANE RIGHT
D	4	C00237	HEATERS ELEV PITOT RIGHT
D	5	C00525	HEATERS F/O PITOT

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(Continued)

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	6	C00524	HEATERS AUX PITOT
D	8	C01946	PROBE AUTO HEAT CAPT
D	9	C01947	PROBE AUTO HEAT F/O

D. AOA Vane, Pitot, Elevator Pitot, Temperature Probes - Tryout

NOTE: This tryout is to make sure the AOA Vane, Pitot, Elevator Pitot, Temperature Probes is in a zero energy state.

SUBTASK 30-31-00-210-001

- (1) At the P5-9 Window/Pitot Heat Module do these steps:
 - (a) Set the PROBE HEAT A switch to the ON position.
 - 1) Make sure the CAPT PITOT, L ELEV PITOT, L ALPHA VANE, and TEMP PROBE lights on the Window and Pitot Heat Module remain ON.
 - (b) Set the PROBE HEAT A switch to the AUTO position.
 - (c) Set the PROBE HEAT B switch to the ON position.
 - 1) Make sure the F/O PITOT, R ELEV PITOT, R ALPHA VANE, and AUX PITOT lights on the Window and Pitot Heat Module remain ON.
 - (d) Set the PROBE HEAT B switch to the AUTO position.
 - (e) Set the four WINDOW HEAT switches to the ON position one at a time.
 - 1) Make sure the corresponding ON light on the Window and Pitot Heat Module remains OFF.
 - 2) Make sure the corresponding OVERHEAT light turns ON.
 - (f) Set all four WINDOW HEAT switches on the Window and Pitot Heat Module to the OFF position.

————— **END OF TASK** —————

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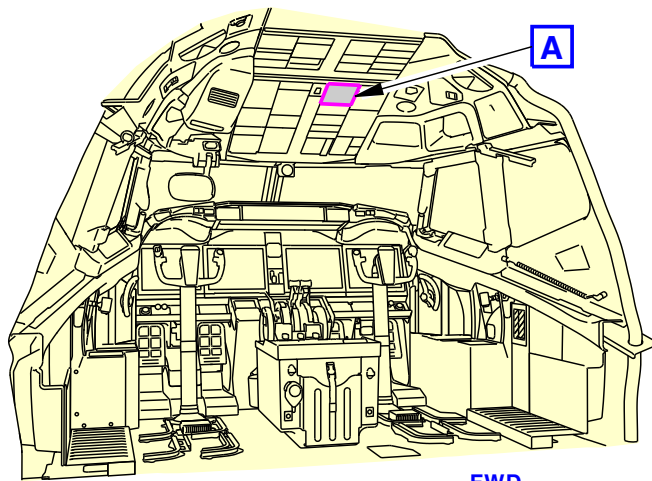
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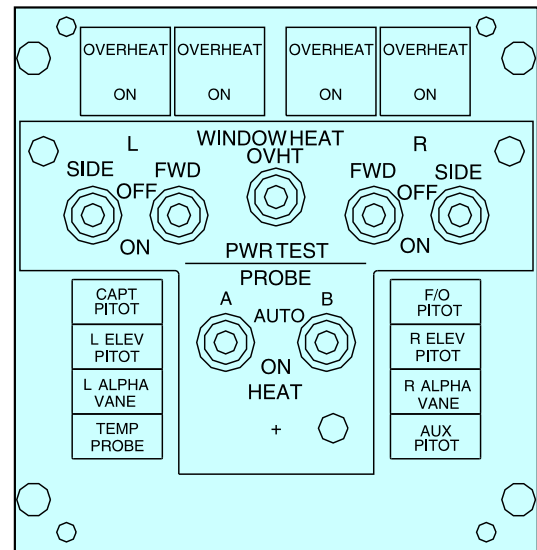
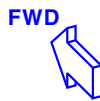
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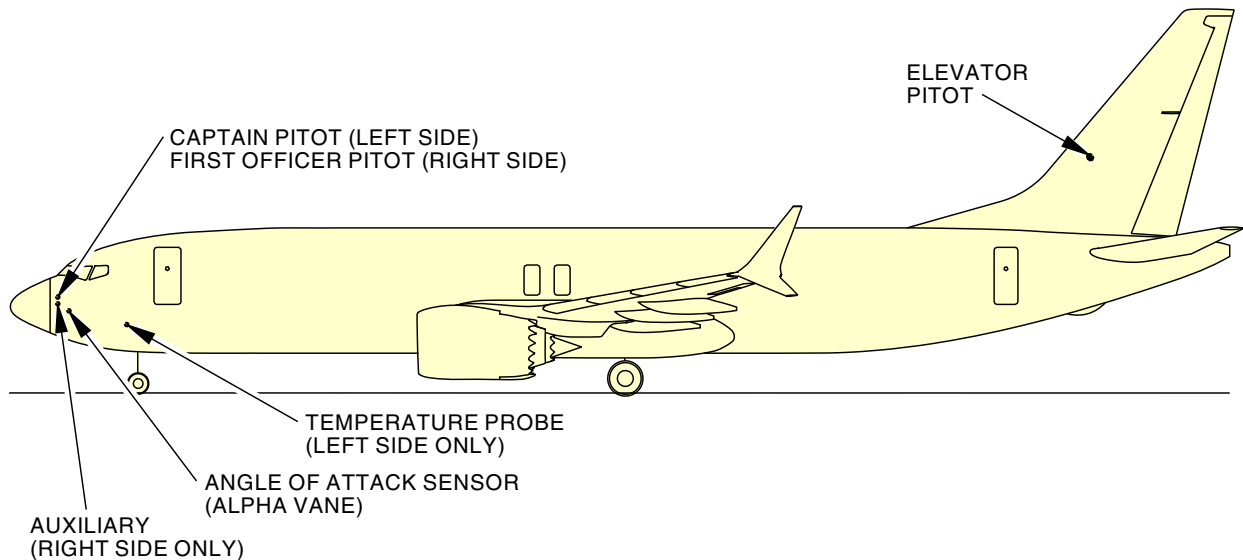
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FLIGHT COMPARTMENT



WINDOW/PITOT HEAT MODULE (P5-9)



PROBE LOCATIONS
(LEFT SIDE IS SHOWN, RIGHT SIDE IS OPPOSITE)

2413912 S00061533771_V1

Window/Pitot Heat Module
Figure 201/30-31-00-990-802

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TASK 30-31-00-440-801

3. AOA Vane, Pitot, Elevator Pitot, Temperature Probes - Activation

(Figure 201)

A. General

- (1) This procedure adds electrical power to the AOA Vane, Pitot, Elevator Pitot, Temperature Probe systems.

B. Location Zones

Zone	Area
113	Area Above and Outboard of Nose Landing Gear Wheel Well - Left
114	Area Above and Outboard of Nose Landing Gear Wheel Well - Right
211	Flight Compartment - Left
212	Flight Compartment - Right
323	Vertical Fin - Front Spar To Rear Spar
324	Vertical Fin - Rear Spar To Trailing Edge

C. Procedure

SUBTASK 30-31-00-860-002



DO NOT TOUCH THE AIR DATA SENSORS. THE SENSORS CAN GET VERY HOT. THE SENSORS CAN BURN YOU.



REMOVE ALL CAPS AND COVERS FROM ALL AIR DATA SENSORS. THE SENSORS BECOME HOT. THIS CAN CAUSE DAMAGE TO THE COVERS.

- (1) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
C	1	C00523	HEATERS CAPT PITOT
C	2	C00238	HEATERS TEMP PROBE
C	3	C01072	HEATERS ALPHA VANE LEFT
C	4	C00236	HEATERS ELEV PITOT LEFT
D	3	C01071	HEATERS ALPHA VANE RIGHT
D	4	C00237	HEATERS ELEV PITOT RIGHT
D	5	C00525	HEATERS F/O PITOT
D	6	C00524	HEATERS AUX PITOT
D	8	C01946	PROBE AUTO HEAT CAPT
D	9	C01947	PROBE AUTO HEAT F/O

————— END OF TASK —————

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TASK 30-31-00-900-801

4. Pitot Probe, Angle of Attack (AOA) Sensor, and TAT Probe - Replacement

A. General

- (1) This procedure provides instructions to replace a Pitot Probe, Angle of Attack (AOA) Sensor, and Total Air Temperature (TAT) Probe.

NOTE: The Angle of Attack (AOA) sensors are also referred to as alpha vanes.

B. References

Reference	Title
27-31-94-000-801	Feel System Pitot Probe Removal (P/B 401)
27-31-94-400-801	Feel System Pitot Probe Installation (P/B 401)
34-11-01-000-801	Pitot Probe - Removal (P/B 401)
34-11-01-400-801	Pitot Probe - Installation (P/B 401)
34-21-05-000-801	Angle of Attack Sensor Removal (P/B 401)
34-21-05-400-801	Angle of Attack Sensor - Installation (P/B 401)
34-21-06-000-801	Total Air Temperature Probe - Removal (P/B 401)
34-21-06-400-801	Total Air Temperature Probe - Installation (P/B 401)

C. Location Zones

Zone	Area
113	Area Above and Outboard of Nose Landing Gear Wheel Well - Left
114	Area Above and Outboard of Nose Landing Gear Wheel Well - Right
323	Vertical Fin - Front Spar To Rear Spar

D. Procedure

SUBTASK 30-31-00-900-001

- (1) If a pitot probe has failed, replace the pitot probe:
- (a) Do these tasks:
- Pitot Probe - Removal, TASK 34-11-01-000-801
 - Pitot Probe - Installation, TASK 34-11-01-400-801

SUBTASK 30-31-00-900-004

- (2) If an elevator feel pitot probe has failed, replace the pitot probe:
- (a) Do these tasks:
- Feel System Pitot Probe Removal, TASK 27-31-94-000-801
 - Feel System Pitot Probe Installation, TASK 27-31-94-400-801

SUBTASK 30-31-00-900-002

- (3) If an AOA sensor has failed, replace the AOA sensor:
- (a) Do these tasks:
- Angle of Attack Sensor Removal, TASK 34-21-05-000-801
 - Angle of Attack Sensor - Installation, TASK 34-21-05-400-801

SUBTASK 30-31-00-900-003

- (4) If a TAT probe has failed, replace the TAT probe:
- (a) Do these tasks:
- Total Air Temperature Probe - Removal, TASK 34-21-06-000-801

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- Total Air Temperature Probe - Installation, TASK 34-21-06-400-801

————— END OF TASK —————

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AIR DATA SENSOR ANTI-ICE - ADJUSTMENT/TEST

1. **General**

A. This procedure consists of two tasks:

- (1) AUTO Air Data Sensor Heating - Operational Test
- (2) Pitot Probe, Angle of Attack (AOA) Sensor, and TAT Probe Heater - System Test

NOTE: The AOA sensors are also referred to as alpha vanes.

TASK 30-31-00-750-801

2. **AUTO Air Data Sensor Heating - Operational Test**

(Figure 501)

NOTE: This procedure is a scheduled maintenance task.

A. General

- (1) This procedure has steps to do a test of the AUTO Air Data Sensor Heating probes.

B. References

Reference	Title
71-00-00-910-802-G00	Start the Engine (Selection) (P/B 201)
71-00-00-910-806-G00	Stop the Engine (Usual Engine Stop) (P/B 201)

C. Location Zones

Zone	Area
113	Area Above and Outboard of Nose Landing Gear Wheel Well - Left
114	Area Above and Outboard of Nose Landing Gear Wheel Well - Right

D. Prepare for the Operational Test

SUBTASK 30-31-00-860-003

- (1) Make sure PROBE HEAT A and PROBE HEAT B switch are set to the AUTO position.

SUBTASK 30-31-00-010-001



CAUTION

REMOVE PROTECTIVE CAPS AND COVERS FROM ALL AIR DATA SENSORS. DAMAGE TO THE AIR DATA SENSORS CAN OCCUR WITH PROTECTIVE CAPS AND COVERS INSTALLED.

- (2) Make sure there are no protective covers on the air data sensors.

E. AUTO Air Data Sensor Heating Operational Test

SUBTASK 30-31-00-730-001



WARNING

KEEP PERSONNEL, AND EQUIPMENT AWAY FROM THE PITOT PROBES, TOTAL AIR TEMPERATURE PROBE, AND ANGLE-OF-ATTACK VANE. THESE COMPONENTS WILL BECOME VERY HOT. THEY CAN CAUSE INJURIES TO PERSONNEL, AND DAMAGE TO EQUIPMENT.

- (1) Do the test of PROBE HEAT switches in the AUTO position:

NOTE: Only one engine should be operating while this test of the AUTO position of the PROBE HEAT switches is done. This is done to do a test of the full health of the system.

- (a) Start the Engine 1 (TASK 71-00-00-910-802-G00).

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- (b) With the engine running, do a check for these indication lights on the window and pitot heat module:
 - 1) Make sure the CAPT PITOT, L ELEV PITOT, L ALPHA VANE, TEMP PROBE, F/O PITOT, R ELEV PITOT, R ALPHA VANE, and AUX PITOT indication lights on the window and pitot heat module go off.
- (c) Stop the Engine 1 (TASK 71-00-00-910-806-G00).
 - 1) Make sure the CAPT PITOT, L ELEV PITOT, L ALPHA VANE, TEMP PROBE, F/O PITOT, R ELEV PITOT, R ALPHA VANE, and AUX PITOT indication lights on the window and pitot heat module come on.
- (d) Start the Engine 2 (TASK 71-00-00-910-802-G00).
- (e) With the engine running, do a check of these indication lights on the window and pitot heat module:
 - 1) Make sure the CAPT PITOT, L ELEV PITOT, L ALPHA VANE, TEMP PROBE, F/O PITOT, R ELEV PITOT, R ALPHA VANE, and AUX PITOT indication lights on the window and pitot heat module go off.
- (f) Stop the Engine 2 (TASK 71-00-00-910-806-G00).
 - 1) Make sure the CAPT PITOT, L ELEV PITOT, L ALPHA VANE, TEMP PROBE, F/O PITOT, R ELEV PITOT, R ALPHA VANE, and AUX PITOT indication lights on the window and pitot heat module come on.

————— **END OF TASK** —————

TASK 30-31-00-730-801

3. Pitot Probe, AOA Sensor, and TAT Probe Heater - System Test

(Figure 501)

A. General

- (1) This procedure has steps to test the Pitot Probes, AOA Sensors, and TAT Probe Heaters.
- (2) There are eight heaters total: three pitot static, two elevator feel pitot, one temperature (TAT), and two alpha vane (AOA).

B. References

Reference	Title
32-09-00 P/B 201	AIR/GROUND SYSTEM - MAINTENANCE PRACTICES

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt.", which stands for Optional.

Reference	Description
COM-1523	Stand and Personnel Lifting Equipment - General Purpose Part #: B-14 Supplier: 05060 Part #: B-9 Supplier: 05060 Part #: Z-45-25J Supplier: 59497

D. Location Zones

Zone	Area
113	Area Above and Outboard of Nose Landing Gear Wheel Well - Left
114	Area Above and Outboard of Nose Landing Gear Wheel Well - Right

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Zone	Area
211	Flight Compartment - Left

E. Prepare for the System Test

SUBTASK 30-31-00-860-006

- (1) Remove the protective caps and covers from all eight probes.
- (2) Make sure that the window heat control switches L SIDE, L FWD, R SIDE, and R FWD are in the OFF position, on the P5-9 panel.
- (3) Make sure that the engine anti-ice control switches ENG ANTI-ICE 1 and ENG ANTI-ICE 2 are in the OFF position.
- (4) Make sure that the probe heat control switches PROBE HEAT A and PROBE HEAT B are in the AUTO position.
- (5) Set the LIGHTS switch to TEST, on the P1-3 panel.
- (6) Make sure that all eight probe heat amber annunciator lights are illuminated.
- (7) Set the LIGHTS switch to BRT.



MAKE SURE THAT THE ATC TRANSPONDERS ARE IN THE STANDBY MODE WHEN YOU SIMULATE ALTITUDE. YOU CAN ACCIDENTALLY CAUSE TCAS TARGETS. AIR TRAFFIC IN THE AREA WILL CHANGE DIRECTION QUICKLY TO GO AWAY FROM THESE TARGETS. THIS CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

- (8) Make sure that the ATC transponders are in standby mode.
 - (a) Set the Mode Reply switch, on the P8 ATC control panel, to STBY.

F. Air Data Probe Heat Indication Test

SUBTASK 30-31-00-860-007



MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF THE LEADING EDGE SLATS DURING THIS PROCEDURE. THE SLATS CAN MOVE AUTOMATICALLY WHEN THE HYDRAULIC SYSTEM IS PRESSURIZED. THIS CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

- (1) Set the GND TEST switch, on the P61-4 panel, to ENABLE.

SUBTASK 30-31-00-860-008

- (2) On the Multi Function Display (MFD), select these items in order:
 - (a) SYS
 - (b) MAINT
 - (c) ONBD MAINT
 - (d) OTHER FUNCTIONS
 - (e) SPECIAL FUNCTIONS
 - (f) ATA System 32: PSEU
 - (g) CONTINUE
 - (h) AIR/GND OVERRIDE
 - (i) CONTINUE (twice)
 - (j) START FUNCTION

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(k) SYS 1 to GND

SUBTASK 30-31-00-860-009

- (3) Make sure that the MFD indicates AIR/GND OVERRIDE is NOT ACTIVE and SYS 1 is currently in GND mode.

SUBTASK 30-31-00-860-010

- (4) Make sure that all eight probe amber annunciator lights, on the P5-9 panel, are illuminated with text as follows:

SYSTEM A	SYSTEM B
CAPT PITOT	F/O PITOT
L ELEV PITOT	R ELEV PITOT
L ALPHA VANE	R ALPHA VANE
TEMP PROBE	AUX PITOT

SUBTASK 30-31-00-860-011

- (5) Set the LIGHTS switch, on the P1-3 panel, to DIM.
(a) Make sure that all eight amber indication lights go dim.

SUBTASK 30-31-00-860-012

- (6) Set the LIGHTS switch, on the P1-3, panel to BRT.
(a) Make sure that all eight amber indication lights return to their original brightness.

SUBTASK 30-31-00-730-003

- (7) Open this circuit breaker:

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
F	18	C00569	PROBE INDICATION CAPT

- (8) Make sure that the system A amber lights, on the P5-9 panel, go off.
(9) Close this circuit breaker:

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
F	18	C00569	PROBE INDICATION CAPT

- (10) Make sure that the system A amber lights are on.

SUBTASK 30-31-00-840-001

- (11) Push to reset either Master Caution light.
(a) Make sure that the Master Caution and ANTI-ICE annunciator lights go off.

SUBTASK 30-31-00-730-004

- (12) Open this circuit breaker:

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
F	16	C00570	PROBE INDICATION F/O

- (13) Make sure that the system B amber lights, on the P5-9 panel, go off.

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- (14) Close this circuit breaker:

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
F	16	C00570	PROBE INDICATION F/O

- (15) Make sure that the system B amber lights are on.

SUBTASK 30-31-00-840-002

- (16) Push to reset either Master Caution light.

- (a) Make sure that the Master Caution and ANTI-ICE annunciator lights go off.

SUBTASK 30-31-00-860-013

- (17) Set the PROBE HEAT A switch, on the P5-9 panel, to the ON position.

- (a) Make sure that the CAPT PITOT, L ELEV PITOT, L ALPHA VANE, and TEMP PROBE lights on the window and pitot heat module go off.
- (b) Make sure that the Master Caution and ANTI-ICE annunciator lights are off.

SUBTASK 30-31-00-860-014

- (18) Set the PROBE HEAT A switch, on the P5-9 panel, to the AUTO position.

- (a) Make sure that the CAPT PITOT, L ELEV PITOT, L ALPHA VANE, and TEMP PROBE lights on the window and pitot heat module are on.

SUBTASK 30-31-00-840-003

- (19) Push to reset either Master Caution light.

- (a) Make sure that the Master Caution and ANTI-ICE annunciator lights go off.

SUBTASK 30-31-00-860-015

- (20) Set the PROBE HEAT B switch to the ON position.

- (a) Make sure that the F/O PITOT, R ELEV PITOT, R ALPHA VANE, and AUX PITOT lights on the window and pitot heat module go off.

SUBTASK 30-31-00-860-016

- (21) Set the PROBE HEAT B switch to the AUTO position.

- (a) Make sure that the F/O PITOT, R ELEV PITOT, R ALPHA VANE, and AUX PITOT lights on the window and pitot heat module are on.

SUBTASK 30-31-00-860-017

- (22) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	1	C00523	HEATERS CAPT PITOT
C	2	C00238	HEATERS TEMP PROBE
C	3	C01072	HEATERS ALPHA VANE LEFT
C	4	C00236	HEATERS ELEV PITOT LEFT
D	3	C01071	HEATERS ALPHA VANE RIGHT
D	4	C00237	HEATERS ELEV PITOT RIGHT
D	5	C00525	HEATERS F/O PITOT
D	6	C00524	HEATERS AUX PITOT

SUBTASK 30-31-00-840-004

- (23) Push to reset either Master Caution light.

- (a) Make sure that the Master Caution and ANTI-ICE annunciator lights go off.

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G. Pitot Static Probe Heater Test

SUBTASK 30-31-00-730-005

(1) Do these steps to test the upper left (captain's) pitot static probe:

(a) Close this circuit breaker:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	1	C00523	HEATERS CAPT PITOT

(b) Set the PROBE HEAT A switch to the ON position.

- 1) Make sure that the CAPT PITOT light goes off and all other probe heat indicator lights stay on.



WARNING

DO NOT TOUCH AIR DATA SENSORS WHEN HOT. A HOT AIR DATA SENSOR CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT CAN OCCUR.

(c) Make sure that only the captain's pitot static probe is heating by using one of these methods:

- 1) Spray the air data sensors with water to check for heat.
- 2) Measure the temperature of the sensor with an infrared or contact thermometer.
- 3) Look at the sensor with an infrared or thermal imager.

NOTE: You will need a work platform, COM-1523, or equivalent to get access to the elevator pitot probe. If you use an infrared or thermal imager to check for heat, then you do not need the stand.

(d) Open this circuit breaker:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	1	C00523	HEATERS CAPT PITOT

(e) Make sure that all probe heat amber indicator lights and the ANTI-ICE and Master Caution annunciators are on.

(f) Make sure that the captain's pitot static probe is no longer heating.

(g) Push to reset either Master Caution light.

- 1) Make sure that the Master Caution and ANTI-ICE annunciator lights go off.

(h) Set the PROBE HEAT A switch to the AUTO position.

SUBTASK 30-31-00-730-006

(2) Do these steps to test the upper right (first officer's) pitot static probe:

(a) Close this circuit breaker:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	5	C00525	HEATERS F/O PITOT

(b) Set the PROBE HEAT B switch to the ON position.

- 1) Make sure that the F/O PITOT light goes off and all other probe heat indicator lights stay on.

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WARNING

DO NOT TOUCH AIR DATA SENSORS WHEN HOT. A HOT AIR DATA SENSOR CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (c) Make sure that only the first officer's pitot static probe is heating by using one of these methods:

- 1) Spray the air data sensors with water to check for heat.
- 2) Measure the temperature of the sensor with an infrared or contact thermometer.
- 3) Look at the sensor with an infrared or thermal imager.

NOTE: You will need a work platform, COM-1523, or equivalent to get access to the elevator pitot probe. If you use an infrared or thermal imager to check for heat, then you do not need the stand.

- (d) Open this circuit breaker:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	5	C00525	HEATERS F/O PITOT

- (e) Make sure that all probe heat amber indicator lights and the ANTI-ICE and Master Caution annunciators are on.
- (f) Make sure that the first officer's pitot static probe is no longer heating.
- (g) Push to reset either Master Caution light.
- 1) Make sure that the Master Caution and ANTI-ICE annunciator lights go off.
- (h) Set the PROBE HEAT B switch to the AUTO position.

SUBTASK 30-31-00-730-007

- (3) Do these steps to test the lower right (AUX) pitot static probe:

- (a) Close this circuit breaker:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	6	C00524	HEATERS AUX PITOT

- (b) Set the PROBE HEAT B switch to the ON position.
- 1) Make sure that the AUX PITOT light goes off and all other probe heat indicator lights stay on.



WARNING

DO NOT TOUCH AIR DATA SENSORS WHEN HOT. A HOT AIR DATA SENSOR CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (c) Make sure that only the AUX pitot static probe is heating by using one of these methods:

- 1) Spray the air data sensors with water to check for heat.
- 2) Measure the temperature of the sensor with an infrared or contact thermometer.
- 3) Look at the sensor with an infrared or thermal imager.

NOTE: You will need a work platform, COM-1523, or equivalent to get access to the elevator pitot probe. If you use an infrared or thermal imager to check for heat, then you do not need the stand.

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- (d) Open this circuit breaker:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	6	C00524	HEATERS AUX PITOT

- (e) Make sure that all probe heat amber indicator lights and the ANTI-ICE and Master Caution annunciators are on.
- (f) Make sure that the AUX pitot static probe is no longer heating.
- (g) Push to reset either Master Caution light.
- 1) Make sure that the Master Caution and ANTI-ICE annunciator lights go off.
- (h) Set the PROBE HEAT B switch to the AUTO position.

H. Elevator Feel Pitot Probe Heater Test

SUBTASK 30-31-00-730-008

- (1) Do these steps to test the left elevator feel pitot probe:

- (a) Close this circuit breaker:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	4	C00236	HEATERS ELEV PITOT LEFT

- (b) Set the PROBE HEAT A switch to the ON position.
- 1) Make sure that the L ELEV PITOT light goes off and all other probe heat indicator lights stay on.



WARNING

DO NOT TOUCH AIR DATA SENSORS WHEN HOT. A HOT AIR DATA SENSOR CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (c) Make sure that only the left elevator feel pitot probe is heating by using one of these methods:
- 1) Spray the air data sensors with water to check for heat.
- 2) Measure the temperature of the sensor with an infrared or contact thermometer.
- 3) Look at the sensor with an infrared or thermal imager.
- NOTE: You will need a work platform, COM-1523, or equivalent to get access to the elevator pitot probe. If you use an infrared or thermal imager to check for heat, then you do not need the stand.

- (d) Open this circuit breaker:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	4	C00236	HEATERS ELEV PITOT LEFT

- (e) Make sure that all probe heat amber indicator lights and the ANTI-ICE and Master Caution annunciators are on.
- (f) Make sure that the left elevator feel pitot probe is no longer heating.
- (g) Push to reset either Master Caution light.
- 1) Make sure that the Master Caution and ANTI-ICE annunciator lights go off.

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- (h) Set the PROBE HEAT A switch to the AUTO position.

SUBTASK 30-31-00-730-009

- (2) Do these steps to test the right elevator feel pitot probe:

- (a) Close this circuit breaker:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	4	C00237	HEATERS ELEV PITOT RIGHT

- (b) Set the PROBE HEAT B switch to the ON position.

- 1) Make sure that the R ELEV PITOT light goes off and all other probe heat indicator lights stay on.



WARNING

DO NOT TOUCH AIR DATA SENSORS WHEN HOT. A HOT AIR DATA SENSOR CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (c) Make sure that only the right elevator feel pitot probe is heating by using one of these methods:

- 1) Spray the air data sensors with water to check for heat.
- 2) Measure the temperature of the sensor with an infrared or contact thermometer.
- 3) Look at the sensor with an infrared or thermal imager.

NOTE: You will need a work platform, COM-1523, or equivalent to get access to the elevator pitot probe. If you use an infrared or thermal imager to check for heat, then you do not need the stand.

- (d) Open this circuit breaker:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	4	C00237	HEATERS ELEV PITOT RIGHT

- (e) Make sure that all probe heat amber indicator lights and the ANTI-ICE and Master Caution annunciators are on.
- (f) Make sure that the right elevator feel pitot probe is no longer heating.
- (g) Push to reset either Master Caution light.
- 1) Make sure that the Master Caution and ANTI-ICE annunciator lights go off.
- (h) Set the PROBE HEAT B switch to the AUTO position.

I. Temperature Probe Heater Test

SUBTASK 30-31-00-730-010

- (1) Do these steps to test the temperature (TAT) probe:

- (a) Close this circuit breaker:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	2	C00238	HEATERS TEMP PROBE

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WARNING

MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF THE LEADING EDGE SLATS DURING THIS PROCEDURE. THE SLATS CAN MOVE AUTOMATICALLY WHEN THE HYDRAULIC SYSTEM IS PRESSURIZED. THIS CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

- (b) Set airplane to GND mode (AIR/GROUND SYSTEM - MAINTENANCE PRACTICES, PAGEBLOCK 32-09-00/201).
- (c) Set the PROBE HEAT A switch to the ON position.
 - 1) Make sure that the TEMP PROBE light goes off and all other probe heat indicator lights stay on.
- (d) Make sure that the TAT probe is heating.
- (e) Make sure that other probes are not heating.
- (f) Push to reset either Master Caution light.
 - 1) Make sure that the Master Caution and ANTI-ICE annunciator lights go off.



WARNING

DO NOT TOUCH AIR DATA SENSORS WHEN HOT. A HOT AIR DATA SENSOR CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (g) Make sure that only the TAT probe is heating by using one of these methods:
 - 1) Spray the air data sensors with water to check for heat.
 - 2) Measure the temperature of the sensor with an infrared or contact thermometer.
 - 3) Look at the sensor with an infrared or thermal imager.

NOTE: You will need a work platform, COM-1523, or equivalent to get access to the elevator pitot probe. If you use an infrared or thermal imager to check for heat, then you do not need the stand.
- (h) Open this circuit breaker:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	2	C00238	HEATERS TEMP PROBE

- (i) Make sure that all probe heat amber indicator lights and the ANTI-ICE and Master Caution annunciators are on.
- (j) Make sure that the TAT probe is no longer heating.
- (k) Push to reset either Master Caution light.
 - 1) Make sure that the Master Caution and ANTI-ICE annunciator lights go off.
- (l) Set the PROBE HEAT A switch to the AUTO position.

J. Alpha Vane Heater Test

SUBTASK 30-31-00-730-011

- (1) Do these steps to test the left alpha vane:

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- (a) Close this circuit breaker:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	3	C01072	HEATERS ALPHA VANE LEFT

- (b) Set the PROBE HEAT A switch to the ON position.

- 1) Make sure that the L ALPHA VANE light goes off and all other probe heat indicator lights stay on.



DO NOT TOUCH AIR DATA SENSORS WHEN HOT. A HOT AIR DATA SENSOR CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (c) Make sure that only the left alpha vane is heating by using one of these methods:

- 1) Spray the air data sensors with water to check for heat.
- 2) Measure the temperature of the sensor with an infrared or contact thermometer.
- 3) Look at the sensor with an infrared or thermal imager.

NOTE: You will need a work platform, COM-1523, or equivalent to get access to the elevator pitot probe. If you use an infrared or thermal imager to check for heat, then you do not need the stand.

- (d) Open this circuit breaker:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	3	C01072	HEATERS ALPHA VANE LEFT

- (e) Make sure that all probe heat amber indicator lights and the ANTI-ICE and Master Caution annunciators are on.

- (f) Make sure that the left alpha vane is no longer heating.

- (g) Push to reset either Master Caution light.

- 1) Make sure that the Master Caution and ANTI-ICE annunciator lights go off.

- (h) Set the PROBE HEAT A switch to the AUTO position.

SUBTASK 30-31-00-730-012

- (2) Do these steps to test the right alpha vane:

- (a) Close this circuit breaker:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	3	C01071	HEATERS ALPHA VANE RIGHT

- (b) Set the PROBE HEAT B switch to the ON position.

- 1) Make sure that the R ALPHA VANE light goes off and all other probe heat indicator lights stay on.



DO NOT TOUCH AIR DATA SENSORS WHEN HOT. A HOT AIR DATA SENSOR CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (c) Make sure that only the right alpha vane is heating by using one of these methods:

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- 1) Spray the air data sensors with water to check for heat.
- 2) Measure the temperature of the sensor with an infrared or contact thermometer.
- 3) Look at the sensor with an infrared or thermal imager.

NOTE: You will need a work platform, COM-1523, or equivalent to get access to the elevator pitot probe. If you use an infrared or thermal imager to check for heat, then you do not need the stand.

- (d) Open this circuit breaker:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	3	C01071	HEATERS ALPHA VANE RIGHT

- (e) Make sure that all probe heat amber indicator lights and the ANTI-ICE and Master Caution annunciators are on.
- (f) Make sure that the right alpha vane is no longer heating.
- (g) Push to reset either Master Caution light.
- 1) Make sure that the Master Caution and ANTI-ICE annunciator lights go off.
- (h) Set the PROBE HEAT B switch to the AUTO position.

K. Auto Probe Heat Test

SUBTASK 30-31-00-710-001

- (1) Test the PROBE HEAT switches in the AUTO position, do this task: AUTO Air Data Sensor Heating - Operational Test, TASK 30-31-00-750-801.

NOTE: It is only necessary to perform a test of the AUTO position (with engine run) after replacement of the window/pitot heat module (P5-9). A test of the AUTO position is not necessary following replacement of a pitot probe, AOA sensor, or TAT probe.

L. Put the Airplane Back to Its Usual Condition

SUBTASK 30-31-00-860-018

- (1) Set the GND TEST switch, on the P61-4 panel, to NORM.
- (2) Close these circuit breakers:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	1	C00523	HEATERS CAPT PITOT
C	2	C00238	HEATERS TEMP PROBE
C	3	C01072	HEATERS ALPHA VANE LEFT
C	4	C00236	HEATERS ELEV PITOT LEFT
D	3	C01071	HEATERS ALPHA VANE RIGHT
D	4	C00237	HEATERS ELEV PITOT RIGHT
D	5	C00525	HEATERS F/O PITOT
D	6	C00524	HEATERS AUX PITOT
D	8	C01946	PROBE AUTO HEAT CAPT
D	9	C01947	PROBE AUTO HEAT F/O

- (3) Install protective caps and covers on all eight air data sensors.

————— **END OF TASK** —————

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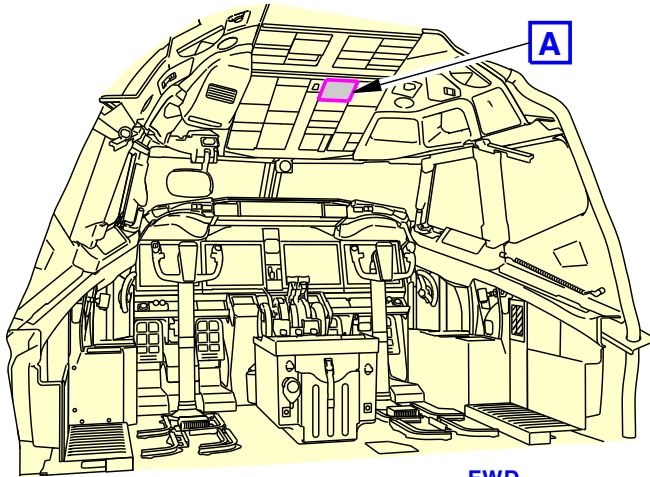
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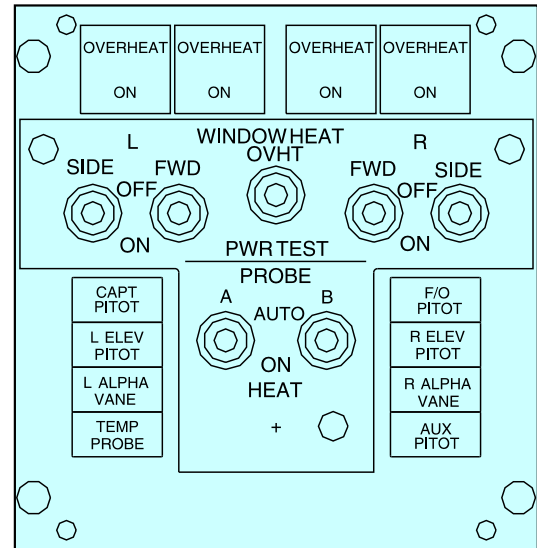
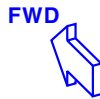
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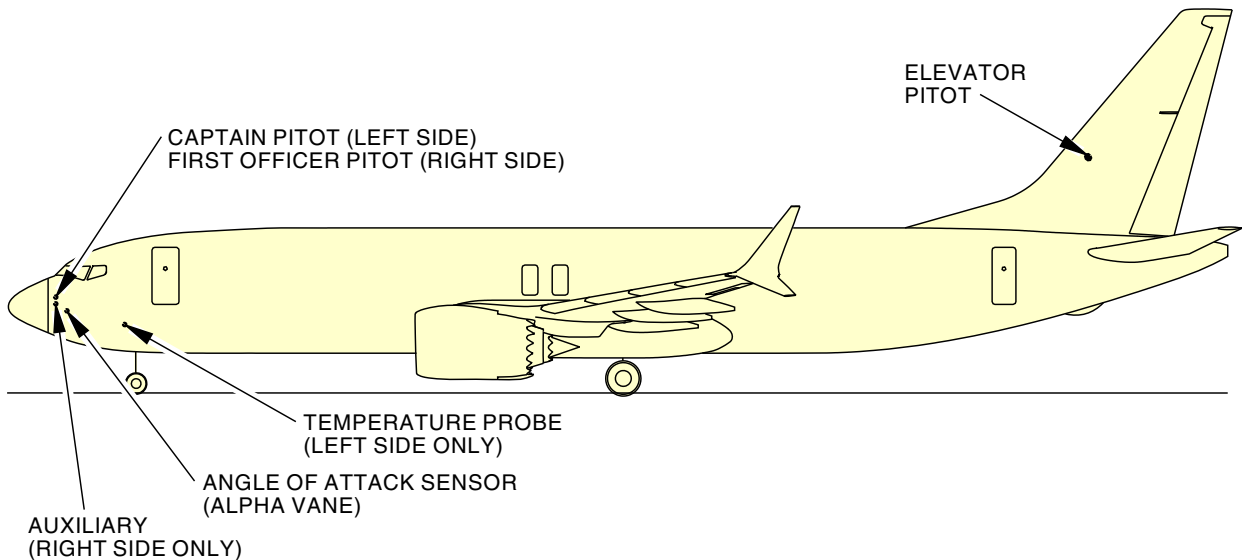
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FLIGHT COMPARTMENT



WINDOW/PITOT HEAT MODULE (P5-9)



PROBE LOCATIONS
(LEFT SIDE IS SHOWN, RIGHT SIDE IS OPPOSITE)

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Window/Pitot Heat Module
Figure 501/30-31-00-990-801

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CONTROL CABIN WINDOW HEAT - MAINTENANCE PRACTICES

1. **General**

A. This procedure has these tasks:

- (1) Control Cabin Window Heat - Deactivation.
- (2) Control Cabin Window Heat - Activation.

TASK 30-41-00-040-801

2. **Control Cabin Window Heat - Deactivation**

(Figure 30-31-00-990-801)

A. **General**

- (1) This procedure removes electrical power to the Control Cabin Window Heat Systems.

B. **References**

Reference	Title
30-31-00-990-801	Figure: Window/Pitot Heat Module (P/B 501)

C. **Location Zones**

Zone	Area
113	Area Above and Outboard of Nose Landing Gear Wheel Well - Left
114	Area Above and Outboard of Nose Landing Gear Wheel Well - Right
211	Flight Compartment - Left
212	Flight Compartment - Right
323	Vertical Fin - Front Spar To Rear Spar
324	Vertical Fin - Rear Spar To Trailing Edge

D. **Procedure**

SUBTASK 30-41-00-860-001



DO NOT TOUCH THE AIR DATA SENSORS. THE SENSORS CAN GET VERY HOT. THE SENSORS CAN BURN YOU.



REMOVE ALL CAPS AND COVERS FROM ALL AIR DATA SENSORS. THE SENSORS BECOME HOT. THIS CAN CAUSE DAMAGE TO THE COVERS.

- (1) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
C	1	C00523	HEATERS CAPT PITOT
C	2	C00238	HEATERS TEMP PROBE
C	3	C01072	HEATERS ALPHA VANE LEFT
C	4	C00236	HEATERS ELEV PITOT LEFT
D	3	C01071	HEATERS ALPHA VANE RIGHT
D	4	C00237	HEATERS ELEV PITOT RIGHT
D	5	C00525	HEATERS F/O PITOT
D	6	C00524	HEATERS AUX PITOT

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F/O Electrical System Panel, P6-5

Row	Col	Number	Name
B	8	C00394	WINDOW HEAT POWER RIGHT FRONT
B	9	C00392	WINDOW HEAT POWER LEFT SIDE
B	20	C00393	WINDOW HEAT POWER RIGHT SIDE
B	21	C00228	WINDOW HEAT POWER LEFT FRONT

E. Control Cabin Window Heat -Tryout

NOTE: This tryout is to make sure the Control Cabin Window heat is in a zero energy state.

SUBTASK 30-41-00-210-001

- (1) At the P5-9 Window/Pitot Heat Module do the following steps:
 - (a) Press the PROBE HEAT A switch to the ON position.
 - 1) Make sure the CAPT PITOT, L ELEV PITOT, L ALPHA VANE, and TEMP PROBE lights on the Window and Pitot Heat Module remain ON.
 - (b) Press the PROBE HEAT A switch to the OFF position.
 - (c) Press the PROBE HEAT B switch to the ON position.
 - 1) Make sure the CAPT PITOT, L ELEV PITOT, L ALPHA VANE, and TEMP PROBE lights on the Window and Pitot Heat Module remain ON.
 - (d) Press the PROBE HEAT B switch to the OFF position.
 - (e) Press the four WINDOW HEAT switches to the ON position one at a time.
 - 1) Make sure the corresponding ON light on the Window and Pitot Heat Module remains OFF.
 - 2) Make sure the corresponding OVERHEAT light turns ON.
 - (f) Press all four WINDOW HEAT switches on the Window and Pitot Heat Module to the OFF position.

————— END OF TASK —————

TASK 30-41-00-440-801

3. Control Cabin Window Heat - Activation

(Figure 30-31-00-990-801)

A. General

- (1) This procedure adds electrical power to the Control Cabin Window Heat Systems.

B. References

Reference	Title
30-31-00-990-801	Figure: Window/Pitot Heat Module (P/B 501)

C. Location Zones

Zone	Area
113	Area Above and Outboard of Nose Landing Gear Wheel Well - Left
114	Area Above and Outboard of Nose Landing Gear Wheel Well - Right
211	Flight Compartment - Left
212	Flight Compartment - Right
323	Vertical Fin - Front Spar To Rear Spar
324	Vertical Fin - Rear Spar To Trailing Edge

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D. Procedure

SUBTASK 30-41-00-860-002



DO NOT TOUCH THE AIR DATA SENSORS. THE SENSORS CAN GET VERY HOT. THE SENSORS CAN BURN YOU.



REMOVE ALL CAPS AND COVERS FROM ALL AIR DATA SENSORS. THE SENSORS BECOME HOT. THIS CAN CAUSE DAMAGE TO THE COVERS.

- (1) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	1	C00523	HEATERS CAPT PITOT
C	2	C00238	HEATERS TEMP PROBE
C	3	C01072	HEATERS ALPHA VANE LEFT
C	4	C00236	HEATERS ELEV PITOT LEFT
D	3	C01071	HEATERS ALPHA VANE RIGHT
D	4	C00237	HEATERS ELEV PITOT RIGHT
D	5	C00525	HEATERS F/O PITOT
D	6	C00524	HEATERS AUX PITOT

F/O Electrical System Panel, P6-5

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	8	C00394	WINDOW HEAT POWER RIGHT FRONT
B	9	C00392	WINDOW HEAT POWER LEFT SIDE
B	20	C00393	WINDOW HEAT POWER RIGHT SIDE
B	21	C00228	WINDOW HEAT POWER LEFT FRONT

————— **END OF TASK** —————

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CONTROL CABIN WINDOW ANTI-ICE SYSTEM - ADJUSTMENT/TEST

1. **General**

- A. This procedure contains scheduled maintenance task data.
- B. This procedure has a task to do an operational test of the window heat system.

TASK 30-41-00-710-801

2. **Window Heat System - Operational Test**

(Figure 501)

A. General

- (1) This test makes sure the control cabin window anti-icing system provides heat to these control cabin windows:
 - (a) Front windows
 - (b) Side windows
 - (c) Number 3 window

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
COM-1572	Thermometer - Infrared, Intrinsically Safe Part #: 568 Ex Supplier: 89536 Opt Part #: DHS24XC-FM Supplier: 08086 Opt Part #: DHS24XF-FM Supplier: 08086 Opt Part #: EX-MP4 A Supplier: 3GT36 Opt Part #: IR-16L3 IS Supplier: 75037
STD-1179	Tester - Pyrometer

C. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

D. Window Heat System Operational Test

SUBTASK 30-41-00-080-001



CAUTION

REMOVE PROTECTIVE CAPS AND COVERS FROM ALL AIR DATA SENSORS. DAMAGE TO THE AIR DATA SENSORS CAN OCCUR WITH PROTECTIVE CAPS AND COVERS INSTALLED.

- (1) Make sure that there are no protective covers on the air data sensors.
 - (a) If protective covers are found, then remove them before you continue this test.

SUBTASK 30-41-00-840-001

- (2) Use a Infrared Thermometer, COM-1572 (including pyrometer, STD-1179), or other temperature indicating device near each window temperature sensor to measure the window temperature.

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SUBTASK 30-41-00-880-001

- (3) If the window temperature is greater than 110°F (43°C), cool the window.

NOTE: The window can be cooled with cool water or by providing shade from the sun.

SUBTASK 30-41-00-860-003

- (4) One switch at a time, put the WINDOW HEAT switches on the Window and Pitot Heat Module to the ON position.

- (a) Make sure that the corresponding ON light on the window and pitot heat module comes on.

NOTE: It can take up to 15 seconds for the light to come on.

- (b) Make sure that both master caution lights are off.

SUBTASK 30-41-00-210-002

- (5) Wait for the windows to heat up.

- (a) Make sure that the front and side windows stabilize at 90°F (32°C) to 120°F (49°C).

NOTE: It can take up to 4 minutes for the window temperatures to stabilize.

- (b) Make sure that the number 3 windows heat up to more than 65°F (18°C) but less than 105°F (41°C)

SUBTASK 30-41-00-860-004

- (6) Put the WINDOW HEAT TEST OVHT/PWR switch to the OVHT position for 1 second.

- (a) Make sure that the OVERHEAT lights come on.
(b) Make sure that the MASTER CAUTION lights come on.
(c) Make sure that the ANTI-ICE light comes on.
(d) Make sure that the ON lights go off in less than 70 seconds.
(e) Make sure that the windows start to cool.
(f) Wait until the window temperatures go below 110°F (43°C).

SUBTASK 30-41-00-860-005

- (7) One switch at a time, put each WINDOW HEAT power switch in the OFF position for 1 second and then put the switch in the ON position.

- (a) Make sure that the applicable OVERHEAT light goes off.
(b) Make sure that the window heat ON light comes on.
(c) Make sure that the windows begin to heat.

SUBTASK 30-41-00-860-006

- (8) Press either MASTER CAUTION light.

- (a) Make sure that the MASTER CAUTION light goes off.
(b) Make sure that the ANTI-ICE light goes off.

SUBTASK 30-41-00-860-007

- (9) Wait 4 minutes.

SUBTASK 30-41-00-860-008

- (10) Hold the window heat TEST switch to PWR.

- (a) Make sure that the window heat ON lights stay on for each window.
(b) If holding the window heat TEST switch to PWR causes the OVERHEAT light to illuminate, the window heat ON lights shall go off within 70 seconds.

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SUBTASK 30-41-00-860-009

- (11) Release the window heat TEST switch.

SUBTASK 30-41-00-860-010

- (12) Put the WINDOW HEAT power switches in the OFF position.

SUBTASK 30-41-00-860-011

- (13) If the PWR TEST switch caused an overheat condition, then press either MASTER CAUTION light.
- (a) Make sure that the OVERHEAT lights, the MASTER CAUTION lights, and the ANTI-ICE lights are off.

————— **END OF TASK** —————

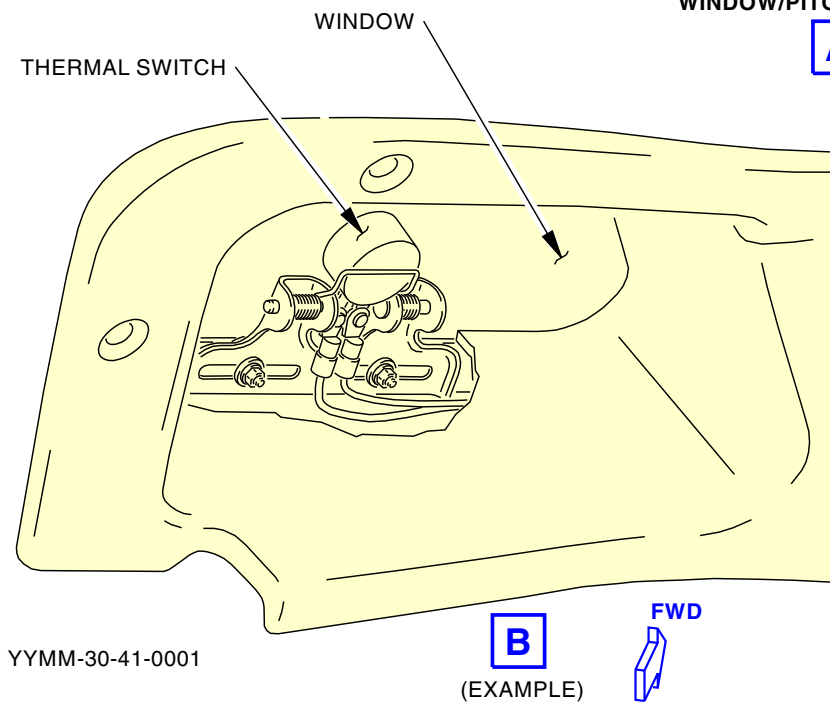
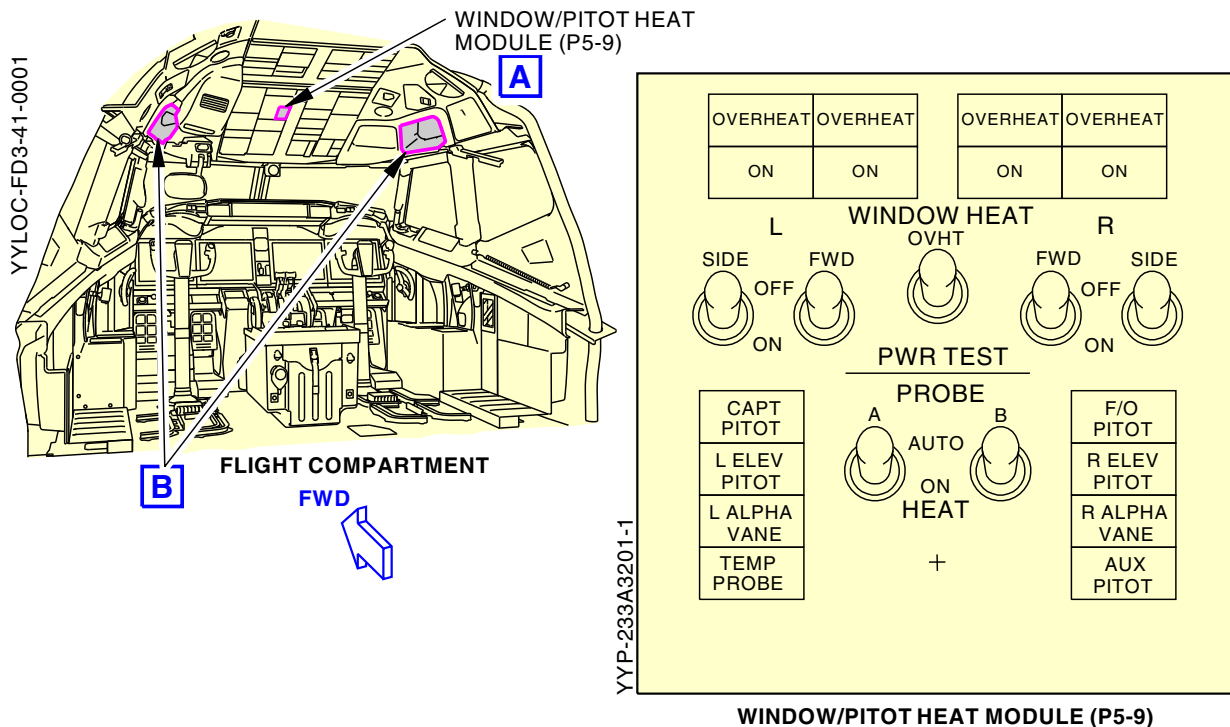
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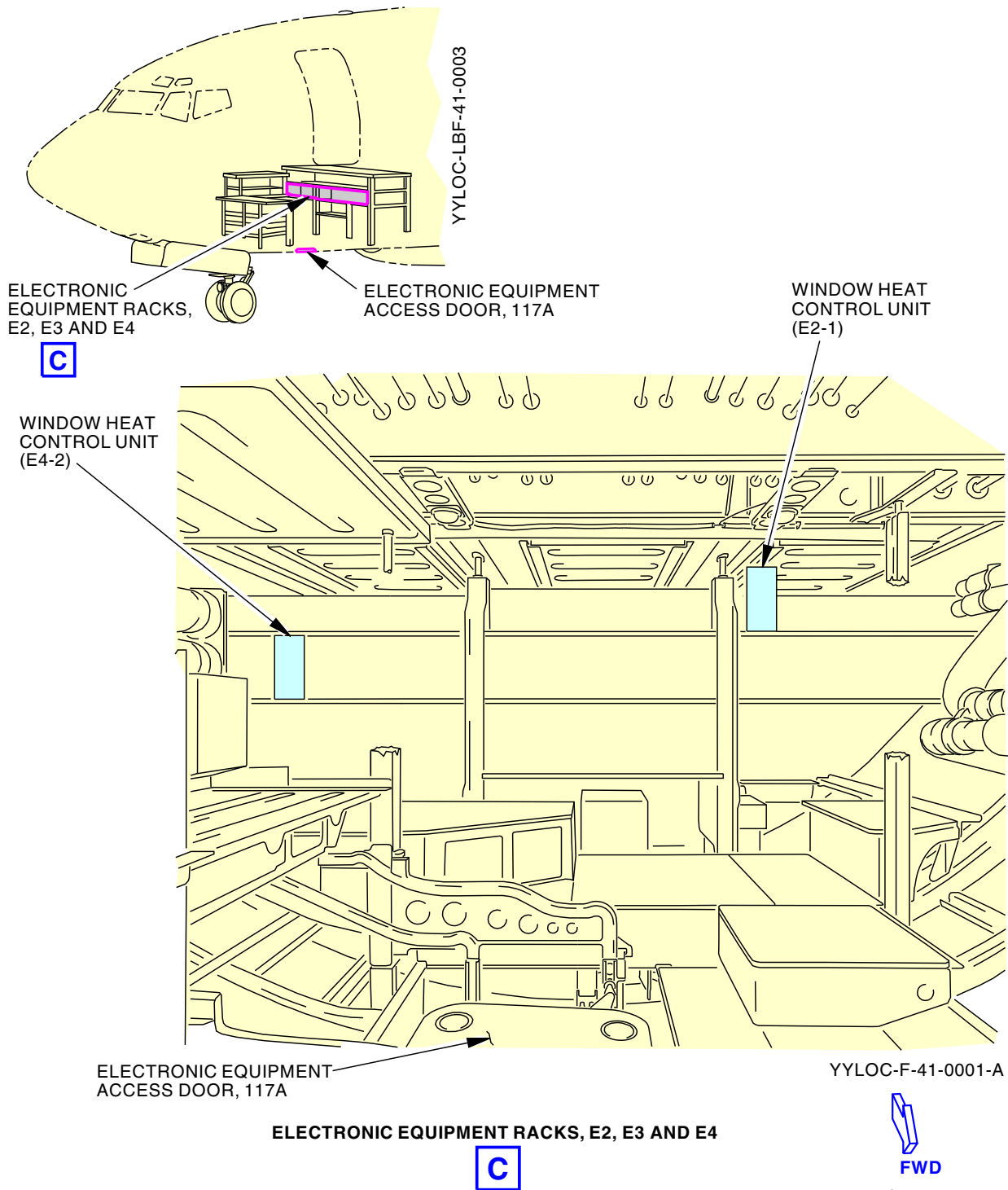
Control Cabin Window Anti-Icing System Test
Figure 501/30-41-00-990-801 (Sheet 1 of 2)

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Control Cabin Window Anti-Icing System Test
Figure 501/30-41-00-990-801 (Sheet 2 of 2)

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CONTROL CABIN WINDOW ANTI-ICE SYSTEM - COIL CORD - INSPECTION/CHECK

1. **General**

- A. This procedure has this task:
(1) Coil Cord - Inspection

TASK 30-41-00-200-801

2. **Coil Cord - Inspection**

(Figure 601)

A. **General**

- (1) This procedure has a task to do an inspection of the No. 2 window coil cord and coil cord keyway positions.

B. **References**

Reference	Title
20-60-02-100-801	General Visual Inspection of EWIS (P/B 201)
24-22-00-860-801	Supply Electrical Power (P/B 201)
24-22-00-860-802	Remove Electrical Power (P/B 201)
25-11-21-000-801	Flight Compartment Forward Ceiling Panel Removal (P/B 201)
25-11-21-400-801	Flight Compartment Forward Ceiling Panel Installation (P/B 201)
30-41-00-710-801	Window Heat System - Operational Test (P/B 501)

C. **Location Zones**

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

D. **Prepare for the Inspection**

SUBTASK 30-41-00-010-001

- (1) Get access to the flight compartment.

SUBTASK 30-41-00-860-013

- (2) Do this task: Remove Electrical Power, TASK 24-22-00-860-802.

SUBTASK 30-41-00-860-014

- (3) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-5

Row	Col	Number	Name
B	8	C00394	WINDOW HEAT POWER RIGHT FRONT
B	9	C00392	WINDOW HEAT POWER LEFT SIDE
B	20	C00393	WINDOW HEAT POWER RIGHT SIDE
B	21	C00228	WINDOW HEAT POWER LEFT FRONT

E. **Procedure**

SUBTASK 30-41-00-020-001

- (1) Remove the coil cord from the captain's side of the flight compartment.

SUBTASK 30-41-00-210-003

- (2) Examine the position of the captain's sidewall receptacle connector keyway.

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- (a) If the captain's sidewall receptacle connector keyway is not set at the up position, or 12 o'clock, do the steps that follow:
- 1) Remove the captain's sidewall, Flight Compartment Forward Ceiling Panel Removal, TASK 25-11-21-000-801.
 - 2) Remove the four screws [3] and four washers [2] at the sidewall receptacle connector.
 - 3) Turn the sidewall receptacle connector keyway to the up position, or 12 o'clock, and install the screws and washers.
 - 4) Install the captain's sidewall, Flight Compartment Forward Ceiling Panel Installation, TASK 25-11-21-400-801.

SUBTASK 30-41-00-210-005

- (3) Examine the captain's coil cord for signs of rub damage at the connector ends.
- (a) Do this task: General Visual Inspection of EWIS, TASK 20-60-02-100-801.

SUBTASK 30-41-00-420-001

- (4) Install the coil cord on the captain's side of the flight compartment.

SUBTASK 30-41-00-020-002

- (5) Remove the coil cord on the first officer's side of the flight compartment.

SUBTASK 30-41-00-210-006

- (6) Examine the position of the first officer's sidewall receptacle connector keyway.
- (a) If the first officer's sidewall receptacle connector keyway is not set at the up position, or 12 o'clock, do the steps that follow:
- 1) Remove the first officer's sidewall, Flight Compartment Forward Ceiling Panel Removal, TASK 25-11-21-000-801.
 - 2) Remove the four screws [3] and four washers [2] at the sidewall receptacle connector.
 - 3) Turn the sidewall receptacle connector keyway to the up position, or 12 o'clock, and install the screws and washers.
 - 4) Install the first officer's sidewall, Flight Compartment Forward Ceiling Panel Installation, TASK 25-11-21-400-801.

SUBTASK 30-41-00-210-008

- (7) Examine the first officer's coil cord for signs of rub damage at the connector ends.
- (a) Do this task: General Visual Inspection of EWIS, TASK 20-60-02-100-801.

SUBTASK 30-41-00-420-002

- (8) Install the coil cord on the first officer's side of the flight compartment.

F. Put the Airplane Back to its Normal Condition

SUBTASK 30-41-00-860-015

- (1) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-5

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	8	C00394	WINDOW HEAT POWER RIGHT FRONT
B	9	C00392	WINDOW HEAT POWER LEFT SIDE
B	20	C00393	WINDOW HEAT POWER RIGHT SIDE
B	21	C00228	WINDOW HEAT POWER LEFT FRONT

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SUBTASK 30-41-00-860-016

(2) If necessary, do this task: Supply Electrical Power, TASK 24-22-00-860-801.

SUBTASK 30-41-00-710-001

(3) Do this task: Window Heat System - Operational Test, TASK 30-41-00-710-801.

———— **END OF TASK** ————

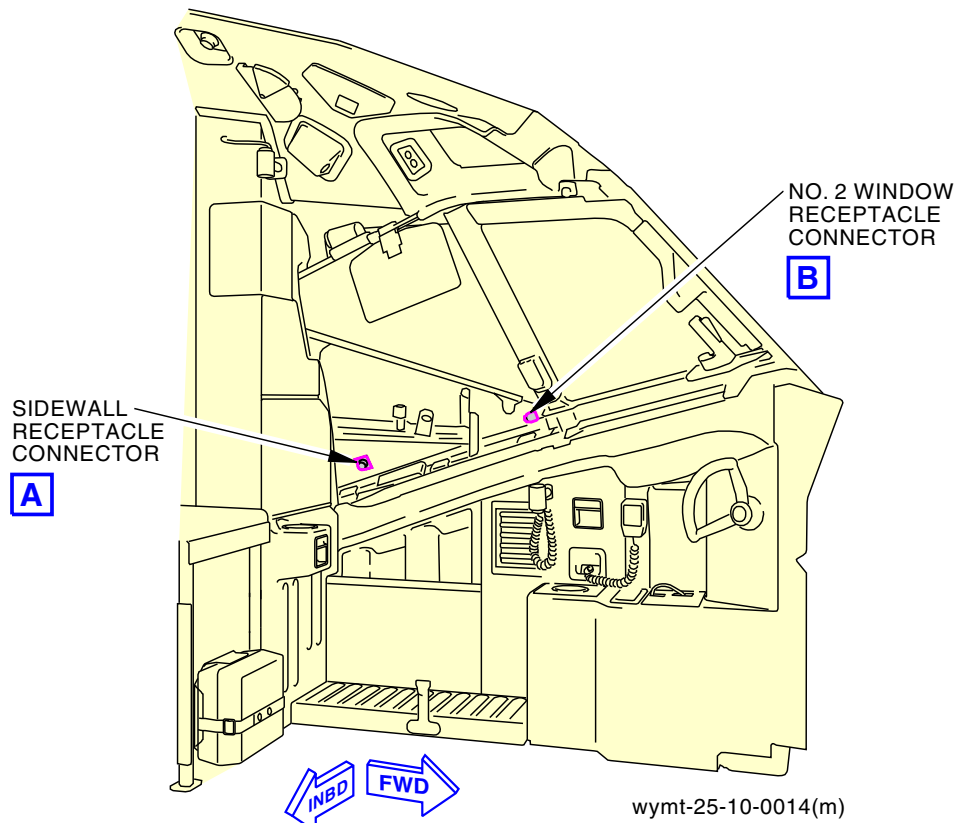
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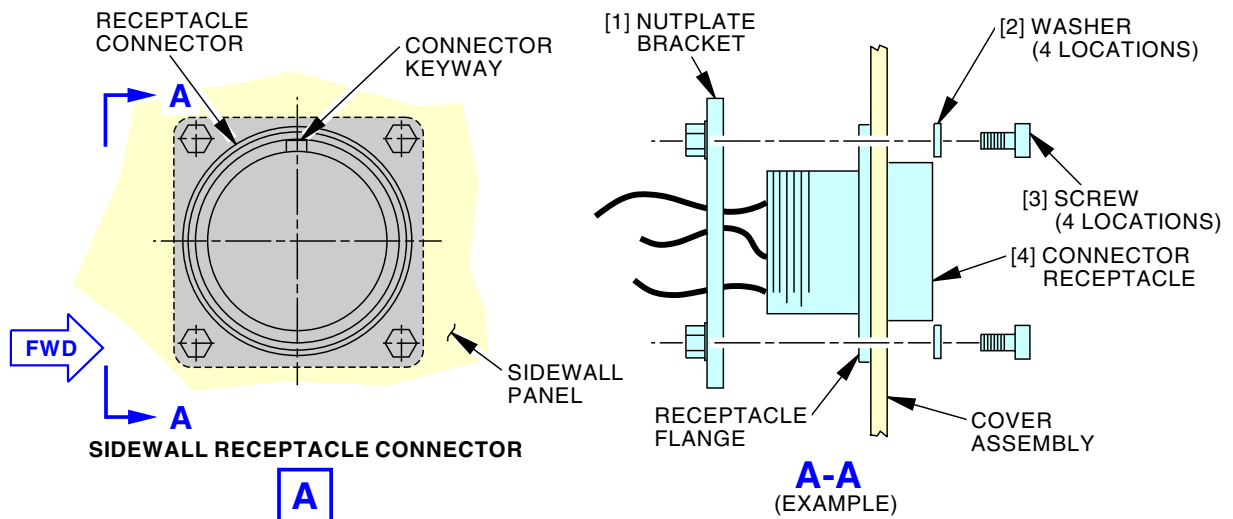
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**FLIGHT COMPARTMENT CAPTAIN'S SIDEWALL
(FIRST OFFICER'S SIDEWALL IS OPPOSITE)**



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**Coil Cord Keyway Position Inspection
Figure 601/30-41-00-990-802 (Sheet 1 of 2)**

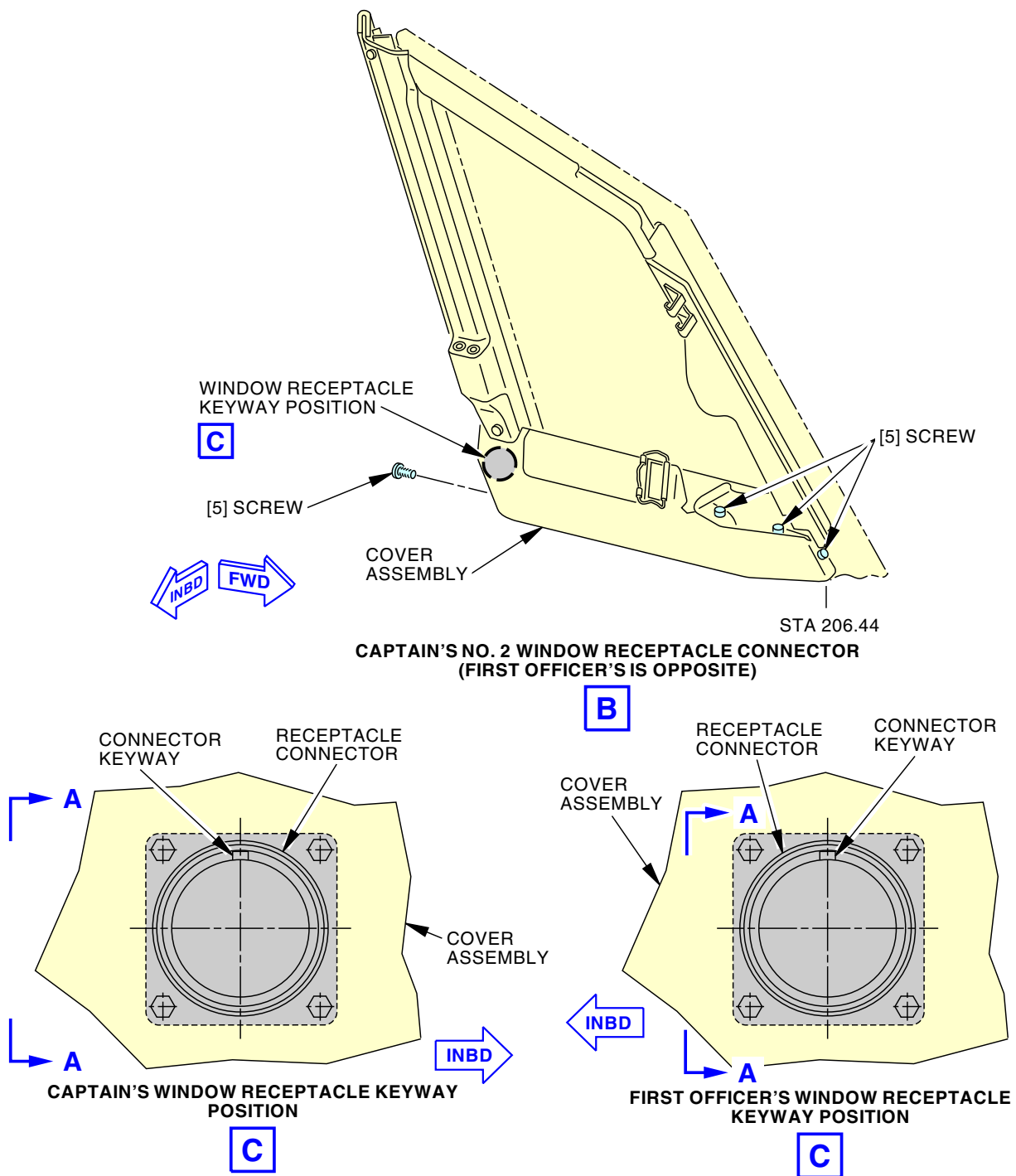
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Coil Cord Keyway Position Inspection
Figure 601/30-41-00-990-802 (Sheet 2 of 2)

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CONTROL CABIN WINDOW ANTI-ICE SYSTEM - REPAIRS

1. **General**

- A. This procedure connects the spare window temperature sensor for the No. 2 windows.
- B. The captain's and first officer's No. 1 and No. 2 windows are electrically heated. Each window has a control (primary) and a spare temperature sensor.
- C. For the No. 1 windows, the WHCU automatically switches between the primary and the spare temperature sensor in override mode, the operator can cycle on the ON/OFF switch to shift to the other operating sensor.
- D. This procedure gives the steps necessary to disconnect the bad control (primary) temperature sensor and connect the spare temperature sensor for the No. 2 windows.
- E. It is optional to replace the window after a primary temperature sensor failure.
- F. It is necessary to replace the window if none of the temperature sensors operate.

TASK 30-41-00-420-801

2. **Control Cabin Window Temperature Sensor - Repairs**

(Figure 801)

A. **References**

Reference	Title
24-22-00-860-801	Supply Electrical Power (P/B 201)
24-22-00-860-804	Remove External Power (P/B 201)
30-41-11-440-801	Window Heat Control Unit (WHCU) Override Mode Activation/Deactivation (P/B 201)
56-12-11-000-801	No. 2 Openable Window Removal (P/B 401)
56-12-11-400-801	No. 2 Openable Window Installation (P/B 401)

B. **Consumable Materials**

Reference	Description	Specification
D50244	Compound - Dow Corning 340 Heat Sink Compound	
G01659	Swab - Cotton Or Rayon, (Disposable)	

C. **Location Zones**

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

D. **Procedure**

SUBTASK 30-41-00-860-017

- (1) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-5

Row	Col	Number	Name
B	8	C00394	WINDOW HEAT POWER RIGHT FRONT
B	9	C00392	WINDOW HEAT POWER LEFT SIDE
B	20	C00393	WINDOW HEAT POWER RIGHT SIDE
B	21	C00228	WINDOW HEAT POWER LEFT FRONT

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SIA ALL; AIRPLANES WITH DUAL SENSOR OPERATION

SUBTASK 30-41-00-440-002

- (2) For No. 1 window, do these steps:
- (a) Put the applicable WINDOW HEAT power switch(es), on the P5-9 panel (window and pitot heat module), to the OFF position.
 - (b) Put the WINDOW HEAT power switch(es) to the ON position.
NOTE: The procedure to activate the primary and spare window heat sensors requires cycling action of the WINDOW HEAT power switch.
 - (c) If it is necessary, activate OVERRIDE mode for No. 1 window (TASK 30-41-11-440-801).
NOTE: Use of the OVERRIDE mode reduces the need for the cycling action when one window heat sensor has failed.
NOTE: In the OVERRIDE mode the OVERHEAT indications will be provided only when both heat sensors fail.

SIA 001, 002, 004, 005 PRE SB 737-30-1079

SUBTASK 30-41-00-900-001

- (3) For the No. 2 window, do these steps to change the wiring from the primary sensor to the spare sensor:
- (a) Disconnect the coil cord that is attached to the side window.
 - (b) If necessary, remove the side window (TASK 56-12-11-000-801).
 - (c) Disconnect the wire connected to the primary sensor's D terminal located at the bottom corner of the window.
 - (d) Connect the wire to the spare temperature sensor's D terminal.
 - (e) Apply a layer of Dow Corning 340 heat sink compound, D50244, to the terminals with a swab, G01659.
NOTE: The Dow Corning 340 heat sink compound, D50244, is intended to prevent inadvertent loss of insulation between the sensor terminals and the metal frame of the window, which can cause the window to overheat.
 - (f) If necessary, install the side window (No. 2 Openable Window Installation, TASK 56-12-11-400-801).
 - (g) Connect the coil cord to the side window.

SIA 003, 006-999; SIA 001, 002, 004, 005 POST SB 737-30-1079

SUBTASK 30-41-00-960-001

- (4) For the No. 2 window, do these steps to change the wiring from the primary sensor to the spare sensor:
- (a) Disconnect the coil cord that is attached to the side window.
 - (b) Remove the quick disconnect plugs from the channel.
 - (c) For the left window:
 - 1) Disconnect the quick disconnect plug D7701P from the primary sensor quick disconnect plug D7701J.
 - 2) Remove the cap from the spare sensor quick disconnect plug D7703.
 - 3) Connect the spare sensor quick disconnect plug D7703 to the quick disconnect plug D7701P.

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SIA 003, 006-999; SIA 001, 002, 004, 005 POST SB 737-30-1079 (Continued)

- 4) Install a cap on the primary sensor quick disconnect plug D7701J.
- (d) For the right window:
 - 1) Disconnect the quick disconnect plug D7702P from the primary sensor quick disconnect plug D7702J.
 - 2) Remove the cap from the spare sensor quick disconnect plug D7704.
 - 3) Connect the spare sensor quick disconnect plug D7704 to the quick disconnect plug D7702P.
 - 4) Install a cap on the primary sensor quick disconnect plug D7702J.
- (e) Stow the quick disconnect plugs in the channel.
- (f) Connect the coil cord to the side window.

SIA ALL; AIRPLANES WITH THE DUAL SENSOR OPERATION (WHCU PROGRAM PIN P1-5 IS GROUNDED)

SUBTASK 30-41-00-440-003

- (5) If it is necessary, start the OVERRIDE mode for No. 2 window (TASK 30-41-11-440-801).

NOTE: In the OVERRIDE mode, the OVERHEAT lights will come on when the two heat sensors become defective.

- (a) If the spare sensor is not connected and dual sensor operation is preferred, do these steps:
 - 1) Disconnect the coil cord that is attached to the side window.
 - 2) Remove the quick disconnect plugs from the channel.
 - 3) For the left window, do these steps:
 - a) Remove the cap from the spare sensor quick disconnect connector plug D7703.
 - b) Remove the cap from the spare sensor quick disconnect connector receptacle D7705.
 - c) Connect the spare sensor quick disconnect connector plug D7703 to the quick disconnect connector receptacle D7705.
 - 4) For the right window, do these steps:
 - a) Remove the cap from the spare sensor quick disconnect connector plug D7704.
 - b) Remove the cap from the spare sensor quick disconnect connector receptacle D7706.
 - c) Connect the spare sensor quick disconnect connector plug D7704 to the quick disconnect connector receptacle D7706.
 - 5) Stow the quick disconnect connectors in the channel.
 - 6) Connect the coil cord to the side window.

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SUBTASK 30-41-00-860-020

- (6) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-5

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	8	C00394	WINDOW HEAT POWER RIGHT FRONT
B	9	C00392	WINDOW HEAT POWER LEFT SIDE
B	20	C00393	WINDOW HEAT POWER RIGHT SIDE
B	21	C00228	WINDOW HEAT POWER LEFT FRONT

SUBTASK 30-41-00-710-002

- (7) Do a test on the temperature control sensor connections:
- (a) Do this task: Supply Electrical Power, TASK 24-22-00-860-801.
 - (b) Push the BIT/VERIFY switch on the window heat control unit.
 - (c) Make sure the green light comes on.

E. Put the Airplane Back to Its Usual Condition

SUBTASK 30-41-00-860-019

- (1) If electrical power is not necessary, do this task: Remove External Power, TASK 24-22-00-860-804.

———— **END OF TASK** ————

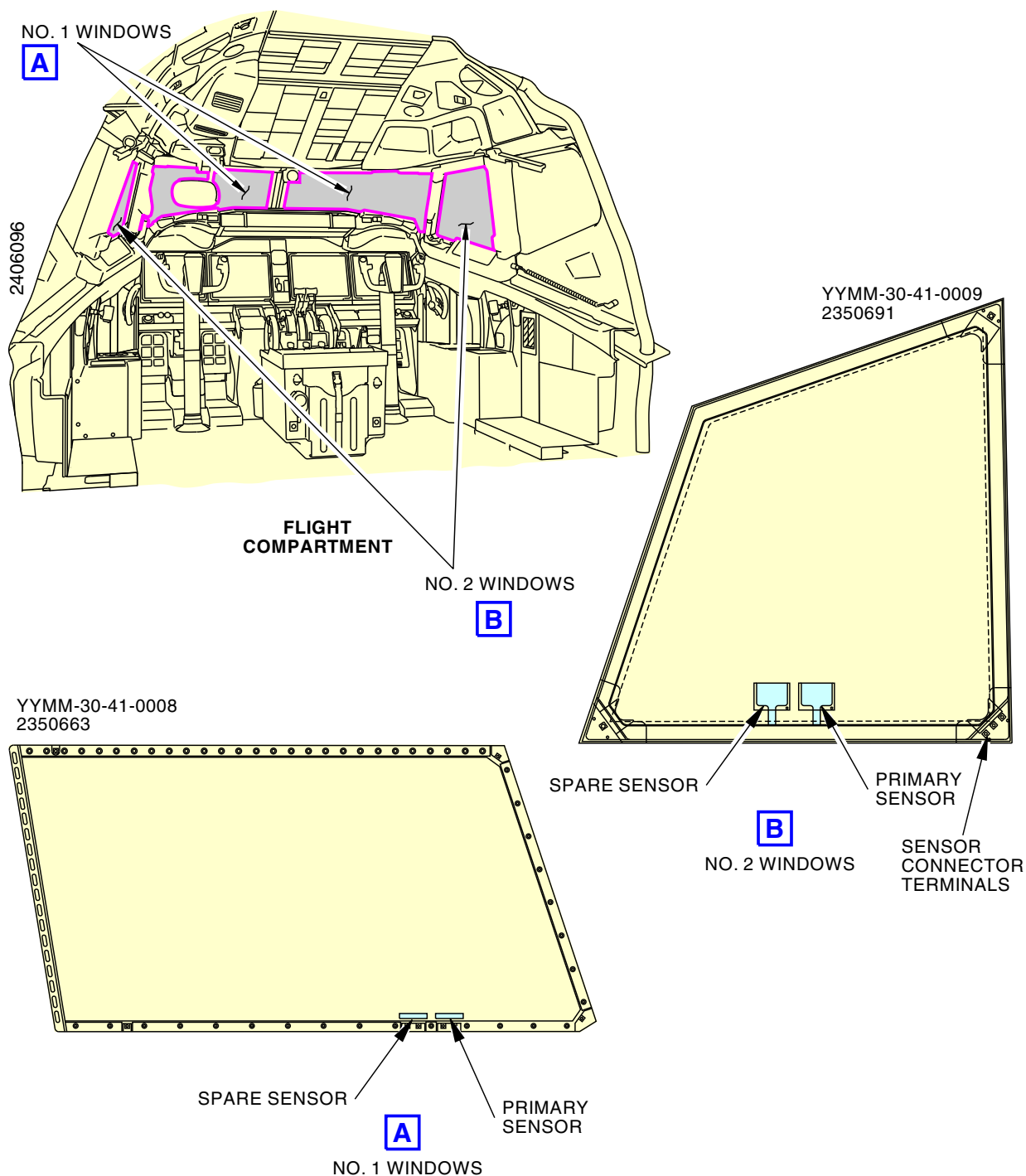
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Flight Compartment Window Temperature Sensor Connections
Figure 801/30-41-00-990-803

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WINDOW HEAT CONTROL UNIT - MAINTENANCE PRACTICES

1. **General**

A. This procedure contains this task

- (1) Window Heat Control Unit (WHCU) Override Mode Activation.
- (2) WHCU Override Mode Deactivation.

NOTE: The OVERRIDE mode is not enabled from the factory and can be enabled by task Window Heat Control Unit (WHCU) Override Mode Activation/Deactivation, TASK 30-41-11-440-801. The use of the OVERRIDE mode is available as a customer convenience, and is an optional action.

TASK 30-41-11-440-801

2. **Window Heat Control Unit (WHCU) Override Mode Activation/Deactivation**

A. **General**

- (1) This task includes the steps to activate/deactivate the override mode on the Window Heat Control Unit (WHCU).
- (2) The WHCUs are installed on the E4-2 and E2-1 racks in the main equipment center.

B. **Location Zones**

Zone	Area
117	Electrical and Electronics Compartment - Left
118	Electrical and Electronics Compartment - Right
211	Flight Compartment - Left
212	Flight Compartment - Right

C. **Access Panels**

Number	Name/Location
117A	Electronic Equipment Access Door

D. **Prepare for the Procedure**

SUBTASK 30-41-11-860-015

- (1) To get access to the Main Equipment Center, do this step:

Open this access panel:

<u>Number</u>	<u>Name/Location</u>
117A	Electronic Equipment Access Door

E. **Activate/deactivate OVERRIDE Mode for No. 1 Window**

SUBTASK 30-41-11-860-016

- (1) Set the applicable WINDOW HEAT switch, on the P5-9 panel, to the OFF and then ON position.

SUBTASK 30-41-11-860-017

- (2) Push both of the front panel BITE panel switches marked LAMP TEST and BIT VERIFY at the same time.

SUBTASK 30-41-11-210-001

- (3) Make sure that the green ON = OVERRIDE MODE light on the front of the window heat control unit (WHCU) comes on.

NOTE: In OVERRIDE mode the OVERHEAT indications will be provided only when both sensors fail.

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SUBTASK 30-41-11-860-018

- (4) Set the applicable WINDOW HEAT switch, on the P5 overhead panel, to the OFF position.
 - (a) If necessary, push and hold the LAMP TEST switch and BIT VERIFY switch again to turn off the Windows No.1 OVERRIDE mode.

F. Activate/deactivate OVERRIDE Mode for No. 2 Window

NOTE: On airplanes using dual sensors, the WHCU alternates between the primary and the spare sensor each time it is powered on.

NOTE: In order to use the second sensor on the side window, the WHCU program pin (P1-5) should be grounded and a section of wire is added inside the window frame. Adding the wire to the window frame makes that window incompatible with an airplane which is not configured for the dual sensor operation.

SUBTASK 30-41-11-860-019

- (1) Set the applicable WINDOW HEAT switch, on the P5-9 panel, to the OFF and then ON position.

SUBTASK 30-41-11-860-020

- (2) Push both of the front panel BITE panel switches marked BIT LAMP RESET and FAULT HISTORY at the same time.

SUBTASK 30-41-11-210-002

- (3) Make sure that the green ON = OVERRIDE MODE light on the front of the WHCU comes on.

NOTE: In OVERRIDE mode the OVERHEAT indications will be provided only when both sensors fail.

SUBTASK 30-41-11-860-021

- (4) Set the applicable WINDOW HEAT switch, on the P5 overhead panel, to the OFF position.
 - (a) If necessary, push and hold the LAMP TEST switch and BIT VERIFY switch again to turn off the Windows No.2 OVERRIDE mode.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 30-41-11-860-022

- (1) Close this access panel:

<u>Number</u>	<u>Name/Location</u>
117A	Electronic Equipment Access Door

————— END OF TASK —————

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WINDOW HEAT CONTROL UNIT - REMOVAL/INSTALLATION

1. **General**

A. This procedure has these tasks:

- (1) Window Heat Control Unit (WHCU) Removal
- (2) Window Heat Control Unit (WHCU) Installation

TASK 30-41-11-000-801

2. **Window Heat Control Unit (WHCU) Removal**

(Figure 401)

A. **General**

- (1) This task gives instructions to remove the two WHCUs.
- (2) The Window Heat Control Unit (WHCU) is installed on the E4-2 and E2-1 racks in the main equipment center.

B. **References**

Reference	Title
20-10-07-000-801	E/E Box Removal (P/B 401)
20-40-12-000-802	ESDS Handling for Metal Encased Unit Removal (P/B 201)

C. **Location Zones**

Zone	Area
117	Electrical and Electronics Compartment - Left
118	Electrical and Electronics Compartment - Right

D. **Access Panels**

Number	Name/Location
117A	Electronic Equipment Access Door

E. **Prepare for the Removal**

SUBTASK 30-41-11-010-001

- (1) To get access to the Main Equipment Center, do this step:

Open this access panel:

<u>Number</u>	<u>Name/Location</u>
117A	Electronic Equipment Access Door

SUBTASK 30-41-11-860-001

- (2) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-5

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	7	C01649	WINDOW HEAT POWER R3
B	8	C00394	WINDOW HEAT POWER RIGHT FRONT
B	9	C00392	WINDOW HEAT POWER LEFT SIDE
B	19	C01650	WINDOW HEAT POWER L3
B	20	C00393	WINDOW HEAT POWER RIGHT SIDE
B	21	C00228	WINDOW HEAT POWER LEFT FRONT

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SUBTASK 30-41-11-840-001



CAUTION

OBEY THE ELECTROSTATIC DISCHARGE PROCEDURES TO HANDLE THE WINDOW HEAT CONTROL UNIT. DAMAGE TO THE WINDOW HEAT CONTROL UNIT CAN OCCUR.

(3) Do this task: ESDS Handling for Metal Encased Unit Removal, TASK 20-40-12-000-802.

F. WHCU Removal

SUBTASK 30-41-11-020-001

(1) Remove the WHCU [1] from the shelf, do this task: E/E Box Removal, TASK 20-10-07-000-801.

———— **END OF TASK** ————

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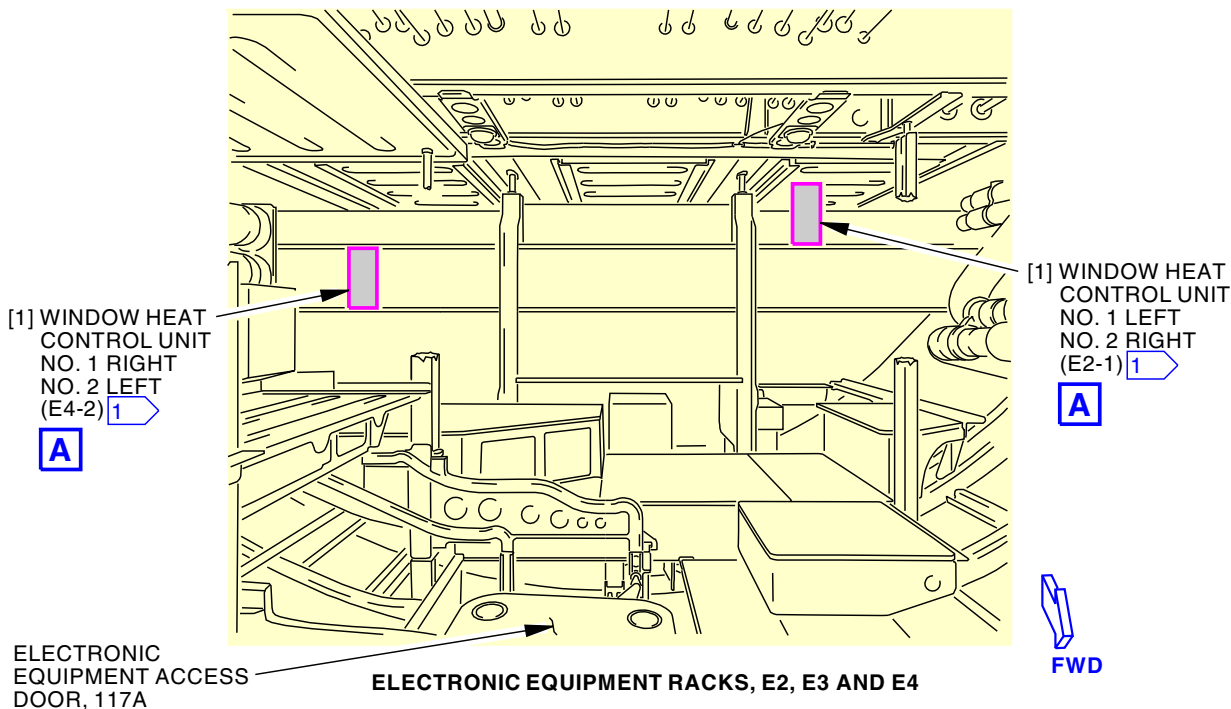
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1

UNIT	ELECTRICAL EQUIPMENT NO.	WINDOW
1	M321	R SIDE L FRONT
2	M323	L SIDE R FRONT

BITE INSTRUCTIONS

- LAMP TEST - All lights ON OK - If not replace LRU
- BIT VERIFY - Red light on - circuit fault - Green light on - no fault
- FAULT HISTORY - Retrieves last fault
- BIT LAMP RESET - Lights off
- LAMP TEST AND BIT LAMP RESET FOR NVRAM ERASE
- LAMP TEST AND BIT VERIFY FOR #1 WINDOW OVERRIDE MODE
- FAULT HISTORY AND BIT LAMP RESET FOR #2 WINDOW OVERRIDE MODE

#1 Window Override

Lamp Test

BIT VERIFY

Fault History

BIT LAMP RESET

Window #1

SENSOR #1

SENSOR #2

WINDOW POWER

WHCU-LRU

PS-9

BIT TEST OK

ON = OVERRIDE MODE

Window #2

SENSOR #1

SENSOR #2

WINDOW POWER

WHCU-LRU

PS-9

BIT TEST OK

ON = OVERRIDE MODE

Single sensor Mode-Override indication and sensor 2 not operational
Normal - overheat indication when sensor fails
Override - auto sensor selection - only indicate after both sensors fail

Name Plate

A

2413918 S00061533791_V4

Window Heat Control Unit Installation Figure 401/30-41-11-990-801

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TASK 30-41-11-400-801

3. Window Heat Control Unit (WHCU) Installation

(Figure 401)

A. General

- (1) This task gives instructions to install the two WHCUs.
- (2) The window heat control units WHCUs are installed on the E4-2 and E2-1 racks in the main equipment center.

B. References

Reference	Title
20-10-07-400-801	E/E Box Installation (P/B 401)
20-40-12-400-802	ESDS Handling for Metal Encased Unit Installation (P/B 201)

C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	WHCU	30-41-11-05-010	SIA ALL
		30-41-11-10-010	SIA ALL

D. Location Zones

Zone	Area
117	Electrical and Electronics Compartment - Left
118	Electrical and Electronics Compartment - Right

E. Access Panels

Number	Name/Location
117A	Electronic Equipment Access Door

F. WHCU Installation

SUBTASK 30-41-11-840-002



CAUTION

OBEY THE ELECTROSTATIC DISCHARGE PROCEDURES TO HANDLE THE WINDOW HEAT CONTROL UNIT. DAMAGE TO THE WINDOW HEAT CONTROL UNIT CAN OCCUR.

- (1) Do this task: ESDS Handling for Metal Encased Unit Installation, TASK 20-40-12-400-802.

SUBTASK 30-41-11-420-001

- (2) Install the WHCU [1] on the shelf, do this task: E/E Box Installation, TASK 20-10-07-400-801.

G. WHCU Installation Test

SUBTASK 30-41-11-860-003

- (1) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-5

Row	Col	Number	Name
B	7	C01649	WINDOW HEAT POWER R3
B	8	C00394	WINDOW HEAT POWER RIGHT FRONT
B	9	C00392	WINDOW HEAT POWER LEFT SIDE
B	19	C01650	WINDOW HEAT POWER L3
B	20	C00393	WINDOW HEAT POWER RIGHT SIDE
B	21	C00228	WINDOW HEAT POWER LEFT FRONT

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SUBTASK 30-41-11-740-001

- (2) Do the WHCU [1] BITE test:
- (a) Put the window heat switches, on the P5 forward overhead panel, to the ON position.
 - (b) Press the LAMP TEST switch.
 - 1) Make sure that all lights (5 red, 2 green) come on.
 - 2) If any light is off, replace the WHCU [1].
 - (c) Press the BIT VERIFY switch for 1 second.
 - 1) If all green lights come on, then there is no fault.
 - 2) If a red light comes on, then a fault exists.
 - (d) Push the FAULT HISTORY switch.
 - 1) Make sure that the last fault is shown.
 - (e) Push the BIT LAMP RESET switch.
 - 1) Make sure that all lights are off.
 - (f) Push the LAMP TEST switch and BIT LAMP RESET switch.
 - 1) Make sure that the NVRAM is erased.
 - (g) Push the LAMP TEST switch and BIT VERIFY switch.
 - 1) Make sure that the module is in the #1 WINDOW OVERRIDE mode.
 - (h) If necessary, push and hold the LAMP TEST switch and BIT VERIFY switch again to turn off the #1 WINDOW OVERRIDE mode.
 - (i) Put the window heat switches, on the P5 forward overhead panel, to the OFF position.

H. Put the Airplane Back to Its Usual Condition.

SUBTASK 30-41-11-410-001

- (1) Close this access panel:

<u>Number</u>	<u>Name/Location</u>
117A	Electronic Equipment Access Door

————— END OF TASK —————

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WINDOW HEAT CONTROL UNIT - ADJUSTMENT/TEST

1. General

A. This procedure has this task:

- (1) A system test of the Window Heat Control Unit (WHCU).

TASK 30-41-11-710-801

2. Window Heat Control Unit - System Test

(Figure 501)

A. General

- (1) The Window Heat Control Unit (WHCU)s are installed in the electrical equipment center. A Built-In-Test Equipment (BITE) module is installed on the control unit. The test makes sure that the WHCUs operate properly.
- (2) The WHCUs can be tested separately or they can all be tested at the same time. Use the table to determine which WHCU controls each window heat (Figure 501).

B. Location Zones

Zone	Area
117	Electrical and Electronics Compartment - Left
118	Electrical and Electronics Compartment - Right
211	Flight Compartment - Left
212	Flight Compartment - Right

C. Prepare for the Test

SUBTASK 30-41-11-860-005

- (1) Press and release the reset switch on the WHCUs.
 - (a) Make sure that all the indicator lights are off.

D. Normal Functions Test of the WHCUs

SUBTASK 30-41-11-860-006

- (1) One switch at a time, put the WINDOW HEAT power switches on the window and pitot heat module to the ON position.
 - (a) To test only one WHCU, put the applicable switch to the ON position.
 - 1) Refer to the table that shows which WHCU controls each window heat (Figure 501).
 - (b) Make sure that the corresponding ON light on the window and pitot heat module comes on.

NOTE: It can take up to five seconds for a light to come on.
 - (c) Make sure that both MASTER CAUTION lights are off.

SUBTASK 30-41-11-860-007

- (2) Put the WINDOW HEAT TEST OVHT/PWR switch to the OVHT position for 1 second.
 - (a) Make sure that the OVERHEAT lights come on.
 - (b) Make sure that the MASTER CAUTION lights come on.
 - (c) Make sure that ANTI-ICE light comes on.
 - (d) Make sure that the ON lights go off in less than 70 seconds.

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SUBTASK 30-41-11-860-008

- (3) One switch at a time, put each window heat control switch to the OFF position for 1 second and then put the switch to the ON position.
 - (a) Make sure that the applicable OVERHEAT light goes off.
 - (b) Make sure that the window heat ON light comes on.

SUBTASK 30-41-11-860-009

- (4) Press either MASTER CAUTION light.
 - (a) Make sure that the MASTER CAUTION light goes off.
 - (b) Make sure that the ANTI-ICE light goes off.

SUBTASK 30-41-11-860-010

- (5) Wait 4 minutes.

SUBTASK 30-41-11-860-011

- (6) Hold the window heat TEST switch to PWR.
 - (a) Make sure that the window heat ON lights stay on for each window.
 - (b) If holding the window heat TEST switch to PWR causes the OVERHEAT light to illuminate, the window heat ON lights shall go off within 70 seconds.

SUBTASK 30-41-11-860-012

- (7) Release the window heat TEST switch.

SUBTASK 30-41-11-860-013

- (8) Put the WINDOW HEAT power switches to the OFF position.

E. BITE test

SUBTASK 30-41-11-740-002

- (1) Set the applicable window heat control switch to the ON position.

SUBTASK 30-41-11-740-008

- (2) Push the LAMP TEST switch.
 - (a) Make sure that all seven lights come on.

SUBTASK 30-41-11-740-009

- (3) Push the BIT VERIFY switch on the WHCU.
 - (a) Make sure that no red lights come on and that the green BIT TEST OK light comes on in less than 10 seconds and stays on for 15 seconds.

SUBTASK 30-41-11-740-010

- (4) Push the BIT LAMP RESET switch on the WHCU.
 - (a) Make sure that the green BIT TEST OK light shuts off.

SUBTASK 30-41-11-740-007

- (5) Push the FAULT HISTORY switch on the WHCU.
 - (a) Cycle through the faults from the most recent to the oldest fault registered in the WHCU.

NOTE: The WHCU has a 10-register FAULT HISTORY memory storage capability, and it shows one fault at a time.

SUBTASK 30-41-11-740-011

- (6) Set the applicable window heat control switch to the OFF position.

————— END OF TASK —————

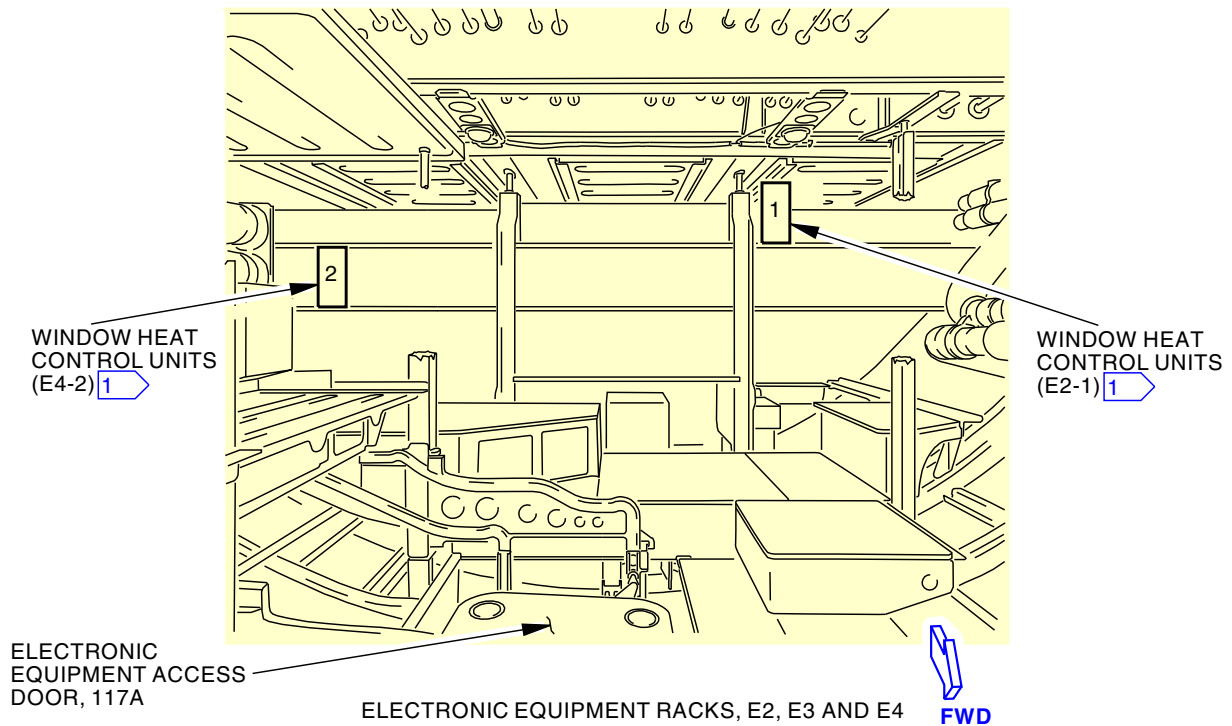
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UNIT	ELECTRICAL EQUIPMENT NO.	WINDOW
1	M321	R SIDE L FRONT
2	M323	L SIDE R FRONT

2413919 S00061533795_V1

Window Heat Control Unit Test
Figure 501/30-41-11-990-802 (Sheet 1 of 2)

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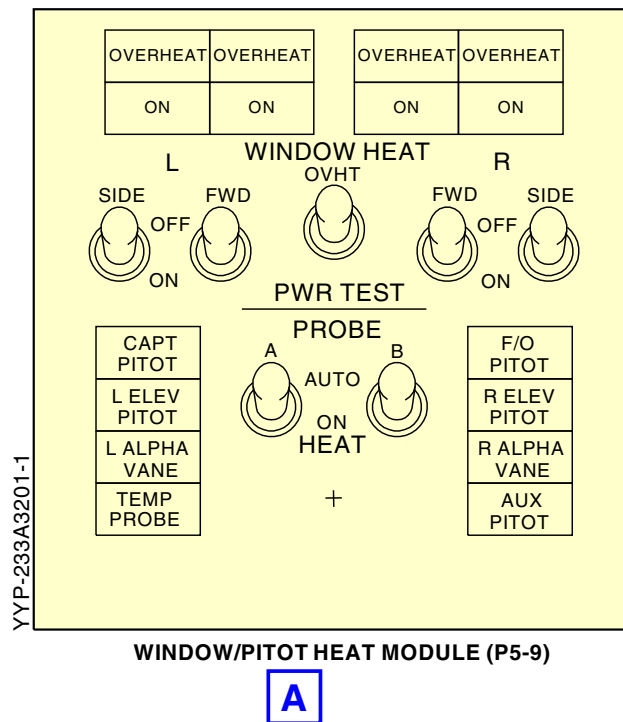
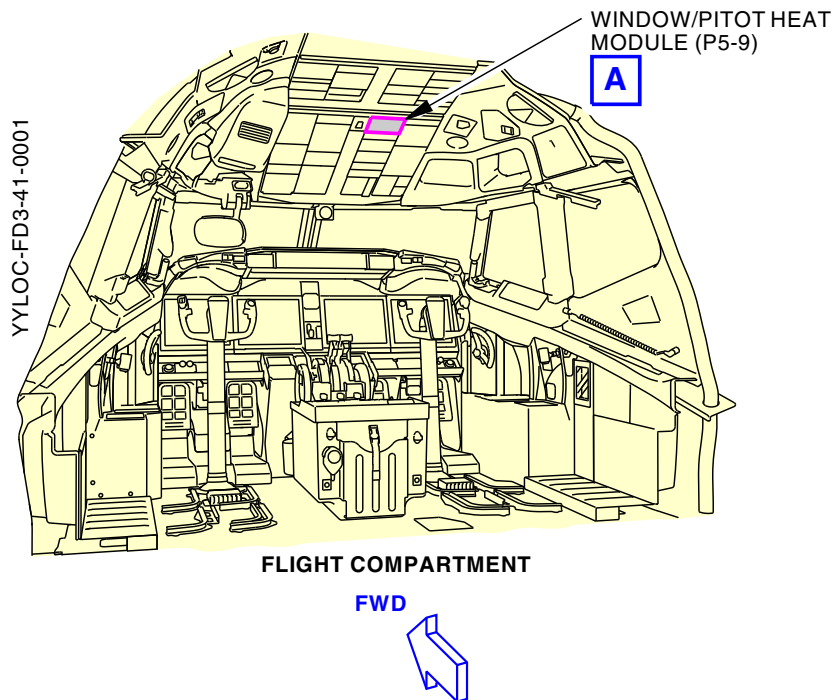
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2413920 S00061533796_V1

Window Heat Control Unit Test
Figure 501/30-41-11-990-802 (Sheet 2 of 2)

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WINDOW HEAT CONDUCTIVE COATING AND SENSOR - ADJUSTMENT/TEST

1. General

A. This procedure has these tasks:

- (1) Check of the electrical resistance of the window heat film.
- (2) Check of the temperature sensors on windows 1 and 2.
- (3) Measure the insulation resistance and Dielectric Absorption Rate (DAR) of the control cabin windows.

TASK 30-41-21-000-801

2. Check the Electrical Resistance of the Window Heat Film

(Figure 501)

A. General

- (1) The number 1 and number 2 windows have a layer of material which heat the windows when electricity is applied. The Window Heat Control Unit (WHCU) provide power to heat the windows. The WHCU will measure the resistance of the window at start-up and then adjust the output voltage and power accordingly.

B. References

Reference	Title
30-41-11-000-801	Window Heat Control Unit (WHCU) Removal (P/B 401)
30-41-11-400-801	Window Heat Control Unit (WHCU) Installation (P/B 401)

C. Location Zones

Zone	Area
117	Electrical and Electronics Compartment - Left
118	Electrical and Electronics Compartment - Right
121	Forward Cargo Compartment - Left
122	Forward Cargo Compartment - Right

D. Prepare for the Procedure

SUBTASK 30-41-21-010-001

- (1) Remove the applicable WHCU (TASK 30-41-11-000-801).

E. Procedure

SUBTASK 30-41-21-760-001

- (1) Measure the resistance at each connector to ground as follows.
 - (a) Unit 1 Left Front M321, D16230 pin 1 to ground.
 - (b) Unit 1 Right Side M321, D16230 pin 3 to ground.
 - (c) Unit 2 Right Front M323, D16232 pin 1 to ground.
 - (d) Unit 2 Left Side M323, D16232 pin 3 to ground.

SUBTASK 30-41-21-970-001

- (2) Make sure that the window resistance is within the range of 30 to 50 ohms for the front windows (No. 1), and 50 to 80 ohms for the side windows (No. 2).

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F. Put the Airplane Back to Its Usual Condition

SUBTASK 30-41-21-420-001

- (1) Install the applicable WHCU (TASK 30-41-11-400-801).

———— **END OF TASK** ————

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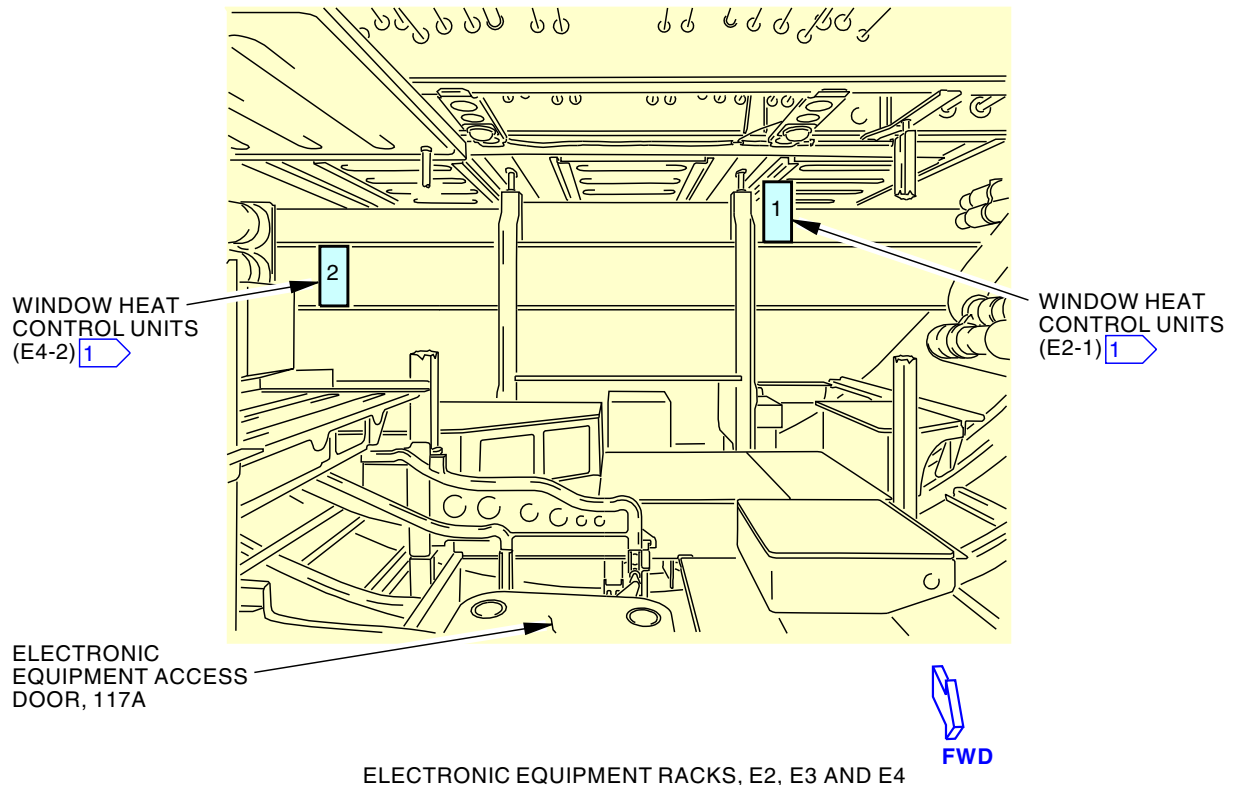
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1

UNIT	ELECTRICAL EQUIPMENT NO.	WINDOW
1	M321	R SIDE L FRONT
2	M323	L SIDE R FRONT

2413921 S00061533800_V2

Window Heat Conductive Coating Test Figure 501/30-41-21-990-801

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TASK 30-41-21-760-801

3. Measure the Resistance of the Window Temperature Sensors

(Figure 502)

A. General

- (1) The number 1 and number 2 windows have sensors that measure the temperature of the windows. This test checks the electrical resistance of the window temperature sensors.

B. References

Reference	Title
30-41-11-000-801	Window Heat Control Unit (WHCU) Removal (P/B 401)
30-41-11-400-801	Window Heat Control Unit (WHCU) Installation (P/B 401)

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
COM-1572	Thermometer - Infrared, Intrinsically Safe Part #: 568 Ex Supplier: 89536 Opt Part #: DHS24XC-FM Supplier: 08086 Opt Part #: DHS24XF-FM Supplier: 08086 Opt Part #: EX-MP4 A Supplier: 3GT36 Opt Part #: IR-16L3 IS Supplier: 75037
STD-442	Gun - Heat, 180 deg. F (82 deg. C) Maximum Output Temperature
STD-1179	Tester - Pyrometer

D. Consumable Materials

Reference	Description	Specification
D50244	Compound - Dow Corning 340 Heat Sink Compound	
G01659	Swab - Cotton Or Rayon, (Disposable)	

E. Location Zones

Zone	Area
117	Electrical and Electronics Compartment - Left
118	Electrical and Electronics Compartment - Right
211	Flight Compartment - Left
212	Flight Compartment - Right

F. Prepare for the Measurement

SUBTASK 30-41-21-860-002

- (1) Heat the windows if the temperature is too cold, use one of the following methods:

NOTE: These steps can be used if the ambient temperature is significantly less the specified test temperature range of 68°F (20°C) - 108°F (42°C).

- (a) Method 1, Heat the Window - Window Heat Control Unit (WHCU):

- 1) One switch at a time, put the WINDOW HEAT switches on the Window and Pitot Heat Module to the ON position.

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- a) Make sure that the corresponding ON light on the window and pitot heat module comes on.

NOTE: It can take up to 15 seconds for the light to come on.

- b) Make sure that both master caution lights are off.

2) Wait for the windows to heat up.

- a) Use a Infrared Thermometer, COM-1572 (including pyrometer, STD-1179), or other temperature indicating device near each window temperature sensor to measure the window temperature.
- b) Make sure that the front and side windows stabilize at 90°F (32°C) - 120°F (49°C).

NOTE: It can take up to 4 minutes for the window temperatures to stabilize.

3) Put the WINDOW HEAT power switches to the OFF position.

- a) Make sure that the OVERHEAT lights, MASTER CAUTION lights, and ANTI-ICE lights are off.

(b) Method 2, Heat the Window - Heat Gun:

- 1) Heat the window near the sensor with a 180 deg. F (82 deg. C) maximum output temperature heat gun, STD-442, for up to thirty seconds.

NOTE: You can use an Infrared Thermometer, COM-1572 (including pyrometer, STD-1179), or other temperature indicating device to do a check of the temperature.

SUBTASK 30-41-21-010-003

- (2) Remove the applicable WHCU (TASK 30-41-11-000-801).

SUBTASK 30-41-21-840-002

- (3) Make sure that the window temperature is between 68°F (20°C) and 108°F (42°C).

G. Measure the Resistance of the Window Temperature Sensors

SUBTASK 30-41-21-760-002

- (1) Measure the resistance of the applicable window temperature sensor.

- a) Make sure that the resistance of the sensor is correct (Table 501).

Table 501/30-41-21-993-803 Sensor Resistance

Window	Sensor wire checked	Connector (WHCU Side)	Pins to measure across	WHCU	WDM
Window #1 Left	Primary	D16230	19, 25	M321	30-41-11
Window #1 Left	Spare	D16230	26, 27	M321	30-41-11
Window #1 Right	Primary	D16232	19, 25	M323	30-41-12
Window #1 Right	Spare	D16232	26, 27	M323	30-41-12
Window #2 Right	Primary	D16230	17, 18	M321	30-41-11
Window #2 Right	Spare	D16230	16, 17	M321	30-41-11
Window #2 Left	Primary	D16232	17, 18	M323	30-41-12
Window #2 Left	Spare	D16232	16, 17	M323	30-41-12

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NOTE: Window temperatures of 68°F (20°C) - 108°F (42°C) is expected for this test.

NOTE: If the temperature of any individual window in Table 501 is greater than 108°F (42°C) due to environmental condition(s) then a measured sensor resistance value less than 362 ohms is acceptable.

NOTE: A measured sensor resistance value above 362 ohms indicates a failed sensor.

- (b) Apply pressure to the corner near the temperature sensor terminal when measuring the resistance of the sensors.

SIA 001, 002, 004, 005 PRE SB 737-30-1079

SUBTASK 30-41-21-760-007

- (2) Do this test to measure the resistance of the spare sensors for the side window.

NOTE: This test applies to spare sensors without quick disconnect plugs.

- (a) Move the rubber terminal boot covers to expose electrical terminals and mounting screws.

NOTE: The terminals are found at the bottom aft corner of the No. 2 Windows.

- (b) Examine the terminals for corrosion.
 - 1) If it is necessary, clean the terminals.
- (c) Remove the D terminal lug that is attached to the primary sensor.
- (d) Install the D terminal lug to the spare sensor.
- (e) Make sure that the resistance is within the limits (Figure 502).
- (f) Remove the D terminal lug that is attached to the spare sensor.
- (g) Install the D terminal lug to the primary sensor.
- (h) Apply a layer of Dow Corning 340 heat sink compound, D50244, to the terminals with a swab, G01659.

NOTE: The Dow Corning 340 heat sink compound, D50244, is intended to prevent inadvertent loss of insulation between the sensor terminals and the metal frame of the window, which can cause the window to overheat.

- (i) Install the rubber terminal boot covers over the terminals as required.
 - 1) Make sure that the rubber terminal boot covers are securely installed to avoid dislocation.

SIA 003, 006-999; SIA 001, 002, 004, 005 POST SB 737-30-1079

SUBTASK 30-41-21-760-008

- (3) Do this test to measure the resistance of the spare sensors for the side windows.

NOTE: This test applies to spare sensors with quick disconnect plugs.

- (a) Remove the quick disconnect plugs from the channel.
- (b) Disconnect the quick disconnect plug for the primary sensor.
- (c) Examine the quick disconnect plugs for the primary sensor and spare sensor for corrosion and clean as necessary.
- (d) Connect the quick disconnect plug for the spare sensor.
- (e) Make sure that the resistance is within the limits (Figure 502).
- (f) Disconnect the quick disconnect plug for the spare sensor and reconnect the quick disconnect plug to the primary sensor.

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SIA 003, 006-999; SIA 001, 002, 004, 005 POST SB 737-30-1079 (Continued)

(g) Place the quick disconnect plugs back in the channel.

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H. Put the Airplane Back to Its Usual Condition

SUBTASK 30-41-21-420-002

(1) Install the applicable WHCU (TASK 30-41-11-400-801).

———— **END OF TASK** ————

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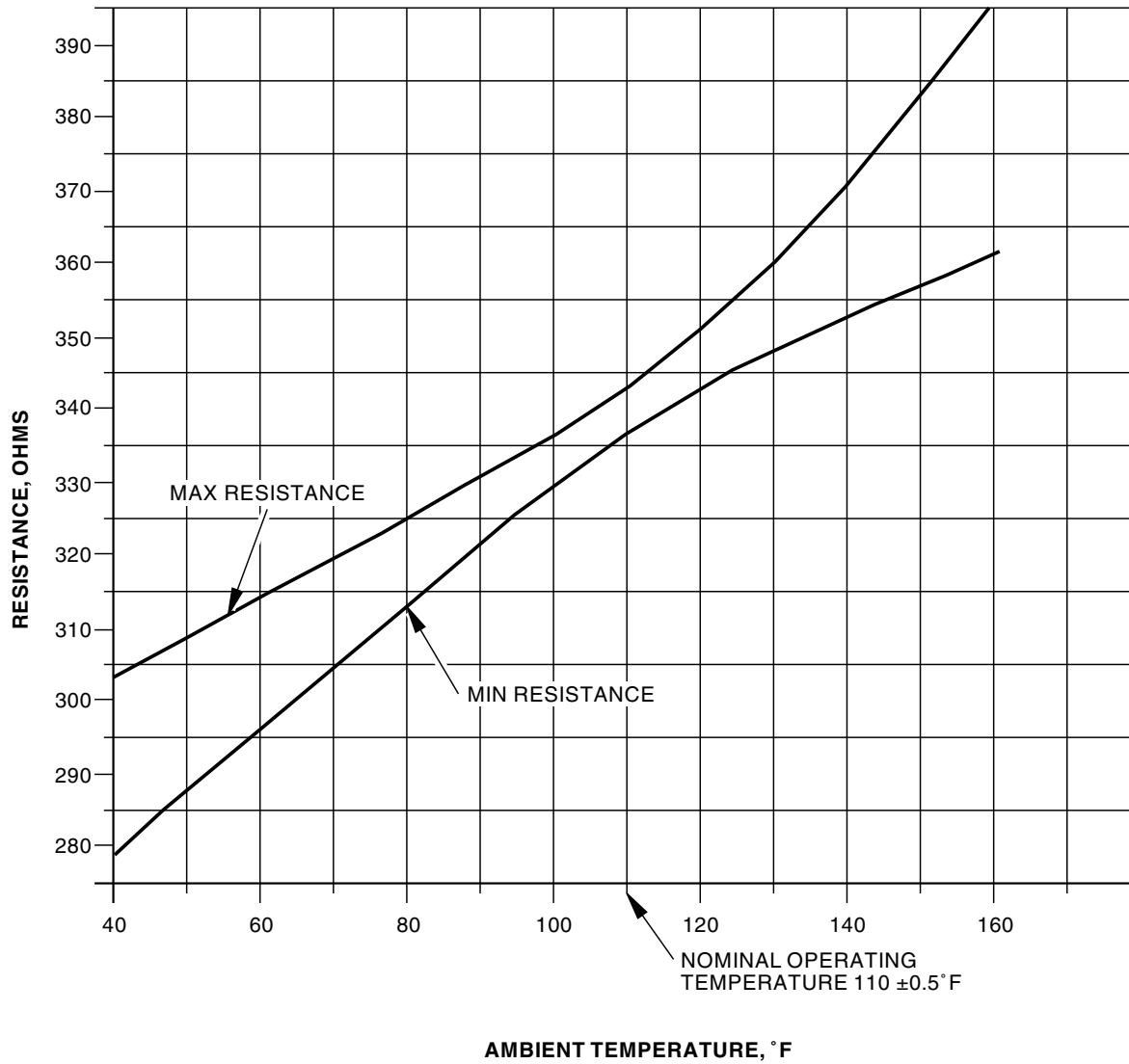
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Window Heat Control Sensor Resistance
Figure 502/30-41-21-990-802

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TASK 30-41-21-700-801

4. **Measure the Insulation Resistance and Dielectric Absorption Ratio of the Control Cabin Windows**
(Figure 503)

A. General

- (1) This test measures the Insulation Resistance (IR) and Dielectric Absorption Rate (DAR) of the control cabin window heat sensors, conductive coating, and bus bars. A low dielectric insulation resistance value between the components in the window can cause the system to not operate correctly. A check of these values can help to monitor the health of the components in the window.
- (2) This test only does a check of the sensor on the L2/R2 window that is connected to the system. To do a check of the spare sensor on the L2/R2 window, refer to WDM 30-41-11 or WDM 30-41-12 to change the connection of the sensor to the circuit.

B. References

Reference	Title
20-10-39-700-801	Insulation Resistance Testing - Special Detail Inspection (P/B 501)
24-22-00-860-801	Supply Electrical Power (P/B 201)
24-22-00-860-802	Remove Electrical Power (P/B 201)
25-11-21-000-801	Flight Compartment Forward Ceiling Panel Removal (P/B 201)
25-11-21-400-801	Flight Compartment Forward Ceiling Panel Installation (P/B 201)
30-41-11-000-801	Window Heat Control Unit (WHCU) Removal (P/B 401)
30-41-11-400-801	Window Heat Control Unit (WHCU) Installation (P/B 401)
30-41-11-710-801	Window Heat Control Unit - System Test (P/B 501)
WDM 30-41-11	D000534537
WDM 30-41-12	D000534539

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
COM-17798	Multimeter - Digital, Insulation Resistance Part #: 1004-745 Supplier: U0146 Part #: 1507 Supplier: 4U744 Part #: 1587 Supplier: 89536 Part #: 1587 FC Supplier: 4U744 Part #: MIT2500 Supplier: U0146 Part #: MIT410/2 Supplier: U0146

D. Location Zones

Zone	Area
117	Electrical and Electronics Compartment - Left
118	Electrical and Electronics Compartment - Right
211	Flight Compartment - Left
212	Flight Compartment - Right

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E. Access Panels

Number	Name/Location

117A	Electronic Equipment Access Door

F. Prepare for the Procedure

SUBTASK 30-41-21-860-004

- (1) Remove electrical power from the aircraft (TASK 24-22-00-860-802).

SUBTASK 30-41-21-860-003

- (2) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-5

Row	Col	Number	Name
B	8	C00394	WINDOW HEAT POWER RIGHT FRONT
B	9	C00392	WINDOW HEAT POWER LEFT SIDE
B	20	C00393	WINDOW HEAT POWER RIGHT SIDE
B	21	C00228	WINDOW HEAT POWER LEFT FRONT

SUBTASK 30-41-21-010-004

- (3) Open this access panel:

Number	Name/Location

117A	Electronic Equipment Access Door

SUBTASK 30-41-21-020-002

- (4) Remove the applicable Window Heat Control Unit (WHCU) from the E2-1 or E4-2 Shelf (TASK 30-41-11-000-801).

SUBTASK 30-41-21-020-005

- (5) In the control cabin, do these steps to disconnect the window ground bus:
- (a) Remove the forward upper window lining panel [1] (Flight Compartment Forward Ceiling Panel Removal, TASK 25-11-21-000-801).
 - (b) Remove ground bus terminal 1 [2] and ground bus terminal 2 [3] from the window.

SUBTASK 30-41-21-020-003

- (6) Disconnect the coil cord (M2675) [4] at the sidewall panel connector [5] (D10564).
- (a) Make sure that the coil cord stays attached to the window.

SUBTASK 30-41-21-020-004

- (7) Disconnect the coil cord (M2675) [6] at the sidewall panel connector [7] (D10568).
- (a) Make sure that the coil cord stays attached to the window.

G. Window Heat Insulation Resistance Check

SUBTASK 30-41-21-710-002

- (1) Use the insulation resistance multimeter, COM-17798 or equivalent meter to do the IR and DAR test of the control cabin L2 and R2 windows (Insulation Resistance Testing - Special Detail Inspection, TASK 20-10-39-700-801):

NOTE: The Fluke multimeter will show an "ERR" message at the end of the test if the DAR value is more than 1.6.

NOTE: The Megger multimeter will show 3 horizontal lines on the display at the end of the test if the DAR value is more than 1.6.

- (a) Do an IR check of the circuit insulation between the conductive coating and the sensor, and between the sensor and the ground bus bar on the L2 and R2 windows:

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- 1) Connect the insulation resistance multimeter, COM-17798 or equivalent meter to the first test point on Table 502.
 - 2) Set the insulation resistance multimeter, COM-17798 or equivalent meter to 50 Volts Direct Current (VDC).
NOTE: This check makes sure that the circuits are isolated and there are no shorts.
 - 3) Push the TEST button on the meter for a minimum of 15 seconds.
 - a) If the value shown on the meter is above 50 megohms, continue.
 - b) If the value is below 50 megohms, do a check of the wiring between the applicable M2675 coil cord assembly and the window:
 <1> If the wiring is satisfactory, replace the applicable window.
 - 4) Do the check again at each point shown in Table 502.
 - a) Do not record the values found.
- (b) Do an IR check of the circuit insulation between the conductive coating and the sensor, and between the sensor and the ground bus bar on the L2 and R2 windows:
- 1) Connect the insulation resistance multimeter, COM-17798 or equivalent meter to the first test point on Table 502.
 - 2) Set the insulation resistance multimeter, COM-17798 or equivalent meter to 500 VDC.
 - 3) Push the TEST button on the meter for a minimum 10 seconds.
 - 4) Record the resistance value found in Table 502.
 - 5) Do the check again at each point shown in Table 502.
- (c) Do a DAR check between the conductive coating and the sensor, and between the sensor and the ground bus bar on the L2 and R2 windows:
- 1) Select the DAR function on the insulation resistance multimeter, COM-17798 or equivalent meter.
 - 2) Set the insulation resistance multimeter, COM-17798 or equivalent meter to 500 VDC.
 - 3) Push the TEST button on the insulation resistance multimeter, COM-17798 or equivalent meter.
 - 4) Record the resistance value found in Table 502.
 - 5) Do the check again at each point shown in Table 502.

Table 502/30-41-21-993-805 L2/R2 Window IR and DAR Values

Test Point	Control Unit	Connector	Measurement	Negative Lead	Positive Lead	IR Value	DAR Value
1	Left Side	M2675	Sensor to Film	1	4		
2	Left Side	M2675	Sensor to Ground	Ground	1		
3	Left Side	M2675	Film to Ground	Ground	4		
4	Right Side	M2675	Sensor to Film	1	4		
5	Right Side	M2675	Sensor to Ground	Ground	1		
6	Right Side	M2675	Film to Ground	Ground	4		

EFFECTIVITY
SIA ALL

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SUBTASK 30-41-21-710-003

- (2) Use the insulation resistance multimeter, COM-17798 or equivalent meter to do the IR and DAR test of the control cabin L1 and R1 windows (Insulation Resistance Testing - Special Detail Inspection, TASK 20-10-39-700-801):

NOTE: The Fluke multimeter will show an "ERR" message at the end of the test if the DAR value is more than 1.6.

NOTE: The Megger multimeter will show 3 horizontal lines on the display at the end of the test if the DAR value is more than 1.6.

- (a) Do an IR check of the circuit insulation between the conductive coating and the sensor, and between the sensor and the ground bus bar on the L1 and R1 windows:
- 1) Connect the insulation resistance multimeter, COM-17798 or equivalent meter to the first test point on Table 503.
 - 2) Set the insulation resistance multimeter, COM-17798 or equivalent meter to 50 VDC.
NOTE: This check makes sure that the circuits are isolated and there are no shorts.
 - 3) Push the TEST button on the meter for a minimum of 15 seconds.
 - a) If the value shown on the meter is above 50 megohms, continue.
 - b) If the value is below 50 megohms, do a check of the wiring between the applicable WHCU and the window:
 <1> If the wiring is satisfactory, replace the applicable window.
 - 4) Do the check again at each point shown in Table 503.
 - a) Do not record the values found.
- (b) Do an IR check of the circuit insulation between the conductive coating and the sensor tap, and between the sensor and the ground bus bar on the L1 and R1 windows:
- 1) Connect the insulation resistance multimeter, COM-17798 or equivalent meter to the first test point on Table 503.
 - 2) Set the insulation resistance multimeter, COM-17798 or equivalent meter to 500 VDC.
 - 3) Push the TEST button on the meter for a minimum 10 seconds.
 - 4) Record the resistance value found in Table 503.
 - 5) Do the check again at each test point shown in Table 503.
- (c) Do a DAR check between the conductive coating and the sensor tap, and between the sensor and the ground bus bar on the L1 and R1 windows:
- 1) Connect the insulation resistance multimeter, COM-17798 or equivalent meter to the first test point on Table 503.
 - 2) Select the DAR function on the insulation resistance multimeter, COM-17798 or equivalent meter.
 - 3) Set the insulation resistance multimeter, COM-17798 or equivalent meter to 500 VDC.
 - 4) Push the TEST button on the insulation resistance multimeter, COM-17798 or equivalent meter.
 - 5) Record the resistance value found in Table 503.
 - 6) Do the check again at each point shown in Table 503.

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Table 503/30-41-21-993-804 L1/R1 Window IR and DAR Values

Test Point	Control Unit	Connector	Measurement	Negative Lead	Positive Lead	IR Value	DAR Value
1	Right Front	D16232	Primary Sensor to Film	1	19		
2	Right Front	D16232	Spare Sensor to Film	1	27		
3	Right Front	D16232	Primary Sensor to Ground	Ground	19		
4	Right Front	D16232	Spare Sensor to Ground	Ground	27		
5	Right Front	D16232	Film to Ground	Ground	1		
6	Left Front	D16230	Primary Sensor to Film	1	19		
7	Left Front	D16230	Spare Sensor to Film	1	27		
8	Left Front	D16230	Film to Ground	Ground	1		
9	Left Front	D16230	Primary Sensor to Ground	Ground	19		
10	Left Front	D16230	Spare Sensor to Ground	Ground	27		

SUBTASK 30-41-21-710-004

- (3) Examine the test results recorded in Table 502 and Table 503:
- (a) If the measured IR value is less than 50 megohms and/or the DAR is less than 1.0, the replacement of the window at the next satisfactory maintenance input is recommended.
 - (b) If the measured IR value is between 50 megohms and 200 megohms and/or the DAR was 1.0 or more, a check of the window at the next satisfactory maintenance input is recommended.
 - (c) If all results are more than the recommended values of more than 50 megohms and/or more than 1.3 DAR, then no more work is necessary.

H. Put the Airplane Back to Its Usual Condition

SUBTASK 30-41-21-840-003

- (1) Disconnect insulation resistance multimeter, COM-17798 or equivalent leads.

SUBTASK 30-41-21-420-003

- (2) Connect the coil cord (M2675) [6] to the sidewall panel connector [7] (D10568).

SUBTASK 30-41-21-420-004

- (3) Connect the coil cord (M2675) [4] to the sidewall panel connector [5] (D10564).

SUBTASK 30-41-21-420-007

- (4) Install the applicable WHCU(s) (TASK 30-41-11-400-801).

SUBTASK 30-41-21-420-006

- (5) Install the forward upper window lining panel [1] (Flight Compartment Forward Ceiling Panel Installation, TASK 25-11-21-400-801).

SUBTASK 30-41-21-860-006

- (6) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-5

Row	Col	Number	Name
B	8	C00394	WINDOW HEAT POWER RIGHT FRONT
B	9	C00392	WINDOW HEAT POWER LEFT SIDE
B	20	C00393	WINDOW HEAT POWER RIGHT SIDE

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(Continued)

F/O Electrical System Panel, P6-5

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	21	C00228	WINDOW HEAT POWER LEFT FRONT

SUBTASK 30-41-21-410-002

(7) Close this access panel:

<u>Number</u>	<u>Name/Location</u>
117A	Electronic Equipment Access Door

SUBTASK 30-41-21-860-005

(8) Do this task: Supply Electrical Power, TASK 24-22-00-860-801.

SUBTASK 30-41-21-710-001

(9) Do the WHCU installation test (TASK 30-41-11-400-801).

SUBTASK 30-41-21-730-001

(10) Do this task: Window Heat Control Unit - System Test, TASK 30-41-11-710-801.

————— END OF TASK —————

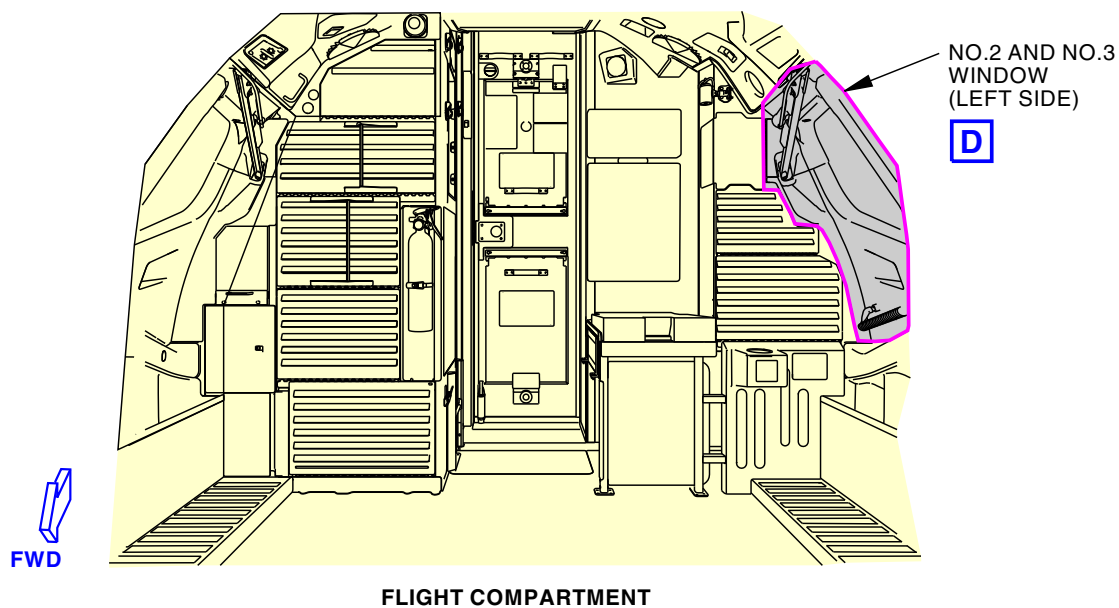
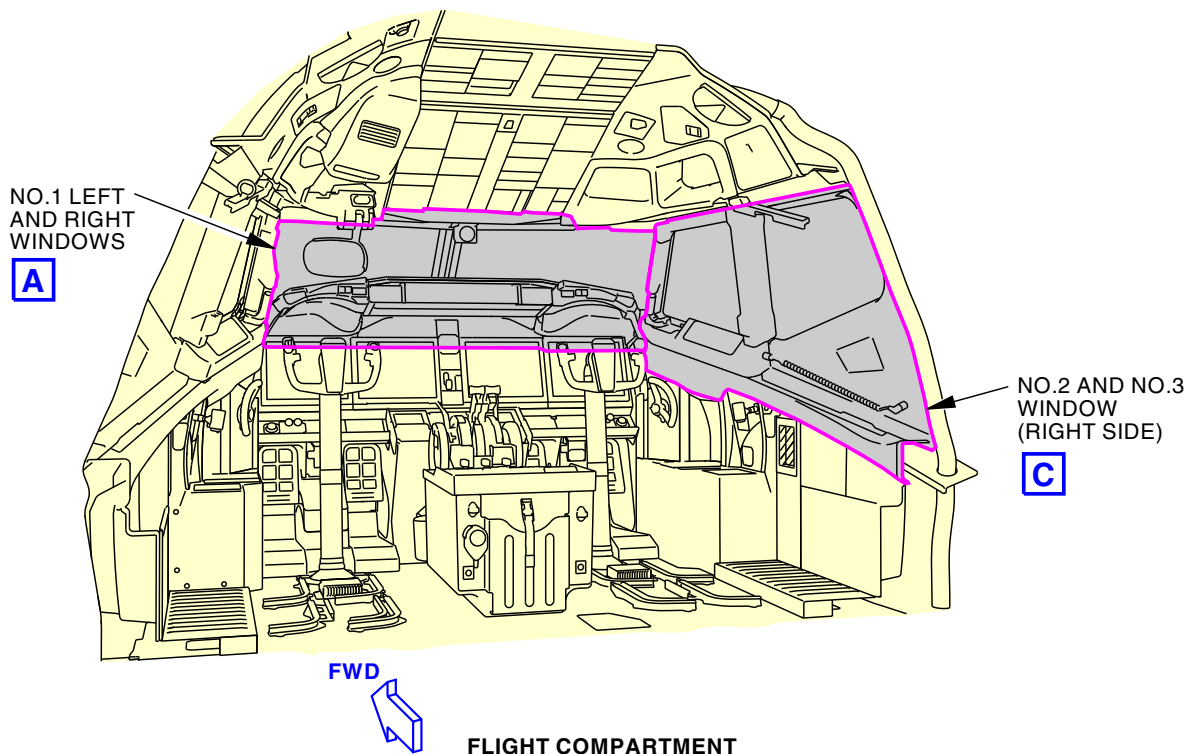
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3043538 S0000810542_V1

Window Heat Insulation Resistance Check
Figure 503/30-41-21-990-803 (Sheet 1 of 5)

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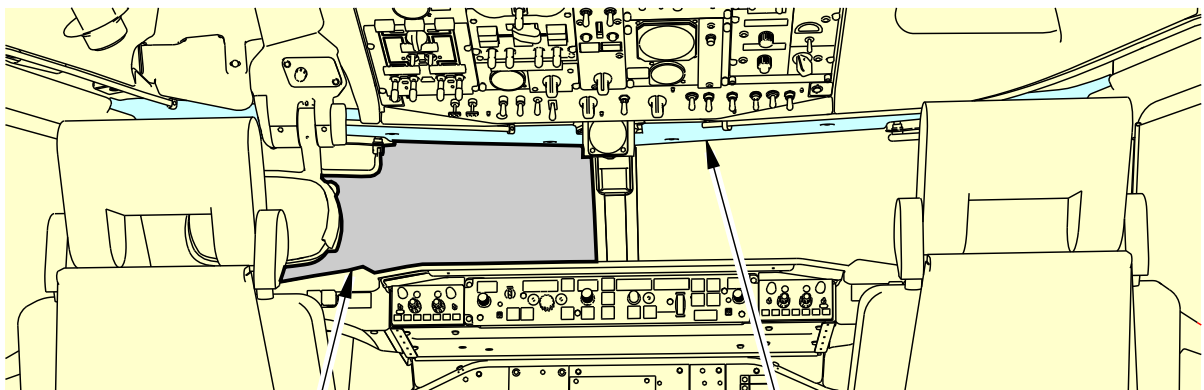
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[1] FORWARD UPPER
WINDOW LINING PANEL

NO.1 LEFT AND RIGHT WINDOWS

A

Window Heat Insulation Resistance Check
Figure 503/30-41-21-990-803 (Sheet 2 of 5)

3039385 S0000807568_V1

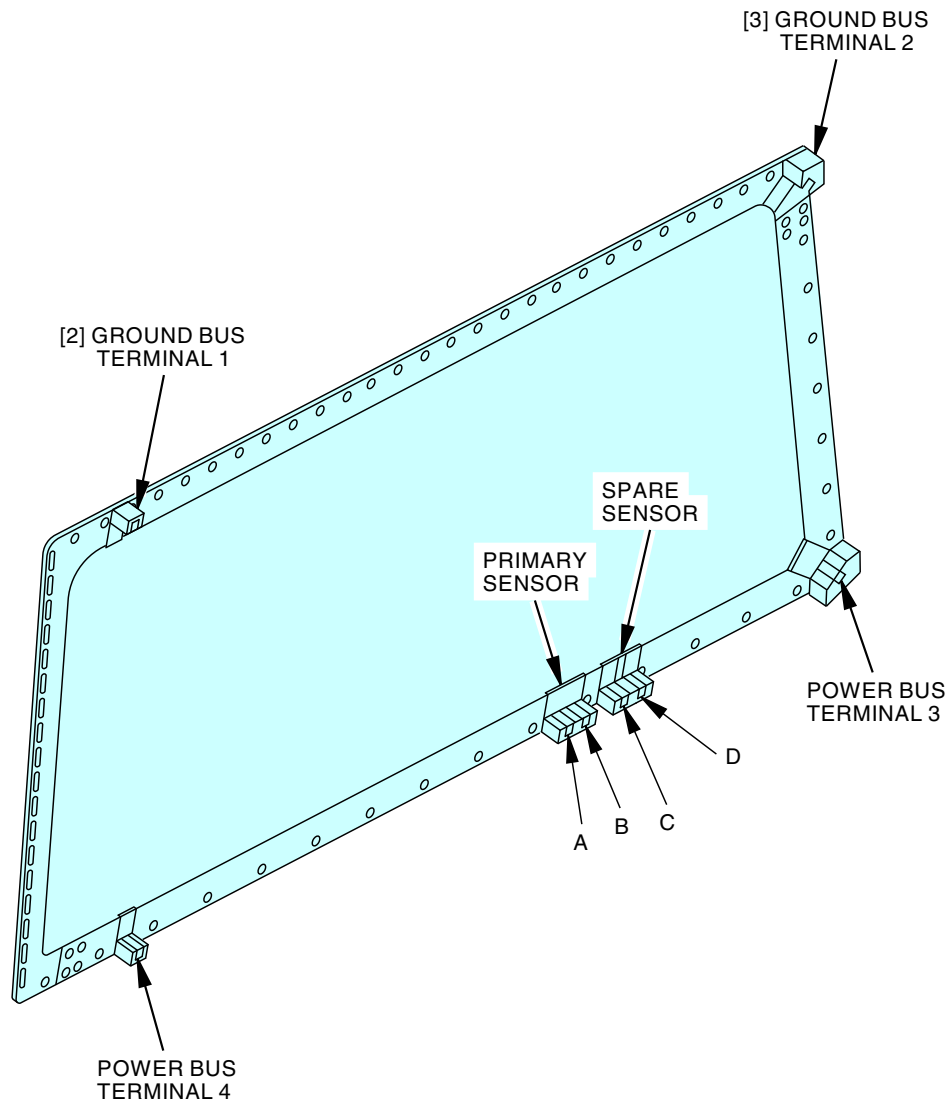
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(NO. 1 PILOT'S WINDSHIELD SHOWN,
NO. 1 CO-PILOT'S WINDSHIELD OPPOSITE)

B

3039384 S0000807567_V1

Window Heat Insulation Resistance Check
Figure 503/30-41-21-990-803 (Sheet 3 of 5)

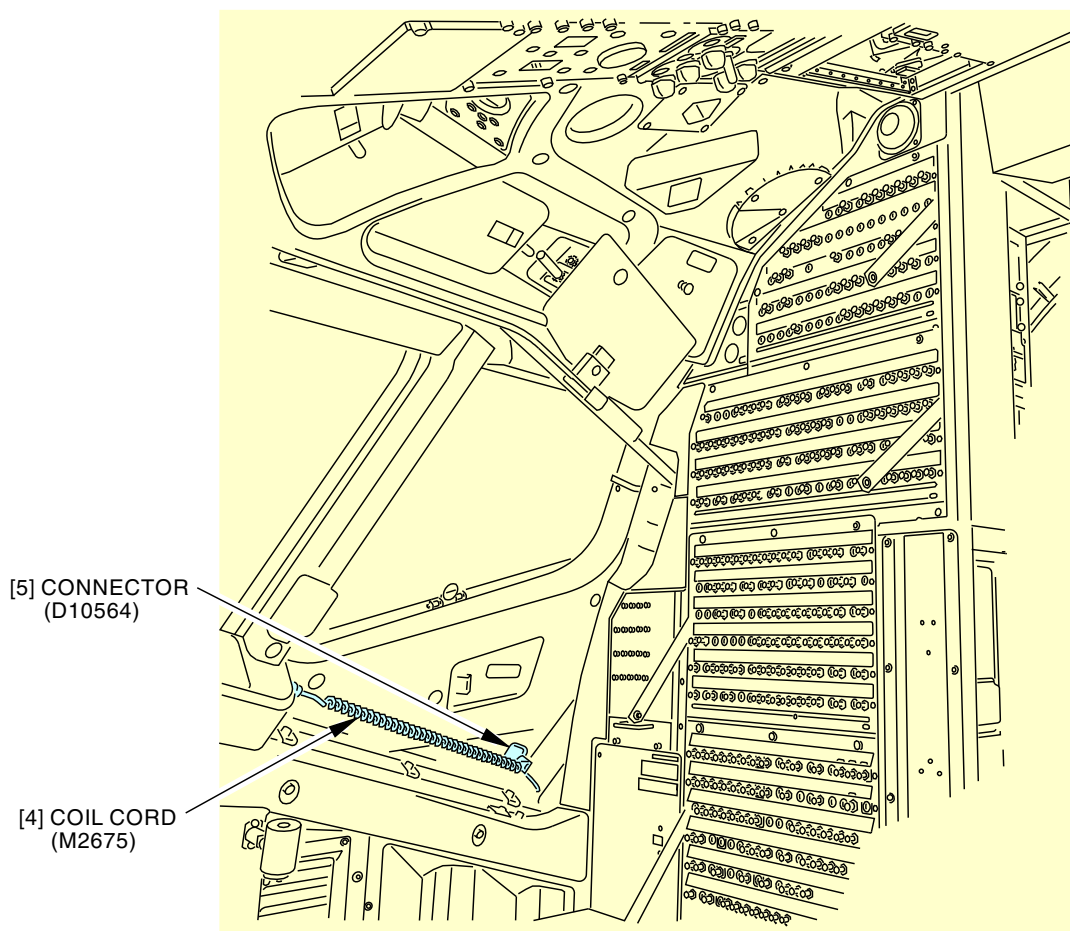
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NO.2 AND NO.3 WINDOW (RIGHT SIDE)

C



3043535 S0000810548_V1

Window Heat Insulation Resistance Check
Figure 503/30-41-21-990-803 (Sheet 4 of 5)

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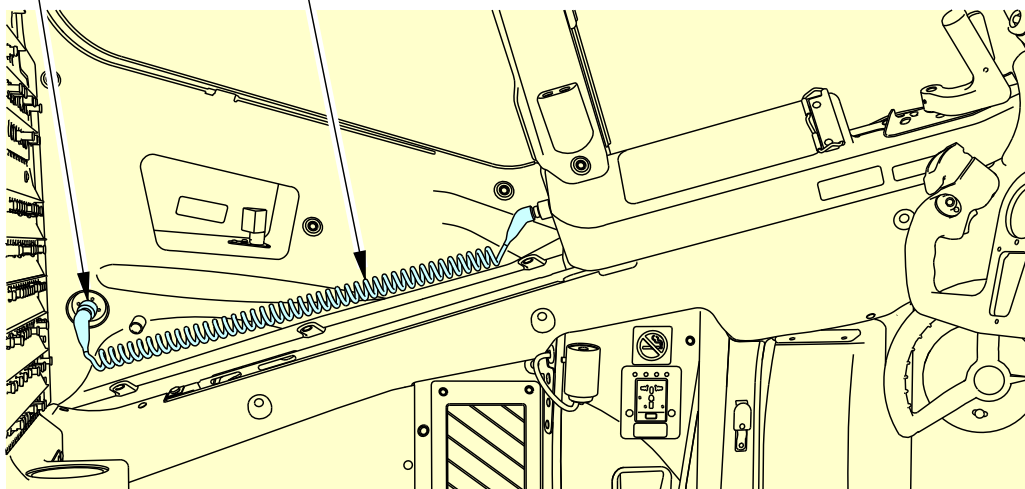
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[7] CONNECTOR
(D10568)

[6] COIL CORD
(M2675)



NO.2 AND NO.3 WINDOW (LEFT SIDE)

D

3039386 S0000807569_V1

Window Heat Insulation Resistance Check
Figure 503/30-41-21-990-803 (Sheet 5 of 5)

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WINDOW THERMAL SWITCH - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

- (1) Window Thermal Switch Removal
- (2) Window Thermal Switch Installation

TASK 30-41-31-000-801

2. Thermal Switch - Removal

(Figure 401)

A. **General**

- (1) This task gives instructions to remove the Thermal Switch.
- (2) The window number 3 thermal switches are installed near the bottom of the window.
- (3) The windows have markings to indicate where to install the switch. A spring holds the thermal switch against the window.

B. **Location Zones**

Zone	Area
212	Flight Compartment - Right

C. **Prepare for the Removal**

SUBTASK 30-41-31-860-001

- (1) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-5

Row	Col	Number	Name
B	7	C01649	WINDOW HEAT POWER R3
B	8	C00394	WINDOW HEAT POWER RIGHT FRONT
B	9	C00392	WINDOW HEAT POWER LEFT SIDE
B	19	C01650	WINDOW HEAT POWER L3
B	20	C00393	WINDOW HEAT POWER RIGHT SIDE
B	21	C00228	WINDOW HEAT POWER LEFT FRONT

D. **Thermal Switch Removal**

SUBTASK 30-41-31-020-001

- (1) Remove the thermal switch [2].
 - (a) Disconnect the electrical leads [1] from the thermal switch [2].
 - (b) Pull the spring from the thermal switch [2].
 - (c) Remove the thermal switch [2] from the window.
 - 1) If the thermal switch [2] does not come off by hand, tap the switch side with a no bounce hammer.

NOTE: The thermal switch [2] must be discarded if the hammer is used.

———— **END OF TASK** ————

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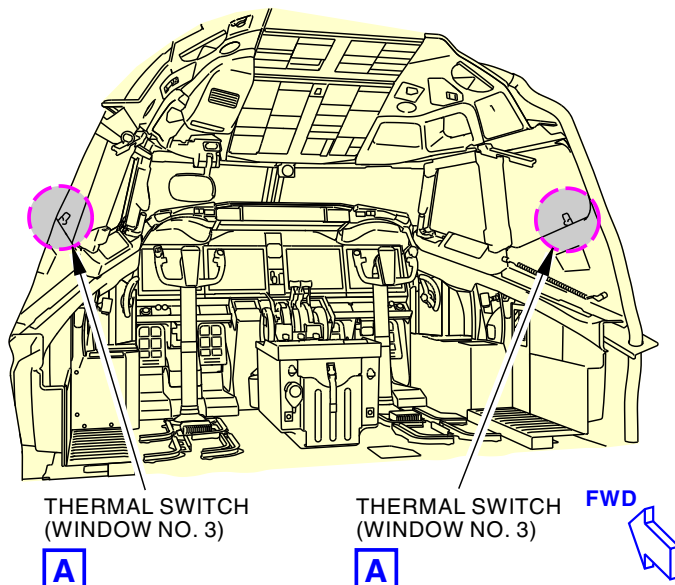
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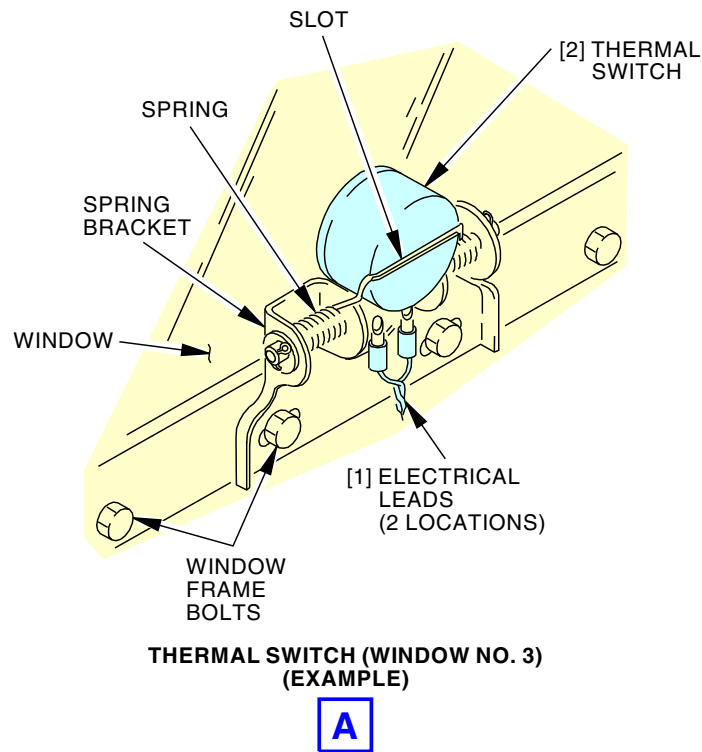
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FLIGHT COMPARTMENT



2538350 S0000602743_V1

Window Heat Thermal Switch Installation
Figure 401/30-41-31-990-801

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TASK 30-41-31-400-801

3. Thermal Switch - Installation

(Figure 401)

A. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
COM-1572	Thermometer - Infrared, Intrinsically Safe Part #: 568 Ex Supplier: 89536 Opt Part #: DHS24XC-FM Supplier: 08086 Opt Part #: DHS24XF-FM Supplier: 08086 Opt Part #: EX-MP4 A Supplier: 3GT36 Opt Part #: IR-16L3 IS Supplier: 75037
STD-1179	Tester - Pyrometer

B. Consumable Materials

Reference	Description	Specification
A00214	Compound - Honeycomb Edge Filling & Potting, Epoxy Based, 2 Part RT Cure (20 Min Gel)	BMS5-28 Type 3
A50061	Adhesive - Epoxy	BAC5010 Type 54
B00083	Solvent - VM&P Naphthas	TT-N-95 Type II, ASTM D-3735 Type III
D00095	Lubricant - Dry Film - MS122	
G50427	Compound - Thermal Heat Sink	MIL-DTL-47113

C. Location Zones

Zone	Area
212	Flight Compartment - Right

D. Prepare to Install the Thermal Switch

SUBTASK 30-41-31-020-002

- (1) Remove the old fairing compound from the window.

SUBTASK 30-41-31-110-001

- (2) Clean the face of the thermal switch [2] with solvent, B00083.

SUBTASK 30-41-31-110-002

- (3) Clean the surface of the window where it will touch the thermal switch [2] with solvent, B00083.

SUBTASK 30-41-31-160-001

- (4) Prepare the fairing compound, A00214 or thermal heat sink compound, G50427, that bonds the thermal switch [2] to the window.

NOTE: Optional fairing compounds include: Granger 610-1016 DC340 or adhesive, A50061.

SUBTASK 30-41-31-420-001

- (5) Find the correct location to install the thermal switch [2].
- (a) Look for the arrow that is on the inner surface of the window.
- (b) Put the vertical center-line of the thermal switch [2] as near as possible to the location indicated by the positioning arrow.

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SUBTASK 30-41-31-420-002

- (6) If you don't use thermal heat sink compound, G50427, put MS122 lubricant, D00095 on the surface of the thermal switch [2] that touches the window.

SUBTASK 30-41-31-420-003

- (7) If you use thermal heat sink compound, G50427, put the excessive thermal heat sink compound, G50427, or compound, A00214, on the face of the thermal switch [2] that touches the window.

NOTE: Optional fairing compounds include GRANGER 610-1016 DC340 and adhesive, A50061.



DO NOT APPLY TOO MUCH COMPOUND ON THE SWITCH. TOO MUCH COMPOUND CAN CAUSE DAMAGE TO THE WINDOW.

- (a) Use only a very thin layer of thermal heat sink compound, G50427 or compound, A00214 just enough to cover the surface of the switch when it is against the window with the retaining spring engaged.

E. Thermal Switch Installation

SUBTASK 30-41-31-420-004

- (1) Put the thermal switch [2] in the spring bracket.
 - (a) Pull the spring back.
 - (b) Make sure the terminals on the thermal switch [2] are at the hinge of the spring.
 - (c) Engage the spring with the slot on the rear of the thermal switch [2].
 - (d) Let the spring push the thermal switch [2] against the window.
 - (e) Release the spring.
 - (f) Remove all thermal heat sink compound, G50427 or compound, A00214 that comes out against the window.

SUBTASK 30-41-31-420-005

- (2) If you don't use thermal heat sink compound, G50427, make sure the bond is satisfactory.

NOTE: One hour is permitted for the sealant to become hard. When the temperature is less than 50°F (10°C), more time is necessary.

- (a) Look through the window at the bond.
- (b) Make a new bond if you see the followings:
 - 1) Bubbles with a diameter of more than 0.095 in. (2.413 mm).
 - 2) Bubbles that add to more than 10 percent of the bond.

SUBTASK 30-41-31-110-003

- (3) Clean excess thermal heat sink compound, G50427 or compound, A00214 from the area of the bond and the thermal switch [2] with solvent, B00083.

SUBTASK 30-41-31-420-006

- (4) Re-install the trim around the window.

SUBTASK 30-41-31-420-007

- (5) Connect the electrical leads [1] to the thermal switch [2].

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F. Thermal Switch Installation Test

SUBTASK 30-41-31-710-001

(1) Do a test of the thermal switch [2].

(a) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-5

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	7	C01649	WINDOW HEAT POWER R3
B	8	C00394	WINDOW HEAT POWER RIGHT FRONT
B	9	C00392	WINDOW HEAT POWER LEFT SIDE
B	19	C01650	WINDOW HEAT POWER L3
B	20	C00393	WINDOW HEAT POWER RIGHT SIDE
B	21	C00228	WINDOW HEAT POWER LEFT FRONT

(b) Push the applicable window heat switch to the ON position.

(c) Monitor the inner temperature of the window adjacent to the thermal switch [2] with pyrometer, STD-1179, or Infrared Thermometer, COM-1572.

(d) If the temperature stays between 65°F (18°C) and 105°F (41°C) for window No. 3, then you have corrected the fault.

NOTE: It may take more than 15 minutes for the window to heat.

SUBTASK 30-41-31-860-002

(2) Put the window heat switch in the OFF position.

————— **END OF TASK** —————

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WINDSHIELD WIPER SYSTEM - MAINTENANCE PRACTICES

1. General

- A. This procedure has these tasks:
- (1) Windshield Wiper System - Deactivation.
 - (2) Windshield Wiper System - Activation.

TASK 30-42-00-040-801

2. Windshield Wiper System - Deactivation

A. **General**

- (1) This task will deactivate the power to the windshield wiper system.

B. **Location Zones**

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

C. **Procedure**

SUBTASK 30-42-00-020-001

- (1) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
B	1	C00055	ANTI-ICE & RAIN WSHLD WIPER RIGHT
B	3	C00054	ANTI-ICE & RAIN WSHLD WIPER LEFT

F/O Electrical System Panel, P6-5

Row	Col	Number	Name
B	8	C00394	WINDOW HEAT POWER RIGHT FRONT
B	9	C00392	WINDOW HEAT POWER LEFT SIDE
B	20	C00393	WINDOW HEAT POWER RIGHT SIDE
B	21	C00228	WINDOW HEAT POWER LEFT FRONT

D. **Windshield Wiper System - Tryout**

NOTE: This tryout is to make sure that the power to the windshield wiper system is in a zero energy state.

SUBTASK 30-42-00-210-001

 CAUTION	DO NOT OPERATE THE WINDSHIELD WIPERS ON DRY GLASS. ALWAYS SUPPLY WATER TO THE WINDSHIELDS BEFORE YOU OPERATE THE WIPER. THE WIPER WILL CAUSE DAMAGE TO A DRY WINDSHIELD.

- (1) Supply a continuous spray of clean water to the windshield.

SUBTASK 30-42-00-210-002

- (2) Set the windshield wiper switch to the INT, LOW, or HIGH position.
 - (a) Make sure that the wipers do not come on.

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SUBTASK 30-42-00-020-002

- (3) Set the windshield wiper switch to the PARK position.

———— **END OF TASK** ————

EFFECTIVITY
SIA ALL

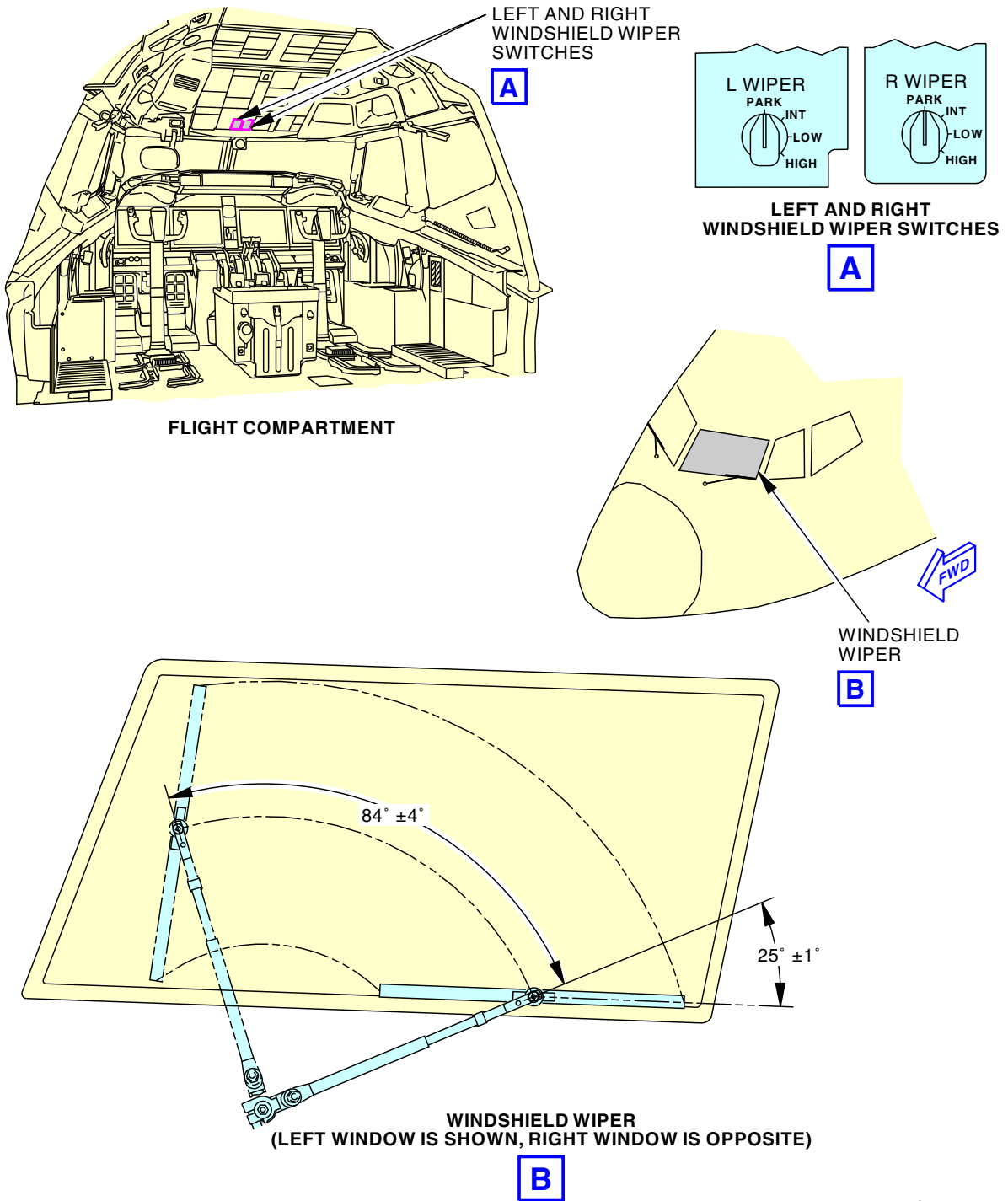
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Windshield Wiper System
Figure 201/30-42-00-990-801

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TASK 30-42-00-440-801

3. Windshield Wiper System - Activation

(Figure 201)

A. General

- (1) This task will activate the power to the windshield wiper system.

B. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

C. Procedure

SUBTASK 30-42-00-420-001

- (1) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
B	1	C00055	ANTI-ICE & RAIN WSHLD WIPER RIGHT
B	3	C00054	ANTI-ICE & RAIN WSHLD WIPER LEFT

F/O Electrical System Panel, P6-5

Row	Col	Number	Name
B	8	C00394	WINDOW HEAT POWER RIGHT FRONT
B	9	C00392	WINDOW HEAT POWER LEFT SIDE
B	20	C00393	WINDOW HEAT POWER RIGHT SIDE
B	21	C00228	WINDOW HEAT POWER LEFT FRONT

————— END OF TASK —————

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WINDSHIELD WIPER SYSTEM - ADJUSTMENT/TEST

1. General

- A. This procedure has a task:
(1) Windshield Wiper System - Operational Test

TASK 30-42-00-700-801

2. Windshield Wiper System - Operational Test

(Figure 501)

A. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
COM-1523	Stand and Personnel Lifting Equipment - General Purpose Part #: B-14 Supplier: 05060 Part #: B-9 Supplier: 05060 Part #: Z-45-25J Supplier: 59497

B. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

C. Windshield Wiper System - Operational Test

SUBTASK 30-42-00-010-001

- (1) Use a work platform, COM-1523 to get access to the windshield wipers.

SUBTASK 30-42-00-710-001

- (2) Do these steps to make sure the windshield wiper system operates correctly:



CAUTION

DO NOT OPERATE THE WIPER ON A DRY OR DIRTY WINDSHIELD. ALWAYS SUPPLY WATER TO THE WINDSHIELD BEFORE YOU OPERATE THE WIPER. THE WIPER WILL CAUSE DAMAGE TO THE WINDSHIELD.

- (a) Supply a continuous spray of clean water to the windshield.

NOTE: For windshields with a hydrophobic coating, deionized or distilled water is recommended during the wiper test. Water with a high mineral content can cause marks on the coated glass surface that are difficult to remove. If water with a high mineral content is used on a windshield with a hydrophobic coating, flush the windshield surface after the wiper test with deionized or distilled water, or remove the remaining water on the windshield with a cotton cloth.

- (b) Do these steps to test the intermittent speed operation of the wiper:

- 1) Set the L WIPER and R WIPER switch to INT.
 - a) Make sure the wiper blade parks near the lower edge of the window during the off time of the intermittent cycle.
 - b) Make sure the wiper blades have a minimum overlap of the windshield seal and do not contact metal structure.

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- c) Make sure the operation of the wiper is smooth and it clears the water from the windshield.
- d) Make sure the wipers make two complete strokes every 6 to 8 seconds.

NOTE: One Stroke = One Wipe

- (c) Do these steps to test the low speed operation of the wiper:

- 1) Set the L WIPER and R WIPER switch to LOW.

NOTE: In the LOW position, the wiper blade moves at approximately 160 strokes per minute.

- a) Make sure the operation of the wiper is smooth and it clears the water from the windshield.

NOTE: One Stroke = One Wipe

- (d) Do these steps to test the high speed operation of the wiper:

- 1) Set the L WIPER and R WIPER switch to HIGH.

NOTE: In the HIGH position, the wiper blade moves at approximately 250 strokes per minute.

- 2) Make sure the operation of the wiper is smooth and it clears the water from the windshield.

NOTE: One Stroke = One Wipe

- (e) Set the L WIPER and R WIPER switch to LOW.

- 1) Make sure the wipers go to low speed operation.

- (f) Set the L WIPER and R WIPER switch to INT.

- 1) Make sure the wipers go to intermittent operation.

- (g) Set the L WIPER and R WIPER switch to PARK.

- 1) Make sure the wiper blades park near the lower edge of the glass.

- (h) Stop the water spray to the window.

———— **END OF TASK** ————

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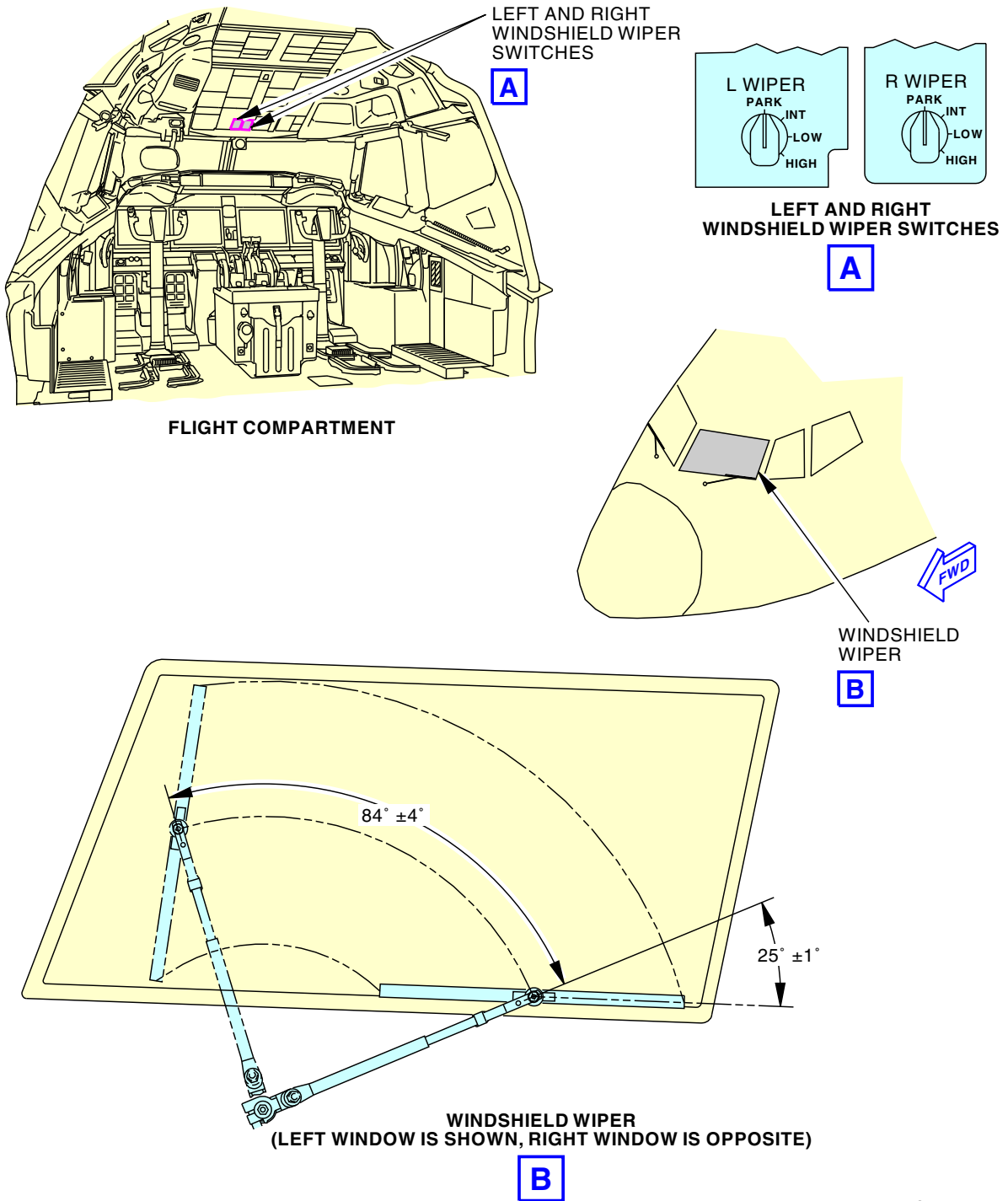
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**Windshield Wipers Operational Test
Figure 501/30-42-00-990-802**

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WINDSHIELD WIPER BLADE - REMOVAL/INSTALLATION

1. **General**

- A. This procedure has these tasks:
- (1) A removal of the windshield wiper blade
 - (2) An installation of the windshield wiper blade.

TASK 30-42-11-020-801

2. **Windshield Wiper Blade Removal**

(Figure 401)

A. **General**

- (1) This task gives instructions to remove the Windshield Wiper Blade.

B. **Tools/Equipment**

Reference	Description
STD-858	Tag - DO NOT OPERATE

C. **Location Zones**

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

D. **Prepare for the Removal**

SUBTASK 30-42-11-010-001

- (1) Use a stand to reach the wiper blade.

SUBTASK 30-42-11-860-001

- (2) On the P5 overhead panel, make sure that the L WIPER and R WIPER switch is in the PARK position.

SUBTASK 30-42-11-040-002

- (3) Do these steps to remove power to the windshield wiper and control cabin heat systems:



OPEN THE WINDOW HEAT CONTROL UNIT CIRCUIT BREAKERS.
INJURIES TO PERSONNEL CAN OCCUR AND DAMAGE TO EQUIPMENT
CAN OCCUR.

- (a) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
B	1	C00055	ANTI-ICE & RAIN WSHLD WIPER RIGHT
B	3	C00054	ANTI-ICE & RAIN WSHLD WIPER LEFT
C	1	C00523	HEATERS CAPT PITOT
D	5	C00525	HEATERS F/O PITOT
D	6	C00524	HEATERS AUX PITOT

F/O Electrical System Panel, P6-5

Row	Col	Number	Name
B	7	C01649	WINDOW HEAT POWER R3

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F/O Electrical System Panel, P6-5

Row	Col	Number	Name
B	8	C00394	WINDOW HEAT POWER RIGHT FRONT
B	9	C00392	WINDOW HEAT POWER LEFT SIDE
B	19	C01650	WINDOW HEAT POWER L3
B	20	C00393	WINDOW HEAT POWER RIGHT SIDE
B	21	C00228	WINDOW HEAT POWER LEFT FRONT

- (b) Do these steps to tryout a windshield wiper and control cabin heat systems:

NOTE: This tryout is to make sure that the power to the windshield wiper and control cabin heat system is in a zero state.



DO NOT OPERATE THE WINDSHIELD WIPERS ON DRY GLASS. ALWAYS SUPPLY WATER TO THE WINDSHIELDS BEFORE YOU OPERATE THE WIPER. THE WIPER WILL CAUSE DAMAGE TO A DRY WINDSHIELD.

- 1) Supply a continuous spray of clean water to the windshield.

NOTE: For windshields with a hydrophobic coating, deionized or distilled water is recommended during the wiper test. Water with a high mineral content can cause marks on the coated glass surface that are difficult to remove. If water with a high mineral content is used on a windshield with a hydrophobic coating, flush the windshield surface after the wiper test with deionized or distilled water, or remove the remaining water on the windshield with a cotton cloth.

- 2) Set the L WIPER and R WIPER, switch to the INT, LOW, or HIGH position.
a) Make sure that the left and right wiper does not operate.
- 3) Set the L WIPER and R WIPER switch to the PARK position.
- 4) At the P5-9 Window/Pitot Heat Module, set the four WINDOW HEAT switches to the ON position one at a time.
a) Make sure that the corresponding ON light on the Window and Pitot Heat Module remains OFF.
- 5) Install the DO NOT OPERATE tag, STD-858, to the WINDOW HEAT, L WIPER, and R WIPER switches.

E. Windshield Wiper Blade Removal

SUBTASK 30-42-11-800-001



DO NOT LIFT THE WINDSHIELD WIPER ARM ASSEMBLY MORE THAN NECESSARY OFF THE WINDSHIELD. DAMAGE TO THE WINDSHIELD ARM ASSEMBLY CAN OCCUR.

- (1) Put a pad between the arm assembly [5] and the windshield to prevent damage to the windshield surface.
a) Make sure that the pad is of sufficient size to cover the windshield surface below the wiper blade.

SUBTASK 30-42-11-020-001

- (2) Remove the nut [1] and washer [2].

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(a) Discard the nut [1].

SUBTASK 30-42-11-020-002

(3) Remove the blade assembly [4].

SUBTASK 30-42-11-860-003

(4) Lower the wiper arm assembly [5] onto the pad.

———— **END OF TASK** ————

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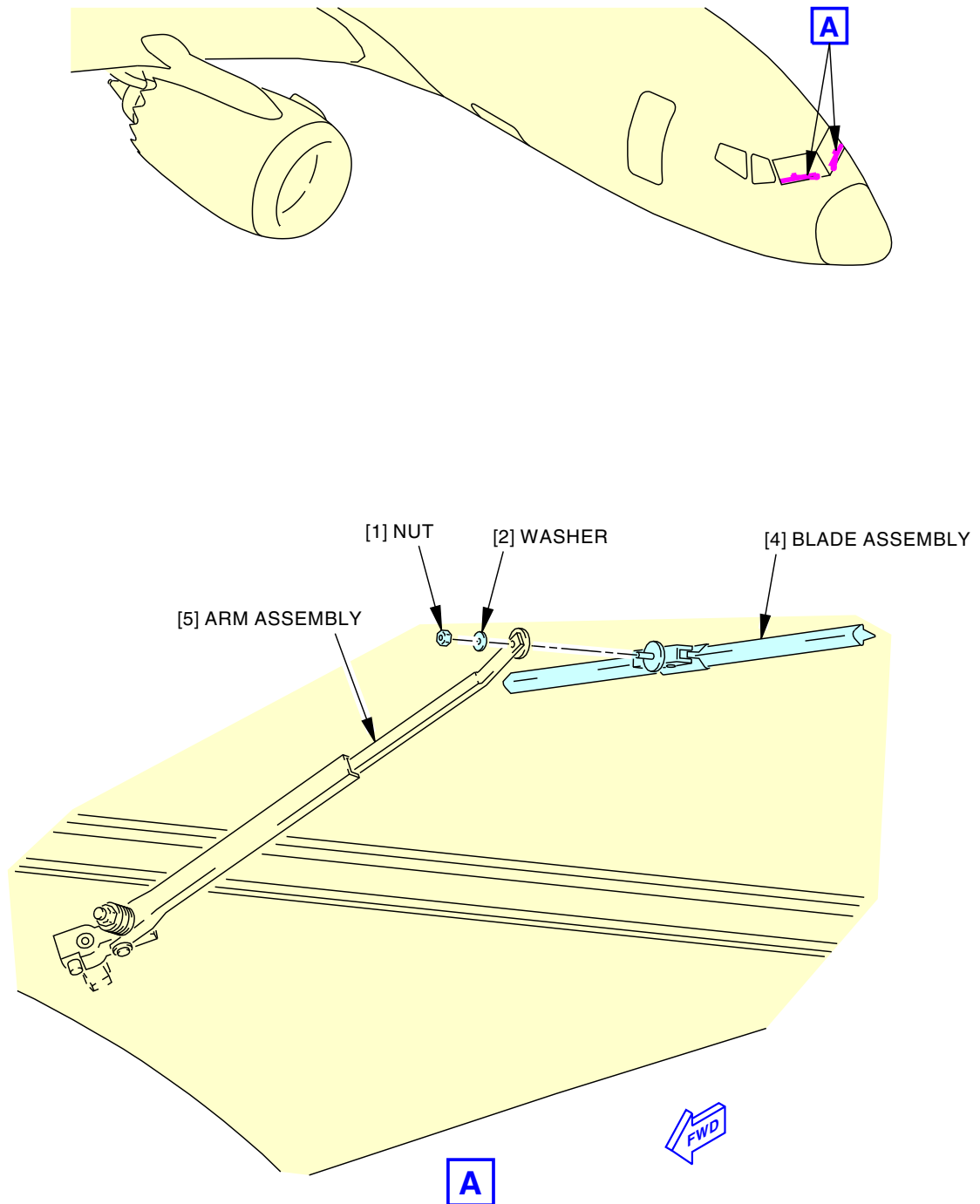
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Windshield Wiper Blade Assembly Installation
Figure 401/30-42-11-990-801

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TASK 30-42-11-400-801

3. Windshield Wiper Blade Installation

(Figure 401)

A. General

(1) This task gives instructions to install the Windshield Wiper Blade.

B. References

Reference	Title
30-42-31-820-801	Windshield Wiper Arm Force Check/Adjustment (P/B 201)

C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Nut	30-42-11-01-014	SIA ALL
4	Blade assembly	30-42-11-01-010	SIA ALL

D. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

E. Windshield Wiper Blade Installation

SUBTASK 30-42-11-420-001

(1) Set the blade assembly [4] on the arm assembly [5].

- (a) Put the blade assembly [4] on the arm assembly [5] so that the blade assembly [4] is parallel to the lower edge of the windshield.

NOTE: When installing the wiper blade assembly, make sure that the part mark is near the inside edge of the window seal (away from pilot and first officers view). The part mark and indicated hole point to the left side of the aircraft for both the pilot and first officer wiper blade assemblies.

SUBTASK 30-42-11-420-002

(2) Install the washer [2] and a new nut [1].

SUBTASK 30-42-11-420-003

 CAUTION	IF YOU DO NOT USE THE CORRECT TORQUE, IT CAN CAUSE THE WIPER BLADE TO MOVE AND TURN. DAMAGE TO AIRCRAFT SKIN AND THE WINDSHIELD STRUCTURE CAN OCCUR.

(3) Tighten the nut [1] to 16 ±2 in-lb (2 ±0 N·m).

SUBTASK 30-42-11-420-004

(4) Remove the pad from the windshield.

F. Windshield Wiper Blade Installation Test

SUBTASK 30-42-11-440-002

(1) Do these steps to add electrical power to the windshield wiper and control cabin heat systems:

- (a) Remove the DO NOT OPERATE tag, from the WINDOW HEAT, L WIPER, and R WIPER switches.

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- (b) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	1	C00055	ANTI-ICE & RAIN WSHLD WIPER RIGHT
B	3	C00054	ANTI-ICE & RAIN WSHLD WIPER LEFT
C	1	C00523	HEATERS CAPT PITOT
D	5	C00525	HEATERS F/O PITOT
D	6	C00524	HEATERS AUX PITOT

F/O Electrical System Panel, P6-5

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	7	C01649	WINDOW HEAT POWER R3
B	8	C00394	WINDOW HEAT POWER RIGHT FRONT
B	9	C00392	WINDOW HEAT POWER LEFT SIDE
B	19	C01650	WINDOW HEAT POWER L3
B	20	C00393	WINDOW HEAT POWER RIGHT SIDE
B	21	C00228	WINDOW HEAT POWER LEFT FRONT

SUBTASK 30-42-11-720-001

- (2) Do a test of the blade assembly [4]:



CAUTION

DO NOT OPERATE THE WIPER ON A DRY OR DIRTY WINDSHIELD. ALWAYS SUPPLY WATER TO THE WINDSHIELD BEFORE YOU OPERATE THE WIPER. THE WIPER WILL CAUSE DAMAGE TO THE WINDSHIELD.

- (a) Supply a continuous spray of clean water to the windshield.

NOTE: For windshields with a hydrophobic coating, deionized or distilled water is recommended during the wiper test. Water with a high mineral content can cause marks on the coated glass surface that are difficult to remove. If water with a high mineral content is used on a windshield with a hydrophobic coating, flush the windshield surface after the wiper test with deionized or distilled water, or remove the remaining water on the windshield with a cotton cloth.

- (b) On the P5 overhead panel, set the L WIPER and R WIPER switch to LOW position.
(c) Make sure that the operation of the blade assembly [4] is smooth and effective.
(d) On the P5 overhead panel, set the L WIPER and R WIPER switch to PARK position.

SUBTASK 30-42-11-720-002

- (3) Do this task: Windshield Wiper Arm Force Check/Adjustment, TASK 30-42-31-820-801.

———— **END OF TASK** ————

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WINDSHIELD WIPER BLADE - INSPECTION/CHECK

1. General

- A. This procedure contains the following task:
(1) Windshield Wiper Blade Inspection.

TASK 30-42-11-200-801

2. Windshield Wiper Blade Inspection/Check

(Figure 601)

A. **General**

- (1) This task gives instructions to inspect the windshield wiper blades.

B. **References**

Reference	Title
30-42-11-020-801	Windshield Wiper Blade Removal (P/B 401)
30-42-11-400-801	Windshield Wiper Blade Installation (P/B 401)
30-42-31-000-801	Windshield Wiper Arm Removal (P/B 401)
30-42-31-400-801	Windshield Wiper Arm Installation (P/B 401)

C. **Consumable Materials**

Reference	Description	Specification
G01043	Cloth - Lint-free	

D. **Location Zones**

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

E. **Prepare for the Inspection**

SUBTASK 30-42-11-860-006

- (1) Make sure that the applicable windshield wiper control switch is in the PARK position.

SUBTASK 30-42-11-860-007



BEFORE YOU DO MAINTENANCE ON THE WINDSHIELD WIPER SYSTEM, OPEN THE WINDOW HEAT CIRCUIT-BREAKERS. IF YOU DO NOT OPEN THESE CIRCUIT BREAKERS YOU CAN GET AN ELECTRICAL SHOCK WHEN YOU TOUCH THE WINDOW.

- (2) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
B	1	C00055	ANTI-ICE & RAIN WSHLD WIPER RIGHT
B	3	C00054	ANTI-ICE & RAIN WSHLD WIPER LEFT
C	1	C00523	HEATERS CAPT PITOT
D	5	C00525	HEATERS F/O PITOT
D	6	C00524	HEATERS AUX PITOT

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F/O Electrical System Panel, P6-5

Row	Col	Number	Name
B	7	C01649	WINDOW HEAT POWER R3
B	8	C00394	WINDOW HEAT POWER RIGHT FRONT
B	9	C00392	WINDOW HEAT POWER LEFT SIDE
B	19	C01650	WINDOW HEAT POWER L3
B	20	C00393	WINDOW HEAT POWER RIGHT SIDE
B	21	C00228	WINDOW HEAT POWER LEFT FRONT

F. Windshield Wiper Blade Inspection

SUBTASK 30-42-11-010-002



CAUTION

DO NOT LIFT THE ARM ASSEMBLY MORE THAN NECESSARY TO LIFT THE ARM OFF THE WINDSHIELD. YOU CAN CAUSE DAMAGE TO THE ARM ASSEMBLY AND MAKE IT UNSERVICEABLE.

- (1) Use a stand to reach and lift the wiper arm.

SUBTASK 30-42-11-200-001

- (2) Check the tension and general condition of the wiper blade [1].
 - (a) If the wiper blade [1] is damaged or worn, replace the wiper blade [1] (TASK 30-42-11-020-801, TASK 30-42-11-400-801).

SUBTASK 30-42-11-210-001

- (3) Make sure that the part mark is near the inside edge of the window seal (away from pilot and first officers view).

NOTE: The part mark and indicated hole should point to the left side of the aircraft for both the pilot and first officer wiper blade assemblies.

SUBTASK 30-42-11-210-003



CAUTION

MAKE SURE THAT YOU ENGAGE THE BLADE ASSEMBLY DISC CORRECTLY WITH THE ARM ASSEMBLY DISC. IF YOU DO NOT OBEY THIS INSTRUCTION, DAMAGE TO THE AIRPLANE SKIN CAN OCCUR.

- (4) Make sure that the wiper blade [1] disc is properly engaged with the wiper arm disc.
 - (a) If the blade discs are damaged or worn, replace the discs on the wiper blade [1] (TASK 30-42-11-020-801, TASK 30-42-11-400-801).
 - (b) If the wiper arm disc is damaged or worn, replace the wiper arm disc (TASK 30-42-31-000-801, TASK 30-42-31-400-801).

SUBTASK 30-42-11-210-002



CAUTION

IF YOU DO NOT USE THE CORRECT TORQUE, IT CAN CAUSE THE WIPER BLADE TO MOVE AND TURN. DAMAGE TO AIRCRAFT SKIN AND THE WINDSHIELD STRUCTURE CAN OCCUR.

- (5) Make sure that the wiper blade [1] is tightly attached to the wiper arm.
 - (a) If it is necessary, tighten the nut [2] to 16 $\pm$ 2 in-lb (1.8 $\pm$ 0.2 N·m).

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SUBTASK 30-42-11-160-001



USE EYE PROTECTION WHEN YOU USE COMPRESSED AIR TO CLEAN, COOL, OR DRY PARTS OR TOOLS. PARTICLES CAN CAUSE AN INJURY TO YOUR EYES. DO NOT POINT COMPRESSED AIR AT YOURSELF OR OTHER PERSONS.

- (6) If it is necessary, clean the wiper blade with lint-free cloth, G01043, or with compressed air.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 30-42-11-860-008

- (1) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	1	C00055	ANTI-ICE & RAIN WSHLD WIPER RIGHT
B	3	C00054	ANTI-ICE & RAIN WSHLD WIPER LEFT
C	1	C00523	HEATERS CAPT PITOT
D	5	C00525	HEATERS F/O PITOT
D	6	C00524	HEATERS AUX PITOT

F/O Electrical System Panel, P6-5

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	7	C01649	WINDOW HEAT POWER R3
B	8	C00394	WINDOW HEAT POWER RIGHT FRONT
B	9	C00392	WINDOW HEAT POWER LEFT SIDE
B	19	C01650	WINDOW HEAT POWER L3
B	20	C00393	WINDOW HEAT POWER RIGHT SIDE
B	21	C00228	WINDOW HEAT POWER LEFT FRONT

————— **END OF TASK** —————

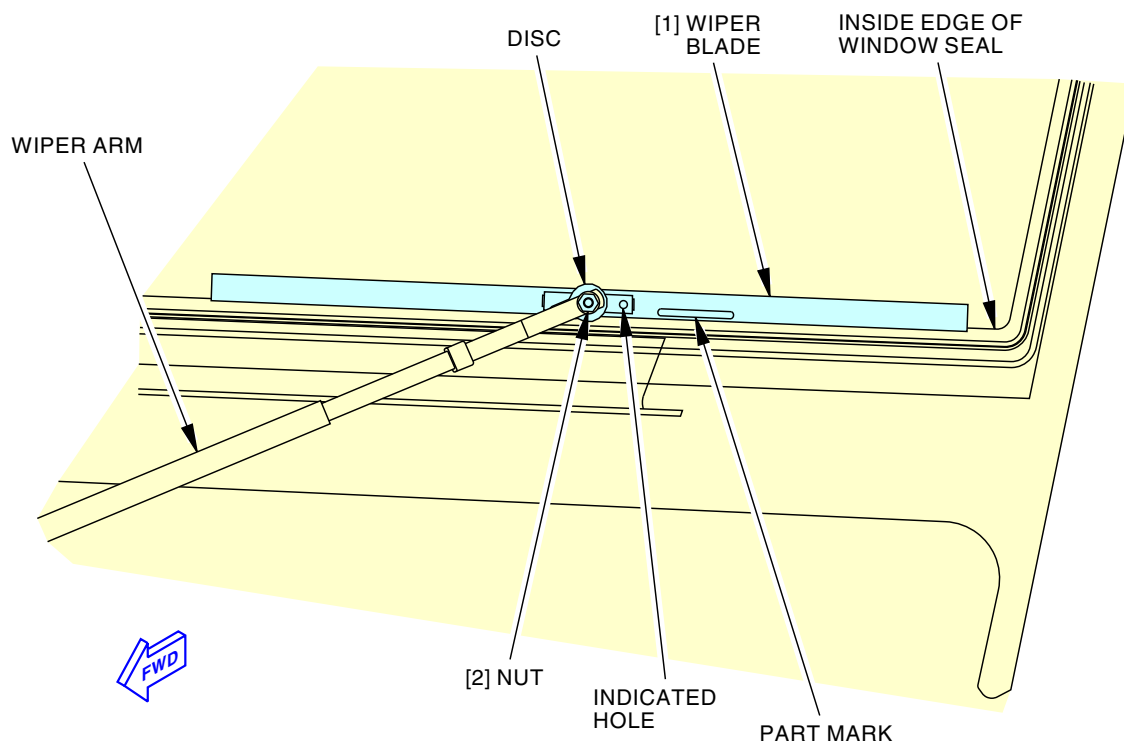
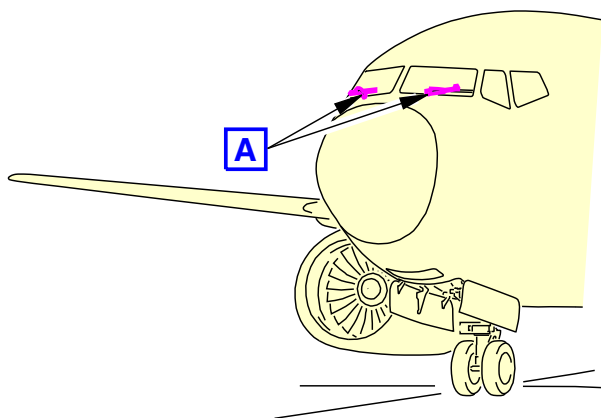
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(EXAMPLE)



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Windshield Wiper Blade Inspection
Figure 601/30-42-11-990-802

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WINDSHIELD WIPER MOTOR/CONVERTER - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

- (1) A removal of the wiper motor/converter
- (2) An installation of the wiper motor/converter.

TASK 30-42-21-000-801

2. Wiper Motor/Converter Removal

(Figure 401)

A. General

- (1) This task gives instructions to remove the wiper motor/converter.

B. References

Reference	Title
30-42-31-000-801	Windshield Wiper Arm Removal (P/B 401)
31-65-11-000-801	MAX Display Unit Removal (P/B 401)

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt.", which stands for Optional.

Reference	Description
COM-2481	Sealant Removal Tool (meets BSS7384 requirements) Part #: 1-6390-A Supplier: 63318 Part #: 10810 Supplier: \$0855 Part #: 10811 Supplier: \$0855 Part #: 10812 Supplier: \$0855 Part #: 234350 Supplier: 5HCF1 Part #: 235072 Supplier: 5HCF1 Part #: 235073 Supplier: 5HCF1 Part #: 235074 Supplier: 5HCF1 Part #: 235075 Supplier: 5HCF1 Part #: 235076 Supplier: 5HCF1 Part #: 311/03 Supplier: F6892 Part #: 311/14 Supplier: F6892 Part #: 311/25 Supplier: F6892 Part #: 311/37 Supplier: F6892 Part #: AS1 Supplier: \$1351 Part #: AS2 Supplier: \$1351 Part #: AS3 Supplier: \$1351 Part #: DAD5013 Supplier: 7RKH2 Part #: DFD5019 Supplier: 7RKH2 Part #: JNT411B60 Supplier: 3DN12 Part #: JNT411B90 Supplier: 3DN12 Part #: SCD5019 Supplier: 7RKH2 Part #: ST982LF-9 Supplier: 81205 Part #: TS1275-4 Supplier: 22975

D. Location Zones

Zone	Area
211	Flight Compartment - Left

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(Continued)

Zone	Area

212	Flight Compartment - Right

E. Prepare for the Removal

SUBTASK 30-42-21-020-001

- (1) Remove the windshield wiper arm, do this task: Windshield Wiper Arm Removal, TASK 30-42-31-000-801.

SUBTASK 30-42-21-010-001

- (2) Remove the display unit, do this task: MAX Display Unit Removal, TASK 31-65-11-000-801.

SUBTASK 30-42-21-020-002

- (3) Remove the P1-3 panel for Captain side and P3-1 panel for F/O side.

F. Wiper Motor/Converter Removal

SUBTASK 30-42-21-150-001



BE CAREFUL WHEN YOU REMOVE THE SEAL WITH THE SEALANT REMOVAL TOOL. DAMAGE TO THE AIRPLANE SKIN CAN OCCUR.

- (1) Remove the sealant, with a sealant removal tool, COM-2481, from the area around the wiper motor shaft on the outside of the airplane.

SUBTASK 30-42-21-020-003

- (2) Remove the ground wire from the wiper motor.

- (a) Remove the nut [4] and washer [5].

SUBTASK 30-42-21-020-004

- (3) Remove the electrical connector [6].

SUBTASK 30-42-21-020-005

- (4) Remove the screws [2] and washers [3].

SUBTASK 30-42-21-020-006



REPLACE THE WIPER MOTOR/CONVERTER IF THE SEAL ON THE OUTPUT SHAFT IS BROKEN. YOU CAN CAUSE DAMAGE TO THE GEAR CASE OF THE WIPER MOTOR/CONVERTER IF YOU OPERATE IT WITH A BROKEN SEAL.

- (5) Remove the wiper motor converter [1].

————— **END OF TASK** —————

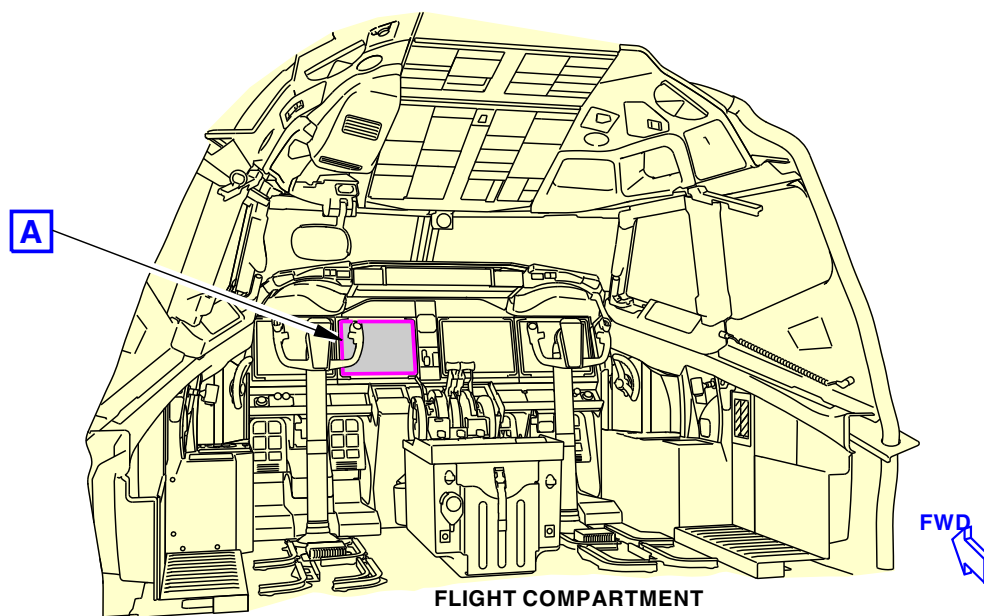
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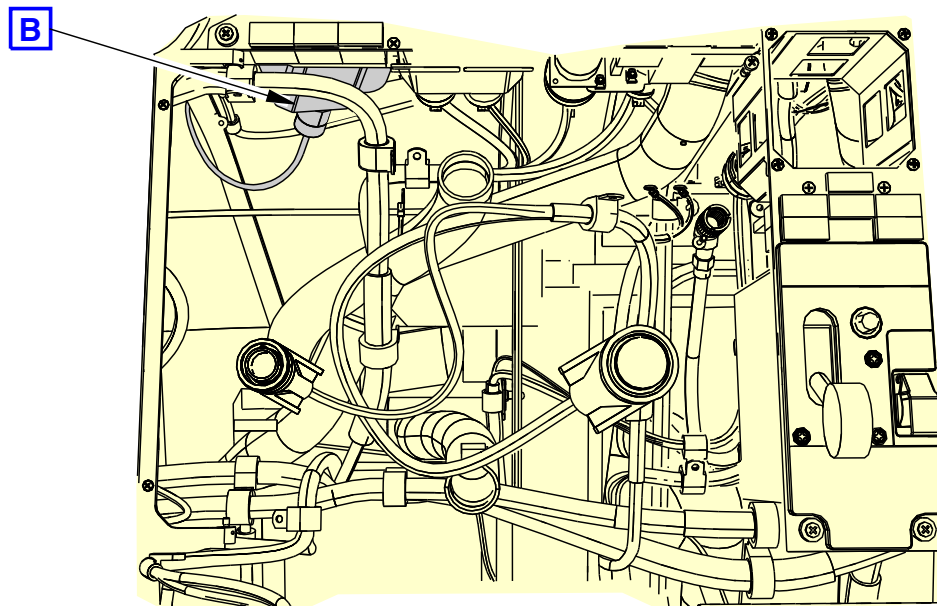
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MOTOR CONVERTER



(LARGE FORMAT DISPLAY REMOVED)
(LEFT SIDE IS SHOWN, RIGHT SIDE IS OPPOSITE)



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Windshield Wiper Motor/Converter Installation
Figure 401/30-42-21-990-801 (Sheet 1 of 2)

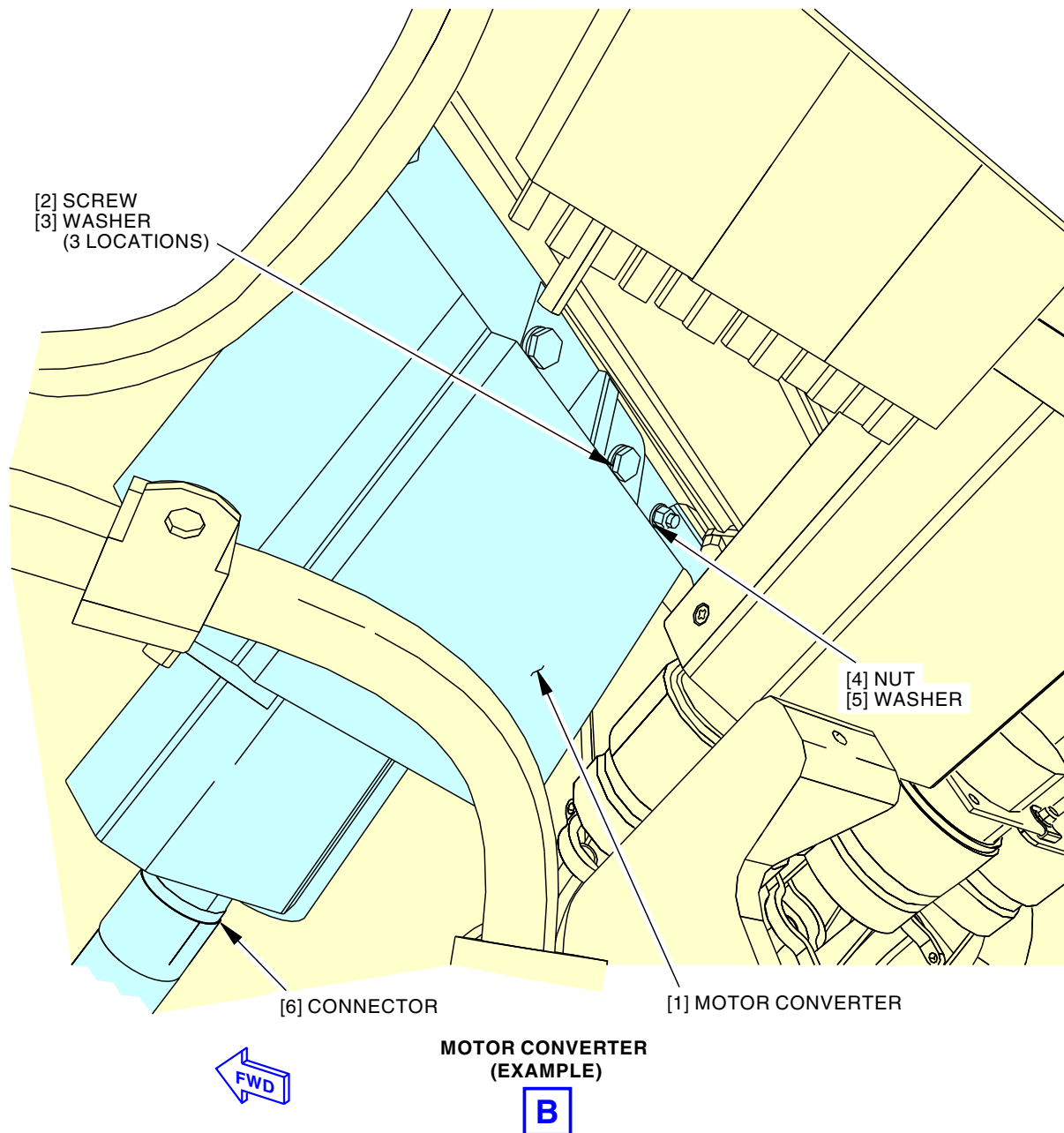
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Windshield Wiper Motor/Converter Installation
Figure 401/30-42-21-990-801 (Sheet 2 of 2)

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TASK 30-42-21-400-801

3. Wiper Motor/Converter Installation

(Figure 401)

A. General

(1) This task gives instructions to install the wiper motor/converter.

B. References

Reference	Title
30-42-31-400-801	Windshield Wiper Arm Installation (P/B 401)
31-65-11-000-801	MAX Display Unit Removal (P/B 401)
31-65-11-400-801	MAX Display Unit Installation (P/B 401)
51-22-00-160-801	Prepare For Sealing (P/B 201)
SWPM 20-20-00	ELECTRICAL BONDING PROCESSES

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
COM-1550	Bonding Meter - Approved, Intrinsically Safe (Approved for use in Class I, Divisions I & II hazardous (classified) locations. Outside these hazardous locations, COM-614 can be used in lieu of COM-1550). Part #: 620LK Supplier: 1CRL2 Part #: M1 Supplier: 3AD17 Part #: M1B Supplier: 3AD17 Part #: T477W (C15292) Supplier: 06659
STD-810	Spatula - Fillet Smoothing, Hardwood or Plastic
STD-858	Tag - DO NOT OPERATE
STD-7413	Sealing gun - 6-inch length cartridge, Semco Research or equivalent

D. Consumable Materials

Reference	Description	Specification
A00247	Sealant - Pressure And Environmental - Chromate Type	BMS5-95
B00130	Alcohol - Isopropyl	TT-I-735
B00148	Solvent - Methyl Ethyl Ketone (MEK)	ASTM D740
B00184	Solvent - Presealing, Cleaning Solvent	BMS11-7
G00034	Cotton Wiper - Process Cleaning Absorbent Wiper (Cheesecloth, Gauze)	AMS3819 Class 1 Grade A or B Form 1 (Supersede BMS15-5 CLA)
G00291	Tape - Aluminum Foil, 3M 425	AMS-T-23397 / L-T-80

E. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Wiper motor converter	30-42-21-01-075	SIA ALL
		30-42-21-01-080	SIA ALL

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F. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

G. Prepare for the Installation

SUBTASK 30-42-21-020-007

- (1) If it is necessary, do this task: MAX Display Unit Removal, TASK 31-65-11-000-801.

H. Wiper Motor/Converter Installation

SUBTASK 30-42-21-100-001



CAUTION

BE CAREFUL WHEN YOU INSTALL OR REMOVE THE WIPER MOTOR/ CONVERTER. THE WIPER SHAFT CAN TEAR THE RUBBER SEAL. IF YOU OPERATE THE WIPER MOTOR/ CONVERTER WITH A BROKEN SEAL, DAMAGE TO THE EQUIPMENT CAN OCCUR.

- (1) Put the wiper motor converter [1] into position.

SUBTASK 30-42-21-400-001

- (2) Install the screws [2] and washers [3].

SUBTASK 30-42-21-100-002

- (3) Clean the ground wire terminal mating surface and the ground stud on the airplane structure (SWPM 20-20-00).
 - (a) Use cotton wiper, G00034, made moist with alcohol, B00130.
 - (b) Immediately dry the surfaces with a new cotton wiper, G00034.

SUBTASK 30-42-21-420-001

- (4) Connect the ground wire to the wiper motor converter [1].
 - (a) Attach the ground wire with the nut [4] and washer [5].

SUBTASK 30-42-21-760-001

- (5) Measure the electrical bonding resistance between the wiper motor converter [1] and airplane structure.
 - (a) Use an intrinsically safe approved bonding meter, COM-1550.
 - (b) Make sure that the resistance is 0.001 ohm (1.0 milliohm) or less.

SUBTASK 30-42-21-420-002

- (6) Connect the electrical connector [6] to the wiper motor converter [1].

I. Wiper Motor/Converter Installation Test

SUBTASK 30-42-21-440-001

- (1) Do these steps to add electrical power to the windshield wiper and control cabin heat systems:
 - (a) Remove the DO NOT OPERATE tag, STD-858, from the WINDOW HEAT, L WIPER, and R WIPER switches.
 - (b) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
B	1	C00055	ANTI-ICE & RAIN WSHLD WIPER RIGHT
B	3	C00054	ANTI-ICE & RAIN WSHLD WIPER LEFT

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CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	1	C00523	HEATERS CAPT PITOT
D	5	C00525	HEATERS F/O PITOT
D	6	C00524	HEATERS AUX PITOT

F/O Electrical System Panel, P6-5

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	8	C00394	WINDOW HEAT POWER RIGHT FRONT
B	9	C00392	WINDOW HEAT POWER LEFT SIDE
B	20	C00393	WINDOW HEAT POWER RIGHT SIDE
B	21	C00228	WINDOW HEAT POWER LEFT FRONT

SUBTASK 30-42-21-710-001

- (2) Do these steps to make sure that the wiper motor converter [1] operates:
 - (a) Set the windshield L WIPER and R WIPER switch to the LOW position.
 - (b) Make sure that the wiper motor converter [1] operates.
 - (c) Set the windshield L WIPER and R WIPER switch to the PARK position.

J. Put the Airplane Back to Its Usual Condition

SUBTASK 30-42-21-410-001

- (1) Install the P1-3 panel for Captain side and P3-1 panel for F/O side.

SUBTASK 30-42-21-410-002

- (2) Install the display unit, do this task: MAX Display Unit Installation, TASK 31-65-11-400-801.

SUBTASK 30-42-21-390-001

- (3) Apply sealant, A00247, to the wiper motor shaft.
 - (a) Make sure that the area around the wiper motor shaft is clean (TASK 51-22-00-160-801).
 - (b) Use a sealant gun, STD-7413, to fill the gap between the wiper motor shaft and airplane skin with sealant, A00247.
 - (c) Use a hardwood or plastic fillet smoothing spatula, STD-810, to make a smooth surface on the sealant.
 - (d) Remove all excess sealant with a clean cotton wiper, G00034, that is wet with solvent, B00184, or solvent, B00148.

SUBTASK 30-42-21-420-003

- (4) Install the windshield wiper arm, do this task: Windshield Wiper Arm Installation, TASK 30-42-31-400-801.

SUBTASK 30-42-21-410-003

- (5) If you must send the airplane before the sealant is fully cured, install 3M 425 Aluminum Foil Tape, G00291, on the top of the sealant.
 - (a) Remove 3M 425 Aluminum Foil Tape, G00291, when the sealant is fully cured.

NOTE: The use of 3M 425 Aluminum Foil Tape, G00291, is not intended for long term use but only until the sealant is cured.

————— **END OF TASK** —————

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WINDSHIELD WIPER ARM - MAINTENANCE PRACTICES

1. General

- A. This procedure has these tasks:
- (1) Windshield Wiper Arm Force Check/Adjustment
 - (2) Windshield Wiper Arm Position Adjustment

TASK 30-42-31-820-801

2. Windshield Wiper Arm Force Check/Adjustment

A. **General**

- (1) This procedure measures the force that the wiper arm applies to the windshield and adjusts the force for correct wiper operation.

B. **References**

Reference	Title
24-22-00-860-803	Supply External Power (P/B 201)

C. **Tools/Equipment**

Reference	Description
STD-759	Scale - Spring, 0 to 20 lbf (0 to 89 N)

D. **Location Zones**

Zone	Area
200	Upper Half of Fuselage
211	Flight Compartment - Left
212	Flight Compartment - Right

E. **Windshield Wiper Arm Force Check/Adjustment**

SUBTASK 30-42-31-860-001



OPEN THE WINDOW HEAT CONTROL UNIT CIRCUIT BREAKERS. INJURIES TO PERSONNEL CAN OCCUR AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (1) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-5

Row	Col	Number	Name
B	8	C00394	WINDOW HEAT POWER RIGHT FRONT
B	9	C00392	WINDOW HEAT POWER LEFT SIDE
B	20	C00393	WINDOW HEAT POWER RIGHT SIDE
B	21	C00228	WINDOW HEAT POWER LEFT FRONT

SUBTASK 30-42-31-800-001

- (2) Do these steps to put the windshield wiper in the testing position:
 - (a) Do this task: Supply External Power, TASK 24-22-00-860-803.

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DO NOT OPERATE THE WINDSHIELD WIPERS ON DRY GLASS. ALWAYS SUPPLY WATER TO THE WINDSHIELDS BEFORE YOU OPERATE THE WIPER. THE WIPER WILL CAUSE DAMAGE TO A DRY WINDSHIELD.



DO NOT USE WATER WITH A HIGH MINERAL CONTENT. IF YOU DO NOT OBEY, IT CAN CAUSE MARKS ON THE COATED GLASS SURFACE.

- (b) Supply a continuous spray of clean water to the windshield.

NOTE: For windshields with a hydrophobic coating, deionized or distilled water is recommended during the wiper test.

- 1) If water with a high mineral content is used on a windshield with a hydrophobic coating, flush the windshield surface after the wiper test with deionized or distilled water, or remove the remaining water on the windshield with a cotton cloth.
- (c) Set the L WIPER or R WIPER switch to the LOW position.
- (d) Do this step for the applicable circuit breaker to stop the wiper arm assembly [3] at the mid-stroke position on the windshield:

Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	1	C00055	ANTI-ICE & RAIN WSHLD WIPER RIGHT
B	3	C00054	ANTI-ICE & RAIN WSHLD WIPER LEFT

- (e) Stop the water spray.

SUBTASK 30-42-31-700-001

- (3) Do these steps to measure the force of the wiper arm assembly [3]:
- (a) Connect the spring scale, STD-759, at the point where the wiper blade [9] attaches to the wiper arm assembly [3].
- (b) Hold the spring scale, STD-759, perpendicular to the windshield.



DO NOT LIFT THE WINDSHIELD WIPER ARM ASSEMBLY MORE THAN NECESSARY OFF THE WINDSHIELD. DAMAGE TO THE WINDSHIELD ARM ASSEMBLY CAN OCCUR.

- (c) Pull the spring scale, STD-759, slowly until the wiper blade [9] lifts off the windshield to measure the force.

NOTE: One end of the wiper blade may remain on the windshield during this test. A piece of paper should be able to slide under the blade without binding.

SUBTASK 30-42-31-820-001

- (4) Adjust the force of the wiper arm assembly [3].

NOTE: The wiper motor has a dimple at the end of the motor/converter shaft.

- (a) If the force is less than 6.5 lbf (28.9 N), tighten the adjustment screw [4] to increase the force of the wiper arm assembly [3].

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- (b) If the force is larger than 7.5 lbf (33.4 N), loosen the adjustment screw [4] to decrease the force of the wiper arm assembly [3].

NOTE: The wiper motor is to be tensioned to the specified tension above, to be in compliance with AD 2003-20-13.

SUBTASK 30-42-31-700-002

- (5) If the force of the arm assembly [3] was adjusted per the steps above, measure the force of the wiper arm assembly [3] again and adjust as required.

SUBTASK 30-42-31-860-002

- (6) Put the windshield wiper arm assembly [3] back to the PARK position:
- (a) Set the L WIPER or R WIPER switch to the PARK position.



CAUTION

DO NOT OPERATE THE WINDSHIELD WIPERS ON DRY GLASS. ALWAYS SUPPLY WATER TO THE WINDSHIELDS BEFORE YOU OPERATE THE WIPER. THE WIPER WILL CAUSE DAMAGE TO A DRY WINDSHIELD.



CAUTION

DO NOT USE WATER WITH A HIGH MINERAL CONTENT. IF YOU DO NOT OBEY, IT CAN CAUSE MARKS ON THE COATED GLASS SURFACE.

- (b) Supply a continuous spray of clean water to the windshield.

NOTE: For windshields with a hydrophobic coating, deionized or distilled water is recommended during the wiper test.

- 1) If water with a high mineral content is used on a windshield with a hydrophobic coating, flush the windshield surface after the wiper test with deionized or distilled water, or remove the remaining water on the windshield with a cotton cloth.
- (c) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	1	C00055	ANTI-ICE & RAIN WSHLD WIPER RIGHT
B	3	C00054	ANTI-ICE & RAIN WSHLD WIPER LEFT

- (d) Make sure that the wiper blade [9] stops in the parked position.
- (e) Stop the water spray.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 30-42-31-860-003

- (1) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-5

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	8	C00394	WINDOW HEAT POWER RIGHT FRONT
B	9	C00392	WINDOW HEAT POWER LEFT SIDE
B	20	C00393	WINDOW HEAT POWER RIGHT SIDE
B	21	C00228	WINDOW HEAT POWER LEFT FRONT

———— **END OF TASK** ————

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TASK 30-42-31-820-802

3. Windshield Wiper Arm Position Check/Adjustment

(Figure 201)

A. General

- (1) This task adjusts the position of the wiper arm sweep on the windshield.
- (2) This task must be completed after an installation of a wiper arm.

B. References

Reference	Title
24-22-00-860-803	Supply External Power (P/B 201)
30-42-31-000-801	Windshield Wiper Arm Removal (P/B 401)
30-42-31-400-801	Windshield Wiper Arm Installation (P/B 401)

C. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

D. Windshield Wiper Arm Position Check/Adjustment

SUBTASK 30-42-31-860-004

- (1) Do this task: Supply External Power, TASK 24-22-00-860-803.

SUBTASK 30-42-31-860-005



OPEN THE WINDOW HEAT CONTROL UNIT CIRCUIT BREAKERS. INJURIES TO PERSONNEL CAN OCCUR AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (2) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-5

Row	Col	Number	Name
B	8	C00394	WINDOW HEAT POWER RIGHT FRONT
B	9	C00392	WINDOW HEAT POWER LEFT SIDE
B	20	C00393	WINDOW HEAT POWER RIGHT SIDE
B	21	C00228	WINDOW HEAT POWER LEFT FRONT

SUBTASK 30-42-31-210-001

- (3) Do these steps to examine the sweep pattern of the wiper arm assembly [3]:



DO NOT OPERATE THE WINDSHIELD WIPERS ON DRY GLASS. ALWAYS SUPPLY WATER TO THE WINDSHIELDS BEFORE YOU OPERATE THE WIPER. THE WIPER WILL CAUSE DAMAGE TO A DRY WINDSHIELD.

- (a) Supply a continuous spray of clean water to the windshield.

NOTE: For windshields with a hydrophobic coating, deionized or distilled water is recommended during the wiper test. Water with a high mineral content can cause marks on the coated glass surface that are difficult to remove. If water with a high mineral content is used on a windshield with a hydrophobic coating, flush the windshield surface after the wiper test with deionized or distilled water, or remove the remaining water on the windshield with a cotton cloth.

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- (b) Set the L WIPER or R WIPER switch to LOW position and let the wiper operate for one or two cycles.
- (c) Set the L WIPER or R WIPER switch to PARK position.
- (d) Stop the water spray.
- (e) Make sure that the wiper arm assembly [3] goes back to the parked position with the wiper blade [9] near the bottom edge of the windshield.
- (f) Make sure that the wiper arm assembly [3] is parallel to the bottom edge of the windshield.
- (g) Compare the sweep pattern (Figure 201).

SUBTASK 30-42-31-820-002

- (4) If you find a problem with the sweep pattern of the wiperarm assembly [3], do these steps to adjust the sweep pattern:
 - (a) Measure the distance that the tip of the wiper blade [9] needs to move.
 - (b) Make a mark on the adjustment sleeve [10] and wiper motor shaft to show the current installation.
 - (c) Remove the windshield wiper arm assembly [3], do this task: Windshield Wiper Arm Removal, TASK 30-42-31-000-801.
 - (d) Install the windshield wiper arm assembly [3], do this task: Windshield Wiper Arm Installation, TASK 30-42-31-400-801.

NOTE: The windshield wiper arm assembly installation procedure has details on how to adjust the windshield wiper arm assembly.

SUBTASK 30-42-31-860-006

- (5) Put the wiper arm assembly [3] to its parked position:



CAUTION

DO NOT OPERATE THE WINDSHIELD WIPERS ON DRY GLASS. ALWAYS SUPPLY WATER TO THE WINDSHIELDS BEFORE YOU OPERATE THE WIPER. THE WIPER WILL CAUSE DAMAGE TO A DRY WINDSHIELD.

- (a) Supply a continuous spray of clean water to the windshield.

NOTE: For windshields with a hydrophobic coating, deionized or distilled water is recommended during the wiper test. Water with a high mineral content can cause marks on the coated glass surface that are difficult to remove. If water with a high mineral content is used on a windshield with a hydrophobic coating, flush the windshield surface after the wiper test with deionized or distilled water, or remove the remaining water on the windshield with a cotton cloth.

- (b) Set the L WIPER or R WIPER switch to LOW position.
- (c) Set the L WIPER or R WIPER switch to PARK position.
- (d) Stop the water spray.

E. Put the Airplane Back to Its Usual Condition

SUBTASK 30-42-31-860-007

- (1) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-5

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	8	C00394	WINDOW HEAT POWER RIGHT FRONT

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F/O Electrical System Panel, P6-5

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	9	C00392	WINDOW HEAT POWER LEFT SIDE
B	20	C00393	WINDOW HEAT POWER RIGHT SIDE
B	21	C00228	WINDOW HEAT POWER LEFT FRONT

————— END OF TASK —————

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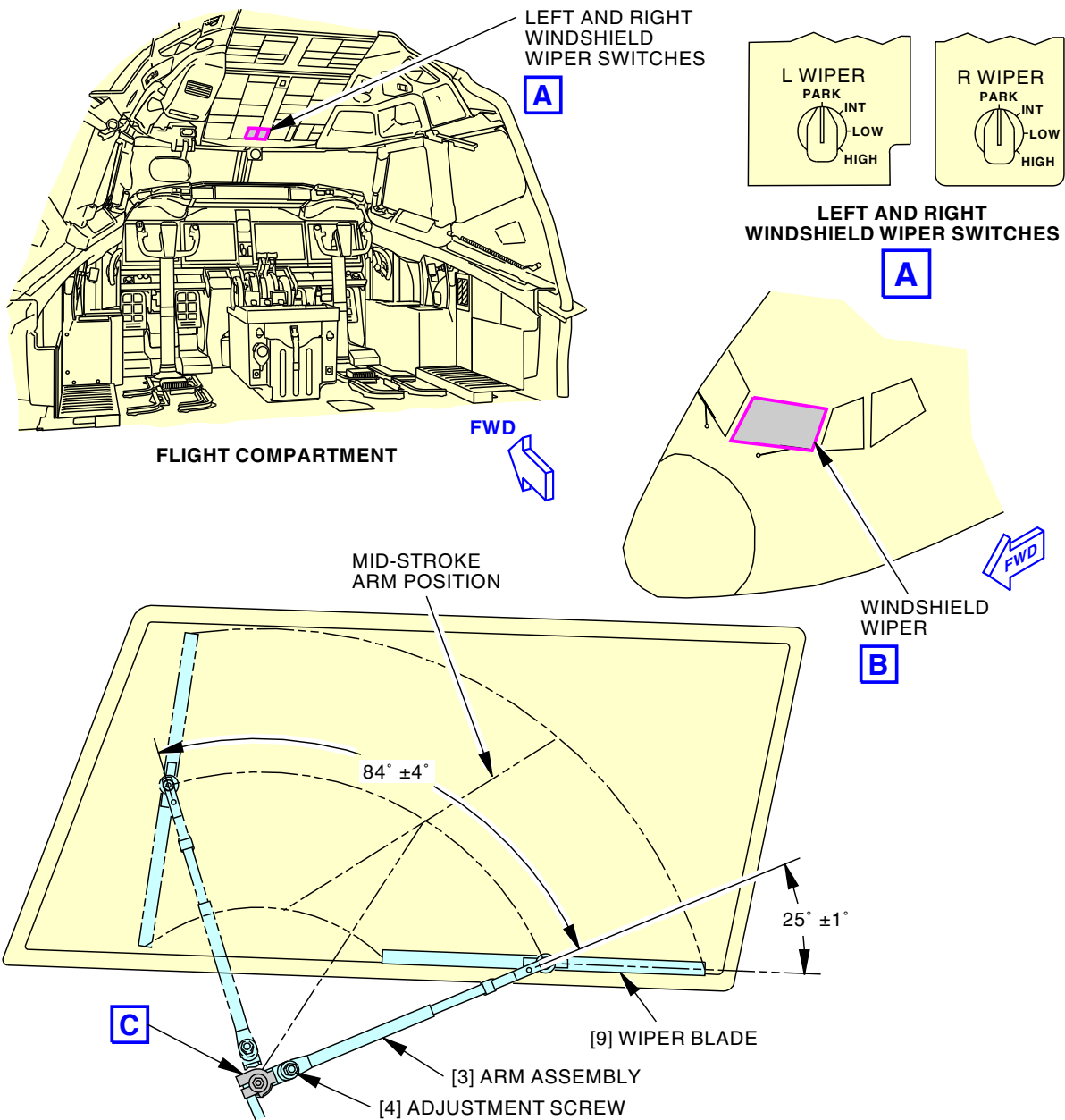
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WINDSHIELD WIPER
(CAPTAIN LEFT SIDE WINDSHIELD WIPER ARM ASSEMBLY IS SHOWN,
FIRST OFFICER RIGHT SIDE WINDSHIELD WIPER ARM ASSEMBLY IS OPPOSITE)

[B]

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Windshield Wiper Arm Sweep Pattern
Figure 201/30-42-31-990-802 (Sheet 1 of 2)

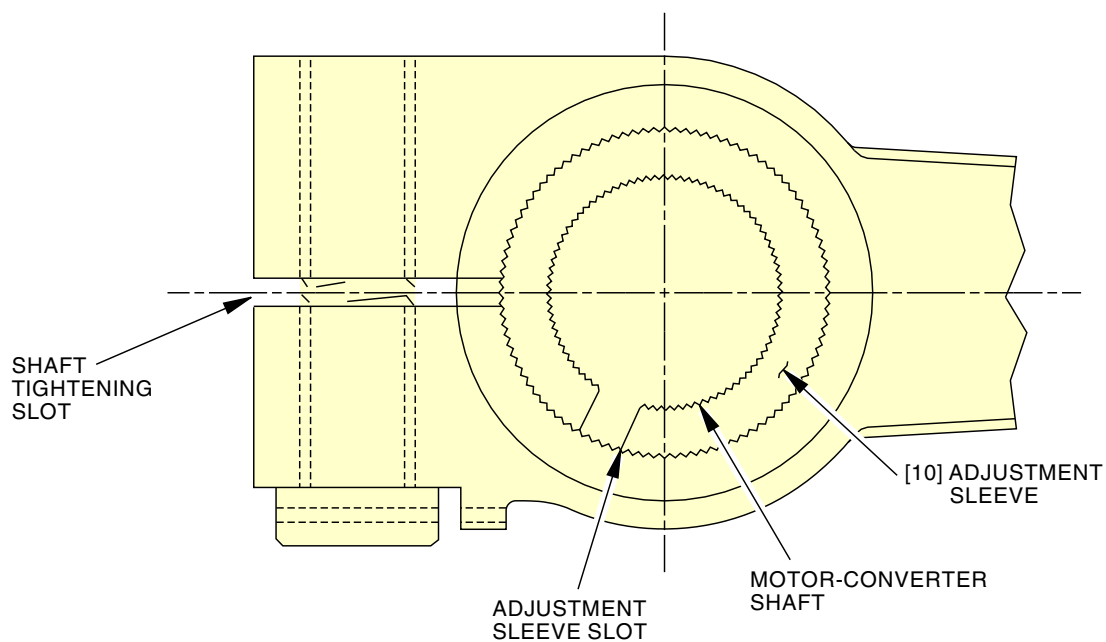
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Windshield Wiper Arm Sweep Pattern
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WINDSHIELD WIPER ARM - REMOVAL/INSTALLATION

1. General

- A. This procedure has these tasks:
- (1) Windshield Wiper Arm Removal
 - (2) Windshield Wiper Arm Installation.

TASK 30-42-31-000-801

2. Windshield Wiper Arm Removal

(Figure 401)

A. **General**

- (1) This task includes the steps to remove the windshield wiper arm.

B. **References**

Reference	Title
30-42-11-020-801	Windshield Wiper Blade Removal (P/B 401)

C. **Tools/Equipment**

Reference	Description
STD-858	Tag - DO NOT OPERATE

D. **Location Zones**

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

E. **Prepare for the Removal**

SUBTASK 30-42-31-040-001

- (1) Do these steps to remove power to the windshield wiper and control cabin heat systems:



WARNING

OPEN THE WINDOW HEAT CONTROL UNIT CIRCUIT BREAKERS. INJURIES TO PERSONNEL CAN OCCUR AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (a) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
B	1	C00055	ANTI-ICE & RAIN WSHLD WIPER RIGHT
B	3	C00054	ANTI-ICE & RAIN WSHLD WIPER LEFT
C	1	C00523	HEATERS CAPT PITOT
D	5	C00525	HEATERS F/O PITOT
D	6	C00524	HEATERS AUX PITOT

F/O Electrical System Panel, P6-5

Row	Col	Number	Name
B	8	C00394	WINDOW HEAT POWER RIGHT FRONT
B	9	C00392	WINDOW HEAT POWER LEFT SIDE
B	20	C00393	WINDOW HEAT POWER RIGHT SIDE

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F/O Electrical System Panel, P6-5

Row	Col	Number	Name
B	21	C00228	WINDOW HEAT POWER LEFT FRONT

- (b) Do these steps to tryout a windshield wiper and control cabin heat systems:

NOTE: This tryout is to make sure that the power to the windshield wiper and control cabin heat system is in a zero state.



DO NOT OPERATE THE WINDSHIELD WIPERS ON DRY GLASS. ALWAYS SUPPLY WATER TO THE WINDSHIELDS BEFORE YOU OPERATE THE WIPER. THE WIPER WILL CAUSE DAMAGE TO A DRY WINDSHIELD.

- 1) Supply a continuous spray of clean water to the windshield.

NOTE: For windshields with a hydrophobic coating, deionized or distilled water is recommended during the wiper test. Water with a high mineral content can cause marks on the coated glass surface that are difficult to remove. If water with a high mineral content is used on a windshield with a hydrophobic coating, flush the windshield surface after the wiper test with deionized or distilled water, or remove the remaining water on the windshield with a cotton cloth.

- 2) Set the L WIPER and R WIPER, switches to the INT, LOW, or HIGH position.
a) Make sure that the left and right wiper does not operate.
- 3) Set the L WIPER and R WIPER switches to the PARK position.
- 4) At the P5-9 window/pitot heat module, set the four WINDOW HEAT switches to the ON position one at a time.
a) Make sure that the corresponding ON light on the window/pitot heat module remains OFF.
- 5) Install the DO NOT OPERATE tag, STD-858, on the WINDOW HEAT, L WIPER, and R WIPER switches.

F. Windshield Wiper Arm Removal

SUBTASK 30-42-31-010-001

- (1) Use a stand to reach the windshield wipers.

SUBTASK 30-42-31-800-002



DO NOT LIFT THE WINDSHIELD WIPER ARM ASSEMBLY MORE THAN NECESSARY OFF THE WINDSHIELD. DAMAGE TO THE WINDSHIELD ARM ASSEMBLY CAN OCCUR.

- (2) Put a pad between the arm assembly [3] and the windshield to prevent damage to the windshield surface.

SUBTASK 30-42-31-020-008

- (3) Disconnect the wiper blade [9] from the arm assembly [3], do this task: Windshield Wiper Blade Removal, TASK 30-42-11-020-801.

SUBTASK 30-42-31-020-001

- (4) Loosen the adjustment screw [4] to remove the force on the wiper arm.

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SUBTASK 30-42-31-020-002

- (5) Remove the lockwire [6] from the bolt [7], arm assembly [3], and bolt [5].

SUBTASK 30-42-31-020-003

- (6) Loosen the bolt [5].

SUBTASK 30-42-31-020-004

- (7) Remove the bolt [7] and washer [8] from the shaft.

- (a) Make sure to hold the arm assembly [3] in position while the bolt [5] is removed.

NOTE: This will make sure that the wiper motor shaft does not turn.

- (b) Make sure to keep the bolt [7] and washer [8] for the windshield wiper arm installation.

SUBTASK 30-42-31-020-005

- (8) Remove the arm assembly [3] from the wiper motor/converter shaft.

SUBTASK 30-42-31-020-006

- (9) If it is necessary, remove the adjustment sleeve [10] from the wiper motor/converter shaft.

NOTE: The adjustment sleeve can stay with the wiper arm when it is removed.

———— **END OF TASK** ————

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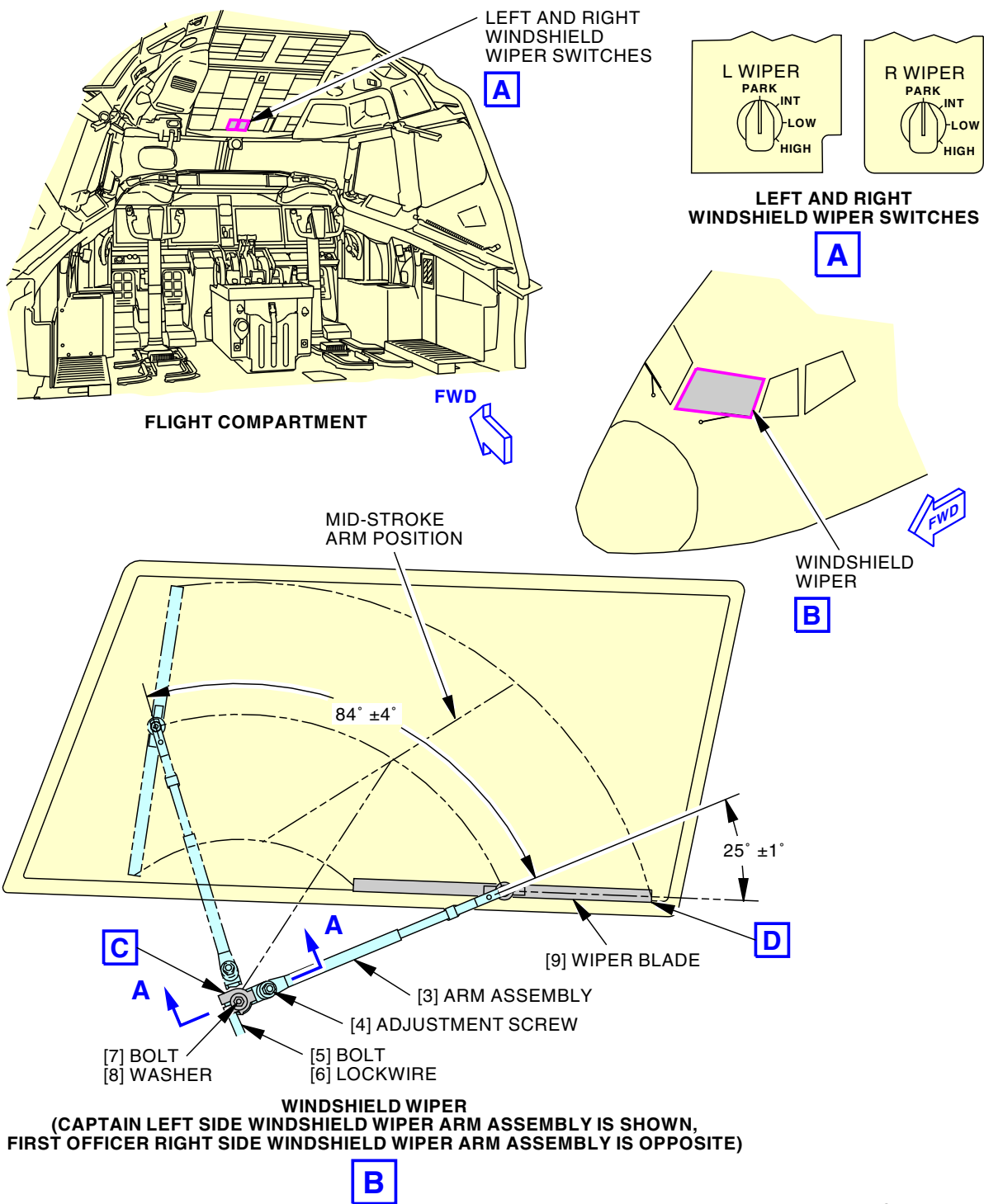
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2413929 S00061533831_V4

Windshield Wiper Arm Installation
Figure 401/30-42-31-990-801 (Sheet 1 of 3)

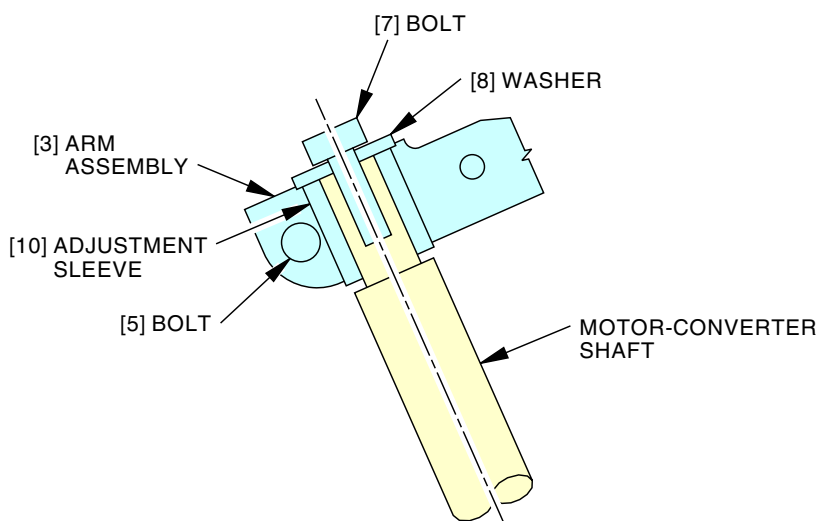
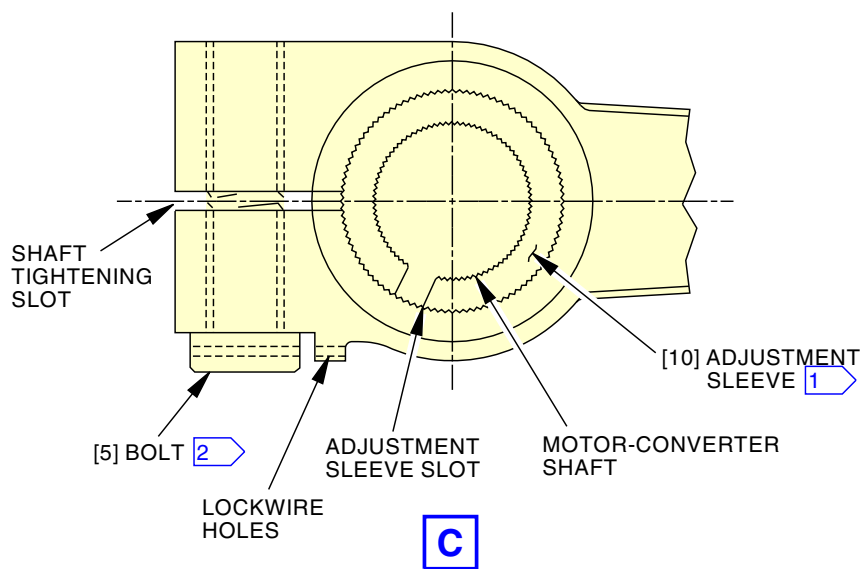
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- 1 FOR FINE ADJUSTMENT OF THE ARM ASSEMBLY REMOVE THE ADJUSTMENT SLEEVE FROM THE ARM AND TURN SLEEVE IN THE SAME DIRECTION THAT THE ARM MUST BE MOVED. EACH NOTCH MOVES THE WIPER END ABOUT 0.03 INCH (0.76 mm).
- 2 MAKE SURE THAT THE INSTALLATION DIRECTION OF THE BOLT [5] IS CORRECT. THE HEAD OF THE BOLT [5] SHOULD BE ON THE SAME SIDE AS THE LOCKWIRE HOLE IN THE WIPER ARM. INSTALLATION OF THE BOLT [5] IN THE F/O SIDE WINDSHIELD WIPER IS EQUIVALENT.

2413930 S00061533832_V3

Windshield Wiper Arm Installation
Figure 401/30-42-31-990-801 (Sheet 2 of 3)

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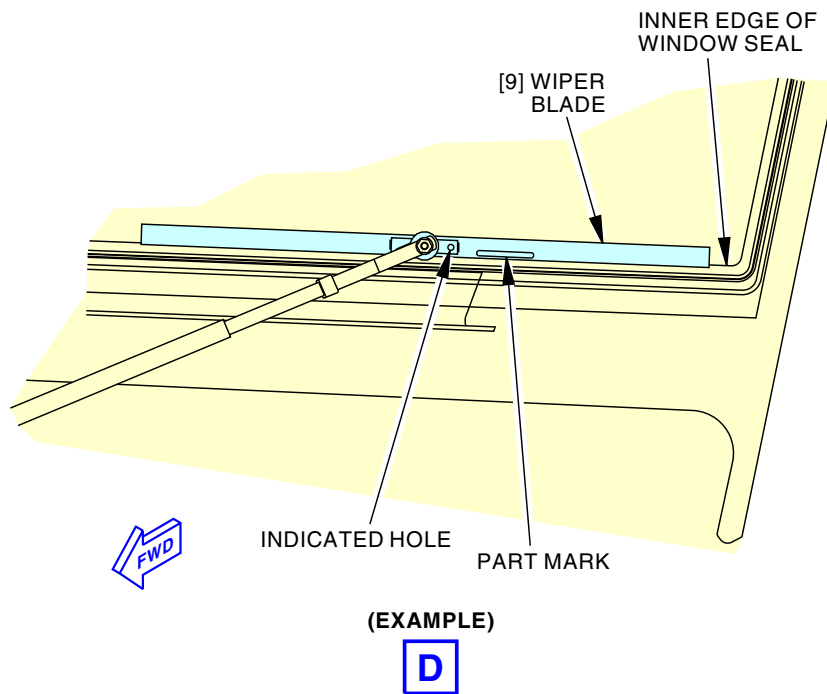
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3021264 S0000793665_V1

Windshield Wiper Arm Installation
Figure 401/30-42-31-990-801 (Sheet 3 of 3)

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TASK 30-42-31-400-801

3. Windshield Wiper Arm Installation

(Figure 401)

A. General

(1) This task includes the steps to install the windshield wiper arm.

B. References

Reference	Title
30-42-11-400-801	Windshield Wiper Blade Installation (P/B 401)
30-42-31-820-801	Windshield Wiper Arm Force Check/Adjustment (P/B 201)
30-42-31-820-802	Windshield Wiper Arm Position Check/Adjustment (P/B 201)

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-22466	Cable Assembly - Safety Part #: BACC13AT3K6 Supplier: 81205

D. Consumable Materials

Reference	Description	Specification
D00013	Grease - Aircraft And Instrument Grease	MIL-PRF-23827 (NATO G-354) (Supersedes MIL-G-23827)
G01048	Lockwire - MS20995C32, Corrosion Resistant Steel - 0.032 Inch (0.8128 mm) Diameter	NASM20995

E. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
3	Arm assembly	30-42-31-01-010	SIA ALL

F. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

G. Prepare for the Installation



WARNING

BEFORE YOU DO MAINTENANCE ON THE WINDSHIELD WIPER SYSTEM, OPEN THE WINDOW HEAT CIRCUIT-BREAKERS. IF YOU DO NOT OPEN THESE CIRCUIT BREAKERS YOU CAN GET AN ELECTRICAL SHOCK WHEN YOU TOUCH THE WINDOW.

SUBTASK 30-42-31-860-013

(1) Make sure that these circuit breakers are open and have safety tags:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
C	1	C00523	HEATERS CAPT PITOT
D	5	C00525	HEATERS F/O PITOT

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CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	6	C00524	HEATERS AUX PITOT

F/O Electrical System Panel, P6-5

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	8	C00394	WINDOW HEAT POWER RIGHT FRONT
B	9	C00392	WINDOW HEAT POWER LEFT SIDE
B	20	C00393	WINDOW HEAT POWER RIGHT SIDE
B	21	C00228	WINDOW HEAT POWER LEFT FRONT

SUBTASK 30-42-31-860-012

- (2) Make sure that the windshield wiper motor is in the PARK position:
- (a) For the left windshield wiper motor/converter, remove the safety tag and close this circuit breaker:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	3	C00054	ANTI-ICE & RAIN WSHLD WIPER LEFT

- (b) For the right windshield wiper motor/converter, remove the safety tag and close this circuit breaker:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	1	C00055	ANTI-ICE & RAIN WSHLD WIPER RIGHT

- (c) Put the L WIPER and R WIPER switches to the PARK position.
- (d) For the left windshield wiper motor/converter, open this circuit breaker and install safety tag:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	3	C00054	ANTI-ICE & RAIN WSHLD WIPER LEFT

- (e) For the right windshield wiper motor/converter, open this circuit breaker and install safety tag:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	1	C00055	ANTI-ICE & RAIN WSHLD WIPER RIGHT

H. Windshield Wiper Arm Installation

SUBTASK 30-42-31-020-007

- (1) Loosen the adjustment screw [4].

SUBTASK 30-42-31-420-001

- (2) Attach the wiper blade [9] to the wiper arm assembly [3], do this task: Windshield Wiper Blade Installation, TASK 30-42-11-400-801.

SUBTASK 30-42-31-640-001

- (3) Apply grease, D00013, to the serrations on the adjustment sleeve [10] and windshield wiper/converter shaft.

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SUBTASK 30-42-31-420-002

- (4) Install the arm assembly [3] on the windshield wiper/converter shaft.
 - (a) Place the wiper arm assembly [3] on the windshield wiper motor/converter shaft in the parked position.

NOTE: To determine the position of the wiper arm assembly and for adjustment instructions refer to Figure 401.

- 1) For large adjustments, turn the wiper arm assembly [3] and adjustment sleeve [10] together on the windshield wiper motor/converter shaft.
- 2) For small adjustments, turn the adjustment sleeve [10] within the arm assembly [3].

NOTE: For fine adjustments of the arm assembly, remove the adjustment sleeve from the arm and turn the sleeve in the same direction that the arm must be moved. Each notch moves the wiper end about 0.034 in. (0.864 mm).

- (b) Apply 3.5 lb (1.6 kg) to 4.5 lb (2.0 kg) downward force at the blade attach point.
 - 1) Make sure that the wiper blade [9] stays on the glass.

SUBTASK 30-42-31-420-003

- (5) Install the bolt [5].
 - (a) Make sure that the head of the bolt [5] is on the same side as the lockwire hole in the wiper arm.

SUBTASK 30-42-31-420-004

- (6) Install the washer [8] and bolt [7] on the end of the shaft.

I. Windshield Wiper Arm Installation Test

SUBTASK 30-42-31-820-003

- (1) Do this task: Windshield Wiper Arm Force Check/Adjustment, TASK 30-42-31-820-801.

SUBTASK 30-42-31-820-004

- (2) Do this task: Windshield Wiper Arm Position Check/Adjustment, TASK 30-42-31-820-802.

SUBTASK 30-42-31-420-005

- (3) Tighten the bolt [7] to 20.0 in-lb (2.3 N·m) - 25.0 in-lb (2.8 N·m).

SUBTASK 30-42-31-420-006

- (4) Tighten the bolt [5] to 35.0 in-lb (4.0 N·m) - 40.0 in-lb (4.5 N·m).

SUBTASK 30-42-31-420-008

- (5) Make sure that the adjustment sleeve [10] and arm assembly [3] touch the bolt [7] and washer [8] (View A-A, Figure 401).
 - (a) Make sure that there is no clearance.

SUBTASK 30-42-31-420-007

- (6) Install the lockwire [6] through the hole in the bolt [5], hole in the arm assembly [3], and hole in the bolt [7] to secure the bolt [5] and bolt [7].
 - (a) Use MS20995C32 lockwire, G01048 (preferred), or cable assembly, SPL-22466 (alternate), with double twist method.

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J. Put the Airplane Back to Its Usual Condition

SUBTASK 30-42-31-860-014

- (1) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	1	C00055	ANTI-ICE & RAIN WSHLD WIPER RIGHT
B	3	C00054	ANTI-ICE & RAIN WSHLD WIPER LEFT
C	1	C00523	HEATERS CAPT PITOT
D	5	C00525	HEATERS F/O PITOT
D	6	C00524	HEATERS AUX PITOT

F/O Electrical System Panel, P6-5

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	8	C00394	WINDOW HEAT POWER RIGHT FRONT
B	9	C00392	WINDOW HEAT POWER LEFT SIDE
B	20	C00393	WINDOW HEAT POWER RIGHT SIDE
B	21	C00228	WINDOW HEAT POWER LEFT FRONT

————— END OF TASK —————

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WINDSHIELD HYDROPHOBIC COATING - MAINTENANCE PRACTICES

1. General

A. This procedure has this task:

- (1) Hydrophobic Coating Maintenance Practices

TASK 30-43-00-800-801

2. Hydrophobic Coating Maintenance Practices

A. **General**

- (1) The maintenance procedures for the hydrophobic coating are in the hydrophobic coating master kit, COM-1806, or hydrophobic coating single kit, COM-21726.
- (2) The windshield wipers are the certified rain removal system. The hydrophobic coating is an enhancement and is not required for dispatch. However, Boeing recommends that the coating be maintained.

B. **Tools/Equipment**

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
COM-1806	Master Kit - Hydrophobic Coating Part #: 7759-V Supplier: U1610 Part #: DSS1020X Supplier: 53117 Part #: DSS4020 Supplier: 53117 Part #: DSS4020X Supplier: 53117 Part #: DSS4040 Supplier: 53117 Opt Part #: 7137-V Supplier: U1610 Opt Part #: DSS1020 Supplier: 53117 Opt Part #: DSS1040 Supplier: 53117
COM-21726	Single Kit - Hydrophobic Coating Part #: DSS4100 Supplier: 53117 Part #: DSS4100X Supplier: 53117 Opt Part #: DSS0100 Supplier: 53117

C. **Prepare for the Maintenance Practices**

SUBTASK 30-43-00-860-001



OPEN THE WINDOW HEAT CONTROL UNIT CIRCUIT BREAKERS. INJURIES TO PERSONNEL CAN OCCUR AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (1) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-5

Row	Col	Number	Name
B	8	C00394	WINDOW HEAT POWER RIGHT FRONT
B	9	C00392	WINDOW HEAT POWER LEFT SIDE
B	20	C00393	WINDOW HEAT POWER RIGHT SIDE
B	21	C00228	WINDOW HEAT POWER LEFT FRONT

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SUBTASK 30-43-00-010-001

- (2) Use a stand to get access to the windshield.

D. Hydrophobic Coating Maintenance Practices

SUBTASK 30-43-00-800-001

- (1) Use the procedure in the hydrophobic coating master kit, COM-1806, or hydrophobic coating single kit, COM-21726, to do these maintenance tasks:
- (a) Clean the hydrophobic coating.
 - (b) Assess the efficiency of the hydrophobic coating.
 - (c) Re-apply the hydrophobic coating.

E. Put the Airplane Back to Its Usual Condition

SUBTASK 30-43-00-860-002

- (1) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-5

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	8	C00394	WINDOW HEAT POWER RIGHT FRONT
B	9	C00392	WINDOW HEAT POWER LEFT SIDE
B	20	C00393	WINDOW HEAT POWER RIGHT SIDE
B	21	C00228	WINDOW HEAT POWER LEFT FRONT

————— **END OF TASK** —————

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WATER AND DRAIN ANTI-ICE SYSTEM - MAINTENANCE PRACTICES

1. General

A. This procedure has these tasks:

- (1) Water and Drain Operation with 115 Volts on the Ground
- (2) Drain Heaters - Deactivation
- (3) Drain Heaters - Activation

TASK 30-71-00-800-801

2. Water and Drain Operation with 115 Volts on the Ground

A. **General**

- (1) This task should only be used when the 28 volt operation will not remove ice from the drain masts.
- (2) 28 volts AC is normally used to provide protection from icing for the water and drain system while the airplane is on the ground. 115 volt AC is used while the airplane is in the air.

B. **References**

Reference	Title
12-33-01-600-801	Cold Weather Maintenance Procedure (P/B 301)
32-09-00-840-801	Prepare to Put the Airplane in the Air Mode (P/B 201)
32-09-00-860-801	Put the Airplane in the Air Mode (P/B 201)
32-09-00-860-802	Return the Airplane to the Ground Mode (P/B 201)

C. **Location Zones**

Zone	Area
100	Lower Half of Fuselage
211	Flight Compartment - Left
212	Flight Compartment - Right

D. **Procedure**

SUBTASK 30-71-00-910-001

- (1) Do this task: Cold Weather Maintenance Procedure, TASK 12-33-01-600-801.

SUBTASK 30-71-00-020-001



WARNING

OBEY THE PROCEDURE THAT PUTS THE AIRPLANE IN THE AIR MODE. IF YOU DO THE PROCEDURE INCORRECTLY, INJURIES TO PERSONNEL, AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (2) Prepare to put the airplane in the air mode (TASK 32-09-00-840-801).

SUBTASK 30-71-00-020-002

- (3) Put the airplane in the air mode (TASK 32-09-00-860-801).

SUBTASK 30-71-00-020-003

- (4) Make sure that this circuit breaker is closed:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	4	C00700	HEATERS DRAIN MAST AIR

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NOTE: This circuit breaker is opened to prepare for put the aircraft in Air Mode Simulation. It must be closed for the operation of the drain mast in the air (high heat) mode.

E. Put the Airplane Back to It's Usual Condition

NOTE: Do this procedure when 115 Volt operation of the anti-ice system is no longer needed.

SUBTASK 30-71-00-840-001

- (1) Put the airplane in the ground mode (TASK 32-09-00-860-802).

————— **END OF TASK** —————

TASK 30-71-00-040-801

3. Drain Heaters - Deactivation

A. General

- (1) This task will deactivate the power to the drain heaters.

B. References

Reference	Title
25-27-15-000-801	Carpet Removal (P/B 401)
25-27-15-400-801	Carpet - Installation (P/B 401)
25-27-21-000-801	Entry and Service Area Floor Covering - Removal (P/B 401)
25-27-21-400-801	Entry and Service Area Floor Covering - Installation (P/B 401)
30-71-00-990-802	Figure: Drain and Water Supply Line Heater Access (P/B 501)
38-31-01-000-801	Forward Drain Mast Removal (P/B 401)
50-10-02-000-801	Cargo Compartment Sidewall Liners Removal (P/B 401)
50-10-02-400-801	Cargo Compartment Sidewall Liners Installation (P/B 401)
50-10-04-000-801	Cargo Compartment Floor Panel Removal (P/B 401)
50-10-04-400-801	Cargo Compartment Floor Panel Installation (P/B 401)
50-11-02-000-801	Forward Cargo Compartment Aft Bulkhead Liner Removal (P/B 401)
50-11-02-400-801	Forward Cargo Compartment Aft Bulkhead Liner Installation (P/B 401)
50-12-02-000-801	Aft Cargo Compartment Aft Bulkhead Liner Removal (P/B 401)
50-12-02-400-801	Aft Cargo Compartment Aft Bulkhead Liner Installation (P/B 401)
50-12-03-000-801	Waste Tank Enclosure Panel Removal (P/B 401)
50-12-03-400-801	Waste Tank Enclosure Panel Installation (P/B 401)
SSM 30-71-11	D000534475

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
COM-1572	Thermometer - Infrared, Intrinsically Safe Part #: 568 Ex Supplier: 89536 Opt Part #: DHS24XC-FM Supplier: 08086 Opt Part #: DHS24XF-FM Supplier: 08086 Opt Part #: EX-MP4 A Supplier: 3GT36 Opt Part #: IR-16L3 IS Supplier: 75037

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Reference	Description
COM-2531	Clamp-On- Current Meter Part #: 324 Supplier: 89536 Part #: 374 Supplier: 89536 Part #: LH41A Supplier: 0JV05 Opt Part #: 321 Supplier: 89536 Opt Part #: 322 Supplier: 89536 Opt Part #: MODEL 33 Supplier: 89536 Opt Part #: MODEL 36 Supplier: 89536

D. Location Zones

Zone	Area
143	Area Below Aft Cargo Compartment - Left
144	Area Below Aft Cargo Compartment - Right

E. Procedure

SUBTASK 30-71-00-020-004



WARNING

BE CAREFUL WHEN YOU DO WORK AROUND ENERGIZED PANELS. HIGH VOLTAGES CAN KILL YOU.

- (1) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
D	18	C01463	WASTE/WTR LINE HEATERS
E	3	C00234	HEATERS DRAIN MAST GND
E	4	C00700	HEATERS DRAIN MAST AIR
E	5	C00233	HEATERS DRAIN
E	18	C01473	HOSE HEATERS

F. Drain Heaters - Tryout

NOTE: This tryout is to make sure that the power to the drain heaters is in a zero energy state.

SUBTASK 30-71-00-020-005

- (1) Get access to the heater and controlling thermostat.
 - (a) Use the schematic (SSM 30-71-11) to find the location of the heater and thermostat.
 - (b) Use Figure 30-71-00-990-802 to identify access requirements.
 - (c) Do these tasks to get access to the heater and thermostat.
 - 1) Remove the floor panel in the cargo compartment (TASK 50-10-04-000-801).
 - 2) Remove the aft bulkhead liner in the forward cargo compartment (TASK 50-11-02-000-801).
 - 3) Remove the aft bulkhead liner in the aft cargo compartment (TASK 50-12-02-000-801).
 - 4) Remove the sidewall liners in the cargo compartment (TASK 50-10-02-000-801).
 - 5) Remove the waste tank enclosure panel (TASK 50-12-03-000-801).
 - 6) Remove the carpet (TASK 25-27-15-000-801).
 - 7) Remove the floor covering in the entry and service area (TASK 25-27-21-000-801).

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SUBTASK 30-71-00-210-001



WARNING

DO NOT TOUCH THE DRAIN MASTS UNTIL THEY BECOME COOL. DRAIN MASTS BECOME VERY HOT. INJURIES TO PERSONNEL CAN OCCUR.

- (2) Make sure that the applicable drain heater does not become warm.
 - (a) You can use an Infrared Thermometer, COM-1572, or other temperature measuring device, to make sure that the temperature is less than 10 degrees F (6 degrees C) warmer than the ambient air temperature.
 - (b) As an alternative, you can use a clamp-on current meter, COM-2531, or equivalent, to measure the current to the drain heater.
 - 1) Make sure that there is no current to the drain heater.
 - 2) Refer to this task: Forward Drain Mast Removal, TASK 38-31-01-000-801, for details to get access to the heater wiring.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 30-71-00-420-001

- (1) Install the interior furnishings as necessary.

SUBTASK 30-71-00-420-002

- (2) Install the floor covering in the entry and service area (TASK 25-27-21-400-801).

SUBTASK 30-71-00-420-003

- (3) Install the carpet (TASK 25-27-15-400-801).

SUBTASK 30-71-00-420-004

- (4) Install the waster tank enclosure panel (TASK 50-12-03-400-801).

SUBTASK 30-71-00-420-005

- (5) Install the sidewall liners in the cargo compartment (TASK 50-10-02-400-801).

SUBTASK 30-71-00-420-006

- (6) Install the aft bulkhead liner in the aft cargo compartment (TASK 50-12-02-400-801).

SUBTASK 30-71-00-420-007

- (7) Install the aft bulkhead liner in the forward cargo compartment (TASK 50-11-02-400-801).

SUBTASK 30-71-00-420-008

- (8) Install the floor panel in the cargo compartment (TASK 50-10-04-400-801).

————— END OF TASK —————

EFFECTIVITY
SIA ALL

30-71-00

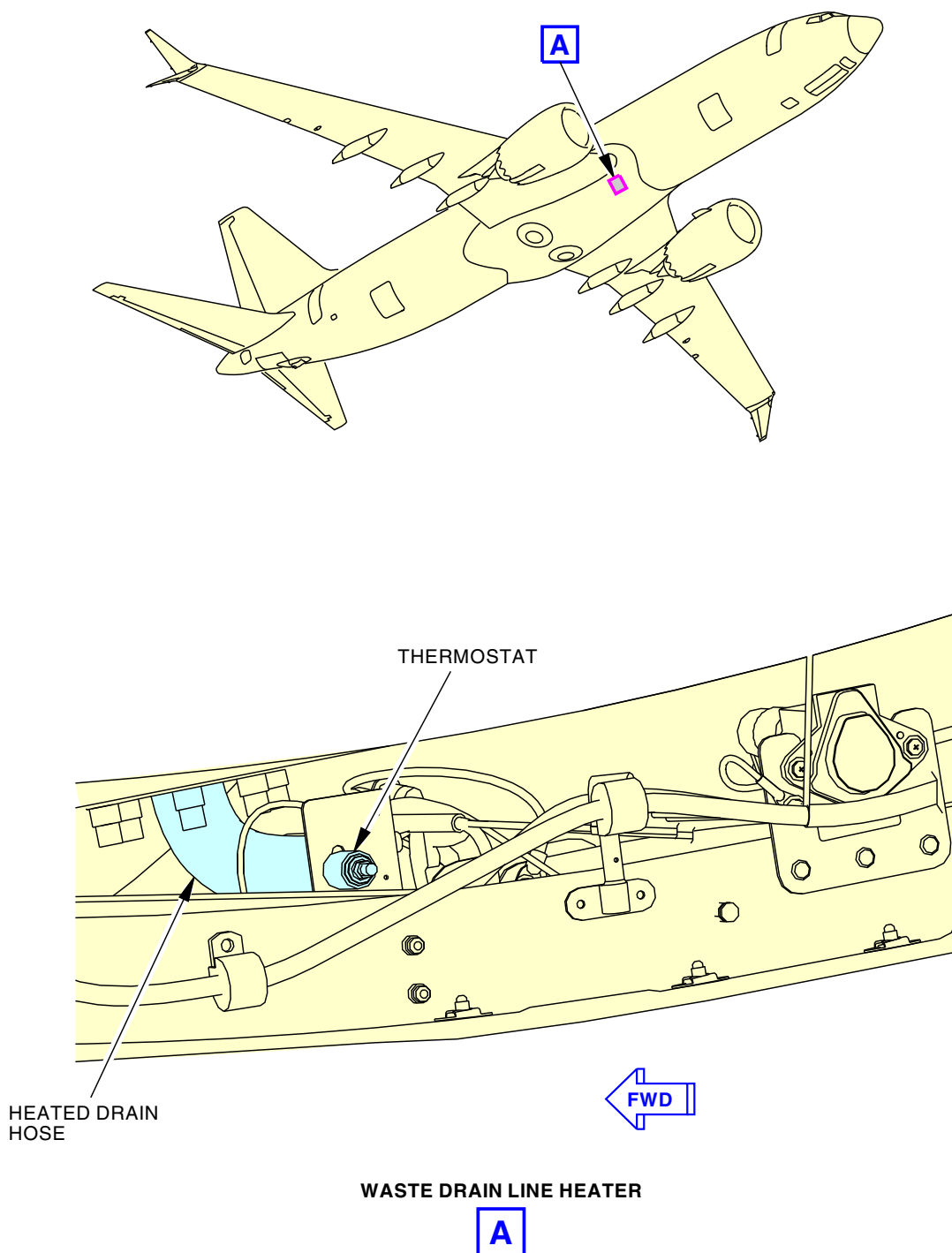
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Drain and Water Supply Line Heater Access
Figure 201/30-71-00-990-801 (Sheet 1 of 3)

EFFECTIVITY
SIA ALL

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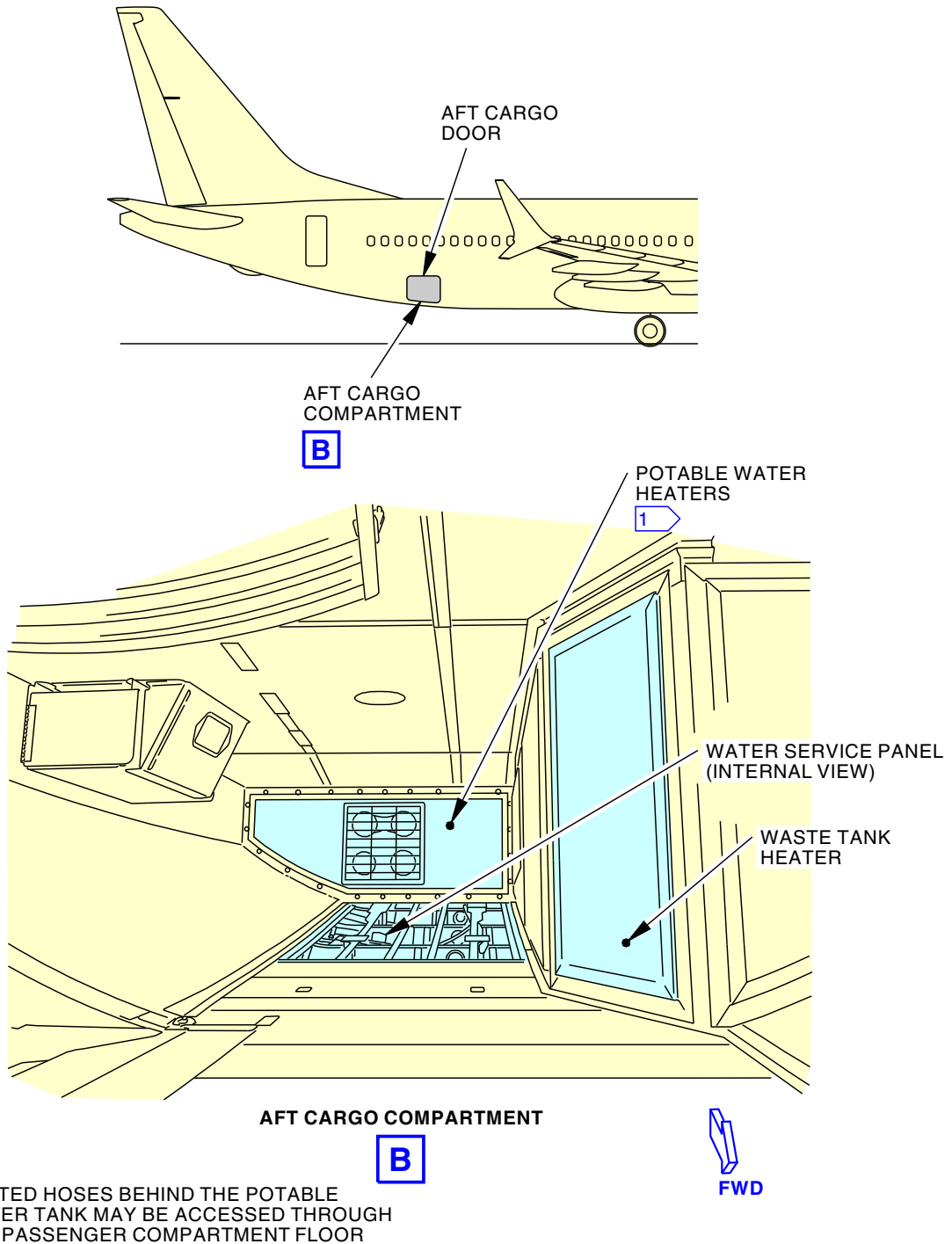
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2413932 S00061533846_V1

Drain and Water Supply Line Heater Access
Figure 201/30-71-00-990-801 (Sheet 2 of 3)

EFFECTIVITY
SIA ALL

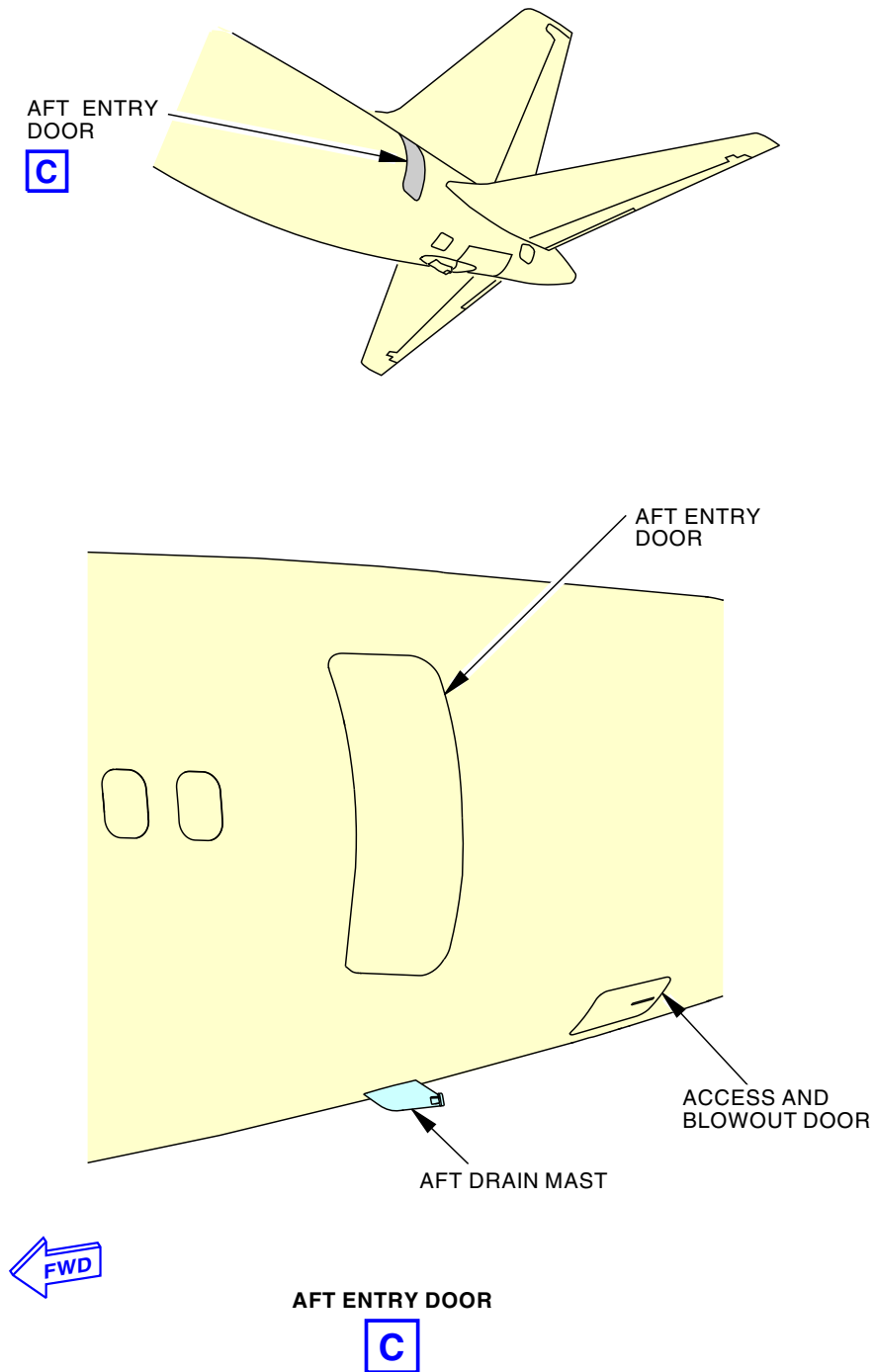
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BOEING
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Drain and Water Supply Line Heater Access
Figure 201/30-71-00-990-801 (Sheet 3 of 3)

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TASK 30-71-00-440-801

4. Drain Heaters - Activation

(Figure 201)

A. General

- (1) This task will activate the power to the drain heaters.

B. Location Zones

Zone	Area
143	Area Below Aft Cargo Compartment - Left
144	Area Below Aft Cargo Compartment - Right

C. Procedure

SUBTASK 30-71-00-420-009



BE CAREFUL WHEN YOU DO WORK AROUND ENERGIZED PANELS. HIGH VOLTAGES CAN KILL YOU.

- (1) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
D	18	C01463	WASTE/WTR LINE HEATERS
E	3	C00234	HEATERS DRAIN MAST GND
E	4	C00700	HEATERS DRAIN MAST AIR
E	5	C00233	HEATERS DRAIN
E	18	C01473	HOSE HEATERS

————— **END OF TASK** —————

EFFECTIVITY
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DRAIN AND WATER SUPPLY LINE HEAT - ADJUSTMENT/TEST

1. **General**

- A. This procedure has these tasks:
- (1) Drain Mast Heater Ground and Air Mode Test
 - (2) Water and Drain Heater Tests

TASK 30-71-00-720-801

2. **Drain Mast Heater Ground and Air Mode Test**

A. References

Reference	Title
24-22-00-860-803	Supply External Power (P/B 201)
32-09-00-840-801	Prepare to Put the Airplane in the Air Mode (P/B 201)
32-09-00-860-801	Put the Airplane in the Air Mode (P/B 201)
32-09-00-860-802	Return the Airplane to the Ground Mode (P/B 201)
38-31-01-000-801	Forward Drain Mast Removal (P/B 401)

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
COM-1572	Thermometer - Infrared, Intrinsically Safe Part #: 568 Ex Supplier: 89536 Opt Part #: DHS24XC-FM Supplier: 08086 Opt Part #: DHS24XF-FM Supplier: 08086 Opt Part #: EX-MP4 A Supplier: 3GT36 Opt Part #: IR-16L3 IS Supplier: 75037
COM-2531	Clamp-On- Current Meter Part #: 324 Supplier: 89536 Part #: 374 Supplier: 89536 Part #: LH41A Supplier: 0JV05 Opt Part #: 321 Supplier: 89536 Opt Part #: 322 Supplier: 89536 Opt Part #: MODEL 33 Supplier: 89536 Opt Part #: MODEL 36 Supplier: 89536

C. Location Zones

Zone	Area
143	Area Below Aft Cargo Compartment - Left
191	Lower Wing-To-Body Fairing - Forward of Wing Box

D. Prepare for the Procedure

SUBTASK 30-71-00-860-001

- (1) Make sure to supply external power (TASK 24-22-00-860-803).

SUBTASK 30-71-00-861-001

- (2) Make sure the CAB/UTIL switch is set to the ON position.

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E. Check the Ground Mode Operation of the Drain Mast Heaters

SUBTASK 30-71-00-720-001



WARNING

DO NOT TOUCH THE DRAIN MAST HEATER WHEN HOT. INJURY TO PERSONNEL AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (1) Make sure that the forward and aft drain masts become warm.
 - (a) You can use an Infrared Thermometer, COM-1572 or other temperature measuring device to make sure the drain mast is at least 10°F (-12°C) warmer than the ambient air temperature.
 - (b) As an alternative, you can use a clamp-on current meter, COM-2531 or equivalent to measure the current to the drain mast heater.
 - 1) Current to the drain mast indicates that the heater is operating.
 - 2) To access the heater wiring, do this task: Forward Drain Mast Removal, TASK 38-31-01-000-801.

SUBTASK 30-71-00-860-002



WARNING

OBEY THE PROCEDURE THAT PUTS THE AIRPLANE IN THE AIR MODE. IF YOU DO THE PROCEDURE INCORRECTLY, INJURIES TO PERSONNEL, AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (2) Prepare to put the airplane in the air mode (TASK 32-09-00-840-801).

SUBTASK 30-71-00-860-003

- (3) Put the airplane in the air mode (TASK 32-09-00-860-801).

SUBTASK 30-71-00-860-004

- (4) Make sure that this circuit breaker is closed:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	4	C00700	HEATERS DRAIN MAST AIR

SUBTASK 30-71-00-720-002



WARNING

DO NOT TOUCH THE DRAIN MAST HEATER WHEN HOT. INJURY TO PERSONNEL AND DAMAGE TO EQUIPMENT CAN OCCUR.



CAUTION

DO NOT OPERATE THE DRAIN MAST HEATERS IN AIR MODE FOR MORE THAN FIVE MINUTES. DAMAGE TO THE DRAIN MAST HEATERS CAN OCCUR.

- (5) Make sure that the forward and aft drain masts become hot.
 - (a) Use an Infrared Thermometer, COM-1572 or other temperature measuring device to make sure the drain mast is at least 10°F (-12°C) warmer than the ground mode test temperature.
 - (b) Use a clamp-on current meter, COM-2531 or equivalent to measure the current to the drain mast heater as an alternate.

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- 1) Make sure there is greater current to the heater than in the ground mode.

SUBTASK 30-71-00-862-001

- (6) Make sure the CAB/UTIL switch is set to the OFF position.

F. Put the Airplane Back to its Usual Condition

SUBTASK 30-71-00-860-005

- (1) Put the airplane back to the ground mode (TASK 32-09-00-860-802).

————— **END OF TASK** —————

TASK 30-71-00-720-802

3. Water and Drain Heater Tests

(Figure 501)

A. References

Reference	Title
24-22-00-860-803	Supply External Power (P/B 201)
25-27-15-000-801	Carpet Removal (P/B 401)
25-27-15-400-801	Carpet - Installation (P/B 401)
25-27-21-000-801	Entry and Service Area Floor Covering - Removal (P/B 401)
25-27-21-400-801	Entry and Service Area Floor Covering - Installation (P/B 401)
50-10-02-000-801	Cargo Compartment Sidewall Liners Removal (P/B 401)
50-10-02-400-801	Cargo Compartment Sidewall Liners Installation (P/B 401)
50-10-04-000-801	Cargo Compartment Floor Panel Removal (P/B 401)
50-10-04-400-801	Cargo Compartment Floor Panel Installation (P/B 401)
50-11-02-000-801	Forward Cargo Compartment Aft Bulkhead Liner Removal (P/B 401)
50-11-02-400-801	Forward Cargo Compartment Aft Bulkhead Liner Installation (P/B 401)
50-12-02-000-801	Aft Cargo Compartment Aft Bulkhead Liner Removal (P/B 401)
50-12-02-400-801	Aft Cargo Compartment Aft Bulkhead Liner Installation (P/B 401)
50-12-03-000-801	Waste Tank Enclosure Panel Removal (P/B 401)
50-12-03-400-801	Waste Tank Enclosure Panel Installation (P/B 401)
SSM 30-71-11	D000534475
WDM 30-71-11	D000534476

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
COM-1572	Thermometer - Infrared, Intrinsically Safe Part #: 568 Ex Supplier: 89536 Opt Part #: DHS24XC-FM Supplier: 08086 Opt Part #: DHS24XF-FM Supplier: 08086 Opt Part #: EX-MP4 A Supplier: 3GT36 Opt Part #: IR-16L3 IS Supplier: 75037

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(Continued)

Reference	Description
COM-2531	Clamp-On- Current Meter Part #: 324 Supplier: 89536 Part #: 374 Supplier: 89536 Part #: LH41A Supplier: 0JV05 Opt Part #: 321 Supplier: 89536 Opt Part #: 322 Supplier: 89536 Opt Part #: MODEL 33 Supplier: 89536 Opt Part #: MODEL 36 Supplier: 89536

C. Consumable Materials

Reference	Description	Specification
G02319	Spray - Freeze - Miller-Stephenson MS-242N	
G02320	Ice - Crushed	

D. Location Zones

Zone	Area
123	Forward Cargo Compartment - Left
143	Area Below Aft Cargo Compartment - Left
191	Lower Wing-To-Body Fairing - Forward of Wing Box

E. Prepare for the Procedure

SUBTASK 30-71-00-860-006

- (1) Make sure to supply external power (TASK 24-22-00-860-803).

F. Procedure

NOTE: You should not feel the heater as a procedure to measure for heat.

SUBTASK 30-71-00-010-001

- (1) Get access to the heater and controlling thermostat (if applicable).
 - (a) Use the schematic (SSM 30-71-11) to determine the location of the heater and thermostat.
 - (b) Identify access requirements (Figure 501).
 - (c) Do these tasks to access the heater and thermostat.
 - 1) Remove the carpet (TASK 25-27-15-000-801).
 - 2) Remove the floor covering in the entry and service area (TASK 25-27-21-000-801).
 - 3) Remove the floor panel in the cargo compartment (TASK 50-10-04-000-801).
 - 4) Remove the aft bulkhead liner in the forward cargo compartment (TASK 50-11-02-000-801).
 - 5) Remove the aft bulkhead liner in the aft cargo compartment (TASK 50-12-02-000-801).
 - 6) Remove the sidewall liners in the cargo compartment (TASK 50-10-02-000-801).
 - 7) Remove the waste tank enclosure panel (TASK 50-12-03-000-801).

SUBTASK 30-71-00-720-003

- (2) If the heater is controlled by a thermostat apply the MS-242N spray, G02319, ice, G02320, or dry ice to decrease the temperature of the thermostat, (WDM 30-71-11).

SUBTASK 30-71-00-720-004

- (3) Make sure the heater gets warm.

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- (a) Use a Infrared Thermometer, COM-1572 or other temperature measuring device to make sure there is an increase of at least 10°F (-12°C) above the ambient air temperature.
- (b) Use a clamp-on current meter, COM-2531 or equivalent to measure the current to the heater as an alternate.
- (c) Current to the heater indicates that the heater is operating.

G. Put the Airplane Back to its Usual Condition

SUBTASK 30-71-00-410-001

- (1) Close the access panels or doors for the heater and thermostat:
 - (a) Install the floor panel in the cargo compartment (TASK 50-10-04-400-801).
 - (b) Install the sidewall liners in the cargo compartment (TASK 50-10-02-400-801).
 - (c) Install the aft bulkhead liner in the forward cargo compartment (TASK 50-11-02-400-801).
 - (d) Install the aft bulkhead liner in the aft cargo compartment (TASK 50-12-02-400-801).
 - (e) Install the waste tank enclosure panel (TASK 50-12-03-400-801).
 - (f) Install the carpet (TASK 25-27-15-400-801).
 - (g) Install the floor covering in the entry and service area (TASK 25-27-21-400-801).

———— **END OF TASK** ————

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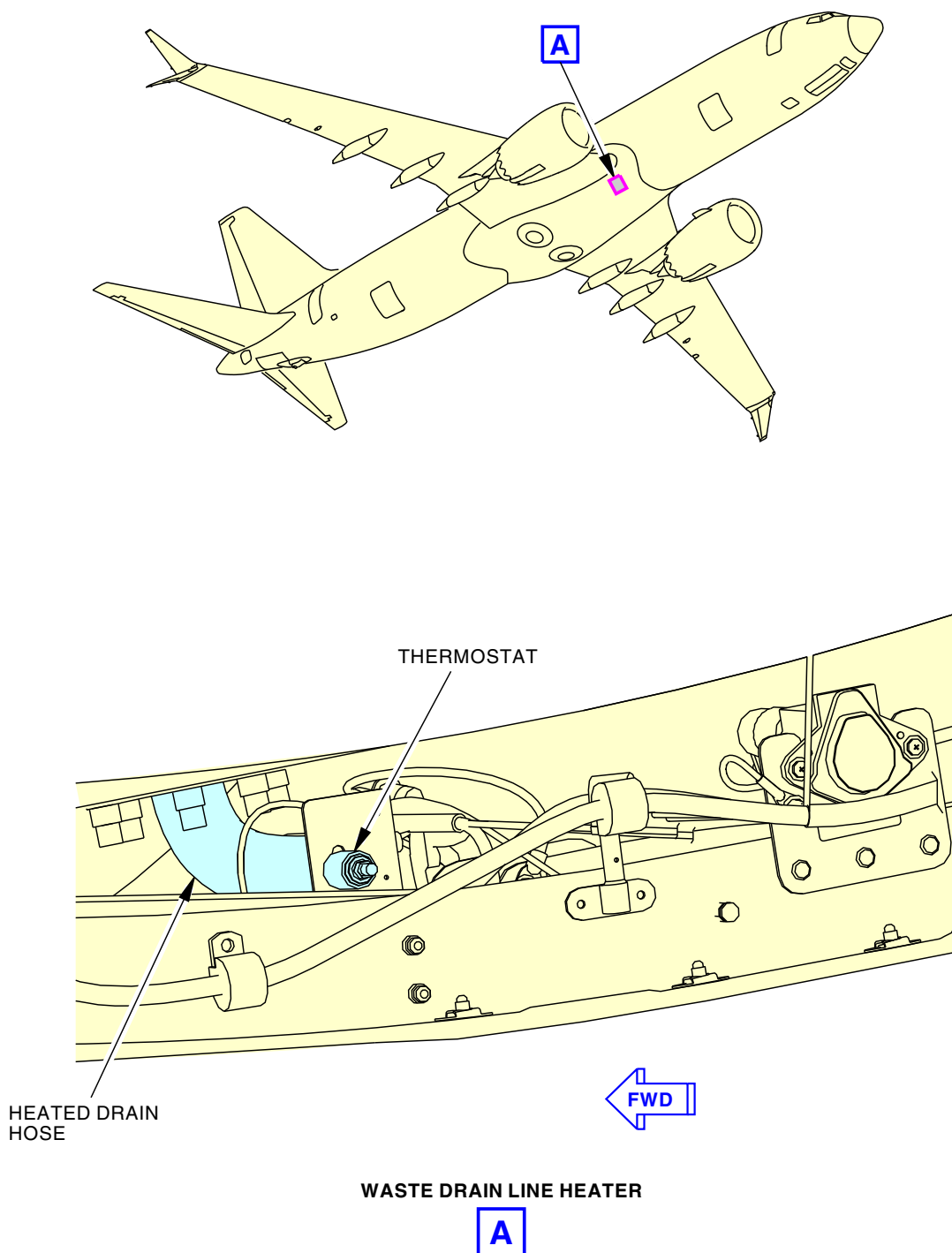
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Drain and Water Supply Line Heater Access
Figure 501/30-71-00-990-802 (Sheet 1 of 3)

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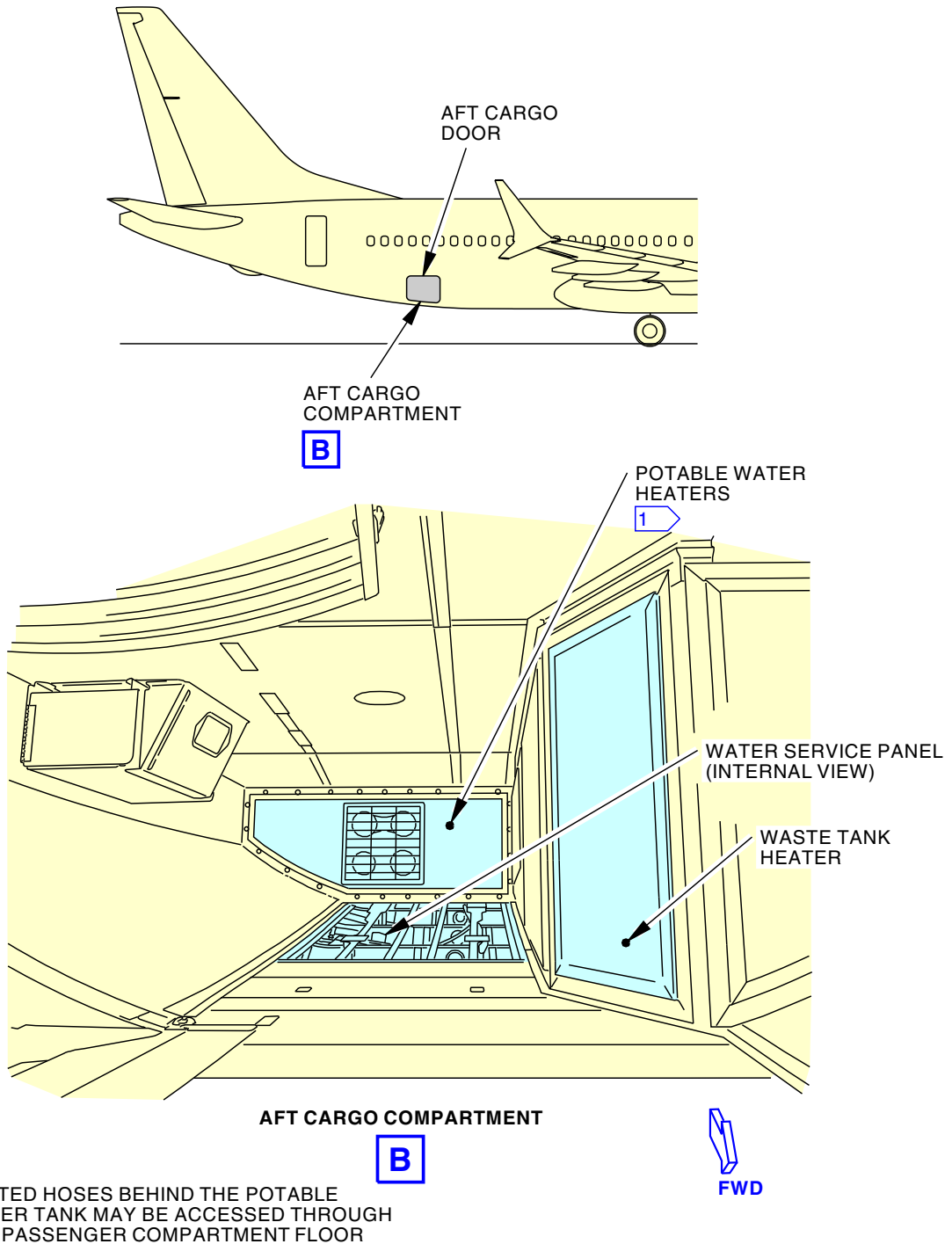
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Drain and Water Supply Line Heater Access
Figure 501/30-71-00-990-802 (Sheet 2 of 3)

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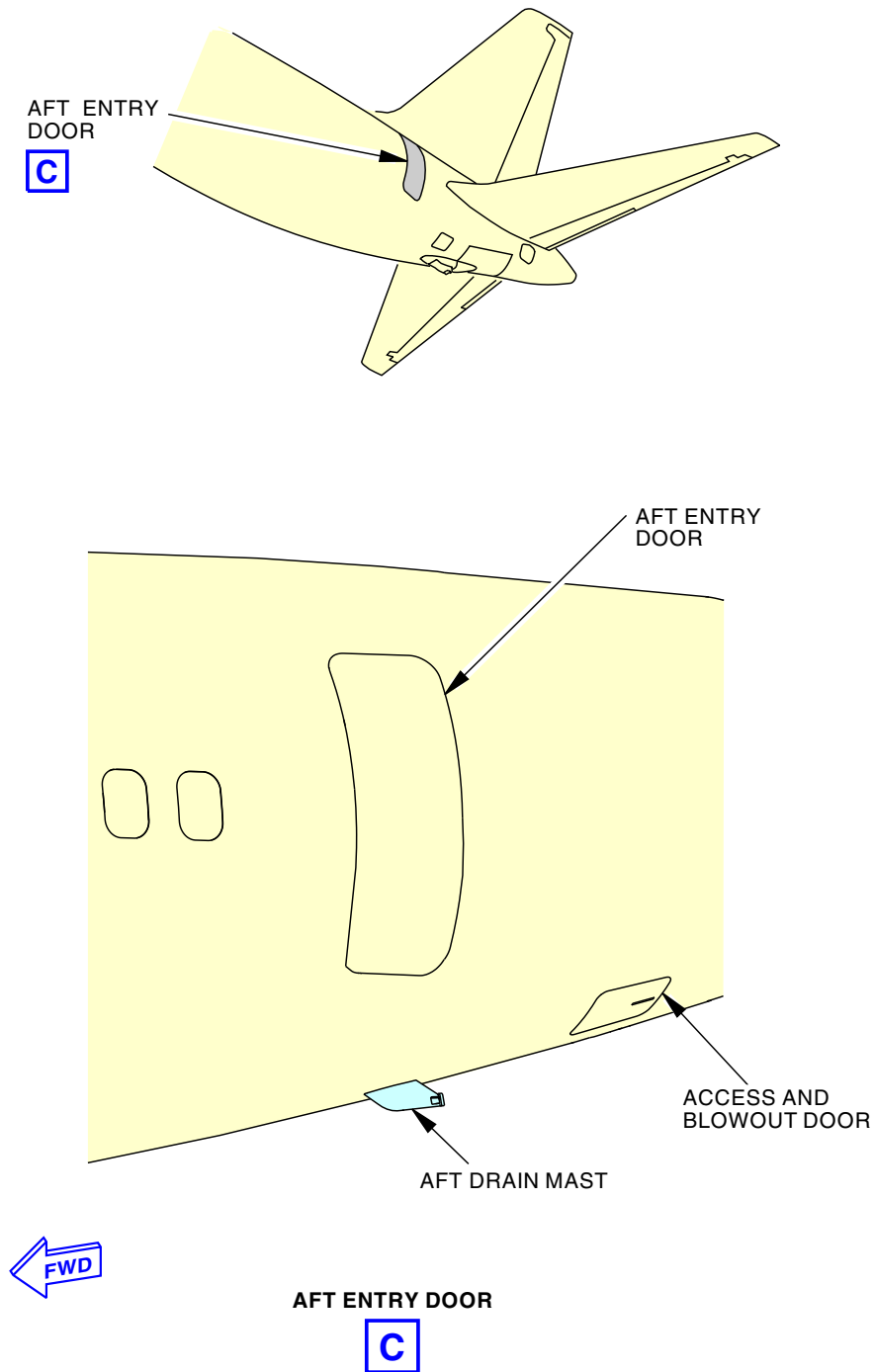
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Drain and Water Supply Line Heater Access
Figure 501/30-71-00-990-802 (Sheet 3 of 3)

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POTABLE WATER FILL FITTING HEATER - REMOVAL/INSTALLATION

1. **General**

- A. This procedure has these tasks:
- (1) Potable Water Fill Fitting Heater Removal
 - (2) Potable Water Fill Fitting Heater Installation

TASK 30-71-01-000-801

2. **Potable Water Fill Fitting Heater Removal**

(Figure 401)

A. **General**

- (1) This task has instructions to remove the Potable Water Fill Fitting Heater.

B. **References**

Reference	Title
50-10-04-000-801	Cargo Compartment Floor Panel Removal (P/B 401)

C. **Location Zones**

Zone	Area
117	Electrical and Electronics Compartment - Left
142	Aft Cargo Compartment - Right
822	Aft Cargo Door

D. **Access Panels**

Number	Name/Location
117A	Electronic Equipment Access Door
146AR	Water Service Door
822	Aft Cargo Door

E. **Prepare for the Removal**

SUBTASK 30-71-01-860-001

- (1) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
D	18	C01463	WASTE/WTR LINE HEATERS
E	5	C00233	HEATERS DRAIN

SUBTASK 30-71-01-010-004

- (2) To get access to the P91 panel, open this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

SUBTASK 30-71-01-860-006



WHEN YOU OPEN THE P91 AND P92 PANELS, MAKE SURE THAT THE OUTER DOOR STAYS AS OPEN AS POSSIBLE. IF THE OUTER DOOR TURNS IN, THE ATTACHED DOOR COMPONENTS COULD TOUCH THE INNER DOOR COMPONENTS. THIS CAN CAUSE AN ARC CONDITION WHEN YOU SUPPLY POWER. IF YOU DO NOT OBEY, DAMAGE TO EQUIPMENT AND INJURY TO PERSONNEL CAN OCCUR.

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(WARNING PRECEDES)



DO NOT TOUCH THE CONDUCTORS IN THE P91 AND P92 PANELS. BE CAREFUL WHEN YOU GET ACCESS TO THE CIRCUIT BREAKERS ON THE INNER SIDE OF THE P91 AND P92 PANELS (ROW F). IF IT IS POSSIBLE, REMOVE AIRPLANE ELECTRICAL POWER FIRST. THE P91 AND P92 PANELS HAVE HIGH VOLTAGES AND CURRENTS. ELECTRICAL VOLTAGE AND CURRENT CAN KILL YOU OR CAUSE INJURIES.

- (3) Open this circuit breaker and install safety tag:

Power Distribution Panel Number 1, P91

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	11	C00873	POT WATER COMPRESSOR

SUBTASK 30-71-01-010-001

- (4) Open this access panel:

<u>Number</u>	<u>Name/Location</u>
146AR	Water Service Door

SUBTASK 30-71-01-040-001

- (5) Pull the handle for the potable water fill valve to the OPEN position.

NOTE: This handle is on the water service panel.

SUBTASK 30-71-01-010-002

- (6) Open this access panel:

<u>Number</u>	<u>Name/Location</u>
822	Aft Cargo Door

SUBTASK 30-71-01-010-003

- (7) Remove the floor panel above the water service panel (TASK 50-10-04-000-801).

F. Potable Water Fill Fitting Heater Removal

SUBTASK 30-71-01-020-001

- (1) Disconnect the heated hose from the fill fitting heater [1].

SUBTASK 30-71-01-020-002

- (2) Remove the bolts [4] that attach the fill fitting and fill fitting heater [1] to the structure.

SUBTASK 30-71-01-020-003

- (3) Remove the thermal spacers [2], o-ring [3], and fill fitting heater [1].

————— **END OF TASK** —————

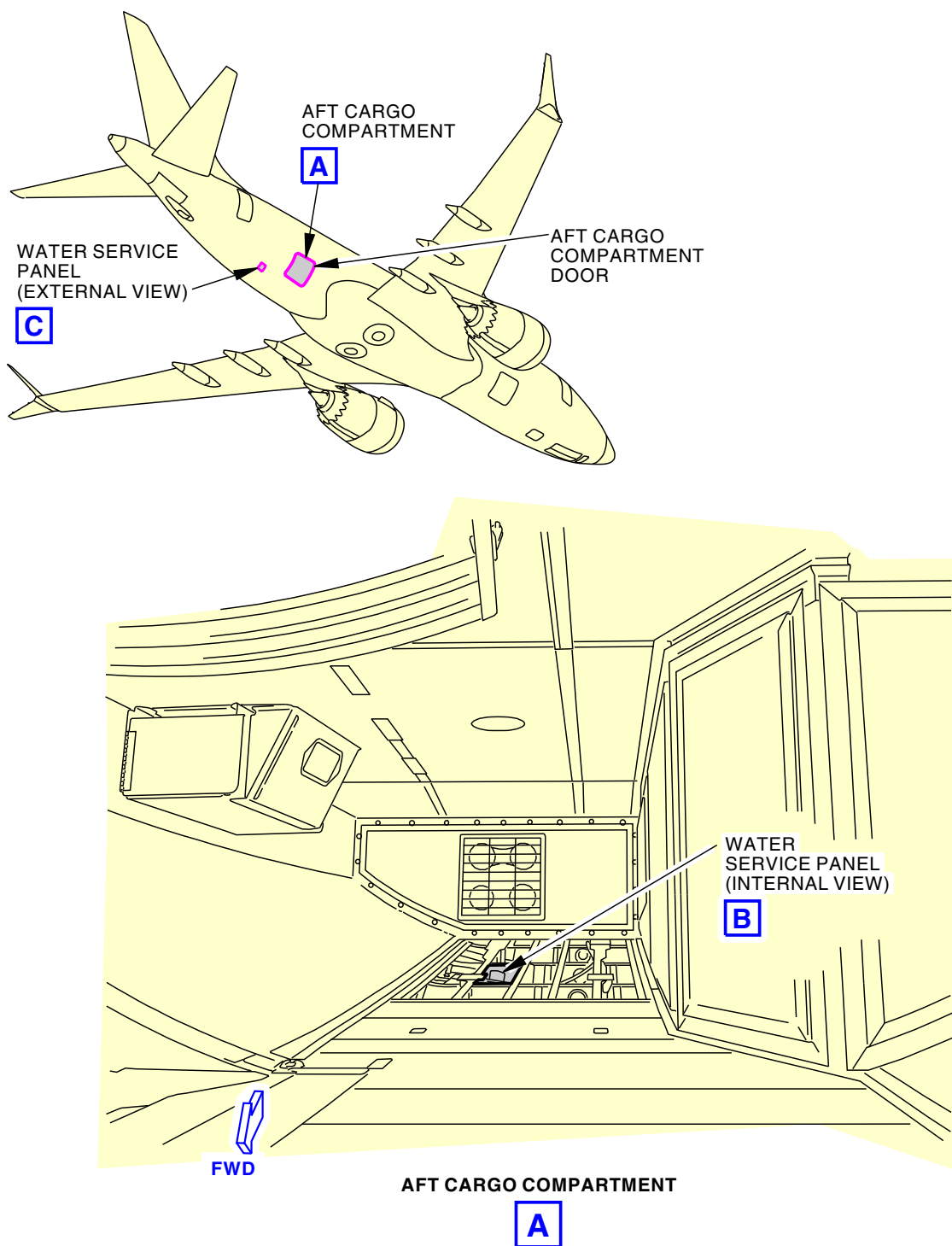
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Potable Water Fill Fitting Heater Installation
Figure 401/30-71-01-990-801 (Sheet 1 of 2)

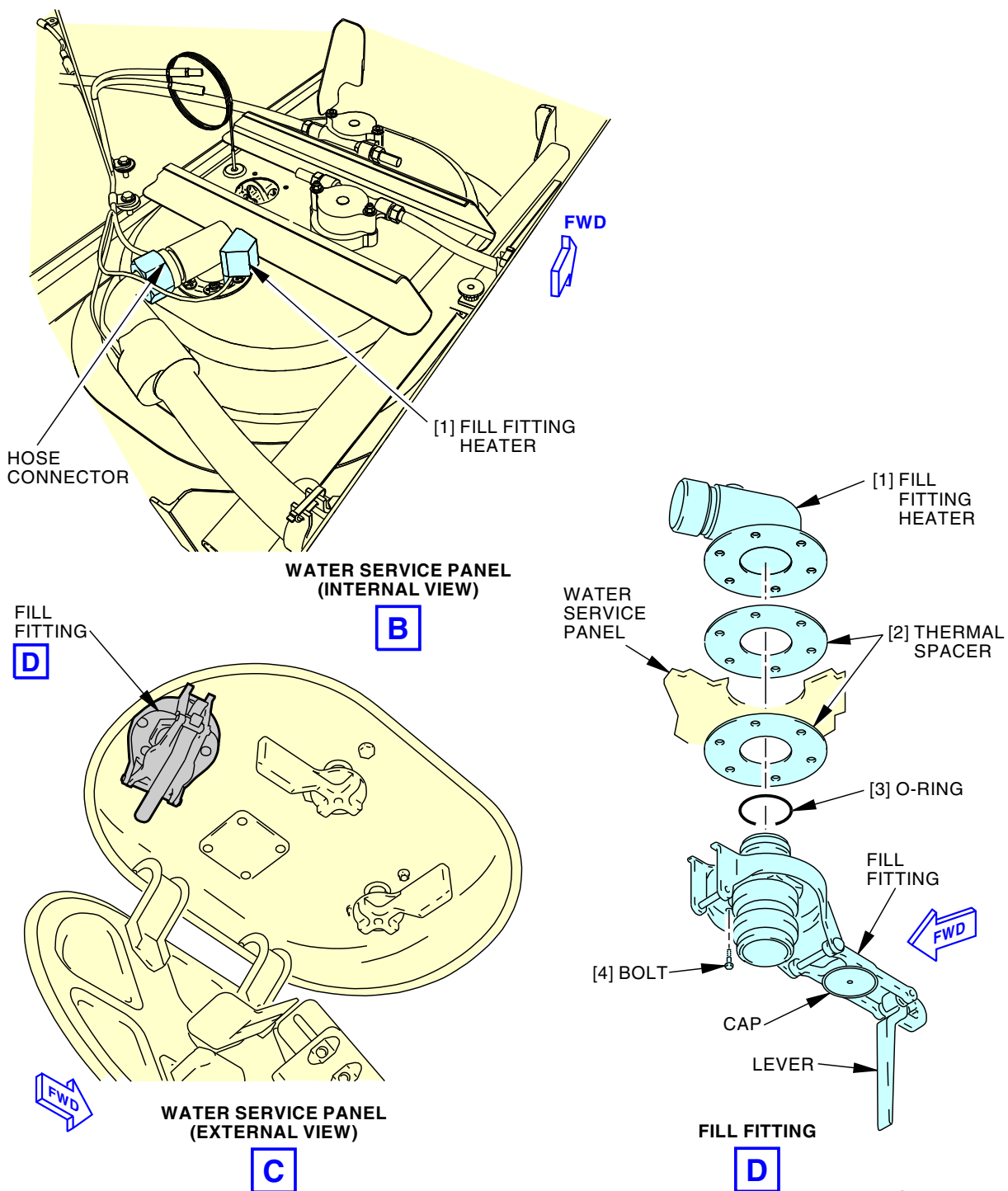
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Potable Water Fill Fitting Heater Installation
Figure 401/30-71-01-990-801 (Sheet 2 of 2)

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TASK 30-71-01-400-801

3. **Potable Water Fill Fitting Heater Installation**

(Figure 401)

A. General

(1) This task has instructions to install the Potable Water Fill Fitting Heater.

B. References

Reference	Title
12-14-00-600-802	Potable Water Tank - Fill (P/B 301)
38-10-00-600-801	Potable Water System Disinfectant (P/B 201)
50-10-04-400-801	Cargo Compartment Floor Panel Installation (P/B 401)

C. Consumable Materials

Reference	Description	Specification
A00247	Sealant - Pressure And Environmental - Chromate Type	BMS5-95

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Fill fitting heater	30-71-01-01-050	SIA ALL

E. Location Zones

Zone	Area
117	Electrical and Electronics Compartment - Left
142	Aft Cargo Compartment - Right
822	Aft Cargo Door

F. Access Panels

Number	Name/Location
117A	Electronic Equipment Access Door
146AR	Water Service Door
822	Aft Cargo Door

G. Potable Water Fill Fitting Heater Installation

SUBTASK 30-71-01-420-001

(1) Apply the sealant, A00247, to all the mating surfaces of the thermal spacers [2] and fill fitting heater [1].

SUBTASK 30-71-01-420-002

(2) Put the fill fitting heater [1], thermal spacer [2], and o-ring [3] in position.

SUBTASK 30-71-01-420-003

(3) Apply sealant, A00247, to the bolts [4] and install the bolts [4].

SUBTASK 30-71-01-420-004

(4) Connect the heated hose to the fill fitting heater [1].

(a) Tighten the heated hose to the fill fitting to 620 ±80 in-lb (70 ±9 N·m).

SUBTASK 30-71-01-670-001

(5) Disinfect the potable water system (TASK 38-10-00-600-801).

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H. Potable Water Fill Fitting Heater Installation Test

SUBTASK 30-71-01-860-007



WHEN YOU OPEN THE P91 AND P92 PANELS, MAKE SURE THAT THE OUTER DOOR STAYS AS OPEN AS POSSIBLE. IF THE OUTER DOOR TURNS IN, THE ATTACHED DOOR COMPONENTS COULD TOUCH THE INNER DOOR COMPONENTS. THIS CAN CAUSE AN ARC CONDITION WHEN YOU SUPPLY POWER. IF YOU DO NOT OBEY, DAMAGE TO EQUIPMENT AND INJURY TO PERSONNEL CAN OCCUR.



DO NOT TOUCH THE CONDUCTORS IN THE P91 AND P92 PANELS. BE CAREFUL WHEN YOU GET ACCESS TO THE CIRCUIT BREAKERS ON THE INNER SIDE OF THE P91 AND P92 PANELS (ROW F). IF IT IS POSSIBLE, REMOVE AIRPLANE ELECTRICAL POWER FIRST. THE P91 AND P92 PANELS HAVE HIGH VOLTAGES AND CURRENTS. ELECTRICAL VOLTAGE AND CURRENT CAN KILL YOU OR CAUSE INJURIES.

- (1) Remove the safety tag and close this circuit breaker:

Power Distribution Panel Number 1, P91

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	11	C00873	POT WATER COMPRESSOR

SUBTASK 30-71-01-410-004

- (2) Close this access panel:

<u>Number</u>	<u>Name/Location</u>
117A	Electronic Equipment Access Door

SUBTASK 30-71-01-860-003

- (3) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	18	C01463	WASTE/WTR LINE HEATERS
E	5	C00233	HEATERS DRAIN

SUBTASK 30-71-01-720-001

- (4) Make sure that the fill fitting heater [1] becomes warm.

SUBTASK 30-71-01-710-001

- (5) Fill the potable water tank (TASK 12-14-00-600-802).
(a) Make sure that there is no leakage at the water fill fitting.

I. Put Airplane Back to Its Usual Condition

SUBTASK 30-71-01-410-001



OBEY THE PROCEDURE TO SEAL THE CARGO COMPARTMENT WITH THE LINING. IMPROPER INSTALLATION OF THE LINING CAN CAUSE DAMAGE TO EQUIPMENT AND INJURIES TO PERSONNEL.

- (1) Install the floor panel in the cargo compartment (TASK 50-10-04-400-801).

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SUBTASK 30-71-01-410-002

(2) Close this access door:

<u>Number</u>	<u>Name/Location</u>
822	Aft Cargo Door

SUBTASK 30-71-01-410-003

(3) Close this access panel:

<u>Number</u>	<u>Name/Location</u>
146AR	Water Service Door

————— END OF TASK —————

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GRAY WATER DRAIN LINE HEATER - REMOVAL/INSTALLATION

1. **General**

A. This procedure has these tasks:

- (1) A removal of the gray water drain line heater
- (2) An installation of the gray water drain line heater.

TASK 30-71-02-000-801

2. **Gray Water Drain Line Heater Removal**

(Figure 401)

A. **General**

- (1) This task has instructions to remove the Gray Water Drain Line Heater.
- (2) A heated drain hose prevents water flowing to the forward drain mast from freezing. The heated hose is under a floor panel in the forward cargo compartment. A thermostat controls the power to the heater and is near the heated drain hose.

B. **References**

Reference	Title
50-11-02-000-801	Forward Cargo Compartment Aft Bulkhead Liner Removal (P/B 401)
WDM 30-71-11	D000534476

C. **Location Zones**

Zone	Area
122	Forward Cargo Compartment - Right

D. **Access Panels**

Number	Name/Location
192CR	ECS Access Door
821	Forward Cargo Door

E. **Prepare for the Removal**

SUBTASK 30-71-02-860-001

- (1) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
E	3	C00234	HEATERS DRAIN MAST GND
E	4	C00700	HEATERS DRAIN MAST AIR

SUBTASK 30-71-02-010-001

- (2) Open this access panel:

Number	Name/Location
821	Forward Cargo Door

SUBTASK 30-71-02-010-002

- (3) Remove the aft bulkhead liner from the forward cargo compartment, do this task: Forward Cargo Compartment Aft Bulkhead Liner Removal, TASK 50-11-02-000-801.

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F. Gray Water Drain Line Heater Removal

SUBTASK 30-71-02-020-001

- (1) Disconnect the electrical splices from the gray water drain line [1] (WDM 30-71-11).

SUBTASK 30-71-02-020-002

- (2) Remove the clamp [4] from the gray water drain line [1].

SUBTASK 30-71-02-020-003

- (3) Remove the bolts [5] and washers [6] from the drain line fitting.

SUBTASK 30-71-02-020-004

- (4) Remove the drain line fitting.

SUBTASK 30-71-02-020-005

- (5) Open this access panel:

<u>Number</u>	<u>Name/Location</u>
192CR	ECS Access Door

SUBTASK 30-71-02-020-006

- (6) Remove the clamp [4] from the gray water drain line [1].

SUBTASK 30-71-02-020-007

- (7) Remove the gray water drain line [1] from the airplane.

————— **END OF TASK** —————

EFFECTIVITY
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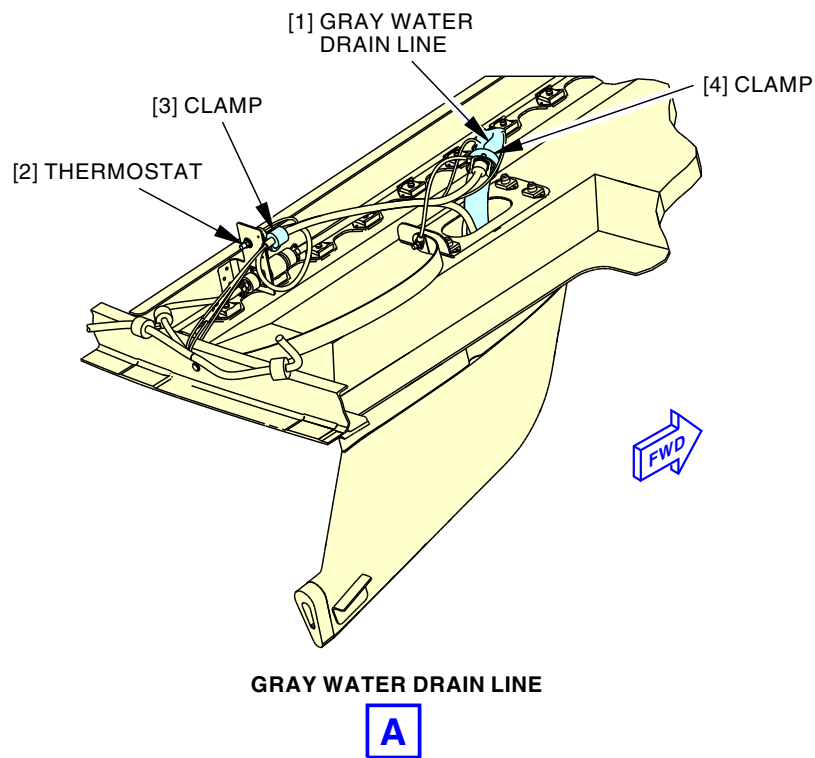
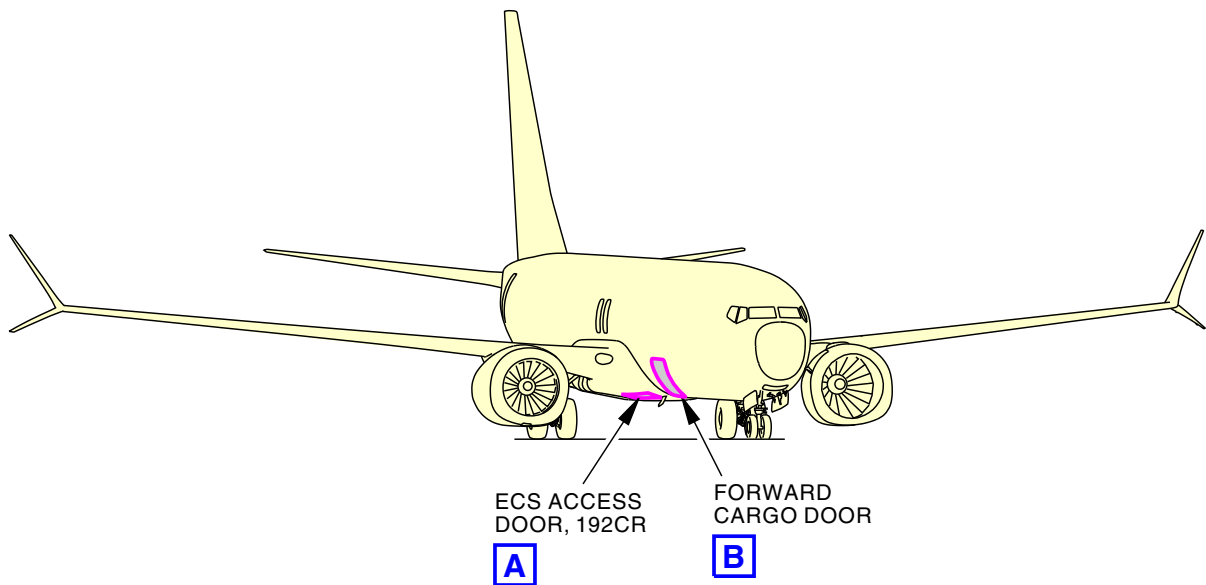
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Gray Water Drain Line Installation
Figure 401/30-71-02-990-801 (Sheet 1 of 2)

EFFECTIVITY
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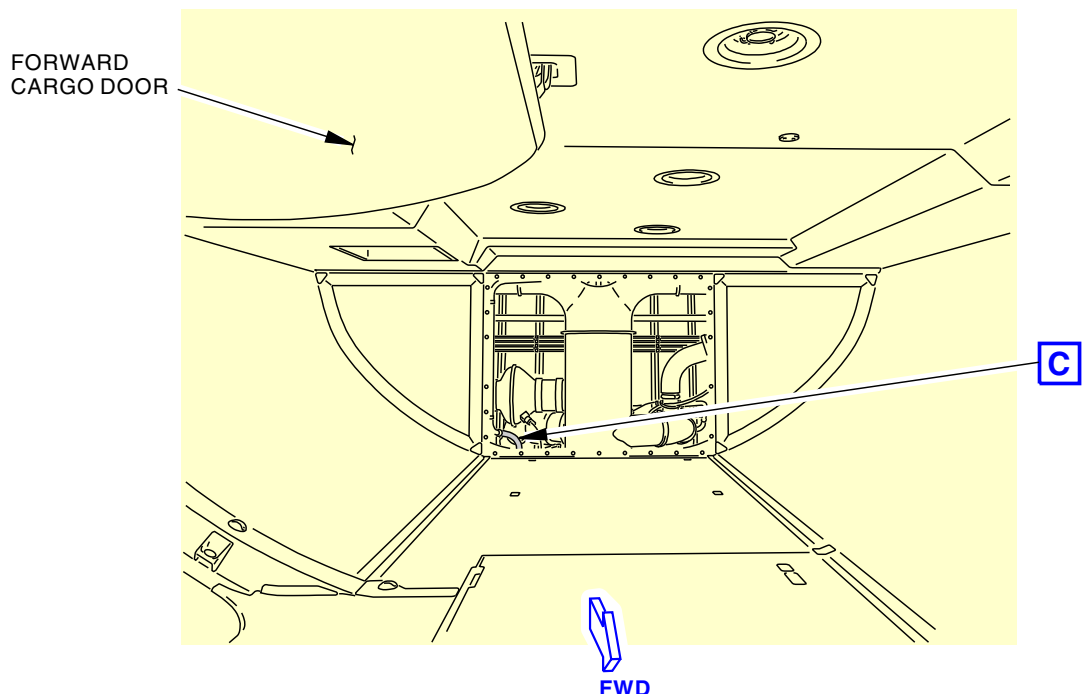
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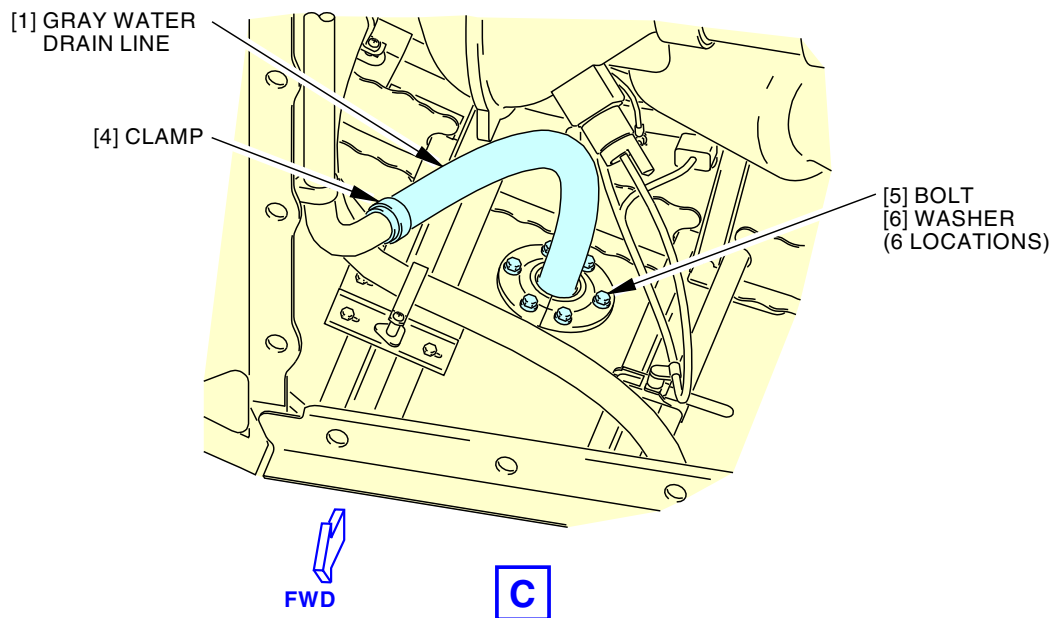


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FORWARD CARGO COMPARTMENT

B



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Gray Water Drain Line Installation
Figure 401/30-71-02-990-801 (Sheet 2 of 2)

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TASK 30-71-02-400-801

3. Gray Water Drain Line Heater Installation

(Figure 401)

A. General

- (1) This task has instructions to install the Gray Water Drain Line Heater.

B. References

Reference	Title
50-11-02-400-801	Forward Cargo Compartment Aft Bulkhead Liner Installation (P/B 401)

C. Consumable Materials

Reference	Description	Specification
G01012	Compound - Carbon Dioxide, Solid (Dry Ice - Any Commercial Grade)	
G02319	Spray - Freeze - Miller-Stephenson MS-242N	
G02320	Ice - Crushed	

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Gray water drain line	30-71-05-01-010	SIA ALL

E. Location Zones

Zone	Area
122	Forward Cargo Compartment - Right

F. Access Panels

Number	Name/Location
192CR	ECS Access Door
821	Forward Cargo Door

G. Gray Water Drain Line Heater Installation

SUBTASK 30-71-02-420-001

- (1) Put the gray water drain line [1] in position through the cargo compartment floor.

SUBTASK 30-71-02-420-002

- (2) Tighten the clamp [4] on the gray water drain line [1].

SUBTASK 30-71-02-020-008

- (3) Install the drain fitting and secure with the bolts [5] and washers [6].

SUBTASK 30-71-02-420-003

- (4) Connect the electrical splices to the gray water drain line [1].

H. Gray Water Drain Line Heater Installation Test

SUBTASK 30-71-02-720-001

- (1) Measure the temperature of the gray water drain line [1].

SUBTASK 30-71-02-860-004

- (2) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
E	3	C00234	HEATERS DRAIN MAST GND

EFFECTIVITY
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(Continued)

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	4	C00700	HEATERS DRAIN MAST AIR

SUBTASK 30-71-02-720-002

- (3) If the temperature in the area is lower than 45°F (7°C):
- (a) Make sure that the temperature of the gray water drain line [1] is at least 5° higher than the first temperature you measured.

SUBTASK 30-71-02-720-003

- (4) If the temperature in the area is higher than 45°F (7°C):
- (a) Decrease the temperature of the thermostat [2].
- NOTE: You can use MS-242N spray, G02319, ice, G02320, or compound, G01012, to decrease the temperature. Permit 3 to 5 minutes for the temperature of the thermostat to decrease before you check the temperature of the gray water drain line [1].
- (b) Make sure that the gray water drain line [1] is warm.

I. Put the Airplane Back to Its Usual Condition

SUBTASK 30-71-02-410-001



OBEY THE PROCEDURE TO SEAL THE CARGO COMPARTMENT WITH THE LINING. IMPROPER INSTALLATION OF THE LINING CAN CAUSE DAMAGE TO EQUIPMENT AND INJURIES TO PERSONNEL.

- (1) Install the bulkhead liner (TASK 50-11-02-400-801).

SUBTASK 30-71-02-410-002

- (2) Close this access door:
- | <u>Number</u> | <u>Name/Location</u> |
|---------------|----------------------|
| 821 | Forward Cargo Door |

SUBTASK 30-71-02-410-003

- (3) Close this access door:
- | <u>Number</u> | <u>Name/Location</u> |
|---------------|----------------------|
| 192CR | ECS Access Door |

————— **END OF TASK** —————

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WASTE DRAIN LINE HEATER - REMOVAL/INSTALLATION

1. **General**

- A. This procedure has these tasks:
- (1) A removal of the waste drain line heater
 - (2) An installation of the waste drain line heater.

TASK 30-71-03-000-801

2. **Waste Drain Line Heater Removal**

(Figure 401)

A. **General**

- (1) This task has instructions to remove the waste drain line heater.
- (2) The heater blanket covers the ball valve of the waste tank.

B. **References**

Reference	Title
50-12-03-000-801	Waste Tank Enclosure Panel Removal (P/B 401)
WDM 30-71-11	D000534476

C. **Location Zones**

Zone	Area
141	Aft Cargo Compartment - Left

D. **Access Panels**

Number	Name/Location
822	Aft Cargo Door

E. **Prepare for the Removal**

SUBTASK 30-71-03-860-008

- (1) Open this circuit breaker and install safety tag:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
E	5	C00233	HEATERS DRAIN

SUBTASK 30-71-03-010-003

- (2) Open this access panel:

Number	Name/Location
822	Aft Cargo Door

SUBTASK 30-71-03-010-004

- (3) Do this task: Waste Tank Enclosure Panel Removal, TASK 50-12-03-000-801.

F. **Waste Drain Line Heater Removal**

SUBTASK 30-71-03-020-005

- (1) Remove the nut [7], screw [3], washer [4], and clamp [2] from the heater blanket [1] wires.

SUBTASK 30-71-03-020-006

- (2) Disconnect the electrical connectors [5] (WDM 30-71-11).

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SUBTASK 30-71-03-020-007

- (3) Pull the velcro hook and pile apart to remove the heater blanket [1].

NOTE: The heater blanket is composed of a heater core (HBCXXX) and jacket cover (HBJXXX).

————— **END OF TASK** —————

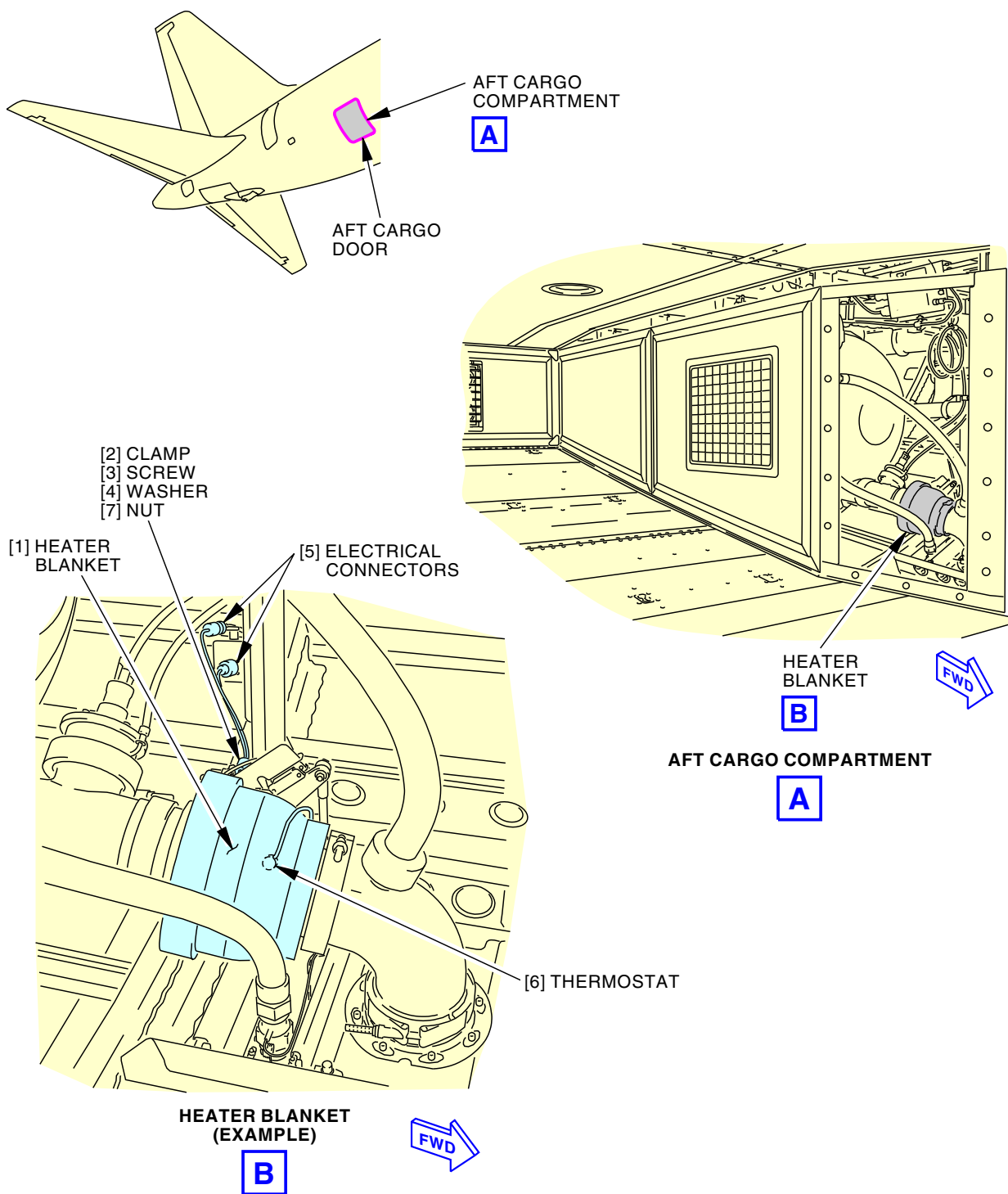
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Waste Drain Line Heater Installation
Figure 401/30-71-03-990-802

EFFECTIVITY
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TASK 30-71-03-400-801

3. **Waste Drain Line Heater Installation**

(Figure 401)

A. General

- (1) This task has instructions to install the waste drain line heater.

B. References

Reference	Title
50-12-03-400-801	Waste Tank Enclosure Panel Installation (P/B 401)

C. Consumable Materials

Reference	Description	Specification
G01012	Compound - Carbon Dioxide, Solid (Dry Ice - Any Commercial Grade)	
G02319	Spray - Freeze - Miller-Stephenson MS-242N	
G02320	Ice - Crushed	
G50333	Tape - Hook/Loop Fastener, Flame Propagation Resistant	BMS8-372

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Heater blanket	30-71-03-01-010	SIA ALL

E. Location Zones

Zone	Area
141	Aft Cargo Compartment - Left

F. Access Panels

Number	Name/Location
822	Aft Cargo Door

G. Waste Drain Line Heater Installation

SUBTASK 30-71-03-420-001

- (1) Put the heater blanket [1] around the drain line ball valve.
- (a) Install the HBCXXX heater core over the tube/valve.
- (b) Cover the heater core with the HBJXXXX jacket cover.

SUBTASK 30-71-03-420-002

- (2) Push the hook/loop fastening tape, G50333, and pile together to attach the heater blanket [1].

SUBTASK 30-71-03-420-003

- (3) Connect the electrical connectors [5].

SUBTASK 30-71-03-020-004

- (4) Install the clamp [2], screw [3], washer [4], and nut [7] to secure the electrical wiring.
- (a) If it is necessary, replace the clamp [2].

H. Waste Drain Line Heater Installation Test

SUBTASK 30-71-03-720-001

- (1) Measure the temperature of the heater blanket [1].

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SUBTASK 30-71-03-860-004

- (2) Remove the safety tag and close this circuit breaker:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	5	C00233	HEATERS DRAIN

SUBTASK 30-71-03-860-006

- (3) Put the CAB/UTL switch, on the P5-13 panel, to the ON position.

SUBTASK 30-71-03-720-002

- (4) If the temperature in the area is lower than 45°F (7°C):
- (a) Make sure that the temperature of the heater blanket [1] is 5° higher than the first temperature you measured.

SUBTASK 30-71-03-720-003

- (5) If the temperature in the area is higher than 45°F (7°C):
- (a) Feel the heater blanket [1] to find the thermostat [6].
- NOTE: The thermostat is approximately 1 in. (25.4 mm) in diameter and is below the skin of the heater blanket.
- (b) Decrease the temperature of the thermostat to below 45°F (7°C).
- NOTE: You can use MS-242N spray, G02319, ice, G02320, or compound, G01012, to decrease the temperature. Permit 3 to 5 minutes for the temperature of the thermostat to decrease before you check the temperature of the heater blanket.
- (c) Make sure that the heater blanket [1] gets warm.

I. Put the Airplane Back to Its Usual Condition

SUBTASK 30-71-03-410-001

 WARNING	OBEY THE PROCEDURE TO SEAL THE CARGO COMPARTMENT WITH THE LINING. IMPROPER INSTALLATION OF THE LINING CAN CAUSE DAMAGE TO EQUIPMENT AND INJURIES TO PERSONNEL.

- (1) Do this task: Waste Tank Enclosure Panel Installation, TASK 50-12-03-400-801.

SUBTASK 30-71-03-410-002

- (2) Close this access door:

<u>Number</u>	<u>Name/Location</u>
822	Aft Cargo Door

SUBTASK 30-71-03-860-007

- (3) Put the CAB/UTL switch, on the P5-13 panel, to the OFF position.

————— **END OF TASK** —————

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WASTE TANK RINSE FITTING HEATER - REMOVAL/INSTALLATION

1. **General**

A. This procedure has these tasks:

- (1) Waste Tank Rinse Fitting Heater Removal
- (2) Waste Tank Rinse Fitting Heater Installation.

TASK 30-71-04-000-801

2. **Waste Tank Rinse Fitting Heater Removal**

(Figure 401)

A. **General**

- (1) This task has instructions to remove the Waste Tank Rinse Fitting Heater.

B. **References**

Reference	Title
12-17-01-610-801	Waste Tank Servicing (P/B 301)
50-12-03-000-801	Waste Tank Enclosure Panel Removal (P/B 401)

C. **Location Zones**

Zone	Area
143	Area Below Aft Cargo Compartment - Left

D. **Access Panels**

Number	Name/Location
822	Aft Cargo Door

E. **Prepare for the Removal**

SUBTASK 30-71-04-610-001

- (1) Do this task: Waste Tank Servicing, TASK 12-17-01-610-801.

NOTE: Do not add the chemical precharge after you do the task to drain and flush the waste tanks.

SUBTASK 30-71-04-010-001

- (2) Open this access door:

Number	Name/Location
822	Aft Cargo Door

SUBTASK 30-71-04-010-002

- (3) Do this task: Waste Tank Enclosure Panel Removal, TASK 50-12-03-000-801.

SUBTASK 30-71-04-860-001

- (4) Open this circuit breaker and install safety tag:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
D	18	C01463	WASTE/WTR LINE HEATERS

F. **Waste Tank Rinse Fitting Heater Removal**

SUBTASK 30-71-04-020-001

- (1) Remove the splices from the rinse fitting heater [2].

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SUBTASK 30-71-04-020-002

- (2) Remove the rinse hose [1] from the rinse fitting heater [2].

SUBTASK 30-71-04-020-003

- (3) Remove the rinse fitting heater thermostat [3] from the airplane structure.

SUBTASK 30-71-04-020-004

- (4) Remove the rinse fitting heater [2] from the rinse fitting.

———— **END OF TASK** ————

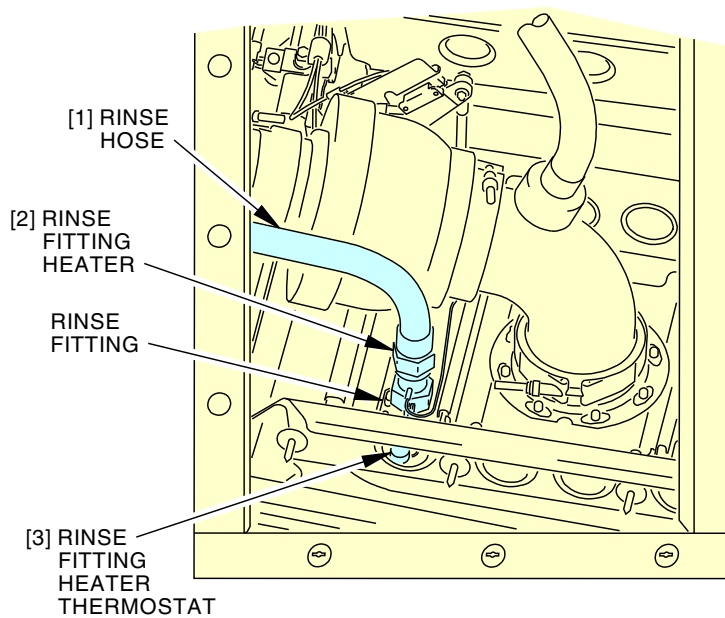
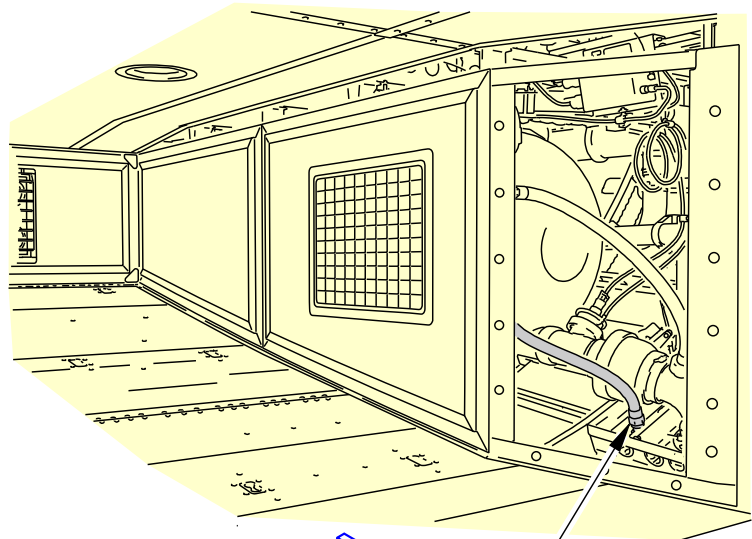
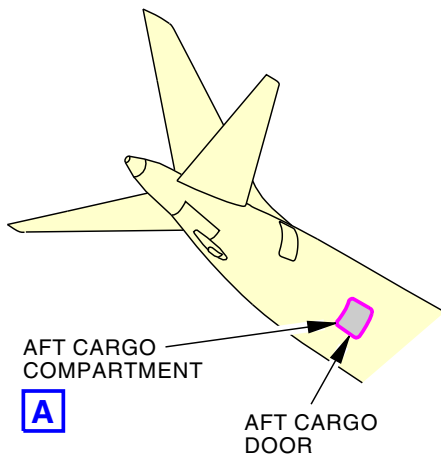
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WASTE TANK RINSE FITTING ASSEMBLY
(INTERNAL VIEW)

B



AFT CARGO COMPARTMENT

A



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Waste Tank Rinse Fitting Heater Installation
Figure 401/30-71-04-990-801

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TASK 30-71-04-400-801

3. **Waste Tank Rinse Fitting Heater Installation**

(Figure 401)

A. General

(1) This task has instructions to install the Waste Tank Rinse Fitting Heater.

B. References

Reference	Title
12-17-01-610-801	Waste Tank Servicing (P/B 301)
50-12-03-400-801	Waste Tank Enclosure Panel Installation (P/B 401)

C. Consumable Materials

Reference	Description	Specification
A00870	Adhesive - Urethane Adhesive for Bonding, 2 Part, Room Temp Cure (for automatic blending)	BMS5-105 Type II
B00083	Solvent - VM&P Naphthas	TT-N-95 Type II, ASTM D-3735 Type III
G01012	Compound - Carbon Dioxide, Solid (Dry Ice - Any Commercial Grade)	
G02319	Spray - Freeze - Miller-Stephenson MS-242N	
G02320	Ice - Crushed	

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
2	Rinse fitting heater	30-71-04-01-010	SIA ALL

E. Location Zones

Zone	Area
143	Area Below Aft Cargo Compartment - Left

F. Access Panels

Number	Name/Location
146AR	Water Service Door
822	Aft Cargo Door

G. Prepare for the Installation

SUBTASK 30-71-04-860-002

(1) Make sure that this circuit breaker is open and has safety tag:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
D	18	C01463	WASTE/WTR LINE HEATERS

H. Waste Tank Rinse Fitting Heater Installation

SUBTASK 30-71-04-420-001

(1) Install the rinse fitting heater [2] on the service panel rinse fitting.

(a) Tighten the rinse fitting heater [2] to 300 in-lb (34 N·m) - 350 in-lb (40 N·m).

SUBTASK 30-71-04-160-001

(2) Clean the pan surface.

EFFECTIVITY
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- (a) Remove all remaining adhesive.
- (b) Wipe the pan surface with solvent, B00083.

SUBTASK 30-71-04-390-001

- (3) Install the rinse fitting heater thermostat [3] to the pan surface.

NOTE: Make sure that you do not install the rinse fitting heater thermostat on a rivet or other fastener.

- (a) If the temperature is less than 65°F (18°C), heat the pan surface.

NOTE: At 65°F (18°C), the handling time for the adhesive is 3 hours, full cure time is 24 hours. At 140°F (60°C) (maximum), the handling time is 20 minutes, full cure time is 2 hours.

- (b) Attach the rinse fitting heater thermostat [3] to the pan surface with adhesive, A00870, any class.

SUBTASK 30-71-04-420-002

- (4) Attach the rinse hose [1] to the rinse fitting heater [2].

- (a) Tighten the rinse hose to 300 in-lb (34 N·m) - 350 in-lb (40 N·m).

SUBTASK 30-71-04-420-003

- (5) Attach splices to the rinse fitting heater [2] wiring.

SUBTASK 30-71-04-860-003

- (6) Remove the safety tag and close this circuit breaker:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	18	C01463	WASTE/WTR LINE HEATERS

I. Waste Tank Rinse Fitting Heater Installation Test

SUBTASK 30-71-04-610-002

- (1) Cool the rinse fitting heater thermostat with ice, G02320, MS-242N spray, G02319, or compound, G01012.

SUBTASK 30-71-04-610-003

- (2) Make sure that the rinse fitting heater [2] becomes warm.

SUBTASK 30-71-04-170-001

- (3) Fill the waste tank with 30 gal (114 l) - 40 gal (151 l) of water.

SUBTASK 30-71-04-790-001

- (4) Examine the rinse fitting assembly and the connections for leakage.

J. Put the Airplane Back to Its Usual Condition

SUBTASK 30-71-04-610-004

- (1) Do this task: Waste Tank Servicing, TASK 12-17-01-610-801.

SUBTASK 30-71-04-410-001



OBEY THE PROCEDURE TO SEAL THE CARGO COMPARTMENT WITH THE LINING. IMPROPER INSTALLATION OF THE LINING CAN CAUSE DAMAGE TO EQUIPMENT AND INJURIES TO PERSONNEL.

- (2) Do this task: Waste Tank Enclosure Panel Installation, TASK 50-12-03-400-801.

EFFECTIVITY
SIA ALL

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SUBTASK 30-71-04-410-002

(3) Close this access door:

<u>Number</u>	<u>Name/Location</u>
822	Aft Cargo Door

SUBTASK 30-71-04-410-003

(4) Close this access door:

<u>Number</u>	<u>Name/Location</u>
146AR	Water Service Door

————— **END OF TASK** —————

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DRAIN MAST HEATERS - MAINTENANCE PRACTICES

1. General

- A. This procedure has this task:
 - (1) Drain Mast Heater Replacement
- B. The drain mast heaters are built into the drain masts.
- C. If a heater fails the sensor must be replaced.

TASK 30-71-05-900-801

2. Drain Mast Heater Replacement

A. **References**

Reference	Title
38-31-01-000-801	Forward Drain Mast Removal (P/B 401)
38-31-01-000-802	Aft Drain Mast Removal (P/B 401)
38-31-01-400-801	Forward Drain Mast Installation (P/B 401)
38-31-01-400-802	Aft Drain Mast Installation (P/B 401)

B. **Location Zones**

Zone	Area
100	Lower Half of Fuselage

C. **Drain Mast Heater Replacement**

SUBTASK 30-71-05-900-001

- (1) To replace a forward drain mast, do these tasks:
 - Forward Drain Mast Removal, TASK 38-31-01-000-801,
 - Forward Drain Mast Installation, TASK 38-31-01-400-801.

SUBTASK 30-71-05-900-002

- (2) To replace the aft drain mast, do these tasks:
 - Aft Drain Mast Removal, TASK 38-31-01-000-802,
 - Aft Drain Mast Installation, TASK 38-31-01-400-802.

———— **END OF TASK** ————

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HEATED POTABLE WATER HOSES - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

- (1) A removal of the heated potable water hose
- (2) An Installation of the heated potable water hose.

TASK 30-71-06-000-801

2. Heated Potable Water Hose Removal

(Figure 401)

A. **General**

- (1) This task gives instructions to remove the Heated Potable Water Hose.
- (2) The procedures to remove the hoses are similar. Access to the hoses is either through the aft cargo compartment or through the floor near the aft lavatory.

B. **References**

Reference	Title
20-10-52-000-801	Flexible Hose Removal (P/B 401)
25-27-15-000-801	Carpet Removal (P/B 401)
25-27-21-000-801	Entry and Service Area Floor Covering - Removal (P/B 401)
38-42-00-800-801	Potable Water System - Deactivation (P/B 201)
50-10-02-000-801	Cargo Compartment Sidewall Liners Removal (P/B 401)
50-10-04-000-801	Cargo Compartment Floor Panel Removal (P/B 401)
50-12-02-000-801	Aft Cargo Compartment Aft Bulkhead Liner Removal (P/B 401)
SSM 30-71-11	D000534475
WDM 30-71-11	D000534476

C. **Location Zones**

Zone	Area
141	Aft Cargo Compartment - Left
142	Aft Cargo Compartment - Right
240	Subzone - Passenger Compartment - Body Station 663.75 to Body Station 1016.00

D. **Access Panels**

Number	Name/Location
822	Aft Cargo Door

E. **Prepare for the Removal**

SUBTASK 30-71-06-840-001

- (1) Remove pressure from the potable water system (TASK 38-42-00-800-801).

SUBTASK 30-71-06-860-001

- (2) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
D	18	C01463	WASTE/WTR LINE HEATERS
E	5	C00233	HEATERS DRAIN
E	18	C01473	HOSE HEATERS

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SUBTASK 30-71-06-010-001

- (3) Open this access panel:

<u>Number</u>	<u>Name/Location</u>
822	Aft Cargo Door

SUBTASK 30-71-06-010-002

- (4) Get access to the applicable heated potable water hose.
- (a) Use the SSM 30-71-11 to determine the location of the heated water hoses.
 - (b) Use Figure 401 to identify access requirements.
 - (c) Do the necessary tasks to access the heated water hose.
 - 1) Remove the floor panel in the cargo compartment (TASK 50-10-04-000-801).
 - 2) Remove the aft bulkhead liner in the aft cargo compartment (TASK 50-12-02-000-801).
 - 3) Remove the sidewall lining in the cargo compartment (TASK 50-10-02-000-801).
 - 4) Remove the carpet (TASK 25-27-15-000-801).
 - 5) Remove the floor covering in the entry and service area (TASK 25-27-21-000-801).

F. Heated Potable Water Hose Removal

SUBTASK 30-71-06-020-001

- (1) Disconnect the electrical connectors from the heated hose (WDM 30-71-11).

SUBTASK 30-71-06-020-002

- (2) Disconnect the fittings on the heated potable water hose.
- (a) Use a bucket to catch water which may be in the hose.
 - (b) Remove the flexible hoses (TASK 20-10-52-000-801).

————— **END OF TASK** —————

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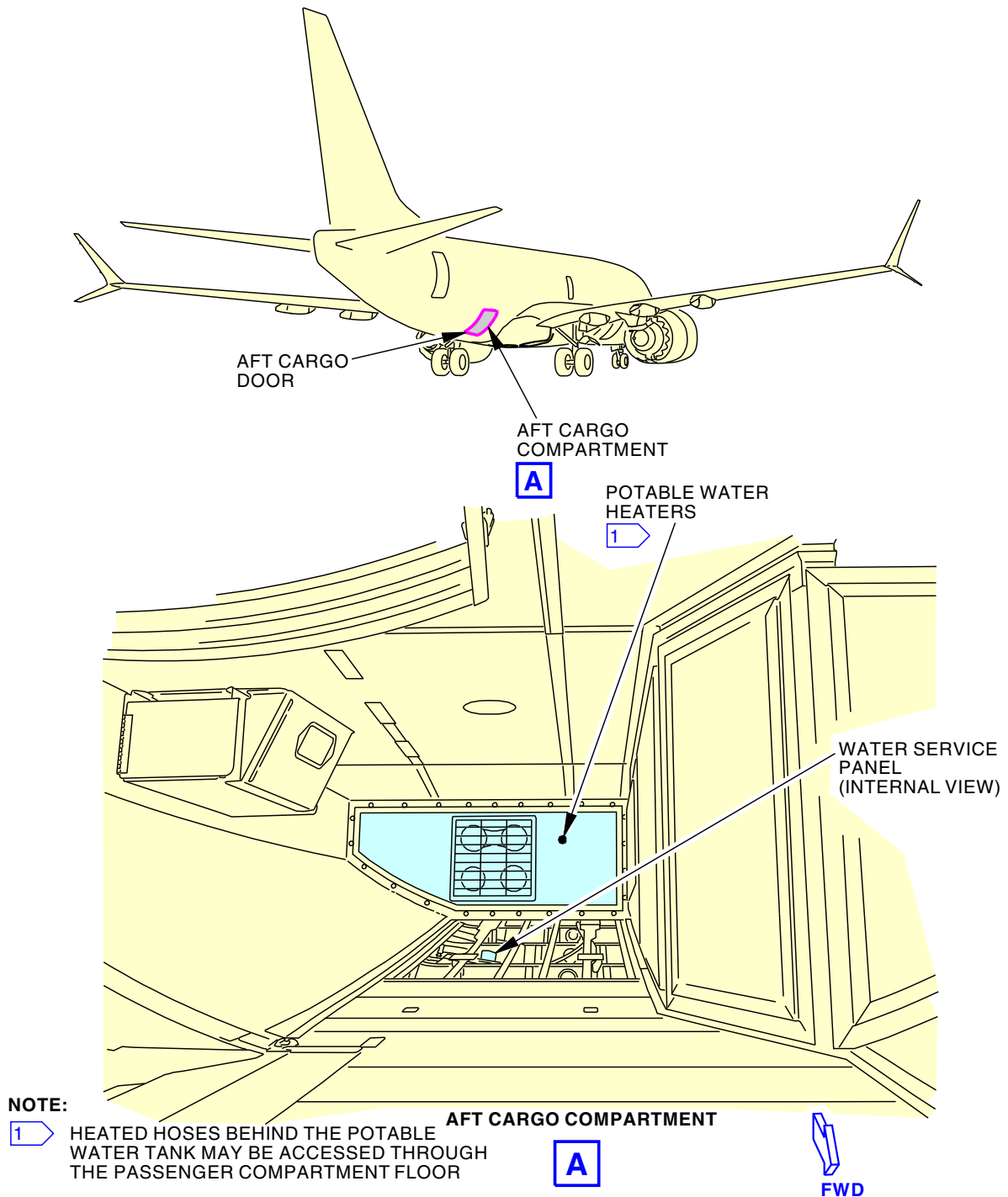
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2413940 S00061533880_V1

Heated Potable Water Hoses Installation
Figure 401/30-71-06-990-801 (Sheet 1 of 2)

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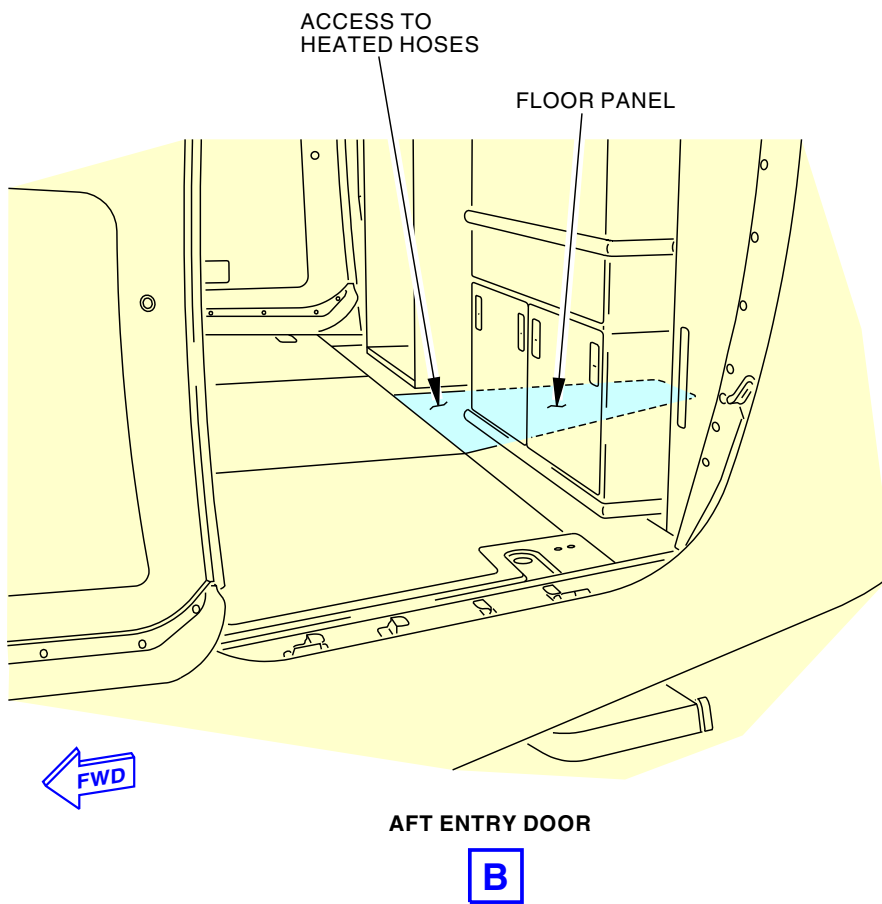
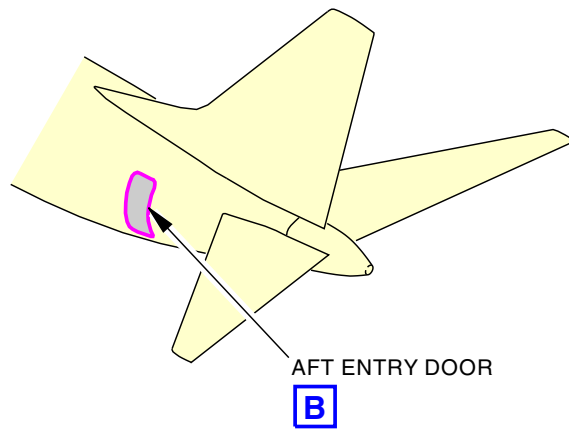
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2413941 S00061533881_V1

Heated Potable Water Hoses Installation
Figure 401/30-71-06-990-801 (Sheet 2 of 2)

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TASK 30-71-06-400-801

3. **Heated Potable Water Hose Installation**

(Figure 401)

A. General

- (1) This task gives instructions to install the Heated Potable Water Hose.
- (2) The installation of each heated potable water hose is similar.

B. References

Reference	Title
20-10-52-400-803	Flexible Hose Installation (P/B 401)
25-27-15-400-801	Carpet - Installation (P/B 401)
25-27-21-400-801	Entry and Service Area Floor Covering - Installation (P/B 401)
38-10-00-600-801	Potable Water System Disinfectant (P/B 201)
38-10-00-790-801	Potable Water System - Leak Test (P/B 201)
50-10-02-400-801	Cargo Compartment Sidewall Liners Installation (P/B 401)
50-10-04-400-801	Cargo Compartment Floor Panel Installation (P/B 401)
50-12-02-400-801	Aft Cargo Compartment Aft Bulkhead Liner Installation (P/B 401)

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
COM-1572	Thermometer - Infrared, Intrinsically Safe Part #: 568 Ex Supplier: 89536 Opt Part #: DHS24XC-FM Supplier: 08086 Opt Part #: DHS24XF-FM Supplier: 08086 Opt Part #: EX-MP4 A Supplier: 3GT36 Opt Part #: IR-16L3 IS Supplier: 75037
COM-2531	Clamp-On- Current Meter Part #: 324 Supplier: 89536 Part #: 374 Supplier: 89536 Part #: LH41A Supplier: 0JV05 Opt Part #: 321 Supplier: 89536 Opt Part #: 322 Supplier: 89536 Opt Part #: MODEL 33 Supplier: 89536 Opt Part #: MODEL 36 Supplier: 89536

D. Consumable Materials

Reference	Description	Specification
G01012	Compound - Carbon Dioxide, Solid (Dry Ice - Any Commercial Grade)	
G02319	Spray - Freeze - Miller-Stephenson MS-242N	
G02320	Ice - Crushed	

E. Location Zones

Zone	Area
141	Aft Cargo Compartment - Left

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Zone	Area
142	Aft Cargo Compartment - Right
240	Subzone - Passenger Compartment - Body Station 663.75 to Body Station 1016.00

F. Access Panels

Number	Name/Location
822	Aft Cargo Door

G. Prepare for the Installation

SUBTASK 30-71-06-860-002

- (1) Make sure that these circuit breakers are open and have safety tags:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
D	18	C01463	WASTE/WTR LINE HEATERS
E	5	C00233	HEATERS DRAIN
E	18	C01473	HOSE HEATERS

H. Heated Potable Water Hose Installation

SUBTASK 30-71-06-420-001

- (1) Connect the heated potable water hose fittings.
 - (a) For the fill fitting, tighten the heated hose to 620 ±80 in-lb (70 ±9 N·m).
 - (b) For all other fittings, do this task: Flexible Hose Installation, TASK 20-10-52-400-803.

SUBTASK 30-71-06-420-002

- (2) Connect the electrical connectors to the heated water hose.

I. Heated Potable Water Hose Installation Test

SUBTASK 30-71-06-790-001

- (1) Do a test for leaks in the potable water hose (TASK 38-10-00-790-801).

SUBTASK 30-71-06-720-001

- (2) Measure the temperature of the hose and surrounding area.

SUBTASK 30-71-06-860-004

- (3) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
D	18	C01463	WASTE/WTR LINE HEATERS
E	5	C00233	HEATERS DRAIN
E	18	C01473	HOSE HEATERS

SUBTASK 30-71-06-720-002

- (4) Do this test of the heated hose:
 - (a) If the temperature in the area is higher than 45°F (7°C), then decrease the temperature of the thermostat.

NOTE: You can use MS-242N spray, G02319, ice, G02320, or compound, G01012 to decrease the temperature. Permit 3 to 5 minutes for the temperature of the thermostat to decrease before you check the temperature of the heated hose. The thermostat is in a bulge at the end of the hose.

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- (b) Make sure that the hose heater is powered by either of these methods:
 - 1) Use a Infrared Thermometer, COM-1572, or equivalent, to make sure that the hose gets warm.
 - 2) Use a clamp-on current meter, COM-2531, or equivalent, to make sure that the heater is drawing electrical current.

J. Put the Airplane Back to Its Usual Condition

SUBTASK 30-71-06-670-001

- (1) Disinfect the potable water system (TASK 38-10-00-600-801).

SUBTASK 30-71-06-410-001

- (2) Close the panels used to access the heated hose.



WARNING

OBEY THE PROCEDURE TO SEAL THE CARGO COMPARTMENT WITH THE LINING. IMPROPER INSTALLATION OF THE LINING CAN CAUSE DAMAGE TO EQUIPMENT AND INJURIES TO PERSONNEL.

- (a) Install the cargo compartment sidewall lining (TASK 50-10-02-400-801).
- (b) Install the cargo compartment floor panel (TASK 50-10-04-400-801).
- (c) Install the aft bulkhead liner (TASK 50-12-02-400-801).
- (d) Install the floor covering (TASK 25-27-21-400-801).
- (e) Install the carpet (TASK 25-27-15-400-801).
- (f) Close this access door:

<u>Number</u>	<u>Name/Location</u>
822	Aft Cargo Door

————— **END OF TASK** —————

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