CHAPTER

30

ICE AND RAIN PROTECTION



CHAPTER 30 ICE AND RAIN PROTECTION

Subject/Page	Date	COC	Subject/Page	Date	coc	Subject/Pag	e Date	COC
30-EFFECTIV	E PAGES		30-00-00 Conf	ig 1 (cont)		30-11-03	(cont)	
1 thru 4	SEP 05/2018		922	Sep 05/2017		403	Sep 05/2017	
30-CONTENT	S		923	May 05/2016		404	Sep 05/2017	
1	Jan 05/2016		924	Jul 25/2018		405	Sep 05/2017	
2	Jan 05/2016		925	Jul 25/2018		406	Sep 05/2017	
3	Jan 05/2016		926	May 05/2016		407	Sep 05/2017	
4	Jan 05/2016		927	Jan 05/2015		408	Jan 05/2016	
5	Jan 05/2016		928	Jan 05/2015		409	Jan 05/2016	
6	May 05/2017		929	Sep 05/2017		410	BLANK	
7	Sep 05/2017		930	Sep 05/2017		30-11-03		
8	Sep 05/2017		931	Sep 05/2017		701	Jan 05/2015	
9	May 05/2017		932	BLANK		702	Sep 05/2017	
10	May 05/2017		30-11-00			30-11-04	·	
11	May 05/2016		201	Jan 05/2016		401	Sep 05/2017	
12	BLANK		202	Sep 05/2017		402	Sep 05/2017	
30-00-00 Con	fig 1		203	Jan 05/2016		403	Sep 05/2017	
901	Jan 05/2016		204	BLANK		404	Sep 05/2017	
902	Sep 05/2017		30-11-00			30-11-05	00p 00/2011	
903	Jan 05/2016		501	Jan 05/2015		401	Sep 05/2017	
904	Sep 05/2017		502	Jan 05/2015		402	Jan 05/2016	
905	Jan 05/2015		503	Sep 05/2017		402	Sep 05/2017	
906	Sep 05/2017		504	Jan 05/2015		403	Jan 05/2016	
907	Jan 05/2016		505	Jan 05/2015		404	Sep 05/2017	
908	Jan 05/2016		506	BLANK			-	
909	May 05/2016		30-11-02			406	Sep 05/2017	
910	Jan 05/2015		201	Jan 05/2017		407	Sep 05/2017	
911	Sep 05/2017		202	May 05/2018		408	BLANK	
912	Jan 05/2016		203	May 05/2017		30-11-06	. 05/0045	
913	Sep 05/2017		204	BLANK		401	Jan 05/2015	
914	Sep 05/2017		30-11-02			402	Jan 05/2015	
915	Sep 05/2017		401	Jan 05/2015		30-21-00		
916	May 05/2016		402	Sep 05/2017		201	Sep 05/2017	
917	Jan 05/2015		403	Sep 05/2017		202	Sep 05/2017	
918	Sep 05/2017		404	Sep 05/2017		203	Jan 05/2016	
919	Sep 05/2017		30-11-03			204	Jan 05/2016	
920	Sep 05/2017		401	Sep 05/2017		205	Jan 05/2016	
921	May 05/2017		402	May 05/2018		206	BLANK	

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Subject/Page	Date	COC	Subject/Page	Date	COC	Subject/Pag	je Date	COC
30-21-00 Con	ifig 1		30-21-03 Confi	g 1 (cont)		30-31-00	(cont)	
501	Jan 05/2015		211	Sep 05/2017		504	Sep 05/2017	
502	Jan 05/2015		212	Sep 05/2017		505	Sep 05/2017	
503	Jan 05/2015		30-21-04 Conf	fig 1		506	Sep 05/2017	
504	May 05/2016		401	Sep 05/2017		507	Sep 05/2017	
505	Jul 25/2018		402	Sep 05/2017		508	Sep 05/2017	
506	Sep 05/2017		403	Sep 05/2017		509	Sep 05/2017	
30-21-01			404	Jan 05/2016		510	Sep 05/2017	
201	Sep 05/2017		405	Sep 05/2017		30-41-00		
202	May 05/2018		406	BLANK		501	May 05/2015	
203	May 05/2018		30-21-05 Conf	fig 1		502	Jan 05/2015	
204	BLANK		401	Sep 05/2017		30-41-01		
30-21-01			402	Sep 05/2017		401	May 05/2015	
401	May 05/2015		403	Sep 05/2017		402	Sep 05/2017	
402	Sep 05/2017		404	Sep 05/2017		403	Sep 05/2017	
403	Sep 05/2017		405	Jul 25/2018		404	May 05/2016	
404	Sep 05/2017		406	BLANK		405	Sep 05/2017	
405	Sep 05/2017		30-21-06 Conf	fig 1		406	BLANK	
406	BLANK		401	Sep 05/2017		30-41-02		
30-21-02 Con	ıfig 1		402	Sep 05/2017		401	Jan 05/2015	
401	Sep 05/2017		403	Sep 05/2017		402	Jan 05/2015	
402	Sep 05/2017		404	Sep 05/2017		403	Sep 05/2017	
403	Sep 05/2017		405	Sep 05/2017		404	May 05/2016	
404	Sep 05/2017		406	Sep 05/2017		405	Jan 05/2015	
405	Sep 05/2017		407	Sep 05/2017		406	BLANK	
406	BLANK		408	Sep 05/2017		30-41-12		
30-21-03 Con	ıfig 1		409	Sep 05/2017		201	Sep 05/2017	
201	Sep 05/2017		410	BLANK		202	Sep 05/2017	
202	Sep 05/2017		30-31-00			203	Jan 05/2016	
203	May 05/2017		201	Sep 05/2017		204	Jan 05/2016	
204	Sep 05/2017		202	Sep 05/2017		205	Sep 05/2017	
205	Sep 05/2017		203	Sep 05/2017		206	BLANK	
206	Sep 05/2017		204	Jan 05/2016		30-41-12		
207	Sep 05/2017		30-31-00			401	Jan 05/2015	
208	Sep 05/2017		501	Jan 05/2015		402	Sep 05/2017	
209	Sep 05/2017		502	Sep 05/2017		403	May 05/2017	
210	Sep 05/2017		503	Sep 05/2017		404	BLANK	

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30-41-12			30-42-02	(cont)		30-43-00	(cont)	
501	May 05/2017		211	Sep 05/2017		218	Jan 05/2015	
502	BLANK		212	Sep 05/2017		219	Sep 05/2017	
30-42-00			213	Sep 05/2017		220	Sep 05/2017	
201	Jan 05/2018		214	Sep 05/2017		221	Sep 05/2017	
202	Jan 05/2018		215	Sep 05/2017		222	BLANK	
203	Sep 05/2017		216	Sep 05/2017		30-71-00		
204	May 05/2016		30-42-03			201	Sep 05/2016	
30-42-00			401	Sep 05/2017		202	Sep 05/2017	
501	Sep 05/2017		402	Sep 05/2017		203	Sep 05/2017	
502	Sep 05/2017		403	Sep 05/2017		204	Sep 05/2017	
503	Sep 05/2017		404	Sep 05/2017		205	Sep 05/2017	
504	May 05/2016		405	Sep 05/2017		206	Sep 05/2017	
30-42-01			406	Sep 05/2017		207	Sep 05/2017	
401	Sep 05/2017		30-42-05			208	Sep 05/2017	
402	Sep 05/2017		201	Sep 05/2017		209	Sep 05/2017	
403	Jul 25/2018		202	Sep 05/2017		210	Sep 05/2017	
404	Jul 25/2018		203	Sep 05/2017		211	Jan 05/2016	
405	Jul 25/2018		204	BLANK		212	Jan 05/2016	
406	Sep 05/2017		30-43-00			30-71-00		
407	Sep 05/2017		201	May 05/2016		501	Sep 05/2016	
408	Sep 05/2017		202	Sep 05/2017		502	Sep 05/2017	
409	Sep 05/2017		203	May 05/2016		503	Sep 05/2017	
410	Sep 05/2017		204	May 05/2016		504	Sep 05/2017	
411	Sep 05/2017		205	Jan 05/2015		505	Sep 05/2017	
412	BLANK		206	Sep 05/2017		506	Sep 05/2017	
30-42-02			207	Sep 05/2017		507	Jul 25/2018	
201	Sep 05/2017		208	Sep 05/2017		508	Jul 25/2018	
202	Sep 05/2017		209	Sep 05/2017		509	Jul 25/2018	
203	Sep 05/2017		210	May 05/2016		510	Jul 25/2018	
204	Sep 05/2017		211	Jan 05/2015		511	Jul 25/2018	
205	Sep 05/2017		212	May 05/2016		512	Jul 25/2018	
206	Sep 05/2017		213	May 05/2016		30-71-02		
207	Sep 05/2017		214	Sep 05/2017		401	Jan 05/2015	
208	Sep 05/2017		215	Sep 05/2017		402	Jan 05/2015	
209	Sep 05/2017		216	Sep 05/2017		403	Jan 05/2015	
210	Sep 05/2017		217	Sep 05/2017		404	Sep 05/2017	

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30-71-02	(cont)		30-71-08					
405	Sep 05/2017		401	Jan 05/2015				
406	BLANK		402	Jan 05/2015				
30-71-03			403	Sep 05/2017				
401	May 05/2017		404	Jan 05/2015				
402	May 05/2017		405	Jan 05/2015				
403	May 05/2017		406	Sep 05/2017				
404	Jan 05/2015		407	Sep 05/2017				
405	Sep 05/2017		408	BLANK				
406	BLANK		30-71-09					
30-71-04			401	Jan 05/2015				
401	Jan 05/2015		402	Jan 05/2015				
402	Jan 05/2015		403	Sep 05/2017				
403	Jan 05/2015		404	BLANK				
404	Sep 05/2017		30-81-00					
30-71-05			201	Jan 05/2016				
201	May 05/2017		202	Sep 05/2017				
202	May 05/2017		203	Jan 05/2016				
30-71-05			204	BLANK				
401	Jan 05/2015		30-81-00					
402	May 05/2017		501	Jan 05/2015				
403	Sep 05/2017		502	BLANK				
404	Sep 05/2017		30-81-01	DE/ II VIC				
405	Sep 05/2017		401	Jan 05/2015				
406	Sep 05/2017		R 402	Sep 05/2018				
407	Sep 05/2017		O 403	Sep 05/2018				
408	Sep 05/2017		404	Sep 05/2017				
30-71-06			404	Sep 05/2017				
401	Jan 05/2016							
402	Jan 05/2016							
403	Jan 05/2015							
404	Sep 05/2017							
30-71-07								
401	Jan 05/2015							
402	Jan 05/2015							
403	Sep 05/2017							
404	BLANK							

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DDG 30-11-1 Preparation - Wing Anti-Ice Systems Inoperative TASK 30-00-00-040-806-001		1	901	ARO ALL
DDG 30-11-1 Restoration - Wing Anti-Ice Systems Inoperative TASK 30-00-00-440-806-001		1	903	ARO ALL
DDG 30-11-2 Preparation - Wing Anti-Ice Control (Card and Switch) Inoperative TASK 30-00-00-040-808-001		1	907	ARO ALL
DDG 30-11-2 Restoration - Wing Anti-Ice Control (Card and Switch) Inoperative TASK 30-00-00-440-807-001		1	908	ARO ALL
DDG 30-21-1 Preparation - Engine Anti-Ice Systems Inoperative TASK 30-00-00-040-809-001		1	912	ARO ALL
DDG 30-21-1 Restoration - Engine Anti-Ice Systems Inoperative TASK 30-00-00-440-808-001		1	921	ARO ALL
DDG 30-31-1 Preparation - Pitot Probe Heater Systems Inoperative TASK 30-00-00-040-824-001		1	923	ARO ALL
DDG 30-31-1 Restoration - Pitot Probe Heater Systems Inoperative TASK 30-00-00-440-818-001		1	925	ARO ALL
DDG 30-71-1 Preparation - Drain Mast Heaters Inoperative TASK 30-00-00-040-810-001		1	927	ARO ALL
DDG 30-71-1 Restoration - Drain Mast Heaters Inoperative TASK 30-00-00-440-809-001		1	927	ARO ALL
WING ANTI-ICE - MAINTENANCE PRACTICES	30-11-00		201	ARO ALL
Wing Anti-Ice - Deactivation TASK 30-11-00-040-801			201	ARO ALL
Wing Anti-Ice - Activation TASK 30-11-00-440-801			203	ARO ALL



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Wing Anti-Ice (pneumatics not available) - System Test TASK 30-11-00-400-801		501	ARO ALL
Wing Anti-Ice (pneumatics available) - System Test TASK 30-11-00-400-802		502	ARO ALL
Airfoil and Cowl Ice Protection System - WAI - Software Configuration Check TASK 30-11-00-700-801		504	ARO ALL
AIRFOIL AND COWL ICE PROTECTION SYSTEM CONTROL CARD - WAI - MAINTENANCE PRACTICES	30-11-02	201	ARO ALL
Airfoil and Cowl Ice Protection System - WAI - Software Installation TASK 30-11-02-400-802		201	ARO ALL
AIRFOIL AND COWL ICE PROTECTION SYSTEM CONTROL CARD - WING ANTI-ICE - REMOVAL/INSTALLATION	30-11-02	401	ARO ALL
Airfoil and Cowl Ice Protection System Control Card - Wing Anti-Ice - Removal TASK 30-11-02-000-801		401	ARO ALL
Airfoil and Cowl Ice Protection System Control Card - Wing Anti-Ice - Installation TASK 30-11-02-400-801		402	ARO ALL
WING ANTI-ICE VALVE AND FILTER - REMOVAL/INSTALLATION	30-11-03	401	ARO ALL
Wing Anti-Ice Valve Removal TASK 30-11-03-000-801		401	ARO ALL
Wing Anti-Ice Valve Installation TASK 30-11-03-400-801		402	ARO ALL
Wing Anti-Ice Valve Filter Removal TASK 30-11-03-000-802		406	ARO ALL
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Wing Anti-Ice Valve Filter - Cleaning TASK 30-11-03-100-801			701	ARO ALL
WING ANTI-ICE PRESSURE SENSOR - REMOVAL/INSTALLATION	30-11-04		401	ARO ALL
Wing Anti-Ice Pressure Sensor Removal TASK 30-11-04-000-801			401	ARO ALL
Wing Anti-Ice Pressure Sensor Installation TASK 30-11-04-400-801			402	ARO ALL
WING ANTI-ICE T-DUCT - REMOVAL/INSTALLATION	30-11-05		401	ARO ALL
Wing Anti-Ice T-Duct Removal TASK 30-11-05-000-801			401	ARO ALL
Wing Anti-Ice T-Duct Installation TASK 30-11-05-400-801			402	ARO ALL
WING ANTI-ICE SPRAY-DUCT - REMOVAL/INSTALLATION	30-11-06		401	ARO ALL
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Wing Anti-Ice Spray-Duct Installation TASK 30-11-06-400-801			401	ARO ALL
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Engine Anti-Ice - Activation TASK 30-21-00-440-801			205	ARO ALL
ENGINE ANTI-ICE - ADJUSTMENT/TEST	30-21-00	1	501	ARO ALL
Engine Anti-Ice (engine not running) - System Test		1	501	ARO ALL
TASK 30-21-00-730-803-001				
Engine Anti-Ice (engine running) - System Test TASK 30-21-00-730-804-001		1	502	ARO ALL
Airfoil and Cowl Ice Protection System - EAI - Software Configuration Check TASK 30-21-00-730-808		1	504	ARO ALL



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AIRFOIL AND COWL ICE PROTECTION SYSTEM CONTROL CARD - EAI - MAINTENANCE PRACTICES	30-21-01		201	ARO ALL
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Engine Anti-Ice Valve Controller Installation TASK 30-21-03-400-811-001		1	202	ARO ALL
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Engine Anti-Ice Duct Installation TASK 30-21-06-400-804-001		1	403	ARO ALL
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PITOT, ANGLE OF ATTACK, TOTAL AIR TEMPERATURE PROBE HEAT - ADJUSTMENT/TEST	30-31-00		501	ARO ALL
Pitot/Angle of Attack Probe Heat and Current Sensing Relay Operational Test (CMCF Available) TASK 30-31-00-700-802			501	ARO ALL; AIRPLANES WITH ADIRU S/W LOAD 3472-HNC-100-01 OR LATER
Pitot/Angle of Attack Probe Heat and Current Sensing Relay Operational Test - No CMCF Available TASK 30-31-00-700-803			507	ARO ALL; AIRPLANES WITH ADIRU S/W LOAD 3472-HNC-100-01



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Window Heat Control System - Operational Test TASK 30-41-00-710-801		501	ARO ALL
WINDOW HEAT CONTROL UNIT - REMOVAL/INSTALLATION	30-41-01	401	ARO ALL
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Window Heat Control Unit Installation TASK 30-41-01-400-801		402	ARO ALL
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Window Heat/Emer Lights Module Removal TASK 30-41-02-020-801		401	ARO ALL
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Window Heat Backup Module - Operational Test TASK 30-41-12-710-801		501	ARO ALL



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Windshield Wiper System - Activation TASK 30-42-00-440-801		204	ARO ALL
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WINDSHIELD WIPER BLADE - REMOVAL/INSTALLATION	30-42-01	401	ARO ALL
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Windshield Wiper Blade Installation TASK 30-42-01-400-801		402	ARO ALL
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Windshield Wiper Arm Position Check/Adjustment TASK 30-42-02-820-801		210	ARO ALL
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Maintenance TASK 30-43-00-140-801			201	ARO ALL
Coating Efficiency Assessment TASK 30-43-00-210-801			203	ARO ALL
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CHAPTER 30 ICE AND RAIN PROTECTION

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	SECTION		
SUBJECT	<u>SUBJECT</u>	CONF PAGE	<u>EFFECT</u>
GRAY WATER DRAIN LINE HEATER - REMOVAL/INSTALLATION	30-71-02	401	ARO ALL
Gray Water Drain Line Hose Heater Removal TASK 30-71-02-000-801		401	ARO ALL
Gray Water Drain Line Hose Heater Installation TASK 30-71-02-400-801		402	ARO ALL
WASTE DRAIN LINE HEATERS - REMOVAL/INSTALLATION	30-71-03	401	ARO ALL
Waste Drain Line Heater Removal TASK 30-71-03-000-801		401	ARO ALL
Waste Drain Line Heater Installation TASK 30-71-03-400-801		402	ARO ALL
WASTE TANK RINSE FITTING HEATER - REMOVAL/INSTALLATION	30-71-04	401	ARO ALL
Waste Tank Rinse Fitting Heater Removal TASK 30-71-04-000-801		401	ARO ALL
Waste Tank Rinse Fitting Heater Installation TASK 30-71-04-400-801		402	ARO ALL
WATER DRAIN LINE HEATER - MAINTENANCE PRACTICES	30-71-05	201	ARO ALL
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Water Drain Line Heater Removal TASK 30-71-05-000-801		401	ARO ALL
Water Drain Line Heater Installation TASK 30-71-05-400-801		402	ARO ALL
WATER SUPPLY IN-LINE HEATERS - REMOVAL/INSTALLATION	30-71-06	401	ARO ALL
Water Supply In-Line Heater Removal TASK 30-71-06-000-801		401	ARO ALL
Water Supply In-Line Heater Installation TASK 30-71-06-400-801		402	ARO ALL



CHAPTER 30 ICE AND RAIN PROTECTION

CHAPTER SECTION

	SECTION		
<u>SUBJECT</u>	<u>SUBJECT</u>	CONF PAGE	<u>EFFECT</u>
WATER TANK DRAIN HEATER - REMOVAL/INSTALLATION	30-71-07	401	ARO ALL
Water Tank Drain Heater Removal TASK 30-71-07-000-801		401	ARO ALL
Water Tank Drain Heater Installation TASK 30-71-07-400-801		402	ARO ALL
DRAIN LINE HEATER THERMOSTATS - REMOVAL/INSTALLATION	30-71-08	401	ARO ALL
Gray Water Drain Line Heater Thermostat Removal TASK 30-71-08-000-801		401	ARO ALL
Gray Water Drain Line Heater Thermostat Installation TASK 30-71-08-000-802		402	ARO ALL
Drain Line Heater Thermostat Removal TASK 30-71-08-000-803		404	ARO ALL
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WATER SUPPLY LINE REMOTE TEMPERATURE SENSORS - REMOVAL/INSTALLATION	30-71-09	401	ARO ALL
Water Supply Line Remote Temperature Sensor Removal TASK 30-71-09-000-801		401	ARO ALL
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ICE DETECTION SYSTEM - MAINTENANCE PRACTICES	30-81-00	201	ARO ALL
Ice Detection System - Deactivation TASK 30-81-00-040-801		201	ARO ALL
Ice Detection System - Activation TASK 30-81-00-440-801		203	ARO ALL
ICE DETECTION SYSTEM - ADJUSTMENT/TEST	30-81-00	501	ARO ALL
Ice Detection Operational Test TASK 30-81-00-710-801		501	ARO ALL



CHAPTER 30 ICE AND RAIN PROTECTION

CHAPTER SECTION

	SECTION		
SUBJECT	SUBJECT CONF	<u>PAGE</u>	EFFECT
ICE DETECTOR - REMOVAL/INSTALLATION	30-81-01	401	ARO ALL
Ice Detector Removal TASK 30-81-01-000-801		401	ARO ALL
Ice Detector Installation TASK 30-81-01-400-801		401	ARO ALL



ICE AND RAIN PROTECTION - DDG MAINTENANCE PROCEDURES

1. General

- A. This procedure has the maintenance tasks for the Master Minimum Equipment List (MMEL) maintenance requirements as shown in the Dispatch Deviations Guide (DDG). These tasks prepare the airplane for flight with certain systems/components inoperative.
- B. This procedure also has the tasks that put the airplane back to its usual condition.
- C. These are the tasks for the components in the ice and rain protection system.
 - (1) DDG 30-11-1 Preparation Wing Anti-Ice Systems Inoperative
 - (2) DDG 30-11-1 Restoration Wing Anti-Ice Systems Inoperative
 - (3) DDG 30-11-2 Preparation Wing Anti-Ice Control (Card and Switch) Inoperative
 - (4) DDG 30-11-2 Restoration Wing Anti-Ice Control (Card and Switch) Inoperative
 - (5) DDG 30-21-1 Preparation Engine Anti-Ice Systems Inoperative
 - (6) DDG 30-21-1 Restoration Engine Anti-Ice Systems Inoperative
 - (7) DDG 30-31-1 Preparation Pitot Probe Heater Systems Inoperative
 - (8) DDG 30-31-1 Restoration Pitot Probe Heater Systems Inoperative
 - (9) DDG 30-71-1 Preparation Drain Mast Heaters Inoperative
 - (10) DDG 30-71-1 Restoration Drain Mast Heaters Inoperative

TASK 30-00-00-040-806-001

2. DDG 30-11-1 Preparation - Wing Anti-Ice Systems Inoperative

A. General

- (1) This task gives the maintenance steps which prepare the airplane for flight with the wing anti-ice (WAI) valves inoperative.
- (2) EICAS Status Messages
 - (a) WAI VALVE L
 - (b) WAI VALVE R
 - (c) WAI PRESS SENSOR L
 - (d) WAI PRESS SENSOR R
- (3) EICAS Advisory Message
 - (a) ANTI-ICE WING

B. References

Reference	Title
27-81-00-040-801	Leading Edge Slat - Deactivation (P/B 201)
27-81-00-440-801	Leading Edge Slat Reactivation (P/B 201)

C. Location Zones

Zone	Area
522	Slat No. 6
622	Slat No. 9

D. Access Panels

Number	Name/Location	
521AB	Wing Anti-Ice Valve Door	

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(Continued)

Number Name/Location
621AB Wing Anti-Ice Valve Door

E. Prepare for the Deactivation of the Wing Anti-Ice (WAI) Valves.

SUBTASK 30-00-00-865-001-001

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

Right Power Management Panel, P210

Row Col Number Name
L 6 C30600 WAI CTRL

SUBTASK 30-00-00-040-039-001



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.

(2) Do this task: Leading Edge Slat - Deactivation, TASK 27-81-00-040-801.

SUBTASK 30-00-00-010-010-001

(3) For the left WAI valve, open this access panel:

Number Name/Location
521AB Wing Anti-Ice Valve Door

SUBTASK 30-00-00-010-011-001

(4) For the right WAI valve, open this access panel:

Number Name/Location
621AB Wing Anti-Ice Valve Door

F. Wing Anti-Ice (WAI) Valve Deactivation

SUBTASK 30-00-00-040-010-001

- (1) Do these steps to lock the WAI valve [3] in the closed position:
 - (a) Remove the locking screw [2] from the normal position.
 - (b) Set the crank [1] to the locked position (CL).



DO NOT USE THE 20 FT-LB (27 N·M) OF TORQUE IDENTIFIED ON THE DECAL TO INSTALL THE LOCKING SCREW [2]. THE 20 FT-LB (27 N·M) OF TORQUE IS THE MAXIMUM TORQUE NECESSARY TO CLOSE THE VALVE. IF YOU USE THE 20 FT-LB (27 N·M) OF TORQUE ON THE LOCKING SCREW, DAMAGE TO THE EQUIPMENT CAN OCCUR.

(c) Install the locking screw [2] through the crank [1] into the locked position.

NOTE: The usual running torque for the locking screw [2] is 12.5 \pm 2.5 in-lb (1.4 \pm 0.3 N·m)

G. Put the Airplane Back to Its Usual Condition

SUBTASK 30-00-00-410-006-001

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

Number521ABWing Anti-Ice Valve Door

- EFFECTIVITY

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SUBTASK 30-00-00-410-007-001

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

<u>Number</u>	Name/Location
621AB	Wing Anti-Ice Valve Door

SUBTASK 30-00-00-440-009-001

(3) Do this task: Leading Edge Slat Reactivation, TASK 27-81-00-440-801.

SUBTASK 30-00-00-860-019-001

(4) Set the Wing Anti-Ice switch on the ANTI-ICE panel (P5) to OFF.

SUBTASK 30-00-00-865-002-001

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

Right Power	Management	Panel,	P210
--------------------	------------	--------	------

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
L	6	C30600	WAI CTRL

----- END OF TASK -----

TASK 30-00-00-440-806-001

3. DDG 30-11-1 Restoration - Wing Anti-Ice Systems Inoperative

A. General

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

B. References

Reference	Title
27-81-00-040-801	Leading Edge Slat - Deactivation (P/B 201)
27-81-00-440-801	Leading Edge Slat Reactivation (P/B 201)
30-11-00-400-802	Wing Anti-Ice (pneumatics available) - System Test (P/B 501)

C. Location Zones

Zone	Area
522	Slat No. 6
622	Slat No. 9

D. Access Panels

Number	Name/Location
521AB	Wing Anti-Ice Valve Door
621AB	Wing Anti-Ice Valve Door

E. Prepare for the Reactivation of the Wing Anti-Ice (WAI) Valve

SUBTASK 30-00-00-865-003-001

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

Right Power Management Panel, P210

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
L	6	C30600	WAI CTRL

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SUBTASK 30-00-00-040-040-001



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.

(2) Do this task: Leading Edge Slat - Deactivation, TASK 27-81-00-040-801.

SUBTASK 30-00-00-010-012-001

(3) For the left WAI valve, open this access panel:

<u>Number</u>	Name/Location
521AB	Wing Anti-Ice Valve Door

SUBTASK 30-00-00-010-013-001

(4) For the right WAI valve, open this access panel:

<u>Number</u>	Name/Location
621AB	Wing Anti-Ice Valve Door

F. Wing Anti-Ice (WAI) Valve Reactivation

SUBTASK 30-00-00-440-010-001

- (1) Do these steps to unlock the WAI valve [3]:
 - (a) Remove the locking screw [2] from the locked position.
 - (b) Set the crank [1] to the normal position.
 - (c) Put the locking screw [2] in its normal position.

SUBTASK 30-00-00-865-004-001

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

Right Power Management Panel, P210

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
L	6	C30600	WAI CTRL

G. Wing Anti-Ice (WAI) Valve Repair

SUBTASK 30-00-00-810-021-001

- (1) Do these steps to 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 are 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:
 - Go to the observed Fault List at the start 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.

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H. Wing Anti-Ice (WAI) Valve Test

SUBTASK 30-00-00-730-002-001

(1) Do this task: Wing Anti-Ice (pneumatics available) - System Test, TASK 30-11-00-400-802.

I. Put the Airplane Back to Its Usual Condition

SUBTASK 30-00-00-410-008-001

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

<u>Number</u>	Name/Location
521AB	Wing Anti-Ice Valve Door

SUBTASK 30-00-00-410-009-001

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

<u>Number</u>	Name/Location
621AB	Wing Anti-Ice Valve Door

SUBTASK 30-00-00-440-011-001

(3) Do this task: Leading Edge Slat Reactivation, TASK 27-81-00-440-801.

SUBTASK 30-00-00-860-023-001

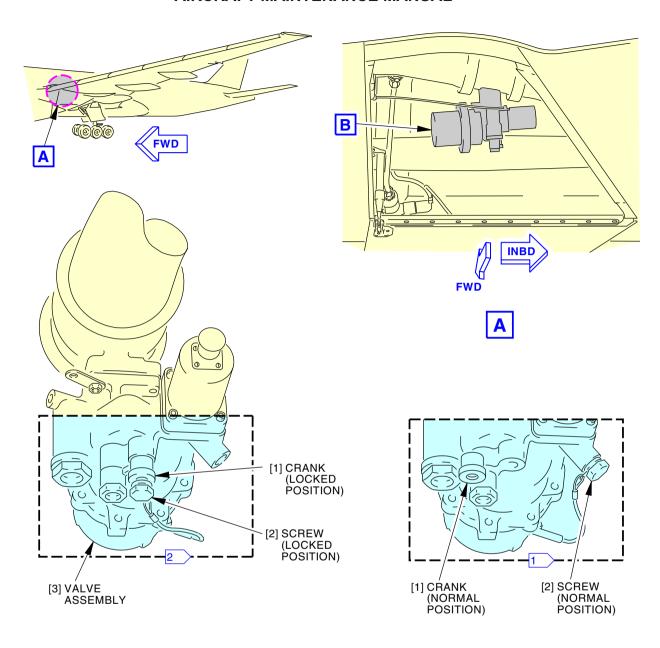
(4) Set the Wing Anti-Ice switch on the ANTI-ICE panel (P5) to AUTO.

——— END OF TASK ———

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WING ANTI-ICE VALVE



WING ANTI-ICE VALVE IN THE NORMAL POSITION.

WING ANTI-ICE VALVE IN THE LOCKED POSITION.

E38209 S0006416472_V2

Wing Anti-Ice Valve Inoperative Figure 901/30-00-00-990-811-001

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D633W101-ARO

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TASK 30-00-00-040-808-001

4. DDG 30-11-2 Preparation - Wing Anti-Ice Control (Card and Switch) Inoperative

A. General

- (1) This task gives the maintenance steps which prepare the airplane for flight with the wing anti-ice (WAI) control (card and switch) inoperative.
- (2) EICAS Status Message
 - (a) WAI CARD
- (3) EICAS Advisory Message
 - (a) ANTI-ICE WING

B. References

Reference	Title
27-81-00-040-801	Leading Edge Slat - Deactivation (P/B 201)
27-81-00-440-801	Leading Edge Slat Reactivation (P/B 201)

C. Location Zones

Zone	Area	
522	Slat No. 6	
622	Slat No. 9	

D. Access Panels

Number	Name/Location
521AB	Wing Anti-Ice Valve Door
621AB	Wing Anti-Ice Valve Door

E. Prepare for the Deactivation of the Wing Anti-Ice (WAI) Valves.

SUBTASK 30-00-00-865-013-001

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

Right Power Management Panel, P210

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
L	6	C30600	WAI CTRL

SUBTASK 30-00-00-040-045-001

(2) Do this task: Leading Edge Slat - Deactivation, TASK 27-81-00-040-801.

SUBTASK 30-00-00-010-034-001

(3) For the left WAI valve, open this access panel:

<u>Number</u>	<u>Name/Location</u>
521AB	Wing Anti-Ice Valve Door

SUBTASK 30-00-00-010-035-001

(4) For the right WAI valve, open this access panel:

<u>Number</u>	Name/Location
621AB	Wing Anti-Ice Valve Door

F. Wing Anti-Ice (WAI) Valve Deactivation

SUBTASK 30-00-00-040-046-001

- (1) Do these steps to lock the WAI valve [3] in the closed position:
 - (a) Remove the locking screw [2] from the normal position.

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- (b) Set the crank [1] to the locked position (CL).
- (c) Install the locking screw [2] through the crank [1] into the locked position.

NOTE: The usual running torque for the locking screw [2] is 12.5 \pm 2.5 in-lb (1.4 \pm 0.3 N·m).

G. Put the Airplane Back to Its Usual Condition

SUBTASK 30-00-00-410-018-001

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

<u>Number</u>	Name/Location
521AB	Wing Anti-Ice Valve Door

SUBTASK 30-00-00-410-019-001

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

<u>Number</u>	Name/Location
621AB	Wing Anti-Ice Valve Door

SUBTASK 30-00-00-440-030-001

(3) Do this task: Leading Edge Slat Reactivation, TASK 27-81-00-440-801.

SUBTASK 30-00-00-860-067-001

(4) Set the Wing Anti-Ice switch on the ANTI-ICE panel (P5) to OFF.

SUBTASK 30-00-00-865-014-001

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

Right P	ower I	<i>l</i> lanagemei	nt Panel, P210
Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
- 1	6	C30600	WALCTRI

----- END OF TASK -----

TASK 30-00-00-440-807-001

5. DDG 30-11-2 Restoration - Wing Anti-Ice Control (Card and Switch) Inoperative

A. General

(1) This task puts the airplane back to its usual condition after operation with the wing anti-ice (WAI) control (card and switch) inoperative.

B. References

Reference	Title
27-81-00-040-801	Leading Edge Slat - Deactivation (P/B 201)
27-81-00-440-801	Leading Edge Slat Reactivation (P/B 201)
30-11-00-400-802	Wing Anti-Ice (pneumatics available) - System Test (P/B 501)

C. Location Zones

Zone	Area	
522	Slat No. 6	
622	Slat No. 9	

D. Access Panels

Number	Name/Location
521AB	Wing Anti-Ice Valve Door
621AB	Wing Anti-Ice Valve Door

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30-00-00

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E. Prepare for the Reactivation of the Wing Anti-Ice (WAI) Valve

SUBTASK 30-00-00-865-015-001

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

Right Power Management Panel, P210

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
L	6	C30600	WAI CTRL

SUBTASK 30-00-00-040-047-001

(2) Do this task: Leading Edge Slat - Deactivation, TASK 27-81-00-040-801.

SUBTASK 30-00-00-010-036-001

(3) For the left WAI valve, open this access panel:

<u>Number</u>	Name/Location	
521AB	Wing Anti-Ice Valve Door	

SUBTASK 30-00-00-010-037-001

(4) For the right WAI valve, open this access panel:

NumberName/Location621ABWing Anti-Ice Valve Door

F. Wing Anti-Ice (WAI) Valve Reactivation

SUBTASK 30-00-00-440-031-001

- (1) Do these steps to unlock the WAI valve [3]:
 - (a) Remove the locking screw [2] from the locked position.
 - (b) Set the crank [1] to the normal position.
 - (c) Put the locking screw [2] in its normal position.

SUBTASK 30-00-00-865-016-001

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

Right Power Management Panel, P210

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
- 1	6	C30600	WAI CTRI

G. Wing Anti-Ice (WAI) Valve Repair

SUBTASK 30-00-00-810-024-001

- (1) Do these steps to 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:
 - 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 are 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:
 - Go to the observed Fault List at the start of the FIM, and find the best description for the fault
 - 2) Find the task number on the same line as the fault description.

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

H. Wing Anti-Ice (WAI) Valve Test

SUBTASK 30-00-00-730-001-001

(1) Do this task: Wing Anti-Ice (pneumatics available) - System Test, TASK 30-11-00-400-802.

I. Put the Airplane Back to Its Usual Condition

SUBTASK 30-00-00-410-020-001

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

Number Name/Location
521AB Wing Anti-Ice Valve Door

SUBTASK 30-00-00-410-021-001

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

NumberName/Location621ABWing Anti-Ice Valve Door

SUBTASK 30-00-00-440-032-001

(3) Do this task: Leading Edge Slat Reactivation, TASK 27-81-00-440-801.

SUBTASK 30-00-00-860-068-001

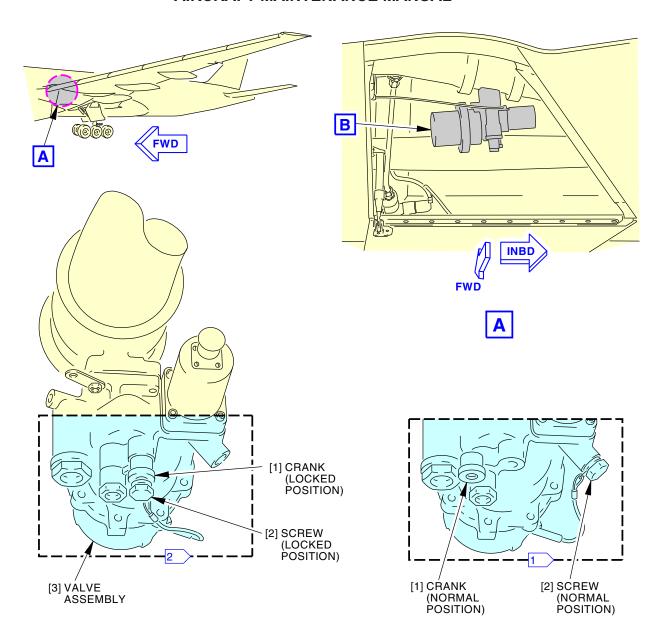
(4) Set the Wing Anti-Ice switch on the ANTI-ICE panel (P5) to AUTO.

—— END OF TASK ——

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WING ANTI-ICE VALVE



1 WING ANTI-ICE VALVE IN THE NORMAL POSITION.

WING ANTI-ICE VALVE IN THE LOCKED POSITION.

E38209 S0006416472_V2

Wing Anti-Ice Valve Inoperative Figure 902/30-00-00-990-822-001

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30-00-00

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TASK 30-00-00-040-809-001

6. DDG 30-21-1 Preparation - Engine Anti-Ice Systems Inoperative

Figure 903,

Figure 904

A. General

- (1) This task gives the maintenance steps which prepare the airplane for flight with the engine anti-ice (EAI) systems inoperative.
- (2) EICAS Status Messages
 - (a) EAI VALVE L
 - (b) EAI VALVE R
 - (c) EAI CARD L
 - (d) EAI CARD R
 - (e) EAI PRESS SENSOR L
 - (f) EAI PRESS SENSOR R
- (3) EICAS Advisory Messages
 - (a) ANTI-ICE ENG L
 - (b) ANTI-ICE ENG R
 - (c) ANTI-ICE LOSS ENG L
 - (d) ANTI-ICE LOSS ENG R
- (4) EICAS Caution Messages
 - (a) ANTI-ICE LEAK ENG L
 - (b) ANTI-ICE LEAK ENG R

B. References

Reference	Title
27-81-00-040-801	Leading Edge Slat - Deactivation (P/B 201)
27-81-00-440-801	Leading Edge Slat Reactivation (P/B 201)
27-81-00-860-805	Retract the Leading Edge Slats (P/B 201)
30-21-02-000-805-001	Engine Anti-Ice Valve Removal (P/B 401)
30-21-02-400-805-001	Engine Anti-Ice Valve Installation (P/B 401)
71-00-00-800-835-H00	Engine Start (Selection) (P/B 201)
71-00-00-800-837-H00	Usual Engine Stop (P/B 201)
78-31-00-040-806-H00	Thrust Reverser Deactivation For Ground Maintenance (P/B 201)
78-31-00-440-805-H00	Thrust Reverser Activation After Ground Maintenance (P/B 201)

C. Tools/Equipment

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

Reference	Description	
SPL-12289	Dispatch Kit - Engine Anti Ice Valve	
	Part #: K28703 Supplier: 73030	

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30-00-00

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D. Consumable Materials

Reference	Description	Specification
D50166	Lubricant - Anti-seize Compound (Silver Goop Thread Lubricant)	
G50177	Lockwire - MS20995N32, Inconel - 0.032 Inch (0.8128 mm) Diameter	NASM20995
G50666	Lockwire - MS20995N40, Inconel - 0.040 Inch (1.016 mm) Diameter	NASM20995

E. Prepare for the Deactivation of the Engine Anti-Ice (EAI) Valves

SUBTASK 30-00-00-865-024-001

(1) For the right EAI valve controller,

Open this circuit breaker and install safety tag:

Right Power Management Panel, P210

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
Р	11	C30602	EAI CTRL R

SUBTASK 30-00-00-865-025-001

(2) For the left EAI valve controller,

Open this circuit breaker and install safety tag:

Standby Power Management Panel, P310

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
Н	11	C30603	EAI CTRL L

SUBTASK 30-00-00-040-054-001

- (3) Do the following steps to deactivate the leading edge slats in the retracted position:
 - (a) Do this task: Retract the Leading Edge Slats, TASK 27-81-00-860-805.
 - (b) Do this task: Leading Edge Slat Deactivation, TASK 27-81-00-040-801.

SUBTASK 30-00-00-040-055-001



DO ALL OF THE SPECIFIED TASKS IN THE CORRECT SEQUENCE TO OPEN THE THRUST REVERSER. IF YOU DO NOT OBEY THIS INSTRUCTION, INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT CAN OCCUR.

(4) Do this task: Thrust Reverser Deactivation For Ground Maintenance, TASK 78-31-00-040-806-H00.

F. Engine Anti-Ice (EAI) Valve Deactivation

SUBTASK 30-00-00-040-013-001

- (1) Do these steps to lock the EAI valve [21] or EAI valve [1] in the closed position:
 - (a) Remove the locking screw [23] or locking screw [3] from the normal position.
 - (b) Set the crank [22] or crank [2] to the locked position.
 - (c) Install the locking screw [23] or locking screw [3] through the crank [22] or crank [2] into the locked position.
 - (d) Set the Engine Anti-Ice switch on the ANTI-ICE panel (P5) to OFF.

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SUBTASK 30-00-00-040-056-001

(2) Do these steps to deactivate the EAI valve [21] or EAI valve [1] in the open position with the engine anti ice valve dispatch kit, SPL-12289 installed:

NOTE: Dispatch is not allowed for EAI LOOPS FANCASE L or EAI LOOPS FANCASE R status messages displayed.

- (a) Remove the inoperative EAI valve [21] or EAI valve [1] (Engine Anti-Ice Valve Removal, TASK 30-21-02-000-805-001).
- (b) Modify the EAI valve [21] or EAI valve [1] with lock-open kit.
 - 1) Remove the outlet flange [8] from the valve housing [3].

NOTE: This will release one end of the retaining cable and terminal [6].

- a) Remove the nine nuts [2].
- b) Remove the nine bolts [7].
- 2) Remove the shims [9] and retain them for use during the assembly of the EAI valve.



INSTALL THE LOCK-OPEN RING INTO THE OPEN SIDE OF THE VALVE PISTON. IF YOU INSTALL THE LOCK-OPEN RING ON THE OTHER SIDE, DAMAGE TO EQUIPMENT CAN OCCUR.

 Insert the lock open ring [10] into the bore of the valve piston [12] as in Detail B of Figure 904.

NOTE: Improperly installing the lock open ring [10] can result in the EAI valve being locked CLOSED, not meeting MEL operational requirements.

- 4) Turn the outlet flange [8] upside down (outlet flange side down).
- 5) Install the shims [9] in the outlet flange [8].



DO NOT USE FORCE TO PUT THE PISTON ON THE OUTLET PISTON RINGS. DAMAGE TO THE PISTON CAN OCCUR.

- 6) Position the valve piston [12] over the outlet flange [8].
- 7) Compress the two piston-set rings [11] onto the two grooves of the outlet flange [8] with your fingers while pushing the valve piston [12] on the outlet flange [8].
- 8) Place the valve housing [3] with the opening facing upward.
- 9) Install the gasket [13] on the outlet flange [8].
- 10) Look inside the valve housing [3] to position piston-set contracting ring [5] in the center of its bore.

NOTE: You can see this when there is approximately the same amount of ring material visible on all sides when you look in the bore of the valve housing [3].

11) Lift the outlet flange [8] with the valve piston [12] installed and carefully lower it on the valve housing [3].

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- 12) Using only a small amount of force if necessary, slowly slide the valve piston [12] into the piston-set contracting ring [5] in the valve housing [3].
 - NOTE: It may be necessary to slightly tilt the valve piston [12] from side to side to make sure that the valve piston [12] slides through the piston-set contracting ring [5].
- 13) If the valve piston [12] does not slide into the piston-set contracting ring [5], remove the valve piston [12] and reposition the piston-set contracting ring [5].
 - NOTE: When the valve housing [3] is correctly assembled, there can be a gap of approximately 0.020 in. (0.508 mm) between the valve housing [3] and the outlet flange [8].
- 14) Position the outlet flange [8] as shown in Detail A of Figure 904

SILVER GOOP LUBRICANT IS AN AGENT THAT IS POISONOUS AND AN IRRITANT. MAKE SURE ALL PERSONS OBEY THE PRECAUTIONS WHEN SILVER GOOP LUBRICANT IS USED.



- DO NOT USE IN AREAS WHERE THERE IS HIGH HEAT, SPARKS, OR FLAMES.
- · USE IN AN AREA OPEN TO THE AIR.
- · CLOSE THE CONTAINER WHEN NOT USED.
- DO NOT GET SILVER GOOP LUBRICANT IN THE EYES, ON THE SKIN, OR ON YOUR CLOTHES.
- DO NOT BREATHE THE GAS.
- 15) Coat the threads of the nine bolts [7] with lubricant anti-seize compound, D50166.
 - NOTE: Similar high temperature thread lubricant that must be capable of sustained temperatures above 1000°F (538°C) can be used.
- 16) Install the nine bolts [7], nine nuts [2] and the retaining cable and terminal [6].
- 17) Tighten the nine bolts [7] in a criss-cross pattern (a bolt on one side, then a bolt on the opposite side) approximately to 30 in-lb (3 N·m) and then to 71.5 ±3.5 in-lb (8.1 ±0.4 N·m) above the running torque.
 - NOTE: Running torque is the amount of torque necessary to turn a fastener before you tighten it.
- 18) Make sure there is no gap between outlet flange [8] and the valve housing [3].
- 19) Bend the modification plate approximately to the same curvature as the middle of the valve housing [3].
- 20) Loop two pieces of MS20995N32 lockwire, G50177, or MS20995N40 lockwire, G50666, around the valve housing [3] and through the holes in the modification plate.
- 21) Position the modification plate as shown in Figure 904 and twist the ends of the MS20995N32 lockwire, G50177, or MS20995N40 lockwire, G50666, to hold it in place.
 - NOTE: The twisted MS20995N32 lockwire, G50177, or MS20995N40 lockwire, G50666, end should not be in a location where it could interfere with the inlet flange clamp during the EAI valve installation on the aircraft.
- (c) Reinstall the modified EAI valve [21] or EAI valve [1] (Engine Anti-Ice Valve Installation, TASK 30-21-02-400-805-001).

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SUBTASK 30-00-00-040-057-001

(3) Do these steps to deactivate the EAI valve [21] or EAI valve [1] in the open position without the engine anti ice valve dispatch kit, SPL-12289 installed:

NOTE: EAI VALVE L or EAI VALVE R status message is displayed.

NOTE: Dispatch is not allowed for EAI LOOPS FANCASE L or EAI LOOPS FANCASE R status messages displayed.

- (a) Deactivate the EAI valve [21] or EAI valve [1] in the open position.
 - 1) Disconnect, cap, and stow the torque motor electrical connector DM30211A from the EAI valve controller, M30211 on the applicable engine.
 - 2) Install a protective cover over the electrical connector on the valve controller.
 - 3) Visually examine the area near the Cowl Thermal Anti-Ice duct for signs of leaks and the fan cowl for flammable fluid leaks.

NOTE: Dispatch is not allowed if any of the duct clamps or supports are not secure or any air leaks from the EAI duct are present, or if significant flammable fluid leakage is present.

- (b) Do this task: Thrust Reverser Activation After Ground Maintenance, TASK 78-31-00-440-805-H00.
- (c) Do this task: Leading Edge Slat Reactivation, TASK 27-81-00-440-801.
- (d) For the right EAI valve controller,

Remove the safety tag and close this circuit breaker:

Right Power Management Panel, P210

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
Р	11	C30602	EALCTRL R

(e) For the left EAI valve controller,

Remove the safety tag and close this circuit breaker:

Standby Power Management Panel, P310

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
Н	11	C30603	EAI CTRL L

- (f) Make sure that the EAI valve [21] or EAI valve [1] is open when the applicable engine is running.
 - 1) Set the Engine Anti-Ice switch on the ANTI-ICE panel (P5) to OFF.
 - 2) Start the applicable engine (Engine Start (Selection), TASK 71-00-00-800-835-H00).
 - 3) Make sure that the EAI indication (green EAI) is displayed above the N1 indication on the EICAS display for the applicable engine.

NOTE: The EAI indication means the EAI valve is open.

NOTE: The EAI indication is not displayed, the valve may be stuck closed and a thrust setting slightly above minimum idle may open the valve.

4) Stop the engine (Usual Engine Stop, TASK 71-00-00-800-837-H00).

G. Put the Airplane Back to Its Usual Condition

SUBTASK 30-00-00-440-039-001

(1) If the thrust reverser is not activated, do this task: Thrust Reverser Activation After Ground Maintenance, TASK 78-31-00-440-805-H00.

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SUBTASK 30-00-00-440-040-001

(2) If the leading edge slats are not activated, do this task: Leading Edge Slat Reactivation, TASK 27-81-00-440-801.

SUBTASK 30-00-00-865-026-001

(3) For the right EAI valve controller,

Make sure that this circuit breaker is closed:

Right	Power	Manag	ement	Panel	P210
NIGHT	I OWEI	wana	Iciliciir	ı anıcı,	1 4 10

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
Ρ	11	C30602	EAI CTRL R

SUBTASK 30-00-00-865-027-001

(4) For the left EAI valve controller,

Make sure that this circuit breaker is closed:

Standby Power Management Panel, P310

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
Н	11	C30603	EAI CTRL L

SUBTASK 30-00-00-860-073-001

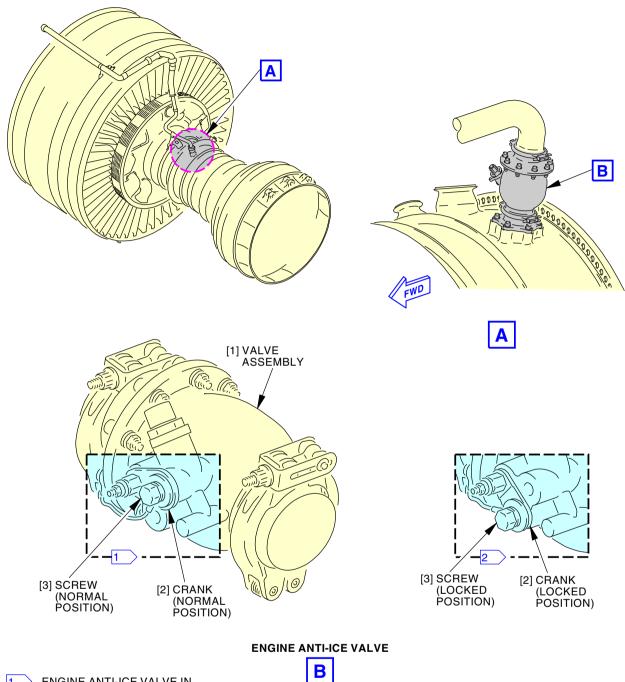
(5) Make sure that the Engine Anti-Ice switch on the ANTI-ICE panel (P5) is set to OFF.

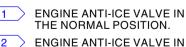
----- END OF TASK -----

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THE LOCKED POSITION.

W62193 S0000127057_V2

Engine Anti-Ice Valve Inoperative Figure 903/30-00-00-990-826

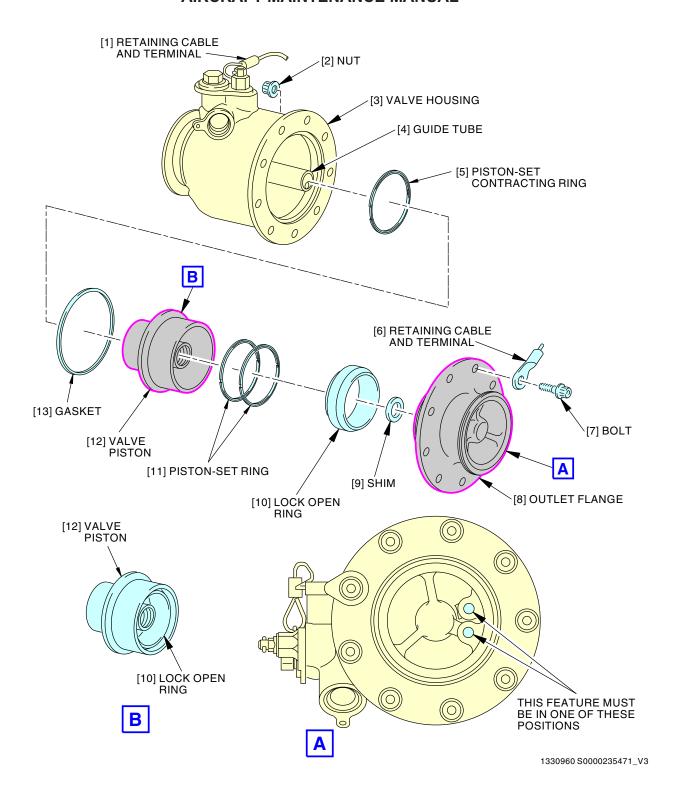
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EAI Valve Disassembly (KIT LOCK OPEN P/N K28703) Figure 904/30-00-00-990-827 (Sheet 1 of 2)

EFFECTIVITY

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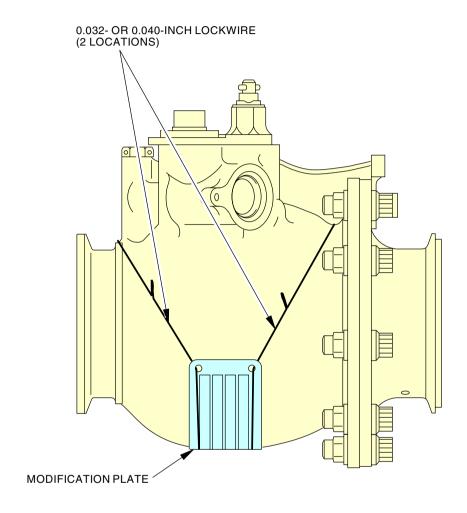
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EAI Valve Disassembly (KIT LOCK OPEN P/N K28703) Figure 904/30-00-990-827 (Sheet 2 of 2)

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TASK 30-00-00-440-808-001

7. DDG 30-21-1 Restoration - Engine Anti-Ice Systems Inoperative

Figure 903

A. General

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

B. References

Reference	Title
27-81-00-040-801	Leading Edge Slat - Deactivation (P/B 201)
27-81-00-440-801	Leading Edge Slat Reactivation (P/B 201)
27-81-00-860-805	Retract the Leading Edge Slats (P/B 201)
30-21-00-730-804-001	Engine Anti-Ice (engine running) - System Test (P/B 501)
30-21-02-000-805-001	Engine Anti-Ice Valve Removal (P/B 401)
30-21-02-400-805-001	Engine Anti-Ice Valve Installation (P/B 401)
78-31-00-040-806-H00	Thrust Reverser Deactivation For Ground Maintenance (P/B 201)
78-31-00-440-805-H00	Thrust Reverser Activation After Ground Maintenance (P/B 201)

C. Tools/Equipment

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

Reference	Description	
SPL-12289	Dispatch Kit - Engine Anti Ice Valve	
	Part #: K28703 Supplier: 73030	

D. Location Zones

Zone	Area
411	Engine, Left
421	Engine, Right

E. Prepare for the Reactivation of the Engine Anti-Ice (EAI) Valves

SUBTASK 30-00-00-865-028-001

(1) For the right EAI valve controller

Open this circuit breaker and install safety tag:

Right Power Management Panel, P210

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
Р	11	C30602	EALCTRL R

SUBTASK 30-00-00-865-029-001

(2) For the left EAI valve controller,

Open this circuit breaker and install safety tag:

Standby Power Management Panel, P310

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
Н	11	C30603	EAI CTRL L

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SUBTASK 30-00-00-040-058-001

- (3) Do the following steps to deactivate the leading edge slats in the retracted position:
 - (a) Do this task: Retract the Leading Edge Slats, TASK 27-81-00-860-805
 - (b) Do this task: Leading Edge Slat Deactivation, TASK 27-81-00-040-801

SUBTASK 30-00-00-040-059-001



DO ALL OF THE SPECIFIED TASKS IN THE CORRECT SEQUENCE TO OPEN THE THRUST REVERSER. IF YOU DO NOT OBEY THIS INSTRUCTION, INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT CAN OCCUR.

(4) Do this task: Thrust Reverser Deactivation For Ground Maintenance, TASK 78-31-00-040-806-H00

F. Engine Anti-Ice Valve Reactivation

NOTE: Do only one of the following applicable steps

SUBTASK 30-00-00-440-013-001

- (1) Do these steps to unlock the EAI valve [21] or EAI valve [1] from the closed position:
 - (a) Remove the locking screw [23] or locking screw [3] from the locked position.
 - (b) Set the crank [22] or crank [2] to the normal position.
 - (c) Put the locking screw [23] or locking screw [3] in its normal position.
 - (d) Set the Engine Anti-Ice switch on the ANTI-ICE panel (P5) to AUTO.

SUBTASK 30-00-00-440-041-001

- (2) Do these steps to reactivate the EAI valve [21] or EAI valve [1] in open position with engine anti ice valve dispatch kit, SPL-12289 installed:
 - (a) Remove the modified EAI valve [21] or EAI valve [1] (Engine Anti-Ice Valve Removal, TASK 30-21-02-000-805-001)
 - (b) Install the unmodified EAI valve [21] or EAI valve [1] (Engine Anti-Ice Valve Installation, TASK 30-21-02-400-805-001)

SUBTASK 30-00-00-440-042-001

- (3) Do these steps to reactivate the EAI valve [21] or EAI valve [1] in open position without engine anti ice valve dispatch kit, SPL-12289 installed.
 - (a) Reactivate the EAI valve [21] or EAI valve [1] in the open position.
 - 1) Remove the protective cover over the electrical connector on the valve controller.
 - Unstow and remove cap from the torque motor electrical connector DM30211A.
 - Reconnect the electrical connector DM30211A to the EAI valve controller, M30211 on the applicable engine.

SUBTASK 30-00-00-865-030-001

(4) For the right EAI valve controller

Make sure that this circuit breaker is closed:

Right Power Management Panel, P210

Row Col Number Name
P 11 C30602 EALCTRL R

SUBTASK 30-00-00-865-031-001

(5) For the left EAI valve controller,

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Make sure that this circuit breaker is closed:

Standby Power Management Panel, P310

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
Н	11	C30603	EAI CTRL L

G. Engine Anti-Ice (EAI) Valve Repair

SUBTASK 30-00-00-810-027-001

- (1) Do these steps to 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:
 - 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 are 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:
 - Go to the observed Fault List at the start 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.

H. Engine Anti-Ice (EAI) Valve Test

SUBTASK 30-00-00-730-007-001

(1) Do this task: Engine Anti-Ice (engine running) - System Test, TASK 30-21-00-730-804-001.

I. Put the Airplane Back to Its Usual Condition

SUBTASK 30-00-00-440-043-001

 Do this task: Thrust Reverser Activation After Ground Maintenance, TASK 78-31-00-440-805-H00.

SUBTASK 30-00-00-440-044-001

(2) Do this task: Leading Edge Slat Reactivation, TASK 27-81-00-440-801.



TASK 30-00-00-040-824-001

8. DDG 30-31-1 Preparation - Pitot Probe Heater Systems Inoperative

A. General

- (1) This task gives you the maintenance steps which prepare the airplane for flight with the pitot probe heater systems inoperative.
- (2) EICAS Status Messages
 - (a) HEAT PITOT C
 - (b) HEAT PITOT L
 - (c) HEAT PITOT R

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B. References

Reference	Title
34-11-01 P/B 601	PITOT PROBE - INSPECTION/CHECK

C. Location Zones

Zone	Area
115	Area Outboard and Above Nose Landing Gear Wheel Well, Left
116	Area Outboard and Above Nose Landing Gear Wheel Well, Right
211	Flight Compartment, Left
212	Flight Compartment, Right

D. Deactivation of Inoperative Probe Heater Systems

SUBTASK 30-00-00-040-069-001

- (1) Do these steps to the inoperative right Pitot Probe
 - (a) Deactivate the right Pitot ADM

NOTE: The PITOT ADM R status message will be displayed. The airplane must also be dispatched using DDG 34-21-4.

NOTE: The AOA VANE R status message will be displayed. The airplane must also be dispatched using DDG 34-21-06

- 1) Get access to the right Power Supply Assembly (PSA) on Equipment Rack E5-1.
- 2) Open this circuit breaker and install safety lock:

Power Supply Assembly Right, M24201

Row	Col	<u>Number</u>	<u>Name</u>
С	7	CBC7-R	PITOT ADM

- (b) Before each departure, visually examine the left and center pitot probe external installations for damage and unwanted material in the pitot probe's opening.
 - 1) If damage or unwanted material is found, perform pitot probe inspection/check (PITOT PROBE INSPECTION/CHECK, PAGEBLOCK 34-11-01/601)
- (c) Make sure SAARU data is available to the right Primary Flight Display (PFD) before each departure
 - 1) With the airplane powered, verify the SAARU alignment.
 - NOTE: The SAARU is also the attitude source for the Standby Attitude indicator and it must display sky/ground (blue above brown) shading.
 - 2) Set the right AIR DATA/ATT switch to ALTN (non normal position-switch in)
 - 3) Make sure the Attitude Indication on the right PFD displays the sky/ground (blue over brown) shading and pitch scale.
 - 4) Set the right AIR DATA/ATT switch off (normal position switch out).

SUBTASK 30-00-00-040-070-001

(2) Do these steps to the inoperative left Pitot Probe

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- (a) Deactivate the left Pitot ADM
 - NOTE: The PITOT ADM L status message will be displayed. The airplane must also be dispatched using DDG 34-21-4.
 - NOTE: The AOA VANE L status message will be displayed. The airplane must also be dispatched using DDG 34-21-06.
 - NOTE: The WINDSHEAR REAC status message will be displayed. The airplane must also be dispatched using DDG 34-46-1.
 - NOTE: The SATCOM SYSTEM and SATCOM HI GAIN status messages may be displayed. If either one of the messages is displayed, the airplane must also be dispatched using DDG 23-15-1.
 - 1) Get access to the left Power Supply Assembly (PSA) on Equipment Rack E1-6.
 - 2) Open this circuit breaker and install safety lock:

Power Supply	Assembly	Left,	M24101
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Row	Col	Number	<u>Name</u>
С	7	CBC7-L	PITOT ADM

- (b) Before each departure, visually examine the right and center pitot probe external installations for damage and unwanted material in the pitot probe's opening.
 - 1) If damage or unwanted material is found, perform pitot probe inspection/check (PITOT PROBE INSPECTION/CHECK, PAGEBLOCK 34-11-01/601)
- (c) Make sure SAARU data is available to the left Primary Flight Display (PFD) before each departure
 - 1) With the airplane powered, verify the SAARU alignment.
 - NOTE: The SAARU is also the attitude source for the Standby Attitude indicator and it must display sky/ground (blue above brown) shading.
 - 2) Set the left AIR DATA/ATT switch to ALTN (non normal position-switch in)
 - 3) Make sure the Attitude Indication on the left PFD displays the sky/ground (blue over brown) shading and pitch scale.
 - 4) Set the left AIR DATA/ATT switch off (normal position switch out).

SUBTASK 30-00-00-040-071-001

- (3) Do the step to the inoperative center Pitot Probe
 - (a) Before each departure, visually examine the left and right pitot probe external installations for damage and unwanted material in the pitot probe's opening.
 - 1) If damage or unwanted material is found, perform pitot probe inspection/check (PITOT PROBE INSPECTION/CHECK, PAGEBLOCK 34-11-01/601)

END	OF TAS	K
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TASK 30-00-00-440-818-001

9. DDG 30-31-1 Restoration - Pitot Probe Heater Systems Inoperative

A. General

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

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B. 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)

C. Location Zones

Zone	Area
115	Area Outboard and Above Nose Landing Gear Wheel Well, Left
116	Area Outboard and Above Nose Landing Gear Wheel Well, Right

D. Probe Heater Systems Reactivation

SUBTASK 30-00-00-960-005-001

(1) Replace the inoperative (center, left or right) 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 30-00-00-865-048-001

(2) Make sure the applicable circuit breakers are closed:

Power Supply Assembly Center, M24301

Row	Col	<u>Number</u>	<u>Name</u>
С	7	CBC7-C	PITOT ADM

Power Supply Assembly Left, M24101

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
С	7	CBC7-L	PITOT ADM

Power Supply Assembly Right, M24201

<u>Row</u>	Col	<u>number</u>	<u>name</u>
С	7	CBC7-R	PITOT ADM

E. Pitot Probe Heater Repair

SUBTASK 30-00-00-810-030-001

- (1) Do these steps to 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:
 - 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 are 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:
 - Go to the observed Fault List at the start of the FIM, and find the best description for the fault
 - 2) Find the task number on the same line as the fault description.

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

	END	OF	TASK	
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TASK 30-00-00-040-810-001

10. DDG 30-71-1 Preparation - Drain Mast Heaters Inoperative

A. General

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

B. Location Zones

Zone	Area
200	Upper Half of Fuselage

C. Water Supply Shutoff Valves Deactivation

SUBTASK 30-00-00-040-017-001

- (1) If the forward drain mast heater is inoperative:
 - (a) Close the water supply shut off valves to the galley sinks, lavatory sinks and drinking fountains (if installed) forward and including the door 3 service area, except outboard lavatories installed on the aft side of the door 3 service area.

SUBTASK 30-00-00-040-018-001

- (2) If the aft drain mast heater is inoperative:
 - (a) Close the water supply shut off valves to the galley sinks, lavatory sinks and drinking fountains (if installed) aft of the door 3 service area including outboard lavatories installed on the aft side of the door 3 service area.



TASK 30-00-00-440-809-001

11. DDG 30-71-1 Restoration - Drain Mast Heaters Inoperative

A. General

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

B. References

Reference	Title
30-71-00-720-801	Drain Mast and Gray Water Drain Line Heaters Operational Test
	(P/B 501)

C. Water Supply Shutoff Valves Reactivation

SUBTASK 30-00-00-440-014-001

- (1) If the forward drain mast heater was inoperative:
 - (a) Open the water supply shut off valves to the galley sinks, lavatory sinks and drinking fountains (if installed) forward and including the door 3 service area, except outboard lavatories installed on the aft side of the door 3 service area.

SUBTASK 30-00-00-440-015-001

- (2) If the aft drain mast heater is inoperative:
 - (a) Open the water supply shut off valves to the galley sinks, lavatory sinks and drinking fountains (if installed) aft of the door 3 service area including outboard lavatories installed on the aft side of the door 3 service area.

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D. Drain Mast Heaters Test

SUBTASK 30-00-00-710-009-001

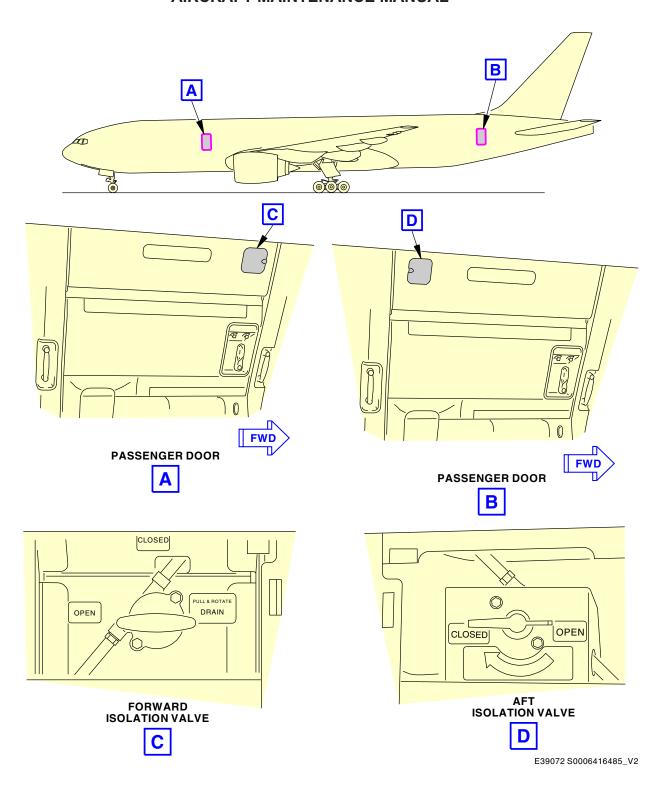
(1) Do this task: Drain Mast and Gray Water Drain Line Heaters Operational Test, TASK 30-71-00-720-801.

——— END OF TASK ———

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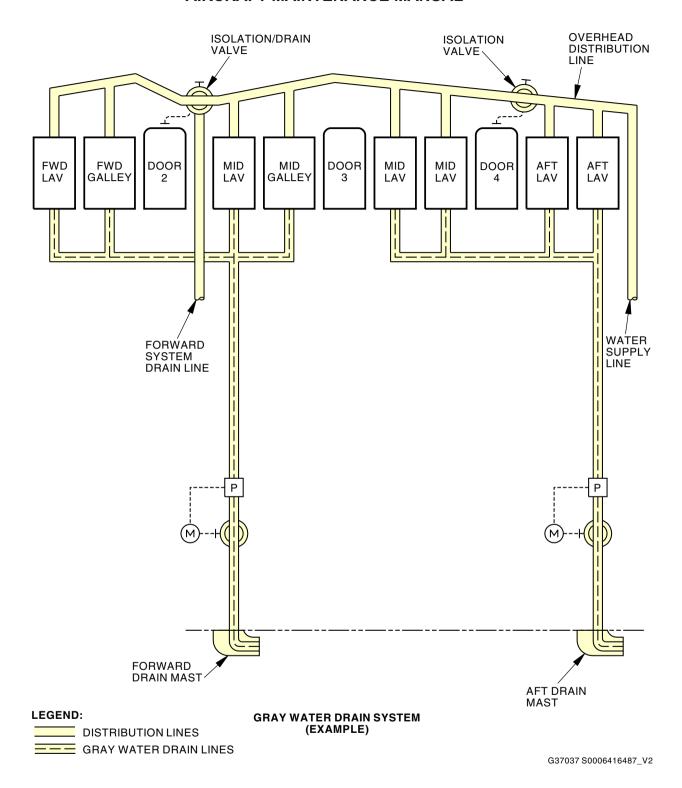


Drain Mast Heaters Inoperative Figure 905/30-00-00-990-816 (Sheet 1 of 3)

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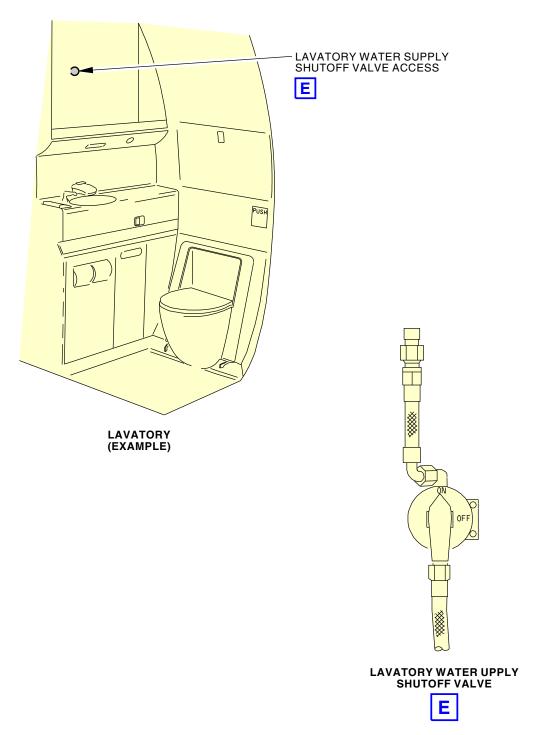




Drain Mast Heaters Inoperative Figure 905/30-00-00-990-816 (Sheet 2 of 3)







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Drain Mast Heaters Inoperative Figure 905/30-00-00-990-816 (Sheet 3 of 3)

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WING ANTI-ICE - MAINTENANCE PRACTICES

1. General

- A. This procedure has these tasks:
 - (1) Wing anti-ice deactivation.
 - (2) Wing anti-ice activation.

TASK 30-11-00-040-801

2. Wing Anti-Ice - Deactivation

- A. General
 - (1) This task will deactivate the wing anti-ice system.
- B. References

Reference	Title
27-81-00-040-801	Leading Edge Slat - Deactivation (P/B 201)
36-00-00-040-811	Pneumatic System - Deactivation (P/B 201)

C. Location Zones

Zone	Area
212	Flight Compartment, Right

D. Procedure

SUBTASK 30-11-00-020-001

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

SUBTASK 30-11-00-020-002

(2) Do this task: Pneumatic System - Deactivation, TASK 36-00-00-040-811.

SUBTASK 30-11-00-020-003

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

Right Power Management Panel, P210

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
1	6	C30600	WAI CTRI

E. Wing Anti-Ice - Tryout

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

SUBTASK 30-11-00-210-001

(1) Make sure that these messages are shown on the Maintenance Access Terminal (MAT) display:

30–10280	Wing Anti-Ice Valve (left) torque motor is open or shorted.
30–10310	Wing Anti-Ice Valve (right) torque motor is open or shorted.

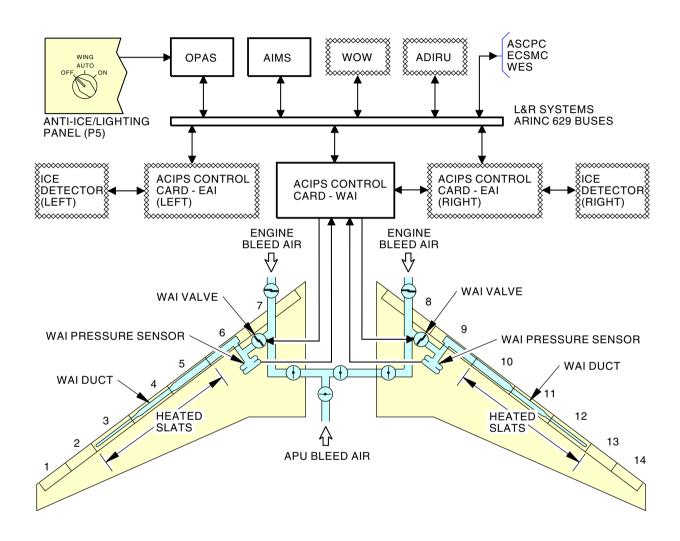
SUBTASK 30-11-00-210-002

(2) Listen to make sure that there is no wing anti-ice air flow from the overboard exhaust.

	END	OF TA	ASK -	
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Wing Anti-Ice Figure 201/30-11-00-990-801





TASK 30-11-00-440-801

3. Wing Anti-Ice - Activation

(Figure 201)

- A. General
 - (1) This task will activate the wing anti-ice system.
- B. References

Reference	Title
27-81-00-440-801	Leading Edge Slat Reactivation (P/B 201)
36-00-00-440-811	Pneumatic System - Activation (P/B 201)

C. Location Zones

Zone	Area	
212	Flight Compartment, Right	

D. Procedure

SUBTASK 30-11-00-420-001

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

Right	Power	Management	Panel,	P210
Dow	Cal	Number	Nama	

IXOW	<u>001</u>	Nullibel	<u>ivallie</u>
L	6	C30600	WAI CTRL

SUBTASK 30-11-00-420-002

(2) Do this task: Leading Edge Slat Reactivation, TASK 27-81-00-440-801.

SUBTASK 30-11-00-420-003

(3) Do this task: Pneumatic System - Activation, TASK 36-00-00-440-811.

----- END OF TASK -----

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WING ANTI-ICE - ADJUSTMENT/TEST

1. General

- A. This procedure has these tasks:
 - (1) Wing Anti-Ice (pneumatics not available) System Test
 - (2) Wing Anti-Ice (pneumatics available) System Test
 - (3) Airfoil and Cowl Ice Protection System Control Card WAI Software Configuration Check

TASK 30-11-00-400-801

2. Wing Anti-Ice (pneumatics not available) - System Test

A. General

- (1) This test makes sure that the electrical interfaces of the Wing Anti-Ice System are connected correctly.
- (2) A maintenance access terminal is necessary for this procedure. For instructions on how to use a maintenance access terminal, do this task: How to Use the Central Maintenance Computing System, TASK 45-10-00-740-808.

B. References

Reference	Title
24-22-00-860-805	Supply Electrical Power (P/B 201)
24-22-00-860-806	Remove Electrical Power (P/B 201)
45-10-00-740-808	How to Use the Central Maintenance Computing System (P/B 201)

C. Location Zones

Zone	Area	
212	Flight Compartment, Right	

D. Procedure

SUBTASK 30-11-00-860-001

(1) Do this task: Supply Electrical Power, TASK 24-22-00-860-805.

SUBTASK 30-11-00-860-002

(2) Make sure that the air ground system is in the ground mode for a minimum of 1 minute.

SUBTASK 30-11-00-860-003

(3) Set the GND TEST switch on the P61 panel to the ENABLE position.

SUBTASK 30-11-00-860-015

(4) Set the WING switch on the P5 panel to AUTO position.

SUBTASK 30-11-00-740-001

- (5) Use a maintenance access terminal (MAT) to do the system test of the wing anti-ice system:
 - (a) Make these selections on the MAT:
 - 1) ONBOARD MAINTENANCE
 - 2) LINE MAINTENANCE
 - 3) GROUND TESTS
 - 4) 30 Airfoil Cowl Ice Protection System
 - 5) SYSTEM TEST
 - 6) Wing Anti-Ice (pneumatics not available)

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- 7) CONTINUE
- (b) Do the instructions that show on the MAT and then make these selections:
 - 1) CONTINUE
 - 2) START TEST
- (c) When the test is completed, make sure that PASSED shows adjacent to TEST CONDITION on the MAT.
- (d) If FAILED shows, make sure there is no maintenance message for the wing anti-ice system.
 - If there is a maintenance message for the wing anti-ice system, refer to the applicable Maintenance Message Index in the FIM or select the maintenance message and select MAINTENANCE MESSAGE DATA.

SUBTASK 30-11-00-860-004

(6) Set the GND TEST switch on the P61 panel to the NORM position.

SUBTASK 30-11-00-860-005

(7) Do this task: Remove Electrical Power, TASK 24-22-00-860-806.



TASK 30-11-00-400-802

3. Wing Anti-Ice (pneumatics available) - System Test

A. General

- (1) This test makes sure that the wing anti-lce system can control the bleed airflow to each of the wings.
- (2) A maintenance access terminal is necessary for this procedure. For instructions on how to use a maintenance access terminal, do this task: How to Use the Central Maintenance Computing System, TASK 45-10-00-740-808.

B. References

Reference	Title
21-00-00-800-803	Supply Conditioned Air with a Cooling Pack (P/B 201)
24-22-00-860-805	Supply Electrical Power (P/B 201)
24-22-00-860-806	Remove Electrical Power (P/B 201)
36-00-00-860-801	Depressurize the Pneumatic System (P/B 201)
36-00-00-860-802	Pressurize the Pneumatic System (P/B 201)
45-10-00-740-808	How to Use the Central Maintenance Computing System (P/B 201)
45-10-00-740-819	How to Do a Ground Test (P/B 201)

C. Location Zones

Zone	Area	
212	Flight Compartment, Right	

D. Procedure

SUBTASK 30-11-00-860-006

(1) Do this task: Supply Electrical Power, TASK 24-22-00-860-805.

SUBTASK 30-11-00-860-007

(2) Do this task: Pressurize the Pneumatic System, TASK 36-00-00-860-802.

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SUBTASK 30-11-00-860-016

(3) Make sure that the air ground system is in the ground mode for a minimum of 1 minute.

NOTE: If you use the APU to pressurize the pneumatic system, an A/C pack must be on to complete the test. The APU will not supply sufficient air to complete the test, unless the APU is in the pneumatic mode, ECS.

SUBTASK 30-11-00-860-008

(4) Set the GND TEST switch on the P61 panel to the ENABLE position.

SUBTASK 30-11-00-860-012

(5) Set the ANTI-ICE WING selector to the AUTO position.

SUBTASK 30-11-00-740-002

- (6) Use a maintenance access terminal (MAT), do this task: How to Do a Ground Test, TASK 45-10-00-740-819 to do the system test of the Wing Anti-Ice System:
 - (a) Make these selections on the MAT:
 - 1) ONBOARD MAINTENANCE
 - 2) LINE MAINTENANCE
 - 3) GROUND TESTS
 - 4) 30 Airfoil Cowl Ice Protection System
 - 5) SYSTEM TEST
 - 6) Wing Anti-Ice (pneumatics available)
 - 7) CONTINUE
 - (b) Do the instructions that show on the MAT and then make these selections:
 - 1) CONTINUE



DO NOT OPERATE THE WAI SYSTEM UNTIL ALL PERSONS ARE CLEAR OF THE WING LEADING EDGE. THE HOT AIR CAN BURN YOU.

- 2) START TEST
- (c) Check the valve joints for leakage. Diffused leakage is acceptable. Jet blast type leakage must be repaired by joint or clamp realignment.
- (d) When the test is completed, make sure that PASSED shows adjacent to TEST CONDITION on the MAT.
- (e) If FAILED shows, select the maintenance message and select MAINTENANCE MESSAGE DATA or refer to the applicable Maintenance Message Index in the FIM.
- (f) If the test stops before it is completed, and you use the APU to pressurize the pneumatic system, then start an A/C pack and do the MAT test again. To start an A/C pack, do this task: Supply Conditioned Air with a Cooling Pack, TASK 21-00-00-800-803.

NOTE: The APU will not supply sufficient air to complete the test unless the APU is in the pneumatic mode, ECS.

SUBTASK 30-11-00-860-009

(7) Do this task: Depressurize the Pneumatic System, TASK 36-00-00-860-801.

SUBTASK 30-11-00-860-010

(8) Set the GND TEST switch on the P61 panel to the NORM position.

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SUBTASK 30-11-00-860-011

(9) Do this task: Remove Electrical Power, TASK 24-22-00-860-806.

	END	OF TA	ASK	
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TASK 30-11-00-700-801

4. Airfoil and Cowl Ice Protection System - WAI - Software Configuration Check

A. General

- (1) The configuration check makes sure that the airfoil and cowl ice protection system control card WAI has the correct software.
- (2) A maintenance access terminal is necessary for this procedure. For instructions on how to use a maintenance access terminal, do this task: How to Use the Central Maintenance Computing System, TASK 45-10-00-740-808.

B. References

Reference	Title
24-22-00-860-805	Supply Electrical Power (P/B 201)
30-11-02-400-802	Airfoil and Cowl Ice Protection System - WAI - Software Installation (P/B 201)
45-10-00-740-808	How to Use the Central Maintenance Computing System (P/B 201)

C. Location Zones

Zone	Area
212	Flight Compartment, Right

D. Software Configuration Check

SUBTASK 30-11-00-860-013

(1) Do this task: Supply Electrical Power, TASK 24-22-00-860-805.

SUBTASK 30-11-00-750-001

(2) Use a maintenance access terminal (MAT) to do a software configuration check of the airfoil and cowl ice protection system control card - WAI:

NOTE: Make sure you know the correct software part << number / numbers >> for the airfoil and cowl ice protection system control card - WAI when you look at the software part number on the display. For the airfoil and cowl ice protection system control card - WAI to be an approved installation, the correct software part number must be installed.

- (a) Make these selections on the MAT:
 - 1) ONBOARD MAINTENANCE
 - 2) LINE MAINTENANCE
 - 3) SYSTEM CONFIGURATION
 - 4) Airfoil and Cowl Ice Protection System
 - 5) CONTINUE
- (b) Find ACIPS Control Card (center) on the display and make sure that the software part number is correct.
- (c) Select GO BACK to remove the configuration display.

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(3) If the part number is incorrect, do this task: Airfoil and Cowl Ice Protection System - WAI - Software Installation, TASK 30-11-02-400-802

----- END OF TASK -----

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AIRFOIL AND COWL ICE PROTECTION SYSTEM CONTROL CARD - WAI - MAINTENANCE PRACTICES

1. General

- A. This procedure has these tasks:
 - (1) Airfoil and Cowl Ice Protection System Control Card WAI Software Installation

TASK 30-11-02-400-802

2. Airfoil and Cowl Ice Protection System - WAI - Software Installation

A. General

- (1) This procedure tells you how to install software in the Airfoil and Cowl Ice Protection System Control Card WAI (ACIPS WAI). The ACIPS WAI must contain this piece of software:
 - (a) The name of the software part loaded into an ACIPS (WAI) card follows:

ACIPS OPS

REF: AIPC 46-00-00-30B

Using the names, the specific software part number for an aircraft can be identified in the IPC

- (2) A maintenance access terminal is necessary for this procedure. For instructions on how to use a maintenance access terminal, do this task: How to Use the Central Maintenance Computing System, TASK 45-10-00-740-808.
- (3) If you do not know if the ACIPS WAI needs new software, you can first do the software configuration check. It will save time if you only install software when the software is missing or the part number is incorrect. You can find the software configuration check in this task: Airfoil and Cowl Ice Protection System Control Card Wing Anti-Ice Installation, TASK 30-11-02-400-801.
- (4) You can use the GSE-Laptop, maintenance device, SPL-5704, as an alternative to the PMAT in this task.
 - NOTE: The GSE-Laptop and the PMAT are equivalent for all of the PMAT functions that you will use in this task.
- (5) You can install the software from disks, the MAT hard drive or the PMAT hard drive (if available). It is recommended that you install software from the MAT or PMAT hard drive. To install new software on the MAT or PMAT hard drive, do this task: How to Add Software to the Hard Drive, TASK 45-10-00-860-812.
 - NOTE: When new software is installed in the ACIPS WAI, the load process first erases the old software and then installs the new software. If you install software directly to the ACIPS WAI from a faulty disk, the load process may erase the old software and then fail, so that no software is installed. If you install a faulty disk to the MAT or PMAT hard drive, the load may fail, but you will not erase the software from the ACIPS WAI.
 - (a) It is recommended that you remove old software part numbers from the MAT or PMAT hard drive after new software is installed. To remove software from the hard drive, do this task: How to Remove Software from the Hard Drive, TASK 45-10-00-860-813.
- (6) The airplane must be on the ground with the engines off before you can install software.
- (7) To read about the conditions and times necessary for software installation, do this task: On-Airplane Software Installation, TASK 20-15-11-400-801.

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B. References

Reference	Title
20-15-11-400-801	On-Airplane Software Installation (P/B 201)
24-22-00-860-805	Supply Electrical Power (P/B 201)
30-11-00-400-801	Wing Anti-Ice (pneumatics not available) - System Test (P/B 501)
30-11-02-400-801	Airfoil and Cowl Ice Protection System Control Card - Wing Anti-Ice - Installation (P/B 401)
45-10-00-740-808	How to Use the Central Maintenance Computing System (P/B 201)
45-10-00-860-812	How to Add Software to the Hard Drive (P/B 201)
45-10-00-860-813	How to Remove Software from the Hard Drive (P/B 201)
AIPC 46-00-00-30B	Aircraft Illustrated Parts Catalog

C. Tools/Equipment

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

Reference	Description
SPL-5704	Device - Maintenance
	Part #: G45004-1 Supplier: 81205
	Part #: G45004-3 Supplier: 81205
	Opt Part #: G45002-20 Supplier: 81205
	Opt Part #: G45002-25 Supplier: 81205
	Opt Part #: G45002-29 Supplier: 81205
	Opt Part #: J45001-1 Supplier: 81205
	Opt Part #: J45003-1 Supplier: 81205

D. Location Zones

Zone	Area
212	Flight Compartment, Right

E. Procedure

SUBTASK 30-11-02-860-001

(1) Do this task: Supply Electrical Power, TASK 24-22-00-860-805.

SUBTASK 30-11-02-860-003

(2) Make sure that the air ground system is in the ground mode for a minimum of 1 minute.

SUBTASK 30-11-02-860-004

(3) Set the WING switch on the P5 panel to AUTO.

SUBTASK 30-11-02-420-002

(4) Use a maintenance access terminal (MAT) to install software in the Airfoil and Cowl Ice Protection System Control Card - WAI:

NOTE: Make sure you know the correct software part number for the Airfoil and Cowl Ice
Protection System Control Card - WAI before you select the software part number on
the display. For the Airfoil and Cowl Ice Protection System Control Card - WAI to be an
approved installation, the correct software must be installed.

- (a) If the software is on a disk, put the correct disk in the disk drive.
- (b) Make these selections on the MAT:

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- 1) ONBOARD MAINTENANCE
- 2) EXTENDED MAINTENANCE
- 3) DATA LOAD
- (c) Make these selections to select the component that will receive the software:
 - 1) SELECT DESTINATION
 - 2) Airfoil and Cowl Ice Protection System
 - 3) ACIPS Control Card, center (WAI Card)
 - 4) CONTINUE
- (d) Make these selections to select the source of the software:
 - 1) SELECT SOURCE
 - 2) Select the source of the software (if Disk Drive is the only selection, it is automatically selected).
 - 3) Select the correct software part number from the display.
 - 4) CONTINUE
- (e) Select START to start the software installation.
- (f) When the software installation is completed, make sure the correct software part number shows on the display.
- (g) Select CONTINUE to remove the configuration display.

NOTE: If the other card (left, right) needs to be loaded, do this task again.

F. Installation Test

SUBTASK 30-11-02-750-002

(1) Do this task: Wing Anti-Ice (pneumatics not available) - System Test, TASK 30-11-00-400-801.

----- END OF TASK -----

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AIRFOIL AND COWL ICE PROTECTION SYSTEM CONTROL CARD - WING ANTI-ICE - REMOVAL/INSTALLATION

1. General

- A. This procedure has these tasks:
 - A removal of the Airfoil and Cowl Ice Protection System (ACIPS) Control Card Wing Anti-Ice (WAI).
 - (2) An installation of the ACIPS Control Card, which includes a software configuration check and an installation test - WAI.
- B. There is a single ACIPS control card for the WAI system located in slot A7 of the right systems cardfile (RSCF), P84.

TASK 30-11-02-000-801

2. Airfoil and Cowl Ice Protection System Control Card - Wing Anti-Ice - Removal (Figure 401)

A. References

Reference	Title
20-10-01-000-802	Printed Circuit Card Removal (P/B 401)

B. Location Zones

Zone	Area
117	Main Equipment Center, Left
118	Main Equipment Center, Right

C. Access Panels

Number	Name/Location	
117AL	Main Equipment Center Access Door	

D. Prepare for the Procedure

SUBTASK 30-11-02-010-001

(1) Open this access panel:

<u>Number</u>	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 30-11-02-010-002

(2) Set the S4 switch on the A3 power supply card in the right systems cardfile, P84, to OFF.

SUBTASK 30-11-02-860-005

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

Right Power	Management	Panel,	P210
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Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
L	6	C30600	WAI CTRL

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E. Procedure

SUBTASK 30-11-02-020-001



DO THE SPECIFIED TASK TO SAFELY REMOVE/INSTALL THE ACIPS CONTROL CARD. IF YOU DO NOT OBEY THE INSTRUCTIONS YOU CAN DAMAGE THE INTERNAL COMPONENTS OF THE ACIPS CONTROL CARD.

(1) Remove the ACIPS control card [1] from slot A7. To remove it, do this task: Printed Circuit Card Removal, TASK 20-10-01-000-802.

——— END OF TASK ———

TASK 30-11-02-400-801

3. Airfoil and Cowl Ice Protection System Control Card - Wing Anti-Ice - Installation (Figure 401)

A. General

- (1) After the installation procedure is accomplished, an installation test makes sure that the ACIPS control card is connected, serviceable and has the correct software.
- (2) A maintenance access terminal is necessary for this procedure. For instructions on how to use a maintenance access terminal, do this task: How to Use the Central Maintenance Computing System, TASK 45-10-00-740-808.

B. References

Reference	Title
20-10-01-400-802	Printed Circuit Card Installation (P/B 401)
30-11-00-400-801	Wing Anti-Ice (pneumatics not available) - System Test (P/B 501)
30-11-02-400-802	Airfoil and Cowl Ice Protection System - WAI - Software Installation (P/B 201)
45-10-00-740-808	How to Use the Central Maintenance Computing System (P/B 201)

C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity	
1	ACIPS control card	30-11-02-01-005	ARO ALL	

D. Location Zones

Zone	Area
117	Main Equipment Center, Left
118	Main Equipment Center, Right
212	Flight Compartment, Right

E. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

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F. Procedure

SUBTASK 30-11-02-420-001



DO THE SPECIFIED TASK TO INSTALL THE ACIPS CONTROL CARD. IF YOU DO NOT OBEY THE INSTRUCTIONS YOU CAN DAMAGE THE INTERNAL COMPONENTS OF THE ACIPS CONTROL CARD.

(1) Install the ACIPS control card [1] into slot A7. To install it, do this task: Printed Circuit Card Installation, TASK 20-10-01-400-802.

SUBTASK 30-11-02-010-003

(2) Set the S4 switch on the A3 power supply card in the right systems cardfile, P84, to ON.

SUBTASK 30-11-02-860-006

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

Right Power Management Panel, P210

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
L	6	C30600	WAI CTRL

G. Software Configuration Check

SUBTASK 30-11-02-750-003

(1) Use a maintenance access terminal (MAT) to do a software configuration check of the ACIPS card you installed:

NOTE: Make sure you know the correct part numbers for the ACIPS card when you look at the software part numbers on the display. For the ACIPS cards to be an approved installation, the correct software part numbers must be installed.

- (a) Make these selections on the MAT:
 - 1) ONBOARD MAINTENANCE
 - 2) LINE MAINTENANCE
 - 3) SYSTEM CONFIGURATION
 - 4) 30 Airfoil and Cowl Ice Protection System
 - 5) CONTINUE
- (b) Find on the display and make sure that the software part number is correct.
- (c) Select GO BACK
- (d) If the software part numbers for the ACIPS card you installed are incorrect, then, do this task: Airfoil and Cowl Ice Protection System WAI Software Installation, TASK 30-11-02-400-802.

H. Installation Test

SUBTASK 30-11-02-750-001

(1) Do this task: Wing Anti-Ice (pneumatics not available) - System Test, TASK 30-11-00-400-801.

I. Put the Airplane Back to Its Usual Condition

SUBTASK 30-11-02-410-001

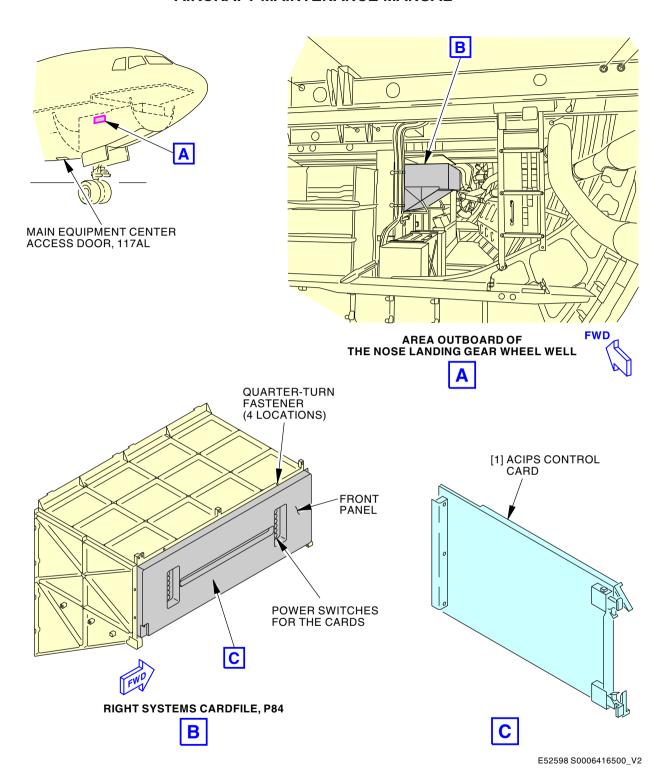
(1) Close this access panel:

<u>Number</u>	Name/Location
117AL	Main Equipment Center Access Door

—— END OF TASK ——

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Airfoil and Cowl Ice Protection System (ACIPS) Control Card - WAI Installation Figure 401/30-11-02-990-801

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WING ANTI-ICE VALVE AND FILTER - REMOVAL/INSTALLATION

1. General

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

TASK 30-11-03-000-801

2. Wing Anti-Ice Valve Removal

(Figure 401)

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
27-81-00-040-801	Leading Edge Slat - Deactivation (P/B 201)
36-00-00-860-801	Depressurize the Pneumatic System (P/B 201)

B. Location Zones

Zone	Area
521	Leading Edge to Front Spar - Outboard of Nacelle Strut - Left Wing
621	Leading Edge to Front Spar - Outboard of Nacelle Strut - Right Wing

C. Access Panels

Number	Name/Location
521AB	Wing Anti-Ice Valve Door
621AB	Wing Anti-Ice Valve Door

D. Prepare for the Procedure

SUBTASK 30-11-03-040-001



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 Slat - Deactivation, TASK 27-81-00-040-801.

SUBTASK 30-11-03-040-002

(2) Do this task: Depressurize the Pneumatic System, TASK 36-00-00-860-801.

SUBTASK 30-11-03-860-001

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

Right Power Management Panel, P210

Row	Col	Number	<u>Name</u>
1	6	C30600	WAI CTRI

SUBTASK 30-11-03-010-002

(4) Open this access panel for the left wing:

<u>Number</u>	Name/Location
521AB	Wing Anti-Ice Valve Door

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SUBTASK 30-11-03-010-001

(5) Open this access panel for the right wing:

Number Name/Location

621AB Wing Anti-Ice Valve Door

E. Procedure

SUBTASK 30-11-03-020-001

(1) Disconnect the electrical connector [2] from the valve assembly [1].

SUBTASK 30-11-03-020-002

(2) Remove the screw [6], nut [8], washer [7] and the washer [9] to disconnect the jumper [5] from the valve assembly [1].

SUBTASK 30-11-03-020-003

(3) Remove the coupling [4] and coupling [10].

SUBTASK 30-11-03-020-004



DO NOT OPERATE THE VALVE BY HAND. MANUAL OPERATION OF THE VALVE CAN CAUSE INTERNAL DAMAGE TO THE VALVE.

(4) Remove the valve assembly [1].

----- END OF TASK -----

TASK 30-11-03-400-801

3. Wing Anti-Ice Valve Installation

(Figure 401)

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
27-81-00-440-801	Leading Edge Slat Reactivation (P/B 201)
30-11-00-400-802	Wing Anti-Ice (pneumatics available) - System Test (P/B 501)
SWPM 20-20-00	Standard Wiring Practices 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-1550	Bonding Meters - Approved, Intrinsically Safe (Approved for use in
	Class I, Divisions I & II hazardous (classified) locations. Outside
	these hazardous locations, COM-614 can be used in lieu of
	COM-1550).
	Part #: 620LK Supplier: 1CRL2
	Part #: M1 Supplier: 3AD17
	Part #: T477W Supplier: 01014
	Opt Part #: M1B Supplier: 3AD17

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C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Valve assembly	30-11-03-05-095	ARO ALL

D. Location Zones

Zone	Area
521	Leading Edge to Front Spar - Outboard of Nacelle Strut - Left Wing
621	Leading Edge to Front Spar - Outboard of Nacelle Strut - Right Wing

E. Access Panels

Number	Name/Location
521AB	Wing Anti-Ice Valve Door
621AB	Wing Anti-Ice Valve Door

F. Procedure

SUBTASK 30-11-03-420-001



DO NOT OPERATE THE VALVE BY HAND. MANUAL OPERATION OF THE VALVE CAN CAUSE INTERNAL DAMAGE TO THE VALVE.

- (1) Position the valve assembly [1] so the flow arrow points outboard.
 - (a) Make sure that the duct flanges make full contact with no gaps around the flanges.

SUBTASK 30-11-03-420-002

- (2) Install the valve assembly [1], coupling [4] and coupling [10].
 - (a) Tighten the coupling [4] and coupling [10] to 55 ±5 in-lb (6 ±1 N·m).
 - (b) Use a rubber mallet to lightly tap around each coupling.
 - <u>NOTE</u>: Lightly tapping around each coupling will help seat the flange and coupling.
 - (c) Tighten the coupling [4] and coupling [10] to 55 \pm 5 in-lb (6 \pm 1 N·m).
 - (d) Repeat the above steps until the locking nut on the coupling will require less than half a turn to get the recommended torque.

SUBTASK 30-11-03-420-004

(3) Install the jumper [5], screw [6], nut [8], washer [7] and washer [9].

SUBTASK 30-11-03-420-005

(4) Connect the electrical connector [2] to the valve assembly [1].

SUBTASK 30-11-03-860-002

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

Right Power Management Panel, P210

Row	<u>Col</u>	Number	<u>Name</u>
1	6	C30600	WAI CTRI

G. Installation Test

SUBTASK 30-11-03-760-001

(1) With a intrinsically safe approved bonding meter, COM-1550, make sure the resistance between the valve assembly [1] and the airplane structure is 0.008 ohms or less. (SWPM 20-20-00)

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SUBTASK 30-11-03-710-001

(2) Do this task: Wing Anti-Ice (pneumatics available) - System Test, TASK 30-11-00-400-802.

H. Put the Airplane Back to Its Usual Condition

SUBTASK 30-11-03-410-001

(1) Close this panel for the left wing:

Number Name/Location

521AB Wing Anti-Ice Valve Door

SUBTASK 30-11-03-410-002

(2) Close this panel for the right wing:

Number Name/Location

621AB Wing Anti-Ice Valve Door

SUBTASK 30-11-03-440-001

(3) Reactivate the leading edge slats. To activate them, do this task: Leading Edge Slat Reactivation, TASK 27-81-00-440-801.

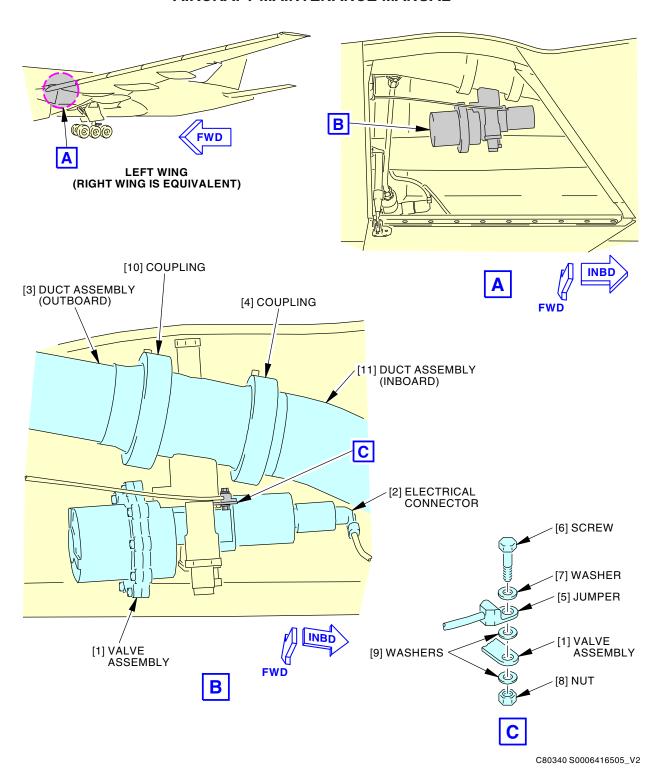
----- END OF TASK -----

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- EFFECTIVITY ·





WAI Valve Installation Figure 401/30-11-03-990-801

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TASK 30-11-03-000-802

4. Wing Anti-Ice Valve Filter Removal

Figure 402

A. References

Reference	Title
27-81-00-040-801	Leading Edge Slat - Deactivation (P/B 201)
36-00-00-860-801	Depressurize the Pneumatic System (P/B 201)

B. Location Zones

Zone	Area
521	Leading Edge to Front Spar - Outboard of Nacelle Strut - Left Wing
621	Leading Edge to Front Spar - Outboard of Nacelle Strut - Right Wing

C. Access Panels

Number	Name/Location
521AB	Wing Anti-Ice Valve Door
621AB	Wing Anti-Ice Valve Door

D. Prepare for the Filter Removal

SUBTASK 30-11-03-860-003



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

(1) Deactivate the leading edge slats. To deactivate them, do this task: Leading Edge Slat - Deactivation, TASK 27-81-00-040-801.

SUBTASK 30-11-03-860-004

(2) Do this task: Depressurize the Pneumatic System, TASK 36-00-00-860-801.

SUBTASK 30-11-03-860-005

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

Right Power Management Panel, P210

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
L	6	C30600	WAI CTRL

SUBTASK 30-11-03-010-003

(4) Open these access panels:

<u>Number</u>	Name/Location
521AB	Wing Anti-Ice Valve Door
621AB	Wing Anti-Ice Valve Door

E. Filter Removal

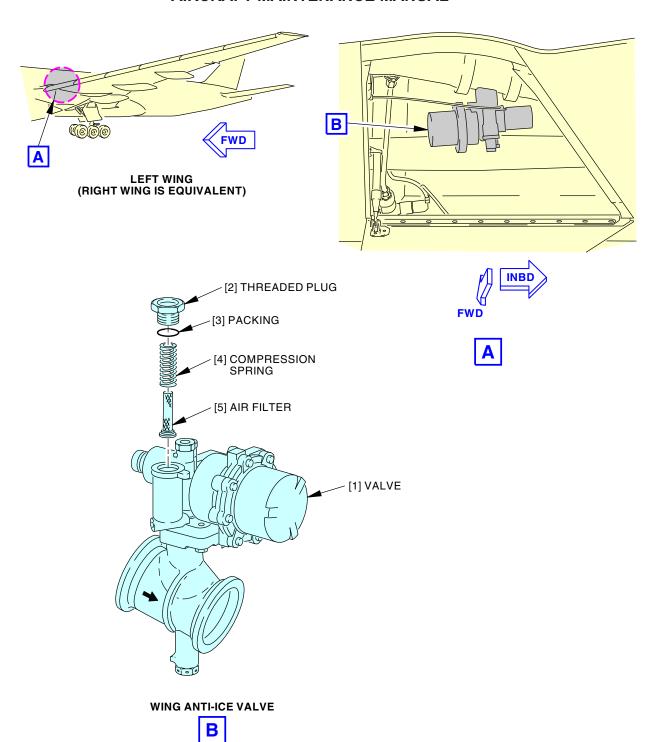
SUBTASK 30-11-03-020-005

- (1) Do these steps to remove the WAI filter:
 - (a) Remove the threaded plug [2] and packing [3].
 - (b) Remove the compression spring [4].
 - (c) Remove the air filter [5].

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Filter Installation Figure 402/30-11-03-990-802

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TASK 30-11-03-400-802

5. Wing Anti-Ice Valve Filter Installation

Figure 402

A. References

Reference	Title
27-81-00-440-801	Leading Edge Slat Reactivation (P/B 201)

B. Consumable Materials

Reference	Description	Specification
D00669	Multi-Purpose, Moly-Lithium Type, Lubriplate	
	Mo-Lith No. 2	
D50104	Grease - Molykote 44 High Temperature	
	Bearing Grease (Medium) (Formerly Dow	
	Corning DC-44)	

C. Location Zones

Zone	Area
521	Leading Edge to Front Spar - Outboard of Nacelle Strut - Left Wing
621	Leading Edge to Front Spar - Outboard of Nacelle Strut - Right Wing

D. Access Panels

Number	Name/Location
521AB	Wing Anti-Ice Valve Door
621AB	Wing Anti-Ice Valve Door

E. Filter Installation

SUBTASK 30-11-03-420-007

- (1) Do these steps to install the WAI filter:
 - (a) Inspect the air filter [5] for a damaged screen.
 - (b) If the screen is damaged, then discard the filter and get a new air filter [5].
 - (c) Install the air filter [5].
 - (d) Reinstall the compression spring [4].
 - (e) Inspect the packing [3] for damage or deterioration.
 - (f) If you find any damage or deterioration, then discard the packing and get a new preformed packing [3].
 - 1) Put a thin layer of Molykote 44 grease, medium, D50104, on the packing [3].
 - 2) Install the packing [3] onto the threaded plug [2].
 - (g) Put a thin layer of, Lubriplate Mo-Lith No. 2 Lubricant, D00669, on the threads of the threaded plug [2].
 - (h) Re-install the threaded plug [2].
 - (i) Tighten the threaded plug [2] to 40 \pm 5 in-lb (5 \pm 1 N·m).

F. Put the Airplane Back to Its Usual Condition

SUBTASK 30-11-03-410-003

(1) Close these access panels:

<u>Number</u>	Name/Location
521AB	Wing Anti-Ice Valve Door

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(Continued)

Number Name/Location

621AB Wing Anti-Ice Valve Door

SUBTASK 30-11-03-860-006

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

Right Power Management Panel, P210

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
L	6	C30600	WAI CTRL

SUBTASK 30-11-03-860-007

(3) Reactivate the leading edge slats. To activate them, do this task: Leading Edge Slat Reactivation, TASK 27-81-00-440-801.

----- END OF TASK -----

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WING ANTI-ICE VALVE - CLEANING/PAINTING

1. General

- A. This procedure contains one task:
 - (1) Cleaning the wing anti-ice valve filter.
- B. The WAIV is pneumatically operated. The WAIV filter prevents unwanted material from entering the control side of the WAIV.

TASK 30-11-03-100-801

2. Wing Anti-Ice Valve Filter - Cleaning

Figure 30-11-03-990-802

A. References

Reference	Title
30-11-03-000-802	Wing Anti-Ice Valve Filter Removal (P/B 401)
30-11-03-400-802	Wing Anti-Ice Valve Filter Installation (P/B 401)
30-11-03-990-802	Figure: Filter Installation (P/B 401)

B. Consumable Materials

Reference	Description	Specification	
B01053	Cleaner - Alkaline - Fine Organics FO2085		

C. Location Zones

Zone	Area
521	Leading Edge to Front Spar - Outboard of Nacelle Strut - Left Wing
621	Leading Edge to Front Spar - Outboard of Nacelle Strut - Right Wing

D. Access Panels

Number	Name/Location	
521AB	Wing Anti-Ice Valve Door	
621AB	Wing Anti-Ice Valve Door	

E. Prepare for the Cleaning

SUBTASK 30-11-03-860-008

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

Right Power Management Panel, P210

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
L	6	C30600	WAI CTRL

SUBTASK 30-11-03-010-004

(2) Open these access panels:

<u>Number</u>	Name/Location
521AB	Wing Anti-Ice Valve Door
621AB	Wing Anti-Ice Valve Door

SUBTASK 30-11-03-860-009

(3) Remove the filter from the Wing Anti-Ice Valve, do this task: Wing Anti-Ice Valve Filter Removal, TASK 30-11-03-000-802.

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F. Clean the Filter

SUBTASK 30-11-03-160-001

(1) Do these steps to clean the filter:



DO NOT GET THIS MATERIAL IN YOUR MOUTH, EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM THIS MATERIAL. PUT ON A RESPIRATOR WHEN YOU USE THIS MATERIAL. MAKE SURE THAT THERE IS SUFFICIENT AIRFLOW. CLEAN BARE SKIN FULLY AFTER YOU USE THIS MATERIAL. THIS MATERIAL CAN CAUSE INJURIES TO PERSONNEL OR DAMAGE TO EQUIPMENT.

(a) Put the filter fully into Fine Organics FO2085 cleaner, B01053 or an equivalent.



OBEY THE PRECAUTIONS. IF YOU DO NOT OBEY THE PRECAUTIONS, INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (b) The precautions are:
 - 1) Use air pressure of 25 psig
 - 2) Do not point the airflow toward yourself, or other persons.
- (c) Shake the filter by hand, or shake the cleaner with compressed air or liquid.
- (d) Blow dry, filtered, compressed air through the air filter to remove any contamination.
- (e) Dry the filter with the compressed air.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 30-11-03-860-011

(1) Re-install the Wing Anti-Ice Valve filter, do this task: Wing Anti-Ice Valve Filter Installation, TASK 30-11-03-400-802.

SUBTASK 30-11-03-860-010

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

Right Power Management Panel, P210

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
L	6	C30600	WAI CTRL

SUBTASK 30-11-03-410-004

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(3) Close these access panels:

<u>number</u>	Name/Location
521AB	Wing Anti-Ice Valve Door
621AB	Wing Anti-Ice Valve Door

----- END OF TASK -----

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EFFECTIVITY



WING ANTI-ICE PRESSURE SENSOR - REMOVAL/INSTALLATION

1. General

- A. This procedure has these tasks:
 - (1) Wing Anti-Ice Pressure Sensor Removal.
 - (2) Wing Anti-Ice Pressure Sensor Installation.

TASK 30-11-04-000-801

2. Wing Anti-Ice Pressure Sensor Removal

(Figure 401)

A. References

Reference	Title
27-81-00-040-801	Leading Edge Slat - Deactivation (P/B 201)
36-00-00-860-801	Depressurize the Pneumatic System (P/B 201)

B. Location Zones

Zone	Area
521	Leading Edge to Front Spar - Outboard of Nacelle Strut - Left Wing
621	Leading Edge to Front Spar - Outboard of Nacelle Strut - Right Wing

C. Access Panels

Number	Name/Location
521AB	Wing Anti-Ice Valve Door
621AB	Wing Anti-Ice Valve Door

D. Prepare for the Procedure

SUBTASK 30-11-04-040-001



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

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

SUBTASK 30-11-04-040-002

(2) Do this task: Depressurize the Pneumatic System, TASK 36-00-00-860-801.

SUBTASK 30-11-04-860-001

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

Right Power Management Panel, P210

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
L	6	C30600	WAI CTRL

SUBTASK 30-11-04-010-001

(4) Open the applicable panels:

<u>Number</u>	Name/Location
521AB	Wing Anti-Ice Valve Door
621AB	Wing Anti-Ice Valve Door

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E. Procedure

SUBTASK 30-11-04-020-001

(1) Disconnect the electrical connector [5] from the sensor [6].

SUBTASK 30-11-04-020-002

(2) Disconnect the tube assy [4] from the sensor [6].

SUBTASK 30-11-04-020-003

(3) Remove the bolt [1], washer [2] and clamp [3].

SUBTASK 30-11-04-020-004

(4) Remove the sensor [6].

——— END OF TASK ———

TASK 30-11-04-400-801

3. Wing Anti-Ice Pressure Sensor Installation

(Figure 401)

A. References

Reference	Title
27-81-00-440-801	Leading Edge Slat Reactivation (P/B 201)
30-11-00-400-802	Wing Anti-Ice (pneumatics available) - System Test (P/B 501)

B. Consumable Materials

Reference	Description	Specification
D50004	Compound - Antiseize	BMS3-28

C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity	
6	Sensor	30-11-04-05-035	ARO ALL	

D. Location Zones

Zone	Area
521	Leading Edge to Front Spar - Outboard of Nacelle Strut - Left Wing
621	Leading Edge to Front Spar - Outboard of Nacelle Strut - Right Wing

E. Access Panels

Number	Name/Location
521AB	Wing Anti-Ice Valve Door
621AB	Wing Anti-Ice Valve Door

F. Procedure

SUBTASK 30-11-04-420-001

(1) Connect the electrical connector [5] to the sensor [6].

SUBTASK 30-11-04-420-002

(2) Install the sensor [6], clamp [3], bolt [1] and washer [2].

SUBTASK 30-11-04-420-003

(3) Apply compound, D50004 to the threads on the sensor [6]

SUBTASK 30-11-04-420-004

(4) Connect the tube assy [4] to the sensor [6].

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SUBTASK 30-11-04-420-005

(5) Tighten the bolt [1] to 32.5 ± 2.5 in-lb $(3.7 \pm 0.3 \text{ N} \cdot \text{m})$.

SUBTASK 30-11-04-860-002

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

Right Power Management Panel, P210

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
L	6	C30600	WAI CTRL

G. Installation Test

SUBTASK 30-11-04-710-001

(1) Do this task: Wing Anti-Ice (pneumatics available) - System Test, TASK 30-11-00-400-802.

H. Put the Airplane Back to Its Usual Condition

SUBTASK 30-11-04-410-001

(1) Close the applicable access panels:

<u>Number</u>	Name/Location
521AB	Wing Anti-Ice Valve Door
621AB	Wing Anti-Ice Valve Door

SUBTASK 30-11-04-440-001

(2) Do this task: Leading Edge Slat Reactivation, TASK 27-81-00-440-801.

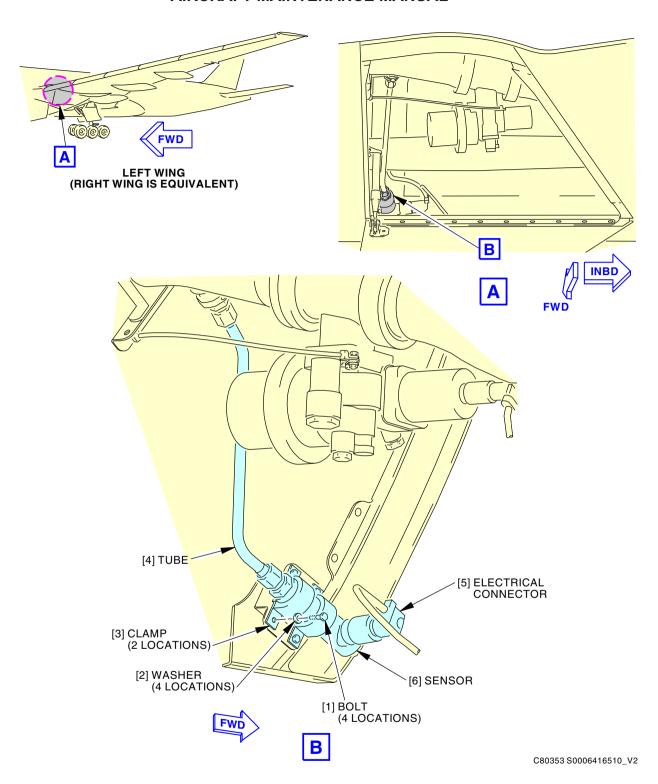
----- END OF TASK -----

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WAI Pressure Sensor Installation Figure 401/30-11-04-990-801

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WING ANTI-ICE T-DUCT - REMOVAL/INSTALLATION

1. General

- A. This procedure has these tasks:
 - (1) Wing Anti-Ice T-Duct Removal
 - (2) Wing Anti-Ice T-Duct Installation

TASK 30-11-05-000-801

2. Wing Anti-Ice T-Duct Removal

(Figure 401)

A. References

Reference	Title
27-81-00-040-801	Leading Edge Slat - Deactivation (P/B 201)
30-11-03-000-801	Wing Anti-Ice Valve Removal (P/B 401)
36-00-00-860-801	Depressurize the Pneumatic System (P/B 201)

B. Location Zones

Zone	Area
522	Slat No. 6
621	Leading Edge to Front Spar - Outboard of Nacelle Strut - Right Wing

C. Access Panels

Number	Name/Location
522BT	Slat No. 6 WAI Access Panel
522JT	Slat No. 6 WAI Access Panel
523AT	Slat No. 5 Cove Access Panel
622BT	Slat No. 9 WAI Access Panel
622JT	Slat No. 9 WAI Access panel
623AT	Slat No. 10 WAI Access Panel

D. Prepare for the Procedure

SUBTASK 30-11-05-860-001



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 Slat - Deactivation, TASK 27-81-00-040-801.

SUBTASK 30-11-05-040-001

(2) Do this task: Depressurize the Pneumatic System, TASK 36-00-00-860-801.

SUBTASK 30-11-05-860-002

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

Right Power Management Panel, P210

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
L	6	C30600	WAI CTRL

SUBTASK 30-11-05-010-001

(4) Remove the applicable panels to get access to the tee assembly [11]:

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(a) Remove these access panels for the left wing:

<u>Number</u>	Name/Location
522BT	Slat No. 6 WAI Access Panel
522JT	Slat No. 6 WAI Access Panel
523AT	Slat No. 5 Cove Access Panel

(b) Remove these access panels for the right wing:

<u>Number</u>	Name/Location	
622BT	Slat No. 9 WAI Access Panel	
622JT	Slat No. 9 WAI Access panel	
623AT	Slat No. 10 WAI Access Panel	

E. Procedure

SUBTASK 30-11-05-020-003

- (1) Do these steps to remove the tee assembly [11]:
 - (a) Remove the bolt [6], washer [7], nut [8] and the forward half of the retainer assembly [5] to disconnect the vibreaker assembly [2] from the duct assembly [9].
 - (b) Remove the screw [3], washer [4] and the aft half of the retainer assembly [5] to disconnect the duct assembly [9] from the bracket [1].
 - (c) Slide the duct assembly [9] and seal [12] out of tee assembly [11].
 - (d) Remove the bolt [10] and nut [14] to disconnect, bearing [13] from the nose rib assembly.
 - (e) Slide the bearing [13] and tee assembly [11] out from between the nose rib assemblies.

SUBTASK 30-11-05-020-002

- (2) Do these steps to remove the duct assembly [24]:
 - (a) Disconnect the tube assembly [26] from the duct assembly duct assembly [18].
 - (b) Remove the wing anti-ice valve so that the duct assembly [18] can be slid out of duct assembly [24]. To remove the valve, do this task: Wing Anti-Ice Valve Removal, TASK 30-11-03-000-801.
 - (c) Slide the duct assembly [18] and seal [25] out of the duct assembly [24].
 - (d) Remove the bolt [16] and washer [17] to disconnect the duct assembly [24] from the hinge assembly [15].
 - (e) Remove the bolt [20], washer [23], nut [22] to disconnect the bearing [19] and bearing [21] from the rib assemblies.
 - (f) Slide the bearing [19], bearing [21], and duct assembly [24] out from between the rib assemblies.

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TASK 30-11-05-400-801

3. Wing Anti-Ice T-Duct Installation

(Figure 401)

A. References

Reference	Title
27-81-00-040-801	Leading Edge Slat - Deactivation (P/B 201)
27-81-00-440-801	Leading Edge Slat Reactivation (P/B 201)
30-11-00-400-802	Wing Anti-Ice (pneumatics available) - System Test (P/B 501)

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(Continued)

Reference	Title
30-11-03-400-801	Wing Anti-Ice Valve Installation (P/B 401)

B. Consumable Materials

Reference	Description	Specification
D00006	Compound - Antiseize Pure Nickel Special -	BAC5008
	Never-Seez NSBT	

C. Location Zones

Zone	Area
522	Slat No. 6
621	Leading Edge to Front Spar - Outboard of Nacelle Strut - Right Wing

D. Access Panels

Number	Name/Location
522BT	Slat No. 6 WAI Access Panel
522JT	Slat No. 6 WAI Access Panel
523AT	Slat No. 5 Cove Access Panel
622BT	Slat No. 9 WAI Access Panel
622JT	Slat No. 9 WAI Access panel
623AT	Slat No. 10 WAI Access Panel

E. Procedure

SUBTASK 30-11-05-860-003

(1) Make sure that this circuit breaker is open and has safety tag:

Right Power Management Panel, P210

Row	Col	Number	<u>Name</u>
L	6	C30600	WAI CTRL

SUBTASK 30-11-05-860-004



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.

(2) Deactivate the leading edge slats. To deactivate them, do this task: Leading Edge Slat - Deactivation, TASK 27-81-00-040-801.

SUBTASK 30-11-05-420-001

- (3) Do these steps to install the duct assembly [24]:
 - (a) Put the bearing [19] and bearing [21] on the duct assembly [24].
 - (b) Put the duct assembly [24], bearing [19] and bearing [21] in between the rib assemblies.
 - (c) Install the bolt [20], washer [23] and nut [22] to connect the bearing [19] and bearing [21] to the rib assemblies.
 - (d) Install bolt [16] and washer [17] to connect the hinge assembly [15] to the duct assembly [24].
 - (e) Slide the duct assembly [18] and seal [25] into the duct assembly [24].
 - (f) Re-install the wing anti-ice valve. To install it, do this task: Wing Anti-Ice Valve Installation, TASK 30-11-03-400-801.

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(g) Apply Never-Seez NSBT compound, D00006 to the threads and connect the tube assembly [26] to the duct assembly [18].

SUBTASK 30-11-05-420-002

- (4) Do these steps to install the tee assembly [11]:
 - (a) Put the bearing [13] on the tee assembly [11].
 - (b) Put the bearing [13] and the tee assembly [11] in between the nose rib assemblies.
 - (c) Slide duct assembly [9] and seal [12] into the tee assembly [11].
 - (d) Install the bolt [10] and nut [14] to connect the bearing [13] to the nose rib assemblies.
 - (e) Install the screw [3], washer [4], and half of retainer assembly [5] to connect duct assembly [9] to the bracket [1].
 - (f) Install the bolt [6], washer [7], nut [8] and the other half of retainer [5] to connect the vibreaker assembly [2] to the duct assembly [9].

F. Installation Test

SUBTASK 30-11-05-710-001

(1) Do this task: Wing Anti-Ice (pneumatics available) - System Test, TASK 30-11-00-400-802.

G. Put the Airplane Back to its Usual Condition

SUBTASK 30-11-05-410-001

- (1) Close the applicable panels:
 - (a) Install these panels for the left wing:

<u>Number</u>	Name/Location
522BT	Slat No. 6 WAI Access Panel
522JT	Slat No. 6 WAI Access Panel
523AT	Slat No. 5 Cove Access Panel

(b) Install these panels for the right wing:

<u>Number</u>	Name/Location
622BT	Slat No. 9 WAI Access Panel
622JT	Slat No. 9 WAI Access panel
623AT	Slat No. 10 WAI Access Panel

SUBTASK 30-11-05-860-005

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

Right Power Management Panel, P210

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
L	6	C30600	WAI CTRL

SUBTASK 30-11-05-440-001

(3) Re-activate the leading edge slats. To activate them, do this task: Leading Edge Slat Reactivation, TASK 27-81-00-440-801.

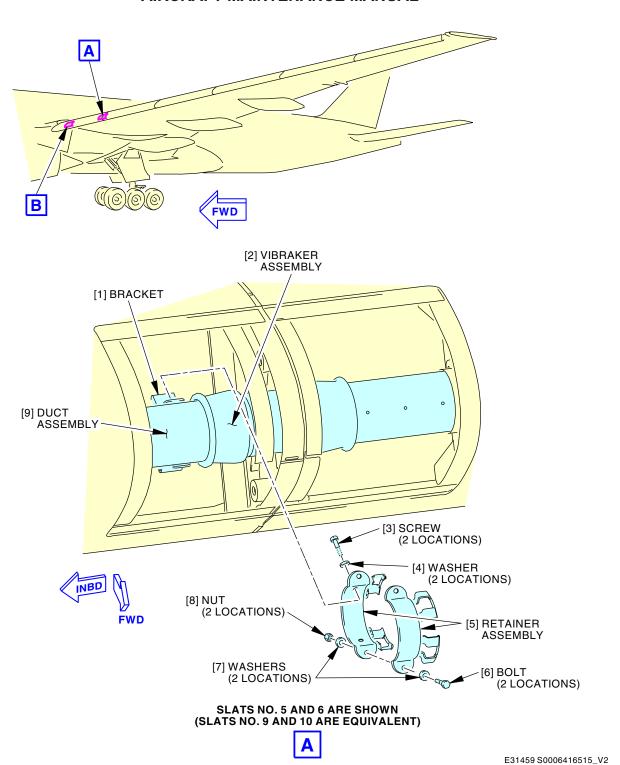
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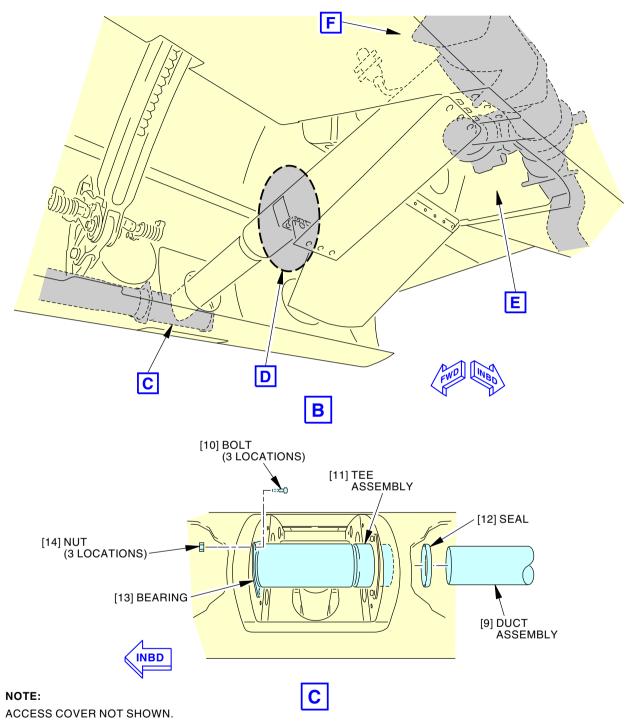
Wing Anti-Ice T-Duct Installation Figure 401/30-11-05-990-801 (Sheet 1 of 3)

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Wing Anti-Ice T-Duct Installation Figure 401/30-11-05-990-801 (Sheet 2 of 3)

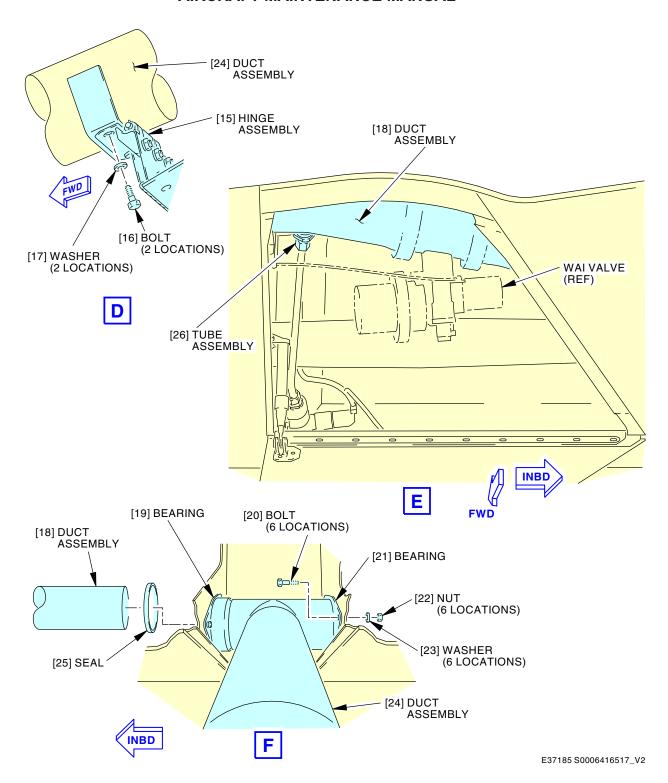
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Wing Anti-Ice T-Duct Installation Figure 401/30-11-05-990-801 (Sheet 3 of 3)

EFFECTIVITY

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WING ANTI-ICE SPRAY-DUCT - REMOVAL/INSTALLATION

1. General

- A. This procedure has these tasks:
 - (1) Wing Anti-Ice Spray-Duct Removal
 - (2) Wing Anti-Ice Spray-Duct Installation

TASK 30-11-06-000-801

2. Wing Anti-Ice Spray-Duct Removal

A. References

Reference	Title
27-81-15-000-801	Outboard Leading Edge Slat Removal (P/B 401)

B. Location Zones

Zone	Area
522	Slat No. 6
523	Slat No. 5
524	Slat No. 4
525	Slat No. 3
622	Slat No. 9
623	Slat No. 10
624	Slat No. 11
625	Slat No. 12

C. Removal Procedure

SUBTASK 30-11-06-010-001

- (1) Remove the applicable leading edge slats to get access to the spray-duct assembly:
 - (a) Do this task: Outboard Leading Edge Slat Removal, TASK 27-81-15-000-801.

SUBTASK 30-11-06-020-001

(2) Remove the spray-duct from the leading edge slat.



TASK 30-11-06-400-801

3. Wing Anti-Ice Spray-Duct Installation

A. References

Reference	Title
27-81-15-400-801	Outboard Leading Edge Slat Installation (P/B 401)
30-11-00-400-802	Wing Anti-Ice (pneumatics available) - System Test (P/B 501)

B. Location Zones

Zone	Area
522	Slat No. 6
523	Slat No. 5
524	Slat No. 4
525	Slat No. 3
622	Slat No. 9

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30-11-06



(Continued)

Zone	Area
623	Slat No. 10
624	Slat No. 11
625	Slat No. 12

C. Installation Procedure

SUBTASK 30-11-06-200-001

(1) Make sure the seal on the vibrake is not damaged.

SUBTASK 30-11-06-860-001

(2) Install the spray-duct assembly in the leading edge slat.

SUBTASK 30-11-06-860-002

(3) Do this task: Outboard Leading Edge Slat Installation, TASK 27-81-15-400-801.

D. Installation Test

SUBTASK 30-11-06-710-001

(1) Do this task: Wing Anti-Ice (pneumatics available) - System Test, TASK 30-11-00-400-802.

----- END OF TASK -----

ARO ALL 30-11-06



ENGINE ANTI-ICE - MAINTENANCE PRACTICES

1. General

- A. This procedure has these tasks:
 - (1) Engine anti-ice deactivation.
 - (2) Engine anti-ice activation.

TASK 30-21-00-040-801

2. Engine Anti-Ice - Deactivation

- A. General
 - (1) This task will deactivate the engine anti-ice system.
- B. References

Reference	Title
71-11-04-010-814-H00	Open the Fan Cowl Panel (Selection) (P/B 201)
78-31-00-010-816-H00	Open the Thrust Reverser (Selection) (P/B 201)

C. Location Zones

Zone	Area
212	Flight Compartment, Right
411	Engine, Left
413	Left Fan Cowl - Left Engine
414	Right Fan Cowl - Left Engine
415	Left Thrust Reverser - Left Engine
416	Right Thrust Reverser - Left Engine
421	Engine, Right
423	Left Fan Cowl - Right Engine
424	Right Fan Cowl - Right Engine
425	Left Thrust Reverser - Right Engine
426	Right Thrust Reverser - Right Engine

D. Procedure

SUBTASK 30-21-00-020-008



MAKE SURE THAT YOU OPEN THE CIRCUIT BREAKERS FOR THE EAI CONTROLLER HEATER. IF YOU DO NOT, THE EAI IS HOT AND CAN CAUSE INJURY TO PERSONNEL.

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

Left Power Management Panel, P110

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
Н	16	C30627	EAI CTRL L HTR

Right Power Management Panel, P210

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
L	17	C30626	EAI CTRL R HTR
Р	11	C30602	EAI CTRL R

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Standby Power Management Panel, P310

Row	Col	<u>Number</u>	<u>Name</u>
Н	11	C30603	EAI CTRL L

SUBTASK 30-21-00-020-009

(2) Do this task for the applicable engine: Open the Fan Cowl Panel (Selection), TASK 71-11-04-010-814-H00.

SUBTASK 30-21-00-020-010

(3) Do this task: Open the Thrust Reverser (Selection), TASK 78-31-00-010-816-H00.

E. Engine Anti-Ice - Tryout

NOTE: This tryout is to make sure that the engine anti-ice system is in a zero energy state.

SUBTASK 30-21-00-210-001

(1) Make sure that these maintenance messages are active on the Maintenance Access Terminal (MAT):

MAINTENANCE MESSAGE	MAINTENANCE TEXT
30–10291	Engine anti-ice valve controller left torque motor is open or shorted.
30–10302	Engine anti-ice valve controller right torque motor is open or shorted.

SUBTASK 30-21-00-210-002



DO NOT TOUCH THE EAI CONTROLLER UNTIL THE TEMPERATURE DECREASES. IF YOU TOUCH THE EAI CONTROLLER WHILE IT IS HOT, IT WILL BURN YOU.

(2) Feel the area near the EAI valve controller to make sure that the EAI valve controller heater is not on.

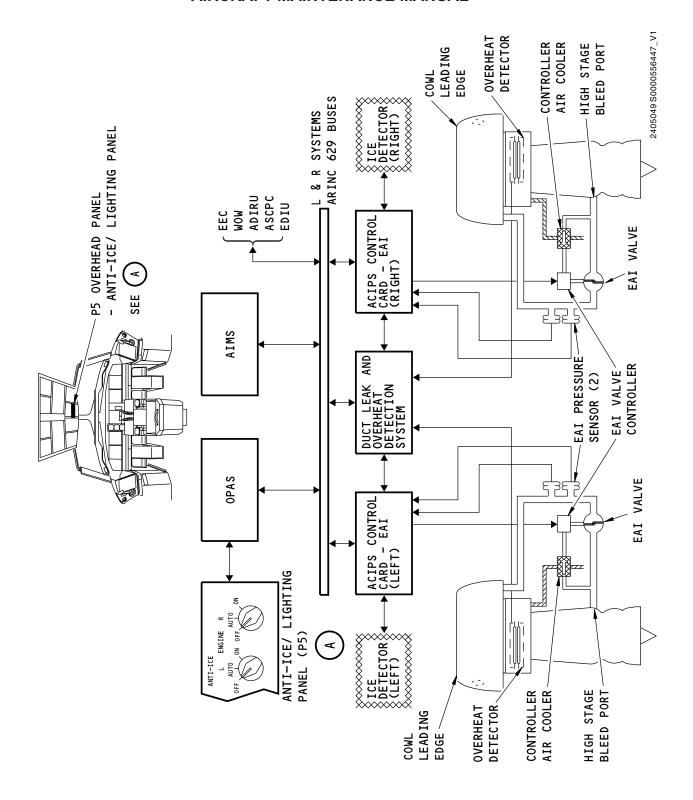
SUBTASK 30-21-00-210-003

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(3) Listen to make sure that there is no flow of engine anti-ice air from the overboard exhaust.

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Engine Anti-Ice Figure 201/30-21-00-990-804

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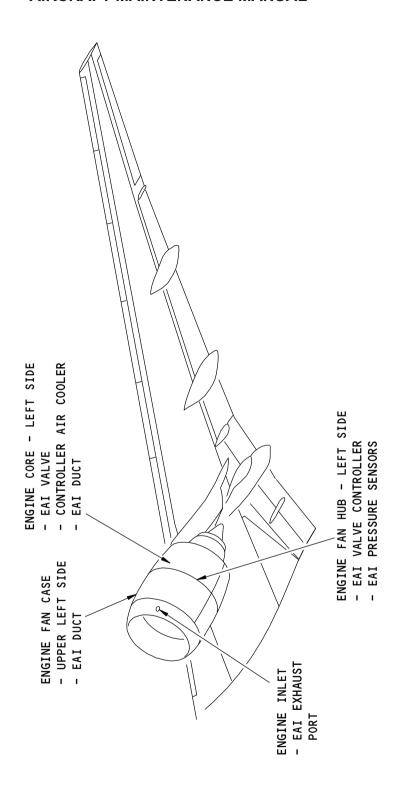
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Engine Anti-Ice - Engine Component Location Figure 202/30-21-00-990-805

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TASK 30-21-00-440-801

3. Engine Anti-Ice - Activation

(Figure 201 or Figure 202)

A. General

(1) This task will activate the engine anti-ice system.

B. References

Reference	Title
71-11-04-410-814-H00	Close the Fan Cowl Panel (Selection) (P/B 201)
78-31-00-410-816-H00	Close the Thrust Reverser (Selection) (P/B 201)

C. Location Zones

Zone	Area
212	Flight Compartment, Right
411	Engine, Left
413	Left Fan Cowl - Left Engine
414	Right Fan Cowl - Left Engine
415	Left Thrust Reverser - Left Engine
416	Right Thrust Reverser - Left Engine
421	Engine, Right
423	Left Fan Cowl - Right Engine
424	Right Fan Cowl - Right Engine
425	Left Thrust Reverser - Right Engine
426	Right Thrust Reverser - Right Engine

D. Procedure

SUBTASK 30-21-00-420-004

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

Left Power Management Panel, P110

Row	<u>Col</u>	Number	<u>Name</u>
Н	16	C30627	EAI CTRL L HTR

Right Power Management Panel, P210

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
L	17	C30626	EAI CTRL R HTR
Р	11	C30602	EAI CTRL R

Standby Power Management Panel, P310

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
Н	11	C30603	EAI CTRL L

SUBTASK 30-21-00-420-005

(2) Do this task for the applicable engine: Close the Fan Cowl Panel (Selection), TASK 71-11-04-410-814-H00.

SUBTASK 30-21-00-420-006

(3) Do this task: Close the Thrust Reverser (Selection), TASK 78-31-00-410-816-H00.

——— END OF TASK ———

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ENGINE ANTI-ICE - ADJUSTMENT/TEST

1. General

- A. This procedure contains scheduled maintenance task data.
- B. This procedure has these tasks:
 - (1) Engine Anti-Ice (engine not running) System Test
 - (2) Engine Anti-Ice (engine running) System Test
 - (3) Airfoil and Cowl Ice Protection System EAI Software Configuration Check
 - (4) Engine Anti-Ice Valve Operation Check

TASK 30-21-00-730-803-001

2. Engine Anti-Ice (engine not running) - System Test

A. General

- (1) This test makes sure that the electrical interfaces of the Engine Anti-Ice System are connected correctly and the ice detector operates correctly.
- (2) The same sequence of steps is used for the left or right Engine Anti-Ice Systems.
- (3) A maintenance access terminal is necessary for this procedure. For instructions on how to use a maintenance access terminal, do this task: How to Use the Central Maintenance Computing System, TASK 45-10-00-740-808.

B. References

Reference	Title
24-22-00-860-805	Supply Electrical Power (P/B 201)
45-10-00-740-808	How to Use the Central Maintenance Computing System (P/B 201)

C. Location Zones

Zone	Area	
212	Flight Compartment, Right	

D. Procedure

SUBTASK 30-21-00-860-020-001

(1) Do this task: Supply Electrical Power, TASK 24-22-00-860-805.

SUBTASK 30-21-00-860-021-001

(2) Make sure that the air ground system is in the ground mode for a minimum of 1 minute.

SUBTASK 30-21-00-860-022-001

(3) Set the GND TEST switch on the P61 panel to the ENABLE position.

SUBTASK 30-21-00-860-023-001

(4) Set the applicable ENGINE ANTI-ICE switch on the P5 panel to AUTO.

SUBTASK 30-21-00-740-003-001

- (5) Use a maintenance access terminal (MAT) to do the system test of the engine anti-ice system.
 - (a) Make these selections on the MAT:
 - ONBOARD MAINTENANCE
 - 2) LINE MAINTENANCE
 - 3) GROUND TESTS

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- 4) 30 Airfoil Cowl Ice Protection System
- 5) SYSTEM TEST
- 6) Engine Anti-Ice (engine not running) (Left, Right)
- 7) CONTINUE
- (b) Do the instructions that show on the MAT and then make these selections:
 - 1) CONTINUE
 - 2) START TEST
- (c) When the test is completed, make sure that PASSED shows adjacent to TEST CONDITION on the MAT.
- (d) If FAILED shows, make sure there is no maintenance message for the engine anti-ice system.
 - 1) If there is a maintenance message for the engine anti-ice system, refer to the applicable Maintenance Message Index in the FIM or select the maintenance message and select MAINTENANCE MESSAGE DATA.

SUBTASK 30-21-00-860-024-001

(6) Set the GND TEST switch on the P61 panel to the NORM position.



TASK 30-21-00-730-804-001

3. Engine Anti-Ice (engine running) - System Test

A. General

- (1) This test makes sure that the Engine Anti-Ice System can control the bleed airflow.
- (2) The same sequence of steps is used for the left or right Engine Anti-Ice Systems.
- (3) A maintenance access terminal is necessary for this procedure. For instructions on how to use a maintenance access terminal, do this task: How to Use the Central Maintenance Computing System, TASK 45-10-00-740-808.

B. References

Reference	Title
24-22-00-860-805	Supply Electrical Power (P/B 201)
45-10-00-740-808	How to Use the Central Maintenance Computing System (P/B 201)
71-00-00-800-835-H00	Engine Start (Selection) (P/B 201)
71-00-00-800-837-H00	Usual Engine Stop (P/B 201)

C. Location Zones

Zone	Area
212	Flight Compartment, Right

D. Procedure

SUBTASK 30-21-00-860-025-001

(1) Do this task: Supply Electrical Power, TASK 24-22-00-860-805.

SUBTASK 30-21-00-860-026-001

(2) Do this task: Engine Start (Selection), TASK 71-00-00-800-835-H00.

SUBTASK 30-21-00-860-027-001

(3) Make sure that the air ground system is in the ground mode for a minimum of 1 minute.

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SUBTASK 30-21-00-860-028-001

(4) Set the GND TEST switch on the P61 panel to the ENABLE position.

SUBTASK 30-21-00-860-029-001

(5) Set the ENGINE ANTI-ICE switch on the P5 overhead panel to the AUTO position.

SUBTASK 30-21-00-860-030-001

(6) Make sure that the PS3 pneumatic pressure is a minimum of 47 psi before you start the ground test.

NOTE: The test will be inhibited if PS3 is too low. Look at the engine maintenance page for the PS3 pressure.

SUBTASK 30-21-00-740-004-001

- (7) Use a maintenance access terminal (MAT) to do the system test of the left and right engine anti-ice systems:
 - (a) Make these selections on the MAT:
 - 1) ONBOARD MAINTENANCE
 - 2) LINE MAINTENANCE
 - 3) GROUND TESTS
 - 4) 30 Airfoil Cowl Ice Protection System
 - 5) SYSTEM TEST
 - 6) (Left, Right) Engine Anti-Ice (engine running)
 - 7) CONTINUE
 - (b) Do the instructions that show on the MAT and then make these selections:
 - 1) CONTINUE
 - 2) START TEST
 - (c) When the test is completed, make sure that PASSED shows adjacent to TEST CONDITION on the MAT.
 - (d) If FAILED shows, make sure there is no maintenance message for the engine anti-ice system.
 - 1) If there is a maintenance message for the engine anti-ice system, refer to the applicable Maintenance Message Index in the FIM or select the maintenance message and select MAINTENANCE MESSAGE DATA.

SUBTASK 30-21-00-860-031-001

(8) Do this task: Usual Engine Stop, TASK 71-00-00-800-837-H00.

SUBTASK 30-21-00-860-032-001

(9) Set the GND TEST switch on the P61 panel to the NORM position.

----- END OF TASK -----

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TASK 30-21-00-730-808

4. Airfoil and Cowl Ice Protection System - EAI - Software Configuration Check

A. General

- (1) The configuration check makes sure that the airfoil and cowl ice protection system control card - EAI has the correct software.
- (2) A maintenance access terminal is necessary for this procedure. For instructions on how to use a maintenance access terminal, do this task: How to Use the Central Maintenance Computing System, TASK 45-10-00-740-808.

B. References

Reference	Title
24-22-00-860-805	Supply Electrical Power (P/B 201)
30-21-01-400-802	Airfoil and Cowl Ice Protection System - EAI - Software Installation (P/B 201)
45-10-00-740-808	How to Use the Central Maintenance Computing System (P/B 201)

C. Location Zones

Zone	Area
212	Flight Compartment, Right

D. Software Configuration Check

SUBTASK 30-21-00-860-049

(1) Do this task: Supply Electrical Power, TASK 24-22-00-860-805.

SUBTASK 30-21-00-750-002

(2) Use a maintenance access terminal (MAT) to do a software configuration check of the airfoil and cowl ice protection system control card - EAI:

NOTE: Make sure you know the correct software part << number / numbers >> for the airfoil and cowl ice protection system control card - EAI when you look at the software part number on the display. For the airfoil and cowl ice protection system control card - EAI to be an approved installation, the correct software part number must be installed.

- (a) Make these selections on the MAT:
 - 1) ONBOARD MAINTENANCE
 - 2) LINE MAINTENANCE
 - 3) SYSTEM CONFIGURATION
 - 4) Airfoil and Cowl Ice Protection System
 - 5) CONTINUE
- (b) Find ACIPS Control Card (left and right) on the display and make sure that the software part number is correct.
- (c) Select GO BACK to remove the configuration display.

SUBTASK 30-21-00-400-002

(3) If the part number is incorrect, do this task: Airfoil and Cowl Ice Protection System - EAI -Software Installation, TASK 30-21-01-400-802

 END	OF	TASK	

30-21-00

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EFFECTIVITY



TASK 30-21-00-710-805-001

5. Engine Anti-Ice Valve Operation Check

(Figure 501)

A. Location Zones

Zone	Area
411	Engine, Left
421	Engine, Right

B. Procedure

SUBTASK 30-21-00-010-003-001

(1) Gain access to the Engine Anti Ice Valve Controller

SUBTASK 30-21-00-020-002-001

(2) Disconnect the Supply line to the controller as indicated on the controller body.

SUBTASK 30-21-00-020-003-001

(3) Disconnect the electrical connector to the Torque Motor similar to MMEL 30-21-1 (The controller is normally un-powered in the open position).

SUBTASK 30-21-00-480-001-001

(4) Using the appropriate fitting and line, connect a Nitrogen cart capable of supplying 40 psi to the supply port.

SUBTASK 30-21-00-780-001-001

(5) Slowly supply air pressure from the Nitrogen cart to the controller. With the controller de-powered, 100% of the supply air should go to the servo port which should open the EAI valve.

SUBTASK 30-21-00-820-001-001

(6) Since there is no mechanical indicator on the EAI valve, the only way to verify that the valve piston is in the open position is to use the "locked closed arm" as an indicator.

SUBTASK 30-21-00-420-001-001

(7) Remove the bolt that secures the arm to the valve body.

SUBTASK 30-21-00-820-002-001

(8) Move the arm to the closed position as far as it will go. If the valve is in the open position, the arm should only move about 15 degrees from its original position.

SUBTASK 30-21-00-400-004-001

(9) Install the electrical connector to the torque motor.

SUBTASK 30-21-00-420-007-001

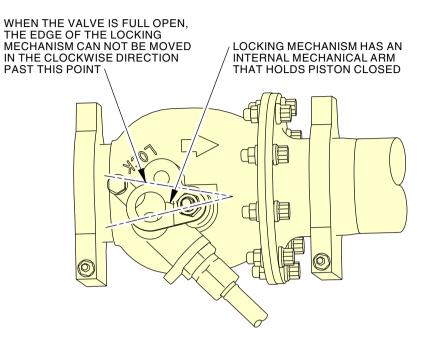
- (10) Install the supply line to the controller body.
 - (a) Tighten the supply line to 270 ±27 in-lb (31 ±3 N·m).

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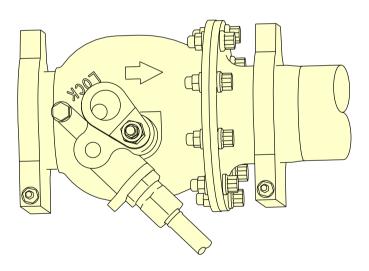
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ENGINE ANTI-ICE VALVE (POSITION OF THE LOCKING CRANK WHEN VALVE IS FULLY OPEN)



ENGINE ANTI-ICE VALVE (POSITION OF THE LOCKING CRANK WHEN VALVE IS FULLY CLOSED)

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Engine Anti-Ice Valve Operation Check Figure 501/30-21-00-990-801-001

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AIRFOIL AND COWL ICE PROTECTION SYSTEM CONTROL CARD - EAI - MAINTENANCE PRACTICES

1. General

- A. This procedure has these tasks:
 - (1) Airfoil and Cowl Ice Protection System Control Card EAI Software Installation

TASK 30-21-01-400-802

2. Airfoil and Cowl Ice Protection System - EAI - Software Installation

A. General

- (1) This procedure tells you how to install software in the Airfoil and Cowl Ice Protection System Control Card EAI (ACIPS-EAI). The ACIPS-EAI must contain this software:
 - (a) Operational Program Software (OPS).
- (2) A Maintenance Access Terminal (MAT) is necessary for this procedure. For instructions on how to use a MAT, do this task: How to Use the Central Maintenance Computing System, TASK 45-10-00-740-808.
- (3) If you do not know if the ACIPS-EAI needs new software, you can first do the software configuration check. It will save time if you only install software when the software is missing or the part number is incorrect. You can find the software configuration check in this task: Airfoil and Cowl Ice Protection System Control Card Engine Anti-Ice Installation, TASK 30-21-01-400-801.
- (4) You can use the GSE-Laptop, maintenance device, SPL-5704, as an alternative to the Portable Maintenance Access Terminal (PMAT) in this task.
 - NOTE: The GSE-Laptop and the PMAT are equivalent for all of the PMAT functions that you will use in this task.
- (5) You can install the software from disks, the MAT hard drive or the PMAT hard drive (if available). It is recommended that you install software from the MAT or PMAT hard drive. To install new software on the MAT or PMAT hard drive, do this task: How to Add Software to the Hard Drive, TASK 45-10-00-860-812.
 - NOTE: When new software is installed in the ACIPS-EAI, the load process first erases the old software and then installs the new software. If you install software directly to the ACIPS-EAI from a faulty disk, the load process may erase the old software and then fail, so that no software is installed. If you install a faulty disk to the MAT or PMAT hard drive, the load may fail, but you will not erase the software from the ACIPS-EAI.
 - (a) It is recommended that you remove old software part numbers from the MAT or PMAT hard drive after new software is installed. To remove software from the hard drive, do this task: How to Remove Software from the Hard Drive, TASK 45-10-00-860-813.

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- (6) You can also install the software from the Onboard Network System (ONS) Mass Storage Device (MSD). To install new software on the ONS MSD, do this task: Mass Storage Device Software Part Installation, TASK 46-13-00-470-802.
 - (a) It is recommended that you remove old software part numbers from the ONS MSD after new software is installed. To remove software from the ONS MSD, do this task: Mass Storage Device Software Removal, TASK 46-13-00-070-801.

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(7) The airplane must be on the ground for 1 minute before you can install software.

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B. References

Reference	Title
24-22-00-860-805	Supply Electrical Power (P/B 201)
30-21-00-730-803-001	Engine Anti-Ice (engine not running) - System Test (P/B 501)
30-21-01-400-801	Airfoil and Cowl Ice Protection System Control Card - Engine Anti-Ice - Installation (P/B 401)
45-10-00-740-808	How to Use the Central Maintenance Computing System (P/B 201)
45-10-00-860-812	How to Add Software to the Hard Drive (P/B 201)
45-10-00-860-813	How to Remove Software from the Hard Drive (P/B 201)
46-13-00-070-801	Mass Storage Device Software Removal (P/B 201)
46-13-00-470-802	Mass Storage Device Software Part Installation (P/B 201)

C. Tools/Equipment

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

Reference	Description	
SPL-5704	Device - Maintenance	
	Part #: G45004-1 Supplier: 81205	
	Part #: G45004-3 Supplier: 81205	
	Opt Part #: G45002-20 Supplier: 81205	
	Opt Part #: G45002-25 Supplier: 81205	
	Opt Part #: G45002-29 Supplier: 81205	
	Opt Part #: J45001-1 Supplier: 81205	
	Opt Part #: J45003-1 Supplier: 81205	

D. Location Zones

Zone	Area
212	Flight Compartment, Right

E. Procedure

SUBTASK 30-21-01-860-003

(1) Do this task: Supply Electrical Power, TASK 24-22-00-860-805.

SUBTASK 30-21-01-860-005

(2) Set the GND TEST switch on the P61 panel to the ENABLE position.

SUBTASK 30-21-01-420-002

(3) Use a MAT to install software in the Airfoil and Cowl Ice Protection System Control Card - EAI:

NOTE: Make sure you know the correct software part number for the Airfoil and Cowl Ice Protection System Control Card - EAI before you select the software part number on the display. For the Airfoil and Cowl Ice Protection System Control Card - EAI to be an approved installation, the correct software must be installed.

- (a) If the software is on a disk, put the correct disk in the disk drive.
- (b) Make these selections on the MAT:
 - ONBOARD MAINTENANCE
 - 2) EXTENDED MAINTENANCE
 - 3) DATA LOAD
- (c) Make these selections to select the component that will receive the software:

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- 1) SELECT DESTINATION
- 2) Airfoil and Cowl Ice Protection System
- 3) ACIPS Control Card, (left, right) (L (R) EAI card)
- 4) CONTINUE
- (d) Make these selections to select the source of the software:
 - 1) SELECT SOURCE
 - 2) Select the source of the software (if Disk Drive is the only selection, it is automatically selected).
 - 3) Select the correct software part number from the display.
 - 4) CONTINUE
- (e) Select START to start the software installation.
- (f) When the software installation is completed, make sure the correct software part number shows on the display.
- (g) Select CONTINUE to remove the configuration display.

SUBTASK 30-21-01-860-008

(4) Set the GND TEST switch on the P61 panel to the NORM position.

F. Installation Test

SUBTASK 30-21-01-710-002

(1) Do this task: Engine Anti-Ice (engine not running) - System Test, TASK 30-21-00-730-803-001.

----- END OF TASK -----

30-21-01

EFFECTIVITY -



AIRFOIL AND COWL ICE PROTECTION SYSTEM CONTROL CARD - ENGINE ANTI-ICE - REMOVAL/INSTALLATION

1. General

- A. This procedure has these tasks:
 - A removal of an airfoil and cowl ice protection system (ACIPS) Control Card Engine Anti-Ice (EAI).
 - (2) An installation of an ACIPS Control Card EAI, which includes a software configuration check and an installation test.
- B. There are two ACIPS control cards for the EAI system located in slot A6 of both the right systems cardfile (RSCF), P84, and the left systems cardfile (LSCF), P85.

TASK 30-21-01-000-801

2. Airfoil and Cowl Ice Protection System Control Card - Engine Anti-Ice - Removal

(Figure 401)

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
20-10-01-000-802	Printed Circuit Card Removal (P/B 401)

B. Location Zones

Zone	Area
117	Main Equipment Center, Left
118	Main Equipment Center, Right

C. Access Panels

Number	Name/Location
117AI	Main Equipment Center Access Door

D. Prepare for the Procedure

SUBTASK 30-21-01-010-001

(1) Open this access panel:

<u>Number</u>	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 30-21-01-860-001

(2) Set the power switch for the A6 ACIPS control card on the applicable engine to OFF.

NOTE: Use the POWER CONTROL decal on the front of cardfile to determine which switches to set to OFF.

NOTE: The ACIPS control card for the left engine is in the LSCF, the ACIPS control card for the right engine is in the RSCF.

SUBTASK 30-21-01-860-006

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

Right Power Management Panel, P210

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
Р	11	C30602	EAI CTRL R

ARO ALL



Standby Power Management Panel, P310

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
Н	11	C30603	EAI CTRL L

E. Procedure

SUBTASK 30-21-01-020-001



DO THE SPECIFIED TASK TO SAFELY REMOVE/INSTALL THE ACIPS CONTROL CARD. IF YOU DO NOT OBEY THE INSTRUCTIONS YOU MAY DAMAGE THE INTERNAL COMPONENTS OF THE ACIPS CONTROL CARD.

(1) Remove the ACIPS control card [1] from slot A6. To remove it, do this task: Printed Circuit Card Removal, TASK 20-10-01-000-802.

NOTE: The ACIPS control card for the left engine is in the LSCF, the ACIPS control card for the right engine is in the RSCF.

----- END OF TASK -----

TASK 30-21-01-400-801

3. Airfoil and Cowl Ice Protection System Control Card - Engine Anti-Ice - Installation

(Figure 401)

NOTE: This procedure is a scheduled maintenance task.

A. General

- (1) After the installation procedure is accomplished, an installation test makes sure that the ACIPS control card is connected, serviceable and has the correct software.
- (2) A maintenance access terminal is necessary for this procedure. For instructions on how to use a maintenance access terminal, do this task: How to Use the Central Maintenance Computing System, TASK 45-10-00-740-808.

B. References

Reference	Title
20-10-01-400-802	Printed Circuit Card Installation (P/B 401)
30-21-00-730-803-001	Engine Anti-Ice (engine not running) - System Test (P/B 501)
30-21-01-400-802	Airfoil and Cowl Ice Protection System - EAI - Software Installation (P/B 201)
45-10-00-740-808	How to Use the Central Maintenance Computing System (P/B 201)

C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	ACIPS control card	30-21-01-01-005	ARO ALL
		30-21-01-02-005	ARO ALL

D. Location Zones

Zone	Area
117	Main Equipment Center, Left
118	Main Equipment Center, Right

ARO ALL



E. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

F. Procedure

SUBTASK 30-21-01-420-001



DO THE SPECIFIED TASK TO SAFELY REMOVE/INSTALL THE ACIPS CONTROL CARD. IF YOU DO NOT OBEY THE INSTRUCTIONS YOU MAY DAMAGE THE INTERNAL COMPONENTS OF THE ACIPS CONTROL CARD.

(1) Install the ACIPS control card [1]. To install it, do this task: Printed Circuit Card Installation, TASK 20-10-01-400-802.

SUBTASK 30-21-01-860-002

(2) Set the power switch for the A6 ACIPS control card on the applicable engine to ON.

NOTE: Use the POWER CONTROL decal on the front of cardfile to determine which switches to set to ON.

SUBTASK 30-21-01-860-007

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

Right Power Management Panel, P210

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
Р	11	C30602	EAI CTRL R

Standby Power Management Panel, P310

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
Н	11	C30603	EAI CTRL L

G. Software Configuration Check

SUBTASK 30-21-01-750-001

(1) Use a maintenance access terminal (MAT) to do a software configuration check of the ACIPS card you installed:

NOTE: Make sure you know the correct part numbers for the ACIPS card when you look at the software part numbers on the display. For the ACIPS cards to be an approved installation, the correct software part numbers must be installed.

- (a) Make these selections on the MAT:
 - 1) ONBOARD MAINTENANCE
 - 2) LINE MAINTENANCE
 - 3) SYSTEM CONFIGURATION
 - 4) 30 Airfoil and Cowl Ice Protection System
 - 5) CONTINUE
- (b) Find ACIPS Control Card (center) on the display and make sure that the software part number is correct.

NOTE: Communication to the Left ACIPS card may be inhibited due to a known problem. Software loading and Configuration Data for an ACIPS card may only be accomplished in the Right (R) location.

(c) Select GO BACK

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(d) If the software part numbers for the ACIPS card you installed are incorrect, then do this task: Airfoil and Cowl Ice Protection System - EAI - Software Installation, TASK 30-21-01-400-802.

H. Installation Test

SUBTASK 30-21-01-710-001

(1) Do this task: Engine Anti-Ice (engine not running) - System Test, TASK 30-21-00-730-803-001.

—— END OF TASK ———

I. Put the Airplane Back to Its Usual Condition

SUBTASK 30-21-01-010-003

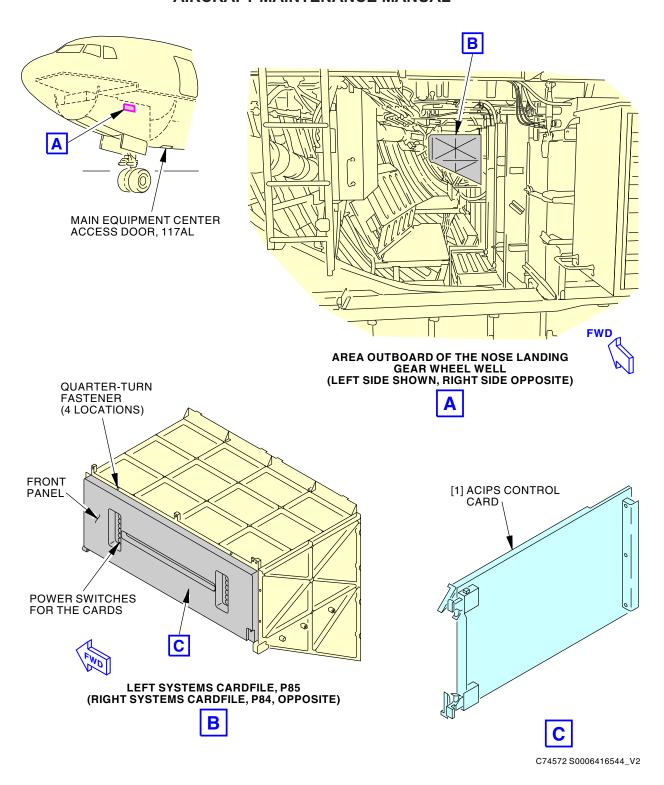
(1) Close this access panel:

<u>Number</u>	Name/Location
117AL	Main Equipment Center Access Door

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- EFFECTIVITY -





Airfoil and Cowl Ice Protection System (ACIPS) Control Card - EAI Installation Figure 401/30-21-01-990-801

EFFECTIVITY

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ENGINE ANTI-ICE VALVE - REMOVAL/INSTALLATION

1. General

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

TASK 30-21-02-000-805-001

2. Engine Anti-Ice Valve Removal

Figure 401

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
27-81-00-040-801	Leading Edge Slat - Deactivation (P/B 201)
27-81-00-860-805	Retract the Leading Edge Slats (P/B 201)
71-11-04-010-814-H00	Open the Fan Cowl Panel (Selection) (P/B 201)
78-31-00-010-816-H00	Open the Thrust Reverser (Selection) (P/B 201)
78-31-00-040-806-H00	Thrust Reverser Deactivation For Ground Maintenance (P/B 201)

B. Location Zones

Zone	Area
411	Engine, Left
421	Engine, Right

C. Access Panels

Number	Name/Location
413AL	Left Fan Cowl Panel, Left Engine
415AL	Left Thrust Reverser, Left Engine
423AL	Left Fan Cowl Panel, Right Engine
425AL	Left Thrust Reverser, Right Engine

D. Prepare for the Procedure

SUBTASK 30-21-02-010-007-001



DO ALL OF THE SPECIFIED TASKS IN THE CORRECT SEQUENCE TO OPEN THE THRUST REVERSER. IF YOU DO NOT OBEY THIS INSTRUCTION, INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (1) Do these tasks in sequence to safely open the left thrust reverser on the applicable engine:
 - (a) Do this task: Retract the Leading Edge Slats, TASK 27-81-00-860-805.
 - (b) Do this task: Leading Edge Slat Deactivation, TASK 27-81-00-040-801.
 - (c) Do this task: Thrust Reverser Deactivation For Ground Maintenance, TASK 78-31-00-040-806-H00.
 - (d) For the left fan cowl panels, do this task:Open the Fan Cowl Panel (Selection), TASK 71-11-04-010-814-H00

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<u>Number</u>	<u>Name/Location</u>
413AL	Left Fan Cowl Panel, Left Engine
423AL	Left Fan Cowl Panel, Right Engine

(e) For the left thrust reversers, do this task:

Open the Thrust Reverser (Selection), TASK 78-31-00-010-816-H00

NumberName/Location415ALLeft Thrust Reverser, Left Engine425ALLeft Thrust Reverser, Right Engine

E. Procedure

SUBTASK 30-21-02-020-029-001



WHEN YOU DISCONNECT THE TUBE ASSEMBLY, HOLD THE VALVE ASSEMBLY WITH A SECOND WRENCH. IF YOU DO NOT HOLD THE VALVE ASSEMBLY YOU WILL DAMAGE IT.

(1) Disconnect the tube assembly [1] from the valve assembly [4].

SUBTASK 30-21-02-020-030-001



HOLD THE VALVE ASSEMBLY WHEN YOU REMOVE THE COUPLINGS. THE VALVE ASSEMBLY WEIGHS APPROXIMATELY 5 LBS AND COULD INJURE YOU OR CAUSE DAMAGE TO EQUIPMENT IF YOU DROP IT.

(2) Remove the coupling assembly [3].

SUBTASK 30-21-02-020-031-001

(3) Remove the valve assy [4].

SUBTASK 30-21-02-020-032-001

(4) Remove the seal [2].

SUBTASK 30-21-02-020-033-001

- (5) Examine the seal [2] for damage.
 - (a) If the seal [2] is damaged, replace it.

----- END OF TASK -----

TASK 30-21-02-400-805-001

3. Engine Anti-Ice Valve Installation

Figure 401

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
27-81-00-440-801	Leading Edge Slat Reactivation (P/B 201)
30-21-00-730-804-001	Engine Anti-Ice (engine running) - System Test (P/B 501)
71-11-04-410-814-H00	Close the Fan Cowl Panel (Selection) (P/B 201)
78-31-00-410-816-H00	Close the Thrust Reverser (Selection) (P/B 201)
78-31-00-440-805-H00	Thrust Reverser Activation After Ground Maintenance (P/B 201)

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B. Tools/Equipment

Reference	Description
STD-3906	Mallet - Rubber

C. Consumable Materials

Reference	Description	Specification
D00006	Compound - Antiseize Pure Nickel Special -	BAC5008
	Never-Seez NSBT	

D. Location Zones

Zone	Area
411	Engine, Left
421	Engine, Right

E. Access Panels

Number	Name/Location
413AL	Left Fan Cowl Panel, Left Engine
415AL	Left Thrust Reverser, Left Engine
423AL	Left Fan Cowl Panel, Right Engine
425AL	Left Thrust Reverser, Right Engine

F. Procedure

SUBTASK 30-21-02-420-054-001

(1) Install the seal [2].

SUBTASK 30-21-02-420-056-001

(2) Install the valve assembly [4] so the flow direction arrow points forward.

SUBTASK 30-21-02-420-057-001

(3) Install the coupling [3].

NOTE: Do not tighten the coupling [3] at this time.

SUBTASK 30-21-02-420-058-001

(4) Turn the valve assembly [4] to align it with the tube assembly [1].

SUBTASK 30-21-02-420-059-001

(5) Put Never-Seez NSBT compound, D00006 on the threads of the union [6].

SUBTASK 30-21-02-420-079

- (6) Install the seal [5] and union [6] in the valve assembly [4].
- (7) Tighten the union [6] to 270 ±27 in-lb (31 ±4 N·m).

SUBTASK 30-21-02-420-060-001

(8) Connect the tube assembly [1] to the union [6].

SUBTASK 30-21-02-420-061-001



WHEN YOU TIGHTEN THE NUT ON THE TUBE, HOLD THE FITTING ON THE VALVE ASSEMBLY WITH A SECOND WRENCH. IF YOU DO NOT HOLD THE FITTING, YOU CAN CAUSE DAMAGE TO THE VALVE ASSEMBLY.

(9) Tighten the tube assembly [1] to 270 ±27 in-lb (31 ±4 N·m).

SUBTASK 30-21-02-420-062-001

(10) Tighten the coupling [3] to 77.5 ±7.5 in-lb (8.8 ±0.9 N⋅m).

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SUBTASK 30-21-02-420-063-001

(11) Lightly tap the coupling [3] with a rubber mallet, STD-3906.

SUBTASK 30-21-02-420-064-001

(12) Re-tighten the coupling [3] to 77.5 ±7.5 in-lb (8.8 ±0.9 N·m).

G. Installation Test

NOTE: It is not necessary to perform the installation test on the EAI valve modified by the KIT LOCK OPEN, K28703.

SUBTASK 30-21-02-410-006-001



DO ALL OF THE SPECIFIED TASKS IN THE CORRECT SEQUENCE TO OPEN THE THRUST REVERSER. IF YOU DO NOT OBEY THIS INSTRUCTION, INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (1) Do these tasks in the sequence safely to close the thrust reverser on the applicable engine:
 - (a) For the left thrust reversers, do this task:

Close the Thrust Reverser (Selection), TASK 78-31-00-410-816-H00

<u>Number</u>	Name/Location
415AL	Left Thrust Reverser, Left Engine
425AL	Left Thrust Reverser, Right Engine

(b) For the left fan cowl panels, do this task:

Close the Fan Cowl Panel (Selection), TASK 71-11-04-410-814-H00

<u>Number</u>	Name/Location
413AL	Left Fan Cowl Panel, Left Engine
423AL	Left Fan Cowl Panel, Right Engine

- (c) Do this task: Thrust Reverser Activation After Ground Maintenance, TASK 78-31-00-440-805-H00.
- (d) Do this task: Leading Edge Slat Reactivation, TASK 27-81-00-440-801.

SUBTASK 30-21-02-730-006-001

(2) Do a test of the engine anti-ice system. To test it, do this task: Engine Anti-Ice (engine running) - System Test, TASK 30-21-00-730-804-001.

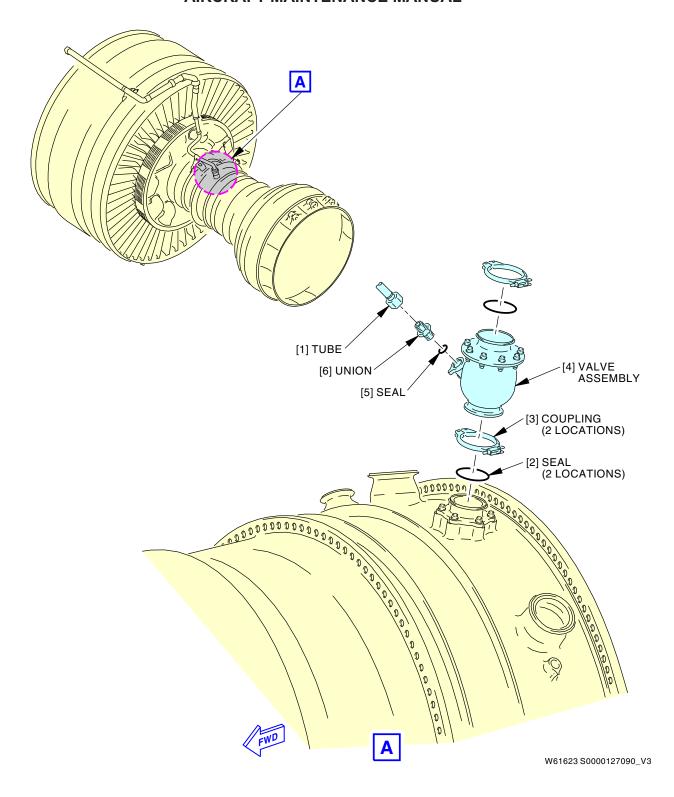


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Engine Anti-ice Valve - Installation Figure 401/30-21-02-990-805

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ENGINE ANTI-ICE VALVE CONTROLLER - MAINTENANCE PRACTICES

1. General

- A. This procedure has these tasks:
 - (1) Engine Anti-Ice Valve Controller Removal.
 - (2) Engine Anti-Ice Valve Controller Installation.
 - (3) Engine Anti-Ice Valve Controller Filter Removal.
 - (4) Engine Anti-Ice Valve Controller Filter Installation.
 - (5) Engine Anti-Ice Valve Controller Filter Cleaning.

TASK 30-21-03-000-813-001

2. Engine Anti-Ice Valve Controller Removal

Figure 201

A. References

Reference	Title
71-11-04-010-814-H00	Open the Fan Cowl Panel (Selection) (P/B 201)

B. Location Zones

Zone	Area
411	Engine, Left
421	Engine, Right

C. Access Panels

Number	Name/Location
413AL	Left Fan Cowl Panel, Left Engine
423AL	Left Fan Cowl Panel, Right Engine

D. Prepare for the Procedure

SUBTASK 30-21-03-860-040-001



MAKE SURE THAT YOU OPEN THE CIRCUIT BREAKERS FOR THE EAI CONTROLLER HEATER. IF YOU DO NOT, THE EAI IS HOT AND CAN CAUSE INJURY TO PERSONNEL.

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

Left Power Management Panel, P110

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
Н	16	C30627	EAI CTRL L HTR

Right Power Management Panel, P210

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
L	17	C30626	EAI CTRL R HTR
Р	11	C30602	EAI CTRL R

Standby Power Management Panel, P310

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
Н	11	C30603	EAI CTRL L

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SUBTASK 30-21-03-010-028-001

(2) For the left fan cowl panels, do this task

Open the Fan Cowl Panel (Selection), TASK 71-11-04-010-814-H00

Number Name/Location

413AL Left Fan Cowl Panel, Left Engine423AL Left Fan Cowl Panel, Right Engine

E. Procedure

SUBTASK 30-21-03-000-002-001



DO NOT TOUCH THE EAI CONTROLLER UNTIL THE TEMPERATURE DECREASES. IF YOU TOUCH THE EAI CONTROLLER WHILE IT IS HOT, IT WILL BURN YOU.

- (1) Do these steps to remove the controller assembly [1]:
 - (a) Disconnect the electrical connector [2] from the controller assembly [1].



WHEN YOU LOOSEN THE TUBE ASSEMBLIES, HOLD THE FITTING ON THE CONTROLLER IN PLACE WITH A SECOND WRENCH. IF YOU DO NOT HOLD THE FITTING YOU WILL DAMAGE THE CONTROLLER.

- b) Disconnect the adapter [15] on the tube assembly [5] from the filter [12].
- (c) Discard the seal [14].

SUBTASK 30-21-03-020-091-001

(2) Disconnect the tube assembly [4] from the controller assembly [1] at the union.

SUBTASK 30-21-03-020-093-001

(3) Remove the bolt [7], bolt [8], washer [6], and jumper [3].

SUBTASK 30-21-03-030-001

(4) Remove the electrical connector [2].

SUBTASK 30-21-03-020-094-001

(5) Remove the controller assembly [1].

----- END OF TASK -----

TASK 30-21-03-400-811-001

3. Engine Anti-Ice Valve Controller Installation

Figure 201

A. References

Reference	Title
20-11-10-910-802-001	Wrench Arc Method (P/B 201)
27-81-00-440-801	Leading Edge Slat Reactivation (P/B 201)
30-21-00-730-804-001	Engine Anti-Ice (engine running) - System Test (P/B 501)
71-11-04-410-814-H00	Close the Fan Cowl Panel (Selection) (P/B 201)
78-31-00-410-816-H00	Close the Thrust Reverser (Selection) (P/B 201)
78-31-00-440-805-H00	Thrust Reverser Activation After Ground Maintenance (P/B 201)

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B. Consumable Materials

Reference	Description	Specification
D00006	Compound - Antiseize Pure Nickel Special -	BAC5008
	Never-Seez NSBT	

C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Controller assembly	30-21-03-01B-020	ARO ALL
14	Seal	30-21-03-01B-155	ARO ALL
		36-11-52-01B-425	ARO ALL

D. Location Zones

Zone	Area
411	Engine, Left
421	Engine, Right

E. Access Panels

Number	Name/Location
413AL	Left Fan Cowl Panel, Left Engine
415AL	Left Thrust Reverser, Left Engine
423AL	Left Fan Cowl Panel, Right Engine
425AL	Left Thrust Reverser, Right Engine

F. Prepare for the Procedure

SUBTASK 30-21-03-860-041-001

(1) Make sure that these circuit breakers are open and have safety tags:

Left Power Management Panel, P110

Row	<u>Col</u>	Number	<u>Name</u>
Н	16	C30627	EAI CTRL L HTR

Right Power Management Panel, P210

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
L	17	C30626	EAI CTRL R HTR
Р	11	C30602	EALCTRL R

Standby Power Management Panel, P310

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
Н	11	C30603	EALCTRL L

G. Procedure

SUBTASK 30-21-03-420-051-001

- (1) Do these steps to install the controller assembly [1]:
 - (a) Hold the controller assembly [1] in its position.
 - 1) Install the bolts [7] and tighten to 65 ±15 in-lb (7 ±2 N·m).
 - (b) Install the jumper [3], washer [6], and the bolt [8].
 - 1) Install the bolt [8] and tighten to 65 ±15 in-lb (7 ±2 N·m).

ARO ALL

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SUBTASK 30-21-03-420-052-001



MAKE SURE THAT YOU ONLY APPLY A THIN LAYER OF THE ANTISEIZE COMPOUND. IF YOU APPLY TOO MUCH ANTISEIZE COMPOUND, IT CAN GO INTO THE ENGINE AND DAMAGE CAN OCCUR.

(2) Apply a thin coat of Never-Seez NSBT compound, D00006, to the threads of the filter [12] and the union on the controller assembly [1].

SUBTASK 30-21-03-420-053-001



WHEN YOU TIGHTEN THE TUBE ASSEMBLIES, HOLD THE FITTING ON THE CONTROLLER IN PLACE WITH A SECOND WRENCH. IF YOU DO NOT HOLD THE FITTING YOU WILL DAMAGE THE CONTROLLER.

- (3) Connect the tube assembly [4] to the controller assembly [1] at the union.
 - (a) Install the b-nut and tighten to 270 ±27 in-lb (31 ±4 N·m), or tighten it by doing this task: Wrench Arc Method, TASK 20-11-10-910-802-001.

SUBTASK 30-21-03-420-058-001

- (4) Connect the tube assembly [5] to the controller assembly [1].
 - (a) Connect the tube assembly [5] at the adapter [15] to the filter [12] with a new seal [14].
 - (b) Install the b-nut and tighten to 270 ±27 in-lb (31 ±4 N·m), or tighten it by doing this task: Wrench Arc Method, TASK 20-11-10-910-802-001.

SUBTASK 30-21-03-420-059-001

(5) Connect the electrical connectors [2].

SUBTASK 30-21-03-860-043-001

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

Left Power Management Panel, P110

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
Н	16	C30627	EAI CTRL L HTR

Right Power Management Panel, P210

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
L	17	C30626	EAI CTRL R HTR
Р	11	C30602	EAI CTRL R

Standby Power Management Panel, P310

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
Н	11	C30603	EAI CTRL L

H. Installation Test

SUBTASK 30-21-03-710-015-001

(1) Do this task: Engine Anti-Ice (engine running) - System Test, TASK 30-21-00-730-804-001.

30-21-03

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I. Put the Airplane Back to Its Usual Condition

SUBTASK 30-21-03-010-025-001



DO ALL OF THE SPECIFIED TASKS IN THE CORRECT SEQUENCE TO CLOSE THE THRUST REVERSER. IF YOU DO NOT OBEY THIS INSTRUCTION, INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (1) Do these tasks in the sequence safely to close the thrust reverser on the applicable engine:
 - (a) For the left thrust reversers, do this task:

Close the Thrust Reverser (Selection), TASK 78-31-00-410-816-H00

<u>Number</u>	Name/Location
415AL	Left Thrust Reverser, Left Engine
425AL	Left Thrust Reverser, Right Engine

(b) For the left fan cowl panels, do this task:

Close the Fan Cowl Panel (Selection), TASK 71-11-04-410-814-H00

<u>Number</u>	Name/Location
413AL	Left Fan Cowl Panel, Left Engine
423AL	Left Fan Cowl Panel, Right Engine

- (c) Do this task: Thrust Reverser Activation After Ground Maintenance, TASK 78-31-00-440-805-H00.
- (d) Do this task: Leading Edge Slat Reactivation, TASK 27-81-00-440-801.

----- END OF TASK -----

TASK 30-21-03-000-814-001

4. Engine Anti-Ice Valve Controller Filter Removal

Figure 201

A. References

Reference	Title
27-81-00-040-801	Leading Edge Slat - Deactivation (P/B 201)
27-81-00-860-805	Retract the Leading Edge Slats (P/B 201)
71-11-04-010-814-H00	Open the Fan Cowl Panel (Selection) (P/B 201)
78-31-00-010-816-H00	Open the Thrust Reverser (Selection) (P/B 201)
78-31-00-040-806-H00	Thrust Reverser Deactivation For Ground Maintenance (P/B 201)

B. Consumable Materials

Reference	Description	Specification
G50225	Lockwire - MS20995C20, Corrosion Resistant	NASM20995
	Steel - 0.020 Inch (0.508 mm) Diameter	

C. Location Zones

Zone	Area	
411	Engine, Left	
421	Engine, Right	

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30-21-03



D. Access Panels

Number	Name/Location
413AL	Left Fan Cowl Panel, Left Engine
415AL	Left Thrust Reverser, Left Engine
423AL	Left Fan Cowl Panel, Right Engine
425AL	Left Thrust Reverser, Right Engine

E. Procedure

SUBTASK 30-21-03-860-044-001

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

Left Power Management Panel, P110

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
Н	16	C30627	EAI CTRL L HTR

Right Power Management Panel, P210

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
L	17	C30626	EAI CTRL R HTR
Р	11	C30602	EAI CTRL R

Standby Power Management Panel, P310

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
Н	11	C30603	EAI CTRL L

SUBTASK 30-21-03-010-019-001



DO ALL OF THE SPECIFIED TASKS IN THE CORRECT SEQUENCE TO OPEN THE THRUST REVERSER. IF YOU DO NOT OBEY THIS INSTRUCTION, INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (2) Do these tasks in the sequence safely to open the left thrust reverser on the applicable engine:
 - (a) Do this task: Retract the Leading Edge Slats, TASK 27-81-00-860-805.
 - (b) Do this task: Leading Edge Slat Deactivation, TASK 27-81-00-040-801.
 - (c) Do this task: Thrust Reverser Deactivation For Ground Maintenance, TASK 78-31-00-040-806-H00.
 - (d) For the left fan cowl panels, do this task:

Open the Fan Cowl Panel (Selection), TASK 71-11-04-010-814-H00

<u>Number</u>	Name/Location
413AL	Left Fan Cowl Panel, Left Engine
423AL	Left Fan Cowl Panel, Right Engine

(e) For the left thrust reversers, do this task:

Open the Thrust Reverser (Selection), TASK 78-31-00-010-816-H00

<u>Number</u>	Name/Location
415AL	Left Thrust Reverser, Left Engine
425AL	Left Thrust Reverser, Right Engine

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F. Procedure

SUBTASK 30-21-03-020-127

(1) Loosen the MS20995C20 lockwire, G50225 on the filter [12] and controller assembly [1].

SUBTASK 30-21-03-020-096-001



WHEN YOU LOOSEN THE TUBE ASSEMBLIES, HOLD THE FITTING ON THE CONTROLLER IN PLACE WITH A SECOND WRENCH. IF YOU DO NOT HOLD THE FITTING YOU WILL DAMAGE THE CONTROLLER.

(2) Disconnect the adapter [15] on the tube assembly [5] from the filter [12].

SUBTASK 30-21-03-080-001

(3) Remove the MS20995C20 lockwire, G50225 from the filter [12].

SUBTASK 30-21-03-020-097-001

(4) Remove the filter [12] and the O-ring [13] from the controller assembly [1].

SUBTASK 30-21-03-020-098-001

- (5) Examine the O-ring [13] for damage.
 - (a) If the O-ring [13] is damaged, replace it.

SUBTASK 30-21-03-212-001

(6) Remove and discard the seal [14].

------ END OF TASK ------

TASK 30-21-03-400-812-001

5. Engine Anti-Ice Valve Controller Filter Installation

Figure 201

A. References

Reference	Title
20-11-10-910-802-001	Wrench Arc Method (P/B 201)
27-81-00-440-801	Leading Edge Slat Reactivation (P/B 201)
30-21-00-730-804-001	Engine Anti-Ice (engine running) - System Test (P/B 501)
71-11-04-410-814-H00	Close the Fan Cowl Panel (Selection) (P/B 201)
78-31-00-410-816-H00	Close the Thrust Reverser (Selection) (P/B 201)
78-31-00-440-805-H00	Thrust Reverser Activation After Ground Maintenance (P/B 201)

B. Consumable Materials

Reference	Description	Specification
D00006	Compound - Antiseize Pure Nickel Special - Never-Seez NSBT	BAC5008
G50225	Lockwire - MS20995C20, Corrosion Resistant Steel - 0.020 Inch (0.508 mm) Diameter	NASM20995

C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
12	Filter	30-21-03-01B-030	ARO ALL
13	O-ring	30-21-03-01B-050	ARO ALL
14	Seal	30-21-03-01B-155	ARO ALL
		36-11-52-01B-425	ARO ALL

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D. Location Zones

Zone	Area
411	Engine, Left
421	Engine, Right

E. Access Panels

Number	Name/Location
413AL	Left Fan Cowl Panel, Left Engine
415AL	Left Thrust Reverser, Left Engine
423AL	Left Fan Cowl Panel, Right Engine
425AL	Left Thrust Reverser, Right Engine

F. Prepare for the Procedure

SUBTASK 30-21-03-860-045-001

(1) Make sure that these circuit breakers are open and have safety tags:

Left Power Management Panel, P110

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
Н	16	C30627	EAI CTRL L HTR

Right Power Management Panel, P210

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
L	17	C30626	EAI CTRL R HTR
Р	11	C30602	EAI CTRL R

Standby Power Management Panel, P310

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
Н	11	C30603	EAI CTRL L

G. Procedure

SUBTASK 30-21-03-420-074-001

(1) Put the O-ring [13] on the filter [12].

SUBTASK 30-21-03-420-076-001

- (2) Install the filter [12] into the controller assembly [1].
 - (a) Tighten the filter to 40 ±5 in-lb (5 ±1 N·m).

SUBTASK 30-21-03-420-075-001

(3) Apply a thin coat of Never-Seez NSBT compound, D00006, to the threads of the filter [12] on the side which connects to the tube assembly [5].

SUBTASK 30-21-03-420-094

(4) Place a new seal [14] between the adapter [15] and the filter [12].

SUBTASK 30-21-03-420-077-001



WHEN YOU TIGHTEN THE TUBE ASSEMBLIES, HOLD THE FITTING ON THE CONTROLLER IN PLACE WITH A SECOND WRENCH. IF YOU DO NOT HOLD THE FITTING YOU WILL DAMAGE THE CONTROLLER.

- (5) Connect the tube assembly [5] at the adapter [15] to the filter [12].
 - (a) Tighten the tube assembly [5] to 270 ±27 in-lb (31 ±4 N·m), or tighten it by doing this task: Wrench Arc Method, TASK 20-11-10-910-802-001.

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SUBTASK 30-21-03-420-093

(6) Lockwire the filter [12] to the controller assembly [1] with MS20995C20 lockwire, G50225.

SUBTASK 30-21-03-860-046-001

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

Left Power Management Panel, P110

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
Н	16	C30627	EAI CTRL L HTR

Right Power Management Panel, P210

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
L	17	C30626	EAI CTRL R HTR
Р	11	C30602	EAI CTRL R

Standby Power Management Panel, P310

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
Н	11	C30603	EAI CTRL L

H. Installation Test

SUBTASK 30-21-03-010-020-001



DO ALL OF THE SPECIFIED TASKS IN THE CORRECT SEQUENCE TO OPEN THE THRUST REVERSER. IF YOU DO NOT OBEY THIS INSTRUCTION, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (1) Do these tasks in sequence tsafely to close the thrust reverser:
 - (a) For the left thrust reversers, do this task:

Close the Thrust Reverser (Selection), TASK 78-31-00-410-816-H00

<u>Number</u>	Name/Location
415AL	Left Thrust Reverser, Left Engine
425AL	Left Thrust Reverser, Right Engine

(b) For the left fan cowl panels, do this task:

Close the Fan Cowl Panel (Selection), TASK 71-11-04-410-814-H00

<u>Number</u>	Name/Location
413AL	Left Fan Cowl Panel, Left Engine
423AL	Left Fan Cowl Panel, Right Engine

- (c) Do this task: Thrust Reverser Activation After Ground Maintenance, TASK 78-31-00-440-805-H00.
- (d) Do this task: Leading Edge Slat Reactivation, TASK 27-81-00-440-801.

SUBTASK 30-21-03-710-016-001

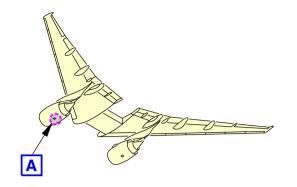
(2) Do this task: Engine Anti-Ice (engine running) - System Test, TASK 30-21-00-730-804-001.

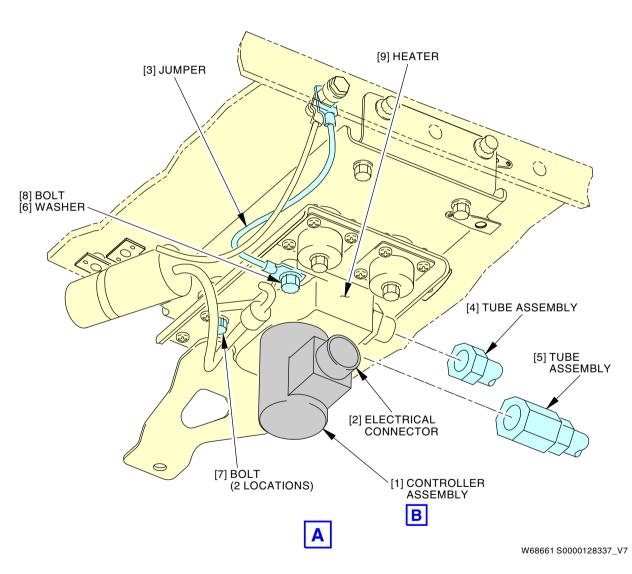
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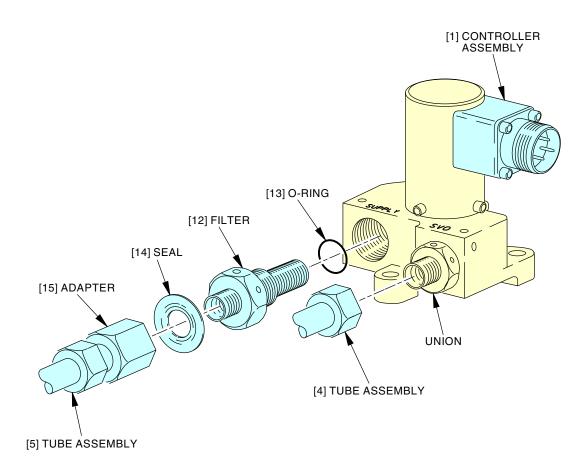
EAI Controller Installation Figure 201/30-21-03-990-801-001 (Sheet 1 of 2)

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CONTROLLER ASSEMBLY



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EAI Controller Installation Figure 201/30-21-03-990-801-001 (Sheet 2 of 2)

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TASK 30-21-03-100-801-001

- 6. Engine Anti-Ice Valve Controller Filter Cleaning
 - A. Consumable Materials

Reference	Description	Specification
B50248	Cleaner - Alkaline - Fine Organics FO2085M	

B. Procedure

SUBTASK 30-21-03-160-001-001

(1) Remove the filter:

Engine Anti-Ice Valve Controller Filter Removal, TASK 30-21-03-000-814-001



USE GOGGLES AND RUBBER GLOVES WHEN YOU CLEAN THE FILTER. CLEAN THE FILTER IN AN AREA WITH A GOOD FLOW OF AIR. THE CLEANER CAN IRRITATE YOUR EYES, SKIN, THROAT, AND LUNGS.

(2) Immerse the filter in Fine Organics FO2085M cleaner, B50248 or equivalent at ambient temperature. Use Fine Organics FO2085M cleaner, B50248 without ultrasonic agitation. Part agitation in the solution during immersion and solution agitation by pumping liquid or air will improve the cleaning process.

SUBTASK 30-21-03-130-001-001



USE AIR PRESSURE OF 25 PSIG OR LESS TO CLEAN AND DRY THE FILTER. DO NOT POINT THE AIRFLOW TOWARD YOURSELF OR OTHER PERSONS. YOU CAN BE INJURED BY FLYING PARTICLES.

(3) Blow dry, filtered, compressed air through the air filter to remove any contamination.

SUBTASK 30-21-03-130-002-001

(4) Dry the air filter with the compressed air.

SUBTASK 30-21-03-160-002-001

- (5) The filter must be clean.
 - (a) If the filter is not clean, then replace the filter.
- (6) Install the filter:

Engine Anti-Ice Valve Controller Filter Installation, TASK 30-21-03-400-812-001

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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.
- B. To get access to the EAI sensors you must remove the bracket assembly they are mounted to. The EAI controller is also mounted to the bracket assembly.

TASK 30-21-04-000-802-001

2. Engine Anti-Ice Pressure Sensor Removal

A. References

Reference	Title
27-81-00-040-801	Leading Edge Slat - Deactivation (P/B 201)
27-81-00-860-805	Retract the Leading Edge Slats (P/B 201)
71-11-04-010-814-H00	Open the Fan Cowl Panel (Selection) (P/B 201)
78-31-00-010-816-H00	Open the Thrust Reverser (Selection) (P/B 201)
78-31-00-040-806-H00	Thrust Reverser Deactivation For Ground Maintenance (P/B 201)

B. Location Zones

Zone	Area	
411	Engine, Left	
421	Engine, Right	

C. Access Panels

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Number	Name/Location
413AL	Left Fan Cowl Panel, Left Engine
415AL	Left Thrust Reverser, Left Engine
423AL	Left Fan Cowl Panel, Right Engine
425AL	Left Thrust Reverser, Right Engine

D. Prepare for the Procedure

SUBTASK 30-21-04-860-005-001

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

Right Power Management Panel, P210

Row	<u>Col</u>	Number	<u>Name</u>
Р	11	C30602	FALCTRI R

Standby Power Management Panel, P310

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
Н	11	C30603	EAI CTRL L

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SUBTASK 30-21-04-010-008-001



DO ALL OF THE SPECIFIED TASKS IN THE CORRECT SEQUENCE TO OPEN THE THRUST REVERSER. IF YOU DO NOT OBEY THIS INSTRUCTION. INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

- Do these tasks in the sequence safely to open the left thrust reverser on the applicable engine:
 - Do this task: Retract the Leading Edge Slats, TASK 27-81-00-860-805.
 - Do this task: Leading Edge Slat Deactivation, TASK 27-81-00-040-801. (b)
 - Do this task: Thrust Reverser Deactivation For Ground Maintenance, TASK 78-31-00-040-806-H00.
 - For the left fan cowl panels, do this task:

Open the Fan Cowl Panel (Selection), TASK 71-11-04-010-814-H00

<u>Number</u>	<u>Name/Location</u>
413AL	Left Fan Cowl Panel, Left Engine
423AL	Left Fan Cowl Panel, Right Engine

(e) For the left thrust reversers, do this task:

Open the Thrust Reverser (Selection), TASK 78-31-00-010-816-H00

<u>Number</u>	Name/Location
415AL	Left Thrust Reverser, Left Engine
425AL	Left Thrust Reverser, Right Engine

E. Procedure

SUBTASK 30-21-04-000-005

- Do these steps to remove the sensor [1]:
 - Disconnect the electrical connector [7] from the sensor [1].



CAUTION

WHEN YOU DISCONNECT THE TUBE, HOLD THE FITTING ON THE SENSOR IN POSITION WITH A SECOND WRENCH, IF YOU DO NOT HOLD THE FITTING, YOU WILL CAUSE DAMAGE TO THE SENSOR.

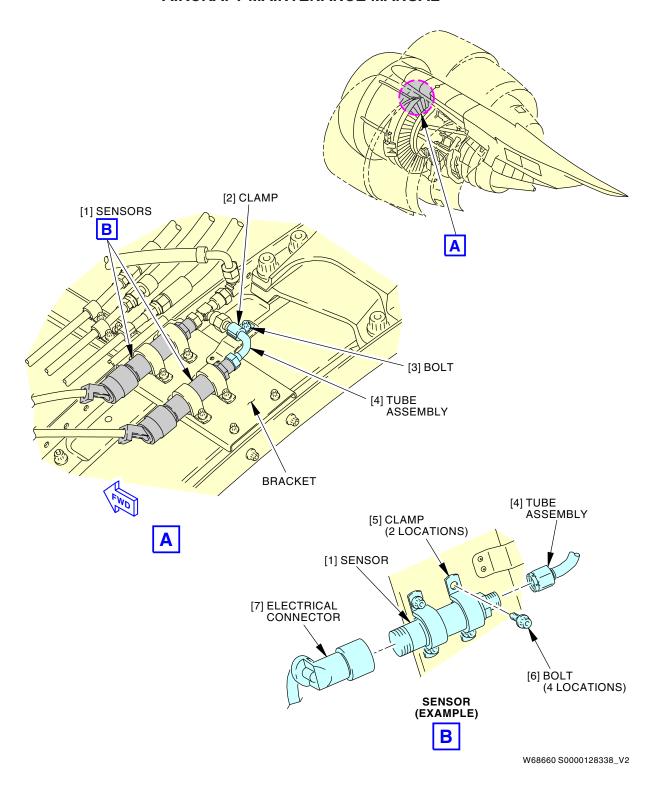
- (b) Disconnect the tube assembly [4] from the sensor [1].
- (c) Remove the bolt [3] and clamp [2].
- (d) Remove the bolts [6].
- (e) Remove the clamps [5].
- Remove the sensor [1].

— END OF TASK —

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EAI Pressure Sensor Installation Figure 401/30-21-04-990-804-001

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TASK 30-21-04-400-802-001

3. Engine Anti-Ice Pressure Sensor Installation

(Figure 401)

A. References

Reference	Title	
20-11-10-910-802-001	Wrench Arc Method (P/B 201)	
27-81-00-440-801	Leading Edge Slat Reactivation (P/B 201)	
30-21-00-730-804-001	Engine Anti-Ice (engine running) - System Test (P/B 501)	
71-11-04-410-814-H00	Close the Fan Cowl Panel (Selection) (P/B 201)	
78-31-00-410-816-H00	Close the Thrust Reverser (Selection) (P/B 201)	
78-31-00-440-805-H00	Thrust Reverser Activation After Ground Maintenance (P/B 201)	

B. Consumable Materials

Reference	Description	Specification
D00006	Compound - Antiseize Pure Nickel Special -	BAC5008
	Never-Seez NSBT	

C. Location Zones

Zone	Area
411	Engine, Left
421	Engine, Right

D. Access Panels

Number	Name/Location
413AL	Left Fan Cowl Panel, Left Engine
415AL	Left Thrust Reverser, Left Engine
423AL	Left Fan Cowl Panel, Right Engine
425AL	Left Thrust Reverser, Right Engine

E. Procedure

SUBTASK 30-21-04-860-006-001

(1) Make sure that these circuit breakers are open and have safety tags:

Right Power Management Panel, P210

Row	<u>Col</u>	Number	<u>Name</u>
Р	11	C30602	EAI CTRL R

Standby Power Management Panel, P310

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
Н	11	C30603	EAI CTRL L

F. Procedure

SUBTASK 30-21-04-400-005

- (1) Do these steps to install the sensor [1]:
 - (a) Hold the sensor [1] in place.
 - (b) Hold the clamp [2] in place.
 - (c) Install the bolt [3].

NOTE: Do not tighten the bolt [3] at this time.

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(d) Install the clamps [5] and bolts [6].

NOTE: Do not tighten the bolts [6] at this time.

- (e) ApplyNever-Seez NSBT compound, D00006 to the threads on the tube assembly [4].
- (f) Connect the tube assembly [4] to the sensor [1].
- (g) Connect the electrical connector [7] to the sensor [1].
- (h) Tighten the tube assembly [4]. To tighten it, do this task: Wrench Arc Method, TASK 20-11-10-910-802-001.
- (i) Tighten the bolts [3] and bolt [6] to 22.5 ±2.5 in-lb (2.5 ±0.3 N·m).
- (j) Remove the safety tags and close these circuit breakers:

Right Power Management Panel, P210

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
Р	11	C30602	EAI CTRL R

Standby Power Management Panel, P310

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
Н	11	C30603	EAI CTRL L

G. Engine Anti-Ice Pressure Sensor Installation Test

SUBTASK 30-21-04-010-009-001



DO ALL OF THE SPECIFIED TASKS IN THE CORRECT SEQUENCE TO OPEN THE THRUST REVERSER. IF YOU DO NOT OBEY THIS INSTRUCTION, INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (1) Do these tasks in the sequence safely to close the thrust reverser:
 - (a)

For the left thrust reversers, do this task:

Close the Thrust Reverser (Selection), TASK 78-31-00-410-816-H00

<u>Number</u>	Name/Location
415AL	Left Thrust Reverser, Left Engine
425AL	Left Thrust Reverser, Right Engine

(b)

For the left fan cowl panels, do this task:

Close the Fan Cowl Panel (Selection), TASK 71-11-04-410-814-H00

<u>Number</u>	Name/Location
413AL	Left Fan Cowl Panel, Left Engine
423AL	Left Fan Cowl Panel, Right Engine

- (c) Do this task: Thrust Reverser Activation After Ground Maintenance, TASK 78-31-00-440-805-H00.
- (d) Do this task: Leading Edge Slat Reactivation, TASK 27-81-00-440-801.

SUBTASK 30-21-04-710-003-001

(2) Do this task: Engine Anti-Ice (engine running) - System Test, TASK 30-21-00-730-804-001.

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CONTROLLER AIR COOLER - REMOVAL/INSTALLATION

1. General

- A. This procedure has these tasks:
 - (1) Controller Air Cooler Removal.
 - (2) Controller Air Cooler Installation.

TASK 30-21-05-000-802-001

2. Controller Air Cooler Removal

(Figure 401)

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
27-81-00-040-801	Leading Edge Slat - Deactivation (P/B 201)
27-81-00-860-805	Retract the Leading Edge Slats (P/B 201)
71-11-04-010-814-H00	Open the Fan Cowl Panel (Selection) (P/B 201)
78-31-00-010-816-H00	Open the Thrust Reverser (Selection) (P/B 201)
78-31-00-040-806-H00	Thrust Reverser Deactivation For Ground Maintenance (P/B 201)

B. Location Zones

Zone	Area
411	Engine, Left
421	Engine, Right

C. Access Panels

Number	Name/Location
413AL	Left Fan Cowl Panel, Left Engine
415AL	Left Thrust Reverser, Left Engine
423AL	Left Fan Cowl Panel, Right Engine
425AL	Left Thrust Reverser, Right Engine

D. Procedure

SUBTASK 30-21-05-010-004-001



DO ALL OF THE SPECIFIED TASKS IN THE CORRECT SEQUENCE TO OPEN THE THRUST REVERSER. IF YOU DO NOT OBEY THIS INSTRUCTION, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (1) Do these tasks in sequence to safely open the left thrust reverser on the applicable engine:
 - (a) Do this task: Retract the Leading Edge Slats, TASK 27-81-00-860-805.
 - (b) Do this task: Leading Edge Slat Deactivation, TASK 27-81-00-040-801.
 - (c) Do this task: Thrust Reverser Deactivation For Ground Maintenance, TASK 78-31-00-040-806-H00.
 - (d) For the left fan cowl panels, do this task:Open the Fan Cowl Panel (Selection), TASK 71-11-04-010-814-H00

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<u>Number</u>	Name/Location
413AL	Left Fan Cowl Panel, Left Engine
423AL	Left Fan Cowl Panel, Right Engine

(e) For the left thrust reversers, do this task:

Open the Thrust Reverser (Selection), TASK 78-31-00-010-816-H00

<u>Number</u>	<u>Name/Location</u>
415AL	Left Thrust Reverser, Left Engine
425AL	Left Thrust Reverser, Right Engine

SUBTASK 30-21-05-020-008-001

(2) Loosen the clamp [4] to disconnect the tube assembly [7] from the cooler [5].

SUBTASK 30-21-05-020-009-001

(3) Disconnect the tube assembly [3] from the cooler [5].

SUBTASK 30-21-05-020-010-001

(4) Disconnect the tube assembly [6] from the cooler [5].

SUBTASK 30-21-05-020-011-001



DO NOT DROP TOOLS OR PARTS IN THIS AREA. IT CAN BE VERY DIFFICULT TO GET BACK DROPPED ITEMS.

(5) Remove the bolt [1] to remove the cooler [5].

----- END OF TASK -----

TASK 30-21-05-400-802-001

3. Controller Air Cooler Installation

(Figure 401)

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
27-81-00-440-801	Leading Edge Slat Reactivation (P/B 201)
30-21-00-730-804-001	Engine Anti-Ice (engine running) - System Test (P/B 501)
71-11-04-410-814-H00	Close the Fan Cowl Panel (Selection) (P/B 201)
78-31-00-410-816-H00	Close the Thrust Reverser (Selection) (P/B 201)
78-31-00-440-805-H00	Thrust Reverser Activation After Ground Maintenance (P/B 201)

B. Consumable Materials

Reference	Description	Specification
D50004	Compound - Antiseize	BMS3-28

C. Location Zones

Zone	Area	
411	Engine, Left	
421	Engine, Right	

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D. Access Panels

Number	Name/Location	
413AL	Left Fan Cowl Panel, Left Engine	
415AL	Left Thrust Reverser, Left Engine	
423AL	Left Fan Cowl Panel, Right Engine	
425AL	Left Thrust Reverser, Right Engine	

E. Procedure

SUBTASK 30-21-05-420-010-001



DO NOT DROP TOOLS OR PARTS IN THIS AREA. IT CAN BE VERY DIFFICULT TO GET BACK DROPPED ITEMS.

(1) Install the cooler [5] with bolt [1] and washer [2].

SUBTASK 30-21-05-420-011-001

(2) Install the bolt [1].

SUBTASK 30-21-05-420-012-001

(3) Apply compound, D50004 to the threads on all of the fittings on the cooler [5].

SUBTASK 30-21-05-420-013-001

- (4) Connect the tube assembly [6] to the cooler [5].
 - (a) Install the tube assembly [6].

SUBTASK 30-21-05-420-014-001

- (5) Connect the tube assembly [3] to the cooler [5].
 - (a) Install the nut.

SUBTASK 30-21-05-420-015-001

(6) Connect the tube assembly [7] to the cooler [5] with the clamp [4].

F. Installation Test

SUBTASK 30-21-05-010-005-001



DO ALL OF THE SPECIFIED TASKS IN THE CORRECT SEQUENCE TO OPEN THE THRUST REVERSER. IF YOU DO NOT OBEY THIS INSTRUCTION, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (1) Do these tasks in sequence to safely close the thrust reverser:
 - (a) For the left thrust reversers, do this task:

Close the Thrust Reverser (Selection), TASK 78-31-00-410-816-H00

<u>Number</u>	<u>Name/Location</u>
415AL	Left Thrust Reverser, Left Engine
425AL	Left Thrust Reverser, Right Engine

(b) For the left fan cowl panels, do this task:

Close the Fan Cowl Panel (Selection), TASK 71-11-04-410-814-H00

<u>Number</u>	Name/Location
413AL	Left Fan Cowl Panel, Left Engine
423AL	Left Fan Cowl Panel, Right Engine

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- (c) Do this task: Thrust Reverser Activation After Ground Maintenance, TASK 78-31-00-440-805-H00.
- (d) Do this task: Leading Edge Slat Reactivation, TASK 27-81-00-440-801.

SUBTASK 30-21-05-710-003-001

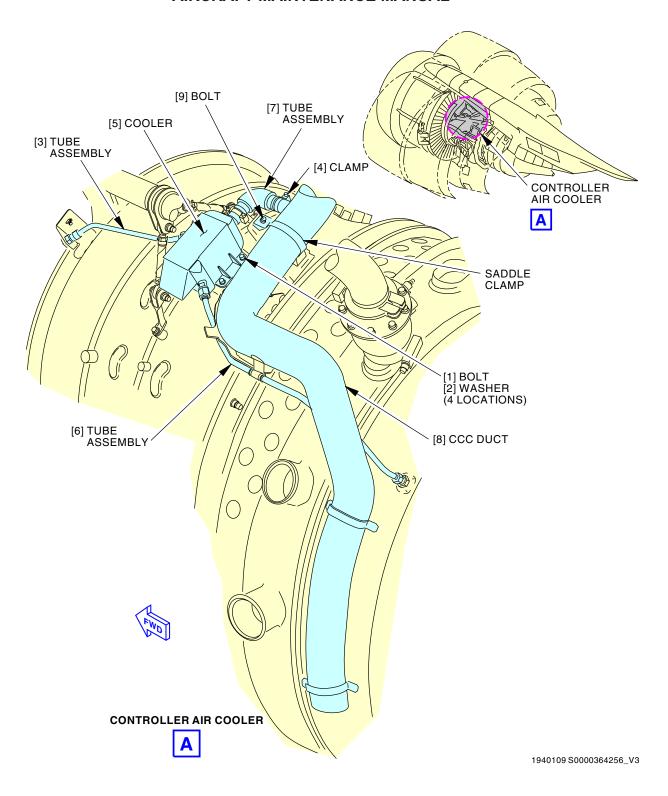
 $\hbox{(2)} \quad \hbox{Do this task: Engine Anti-Ice (engine running) - System Test, TASK 30-21-00-730-804-001.}\\$

----- END OF TASK -----

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Controller Air Cooler Installation Figure 401/30-21-05-990-803-001

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ENGINE ANTI-ICE DUCT - REMOVAL/INSTALLATION

1. General

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

TASK 30-21-06-000-804-001

2. Engine Anti-Ice Duct Removal

Figure 401

A. References

Reference	Title
27-81-00-040-801	Leading Edge Slat - Deactivation (P/B 201)
27-81-00-860-805	Retract the Leading Edge Slats (P/B 201)
71-11-04-010-814-H00	Open the Fan Cowl Panel (Selection) (P/B 201)
78-31-00-010-816-H00	Open the Thrust Reverser (Selection) (P/B 201)
78-31-00-040-806-H00	Thrust Reverser Deactivation For Ground Maintenance (P/B 201)

B. Location Zones

Zone	Area
411	Engine, Left
421	Engine, Right

C. Access Panels

Num	ber	Name/Location
413A	۸L	Left Fan Cowl Panel, Left Engine
414	١R	Right Fan Cowl Panel, Left Engine
415A	۸L	Left Thrust Reverser, Left Engine
4164	λR	Right Thrust Reverser, Left Engine
423A	۸L	Left Fan Cowl Panel, Right Engine
424	١R	Right Fan Cowl Panel, Right Engine
425A	۸L	Left Thrust Reverser, Right Engine
426 <i>A</i>	λR	Right Thrust Reverser, Right Engine

D. Prepare for the Procedure

SUBTASK 30-21-06-010-007-001



DO ALL OF THE SPECIFIED TASKS IN THE CORRECT SEQUENCE TO OPEN THE THRUST REVERSER. IF YOU DO NOT OBEY THIS INSTRUCTION, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (1) Do these tasks in sequence to safely open the left thrust reverser on the applicable engine:
 - (a) Do this task: Retract the Leading Edge Slats, TASK 27-81-00-860-805.
 - (b) Do this task: Leading Edge Slat Deactivation, TASK 27-81-00-040-801.
 - (c) Do this task: Thrust Reverser Deactivation For Ground Maintenance, TASK 78-31-00-040-806-H00.

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(d) For the left and right fan cowl panels, do this task:

Open the Fan Cowl Panel (Selection), TASK 71-11-04-010-814-H00

<u>Number</u>	Name/Location
413AL	Left Fan Cowl Panel, Left Engine
414AR	Right Fan Cowl Panel, Left Engine
423AL	Left Fan Cowl Panel, Right Engine
424AR	Right Fan Cowl Panel, Right Engine

(e) For the left and right thrust reversers, do this task:

Open the Thrust Reverser (Selection), TASK 78-31-00-010-816-H00

<u>Number</u>	Name/Location
415AL	Left Thrust Reverser, Left Engine
416AR	Right Thrust Reverser, Left Engine
425AL	Left Thrust Reverser, Right Engine
426AR	Right Thrust Reverser, Right Engine

E. Procedure

SUBTASK 30-21-06-020-015-001

(1) Do these steps to remove the duct assy [1]:

SUBTASK 30-21-06-020-016-001

- (2) Do these steps to remove the duct assembly [1]:
 - (a) Remove the clamps [16] from the coupling covers [15] at each end of the duct assembly [1].
 - (b) Remove the tape from the coupling covers [15] to remove them.
 - (c) Remove the couplings [4] and seals [5] from each end of the duct assembly [1].
 - (d) Examine the seals [5] for damage.
 - (e) If the seals [5] are damaged, replace them.



BE CAREFUL NOT TO LET THE DUCT FALL WHEN YOU REMOVE THE BOLTS FROM THE LINK ASSEMBLY. YOU CAN DAMAGE THE DUCT IF YOU LET IT FALL.

(f) Remove the bolt [8], nut [12], washer [14], washer [11], and bushing [10] from each link assembly [13] to remove the duct assembly [1].

SUBTASK 30-21-06-020-017-001

- (3) Do these steps to remove the duct assembly [2]:
 - (a) Remove the clamps [16] from the coupling covers [10] at each end of the duct assembly [2].
 - (b) Remove the tape from the coupling covers [10] to remove them.



BE CAREFUL NOT TO LET THE DUCT WHEN YOU REMOVE THE COUPLINGS. YOU CAN DAMAGE THE DUCT IF YOU LET IT FALL.

- (c) Remove the couplings [4] and seals [5] from the ends of the duct assembly [2] to remove it.
- (d) Examine the seals [5] for damage.

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(e) If the seals [5] are damaged, replace them.

SUBTASK 30-21-06-020-018-001

- (4) Do these steps to remove the duct assembly [3]:
 - (a) Remove the clamps [16] from the coupling cover [15] at the top of the duct assembly [3].
 - (b) Remove the tape from the coupling cover [15] to remove it.
 - (c) Remove the couplings [4] and seals [5] from the ends of the duct assembly [3].
 - (d) Examine the seals [5] for damage.
 - (e) If the seals [5] are damaged, discard them.



BE CAREFUL NOT TO LET THE DUCT FALL WHEN YOU REMOVE THE BOLTS. YOU CAN DAMAGE THE DUCT IF YOU LET IT FALL.

(f) Remove the bolts [17] and washers [18] from the upper fire wall [19] to remove the duct assembly [3].

SUBTASK 30-21-06-020-019-001

- (5) Do these steps to remove the duct assembly [6]:
 - (a) Remove the couplings [4] and seals [5] from each end of the duct assembly [6].
 - (b) Examine the seals [5] for damage.
 - (c) If the seals [5] are damaged, replace them.



BE CAREFUL NOT TO LET THE DUCT FALL WHEN YOU REMOVE THE BOLTS FROM THE LINK ASSEMBLIES. YOU CAN DAMAGE THE DUCT IF YOU LET IT FALL.

(d) Remove the bolt [8], nut [12], washer [14], washer [11], and bushing [10] from each link assembly [13] to remove the duct assembly [6].

——— END OF TASK ———

TASK 30-21-06-400-804-001

3. Engine Anti-Ice Duct Installation

(Figure 401)

A. References

Reference	Title
27-81-00-440-801	Leading Edge Slat Reactivation (P/B 201)
30-21-00-730-804-001	Engine Anti-Ice (engine running) - System Test (P/B 501)
71-11-04-410-814-H00	Close the Fan Cowl Panel (Selection) (P/B 201)
78-31-00-410-816-H00	Close the Thrust Reverser (Selection) (P/B 201)
78-31-00-440-805-H00	Thrust Reverser Activation After Ground Maintenance (P/B 201)

B. Tools/Equipment

Reference	Description	
STD-583	Mallet - Non-metallic	

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C. Consumable Materials

Reference	Description	Specification
D00667	Compound - Antiseize - Loctite C5-A Copper	MIL-PRF-907
	Based Anti-Seize (Replaces FEL-PRO C5-A)	

D. Location Zones

Zone	Area
411	Engine, Left
421	Engine, Right

E. Access Panels

Number	Name/Location
413AL	Left Fan Cowl Panel, Left Engine
414AR	Right Fan Cowl Panel, Left Engine
415AL	Left Thrust Reverser, Left Engine
416AR	Right Thrust Reverser, Left Engine
423AL	Left Fan Cowl Panel, Right Engine
424AR	Right Fan Cowl Panel, Right Engine
425AL	Left Thrust Reverser, Right Engine
426AR	Right Thrust Reverser, Right Engine

F. Procedure

SUBTASK 30-21-06-400-009-001

(1) Do these steps to install the duct assembly [1]:



BE CAREFUL NOT TO LET THE DUCT FALL BEFORE YOU INSTALL THE BOLTS IN THE LINK ASSEMBLY. YOU CAN DAMAGE THE DUCT IF YOU LET IT FALL.

- (a) Install the bolt [8], nut [12], washer [14], washer [11], and bushing [10] to connect each link assembly [13] to the duct assembly [1].
 - 1) Adjust the length of the link assemblies [13] by loosening the jamnuts to release the rod end bearings.
 - 2) After the link assembly [13] has been adjusted and aligned correctly, re-tighten the jamnuts and secure with lockwire (double twist method).
 - 3) Install the countersunk side of the washer [14] adjacent to the head of the bolt [8].
- (b) Install the couplings [4] and new seals [5] at each end of the duct assembly [1].
 - 1) Examine the sealing surfaces of the seals [5] and the flanges on the duct assembly [1] to make sure there are no scratches, cuts, pits or unwanted material.
 - 2) Turn the coupling [4] to maximize clearance.
 - 3) Tighten the coupling [4] to 75 \pm 5 in-lb (8 \pm 1 N·m).
 - 4) Hit the coupling [4] lightly with a non-metallic mallet, STD-583.
 - 5) Tighten the coupling [4] to 75 ±5 in-lb (8 ±1 N·m) again.
- (c) Install a coupling covers [15] over the each coupling [4].
 - 1) Turn the coupling cover [15] to maximize clearance.
- (d) Seal each coupling cover [15] with tape.
- (e) Install the clamps [16] on each coupling cover [15].

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1) Tighten the clamps [16] to 20 ±2 in-lb (2 ±0 N·m).

SUBTASK 30-21-06-400-010-001

(2) Do these steps to install the duct assembly [2]:



BE CAREFUL NOT TO LET THE DUCT FALL WHEN YOU INSTALL THE COUPLINGS. YOU CAN DAMAGE THE DUCT IF YOU LET IT FALL.

- (a) Install the couplings [4] and new seals [5] at the ends of the duct assembly [2].
 - 1) Examine the sealing surfaces of the seals [5] and the flanges on the duct assembly [2] to make sure there are no scratches, cuts, pits or unwanted material.
 - 2) Turn the coupling [4] to maximize clearance.
 - 3) Tighten the coupling [4] to 75 ±5 in-lb (8 ±1 N·m).
 - 4) Hit the coupling [4] lightly with a non-metallic mallet, STD-583.
 - 5) Tighten the coupling [4] to 75 ±5 in-lb (8 ±1 N·m) again.
- (b) Install the coupling covers [15] over the couplings [4] at each end of the duct assembly [2] with tape.
 - 1) Turn the coupling cover [15] to maximize clearance.
- (c) Install the clamps [16] on the coupling covers [15] at each end of the duct assembly [2].
 - 1) Tighten the clamps [16] to 20 ±2 in-lb (2 ±0 N·m).

SUBTASK 30-21-06-400-011-001

(3) Do these steps to install the duct assembly [3]:



BE CAREFUL NOT TO LET THE DUCT FALL WHEN YOU INSTALL THE BOLTS. YOU CAN DAMAGE THE DUCT IF YOU LET IT FALL.

- (a) Install the bolts [17] and washers [18] to connect the duct assembly [3] to the upper fire wall [19].
 - 1) Apply Loctite C5-A compound, D00667, to the threads of the bolt [17].
 - 2) Install the countersunk side of the washer [18] adjacent to the head of the bolt [17].
- (b) Install the couplings [4] and new seals [5] at each end of the duct assembly [3].
 - 1) Examine the sealing surfaces of the seals [5] and the flanges on the duct assembly [3] to make sure there are no scratches, cuts, pits or unwanted material.
 - 2) Turn the coupling [4] to maximize clearance.
 - 3) Tighten the coupling [4] to 75 ±5 in-lb (8 ±1 N·m).
 - 4) Hit the coupling [4] lightly with a non-metallic mallet, STD-583.
 - 5) Tighten the coupling [4] to 75 ±5 in-lb (8 ±1 N·m) again.
- (c) Install the coupling covers [15] over the couplings [4] at each end of the duct assembly [3] with tape.
 - 1) Turn the coupling cover [15] to maximize clearance.
- (d) Install the clamps [16] on the coupling cover [15] at the top of the duct assembly [3].
 - 1) Tighten the clamps [16] to 20 ±2 in-lb (2 ±0 N·m).

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SUBTASK 30-21-06-400-012-001

- (4) Do these steps to install the duct assembly [6]:
 - (a) Install the couplings [4] and new seals [5] at each end of the duct assembly [6].
 - 1) Examine the sealing surfaces of the seals [5] and the flanges on the duct assembly [6] to make sure there are no scratches, cuts, pits or unwanted material.
 - 2) Turn the coupling [4] to maximize clearance.
 - 3) Tighten the coupling [4] to 75 \pm 5 in-lb (8 \pm 1 N·m).
 - 4) Hit the coupling [4] lightly with a non-metallic mallet, STD-583.
 - 5) Tighten the coupling [4] to 75 ±5 in-lb (8 ±1 N·m) again.



BE CAREFUL NOT TO LET THE DUCT FALL BEFORE YOU INSTALL THE BOLTS. YOU CAN DAMAGE THE DUCT IF YOU LET IT FALL.



BEFORE THE FINAL ASSEMBLY AND ADJUSTMENT OF THE INTERFACE DUCT, MAKE SURE THERE IS NO PRELOAD ON THE DUCT. A PRELOAD CONDITION CAN CAUSE FAILURE OF THE DUCTS AND THE SUBSEQUENT RELEASE OF HOT GASES INTO THE CORE AREA.

- (b) Install the bolt [8], nut [12], washer [14], washer [11], and bushing [10] to connect each link assembly [13] to the duct assembly [6].
 - To adjust the length of the link assemblies [13] by loosening the jamnuts to release the rod end bearings.
 - 2) After the link assembly [13] has been adjusted and aligned correctly, re-tighten the jamnuts and secure with lockwire (double twist method).
 - Install the countersunk side of the washer [14] adjacent to the head of the bolt [8].

G. Installation Test

SUBTASK 30-21-06-010-008-001



DO ALL OF THE SPECIFIED TASKS IN THE CORRECT SEQUENCE TO OPEN THE THRUST REVERSER. IF YOU DO NOT OBEY THIS INSTRUCTION, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (1) Do these tasks in sequence to safely close the left and right thrust reversers:
 - (a) For the left and right thrust reversers, do this task:

Close the Thrust Reverser (Selection), TASK 78-31-00-410-816-H00

<u>Number</u>	Name/Location
415AL	Left Thrust Reverser, Left Engine
416AR	Right Thrust Reverser, Left Engine
425AL	Left Thrust Reverser, Right Engine
426AR	Right Thrust Reverser, Right Engine

(b) For the left and right fan cowl panels, do this task:

Close the Fan Cowl Panel (Selection), TASK 71-11-04-410-814-H00

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<u>Number</u>	Name/Location
413AL	Left Fan Cowl Panel, Left Engine
414AR	Right Fan Cowl Panel, Left Engine
423AL	Left Fan Cowl Panel, Right Engine
424AR	Right Fan Cowl Panel, Right Engine

- (c) Do this task: Thrust Reverser Activation After Ground Maintenance, TASK 78-31-00-440-805-H00.
- (d) Do this task: Leading Edge Slat Reactivation, TASK 27-81-00-440-801.

SUBTASK 30-21-06-710-005-001

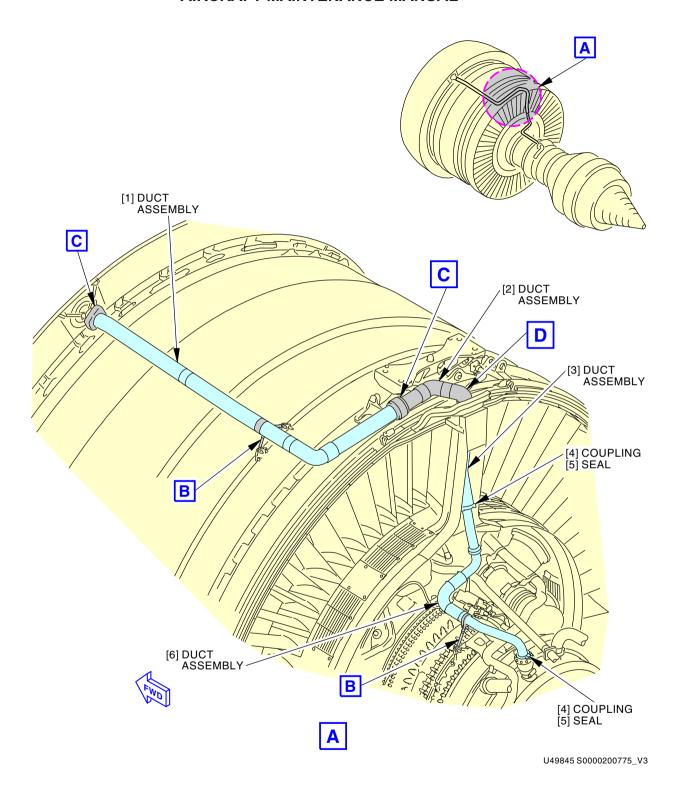
(2) Do a test of the EAI system (TASK 30-21-00-730-804-001)

----- END OF TASK -----

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Engine Anti-Ice Duct Installation Figure 401/30-21-06-990-806 (Sheet 1 of 2)

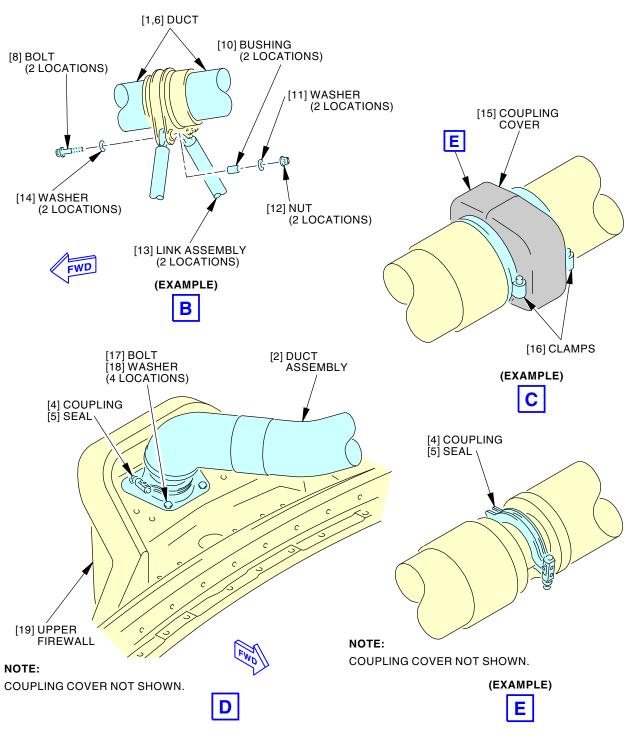
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Engine Anti-Ice Duct Installation Figure 401/30-21-06-990-806 (Sheet 2 of 2)

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PITOT STATIC PROBE ANTI-ICING - MAINTENANCE PRACTICES

1. General

- A. This procedure has these tasks:
 - (1) Pitot static probe anti-icing deactivation.
 - (2) Pitot static probe anti-icing activation.

TASK 30-31-00-040-801

2. Pitot Static Probe Anti-Icing - Deactivation

- A. General
 - (1) This task will deactivate the probe heat systems.
- B. References

Reference	Title
24-22-00-860-805	Supply Electrical Power (P/B 201)
24-22-00-860-806	Remove Electrical Power (P/B 201)

C. Tools/Equipment

Reference	Description
STD-1179	Tester - Pyrometer

D. Location Zones

Zone	Area	
212	Flight Compartment, Right	

E. Procedure

SUBTASK 30-31-00-020-004



DO NOT TOUCH THE PROBES WHILE THE HEATERS ARE ON. BEFORE YOU TOUCH IT, FEEL FOR HEAT RADIATION FROM THE PROBE. HOT PROBES CAN BURN YOU.

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

Left Power Management Panel, P110

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	26	C30409	AOA PROBE HTR L
G	5	C30405	PH B PITOT PROBE HTR L
Н	6	C30424	PH C PITOT PROBE HTR L
M	25	C30624	PROBE/VANE HTR CTRL L

Right Power Management Panel, P210

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	1	C30408	AOA PROBE HTR R
D	5	C30404	PH B PITOT PROBE HTR R
Е	4	C30423	PH C PITOT PROBE HTR R
Е	20	C30406	PH B PITOT PROBE HTR C
G	26	C30425	PH C PITOT PROBE HTR C
L	10	C30623	PROBE/VANE HTR CTRL R
L	11	C30625	PITOT PROBE HTR C CTRL

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F. Pitot Static Probe Anti-Icing - Tryout

NOTE: This tryout is to make sure that the pitot static probes are in a zero energy state.

SUBTASK 30-31-00-420-001

(1) Supply electrical power (TASK 24-22-00-860-805).

SUBTASK 30-31-00-210-001



DO NOT TOUCH HOT PARTS WITHOUT APPLICABLE GLOVES. HOT PARTS CAN CAUSE AN INJURY. IF YOU GET AN INJURY, PUT IT IN COLD WATER FOR 10 MINUTES AND GET MEDICAL AID.

(2) Use a pyrometer, STD-1179, or equivalent to make sure that the surface temperature of the equipment is not hot.

NOTE: There are no switches to activate the probe heat systems.

SUBTASK 30-31-00-020-005

- EFFECTIVITY ·

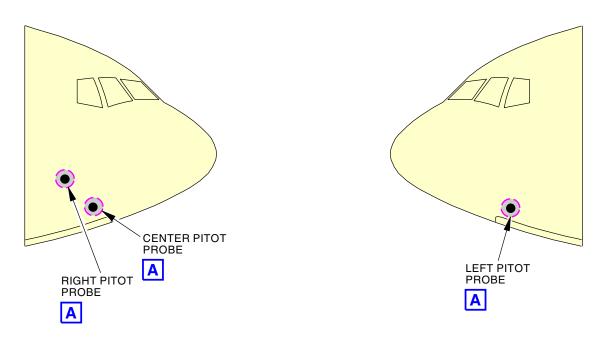
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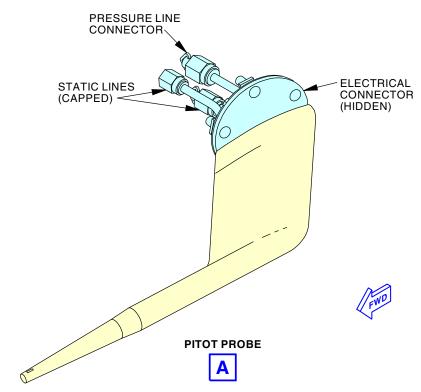
(3) Remove electrical power (TASK 24-22-00-860-806).

——— END OF TASK ———

30-31-00







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Pitot Static Probe Anti-Icing Figure 201/30-31-00-990-801

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TASK 30-31-00-440-801

3. Pitot Static Probe Anti-Icing - Activation

(Figure 201)

A. General

(1) This task will activate the probe heat systems.

B. Location Zones

Zone	Area
212	Flight Compartment, Right

C. Procedure

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SUBTASK 30-31-00-420-002

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

Left Power Management Panel, P110

	,,,				
Row	<u>Col</u>	<u>Number</u>	<u>Name</u>		
D	26	C30409	AOA PROBE HTR L		
G	5	C30405	PH B PITOT PROBE HTR L		
Н	6	C30424	PH C PITOT PROBE HTR L		
M	25	C30624	PROBE/VANE HTR CTRL L		

Right Power Management Panel, P210

Row	Col	<u>Number</u>	<u>Name</u>
D	1	C30408	AOA PROBE HTR R
D	5	C30404	PH B PITOT PROBE HTR R
Е	4	C30423	PH C PITOT PROBE HTR R
Е	20	C30406	PH B PITOT PROBE HTR C
G	26	C30425	PH C PITOT PROBE HTR C
L	10	C30623	PROBE/VANE HTR CTRL R
L	11	C30625	PITOT PROBE HTR C CTRL

----- END OF TASK -----



PITOT, ANGLE OF ATTACK, TOTAL AIR TEMPERATURE PROBE HEAT - ADJUSTMENT/TEST

1. General

- A. This procedure has these tasks:
 - Pitot/Angle of Attack Probe Heat and Current Sensing Relay Operational Test CMCF Available
 - (2) Pitot/Angle of Attack Probe Heat and Current Sensing Relay Operational Test No CMCF Available
 - (3) Total Air Temperature Probe Heat Operational Test

ARO ALL; AIRPLANES WITH ADIRU S/W LOAD 3472-HNC-100-01 OR LATER

TASK 30-31-00-700-802

2. Pitot/Angle of Attack Probe Heat and Current Sensing Relay Operational Test (CMCF Available)

A. General

- (1) This test makes sure that the left, center, and right pitot probe heaters, the left and right angle of attack (AOA) vane heaters, and the current sensing relays are operating correctly.
- (2) The test uses the central maintenance computing function (CMCF) and the engine indication and crew alerting system (EICAS) to test the current sensing relays.
- (3) A maintenance access terminal is necessary for this procedure.

B. References

Reference	Title
24-22-00-860-805	Supply Electrical Power (P/B 201)
45-10-00-740-819	How to Do a Ground Test (P/B 201)
WDM 30-31-11	Wiring Diagram Manual
WDM 30-31-12	Wiring Diagram Manual
WDM 30-31-13	Wiring Diagram Manual
WDM 30-32-11	Wiring Diagram Manual
WDM 30-32-12	Wiring Diagram Manual

C. Location Zones

Zone	Area
212	Flight Compartment, Right

D. Procedure

NOTE: This procedure is for AIRPLANES WITH ADIRU S/W LOAD 3472-HNC-100-01 OR LATER.

SUBTASK 30-31-00-860-002

(1) Do this task: Supply Electrical Power, TASK 24-22-00-860-805.

SUBTASK 30-31-00-020-002

(2) Remove all caps, covers, and test equipment from the probes before you start these tests.

SUBTASK 30-31-00-860-003

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

Left Power Management Panel, P110

O a l Marina la ani

Row	<u>C01</u>	<u>number</u>	<u>name</u>
D	26	C30409	AOA PROBE HTR L
G	5	C30405	PH B PITOT PROBE HTR L

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ARO ALL; AIRPLANES WITH ADIRU S/W LOAD 3472-HNC-100-01 OR LATER (Continued)

(Continued)

Left Power Management Panel, P110

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
Н	6	C30424	PH C PITOT PROBE HTR L
M	25	C30624	PROBE/VANE HTR CTRL L

SUBTASK 30-31-00-860-023

- (4) Make sure that these circuit breakers are closed:
 - Left Power Supply Assembly, M24101:
 - 1) CBD2 PFC LANE 1
 - CBD4 PFC LANE 2
 - 3) CBD6 PFC LANE 3

SUBTASK 30-31-00-740-002

Use a maintenance access terminal (MAT) (TASK 45-10-00-740-819) to do an operational test of the heaters for the left pitot probes and left angle of attack vane.



KEEP PERSONS AND EQUIPMENT AWAY FROM THE LEFT PITOT PROBES AND THE LEFT ANGLE OF ATTACK VANE. THESE COMPONENTS WILL BECOME VERY HOT AND CAUSE INJURY TO WARNING PERSONS AND DAMAGE TO EQUIPMENT.

- Make these selections on the MAT:
 - ONBOARD MAINTENANCE
 - 2) LINE MAINTENANCE
 - **GROUND TESTS**
 - 30 AIR DATA SENSOR ANTI-ICING SYSTEM
 - 5) **OPERATIONAL TEST**
 - 6) PITOT / AOA (L) HEAT TEST
 - 7) CONTINUE
- Do the instructions that show on the MAT and then make these selections: (b)
 - 1) CONTINUE
 - START TEST 2)
- When the test is completed, make sure that FAILED shows adjacent to TEST CONDITION on the MAT, and the following EICAS status messages are present:
 - 1) HEAT PITOT L
 - 2) AOA VANE L
- (d) If the HEAT PITOT L status message does not show, replace the left pitot probe heat sensor relay (WDM 30-31-11), K30120 and do the PITOT / AOA (L) HEAT TEST again.
- If the AOA VANE L status message does not show, replace the left angle of attack case probe heat sensor relay, K30121, and the left angle of attack vane probe heat sensor relay, K30122 (WDM 30-32-11) and do the PITOT / AOA (L) HEAT TEST again.

EFFECTIVITY **ARO ALL**



ARO ALL; AIRPLANES WITH ADIRU S/W LOAD 3472-HNC-100-01 OR LATER (Continued)

SUBTASK 30-31-00-860-004

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

Left Power Management Panel, P110

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	26	C30409	AOA PROBE HTR L
G	5	C30405	PH B PITOT PROBE HTR L
Н	6	C30424	PH C PITOT PROBE HTR L
М	25	C30624	PROBE/VANE HTR CTRL L

SUBTASK 30-31-00-740-003

Use a maintenance access terminal (MAT) (TASK 45-10-00-740-819) to do an operational test of the heaters for the left pitot probes and left angle of attack vane.



KEEP PERSONS AND EQUIPMENT AWAY FROM THE LEFT PITOT PROBES AND THE LEFT ANGLE OF ATTACK VANE. THESE COMPONENTS WILL BECOME VERY HOT AND CAUSE INJURY TO WARNING PERSONS AND DAMAGE TO EQUIPMENT.

- Make these selections on the MAT:
 - ONBOARD MAINTENANCE
 - 2) LINE MAINTENANCE
 - 3) GROUND TESTS
 - 4) 30 AIR DATA SENSOR ANTI-ICING SYSTEM
 - 5) OPERATIONAL TEST
 - 6) PITOT / AOA (L) HEAT TEST
 - 7) CONTINUE
- (b) Do the instructions that show on the MAT and then make these selections:
 - 1) CONTINUE
 - 2) START TEST
- (c) When the test is completed, make sure that PASSED shows adjacent to TEST CONDITION on the MAT.
- (d) If FAILED shows, select the maintenance message and select MAINTENANCE MESSAGE DATA, or refer to the applicable Maintenance Message Index in the FIM.

SUBTASK 30-31-00-860-005

Open these circuit breakers and install safety tags:

Right Power Management Panel, P210

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	1	C30408	AOA PROBE HTR R
D	5	C30404	PH B PITOT PROBE HTR R
E	4	C30423	PH C PITOT PROBE HTR R
L	10	C30623	PROBE/VANE HTR CTRL R

SUBTASK 30-31-00-860-024

- (9) Make sure that these circuit breakers are closed:
 - (a) Right Power Supply Assembly, M24201:

· EFFECTIVITY -**ARO ALL**



ARO ALL; AIRPLANES WITH ADIRU S/W LOAD 3472-HNC-100-01 OR LATER (Continued)

- 1) CBD2 PFC LANE 1
- 2) CBD4 PFC LANE 2
- 3) CBD6 PFC LANE 3

SUBTASK 30-31-00-740-004

(10) Use a maintenance access terminal (MAT) (TASK 45-10-00-740-819) to do an operational test of the heaters for the right pitot probes and right angle of attack vane.



KEEP PERSONS AND EQUIPMENT AWAY FROM THE RIGHT PITOT PROBES AND THE RIGHT ANGLE OF ATTACK VANE. THESE COMPONENTS WILL BECOME VERY HOT AND CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (a) Make these selections on the MAT:
 - 1) ONBOARD MAINTENANCE
 - 2) LINE MAINTENANCE
 - 3) GROUND TESTS
 - 4) 30 AIR DATA SENSOR ANTI-ICING SYSTEM
 - 5) OPERATIONAL TEST
 - 6) PITOT / AOA (R) HEAT TEST
 - 7) CONTINUE
- (b) Do the instructions that show on the MAT and then make these selections:
 - 1) CONTINUE
 - 2) START TEST
- (c) When the test is completed, make sure that FAILED shows adjacent to TEST CONDITION on the MAT, and the following EICAS status messages are present:
 - 1) HEAT PITOT R
 - 2) AOA VANE R
- (d) If the HEAT PITOT R status message does not show, replace the right pitot probe heat sensor relay, K30220 (WDM 30-31-12) and do the PITOT / AOA (R) HEAT TEST again.
- (e) If the AOA VANE R status message does not show, replace the right angle of attack case probe heat sensor relay, K30221, and the left angle of attack vane probe heat sensor relay, K30222 (WDM 30-32-12) and do the PITOT / AOA (R) HEAT TEST again.

SUBTASK 30-31-00-860-006

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

Right Power Management Panel, P210

Row	Col	<u>Number</u>	<u>Name</u>
D	1	C30408	AOA PROBE HTR R
D	5	C30404	PH B PITOT PROBE HTR R
Е	4	C30423	PH C PITOT PROBE HTR R
L	10	C30623	PROBE/VANE HTR CTRL R

ARO ALL



ARO ALL; AIRPLANES WITH ADIRU S/W LOAD 3472-HNC-100-01 OR LATER (Continued)

SUBTASK 30-31-00-740-005

(12) Use a maintenance access terminal (MAT) (TASK 45-10-00-740-819) to do an operational test of the heaters for the right pitot probes and right angle of attack vane.



KEEP PERSONS AND EQUIPMENT AWAY FROM THE RIGHT PITOT PROBES AND THE RIGHT ANGLE OF ATTACK VANE. THESE COMPONENTS WILL BECOME VERY HOT AND CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (a) Make these selections on the MAT:
 - 1) ONBOARD MAINTENANCE
 - 2) LINE MAINTENANCE
 - 3) GROUND TESTS
 - 4) 30 AIR DATA SENSOR ANTI-ICING SYSTEM
 - 5) OPERATIONAL TEST
 - 6) PITOT / AOA (R) HEAT TEST
 - 7) CONTINUE
- (b) Do the instructions that show on the MAT and then make these selections:
 - 1) CONTINUE
 - 2) START TEST
- (c) When the test is completed, make sure that PASSED shows adjacent to TEST CONDITION on the MAT.
- (d) If FAILED shows, select the maintenance message and select MAINTENANCE MESSAGE DATA, or refer to the applicable Maintenance Message Index in the FIM.

SUBTASK 30-31-00-860-007

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

Right Power Management Panel, P210

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
Е	20	C30406	PH B PITOT PROBE HTR C
G	26	C30425	PH C PITOT PROBE HTR C
L	11	C30625	PITOT PROBE HTR C CTRL

SUBTASK 30-31-00-860-025

- (14) Make sure that these circuit breakers are closed:
 - (a) Center Power Supply Assembly, M24301:
 - 1) CBD2 PFC LANE 1
 - 2) CBD4 PFC LANE 2
 - 3) CBD6 PFC LANE 3

SUBTASK 30-31-00-740-006

(15) Use a maintenance access terminal (MAT) (TASK 45-10-00-740-819) to do an operational test of the heater for the center pitot probe.

ARO ALL



ARO ALL; AIRPLANES WITH ADIRU S/W LOAD 3472-HNC-100-01 OR LATER (Continued)



KEEP PERSONS AND EQUIPMENT AWAY FROM THE RIGHT PITOT PROBES AND THE RIGHT ANGLE OF ATTACK VANE. THESE COMPONENTS WILL BECOME VERY HOT AND CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (a) Make these selections on the MAT:
 - 1) ONBOARD MAINTENANCE
 - 2) LINE MAINTENANCE
 - 3) GROUND TESTS
 - 4) 30 AIR DATA SENSOR ANTI-ICING SYSTEM
 - 5) OPERATIONAL TEST
 - 6) PITOT (C) HEAT TEST
 - 7) CONTINUE
- (b) Do the instructions that show on the MAT and then make these selections:
 - 1) CONTINUE
 - 2) START TEST
- (c) When the test is completed, make sure that FAILED shows adjacent to TEST CONDITION on the MAT, and the following EICAS status messages are present:
 - 1) HEAT PITOT C
- (d) If the HEAT PITOT C status message does not show, replace the center pitot probe heat sensor relay, K30223 (WDM 30-31-13) and do the PITOT (C) HEAT TEST again.

SUBTASK 30-31-00-860-008

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

Right Power Management Panel, P210

Row	<u>Col</u>	Number	<u>Name</u>
E	20	C30406	PH B PITOT PROBE HTR C
G	26	C30425	PH C PITOT PROBE HTR C
L	11	C30625	PITOT PROBE HTR C CTRL

SUBTASK 30-31-00-740-007

(17) Use a maintenance access terminal (MAT) (TASK 45-10-00-740-819) to do an operational test of the heaters for the center pitot probe.



KEEP PERSONS AND EQUIPMENT AWAY FROM THE CENTER PITOT PROBES AND THE CENTER ANGLE OF ATTACK VANE. THESE COMPONENTS WILL BECOME VERY HOT AND CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (a) Make these selections on the MAT:
 - 1) ONBOARD MAINTENANCE
 - 2) LINE MAINTENANCE
 - 3) GROUND TESTS
 - 4) 30 AIR DATA SENSOR ANTI-ICING SYSTEM

ARO ALL



ARO ALL; AIRPLANES WITH ADIRU S/W LOAD 3472-HNC-100-01 OR LATER (Continued)

- 5) OPERATIONAL TEST
- 6) PITOT (C) HEAT TEST
- 7) CONTINUE
- (b) Do the instructions that show on the MAT and then make these selections:
 - 1) CONTINUE
 - 2) START TEST
- (c) When the test is completed, make sure that PASSED shows adjacent to TEST CONDITION on the MAT.
- (d) If FAILED shows, select the maintenance message and select MAINTENANCE MESSAGE DATA, or refer to the applicable Maintenance Message Index in the FIM.

——— END OF TASK ———

ARO ALL; AIRPLANES WITH ADIRU S/W LOAD 3472-HNC-100-01

TASK 30-31-00-700-803

3. Pitot/Angle of Attack Probe Heat and Current Sensing Relay Operational Test - No CMCF Available

A. General

- (1) This test makes sure that the left, center, and right pitot probe heaters, the left and right angle of attack (AOA) vane heaters, and the current sensing relays are operating correctly.
- (2) The test uses the engine indication and crew alerting system (EICAS) only to test the current sensing relays.
- (3) A maintenance access terminal is not necessary for this procedure.

B. References

Reference	Title
24-22-00-860-805	Supply Electrical Power (P/B 201)
71-00-00-800-835-H00	Engine Start (Selection) (P/B 201)
71-00-00-800-837-H00	Usual Engine Stop (P/B 201)
WDM 30-31-11	Wiring Diagram Manual
WDM 30-31-12	Wiring Diagram Manual
WDM 30-31-13	Wiring Diagram Manual
WDM 30-32-11	Wiring Diagram Manual
WDM 30-32-12	Wiring Diagram Manual

C. Location Zones

Zone	Area
212	Flight Compartment, Right

D. Procedure

NOTE: This procedure is for AIRPLANES WITH ADIRU S/W LOAD 3472-HNC-100-01.

SUBTASK 30-31-00-860-009

(1) Do this task: Supply Electrical Power, TASK 24-22-00-860-805.

SUBTASK 30-31-00-020-003

(2) Remove all caps, covers, and test equipment from the probes before you start these tests.

ARO ALL



ARO ALL; AIRPLANES WITH ADIRU S/W LOAD 3472-HNC-100-01 (Continued)

SUBTASK 30-31-00-860-010

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

Left Power Management Panel, P110

Row	<u>Col</u>	Number	<u>Name</u>
D	26	C30409	AOA PROBE HTR L
G	5	C30405	PH B PITOT PROBE HTR L
Н	6	C30424	PH C PITOT PROBE HTR L

Right Power Management Panel, P210

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	1	C30408	AOA PROBE HTR R
D	5	C30404	PH B PITOT PROBE HTR R
Е	4	C30423	PH C PITOT PROBE HTR R
Е	20	C30406	PH B PITOT PROBE HTR C
G	26	C30425	PH C PITOT PROBE HTR C

SUBTASK 30-31-00-860-011

(4) Do this task: Engine Start (Selection), TASK 71-00-00-800-835-H00.

SUBTASK 30-31-00-860-012

- (5) Make sure these EICAS messages are present:
 - (a) HEAT PITOT L
 - (b) AOA VANE L
 - (c) HEAT PITOT C
 - (d) HEAT PITOT R
 - (e) AOA VANE R

SUBTASK 30-31-00-810-001

(6) If the HEAT PITOT L status message does not show, replace the left pitot heat sensor relay, K30120 (WDM 30-31-11) and repeat this task.

SUBTASK 30-31-00-810-002

(7) If the AOA VANE L status message does not show, replace the left AOA case probe heat sensor relay, K30121, and replace the left AOA vane probe heat sensor relay, K30122 (WDM 30-32-11) and repeat this task.

SUBTASK 30-31-00-810-003

(8) If the HEAT PITOT C status message does not show, replace the center pitot heat sensor relay, K30223 (WDM 30-31-13) and repeat this task.

SUBTASK 30-31-00-810-004

(9) If the HEAT PITOT R status message does not show, replace the right pitot heat sensor relay, K30220 (WDM 30-31-12) and repeat this task.

SUBTASK 30-31-00-810-005

(10) If the AOA VANE R status message does not show, replace the right AOA case probe heat sensor relay, K30221, and replace the right AOA vane probe heat sensor relay, K30222 (WDM 30-32-12) and repeat this task.

SUBTASK 30-31-00-860-013

(11) Do this task: Usual Engine Stop, TASK 71-00-00-800-837-H00.

ARO ALL

30-31-00

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ARO ALL; AIRPLANES WITH ADIRU S/W LOAD 3472-HNC-100-01 (Continued)

SUBTASK 30-31-00-860-014

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

Left Power Management Panel, P110

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	26	C30409	AOA PROBE HTR L
G	5	C30405	PH B PITOT PROBE HTR L
Н	6	C30424	PH C PITOT PROBE HTR L

Right Power Management Panel, P210

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	1	C30408	AOA PROBE HTR R
D	5	C30404	PH B PITOT PROBE HTR R
Е	4	C30423	PH C PITOT PROBE HTR R
Е	20	C30406	PH B PITOT PROBE HTR C
G	26	C30425	PH C PITOT PROBE HTR C

ARO ALL



TASK 30-31-00-700-801

4. Total Air Temperature Probe Heat Operational Test

A. General

- (1) This test makes sure that the total air temperature (TAT) probe heater system operates correctly.
- (2) A maintenance access terminal is necessary for this procedure.

B. References

Reference	Title
24-22-00-860-805	Supply Electrical Power (P/B 201)
45-10-00-740-819	How to Do a Ground Test (P/B 201)

C. Location Zones

Zone	Area	
212	Flight Compartment, Right	

D. Procedure

SUBTASK 30-31-00-860-001

(1) Do this task: Supply Electrical Power, TASK 24-22-00-860-805.

SUBTASK 30-31-00-020-001

(2) Remove all caps, covers, and test equipment from the probes before you start these tests.

SUBTASK 30-31-00-740-001

(3) Use a maintenance access terminal (MAT) (TASK 45-10-00-740-819) to do an operational test of the TAT probe heater system.

ARO ALL





KEEP PERSONS AND EQUIPMENT AWAY FROM THE TAT PROBE. THESE COMPONENTS WILL BECOME VERY HOT AND CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (a) Make these selections on the MAT:
 - 1) ONBOARD MAINTENANCE
 - 2) LINE MAINTENANCE
 - 3) GROUND TESTS
 - 4) 30 AIR DATA SENSOR ANTI-ICE SYSTEM
 - 5) OPERATIONAL TEST
 - 6) TAT PROBE HEAT TEST
 - 7) CONTINUE
- (b) Do the instructions that show on the MAT and then make these selections:
 - 1) CONTINUE
 - 2) START TEST
- (c) When the test is completed, make sure that PASSED shows adjacent to TEST CONDITION on the MAT.
- (d) If FAILED shows, select the maintenance message and select MAINTENANCE MESSAGE DATA or refer to the applicable Maintenance Message Index in the FIM.

——— END OF TASK ———



FLIGHT COMPARTMENT WINDOW ANTI-ICE - ADJUSTMENT/TEST

1. General

- A. This procedure contains scheduled maintenance task data.
- B. This procedure has these tasks:
 - (1) Window Heat Control System Operational Test

TASK 30-41-00-710-801

2. Window Heat Control System - Operational Test

NOTE: This procedure is a scheduled maintenance task.

A. General

- (1) This test makes sure that the Window Heat Control Unit operates correctly.
- (2) The same sequence of steps is used for the left or right Window Heat Control Unit.
- (3) A maintenance access terminal is necessary for this procedure. For instructions on how to use a maintenance access terminal, do this task: How to Use the Central Maintenance Computing System, TASK 45-10-00-740-808.

B. References

Reference	Title
24-22-00-860-805	Supply Electrical Power (P/B 201)
24-22-00-860-806	Remove Electrical Power (P/B 201)
45-10-00-740-808	How to Use the Central Maintenance Computing System (P/B 201)

C. Location Zones

Zone	Area	
212	Flight Compartment, Right	

D. Window Heat Control System - Operational Test

SUBTASK 30-41-00-860-001

(1) Do this task: Supply Electrical Power, TASK 24-22-00-860-805.

SUBTASK 30-41-00-860-005

(2) Set the applicable window heat control switch to ON.

SUBTASK 30-41-00-740-001

- (3) Use a maintenance access terminal (MAT) to do the operational test of the left and right Window Heat Control Units:
 - (a) Make these selections on the MAT:
 - 1) ONBOARD MAINTENANCE
 - 2) LINE MAINTENANCE
 - 3) GROUND TESTS
 - 4) 30 Window Heat Control System
 - 5) SYSTEM TEST
 - 6) Window Heat Control Unit-L, R
 - 7) CONTINUE
 - (b) Do the instructions that show on the MAT and then make these selections:

ARO ALL



- 1) CONTINUE
- 2) START TEST
- (c) When the test is completed, make sure that PASSED shows adjacent to TEST CONDITION on the MAT.
 - NOTE: An illuminated LEFT FWD or RIGHT SIDE INOP light, on the WINDOW HEAT control panel (P5 overhead panel) also indicates a FAILED test.
- (d) If FAILED shows, refer to the applicable Maintenance Message Index in the FIM or select the maintenance message and select MAINTENANCE MESSAGE DATA.

SUBTASK 30-41-00-860-006

(4) Set the applicable window heat control switch to OFF.

SUBTASK 30-41-00-860-007

- EFFECTIVITY

ARO ALL

(5) Do this task: Remove Electrical Power, TASK 24-22-00-860-806

----- END OF TASK -----



WINDOW HEAT CONTROL UNIT - REMOVAL/INSTALLATION

1. General

- A. This procedure has these tasks:
 - (1) Window Heat Control Unit Removal
 - (2) Window Heat Control Unit Installation
- B. There are two Window Heat Control Units (WHCU):
 - (1) M30101 controls the left forward and right side windows and is on the E1-1 shelf in the EE Bay.
 - (2) M30201 controls the right forward and left side and is on the E2-2 shelf.

TASK 30-41-01-000-801

2. Window Heat Control Unit Removal

(Figure 401)

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
20-10-01-000-801	E/E Box Removal (P/B 401)

B. Location Zones

Zone	Area
117	Main Equipment Center, Left
118	Main Equipment Center, Right

C. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

D. Prepare for the Procedure

SUBTASK 30-41-01-010-001

(1) Open this access panel:

<u>Number</u>	Name/Location
117AL	Main Equipment Center Access Door
to get acces	ss to the Main Equipment Center.

SUBTASK 30-41-01-860-001

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

Left Power Management Panel, P110

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
В	16	C30416	WDO HT 2R
С	16	C30418	WDO HT 3R
F	3	C30415	WDO HT BACKUP 1L
M	26	C30613	WHCU BITE L

Left Power Panel, P100

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
Е	2	C30301	WDO HTR 1L

ARO ALL



Right Power Management Panel, P210

Row	Col	Number	<u>Name</u>
С	11	C30417	WDO HT 2L
С	12	C30414	WDO HT BACKUP 1R
D	11	C30419	WDO HT 3L
L	8	C30616	WHCU BITE R

Right Power Panel, P200

Row	Col	Number	<u>Name</u>
ARO 00	5-999		
Α	4	C30300	WDO HTR 1R
ARO 00	1-004		
В	4	C30300	WDO HTR 1R

ARO ALL

E. Procedure

SUBTASK 30-41-01-020-001



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) Remove the unit [1]. To remove it, do this task: E/E Box Removal, TASK 20-10-01-000-801.



TASK 30-41-01-400-801

3. Window Heat Control Unit Installation

(Figure 401)

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
20-10-01-400-801	E/E Box Installation (P/B 401)
20-41-01-400-803	ESDS Handling for Metal Encased Unit Installation (P/B 201)
30-41-00-710-801	Window Heat Control System - Operational Test (P/B 501)

B. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Unit	30-41-01-01-009	ARO ALL

C. Location Zones

Zone	Area
117	Main Equipment Center, Left
118	Main Equipment Center, Right
212	Flight Compartment, Right

D. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

ARO ALL



E. Procedure

SUBTASK 30-41-01-420-001



SUBTASK 30-41-01-860-002

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) Do this task: ESDS Handling for Metal Encased Unit Installation, TASK 20-41-01-400-803.
- (2) Install the unit [1]. To install it, do this task: E/E Box Installation, TASK 20-10-01-400-801. SUBTASK 30-41-01-860-003
- (3) Remove the safety tags and close these circuit breakers:

Left Power Management Panel, P110

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
В	16	C30416	WDO HT 2R
С	16	C30418	WDO HT 3R
F	3	C30415	WDO HT BACKUP 1L
M	26	C30613	WHCU BITE L

Left Power Panel, P100

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
Е	2	C30301	WDO HTR 1L

Right Power Management Panel, P210

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
С	11	C30417	WDO HT 2L
С	12	C30414	WDO HT BACKUP 1R
D	11	C30419	WDO HT 3L
L	8	C30616	WHCU BITE R

Right Power Panel, P200

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
ARO 00	5-999		
Α	4	C30300	WDO HTR 1R
ARO 00	1-004		
В	4	C30300	WDO HTR 1R

ARO ALL

F. Installation Test

SUBTASK 30-41-01-710-001

- (1) Do this task: Window Heat Control System Operational Test, TASK 30-41-00-710-801.
- G. Put the Airplane back to its Usual Condition.

SUBTASK 30-41-01-410-001

(1) Close this access panel:

<u>Number</u>	Name/Location
117AL	Main Equipment Center Access Door

ARO ALL

30-41-01

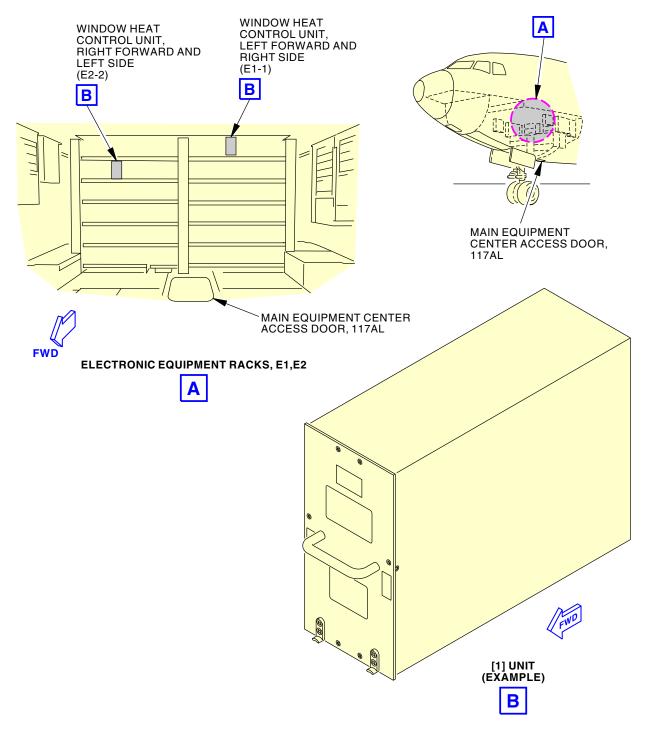
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——— END OF TASK ———

ARO ALL





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Window Heat Control Unit Installation Figure 401/30-41-01-990-801

ARO ALL

D633W101-ARO

30-41-01

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WINDOW HEAT/EMER LIGHTS MODULE - REMOVAL/INSTALLATION

1. General

- A. This procedure has these tasks:
 - (1) A removal of the window heat/emer lights module.
 - (2) An installation of the window heat/emer lights module.
- B. The window heat/emer lights module is referred to as the "module" in this procedure.
- C. The module is installed in the P5 overhead panel.

TASK 30-41-02-020-801

2. Window Heat/Emer Lights Module Removal

(Figure 401)

A. Location Zones

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

B. Procedure

SUBTASK 30-41-02-860-001

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

Ground Service/Handling Power Panel, P320

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
С	13	C23611	INTPH GND

Left Power Management Panel, P110

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
В	16	C30416	WDO HT 2R
С	16	C30418	WDO HT 3R
F	3	C30415	WDO HT BACKUP 1L
M	26	C30613	WHCU BITE L

Overhead Circuit Breaker Panel, P11

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
В	24	C23631	INTERPHONE-SERVICE

Right Power Management Panel, P210

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
С	11	C30417	WDO HT 2L
С	12	C30414	WDO HT BACKUP 1R
D	11	C30419	WDO HT 3L
L	8	C30616	WHCU BITE R

Standby Power Management Panel, P310

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
Α	3	C35403	L PAX OXY
Α	4	C35405	C PAX OXY

ARO ALL

30-41-02

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(Continued)

Standby Power Management Panel, P310

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
Α	5	C35404	R PAX OXY
Н	3	C35606	CHAN A OXY DEPLOY
Н	4	C35607	CHAN B OXY DEPLOY

SUBTASK 30-41-02-020-001

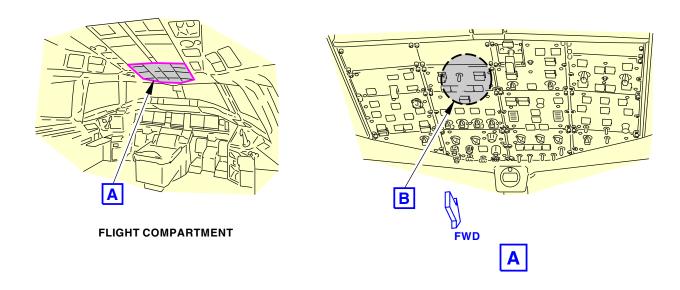
- (2) Do these steps to remove the module [1]:
 - (a) Loosen the quarter-turn fasteners on the module [1].
 - (b) Pull the module [1] from the P5 overhead panel.
 - (c) Disconnect the electrical connectors from the module [1].
 - (d) Remove the module [1].

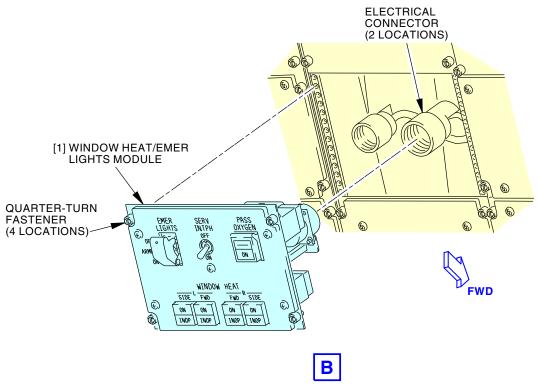
----- END OF TASK -----

ARO ALL

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Window Heat/Emer Lights Module Installation Figure 401/30-41-02-990-801

ARO ALL
D633W101-ARO

30-41-02

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TASK 30-41-02-400-801

3. Window Heat/Emer Lights Module Installation

(Figure 401)

A. References

Reference	Title
33-16-00-710-801	Master Dim and Test - Operational Test (P/B 501)

B. Location Zones

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

C. Procedure

SUBTASK 30-41-02-020-002

- (1) Do these steps to install the module [1]:
 - (a) Connect the electrical connectors to the module [1].
 - (b) Put the module [1] in its position.
 - (c) Tighten the quarter-turn fasteners on the module [1].

SUBTASK 30-41-02-860-002

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

Ground Service/Handling Power Panel, P320

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
С	13	C23611	INTPH GND

Left Power Management Panel, P110

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
В	16	C30416	WDO HT 2R
С	16	C30418	WDO HT 3R
F	3	C30415	WDO HT BACKUP 1L
M	26	C30613	WHCU BITE L

Overhead Circuit Breaker Panel, P11

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
В	24	C23631	INTERPHONE-SERVICE

Right Power Management Panel, P210

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
С	11	C30417	WDO HT 2L
С	12	C30414	WDO HT BACKUP 1R
D	11	C30419	WDO HT 3L
L	8	C30616	WHCU BITE R

Standby Power Management Panel, P310

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
Α	3	C35403	L PAX OXY
Α	4	C35405	C PAX OXY

ARO ALL

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(Continued)

Standby Power Management Panel, P310

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
Α	5	C35404	R PAX OXY
Н	3	C35606	CHAN A OXY DEPLOY
Н	4	C35607	CHAN B OXY DEPLOY

SUBTASK 30-41-02-710-001

(3)	Do this task:	Master Dim and	Test - Operational	Test. TASK 33	3-16-00-710-801
(~ <i>/</i>				,	

——— END OF TASK ———

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WINDOW HEAT BACKUP MODULE - MAINTENANCE PRACTICES

1. General

- A. This procedure has these tasks:
 - (1) Window heat backup module deactivation.
 - (2) Window heat backup module activation.

TASK 30-41-12-040-801

2. Window Heat Backup Module - Deactivation

(Figure 201)

A. General

(1) This task will deactivate the window heat backup module.

B. References

Reference	Title
24-22-00-860-805	Supply Electrical Power (P/B 201)

C. Location Zones

Zone	Area
117	Main Equipment Center, Left
118	Main Equipment Center, Right
211	Flight Compartment, Left
212	Flight Compartment, Right

D. Procedure



BE CAREFUL WHEN YOU DO WORK AROUND ENERGIZED PANELS. HIGH VOLTAGES CAN KILL YOU.

SUBTASK 30-41-12-020-002

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

Left Power Management Panel, P110

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
В	16	C30416	WDO HT 2R
С	16	C30418	WDO HT 3R
F	3	C30415	WDO HT BACKUP 1L
M	26	C30613	WHCU BITE L

Right Power Management Panel, P210

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
С	11	C30417	WDO HT 2L
С	12	C30414	WDO HT BACKUP 1R
D	11	C30419	WDO HT 3L
L	8	C30616	WHCU BITE R

E. Window Heat Backup Module - Tryout

NOTE: This tryout is to make sure that the Window Heat Backup Module is in a zero energy state.

ARO ALL



SUBTASK 30-41-12-860-001

(1) Do this task: Supply Electrical Power, TASK 24-22-00-860-805.

SUBTASK 30-41-12-860-002

(2) Set the window heat control switch and the backup window heat switch to OFF.

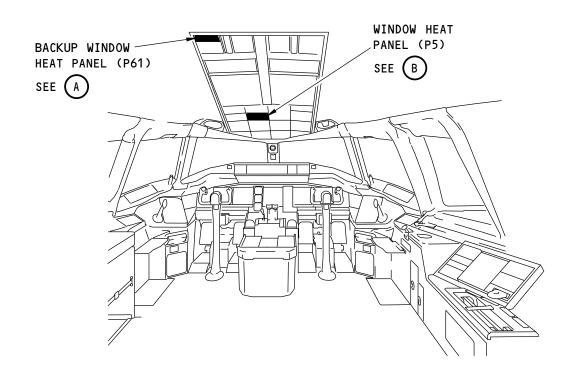
SUBTASK 30-41-12-860-006

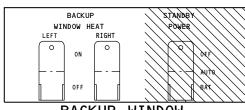
- (3) Use a maintenance access terminal (MAT) to do the operational test of the left and right Window Heat Control Units:
 - (a) Make these selections on the MAT:
 - 1) ONBOARD MAINTENANCE
 - 2) LINE MAINTENANCE
 - 3) GROUND TESTS
 - 4) 30 Window Heat Control System
 - 5) SYSTEM TEST
 - 6) Window Heat Control Unit-L, R
 - 7) CONTINUE
 - (b) Do the instructions that show on the MAT and then make these selections:
 - 1) CONTINUE
 - 2) START TEST
 - (c) When the test is completed, make sure that FAILED shows adjacent to TEST CONDITION on the MAT.

NOTE: An illuminated LEFT FWD or RIGHT SIDE INOP light, on the WINDOW HEAT control panel (P5 overhead panel) also indicates a FAILED test.

—— END OF TASK ——

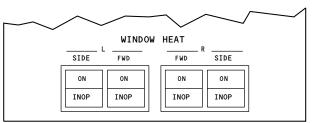






BACKUP WINDOW
HEAT/STANDBY POWER PANEL
(P61)





WINDOW HEAT/EMERGENCY LIGHTS PANEL (P5)

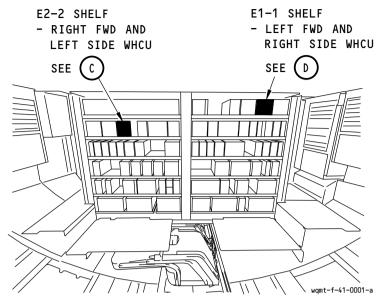
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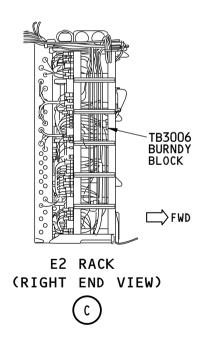
Window Heat Backup Module Figure 201/30-41-12-990-802 (Sheet 1 of 2)

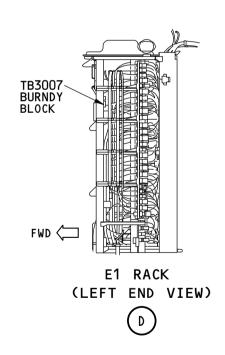
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MAIN EQUIPMENT CENTER (LOOKING AFT)





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Window Heat Backup Module Figure 201/30-41-12-990-802 (Sheet 2 of 2)

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TASK 30-41-12-440-801

3. Window Heat Backup Module - Activation

(Figure 201)

A. General

(1) This task will activate the window heat backup module.

B. Location Zones

Zone	Area
117	Main Equipment Center, Left
118	Main Equipment Center, Right
211	Flight Compartment, Left
212	Flight Compartment, Right

C. Procedure



BE CAREFUL WHEN YOU DO WORK AROUND ENERGIZED PANELS. HIGH VOLTAGES CAN KILL YOU.

SUBTASK 30-41-12-410-001

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

Left Power Management Panel, P110

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
В	16	C30416	WDO HT 2R
С	16	C30418	WDO HT 3R
F	3	C30415	WDO HT BACKUP 1L
M	26	C30613	WHCU BITE L

Right Power Management Panel, P210

<u>Col</u>	<u>Number</u>	<u>Name</u>
11	C30417	WDO HT 2L
12	C30414	WDO HT BACKUP 1R
11	C30419	WDO HT 3L
8	C30616	WHCU BITE R
	11 12 11	

------ END OF TASK -----

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WINDOW HEAT BACKUP MODULE - REMOVAL/INSTALLATION

1. General

- A. This procedure has these tasks:
 - (1) A removal of the window heat backup module
 - (2) An installation of the window heat backup module
- B. The module is installed in the P61 overhead panel

TASK 30-41-12-000-801

2. Window Heat Backup Module Removal

(Figure 401)

A. Location Zones

Zone	Area
211	Flight Compartment, Left
212	Flight Compartment Right

B. Procedure

SUBTASK 30-41-12-865-001

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

Left Power Management Panel, P110

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
В	16	C30416	WDO HT 2R
С	16	C30418	WDO HT 3R
F	3	C30415	WDO HT BACKUP 1L
M	26	C30613	WHCU BITE L

Right Power Management Panel, P210

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
С	11	C30417	WDO HT 2L
С	12	C30414	WDO HT BACKUP 1R
D	11	C30419	WDO HT 3L
L	8	C30616	WHCU BITE R

SUBTASK 30-41-12-020-001

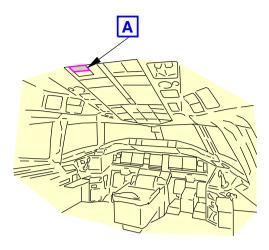
- (2) Do these steps to remove the window heat backup module [1]:
 - (a) Loosen the quarter-turn fasteners [2] on the window heat backup module [1].
 - (b) Pull the window heat backup module [1] from the P61 overhead panel.
 - (c) Disconnect the electrical connectors [3] from the window heat backup module [1].
 - (d) Remove the window heat backup module [1].

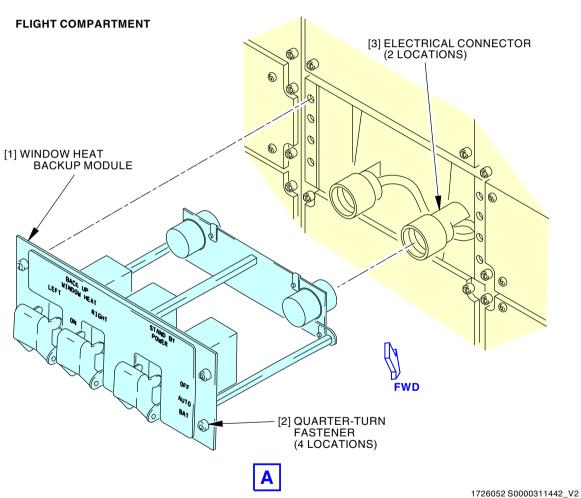
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Window Heat Backup Module Installation Figure 401/30-41-12-990-801

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TASK 30-41-12-400-801

3. Window Heat Backup Module Installation

(Figure 401)

A. References

Reference	Title
30-41-12-710-801	Window Heat Backup Module - Operational Test (P/B 501)

B. Location Zones

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

C. Procedure

SUBTASK 30-41-12-420-001

- (1) Do these steps to install the window heat backup module [1]:
 - (a) Connect the electrical connectors [3] to the window heat backup module [1].
 - (b) Put the window heat backup module [1] in its position.
 - (c) Tighten the quarter-turn fasteners [2] on the window heat backup module [1].

SUBTASK 30-41-12-865-002

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

Left Power Management Panel, P110

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
В	16	C30416	WDO HT 2R
С	16	C30418	WDO HT 3R
F	3	C30415	WDO HT BACKUP 1L
M	26	C30613	WHCU BITE L

Right Power Management Panel, P210

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
С	11	C30417	WDO HT 2L
С	12	C30414	WDO HT BACKUP 1R
D	11	C30419	WDO HT 3L
L	8	C30616	WHCU BITE R

SUBTASK 30-41-12-710-001

(3) Do this task: Window Heat Backup Module - Operational Test, TASK 30-41-12-710-801.

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WINDOW HEAT BACKUP MODULE - ADJUSTMENT/TEST

1. General

- A. This procedure has this task:
 - (1) Window Heat Backup Module Operational Test.

TASK 30-41-12-710-801

2. Window Heat Backup Module - Operational Test

A. General

(1) This test makes sure that the window heat backup module operates correctly.

B. References

Reference	Title	
24-22-00-860-805	Supply Electrical Power (P/B 201)	
24-22-00-860-806	Remove Electrical Power (P/B 201)	

C. Window Heat Backup Module - Operational Test

SUBTASK 30-41-12-860-007

(1) Do this task: Supply Electrical Power, TASK 24-22-00-860-805.

SUBTASK 30-41-12-860-008

(2) Set the window heat control switch to OFF.

SUBTASK 30-41-12-860-010

- (3) Use a Maintenance Access Terminal (MAT) to do the operational test of the left and right window heat control units:
 - (a) Make these selections on the MAT:
 - 1) ONBOARD MAINTENANCE
 - 2) LINE MAINTENANCE
 - 3) GROUND TESTS
 - 4) 30 Window Heat Control System
 - 5) SYSTEM TEST
 - 6) Window Heat Control Unit-L, R
 - 7) CONTINUE.
 - (b) Do the instructions that show on the MAT and then make these selections:
 - 1) CONTINUE
 - 2) START TEST.
 - (c) When the test is completed, make sure that PASSED shows adjacent to TEST CONDITION on the MAT. If PASSED shows, the window heat backup module is installed correctly.
 - (d) If FAILED shows, refer to the applicable Maintenance Message Index in the FIM or select the maintenance message and select MAINTENANCE MESSAGE DATA.

SUBTASK 30-41-12-860-009

(4) Do this task: Remove Electrical Power, TASK 24-22-00-860-806.

ARO ALL



WINDSHIELD WIPER SYSTEM - MAINTENANCE PRACTICES

1. General

- A. This procedure has these tasks:
 - (1) Windshield wiper system deactivation.
 - (2) Windshield wiper system activation.

TASK 30-42-00-040-801

2. Windshield Wiper System - Deactivation

- A. General
 - (1) This task will deactivate the windshield wiper system.
- **B.** Location Zones

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

C. Procedure

SUBTASK 30-42-00-020-001

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

Left Power Management Panel, P110

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
В	16	C30416	WDO HT 2R
С	16	C30418	WDO HT 3R
F	3	C30415	WDO HT BACKUP 1L
M	26	C30613	WHCU BITE L
M	27	C30607	WSHLD WIPER L

Left Power Panel, P100

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
Е	2	C30301	WDO HTR 1L

Right Power Management Panel, P210

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
С	11	C30417	WDO HT 2L
С	12	C30414	WDO HT BACKUP 1R
D	11	C30419	WDO HT 3L
L	7	C30608	WSHLD WIPER R
L	8	C30616	WHCU BITE R

Right Power Panel, P200

Row	Col	<u>Number</u>	<u>Name</u>	
ARO 00	5-999			
Α	4	C30300	WDO HTR 1R	
ARO 001-004				
В	4	C30300	WDO HTR 1R	

ARO ALL

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30-42-00



D. Windshield Wiper System - Tryout

NOTE: This tryout is to make sure that the windshield wiper system is in a zero energy state.

SUBTASK 30-42-00-020-002

- (1) Do these steps to do a tryout of the left windshield wiper:
 - (a) Set the left windshield wiper switch on the P5 overhead panel to the LOW, INT, and HI position.
 - (b) Make sure that the left windshield wiper does not move.
 - (c) Set the left windshield wiper switch to the OFF position.

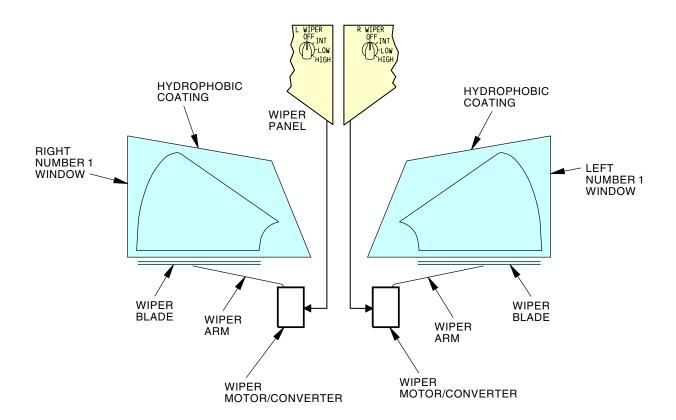
SUBTASK 30-42-00-020-003

- (2) Do these steps to do a tryout of the right windshield wiper:
 - (a) Set the right windshield wiper switch on the P5 overhead panel to the LOW, INT, and HI position.
 - (b) Make sure that the right windshield wiper does not move.
 - (c) Set the right windshield wiper switch to the OFF position.

——— END OF	TASK ———
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30-42-00





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Windshield Wiper System Figure 201/30-42-00-990-801

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30-42-00

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TASK 30-42-00-440-801

3. Windshield Wiper System - Activation

(Figure 201)

A. General

(1) This task will activate the windshield wiper system.

B. Location Zones

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

C. Procedure

SUBTASK 30-42-00-420-001

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

Left Power Management Panel, P110

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
В	16	C30416	WDO HT 2R
С	16	C30418	WDO HT 3R
F	3	C30415	WDO HT BACKUP 1L
M	26	C30613	WHCU BITE L
M	27	C30607	WSHLD WIPER L

Left Power Panel, P100

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
Е	2	C30301	WDO HTR 1L

Right Power Management Panel, P210

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
С	11	C30417	WDO HT 2L
С	12	C30414	WDO HT BACKUP 1R
D	11	C30419	WDO HT 3L
L	7	C30608	WSHLD WIPER R
L	8	C30616	WHCU BITE R

Right Power Panel, P200

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Row	<u>Col</u>	<u>Number</u>	<u>Name</u>		
ARO 005	5-999				
Α	4	C30300	WDO HTR 1R		
ARO 001-004					
В	4	C30300	WDO HTR 1R		

— END OF TASK ——

30-42-00

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WINDSHIELD WIPER SYSTEM - ADJUSTMENT/TEST

1. General

- A. This procedure has these tasks:
 - (1) Windshield Wiper System Operational Test

TASK 30-42-00-700-801

2. Windshield Wiper System - Operational Test

A. References

Reference	Title
24-22-00-860-805	Supply Electrical Power (P/B 201)
30-42-02-820-801	Windshield Wiper Arm Position Check/Adjustment (P/B 201)

B. Consumable Materials

Reference	Description	Specification
G50256	Water, Regular	

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 Electrical Power, TASK 24-22-00-860-805.

SUBTASK 30-42-00-860-002



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:

Left Power Management Panel, P110

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
В	16	C30416	WDO HT 2R
С	16	C30418	WDO HT 3R
F	3	C30415	WDO HT BACKUP 1L
M	26	C30613	WHCU BITE L

Left Power Panel, P100

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
Ε	2	C30301	WDO HTR 1L

Right Power Management Panel, P210

<u>Row</u>	Col	<u>number</u>	<u>name</u>
С	11	C30417	WDO HT 2L
C	12	C30414	WDO HT BACKUP 1R

ARO ALL



(Continued)

Right Power Management Panel, P210

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	11	C30419	WDO HT 3L
L	8	C30616	WHCU BITE R

Right Power Panel, P200

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
ARO 005	5-999		
Α	4	C30300	WDO HTR 1R
ARO 001	1-004		
В	4	C30300	WDO HTR 1R

ARO ALL

SUBTASK 30-42-00-860-003

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

Left Power Management Panel, P110

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
M	27	C30607	WSHLD WIPER L

Right Power Management Panel, P210

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
L	7	C30608	WSHLD WIPER R

SUBTASK 30-42-00-010-001

(4) Use a stand to get access to the windshield wiper.

SUBTASK 30-42-00-710-001

(5) Do these steps to make sure the windshield wiper system operates correctly:



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 water, G50256, spray to the windshield.

NOTE: For windshields with a hydrophobic coating, deionized or distilled water is recommended during the wiper test. Water with a high mineral content can cause marks on the coated glass surface that are difficult to remove. If water with a high mineral content is used on a windshield with a hydrophobic coating, flush the windshield surface after the wiper test with deionized or distilled water, or remove the remaining water on the windshield with a cotton cloth.

- (b) Do these steps to test the low speed operation of the wiper:
 - 1) Set the windshield wiper switch on the P5 overhead panel to LOW.
 - 2) Make sure that the wiper blade touches the windshield.
 - 3) Make sure that during operation, the lowest possible position of the wiper blade tip falls within 0.5 in. (12.7 mm) 1.8 in. (45.7 mm) from the lower windshield seal strip.
 - a) Make sure the wiper blade does not contact the upper windshield seal strip.

30-42-00

ARO ALL

EFFECTIVITY



- b) If it is necessary, do this task to adjust the wiper arm: Windshield Wiper Arm Position Check/Adjustment, TASK 30-42-02-820-801.
- Make sure the operation of the wiper is smooth and it clears the water from the windshield.
- 5) Set the windshield wiper switch on the P5 overhead panel to OFF.
- 6) Make sure the wiper blade parks off the glass.
- 7) Make sure that the wiper arm goes back to the parked position and is parallel to the wiper blade.
- 8) Make sure the blade is lifted off the surface by the lift block.
- (c) Do these steps to test the high speed operation of the wiper:
 - 1) Set the windshield wiper switch on the P5 overhead panel to HIGH.
 - 2) Make sure that the wiper blade touches the windshield.
 - 3) Make sure that during operation, the lowest possible position of the wiper blade tip falls within 0.5 in. (12.7 mm) 1.8 in. (45.7 mm) from the lower windshield seal strip.
 - a) Make sure the wiper blade does not contact the upper windshield seal strip.
 - b) If it is necessary, do this task to adjust the wiper arm: Windshield Wiper Arm Position Check/Adjustment, TASK 30-42-02-820-801.
 - Make sure the operation of the wiper is smooth and it clears the water from the windshield.
 - 5) Set the windshield wiper switch on the P5 overhead panel to OFF.
 - 6) Make sure the wiper blade parks off the glass.
 - 7) Make sure that the wiper arm goes back to the parked position and is parallel to the wiper blade.
 - 8) Make sure the blade is lifted off the surface by the lift block.
- (d) Do these steps to test the intermittent speed operation of the wiper:
 - 1) Set the windshield wiper switch on the P5 overhead panel to INT.
 - 2) Make sure that the wiper blade touches the windshield.
 - 3) Make sure that during operation, the lowest possible position of the wiper blade tip falls within 0.5 in. (12.7 mm) 1.8 in. (45.7 mm) from the lower windshield seal strip.
 - a) Make sure the wiper blade does not contact the upper windshield seal strip.
 - b) If it is necessary, do this task to adjust the wiper arm: Windshield Wiper Arm Position Check/Adjustment, TASK 30-42-02-820-801.
 - 4) Make sure the operation of the wiper is smooth and clears the water from the windshield.
 - 5) Set the windshield wiper switch on the P5 overhead panel to OFF.
 - 6) Make sure the wiper blade parks off the glass.
 - 7) Make sure that the wiper arm goes back to the parked position and is parallel to the wiper blade.
 - 8) Make sure the blade is lifted off the surface by the lift block.
- (e) Stop the water spray to the window.

EFFECTIVITY

ARO ALL



E. Put the Airplane Back to Its Usual Condition

SUBTASK 30-42-00-860-004

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

Left Power Management Panel, P110

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
В	16	C30416	WDO HT 2R
С	16	C30418	WDO HT 3R
F	3	C30415	WDO HT BACKUP 1L
M	26	C30613	WHCU BITE L

Left Power Panel, P100

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	2	C30301	WDO HTR 1L

Right Power Management Panel, P210

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
С	11	C30417	WDO HT 2L
С	12	C30414	WDO HT BACKUP 1R
D	11	C30419	WDO HT 3L
L	8	C30616	WHCU BITE R

Right Power Panel, P200

		u,		
Row	<u>Col</u>	<u>Number</u>	<u>Name</u>	
ARO 00	5-999			
Α	4	C30300	WDO HTR 1R	
ARO 001-004				
В	4	C30300	WDO HTR 1R	

——— END OF TASK ———

30-42-00

ARO ALL

- EFFECTIVITY -



WINDSHIELD WIPER BLADE - REMOVAL/INSTALLATION

1. General

- A. This procedure has these tasks:
 - (1) Windshield Wiper Blade Removal
 - (2) Windshield Wiper Blade Installation
 - (3) Lift Block Bumper Removal
 - (4) Lift Block Bumper Installation

TASK 30-42-01-000-801

2. Windshield Wiper Blade Removal

(Figure 401)

A. Location Zones

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

B. Prepare for the Procedure

SUBTASK 30-42-01-010-001

(1) Use a stand to reach the blade [2].

SUBTASK 30-42-01-860-005

(2) Make sure the windshield wiper is in the parked position.

SUBTASK 30-42-01-860-006



BEFORE YOU DO MAINTENANCE ON THE WINDSHIELD WIPER SYSTEM, OPEN THE WINDOW HEAT CIRCUIT BREAKERS. IF YOU DO NOT OPEN THESE CIRCUIT BREAKERS YOU CAN GET AN ELECTRICAL SHOCK WHEN YOU TOUCH THE WINDOW.

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

Left Power Management Panel, P110

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
В	16	C30416	WDO HT 2R
С	16	C30418	WDO HT 3R
F	3	C30415	WDO HT BACKUP 1L
M	26	C30613	WHCU BITE L
M	27	C30607	WSHLD WIPER L

Left Power Panel, P100

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
Е	2	C30301	WDO HTR 1L

Right Power Management Panel, P210

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
С	11	C30417	WDO HT 2L
С	12	C30414	WDO HT BACKUP 1R
D	11	C30419	WDO HT 3L

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(Continued)

Right Power Management Panel, P210

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
L	7	C30608	WSHLD WIPER R
L	8	C30616	WHCU BITE R

Right Power Panel, P200

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
ARO 00	5-999		
Α	4	C30300	WDO HTR 1R
ARO 00	1-004		
В	4	C30300	WDO HTR 1R

ARO ALL

C. Procedure

SUBTASK 30-42-01-800-001



DO NOT LIFT THE ARM ASSEMBLY MORE THAN 0.5 INCH. YOU CAN CAUSE DAMAGE TO THE ARM ASSEMBLY AND MAKE IT UNSERVICEABLE.

(1) Put a pad between the arm assembly [6] and the lift block 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 30-42-01-020-001

(2) Remove the nut [3] and the washer [1].

SUBTASK 30-42-01-020-002

(3) Remove the blade [2].

NOTE: Make sure the washer [4] stays in its position on the attach pin [5].

SUBTASK 30-42-01-860-002

(4) Lower the arm assembly [6] onto the pad.



TASK 30-42-01-400-801

3. Windshield Wiper Blade Installation

(Figure 401, Figure 402)

A. References

Reference	Title
24-22-00-860-805	Supply Electrical Power (P/B 201)
30-42-03-000-802	Wiper Motor/Converter Removal (P/B 401)
30-42-03-400-801	Wiper Motor/Converter Installation (P/B 401)

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B. Consumable Materials

Reference	Description	Specification
D00013	Grease - Aircraft And Instrument Grease	MIL-PRF-23827 (NATO G-354) (Supersedes
		MIL-G-23827)

C. Location Zones

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

D. Procedure

SUBTASK 30-42-01-860-003

- (1) Make sure the seal on the output shaft of the wiper motor converter is not broken.
 - (a) Refer to Figure 402 for an example of an acceptable seal condition.
 - (b) If the seal is broken, replace the wiper motor converter. To replace it, do these tasks: Wiper Motor/Converter Removal, TASK 30-42-03-000-802 and Wiper Motor/Converter Installation, TASK 30-42-03-400-801.
 - (c) Apply a thin layer of grease, D00013, to the wiper motor output shaft seal at every wiper blade installation/replacement. Refer to Figure 402.
- (2) Make sure the windshield wiper is in the parked position.

SUBTASK 30-42-01-420-001

(3) Make sure the washer [4] is in position on the attach pin [5] before you put the blade [2] on the arm assembly [6].

SUBTASK 30-42-01-420-006

(4) Hold the blade [2] on the arm assembly [6].

SUBTASK 30-42-01-420-002

(5) Install the washer [1] and nut [3].

SUBTASK 30-42-01-420-003

(6) Tighten the nut [3] to 28.5 ± 3.5 in-lb $(3.2 \pm 0.4 \text{ N} \cdot \text{m})$.

SUBTASK 30-42-01-420-005

Remove the pad from the windshield.

SUBTASK 30-42-01-210-001

(8) Make sure that the wiper rubber blade touch the windshield after installation.

SUBTASK 30-42-01-420-004

(9) Make sure the blade [2] turns freely.

NOTE: If necessary, you can loosen the nut [3] a small amount to make sure the blade [2] moves freely.

SUBTASK 30-42-01-860-001

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

Left Power Management Panel, P110

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
M	27	C30607	WSHI D WIPER I

ARO ALL



Right Power Management Panel, P210

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
L	7	C30608	WSHLD WIPER R

E. Installation Test

SUBTASK 30-42-01-720-001

- (1) Do a test of the blade [2]:
 - (a) Do this task: Supply Electrical Power, TASK 24-22-00-860-805.



DO NOT OPERATE THE WIPER ON A DRY WINDSHIELD. YOU CAN DAMAGE THE WINDSHIELD.

(b) Use a water source to keep the windshield wet while the wiper operates.

NOTE: For windshields with a hydrophobic coating, deionized or distilled water is recommended during the wiper test. Water with a high mineral content can cause marks on the coated glass surface that are difficult to remove. If water with a high mineral content is used on a windshield with a hydrophobic coating, flush the windshield surface after the wiper test with deionized or distilled water, or remove the remaining water on the windshield with a cotton cloth.

- (c) Turn the applicable Windshield Wiper Switch to LOW.
- (d) Make sure the operation of the blade [2] is smooth and effective.
- (e) Turn the Windshield Wiper Switch to OFF.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 30-42-01-860-004

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

Left Power Management Panel, P110

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
В	16	C30416	WDO HT 2R
С	16	C30418	WDO HT 3R
F	3	C30415	WDO HT BACKUP 1L
M	26	C30613	WHCU BITE L

Left Power Panel, P100

Row	<u>Col</u>	Number	<u>Name</u>
Ε	2	C30301	WDO HTR 1L

Right Power Management Panel, P210

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
С	11	C30417	WDO HT 2L
С	12	C30414	WDO HT BACKUP 1R
D	11	C30419	WDO HT 3L
L	8	C30616	WHCU BITE R

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Right Power Panel, P200

Row Col Number Name

ARO 005-999

A 4 C30300 WDO HTR 1R

ARO 001-004

B 4 C30300 WDO HTR 1R

ARO ALL

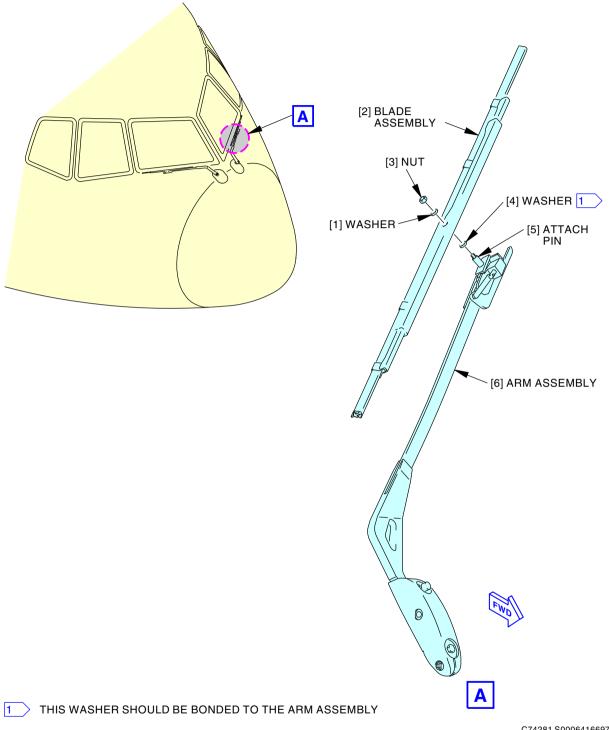
------ END OF TASK -----

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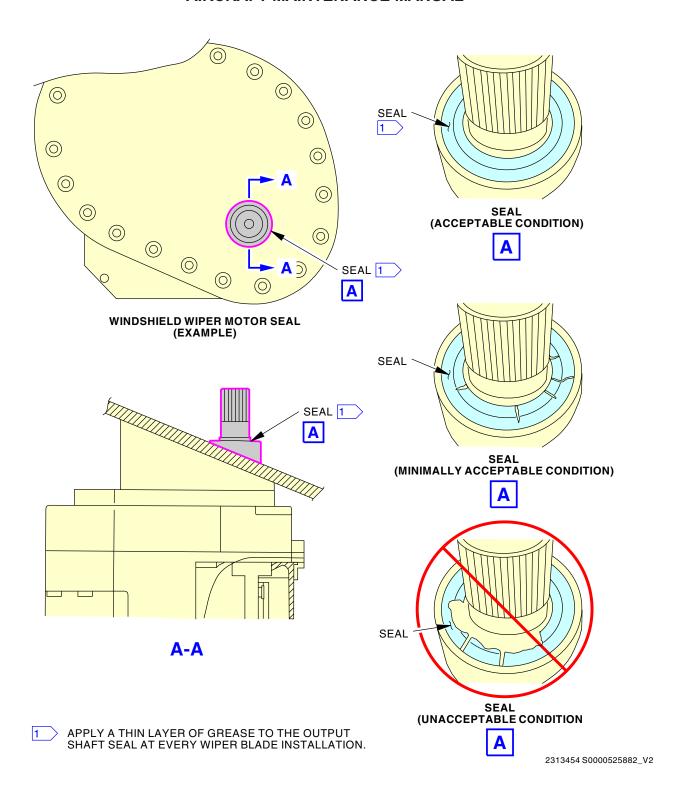
Windshield Wiper Blade Installation Figure 401/30-42-01-990-801

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Windshield Wiper Motor Seal Inspection Figure 402/30-42-01-990-803

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TASK 30-42-01-000-802

4. Lift Block Bumper Removal

A. General

(1) The wiper lift block bumper is attached to a shield assembly located on the lift block. The wiper blade rest on the lift block assembly while in the park position.

B. References

Reference	Title
24-22-00-860-805	Supply Electrical Power (P/B 201)

C. Tools/Equipment

Reference	Description
STD-6474	Padding - Cloth

D. Location Zones

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

E. Procedure

SUBTASK 30-42-01-861-001

(1) Do this task: Supply Electrical Power, TASK 24-22-00-860-805

SUBTASK 30-42-01-860-007

(2) On the pilot overhead panel, P5, set the WIPER switch to the OFF position.

SUBTASK 30-42-01-865-001

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

Left Power Management Panel, P110

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
M	27	C30607	WSHLD WIPER L

Right Power Management Panel, P210

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
- 1	7	C30608	WSHI D WIPER R

SUBTASK 30-42-01-869-001

(4) Put a cloth padding, STD-6474 between the wiper arm and the airplane structure to give protection to the surface if necessary.

SUBTASK 30-42-01-020-003

(5) Remove the lift block bumper from the shield assembly.

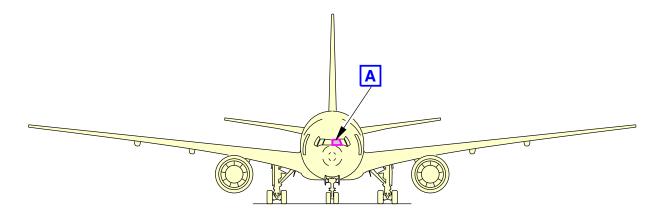
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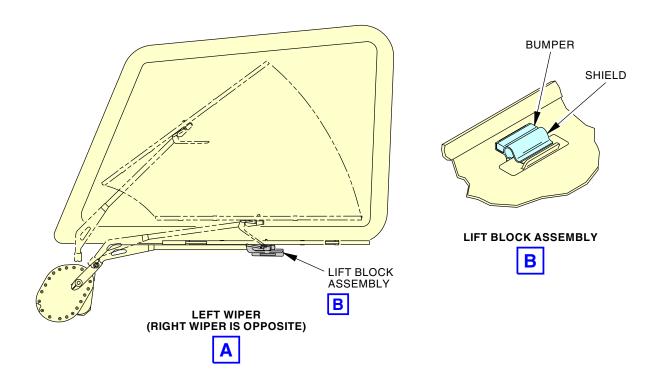
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Lift Block Bumper Installation Figure 403/30-42-01-990-802

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TASK 30-42-01-400-802

5. Lift Block Bumper Installation

A. References

Reference	Title
24-22-00-860-805	Supply Electrical Power (P/B 201)
24-22-00-860-806	Remove Electrical Power (P/B 201)

B. Tools/Equipment

Reference	Description
STD-6474	Padding - Cloth

C. Consumable Materials

Reference	Description	Specification
A50187	Adhesive - Loctite 416 Super Bonder Instant	A-A-3097 (Supersedes
	Adhesive	MIL-A-46050)

D. Location Zones

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

E. Procedure

SUBTASK 30-42-01-861-002

(1) Do this task: Supply Electrical Power, TASK 24-22-00-860-805

SUBTASK 30-42-01-860-008

(2) On the pilot overhead panel, P5, make sure that the WIPER switch is set to OFF position.

SUBTASK 30-42-01-865-002

(3) Make sure that these circuit breakers are open and have safety tags:

Left Power Management Panel, P110

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
M	27	C30607	WSHLD WIPER L

Right Power Management Panel, P210

Row	<u>Col</u>	Number	<u>Name</u>
L	7	C30608	WSHLD WIPER R

SUBTASK 30-42-01-869-002

(4) Put a cloth padding, STD-6474 between the wiper arm and the airplane structure to give protection to the surface if necessary.

SUBTASK 30-42-01-420-007

(5) Install the lift block bumper to the shield assembly with loctite 416 instant adhesive, A50187.
NOTE: Allow time for adhesive to cure.

SUBTASK 30-42-01-869-003

(6) Remove the cloth padding, STD-6474 between the wiper arm and the airplane structure if installed.

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SUBTASK 30-42-01-865-003

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

Left Power Management Panel, P110

Row Col Number Name

M 27 C30607 WSHLD WIPER L

Right Power Management Panel, P210

Row Col Number Name

L 7 C30608 WSHLD WIPER R

SUBTASK 30-42-01-862-001

(8) Do this task: Remove Electrical Power, TASK 24-22-00-860-806.

----- END OF TASK -----

ARO ALL



WINDSHIELD WIPER ARM - MAINTENANCE PRACTICES

1. General

- A. This procedure has these tasks:
 - (1) Windshield Wiper Arm Seal Buildup
 - (2) Windshield Wiper Arm Removal
 - (3) Windshield Wiper Arm Installation
 - (4) Windshield Wiper Arm Force Check/Adjustment
 - (5) Windshield Wiper Arm Position Adjustment

TASK 30-42-02-000-801

2. Windshield Wiper Arm Removal

(Figure 201)

A. Tools/Equipment

Reference	Description
STD-1182	Tool - Seal Cutting, Hardwood or Plastic

B. Location Zones

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

C. Prepare for the Procedure

SUBTASK 30-42-02-860-013



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:

Left Power Management Panel, P110

Row	<u>Col</u>	Number	<u>Name</u>
В	16	C30416	WDO HT 2R
С	16	C30418	WDO HT 3R
F	3	C30415	WDO HT BACKUP 1L
M	26	C30613	WHCU BITE L
M	27	C30607	WSHLD WIPER L

Left Power Panel, P100

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
Ε	2	C30301	WDO HTR 1L

Right Power Management Panel, P210

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
С	11	C30417	WDO HT 2L
С	12	C30414	WDO HT BACKUP 1R
D	11	C30419	WDO HT 3L

ARO ALL



(Continued)

Right Power Management Panel, P210

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
L	7	C30608	WSHLD WIPER R
L	8	C30616	WHCU BITE R

Right Power Panel, P200

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
ARO 00	5-999		
Α	4	C30300	WDO HTR 1R
ARO 00	1-004		
В	4	C30300	WDO HTR 1R

ARO ALL

SUBTASK 30-42-02-010-002

(2) Use a stand to reach the arm [4].

D. Procedure

SUBTASK 30-42-02-800-001

(1) To remove the arm [4], do these steps:



DO NOT LIFT THE ARM MORE THAN 0.5 INCH. YOU WILL CAUSE DAMAGE TO THE ARM AND MAKE IT UNSERVICEABLE.

- (a) Put a pad between the arm [4] and the windshield to prevent damage to the windshield surface.
- (b) Use the seal cutting tool, STD-1182 to remove sealant from the head of screw [6], screw [7], and screw [9].
- (c) Loosen the screw [7] to remove the force on the blade [1].
- (d) Loosen the screw [9].
- (e) Remove the screw [6] and the washer [5] from the shaft [10].

NOTE: Hold the arm [4] in position while you remove the screw [6]. This will make sure you do not turn the shaft [10].

NOTE: Keep the screw [6] and the washer [5] for the arm [4] if new installation hardware is not available.

- (f) Remove the arm [4] from the shaft [10].
- (g) Remove the bushing [11] from the shaft [10].

NOTE: The bushing [11] can stay with the arm [4] when it is removed.

----- END OF TASK -----

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TASK 30-42-02-400-801

3. Windshield Wiper Arm Installation

(Figure 201)

A. Tools/Equipment

Reference	Description
STD-123	Brush - Soft Bristle
STD-810	Spatula - Fillet Smoothing, Hardwood or Plastic

B. Consumable Materials

Reference	Description	Specification
A00247	Sealant - Pressure And Environmental - Chromate Type	BMS5-95
B00083	Solvent - VM&P Naphthas	TT-N-95 Type II, ASTM D-3735 Type III
D00013	Grease - Aircraft And Instrument Grease	MIL-PRF-23827 (NATO G-354) (Supersedes MIL-G-23827)
G50256	Water, Regular	

C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
4	Arm	30-42-02-01-010	ARO ALL
		30-42-02-01-015	ARO ALL

D. Location Zones

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

E. Prepare for the Procedure

SUBTASK 30-42-02-860-014

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

Left Power Management Panel, P110

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
M	27	C30607	WSHLD WIPER L

Right Power Management Panel, P210

Row		_	<u>Name</u>
L	7	C30608	WSHLD WIPER R

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DO NOT OPERATE THE WINDSHIELD WIPER ON A DRY OR DIRTY WINDSHIELD. IT CAN CAUSE DAMAGE TO THE WINDSHIELD GLASS.

(a) Supply a continuous water, G50256 spray to the windshield.

NOTE: For windshields with a hydrophobic coating, deionized or distilled water is recommended during the wiper test. Water with a high mineral content can cause marks on the coated glass surface that are difficult to remove. If water with a high mineral content is used on a windshield with a hydrophobic coating, flush the windshield surface after the wiper test with deionized or distilled water, or remove the remaining water on the windshield with a cotton cloth.

SUBTASK 30-42-02-860-015

- (2) Set the applicable windshield wiper switch (P5) to INT or LOW.
 - (a) Allow the motor/converter to operate for one full cycle.

SUBTASK 30-42-02-860-016

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

Left Power Management Panel, P110

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
M	27	C30607	WSHLD WIPER L

Right Power Management Panel, P210

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
L	7	C30608	WSHLD WIPER R

F. Procedure

SUBTASK 30-42-02-020-007

- (1) To install the arm [4], do these steps:
 - (a) Apply grease, D00013 to the serrations on the bushing [11] and the shaft [10].
 - (b) Install the bushing [11] on the shaft [10].
 - 1) Align the split in the bushing [11] with the scribe line on the end of the shaft [10].
 - (c) Loosen the screw [7].
 - (d) Install the adapter [8] and arm [4] on the bushing [11] (Figure 201).
 - 1) Align the groove in the end of the adapter with the scribe mark.
 - (e) Install the screw [9].
 - (f) Tighten the screw [9] to 80 ±20 in-lb (9 ±2 N·m).



MAKE SURE THAT YOU USE THE CORRECT FORCE WHEN YOU PUT THE WIPER BLADE ON THE LIFT BLOCK. IF YOU APPLY TOO MUCH FORCE, IT CAN CAUSE DAMAGE TO THE WIPER MOTOR CONTROLLER.

(g) Place blade [1] on lift block [2] with blade tip initially 4 inches below the lower edge of the windshield / top of seal.

NOTE: Make sure that the rubber blade on the wiper arm points in the direction of the windshield.

ARO ALL



- (h) Do a check of the force of the arm [4] (Windshield Wiper Arm Force Check/Adjustment, TASK 30-42-02-800-801).
- (i) Adjust the position of the arm [4] (Windshield Wiper Arm Position Check/Adjustment, TASK 30-42-02-820-801).
- (j) Install the washer [5] and screw [6] on the end of the shaft [10].
- (k) Tighten the screw [6] to 25 ±5 in-lb (3 ±1 N·m).
 - NOTE: Certain windshield wiper arm hardware allows for lockwiring.
- (I) Tighten the screw [9] to 80 \pm 20 in-lb (9 \pm 2 N·m).

SUBTASK 30-42-02-390-001

- (2) Do these steps to seal the arm [4]:
 - (a) Apply solvent, B00083 to the screw [6], the screw [7], the screw [9] and the adapter [8] with a soft bristle brush, STD-123.
 - (b) Rub off the solvent, B00083 before it dries.
 - (c) Apply sealant, A00247 fully around the adapter [8] to make it aerodynamically smooth.
 - NOTE: It is not necessary to apply the sealant immediately, if the cure time will cause a flight delay. But, you must apply the sealant as soon as possible to keep moisture out of the area between the Wiper Motor Converter and airplane skin.
 - 1) Fill the slot in the adapter [8].
 - 2) Fill the recess in and around the screw [6].
 - 3) Fill the recess in and around the screw [7].
 - 4) Fill the recess in and around the screw [9].
 - (d) Use a hardwood or plastic fillet smoothing spatula, STD-810 to make the sealant, A00247 smooth.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 30-42-02-860-004

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

Left Power Management Panel, P110

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
В	16	C30416	WDO HT 2R
С	16	C30418	WDO HT 3R
F	3	C30415	WDO HT BACKUP 1L
M	26	C30613	WHCU BITE L

Left Power Panel, P100

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
Е	2	C30301	WDO HTR 1L

Right Power Management Panel, P210

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
С	11	C30417	WDO HT 2L
С	12	C30414	WDO HT BACKUP 1R
D	11	C30419	WDO HT 3L

ARO ALL



(Continued)

Right Power Management Panel, P210

Row Col Number Name

L 8 C30616 WHCU BITE R

Right Power Panel, P200

 Row
 Col
 Number
 Name

 ARO 005-999
 A
 4
 C30300
 WDO HTR 1R

 ARO 001-004
 B
 4
 C30300
 WDO HTR 1R

ARO ALL

——— END OF TASK ———

TASK 30-42-02-800-801

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	
24-22-00-860-805	Supply Electrical Power (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-1557	Gauge - Force
	Part #: DG-200 Supplier: 92456
	Part #: FDIX 100 Supplier: 0BFD9
	Part #: FDIX 50 Supplier: 0BFD9
	Part #: LG-010 Supplier: 92456
	Part #: LG-050 Supplier: 92456
	Part #: LG-100 Supplier: 92456
	Opt Part #: DPP-500G Supplier: 92456
	Opt Part #: DPPH-150 Supplier: 92456
	Opt Part #: DPPH-200 Supplier: 92456
	Opt Part #: DPPH-50 Supplier: 92456
	Opt Part #: FDI 100 Supplier: 0BFD9
	Opt Part #: FDI 50 Supplier: 0BFD9
	Opt Part #: FDV 100 Supplier: 0BFD9
	Opt Part #: FDV 50 Supplier: 0BFD9

D. Consumable Materials

Reference	Description	Specification
G50256	Water, Regular	

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E. Location Zones

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

F. Procedure

SUBTASK 30-42-02-860-011



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:

Left Power Management Panel, P110

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
В	16	C30416	WDO HT 2R
С	16	C30418	WDO HT 3R
F	3	C30415	WDO HT BACKUP 1L
M	26	C30613	WHCU BITE L

Left Power Panel, P100

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
Е	2	C30301	WDO HTR 1L

Right Power Management Panel, P210

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
С	11	C30417	WDO HT 2L
С	12	C30414	WDO HT BACKUP 1R
D	11	C30419	WDO HT 3L
L	8	C30616	WHCU BITE R

Right Power Panel, P200

Row	Col	<u>Number</u>	<u>Name</u>
ARO 00	5-999		
Α	4	C30300	WDO HTR 1R
ARO 00	1-004		
В	4	C30300	WDO HTR 1R

ARO ALL

- EFFECTIVITY -

ARO ALL

SUBTASK 30-42-02-800-002

- (2) Put the windshield wiper in the testing position:
 - (a) Do this task: Supply Electrical Power, TASK 24-22-00-860-805.





DO NOT OPERATE THE WINDSHIELD WIPER ON A DRY OR DIRTY WINDSHIELD. IT CAN CAUSE DAMAGE TO THE WINDSHIELD GLASS.

(b) Supply a continuous water, G50256 spray to the windshield.

NOTE: For windshields with a hydrophobic coating, deionized or distilled water is recommended during the wiper test. Water with a high mineral content can cause marks on the coated glass surface that are difficult to remove. If water with a high mineral content is used on a windshield with a hydrophobic coating, flush the windshield surface after the wiper test with deionized or distilled water, or remove the remaining water on the windshield with a cotton cloth.

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

Left Power Management Panel, P110

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
M	27	C30607	WSHLD WIPER L

Right Power Management Panel, P210

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
L	7	C30608	WSHLD WIPER R

(d) Turn the applicable wiper switch to INT.

NOTE: Two persons and an interphone system will be necessary for the subsequent step. The first person must be in the Main Equipment Center to open the circuit breaker. The second person must be in clear view of the wiper (in the Flight Compartment or on a stand) and tell the first mechanic when to open the circuit breaker.

- (e) Do this step for the applicable circuit breaker to stop the arm [4] at the middle of the windshield:
 - 1) Open these circuit breakers and install safety tags:

Left Power Management Panel, P110

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
M	27	C30607	WSHI D WIPER I

Right Power Management Panel, P210

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
1	7	C30608	WSHI D WIPER R

(f) Stop the continuous water spray.

SUBTASK 30-42-02-700-001

- (3) Do these steps to measure the force of the arm [4]:
 - (a) Connect the force gauge, COM-1557 to the lock nut [12] on the wiper arm [4].
 - (b) Hold the force gauge, COM-1557 perpendicular to the windshield.

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DO NOT LIFT THE WIPER ARM MORE THAN 0.5 INCH. YOU WILL CAUSE DAMAGE TO THE ARM [4] AND MAKE IT UNSERVICEABLE.

- (c) Pull the force gauge, COM-1557 slowly until the blade [1] lifts off the windshield to measure the force.
- (d) If the force is less than 14 lb (6.4 kg), loosen the jam nut for screw [7], tighten screw [7] to increase the force of the arm [4], and then re-tighten the jam nut to 70 ±5 in-lb (8 ±1 N·m).
- (e) If the force is larger than 16 lb (7.3 kg), loosen the jam nut for screw [7], loosen screw [7] to decrease the force of the arm [4], and then re-tighten the jam nut to 70 ±5 in-lb (8 ±1 N·m).

NOTE: A force between 15 lb (6.8 kg) and 16 lb (7.3 kg) is optimal.

SUBTASK 30-42-02-700-002

(4) Measure the force of the arm [4] again.

SUBTASK 30-42-02-860-001

- (5) Put the windshield wiper back to its usual position:
 - (a) Turn the applicable wiper switch to OFF.



DO NOT OPERATE THE WINDSHIELD WIPER ON A DRY OR DIRTY WINDSHIELD. IT CAN CAUSE DAMAGE TO THE WINDSHIELD GLASS.

b) Supply a continuous water, G50256 spray to the windshield.

NOTE: For windshields with a hydrophobic coating, deionized or distilled water is recommended during the wiper test. Water with a high mineral content can cause marks on the coated glass surface that are difficult to remove. If water with a high mineral content is used on a windshield with a hydrophobic coating, flush the windshield surface after the wiper test with deionized or distilled water, or remove the remaining water on the windshield with a cotton cloth.

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

Left Power Management Panel, P110

Row	Col	<u>Number</u>	<u>Name</u>
M	27	C30607	WSHLD WIPER I

Right Power Management Panel, P210

Row	Col	<u>Number</u>	<u>Name</u>
L	7	C30608	WSHLD WIPER R

- (d) Make sure the blade [1] stops in the parked position.
- (e) Stop the water spray.

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ARO ALL

EFFECTIVITY .



G. Put the Airplane Back to Its Usual Condition

SUBTASK 30-42-02-860-002

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

Left Power Management Panel, P110

Row	<u>Col</u>	Number	<u>Name</u>
В	16	C30416	WDO HT 2R
С	16	C30418	WDO HT 3R
F	3	C30415	WDO HT BACKUP 1L
М	26	C30613	WHCU BITE L

Left Power Panel, P100

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
Е	2	C30301	WDO HTR 1L

Right Power Management Panel, P210

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
С	11	C30417	WDO HT 2L
С	12	C30414	WDO HT BACKUP 1R
D	11	C30419	WDO HT 3L
L	8	C30616	WHCU BITE R

Right Power Panel, P200

Row	Col	Number	<u>Name</u>
ARO 00	5-999		
Α	4	C30300	WDO HTR 1R
ARO 00	1-004		
В	4	C30300	WDO HTR 1R

ARO ALL

----- END OF TASK -----

TASK 30-42-02-820-801

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 an arm [4].
- (3) This procedure may take several attempts to adjust the sweep to the correct position.

B. References

Reference	Title	
24-22-00-860-805	Supply Electrical Power (P/B 201)	

C. Consumable Materials

Reference	Description	Specification
G50256	Water, Regular	

ARO ALL

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D. Location Zones

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

E. Procedure

SUBTASK 30-42-02-860-005

(1) Do this task: Supply Electrical Power, TASK 24-22-00-860-805.

SUBTASK 30-42-02-860-012



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:

Left Power Management Panel, P110

Row	<u>Col</u>	Number	<u>Name</u>
В	16	C30416	WDO HT 2R
С	16	C30418	WDO HT 3R
F	3	C30415	WDO HT BACKUP 1L
M	26	C30613	WHCU BITE L

Left Power Panel, P100

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
Е	2	C30301	WDO HTR 1L

Right Power Management Panel, P210

Row	<u>Col</u>	<u>Number</u>	Name
С	11	C30417	WDO HT 2L
С	12	C30414	WDO HT BACKUP 1R
D	11	C30419	WDO HT 3L
L	8	C30616	WHCU BITE R

Right Power Panel, P200

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
ARO 00	5-999		
Α	4	C30300	WDO HTR 1R
ARO 00	1-004		
В	4	C30300	WDO HTR 1R

ARO ALL

SUBTASK 30-42-02-210-001

(3) Do these steps to examine the sweep pattern of the arm [4]:

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- EFFECTIVITY -





DO NOT OPERATE THE WINDSHIELD WIPER ON A DRY OR DIRTY WINDSHIELD. IT CAN CAUSE DAMAGE TO THE WINDSHIELD GLASS.

(a) Supply a continuous water, G50256, spray to the windshield.

NOTE: For windshields with a hydrophobic coating, deionized or distilled water is recommended during the wiper test. Water with a high mineral content can cause marks on the coated glass surface that are difficult to remove. If water with a high mineral content is used on a windshield with a hydrophobic coating, flush the windshield surface after the wiper test with deionized or distilled water, or remove the remaining water on the windshield with a cotton cloth.

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

Left Power Management Panel, P110

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
M	27	C30607	WSHLD WIPER L

Right Power Management Panel, P210

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
L	7	C30608	WSHLD WIPER R

- (c) Turn the wiper switch to LOW and let the arm [4] operate for one or two cycles.
- (d) Make sure that the wiper blade touches the windshield.
- (e) Make sure that during operation, the lowest possible position of the wiper blade tip falls within 0.5 in. (12.7 mm) 1.8 in. (45.7 mm) from the lower windshield seal strip.
 - 1) Make sure the wiper blade does not contact the upper windshield seal strip.
- (f) Make sure the operation of the wiper is smooth and clears the water from the windshield.
- (g) Turn the wiper switch to OFF.
- (h) Stop the water spray.
- (i) Make sure the wiper blade parks off the glass.
- (j) Make sure that the arm [4] goes back to the parked position and is parallel to the blade [1].
- (k) Make sure the end of the arm [4] is on the lift block [2] and the blade [1] is lifted off the windshield.

SUBTASK 30-42-02-820-003

- (4) If you find a problem with the sweep pattern of the arm [4], do these steps to adjust the position of it:
 - (a) Measure the distance that the tip of the blade [1] needs to move.
 - (b) Remove the arm [4] (TASK 30-42-02-000-801).
 - (c) Use this table to adjust the arm [4]:

Table 201/30-42-02-993-801

DESIRED BLADE TIP MOVEMENT (INCHES) TURN THE BUSHING RELATIVE TO SHAFT		TURN THE ARM ASSY RELATIVE TO BUSHING
0.09	1 TOOTH IN THE DESIRED DIRECTION	1 TOOTH IN THE OPPOSITE DIRECTION

ARO ALL



Table 201/30-42-02-993-801 (Continued)

DESIRED BLADE TIP MOVEMENT (INCHES)	TURN THE BUSHING RELATIVE TO SHAFT	TURN THE ARM ASSY RELATIVE TO BUSHING
1.2	1/4 TURN IN THE DESIRED DIRECTION	IN THE OPPOSITE DIRECTION TO THE DESIRED POSITION WHERE THE ARM ENGAGES SPLINES ON THE BUSHING
2.4	1/2 TURN IN THE DESIRED DIRECTION	IN THE OPPOSITE DIRECTION TO THE DESIRED POSITION WHERE THE ARM ENGAGES SPLINES ON THE BUSHING
3.6	3/4 TURN IN THE DESIRED DIRECTION	IN THE OPPOSITE DIRECTION TO THE DESIRED POSITION WHERE THE ARM ENGAGES SPLINES ON THE BUSHING
4.67	NONE	1 TOOTH IN THE DESIRED DIRECTION
4.76	1 TOOTH IN THE DESIRED DIRECTION	NONE

Install the arm [4]. To install it, do this task: Windshield Wiper Arm Installation, TASK 30-42-02-400-801 (in this procedure).

SUBTASK 30-42-02-860-003

(5) Put the arm [4] to its parked position:



DO NOT OPERATE THE WINDSHIELD WIPER ON A DRY OR DIRTY WINDSHIELD. IT CAN CAUSE DAMAGE TO THE WINDSHIELD GLASS.

(a) Supply a continuous water, G50256, spray to the windshield:

NOTE: For windshields with a hydrophobic coating, deionized or distilled water is recommended during the wiper test. Water with a high mineral content can cause marks on the coated glass surface that are difficult to remove. If water with a high mineral content is used on a windshield with a hydrophobic coating, flush the windshield surface after the wiper test with deionized or distilled water, or remove the remaining water on the windshield with a cotton cloth.

- (b) Set the applicable wiper switch to ON.
- (c) Set the applicable wiper switch to OFF.
- (d) Stop the water spray.

ARO ALL 30-42-02



F. Put the Airplane Back to Its Usual Condition

SUBTASK 30-42-02-860-006

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

Left Power Management Panel, P110

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
В	16	C30416	WDO HT 2R
С	16	C30418	WDO HT 3R
F	3	C30415	WDO HT BACKUP 1L
M	26	C30613	WHCU BITE L

Left Power Panel, P100

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
Е	2	C30301	WDO HTR 1L

Right Power Management Panel, P210

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
С	11	C30417	WDO HT 2L
С	12	C30414	WDO HT BACKUP 1R
D	11	C30419	WDO HT 3L
L	8	C30616	WHCU BITE R

Right Power Panel, P200

	1.19.11.1 01101 1 011101, 1 = 00				
Row	<u>Col</u>	<u>Number</u>	<u>Name</u>		
ARO 00	5-999				
Α	4	C30300	WDO HTR 1R		
ARO 001-004					
В	4	C30300	WDO HTR 1R		

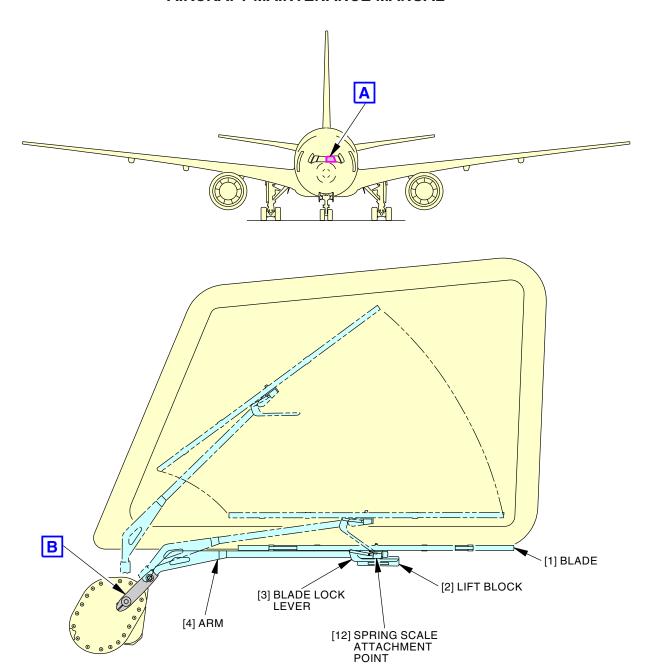
ARO ALL

- EFFECTIVITY -

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------ END OF TASK ------





LEFT WIPER (RIGHT WIPER IS OPPOSITE)



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Windshield Wiper Arm Installation Figure 201/30-42-02-990-801 (Sheet 1 of 2)

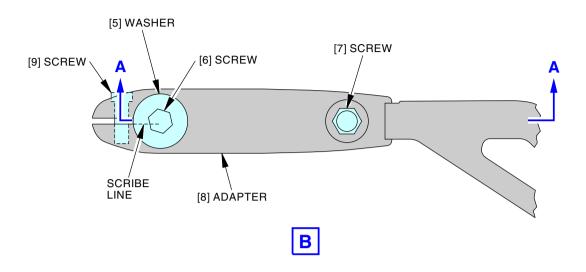
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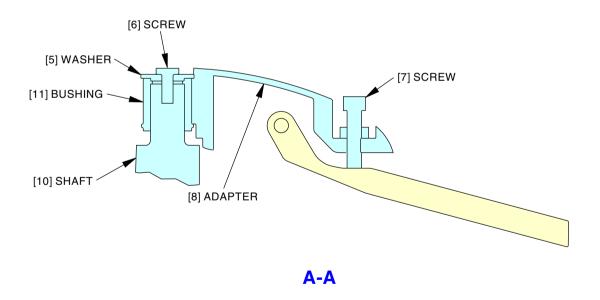
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Windshield Wiper Arm Installation Figure 201/30-42-02-990-801 (Sheet 2 of 2)

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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 30-42-03-000-802

2. Wiper Motor/Converter Removal

(Figure 401)

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
30-42-02-000-801	Windshield Wiper Arm Removal (P/B 201)

B. Location Zones

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

C. Prepare for the Procedure

SUBTASK 30-42-03-860-004



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:

Left Power Management Panel, P110

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
В	16	C30416	WDO HT 2R
С	16	C30418	WDO HT 3R
F	3	C30415	WDO HT BACKUP 1L
M	26	C30613	WHCU BITE L
M	27	C30607	WSHLD WIPER L

Left Power Panel, P100

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
Ε	2	C30301	WDO HTR 1L

Right Power Management Panel, P210

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
С	11	C30417	WDO HT 2L
С	12	C30414	WDO HT BACKUP 1R
D	11	C30419	WDO HT 3L
L	7	C30608	WSHLD WIPER R
L	8	C30616	WHCU BITE R

ARO ALL

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Right Power Panel, P200

Row	Col	Number	<u>Name</u>
ARO 00	5-999		
Α	4	C30300	WDO HTR 1R
ARO 00	1-004		
В	4	C30300	WDO HTR 1R

ARO ALL

SUBTASK 30-42-03-010-001

(2) Use a stand to reach the arm [1].

SUBTASK 30-42-03-000-001

(3) Remove the arm [1]. To remove it, do this task: Windshield Wiper Arm Removal, TASK 30-42-02-000-801.

D. Procedure

SUBTASK 30-42-03-020-001

- (1) To remove the converter [5], do these steps:
 - (a) Remove the bolt [2].



USE CARE WHEN LIFTING CONVERTER FROM ACCESS OPENING. FAILURE TO USE CARE WHEN LIFTING THE CONVERTER CAN CAUSE DAMAGE TO THE CONVERTER, THE ELECTRICAL CONNECTOR AND THE GASKET.

- (b) Carefully lift converter [5] from access opening.
- (c) Disconnect the electrical connector [3] from the converter [5].
- (d) Remove the converter [5] and gasket [4].

----- END OF TASK -----

TASK 30-42-03-400-801

3. Wiper Motor/Converter Installation

(Figure 401)

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
24-22-00-860-805	Supply Electrical Power (P/B 201)
30-42-02-400-801	Windshield Wiper Arm Installation (P/B 201)
30-42-02-800-801	Windshield Wiper Arm Force Check/Adjustment (P/B 201)
30-42-02-820-801	Windshield Wiper Arm Position Check/Adjustment (P/B 201)

B. Tools/Equipment

Reference	Description
STD-810	Spatula - Fillet Smoothing, Hardwood or Plastic

C. Consumable Materials

Reference	Description	Specification
A00153	Adhesive - Low Odor, Synthetic Rubber	BMS5-30
	Cement	

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(Continued)

Reference	Description	Specification
A00247	Sealant - Pressure And Environmental - Chromate Type	BMS5-95
B00083	Solvent - VM&P Naphthas	TT-N-95 Type II, ASTM D-3735 Type III
B00148	Solvent - Methyl Ethyl Ketone (MEK)	ASTM D740
G00034	Cotton Wiper - Process Cleaning Absorbent Wiper (Cheesecloth, Gauze)	BMS15-5 Class A

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
4	Gasket	30-42-03-01-015	ARO ALL
5	Converter	30-42-03-01-020	ARO ALL
		30-42-03-01-025	ARO ALL

E. Location Zones

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

F. Prepare for the Procedure

SUBTASK 30-42-03-010-002

(1) Use a stand to reach the arm [1].

G. Procedure

SUBTASK 30-42-03-100-001

- (1) To install the converter [5], do these steps:
 - (a) Remove sealant, A00247 from the access opening in the skin.
 - (b) If you install the same converter [5], remove sealant, A00247 from the converter [5].
 - (c) Use solvent, B00083 to clean the surfaces on the access opening in the skin and the converter [5] that mate with the gasket [4].
 - (d) Dry the area with a clean cotton wiper, G00034.



DO NOT GET SOLVENTS IN YOUR MOUTH OR EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM SOLVENTS. PUT ON A RESPIRATOR, PROTECTIVE SPLASH GOGGLES, AND GLOVES WHEN YOU USE SOLVENTS. KEEP THE SOLVENTS AWAY FROM SPARKS, FLAME, AND HEAT. SOLVENTS ARE POISONOUS AND FLAMMABLE. SOLVENTS CAN CAUSE INJURIES TO PERSONNEL, AND DAMAGE TO EQUIPMENT.

- (e) Mix (by volume) one part of adhesive, A00153 with one part of solvent, B00148.
- (f) Carefully apply the mixture to the surface with a paint brush, STD-1080.



EFFECTIVITY

ARO ALL

LET THE SURFACE BECOME TACKY BEFORE YOU INSTALL THE GASKET. IF YOU INSTALL THE GASKET TO A WET SURFACE, YOU WILL NOT GET A SATISFACTORY BOND.

(g) Let the surface dry at room temperature for a minimum of 30 minutes.

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- (h) Attach the gasket [4] to the converter [5] with adhesive, A00153.
- (i) Connect the electrical connector [3] to the converter [5].
- (j) Do these steps to make sure the converter [5] operates:
 - 1) Supply electrical power. To supply it, do this task: Supply Electrical Power, TASK 24-22-00-860-805.
 - 2) Remove the safety tags and close these circuit breakers:

Left Power Management Panel, P110

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
M	27	C30607	WSHLD WIPER L

Right Power Management Panel, P210

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
L	7	C30608	WSHLD WIPER R

- 3) Set the windshield wiper switch to LOW.
- 4) Make sure the converter [5] operates.
- 5) Turn the windshield wiper switch to OFF.
- 6) Open these circuit breakers and install safety tags:

Left Power Management Panel, P110

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
M	27	C30607	WSHLD WIPER L

Right Power Management Panel, P210

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
L	7	C30608	WSHLD WIPER R

- (k) Hold the converter [5] in place.
- (I) Apply sealant, A00247 under the head of the bolt [2] and the chamfer of each bolt hole.
- (m) Hand tighten the bolt [2].
- (n) Apply sealant, A00247 to the joint between the converter [5] and the skin to make an aerodynamic seal.

NOTE: It is not necessary to apply the sealant immediately, if the cure time will cause a flight delay. But, you must apply the sealant as soon as possible to keep moisture out of the area between the Wiper Motor Converter and airplane skin.

- Use the hardwood or plastic fillet smoothing spatula, STD-810 to make the surface smooth.
- 2) Use the hardwood or plastic fillet smoothing spatula, STD-810 to remove any unwanted sealant, A00247.
- (o) Install the arm [1]. To install it, do this task: Windshield Wiper Arm Installation, TASK 30-42-02-400-801.

H. Installation Test

SUBTASK 30-42-03-720-001

(1) Check the force of the arm [1]. To check it, do this task: Windshield Wiper Arm Force Check/Adjustment, TASK 30-42-02-800-801.

ARO ALL



SUBTASK 30-42-03-720-002

(2) Adjust the position of the arm [1]. To adjust it, do this task: Windshield Wiper Arm Position Check/Adjustment, TASK 30-42-02-820-801.

I. Put the Airplane Back to its Usual Position

SUBTASK 30-42-03-860-003

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

Left Power Management Panel, P110

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
В	16	C30416	WDO HT 2R
С	16	C30418	WDO HT 3R
F	3	C30415	WDO HT BACKUP 1L
M	26	C30613	WHCU BITE L
M	27	C30607	WSHLD WIPER L

Left Power Panel, P100

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>	
Е	2	C30301	WDO HTR 1L	

Right Power Management Panel, P210

Row	Col	Number	<u>Name</u>
С	11	C30417	WDO HT 2L
С	12	C30414	WDO HT BACKUP 1R
D	11	C30419	WDO HT 3L
L	7	C30608	WSHLD WIPER R
L	8	C30616	WHCU BITE R

Right Power Panel, P200

Row	<u>Col</u>	Number	<u>Name</u>			
ARO 005-999						
Α	4	C30300	WDO HTR 1R			
ARO 001-004						
В	4	C30300	WDO HTR 1R			
В	4	C30300	WDO HTR 1F			

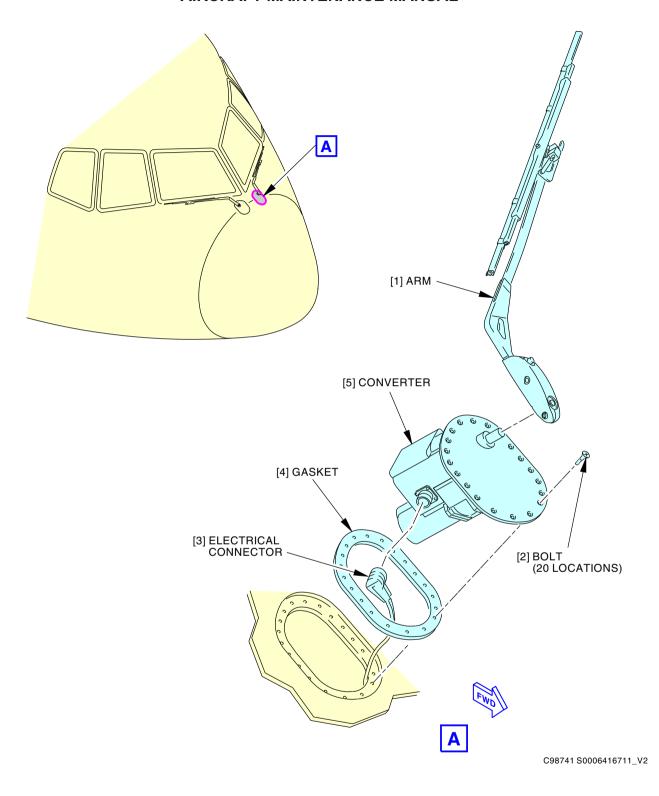
ARO ALL

EFFECTIVITY -

ARO ALL

----- END OF TASK -----





Windshield Wiper Motor Converter Installation Figure 401/30-42-03-990-801

ARO ALL
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WINDSHIELD HYDROPHOBIC COATING - MAINTENANCE PRACTICES

1. General

- A. This procedure has these tasks:
 - (1) Hydrophobic Coating Maintenance Practices

TASK 30-42-05-800-801

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 #: DSS1020 Supplier: 53117	

C. Prepare for the Procedure

SUBTASK 30-42-05-860-001



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:

Left Power Management Panel, P110

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
В	16	C30416	WDO HT 2R
С	16	C30418	WDO HT 3R
F	3	C30415	WDO HT BACKUP 1L
M	26	C30613	WHCU BITE L
M	27	C30607	WSHLD WIPER L

Left Power Panel, P100

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
Е	2	C30301	WDO HTR 1L

Right Power Management Panel, P210

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
С	11	C30417	WDO HT 2L
С	12	C30414	WDO HT BACKUP 1R

ARO ALL

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(Continued)

Right Power Management Panel, P210

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	11	C30419	WDO HT 3L
L	7	C30608	WSHLD WIPER R
L	8	C30616	WHCU BITE R

Right Power Panel, P200

Row	Col	Number	<u>Name</u>
ARO 00	5-999		
Α	4	C30300	WDO HTR 1R
ARO 00	1-004		
В	4	C30300	WDO HTR 1R

ARO ALL

SUBTASK 30-42-05-010-001

(2) Use a stand to get access to the windshield.

D. Procedure

SUBTASK 30-42-05-800-002

- (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 30-42-05-860-002

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

Left Power Management Panel, P110

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
В	16	C30416	WDO HT 2R
С	16	C30418	WDO HT 3R
F	3	C30415	WDO HT BACKUP 1L
M	26	C30613	WHCU BITE L
M	27	C30607	WSHLD WIPER L

Left Power Panel, P100

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	2	C30301	WDO HTR 1L

Right Power Management Panel, P210

Row	Col	Number	Name
IXOVV	<u>001</u>	Number	Manie
С	11	C30417	WDO HT 2L
С	12	C30414	WDO HT BACKUP 1R
D	11	C30419	WDO HT 3L
L	7	C30608	WSHLD WIPER R

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(Continued)

Right Power Management Panel, P210

Row Col Number Name

L 8 C30616 WHCU BITE R

Right Power Panel, P200

 Row
 Col
 Number
 Name

 ARO 005-999
 A
 4
 C30300
 WDO HTF

A 4 C30300 WDO HTR 1R

ARO 001-004

B 4 C30300 WDO HTR 1R

——— END OF TASK ———

ARO ALL

30-42-05

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WINDSHIELD HYDROPHOBIC COATING KIT - MAINTENANCE PRACTICES

1. General

- A. This procedure contains these tasks:
 - (1) Maintenance
 - (2) Coating Efficiency Assessment
 - (3) Application and Removal
- B. This procedure is a reprint of DSS1022, Revision D found in the Master Kit (P/N DSS1020). It is included in the maintenance manual as a courtesy to our customers. The sole authority for this information is DSS1022. DSS1022 is the responsibility of:
 - (1) PPG Industries, Inc.

Aircraft Products

Huntsville, Alabama, USA

Phone: 205-851-7001 FAX: 205-851-8822 SITA: HSVXPCR

- C. The application as defined herein pertains to on-aircraft reapplication or first time application to previously uncoated windshields.
- D. Surface Seal Coated Glass Definition
 - (1) Developed to enhance pilot vision during rain conditions, surface seal-coated glass from PPG Industries incorporates a durable transparent water-repellent coating on the windshield surface for efficient rain removal.
- E. Health and Safety General
 - (1) Throughout each described procedure, it is recommended that gloves (for cleanliness) and safety glasses be worn. For additional health and safety information refer to applicable safety documents and to the specific MSDS (Material Safety Data Sheet) information contained in the Master Kit.

TASK 30-43-00-140-801

2. Maintenance

A. General

(1) The effectiveness of SURFACE SEAL-COATED GLASS is maximized and protected by specific and routine cleaning practices. The Master Kit provides disposable gloves, towels, and a plastic cleaning pad to assist in the procedure.

B. Equipment

SUBTASK 30-43-00-800-001

(1) Spray Bottle (DSS1029 spray nozzle and a bottle or equivalent)

C. Consumable Materials

SUBTASK 30-43-00-800-002

(1) DSS1027 Kit D, Mater Refill (Replenishable supplies to prepare approximately ten windshields) or equivalent items listed below.

SUBTASK 30-43-00-800-007

(2) Deionized Water

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SUBTASK 30-43-00-800-008

(3) Latex Gloves (uncontaminated)

SUBTASK 30-43-00-800-009

(4) Cleaning Cloths

SUBTASK 30-43-00-800-010

(5) Cleaning Solvent - 50/50 Solution of Isopropanol and Water

SUBTASK 30-43-00-800-011

(6) Plastic Cleaning Pad

D. Cleaning Procedure

SUBTASK 30-43-00-140-001

 Verify windshield heat is turned off. Flush the glass surface with clean water to remove excessive amounts of dirt.

SUBTASK 30-43-00-140-002

(2) Put on a pair of protective gloves.

SUBTASK 30-43-00-140-003



NEVER USE RAZOR BLADES OR SCRAPERS OF ANY TYPE TO DISLODGE ADHERED PARTICLES AS THESE DEVICES MAY DAMAGE THE COATING OR THE GLASS ITSELF.

(3) Use only clean materials such as a soft cloth or clean sponge or soft paper towel (such as Kaydry (R) wipers) to clean the window.

SUBTASK 30-43-00-140-004

(4) Wash the window with a 50/50 solution of isopropanol and water.

NOTE: If isopropanol is not available, refer to AMM 12-16-02/301 for approved cleaning solutions.

SUBTASK 30-43-00-140-005

- (5) Adhered particles can be dislodged using the cleaning solution and the plastic cleaning pad.
 - (a) When using the plastic cleaning pad, be extremely careful that the removed particles do not become embedded in the pad and become a potential cause of scratches in the coating or glass.

NOTE: None of the cleaning chemicals recommended for this procedure are provided in the Master Kit. Specific health and safety information for the recommended chemicals should be obtained and reviewed by the user.

SUBTASK 30-43-00-140-006

(6) Flush the windshield thoroughly with clean water. Wipe dry with strokes in one direction using only clean materials such as a damp soft cloth, damp sponge, or soft paper towel (such as Kaydry (R) Wipers).

NOTE: Do not apply polish or wax to the glass surface.

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TASK 30-43-00-210-801

3. Coating Efficiency Assessment

(Figure 201, Figure 202, Figure 203, Figure 204)

A. General

- (1) Although the SURFACE SEAL COATED GLASS is easily maintained and protected by routine cleaning practices, the coating may not last the entire service life of a windshield. Periodic assessment of coating efficiency can be timed with regular windshield cleaning (Maintenance). If reapplication is required, a straight-forward procedure as detailed later in this document will provide renewed rain repellency.
- (2) In planning the assessment, first watch the PPG video "Coating Efficiency Assessment", that provides overall direction and guidelines. This video is contained in the Master Kit. The following instructions provide the specific procedure as demonstrated in the video.
- (3) Before beginning this procedure, be sure the windshield electrical heat is turned off. It is necessary to gain access to the windshield so that it can be thoroughly cleaned, can be examined clearly, and space is available for kit contents. A rolling ladder/platform is recommended that will enable all areas of the windshield to be reached. Other requirements include a dry environment (not raining, sleeting, or snowing, and preferably in a hanger), adequate lighting for inspecting the windshield, ambient temperature in the range 40 90 °F (40 32 °C), and humidity in the range 20 80%. The windshield itself should not be hot to the touch and should be out of direct sunlight.

B. Equipment

SUBTASK 30-43-00-800-003

(1) Spray Bottle (DSS1029 spray nozzle and a bottle or equivalent)

C. Consumable Materials

SUBTASK 30-43-00-800-004

- (1) DSS1027 Kit D, Master Refill (Replenishable supplies to prepare approximately 10 windshields) or equivalent items listed below.
 - (a) Disposal Bag
 - (b) De-ionized Water
 - (c) Latex Gloves (uncontaminated)

D. Windshield Preparation

SUBTASK 30-43-00-940-001

(1) Access the Master Kit. Remove one disposal bag and place it in a convenient nearby position.

SUBTASK 30-43-00-140-007

(2) Use the Cleaning Procedure in this procedure to thoroughly clean the windshield. Kaydry Wipers from the Master Kit can be used for washing and drying the glass surface.

E. Evaluation

SUBTASK 30-43-00-210-001

(1) Access a 500 mL bottle of De-ionized Water and the spray nozzle from the Master Kit. Replace the closed cap on the bottle with the spray nozzle. With the nozzle pointing away, turn the nozzle adjustment counterclockwise until no adjustment remains. The nozzle is now set to deliver a fine mist.

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SUBTASK 30-43-00-210-002

(2) If the disposable gloves have been removed after windshield cleaning, replace them with another pair. Avoiding possible contamination of the glass surface from skin oil is important in this assessment.

SUBTASK 30-43-00-210-003

(3) Starting at the bottom of the windshield and with the nozzle at a 12 - 18 inch distance from the glass, pump the spray nozzle to fully wet the windshield with a mist from one side to the other. Progressively work up the windshield until the surface is fully misted. Starting at one side along the top edge, continue spraying the windshield until water droplets roll freely down the windshield. Continue across the windshield along the top edge until water droplets have rolled freely to the bottom of the windshield completely across the windshield. Smaller droplets that "crawl" through an area should be ignored.

SUBTASK 30-43-00-210-004

(4) Examine the appearance of the remaining water on the windshield and the droplet "tracks" and compare within the critical vision area to the illustrations and illustration explanations (photographs and photograph explanations are used in the DSS1022 document) in this procedure.

NOTE: It is possible that the assessment produces more than one result. If such a situation is present, reapplication should be bases on the overall performance of the coating within the critical vision area.

SUBTASK 30-43-00-210-005

- (5) Critical Vision Area (Fig. 201)
 - (a) A 2-inch periphery around the daylight opening is generally considered unimportant for this assessment, since those vision areas are considered noncritical.

SUBTASK 30-43-00-210-006

- (6) Coating Efficient Illustrations
 - (a) Like-New Coating Performance (Fig. 202)
 - The sprayed water remains "beaded-up" as small droplets circular in shape. Water droplets "tracks" leave no water residue in the track itself. The coating is very water repellent, and no reapplication is necessary.
 - (b) Acceptable Coating Performance (Fig. 203)
 - The sprayed water remains "beaded-up" but as slightly larger droplets as compared to Like-New Coating Performance. The largest droplets will be slightly elongated in the direction of gravity. Water droplet "tracks" leave water droplets within the "tracks" that are essentially elliptical in shape. The coating provides acceptable vision in rain. Reapplication is not necessary, but may be required after the next scheduled assessment.
 - (c) Unacceptable Coating Performance (Fig. 204)
 - The sprayed water forms droplets of larger size as compared to Acceptable Coating Performance and of irregular shape. The largest droplets will be elongated in the direction of gravity. Water droplet "track" leave larger droplets within the "tracks" as compared to Acceptable Coating Performance that are elongated in the direction of gravity and of irregular shape. Some of the sprayed water may form only large droplets. The coating has degraded to the level where reapplication must be accomplished.

EFFECTIVITY 30-43-00



F. Follow-up

SUBTASK 30-43-00-890-001

(1) If reapplication is indicated, make all necessary scheduling arrangements.

NOTE: It may be preferable to reapply the coating system to both windshields at the same time, even if only one is required.

SUBTASK 30-43-00-940-002

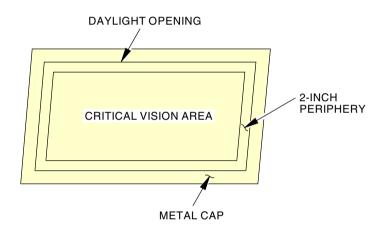
(2) Return all supplies to their proper place. Discard disposal bag in accordance with national, regional, and local regulations.

——— END OF TASK ———

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Critical Vision Area Figure 201/30-43-00-990-801

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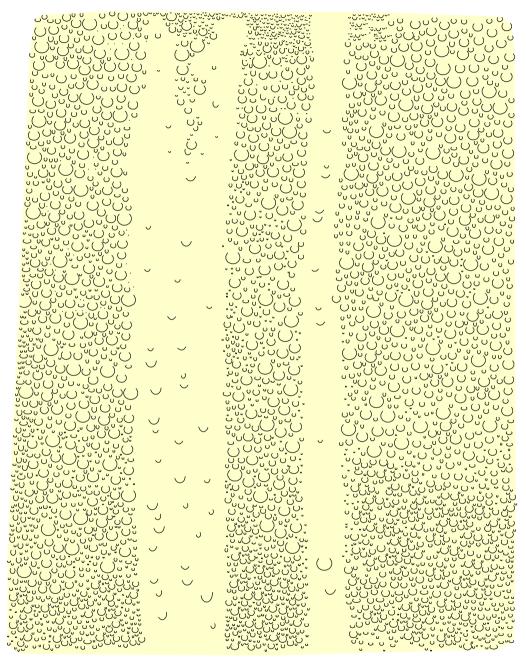
Like-New Coating Performance Figure 202/30-43-00-990-802

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K20809 S0006416722_V2

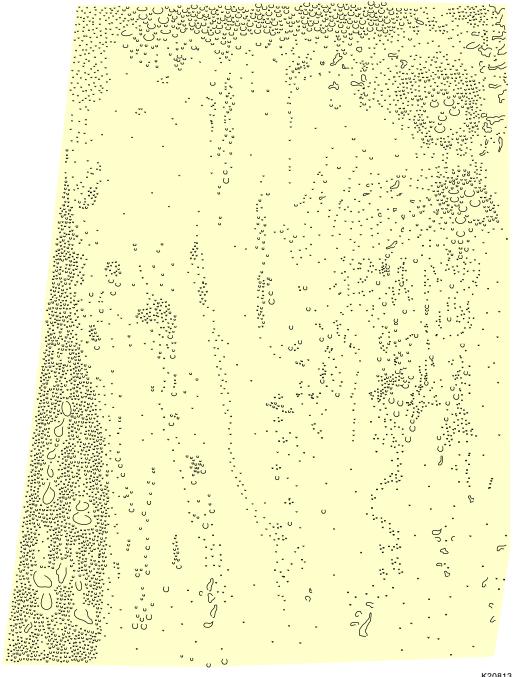
Acceptable Coating Performance Figure 203/30-43-00-990-803

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K20813 S0006416723_V2

Unacceptable Coating Performance Figure 204/30-43-00-990-804

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TASK 30-43-00-350-801

4. Application and Removal

(Figure 205, Figure 206, Figure 207)

A. General

- (1) If the results of the coating efficiency assessment indicate that reapplication is required, or if a first time application will be accomplished, prepare for this procedure by first watching the PPG video "Reapplication and First Time Application". Contained in the Master Kit, this video provides step-by-step guidelines and overall direction.
- (2) The video is designed to supplement these written instructions, and should not be used without these instructions.
- (3) Materials needed for reapplication or first time application are contained in the Master Kit and the Curing Kit. Master Kit contents are described in the "Equipment" and Consumable Materials" paragraphs in this task. The Curing Kit is also described in the "Equipment" paragraph in this task. Throughout this procedure, use only PPG approved materials. Do not make any substitutions.
- (4) The Curing Kit consists of protective material and electric heat blankets that are configured specifically for the aircraft windshields being treated. The protective material prevents the possibility of the heat blanket scratching the glass surface.
- (5) The heat blanket is thermostatically controlled to provide a curing temperature for the coating. No substitutions are permitted for heat blankets.

B. Equipment

SUBTASK 30-43-00-800-005

(1) 220/240V AC Power Source

SUBTASK 30-43-00-800-012

- (2) DSS1020 Master Kit Complete
 - (a) DSS1021 Packing List/Reorder Form
 - (b) DSS1022 Maintenance, Assessment, Application Procedures
 - (c) DSS1023 Video "Coating Efficiency Assessment: (Specify PAL, NTSC, or SECAM)
 - (d) DSS1024 Video "Reapplication and First Time Application" (Specify PAL, NTSC, or SECAM)
 - (e) Material Safety Data Sheets (MSDS) for Kit A and D
 - (f) DSS1005 Orbital Sander with 115V Charger or DSS1006 Orbital Sander with 220V Charger
 - (g) DSS1031 Adapter plugs or equivalent
 - (h) DSS1018 Scissors or equivalent
 - (i) Coated Windshield Identification Decal & Marking Pen (first time application only)

SUBTASK 30-43-00-800-013

(3) DSS2020 Curing Kit-B707, B727,B737

DSS2021 Curing Kit-B757,B767,B777

DSS2022 Curing Kit-B747

(a) DSS2023 Heater Blanket - B707,B727,B737 Capt. W/S DSS2024 Heater Blanket - B707,B727,B737 F.O. W/S

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DSS2025 Heater Blanket - B757,B767,B777 Capt. W/S

DSS2026 Heater Blanket - B757, B767, B777 F.O. W/S

DSS2027 Heater Blanket - B747 Capt. W/S

DSS2028 Heater Blanket - B747 F.O. W/S

(b) DSS2029 Protective Film - B707,B727,B737 Capt. and F.O. W/S

DSS2030 Protective Film - B757,B767,B777 Capt. and F.O. W/S

DSS2031 Protective Film - B747 Capt. and F.O. W/S

C. Consumable Materials

SUBTASK 30-43-00-800-006

- (1) DSS1015 Kit A, Application (chemicals and supplies to coat one windshield each Kit A for one window only)
 - (a) Packing List/Reorder Form
 - (b) Material Safety Data Sheets (MSDS) for Surface Prep and Coating Solution
 - (c) Felt Pad in Plastic Bag
 - (d) Surface Prep (2), 20mL Ampules
 - (e) Coating Solution (1) 20mL Ampule
 - (f) Applicators (6) in Plastic Bag

SUBTASK 30-43-00-800-014

- (2) DSS1027 Kit D, Mater Refill (Replenishable supplies to prepare approximately ten windshields) or equivalent items listed below.
 - (a) Latex Gloves (uncontaminated)
 - (b) Tape, 1/4"
 - (c) Tape, 2"
 - (d) Felt Pad
 - (e) Polishing Slurry
 - (f) De-ionized Water
 - (g) Kaydry (R) Wipers
 - (h) Gauze Pads
 - (i) Cleaning Solvent

D. Health and Safety

SUBTASK 30-43-00-940-003

(1) Inspect the contents of the Master Kit and Curing Kit carefully, reading all identification labels. Read the health and safety information as provided on the MSDS sheets.

SUBTASK 30-43-00-940-004

(2) Disposable gloves, as included in the Master Kit, should be worn at all times during cleaning, chemicals application, and clean up.

SUBTASK 30-43-00-940-005

(3) Because a change of gloves is called for several times during the application procedure, it is suggested that two pair be worn at the same time. Changing only the outer pair eases and facilitates the glove-changing process.

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SUBTASK 30-43-00-940-006

(4) Safety glasses, although not included in the kit, should also be worn from start to finish.

E. Application Procedure

SUBTASK 30-43-00-940-007

(1) In the Master Kit to protect materials during shipment, all liquids in bottles have been closed capped for shipment. Replace closed caps with the flip-top caps (appropriately color-coded) packed separately within the kit. Screw caps on tightly and make certain that each cap is fully closed after each use. Retain original caps for use in possible future shipment.

SUBTASK 30-43-00-940-008

- (2) Before application can begin, five preliminary steps must be taken:
 - (a) First, as in the assessment procedure, it is necessary to gain access to the windshield. A rolling ladder/platform is recommended that will enable all areas of the windshield to be reached and kit contents to be accessed.
 - (b) Second, the environment must be in a hanger or outside with good weather available for the expected duration of the coating application. Ambient temperature should be in the 40-90 °F range (4-32 °C). Humidity should be in the range of 20-80%.
 - (c) Third, good lightning must be available for inspection of work in process.
 - (d) Fourth, make certain that the rechargeable orbital sander contained in the Master Kit is fully charged. If not, follow the instructions found inside the box for proper preparation, making careful note of all safety precautions. Allow about one hour for a complete charge. Adapter plugs are provided in Master Kit if charger plug is not compatible with local power source.
 - (e) Fifth, a 220/240V ac power source must be available at the windshield for the heat blanket cure. Electric heat blankets are provided without plugs. Provide correct plugs for each blanket according to power requirement as stated on blanket.

SUBTASK 30-43-00-140-008

- (3) Windshield Cleaning
 - (a) Remove one disposal bag and place it in a convenient nearby position. Using the Cleaning Procedure described in this procedure to thoroughly clean the windshield. Use Kaydry Wipers from the Master Kit for washing and drying the windshield. Deposit soiled towels in the disposal bag.
 - NOTE: If the windshield wiper is parked on the glass surface, this entire application procedure will be easier to accomplish if the wiper arm spring tension is released and the wiper arm taped away from the windshield. Refer to AMM 30-42-00/201 for wiper removal and functional checks.
 - (b) Using quarter-inch tape from the Master Kit, mask the glass periphery of the windshield as illustrated below (Fig. 205) right up to the moisture/hump seal.
 - NOTE: Disposable gloves may be removed here if the taping step is easier to do bare-handed.
 - (c) Remove a roll of 2-inch tape from the Master Kit and apply it to the windshield periphery. Start by partly overlapping the quarter-in tape, span the moisture seal and terminate on the windshield retainer or structure as illustrated.
 - (d) Return the tape and scissors to the Master Kit. If gloves have been removed or torn during the taping process, replace them before proceeding. Gloves are extremely important in subsequent steps because elimination of skin-oil contamination is critical.

ARO ALL 30-43-00



- (e) Remove the felt pad from the plastic bag inside the box labeled Kit A, and attach it to the fully charged orbital sander.
 - NOTE: The PPG-supplied sander is the only one approved for this process. Make no substitution. Use of other equipment such as an air powered sander can result in oil contamination of the glass surface or permanent damage to the windshield.
- (f) Before starting the polishing operation, examine the windshield to determine if any "staining" (example RAIN-BOE build-up) is apparent. If such areas are apparent, extra polishing may be required to remove the contamination. Remove the 500 mL bottle of Polishing Slurry. No substitution for this polishing compound is permitted. Shake the bottle well, and apply about 10 to 20 mL of fluid to the felt pad. Be certain that no extraneous dirt or grit of any kind contacts the felt pad, and make certain it is moistened with slurry prior to contact with the pre-cleaned glass surface.
- (g) Light set the felt pad onto the glass surface and activate the sander. The weight of the sander itself on the felt pad provides sufficient polishing force on the glass surface. Using overlapping strokes, cover the entire glass surface evenly. Add additional slurry as needed to keep the felt pad moistened throughout the process. A thin, cloudy film of slurry will be left on the glass surface; but if it "breaks up", that is, if the Polishing Slurry does not remain in a thin film, continue the polishing operation. Use long horizontal strokes followed by short vertical ones.
- (h) After the slurry has been thoroughly applied, set the sander aside temporarily, placing it onto a clean, disposable towel. Remove the soiled gloves and place them in the disposal bag.
 - NOTE: Remove soiled gloves carefully by pulling the cuff down over the hand so that the glove is removed inside out. This prevents any possible contamination by contact with the glove as it is deposited into the disposal bag.
- (i) Put on new gloves and remove a 500 mL bottle of De-ionized water and several disposable towels from the kit. Wash and dry the windshield thoroughly to remove all traces of Polishing Slurry and continue wiping until the glass is completely dry.
 - NOTE: If "stained" areas persist, repeat a localized polishing with additional slurry applied to felt pad. Repeat localized wash and dry steps using De-ionized water and towels.
- (j) Do not let thick water films evaporate, as this causes contamination of the surface; and do not use any other chemicals or cleaners to remove the Polishing Slurry residue.
- (k) To ensure the glass surface is clean from all contaminants or previous hydrophobic coating, an evaluation is necessary. Attach the spray nozzle from the Master Kit to the 500 mL bottle of De-ionized Water. With the nozzle pointing away adjust the nozzle completely counterclockwise. Wet the entire windshield thoroughly until water rolls freely down the surface. The glass is thoroughly clean when there is no beading of water droplets, and when water droplets will combine to "sheet-over":
 - NOTE: If beaded water droplets are still present, repeat the polishing procedure in the affected area, repeat localized wash, dry, and evaluation as described previously until no beaded droplets form.
- (I) Dry the windshield surface thoroughly before continuing this procedure.
- (m) Remove the soiled gloves (pulling them off inside out) and deposit them in the disposal bag. The windshield glass surface is not extremely clean. The next step, Surface Preparation, should be started within 5 minutes to prevent possible soil (dust) contamination of the glass surface.

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SUBTASK 30-43-00-350-001

(4) Surface Preparation



ONCE THE FLUID CONTENTS OF THE SURFACE PREP AND COATING SOLUTION AMPULES ARE EXPOSED TO AIR A REACTION OCCURS THAT WILL CAUSE THE INGREDIENTS TO BECOME NONEFFECTIVE IN A RELATIVELY SHORT PERIOD OF TIME (APPROXIMATELY 30 MINUTES). IF BOTH WINDSHIELDS ARE TO BE COATED WITH ONE AMPULE, BOTH WINDSHIELDS SHOULD BE PREPARED THROUGH THE POLISHING PROCESS, THEN SURFACE PREP SHOULD BE APPLIED TO BOTH WITH A MINIMUM AMOUNT OF TIME BETWEEN PROCEDURES. THE SAME PROCEDURE SHOULD BE FOLLOWED FOR APPLYING THE SURFACE COATING.

- (a) Put on a clean pair of disposable gloves, and remove one Surface Prep ampule and two applicators from Kit A in the Master Kit.
 - NOTE: The Surface Prep material is corrosive to the aircraft structure and may damage the paint. Before proceeding, ensure that the tape masking the windshield is intact to prevent the chemical from wicking into the aircraft structure. Clean any spills immediately.
- (b) The Surface Prep ampule is surrounded by sealed plastic tubing above the foam filter. To open it, use scissors to cut off a corner of the plastic tubing at the top as illustrated in Fig. 206. Do not cut into the foam.
- (c) Hold the ampule assembly with the cut tubing pointing upward. Break the seal by bending the ampule above the cylindrical reservoir.
- (d) Hold the ampule away from the aircraft. Carefully pour fluid onto one of the applicator pads. Do not saturate the applicator to the extent that any fluid drips off.
- (e) Apply the Surface Prep to the windshield, using slightly overlapping strokes. Work at a moderate speed, covering approximately 2 linear feet per second.
- (f) A thin film of solution will trail from the applicator and quickly evaporate from the glass surface. Do not allow thick films of liquid to accumulate on the glass surface. Apply additional surface prep to the applicator to complete covering the total glass area.
- (g) After the entire glass area has been covered, repeat the application process, using a new applicator. Again, be sure to not over-saturate the pad.
 - NOTE: It is not necessary to use all the Surface Prep ampule chemical with the second application. The important issue is to complete the second application over the total glass area.
- (h) Visually inspect the outside surface of the windshield making certain that there is no streaking or haze. If any appears, buff the windshield with dry gauze pads from the Master Kit until the windshield is perfectly clear. Then place the used applicators, used gauze pads, disposable gloves, and used Surface Prep ampule into the disposal bag
- (i) If streaking or haze persists, it may be caused by a residue of Surface Prep solution remaining on areas where too much fluid was applied, and a thick film was allowed to evaporate.
- (j) However, before attempting any removal of the streaking or haze, first make sure the appearance problem is not actually due to contamination on the interior surface of the windshield.

ARO ALL



- (k) If the streaking or haze is localized, it should be possible to remove the extra Surface Prep thickness by reworking just that one area. Apply some Polishing Slurry to the felt pad, and use the orbital sander to very lightly polish the problem area. Clean the area with De-ionized water and dry it with a clean disposable towel. Examine the area to see if the problem persists. If it does, repeat this sequence of very light polishing, washing and drying until the streaking or haze is eliminated.
- (I) If the problem is wide-spread across the windshield, all previous steps will need to be repeated using the sander and Polishing Slurry on the entire glass surface.
- (m) After the haze or streaking has been eliminated, remove soiled gloves and put on a clean pair. Thoroughly wash and dry the entire windshield surface using De-ionized Water and clean disposable towels.
- If Surface Prep does need to be reapplied, an additional ampule and applicators are included in Kit A.
- (o) If re-application is not required, retain the extra Surface Prep ampule for possible future use. Keep it, along with the proper health and safety instructions, inside the Master Kit. Do not save the opened ampule(s).
- (p) Remove the felt pad from the orbital sander and place the pad in the disposal bag. Apply some De-ionized Water to a clean towel and wipe off the sander. Return the sander to the storage box in the kit. Remove soiled gloves and deposit them into the disposal bag.

SUBTASK 30-43-00-350-002

(5) Coating Procedure



ONCE THE FLUID CONTENTS OF THE SURFACE PREP AND COATING SOLUTION AMPULES ARE EXPOSED TO AIR A REACTION OCCURS THAT WILL CAUSE THE INGREDIENTS TO BECOME NON-EFFECTIVE IN A RELATIVELY SHORT PERIOD OF TIME (APPROXIMATELY 30 MINUTES). IF BOTH WINDSHIELDS ARE TO BE COATED WITH ONE AMPULE, BOTH WINDSHIELDS SHOULD BE PREPARED THROUGH THE POLISHING PROCESS, THEN SURFACE PREP SHOULD BE APPLIED TO BOTH WITH A MINIMUM AMOUNT OF TIME BETWEEN PROCEDURES. THE SAME PROCEDURE SHOULD BE FOLLOWED FOR APPLYING THE SURFACE COATING.

- (a) Put on clean, disposable gloves, and remove the Coating Solution ampule and another applicator from Kit A. Repeat the previously explained technique for opening the ampule: cut off the top corner of the plastic tubing surrounding the ampule above the foam; hold the ampule assembly with the cut tubing pointing upward; break the seal by bending the ampule above the cylindrical reservoir.
- (b) Holding the ampule away from the airplane, pour about one-third of the solution onto the applicator, and wipe the coating solution onto the glass surface, using quick, circular motions. Begin in the critical vision areas and work toward the outer edges of the windshield.
- (c) As the applicator becomes dry, add more solution, and continue the process until several coverages have been accomplished or until the ampule is empty. A haze will form over the entire glass surface.

30-43-00

ARO ALL



- (d) Immediately after the application of Coating Solution, spread a fresh disposable towel on the coated surface and apply De-ionized Water to the towel until it is thoroughly wet. The wet towel should adhere to the glass surface. Continue to spread and wet towels, overlapping as necessary, to cover the entire surface. Pat the towels down and wipe to push air pockets from between the towels and glass surface. Leave the wet towels on the glass surface for 5 minutes. Remove the towels. Dry residual water using fresh disposable towels.
- (e) Place the used applicator, empty ampule, soiled gloves and towel into the disposal bag. Dispose of these materials in full accordance with national, regional, and local regulations.

SUBTASK 30-43-00-350-003

- (6) Heat Cure Options
 - (a) Heat curing of the coating system is an optional step. Heat curing will result in a more durable coating; however, the heat curing procedure may be omitted when time is limited. For heat curing instructions, do the procedure that follows. To omit the heat cure proceed to the "No Heat Cure" paragraph.
 - (b) To accomplish this procedure, the appropriate Curing Kit is required. Refer to Curing Kit, Boeing Airplane in the "Equipment" paragraph of this task for the correct designation Curing Kit.
 - (c) Carefully place a sheet of protective film over the windshield, making sure to line up all edges. Then, secure the film to the windshield retainer or to line up all edges. Then secure the film to the windshield retainer or airplane structure at each corner, with sort strips of quarter-inch tape.



DO NOT TOUCH THE SURFACE WHILE IT IS HOT. IT WILL BURN YOU.

- (d) Apply the correct left-hand or right-hand heating blanket to the windshield's surface and anchor it securely in place, using 2-inch tape. Then, plug the blanket into the 220/240V power source.
- (e) The blanket temperature has been pre-set for the heat curing process, which may continue for up to 8 hours for optimum durability. No substitutions for heat blankets are permitted.
- (f) This time can be used to recharge the orbital sander. Note, however, that the battery must be at room temperature to receive a full charge from the battery charger.
- (g) The work on one windshield is temporarily completed. A second windshield can receive a coating application once the sander battery is recharged.
- (h) If only one windshield is to be coated, close the disposal bag and dispose of it in full accordance with all national, regional, and local regulations. The empty Kit A box can be disposed in any trash bin.
- (i) After the desired curing time has elapsed, unplug the blanket and allow it to cool down to near-ambient room temperature. This should require no more than 5 or 10 minutes.
- (j) After checking carefully to make certain that the blanket is not too hot to handle, remove the tape, blanket, and protective film. Return the blanket to its proper place in the Curing Kit. Remove all two-inch and quarter-inch tape still attached to the windshield and dispose, along with the protective film, in any convenient trash bin.

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SUBTASK 30-43-00-350-004

- (7) No Heat Cure
 - (a) After the residual water has been dried from the windshield, immediately remove all two-inch and quarter-inch tape from the windshield and dispose of in a disposable bag.
 - (b) Put on a clean pair of disposable gloves, remove several disposable towels, and the Cleaning Solvent from the Master Kit. Using the Cleaning Solvent, remove all visible haze form the airplane windshield, and any residue remaining from the tape.
 - (c) Because the haze tends to smear rather than clean off easily, this will require some effort. Any variety of wiping techniques can be used, but a two-step approach is recommended; make one pass with a wet disposable towel moistened with the Cleaning Solvent; make a second pass using a dry one. Several sets of wipings will be necessary. After haze has been removed, wash the windshield with De-ionized Water and dry it with disposable towels.
 - (d) Because the windshield surface is now extremely water-repellent, it may be easier to apply water to the towels rather than applying it directly to the glass.
 - (e) Discard the disposable gloves (pulling them off inside out) and place them in a disposable bag along with any used towels. Seal the top of the bag, and dispose of it in full accordance with national, regional, and local regulations.
 - (f) At this point, refurbishment is complete. However, effectiveness of the treatment and efficiency of the coating must be assessed.

F. Coating Efficiency Assessment

SUBTASK 30-43-00-210-007

(1) Repeat the coating efficiency assessment procedure as explained in this procedure, and as demonstrated in the video cassette "Coating Efficiency Assessment" found in the Master Kit Record results as required.

SUBTASK 30-43-00-140-009

(2) If coating performance appears unacceptable, repeat the cleaning steps described in this procedure. Then repeat the coating efficiency assessment procedure, again recording results are require.

G. Windshield Identification

SUBTASK 30-43-00-930-001

(1) If coating system has been applied to a previously uncoated windshield, the windshield part number must be re-identified. All part number decals are included in the Master Kit. Refer to the appropriate Service Bulletin for part number identification. Using the permanent marking pen from the decal/pen box, mark through the existing part number on the windshield part number/serial number trademark label located on the inboard surface of the windshield (Fig. 207) obtain a fresh disposable towel and an approved Boeing glass cleaning solution. Apply cleaner to the towel and thoroughly clean the surface area adjacent to the existing decal. Select the correct new part number decal, remove it from its backing and apply to the windshield surface as illustrated in the subsequent sketch. Dispose of towel.

SUBTASK 30-43-00-350-005

- (2) Coating System Removal
 - (a) If it is decided to remove the coating system from the windshield, a complete cleaning and polishing of the glass surface will accomplish the task. The steps beginning with the "Application and Removal" paragraph through the "Windshield Cleaning" paragraph, detail the procedure to be followed for coating system removal.

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H. Inventory and Resupply

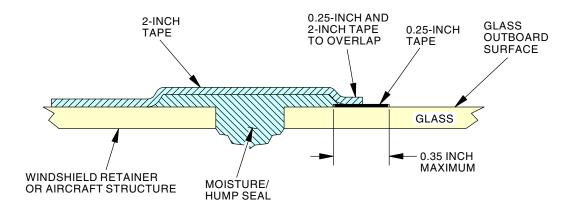
SUBTASK 30-43-00-840-001

(1) Once the project is complete, take an inventory of all Master Kit contents. Be certain that all equipment and re-useables have been returned to the correct kit locations. As necessary, for reordering kit components or supplies, make photocopies of the order forms included in the PPG DSS 1022 document, complete and mail, FAX or SITA according to order form instructions.

——— END OF TASK ———

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Tape Layout Figure 205/30-43-00-990-805

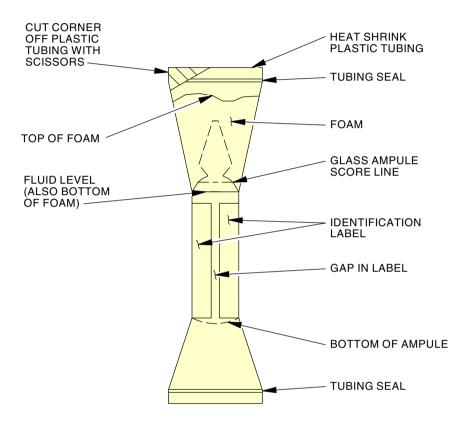
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Surface Prep Ampule Figure 206/30-43-00-990-806

AMPULE APPEARANCE

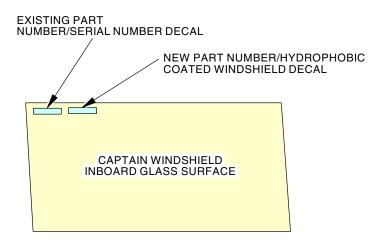
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AIRCRAFT MAINTENANCE MANUAL



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Windshield Identification Figure 207/30-43-00-990-807

- EFFECTIVITY -ARO ALL

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DRAIN AND WATER SUPPLY LINE HEATING - MAINTENANCE PRACTICES

1. General

- A. This procedure has these tasks:
 - (1) Drain and water supply line heating deactivation.
 - (2) Drain and water supply line heating activation.

TASK 30-71-00-040-801

2. Drain and Water Supply Line Heating - Deactivation

A. General

(1) This task will deactivate the drain and water supply line heating systems.

B. References

Reference	Title
24-22-00-860-805	Supply Electrical Power (P/B 201)
25-52-10-000-801	Floor Panels and Walkways Removal (P/B 401)
25-52-11-000-801	Bulk Cargo Floor Removal (P/B 401)
25-52-19-000-801	Bulk Cargo Compartment Aft End Wall Removal (P/B 401)
WDM 30-71-11	Wiring Diagram Manual

C. Tools/Equipment

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

Reference	Description
COM-1572	Thermometer - Infrared, Intrinsically Safe
	Part #: EX-MP4 A Supplier: 3GT36 Opt Part #: DHS24XC-FM Supplier: 08086 Opt Part #: DHS24XF-FM Supplier: 08086 Opt Part #: IR-16L3 IS Supplier: 75037
COM-7791	Meter - Current, RMS
	Part #: 324 Supplier: 89536 Opt Part #: 322 Supplier: 89536 Opt Part #: MODEL 33 Supplier: 89536

D. Consumable Materials

Reference	Description	Specification
G02319	Spray - Freeze - Miller-Stephenson MS-242N	
G02320	Ice - Crushed	

E. Location Zones

Zone	Area
122	Forward Cargo Compartment, Right
123	Area Below Forward Cargo Compartment, Left
124	Area Below Forward Cargo Compartment, Right
153	Area Below Aft Cargo Compartment, Left
154	Area Below Aft Cargo Compartment, Right
163	Area Below Bulk Cargo Compartment, Left
164	Area Below Bulk Cargo Compartment, Right

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F. Procedure

SUBTASK 30-71-00-020-001

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

Ground Service/Handling Power Panel, P320

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
Н	1	C30402	WATER DRAIN LINE HEATING FWD
J	13	C30500	DRAIN MAST HTRS GND
ARO 00	1		
L	3	C30422	DRAIN MAST HTRS FLS
ARO AL	L		
L	3	C30426	DRAIN MAST HTRS FLS
L	4	C30400	WTR SPLY LINE HTRS
L	9	C30403	WATER DRAIN LINE HEATING AFT
L	11	C30401	DRAIN LINE HTRS
L	12	C30446	WTR DRAIN LINE HTR OVWG FWD

This circuit breaker is inoperative and should remain open:

Ground Service/Handling Power Panel, P320

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
L	1	C30447	WTR DRAIN LINE HTR OVWG AFT (INOP)

G. Drain and Water Supply Line Heating - Tryout

NOTE: This tryout is to make sure that the drain and water supply line heating systems are in a zero energy state.

SUBTASK 30-71-00-020-003

(1) Do this task: Supply Electrical Power, TASK 24-22-00-860-805.

SUBTASK 30-71-00-020-004

(2) Do these steps to do a tryout of the drain mast and gray water drain line heaters:



DO NOT TOUCH THE DRAIN MASTS UNTIL THEY BECOME COOL. DRAIN MASTS BECOME VERY HOT. INJURIES TO PERSONNEL CAN OCCUR.

- (a) Make sure that the forward drain mast does not become warm.
 - 1) You can hold your hand near the drain mast to monitor its temperature or,
 - 2) You can use an Infrared Thermometer, COM-1572 to make sure that the temperature does not increase.



DO NOT TOUCH THE DRAIN MASTS UNTIL THEY BECOME COOL. DRAIN MASTS BECOME VERY HOT. INJURIES TO PERSONNEL CAN OCCUR.

- (b) Make sure that the aft drain mast does not become warm.
 - 1) You can hold your hand near the rain mast to monitor its temperature or,
 - 2) You can use an Infrared Thermometer, COM-1572 to make sure that the temperature does not increase.

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SUBTASK 30-71-00-020-005

- (3) Do these steps to do a tryout of the water supply in-line heaters:
 - (a) Access the water supply lines. To access them, do this task: Bulk Cargo Compartment Aft End Wall Removal, TASK 25-52-19-000-801.
 - (b) Use MS-242N spray, G02319 or ice, G02320 to make the temperature of the sensor (remote or integrated) less than 45 degrees F.
 - (c) Use the current meter, COM-7791 or equivalent to make sure the current does not increase from the initial instrumentation value in each of the water supply line heaters (WDM 30-71-11).

SUBTASK 30-71-00-020-006

- (4) Do these steps to do a tryout of the drain line heaters:
 - (a) Remove the applicable cargo compartment floor panels to get access to the thermostats (TASK 25-52-10-000-801) or (TASK 25-52-11-000-801).
 - (b) Use MS-242N spray, G02319 or ice, G02320 to decrease the temperature of the thermostat.
 - (c) Use the current meter, COM-7791 or equivalent to make sure that the current in the forward drain line heaters does not increase.
 - (d) Use the current meter, COM-7791 or equivalent to make sure that the current in the aft drain line heaters does not increase.

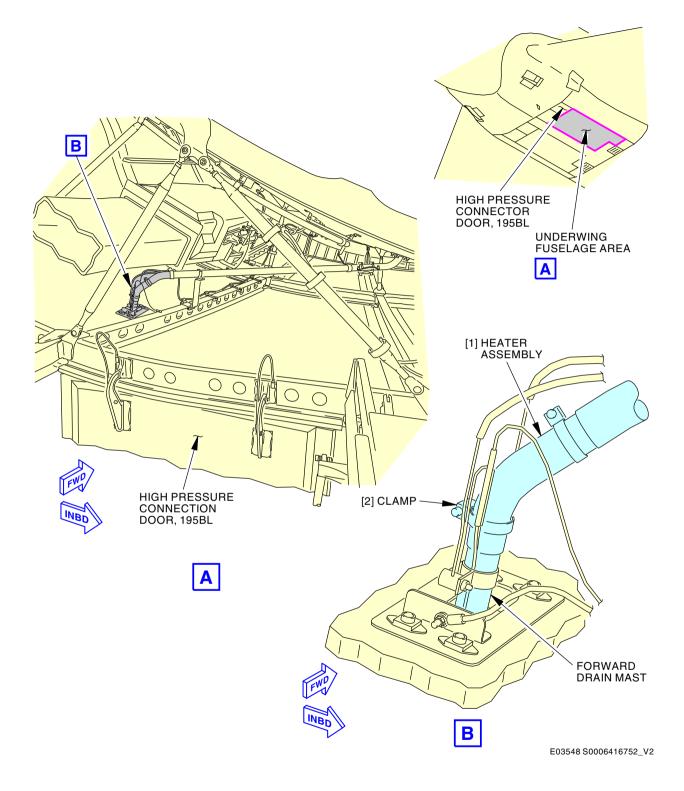


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Drain and Water Supply Line Heating Figure 201/30-71-00-990-801 (Sheet 1 of 7)

EFFECTIVITY

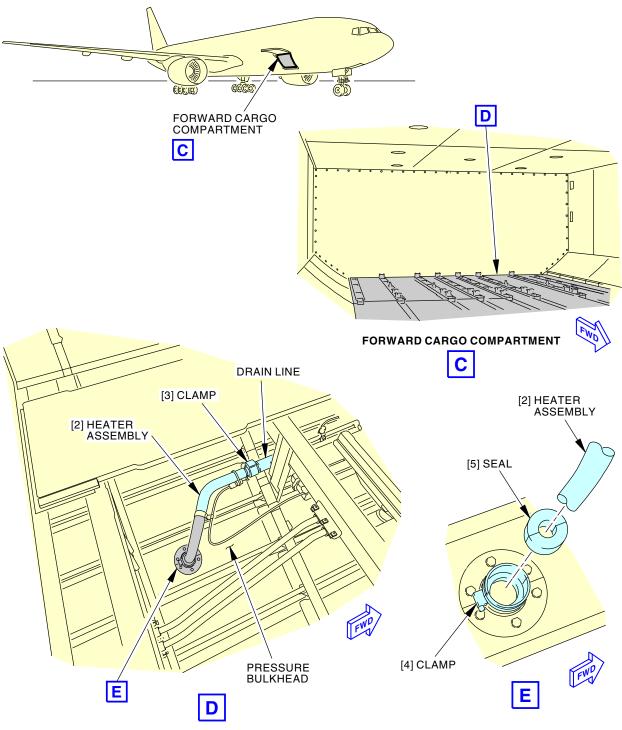
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Drain and Water Supply Line Heating Figure 201/30-71-00-990-801 (Sheet 2 of 7)

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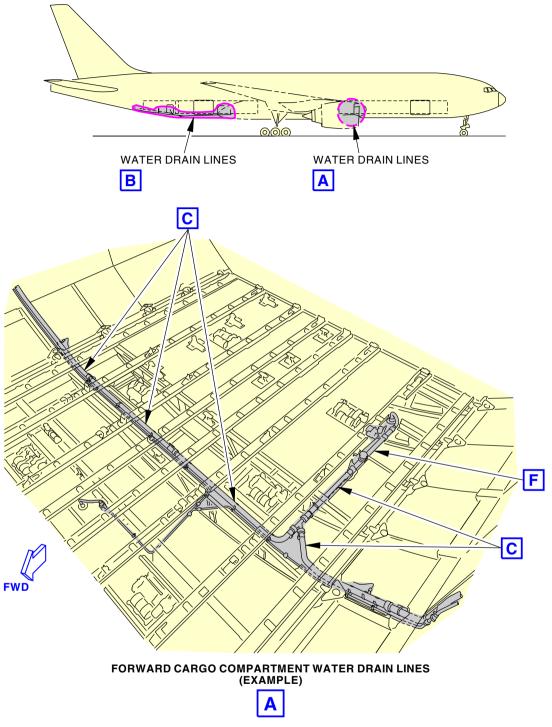
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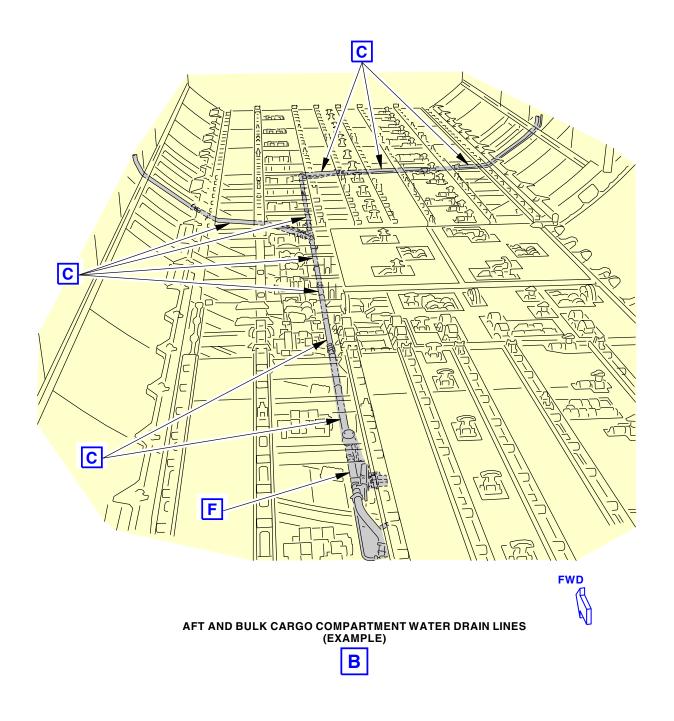
Drain and Water Supply Line Heating Figure 201/30-71-00-990-801 (Sheet 3 of 7)

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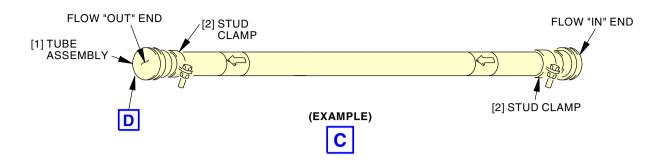
Drain and Water Supply Line Heating Figure 201/30-71-00-990-801 (Sheet 4 of 7)

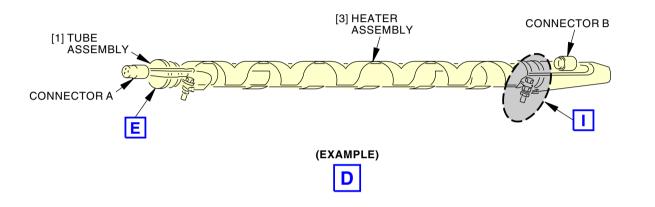
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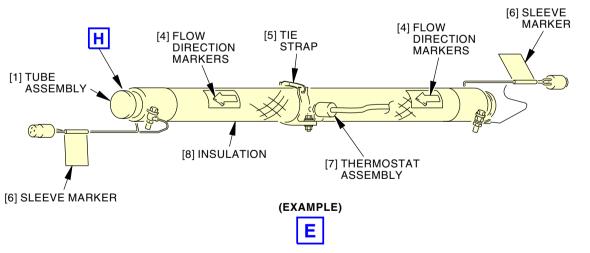
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Drain and Water Supply Line Heating Figure 201/30-71-00-990-801 (Sheet 5 of 7)

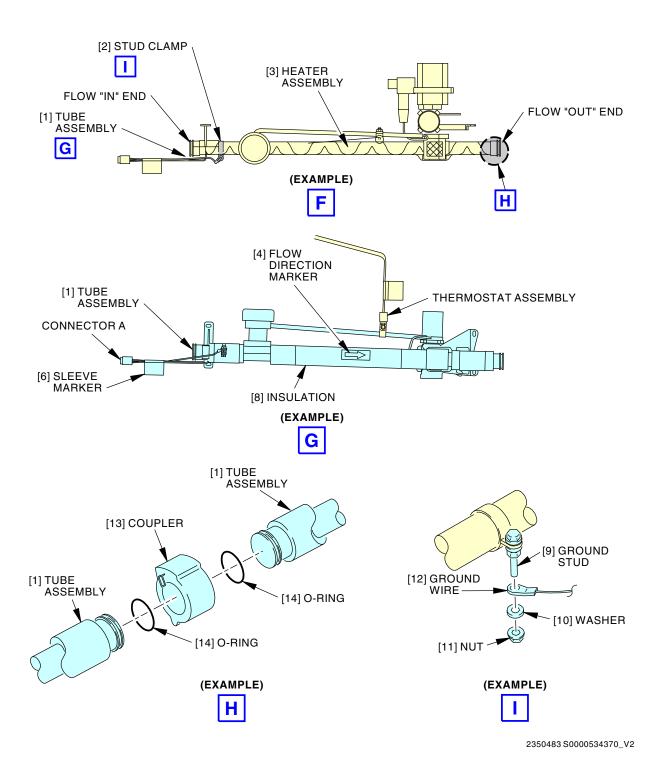
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Drain and Water Supply Line Heating Figure 201/30-71-00-990-801 (Sheet 6 of 7)

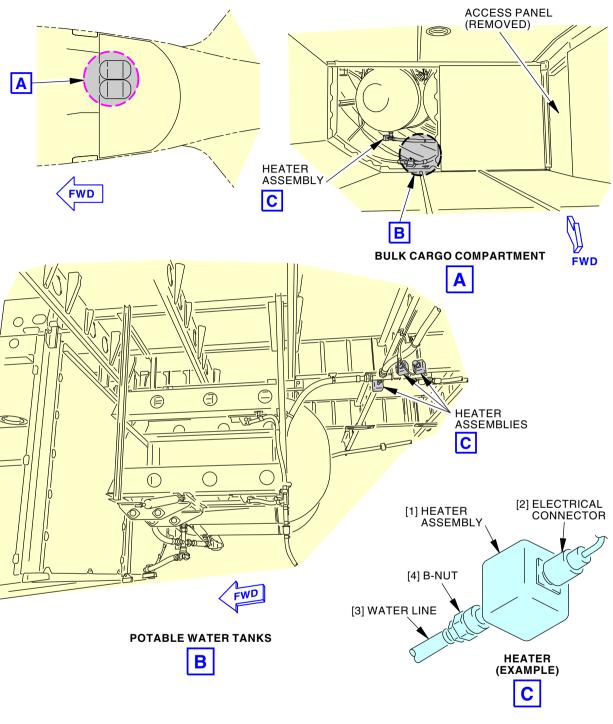
EFFECTIVITY

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Drain and Water Supply Line Heating Figure 201/30-71-00-990-801 (Sheet 7 of 7)

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TASK 30-71-00-440-801

3. Drain and Water Supply Line Heating - Activation

(Figure 201)

A. General

(1) This task will activate the drain and water supply line heating systems.

B. References

Reference	Title
25-52-10-400-801	Floor Panels and Walkways Installation (P/B 401)
25-52-11-400-801	Bulk Cargo Floor Installation (P/B 401)
25-52-19-400-801	Bulk Cargo Compartment Aft End Wall Installation (P/B 401)

C. Location Zones

Zone	Area
122	Forward Cargo Compartment, Right
123	Area Below Forward Cargo Compartment, Left
124	Area Below Forward Cargo Compartment, Right
153	Area Below Aft Cargo Compartment, Left
154	Area Below Aft Cargo Compartment, Right
163	Area Below Bulk Cargo Compartment, Left
164	Area Below Bulk Cargo Compartment, Right

D. Procedure

SUBTASK 30-71-00-420-001

(1) Do this task: Floor Panels and Walkways Installation, TASK 25-52-10-400-801 or Bulk Cargo Floor Installation, TASK 25-52-11-400-801.

SUBTASK 30-71-00-420-002

(2) Do this task: Bulk Cargo Compartment Aft End Wall Installation, TASK 25-52-19-400-801.

SUBTASK 30-71-00-420-003

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

Ground Service/Handling Power Panel, P320

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
Н	1	C30402	WATER DRAIN LINE HEATING FWD
J	13	C30500	DRAIN MAST HTRS GND
ARO 001	I		
L	3	C30422	DRAIN MAST HTRS FLS
ARO AL	L		
L	3	C30426	DRAIN MAST HTRS FLS
L	4	C30400	WTR SPLY LINE HTRS
L	9	C30403	WATER DRAIN LINE HEATING AFT
L	11	C30401	DRAIN LINE HTRS
L	12	C30446	WTR DRAIN LINE HTR OVWG FWD

This circuit breaker is inoperative and should remain open:

Ground Service/Handling Power Panel, P320

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
L	1	C30447	WTR DRAIN LINE HTR OVWG AFT (INOP)

ARO ALL

30-71-00



----- END OF TASK -----

ARO ALL

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DRAIN AND WATER SUPPLY LINE HEATING - ADJUSTMENT/TEST

1. General

- A. This procedure has these tasks:
 - (1) Drain Mast and Gray Water Drain Line Heaters Operational Test
 - (2) Water Supply In-Line Heaters Test
 - (3) Drain Line Heaters Test
 - (4) Waste Tank Drain Line Heater Test
 - (5) Waste Tank Rinse Fitting Heater Test

TASK 30-71-00-720-801

2. Drain Mast and Gray Water Drain Line Heaters Operational Test

A. References

Reference	Title
24-22-00-860-805	Supply Electrical Power (P/B 201)
25-52-10-000-801	Floor Panels and Walkways Removal (P/B 401)
25-52-10-400-801	Floor Panels and Walkways Installation (P/B 401)
32-09-00-860-801	Air/Ground Mode Simulation (P/B 201)
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, Intrinsically Safe
	Part #: EX-MP4 A Supplier: 3GT36 Opt Part #: DHS24XC-FM Supplier: 08086 Opt Part #: DHS24XF-FM Supplier: 08086 Opt Part #: IR-16L3 IS Supplier: 75037
COM-7791	Meter - Current, RMS
	Part #: 324 Supplier: 89536 Opt Part #: 322 Supplier: 89536 Opt Part #: MODEL 33 Supplier: 89536

C. Consumable Materials

Reference	Description	Specification
G02319	Spray - Freeze - Miller-Stephenson MS-242N	
G02320	Ice - Crushed	

D. Location Zones

Zone	Area
123	Area Below Forward Cargo Compartment, Left
153	Area Below Aft Cargo Compartment, Left

E. Prepare for the Procedure

SUBTASK 30-71-00-860-001

(1) Do this task: Supply Electrical Power, TASK 24-22-00-860-805.

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SUBTASK 30-71-00-010-004

(2) Remove the applicable cargo compartment floor panel (TASK 25-52-10-000-801).

SUBTASK 30-71-00-860-019

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

Ground	Service	/Handling	Power	Panel.	P320
Ground	OCI VICE	/Hallulliu	LOMEI	ranei.	T JZU

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
J	13	C30500	DRAIN MAST HTRS GND
ARO 001	1		
L	3	C30422	DRAIN MAST HTRS FLS
ARO AL	L		
L	3	C30426	DRAIN MAST HTRS FLS

F. Procedure

SUBTASK 30-71-00-860-036

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

Ground Service/Handling Power Panel, P320

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
J	13	C30500	DRAIN MAST HTRS GND

SUBTASK 30-71-00-720-001



DO NOT TOUCH THE DRAIN MAST. WHEN THE DRAIN MAST HEATER OPERATES, THE DRAIN MAST IS SUFFICIENTLY HOT TO BURN YOU.

(2) Make sure the forward drain mast, B30002 becomes warm.



DO NOT TOUCH THE DRAIN MAST. IF YOU TOUCH IT YOU WILL BE BURNED.

- (a) You can hold your hand near the drain mast to monitor its temperature or,
- (b) You can use an Infrared Thermometer, COM-1572 to make sure there is an increase of at least 10 degrees F.

SUBTASK 30-71-00-720-013



DO NOT TOUCH THE DRAIN MAST. WHEN THE DRAIN MAST HEATER OPERATES, THE DRAIN MAST IS SUFFICIENTLY HOT TO BURN YOU.

(3) Make sure the aft drain mast, B30001 becomes warm.



DO NOT TOUCH THE DRAIN MAST. IF YOU TOUCH IT YOU WILL BE BURNED.

- (a) You can hold your hand near the drain mast to monitor its temperature or,
- (b) You can use an Infrared Thermometer, COM-1572 to make sure there is an increase of at least 10 degrees F.

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SUBTASK 30-71-00-720-014

(4) Apply the MS-242N spray, G02319 or ice, G02320 to the gray water drain line heater thermostat, B30009 (WDM 30-71-11).

SUBTASK 30-71-00-720-015

(5) Use the current meter, COM-7791 or equivalent to make sure the current through the gray water drain line heater, B30140 is 0.55 amps maximum (WDM 30-71-11).

NOTE: Gray water drain line heater, B30141 is connected in series with B30140.

SUBTASK 30-71-00-860-037

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

Ground Service/Handling Power Panel, P320

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
J	13	C30500	DRAIN MAST HTRS GND

SUBTASK 30-71-00-720-016



DO NOT TOUCH THE DRAIN MAST. WHEN THE DRAIN MAST HEATER OPERATES, THE DRAIN MAST IS SUFFICIENTLY HOT TO BURN YOU.

(7) Make sure the aft drain mast, B30001 begins to cool.



DO NOT TOUCH THE DRAIN MAST. IF YOU TOUCH IT YOU WILL BE BURNED.

- a) You can hold your hand near the drain mast to monitor its temperature or,
- (b) You can use an Infrared Thermometer, COM-1572 to make sure there is an decrease of at least 10 degrees F.

SUBTASK 30-71-00-720-017



DO NOT TOUCH THE DRAIN MAST. WHEN THE DRAIN MAST HEATER OPERATES, THE DRAIN MAST IS SUFFICIENTLY HOT TO BURN YOU.

(8) Make sure the forward drain mast, B30002 begins to cool.



DO NOT TOUCH THE DRAIN MAST. IF YOU TOUCH IT YOU WILL BE BURNED.

- (a) You can hold your hand near the drain mast to monitor its temperature or,
- (b) You can use an Infrared Thermometer, COM-1572 to make sure there is an decrease of at least 10 degrees F.

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SUBTASK 30-71-00-860-038

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

Ground	Sei	rvic	e/Ha	ndling	Power	Panel,	P320

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
ARO 00	1		
L	3	C30422	DRAIN MAST HTRS FLS
ARO AL	.L		
L	3	C30426	DRAIN MAST HTRS FLS

SUBTASK 30-71-00-860-039



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 WILL CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.



DO NOT OPERATE THE DRAIN MAST HEATERS IN THE AIR MODE FOR MORE THAN 5 MINUTES. THE DRAIN MASTS WILL BECOME TOO HOT.

(10) Put the airplane in the air mode. To put it in the air mode, do this task: Air/Ground Mode Simulation, TASK 32-09-00-860-801.

SUBTASK 30-71-00-720-018



DO NOT TOUCH THE DRAIN MAST. WHEN THE DRAIN MAST HEATER OPERATES, THE DRAIN MAST IS SUFFICIENTLY HOT TO BURN YOU.

(11) Make sure the forward drain mast, B30002 becomes hot.



DO NOT TOUCH THE DRAIN MAST. IF YOU TOUCH IT YOU WILL BE BURNED.

- (a) You can hold your hand near the drain mast to monitor its temperature or,
- (b) You can use an Infrared Thermometer, COM-1572 to make sure there is an increase of at least 10 degrees F.

SUBTASK 30-71-00-720-019



DO NOT TOUCH THE DRAIN MAST. WHEN THE DRAIN MAST HEATER OPERATES, THE DRAIN MAST IS SUFFICIENTLY HOT TO BURN YOU.

(12) Make sure the aft drain mast, B30001 becomes hot.

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DO NOT TOUCH THE DRAIN MAST. IF YOU TOUCH IT YOU WILL BE BURNED.

- (a) You can hold your hand near the drain mast to monitor its temperature or,
- (b) You can use an Infrared Thermometer, COM-1572 to make sure there is an increase of at least 10 degrees F.

SUBTASK 30-71-00-860-040

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

Ground Service/Handling Power Panel, P320

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
ARO 001	l		
L	3	C30422	DRAIN MAST HTRS FLS
ARO ALI	L		
L	3	C30426	DRAIN MAST HTRS FLS

SUBTASK 30-71-00-860-041

(14) Put the airplane back in the ground mode. To put it in the ground mode, do this task: Air/Ground Mode Simulation, TASK 32-09-00-860-801.

SUBTASK 30-71-00-720-020



DO NOT TOUCH THE DRAIN MAST. WHEN THE DRAIN MAST HEATER OPERATES, THE DRAIN MAST IS SUFFICIENTLY HOT TO BURN YOU.

(15) Make sure the aft drain mast, B30001 begins to cool.



DO NOT TOUCH THE DRAIN MAST. IF YOU TOUCH IT YOU WILL BE BURNED.

- (a) You can hold your hand near the drain mast to monitor its temperature or,
- (b) You can use an Infrared Thermometer, COM-1572 to make sure there is an decrease of at least 10 degrees F.

SUBTASK 30-71-00-720-021



DO NOT TOUCH THE DRAIN MAST. WHEN THE DRAIN MAST HEATER OPERATES, THE DRAIN MAST IS SUFFICIENTLY HOT TO BURN YOU.

(16) Make sure the forward drain mast, B30002 begins to cool.



DO NOT TOUCH THE DRAIN MAST. IF YOU TOUCH IT YOU WILL BE BURNED.

(a) You can hold your hand near the drain mast to monitor its temperature or,

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(b) You can use an Infrared Thermometer, COM-1572 to make sure there is an decrease of at least 10 degrees F.

G. Put the Airplane Back to its Usual Condition

SUBTASK 30-71-00-410-004

(1) Re-install the cargo compartment floor panel. To install it, (TASK 25-52-10-400-801).

SUBTASK 30-71-00-860-042

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

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
J	13	C30500	DRAIN MAST HTRS GND
ARO 00	1		
L	3	C30422	DRAIN MAST HTRS FLS
ARO AL	.L		
L	3	C30426	DRAIN MAST HTRS FLS

----- END OF TASK ----

TASK 30-71-00-720-804

3. Water Supply In-Line Heaters Test

A. References

Reference	Title
24-22-00-860-805	Supply Electrical Power (P/B 201)
25-52-19-000-801	Bulk Cargo Compartment Aft End Wall Removal (P/B 401)
25-52-19-400-801	Bulk Cargo Compartment Aft End Wall Installation (P/B 401)
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-7791	Meter - Current, RMS
	Part #: 324 Supplier: 89536
	Opt Part #: 322 Supplier: 89536
	Opt Part #: MODEL 33 Supplier: 89536

C. Consumable Materials

Reference	Description	Specification
G02319	Spray - Freeze - Miller-Stephenson MS-242N	
G02320	Ice - Crushed	

D. Prepare for the Procedure

SUBTASK 30-71-00-860-013

(1) Do this task: Supply Electrical Power, TASK 24-22-00-860-805.

SUBTASK 30-71-00-010-002

(2) Access the water supply lines. To access them, do this task: Bulk Cargo Compartment Aft End Wall Removal, TASK 25-52-19-000-801.

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SUBTASK 30-71-00-860-014

(3) Make sure that this circuit breaker is closed:

Ground Service/Handling Power Panel, P320

Row	Col	<u>Number</u>	<u>Name</u>
L	4	C30400	WTR SPLY LINE HTRS

E. Procedure

NOTE: You are not permitted to feel the heater as a procedure to measure for heat.

SUBTASK 30-71-00-720-005

(1) Use MS-242N spray, G02319 or ice, G02320 to make the temperature of the sensor (remote or integrated) less than 45 degrees F

SUBTASK 30-71-00-720-006

(2) Use the current meter, COM-7791 to make sure the increase value of current from the initial instrumenstation value in each of the water supply line heaters (WDM 30-71-11).

F. Put the Airplane Back to its Usual Condition

SUBTASK 30-71-00-410-002

(1) Install the station 2062 end wall. To install it, do this task: Bulk Cargo Compartment Aft End Wall Installation, TASK 25-52-19-400-801.

----- END OF TASK -----

TASK 30-71-00-720-805

4. Drain Line Heaters Test

A. References

Reference	Title
24-22-00-860-805	Supply Electrical Power (P/B 201)
25-52-10-000-801	Floor Panels and Walkways Removal (P/B 401)
25-52-10-400-801	Floor Panels and Walkways Installation (P/B 401)
25-52-11-000-801	Bulk Cargo Floor Removal (P/B 401)
25-52-11-400-801	Bulk Cargo Floor Installation (P/B 401)
WDM 30-71-13	Wiring Diagram Manual
WDM 30-71-14	Wiring Diagram Manual
WDM 30-71-15	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-7791	Meter - Current, RMS	
	Part #: 324 Supplier: 89536	
	Opt Part #: 322 Supplier: 89536	
	Opt Part #: MODEL 33 Supplier: 89536	

C. Consumable Materials

Reference	Description	Specification
G02319	Spray - Freeze - Miller-Stephenson MS-242N	

ARO ALL



(Continued)

Reference	Description	Specification
G02320	Ice - Crushed	

D. Location Zones

Zone	Area
123	Area Below Forward Cargo Compartment, Left
124	Area Below Forward Cargo Compartment, Right
153	Area Below Aft Cargo Compartment, Left
154	Area Below Aft Cargo Compartment, Right
163	Area Below Bulk Cargo Compartment, Left
164	Area Below Bulk Cargo Compartment, Right

E. Prepare for the Procedure

SUBTASK 30-71-00-860-023

(1) Do this task: Supply Electrical Power, TASK 24-22-00-860-805.

SUBTASK 30-71-00-010-003

(2) Remove the applicable cargo compartment floor panels to get access to the thermostats (TASK 25-52-10-000-801) or (TASK 25-52-11-000-801).

SUBTASK 30-71-00-860-017

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

Ground Service/Handling Power Panel, P320

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
Н	1	C30402	WATER DRAIN LINE HEATING FWD
L	9	C30403	WATER DRAIN LINE HEATING AFT
L	12	C30446	WTR DRAIN LINE HTR OVWG FWD

F. Procedure

NOTE: You are not permitted to feel the heater as a procedure to measure for heat.

SUBTASK 30-71-00-720-007

(1) Use MS-242N spray, G02319 or ice, G02320 to decrease the temperature of the thermostat.

SUBTASK 30-71-00-720-008

(2) Use the current meter, COM-7791 to make sure the current increase in the forward drain line heaters to a value less than maximum (WDM 30-71-13).

NOTE: The maximum current reading for all heaters should not exceed 1.5 amps. The actual current reading will vary from one heater to another between 0.3 and 1.5 amps.

SUBTASK 30-71-00-730-002

(3) Use the current meter, COM-7791 to make sure the current increase in the aft drain line heaters to a value less than maximum (WDM 30-71-14).

NOTE: The maximum current reading for all heaters should not exceed 1.5 amps. The actual current reading will vary from one heater to another between 0.3 and 1.5 amps.

SUBTASK 30-71-00-730-008

(4) Use the current meter, COM-7791 to make sure the current increase in the aft drain line heaters to a value less than maximum (WDM 30-71-15).

NOTE: The maximum current reading for all heaters should not exceed 1.5 amps. The actual current reading will vary from one heater to another between 0.3 and 1.5 amps.

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G. Put the Airplane Back to Its Usual Condition

SUBTASK 30-71-00-410-003

(1) Install the cargo compartment floor panels you removed. To install them, (TASK 25-52-10-400-801) or (TASK 25-52-11-400-801).



TASK 30-71-00-730-801

5. Waste Tank Drain Line Heater Blanket Test

A. General

(1) This procedure tests these heater blankets: B30016, B30017, B30018, B30019, B30020, B30021 (WDM 30-71-12).

B. References

Reference	Title
24-22-00-860-805	Supply Electrical Power (P/B 201)
25-52-20-000-801	Waste Tank Enclosure Panels Removal (P/B 401)
25-52-20-400-801	Waste Tank Enclosure Panels Installation (P/B 401)
WDM 30-71-12	Wiring Diagram Manual

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-1793	Multimeter - Digital/Analog (or equivalent meter meets task requirements)
	Part #: 117 Supplier: 89536 Part #: 260-8XPI Supplier: 55026 Part #: 287 Supplier: 89536 Part #: 87V Supplier: 89536 Part #: FLUKE 27 II Supplier: 89536 Part #: FLUKE-77-4 Supplier: 89536 Opt Part #: 187 Supplier: 89536 Opt Part #: 189 Supplier: 89536 Opt Part #: 260 Supplier: 55026 Opt Part #: 27 Supplier: 89536 Opt Part #: 77 SERIES III Supplier: 89536 Opt Part #: 77 SERIES III Supplier: 89536 Opt Part #: 87 Supplier: 89536 Opt Part #: 87 Supplier: 89536
	Opt Part #: MODEL 27 Supplier: 89536
STD-1116	Thermometer - Alcohol (Mercury),-40 to +125 Degrees F (-40 to +49 Degrees C)

D. Consumable Materials

Reference	Description	Specification
G02319	Spray - Freeze - Miller-Stephenson MS-242N	
G02320	Ice - Crushed	

ARO ALL



E. Location Zones

Zone	Area
161	Bulk Cargo Compartment, Left

F. Access Panels

G. Prepare for the Procedure

SUBTASK 30-71-00-860-024

(1) Do this task: Supply Electrical Power, TASK 24-22-00-860-805.

SUBTASK 30-71-00-860-025

(2) Make sure that this circuit breaker is closed:

Ground Service/Handling Power Panel, P320

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
L	11	C30401	DRAIN LINE HTRS

SUBTASK 30-71-00-860-026

(3) Open this access panel:

<u>Number</u>	Name/Location	
825	Bulk Cargo Door	

SUBTASK 30-71-00-860-027

(4) Do this task: Waste Tank Enclosure Panels Removal, TASK 25-52-20-000-801.

H. Procedure

NOTE: You are not permitted to feel the heater blanket as a procedure to measure for heat.

NOTE: You are permitted to open up the heater blanket and take temperature readings on the inside surface of the blanket.

NOTE: You are permitted to use a current probe to measure the current in one of the lead wires to the heater blanket as an alterative procedure.

SUBTASK 30-71-00-800-001

(1) Apply MS-242N spray, G02319 or ice, G02320 to the thermostat.

NOTE: You will find the thermostat on the side of the heater blanket opposite of the lead wires.

NOTE: Allow 3 to 5 minutes for the temperature of the thermostats to decrease before you measure the temperature or current of the heater blanket.

SUBTASK 30-71-00-720-009

(2) Use the thermometer, STD-1116 to measure the temperature or the digital/analog multimeter, COM-1793 to measure the current of each heater blanket.

SUBTASK 30-71-00-720-010

(3) Make sure the temperature is 5 degrees F above the ambient temperature or is between 0.1 amps and 0.2 amps above the initial current.

I. Return the Airplane to its Usual Condition

SUBTASK 30-71-00-860-028

(1) Do this task: Waste Tank Enclosure Panels Installation, TASK 25-52-20-400-801.

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SUBTASK 30-71-00-860-029

(2) Close this access panel:

<u>Number</u>	Name/Location
825	Bulk Cargo Door

— END OF TASK ————

TASK 30-71-00-730-802

6. Waste Tank Rinse Fitting Heater Test

A. References

Reference	Title
24-22-00-860-805	Supply Electrical 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-1793	Multimeter - Digital/Analog (or equivalent meter meets task requirements)
	Part #: 117 Supplier: 89536 Part #: 260-8XPI Supplier: 55026 Part #: 287 Supplier: 89536 Part #: 289 Supplier: 89536 Part #: 87V Supplier: 89536 Part #: FLUKE 27 II Supplier: 89536 Part #: FLUKE-77-4 Supplier: 89536 Opt Part #: 187 Supplier: 89536 Opt Part #: 189 Supplier: 89536 Opt Part #: 260 Supplier: 55026 Opt Part #: 27 Supplier: 89536 Opt Part #: 77 SERIES III Supplier: 89536 Opt Part #: 87 Supplier: 89536 Opt Part #: 87 Supplier: 89536 Opt Part #: FLUKE 27 Supplier: 89536 Opt Part #: MODEL 27 Supplier: 89536
STD-1116	Thermometer - Alcohol (Mercury),-40 to +125 Degrees F (-40 to +49 Degrees C)

C. Consumable Materials

Reference	Description	Specification
G02319	Spray - Freeze - Miller-Stephenson MS-242N	
G02320	Ice - Crushed	

D. Location Zones

Zone	Area
161	Bulk Cargo Compartment, Left

E. Access Panels

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F. Prepare for the Procedure

SUBTASK 30-71-00-860-030

(1) Do this task: Supply Electrical Power, TASK 24-22-00-860-805.

SUBTASK 30-71-00-860-031

(2) Make sure that this circuit breaker is closed:

Ground Service/Handling Power Panel, P320

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
L	11	C30401	DRAIN LINE HTRS

SUBTASK 30-71-00-860-032

(3) Open this access panel:

<u>Number</u>	Name/Location
825	Bulk Cargo Door

SUBTASK 30-71-00-860-033

(4) Remove the vacuum waste service access panel.

G. Procedure

NOTE: You are not permitted to feel heaters as a procedure to measure for heat.

NOTE: You are permitted to use a current probe to measure the current in one of the lead wires to the heater as an alterative procedure.

SUBTASK 30-71-00-800-002

(1) Apply MS-242N spray, G02319 or ice, G02320 to the thermostat.

NOTE: You will find the thermostat bonded to the back of the waste tank service panel near the heater.

NOTE: Allow 3 to 5 minutes for the temperature of the thermostats to decrease before you measure the temperature or current of the heater.

SUBTASK 30-71-00-720-011

(2) Use the thermometer, STD-1116 to measure the temperature or digital/analog multimeter, COM-1793 to measure the current of each heater.

SUBTASK 30-71-00-720-012

(3) Make sure the temperature is 5 degrees F above the ambient temperature or is between 0.1 amps and 0.2 amps above the initial current.

H. Put the Airplane Back to its Usual Condition

SUBTASK 30-71-00-860-034

(1) Remove the vacuum waste service access panel.

SUBTASK 30-71-00-860-035

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(2) Close this access panel:

<u>Number</u>	Name/Location
825	Bulk Cargo Door

------ END OF TASK -----

30-71-00

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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 Hose Heater Removal

(Figure 401)

A. References

Reference	Title
25-52-10-000-801	Floor Panels and Walkways Removal (P/B 401)

B. Location Zones

Zone	Area
123	Area Below Forward Cargo Compartment, Left

C. Access Panels

Number	Name/Location
195CL	ECS Low Pressure Connection Door
821	Forward Large Cargo Door

D. Gray Water Drain Line Heater Removal

SUBTASK 30-71-02-860-001

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

Ground Service/Handling Power Panel, P320

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
J	13	C30500	DRAIN MAST HTRS GND
ARO 001			
L	3	C30422	DRAIN MAST HTRS FLS

ARO ALL

SUBTASK 30-71-02-010-001

(2) Open this access panel:

<u>Number</u>	Name/Location
195CL	ECS Low Pressure Connection Door

SUBTASK 30-71-02-020-005

(3) Cut the wires at the heater assembly [1].

SUBTASK 30-71-02-020-001

(4) Remove the clamp [2] at the forward drain mast.

SUBTASK 30-71-02-010-002

(5) Open this access panel:

<u>Number</u>	Name/Location
821	Forward Large Cargo Door

ARO ALL



SUBTASK 30-71-02-010-003

(6) Remove the floor panel in the left aft end of the forward cargo compartment. To remove it, do this task: Floor Panels and Walkways Removal, TASK 25-52-10-000-801.

SUBTASK 30-71-02-020-002

(7) Remove the clamp [4] at the pressure bulkhead.

SUBTASK 30-71-02-020-003

(8) Remove the clamp [3] at the drain line.

SUBTASK 30-71-02-020-004

(9) Remove the heater assembly [1] and seal [5].

----- END OF TASK -----

TASK 30-71-02-400-801

3. Gray Water Drain Line Hose Heater Installation

(Figure 401)

A. References

Reference	Title
25-52-10-400-801	Floor Panels and Walkways Installation (P/B 401)
30-71-00-720-801	Drain Mast and Gray Water Drain Line Heaters Operational Test (P/B 501)
WDM 30-71-11	Wiring Diagram Manual

B. Location Zones

Zone	Area	
123	Area Below Forward Cargo Compartment, Left	

C. Access Panels

Number	Name/Location
195CL	ECS Low Pressure Connection Door
821	Forward Large Cargo Door

D. Gray Water Drain Line Heater Installation

SUBTASK 30-71-02-420-007

(1) Install the clamp [3] at the drain line.

SUBTASK 30-71-02-420-002

(2) Install the heater assembly [1] and seal [5] in the pressure bulkhead.

SUBTASK 30-71-02-420-003

(3) Install the clamp [4] at the pressure bulkhead.

SUBTASK 30-71-02-420-008

(4) Put the clamp [2] on the heater assembly [1].

SUBTASK 30-71-02-420-009

(5) Put the heater assembly on the forward drain mast.

SUBTASK 30-71-02-420-010

(6) Install clamp [2] on the heater assembly [1].

SUBTASK 30-71-02-420-005

(7) Connect the wires to the heater assembly [1] (WDM 30-71-11).

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SUBTASK 30-71-02-860-002

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

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
J	13	C30500	DRAIN MAST HTRS GND
ARO 001	l		
L	3	C30422	DRAIN MAST HTRS FLS

ARO ALL

E. Gray Water Drain Line Heater Installation Test

SUBTASK 30-71-02-720-001

(1) Do a test of the operation of the heater assembly. To test it, do this task: Drain Mast and Gray Water Drain Line Heaters Operational Test, TASK 30-71-00-720-801.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 30-71-02-410-001

(1) Re-install the floor panel in the forward cargo compartment. To install it, do this task: Floor Panels and Walkways Installation, TASK 25-52-10-400-801.

SUBTASK 30-71-02-410-002

(2) Close this access panel:

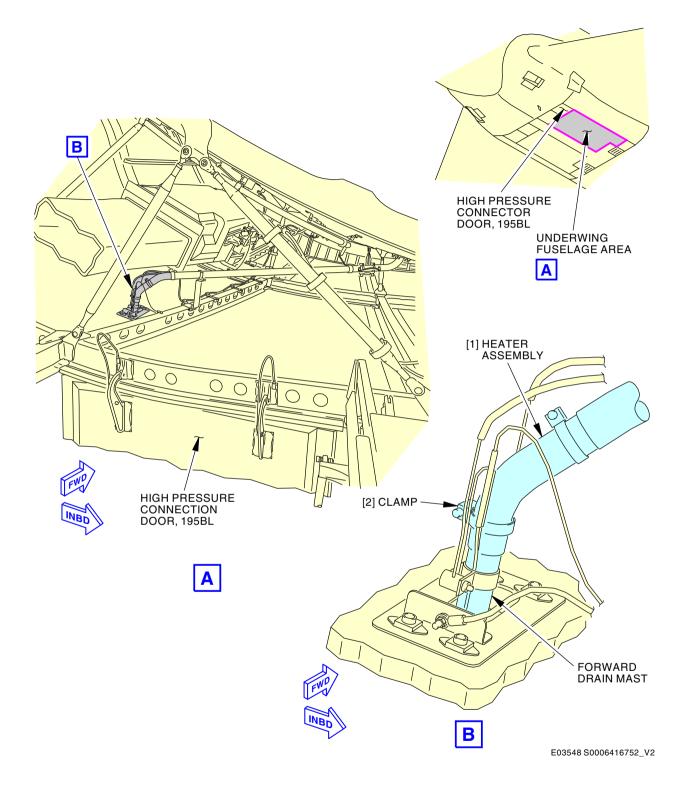
<u>Number</u>	Name/Location
821	Forward Large Cargo Door

SUBTASK 30-71-02-410-003

(3) Close this access panel:

<u>Number</u>	Name/Location	
195CL	ECS Low Pressure Connection Door	
	END OF TASK	





Gray Water Drain Line Hose Heater Installation Figure 401/30-71-02-990-801 (Sheet 1 of 2)

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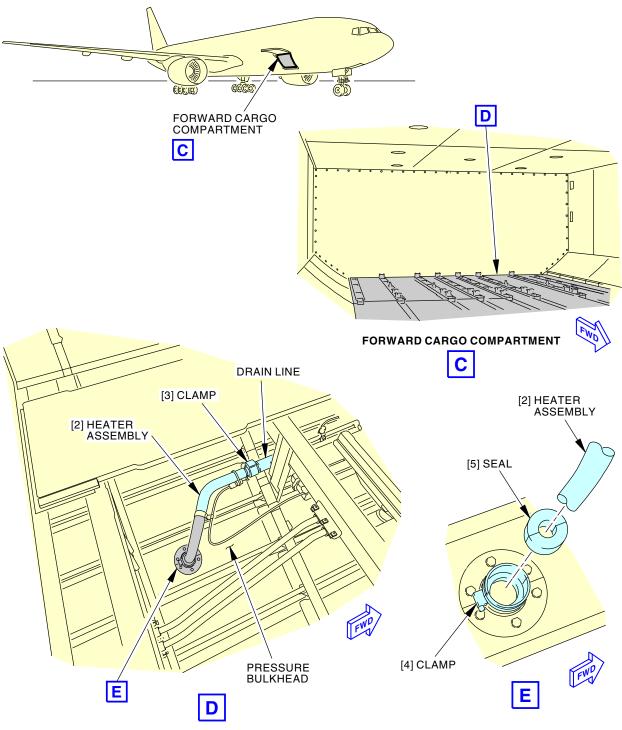
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Gray Water Drain Line Hose Heater Installation Figure 401/30-71-02-990-801 (Sheet 2 of 2)

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WASTE DRAIN LINE HEATERS - 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) Heater blankets cover the drain line and ball valve of each waste tank.
- (2) The procedure is the same for the drain line heater blanket and the ball valve heater blanket.

B. References

Reference	Title
25-52-20-000-801	Waste Tank Enclosure Panels Removal (P/B 401)
WDM 30-71-12	Wiring Diagram Manual

C. Location Zones

Zone	Area
161	Bulk Cargo Compartment, Left

D. Access Panels

Name/Location
Bulk Cargo Door

E. Prepare for the Procedure

SUBTASK 30-71-03-860-001

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

Ground Service/Handling Power Panel, P320

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
L	11	C30401	DRAIN LINE HTRS

SUBTASK 30-71-03-010-001

(2) Open this access panel:

<u>Number</u>	Name/Location
825	Bulk Cargo Door

SUBTASK 30-71-03-010-002

(3) Remove the enclosure panel for the waste tank. To remove it, do this task: Waste Tank Enclosure Panels Removal, TASK 25-52-20-000-801.

F. Procedure

SUBTASK 30-71-03-020-003

(1) Cut the straps that hold the ball valve and line heater blanket wiring.

SUBTASK 30-71-03-020-001

(2) Disconnect the applicable electrical connector [2] (WDM 30-71-12).

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SUBTASK 30-71-03-020-002

(3) Pull the velcro hook and pile apart to remove the applicable heater blanket [3].

NOTE: The heater blanket [3] is composed of a heater core (HBCXXX) and a jacket cover (HBJXXXX).

—— END OF TASK ———

TASK 30-71-03-400-801

3. Waste Drain Line Heater Installation

(Figure 401)

A. General

- (1) Heater blankets cover the drain line and ball valve of each waste tank.
- (2) The procedure is the same for the drain line heater blanket and the ball valve heater blanket.

B. References

Reference	Title
24-22-00-860-805	Supply Electrical Power (P/B 201)
25-52-20-400-801	Waste Tank Enclosure Panels Installation (P/B 401)

C. Tools/Equipment

Reference	Description
STD-1122	Thermometer - Alcohol/Mercury (or equivalent meter meets task
	requirements)

D. Consumable Materials

Reference	Description	Specification
G02319	Spray - Freeze - Miller-Stephenson MS-242N	
G02320	Ice - Crushed	

E. Location Zones

Zone	Area	
161	Bulk Cargo Compartment, Left	

F. Access Panels

Number	Name/Location
825	Bulk Cargo Door

G. Procedure

SUBTASK 30-71-03-420-001

- (1) Put the applicable heater blanket [3] around the drain line or the ball valve.
 - (a) Install the HBCXXX heater core over the tube/valve.
 - (b) Cover the heater core with the HBJXXXX jacket cover.

SUBTASK 30-71-03-420-003

(2) Connect the applicable electrical connector [2].

SUBTASK 30-71-03-420-007

(3) Use straps to hold the ball valve and line heater blanket wiring together.

H. Installation Test

SUBTASK 30-71-03-860-002

(1) Do this task: Supply Electrical Power, TASK 24-22-00-860-805.

ARO ALL



SUBTASK 30-71-03-860-003

(2) Make sure that this circuit breaker is open and has safety tag:

Ground Service/Handling Power Panel, P320

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
L	11	C30401	DRAIN LINE HTRS

SUBTASK 30-71-03-720-001

(3) Measure the temperature of the heater blanket [3] with a thermometer, STD-1122.

SUBTASK 30-71-03-720-002

- (4) If the temperature in the area is lower than 45°F (7°C):
 - (a) Remove the safety tag and close this circuit breaker:

Ground Service/Handling Power Panel, P320

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
L	11	C30401	DRAIN LINE HTRS

(b) Make sure that the temperature of the heater blanket [3] is 5 degrees F higher than the first temperature you measured.

SUBTASK 30-71-03-720-003

- (5) If the temperature in the area is higher than 45°F (7°C):
 - (a) Open this circuit breaker and install safety tag:

Ground Service/Handling Power Panel, P320

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
L	11	C30401	DRAIN LINE HTRS

(b) Feel the heater blanket [3] to find the thermostat [1].

NOTE: The thermostat [1] is approximately 1.0 in. (25.4 mm) in diameter and is below the skin of the heater blanket [3]].

(c) Decrease the temperature of the thermostat [1].

NOTE: You can use MS-242N spray, G02319 or ice, G02320 to decrease the temperature. Permit 3 to 5 minutes for the temperature of the thermostats to decrease before you measure the temperature of the heater blanket.

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

Ground Service/Handling Power Panel, P320

Row	ow <u>Col</u> Numb		<u>Name</u>
L	11	C30401	DRAIN LINE HTRS

(e) Make sure that the temperature of the heater blanket [3] is 5 degrees F higher than the first temperature you measured.

I. Put the Airplane Back to Its Usual Condition

SUBTASK 30-71-03-410-001

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(1) Install the enclosure panel for the waste tank. To install it, do this task: Waste Tank Enclosure Panels Installation, TASK 25-52-20-400-801.



SUBTASK 30-71-03-410-002

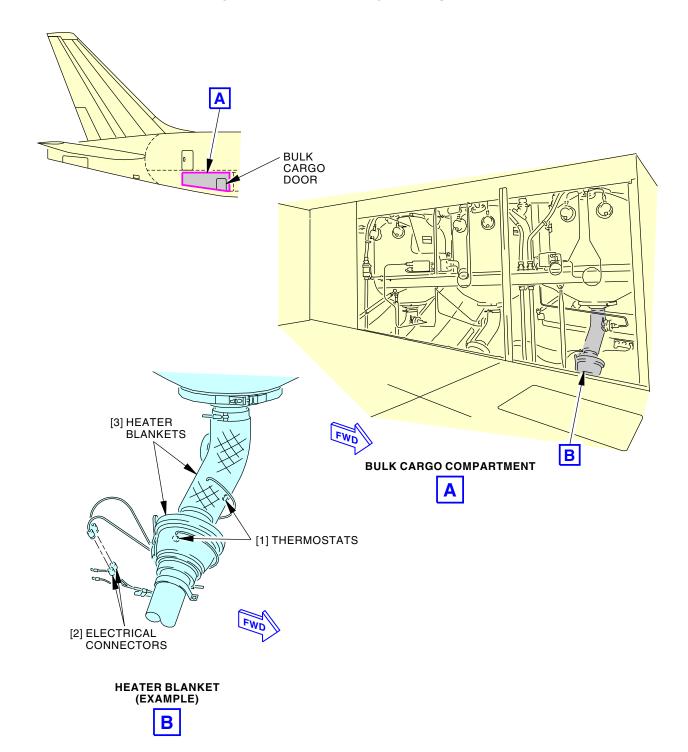
(2) Close this access panel:

NumberName/Location825Bulk Cargo Door

——— END OF TASK ———

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Waste Drain Line Heater Installation Figure 401/30-71-03-990-801

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WASTE TANK RINSE FITTING HEATER - REMOVAL/INSTALLATION

1. General

- A. This procedure has these tasks:
 - (1) Waste Tank Rinse Fitting Heater Removal
 - (2) Waste Tank Rinse Fitting Heater Installation

TASK 30-71-04-000-801

2. Waste Tank Rinse Fitting Heater Removal

(Figure 401)

A. References

Reference	Title
WDM 30-71-12	Wiring Diagram Manual

B. Location Zones

Zone	Area	
163	Area Below Bulk Cargo Compartment, Left	

C. Waste Tank Rinse Fitting Removal

SUBTASK 30-71-04-860-001

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

Ground Service/Handling Power Panel, P320

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
L	11	C30401	DRAIN LINE HTRS

SUBTASK 30-71-04-010-001

(2) Remove the waste vacuum service panel [1] in the bulk cargo compartment.

SUBTASK 30-71-04-020-001

(3) Disconnect the wire at the splice that supplies power to the thermostat [4] (WDM 30-71-12).

SUBTASK 30-71-04-020-004

(4) Disconnect the wire at the splice run from the heater [2] to ground (WDM 30-71-12).

SUBTASK 30-71-04-020-002

(5) Remove the thermostat [4].

NOTE: The thermostat [4] is attached with adhesive.

SUBTASK 30-71-04-020-005

(6) Remove any remaining adhesive from where the thermostat [4] was installed.

SUBTASK 30-71-04-020-003

(7) Remove the tape that is wound around the heater [2].

SUBTASK 30-71-04-020-008

(8) Remove the heater [2].

	OF TASK	

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TASK 30-71-04-400-801

3. Waste Tank Rinse Fitting Heater Installation

(Figure 401)

A. References

Reference	Title
24-22-00-860-805	Supply Electrical Power (P/B 201)
WDM 30-71-12	Wiring Diagram Manual

B. Consumable Materials

Reference	Description	Specification
A00188	Adhesive - Urethane, Two Component	BMS5-105 Type V
G02319	Spray - Freeze - Miller-Stephenson MS-242N	
G02320	Ice - Crushed	

C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
2	Heater	Not Specified	

D. Location Zones

Zone	Area	
163	Area Below Bulk Cargo Compartment, Left	

E. Waste Tank Rinse Fitting Heater Installation

SUBTASK 30-71-04-010-002

(1) Open the heater [2] at the split and put it on the hose assembly [3].

SUBTASK 30-71-04-420-001

(2) Install the heater [2].

SUBTASK 30-71-04-160-001

(3) Clean the mounting surfaces for the thermostat [4].

SUBTASK 30-71-04-420-002

(4) Bond the thermostat [4] to the mounting surface with adhesive, A00188.

SUBTASK 30-71-04-020-009

(5) Connect the wire at the splice that supplies power to the thermostat [4] (WDM 30-71-12).

SUBTASK 30-71-04-020-010

(6) Connect the wire at the splice run from the heater [2] to ground (WDM 30-71-12).

F. Installation Test

NOTE: Make sure the temperature of the thermostat [4] is less than 80 degrees F before you do this test.

SUBTASK 30-71-04-720-001

- (1) Do these steps to do a test of the heater [2]:
 - (a) Do this task: Supply Electrical Power, TASK 24-22-00-860-805.
 - (b) Measure the temperature of the heater [2].

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

Ground Service/Handling Power Panel, P320

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
L	11	C30401	DRAIN LINE HTRS

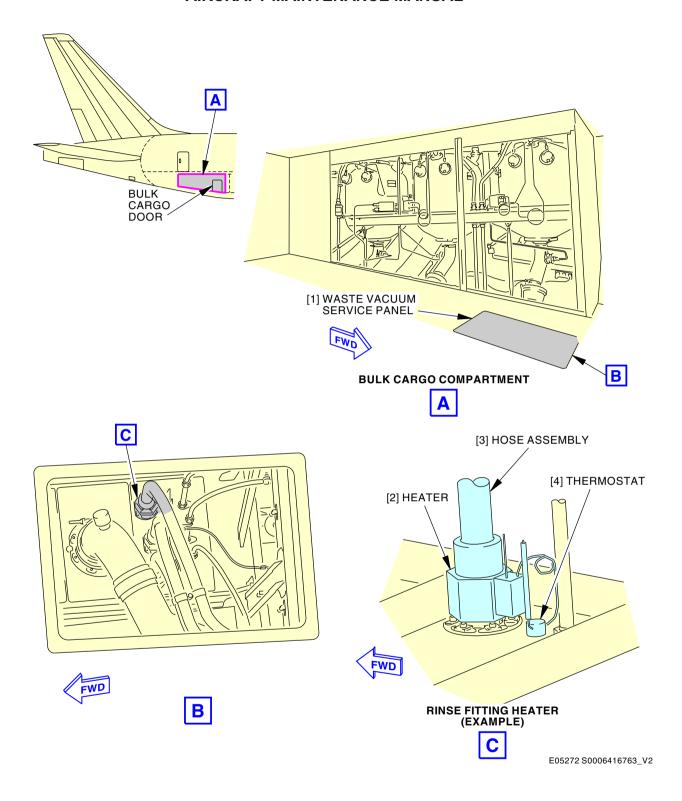
- (d) Use MS-242N spray, G02319 or ice, G02320 to decrease the temperature of the thermostat [5] to less than 45°F (7°C).
- (e) Feel the heater [2] to make sure its temperature increases.
 - 1) An alternate method to use a pyrometer to make sure the temperature increases by at least 5 degrees F.
- G. Put the Airplane Back to Its Usual Condition

SUBTASK 30-71-04-410-001

(1) Install the waste vacuum service panel [1] in the bulk cargo compartment.

——— END OF TASK ———





Waste Tank Rinse Fitting Heater Installation Figure 401/30-71-04-990-801

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WATER DRAIN LINE HEATER - MAINTENANCE PRACTICES

1. General

- A. This procedure has these tasks:
 - (1) Water Drain Line Heater Insulation Repair.

TASK 30-71-05-300-801

2. Water Drain Line Heater - Insulation Repair

A. General

(1) This task provides the steps necessary to repair damaged insulation on the water drain line heaters.

B. Consumable Materials

Reference	Description	Specification
G02470	Foam - Flexible Polyimide	BMS8-300 Type I
G50327	Tape - Advanced Insulation Blanket (use until stock depleted)	BMS5-157 Type I Class 1 Grade B Composition MPVF
G50449	Foam - Flexible Melamine	BMS8-385 Type 4 Grade 1
G50789	Tape - Adhesive Insulation Blanket	BMS5-157 Type I Class 2 Grade C Composition MPEEK
G51169	Foam - Flexible Melamine,	BMS8-385 Type 6
G51170	Foam - Flexible Polyimide	BMS8-300 Type VIII
G51202	Tape - Advanced Insulation Blanket	BMS5-157 Type I Class 1 Grade A Composition MPVF

C. Location Zones

Zone	Area
100	Lower Half of Fuselage

D. Prepare for the Repair

SUBTASK 30-71-05-860-003

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

Ground Service/Handling Power Panel, P320

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
Н	1	C30402	WATER DRAIN LINE HEATING FWD
L	9	C30403	WATER DRAIN LINE HEATING AFT
L	11	C30401	DRAIN LINE HTRS
L	12	C30446	WTR DRAIN LINE HTR OVWG FWD

This circuit breaker is inoperative and should remain open:

Ground Service/Handling Power Panel, P320

Row	Col	<u>Number</u>	<u>Name</u>
L	1	C30447	WTR DRAIN LINE HTR OVWG AFT (INOP)

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E. Procedure

SUBTASK 30-71-05-300-001

- (1) Cut and trim the damaged insulation tube.
- (2) Install the foam to fill the damaged section of insulation.
 - (a) You must install insulation that meets one of these specifications:
 - 1) BMS 8-385 Type 4 foam insulation, G50449
 - 2) BMS 8-385 Type 6 foam insulation, G51169
 - 3) BMS 8-300 Type 8 foam insulation, G51170.
 - 4) BMS 8-300 Type 1 foam insulation, G02470
 - (b) Use BMS 5-157 MPEEK tape, G50789, BMS 5-157 MPVF tape, G50327, or tape, G51202 to install the insulation.
- (3) Apply tape, G50789, tape, G50327, or tape, G51202 to the foam based on the following:
 - (a) When using foam insulation, G02470, if the repair exceeds 25% of the total area of insulation on the water line being worked on, then the entire repair area must be covered by tape.
 - (b) When using foam insulation, G50449, foam insulation, G51169, foam insulation, G51170, the 25% restriction above does not apply and only the point where the repair meets the original insulation needs to be taped.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 30-71-05-860-004

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

Ground Service/Handling Power Panel, P320

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
Н	1	C30402	WATER DRAIN LINE HEATING FWD
L	9	C30403	WATER DRAIN LINE HEATING AFT
L	11	C30401	DRAIN LINE HTRS
L	12	C30446	WTR DRAIN LINE HTR OVWG FWD

This circuit breaker is inoperative and should remain open:

Ground Service/Handling Power Panel, P320

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
L	1	C30447	WTR DRAIN LINE HTR OVWG AFT (INOP)

- END OF TASK —

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WATER DRAIN LINE HEATER - REMOVAL/INSTALLATION

1. General

- A. This procedure has these tasks:
 - (1) Water Drain Line Heater Removal
 - (2) Water Drain Line Heater Installation

TASK 30-71-05-000-801

2. Water Drain Line Heater Removal

(Figure 401)

A. General

(1) For some installations, it will be easier if you remove the tube assembly from the airplane. If you do this, you must do a leak check when you install the tube assembly.

B. References

Reference	Title
12-14-01-616-802	Potable Water System - Drain (P/B 301)
25-52-10-000-801	Floor Panels and Walkways Removal (P/B 401)
25-52-11-000-801	Bulk Cargo Floor Removal (P/B 401)

C. Location Zones

Zone	Area
123	Area Below Forward Cargo Compartment, Left
124	Area Below Forward Cargo Compartment, Right
153	Area Below Aft Cargo Compartment, Left
154	Area Below Aft Cargo Compartment, Right
163	Area Below Bulk Cargo Compartment, Left
164	Area Below Bulk Cargo Compartment, Right

D. Procedure

SUBTASK 30-71-05-860-001

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

Ground Service/Handling Power Panel, P320

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
Н	1	C30402	WATER DRAIN LINE HEATING FWD
1	9	C30403	WATER DRAIN LINE HEATING AFT

SUBTASK 30-71-05-010-001

(2) Remove the applicable floor panels in the cargo compartment to get to the tube assembly [1]. To remove it, do this task: Floor Panels and Walkways Removal, TASK 25-52-10-000-801 or, do this task: Bulk Cargo Floor Removal, TASK 25-52-11-000-801.

SUBTASK 30-71-05-020-001

- (3) Do these steps to disconnect the tube assembly, if it is necessary:
 - (a) Make sure that water is drained from the system. To drain it, do this task: Potable Water System - Drain, TASK 12-14-01-616-802.
 - (b) Disconnect electrical connectors "A" and "B".

NOTE: Some drain line heaters have only one electrical connector.

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(c) Disconnect the coupler [13] from each end of the tube assembly [1].

SUBTASK 30-71-05-020-002

- (4) Do these steps to remove the thermostat assembly [7], if it is necessary:
 - (a) Measure the distance of the thermostat assembly [7] from the flow "out" end of the heated tube assembly [1].
 - NOTE: You will use this dimension when you to install the thermostat assembly [7].
 - (b) Write down the part number on the sleeve marker [6].
 - NOTE: You will use the part number to identify the new tube assembly [1].
 - (c) Make a record of the orientation of the flow markers [4] on the tube assembly.
 NOTE: You will use this data when you install new markers.
 - (d) Remove the tie strap [5] to remove the thermostat assembly [7].

SUBTASK 30-71-05-020-003

(5) Remove the nuts [11] and washers [10] to disconnect the wires [12] from the screws [9].

SUBTASK 30-71-05-020-005

(6) Remove the tape and the insulation [8].

SUBTASK 30-71-05-020-006

(7) Remove the heater assembly [3].



TASK 30-71-05-400-801

3. Water Drain Line Heater Installation

(Figure 401)

A. References

Reference	Title	
25-52-10-400-801	Floor Panels and Walkways Installation (P/B 401)	
25-52-11-400-801	Bulk Cargo Floor Installation (P/B 401)	
30-71-00-720-805	Drain Line Heaters Test (P/B 501)	

B. Consumable Materials

Reference	Description	Specification
G02470	Foam - Flexible Polyimide	BMS8-300 Type I
G50327	Tape - Advanced Insulation Blanket (use until stock depleted)	BMS5-157 Type I Class 1 Grade B Composition MPVF
G50449	Foam - Flexible Melamine	BMS8-385 Type 4 Grade 1
G50789	Tape - Adhesive Insulation Blanket	BMS5-157 Type I Class 2 Grade C Composition MPEEK
G51169	Foam - Flexible Melamine,	BMS8-385 Type 6
G51170	Foam - Flexible Polyimide	BMS8-300 Type VIII
G51202	Tape - Advanced Insulation Blanket	BMS5-157 Type I Class 1 Grade A Composition MPVF

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C. Location Zones

Zone	Area
123	Area Below Forward Cargo Compartment, Left
124	Area Below Forward Cargo Compartment, Right
153	Area Below Aft Cargo Compartment, Left
154	Area Below Aft Cargo Compartment, Right
163	Area Below Bulk Cargo Compartment, Left
164	Area Below Bulk Cargo Compartment, Right

D. Procedure

SUBTASK 30-71-05-420-001



MAKE SURE YOU PUT THE CORRECT HEATER ASSEMBLY [3] ON THE TUBE ASSEMBLY [1]. IF THE HEATER ASSEMBLY [3] IS INCORRECT, IT WILL CAUSE THE DRAIN LINES TO FREEZE OR BECOME TOO HOT.

- (1) Put a new heater assembly [3] on the tube assembly [1].
 - (a) Put the connector "A" at the flow "out" end and connector "B" at the flow "in" end.

NOTE: Some drain line heaters have only one electrical connector.

NOTE: Connector "A" is the plug and connector "B" is the receptacle.

(b) Start at the flow "out" end of the tube assembly [1].

NOTE: Most heater assemblies [3] are the same length as the tube assembly [1], but some heaters assemblies [3] are shorter.

SUBTASK 30-71-05-420-002

- (2) Connect the ground wires [12] to the ground studs [9] with the washers [10] and nuts [11].
 - (a) Make sure the ground wires [12] are electrically bonded to the ground studs [9].

SUBTASK 30-71-05-390-001

- (3) If insulation was removed from the duct joint, install new insulation:
 - (a) You must install insulation that meets one of these specifications:
 - 1) BMS 8-385 Type 4 foam insulation, G50449
 - 2) BMS 8-385 Type 6 foam insulation, G51169
 - 3) BMS 8-300 Type 8 foam insulation, G51170.
 - 4) BMS 8-300 Type 1 foam insulation, G02470
 - (b) Use BMS 5-157 MPVF tape, G50327, BMS 5-157 MPVF tape, G51202, or BMS 5-157 MPEEK tape, G50789 to install the insulation.

SUBTASK 30-71-05-420-003

- (4) Do these steps to install the new insulation [8] on the heater assembly [3]:
 - (a) Cut the insulation [8] if the tube assembly [1] is shorter than 48 inches.
 - (b) If the tube assembly [1] is longer than 48 inches, connect a second piece of insulation [8].
 - 1) Apply one wrap of tape, G50789 to connect the two pieces of insulation [8].
 - (c) Cut the insulation [8] at the inner bend(s), when it is necessary, to cover the tube assembly [1] fully.
 - 1) Apply one wrap of tape, G50789 at the bends to connect the insulation [8].
 - (d) Cut the insulation [8] around the stud clamps [2] and ground studs [9].

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- 1) Apply one wrap of tape, G50789 at each end of the insulation [8].
- (e) Apply the flow direction markers [4] to the insulation [8].

SUBTASK 30-71-05-420-004

- (5) Use the tape to make sleeve markers [6] on the lead wire of connector "A" and "B" on the heater assembly [3].
 - (a) Write the part number from the used sleeve marker [6] on the new sleeve marker [6].

SUBTASK 30-71-05-410-002

(6) Connect electrical connectors "A" and "B".

NOTE: Some drain line heaters have only one electrical connector.

SUBTASK 30-71-05-420-005

- (7) Do these steps to install the thermostat assembly [7], if it was removed:
 - (a) Measure from the flow "out" end of the tube assembly [1] the distance that you measured from the used thermostat assembly [7].
 - (b) Install the new thermostat assembly [7] at this same location.



DO NOT DECREASE THE THICKNESS OF THE INSULATION BY MORE THAN HALF WHEN YOU INSTALL THE TIE STRAP. COMPRESSED INSULATION WILL BECOME TOO HOT.

c) Use a new tie strap [5] to install the thermostat assembly [7] in its position.

SUBTASK 30-71-05-420-006

- (8) Install the tube assembly, if it was removed.
 - (a) Do a leak check of the tube connections.

E. Installation Test

SUBTASK 30-71-05-860-002

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

Ground Service/Handling Power Panel, P320

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
Н	1	C30402	WATER DRAIN LINE HEATING FWD
L	9	C30403	WATER DRAIN LINE HEATING AFT

SUBTASK 30-71-05-720-001

(2) Do an operation test of the water drain line heater. To test it, do this task: Drain Line Heaters Test, TASK 30-71-00-720-805.

F. Put the Airplane to its Usual Condition

SUBTASK 30-71-05-410-001

(1) Install the floor panels you removed from the cargo compartment. To install them, do this task: Floor Panels and Walkways Installation, TASK 25-52-10-400-801

or, do this task: Bulk Cargo Floor Installation, TASK 25-52-11-400-801.

——— END OF TASK	(
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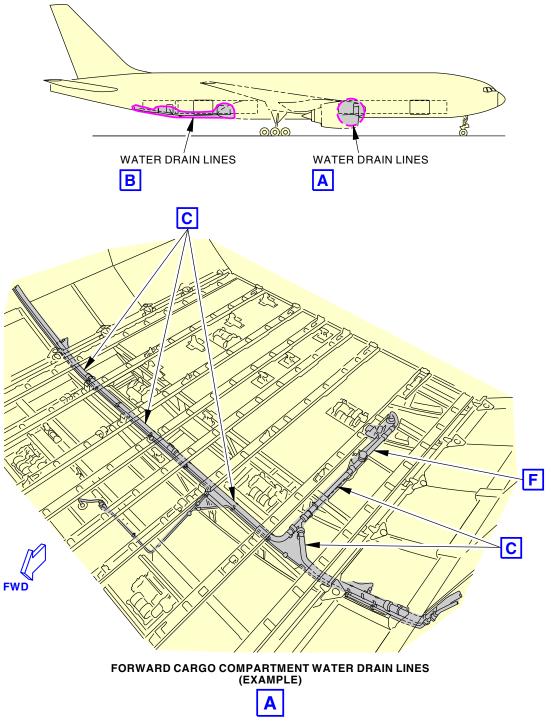
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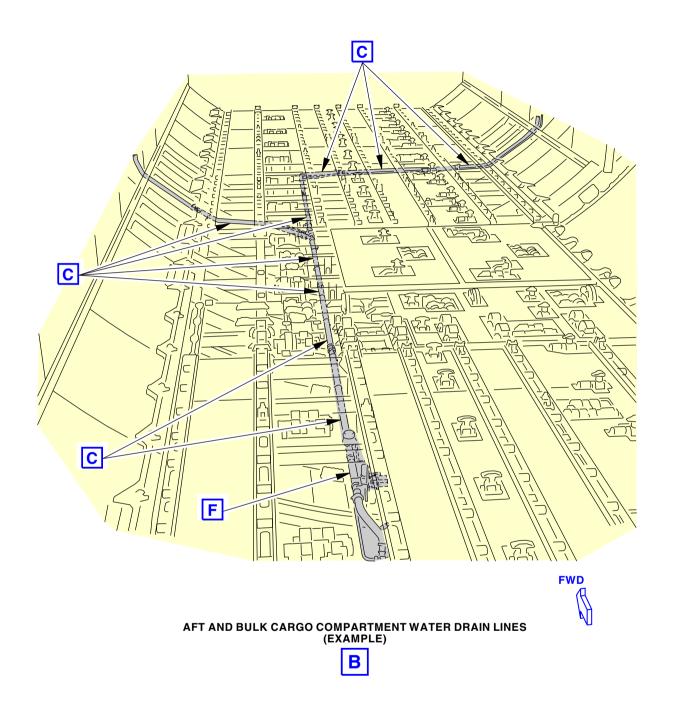
Water Drain Line Heater Installation Figure 401/30-71-05-990-801 (Sheet 1 of 4)

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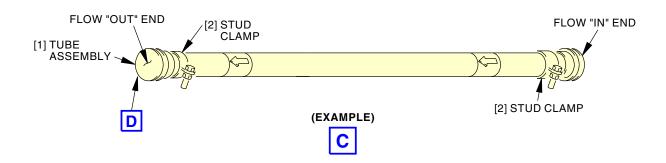
Water Drain Line Heater Installation Figure 401/30-71-05-990-801 (Sheet 2 of 4)

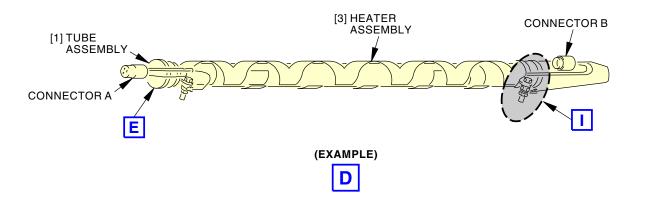
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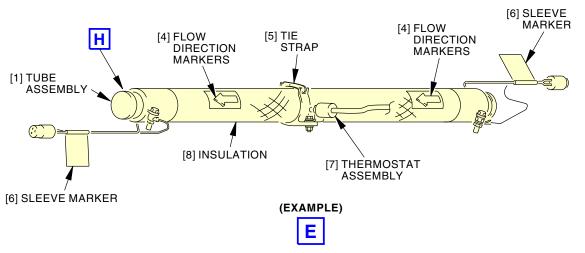
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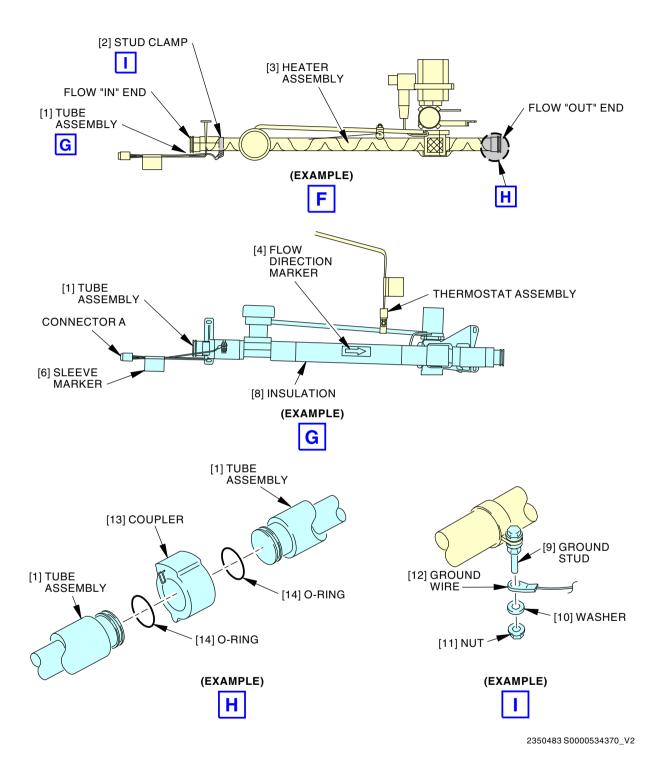
Water Drain Line Heater Installation Figure 401/30-71-05-990-801 (Sheet 3 of 4)

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Water Drain Line Heater Installation Figure 401/30-71-05-990-801 (Sheet 4 of 4)

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WATER SUPPLY IN-LINE HEATERS - REMOVAL/INSTALLATION

1. General

- A. This procedure gives the instructions to complete these tasks:
 - (1) Water Supply In-Line Heater Removal
 - (2) Water Supply In-Line Heater Installation

TASK 30-71-06-000-801

2. Water Supply In-Line Heater Removal

(Figure 401)

B.

A. References

Reference	Title
12-14-01-616-802	Potable Water System - Drain (P/B 301)
25-52-06-000-801 Sidewall Liner Removal (P/B 401)	
25-52-09-000-801	Ceiling Liner Removal (P/B 401)
25-52-19-000-801	Bulk Cargo Compartment Aft End Wall Removal (P/B 401)
Location Zones	
Zone Area	

C. Prepare for the Procedure

SUBTASK 30-71-06-860-001

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

Ground Service/Handling P	Power Panel	, P320
---------------------------	-------------	--------

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
L	4	C30400	WTR SPLY LINE HTRS

Area Aft of Bulk Cargo Compartment, Right

SUBTASK 30-71-06-680-001

(2) Drain the potable water system. To drain it, do this task: Potable Water System - Drain, TASK 12-14-01-616-802.

SUBTASK 30-71-06-010-001

- (3) Do one of the these tasks to get access to the applicable heater:
- (4) Do this task: Bulk Cargo Compartment Aft End Wall Removal, TASK 25-52-19-000-801.
- (5) Do this task: Sidewall Liner Removal, TASK 25-52-06-000-801.
- (6) Do this task: Ceiling Liner Removal, TASK 25-52-09-000-801.

D. Procedure

SUBTASK 30-71-06-020-001

(1) Disconnect the electrical connector [2] from the heater assembly [1].

SUBTASK 30-71-06-020-002

(2) Loosen the B-nut [4] on the heater assembly [1].

SUBTASK 30-71-06-020-003

(3) Pull the heater assembly [1] out of the waterline [3].

----- END OF TASK -----

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TASK 30-71-06-400-801

3. Water Supply In-Line Heater Installation

(Figure 401)

A. References

Reference	Title
12-14-01-600-810	Potable Water Tank - Fill (P/B 301)
25-52-06-400-801	Sidewall Liner Installation (P/B 401)
25-52-09-000-801	Ceiling Liner Removal (P/B 401)
25-52-19-400-801	Bulk Cargo Compartment Aft End Wall Installation (P/B 401)
30-71-00-720-804	Water Supply In-Line Heaters Test (P/B 501)

B. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Heater assembly	30-71-51-01-045	ARO ALL
		30-71-51-01-051	ARO ALL
		30-71-51-01-052	ARO ALL

C. Location Zones

Zone	Area	
166	Area Aft of Bulk Cargo Compartment, Right	

D. Procedure

SUBTASK 30-71-06-420-001

(1) Put the heater assembly [1] into the waterline [3].

SUBTASK 30-71-06-420-002

(2) Tighten the B-nut [4].

SUBTASK 30-71-06-420-003

(3) Connect the electrical connector [2].

SUBTASK 30-71-06-670-001

(4) Fill the potable water system. To fill it, do this task: Potable Water Tank - Fill, TASK 12-14-01-600-810.

E. Installation Test

SUBTASK 30-71-06-790-001

(1) Make sure there are no leaks at the B-nut [4].

SUBTASK 30-71-06-860-002

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

Ground Service/Handling Power Panel, P320

Row		Number	<u>Name</u>
L	4	C30400	WTR SPLY LINE HTRS

SUBTASK 30-71-06-720-001

(3) Do this task: Water Supply In-Line Heaters Test, TASK 30-71-00-720-804.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 30-71-06-010-002

- (1) Do one of the these tasks to re-install the applicable access panel:
- (2) Do this task: Bulk Cargo Compartment Aft End Wall Installation, TASK 25-52-19-400-801.

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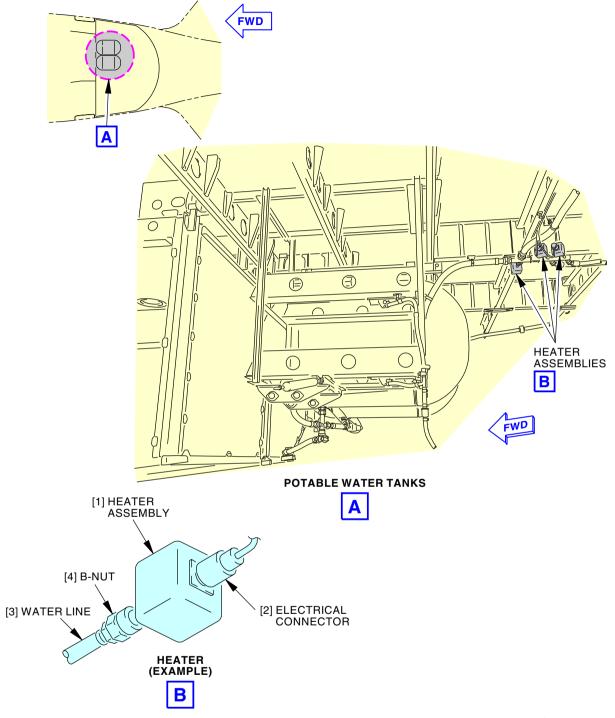


- (3) Do this task: Sidewall Liner Installation, TASK 25-52-06-400-801.
- (4) Do this task: Ceiling Liner Removal, TASK 25-52-09-000-801.

----- END OF TASK -----

ARO ALL





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Water Supply Line Heater Installation Figure 401/30-71-06-990-803

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30-71-06

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WATER TANK DRAIN HEATER - REMOVAL/INSTALLATION

1. General

- A. This procedure has these tasks:
 - (1) Water Tank Drain Heater Removal
 - (2) Water Tank Drain Heater Installation
 - (3) The Water Tank Drain Heater is also called a heated hose.

TASK 30-71-07-000-801

2. Water Tank Drain Heater Removal

(Figure 401)

A. References

Reference	Title
12-14-01-616-802	Potable Water System - Drain (P/B 301)
25-52-19-000-801	Bulk Cargo Compartment Aft End Wall Removal (P/B 401)

B. Location Zones

Zone	Area
165	Area Aft of Bulk Cargo Compartment, Left
166	Area Aft of Bulk Cargo Compartment, Right

C. Water Tank Drain Heater Removal

SUBTASK 30-71-07-860-001

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

Ground	Service	/Handling	Power	Panel	P320

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
L	4	C30400	WTR SPLY LINE HTRS

SUBTASK 30-71-07-680-001

(2) Drain the potable water system. To drain it, do this task: Potable Water System - Drain, TASK 12-14-01-616-802.

SUBTASK 30-71-07-010-001

(3) Remove the wall at the end of the bulk cargo compartment. To remove it, do this task: Bulk Cargo Compartment Aft End Wall Removal, TASK 25-52-19-000-801.

SUBTASK 30-71-07-020-001

(4) Cut the electrical wire [2] to the heated hose [1].

SUBTASK 30-71-07-020-002

(5) Loosen the B-nuts on each end of the heated hose [1].

SUBTASK 30-71-07-020-003

(6) Remove the heated hose [1].

——— END OF TASK ———

30-71-07

ARO ALL



TASK 30-71-07-400-801

3. Water Tank Drain Heater Installation

(Figure 401)

A. References

Reference	Title
25-52-19-400-801	Bulk Cargo Compartment Aft End Wall Installation (P/B 401)
30-71-00-720-804	Water Supply In-Line Heaters Test (P/B 501)
38-10-00-600-801	Potable Water System - Disinfectant (P/B 201)

B. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Heated hose	38-31-57-06A-050	ARO ALL

C. Location Zones

Zone	Area	
165	Area Aft of Bulk Cargo Compartment, Left	
166	Area Aft of Bulk Cargo Compartment, Right	

D. Water Tank Drain Heater Installation

SUBTASK 30-71-07-020-004

(1) Install the heated hose [1].

SUBTASK 30-71-07-020-005

(2) Tighten the B-nuts on each end of the heated hose [1].

SUBTASK 30-71-07-020-006

(3) Make a splice to connect electrical wire [2].

SUBTASK 30-71-07-670-001

(4) Fill the water tanks. To fill them, do this task: Potable Water System - Disinfectant, TASK 38-10-00-600-801.

SUBTASK 30-71-07-860-002

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

Ground Service/Handling Power Panel, P320

		•	•
Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
L	4	C30400	WTR SPLY LINE HTRS

E. Water Tank Drain Heater Installation Test

SUBTASK 30-71-07-730-001

(1) Make sure the heated hose [1] installation does not leak.

SUBTASK 30-71-07-730-002

(2) Do an operational test of the heated hose [1]. To test it, do this task: Water Supply In-Line Heaters Test, TASK 30-71-00-720-804.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 30-71-07-010-002

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(1) Install the wall at the end of the bulk cargo compartment. To install it, do this task: Bulk Cargo Compartment Aft End Wall Installation, TASK 25-52-19-400-801.

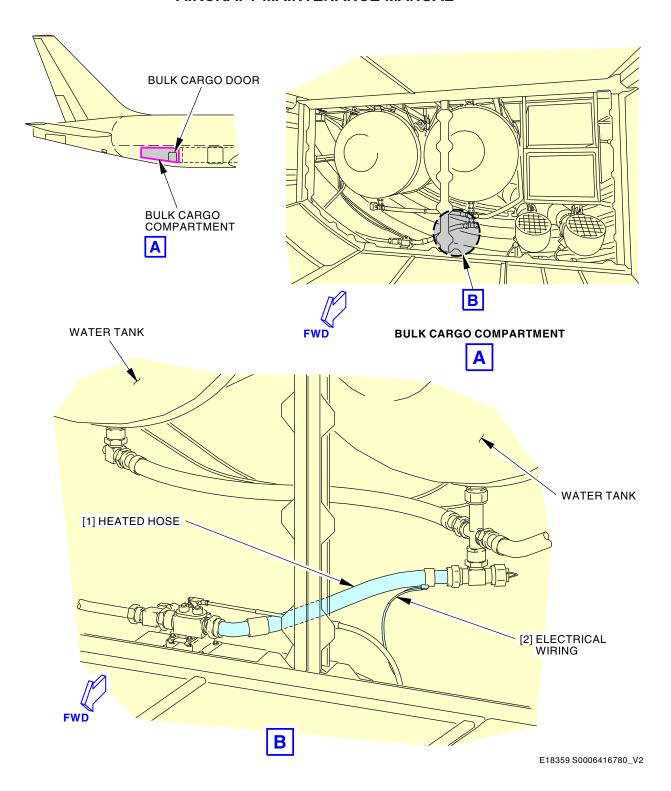
END O	TASK ———
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Water Tank Drain Heater Installation Figure 401/30-71-07-990-801

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DRAIN LINE HEATER THERMOSTATS - REMOVAL/INSTALLATION

1. General

- A. This procedure has these tasks:
 - (1) Gray Water Drain Line Heater Thermostat Removal
 - (2) Gray Water Drain Line Heater Thermostat Installation
 - (3) Drain Line Heater Thermostat Removal
 - (4) Drain Line Heater Thermostat Installation

TASK 30-71-08-000-801

2. Gray Water Drain Line Heater Thermostat Removal

(Figure 401)

A. References

Reference	Title
WDM 30-71-11	Wiring Diagram Manual

B. Location Zones

Zone	Area
123	Area Below Forward Cargo Compartment, Left

C. Access Panels

Number	Name/Location
195BL	ECS High Pressure Connection Door

D. Procedure

SUBTASK 30-71-08-860-001

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

Ground Service/Handling Power Panel, P320

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
J	13	C30500	DRAIN MAST HTRS GND
ARO 001			
L	3	C30422	DRAIN MAST HTRS FLS

ARO ALL

SUBTASK 30-71-08-010-001

(2) Open this access panel:

<u>Number</u>	<u>Name/Location</u>
195BL	ECS High Pressure Connection Door

SUBTASK 30-71-08-020-006

(3) Cut wires [6] to the thermostat [1] (WDM 30-71-11).

SUBTASK 30-71-08-020-001

(4) Remove the nut [3] and washer [2].

SUBTASK 30-71-08-020-002

(5) Remove the thermostat [1].

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	<i>-</i>	IASK	

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TASK 30-71-08-000-802

3. Gray Water Drain Line Heater Thermostat Installation

(Figure 401)

A. References

Reference	Title
30-71-00-720-801	Drain Mast and Gray Water Drain Line Heaters Operational Test (P/B 501)
WDM 30-71-11	Wiring Diagram Manual

B. Location Zones

Zone	Area
123	Area Below Forward Cargo Compartment, Left

C. Access Panels

Number	Name/Location	
195BL	ECS High Pressure Connection Door	

D. Procedure

SUBTASK 30-71-08-420-001

(1) Install the thermostat [1] with washer [2] and nut [3].

SUBTASK 30-71-08-020-007

(2) Splice wires [6] to the thermostat [1] (WDM 30-71-11).

SUBTASK 30-71-08-860-005

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

Ground Service/Handling Power Panel, P320

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
J	13	C30500	DRAIN MAST HTRS GND
ARO 001			
L	3	C30422	DRAIN MAST HTRS FLS

ARO ALL

E. Installation Test

SUBTASK 30-71-08-860-002

(1) Do an operational test of the installation. To test it, do this task: Drain Mast and Gray Water Drain Line Heaters Operational Test, TASK 30-71-00-720-801.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 30-71-08-410-001

(1) Close this access panel:

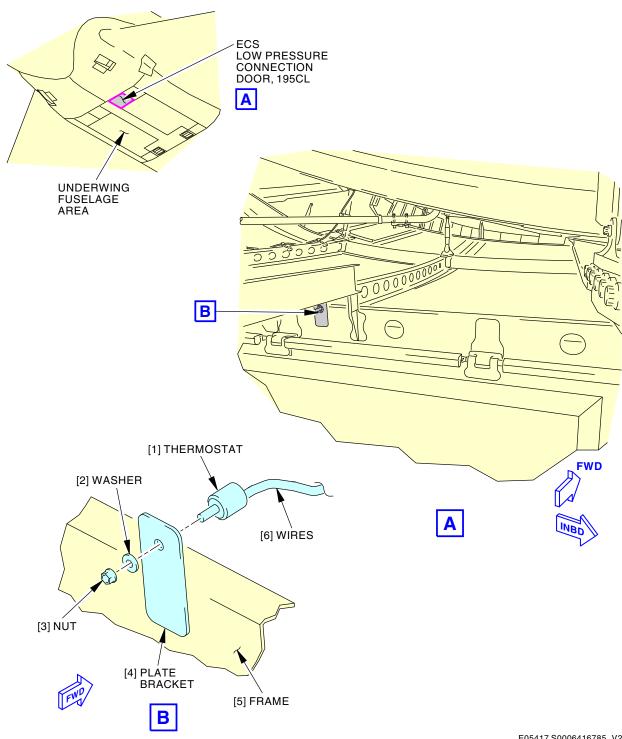
<u>Number</u>	Name/Location
195BL	ECS High Pressure Connection Door

------ END OF TASK ------

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Gray Water Drain Line Heater Thermostat Installation Figure 401/30-71-08-990-801

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TASK 30-71-08-000-803

4. Drain Line Heater Thermostat Removal

(Figure 402)

A. References

Reference	Title
25-52-10-000-801	Floor Panels and Walkways Removal (P/B 401)
25-52-11-000-801	Bulk Cargo Floor Removal (P/B 401)
WDM 30-71-13	Wiring Diagram Manual

B. Location Zones

Zone	Area
123	Area Below Forward Cargo Compartment, Left
124	Area Below Forward Cargo Compartment, Right
153	Area Below Aft Cargo Compartment, Left
154	Area Below Aft Cargo Compartment, Right
163	Area Below Bulk Cargo Compartment, Left
164	Area Below Bulk Cargo Compartment, Right

C. Procedure

SUBTASK 30-71-08-860-003

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

Ground Service/Handling Power Panel, P320

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
Н	1	C30402	WATER DRAIN LINE HEATING FWD
L	9	C30403	WATER DRAIN LINE HEATING AFT

SUBTASK 30-71-08-010-002

(2) Remove the cargo compartment floor panels as necessary to get to the thermostat [22]. To remove them, do this task: Floor Panels and Walkways Removal, TASK 25-52-10-000-801 or, do this task: Bulk Cargo Floor Removal, TASK 25-52-11-000-801.

SUBTASK 30-71-08-020-003

(3) Cut the wires to the thermostat [22] near the applicable splice (WDM 30-71-13).

SUBTASK 30-71-08-020-004

(4) Remove the nut [20] and washer [21].

SUBTASK 30-71-08-020-005

(5) Remove the thermostat [22].



TASK 30-71-08-000-804

5. Drain Line Heater Thermostat Installation

(Figure 402)

A. References

Reference	Title
25-52-10-400-801	Floor Panels and Walkways Installation (P/B 401)
25-52-11-400-801	Bulk Cargo Floor Installation (P/B 401)
30-71-00-720-805	Drain Line Heaters Test (P/B 501)

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(Continued)

Reference	Title
WDM 30-71-13	Wiring Diagram Manual

B. Location Zones

Zone	Area
123	Area Below Forward Cargo Compartment, Left
124	Area Below Forward Cargo Compartment, Right
153	Area Below Aft Cargo Compartment, Left
154	Area Below Aft Cargo Compartment, Right
163	Area Below Bulk Cargo Compartment, Left
164	Area Below Bulk Cargo Compartment, Right

C. Procedure

SUBTASK 30-71-08-420-002

(1) Install the thermostat [22] on the bracket [24] with the washer [21] and nut [20].

SUBTASK 30-71-08-420-003

(2) Splice the applicable airplane wires to the thermostat [22] wiring (WDM 30-71-13).

D. Installation Test

SUBTASK 30-71-08-860-004

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

Ground Service/Handling Power Panel, P320

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
Н	1	C30402	WATER DRAIN LINE HEATING FWD
L	9	C30403	WATER DRAIN LINE HEATING AFT

SUBTASK 30-71-08-720-001

(2) Test the installation. To test it, do this task: Drain Line Heaters Test, TASK 30-71-00-720-805.

E. Put the Airplane Back to Its Usual Condition

SUBTASK 30-71-08-410-002

(1) Install the applicable cargo floor panel. To install it, do this task: Floor Panels and Walkways Installation, TASK 25-52-10-400-801

or, do this task: Bulk Cargo Floor Installation, TASK 25-52-11-400-801.

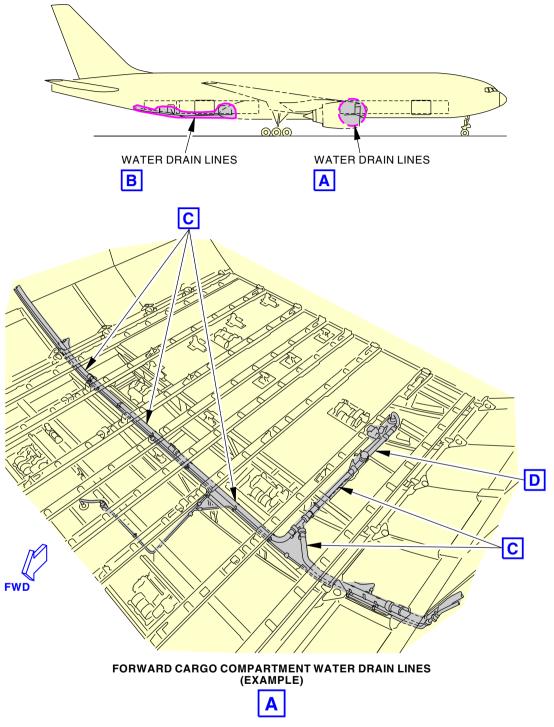
----- END OF TASK -----

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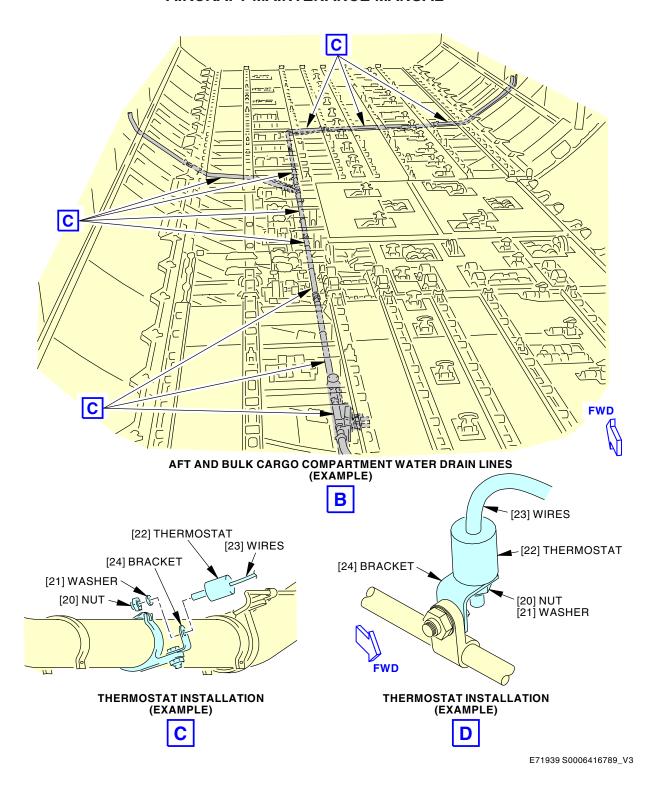
Water Drain Line Heater Thermostat Installation Figure 402/30-71-08-990-802 (Sheet 1 of 2)

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Water Drain Line Heater Thermostat Installation Figure 402/30-71-08-990-802 (Sheet 2 of 2)

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WATER SUPPLY LINE REMOTE TEMPERATURE SENSORS - REMOVAL/INSTALLATION

1. General

- A. This procedure has these tasks:
 - (1) Water Supply Line Remote Temperature Sensor Removal
 - (2) Water Supply Line Remote Temperature Sensor Installation

TASK 30-71-09-000-801

2. Water Supply Line Remote Temperature Sensor Removal

(Figure 401)

A. References

Reference	Title
12-14-01-616-802	Potable Water System - Drain (P/B 301)

B. Location Zones

Zone	Area
261	Passenger Compartment, Left - Section 47
262	Passenger Compartment, Right - Section 47

C. Prepare for the Procedure

SUBTASK 30-71-09-860-001

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

Ground Service/Handling Power Panel, P320

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
L	4	C30400	WTR SPLY LINE HTRS

SUBTASK 30-71-09-680-001

(2) Drain the potable water system. To drain it, do this task: Potable Water System - Drain, TASK 12-14-01-616-802.

D. Procedure

SUBTASK 30-71-09-020-001

(1) Disconnect the electrical connector [2] from the temperature sensor [1].

SUBTASK 30-71-09-020-002

(2) Loosen the B-nut [4] on the temperature sensor [1].

SUBTASK 30-71-09-020-003

- (3) Pull the temperature sensor [1] out of the fitting [3].
 - (a) Put a cover on the fitting [3] waterline connector for the temperature sensor to prevent contamination in the waterline.



TASK 30-71-09-400-801

3. Water Supply Line Remote Temperature Sensor Installation

(Figure 401)

A. References

Reference	Title
12-14-01-600-810	Potable Water Tank - Fill (P/B 301)

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(Continued)

Reference	Title
24-22-00-860-805	Supply Electrical Power (P/B 201)
30-71-00-720-804	Water Supply In-Line Heaters Test (P/B 501)
38-10-00-863-801	Potable Water System - Pressurization (P/B 201)

B. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity	
1	Temperature sensor	30-71-51-01-150	ARO ALL	

C. Location Zones

Zone	Area
261	Passenger Compartment, Left - Section 47
262	Passenger Compartment, Right - Section 47

D. Procedure

SUBTASK 30-71-09-420-001

- (1) Connect the temperature sensor [1] to the fitting [3].
 - (a) Make sure the temperature sensor does not have visible contamination.

SUBTASK 30-71-09-420-002

(2) Tighten the B-nut [4].

SUBTASK 30-71-09-420-003

(3) Connect the electrical connector [2].

SUBTASK 30-71-09-610-001

(4) Fill the potable water system. To fill it, do this task: Potable Water Tank - Fill, TASK 12-14-01-600-810.

SUBTASK 30-71-09-610-002

(5) Pressurize the potable water system. To pressurize it, do this task: Potable Water System - Pressurization, TASK 38-10-00-863-801.

E. Water Supply Line Remote Temperture Sensor Installation Test

SUBTASK 30-71-09-790-001

(1) Make sure the temperature sensor [1] does not leak.

SUBTASK 30-71-09-860-002

(2) Do this task: Supply Electrical Power, TASK 24-22-00-860-805.

SUBTASK 30-71-09-860-003

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

Ground Service/Handling Power Panel, P320

_		· · · ·	,
Row	Col	<u>Number</u>	<u>Name</u>
L	4	C30400	WTR SPLY LINE HTRS

SUBTASK 30-71-09-720-001

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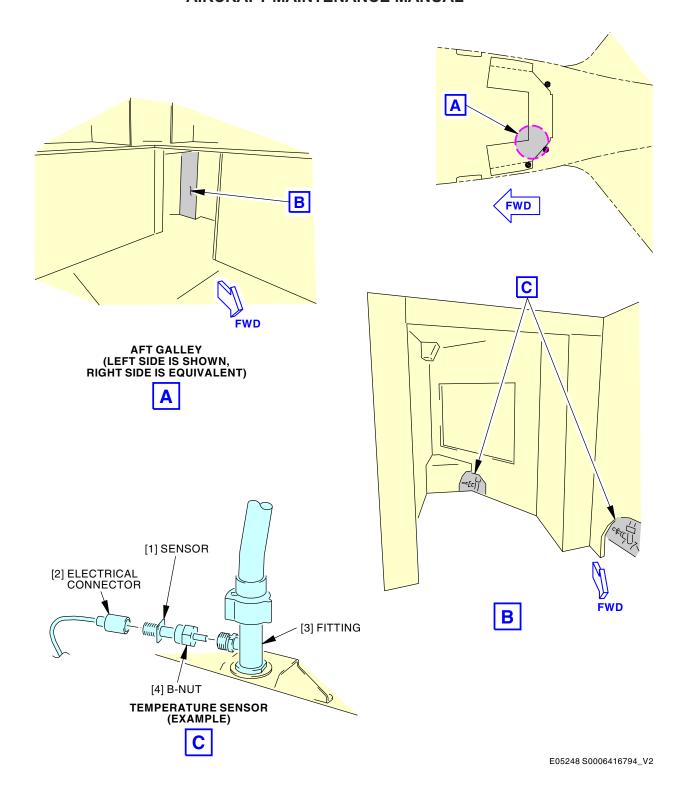
(4) Test the temperature sensor. To test it, do this task: Water Supply In-Line Heaters Test, TASK 30-71-00-720-804.

——— END OF TASK ———

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Water Supply Line Remote Temperature Sensors Installation Figure 401/30-71-09-990-801

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ICE DETECTION SYSTEM - MAINTENANCE PRACTICES

1. General

- A. This procedure has these tasks:
 - (1) Ice detection system deactivation.
 - (2) Ice detection system activation.

TASK 30-81-00-040-801

2. Ice Detection System - Deactivation

- A. General
 - (1) This task will deactivate the ice detection system.
- B. Location Zones

Area
Nose Landing Gear Wheel Well, Left
Nose Landing Gear Wheel Well, Right
Area Outboard and Above Nose Landing Gear Wheel Well, Left
Area Outboard and Above Nose Landing Gear Wheel Well, Right
Flight Compartment, Left
Flight Compartment, Right

C. Procedure

SUBTASK 30-81-00-020-001

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

Left Power Management Panel, P110

Row	<u>Col</u>	<u>Number</u>	Name
Е	26	C30441	ICE DET L

Right Power Management Panel, P210

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	4	C30440	ICE DET R

D. Ice Detection System - Tryout

NOTE: This tryout is to make sure that the ice detection system is in a zero energy state.

SUBTASK 30-81-00-800-003

(1) Go to the Maintenance Access Terminal (MAT).

SUBTASK 30-81-00-210-001

(2) Make sure that these messages are shown on the display:

30–10550	Ice Detector (left) is inactive or faulted.
30–10555	Ice Detector (right) is inactive or faulted.

SUBTASK 30-81-00-800-004

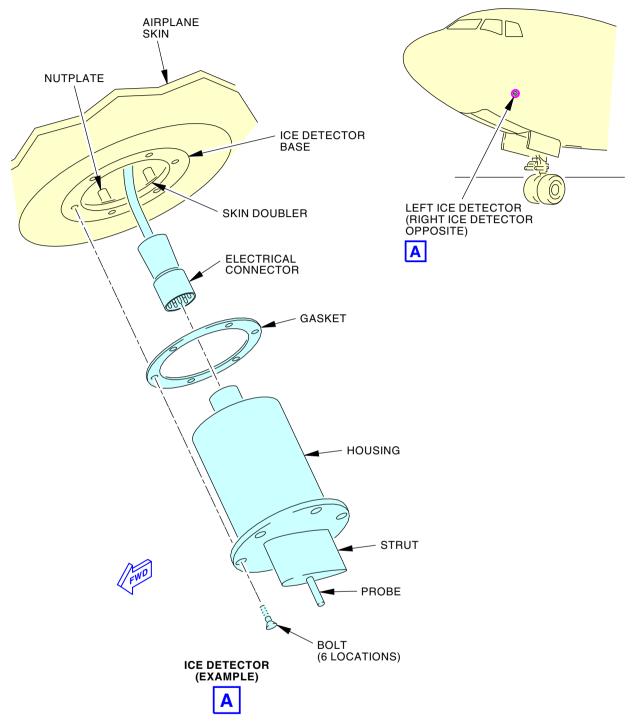
- (3) Feel the area near the ice detector sensing element.
 - (a) Make sure that the heater is not on.

------ END OF TASK ------

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30-81-00





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Ice Detection System Figure 201/30-81-00-990-801

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TASK 30-81-00-440-801

3. Ice Detection System - Activation

(Figure 201)

A. General

(1) This task will activate the ice detection system.

B. Location Zones

Zone	Area
113	Nose Landing Gear Wheel Well, Left
114	Nose Landing Gear Wheel Well, Right
115	Area Outboard and Above Nose Landing Gear Wheel Well, Left
116	Area Outboard and Above Nose Landing Gear Wheel Well, Right
211	Flight Compartment, Left
212	Flight Compartment, Right

C. Procedure

SUBTASK 30-81-00-420-001

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

Left Power Management Panel, P110

Row	<u>Col</u>	Number	<u>Name</u>
Е	26	C30441	ICE DET L

Right Power Management Panel, P210

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
С	4	C30440	ICE DET R

----- END OF TASK -----

ARO ALL

30-81-00



ICE DETECTION SYSTEM - ADJUSTMENT/TEST

1. General

- A. This procedure has these tasks:
 - (1) Ice Detection Operational Test

TASK 30-81-00-710-801

2. Ice Detection Operational Test

A. References

Reference	Title
24-22-00-860-805	Supply Electrical Power (P/B 201)
30-21-00-730-803-001	Engine Anti-Ice (engine not running) - System Test (P/B 501)
30-21-00-730-804-001	Engine Anti-Ice (engine running) - System Test (P/B 501)

B. Location Zones

Zone	Area
113	Nose Landing Gear Wheel Well, Left
114	Nose Landing Gear Wheel Well, Right
211	Flight Compartment, Left
212	Flight Compartment, Right

C. Prepare for the Procedure

SUBTASK 30-81-00-860-001

(1) Do this task: Supply Electrical Power, TASK 24-22-00-860-805.

SUBTASK 30-81-00-800-001

(2) Wait 1 minute for the system to power up.

D. Procedure

SUBTASK 30-81-00-800-002

- (1) Make sure these EICAS status messages do not show:
 - (a) ICE DETECTOR L
 - (b) ICE DETECTOR R

SUBTASK 30-81-00-740-001

- (2) Do one of the two tasks that follow:
 - (a) Do this task: Engine Anti-Ice (engine not running) System Test, TASK 30-21-00-730-803-001.
 - (b) Do this task: Engine Anti-Ice (engine running) System Test, TASK 30-21-00-730-804-001.

— LIND OI IASK ——		END	OF	TASK	
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ICE DETECTOR - REMOVAL/INSTALLATION

1. General

- A. This procedure has these tasks:
 - (1) Ice Detector Removal
 - (2) Ice Detector Installation

TASK 30-81-01-000-801

2. Ice Detector Removal

(Figure 401)

A. Location Zones

Zone	Area
115	Area Outboard and Above Nose Landing Gear Wheel Well, Left
116	Area Outboard and Above Nose Landing Gear Wheel Well, Right

B. Procedure

SUBTASK 30-81-01-860-001

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

Left Power Management Panel, P110

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
Ε	26	C30441	ICE DET L

Right Power Management Panel, P210

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
С	4	C30440	ICE DET R

SUBTASK 30-81-01-020-001

(2) Remove the bolt [4] from the ice detector [3].

SUBTASK 30-81-01-020-002

(3) Pull the ice detector [3] away from the airplane skin.

SUBTASK 30-81-01-020-003

(4) Disconnect the electrical connector [1].

SUBTASK 30-81-01-020-004

(5) Discard the gasket [2].

——— END OF TASK ———

TASK 30-81-01-400-801

3. Ice Detector Installation

(Figure 401)

A. References

Reference	Title
30-81-00-710-801	Ice Detection Operational Test (P/R 501)

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30-81-01

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B. Consumable Materials

Reference	Description	Specification
A02315	Sealant - Low Density, Synthetic Rubber. 2	BMS5-142 Type II
	Part	

C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
2	Gasket	30-81-03-01-015	ARO ALL
3	Ice detector	30-81-03-01-020	ARO ALL

D. Location Zones

Zone	Area
115	Area Outboard and Above Nose Landing Gear Wheel Well, Left
116	Area Outboard and Above Nose Landing Gear Wheel Well, Right

E. Procedure

SUBTASK 30-81-01-420-001

(1) Put a new gasket [2] on the ice detector [3].

SUBTASK 30-81-01-420-002

(2) Connect the electrical connector [1].

SUBTASK 30-81-01-420-004

(3) Hold the ice detector [3] in place.

SUBTASK 30-81-01-420-003

(4) Install the bolts [4].

SUBTASK 30-81-01-390-001

(5) Inject sealant, A02315 between the ice detector [3] and the airplane skin to completely fill the gap.

NOTE: It is not necessary to apply the sealant immediately, if the cure time will cause a flight delay. The sealant should be applied as soon as possible when it is convenient for personnel but the deferral should be no longer than 8 weeks. The sealant is required to keep moisture out of the area between the probe and airplane skin.

SUBTASK 30-81-01-390-002

(6) Make the sealant, A02315 sealant between the ice detector [3] and the airplane skin aerodynamically smooth.

SUBTASK 30-81-01-760-001

- (7) Measure the bonding resistance between the ice detector base and the airplane skin.
 - (a) Make sure that the resistance is less than 10 milliohms.

F. Installation Test

ARO ALL

SUBTASK 30-81-01-860-003

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

Left Power Management Panel, P110 Row Col Number Name

11011	<u> </u>	Hallibel	Hame
Е	26	C30441	ICE DET L

SEFFECTIVITY 30-81-01



Right Power Management Panel, P210

Row	<u>Col</u>	<u>Number</u>	<u>Name</u>
С	4	C30440	ICE DET R

SUBTASK 30-81-01-710-001

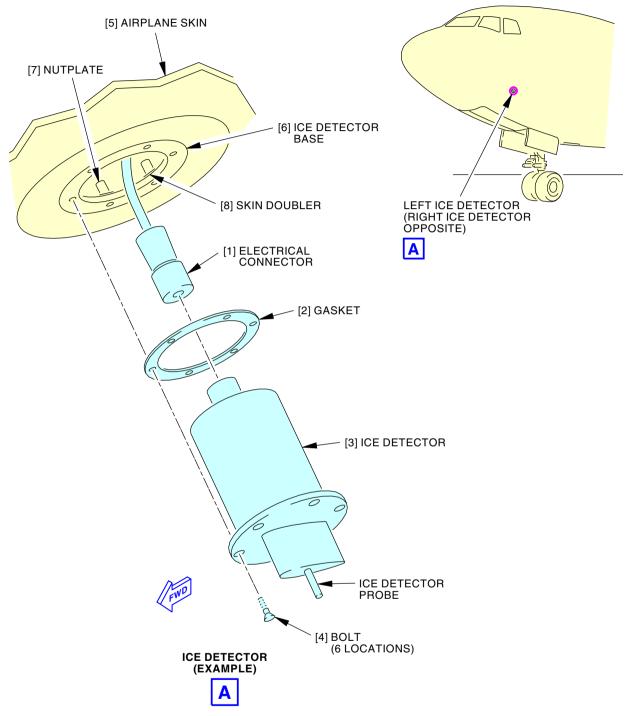
(2) Do this task: Ice Detection Operational Test, TASK 30-81-00-710-801.

——— END OF TASK ———

ARO ALL

30-81-01





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Ice Detector Installation Figure 401/30-81-01-990-801

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