CHAPTER

30

ICE AND RAIN PROTECTION

CHAPTER 30
ICE AND RAIN PROTECTION

Subject/Page	Date	COC
EFFECTIVE PAGES		
1 thru 3	Jun 15/2009	
4	BLANK	
30-CONTENTS		
1	Feb 15/2008	
2	Feb 15/2008	
3	Feb 15/2008	
4	Feb 15/2008	
5	Feb 15/2008	
O 6	Jun 15/2009	
7	Feb 15/2008	
O 8	Jun 15/2009	
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901	Feb 10/2006	
902	Oct 10/2005	
903	Oct 10/2005	
904	Oct 10/2005	
905	Oct 10/2005	
906	Oct 10/2005	
907	Oct 10/2003	
908	Jun 10/2005	
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910	Oct 10/2003	
911	Oct 10/2003	
912	Feb 15/2008	
913	Feb 15/2008	
914	Feb 15/2008	
915	Feb 15/2008	
916	Feb 15/2008	
917	Feb 15/2008	
918	Feb 15/2008	
919	Feb 15/2008	
920	Feb 15/2008	
921	Feb 15/2008	
922	Feb 15/2008	
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505	Jun 10/2007	
506	Jun 10/2007	
507	Jun 10/2007	
508	Jun 10/2007	
509	Jun 10/2007	
510	Jun 10/2007	
30-11-11		
401	Oct 10/2003	
402	Feb 10/2004	
403	Oct 10/2003	
404	Feb 10/2004	
405	Oct 10/2003	
406	BLANK	
30-11-11		
501	Oct 10/2003	
502	Oct 10/2006	
503	Oct 10/2006	
504	Oct 10/2006	
30-11-12		
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402	Oct 10/2003	
403	Oct 10/2003	
404	Oct 10/2003	
405	Jun 10/2005	
406	Oct 10/2003	
30-11-12		
501	Feb 15/2009	
502	Feb 10/2007	
503	Oct 10/2006	
504	Oct 10/2006	
505	Oct 10/2006	
506	Oct 10/2006	
30-11-21		
401	Jun 10/2006	
402	Oct 10/2003	
403	Oct 10/2003	
404	Jun 10/2007	
405	Jun 15/2008	
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401	Feb 10/2007	
402	Feb 10/2007	
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404	Oct 10/2003	
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407	Oct 10/2007	
408	Jun 15/2008	
409	Jun 15/2008	
410	Oct 10/2007	
411	Oct 10/2007	
412	Oct 10/2007	
413	Oct 10/2007	
414	Oct 10/2007	
415	Oct 10/2007	
416	Oct 10/2007	
30-11-41		
401	Oct 10/2006	
402	Oct 10/2003	
403	Feb 15/2008	
404	BLANK	
30-11-41		
501	Oct 10/2003	
502	Oct 10/2003	
503	Oct 15/2008	
504	Oct 15/2008	
505	Oct 10/2003	
506	Oct 10/2003	
30-11-51		
401	Oct 10/2003	
402	Oct 10/2003	
403	Oct 10/2003	

A = Added, R = Revised, D = Deleted, O = Overflow, C = Customer Originated Change

30-EFFECTIVE PAGES

CHAPTER 30
ICE AND RAIN PROTECTION

Subject/Page	Date	COC
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502	Oct 10/2003	
503	Feb 10/2004	
504	Oct 10/2003	
505	Oct 10/2006	
506	Oct 10/2006	
30-21-11		
401	Feb 15/2008	
402	Feb 15/2008	
403	Oct 10/2006	
404	Feb 15/2009	
405	Jun 15/2008	
406	Jun 15/2008	
407	Oct 10/2006	
408	Oct 10/2006	
30-21-21		
401	Feb 15/2008	
402	Feb 15/2008	
403	Feb 15/2008	
404	Feb 15/2008	
405	Feb 10/2004	
406	BLANK	
30-31-00		
201	Oct 10/2006	
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30-31-00		
501	Feb 15/2009	
502	Feb 15/2009	
503	Feb 15/2009	
504	Oct 10/2006	
30-41-00		
R 501	Jun 15/2009	
R 502	Jun 15/2009	
O 503	Jun 15/2009	
504	Oct 10/2005	
505	Oct 10/2005	
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30-41-11		
R 401	Jun 15/2009	
R 402	Jun 15/2009	
403	Oct 10/2003	
R 404	Jun 15/2009	
R 405	Jun 15/2009	
O 406	BLANK	
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502	Jun 10/2007	
503	Oct 10/2003	
504	Oct 10/2003	
505	Oct 15/2008	
506	Jun 10/2005	
507	Jun 10/2005	
508	Jun 10/2005	
30-41-21		
501	Oct 10/2007	
502	Oct 10/2007	
503	Oct 10/2007	
504	Oct 10/2003	
505	Oct 10/2003	
506	Oct 10/2007	
507	Oct 10/2007	
508	Oct 10/2003	
30-41-31		
R 401	Jun 15/2009	
O 402	Jun 15/2009	
R 403	Jun 15/2009	
O 404	Jun 15/2009	
O 405	Jun 15/2009	
R 406	Jun 15/2009	
D 407	Jun 15/2009	
30-41-31 (cont)		
D 408	BLANK	
30-41-41		
401	Jun 15/2008	
R 402	Jun 15/2009	
403	Oct 10/2003	
404	Feb 10/2007	
R 405	Jun 15/2009	
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R 501	Jun 15/2009	
O 502	Jun 15/2009	
R 503	Jun 15/2009	
504	Oct 10/2003	
30-42-11		
R 401	Jun 15/2009	
402	Jun 15/2008	
403	Jun 15/2008	
404	Feb 15/2009	
R 405	Jun 15/2009	
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R 401	Jun 15/2009	
O 402	Jun 15/2009	
403	Oct 10/2003	
404	Oct 10/2003	
405	Feb 15/2009	
R 406	Jun 15/2009	
30-42-31		
R 201	Jun 15/2009	
O 202	Jun 15/2009	
203	Oct 10/2003	
204	Oct 10/2003	
R 205	Jun 15/2009	
O 206	Jun 15/2009	
R 207	Jun 15/2009	
R 208	Jun 15/2009	
O 209	Jun 15/2009	
R 210	Jun 15/2009	
R 211	Jun 15/2009	

A = Added, R = Revised, D = Deleted, O = Overflow, C = Customer Originated Change

30-EFFECTIVE PAGES

CHAPTER 30
ICE AND RAIN PROTECTION

Subject/Page	Date	COC
30-42-31 (cont)		
R 212	Jun 15/2009	
R 213	Jun 15/2009	
214	BLANK	
30-43-00		
R 201	Jun 15/2009	
R 202	Jun 15/2009	
30-71-00		
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202	Oct 10/2006	
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502	Feb 10/2007	
503	Feb 15/2009	
504	Oct 15/2008	
505	Oct 15/2008	
506	Jun 10/2005	
507	Jun 10/2005	
508	Jun 10/2005	
30-71-01		
401	Feb 15/2009	
402	Feb 15/2008	
403	Oct 10/2003	
404	Oct 10/2003	
405	Jun 15/2008	
406	Feb 15/2009	
30-71-02		
401	Jun 10/2006	
402	Jun 10/2006	
403	Oct 10/2003	
404	Oct 10/2003	
405	Oct 10/2006	
406	Oct 10/2006	
30-71-03		
401	Feb 10/2004	
402	Oct 10/2003	
403	Oct 10/2003	
404	Feb 15/2009	
405	Jun 10/2005	
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30-71-04		
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30-71-05		
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402	Feb 15/2009	
403	Oct 10/2003	
404	Oct 10/2003	
405	Oct 15/2008	
406	Feb 15/2009	
407	Jun 10/2006	
408	BLANK	

Subject/Page	Date	COC

A = Added, R = Revised, D = Deleted, O = Overflow, C = Customer Originated Change

30-EFFECTIVE PAGES

CHAPTER 30
ICE AND RAIN PROTECTION

30-CONTENTS

CHAPTER 30
ICE AND RAIN PROTECTION

30-CONTENTS

CHAPTER 30
ICE AND RAIN PROTECTION

30-CONTENTS

CHAPTER 30
ICE AND RAIN PROTECTION

30-CONTENTS

CHAPTER 30
ICE AND RAIN PROTECTION

30-CONTENTS

CHAPTER 30
ICE AND RAIN PROTECTION

30-CONTENTS

CHAPTER 30
ICE AND RAIN PROTECTION

CHAPTER 30
ICE AND RAIN PROTECTION

30-CONTENTS

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 Procedures Guide (DDPG). 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) MMEL 30-01 (DDPG) Preparation - Wing Anti-Ice Valves Inoperative

(2) MMEL 30-01 (DDPG) Restoration - Wing Anti-Ice Valves Inoperative

(3) MMEL 30-02 (DDPG) Preparation - Wing Anti-Ice Valve Position Lights Inoperative

(4) MMEL 30-02 (DDPG) Restoration - Wing Anti-Ice Valve Position Lights Inoperative

(5) MMEL 30-03 (DDPG) Preparation - Engine and Nose Cowl Anti-Ice Valves Inoperative

(6) MMEL 30-03 (DDPG) Restoration - Engine and Nose Cowl Anti-Ice Valves Inoperative

(7) MMEL 30-04 (DDPG) Preparation - Engine and Nose Cowl Anti-Ice Valve Position Lights Inoperative

(8) MMEL 30-04 (DDPG) Restoration - Engine and Nose Cowl Anti-Ice Valve Position Lights Inoperative

(9) MMEL 30-09 (DDPG) Preparation - Pitot, Pitot/Static and Temperature Probe Heater Lights Inoperative

(10) MMEL 30-09 (DDPG) Restoration - Pitot, Pitot/Static and Temperature Probe Heater Lights Inoperative

(11) MMEL 30-13 (DDPG) Preparation - Windshield Wiper Systems Inoperative

(12) MMEL 30-13 (DDPG) Restoration - Windshield Wiper Systems Inoperative

(13) MMEL 30-18 (DDPG) Preparation - Alpha Vane Heater Light Inoperative

(14) MMEL 30-18 (DDPG) Restoration - Alpha Vane Heater Light Inoperative

(15) MMEL 30-19 (DDPG) Preparation - Drain Mast Heater Inoperative

(16) MMEL 30-19 (DDPG) Restoration - Drain Mast Heater Inoperative

TASK 30-00-00-040-801

2. MMEL 30-01 (DDPG) Preparation - Wing Anti-Ice Valves Inoperative

(Figure 901)

A. General

(1) This task gives the maintenance steps which prepare the airplane for flight with the wing anti-ice valves 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
27-81-00-080-801	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)
71-00-00-800-807-F00	Start the Engine Procedure (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 20.04
621AB	Outboard Leading Edge Blowout Door - Slat Station 20.04

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: MAKE SURE YOU DO THE PROCEDURE TO DEACTIVATE THE LE SLATS. THE LEADING EDGE SLATS CAN MOVE AND CAUSE INJURIES TO PERSONS IF THEY ARE NOT DEACTIVATED.

(a) Do this task: Leading Edge Flap and Slat Locks Installation, TASK 27-81-00-480-801.

(b) Open this circuit breaker and install safety tag:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
A	1	C00146	ANTI-ICE & RAIN WING ANTI-ICE VALVE

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

Number	Name/Location
521AB	Outboard Leading Edge Blowout Door - Slat Station 20.04

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

Number	Name/Location
621AB	Outboard Leading Edge Blowout Door - Slat Station 20.04

SUBTASK 30-00-00-020-001

(2) Disconnect the electrical connector from the wing anti-ice valve and stow the connector.

SUBTASK 30-00-00-040-001

(3) Move the red lever on the wing anti-ice valve to the CLOSED position.

SUBTASK 30-00-00-840-002

(4) Return the airplane to its usual condition with a wing anti-ice valve locked closed:

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

Number	Name/Location
521AB	Outboard Leading Edge Blowout Door - Slat Station 20.04

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

Number	Name/Location
621AB	Outboard Leading Edge Blowout Door - Slat Station 20.04

(c) Remove the safety tag and close this circuit breaker:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
A	1	C00146	ANTI-ICE & RAIN WING ANTI-ICE VALVE

(d) Activate the LE slats. To activate them, do this task: Leading Edge Flap and Slat Locks Removal, TASK 27-81-00-080-801.

SUBTASK 30-00-00-930-001

(5) Put an INOP OFF placard on the WING ANTI-ICE switch.

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

SUBTASK 30-00-00-860-001

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

WARNING: MAKE SURE YOU DO THE PROCEDURE TO DEACTIVATE THE LE SLATS. THE LEADING EDGE SLATS CAN MOVE AND CAUSE INJURIES TO PERSONS IF THEY ARE NOT DEACTIVATED.

(a) Do this task: Leading Edge Flap and Slat Locks Installation, TASK 27-81-00-480-801.

(b) Open this circuit breaker and install safety tag:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
A	1	C00146	ANTI-ICE & RAIN WING ANTI-ICE VALVE

(c) Open this access panel:

Number	Name/Location
521AB	Outboard Leading Edge Blowout Door - Slat Station 20.04

(d) Disconnect the electrical connector from the left wing anti-ice valve and stow the connector.

(e) Move the red lever on the left wing anti-ice valve to the CLOSED position.

WARNING: MAKE SURE ALL PERSONNEL AND EQUIPMENT ARE CLEAR OF THE RIGHT ENGINE DANGER AREA. THE ENGINE INTAKE AND EXHAUST CAN INJURE PERSONNEL AND DAMAGE EQUIPMENT IN THE DANGER AREAS.

(f) Make sure that all personnel are cleared from the right engine danger area.

(g) For the right engine, do this task: Start the Engine Procedure (Selection), TASK 71-00-00-800-807-F00.

(h) Close the isolation and APU bleed air valves to depressurize the left pneumatic duct.

(i) After the pneumatic duct is depressurized, move the wing anti-ice valve to the open position.

(j) Close this access panel:

Number	Name/Location
521AB	Outboard Leading Edge Blowout Door - Slat Station 20.04

(k) Remove the safety tag and close this circuit breaker:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
A	1	C00146	ANTI-ICE & RAIN WING ANTI-ICE VALVE

(l) Activate the LE slats. To activate them, do this task: Leading Edge Flap and Slat Locks Removal, TASK 27-81-00-080-801.

SUBTASK 30-00-00-860-002

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

WARNING: MAKE SURE YOU DO THE PROCEDURE TO DEACTIVATE THE LE SLATS. THE LEADING EDGE SLATS CAN MOVE AND CAUSE INJURIES TO PERSONS IF THEY ARE NOT DEACTIVATED.

(a) Do this task: Leading Edge Flap and Slat Locks Installation, TASK 27-81-00-480-801.

(b) Open this circuit breaker and install safety tag:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
A	1	C00146	ANTI-ICE & RAIN WING ANTI-ICE VALVE

(c) Open this access panel:

Number	Name/Location
521AB	Outboard Leading Edge Blowout Door - Slat Station 20.04

(d) Disconnect the electrical connector from the left wing anti-ice valve and stow the connector.

(e) Move the red lever on the left wing anti-ice valve to the OPEN position.

(f) Close this access panel:

Number	Name/Location
521AB	Outboard Leading Edge Blowout Door - Slat Station 20.04

(g) Remove the safety tag and close this circuit breaker:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
A	1	C00146	ANTI-ICE & RAIN WING ANTI-ICE VALVE

(h) Activate the LE slats. To activate them, do this task: Leading Edge Flap and Slat Locks Removal, TASK 27-81-00-080-801.

SUBTASK 30-00-00-930-002

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

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

SUBTASK 30-00-00-860-003

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

WARNING: MAKE SURE YOU DO THE PROCEDURE TO DEACTIVATE THE LE SLATS. THE LEADING EDGE SLATS CAN MOVE AND CAUSE INJURIES TO PERSONS IF THEY ARE NOT DEACTIVATED.

(a) Do this task: Leading Edge Flap and Slat Locks Installation, TASK 27-81-00-480-801.

(b) Open this circuit breaker and install safety tag:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
A	1	C00146	ANTI-ICE & RAIN WING ANTI-ICE VALVE

(c) Open this access panel:

Number	Name/Location
621AB	Outboard Leading Edge Blowout Door - Slat Station 20.04

(d) Disconnect the electrical connector from the right wing anti-ice valve and stow the connector.

(e) Move the red lever on the right wing anti-ice valve to the OPEN position.

(f) Close this access panel:

Number	Name/Location
621AB	Outboard Leading Edge Blowout Door - Slat Station 20.04

(g) Remove the safety tag and close this circuit breaker:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
A	1	C00146	ANTI-ICE & RAIN WING ANTI-ICE VALVE

(h) Activate the LE slats. To activate them, do this task: Leading Edge Flap and Slat Locks Removal, TASK 27-81-00-080-801.

SUBTASK 30-00-00-860-004

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

WARNING: MAKE SURE YOU DO THE PROCEDURE TO DEACTIVATE THE LE SLATS. THE LEADING EDGE SLATS CAN MOVE AND CAUSE INJURIES TO PERSONS IF THEY ARE NOT DEACTIVATED.

(a) Do this task: Leading Edge Flap and Slat Locks Installation, TASK 27-81-00-480-801.

(b) Open this circuit breaker and install safety tag:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
A	1	C00146	ANTI-ICE & RAIN WING ANTI-ICE VALVE

(c) Open this access panel:

Number	Name/Location
621AB	Outboard Leading Edge Blowout Door - Slat Station 20.04

(d) Disconnect the electrical connector from the right wing anti-ice valve and stow the connector.

(e) Move the red lever on the right wing anti-ice valve to the CLOSED position.

WARNING: MAKE SURE ALL PERSONNEL AND EQUIPMENT ARE CLEAR OF THE RIGHT ENGINE DANGER AREA. THE ENGINE INTAKE AND EXHAUST CAN INJURE PERSONNEL AND DAMAGE EQUIPMENT IN THE DANGER AREAS.

(f) Make sure that all personnel are cleared from the left engine danger area.

(g) For the left engine, do this task: Start the Engine Procedure (Selection), TASK 71-00-00-800-807-F00.

(h) Remove the ground air source from the airplane.

(i) Close the isolation and APU bleed air valves to depressurize the right pneumatic duct.

(j) After the pneumatic duct is depressurized, manually move the wing anti-ice valve to the open position.

(k) Close this access panel:

Number	Name/Location
621AB	Outboard Leading Edge Blowout Door - Slat Station 20.04

(l) Remove the safety tag and close this circuit breaker:

CAPT Electrical System Panel, P18-3

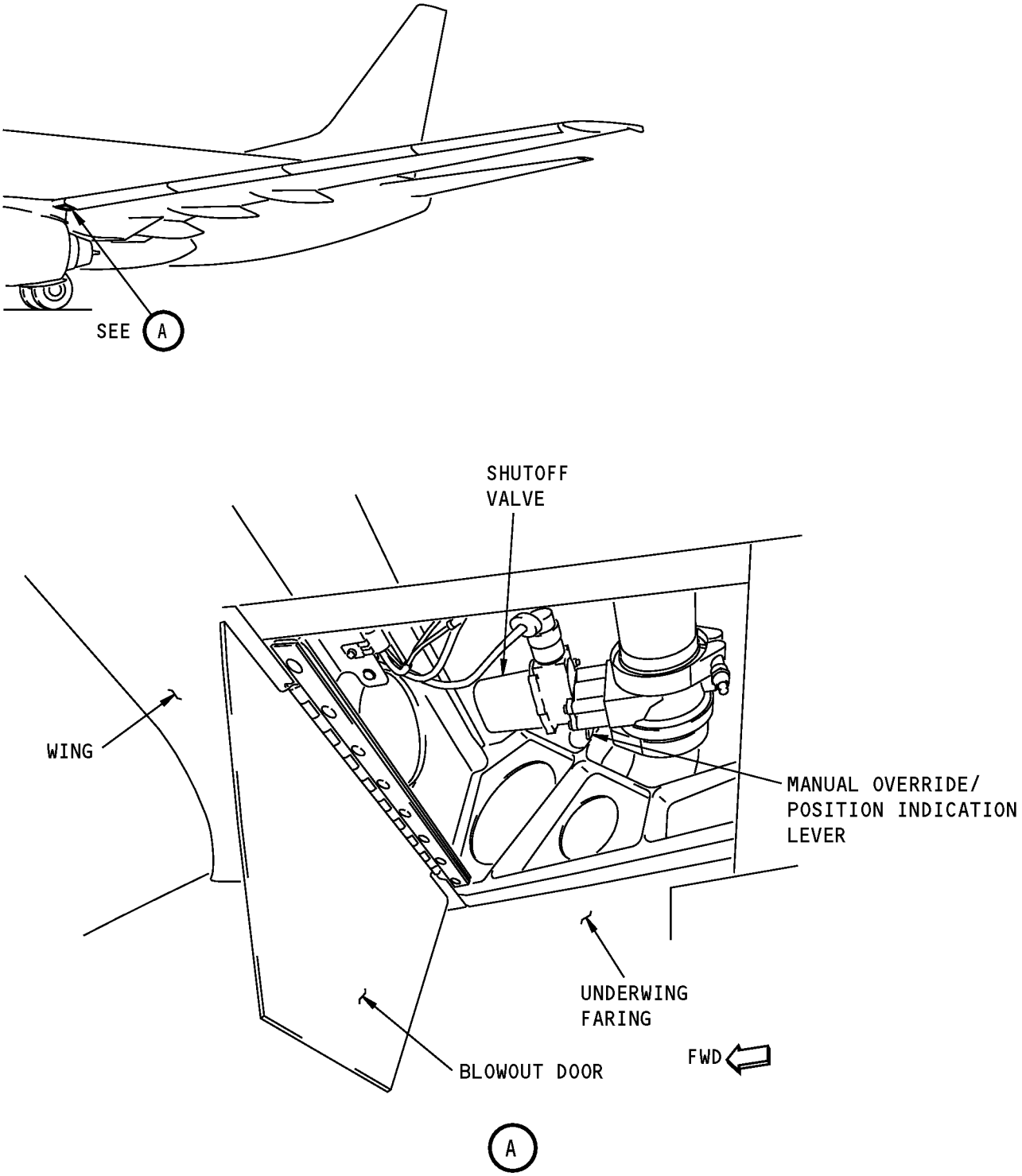
Row	Col	Number	Name
A	1	C00146	ANTI-ICE & RAIN WING ANTI-ICE VALVE

(m) Activate the LE slats. To activate them, do this task: Leading Edge Flap and Slat Locks Removal, TASK 27-81-00-080-801.

SUBTASK 30-00-00-930-003

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

———————— END OF TASK ————————



Wing Thermal Anti-Icing Shutoff Valve
Figure 901/30-00-00-990-801

TASK 30-00-00-440-801

3. MMEL 30-01 (DDPG) Restoration - Wing Anti-Ice Valves Inoperative

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
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)

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 20.04
621AB	Outboard Leading Edge Blowout Door - Slat Station 20.04

E. Reactivate the Wing Anti-Ice Valve

SUBTASK 30-00-00-860-005

(1) Open this circuit breaker and install safety tag:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
A	1	C00146	ANTI-ICE & RAIN WING ANTI-ICE VALVE

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: MAKE SURE YOU DO THE PROCEDURE TO DEACTIVATE THE LE SLATS. THE LEADING EDGE SLATS CAN MOVE AND CAUSE INJURIES TO PERSONS IF THEY ARE NOT DEACTIVATED.

(3) Do this task: Leading Edge Flap and Slat Locks Installation, TASK 27-81-00-480-801.

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 20.04

SUBTASK 30-00-00-010-002

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

Number	Name/Location
621AB	Outboard Leading Edge Blowout Door - Slat Station 20.04

SUBTASK 30-00-00-420-001

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

SUBTASK 30-00-00-860-008

(7) Remove the safety tag and close this circuit breaker:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
A	1	C00146	ANTI-ICE & RAIN WING ANTI-ICE VALVE

F. Wing Anti-Ice Valve Repair

SUBTASK 30-00-00-810-001

(1) Correct the fault.

(a) Find the fault code or description of the fault that occured.

(b) If you find a fault code, then do these steps:

1) Go to the Fault Code Index in the applicable chapter of the FIM and find the fault code.

NOTE: The first two digits of the fault code is the FIM chapter.

2) Find the task number on the same line as the fault code.

3) Go to the task in the FIM and do the steps in the task.

(c) If you find a description of the fault, then do these steps:

1) Go to the Observed Fault List at the beginning of the FIM and find the best description for the fault.

2) Find the task number on the same line as the fault description.

3) Go to the task in the FIM and do the steps in the task.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 30-00-00-410-001

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

Number	Name/Location
521AB	Outboard Leading Edge Blowout Door - Slat Station 20.04

SUBTASK 30-00-00-410-002

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

Number	Name/Location
621AB	Outboard Leading Edge Blowout Door - Slat Station 20.04

SUBTASK 30-00-00-440-001

(3) Activate the LE slats. To activate them, do this task: Leading Edge Flap and Slat Locks Removal, TASK 27-81-00-080-801.

SUBTASK 30-00-00-020-002

(4) If the fault was repaired, remove the INOP placard from the WING ANTI-ICE switch.

———————— END OF TASK ————————

TASK 30-00-00-040-802

4. MMEL 30-02 (DDPG) Preparation - Wing Anti-Ice Valve Position Lights Inoperative

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
27-81-00-080-801	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)

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 20.04
621AB	Outboard Leading Edge Blowout Door - Slat Station 20.04

E. Prepare for the Procedure

SUBTASK 30-00-00-860-009

WARNING: MAKE SURE YOU DO THE PROCEDURE TO DEACTIVATE THE LE SLATS. THE LEADING EDGE SLATS CAN MOVE AND CAUSE INJURIES TO PERSONS IF THEY ARE NOT DEACTIVATED.

(1) Do this task: Leading Edge Flap and Slat Locks Installation, TASK 27-81-00-480-801.

SUBTASK 30-00-00-010-003

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

Number	Name/Location
521AB	Outboard Leading Edge Blowout Door - Slat Station 20.04

SUBTASK 30-00-00-010-004

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

Number	Name/Location
621AB	Outboard Leading Edge Blowout Door - Slat Station 20.04

F. Test the Wing Anti-Ice Valve

SUBTASK 30-00-00-710-001

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

SUBTASK 30-00-00-710-002

(2) Observe the position indicator on the wing anti-ice valve and make sure the valve indicates OPEN.

SUBTASK 30-00-00-710-003

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

SUBTASK 30-00-00-710-004

(4) Observe the position indicator on the wing anti-ice valve and make sure the valve indicates CLOSED.

SUBTASK 30-00-00-930-004

(5) Attach an INOP placard to the applicable VALVE OPEN light.

G. Return the Airplane to Its Usual Condition

SUBTASK 30-00-00-010-005

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

Number	Name/Location
521AB	Outboard Leading Edge Blowout Door - Slat Station 20.04

SUBTASK 30-00-00-010-006

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

Number	Name/Location
621AB	Outboard Leading Edge Blowout Door - Slat Station 20.04

SUBTASK 30-00-00-440-002

(3) Do this task: Leading Edge Flap and Slat Locks Removal, TASK 27-81-00-080-801.

——————— END OF TASK ———————

TASK 30-00-00-440-802

5. MMEL 30-02 (DDPG) Restoration - Wing Anti-Ice Valve Position Lights Inoperative

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

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

C. Procedure

SUBTASK 30-00-00-810-002

(1) Correct the fault.

(a) Find the fault code or description of the fault that occured.

(b) If you find a fault code, then do these steps:

1) Go to the Fault Code Index in the applicable chapter of the FIM and find the fault code.

NOTE: The first two digits of the fault code is the FIM chapter.

2) Find the task number on the same line as the fault code.

3) Go to the task in the FIM and do the steps in the task.

(c) If you find a description of the fault, then do these steps:

1) Go to the Observed Fault List at the beginning of the FIM and find the best description for the fault.

2) Find the task number on the same line as the fault description.

3) Go to the task in the FIM and do the steps in the task.

SUBTASK 30-00-00-020-003

(2) If the fault was repaired, remove the INOP placard from the valve open light.

——————— END OF TASK ———————

TASK 30-00-00-040-803

6. MMEL 30-03 (DDPG) Preparation - Engine and Nose Cowl Anti-Ice Valves Inoperative

(Figure 902, Figure 903)

A. General

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

(2) The engine anti-ice valves can be deactivated by locking them closed or open.

B. References

Reference	Title
71-11-02-010-801-F00	Open the Fan Cowl Panels (P/B 201)
71-11-02-410-801-F00	Close the Fan Cowl Panels (P/B 201)
78-31-00-010-801-F00	Open the Thrust Reverser (Selection) (P/B 201)
78-31-00-010-804-F00	Close the Thrust Reverser (Selection) (P/B 201)

C. Prepare for the Procedure

SUBTASK 30-00-00-010-007

(1) Do this task: Open the Fan Cowl Panels, TASK 71-11-02-010-801-F00.

SUBTASK 30-00-00-010-008

(2) Do this task: Open the Thrust Reverser (Selection), TASK 78-31-00-010-801-F00.

SUBTASK 30-00-00-860-019

(3) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
A	6	C00148	ANTI-ICE & RAIN ENGINE 1 & WING CONTROL
A	7	C01001	ANTI-ICE & RAIN ENGINE 1 COWL ANTI-ICE VALVE
B	6	C00149	ANTI-ICE & RAIN ENGINE 2 CONTROL

D. Put the Engine Anti-Ice Valve Inoperative CLOSED

SUBTASK 30-00-00-210-001

(1) To manually position the valve in the CLOSED position:

(a) Loosen the retaining screw on the manual locking assembly.

(b) Move the hex shaft to the CLOSED desired position.

(c) Slide the locking assembly up the shaft into the recess in the cover plate.

(d) Tighten the retaining screw.

E. Put the Engine Anti-Ice Valve Inoperative Open

SUBTASK 30-00-00-210-002

(1) To manually position the valve in the OPEN position, do these steps:

(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.

SUBTASK 30-00-00-020-006

(2) Disconnect, cap and stow the DP1302 ELECTRICAL CONNECTOR [3] on the ANTI-ICE PRESSURE SWITCH [4]Figure 902.

SUBTASK 30-00-00-860-010

(3) Close theHIGH STAGE VALVE [5] from the 9th stage bleed air sourceFigure 903:

(a) Manually wrench the MANUAL OVERRIDE/POSITION INDICATOR [6]on the HIGH STAGE VALVE [5] to the CLOSE position Figure 903.

(b) Loosen the position indicator screw.

(c) Slide the lock into the recess in the cover plate.

(d) Tighten the position indicator screw.

F. Secure the Engine Access Panels

SUBTASK 30-00-00-860-020

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

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
A	6	C00148	ANTI-ICE & RAIN ENGINE 1 & WING CONTROL
A	7	C01001	ANTI-ICE & RAIN ENGINE 1 COWL ANTI-ICE VALVE
B	6	C00149	ANTI-ICE & RAIN ENGINE 2 CONTROL

SUBTASK 30-00-00-010-009

(2) Do this task: Close the Fan Cowl Panels, TASK 71-11-02-410-801-F00.

SUBTASK 30-00-00-010-010

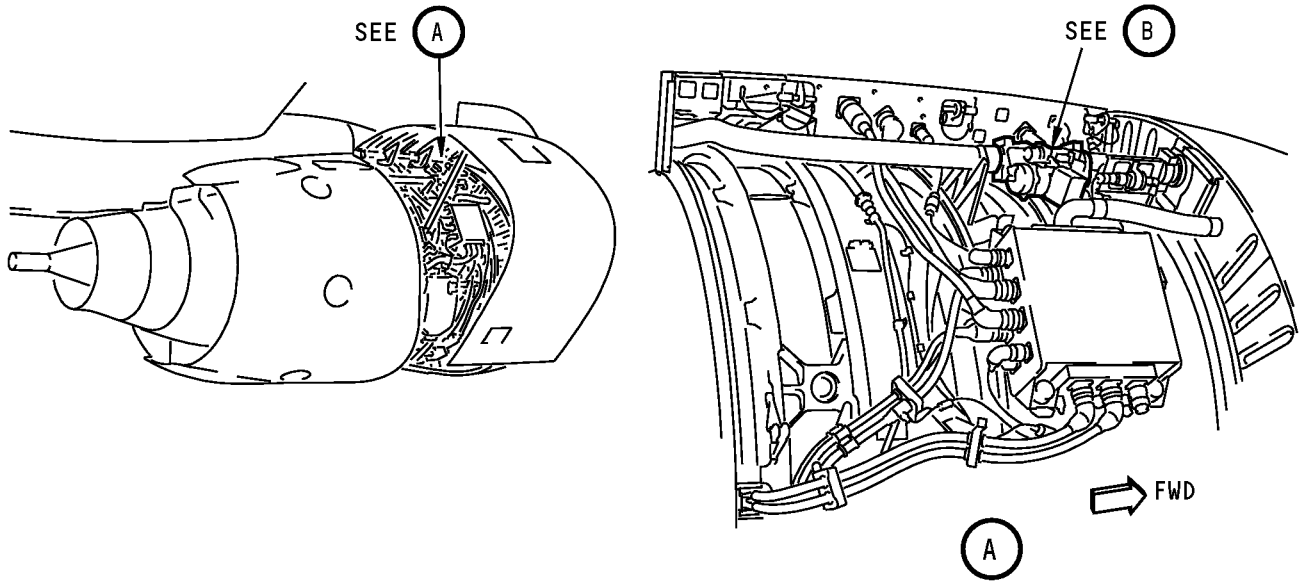
(3) Do this task: Close the Thrust Reverser (Selection), TASK 78-31-00-010-804-F00.

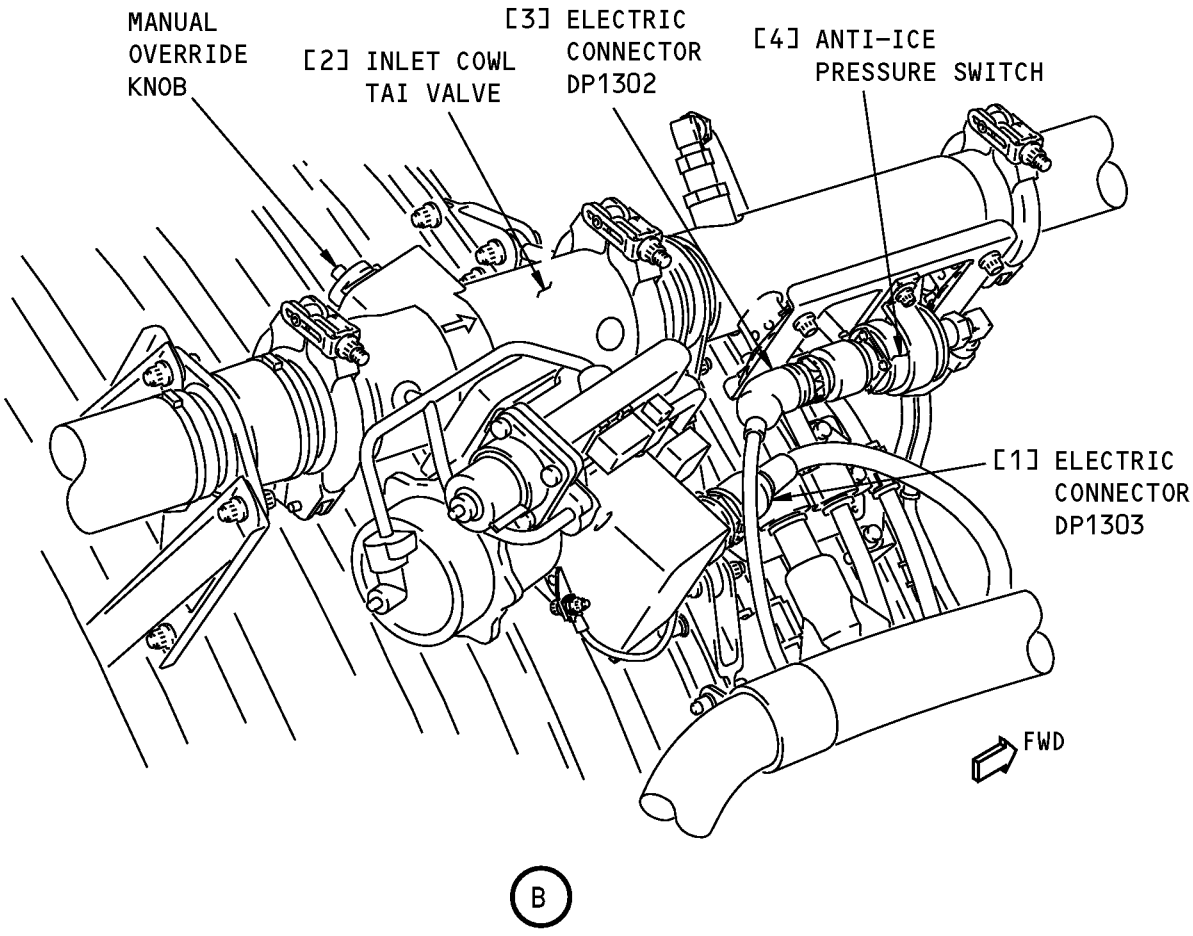
G. Put INOP Placards on the Affected Switch and Light

SUBTASK 30-00-00-930-005

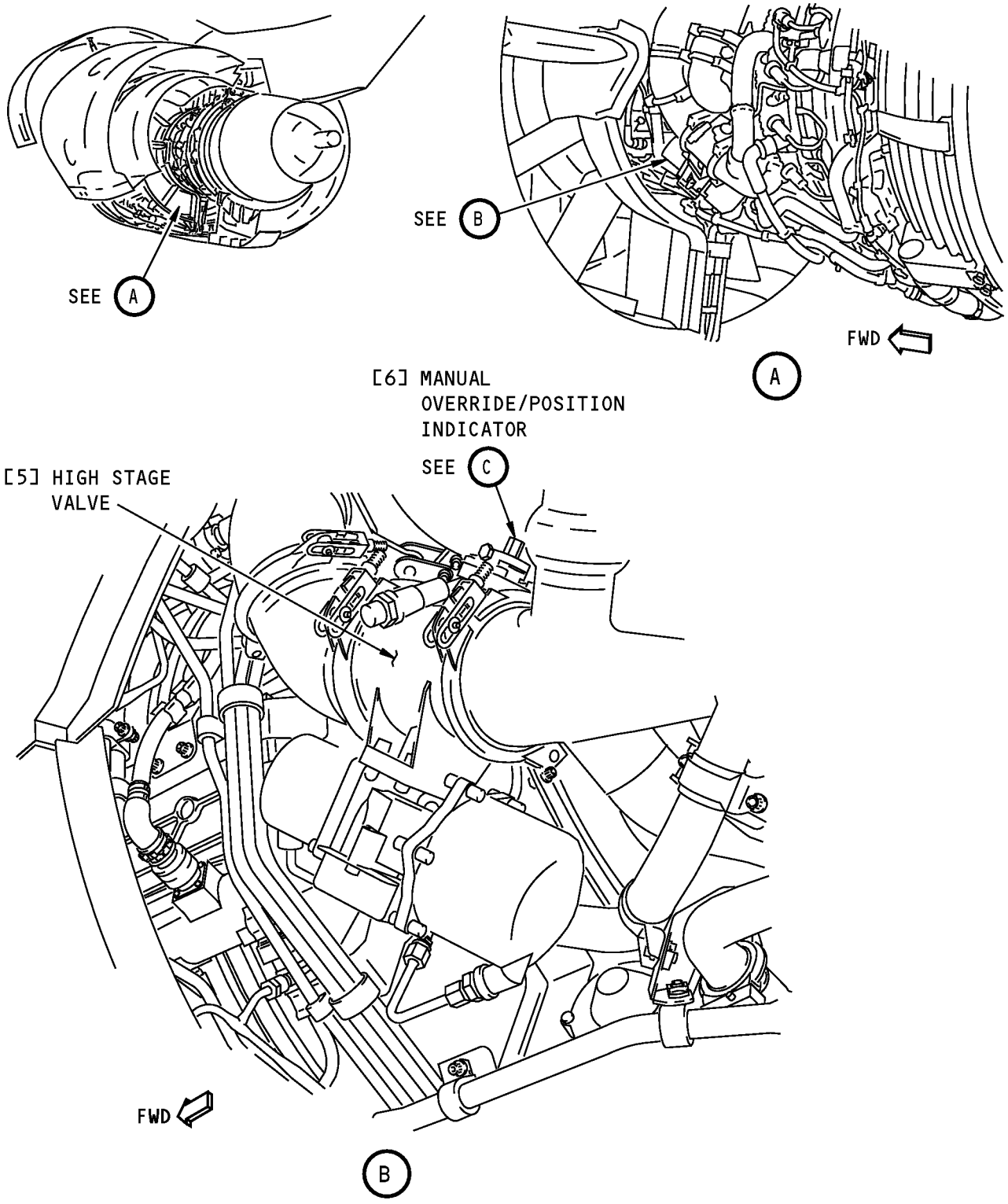
(1) Put an INOP LOCKED OPEN or INOP LOCKED CLOSED placard on the affected ENG ANTI-ICE switch.

END OF TASK

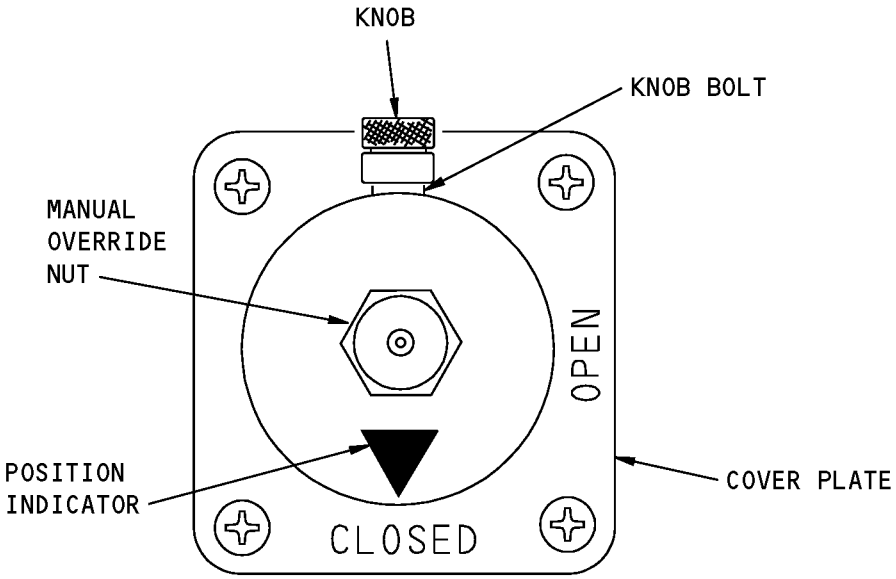




Engine Cowl TAI Valve Deactivation
Figure 902/30-00-00-990-802



High Stage Valve Deactivation
Figure 903 (Sheet 1 of 2)/30-00-00-990-803



MANUAL OVERRIDE/POSITION INDICATOR

C

High Stage Valve Deactivation
Figure 903 (Sheet 2 of 2)/30-00-00-990-803

TASK 30-00-00-440-803

7. MMEL 30-03 (DDPG) Restoration - Engine and Nose Cowl Anti-Ice Valves Inoperative

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
71-11-02-010-801-F00	Open the Fan Cowl Panels (P/B 201)
71-11-02-410-801-F00	Close the Fan Cowl Panels (P/B 201)
78-31-00-010-801-F00	Open the Thrust Reverser (Selection) (P/B 201)
78-31-00-010-804-F00	Close the Thrust Reverser (Selection) (P/B 201)

C. Location Zones

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

D. Prepare for the Procedure

SUBTASK 30-00-00-010-011

(1) Do this task: Open the Fan Cowl Panels, TASK 71-11-02-010-801-F00.

SUBTASK 30-00-00-010-012

(2) Do this task: Open the Thrust Reverser (Selection), TASK 78-31-00-010-801-F00.

SUBTASK 30-00-00-860-021

(3) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
A	6	C00148	ANTI-ICE & RAIN ENGINE 1 & WING CONTROL
A	7	C01001	ANTI-ICE & RAIN ENGINE 1 COWL ANTI-ICE VALVE
B	6	C00149	ANTI-ICE & RAIN ENGINE 2 CONTROL

E. Procedure

SUBTASK 30-00-00-210-004

(1) Unlock the engine cowl anti-ice valve:

(a) Loosen the retaining screw on the manual locking assembly.

(b) Slide the locking assembly out of the cover plate recess.

(c) Tighten the retaining screw.

SUBTASK 30-00-00-420-003

(2) Connect the electrical connector to the pressure switch.

SUBTASK 30-00-00-860-011

(3) If it is necessary, unlock the 9th stage bleed air modulating and shutoff valve:

(a) Loosen the position indicator screw.

(b) Slide the lock out of the recess in the cover plate.

(c) Tighten the position indicator screw.

SUBTASK 30-00-00-860-022

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

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
A	6	C00148	ANTI-ICE & RAIN ENGINE 1 & WING CONTROL
A	7	C01001	ANTI-ICE & RAIN ENGINE 1 COWL ANTI-ICE VALVE
B	6	C00149	ANTI-ICE & RAIN ENGINE 2 CONTROL

F. Secure the Engine Access Panels

SUBTASK 30-00-00-010-013

(1) Do this task: Close the Fan Cowl Panels, TASK 71-11-02-410-801-F00.

SUBTASK 30-00-00-010-014

(2) Do this task: Close the Thrust Reverser (Selection), TASK 78-31-00-010-804-F00.

G. Engine Cowl Anti-Ice Valve Repair

SUBTASK 30-00-00-810-003

(1) Correct the fault.

(a) Find the fault code or description of the fault that occured.

(b) If you find a fault code, then do these steps:

1) Go to the Fault Code Index in the applicable chapter of the FIM and find the fault code.

NOTE: The first two digits of the fault code is the FIM chapter.

2) Find the task number on the same line as the fault code.

3) Go to the task in the FIM and do the steps in the task.

(c) If you find a description of the fault, then do these steps:

1) Go to the Observed Fault List at the beginning of the FIM and find the best description for the fault.

2) Find the task number on the same line as the fault description.

3) Go to the task in the FIM and do the steps in the task.

SUBTASK 30-00-00-440-003

(2) If the fault was repaired, remove the INOP placards from the affected position light and ENG ANTI-ICE switch.

———————— END OF TASK ————————

TASK 30-00-00-040-804

8. MMEL 30-04 (DDPG) Preparation - Engine and Nose Cowl Anti-Ice Valve Position Lights Inoperative

A. General

(1) This task gives the maintenance steps which prepare the airplane for flight with an engine and nose cowl anti-ice valve position light inoperative.

B. References

Reference	Title
71-00-00-700-819-F00	Stop the Engine Procedure (Usual Engine Stop) (P/B 201)
71-00-00-800-807-F00	Start the Engine Procedure (Selection) (P/B 201)

C. Location Zones

Zone	Area
200	Upper Half of Fuselage

D. Procedure

SUBTASK 30-00-00-860-012

(1) Do this task: Start the Engine Procedure (Selection), TASK 71-00-00-800-807-F00.

SUBTASK 30-00-00-860-013

(2) Wait for the engine to stabilize at idle.

SUBTASK 30-00-00-210-005

(3) Make sure that the engine and APU bleed air switches are in the OFF position.

SUBTASK 30-00-00-210-006

(4) Make that the ENG ANTI-ICE switch is in the OFF position.

SUBTASK 30-00-00-210-007

(5) Monitor the EGT

(a) Wait for the EGT to stabilize and record the temperature.

CAUTION: DO NOT OPERATE THE ENGINE COWL ANTI-ICE FOR LONGER THAN 30 SECONDS. DAMAGE TO THE ENGINE COWL MAY OCCUR IF THE ANTI-ICE SYSTEM IS OPERATED FOR LONGER THAN 30 SECONDS.

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

(c) Wait for the EGT to stabilize and record the temperature.

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

(e) Wait for the EGT to stabilize and record the temperature.

SUBTASK 30-00-00-860-014

(6) Make sure that these changes occured:

(a) The EGT increased by a minimum of 15 degrees C when the ENG ANTI-ICE switch was placed in the ON position.

(b) The EGT returned to the original idle temperature when the ENG ANTI-ICE switch was put in the OFF position.

SUBTASK 30-00-00-860-015

(7) Do this task: Stop the Engine Procedure (Usual Engine Stop), TASK 71-00-00-700-819-F00.

SUBTASK 30-00-00-860-016

(8) Put an INOP placard on the applicable COWL ANTI-ICE light.

———————— END OF TASK ————————

TASK 30-00-00-440-804

9. MMEL 30-04 (DDPG) Restoration - Engine and Nose Cowl Anti-Ice Valve Position Lights Inoperative

A. General

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

B. Location Zones

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

C. Procedure

SUBTASK 30-00-00-810-004

(1) Correct the fault.

(a) Find the fault code or description of the fault that occured.

(b) If you find a fault code, then do these steps:

1) Go to the Fault Code Index in the applicable chapter of the FIM and find the fault code.

NOTE: The first two digits of the fault code is the FIM chapter.

2) Find the task number on the same line as the fault code.

3) Go to the task in the FIM and do the steps in the task.

(c) If you find a description of the fault, then do these steps:

1) Go to the Observed Fault List at the beginning of the FIM and find the best description for the fault.

2) Find the task number on the same line as the fault description.

3) Go to the task in the FIM and do the steps in the task.

SUBTASK 30-00-00-440-004

(2) If the fault was repaired, remove the INOP placard from the affected light.

——————— END OF TASK ———————

TASK 30-00-00-040-805

10. MMEL 30-09 (DDPG) Preparation - Pitot, Pitot/Static and Temperature Probe Heater Lights Inoperative

A. General

(1) This task gives the maintenance steps which prepare the airplane for flight with a pitot, pitot/static, and temperature probe heater light inoperative.

B. References

Reference	Title
24-22-00-860-813	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 the probe heater associated with the light operates.

(a) Make sure the covers are removed from all air data probes and vanes.

(b) Do this task: Supply External Power, TASK 24-22-00-860-813.

WARNING: DO NOT TOUCH THE AIR DATA PROBE. THE PROBE CAN GET VERY HOT. A HOT PROBE CAN CAUSE INJURY TO PERSONNEL.

(WARNING PRECEDES)

CAUTION: DO NOT HEAT THE AIR DATA PROBE LONGER THAN IS NECESSARY TO RUN THE TEST. HEATER LIFE CAN BE SHORTENNED IF YOU LEAVE IT ON LONGER THAN NECESSARY TO RUN THE TEST.

(c) Put the applicable PITOT STATIC HEAT switch to the ON position.

(d) Make sure the applicable probe gets warm.

(e) Put the applicable PITOT STATIC HEAT switch to the OFF position.

SUBTASK 30-00-00-930-007

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

——————— END OF TASK ———————

TASK 30-00-00-440-805

11. MMEL 30-09 (DDPG) Restoration - Pitot, Pitot/Static and Temperature Probe Heater Lights Inoperative

A. General

(1) This task puts the airplane back to its usual condition after operation with a pitot, pitot/static, and temperature probe heater light inoperative.

B. Procedure

SUBTASK 30-00-00-810-005

(1) Correct the fault.

(a) Find the fault code or description of the fault that occured.

(b) If you find a fault code, then do these steps:

1) Go to the Fault Code Index in the applicable chapter of the FIM and find the fault code.

NOTE: The first two digits of the fault code is the FIM chapter.

2) Find the task number on the same line as the fault code.

3) Go to the task in the FIM and do the steps in the task.

(c) If you find a description of the fault, then do these steps:

1) Go to the Observed Fault List at the beginning of the FIM and find the best description for the fault.

2) Find the task number on the same line as the fault description.

3) Go to the task in the FIM and do the steps in the task.

SUBTASK 30-00-00-440-005

(2) If the fault was repaired, remove the INOP placard from the affected light.

——————— END OF TASK ———————

TASK 30-00-00-040-806

12. MMEL 30-13 (DDPG) Preparation - Windshield Wiper System Inoperative

A. General

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

B. References

Reference	Title
30-42-31-000-801	Windshield Wiper Arm Removal (P/B 201)
30-42-31-400-801	Windshield Wiper Arm Installation (P/B 201)

C. Location Zones

Zone	Area
200	Upper Half of Fuselage

D. Procedure

SUBTASK 30-00-00-930-008

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

SUBTASK 30-00-00-020-005

(2) If the wiper blade obstructs forward vision do these steps:

(a) Do this task: Windshield Wiper Arm Removal, TASK 30-42-31-000-801.

(b) Do this task: 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 ————————

TASK 30-00-00-440-806

13. MMEL 30-13 (DDPG) Restoration - Windshield Wiper System Inoperative

A. General

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

B. References

Reference	Title
30-42-31-820-802	Windshield Wiper Arm Position Check/Adjustment (P/B 201)

C. Procedure

SUBTASK 30-00-00-810-006

(1) Correct the fault.

(a) Find the fault code or description of the fault that occured.

(b) If you find a fault code, then do these steps:

1) Go to the Fault Code Index in the applicable chapter of the FIM and find the fault code.

NOTE: The first two digits of the fault code is the FIM chapter.

2) Find the task number on the same line as the fault code.

3) Go to the task in the FIM and do the steps in the task.

(c) If you find a description of the fault, then do these steps:

1) Go to the Observed Fault List at the beginning of the FIM and find the best description for the fault.

2) Find the task number on the same line as the fault description.

3) Go to the task in the FIM and do the steps in the task.

SUBTASK 30-00-00-820-001

(2) If the windshield wiper arm was adjusted in the preparation task, do this task: Windshield Wiper Arm Position Check/Adjustment, TASK 30-42-31-820-802.

SUBTASK 30-00-00-440-006

(3) If the fault was repaired, remove the INOP placard from the windshield wiper switch.

——————— END OF TASK ———————

TASK 30-00-00-040-807

14. MMEL 30-18 (DDPG) Preparation - Alpha Vane Heater Light Inoperative

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
24-22-00-860-811	Supply Electrical 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 the vane heater associated with the light operates.

(a) Make sure the covers are removed from all probe and vane heads.

(b) Do this task: Supply Electrical Power, TASK 24-22-00-860-811

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.

(c) Put the applicable PITOT STATIC HEAT switch to the ON position.

(d) Make sure the applicable vane gets warm

(e) Put the applicable PITOT STATIC HEAT switch to the OFF position.

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

15. MMEL 30-18 (DDPG) Restoration - Alpha Vane Heater Light Inoperative

A. General

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

B. Procedure

SUBTASK 30-00-00-810-007

(1) Correct the fault.

(a) Find the fault code or description of the fault that occurred.

(b) If you find a fault code, then do these steps:

1) Go to the Fault Code Index in the applicable chapter of the FIM and find the fault code.

NOTE: The first two digits of the fault code is the FIM chapter.

2) Find the task number on the same line as the fault code.

3) Go to the task in the FIM and do the steps in the task.

(c) If you find a description of the fault, then do these steps:

1) Go to the Observed Fault List at the beginning of the FIM and find the best description for the fault.

2) Find the task number on the same line as the fault description.

3) Go to the task in the FIM and do the steps in the task.

SUBTASK 30-00-00-440-007

(2) If the fault was repaired, remove the INOP placard from the affected light.

——————— END OF TASK ———————

TASK 30-00-00-040-808

16. MMEL 30-19 (DDPG) Preparation - Drain Mast Heaters Inoperative

A. General

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

B. Procedure

SUBTASK 30-00-00-210-008

(1) Close the water supply shutoff valves.

SUBTASK 30-00-00-040-002

(2) Placard the basins.

SUBTASK 30-00-00-865-001

(3) 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

——————— END OF TASK ———————

TASK 30-00-00-440-808

17. MMEL 30-19 (DDPG) Restoration - Drain Mast Heater Inoperative

A. General

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

B. Procedure

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 30-00-00-010-015

(2) Open the water supply shutoff valves.

C. Drain Mast Heater Repair

SUBTASK 30-00-00-810-008

(1) Correct the fault.

(a) Find the fault code or description of the fault that occured.

(b) If you find a fault code, then do these steps:

1) Go to the Fault Code Index in the applicable chapter of the FIM and find the fault code.

NOTE: The first two digits of the fault code is the FIM chapter.

2) Find the task number on the same line as the fault code.

3) Go to the task in the FIM and do the steps in the task.

(c) If you find a description of the fault, then do these steps:

1) Go to the Observed Fault List at the beginning of the FIM and find the best description.

2) Find the task number on the same line as the fault description

3) Go to the task in the FIM and do the steps in the task.

SUBTASK 30-00-00-440-008

(2) If the fault was repaired, remove the INOP placard from the affected light.

END OF TASK

WING THERMAL ANTI-ICING - ADJUSTMENT/TEST

1. General

A. This procedure has these tasks:

(1) Wing Thermal Anti-Icing - Operational Test

(2) Wing Anti-Icing Duct Leak Test

TASK 30-11-00-710-801

2. Wing Anti-Icing - Operational Test

(Figure 501)

A. General

(1) This test makes sure that the wing anti-icing System is operating properly. Specific tests for wing anti-icing components are contained in other procedures.

B. References

Reference	Title
24-22-00-860-813	Supply External Power (P/B 201)
24-22-00-860-814	Remove External Power (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
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. Access Panels

Number	Name/Location
521AB	Outboard Leading Edge Blowout Door - Slat Station 20.04
621AB	Outboard Leading Edge Blowout Door - Slat Station 20.04

E. Prepare for the Test

SUBTASK 30-11-00-010-001

(1) Open these access panels:

Number	Name/Location
521AB	Outboard Leading Edge Blowout Door - Slat Station 20.04
621AB	Outboard Leading Edge Blowout Door - Slat Station 20.04

SUBTASK 30-11-00-860-001

(2) Do this task: Supply External Power, TASK 24-22-00-860-813.

SUBTASK 30-11-00-860-002

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

SUBTASK 30-11-00-860-003

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

SUBTASK 30-11-00-210-001

(5) Make sure the VALVE OPEN light on the control panel is off.

SUBTASK 30-11-00-860-004

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

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

F. Test the WING ANTI-ICE Switch and Indication

SUBTASK 30-11-00-860-005

(1) Press and release the L VALVE OPEN and R VALVE OPEN light switches on the engine and wing anti-ice control panel (P5-11).

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

SUBTASK 30-11-00-860-006

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

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

(b) Make sure the VALVE OPEN lights come on brightly for 1 to 3 seconds.

(c) Make sure the VALVE OPEN lights are on dimly after 3 seconds.

CAUTION: DO NOT LET THE WING TAI VALVE BE OPEN FOR MORE THAN 30 SECONDS. OPERATION FOR MORE THAN 30 SECONDS WITH HEATED AIR CAN CAUSE DAMAGE TO THE WING LEADING EDGE.

(d) Make sure the wing anti-icing valves are open.

SUBTASK 30-11-00-720-001

(3) Do this test to make sure the wing anti-icing valves close when thrust is advanced:

(a) Put the left thrust lever in the fully advanced position.

1) Make sure the VALVE OPEN lights come on brightly.

(b) Put the left thrust lever in the idle position.

1) Make sure the VALVE OPEN lights are on dimly after 3 seconds.

(c) Put the right thrust lever in the fully advanced position.

1) Make sure the VALVE OPEN lights come on brightly.

(d) Put the right thrust lever in the idle position.

1) Make sure the VALVE OPEN lights are on dimly after 3 seconds.

SUBTASK 30-11-00-720-002

(4) Do this test to make sure the wing anti-icing valves close when a duct over temperature condition is detected in the left duct.

(a) Open this circuit breaker and install safety tag:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
A	1	C00146	ANTI-ICE & RAIN WING ANTI-ICE VALVE

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

(c) Remove the safety tag and close this circuit breaker:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
A	1	C00146	ANTI-ICE & RAIN WING ANTI-ICE VALVE

(d) Connect a jumper wire between pins 1 and 2 of the connector.

1) Make sure the L and R VALVE OPEN lights come on brightly for 1 to 3 seconds.

(e) Remove the jumper wire from the connector.

(f) Open this circuit breaker and install safety tag:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
A	1	C00146	ANTI-ICE & RAIN WING ANTI-ICE VALVE

(g) Connect the connector to the left wing ground thermal anti-ice switch.

(h) Remove the safety tag and close this circuit breaker:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
A	1	C00146	ANTI-ICE & RAIN WING ANTI-ICE VALVE

(i) Make sure the L and R VALVE OPEN lights are dim.

SUBTASK 30-11-00-720-003

(5) Do this test to make sure the wing anti-icing valves close when a duct over temperature condition is detected in the right duct.

(a) Open this circuit breaker and install safety tag:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
A	1	C00146	ANTI-ICE & RAIN WING ANTI-ICE VALVE

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

(c) Remove the safety tag and close this circuit breaker:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
A	1	C00146	ANTI-ICE & RAIN WING ANTI-ICE VALVE

(d) Connect a jumper wire between pins 1 and 2 of the connector.

1) Make sure the L and R VALVE OPEN lights come on brightly for 1 to 3 seconds.

(e) Remove the jumper wire from the connector.

(f) Open this circuit breaker and install safety tag:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
A	1	C00146	ANTI-ICE & RAIN WING ANTI-ICE VALVE

(g) Connect the connector to the right wing ground thermal anti-ice switch.

(h) Remove the safety tag and close this circuit breaker:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
A	1	C00146	ANTI-ICE & RAIN WING ANTI-ICE VALVE

(i) Make sure the L and R VALVE OPEN lights are dim.

SUBTASK 30-11-00-720-004

(6) Do this check of the air mode transition:

WARNING: OBEY THE PROCEDURE THAT PREPARES TO PUT THE AIRPLANE IN THE AIR MODE. IN THE AIR MODE, MANY OF THE AIRPLANE SYSTEMS CAN OPERATE. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

(a) Do this task: Put the Airplane in the Air Mode, TASK 32-09-00-860-801.

(b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
D	1	C01399	PSEU PRI
D	2	C01400	PSEU ALTN

1) Make sure the WING ANTI-ICE switch goes to the OFF position.

2) Make sure the VALVE OPEN lights are bright for 1 to 3 seconds and then go off.

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

1) Make sure the VALVE OPEN lights go bright for 1 to 3 seconds and then go dim.

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

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
D	1	C01399	PSEU PRI
D	2	C01400	PSEU ALTN

(e) Return the airplane to the ground mode. To do this, do this task: Return the Airplane to the Ground Mode, TASK 32-09-00-860-802.

SUBTASK 30-11-00-860-007

(7) Do these steps to make sure the engine and wing anti-ice panel commands the anti-icing valves closed:

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

(b) Make sure the VALVE OPEN lights come on brightly for 1 to 3 seconds.

(c) Make sure the VALVE OPEN lights go off after 3 seconds.

G. Put the airplane back to its usual condition.

SUBTASK 30-11-00-720-005

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

SUBTASK 30-11-00-410-001

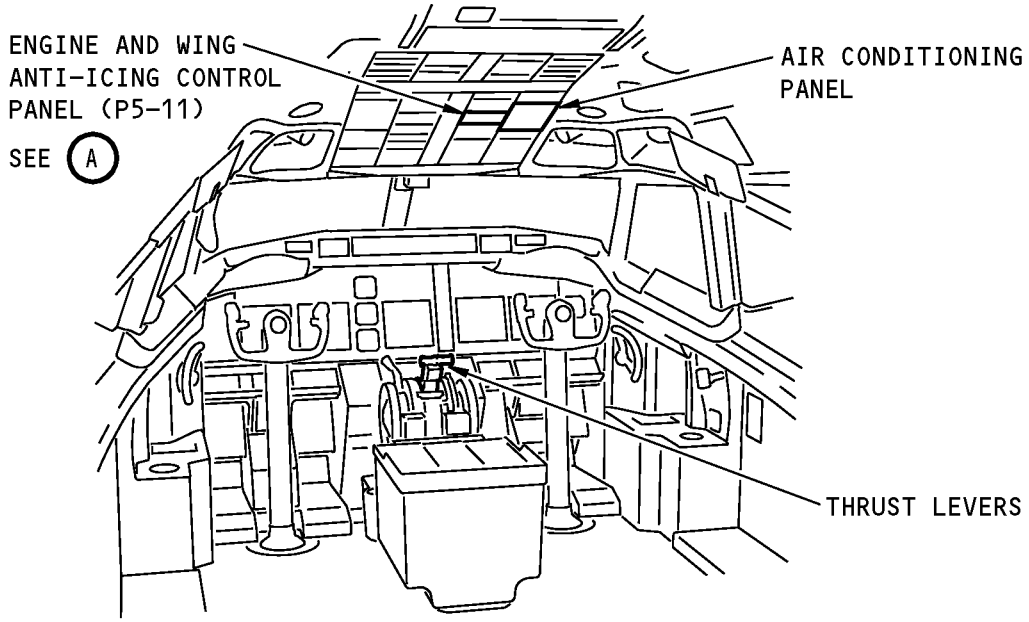
(2) Close these access panels:

Number	Name/Location
521AB	Outboard Leading Edge Blowout Door - Slat Station 20.04
621AB	Outboard Leading Edge Blowout Door - Slat Station 20.04

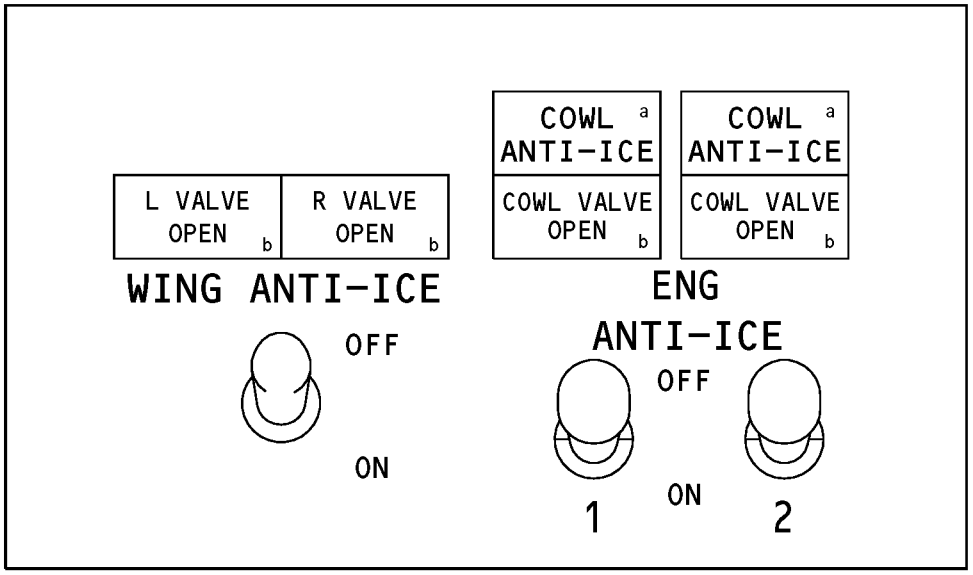
SUBTASK 30-11-00-860-008

(3) If electrical power is no longer necessary, do this task: Remove External Power, TASK 24-22-00-860-814.

——————— END OF TASK ———————



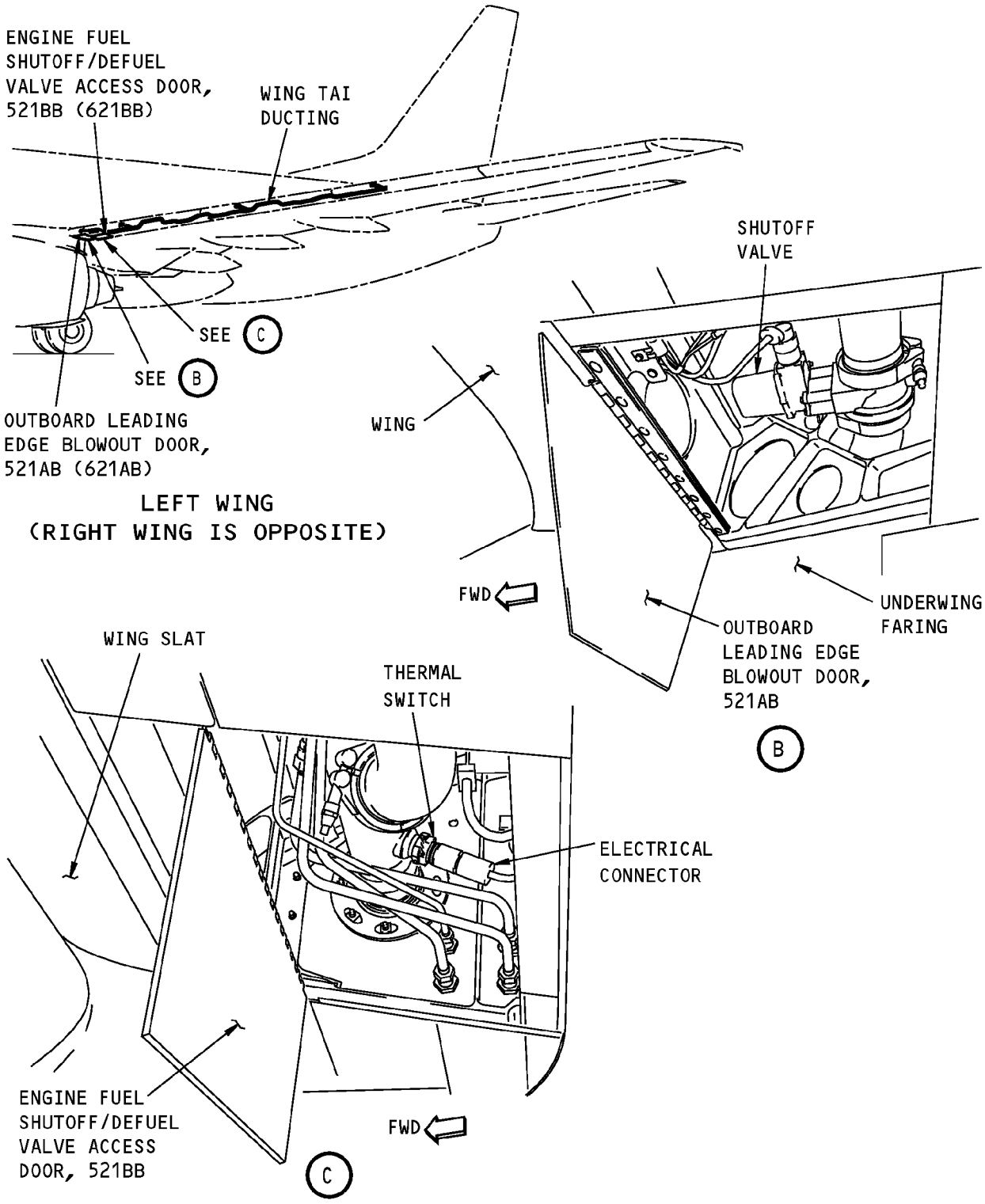
FLIGHT COMPARTMENT



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

A

Wing Thermal Anti-Icing Test
Figure 501 (Sheet 1 of 2)/30-11-00-990-801



Wing Thermal Anti-Icing Test
Figure 501 (Sheet 2 of 2)/30-11-00-990-801

TASK 30-11-00-790-801

3. Wing Anti-Icing Duct - Leak Test

(Figure 501)

A. General

(1) This test checks for leaks in the wing anti-icing ducts in the fixed leading edge of the wings and in the telescoping ducts. The check includes a visual inspection of the ducts and connectors. The check also includes feeling for leaks at the clamp connectors and duct sleeves.

B. References

Reference	Title
24-22-00-860-813	Supply External Power (P/B 201)
24-22-00-860-814	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. 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

D. Access Panels

Number	Name/Location
521AB	Outboard Leading Edge Blowout Door - Slat Station 20.04
621AB	Outboard Leading Edge Blowout Door - Slat Station 20.04

E. Prepare for the Procedure

SUBTASK 30-11-00-860-009

(1) If it is necessary, supply electrical power to the airplane. To do this, do this task: Supply External Power, TASK 24-22-00-860-813.

SUBTASK 30-11-00-860-010

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

SUBTASK 30-11-00-010-002

(3) Open these access panels:

Number	Name/Location
521AB	Outboard Leading Edge Blowout Door - Slat Station 20.04
621AB	Outboard Leading Edge Blowout Door - Slat Station 20.04

F. Procedure

SUBTASK 30-11-00-210-002

(1) Do a visual check of the wing thermal anti-icing duct and fittings.

(a) Inspect for holes, cracks, and loose components

SUBTASK 30-11-00-840-001

(2) Provide pneumatic pressure for the ducts.

(a) To use the APU to pressurize the TAI duct:

1) 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:

1) 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 the ISOLATION VALVE switch is in the OPEN or the AUTO position.

SUBTASK 30-11-00-860-011

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

SUBTASK 30-11-00-200-001

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

WARNING: DO NOT TOUCH THE TAI DUCT. THE DUCT CAN GET VERY HOT. IF YOU TOUCH THE DUCT YOU MAY GET BURNED.

CAUTION: DO NOT KEEP THE WING TAI VALVE OPEN FOR MORE THAN 30 SECONDS. IF IT IS OPEN FOR MORE THAN 30 SECONDS, THE HOT AIR CAN CAUSE DAMAGE TO THE WING LEADING EDGE.

(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 or more inches away are not satisfactory.

G. Put the airplane back to its usual condition.

SUBTASK 30-11-00-860-012

(1) Remove pneumatic pressure from the ducts. To do this, do this task: Remove Pressure from the Pneumatic System, TASK 36-00-00-860-806.

SUBTASK 30-11-00-720-006

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

SUBTASK 30-11-00-410-003

(3) Close these access panels:

Number	Name/Location
521AB	Outboard Leading Edge Blowout Door - Slat Station 20.04
621AB	Outboard Leading Edge Blowout Door - Slat Station 20.04

SUBTASK 30-11-00-860-013

(4) If electrical power is no longer necessary, do this task: Remove External Power, TASK 24-22-00-860-814.

END OF TASK

WING THERMAL ANTI-ICING SHUTOFF VALVE - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) Wing Thermal Anti-Icing Shutoff Valve Removal

(2) Wing Thermal Anti-Icing Shutoff Valve Installation

TASK 30-11-11-000-801

2. Wing Thermal Anti-Icing Shutoff Valve Removal

(Figure 401)

A. References

Reference	Title
27-81-00-480-801	Leading Edge Flap and Slat Locks Installation (P/B 201)
SSM 30-11-11	System Schematics Manual
WDM 30-11-11	Wiring Diagram Manual

B. 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

C. Access Panels

Number	Name/Location
521AB	Outboard Leading Edge Blowout Door - Slat Station 20.04
621AB	Outboard Leading Edge Blowout Door - Slat Station 20.04

D. Prepare for the Removal

SUBTASK 30-11-11-040-001

WARNING: DO THE DEACTIVATION PROCEDURE FOR THE LE SLATS. THE LE SLATS CAN MOVE QUICKLY AND CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) Deactivate the leading edge slats. To deactivate them, do this task: Leading Edge Flap and Slat Locks Installation, TASK 27-81-00-480-801.

SUBTASK 30-11-11-860-001

(2) Open this circuit breaker and install safety tag:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
A	1	C00146	ANTI-ICE & RAIN WING ANTI-ICE VALVE

SUBTASK 30-11-11-010-001

(3) Open the applicable wing access panels:

Number	Name/Location
521AB	Outboard Leading Edge Blowout Door - Slat Station 20.04
621AB	Outboard Leading Edge Blowout Door - Slat Station 20.04

E. Wing Thermal Anti-Icing Shutoff Valve Removal

(SSM 30-11-11, WDM 30-11-11)

SUBTASK 30-11-11-020-001

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

SUBTASK 30-11-11-020-002

(2) Disconnect the bonding jumper [10] from the valve.

(a) Remove nut [7], washers [8], [11] and screw [12].

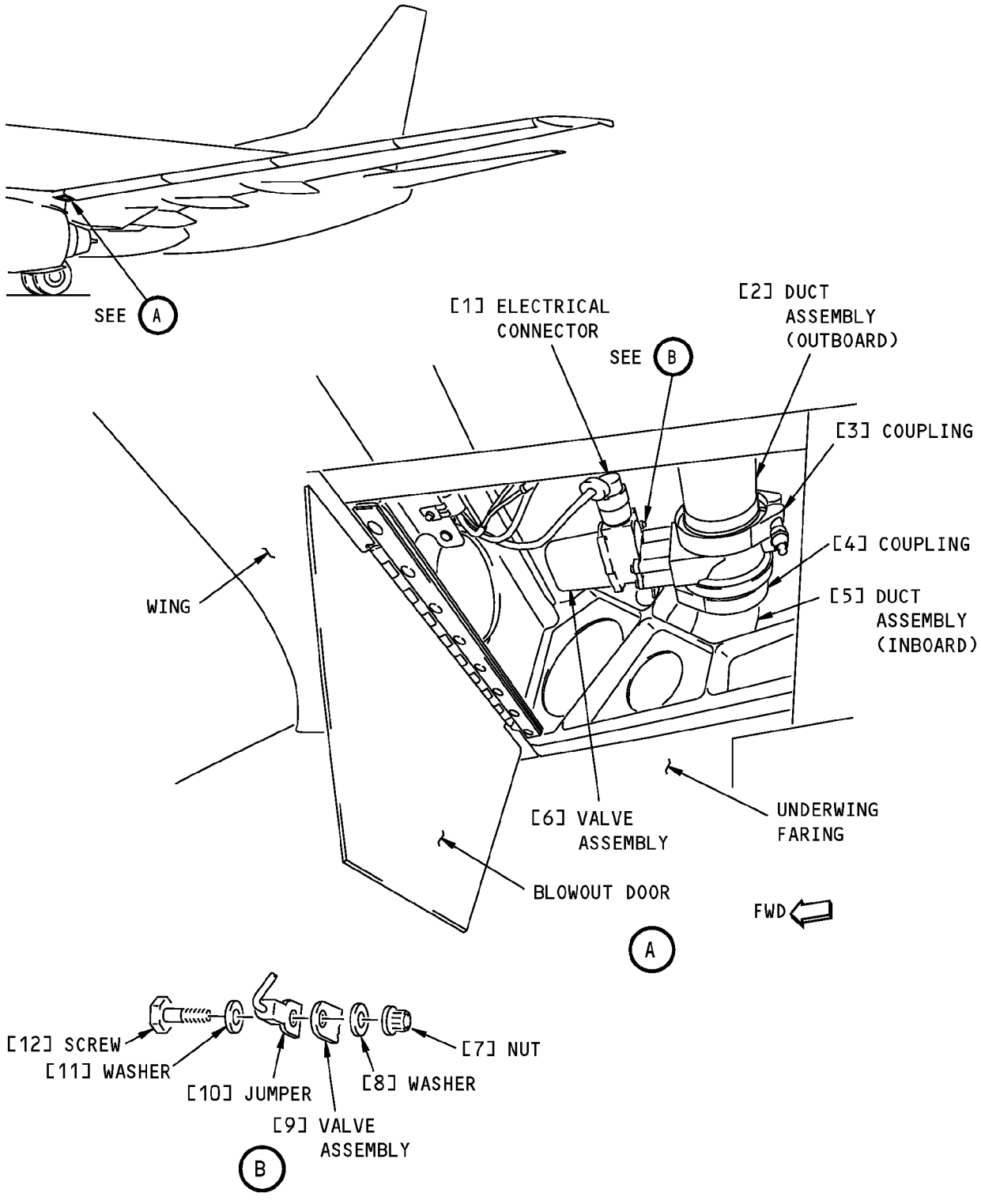
SUBTASK 30-11-11-020-003

(3) Remove the couplings [3], [4].

SUBTASK 30-11-11-020-004

(4) Remove the valve [6].

END OF TASK



Wing Thermal Anti-Icing Shutoff Valve Installation
Figure 401/30-11-11-990-801

TASK 30-11-11-400-801

3. Wing Thermal Anti-Icing Shutoff Valve Installation

(Figure 401)

A. References

Reference	Title
24-22-00-860-814	Remove External Power (P/B 201)
27-81-00-080-801	Leading Edge Flap and Slat Locks Removal (P/B 201)
30-11-11-710-801	Wing Thermal Anti Icing Shutoff Valve Test (P/B 501)
SSM 30-11-11	System Schematics Manual
WDM 30-11-11	Wiring Diagram Manual

B. 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

C. Access Panels

Number	Name/Location
521AB	Outboard Leading Edge Blowout Door - Slat Station 20.04
621AB	Outboard Leading Edge Blowout Door - Slat Station 20.04

D. Wing Thermal Anti-Icing Shutoff Valve Installation

(SSM 30-11-11) (WDM 30-11-11)

SUBTASK 30-11-11-420-001

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

SUBTASK 30-11-11-420-002

(2) Install the couplings [3], [4].

SUBTASK 30-11-11-420-004

(3) Connect the jumper [10].

(a) Install the screw [12], washers [8], [11] and nut [7].

SUBTASK 30-11-11-420-005

(4) Connect the electrical connector [1].

E. Wing Thermal Anti-Icing Shutoff Valve Installation Test

SUBTASK 30-11-11-860-002

(1) Remove the safety tag and close this circuit breaker:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
A	1	C00146	ANTI-ICE & RAIN WING ANTI-ICE VALVE

SUBTASK 30-11-11-760-001

(2) Make sure the resistance between the valve and the airplane structure is 0.1 ohms or less.

SUBTASK 30-11-11-710-001

(3) Do this task: Wing Thermal Anti Icing Shutoff Valve Test, TASK 30-11-11-710-801.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 30-11-11-410-001

(1) Close the applicable wing panels,

Number	Name/Location
521AB	Outboard Leading Edge Blowout Door - Slat Station 20.04
621AB	Outboard Leading Edge Blowout Door - Slat Station 20.04

SUBTASK 30-11-11-440-001

(2) Reactivate the leading edge slats. To activate them, do this task: Leading Edge Flap and Slat Locks Removal, TASK 27-81-00-080-801.

SUBTASK 30-11-11-860-003

(3) If it is necessary to remove electrical power, do this task: Remove External Power, TASK 24-22-00-860-814.

——————— END OF TASK ———————

WING THERMAL ANTI-ICING SHUTOFF VALVE - ADJUSTMENT/TEST

1. General

A. This procedure contains a task to test the wing thermal anti-icing shutoff valve.

TASK 30-11-11-710-801

2. Wing Thermal Anti Icing Shutoff Valve Test

(Figure 501)

A. General

(1) This test makes sure that the Wing Thermal Anti-Icing Shutoff Valve is operating properly.

B. References

Reference	Title
24-22-00-860-813	Supply External Power (P/B 201)
24-22-00-860-814	Remove External Power (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
521AB	Outboard Leading Edge Blowout Door - Slat Station 20.04
621AB	Outboard Leading Edge Blowout Door - Slat Station 20.04

E. Prepare for the Test

SUBTASK 30-11-11-860-004

(1) Do this task: Supply External Power, TASK 24-22-00-860-813.

SUBTASK 30-11-11-860-005

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

SUBTASK 30-11-11-010-002

(3) Open the applicable wing access panels:

Number	Name/Location
521AB	Outboard Leading Edge Blowout Door - Slat Station 20.04
621AB	Outboard Leading Edge Blowout Door - Slat Station 20.04

F. Procedure

SUBTASK 30-11-11-860-006

(1) Press and release the L VALVE OPEN and R VALVE OPEN light switches on the P5-11 panel.

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

SUBTASK 30-11-11-860-007

(2) Make sure the TAI valves open correctly.

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

(b) Make sure the VALVE OPEN lights come on brightly for 1 to 3 seconds.

(c) Make sure the VALVE OPEN lights are on dimly after 3 seconds.

(d) Make sure the wing TAI valves are open.

SUBTASK 30-11-11-720-001

(3) Test the TAI valve indication for the left wing:

(a) Open this circuit breaker:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
A	1	C00146	ANTI-ICE & RAIN WING ANTI-ICE VALVE

(b) Disconnect the electrical connector from the left wing TAI valve.

(c) Make sure the L VALVE OPEN light is on brightly and continuously.

(d) Reconnect the electrical connector to the TAI valve.

(e) Close this circuit breaker:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
A	1	C00146	ANTI-ICE & RAIN WING ANTI-ICE VALVE

(f) Make sure the L VALVE OPEN is on dimly and continuously.

SUBTASK 30-11-11-720-002

(4) Test the TAI valve indication for the right wing:

(a) Open this circuit breaker:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
A	1	C00146	ANTI-ICE & RAIN WING ANTI-ICE VALVE

(b) Disconnect the electrical connector from the right wing TAI valve.

(c) Make sure the R VALVE OPEN light is on brightly and continuously.

(d) Reconnect the electrical connector to the TAI valve.

(e) Close this circuit breaker:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
A	1	C00146	ANTI-ICE & RAIN WING ANTI-ICE VALVE

(f) Make sure the R VALVE OPEN is on dimly and continuously.

SUBTASK 30-11-11-860-008

(5) Make sure the TAI valves close correctly.

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

(b) Make sure the VALVE OPEN lights come on brightly for 1 to 3 seconds.

(c) Make sure the VALVE OPEN lights go off after 3 seconds.

(d) Make sure the wing TAI valves are closed.

G. Put the Airplane in its Usual Condition

SUBTASK 30-11-11-410-002

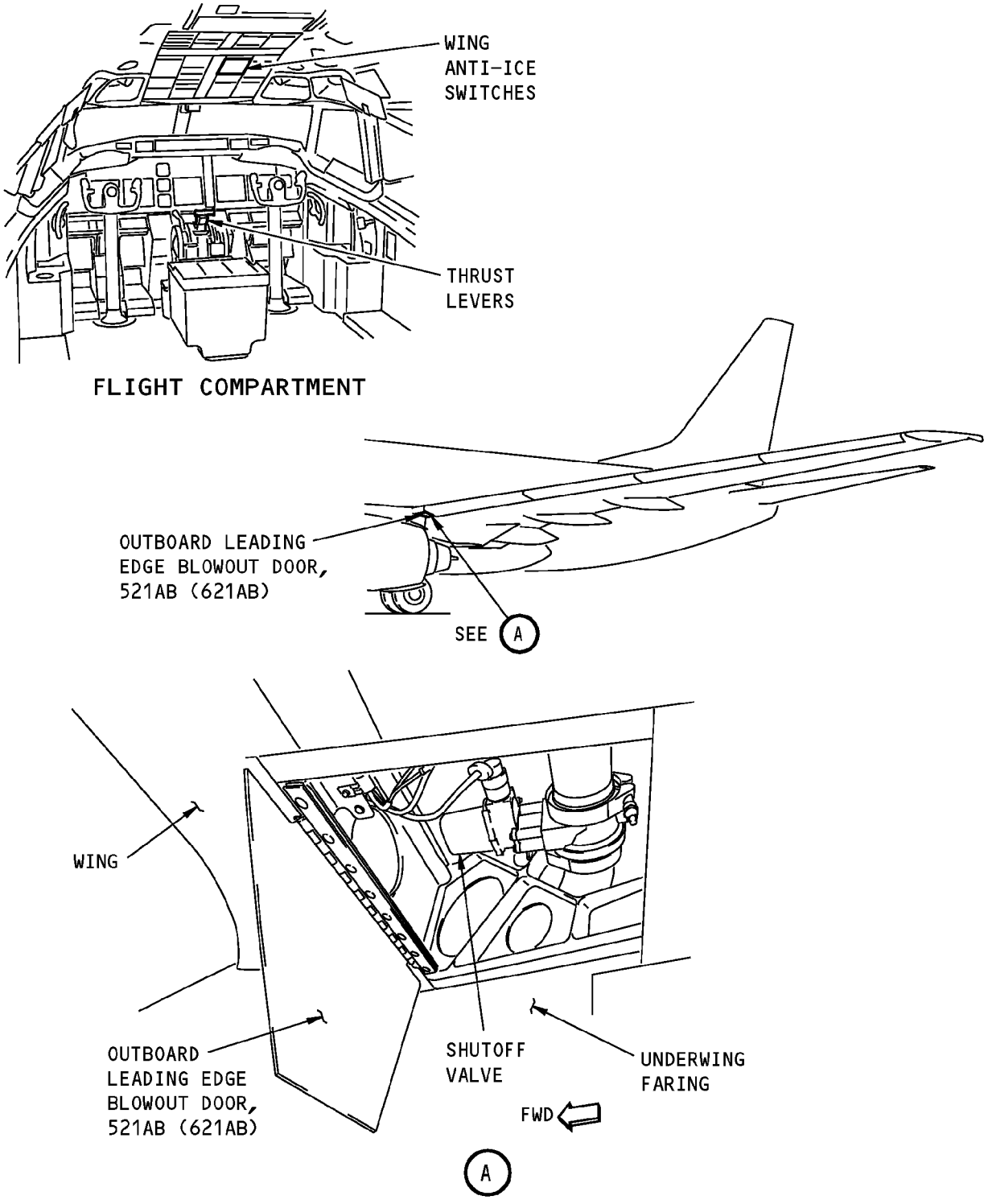
(1) Close the applicable wing access panels:

Number	Name/Location
521AB	Outboard Leading Edge Blowout Door - Slat Station 20.04
621AB	Outboard Leading Edge Blowout Door - Slat Station 20.04

SUBTASK 30-11-11-860-009

(2) If electrical power is no longer necessary, do this task: Remove External Power, TASK 24-22-00-860-814.

——————— END OF TASK ———————



Wing Thermal Anti-Icing Shutoff Valve Test
Figure 501/30-11-11-990-802

GROUND WING THERMAL ANTI-ICING SOLENOID VALVE - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) Ground Wing Thermal Anti-Icing Solenoid Valve Removal.

(2) Ground Wing Thermal Anti-Icing Solenoid Valve Installation.

TASK 30-11-12-000-801

2. Ground Wing Thermal Anti-Icing Solenoid Valve Removal

(Figure 401)

A. References

Reference	Title
78-31-00-010-801-F00	Open the Thrust Reverser (Selection) (P/B 201)

B. Location Zones

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

C. Prepare for the Removal

SUBTASK 30-11-12-860-001

(1) Open this circuit breaker and install safety tag:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
A	1	C00146	ANTI-ICE & RAIN WING ANTI-ICE VALVE

SUBTASK 30-11-12-010-005

WARNING: DO THESE SPECIFIED TASKS IN THE CORRECT SEQUENCE BEFORE YOU OPEN THE THRUST REVERSERS: RETRACT THE LEADING EDGE, DO THE DEACTIVATION PROCEDURES FOR THE LEADING EDGE AND THE THRUST REVERSERS (FOR GROUND MAINTENANCE), AND OPEN THE FAN COWL PANELS. IF YOU DO NOT OBEY THE ABOVE SEQUENCE, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

(2) Do this task: Open the Thrust Reverser (Selection), TASK 78-31-00-010-801-F00.

D. Ground Wing Thermal Anti-Icing Solenoid Valve Removal

SUBTASK 30-11-12-020-001

(1) Remove the electrical connector [5].

SUBTASK 30-11-12-020-002

(2) Remove the tube [4].

SUBTASK 30-11-12-020-003

(3) Remove the union [3] and discard the O-ring [2].

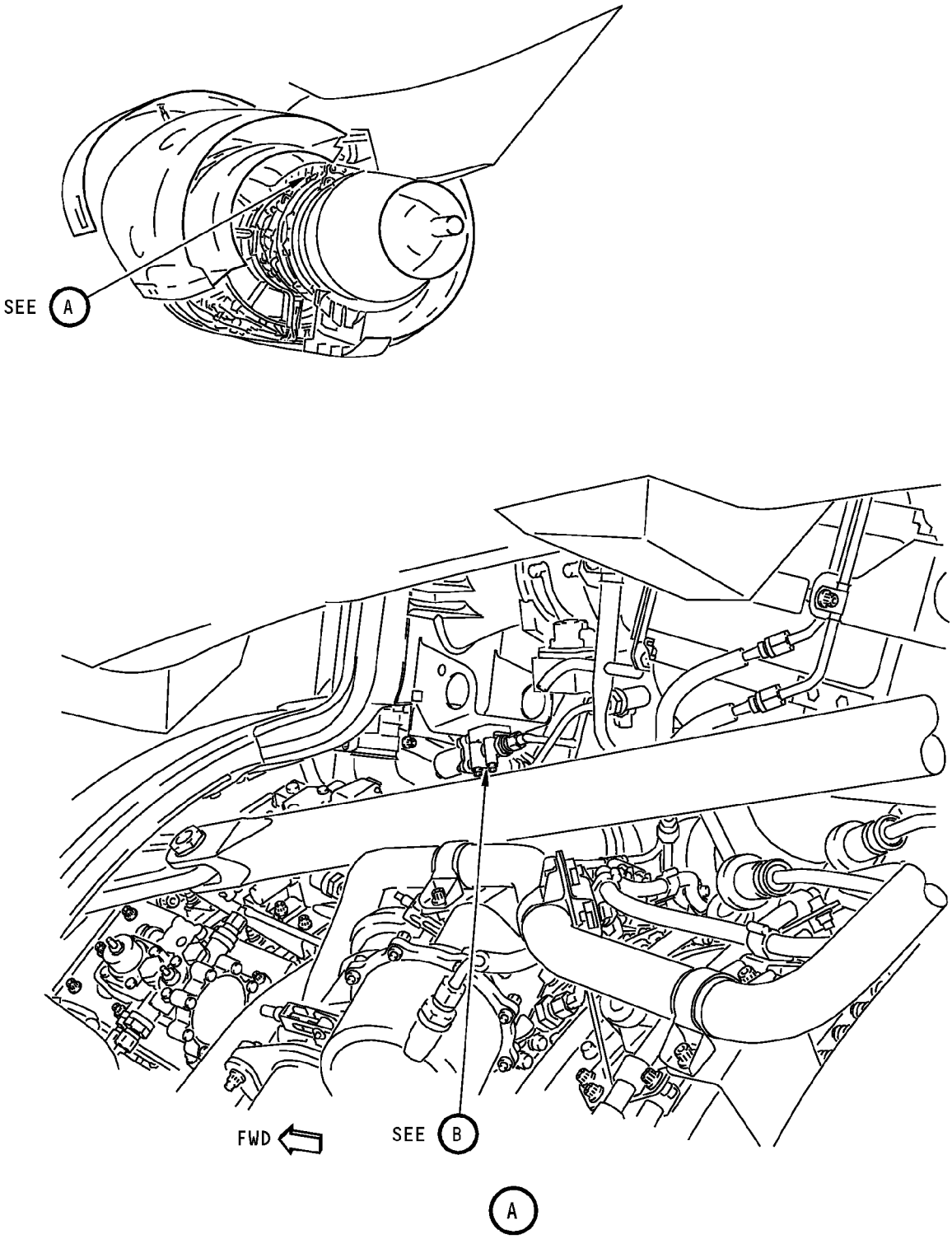
SUBTASK 30-11-12-020-004

(4) Remove the bolts [6].

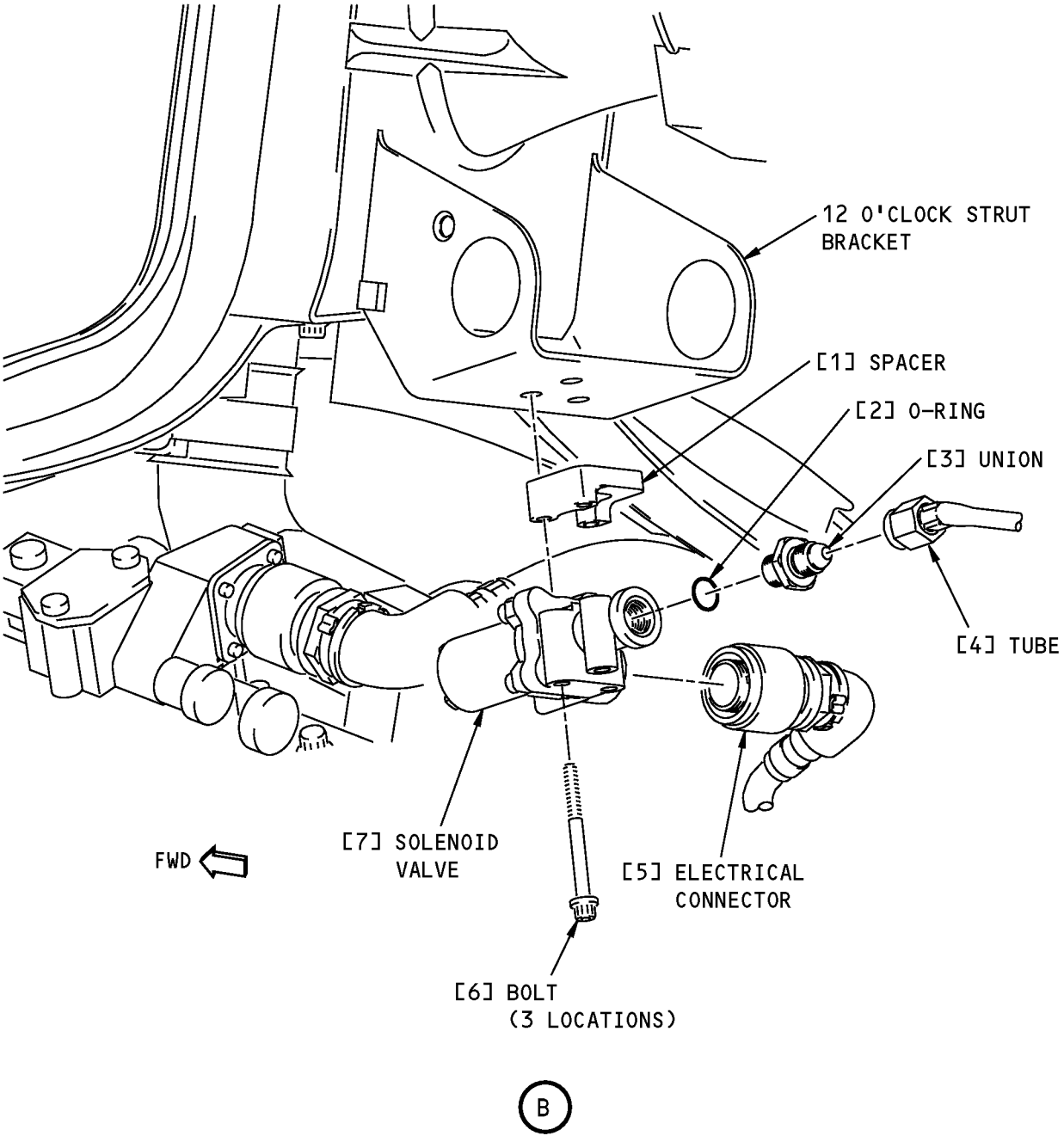
SUBTASK 30-11-12-020-005

(5) Remove the solenoid valve [7], set the spacer [1] aside.

END OF TASK



Wing Thermal Anti-Ice Solenoid Valve Installation
Figure 401 (Sheet 1 of 2)/30-11-12-990-801



Wing Thermal Anti-Ice Solenoid Valve Installation
Figure 401 (Sheet 2 of 2)/30-11-12-990-801

TASK 30-11-12-400-801

3. Ground Wing Thermal Anti-Icing Solenoid Valve Installation

(Figure 401)

A. References

Reference	Title
78-31-00-010-804-F00	Close the Thrust Reverser (Selection) (P/B 201)

B. Location Zones

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

C. Ground Wing Thermal Anti-Icing Solenoid Valve Installation

SUBTASK 30-11-12-420-001

(1) Position the solenoid valve [7] and spacer [1] on the strut bracket.

SUBTASK 30-11-12-420-002

(2) Secure the solenoid valve [7] with the bolts [6].

SUBTASK 30-11-12-420-003

(3) Install the O-ring [2] and union [3].

SUBTASK 30-11-12-420-005

(4) Install the tube [4].

SUBTASK 30-11-12-420-007

(5) Connect the electrical connector [5] to the solenoid valve [7].

SUBTASK 30-11-12-860-002

(6) Remove the safety tag and close this circuit breaker:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
A	1	C00146	ANTI-ICE & RAIN WING ANTI-ICE VALVE

D. Ground Wing Thermal Anti-Icing Solenoid Valve Installation Test

SUBTASK 30-11-12-760-001

(1) Make sure the resistance between the solenoid valve and the airplane structure is 0.008 ohms or less.

SUBTASK 30-11-12-710-001

(2) Do this test of the solenoid valve:

NOTE: This test requires two people to complete.

(a) While one person listens to the solenoid valve, put the WING ANTI-ICE switch in the ON position.

(b) If the solenoid valve makes a clicking sound, then the valve is open. The solenoid valve operates correctly.

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

E. Put the Airplane Back to Its Usual Condition

SUBTASK 30-11-12-410-004

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.

(1) Do this task: Close the Thrust Reverser (Selection), TASK 78-31-00-010-804-F00.

—————— END OF TASK ——————

GROUND WING THERMAL ANTI-ICING SOLENOID VALVE - ADJUSTMENT/TEST

1. General

A. This procedure contains scheduled maintenance task data.

B. This procedure has a task to test the Ground Wing TAI Solenoid Valve.

TASK 30-11-12-710-801

2. Ground Wing Thermal Anti-Icing (TAI) Solenoid Valve Test

(Figure 501)

A. General

(1) This procedure is a scheduled maintenance task.

(2) This test checks for for the proper operation of the ground wing thermal anti-icing (TAI) solenoid valves.

B. References

Reference	Title
24-22-00-860-813	Supply External Power (P/B 201)
24-22-00-860-814	Remove External Power (P/B 201)
30-11-00-790-801	Wing Anti-Icing Duct - Leak Test (P/B 501)
78-31-00-010-801-F00	Open the Thrust Reverser (Selection) (P/B 201)
78-31-00-010-804-F00	Close the Thrust Reverser (Selection) (P/B 201)

C. Tools/Equipment

Reference	Description
STD-1115	Source - Nitrogen, 0-100 PSIG
STD-1198	Regulator - Pressure, 0 to 100 PSI with Pressure Gauge, 3/8 Inch ID Connections

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. Prepare for the Procedure

SUBTASK 30-11-12-860-003

(1) Do this task: Supply External Power, TASK 24-22-00-860-813.

SUBTASK 30-11-12-860-004

(2) Make sure each engine start lever is in the CUTOFF position.

(a) Install a DO-NOT-OPERATE tag on the each engine start lever.

SUBTASK 30-11-12-010-003

WARNING: DO THESE SPECIFIED TASKS IN THE CORRECT SEQUENCE BEFORE YOU OPEN THE THRUST REVERSERS: RETRACT THE LEADING EDGE, DEACTIVATE THE LEADING EDGE, DEACTIVATE THE THRUST REVERSER (FOR GROUND MAINTENANCE), AND OPEN THE FAN COWL PANEL. IF YOU DO NOT OBEY THE ABOVE SEQUENCE, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

(3) Do this task: Open the Thrust Reverser (Selection), TASK 78-31-00-010-801-F00.

SUBTASK 30-11-12-860-005

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

F. Procedure

SUBTASK 30-11-12-480-001

(1) Do these steps to connect the test equipment to the engine:

(a) Disconnect the bleed air supply line at the inlet tee at the supply pressure sense line on the left of the engine.

(b) Connect a 0-100 PSIG nitrogen source, STD-1115, pressure regulator, STD-1198 and test line at the tee to the supply pressure sense line.

(c) Remove the cap from the test port on the control pressure sense line on the right side of the engine (Figure 501).

(d) Install a needle valve, control pressure gauge and a test line to the test port on the control pressure sense line.

SUBTASK 30-11-12-710-002

(2) Do this test of the solenoid valve:

(a) With the needle valve in the closed position, slowly increase the supply pressure to 26 Psig (180 KPa).

(b) Make sure the control pressure is stable and greater than 10 Psig 69 KPa).

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

(d) Make sure these actions occur:

1) Listen for the ground wing thermal anti-icing solenoid valve to make a clicking sound to indicate the valve is open.

2) Make sure the control pressure decreases to below 10 Psig (69 KPa).

(e) If these actions do not occur, then replace the solenoid valve.

SUBTASK 30-11-12-710-003

(3) Decrease the supply pressure to 0.

SUBTASK 30-11-12-080-001

(4) Remove the test equipment from the engine.

SUBTASK 30-11-12-080-002

(5) Re-install the cap on the test port.

SUBTASK 30-11-12-080-003

(6) Re-connect the bleed air supply line at the inlet tee of the supply pressure sense line.

SUBTASK 30-11-12-790-001

(7) Do this task: Wing Anti-Icing Duct - Leak Test, TASK 30-11-00-790-801.

G. Put the airplane back to its usual condition.

SUBTASK 30-11-12-720-001

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

SUBTASK 30-11-12-410-005

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.

(2) Do this task: Close the Thrust Reverser (Selection), TASK 78-31-00-010-804-F00.

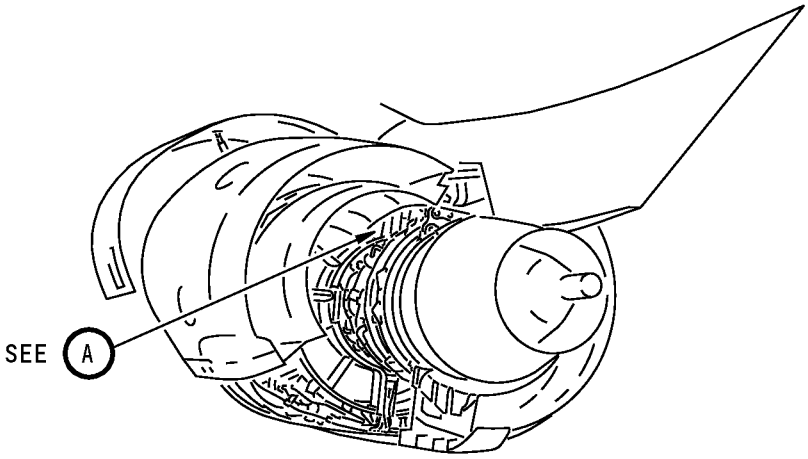
SUBTASK 30-11-12-440-002

(3) Remove the DO-NOT-OPERATE tag from each engine start lever.

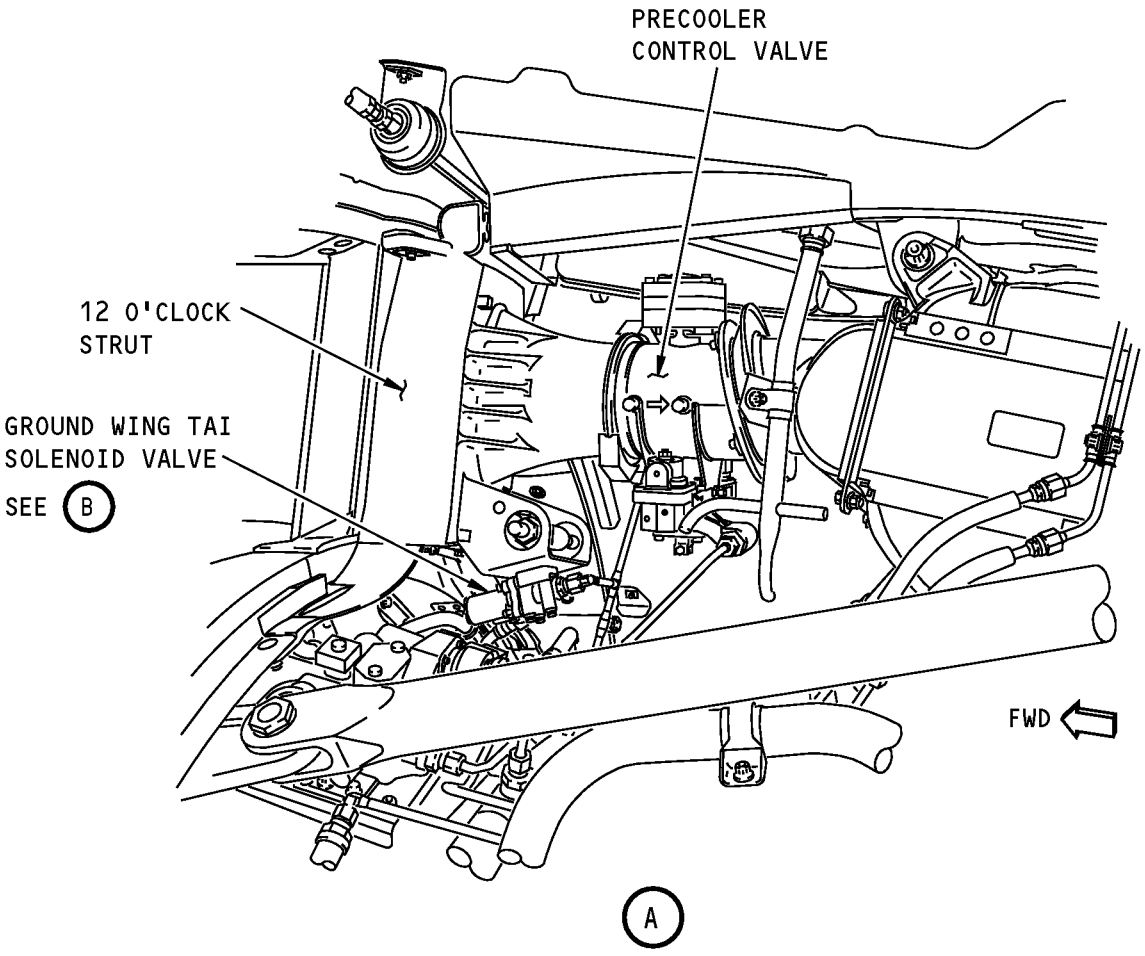
SUBTASK 30-11-12-860-011

(4) If electrical power is no longer necessary, do this task: Remove External Power, TASK 24-22-00-860-814.

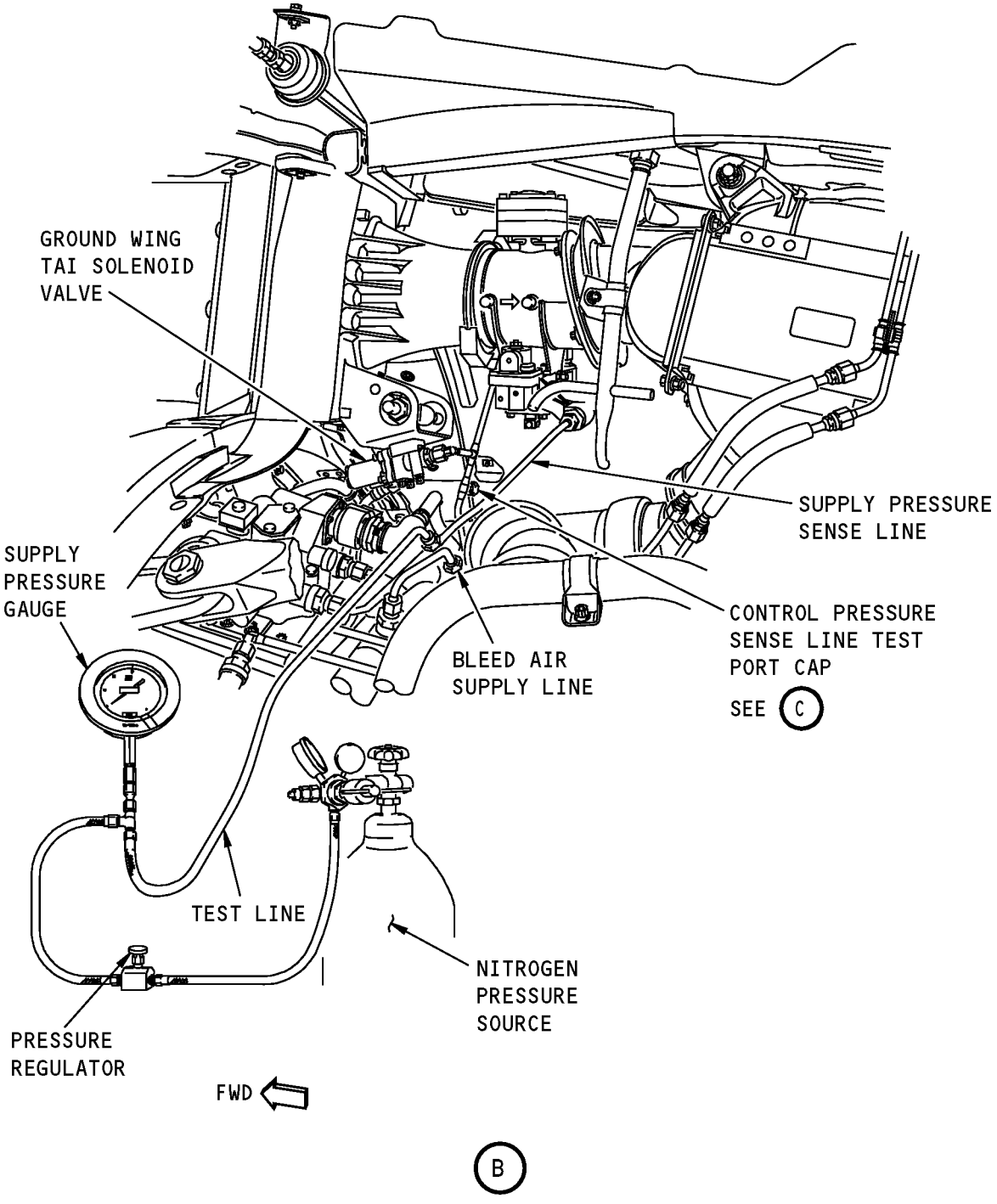
END OF TASK



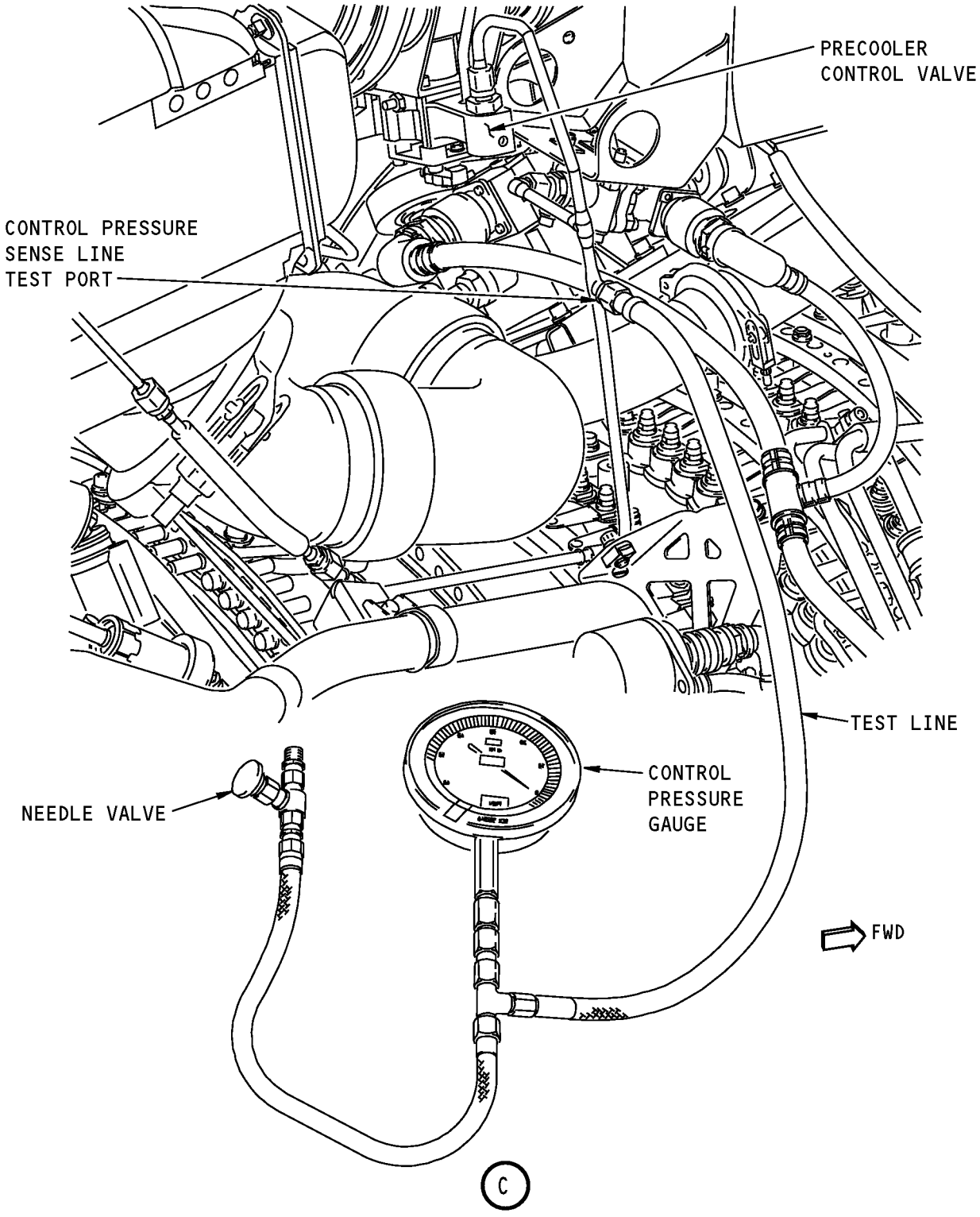
LEFT ENGINE
(RIGHT ENGINE IS EQUIVALENT)



Ground Wing Thermal Anti-Icing Solenoid Valve Test
Figure 501 (Sheet 1 of 3)/30-11-12-990-802



Ground Wing Thermal Anti-Icing Solenoid Valve Test
Figure 501 (Sheet 2 of 3)/30-11-12-990-802



Ground Wing Thermal Anti-Icing Solenoid Valve Test
Figure 501 (Sheet 3 of 3)/30-11-12-990-802

WING ANTI-ICING GROUND OVERHEAT THERMAL SWITCH - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) Removal of the wing anti-icing ground overheat thermal switch.

(2) Installation of the wing anti-icing ground overheat thermal switch.

TASK 30-11-21-000-801

2. Wing Anti-Icing Ground Overheat Thermal Switch Removal

(Figure 401)

A. References

Reference	Title
27-81-00-480-801	Leading Edge Flap and Slat Locks Installation (P/B 201)

B. Access Panels

Number	Name/Location
521BB	Engine Fuel Valve Shutoff Access Panel - Slat Station 36.02
621BB	Engine Fuel Spar Valve Access Panel - Slat Station 36.02

C. Prepare for the Removal

SUBTASK 30-11-21-860-001

WARNING: YOU MUST CAREFULLY DO THE STEPS IN THE TASK BELOW TO INSTALL THE LEADING EDGE FLAPS AND SLATS LOCKS. IF YOU DO NOT INSTALL THE LOCKS CORRECTLY, THE LEADING EDGE FLAPS CAN MOVE QUICKLY. THIS CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(1) Install the leading edge flaps and slats locks. To do this, do this task: Leading Edge Flap and Slat Locks Installation, TASK 27-81-00-480-801.

SUBTASK 30-11-21-860-002

(2) Open this circuit breaker and install safety tag:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
A	1	C00146	ANTI-ICE & RAIN WING ANTI-ICE VALVE

SUBTASK 30-11-21-010-001

(3) Open the applicable access panels:

Number	Name/Location
521BB	Engine Fuel Valve Shutoff Access Panel - Slat Station 36.02
621BB	Engine Fuel Spar Valve Access Panel - Slat Station 36.02

D. Wing Anti-Icing Ground Overheat Thermal Switch Removal

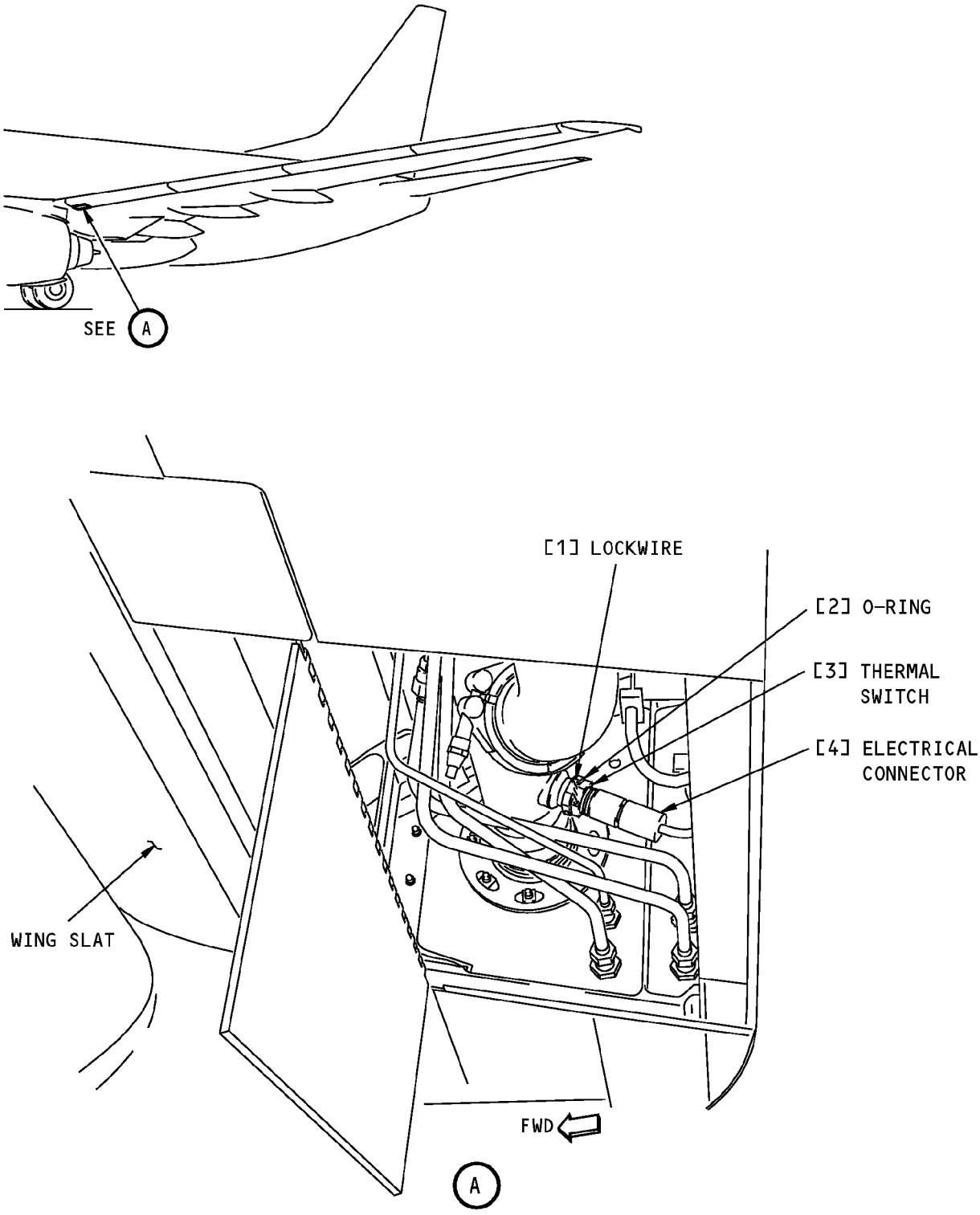
SUBTASK 30-11-21-020-001

(1) Disconnect the electrical connector [4] from the thermal switch [3].

SUBTASK 30-11-21-020-002

(2) Remove the thermal switch [3]. Discard the O-ring [2].

END OF TASK



Wing Anti-Icing Ground Overheat Thermal Switch Installation
Figure 401/30-11-21-990-801

TASK 30-11-21-400-801

3. Wing Anti-Icing Ground Overheat Thermal Switch Installation

(Figure 401)

A. References

Reference	Title
24-22-00-860-813	Supply External Power (P/B 201)
24-22-00-860-814	Remove External Power (P/B 201)
27-81-00-080-801	Leading Edge Flap and Slat Locks Removal (P/B 201)

B. Consumable Materials

Reference	Description	Specification
D00010	Compound - Thread Antiseize, High Temperature	MIL-PRF-907F

C. Access Panels

Number	Name/Location
521BB	Engine Fuel Valve Shutoff Access Panel - Slat Station 36.02
621BB	Engine Fuel Spar Valve Access Panel - Slat Station 36.02

D. Wing Anti-Icing Ground Overheat Thermal Switch Installation

SUBTASK 30-11-21-420-001

(1) Put compound, D00010 on the threads of the overheat thermal switch [3].

SUBTASK 30-11-21-420-002

(2) Install the O-ring [2] on the thermal switch [3].

SUBTASK 30-11-21-400-001

(3) Install the thermal switch [3] into the duct boss.

(a) Torque the thermal switch [3] to 80 to 100 inch-pounds (9-11.3 N·m).

SUBTASK 30-11-21-420-004

(4) Install the lockwire [1] on the thermal switch [3].

SUBTASK 30-11-21-420-005

(5) Connect the electrical connector [4] to the thermal switch [3].

NOTE: If you will do the Test of the Thermal Switch Circuit, do not connect the electrical connector until after the test.

E. Wing Anti-Icing Ground Overheat Thermal Switch Installation Test

SUBTASK 30-11-21-860-003

(1) Supply electrical power to the airplane. To do this, do this task: Supply External Power, TASK 24-22-00-860-813.

SUBTASK 30-11-21-860-004

(2) Remove the safety tag and close this circuit breaker:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
A	1	C00146	ANTI-ICE & RAIN WING ANTI-ICE VALVE

SUBTASK 30-11-21-020-003

(3) Remove the electrical connector from the thermal switch if it is necessary.

SUBTASK 30-11-21-710-001

(4) Do a test of the thermal switch circuit:

(a) Set the WING ANTI-ICE switch (P5 overhead panel) to ON.

(b) Look at the left and right wing anti-ice valves to make sure that they are open.

(c) Use a jumper to connect the pins 1 and 2 of the switch connector (D738 - left wing, D736 - Right wing).

(d) Make sure that the L VALVE OPEN and R VALVE OPEN lights come on brightly for 1 to 3 seconds and then go off.

(e) Look at the left and right wing anti-ice valves to make sure that they are closed.

(f) Remove the jumper from the thermal switch connector.

(g) Make sure that the L VALVE OPEN and the R VALVE OPEN lights become dim.

(h) Look at the left and right wing anti-ice valves to make sure that they are open.

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

SUBTASK 30-11-21-020-004

(5) Connect the electrical connector to the thermal switch.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 30-11-21-410-001

(1) Close the applicable panels:

Number	Name/Location
521BB	Engine Fuel Valve Shutoff Access Panel - Slat Station 36.02
621BB	Engine Fuel Spar Valve Access Panel - Slat Station 36.02

SUBTASK 30-11-21-840-001

(2) Remove the leading edge flaps and slats locks. To do this, do this task: Leading Edge Flap and Slat Locks Removal, TASK 27-81-00-080-801.

SUBTASK 30-11-21-840-002

(3) If electrical power is no longer necessary, do this task: Remove External Power, TASK 24-22-00-860-814.

——————— END OF TASK ———————

WING ANTI-ICE TELESCOPING DUCT - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) Wing Anti-Ice Telescoping Duct Seals Removal

(2) Wing Anti-Ice Telescoping Duct Seals Installation

(3) Wing Anti-Ice Telescoping Duct Removal

(4) Wing Anti-Ice telescoping Duct Installation

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. References

Reference	Title
27-81-00-480-801	Leading Edge Flap and Slat Locks Installation (P/B 201)

B. 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

C. Access Panels

Number	Name/Location
521DB	Lower Leading Edge Access Panel - Slat Station 71.38
521KB	Lower Leading Edge Access Panel - Slat Station 188.12
521RB	Lower Leading Edge Access Panel - Slat Station 307.75
621DB	Lower Leading Edge Access Panel - Slat Station 71.38
621KB	Lower Leading Edge Access Panel - Slat Station 216.71

D. Prepare for the Removal

SUBTASK 30-11-31-860-001

(1) Extend the Leading Edge Slat.

SUBTASK 30-11-31-860-002

WARNING: MAKE SURE YOU INSTALL THE LEADING EDGE SLAT ACTUATOR LOCKS TO PREVENT ACCIDENTAL OPERATION OF THE LEADING EDGE SLATS. THE LEADING EDGE SLATS CAN MOVE QUICKLY. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(2) Do this task: Leading Edge Flap and Slat Locks Installation, TASK 27-81-00-480-801.

SUBTASK 30-11-31-010-001

(3) Remove the applicable panel to get access to the telescoping duct:

(a) For the left wing, open these access panels:

Number	Name/Location
521DB	Lower Leading Edge Access Panel - Slat Station 71.38
521KB	Lower Leading Edge Access Panel - Slat Station 188.12
521RB	Lower Leading Edge Access Panel - Slat Station 307.75

(b) For the right wing, open these access panels:

Number	Name/Location
521RB	Lower Leading Edge Access Panel - Slat Station 307.75
621DB	Lower Leading Edge Access Panel - Slat Station 71.38
621KB	Lower Leading Edge Access Panel - Slat Station 216.71

E. Wing Anti-Ice Telescoping Duct Seal Removal

SUBTASK 30-11-31-020-001

(1) Remove the duct assemblies [6] and bearings [10], [14]:

(a) Remove the bolts [16], [17], [18] and washers [15].

(b) Remove the clamps [5].

(c) Remove the duct assemblies [6] and bearings [10], [14].

SUBTASK 30-11-31-020-002

(2) Remove the inner inner telescoping duct [1]:

(a) Turn the inner telescoping duct [1] 90 degrees and lower the duct from the wing.

(b) Pull the inner telescoping [1] duct from the outer duct.

F. Remove the Seals On the Inner Telescoping Duct

SUBTASK 30-11-31-020-003

(1) Remove the O-ring [11], O-ring(s) [12], or O-ring [13], as necessary, from the inner telescoping duct swivel joint and discard the rings.

NOTE: You can use a hard wooden rod to remove the O-rings.

SUBTASK 30-11-31-020-004

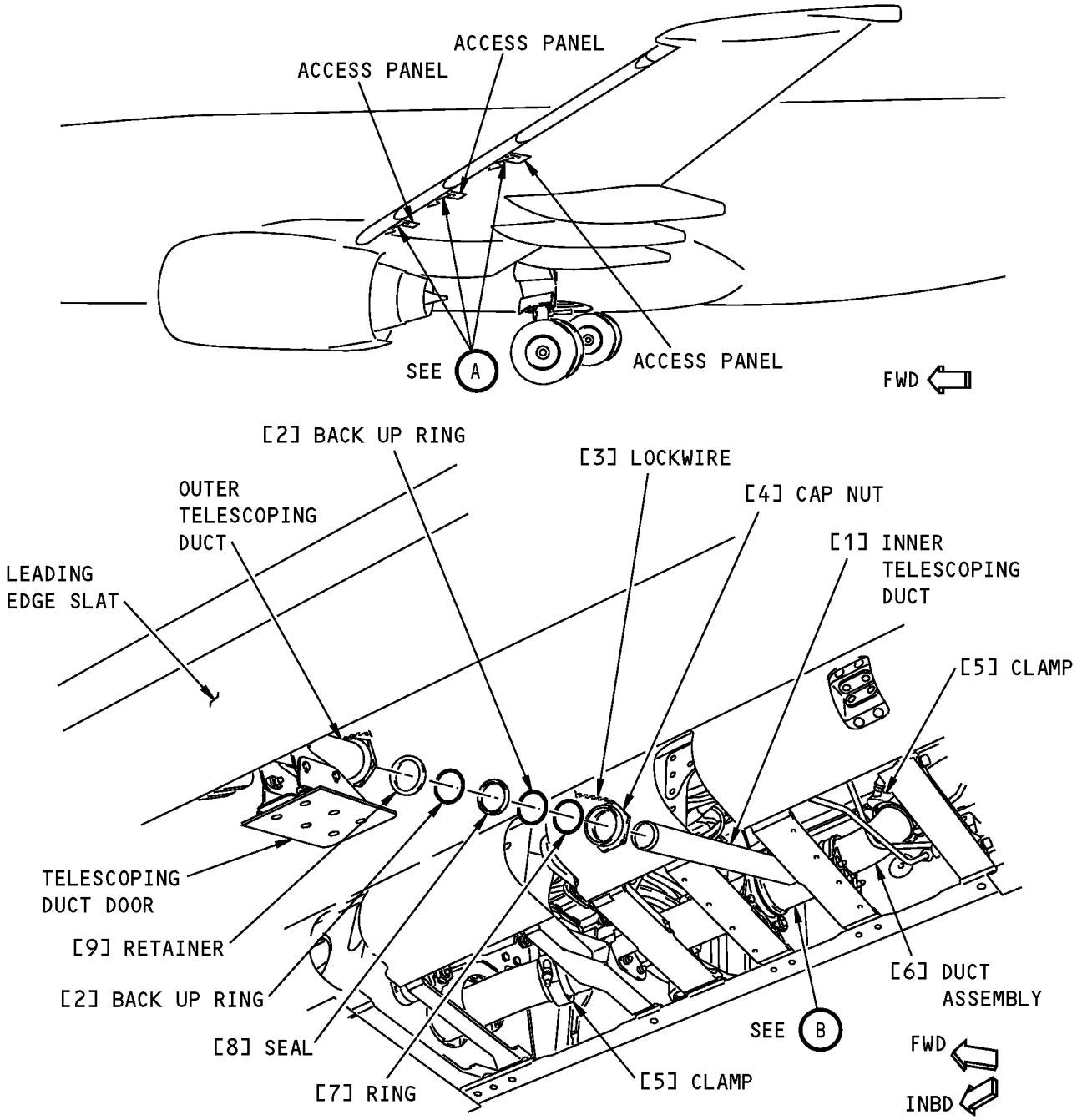
(2) Disassemble the telescoping duct seal.

(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].

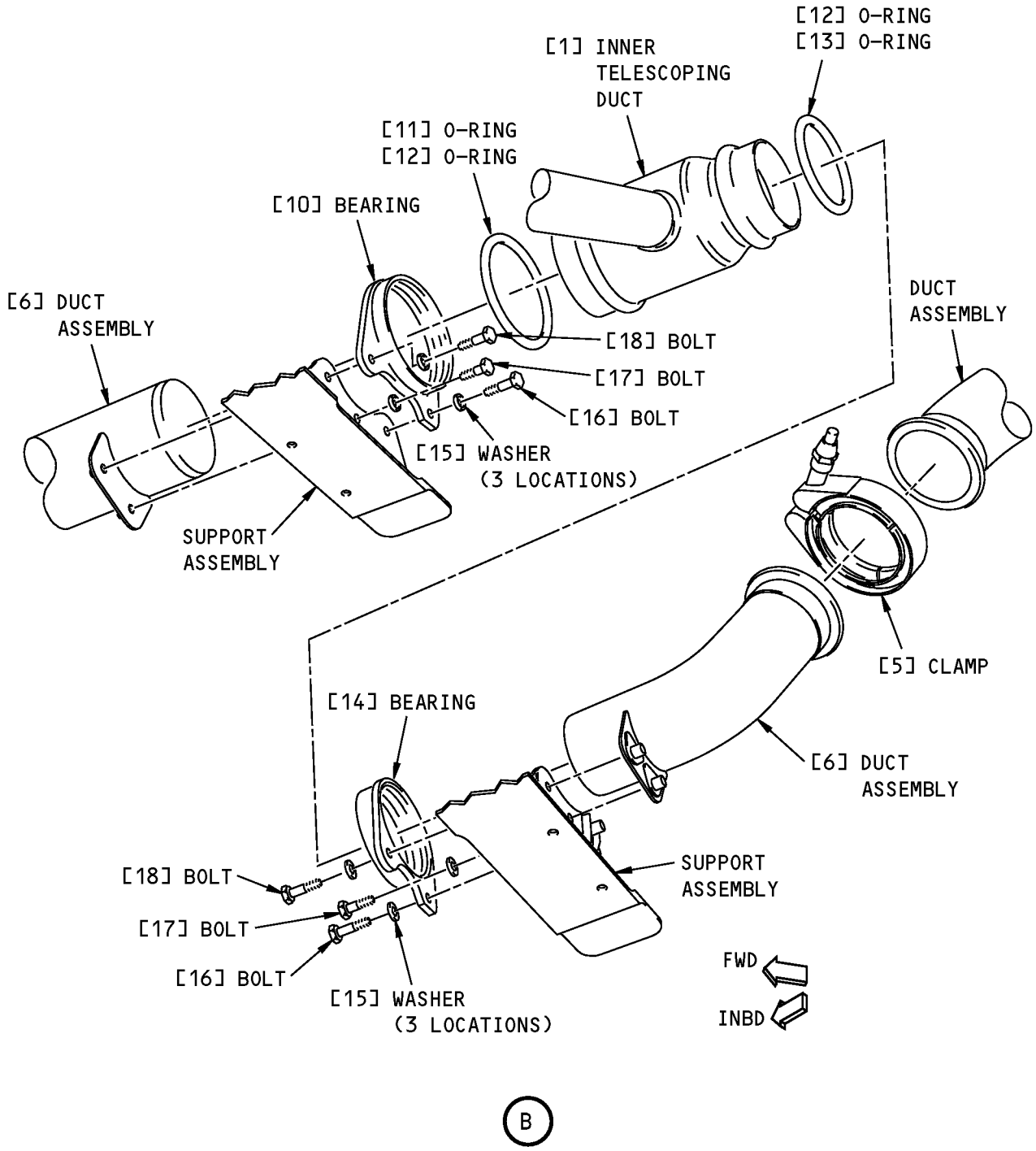
——————— END OF TASK ———————



LEFT WING ANTI-ICE TELESCOPING DUCT
(RIGHT WING ANTI-ICE TELESCOPING DUCT IS OPPOSITE)
(EXAMPLE)

A

Wing Anti-Icing Telescoping Duct Installation
Figure 401 (Sheet 1 of 2)/30-11-31-990-801



Wing Anti-Icing Telescoping Duct Installation
Figure 401 (Sheet 2 of 2)/30-11-31-990-801

TASK 30-11-31-400-801

3. Wing Anti-Ice Telescoping Duct Seal Installation

(Figure 401)

A. 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)
30-11-00-790-801	Wing Anti-Icing Duct - Leak Test (P/B 501)

B. Consumable Materials

Reference	Description	Specification
D00013	Grease - Aircraft And Instrument Grease	MIL-PRF-23827 (NATO G-354) (Supersedes MIL-G-23827)
D00254	Compound - Silicone	SAE AS8660 (NATO S-736) (Supercedes MIL-S-8660)

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
521DB	Lower Leading Edge Access Panel - Slat Station 71.38
521KB	Lower Leading Edge Access Panel - Slat Station 188.12
521RB	Lower Leading Edge Access Panel - Slat Station 307.75
621DB	Lower Leading Edge Access Panel - Slat Station 71.38
621JB	Lower Leading Edge Access Panel - Slat Station 188.14
621RB	Lower Leading Edge Access Panel - Slat Station 337.62

E. Wing Anti-Ice Telescoping Duct Seal Installation

SUBTASK 30-11-31-860-003

WARNING: MAKE SURE THE LEADING EDGE SLAT ACTUATOR LOCKS ARE INSTALLED TO PREVENT ACCIDENTAL OPERATION OF THE LEADING EDGE SLATS. THE LEADING EDGE SLATS CAN MOVE QUICKLY. THIS CAN CAUSE INJURY TO PERSONS 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.

NOTE: See (Figure 401) for the correct sequence.

(c) Tighten the cap nut [4] to 250 to 370 inch-pounds (28.2-41.8 newton-meters).

(d) Put lockwire [3] on the cap nut.

SUBTASK 30-11-31-420-002

(3) Install the O-ring [11], O-ring(s) [12], or O-ring [13], as necessary, on the inner telescoping duct swivel joint.

NOTE: You may use silicone compound, D00254 on the O-rings to make installation easier.

SUBTASK 30-11-31-420-003

(4) Install the inner telescoping duct [1]:

(a) Put the bearings [10], [14] on the duct end.

NOTE: You may use silicone compound, D00254 on the O-rings to make installation easier.

(b) Install the bolts [16] and washers [15].

NOTE: Do not tighten the bolt until after the duct assembly [6] is installed.

SUBTASK 30-11-31-420-004

(5) Install the duct assembly [6]:

(a) Position the duct assembly [6].

(b) Install the bolts [17], [18] and washers [15].

(c) Tighten the bolts [16].

(d) Position the clamps [5] so that there is a clearance of at least 0.2 inches (0.5 mm) from any adjacent structure and install the clamps [5].

F. Wing Anti-Ice Telescoping Duct Seal Installation Test

SUBTASK 30-11-31-710-001

(1) Do this task: Wing Anti-Icing Duct - Leak Test, TASK 30-11-00-790-801.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 30-11-31-410-001

(1) Close the applicable panels:

(a) For the left wing, close these access panels:

Number	Name/Location
521DB	Lower Leading Edge Access Panel - Slat Station 71.38
521KB	Lower Leading Edge Access Panel - Slat Station 188.12
521RB	Lower Leading Edge Access Panel - Slat Station 307.75

(b) For the right wing, close these access panels:

Number	Name/Location
621DB	Lower Leading Edge Access Panel - Slat Station 71.38
621JB	Lower Leading Edge Access Panel - Slat Station 188.14
621RB	Lower Leading Edge Access Panel - Slat Station 337.62

SUBTASK 30-11-31-440-001

(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 or Figure 403

A. References

Reference	Title
27-81-00 P/B 201	LEADING EDGE FLAP AND SLAT CONTROL SYSTEM - MAINTENANCE PRACTICES
54-52-01 P/B 401	FORWARD FAIRINGS - REMOVAL/INSTALLATION
57-41-02 P/B 201	LEADING EDGE ACCESS PANELS - MAINTENANCE PRACTICES

B. 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

C. Procedure

SUBTASK 30-11-31-860-004

WARNING: MAKE SURE THAT PERSONNEL AND EQUIPMENT STAY AWAY FROM THE LEADING EDGE FLAPS AND 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.

(1) Extend the leading edge slats (LEADING EDGE FLAP AND SLAT CONTROL SYSTEM - MAINTENANCE PRACTICES, PAGEBLOCK 27-81-00/201).

SUBTASK 30-11-31-010-002

(2) Remove the applicable wing panels to get access to the manifold on each side of the telescoping duct (LEADING EDGE ACCESS PANELS - MAINTENANCE PRACTICES, PAGEBLOCK 57-41-02/201).

SUBTASK 30-11-31-010-003

(3) For the duct at slat 3 or 4:

(a) Remove the forward fairing from the engine nacelle (FORWARD FAIRINGS - REMOVAL/INSTALLATION, PAGEBLOCK 54-52-01/401).

(b) Remove the applicable inner skin panel from the slat.

(c) Remove the access door from the outer duct.

SUBTASK 30-11-31-010-004

(4) Remove the telescoping duct door from the inner duct.

SUBTASK 30-11-31-010-005

(5) For the duct at slat 2, 3, 4 or 5:

(a) Remove the applicable doubler from the inner skin panel of the slat.

(b) Remove the coverplate and the access door to the outer duct.

SUBTASK 30-11-31-010-006

(6) Remove the slat access panels from the wing at each end of the slat.

SUBTASK 30-11-31-030-001

(7) Remove the blade seal.

SUBTASK 30-11-31-030-002

(8) Remove the 2 retaining bolts for the spray duct from each end of the slat.

SUBTASK 30-11-31-030-003

WARNING: 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.

(9) Move the spray duct until it is clear of the telescoping duct and the spray duct bearing.

SUBTASK 30-11-31-030-004

(10) Remove the outer duct.

SUBTASK 30-11-31-030-005

(11) Remove the spray duct bearings.

SUBTASK 30-11-31-030-006

(12) Remove the seal from the outer duct.

SUBTASK 30-11-31-030-007

(13) For the duct at slat 2, 3, 4 or 5:

(a) Disconnect the bonding strap from the inner duct arm.

SUBTASK 30-11-31-030-008

(14) Disconnect the applicable support clamps and the connections to the supply duct.

SUBTASK 30-11-31-030-009

WARNING: 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.

(15) Remove the duct section.

SUBTASK 30-11-31-030-010

(16) For the duct at slat 2, 3, 4 or 5:

(a) Remove the bearing mounting bolts and the bearings on each side of the inner duct.

(b) Lower the inner duct until it is clear of the structure and remove the innder duct from the outer duct.

SUBTASK 30-11-31-030-011

(17) For the duct at slat 1 or 6:

(a) Remove the duct mounting bolts and bearings on the inboard side of the inner duct.

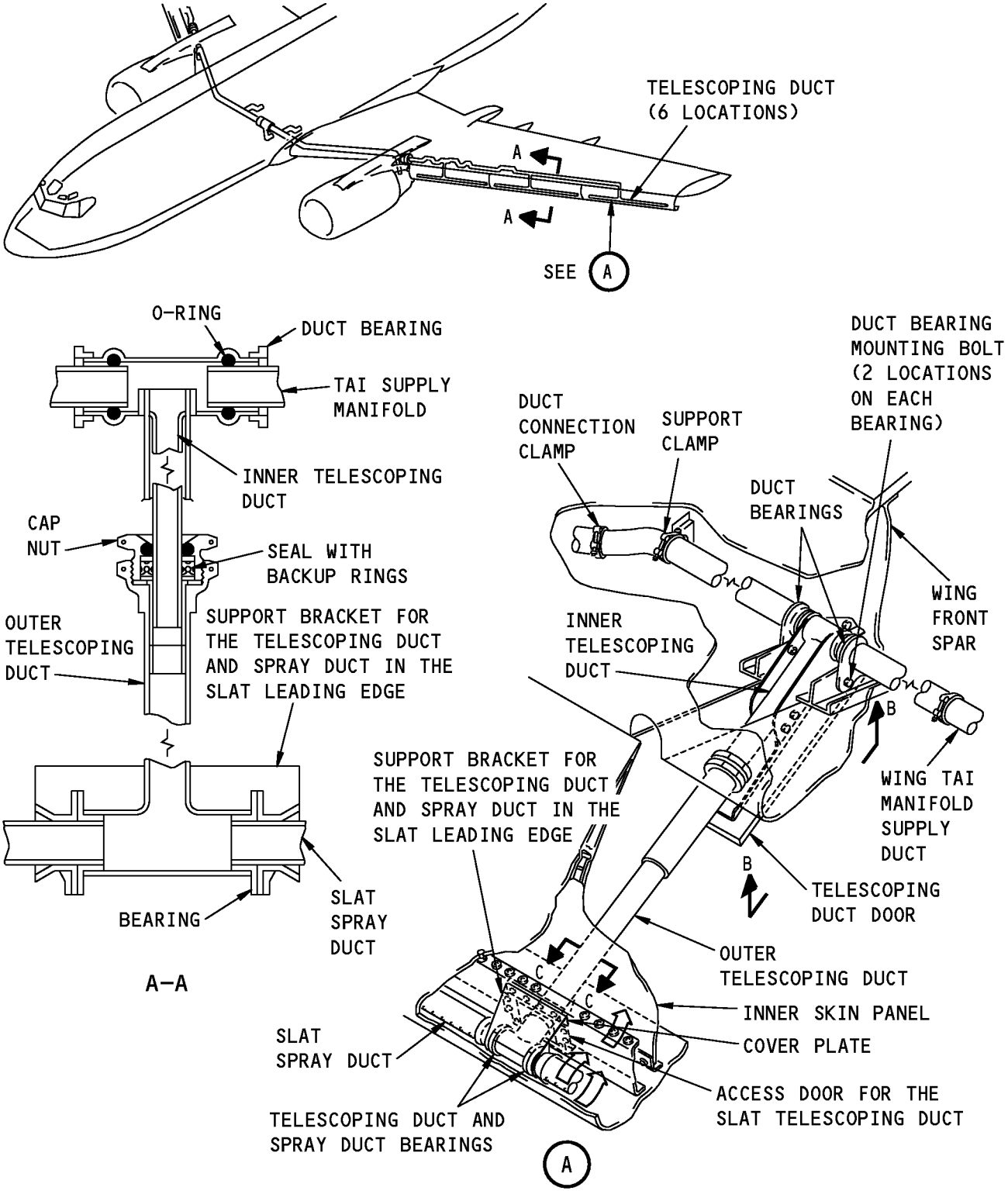
(b) Lower the inner duct until it is clear of the structure and remove it.

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 (LEADING EDGE FLAP AND SLAT CONTROL SYSTEM - MAINTENANCE PRACTICES, PAGEBLOCK 27-81-00/201).

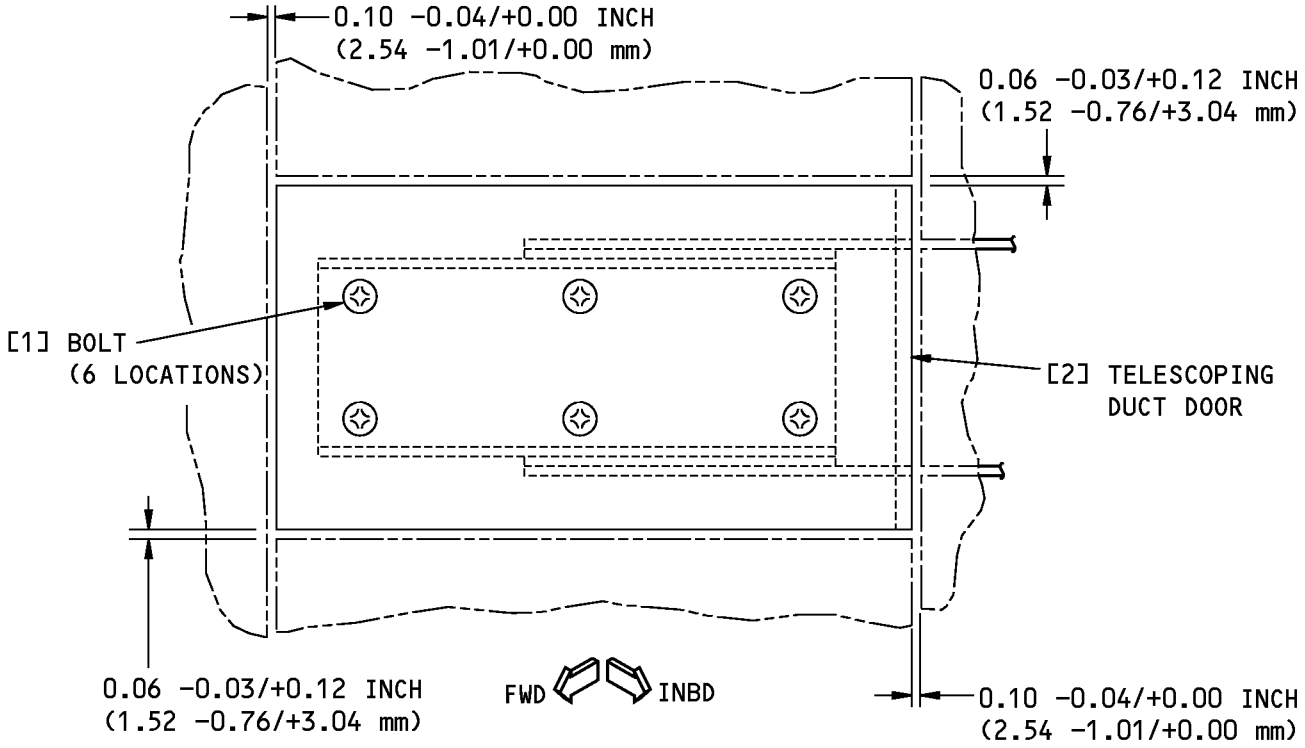
SUBTASK 30-11-31-030-012

(18) Remove the O-rings from the T of the inner duct.

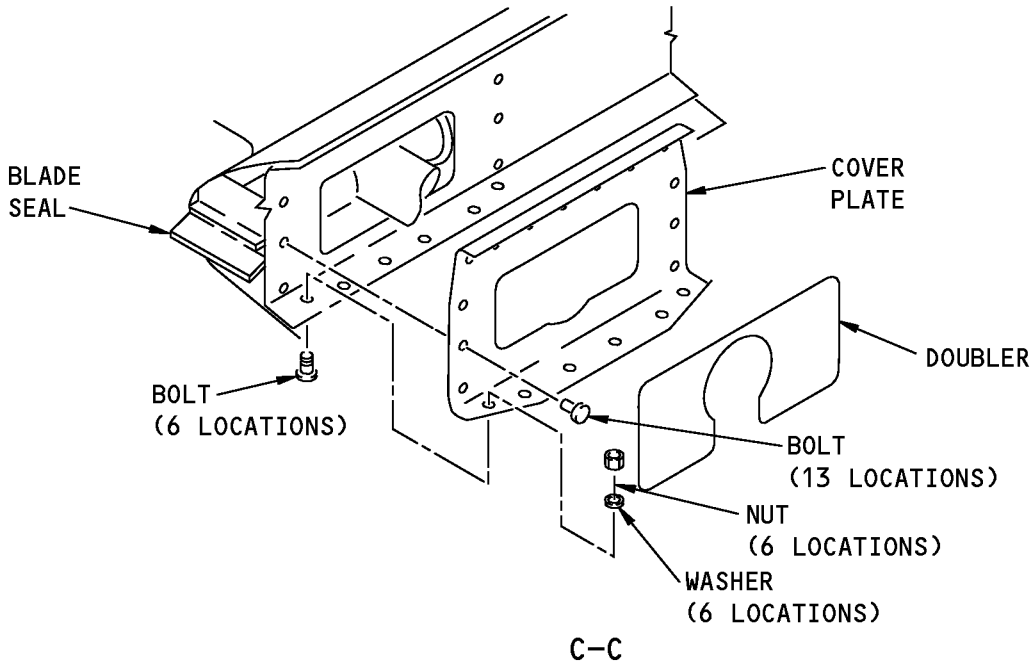
END OF TASK



Wing Anti-Icing Telescoping Duct Installation
Figure 402 (Sheet 1 of 3)/30-11-31-990-802

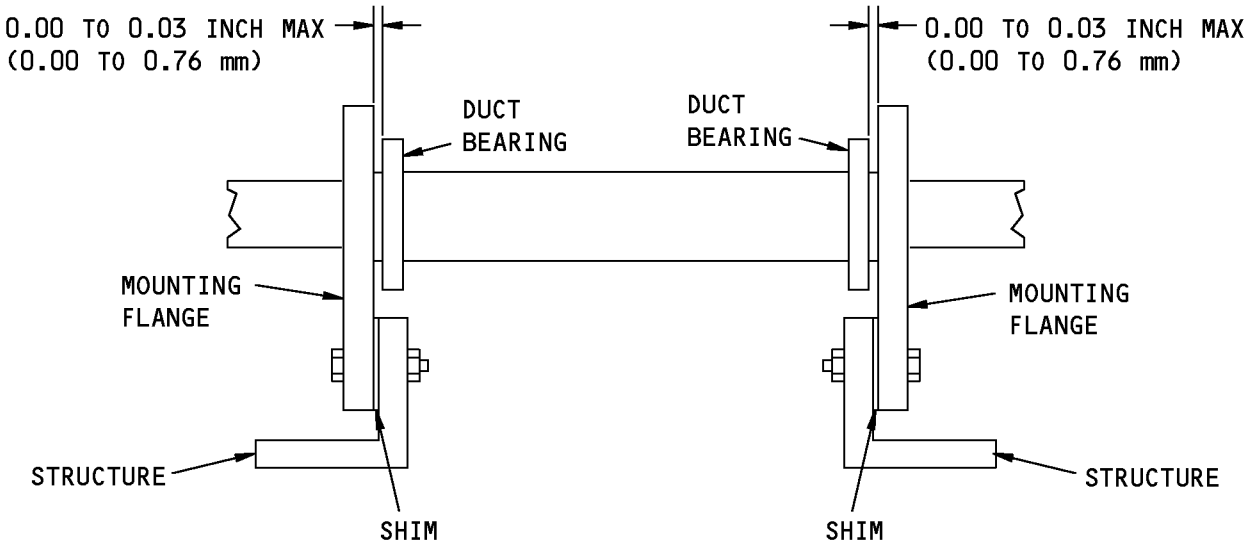


B–B



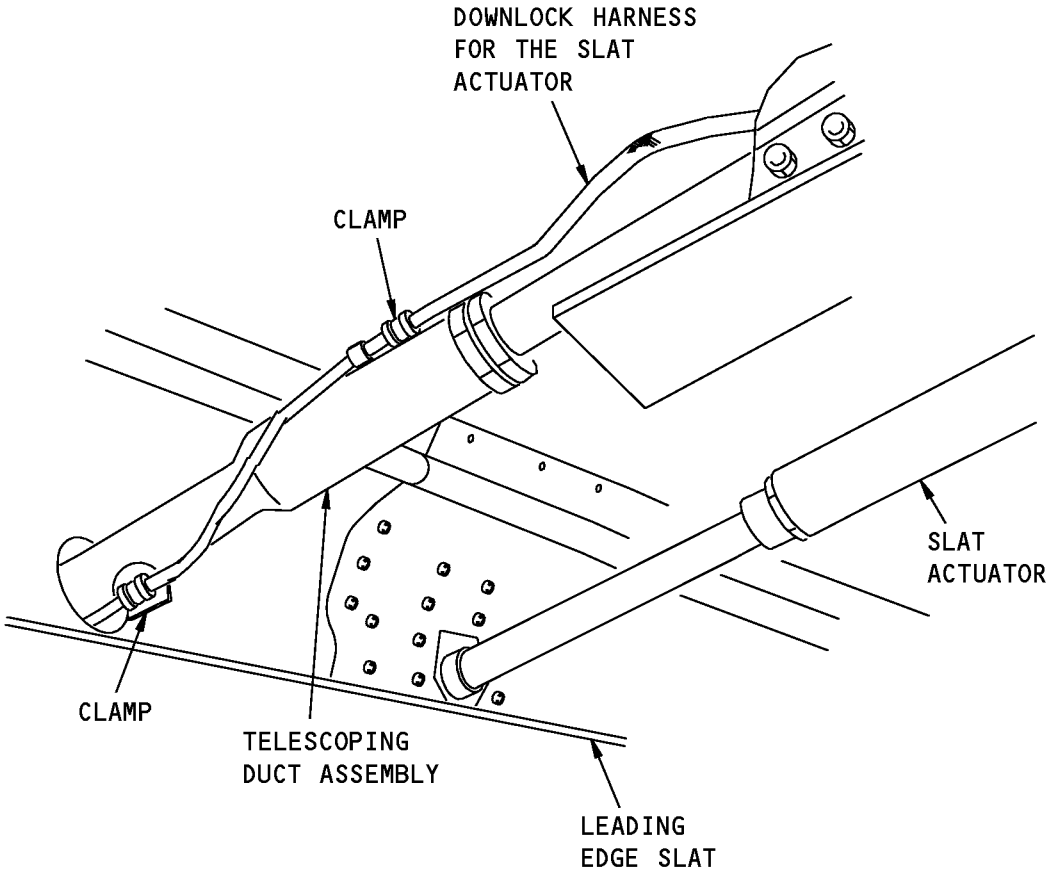
C–C

Wing Anti-Icing Telescoping Duct Installation
Figure 402 (Sheet 2 of 3)/30-11-31-990-802



NOTE:
1. WITH ALL DUCTS ADJUSTED AND JOINTS TORQUED, INSPECT FOR GAPS BETWEEN THE DUCT MOUNTING FLANGE AND THE DUCT BEARING.
2. IF THE COMBINED GAP EXCEEDS 0.03 INCH (0.76 mm) INSTALL SHIM 69-77116-1 AND/OR SHIM 69-77116-2 BETWEEN THE STRUCTURE AND THE MOUNTING BRACKET TO REDUCE THE FINAL COMBINED GAP AT BOTH LOCATIONS FROM 0.00 TO 0.03 INCH (0.00 TO 0.76 mm) MAX.
3. INSTALL LAMINATED SIDE OF SHIM NEXT TO STRUCTURE AND FINISH BY INSTALLING FILET SEAL OF DOW CORNING 93-006, OR BMS 5-95, AND APPLY A COAT OF BMS 10-11 TYPE-1 TO THE DELAMINATED SIDE.

Wing Anti-Icing Telescoping Duct Installation
Figure 402 (Sheet 3 of 3)/30-11-31-990-802



Installation of the Downlock Harness for the Slat Actuator
Figure 403/30-11-31-990-803

TASK 30-11-31-400-802

5. Wing Anti-Ice Telescoping Duct Installation

A. References

Reference	Title
27-81-00 P/B 201	LEADING EDGE FLAP AND SLAT CONTROL SYSTEM - MAINTENANCE PRACTICES
54-52-01 P/B 401	FORWARD FAIRINGS - REMOVAL/INSTALLATION
57-41-02 P/B 201	LEADING EDGE ACCESS PANELS - MAINTENANCE PRACTICES

B. 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

C. Procedure

SUBTASK 30-11-31-430-001

(1) Install O-rings for the supply duct on the T of the inner duct.

SUBTASK 30-11-31-220-001

(2) Inspect for gaps between the duct mounting flange and the duct bearing.

(a) If the combined gap of both duct bearings exceed +0.03 inch then reference Figure 402 (Sheet 3)

SUBTASK 30-11-31-430-002

(3) Set the T of the inner duct in the leading edge and install the duct bearings.

SUBTASK 30-11-31-430-016

(4) Install the downlock harness and clamps for the slat actuator for slats 2, 3, 4 and 5 (Figure 402 or Figure 403)..

SUBTASK 30-11-31-430-003

(5) Set the supply duct sections in position at the telescoping duct.

SUBTASK 30-11-31-430-004

(6) Connect the duct connection and the support clamps.

SUBTASK 30-11-31-430-005

(7) For the duct at slat 1 or 6:

(a) Install the seal in the end of the outer duct.

(b) Put the outer duct assembly over the inner duct.

(c) Tighten the cap nut to 250 to 370 pound-inches.

SUBTASK 30-11-31-430-006

(8) Put the bearings on each end of the T-section of the outer duct.

SUBTASK 30-11-31-430-007

(9) Put the outer duct assembly into the support bracket for the inner slat.

SUBTASK 30-11-31-430-008

(10) Install the slat spray duct from each end of the slat.

SUBTASK 30-11-31-430-009

(11) Install the retaining bolts for the spray duct (2 places) at each end of the slat.

SUBTASK 30-11-31-430-010

(12) Install the blade seal.

SUBTASK 30-11-31-410-002

(13) Install the access panel.

SUBTASK 30-11-31-410-003

(14) For the duct at slat 2, 3, 4 or 5:

(a) Install the access door for the outer duct.

(b) Install the slat inner skin, the coverplate, and the doubler.

(c) Install the seal in the end of the outer duct.

(d) Put the outer duct assembly over the inner duct.

(e) Tighten the cap nut to 250 to 370 pound-inches.

SUBTASK 30-11-31-430-011

(15) For the duct at slat 1 or 6:

(a) Install the downlock harness and clamps for the slat actuator (Figure 402 or Figure 403).

(b) Install the access door for the outer duct and the slat inner skin.

SUBTASK 30-11-31-860-005

(16) Make sure that the leading edge slats are extended

SUBTASK 30-11-31-410-004

(17) Attach the DOOR [2] to the inner duct (Figure 402 or Figure 403).

SUBTASK 30-11-31-430-012

(18) Lightly tighten the BOLTS [1], but do not tighten them too much.

SUBTASK 30-11-31-860-006

(19) Retract the leading edge slats (LEADING EDGE FLAP AND SLAT CONTROL SYSTEM - MAINTENANCE PRACTICES, PAGEBLOCK 27-81-00/201).

SUBTASK 30-11-31-820-001

(20) Adjust the DOOR [2] against the wing structure to get equal clearances on the inboard and outboard sides, and equal clearances and on the forward and aft sides.

SUBTASK 30-11-31-430-013

(21) Tighten the BOLTS [1].

SUBTASK 30-11-31-860-007

(22) Extend the leading edge slats (LEADING EDGE FLAP AND SLAT CONTROL SYSTEM - MAINTENANCE PRACTICES, PAGEBLOCK 27-81-00/201).

SUBTASK 30-11-31-430-014

(23) Tighten the bolts that attach the door to the inner duct (6 locations).

SUBTASK 30-11-31-430-015

(24) Attach the bonding strap from the wing structure to the door.

SUBTASK 30-11-31-790-001

(25) Do a check for the air leakage at the duct.

SUBTASK 30-11-31-860-008

(26) Retract the slats to the full up position (LEADING EDGE FLAP AND SLAT CONTROL SYSTEM - MAINTENANCE PRACTICES, PAGEBLOCK 27-81-00/201).

SUBTASK 30-11-31-410-005

(27) Install the wing access panels (LEADING EDGE ACCESS PANELS - MAINTENANCE PRACTICES, PAGEBLOCK 57-41-02/201).

SUBTASK 30-11-31-410-006

(28) For the duct at slat 3 or 4:

(a) Install the forward fairing on the engine nacelle (FORWARD FAIRINGS - REMOVAL/INSTALLATION, PAGEBLOCK 54-52-01/401).

——————— END OF TASK ———————

ENGINE AND WING ANTI-ICE PANEL - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) Removal of the engine and wing anti-ice panel.

(2) Installation of the engine and wing anti-ice panel.

TASK 30-11-41-000-801

2. Engine and Wing Anti-Ice Panel Removal

(Figure 401)

A. References

Reference	Title
24-22-00-860-814	Remove External Power (P/B 201)

B. Location Zones

Zone	Area
212	Flight Compartment - Right

C. Prepare for the Removal

SUBTASK 30-11-41-860-012

(1) Remove electrical power from the airplane, Remove External Power, TASK 24-22-00-860-814.

SUBTASK 30-11-41-010-002

(2) Open the P5 overhead panel.

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

CAUTION: THE P5 OVERHEAD PANEL IS VERY HEAVY AND WILL SWING FREELY WHEN THE LATCH IS RELEASED. SUPPORT THE P5 OVERHEAD PANEL BEFORE YOU RELEASE THE SAFETY LATCH.

(b) Release the panel safety latch.

D. Engine and Wing Anti-Ice Panel Removal

SUBTASK 30-11-41-020-002

WARNING: THERE ARE HIGH VOLTAGES IN THE P5 OVERHEAD PANEL. MAKE SURE YOU DO NOT TOUCH OR SHORT EXPOSED TERMINALS. INJURY TO PERSONNEL OR DAMAGE TO EQUIPMENT CAN OCCUR.

(1) Remove the connectors from the engine and wing anti-ice panel.

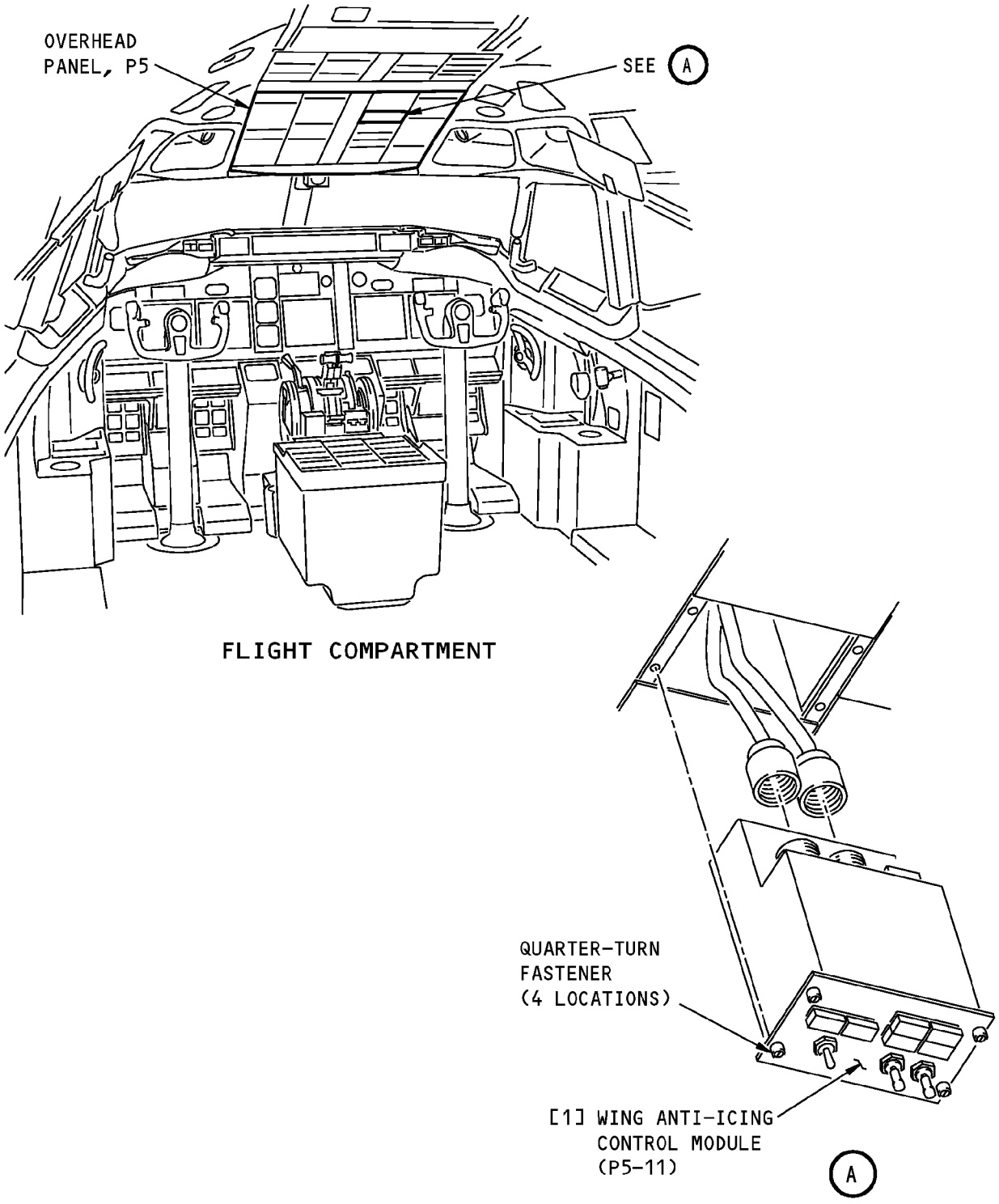
SUBTASK 30-11-41-020-001

(2) Remove the engine and wing anti-ice panel [1]:

(a) Release the fasteners which attach the anti-ice panel to the P5 overhead panel.

(b) Remove the anti-ice panel [1].

END OF TASK



Wing Anti-Icing Control Module Installation
Figure 401/30-11-41-990-802

TASK 30-11-41-400-801

3. Engine and Wing Anti-Ice Panel Installation

(Figure 401)

A. References

Reference	Title
24-22-00-860-813	Supply External Power (P/B 201)

B. Engine and Wing Anti-Ice Panel Installation

SUBTASK 30-11-41-420-004

(1) Install the anti-ice panel [1] in the P5 overhead panel.

SUBTASK 30-11-41-420-005

(2) Tighten the fasteners.

SUBTASK 30-11-41-420-006

WARNING: THERE ARE HIGH VOLTAGES IN THE P5 OVERHEAD PANEL. MAKE SURE YOU DO NOT TOUCH OR SHORT EXPOSED TERMINALS. INJURY TO PERSONNEL OR DAMAGE TO EQUIPMENT CAN OCCUR.

(3) Attach the connectors to the engine and wing anti-ice panel.

SUBTASK 30-11-41-410-002

CAUTION: MAKE SURE THE WIRE ASSEMBLIES ARE FLEXIBLE. DO NOT BEND OR TWIST THEM DURING REMOVAL OR INSTALLATION. THIS CAN CAUSE DAMAGE TO THE WIRE HARNESSES.

(4) Do these steps to close the P5 overhead panel:

(a) Raise the P5 overhead panel.

(b) Make sure the safety latch is in the proper position.

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

SUBTASK 30-11-41-860-013

(5) Make sure that these circuit breakers are closed:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
A	1	C00146	ANTI-ICE & RAIN WING ANTI-ICE VALVE
A	6	C00148	ANTI-ICE & RAIN ENGINE 1 & WING CONTROL
A	7	C01001	ANTI-ICE & RAIN ENGINE 1 COWL ANTI-ICE VALVE
B	6	C00149	ANTI-ICE & RAIN ENGINE 2 CONTROL
B	7	C01002	ANTI-ICE & RAIN ENGINE 2 COWL ANTI-ICE VALVE

C. Engine and Wing Anti-Ice Panel Installation Test

SUBTASK 30-11-41-860-014

(1) Do this task: Supply External Power, TASK 24-22-00-860-813.

SUBTASK 30-11-41-710-001

(2) Push the MASTER DIM AND TEST switch.

(a) Make sure the COWL VALVE OPEN indicators on the anti-ice panel turn blue.

END OF TASK

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 30-11-41-710-801

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
24-22-00-860-813	Supply External Power (P/B 201)
24-22-00-860-814	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)
71-11-02-010-801-F00	Open the Fan Cowl Panels (P/B 201)
71-11-02-410-801-F00	Close the Fan Cowl Panels (P/B 201)
78-31-00-010-801-F00	Open the Thrust Reverser (Selection) (P/B 201)

C. Location Zones

Zone	Area
212	Flight Compartment - Right

D. Prepare for the Tests

SUBTASK 30-11-41-860-001

(1) Do this task: Supply External Power, TASK 24-22-00-860-813.

SUBTASK 30-11-41-860-002

(2) Provide pneumatic pressure for the TAI ducts.

(a) To use the APU to pressurize the TAI duct:

1) 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:

1) 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 the ISOLATION VALVE switch is in the OPEN or the AUTO position.

SUBTASK 30-11-41-010-001

(3) For the applicable engine, open the right fan cowl panel. To do this, do this task: Open the Fan Cowl Panels, TASK 71-11-02-010-801-F00.

SUBTASK 30-11-41-860-003

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

E. Test the WING ANTI-ICE Switch and Indication

SUBTASK 30-11-41-860-004

(1) Press and release the L VALVE OPEN and R VALVE OPEN light switches on the P5-11 panel.

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

SUBTASK 30-11-41-860-005

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

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

(b) Make sure the VALVE OPEN lights come on brightly for 1 to 6 seconds.

(c) Make sure the VALVE OPEN lights are on dimly after 6 seconds.

SUBTASK 30-11-41-720-001

(3) Check 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 the L and R VALVE OPEN lights come on brightly.

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

(c) Make sure the VALVE OPEN lights are on dimly after 6 seconds.

SUBTASK 30-11-41-860-006

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

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

(b) Make sure the VALVE OPEN lights come on brightly for 1 to 6 seconds.

(c) Make sure the VALVE OPEN lights go off after 6 seconds.

F. Test the ENG ANTI-ICE Switches and Indication

SUBTASK 30-11-41-860-007

(1) Press and release the COWL ANTI-ICE and COWL VALVE OPEN light switches on the P5-11 panel.

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

SUBTASK 30-11-41-860-015

(2) Manually open the PRSOV valve on each engine:

WARNING: DO THESE SPECIFIED TASKS IN THE CORRECT SEQUENCE BEFORE YOU OPEN THE THRUST REVERSER: RETRACT THE LEADING EDGE, DO THE DEACTIVATION PROCEDURES FOR THE LEADING EDGE AND THE THRUST REVERSER (FOR GROUND MAINTENANCE), AND OPEN THE FAN COWL PANELS. IF YOU DO NOT OBEY THE ABOVE SEQUENCE, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

(a) Open the left thrust reverser. To do this, do this task: Open the Thrust Reverser (Selection), TASK 78-31-00-010-801-F00.

(b) Put the applicable engine BLEED switch on the P5-10, forward overhead panel to the ON position.

(c) Use a wrench on the manual override nut for the PRSOV to put it to the open position.

(d) Make sure that the PRSOV stays in the open position.

NOTE: The PRSOV is spring-loaded to the closed position. If there is pressure supplied and the PRSOV does not stay open, there may be a leakage in the PRSOV or in the sense line(s).

SUBTASK 30-11-41-860-008

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

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

1) Make sure the left COWL VALVE OPEN light comes on brightly for 1 to 6 seconds.

2) Make sure the COWL VALVE OPEN light goes dimly after 6 seconds.

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

1) Make sure the right COWL VALVE OPEN light comes on brightly for 1 to 6 seconds.

2) Make sure the COWL VALVE OPEN light goes dimly after 6 seconds.

SUBTASK 30-11-41-720-002

(4) Check 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

Row	Col	Number	Name
A	6	C00148	ANTI-ICE & RAIN ENGINE 1 & WING CONTROL
A	7	C01001	ANTI-ICE & RAIN ENGINE 1 COWL ANTI-ICE VALVE

(b) Remove the electrical connector from the left cowl TAI duct pressure switch.

(c) Connect a jumper wire between pins 1 and 2 of the electrical connector.

1) Make sure the left COWL ANTI-ICE light comes on.

2) Make sure the Left COWL VALVE OPEN light is dim.

(d) Remove the jumper wire.

(e) Connect the electrical connector to the pressure switch.

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

2) Make sure the left COWL ANTI-ICE light goes off.

3) Make sure the left COWL VALVE OPEN light is dim.

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

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
A	6	C00148	ANTI-ICE & RAIN ENGINE 1 & WING CONTROL
A	7	C01001	ANTI-ICE & RAIN ENGINE 1 COWL ANTI-ICE VALVE

(g) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
B	6	C00149	ANTI-ICE & RAIN ENGINE 2 CONTROL
B	7	C01002	ANTI-ICE & RAIN ENGINE 2 COWL ANTI-ICE VALVE

(h) Remove the electrical connector from the right cowl TAI duct pressure switch.

(i) Connect a jumper wire between pins 1 and 2 of the electrical connector.

1) Make sure the right COWL ANTI-ICE light comes on.

2) Make sure the right COWL VALVE OPEN light is dim.

(j) Remove the jumper wire.

(k) Connect the electrical connector to the pressure switch.

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

2) Make sure the right COWL ANTI-ICE light goes off.

3) Make sure the right COWL VALVE OPEN light is dim.

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

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
B	6	C00149	ANTI-ICE & RAIN ENGINE 2 CONTROL
B	7	C01002	ANTI-ICE & RAIN ENGINE 2 COWL ANTI-ICE VALVE

SUBTASK 30-11-41-860-009

(5) Make sure 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 the left COWL VALVE OPEN light comes on brightly for 1 to 6 seconds.

2) Make sure the COWL VALVE OPEN light goes off after 6 seconds.

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

1) Make sure the right COWL VALVE OPEN light comes on brightly for 1 to 6 seconds.

2) Make sure the COWL VALVE OPEN light goes off after 6 seconds.

G. Put the airplane back to its usual condition.

SUBTASK 30-11-41-410-001

(1) Close the right fan cowl panel. To do this, do this task: Close the Fan Cowl Panels, TASK 71-11-02-410-801-F00.

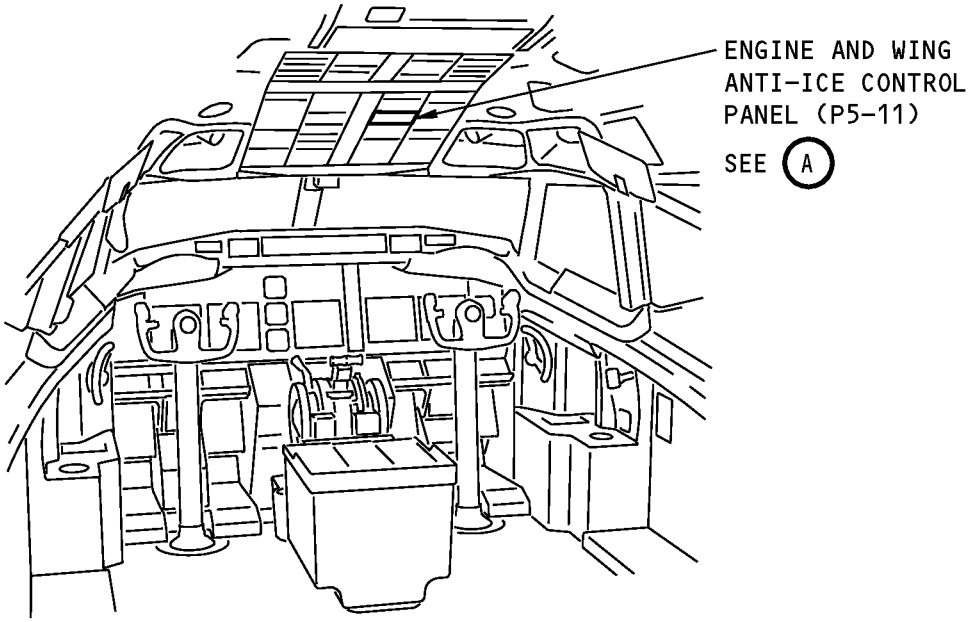
SUBTASK 30-11-41-860-010

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

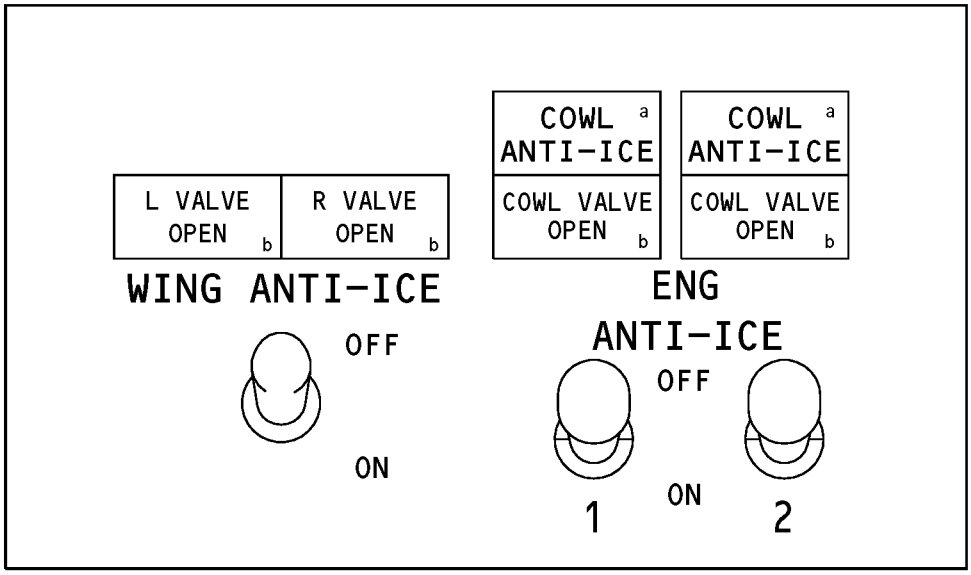
SUBTASK 30-11-41-860-011

(3) If electrical power is no longer necessary, do this task: Remove External Power, TASK 24-22-00-860-814.

——————— END OF TASK ———————



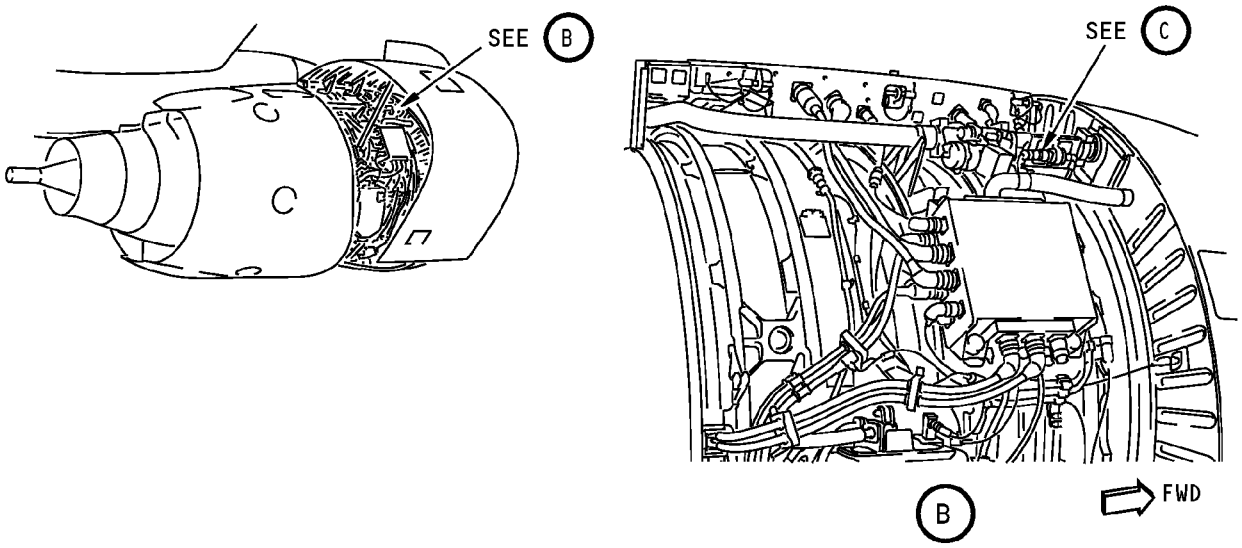
FLIGHT COMPARTMENT

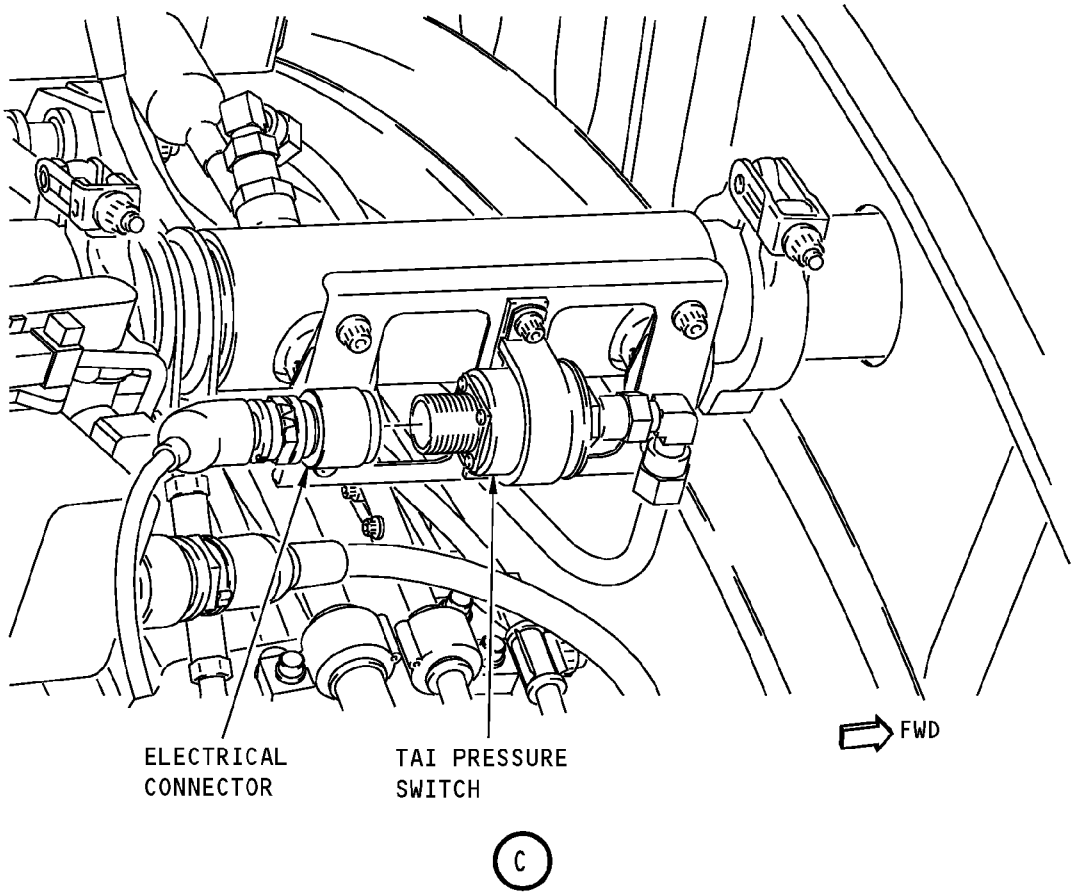


ENGINE AND WING ANTI-ICE CONTROL PANEL (P5-11)

A

Engine and Wing Anti-Ice Control Panel Test
Figure 501 (Sheet 1 of 2)/30-11-41-990-801





Engine and Wing Anti-Ice Control Panel Test
Figure 501 (Sheet 2 of 2)/30-11-41-990-801

CONTROL STAND WING ANTI-ICE SWITCHES - REMOVAL/INSTALLATION

1. General

A. This procedure refers to other tasks for the removal and installation of the control stand wing anti-ice switches.

B. This procedure has a post-installation check for the control stand wing anti-ice switches.

TASK 30-11-51-020-801

2. Control Stand Wing Anti-Ice Switches - Removal

(Figure 401)

A. General

(1) The Wing Anti-Ice Switches are located in the forward equipment center above the nose wheel well.

(2) Refer to (Figure 401) for the switch locations.

B. References

Reference	Title
76-11-07-020-801-F00	Switch Removal (P/B 401)

C. Location Zones

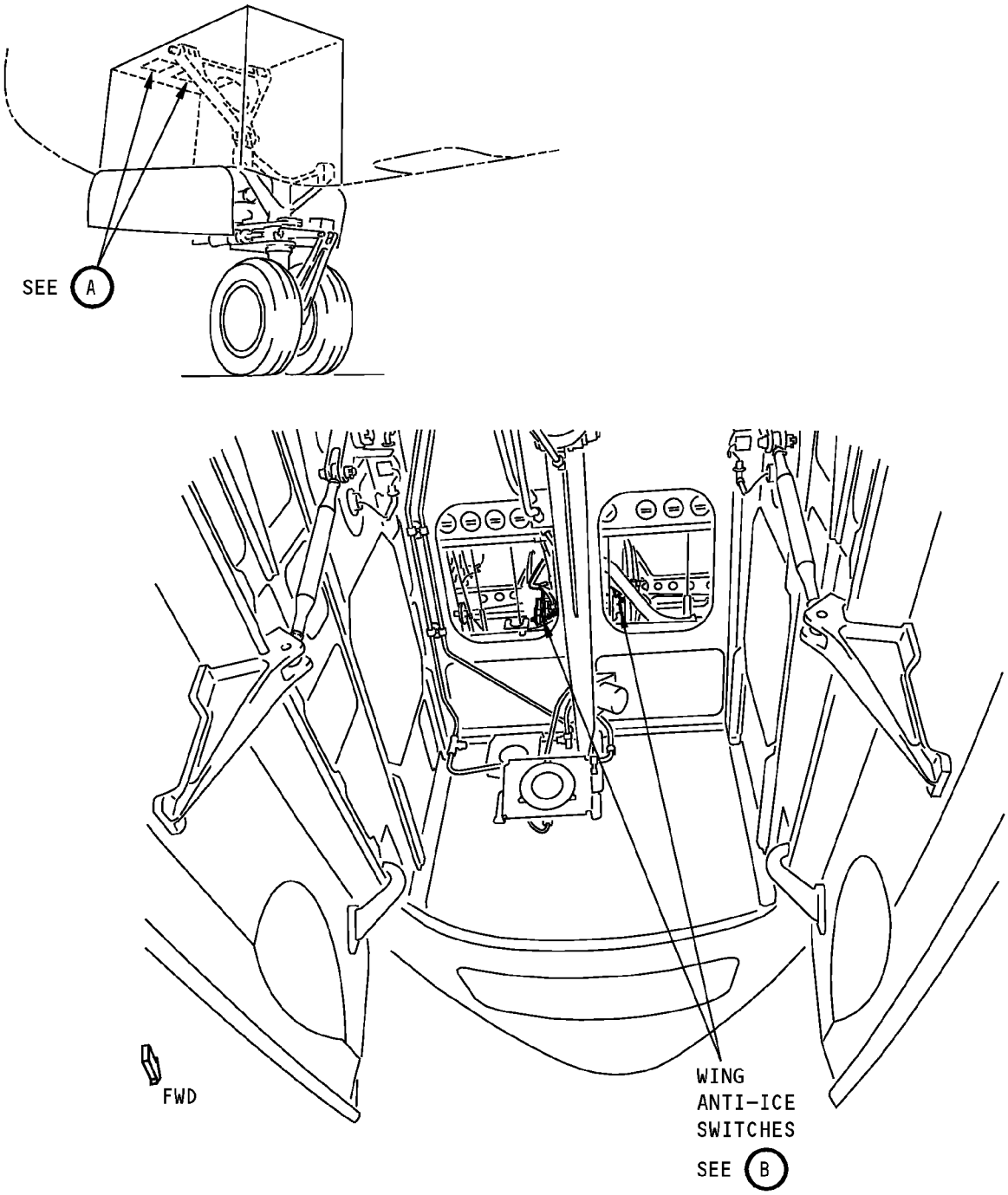
Zone	Area
113	Area Above and Outboard of Nose Landing Gear Wheel Well - Left
114	Area Above and Outboard of Nose Landing Gear Wheel Well - Right

D. Control Stand Wing Anti-Ice Switches Removal

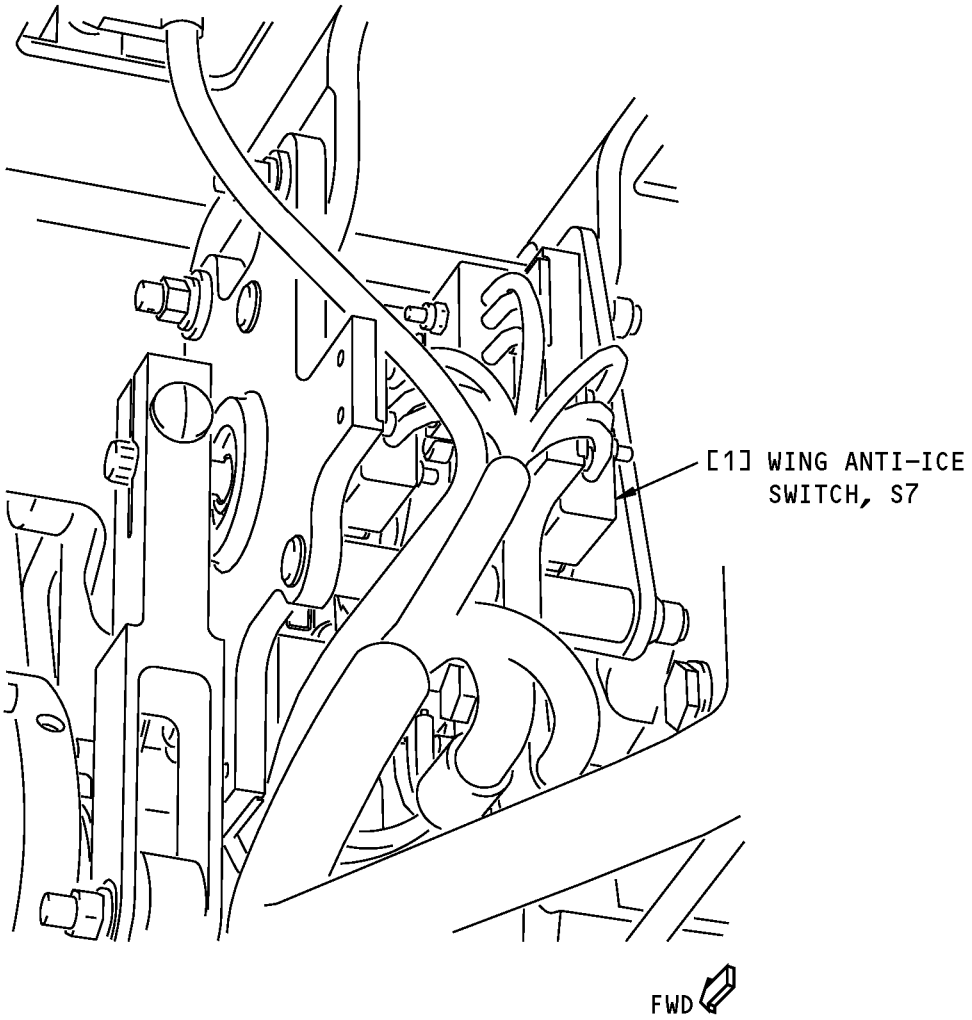
SUBTASK 30-11-51-020-001

(1) Do this task: Switch Removal, TASK 76-11-07-020-801-F00.

END OF TASK



Wing Anti-Ice Switches Installation
Figure 401 (Sheet 1 of 2)/30-11-51-990-802



(EXAMPLE)

B

Wing Anti-Ice Switches Installation
Figure 401 (Sheet 2 of 2)/30-11-51-990-802

TASK 30-11-51-420-801

3. Control Stand Wing Anti-Ice Switches - Installation

(Figure 401)

A. General

(1) The Wing Anti-Ice Switches are located in the forward equipment center above the nose wheel well.

(2) Refer to (Figure 401) for the switch locations.

B. References

Reference	Title
76-11-07-400-801-F00	Switch 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

D. Control Stand Wing Anti-Ice Switches Installation

SUBTASK 30-11-51-420-001

(1) Do this task: Switch Installation, TASK 76-11-07-400-801-F00.

——————— END OF TASK ———————

TASK 30-11-51-000-801

4. Control Stand Wing Anti-Ice Switches - Post Installation Check

(Figure 401)

A. 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

B. Control Stand Wing Anti-Ice Switches Installation Test

SUBTASK 30-11-51-860-008

(1) Make sure that this circuit breaker is closed:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
A	1	C00146	ANTI-ICE & RAIN WING ANTI-ICE VALVE

SUBTASK 30-11-51-860-009

(2) Make sure the WING ANTI-ICE switch is in the OFF position.

SUBTASK 30-11-51-860-010

(3) Make sure the thrust levers are in the idle position.

SUBTASK 30-11-51-860-011

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

(a) Make sure the L VALVE OPEN and R VALVE OPEN lights go bright for 1 to 3 seconds and then go dim.

SUBTASK 30-11-51-860-012

(5) Advance thrust lever to greater than 60.

(a) Make sure the L VALVE OPEN and R VALVE OPEN lights go bright.

C. Put the Airplane Back to Its Usual Condition

SUBTASK 30-11-51-860-013

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

SUBTASK 30-11-51-860-014

(2) Put the thrust levers in the idle position.

END OF TASK

CONTROL STAND WING ANTI-ICING SWITCHES - ADJUSTMENT/TEST

1. General

A. This procedure contains a task to test the control stand wing anti-icing switches.

TASK 30-11-51-710-801

2. Control Stand Wing Anti-Icing Switches Test

(Figure 501)

A. General

(1) This test makes sure that the control stand wing anti-icing switches are operating correctly.

B. References

Reference	Title
24-22-00-860-813	Supply External Power (P/B 201)
24-22-00-860-814	Remove External Power (P/B 201)

C. Location Zones

Zone	Area
212	Flight Compartment - Right

D. Procedure

SUBTASK 30-11-51-860-001

(1) Supply electrical power to the airplane. To supply power, do this task: Supply External Power, TASK 24-22-00-860-813.

SUBTASK 30-11-51-860-002

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

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

SUBTASK 30-11-51-860-003

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

SUBTASK 30-11-51-860-004

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

(a) Make sure the VALVE OPEN lights come on brightly for 1 to 3 seconds.

(b) Make sure the VALVE OPEN lights are on dimly after 3 seconds.

SUBTASK 30-11-51-740-001

(5) Do these steps to display the thrust lever resolver angle:

(a) Get access to the CDU in the flight compartment.

(b) Push the INIT REF key to show the PERF INIT screen on the CDU.

(c) Push these line select keys on the FMCS CDU.

1) INDEX

2) MAINT

NOTE: This LSK causes the MAINT BITE INDEX screen to show.

3) ENGINE

NOTE: This LSK causes the ENGINE/EXCEED BITE INDEX screen to show.

4) The Applicable ENGINE X, (X = 1 or 2) key

NOTE: This LSK causes the ENGINE X BITE TEST MAIN MENU to show. Also, the ENGINE X LSK automatically applies power to the EEC and causes the EEC to initialize. The CDU will show INITIALIZING EEC X, for a short time, just before the ENGINE X BITE TEST MAIN MENU shows.

5) INPUT MONITORING

NOTE: This LSK causes the ENGINE X INPUT MONITORING menu to show.

6) CONTROL LOOPS

NOTE: This causes screen 1 of the CONTROL LOOPS to show.

7) NEXT PAGE

NOTE: Push this key until screen 3 of the CONTROL LOOPS shows.

8) TRA

NOTE: The Thrust Lever Resolver Angle (TRA) for the two channels will show on the CDU display.

SUBTASK 30-11-51-720-001

(6) Monitor the VALVE OPEN lights while you advance the left thrust lever.

(a) Make sure the VALVE OPEN lights go on bright at a thrust lever angle of 60% +/- 1%.

SUBTASK 30-11-51-860-005

(7) Put the thrust lever back to the idle position.

(a) Make sure the VALVE OPEN lights go dim after 1 to 3 seconds.

SUBTASK 30-11-51-720-002

(8) Monitor the VALVE OPEN lights while you advance the right thrust lever.

(a) Make sure the VALVE OPEN light goes on bright at a thrust lever angle of 60% +/- 1%.

SUBTASK 30-11-51-860-006

(9) Put the thrust lever back to the idle position.

(a) Make sure the VALVE OPEN lights go dim after 1 to 3 seconds.

E. Return the airplane to its usual condition.

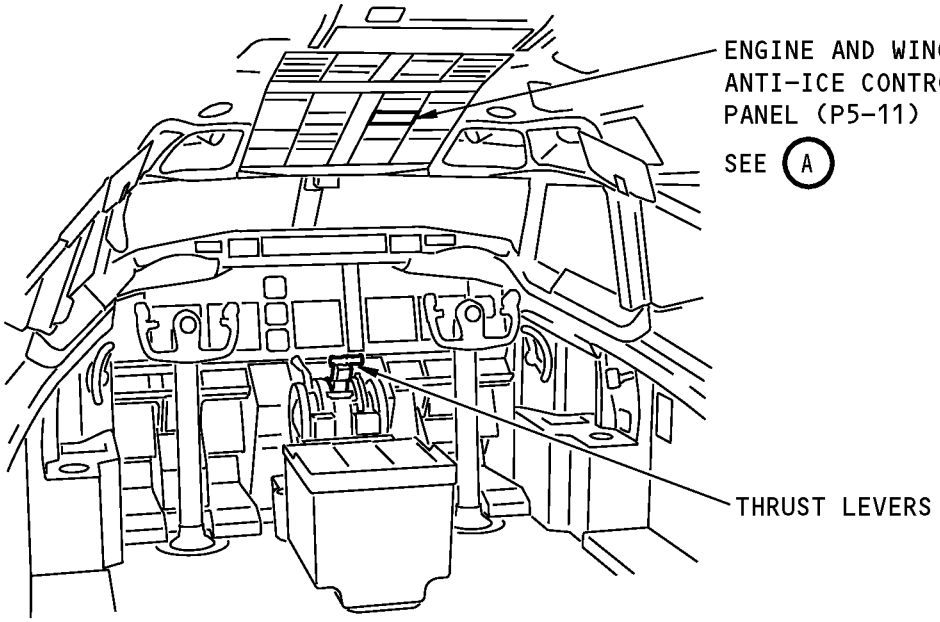
SUBTASK 30-11-51-840-001

(1) Push the INIT REF key on the FMCS CDU to return the CDU to normal.

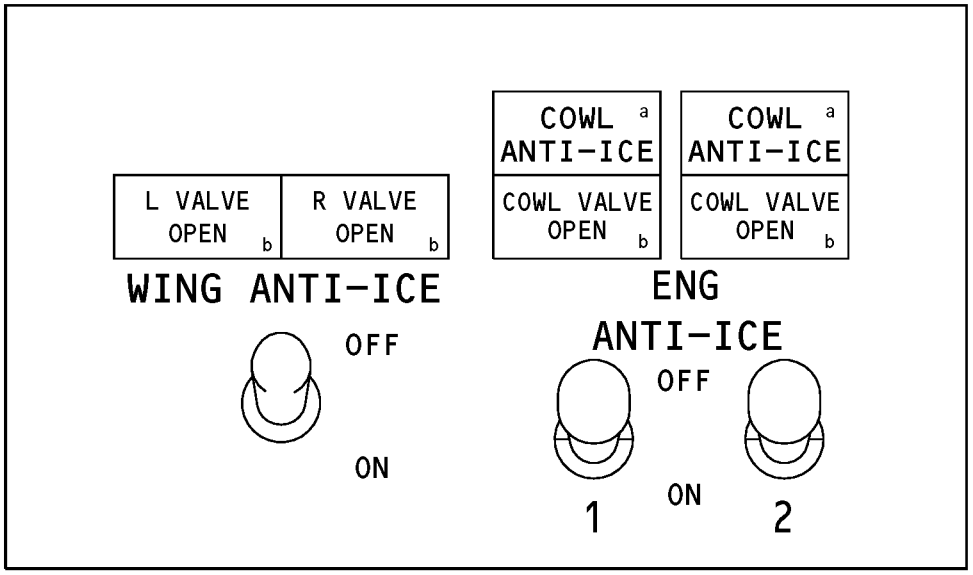
SUBTASK 30-11-51-860-007

(2) If electrical power is no longer necessary, do this task: Remove External Power, TASK 24-22-00-860-814.

———————— END OF TASK ————————



FLIGHT COMPARTMENT



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

A

Control Stand Wing Anti-Icing Switches Test
Figure 501/30-11-51-990-801

ENGINE COWL ANTI-ICING SYSTEM - ADJUSTMENT/TEST

1. General

A. This procedure has these tasks:

(1) Test of the Engine Cowl Thermal Anti-Icing System.

TASK 30-21-00-710-801

2. Engine Cowl Anti-Icing - Operational Test

(Figure 501)

A. General

(1) This test makes sure that the cowl thermal anti-icing (TAI) system is operating properly. Specific tests for cowl TAI components are contained in other procedures.

B. References

Reference	Title
24-22-00-860-813	Supply External Power (P/B 201)
24-22-00-860-814	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)
71-00-00-700-819-F00	Stop the Engine Procedure (Usual Engine Stop) (P/B 201)
71-00-00-800-807-F00	Start the Engine Procedure (Selection) (P/B 201)
71-11-02-010-801-F00	Open the Fan Cowl Panels (P/B 201)
71-11-02-410-801-F00	Close the Fan Cowl Panels (P/B 201)
78-31-00-010-801-F00	Open the Thrust Reverser (Selection) (P/B 201)
78-31-00-010-804-F00	Close the Thrust Reverser (Selection) (P/B 201)

C. Location Zones

Zone	Area
212	Flight Compartment - Right

D. Prepare for the Test

SUBTASK 30-21-00-860-001

(1) Supply electrical power to the airplane. To do this, do this task: Supply External Power, TASK 24-22-00-860-813.

E. Test of the ENG ANTI-ICE switches and Indication

SUBTASK 30-21-00-840-002

(1) Do these steps to provide pneumatic pressure for the ducts:

(a) To use the engines to pressurize the TAI duct, do this task: Start the Engine Procedure (Selection), TASK 71-00-00-800-807-F00.

(b) 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.

(c) 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

(d) If you use the APU, external air, or a single engine to pressurize the TAI duct, then do these steps:

1) Put the BLEED 1 and 2 switches on the air conditioning panel in the OFF position.

2) Put the L PACK and R PACK switches on the air conditioning panel in the OFF position.

3) Make sure the ISOLATION VALVE switch is in the OPEN or the AUTO position.

4) If you use the APU or external air to pressurize the TAI duct, then you must manually open the PRSOV valves.

5) If you use the a single engine to pressurize the TAI duct, then you must manually open the PRSOV valve on the non-running engine.

6) To open a PRSOV valve, do these steps on the applicable engine or engines:

WARNING: DO THESE SPECIFIED TASKS IN THE CORRECT SEQUENCE BEFORE YOU OPEN THE THRUST REVERSER: RETRACT THE LEADING EDGE, DO THE DEACTIVATION PROCEDURES FOR THE LEADING EDGE AND THE THRUST REVERSER (FOR GROUND MAINTENANCE), AND OPEN THE FAN COWL PANELS. IF YOU DO NOT OBEY THE ABOVE SEQUENCE, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

a) Open the left thrust reverser. To do this, do this task: Open the Thrust Reverser (Selection), TASK 78-31-00-010-801-F00.

b) Put the applicable engine BLEED switch on the P5-10, forward overhead panel to the ON position.

c) Use a wrench on the manual override nut for the PRSOV to put it to the open position.

d) Make sure that the PRSOV stays in the open position.

NOTE: The PRSOV is spring-loaded to the closed position. If there is pressure supplied and the PRSOV does not stay open, there may be a leakage in the PRSOV or in the sense line(s).

SUBTASK 30-21-00-860-003

(2) Do this test of the COWL VALVE OPEN and COWL ANTI-ICE light switches:

(a) Push and release the COWL VALVE OPEN and COWL ANTI-ICE light switches on the P5-11 panel.

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

SUBTASK 30-21-00-860-004

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

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

1) Make sure the left COWL VALVE OPEN light come on brightly for 1 to 3 seconds.

2) Make sure the COWL VALVE OPEN light is on dimly after 3 seconds.

3) Make sure the green TAI indication shows on the CDS (Common Display System) display, above the left N1 speed display.

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

1) Make sure the right COWL VALVE OPEN light come on brightly for 1 to 3 seconds.

2) Make sure the COWL VALVE OPEN light is on dimly after 3 seconds.

3) Make sure the green TAI indication shows on the CDS display above the right N1 speed display.

SUBTASK 30-21-00-860-005

(4) Make sure the engine and wing anti-ice panel commands the cowl TAI valves closed:

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

1) Make sure the left COWL VALVE OPEN light comes on brightly for 1 to 3 seconds.
2) Make sure the COWL VALVE OPEN light goes off after 3 seconds.

(b) Put the ENG ANTI-ICE 2 switch in the OFF position.
1) Make sure the right COWL VALVE OPEN light comes on brightly for 1 to 3 seconds.
2) Make sure the COWL VALVE OPEN light goes off after 3 seconds.

SUBTASK 30-21-00-860-006

(5) If you used the engines to pressurize the TAI ducts, then stop the engines. To do this, do this task: Stop the Engine Procedure (Usual Engine Stop), TASK 71-00-00-700-819-F00.

SUBTASK 30-21-00-860-009

(6) If you used the APU or external air to pressurize the TAI ducts, then, do this task: Remove Pressure from the Pneumatic System, TASK 36-00-00-860-806.

SUBTASK 30-21-00-860-007

(7) Make sure the fuel shutoff levers are in the cutoff position and install DO-NOT-OPERATE tags.

SUBTASK 30-21-00-010-001

(8) For the right fan cowl panel, do this task: Open the Fan Cowl Panels, TASK 71-11-02-010-801-F00.

SUBTASK 30-21-00-720-004

(9) Do this test of the left cowl TAI duct overpressure detection circuit:
(a) Disconnect the electrical connector from the left engine duct overpressure switch.
(b) Connect a jumper wire between pins 1 and 2 of the connector.
1) Make sure the left COWL ANTI-ICE light comes on.
(c) Remove the jumper wire from the connector.
(d) Re-connect the connector to the overpressure switch.
(e) Make sure the left COWL ANTI-ICE light is off.

SUBTASK 30-21-00-720-005

(10) Do this test of the right cowl TAI duct overpressure detection circuit:
(a) Disconnect the electrical connector from the right engine duct overpressure switch.
(b) Connect a jumper wire between pins 1 and 2 of the connector.
1) Make sure the right COWL ANTI-ICE light comes on.
(c) Remove the jumper wire from the connector.
(d) Connect the connector to the overpressure switch.
(e) Make sure the right COWL ANTI-ICE light is off.

SUBTASK 30-21-00-720-003

(11) Do this test to make sure the TAI fault is shown:
(a) Do a test of the left cowl TAI system:
1) Put the ENG ANTI-ICE 1 switch in the ON position.
2) Make sure the amber TAI indication is shown on the CDS (Common Display System) display above the left N1 speed display.
3) Make sure the left COWL VALVE OPEN light comes on brightly.
4) Put the ENG ANTI-ICE 1 switch in the OFF position.
5) Make sure the TAI indication on the CDS display goes away.

6) Make sure the COWL VALVE OPEN light goes off.

(b) Do a test of the right cowl TAI system:

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

2) Make sure the amber TAI indication is shown on the CDS display above the right N1 speed display.

3) Make sure the right COWL VALVE OPEN light comes on brightly.

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

5) Make sure the TAI indcation on the CDS display goes away.

6) Make sure the COWL VALVE OPEN light goes off.

F. Put the airplane back to its usual condition.

SUBTASK 30-21-00-410-002

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.

(1) Close the thrust reverser. To close the thrust reverser, do this task: Close the Thrust Reverser (Selection), TASK 78-31-00-010-804-F00.

SUBTASK 30-21-00-410-001

(2) Close the right fan cowl panel. To close the panel, do this task: Close the Fan Cowl Panels, TASK 71-11-02-410-801-F00.

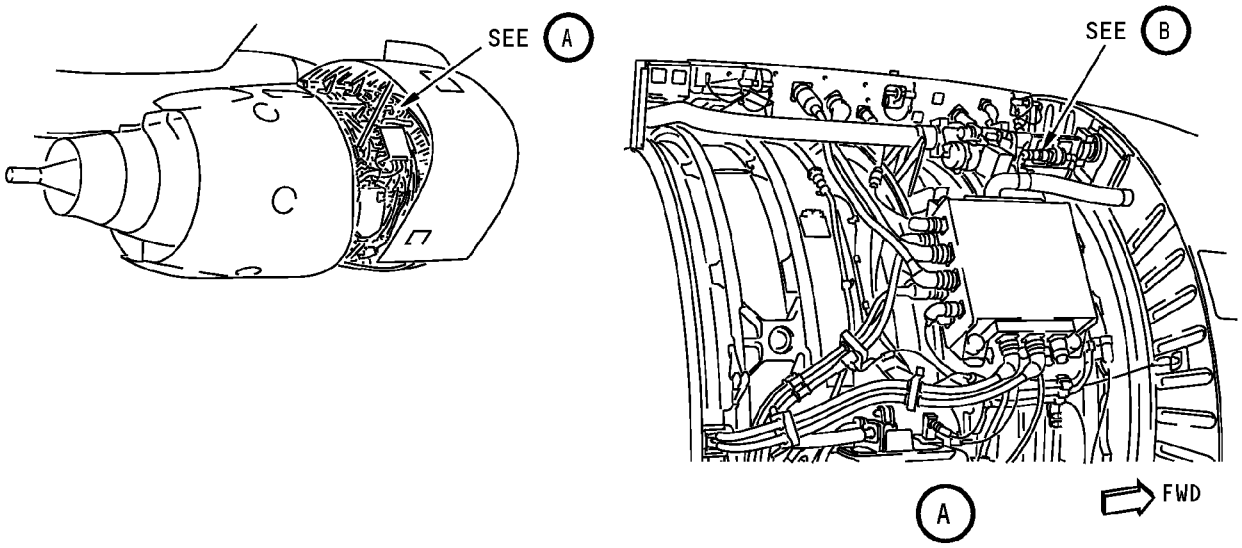
SUBTASK 30-21-00-840-001

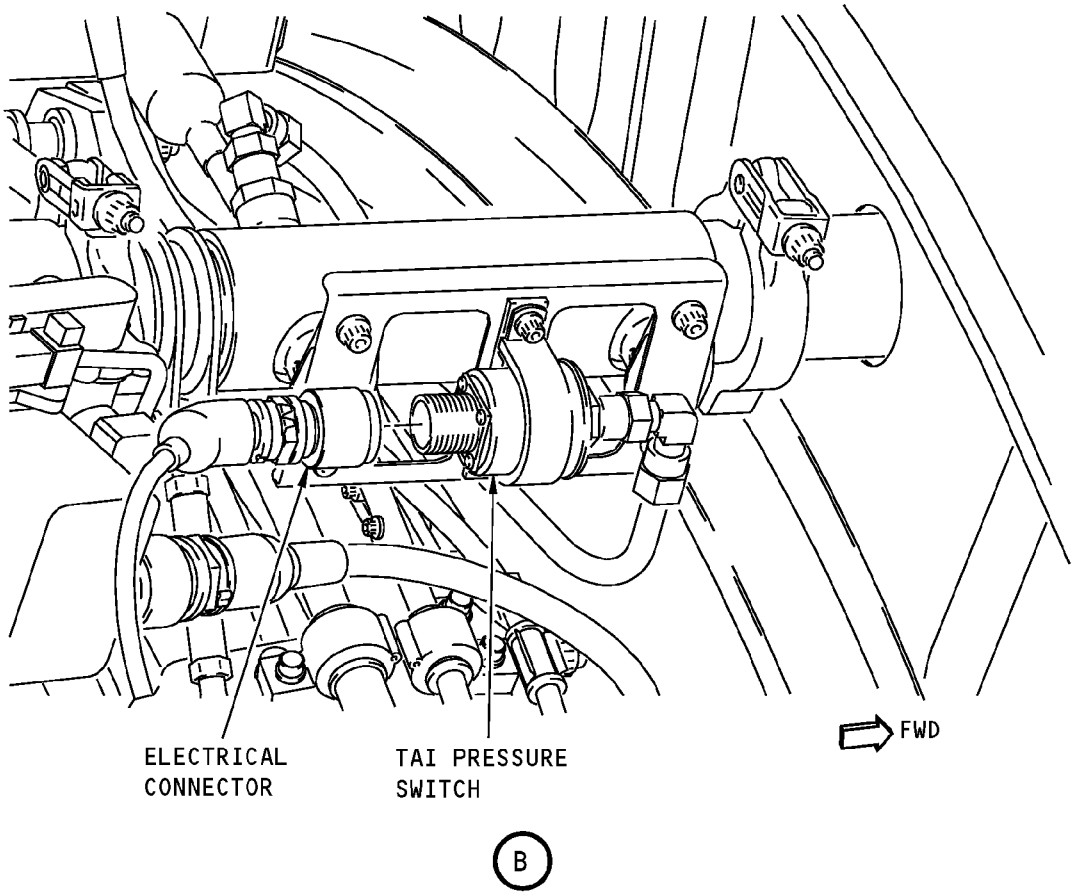
(3) Remove the DO-NOT-OPERATE tags from the fuel shutoff levers.

SUBTASK 30-21-00-860-008

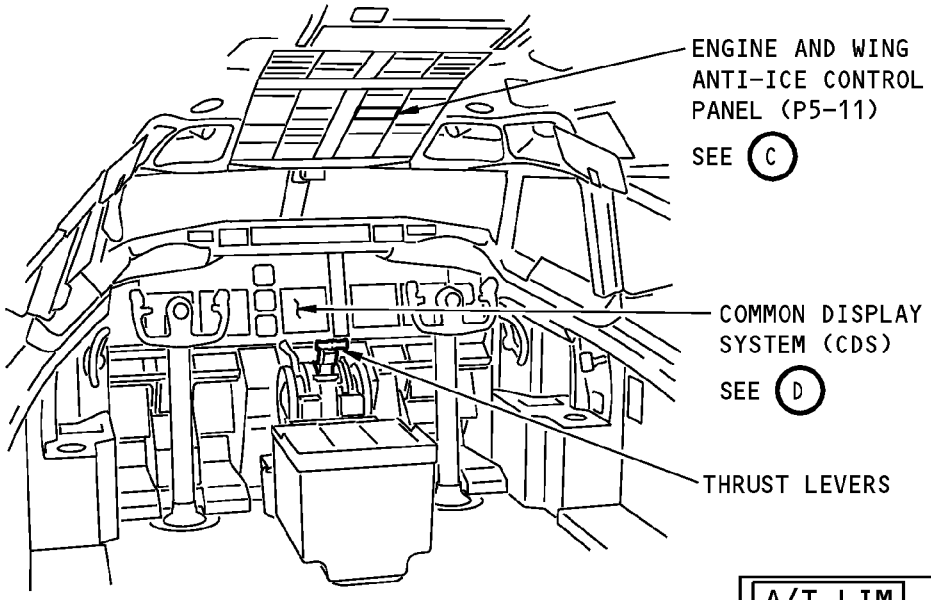
(4) If electrical power is no longer necessary, do this task: Remove External Power, TASK 24-22-00-860-814.

——————— END OF TASK ———————

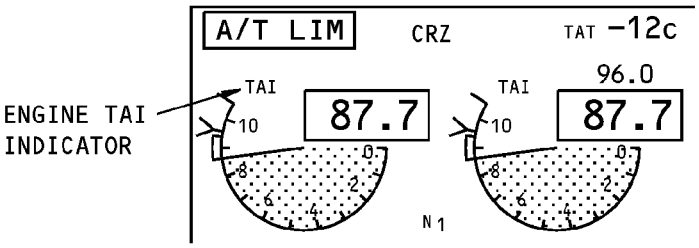




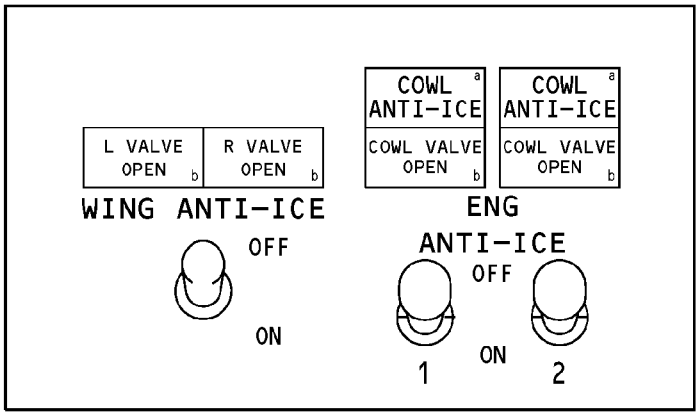
Engine Cowl Anti-Icing Test
Figure 501 (Sheet 1 of 2)/30-21-00-990-801



FLIGHT COMPARTMENT



COMMON DISPLAY SYSTEM
D



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

Engine Cowl Anti-Icing Test
Figure 501 (Sheet 2 of 2)/30-21-00-990-801

ENGINE COWL TAI VALVE - REMOVAL/INSTALLATION

1. General

A. This procedure has tasks:

(1) The removal of the engine cowl TAI valve

(2) The installation of the engine cowl TAI valve.

B. The engine cowl TAI valve is at the 2 o'clock position on the right side of the engine fan case.

TASK 30-21-11-000-801

2. Engine Cowl TAI Valve Removal

(Figure 401)

A. General

(1) For this procedure the engine cowl TAI valve will be referred to as the valve.

B. References

Reference	Title
36-00-00-860-806	Remove Pressure from the Pneumatic System (P/B 201)
71-11-02-010-801-F00	Open the Fan Cowl Panels (P/B 201)

C. Location Zones

Zone	Area
410	Subzone - Engine 1
420	Subzone - Engine 2

D. Prepare for the Removal

SUBTASK 30-21-11-860-001

(1) To remove the valve on the No. 1 power plant, 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 ENGINE 1 & WING CONTROL
A	7	C01001	ANTI-ICE & RAIN ENGINE 1 COWL ANTI-ICE VALVE

SUBTASK 30-21-11-860-002

(2) To remove the valve on the No. 2 power plant, do this step:

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

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
B	6	C00149	ANTI-ICE & RAIN ENGINE 2 CONTROL
B	7	C01002	ANTI-ICE & RAIN ENGINE 2 COWL ANTI-ICE VALVE

SUBTASK 30-21-11-860-003

(3) Make sure the fuel shutoff lever for the applicable engine is in the cutoff position and install a DO-NOT-OPERATE tag.

SUBTASK 30-21-11-860-004

(4) If not already done, do this task: Remove Pressure from the Pneumatic System, TASK 36-00-00-860-806.

SUBTASK 30-21-11-010-001

(5) For the right fan cowl panel, do this task: Open the Fan Cowl Panels, TASK 71-11-02-010-801-F00

E. Engine Cowl TAI Valve Removal

SUBTASK 30-21-11-020-001

(1) Disconnect the connector, DP1303, [10] from the valve [5].

SUBTASK 30-21-11-020-002

(2) Remove the bolt [6], the washers [7] and the nut [9] that attach the bonding jumper [8] to the valve [5].

(a) Move the bonding jumper [8] away from the valve [5].

SUBTASK 30-21-11-020-003

(3) Remove the three bolts [11] and the three nuts [12] that attach the aft duct to the fan case bracket.

SUBTASK 30-21-11-020-004

(4) Do these steps to remove the valve [5]:

(a) Disconnect the two couplings [1] at each end of the valve [5].

CAUTION: DO NOT APPLY TOO MUCH FORCE TO THE AFT DUCT. APPLY ONLY ENOUGH FORCE TO MOVE THE AFT DUCT REARWARD APPROXIMATELY 0.5 INCH (13 MM). IF YOU APPLY TOO MUCH FORCE, YOU CAN DAMAGE THE AFT DUCT.

(b) Push the aft duct rearward to disengage the duct flanges.

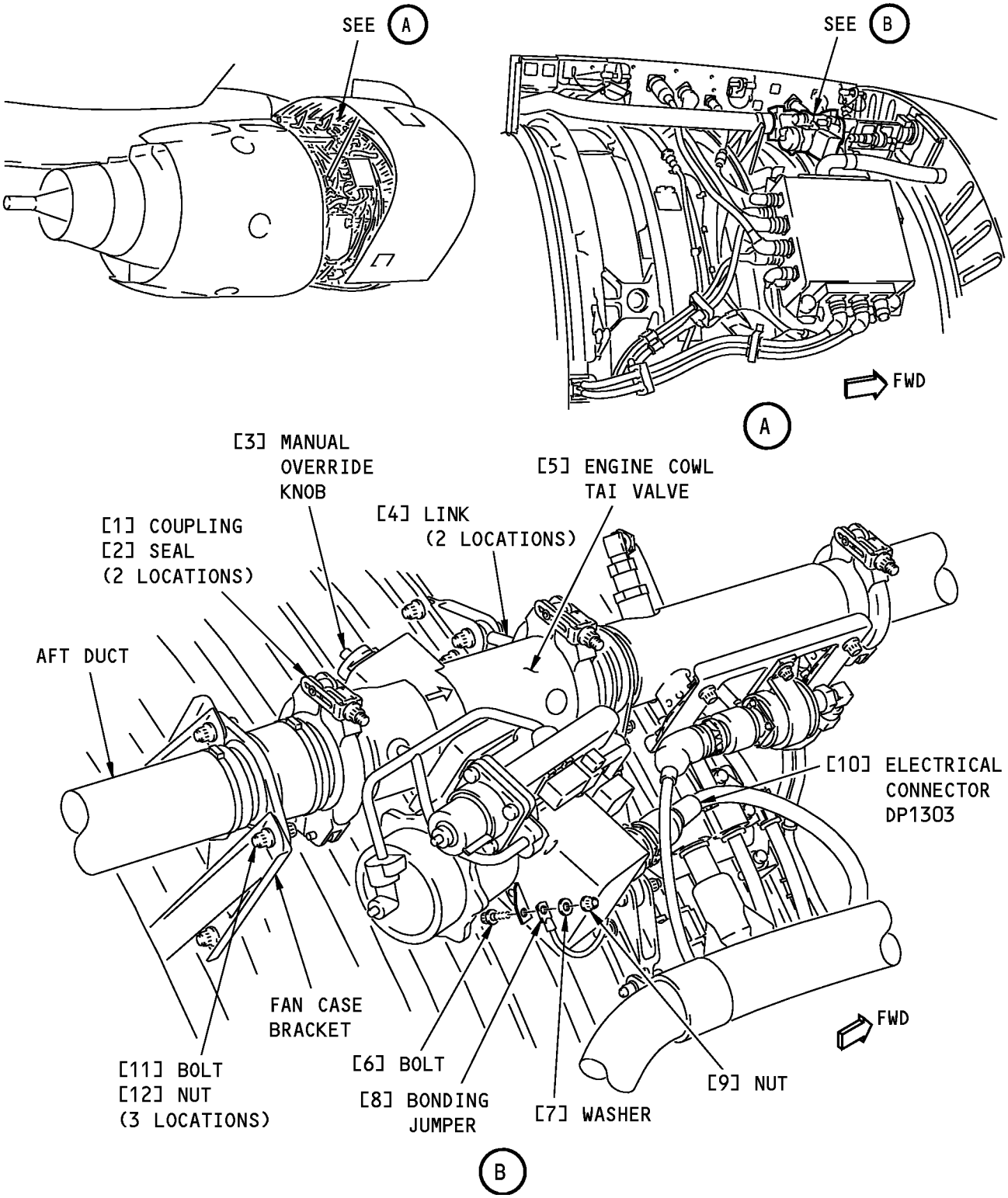
NOTE: You can install a temporary support between the fan case bracket and the aft duct to hold the duct in this position. This will make the removal of the valve easier.

(c) Remove the valve [5] from the engine.

(d) Remove the seal [2] from the forward end of the valve [5] and the aft duct flange.

(e) Install protective covers on the openings of the ducts and the valve [5].

———————— END OF TASK ————————



Engine Cowl TAI Valve Installation
Figure 401/30-21-11-990-801

TASK 30-21-11-400-801

3. Engine Cowl TAI Valve Installation

(Figure 401)

A. General

(1) For this procedure the engine cowl TAI valve will be referred to as the valve.

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)
36-00-00-860-806	Remove Pressure from the Pneumatic System (P/B 201)
71-00-00-700-819-F00	Stop the Engine Procedure (Usual Engine Stop) (P/B 201)
71-00-00-800-807-F00	Start the Engine Procedure (Selection) (P/B 201)
71-11-02-410-801-F00	Close the Fan Cowl Panels (P/B 201)
78-31-00-010-801-F00	Open the Thrust Reverser (Selection) (P/B 201)
78-31-00-010-804-F00	Close the Thrust Reverser (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
COM-615	Meter - Bonding (Part #: C15292 (MODEL T477W), Supplier: 01014, A/P Effectivity: 737-ALL)
STD-1014	Wrench - Torque, 0 to 150 in-lbs (0 to 16.9 N-m)
STD-3906	Mallet - Rubber

D. Consumable Materials

Reference	Description	Specification
B00130	Alcohol - Isopropyl	TT-I-735
G01048	Lockwire - Corrosion Resistant Steel (0.032 In. Dia.)	NASM20995˜ C32

E. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
2	Seal	30-21-11-01-125	HAP 001-007
		30-21-11-01A-125	HAP 008-013, 015-026, 028-054, 101-999
5	Valve	30-21-11-01-130	HAP 001-007
		30-21-11-01A-130	HAP 008-013, 015-026, 028-054, 101-999

F. Location Zones

Zone	Area
410	Subzone - Engine 1
420	Subzone - Engine 2

G. Prepare for the Installation

SUBTASK 30-21-11-820-001

(1) Look at the manual override nut [3] on the valve [5] and make sure the valve [5]is not in the LOCKED closed position.

H. Engine Cowl TAI Valve Installation

SUBTASK 30-21-11-420-001

(1) Remove the protective covers from the ducts and the valve [5].

SUBTASK 30-21-11-210-001

(2) Examine the seal [2] as follows:

(a) Make sure the seal [2] do not have cracks, dents, or other damage.

(b) Replace all damaged seal [2] that you find.

SUBTASK 30-21-11-420-002

(3) Do these steps to install the valve [5]:

CAUTION: DO NOT APPLY TOO MUCH FORCE TO THE AFT DUCT. APPLY ONLY ENOUGH FORCE TO MOVE THE AFT DUCT REARWARD APPROXIMATELY 0.5 INCH (13 MM). IF YOU APPLY TOO MUCH FORCE, YOU CAN DAMAGE THE AFT DUCT.

(a) If removed, install a temporary support between the aft duct and the fan case bracket to move the aft duct rearward.

NOTE: You can install a temporary support between the fan case bracket and the aft duct to hold the duct in this position. This will make the installation of the valve easier.

(b) Install a seal [2] in the forward end of the valve [5] and on the aft duct flange.

(c) Install the valve [5] between the ducts.

NOTE: Make sure the flow arrow points forward and the locking feature on the downstream flange is correctly engaged.

(d) Remove the temporary support between the aft duct and the fan case bracket.

(e) Loosely install the coupling [1] to attach the valve [5] to the ducts.

NOTE: Make sure the coupling nuts on the couplings are on top and the nuts face outboard.

CAUTION: WHEN YOU INSTALL THE COUPLINGS, MAKE SURE THE COUPLINGS DO NOT APPLY A FORCE ON THE DUCTS OR THE INLET COWL TAI VALVE. DAMAGE TO EQUIPMENT CAN OCCUR.

(f) Do these steps to tighten the coupling [1]:

NOTE: If it is difficult to attach the valve [5] to the adjacent ducts, remove the lockwire from the links [4] and adjust the links until no force is applied to the ducts or the valve [5]. Tighten the links [4] and install a lockwire, G01048.

1) Use a torque wrench 0 to 150 in-lbs (0 to 16.9 N-m), STD-1014 to tighten the coupling [1] to 70-90 pound-inches (7.9-10.2 Newton meters).

2) Lightly hit the surface of each coupling [1]with a rubber mallet, STD-3906.

3) Use a torque wrench 0 to 150 in-lbs (0 to 16.9 N-m), STD-1014 to tighten the coupling [1] again to 70-90 pound-inches (7.9-10.2 Newton meters).

4) Install the three bolts [11] and the three nuts [12] that attach the aft duct to the fan case bracket.

a) Use a torque wrench 0 to 150 in-lbs (0 to 16.9 N-m), STD-1014 to tighten the bolts to a torque of 97-103 in-lbs (10.9-11.6 N-m).

SUBTASK 30-21-11-020-005

(4) Connect the connector, DP1303, [10] to the valve [5].

SUBTASK 30-21-11-760-001

(5) Do these steps to connect the bonding jumper [8] to the valve [5]:

(a) Clean the bonding surface on the valve [5] with alcohol, B00130.

(b) Attach the bonding jumper [8] to the valve [5]with the bolt [6], the washers [7] and the nut [9].

1) Use a torque wrench 0 to 150 in-lbs (0 to 16.9 N-m), STD-1014 to tighten the nut [9] to 28-35 pound-inches (3.2-4.0 Newton meters).

(c) Use an bonding meter, COM-615 to measure the resistance between the bonding jumper [8] and the valve [5].

1) The maximum permitted resistance is 0.008 ohms.

I. Engine Cowl TAI Valve Installation Test

SUBTASK 30-21-11-860-009

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

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
A	6	C00148	ANTI-ICE & RAIN ENGINE 1 & WING CONTROL
A	7	C01001	ANTI-ICE & RAIN ENGINE 1 COWL ANTI-ICE VALVE
B	6	C00149	ANTI-ICE & RAIN ENGINE 2 CONTROL
B	7	C01002	ANTI-ICE & RAIN ENGINE 2 COWL ANTI-ICE VALVE

SUBTASK 30-21-11-840-001

(2) Do these steps to provide pneumatic pressure for the ducts:

(a) To use the engines to pressurize the TAI duct, do this task: Start the Engine Procedure (Selection), TASK 71-00-00-800-807-F00.

(b) 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.

(c) 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.

(d) If you use the APU or external air to pressurize the TAI duct, then do these steps:

1) Put the BLEED 1 and 2 switches on the air conditioning panel in the OFF position.

2) Put the L PACK and R PACK switches on the air conditioning panel in the OFF position.

3) Make sure the ISOLATION VALVE switch is in the OPEN or the AUTO position.

(e) Do these steps on the applicable engine to manually open the PRSOV at the applicable engine:

WARNING: DO THESE SPECIFIED TASKS IN THE CORRECT SEQUENCE BEFORE YOU OPEN THE THRUST REVERSER: RETRACT THE LEADING EDGE, DO THE DEACTIVATION PROCEDURES FOR THE LEADING EDGE AND THE THRUST REVERSER (FOR GROUND MAINTENANCE), AND OPEN THE FAN COWL PANELS. IF YOU DO NOT OBEY THE ABOVE SEQUENCE, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

1) Open the left thrust reverser. To open it, do this task: Open the Thrust Reverser (Selection), TASK 78-31-00-010-801-F00.
2) Put the applicable engine BLEED switch, on the P5-10 panel, to the ON position.
3) Use a wrench on the manual override nut for the PRSOV to put it to the open position.
4) Make sure that the PRSOV stays in the open position.

NOTE: The PRSOV is spring-loaded to the closed position. If there is pressure supplied and the PRSOV does not stay open, there may be a leakage in the PRSOV or in the sense line(s).

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.

5) Close the thrust reverser. To close it, do this task: Close the Thrust Reverser (Selection), TASK 78-31-00-010-804-F00.

SUBTASK 30-21-11-860-010

(3) Do this test of the COWL VALVE OPEN and COWL ANTI-ICE light switches:
   (a) Push and release the COWL VALVE OPEN and COWL ANTI-ICE light switches on the P5-11 panel.
   (b) Make sure each light comes on then goes off.

SUBTASK 30-21-11-860-011

(4) Make sure the engine and wing anti-ice panel commands the applicable cowl TAI valves open:
   (a) For the left cowl TAI valve, put the ENG ANTI-ICE 1 switch in the ON position.
      1) Make sure the left COWL VALVE OPEN light comes on brightly for 1 to 3 seconds.
      2) Make sure the COWL VALVE OPEN light is on dimly after 3 seconds.
   (b) For the right cowl TAI valve, put the ENG ANTI-ICE 2 switch in the ON position.
      1) Make sure the right COWL VALVE OPEN light comes on brightly for 1 to 3 seconds.
      2) Make sure the COWL VALVE OPEN light is on dimly after 3 seconds.

SUBTASK 30-21-11-860-015

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.

(5) Make sure there is no leakage around the engine cowl TAI ducts and TAI valve.
   (a) To repair jet blast leakage, align the couplings.

SUBTASK 30-21-11-860-012

(6) Make sure the engine and wing anti-ice panel commands the cowl TAI valves closed:
   (a) For the left cowl TAI valve, put the ENG ANTI-ICE 1 switch in the OFF position.
      1) Make sure the left COWL VALVE OPEN light comes on brightly for 1 to 3 seconds.
      2) Make sure the COWL VALVE OPEN light goes off after 3 seconds.

(b) For the right cowl TAI valve, put the ENG ANTI-ICE 2 switch in the OFF position.

1) Make sure the right COWL VALVE OPEN light comes on brightly for 1 to 3 seconds.

2) Make sure the COWL VALVE OPEN light goes off after 3 seconds.

J. Put the Airplane Back to Its Usual Condition.

SUBTASK 30-21-11-860-013

(1) If you used the engines to pressurize the TAI ducts, then stop the engines. To do this, do this task: Stop the Engine Procedure (Usual Engine Stop), TASK 71-00-00-700-819-F00.

SUBTASK 30-21-11-860-014

(2) If you used the APU or external air to pressurize the TAI ducts, then, do this task: Remove Pressure from the Pneumatic System, TASK 36-00-00-860-806.

SUBTASK 30-21-11-860-007

(3) Remove the DO-NOT-OPERATE tags from the fuel shutoff levers.

SUBTASK 30-21-11-860-008

(4) For the right fan cowl panel, do this task: Close the Fan Cowl Panels, TASK 71-11-02-410-801-F00

——————— END OF TASK ———————

ENGINE ANTI-ICE PRESSURE SENSOR - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) Engine Anti-Ice Pressure Sensor Removal.

(2) Engine Anti-Ice Pressure Sensor Installation.

TASK 30-21-21-000-802

2. Engine Anti-Ice Pressure Sensor Removal

(Figure 401)

A. References

Reference	Title
78-31-00-010-801-F00	Open the Thrust Reverser (Selection) (P/B 201)

B. Location Zones

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

C. Prepare for the Removal

SUBTASK 30-21-21-860-004

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

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
A	6	C00148	ANTI-ICE & RAIN ENGINE 1 & WING CONTROL
B	6	C00149	ANTI-ICE & RAIN ENGINE 2 CONTROL

SUBTASK 30-21-21-010-005

WARNING: DO THESE SPECIFIED TASKS IN THE CORRECT SEQUENCE BEFORE YOU OPEN THE THRUST REVERSER: YOU MUST RETRACT THE LEADING EDGE, YOU MUST DEACTIVATE THE LEADING EDGE, YOU MUST DEACTIVATE THE THRUST REVERSER, AND YOU MUST OPEN THE FAN COWL PANEL. IF YOU DO NOT OBEY THE ABOVE SEQUENCE, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

(2) For the left thrust reverser, do this task: Open the Thrust Reverser (Selection), TASK 78-31-00-010-801-F00.

D. Engine Anti-Ice Pressure Sensor Removal

SUBTASK 30-21-21-020-001

(1) Disconnect the electrical connector [5] from the TAI pressure switch [4].

SUBTASK 30-21-21-020-002

CAUTION: WHEN YOU DISCONNECT THE PNEUMATIC FITTING, HOLD THE FITTING ON THE PRESSURE SWITCH IN PLACE WITH A SECOND WRENCH. IF YOU DO NOT HOLD THE FITTING IN PLACE YOU WILL DAMAGE THE TAI PRESSURE SWITCH.

(2) Remove the pneumatic fitting [1] from the TAI pressure switch [4].

SUBTASK 30-21-21-020-003

(3) Loosen the bolts [2] to loosen the clamp [3].

SUBTASK 30-21-21-020-004

(4) Remove the clamp [3], TAI pressure switch [4] and saddle clamp [6].

——————— END OF TASK ———————

TASK 30-21-21-400-801

3. Engine Anti-Ice Pressure Sensor Installation

(Figure 401)

A. References

Reference	Title
78-31-00-010-801-F00	Open the Thrust Reverser (Selection) (P/B 201)
78-31-00-010-804-F00	Close the Thrust Reverser (Selection) (P/B 201)

B. Location Zones

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

C. Prepare for the Installation

SUBTASK 30-21-21-860-005

(1) Make sure that these circuit breakers are open and have safety tags:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
A	6	C00148	ANTI-ICE & RAIN ENGINE 1 & WING CONTROL
B	6	C00149	ANTI-ICE & RAIN ENGINE 2 CONTROL

SUBTASK 30-21-21-010-007

WARNING: DO THESE SPECIFIED TASKS IN THE CORRECT SEQUENCE BEFORE YOU OPEN THE THRUST REVERSER: YOU MUST RETRACT THE LEADING EDGE, YOU MUST DEACTIVATE THE LEADING EDGE, YOU MUST DEACTIVATE THE THRUST REVERSER, AND YOU MUST OPEN THE FAN COWL PANEL. IF YOU DO NOT OBEY THE ABOVE SEQUENCE, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

(2) If not already done, do this task: Open the Thrust Reverser (Selection), TASK 78-31-00-010-801-F00.

D. Engine Anti-Ice Pressure Sensor Installation

SUBTASK 30-21-21-420-002

(1) Loosely install the TAI pressure switch [4] in the saddle clamp [6] with the clamp [3] and bolts [2].

NOTE: Do not tighten the bolt [2] at this time.

SUBTASK 30-21-21-820-001

(2) Position the TAI pressure switch [4] such that the electrical connector [5] master keyway is furthest away from the duct.

SUBTASK 30-21-21-420-003

(3) Connect the electrical connector [5] to the TAI pressure switch [4].

SUBTASK 30-21-21-420-005

CAUTION: HOLD THE FITTING ON THE PRESSURE SWITCH IN PLACE WITH A SECOND WRENCH WHEN YOU CONNECT THE TUBE. IF YOU DO NOT HOLD THE FITTING IN PLACE YOU WILL DAMAGE THE TAI PRESSURE SWITCH.

(4) Connect the elbow [1] to the TAI pressure switch [4].

SUBTASK 30-21-21-420-006

CAUTION: WHEN YOU TIGHTEN THE TUBE ASSEMBLY, HOLD THE FITTING ON THE PRESSURE SWITCH IN PLACE WITH A SECOND WRENCH. IF YOU DO NOT HOLD THE FITTING IN PLACE YOU WILL DAMAGE THE TAI PRESSURE SWITCH.

(5) Tighten the elbow [1] to 256.5-283.5 pounds-inches (29-32 Newton meters).

SUBTASK 30-21-21-420-008

(6) Tighten the bolts [2] on the clamp [3] to 50-56 pound-inches (5.6-6.3 Newton meters).

SUBTASK 30-21-21-860-003

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

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
B	4	C01003	ENGINE 1 THRUST REVERSER IND

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
A	6	C00148	ANTI-ICE & RAIN ENGINE 1 & WING CONTROL
A	7	C01001	ANTI-ICE & RAIN ENGINE 1 COWL ANTI-ICE VALVE
B	6	C00149	ANTI-ICE & RAIN ENGINE 2 CONTROL
B	7	C01002	ANTI-ICE & RAIN ENGINE 2 COWL ANTI-ICE VALVE

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
C	4	C00154	ENGINE 2 START VALVE

E. Left Anti-Ice Overpressure Pressure Sensor Installation Test

SUBTASK 30-21-21-710-003

(1) Do this test of the left cowl TAI duct overpressure detection circuit:
   (a) Disconnect the electrical connector from the left engine duct overpressure switch.
   (b) Connect a jumper wire between pins 1 and 2 of the connector.
      1) Make sure the left COWL ANTI-ICE light comes on.
   (c) Remove the jumper wire from the connector.
   (d) Re-connect the connector to the overpressure switch.
   (e) Make sure the left COWL ANTI-ICE light is off.

F. Right Anti-Ice Overpressure Pressure Sensor Installation Test

SUBTASK 30-21-21-710-004

(1) Do this test of the right cowl TAI duct overpressure detection circuit:
   (a) Disconnect the electrical connector from the right engine duct overpressure switch.
   (b) Connect a jumper wire between pins 1 and 2 of the connector.
      1) Make sure the right COWL ANTI-ICE light comes on.

(c) Remove the jumper wire from the connector.

(d) Connect the connector to the overpressure switch.

(e) Make sure the right COWL ANTI-ICE light is off.

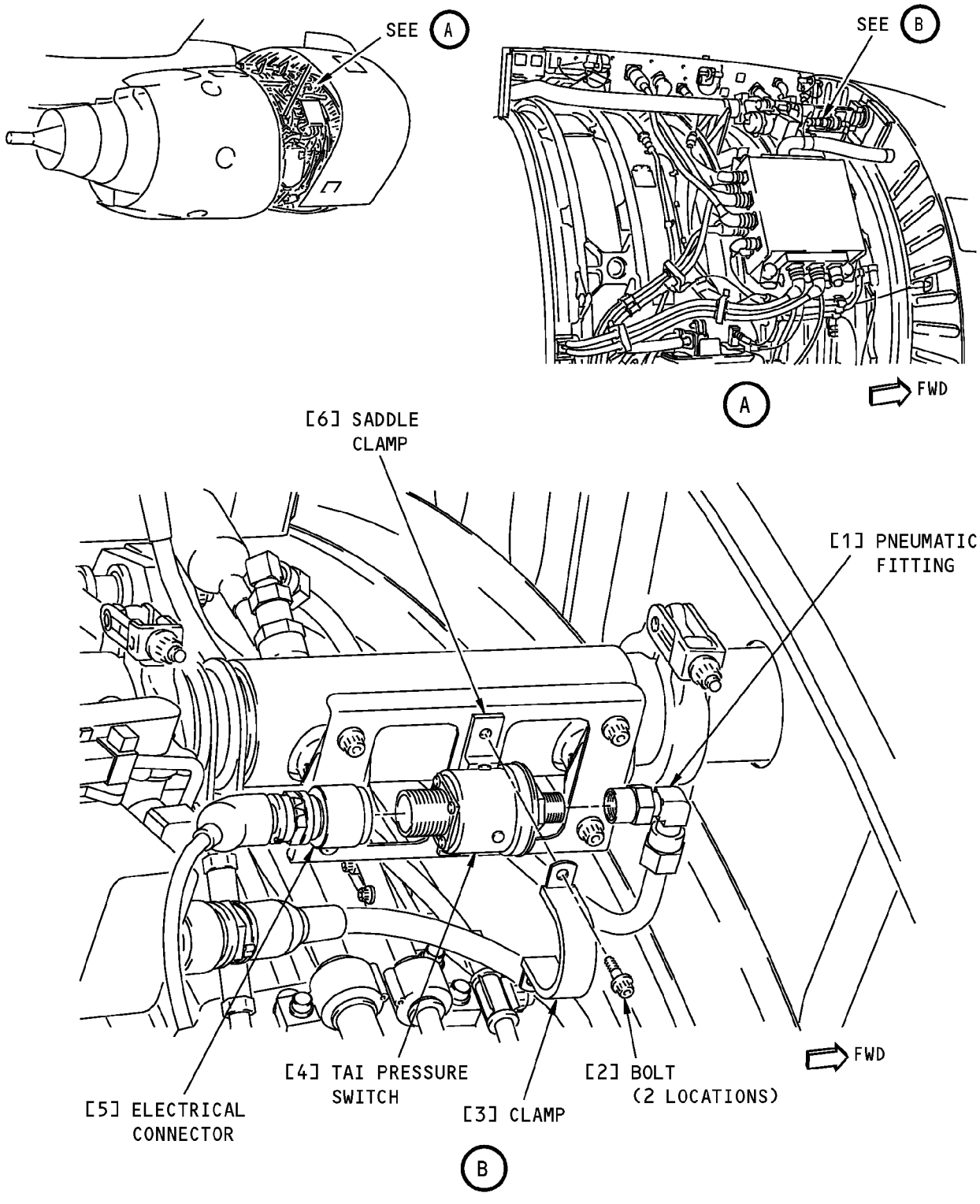
G. Put the Airplane Back to Its Usual Condition

SUBTASK 30-21-21-010-003

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.

(1) For the left thrust reverser, do this task: Close the Thrust Reverser (Selection), TASK 78-31-00-010-804-F00.

END OF TASK



Engine Anti-ice Pressure Switch Installtion
Figure 401/30-21-21-990-801

AIR DATA SENSOR ANTI-ICING - MAINTENANCE PRACTICES

1. General

A. This procedure has these task references:

(1) Replacement of the 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.

(a) The pitot probe, AOA sensor, and TAT probe heaters are built into the respective air data sensor.

(b) If a heater fails, then the sensor must be replaced.

TASK 30-31-00-900-801

2. Pitot Probe, AOA Sensor, and TAT Probe Heater Replacement

A. References

Reference	Title
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)

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
323	Vertical Fin - Front Spar To Rear Spar

C. Procedure

SUBTASK 30-31-00-900-001

(1) If a pitot probe heater is failed, then you must replace the pitot probe.

These are the tasks:

Pitot Probe Removal, TASK 34-11-01-000-801,

Pitot Probe Installation, TASK 34-11-01-400-801.

SUBTASK 30-31-00-900-002

(2) If an AOA sensor heater is failed, then you must replace the AOA sensor.

These are the 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

(3) If a TAT probe heater is failed, then you must replace the TAT probe.

These are the tasks:

Total Air Temperature Probe Removal, TASK 34-21-06-000-801,

Total Air Temperature Probe Installation, TASK 34-21-06-400-801.

END OF TASK

AIR DATA SENSOR ANTI-ICING - ADJUSTMENT/TEST

1. General

A. This procedure contains scheduled maintenance task data.

B. This procedure consists of a task to do a test of the pitot probe, angle of attack (AOA) sensor, and TAT probe heaters.

NOTE: The AOA sensors are also referred to as alpha vanes.

TASK 30-31-00-730-801

2. Pitot Probe, AOA Sensor, and TAT Probe Heater Test

(Figure 501)

A. References

Reference	Title
24-22-00-860-813	Supply External Power (P/B 201)
24-22-00-860-814	Remove External Power (P/B 201)

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-1522	Stand - Work, Fin Access, Working Height 9-39 Feet (Part #: B-14, Supplier: 05060, A/P Effectivity: 737-ALL)

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. Procedure

SUBTASK 30-31-00-861-001

(1) Supply electrical power to the airplane. To supply power, do this task: Supply External Power, TASK 24-22-00-860-813.

SUBTASK 30-31-00-860-011

(2) Make sure there are no protective covers on the air data sensors.

(a) If there are any protective covers, then proceed with the next step; otherwise, continue with SUBTASK 30-31-00-865-002.

SUBTASK 30-31-00-865-006

(3) 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

Row	Col	Number	Name
D	5	C00525	HEATERS F/O PITOT
D	6	C00524	HEATERS AUX PITOT

SUBTASK 30-31-00-860-010

(4) Remove the protective covers.

SUBTASK 30-31-00-865-004

(5) 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

(a) Make sure the amber OVERHEAT lights on the window and pitot heat module go off.

SUBTASK 30-31-00-860-012

(6) Continue with SUBTASK 30-31-00-860-003.

SUBTASK 30-31-00-865-002

(7) Make sure that these circuit breakers are closed:

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

(a) Make sure the amber OVERHEAT lights on the window and pitot heat module go off.

SUBTASK 30-31-00-860-003

(8) Put the PROBE HEAT A switch in the ON position.

(a) Make sure the CAPT PITOT, L ELEV PITOT, L ALPHA VANE, and TEMP PROBE lights on the window and pitot heat module go off.

SUBTASK 30-31-00-860-004

(9) Put the PROBE HEAT B switch in the ON position.

(a) Make sure the F/O PITOT, R ELEV PITOT, R ALPHA VANE, and AUX PITOT lights on the window and pitot heat module go off.

WARNING: THE AIR DATA SENSORS CAN GET VERY HOT. DO NOT TOUCH THE SENSORS. YOU MAY GET BURNED IF YOU TOUCH THE SENSORS.

(b) Make sure the air data sensor heaters get warm. Here are some optional ways to do this:

NOTE: You will need a stand, COM-1522 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.

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.

SUBTASK 30-31-00-860-005

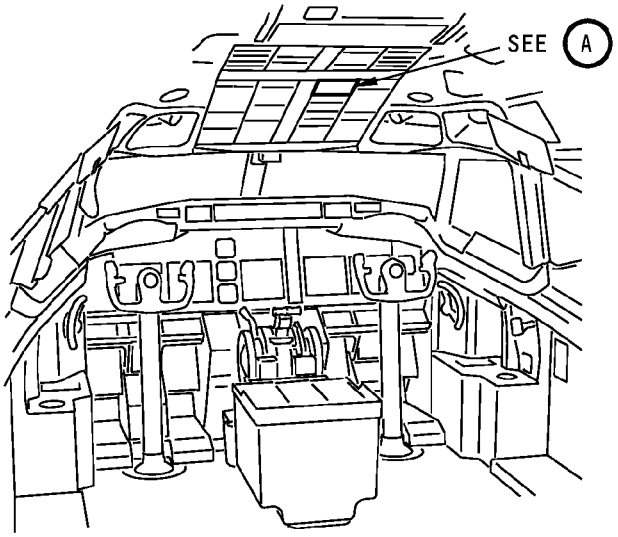
(10) Put the PROBE HEAT switches in the OFF position.

E. Put the airplane in its normal condition.

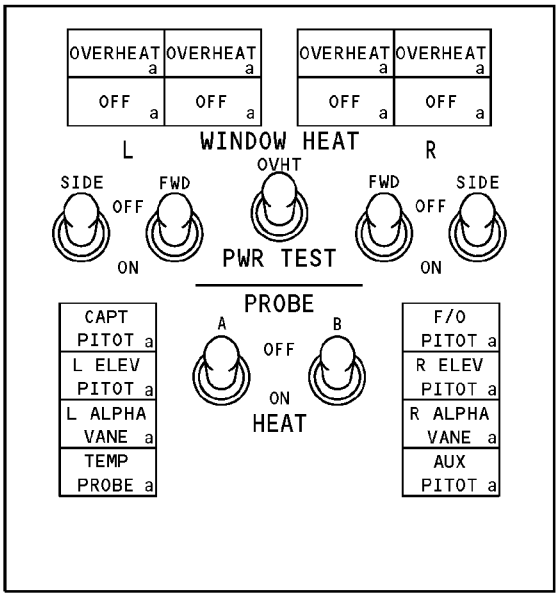
SUBTASK 30-31-00-860-006

(1) If electrical power is not necessary, do this task: Remove External Power, TASK 24-22-00-860-814.

——————— END OF TASK ———————

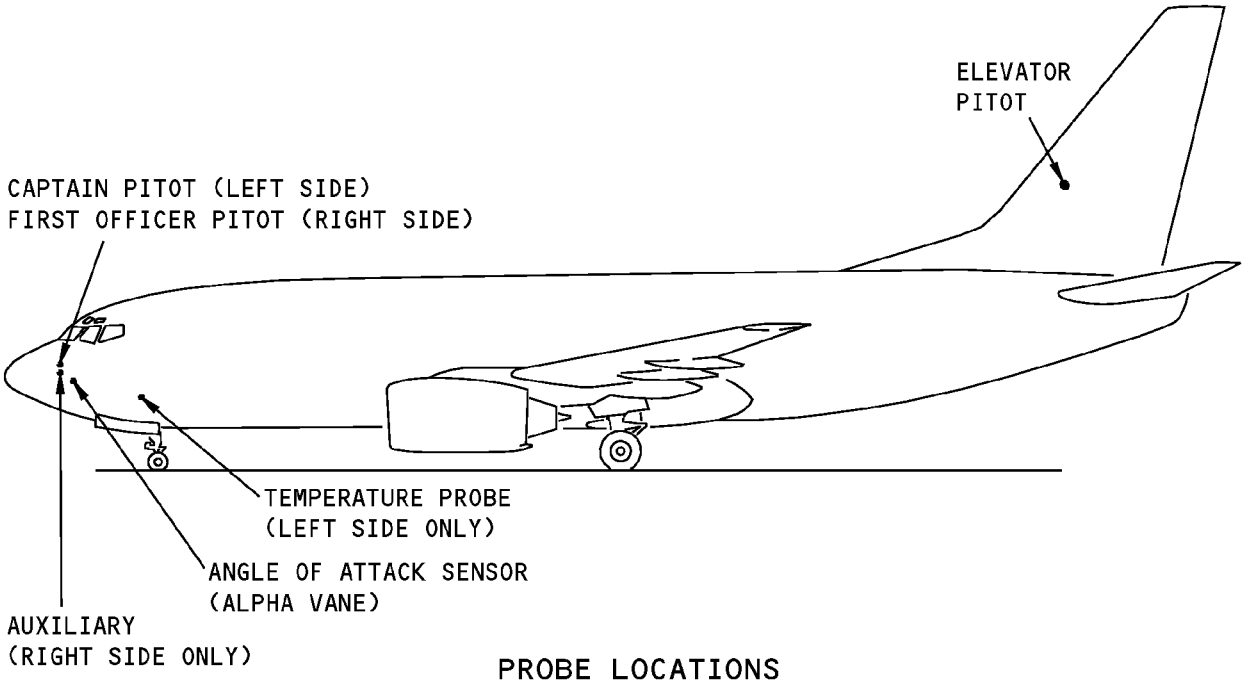


FLIGHT COMPARTMENT



WINDOW/PITOT HEAT MODULE
(P5-9)

A



PROBE LOCATIONS
(LEFT SIDE IS SHOWN, RIGHT SIDE IS OPPOSITE)

Window/Pitot Heat Module
Figure 501/30-31-00-990-801

CONTROL CABIN WINDOW ANTI-ICING 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 (Part #: DHS24XC-FM, Supplier: 08086, A/P Effectivity: 737-ALL) (Part #: DHS24XF-FM, Supplier: 08086, A/P Effectivity: 737-ALL) (Opt Part #: IR-16L3 IS, Supplier: 75037, A/P Effectivity: 737-ALL)
STD-1179	Tester - Pyrometer

C. Location Zones

Zone	Area
212	Flight Compartment - Right

D. Procedure

SUBTASK 30-41-00-840-001

(1) 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.

SUBTASK 30-41-00-880-001

(2) If the window temperature is greater than 110 degrees F (43 degrees C), then cool the window.

NOTE: The window can be cooled with cool water or by providing shade from the sun.

SUBTASK 30-41-00-860-008

WARNING: WHEN PITOT HEAT IS ON, DO NOT TOUCH THE PITOT TUBES. PITOT TUBES WILL BE VERY HOT. HOT PITOT TUBES CAN CAUSE BURNS AND OTHER INJURIES TO PERSONS.

CAUTION: REMOVE ALL CAPS AND COVERS FROM ALL AIR DATA SENSORS. THE SENSORS BECOME HOT. THIS CAN CAUSE DAMAGE TO THE COVERS.

(3) Put the PROBE HEAT A and B switches in the ON position.

SUBTASK 30-41-00-860-001

(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 the corresponding OFF light on the window and pitot heat module goes out.

NOTE: It can take up to 15 seconds for the light to go out.

(b) Make sure both master caution lights are off.

SUBTASK 30-41-00-210-001

(5) Wait for the windows to heat up.

(a) Make sure the front and side windows stabilize at 90 to 120 degrees F (32 to 49 degrees C).

NOTE: It can take up to 4 minutes for the window temperatures to stabilize.

(b) Make sure the number 3 windows heat up to more than 90 degrees F (32 degrees C) but less than 125 degrees F (52 degrees C).

SUBTASK 30-41-00-860-002

(6) Put the WINDOW HEAT TEST OVHT/PWR switch to the OVHT position for 1 second.

(a) Make sure that the WINDOW HEAT OVHT lights come on.

(b) Make sure the MASTER CAUTION lights come on.

(c) Make sure ANTI-ICE light comes on.

(d) Make sure the OFF lights come on in less than 70 seconds.

(e) Make sure the windows start to cool.

(f) Wait until the window temperatures go below 110 degrees F (43 degrees C).

SUBTASK 30-41-00-860-003

(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 the window heat OFF light goes off.

(c) Make sure the windows begin to heat.

SUBTASK 30-41-00-860-004

(8) Press either MASTER CAUTION light.

(a) Make sure the MASTER CAUTION light goes off.

(b) Make sure the ANTI-ICE light goes off.

SUBTASK 30-41-00-860-005

(9) Wait 4 minutes.

SUBTASK 30-41-00-860-006

(10) Hold the window heat TEST switch to PWR.

(a) Make sure that the window heat OFF light stays off.

NOTE: If the window reaches its upper safe temperature limit, the OVERHEAT light, the MASTER CAUTION lights, and the ANTI-ICE light will come on. If the test switch is held to PWR after the OVERHEAT light comes on, the OFF light will come on within 70 seconds.

(b) Release the window heat TEST switch.

SUBTASK 30-41-00-860-007

(11) Put the WINDOW HEAT power switches in the off position.

SUBTASK 30-41-00-860-010

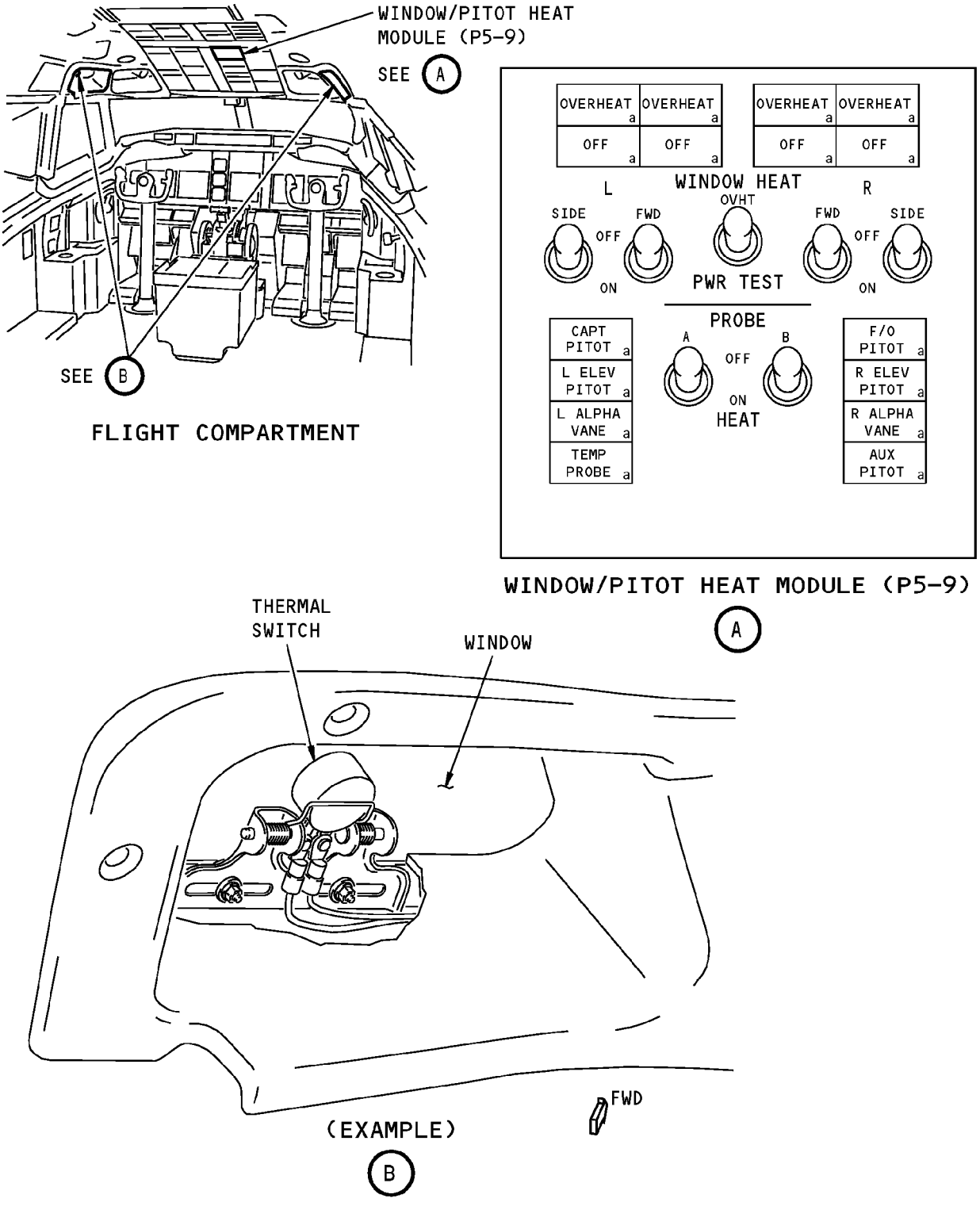
(12) Press either MASTER CAUTION light.

(a) Make sure the OVERHEAT lights, the MASTER CAUTION lights, and the ANTI-ICE lights are off.

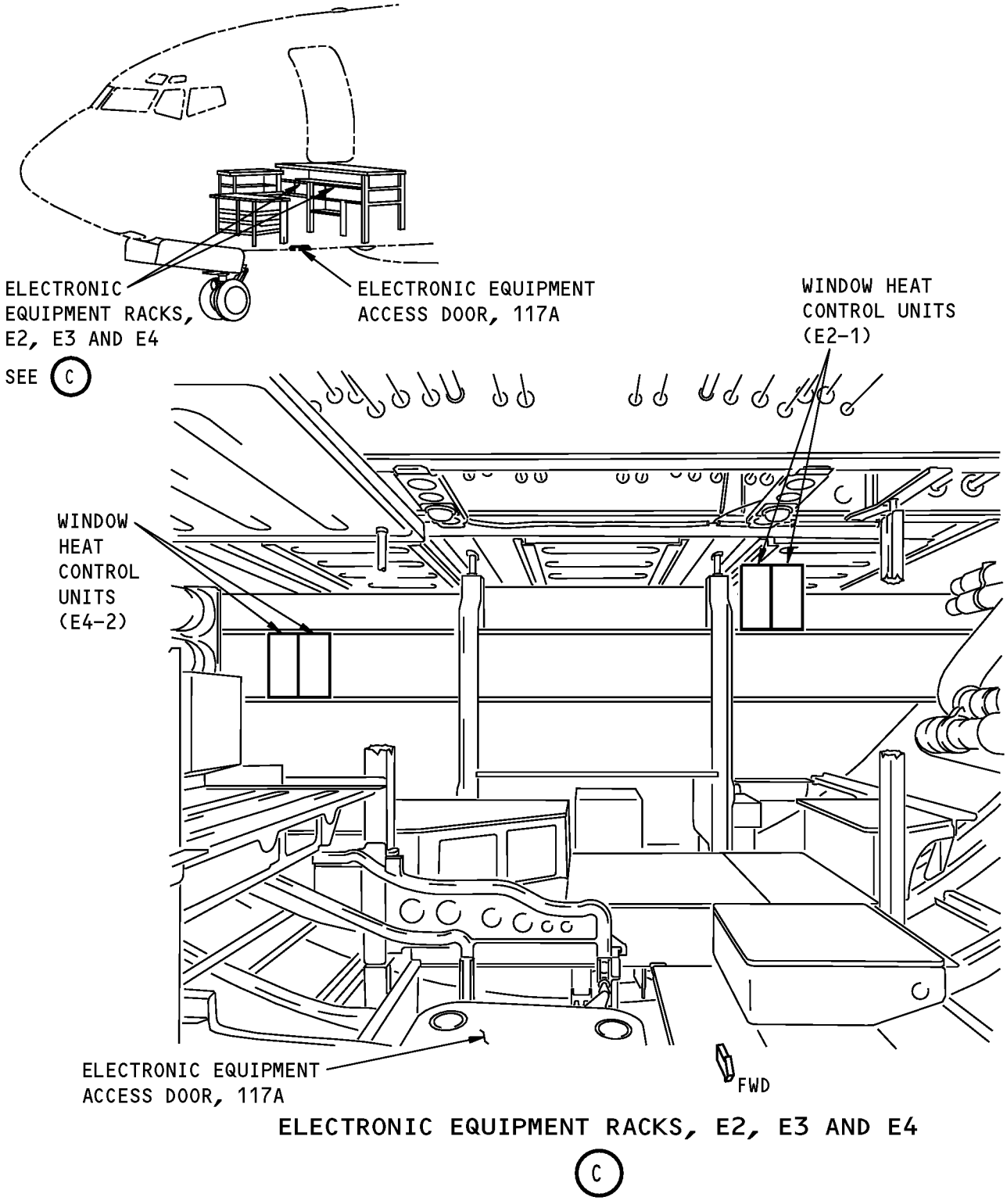
SUBTASK 30-41-00-860-009

(13) Put the PROBE HEAT A and B switches in the OFF position.

END OF TASK



Control Cabin Window Anti-Icing System Test
Figure 501 (Sheet 1 of 2)/30-41-00-990-801



Control Cabin Window Anti-Icing System Test
Figure 501 (Sheet 2 of 2)/30-41-00-990-801

WINDOW HEAT CONTROL UNIT - REMOVAL/INSTALLATION

1. General

A. This procedure contains scheduled maintenance task data.

B. This Procedure has these tasks:

(1) Removal of the window heat control unit.

(2) Installation of the window heat control unit.

TASK 30-41-11-000-801

2. Window Heat Control Unit (WHCU) Removal

(Figure 401)

A. General

(1) The window heat control units (WHCU) are 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 201)
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:

Number	Name/Location
117A	Electronic Equipment Access Door

SUBTASK 30-41-11-860-011

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

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
D	1	C00226	WINDOW HEAT CONTROL RIGHT FRONT AC
D	2	C00225	WINDOW HEAT CONTROL LEFT SIDE AC
E	1	C00224	WINDOW HEAT CONTROL LEFT FRONT AC
E	2	C00227	WINDOW HEAT CONTROL RIGHT SIDE AC

F/O Electrical System Panel, P6-11

Row	Col	Number	Name
B	8	C00393	WINDOW HEAT POWER RIGHT SIDE

Row	Col	Number	Name
B	9	C00228	WINDOW HEAT POWER LEFT FRONT

F/O Electrical System Panel, P6-12

Row	Col	Number	Name
B	8	C00394	WINDOW HEAT POWER RIGHT FRONT
B	9	C00392	WINDOW HEAT POWER LEFT SIDE

F. WHCU Removal

SUBTASK 30-41-11-840-001

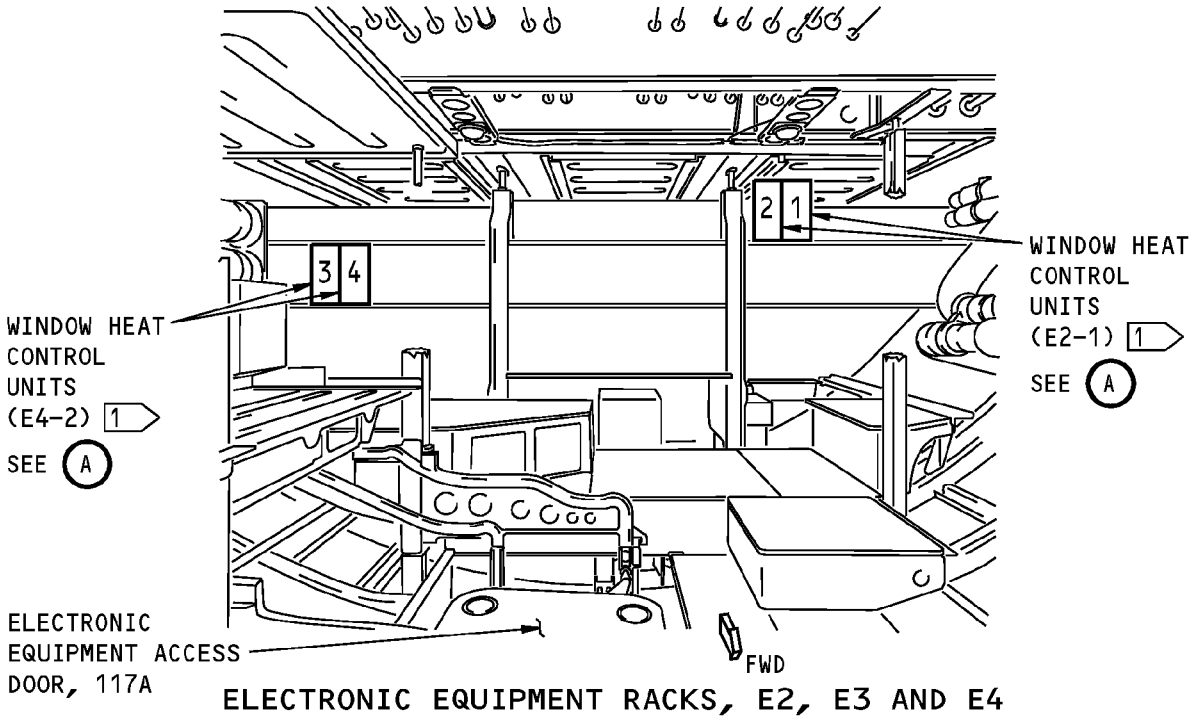
CAUTION: DO NOT TOUCH THE WINDOW HEAT CONTROL UNIT BEFORE YOU DO THE PROCEDURE FOR DEVICES THAT ARE SENSITIVE TO ELECTROSTATIC DISCHARGE. ELECTROSTATIC DISCHARGE CAN CAUSE DAMAGE TO THE WINDOW HEAT CONTROL UNIT.

(1) To handle the WHCU, do this task: ESDS Handling for Metal Encased Unit Removal, TASK 20-40-12-000-802.

SUBTASK 30-41-11-020-001

(2) To remove the WHCU [1] from the shelf, do this task: E/E Box Removal, TASK 20-10-07-000-801.

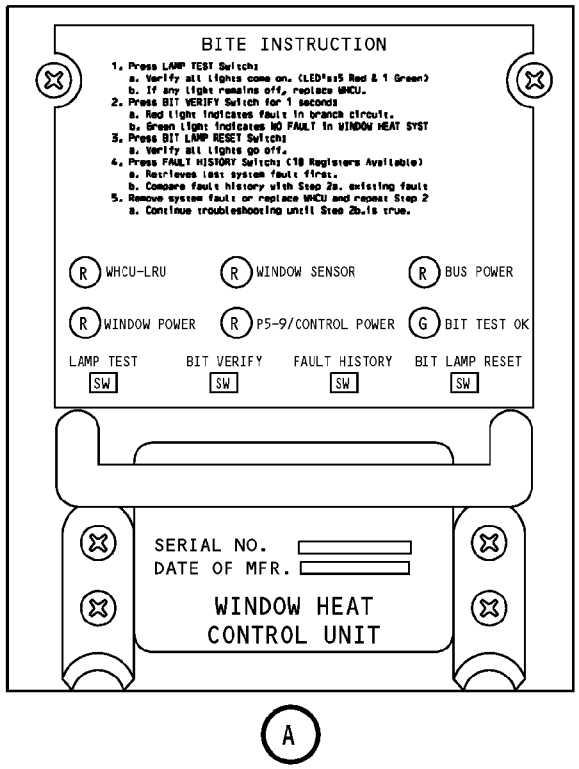
—————— END OF TASK ——————



ELECTRONIC EQUIPMENT RACKS, E2, E3 AND E4

1

UNIT	ELECTRICAL EQUIPMENT NO.	WINDOW
1	M320	R SIDE
2	M321	L FWD
3	M322	L SIDE
4	M323	R FWD



Window Heat Control Unit Installation
Figure 401/30-41-11-990-802

TASK 30-41-11-400-801

3. Window Heat Control Unit (WHCU) Installation

(Figure 401)

A. References

Reference	Title
20-10-07-400-801	E/E Box Installation (P/B 201)
20-40-12-400-802	ESDS Handling for Metal Encased Unit Installation (P/B 201)

B. Location Zones

Zone	Area
117	Electrical and Electronics Compartment - Left
118	Electrical and Electronics Compartment - Right

C. Access Panels

Number	Name/Location
117A	Electronic Equipment Access Door

D. WHCU Installation

SUBTASK 30-41-11-860-012

(1) Make sure that these circuit breakers are open and have safety tags:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
D	1	C00226	WINDOW HEAT CONTROL RIGHT FRONT AC
D	2	C00225	WINDOW HEAT CONTROL LEFT SIDE AC
E	1	C00224	WINDOW HEAT CONTROL LEFT FRONT AC
E	2	C00227	WINDOW HEAT CONTROL RIGHT SIDE AC

F/O Electrical System Panel, P6-11

Row	Col	Number	Name
B	8	C00393	WINDOW HEAT POWER RIGHT SIDE
B	9	C00228	WINDOW HEAT POWER LEFT FRONT

F/O Electrical System Panel, P6-12

Row	Col	Number	Name
B	8	C00394	WINDOW HEAT POWER RIGHT FRONT
B	9	C00392	WINDOW HEAT POWER LEFT SIDE

SUBTASK 30-41-11-840-002

CAUTION: DO NOT TOUCH THE WINDOW HEAT CONTROL UNIT BEFORE YOU DO THE PROCEDURE FOR DEVICES THAT ARE SENSITIVE TO ELECTROSTATIC DISCHARGE. ELECTROSTATIC DISCHARGE CAN CAUSE DAMAGE TO THE WINDOW HEAT CONTROL UNIT.

(2) To handle the WHCU, do this task: ESDS Handling for Metal Encased Unit Installation, TASK 20-40-12-400-802.

SUBTASK 30-41-11-420-001

(3) To install the WHCU [1] on the shelf, do this task: E/E Box Installation, TASK 20-10-07-400-801.

SUBTASK 30-41-11-860-013

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

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
D	1	C00226	WINDOW HEAT CONTROL RIGHT FRONT AC
D	2	C00225	WINDOW HEAT CONTROL LEFT SIDE AC
E	1	C00224	WINDOW HEAT CONTROL LEFT FRONT AC
E	2	C00227	WINDOW HEAT CONTROL RIGHT SIDE AC

F/O Electrical System Panel, P6-11

Row	Col	Number	Name
B	8	C00393	WINDOW HEAT POWER RIGHT SIDE
B	9	C00228	WINDOW HEAT POWER LEFT FRONT

F/O Electrical System Panel, P6-12

Row	Col	Number	Name
B	8	C00394	WINDOW HEAT POWER RIGHT FRONT
B	9	C00392	WINDOW HEAT POWER LEFT SIDE

E. WHCU Installation Test.

SUBTASK 30-41-11-740-004

(1) Do this test on the WHCU BITE.

(a) Put the WINDOW HEAT switches to the ON position.

(b) Press the LAMP TEST switch.

1) Make sure all lights (5 red, 1 green) on the face come on.

2) If any light stays off, replace the unit.

(c) Press the BIT VERIFY switch for 1 second.

1) Make sure the green light comes on.

F. Put the Airplane back to Its Usual Condition.

SUBTASK 30-41-11-410-001

(1) Close this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

END OF TASK

WINDOW HEAT CONTROL UNIT - ADJUSTMENT/TEST

1. General

A. This procedure consists of two tasks to test the window heat control units:

(1) With the Bite module installed on the control unit.

(2) Without the Bite module installed on control unit.

TASK 30-41-11-710-801

2. Window Heat Control Unit Test - With BITE Module Installed

(Figure 501)

A. General

(1) The window heat control units (WHCU) are installed in the electrical equipment center. A BITE module is installed on the control unit. The test makes sure the WHCUs operate properly.

(2) The WHCUs can be tested separately or they can all be tested at the same time. Use the table on (Figure 501) to determine which WHCU controls each window heat.

B. References

Reference	Title
24-22-00-860-813	Supply External Power (P/B 201)
24-22-00-860-814	Remove External Power (P/B 201)

C. Location Zones

Zone	Area
117	Electrical and Electronics Compartment - Left
118	Electrical and Electronics Compartment - Right
211	Flight Compartment - Left
212	Flight Compartment - Right

D. Prepare for the Test

SUBTASK 30-41-11-860-001

(1) Do this task: Supply External Power, TASK 24-22-00-860-813.

SUBTASK 30-41-11-860-002

(2) Press and release the reset switch on the WHCUs.

(a) Make sure all the indicator lights are off.

E. Test the Normal Functions of the WHCUs

SUBTASK 30-41-11-860-003

(1) One switch at a time, put the WINDOW HEAT power switches on the window and pitot heat module to the on position.

NOTE: If you are only testing one WHCU, you only need to put the applicable switch in the ON position. The table in (Figure 501) shows which WHCU controls each window heat.

(a) Make sure the corresponding OFF light on the window and pitot heat module goes out.

NOTE: It can take up to five seconds for a light to go out.

(b) Make sure both master caution lights are off.

SUBTASK 30-41-11-860-004

(2) Put the WINDOW HEAT TEST OVHT/PWR switch to the OVHT position for 1 second.

(a) Make sure that the WINDOW HEAT OVHT lights come on.

(b) Make sure the MASTER CAUTION lights come on.

(c) Make sure ANTI-ICE light comes on.

(d) Make sure the OFF lights go on in less than 70 seconds.

SUBTASK 30-41-11-860-005

(3) One switch at a time, put each window heat control 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 the window heat OFF light goes out.

SUBTASK 30-41-11-860-006

(4) Press either MASTER CAUTION light.

(a) Make sure the MASTER CAUTION light goes off.

(b) Make sure the ANTI-ICE light goes off.

SUBTASK 30-41-11-860-007

(5) Wait 4 minutes.

SUBTASK 30-41-11-860-008

(6) Hold the window heat TEST switch to PWR.

(a) Make sure that the window heat OFF light stays off.

NOTE: If the window reaches its upper safe temperature limit, the OVERHEAT light, the MASTER CAUTION lights, and the ANTI-ICE light will come on. If the test switch is held to PWR after the OVERHEAT light comes on, the OFF light will come on within 70 seconds.

(b) Release the window heat TEST switch.

SUBTASK 30-41-11-860-009

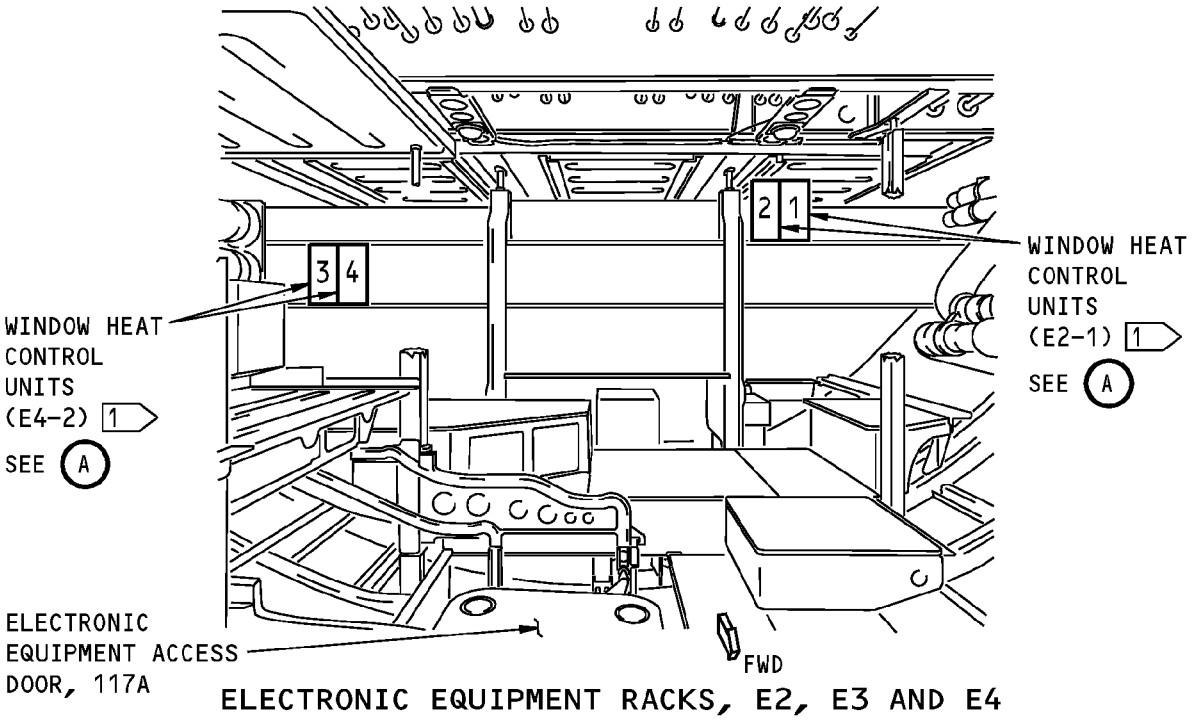
(7) Put the WINDOW HEAT power switches in the off position.

F. Put the Airplane Back to its Normal Condition.

SUBTASK 30-41-11-860-010

(1) If it is no longer necessary, do this task: Remove External Power, TASK 24-22-00-860-814.

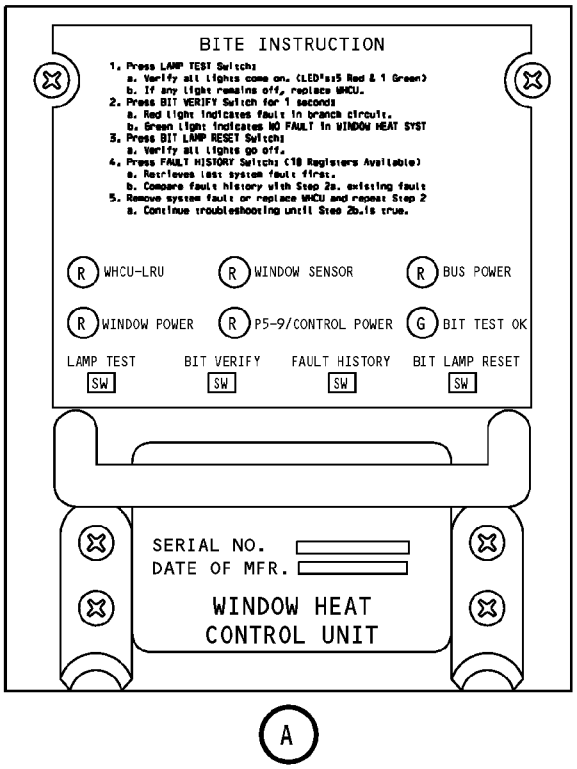
——————— END OF TASK ———————



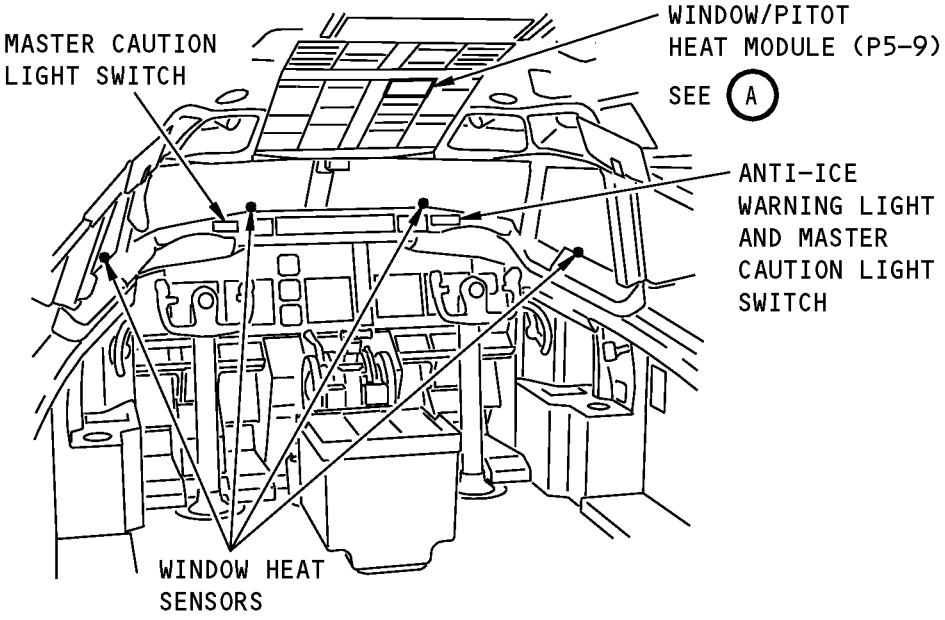
ELECTRONIC EQUIPMENT RACKS, E2, E3 AND E4

1

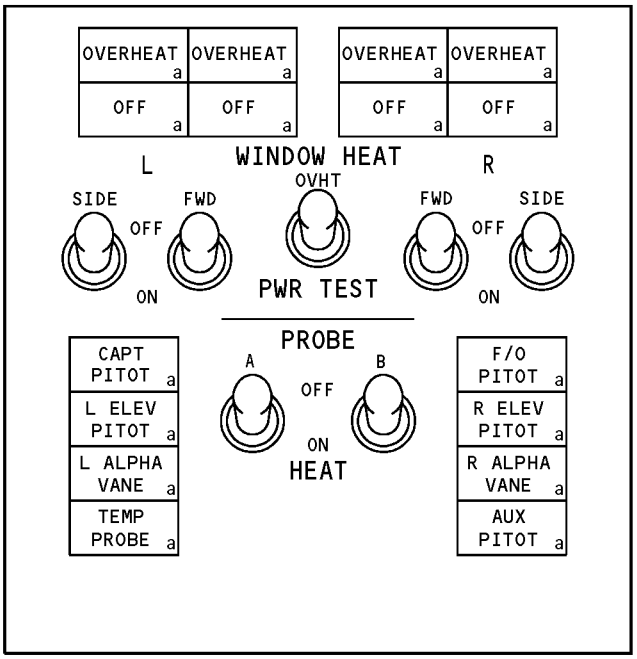
UNIT	ELECTRICAL EQUIPMENT NO.	WINDOW
1	M320	R SIDE
2	M321	L FWD
3	M322	L SIDE
4	M323	R FWD



Window Heat Control Unit Test
Figure 501 (Sheet 1 of 2)/30-41-11-990-801



FLIGHT COMPARTMENT



WINDOW/PITOT HEAT MODULE (P5-9)
A

Window Heat Control Unit Test
Figure 501 (Sheet 2 of 2)/30-41-11-990-801

TASK 30-41-11-710-802

3. Window Heat Control Unit Test - Without BITE Module Installed

(Figure 501)

A. General

(1) This task is an operational test of the Window Heat Control Units (WHCU) which are installed in the electrical equipment center.

(2) This task should be performed whenever a WHCU is removed and installed.

(3) The WHCUs can be tested separately or they can all be tested at the same time. Use the table on (Figure 501) to determine which WHCU controls each window heat.

B. References

Reference	Title
24-22-00-860-813	Supply External Power (P/B 201)
24-22-00-860-814	Remove External Power (P/B 201)

C. Location Zones

Zone	Area
117	Electrical and Electronics Compartment - Left
118	Electrical and Electronics Compartment - Right
211	Flight Compartment - Left
212	Flight Compartment - Right

D. Prepare for the Operational Test

SUBTASK 30-41-11-860-014

(1) Do this task: Supply External Power, TASK 24-22-00-860-813

(2) Make sure that the window heat indicator light operates:

(a) Push the applicable window heat ON light on the WINDOW HEAT CONTROL MODULE.

(b) Make sure the ON light comes on.

(c) Release the ON light.

E. Do the WHCU Operational Test

SUBTASK 30-41-11-860-015

(1) Do this test of the window heat control unit:

(a) Set the applicable window heat control switch to ON.

1) Make sure that the window ON light comes on within seconds.

2) Make sure that the temperature of the applicable window increases.

(b) Push either MASTER CAUTION light.

1) Make sure that the MASTER CAUTION lights stay off.

2) Make sure that the ANTI-ICE annunicator light on the glareshied stays off.

(c) Set the applicable window heat TEST switch to OVHT for 1 second and then release the switch.

1) Make sure that the OVERHEAT light, the two MASTER CAUTION lights, and the ANTI-ICE light come on.

2) Make sure that the window heat light goes off in less than 70 seconds after the OVERHEAT light comes on.

(d) Set the applicable window heat control switch to OFF for a second and the back on.

1) Make sure that the OVERHEAT light goes off.

2) Press either MASTER CAUTION light.

3) Make sure that the MASTER CAUTION light and the ANIT-ICE light goes off.

4) Make sure that the window heat ON light comes on.

(e) After 4 minutes, hold the window heat TEST switch to PWR.

1) Make sure that the window heat ON light stays on.

NOTE: If the window reaches its upper safe temperature limits, the OVERHEAT light, the MASTER CAUTION lights, and the ANTI-ICE light will come on. The test switch is held to the PWR after the OVERHEAT light comes on, the OFF light will come on within 70 seconds.

2) Release the window heat TEST switch.

(f) Set the window heat control switch to OFF.

1) Make sure that the OVERHEAT light, the two MASTER CAUTION lights, and the ANTI-ICE lights are off.

(g) Close these circuit breakers and remove the DO-NOT-CLOSE tags:

1) 28 VDC Pitot Static Indication - CAPT

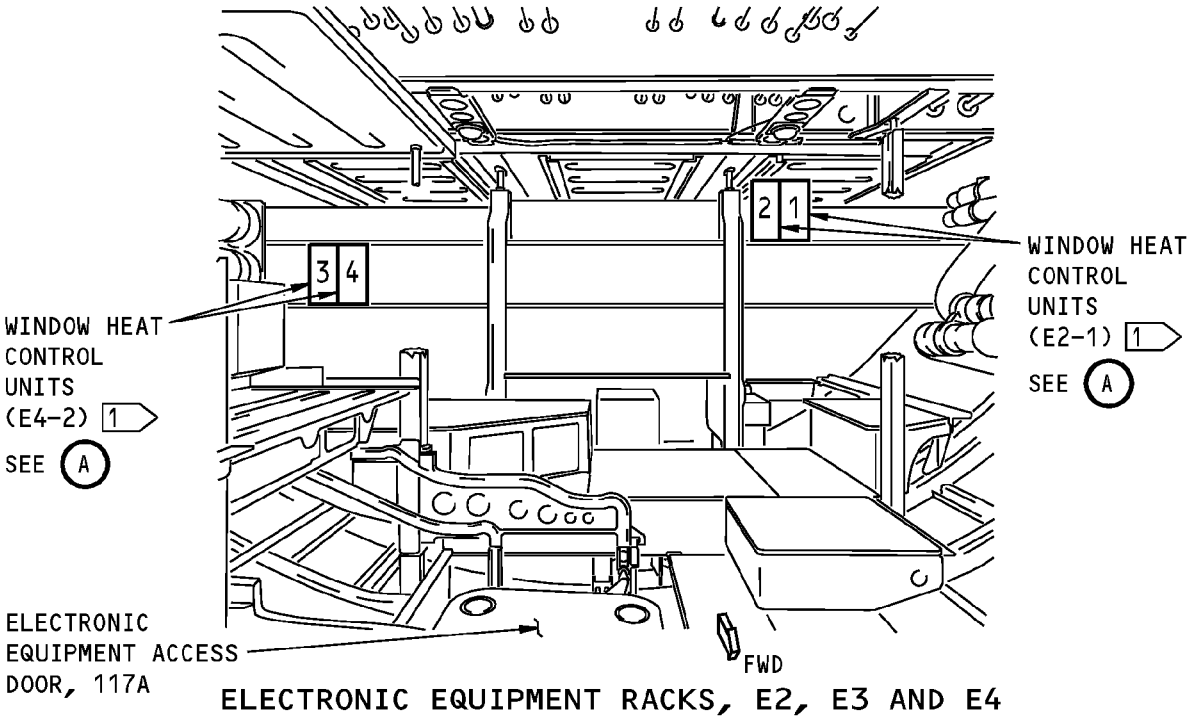
2) 28 VDC Pitot Static Indication - F/O

F. Put the Airplane Back to its Normal Condition.

SUBTASK 30-41-11-860-016

(1) If it is no longer necessary, do this task: Remove External Power, TASK 24-22-00-860-814.

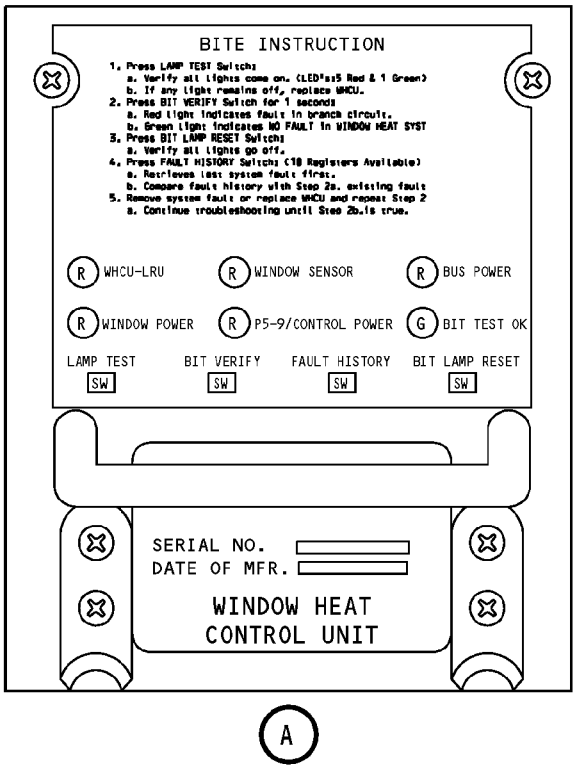
——————— END OF TASK ———————



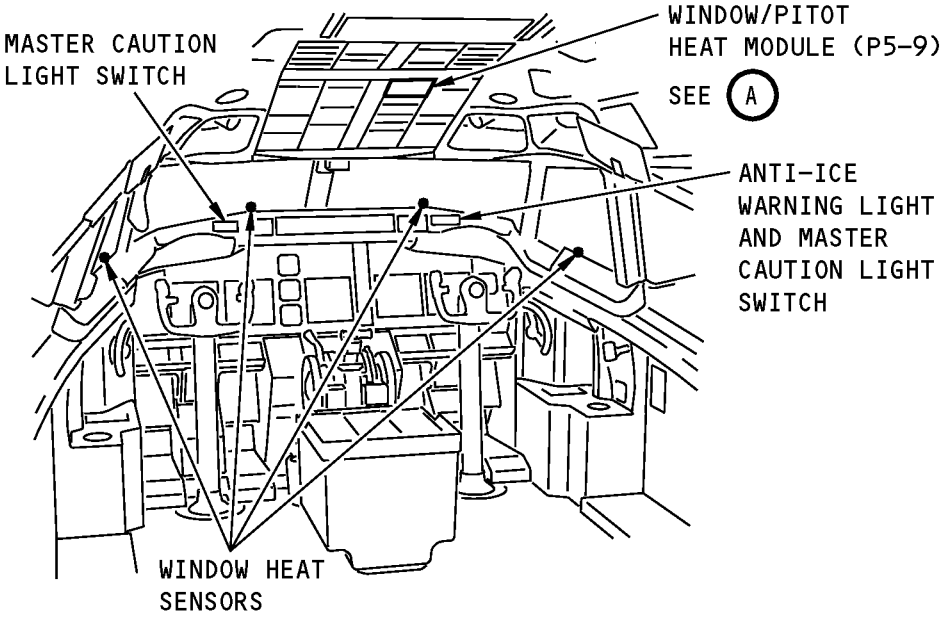
ELECTRONIC EQUIPMENT RACKS, E2, E3 AND E4

1

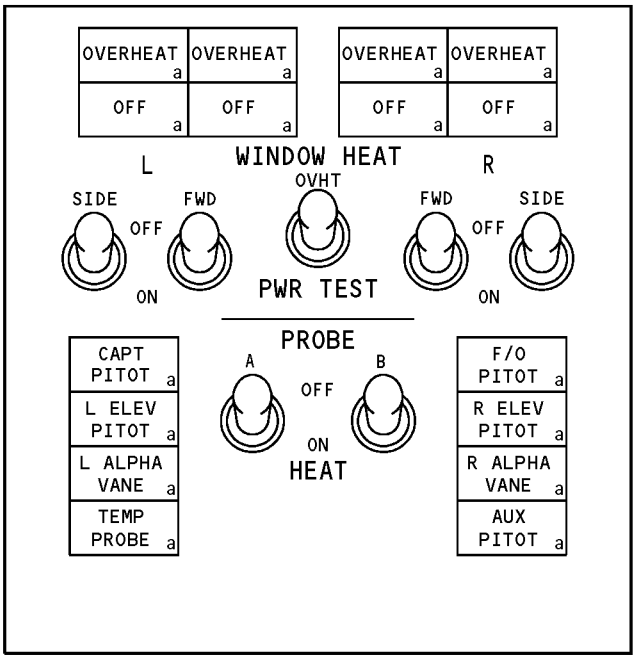
UNIT	ELECTRICAL EQUIPMENT NO.	WINDOW
1	M320	R SIDE
2	M321	L FWD
3	M322	L SIDE
4	M323	R FWD



Window Heat Control Unit Test
Figure 502 (Sheet 1 of 2)/30-41-11-990-803



FLIGHT COMPARTMENT



WINDOW/PITOT HEAT MODULE (P5-9)
A

Window Heat Control Unit Test
Figure 502 (Sheet 2 of 2)/30-41-11-990-803

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.

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 units (WHCUs) provide power to heat the windows. The WHCUs have various output connections which should be matched to each window resistance. This test checks the electrical resistance of the window heaters and makes sure the heaters are matched to the WHCU.

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 30-41-21-860-001

(1) Do these steps to heat the windows if the temperature is too cold:

NOTE: These steps can be used if the ambient temperature is significantly less the specified test temperature range of 68 to 108 degrees F (20 to 42 degrees C).

WARNING: WHEN PITOT HEAT IS ON, DO NOT TOUCH THE PITOT TUBES. PITOT TUBES WILL BE VERY HOT. HOT PITOT TUBES CAN CAUSE BURNS AND OTHER INJURIES TO PERSONS.

CAUTION: REMOVE ALL CAPS AND COVERS FROM ALL AIR DATA SENSORS. THE SENSORS BECOME HOT. THIS CAN CAUSE DAMAGE TO THE COVERS.

(a) Put the PROBE HEAT A and B switches in the ON position.

(b) One switch at a time, put the WINDOW HEAT switches on the Window and Pitot Heat Module to the on position.

1) Make sure the corresponding OFF light on the window and pitot heat module goes out.

NOTE: It can take up to 15 seconds for the light to go out.

2) Make sure both master caution lights are off.

(c) Wait for the windows to heat up.

1) Make sure the front and side windows stabilize at 90 to 120 degrees F (32 to 49 degrees C).

NOTE: It can take up to 4 minutes for the window temperatures to stabilize.

(d) Put the WINDOW HEAT power switches in the off position.

1) Make sure the OVERHEAT lights, the MASTER CAUTION lights, and the ANTI-ICE lights are off.

(e) Put the PROBE HEAT A and B switches in the OFF position.

SUBTASK 30-41-21-010-001

(2) Remove the applicable WHCU for the window. To remove the WHCU, do this task: Window Heat Control Unit (WHCU) Removal, TASK 30-41-11-000-801.

NOTE: See (Table 501) to identify which Window Heat Control Unit (WHCU) needs to be removed.

SUBTASK 30-41-21-840-001

(3) Make sure the window temperature is between 68 and 108 degrees F (20 and 42 degrees C).

SUBTASK 30-41-21-010-002

(4) Remove the panels on the forward end of the forward cargo compartment to access the window heat terminal connections Figure 501.

E. Procedure

SUBTASK 30-41-21-020-001

(1) Remove the window connector terminal D40070P from the terminal block Figure 501.

SUBTASK 30-41-21-760-001

(2) Measure the resistance between the connector terminal and ground.

SUBTASK 30-41-21-210-001

(3) Determine the terminal board tap that matches the resistance measured on the connector terminal (Table 501) .

NOTE: For example, if you measure 40 ohms on D40070P-F (Left Front), the matching terminal is TB5010-3 on M321.

Table 501/30-41-21-993-803

WINDOW HEAT	CONNEC~ TOR TERMINAL	WINDOW CODE	RESISTANCE	TERMINAL BOARD TAP	WHCU	WDM
LEFT FRONT	D40070P	H13	31.4-35.1 OHM	TB5010 - 1	M321	30-41-11
1	F	H12	35.1-38.8 OHM	-2		
		H11	38.8-42.6 OHM	-3		
			42.6-47.3 OHM	-4		
			47.3-52.0 OHM	-5		
RIGHT SIDE	D40070P	H16	55.7-62.3 OHM	TB5014 - 1	M320	30-41-11
2	A3	H15	62.3-69.0 OHM	2		
		H14	69.0-75.5 OHM	3		
			75.5-81.6 OHM	4		
			81.6-90.3 OHM	5		

(Continued)

WINDOW HEAT	CONNECTOR TERMINAL	WINDOW CODE	RESISTANCE	TERMINAL BOARD TAP	WHCU	WDM
			90.3-100 OHM	6		
RIGHT FRONT	D40068P	H13	31.4-35.1 OHM	TB5012 - 1	M323	30-41-12
1	F	H12	35.1-38.8 OHM	2		
		H11	38.8-42.6 OHM	3		
			42.6-47.3 OHM	4		
			47.3-52.0 OHM	5		
LEFT SIDE	D40068P	H16	55.7-62.3 OHM	TB5016 - 1	M322	30-41-12
2	A3	H15	62.3-69.0 OHM	2		
		H14	69.0-75.5 OHM	3		
			75.5-81.6 OHM	4		
			81.6-90.3 OHM	5		
			90.3-100 OHM	6		

SUBTASK 30-41-21-820-001

(4) Connect the connector terminal to the applicable terminal board tap.

SUBTASK 30-41-21-810-001

(5) If the window resistance is outside the limits of the table, then go to the fault isolation manual for assistance.

F. Return the airplane to its usual condition

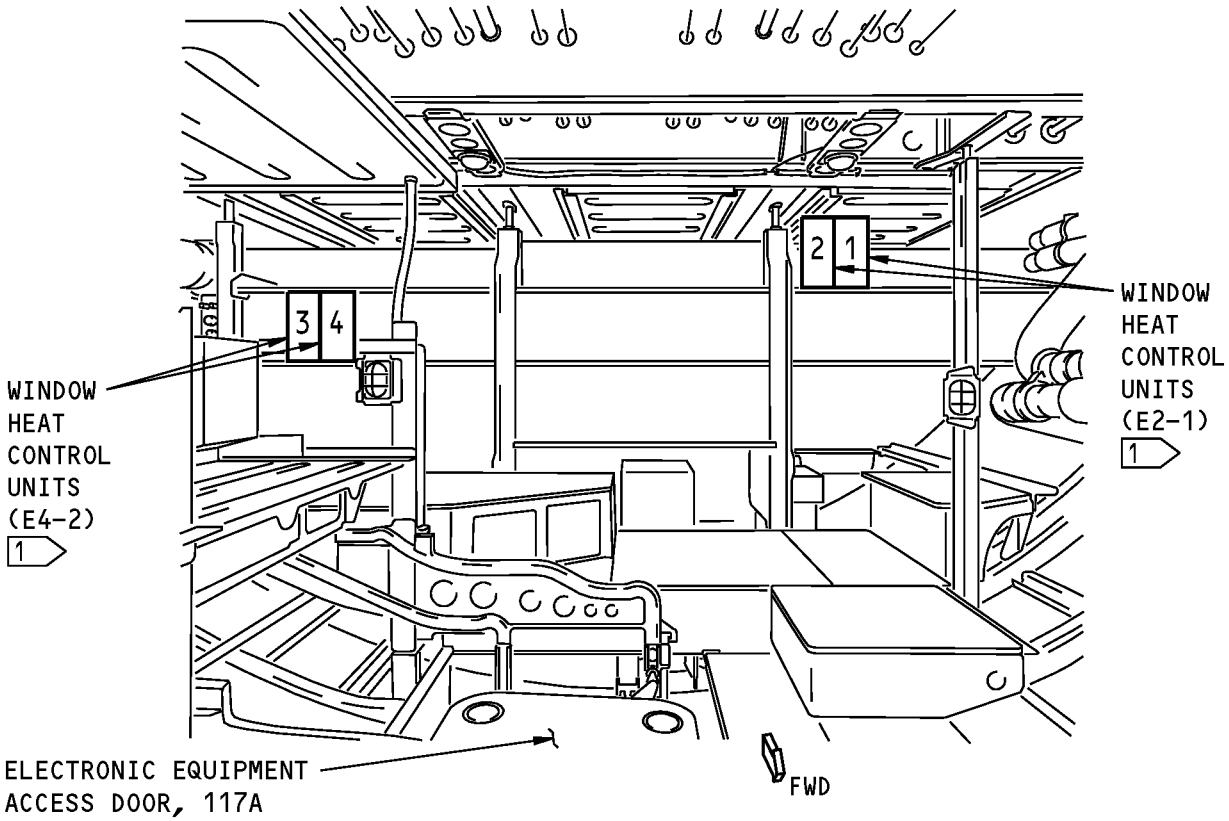
SUBTASK 30-41-21-410-001

(1) Replace the forward cargo compartment access panels.

SUBTASK 30-41-21-420-001

(2) Re-install the WHCU. To install the WHCU, do this task: Window Heat Control Unit (WHCU) Installation, TASK 30-41-11-400-801.

END OF TASK

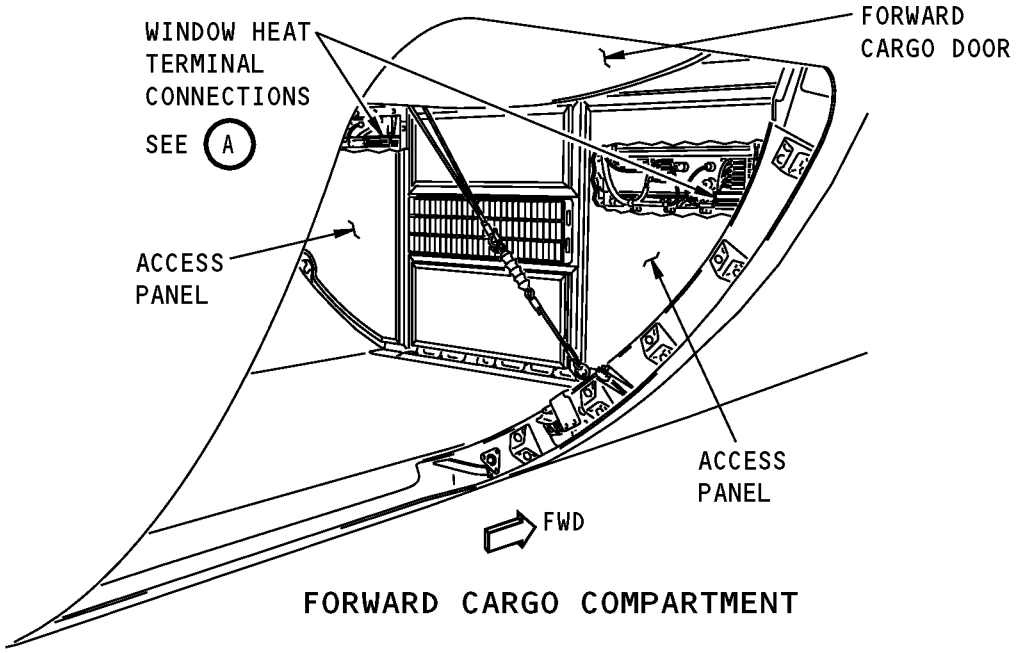


ELECTRONIC EQUIPMENT RACKS, E2, E3 AND E4

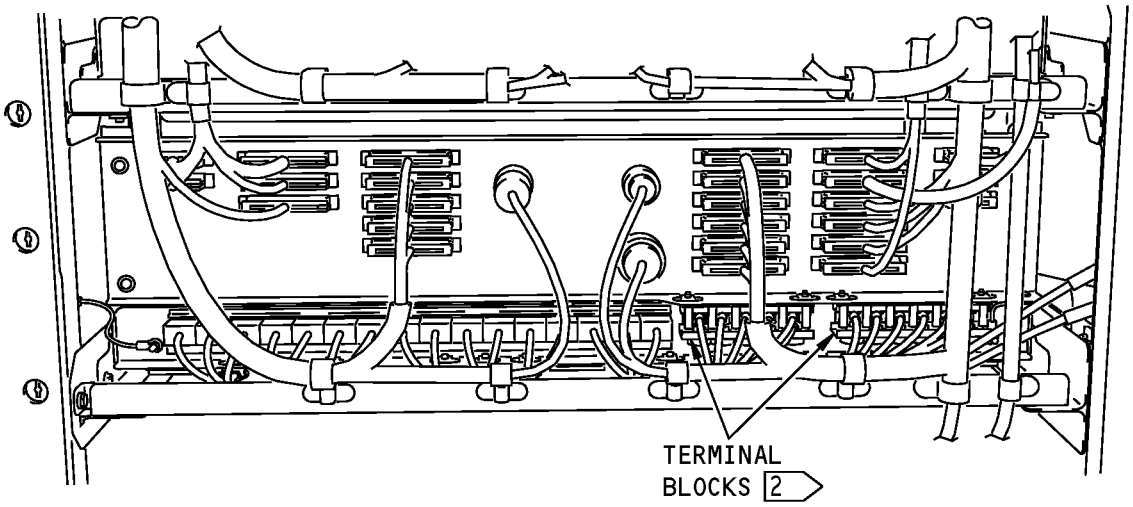
1

UNIT	ELECTRICAL EQUIPMENT NO.	WINDOW
1	M320	R SIDE
2	M321	L FWD
3	M322	L SIDE
4	M323	R FWD

Window Heat Conductive Coating Test
Figure 501 (Sheet 1 of 2)/30-41-21-990-801



FORWARD CARGO COMPARTMENT



WINDOW HEAT TERMINAL CONNECTIONS
(EXAMPLE)

A

2

WINDOW	WHCU	SHELF	TERMINAL BOARD
R SIDE	M320	E2-1	TB5014
L FWD	M321	E2-1	TB5010
L SIDE	M322	E4-2	TB5016
R FWD	M323	E4-2	TB5012

Window Heat Conductive Coating Test
Figure 501 (Sheet 2 of 2)/30-41-21-990-801

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 which 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. Location Zones

Zone	Area
117	Electrical and Electronics Compartment - Left
118	Electrical and Electronics Compartment - Right

D. Prepare for the Procedure

SUBTASK 30-41-21-860-002

(1) Do these steps to heat the windows if the temperature is too cold:

NOTE: These steps can be used if the ambient temperature is significantly less the specified test temperature range of 68 to 108 degrees F (20 to 42 degrees C).

WARNING: WHEN PITOT HEAT IS ON, DO NOT TOUCH THE PITOT TUBES. PITOT TUBES WILL BE VERY HOT. HOT PITOT TUBES CAN CAUSE BURNS AND OTHER INJURIES TO PERSONS.

CAUTION: REMOVE ALL CAPS AND COVERS FROM ALL AIR DATA SENSORS. THE SENSORS BECOME HOT. THIS CAN CAUSE DAMAGE TO THE COVERS.

(a) Put the PROBE HEAT A and B switches in the ON position.

(b) One switch at a time, put the WINDOW HEAT switches on the Window and Pitot Heat Module to the on position.

1) Make sure the corresponding OFF light on the window and pitot heat module goes out.

NOTE: It can take up to 15 seconds for the light to go out.

2) Make sure both master caution lights are off.

(c) Wait for the windows to heat up.

1) Make sure the front and side windows stabilize at 90 to 120 degrees F (32 to 49 degrees C).

NOTE: It can take up to 4 minutes for the window temperatures to stabilize.

(d) Put the WINDOW HEAT power switches in the off position.

1) Make sure the OVERHEAT lights, the MASTER CAUTION lights, and the ANTI-ICE lights are off.

(e) Put the PROBE HEAT A and B switches in the OFF position.

SUBTASK 30-41-21-010-003

(2) Remove the applicable WHCU for the window (Table 502). To remove the WHCU, do this task: Window Heat Control Unit (WHCU) Removal, TASK 30-41-11-000-801.

SUBTASK 30-41-21-840-002

(3) Make sure the window temperature is between 68 and 108 degrees F (20 and 42 degrees C).

E. Procedure

SUBTASK 30-41-21-760-002

(1) Measure the resistance of the applicable window temperature sensor.

(a) Make sure the resistance of the sensor is correct (Table 502).

Table 502/30-41-21-993-804

WINDOW TEMP SENSOR	CONNECTOR/PINS	RESISTANCE	WHCU	WDM
LEFT FRONT 1	D1044A/ 13 TO 26	290-330 OHMS	M321	30-41-11
RIGHT SIDE 2	D1042A/ 13 TO 26	290-330 OHMS	M320	30-41-11
RIGHT FRONT 1	D1048A/ 13 TO 26	290-330 OHMS	M323	30-41-12
LEFT SIDE 2	D1046A/ 13 TO 26	290-330 OHMS	M322	30-41-12

SUBTASK 30-41-21-760-003

(2) For the front windows, you can test the resistance of the spare sensors.

(a) Put the applicable WNDSHLD SNSR switches in the spare position.

(b) Make sure the resistance is correct (Table 502).

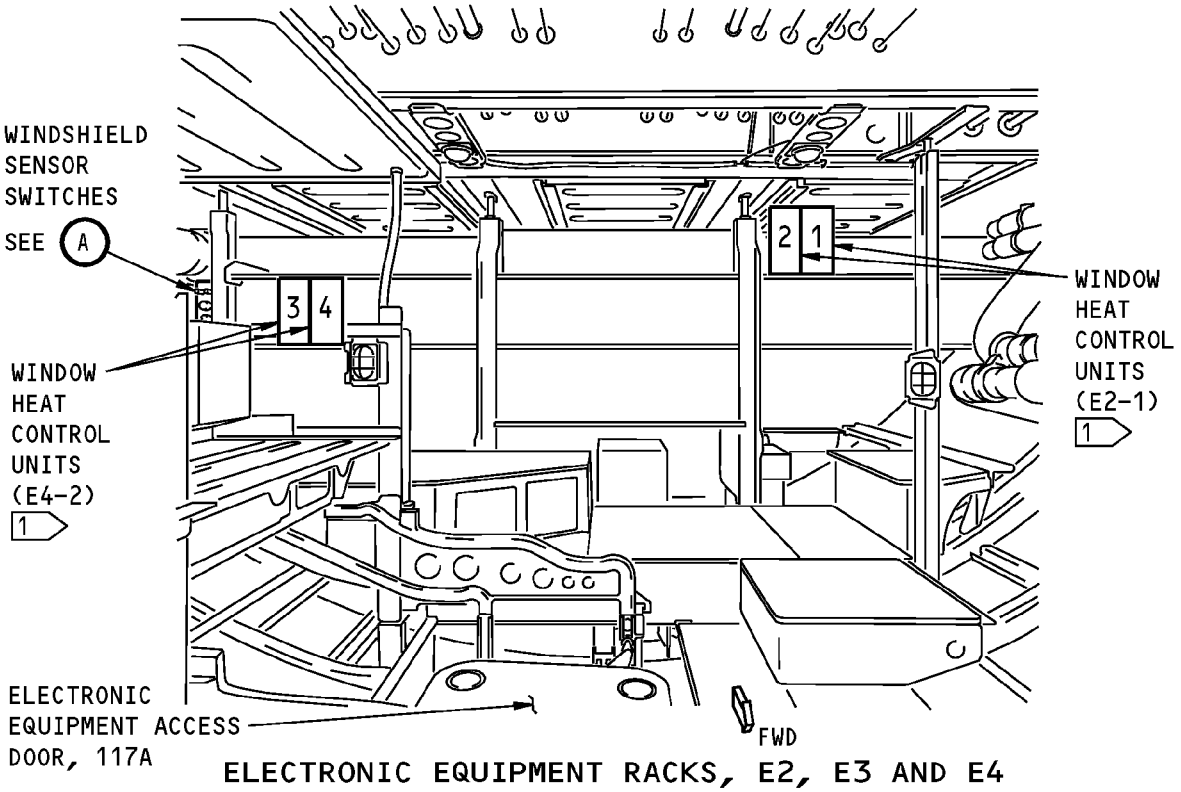
(c) Put the WNDSHLD SNSR switches back to the original position.

F. Return the airplane to its usual condition

SUBTASK 30-41-21-420-002

(1) Re-install the WHCU. To install the WHCU, do this task: Window Heat Control Unit (WHCU) Installation, TASK 30-41-11-400-801.

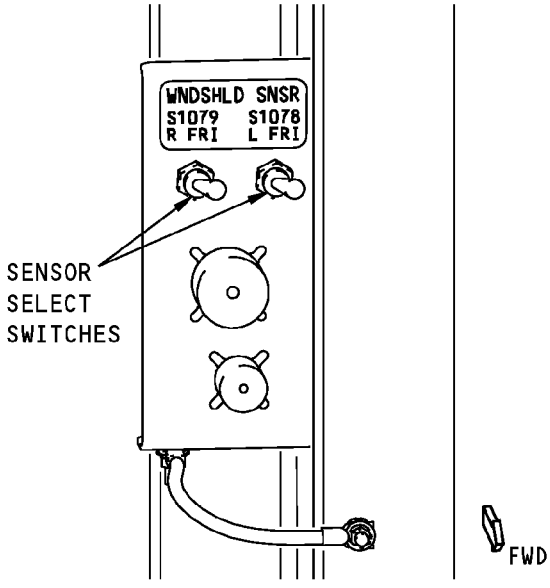
——————— END OF TASK ———————



ELECTRONIC EQUIPMENT RACKS, E2, E3 AND E4

1

UNIT	ELECTRICAL EQUIPMENT NO.	WINDOW
1	M320	R SIDE
2	M321	L FWD
3	M322	L SIDE
4	M323	R FWD



WINDSHIELD SENSOR SWITCHES
A

Window Temperature Sensor Test
Figure 502/30-41-21-990-802

WINDOW THERMAL SWITCH - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) Removal of the thermal switch.

(2) Installation of the thermal switch.

TASK 30-41-31-000-801

2. Thermal Switch Removal

(Figure 401)

A. General

(1) The window number 3 thermal switches are installed near the bottom of the window.

(2) 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:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
D	1	C00226	WINDOW HEAT CONTROL RIGHT FRONT AC
D	2	C00225	WINDOW HEAT CONTROL LEFT SIDE AC
E	1	C00224	WINDOW HEAT CONTROL LEFT FRONT AC
E	2	C00227	WINDOW HEAT CONTROL RIGHT SIDE AC
HAP 008-013, 015-026, 028-054, 101-999			
F	1	C00222	WINDOW HEAT CONTROL RIGHT FRONT DC
F	4	C00223	WINDOW HEAT CONTROL RIGHT SIDE DC
F	5	C00220	WINDOW HEAT CONTROL LEFT FRONT DC

F/O Electrical System Panel, P6-11

Row	Col	Number	Name
HAP ALL			
B	8	C00393	WINDOW HEAT POWER RIGHT SIDE
B	9	C00228	WINDOW HEAT POWER LEFT FRONT

F/O Electrical System Panel, P6-12

Row	Col	Number	Name
B	8	C00394	WINDOW HEAT POWER RIGHT FRONT
B	9	C00392	WINDOW HEAT POWER LEFT SIDE

SUBTASK 30-41-31-010-001

(2) Remove the trim from around the number 5 window.

D. Thermal Switch Removal

SUBTASK 30-41-31-020-001

(1) Remove the thermal switch [2].

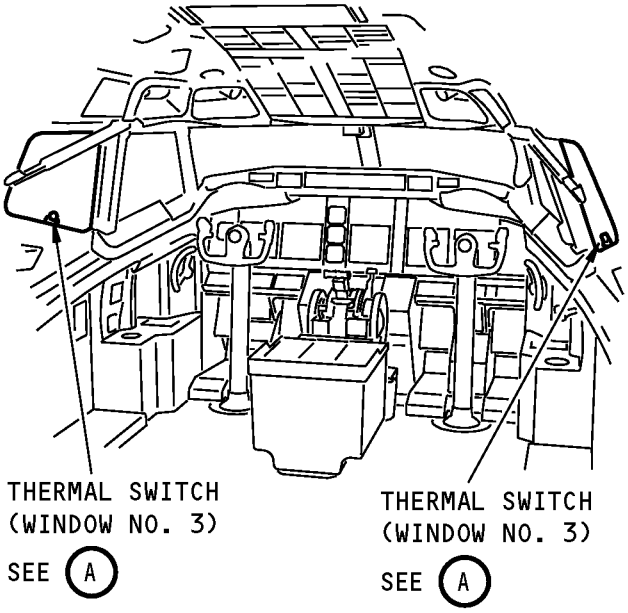
(a) Disconnect the electrical leads [1] from the thermal switch [2].

(b) Pull the spring from the thermal switch [2].

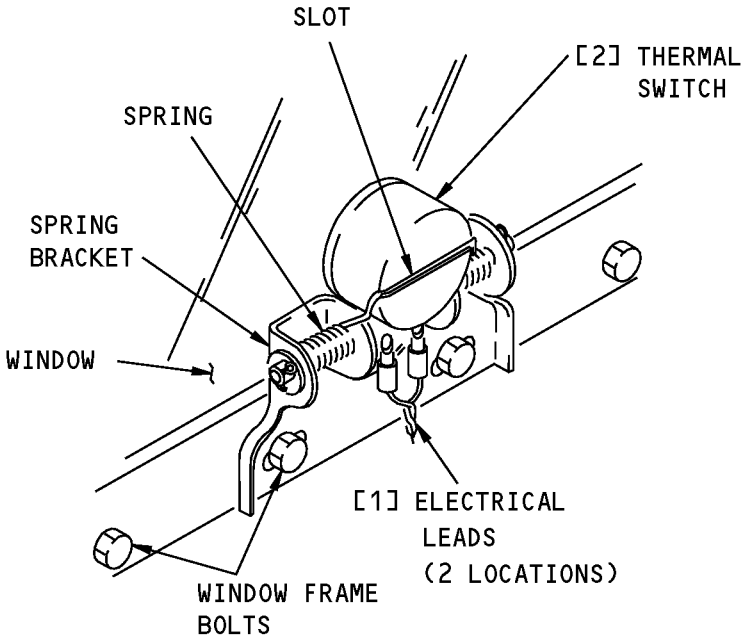
(c) Remove the thermal switch [2] from the window.

NOTE: Be careful not to damage the fairing compound. If the switch does not come off by hand, you may tap the switch side with a no bounce hammer. If you use a hammer to remove the switch, you will have to discard the switch.

——————— END OF TASK ———————



FLIGHT COMPARTMENT



THERMAL SWITCH (WINDOW NO. 3)
(EXAMPLE)

A

Window Heat Thermal Switch Installation
Figure 401/30-41-31-990-801

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 (Part #: DHS24XC-FM, Supplier: 08086, A/P Effectivity: 737-ALL) (Part #: DHS24XF-FM, Supplier: 08086, A/P Effectivity: 737-ALL) (Opt Part #: IR-16L3 IS, Supplier: 75037, A/P Effectivity: 737-ALL)
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
B00083	Solvent - Aliphatic Naphtha (For Acrylic Plastics)	TT-N-95 Type II, ASTM D-3735 Type III
D00095	Lubricant - Dry Film - MS122	
G50427	Compound - Thermal Heat Sink	A-A-56022

C. Location Zones

Zone	Area
212	Flight Compartment - Right

D. Prepare to Install the Thermal Switch

SUBTASK 30-41-31-420-008

(1) Remove the old fairing compound from the window.

SUBTASK 30-41-31-420-009

(2) Clean the face of the thermal switch [2] with solvent, B00083.

SUBTASK 30-41-31-420-010

(3) Clean the surface of the window where it will touch the thermal switch [2] with solvent, B00083.

SUBTASK 30-41-31-420-011

(4) Prepare the fairing compound, A00214 that bonds the thermal switch [2] to the window.

SUBTASK 30-41-31-420-012

(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.

SUBTASK 30-41-31-420-013

NOTE: Omit this step when using thermal heat sink compound, G50427.

(6) Put MS122 lubricant, D00095 on the surface of the thermal switch [2] that touches the window.

SUBTASK 30-41-31-420-014

(7) Put the excessive thermal heat sink compound, G50427 orcompound, A00214 on the face of the thermal switch [2] that touches the window.

NOTE: Optional fairing compounds include GRANGER 610-1016 DC340 and BAC5010 TYPE 54.

CAUTION: 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 30-41-31-420-003

(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 30-41-31-420-015

NOTE: Omit this step and its substeps when using thermal heat sink compound, G50427.

(2) Make sure the bond is satisfactory.

NOTE: Permit one hour for the sealant to become hard. When the temperature is less than 50 degrees F (10 degrees C), more time is necessary.

(a) Look through the window at the bond.

(b) Make a new bond if you see the following:

1) Bubbles with a diameter of more than 3/32 inches (2.4 millimeters).

2) Bubbles that add to more than 10 percent of the bond.

SUBTASK 30-41-31-420-016

(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 30-41-31-420-017

(4) Re-install the trim around the window.

SUBTASK 30-41-31-420-004

(5) Connect the electrical leads [1] to the thermal switch [5].

F. Thermal Switch Installation Test

SUBTASK 30-41-31-710-001

(1) Do a test of the thermal switch [5].

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

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
D	1	C00226	WINDOW HEAT CONTROL RIGHT FRONT AC
D	2	C00225	WINDOW HEAT CONTROL LEFT SIDE AC
E	1	C00224	WINDOW HEAT CONTROL LEFT FRONT AC
E	2	C00227	WINDOW HEAT CONTROL RIGHT SIDE AC
HAP 008-013, 015-026, 028-054, 101-999			
F	1	C00222	WINDOW HEAT CONTROL RIGHT FRONT DC
F	4	C00223	WINDOW HEAT CONTROL RIGHT SIDE DC
F	5	C00220	WINDOW HEAT CONTROL LEFT FRONT DC

F/O Electrical System Panel, P6-11

Row	Col	Number	Name
HAP ALL			
B	8	C00393	WINDOW HEAT POWER RIGHT SIDE
B	9	C00228	WINDOW HEAT POWER LEFT FRONT

F/O Electrical System Panel, P6-12

Row	Col	Number	Name
B	8	C00394	WINDOW HEAT POWER RIGHT FRONT
B	9	C00392	WINDOW HEAT POWER LEFT SIDE

(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 and 105 degrees F (18.3 and 40.6 degrees C) for window No. 3 and 80 and 125 degrees F (27 and 52 degrees C) for window No. 5, 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 ———————

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-icing and air data sensor anti-icing system.

B. The LRU is operationally essential LMP equipment and does not require special certification training to reinstate aircraft CAT status.

(1) Upon successful completion of the installation and return-to-service test procedure, restore the aircraft to CAT-3 status and make the appropriate E-6 Logbook entry.

(2) Remove any placards from the LMP placard holder (if installed) located in the E-6 Logbook. If this LRU is a borrowed (pool) part, downgrade the aircraft LMP status per MEL 22-89x (refer to the application MEL reference for the correct 22-89 suffix).

(3) Install LMP downgrade placard in the LMP placard holder (if installed) in the E-6 Logbook.

C. This procedure has these tasks:

(1) Removal of the window/pitot heat module (P5-9).

(2) Installation of the window/pitot heat module (P5-9).

TASK 30-41-41-000-801

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

(Figure 401)

A. General

(1) The window/pitot heat module is on the flight crew's overhead panel. The module contains lights and switches used for the window anti-icing and air data sensor anti-icing system.

B. Location Zones

Zone	Area
212	Flight Compartment - Right

C. Prepare for the Removal

SUBTASK 30-41-41-860-001

(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	1	C00226	WINDOW HEAT CONTROL RIGHT FRONT AC
D	2	C00225	WINDOW HEAT CONTROL LEFT SIDE AC
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
E	1	C00224	WINDOW HEAT CONTROL LEFT FRONT AC
E	2	C00227	WINDOW HEAT CONTROL RIGHT SIDE AC

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
F	16	C00570	PROBE INDICATION F/O

Row	Col	Number	Name
F	18	C00569	PROBE INDICATION CAPT

SUBTASK 30-41-41-010-001

(2) Open the P5 overhead panel assembly.

(a) Loosen the quarter turn fasteners on the bottom corners of the P5 panel.

CAUTION: THE P5 PANEL IS VERY HEAVY AND WILL SWING FREELY WHEN THE LATCHES ARE RELEASED. SUPPORT THE P5 PANEL BEFORE YOU RELEASE THE SAFETY LATCHES.

(b) Release the panel safety latches.

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

SUBTASK 30-41-41-020-001

WARNING: THERE ARE HIGH VOLTAGES IN THE P5 OVERHEAD PANEL. MAKE SURE YOU DO NOT TOUCH OR SHORT EXPOSED TERMINALS. INJURY TO PERSONNEL OR DAMAGE TO EQUIPMENT CAN OCCUR.

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

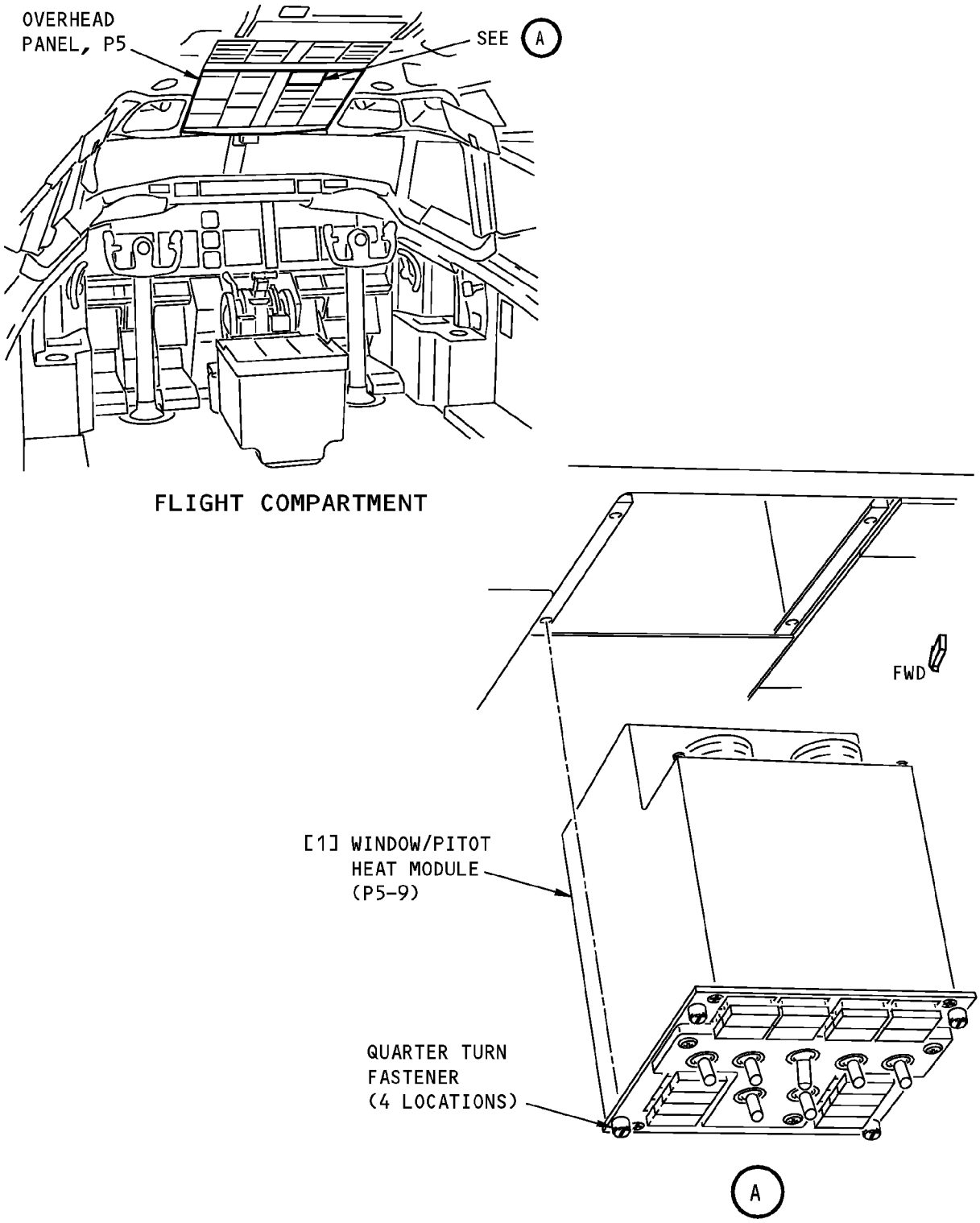
SUBTASK 30-41-41-020-002

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

SUBTASK 30-41-41-020-003

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

——————— END OF TASK ———————



Window/Pitot Heat Module Installation
Figure 401/30-41-41-990-801

TASK 30-41-41-400-801

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

A. Location Zones

Zone	Area
212	Flight Compartment - Right

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

SUBTASK 30-41-41-420-001

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

SUBTASK 30-41-41-420-002

(2) Tighten the quarter turn fasteners.

SUBTASK 30-41-41-420-003

WARNING: THERE ARE HIGH VOLTAGES IN THE P5 OVERHEAD PANEL. MAKE SURE YOU DO NOT TOUCH OR SHORT EXPOSED TERMINALS. INJURY TO PERSONNEL OR DAMAGE TO EQUIPMENT CAN OCCUR.

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

SUBTASK 30-41-41-410-001

CAUTION: TO PREVENT CHAFING OR DAMAGE TO WIRE HARNESSES, MAKE CERTAIN THAT WIRING IS ROUTED PROPERLY DURING INSTALLATION OF GLARESHIELD.

(4) Do these steps to close the P5 overhead panel assembly:

(a) Make sure the safety latches are in the proper position to enable the P5 panel to be closed.

(b) Raise the P5 overhead panel assembly.

(c) Tighten the quarter turn fasteners on the bottom corners of the P5 panel.

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

SUBTASK 30-41-41-860-002

(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	1	C00226	WINDOW HEAT CONTROL RIGHT FRONT AC
D	2	C00225	WINDOW HEAT CONTROL LEFT SIDE AC
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
E	1	C00224	WINDOW HEAT CONTROL LEFT FRONT AC
E	2	C00227	WINDOW HEAT CONTROL RIGHT SIDE AC

F/O Electrical System Panel, P6-3

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

SUBTASK 30-41-41-760-001

(2) Press the MASTER DIM AND TEST switch.

(a) Make sure all the lights on the window/pitot heat module [1] come on.

SUBTASK 30-41-41-710-001

(3) Put the PITOT & PROBE HEAT switches to the ON position.

WARNING: DO NOT TOUCH THE PROBES WHEN YOU CHECK FOR HEAT. THE PROBE TEMPERATURES CAN REACH 800 DEGREES F (427 DEGREES C) IN STILL AIR.

(a) Make sure the pitot probes get hot.

NOTE: You can check for heat by spraying the probe with water and watching for steam.

SUBTASK 30-41-41-860-003

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

SUBTASK 30-41-41-860-004

(5) Put the WINDOW HEAT switches to the ON position.

NOTE: Do not power test when all ON lights are illuminated

SUBTASK 30-41-41-710-002

(6) Push the WINDOW HEAT TEST switch.

(a) Make sure the window heat OFF lights go off.

SUBTASK 30-41-41-710-003

(7) Release the WINDOW HEAT TEST switch.

SUBTASK 30-41-41-860-005

(8) Put the WINDOW HEAT switches to the OFF position.

END OF TASK

WINDSHIELD WIPER SYSTEM - ADJUSTMENT/TEST

1. General

A. This procedure has a task to do an operational test of the windshield wiper system.

TASK 30-42-00-700-801

2. Windshield Wiper System - Operational Test

(Figure 501)

A. References

Reference	Title
24-22-00-860-813	Supply External Power (P/B 201)

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-1523	Stand - Work, (B9) General Purpose, Working Height 4-21 Feet (Part #: B-9, Supplier: 05060, A/P Effectivity: 737-ALL)

C. Location Zones

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

D. Windshield Wiper System - Operational Test

SUBTASK 30-42-00-860-001

(1) Do this task: Supply External Power, TASK 24-22-00-860-813.

SUBTASK 30-42-00-860-002

WARNING: BEFORE YOU DO MAINTENANCE ON THE WINDSHIELD WIPER SYSTEM, OPEN THE CIRCUIT BREAKERS FOR THE WINDOW HEAT SYSTEM. IF THESE CIRCUIT BREAKERS ARE NOT OPEN DURING MAINTENANCE, PERSONS CAN GET AN ELECTRICAL SHOCK WHEN THEY TOUCH THE WINDOW.

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

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
D	1	C00226	WINDOW HEAT CONTROL RIGHT FRONT AC
D	2	C00225	WINDOW HEAT CONTROL LEFT SIDE AC
E	1	C00224	WINDOW HEAT CONTROL LEFT FRONT AC
E	2	C00227	WINDOW HEAT CONTROL RIGHT SIDE AC

F/O Electrical System Panel, P6-11

Row	Col	Number	Name
B	8	C00393	WINDOW HEAT POWER RIGHT SIDE
B	9	C00228	WINDOW HEAT POWER LEFT FRONT

F/O Electrical System Panel, P6-12

Row	Col	Number	Name
B	8	C00394	WINDOW HEAT POWER RIGHT FRONT
B	9	C00392	WINDOW HEAT POWER LEFT SIDE

SUBTASK 30-42-00-010-001

(3) Use a stand, COM-1523 to get access to the windshield wiper.

SUBTASK 30-42-00-710-001

(4) Do these steps to make sure the windshield wiper system operates correctly:

CAUTION: DO NOT OPERATE THE WIPER ON A DRY WINDSHIELD. THE WIPER WILL CAUSE DAMAGE TO A DRY WINDSHIELD. ALWAYS SUPPLY WATER TO THE WINDSHIELD BEFORE YOU OPERATE THE WIPER.

(a) Supply a continuous spray of water to the windshield.

(b) Do these steps to test the intermittent speed operation of the wiper:

1) Set the windshield wiper switch to "INT" (P5 overhead panel flight compartment).

NOTE: The test for the pilot's and first officer's wipers are the same. Use the applicable wiper switch to operate the wiper.

2) Make sure the wiper blade parks near the lower edge of the window during the off time of the intermittent cycle.

3) Make sure the wiper blades have a minimum overlap of the windshield seal and do not contact metal structure.

4) Make sure the operation of the wiper is smooth and it clears the water from the windshield.

5) Make sure the wipers make two complete strokes every 6 to 8 seconds.

(c) Do these steps to test the low speed operation of the wiper:

1) Set the windshield wiper switch to LOW.

2) Make sure the operation of the wiper is smooth and it clears the water from the windshield.

3) Make sure the wipers operate at 135-185 strokes per minute.

(d) Do these steps to test the high speed operation of the wiper:

1) Set the windshield wiper switch to HIGH.

2) Make sure the operation of the wiper is smooth and it clears the water from the windshield.

3) Make sure the wipers operate at 225-275 strokes per minute.

(e) Set the windshield wiper switch to LOW.

1) Make sure the wipers go to low speed operation.

(f) Set the windshield wiper switch to INT.

1) Make sure the wipers go to intermittent operation.

(g) Set the windshield 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.

E. Put the Airplane Back to Its Usual Condition

SUBTASK 30-42-00-860-003

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

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
D	1	C00226	WINDOW HEAT CONTROL RIGHT FRONT AC
D	2	C00225	WINDOW HEAT CONTROL LEFT SIDE AC
E	1	C00224	WINDOW HEAT CONTROL LEFT FRONT AC
E	2	C00227	WINDOW HEAT CONTROL RIGHT SIDE AC

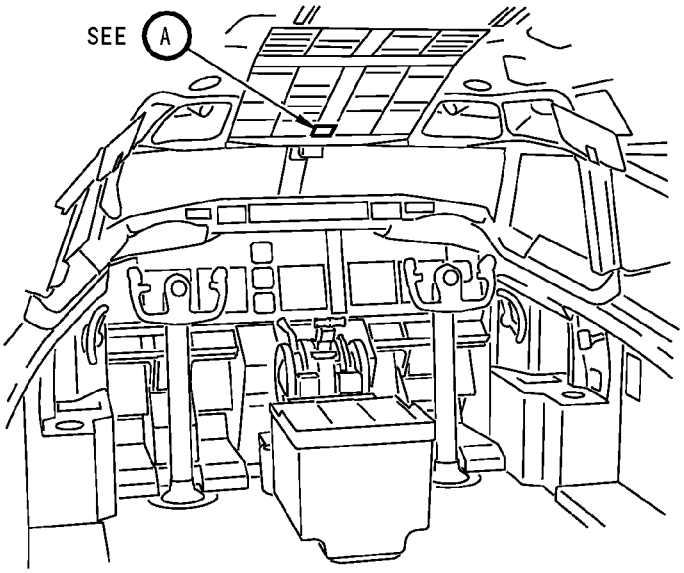
F/O Electrical System Panel, P6-11

Row	Col	Number	Name
B	8	C00393	WINDOW HEAT POWER RIGHT SIDE
B	9	C00228	WINDOW HEAT POWER LEFT FRONT

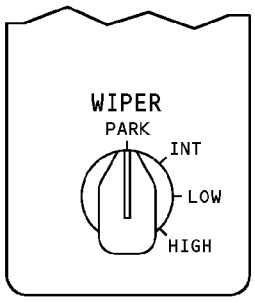
F/O Electrical System Panel, P6-12

Row	Col	Number	Name
B	8	C00394	WINDOW HEAT POWER RIGHT FRONT
B	9	C00392	WINDOW HEAT POWER LEFT SIDE

——————— END OF TASK ———————

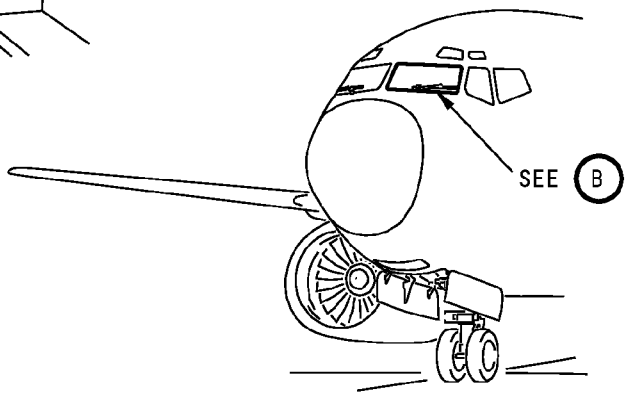


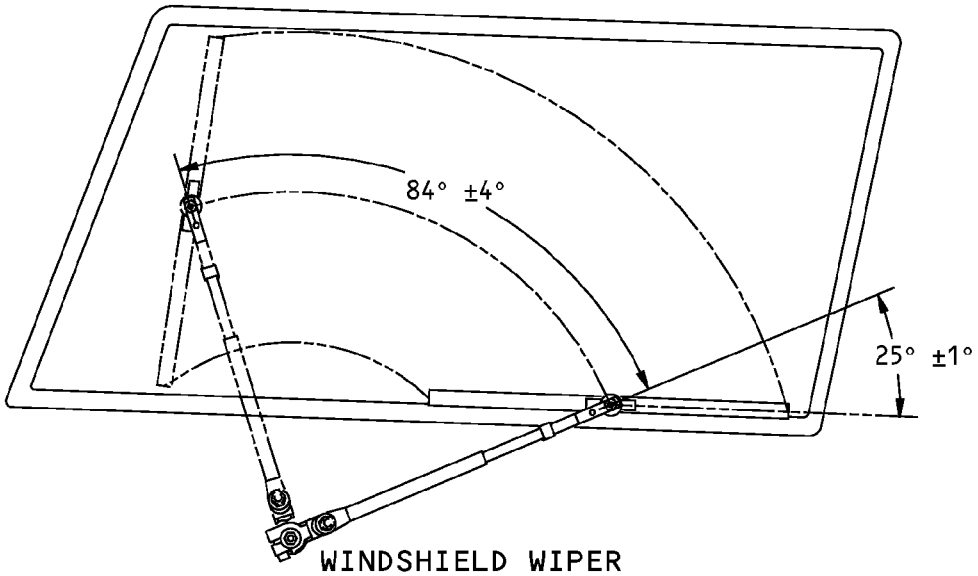
FLIGHT COMPARTMENT



WINDSHIELD WIPER SWITCH

A





WINDSHIELD WIPER

B

Windshield Wipers Operational Test
Figure 501/30-42-00-990-801

WINDSHIELD WIPER BLADE - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) Windshield Wiper Blade Removal

(2) Windshield Wiper Blade Installation

TASK 30-42-11-020-801

2. Windshield Wiper Blade Removal

(Figure 401)

A. Location Zones

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

B. 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) Make sure the windshield wiper is in the parked position.

SUBTASK 30-42-11-860-002

WARNING: BEFORE YOU DO MAINTENANCE ON THE WINDSHIELD WIPER SYSTEM, OPEN THE WINDOW HEAT, WINDSHIELD WIPER CIRCUIT BREAKERS. IF YOU DO NOT OPEN THE WINDOW HEAT CIRCUIT BREAKERS YOU CAN GET AN ELECTRICAL SHOCK WHEN YOU TOUCH THE WINDOW.

(3) 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, P6-11

Row	Col	Number	Name
B	8	C00393	WINDOW HEAT POWER RIGHT SIDE
B	9	C00228	WINDOW HEAT POWER LEFT FRONT

F/O Electrical System Panel, P6-12

Row	Col	Number	Name
B	8	C00394	WINDOW HEAT POWER RIGHT FRONT
B	9	C00392	WINDOW HEAT POWER LEFT SIDE

C. Windshield Wiper Blade Removal

SUBTASK 30-42-11-800-001

CAUTION: DO NOT LIFT THE ARM ASSEMBLY MORE THAN NECESSARY TO LIFT THE WIPER BLADE OFF THE WINDSHIELD. YOU CAN CAUSE DAMAGE TO THE ARM ASSEMBLY AND MAKE IT UNSERVICEABLE.

(1) Put a pad between the arm assembly [5] and the windshield to prevent damage to the windshield surface.

NOTE: Make sure 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] , C20885-0022, and washer [2], MS21044N08 .

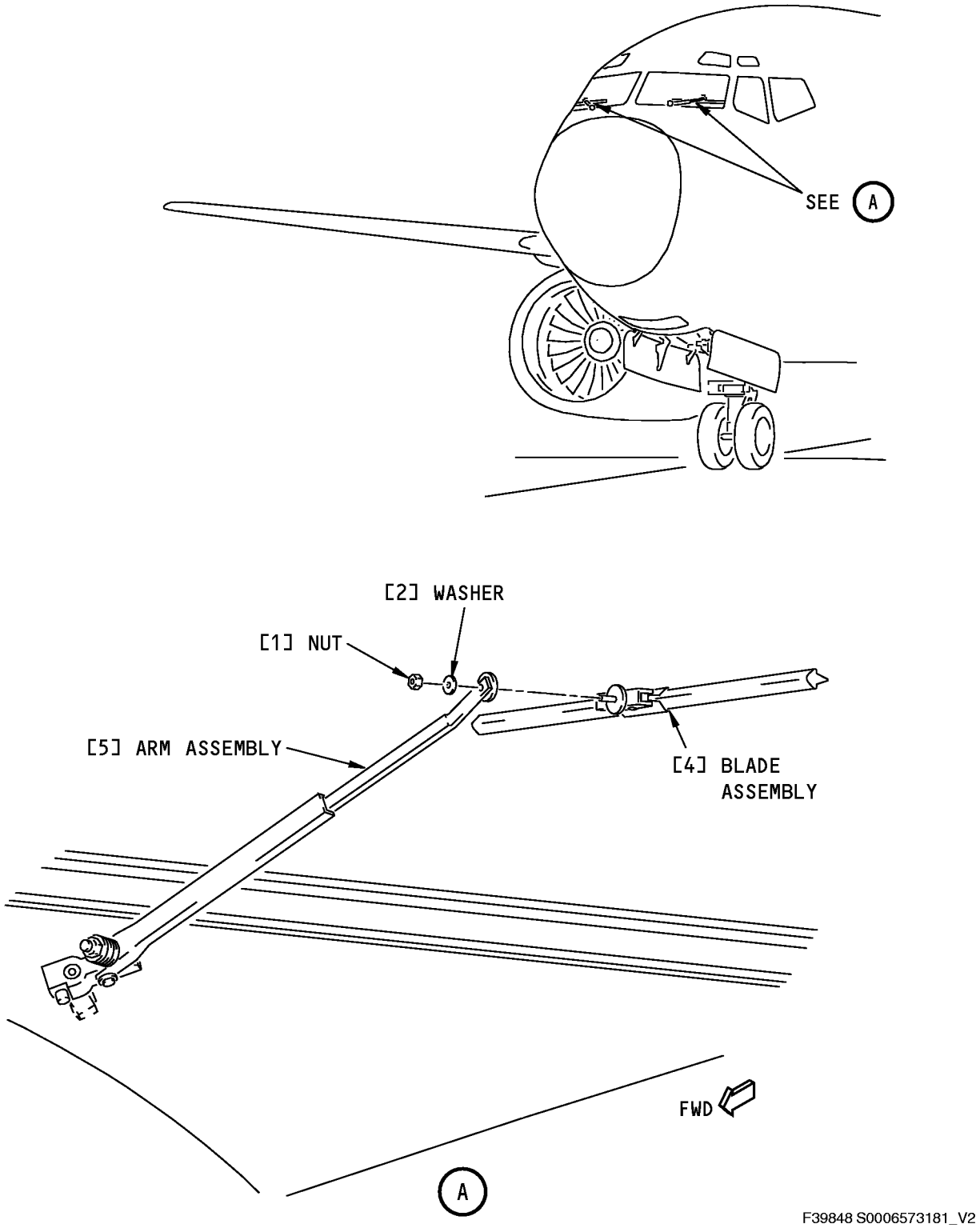
SUBTASK 30-42-11-020-002

(3) Remove the blade [4].

SUBTASK 30-42-11-860-003

(4) Lower the wiper arm assembly [5] onto the pad.

——————— END OF TASK ———————



Windshield Wiper Blade Assembly Installation
Figure 401/30-42-11-990-801

TASK 30-42-11-400-801

3. Windshield Wiper Blade Installation

(Figure 401)

A. References

Reference	Title
24-22-00-860-811	Supply Electrical Power (P/B 201)
30-42-31-820-801	Windshield Wiper Arm Force Check/Adjustment (P/B 201)

B. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
4	Blade	30-42-11-01-010	HAP ALL

C. Location Zones

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

D. Windshield Wiper Blade Installation

SUBTASK 30-42-11-420-002

(1) Set the blade [4] on the arm assembly [5].

(a) Put the blade [4] on the arm assembly [5] so that the blade [4] is parallel to the lower edge of the windshield.

SUBTASK 30-42-11-420-003

(2) Install the washer [2], C20885-0022, and nut [1], MS21044N08.

NOTE: Use a brand new nut [1], MS21044N08.

SUBTASK 30-42-11-420-004

(3) Tighten the nut [1], MS21044N08, to 14-18 inch-pounds (1.6-2.0 Nm).

SUBTASK 30-42-11-420-006

(4) Remove the pad from the windshield.

SUBTASK 30-42-11-860-005

(5) 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

E. Windshield Wiper Blade Installation Test

SUBTASK 30-42-11-720-001

(1) Do a test of the blade [4]:

(a) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

CAUTION: DO NOT OPERATE THE WIPER ON A DRY WINDSHIELD. YOU CAN DAMAGE THE WINDSHIELD.

(b) Spray the windshield with water while the wiper operates.

(c) Turn the windshield wiper switch to "LOW".

(d) Make sure the operation of the blade [4] is smooth and effective.

(e) Turn the switch to PARK.

SUBTASK 30-42-11-720-002

(2) Do this task: Windshield Wiper Arm Force Check/Adjustment, TASK 30-42-31-820-801.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 30-42-11-860-006

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

F/O Electrical System Panel, P6-11

Row	Col	Number	Name
B	8	C00393	WINDOW HEAT POWER RIGHT SIDE
B	9	C00228	WINDOW HEAT POWER LEFT FRONT

F/O Electrical System Panel, P6-12

Row	Col	Number	Name
B	8	C00394	WINDOW HEAT POWER RIGHT FRONT
B	9	C00392	WINDOW HEAT POWER LEFT SIDE

END OF TASK

WINDSHIELD WIPER MOTOR/CONVERTER - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) Wiper Motor/Converter Removal

(2) Wiper Motor/Converter Installation

TASK 30-42-21-000-801

2. Wiper Motor/Converter Removal

(Figure 401)

A. General

(1) You must do the wiper arm removal (TASK 30-42-31-000-801) before you do this task.

B. References

Reference	Title
30-42-31-000-801	Windshield Wiper Arm Removal (P/B 201)
31-62-11-000-801	Display Unit Removal (P/B 401)

C. Location Zones

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

D. Prepare for the Removal

SUBTASK 30-42-21-860-001

WARNING: BEFORE YOU DO MAINTENANCE ON THE WINDSHIELD WIPER SYSTEM, OPEN THE WINDOW HEAT CIRCUIT BREAKERS. IF YOU DO NOT OPEN THESE CIRCUIT BREAKERS DURING MAINTENANCE, YOU CAN GET AN ELECTRICAL SHOCK WHEN YOU TOUCH THE WINDOW.

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

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
D	1	C00226	WINDOW HEAT CONTROL RIGHT FRONT AC
D	2	C00225	WINDOW HEAT CONTROL LEFT SIDE AC
E	1	C00224	WINDOW HEAT CONTROL LEFT FRONT AC
E	2	C00227	WINDOW HEAT CONTROL RIGHT SIDE AC

F/O Electrical System Panel, P6-11

Row	Col	Number	Name
B	8	C00393	WINDOW HEAT POWER RIGHT SIDE
B	9	C00228	WINDOW HEAT POWER LEFT FRONT

F/O Electrical System Panel, P6-12

Row	Col	Number	Name
B	8	C00394	WINDOW HEAT POWER RIGHT FRONT
B	9	C00392	WINDOW HEAT POWER LEFT SIDE

SUBTASK 30-42-21-860-002

(2) For the left windshield wiper motor/convertor:

Open this circuit breaker and install safety tag:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
B	3	C00054	ANTI-ICE & RAIN WSHLD WIPER LEFT

SUBTASK 30-42-21-860-003

(3) For the right windshield wiper motor/convertor:

Open this circuit breaker and install safety tag:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
B	1	C00055	ANTI-ICE & RAIN WSHLD WIPER RIGHT

SUBTASK 30-42-21-020-001

(4) Remove the windshield wiper arm. To remove the wiper arm, do this task: Windshield Wiper Arm Removal, TASK 30-42-31-000-801.

SUBTASK 30-42-21-010-001

(5) Remove the display unit. To remove the unit, do this task: Display Unit Removal, TASK 31-62-11-000-801.

E. Wiper Motor/Converter Removal

SUBTASK 30-42-21-020-002

(1) Remove the ground wire from the wiper motor.

(a) Remove the nut [4] and washer [5].

SUBTASK 30-42-21-020-003

(2) Remove the electrical connector [6].

SUBTASK 30-42-21-020-004

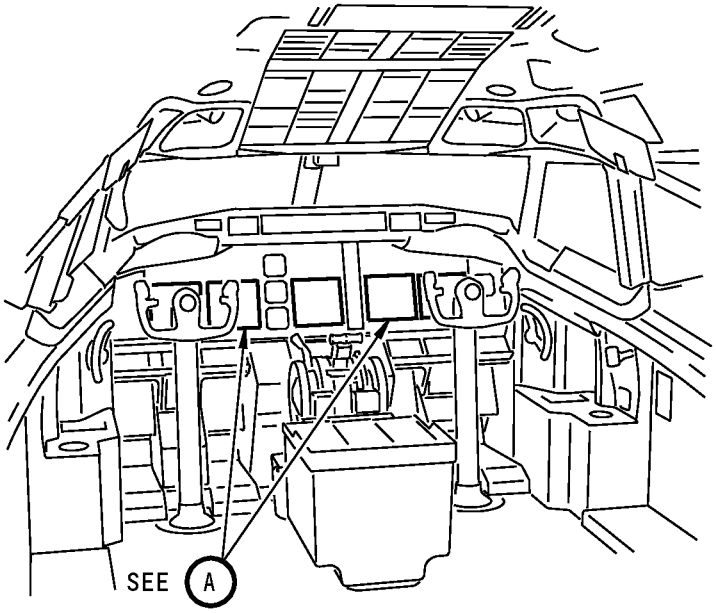
(3) Remove the screws [2] and washers [3].

SUBTASK 30-42-21-020-005

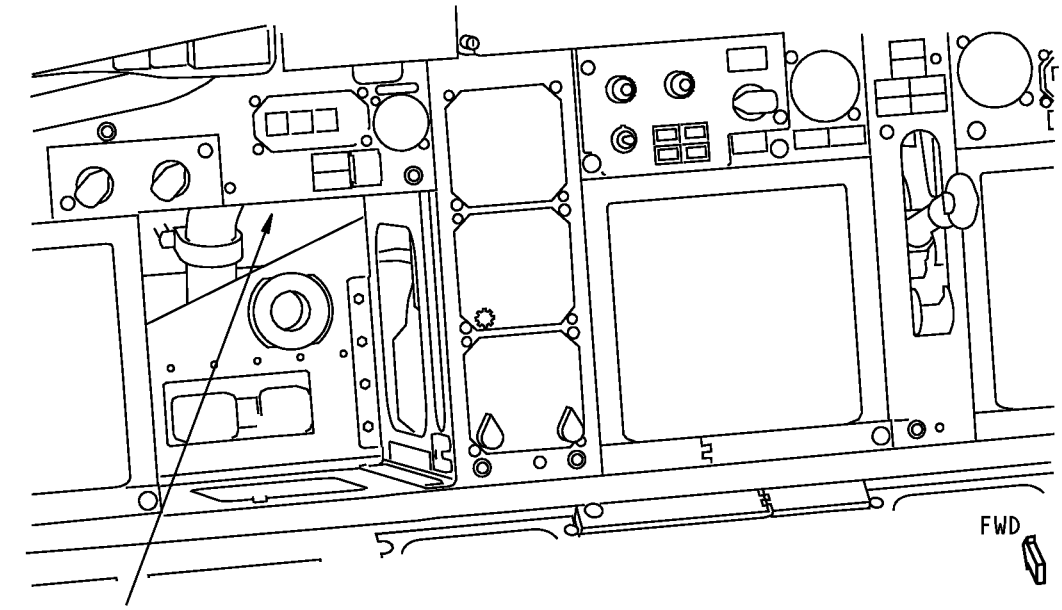
CAUTION: YOU MUST BE CAREFUL WHEN YOU REMOVE THE WIPER MOTOR/CONVERTER. THE WIPER SHAFT MAY TEAR THE RUBBER SEAL WHERE THE SHAFT PIERCES THE AIRPLANE SKIN.

(4) Remove the wiper motor converter [1].

——————— END OF TASK ———————



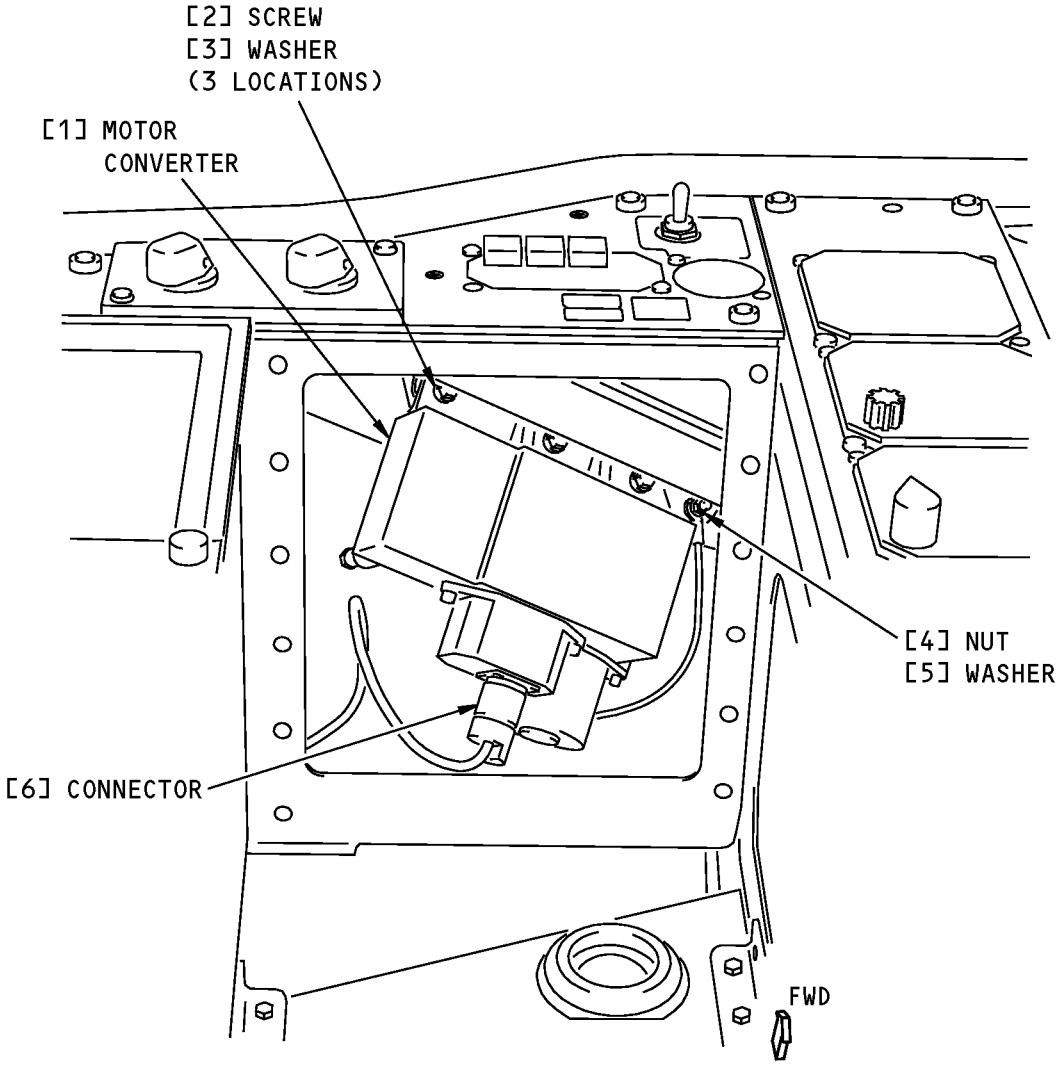
FLIGHT COMPARTMENT



(LEFT SIDE IS SHOWN, RIGHT SIDE IS OPPOSITE)

A

Windshield Wiper Motor/Converter Installation
Figure 401 (Sheet 1 of 2)/30-42-21-990-801



MOTOR CONVERTER
(EXAMPLE)
B

Windshield Wiper Motor/Converter Installation
Figure 401 (Sheet 2 of 2)/30-42-21-990-801

TASK 30-42-21-400-801

3. Wiper Motor/Converter Installation

(Figure 401)

A. References

Reference	Title
24-22-00-860-813	Supply External Power (P/B 201)
30-42-31-400-801	Windshield Wiper Arm Installation (P/B 201)
31-62-11-400-801	Display Unit Installation (P/B 401)

B. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Wiper motor converter	30-42-21-01-030	HAP 001-013, 015-026, 028
		30-42-21-01-035	HAP 001-013, 015-026, 028
		30-42-21-01-075	HAP 031-054, 101-999
		30-42-21-01-080	HAP 031-054, 101-999

C. Location Zones

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

D. Wiper Motor/Converter Installation

SUBTASK 30-42-21-100-001

CAUTION: YOU MUST BE CAREFUL WHEN YOU INSTALL THE WIPER MOTOR/CONVERTER. THE WIPER SHAFT MAY TEAR THE RUBBER SEAL WHERE THE SHAFT PIERCES THE AIRPLANE SKIN.

(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 stud on the airplane structure.

SUBTASK 30-42-21-420-001

(4) Connect the ground wire to the wiper motor/convertor.

(a) Attach the groundwire with the nut [4] and washer [5].

SUBTASK 30-42-21-420-002

(5) Connect the electrical connector [6] to the wiper motor/converter [1].

E. Wiper Motor/Converter Installation Test

SUBTASK 30-42-21-710-001

(1) Do these steps to make sure the wiper motor/converter operates:

(a) Do this task: Supply External Power, TASK 24-22-00-860-813.

(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

(c) Set the windshield wiper switch to LOW.

(d) Make sure the wiper motor/converter operates.

(e) Turn the windshield wiper switch to OFF.

SUBTASK 30-42-21-410-001

(2) Re-install the display unit. To install the unit, do this task: Display Unit Installation, TASK 31-62-11-400-801.

SUBTASK 30-42-21-420-003

(3) Re-install the windshield wiper arm. To install the arm, do this task: Windshield Wiper Arm Installation, TASK 30-42-31-400-801.

F. Put the Airplane Back to its Usual Condition

SUBTASK 30-42-21-860-004

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

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
D	1	C00226	WINDOW HEAT CONTROL RIGHT FRONT AC
D	2	C00225	WINDOW HEAT CONTROL LEFT SIDE AC
E	1	C00224	WINDOW HEAT CONTROL LEFT FRONT AC
E	2	C00227	WINDOW HEAT CONTROL RIGHT SIDE AC

F/O Electrical System Panel, P6-11

Row	Col	Number	Name
B	8	C00393	WINDOW HEAT POWER RIGHT SIDE
B	9	C00228	WINDOW HEAT POWER LEFT FRONT

F/O Electrical System Panel, P6-12

Row	Col	Number	Name
B	8	C00394	WINDOW HEAT POWER RIGHT FRONT
B	9	C00392	WINDOW HEAT POWER LEFT SIDE

——————— END OF TASK ———————

WINDSHIELD WIPER ARM - MAINTENANCE PRACTICES

1. General

A. This procedure has these tasks:

(1) Windshield Wiper Arm Removal

(2) Windshield Wiper Arm Installation

(3) Windshield Wiper Arm Force Check/Adjustment

(4) Windshield Wiper Arm Position Adjustment

TASK 30-42-31-000-801

2. Windshield Wiper Arm Removal

(Figure 201)

A. Location Zones

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

B. Procedure

SUBTASK 30-42-31-860-001

WARNING: BEFORE YOU DO MAINTENANCE ON THE WINDSHIELD WIPER SYSTEM, OPEN THE WINDOW HEAT CIRCUIT BREAKERS. IF THESE CIRCUIT BREAKERS ARE NOT OPEN DURING MAINTENANCE, YOU CAN GET AN ELECTRICAL SHOCK WHEN YOU TOUCH THE WINDOW.

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

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
D	1	C00226	WINDOW HEAT CONTROL RIGHT FRONT AC
D	2	C00225	WINDOW HEAT CONTROL LEFT SIDE AC
E	1	C00224	WINDOW HEAT CONTROL LEFT FRONT AC
E	2	C00227	WINDOW HEAT CONTROL RIGHT SIDE AC

F/O Electrical System Panel, P6-11

Row	Col	Number	Name
B	8	C00393	WINDOW HEAT POWER RIGHT SIDE
B	9	C00228	WINDOW HEAT POWER LEFT FRONT

F/O Electrical System Panel, P6-12

Row	Col	Number	Name
B	8	C00394	WINDOW HEAT POWER RIGHT FRONT
B	9	C00392	WINDOW HEAT POWER LEFT SIDE

SUBTASK 30-42-31-860-002

(2) For the left windshield wiper,

Open this circuit breaker and install safety tag:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
B	3	C00054	ANTI-ICE & RAIN WSHLD WIPER LEFT

SUBTASK 30-42-31-860-003

(3) For the right windshield wiper,

Open this circuit breaker and install safety tag:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
B	1	C00055	ANTI-ICE & RAIN WSHLD WIPER RIGHT

SUBTASK 30-42-31-010-001

(4) Use a stand to reach the windshield wipers.

SUBTASK 30-42-31-800-001

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.

(5) Put a pad between the arm assembly and the windshield to prevent damage to the windshield surface.

SUBTASK 30-42-31-020-001

(6) Loosen the adjustment screw [4] to remove the force on the wiper arm.

SUBTASK 30-42-31-020-002

(7) Remove the lockwire [6] from the clamping and hub holddown bolts.

SUBTASK 30-42-31-020-003

(8) Loosen the bolt [5].

SUBTASK 30-42-31-020-004

(9) Remove the bolt [7] and washer [8] from the shaft.

NOTE: Hold the arm assembly in position while you remove the bolt [8]. This will make sure you do not turn the wiper motor shaft.

NOTE: Keep the bolt [7] and washer [8] for the windshield wiper arm installation.

SUBTASK 30-42-31-020-005

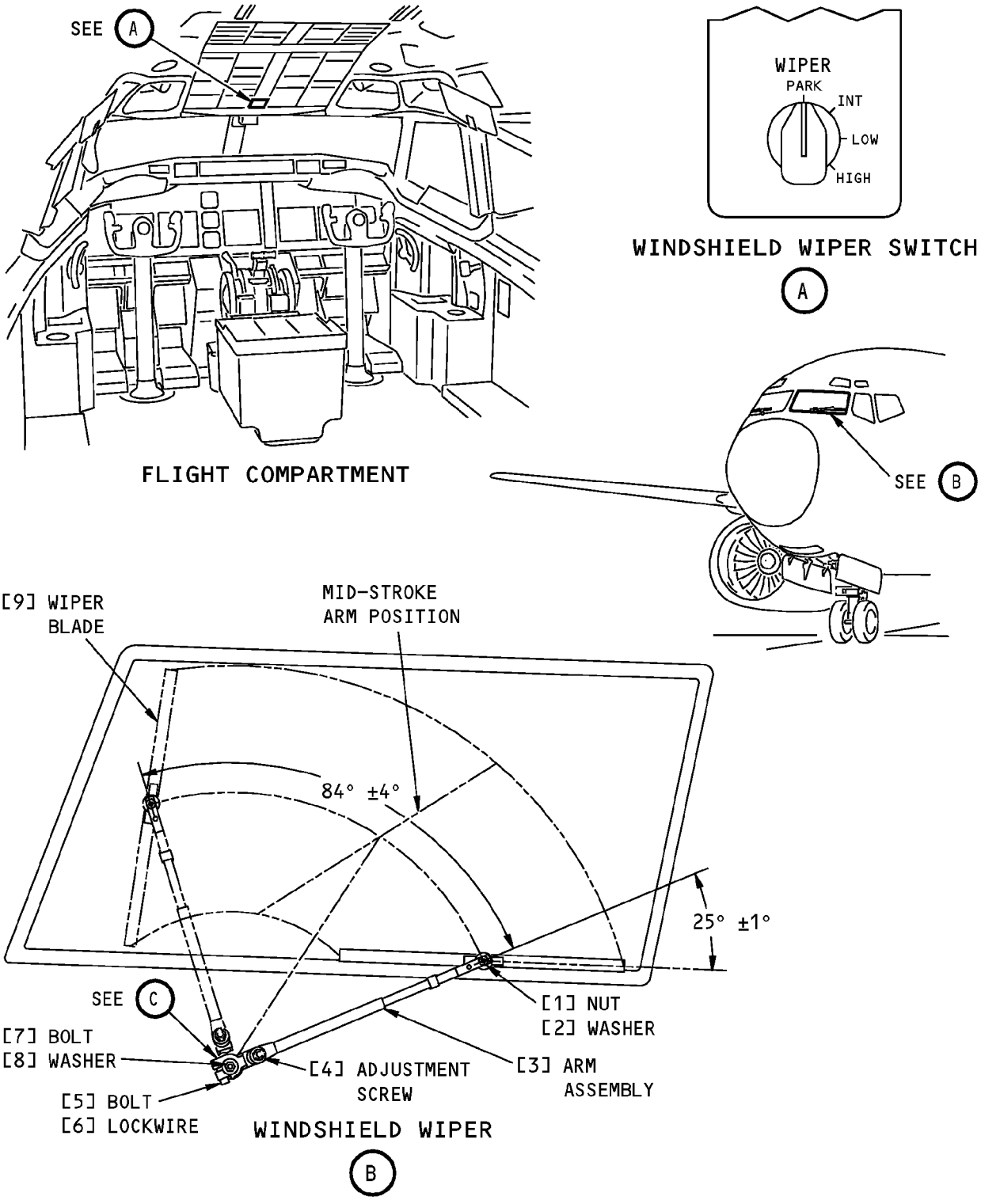
(10) Remove the arm [3] from the shaft.

SUBTASK 30-42-31-020-006

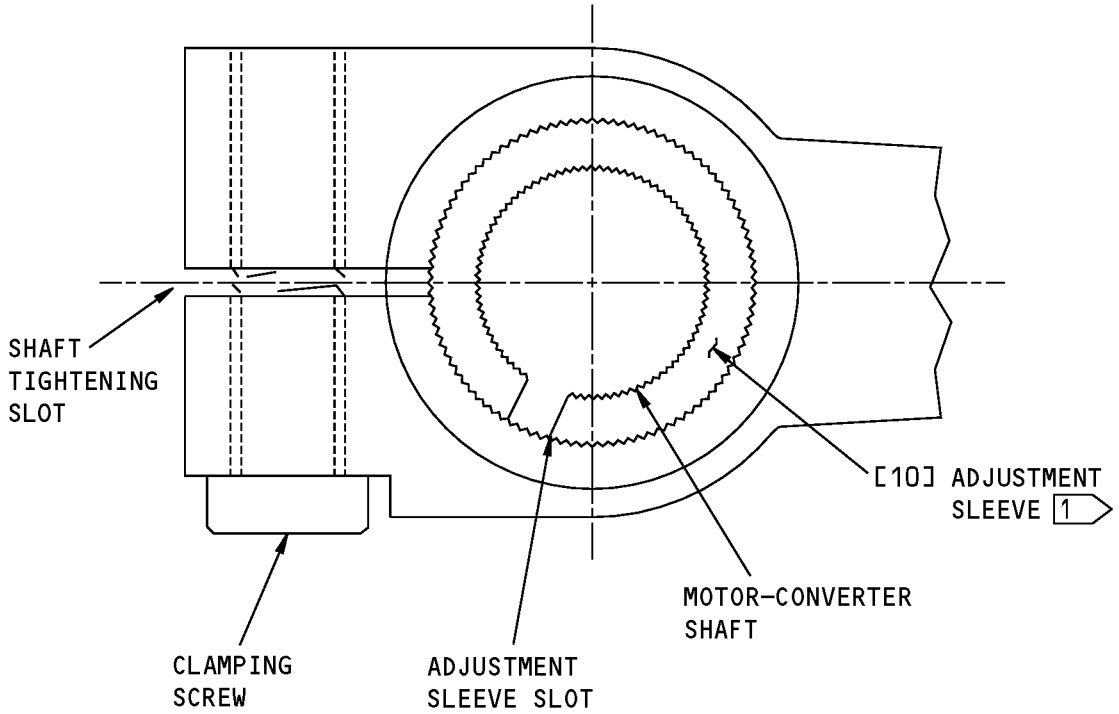
(11) If necessary, remove the adjustment sleeve [10] from the shaft.

NOTE: The adjustment sleeve can stay with the wiper arm when it is removed.

———————— END OF TASK ————————



Windshield Wiper Arm - Maintenance Practices
Figure 201 (Sheet 1 of 2)/30-42-31-990-801



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).

Windshield Wiper Arm - Maintenance Practices
Figure 201 (Sheet 2 of 2)/30-42-31-990-801

TASK 30-42-31-400-801

3. Windshield Wiper Arm Installation

(Figure 201)

A. Consumable Materials

Reference	Description	Specification
D00013	Grease - Aircraft And Instrument Grease	MIL-PRF-23827 (NATO G-354) (Supersedes MIL-G-23827)

B. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
3	Arm	30-42-11-01-015	HAP ALL

C. Location Zones

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

D. Procedure

SUBTASK 30-42-31-860-004

WARNING: BEFORE YOU DO MAINTENANCE ON THE WINDSHIELD WIPER SYSTEM, OPEN THE WINDOW HEAT CIRCUIT BREAKERS. IF THESE CIRCUIT BREAKERS ARE NOT OPEN DURING MAINTENANCE, YOU CAN GET AN ELECTRICAL SHOCK WHEN YOU TOUCH THE WINDOW.

(1) Make sure that these circuit breakers are open and have safety tags:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
D	1	C00226	WINDOW HEAT CONTROL RIGHT FRONT AC
D	2	C00225	WINDOW HEAT CONTROL LEFT SIDE AC
E	1	C00224	WINDOW HEAT CONTROL LEFT FRONT AC
E	2	C00227	WINDOW HEAT CONTROL RIGHT SIDE AC

F/O Electrical System Panel, P6-11

Row	Col	Number	Name
B	8	C00393	WINDOW HEAT POWER RIGHT SIDE
B	9	C00228	WINDOW HEAT POWER LEFT FRONT

F/O Electrical System Panel, P6-12

Row	Col	Number	Name
B	8	C00394	WINDOW HEAT POWER RIGHT FRONT
B	9	C00392	WINDOW HEAT POWER LEFT SIDE

SUBTASK 30-42-31-860-005

(2) Make sure the wiper motor is in the park position.

(a) For the left windshield wiper,

Remove the safety tag and close this circuit breaker:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
B	3	C00054	ANTI-ICE & RAIN WSHLD WIPER LEFT

(b) For the right windshield wiper,

Remove the safety tag and close this circuit breaker:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
B	1	C00055	ANTI-ICE & RAIN WSHLD WIPER RIGHT

(c) Put the windshield wiper switch to the PARK position.

(d) For the left windshield wiper,

Open this circuit breaker and install safety tag:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
B	3	C00054	ANTI-ICE & RAIN WSHLD WIPER LEFT

(e) For the right windshield wiper,

Open this circuit breaker and install safety tag:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
B	1	C00055	ANTI-ICE & RAIN WSHLD WIPER RIGHT

SUBTASK 30-42-31-020-007

(3) Loosen the adjustment screw [4].

SUBTASK 30-42-31-420-001

(4) Attach a wiper [9] to the wiper arm assembly [3].

(a) Attach the wiper [9] to the wiper arm as shown in (Figure 201).

(b) Secure the wiper to the arm with the nut [1] and washer [2], applying 14-18 inch-pounds (1.6-2.0 Nm) of torque..

SUBTASK 30-42-31-640-001

(5) Apply grease, D00013 to the serrations on the adjustment sleeve [10] and the shaft.

SUBTASK 30-42-31-420-002

(6) Install the arm [3] on the windshield wiper shaft.

(a) Place the wiper arm on the shaft in the parked position as shown in (Figure 201).

NOTE: Use (Figure 201) to determine the position of the wiper arm assembly and for adjustment instructions.

1) For large adjustments, turn the arm assembly and adjustment sleeve together on the wiper motor shaft.

2) For small adjustments, turn the adjustment sleeve within the arm assembly.

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 inches (0.86 millimeters).

(b) Apply 3.5 to 4.5 pounds (1.6 to 2.0 kilograms) downward force at the blade attach point.

1) Make sure the wiper blade stays on the glass.

SUBTASK 30-42-31-420-003

(7) Install the bolt [5].

SUBTASK 30-42-31-420-004

(8) Install washer [8] and bolt [7] on the end of the shaft.

SUBTASK 30-42-31-820-001

(9) Do a check of the wiper arm down force. To do the check, do this task: Windshield Wiper Arm Force Check/Adjustment, TASK 30-42-31-820-801.

SUBTASK 30-42-31-820-002

(10) Do a check of the wiper arm position. To do the check, do this task: Windshield Wiper Arm Position Check/Adjustment, TASK 30-42-31-820-802.

SUBTASK 30-42-31-420-005

(11) Secure bolt [5] by applying 20-25 inch-pounds (2.3-2.8 Nm) of torque. Secure bolt [7] by applying 35-40 inch-pounds (4.0-4.5 Nm) of torque. Secure bolts with lockwire [6].

E. Put the Airplane Back to Its Usual Condition

SUBTASK 30-42-31-860-006

(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
D	1	C00226	WINDOW HEAT CONTROL RIGHT FRONT AC
D	2	C00225	WINDOW HEAT CONTROL LEFT SIDE AC
E	1	C00224	WINDOW HEAT CONTROL LEFT FRONT AC
E	2	C00227	WINDOW HEAT CONTROL RIGHT SIDE AC

F/O Electrical System Panel, P6-11

Row	Col	Number	Name
B	8	C00393	WINDOW HEAT POWER RIGHT SIDE
B	9	C00228	WINDOW HEAT POWER LEFT FRONT

F/O Electrical System Panel, P6-12

Row	Col	Number	Name
B	8	C00394	WINDOW HEAT POWER RIGHT FRONT
B	9	C00392	WINDOW HEAT POWER LEFT SIDE

END OF TASK

TASK 30-42-31-820-801

4. Windshield Wiper Arm Force Check/Adjustment

(Figure 201)

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
24-22-00-860-813	Supply External Power (P/B 201)

C. Tools/Equipment

Reference	Description
STD-753	Scale - Push/Pull, 0-25 pound (0-11 kilogram) Capacity, 1/4 pound (113 gram) Accuracy

D. Location Zones

Zone	Area
200	Upper Half of Fuselage
211	Flight Compartment - Left
212	Flight Compartment - Right

E. Procedure

SUBTASK 30-42-31-860-007

WARNING: BEFORE YOU DO MAINTENANCE ON THE WINDSHIELD WIPER SYSTEM, OPEN THE WINDOW HEAT CIRCUIT BREAKERS. IF THESE CIRCUIT BREAKERS ARE NOT OPEN DURING MAINTENANCE, PERSONS CAN GET AN ELECTRICAL SHOCK WHEN THEY TOUCH THE WINDOW.

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

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
D	1	C00226	WINDOW HEAT CONTROL RIGHT FRONT AC
D	2	C00225	WINDOW HEAT CONTROL LEFT SIDE AC
E	1	C00224	WINDOW HEAT CONTROL LEFT FRONT AC
E	2	C00227	WINDOW HEAT CONTROL RIGHT SIDE AC

F/O Electrical System Panel, P6-11

Row	Col	Number	Name
B	8	C00393	WINDOW HEAT POWER RIGHT SIDE
B	9	C00228	WINDOW HEAT POWER LEFT FRONT

F/O Electrical System Panel, P6-12

Row	Col	Number	Name
B	8	C00394	WINDOW HEAT POWER RIGHT FRONT
B	9	C00392	WINDOW HEAT POWER LEFT SIDE

SUBTASK 30-42-31-800-002

(2) Do these steps to put the windshield wiper in the testing position:

(a) Supply electrical power to the airplane. To do this, do this task: Supply External Power, TASK 24-22-00-860-813.

CAUTION: DO NOT OPERATE THE WIPER ON A DRY WINDSHIELD. THE WIPER WILL CAUSE DAMAGE TO A DRY WINDSHIELD. ALWAYS SUPPLY WATER TO THE WINDSHIELD BEFORE YOU OPERATE THE WIPER.

(b) Supply a continuous water spray to the windshield.

(c) Turn the applicable wiper switch to LOW.

(d) Do this step for the applicable circuit breaker to stop the 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

Row	Col	Number	Name
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:

(a) Connect the push/pull scale 0-25 pound (0-11 kilogram), STD-753 at the point where the wiper blade attaches to the wiper arm.

(b) Hold the push/pull scale 0-25 pound (0-11 kilogram), STD-753 perpendicular to the windshield.

CAUTION: DO NOT LIFT THE WIPER ARM MORE THAN NECESSARY TO LIFT THE WIPER BLADE FROM THE WINDSHIELD. YOU CAN CAUSE DAMAGE TO THE WIPER ARM AND MAKE IT UNSERVICEABLE.

(c) Pull the push/pull scale 0-25 pound (0-11 kilogram), STD-753 slowly until the wiper blade 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.

HAP 001-013, 015-026, 028 PRE SB 737-30-1054

SUBTASK 30-42-31-820-003

(4) Adjust the force of the wiper arm.

(a) If the force is less than 3.5 pounds (1.6 kilograms), tighten the screw [4] to increase the force of the wiper arm.

(b) If the force is larger than 4.5 pounds (2.0 kilograms), loosen the screw [4] to decrease the force of the wiper arm.

NOTE: The wiper motor is to be tensioned to the specified tension above, to be in compliance with AD 2003-20-13.

HAP 029-054, 101-999; HAP 001-013, 015-026, 028 POST SB 737-30-1054

SUBTASK 30-42-31-820-006

(5) Adjust the force of the wiper arm.

NOTE: The wiper motor has a dimple at the end of the motor/converter shaft.

(a) If the force is less than 6.5 pounds (3 kilograms), tighten the screw [4] to increase the force of the wiper arm.

(b) If the force is larger than 7.5 pounds (3.4 kilograms), loosen the screw [4] to decrease the force of the wiper arm.

NOTE: The wiper motor is to be tensioned to the specified tension above, to be in compliance with AD 2003-20-13.

HAP ALL

SUBTASK 30-42-31-700-002

(6) Measure the force of the wiper arm again.

SUBTASK 30-42-31-860-008

(7) Put the windshield wiper back to its usual position:

(a) Turn the applicable wiper switch to PARK.

CAUTION: DO NOT OPERATE THE WINDSHIELD WIPER ON DRY GLASS. THE WIPER WILL CAUSE DAMAGE TO THE WINDSHIELD. ALWAYS SUPPLY WATER TO THE WINDSHIELDS BEFORE YOU OPERATE THE WIPER.

(b) Supply a continuous water spray to the windshield.

(c) 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

(d) Make sure the wiper blade stops in the parked position.

(e) Stop the water spray.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 30-42-31-860-009

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

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
D	1	C00226	WINDOW HEAT CONTROL RIGHT FRONT AC
D	2	C00225	WINDOW HEAT CONTROL LEFT SIDE AC
E	1	C00224	WINDOW HEAT CONTROL LEFT FRONT AC
E	2	C00227	WINDOW HEAT CONTROL RIGHT SIDE AC

F/O Electrical System Panel, P6-11

Row	Col	Number	Name
B	8	C00393	WINDOW HEAT POWER RIGHT SIDE
B	9	C00228	WINDOW HEAT POWER LEFT FRONT

F/O Electrical System Panel, P6-12

Row	Col	Number	Name
B	8	C00394	WINDOW HEAT POWER RIGHT FRONT
B	9	C00392	WINDOW HEAT POWER LEFT SIDE

END OF TASK

TASK 30-42-31-820-802

5. Windshield Wiper Arm Position Check/Adjustment

(Figure 201)

A. General

(1) This procedure adjusts the position of the wiper arm sweep on the windshield.

(2) This procedure must be completed after an installation of a wiper arm.

B. References

Reference	Title
24-22-00-860-813	Supply External Power (P/B 201)

C. Location Zones

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

D. Procedure

SUBTASK 30-42-31-860-010

(1) Do this task: Supply External Power, TASK 24-22-00-860-813.

SUBTASK 30-42-31-860-011

WARNING: BEFORE YOU DO MAINTENANCE ON THE WINDSHIELD WIPER SYSTEM, OPEN THE WINDOW HEAT CIRCUIT BREAKERS. IF THESE CIRCUIT BREAKERS ARE NOT OPEN DURING MAINTENANCE, PERSONS CAN GET AN ELECTRICAL SHOCK WHEN THEY TOUCH THE WINDOW.

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

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
D	1	C00226	WINDOW HEAT CONTROL RIGHT FRONT AC
D	2	C00225	WINDOW HEAT CONTROL LEFT SIDE AC
E	1	C00224	WINDOW HEAT CONTROL LEFT FRONT AC
E	2	C00227	WINDOW HEAT CONTROL RIGHT SIDE AC

F/O Electrical System Panel, P6-11

Row	Col	Number	Name
B	8	C00393	WINDOW HEAT POWER RIGHT SIDE
B	9	C00228	WINDOW HEAT POWER LEFT FRONT

F/O Electrical System Panel, P6-12

Row	Col	Number	Name
B	8	C00394	WINDOW HEAT POWER RIGHT FRONT
B	9	C00392	WINDOW HEAT POWER LEFT SIDE

SUBTASK 30-42-31-210-001

(3) Do these steps to examine the sweep pattern of the wiper arm [4]:

CAUTION: DO NOT OPERATE THE WINDSHIELD WIPER ON DRY GLASS. THE WIPER WILL CAUSE DAMAGE TO THE WINDSHIELD. ALWAYS SUPPLY WATER TO THE WINDSHIELDS BEFORE YOU OPERATE THE WIPER.

(a) Supply a continuous water spray to the windshield.

(b) Turn the wiper switch to LOW and let the wiper operate for one or two cycles.

(c) Turn the wiper switch to PARK.

(d) Stop the water spray.

(e) Make sure the wiper arm goes back to the parked position with the wiper blade near the bottom edge of the windshield.

(f) Make sure the wiper arm is parallel to the bottom edge of the windshield.

(g) Compare the sweep pattern to (Figure 201).

SUBTASK 30-42-31-820-005

(4) If you find a problem with the sweep pattern of the wiper arm, do these steps to adjust the sweep pattern:

(a) Measure the distance that the tip of the wiper blade needs to move.

(b) Make a mark on the adjustment sleeve and wiper motor shaft to show the current installation.

(c) Remove the windshield wiper arm. To remove the arm, do this task: Windshield Wiper Arm Removal, TASK 30-42-31-000-801.

(d) Re-install the windshield wiper arm. To install the arm, do this task: Windshield Wiper Arm Installation, TASK 30-42-31-400-801.

NOTE: The arm assembly installation procedure has details on how to adjust the arm assembly.

SUBTASK 30-42-31-860-012

(5) Put the wiper to its parked position:

CAUTION: DO NOT OPERATE THE WINDSHIELD WIPERS ON DRY GLASS. THE WIPER WILL CAUSE DAMAGE TO THE WINDSHIELD. ALWAYS SUPPLY WATER TO THE WINDSHIELDS BEFORE YOU OPERATE THE WIPER.

(a) Supply a continuous water spray to the windshield.

(b) Set the wiper switch to LOW.

(c) Set the wiper switch to PARK.

(d) Stop the water spray.

E. Put the Airplane Back to Its Usual Condition

SUBTASK 30-42-31-860-013

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

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
D	1	C00226	WINDOW HEAT CONTROL RIGHT FRONT AC
D	2	C00225	WINDOW HEAT CONTROL LEFT SIDE AC
E	1	C00224	WINDOW HEAT CONTROL LEFT FRONT AC
E	2	C00227	WINDOW HEAT CONTROL RIGHT SIDE AC

F/O Electrical System Panel, P6-11

Row	Col	Number	Name
B	8	C00393	WINDOW HEAT POWER RIGHT SIDE
B	9	C00228	WINDOW HEAT POWER LEFT FRONT

F/O Electrical System Panel, P6-12

Row	Col	Number	Name
B	8	C00394	WINDOW HEAT POWER RIGHT FRONT
B	9	C00392	WINDOW HEAT POWER LEFT SIDE

END OF TASK

WINDSHIELD HYDROPHOBIC COATING - MAINTENANCE PRACTICES

1. General

A. This procedure has these tasks:

(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.

(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 #: 7137D, Supplier: U1610, A/P Effectivity: 737-ALL) (Part #: DSS1020, Supplier: 53117, A/P Effectivity: 737-ALL)

C. Prepare for the Procedure

SUBTASK 30-43-00-860-001

WARNING: BEFORE YOU DO MAINTENANCE ON THE WINDSHIELD, OPEN THE WINDOW HEAT CIRCUIT BREAKERS. IF YOU DO NOT OPEN THESE CIRCUIT BREAKERS DURING MAINTENANCE, YOU CAN GET AN ELECTRICAL SHOCK WHEN YOU TOUCH THE WINDOW.

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

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
D	1	C00226	WINDOW HEAT CONTROL RIGHT FRONT AC
D	2	C00225	WINDOW HEAT CONTROL LEFT SIDE AC
E	1	C00224	WINDOW HEAT CONTROL LEFT FRONT AC
E	2	C00227	WINDOW HEAT CONTROL RIGHT SIDE AC

F/O Electrical System Panel, P6-11

Row	Col	Number	Name
B	8	C00393	WINDOW HEAT POWER RIGHT SIDE
B	9	C00228	WINDOW HEAT POWER LEFT FRONT

F/O Electrical System Panel, P6-12

Row	Col	Number	Name
B	8	C00394	WINDOW HEAT POWER RIGHT FRONT
B	9	C00392	WINDOW HEAT POWER LEFT SIDE

SUBTASK 30-43-00-010-001

(2) Use a stand to get access to the windshield.

D. Procedure

SUBTASK 30-43-00-800-001

(1) Use the procedure in the hydrophobic coating master kit, COM-1806 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:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
D	1	C00226	WINDOW HEAT CONTROL RIGHT FRONT AC
D	2	C00225	WINDOW HEAT CONTROL LEFT SIDE AC
E	1	C00224	WINDOW HEAT CONTROL LEFT FRONT AC
E	2	C00227	WINDOW HEAT CONTROL RIGHT SIDE AC

F/O Electrical System Panel, P6-11

Row	Col	Number	Name
B	8	C00393	WINDOW HEAT POWER RIGHT SIDE
B	9	C00228	WINDOW HEAT POWER LEFT FRONT

F/O Electrical System Panel, P6-12

Row	Col	Number	Name
B	8	C00394	WINDOW HEAT POWER RIGHT FRONT
B	9	C00392	WINDOW HEAT POWER LEFT SIDE

END OF TASK

WATER AND DRAIN ANTI-ICING SYSTEM - MAINTENANCE PRACTICES

1. General

A. This procedure has this task:

(1) Anti-ice operation for the drain mast with 115 Volts AC on the Ground

TASK 30-71-00-800-801

2. Water and Drain Operation with 115 Volts on the Ground

A. General

(1) 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.

(2) This task should only be used when the 28 volt operation will not remove ice from the drain masts.

(3) Refer to Cold Weather Maintenance Procedure, TASK 12-33-01-600-802.

B. References

Reference	Title
12-33-01-600-802	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 30-71-00-020-001

WARNING: OBEY THE PROCEDURE THAT PREPARES TO PUT THE AIRPLANE IN THE AIR MODE. IN THE AIR MODE, MANY OF THE AIRPLANE SYSTEMS CAN OPERATE. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

(1) Do this task: Prepare to Put the Airplane in the Air Mode, TASK 32-09-00-840-801.

SUBTASK 30-71-00-020-002

(2) Do this task: Put the Airplane in the Air Mode, TASK 32-09-00-860-801.

SUBTASK 30-71-00-020-003

(3) Make sure that this circuit breaker is closed:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
E	4	C00700	HEATERS DRAIN MAST AIR

NOTE: This circuit breaker is opened in the Prepare for Air Mode Simulation task. It must be closed for the operation of the drain mast in the air (high heat) mode.

E. Put the Airplane back to Normal

NOTE: Do this procedure when 115 Volt operation of the anti-ice system is no longer needed.

SUBTASK 30-71-00-840-001

(1) Do this task: Return the Airplane to the Ground Mode, TASK 32-09-00-860-802.

——————— END OF TASK ———————

DRAIN AND WATER SUPPLY LINE HEATING - ADJUSTMENT/TEST

1. General

A. This procedure has general instructions for testing the water supply, drains, and waste anti-icing system. This procedure includes these tests:

(1) Drain mast heater ground and air mode tests

(2) Heater tests

TASK 30-71-00-720-801

2. Drain Mast Heater Ground and Air Mode Test

A. References

Reference	Title
24-22-00-860-813	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 (Part #: DHS24XC-FM, Supplier: 08086, A/P Effectivity: 737-ALL) (Part #: DHS24XF-FM, Supplier: 08086, A/P Effectivity: 737-ALL) (Opt Part #: IR-16L3 IS, Supplier: 75037, A/P Effectivity: 737-ALL)
COM-2531	Meter - Current, RMS (Part #: 321, Supplier: 89536, A/P Effectivity: 737-ALL) (Part #: 322, Supplier: 89536, A/P Effectivity: 737-ALL) (Part #: LH41A, Supplier: 15566, A/P Effectivity: 737-ALL) (Part #: MODEL 33, Supplier: 89536, A/P Effectivity: 737-ALL) (Part #: MODEL 36, Supplier: 89536, A/P Effectivity: 737-ALL)

C. Location Zones

Zone	Area
143	Area Below Aft Cargo Compartment - Left

D. Prepare for the Procedure

SUBTASK 30-71-00-860-001

(1) Do this task: Supply External Power, TASK 24-22-00-860-813.

HAP 031-054, 101-999; HAP 001-013, 015-026, 028-030 POST SB 737-24-1147

SUBTASK 30-71-00-861-001

(2) Make sure the CABIN/UTIL switch is set to the ON position.

HAP ALL

E. Check the Ground Mode Operation of the Drain Mast Heaters

SUBTASK 30-71-00-720-001

WARNING: DO NOT TOUCH THE DRAIN MAST. WHEN THE DRAIN MAST HEATER OPERATES, THE DRAIN MAST IS SUFFICIENTLY HOT TO BURN YOU.

(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 degrees F (6 degrees C) warmer than the ambient air temperature.

(b) As an alternative, you can use a 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) Refer to (TASK 38-31-01-000-801) for details to access the heater wiring.

SUBTASK 30-71-00-860-003

WARNING: YOU MUST DO THE STEPS IN THE TASK BELOW TO PREPARE THE SAFETY-SENSITIVE SYSTEMS FOR THE AIR MODE. FAILURE TO DO THE STEPS CORRECTLY WILL CAUSE THE AUTOMATIC OPERATION OF AIRPLANE SYSTEMS. THIS CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(2) Do this task: Prepare to Put the Airplane in the Air Mode, TASK 32-09-00-840-801.

SUBTASK 30-71-00-860-004

(3) Put the airplane in the air mode. To put it in the air mode, do this task: Put the Airplane in the Air Mode, TASK 32-09-00-860-801.

SUBTASK 30-71-00-860-005

WARNING: DO NOT TOUCH THE DRAIN MAST. WHEN THE DRAIN MAST HEATER OPERATES, THE DRAIN MAST IS SUFFICIENTLY HOT TO BURN YOU.

CAUTION: DO NOT OPERATE THE DRAIN MAST HEATERS IN THE AIR MODE FOR MORE THAN 5 MINUTES. THE DRAIN MASTS WILL BECOME TOO HOT.

(4) Make sure that this circuit breaker is closed:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
E	4	C00700	HEATERS DRAIN MAST AIR

SUBTASK 30-71-00-720-002

(5) Make sure that the forward and aft drain masts become hot.

(a) You can use an Infrared Thermometer, COM-1572 or other temperature measuring device to make sure the drain mast is at least 10 degrees F (6 degrees C) warmer than the ground mode test temperature.

(b) As an alternative, you can use a current meter, COM-2531 or equivalent to measure the current to the drain mast heater.

1) Make sure there is greater current to the heater than in the ground mode.

HAP 031-054, 101-999; HAP 001-013, 015-026, 028-030 POST SB 737-24-1147

SUBTASK 30-71-00-862-001

(6) Make sure the CAB/UTIL switch is set to the OFF position.

HAP ALL

SUBTASK 30-71-00-860-006

(7) Put the airplane back in the ground mode. To put it in the ground mode, do this task: Return the Airplane 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
24-22-00-860-813	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)
25-52-06-000-801	Remove the Sidewall Lining for the Cargo Compartment (P/B 401)
25-52-06-400-801	Install the Sidewall Lining for the Cargo Compartment (P/B 401)
25-52-10-000-801	Cargo Floor Panel Removal (P/B 401)
25-52-10-400-801	Cargo Floor Panel Installation (P/B 401)
25-52-17-000-801	Forward Cargo Compartment Aft Bulkhead Liner Removal (P/B 401)
25-52-17-400-801	Forward Cargo Compartment Aft Bulkhead Liner Installation (P/B 401)
25-52-19-000-801	Aft Cargo Compartment Aft Bulkhead Liner Removal (P/B 401)
25-52-19-400-801	Aft Cargo Compartment Aft Bulkhead Liner Installation (P/B 401)
25-52-20-000-801	Waste Tank Enclosure Panel Removal (P/B 401)
25-52-20-400-801	Waste Tank Enclosure Panel Installation (P/B 401)
SSM 30-71-11	System Schematics Manual
WDM 30-71-11	Wiring Diagram Manual

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 (Part #: DHS24XC-FM, Supplier: 08086, A/P Effectivity: 737-ALL) (Part #: DHS24XF-FM, Supplier: 08086, A/P Effectivity: 737-ALL) (Opt Part #: IR-16L3 IS, Supplier: 75037, A/P Effectivity: 737-ALL)
COM-2531	Meter - Current, RMS (Part #: 321, Supplier: 89536, A/P Effectivity: 737-ALL) (Part #: 322, Supplier: 89536, A/P Effectivity: 737-ALL) (Part #: LH41A, Supplier: 15566, A/P Effectivity: 737-ALL) (Part #: MODEL 33, Supplier: 89536, A/P Effectivity: 737-ALL) (Part #: MODEL 36, Supplier: 89536, A/P Effectivity: 737-ALL)

C. Consumable Materials

Reference	Description	Specification
G02319	Spray - Freeze - Miller-Stephenson MS-242N	
G02320	Ice - Crushed	

D. Location Zones

Zone	Area
143	Area Below Aft Cargo Compartment - Left

E. Prepare for the Procedure

SUBTASK 30-71-00-860-007

(1) Do this task: Supply External Power, TASK 24-22-00-860-813.

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) Use (Figure 501) to identify access requirements.

(c) Do the necessary tasks to access the heater and thermostat.

1) Do this task: Cargo Floor Panel Removal, TASK 25-52-10-000-801.

2) Do this task: Forward Cargo Compartment Aft Bulkhead Liner Removal, TASK 25-52-17-000-801.

3) Do this task: Aft Cargo Compartment Aft Bulkhead Liner Removal, TASK 25-52-19-000-801.

4) Do this task: Remove the Sidewall Lining for the Cargo Compartment, TASK 25-52-06-000-801.

5) Do this task: Waste Tank Enclosure Panel Removal, TASK 25-52-20-000-801.

6) Do this task: Carpet Removal, TASK 25-27-15-000-801.

7) Do this task: Entry and Service Area Floor Covering Removal, TASK 25-27-21-000-801.

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.

(a) You can use a Infrared Thermometer, COM-1572 or other temperature measuring device to make sure there is an increase of at least 10 degrees F (6 degrees C) above the ambient air temperature.

(b) As an alternative, you can use a current meter, COM-2531 or equivalent to measure the current to the heater.

(c) Current to the heater indicates that the heater is operating.

G. Put the Airplane Back to its Usual Condition

SUBTASK 30-71-00-410-002

(1) Replace or close the panels or doors used to access the heater and thermostat.

(a) Do this task: Cargo Floor Panel Installation, TASK 25-52-10-400-801.

(b) Do this task: Forward Cargo Compartment Aft Bulkhead Liner Installation, TASK 25-52-17-400-801.

(c) Do this task: Aft Cargo Compartment Aft Bulkhead Liner Installation, TASK 25-52-19-400-801.

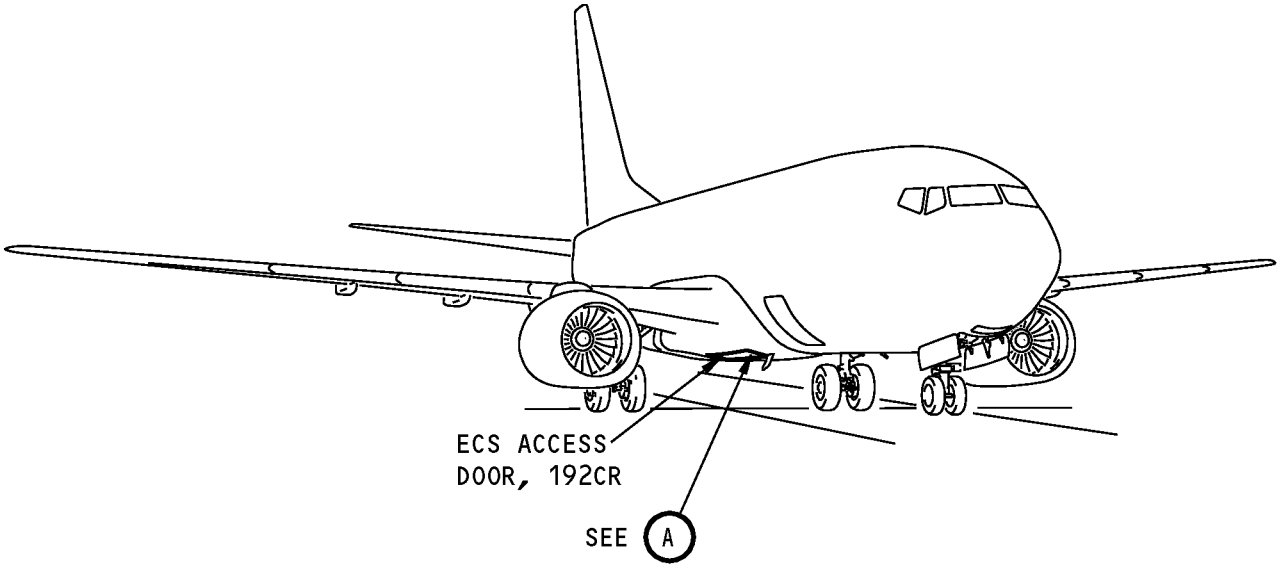
(d) Do this task: Install the Sidewall Lining for the Cargo Compartment, TASK 25-52-06-400-801.

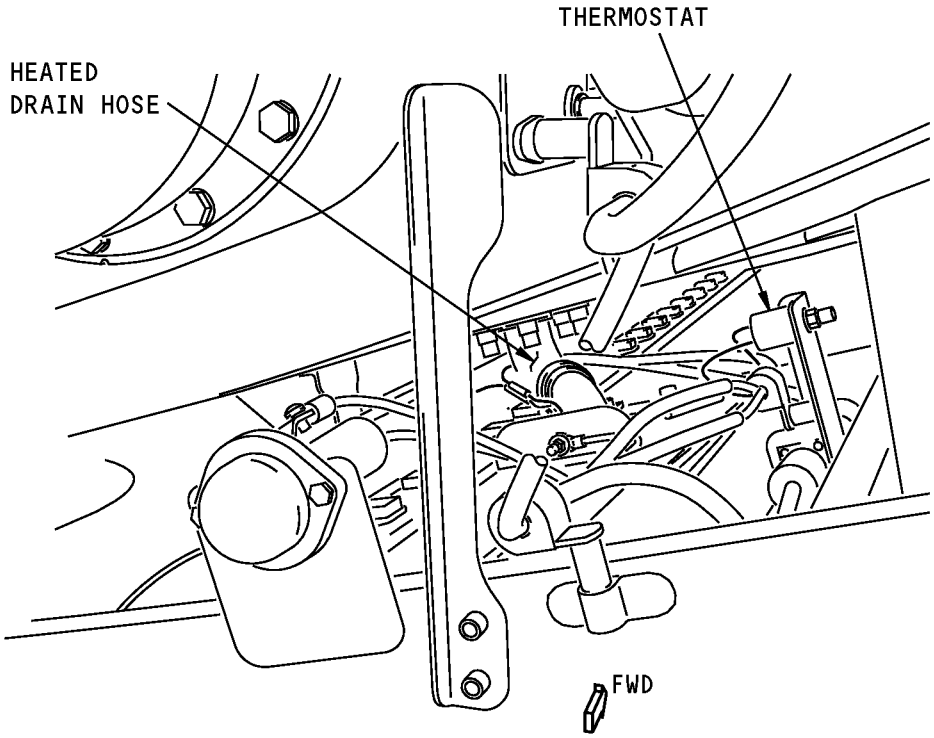
(e) Do this task: Waste Tank Enclosure Panel Installation, TASK 25-52-20-400-801.

(f) Do this task: Carpet Installation, TASK 25-27-15-400-801.

(g) Do this task: Entry and Service Area Floor Covering Installation, TASK 25-27-21-400-801

—————— END OF TASK ——————

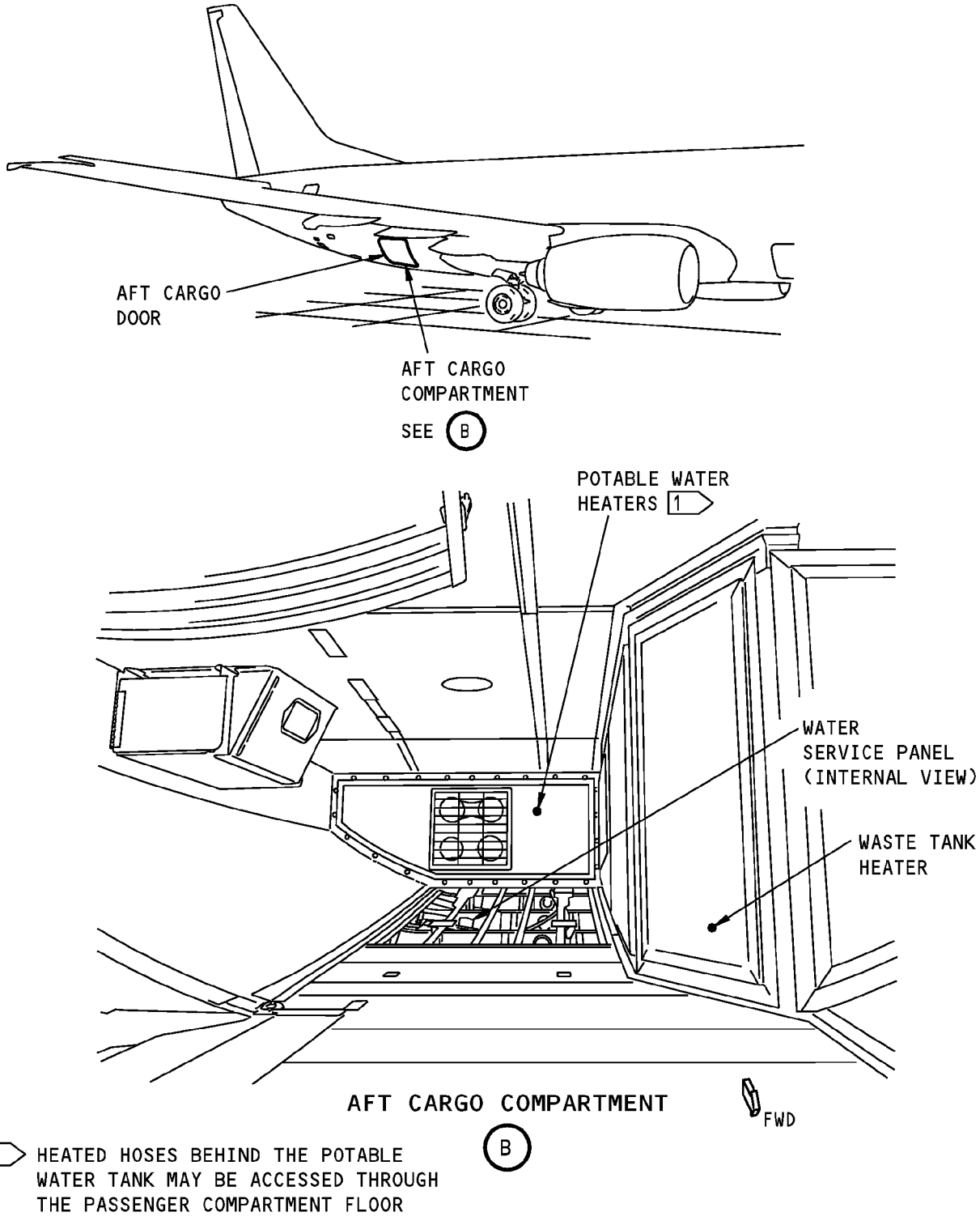




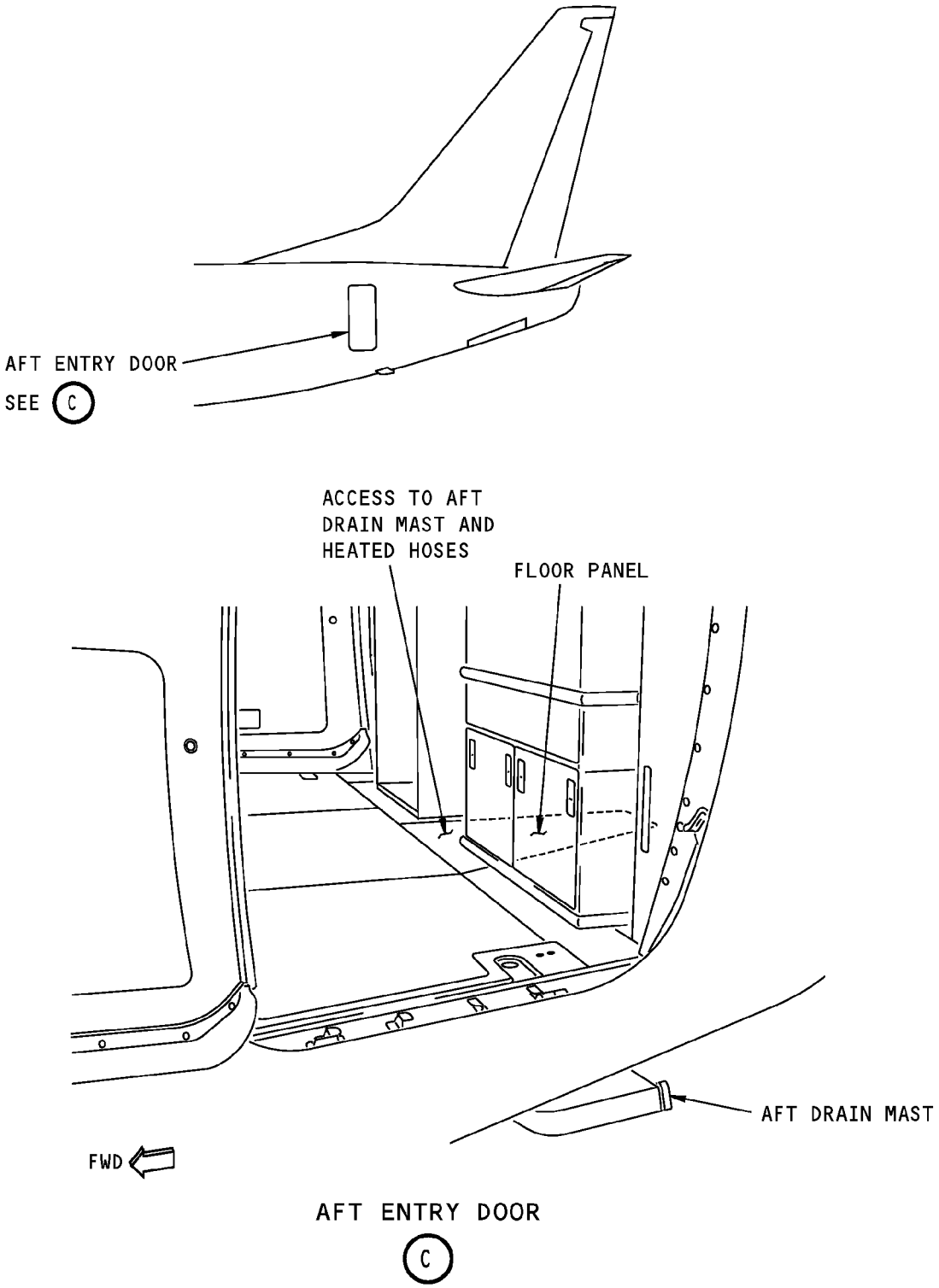
WASTE DRAIN LINE HEATER

A

Drain and Water Supply Line Heater Access
Figure 501 (Sheet 1 of 3)/30-71-00-990-801



Drain and Water Supply Line Heater Access
Figure 501 (Sheet 2 of 3)/30-71-00-990-801



Drain and Water Supply Line Heater Access
Figure 501 (Sheet 3 of 3)/30-71-00-990-801

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. References

Reference	Title
25-52-10-000-801	Cargo Floor Panel Removal (P/B 401)

B. Location Zones

Zone	Area
142	Aft Cargo Compartment - Right
822	Aft Cargo Door

C. Access Panels

Number	Name/Location
145AL	Waste Service Door
822	Aft Cargo Door

D. 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

Power Distribution Panel Number 1, P91

Row	Col	Number	Name
HAP 001-013, 015-026, 028-036			
A	18	C00873	POT WATER COMPRESSOR
HAP 037-054, 101-999			
D	11	C00873	POT WATER COMPRESSOR

HAP ALL

SUBTASK 30-71-01-010-001

(2) Open this access panel:

Number	Name/Location
145AL	Waste Service Door

SUBTASK 30-71-01-040-001

(3) 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

(4) Open this access panel:

Number	Name/Location
822	Aft Cargo Door

SUBTASK 30-71-01-010-003

(5) To remove the floor panel above the water service panel, do this task: Cargo Floor Panel Removal, TASK 25-52-10-000-801.

E. Potable Water Fill Fitting Heater Removal

SUBTASK 30-71-01-020-001

(1) Disconnect the heated hose from the fill fitting heater [1].

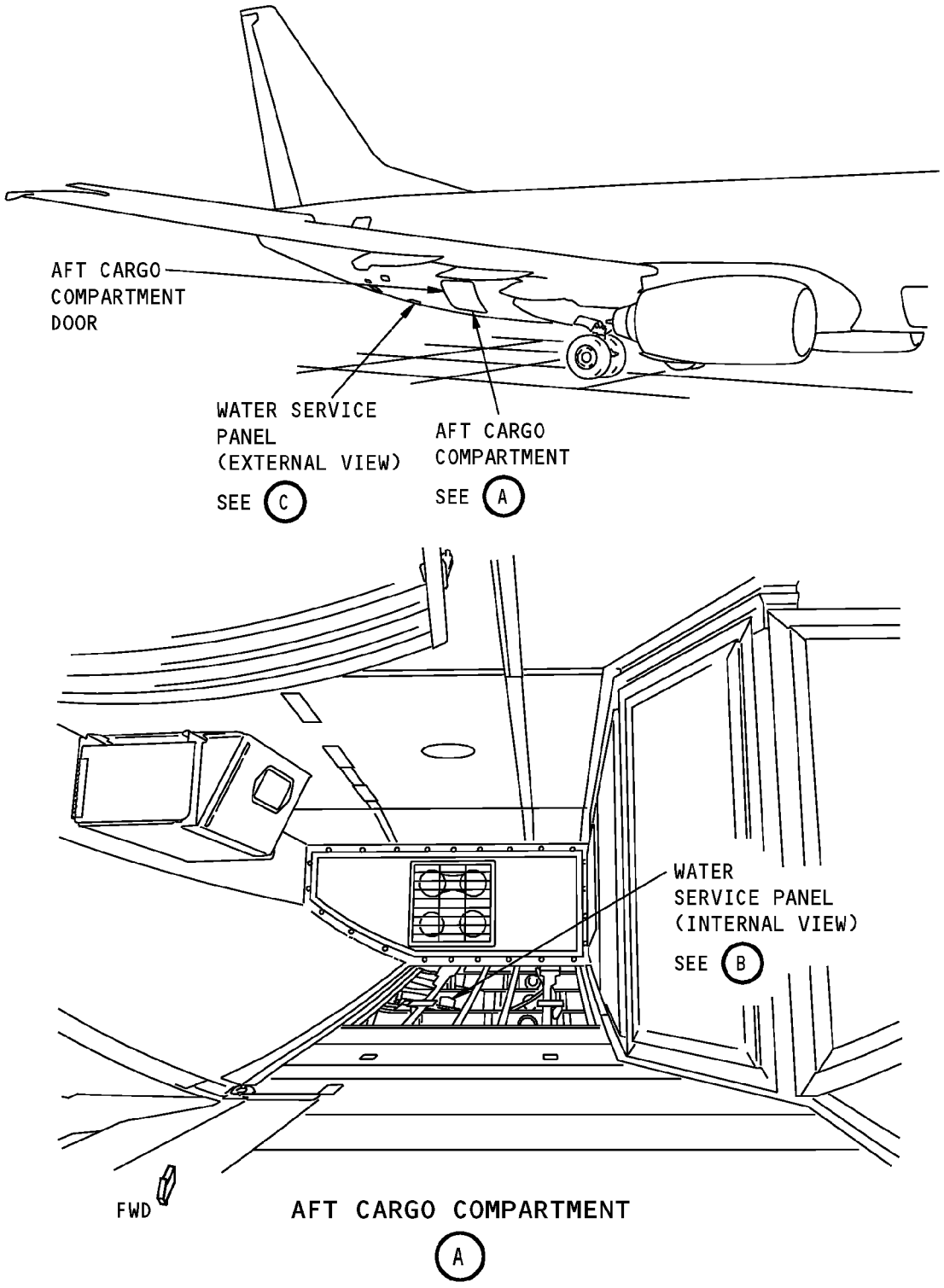
SUBTASK 30-71-01-020-002

(2) Remove the bolts [4] that attach the fill fitting and fill fitting heater [1] to the structure.

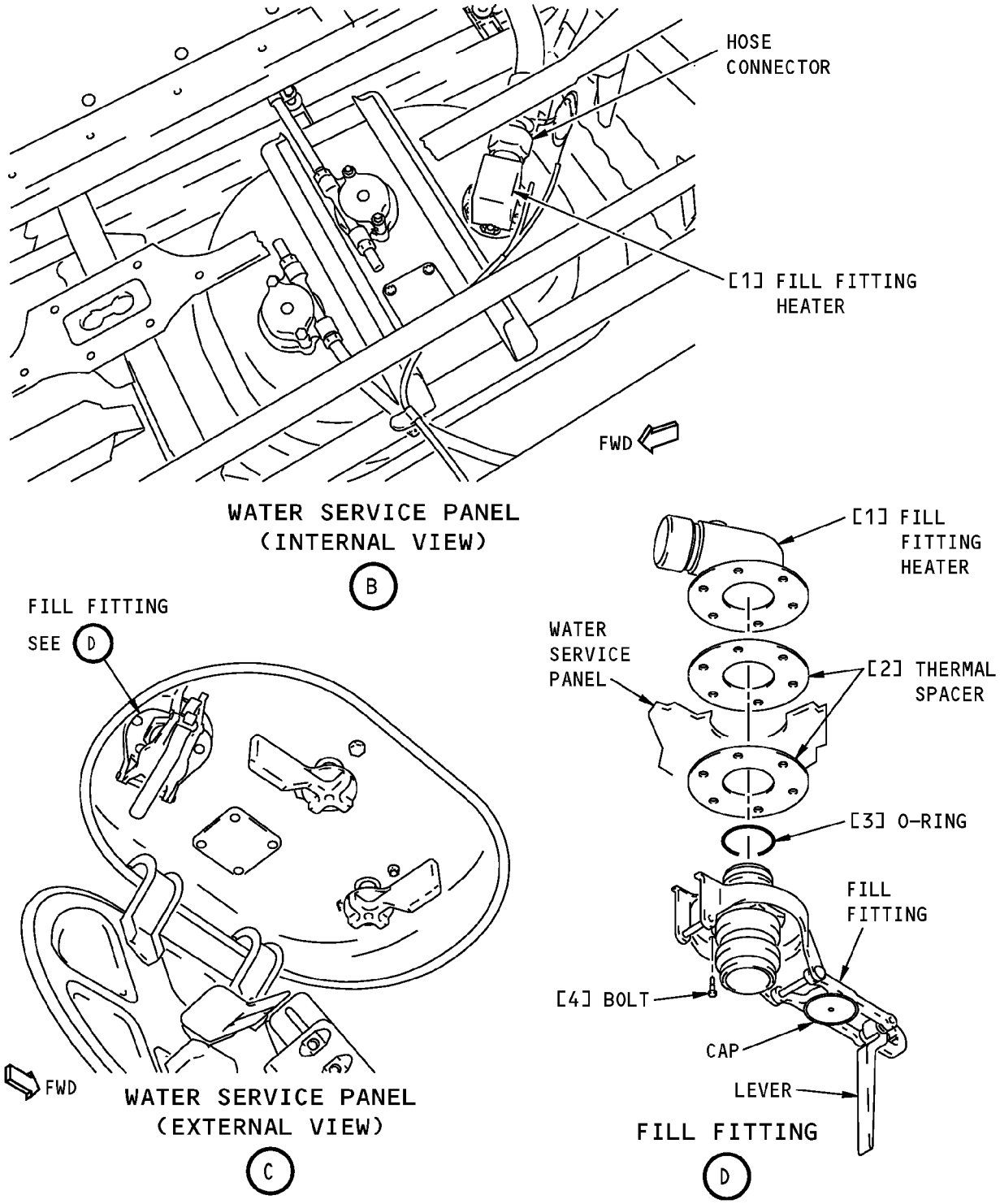
SUBTASK 30-71-01-020-003

(3) Remove the thermal spacer [2], O-ring [3], and fill fitting heater [1].

——————— END OF TASK ———————



Potable Water Fill Fitting Heater Installation
Figure 401 (Sheet 1 of 2)/30-71-01-990-801



Potable Water Fill Fitting Heater Installation
Figure 401 (Sheet 2 of 2)/30-71-01-990-801

TASK 30-71-01-400-801

3. Potable Water Fill Fitting Heater Installation

(Figure 401)

A. References

Reference	Title
12-14-01-600-802	Potable Water Tank - Fill (P/B 301)
24-22-00-860-811	Supply Electrical Power (P/B 201)
24-22-00-860-812	Remove Electrical Power (P/B 201)
25-52-10-400-801	Cargo Floor Panel Installation (P/B 401)
38-10-00-600-801	Potable Water System - Disinfectant (P/B 201)

B. Consumable Materials

Reference	Description	Specification
A00247	Sealant - Pressure And Environmental - Chromate Type	BMS 5-95

C. Location Zones

Zone	Area
142	Aft Cargo Compartment - Right
822	Aft Cargo Door

D. Access Panels

Number	Name/Location
145AL	Waste Service Door
822	Aft Cargo Door

E. 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 spacer [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 30-71-01-420-005

(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].

SUBTASK 30-71-01-670-001

(5) Disinfect the potable water system. To do this, do this task: Potable Water System - Disinfectant, TASK 38-10-00-600-801.

F. Potable Water Fill Fitting Heater Installation Test

SUBTASK 30-71-01-860-002

(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

Power Distribution Panel Number 1, P91

Row	Col	Number	Name
HAP 001-013, 015-026, 028-036			
A	18	C00873	POT WATER COMPRESSOR
HAP 037-054, 101-999			
D	11	C00873	POT WATER COMPRESSOR
HAP ALL			

SUBTASK 30-71-01-860-003

(2) do this task: Supply Electrical Power, TASK 24-22-00-860-811

SUBTASK 30-71-01-720-001

(3) Make sure the fill fitting heater [1] gets warm.

SUBTASK 30-71-01-710-001

(4) Fill the potable water tank. To do this, do this task: Potable Water Tank - Fill, TASK 12-14-01-600-802.

(a) Make sure there is no leakage at the water fill fitting.

G. Put Airplane Back to Its Usual Condition

SUBTASK 30-71-01-410-001

WARNING: SEAL THE CARGO COMPARTMENT WITH THE LINING. OBEY THE INSTRUCTIONS IN THE SPECIFIED PROCEDURE WHEN YOU INSTALL THE LINING. IF YOU INSTALL THE LINING INCORRECTLY, THE SMOKE CAN GET INTO THE PASSENGER COMPARTMENT DURING A FIRE.

(1) Do this task: Cargo Floor Panel Installation, TASK 25-52-10-400-801.

SUBTASK 30-71-01-410-002

(2) Close this access panel:

Number	Name/Location
822	Aft Cargo Door

SUBTASK 30-71-01-410-003

(3) Close this access panel:

Number	Name/Location
145AL	Waste Service Door

SUBTASK 30-71-01-860-004

(4) do this task: Remove Electrical Power, TASK 24-22-00-860-812

——————— END OF TASK ———————

GRAY WATER DRAIN LINE HEATER - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) Gray Water Drain Line Heater Removal

(2) Gray Water Drain Line Heater Installation

TASK 30-71-02-000-801

2. Gray Water Drain Line Heater Removal

(Figure 401)

A. General

(1) 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
25-52-17-000-801	Forward Cargo Compartment Aft Bulkhead Liner Removal (P/B 401)
WDM 30-71-12	Wiring Diagram Manual

C. Location Zones

Zone	Area
122	Forward Cargo Compartment - Right

D. Access Panels

Number	Name/Location
192CR	Air Conditioning Access Door
821	Forward Cargo Door

E. Prepare for the Removal

SUBTASK 30-71-02-860-004

(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 30-71-02-010-003

(2) Open this access panel:

Number	Name/Location
821	Forward Cargo Door

SUBTASK 30-71-02-010-004

(3) Remove the aft bulkhead liner from the forward cargo compartment. To remove the liner, do this task: Forward Cargo Compartment Aft Bulkhead Liner Removal, TASK 25-52-17-000-801.

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 30-71-12).

SUBTASK 30-71-02-020-002

(2) Remove the clamp [4] from the gray water drain line [1].

SUBTASK 30-71-02-020-007

(3) Remove the bolts [5] and washers [6] from the drain line fitting.

SUBTASK 30-71-02-020-008

(4) Remove the drain line fitting.

SUBTASK 30-71-02-020-003

(5) Open this access panel:

Number	Name/Location
192CR	Air Conditioning Access Door

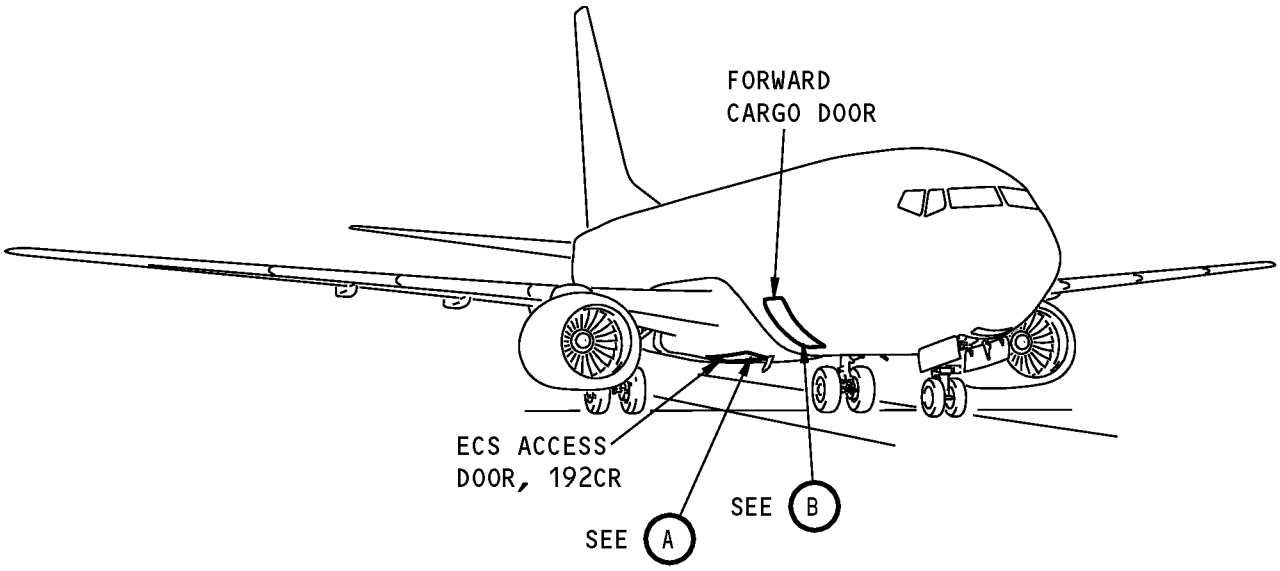
SUBTASK 30-71-02-020-004

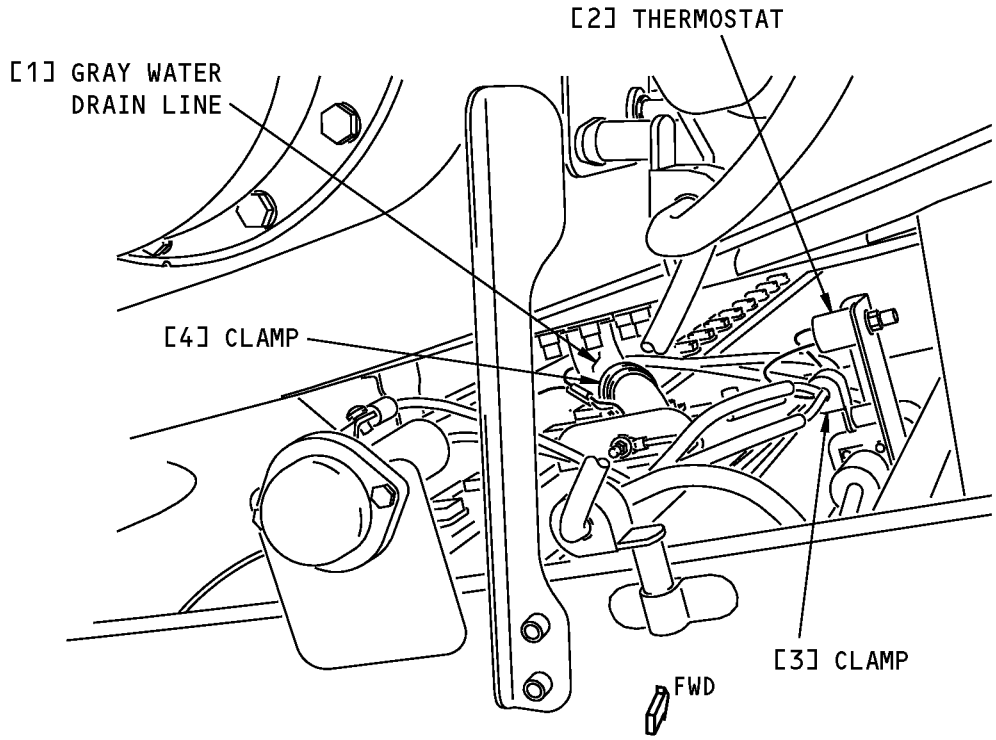
(6) Remove the clamp [4] from the gray water drain line [1].

SUBTASK 30-71-02-020-006

(7) Remove the gray water drain line [1] from the airplane.

——————— END OF TASK ———————

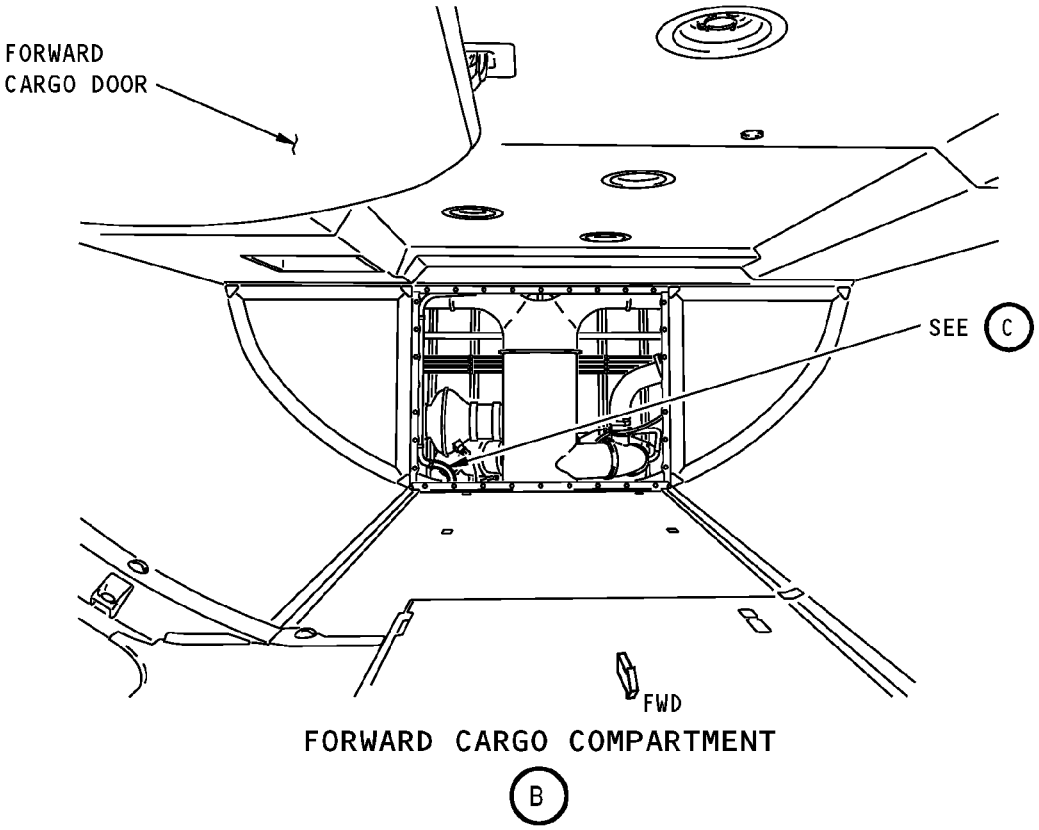


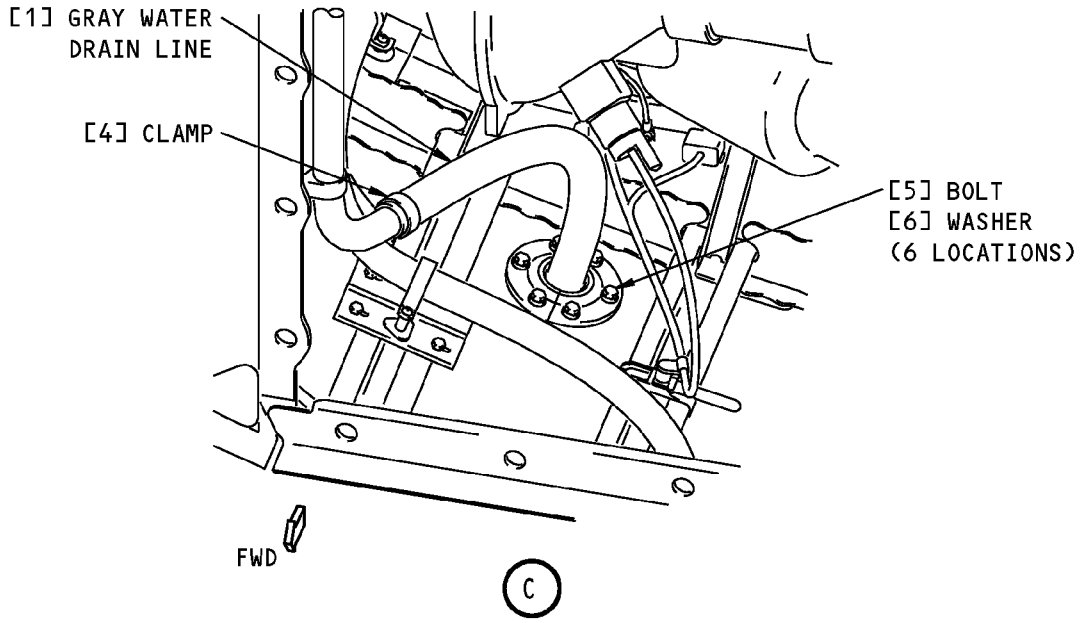


GRAY WATER DRAIN LINE

A

Gray Water Drain Line Installation
Figure 401 (Sheet 1 of 2)/30-71-02-990-801





Gray Water Drain Line Installation
Figure 401 (Sheet 2 of 2)/30-71-02-990-801

TASK 30-71-02-400-801

3. Gray Water Drain Line Heater Installation

(Figure 401)

A. References

Reference	Title
24-22-00-860-811	Supply Electrical Power (P/B 201)
24-22-00-860-812	Remove Electrical Power (P/B 201)
25-52-17-400-801	Forward Cargo Compartment Aft Bulkhead Liner Installation (P/B 401)

B. 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	

C. Location Zones

Zone	Area
122	Forward Cargo Compartment - Right

D. Access Panels

Number	Name/Location
192CR	Air Conditioning Access Door
821	Forward Cargo Door

E. 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 clamps [4] on the gray water drain line [1].

SUBTASK 30-71-02-020-005

(3) Re-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].

F. 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 30-71-02-860-002

(2) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

SUBTASK 30-71-02-860-003

(3) 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

Row	Col	Number	Name
E	4	C00700	HEATERS DRAIN MAST AIR

SUBTASK 30-71-02-720-002

(4) If the temperature in the area is lower than 45 degrees F (7 degrees C):

(a) Make sure the temperature of the gray water drain line [1] is 5 degrees F (3 degrees C) higher than the first temperature you measured.

SUBTASK 30-71-02-720-003

(5) If the temperature in the area is higher than 45 degrees F (7 degrees 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 heater [1].

(b) Make sure the gray water drain line [1] gets warm.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 30-71-02-410-001

WARNING: SEAL THE CARGO COMPARTMENT WITH THE LINING. OBEY THE INSTRUCTIONS IN THE SPECIFIED PROCEDURE WHEN YOU INSTALL THE LINING. IF YOU INSTALL THE LINING INCORRECTLY, SMOKE CAN GET INTO THE PASSENGER COMPARTMENT DURING A FIRE.

(1) Re-install the bulkhead liner. To install the liner, do this task: Forward Cargo Compartment Aft Bulkhead Liner Installation, TASK 25-52-17-400-801.

SUBTASK 30-71-02-410-002

(2) Close this access panel:

Number	Name/Location
821	Forward Cargo Door

SUBTASK 30-71-02-410-003

(3) Close this access panel:

Number	Name/Location
192CR	Air Conditioning Access Door

SUBTASK 30-71-02-860-005

(4) Do this task: Remove Electrical Power, TASK 24-22-00-860-812.

——————— END OF TASK ———————

WASTE DRAIN LINE HEATER - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) Waste Drain Line Heater Removal

(2) Waste Drain Line Heater Installation

TASK 30-71-03-000-801

2. Waste Drain Line Heater Removal

(Figure 401)

A. General

(1) The heater blanket covers the ball valve of the waste tank.

B. References

Reference	Title
25-52-20-000-801	Waste Tank Enclosure Panel Removal (P/B 401)
WDM 30-71-12	Wiring Diagram Manual

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 30-71-03-860-001

(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 30-71-03-010-001

(2) Open this access panel:

Number	Name/Location
822	Aft Cargo Door

SUBTASK 30-71-03-010-002

(3) Do this task: Waste Tank Enclosure Panel Removal, TASK 25-52-20-000-801.

F. Waste Drain Line Heater Removal

SUBTASK 30-71-03-020-001

(1) Remove the clamp [2] from the heater blanket [1] wires.

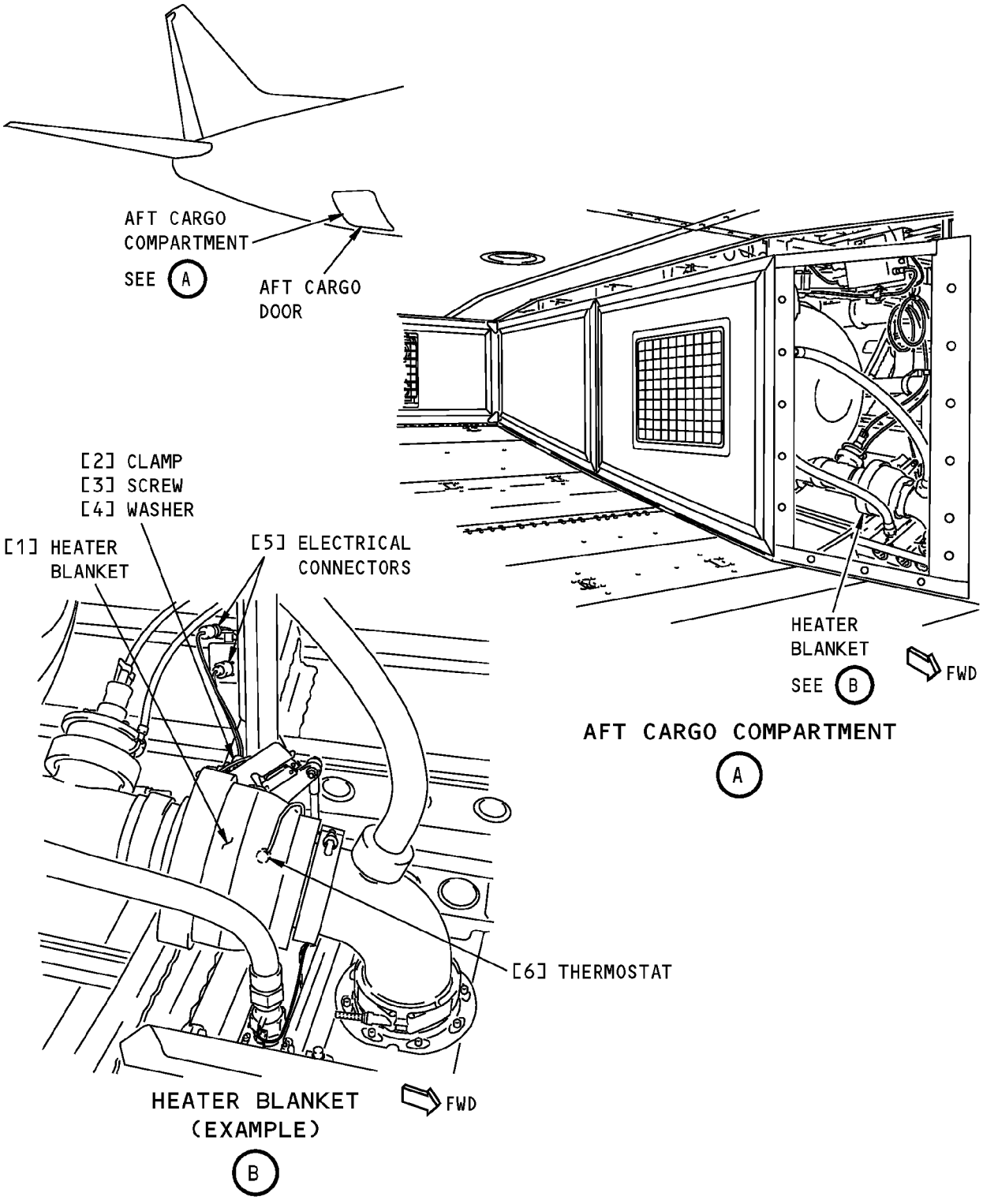
SUBTASK 30-71-03-020-002

(2) Disconnect the electrical connectors [5] (WDM 30-71-12).

SUBTASK 30-71-03-020-003

(3) Pull the velcro hook and pile apart to remove the heater blanket [1].

——————— END OF TASK ———————



Waste Drain Line Heater Installation
Figure 401/30-71-03-990-801

TASK 30-71-03-400-801

3. Waste Drain Line Heater Installation

(Figure 401)

A. References

Reference	Title
24-22-00-860-811	Supply Electrical Power (P/B 201)
24-22-00-860-812	Remove Electrical Power (P/B 201)

B. 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	
G02360	Tape - Hook/Loop Fastener (Polypropylene Hook & Nylon Loop)	BMS 8-285, Type IV
G50333	Tape - Hook/Loop Fastener, Flame Propagation Resistant	BMS8-372

C. Location Zones

Zone	Area
141	Aft Cargo Compartment - Left

D. Access Panels

Number	Name/Location
822	Aft Cargo Door

E. Waste Drain Line Heater Installation

SUBTASK 30-71-03-420-001

(1) Put the heater blanket [1] around the drain line ball valve.

HAP 001-013, 015-026, 028-030 PRE SEP 2, 2005 FAR STD; AIRPLANES WITHOUT FAR 25.856(a) COMPLIANT THERMAL/ACOUSTIC INSULATION MATERIALS

SUBTASK 30-71-03-420-002

(2) Push the hook/loop fastening tape, G02360, or tape, G50333 and pile together to attach the heater blanket [1].

HAP 031-054, 101-999; HAP 001-013, 015-026, 028-030 POST SEP 2, 2005 FAR STD; AIRPLANES WITH FAR 25.856(a) COMPLIANT THERMAL/ACOUSTIC INSULATION MATERIALS

SUBTASK 30-71-03-420-004

(3) Push the hook/loop fastening tape, G50333 and pile together to attach the heater blanket [1].

HAP ALL

SUBTASK 30-71-03-420-003

(4) Connect the electrical connectors [5].

SUBTASK 30-71-03-020-004

(5) Replace the clamp [2] which secures the electrical wiring.

F. Waste Drain Line Heater Installation Test

SUBTASK 30-71-03-720-001

(1) Measure the temperature of the heater blanket [1].

SUBTASK 30-71-03-860-002

(2) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

SUBTASK 30-71-03-860-003

(3) 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 30-71-03-720-002

(4) If the temperature in the area is lower than 45 degrees F (7 degrees C):

(a) Make sure the temperature of the heater blanket [1] is 5 degrees F (3 degrees C) higher than the first temperature you measured.

SUBTASK 30-71-03-720-003

(5) If the temperature in the area is higher than 45 degrees F (7 degrees C):

(a) Feel the heater blanket [1] to find the thermostat [6].

NOTE: The thermostat is approximately 1 inch in diameter and is below the skin of the heater blanket.

(b) Decrease the temperature of the thermostat to below 45 degrees (7 degrees 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 the heater blanket [1] gets warm.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 30-71-03-410-002

(1) Close this access panel:

Number	Name/Location
822	Aft Cargo Door

SUBTASK 30-71-03-860-004

(2) Do this task: Remove Electrical Power, TASK 24-22-00-860-812.

——————— END OF TASK ———————

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. References

Reference	Title
12-17-01-610-801	Waste Tank Servicing (P/B 301)
25-52-20-000-801	Waste Tank Enclosure Panel Removal (P/B 401)

B. Location Zones

Zone	Area
143	Area Below Aft Cargo Compartment - Left

C. Access Panels

Number	Name/Location
822	Aft Cargo Door

D. 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 panel:

Number	Name/Location
822	Aft Cargo Door

SUBTASK 30-71-04-010-002

(3) Do this task: Waste Tank Enclosure Panel Removal, TASK 25-52-20-000-801.

E. Waste Tank Rinse Fitting Heater Removal

SUBTASK 30-71-04-020-001

(1) 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

SUBTASK 30-71-04-020-002

(2) Remove the splices from the rinse fitting heater [2].

SUBTASK 30-71-04-020-003

(3) Remove the rinse hose [1] from the rinse fitting heater [2].

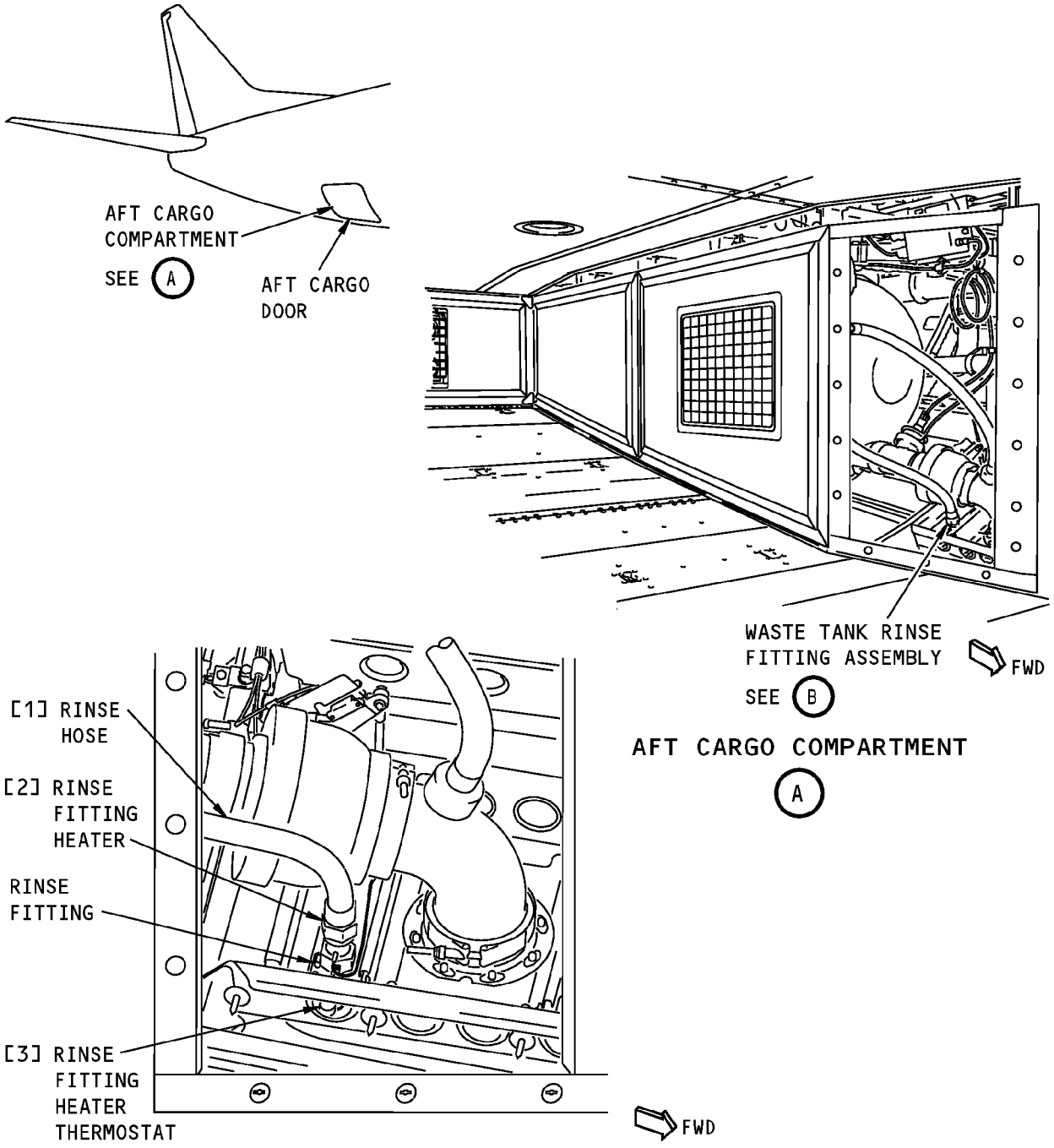
SUBTASK 30-71-04-020-004

(4) Remove the rinse fitting heater thermostat [3] from the airplane structure.

SUBTASK 30-71-04-020-005

(5) Remove the rinse fitting heater [2] from the rinse fitting.

END OF TASK



Waste Tank Rinse Fitting Heater Installation
Figure 401/30-71-04-990-801

TASK 30-71-04-400-801

3. Waste Tank Rinse Fitting Heater Installation

(Figure 401)

A. References

Reference	Title
12-17-01-610-801	Waste Tank Servicing (P/B 301)
25-52-20-400-801	Waste Tank Enclosure Panel Installation (P/B 401)

B. Consumable Materials

Reference	Description	Specification
A00870	Adhesive - Urathane Adhesive for Bonding, 2 Part, Room Temp Cure (for automatic blending)	BMS5-105, Type II
B00083	Solvent - Aliphatic Naphtha (For Acrylic Plastics)	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	

C. Location Zones

Zone	Area
143	Area Below Aft Cargo Compartment - Left

D. Access Panels

Number	Name/Location
146AR	Water Service Door
822	Aft Cargo Door

E. 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) Torque the rinse fitting heater [2] to 300-350 pound-inches (34-40 Nm).

SUBTASK 30-71-04-160-001

(2) Prepare the pan surface for attaching the rinse fitting heater thermostat [3].

(a) Remove any 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 you do not install the rinse fitting heater thermostat on a rivet or other fastener.

(a) If the temperature is less than 65 degrees Fahrenheit (18 degrees Celsius), heat the pan surface.

NOTE: At 65 degrees Fahrenheit (18 degrees celcius), the handling time for the adhesive is 3 hours, full cure time is 24 hours. At 140 degrees Fahrenheit (maximum) (60 degrees Celsius), 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) Torque the rinse hose connect to 300-350 pound-inches (34-40 Nm).

SUBTASK 30-71-04-420-003

(5) Attach splices to the rinse fitting heater [2] wiring.

SUBTASK 30-71-04-860-001

(6) Remove the safety tag and close this circuit breaker:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
D	18	C01463	WASTE/WTR LINE HEATERS

F. 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 the rinse fitting heater [2] gets warm.

SUBTASK 30-71-04-170-001

(3) Fill the waste tank with 30-40 gallons (100-150 liters) of water.

SUBTASK 30-71-04-790-001

(4) Examine the rinse fitting assembly and the connections for leakage.

G. 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

WARNING: SEAL THE CARGO COMPARTMENT WITH THE LINING. OBEY THE INSTRUCTIONS IN THE SPECIFIED PROCEDURE WHEN YOU INSTALL THE LINING. IF YOU INSTALL THE LINING INCORRECTLY, THE SMOKE CAN GET INTO THE PASSENGER COMPARTMENT DURING A FIRE.

(2) Do this task: Waste Tank Enclosure Panel Installation, TASK 25-52-20-400-801.

SUBTASK 30-71-04-410-002

(3) Close this access panel:

Number	Name/Location
822	Aft Cargo Door

SUBTASK 30-71-04-410-003

(4) Close this access panel:

Number	Name/Location
146AR	Water Service Door

END OF TASK

DRAIN MAST HEATERS - REMOVAL/INSTALLATION

1. General

A. This procedure consists of task references to remove and install the drain masts.

(1) The drain mast heaters are built into the drain masts.

(2) 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:

These are the 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:

These are the tasks:

Aft Drain Mast Removal, TASK 38-31-01-000-802,

Aft Drain Mast Installation, TASK 38-31-01-400-802.

——————— END OF TASK ———————

HEATED POTABLE WATER HOSES - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) Heated potable water hose removal

(2) Heated potable water hose installation

TASK 30-71-06-000-801

2. Heated Potable Water Hose Removal

(Figure 401)

A. General

(1) 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)
25-52-06-000-801	Remove the Sidewall Lining for the Cargo Compartment (P/B 401)
25-52-10-000-801	Cargo Floor Panel Removal (P/B 401)
25-52-19-000-801	Aft Cargo Compartment Aft Bulkhead Liner Removal (P/B 401)
38-42-00-800-801	Potable Water System - Pressure Release (P/B 201)
SSM 30-71-11	System Schematics Manual
WDM 30-71-12	Wiring Diagram Manual

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. To remove the pressure, do this task: Potable Water System - Pressure Release, 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
E	5	C00233	HEATERS DRAIN
HAP 031-054, 101-999			
E	18	C01473	HOSE HEATERS

HAP 031-054, 101-999 (Continued)

Row	Col	Number	Name
HAP 001-013, 015-026, 028-030			
F	16	C01473	HOSE HEATERS

HAP ALL

SUBTASK 30-71-06-010-001

(3) Open this access panel:

Number	Name/Location
822	Aft Cargo Door

SUBTASK 30-71-06-010-002

(4) Get access to the applicable heated potable water hose.

(a) Use the schematic (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 cargo compartment floor panel. To do this, do this task: Cargo Floor Panel Removal, TASK 25-52-10-000-801.

2) Remove the aft bulkhead liner. To do this, do this task: Aft Cargo Compartment Aft Bulkhead Liner Removal, TASK 25-52-19-000-801.

3) Remove cargo compartment sidewall lining. To do this, do this task: Remove the Sidewall Lining for the Cargo Compartment, TASK 25-52-06-000-801.

4) Remove the carpet. To do this, do this task: Carpet Removal, TASK 25-27-15-000-801.

5) Remove the floor covering. To do this, do this task: Entry and Service Area Floor Covering Removal, TASK 25-27-21-000-801.

F. Heated Potable Water Hose Removal

SUBTASK 30-71-06-020-001

(1) Disconnect the electrical connectors (WDM 30-71-12) from the heated hose.

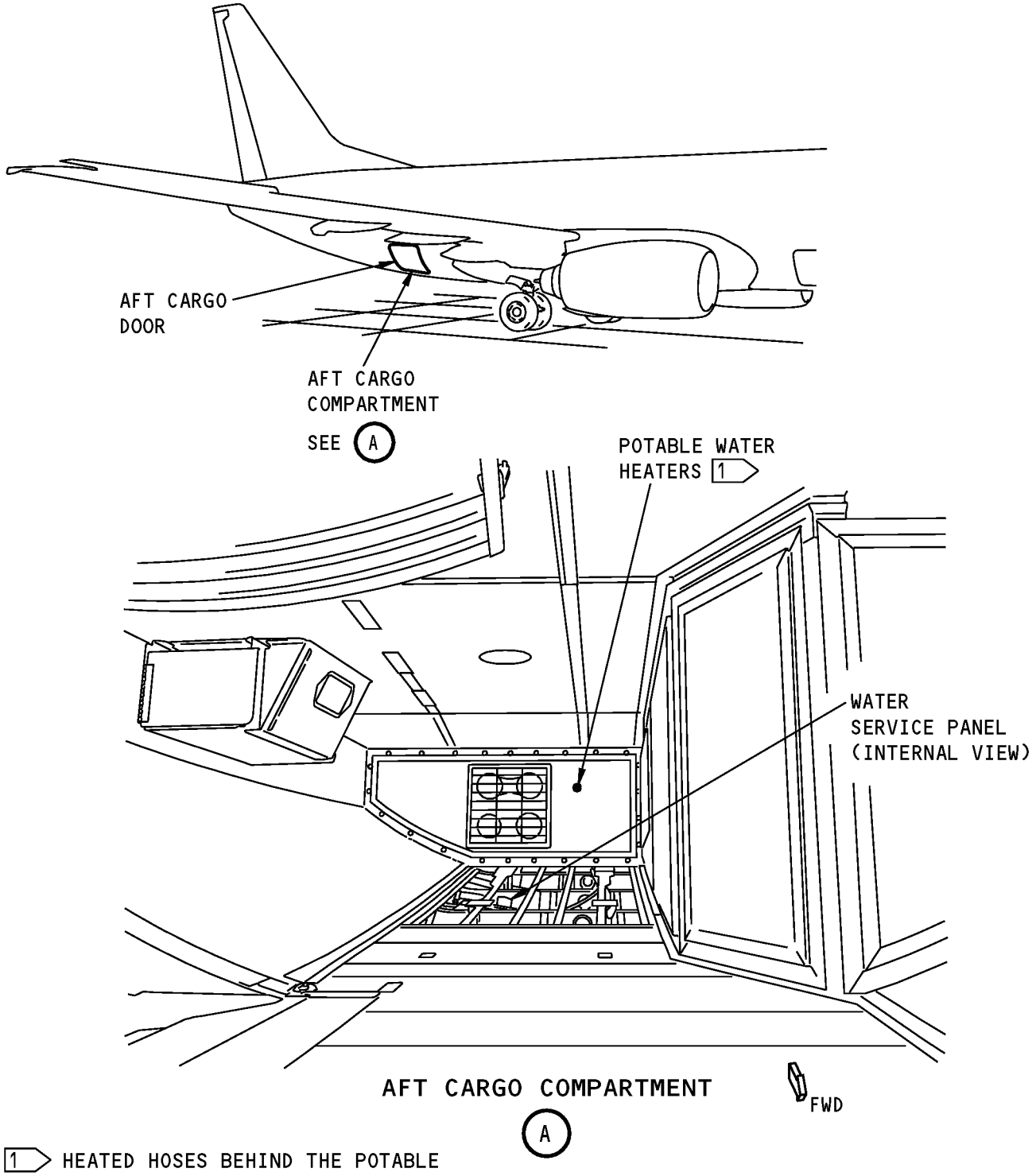
SUBTASK 30-71-06-020-002

(2) Disconnect the fittings on the heated potable water hose.

(a) Use a bucket to catch water which may be in the hose.

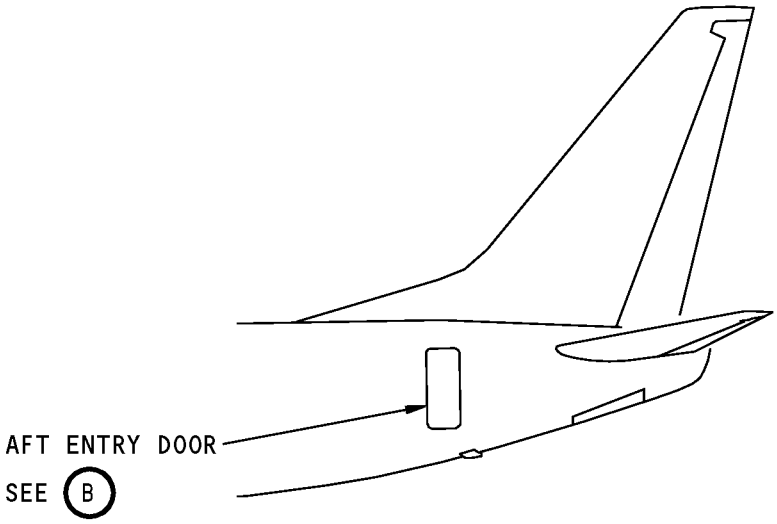
(b) For details to remove flexible hoses refer to: (TASK 20-10-52-000-801).

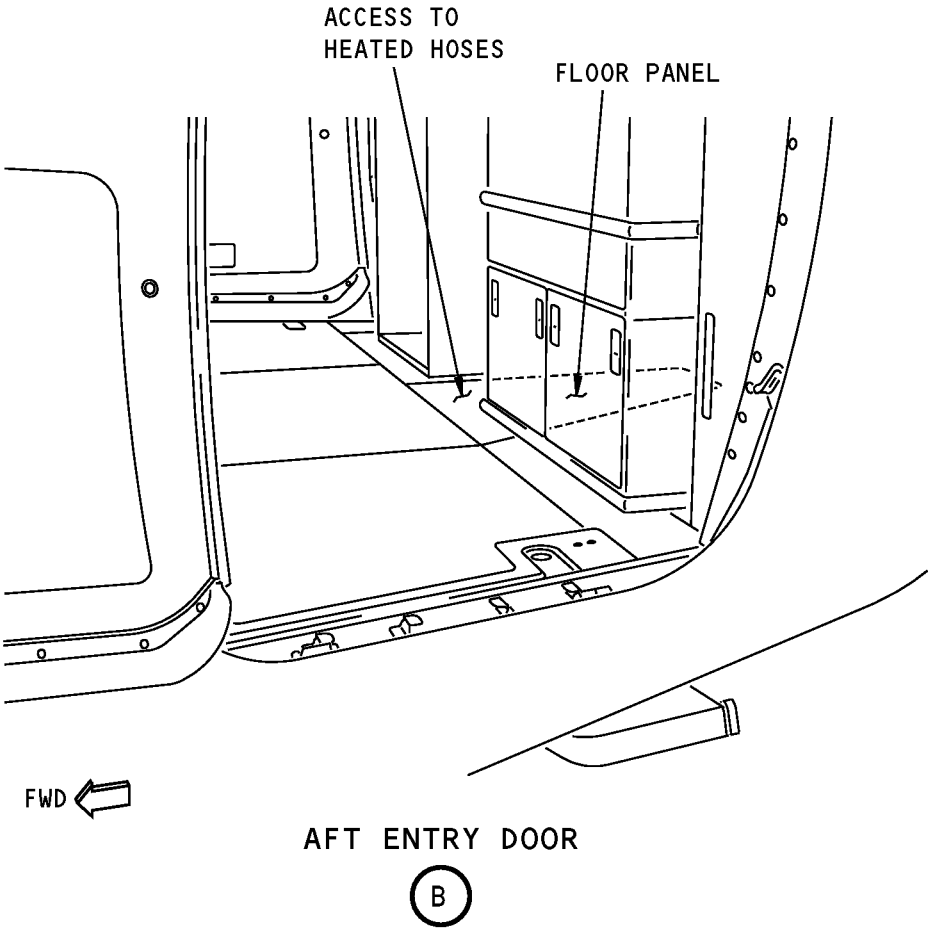
——————— END OF TASK ———————



1 HEATED HOSES BEHIND THE POTABLE WATER TANK MAY BE ACCESSED THROUGH THE PASSENGER COMPARTMENT FLOOR

Heated Potable Water Hoses Installation
Figure 401 (Sheet 1 of 2)/30-71-06-990-801





Heated Potable Water Hoses Installation
Figure 401 (Sheet 2 of 2)/30-71-06-990-801

TASK 30-71-06-400-801

3. Heated Potable Water Hose Installation

(Figure 401)

A. General

(1) The installation each heated potable water hose is similar.

B. References

Reference	Title
20-10-52-400-801	Flexible Hose Installation (P/B 401)
24-22-00-860-811	Supply Electrical Power (P/B 201)
24-22-00-860-812	Remove Electrical Power (P/B 201)
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)
25-52-06-400-801	Install the Sidewall Lining for the Cargo Compartment (P/B 401)
25-52-10-400-801	Cargo Floor Panel Installation (P/B 401)
25-52-19-400-801	Aft Cargo Compartment Aft Bulkhead Liner 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)

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 (Part #: DHS24XC-FM, Supplier: 08086, A/P Effectivity: 737-ALL) (Part #: DHS24XF-FM, Supplier: 08086, A/P Effectivity: 737-ALL) (Opt Part #: IR-16L3 IS, Supplier: 75037, A/P Effectivity: 737-ALL)
COM-2531	Meter - Current, RMS (Part #: 321, Supplier: 89536, A/P Effectivity: 737-ALL) (Part #: 322, Supplier: 89536, A/P Effectivity: 737-ALL) (Part #: LH41A, Supplier: 15566, A/P Effectivity: 737-ALL) (Part #: MODEL 33, Supplier: 89536, A/P Effectivity: 737-ALL) (Part #: MODEL 36, Supplier: 89536, A/P Effectivity: 737-ALL)

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
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. Heated Potable Water Hose Installation

SUBTASK 30-71-06-420-001

(1) Connect the heated potable water hose fittings.

(a) For details to replace flexible hoses refer to: (TASK 20-10-52-400-801).

SUBTASK 30-71-06-420-002

(2) Connect the electrical connectors to the heated water hose.

H. Heated Potable Water Hose Installation Test

SUBTASK 30-71-06-790-001

(1) Do a test for leaks in the potable water hose. To do the test, do this task: Potable Water System - Leak Test, TASK 38-10-00-790-801.

SUBTASK 30-71-06-720-001

(2) Measure the temperature of the hose and surrounding area.

SUBTASK 30-71-06-860-002

(3) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

SUBTASK 30-71-06-860-003

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

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
E	5	C00233	HEATERS DRAIN

HAP 031-054, 101-999

Row	Col	Number	Name
E	18	C01473	HOSE HEATERS

HAP 001-013, 015-026, 028-030

Row	Col	Number	Name
F	16	C01473	HOSE HEATERS

HAP ALL

SUBTASK 30-71-06-720-002

(5) Do this test of the heated hose:

(a) If the temperature in the area is higher than 45 degrees F (7 degrees 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.

(b) Make sure the hose heater is powered by either of these methods:

1) Use a Infrared Thermometer, COM-1572 or equivalent to make sure the hose gets warm.

2) Use a current meter, COM-2531 or equivalent to make sure that the heater is drawing electrical current.

I. Put the Airplane Back to Its Usual Condition

SUBTASK 30-71-06-670-001

(1) Disinfect the potable water system. To do this, do this task: Potable Water System - Disinfectant, TASK 38-10-00-600-801.

SUBTASK 30-71-06-410-001

(2) Replace or close the panels or doors used to access the heated hose.

WARNING: SEAL THE CARGO COMPARTMENT WITH THE LINING. OBEY THE INSTRUCTIONS IN THE SPECIFIED PROCEDURE WHEN YOU INSTALL THE LINING. IF YOU INSTALL THE LINING INCORRECTLY, SMOKE CAN GET INTO THE PASSENGER COMPARTMENT DURING A FIRE.

(a) Re-install the cargo compartment sidewall lining. To do this, do this task: Install the Sidewall Lining for the Cargo Compartment, TASK 25-52-06-400-801.

(b) Re-install the cargo compartment floor panel. To do this, do this task: Cargo Floor Panel Installation, TASK 25-52-10-400-801.

(c) Re-install the aft bulkhead liner. To do this, do this task: Aft Cargo Compartment Aft Bulkhead Liner Installation, TASK 25-52-19-400-801.

(d) Re-install the floor covering. To do this, do this task: Entry and Service Area Floor Covering Installation, TASK 25-27-21-400-801.

(e) Re-install the carpet. To do this, do this task: Carpet Installation, TASK 25-27-15-400-801.

(f) Close this access panel:

Number	Name/Location
822	Aft Cargo Door

SUBTASK 30-71-06-860-004

(3) Do this task: Remove Electrical Power, TASK 24-22-00-860-812.

END OF TASK