

CHAPTER

24

ELECTRICAL POWER



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ELECTRICAL POWER - DDG MAINTENANCE PROCEDURES

1. General

- A. This procedure has maintenance tasks for the Master Minimum Equipment List (MMEL) maintenance requirements as shown in the Dispatch Deviations Procedures Guide (DDPG). These tasks are used to 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 electrical power system:
 - (1) MMEL 24-1 (DDPG) Preparation - Engine Driven Generator Systems (IDG) Inoperative
 - (2) MMEL 24-1 (DDPG) Restoration - Engine Driven Generator Systems (IDG) Inoperative

TASK 24-00-00-040-801

2. MMEL 24-1 (DDPG) Preparation - Engine Driven Generator Systems (IDG) Inoperative

- A. General
 - (1) This task gives the maintenance steps which prepare the airplane for flight with one of the Engine Driven Generator Systems (IDG) Inoperative.

B. References

Reference	Title
12-13-21-200-801	IDG Oil Level Check (P/B 301)
24-22-00-860-812	Remove Electrical Power (P/B 201)
24-22-00-860-813	Supply External Power (P/B 201)
71-00-00-700-819-F00	Stop the Engine Procedure (Usual Engine Stop) (P/B 201)
71-00-00-800-807-F00	Start the Engine Procedure (Selection) (P/B 201)

C. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right
411	Engine 1 - Engine
421	Engine 2 - Engine

D. Integrated Drive Generator (IDG) Deactivation

SUBTASK 24-00-00-040-001

- (1) If the IDG is not disconnected, disconnect the IDG per the steps that follow:
 - (a) Do this task: IDG Oil Level Check, TASK 12-13-21-200-801.

NOTE: The IDG may be operated without oil for up to 50 hours in the disconnected mode.
 - (b) Do this task: Supply External Power, TASK 24-22-00-860-813.
 - (c) Start the applicable engine. To start the engine, do this task: Start the Engine Procedure (Selection), TASK 71-00-00-800-807-F00.

NOTE: The DRIVE light should go off when the engine reaches idle speed.
 - (d) Set the AC meter selector switch on the P5-13 panel to the applicable GEN position.
 - (e) Lift the applicable DISCONNECT switch guard on the P5-5 panel.
 - (f) Push the DISCONNECT switch to the DISCONNECT position when the engine is at or above idle speed.
 - (g) Make sure the DRIVE light comes on.

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- (h) Make sure the AC meter on the P5 panel shows these values:
1) AC VOLTS = 0
2) CPS FREQ = 0
(i) Stop the applicable engine. To stop it, do this task: Stop the Engine Procedure (Usual Engine Stop), TASK 71-00-00-700-819-F00.

SUBTASK 24-00-00-930-001

- (2) Install an INOP placard on the applicable GEN control switch on the P5-4 panel.

SUBTASK 24-00-00-020-001

- (3) Remove the lamp from the applicable GEN OFF BUS (P5-4 panel) and DRIVE (P5-5 panel) light indicators and install INOP placards.

E. Put The Airplane Back to Its Usual Condition

SUBTASK 24-00-00-860-001

- (1) Do this task: Remove Electrical Power, TASK 24-22-00-860-812.

END OF TASK

TASK 24-00-00-440-801

3. MMEL 24-1 (DDPG) Restoration - Engine Driven Generator Systems (IDG) Inoperative

A. General

- (1) This task puts the airplane back to its usual condition after operation with the Engine Driven Generator Systems (IDG) Inoperative.

B. References

Table with 2 columns: Reference, Title. Row 1: 24-22-00-860-812, Remove Electrical Power (P/B 201)

C. Location Zones

Table with 2 columns: Zone, Area. Rows: 211 Flight Compartment - Left, 212 Flight Compartment - Right, 411 Engine 1 - Engine, 421 Engine 2 - Engine

D. Integrated Drive Generator (IDG) Activation

SUBTASK 24-00-00-810-001

- (1) Correct the fault.
(a) Find the fault code or description of the fault that occurred.
(b) Go to the applicable index or list in the FIM and find the FIM task number.
(c) Go to the task in the FIM and do the steps in the task.

SUBTASK 24-00-00-840-001

- (2) Remove the INOP placard from the applicable GEN CTRL switch.

SUBTASK 24-00-00-840-002

- (3) Install the lamps in the applicable GEN OFF BUS (P5-4 panel) and DRIVE (P5-5 panel) light indicators and remove the INOP placards.

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E. Put The Airplane Back to Its Usual Condition

SUBTASK 24-00-00-860-002

(1) Do this task: Remove Electrical Power, TASK 24-22-00-860-812.

————— **END OF TASK** —————

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AC GENERATOR DRIVE SYSTEM - MAINTENANCE PRACTICES

1. General

A. This procedure has these tasks:

- (1) IDG Oil System Static Leak Check
- (2) IDG Push-to-Vent Valve replacement

TASK 24-11-00-700-801

2. IDG Oil System Static Leak Check

(Figure 201)

A. General

- (1) The static leak check applies compressed air or nitrogen to the Integrated Drive Generator (IDG) oil system through the IDG pressure fill fitting. The pressure is monitored to see if it starts to decrease. A continuous decrease in pressure indicates there is a leak in the system.

B. References

Reference	Title
12-13-21-200-801	IDG Oil Level Check (P/B 301)
71-11-02-010-801-F00	Open the Fan Cowl Panels (P/B 201)
71-11-02-410-801-F00	Close the Fan Cowl Panels (P/B 201)

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-8912	Test Equipment- Engine Generator Pressure (Part #: J24015-1, Supplier: 81205, A/P Effectivity: 737-ALL)
STD-3940	Air Source - Regulated, Dry Filtered, 0 to 150 psig

D. Location Zones

Zone	Area
410	Subzone - Engine 1
420	Subzone - Engine 2

E. Prepare for check

SUBTASK 24-11-00-010-001

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

F. Procedure

SUBTASK 24-11-00-710-001

WARNING: DO NOT TOUCH THE COMPONENTS OF THE OIL SYSTEM IF THE ENGINE IS HOT. THESE COMPONENTS STAY HOTTER THAN OTHER COMPONENTS. HOT COMPONENTS CAN BURN YOU.

WARNING: DO NOT LET HOT OIL GET ON YOU. PUT ON GOGGLES AND OTHER EQUIPMENT FOR PROTECTION OR LET THE ENGINE BECOME COOL. HOT OIL CAN BURN YOU.

- (1) Do the static leak check as follows:

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WARNING: MAKE SURE YOU PUSH THE PUSH-TO-VENT VALVE. FAILURE TO DO THIS COULD CAUSE HOT OIL TO SPRAY OUT AND CAN CAUSE INJURY TO PERSONS.

- (a) Push the PUSH-TO-VENT VALVE on the IDG to relieve internal IDG pressure.
- (b) Use the engine generator pressure test equipment, SPL-8912 as shown in Figure 201.
- (c) Set the shutoff valve on the test equipment to the off position.
- (d) Set the regulator valve on the test equipment to the off position.
- (e) Remove the cover from the IDG pressure fill fitting.
- (f) Connect the hose adapter on the test equipment to the IDG pressure fill fitting.
- (g) Connect the other end of the test equipment to a regulated, dry filtered 0 to 150 psig dry filtered regulated air source, STD-3940 or a regulated nitrogen source.

CAUTION: DO NOT APPLY MORE THAN 30 PSI TO THE IDG. TOO MUCH PRESSURE CAN CAUSE DAMAGE TO THE IDG.

- (h) Turn the shutoff valve to the on position and adjust the regulator valve to 25 psi.
- (i) Turn the shutoff valve to the off position.

NOTE: The pressure will decrease a small quantity, then the pressure gage should become stable.

- (j) If the pressure gage continues to decrease, do these steps:
 - 1) Visually examine the IDG and the external cooling circuit for leaks.
 - 2) If you do not find a leak, do a leak check with leak detector fluid or a soap solution.

WARNING: MAKE SURE YOU PUSH THE PUSH-TO-VENT VALVE. FAILURE TO DO THIS COULD CAUSE HOT OIL TO SPRAY OUT AND CAN CAUSE INJURY TO PERSONS.

- 3) Push the PUSH-TO-VENT VALVE to relieve the IDG internal pressure.
- 4) Repair any leaks that you found.
- 5) Repeat the Static leak check.

WARNING: MAKE SURE YOU PUSH THE PUSH-TO-VENT VALVE. FAILURE TO DO THIS COULD CAUSE HOT OIL TO SPRAY OUT AND CAN CAUSE INJURY TO PERSONS.

- (k) Push the PUSH-TO-VENT VALVE to relieve the IDG internal pressure.
- (l) Remove the hose on the test equipment from the IDG pressure fill fitting.
- (m) Do this task: IDG Oil Level Check, TASK 12-13-21-200-801.
- (n) Install the cover on the IDG pressure fill fitting.

G. Put the airplane in its usual condition.

SUBTASK 24-11-00-410-001

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

————— **END OF TASK** —————

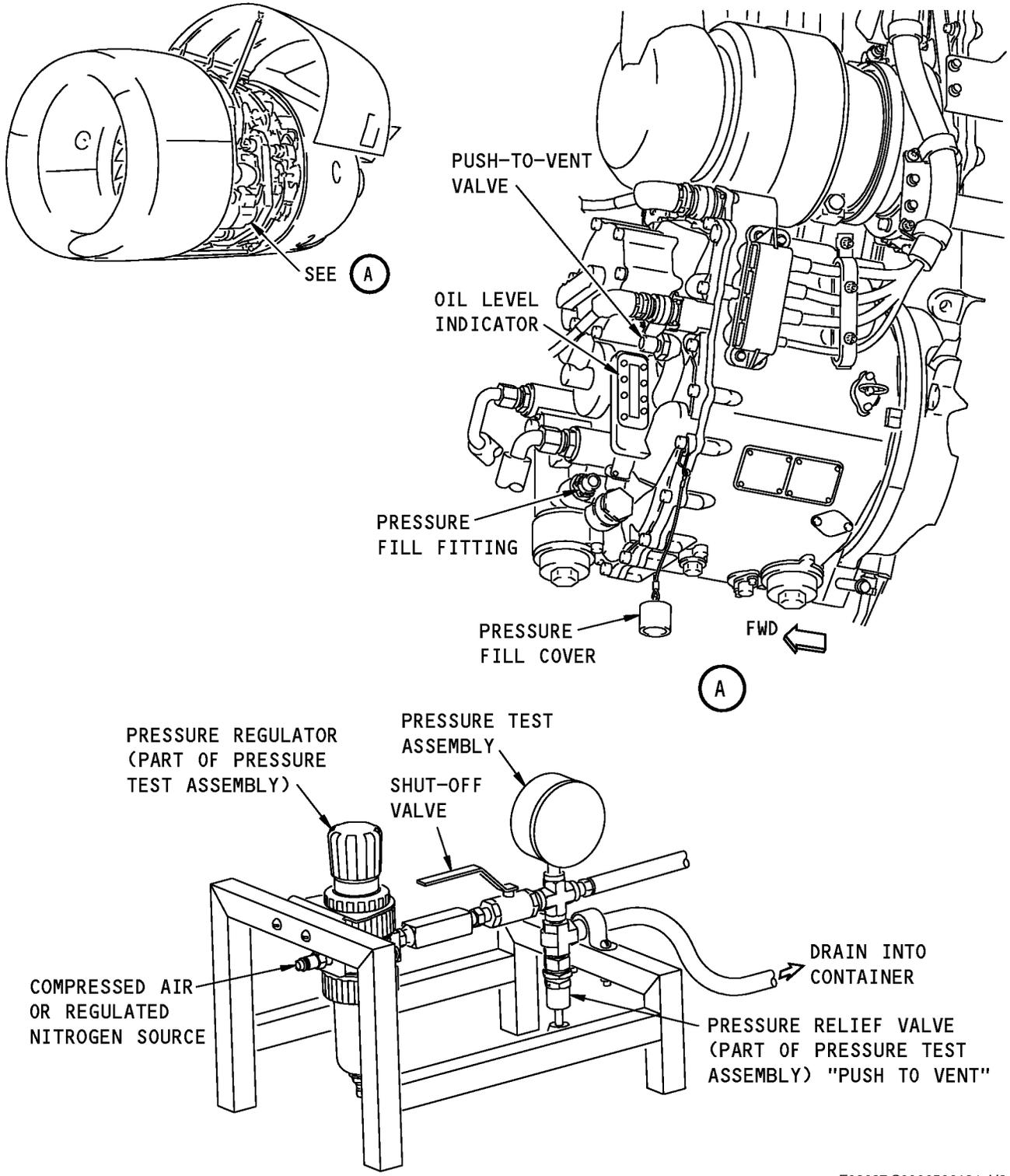
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**IDG Oil System Static Leak Check
Figure 201/24-11-00-990-801**

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TASK 24-11-00-700-804

3. IDG Push-to-Vent Valve Replacement

(Figure 202)

A. General

- (1) This task removes and installs the IDG push-to-vent valve. The push-to-vent valve is on the IDG next to the sightglass. After replacement of the valve, it is necessary to do a leak check.

B. References

Reference	Title
12-13-21-600-801	IDG Servicing (Oil Fill) (P/B 301)
71-00-00-700-821-F00	Dry Motor the Engine (P/B 201)
71-11-02-010-801-F00	Open the Fan Cowl Panels (P/B 201)
71-11-02-410-801-F00	Close the Fan Cowl Panels (P/B 201)

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-1537	Cart - Servicing, Engine Oil (Part #: PF53361-2PWS, Supplier: 94861, A/P Effectivity: 737-ALL) (Part #: PF53361-8PWS, Supplier: 94861, A/P Effectivity: 737-ALL) (Part #: PF53481-8PWS, Supplier: 94861, A/P Effectivity: 737-ALL) (Part #: PF55451-2WS, Supplier: 94861, A/P Effectivity: 737-ALL) (Part #: PF55451-7WS, Supplier: 94861, A/P Effectivity: 737-ALL)

D. Consumable Materials

Reference	Description	Specification
D00068	Oil - Aircraft Turbine Engine, Synthetic Base	MIL-PR~ F-23699F, Class STD (Standard)
D00071	Oil - Aircraft Turbine Engine, Synthetic Base	MIL-PRF-7808, Grade 3
G01048	Lockwire - Corrosion Resistant Steel (0.032 In. Dia.)	NASM20995~ C32

E. Location Zones

Zone	Area
410	Subzone - Engine 1
420	Subzone - Engine 2

F. Prepare to remove the push-to-vent valve.

SUBTASK 24-11-00-010-002

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

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G. Procedure

SUBTASK 24-11-00-780-001

WARNING: MAKE SURE YOU PUSH THE PUSH-TO-VENT VALVE. FAILURE TO DO THIS COULD CAUSE HOT OIL TO SPRAY OUT AND CAN CAUSE INJURY TO PERSONS.

- (1) Release the IDG case pressure as follows:
 - (a) Push the push-to-vent valve [21] on the IDG for a minimum of 15 seconds to relieve internal IDG pressure.
 - (b) If you cannot push the push-to-vent valve [21] to release the pressure, do these steps:
 - 1) Remove the pressure fill cover from the pressure fill fitting on the IDG.
 - 2) Put the container below the pressure fill hose.
 - 3) Connect the pressure fill hose from the engine oil servicing cart, COM-1537 to the pressure fill fitting on the IDG.

SUBTASK 24-11-00-020-001

- (2) Remove the IDG push-to-vent valve [21] as follows:
 - (a) Remove the lockwire from the push-to-vent valve [21].
 - (b) Put an approved container under the vent valve port to catch the oil that drains.

WARNING: DO NOT OPEN THE IDG OIL SYSTEM UNTIL THE PRESSURE GOES TO ZERO. A PRESSURIZED OIL SYSTEM CAN CAUSE INJURY TO PERSONS.

- (c) Remove the push-to-vent valve [21].
- (d) Remove and discard the o-ring [22].

SUBTASK 24-11-00-420-001

- (3) Install the IDG push-to-vent valve [21] as follows:
 - (a) Lubricate a new o-ring [22] with oil, D00068 or oil, D00071.
 - (b) Put the o-ring [22] in correct position on the push-to-vent valve [21].
 - (c) Install the vent valve [21] on the IDG and torque to 110-150 pound-inches (12.4-16.9 Newton-meters).
 - (d) Safety the push-to-vent valve with lockwire, G01048.

SUBTASK 24-11-00-610-001

- (4) Do this task: IDG Servicing (Oil Fill), TASK 12-13-21-600-801.

SUBTASK 24-11-00-790-001

- (5) Do this task: Dry Motor the Engine, TASK 71-00-00-700-821-F00.
 - (a) Check for leaks.

H. Put the airplane in its usual condition.

SUBTASK 24-11-00-410-003

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

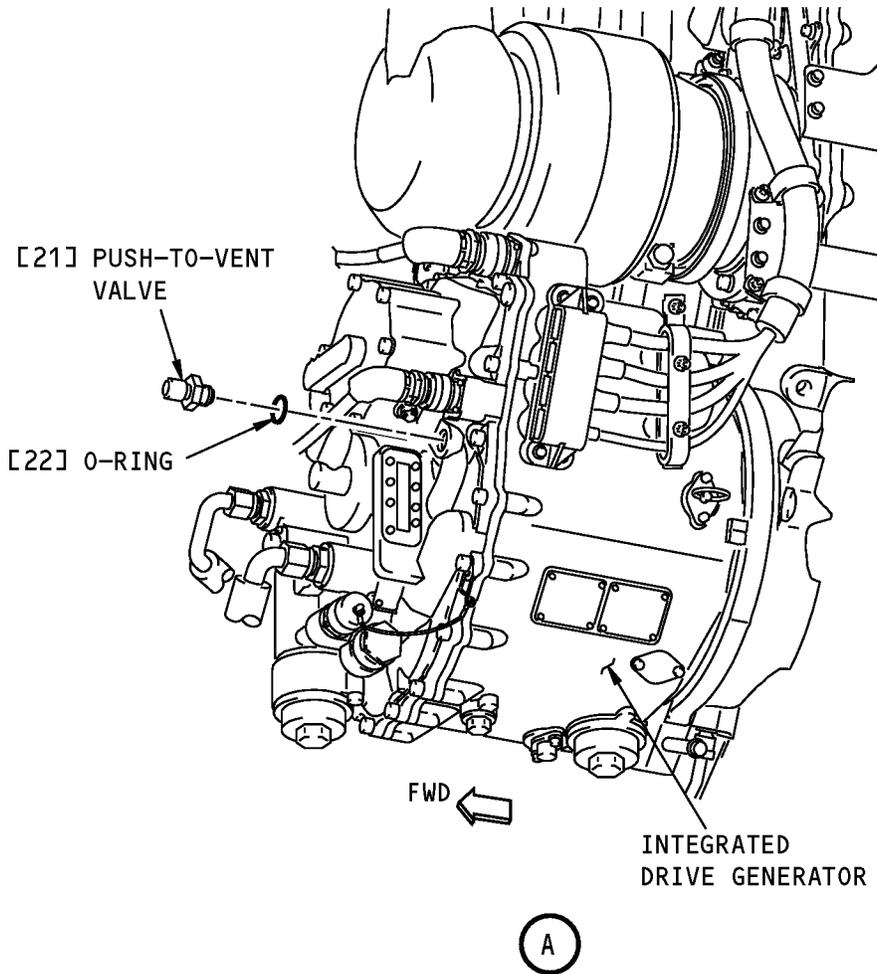
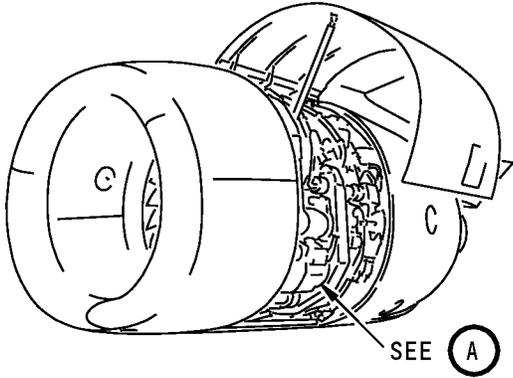
————— **END OF TASK** —————

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**IDG Push-To-Vent Valve Replacement
Figure 202/24-11-00-990-804**

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GENERATOR DRIVE SYSTEM - ADJUSTMENT/TEST

1. General

A. This procedure has these tasks:

- (1) The Operational Test For The Number 1 IDG.
- (2) The Operational Test For The Number 2 IDG.

TASK 24-11-00-700-802

2. Operational Test For Number 1 IDG

(Figure 501, Figure 502)

A. General

(1) This procedure does these test:

- (a) The Operation Test
- (b) The Load Test
- (c) The IDG Disconnect and Connect Test

(2) You must operate the engines to do an operational test of the IDG.

B. References

Reference	Title
24-11-11-000-801	Integrated Drive Generator (IDG) Removal (P/B 401)
24-11-11-400-801	Integrated Drive Generator (IDG) Installation (P/B 401)
24-22-00-860-812	Remove Electrical Power (P/B 201)
24-22-00-860-813	Supply External Power (P/B 201)
71-00-00-700-819-F00	Stop the Engine Procedure (Usual Engine Stop) (P/B 201)
71-00-00-800-807-F00	Start the Engine Procedure (Selection) (P/B 201)
71-11-02-010-801-F00	Open the Fan Cowl Panels (P/B 201)
71-11-02-410-801-F00	Close the Fan Cowl Panels (P/B 201)

C. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right
410	Subzone - Engine 1

D. Prepare for the Test

SUBTASK 24-11-00-860-001

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

E. The Operation Test

SUBTASK 24-11-00-710-002

(1) Do the operation test as follows:

- (a) Set the AC meter selector switch on the P5 panel to the GEN 1 position.
- (b) Make sure the AC meter on the P5 panel shows these values:
 - 1) AC VOLTS = 0
 - 2) CPS FREQ = BLANK

NOTE: When the AC voltage goes below approximately 12 VAC, the CPS FREQ will become blank.

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- (c) Start the No. 1 engine. To start it, do this task: Start the Engine Procedure (Selection), TASK 71-00-00-800-807-F00.

CAUTION: THE DRIVE LIGHT ON THE P5 PANEL SHOULD GO OFF AFTER THE ENGINE GETS UP TO IDLE SPEED. IF THE DRIVE LIGHT DOES NOT GO OFF OR COMES ON WHEN THE ENGINE IS AT OR ABOVE IDLE SPEED, THE DISCONNECT SWITCH ON THE P5 PANEL MUST BE PUSHED. FAILURE TO PUSH THE DISCONNECT SWITCH CAN CAUSE DAMAGE TO THE IDG.

- (d) Make sure the number 1 DRIVE light on the P5 panel goes off after number 1 engine reaches idle speed.
(e) Set the GEN 1 switch on the P5 panel to the ON position.
(f) Make sure the 1 GEN OFF BUS light on the P5 panel goes off.
(g) Make sure the AC meter on the P5 panel shows these values:
1) AC VOLTS = 110-120
2) CPS FREQ = 395-405
(h) Set the GRD PWR switch on the P5 panel to the OFF position.
(i) Make sure both TRANSFER BUS OFF lights on the P5 panel stay off.

F. The Load Test

SUBTASK 24-11-00-710-003

- (1) Do the Load Test as follows:

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

CAPT Electrical System Panel, P18-3

Table with 4 columns: Row, Col, Number, Name. Lists circuit breakers for exterior lighting.

Power Distribution Panel Number 1, P91

Table with 4 columns: Row, Col, Number, Name. Lists circuit breakers for fuel boost pumps and electrical systems.

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Power Distribution Panel Number 2, P92

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	8	C00767	ELEC HYD PUMP CONTROL SYS A
HAP 037-054, 101-999			
D	1	C00826	FUEL BOOST PUMP TANK 1 AFT
HAP 001-013, 015-026, 028-036			
D	2	C00826	FUEL BOOST PUMP TANK 1 AFT
HAP 037-054, 101-999			
D	3	C00829	FUEL BOOST PUMP TANK 2 FWD
HAP 001-013, 015-026, 028-036			
D	4	C00829	FUEL BOOST PUMP TANK 2 FWD
HAP 037-054, 101-999			
D	5	C00846	FUEL BOOST PUMP CTR TANK RIGHT
HAP 001-013, 015-026, 028-036			
D	6	C00846	FUEL BOOST PUMP CTR TANK RIGHT
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F	3	C00881	ELEC HYD PUMP SYS A

CAUTION: DO NOT OPERATE THE BOOST PUMPS WITH THE FUEL TANKS EMPTY. DAMAGE TO THE BOOST PUMPS CAN OCCUR.

- (b) Set these switches on the Fuel System Panel (P5) to the ON position.
- 1) 1 AFT FUEL PUMP
 - 2) 1 FWD FUEL PUMP
 - 3) 2 AFT FUEL PUMP
 - 4) 2 FWD FUEL PUMP
 - 5) L CTR FUEL PUMP
 - 6) R CTR FUEL PUMP

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

- (c) Set these switches on the Hydraulic Pump Panel (P5) to the ON position.
- 1) A ELEC 2 HYD PUMP
 - 2) B ELEC 1 HYD PUMP
- (d) Set these switches on the Exterior Light Control Panel (P5) to the ON position.
- 1) L RETRACTABLE LANDING
 - 2) R RETRACTABLE LANDING
 - 3) L FIXED LANDING
 - 4) R FIXED LANDING
- (e) Make sure the AC meter on the P5 panel shows these values:
- 1) AC VOLTS = 110-120
 - 2) CPS FREQ = 395-405
- (f) Set these switches on the Fuel System Panel (P5) to the OFF position.

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- 1) 1 AFT FUEL PUMP
 - 2) 1 FWD FUEL PUMP
 - 3) 2 AFT FUEL PUMP
 - 4) 2 FWD FUEL PUMP
 - 5) L CTR FUEL PUMP
 - 6) R CTR FUEL PUMP
- (g) Set these switches on the Hydraulic Pump Panel (P5) to the OFF position.
- 1) A ELEC 2 HYD PUMP
 - 2) B ELEC 1 HYD PUMP
- (h) Set these switches on the Exterior Light Control Panel (P5) to the OFF position.
- 1) L RETRACTABLE LANDING
 - 2) R RETRACTABLE LANDING
 - 3) L FIXED LANDING
 - 4) R FIXED LANDING

G. The IDG Disconnect and Connect Test

SUBTASK 24-11-00-710-004

- (1) Do the Disconnect and Connect Test as follows:
- (a) Set the GRD PWR switch on the P5 panel to the ON position.
 - (b) Make sure the 1 GEN OFF BUS light on the P5 panel comes on.
 - (c) Make sure the AC meter on the P5 panel shows these values:
 - 1) AC VOLTS = 110-120
 - 2) CPS FREQ = 395-405

CAUTION: DO NOT ACTUATE THE DISCONNECT SWITCH FOR MORE THAN 3 SECONDS. ALLOW A MINIMUM OF 60 SECONDS BETWEEN ACTUATION PERIODS. FAILURE TO FOLLOW THIS PROCEDURE CAN CAUSE DAMAGE TO IDG.

- (d) Push the 1 DISCONNECT switch on the P5 panel to the DISCONNECT position.
- (e) Make sure the 1 DRIVE light comes on.
- (f) Make sure the AC meter on the P5 panel shows these values:
 - 1) AC VOLTS = 0
 - 2) CPS FREQ = BLANK

NOTE: When the AC voltage goes below approximately 12 VAC, the CPS FREQ will become blank.

- (g) Stop the No. 1 engine. To stop it, do this task: Stop the Engine Procedure (Usual Engine Stop), TASK 71-00-00-700-819-F00.
- (h) Do this task: Open the Fan Cowl Panels, TASK 71-11-02-010-801-F00.

WARNING: DO NOT TOUCH THE COMPONENTS OF THE OIL SYSTEM IF THE ENGINE IS HOT. THESE COMPONENTS STAY HOTTER THAN OTHER COMPONENTS. HOT COMPONENTS CAN BURN YOU.

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(WARNING PRECEDES)

WARNING: DO NOT LET HOT OIL GET ON YOU. PUT ON GOGGLES AND OTHER EQUIPMENT FOR PROTECTION OR LET THE ENGINE BECOME COOL. HOT OIL CAN BURN YOU.

CAUTION: DO NOT RESET THE IDG IF THE INPUT SPEED OF THE ENGINE GEARBOX IS MORE THAN 100 REVOLUTIONS PER MINUTE (RPM). IF THE IDG IS RESET WITH THE ENGINE GEARBOX SPEED GREATER THAN 100 RPM, DAMAGE TO THE IDG WILL OCCUR.

- (i) Slowly pull the IDG Disconnect Reset Ring on the IDG to the outward travel limit. Monitor the hand force necessary to pull the ring.
- (j) Make sure a click can be felt in the IDG Disconnect Reset Ring as it gets near the outward limit of travel.

NOTE: Operation of the IDG Disconnect Reset Ring should be smooth with moderate force necessary and no indication of binding.

- (k) Allow the IDG Disconnect Reset Ring to slowly return to the maximum inward position.
- (l) Slowly pull the IDG Disconnect Reset Ring on the IDG to the outward travel limit. Monitor the hand force necessary to pull the ring.
- (m) Make sure the amount of hand force necessary is less than the amount required in the previous pull.
- (n) Make sure that no click is felt in the IDG Disconnect Reset Ring during the second pull.
 - 1) If a click is produced during the second pull of the IDG Disconnect Reset Ring, replace the IDG. These are the tasks:
 - Integrated Drive Generator (IDG) Removal, TASK 24-11-11-000-801
 - Integrated Drive Generator (IDG) Installation, TASK 24-11-11-400-801.
- (o) Allow the IDG Disconnect Reset Ring to slowly return to the maximum inward position.

SUBTASK 24-11-00-710-005

- (2) Do a check of the IDG disconnect inhibit function as follows:

NOTE: The IDG disconnect function is inhibited when the engine is below idle speed.

CAUTION: DO NOT ACTUATE THE DISCONNECT SWITCH FOR MORE THAN 3 SECONDS. ALLOW A MINIMUM OF 60 SECONDS BETWEEN ACTUATION PERIODS. FAILURE TO FOLLOW THIS PROCEDURE CAN CAUSE DAMAGE TO IDG.

- (a) Push the 1 DISCONNECT switch on the P5 panel to the DISCONNECT position.

NOTE: Put a person near the IDG listening for no click and feeling for no movement while lightly holding the IDG Disconnect Reset Ring. There should be no click and no movement at IDG when the 1 DISCONNECT switch is pushed.

- (b) Make sure the 1 DRIVE light on the P5 panel stays on.
- (c) Slowly pull the IDG Disconnect Reset Ring on the IDG to the outward travel limit. Make a note of the amount of hand force necessary.
- (d) Make sure that the force necessary is light.
- (e) Make sure that no click is felt when pulling the IDG Disconnect Reset Ring.
- (f) Allow the IDG Disconnect Reset Ring to slowly return to the maximum inward position.

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SUBTASK 24-11-00-860-002

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

H. Put the airplane in its usual condition.

SUBTASK 24-11-00-860-003

(1) Do this task: Remove Electrical Power, TASK 24-22-00-860-812.

————— **END OF TASK** —————

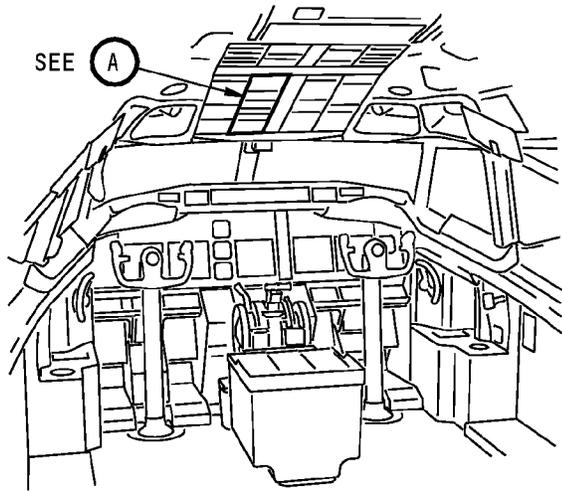
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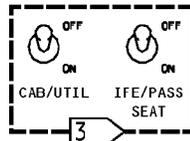
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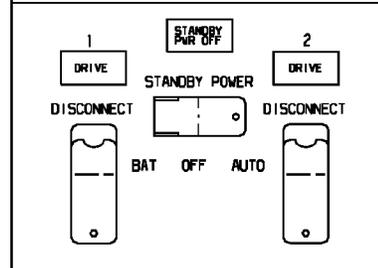
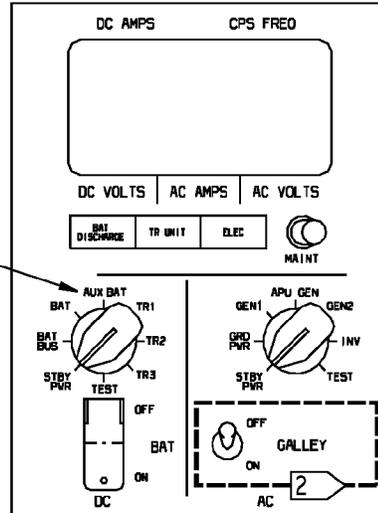
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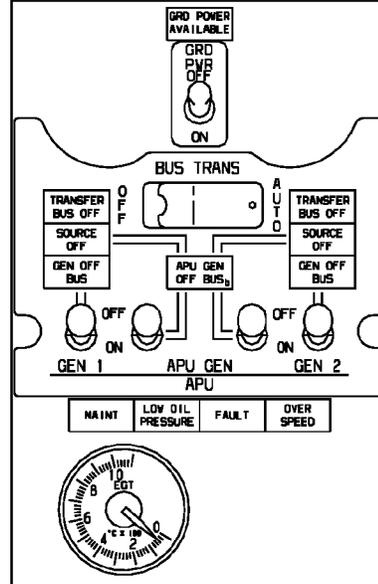
FLIGHT COMPARTMENT



P5-13



P5-5



P5-4

- 1 AIRPLANES WITH AUXILIARY BATTERY
- 2 AIRPLANES WITH GALLEY SWITCH
- 3 AIRPLANES WITH CABIN UTILITY AND IFE SWITCHES

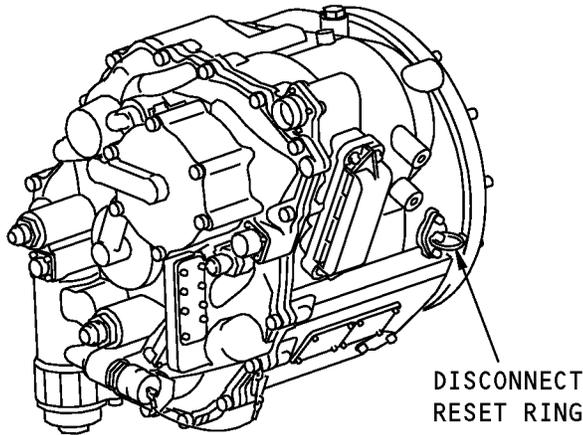
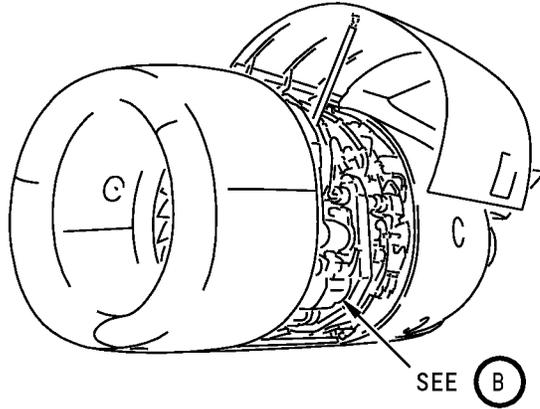


AC/DC Power Control and Display Panels
Figure 501/24-11-00-990-802

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**INTEGRATED DRIVE
GENERATOR**

(B)

**IDG Disconnect Reset
Figure 502/24-11-00-990-803**

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TASK 24-11-00-700-803

3. Operational Test For Number 2 IDG

(Figure 501, Figure 502)

A. General

- (1) This procedure does these test:
 - (a) The Operation Test
 - (b) The Load Test
 - (c) The IDG Disconnect and Connect Test
- (2) You must operate the engines to do an operational test of the IDG.

B. References

Reference	Title
24-11-11-000-801	Integrated Drive Generator (IDG) Removal (P/B 401)
24-11-11-400-801	Integrated Drive Generator (IDG) Installation (P/B 401)
24-22-00-860-812	Remove Electrical Power (P/B 201)
24-22-00-860-813	Supply External Power (P/B 201)
71-00-00-700-819-F00	Stop the Engine Procedure (Usual Engine Stop) (P/B 201)
71-00-00-800-807-F00	Start the Engine Procedure (Selection) (P/B 201)
71-11-02-010-801-F00	Open the Fan Cowl Panels (P/B 201)
71-11-02-410-801-F00	Close the Fan Cowl Panels (P/B 201)

C. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right
420	Subzone - Engine 2

D. Prepare for the Test

SUBTASK 24-11-00-860-004

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

E. The Operation Test

SUBTASK 24-11-00-710-006

- (1) Do the operation test as follows:
 - (a) Set the AC meter selector switch on the P5 panel to the GEN 2 position.
 - (b) Make sure the AC meter on the P5 panel shows these values:
 - 1) AC VOLTS = 0
 - 2) CPS FREQ = BLANK

NOTE: When the AC voltage goes below approximately 12 VAC, the CPS FREQ will become blank.
 - (c) Start the No. 2 engine. To start it, do this task: Start the Engine Procedure (Selection), TASK 71-00-00-800-807-F00.

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CAUTION: THE DRIVE LIGHT ON THE P5 PANEL SHOULD GO OFF AFTER THE ENGINE GETS UP TO IDLE SPEED. IF THE DRIVE LIGHT DOES NOT GO OFF OR COMES ON WHEN THE ENGINE IS AT OR ABOVE IDLE SPEED, THE DISCONNECT SWITCH ON THE P5 PANEL MUST BE PUSHED. FAILURE TO PUSH THE DISCONNECT SWITCH CAN CAUSE DAMAGE TO THE IDG.

- (d) Make sure the number 2 DRIVE light on the P5 panel goes off after number 2 engine reaches idle speed.
(e) Set the GEN 2 switch on the P5 panel to the ON position.
(f) Make sure the 2 GEN OFF BUS light on the P5 panel goes off.
(g) Make sure the AC meter on the P5 panel shows these values:
1) AC VOLTS = 110-120
2) CPS FREQ = 395-405
(h) Set the GRD PWR switch on the P5 panel to the OFF position.
(i) Make sure both TRANSFER BUS OFF lights on the P5 panel stay off.

F. The Load Test

SUBTASK 24-11-00-410-002

(1) Do the Load Test as follows:

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

CAPT Electrical System Panel, P18-3

Table with 4 columns: Row, Col, Number, Name. Rows include exterior lighting landing right and left retracted and fixed.

Power Distribution Panel Number 1, P91

Table with 4 columns: Row, Col, Number, Name. Row C00768: ELEC HYD PUMP CONTROL SYS B

HAP 037-054, 101-999

Table with 4 columns: Row, Col, Number, Name. Row D00827: FUEL BOOST PUMP TANK 1 FWD

HAP 001-013, 015-026, 028-036

Table with 4 columns: Row, Col, Number, Name. Row D00827: FUEL BOOST PUMP TANK 1 FWD

HAP 037-054, 101-999

Table with 4 columns: Row, Col, Number, Name. Row D00828: FUEL BOOST PUMP TANK 2 AFT

HAP 001-013, 015-026, 028-036

Table with 4 columns: Row, Col, Number, Name. Row D00828: FUEL BOOST PUMP TANK 2 AFT

HAP 037-054, 101-999

Table with 4 columns: Row, Col, Number, Name. Row D00845: FUEL BOOST PUMP CTR TANK LEFT

HAP 001-013, 015-026, 028-036

Table with 4 columns: Row, Col, Number, Name. Row D00845: FUEL BOOST PUMP CTR TANK LEFT

HAP ALL

Table with 4 columns: Row, Col, Number, Name. Row F00882: ELEC HYD PUMP SYS B

Power Distribution Panel Number 2, P92

Table with 4 columns: Row, Col, Number, Name. Row C00767: ELEC HYD PUMP CONTROL SYS A

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<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
HAP 037-054, 101-999			
D	1	C00826	FUEL BOOST PUMP TANK 1 AFT
HAP 001-013, 015-026, 028-036			
D	2	C00826	FUEL BOOST PUMP TANK 1 AFT
HAP 037-054, 101-999			
D	3	C00829	FUEL BOOST PUMP TANK 2 FWD
HAP 001-013, 015-026, 028-036			
D	4	C00829	FUEL BOOST PUMP TANK 2 FWD
HAP 037-054, 101-999			
D	5	C00846	FUEL BOOST PUMP CTR TANK RIGHT
HAP 001-013, 015-026, 028-036			
D	6	C00846	FUEL BOOST PUMP CTR TANK RIGHT
HAP ALL			
F	3	C00881	ELEC HYD PUMP SYS A

CAUTION: DO NOT OPERATE THE BOOST PUMPS WITH THE FUEL TANKS EMPTY. DAMAGE TO THE BOOST PUMPS CAN OCCUR.

- (b) Set these switches on the Fuel System Panel (P5) to the ON position.
- 1) 1 AFT FUEL PUMP
 - 2) 1 FWD FUEL PUMP
 - 3) 2 AFT FUEL PUMP
 - 4) 2 FWD FUEL PUMP
 - 5) L CTR FUEL PUMP
 - 6) R CTR FUEL PUMP

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

- (c) Set these switches on the Hydraulic Pump Panel (P5) to the ON position.
- 1) A ELEC 2 HYD PUMP
 - 2) B ELEC 1 HYD PUMP
- (d) Set these switches on the Exterior Light Control Panel (P5) to the ON position.
- 1) L RETRACTABLE LANDING
 - 2) R RETRACTABLE LANDING
 - 3) L FIXED LANDING
 - 4) R FIXED LANDING
- (e) Make sure the AC meter on the P5 panel shows these values:
- 1) AC VOLTS = 110-120
 - 2) CPS FREQ = 395-405
- (f) Set these switches on the Fuel System Panel (P5) to the OFF position.
- 1) 1 AFT FUEL PUMP
 - 2) 1 FWD FUEL PUMP

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- 3) 2 AFT FUEL PUMP
 - 4) 2 FWD FUEL PUMP
 - 5) L CTR FUEL PUMP
 - 6) R CTR FUEL PUMP
- (g) Set these switches on the Hydraulic Pump Panel (P5) to the OFF position.
- 1) A ELEC 2 HYD PUMP
 - 2) B ELEC 1 HYD PUMP
- (h) Set these switches on the Exterior Light Control Panel (P5) to the OFF position.
- 1) L RETRACTABLE LANDING
 - 2) R RETRACTABLE LANDING
 - 3) L FIXED LANDING
 - 4) R FIXED LANDING

G. The IDG Disconnect and Connect Test

SUBTASK 24-11-00-710-007

(1) Do the Disconnect and Connect Test as follows:

- (a) Set the GRD PWR switch on the P5 panel to the ON position.
- (b) Make sure the 2 GEN OFF BUS light on the P5 panel comes on.
- (c) Make sure the AC meter on the P5 panel shows these values:
 - 1) AC VOLTS = 110-120
 - 2) CPS FREQ = 395-405

CAUTION: DO NOT ACTUATE THE DISCONNECT SWITCH FOR MORE THAN 3 SECONDS. ALLOW A MINIMUM OF 60 SECONDS BETWEEN ACTUATION PERIODS. FAILURE TO FOLLOW THIS PROCEDURE CAN CAUSE DAMAGE TO IDG.

- (d) Push the 2 DISCONNECT switch on the P5 panel to the DISCONNECT position.
- (e) Make sure the 2 DRIVE light comes on.
- (f) Make sure the AC meter on the P5 panel shows these values:
 - 1) AC VOLTS = 0
 - 2) CPS FREQ = BLANK

NOTE: When the AC voltage goes below approximately 12 VAC, the CPS FREQ will become blank.

- (g) Stop the No. 2 engine. To stop it, do this task: Stop the Engine Procedure (Usual Engine Stop), TASK 71-00-00-700-819-F00.
- (h) Do this task: Open the Fan Cowl Panels, TASK 71-11-02-010-801-F00.

WARNING: DO NOT TOUCH THE COMPONENTS OF THE OIL SYSTEM IF THE ENGINE IS HOT. THESE COMPONENTS STAY HOTTER THAN OTHER COMPONENTS. HOT COMPONENTS CAN BURN YOU.

WARNING: DO NOT LET HOT OIL GET ON YOU. PUT ON GOGGLES AND OTHER EQUIPMENT FOR PROTECTION OR LET THE ENGINE BECOME COOL. HOT OIL CAN BURN YOU.

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(WARNING PRECEDES)

CAUTION: DO NOT RESET THE IDG IF THE INPUT SPEED OF THE ENGINE GEARBOX IS MORE THAN 100 REVOLUTIONS PER MINUTE (RPM). IF THE IDG IS RESET WITH THE ENGINE GEARBOX SPEED GREATER THAN 100 RPM, DAMAGE TO THE IDG WILL OCCUR.

- (i) Slowly pull the IDG Disconnect Reset Ring on the IDG to the outward travel limit. Monitor the hand force necessary to pull the ring.
- (j) Make sure a click can be felt in the IDG Disconnect Reset Ring as it gets near the outward limit of travel.

NOTE: Operation of the IDG Disconnect Reset Ring should be smooth with moderate force necessary and no indication of binding.

- (k) Allow the IDG Disconnect Reset Ring to slowly return to the maximum inward position.
- (l) Slowly pull the IDG Disconnect Reset Ring on the IDG to the outward travel limit. Monitor the hand force necessary to pull the ring.
- (m) Make sure the amount of hand force necessary is less than the amount required in the previous pull.
- (n) Make sure that no click is felt in the IDG Disconnect Reset Ring during the second pull.
 - 1) If a click is produced during the second pull of the IDG Disconnect Reset Ring, replace the IDG. These are the tasks:
 - Integrated Drive Generator (IDG) Removal, TASK 24-11-11-000-801
 - Integrated Drive Generator (IDG) Installation, TASK 24-11-11-400-801.
- (o) Allow the IDG Disconnect Reset Ring to slowly return to the maximum inward position.

SUBTASK 24-11-00-710-008

- (2) Make a check of the IDG disconnect inhibit function as follows:

NOTE: The IDG disconnect function is inhibited when the engine is below idle speed.

CAUTION: DO NOT ACTUATE THE DISCONNECT SWITCH FOR MORE THAN 3 SECONDS. ALLOW A MINIMUM OF 60 SECONDS BETWEEN ACTUATION PERIODS. FAILURE TO FOLLOW THIS PROCEDURE CAN CAUSE DAMAGE TO IDG.

- (a) Push the 2 DISCONNECT switch on the P5 panel to the DISCONNECT position.

NOTE: Put a person near the IDG listening for no click and feeling for no movement while lightly holding the IDG Disconnect Reset Ring. There should be no click and no movement at IDG when the 2 DISCONNECT switch is pushed.

- (b) Make sure the 2 DRIVE light on the P5 panel stays on.
- (c) Slowly pull the IDG Disconnect Reset Ring on the IDG to the outward travel limit. Make a note of the amount of hand force necessary.
- (d) Make sure that the force necessary is light.
- (e) Make sure that no click is felt when pulling the IDG Disconnect Reset Ring.
- (f) Allow the IDG Disconnect Reset Ring to slowly return to the maximum inward position.

SUBTASK 24-11-00-860-005

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

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H. Put the airplane in its usual condition.

SUBTASK 24-11-00-860-006

(1) Do this task: Remove Electrical Power, TASK 24-22-00-860-812.

————— **END OF TASK** —————

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INTEGRATED DRIVE GENERATOR (IDG) - REMOVAL/INSTALLATION

1. General

A. This procedure has two tasks:

- (1) The IDG Removal
- (2) The IDG Installation.

TASK 24-11-11-000-801

2. Integrated Drive Generator (IDG) Removal

(Figure 401)

A. General

- (1) The IDG is found on the accessory gearbox on the left side of the engine fan case.

B. References

Reference	Title
70-30-01-910-802-F00	Seals (Preformed Packings and O-Rings) and Gaskets (P/B 201)
71-11-02-010-801-F00	Open the Fan Cowl Panels (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-1443	Jack - Hydraulic, General Low Profile, Capacity: 2000 lbs, Lift: 10 to 44 Inches, or Equivalent Jack Capable of Lifting 300 lbs. (Part #: HW93718, Supplier: 28047, A/P Effectivity: 737-ALL) (Opt Part #: W93718, Supplier: 36251, A/P Effectivity: 737-ALL)
SPL-1626	Eye - Lifting, APU Generator (Part #: A49002-2, Supplier: 81205, A/P Effectivity: 737-600, -700, -700C, -700ER, -700QC, -800, -900, -900ER, -BBJ)
SPL-1634	Jack Adapter - VSCF and IDG (Part #: C24002-40, Supplier: 81205, A/P Effectivity: 737-600, -700, -700C, -700ER, -700QC, -800, -900, -900ER, -BBJ) (Part #: C24002-41, Supplier: 81205, A/P Effectivity: 737-600, -700, -700C, -700ER, -700QC, -800, -900, -900ER, -BBJ) (Part #: C24002-45, Supplier: 81205, A/P Effectivity: 737-600, -700, -700C, -700ER, -700QC, -800, -900, -900ER, -BBJ)
STD-1055	Container - Oil Resistant, 5 Gallon (19 Liters)

D. Location Zones

Zone	Area
410	Subzone - Engine 1
420	Subzone - Engine 2

E. Prepare for the Removal

SUBTASK 24-11-11-010-001

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

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F. IDG Removal

SUBTASK 24-11-11-610-001

WARNING: DO NOT TOUCH THE COMPONENTS OF THE OIL SYSTEM IF THE ENGINE IS HOT. THESE COMPONENTS STAY HOTTER THAN OTHER COMPONENTS. HOT COMPONENTS CAN BURN YOU.

WARNING: DO NOT OPEN THE OIL SYSTEM UNTIL THE PRESSURE GOES TO ZERO. THE PRESSURE GOES TO ZERO APPROXIMATELY 5 MINUTES AFTER AN ENGINE SHUTDOWN. A PRESSURIZED ENGINE CAN RELEASE A SPRAY OF HOT OIL THAT CAN BURN YOU.

WARNING: DO NOT LET HOT OIL GET ON YOU. PUT ON GOGGLES AND OTHER EQUIPMENT FOR PROTECTION OR LET THE ENGINE BECOME COOL. HOT OIL CAN BURN YOU.

CAUTION: DO NOT LET HOT OIL GET ON THE ENGINE OR OTHER COMPONENTS. IMMEDIATELY CLEAN THE COMPONENT IF OIL FALLS ON IT. OIL CAN CAUSE DAMAGE TO PAINT AND RUBBER.

- (1) Do the following steps to drain the IDG oil:
 - (a) Push the PUSH-TO-VENT valve [15] on the IDG [10] for a minimum of 15 seconds.
 - (b) Remove the lockwire from the IDG case drain plug.
 - (c) Place an oil resistant container (5 gal)(19 Liters), STD-1055 below the IDG to catch the oil.
 - (d) Remove the drain plug [17].
 - (e) Let the IDG oil drain into the container.
 - (f) Install the drain plug [17] on the IDG finger tight.

SUBTASK 24-11-11-020-001

- (2) Disconnect the electrical connector, DP1205, [4] and the electrical connector, DP1206, [13] from the IDG receptacles:

NOTE: For the specific steps to disconnect and give protection to these electrical connectors, refer to Seals (Preformed Packings and O-Rings) and Gaskets, TASK 70-30-01-910-802-F00.

SUBTASK 24-11-11-020-008

- (3) Disconnect the IDG lanyards per the steps that follow:
 - (a) Remove the nut [19] and bolt [20] that hold the two lanyards to the bracket on the IDG.
 - (b) Remove the nut [19] and bolt [18] that hold the lanyard to the bracket on the gearbox.
 - (c) Move the lanyards so they are not between the IDG and the adapter assembly.

SUBTASK 24-11-11-020-002

CAUTION: USE TWO WRENCHES TO LOOSEN THE TUBE COUPLING NUTS. USE ONE TO HOLD THE UNION, AND THE OTHER TO LOOSEN THE COUPLING NUT. IF YOU DO NOT USE TWO WRENCHES, DAMAGE TO THE TUBES AND UNIONS CAN OCCUR.

- (4) Disconnect the oil-in line [14] and the oil-out line [1] from the IDG [10] as follows:
 - (a) Disconnect the oil-in line [14] and the oil-out line [1] from the oil-in union and the oil-out union on the IDG [10].

NOTE: Let the oil drain from the lines into a oil resistant container (5 gal)(19 Liters), STD-1055.

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SUBTASK 24-11-11-020-003

(5) Remove the four power feeder leads [5] from the IDG [10] as follows:

(a) Remove the two screws [6] which attach the fanning strip to the IDG [10].

NOTE: Keep the screws [6] for the installation.

(b) Remove the two screws [8] to remove the cover [7] from the IDG [10].

(c) Remove the four nuts [9] from the power feeder terminals on the IDG [10].

(d) Remove the four power feeder leads [5].

(e) Loosely install the four nuts [9] on the power feeder terminals of the IDG [10].

NOTE: If the new IDG does not have four power feeder nuts [9], keep the nuts [9] for reuse.

1) Tighten the nuts with your hand only.

(f) Loosely attach the cover [7] to the IDG [10] with the two screws [8].

SUBTASK 24-11-11-020-005

(6) Do these steps to remove the IDG [10] (Figure 401):

(a) Make sure the adapter, SPL-1634 is installed on the low profile hydraulic jack, COM-1443.

(b) Put the jack under the IDG [10] and raise the jack until the adapter engages with the IDG.

(c) Use the strap to attach the IDG [10] to the adapter.

CAUTION: MAKE SURE THAT YOU APPLY ONLY SUFFICIENT PRESSURE WITH THE JACK TO HOLD THE WEIGHT OF THE IDG. TOO MUCH PRESSURE ON THE IDG OR FAILURE TO HOLD THE IDG CORRECTLY CAN CAUSE DAMAGE TO THE INPUT SEAL.

(d) Continue to raise the jack until the weight of the IDG [10] is held by the jack.

(e) Remove the lockwire and loosen the QAD tension bolt on the QAD ring.

(f) Loosen the QAD tension bolt until the alignment marks on the QAD ring and IDG housing align.

NOTE: In this position, the QAD ring is in the open position and the clamping lugs will be disengaged.

NOTE: If the QAD ring turns off the alignment marks on the adapter plate, the IDG cannot be removed. If this occurs, turn the QAD tension bolt to keep the alignment during the IDG removal.

(g) Move the IDG [10] forward until the input shaft is free of the accessory gearbox and QAD ring, then move the IDG [10] outboard and away from the power plant.

(h) Remove the O-ring [16] from the input shaft on the IDG [10].

1) Discard the O-ring [16].

(i) Put the IDG [10] on a cart or pallet.

NOTE: To lift the IDG from Jack/Adapter Assy. after removal, install eyebolt APU generator lifting eye, SPL-1626 on the IDG (10) housing to facilitate hoist or crane usage. Use hoist or crane to move IDG to Jack/Adapter Assy. before installation.

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SUBTASK 24-11-11-910-001

- (7) If the new IDG will not be immediately installed, give protection to the gearbox mount pad on the accessory gearbox.

————— **END OF TASK** —————

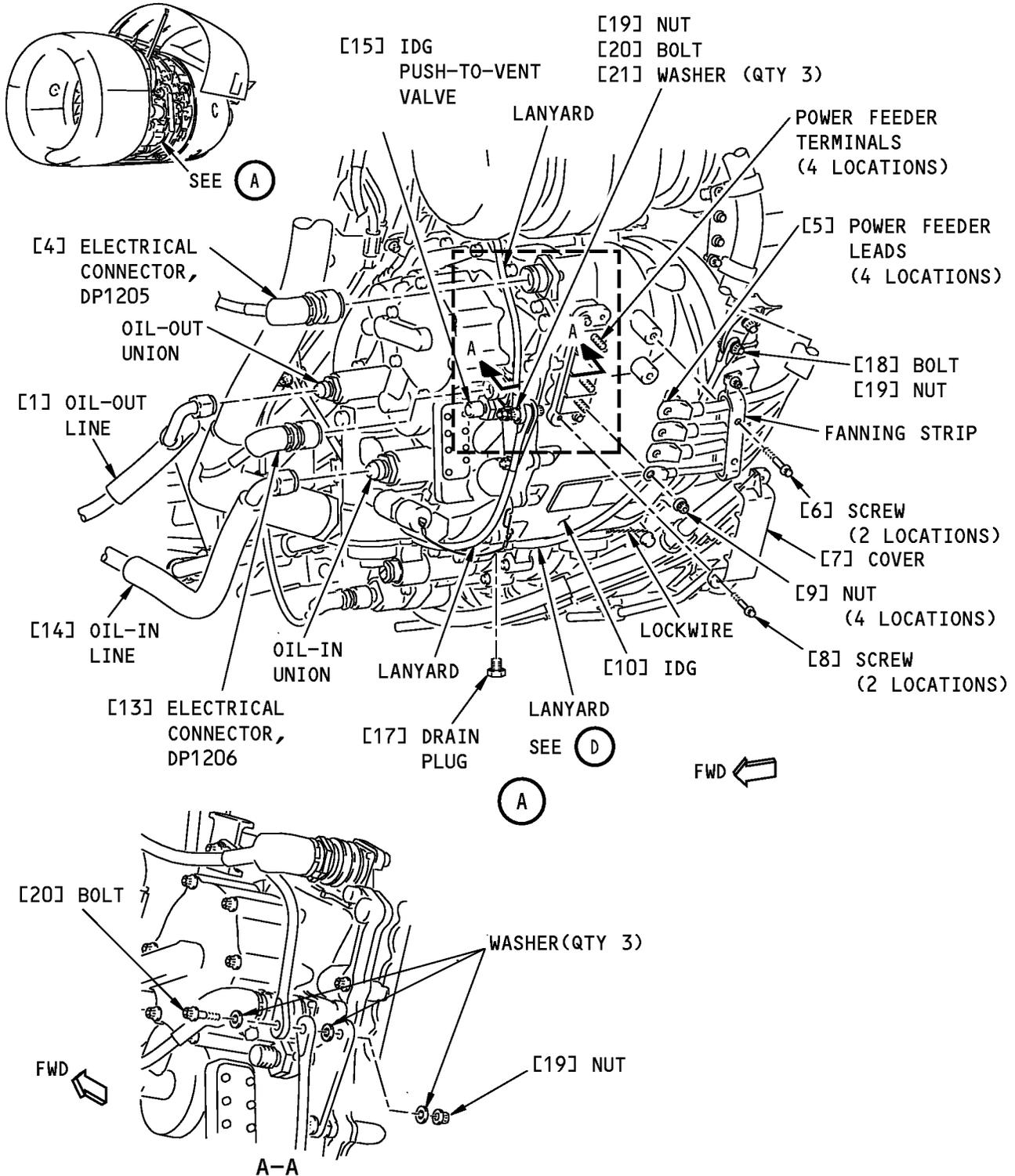
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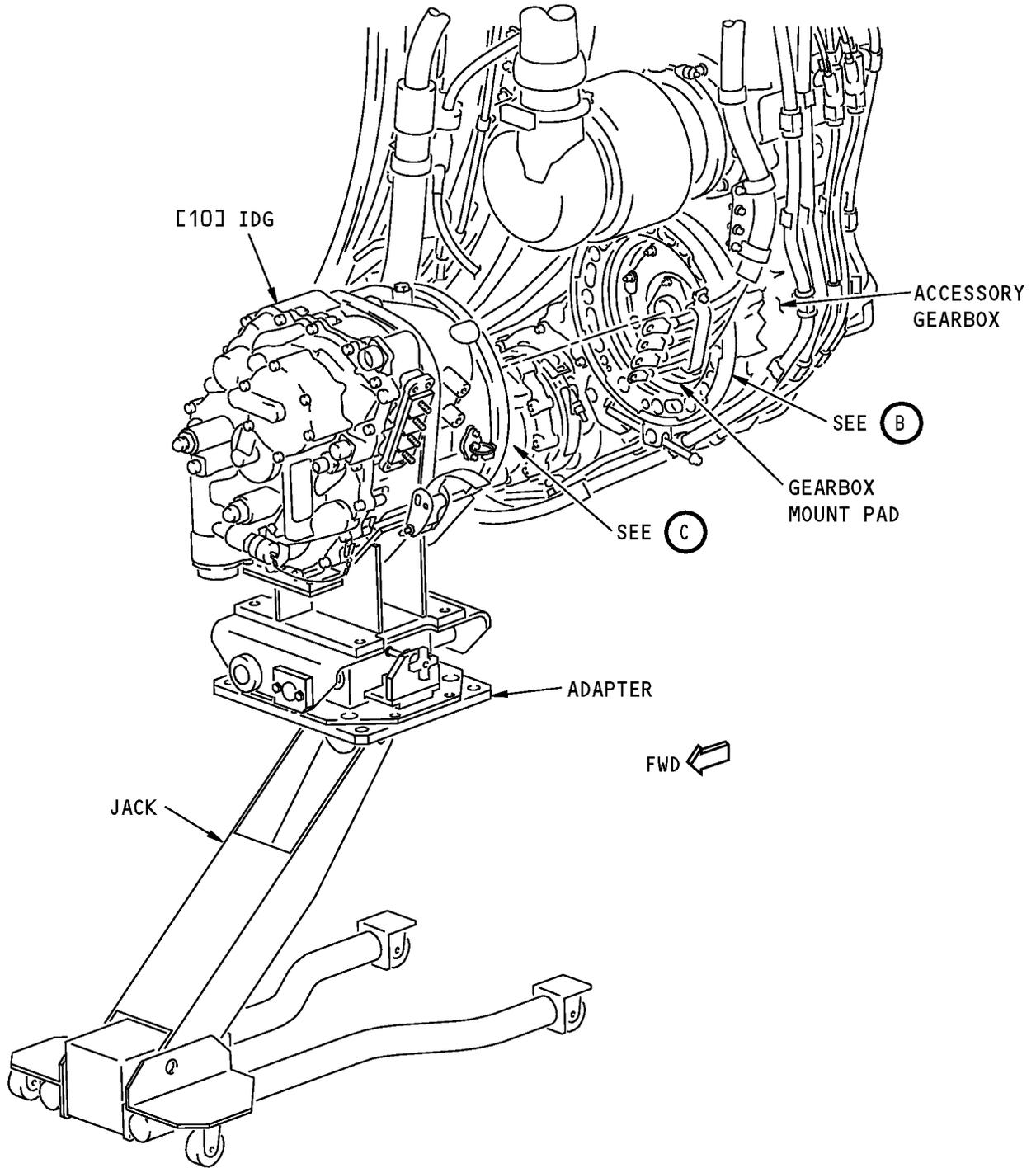
**Integrated Drive Generator (IDG) Installation
Figure 401 (Sheet 1 of 4)/24-11-11-990-801**

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**Integrated Drive Generator (IDG) Installation
Figure 401 (Sheet 2 of 4)/24-11-11-990-801**

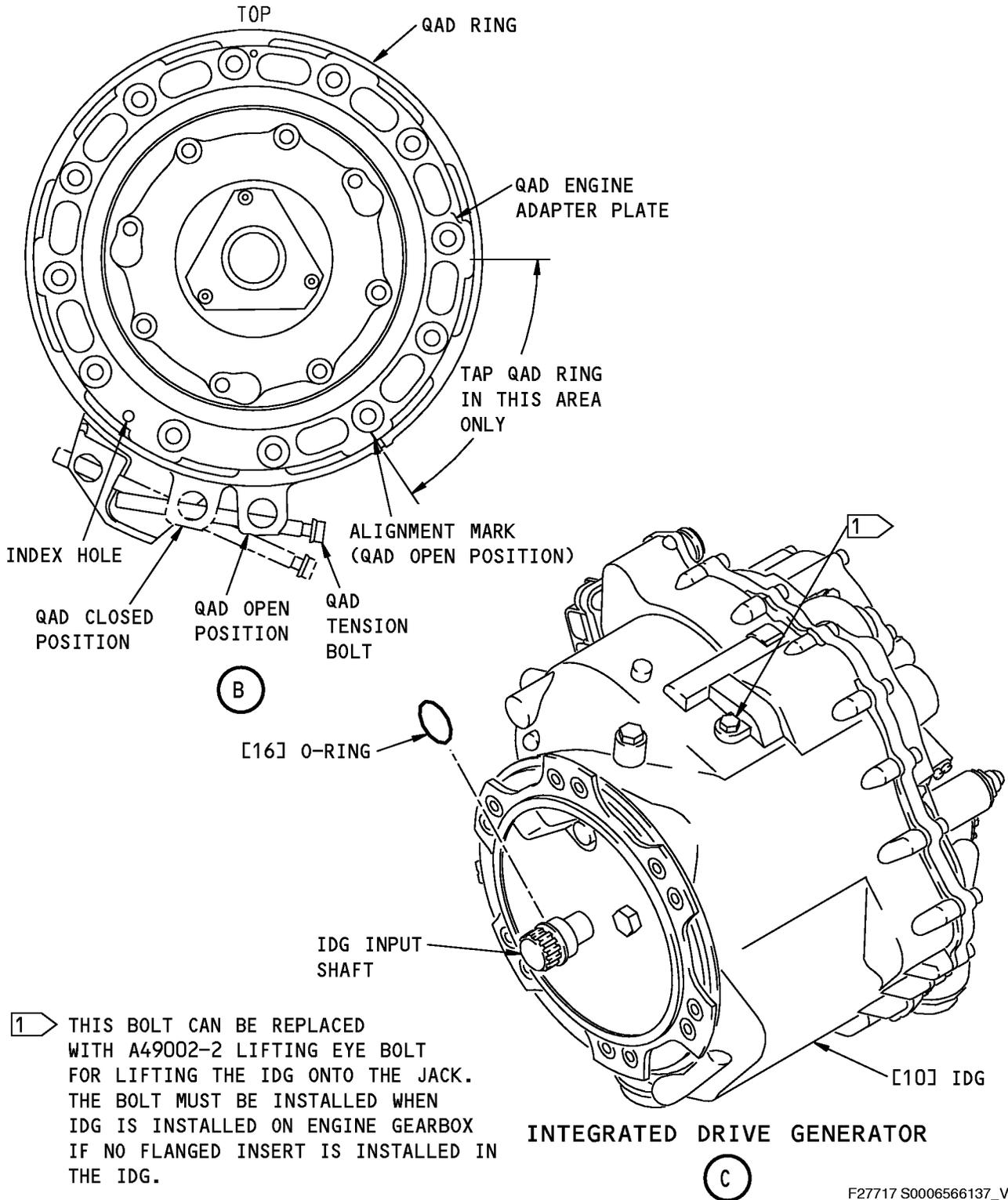
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1 THIS BOLT CAN BE REPLACED WITH A49002-2 LIFTING EYE BOLT FOR LIFTING THE IDG ONTO THE JACK. THE BOLT MUST BE INSTALLED WHEN IDG IS INSTALLED ON ENGINE GEARBOX IF NO FLANGED INSERT IS INSTALLED IN THE IDG.

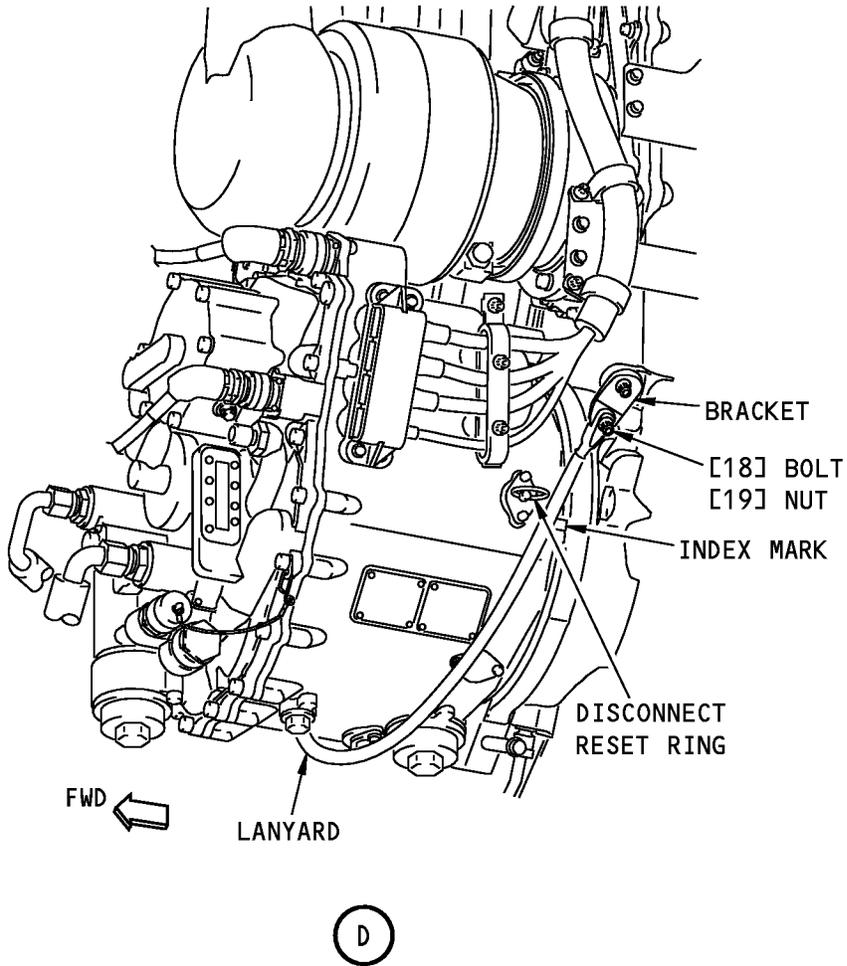
INTEGRATED DRIVE GENERATOR

F27717 S0006566137_V3

**Integrated Drive Generator (IDG) Installation
Figure 401 (Sheet 3 of 4)/24-11-11-990-801**

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1553483 S0000286068_V1

**Integrated Drive Generator (IDG) Installation
Figure 401 (Sheet 4 of 4)/24-11-11-990-801**

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TASK 24-11-11-400-801

3. Integrated Drive Generator (IDG) Installation

(Figure 401)

A. General

(1) The IDG is found on the accessory gearbox on the left side of the engine fan case.

B. References

Reference	Title
12-13-21-600-801	IDG Servicing (Oil Fill) (P/B 301)
20-30-51-910-801	Miscellaneous Materials (P/B 201)
24-11-00-700-802	Operational Test For Number 1 IDG (P/B 501)
24-11-00-700-803	Operational Test For Number 2 IDG (P/B 501)
24-11-61-000-801	Quick Attach/Detach (QAD) Adapter Removal (P/B 401)
24-11-61-400-801	Quick Attach/Detach (QAD) Adapter Installation (P/B 401)
70-30-01-910-802-F00	Seals (Preformed Packings and O-Rings) and Gaskets (P/B 201)
71-00-00-800-811-F00	Power Plant Test Reference Table (P/B 501)
71-11-02-410-801-F00	Close the Fan Cowl Panels (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-1443	Jack - Hydraulic, General Low Profile, Capacity: 2000 lbs, Lift: 10 to 44 Inches, or Equivalent Jack Capable of Lifting 300 lbs. (Part #: HW93718, Supplier: 28047, A/P Effectivity: 737-ALL) (Opt Part #: W93718, Supplier: 36251, A/P Effectivity: 737-ALL)
SPL-1626	Eye - Lifting, APU Generator (Part #: A49002-2, Supplier: 81205, A/P Effectivity: 737-600, -700, -700C, -700ER, -700QC, -800, -900, -900ER, -BBJ)
SPL-1634	Jack Adapter - VSCF and IDG (Part #: C24002-40, Supplier: 81205, A/P Effectivity: 737-600, -700, -700C, -700ER, -700QC, -800, -900, -900ER, -BBJ) (Part #: C24002-41, Supplier: 81205, A/P Effectivity: 737-600, -700, -700C, -700ER, -700QC, -800, -900, -900ER, -BBJ) (Part #: C24002-45, Supplier: 81205, A/P Effectivity: 737-600, -700, -700C, -700ER, -700QC, -800, -900, -900ER, -BBJ)

D. Consumable Materials

Reference	Description	Specification
B00074	Solvent - Degreasing	MIL-PRF-680 (Supersedes P-D-680)
D00068	Oil - Aircraft Turbine Engine, Synthetic Base	MIL-PR~ F-23699F, Class STD (Standard)
D00071	Oil - Aircraft Turbine Engine, Synthetic Base	MIL-PRF-7808, Grade 3
G01912	Lockwire - Monel (0.032 In. Dia.)	NASM20995N~ C32 (QQ-N-281)

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E. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
16	O-ring	24-11-11-50-030	HAP ALL

F. Location Zones

Zone	Area
410	Subzone - Engine 1
420	Subzone - Engine 2

G. IDG Installation

SUBTASK 24-11-11-840-001

(1) Do these steps to prepare the IDG [10] for the installation:

- (a) If installed, remove the protective cover from the gearbox mount pad on the accessory gearbox.
- (b) Examine the IDG [10], the QAD ring and the input seal for signs of damage or unwanted material
- (c) Clean all grease from the IDG input shaft with solvent, B00074.
- (d) Apply a thin layer of oil, D00068 or oil, D00071 to the lugs of the QAD ring and to the threads of the QAD tension bolt.
- (e) Lubricate a new o-ring [16] with oil, D00068 or oil, D00071.
- (f) Install the O-ring [16] on the input shaft of the IDG [10].

SUBTASK 24-11-11-420-001

(2) Do these steps to install the IDG [10]:

- (a) Make sure the adapter, SPL-1634 is installed on the low profile hydraulic jack, COM-1443.
- (b) Put the IDG [10] on the jack.
- (c) If the APU generator lifting eye, SPL-1626 is installed on the IDG, remove the eyebolt and install a bolt on the IDG.
- (d) If not already done, turn the QAD tension bolt to put the QAD ring in the open position.
 - 1) Make sure you align the mark on the QAD ring with the mark on the QAD engine adapter plate.

NOTE: The mark on the QAD ring is inside the gearbox pad and is found on the adapter plate.

CAUTION: DO NOT LET THE IDG HANG ON THE INPUT SHAFT DURING THE INSTALLATION. FAILURE TO GIVE SUFFICIENT SUPPORT TO THE IDG CAN CAUSE DAMAGE TO THE INPUT SHAFT AND CARBON SEALS.

- (e) Align the IDG [10] with the gearbox mount pad.
- (f) Adjust the IDG [10] until the lugs on the IDG input flange engage with the QAD ring openings.
 - 1) Make sure you align the index pin on the IDG with the index hole on the QAD engine adapter plate.
 - 2) Make sure the clearance between the IDG and the QAD ring is equivalent for all points around the IDG.

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- (g) Tighten the QAD tension bolt so that the QAD ring lugs fully engage the input flange lugs on the IDG.

NOTE: Make sure that the QAD ring moves smoothly and does not bind or snag.

- (h) Tighten the QAD tension bolt as follows:
- 1) Tighten the QAD tension bolt to 240-264 pound-inches (27-30 Newton-meters).
 - 2) Tap the QAD in the area shown on Figure 401 with a soft mallet or brass drift to prevent an incorrect torque value.
 - 3) Do a check of the torque value of the QAD tension bolt. If the torque is less than 180 pound-inches (20 Newton- meters), then do these steps:
 - a) Tighten the QAD tension bolt to 240-264 pound-inches (27-30 Newton-meters).
 - b) Repeat tapping and torquing to 240-264 pound-inches (27-30 Newton-meters) until the torque of the QAD tension bolt does not drop below 180 pound-inches (20 Newton- meters) after tapping on the QAD.
 - c) Tighten the QAD tension bolt to 240-264 pound-inches (27-30 Newton-meters).
 - 4) If first check of the torque of the QAD tension bolt is above 180 pound-inches (20 Newton- meters), then do these steps:
 - a) Tap on the QAD ring and check torque again. If second check of the torque is above 180 pound-inches (20 Newton- meters), tighten the QAD tension bolt to 240-264 pound-inches (27-30 Newton-meters).

SUBTASK 24-11-11-220-001

- (3) Measure the distance between the center of the nuts on the QAD tension bolt. If the distance is less than 1.75 inches, replace the QAD. These are the tasks:
- Quick Attach/Detach (QAD) Adapter Removal, TASK 24-11-61-000-801
 - Quick Attach/Detach (QAD) Adapter Installation, TASK 24-11-61-400-801.

SUBTASK 24-11-11-910-002

- (4) Install a 0.032 inch (0.8128 mm) diameter lockwire, G01912 on the QAD tension bolt (TASK 20-30-51-910-801).

SUBTASK 24-11-11-080-001

- (5) Lower the jack with the attached adapter and remove it from the engine.

SUBTASK 24-11-11-420-002

- (6) Connect the power feeder leads [5] to the IDG [10] as follows:
- (a) Remove the two screws [8] that attach the cover [7] to the IDG [10].
 - (b) Remove the four power feeder nuts [9].

CAUTION: DO NOT INSTALL ANY WASHERS UNDER THE POWER FEEDER LEADS. LOCALIZED RESISTANCE HEATING CAN OCCUR WHICH COULD CAUSE THE TERMINAL BLOCK TO BURN.

- (c) Install the power feeder leads [5] on the power feeder terminals.

NOTE: Make sure the leads [5] are on the correct terminal.

- (d) Install the 12-point nuts [9] or the preferred 6-point Spirallock nuts and tighten to 144-168 pound-inches (16-19 Newton meters).

NOTE: For the 6-point Spirallock nut, the nut should have no resistance while it spins down the terminal stud. If resistance is felt, do a check for galling on the stud. If galling is found, the terminal block should be replaced.

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- (e) Attach the cover [7] to the IDG [10] with the two screws [8].
 - 1) Tighten the screws [8] to 20-22 pound-inches (2.3-2.5 Newton-meters).
- (f) Attach the fanning strip to the IDG [10] with the two screws [6].

NOTE: The fanning strip is attached to the power feeder leads [5].

- 1) Tighten the screws [6] to 48-53 pound-inches (2.9-3.4 Newton-meters).

SUBTASK 24-11-11-420-003

CAUTION: USE TWO WRENCHES TO TIGHTEN THE TUBE COUPLING NUTS. USE ONE TO HOLD THE UNION, AND THE OTHER TO TIGHTEN THE COUPLING NUT. IF YOU DO NOT USE TWO WRENCHES, DAMAGE TO THE TUBES AND UNIONS CAN OCCUR.

- (7) Install the oil-in line [14] and the oil-out line [1] as follows:
 - (a) Remove the protective covers from the oil-in line [14] and the oil-out line [1].
 - (b) Connect the oil-in line [14] to the oil-in union.
 - (c) Connect the oil-out line [1] to the oil-out union.
 - (d) Tighten the oil-in line [14] to 665-735 pound-inches (75-83 Newton-meters).
 - (e) Tighten the oil-out line [1] to 475-525 pound-inches (54-59 Newton-meters).

SUBTASK 24-11-11-420-004

- (8) Connect the IDG lanyards per the steps that follow:
 - (a) Position the two lanyards on the IDG bracket.
 - (b) Install the bolt [20], nut [19] and washers [21] that hold the two lanyards to the IDG bracket.
 - (c) Install the bolt [18] and nut [19] that hold the lanyard to the bracket on the gearbox.
 - 1) Make sure the lanyard is aligned with the bracket and is between the disconnect reset ring and the index mark (See Figure 401 (Sheet 4)),.
 - (d) Tighten the nuts to 100-150 inch-pounds, (11.3-16.9 Newton-meters).

SUBTASK 24-11-11-420-006

- (9) Connect the electrical connector, DP1205, [4] and the electrical connector, DP1206, [13] to the IDG [10].

NOTE: For the specific steps to connect, clean and remove protection to the electrical connectors, refer to Seals (Preformed Packings and O-Rings) and Gaskets, TASK 70-30-01-910-802-F00.

SUBTASK 24-11-11-610-002

- (10) Do this task: IDG Servicing (Oil Fill), TASK 12-13-21-600-801.

H. IDG Installation Test

SUBTASK 24-11-11-790-001

- (1) Do the test listed in the Power Plant Test Reference Table, TASK 71-00-00-800-811-F00.

SUBTASK 24-11-11-710-005

- (2) If the Number 1 IDG was replaced, do this task: Operational Test For Number 1 IDG, TASK 24-11-00-700-802.

SUBTASK 24-11-11-710-006

- (3) If the Number 2 IDG was replaced, do this task: Operational Test For Number 2 IDG, TASK 24-11-00-700-803.

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I. Put the Airplane Back to Its Usual Condition

SUBTASK 24-11-11-860-002

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

————— **END OF TASK** —————

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INTEGRATED DRIVE GENERATOR (IDG) - INSPECTION/CHECK

1. General

A. This task:

- (1) The IDG Disconnect and Reset Check

TASK 24-11-11-700-801

2. Integrated Drive Generator Disconnect and Reset Check

(Figure 601)

A. General

- (1) The IDG is found on the accessory gearbox on the left side of the engine fan case.
- (2) A disconnected IDG that remains mounted to an engine for about 50 flight hours can receive damage to the ball bearing assembly for the IDG input shaft.

B. References

Reference	Title
24-22-00-860-813	Supply External Power (P/B 201)
24-22-00-860-814	Remove External Power (P/B 201)
71-11-02-010-801-F00	Open the Fan Cowl Panels (P/B 201)
71-11-02-410-801-F00	Close the Fan Cowl Panels (P/B 201)

C. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right
410	Subzone - Engine 1
420	Subzone - Engine 2

D. Prepare for check

SUBTASK 24-11-11-010-002

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

SUBTASK 24-11-11-860-003

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

SUBTASK 24-11-11-860-004

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
F	8	C01286	GENERATOR DISC 1
F	9	C01287	GENERATOR DISC 2
F	10	C01283	GENERATOR CONT UNIT 1
F	11	C01284	GENERATOR CONT UNIT 2

E. Procedure

SUBTASK 24-11-11-710-001

- (1) Do the check as follows:
 - (a) Push the BAT switch on the P5 panel to the ON position.
 - (b) Make sure that the applicable DRIVE light on the P5 panel is on.

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SUBTASK 24-11-11-710-002

(2) Do a check of the IDG disconnect inhibit function as follows:

NOTE: The IDG disconnect function is inhibited when the engine is below idle speed.

CAUTION: DO NOT ACTUATE THE DISCONNECT SWITCH FOR MORE THAN 3 SECONDS. ALLOW A MINIMUM OF 60 SECONDS BETWEEN ACTUATION PERIODS. FAILURE TO FOLLOW THIS PROCEDURE COULD CAUSE DAMAGE TO IDG.

(a) Push the applicable DISCONNECT switch on the P5 panel to the DISCONNECT position.

NOTE: Put a person near the IDG listening for no click and feeling for no movement while lightly holding the IDG Disconnect Reset Ring. There should be no click and no movement at IDG when the applicable DISCONNECT switch is pushed.

(b) Make sure the DRIVE light on the P5 panel stays on.

(c) Slowly pull the IDG Disconnect Reset Ring to the outward travel limit. Make a note of the amount of hand force necessary.

(d) Make sure that the force necessary to pull the ring is light.

(e) Make sure that no click is felt when pulling the IDG Disconnect Reset Ring.

SUBTASK 24-11-11-710-003

(3) Do a check of the IDG disconnect function as follows:

(a) Simulate an engine run as follows:

NOTE: The IDG disconnect function is inhibited when the engine is below idle speed.

1) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
A	1	C00458	ENGINE 1 IGNITION RIGHT
A	3	C00153	ENGINE 1 IGNITION LEFT
B	1	C01316	ENGINE 1 START LEVER CHAN A

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	6	C01318	ENGINE 2 START LEVER CHAN A
D	4	C00459	ENGINE 2 IGNITION RIGHT
D	6	C00151	ENGINE 2 IGNITION LEFT

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
B	3	C00360	FUEL SPAR VALVE ENG 2
B	4	C00359	FUEL SPAR VALVE ENG 1
B	5	C00540	FUEL SPAR VALVE IND
E	3	C01321	ENGINE FUEL ENGINE 2 HPSOV CONT
E	4	C01396	ENGINE FUEL ENGINE 2 HPSOV IND
E	5	C01320	ENGINE FUEL ENGINE 1 HPSOV CONT
E	6	C01395	ENGINE FUEL ENGINE 1 HPSOV IND

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2) Make sure that these circuit breakers are closed:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	2	C01317	ENGINE 1 START LEVER CHAN B

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	7	C01319	ENGINE 2 START LEVER CHAN B

3) Push the applicable ENGINE START LEVER to the IDLE position.

CAUTION: DO NOT ACTUATE THE DISCONNECT SWITCH FOR MORE THAN 3 SECONDS. ALLOW A MINIMUM OF 60 SECONDS BETWEEN ACTUATION PERIODS. FAILURE TO FOLLOW THIS PROCEDURE COULD CAUSE DAMAGE TO IDG.

(b) Push the DISCONNECT switch on the P5 panel to the DISCONNECT position.

NOTE: Put a person near the IDG listening for a click and feeling for a movement while lightly holding the IDG Disconnect Reset Ring. There should be a click and movement should be felt when the applicable DISCONNECT switch is pushed.

- (c) Make sure the DRIVE light on the P5 panel stays on.
- (d) Push the BAT switch on the P5 panel to the OFF position.
- (e) Put the ENGINE START LEVER in the CUTOFF position
- (f) Close these circuit breakers:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	1	C00458	ENGINE 1 IGNITION RIGHT
A	3	C00153	ENGINE 1 IGNITION LEFT
B	1	C01316	ENGINE 1 START LEVER CHAN A

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	6	C01318	ENGINE 2 START LEVER CHAN A
D	4	C00459	ENGINE 2 IGNITION RIGHT
D	6	C00151	ENGINE 2 IGNITION LEFT

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	3	C00360	FUEL SPAR VALVE ENG 2
B	4	C00359	FUEL SPAR VALVE ENG 1
B	5	C00540	FUEL SPAR VALVE IND
E	3	C01321	ENGINE FUEL ENGINE 2 HPSOV CONT
E	4	C01396	ENGINE FUEL ENGINE 2 HPSOV IND
E	5	C01320	ENGINE FUEL ENGINE 1 HPSOV CONT
E	6	C01395	ENGINE FUEL ENGINE 1 HPSOV IND

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SUBTASK 24-11-11-710-004

CAUTION: THE IDG INPUT SHAFT MUST BE RECONNECTED PRIOR TO ENGINE START. WHEN THE IDG IS DISCONNECTED WITH THE ENGINE SHUT DOWN OR BELOW IDLE SPEED, THERE WILL NOT BE COMPLETE SEPARATION OF THE IDG DOG TEETH. IF YOU DO NOT RECONNECT THE IDG PRIOR TO ENGINE START DAMAGE TO THE IDG CAN OCCUR.

(4) Reconnect the IDG drive shaft as follows:

- (a) Slowly pull the IDG Disconnect Reset Ring to the outward travel limit. Make a note of the amount of hand force necessary.
- (b) Make sure that a click is felt in the Disconnect Reset Ring as it gets near the outward limit of travel.

NOTE: Operation of the Rest Ring should be smooth with moderate force necessary and no indication of binding.

- (c) Allow the Disconnect Reset Ring to slowly return to the maximum inward position.

NOTE: Operation of the Rest Ring should be smooth with moderate force required and no indication of binding.

- (d) Slowly pull the IDG Disconnect Reset Ring to the outward travel limit. Make a note of the amount of hand force necessary.
- (e) Make sure that the amount of hand force necessary is less than the amount used in the previous step.
- (f) Make sure that there is no click during the second pull of the Disconnect Reset Ring.
 - 1) If the hand force does not decrease, or a click is produced during the second pull of the Disconnect Reset Ring, replace the IDG.
- (g) Allow the Disconnect Reset Ring to slowly return to the maximum inward position.

F. Put the airplane in its usual condition.

SUBTASK 24-11-11-410-001

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

SUBTASK 24-11-11-860-005

- (2) Do this task: Remove External Power, TASK 24-22-00-860-814.

————— **END OF TASK** —————

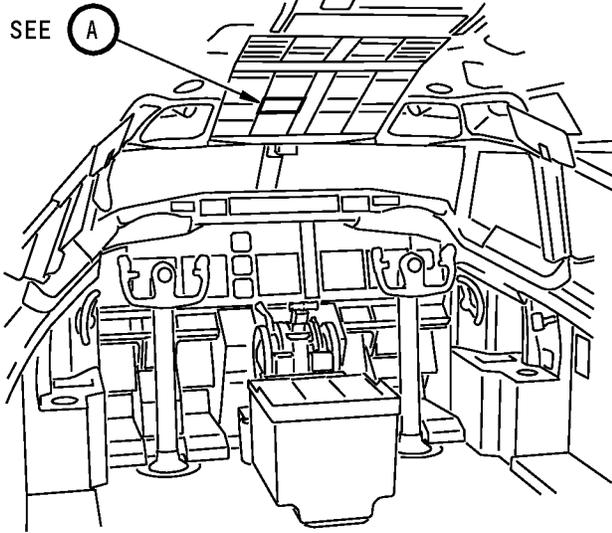
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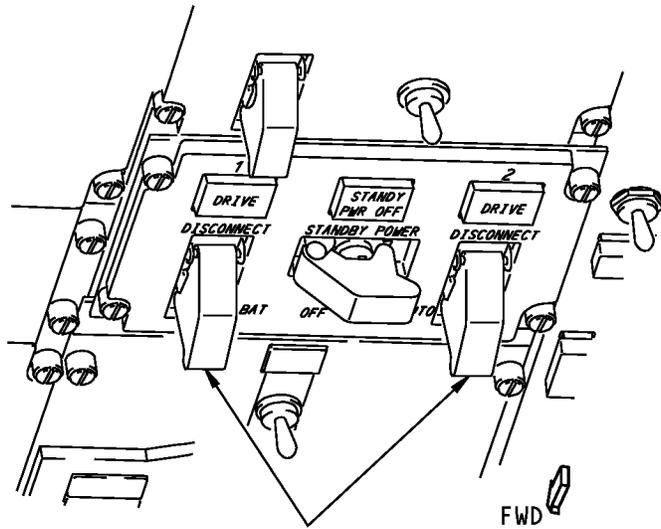
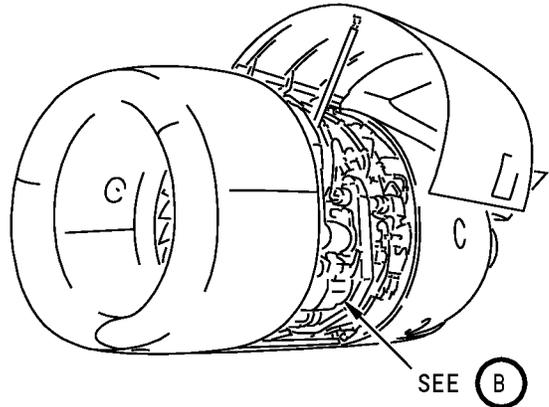
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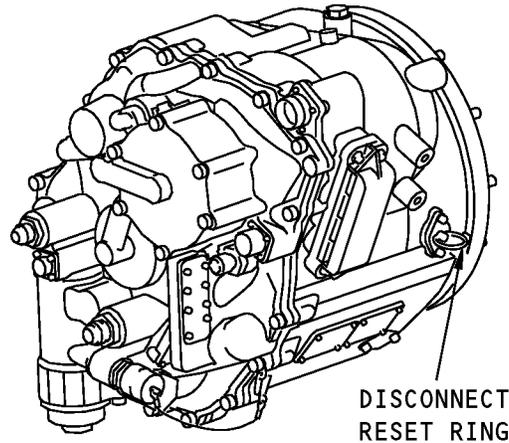
FLIGHT COMPARTMENT



**GENERATOR
DRIVE DISCONNECT
SWITCHES**

**GENERATOR DRIVE AND
STANDBY POWER MODULE (P5-5)**

(A)



**INTEGRATED DRIVE
GENERATOR**

(B)

**IDG Disconnect Drive System
Figure 601/24-11-11-990-802**

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IDG AIR/OIL COOLER - REMOVAL/INSTALLATION

1. General

A. This procedure has two tasks:

- (1) IDG Air/Oil Cooler Removal
- (2) IDG Air/Oil Cooler Installation.

TASK 24-11-21-000-801

2. Integrated Drive Generator (IDG) Air/Oil Cooler Removal

(Figure 401 and Figure 402)

A. General

- (1) The IDG air/oil cooler is an oil-to-air heat exchanger that uses bypass fan air to cool the IDG cooling oil system.
- (2) The IDG air/oil cooler is found inside the fan case and to the left of the 6 o'clock strut.
- (3) For the procedure the IDG air/oil cooler will be referred to as the cooler.

B. References

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

C. Tools/Equipment

Reference	Description
STD-1055	Container - Oil Resistant, 5 Gallon (19 Liters)

D. Location Zones

Zone	Area
410	Subzone - Engine 1
420	Subzone - Engine 2

E. Prepare for the Removal

SUBTASK 24-11-21-010-001

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

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

SUBTASK 24-11-21-010-002

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

SUBTASK 24-11-21-680-001

WARNING: DO NOT TOUCH THE COMPONENTS OF THE OIL SYSTEM IF THE ENGINE IS HOT. THESE COMPONENTS STAY HOTTER THAN OTHER COMPONENTS. HOT COMPONENTS CAN BURN YOU.

WARNING: DO NOT LET HOT OIL GET ON YOU. PUT ON GOGGLES AND OTHER EQUIPMENT FOR PROTECTION OR LET THE ENGINE BECOME COOL. HOT OIL CAN BURN YOU.

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(WARNING PRECEDES)

CAUTION: DO NOT LET HOT OIL GET ON THE ENGINE OR OTHER COMPONENTS. IMMEDIATELY CLEAN THE COMPONENT IF OIL FALLS ON IT. OIL CAN CAUSE DAMAGE TO PAINT AND RUBBER.

(3) Drain the IDG oil as follows:

WARNING: MAKE SURE YOU PUSH THE PUSH-TO-VENT VALVE. FAILURE TO DO THIS COULD CAUSE HOT OIL TO SPRAY OUT AND CAN CAUSE INJURY TO PERSONS.

- (a) Push the PUSH-TO-VENT VALVE on the IDG for a minimum of 15 seconds.
- (b) Place an oil resistant container (5 gal)(19 Liters), STD-1055 below the IDG to catch the oil.
- (c) Remove the lockwire from the drain plug on the IDG.
- (d) Remove the drain plug [21], and let the oil drain into the container.
- (e) Remove the used o-ring [22] from case drain plug and discard.

F. Procedure

SUBTASK 24-11-21-020-001

(1) Remove the cooler [1] per the steps that follow:

CAUTION: USE TWO WRENCHES TO LOOSEN THE TUBE COUPLING NUTS. USE ONE TO HOLD THE UNION, AND THE OTHER TO LOOSEN THE COUPLING NUT. IF YOU DO NOT USE TWO WRENCHES, DAMAGE TO THE TUBES AND UNIONS CAN OCCUR.

- (a) Disconnect the oil-in line and the oil-out line from the cooler [1].
- (b) If the bolts [3] are lockwired in-place, remove the lockwire.
- (c) Remove the eight bolts [3] and washers [4] that attach the cooler [1] to the engine fan case.
- (d) To remove the cooler [1], lift it free of the engine fan case.
- (e) Remove the gasket [2].

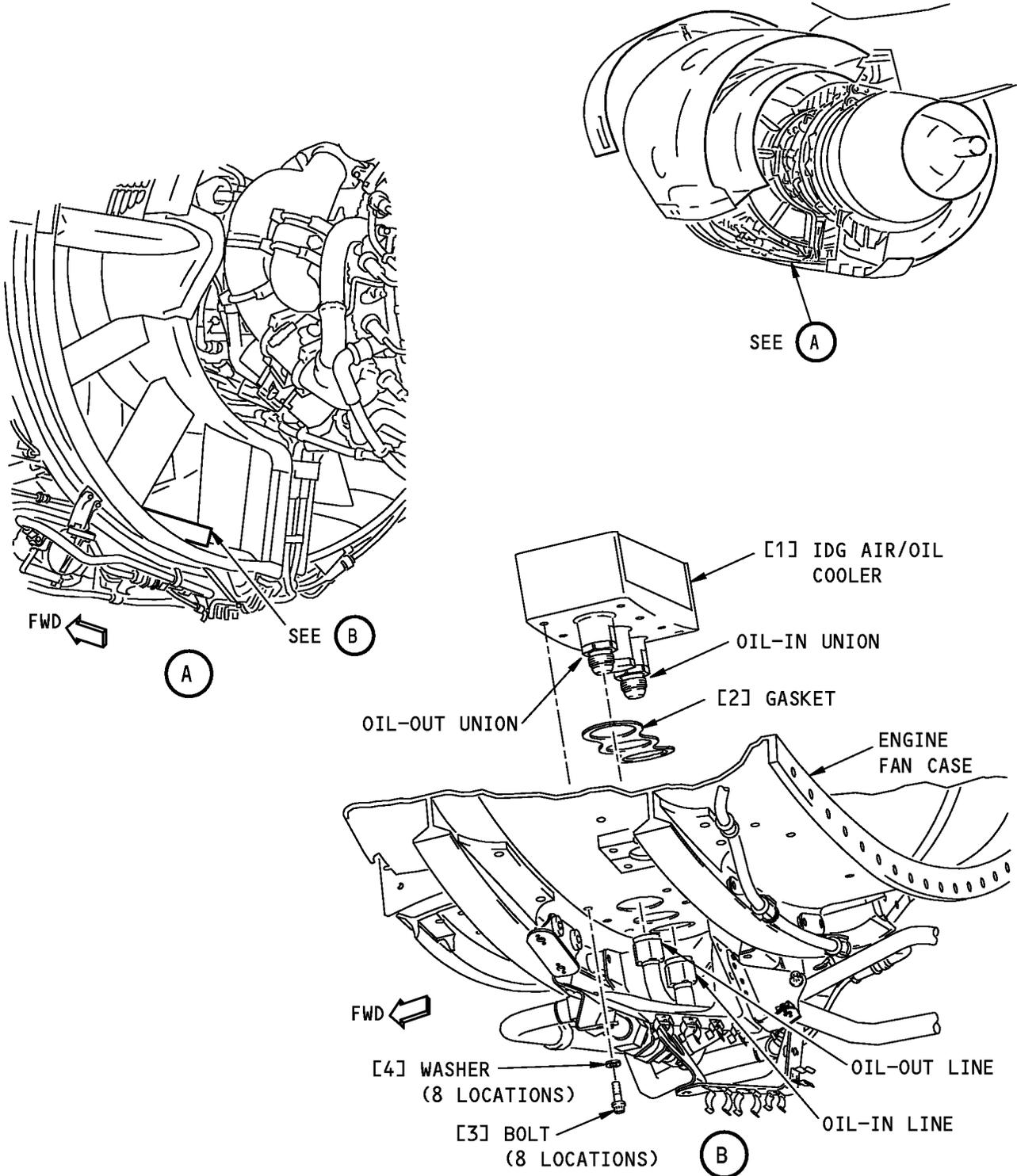
————— **END OF TASK** —————

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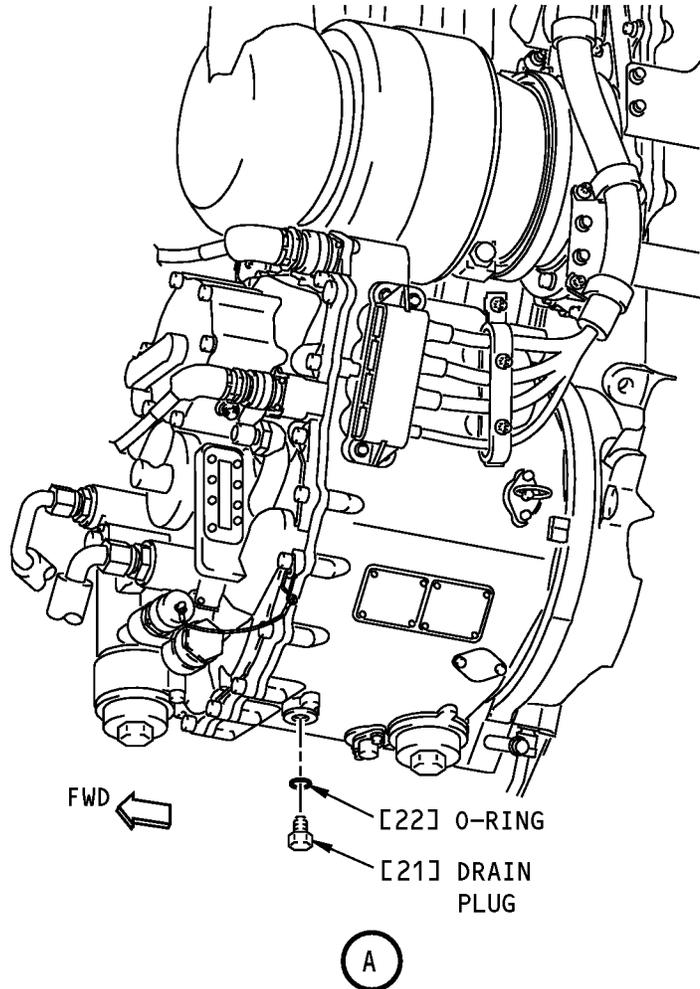
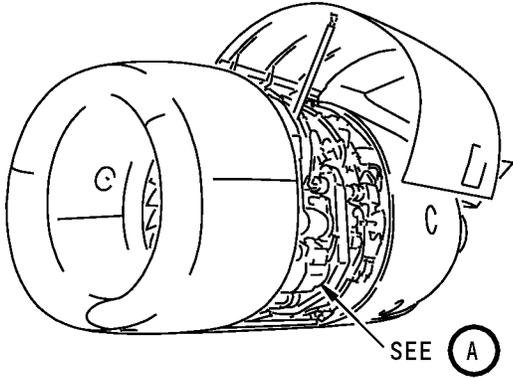


NOTE: CFMI WIRE HARNESSSES ARE NOT SHOWN.

**Integrated Drive Generator (IDG) Air/Oil Cooler Installation
Figure 401/24-11-21-990-801**

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**Integrated Drive Generator (IDG)
Figure 402/24-11-21-990-802**

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TASK 24-11-21-400-801

3. Integrated Drive Generator (IDG) Air/Oil Cooler Installation

(Figure 401 and Figure 402)

A. General

- (1) The IDG air/oil cooler is an oil-to-air heat exchanger that uses bypass fan air to cool the IDG cooling oil system.
- (2) The IDG air/oil cooler is found inside the fan case and to the left of the 6 o'clock strut.
- (3) For the procedure the IDG air/oil cooler will be referred to as the cooler.

B. References

Reference	Title
12-13-21-600-801	IDG Servicing (Oil Fill) (P/B 301)
20-30-51-910-801	Miscellaneous Materials (P/B 201)
70-20-01-800-804-F00	Lockwire Installation (P/B 201)
71-00-00-800-811-F00	Power Plant Test Reference Table (P/B 501)
71-11-02-410-801-F00	Close the Fan Cowl Panels (P/B 201)
78-31-00-010-804-F00	Close the Thrust Reverser (Selection) (P/B 201)

C. Consumable Materials

Reference	Description	Specification
D00068	Oil - Aircraft Turbine Engine, Synthetic Base	MIL-PR~ F-23699F, Class STD (Standard)
D00071	Oil - Aircraft Turbine Engine, Synthetic Base	MIL-PRF-7808, Grade 3
D00504	Grease - Petrolatum	VV-P-236
G01912	Lockwire - Monel (0.032 In. Dia.)	NASM20995N~ C32 (QQ-N-281)

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Cooler	24-11-21-01-020	HAP 001-007
		24-11-21-01A-020	HAP 008-013, 015-026, 028-054, 101-999
2	Gasket	24-11-21-01-015	HAP 001-007
		24-11-21-01A-015	HAP 008-013, 015-026, 028-051, 054, 101-999
22	O-ring	24-11-11-50-025	HAP ALL

E. Location Zones

Zone	Area
410	Subzone - Engine 1
420	Subzone - Engine 2

F. Prepare for the Installation

SUBTASK 24-11-21-420-001

- (1) Install the IDG case drain plug as follows:

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- (a) Apply Acryloid, oil, D00071 or oil, D00068 to new o-ring [22].
- (b) Install new o-ring [22] on the drain plug [21].
- (c) Install the drain plug [21] on the IDG.
- (d) Tighten the drain plug to 55-75 pound inches, (6.2-8.4 Newton meters).
- (e) Install a 0.032 inch (0.8128 mm) diameter lockwire, G01912, (TASK 20-30-51-910-801).

SUBTASK 24-11-21-840-001

- (2) Prepare the cooler [1] for installation as follows:
 - (a) If installed, remove the protective covers from the openings on the cooler [1].
 - (b) Examine the cooler [1] for signs of damage or unwanted material.

G. Procedure

SUBTASK 24-11-21-420-002

- (1) Install the cooler [1] per the steps that follow:
 - (a) Lubricate the gasket [2] with grease, D00504.
 - (b) Install the gasket [2] on the cooler [1].
 - (c) Install the cooler [1] onto the engine fan case.

NOTE: Make sure the bolt holes in the cooler line up with the holes on the engine fan case.
 - (d) Install the eight bolts [3] and washers [4] that hold the cooler to the engine fan case.
 - (e) Tighten the eight bolts [3] to 72-88 pound-inches (8.1-9.9 Newton meters).
 - (f) If the bolts [3] were originally lockwired in place, do this task: Lockwire Installation, TASK 70-20-01-800-804-F00.

SUBTASK 24-11-21-420-003

CAUTION: USE TWO WRENCHES TO TIGHTEN THE TUBE COUPLING NUTS. USE ONE TO HOLD THE UNION, AND THE OTHER TO TIGHTEN THE COUPLING NUT. IF YOU DO NOT USE TWO WRENCHES, DAMAGE TO THE TUBES AND UNIONS CAN OCCUR.

- (2) Install the oil-in and the oil-out lines as follows:
 - (a) Connect the coupling nut on the oil-in line to the oil-in union.
 - 1) Tighten the coupling nut on the oil-in line to 342-378 pound-inches (38.6 - 42.7 Newton meters).
 - 2) Back off the coupling nut on the oil-in line to decrease the torque.
 - 3) Tighten the coupling nut again to 342-378 pound-inches (38.6 - 42.7 Newton meters).
 - (b) Connect the coupling nut on the oil-out line to the oil-out union.
 - 1) Tighten the coupling nut on the oil-out line to 342-378 pound-inches (38.6 - 42.7 Newton meters).
 - 2) Back off the coupling nut on the oil-out line to decrease the torque.
 - 3) Tighten the coupling nut again to 342 - 378 pound-inches (38.6 - 42.7 Newton meters).

SUBTASK 24-11-21-610-001

- (3) Do this task: IDG Servicing (Oil Fill), TASK 12-13-21-600-801.

H. IDG Air/Oil Cooler Installation Test

SUBTASK 24-11-21-790-001

- (1) Do the test listed in the Power Plant Test Reference Table, TASK 71-00-00-800-811-F00.

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I. Put the Airplane Back to Its Usual Condition

SUBTASK 24-11-21-010-003

WARNING: OBEY THE INSTRUCTIONS IN THE PROCEDURE TO CLOSE THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

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

SUBTASK 24-11-21-410-001

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

————— **END OF TASK** —————

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IDG SCAVENGE/CHARGE OIL FILTER - MAINTENANCE PRACTICES

1. General

- A. This procedure contains scheduled maintenance task data.
B. This procedure has these tasks:
(1) IDG Scavenge and Charge Filter Removal
(2) IDG Scavenge and Charge Filter Inspection/Check
(3) IDG Scavenge and Charge Filter Installation

TASK 24-11-41-000-801

2. IDG Scavenge and Charge Filter Removal

(Figure 201)

A. General

- (1) This procedure is a scheduled maintenance task.
(2) Identify the filter element that came out of the scavenge cavity and the charge cavity on the IDG.
(3) If the IDG is to be replaced, put the element back into the cavity that it was removed from and install the filter cover finger tight before you send the IDG to the repair shop.
(4) The IDG Scavenge Filter and Charge Filter elements are the same.

B. References

Table with 2 columns: Reference, Title. Row: 71-11-02-010-801-F00, Open the Fan Cowl Panels (P/B 201)

C. Location Zones

Table with 2 columns: Zone, Area. Row 1: 410, Subzone - Engine 1. Row 2: 420, Subzone - Engine 2

D. Prepare for removal

SUBTASK 24-11-41-010-001

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

E. Procedure

SUBTASK 24-11-41-020-001

WARNING: DO NOT TOUCH THE COMPONENTS OF THE OIL SYSTEM IF THE ENGINE IS HOT. THESE COMPONENTS STAY HOTTER THAN OTHER COMPONENTS. HOT COMPONENTS CAN BURN YOU.

WARNING: DO NOT LET HOT OIL GET ON YOU. PUT ON GOGGLES AND OTHER EQUIPMENT FOR PROTECTION OR LET THE ENGINE BECOME COOL. HOT OIL CAN BURN YOU.

- (1) Do the filter removal as follows:

WARNING: MAKE SURE YOU PUSH THE PUSH-TO-VENT VALVE. FAILURE TO DO THIS COULD CAUSE HOT OIL TO SPRAY OUT AND CAN CAUSE INJURY TO PERSONS.

- (a) Push the PUSH-TO-VENT VALVE on the IDG for a minimum of 15 seconds.
(b) Remove the lockwire from the filter cover.
(c) Place an oil resistant 5 gallon container under IDG filter to catch the oil.

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- (d) Do these steps to remove the filter:
- 1) Remove the filter cover [4].
NOTE: Inspect the oil in the cover for bright metal particles before you discard the oil.
 - 2) Remove the o-ring [3] from the filter cover and discard.
 - 3) Remove the element [2].
NOTE: Do not reinstall a used filter element, even if it looks clean. Always install a new filter element.
- (e) Do this task: IDG Scavenge and Charge Filter Inspection/Check, TASK 24-11-41-200-801.

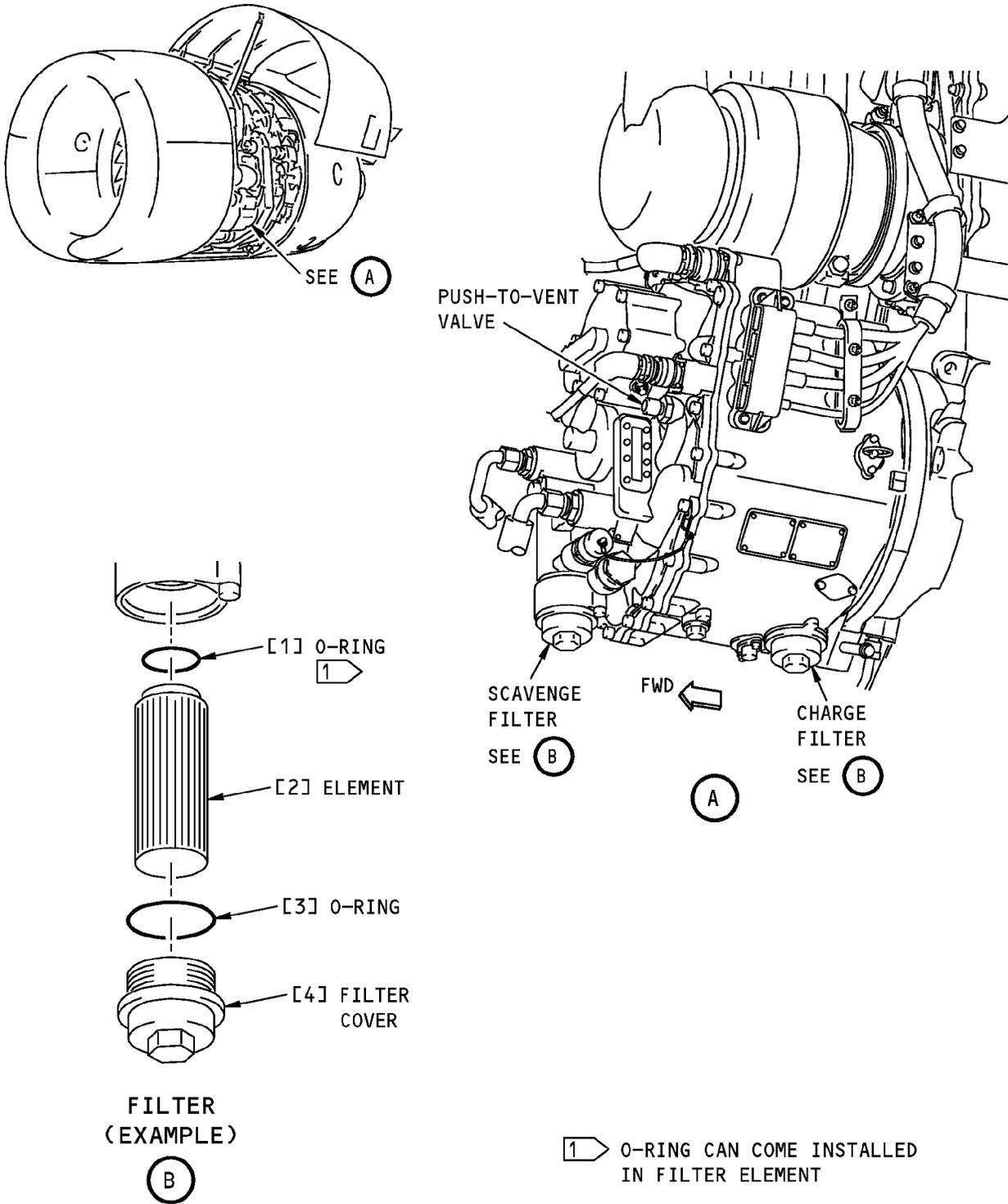
————— **END OF TASK** —————

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**IDG Scavenge Filter and Charge Filter Installation
Figure 201/24-11-41-990-801**

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TASK 24-11-41-200-801

3. IDG Scavenge and Charge Filter Inspection/Check

A. General

(1) This procedure is a scheduled maintenance task.

B. References

Reference	Title
12-13-21 P/B 301	INTEGRATED DRIVE GENERATOR (IDG) - SERVICING
24-11-11 P/B 401	INTEGRATED DRIVE GENERATOR (IDG) - REMOVAL/INSTALLATION
24-11-21 P/B 401	IDG AIR/OIL COOLER - REMOVAL/INSTALLATION

C. Tools/Equipment

Reference	Description
STD-205	Container - Oil Resistant, 5 U.S.-Gal (19 l)

D. Location Zones

Zone	Area
410	Subzone - Engine 1
420	Subzone - Engine 2

E. Prepare for inspection/check

SUBTASK 24-11-41-010-002

(1) If the filter is not already removed, do this task: IDG Scavenge and Charge Filter Removal, TASK 24-11-41-000-801.

SUBTASK 24-11-41-210-002

(2) When the differential pressure indicator (DPI) on the IDG is extended, the scavenge filter and the IDG oil must be examined.

SUBTASK 24-11-41-210-003

(3) If the scavenge filter and the IDG oil condition are not satisfactory, or the DPI Resets decal (if installed) shows it is the 4th extension, the IDG must be replaced.

SUBTASK 24-11-41-210-004

(4) If the scavenge filter and the IDG oil condition are satisfactory, and the DPI Resets decal (if installed) shows it is not the 4th extension, the DPI can be reset.

SUBTASK 24-11-41-860-001

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
F	8	C01286	GENERATOR DISC 1
F	9	C01287	GENERATOR DISC 2

F. Procedure

SUBTASK 24-11-41-210-006

(1) Do these steps to visually examine the differential pressure indicator (DPI):

NOTE: The DPI is the red button adjacent to the scavenge filter on the IDG.

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- (a) If the DPI is in the up position, examine the scavenge filter condition, the IDG oil condition and do actions in the DPI extension table below.

NOTE: When the DPI is in the up position and if the DPI resets decal shows it is the 4th DPI extension, the IDG must be replaced.

- 1) If the IDG was replaced, no more work is necessary.
- 2) If the IDG was not replaced, check the DPI resets decal on the scavenge filter cover for the number of DPI resets that has been done.

NOTE: When the DPI is in the up position and if the actions in the DPI extension table does not require to replace the IDG, the DPI can be reset 3 times.

- a) If the DPI resets decal shows it is the fourth (4th) DPI extension, replace the IDG (PAGEBLOCK 24-11-11/401).
 - b) If the DPI resets decal shows it is not the fourth (4th) DPI extension, use a blunt tool to rub out the next number on the DPI resets decal and use finger to push the DPI red button down.
- (b) If the button is in the down position, do these steps:
 - 1) If other regular IDG service maintenance is not required, no more work is necessary.
 - 2) If other regular IDG service maintenance tasks are required, do those tasks.

Table 201/24-11-41-993-803 DPI EXTENSION

SCAVENGE FILTER CONDITION	IDG OIL CONDITION	ACTION
No visible magnetic or non-metallic particles (See NOTE for more scavenge filter data) ^{*[1]}	No oil discoloration, no signs of over-heating or chemical contamination of the oil is not suspected	1. Drain the oil in the 5 U.S.-gal (19 l) oil resistant container, STD-205. 2. Replace the scavenge filter (24-11-41/201). 3. Service with oil (PAGEBLOCK 12-13-21/301).
No visible magnetic or non-metallic particles (See NOTE for more scavenge filter data) ^{*[1]}	Oil discoloration, signs of overheating or chemical contamination of the oil is suspected (Hydraulic fluid and water)	1. Drain the oil in the 5 U.S.-gal (19 l) oil resistant container, STD-205. 2. Replace the scavenge filter (24-11-41/201). 3. Service with oil (PAGEBLOCK 12-13-21/301). 4. Run the engine until the IDG oil temperature is 175 deg F. 5. Drain the oil in the 5 U.S.-gal (19 l) oil resistant container, STD-205. 6. Replace the scavenge filter (24-11-41/201). 7. Service with oil (PAGEBLOCK 12-13-21/301).

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(Continued)

SCAVENGE FILTER CONDITION	IDG OIL CONDITION	ACTION
Visible magnetic or non-metallic particles in the scavenge filter and the scavenge filter is not breached. (See NOTE for more scavenge filter data) ^[1]	No oil discoloration, no signs of over-heating or chemical contamination of the oil is not suspected	1. Replace the IDG (PAGEBLOCK 24-11-11/401).
Visible magnetic or non-metallic particles in the scavenge filter and the scavenge filter is not breached. (See NOTE for more scavenge filter data) ^[1]	Oil discoloration, signs of overheating or chemical contamination of the oil is suspected (Hydraulic fluid and water)	1. Remove the IDG (PAGEBLOCK 24-11-11/401). 2. Flush the IDG oil system (PAGEBLOCK 12-13-21/301). 3. Install the IDG (PAGEBLOCK 24-11-11/401).
Visible magnetic or non-metallic particles in the scavenge filter and the scavenge filter is breached. (See NOTE for more scavenge filter data) ^[1]	Oil condition is not a factor	1. Remove the IDG (PAGEBLOCK 24-11-11/401). 2. Replace the IDG air/oil cooler (PAGEBLOCK 24-11-21/401). 3. Replace the IDG oil cooler lines. 4. Install the IDG (PAGEBLOCK 24-11-11/401).

*[1] If the scavenge filter element or filter cover shows a number of moderately scattered, small metallic flakes (bronze or silver colored metal), flakes of generator insulation, black epoxy flakes, or sleeving, do not replace the IDG. These products are normal wear during IDG operation. If the filter element shows bright metal deposits that can be clearly specified as chunks or pieces caused by breakage, or a large number of small metallic flakes (bronze or silver-colored metal), replace the IDG. These are indications of IDG internal damage. The filter is breached if the filter is damaged or missing, the O-ring is damaged or missing, or the filter cap is damaged or loose.

SUBTASK 24-11-41-860-002

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
F	8	C01286	GENERATOR DISC 1
F	9	C01287	GENERATOR DISC 2

————— END OF TASK —————

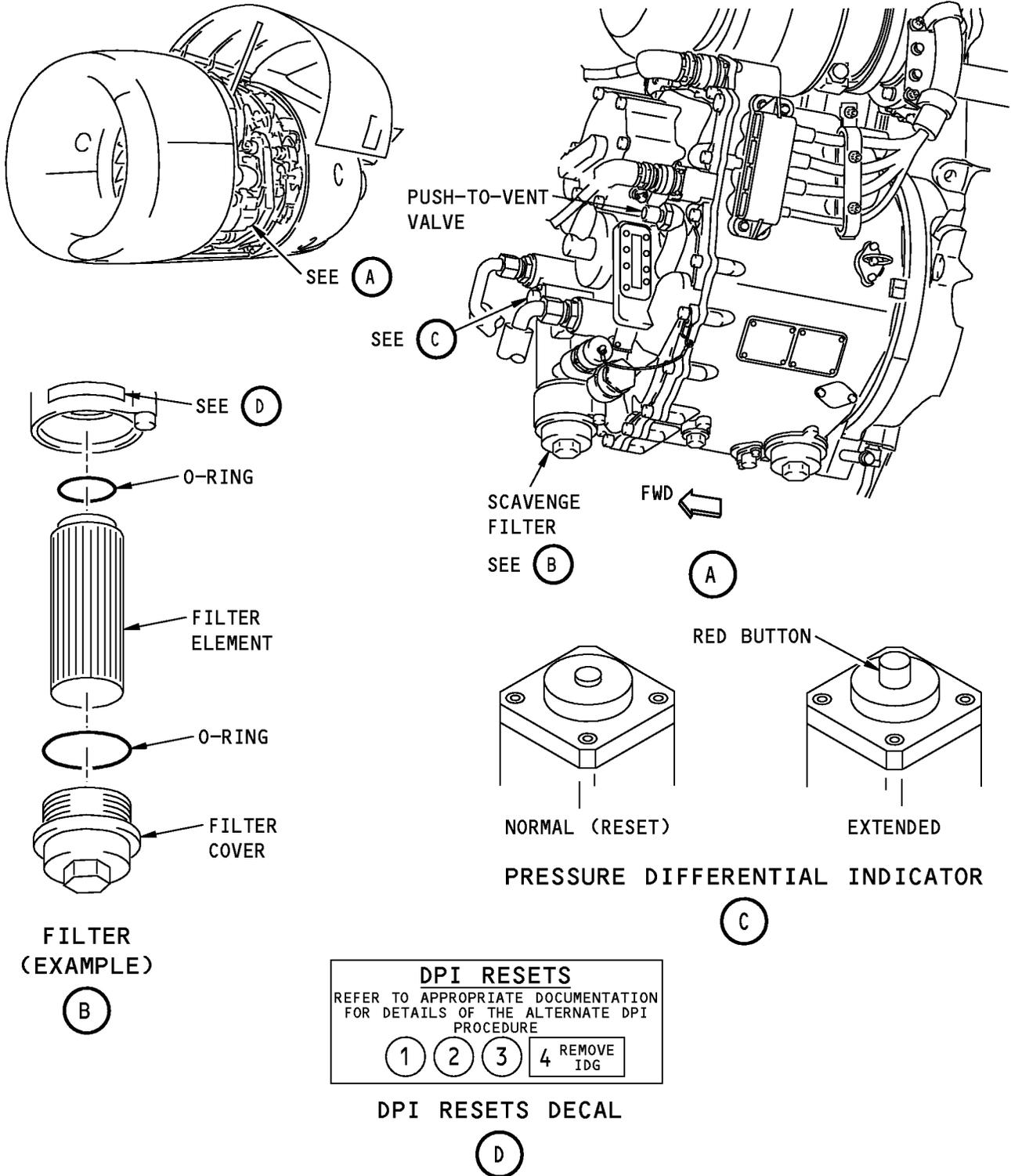
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DPI Reset Procedure
Figure 202/24-11-41-990-802

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TASK 24-11-41-400-801

4. IDG Scavenge and Charge Filter Installation

A. General

- (1) This procedure is a scheduled maintenance task.
(2) The IDG Scavenge Filter and Charge Filter elements are the same.
(3) Do not reinstall a used filter element, even if it looks clean. Always install a new filter element.

B. References

Table with 2 columns: Reference, Title. Rows include 12-13-21-600-801 (IDG Servicing), 20-30-51-910-801 (Miscellaneous Materials), 71-00-00-700-821-F00 (Dry Motor the Engine), 71-11-02-410-801-F00 (Close the Fan Cowl Panels).

C. Consumable Materials

Table with 3 columns: Reference, Description, Specification. Rows include D00068 (Oil - Aircraft Turbine Engine, Synthetic Base), D00071 (Oil - Aircraft Turbine Engine, Synthetic Base), G01912 (Lockwire - Monel).

D. Expendables/Parts

Table with 4 columns: AMM Item, Description, AIPC Reference, AIPC Effectivity. Rows include 2 (Element), 3 (O-ring).

E. Procedure

SUBTASK 24-11-41-420-001

- (1) Install the filter element as follows:
(a) Apply oil, D00071 or oil, D00068 on the o-ring [3].
(b) Install the o-ring [3] on the filter cover [4].
(c) Apply oil, D00071 or oil, D00068 on the o-ring [1].
NOTE: The o-ring [1] comes installed in the element [2].
(d) Install the element [2] in the cavity on the IDG until o-ring on filter element makes a seal.
NOTE: Make sure that filter element is properly seated into the IDG cavity before you install the filter cover.

CAUTION: DO NOT TIGHTEN THE FILTER COVER TO FORCE THE FILTER ELEMENT INTO THE HOUSING. IF YOU DO, DAMAGE TO THE FILTER ELEMENT CAN OCCUR.

- (e) Install the filter cover [4].
(f) Tighten the filter cover to 156 - 180 pound-inches (17.6 - 20.3 Newton meters).
(g) Install a 0.032 inch (0.8128 mm) diameter lockwire, G01912 onto the filter cover (TASK 20-30-51-910-801).

Table with 2 columns: EFFECTIVITY, HAP ALL.

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- (h) Do this task: IDG Servicing (Oil Fill), TASK 12-13-21-600-801.
- (i) Do this task: Dry Motor the Engine, TASK 71-00-00-700-821-F00.
- (j) Check for leaks.

F. Put the airplane in its usual condition.

SUBTASK 24-11-41-410-001

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

————— **END OF TASK** —————

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QUICK ATTACH/DETACH (QAD) ADAPTER - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

- (1) Quick Attach/Detach (QAD) Adapter Removal
- (2) Quick Attach/Detach (QAD) Adapter Installation

TASK 24-11-61-000-801

2. Quick Attach/Detach (QAD) Adapter Removal

(Figure 401)

A. General

- (1) This task removes the QAD adapter from the engine accessory gearbox. You must remove the IDG before you can remove the QAD adapter.

B. References

Reference	Title
24-11-11-000-801	Integrated Drive Generator (IDG) Removal (P/B 401)
71-11-02-010-801-F00	Open the Fan Cowl Panels (P/B 201)

C. Tools/Equipment

Reference	Description
STD-3906	Mallet - Rubber

D. Location Zones

Zone	Area
410	Subzone - Engine 1
413	Engine 1 - Fan Cowl, Left
420	Subzone - Engine 2
423	Engine 2 - Fan Cowl, Left

E. Prepare for the Removal

SUBTASK 24-11-61-010-001

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

SUBTASK 24-11-61-010-002

- (2) If the IDG is installed, do this task: Integrated Drive Generator (IDG) Removal, TASK 24-11-11-000-801.

F. Procedure

SUBTASK 24-11-61-020-001

- (1) Remove the QAD adapter per the steps that follow:
 - (a) Remove the twelve flathead screws [3] that attach the QAD adapter [1] to the gearbox mount pad.
 - (b) Pull the QAD adapter [1] away from the pad.

NOTE: If the QAD adapter does not release easily from the pad, lightly hit it with a rubber mallet, STD-3906.
 - (c) Remove the QAD adapter [1].

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(d) Remove the gasket [2].

————— **END OF TASK** —————

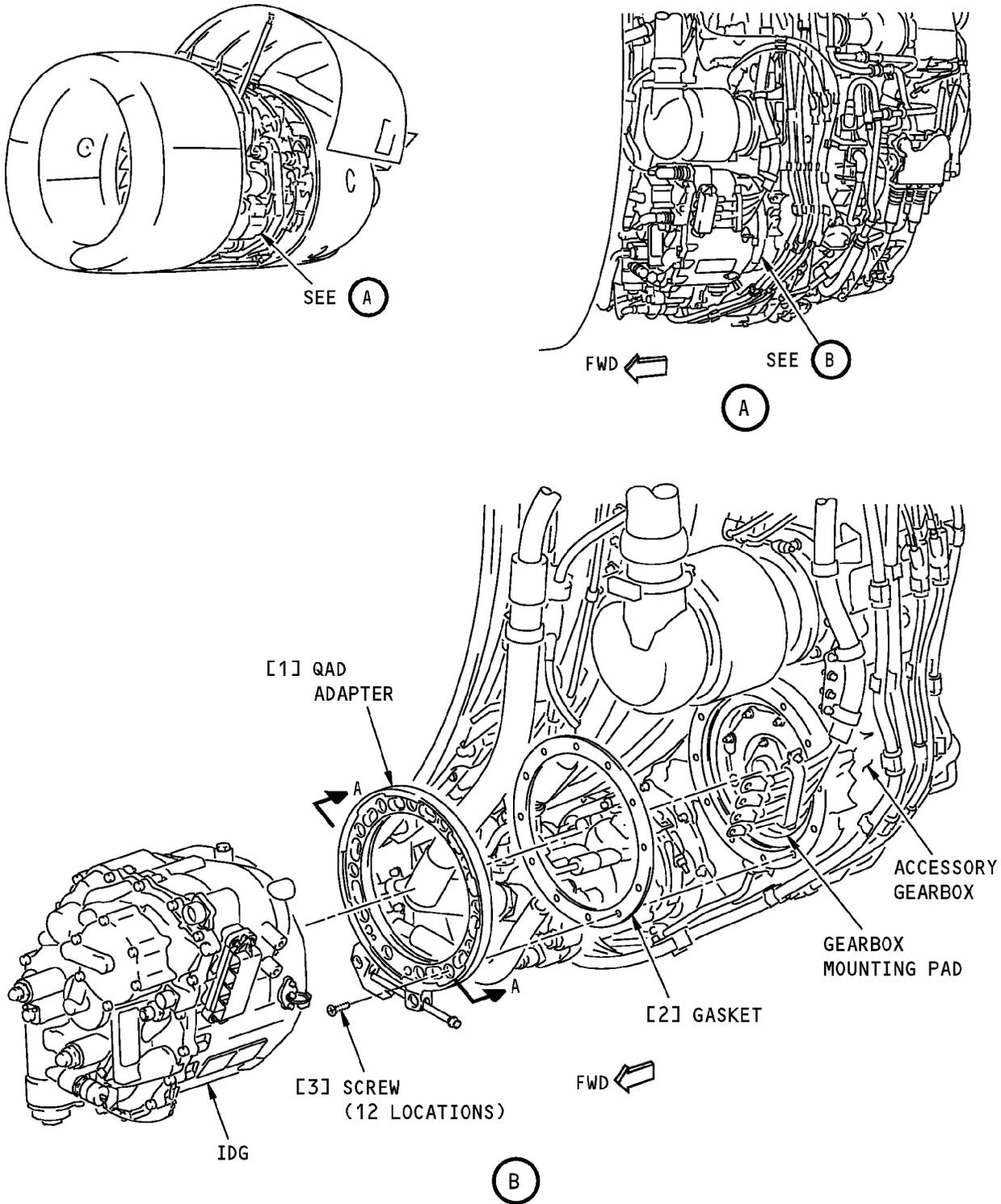
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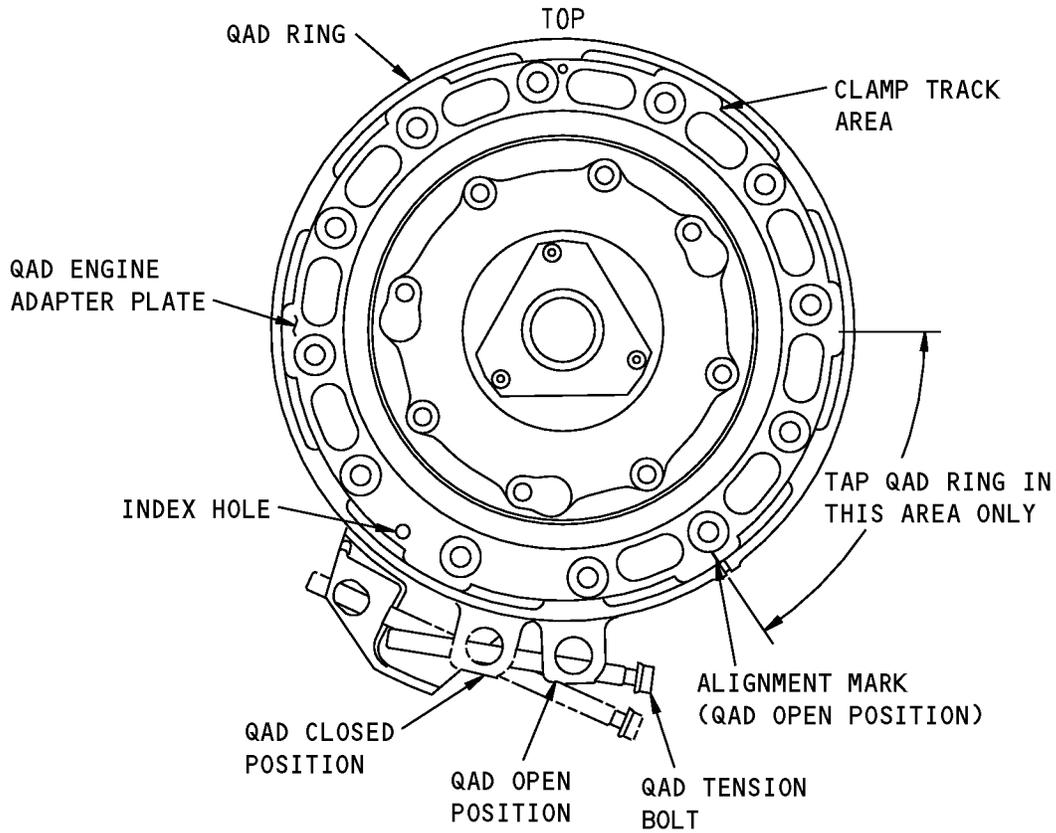
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**Quick Attach/Detach Adapter Installation
Figure 401 (Sheet 1 of 2)/24-11-61-990-801**

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A-A

**Quick Attach/Detach Adapter Installation
Figure 401 (Sheet 2 of 2)/24-11-61-990-801**

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TASK 24-11-61-400-801

3. Quick Attach/Detach (QAD) Adapter Installation

(Figure 401)

A. General

(1) This task installs the QAD adapter to the engine accessory gearbox.

B. References

Reference	Title
24-11-11-400-801	Integrated Drive Generator (IDG) Installation (P/B 401)
71-11-02-410-801-F00	Close the Fan Cowl Panels (P/B 201)

C. Consumable Materials

Reference	Description	Specification
D00006	Compound - Antiseize Pure Nickel Special - Never-Seez NSBT-8N	MIL-PRF-907F
D00254	Compound - Silicone	SAE AS8660 (NATO S-736) (Supercedes MIL-S-8660)

D. Location Zones

Zone	Area
410	Subzone - Engine 1
413	Engine 1 - Fan Cowl, Left
420	Subzone - Engine 2
423	Engine 2 - Fan Cowl, Left

E. Prepare for the Installation

SUBTASK 24-11-61-210-001

(1) Visually examine the mating surfaces of the QAD adapter and the gearbox mounting pad.

NOTE: The surfaces must be smooth and clean.

F. Procedure

SUBTASK 24-11-61-420-001

(1) Install the QAD adapter [1] per the steps that follow:

CAUTION: YOU MUST NOT LET GREASE GET INTO THE DOWEL PIN HOLES AND BOLT HOLES. IF GREASE GETS INTO THESE HOLES DAMAGE TO THE GEARBOX CAN OCCUR DUE TO PRESSURE BUILDUP WHEN THE BOLTS ARE INSTALLED AND TIGHTENED.

- (a) Apply a light coat of silicone compound, D00254 to the QAD flange and gearbox pad where they contact the gasket [2].
- (b) Position the gasket [2] on the side of the QAD adapter that mates up with the gearbox pad. Make sure the hole pattern of the gasket [2] aligns with the hole pattern of the QAD adapter [1].
- (c) Apply a thin layer of Never-Seez NSBT-8N compound, D00006 to the twelve flathead screws [3].

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(d) Position the QAD adapter [1] to the gearbox mounting pad.

NOTE: Be sure the QAD coupling is in the correct position (Figure 401).

(e) Install the twelve flathead screws [3].

(f) Tighten the screws [3] to 275-300 pound-inches (31.1-33.9 Newton meters).

SUBTASK 24-11-61-410-001

(2) Install the IDG. To install the IDG, do this task: Integrated Drive Generator (IDG) Installation, TASK 24-11-11-400-801.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 24-11-61-410-002

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

————— **END OF TASK** —————

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QUICK ATTACH/DETACH (QAD) ADAPTER - INSPECTION/CHECK

1. General

- A. This procedure contains scheduled maintenance task data.
- B. This procedure has this task:
 - (1) QAD Adapter Torque Check.

TASK 24-11-61-200-801

2. QAD Adapter Torque Check

(Figure 601)

A. General

- (1) This procedure is a scheduled maintenance task.
- (2) This procedure does a check of the torque on the QAD tension bolt with the IDG installed.

B. References

Reference	Title
20-10-44-400-801	Lockwires Installation (P/B 401)
71-11-02-010-801-F00	Open the Fan Cowl Panels (P/B 201)
71-11-02-410-801-F00	Close the Fan Cowl Panels (P/B 201)

C. Consumable Materials

Reference	Description	Specification
G01912	Lockwire - Monel (0.032 In. Dia.)	NASM20995N~ C32 (QQ-N-281)

D. Location Zones

Zone	Area
410	Subzone - Engine 1
413	Engine 1 - Fan Cowl, Left
420	Subzone - Engine 2
423	Engine 2 - Fan Cowl, Left

E. Prepare for the Torque Check

SUBTASK 24-11-61-010-004

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

F. Procedure

SUBTASK 24-11-61-200-001

- (1) Do the steps that follow to check the torque of the QAD adapter tension bolt:
 - (a) Remove the lockwire from the tension bolt on the QAD adapter.
 - (b) Tap the QAD in the area shown on Figure 601 with a soft mallet or brass drift to prevent an incorrect torque value.
 - (c) Do a check of the torque value of the QAD tension bolt. If the torque is less than 180 pound-inches (20 Newton-meters), then do these steps:
 - 1) Tighten the QAD tension bolt to 240-264 pound-inches (27-30 Newton-meters).

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- 2) Repeat tapping and torquing to 240-264 pound-inches (27-30 Newton-meters) until the torque of the QAD tension bolt does not drop below 180 pound-inches (20 Newton-meters) after tapping on the QAD.
- 3) Tighten the QAD tension bolt to 240-264 pound-inches (27-30 Newton-meters).
- (d) If first check of the torque of the QAD tension bolt is above 180 pound-inches (20 Newton-meters), then do these steps:
 - 1) Tap on the QAD ring and check torque again. If second check of the torque is above 180 pound-inches (20 Newton-meters), tighten the QAD tension bolt to 240-264 pound-inches (27-30 Newton-meters).
- (e) Install a 0.032 inch (0.8128 mm) diameter lockwire, G01912 on QAD tension bolt (TASK 20-10-44-400-801).

G. Put the Airplane Back to Its Usual Condition

SUBTASK 24-11-61-410-003

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

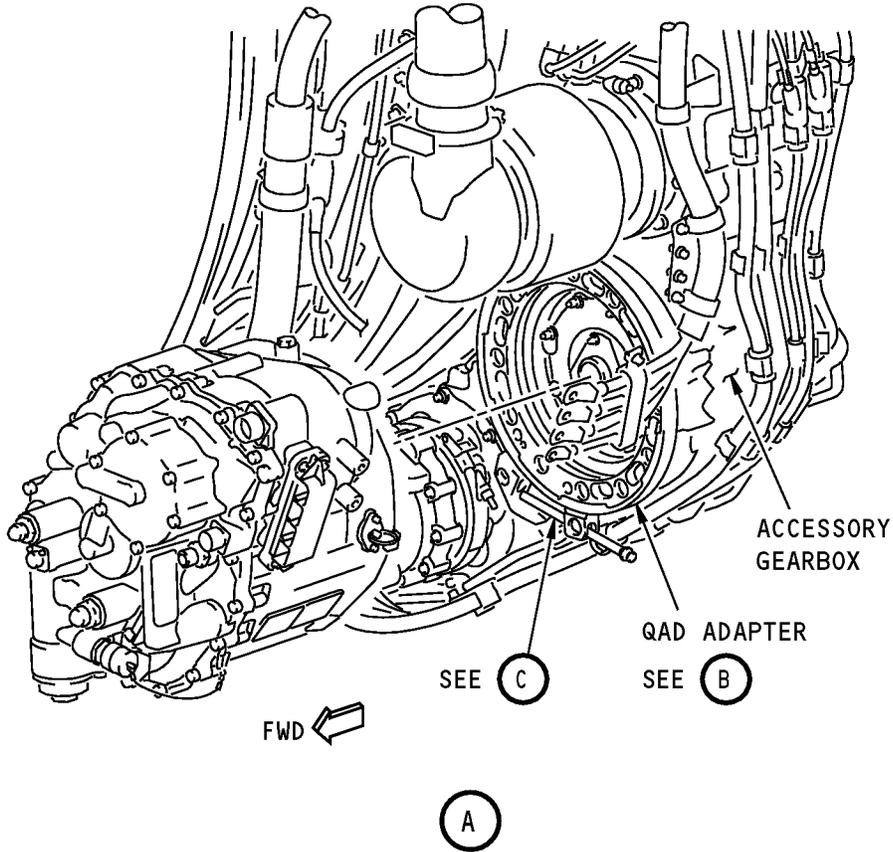
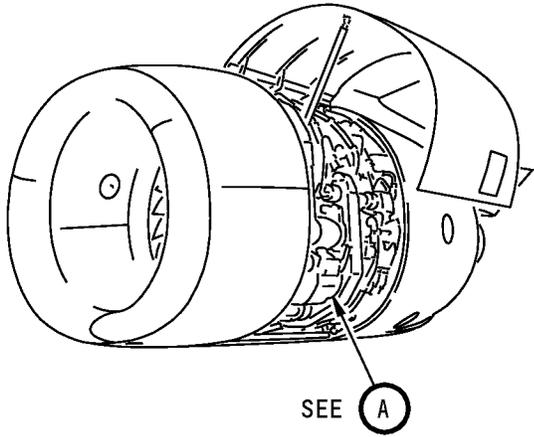
————— **END OF TASK** —————

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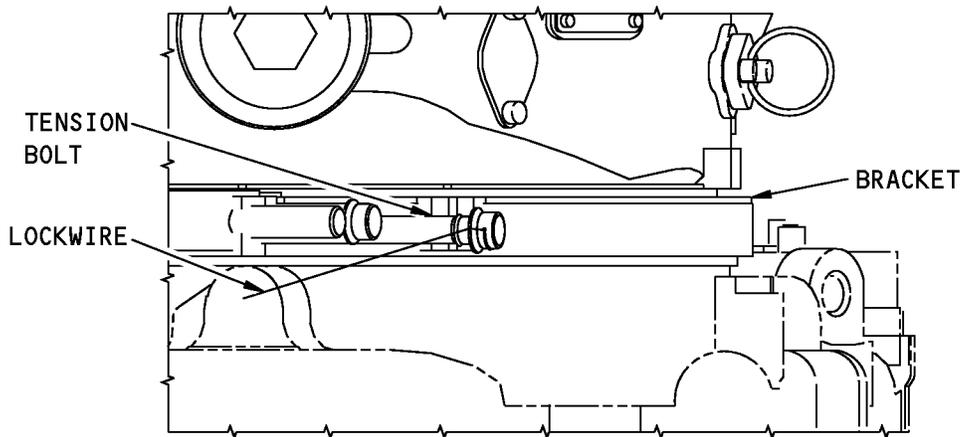
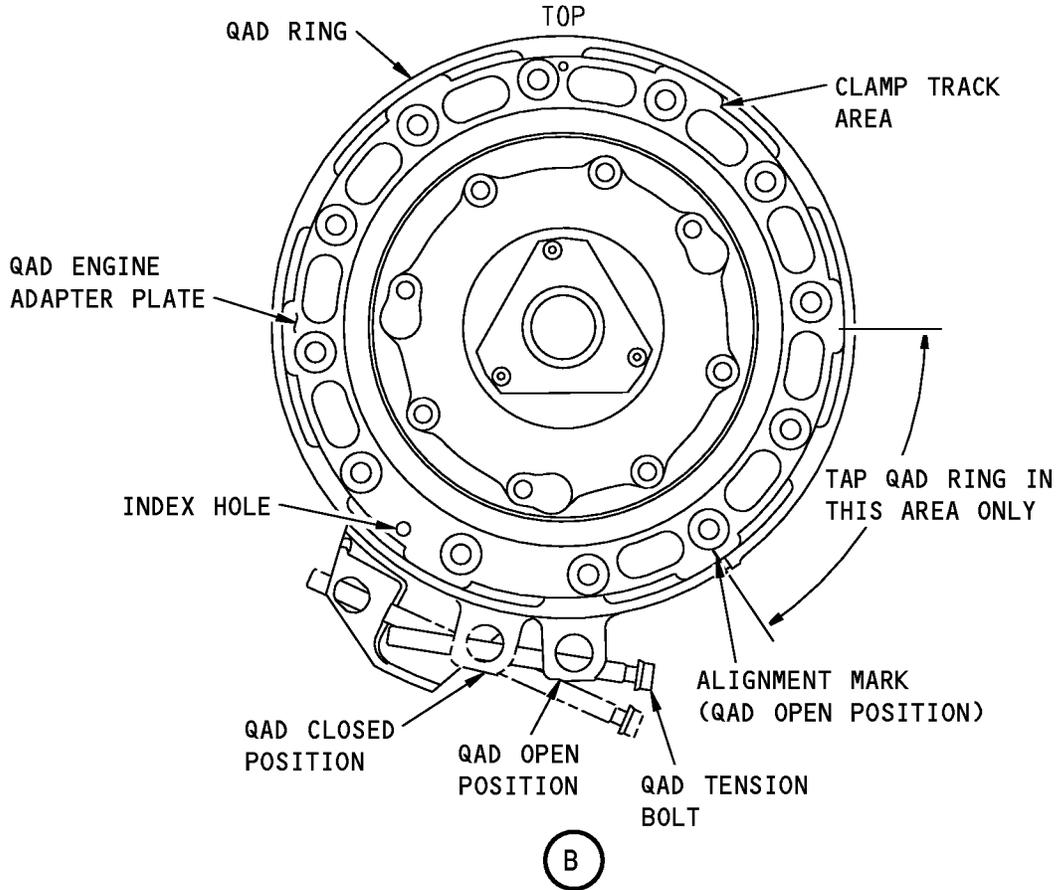


**Quick Attach/Detach Adapter Inspection
Figure 601 (Sheet 1 of 2)/24-11-61-990-802**

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TENSION BOLT WITH LOCKWIRE

(C)

G13924 S0006566163_V2

Quick Attach/Detach Adapter Inspection
Figure 601 (Sheet 2 of 2)/24-11-61-990-802

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AC GENERATION SYSTEM - ADJUSTMENT/TEST

1. General

- A. This procedure contains scheduled maintenance task data.
- B. This procedure has these tasks:
 - (1) Operational Test for the AC Generation and Control System
 - (2) System Test for the AC Generation and Control System
- C. It is necessary to operate the engines and the APU when you do these tests.

TASK 24-21-00-700-803

2. Operational Test for the AC Generation and Control System

(Figure 501)

A. General

- (1) This procedure does these tests:
 - (a) APU Start with External Power and Switch Check
 - (b) Engine Start with APU Power and Switch Check
 - (c) Bus Tie Breaker and Generator Control Breaker Check
 - (d) Switch Check with External Power and IDG Power

B. References

Reference	Title
24-22-00-860-813	Supply External Power (P/B 201)
24-22-00-860-814	Remove External Power (P/B 201)
49-11-00-860-801	APU Starting and Operation (P/B 201)
49-11-00-860-802	APU Usual Shutdown (P/B 201)
71-00-00-700-819-F00	Stop the Engine Procedure (Usual Engine Stop) (P/B 201)
71-00-00-800-807-F00	Start the Engine Procedure (Selection) (P/B 201)

C. Location Zones

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

D. Prepare for the Test

SUBTASK 24-21-00-860-011

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

E. APU Start with External Power and Switch Check

SUBTASK 24-21-00-710-005

- (1) Do the check as follows:
 - (a) Make sure the BAT switch on the P5-13 panel is set to the ON position.
 - (b) Make sure the BUS TRANS switch on the P5-4 panel is set to the AUTO position.
 - (c) Make sure the GRD POWER AVAILABLE light on the P5-4 panel is on.
 - (d) Make sure these lights on the P5-4 panel are off:
 - 1) 1 TRANSFER BUS OFF
 - 2) 1 SOURCE OFF

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- 3) 2 TRANSFER BUS OFF
- 4) 2 SOURCE OFF
- (e) Make sure these lights on the P5-4 panel are on:
 - 1) 1 GEN OFF BUS
 - 2) 2 GEN OFF BUS
- (f) Set the AC meter selector switch on the P5-13 panel to the GRD PWR position.
- (g) Make sure the AC meter on the P5-13 panel shows these values:
 - 1) AC VOLTS = 110-120
 - 2) CPS FREQ = 395-405
- (h) Make sure the APU GEN OFF BUS light on the P5-4 panel is off
- (i) Do this task: APU Starting and Operation, TASK 49-11-00-860-801.
- (j) Make sure the APU GEN OFF BUS light on the P5-4 panel comes on.

NOTE: The APU GEN OFF BUS light should come on approximately 50 seconds after the APU is started.

- (k) Set the 1 APU GEN switch on the P5-4 panel to the ON position.
- (l) Make sure the APU GEN OFF BUS light goes off.
- (m) Make sure the GRD POWER AVAILABLE light stays on.
- (n) Make sure these lights on the P5-4 panel stay off:
 - 1) 1 TRANSFER BUS OFF
 - 2) 1 SOURCE OFF
 - 3) 2 TRANSFER BUS OFF
- (o) Set the 2 APU GEN switch on the P5-4 panel to the ON position.
- (p) Make sure the 2 SOURCE OFF light goes off.
- (q) Set the AC meter selector switch on the P5-13 panel to the APU GEN position.
- (r) Make sure the AC meter on the P5-13 panel shows these values:
 - 1) AC VOLTS = 110-120
 - 2) CPS FREQ = 395-405
- (s) Set the GRD PWR switch to the ON position.
- (t) Make sure the APU GEN OFF BUS light comes on.
- (u) Make sure the GRD POWER AVAILABLE light stays on.
- (v) Make sure these lights on the P5-4 panel stay off:
 - 1) 1 TRANSFER BUS OFF
 - 2) 1 SOURCE OFF
 - 3) 2 TRANSFER BUS OFF
 - 4) 2 SOURCE OFF
- (w) Set both of the APU GEN switches to the ON position.
- (x) Make sure the APU GEN OFF BUS light goes off.
- (y) Make sure the GRD POWER AVAILABLE light stays on.
- (z) Make sure these lights on the P5-4 panel stay off:

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- 1) 1 TRANSFER BUS OFF
- 2) 1 SOURCE OFF
- 3) 2 TRANSFER BUS OFF
- 4) 2 SOURCE OFF

F. Engine Start with APU Power and Switch Check

SUBTASK 24-21-00-710-006

(1) Do the check as follows:

- (a) Start the No. 1 engine. To start it, do this task: Start the Engine Procedure (Selection), TASK 71-00-00-800-807-F00.

CAUTION: THE DRIVE LIGHT ON THE P5 PANEL SHOULD GO OFF AFTER THE ENGINE GETS UP TO IDLE SPEED. IF THE DRIVE LIGHT COMES ON WHEN THE ENGINE IS AT OR ABOVE IDLE SPEED, THE DISCONNECT SWITCH ON THE P5 PANEL MUST BE PUSHED. FAILURE TO PUSH THE DISCONNECT SWITCH CAN CAUSE DAMAGE TO THE IDG.

- (b) Make sure the number 1 DRIVE light on the P5-5 panel goes off after number 1 engine reaches idle speed.
- (c) Set the GEN 1 switch on the P5-4 panel to the ON position.
- (d) Make sure the 1 GEN OFF BUS light on the P5-4 panel goes off.
- (e) Make sure these lights stay off:
 - 1) APU GEN OFF BUS
 - 2) 1 TRANSFER BUS OFF
 - 3) 1 SOURCE OFF
 - 4) 2 TRANSFER BUS OFF
 - 5) 2 SOURCE OFF
- (f) Set the AC meter selector switch on the P5-13 panel to the GEN 1 position.
- (g) Make sure the AC meter shows these values:
 - 1) AC VOLTS = 110-120
 - 2) CPS FREQ = 395-405
- (h) Start the No. 2 engine. To start it, do this task: Start the Engine Procedure (Selection), TASK 71-00-00-800-807-F00.

CAUTION: THE DRIVE LIGHT ON THE P5 PANEL SHOULD GO OFF AFTER THE ENGINE GETS UP TO IDLE SPEED. IF THE DRIVE LIGHT COMES ON WHEN THE ENGINE IS AT OR ABOVE IDLE SPEED, THE DISCONNECT SWITCH ON THE P5 PANEL MUST BE PUSHED. FAILURE TO PUSH THE DISCONNECT SWITCH CAN CAUSE DAMAGE TO THE IDG.

- (i) Make sure the number 2 DRIVE light on the P5-5 panel goes off after number 2 engine reaches idle speed.
- (j) Set the GEN 2 switch on the P5-4 panel to the ON position.
- (k) Make sure the 2 GEN OFF BUS light on the P5-4 panel goes off.
- (l) Make sure the APU GEN OFF BUS light comes on.
- (m) Make sure these lights stay off:
 - 1) 1 TRANSFER BUS OFF

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- 2) 1 SOURCE OFF
 - 3) 1 GEN OFF BUS
 - 4) 2 TRANSFER BUS OFF
 - 5) 2 SOURCE OFF
- (n) Set the AC meter selector switch on the P5-13 panel to the GEN 2 position.
- (o) Make sure the AC meter shows these values:
- 1) AC VOLTS = 110-120
 - 2) CPS FREQ = 395-405
- (p) Set the APU GEN 1 switch to the ON position.
- (q) Make sure the APU GEN OFF BUS light goes off.
- (r) Make sure the 1 GEN OFF BUS light comes on.
- (s) Make sure these lights stay off:
- 1) 1 TRANSFER BUS OFF
 - 2) 1 SOURCE OFF
 - 3) 2 TRANSFER BUS OFF
 - 4) 2 SOURCE OFF
 - 5) 2 GEN OFF BUS
- (t) Set the APU GEN 2 switch to the ON position.
- (u) Make sure the 2 GEN OFF BUS light comes on.
- (v) Make sure these lights stay off:
- 1) APU GEN OFF BUS
 - 2) 1 TRANSFER BUS OFF
 - 3) 1 SOURCE OFF
 - 4) 2 TRANSFER BUS OFF
 - 5) 2 SOURCE OFF
- (w) Set the GEN 1 switch on the P5-4 panel to the ON position.
- (x) Make sure the 1 GEN OFF BUS light on the P5-4 panel goes off.
- (y) Make sure these lights stay off:
- 1) APU GEN OFF BUS
 - 2) 1 TRANSFER BUS OFF
 - 3) 1 SOURCE OFF
 - 4) 2 TRANSFER BUS OFF
 - 5) 2 SOURCE OFF
- (z) Set the GEN 2 switch on the P5-4 panel to the ON position.
- (aa) Make sure the 2 GEN OFF BUS light on the P5-4 panel goes off.
- (ab) Make sure the APU GEN OFF BUS light comes on.
- (ac) Make sure these lights stay off:
- 1) 1 TRANSFER BUS OFF
 - 2) 1 SOURCE OFF

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- 3) 1 GEN OFF BUS
- 4) 2 TRANSFER BUS OFF
- 5) 2 SOURCE OFF

G. Bus Tie Breaker and Generator Control Breaker Check

SUBTASK 24-21-00-710-007

(1) Do the check as follows:

- (a) Set the GEN 1 switch to the OFF position.
- (b) Make sure these lights come on:
 - 1) 1 GEN OFF BUS
 - 2) 1 SOURCE OFF
- (c) Make sure these lights stay off:
 - 1) 1 TRANSFER BUS OFF
 - 2) 2 TRANSFER BUS OFF
 - 3) 2 GEN OFF BUS
 - 4) 2 SOURCE OFF
- (d) Set the BUS TRANS switch to the OFF position.
- (e) Make sure this light comes on:
 - 1) 1 TRANSFER BUS OFF
- (f) Make sure these lights stay off:
 - 1) 2 TRANSFER BUS OFF
 - 2) 2 GEN OFF BUS
 - 3) 2 SOURCE OFF
- (g) Set the GEN 1 switch to the ON position.
- (h) Make sure these lights go off:
 - 1) 1 TRANSFER BUS OFF
 - 2) 1 GEN OFF BUS
 - 3) 1 SOURCE OFF
- (i) Set the BUS TRANS switch to the AUTO position.
- (j) Set the GEN 2 switch to the OFF position.
- (k) Make sure these lights come on:
 - 1) 2 GEN OFF BUS
 - 2) 2 SOURCE OFF
- (l) Make sure these lights stay off:
 - 1) 2 TRANSFER BUS OFF
 - 2) 1 TRANSFER BUS OFF
 - 3) 1 GEN OFF BUS
 - 4) 1 SOURCE OFF
- (m) Set the BUS TRANS switch to the OFF position.
- (n) Make sure these light comes on:

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- 1) 2 TRANSFER BUS OFF
 - (o) Make sure these lights stay off:
 - 1) 1 TRANSFER BUS OFF
 - 2) 1 GEN OFF BUS
 - 3) 1 SOURCE OFF
 - (p) Set the GEN 2 switch to the ON position.
 - (q) Make sure these lights go off:
 - 1) 2 TRANSFER BUS OFF
 - 2) 2 GEN OFF BUS
 - 3) 2 SOURCE OFF
 - (r) Set the BUS TRANS switch to the AUTO position.
- H. Switch Check with External Power and IDG Power
- SUBTASK 24-21-00-710-008
- (1) Do the check as follows:
 - (a) Make sure the GRD POWER AVAILABLE light on the P5-4 panel is on.
 - (b) Set the GRD PWR switch to the ON position.
 - (c) Make sure these lights stay off:
 - 1) 1 TRANSFER BUS OFF
 - 2) 1 SOURCE OFF
 - 3) 2 TRANSFER BUS OFF
 - 4) 2 SOURCE OFF
 - (d) Make sure these lights come on:
 - 1) 1 GEN OFF BUS
 - 2) 2 GEN OFF BUS
 - (e) Set the GEN 1 switch on the P5-4 panel to the ON position.
 - (f) Make sure the 1 GEN OFF BUS light on the P5-4 panel goes off.
 - (g) Make sure these lights stay off:
 - 1) 1 TRANSFER BUS OFF
 - 2) 1 SOURCE OFF
 - 3) 2 TRANSFER BUS OFF
 - 4) 2 SOURCE OFF
 - (h) Set the GEN 2 switch on the P5-4 panel to the ON position.
 - (i) Make sure the 2 GEN OFF BUS light on the P5-4 panel goes off.
 - (j) Make sure these lights stay off:
 - 1) 1 TRANSFER BUS OFF
 - 2) 1 SOURCE OFF
 - 3) 1 GEN OFF BUS
 - 4) 2 TRANSFER BUS OFF
 - 5) 2 SOURCE OFF

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I. Engine and APU Shutdown

SUBTASK 24-21-00-860-012

- (1) Shut down the number 1 engine. To shut down the engine, do this task: Stop the Engine Procedure (Usual Engine Stop), TASK 71-00-00-700-819-F00.

SUBTASK 24-21-00-860-013

- (2) Shut down the number 2 engine. To shut down the engine, do this task: Stop the Engine Procedure (Usual Engine Stop), TASK 71-00-00-700-819-F00.

SUBTASK 24-21-00-860-014

- (3) Do this task: APU Usual Shutdown, TASK 49-11-00-860-802.

SUBTASK 24-21-00-860-015

- (4) Do this task: Remove External Power, TASK 24-22-00-860-814.

————— **END OF TASK** —————

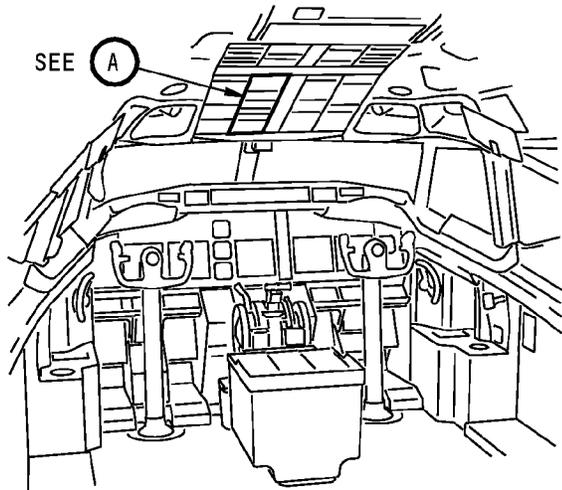
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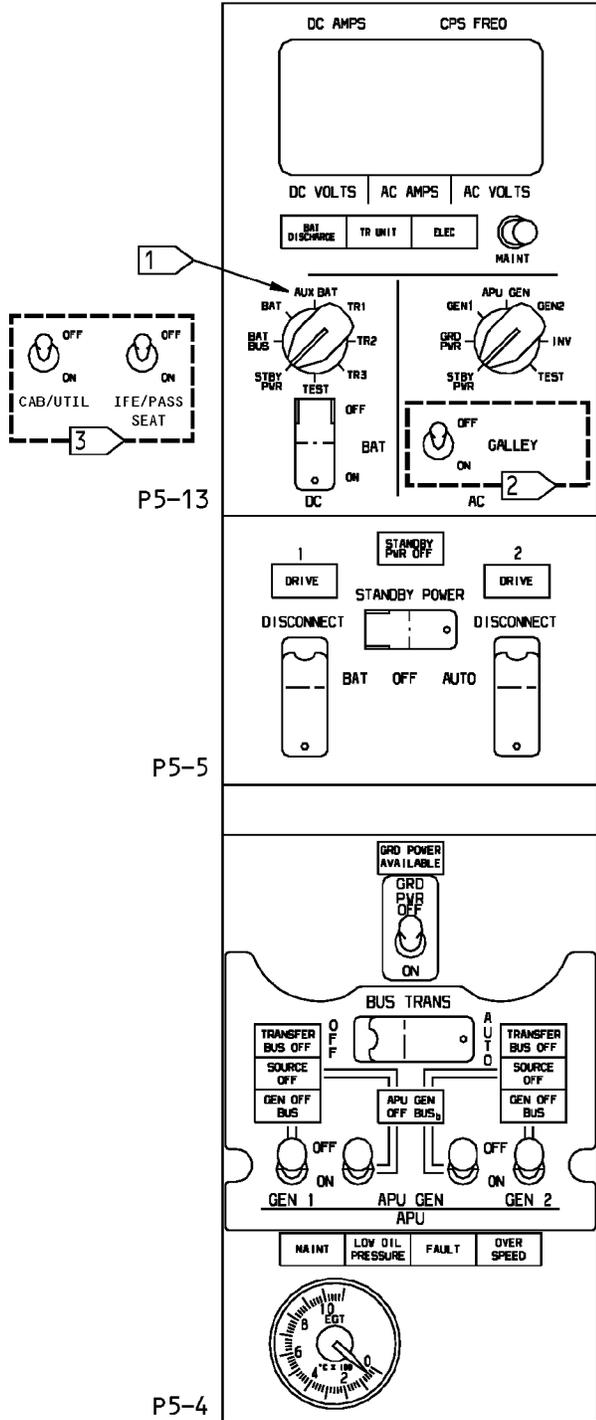
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FLIGHT COMPARTMENT



- 1 AIRPLANES WITH AUXILIARY BATTERY
- 2 AIRPLANES WITH GALLEY SWITCH
- 3 AIRPLANES WITH CABIN UTILITY AND IFE SWITCHES



AC Generator and Control System
Figure 501/24-21-00-990-801

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TASK 24-21-00-700-802

3. System Test for the AC Generation and Control System

(Figure 501)

A. General

- (1) The system test has an Air Mode test.
- (2) The automatic transfer from APU to IDG power happens only once per Air Mode cycle. If you need to repeat this test you will need to put the airplane into ground mode and then simulate air mode again.

B. References

Reference	Title
24-22-00-860-812	Remove Electrical Power (P/B 201)
24-22-00-860-815	Supply APU Generator Power (P/B 201)
32-09-00-840-801	Prepare to Put the Airplane in the Air Mode (P/B 201)
32-09-00-860-801	Put the Airplane in the Air Mode (P/B 201)
32-09-00-860-802	Return the Airplane to the Ground Mode (P/B 201)
71-00-00-700-819-F00	Stop the Engine Procedure (Usual Engine Stop) (P/B 201)
71-00-00-800-807-F00	Start the Engine Procedure (Selection) (P/B 201)

C. Location Zones

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

D. Prepare for the Test

SUBTASK 24-21-00-860-007

- (1) Do this task: Supply APU Generator Power, TASK 24-22-00-860-815.

SUBTASK 24-21-00-860-008

- (2) Do this task: Prepare to Put the Airplane in the Air Mode, TASK 32-09-00-840-801.

E. Procedure

SUBTASK 24-21-00-730-001

- (1) Do the Air Mode test as follows:
 - (a) Make sure these lights on the P5-4 panel are off:
 - 1) APU GEN OFF BUS
 - 2) 1 TRANSFER BUS OFF
 - 3) 1 SOURCE OFF
 - 4) 2 TRANSFER BUS OFF
 - 5) 2 SOURCE OFF
 - (b) Make sure these lights on the P5-4 panel are on:
 - 1) 1 GEN OFF BUS
 - 2) 2 GEN OFF BUS
 - (c) Start the No. 1 engine. To start it, do this task: Start the Engine Procedure (Selection), TASK 71-00-00-800-807-F00.

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CAUTION: THE DRIVE LIGHT ON THE P5 PANEL SHOULD GO OFF AFTER THE ENGINE GETS UP TO IDLE SPEED. IF THE DRIVE LIGHT COMES ON WHEN THE ENGINE IS AT OR ABOVE IDLE SPEED, THE DISCONNECT SWITCH ON THE P5 PANEL MUST BE PUSHED. FAILURE TO PUSH THE DISCONNECT SWITCH CAN CAUSE DAMAGE TO THE IDG.

- (d) Make sure the number 1 DRIVE light on the P5-5 panel goes off after number 1 engine reaches idle speed.
- (e) Start the No. 2 engine. To start it, do this task: Start the Engine Procedure (Selection), TASK 71-00-00-800-807-F00.

CAUTION: THE DRIVE LIGHT ON THE P5 PANEL SHOULD GO OFF AFTER THE ENGINE GETS UP TO IDLE SPEED. IF THE DRIVE LIGHT COMES ON WHEN THE ENGINE IS AT OR ABOVE IDLE SPEED, THE DISCONNECT SWITCH ON THE P5 PANEL MUST BE PUSHED. FAILURE TO PUSH THE DISCONNECT SWITCH CAN CAUSE DAMAGE TO THE IDG.

- (f) Make sure the number 2 DRIVE light on the P5-5 panel goes off after number 2 engine reaches idle speed.
- (g) Use the PSEU BITE to put the airplane in the air mode. To do this, do this task: Put the Airplane in the Air Mode, TASK 32-09-00-860-801.
- (h) Set the APU switch on the P5 panel to the OFF position.
- (i) Make sure these lights on the P5-4 panel go off:
 - 1) 1 GEN OFF BUS
 - 2) 2 GEN OFF BUS
- (j) Make sure these lights on the P5-4 panel stay off:
 - 1) 1 TRANSFER BUS OFF
 - 2) 1 SOURCE OFF
 - 3) 2 TRANSFER BUS OFF
 - 4) 2 SOURCE OFF
- (k) Set the GEN 1 switch to the OFF position.
- (l) Make sure these lights come on:
 - 1) 1 GEN OFF BUS
 - 2) 1 SOURCE OFF
- (m) Make sure these lights on the P5-4 panel stay off:
 - 1) 1 TRANSFER BUS OFF
 - 2) 2 TRANSFER BUS OFF
 - 3) 2 SOURCE OFF
 - 4) 2 GEN OFF BUS
- (n) Set the GEN 1 switch to the ON position.
- (o) Make sure these lights go off:
 - 1) 1 GEN OFF BUS
 - 2) 1 SOURCE OFF
- (p) Set the GEN 2 switch to the OFF position.
- (q) Make sure these lights come on:

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- 1) 2 GEN OFF BUS
 - 2) 2 SOURCE OFF
- (r) Make sure these lights on the P5-4 panel stay off:
- 1) 2 TRANSFER BUS OFF
 - 2) 1 TRANSFER BUS OFF
 - 3) 1 SOURCE OFF
 - 4) 1 GEN OFF BUS
- (s) Set the GEN 2 switch to the ON position.
- (t) Make sure these lights go off:
- 1) 2 GEN OFF BUS
 - 2) 2 SOURCE OFF
- (u) Shut down both engines. To shut down the engines, do this task: Stop the Engine Procedure (Usual Engine Stop), TASK 71-00-00-700-819-F00.
- F. Put the airplane in its usual condition.

SUBTASK 24-21-00-860-009

(1) Do this task: Return the Airplane to the Ground Mode, TASK 32-09-00-860-802.

SUBTASK 24-21-00-860-010

(2) Do this task: Remove Electrical Power, TASK 24-22-00-860-812.

————— **END OF TASK** —————

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POWER DISTRIBUTION PANEL - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

- (1) A removal of the Power Distribution Panel.
- (2) An installation of the Power Distribution Panel.

B. Some components in the PDP can be replaced with the PDP installed but some components required the PDP to be removed from the rack. If the component requires the PDP to be removed, remove the PDP from the rack, disassemble it, and replace the internal component in a clean dry environment per the supplier CMM. Once the replacement is complete, reassemble the PDP per the supplier CMM, reinstall it on the rack, and perform the installation test in this procedure.

TASK 24-21-21-000-801

2. Power Distribution Panel Removal

(Figure 401)

A. General

- (1) There are two power distribution panels (PDP), P91 and P92 installed in the electronic equipment area.
- (2) It is necessary to get access to the front and the rear of the power distribution panels to remove and install them.
- (3) You get access to the front of the PDP from the electronic equipment area.
- (4) You get access to the rear of the PDP from the forward cargo area.

B. References

Reference	Title
24-22-00-860-812	Remove 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
SPL-1635	Equipment - Installation, Power Distribution Panels (Part #: C24004-1, Supplier: 81205, A/P Effectivity: 737-600, -700, -700C, -700ER, -700QC, -800, -900, -900ER, -BBJ)

D. Location Zones

Zone	Area
117	Electrical and Electronics Compartment - Left
118	Electrical and Electronics Compartment - Right
121	Forward Cargo Compartment - Left
122	Forward Cargo Compartment - Right

E. Access Panels

Number	Name/Location
117A	Electronic Equipment Access Door

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F. Prepare for removal.

SUBTASK 24-21-21-860-001

WARNING: REMOVE ELECTRICAL POWER BEFORE REMOVING OR INSTALLING POWER DISTRIBUTION PANELS. HIGH VOLTAGES PRESENT CAN CAUSE INJURY TO PERSONS.

- (1) Do this task: Remove Electrical Power, TASK 24-22-00-860-812.
 - (a) Make sure that all of the power warning lights on the power distribution panel are off.

SUBTASK 24-21-21-010-001

- (2) Open this access panel to get access to the main equipment center .

<u>Number</u>	<u>Name/Location</u>
117A	Electronic Equipment Access Door

G. Procedure

SUBTASK 24-21-21-010-002

- (1) Get access to the forward cargo area and do the steps that follow:
 - (a) Remove the applicable forward bulkhead liner to get access to the rear of the power distribution panel.

SUBTASK 24-21-21-020-001

- (2) Remove the power feeders from the power distribution panel, do the steps that follow:
 - (a) Install identification tags on the power feeders before removal.
 - (b) Remove the nuts [6] and washers [7] from each terminal stud.
 - (c) Remove the power feeders from the terminal studs.

SUBTASK 24-21-21-020-002

- (3) Remove the cooling duct from the power distribution panel per the steps that follow:
 - (a) Remove the four screws [8] and washers [9] that hold the cooling duct to the power distribution panel.
 - (b) Pull the duct away from the panel and remove the gasket [10].

SUBTASK 24-21-21-020-003

- (4) Remove the electrical connectors from the power distribution panels.

SUBTASK 24-21-21-020-004

- (5) Remove the two ground straps from the power distribution panel per the steps that follow:
 - (a) Remove the two nuts [2] and washers [3] from the ground studs on the power distribution panel.

NOTE: Do not remove the other end of the ground strap attached to the airplane structure.

- (b) Remove the ground strap from the ground stud on the power distribution panel.

NOTE: Move the strap or use tape to hold the strap so that it does not interfere with the panel when it is removed.

SUBTASK 24-21-21-020-005

- (6) Remove the power distribution panel [1], do the steps that follow:
 - (a) Remove the four bolts [5] and washers [4] located at the corners of the power distribution panel.

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- (b) Pull the power distribution panel [1] out from the rack onto the equipment, SPL-1635.

————— **END OF TASK** —————

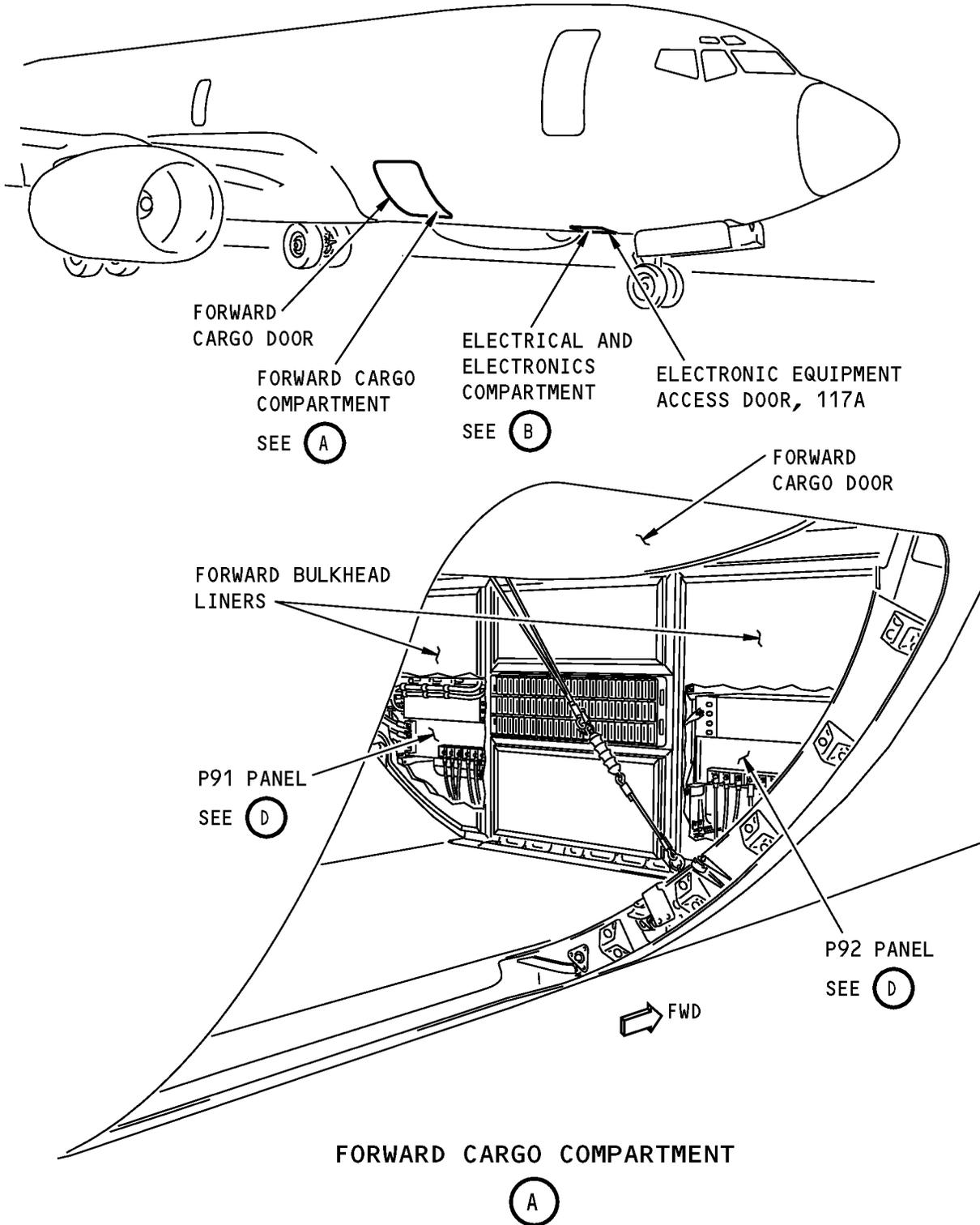
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**Power Distribution Panel Installation
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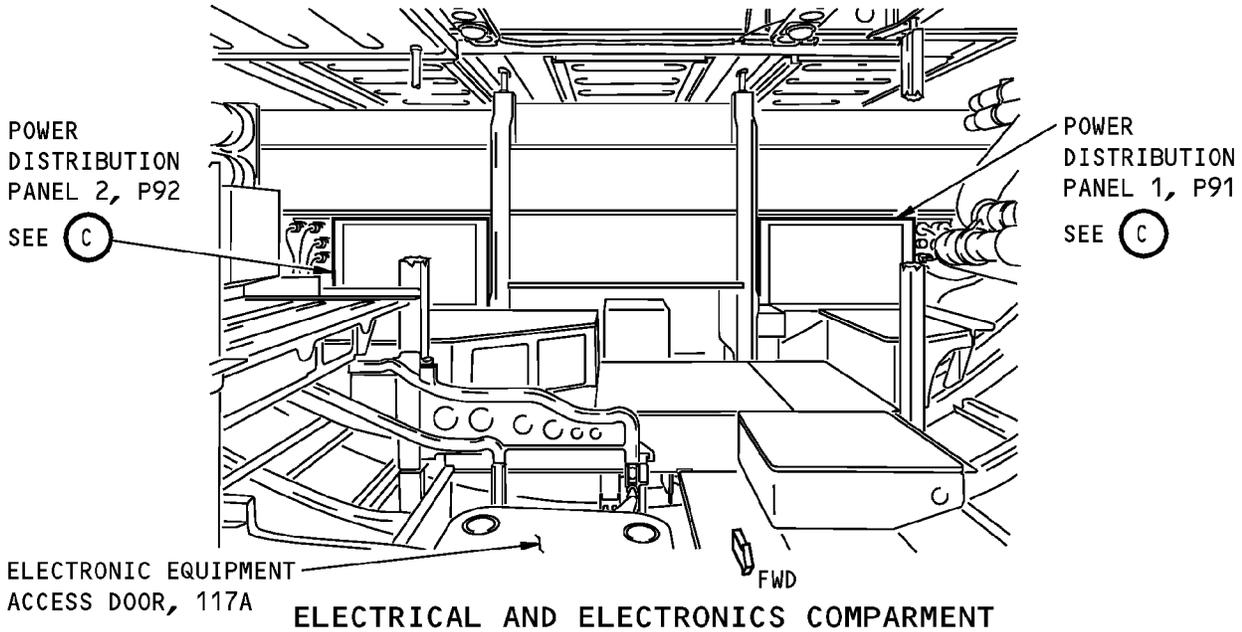
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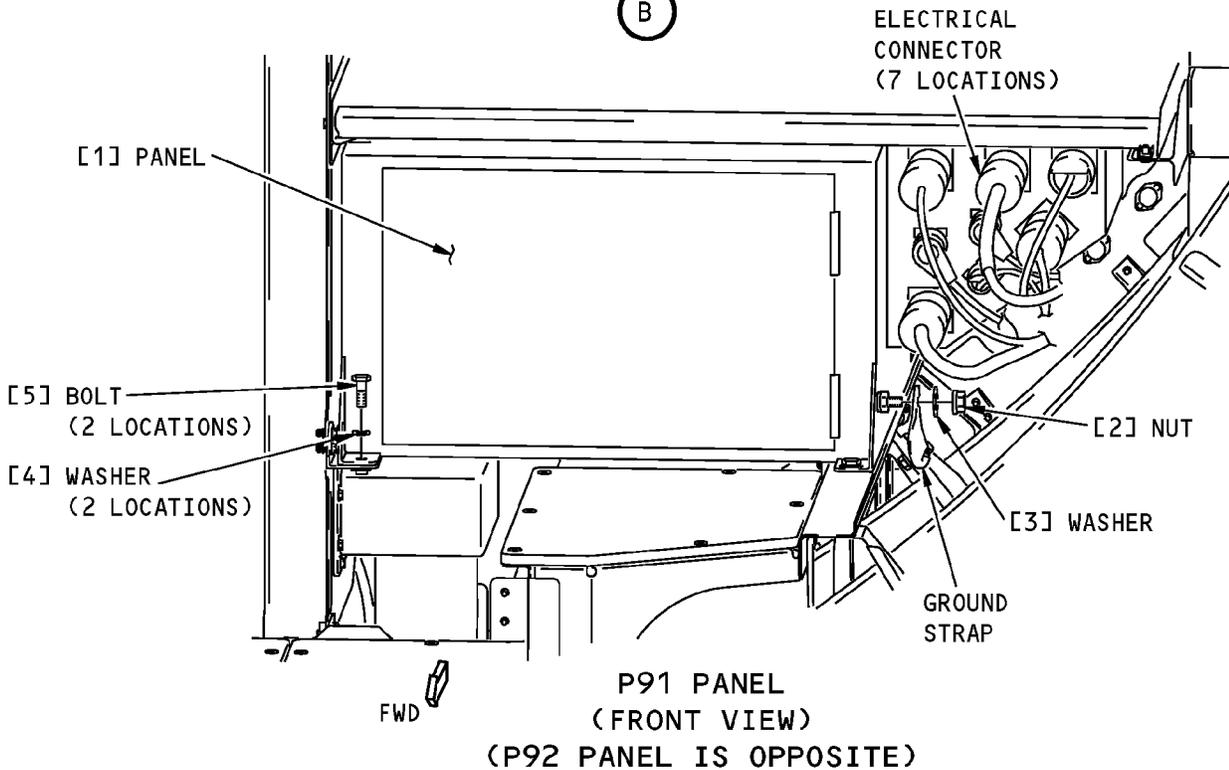
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(B)

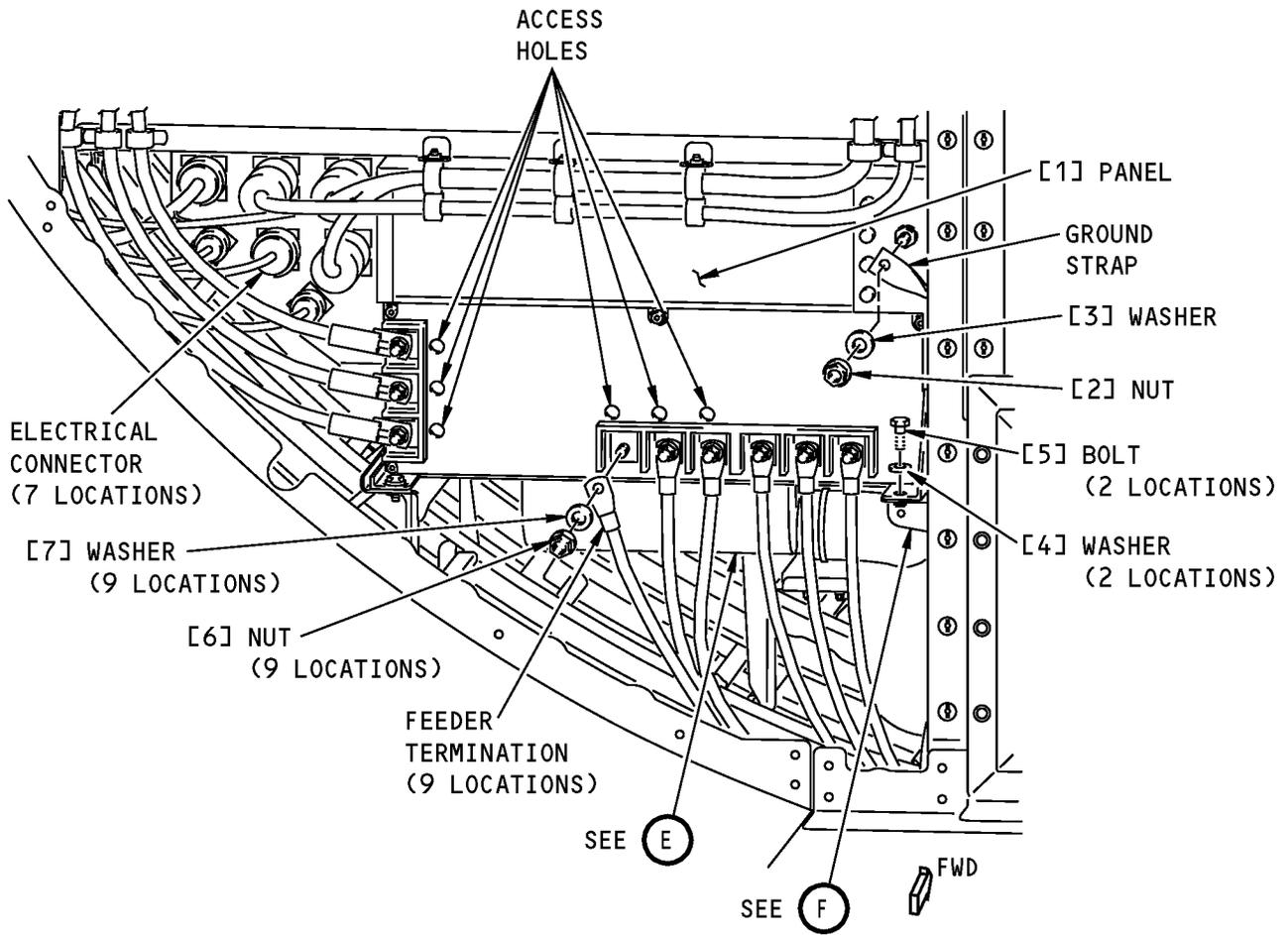


(C)

Power Distribution Panel Installation
Figure 401 (Sheet 2 of 4)/24-21-21-990-801

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**P91 PANEL
(REAR VIEW)
(P92 PANEL IS OPPOSITE)**

**Power Distribution Panel Installation
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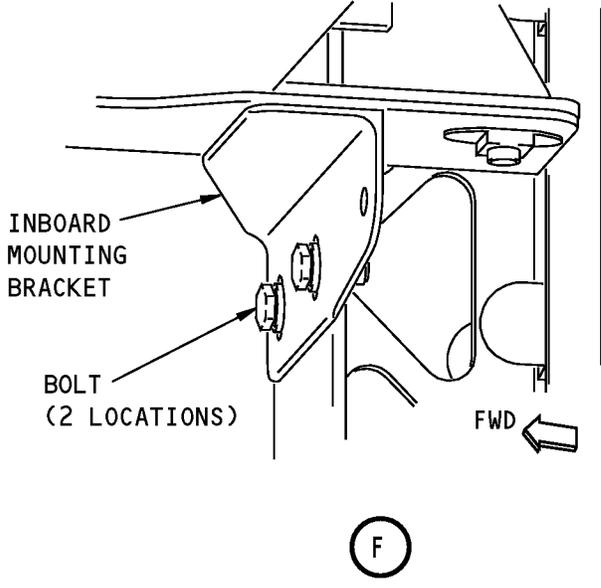
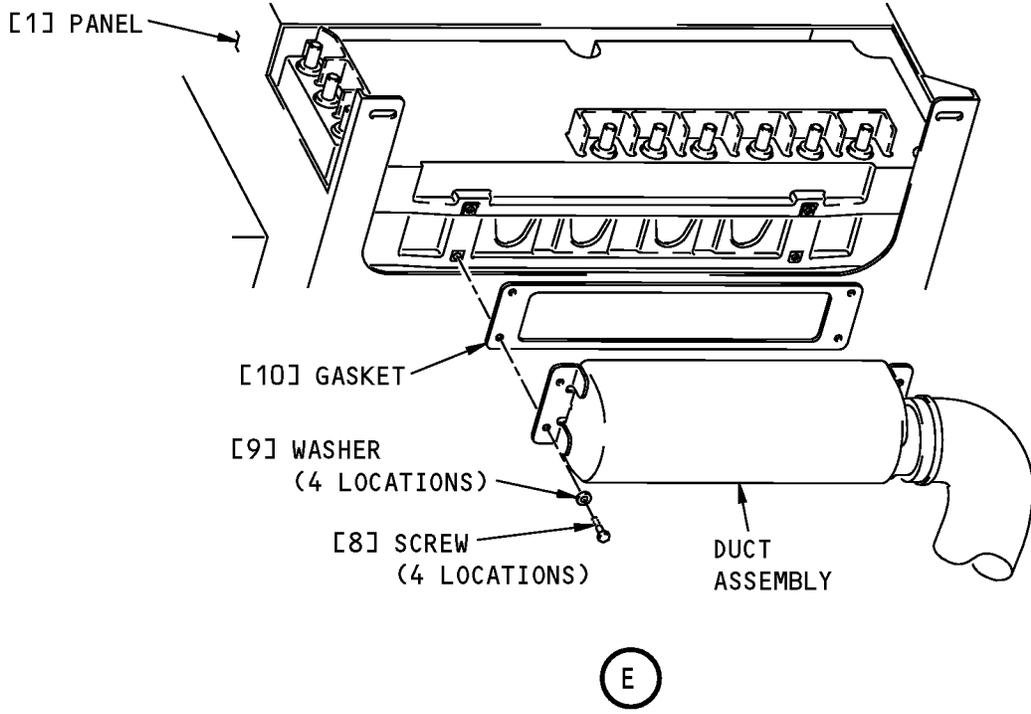
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**Power Distribution Panel Installation
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TASK 24-21-21-400-801

3. Power Distribution Panel Installation

(Figure 401)

A. General

- (1) There are two power distribution panels (PDP), P91 and P92 installed in the electronic equipment area.
- (2) It is necessary to get access to the front and the rear of the power distribution panels to remove and install them.
- (3) You get access to the front of the PDP from the electronic equipment area.
- (4) You get access to the rear of the PDP from the forward cargo area.

B. References

Reference	Title
21-27-00-700-802	Equipment Cooling Fans - Operational Test (P/B 501)
24-21-00-700-803	Operational Test for the AC Generation and Control System (P/B 501)
24-22-00-860-812	Remove Electrical Power (P/B 201)
24-31-00-700-801	The Operational Test of the DC System (P/B 501)
28-22-00-730-801	Engine Fuel Feed Pumps - Functional Test (P/B 501)
29-11-00-700-801	Operational Test of the Hydraulic Systems A and B (P/B 501)
29-21-00-700-801	Operational Test of the Standby Hydraulic System (P/B 501)
38-42-00-800-803	Water Tank Pressurization System - Operational Test (P/B 501)

C. Location Zones

Zone	Area
117	Electrical and Electronics Compartment - Left
118	Electrical and Electronics Compartment - Right
121	Forward Cargo Compartment - Left
122	Forward Cargo Compartment - Right

D. Access Panels

Number	Name/Location
117A	Electronic Equipment Access Door

E. Prepare for installation.

SUBTASK 24-21-21-860-002

WARNING: REMOVE ELECTRICAL POWER BEFORE REMOVING OR INSTALLING POWER DISTRIBUTION PANELS. HIGH VOLTAGES PRESENT CAN CAUSE INJURY TO PERSONS.

- (1) Make sure that electrical power is removed from airplane.
 - (a) Make sure that all of the power warning lights on the power distribution panel are off.

NOTE: Look at opposite power distribution panel if it is installed.

F. Procedure

SUBTASK 24-21-21-420-001

- (1) Do these steps to install the power distribution panel [1]:

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- (a) Move the power distribution panel [1] into position on the rack.
NOTE: The door on the panel must face forward.
- (b) Loosen the two bolts on the inboard mounting bracket. The bracket is located at the inboard corner of the panel when you view the rear of the panel from the forward cargo area.
NOTE: This step is done to get the required flat mounting surface for the power distribution panel.
- (c) Loosely install the four bolts [5] and washers [4] that hold the panel at the corners.
- (d) Tighten the four bolts [5] to 65-100 pound-inches (7.3-11.3 Newton-meters).
 - 1) Make sure you tighten the bolt located at the same corner as the inboard mounting bracket last.
- (e) Tighten the two bolts on the inboard mounting bracket to 30-35 pound-inches (3.4-4.0 Newton-meters).

SUBTASK 24-21-21-420-002

- (2) Install the two ground straps on the power distribution panel, do the steps that follow:
 - (a) Install the straps on the ground stud on the power distribution panel.
 - (b) Install the two nuts [2] and washers [3] on the ground studs.
 - (c) Tighten the nuts to 180-200 pound-inches (20.3-22.6 Newton meters).

SUBTASK 24-21-21-420-003

- (3) Install the electrical connectors on the power distribution panels.

SUBTASK 24-21-21-420-004

- (4) Do these steps to install the cooling duct on the power distribution panel:
 - (a) Install the gasket [10] on the duct and put the duct in position on the power distribution panel.
 - (b) Install the four screws [8] and washers [9] that hold the cooling duct to the power distribution panel.
 - (c) Tighten the screws.

SUBTASK 24-21-21-420-005

- (5) Do these steps to install the power feeders on the power distribution panel:
 - (a) Use the identification tags to install the power feeders on the correct terminal studs.
 - (b) Install the nuts [6] and washers [7] on each terminal stud.
 - (c) Tighten the nuts to 180-200 inch-pounds (20.3-22.6 Newton-meters).

NOTE: When you install and tighten the power feeders to the rigid bus assembly, there may be some axial movement of the terminal studs (particularly TB5004 and TB5008). A small amount of movement is normal and should not affect the tightening of the nuts to the specified torque.

G. Installation Test

SUBTASK 24-21-21-710-001

- (1) Do this task: Operational Test for the AC Generation and Control System, TASK 24-21-00-700-803.

SUBTASK 24-21-21-710-002

- (2) Do this task: The Operational Test of the DC System, TASK 24-31-00-700-801.

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SUBTASK 24-21-21-710-003

(3) Do this task: Equipment Cooling Fans - Operational Test, TASK 21-27-00-700-802.

SUBTASK 24-21-21-710-004

(4) Do this task: Engine Fuel Feed Pumps - Functional Test, TASK 28-22-00-730-801.

SUBTASK 24-21-21-710-005

(5) Do this task: Operational Test of the Hydraulic Systems A and B, TASK 29-11-00-700-801.

SUBTASK 24-21-21-710-006

(6) Do this task: Operational Test of the Standby Hydraulic System, TASK 29-21-00-700-801.

SUBTASK 24-21-21-710-007

(7) Do this task: Water Tank Pressurization System - Operational Test, TASK 38-42-00-800-803.

H. Put the airplane back to its usual condition.

SUBTASK 24-21-21-410-002

(1) Install the forward bulkhead liner.

SUBTASK 24-21-21-410-001

(2) Close this access panel:

<u>Number</u>	<u>Name/Location</u>
117A	Electronic Equipment Access Door

SUBTASK 24-21-21-860-003

(3) Do this task: Remove Electrical Power, TASK 24-22-00-860-812.

————— **END OF TASK** —————

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RIGID BUS ASSEMBLY - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

- (1) A removal of the rigid bus assembly.
- (2) An installation of the rigid bus assembly.

TASK 24-21-22-000-801

2. Rigid Bus Assembly Removal

(Figure 401)

A. General

- (1) There is one rigid bus assembly located at the rear of each of the power distribution panels (PDP), P91 and P92.

NOTE: If the troubleshooting points to a defective current transformer, the airline must remove and send back the rigid bus assembly to Honeywell. Write or speak to Honeywell for more data.

- (2) It is necessary to get access to the front and the rear of the power distribution panels to remove and install the rigid bus assembly.
- (3) You get access to the front of the PDP from the electronic equipment area.
- (4) You get access to the rear of the PDP from the forward cargo area.

B. References

Reference	Title
24-21-41-000-801	Breaker Removal (P/B 401)
24-22-00-860-812	Remove Electrical Power (P/B 201)
24-41-12-000-801	External Power Contactor Removal (P/B 401)

C. Location Zones

Zone	Area
117	Electrical and Electronics Compartment - Left
118	Electrical and Electronics Compartment - Right
121	Forward Cargo Compartment - Left
122	Forward Cargo Compartment - Right

D. Access Panels

Number	Name/Location
117A	Electronic Equipment Access Door

E. Prepare for removal.

SUBTASK 24-21-22-860-001

WARNING: REMOVE ELECTRICAL POWER BEFORE REMOVING OR INSTALLING RIGID BUS ASSEMBLY. HIGH VOLTAGES PRESENT CAN CAUSE INJURY TO PERSONS.

- (1) Do this task: Remove Electrical Power, TASK 24-22-00-860-812.
 - (a) Make sure that all of the power warning lights on the power distribution panel are off.

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SUBTASK 24-21-22-010-001

(2) Open this access panel to get access to the main equipment center:

<u>Number</u>	<u>Name/Location</u>
117A	Electronic Equipment Access Door

F. Procedure

SUBTASK 24-21-22-020-001

(1) To remove the rigid bus assembly from the Power Distribution Panel 1, P91, do the steps that follow:

NOTE: These steps are done at the front of the power distribution panel, in the electronic equipment area.

(a) Remove the breakers listed below. To remove these breakers, do this task: Breaker Removal, TASK 24-21-41-000-801.

1) These are the circuit breakers:

Power Distribution Panel Number 1, P91

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
---	---	C00803	AUXILIARY POWER BREAKER
---	---	C00804	BUS TIE BREAKER 1
---	---	C00801	GENERATOR BREAKER 1

(b) Loosen the screws that hold the electrical connectors to the rigid bus assembly.

(c) Remove the two electrical connectors from the rigid bus assembly.

(d) Remove the three nuts [9], lockwashers [10] and washers [11] that hold the bus bars to the rigid bus assembly.

SUBTASK 24-21-22-020-002

(2) To remove the rigid bus assembly from the Power Distribution Panel 2, P92, do the steps that follow:

NOTE: These steps are done at the front of the power distribution panel, in the electronic equipment area.

(a) Remove the breakers listed below. To remove these breakers, do this task: Breaker Removal, TASK 24-21-41-000-801.

1) These are the circuit breakers:

Power Distribution Panel Number 2, P92

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
---	---	C00805	BUS TIE BREAKER 2
---	---	C00802	GENERATOR BREAKER 2

(b) Do this task: External Power Contactor Removal, TASK 24-41-12-000-801.

(c) Loosen the screws that hold the electrical connectors to the rigid bus assembly.

(d) Remove the two electrical connectors from the rigid bus assembly.

(e) Remove the three nuts [9], lockwashers [10] and washers [11] that hold the bus bars to the rigid bus assembly.

(f) Remove the three bolts [12] and washers [13] that hold the wires to the terminal posts on the rigid bus assembly.

NOTE: Install identification tags on wires before removing these wires.

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SUBTASK 24-21-22-010-002

- (3) Get access to the forward cargo area and do the steps that follow:
 - (a) Remove the applicable forward bulkhead liner to get access to the rear of the power distribution panel.

SUBTASK 24-21-22-020-003

- (4) Remove the power feeders from the power distribution panel per the steps that follow:
 - (a) Install identification tags on the power feeders before removal.
 - (b) Remove the nuts [4] and washers [5] from each terminal stud.
 - (c) Remove power feeders from terminal studs.

SUBTASK 24-21-22-020-004

- (5) Remove the cooling duct from the power distribution panel per the steps that follow:
 - (a) Remove the four screws [6] and washers [7] that hold the cooling duct to the power distribution panel.
 - (b) Pull the duct away from the panel and remove the gasket [8].

SUBTASK 24-21-22-020-005

- (6) Do these steps to remove the rigid bus assembly [1]:
 - (a) Remove the five screws [3] and washers [2] that hold the rigid bus assembly [1] to the power distribution panel.
 - (b) Remove the rigid bus assembly [1].

————— **END OF TASK** —————

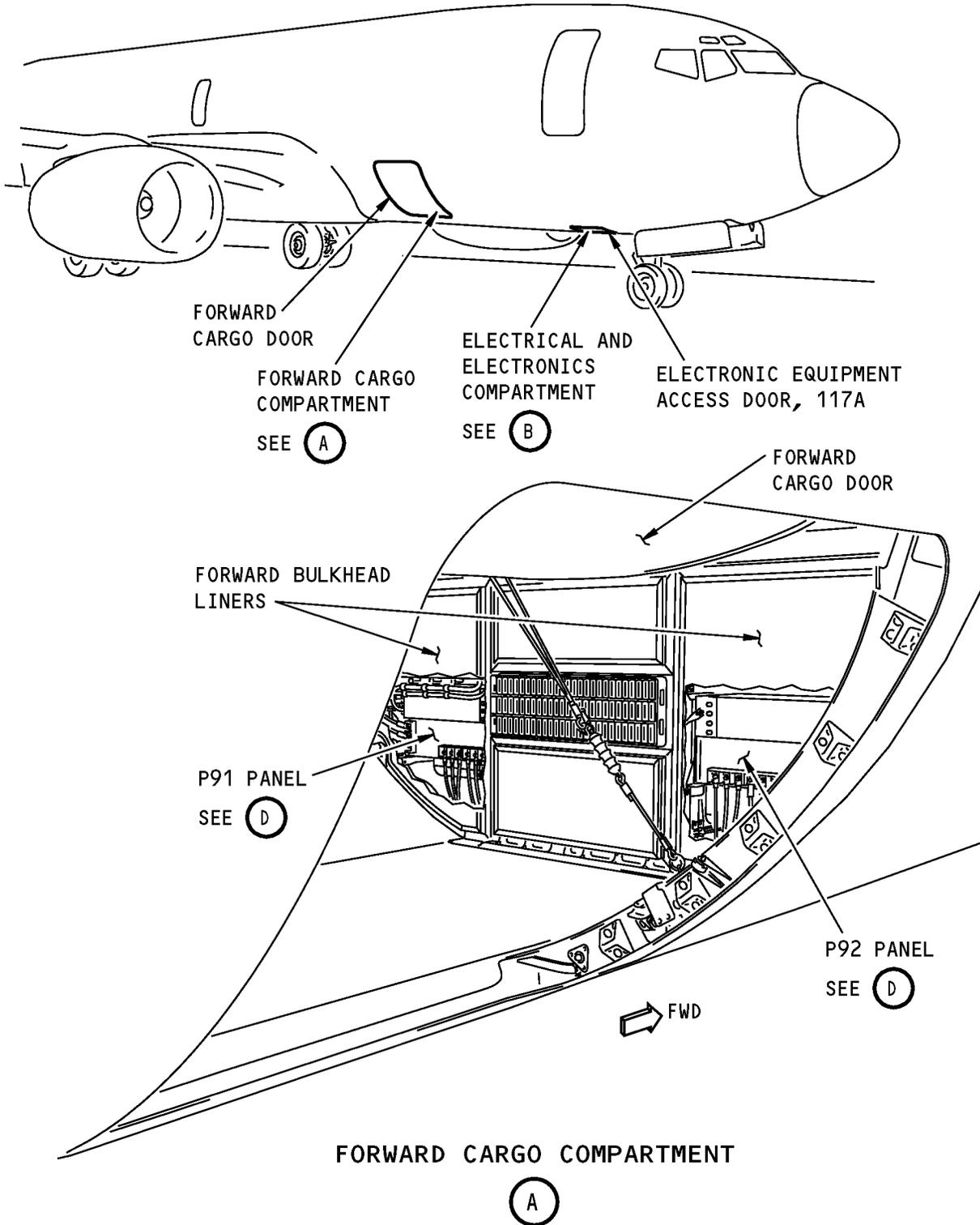
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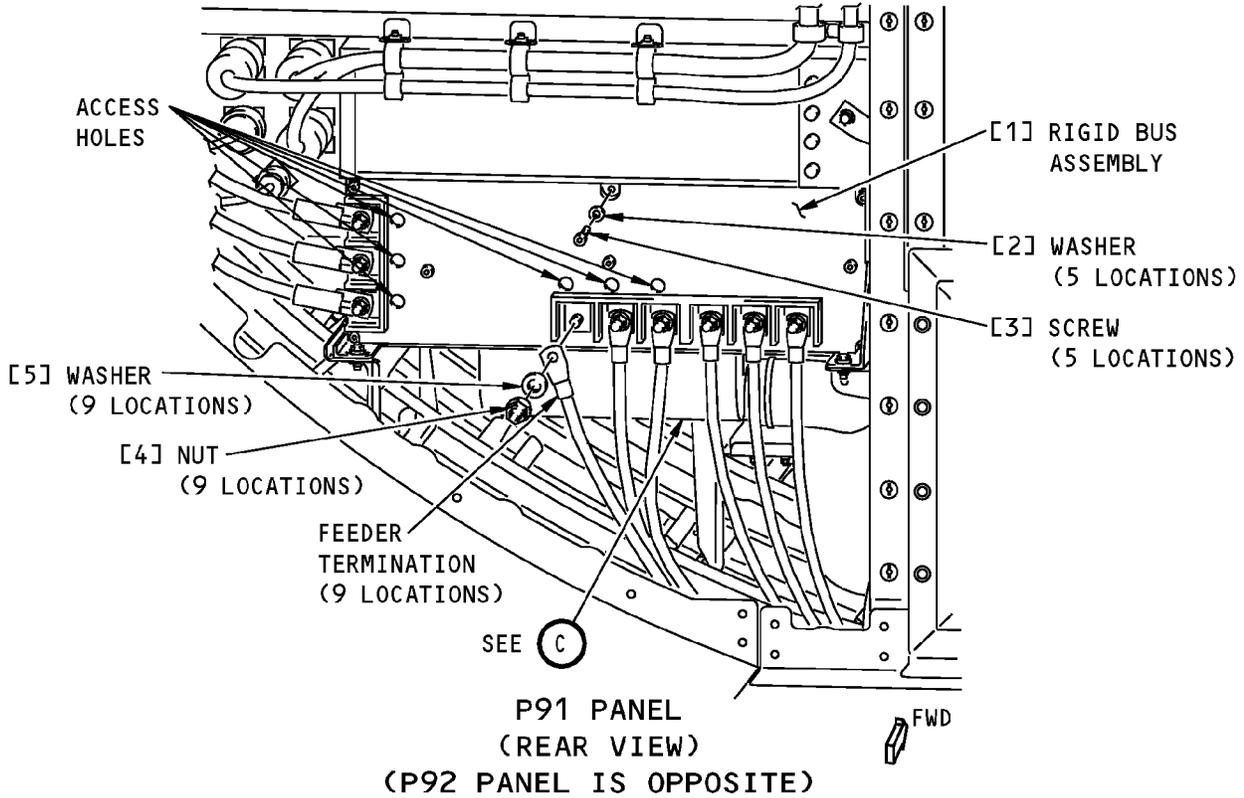


Rigid Bus Assembly Installation
Figure 401 (Sheet 1 of 4)/24-21-22-990-801

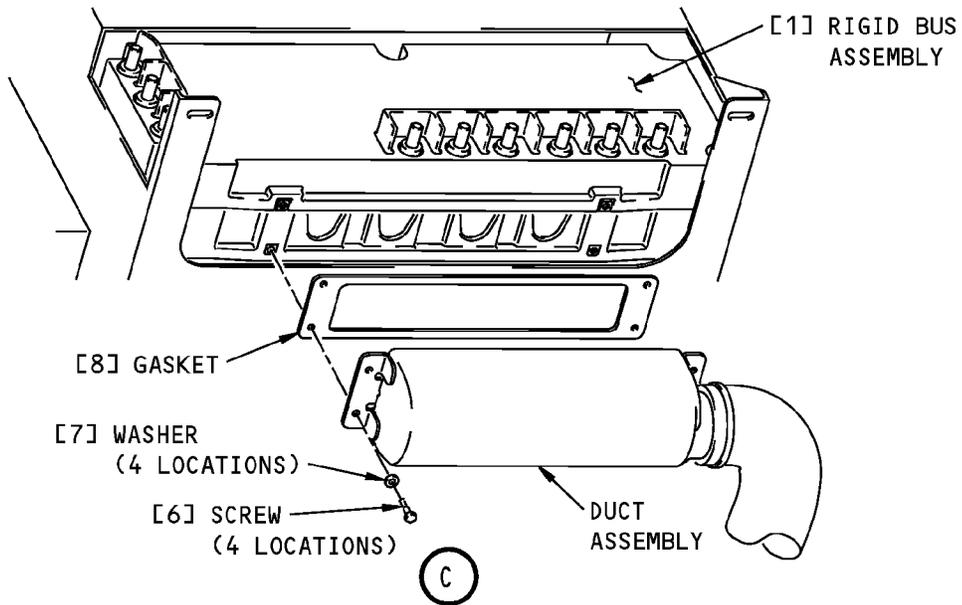
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(B)

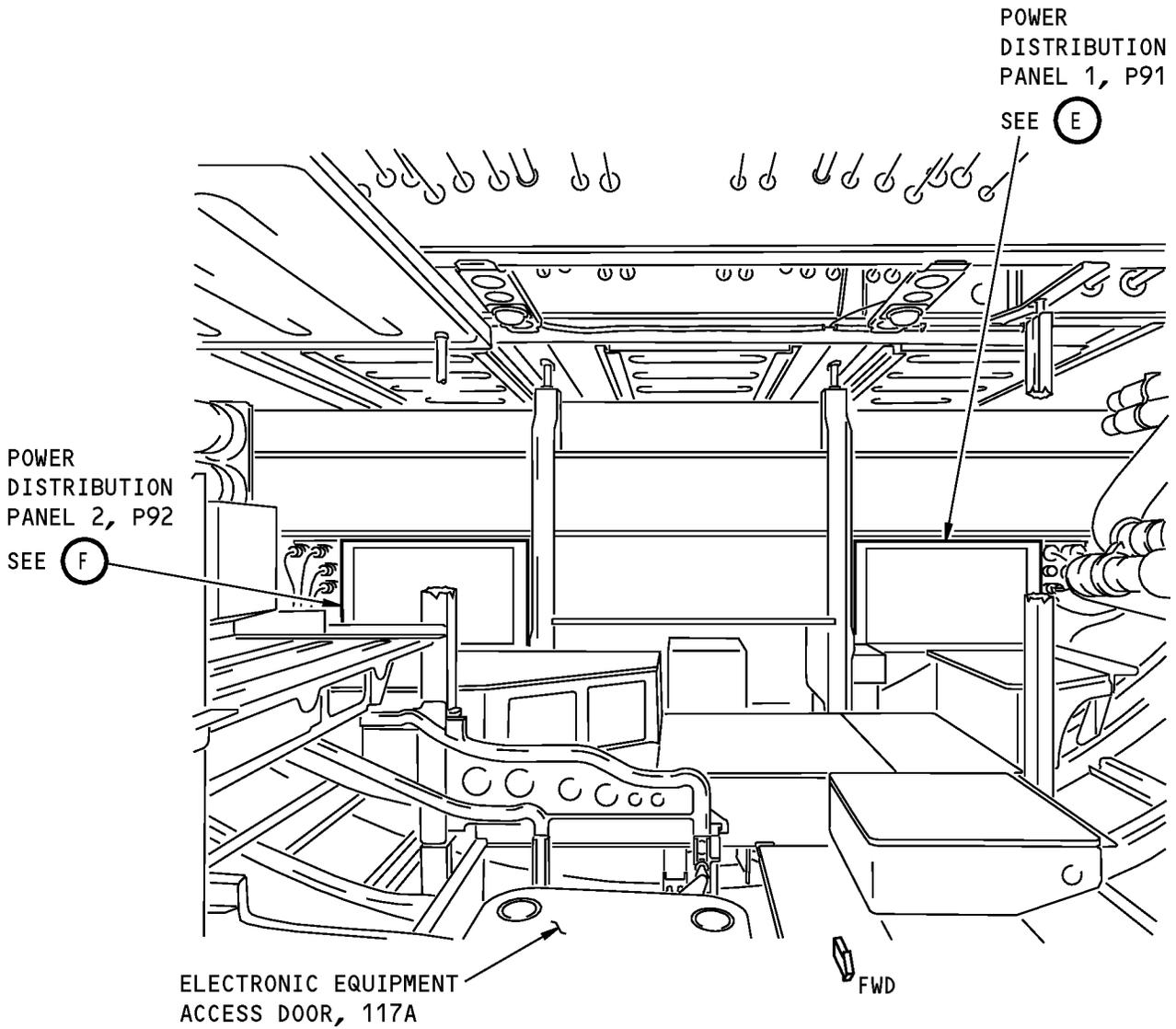


(C)

Rigid Bus Assembly Installation
Figure 401 (Sheet 2 of 4)/24-21-22-990-801

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ELECTRICAL AND ELECTRONICS COMPARTMENT

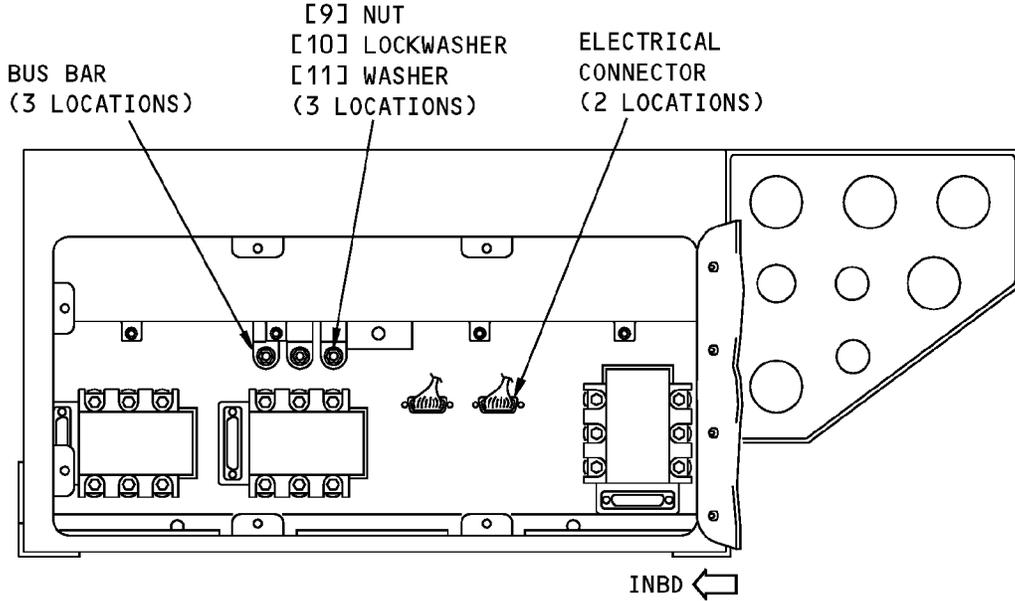
(D)

**Rigid Bus Assembly Installation
Figure 401 (Sheet 3 of 4)/24-21-22-990-801**

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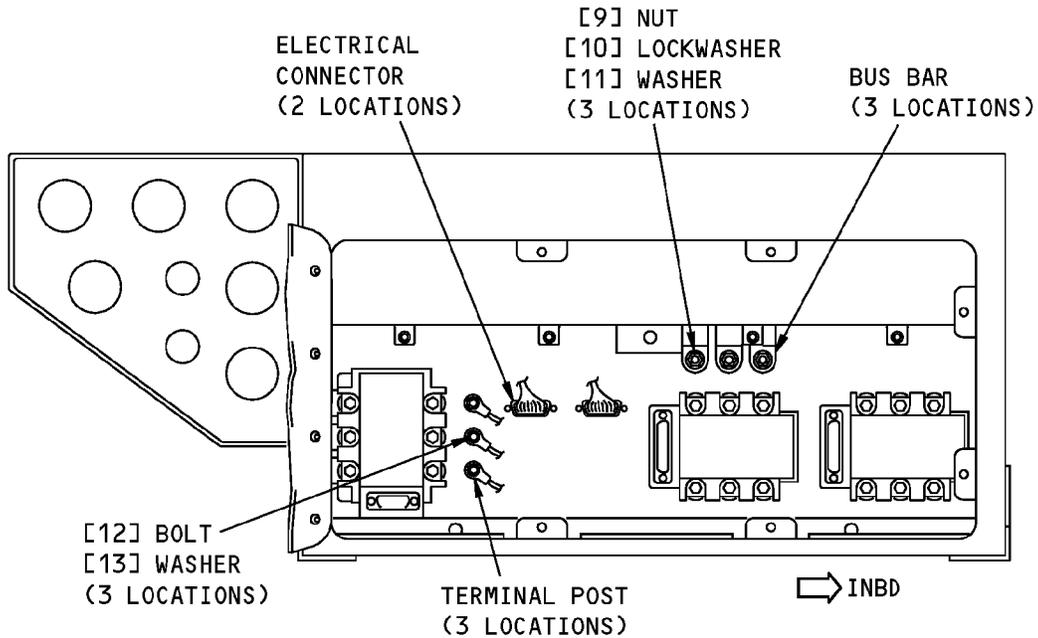
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POWER DISTRIBUTION PANEL 1, P91

E



POWER DISTRIBUTION PANEL 2, P92

F

**Rigid Bus Assembly Installation
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TASK 24-21-22-400-801

3. Rigid Bus Assembly Installation

(Figure 401)

A. General

- (1) There is one rigid bus assembly located at the rear of each of the power distribution panels (PDP), P91 and P92.
- (2) It is necessary to get access to the front and the rear of the power distribution panels to remove and install the rigid bus assembly.
- (3) You get access to the front of the PDP from the electronic equipment area.
- (4) You get access to the rear of the PDP from the forward cargo area.

B. References

Reference	Title
24-21-00-700-803	Operational Test for the AC Generation and Control System (P/B 501)
24-21-41-400-801	Breaker Installation (P/B 401)
24-22-00-860-812	Remove Electrical Power (P/B 201)
24-41-12-400-801	External Power Contactor Installation (P/B 401)

C. Location Zones

Zone	Area
117	Electrical and Electronics Compartment - Left
118	Electrical and Electronics Compartment - Right
121	Forward Cargo Compartment - Left
122	Forward Cargo Compartment - Right

D. Access Panels

Number	Name/Location
117A	Electronic Equipment Access Door

E. Prepare for installation.

SUBTASK 24-21-22-860-002

WARNING: REMOVE ELECTRICAL POWER BEFORE REMOVING OR INSTALLING RIGID BUS ASSEMBLY. HIGH VOLTAGES PRESENT CAN CAUSE INJURY TO PERSONS.

- (1) Make sure that electrical power is removed from airplane.
 - (a) Make sure that all of the power warning lights on the power distribution panel are off.

F. Procedure

SUBTASK 24-21-22-420-001

- (1) Do these steps to install the rigid bus assembly [1]:
 - (a) Hold the rigid bus assembly [1] in position.
 - (b) Install the five screws [3] and washers [2].
 - (c) Tighten the screws to 115-130 pound-inches (13.0-14.7 Newton meters).

SUBTASK 24-21-22-420-002

- (2) Do these steps to install the cooling duct on the power distribution panel:
 - (a) Install the gasket [8] on the duct and put the duct in position on the power distribution panel.

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- (b) Install the four screws [6] and washers [7] that hold the cooling duct to the power distribution panel.
- (c) Tighten the screws.

SUBTASK 24-21-22-420-003

- (3) Do these steps to install the power feeders on the power distribution panel:
 - (a) Use the identification tags to install the power feeders on the correct terminal studs.
 - (b) Install the nuts [4] and washers [5] on each terminal stud.
 - (c) Tighten the nuts to 180-200 inch-pounds (20.3-22.6 Newton meters).

NOTE: When you install and tighten the power feeders to the rigid bus assembly, there may be some axial movement of the terminal studs (particularly TB5004 and TB5008). A small amount of movement is normal and should not affect the tightening of the nuts to the specified torque.

SUBTASK 24-21-22-420-004

- (4) To install the rigid bus assembly on Power Distribution Panel 1, P91, do the steps that follow:
 - (a) Install the two electrical connectors on the rigid bus assembly and tighten the two screws.
 - (b) Install the three nuts [9], lockwashers [10] and washers [11] that hold the bus bars to the rigid bus assembly.
 - (c) Tighten the nuts to 20-25 inch-pounds (2.3-2.8 Newton meters).
 - (d) Install the breakers listed below. To install these breakers, do this task: Breaker Installation, TASK 24-21-41-400-801.
 - 1) These are the circuit breakers:

Power Distribution Panel Number 1, P91

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
---	---	C00803	AUXILIARY POWER BREAKER
---	---	C00804	BUS TIE BREAKER 1
---	---	C00801	GENERATOR BREAKER 1

SUBTASK 24-21-22-420-005

- (5) To install the rigid bus assembly on Power Distribution Panel 2, P92, do the steps that follow:
 - (a) Install the two electrical connectors on the rigid bus assembly and tighten the two screws.
 - (b) Install the three nuts [9], lockwashers [10] and washers [11] that hold the bus bars to the rigid bus assembly.
 - (c) Tighten the nuts to 20-25 inch-pounds (2.3-2.8 Newton meters).
 - (d) Install the three bolts [12] and washers [13] that hold wires to the terminal posts on the rigid bus assembly.

NOTE: Use identification tags on wires for correct installation.

- (e) Install the breakers listed below. To install these breakers, do this task: Breaker Installation, TASK 24-21-41-400-801.
 - 1) These are the circuit breakers:

Power Distribution Panel Number 2, P92

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
---	---	C00805	BUS TIE BREAKER 2
---	---	C00802	GENERATOR BREAKER 2

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(f) Do this task: External Power Contactor Installation, TASK 24-41-12-400-801.

G. Installation Test

SUBTASK 24-21-22-710-001

(1) Do this task: Operational Test for the AC Generation and Control System, TASK 24-21-00-700-803.

H. Put the airplane back to its usual condition.

SUBTASK 24-21-22-410-001

(1) Install the applicable forward bulkhead liner.

SUBTASK 24-21-22-410-002

(2) Close this access panel:

<u>Number</u>	<u>Name/Location</u>
117A	Electronic Equipment Access Door

SUBTASK 24-21-22-860-003

(3) Do this task: Remove Electrical Power, TASK 24-22-00-860-812.

————— **END OF TASK** —————

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GENERATOR, BUS TIE AND AUXILIARY POWER BREAKERS - REMOVAL/INSTALLATION

1. General

A. This procedure has two tasks:

(1) The first task removes any of the following breakers:

- (a) GENERATOR CONTROL BREAKER 1 (GCB)
- (b) GENERATOR CONTROL BREAKER 2 (GCB)
- (c) AUXILIARY POWER BREAKER (APB)
- (d) BUS TIE BREAKER 1 (BTB)
- (e) BUS TIE BREAKER 2 (BTB)

(2) The second task installs any of these breakers.

B. These power breakers are the same. This procedure is applicable to all of these power breakers.

TASK 24-21-41-000-801

2. Breaker Removal

(Figure 401)

A. General

(1) The breakers are located as follows:

- (a) GENERATOR CONTROL BREAKER 1, C801 - P91
- (b) GENERATOR CONTROL BREAKER 2, C802 - P92
- (c) AUXILIARY POWER BREAKER, C803 - P91
- (d) BUS TIE BREAKER 1, C804 - P91
- (e) BUS TIE BREAKER 2, C805 - P92

B. References

Reference	Title
24-22-00-860-812	Remove Electrical Power (P/B 201)

C. Location Zones

Zone	Area
117	Electrical and Electronics Compartment - Left
118	Electrical and Electronics Compartment - Right

D. Access Panels

Number	Name/Location
117A	Electronic Equipment Access Door

E. Prepare for removal.

SUBTASK 24-21-41-860-001

WARNING: REMOVE ELECTRICAL POWER BEFORE REMOVING OR INSTALLING POWER BREAKERS IN POWER DISTRIBUTION PANELS. HIGH VOLTAGES PRESENT CAN CAUSE INJURY TO PERSONS.

(1) Do this task: Remove Electrical Power, TASK 24-22-00-860-812.

- (a) Make sure that all of the power warning lights on the power distribution panel are off.

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SUBTASK 24-21-41-010-001

(2) Open this access panel to get access to the main equipment center:

<u>Number</u>	<u>Name/Location</u>
117A	Electronic Equipment Access Door

F. Procedure

SUBTASK 24-21-41-020-001

- (1) Do these steps to remove the breaker [1]:
- (a) Open the applicable panel for the breaker that is to be removed.
 - (b) Loosen two screws and remove the electrical connector from the breaker.
 - (c) Remove the six bolts [2] and washers [3] that hold the breaker.
 - (d) Remove the breaker.

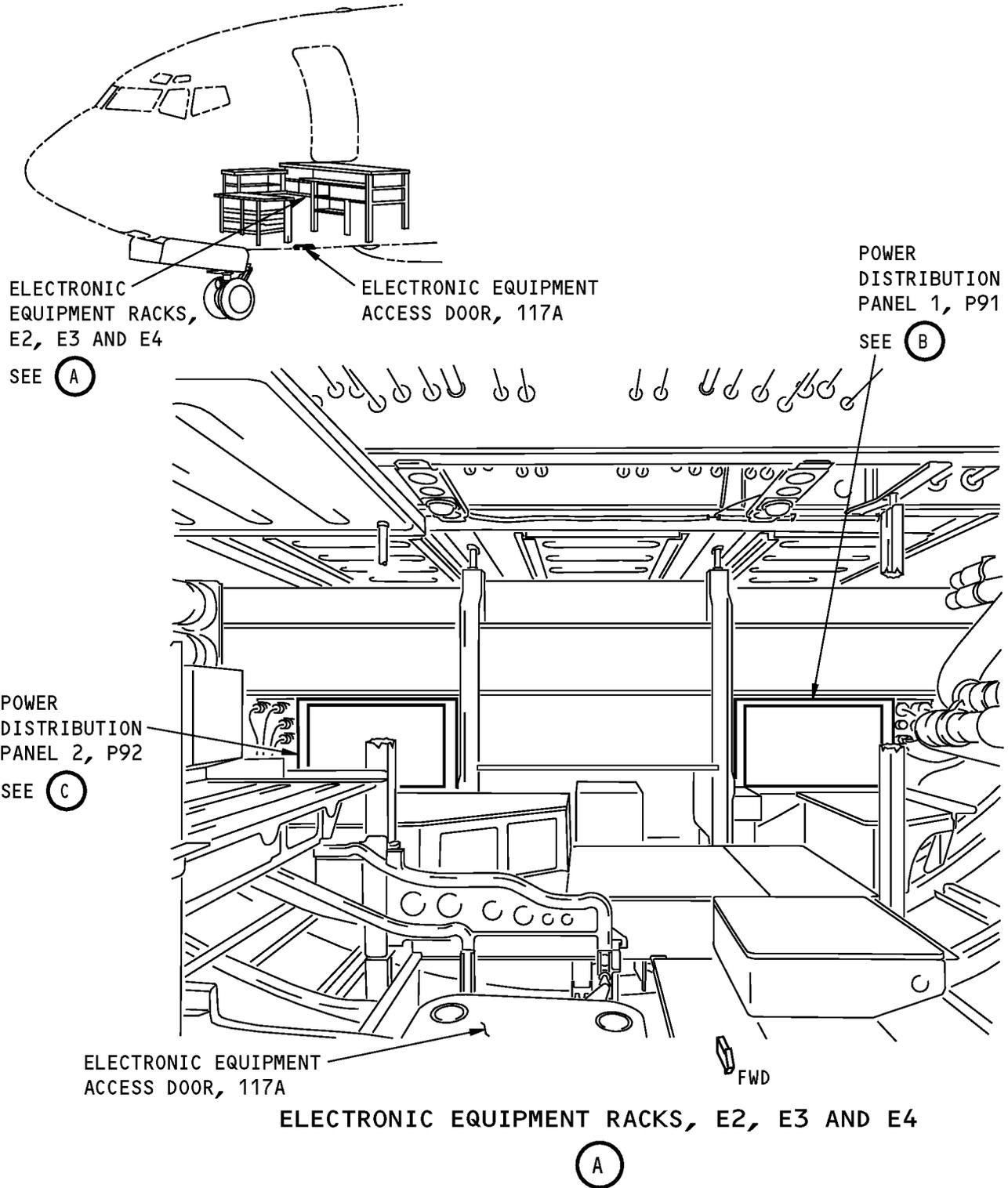
————— **END OF TASK** —————

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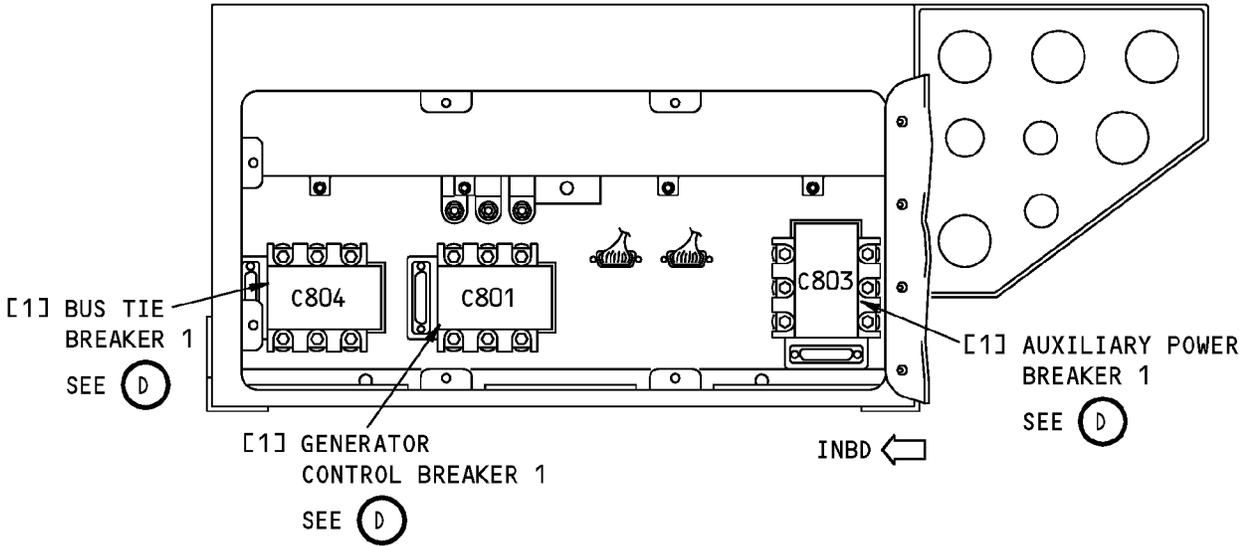


Main Power Breaker Installation
Figure 401 (Sheet 1 of 3)/24-21-41-990-801

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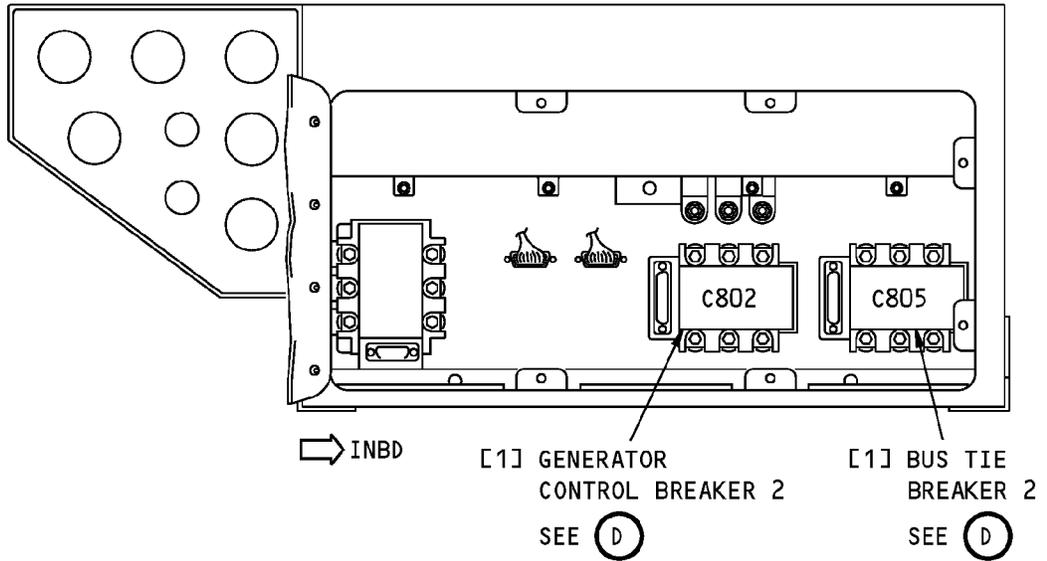
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POWER DISTRIBUTION PANEL 1, P91

(B)



POWER DISTRIBUTION PANEL 2, P92

(C)

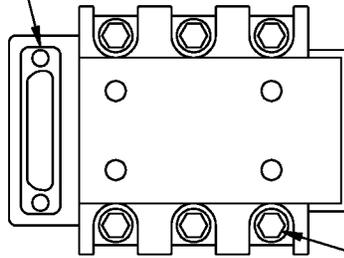
**Main Power Breaker Installation
Figure 401 (Sheet 2 of 3)/24-21-41-990-801**

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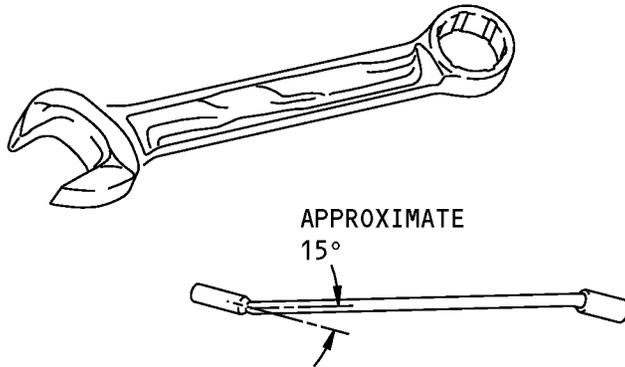
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ELECTRICAL
CONNECTOR



[2] BOLT
[3] WASHER
(6 LOCATIONS)

(EXAMPLE)



APPROXIMATE
15°

5mm-WRENCH 1

1 USE 5mm-WRENCH TO HOLD THE SPACER NUTS IN PLACE WHILE LOOSENING THE SCREWS ON THE ELECTRICAL CONNECTOR. FAILURE TO USE WRENCH COULD RESULT IN DAMAGE TO HARDWARE.

Main Power Breaker Installation
Figure 401 (Sheet 3 of 3)/24-21-41-990-801

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TASK 24-21-41-400-801

3. Breaker Installation

(Figure 401)

A. General

- (1) The breakers are located as follows:
 - (a) GENERATOR CONTROL BREAKER 1, C801 - P91
 - (b) GENERATOR CONTROL BREAKER 2, C802 - P92
 - (c) AUXILIARY POWER BREAKER, C803 - P91
 - (d) BUS TIE BREAKER 1, C804 - P91
 - (e) BUS TIE BREAKER 2, C805 - P92

B. References

Reference	Title
24-22-00-860-812	Remove Electrical Power (P/B 201)
24-22-00-860-814	Remove External Power (P/B 201)
24-22-00-860-816	Remove APU Generator Power (P/B 201)
49-11-00-860-801	APU Starting and Operation (P/B 201)
71-00-00-700-819-F00	Stop the Engine Procedure (Usual Engine Stop) (P/B 201)
71-00-00-800-807-F00	Start the Engine Procedure (Selection) (P/B 201)

C. Location Zones

Zone	Area
117	Electrical and Electronics Compartment - Left
118	Electrical and Electronics Compartment - Right

D. Access Panels

Number	Name/Location
117A	Electronic Equipment Access Door

E. Prepare for installation.

SUBTASK 24-21-41-860-002

WARNING: REMOVE ELECTRICAL POWER BEFORE REMOVING OR INSTALLING POWER BREAKERS IN POWER DISTRIBUTION PANELS. HIGH VOLTAGES PRESENT CAN CAUSE INJURY TO PERSONS.

- (1) Make sure that electrical power is removed from airplane.
 - (a) Make sure that all of the power warning lights on the power distribution panel are off.

F. Procedure

SUBTASK 24-21-41-420-001

- (1) Do these steps to install the breaker [1]:
 - (a) Hold the breaker in place and install the six bolts [2] and washers [3].
 - (b) Tighten the bolts to 44-52 inch-pounds (5.0-5.9 Newton-Meters).
 - (c) Install the electrical connector on the breaker and tighten two screws on connector.
 - (d) Close the access door on the panel.

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G. The Installation Test of the Breaker

SUBTASK 24-21-41-700-001

- (1) If you replaced one of the Generator Control Breakers, do this test:
 - (a) Start the applicable engine, do this task: Start the Engine Procedure (Selection), TASK 71-00-00-800-807-F00.
 - (b) Make sure the blue GEN OFF BUS light on the P5-4 panel is on.
 - (c) Set the GEN control switch on the P5-4 panel to the ON position.
 - (d) Make sure the blue GEN OFF BUS light on the P5-4 panel goes off.
 - (e) Stop the engine, do this task: Stop the Engine Procedure (Usual Engine Stop), TASK 71-00-00-700-819-F00.

SUBTASK 24-21-41-700-002

- (2) If you replaced one of the Bus Tie Breakers, do this test:
 - (a) Make sure the BAT switch on the P5-13 panel is in the ON position.
 - (b) Set the BUS TRANS switch on the P5-4 panel to the AUTO position.
 - (c) Make sure both amber TRANSFER BUS OFF lights on the P5-4 panel are on.
 - (d) Connect external power to the P19 panel.
 - (e) Make sure the blue GND POWER AVAILABLE light on the P5-4 panel is on.
 - (f) Set the GRD PWR switch on the P5-4 panel to the ON position.
 - (g) Make sure both amber TRANSFER BUS OFF lights on the P5-4 panel go off.
 - (h) Do this task: Remove External Power, TASK 24-22-00-860-814.

SUBTASK 24-21-41-700-003

- (3) If you replaced the Auxiliary Power Breaker, do this test:
 - (a) Do this task: APU Starting and Operation, TASK 49-11-00-860-801.
 - (b) Make sure the blue APU GEN OFF BUS light on the P5-4 panel comes on (approximately 50 seconds) after APU start.
 - (c) Set either of the APU GEN switches on the P5-4 panel to the ON position.
 - (d) Make sure the blue APU GEN OFF BUS light on the P54 panel goes off.
 - (e) Do this task: Remove APU Generator Power, TASK 24-22-00-860-816.

H. Put the airplane in its usual condition.

SUBTASK 24-21-41-410-001

- (1) Close this access panel:

<u>Number</u>	<u>Name/Location</u>
117A	Electronic Equipment Access Door

SUBTASK 24-21-41-860-003

- (2) Do this task: Remove Electrical Power, TASK 24-22-00-860-812.

————— **END OF TASK** —————

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AC SYSTEM GENERATOR AND APU MODULE (P5-4) - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

- (1) Removal of the AC System Generator and APU Module
- (2) Installation of the AC System Generator and APU Module

TASK 24-21-51-000-801

2. AC System Generator and APU Module Removal

(Figure 401)

A. General

- (1) The AC System Generator and APU Module, P5-4, is located on the P5 Overhead Panel in the flight compartment.

B. References

Reference	Title
24-22-00-860-812	Remove Electrical Power (P/B 201)

C. Location Zones

Zone	Area
211	Flight Compartment - Left

D. Prepare for the Removal

SUBTASK 24-21-51-860-001

- (1) Do this task: Remove Electrical Power, TASK 24-22-00-860-812.

E. Procedure

SUBTASK 24-21-51-020-001

- (1) Do these steps to remove the module assembly [1]:
 - (a) Unlatch the P5 overhead panel and let the panel hinge down to the open position.
 - (b) Disconnect the electrical connectors from the module [1].
 - (c) Put protective covers on the electrical connectors.
 - (d) Loosen the quarter turn fasteners on the module [1].

NOTE: Hold the module when you loosen the quarter turn fasteners so that the module does not fall.

- (e) Carefully pull the module [1] out from the P5 overhead panel.

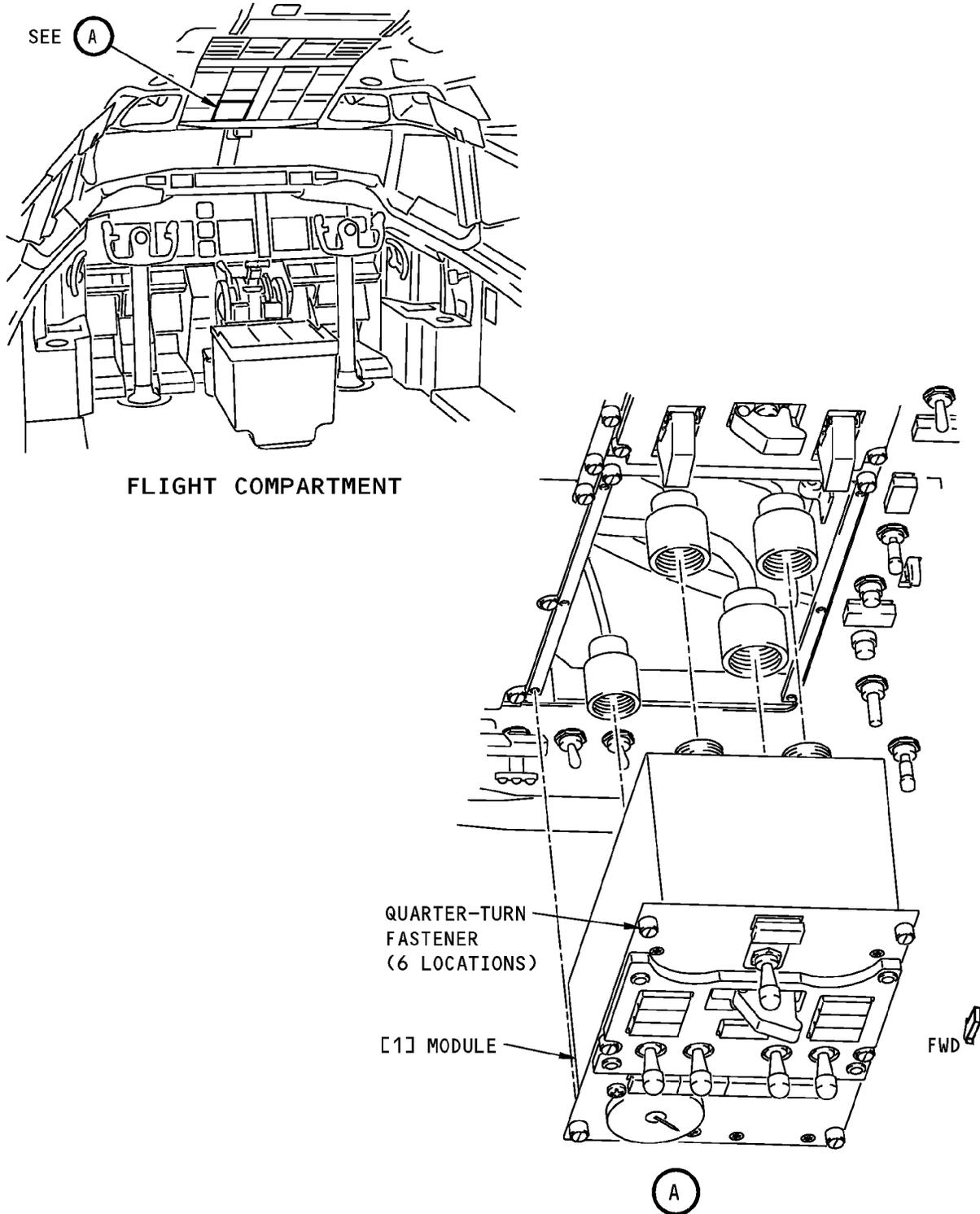
————— **END OF TASK** —————

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AC System Generator and APU Module Installation
Figure 401/24-21-51-990-801

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TASK 24-21-51-400-801

3. AC System Generator and APU Module Installation

(Figure 401)

A. General

- (1) The AC System Generator and APU Module, P5-4, is located on the P5 Overhead Panel in the flight compartment.

B. References

Reference	Title
24-21-00-700-803	Operational Test for the AC Generation and Control System (P/B 501)
24-22-00-860-812	Remove Electrical Power (P/B 201)

C. Location Zones

Zone	Area
211	Flight Compartment - Left

D. Procedure

SUBTASK 24-21-51-420-001

- (1) Do these steps to install the module assembly [1]:
 - (a) Put the module [1] carefully into position in the P5 overhead panel.
 - (b) Tighten the quarter turn fasteners on the module [1].
 - (c) Remove the protective covers from the electrical connectors.
 - (d) Examine the electrical connectors for bent or broken pins, dirt and damage.
 - 1) Clean or repair the electrical connectors if it is necessary.
 - (e) Connect the electrical connectors to the module [1].
 - (f) Push the P5 overhead panel up to the closed position and latch it.

E. Installation Test of the AC System Generator and APU Module

SUBTASK 24-21-51-710-001

- (1) Do this task: Operational Test for the AC Generation and Control System, TASK 24-21-00-700-803.

F. Put the Airplane Back to its Usual Condition

SUBTASK 24-21-51-710-002

- (1) Do this task: Remove Electrical Power, TASK 24-22-00-860-812.

END OF TASK

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GENERATOR DRIVE AND STANDBY POWER MODULE (P5-5) - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

- (1) Removal of the Generator Drive and Standby Power Module
(2) Installation of the Generator Drive and Standby Power Module

TASK 24-21-52-000-801

2. Generator Drive and Standby Power Module Removal

(Figure 401)

A. General

- (1) The Generator Drive and Standby Power Module, P5-5, is located on the P5 Overhead Panel in the flight compartment.

B. References

Table with 2 columns: Reference, Title. Row 1: 24-22-00-860-812, Remove Electrical Power (P/B 201)

C. Location Zones

Table with 2 columns: Zone, Area. Row 1: 211, Flight Compartment - Left

D. Prepare for the Removal

SUBTASK 24-21-52-860-001

- (1) Do this task: Remove Electrical Power, TASK 24-22-00-860-812.

E. Procedure

SUBTASK 24-21-52-020-002

- (1) Do these steps to remove the module assembly [1]:
(a) Unlatch the P5 overhead panel and let the panel hinge down to the open position.
(b) Disconnect the electrical connectors from the module [1].
(c) Put protective covers on the electrical connectors.
(d) Loosen the quarter turn fasteners on the module [1].

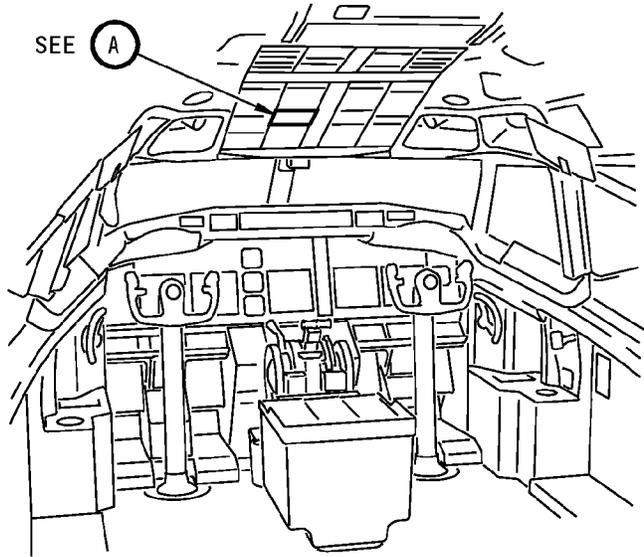
NOTE: Hold the module when you loosen the quarter turn fasteners so that the module does not fall.

- (e) Carefully pull the module [1] out from the P5 overhead panel.

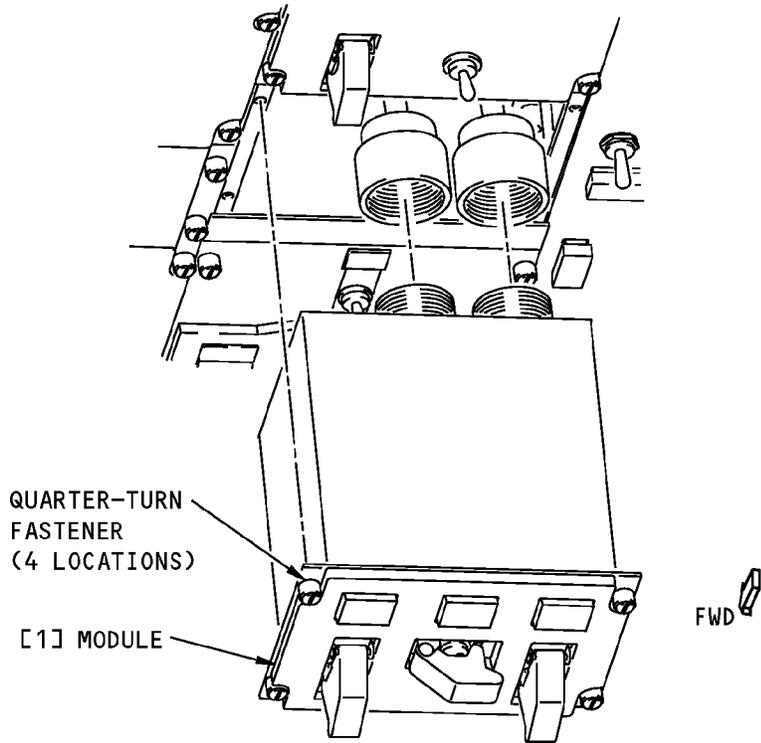
END OF TASK

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Generator Drive and Standby Power Module Installation
Figure 401/24-21-52-990-801

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TASK 24-21-52-400-801

3. Generator Drive and Standby Power Module Installation

(Figure 401)

A. General

- (1) The Generator Drive and Standby Power Module, P5-5, is located on the P5 Overhead Panel in the flight compartment.

B. References

Reference	Title
24-11-00-700-802	Operational Test For Number 1 IDG (P/B 501)
24-11-00-700-803	Operational Test For Number 2 IDG (P/B 501)
24-22-00-860-812	Remove Electrical Power (P/B 201)
24-34-00-710-802	The Operational Test of the Standby Power System (P/B 501)

C. Location Zones

Zone	Area
211	Flight Compartment - Left

D. Procedure

SUBTASK 24-21-52-420-002

- (1) Do these steps to install the module assembly [1]:
 - (a) Put the module [1] carefully into position in the P5 overhead panel.
 - (b) Tighten the quarter turn fasteners on the module [1].
 - (c) Remove the protective covers from the electrical connectors.
 - (d) Examine the electrical connectors for bent or broken pins, dirt and damage.
 - 1) Clean or repair the electrical connectors if it is necessary.
 - (e) Connect the electrical connectors to the module [1].
 - (f) Push the P5 overhead panel up to the closed position and latch it.

E. Installation Test of the Generator Drive and Standby Power Module

SUBTASK 24-21-52-710-001

- (1) Do these tasks: Operational Test For Number 1 IDG, TASK 24-11-00-700-802 and Operational Test For Number 2 IDG, TASK 24-11-00-700-803.

SUBTASK 24-21-52-710-004

- (2) Do this task: The Operational Test of the Standby Power System, TASK 24-34-00-710-802.

F. Put the Airplane Back to its Usual Condition

SUBTASK 24-21-52-710-002

- (1) Do this task: Remove Electrical Power, TASK 24-22-00-860-812.

————— **END OF TASK** —————

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ELECTRICAL METERS, BATTERY AND GALLEY POWER MODULE (P5-13) - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

- (1) Removal of the Electrical Meters, Battery and Galley Power Module
- (2) Installation of the Electrical Meters, Battery and Galley Power Module

TASK 24-21-53-000-801

2. Electrical Meters, Battery and Galley Power Module Removal

(Figure 401)

A. General

- (1) The Electrical Meters, Battery and Galley Power Module, P5-13, is located on the P5 Overhead Panel in the flight compartment.

B. References

Reference	Title
24-22-00-860-812	Remove Electrical Power (P/B 201)

C. Location Zones

Zone	Area
211	Flight Compartment - Left

D. Prepare for the Removal

SUBTASK 24-21-53-860-001

- (1) Do this task: Remove Electrical Power, TASK 24-22-00-860-812.

SUBTASK 24-21-53-860-002

- (2) Make sure the BAT switch on the P5-13 panel is in the OFF position.

E. Procedure

SUBTASK 24-21-53-020-002

- (1) Do these steps to remove the module [1]:
 - (a) Unlatch the P5 overhead panel and let the panel hinge down to the open position.
 - (b) Disconnect the electrical connectors from the module [1].
 - (c) Put protective covers on the electrical connectors.
 - (d) Loosen the quarter turn fasteners on the module [1].

NOTE: Hold the module when you loosen the quarter turn fasteners so that the module does not fall.

- (e) Carefully pull the module [1] out from the P5 overhead panel.

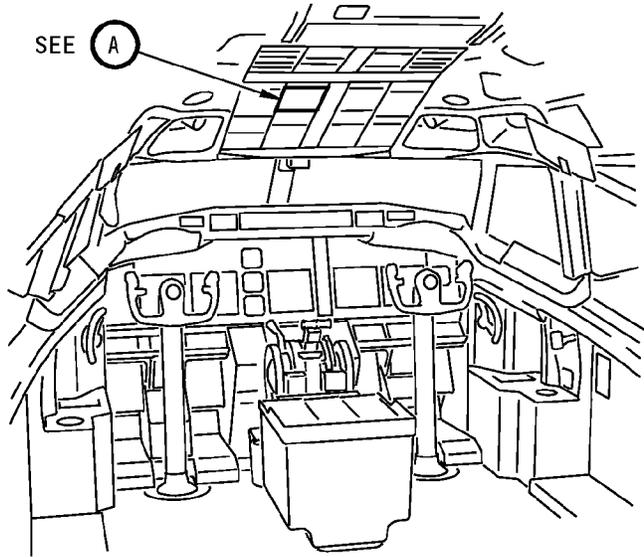
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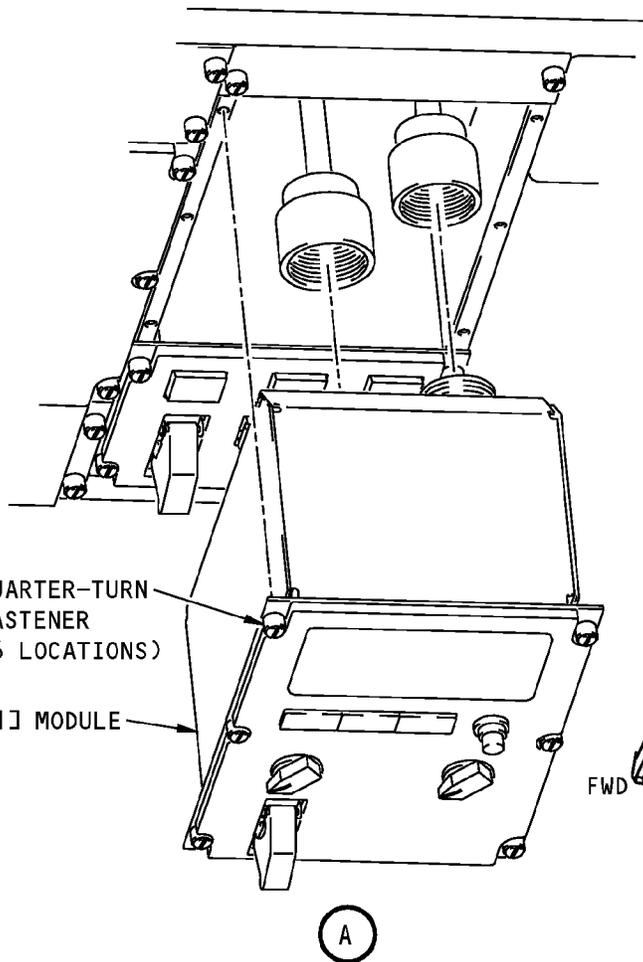
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FLIGHT COMPARTMENT



Electrical Meters, Battery and Galley Power Module Installation
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TASK 24-21-53-400-801

3. Electrical Meters, Battery and Galley Power Module Installation

(Figure 401)

A. General

- (1) The Electrical Meters, Battery and Galley Power Module, P5-13, is located on the P5 Overhead Panel in the flight compartment.

B. References

Reference	Title
24-22-00-860-812	Remove Electrical Power (P/B 201)
24-22-00-860-813	Supply External Power (P/B 201)

C. Location Zones

Zone	Area
211	Flight Compartment - Left

D. Procedure

SUBTASK 24-21-53-420-002

- (1) Do these steps to install the module [1]:
 - (a) Put the module [1] carefully into position in the P5 overhead panel.
 - (b) Tighten the quarter turn fasteners on the module [1].
 - (c) Remove the protective covers from the electrical connectors.
 - (d) Examine the electrical connectors for bent or broken pins, dirt and damage.
 - 1) Clean or repair the electrical connectors if it is necessary.
 - (e) Connect the electrical connectors to the module [1].
 - (f) Push the P5 overhead panel up to the closed position and latch it.

E. Installation Test of the Electrical Meters, Battery and Galley Power Module

SUBTASK 24-21-53-710-001

- (1) Do this task: Supply External Power, TASK 24-22-00-860-813.
 - (a) If the ELEC light on the P5-13 panel is on do the steps that follow:

NOTE: The P5-13 panel may have fault messages latched in from the previous shop test. Do these steps to clear any fault messages.

 - 1) Set the AC meter selector switch and the DC meter selector switch on the P5-13 panel to the TEST position.
 - 2) Push and release the MAINT switch on the P5-13 panel to start the display test.

NOTE: The display test will exercise all of the segments of the alphanumeric display to allow the operator to verify the functionality of the display. The display test is automatically terminated after a complete test cycle.
 - 3) After completion of the display test the fault messages, (if there are any), will be displayed on the meter. The fault messages will be displayed one at a time. Press the MAINT switch again to step to the next message.
 - 4) After the last message has been displayed, the following message will be displayed:
 - a) HOLD BUTTON CLEAR FAULTS

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5) To clear the fault messages, push and hold the MAINT switch for 6 ± 0.2 seconds. The following message will be displayed if the faults have been successfully cleared:

- a) FAULTS CLEARED
- (b) Make sure the ELEC light on the P5-13 panel is off.
- (c) Set the AC meter selector switch on the P5-13 panel to the GRD PWR position.
- (d) Make sure the AC meter on the P5-13 panel shows these values:
 - 1) AC VOLTS = 110-120
 - 2) CPS FREQ = 390-410
- (e) Set the DC Meter Selector Switch on the P5-13 panel to the TR 1 position.
- (f) Make sure the DC meter on the P5-13 panel shows this value:
 - 1) DC VOLTS = 22-30

F. Put the Airplane Back to its Usual Condition

SUBTASK 24-21-53-710-002

(1) Do this task: Remove Electrical Power, TASK 24-22-00-860-812.

————— **END OF TASK** —————

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CURRENT TRANSFORMER - REMOVAL/INSTALLATION

1. General

A. This procedure has two tasks:

- (1) The first task removes any of the following current transformers:
 - (a) GEN 1 DIFFERENTIAL PROTECTION CURRENT TRANSFORMER (DPCT), T374
 - (b) GEN 2 DIFFERENTIAL PROTECTION CURRENT TRANSFORMER (DPCT), T375
 - (c) APU DIFFERENTIAL PROTECTION CURRENT TRANSFORMER (DPCT), T376
 - (d) EXT PWR CURRENT TRANSFORMER (CT), T378
- (2) The second task installs any of these current transformers.

TASK 24-21-71-000-801

2. Current Transformer Removal

(Figure 401)

A. General

- (1) These current transformers are located in the Rigid Bus Assemblies which are installed in the back of the P91 and P92 Power Distribution Panels.

NOTE: If the troubleshooting points to a defective current transformer, the airline must remove and send back the rigid bus assembly to Honeywell. Write or speak to Honeywell for more data.

- (2) You get access to the current transformers from the forward cargo area.
- (3) The current transformers are located as follows:
 - (a) GEN 1 DPCT, T374 - P91 Panel
 - (b) GEN 2 DPCT, T375 - P92 Panel
 - (c) APU DPCT, T376 - P91 Panel
 - (d) EXT PWR CT, T378 - P92 Panel

B. References

Reference	Title
24-22-00-860-812	Remove Electrical Power (P/B 201)

C. Location Zones

Zone	Area
121	Forward Cargo Compartment - Left
122	Forward Cargo Compartment - Right

D. Prepare for Removal

SUBTASK 24-21-71-860-001

WARNING: REMOVE ELECTRICAL POWER BEFORE REMOVAL OR INSTALLATION OF THE CURRENT TRANSFORMERS IN THE POWER DISTRIBUTION PANELS. HIGH VOLTAGES PRESENT CAN CAUSE INJURY TO PERSONS.

- (1) Do this task: Remove Electrical Power, TASK 24-22-00-860-812.
 - (a) Make sure that all of the power warning lights on the power distribution panel are off.

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SUBTASK 24-21-71-010-001

- (2) Remove the applicable forward bulkhead liner in the forward cargo area to get access to the back of the power distribution panel.

SUBTASK 24-21-71-010-002

- (3) Do the following steps to remove the power feeders from the power distribution panel:
 - (a) Install identification tags on the power feeders before removing them.
 - (b) Remove the nuts [2] and washers [1] from each terminal stud.
 - (c) Remove power feeders from terminal studs.

E. Procedure

SUBTASK 24-21-71-020-002

- (1) AIRPLANES WITH NEW RIGID BUS ASSEMBLIES (POST- SB 24-1128) (POST - PRR 38317); do the steps that follow to remove the current transformer [10]:

- (a) Remove the three screws [4] and washers [5] that hold the cover [3] on the rigid bus assembly.
- (b) Remove the aft two bolts and washers that hold the cooling duct assembly to the bottom of the cover [3].

NOTE: You can loosen the fwd two bolts to make removal of the cover [3] easier.

- (c) Remove the four screws [13] that hold the cover [3] and the retainer [14] together.
- (d) Remove the cover [3].

NOTE: Be careful when removing the cover. There are bushings [6] installed between the terminal studs and the cover that could fall out when the cover is removed.

- (e) Install identification tags on the three wires connected to the terminal studs [7].
- (f) Remove the three screws [12] and washers [11] that hold the terminal studs [7] and the wires to the rigid bus assembly.
- (g) Remove the terminal studs [7] and the retainer [14] from the current transformer in one piece.

NOTE: Leave retainer [14] attached to the terminal studs [7]. If these items show any damage, then they should be replaced.

- (h) Loosen the two screws that hold the electrical connector to the current transformer.
- (i) Remove the electrical connector.
- (j) Remove the screw [8] and washer [9] that hold the current transformer to the rigid bus assembly.
- (k) Remove the current transformer [10].

————— END OF TASK —————

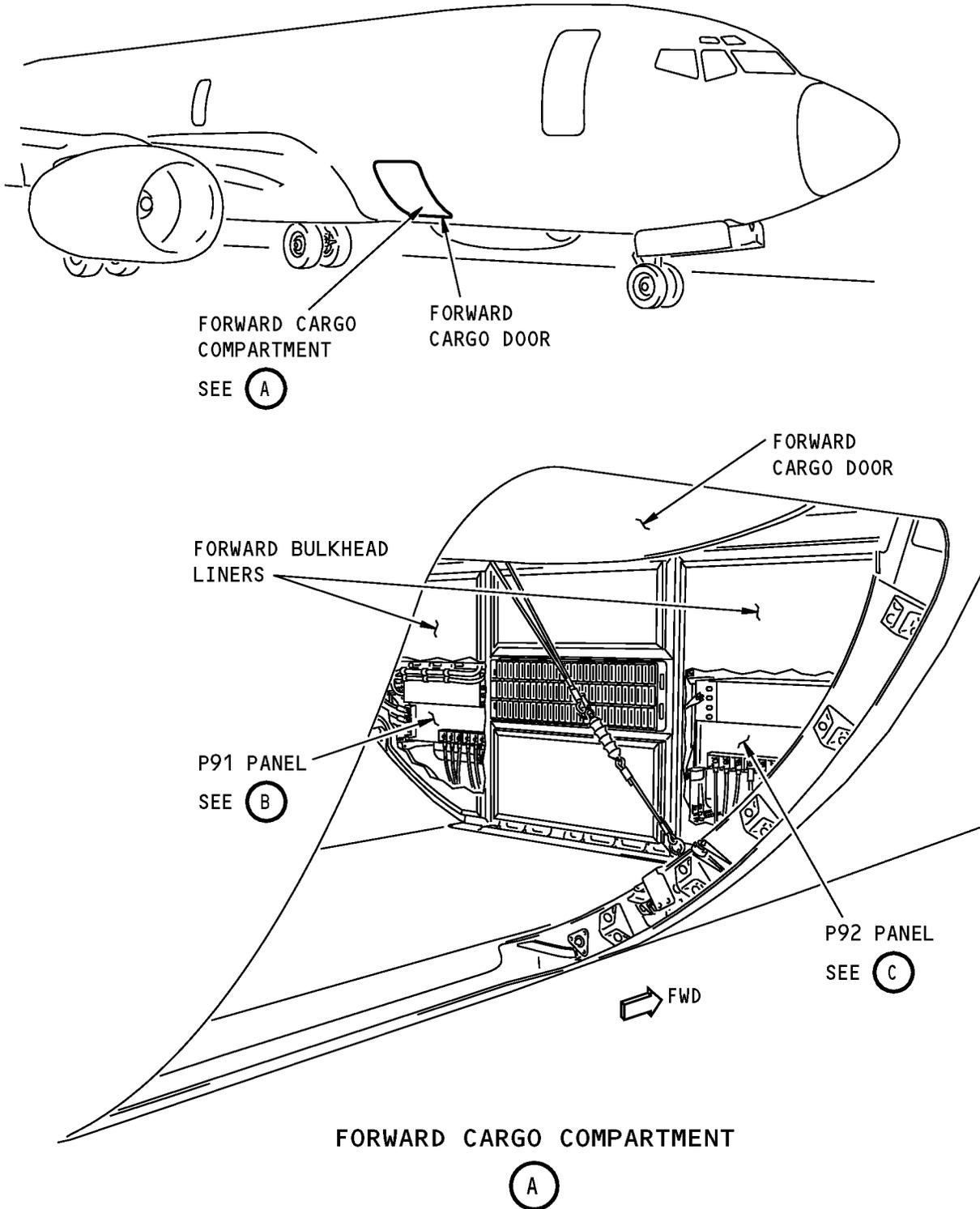
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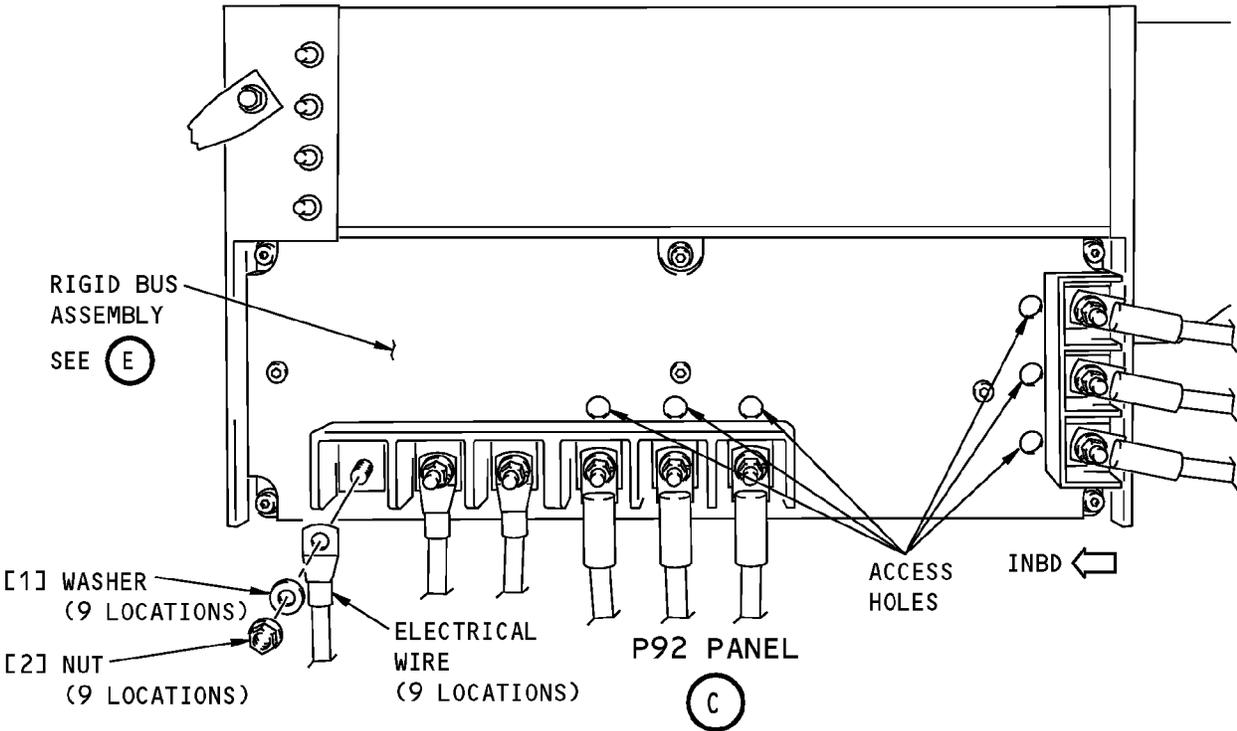
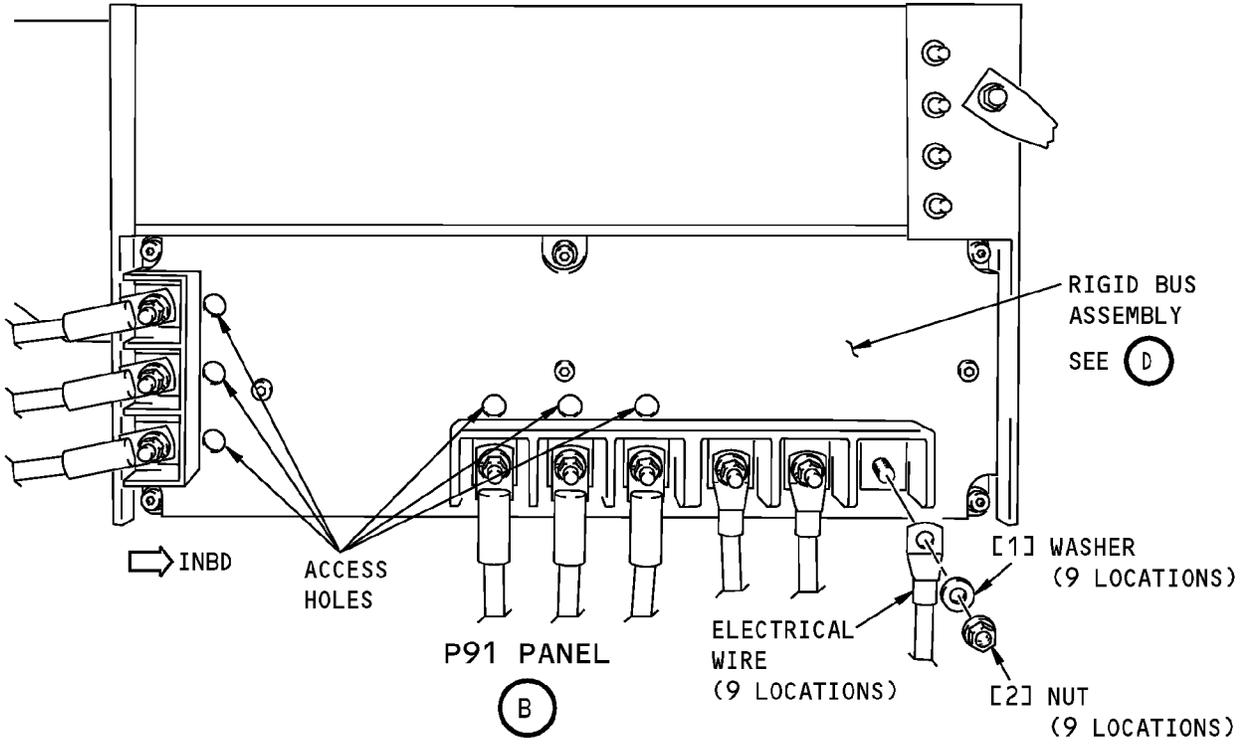
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**Current Transformer Installation
Figure 401 (Sheet 1 of 4)/24-21-71-990-801**

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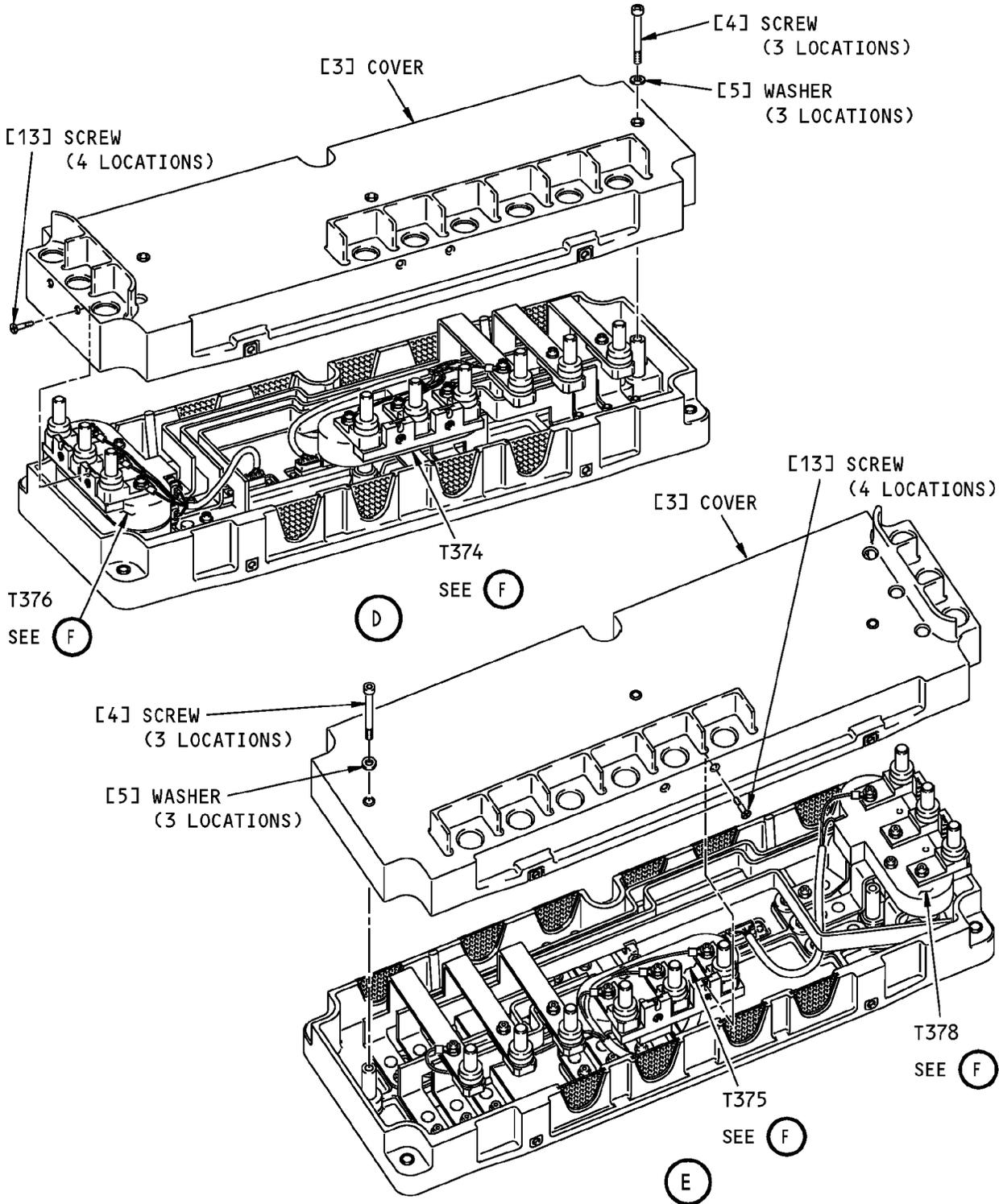


**Current Transformer Installation
Figure 401 (Sheet 2 of 4)/24-21-71-990-801**

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**Current Transformer Installation
Figure 401 (Sheet 3 of 4)/24-21-71-990-801**

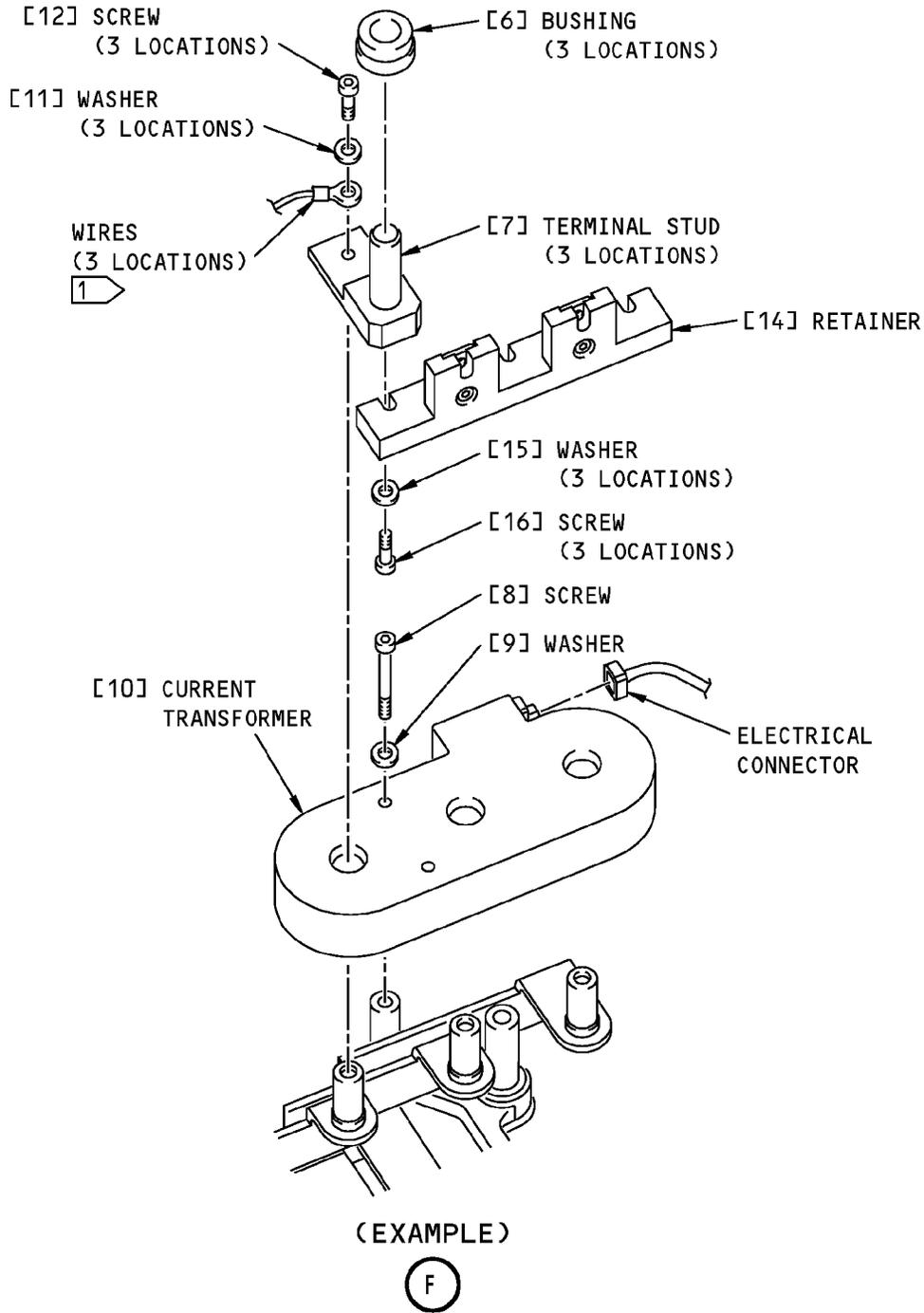
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1 EXTERNAL POWER CURRENT TRANSFORMER,
T378 HAS ONE WIRE

Current Transformer Installation
Figure 401 (Sheet 4 of 4)/24-21-71-990-801

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TASK 24-21-71-400-801

3. Current Transformer Installation

(Figure 401)

A. General

- (1) These current transformers are located in the Rigid Bus Assemblies which are installed in the back of the P91 and P92 Power Distribution Panels.
- (2) You get access to the current transformers from the forward cargo area.
- (3) The current transformers are located as follows:
 - (a) GEN 1 DPCT, T374 - P91 Panel
 - (b) GEN 2 DPCT, T375 - P92 Panel
 - (c) APU DPCT, T376 - P91 Panel
 - (d) EXT PWR CT, T378 - P92 Panel

B. References

Reference	Title
24-22-00-860-812	Remove Electrical Power (P/B 201)
24-22-00-860-814	Remove External Power (P/B 201)
24-22-00-860-816	Remove APU Generator Power (P/B 201)
49-11-00-860-801	APU Starting and Operation (P/B 201)
71-00-00-700-819-F00	Stop the Engine Procedure (Usual Engine Stop) (P/B 201)
71-00-00-800-807-F00	Start the Engine Procedure (Selection) (P/B 201)

C. Location Zones

Zone	Area
121	Forward Cargo Compartment - Left
122	Forward Cargo Compartment - Right
211	Flight Compartment - Left
212	Flight Compartment - Right

D. Prepare for Installation

SUBTASK 24-21-71-860-002

WARNING: REMOVE ELECTRICAL POWER BEFORE REMOVAL OR INSTALLATION OF THE CURRENT TRANSFORMERS IN THE POWER DISTRIBUTION PANELS. HIGH VOLTAGES PRESENT CAN CAUSE INJURY TO PERSONS.

- (1) Make sure that electrical power is removed from airplane.
 - (a) Make sure that all of the power warning lights on the power distribution panel are off.

E. Procedure

SUBTASK 24-21-71-420-003

- (1) AIRPLANES WITH NEW RIGID BUS ASSEMBLIES (POST- SB 24-1128) (POST - PRR 38317); do the steps that follow to install the current transformer [10]:
 - (a) Hold the current transformer [10] in position.
 - (b) Install the screw [8] and washer [9] that hold the current transformer to the rigid bus assembly.
 - (c) Tighten the screw [8] to 17-20 inch-pounds (1.9-2.3 Newton meters).
 - (d) Install the electrical connector on the current transformer and tighten the two screws.

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- (e) Put the three terminal studs [7] and retainer [14] in position. Install the wires, screws [12] and washers [11].

NOTE: Loosely install the screws [12], they will be tightened after the cover [3] is installed.

NOTE: The torque for the three screws [16] that hold the retainer [14] to the terminal studs [7] is 1-2 inch-pounds.

- (f) Install the cover [3] on the rigid bus assembly so that all of the terminal studs [7] fit through the holes in the cover [3].

NOTE: Make sure that the bushings [6] are installed between each terminal stud [7] and the cover [3].

- (g) Install the three screws [4] and washers [5] that hold the cover [3].

- (h) Tighten the screws [4] to 46-50 inch-pounds (5.2-5.6 Newton meters).

- (i) Tighten the three screws [12] to 20-23 inch-pounds (2.3-2.6 Newton meters).

NOTE: Use the access holes in the cover [3] located just above the terminal studs, to tighten these screws.

- (j) Install the four screws [13] that hold the cover [3] and the retainer [14] together.

- (k) Tighten the screws [13] to 9-12 inch-pounds (1.0-1.4 Newton meters).

- (l) Install the aft two screws and washers that hold the cooling duct assembly to the bottom of the cover [3]. Tighten all four screws that hold the duct to the rigid bus assembly.

SUBTASK 24-21-71-420-002

- (2) Do the following steps to install the power feeders on the power distribution panel:

- (a) Use the identification tags to install the power feeders on the correct terminal studs.

- (b) Install the nuts [2] and washers [1] on each terminal stud.

- (c) Tighten the nuts to 180-200 inch-pounds (20.3-22.6 Newton meters).

NOTE: When you install and tighten the power feeders to the rigid bus assembly, there may be some axial movement of the terminal studs (particularly TB5004 and TB5008). A small amount of movement is normal and should not affect the tightening of the nuts to the specified torque.

SUBTASK 24-21-71-410-001

- (3) Install the applicable forward bulkhead liner.

F. The Installation Test of the Current Transformer

SUBTASK 24-21-71-700-001

- (1) If you replaced the GEN 1 DPCT, T374 or GEN 2 DPCT, T375 do this test:

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

- (b) Make sure the applicable GEN OFF BUS light on the P5-4 panel is on.

- (c) Set the applicable GEN control switch on the P5-4 panel to the ON position.

- (d) Make sure the applicable GEN OFF BUS light on the P5-4 panel goes off.

- (e) Stop the engine, do this task: Stop the Engine Procedure (Usual Engine Stop), TASK 71-00-00-700-819-F00.

SUBTASK 24-21-71-700-002

- (2) If you replaced the EXT PWR CT, T378 do this test:

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- (a) Make sure the BAT switch on the P5-13 panel is in the ON position.
- (b) Set the BUS TRANS switch on the P5-4 panel to the AUTO position.
- (c) Make sure both TRANSFER BUS OFF lights on the P5-4 panel are on.
- (d) Connect external power to the P19 panel.
- (e) Make sure the GRD POWER AVAILABLE light on the P5-4 panel is on.
- (f) Set the GRD PWR switch on the P5-4 panel to the ON position.
- (g) Make sure both TRANSFER BUS OFF lights on the P5-4 panel go OFF.
- (h) Do this task: Remove External Power, TASK 24-22-00-860-814.

SUBTASK 24-21-71-700-003

(3) If you replaced the APU DPCT, T376 do this test:

- (a) Do this task: APU Starting and Operation, TASK 49-11-00-860-801.
- (b) Make sure the APU GEN OFF BUS light on the P5-4 panel comes on (approximately 50 seconds) after APU start.
- (c) Set either of the APU GEN switches on the P5-4 panel to the ON position.
- (d) Make sure the APU GEN OFF BUS light on the P5-4 panel goes off.
- (e) Do this task: Remove APU Generator Power, TASK 24-22-00-860-816.

G. Put the airplane in its usual condition.

SUBTASK 24-21-71-860-003

(1) Do this task: Remove Electrical Power, TASK 24-22-00-860-812.

————— **END OF TASK** —————

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GENERATOR CONTROL UNIT - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

- (1) A removal of the Generator Control Unit
- (2) An Installation of the Generator Control Unit

TASK 24-21-81-000-801

2. Generator Control Unit Removal

(Figure 401)

A. General

- (1) There are three GCU's installed as follows:
 - (a) GCU 1, G10 - located on the E2-1 Rack
 - (b) GCU 2, G12 - located on the E4-2 Rack
 - (c) APU GCU, G14 - located on the E2-1 Rack

B. References

Reference	Title
20-10-07-000-801	E/E Box Removal (P/B 201)
20-40-12-000-802	ESDS Handling for Metal Encased Unit Removal (P/B 201)
24-22-00-860-816	Remove APU Generator Power (P/B 201)
24-22-00-860-818	Remove IDG Power (P/B 201)

C. Location Zones

Zone	Area
117	Electrical and Electronics Compartment - Left
118	Electrical and Electronics Compartment - Right

D. Access Panels

Number	Name/Location
117A	Electronic Equipment Access Door

E. Prepare for the Removal

SUBTASK 24-21-81-010-001

(1) Open this access panel to get access to the main equipment center:

Number	Name/Location
117A	Electronic Equipment Access Door

SUBTASK 24-21-81-860-001

(2) If you are going to remove the APU GCU, G14, do the steps that follow:

- (a) Remove power from APU generator. To remove APU power, do this task: Remove APU Generator Power, TASK 24-22-00-860-816.
- (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
F	12	C01285	GENERATOR APU GEN CONT UNIT

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Power Distribution Panel Number 2, P92

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	9	C01326	APU GEN CONT UNIT

SUBTASK 24-21-81-860-002

- (3) If you are going to remove GCU 1, G10, do the steps that follow:
- (a) Remove power from IDG 1. To remove IDG power, do this task: Remove IDG Power, TASK 24-22-00-860-818.
 - (b) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
F	10	C01283	GENERATOR CONT UNIT 1

SUBTASK 24-21-81-860-003

- (4) If you are going to remove GCU 2, G12, do the steps that follow:
- (a) Remove power from IDG 2. To remove IDG power, do this task: Remove IDG Power, TASK 24-22-00-860-818.
 - (b) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
F	11	C01284	GENERATOR CONT UNIT 2

F. Generator Control Unit Removal

SUBTASK 24-21-81-910-001

CAUTION: DO NOT TOUCH THE CONTROL UNIT BEFORE YOU DO THE PROCEDURE FOR DEVICES THAT ARE SENSITIVE TO ELECTROSTATIC DISCHARGE. ELECTROSTATIC DISCHARGE CAN CAUSE DAMAGE TO THE CONTROL UNIT.

- (1) Before you touch the GCU [1], do this task: ESDS Handling for Metal Encased Unit Removal, TASK 20-40-12-000-802.

SUBTASK 24-21-81-020-001

- (2) Remove the GCU [1], do this task: E/E Box Removal, TASK 20-10-07-000-801.

————— **END OF TASK** —————

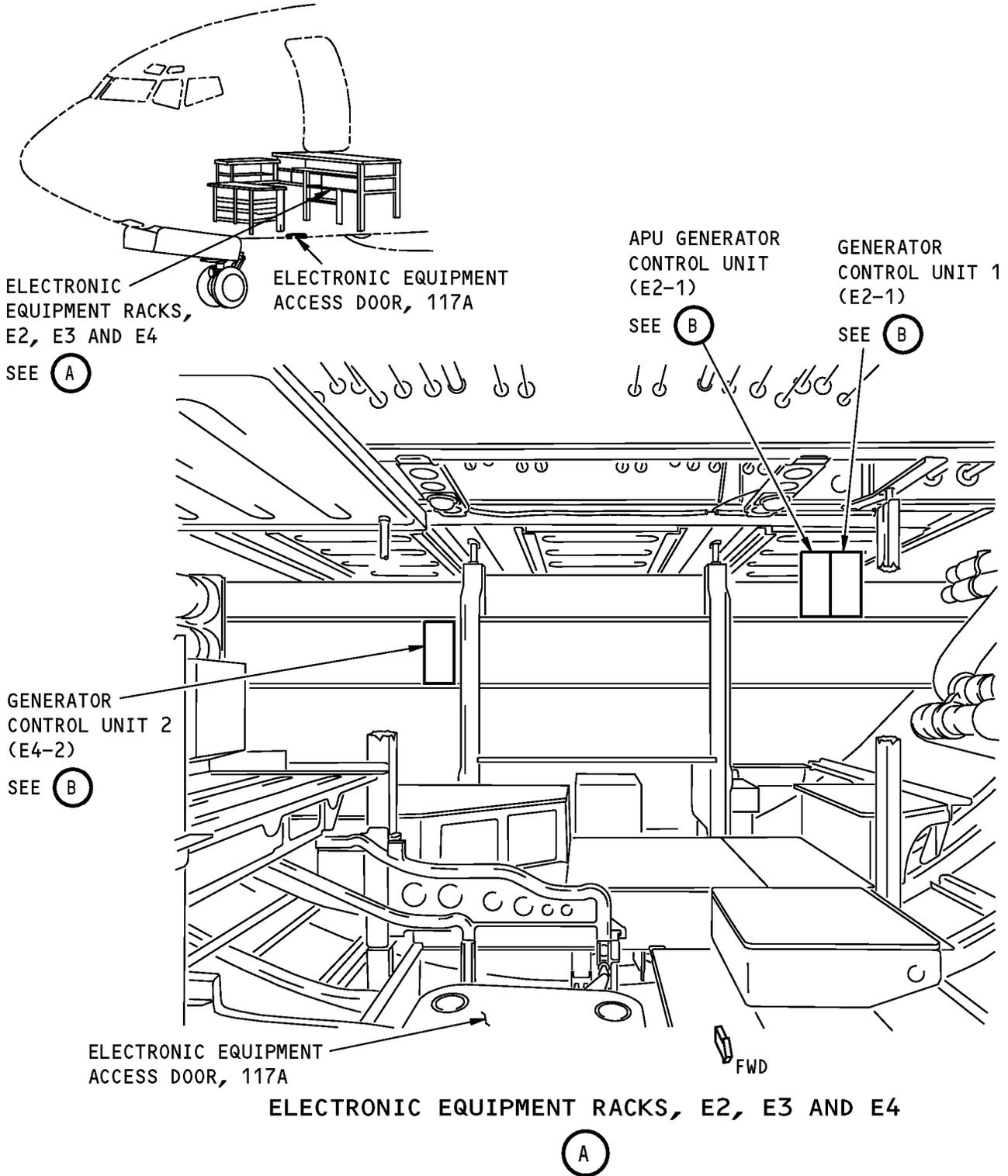
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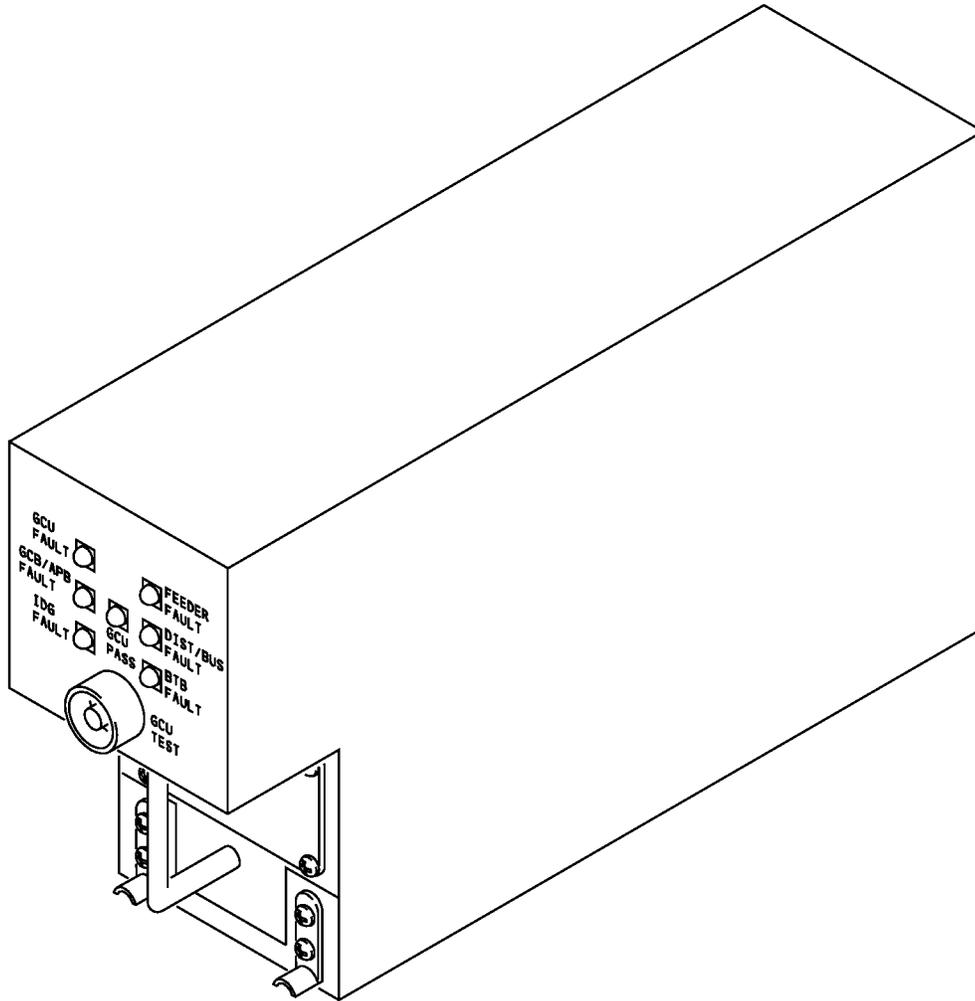
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**Generator Control Unit (GCU) Installation
Figure 401 (Sheet 1 of 2)/24-21-81-990-801**

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[1] GENERATOR CONTROL UNIT

(B)

**Generator Control Unit (GCU) Installation
Figure 401 (Sheet 2 of 2)/24-21-81-990-801**

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TASK 24-21-81-400-801

3. Generator Control Unit Installation

(Figure 401)

A. General

- (1) There are three GCU's installed as follows:
 - (a) GCU 1, G10 - located on the E2-1 Rack
 - (b) GCU 2, G12 - located on the E4-2 Rack
 - (c) APU GCU, G14 - located on the E2-1 Rack

B. References

Reference	Title
20-10-07-400-801	E/E Box Installation (P/B 201)
20-40-12-400-802	ESDS Handling for Metal Encased Unit Installation (P/B 201)

C. Location Zones

Zone	Area
117	Electrical and Electronics Compartment - Left
118	Electrical and Electronics Compartment - Right

D. Access Panels

Number	Name/Location
117A	Electronic Equipment Access Door

E. Generator Control Unit Installation

SUBTASK 24-21-81-910-002

CAUTION: DO NOT TOUCH THE CONTROL UNIT BEFORE YOU DO THE PROCEDURE FOR DEVICES THAT ARE SENSITIVE TO ELECTROSTATIC DISCHARGE. ELECTROSTATIC DISCHARGE CAN CAUSE DAMAGE TO THE CONTROL UNIT.

- (1) Before you touch the GCU [1], do this task: ESDS Handling for Metal Encased Unit Installation, TASK 20-40-12-400-802.

SUBTASK 24-21-81-420-001

- (2) Install the GCU [1], do this task: E/E Box Installation, TASK 20-10-07-400-801.

SUBTASK 24-21-81-860-004

- (3) Close applicable circuit breaker:
 - (a) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
F	10	C01283	GENERATOR CONT UNIT 1
F	11	C01284	GENERATOR CONT UNIT 2
F	12	C01285	GENERATOR APU GEN CONT UNIT

Power Distribution Panel Number 2, P92

Row	Col	Number	Name
C	9	C01326	APU GEN CONT UNIT

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F. Installation Test of the GCU

SUBTASK 24-21-81-700-002

- (1) Do a test of the GCU as follows:
 - (a) Make sure the STANDBY POWER switch on the P5-5 panel is set to the AUTO position.
 - (b) Set the BAT switch on the P5-13 panel to the ON position.
 - (c) Push the GCU TEST switch on the GCU for at least one second.
 - (d) Make sure all seven of the indicator lights on the GCU come on for approximately three seconds.
 - (e) Make sure all seven of the indicator lights on the GCU go off for approximately three seconds.
 - (f) Make sure the green GCU PASS light on the GCU comes on for approximately seven seconds.

SUBTASK 24-21-81-210-001

- (2) If the TR UNIT and ELEC lights on the P5-13 panel are on do the steps that follow:

NOTE: If either GCU 1, G10 or GCU 2, G12 is replaced with only battery power supplied (no power on the 115 VAC TRANSFER BUSES) and the STANDBY POWER switch in the AUTO position, the TR UNIT and ELEC lights on the P5-13 panel will come on.

 - (a) The TR UNIT light will go off after the GCU's are installed and their associated circuit breakers are closed.
 - (b) The ELEC light will remain on until you clear the BAT CHGR INOP or AUX BAT CHGR INOP message.
 - 1) To clear the BAT CHGR INOP or AUX BAT CHGR INOP message, do this task: P5-13 ELEC light Message BITE Procedure (FIM 24-31 TASK 801).

G. Put the airplane back to its usual condition.

SUBTASK 24-21-81-010-002

- (1) Close this access panel:

<u>Number</u>	<u>Name/Location</u>
117A	Electronic Equipment Access Door

SUBTASK 24-21-81-860-006

- (2) Set the BAT switch on the P5-13 panel to the OFF position.

————— **END OF TASK** —————

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MANUAL CONTROL - MAINTENANCE PRACTICES

1. General

A. This procedure has these tasks:

- (1) Supply Electrical Power
- (2) Remove Electrical Power
- (3) Supply External Power
- (4) Remove External Power
- (5) Supply APU Power
- (6) Remove APU Power
- (7) Supply IDG Power
- (8) Remove IDG Power.

B. Most of the switches you use to control the electrical power system are on the electrical system control panel. The electrical system control panel is on the P5 overhead panel.

C. It is recommended that you put the BAT switch on the P5-13 panel to the ON position when you transfer power sources on the airplane.

TASK 24-22-00-860-811

2. Supply Electrical Power

A. Location Zones

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

B. Procedure

SUBTASK 24-22-00-860-001

- (1) Do the applicable task(s) to supply electrical power to the airplane:
 - (a) Do this task: Supply External Power, TASK 24-22-00-860-813.
 - (b) Do this task: Supply APU Generator Power, TASK 24-22-00-860-815.
 - (c) Do this task: Supply IDG Power, TASK 24-22-00-860-817.

————— **END OF TASK** —————

TASK 24-22-00-860-812

3. Remove Electrical Power

A. Location Zones

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

B. Procedure

SUBTASK 24-22-00-860-023

- (1) Do the applicable task(s) to remove electrical power from the airplane:
 - (a) Do this task: Remove External Power, TASK 24-22-00-860-814.
 - (b) Do this task: Remove APU Generator Power, TASK 24-22-00-860-816.

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(c) Do this task: Remove IDG Power, TASK 24-22-00-860-818.

END OF TASK

TASK 24-22-00-860-813

4. Supply External Power

(Figure 201, Figure 202)

A. General

- (1) This task has these procedures:
(a) Supply external power to the ground service buses
(b) Supply external power to the 115V AC transfer buses
(2) Use the applicable procedure to energize the necessary buses.

B. References

Table with 2 columns: Reference, Title. Row 1: 20-40-11-910-801, Static Grounding (P/B 201)

C. Location Zones

Table with 2 columns: Zone, Area. Row 1: 211, Flight Compartment - Left. Row 2: 212, Flight Compartment - Right

D. Procedure

SUBTASK 24-22-00-860-004

- (1) Do these steps to supply external power to the ground service buses:
(a) Open the External Power Receptacle Door.

WARNING: IF THE EXTERNAL POWER SUPPLY HAS AN EARTH GROUNDED NEUTRAL, THERE MUST NOT BE AN OPEN OR FLOATING GROUND IN THE NEUTRAL CIRCUIT WIRING OF THE SUPPLY OR THE AIRPLANE. IF AN OPEN OR FLOATING GROUND IS PRESENT, THE AIRPLANE CAN BE PUT AT AN ELECTRICAL POTENTIAL ABOVE EARTH GROUND. THIS ELECTRICAL POTENTIAL CAN CAUSE ELECTRIC SHOCK WITH POSSIBLE SEVERE INJURY TO PERSONNEL WHO TOUCH THE AIRPLANE.

- (b) Make sure the external power supply operates correctly before you supply external power to the airplane.
1) If the ground return (neutral) circuit on the external power supply or the external power receptacle do not operate correctly, do this task: Static Grounding, TASK 20-40-11-910-801.

WARNING: REMOVE THE ELECTRICAL POWER FROM THE EXTERNAL POWER CABLE BEFORE YOU CONNECT THE CABLE TO THE AIRPLANE. INJURY TO PERSONS CAN BE CAUSED BY AN ELECTRICAL SHOCK.

- (c) Install the power cable to the external power receptacle.
(d) Energize the external power cable.
(e) Make sure these lights on the external power panel, P19 are on:
1) EXTERNAL PWR CONN
2) EXTERNAL PWR NOT IN USE

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- (f) Make sure the GRD POWER AVAILABLE light on the P5-4 panel comes on.
- (g) Push the GROUND SERVICE switch on the FWD ATTENDANT panel, P13.
 - 1) Make sure the light in the GROUND SERVICE switch comes on.
- (h) Make sure the EXTERNAL PWR NOT IN USE light on the P19 panel is off.

NOTE: The ground service buses energizes when the external power is supplied to the receptacle and the GROUND SERVICE switch is set to ON.

SUBTASK 24-22-00-860-005

- (2) Do these steps to supply external power to the 115V AC transfer buses:

NOTE: The ground service buses are energized automatically when external power is supplied to the 115V AC transfer bus 1 and the 115V AC transfer bus 2.

- (a) Open the External Power Receptacle Door.

WARNING: IF THE EXTERNAL POWER SUPPLY HAS AN EARTH GROUNDED NEUTRAL, THERE MUST NOT BE AN OPEN OR FLOATING GROUND IN THE NEUTRAL CIRCUIT WIRING OF THE SUPPLY OR THE AIRPLANE. IF AN OPEN OR FLOATING GROUND IS PRESENT, THE AIRPLANE CAN BE PUT AT AN ELECTRICAL POTENTIAL ABOVE EARTH GROUND. THIS ELECTRICAL POTENTIAL CAN CAUSE ELECTRIC SHOCK WITH POSSIBLE SEVERE INJURY TO PERSONNEL WHO TOUCH THE AIRPLANE.

- (b) Make sure the external power supply operates correctly before you supply external power to the airplane.
 - 1) If the ground return (neutral) circuit on the external power supply or the external power receptacle do not operate correctly, do this task: Static Grounding, TASK 20-40-11-910-801.

WARNING: REMOVE THE ELECTRICAL POWER FROM THE EXTERNAL POWER CABLE BEFORE YOU CONNECT THE CABLE TO THE AIRPLANE. INJURY TO PERSONS CAN BE CAUSED BY AN ELECTRICAL SHOCK.

- (c) Install the power cable to the external power receptacle.
- (d) Energize the external power cable.
- (e) Make sure these lights on the external power panel, P19 are on:
 - 1) EXTERNAL PWR CONN
 - 2) EXTERNAL PWR NOT IN USE
- (f) Set the BAT switch located on the P5-13 panel to the ON position.
- (g) Make sure the GRD POWER AVAILABLE light on the P5-4 panel is on.

WARNING: WHEN APPLYING 115V AC, 400HZ EXTERNAL OR APU GENERATOR POWER, THE STANDBY HYDRAULIC PUMP CAN OPERATE FOR APPROX 4 SECONDS AND MAY MOVE THE RUDDER AND THRUST REVERSERS. TO PREVENT POSSIBLE INJURY, MAKE SURE THE RUDDER AND THRUST REVERSERS ARE CLEAR OF PERSONNEL BEFORE APPLYING POWER.

- (h) Set the GRD POWER switch on the P5-4 panel to the ON position.
- (i) Make sure these lights on the P5-4 panel go off:
 - 1) 1 SOURCE OFF
 - 2) 2 SOURCE OFF
 - 3) 1 TRANSFER BUS OFF

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- 4) 2 TRANSFER BUS OFF
- (j) Make sure the EXTERNAL PWR NOT IN USE light on the P19 panel is off.

————— **END OF TASK** —————

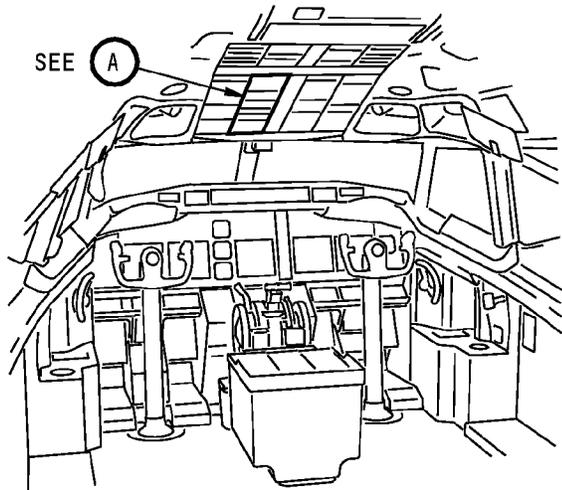
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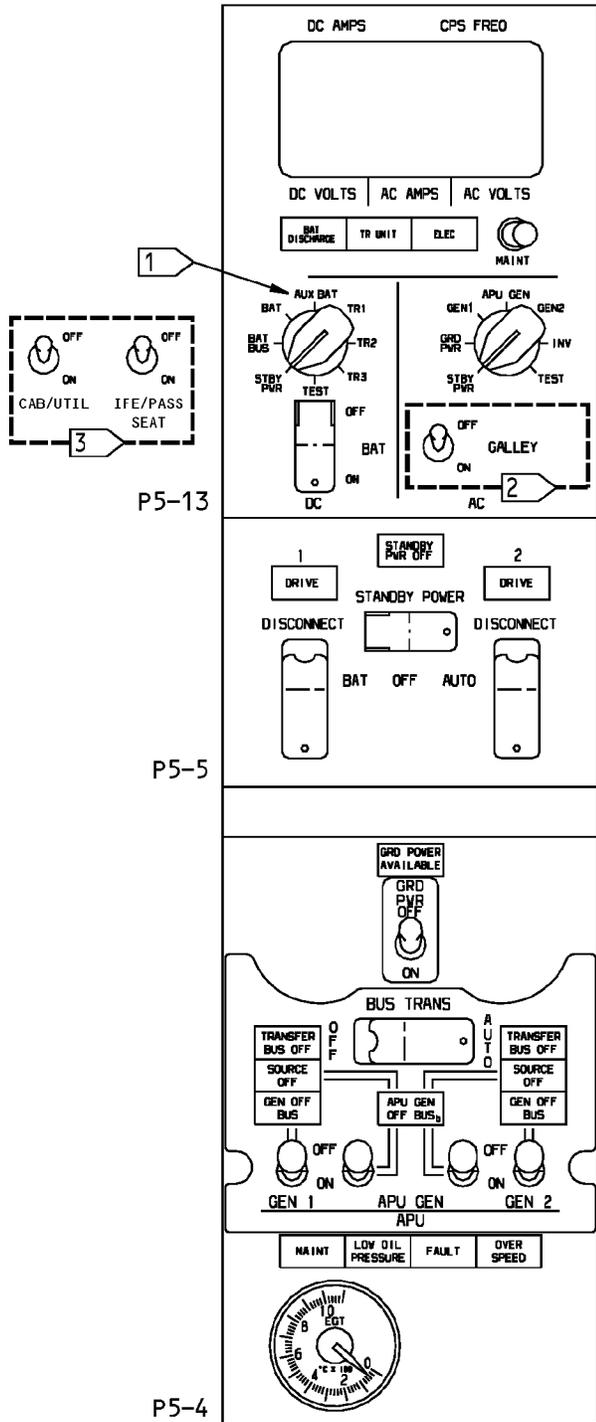
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- 1 AIRPLANES WITH AUXILIARY BATTERY
- 2 AIRPLANES WITH GALLEY SWITCH
- 3 AIRPLANES WITH CABIN UTILITY AND IFE SWITCHES



AC Generator and Bus Control
Figure 201/24-22-00-990-801

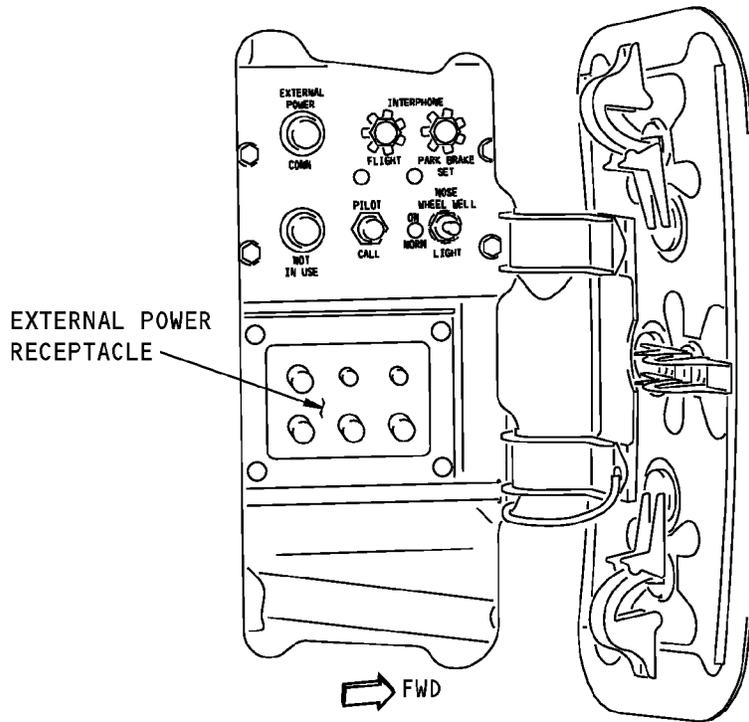
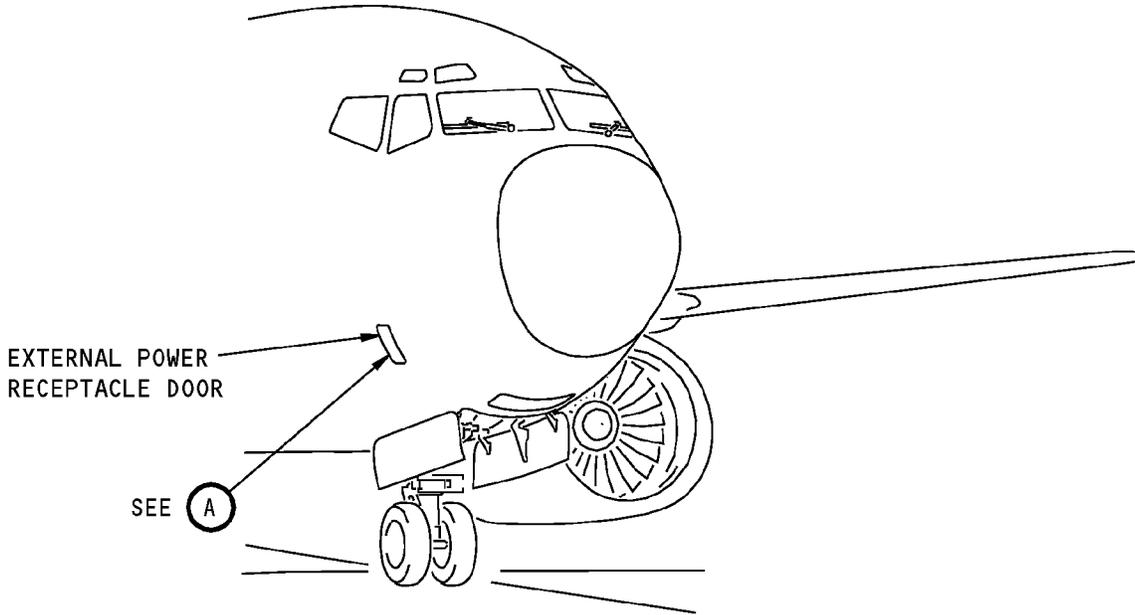
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EXTERNAL POWER RECEPTACLE PANEL (P19)

(A)

**External Power Receptacle and Indication
Figure 202/24-22-00-990-802**

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TASK 24-22-00-860-814

5. Remove External Power

(Figure 201, Figure 202)

A. General

- (1) This task has these procedures:
 - (a) Remove external power from the ground service buses.
 - (b) Remove external power from the 115V ac transfer buses.

B. Location Zones

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

C. Procedure

SUBTASK 24-22-00-860-007

- (1) Do these steps to remove external power from the ground service buses:
 - (a) Push the GROUND SERVICE switch on the FWD ATTENDANT panel, P13.
 - 1) Make sure the light in the GROUND SERVICE switch goes off.
 - (b) Remove power from the external power cable.
 - (c) Make sure these lights on the P19 panel go off:
 - 1) EXTERNAL POWER CONN
 - 2) EXTERNAL POWER NOT IN USE

WARNING: REMOVE ELECTRICAL POWER FROM THE EXTERNAL POWER CABLE BEFORE YOU REMOVE THE CABLE FROM THE AIRPLANE. INJURY TO PERSONS CAN BE CAUSED BY AN ELECTRICAL SHOCK.

- (d) Remove the external power cable.
- (e) Close the External Power Receptacle Door.

SUBTASK 24-22-00-860-008

- (2) Do these steps to remove external power from the 115V AC transfer buses:
 - (a) Set the GRD PWR switch on the P5-4 panel to the OFF position.
 - (b) Make sure the GRD POWER AVAILABLE light on the P5-4 stays on.
 - (c) Make sure these lights on the P5-4 panel come on:
 - 1) 1 SOURCE OFF
 - 2) 2 SOURCE OFF
 - 3) 1 TRANSFER BUS OFF
 - 4) 2 TRANSFER BUS OFF
 - (d) Remove power from the external power cable.
 - (e) Make sure these lights on the P19 panel are off:
 - 1) EXTERNAL POWER CONN
 - 2) EXTERNAL POWER NOT IN USE

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WARNING: REMOVE ELECTRICAL POWER FROM THE EXTERNAL POWER CABLE BEFORE YOU REMOVE THE CABLE FROM THE AIRPLANE. INJURY TO PERSONS CAN BE CAUSED BY AN ELECTRICAL SHOCK.

- (f) Remove the external power cable.
 - (g) Close the External Power Receptacle Door.
- D. Put the Airplane into its Usual Condition

SUBTASK 24-22-00-860-025

- (1) Set the BAT switch on the P5-13 panel to the OFF position.

————— **END OF TASK** —————

TASK 24-22-00-860-815

6. Supply APU Generator Power

(Figure 201)

A. General

- (1) This task has this procedure:
 - (a) Supply the APU generator power to the 115V AC transfer buses

B. References

Reference	Title
49-11-00-860-801	APU Starting and Operation (P/B 201)

C. Location Zones

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

D. Procedure

SUBTASK 24-22-00-860-013

- (1) Do these steps to supply the APU generator power to the 115V AC transfer buses:
 - (a) Set the BAT switch on the P5-13 panel to the ON position.
 - (b) Set the BUS TRANS switch on the P5-4 panel to the AUTO position.
 - (c) Do this task: APU Starting and Operation, TASK 49-11-00-860-801.
 - (d) Make sure the APU GEN OFF BUS light on the P5-4 panel comes on.

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WARNING: WHEN APPLYING 115V AC, 400HZ EXTERNAL OR APU GENERATOR POWER, THE STANDBY HYDRAULIC PUMP CAN OPERATE FOR APPROX 4 SECONDS AND MAY MOVE THE RUDDER AND THRUST REVERSERS. TO PREVENT POSSIBLE INJURY, MAKE SURE THE RUDDER AND THRUST REVERSERS ARE CLEAR OF PERSONNEL BEFORE APPLYING POWER.

- (e) To energize the 115V ac transfer buses, set both of the APU GEN switches on the P5-4 panel to the ON position.

NOTE: Either of the APU GEN switches will connect the APU generator to both TRANSFER BUSES. However both of the APU GEN switches must be set to the ON position to make both of the SOURCE OFF lights go off.

NOTE: The APU exhaust gas temperature (EGT) indicator on the P5 forward overhead panel can spike (move) quickly to half scale (400°C-500°C) when you put an electrical load on the APU starter-generator and then move down to zero after a few bounces. This APU condition is satisfactory.

- (f) Make sure these lights on the P5-4 panel go off:
 - 1) APU GEN OFF BUS
 - 2) 1 SOURCE OFF
 - 3) 2 SOURCE OFF
 - 4) 1 TRANSFER BUS OFF
 - 5) 2 TRANSFER BUS OFF

————— END OF TASK —————

TASK 24-22-00-860-816

7. Remove APU Generator Power

(Figure 201)

A. General

(1) This task has this procedure:

- (a) Remove the APU generator power from the 115V AC buses.

B. References

Reference	Title
49-11-00-860-802	APU Usual Shutdown (P/B 201)

C. Location Zones

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

D. Procedure

SUBTASK 24-22-00-860-014

(1) Do these steps to remove the APU generator power from the 115V AC transfer buses:

- (a) To remove power from the 115V AC transfer buses, set both of the APU GEN switches on the P5-4 panel to the OFF position.
- (b) Make sure these lights on the P5-4 panel come on:
 - 1) APU GEN OFF BUS

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- 2) 1 SOURCE OFF
- 3) 2 SOURCE OFF
- 4) 1 TRANSFER BUS OFF
- 5) 2 TRANSFER BUS OFF

(c) Do this task: APU Usual Shutdown, TASK 49-11-00-860-802.

E. Put the Airplane into its Usual Condition

SUBTASK 24-22-00-860-019

- (1) Set the BAT switch on the P5-13 panel to the OFF position.

————— **END OF TASK** —————

TASK 24-22-00-860-817

8. Supply IDG Power

(Figure 201)

A. General

- (1) This task has three procedures to supply IDG power to the transfer buses:
 - (a) Supply IDG 1 power to both 115V AC transfer buses
 - (b) Supply IDG 2 power to both 115V AC transfer buses
 - (c) Supply IDG 1 power to the 115V AC TRANSFER BUS 1 and IDG 2 power to the 115 AC TRANSFER BUS 2

B. References

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

C. Location Zones

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

D. Procedure

SUBTASK 24-22-00-860-015

- (1) Do these steps to supply power to the 115V AC TRANSFER BUS 1 and 2 from IDG 1:
 - (a) Set the BAT switch on the P5-13 panel to the ON position.
 - (b) Set the BUS TRANS switch on the P5-4 panel to the OFF position.
 - (c) Start the Number 1 engine. To start the Number 1 engine, do this task: Start the Engine Procedure (Selection), TASK 71-00-00-800-807-F00.

CAUTION: THE DRIVE LIGHT ON THE P5 PANEL SHOULD GO OFF AFTER THE ENGINE GETS UP TO IDLE SPEED. IF THE DRIVE LIGHT COMES ON WHEN THE ENGINE IS AT OR ABOVE IDLE SPEED, THE DISCONNECT SWITCH ON THE P5 PANEL MUST BE PUSHED. FAILURE TO PUSH THE DISCONNECT SWITCH CAN CAUSE DAMAGE TO THE IDG.

- (d) Make sure the 1 DRIVE light on the P5-5 panel goes off after number 1 engine reaches idle speed.
- (e) Set the GEN 1 switch on the P5-4 panel to the ON position.

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- (f) Make sure these lights on the P5-4 panel go off.
 - 1) 1 GEN OFF BUS
 - 2) 1 SOURCE OFF
 - 3) 1 TRANSFER BUS OFF
- (g) Set the BUS TRANS switch on the P5-4 panel to the AUTO position.
- (h) Make sure the 2 TRANSFER BUS OFF light on the P5-4 panel goes off.
- (i) To remove IDG power, do this task: Remove IDG Power, TASK 24-22-00-860-818.

SUBTASK 24-22-00-860-020

- (2) Do these steps to supply power to the 115V AC TRANSFER BUS 1 and 2 from IDG 2:
 - (a) Set the BAT switch on the P5-13 panel to the ON position.
 - (b) Set the BUS TRANS switch on the P5-4 panel to the OFF position.
 - (c) Start the Number 2 engine. To start the Number 2 engine, do this task: Start the Engine Procedure (Selection), TASK 71-00-00-800-807-F00.

CAUTION: THE DRIVE LIGHT ON THE P5 PANEL SHOULD GO OFF AFTER THE ENGINE GETS UP TO IDLE SPEED. IF THE DRIVE LIGHT COMES ON WHEN THE ENGINE IS AT OR ABOVE IDLE SPEED, THE DISCONNECT SWITCH ON THE P5 PANEL MUST BE PUSHED. FAILURE TO PUSH THE DISCONNECT SWITCH CAN CAUSE DAMAGE TO THE IDG.

- (d) Make sure the 2 DRIVE light on the P5-5 panel goes off after number 2 engine reaches idle speed.
- (e) Set the GEN 2 switch on the P5-4 panel to the ON position.
- (f) Make sure these lights on the P5-4 panel go off.
 - 1) 2 GEN OFF BUS
 - 2) 2 SOURCE OFF
 - 3) 2 TRANSFER BUS OFF
- (g) Set the BUS TRANS switch on the P5-4 panel to the AUTO position.
- (h) Make sure the 1 TRANSFER BUS OFF light on the P5-4 panel goes off.
- (i) To remove IDG power, do this task: Remove IDG Power, TASK 24-22-00-860-818.

SUBTASK 24-22-00-860-021

- (3) Do these steps to supply power to the 115V AC TRANSFER BUS 1 from IDG 1 and the 115V AC TRANSFER BUS 2 from IDG 2:
 - (a) Set the BAT switch on the P5-13 panel to the ON position.
 - (b) Set the BUS TRANS switch on the P5-4 panel to the AUTO position.
 - (c) Start the Number 1 engine. To start the Number 1 engine, do this task: Start the Engine Procedure (Selection), TASK 71-00-00-800-807-F00.

CAUTION: THE DRIVE LIGHT ON THE P5 PANEL SHOULD GO OFF AFTER THE ENGINE GETS UP TO IDLE SPEED. IF THE DRIVE LIGHT COMES ON WHEN THE ENGINE IS AT OR ABOVE IDLE SPEED, THE DISCONNECT SWITCH ON THE P5 PANEL MUST BE PUSHED. FAILURE TO PUSH THE DISCONNECT SWITCH CAN CAUSE DAMAGE TO THE IDG.

- (d) Make sure the 1 DRIVE light on the P5-5 panel goes off after number 1 engine reaches idle speed.

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- (e) Set the GEN 1 switch on the P5-4 panel to the ON position.
(f) Make sure these lights on the P5-4 panel go off.
1) 1 GEN OFF BUS
2) 1 SOURCE OFF
3) 1 TRANSFER BUS OFF
4) 2 TRANSFER BUS OFF
(g) Start the Number 2 engine. To start the Number 2 engine, do this task: Start the Engine Procedure (Selection), TASK 71-00-00-800-807-F00.

CAUTION: THE DRIVE LIGHT ON THE P5 PANEL SHOULD GO OFF AFTER THE ENGINE GETS UP TO IDLE SPEED. IF THE DRIVE LIGHT COMES ON WHEN THE ENGINE IS AT OR ABOVE IDLE SPEED, THE DISCONNECT SWITCH ON THE P5 PANEL MUST BE PUSHED. FAILURE TO PUSH THE DISCONNECT SWITCH CAN CAUSE DAMAGE TO THE IDG.

- (h) Make sure the 2 DRIVE light on the P5-5 panel goes off after number 2 engine reaches idle speed.
(i) Set the GEN 2 switch on the P5-4 panel to the ON position.
(j) Make sure the 2 GEN OFF BUS and 2 SOURCE OFF lights on the P5-4 panel go off.
(k) To remove IDG power, do this task: Remove IDG Power, TASK 24-22-00-860-818.

END OF TASK

TASK 24-22-00-860-818

9. Remove IDG Power

(Figure 201)

A. General

- (1) This task has these procedures:
(a) Remove IDG 1 power from the 115V AC transfer buses.
(b) Remove IDG 2 power from the 115V AC transfer buses.

B. References

Table with 2 columns: Reference, Title. Row 1: 71-00-00-700-819-F00, Stop the Engine Procedure (Usual Engine Stop) (P/B 201)

C. Location Zones

Table with 2 columns: Zone, Area. Row 1: 211, Flight Compartment - Left. Row 2: 212, Flight Compartment - Right

D. Procedure

SUBTASK 24-22-00-860-017

- (1) Do these steps to remove IDG 1 power from the 115V AC transfer buses:
(a) Set the GEN 1 switch on the P5-4 panel to the OFF position.
NOTE: It is sufficient to shut down the engine without setting the GEN 1 switch to OFF.
(b) Make sure the 1 GEN OFF BUS light on the P5-4 panel comes on.

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- (c) Stop the number 1 engine. To stop the number 1 engine, do this task: Stop the Engine Procedure (Usual Engine Stop), TASK 71-00-00-700-819-F00.

SUBTASK 24-22-00-860-018

- (2) Do these steps to remove IDG 2 power from the 115V AC transfer buses:

- (a) Set the GEN 2 control switch on the P5-4 panel to the OFF position.

NOTE: It is sufficient to shut down the engine without setting the GEN 2 switch to OFF.

- (b) Make sure the 2 GEN OFF BUS light on the P5-4 panel comes on.

- (c) Stop the number 2 engine. To stop the number 2 engine, do this task: Stop the Engine Procedure (Usual Engine Stop), TASK 71-00-00-700-819-F00.

E. Put the Airplane into its Usual Condition

SUBTASK 24-22-00-860-022

- (1) Set the BAT switch on the P5-13 panel to the OFF position.

————— **END OF TASK** —————

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DC GENERATION SYSTEM - ADJUSTMENT/TEST

1. General

A. This procedure has this task:

- (1) The Operational Test of the DC System.

TASK 24-31-00-700-801

2. The Operational Test of the DC System

(Figure 501)

A. References

Reference	Title
24-22-00-860-812	Remove Electrical Power (P/B 201)
24-22-00-860-813	Supply External Power (P/B 201)

B. Location Zones

Zone	Area
117	Electrical and Electronics Compartment - Left
118	Electrical and Electronics Compartment - Right
211	Flight Compartment - Left
212	Flight Compartment - Right

C. Prepare for the Test

SUBTASK 24-31-00-860-001

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

D. The Operation Test

SUBTASK 24-31-00-710-001

- (1) Do a check of the Transformer Rectifier Units (TRU) and the DC Bus Tie Relay as follows:
 - (a) Make sure the BAT switch on the P5-13 panel is set to the ON position.
 - (b) Make sure the BUS TRANS switch on the P5-4 panel is set to the AUTO position.
 - (c) Set the DC Meter Selector Switch on the P5-13 panel to the TR 3 position.
 - (d) Make sure the DC meter on the P5-13 panel shows this value:
 - 1) DC VOLTS = 22-30
 - (e) Set the DC Meter Selector Switch on the P5-13 panel to the TR 2 position.
 - (f) Make sure the DC meter on the P5-13 panel shows this value:
 - 1) DC VOLTS = 22-30
 - (g) Set the DC Meter Selector Switch on the P5-13 panel to the TR 1 position.
 - (h) Make sure the DC meter on the P5-13 panel shows this value:
 - 1) DC VOLTS = 22-30
 - (i) Open this circuit breaker and install safety tag:

Power Distribution Panel Number 1, P91

Row	Col	Number	Name
A	6	C00806	TRU 1

- (j) Make sure the DC meter on the P5-13 panel shows these values:

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- 1) DC VOLTS = 22-30
- 2) DC AMPS = 0
- (k) Make sure the TR UNIT light on the P5-13 panel comes on.
- (l) Set the BUS TRANS switch on the P5-4 panel to the OFF position.
- (m) Make sure the DC meter on the P5-13 panel shows these values:
 - 1) DC VOLTS = 0
 - 2) DC AMPS = 0
- (n) Set the BUS TRANS switch on the P5-4 panel to the AUTO position.
- (o) Make sure the DC meter on the P5-13 panel shows these values:
 - 1) DC VOLTS = 22-30
 - 2) DC AMPS = 0
- (p) Remove the safety tag and close this circuit breaker:

Power Distribution Panel Number 1, P91

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	6	C00806	TRU 1

- (q) Make sure the TR UNIT light on the P5-13 panel goes off.

SUBTASK 24-31-00-710-003

- (2) Do a check of the TR3 Transfer Relay as follows:
 - (a) Set the DC Meter Selector Switch on the P5-13 panel to the TR 3 position.
 - (b) Make sure the DC meter on the P5-13 panel shows this value:
 - 1) DC VOLTS = 22-30
 - (c) Open this circuit breaker and install safety tag:

Power Distribution Panel Number 2, P92

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	6	C00808	TRU 3

- (d) Make sure the DC meter on the P5-13 panel shows this value:
 - 1) DC VOLTS = 22-30
- (e) Open this circuit breaker and install safety tag:

Power Distribution Panel Number 1, P91

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	4	C00941	TRU 3 ALTN

- (f) Make sure the DC meter on the P5-13 panel shows this value:
 - 1) DC VOLTS = Less than 10
- (g) Make sure the TR UNIT light on the P5-13 panel comes on.
- (h) Remove the safety tag and close this circuit breaker:

Power Distribution Panel Number 2, P92

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	6	C00808	TRU 3

- (i) Make sure the DC meter on the P5-13 panel shows this value:

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- 1) DC VOLTS = 22-30
- (j) Make sure the TR UNIT light on the P5-13 panel goes off.
- (k) Remove the safety tag and close this circuit breaker:

Power Distribution Panel Number 1, P91

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	4	C00941	TRU 3 ALTN

SUBTASK 24-31-00-710-002

- (3) Do a check of the battery bus transfer relays as follows:
 - (a) Set the DC Meter Selector Switch on the P5-13 panel to the BAT position.
 - (b) Make sure the DC meter on the P5-13 panel shows this value:
 - 1) DC VOLTS = 30 ± 3
 - (c) Set the DC Meter Selector Switch on the P5-13 panel to the BAT BUS position.
 - (d) Make sure the DC meter on the P5-13 panel shows this value:
 - 1) DC VOLTS = 22-30
 - (e) Open these circuit breakers and install safety tags:

Power Distribution Panel Number 1, P91

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	4	C00941	TRU 3 ALTN

Power Distribution Panel Number 2, P92

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	6	C00808	TRU 3

- (f) Make sure the DC meter on the P5-13 panel shows this value:
 - 1) DC VOLTS = 22-30
- (g) Set the DC Meter Selector Switch on the P5-13 panel to the TR 3 position.
- (h) Make sure the DC meter on the P5-13 panel shows this value:
 - 1) DC VOLTS = Less than 10
- (i) Remove the safety tags and close these circuit breakers:

Power Distribution Panel Number 1, P91

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	4	C00941	TRU 3 ALTN

Power Distribution Panel Number 2, P92

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	6	C00808	TRU 3

E. Put the airplane in its usual condition.

SUBTASK 24-31-00-860-003

- (1) Do this task: Remove Electrical Power, TASK 24-22-00-860-812.

————— **END OF TASK** —————

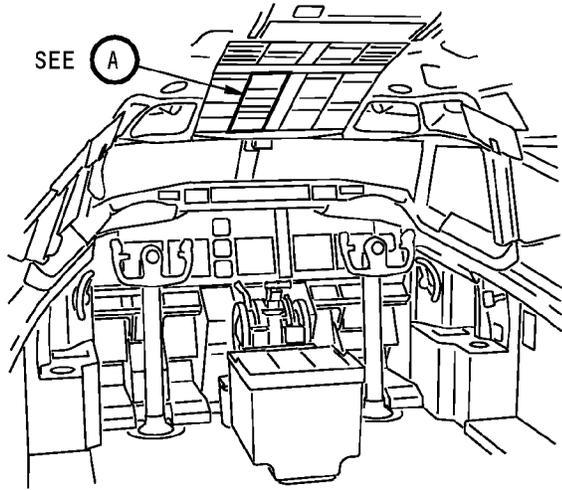
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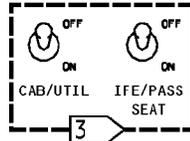
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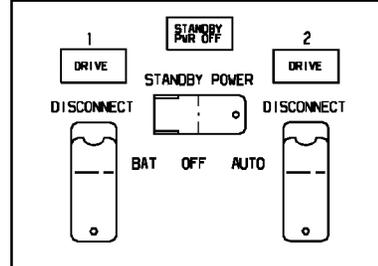
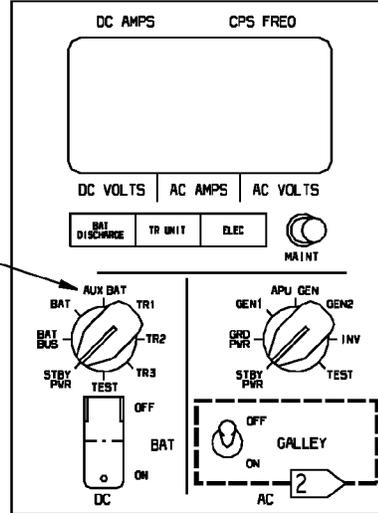
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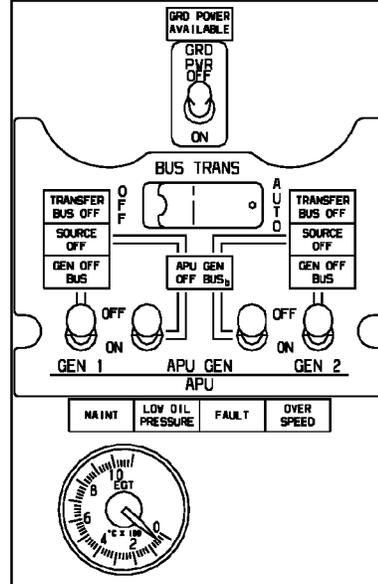
FLIGHT COMPARTMENT



P5-13



P5-5



P5-4

- 1 AIRPLANES WITH AUXILIARY BATTERY
- 2 AIRPLANES WITH GALLEY SWITCH
- 3 AIRPLANES WITH CABIN UTILITY AND IFE SWITCHES



AC/DC Power Control and Display Panels
Figure 501/24-31-00-990-801

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BATTERY - REMOVAL/INSTALLATION

1. General

- A. This procedure contains scheduled maintenance task data.
- B. This procedure has these tasks:
 - (1) A removal of the main battery and the auxiliary battery.
 - (2) An installation of main battery and the auxiliary battery.

TASK 24-31-11-000-802-002

2. Battery Removal

(Figure 401)

A. General

- (1) This procedure is a scheduled maintenance task.
- (2) The main battery, M6 is located below the E3 equipment rack in the main equipment area. The auxiliary battery, M3054 is located just forward of the main battery.
- (3) The main battery must be removed before you can remove the auxiliary battery. You do not have to remove the auxiliary battery to replace the main battery. Both batteries are the same part number.
- (4) The batteries are removed and installed through a liner in the forward cargo area. The circuit breakers for both batteries are installed on the J9 panel in the main equipment center.

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
SPL-1633	Equipment - Battery Installation (Part #: C24003-1, Supplier: 81205, A/P Effectivity: 737-600, -700, -700C, -700ER, -700QC, -800, -900, -900ER, -BBJ)

C. Location Zones

Zone	Area
117	Electrical and Electronics Compartment - Left
118	Electrical and Electronics Compartment - Right
121	Forward Cargo Compartment - Left
122	Forward Cargo Compartment - Right

D. Access Panels

Number	Name/Location
117A	Electronic Equipment Access Door

E. Prepare for the removal

SUBTASK 24-31-11-860-009-002

- (1) Make sure the BAT switch on the P5-13 panel is set to the OFF position.

SUBTASK 24-31-11-860-010-002

- (2) Make sure the STANDBY POWER switch on the P5-5 panel is set to the AUTO position.

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SUBTASK 24-31-11-860-052-002

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

Standby Power Control Unit, M01720

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	1	C01410	SPCU NORMAL

SUBTASK 24-31-11-010-003-002

(4) To get access to the main equipment center, do this step:

Open this access panel:

<u>Number</u>	<u>Name/Location</u>
117A	Electronic Equipment Access Door

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SUBTASK 24-31-11-020-006

(5) Remove the access cover on top of the J39 shield to get access to the circuit breakers.

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SUBTASK 24-31-11-860-011-002

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

Battery Shield, J9

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	3	C01209	AUX BAT CHARGER
A	4	C00142	BATTERY CHARGER
A	5	C01340	BATTERY BUS

SUBTASK 24-31-11-010-004-002

(7) Get access to the forward cargo area through the forward cargo door.

(a) Remove the forward bulkhead liner to get access to the battery

F. Battery Removal

SUBTASK 24-31-11-020-002-002

(1) Remove the main battery [1] as follows:

- (a) Disconnect the battery connector from the battery.
- (b) Disconnect the electrical connector from the battery.
- (c) Remove the six bolts [2] and washers [3] from the battery mounting brackets.
- (d) Slide the skid plate, equipment, SPL-1633 under the battery.

NOTE: The skid plate is used so that the battery will not touch the capstrip just below it.

CAUTION: DO NOT LET THE BATTERY TOUCH THE CAPSTRIP JUST BELOW THE BATTERY MOUNTING RACK. IF THE BATTERY TOUCHES THE CAPSTRIP, IT CAN SCRATCH IT AND CAUSE DAMAGE TO THE SEAL THAT FORMS WHEN THE CLOSE-OUT PANEL IS INSTALLED.

(e) Slide the battery out from the battery rack to the forward cargo area.

SUBTASK 24-31-11-020-003-002

(2) Remove the auxiliary battery [1] as follows:

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- (a) Disconnect the battery connector from the battery.
- (b) Disconnect the electrical connector from the battery.
- (c) Remove the six bolts [2] and washers [3] from the battery mounting brackets.
- (d) Slide the skid plate, equipment, SPL-1633 under the battery.

NOTE: The skid plate is used so that the battery will not touch the capstrip just below it.

CAUTION: DO NOT LET THE BATTERY TOUCH THE CAPSTRIP JUST BELOW THE BATTERY MOUNTING RACK. IF THE BATTERY TOUCHES THE CAPSTRIP, IT CAN SCRATCH IT AND CAUSE DAMAGE TO THE SEAL THAT FORMS WHEN THE CLOSE-OUT PANEL IS INSTALLED.

- (e) Slide the battery out from the battery rack to the forward cargo area.

————— **END OF TASK** —————

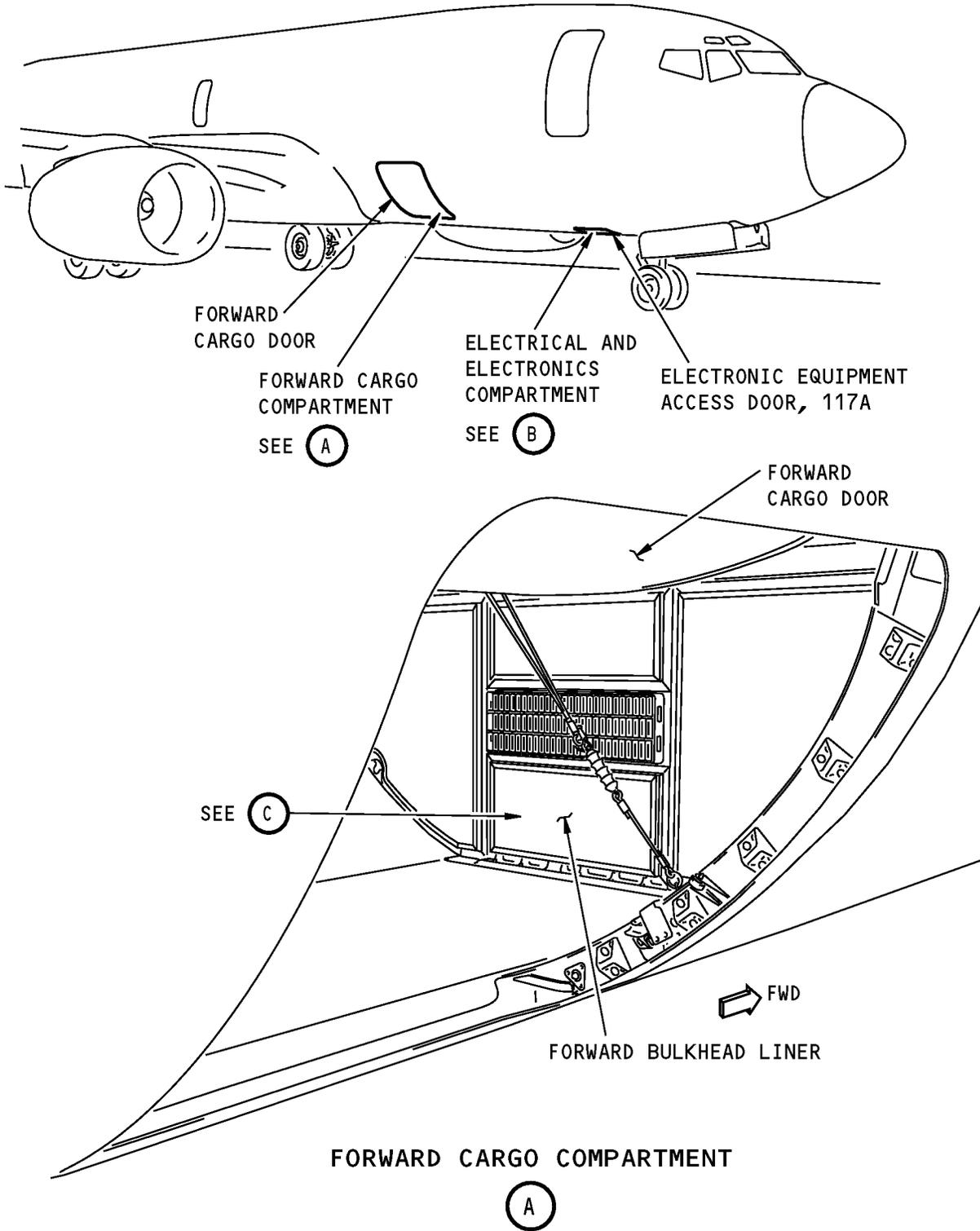
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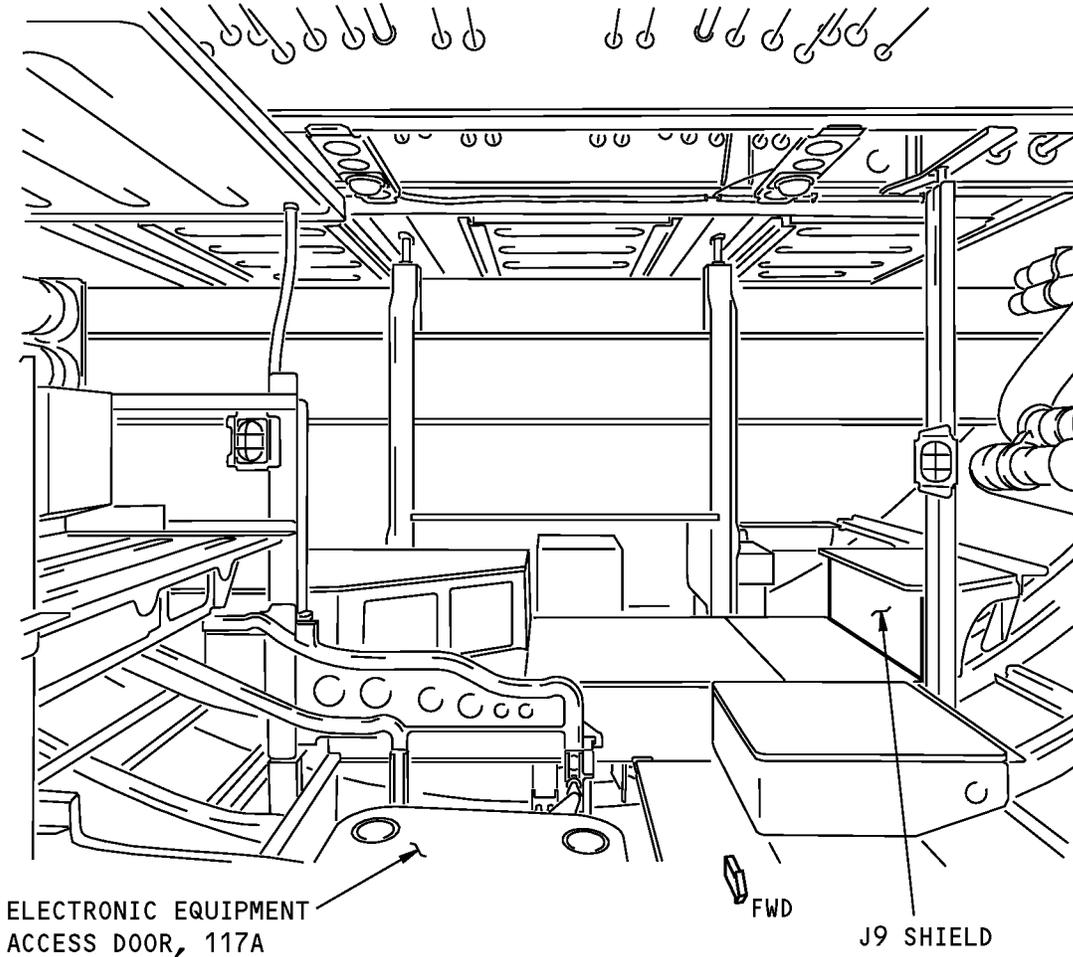
Battery Installation
Figure 401 (Sheet 1 of 4)/24-31-11-990-802-002

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ELECTRICAL AND ELECTRONICS COMPARTMENT

B

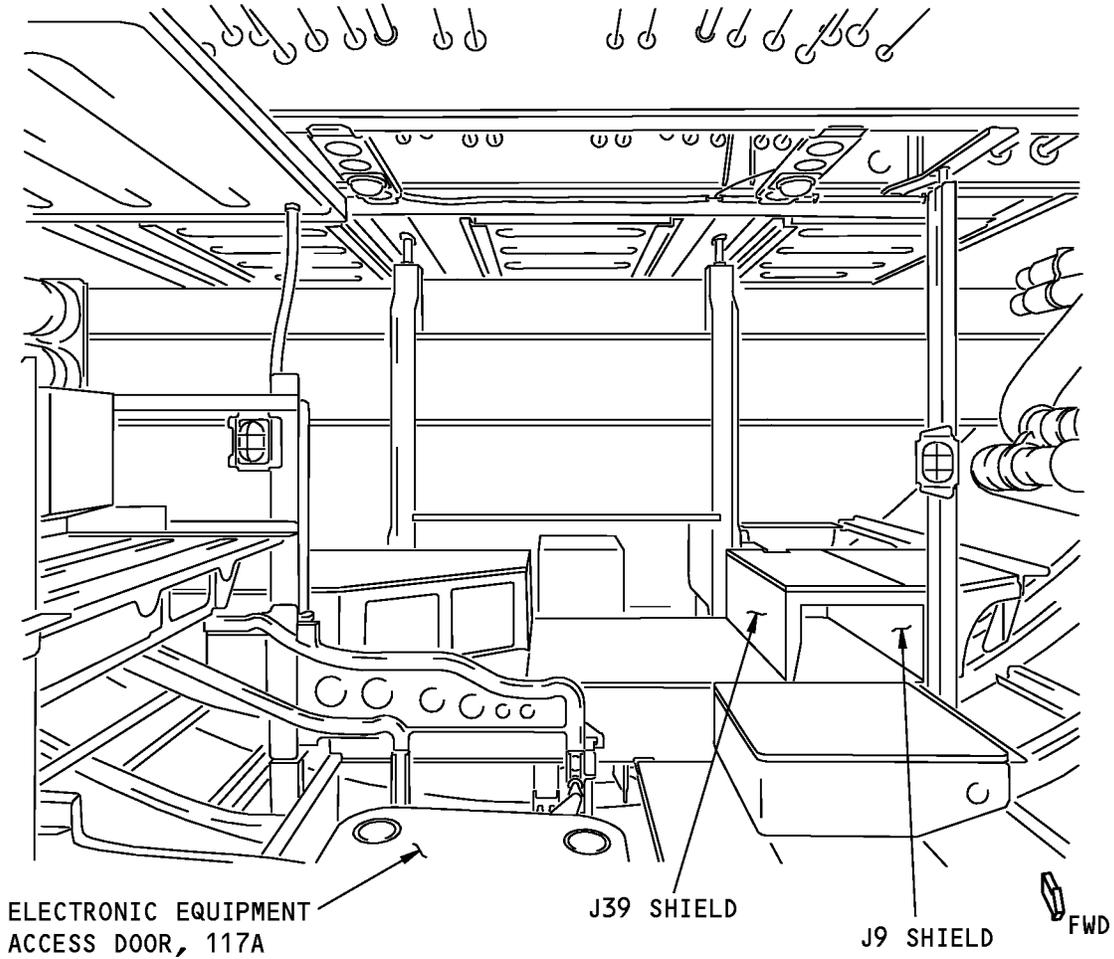
**Battery Installation
Figure 401 (Sheet 2 of 4)/24-31-11-990-802-002**

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B

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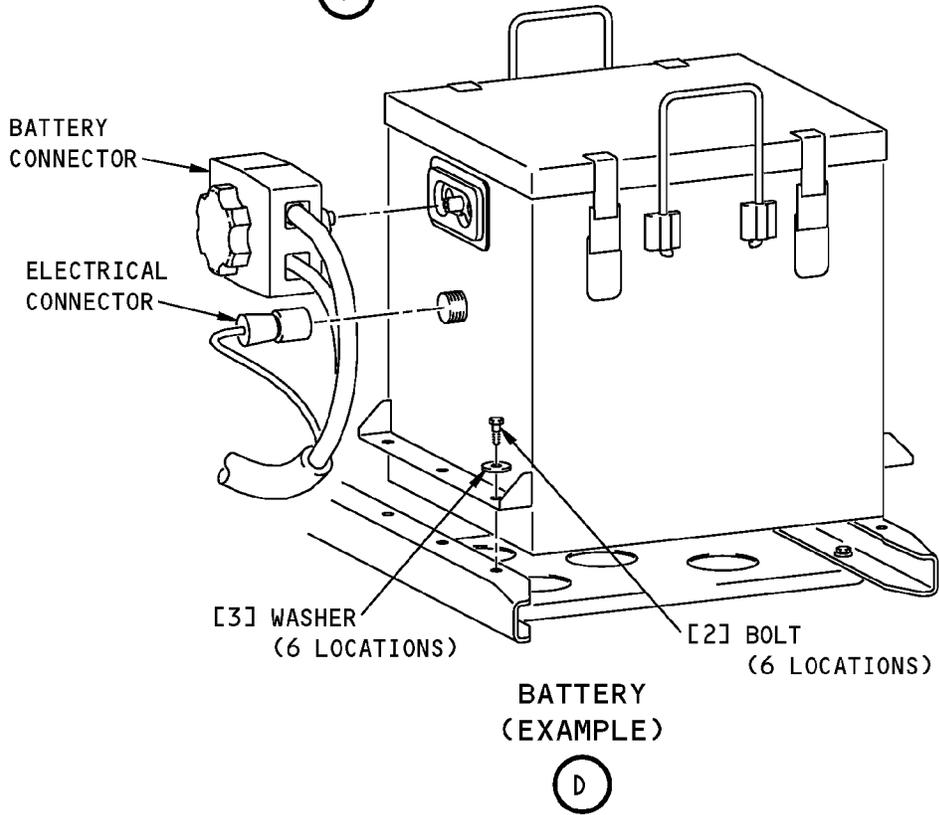
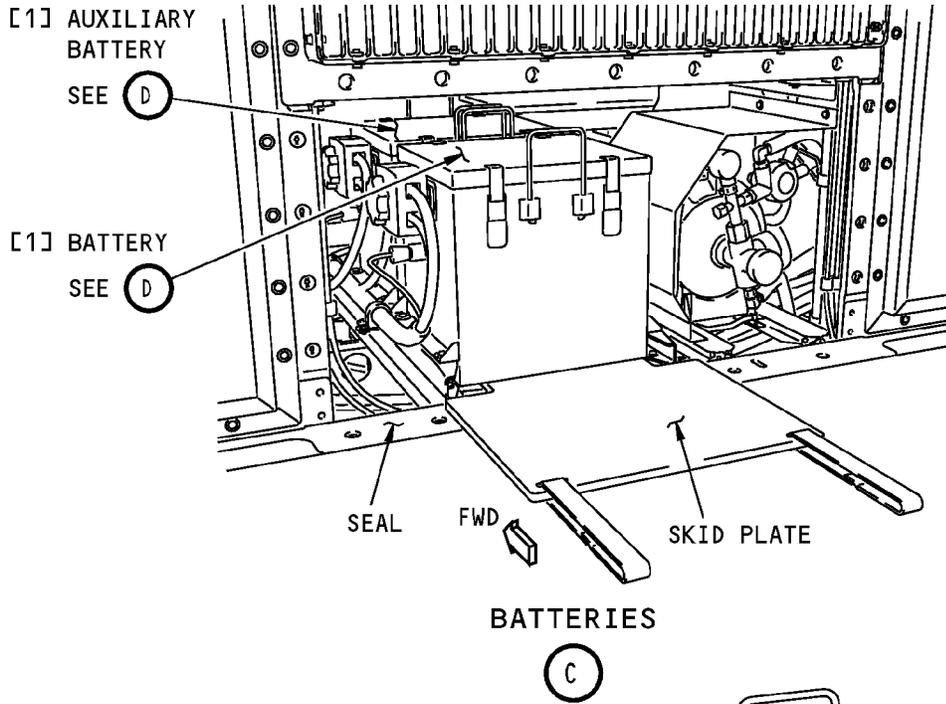
**Battery Installation
Figure 401 (Sheet 3 of 4)/24-31-11-990-802-002**

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TASK 24-31-11-400-802-002

3. Battery Installation

(Figure 401)

A. General

- (1) This procedure is a scheduled maintenance task.
- (2) The main battery, M6 is located below the E3 equipment rack in the main equipment area. The auxiliary battery, M3054 is located just forward of the main battery.
- (3) The main battery must be removed before you can remove the auxiliary battery. You do not have to remove the auxiliary battery to replace the main battery. Both batteries are the same part number.
- (4) The batteries are removed and installed through a liner in the forward cargo area. The circuit breakers for both batteries are installed on the J9 panel in the main equipment center.

B. References

Reference	Title
20-30-51-910-801	Miscellaneous Materials (P/B 201)
24-22-00-860-812	Remove Electrical Power (P/B 201)
24-22-00-860-813	Supply External Power (P/B 201)
49-11-00-860-801	APU Starting and Operation (P/B 201)
49-11-00-860-802	APU Usual Shutdown (P/B 201)
FIM 24-31 TASK 801	P5-13 ELEC Light Message BITE Procedure

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-1633	Equipment - Battery Installation (Part #: C24003-1, Supplier: 81205, A/P Effectivity: 737-600, -700, -700C, -700ER, -700QC, -800, -900, -900ER, -BBJ)

D. Consumable Materials

Reference	Description	Specification
G02479	Lockwire - Copper (0.020 inch Diameter)	NASM20995~ CY20

E. Location Zones

Zone	Area
117	Electrical and Electronics Compartment - Left
118	Electrical and Electronics Compartment - Right
121	Forward Cargo Compartment - Left
122	Forward Cargo Compartment - Right
211	Flight Compartment - Left
212	Flight Compartment - Right

F. Access Panels

Number	Name/Location
117A	Electronic Equipment Access Door

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G. Battery Installation

SUBTASK 24-31-11-420-002-002

(1) Install the auxiliary battery [1] as follows:

(a) Put the skid plate, equipment, SPL-1633 in position as shown in (Figure 401).

CAUTION: DO NOT LET THE BATTERY TOUCH THE CAPSTRIP JUST BELOW THE BATTERY MOUNTING RACK. IF THE BATTERY TOUCHES THE CAPSTRIP, IT CAN SCRATCH IT AND CAUSE DAMAGE TO THE SEAL THAT FORMS WHEN THE CLOSE-OUT PANEL IS INSTALLED.

(b) Have two persons hold each of the battery handles and lift the battery onto the skid plate. Slide the battery into position.

NOTE: Make sure the terminals point left.

(c) Remove the skid plate.

NOTE: You may have to tilt the battery back some to remove the skid plate.

(d) Install the six bolts [2] and washers [3] on the battery mounting brackets.

(e) Connect the electrical connector to the battery.

(f) Connect the battery connector to the battery.

1) Safetywire the battery connector with .020 inch copper lockwire, G02479, (TASK 20-30-51-910-801).

SUBTASK 24-31-11-420-003-002

(2) Install the main battery [1] as follows:

(a) Put the skid plate, equipment, SPL-1633 in position as shown in (Figure 401).

CAUTION: DO NOT LET THE BATTERY TOUCH THE CAPSTRIP JUST BELOW THE BATTERY MOUNTING RACK. IF THE BATTERY TOUCHES THE CAPSTRIP, IT CAN SCRATCH IT AND CAUSE DAMAGE TO THE SEAL THAT FORMS WHEN THE CLOSE-OUT PANEL IS INSTALLED.

(b) Have two persons hold each of the battery handles and lift the battery onto the skid plate. Slide the battery into position.

NOTE: Make sure the terminals point left.

(c) Remove the skid plate.

NOTE: You may have to tilt the battery back some to remove the skid plate.

(d) Install the six bolts [2] and washers [3] on the battery mounting brackets.

(e) Connect the electrical connector to the battery.

(f) Connect the battery connector to the battery.

1) Safetywire the battery connector with a 0.020 inch (0.5080 mm) diameter lockwire, G02479, (TASK 20-30-51-910-801).

SUBTASK 24-31-11-860-040-002

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

Battery Shield, J9

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	3	C01209	AUX BAT CHARGER
A	4	C00142	BATTERY CHARGER
A	5	C01340	BATTERY BUS

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SUBTASK 24-31-11-420-006

- (4) Install the access cover on top of the J39 shield.

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SUBTASK 24-31-11-860-053-002

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

Standby Power Control Unit, M01720

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	1	C01410	SPCU NORMAL

H. Battery Installation Test

SUBTASK 24-31-11-860-041-002

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

SUBTASK 24-31-11-860-042-002

- (2) Make sure the STANDBY POWER switch on the P5-5 panel is in the AUTO position.

SUBTASK 24-31-11-210-003-002

- (3) Make sure the ELEC light on the P5-13 panel is OFF.

- (a) To clear ELEC light messages, do this task: P5-13 ELEC light Message BITE Procedure (FIM 24-31 TASK 801).

SUBTASK 24-31-11-710-008-002

- (4) Do these steps to test the main battery:

- (a) Set the GRD PWR switch on the P5-4 panel to the OFF position.
 - (b) Make sure the BAT switch on the P5-13 panel is set to the ON position.
 - (c) Set the DC meter selector switch on the P5-13 panel to the BAT position.
 - (d) Make sure the DC meter on the P5-13 panel shows these values:
 - 1) DC VOLTS = 22-28
 - 2) DC AMPS = a negative value

NOTE: The battery current is negative when the battery is discharging.

- (e) Make sure the BAT DISCHARGE light on the P5-13 panel comes on. This light will come on when any of these conditions are met:
 - 1) The battery current is greater than 5 Amps for more than 95 seconds.
 - 2) The battery current is greater than 15 Amps for more than 25 seconds.
 - 3) The battery current is greater than 100 Amps for more than 1.2 seconds.

- (f) Set the GRD PWR switch to the ON position.

- (g) Make sure the DC AMPS value goes to 45 ± 10 AMPS and then goes down to less than 5 AMPS within 180 minutes.

NOTE: 180 minutes is the maximum. It can take less time depending the state of the battery.

- (h) Make sure the DC VOLTS value goes to 30 ± 3 VOLTS.

- (i) Make sure the BAT DISCHARGE light goes off.

- 1) If the BAT DISCHARGE light stays on, then do these steps:

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- a) Set the GRD PWR switch on the P5-4 panel to the OFF position.
- b) Do this task: APU Starting and Operation, TASK 49-11-00-860-801.
- c) Do this task: APU Usual Shutdown, TASK 49-11-00-860-802.
- d) Do the above test again.

SUBTASK 24-31-11-710-009-002

(5) Do these steps to test auxiliary battery:

- (a) Set the GRD PWR switch on the P5-4 panel to the OFF position.
- (b) Make sure the BAT switch on the P5-13 panel is set to the ON position.
- (c) Set the DC meter selector switch on the P5-13 panel to the AUX BAT position.
- (d) Make sure the DC meter on the P5-13 panel shows these values:

- 1) DC VOLTS = 22-28
- 2) DC AMPS = a negative value

NOTE: The battery current is negative when the battery is discharging.

- (e) Make sure the BAT DISCHARGE light on the P5-13 panel comes on. This light will come on when any of these conditions are met:
 - 1) The battery current is greater than 5 Amps for more than 95 seconds.
 - 2) The battery current is greater than 15 Amps for more than 25 seconds.
 - 3) The battery current is greater than 100 Amps for more than 1.2 seconds.

- (f) Set the GRD PWR switch to the ON position.
- (g) Make sure the DC AMPS value goes to 45 ± 10 AMPS and then goes down to less than 5 AMPS within 180 minutes.

NOTE: 180 minutes is the maximum. It can take less time depending the state of the battery.

- (h) Make sure the DC VOLTS value goes to 30 ± 3 VOLTS.
- (i) Make sure the BAT DISCHARGE light goes off.
 - 1) If the BAT DISCHARGE light stays on, then do these steps:
 - a) Set the GRD PWR switch on the P5-4 panel to the OFF position.
 - b) Do this task: APU Starting and Operation, TASK 49-11-00-860-801.
 - c) Do this task: APU Usual Shutdown, TASK 49-11-00-860-802.
 - d) Do the above test again.

SUBTASK 24-31-11-860-043-002

(6) Set the clock GMT and date.

SUBTASK 24-31-11-860-044-002

- (7) Get access to the main equipment center. Make sure the BATTERY and CHARGER lights on the front of the main battery charger and auxiliary battery charger are on.

I. Put the Airplane Back to its Usual Condition

SUBTASK 24-31-11-410-003-002

- (1) Install the forward bulkhead liner.

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SUBTASK 24-31-11-410-004-002

(2) Close this access panel:

<u>Number</u>	<u>Name/Location</u>
117A	Electronic Equipment Access Door

SUBTASK 24-31-11-860-015-002

(3) Do this task: Remove Electrical Power, TASK 24-22-00-860-812.

————— **END OF TASK** —————

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BATTERY CONNECTOR - INSPECTION/CHECK

1. General

A. This procedure contains this task:

(1) Battery Connector Inspection

B. The main battery, M6, is located below the E3 equipment rack in the main equipment area.

C. The auxiliary battery, M3054, is located just forward of the main battery.

D. The main battery must be removed before you can remove the auxiliary battery. You do not have to remove the auxiliary battery to replace the main battery.

TASK 24-31-11-200-801

2. Battery Connector Inspection

(Figure 601)

A. References

Reference	Title
20-10-44-400-801	Lockwires Installation (P/B 401)
20-50-11 P/B 201	STANDARD TORQUE VALUES - MAINTENANCE PRACTICES
24-22-00-860-812	Remove Electrical Power (P/B 201)
24-22-00-860-813	Supply External Power (P/B 201)
31-25-00 P/B 501	CLOCKS - ADJUSTMENT/TEST
49-11-00-860-801	APU Starting and Operation (P/B 201)
49-11-00-860-802	APU Usual Shutdown (P/B 201)
FIM 24-31 TASK 801	P5-13 ELEC Light Message BITE Procedure
SWPM 20-30-00	Standard Wiring Practices Manual
SWPM 20-30-11	Standard Wiring Practices Manual

B. Consumable Materials

Reference	Description	Specification
G02479	Lockwire - Copper (0.020 inch Diameter)	NASM20995~ CY20

C. Location Zones

Zone	Area
117	Electrical and Electronics Compartment - Left
118	Electrical and Electronics Compartment - Right
121	Forward Cargo Compartment - Left
122	Forward Cargo Compartment - Right

D. Access Panels

Number	Name/Location
117A	Electronic Equipment Access Door

E. Prepare for the Battery Connector Examination

SUBTASK 24-31-11-860-056

(1) Make sure the BAT switch on the P5-13 panel is set to the OFF position.

SUBTASK 24-31-11-860-066

(2) Make sure the STANDBY POWER switch on the P5-5 panel is set to the AUTO position.

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SUBTASK 24-31-11-860-057

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

Standby Power Control Unit, M01720

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	1	C01410	SPCU NORMAL

SUBTASK 24-31-11-010-006

(4) To get access to the main equipment center, do this step:

Open this access panel:

<u>Number</u>	<u>Name/Location</u>
117A	Electronic Equipment Access Door

HAP 031-054, 101-999

SUBTASK 24-31-11-010-007

(5) Remove the access cover on top of the J39 shield to get access to the circuit breakers.

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SUBTASK 24-31-11-860-058

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

Battery Shield, J9

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	3	C01209	AUX BAT CHARGER
A	4	C00142	BATTERY CHARGER
A	5	C01340	BATTERY BUS

SUBTASK 24-31-11-010-008

(7) Get access to the forward cargo area through the forward cargo door.

(a) Remove the forward bulkhead liner to get access to the battery.

SUBTASK 24-31-11-020-007

(8) Disconnect the connectors from the battery:

(a) Remove the sealing wire from the connector knob.

(b) Turn the knob on the battery power connector counterclockwise until the connector is free from the battery receptacle.

(c) Disconnect the battery sensor connector from the battery receptacle.

F. Battery Connector Examination

SUBTASK 24-31-11-210-004

(1) Examine the battery sensor connector for these conditions:

(a) Corrosion or pitting of the contacts

(b) Burn marks on the contacts.

(c) Bent or pushed back contacts

(d) Damage or corrosion to the connector body

SUBTASK 24-31-11-210-007

(2) If you found one of the above conditions, repair or replace battery power connector.

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SUBTASK 24-31-11-210-005

(3) Do this check of the battery power connector:

- (a) Remove the two (2) bolts that hold the connector together.
- (b) If you found one of these conditions, replace the battery power connector.
 - 1) Corrosion and pitting of the power contacts or terminal lug mating surfaces
 - 2) Excessive free play or broken pins on the handwheel-worm assembly
 - 3) Burn marks on the power contacts, terminal lug contact bar mating surfaces or terminal stud
- (c) Do this check of the resiliency of the battery connector power contactor:
 - 1) Put the 0.385 end of the tool into the power contact.
 - a) Make sure the tool fits perfectly (not loose) into the power contact and it requires one pound force to remove the tool.
- (d) Do a check of the ability for the power contact to mate with a worn or undersize pin.
 - 1) Put the 0.370 end of the tool into the power contact.
 - a) Make sure the tool fits perfectly (not loose) into the power contact and it requires one pound force to remove the tool.
- (e) Do a check of the contact bar:
 - 1) If the contact bar is held on with a screw, make sure the screw is tight and the contact bar is tight.

NOTE: Use the standard torque values for the screw (PAGEBLOCK 20-50-11/201).
 - 2) If the contact bar is held with a rivet, make sure the contact bar can not be removed from the connector.

NOTE: The contact bar is loose on the connector.
- (f) If the terminal lug or stud is damaged, deformed, discolored or annealed, repair or replaced the terminal lug (SWPM 20-30-00).

NOTE: If the terminal lug is annealed, use a high temperature terminal lug to replace the lug (SWPM 20-30-11).
- (g) Make sure the terminal nuts are tight.

NOTE: Use the installation torque value for the terminal nut (SWPM 20-30-00).

NOTE: Do not pull or move the wires after the terminal nut is tightened.
- (h) If the shipping plugs are installed, removed the shipping plugs.

NOTE: Wire type contacts have less contact surface.
- (i) Put the connector together and install the two (2) bolts.

NOTE: Use the standard torque values for the bolts (PAGEBLOCK 20-50-11/201).
- (j) Make sure the wires are centered in the connector openings.
- (k) Connect the battery sensor connector to the battery.
- (l) Put the battery power connector into the battery receptacle on the battery.
 - 1) Turn the knob on the connector clockwise with your hand until it is tight.

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- 2) Use the double twist method to install the lockwire, G02479 from the battery power connector knob to one of the connector bolts (Lockwires Installation, TASK 20-10-44-400-801).

NOTE: MS20995CY20 lockwire is the alternative to lockwire, G02479.

SUBTASK 24-31-11-860-059

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

Battery Shield, J9

Row	Col	Number	Name
A	3	C01209	AUX BAT CHARGER
A	4	C00142	BATTERY CHARGER
A	5	C01340	BATTERY BUS

HAP 031-054, 101-999

SUBTASK 24-31-11-410-006

- (5) Install the access cover on top of the J39 shield.

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SUBTASK 24-31-11-860-060

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

Standby Power Control Unit, M01720

Row	Col	Number	Name
B	1	C01410	SPCU NORMAL

G. Battery Installation Test

SUBTASK 24-31-11-860-061

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

SUBTASK 24-31-11-860-062

- (2) Make sure the STANDBY POWER switch on the P5-5 panel is in the AUTO position.

SUBTASK 24-31-11-210-006

- (3) Make sure the ELEC light on the P5-13 panel is OFF.
 - (a) To clear ELEC light messages, do this task: P5-13 ELEC light Message BITE Procedure (FIM 24-31 TASK 801).

SUBTASK 24-31-11-710-010

- (4) Do these steps to test the main battery:
 - (a) Set the GRD PWR switch on the P5-4 panel to the OFF position.
 - (b) Make sure the BAT switch on the P5-13 panel is set to the ON position.
 - (c) Set the DC meter selector switch on the P5-13 panel to the BAT position.
 - (d) Make sure the DC meter on the P5-13 panel shows these values:
 - 1) DC VOLTS = 22-28
 - 2) DC AMPS = a negative value

NOTE: The battery current is negative when the battery is discharging.
 - (e) Make sure the BAT DISCHARGE light on the P5-13 panel comes on. This light will come on when any of these conditions are met:

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- 1) The battery current is greater than 5 Amps for more than 95 seconds.
 - 2) The battery current is greater than 15 Amps for more than 25 seconds.
 - 3) The battery current is greater than 100 Amps for more than 1.2 seconds.
- (f) Set the GRD PWR switch to the ON position.
- (g) Make sure the DC AMPS value goes to 45 ± 10 AMPS and then goes down to less than 5 AMPS within 180 minutes.

NOTE: 180 minutes is the maximum. It can take less time depending the state of the battery.

- (h) Make sure the DC VOLTS value goes to 30 ± 3 VOLTS.
- (i) Make sure the BAT DISCHARGE light goes off.
- 1) If the BAT DISCHARGE light stays on, then do these steps:
 - a) Set the GRD PWR switch on the P5-4 panel to the OFF position.
 - b) Do this task: APU Starting and Operation, TASK 49-11-00-860-801.
 - c) Do this task: APU Usual Shutdown, TASK 49-11-00-860-802.
 - d) Do the above test again.

SUBTASK 24-31-11-710-011

- (5) Do these steps to test auxiliary battery:
- (a) Set the GRD PWR switch on the P5-4 panel to the OFF position.
 - (b) Make sure the BAT switch on the P5-13 panel is set to the ON position.
 - (c) Set the DC meter selector switch on the P5-13 panel to the AUX BAT position.
 - (d) Make sure the DC meter on the P5-13 panel shows these values:
 - 1) DC VOLTS = 22-28
 - 2) DC AMPS = a negative value

NOTE: The battery current is negative when the battery is discharging.
 - (e) Make sure the BAT DISCHARGE light on the P5-13 panel comes on. This light will come on when any of these conditions are met:
 - 1) The battery current is greater than 5 Amps for more than 95 seconds.
 - 2) The battery current is greater than 15 Amps for more than 25 seconds.
 - 3) The battery current is greater than 100 Amps for more than 1.2 seconds.
 - (f) Set the GRD PWR switch to the ON position.
 - (g) Make sure the DC AMPS value goes to 45 ± 10 AMPS and then goes down to less than 5 AMPS within 180 minutes.
- NOTE: 180 minutes is the maximum. It can take less time depending the state of the battery.
- (h) Make sure the DC VOLTS value goes to 30 ± 3 VOLTS.
 - (i) Make sure the BAT DISCHARGE light goes off.
 - 1) If the BAT DISCHARGE light stays on, then do these steps:
 - a) Set the GRD PWR switch on the P5-4 panel to the OFF position.
 - b) Do this task: APU Starting and Operation, TASK 49-11-00-860-801.
 - c) Do this task: APU Usual Shutdown, TASK 49-11-00-860-802.

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d) Do the above test again.

SUBTASK 24-31-11-860-063

(6) Set the clocks to the correct date and Greenwich Mean Time (GMT) (CLOCKS - ADJUSTMENT/TEST, PAGEBLOCK 31-25-00/501).

SUBTASK 24-31-11-860-064

(7) Get access to the main equipment center. Make sure the BATTERY and CHARGER lights on the front of the battery charger are on.

H. Put the Airplane Back to its Usual Condition

SUBTASK 24-31-11-410-007

(1) Install the forward bulkhead liner.

SUBTASK 24-31-11-410-008

(2) Close this access panel:

<u>Number</u>	<u>Name/Location</u>
117A	Electronic Equipment Access Door

SUBTASK 24-31-11-860-065

(3) Do this task: Remove Electrical Power, TASK 24-22-00-860-812.

————— **END OF TASK** —————

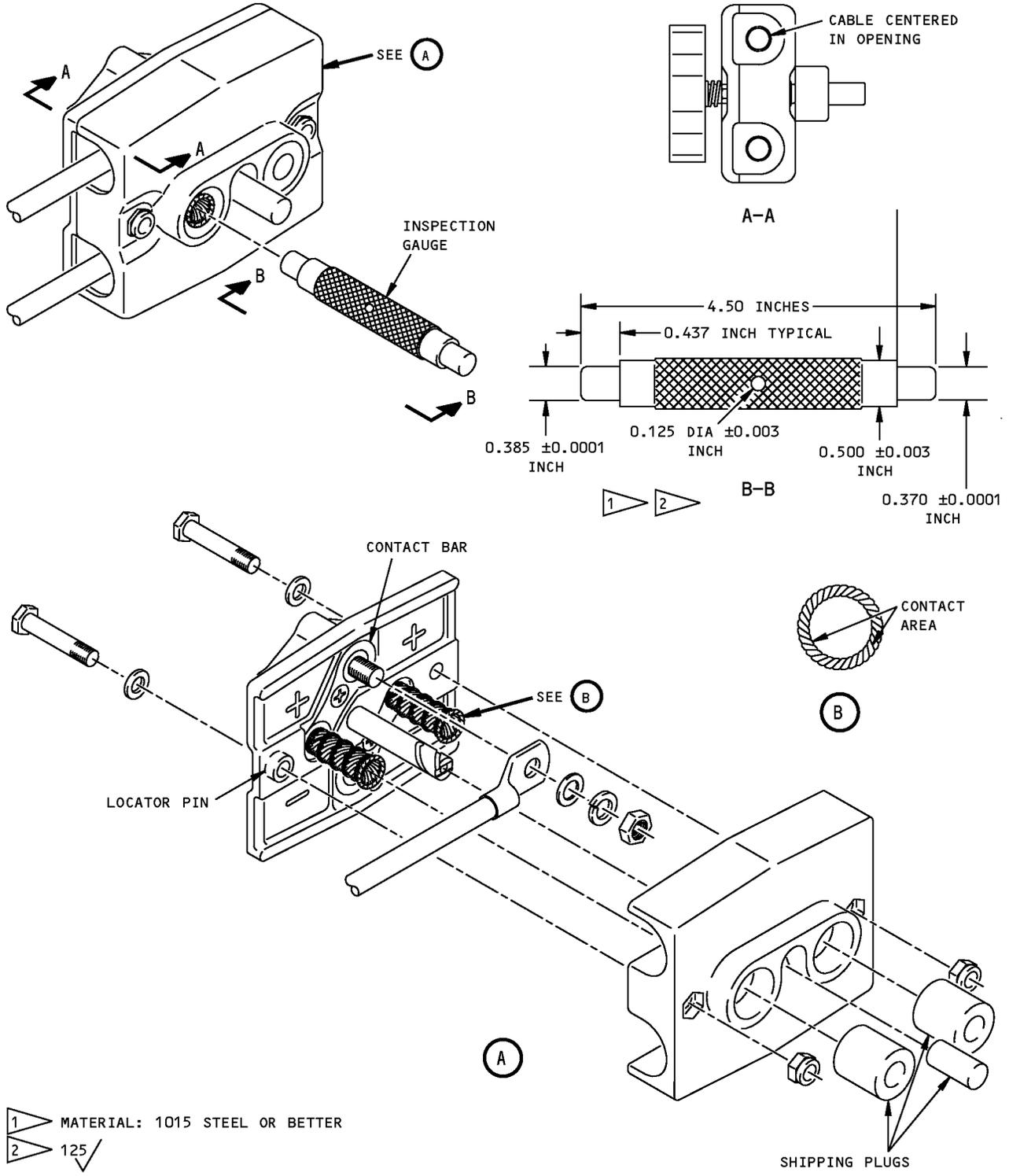
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1 MATERIAL: 1015 STEEL OR BETTER
2 125

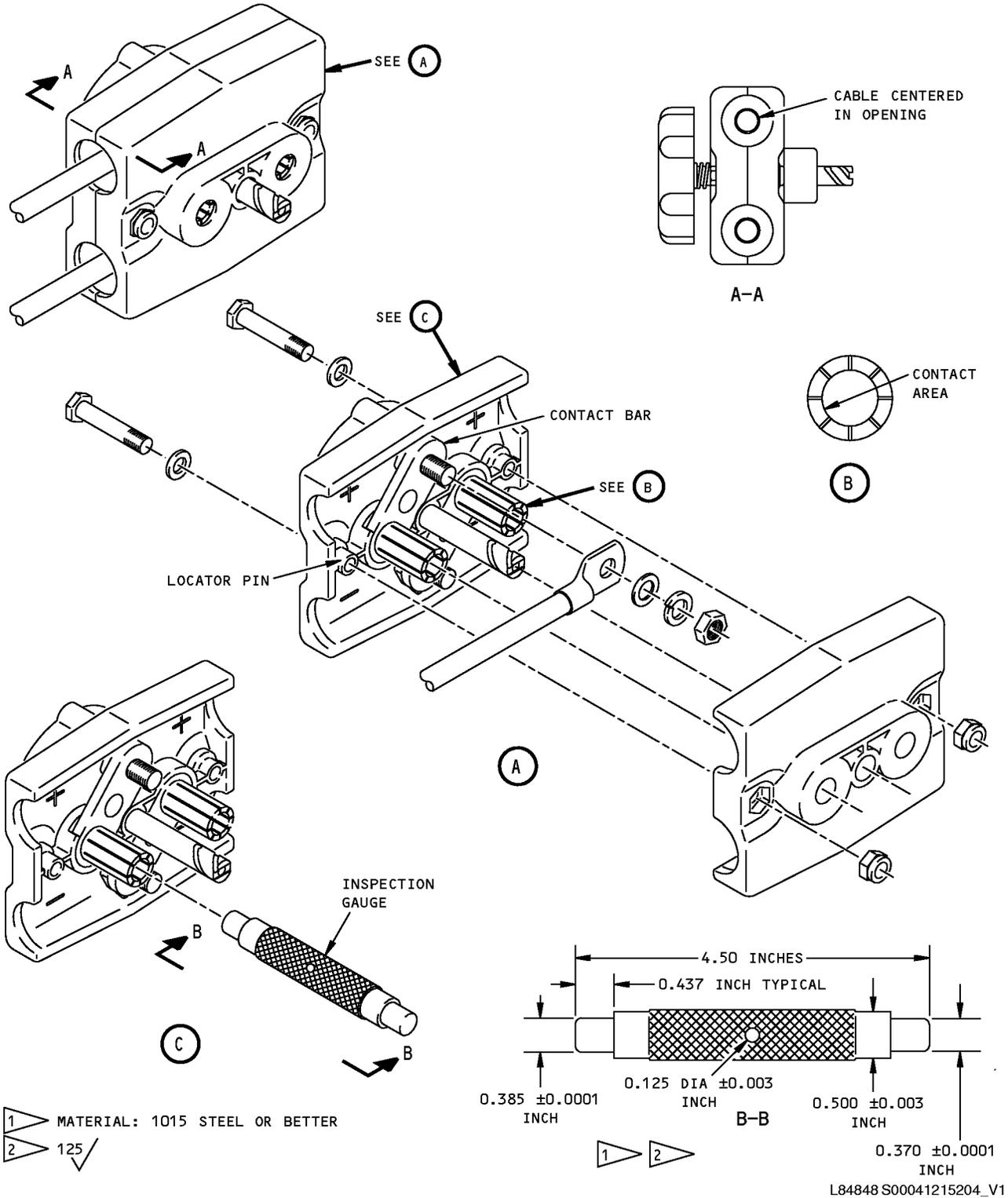
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**Battery Connector Inspection/Check
Figure 601 (Sheet 1 of 2)/24-31-11-990-803**

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**Battery Connector Inspection/Check
Figure 601 (Sheet 2 of 2)/24-31-11-990-803**

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BATTERY CHARGER - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

- (1) A removal of the Battery Charger.
- (2) An installation of the Battery Charger.

TASK 24-31-21-000-802-002

2. Battery Charger Removal

(Figure 401)

A. General

- (1) The M5 Battery Charger is located on the E2-1 equipment rack in the main equipment center.

B. References

Reference	Title
20-10-07-000-801	E/E Box Removal (P/B 201)
20-40-12-000-802	ESDS Handling for Metal Encased Unit Removal (P/B 201)

C. Location Zones

Zone	Area
117	Electrical and Electronics Compartment - Left
118	Electrical and Electronics Compartment - Right

D. Access Panels

Number	Name/Location
117A	Electronic Equipment Access Door

E. Prepare for the removal

SUBTASK 24-31-21-010-003-002

- (1) Set the BAT switch on the P5-13 panel to the OFF position.

SUBTASK 24-31-21-010-004-002

- (2) To get access to the main equipment center, open this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

HAP 031-054, 101-999

SUBTASK 24-31-21-020-005

- (3) Remove the access cover on top of the J39 shield to get access to the circuit breakers.

HAP ALL

SUBTASK 24-31-21-860-004-002

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

Battery Shield, J9

Row	Col	Number	Name
A	4	C00142	BATTERY CHARGER

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Power Distribution Panel Number 2, P92

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	1	C00809	BAT CHGR

NOTE: When these circuit breakers are opened the battery will supply power to the hot battery bus. You can remove the main battery connector to stop the drain on the battery.

F. Battery Charger Removal

SUBTASK 24-31-21-910-003-002

CAUTION: DO NOT TOUCH THE BATTERY CHARGER BEFORE YOU DO THE PROCEDURE FOR DEVICES THAT ARE SENSITIVE TO ELECTROSTATIC DISCHARGE. ELECTROSTATIC DISCHARGE CAN CAUSE DAMAGE TO THE BATTERY CHARGER.

- (1) Before you touch the battery charger [1], do this task: ESDS Handling for Metal Encased Unit Removal, TASK 20-40-12-000-802.

SUBTASK 24-31-21-020-002-002

- (2) Remove the battery charger [1] per the steps that follow:
 - (a) Remove the electrical connector from the front of the battery charger.
 - (b) Remove the screw [9] and washer [8] from the terminal block cover [10].
 - (c) Remove the terminal block cover [10] from the front of the battery charger.
 - (d) Remove the nut [2], lockwasher [3] and washer [4] from the terminal stud.
 - (e) Remove the nut [7], lockwasher [6] and washer [5] from the terminal stud.
 - (f) Remove the wires from the terminals.
 - (g) Remove the battery charger. To remove the battery charger, do this task: E/E Box Removal, TASK 20-10-07-000-801.

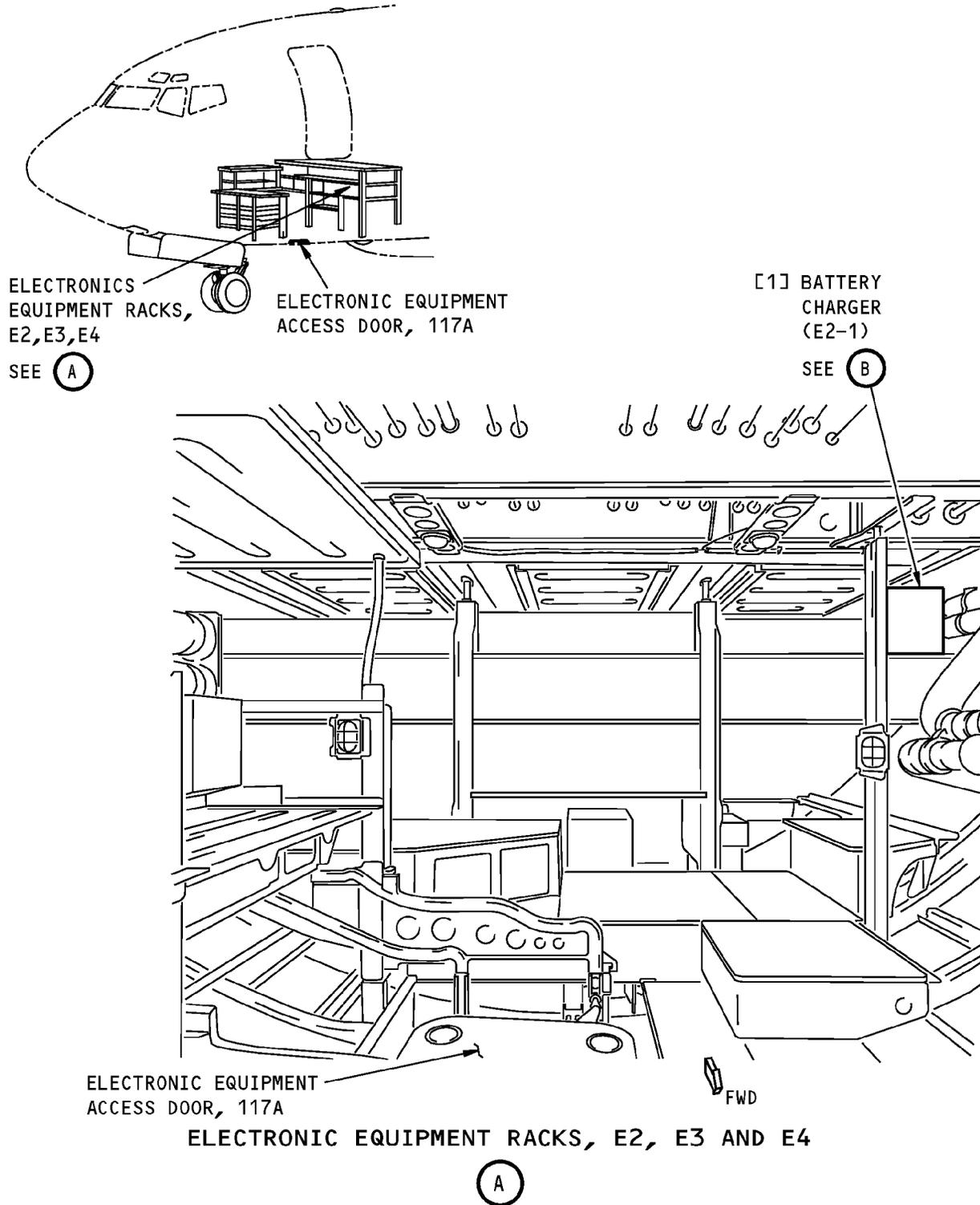
————— **END OF TASK** —————

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Battery Charger Installation
Figure 401 (Sheet 1 of 3)/24-31-21-990-802-002

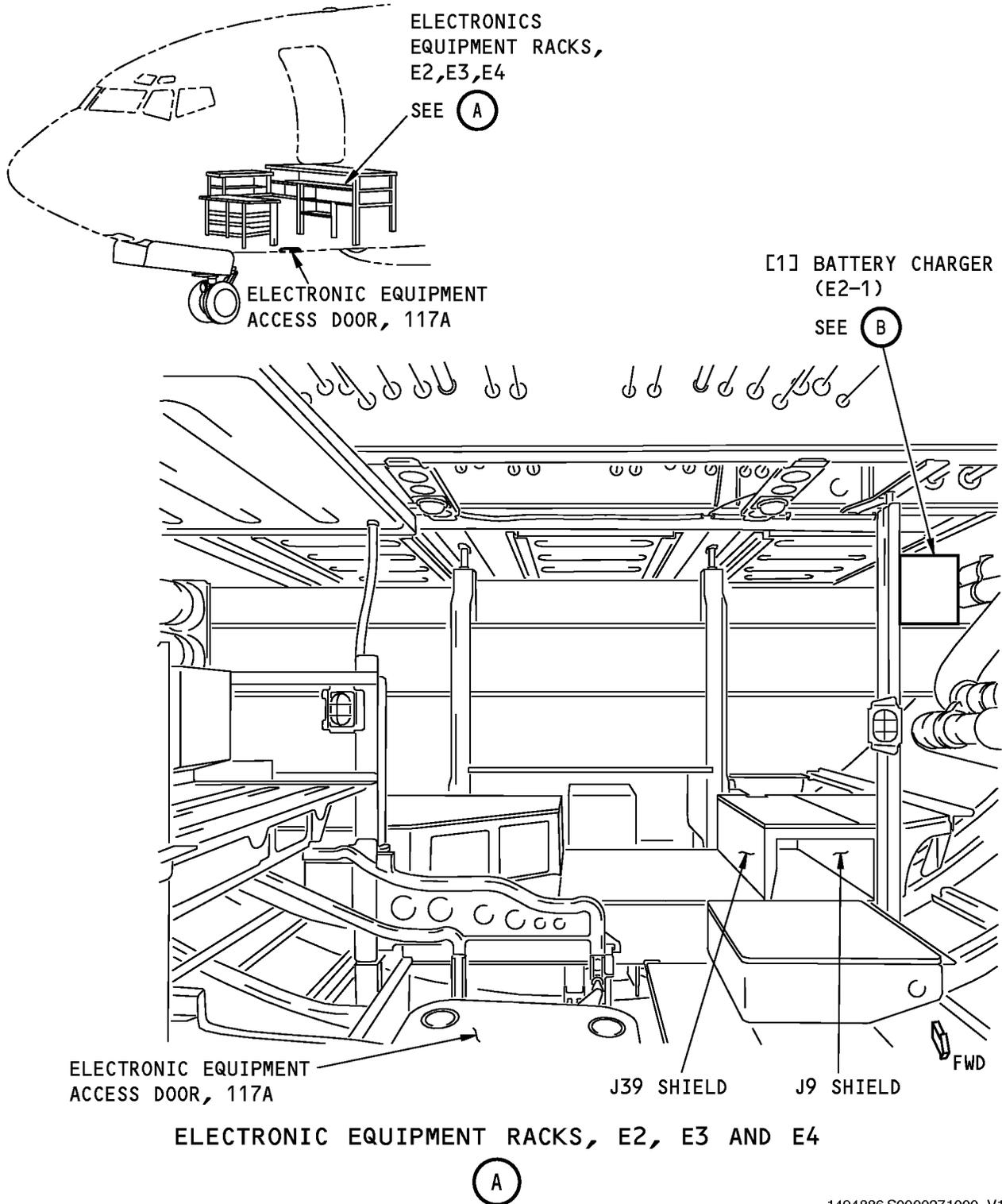
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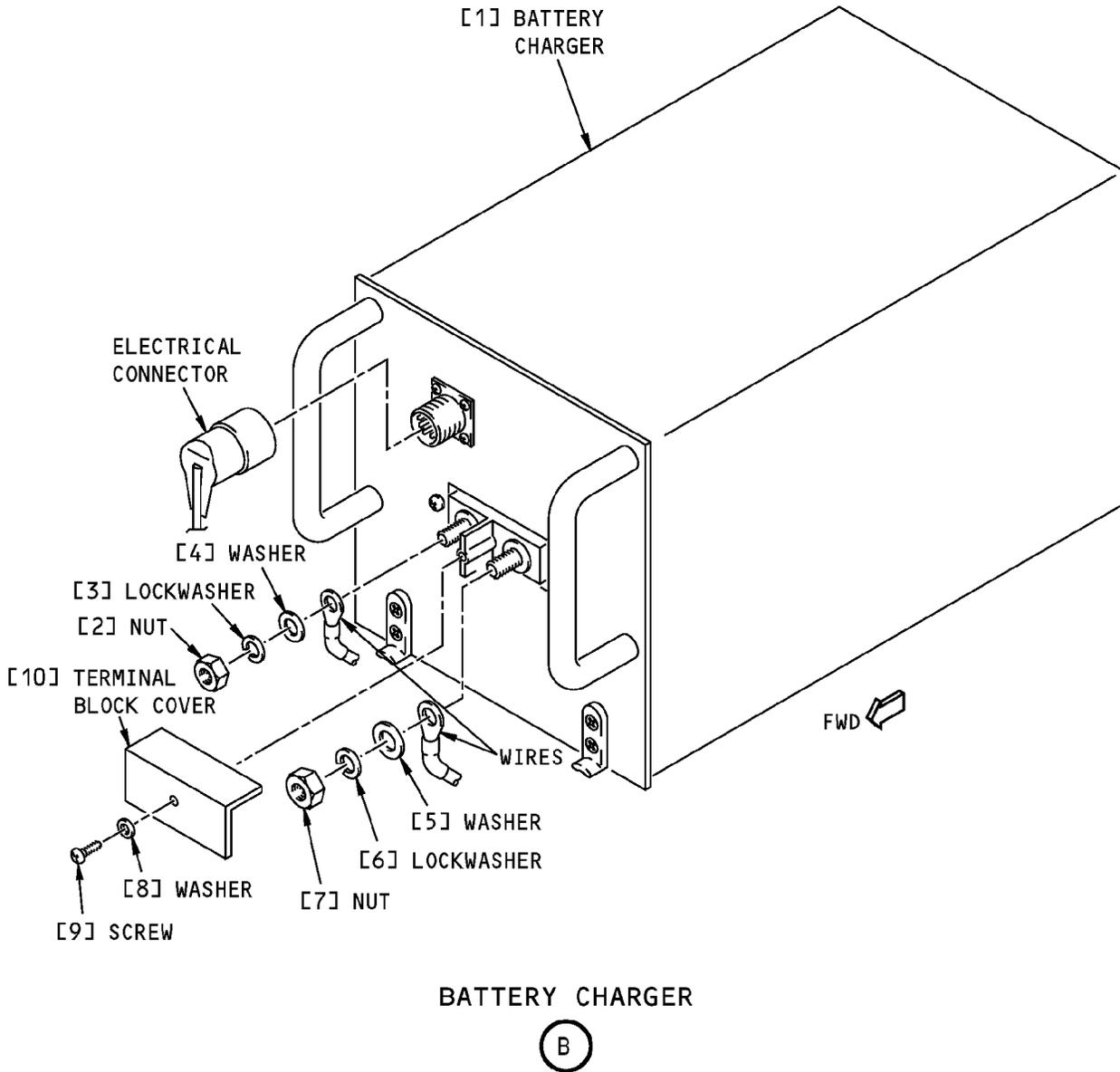
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Battery Charger Installation
Figure 401 (Sheet 2 of 3)/24-31-21-990-802-002

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Battery Charger Installation
Figure 401 (Sheet 3 of 3)/24-31-21-990-802-002

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TASK 24-31-21-400-802-002

3. Battery Charger Installation

(Figure 401)

A. References

Reference	Title
20-10-07-400-801	E/E Box Installation (P/B 201)
20-40-12-400-802	ESDS Handling for Metal Encased Unit Installation (P/B 201)
24-22-00-860-812	Remove Electrical Power (P/B 201)
24-31-21-710-801	Battery Charger Operational Test (P/B 501)

B. Location Zones

Zone	Area
117	Electrical and Electronics Compartment - Left
118	Electrical and Electronics Compartment - Right

C. Access Panels

Number	Name/Location
117A	Electronic Equipment Access Door

D. Battery Charger Installation

SUBTASK 24-31-21-910-004-002

CAUTION: DO NOT TOUCH THE BATTERY CHARGER BEFORE YOU DO THE PROCEDURE FOR DEVICES THAT ARE SENSITIVE TO ELECTROSTATIC DISCHARGE. ELECTROSTATIC DISCHARGE CAN CAUSE DAMAGE TO THE BATTERY CHARGER.

- (1) Before you touch the battery charger [1], do this task: ESDS Handling for Metal Encased Unit Installation, TASK 20-40-12-400-802.

SUBTASK 24-31-21-420-002-002

- (2) Install the battery charger [1] on the E2-1 shelf, do this task: E/E Box Installation, TASK 20-10-07-400-801.

SUBTASK 24-31-21-420-003-002

- (3) Connect the battery charger per the steps that follow:
 - (a) Install the wires on the terminal studs of the battery charger.
 - (b) Install the nut [2], lockwasher [3] and washer [4] on the terminal stud.
 - (c) Tighten nut to 135-145 inch-pounds (15.3-16.4 Newton meters).
 - (d) Install the nut [7], lockwasher [6] and washer [5] on the terminal stud.
 - (e) Tighten nut to 170-190 inch-pounds (19.2-21.5 Newton meters).
 - (f) Install the screw [9], washer [8] and terminal block cover [10].
 - (g) Install the electrical connector on the battery charger.

SUBTASK 24-31-21-860-005-002

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

Battery Shield, J9

Row	Col	Number	Name
A	4	C00142	BATTERY CHARGER

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Power Distribution Panel Number 2, P92

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	1	C00809	BAT CHGR

HAP 031-054, 101-999

SUBTASK 24-31-21-420-006

- (5) Install the access cover on top of the J39 shield.

HAP ALL

E. Battery Charger Installation Test

SUBTASK 24-31-21-710-002-002

- (1) Do a check of the battery charger per the steps that follow:
 - (a) Do this task: Battery Charger Operational Test, TASK 24-31-21-710-801.

F. Put the Airplane Back to its Usual Condition

SUBTASK 24-31-21-410-003-002

- (1) Close this access panel:

<u>Number</u>	<u>Name/Location</u>
117A	Electronic Equipment Access Door

SUBTASK 24-31-21-860-006-002

- (2) Do this task: Remove Electrical Power, TASK 24-22-00-860-812.

————— **END OF TASK** —————

<p>EFFECTIVITY</p> <p>HAP ALL</p>	
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BATTERY CHARGER - ADJUSTMENT/TEST

1. General

- A. This procedure contains scheduled maintenance task data.
- B. This procedure has this task:
 - (1) The Battery Charger Operational Test.

TASK 24-31-21-710-801

2. Battery Charger Operational Test

A. General

- (1) The Battery Charger, M5 is located on the E2-1 equipment rack in the main equipment center.

B. References

Reference	Title
24-22-00-860-812	Remove Electrical Power (P/B 201)
24-22-00-860-813	Supply External Power (P/B 201)

C. Location Zones

Zone	Area
117	Electrical and Electronics Compartment - Left
118	Electrical and Electronics Compartment - Right
211	Flight Compartment - Left
212	Flight Compartment - Right

D. Access Panels

Number	Name/Location
117A	Electronic Equipment Access Door

E. Prepare for Test

SUBTASK 24-31-21-860-007

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

SUBTASK 24-31-21-860-008

- (2) Make sure the BUS TRANS switch on the P5-4 panel is in the AUTO position.

SUBTASK 24-31-21-860-009

- (3) Make sure the STANDBY POWER switch on the P5-5 panel is in the AUTO position.

SUBTASK 24-31-21-210-001

- (4) Make sure the ELEC light on the P5-13 panel is OFF.
 - (a) To clear ELEC light messages, do this task: P5-13 ELEC Light Message BITE Procedure (FIM 24-31 TASK 801).

F. Operational Test

SUBTASK 24-31-21-710-003

- (1) Do a check of the battery charger per the steps that follow:
 - (a) Set the GRD PWR switch on the P5-4 panel to the OFF position.
 - (b) Make sure the BAT switch on the P5-13 panel is set to the ON position.
 - (c) Set the DC meter selector switch on the P5-13 panel to the BAT position.
 - (d) Make sure the DC meter on the P5-13 panel shows these values:

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- 1) DC VOLTS = 22-28
- 2) DC AMPS = a negative value

NOTE: The battery current is negative when the battery is discharging.

- (e) Make sure the BAT DISCHARGE light on the P5-13 panel comes on. This light will come on when any of these conditions are met:
 - 1) The battery current is greater than 5 Amps for more than 95 seconds.
 - 2) The battery current is greater than 15 Amps for more than 25 seconds.
 - 3) The battery current is greater than 100 Amps for more than 1.2 seconds.

- (f) Set the GRD PWR switch to the ON position.

- (g) Make sure the DC AMPS value goes to 45 ± 10 AMPS and then goes down to less than 5 AMPS within 180 minutes.

NOTE: 180 minutes is the maximum. It can take less time depending the state of the battery.

- (h) Make sure the DC VOLTS value goes to 30 ± 3 VOLTS.

- (i) Make sure the BAT DISCHARGE light goes off.

- (j) To get access to the main equipment center, open this access panel:

<u>Number</u>	<u>Name/Location</u>
117A	Electronic Equipment Access Door

- (k) Make sure the BATTERY and CHARGER lights on the front panel of the battery charger are ON.

- (l) Open this circuit breaker:

Power Distribution Panel Number 2, P92

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	1	C00809	BAT CHGR

NOTE: Leave the circuit breaker open for more than 60 seconds.

- (m) Close this circuit breaker:

Power Distribution Panel Number 2, P92

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	1	C00809	BAT CHGR

- (n) Get access to the flight compartment, make sure the ELEC light on the P5-13 panel is ON.
- (o) Set both the AC meter selector switch and the DC meter selector switch to the TEST positions.
- (p) Push and release the MAINT switch on the P5-13 panel to start the display test.
- (q) After the display test is complete, push the MAINT switch to view the messages.
- (r) Make sure this message appears: BAT CHGR INOP.
- (s) Push the MAINT switch until this message appears: HOLD BUTTON CLEAR FAULTS.
- (t) To clear the message push and hold the MAINT switch for 6 seconds.
- (u) Make sure this message appears: FAULTS CLEARED.

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G. Put the Airplane Back to its Usual Condition

SUBTASK 24-31-21-410-004

(1) Close this access panel:

<u>Number</u>	<u>Name/Location</u>
117A	Electronic Equipment Access Door

SUBTASK 24-31-21-860-010

(2) Do this task: Remove Electrical Power, TASK 24-22-00-860-812.

————— **END OF TASK** —————

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AIRCRAFT MAINTENANCE MANUAL

AUXILIARY BATTERY CHARGER - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

- (1) A removal of the Auxiliary Battery Charger.
- (2) An installation of the Auxiliary Battery Charger.

TASK 24-31-31-000-801

2. Auxiliary Battery Charger Removal

(Figure 401)

A. General

- (1) The Auxiliary Battery Charger, M3055 is located on the E3-3 equipment rack in the main equipment center.

B. References

Reference	Title
20-10-07-000-801	E/E Box Removal (P/B 201)
20-40-12-000-802	ESDS Handling for Metal Encased Unit Removal (P/B 201)

C. Location Zones

Zone	Area
117	Electrical and Electronics Compartment - Left
118	Electrical and Electronics Compartment - Right

D. Access Panels

Number	Name/Location
117A	Electronic Equipment Access Door

E. Prepare for the removal

SUBTASK 24-31-31-860-001

- (1) Set the BAT switch on the P5-13 panel to the OFF position.

SUBTASK 24-31-31-010-001

- (2) To get access to the main equipment center, open this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

HAP 031-054, 101-999

SUBTASK 24-31-31-020-004

- (3) Remove the access cover on top of the J39 shield to get access to the circuit breakers.

HAP ALL

SUBTASK 24-31-31-860-002

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

Battery Shield, J9

Row	Col	Number	Name
A	3	C01209	AUX BAT CHARGER

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Power Distribution Panel Number 1, P91

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	3	C00922	AUX BAT CHGR

F. Auxiliary Battery Charger Removal

SUBTASK 24-31-31-910-001

CAUTION: DO NOT TOUCH THE AUXILIARY BATTERY CHARGER BEFORE YOU DO THE PROCEDURE FOR DEVICES THAT ARE SENSITIVE TO ELECTROSTATIC DISCHARGE. ELECTROSTATIC DISCHARGE CAN CAUSE DAMAGE TO THE BATTERY CHARGER.

- (1) Before you touch the auxiliary battery charger [1], do this task: ESDS Handling for Metal Encased Unit Removal, TASK 20-40-12-000-802.

SUBTASK 24-31-31-020-001

- (2) Remove the auxiliary battery charger [1] per the steps that follow:
- (a) Remove the electrical connector from the front of the battery charger.
 - (b) Remove the screw [9] and washer [8] from the terminal block cover [10].
 - (c) Remove the terminal block cover [10] from the front of the battery charger.
 - (d) Remove the nut [2], lockwasher [3] and washer [4] from the terminal stud.
 - (e) Remove the nut [7], lockwasher [6] and washer [5] from the terminal stud.
 - (f) Remove the wires from the terminals.
 - (g) To remove the auxiliary battery charger, do this task: E/E Box Removal, TASK 20-10-07-000-801.

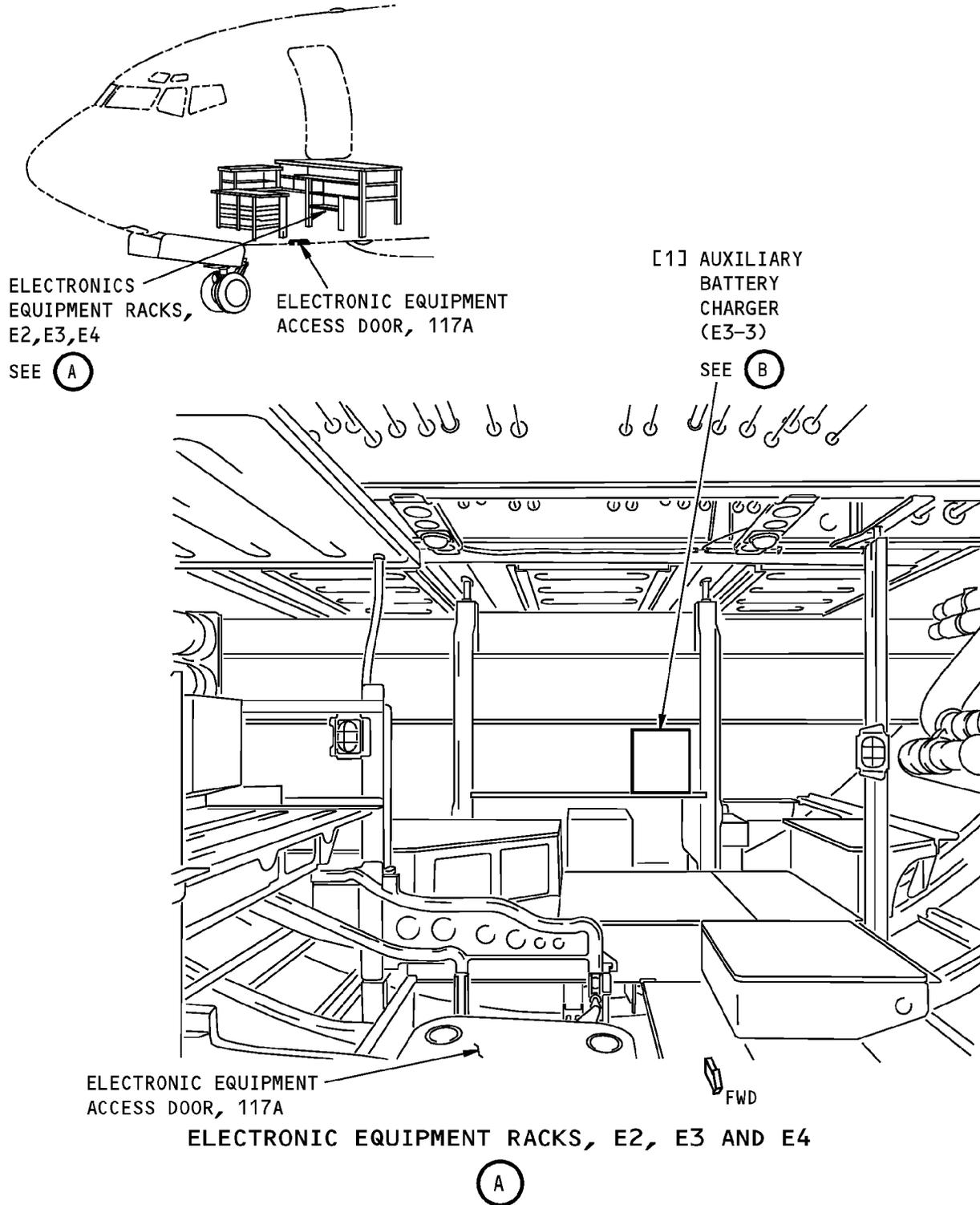
————— **END OF TASK** —————

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ELECTRONICS EQUIPMENT RACKS, E2, E3, E4

SEE (A)

ELECTRONIC EQUIPMENT ACCESS DOOR, 117A

(1) AUXILIARY BATTERY CHARGER (E3-3)

SEE (B)

ELECTRONIC EQUIPMENT ACCESS DOOR, 117A

ELECTRONIC EQUIPMENT RACKS, E2, E3 AND E4

FWD

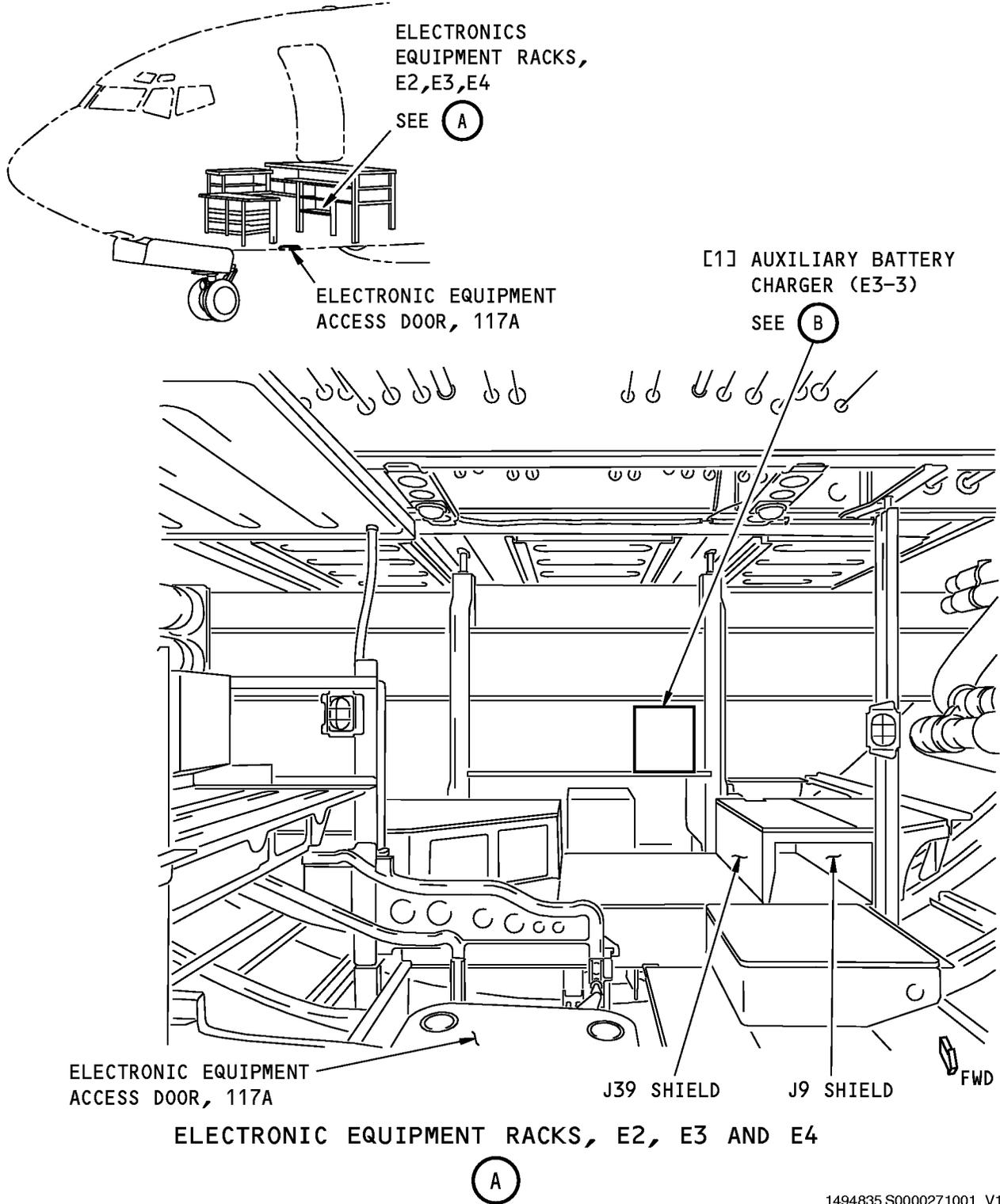
(A)

Auxiliary Battery Charger Installation
Figure 401 (Sheet 1 of 3)/24-31-31-990-801

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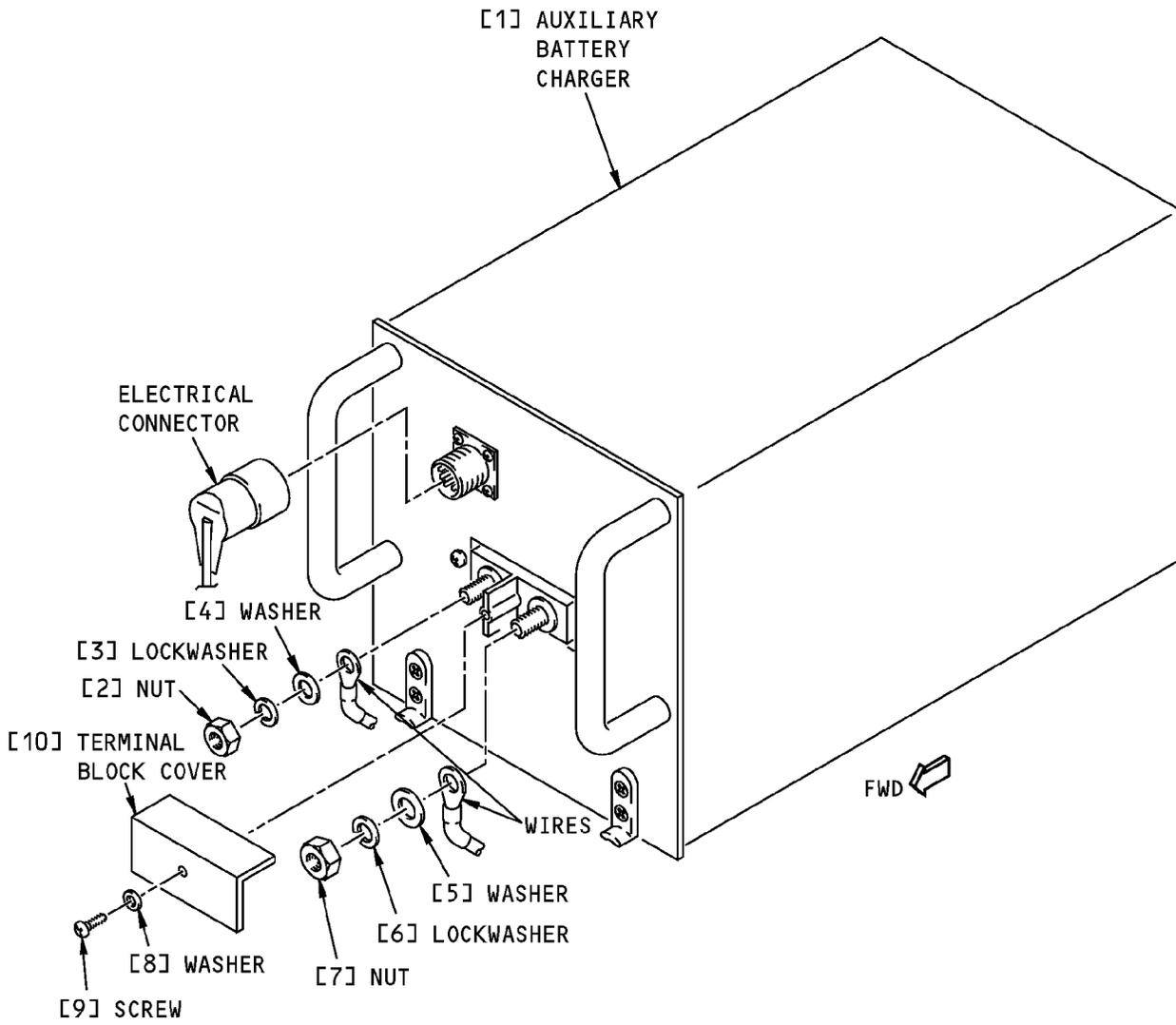


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Auxiliary Battery Charger Installation
Figure 401 (Sheet 2 of 3)/24-31-31-990-801

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AUXILIARY BATTERY CHARGER

(B)

**Auxiliary Battery Charger Installation
Figure 401 (Sheet 3 of 3)/24-31-31-990-801**

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TASK 24-31-31-400-801

3. Auxiliary Battery Charger Installation

(Figure 401)

A. References

Reference	Title
20-10-07-400-801	E/E Box Installation (P/B 201)
20-40-12-400-802	ESDS Handling for Metal Encased Unit Installation (P/B 201)
24-22-00-860-812	Remove Electrical Power (P/B 201)
24-31-31-710-801	Auxiliary Battery Charger Operational Test (P/B 501)

B. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Charger	24-31-21-01J-015 24-31-31-02-005	HAP 031-054, 101-999 HAP 001-013, 015-026, 028-050, 054, 101-999

C. Location Zones

Zone	Area
117	Electrical and Electronics Compartment - Left
118	Electrical and Electronics Compartment - Right

D. Access Panels

Number	Name/Location
117A	Electronic Equipment Access Door

E. Auxiliary Battery Charger Installation

SUBTASK 24-31-31-910-002

CAUTION: DO NOT TOUCH THE AUXILIARY BATTERY CHARGER BEFORE YOU DO THE PROCEDURE FOR DEVICES THAT ARE SENSITIVE TO ELECTROSTATIC DISCHARGE. ELECTROSTATIC DISCHARGE CAN CAUSE DAMAGE TO THE BATTERY CHARGER.

- (1) Before you touch the auxiliary battery charger [1], do this task: ESDS Handling for Metal Encased Unit Installation, TASK 20-40-12-400-802.

SUBTASK 24-31-31-420-001

- (2) Install the auxiliary battery charger [1] on the E3-3 shelf, do this task: E/E Box Installation, TASK 20-10-07-400-801.

SUBTASK 24-31-31-420-002

- (3) Connect the auxiliary battery charger per the steps that follow:
 - (a) Install the wires on the terminal studs of the battery charger.
 - (b) Install the nut [2], lockwasher [3] and washer [4] on the terminal stud.
 - (c) Tighten nut to 135-145 inch-pounds (15.3-16.4 Newton meters).
 - (d) Install the nut [7], lockwasher [6] and washer [5] on the terminal stud.
 - (e) Tighten nut to 170-190 inch-pounds (19.2-21.5 Newton meters).
 - (f) Install the electrical connector on the battery charger.

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SUBTASK 24-31-31-860-003

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

Battery Shield, J9

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	3	C01209	AUX BAT CHARGER

Power Distribution Panel Number 1, P91

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	3	C00922	AUX BAT CHGR

HAP 031-054, 101-999

SUBTASK 24-31-31-420-005

(5) Install the access cover on top of the J39 shield.

HAP ALL

F. Auxiliary Battery Charger Installation Test

SUBTASK 24-31-31-710-001

(1) Do a check of the auxiliary battery charger per the steps that follow:

(a) Do this task: Auxiliary Battery Charger Operational Test, TASK 24-31-31-710-801.

G. Put the Airplane Back to its Usual Condition

SUBTASK 24-31-31-410-001

(1) Close this access panel:

<u>Number</u>	<u>Name/Location</u>
117A	Electronic Equipment Access Door

SUBTASK 24-31-31-860-004

(2) Do this task: Remove Electrical Power, TASK 24-22-00-860-812.

————— **END OF TASK** —————

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AIRCRAFT MAINTENANCE MANUAL

AUXILIARY BATTERY CHARGER - ADJUSTMENT/TEST

1. General

A. This procedure has this task:

- (1) The Auxiliary Battery Charger Operational Test.

TASK 24-31-31-710-801

2. Auxiliary Battery Charger Operational Test

A. General

- (1) The Auxiliary Battery Charger, M3055 is located on the E3-3 equipment rack in the main equipment center.

B. References

Reference	Title
24-22-00-860-812	Remove Electrical Power (P/B 201)
24-22-00-860-813	Supply External Power (P/B 201)

C. Location Zones

Zone	Area
117	Electrical and Electronics Compartment - Left
118	Electrical and Electronics Compartment - Right
211	Flight Compartment - Left
212	Flight Compartment - Right

D. Access Panels

Number	Name/Location
117A	Electronic Equipment Access Door

E. Prepare for Test

SUBTASK 24-31-31-860-005

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

SUBTASK 24-31-31-860-006

- (2) Make sure the BUS TRANS switch on the P5-4 panel is in the AUTO position.

SUBTASK 24-31-31-860-007

- (3) Make sure the STANDBY POWER switch on the P5-5 panel is in the AUTO position.

SUBTASK 24-31-31-210-001

- (4) Make sure the ELEC light on the P5-13 panel is OFF.
 - (a) To clear ELEC light messages, do this task: P5-13 ELEC Light Message BITE Procedure (FIM 24-31 TASK 818).

F. Operational Test

SUBTASK 24-31-31-710-002

- (1) Do a check of the auxiliary battery charger per the steps that follow:
 - (a) Set the GRD PWR switch on the P5-4 panel to the OFF position.
 - (b) Make sure the BAT switch on the P5-13 panel is set to the ON position.
 - (c) Set the DC meter selector switch on the P5-13 panel to the AUX BAT position.
 - (d) Make sure the DC meter on the P5-13 panel shows these values:

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- 1) DC VOLTS = 22-28
- 2) DC AMPS = a negative value

NOTE: The auxiliary battery current is negative when the battery is discharging.

- (e) Make sure the BAT DISCHARGE light on the P5-13 panel comes on. This light will come on when any of these conditions are met:
 - 1) Auxiliary or main battery current is greater than 5 Amps for more than 95 seconds.
 - 2) Auxiliary or main battery current is greater than 15 Amps for more than 25 seconds.
 - 3) Auxiliary or main battery current is greater than 100 Amps for more than 1.2 seconds.

- (f) Set the GRD PWR switch to the ON position.

- (g) Make sure the DC AMPS value goes to 45 ± 10 AMPS and then goes down to less than 5 AMPS within 180 minutes.

NOTE: 180 minutes is the maximum. It can take less time depending the state of the auxiliary battery.

- (h) Make sure the DC VOLTS value goes to 30 ± 3 VOLTS.

- (i) Make sure the BAT DISCHARGE light goes OFF.

- (j) To get access to the main equipment center, open this access panel:

<u>Number</u>	<u>Name/Location</u>
117A	Electronic Equipment Access Door

- (k) Make sure the BATTERY and CHARGER lights on the front panel of the auxiliary battery charger are ON.

- (l) Open this circuit breaker:

Power Distribution Panel Number 1, P91

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	3	C00922	AUX BAT CHGR

NOTE: Leave the circuit breaker open for more than 60 seconds.

- (m) Close this circuit breaker:

Power Distribution Panel Number 1, P91

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	3	C00922	AUX BAT CHGR

- (n) Get access to the flight compartment, make sure the ELEC light on the P5-13 panel is ON.
- (o) Set both the AC meter selector switch and the DC meter selector switch to the TEST positions.
- (p) Push and release the MAINT switch on the P5-13 panel to start the display test.
- (q) After the display test is complete, push the MAINT switch to view the messages.
- (r) Make sure this message appears: AUX BAT CHGR INOP.
- (s) Push the MAINT switch until this message appears: HOLD BUTTON CLEAR FAULTS.
- (t) To clear the message push and hold the MAINT switch for 6 seconds.
- (u) Make sure this message appears: FAULTS CLEARED.

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HAP ALL	

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G. Put the Airplane Back to its Usual Condition

SUBTASK 24-31-31-410-002

(1) Close this access panel:

<u>Number</u>	<u>Name/Location</u>
117A	Electronic Equipment Access Door

SUBTASK 24-31-31-860-008

(2) Do this task: Remove Electrical Power, TASK 24-22-00-860-812.

————— **END OF TASK** —————

EFFECTIVITY
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DUAL BATTERY REMOTE CONTROL CIRCUIT BREAKER (RCCB) - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

- (1) Dual Battery RCCB Removal
- (2) Dual Battery RCCB Installation.

TASK 24-31-41-000-801

2. Dual Battery RCCB Removal

(Figure 401, Figure 402)

A. General

- (1) The Dual Battery RCCB, C1212, is located on the J9 Battery Shield in the Main Equipment Center.

B. References

Reference	Title
SWPM 20-83-00	Standard Wiring Practices Manual

C. Location Zones

Zone	Area
117	Electrical and Electronics Compartment - Left
121	Forward Cargo Compartment - Left
122	Forward Cargo Compartment - Right

D. Access Panels

Number	Name/Location
117A	Electronic Equipment Access Door

E. Prepare for the Removal

SUBTASK 24-31-41-860-001

- (1) Set the STANDBY POWER switch on the P5-5 panel to the OFF position and attach a DO-NOT-OPERATE tag to it.

SUBTASK 24-31-41-860-002

- (2) Set the BAT switch on the P5-13 panel to the OFF position and attach a DO-NOT-OPERATE tag to it.

SUBTASK 24-31-41-010-001

- (3) Open this access panel:

<u>Number</u>	<u>Name/Location</u>
117A	Electronic Equipment Access Door

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- (a) Remove the access cover on top of the J39 shield to get access to the circuit breakers.

HAP ALL

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

Battery Shield, J9

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	3	C01209	AUX BAT CHARGER
A	4	C00142	BATTERY CHARGER
A	5	C01340	BATTERY BUS

SUBTASK 24-31-41-020-001

- (4) Disconnect the battery connectors from the main and auxiliary batteries per the steps that follow:
- (a) Gain access to the forward cargo area.
 - (b) Remove the access panel that covers the batteries.
 - (c) Disconnect the battery connectors from both batteries.

NOTE: Do not let the terminals on the connector rest against the airplane structure.

F. Procedure

SUBTASK 24-31-41-020-002

- (1) Do these steps to remove the dual battery RCCB [1]:
- (a) Remove the access cover on top of the J9 shield to get access to the Dual Battery RCCB [1].
 - (b) Install identification tags on all wires attached to the Dual Battery RCCB [1] before removing them.
 - (c) Remove the two nuts [2], lockwashers [3] and washers [4] from both terminal studs on the Dual Battery RCCB [1].
 - (d) Remove the nut [2], lockwasher [3] and washer [4] from the top terminal stud on the Static Inverter RCCB [1].

NOTE: This step must be done because the terminals are close together on the same wire.

- (e) Remove the wires from the terminal studs.
- (f) Remove the control wires from the connector on the Dual Battery RCCB [1] SWPM 20-83-00.

NOTE: Be sure to install an identification tag on wire so that you can install the wire into the correct socket later.

- (g) Remove the two screws [5] that hold the Dual Battery RCCB [1] to the panel.
- (h) Remove the Dual Battery RCCB [1].

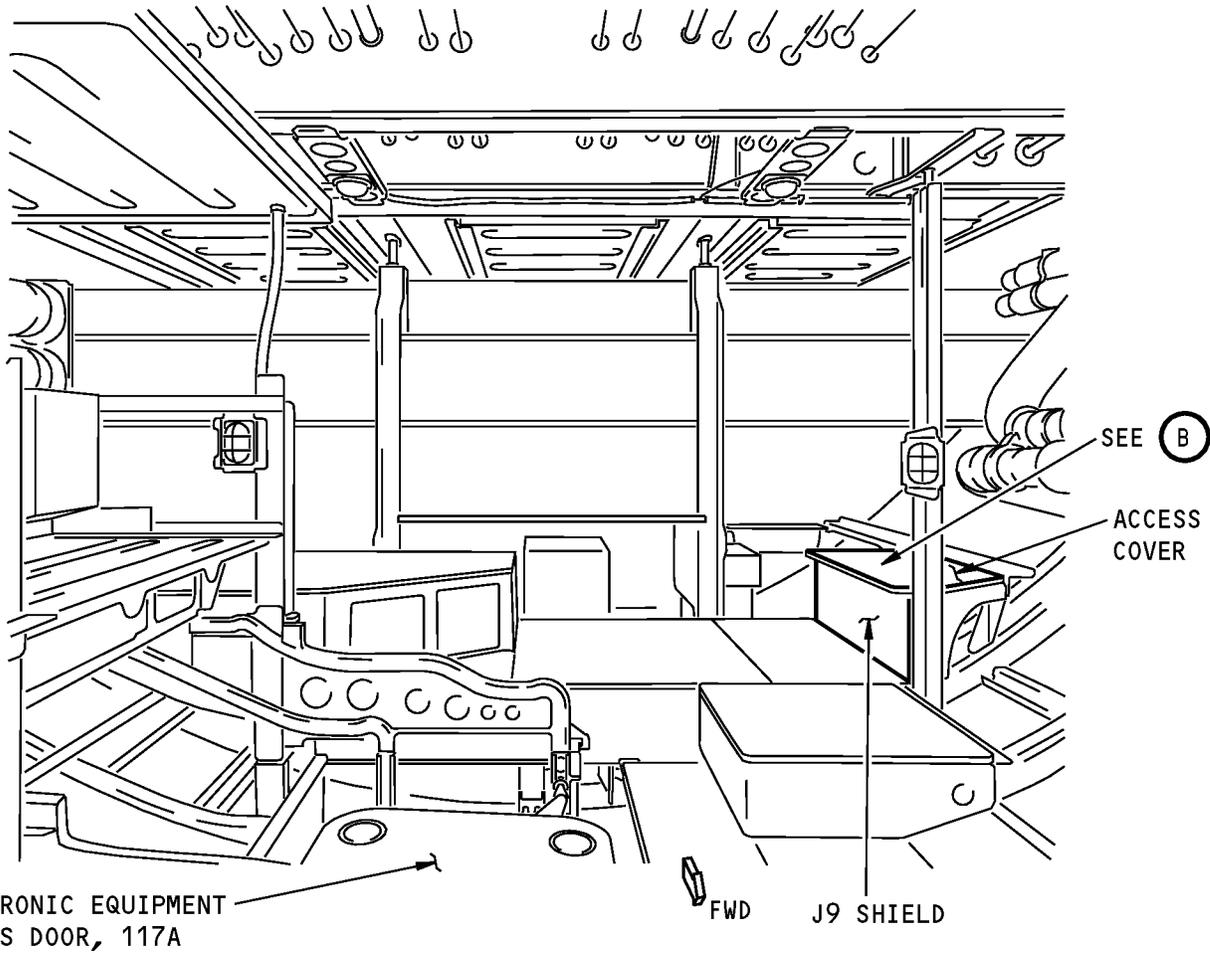
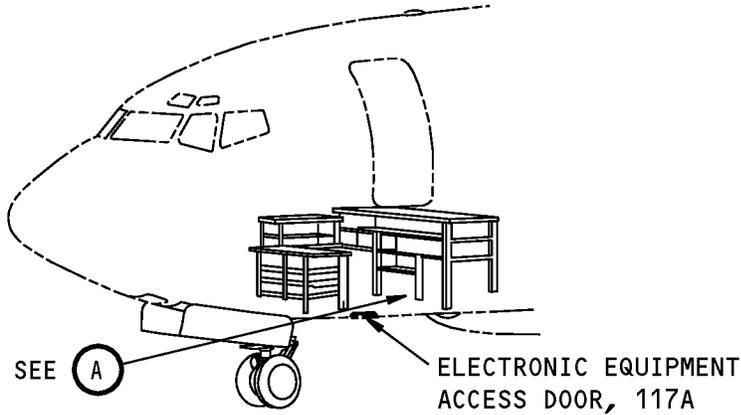
————— **END OF TASK** —————

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HAP ALL

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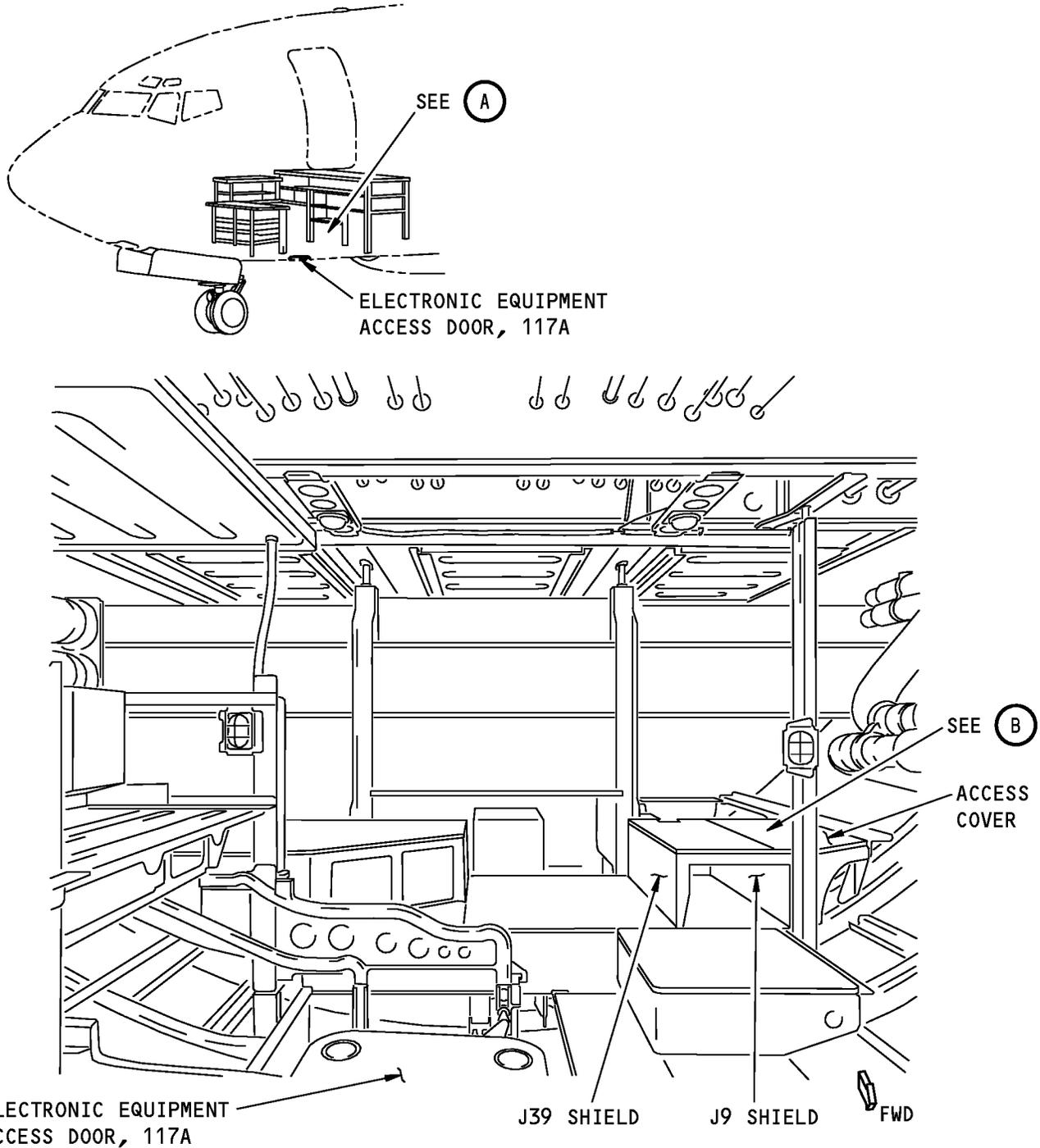
ELECTRICAL AND ELECTRONICS COMPARTMENT

(A)

**Dual Battery Remote Control Circuit Breaker (RCCB) Installation
Figure 401 (Sheet 1 of 3)/24-31-41-990-801**

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ELECTRICAL AND ELECTRONICS COMPARTMENT

(A)

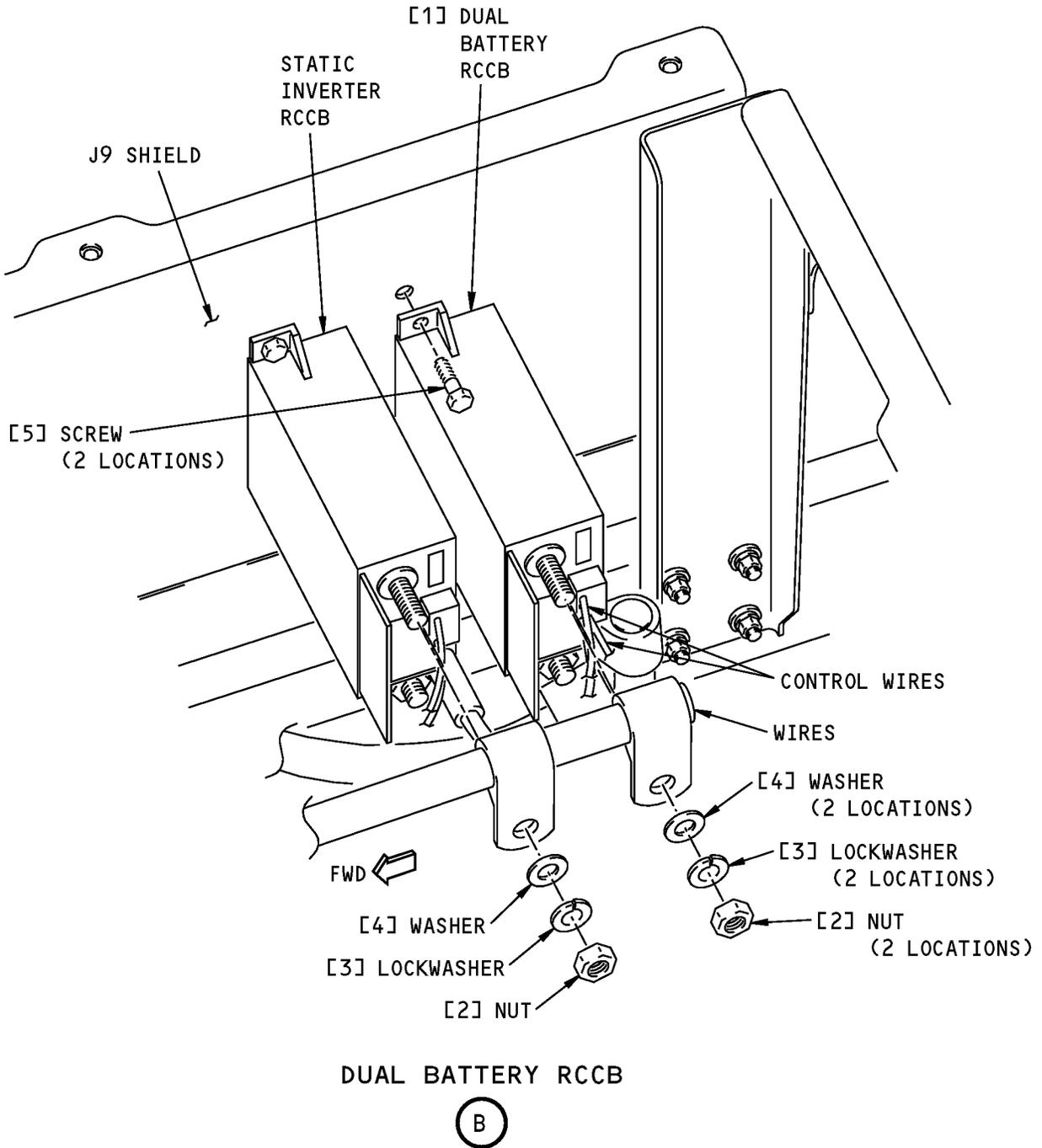
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**Dual Battery Remote Control Circuit Breaker (RCCB) Installation
Figure 401 (Sheet 2 of 3)/24-31-41-990-801**

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**Dual Battery Remote Control Circuit Breaker (RCCB) Installation
Figure 401 (Sheet 3 of 3)/24-31-41-990-801**

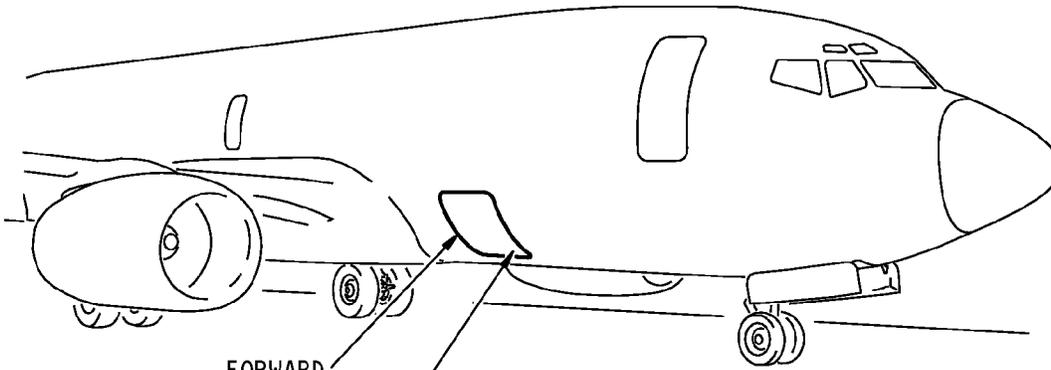
EFFECTIVITY
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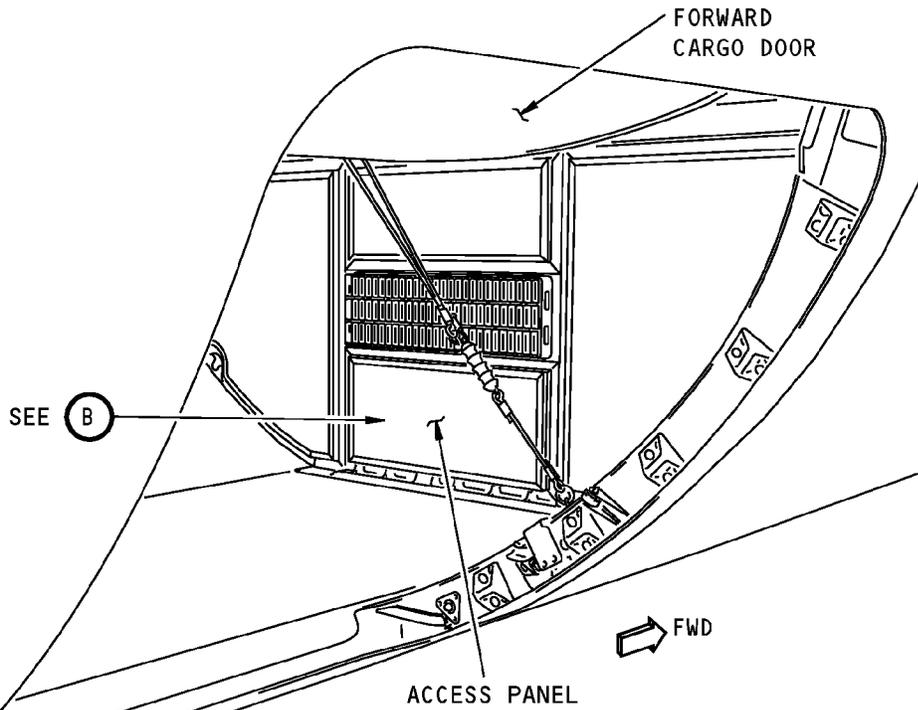
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FORWARD
CARGO DOOR

FORWARD CARGO
COMPARTMENT

SEE (A)



SEE (B)

FORWARD
CARGO DOOR

ACCESS PANEL

FWD

FORWARD CARGO COMPARTMENT

(A)

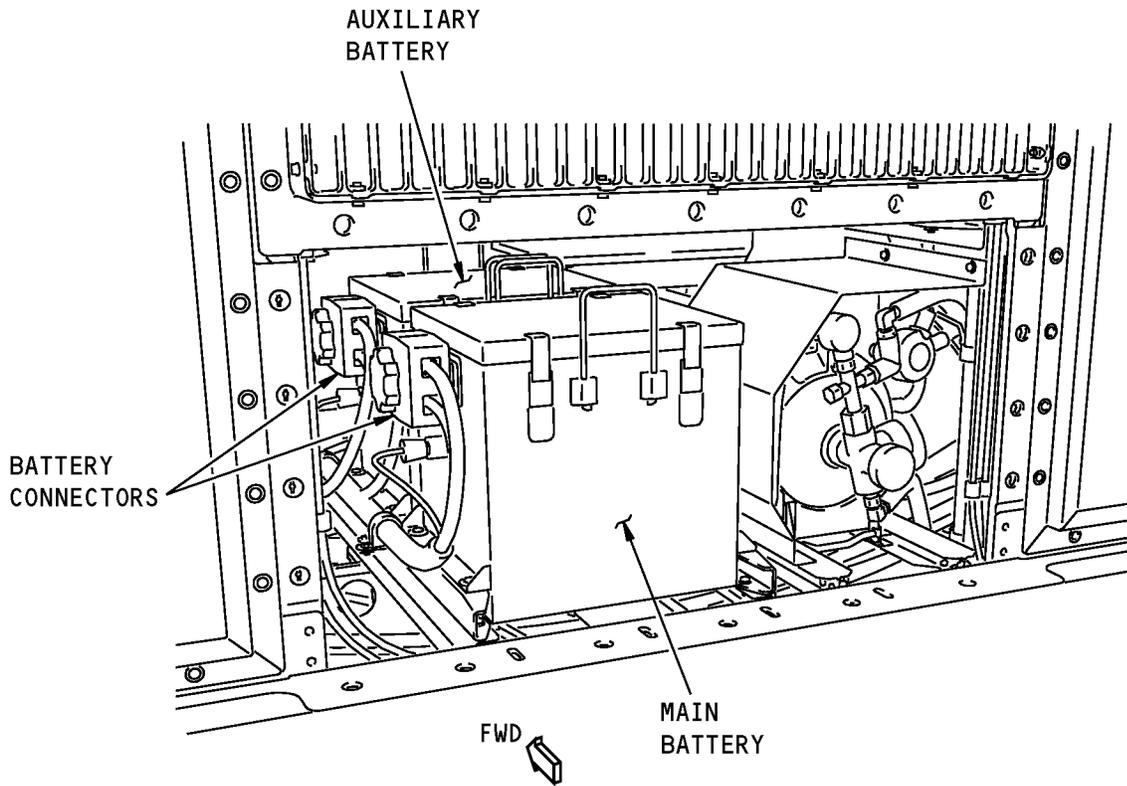
Battery Installation
Figure 402 (Sheet 1 of 2)/24-31-41-990-802

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BATTERIES



**Battery Installation
Figure 402 (Sheet 2 of 2)/24-31-41-990-802**

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TASK 24-31-41-400-801

3. Dual Battery RCCB Installation

(Figure 401, Figure 402)

A. General

- (1) The Dual Battery RCCB, C1212, is located on the J9 Battery Shield in the Main Equipment Center.

B. References

Reference	Title
24-22-00-860-813	Supply External Power (P/B 201)
24-22-00-860-814	Remove External Power (P/B 201)
24-31-21-710-801	Battery Charger Operational Test (P/B 501)
24-31-31-710-801	Auxiliary Battery Charger Operational Test (P/B 501)
SWPM 20-83-00	Standard Wiring Practices Manual

C. Location Zones

Zone	Area
117	Electrical and Electronics Compartment - Left
121	Forward Cargo Compartment - Left
122	Forward Cargo Compartment - Right
211	Flight Compartment - Left
212	Flight Compartment - Right

D. Access Panels

Number	Name/Location
117A	Electronic Equipment Access Door

E. Procedure

SUBTASK 24-31-41-420-001

- (1) Do these steps to install the Dual Battery RCCB [1]:
 - (a) Hold the Dual Battery RCCB [1] in position.
 - (b) Install the two screws [5] that hold the Dual Battery RCCB [1].
 - (c) Install the wires on the terminal studs.
 - (d) Install the two nuts [2], lockwashers [3] and washers [4] on both terminal studs on the Dual Battery RCCB [1].
 - (e) Install the nut [2], lockwasher [3] and washer [4] on the top terminal stud on the Static Inverter RCCB [1].
 - (f) Tighten the nuts to 40-45 inch-pounds (4.5-5.1 Newton meters).
 - (g) Install the control wires into sockets on the RCCB [1] per the identification tags SWPM 20-83-00.
 - (h) Install the access cover on top of the J9 shield.

SUBTASK 24-31-41-420-002

- (2) Re-connect the battery connector to the main battery per the steps that follow:

NOTE: Do not connect the battery connector to the auxiliary battery until after the check of the dual battery RCCB is complete.

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- (a) Gain access to the forward cargo area.
- (b) Re-connect the battery connector to the main battery.
- (c) Remove the safety tags and close these circuit breakers:

Battery Shield, J9

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	4	C00142	BATTERY CHARGER
A	5	C01340	BATTERY BUS

NOTE: Do not close the AUX BATTERY CHARGER circuit breaker until after the check of the dual battery RCCB is complete.

F. Dual Battery RCCB Installation Test

SUBTASK 24-31-41-710-003

- (1) Do a check of the Dual Battery RCCB per the steps that follow:
 - (a) Do this task: Supply External Power, TASK 24-22-00-860-813.
 - (b) Set the DC Meter Selector Switch on the P5-13 panel to the AUX BAT position.
 - (c) Set the BAT switch on the P5-13 panel to the ON position.
 - (d) Make sure the DC meter on the P5-13 panel shows this value:
 - 1) DC VOLTS = 0
 - (e) Set the STANDBY POWER switch on the P5-5 panel to the BAT position.
 - (f) Make sure the DC meter on the P5-13 panel shows this value:
 - 1) DC VOLTS = 22-28
 - (g) Set the STANDBY POWER switch on the P5-5 panel to the AUTO position.
 - (h) Make sure the DC meter on the P5-13 panel shows this value:
 - 1) DC VOLTS = 0

SUBTASK 24-31-41-420-004

- (2) Re-connect the battery connector to the auxiliary battery per the steps that follow:
 - (a) Gain access to the forward cargo area.
 - (b) Re-connect the battery connector to the auxiliary battery.
 - (c) Install the access panel that covers the batteries.

SUBTASK 24-31-41-860-011

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

Battery Shield, J9

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	3	C01209	AUX BAT CHARGER

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SUBTASK 24-31-41-420-005

- (4) Install the access cover on top of the J39 shield.

HAP ALL

SUBTASK 24-31-41-710-004

- (5) Do a check of the main battery charger per the steps that follow:

<p>EFFECTIVITY</p> <p>HAP ALL</p>

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(a) Do this task: Battery Charger Operational Test, TASK 24-31-21-710-801.

SUBTASK 24-31-41-710-005

(6) Do a check of the auxiliary battery charger per the steps that follow:

(a) Do this task: Auxiliary Battery Charger Operational Test, TASK 24-31-31-710-801.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 24-31-41-410-004

(1) Close this access panel:

<u>Number</u>	<u>Name/Location</u>
117A	Electronic Equipment Access Door

SUBTASK 24-31-41-860-012

(2) Do this task: Remove External Power, TASK 24-22-00-860-814.

————— **END OF TASK** —————

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DUAL BATTERY REMOTE CONTROL CIRCUIT BREAKER (RCCB) - ADJUSTMENT/TEST

1. General

- A. This procedure contains scheduled maintenance task data.
- B. This procedure has this task:
 - (1) The Operational Test of the Dual Battery RCCB

TASK 24-31-41-710-801

2. Operational Test for the Dual Battery RCCB

(Figure 501)

- A. General
 - (1) This procedure is a scheduled maintenance task.
- B. References

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

C. Location Zones

Zone	Area
117	Electrical and Electronics Compartment - Left
121	Forward Cargo Compartment - Left
122	Forward Cargo Compartment - Right
211	Flight Compartment - Left
212	Flight Compartment - Right

D. Access Panels

Number	Name/Location
117A	Electronic Equipment Access Door

E. Prepare for Test

SUBTASK 24-31-41-860-005

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

SUBTASK 24-31-41-860-006

- (2) Set the STANDBY POWER switch on the P5-5 panel to the OFF position.

SUBTASK 24-31-41-860-007

- (3) Set the BAT switch on the P5-13 panel to the OFF position.

SUBTASK 24-31-41-010-002

- (4) Open this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

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- (a) Remove the access cover on top of the J39 shield to get access to the circuit breakers.

HAP ALL

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HAP ALL

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

Battery Shield, J9

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	3	C01209	AUX BAT CHARGER

SUBTASK 24-31-41-020-003

(5) Disconnect the battery connector from the auxiliary battery per the steps that follow:

NOTE: Do not disconnect the battery connector from the main battery. The applicable connector can be access through the Electrical and Electronics compartment (EE Bay) or the forward cargo access panel.

(a) Gain access to the forward cargo area or the Electrical and Electronics compartment (EE Bay).

1) If you access in the forward cargo area, then remove the access panel that covers the batteries.

(b) Disconnect the battery connector from the auxiliary battery.

NOTE: Do not let the terminals on the connector rest against the airplane structure.

F. Operational Test

SUBTASK 24-31-41-710-002

(1) Do a check of the Dual Battery RCCB per the steps that follow:

(a) Set the DC Meter Selector Switch on the P5-13 panel to the AUX BAT position.

(b) Set the BAT switch on the P5-13 panel to the ON position.

(c) Make sure the DC meter on the P5-13 panel shows this value:

1) DC VOLTS = 0

(d) Set the STANDBY POWER switch on the P5-5 panel to the BAT position.

(e) Make sure the DC meter on the P5-13 panel shows this value:

1) DC VOLTS = 22-28

(f) Set the STANDBY POWER switch on the P5-5 panel to the AUTO position.

(g) Make sure the DC meter on the P5-13 panel shows this value:

1) DC VOLTS = 0

G. Put the Airplane Back to Its Usual Condition

SUBTASK 24-31-41-420-003

(1) Re-connect the battery connector to the auxiliary battery per the steps that follow:

(a) Gain access to the forward cargo area or the EE Bay.

(b) Re-connect the battery connector to the auxiliary battery.

(c) If you access in the forward cargo area, then install the access panel that covers the batteries.

SUBTASK 24-31-41-860-008

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

Battery Shield, J9

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	3	C01209	AUX BAT CHARGER

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SUBTASK 24-31-41-860-013

(3) Install the access cover on top of the J39 shield.

HAP ALL

SUBTASK 24-31-41-410-003

(4) Close this access panel:

<u>Number</u>	<u>Name/Location</u>
117A	Electronic Equipment Access Door

SUBTASK 24-31-41-860-009

(5) Do this task: Remove External Power, TASK 24-22-00-860-814.

SUBTASK 24-31-41-860-010

(6) Set the BAT switch on the P5-13 panel to the OFF position.

————— **END OF TASK** —————

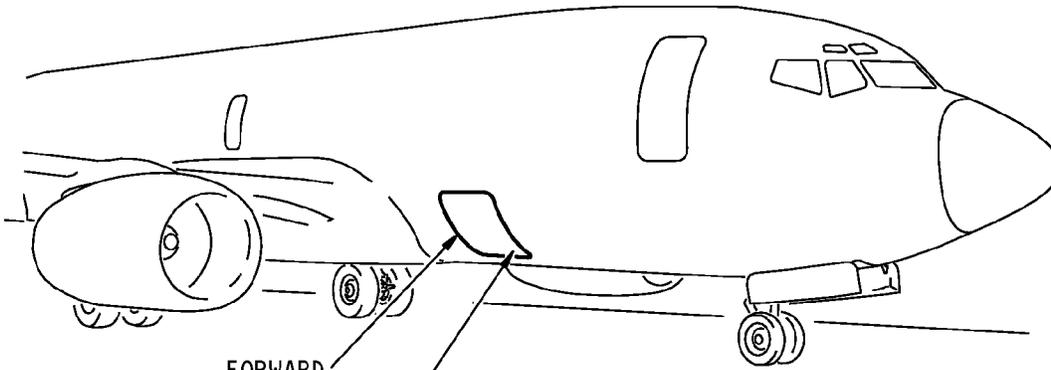
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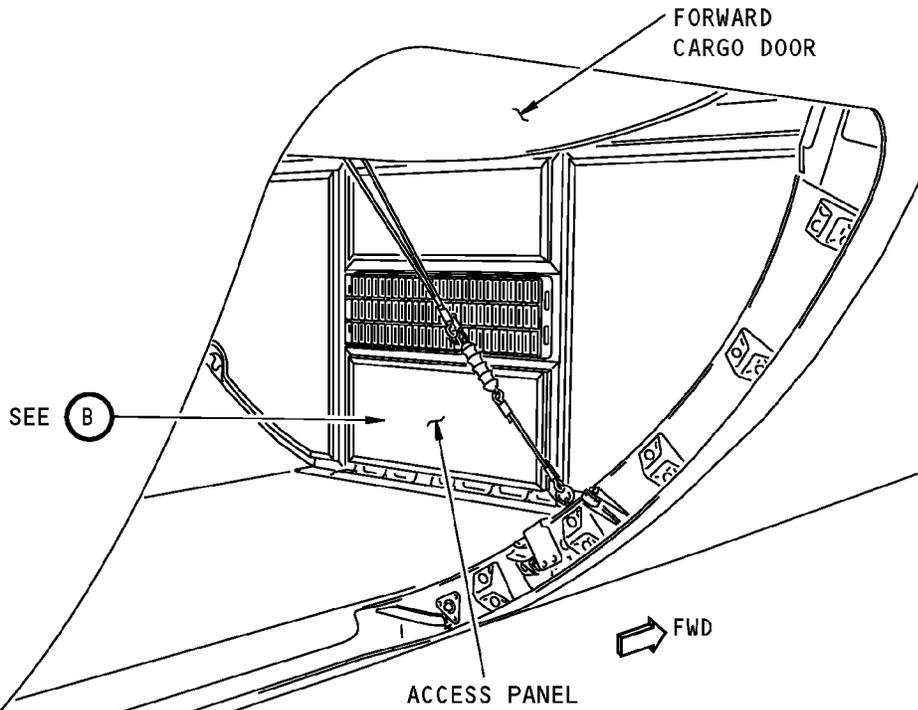
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FORWARD
CARGO DOOR

FORWARD CARGO
COMPARTMENT

SEE (A)



FORWARD
CARGO DOOR

SEE (B)

FWD

ACCESS PANEL

FORWARD CARGO COMPARTMENT

(A)

Batteries

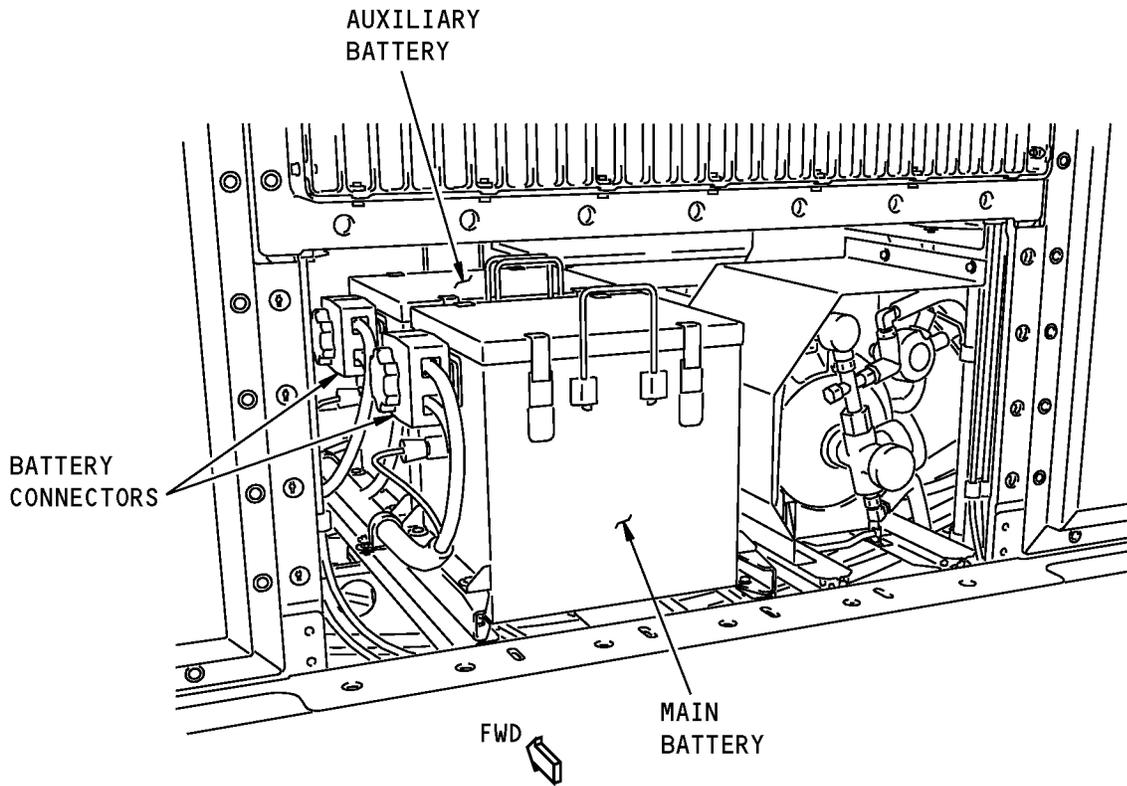
Figure 501 (Sheet 1 of 2)/24-31-41-990-803

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BATTERIES

(B)

**Batteries
Figure 501 (Sheet 2 of 2)/24-31-41-990-803**

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TRANSFORMER RECTIFIER UNIT - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

- (1) A removal of the transformer rectifier unit (TRU).
- (2) An installation of the transformer rectifier unit (TRU).

B. The removal and installation procedures are the same for all of the units.

TASK 24-32-11-000-801

2. Transformer Rectifier Unit Removal

(Figure 401)

A. General

(1) There are 3 TRUs in the Electrical Power System. The TRU's are located as follows:

- (a) TRU 1, T11 is located on the E2-1 Equipment Rack
- (b) TRU 2, T12 is located on the E4-2 Equipment Rack
- (c) TRU 3, T13 is located on the E4-2 Equipment Rack

B. References

Reference	Title
20-10-07-000-801	E/E Box Removal (P/B 201)

C. Location Zones

Zone	Area
117	Electrical and Electronics Compartment - Left
118	Electrical and Electronics Compartment - Right

D. Access Panels

Number	Name/Location
117A	Electronic Equipment Access Door

E. Prepare for the Removal

SUBTASK 24-32-11-010-001

(1) Open this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

SUBTASK 24-32-11-860-001

(2) Before you remove TRU number 1, do this step:

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

Power Distribution Panel Number 1, P91

Row	Col	Number	Name
A	6	C00806	TRU 1

SUBTASK 24-32-11-860-002

(3) Before you remove TRU number 2, do this step:

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

Power Distribution Panel Number 2, P92

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	4	C00807	TRU 2

SUBTASK 24-32-11-860-003

- (4) Before you remove TRU 3, do this step:

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

Power Distribution Panel Number 1, P91

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	4	C00941	TRU 3 ALTN

Power Distribution Panel Number 2, P92

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	6	C00808	TRU 3

F. Transformer Rectifier Unit (TRU) Removal

SUBTASK 24-32-11-020-001

- (1) Remove the transformer rectifier unit [1], do this task: E/E Box Removal, TASK 20-10-07-000-801.

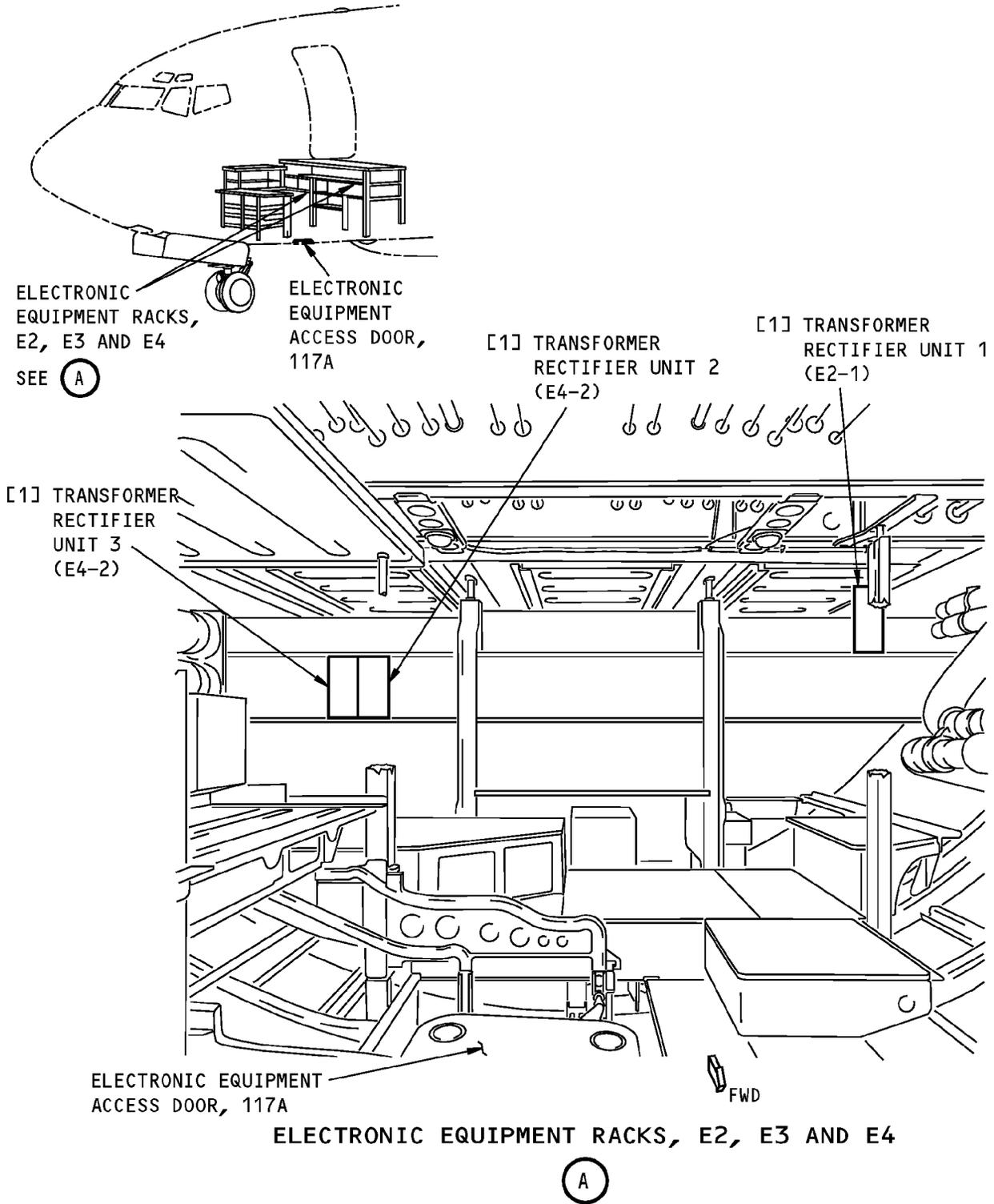
————— **END OF TASK** —————

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Transformer Rectifier Units (TRU) Installation
Figure 401/24-32-11-990-801

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TASK 24-32-11-400-801

3. Transformer Rectifier Unit Installation

(Figure 401)

A. General

- (1) There are 3 TRUs in the Electrical Power System. The TRU's are located as follows:
 - (a) TRU 1, T11 is located on the E2-1 Equipment Rack
 - (b) TRU 2, T12 is located on the E4-2 Equipment Rack
 - (c) TRU 3, T13 is located on the E4-2 Equipment Rack

B. References

Reference	Title
20-10-07-400-801	E/E Box Installation (P/B 201)
24-22-00-860-811	Supply Electrical Power (P/B 201)
24-22-00-860-812	Remove Electrical Power (P/B 201)

C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Unit	24-32-11-02-005 24-32-11-04-010	HAP 031-054, 101-999 HAP ALL

D. Location Zones

Zone	Area
117	Electrical and Electronics Compartment - Left
118	Electrical and Electronics Compartment - Right

E. Access Panels

Number	Name/Location
117A	Electronic Equipment Access Door

F. Transformer Rectifier Unit (TRU) Installation

SUBTASK 24-32-11-010-002

- (1) Open the applicable access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

SUBTASK 24-32-11-420-001

- (2) Install the transformer rectifier unit [1], do this task: E/E Box Installation, TASK 20-10-07-400-801.

SUBTASK 24-32-11-860-004

- (3) If you installed the TRU 1, do this step:
 - (a) Remove the safety tag and close this circuit breaker:

Power Distribution Panel Number 1, P91

Row	Col	Number	Name
A	6	C00806	TRU 1

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SUBTASK 24-32-11-860-005

- (4) If you installed TRU 2, do this step:
 - (a) Remove the safety tag and close this circuit breaker:

Power Distribution Panel Number 2, P92

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	4	C00807	TRU 2

SUBTASK 24-32-11-860-006

- (5) If you installed TRU 3, do this step:
 - (a) Remove the safety tags and close these circuit breakers:

Power Distribution Panel Number 1, P91

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	4	C00941	TRU 3 ALTN

Power Distribution Panel Number 2, P92

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	6	C00808	TRU 3

SUBTASK 24-32-11-410-001

- (6) Close this access panel:

<u>Number</u>	<u>Name/Location</u>
117A	Electronic Equipment Access Door

G. Transformer Rectifier Unit (TRU) Installation Test

SUBTASK 24-32-11-860-007

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

SUBTASK 24-32-11-700-001

- (2) Do a test of the TRU as follows:
 - (a) If you replaced TRU 1, set the DC Meter Selector switch on the P5-13 Electrical Meters, Battery and Galley Power module to the TR 1 position.
 - (b) If you replaced TRU 2, set the DC Meter Selector switch on the P5-13 Electrical Meters, Battery and Galley Power module to the TR 2 position.
 - (c) If you replaced TRU 3, set the DC Meter Selector switch on the P5-13 Electrical Meters, Battery and Galley Power module to the TR 3 position.
 - (d) Make sure the DC meter on the P5-13 panel shows this value:
 - 1) DC VOLTS = 22-30

NOTE: The total current drawn is almost shared equally by all 3 TRUs.
 - (e) Make sure the amber TRU fail light on the P5-13 panel is off.

H. Put the Airplane Back to Its Usual Condition

SUBTASK 24-32-11-860-008

- (1) Do this task: Remove Electrical Power, TASK 24-22-00-860-812.

END OF TASK

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STANDBY POWER SYSTEM - ADJUSTMENT/TEST

1. General

- A. This procedure contains scheduled maintenance task data.
- B. This procedure has this task:
 - (1) The Operational Test of the Standby Power System.

TASK 24-34-00-710-802

2. The Operational Test of the Standby Power System

(Figure 501)

A. General

- (1) This procedure is a scheduled maintenance task.

B. References

Reference	Title
24-22-00-860-811	Supply Electrical Power (P/B 201)
24-22-00-860-812	Remove Electrical Power (P/B 201)

C. Location Zones

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

D. Prepare for the Test

SUBTASK 24-34-00-860-007

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

E. The Operation Test

SUBTASK 24-34-00-710-002

- (1) Do an operational check of the Standby Power system as follows:
 - (a) Make sure the BAT switch on the P5-13 panel is set to the ON position.
 - (b) Make sure the STANDBY POWER switch on the P5-5 panel is set to the AUTO position.
 - (c) Make sure the STANDBY PWR OFF light on the P5-5 panel is off.
 - (d) Set both the AC meter selector switch and the DC meter selector switch on the P5-13 panel to the STBY PWR position.
 - (e) Make sure the AC meter shows these values:
 - 1) AC VOLTS = 110-120
 - 2) CPS FREQ = 395-405
 - (f) Make sure the DC meter shows this value:
 - 1) DC VOLTS = 22-30
 - (g) Set the STANDBY POWER switch on the P5-5 panel to the OFF position.

NOTE: Ignore the flight deck effects that are not specified in this test procedure.

 - (h) Make sure the STANDBY PWR OFF light on the P5-5 panel comes on.
 - (i) Make sure the AC meter shows these values:
 - 1) AC VOLTS = 0

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2) CPS FREQ = BLANK

NOTE: When the AC voltage goes below approximately 12 VAC, the CPS FREQ will become blank.

(j) Make sure the DC meter shows this value:

1) DC VOLTS = 0

(k) Set the STANDBY POWER switch on the P5-5 panel to the BAT position.

(l) Make sure the STANDBY PWR OFF light on the P5-5 panel goes off.

(m) Make sure the AC meter shows these values:

1) AC VOLTS = 110-120

2) CPS FREQ = 395-405

(n) Make sure the DC meter shows this value:

1) DC VOLTS = 22-30

(o) Set the STANDBY POWER switch on the P5-5 panel to the AUTO position.

(p) Set the applicable switch(es) on the P5-4 panel to the OFF position:

NOTE: This step is to remove power from the 115 VAC Transfer Buses.

1) GRD POWER control switch

2) APU GEN control switches

3) GEN 1 and GEN 2 control switches

(q) Make sure both TRANSFER BUS OFF lights on the P5-4 panel are on.

(r) Set the DC meter selector switch on the P5-13 panel to the BAT position.

(s) Make sure the DC meter shows these values:

1) DC VOLTS = 22-28

2) DC AMPS = a negative value

NOTE: A negative DC AMP value indicates that the battery is discharging.

(t) Set the DC meter selector switch on the P5-13 panel to the AUX BAT position.

(u) Make sure the DC meter shows these values:

1) DC VOLTS = 22-28

2) DC AMPS = a negative value

NOTE: A negative DC AMP value indicates that the battery is discharging.

(v) Make sure the BAT DISCHARGE light on the P5-13 panel comes on. The light will come on when any of these conditions are met:

1) The battery current is greater than 5 Amps for more than 95 seconds.

2) The battery current is greater than 15 Amps for more than 25 seconds.

3) The battery current is greater than 100 Amps for more than 1.2 seconds.

(w) Set the applicable switch(es) on the P5-4 panel back to the ON position:

1) GRD POWER control switch

2) APU GEN control switches

3) GEN 1 and GEN 2 control switches

(x) Make sure the BAT DISCHARGE light on the P5-13 panel goes off.

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F. Put the airplane in its usual condition.

SUBTASK 24-34-00-860-008

- (1) If electrical power is not needed, do this task: Remove Electrical Power, TASK 24-22-00-860-812.

NOTE: Leave electrical power on, if the batteries need charging.

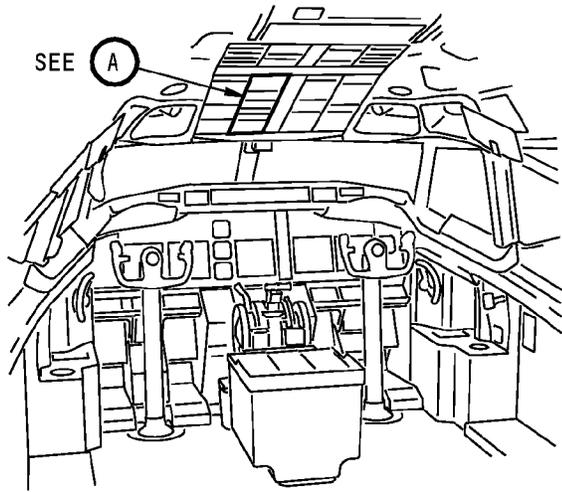
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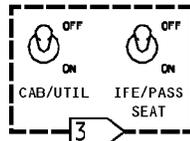
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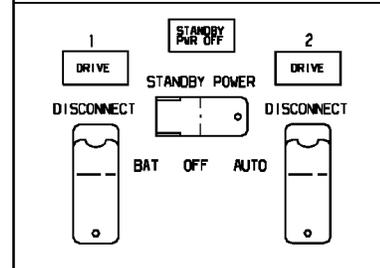
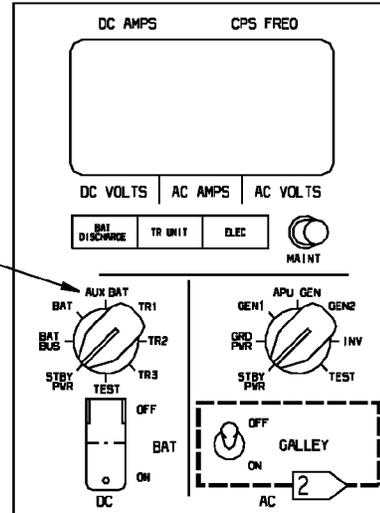
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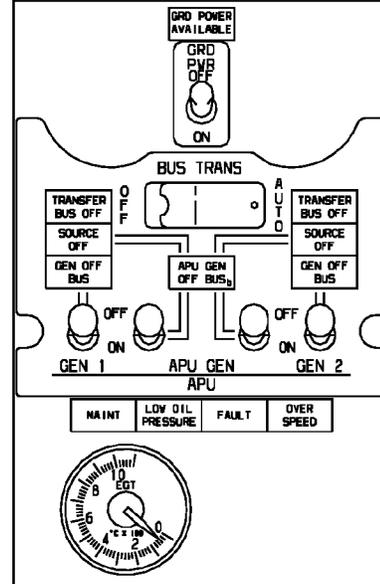
FLIGHT COMPARTMENT



P5-13



P5-5



P5-4

- 1 AIRPLANES WITH AUXILIARY BATTERY
- 2 AIRPLANES WITH GALLEY SWITCH
- 3 AIRPLANES WITH CABIN UTILITY AND IFE SWITCHES



AC/DC Power Control and Display Panels
Figure 501/24-34-00-990-803

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STANDBY POWER CONTROL UNIT (SPCU) - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

- (1) A removal of the SPCU.
- (2) An installation of the SPCU.

TASK 24-34-11-000-801

2. SPCU Removal

(Figure 401)

A. General

- (1) The Standby Power Control Unit, M1720 is located on the P6 panel.

B. References

Reference	Title
20-10-07-000-801	E/E Box Removal (P/B 201)
20-40-12-000-802	ESDS Handling for Metal Encased Unit Removal (P/B 201)
24-22-00-860-812	Remove Electrical Power (P/B 201)

C. Location Zones

Zone	Area
212	Flight Compartment - Right

D. Access Panels

Number	Name/Location
117A	Electronic Equipment Access Door

E. Prepare for the removal

SUBTASK 24-34-11-860-001

- (1) Do this task: Remove Electrical Power, TASK 24-22-00-860-812.

SUBTASK 24-34-11-010-001

- (2) Open this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

HAP 031-054, 101-999

SUBTASK 24-34-11-010-002

- (3) Remove the access cover on top of the J39 shield to get access to the circuit breaker.

HAP ALL

SUBTASK 24-34-11-860-005

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

Battery Shield, J9

Row	Col	Number	Name
A	5	C01340	BATTERY BUS

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F. Standby Power Control Unit Removal

SUBTASK 24-34-11-910-001

CAUTION: DO NOT TOUCH THE CONTROL UNIT BEFORE YOU DO THE PROCEDURE FOR DEVICES THAT ARE SENSITIVE TO ELECTROSTATIC DISCHARGE. ELECTROSTATIC DISCHARGE CAN CAUSE DAMAGE TO THE CONTROL UNIT.

- (1) Before you touch the SPCU [1], do this task: ESDS Handling for Metal Encased Unit Removal, TASK 20-40-12-000-802.

SUBTASK 24-34-11-020-001

- (2) To remove the SPCU [1] from the P6 panel, do this task: E/E Box Removal, TASK 20-10-07-000-801.

————— **END OF TASK** —————

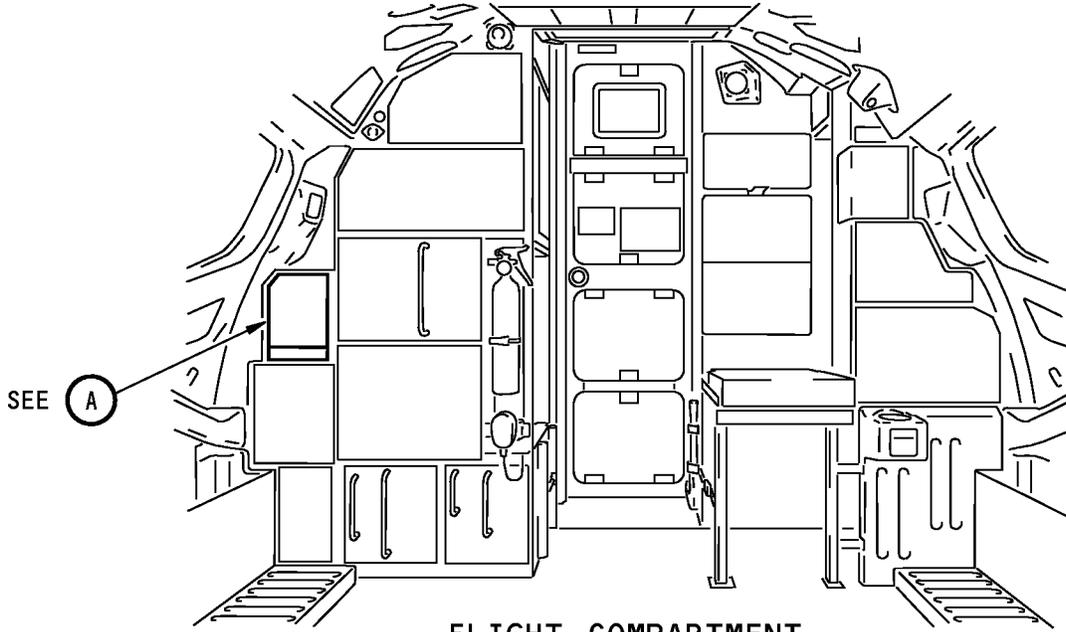
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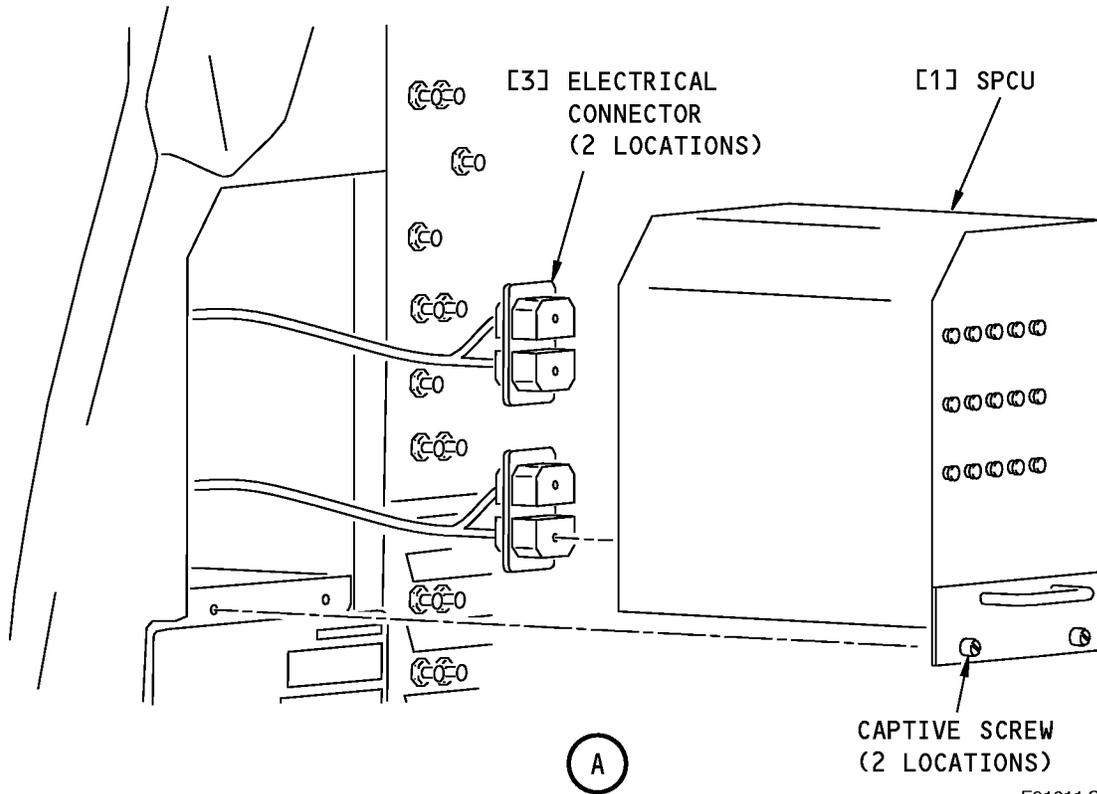
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**FLIGHT COMPARTMENT
(VIEW IN THE AFT DIRECTION)**



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**Standby Power Control Unit (SPCU) Installation
Figure 401/24-34-11-990-801**

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TASK 24-34-11-400-801

3. SPCU Installation

(Figure 401)

A. General

(1) The Standby Power Control Unit, M1720 is located on the P6 panel.

B. References

Reference	Title
20-10-07-400-801	E/E Box Installation (P/B 201)
20-40-12-400-802	ESDS Handling for Metal Encased Unit Installation (P/B 201)
24-22-00-860-813	Supply External Power (P/B 201)
24-22-00-860-814	Remove External Power (P/B 201)

C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	SPCU	24-34-11-01-005	HAP 001-007
		24-34-11-02-005	HAP 008-013, 015-026, 028-030
		24-34-11-02-006	HAP 008-013, 015-026, 028-030
		24-34-11-03-005	HAP 031-054, 101-999

D. Location Zones

Zone	Area
212	Flight Compartment - Right

E. Access Panels

Number	Name/Location
117A	Electronic Equipment Access Door

F. SPCU Installation

SUBTASK 24-34-11-910-002

CAUTION: DO NOT TOUCH THE CONTROL UNIT BEFORE YOU DO THE PROCEDURE FOR DEVICES THAT ARE SENSITIVE TO ELECTROSTATIC DISCHARGE. ELECTROSTATIC DISCHARGE CAN CAUSE DAMAGE TO THE CONTROL UNIT.

(1) Before you touch the SPCU [1], do this task: ESDS Handling for Metal Encased Unit Installation, TASK 20-40-12-400-802.

SUBTASK 24-34-11-420-001

(2) To install the SPCU [1] on the P6 panel, do this task: E/E Box Installation, TASK 20-10-07-400-801.

SUBTASK 24-34-11-860-006

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

Battery Shield, J9

Row	Col	Number	Name
A	5	C01340	BATTERY BUS

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HAP 031-054, 101-999

SUBTASK 24-34-11-410-001

- (4) Install the access cover on top of the J39 shield.

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G. SPCU Installation Test

SUBTASK 24-34-11-860-003

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

SUBTASK 24-34-11-710-002

- (2) Do a test of the SPCU, as follows:
 - (a) Make sure the STANDBY POWER switch on the P5-5 panel is in the AUTO position.
 - (b) Make sure the STANDBY PWR OFF light on the P5-5 panel is off.
 - (c) Set both the AC meter selector switch and the DC meter selector switch on the P5-13 panel to the STBY PWR position.
 - (d) Make sure the AC meter shows these values:
 - 1) AC VOLTS = 110-120
 - 2) CPS FREQ = 395-405
 - (e) Make sure the DC meter shows this value:
 - 1) DC VOLTS = 22-30
 - (f) Set the STANDBY POWER switch to the OFF position.
 - (g) Make sure the STANDBY POWER OFF light comes on.
 - (h) Make sure the AC meter shows these values:
 - 1) AC VOLTS = 0
 - 2) CPS FREQ = BLANK

NOTE: When the AC voltage goes below approximately 12 VAC, the CPS FREQ will become blank.
 - (i) Make sure the DC meter shows this value:
 - 1) DC VOLTS = 0
 - (j) Set the STANDBY POWER switch to the BAT position.
 - (k) Make sure the STANDBY POWER OFF light goes off.
 - (l) Make sure the AC meter shows these values:
 - 1) AC VOLTS = 110-120
 - 2) CPS FREQ = 395-405
 - (m) Make sure the DC meter shows these values:
 - 1) DC VOLTS = 22-30
 - (n) Set the STANDBY POWER switch to the AUTO position.

H. Put the Airplane Back to Its Usual Condition

SUBTASK 24-34-11-860-004

- (1) Do this task: Remove External Power, TASK 24-22-00-860-814.

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SUBTASK 24-34-11-410-002

(2) Close this access panel:

<u>Number</u>	<u>Name/Location</u>
117A	Electronic Equipment Access Door

————— **END OF TASK** —————

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STATIC INVERTER - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

- (1) Static Inverter Removal
- (2) Static Inverter Installation.

TASK 24-34-21-000-801

2. Static Inverter Removal

(Figure 401)

A. General

- (1) The M9 Static Inverter is located on the E2-2 equipment rack in the main equipment center.

B. References

Reference	Title
20-10-07-000-801	E/E Box Removal (P/B 201)
20-40-12-000-802	ESDS Handling for Metal Encased Unit Removal (P/B 201)

C. Location Zones

Zone	Area
117	Electrical and Electronics Compartment - Left

D. Access Panels

Number	Name/Location
117A	Electronic Equipment Access Door

E. Prepare for the Removal

SUBTASK 24-34-21-860-001

- (1) Set the STANDBY POWER switch on the P5-5 panel to the OFF position and attach a DO-NOT-OPERATE tag to it.

SUBTASK 24-34-21-860-002

- (2) Set the BAT switch on the P5-13 panel to the OFF position and attach a DO-NOT-OPERATE tag to it.

SUBTASK 24-34-21-860-003

- (3) Open this access panel:

<u>Number</u>	<u>Name/Location</u>
117A	Electronic Equipment Access Door

F. Static Inverter Removal

SUBTASK 24-34-21-910-001

CAUTION: DO NOT TOUCH THE STATIC INVERTER BEFORE YOU DO THE PROCEDURE FOR DEVICES THAT ARE SENSITIVE TO ELECTROSTATIC DISCHARGE. ELECTROSTATIC DISCHARGE CAN CAUSE DAMAGE TO THE STATIC INVERTER.

- (1) Before you touch the static inverter [1], do this task: ESDS Handling for Metal Encased Unit Removal, TASK 20-40-12-000-802.

SUBTASK 24-34-21-020-001

- (2) Do these steps to disconnect the static inverter [1]:

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- (a) Remove the electrical connector from the static inverter .
- (b) Remove the four screws [8], lockwashers [9] and washers [10] that hold the terminal block covers.
- (c) Remove the terminal block covers [11].
- (d) Put tags on the wires to identify them for installation.
- (e) Remove the nut [2], lockwasher [3] and washer [4] from the terminal stud.
- (f) Remove the nut [5], lockwasher [6] and washer [7] from the terminal stud.
- (g) Remove the wires from the terminal studs.

SUBTASK 24-34-21-020-002

- (3) Remove the static inverter [1]. To remove it, do this task: E/E Box Removal, TASK 20-10-07-000-801.

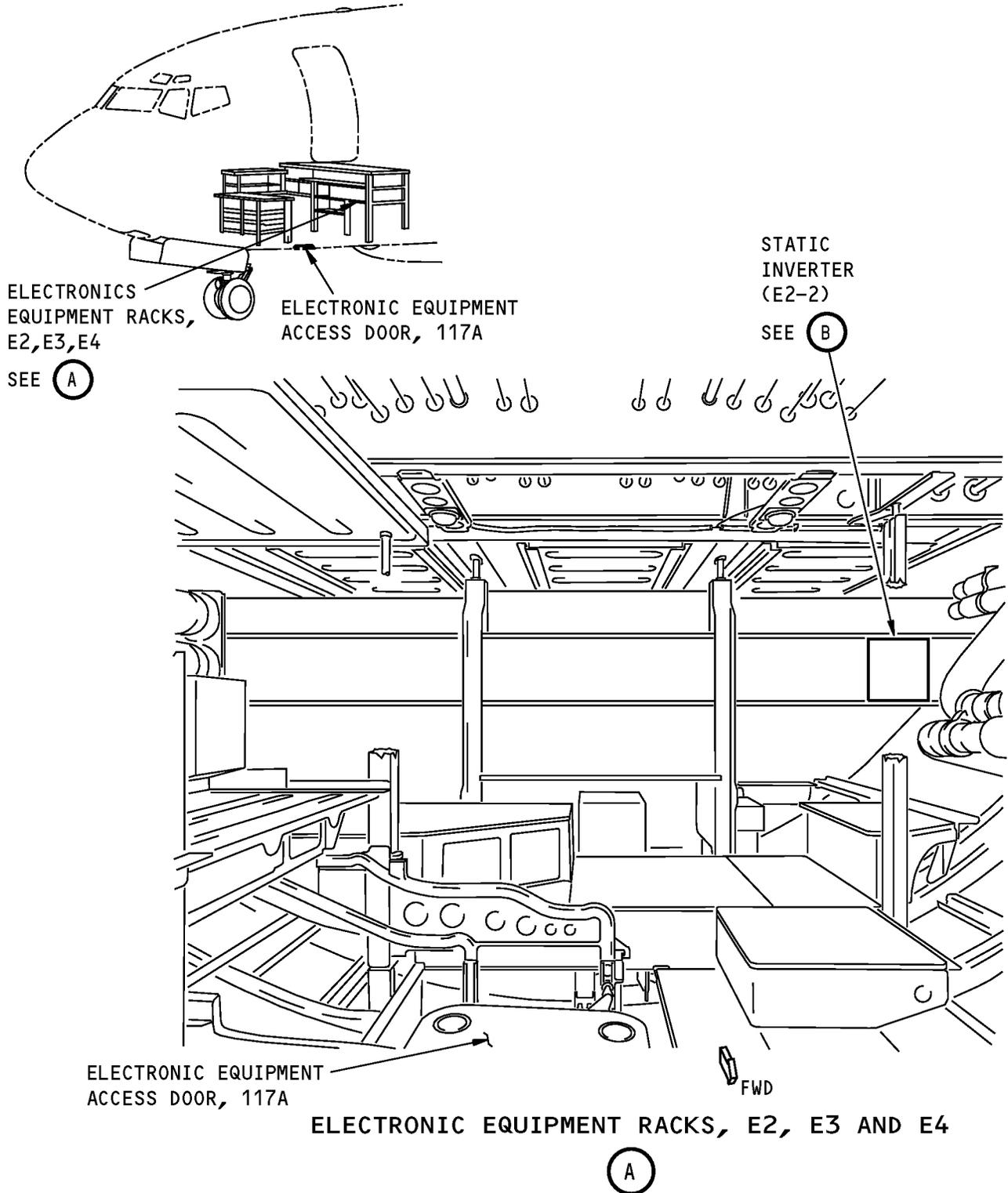
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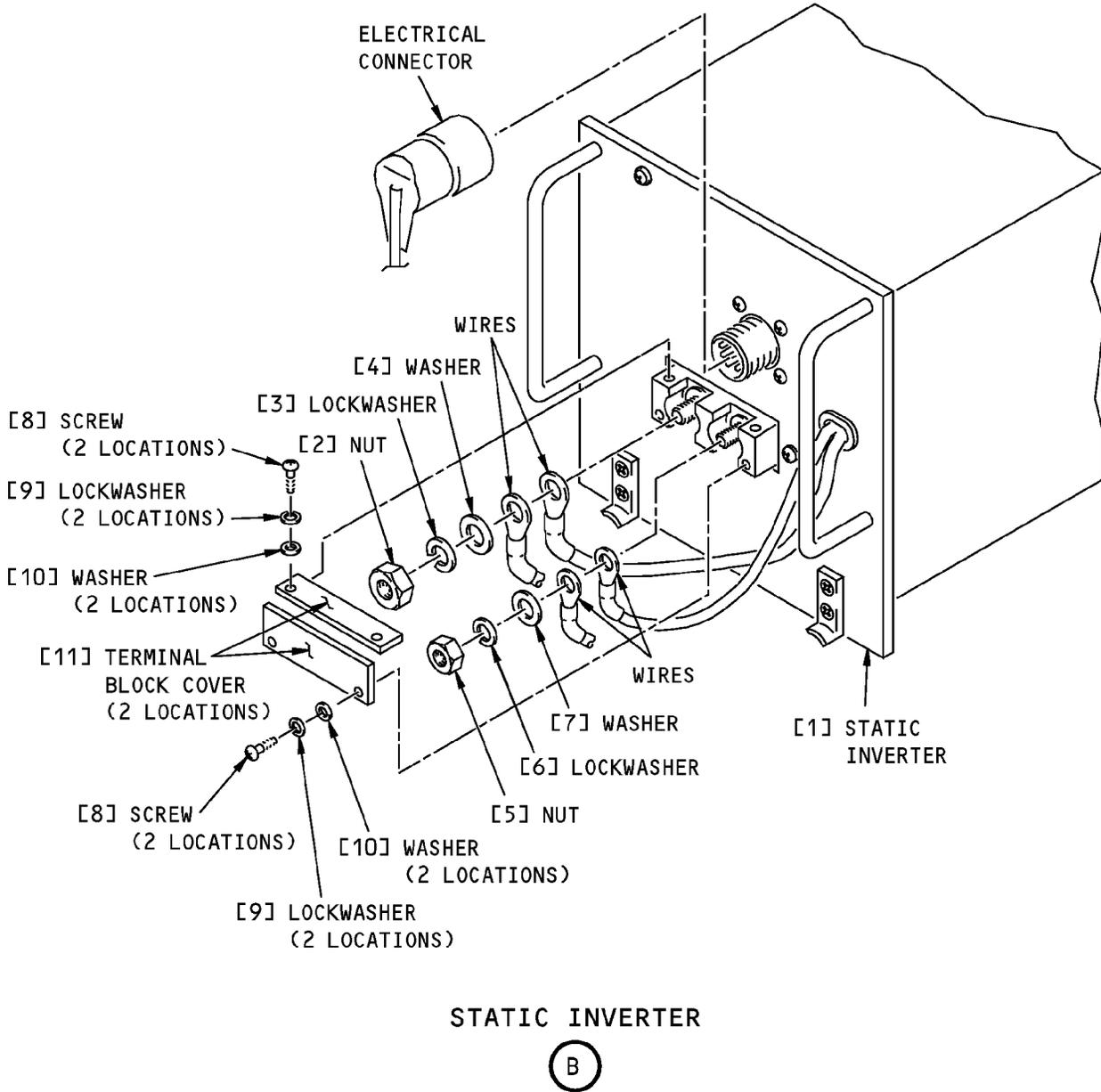
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Static Inverter Installation
Figure 401 (Sheet 1 of 2)/24-34-21-990-801

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**Static Inverter Installation
Figure 401 (Sheet 2 of 2)/24-34-21-990-801**

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TASK 24-34-21-400-801

3. Static Inverter Installation

(Figure 401)

A. General

(1) The M9 Static Inverter is located on the E2-2 equipment rack in the main equipment center.

B. References

Reference	Title
20-10-07-400-801	E/E Box Installation (P/B 201)
20-40-12-400-802	ESDS Handling for Metal Encased Unit Installation (P/B 201)

C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Static inverter	24-34-21-01-005	HAP ALL

D. Location Zones

Zone	Area
117	Electrical and Electronics Compartment - Left

E. Access Panels

Number	Name/Location
117A	Electronic Equipment Access Door

F. Static Inverter Installation

SUBTASK 24-34-21-480-001

WARNING: MAKE SURE THAT POWER IS STILL REMOVED FROM STATIC INVERTER WIRING BEFORE INSTALLING STATIC INVERTER. POWER PRESENT ON WIRES CAN CAUSE INJURY TO PERSONS.

CAUTION: DO NOT TOUCH THE STATIC INVERTER BEFORE YOU DO THE PROCEDURE FOR DEVICES THAT ARE SENSITIVE TO ELECTROSTATIC DISCHARGE. ELECTROSTATIC DISCHARGE CAN CAUSE DAMAGE TO THE STATIC INVERTER.

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

SUBTASK 24-34-21-420-001

(2) Install the static inverter [1]. To install it, do this task: E/E Box Installation, TASK 20-10-07-400-801.

SUBTASK 24-34-21-420-002

(3) Do these steps to connect the static inverter:

- (a) Put the wires on the terminal studs of the static inverter.
- (b) Install the nut [2], lockwasher [3] and washer [4] on the terminal stud.
- (c) Tighten the nut to 135-145 inch-pounds (15.3-16.4 Newton meters).
- (d) Install the nut [5], lockwasher [6] and washer [7] on the terminal stud.
- (e) Tighten the nut to 65-75 inch-pounds (7.3-8.5 Newton meters).
- (f) Do these steps to install the terminal block covers:
 - 1) Hold the two terminal block covers [11] in place.

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2) Install the four screws [8], lockwashers [9] and washers [10] that hold the terminal block covers.

(g) Install the electrical connector on the static inverter.

G. Static Inverter Installation Test

SUBTASK 24-34-21-910-002

(1) Do a check of the static inverter per the steps that follow:

(a) Set the BAT switch on the P5-13 panel to the ON position.

(b) Set the STANDBY POWER switch on the P5-5 panel to the BAT position.

(c) Set the AC Meter Selector Switch on the P5-13 panel to the INV position.

(d) Make sure the AC meter shows these values:

1) AC VOLTS = 110-120

2) CPS FREQ = 390-410

H. Put the Airplane Back to Its Usual Condition

SUBTASK 24-34-21-410-001

(1) Close this access panel:

<u>Number</u>	<u>Name/Location</u>
117A	Electronic Equipment Access Door

SUBTASK 24-34-21-860-008

(2) Set the STANDBY POWER switch on the P5-5 panel to the AUTO position.

SUBTASK 24-34-21-860-009

(3) Set the BAT switch on the P5-13 panel to the OFF position.

————— **END OF TASK** —————

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STATIC INVERTER REMOTE CONTROL CIRCUIT BREAKER (RCCB) - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

- (1) Static Inverter RCCB Removal
- (2) Static Inverter RCCB Installation.

TASK 24-34-31-000-803-002

2. Static Inverter RCCB Removal

(Figure 401, Figure 402)

A. General

- (1) The Static Inverter RCCB, C1341, is located on the J9 Battery Shield in the Main Equipment Center.

B. References

Reference	Title
SWPM 20-83-00	Standard Wiring Practices Manual

C. Location Zones

Zone	Area
117	Electrical and Electronics Compartment - Left
121	Forward Cargo Compartment - Left
122	Forward Cargo Compartment - Right

D. Access Panels

Number	Name/Location
117A	Electronic Equipment Access Door

E. Prepare for the Removal

SUBTASK 24-34-31-860-009-002

- (1) Set the STANDBY POWER switch on the P5-5 panel to the OFF position and attach a DO-NOT-OPERATE tag to it.

SUBTASK 24-34-31-860-010-002

- (2) Set the BAT switch on the P5-13 panel to the OFF position and attach a DO-NOT-OPERATE tag to it.

SUBTASK 24-34-31-010-003-002

- (3) Open this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

HAP 031-054, 101-999

- (a) Remove the access cover on top of the J39 shield to get access to the circuit breakers.

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

Battery Shield, J9

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	3	C01209	AUX BAT CHARGER
A	4	C00142	BATTERY CHARGER
A	5	C01340	BATTERY BUS

SUBTASK 24-34-31-020-007-002

- (4) Remove the battery connectors from the main and auxiliary batteries per the steps that follow:
- (a) Gain access to the forward cargo area.
 - (b) Remove the forward bulkhead liner that covers the batteries.
 - (c) Remove the battery connectors from both batteries.

NOTE: Do not let the terminals on the connector rest against the airplane structure.

F. Procedure

SUBTASK 24-34-31-020-008-002

- (1) Do these steps to remove the static inverter RCCB [1]:
- (a) Remove the access cover on top of the J9 shield to get access to the RCCB.
 - (b) Install identification tags on all wires attached to the RCCB before removing them.
 - (c) Remove the two nuts [2], lockwashers [3] and washers [4] from both terminal studs on the Static inverter RCCB.
 - (d) Remove the nut [2], lockwasher [3] and washer [4] from the top terminal stud on the Dual Battery RCCB.
- NOTE: This step must be done because the terminals are close together on the same wire.
- (e) Remove the wires from the terminal studs.
 - (f) Remove the control wires from the connector on the RCCB SWPM 20-83-00.
- NOTE: Be sure to install an identification tag on wire so that you can install the wire into the correct socket later.
- (g) Remove the two screws [5] that hold the RCCB to the panel.
 - (h) Remove the RCCB.

————— **END OF TASK** —————

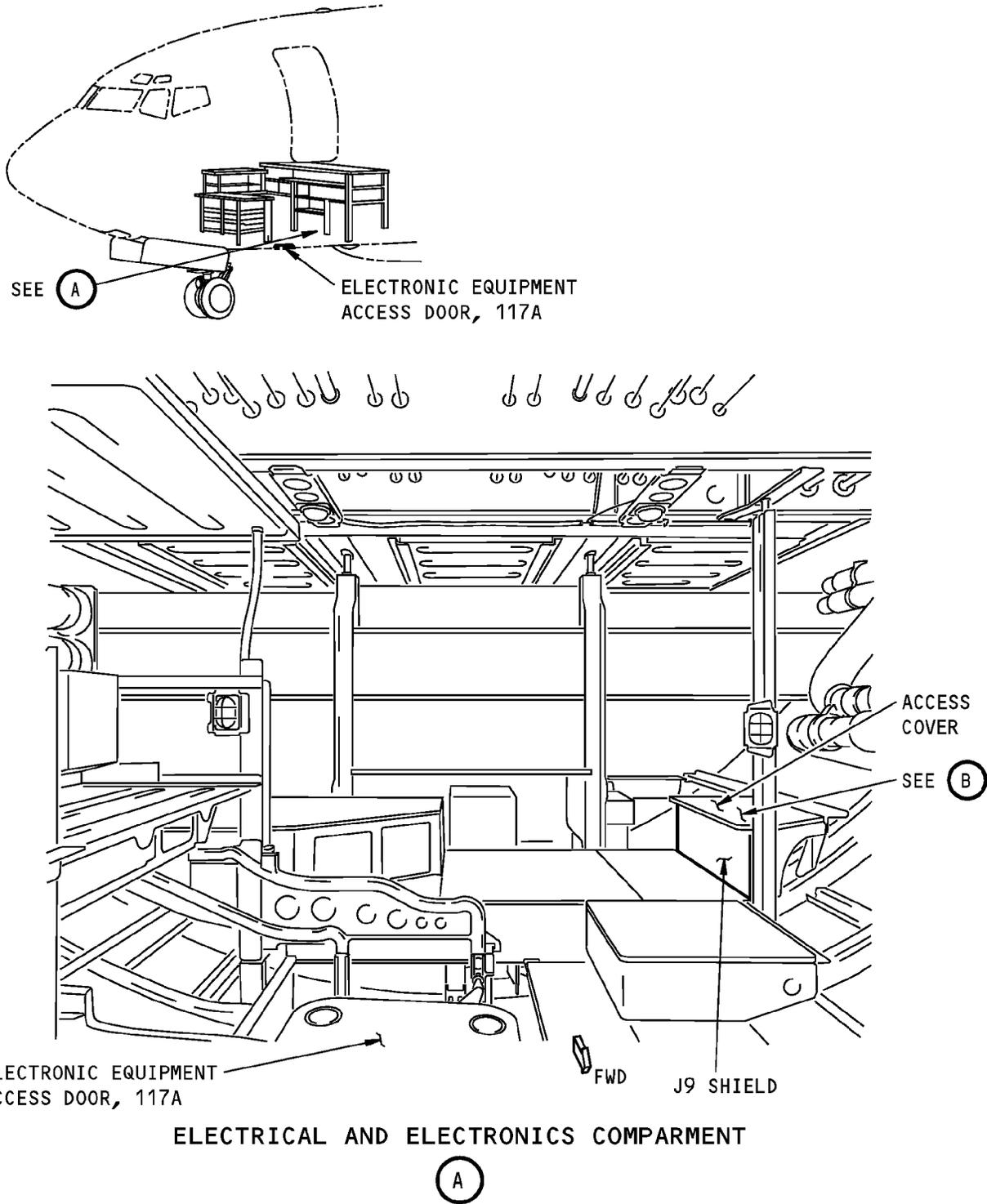
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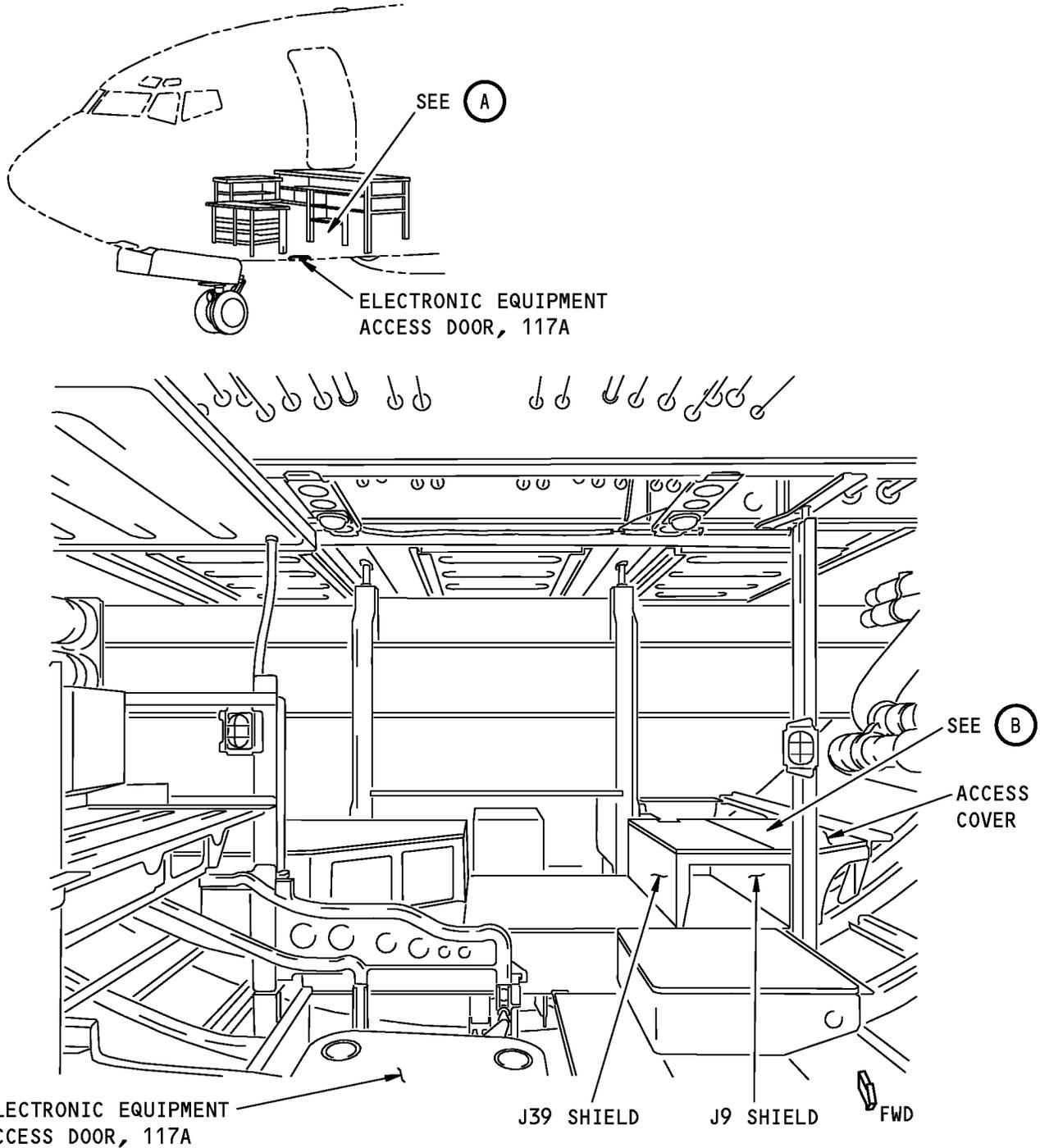


Static Inverter Remote Control Circuit Breaker (RCCB) Installation
Figure 401 (Sheet 1 of 3)/24-34-31-990-805-002

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ELECTRICAL AND ELECTRONICS COMPARTMENT

(A)

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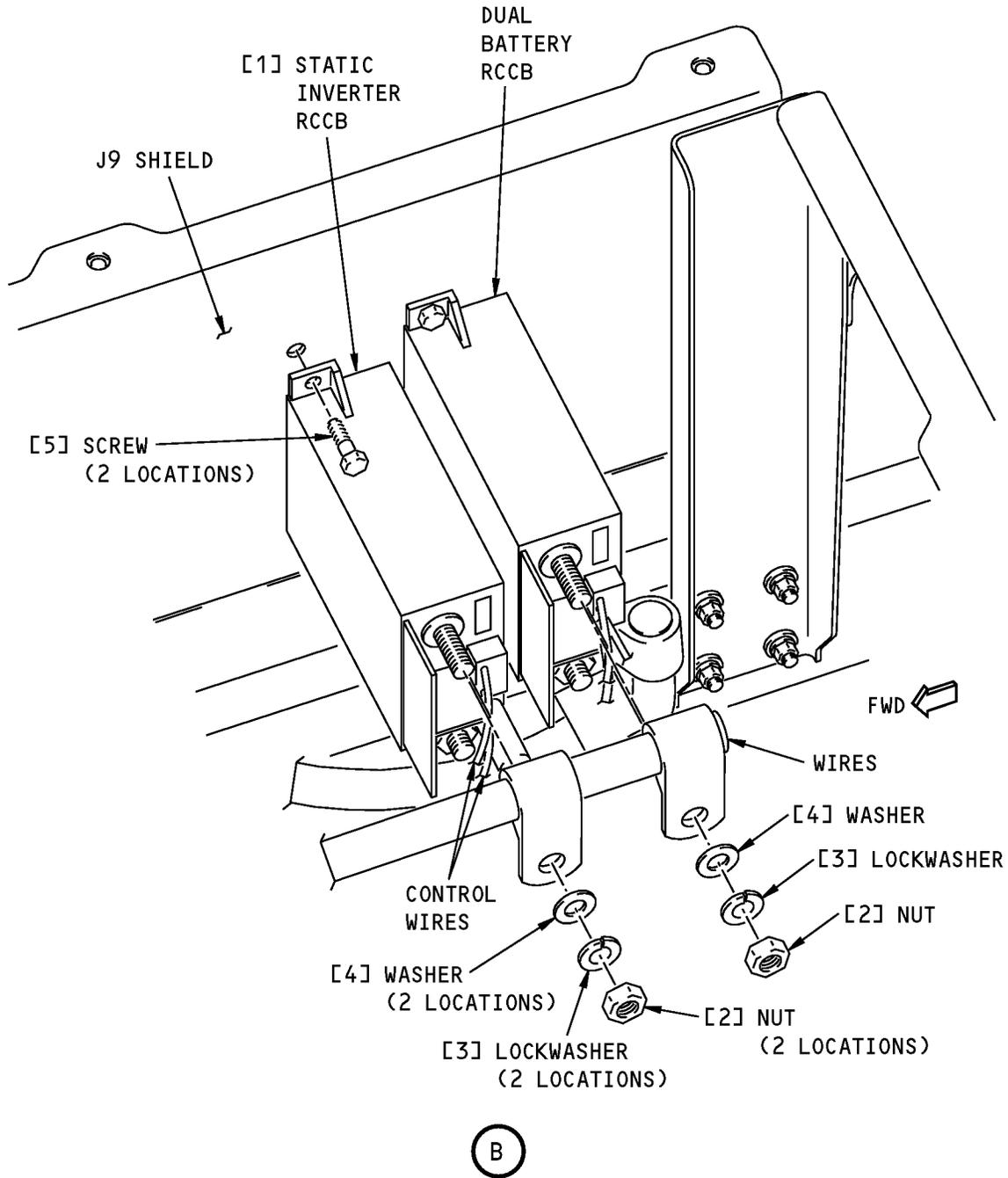
**Static Inverter Remote Control Circuit Breaker (RCCB) Installation
Figure 401 (Sheet 2 of 3)/24-34-31-990-805-002**

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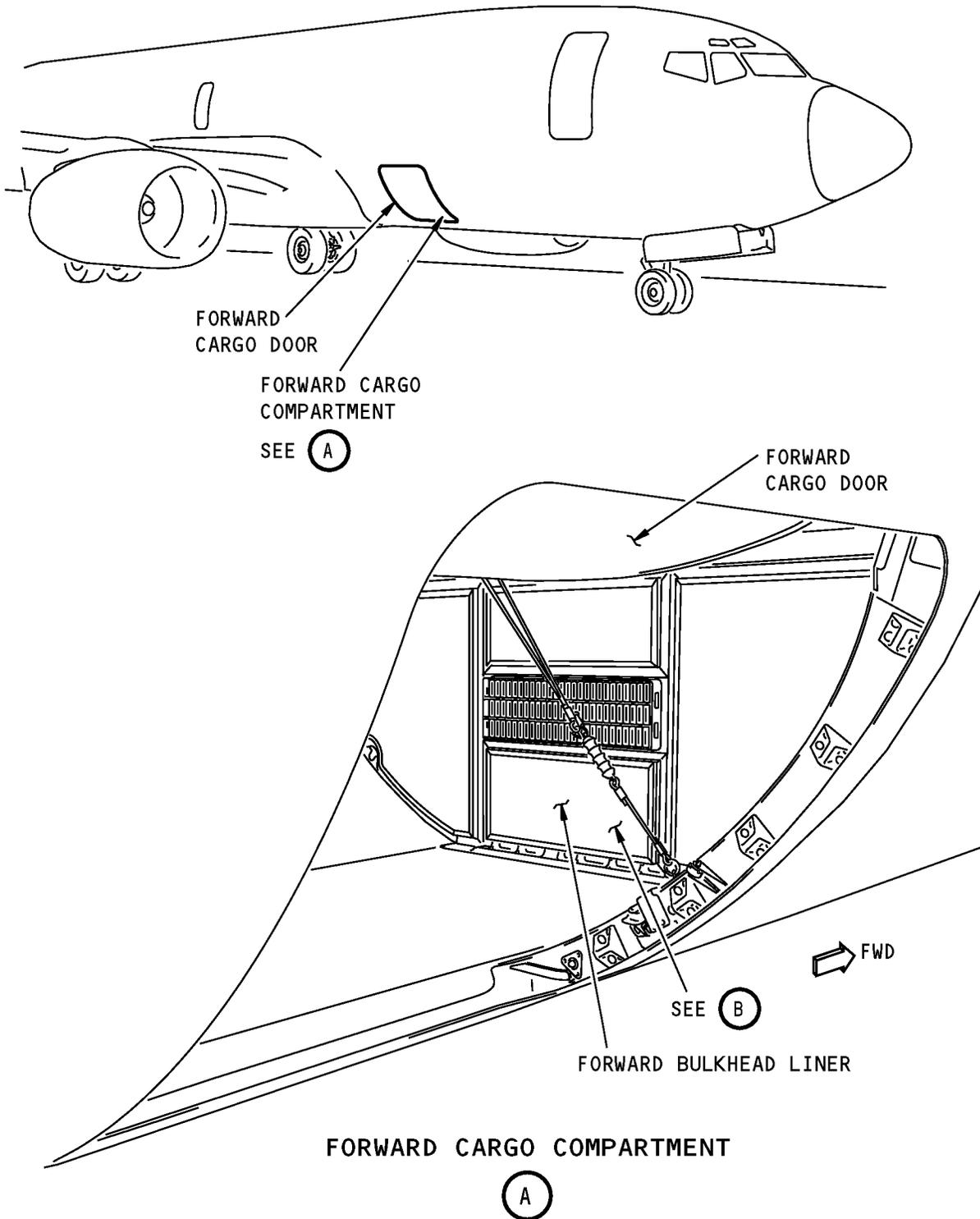
**Static Inverter Remote Control Circuit Breaker (RCCB) Installation
Figure 401 (Sheet 3 of 3)/24-34-31-990-805-002**

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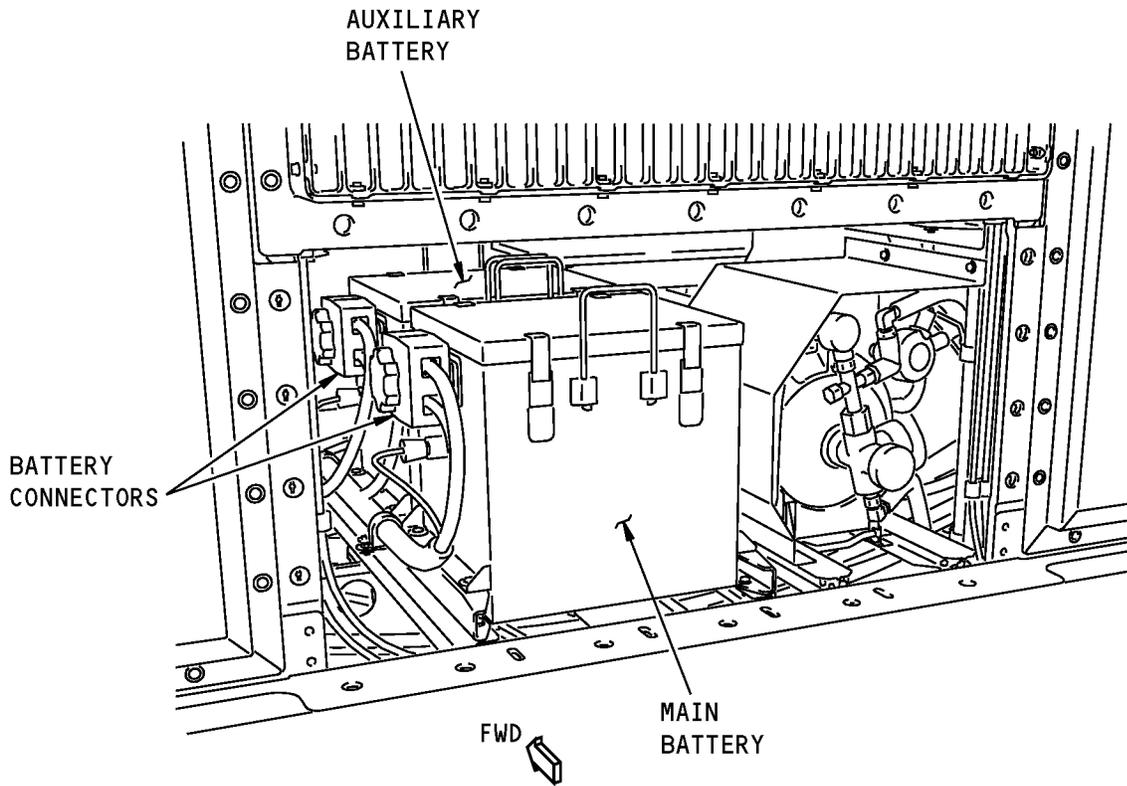


Battery Installation
Figure 402 (Sheet 1 of 2)/24-34-31-990-806-002

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BATTERIES



**Battery Installation
Figure 402 (Sheet 2 of 2)/24-34-31-990-806-002**

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TASK 24-34-31-400-803-002

3. Static Inverter RCCB Installation

(Figure 401, Figure 402)

A. General

- (1) The Static Inverter RCCB, C1341, is located on the J9 Battery Shield in the Main Equipment Center.

B. References

Reference	Title
24-22-00-860-813	Supply External Power (P/B 201)
24-31-21-710-801	Battery Charger Operational Test (P/B 501)
24-31-31-710-801	Auxiliary Battery Charger Operational Test (P/B 501)
SWPM 20-83-00	Standard Wiring Practices Manual

C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Static inverter RCCB	24-34-31-01-015	HAP 001-013, 015-026, 028-030
		24-34-31-02-015	HAP 031-054, 101-999
		24-34-31-02-017	HAP 031-054, 101-999
		24-34-31-02-020	HAP 031-047, 054, 101-106

D. Location Zones

Zone	Area
117	Electrical and Electronics Compartment - Left
121	Forward Cargo Compartment - Left
122	Forward Cargo Compartment - Right

E. Access Panels

Number	Name/Location
117A	Electronic Equipment Access Door

F. Procedure

SUBTASK 24-34-31-420-007-002

- (1) Do these steps to install the static inverter RCCB [1]:
 - (a) Hold the RCCB in position.
 - (b) Install the two screws [5] that hold the RCCB.
 - (c) Install the wires on the RCCB terminal studs.
 - (d) Install the two nuts [2], lockwashers [3] and washers [4] on both terminal studs on the Static Inverter RCCB.
 - (e) Install the nut [2], lockwasher [3] and washer [4] on the top terminal stud on the Dual Battery RCCB.
 - (f) Tighten the nuts to 40-45 inch-pounds (4.5-5.1 Newton meters).
 - (g) Install the control wires into sockets on RCCB per the identification tags SWPM 20-83-00.
 - (h) Install the access cover on top of the J9 shield.

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SUBTASK 24-34-31-420-008-002

- (2) Install the battery connectors on the main and auxiliary batteries per the steps that follow:
 - (a) Gain access to the forward cargo area.
 - (b) Install the battery connectors on both batteries.
 - (c) Install the forward bulkhead liner.

SUBTASK 24-34-31-860-012

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

Battery Shield, J9

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	3	C01209	AUX BAT CHARGER
A	4	C00142	BATTERY CHARGER
A	5	C01340	BATTERY BUS

HAP 031-054, 101-999

SUBTASK 24-34-31-410-004

- (4) Install the access cover on top of the J39 shield.

HAP ALL

G. Static Inverter RCCB Installation Test

SUBTASK 24-34-31-710-006-002

- (1) Do a check of the Static Inverter RCCB per the steps that follow:
 - (a) Do this task to supply external power: Supply External Power, TASK 24-22-00-860-813.
 - (b) Make sure the BAT switch on the P5-13 panel is in the OFF position.
 - (c) Set the STANDBY POWER switch on the P5-5 panel to the AUTO position.
 - (d) Set the AC Meter Selector Switch on the P5-13 panel to the INV position.
 - (e) Make sure the AC meter shows these values:
 - 1) AC VOLTS = 0
 - 2) CPS FREQ = BLANK

NOTE: When the AC voltage goes below approximately 12 VAC, the CPS FREQ will become blank.
 - (f) Set the BAT switch on the P5-13 panel to the ON position.
 - (g) Make sure the AC meter shows these values:
 - 1) AC VOLTS = 110-120
 - 2) CPS FREQ = 390-410

SUBTASK 24-34-31-710-007-002

- (2) Do a check of the battery charger per the steps that follow:
 - (a) Do this task: Battery Charger Operational Test, TASK 24-31-21-710-801.

SUBTASK 24-34-31-710-008-002

- (3) Do a check of the auxiliary battery charger per the steps that follow:
 - (a) Do this task: Auxiliary Battery Charger Operational Test, TASK 24-31-31-710-801.

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H. Put the Airplane Back to Its Usual Condition

SUBTASK 24-34-31-410-003-002

(1) Close this access panel:

<u>Number</u>	<u>Name/Location</u>
117A	Electronic Equipment Access Door

SUBTASK 24-34-31-860-011-002

(2) Set the BAT switch on the P5-13 panel to the OFF position.

————— **END OF TASK** —————

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AC EXTERNAL POWER - ADJUSTMENT/TEST

1. General

A. This procedure has this task:

- (1) AC External Power Operational Test.

TASK 24-41-00-700-801

2. AC External Power Operational Test

(Figure 501, Figure 502)

A. References

Reference	Title
20-40-11-910-801	Static Grounding (P/B 201)
24-22-00-860-812	Remove Electrical Power (P/B 201)

B. Location Zones

Zone	Area
117	Electrical and Electronics Compartment - Left
118	Electrical and Electronics Compartment - Right
211	Flight Compartment - Left
212	Flight Compartment - Right

C. Access Panels

Number	Name/Location
117A	Electronic Equipment Access Door

D. Prepare for the operational test

SUBTASK 24-41-00-860-001

- (1) Do this task: Remove Electrical Power, TASK 24-22-00-860-812.

SUBTASK 24-41-00-860-002

- (2) Make sure the BAT switch on the P5-13 panel is set to the ON position.

SUBTASK 24-41-00-860-003

- (3) Make sure the STANDBY POWER switch on the P5-5 panel is set to the AUTO position.

SUBTASK 24-41-00-860-004

- (4) Make sure the BUS TRANS switch on the P5-4 panel is set to the AUTO position.

SUBTASK 24-41-00-860-005

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
E	13	C01328	ELECTRICAL GND SERV CONT
F	13	C01290	GENERATOR BUS PWR CONT UNIT

SUBTASK 24-41-00-010-001

- (6) To get access to the main equipment center, open this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

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SUBTASK 24-41-00-860-006

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

Power Distribution Panel Number 1, P91

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	10	C01327	BUS PWR CONT UNIT

Power Distribution Panel Number 2, P92

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	12	C00936	EXT PWR BPCU

E. Procedure

SUBTASK 24-41-00-860-007

(1) Do a check of the external power system as follows:

(a) Open the External Power Receptacle Door.

WARNING: IF THE EXTERNAL POWER SUPPLY HAS AN EARTH GROUNDED NEUTRAL, THERE MUST NOT BE AN OPEN OR FLOATING GROUND IN THE NEUTRAL CIRCUIT WIRING OF THE SUPPLY OR THE AIRPLANE. IF AN OPEN OR FLOATING GROUND IS PRESENT, THE AIRPLANE CAN BE PUT AT AN ELECTRICAL POTENTIAL ABOVE EARTH GROUND. THIS ELECTRICAL POTENTIAL CAN CAUSE ELECTRIC SHOCK WITH POSSIBLE SEVERE INJURY TO PERSONNEL WHO TOUCH THE AIRPLANE.

(b) Make sure the external power supply operates correctly before you supply external power to the airplane.

1) If the ground return (neutral) circuit on the external power source or the external power receptacle do not operate correctly, do this task: Static Grounding, TASK 20-40-11-910-801.

WARNING: REMOVE THE ELECTRICAL POWER FROM THE EXTERNAL POWER SOURCE BEFORE YOU CONNECT THE CABLE TO THE AIRPLANE. INJURY TO PERSONS CAN BE CAUSED BY AN ELECTRICAL SHOCK.

(c) Install the power cable to the external power receptacle.

(d) Energize the external power cable.

(e) Make sure these lights on the external power panel (P19) are on:

- 1) EXTERNAL PWR CONN
- 2) EXTERNAL PWR NOT IN USE

(f) Make sure the GRD POWER AVAILABLE light on the P5-4 panel comes on.

(g) Set the AC meter selector switch on the P5-13 panel to the GRD PWR position.

(h) Make sure the AC meter on the P5-13 panel shows these values:

- 1) AC VOLTS = 110-120
- 2) CPS FREQ = 390-410

(i) Push the GROUND SERVICE switch on the FWD ATTENDANT panel, P13.

1) Make sure the ON light in the GROUND SERVICE switch comes on.

NOTE: The ground service buses are energized when external power is supplied to the receptacle and the GROUND SERVICE switch is set to ON. The transfer buses do not need to be powered to supply power ground service busses.

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- 2) Make sure the EXTERNAL PWR NOT IN USE light on the P19 panel goes off.
 - (j) Push the GROUND SERVICE switch again.
 - 1) Make sure the ON light in the GROUND SERVICE switch goes off.
 - 2) Make sure the EXTERNAL PWR NOT IN USE light on the P19 panel comes on.
 - (k) Set the GRD POWER switch on the P5-4 panel to the ON position.
- NOTE:** The ground service buses are automatically powered when power is supplied to the transfer buses.
- (l) Make sure the GRD POWER AVAILABLE light on the P5-4 panel stays on.
 - (m) Make sure these lights on the P5-4 panel go off:
 - 1) 1 SOURCE OFF
 - 2) 2 SOURCE OFF
 - 3) 1 TRANSFER BUS OFF
 - 4) 2 TRANSFER BUS OFF
 - (n) Make sure the EXTERNAL PWR NOT IN USE light on the P19 panel goes off.
 - (o) Set the GRD PWR switch on the P5-4 panel to the OFF position.
 - (p) Make sure the GRD POWER AVAILABLE light on the P5-4 stays on.
 - (q) Make sure these lights on the P5-4 panel come on:
 - 1) 1 SOURCE OFF
 - 2) 2 SOURCE OFF
 - 3) 1 TRANSFER BUS OFF
 - 4) 2 TRANSFER BUS OFF
 - (r) Make sure the EXTERNAL POWER NOT IN USE light on the P19 panel comes on.
 - (s) Remove power from the external power cable.
 - (t) Make sure these lights on the P19 panel go off:
 - 1) EXTERNAL POWER CONN
 - 2) EXTERNAL POWER NOT IN USE

WARNING: REMOVE ELECTRICAL POWER FROM THE EXTERNAL POWER CABLE BEFORE YOU REMOVE THE CABLE FROM THE AIRPLANE. INJURY TO PERSONS CAN BE CAUSED BY AN ELECTRICAL SHOCK.

- (u) Remove the external power cable.
- (v) Close the External Power Receptacle Door.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 24-41-00-860-009

- (1) Close this access panel:

<u>Number</u>	<u>Name/Location</u>
117A	Electronic Equipment Access Door

SUBTASK 24-41-00-860-008

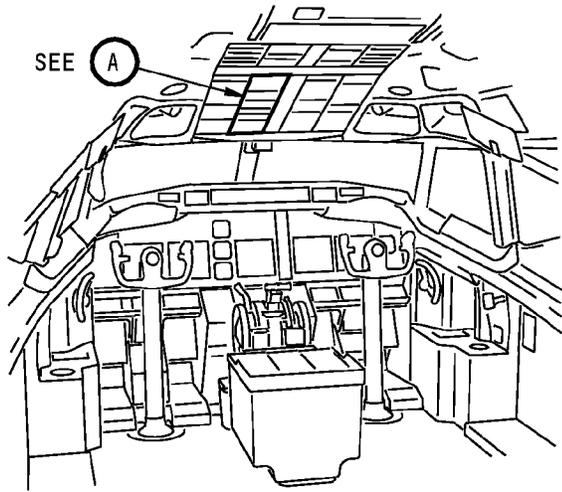
- (2) Set the BAT switch on the P5-13 panel to the OFF position.

————— **END OF TASK** —————

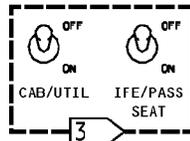
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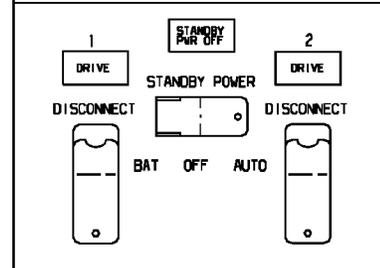
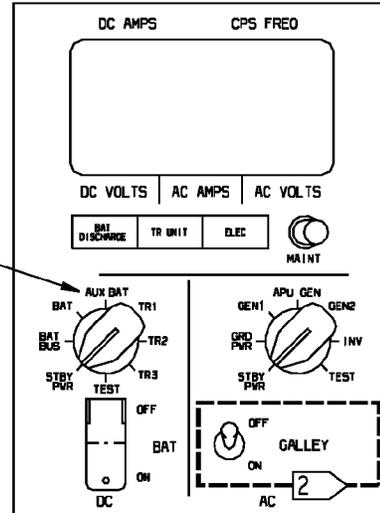
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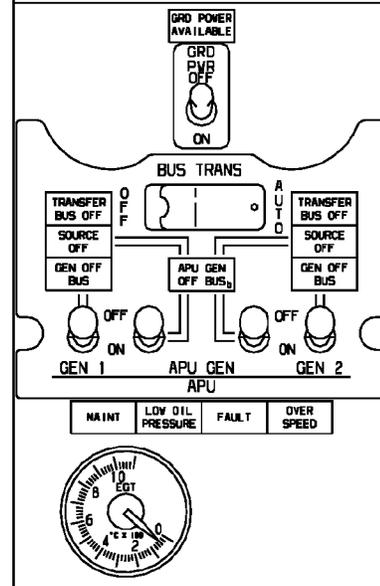
FLIGHT COMPARTMENT



P5-13



P5-5



P5-4

- 1 AIRPLANES WITH AUXILIARY BATTERY
- 2 AIRPLANES WITH GALLEY SWITCH
- 3 AIRPLANES WITH CABIN UTILITY AND IFE SWITCHES

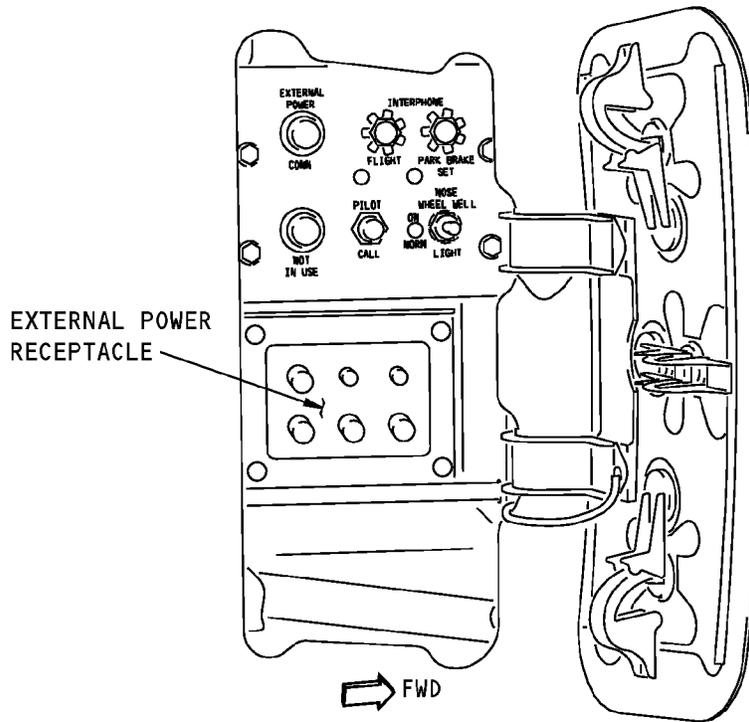
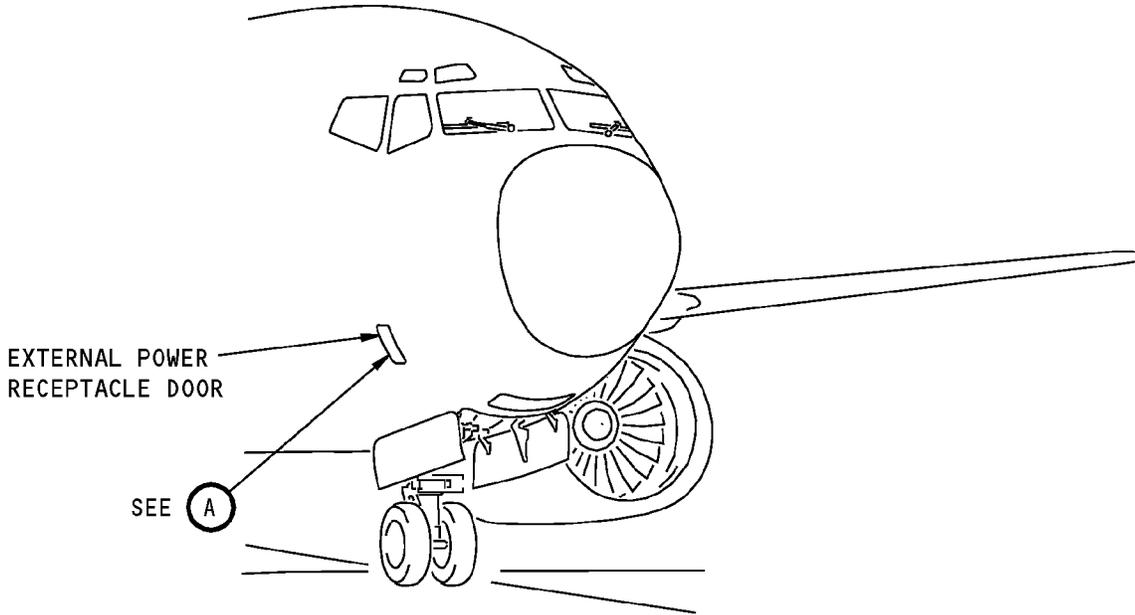


AC Power and Bus Control
Figure 501/24-41-00-990-801

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EXTERNAL POWER RECEPTACLE PANEL (P19)

(A)

**External Power Receptacle and Indication
Figure 502/24-41-00-990-802**

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EXTERNAL POWER RECEPTACLE - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

- (1) A removal of the External Power receptacle.
- (2) An installation of the External Power Receptacle.

TASK 24-41-11-000-801

2. External Power Receptacle Removal

(Figure 401)

A. General

- (1) The External Power Receptacle is located on the lower right hand side of the airplane. It is installed forward of the nose gear wheel well.

B. References

Reference	Title
24-22-00-860-812	Remove Electrical Power (P/B 201)

C. Location Zones

Zone	Area
116	Nose Landing Gear Wheel Well - Right

D. Access Panels

Number	Name/Location
114AR	External Power Receptacle Door

E. Prepare for the removal

SUBTASK 24-41-11-860-001

- (1) Do this task: Remove Electrical Power, TASK 24-22-00-860-812.

SUBTASK 24-41-11-010-001

- (2) Open this access panel if it is closed:

Number	Name/Location
114AR	External Power Receptacle Door

SUBTASK 24-41-11-010-002

- (3) Remove External Power Plug from the receptacle, if it is installed.

SUBTASK 24-41-11-930-001

WARNING: MAKE SURE YOU PUT A DO-NOT-OPERATE TAG ON THE EXTERNAL POWER RECEPTACLE. FAILURE TO DO THIS CAN CAUSE INJURY TO PERSONS.

- (4) Attach a DO-NOT-OPERATE tag to the external power receptacle.

SUBTASK 24-41-11-010-003

- (5) Open access panel on forward right hand side of nose gear wheel well, to get access to the back of the receptacle.

F. External Power Receptacle Removal

SUBTASK 24-41-11-020-001

- (1) Remove the electrical leads from the receptacle:

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- (a) Remove the screw [11], from back of terminal cover.
- (b) Remove the nuts [9] and washers [8] that hold the terminal cover.
- (c) Remove the cover assembly [10].
- (d) Attach an identification tag to each lead.
- (e) Remove the six nuts [7], lockwashers [6], and washers [5] that hold the six electrical leads.
- (f) Remove the electrical leads from the studs.

SUBTASK 24-41-11-020-002

- (2) Remove the receptacle [1] per the steps that follow:

HAP 001-013, 015-019

- (a) Remove the four nuts [4], twelve washers [3],[12], and four bolts [2] that hold the receptacle to the pan.

NOTE: This step works best with two people, one outside the airplane and one inside the wheel well access. However if only one person is available, you can put tape over the bolts to prevent them from falling out when the nuts are removed.

HAP 020-026, 028-054, 101-999

- (b) Remove the eight nuts [4],[13], twelve washers [3], [12], and four bolts [2] that hold the receptacle to the pan.

NOTE: This step works best with two people, one outside the airplane and one inside the wheel well access. However if only one person is available, you can put tape over the bolts to prevent them from falling out when the nuts are removed.

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- (c) Remove the receptacle [1] from the outside of the airplane.

————— END OF TASK —————

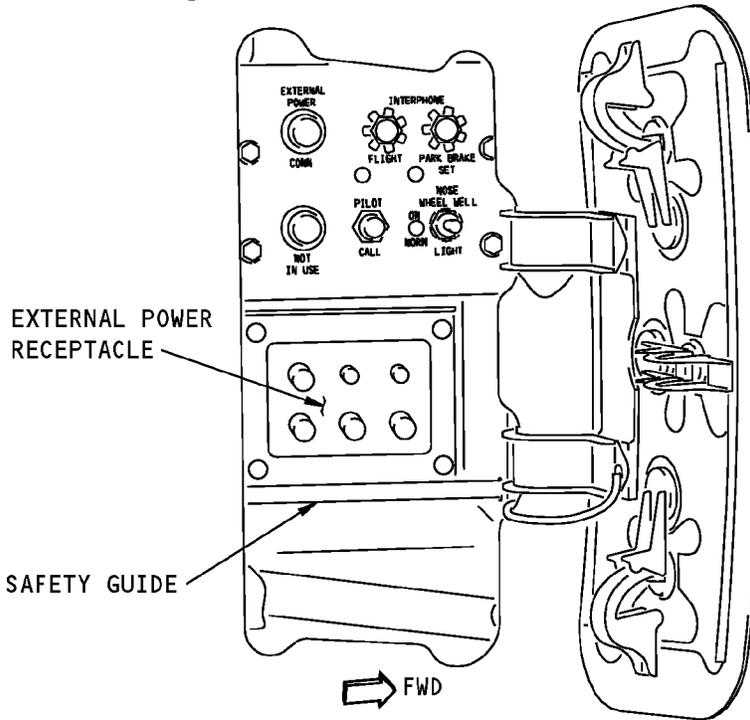
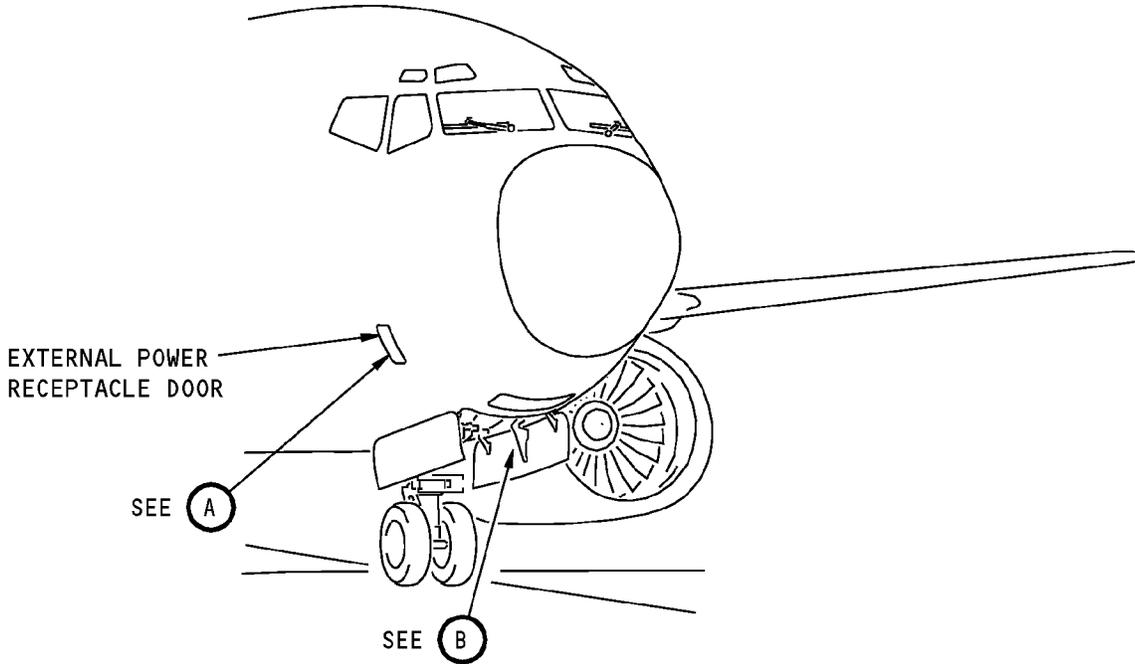
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EXTERNAL POWER RECEPTACLE

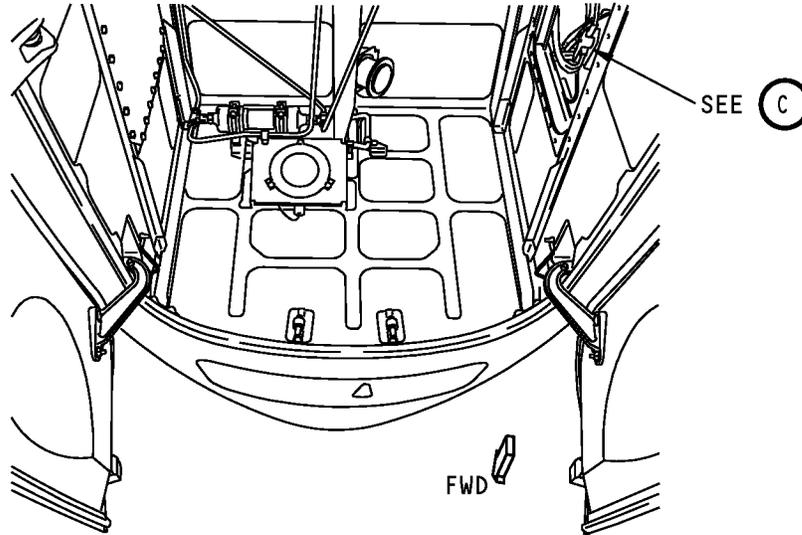
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**External Power Receptacle Installation
Figure 401 (Sheet 1 of 3)/24-41-11-990-801**

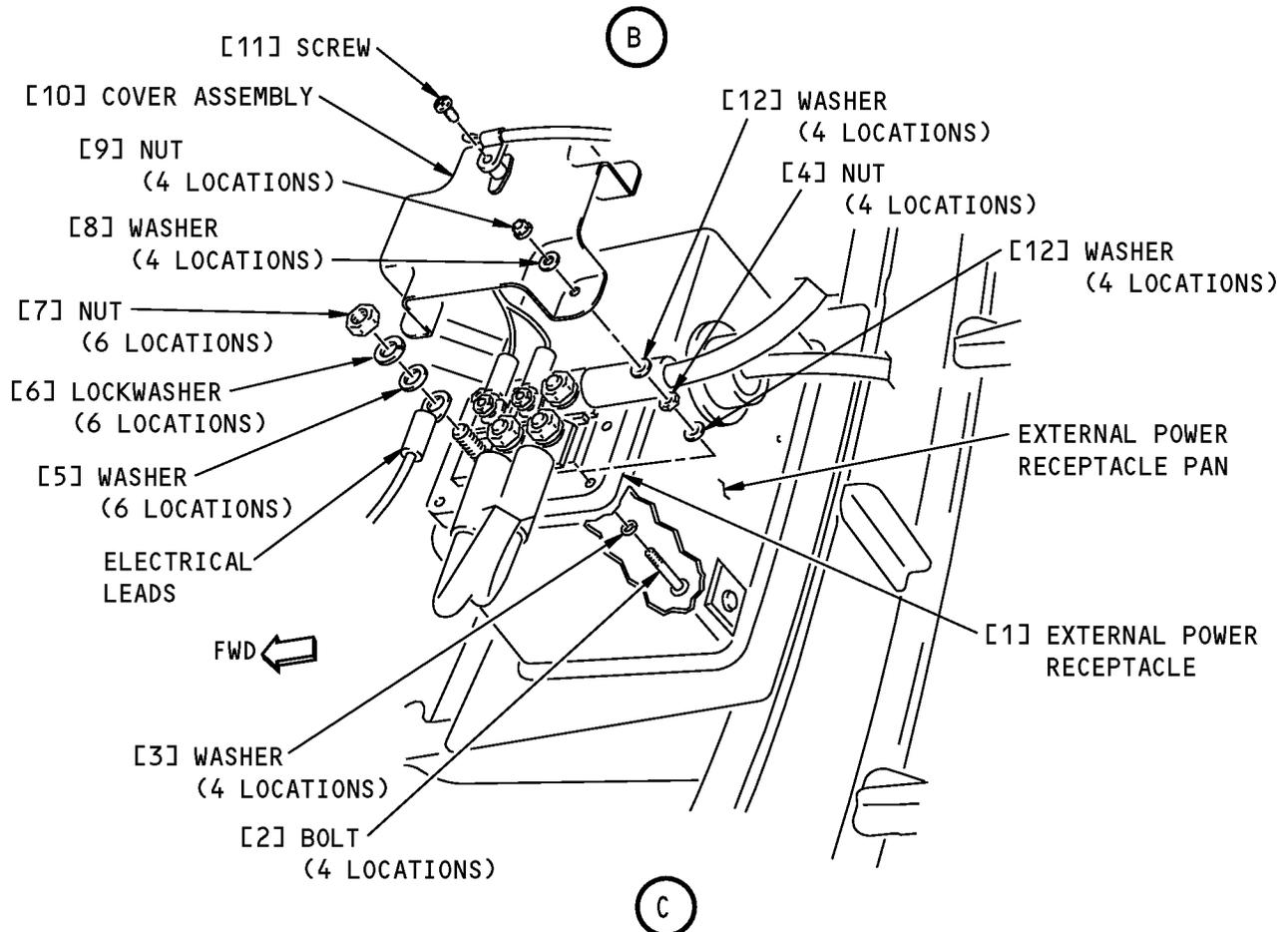
EFFECTIVITY
HAP ALL

24-41-11

AIRCRAFT MAINTENANCE MANUAL



NOSE LANDING GEAR WHEEL WELL



External Power Receptacle Installation
Figure 401 (Sheet 2 of 3)/24-41-11-990-801

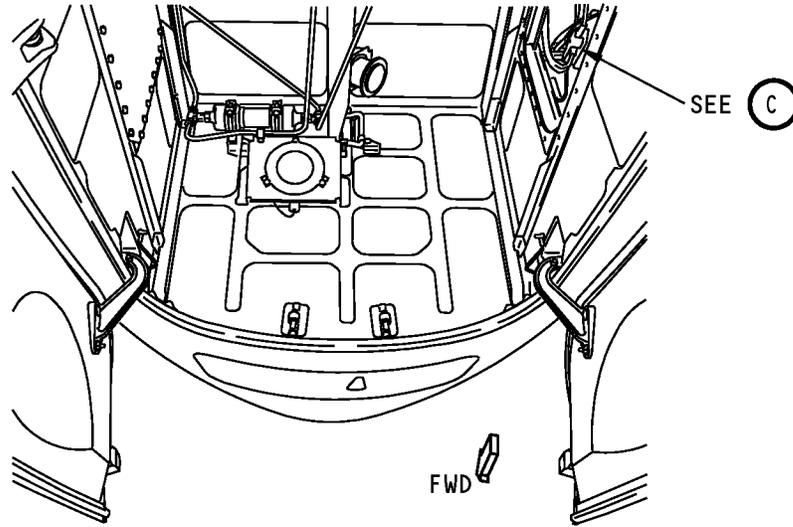
EFFECTIVITY
HAP 001-013, 015-019

24-41-11

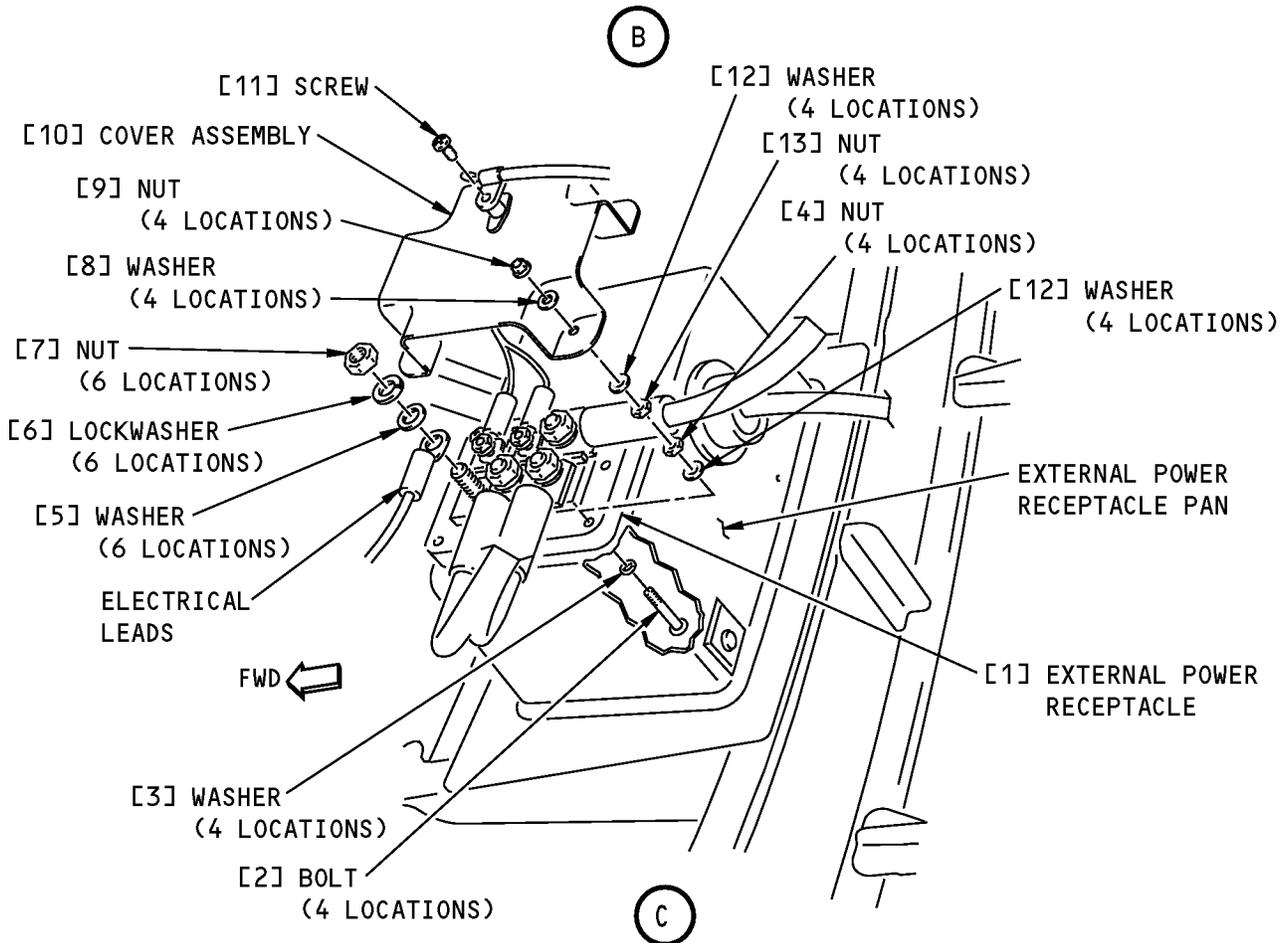
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AIRCRAFT MAINTENANCE MANUAL



NOSE LANDING GEAR WHEEL WELL



**External Power Receptacle Installation
Figure 401 (Sheet 3 of 3)/24-41-11-990-801**

EFFECTIVITY
HAP 020-026, 028-054, 101-999

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TASK 24-41-11-400-801

3. External Power Receptacle Installation

(Figure 401)

A. General

- (1) The External Power Receptacle is located on the lower right hand side of the airplane. It is installed forward of the nose gear wheel well.
- (2) The External Power Receptacle is part of the pressure seal of the airplane. You must seal the receptacle when installing it.

B. References

Reference	Title
24-22-00-860-812	Remove Electrical Power (P/B 201)
24-22-00-860-813	Supply External Power (P/B 201)

C. Consumable Materials

Reference	Description	Specification
A00247	Sealant - Pressure And Environmental - Chromate Type	BMS 5-95

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Receptacle	24-41-11-01B-080	HAP 008-013, 015-026, 028-054, 101-999
		24-41-11-02-130	HAP 001-007

E. Location Zones

Zone	Area
116	Nose Landing Gear Wheel Well - Right

F. Access Panels

Number	Name/Location
114AR	External Power Receptacle Door

G. External Power Receptacle Installation

SUBTASK 24-41-11-420-001

- (1) Install the receptacle [1] per the steps that follow:
 - (a) Apply sealant, A00247 to the surface of the receptacle that touches the receptacle pan, to make a pressure fillet seal.
 - (b) Put the receptacle [1] in position on the receptacle pan.
 - (c) Apply sealant, A00247 to the four bolts [2].
 - (d) Install the twelve washers [3],[12] and bolts [2] through receptacle and receptacle pan.

HAP 001-013, 015-019

- (e) Install the four nuts [4] and tighten the nuts.

HAP 020-026, 028-054, 101-999

- (f) Install the eight nuts [4],[13] and tighten the nuts.

HAP ALL

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SUBTASK 24-41-11-420-002

(2) Connect electrical leads to the external power receptacle:

CAUTION: MAKE SURE TO CONNECT THE CORRECT ELECTRICAL LEAD AS IDENTIFIED BY THE TAG, TO EACH RECEPTACLE STUD. INCORRECT INSTALLATION OF THE ELECTRICAL LEADS CAN CAUSE DAMAGE TO EQUIPMENT.

(a) Install the electrical leads onto receptacle studs.

CAUTION: DO NOT INSTALL WASHERS BELOW THE ELECTRICAL LEAD TERMINAL LUGS. THIS WILL CAUSE HEAT AND SUBSEQUENT DAMAGE TO RECEPTACLE STUDS.

(b) Install the six washers [5], lockwashers [6] and nuts [7] on the receptacle studs.

(c) Torque the 3/8 inch nuts to 100-120 pound-inches (11.3-13.6 Newton meters).

(d) Torque the 10-32 nuts to 16-18 pound-inches (1.8-2.0 Newton meters).

(e) Remove identification tags.

(f) Install cover assembly [10] into position.

(g) Install washers [8] and nuts [9].

(h) Tighten the nuts.

(i) Install the screw [11] on the back of terminal cover.

SUBTASK 24-41-11-410-001

(3) Close the access panel on the forward right hand side of the nose gear wheel well.

SUBTASK 24-41-11-860-002

(4) Remove the DO-NOT-OPERATE tag from the external power receptacle, and close this access panel:

<u>Number</u>	<u>Name/Location</u>
114AR	External Power Receptacle Door

H. External Power Receptacle Installation Test

SUBTASK 24-41-11-860-003

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

SUBTASK 24-41-11-860-004

(2) Make sure external power comes on line and operates correctly.

I. Put the Airplane Back to Its Usual Condition

SUBTASK 24-41-11-860-005

(1) Do this task: Remove Electrical Power, TASK 24-22-00-860-812.

————— **END OF TASK** —————

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EXTERNAL POWER RECEPTACLE - INSPECTION/CHECK

1. General

A. This procedure has these tasks:

- (1) External Power Receptacle - Internal Inspection.
- (2) External Power Receptacle - External Inspection.
- (3) External Power Receptacle Pin Inspection.
- (4) External Power Receptacle Neutral Pin To Ground Continuity Check.

TASK 24-41-11-200-801

2. External Power Receptacle - Internal Inspection

(Figure 601)

A. General

- (1) The External Power Receptacle is located on the lower right hand side of the airplane. It is installed forward of the nose gear wheel well.
- (2) The External Power Receptacle Inspection looks for visual wear such as cracks in the base and corroded and pitted pins. This inspection also makes sure that the terminals are correctly installed on the studs and that the torque is correct.

B. References

Reference	Title
24-22-00-860-812	Remove Electrical Power (P/B 201)

C. Location Zones

Zone	Area
116	Nose Landing Gear Wheel Well - Right

D. Access Panels

Number	Name/Location
114AR	External Power Receptacle Door

E. Prepare for Inspection

SUBTASK 24-41-11-860-006

- (1) Do this task: Remove Electrical Power, TASK 24-22-00-860-812.

SUBTASK 24-41-11-010-004

- (2) Open this access panel:

<u>Number</u>	<u>Name/Location</u>
114AR	External Power Receptacle Door

SUBTASK 24-41-11-010-005

- (3) Remove External Power Plug from receptacle, if it is installed.

SUBTASK 24-41-11-930-002

WARNING: MAKE SURE YOU PUT A DO-NOT-OPERATE TAG ON THE EXTERNAL POWER RECEPTACLE. INJURIES TO PERSONS CAN OCCUR IF YOU DO NOT OBEY THIS INSTRUCTION.

- (4) Attach a DO-NOT-OPERATE tag to the external power receptacle.

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SUBTASK 24-41-11-010-006

- (5) Remove the access panel on forward right hand side of nose gear wheel well, to get access to the back of the receptacle.

SUBTASK 24-41-11-010-007

- (6) Remove the four nuts [2] and washers [3] that hold the cover assembly [1].
 - (a) Remove cover assembly [1] for access to receptacle studs.

F. Procedure

SUBTASK 24-41-11-210-001

- (1) Inspect the External Power Receptacle from the outside of airplane as follows:
 - (a) Look for cracks or other damage on the receptacle base.
 - (b) Look for loose, bent or cracked pins.
 - (c) Look for discolored, corroded or pitted pins.

NOTE: Discoloration of pins is due to excessive heat, which is caused by excessive corrosion and poor contact between pin and socket. The receptacle should be replaced if this is found.

SUBTASK 24-41-11-210-002

- (2) Inspect the External Power Receptacle from the inside of airplane as follows:
 - (a) Look for discoloration of the receptacle studs and electrical leads.

CAUTION: DO NOT INSTALL WASHERS BELOW THE ELECTRICAL LEAD TERMINAL LUGS. THIS WILL CAUSE HEAT AND SUBSEQUENT DAMAGE TO RECEPTACLE STUDS.

- (b) Make sure that the electrical leads are correctly installed onto receptacle studs.
- (c) Look for loose nuts on receptacle studs. The nuts should be torqued as follows:
 - 1) Torque the four 3/8 inch nuts to 100-120 pound-inches (11.3-13.6 Newton meters).
 - 2) Torque the two 10-32 nuts to 16-18 pound-inches (1.8-2.0 Newton meters).

SUBTASK 24-41-11-410-002

- (3) Put cover assembly [1] in place and install four nuts [2] and washers [3]. Tighten the nuts.

SUBTASK 24-41-11-410-003

- (4) Close the access panel on the forward right hand side of the nose gear wheel well.

SUBTASK 24-41-11-410-004

- (5) Remove the DO-NOT-OPERATE tag from the external power receptacle, and close this access panel:

<u>Number</u>	<u>Name/Location</u>
114AR	External Power Receptacle Door

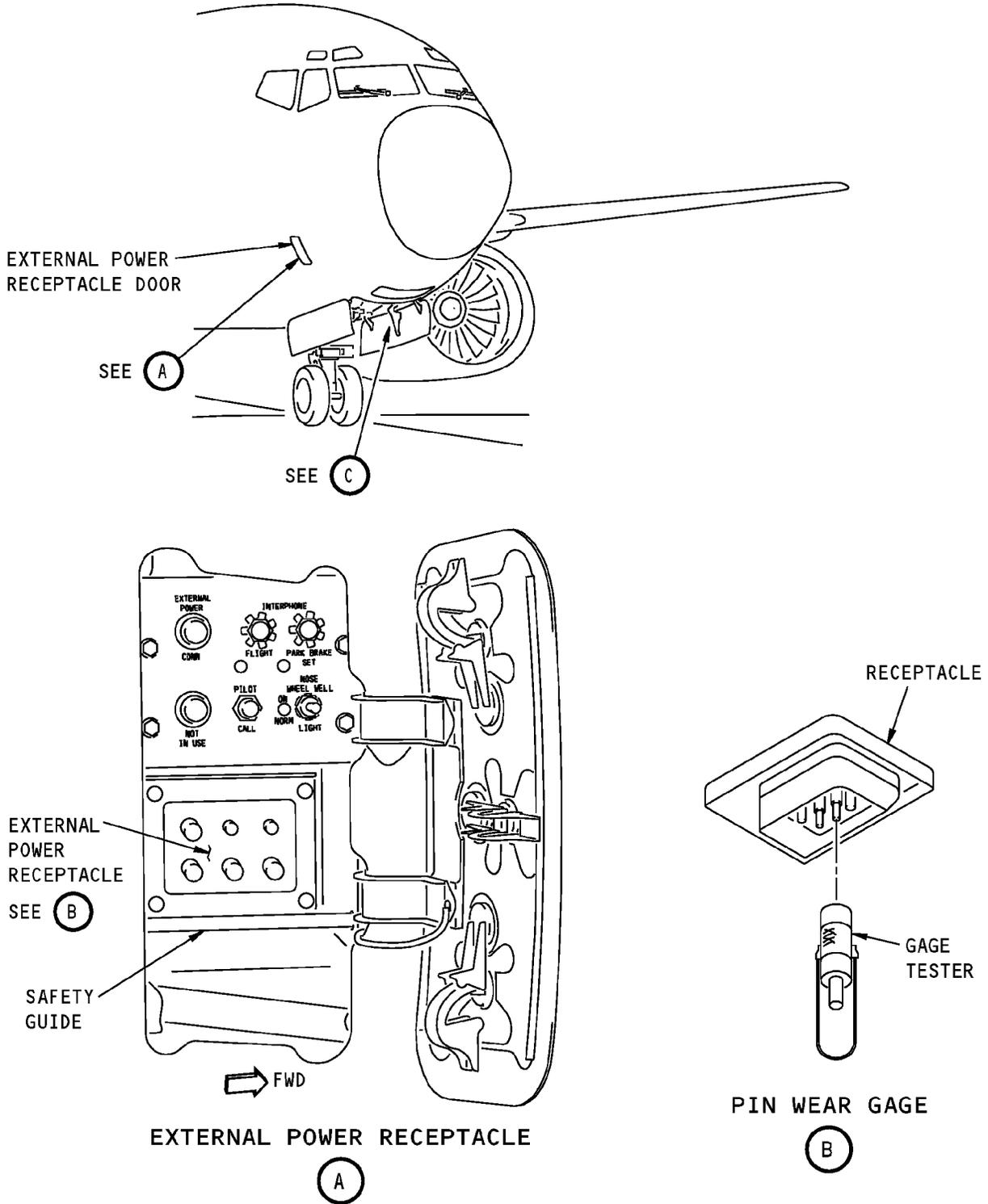
————— END OF TASK —————

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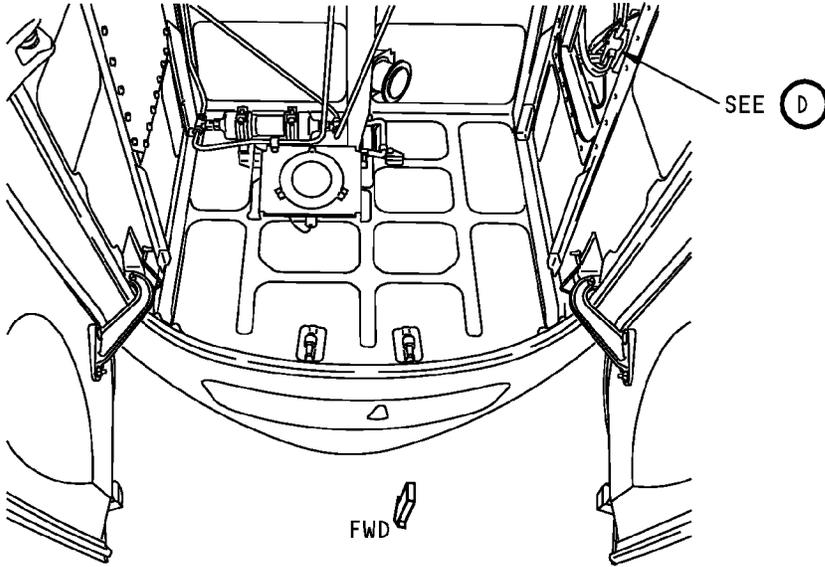


External Power Receptacle Inspection
Figure 601 (Sheet 1 of 3)/24-41-11-990-802

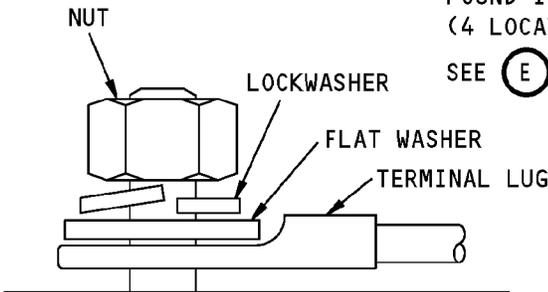
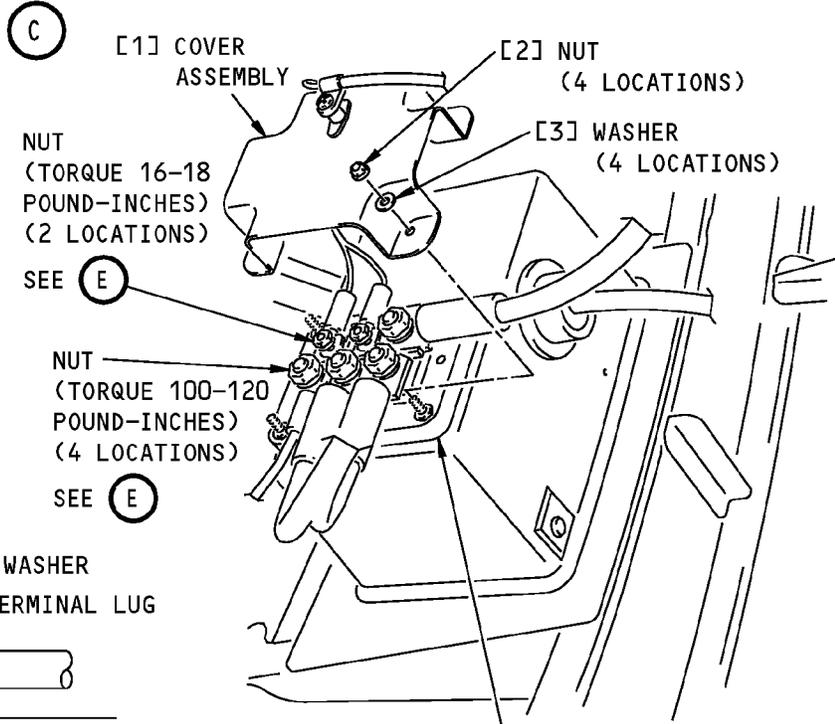
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NOSE LANDING GEAR WHEEL WELL



**RECEPTACLE STUD BUILDUP
(EXAMPLE)**

E

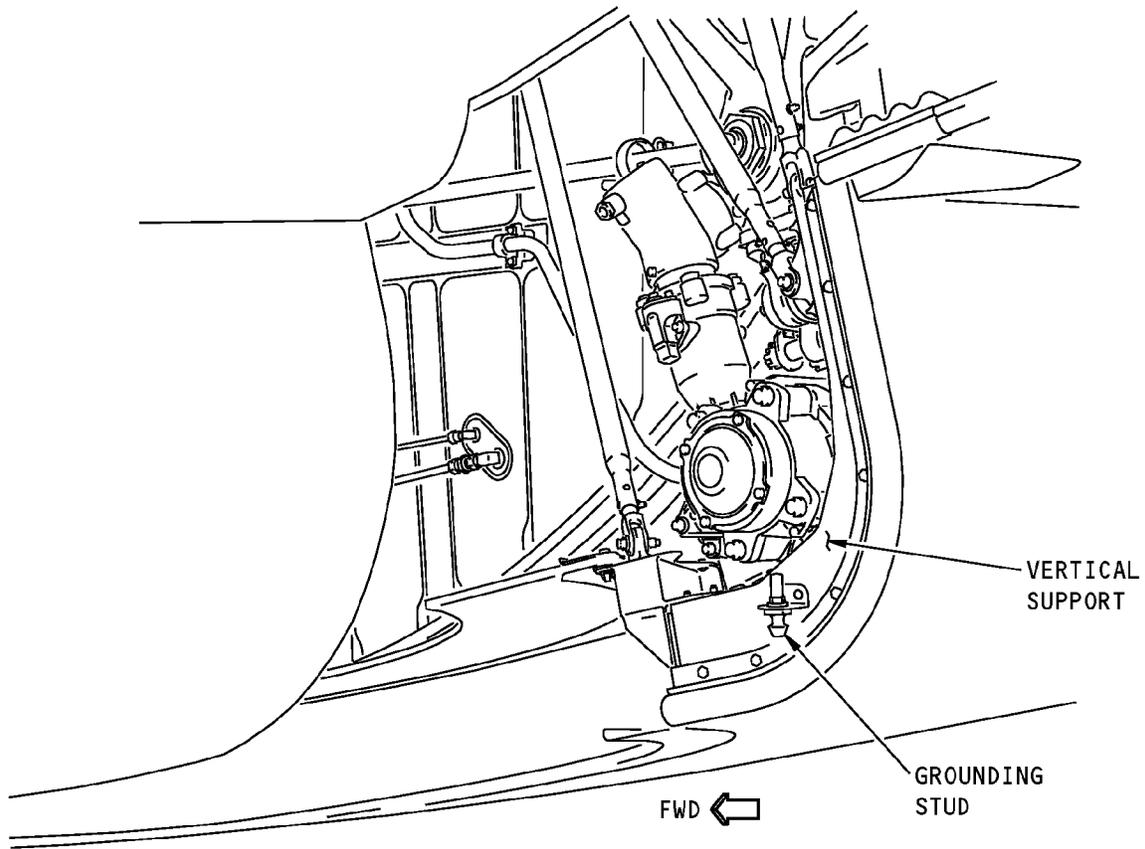
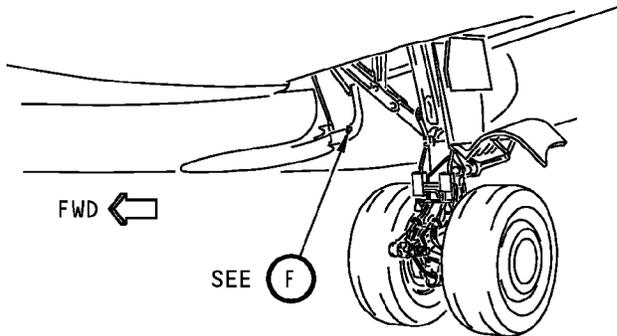
**EXTERNAL POWER
RECEPTACLE**

D

**External Power Receptacle Inspection
Figure 601 (Sheet 2 of 3)/24-41-11-990-802**

EFFECTIVITY
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**MAIN LANDING GEAR WHEEL WELL
(LEFT SIDE IS SHOWN, RIGHT SIDE IS OPPOSITE)**

F

**External Power Receptacle Inspection
Figure 601 (Sheet 3 of 3)/24-41-11-990-802**

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TASK 24-41-11-200-804

3. External Power Receptacle - External Inspection

(Figure 601)

A. General

- (1) The external power receptacle is located on the lower right hand side of the airplane. It is installed forward of the nose gear wheel well.

B. References

Reference	Title
24-22-00-860-812	Remove Electrical Power (P/B 201)

C. Location Zones

Zone	Area
116	Nose Landing Gear Wheel Well - Right

D. Access Panels

Number	Name/Location
114AR	External Power Receptacle Door

E. Procedure

SUBTASK 24-41-11-860-009

- (1) Do this task: Remove Electrical Power, TASK 24-22-00-860-812.

SUBTASK 24-41-11-010-012

- (2) Open this access panel:

Number	Name/Location
114AR	External Power Receptacle Door

SUBTASK 24-41-11-860-010

- (3) Remove external power plug from receptacle, if it is installed.

SUBTASK 24-41-11-210-003

- (4) Do these steps to examine the receptacles from the outer side of the airplane:
 - (a) Make sure the pins are not loose.
 - (b) Look for pins that are bent or have a crack.
 - (c) Look for damage or cracks on the base insulation.
 - (d) Look for discolored, burned, or pitted pins.

SUBTASK 24-41-11-410-007

- (5) Close this access panel:

Number	Name/Location
114AR	External Power Receptacle Door

————— **END OF TASK** —————

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TASK 24-41-11-200-802

4. External Power Receptacle Pin Inspection

(Figure 601)

A. General

- (1) The external power receptacle is located on the lower right hand side of the airplane. It is installed forward of the nose gear wheel well.
- (2) The external power receptacle pin inspection uses a GO/NO-GO gauge to make sure that the pins are not worn. If the pins are worn, the external power receptacle should be replaced.

B. References

Reference	Title
24-22-00-860-812	Remove Electrical Power (P/B 201)
24-41-11-000-801	External Power Receptacle Removal (P/B 401)
24-41-11-400-801	External Power Receptacle Installation (P/B 401)

C. Tools/Equipment

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

Reference	Description
SPL-1625	Wear Gage Set - Ground Power Plug and Receptacle (Part #: F70284-1, Supplier: 81205, A/P Effectivity: 737-ALL)

D. Location Zones

Zone	Area
116	Nose Landing Gear Wheel Well - Right

E. Access Panels

Number	Name/Location
114AR	External Power Receptacle Door

F. Procedure

SUBTASK 24-41-11-860-007

- (1) Do this task: Remove Electrical Power, TASK 24-22-00-860-812.

SUBTASK 24-41-11-010-008

- (2) Open this access panel:

Number	Name/Location
114AR	External Power Receptacle Door

SUBTASK 24-41-11-010-009

- (3) Remove external power plug from receptacle, if it is installed.

SUBTASK 24-41-11-220-001

- (4) Inspect the external power receptacle pins for wear as follows:

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CAUTION: DO NOT USE TOO MUCH FORCE WHEN PUSHING THE WEAR GAGE ONTO THE PINS. THE WEAR GAGE IS A GO/NO GO TOOL AND SHOULD NOT FIT OVER THE PINS. THE USE OF TOO MUCH FORCE COULD CAUSE DAMAGE TO PINS.

- (a) Try to slide the wear gage set, SPL-1625 over the external power receptacle pins

NOTE: The F70284-1 is a gage set. Use the -2 on the four large pins A, B, C and D. Use the -3 on the two small pins E and F.

- (b) Make sure the gage does not slide over the pins. If the gage slides over the pins, replace the external power receptacle. These are the tasks:
- External Power Receptacle Removal, TASK 24-41-11-000-801
- External Power Receptacle Installation, TASK 24-41-11-400-801.

SUBTASK 24-41-11-410-005

- (5) Close this access panel:

Table with 2 columns: Number, Name/Location. Row 1: 114AR, External Power Receptacle Door

END OF TASK

TASK 24-41-11-200-803

5. External Power Receptacle Neutral Pin to Ground Continuity Check

(Figure 601)

A. General

- (1) The External Power Receptacle is located on the lower right hand side of the airplane. It is installed forward of the nose gear wheel well.
(2) The External Power Receptacle Neutral Pin to Ground Continuity Check uses a low resistance ohm meter to measure the resistance between the neutral pin and a ground stud located on the main landing gear wheel well.

B. References

Table with 2 columns: Reference, Title. Row 1: 24-22-00-860-812, Remove Electrical Power (P/B 201)

C. Location Zones

Table with 2 columns: Zone, Area. Row 1: 116, Nose Landing Gear Wheel Well - Right

D. Access Panels

Table with 2 columns: Number, Name/Location. Row 1: 114AR, External Power Receptacle Door

E. Procedure

SUBTASK 24-41-11-860-008

- (1) Do this task: Remove Electrical Power, TASK 24-22-00-860-812.

SUBTASK 24-41-11-010-010

- (2) Open this access panel if it is closed:

Table with 2 columns: Number, Name/Location. Row 1: 114AR, External Power Receptacle Door

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SUBTASK 24-41-11-010-011

(3) Remove External Power Plug from receptacle, if it is installed.

SUBTASK 24-41-11-760-001

(4) Do the Neutral Pin to Ground Continuity Check as follows:

- (a) Use a low resistance ohmmeter to measure the resistance between the neutral pin on the external power receptacle and the ground stud located on the main landing gear wheel well.
- (b) Make sure that the resistance does not exceed 0.1 ohms.
- (c) If the Resistance measurement exceeds 0.1 ohms, do the steps that follow:
 - 1) Do this task: External Power Receptacle - Internal Inspection, TASK 24-41-11-200-801.
 - 2) Do this task: External Power Receptacle Pin Inspection, TASK 24-41-11-200-802.
 - 3) If the problem continues repair the wiring between the external power receptacle neutral pin and airplane ground.

F. Put airplane back to its usual condition.

SUBTASK 24-41-11-410-006

(1) Close this access panel:

<u>Number</u>	<u>Name/Location</u>
114AR	External Power Receptacle Door

————— **END OF TASK** —————

<p>EFFECTIVITY</p> <p>HAP ALL</p>

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EXTERNAL POWER CONTACTOR - REMOVAL/INSTALLATION

1. General

- A. This procedure has two tasks:
 - (1) A removal of the External Power Contactor.
 - (2) An installation of the External Power Contactor.

TASK 24-41-12-000-801

2. External Power Contactor Removal

(Figure 401)

- A. General
 - (1) The External Power Contactor, C937 is located in the P92 Power Distribution Panel.
- B. References

Reference	Title
24-22-00-860-812	Remove Electrical Power (P/B 201)

C. Location Zones

Zone	Area
117	Electrical and Electronics Compartment - Left
118	Electrical and Electronics Compartment - Right

D. Access Panels

Number	Name/Location
114AR	External Power Receptacle Door
117A	Electronic Equipment Access Door

E. Prepare for removal.

SUBTASK 24-41-12-860-001

WARNING: REMOVE ELECTRICAL POWER BEFORE REMOVING OR INSTALLING CONTROL BREAKERS IN POWER DISTRIBUTION PANELS. HIGH VOLTAGES COULD BE FATAL.

- (1) Do this task: Remove Electrical Power, TASK 24-22-00-860-812.
 - (a) Make sure that all of the power warning lights on the P92 panel are off.

SUBTASK 24-41-12-930-002

- (2) Open this access panel and attach a DO-NOT-OPERATE tag to External Power Receptacle:

Number	Name/Location
114AR	External Power Receptacle Door

SUBTASK 24-41-12-010-002

- (3) Open this access panel to get access to the main equipment center:

Number	Name/Location
117A	Electronic Equipment Access Door

F. Procedure

SUBTASK 24-41-12-020-001

- (1) Do these steps to remove the external power contactor [1]:
 - (a) Open the P92 panel for access to the contactor [1].

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- (b) Loosen the two screws and remove the electrical connector from the contactor [1].
- (c) Remove the six bolts [2] and washers [3] that hold the contactor [1].
- (d) Remove the contactor [1].

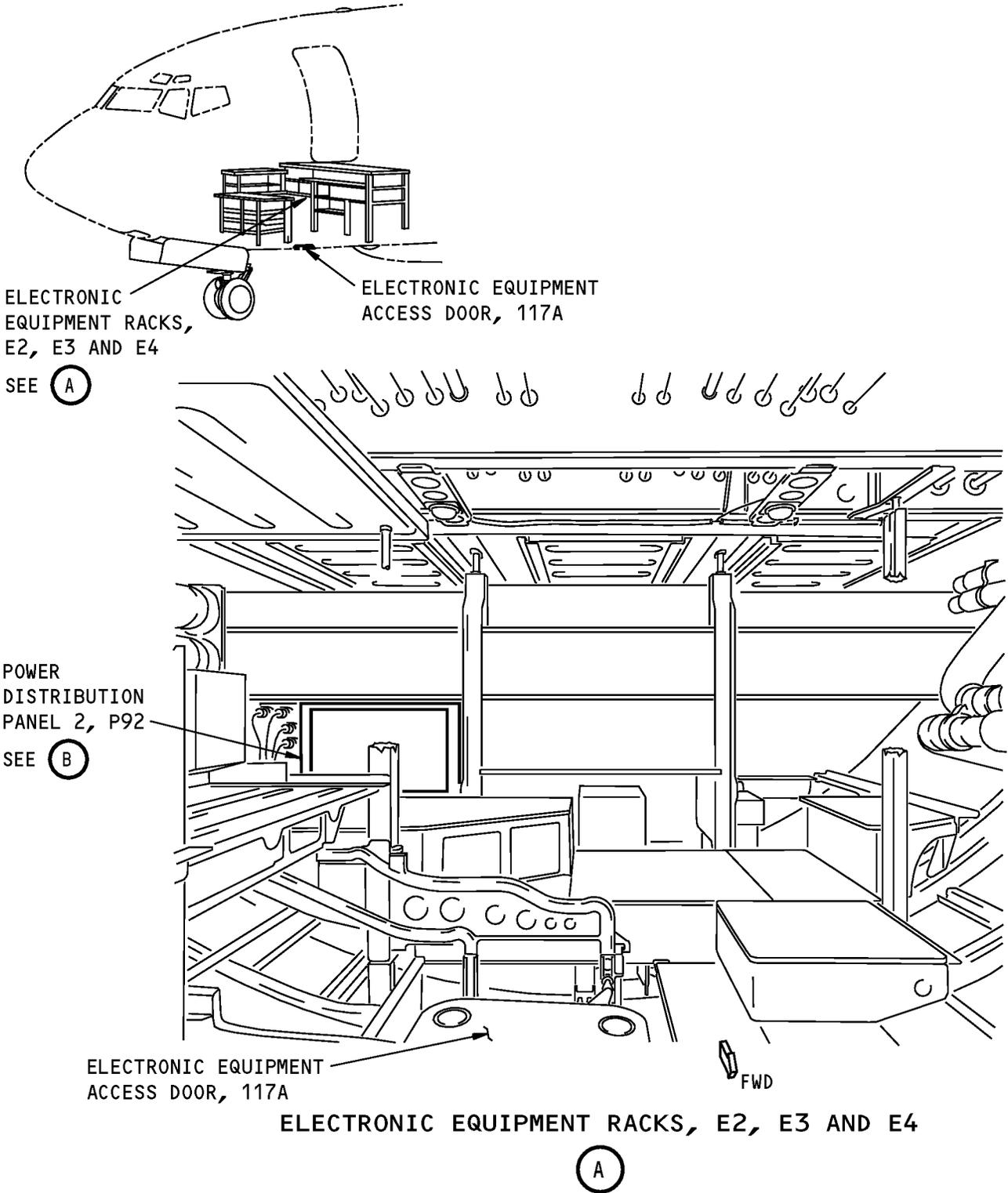
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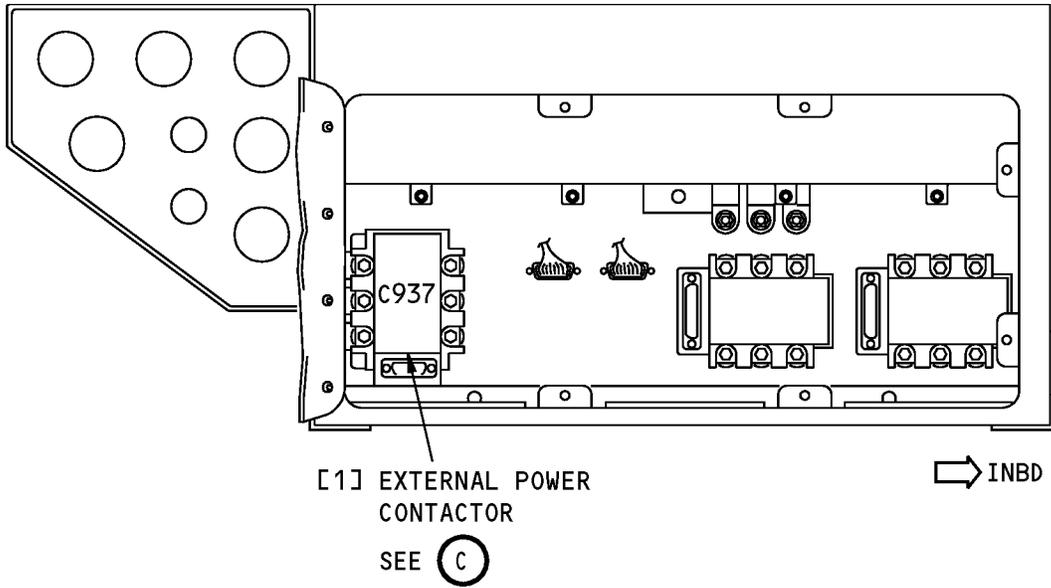


External Power Contactor Installation
Figure 401 (Sheet 1 of 2)/24-41-12-990-801

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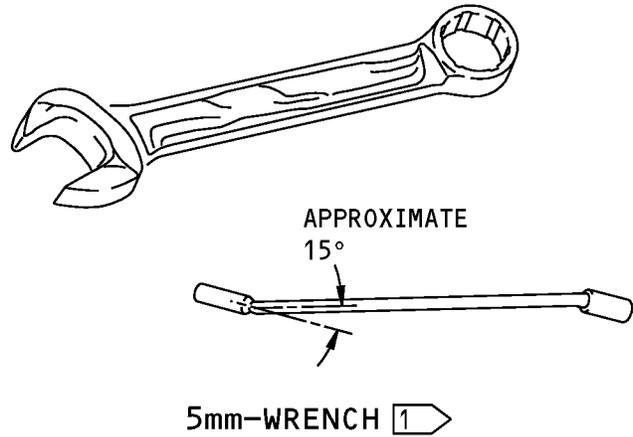
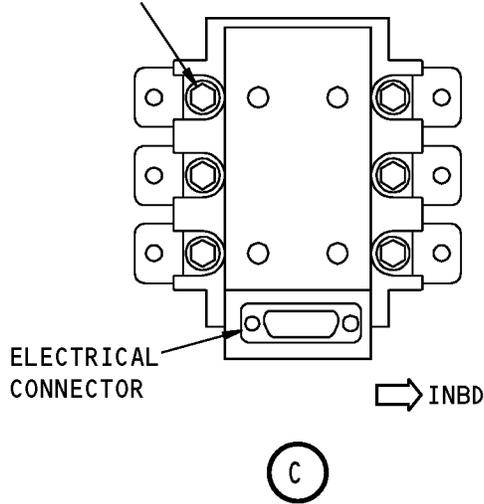
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POWER DISTRIBUTION PANEL 2, P92

(B)

- [2] BOLT
- [3] WASHER
(6 LOCATIONS)



1 USE 5mm-WRENCH TO HOLD THE SPACER NUTS IN PLACE WHILE LOOSENING THE SCREWS ON THE ELECTRICAL CONNECTOR. FAILURE TO USE WRENCH COULD RESULT IN DAMAGE TO HARDWARE.

External Power Contactor Installation
Figure 401 (Sheet 2 of 2)/24-41-12-990-801

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TASK 24-41-12-400-801

3. External Power Contactor Installation

(Figure 401)

A. General

(1) The External Power Contactor, C937 is located in the P92 Power Distribution Panel.

B. References

Reference	Title
24-22-00-860-812	Remove Electrical Power (P/B 201)

C. Location Zones

Zone	Area
117	Electrical and Electronics Compartment - Left
118	Electrical and Electronics Compartment - Right

D. Access Panels

Number	Name/Location
114AR	External Power Receptacle Door
117A	Electronic Equipment Access Door

E. Prepare for installation.

SUBTASK 24-41-12-860-002

WARNING: REMOVE ELECTRICAL POWER BEFORE REMOVING OR INSTALLING CONTROL BREAKERS IN POWER DISTRIBUTION PANELS. HIGH VOLTAGES COULD BE FATAL.

(1) Make sure that electrical power is removed from airplane.

(a) Make sure that all of the power warning lights on the P92 panel are off.

F. Procedure

SUBTASK 24-41-12-420-001

(1) Do these steps to install the external power contactor [1]:

(a) Hold contactor [1] in place and install the six bolts [2] and washers [3].

(b) Tighten the bolts to 44-52 inch-pounds (5.0-5.9 Newton meters).

(c) Install the electrical connector on the contactor [1] and tighten the two screws on the connector.

(d) Close the access door on P92 panel.

SUBTASK 24-41-12-010-001

(2) Remove the DO-NOT-OPERATE tag from External Power Receptacle and close this access panel:

Number	Name/Location
114AR	External Power Receptacle Door

G. The Installation Test of the External Power Contactor

SUBTASK 24-41-12-700-001

(1) Do a check of the External Power Contactor as follows:

(a) Connect an external power source to the external power receptacle on the P19 panel.

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- (b) Make sure the EXTERNAL POWER CONNECTED and the NOT IN USE lights on the P19 panel come on.
- (c) Make sure the BAT switch on the P5-13 panel is in the ON position.
- (d) Make sure the GND POWER AVAILABLE light on the P5-4 panel is ON.
- (e) Set the GRD PWR switch on the P5-4 panel to the ON position.
- (f) Make sure the GND POWER AVAILABLE light remains on and that both TRANSFER BUS OFF lights on the P5-4 panel go off.

H. Put the airplane back to its usual condition.

SUBTASK 24-41-12-410-001

(1) Close this access panel:

<u>Number</u>	<u>Name/Location</u>
117A	Electronic Equipment Access Door

SUBTASK 24-41-12-860-003

(2) Do this task: Remove Electrical Power, TASK 24-22-00-860-812.

————— **END OF TASK** —————

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BUS POWER CONTROL UNIT (BPCU) - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

- (1) A removal of the BPCU.
- (2) An installation of the BPCU.

TASK 24-41-21-000-801

2. BPCU Removal

(Figure 401)

A. General

- (1) The BPCU, G15 is on the E4-2 equipment rack in the main equipment center.

B. References

Reference	Title
20-10-07-000-801	E/E Box Removal (P/B 201)
20-40-12-000-802	ESDS Handling for Metal Encased Unit Removal (P/B 201)
24-22-00-860-812	Remove Electrical Power (P/B 201)

C. Location Zones

Zone	Area
117	Electrical and Electronics Compartment - Left
118	Electrical and Electronics Compartment - Right

D. Access Panels

Number	Name/Location
117A	Electronic Equipment Access Door

E. Prepare for the removal

SUBTASK 24-41-21-010-001

- (1) Open this access panel to get access to the main equipment center:

Number	Name/Location
117A	Electronic Equipment Access Door

SUBTASK 24-41-21-860-001

- (2) Do this task: Remove Electrical Power, TASK 24-22-00-860-812.

SUBTASK 24-41-21-860-002

- (3) Make sure the BAT switch on the P5-13 panel is set to the OFF position.

SUBTASK 24-41-21-860-003

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

Power Distribution Panel Number 2, P92

Row	Col	Number	Name
A	12	C00936	EXT PWR BPCU

EFFECTIVITY

HAP ALL

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F. Bus Power Control Unit Removal

SUBTASK 24-41-21-910-001

CAUTION: DO NOT TOUCH THE CONTROL UNIT BEFORE YOU DO THE PROCEDURE FOR DEVICES THAT ARE SENSITIVE TO ELECTROSTATIC DISCHARGE. ELECTROSTATIC DISCHARGE CAN CAUSE DAMAGE TO THE CONTROL UNIT.

- (1) Before you touch the BPCU [1], do this task: ESDS Handling for Metal Encased Unit Removal, TASK 20-40-12-000-802.

SUBTASK 24-41-21-020-001

- (2) To remove the BPCU [1], do this task: E/E Box Removal, TASK 20-10-07-000-801.

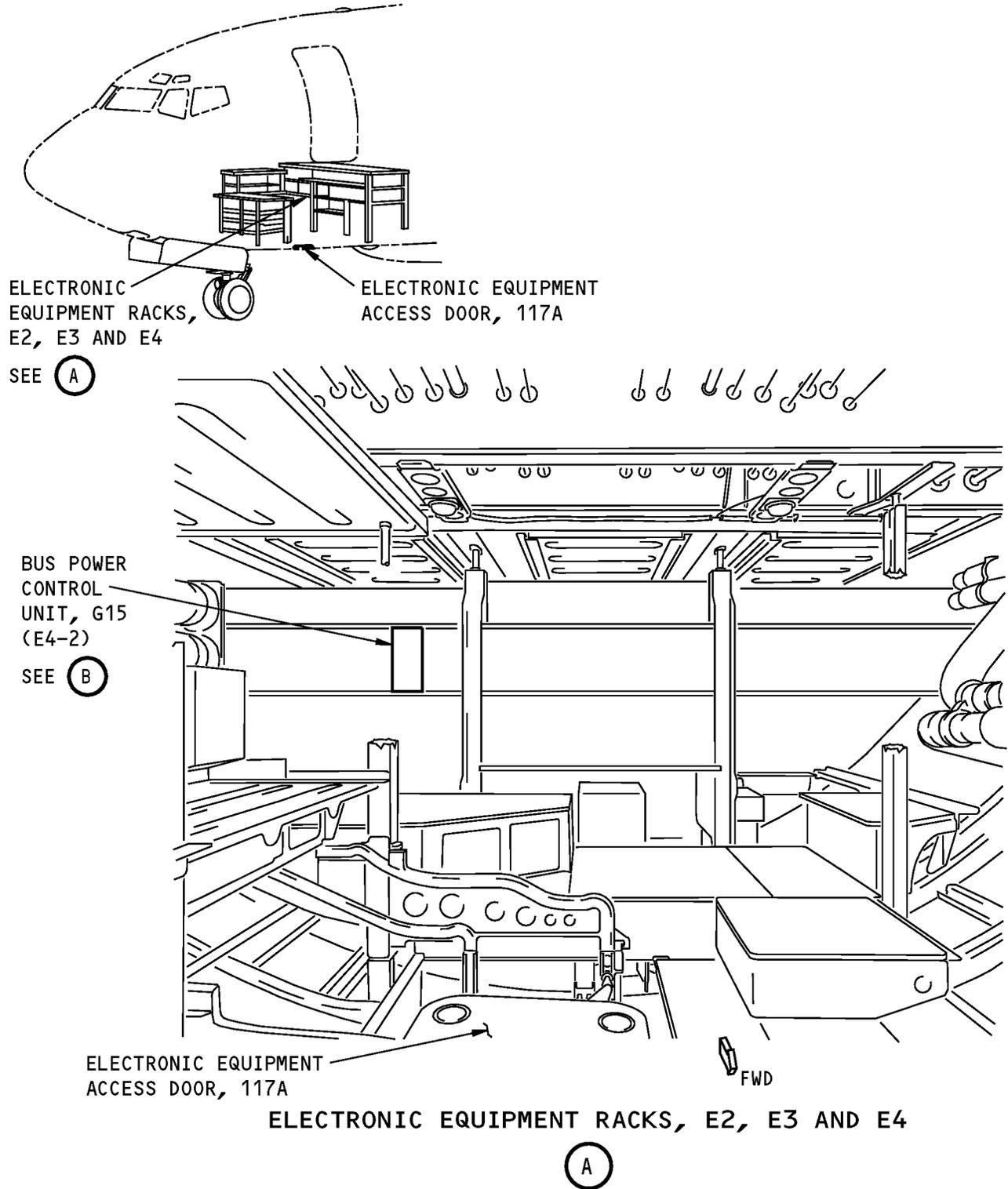
————— **END OF TASK** —————

EFFECTIVITY
HAP ALL

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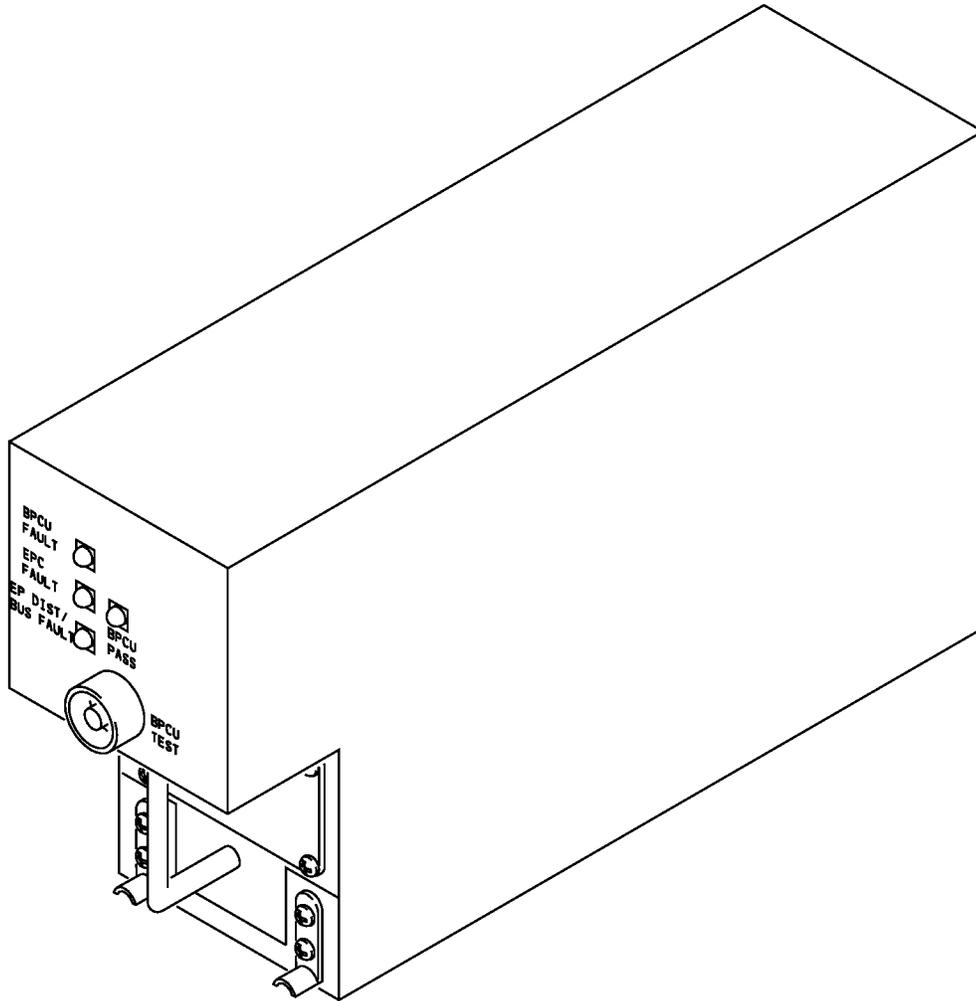
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**Bus Power Control Unit (BPCU) Installation
Figure 401 (Sheet 1 of 2)/24-41-21-990-801**

EFFECTIVITY
HAP ALL

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[1] BUS POWER CONTROL UNIT

(B)

**Bus Power Control Unit (BPCU) Installation
Figure 401 (Sheet 2 of 2)/24-41-21-990-801**

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HAP ALL

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TASK 24-41-21-400-801

3. BPCU Installation

(Figure 401)

A. General

- (1) The BPCU, G15 is on the E4-2 equipment rack in the main equipment center.

B. References

Reference	Title
20-10-07-400-801	E/E Box Installation (P/B 201)
20-40-12-400-802	ESDS Handling for Metal Encased Unit Installation (P/B 201)

C. Location Zones

Zone	Area
117	Electrical and Electronics Compartment - Left
118	Electrical and Electronics Compartment - Right

D. Access Panels

Number	Name/Location
117A	Electronic Equipment Access Door

E. BPCU Installation

SUBTASK 24-41-21-010-002

- (1) Open this access panel if it is closed:

Number	Name/Location
117A	Electronic Equipment Access Door

SUBTASK 24-41-21-910-002

CAUTION: DO NOT TOUCH THE CONTROL UNIT BEFORE YOU DO THE PROCEDURE FOR DEVICES THAT ARE SENSITIVE TO ELECTROSTATIC DISCHARGE. ELECTROSTATIC DISCHARGE CAN CAUSE DAMAGE TO THE CONTROL UNIT.

- (2) Before you touch the BPCU [1], do this task: ESDS Handling for Metal Encased Unit Installation, TASK 20-40-12-400-802.

SUBTASK 24-41-21-420-001

- (3) To install the BPCU [1], do this task: E/E Box Installation, TASK 20-10-07-400-801.

SUBTASK 24-41-21-860-004

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

Power Distribution Panel Number 2, P92

Row	Col	Number	Name
A	12	C00936	EXT PWR BPCU

F. BPCU Installation Test

SUBTASK 24-41-21-700-001

- (1) Do a test of the BPCU as follows:
 - (a) Make sure the STANDBY POWER switch on the P5-5 panel is set to the AUTO position.
 - (b) Set the BAT switch on the P5-13 panel to the ON position.
 - (c) Push the BPCU TEST switch on the BPCU front panel for at least one second.

EFFECTIVITY

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- (d) Make sure all four of the indicator lights on the BPCU come on for approximately three seconds.
- (e) Make sure all four of the indicator lights on the BPCU go off for approximately three seconds.
- (f) Make sure the green BPCU PASS light comes on for approximately seven seconds.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 24-41-21-410-002

- (1) Close this access panel:

<u>Number</u>	<u>Name/Location</u>
117A	Electronic Equipment Access Door

SUBTASK 24-41-21-860-006

- (2) Set the BAT switch on the P5-13 panel to the OFF position.

————— **END OF TASK** —————

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LOAD SHED RELAY - REMOVAL/INSTALLATION

1. General

A. This procedure has two tasks:

- (1) A removal of the Load Shed Relay.
- (2) An installation of the Load Shed Relay.

TASK 24-51-11-000-801

2. Load Shed Relay Removal

(Figure 401)

A. General

- (1) The load shed relays are installed in the rear part of the P91 and P92 panels. The relays are removed and installed through the forward bulkhead liners in the forward cargo area that provide access to the back of the P91 and P92 panels.
- (2) There is a minimum of one or a maximum of three, (depending on airplane configuration), load shed relays installed in each of the power distribution panels (P91 and P92). Refer to System Schematics SSM 24-51-11, SSM 24-51-21 and Wiring Diagrams WDM 24-51-11, WDM 24-51-21.
- (3) Below is a list of the maximum number of load shed relays that could be installed in the P91 panel, there may be fewer:
 - (a) R561 - MAIN BUS 1
 - (b) R605 - GALLEY D
 - (c) R606 - GALLEY C
- (4) Below is a list of the maximum number of load shed relays that could be installed in the P92 panel, there may be fewer:
 - (a) R562 - MAIN BUS 2
 - (b) R603 - GALLEY A
 - (c) R604 - GALLEY B

B. References

Reference	Title
24-22-00-860-812	Remove Electrical Power (P/B 201)
SSM 24-51-11	System Schematics Manual
SSM 24-51-21	System Schematics Manual
WDM 24-51-11	Wiring Diagram Manual
WDM 24-51-21	Wiring Diagram Manual

C. Location Zones

Zone	Area
117	Electrical and Electronics Compartment - Left
118	Electrical and Electronics Compartment - Right
121	Forward Cargo Compartment - Left
122	Forward Cargo Compartment - Right

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D. Prepare for removal.

SUBTASK 24-51-11-860-001

WARNING: REMOVE ELECTRICAL POWER BEFORE REMOVING OR INSTALLING RELAYS IN THE POWER DISTRIBUTION PANELS. HIGH VOLTAGES PRESENT CAN CAUSE INJURY TO PERSONS.

(1) Do this task: Remove Electrical Power, TASK 24-22-00-860-812.

SUBTASK 24-51-11-010-001

(2) Get access to the forward cargo area through the forward cargo door.

(a) Remove the applicable forward bulkhead liner to get access to the back of the power distribution panel.

E. Procedure

SUBTASK 24-51-11-020-001

(1) Do these steps to remove the relay [1]:

WARNING: MAKE SURE ALL POWER WARNING LIGHTS ON THE POWER DISTRIBUTION PANEL ARE OFF. HIGH VOLTAGES PRESENT IN THE POWER DISTRIBUTION PANEL CAN CAUSE INJURY TO PERSONS.

- (a) Make sure that all of the power warning lights on the power distribution panel are off.
- (b) Remove the panel cover on the rear of the power distribution panel to get access to the load shed relay.
- (c) Remove the two screws [2] that hold the terminal cover [3].
- (d) Remove the terminal cover [3].
- (e) Identify and tag the wires before removing them.
- (f) Remove the nut [6] and lockwasher [7] from each electrical wire.
- (g) Remove the electrical wires.
- (h) Remove the four nuts [4] and washers [5] that hold the relay to the power distribution panel.
- (i) Remove the relay [1].

————— **END OF TASK** —————

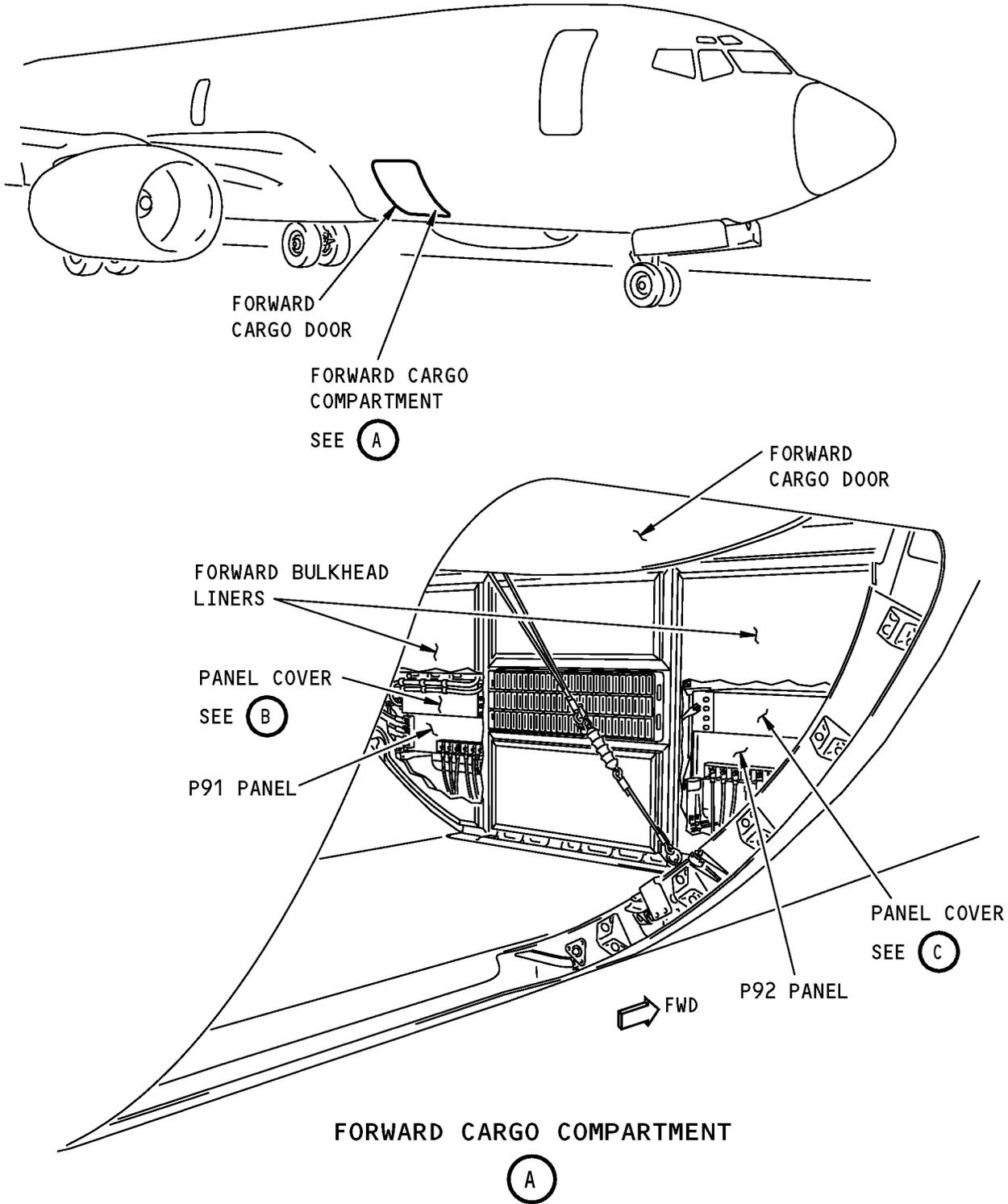
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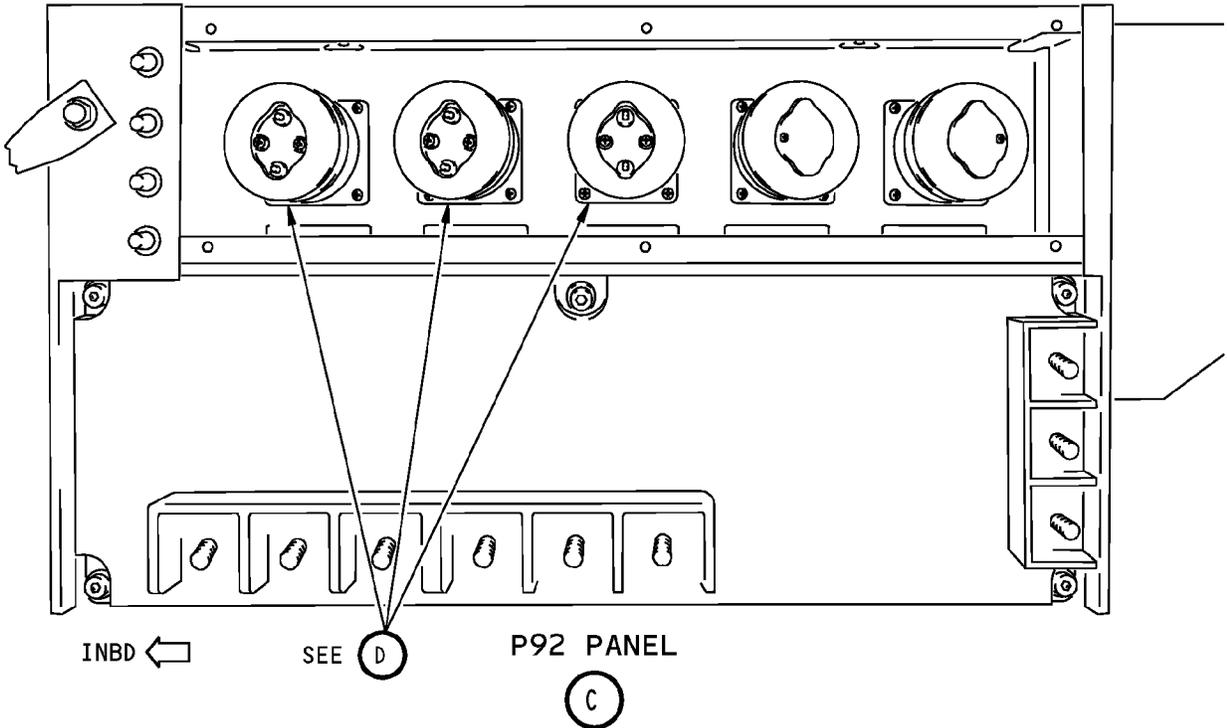
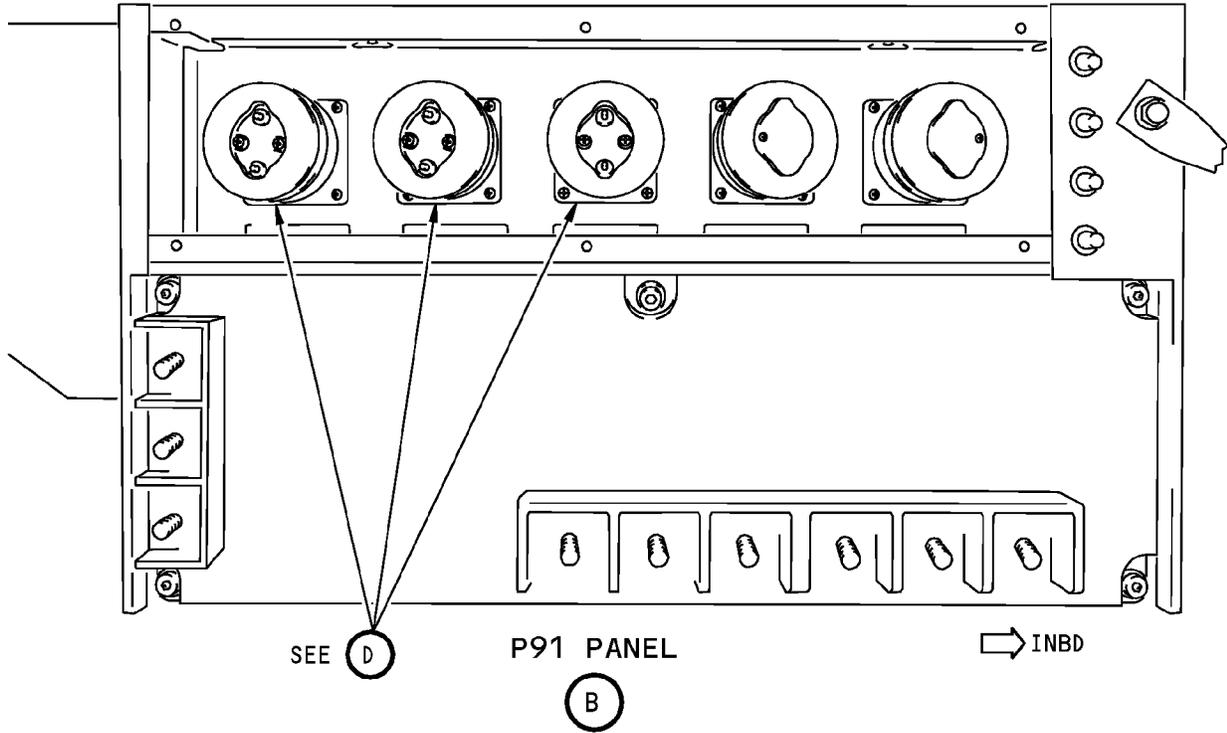


**Load Shed Relay Installation
Figure 401 (Sheet 1 of 3)/24-51-11-990-801**

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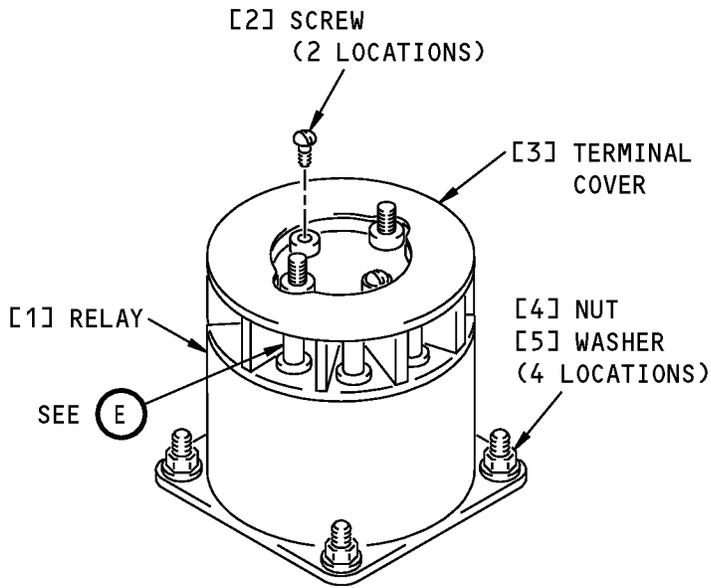
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**Load Shed Relay Installation
Figure 401 (Sheet 2 of 3)/24-51-11-990-801**

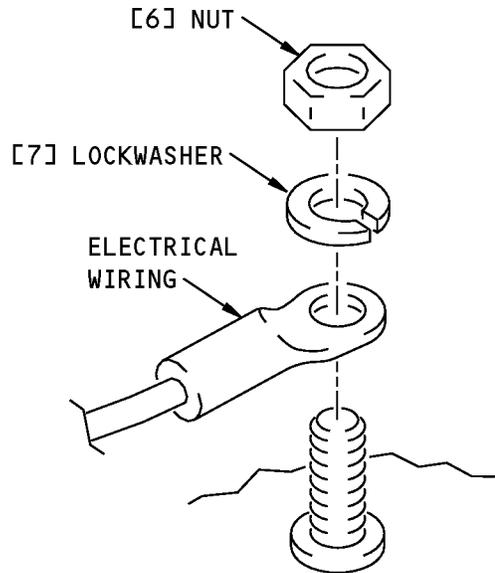
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**LOAD SHED RELAY
(EXAMPLE)**

(D)



**TERMINAL STUD BUILDUP
(EXAMPLE)**

(E)

**Load Shed Relay Installation
Figure 401 (Sheet 3 of 3)/24-51-11-990-801**

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TASK 24-51-11-400-801

3. Load Shed Relay Installation

(Figure 401)

A. General

- (1) The load shed relays are installed in the rear part of the P91 and P92 panels. The relays are removed and installed through the forward bulkhead liners in the forward cargo area that provide access to the back of the P91 and P92 panels.
- (2) There is a minimum of one or a maximum of three, (depending on airplane configuration), load shed relays installed in each of the power distribution panels (P91 and P92). Refer to System Schematics SSM 24-51-11, SSM 24-51-21 and Wiring Diagrams WDM 24-51-11, WDM 24-51-21.
- (3) Below is a list of the maximum number of load shed relays that could be installed in the P91 panel, there may be fewer:
 - (a) R561 - MAIN BUS 1
 - (b) R605 - GALLEY D
 - (c) R606 - GALLEY C
- (4) Below is a list of the maximum number of load shed relays that could be installed in the P92 panel, there may be fewer:
 - (a) R562 - MAIN BUS 2
 - (b) R603 - GALLEY A
 - (c) R604 - GALLEY B

B. References

Reference	Title
24-22-00-860-812	Remove Electrical Power (P/B 201)
24-22-00-860-813	Supply External Power (P/B 201)
SSM 24-51-11	System Schematics Manual
SSM 24-51-21	System Schematics Manual
WDM 24-51-11	Wiring Diagram Manual
WDM 24-51-21	Wiring Diagram Manual

C. Location Zones

Zone	Area
117	Electrical and Electronics Compartment - Left
118	Electrical and Electronics Compartment - Right
121	Forward Cargo Compartment - Left
122	Forward Cargo Compartment - Right

D. Prepare for installation.

SUBTASK 24-51-11-860-002

WARNING: REMOVE ELECTRICAL POWER BEFORE REMOVING OR INSTALLING RELAYS IN THE POWER DISTRIBUTION PANELS. HIGH VOLTAGES PRESENT CAN CAUSE INJURY TO PERSONS.

- (1) Make sure that electrical power is removed.

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E. Procedure

SUBTASK 24-51-11-420-001

(1) Do these steps to install the relay [1]:

WARNING: MAKE SURE ALL POWER WARNING LIGHTS ON THE POWER DISTRIBUTION PANEL ARE OFF. HIGH VOLTAGES PRESENT IN THE POWER DISTRIBUTION PANEL CAN CAUSE INJURY TO PERSONS.

- (a) Make sure that all of the power warning lights on the power distribution panel are off.
- (b) Put the relay [1] in position.
- (c) Install the four nuts [4] and washers [5] that hold the relay to the power distribution panel.
- (d) Install the electrical wires on lower terminal studs as specified by the identification tags.
- (e) Install the nut [6] and lockwasher [7] on each electrical wire.
- (f) Remove the identification tags from the wires.
- (g) Install the terminal cover [3].
- (h) Install the two screws [2] that hold the terminal cover.
- (i) Install the top panel on the rear of the power distribution panel.

F. Load Shed Relay Installation Test

SUBTASK 24-51-11-710-001

(1) If the MAIN BUS 1 or MAIN BUS 2 load shed relay was replaced, test the relay per the steps that follow:

- (a) Do this task: Supply External Power, TASK 24-22-00-860-813.
- (b) Reference the wiring diagram listed below to find an electrical load for the load shed relay that was replaced:

NOTE: Choose a load that is easy to verify if power is being supplied or removed.

- 1) WDM 24-51-11
- 2) WDM 24-51-21

- (c) Make sure that the applicable load is being supplied power.
- (d) If the MAIN BUS 1 load shed relay was replaced in the P91 panel.
 - 1) Open this circuit breaker and install safety tag:

Power Distribution Panel Number 1, P91

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	7	C01288	GEN 1 LOAD SHED

- (e) If the MAIN BUS 2 load shed relay was replaced in the P92 panel.
 - 1) Open this circuit breaker and install safety tag:

Power Distribution Panel Number 2, P92

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	7	C01289	GEN 2 LOAD SHED

- (f) Make sure that power is removed from the applicable load.

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

Power Distribution Panel Number 1, P91

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	7	C01288	GEN 1 LOAD SHED

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

Power Distribution Panel Number 2, P92

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	7	C01289	GEN 2 LOAD SHED

SUBTASK 24-51-11-710-002

(2) If a GALLEY BUS load shed relay was replaced, test the relay per the steps that follow:

- (a) Do this task: Supply External Power, TASK 24-22-00-860-813.
- (b) Set the GALLEY switch on the P5-13 panel to the ON position.
NOTE: On some airplanes, the switch name is CAB/UTIL.
- (c) Make sure that the applicable galley is being supplied power.

NOTE: There may be a power switch on the galley module that needs to be set to the ON position also.

- (d) Set the GALLEY switch on the P5-13 panel to the OFF position.
NOTE: On some airplanes, the switch name is CAB/UTIL.
- (e) Make sure that power is removed from the applicable galley.

G. Put the airplane back to its usual condition.

SUBTASK 24-51-11-410-001

(1) Install the forward bulkhead liner.

SUBTASK 24-51-11-860-003

(2) Do this task: Remove Electrical Power, TASK 24-22-00-860-812.

————— **END OF TASK** —————

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CROSS BUS TIE RELAY - REMOVAL/INSTALLATION

1. General

- A. This procedure has two tasks:
(1) A removal of the Cross Bus Tie Relay.
(2) An installation of the Cross Bus Tie Relay.

TASK 24-61-01-000-801

2. Cross Bus Tie Relay Removal

(Figure 401)

A. General

- (1) The cross bus tie relay is installed in the rear part of the P91 panel. The relay is removed and installed through the forward bulkhead liner in the forward cargo area that provides access to the back of the P91 panel. Refer to System Schematics SSM 24-61-11 and Wiring Diagrams WDM 24-61-11 .

B. References

Table with 2 columns: Reference, Title. Rows include 24-22-00-860-812, SSM 24-61-11, and WDM 24-61-11.

C. Location Zones

Table with 2 columns: Zone, Area. Rows include 117 and 121.

D. Prepare for removal

SUBTASK 24-61-01-860-001

WARNING: REMOVE ELECTRICAL POWER BEFORE YOU REMOVE OR INSTALL COMPONENTS IN THE POWER DISTRIBUTION PANELS. THERE ARE HIGH VOLTAGES THAT CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

- (1) Do this task: Remove Electrical Power, TASK 24-22-00-860-812.

SUBTASK 24-61-01-010-001

- (2) Get access to the forward cargo area through the forward cargo door.
(a) Remove the applicable forward bulkhead liner to get access to the back of the power distribution panel.

E. Procedure

SUBTASK 24-61-01-020-001

- (1) Do these steps to remove the relay [1]:

WARNING: MAKE SURE THAT ALL OF THE POWER WARNING LIGHTS ON THE POWER DISTRIBUTION PANEL ARE OFF. THERE ARE HIGH VOLTAGES IN THE POWER DISTRIBUTION PANEL THAT CAN CAUSE INJURIES TO PERSONNEL.

- (a) Make sure that all of the power warning lights on the power distribution panel are off.
(b) Remove the panel cover on the rear of the power distribution panel to get access to the cross bus tie relay.

Box containing EFFECTIVITY and HAP ALL

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- (c) Remove the two screws [2] that hold the terminal cover [3].
- (d) Remove the terminal cover [3] .
- (e) Identify and tag the wires before removing them.
- (f) Remove the nut [6] and lock washer [7] from each electrical wire.
- (g) Remove the electrical wires.
- (h) Remove the four nuts [4] and washers [5] that hold the relay to the power distribution panel.
- (i) Remove the relay [1].

————— **END OF TASK** —————

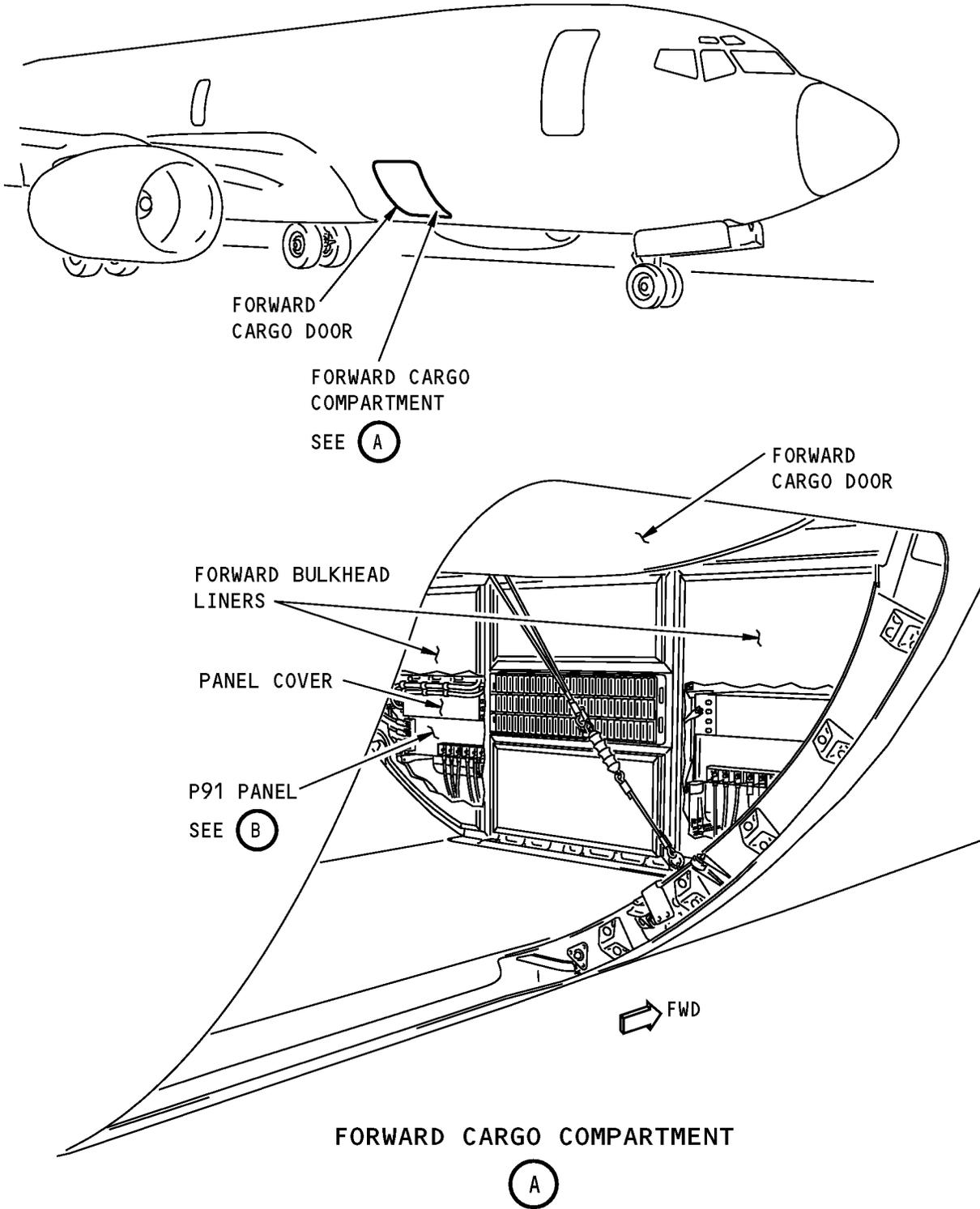
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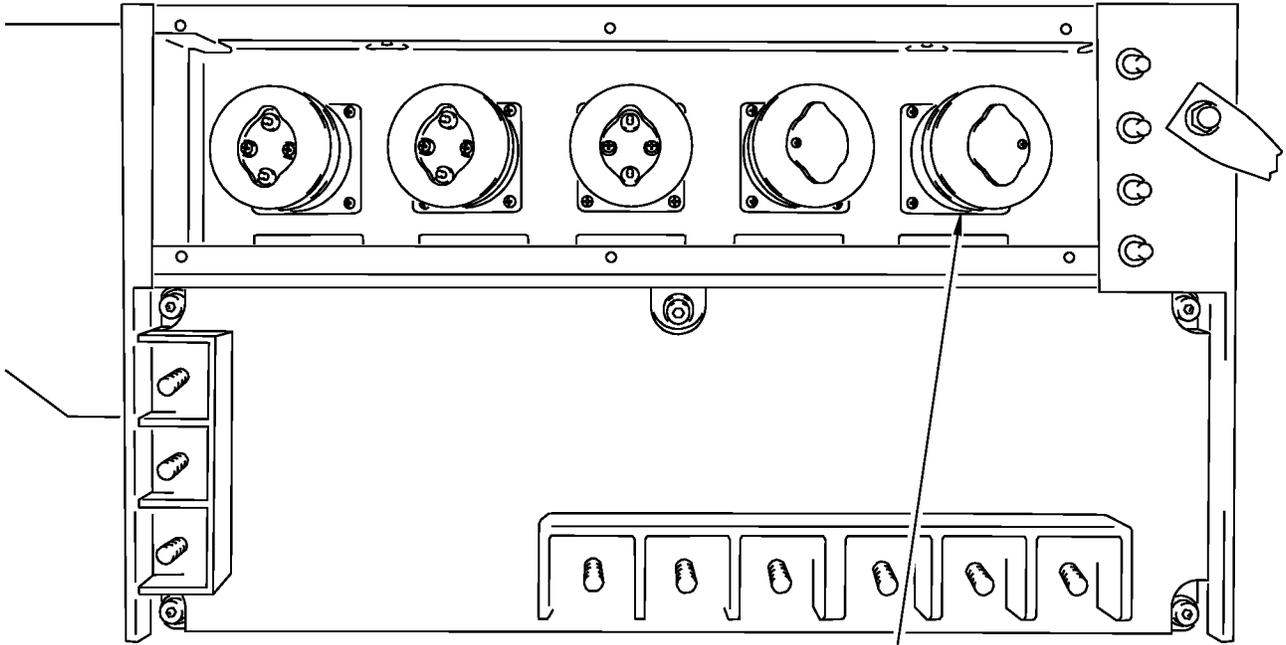
**Cross Bus Tie Relay Installation
Figure 401 (Sheet 1 of 2)/24-61-01-990-801**

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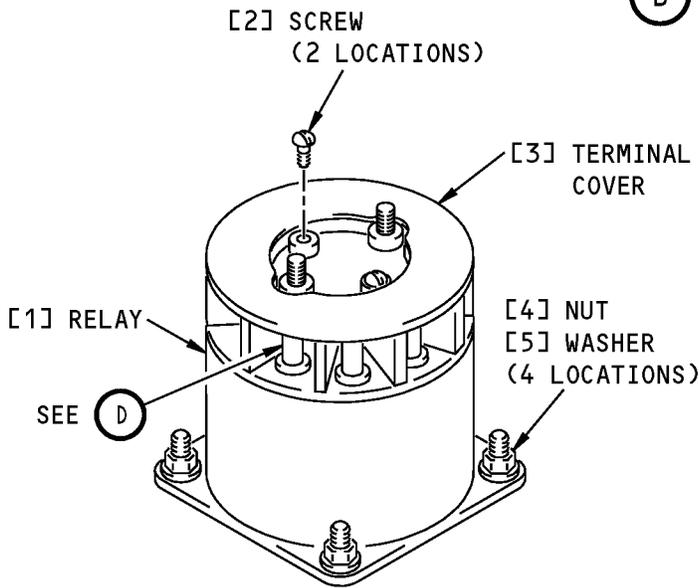


P91 PANEL

SEE (C)

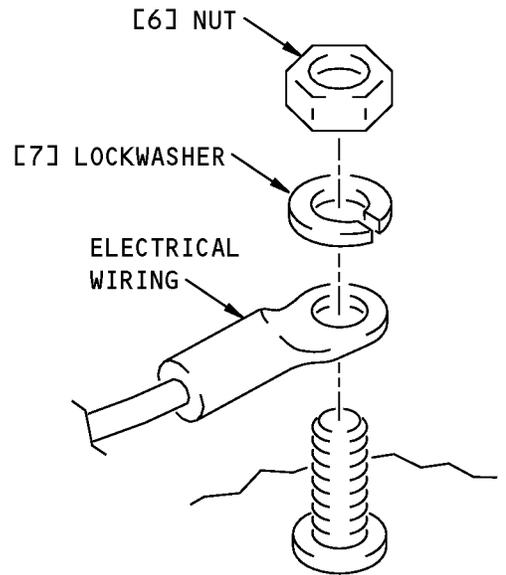
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(B)



**CROSS BUS TIE RELAY
(EXAMPLE)**

(C)



**TERMINAL STUD BUILDUP
(EXAMPLE)**

(D)

**Cross Bus Tie Relay Installation
Figure 401 (Sheet 2 of 2)/24-61-01-990-801**

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TASK 24-61-01-400-801

3. Cross Bus Tie Relay Installation

(Figure 401)

A. General

- (1) The cross bus tie relay is installed in the rear part of the P91 panel. The relay is removed and installed through the forward bulkhead liner in the forward cargo area that provides access to the back of the P91 panel. Refer to System Schematics SSM 24-32-11 and Wiring Diagrams WDM 24-32-11.

B. References

Reference	Title
24-22-00-860-812	Remove Electrical Power (P/B 201)
24-22-00-860-813	Supply External Power (P/B 201)
SSM 24-32-11	System Schematics Manual
WDM 24-32-11	Wiring Diagram Manual

C. Location Zones

Zone	Area
117	Electrical and Electronics Compartment - Left
121	Forward Cargo Compartment - Left

D. Prepare for Installation.

SUBTASK 24-61-01-860-002

WARNING: REMOVE ELECTRICAL POWER BEFORE YOU REMOVE OR INSTALL COMPONENTS IN THE POWER DISTRIBUTION PANELS. THERE ARE HIGH VOLTAGES THAT CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

- (1) Make sure that electrical power is removed.

E. Procedure

SUBTASK 24-61-01-420-001

- (1) Do these steps to install the relay [1]:

WARNING: MAKE SURE THAT ALL OF THE POWER WARNING LIGHTS ON THE POWER DISTRIBUTION PANEL ARE OFF. THERE ARE HIGH VOLTAGES IN THE POWER DISTRIBUTION PANEL THAT CAN CAUSE INJURIES TO PERSONNEL.

- (a) Make sure that all of the power warning lights on the power distribution panel are off.
- (b) Put the relay [1] in position.
- (c) Install the four nuts [4] and washers [5] that hold the relay to the power distribution panel.
- (d) Install the electrical wires on lower terminal studs as specified by the identification tags.
- (e) Install the nut [6] and lock washer [7] on each electrical wire.
- (f) Remove the identification tags from the wires.
- (g) Install the terminal cover [3].
- (h) Install the two screws [2] that hold the terminal cover.
- (i) Install the top panel on the rear of the power distribution panel.

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F. Cross Bus Tie Relay Installation Test

SUBTASK 24-61-01-860-003

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

SUBTASK 24-61-01-710-002

(2) Do a check of the DC Bus Tie Relay as follows:

- (a) Make sure the BAT switch on the P5-13 panel is set to the ON position.
- (b) Make sure the BUS TRANS switch on the P5-4 panel is set to the AUTO position.
- (c) Set the DC Meter Selector Switch on the P5-13 panel to the TR 1 position.
- (d) Make sure the DC meter on the P5-13 panel shows this value:
 - 1) DC VOLTS = 22-30
- (e) Open this circuit breaker and install safety tag:

Power Distribution Panel Number 1, P91

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	6	C00806	TRU 1

- (f) Make sure the DC meter on the P5-13 panel shows these values:
 - 1) DC VOLTS = 22-30
 - 2) DC AMPS = 0
- (g) Make sure the TR UNIT light on the P5-13 panel comes on.
- (h) Set the BUS TRANS switch on the P5-4 panel to the OFF position.
- (i) Make sure the DC meter on the P5-13 panel shows these values:
 - 1) DC VOLTS = 0
 - 2) DC AMPS = 0
- (j) Set the BUS TRANS switch on the P5-4 panel to the AUTO position.
- (k) Make sure the DC meter on the P5-13 panel shows these values:
 - 1) DC VOLTS = 22-30
 - 2) DC AMPS = 0
- (l) Remove the safety tag and close this circuit breaker:

Power Distribution Panel Number 1, P91

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	6	C00806	TRU 1

(m) Make sure the TR UNIT light on the P5-13 panel goes off.

G. Put the airplane back to its usual condition.

SUBTASK 24-61-01-410-001

(1) Install the forward bulkhead liner.

SUBTASK 24-61-01-860-004

(2) Do this task: Remove Electrical Power, TASK 24-22-00-860-812

————— END OF TASK —————

EFFECTIVITY HAP ALL

24-61-01

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