CHAPTER

12

SERVICING

CHAPTER 12
SERVICING

Subject/Page	Date	COC
12-EFFECTIVE PAGES		
1 thru 7	Sep 15/2023	
8	BLANK	
12-CONTENTS		
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O 2	Sep 15/2023	
O 3	Sep 15/2023	
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7	Sep 15/2021	
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339	May 15/2023	
340	Jan 15/2023	
341	Sep 15/2021	

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

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Subject/Page	Date	COC
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O 315	Sep 15/2023	
O 316	Sep 15/2023	
O 317	Sep 15/2023	
R 318	Sep 15/2023	
R 319	Sep 15/2023	
O 320	Sep 15/2023	
O 321	Sep 15/2023	
R 322	Sep 15/2023	
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307	May 15/2023	
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R 310	Sep 15/2023	
R 311	Sep 15/2023	
R 312	Sep 15/2023	
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R 314	Sep 15/2023	
R 315	Sep 15/2023	
R 316	Sep 15/2023	
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R 307	Sep 15/2023	
R 308	Sep 15/2023	
R 309	Sep 15/2023	
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R 304	Sep 15/2023	
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R 309	Sep 15/2023	
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R 313	Sep 15/2023	
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O 316	Sep 15/2023	
O 317	Sep 15/2023	
R 318	Sep 15/2023	
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R 304	Sep 15/2023	
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R 307	Sep 15/2023	
R 308	Sep 15/2023	
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R 310	Sep 15/2023	
O 311	Sep 15/2023	
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12-16-02		
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R 319	Sep 15/2023	
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R 321	Sep 15/2023	
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12-22-51 (cont)		
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306	Sep 15/2021	

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316	Jan 15/2023	

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Subject/Page	Date	COC
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R 201	Sep 15/2023	
R 202	Sep 15/2023	

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

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CHAPTER 12
SERVICING

SERVICING - GENERAL

1. General

A. This section contains information for Replenishment of the system reservoirs or components.

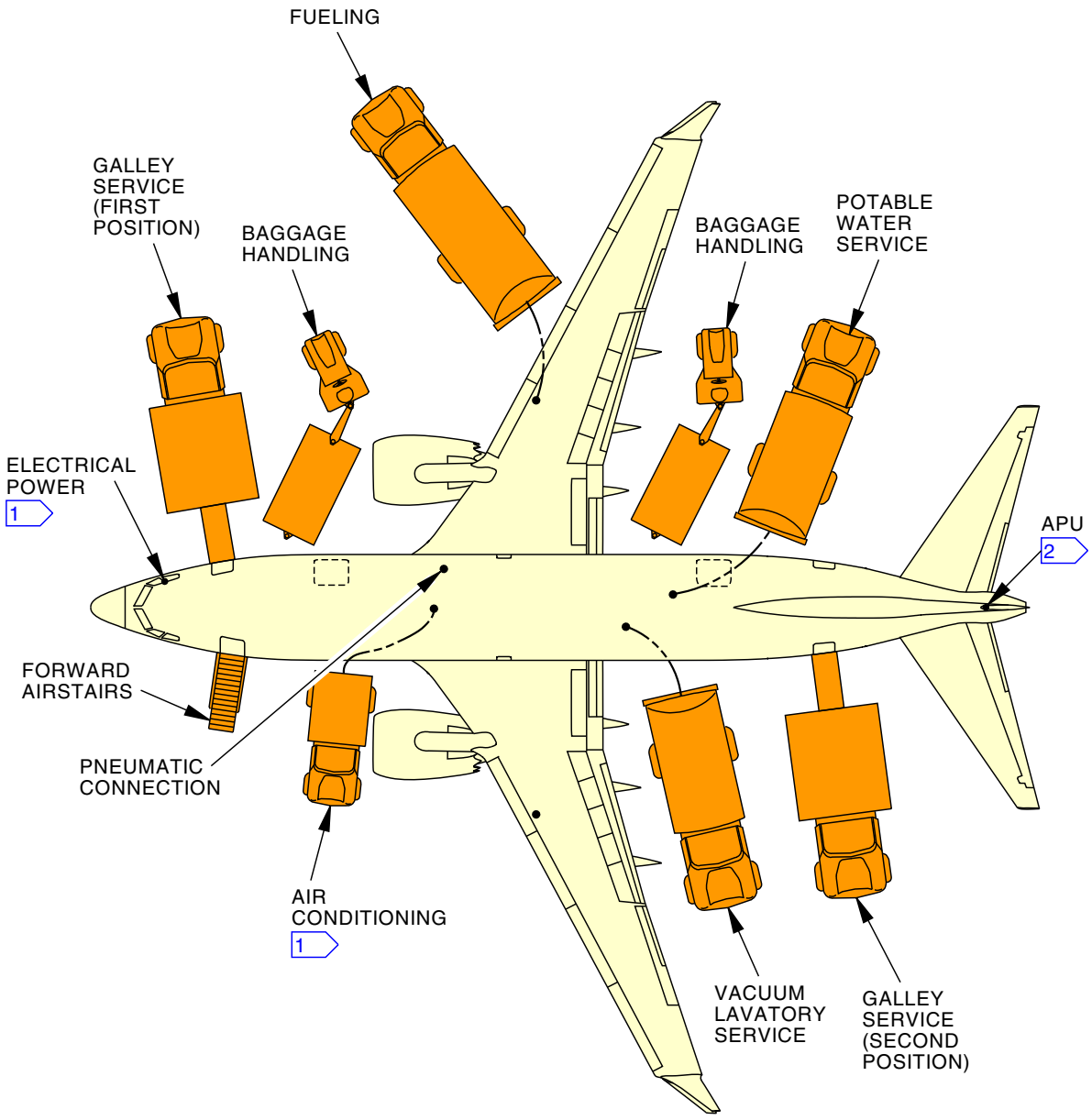
TASK 12-00-00-610-801

2. Servicing - General

A. General

(1) For reservoir servicing locations see (Figure 301, Figure 302).

END OF TASK



1 NOT REQUIRED IF APU IS IN USE.

2 AUXILIARY POWER UNIT CAN PROVIDE:
- ELECTRICAL POWER
- ENGINE START
- AIR CONDITIONING

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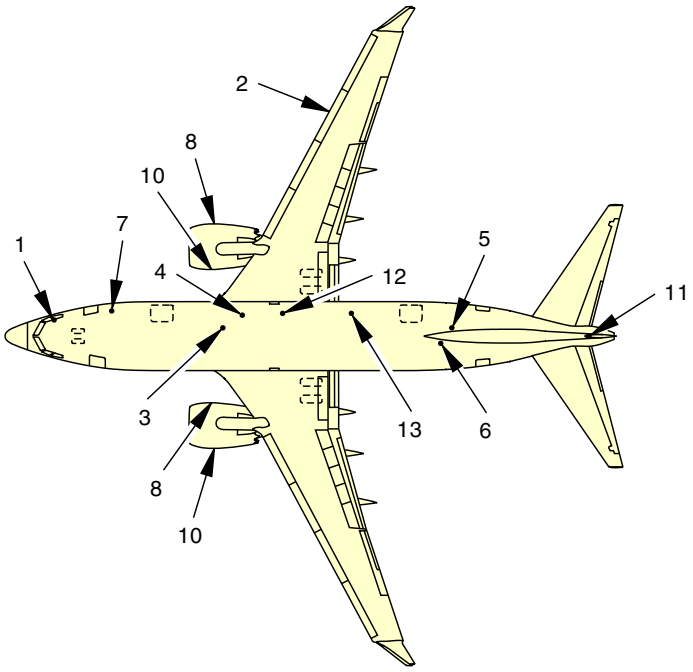
Terminal Service Arrangement (Example)
Figure 301/12-00-00-990-801



POINT	SERVICE POINT	LOCATION
1	ELECTRICAL	BELOW FLIGHT DECK WINDOW
2	PRESSURE FUELING	WING LEADING EDGE
3	CONDITIONED AIR	AFT OF THE FORWARD CARGO COMPARTMENT ON BOTTOM OF FUSELAGE
4	PNEUMATICS	AFT OF CONDITIONED AIR SERVICING POINT ON BOTTOM OF FUSELAGE
5	POTABLE WATER	BETWEEN RIGHT SIDE AFT CARGO DOOR AND PASSENGER SERVICE DOOR
6	VACUUM LAV SERVICE	FORWARD OF LEFT SIDE PASSENGER SERVICE DOOR
7	OXYGEN SERVICE (OPT)	AFT OF E/E COMPARTMENT EXTERNAL ACCESS DOOR ON BOTTOM OF AIRPLANE
8	ENGINE NO. 1 (OIL) ENGINE NO. 2 (OIL)	RIGHT SIDE OF ENGINE
10	ENGINE NO. 1 IDG (OIL) ENGINE NO. 2 IDG (OIL)	LEFT SIDE OF ENGINE
11	APU OIL	BACK OF AIRPLANE
12	HYDRAULIC RESERVOIR	RIGHT MAIN LANDING GEAR WHEEL WELL FORWARD BULKHEAD
13	BRAKE ACCUMULATOR	RIGHT MAIN LANDING GEAR WHEEL WELL AFT WALL

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Location of Ground Service Points
Figure 302/12-00-00-990-802

FUEL - SERVICING

1. General

A. This procedure has these tasks:

(1) Precautions and Limits for the Refuel Operation

(2) Prepare the Airplane for a Refuel Operation

(3) Pressure Refuel Procedure

(4) Refuel Operation When the Refuel Quantity Indicators Flash

(5) Refuel Operation When the Fuel Quantity Indicating System (FQIS) Does Not Operate

(6) Pressure Refueling Operation For a Refuel Valve That Does Not Open Electrically

(7) Fuel System Drainage

(8) Drain the fuel from the Sumps after Defueling.

B. You must not permit the fuel tanks to collect too much water. Do the procedure to drain the sumps drain valves for each tank regularly.

C. Fuel Servicing Regulations

(1) Each operator is responsible for complying with the local, state and national regulations regarding aircraft fuel servicing. It is possible that fire codes and standards make it necessary to use different or more restrictive procedures than those given below. Make sure the procedures used during the refuel operation give sufficient protection to persons and equipment.

(2) Obey all of the safety precautions supplied in this task: "Precautions and Limits for the Refuel Operation".

(3) If you make a decision not to do this recommended procedure, you must have an approved alternative procedure.

TASK 12-11-00-650-801

2. Precautions and Limits for the Refuel Operation

(Figure 301)

A. General

(1) Obey all of the precautions in this task when you refuel the airplane.

B. References

Reference	Title
28-21-11-000-801	Fueling Receptacle Removal (P/B 401)
28-21-11-400-801	Fueling Receptacle Installation (P/B 401)
28-26-00-650-802	Tank to Tank Fuel Transfer (P/B 201)
49-11-00-710-801	APU Operation Limits (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)
49-11-00-860-803	APU Emergency Shutdown (P/B 201)

C. Location Zones

Zone	Area
531	Left Wing - Center Fuel Tank, Rib 1 to Rib 5
532	Left Wing - Main Tank, Rib 5 to Rib 22, Wing Station 204.25 to Wing BL 643.50

(Continued)

Zone	Area
631	Right Wing - Center Fuel Tank, Rib 1 to Rib 5
632	Right Wing - Main Tank, Rib 5 to Rib 22, Wing Station 204.25 to Wing Station 643.50

D. Emergency Procedures

SUBTASK 12-11-00-650-001

(1) Obey all airport and operator provided fire protection, rescue and fuel spill emergency procedures. Emergency procedures include these subjects:

(a) Location of emergency fuel shutoff.

(b) Airport fire department phone numbers.

(c) Evacuation of airplane passengers.

(d) Fuel spill containment and ignition source reduction.

(e) Location and use of fire extinguishers.

(f) Responsibilities of fuel servicing and airplane servicing personnel.

SUBTASK 12-11-00-650-002

(2) Refuel the airplane in areas which allow the free movement of air, fire fighting equipment and other emergency equipment.

SUBTASK 12-11-00-650-003

(3) Stop the refuel operation if conditions change which could cause an unsafe condition for persons or equipment.

E. Fuel Spills

SUBTASK 12-11-00-650-004

(1) Each fuel spill event is different. Variables such as the size of the spill, weather conditions, equipment location, aircraft occupancy, emergency equipment and personnel available will determine the correct response to control the fire hazard.

SUBTASK 12-11-00-650-005

(2) During a refuel operation, continuously monitor the airplane for fuel leaks and fuel spills at the wingtip.

SUBTASK 12-11-00-650-006

(3) If a fuel spill occurs, do these steps:

(a) Stop the fuel flow.

(b) Unload and shutdown the Auxiliary Power Unit (APU) (TASK 49-11-00-860-802).

(c) Follow the fire department and operator provided fuel spill and fire protection emergency procedures.

(d) Find the cause of the fuel spill and correct it.

(e) Inspect enclosed areas to make sure that they are free of fuel vapor.

(f) Do not start the refuel operation or start the APU again until the fire department or the person(s) in charge have given approval.

(g) Check the fuel level in each tank using the measuring stick.

1) If a tank has more than the usable fuel capacity, transfer the excess fuel to a different fuel tank or remove the excess fuel from the airplane.

NOTE: If a fuel tank has too much fuel, fuel may spill during taxi or during takeoff.

F. Passenger Precautions

SUBTASK 12-11-00-650-007

WARNING OBEY THESE PASSENGER PRECAUTIONS WHEN YOU REFUEL THE AIRPLANE. IF YOU DO NOT OBEY THESE PRECAUTIONS, INJURIES TO PERSONS CAN OCCUR.

(1) Obey all airport and operator procedures if you refuel the airplane with passengers onboard.

SUBTASK 12-11-00-650-008

(2) For each airplane type, a hazardous area must be identified for boarding or unloading passengers during a refuel operation. Barriers must be in place to stop passengers from entering this hazardous area.

G. Airplane System Precautions

SUBTASK 12-11-00-650-009

WARNING OBEY THESE AIRPLANE SYSTEM PRECAUTIONS WHEN YOU REFUEL THE AIRPLANE. IF YOU DO NOT OBEY THESE PRECAUTIONS, A FIRE OR AN EXPLOSION CAN OCCUR.

(1) Do not operate this airplane system during a refuel operation:

(a) High Frequency (HF) communications system.

SUBTASK 12-11-00-650-010

(2) The SATCOM system can be operated during a refuel operation.

SUBTASK 12-11-00-650-011

(3) Obey these restrictions on maintenance tasks during a refuel operation:

(a) Do not connect or disconnect the battery chargers, aircraft ground-power generators or other electrical ground-power components. Do not test the power equipment until after the refuel operation is complete.

(b) Do not fill or change oxygen bottles.

(c) Do not remove electrical power.

NOTE: Damage to the refuel system components can occur.

(d) Do not start refueling if parts of the landing gear is unusually hot.

SUBTASK 12-11-00-650-012

CAUTION DO NOT OPERATE THE EMDP FOR MORE THAN TWO MINUTES UNLESS THE APPLICABLE FUEL TANK HAS A MINIMUM OF 250 GALLONS/946 LITERS (1675 POUNDS/760 KILOGRAMS) OF FUEL IN IT. YOU CAN ALSO USE A PORTABLE EXTERNAL OIL COOLER (PEOC). IF YOU CONTINUE TO OPERATE THE EMDP, THE HYDRAULIC FLUID CAN BECOME TOO HOT. IF YOU DO NOT OBEY, DAMAGE TO EQUIPMENT CAN OCCUR.

(4) Do not operate a hydraulic system for more than two minutes if the tank that contains the exchanger for that hydraulic system has less than 250 gal (946 l) (1675 lb (760 kg)) of fuel.

(a) Do not operate hydraulic system A (placard controls) for more than two minutes if the No. 1 tank has less than 250 gal (946 l) (1675 lb (760 kg)) of fuel.

(b) Do not operate hydraulic system B or the standby hydraulic system (placard controls) for more than two minutes if the No. 2 tank has less than 250 gal (946 l) (1675 lb (760 kg)) of fuel.

(c) If the hydraulic exchangers are not below the top level of the fuel, the hydraulic system will become too hot.

SUBTASK 12-11-00-650-013

(5) Make sure that these components are in the closed position before you start the refuel operation:

NOTE: Fuel spills, damage to the airplane or inability to close doors can occur if these components are not closed.

(a) Wing pressure relief valves (two locations).

(b) Make sure that the wingtip vents are not blocked before you start the refuel operation.

SUBTASK 12-11-00-420-001

WARNING

MAKE SURE THAT THERE IS NO TENSION ON THE HOSE. THE HOSE MUST HANG FREELY FROM THE REFUEL ADAPTER, WITH NO FORCE ON IT. TENSION ON THE HOSE CAN CAUSE DAMAGE TO THE FUEL RECEPTACLE AND CAUSE THE HOSE TO DISCONNECT. INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT CAN OCCUR.

(6) Do an inspection of the refuel adapter before you connect the refuel nozzle:

(a) Make sure that the refuel adapter is clean, not damaged and there are no fuel leaks.

1) Make sure that the screws, lugs, and slots are not loose or damaged.

(b) If there is a problem with the refuel adapter, replace the refuel adapter (TASK 28-21-11-000-801, TASK 28-21-11-400-801).

(c) Make sure that the refuel/defuel handle is in the refuel position.

SUBTASK 12-11-00-650-014

(7) Make sure that the landing gear wheel chocks do not touch the tires.

NOTE: The wheel chocks can wedge against the tire after you add fuel.

SUBTASK 12-11-00-650-015

(8) A refuel operation with a main engine operating is an emergency procedure. Obey all airport- and operator-provided emergency procedures.

H. Auxiliary Power Unit (APU) Operations During Refueling and Defueling - Limits and Precautions

SUBTASK 12-11-00-860-001

WARNING

OBEY THE PRECAUTIONS FOR APU OPERATION WHEN YOU OPERATE THE APU DURING THE FUELING OPERATION OF THE AIRPLANE. IF YOU OPERATE THE APU INCORRECTLY, INJURIES TO PERSONNEL, AND DAMAGE TO EQUIPMENT CAN OCCUR.

(1) If the APU is operating during refueling, do these steps:

(a) Obey the limits for the operation of the APU (TASK 49-11-00-710-801, TASK 49-11-00-860-801).

(b) You can start the APU during refueling if the start is an initial start or a restart after normal shutdown.

(c) You can shut down the APU (manual or automatic) during the refueling operation.

WARNING IF THERE IS A PROTECTIVE AUTOMATIC SHUTDOWN OF THE APU OR A FAILURE TO START CONDITION, DO NOT TRY TO START THE APU DURING THE FUELING OPERATION OF THE AIRPLANE. IF YOU TRY TO START THE APU, INJURIES TO PERSONNEL, AND DAMAGE TO EQUIPMENT CAN OCCUR.

(d) If there is a protective automatic shutdown or failure to start condition on the APU, do one of these two steps:

1) Complete the refueling before you try to start the APU again.
2) Stop the refueling operation and disconnect the fuel hose(s) from the airplane fueling adapter(s) before you start the APU again.

WARNING DO THESE STEPS IF AN APU FIRE OCCURS WHILE YOU REFUEL THE AIRPLANE. IF YOU DO NOT OBEY THESE STEPS, INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT CAN OCCUR.

(e) If an APU fire occurs, do these steps in this sequence:

1) Stop the refueling operation.
2) The APU should shut down automatically. If it does not shut down automatically, do this task: APU Emergency Shutdown, TASK 49-11-00-860-803.
3) Discharge the APU fire bottles (TASK 49-11-00-860-803).
4) Notify persons on board the airplane and Airport Fire Services.

WARNING DO THESE STEPS IF FUEL SPILLAGE OCCURS DURING DEFUELING. INJURY TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

(f) If fuel spillage occurs, do these steps:

1) Stop the refueling operation.
2) Notify persons on board the airplane.
3) Unload the APU and shut it down (TASK 49-11-00-860-802).
   a) Do not start the APU until the spilled fuel is removed and there is no further risk of spilled fuel or vapors.

WARNING MAKE SURE THAT FUELING VEHICLES ARE NOT PARKED IN THE EXHAUST FLOW OF THE ENGINES OF THIS AIRPLANE, OR ADJACENT AIRPLANES. THE HOT EXHAUST CAN CAUSE A FIRE OR EXPLOSION.

(g) Make sure that fueling vehicles are in a position that avoids risk of coming in the path of the APU exhaust stream.

1) Make sure that the APU exhaust stream does not impinge on fueling vehicles for other airplanes.
2) Make sure that the fueling vehicles for this airplane are out of the APU exhaust stream of adjacent airplanes.

I. Airplane Separation Distance Limits

SUBTASK 12-11-00-650-016

WARNING OBEY THESE SEPARATION DISTANCES DURING THE FUELING OPERATION OF THE AIRPLANE. IF YOU DO NOT OBEY THESE SEPARATION DISTANCES, A FIRE OR AN EXPLOSION CAN OCCUR. A FIRE OR EXPLOSION CAN KILL OR CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

(1) Maintain the separation distance given in Table 301.

Table 301/12-11-00-993-801

EQUIPMENT OR IGNITION SOURCES	REFUEL/DEFUEL SEPARATION DISTANCE*[1]
Adjacent aircraft engine or APU	50 ft (15 m)
Fuel service equipment - measured from engine or exhaust system	10 ft (3 m) from fuel vents
Ground Power Units	20 ft (6 m)
Aircraft servicing equipment - measured from the engine or exhaust system	10 ft (3 m)
Electrical equipment that is likely to cause arcs or sparks	50 ft (15 m)
Photographic equipment	10 ft (3 m)
Battery powered equipment	10 ft (3 m) from fuel servicing equipment or fuel spills*[2]
Open flames, heat sources, lighted smoking material, and other potential ignition sources	50 ft (15 m)
Electrical transmitting equipment	Refer to Table 302

*[1] The distance is measured from a point on the ground directly below the fuel vents or from fueling equipment.

*[2] Does not apply to battery powered equipment approved (by an independent testing laboratory) for use in Class I Division 1 hazardous locations.

SUBTASK 12-11-00-650-017

WARNING OBEY THESE SEPARATION DISTANCES FOR THE ELECTRICAL SYSTEM DURING THE FUELING OF THE AIRPLANE. IF YOU DO NOT OBEY THIS PRECAUTION, A FIRE OR AN EXPLOSION CAN OCCUR.

(2) Maintain the separation distance given in Table 302.

Table 302/12-11-00-993-802

POWER (EIRP*[1]) OF EQUIPMENT TRANSMITTING RADAR OR RADIO	REFUEL/DEFUEL SEPARATION DISTANCE*[2]
More than 100 Watts (radio or radar)	200 ft (61 m)
25 to 100 Watts (radio or radar)	50 ft (15 m)
Less than 25 Watts*[3]	10 ft (3 m)

*[1] EIRP is Effective Isotropic Radiated Power in Watts.

*[2] The distance is measured from a point on the ground directly below the fuel vents or from fueling equipment.

*[3] This category includes mobile phones, pagers, two-way radios, and similar wireless communication equipment. There are low power, intrinsically safe communication systems that are approved for use in hazardous locations. These devices can be used safely in areas that contain fuel vapor (UL 913 or equivalent standards).

J. Fuel Requirements

SUBTASK 12-11-00-650-018

WARNING OBEY THESE FUEL GRADE LIMITS. THE INCORRECT GRADE OF FUEL CAN CAUSE AN ENGINE FLAMEOUT, DECREASE ENGINE PERFORMANCE, OR CAUSE DAMAGE.

(1) Make sure that the fuel source contains the correct fuel grade as specified by the Airplane Flight Manual (AFM).

SUBTASK 12-11-00-650-019

WARNING DO NOT USE WIDE-CUT FUEL WHEN IT IS NOT PERMITTED. A FLAMEOUT CAN OCCUR, AND ENGINE POWER CAN DECREASE SUDDENLY. INJURIES TO PERSONS AND DAMAGE TO THE AIRPLANE CAN OCCUR IF YOU USE AN INCORRECT FUEL.

(2) Do not use wide cut fuels.

NOTE: There is a placard on the refueling station that prevents the use of wide cut fuels. Wide cut fuel is fuel which satisfies ASTM D 6615, JET B or MIL-T-5624, JP-4. Wide cut fuel contains both kerosene and naphtha (gasoline) fractions. It is not certified for use on the Boeing 737-7/8/8200/9 model of airplane.

K. Fuel Servicing Equipment Precautions

SUBTASK 12-11-00-650-020

WARNING OBEY THESE PRECAUTIONS FOR FUEL SERVICING EQUIPMENT WHEN YOU REFUEL THE AIRPLANE. IF YOU DO NOT OBEY THESE PRECAUTIONS, A FIRE OR AN EXPLOSION CAN OCCUR.

(1) Obey all separation distance requirements (Table 301).

SUBTASK 12-11-00-650-021

(2) Use only approved fuel servicing equipment in a serviceable condition.

SUBTASK 12-11-00-650-022

(3) Do not disable the deadman shutoff controls.

NOTE: Wire, rope or tools used to disable the deadman control can prevent the immediate shutoff of pressurized fuel. A disabled deadman control can cause a fuel spill hazard.

SUBTASK 12-11-00-650-023

(4) When you position fuel servicing vehicles, make sure that the equipment:

(a) Has a clear exit path at all times.

(b) Does not interfere with access to the aircraft for rescue or fire protection.

(c) Does not obstruct the passenger evacuation routes.

(d) Does not obstruct the chute deployment areas.

L. Ground Equipment and Airplane Servicing Equipment Precautions

SUBTASK 12-11-00-650-024

WARNING OBEY THESE PRECAUTIONS FOR FUEL SERVICING EQUIPMENT WHEN YOU REFUEL THE AIRPLANE. IF YOU DO NOT OBEY THESE PRECAUTIONS, A FIRE OR AN EXPLOSION CAN OCCUR.

(1) Obey all separation distance requirements (Table 301).

SUBTASK 12-11-00-650-025

(2) Do not put ground equipment below the fuel system vents at the wingtips. The fuel tanks are vented through the wingtips vents. An explosive mixture of fuel vapor can exist at these locations.

SUBTASK 12-11-00-650-026

(3) Added fuel weight will compress the landing gear shock struts and lower the airplane. Make sure that all stands, ladders, vehicles, and equipment that can come in contact with the airplane are removed before the refuel operation starts.

M. Personnel Precautions

SUBTASK 12-11-00-650-027

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

(1) Personnel that refuel the airplane must be trained in the safe operation of these systems and procedures:

(a) 737 fuel servicing operations.

(b) Fuel servicing equipment.

(c) Fuel spill prevention.

(d) Emergency controls.

(e) Emergency equipment.

(f) Emergency fuel spill and fire protection procedures.

(g) Fuel vapor hazard locations (wing tips, engine locations, and other hazard locations).

SUBTASK 12-11-00-650-028

(2) At some airport locations, a fuel safety person may be added to oversee aircraft refueling operations.

N. Fueling Zone

SUBTASK 12-11-00-650-029

(1) Refuel operations must only be done in airport approved areas. Fire protection, emergency rescue equipment and correct separation distances will be available in these areas.

SUBTASK 12-11-00-650-030

(2) A fueling zone exists around the airplane when an airplane is preparing for or during a refuel operation.

SUBTASK 12-11-00-650-031

(3) Fire and rescue equipment, including approved fire extinguishers, must be available.

SUBTASK 12-11-00-650-032

(4) While in the fueling zone, obey these requirements:

(a) Obey the equipment separation requirements (Table 301, Table 302).

(b) Only authorized persons and vehicles are permitted.

(c) Passengers are not permitted.

(d) When a fuel servicing vehicle is in the fueling zone all personnel must assume that a refuel operation is in progress.

(e) To prevent the risk of igniting the vapor, limit maintenance activity on the airplane.

(f) All electrical equipment must be rated for the hazardous location zone where it will operate.

(g) Do not keep vehicle engines on unless necessary for aircraft maintenance or servicing.

(h) Metal wheels or studded tires are not permitted.

(i) Do not go near the airplane, 50 ft (15 m) radius, with these items:

1) Open flames

2) Heat sources

3) Lighted smoking material

4) Shoes with metal clips

5) Other potential ignition sources.

O. Adverse Weather Conditions Precautions

SUBTASK 12-11-00-650-033

WARNING DO NOT REFUEL THE AIRPLANE WHEN YOU SEE LIGHTNING, OR THERE IS HIGH ATMOSPHERIC ELECTRICAL ACTIVITY. STOP THE REFUEL OPERATION IF YOU SEE LIGHTNING. DO NOT CONNECT A HEADSET. DO NOT TOUCH ELECTRICAL CONNECTIONS TO THE AIRPLANE. LIGHTNING STRIKES CAN CAUSE INJURIES TO PERSONNEL, A FIRE, OR AN EXPLOSION.

(1) When thunderstorms or lightning are in the area, approximately a 10 mi (16 km) radius, do these steps:

(a) Contact the airport authority, air traffic control, or flight deck crew for guidance on the decision to continue or stop fueling operations.

(b) Stop the refuel operation when fueling operations are suspended.

(c) Disconnect and remove all external headsets.

(d) Do not touch electrical connections.

SUBTASK 12-11-00-650-034

(2) If there are strong wind conditions, stop all refuel operations.

NOTE: Strong wind conditions can cause a build-up of static electricity. Large charges of static electricity can develop on support equipment while parked as a result of the movement of dust particles and air currents during strong wind conditions. Strong wind conditions can also cause the unwanted movement of items or equipment which can cause injury to persons or strike the airplane.

P. Refueling Precautions

SUBTASK 12-11-00-650-035

CAUTION	MAKE SURE THAT YOU PUT THE SAME QUANTITY OF FUEL INTO THE NO. 1 TANK AND THE NO. 2 TANK. IF THE FUEL QUANTITIES ARE DIFFERENT, THE AIRPLANE FLIGHT PROPERTIES WILL BE INCORRECT, AND DAMAGE TO THE WINGS CAN OCCUR.

(1) Put approximately the same quantity of fuel in the No. 1 main tank and the No. 2 main tank.

SUBTASK 12-11-00-650-036

(2) If the center tank has more than 1000 lb (454 kg) of fuel, fill the No. 1 main tank and the No. 2 main tank fully.

NOTE: This requirement is applicable to the fuel configuration for flight. A given quantity of fuel can be added to the center tank or transferred from the No. 1 or No. 2 main tank for ground maintenance (TASK 28-26-00-650-802).

SIA ALL; AIRPLANES WITHOUT ALOFT AUXILIARY TANK (STC TM-9000-AMMS AND TM-9001-AMMS)

SUBTASK 12-11-00-650-038

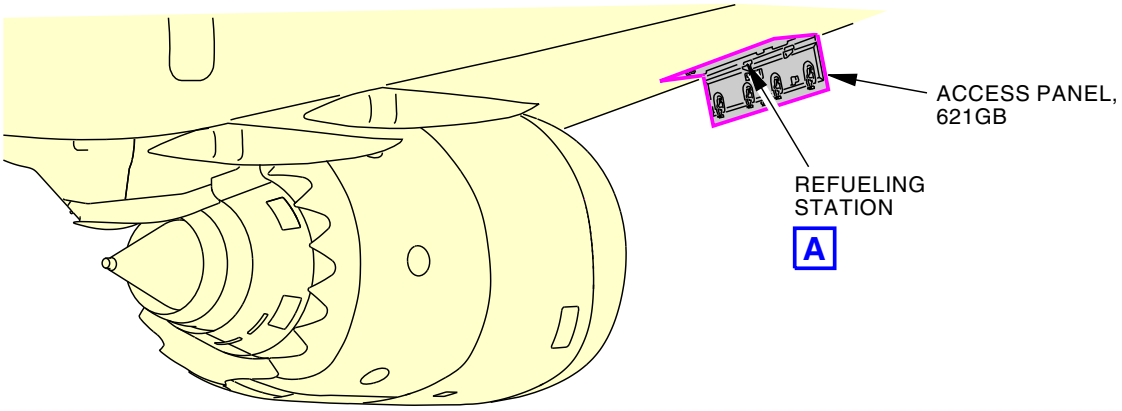
(3) You can put fuel into all of the fuel tanks at the same time or put fuel into each of fuel tanks in a sequence.

SIA ALL

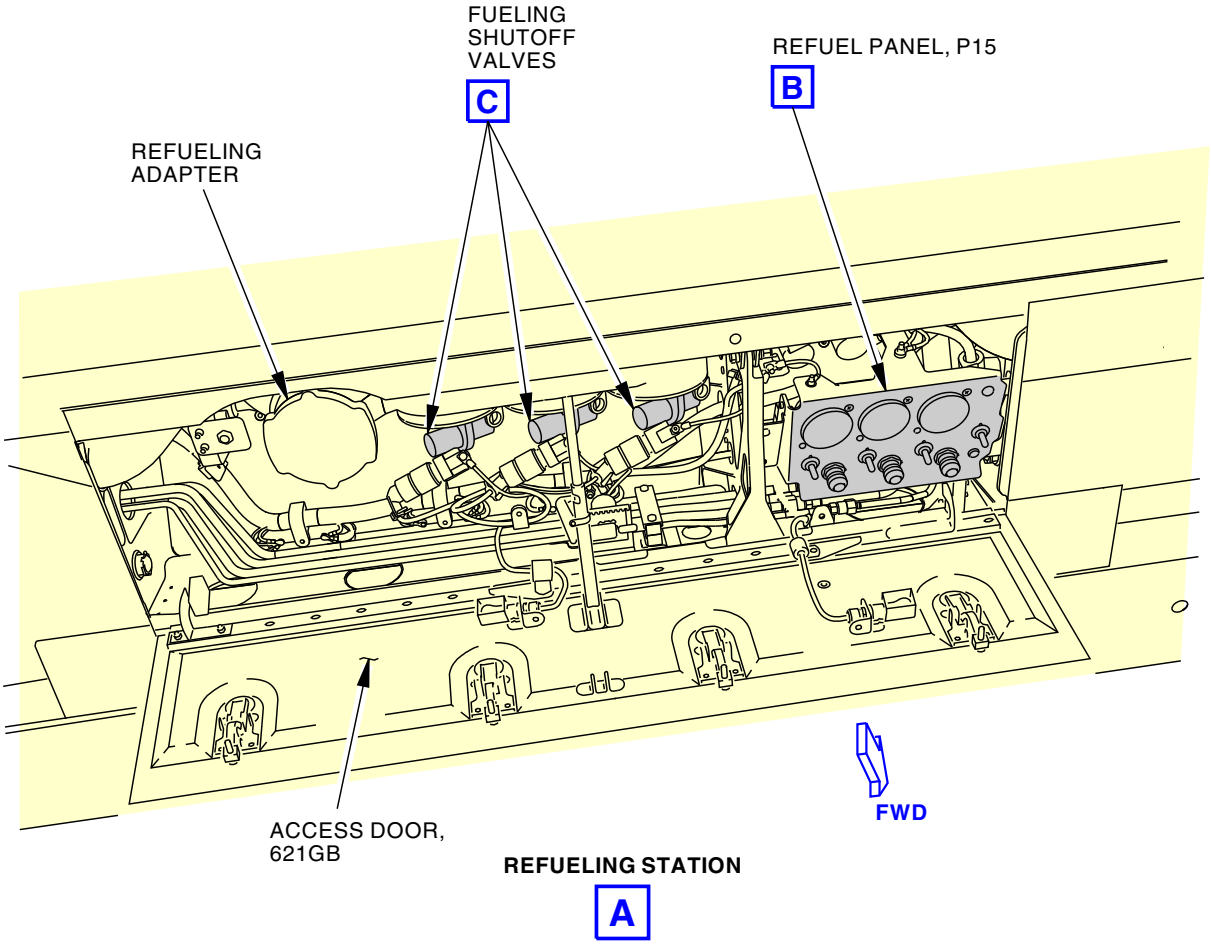
SUBTASK 12-11-00-940-001

(4) Obey all of the approved procedures and precautions during a refuel operation.

——— END OF TASK ———



RIGHT WING



REFUELING STATION

A

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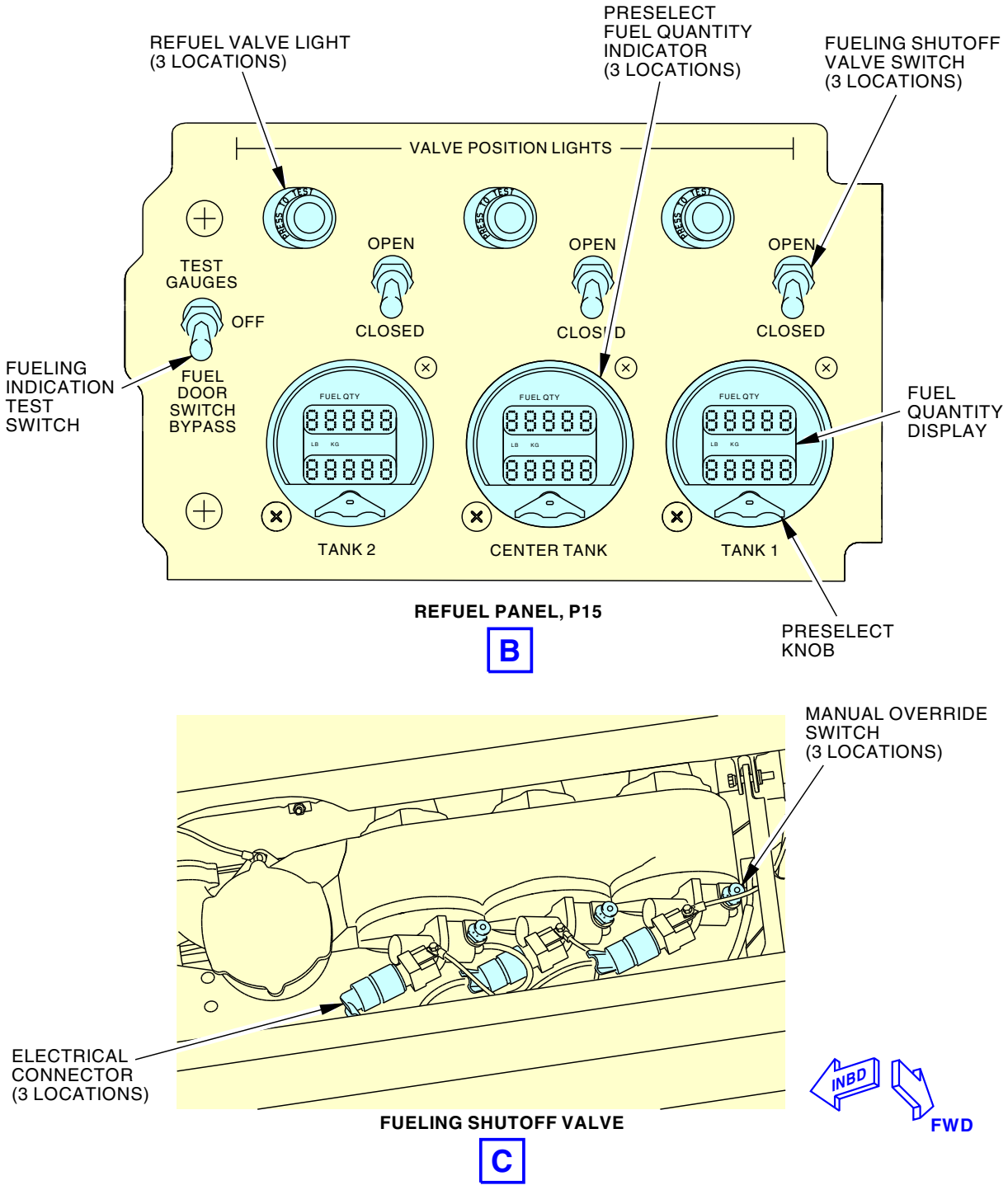
Pressure Refueling
Figure 301/12-11-00-990-801 (Sheet 1 of 2)



Pressure Refueling
Figure 301/12-11-00-990-801 (Sheet 2 of 2)

TASK 12-11-00-650-802

3. Prepare the Airplane for a Refuel Operation

A. References

Reference	Title
27-81-00-480-801	Leading Edge Flap and Slat Locks Installation (P/B 201)
28-13-41-400-802	Pressure Relief Valve - Manual Operation (P/B 601)
28-26-00-650-802	Tank to Tank Fuel Transfer (P/B 201)

B. Prepare the Airplane for a Refuel Operation

SUBTASK 12-11-00-650-039

(1) Read and obey the precautions for fuel servicing (TASK 12-11-00-650-801).

SUBTASK 12-11-00-860-003

(2) If it is necessary, do these steps to supply electrical power from the airplane battery:

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

Battery Shield, J9

Row	Col	Number	Name
---	---	C01341	STATIC INVERTER RCCB
A	5	C01340	BATTERY BUS

(b) Set the battery switch to ON.

NOTE: Complete the refuel operation as soon as it is possible. This procedure keeps a maximum quantity of power in the battery. A fully charged battery can be expected to operate the refuel system for 15 minutes with sufficient power remaining to start the APU. In some cases, there may not be sufficient power in the battery to fill the fuel tanks completely and to start the APU. Make sure that there will be sufficient power remaining in the battery to start the APU after the refueling operation.

SUBTASK 12-11-00-860-004

(3) If the APU is to supply power, obey all the applicable precautions (TASK 12-11-00-650-801).

SUBTASK 12-11-00-860-005

(4) Make sure that the airplane has a ground attitude of 0.18 degrees nose-up pitch and 0.0 degree roll (±2.0 degrees pitch and roll).

NOTE: A ground attitude of 0.18 degrees nose-up pitch and 0.0 degrees roll permits you to put the maximum quantity of fuel in the fuel tanks.

NOTE: If the center tank is scheduled to receive fuel, the airplane pitch must be no higher than 2 degrees nose up and no lower than 0.5 degrees nose down to provide warning of a potential overfill.

SUBTASK 12-11-00-680-001

(5) Drain the water from the fuel tank sumps before you refuel the airplane (TASK 12-11-00-680-801).

SUBTASK 12-11-00-860-006

(6) Make sure that the wing pressure relief valves (2 locations) are in the closed position (TASK 28-13-41-400-802).

SUBTASK 12-11-00-480-001

WARNING INSTALL THE LOCK ON LEADING EDGE FLAP ACTUATOR CAREFULLY TO PREVENT THE ACCIDENTAL OPERATION OF THE LEADING EDGE FLAPS. THE LEADING EDGE FLAPS CAN MOVE QUICKLY. THIS CAN CAUSE INJURIES TO PERSONNEL, AND DAMAGE TO EQUIPMENT.

(7) Install the leading edge flap locks when the leading edge flaps are extended (TASK 27-81-00-480-801).

SUBTASK 12-11-00-860-007

(8) Make sure that the onboard fuel load is in a valid fuel distribution configuration (equivalent to after a flight operation).

(a) If it is necessary, do this task: Tank to Tank Fuel Transfer, TASK 28-26-00-650-802.

——— END OF TASK ———

TASK 12-11-00-650-803

4. Pressure Refuel Procedure

(Figure 301)

A. General

(1) You can fill all of the fuel tanks at the same time.

(2) You can fill one fuel tank when necessary.

(3) If you make a decision not to do this recommended procedure, you must have an alternative procedure. Make sure that the conditions during the fueling operation give sufficient protection to the persons and equipment used in the procedure. It is possible that local fire codes and standards make it necessary to use different procedures or more procedures than those defined in the subsequent steps.

(4) The preselect fuel quantity indicator is referred to as the refuel quantity indicator in this procedure.

B. References

Reference	Title
20-40-11-760-801	Electrical Bonding (P/B 201)
27-81-00-080-801	Leading Edge Flap and Slat Locks Removal (P/B 201)
28-26-00-650-802	Tank to Tank Fuel Transfer (P/B 201)

C. Location Zones

Zone	Area
131	Center Section Wing Box, Body Station 540.00 to Body Station 663.75 - Left
132	Center Section Wing Box, Body Station 540.00 to Body Station 663.75 - Right
531	Left Wing - Center Fuel Tank, Rib 1 to Rib 5
532	Left Wing - Main Tank, Rib 5 to Rib 22, Wing Station 204.25 to Wing BL 643.50
631	Right Wing - Center Fuel Tank, Rib 1 to Rib 5
632	Right Wing - Main Tank, Rib 5 to Rib 22, Wing Station 204.25 to Wing Station 643.50

D. Access Panels

Number	Name/Location
621GB	Refuel Valve Door - Slat Station 125

E. Prepare the Airplane for a Refuel Operation

SUBTASK 12-11-00-650-040

WARNING OBEY ALL OF THE APPLICABLE PRECAUTIONS, AND LIMITS FOR PRESSURE FUELING. IF YOU DO NOT OBEY THE PRECAUTIONS, INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT CAN OCCUR.

(1) Do this task: Precautions and Limits for the Refuel Operation, TASK 12-11-00-650-801.

SUBTASK 12-11-00-650-041

(2) Do this task: Prepare the Airplane for a Refuel Operation, TASK 12-11-00-650-802.

F. Connect the Fueling Equipment

SUBTASK 12-11-00-420-002

WARNING OBEY THE APPLICABLE PRECAUTIONS WHEN YOU ATTACH THE BONDING CABLES. INSTALL THE BONDING CABLES AT AN APPROVED AIRPLANE GROUND CONNECTION TO MAKE SURE THAT THE ELECTRICAL BOND IS SUFFICIENT. IF THE FUEL SERVICE EQUIPMENT AND AIRPLANE DO NOT HAVE A SUFFICIENT ELECTRICAL BOND, A FIRE OR EXPLOSION CAN OCCUR. A FIRE OR EXPLOSION CAN KILL OR CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

(1) Connect a bonding cable from the fueling source to an approved electrical ground or bonding connection on the airplane (TASK 20-40-11-760-801).

SUBTASK 12-11-00-010-001

(2) Open this access panel:

Number	Name/Location
621GB	Refuel Valve Door - Slat Station 125

SUBTASK 12-11-00-480-002

WARNING MAKE SURE THAT THERE IS NO TENSION ON THE HOSE. THE HOSE MUST HANG FREELY FROM THE REFUEL ADAPTER, WITH NO FORCE ON IT. TENSION ON THE HOSE CAN CAUSE DAMAGE TO THE FUEL RECEPTACLE AND CAUSE THE HOSE TO DISCONNECT. INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT CAN OCCUR.

(3) Connect the fuel nozzle to the refuel adapter, as follows:

(a) Make sure that there are no fuel leaks.

(b) Make sure that the refuel adapter is clean and not damaged.

1) Make sure that the screws that attach to the refuel adapter are not loose, damaged, or missing.

2) Make sure that the lugs on the refuel adapter are not bent, cracked, or missing.

(c) Connect the refuel nozzle to the refuel adapter.

G. Prepare the P15 Refuel Panel

SUBTASK 12-11-00-010-002

(1) Make sure that this access panel is open:

Number	Name/Location
621GB	Refuel Valve Door - Slat Station 125

NOTE: The panel floodlights come on when the panel opens.

SUBTASK 12-11-00-650-043

(2) If the floodlights do not come on (no ground power), then do these steps:

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

Battery Shield, J9

Row	Col	Number	Name
---	---	C01341	STATIC INVERTER RCCB
A	5	C01340	BATTERY BUS

(b) Set the battery switch to the ON position.

NOTE: Complete the refuel operation as soon as it is possible. This procedure keeps a maximum quantity of power in the battery. A fully charged battery can be expected to operate the refuel system for 15 minutes with sufficient power remaining to start the APU. In some cases, there may not be sufficient power in the battery to fill the fuel tanks completely and to start the APU. Make sure that there will be sufficient power remaining in the battery to start the APU after the refueling operation.

SUBTASK 12-11-00-710-001

(3) On the P15 refuel panel, push each refuel valve light to make sure that they operate correctly.

(a) Make sure that each of the PRESS-TO-TEST indicator lights comes on when you push it.

SUBTASK 12-11-00-650-044

(4) Do a test of the refuel quantity indicators:

(a) On the P15 refuel panel, push and hold the fueling indication test switch to the TEST GAUGES position.

(b) Make sure that the three refuel quantity indicators displays show blank for two seconds, then show 888.8 for two seconds.

NOTE: The test blanks the display on the three refuel quantity indicators for 2 seconds, then all LED segments come on for 2 seconds. This sequence continues as long as you hold the fueling indication test switch to the TEST GAUGES position.

If you hold the fueling indication test switch for more than 20 seconds, the test mode times out and the refuel quantity indicators goes back to its usual operating mode. If an internal fault is found during the test, the indicator will show Ind FAIL.

(c) Release the fueling indication test switch.

(d) Make sure that the display on each refuel quantity indicator shows the quantity of fuel in each fuel tank.

H. Prepare the Fuel Sheet

SUBTASK 12-11-00-650-045

(1) Use the operator-supplied fuel sheet to record the pre-uplift fuel quantity for each tank.

SUBTASK 12-11-00-650-046

(2) Calculate the fuel to be uplifted.

NOTE: Convert the fuel weight to volume if necessary.

SUBTASK 12-11-00-650-047

(3) Record the uplift quantity on the fuel sheet, if necessary.

I. Set the Fuel Quantity

SUBTASK 12-11-00-860-008

(1) If you are scheduled to fill the fuel tanks fully:

(a) On the P15 refuel panel, set all of the fueling shutoff valve switches to the OPEN position.

NOTE: If you refuel tanks to full and there is a float switch fault, fuel will spill.

SUBTASK 12-11-00-860-009

(2) If it is necessary to refuel the fuel tanks to less than full, do these steps:

CAUTION

OBEY ALL OF THE APPLICABLE SAFETY PRECAUTIONS AND THE LOAD LIMITS. DAMAGE TO THE AIRPLANE CAN OCCUR.

(a) Calculate the value that each refuel quantity indicator must show when the necessary quantity of fuel is in the fuel tank.

(b) Use the preselect knob on the front of the display to set the PRESET display to the correct quantity of fuel for each fuel tank.

J. Start the Refuel Operation

SUBTASK 12-11-00-650-048

(1) Start the refuel operation, as follows:

(a) On the P15 refuel panel, set the applicable fueling shutoff valve switches to the OPEN position.

NOTE: Fuel tanks that will be refueled.

(b) Activate the fuel shutoff control switch (deadman switch) to start the fuel flow.

(c) Make sure that the refuel pressure is between 35 psi (241 kPa) and 55 psi (379 kPa).

(d) Make sure that the applicable refuel valve lights are on (valves open).

(e) Make sure that the No. 1 and No. 2 main tanks refuel at approximately the same rate, while you refuel the main tanks at the same time.

WARNING

MONITOR THE INDICATORS ON THE P15 REFUEL PANEL FOR INDICATORS TO FLASH. IF THE INDICATORS START TO FLASH, THIS SHOWS THAT THE FUEL TANK IS FULL AND CAN OVERFLOW. THIS CAN CAUSE FUEL TO SPILL. IF YOU DO NOT OBEY, DAMAGE TO EQUIPMENT AND INJURY TO PERSONNEL CAN OCCUR.

CAUTION

DO NOT CONTINUE TO REFUEL THE FUEL TANK AFTER THE REFUEL OPERATION STOPS AUTOMATICALLY. UNWANTED FUEL WILL FLOW ON THE GROUND.

(f) Put the necessary quantity of fuel in the fuel tank or tanks.

NOTE: The float switch in each fuel tank closes each refuel shutoff valve when each fuel tank is filled to the maximum approved volume.

NOTE: The fuel tank is full when the refuel stops automatically because of the volumetric shutoff.

1) Immediately release the deadman switch if any of the indicators flash.

NOTE: A flashing indicator is defined as an indicator alternating between displaying the fuel quantity and blank at one second intervals.

K. Stop the Refuel Operation

SUBTASK 12-11-00-080-005

(1) Release the deadman switch to stop the fuel flow when all of the refuel valve lights are off.

(a) Set the fueling shutoff valve switches to the CLOSED position.

SUBTASK 12-11-00-650-050

(2) Make sure that the onboard fuel load is in a valid pre-flight fuel distribution.

SUBTASK 12-11-00-650-051

(3) Transfer fuel to balance the fuel load when necessary (TASK 28-26-00-650-802).

SUBTASK 12-11-00-650-052

(4) Wait 1 minute to let the Fuel Quantity Indicating System (FQIS) system become stable.

SUBTASK 12-11-00-650-053

(5) Record the fuel quantities from the refuel quantity indicators.

SUBTASK 12-11-00-650-054

(6) Record the fuel quantity from the fuel vehicle flow meter.

SUBTASK 12-11-00-650-055

(7) Do the discrepancy check and make sure that it is in limits.

NOTE: Refer to the operator's requirement.

SUBTASK 12-11-00-650-056

(8) Complete the Fuel Sheet.

SUBTASK 12-11-00-650-057

(9) Complete the Delivery Receipt, when necessary.

SUBTASK 12-11-00-650-058

(10) Give a copy of the forms to the airline representative or flight crew.

L. Put the Airplane Back to Its Usual Condition

SUBTASK 12-11-00-860-010

(1) On the P15 refuel panel, make sure that all the fueling shutoff valve switches are in the CLOSED position.

SUBTASK 12-11-00-650-059

(2) Disconnect the fuel hose nozzle from the airplane.

SUBTASK 12-11-00-860-011

(3) Make sure that the refuel adapter is not damaged.

SUBTASK 12-11-00-160-001

(4) If there is a fuel spill at the refueling station, remove the fuel with a sponge or dry cloth.

SUBTASK 12-11-00-860-012

(5) On the P15 refuel panel, push the refuel valve lights and make sure that each refuel valve light comes on.

NOTE: The refuel valve lights are PRESS-TO-TEST buttons.

SUBTASK 12-11-00-410-001

(6) Close and security latch this access panel:

Number	Name/Location
621GB	Refuel Valve Door - Slat Station 125

SUBTASK 12-11-00-080-001

(7) Disconnect the bonding cable between the fueling source and the airplane (TASK 20-40-11-760-801).

SUBTASK 12-11-00-080-002

WARNING MAKE SURE THAT PERSONNEL AND EQUIPMENT STAY AWAY FROM THE LEADING EDGE SLATS, TRAILING EDGE FLAPS, AND DRIVE MECHANISMS. THE FLAPS, SLATS, AND DRIVE MECHANISMS MOVE QUICKLY. THIS CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

(8) If necessary, do this task: Leading Edge Flap and Slat Locks Removal, TASK 27-81-00-080-801.

SUBTASK 12-11-00-860-014

(9) If you used power from the airplane battery, do these steps:

(a) Set the standby power switch to the AUTO position.

(b) Set the battery switch to the OFF position.

SUBTASK 12-11-00-800-001

(10) Do the operator-supplied procedures to remove the fuel vehicle.

END OF TASK

TASK 12-11-00-650-804

5. Refuel Operation When the Refuel Quantity Indicators Flash

A. General

(1) Do this procedure if one of the refuel quantity indicators on the refuel panel (P15) starts to flash during the refueling operation (at one-second intervals).

(2) If the refuel quantity indicators flash, and the refueling operation stops automatically, then it is not always necessary to do a check of the quantity of fuel in the fuel tank. Do the steps below if the refuel quantity indicator continues to flash for 60 seconds or more. If the refuel quantity indicator stops flashing in less than 60 seconds, then the sensed overfill condition was probably caused by fuel movement or hysteresis related to the fueling operation. In this case, no more maintenance is necessary.

(3) The preselect fuel quantity indicator is referred to as the refuel quantity indicator in this procedure.

B. References

Reference	Title
28-26-00-650-801	Fuel Tank Defueling (P/B 201)
28-26-00-650-802	Tank to Tank Fuel Transfer (P/B 201)

C. Procedure

SUBTASK 12-11-00-650-060

(1) Do a check of the outboard fuel measuring stick for the fuel tank with the flashing refuel quantity indicator.

SUBTASK 12-11-00-810-001

(2) Do these steps for the applicable fuel tank to complete the refuel operation:

(a) For the No. 1 or the No. 2 main tank; if the fuel quantity is less than 1288 gal (4876 l), then use the fuel measuring sticks to put the correct quantity of fuel into the fuel tank.

NOTE: The volume 1288 gal (4876 l) is equivalent to 8630 lb (3915 kg) at a density of 6.7 pounds/gallon (0.8029 kilograms/liter). You can use the fuel measuring stick table to find out if you have this volume.

1) To measure the fuel quantity, refer to the applicable Fuel Measuring Stick Manual (FMSM).

(b) For the center tank; if the fuel quantity is less than 4299 gal (16,273 l), then use the fuel measuring sticks to put the correct quantity of fuel into the fuel tank.

NOTE: The volume 4299 gal (16,273 l) is equivalent to 28,803 lb (13,065 kg) at a density of 6.7 pounds/gallon (0.8029 kilograms/liter). You can use the fuel measuring stick table to find out if you have this volume.

1) To measure the fuel quantity, refer to the applicable Fuel Measuring Stick Manual (FMSM).

(c) For the No. 1 or the No. 2 main tank; if the fuel quantity is more than 1288 gal (4876 l), then do these steps:

NOTE: The volume 1288 gal (4876 l) is equivalent to 8630 lb (3915 kg) at a density of 6.7 pounds/gallon (0.8029 kilograms/liter). You can use the fuel measuring stick table to find out if you have this volume.

1) Remove fuel from the applicable fuel tank to the desired quantity (TASK 28-26-00-650-802 or TASK 28-26-00-650-801).

2) Use the fuel measuring sticks to make sure that the correct quantity of fuel is in the fuel tank.

a) To measure the fuel quantity, refer to the applicable Fuel Measuring Stick Manual (FMSM).

(d) For the center tank; if the fuel quantity is more than 4299 gal (16,273 l), then do these steps:

NOTE: The volume 4299 gal (16,273 l) is equivalent to 28,803 lb (13,065 kg) at a density of 6.7 pounds/gallon (0.8029 kilograms/liter). You can use the fuel measuring stick table to find out if you have this volume.

1) Remove fuel from the applicable fuel tank to the desired quantity (TASK 28-26-00-650-802 or TASK 28-26-00-650-801).

2) Use the fuel measuring sticks to make sure that the correct quantity of fuel is in the fuel tank.

a) To measure the fuel quantity, refer to the applicable Fuel Measuring Stick Manual (FMSM).

——— END OF TASK ———

TASK 12-11-00-650-805

6. Refuel Operation When the Fuel Quantity Indicating System Does not Operate

(Figure 301, Figure 302)

A. General

(1) You can refuel a fuel tank with a fuel quantity indicating system that does not operate correctly (a bad refuel quantity indicator). You can do this task with the fuel measuring sticks in the No. 1 main tank, the No. 2 main tank, or the center tank. You must do the applicable procedure to calculate the fuel quantity from the values on the fuel measuring sticks. You can also transfer fuel to refuel one of the fuel tanks as an alternative to the fuel measuring stick procedure (TASK 28-26-00-650-802).

(2) The preselect fuel quantity indicator is referred to as the refuel quantity indicator in this procedure.

B. References

Reference	Title
28-26-00-650-802	Tank to Tank Fuel Transfer (P/B 201)

C. Location Zones

Zone	Area
531	Left Wing - Center Fuel Tank, Rib 1 to Rib 5
532	Left Wing - Main Tank, Rib 5 to Rib 22, Wing Station 204.25 to Wing BL 643.50
631	Right Wing - Center Fuel Tank, Rib 1 to Rib 5
632	Right Wing - Main Tank, Rib 5 to Rib 22, Wing Station 204.25 to Wing Station 643.50

D. Use the Fuel Measuring Sticks to Refuel a Fuel Tank When the Fuel Quantity Indicating System Does Not Operate

SUBTASK 12-11-00-650-061

WARNING OBEY ALL OF THE APPLICABLE PRECAUTIONS, AND LIMITS FOR PRESSURE FUELING. IF YOU DO NOT OBEY THE PRECAUTIONS, INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT CAN OCCUR.

(1) Do this task: Precautions and Limits for the Refuel Operation, TASK 12-11-00-650-801.

SUBTASK 12-11-00-860-015

(2) Release the fuel measuring sticks on the fuel tank with the bad refuel quantity indicators.

NOTE: Let the stick fall freely and lift it slowly to lock on the float assembly.

SUBTASK 12-11-00-860-016

(3) Use the fuel measuring sticks to monitor the fuel quantity.

(a) Make sure that you know the attitude of the airplane.

(b) Use the fuel measuring stick procedure in the Fuel Measuring Stick Manual (FMSM) to calculate the fuel quantity.

1) Refer to the applicable FMSM.

SUBTASK 12-11-00-650-062

(4) Put fuel in the fuel tank until the fuel measuring sticks show the necessary quantity of fuel.

SUBTASK 12-11-00-650-063

(5) Stop the refuel operation.

SUBTASK 12-11-00-650-064

(6) Permit the fuel level in the fuel tank to become stable for 5 minutes.

SUBTASK 12-11-00-650-065

(7) Examine the fuel measuring sticks again.

SUBTASK 12-11-00-650-066

(8) If the fuel measuring sticks show a fuel quantity less than the necessary quantity, continue the refuel operation.

SUBTASK 12-11-00-650-067

(9) Continue to refuel the fuel tank until the fuel measuring sticks show the necessary quantity after the 5 minute time.

SUBTASK 12-11-00-860-017

(10) Lock the fuel measuring sticks in the retracted position.

SUBTASK 12-11-00-650-068

(11) Do the necessary procedure to refuel the remaining fuel tanks.

E. Move Fuel From a Different Fuel Tank to Refuel a Fuel Tank with a Refuel Quantity Indicator That Does Not Operate

NOTE: You can use this procedure to refuel the center tank, the No. 1 main tank, or the No. 2 main tank.

SUBTASK 12-11-00-650-069

CAUTION

OBEY ALL OF THE APPLICABLE SAFETY PRECAUTIONS AND THE LOAD LIMITS. DAMAGE TO THE AIRPLANE CAN OCCUR.

(1) Transfer fuel from the fuel tank with the inoperative refuel quantity indicator to a different fuel tank or tanks (TASK 28-26-00-650-802).

SUBTASK 12-11-00-970-001

(2) Calculate the weight of the quantity of fuel that you must put into the fuel tank with the inoperative refuel quantity indicator.

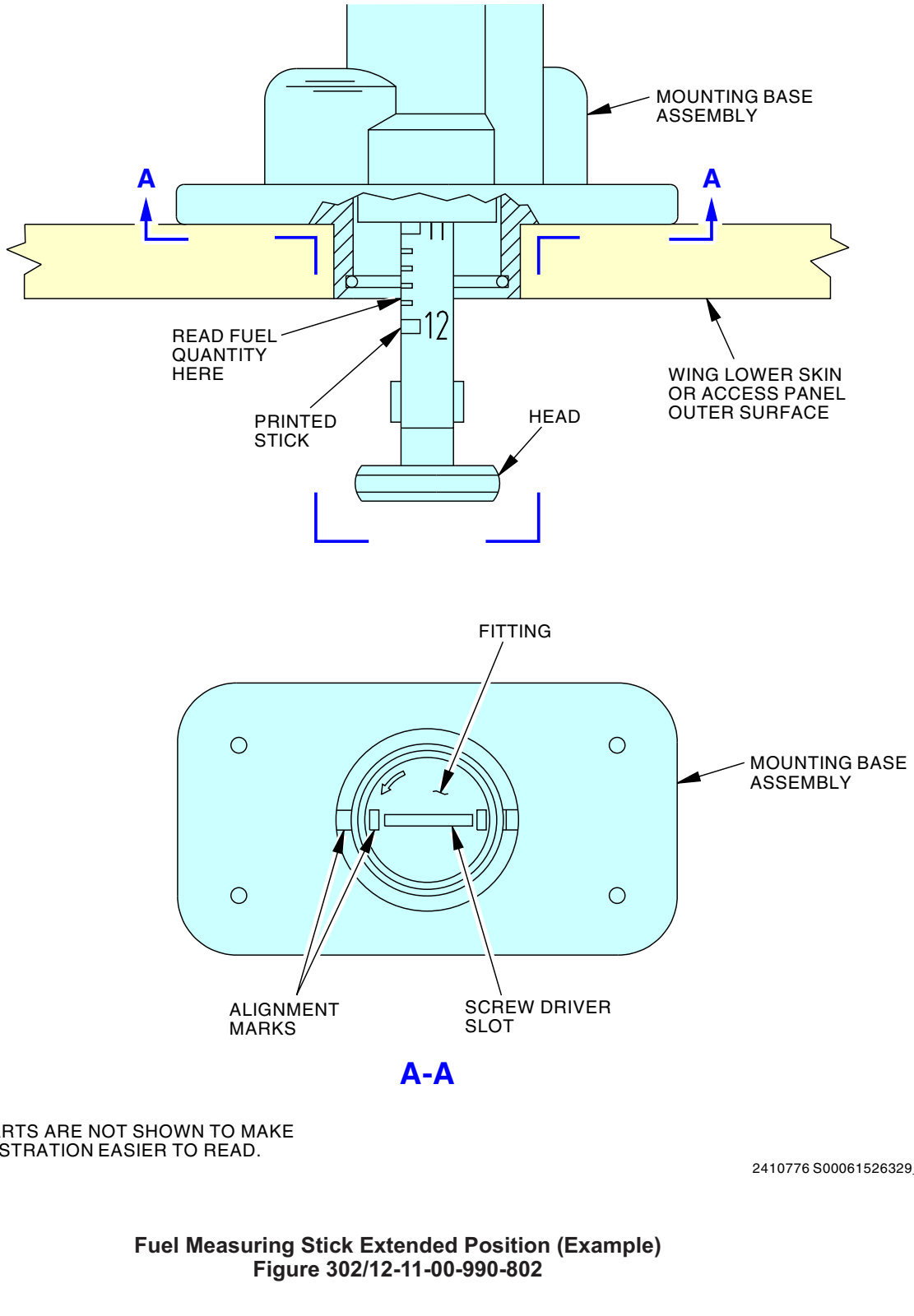
SUBTASK 12-11-00-650-070

(3) Move the quantity of fuel (calculated before) from a fuel tank with the operative refuel quantity indicators to the defueled fuel tank.

SUBTASK 12-11-00-650-071

(4) Refuel the fuel tank from which you moved the fuel.

——— END OF TASK ———



NOTE:

SOME PARTS ARE NOT SHOWN TO MAKE THE ILLUSTRATION EASIER TO READ.

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Fuel Measuring Stick Extended Position (Example)
Figure 302/12-11-00-990-802

TASK 12-11-00-650-806

7. Pressure Refueling Operation For A Refuel Valve That Does Not Open Electrically

(Figure 301, Figure 302)

A. General

(1) You can refuel a tank with a refuel valve that does not open electrically but can be opened manually.

B. References

Reference	Title
20-40-11-760-801	Electrical Bonding (P/B 201)
20-40-11-910-801	Static Grounding (P/B 201)
28-21-00-700-801	Pressure Fueling System - Test (P/B 501)

C. Location Zones

Zone	Area
531	Left Wing - Center Fuel Tank, Rib 1 to Rib 5
532	Left Wing - Main Tank, Rib 5 to Rib 22, Wing Station 204.25 to Wing BL 643.50
631	Right Wing - Center Fuel Tank, Rib 1 to Rib 5
632	Right Wing - Main Tank, Rib 5 to Rib 22, Wing Station 204.25 to Wing Station 643.50

D. Access Panels

Number	Name/Location
621GB	Refuel Valve Door - Slat Station 125

E. Procedure

SUBTASK 12-11-00-650-072

WARNING OBEY ALL OF THE APPLICABLE PRECAUTIONS, AND LIMITS FOR PRESSURE FUELING. IF YOU DO NOT OBEY THE PRECAUTIONS, INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT CAN OCCUR.

(1) Do this task: Precautions and Limits for the Refuel Operation, TASK 12-11-00-650-801.

SUBTASK 12-11-00-860-018

(2) Electrically ground the airplane and the fuel vehicle (Static Grounding, TASK 20-40-11-910-801).

SUBTASK 12-11-00-860-019

(3) Connect a bonding cable from the fueling vehicle to an approved electrical grounding or bonding connection on the airplane (Electrical Bonding, TASK 20-40-11-760-801).

NOTE: If the fueling vehicle has a permanently attached V or Y grounding cable, connect one part of the V or Y to an approved identified ground. Then connect the other part of the V or Y cable to an approved electrical bonding or grounding point on the airplane.

SUBTASK 12-11-00-010-003

(4) Make sure this access panel is open:

(Figure 301)

Number	Name/Location
621GB	Refuel Valve Door - Slat Station 125

SUBTASK 12-11-00-210-001

(5) Make sure the fuel tank quantity indicator for the tank you will refuel is operative.

SUBTASK 12-11-00-420-003

WARNING MAKE SURE THAT THERE IS NO TENSION ON THE HOSE. THE HOSE MUST HANG FREELY FROM THE REFUEL ADAPTER, WITH NO FORCE ON IT. TENSION ON THE HOSE CAN CAUSE DAMAGE TO THE FUEL RECEPTACLE AND CAUSE THE HOSE TO DISCONNECT. INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT CAN OCCUR.

(6) Do an inspection of the refuel adapter before you connect the refuel nozzle:

(a) Make sure there are no fuel leaks.

(b) Make sure there is no contamination at the refuel adapter.

CAUTION MAKE SURE THAT THE REFUEL ADAPTER IS CLEAN AND DOES NOT HAVE DAMAGE. IF THE REFUEL ADAPTER HAS DAMAGE, IT CAN CAUSE A FUEL LEAK.

(c) Make sure the refuel adapter is clean and does not have any damage (Pressure Fueling System - Test, TASK 28-21-00-700-801).

1) Make sure the screws that attach to the refuel adapter are not loose, damaged or missing.

2) Make sure the lugs on the refuel adapter are not bent, cracked or missing.

SUBTASK 12-11-00-650-073

(7) Do these steps to put fuel into the tank with the refuel valve that does not open:

(a) Connect the refueling hose nozzle to the refuel adapter.

(b) Start the fuel source pump.

CAUTION DO NOT PERMIT THE FUEL QUANTITY TO BE MORE THAN THE MAXIMUM FUEL QUANTITY FOR THE APPLICABLE TANK. THERE IS NO AUTOMATIC SHUTOFF. A FUEL SPILL CAN OCCUR.

CAUTION MONITOR THE REFUEL PANEL INDICATORS TO MAKE SURE THEY DO NOT START TO FLASH. IF THE PANEL INDICATORS FLASH, THE FUEL TANK CAN BE OVERFILLED. THIS CAN CAUSE A FUEL SPILL TO OCCUR.

(c) For the tank whose refuel valve does not open, push the red fueling manual override button to open the refuel valve for that tank.

(d) Continue to hold down the red button.

(e) Monitor the fueling indicator for the tank with the refuel valve that does not open.

(f) When the fueling indicator shows a full tank or the fuel quantity scheduled for that tank, release the red manual override button.

(g) Stop the fuel source pump.

(h) Remove the refueling hose nozzle from the refuel adapter.

SUBTASK 12-11-00-080-003

(8) Disconnect the ground cables from the fuel source and the airplane (Static Grounding, TASK 20-40-11-910-801).

SUBTASK 12-11-00-080-004

(9) Disconnect the bonding cable between the fueling vehicle and the airplane (Electrical Bonding, TASK 20-40-11-760-801).

SUBTASK 12-11-00-010-004

(10) Close this access door if the refueling operation is completed:

(Figure 301)

Number	Name/Location
621GB	Refuel Valve Door - Slat Station 125

——— END OF TASK ———

TASK 12-11-00-680-801

8. Fuel Tank Sumps - Fuel Sampling

(Figure 303 and Figure 304)

A. General

(1) This procedure is for the regular draining of the sumps for each tank if conditions cause fuel tanks to collect water.

(2) There are five sump drain valves [1] in total, installed on the airplane. There is one sump drain valve [1] installed in the center fuel tank, one in each main fuel tank and one in each surge tank. The best airplane attitude to drain the sumps is a pitch of 0.18 degrees nose-up and a roll of zero degrees.

(3) FOR THE SUMP DRAIN VALVES INSTALLED IN THE CENTER, NO. 1 AND NO. 2 FUEL TANKS;

It is recommended to drain the fuel tank sumps regularly to remove water from the fuel tanks. The fuel tank sumps should be drained before or after refueling, but not during refueling. You must permit the water to go to the bottom of the tanks before you drain the sumps. During refueling, water will mix with the fuel. In cold weather the water can freeze and prevent the sump drain valve [1] from opening. If the temperature of the fuel is below 32°F (0°C), do not drain the fuel tank sumps. For cold weather maintenance, refer to Cold Weather Maintenance Procedure, TASK 12-33-01-600-801.

NOTE: Wait for a sufficient time to permit the water in the fuel to move to the bottom of the fuel tank. Water sinks in fuel at the rate of approximately one foot per hour.

CAUTION MAKE SURE THAT THE FUEL DOES NOT HAVE RED OR A PINK COLOR. IF THE FUEL DOES HAVE A RED OR PINK COLOR, DO THE APPLICABLE CHECK FOR FUEL CONTAMINATION. IF THE FUEL HAS CONTAMINATION, DAMAGE TO EQUIPMENT CAN OCCUR.

(a) Drain fuel samples from each sump drain valve [1] into a transparent container. Do a check of each sample independently for water, ice or contamination. If the fuel has a pink or a red color, refer to the task: Clean the Fuel Tanks Contaminated with Red Dye, TASK 28-11-00-100-801, to do an inspection for contamination. Water in the fuel usually shows as a layer below the fuel, or as small bubbles in the fuel. Ice crystal usually appear as cloudiness or haziness and make the fuel less transparent. Fuel with no water, ice, or contamination, is clear and bright and very transparent. The words "clear and bright" mean that you cannot see undissolved water, sediment, and suspended material when you examine the sample in a clear glass container. If the fuel is free of these types of contamination, it is clear and bright.

NOTE: Jet-A fuel can have a range of colors from yellow (straw) color to no color. The words "clear and bright" do not refer to color of the fuel. Yellow fuel or fuel that has no color can be "clear and bright" as specified above.

(b) If one or two drops of food coloring that is water soluble is put into the container of fuel, then water in the fuel will be shown by a color. You can put the food coloring into the container before you get the sample.

(c) A large quantity of water drained from one fuel tank before refueling can show a blocked water scavenge jet pump. To examine the water scavenge jet pump, refer to Center Tank Water Scavenge Jet Pump Cleaning, TASK 28-22-13-100-801 or Main Tank Water Scavenge Jet Pump Cleaning, TASK 28-22-13-100-802.

(d) Drain the tank sumps sufficiently to make sure you remove water or other contamination from the system.

(e) Drain the sumps a maximum time of one hour after you remove the airplane from the hangar if the temperature has these conditions:

1) The ambient temperature is less than 32°F (0°C).

2) The temperature of the hangar is more than the ambient temperature.

(f) If the ambient temperature is less than 32°F (0°C), do one of these steps to raise the temperature of the fuel:

1) Fill the tanks with warm fuel.

2) Move the airplane to a warm hangar.

(4) For the sump drain valves installed in the surge tanks;

The sump drain valves [1] in the surge tanks are installed to do a check for fuel in the surge tank before you remove the access door for entry. Fuel in the surge tank will drain into the main fuel tanks through the drain check valve in each surge tank. If the main fuel tank is full and there is fuel in the surge tank, you can defuel the main tank to remove the fuel in the surge tank.

NOTE: The drain check valve installed in the surge tank will drain the fuel to a lower level than the sump drain valve [1].

B. References

Reference	Title
12-33-01-600-801	Cold Weather Maintenance Procedure (P/B 301)

(Continued)

Reference	Title
28-10-00-100-801	Microbial Growth Removal - Manual Removal Method (P/B 201)
28-10-00-100-802	Microbial Growth Removal - Pressure Washer Method (P/B 201)
28-10-00-200-801	Detection Test for Microbial Growth (P/B 201)
28-11-00-100-801	Clean the Fuel Tanks Contaminated with Red Dye (P/B 701)
28-22-13-100-801	Center Tank Water Scavenge Jet Pump Cleaning (P/B 701)
28-22-13-100-802	Main Tank Water Scavenge Jet Pump Cleaning (P/B 701)

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-1535	Equipment - Sampling, Fuel Part #: 100-0128-04 Supplier: 99321 Part #: 94-8136 Supplier: 99321 Opt Part #: V799 Supplier: 20661
SPL-9698	Drain Equipment, Surge Tank Sump Part #: 100-0128-04 Supplier: 99321 Part #: C12002-7 Supplier: 81205 Opt Part #: V799 Supplier: 20661
STD-8855	Beaker - Non-Metal, Transparent, Fuel/Oil Resistant, 1 Quart (ex: Pyrex Brand 1060 Glass Beaker)

D. Consumable Materials

Reference	Description	Specification
B00130	Alcohol - Isopropyl	TT-I-735

E. Location Zones

Zone	Area
531	Left Wing - Center Fuel Tank, Rib 1 to Rib 5
532	Left Wing - Main Tank, Rib 5 to Rib 22, Wing Station 204.25 to Wing BL 643.50
631	Right Wing - Center Fuel Tank, Rib 1 to Rib 5
632	Right Wing - Main Tank, Rib 5 to Rib 22, Wing Station 204.25 to Wing Station 643.50

F. Access Panels

Number	Name/Location
192G	Sump Drain Access Door

G. Sampling Operation for the No. 1 Tank and the No. 2 Tank

SUBTASK 12-11-00-480-009

WARNING DO NOT BREATHE FUMES FROM THE BIOCIDE FUEL ADDITIVE, OR TOUCH IT. READ THE MATERIAL SAFETY DATA SHEET (MSDS) FROM THE MANUFACTURER OF THE ADDITIVE. THE ADDITIVE CAN CAUSE INJURIES TO PERSONNEL AND HEALTH PROBLEMS.

(1) If biocide was used in the fuel tanks, use personal protective equipment before taking fuel samples.

(2) To get the fuel sample, do these steps:

(a) Use a screwdriver to turn the carrier seal of the sump drain valve [1] 90 degrees to the unlocked position.

NOTE: The sump drain valve is in the unlocked position when the carrier seal slot is 90 degrees with the housing assembly red line marker.

(b) Put the top end of the drain fuel sampling equipment, COM-1535, into the sump drain valve [1].

(c) Push the carrier seal with fuel sampling equipment, COM-1535, until fuel starts to flow into the container.

SUBTASK 12-11-00-480-005

(3) When you have the fuel sample you require, do these steps:

(a) Remove the fuel sampling equipment, COM-1535.

(b) Use a screwdriver to turn the carrier seal of the sump drain valve [1] 90 degrees to the locked position.

1) Make sure that the carrier seal slot is lined up with the sump drain valve housing red line marker.

SUBTASK 12-11-00-210-002

(4) Do a visual inspection of the fuel in the container as follows:

(a) If you see red dye in the fuel, clean the fuel tanks (TASK 28-11-00-100-801).

(b) If you see other contamination, do these steps:

1) Clean the fuel sampling equipment with alcohol, B00130, and dry it completely.

2) With a sterilized glass container, get another sample of fuel.

3) Do this task: Detection Test for Microbial Growth, TASK 28-10-00-200-801.

H. Sumping Operation for the Surge Tanks

SUBTASK 12-11-00-480-004

WARNING DO NOT BREATHE FUMES FROM THE BIOCIDE FUEL ADDITIVE, OR TOUCH IT. READ THE MATERIAL SAFETY DATA SHEET (MSDS) FROM THE MANUFACTURER OF THE ADDITIVE. THE ADDITIVE CAN CAUSE INJURIES TO PERSONNEL AND HEALTH PROBLEMS.

(1) If biocide was used in the fuel tanks, use personal protective equipment before sumping the tanks.

(2) Put the fuel/oil resistant non-metal beaker, STD-8855, below the surge tank sump drain valve [1].

SUBTASK 12-11-00-860-022

(3) Put the top end of the drain equipment, SPL-9698, against the bottom side of the piston on the surge tank sump drain valve [1].

(a) Push the tool up and hold it in position to let the fuel flow into the fuel/oil resistant non-metal beaker, STD-8855.

NOTE: There may not be fuel or fluid to drain from the surge tank.

SUBTASK 12-11-00-680-003

(4) Drain each surge tank sump until there is no water in the fuel that flows into the fuel/oil resistant non-metal beaker, STD-8855.

SUBTASK 12-11-00-860-023

(5) Remove the drain equipment, SPL-9698, and let the valve close.

NOTE: Make sure that the fuel flow stops.

SUBTASK 12-11-00-210-003

(6) Do a visual inspection of the fuel in the container as follows:

(a) If you see red dye in the fuel, clean the fuel tanks (TASK 28-11-00-100-801).

(b) If you see other contamination, do this task: Microbial Growth Removal - Manual Removal Method, TASK 28-10-00-100-801 or Microbial Growth Removal - Pressure Washer Method, TASK 28-10-00-100-802.

I. Sumping Operation for the Center Fuel Tank

SUBTASK 12-11-00-860-024

WARNING DO NOT BREATHE FUMES FROM THE BIOCIDE FUEL ADDITIVE, OR TOUCH IT. READ THE MATERIAL SAFETY DATA SHEET (MSDS) FROM THE MANUFACTURER OF THE ADDITIVE. THE ADDITIVE CAN CAUSE INJURIES TO PERSONNEL AND HEALTH PROBLEMS.

(1) If biocide was used in the fuel tanks, use personal protective equipment before sumping the tanks.

(2) To drain the maximum quantity of water from the center tank sump, put the airplane in this attitude, if it is possible:

(a) Pitch: 0.18 degrees nose-up

(b) Roll: 0.0 degrees

(c) Permit the fuel time to go to the bottom of the tank before you open the sump drain valve [1].

SUBTASK 12-11-00-010-005

(3) Open this access panel:

Number	Name/Location
192G	Sump Drain Access Door

SUBTASK 12-11-00-480-006

(4) Put a fuel/oil resistant non-metal beaker, STD-8855 below the drain tube assembly.

NOTE: Use a 0.5 in. (12.7 mm) ID hose and clamp to extend the drain tube assembly for draining the fuel.

SUBTASK 12-11-00-680-004

(5) Drain the fuel from the center tank as follows:

(a) Pull the actuator rod [2] down to open the drain valve.

(b) Let the fuel drain as necessary until there is no water in the fuel.

(c) Release the actuator rod [2] to close the sump drain valve [1].

NOTE: Make sure that the fuel flow stops.

SUBTASK 12-11-00-860-025

(6) If it is necessary, remove the hose extension from the drain tube assembly.

SUBTASK 12-11-00-410-002

(7) Close this access panel:

Number	Name/Location
192G	Sump Drain Access Door

SUBTASK 12-11-00-210-004

(8) Do a visual inspection of the fuel in the container as follows:

(a) If you see red dye in the fuel, clean the fuel tanks (TASK 28-11-00-100-801).

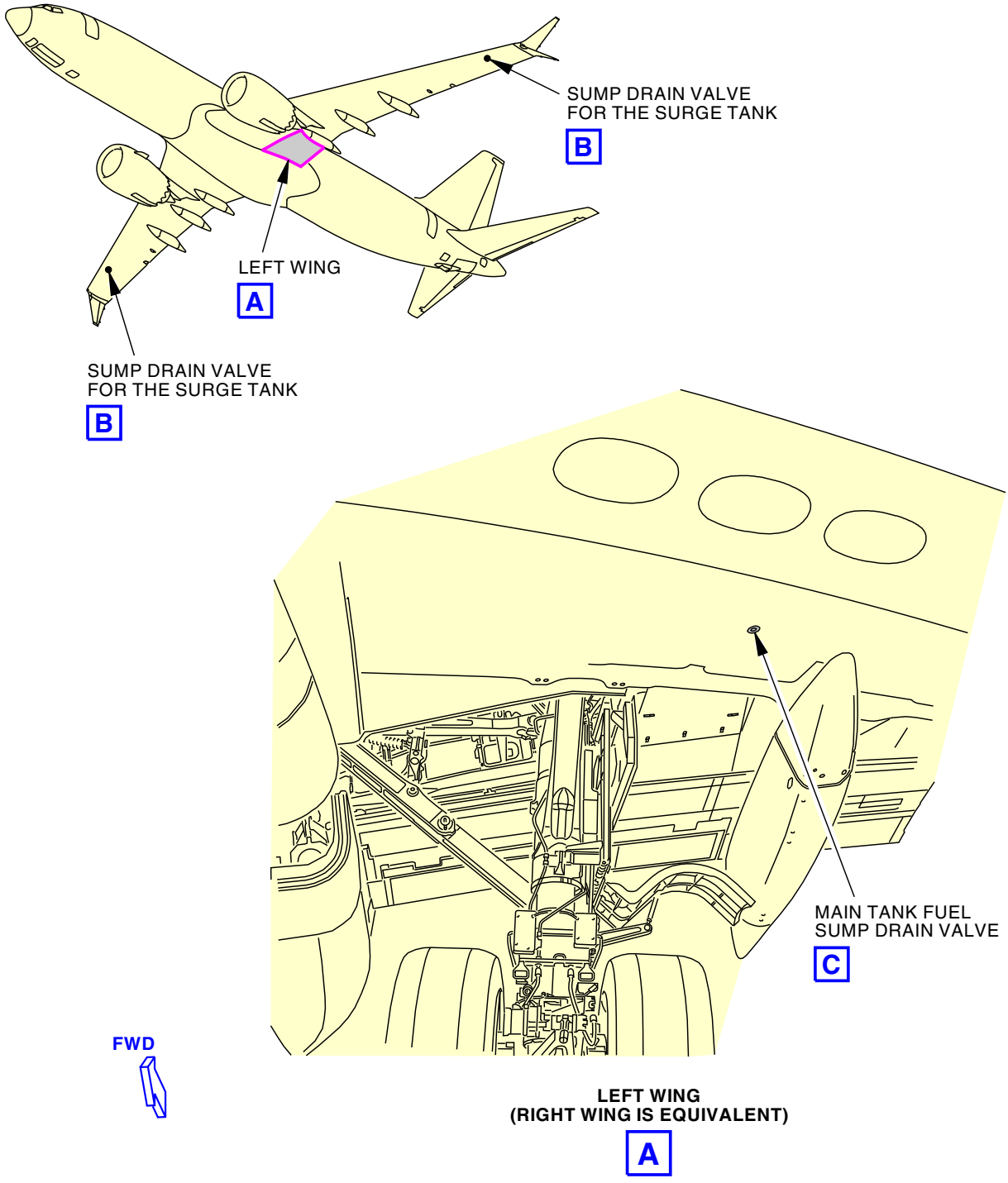
(b) If you see other contamination, do these steps:

1) Clean the fuel sampling equipment with alcohol, B00130, and dry it completely.

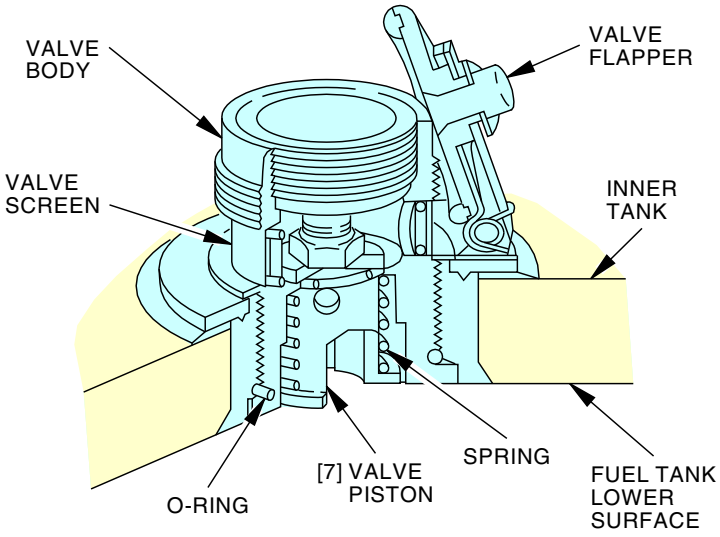
2) With a sterilized glass container, get another sample of fuel.

3) Do this task: Detection Test for Microbial Growth, TASK 28-10-00-200-801.

——— END OF TASK ———

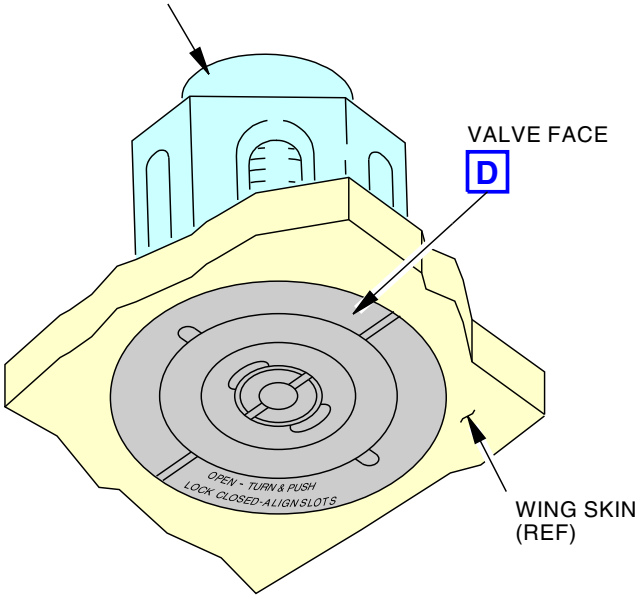


Main and Surge Fuel Tank Sump Drain Valves
Figure 303/12-11-00-990-803 (Sheet 1 of 2)



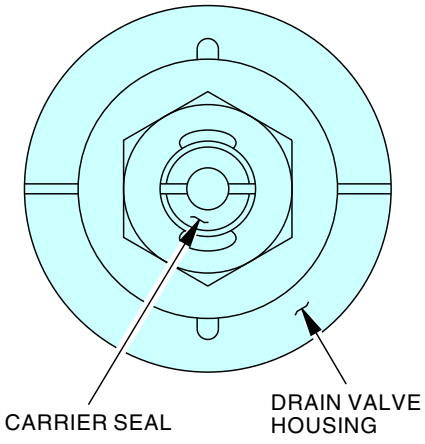
SURGE TANK FUEL SUMP DRAIN VALVE

B



MAIN TANK FUEL SUMP DRAIN VALVE

C



VALVE FACE

D

NOTE:

VALVE SHOWN IN THE LOCKED POSITION WITH THE CARRIER SEAL SLOT IN LINE WITH THE VALVE HOUSING RED LINE.

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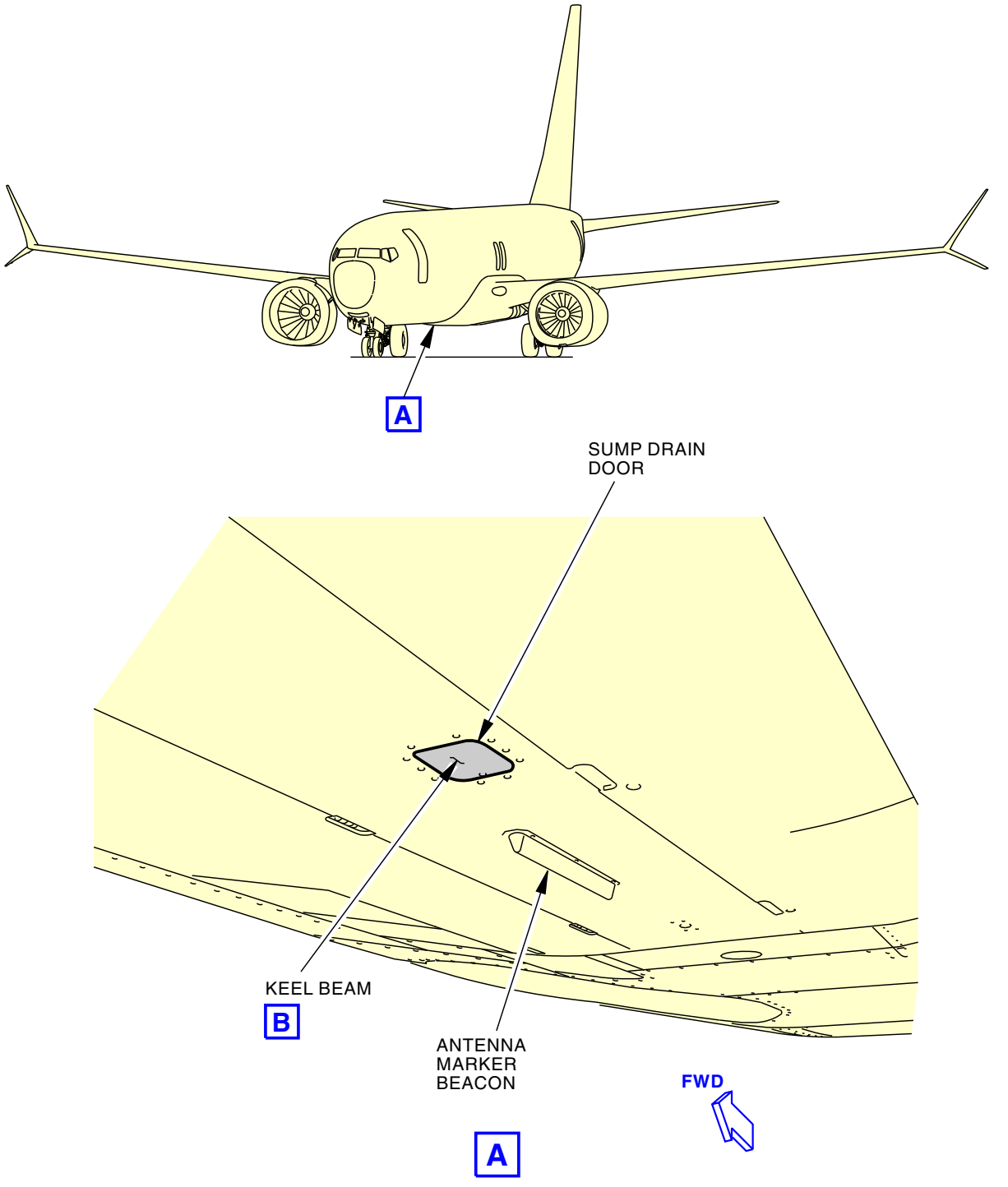
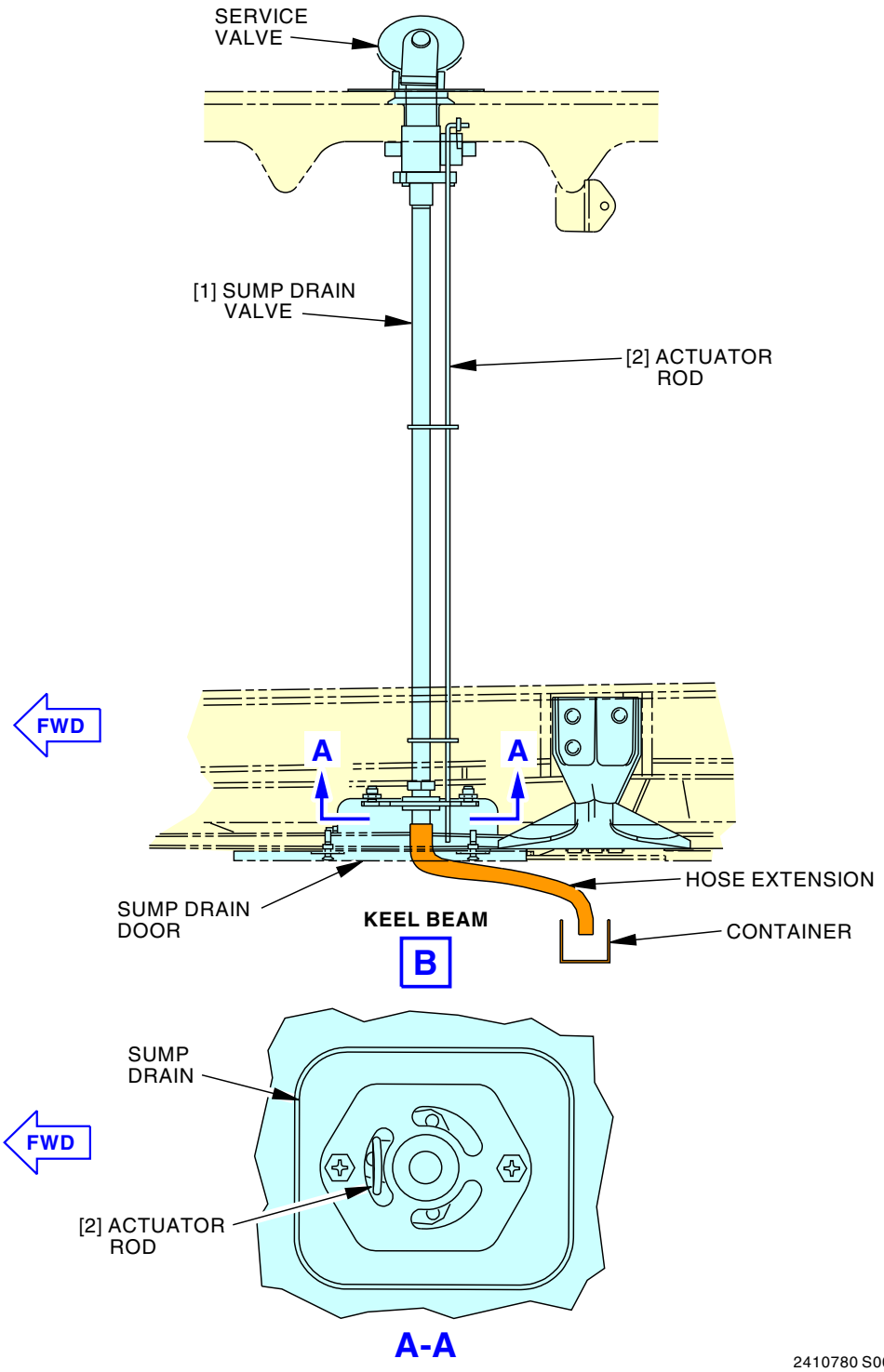
Main and Surge Fuel Tank Sump Drain Valves
Figure 303/12-11-00-990-803 (Sheet 2 of 2)



Center Tank Sump Drain Valve Extension
Figure 304/12-11-00-990-804 (Sheet 1 of 2)



Center Tank Sump Drain Valve Extension
Figure 304/12-11-00-990-804 (Sheet 2 of 2)

TASK 12-11-00-650-807

9. Drain the Fuel from the Sumps after Defueling

(Figure 303, and Figure 304)

A. General

(1) This task removes the fuel that remains after defueling each tank.

B. References

Reference	Title
20-40-11-910-801	Static Grounding (P/B 201)
28-11-00-910-802	Purging and Fuel Tank Entry (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-1772	Drain Fitting, Fuel System Part #: J28013-1 Supplier: 81205
SPL-9698	Drain Equipment, Surge Tank Sump Part #: 100-0128-04 Supplier: 99321 Part #: C12002-7 Supplier: 81205 Opt Part #: V799 Supplier: 20661
STD-1054	Container - Fuel Resistant, 5-Gallon (19-Liter)

D. Location Zones

Zone	Area
531	Left Wing - Center Fuel Tank, Rib 1 to Rib 5
532	Left Wing - Main Tank, Rib 5 to Rib 22, Wing Station 204.25 to Wing BL 643.50
631	Right Wing - Center Fuel Tank, Rib 1 to Rib 5
632	Right Wing - Main Tank, Rib 5 to Rib 22, Wing Station 204.25 to Wing Station 643.50

E. Access Panels

Number	Name/Location
192G	Sump Drain Access Door

F. Drain the Fuel from the Sumps of the No. 1 or No. 2 Tank

SUBTASK 12-11-00-650-074

WARNING

DURING THE SUMPING PROCEDURE, ELECTRICALLY GROUND THE METAL CONTAINER AND ALL RELATED SUMP EQUIPMENT. MAKE THE GROUND AWAY FROM THE AREA THAT IS IMMEDIATELY ADJACENT TO THE DRAINAGE. FLAMMABLE FUMES CAN OCCUR. FIRE AND EXPLOSIONS CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

(1) Drain the sump fuel from the No. 1 or the No. 2 tank that you de-fueled as follows:

NOTE: The best attitude to drain the sumps is 0.18 degrees nose-up pitch and zero degree roll.

(a) Electrically ground the 5-gallon (19-liter) fuel resistant container, STD-1054, and other applicable equipment to the airplane structure (TASK 20-40-11-910-801).

NOTE: Do not connect the 5-gallon (19-liter) fuel resistant container, STD-1054, and other equipment to the airplane structure in the area immediately adjacent to the sump drain valve [1].

(b) Remove the sump drain valve cap [3] and the seal carrier [6] from the valve housing.

(c) If it is necessary, install an extension hose or suitable drain connection to the sump drain hose.

(d) Put the top end of the drain fitting, SPL-1772, on the sump drain valve [1].

(e) Push the plunger handle up to engage the stem assembly in the drain valve.

(f) Push the plunger handle up until the fuel flows into the 5-gallon (19-liter) fuel resistant container, STD-1054.

NOTE: The fitting assembly has a device on the side that can hold the plunger handle up. If desired, push the holding device in to hold the handle up.

(g) When the fuel flow stops, release the plunger handle and remove the J28013-2 fitting from the sump drain valve [1].

NOTE: If necessary, pull the metal ring to release plunger handle.

G. Drain the Fuel from the Sump of the Surge Tank

SUBTASK 12-11-00-680-005

WARNING

DURING THE SUMPING PROCEDURE, ELECTRICALLY GROUND THE METAL CONTAINER AND ALL RELATED SUMP EQUIPMENT. MAKE THE GROUND AWAY FROM THE AREA THAT IS IMMEDIATELY ADJACENT TO THE DRAINAGE. FLAMMABLE FUMES CAN OCCUR. FIRE AND EXPLOSIONS CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

(1) Drain the sump fuel from the de-fueled surge tank as follows:

NOTE: The best attitude to drain the sumps is 0.18 degrees nose-up pitch and zero degree roll.

(a) Electrically ground the 5-gallon (19-liter) fuel resistant container, STD-1054, and other applicable equipment to the airplane structure (TASK 20-40-11-910-801).

NOTE: Do not connect the 5-gallon (19-liter) fuel resistant container, STD-1054, and other equipment to the airplane structure in the area immediately adjacent to the sump drain valve [1].

(b) Put the top end of the drain equipment, SPL-9698, against the bottom side of the piston in the surge tank sump drain valve [1] (Figure 303).

(c) Push the drain equipment, SPL-9698 assembly up on the piston and let the fuel flow into the 5-gallon (19-liter) fuel resistant container, STD-1054.

NOTE: There may not be any fuel or fluid to drain from the surge tank.

(d) When the fuel flow stops, remove the tool.

H. Drain the Fuel from the Sump of the Center Tank

SUBTASK 12-11-00-680-006

WARNING

DURING THE SUMPING PROCEDURE, ELECTRICALLY GROUND THE METAL CONTAINER AND ALL RELATED SUMP EQUIPMENT. MAKE THE GROUND AWAY FROM THE AREA THAT IS IMMEDIATELY ADJACENT TO THE DRAINAGE. FLAMMABLE FUMES CAN OCCUR. FIRE AND EXPLOSIONS CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

(1) Drain the sump fuel from the de-fueled center tank as follows:

(a) Adjust the airplane attitude to 0.18 degrees nose-up pitch and zero-degree roll to drain the maximum quantity of fuel.

(b) Open this access panel for the sump valve for the center tank:

(Figure 304)

Number	Name/Location
192G	Sump Drain Access Door

(c) Attach a 0.5 in. (12.7 mm) ID hose and clamp to extend the drain tube assembly to the fuel container.

(d) Put a 5-gallon (19-liter) fuel resistant container, STD-1054 below the drain tube assembly and the hose extension.

(e) Electrically ground the 5-gallon (19-liter) fuel resistant container, STD-1054, and other applicable equipment to the airplane structure (TASK 20-40-11-910-801).

NOTE: Do not connect the 5-gallon (19-liter) fuel resistant container, STD-1054, and other equipment to the airplane structure in the immediate area of the sump drain.

(f) Pull the actuator rod [2] down to open the drain valve.

(g) Release the actuator rod [2] when the fuel flow stops.

(h) Remove the clamp and the hose.

(i) Close this access panel for the sump drain valve:

Number	Name/Location
192G	Sump Drain Access Door

SUBTASK 12-11-00-680-007

(2) Open the drain valves for the boost pumps.

(a) Drain the fuel from the pumps.

SUBTASK 12-11-00-680-008

(3) Close the drain valves for the boost pumps.

SUBTASK 12-11-00-680-009

WARNING

BEFORE YOU GO INTO THE CENTER TANK, MAKE SURE THAT YOU FULLY DRAIN THE SUMP FUEL. MAKE SURE THAT THE AIRPLANE ATTITUDE IS CORRECT BEFORE YOU DRAIN THE FUEL. IF YOU DO NOT, THERE WILL BE FUEL LEAKAGE WHEN YOU REMOVE THE ACCESS PANEL. INJURY TO PERSONNEL CAN OCCUR.

(4) If you will enter a fuel tank that was de-fueled, make sure that you purge the tank (TASK 28-11-00-910-802).

END OF TASK

HYDRAULIC RESERVOIR - SERVICING

1. General

A. This procedure contains this task:

(1) Hydraulic reservoir servicing.

TASK 12-12-00-610-801

2. Hydraulic Reservoir Servicing

(Figure 301)

A. General

(1) The equipment that is necessary to fill the hydraulic fluid is on the forward bulkhead of the right wheel well. The equipment includes a reservoir manual fill pump, a pressure fill connection, a reservoir fill filter module for the hydraulic fluid, and a reservoir fill selector valve.

(2) There is a fluid quantity indicator on the system A and B reservoirs. The standby reservoir is filled through the B system reservoir. When the fluid quantity indicator for system B shows full, the system B reservoir and the standby reservoir are full.

(3) The fluid chilling at high altitude and the large ambient temperature changes between departure and arrival locations can result in a decrease in fluid levels. These cold soak effects will not have an impact on the operation of the systems but it can shrink the fluid sufficiently to indicate a need for servicing, even if you serviced the reservoirs at a warm location before the previous flight. Under such circumstances, if you service the airplane "high" at the cold location before the airplane is sent back to the warm location, it is possible that you will cause an overfill of the reservoir and fluid can overflow from the drain line.

(4) If the ambient temperature on the ground is 20°F (-7°C) or lower at an arrival location and a fluid level is below "REFILL" (76% indicated in flight deck), service the reservoir to just above "REFILL" to avoid the overflow of fluid at the next warmer location.

B. References

Reference	Title
29-00-00-870-801	Bleed the Hydraulic Systems (P/B 201)
29-09-00-860-801	Hydraulic Reservoirs Pressurization (P/B 201)
29-09-00-860-802	Hydraulic Reservoirs Depressurization (P/B 201)
29-11-00-860-801	Hydraulic System A or B Pressurization (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)
29-21-00-000-801	Standby Hydraulic System Pressurization (P/B 201)
29-21-00-000-802	Standby Hydraulic System Power Removal (P/B 201)
78-31-00-980-802-G00	Thrust Reverser Operation - Retract (Selection) (P/B 201)

C. Tools/Equipment

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

Reference	Description
COM-1536	Cart - Service, Hydraulic System Part #: 06-5020-3600 Supplier: 59603 Part #: 06-5021-3600 Supplier: 59603 Part #: 06-5022-6600 Supplier: 59603 Part #: 06-5024-3610 Supplier: 59603 Part #: 06-5043-3600 Supplier: 59603 Part #: BOB05 Supplier: D2029 Part #: MODEL 160 Supplier: 94861 Part #: PF53467-1P Supplier: 94861 Part #: PF54115-6P Supplier: 94861 Part #: PF55451 Supplier: 94861 Opt Part #: WF160 Supplier: 94861
STD-1110	Container - Hydraulic Fluid Resistant, 5 Gallon (19 Liter)
STD-1140	Hose - Flexible, 1/2 Inch ID, BMS 3-11 Resistant, 10 Foot

D. Consumable Materials

Reference	Description	Specification
D00153	Fluid - Hydraulic Fluid, Fire Resistant (Interchangeable And Intermixable With BMS 3-11 Type V)	BMS3-11 Type IV
D50269	Fluid - Hydraulic Fluid, Fire Resistant (Interchangeable And Intermixable With BMS 3-11 Type IV)	BMS3-11 Type V
G50347	Lockwire - MS20995NC32, Monel - 0.032 Inch (0.8128 mm) Diameter	NASM20995
G51674	Kit - Safety Cable, 321 CRES - 0.032 Inch (0.81 mm) Diameter, (Contains both Cable and Ferrule), 12 Inches Long	BACC13AT3K12

E. Location Zones

Zone	Area
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right

F. Hydraulic Reservoir Servicing

SUBTASK 12-12-00-863-001

(1) Supply power to the A, B, and standby hydraulic systems.

(a) Do this task: Hydraulic System A or B Pressurization, TASK 29-11-00-860-801.

(b) Do this task: Standby Hydraulic System Pressurization, TASK 29-21-00-000-801.

SUBTASK 12-12-00-210-001

(2) Make sure that the flaps and leading edge are up.

SUBTASK 12-12-00-866-001

(3) Make sure that the spoilers and landing gear are in the down position.

SUBTASK 12-12-00-860-001

(4) Make sure that the flight controls are in the neutral position.

SUBTASK 12-12-00-860-002

(5) If the thrust reversers are not retracted, do this task: Thrust Reverser Operation - Retract (Selection), TASK 78-31-00-980-802-G00.

SUBTASK 12-12-00-860-003

(6) Remove power from hydraulic systems A, B, and standby systems:

NOTE: It is not necessary to release head pressure from the hydraulic reservoirs before you fill them.

(a) Do this task: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805.

(b) Do this task: Standby Hydraulic System Power Removal, TASK 29-21-00-000-802.

SUBTASK 12-12-00-210-002

(7) Before you fill the system B reservoir, make sure that the brake accumulator has a minimum of 2800 psig (19,305 kPa) of pressure in it (with the hydraulic pumps off).

SUBTASK 12-12-00-480-001

(8) If you use the hand pump, put the end of the suction hose in the 5 gallon (19 liter) hydraulic fluid resistant container, STD-1110.

SUBTASK 12-12-00-480-002

CAUTION

DO NOT SUPPLY HYDRAULIC FLUID AT MORE THAN 75 PSIG (517 KPA) TO THE PRESSURE FILL CONNECTION. A PRESSURE OF MORE THAN 75 PSIG (517 KPA) CAN CAUSE DAMAGE TO THE HYDRAULIC SYSTEM.

(9) If you use a hydraulic system service cart, COM-1536, connect the hose from the hydraulic system service cart, COM-1536, to the pressure fill connection.

SUBTASK 12-12-00-860-004

(10) Turn the reservoir fill selector valve to the reservoir to be filled.

NOTE: PORT A fills reservoir A, and PORT B fills the standby reservoir and reservoir B.

SUBTASK 12-12-00-610-001

WARNING

MAKE SURE THAT THE CORRECT QUANTITY OF FLUID IS PRESENT IN BOTH HYDRAULIC RESERVOIRS. OVERSERVICED RESERVOIR(S) CAN CAUSE FLUID TO ENTER THE PNEUMATIC DUCTS AND THE AIR CONDITIONING PACKS AND SUBSEQUENT SMOKE AND FUMES IN THE FLIGHT COMPARTMENT AND PASSENGER COMPARTMENT (ALTHOUGH THE HYDRAULIC RESERVOIR PRESSURIZATION SYSTEM IS DESIGNED TO MITIGATE THESE EVENTS). HYDRAULIC FLUID CONTAMINATION OF THE PNEUMATIC SYSTEM CAN ALSO CAUSE DAMAGE TO TITANIUM DUCTS. SMOKE AND FUMES FROM HYDRAULIC FLUID CAN CAUSE INJURIES TO PERSONNEL.

WARNING

HYDRAULIC FLUID, BMS 3-11, CAN CAUSE INJURY TO PERSONS. IF YOU GET THE HYDRAULIC FLUID ON YOUR SKIN, FLUSH YOUR SKIN WITH WATER. IF YOU GET HYDRAULIC FLUID IN YOUR EYES, FLUSH YOUR EYES WITH WATER AND GET MEDICAL AID. IF YOU EAT OR DRINK THE HYDRAULIC FLUID, GET MEDICAL AID.

CAUTION

USE CLEAN HYDRAULIC FLUID AND CLEAN EQUIPMENT TO FILL THE HYDRAULIC SYSTEM RESERVOIRS. IF YOU DO NOT USE CLEAN HYDRAULIC FLUID AND EQUIPMENT, CONTAMINATION OF THE HYDRAULIC SYSTEM CAN OCCUR.

(11) Add hydraulic fluid, D00153, or hydraulic fluid, D50269, using the following requirements until the reservoir indicators are as specified below:

(a) Fill the hydraulic reservoir until the quantity indicator is approximately 2/3 between RFL (refill) and F (full), which is approximately 92%. This will have no effect on system operation and will make sure that the reservoirs are not over filled.

NOTE: The indicator needle will be closer to the F (full) mark than the RFL (refill) mark.

NOTE: For hydraulic system A reservoir, the quantity for the FULL mark is approximately 5.7 gallons (21.6 liters). For hydraulic system B and standby reservoirs, the quantity for the FULL mark is 8.2 gallons (31.1 liters). The reservoir fill connection permits fluid servicing from the ground servicing system to the A system and system B reservoirs.

NOTE: All currently qualified BMS 3-11, Type IV or Type V hydraulic fluids are interchangeable and intermixable in any proportion.

(b) If the ambient temperature on the ground is 20°F (-7°C) or lower and the fluid level is below RF (refill), which is 76% indicated in the flight deck, service the reservoir so that the fluid level is just above the RFL indication.

NOTE: This will prevent the reservoir from being too full at a warmer location.

SUBTASK 12-12-00-860-005

(12) Put the reservoir fill selector valve in the CLOSED position.

SUBTASK 12-12-00-080-001

(13) Put the handle and suction hose for the hand pump in their usual positions, or disconnect hydraulic system service cart, COM-1536.

(a) Before storage of the suction hose assembly, make sure to drain all the hydraulic fluid in the suction hose.

NOTE: This will minimize the quantity of hydraulic fluid caught in the hose assembly when stowed.

SUBTASK 12-12-00-210-003

(14) Look at the gages, for the hydraulic fluid quantity, that are in the flight compartment.

(a) Make sure that the gages show that the hydraulic fluid quantity are above refill (more than 76%).

SUBTASK 12-12-00-870-001

(15) If it is necessary, do this task: Bleed the Hydraulic Systems, TASK 29-00-00-870-801.

NOTE: It is not necessary to bleed the hydraulic system if a small quantity of hydraulic fluid is added during servicing. You should bleed the hydraulic system if maintenance activity allows air to enter the system, or, if you add a large quantity of fluid and believe that air has entered the system from the reservoir.

SUBTASK 12-12-00-680-001

(16) If it is necessary to lower the hydraulic fluid level because it is too high (more than 100%), do these steps:

(a) Release head pressure from the applicable hydraulic reservoir, do this task: Hydraulic Reservoirs Depressurization, TASK 29-09-00-860-802.

NOTE: The air charging valve manifold allows both hydraulic reservoirs to be depressurized with one valve.

(b) Install the ten foot hose (1/2 inch ID), STD-1140, as follows:

1) Put one end of the ten foot hose (1/2 inch ID), STD-1140, on the outlet of the reservoir drain valve.

2) Put the opposite end of the ten foot hose (1/2 inch ID), STD-1140, into the 5 gallon (19 liter) hydraulic fluid resistant container, STD-1110, for the hydraulic fluid.

(c) Remove the lockwire or safety cable on the handle of the reservoir drain valve.

(d) To lower the hydraulic fluid level, do these steps:

1) Monitor the reservoir quantity gages while you drain fluid from the reservoir.

2) Open the reservoir drain valve to drain the hydraulic fluid into the 5 gallon (19 liter) hydraulic fluid resistant container, STD-1110.

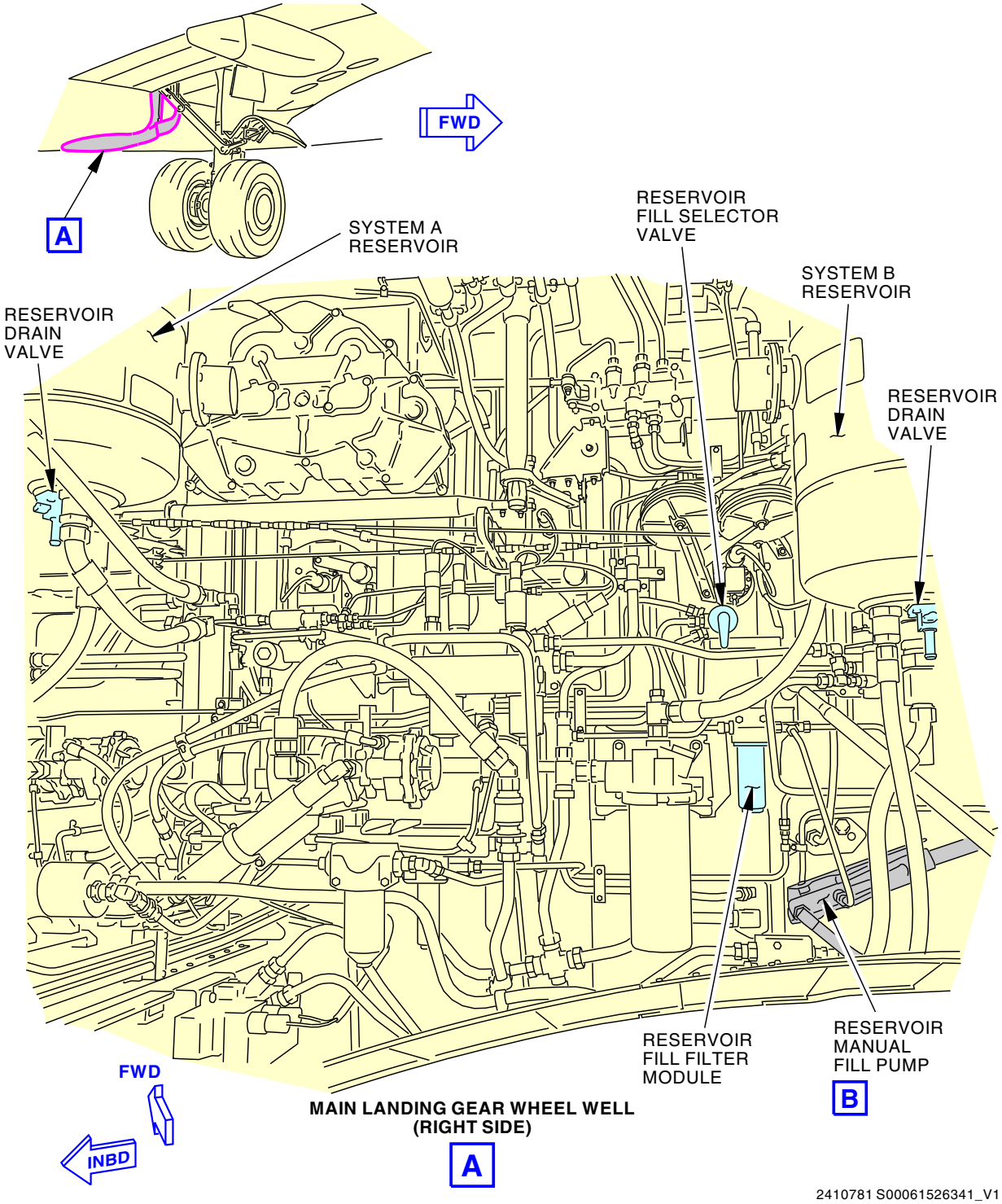
3) Close the reservoir drain valve when the reservoir quantity gage is above refill.

(e) Remove the ten foot hose (1/2 inch ID), STD-1140, from the reservoir drain valve.

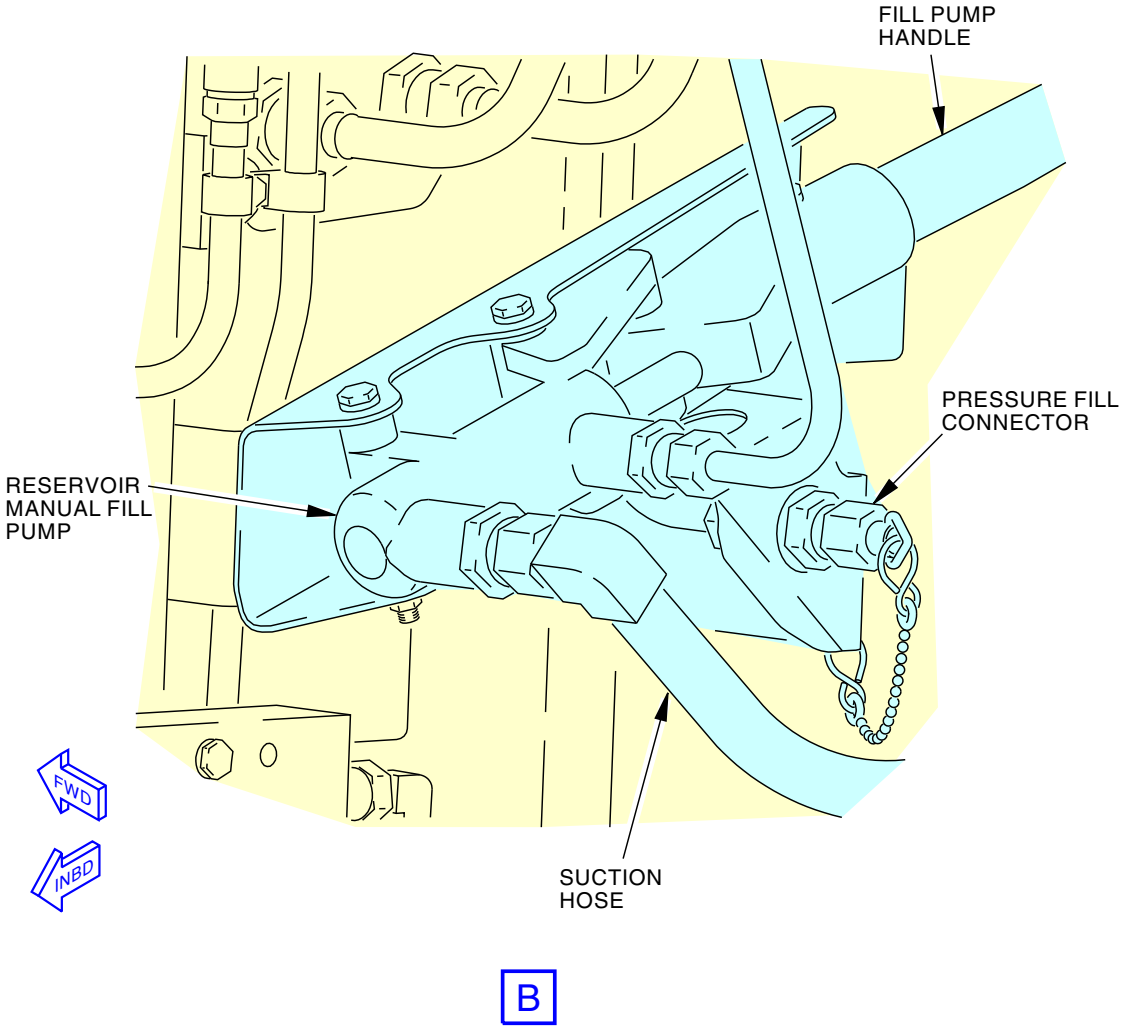
(f) Install a MS20995NC32 lockwire, G50347, or safety cable kit, G51674, on the handle of the reservoir drain valve with double twist method.

(g) Pressurize the hydraulic reservoirs, do this task: Hydraulic Reservoirs Pressurization, TASK 29-09-00-860-801.

——— END OF TASK ———



Hydraulic Reservoir Servicing
Figure 301/12-12-00-990-801 (Sheet 1 of 2)



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Hydraulic Reservoir Servicing
Figure 301/12-12-00-990-801 (Sheet 2 of 2)

ENGINE OIL - SERVICING

1. General

A. This procedure has these tasks:

(1) Engine Servicing (Oil Replenishing)

(2) Engine Oil Change Servicing

(3) Engine Oil System Flushing

(4) Oil Tank Flushing.

TASK 12-13-11-600-801

2. Engine Servicing (Oil Replenishing)

(Figure 301)

A. General

(1) This task gives the instructions to replenish the engine oil.

(2) The total oil tank capacity in oil (100% at the cockpit oil level) is 22.32 qt (21.12 l) before reaching the overfill drain port.

(3) The oil tank should be serviced on a regular basis. After servicing, the real oil level should be greater than 14.7 qt (13.9 l) plus an additional quantity that accounts for anticipated oil consumption based on the mission duration and oil consumption rate.

NOTE: For engine oil consumption calculations, you can refer to Engine Operation Limits, TASK 71-00-00-800-802-G00.

NOTE: A minimum of 14.7 qt (13.9 l) oil level will prevent transient low oil level indications during take-off due to gulping and airplane pitch in the longitudinal axis.

NOTE: 14.7 qt (13.9 l) oil level is below the "-3Q" sight glass indication mark. This quantity can only be determined from the cockpit. A real volume of 14.7 qt (13.9 l) would give an indicated volume displayed in the cockpit of 13 qt (12 l) or 62%.

NOTE: If the flight deck indication is in quarts or liters, you may observe different oil quantity values at oil tank sight glass between left and right engines while the oil quantity flight deck indication is the same.

(4) You must flush the oil system if there is sign of contamination.

(5) Do not mix different approved brands of oil except when approved by CFM SB 79-0001.

(6) When you change the fleet to a different approved brand, make sure that you follow the instructions in CFM SB 79-0001 when you service the engine.

B. References

Reference	Title
71-00-00-800-802-G00	Engine Operation Limits (P/B 201)
79-00-00-211-801-G00	Engine Oil System (Fluids (Fuel or Skydrol) and Solids Contamination) Detailed Inspection (P/B 601)
IFIM and do the applicable procedure(s)	Interactive Fault Isolation Manual

C. Tools/Equipment

Reference	Description
STD-858	Tag - DO NOT OPERATE

D. Consumable Materials

Reference	Description	Specification
D00599 [CP2442]	Oil - Engine	
G00034	Cotton Wiper - Process Cleaning Absorbent Wiper (Cheesecloth, Gauze)	AMS3819 Class 1 Grade A or B Form 1 (Supersede BMS15-5 CL A)
G51335 [CP2674]	Lint-Free Cloth	

E. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
6	Preformed packing	79-11-01-01-100	SIA ALL

F. Location Zones

Zone	Area
414	Engine 1 - Fan Cowl, Right
424	Engine 2 - Fan Cowl, Right

G. Access Panels

Number	Name/Location
414AR	Oil Tank Access / Pressure Relief Door, Engine 1
424AR	Oil Tank Access / Pressure Relief Door, Engine 2

H. Prepare for the Servicing

SUBTASK 12-13-11-860-001

(1) Do these steps to make sure that the ENGINE START switch and the START LEVER switch are not operated:

(a) Make sure that the applicable ENGINE START switch, on the P5 overhead panel, is in the AUTO or OFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable ENGINE START switch.

(b) Make sure that the applicable START LEVER switch, on the P10 control stand, is in the CUTOFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable START LEVER switch.

I. Engine Servicing (Oil Replenishing)

SUBTASK 12-13-11-170-001

WARNING BE CAREFUL WHEN YOU DO WORK ON THE ENGINE PARTS AFTER THE ENGINE IS STOPPED. THE ENGINE PARTS CAN STAY HOT FOR ALMOST ONE HOUR. DO NOT TOUCH HOT PARTS WITHOUT APPLICABLE GLOVES. HOT PARTS CAN CAUSE INJURIES TO PERSONNEL.

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

WARNING DO NOT LET THE OIL STAY ON YOUR SKIN. YOU CAN ABSORB POISONOUS MATERIALS FROM THE OIL THROUGH YOUR SKIN.

(WARNING PRECEDES)

CAUTION DO NOT LET OIL GET ON THE ENGINE OR OTHER COMPONENTS. IMMEDIATELY CLEAN THE OIL WHEN IT FALLS ON THEM. OIL CAN CAUSE DAMAGE TO EQUIPMENT.

(1) Oil level Requirement:

CAUTION MAKE SURE THAT THE OIL IN THE TANK IS WARM WHEN OIL IS ADDED. IF THE TEMPERATURE OF THE OIL IN THE OIL TANK IS COLD, THE OIL VOLUME WILL DECREASE. THIS CAN CAUSE A CONDITION WHERE THE OIL TANK CAN HAVE TOO MUCH OIL WHEN THE OIL TEMPERATURE INCREASES. IF THE SERVICING OF THE TANKS ADDS TOO MUCH OIL, THE OIL TEMPERATURE CAN INCREASE AND ENGINE DAMAGE CAN OCCUR.

(a) Add the oil not less than five minutes and not more than 60 minutes after engine shutdown.

NOTE: The oil should be added when the oil in the tank is still warm. This will prevent over-servicing of the engine. If the oil in the oil tank is cold, the oil density will increase. This will let the volume decrease and allow the oil tank to be over-serviced. If the oil tank is over-serviced, the extra oil will go overboard through the engine vent system. This can cause incorrect calculation of the oil consumption rate.

NOTE: Unusual repeated servicing (especially during a period without operation) may indicate an abnormal situation on the oil system circuit suggesting internal or external leakage and may result in over-servicing.

(b) Find the minimum oil level necessary to dispatch the airplane:

1) Before flight, do a check of the indicated engine oil level in the flight compartment.

a) With engine not in operation, make sure that the oil level is 13 qt (12 l) or 62%, or more.

2) Use the flight's duration and the specific engine oil consumption to calculate the oil usage.

3) Calculate the minimum oil level necessary for dispatch.

NOTE: The oil level indication should be greater than 13 qt (12 l) or 62% plus an additional quantity that accounts for anticipated oil consumption based on the mission duration and oil consumption rate.

(c) If the real volume of oil level is less than the necessary minimum oil level, do the steps to replenish the oil tank.

(d) If the oil servicing is done more than 1 hour after engine shutdown, do the steps below to replenish the oil tank.

1) If possible, limit the oil tank servicing to the "-3Q" mark (19.3 qt (18.3 l)) to avoid over-servicing.

(e) If the oil level is above the MAX level on the oil tank sight glass [4], check the Onboard Maintenance Function (OMF) PRESENT LEG FAULTS report for maintenance message 79-41880 (Engine 1) or 79-41885 (Engine 2).

NOTE: Increase in oil level since previous oil replenishing may indicate fuel in the oil system. Fuel in the oil can cause damage to the engine.

1) If the maintenance message is present, refer to the IFIM and do the applicable procedure(s).

SUBTASK 12-13-11-860-017

(2) Replenish the oil tank [1]:

(a) For the applicable engine, open these access doors:

Number	Name/Location
414AR	Oil Tank Access / Pressure Relief Door, Engine 1
424AR	Oil Tank Access / Pressure Relief Door, Engine 2

CAUTION MAKE SURE THAT THE OIL TANK SCUPPER IS CLEAN. IF THE SCUPPER IS NOT CLEAN, IT CAN CAUSE CONTAMINATION OF THE OIL SYSTEM. THIS CAN CAUSE DAMAGE TO THE ENGINE.

(b) If necessary, clean the oil tank scupper [5] with lint-free cloth, G51335 [CP2674], or cotton wiper, G00034, before you open the oil tank filler cap [2].

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

CAUTION BE CAREFUL WHEN YOU OPEN THE FILLER CAP. DO NOT PULL THE HANDLE OF THE FILLER CAP OUT OF ITS STOP LIMITS. DO NOT APPLY MORE FORCE THAN IS NECESSARY. TOO MUCH FORCE CAN CAUSE DAMAGE TO ITS LOCKING DEVICE.

(c) Open the oil tank filler cap [2]:

1) Pull oil tank filler cap handle [3] to the unlocked position.

2) Open the oil tank filler cap [2].

CAUTION MAKE SURE THAT YOU DO NOT SMELL FUEL FUMES WHEN YOU OPEN THE OIL FILLER CAP. FUEL IN THE OIL CAN CAUSE DAMAGE TO THE ENGINE.

(d) Do a check for fuel in the oil.

1) If you find fuel in the engine oil, do the applicable steps in this task: Engine Oil System (Fluids (Fuel or Skydrol) and Solids Contamination) Detailed Inspection, TASK 79-00-00-211-801-G00.

(e) Do a check of the oil level in the oil tank sight glass [4].

(f) If the oil level is below the full mark, add oil, D00599 [CP2442], through the oil tank filler gravity port [8] up to the full mark.

(g) Replenish oil tank [1] with the oil, D00599 [CP2442], through the oil tank filler gravity port [8] up to the full mark.

1) If non-approved oils or different oil types were added to the engine oil, drain and then replenish the oil tank with oil, D00599 [CP2442], before the subsequent flight.

(h) Close the oil tank filler cap [2] on the oil tank [1]:

1) Examine the preformed packing [6] on the oil tank filler cap [2].

2) If you find damage, remove and replace the preformed packing [6].
   a) Lubricate the new preformed packing [6] for the oil tank filler cap [2] with engine oil, D00599 [CP2442].
   b) Install the preformed packing [6] on the oil tank filler cap [2].
3) Close the oil tank filler cap [2] with the oil tank filler cap handle [3] in the vertical position.
4) Push the oil tank filler cap handle [3] to the closed position.
   a) Make sure that the filler cap is locked.

SUBTASK 12-13-11-860-003

(3) For the applicable engine, close these access doors:

Number	Name/Location
414AR	Oil Tank Access / Pressure Relief Door, Engine 1
424AR	Oil Tank Access / Pressure Relief Door, Engine 2

(a) Make sure that the latches are fully closed.
   1) Press the aft “PUSH CLOSE” button to fully close the latch.
   2) If the latch appears to be jammed in the fully open position and does not close, press the forward “PUSH OPEN” button to reset the latch.

      NOTE: Do not use a prying tool to force the latch closed.
   3) Repeat the steps as necessary to fully close the latch.

      NOTE: The latch may not close if the aft “PUSH CLOSE” button is released before the latch is fully closed.

J. Put the Airplane Back to Its Usual Condition

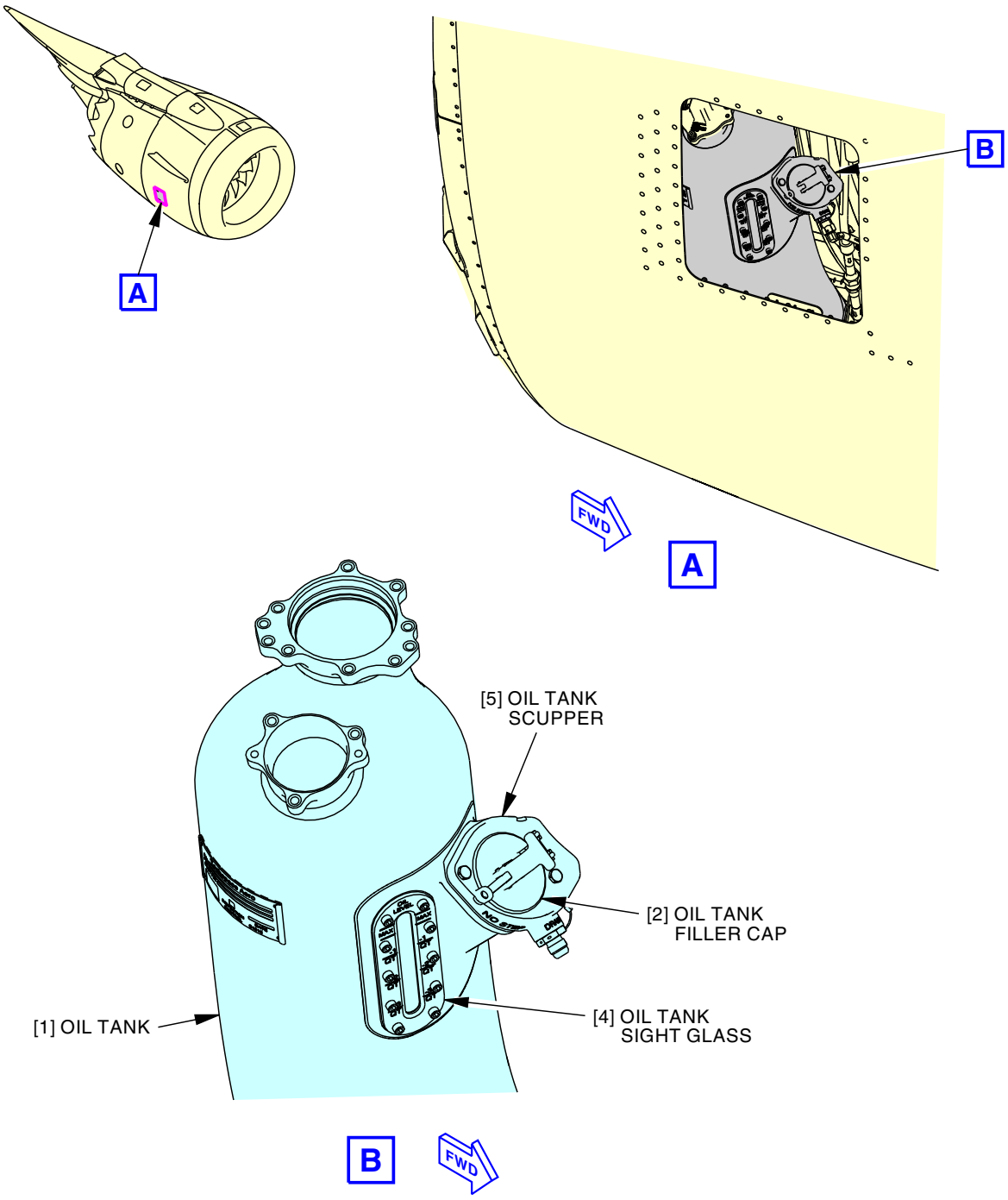
SUBTASK 12-13-11-100-001

(1) Clean the work area and remove the tools you used to do the work.

SUBTASK 12-13-11-860-004

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

——— END OF TASK ———



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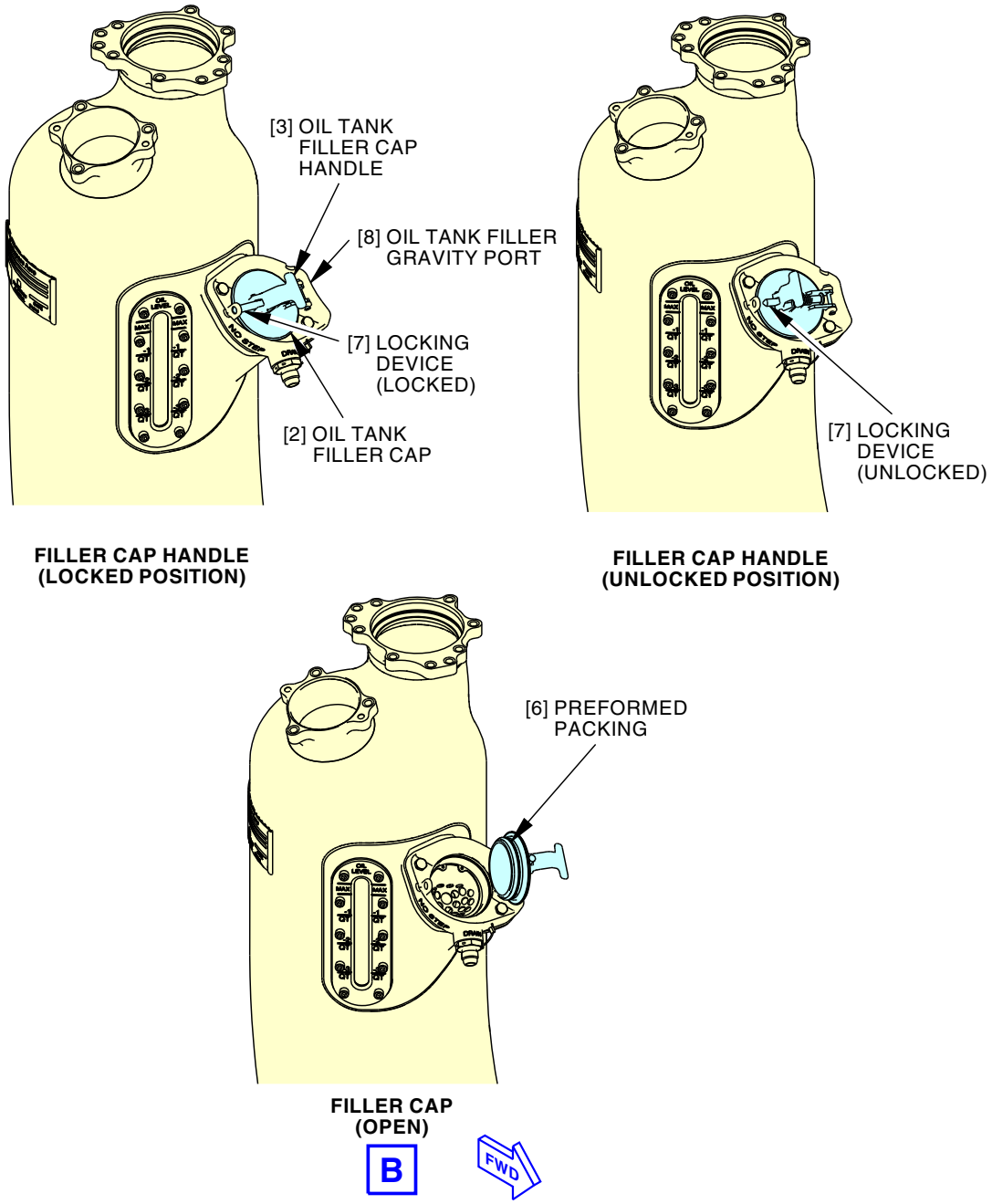
Engine Servicing (Oil Replenishing)
Figure 301/12-13-11-990-801 (Sheet 1 of 2)



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Engine Servicing (Oil Replenishing)
Figure 301/12-13-11-990-801 (Sheet 2 of 2)

TASK 12-13-11-600-803

3. Engine Oil Change Servicing

(Figure 302)

A. General

(1) This task gives the instructions to change the engine oil.

B. References

Reference	Title
71-11-04-010-801-G00	Open the Fan Cowl Panels (Selection) (P/B 201)
71-11-04-410-801-G00	Close the Fan Cowl Panels (Selection) (P/B 201)

C. Tools/Equipment

Reference	Description
STD-193	Container
STD-858	Tag - DO NOT OPERATE

D. Consumable Materials

Reference	Description	Specification
D00599 [CP2442]	Oil - Engine	
D00672 [CP5070]	Vaseline - Pure Mineral	V V-P-236
G02345 [CP8001]	Wire - Safety, 0.032 Inch (0.8 mm) Diameter	AMS 5687
G50065 [CP8006]	Cable, Safety, Stainless Steel, 0.032 inch (0.8 mm) Diameter	M50 TF 9 CL-A

E. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
3	Preformed packing	79-11-01-01-100	SIA ALL
7	Preformed packing	79-11-51-02-005	SIA ALL
19	Preformed packing	72-63-01-03-380	SIA ALL

F. Location Zones

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

G. Access Panels

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

H. Prepare for the Servicing

SUBTASK 12-13-11-860-005

(1) Do these steps to make sure that the ENGINE START switch and the START LEVER switch are not operated:

(a) Make sure that the applicable ENGINE START switch, on the P5 overhead panel, is in the AUTO or OFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable ENGINE START switch.

(b) Make sure that the applicable START LEVER switch, on the P10 control stand, is in the CUTOFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable START LEVER switch.

SUBTASK 12-13-11-860-018

(2) Do this task: Open the Fan Cowl Panels (Selection), TASK 71-11-04-010-801-G00.

(a) On the applicable engine, open these access panels:

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

I. Engine Oil Change Servicing

SUBTASK 12-13-11-020-001

WARNING BE CAREFUL WHEN YOU DO WORK ON THE ENGINE PARTS AFTER THE ENGINE IS STOPPED. THE ENGINE PARTS CAN STAY HOT FOR ALMOST ONE HOUR. DO NOT TOUCH HOT PARTS WITHOUT APPLICABLE GLOVES. HOT PARTS CAN CAUSE INJURIES TO PERSONNEL.

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

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

WARNING DO NOT LET THE OIL STAY ON YOUR SKIN. YOU CAN ABSORB POISONOUS MATERIALS FROM THE OIL THROUGH YOUR SKIN.

CAUTION DO NOT LET OIL GET ON THE ENGINE OR OTHER COMPONENTS. IMMEDIATELY CLEAN THE OIL WHEN IT FALLS ON THEM. OIL CAN CAUSE DAMAGE TO EQUIPMENT.

(1) Open the oil tank filler cap [1]:

(a) Pull the oil tank filler cap handle [2] to the vertical (unlocked) position.

(b) Lift the oil tank filler cap handle [2] to the OPEN position.

SUBTASK 12-13-11-610-001

(2) Drain the oil from the oil tank [4]:

(a) Put the 8 gal (30 l) oil resistant container, STD-193 below the oil tank [4].

(b) Remove the drain plug [6] from the oil tube [5]:

1) Cut and remove the cable, G50065 [CP8006] or safety wire, G02345 [CP8001] from the drain plug [6].

2) Remove the drain plug [6] from the oil tube [5].
3) Remove and discard the preformed packing [7] from the drain plug [6].
4) Let the oil drain into the 8 gal (30 l) oil resistant container, STD-193.

(c) Install the drain plug [6] on the oil tube [5]:
1) Make sure that the mating faces are clean and clear of unwanted materials.
2) Lubricate the threads of the drain plug [6] with engine oil, D00599 [CP2442].
3) Lubricate the new preformed packing [7] with vaseline, D00672 [CP5070].
4) Install the new preformed packing [7] onto the groove of the drain plug [6].
5) Install the drain plug [6] on the oil tube [5].
6) Tighten the drain plug [6] to 177.0 in-lb (20.0 N·m) - 203.6 in-lb (23.0 N·m).
7) Install a cable, G50065 [CP8006] or safety wire, G02345 [CP8001] on the drain plug [6].

SUBTASK 12-13-11-680-001

(3) Drain the oil from the accessory gearbox [17]:
(a) Put the 8 gal (30 l) oil resistant container, STD-193 below the accessory gearbox [17].
NOTE: Use an oil resistant container with the capacity to receive the oil from the AGB.
(b) Remove the drain plug [18] from the accessory gearbox [17]:
1) Cut and remove the cable, G50065 [CP8006] or safety wire, G02345 [CP8001] from the drain plug [18].
2) Remove the drain plug [18] from the accessory gearbox [17].
3) Remove and discard the preformed packing [19] from the drain plug [18].
4) Let the oil drain into the 8 gal (30 l) oil resistant container, STD-193.
(c) Install the drain plug [18] on the accessory gearbox [17]:
1) Make sure that the mating faces are clean and clear of unwanted materials.
2) Lubricate the threads of the drain plug [18] with engine oil, D00599 [CP2442].
3) Lubricate the new preformed packing [19] with vaseline, D00672 [CP5070].
4) Install the new preformed packing [19] onto the groove of the drain plug [18].
5) Install the drain plug [18] in a correct position on the accessory gearbox [17].
6) Tighten the drain plug [18] to 185.9 in-lb (21.0 N·m) - 212.4 in-lb (24.0 N·m).
7) Install a cable, G50065 [CP8006] or safety wire, G02345 [CP8001] on the drain plug [18].

SUBTASK 12-13-11-610-004

(4) Replenish the oil tank [4] (TASK 12-13-11-600-801).

SUBTASK 12-13-11-420-003

(5) Close the oil tank filler cap [1]:
(a) Examine the preformed packing [3] on the oil tank filler cap [1].
(b) If you find damage in the preformed packing [3], do the steps that follow:
1) Remove and discard the preformed packing [3].
2) Lubricate a new preformed packing [3] with engine oil, D00599 [CP2442].
3) Install the new preformed packing [3] onto the groove of the oil tank filler cap [1].

(c) Close the oil tank filler cap [1] with the oil tank filler cap handle [2] in vertical position.

(d) Lower the oil tank filler cap handle [2] to the CLOSED position.

(e) Push the oil tank filler cap handle [2] down in the locked position.

NOTE: The handle will be flat with the oil tank filler cap when it is in the locked position.

(f) Make sure that the oil tank filler cap [1] is tightly closed and locked.

(g) Clean the work area and clear the tools and other items.

J. Put the Airplane Back to Its Usual Condition

SUBTASK 12-13-11-860-019

(1) Do this task: Close the Fan Cowl Panels (Selection), TASK 71-11-04-410-801-G00.

(a) On the applicable engine, close these access panels:

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

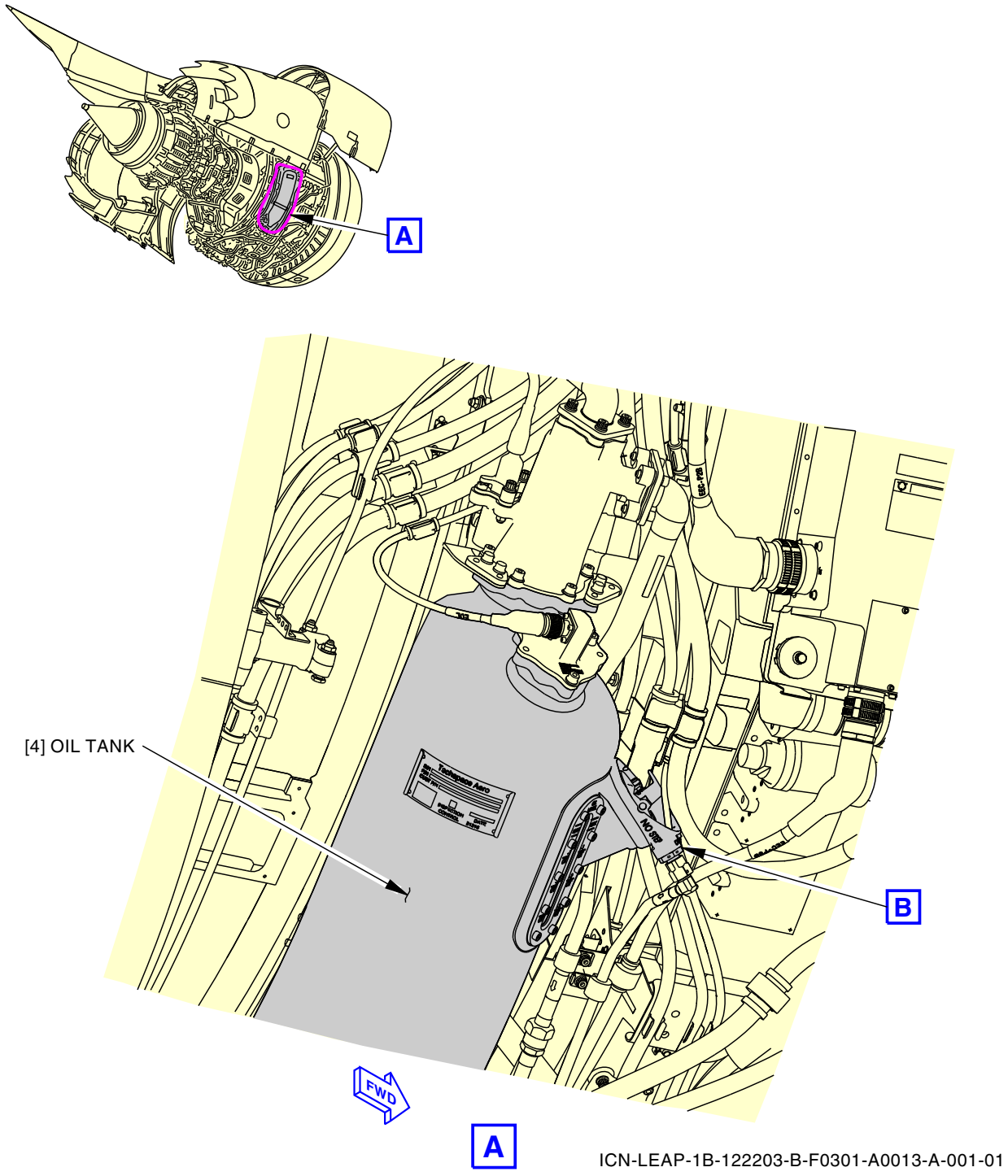
SUBTASK 12-13-11-860-008

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

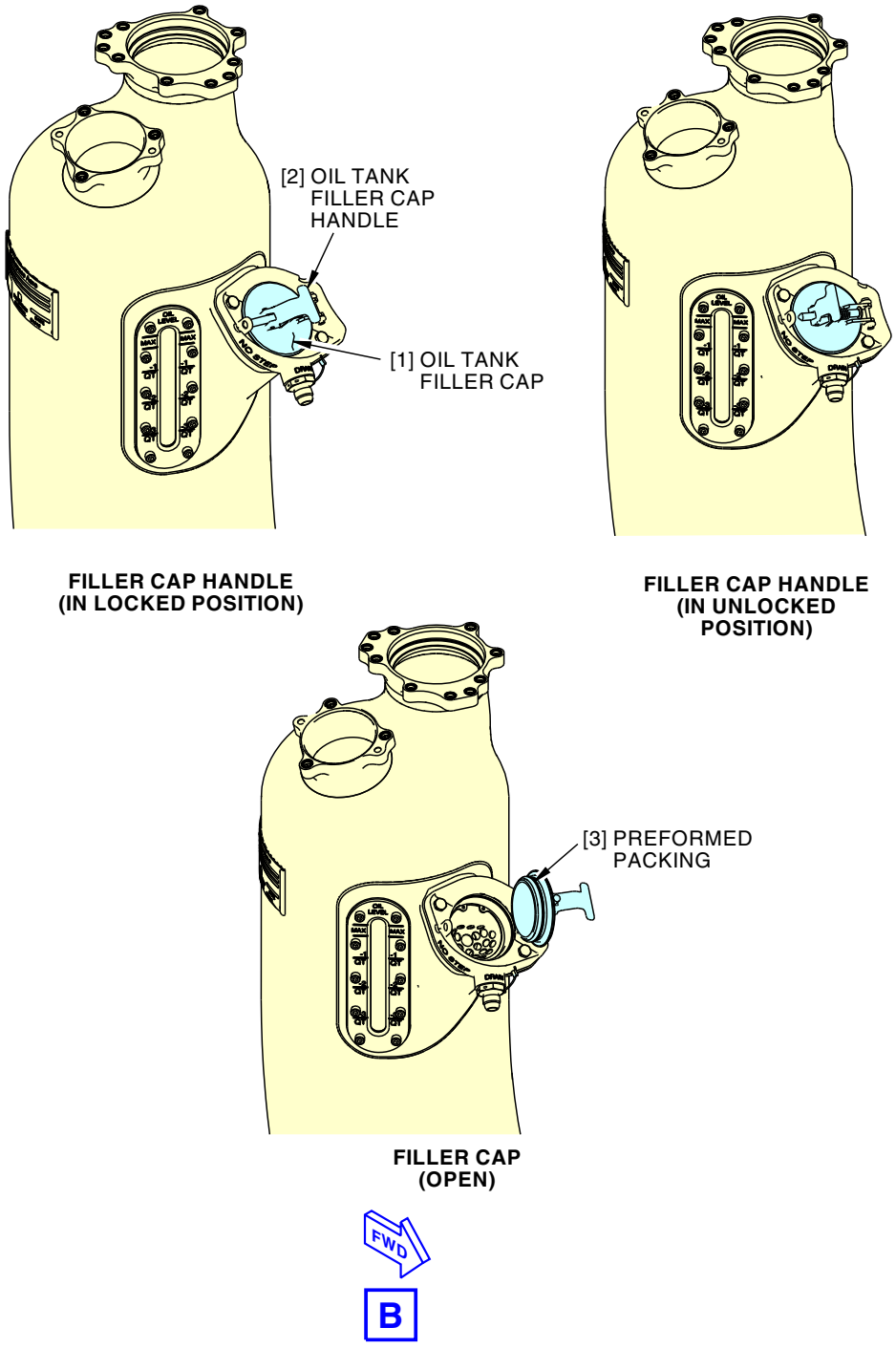
(a) On the P5 overhead panel, remove the DO NOT OPERATE tag, STD-858, from the applicable ENGINE START switch.

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

——— END OF TASK ———



Engine Oil Change Servicing
Figure 302/12-13-11-990-803 (Sheet 1 of 4)



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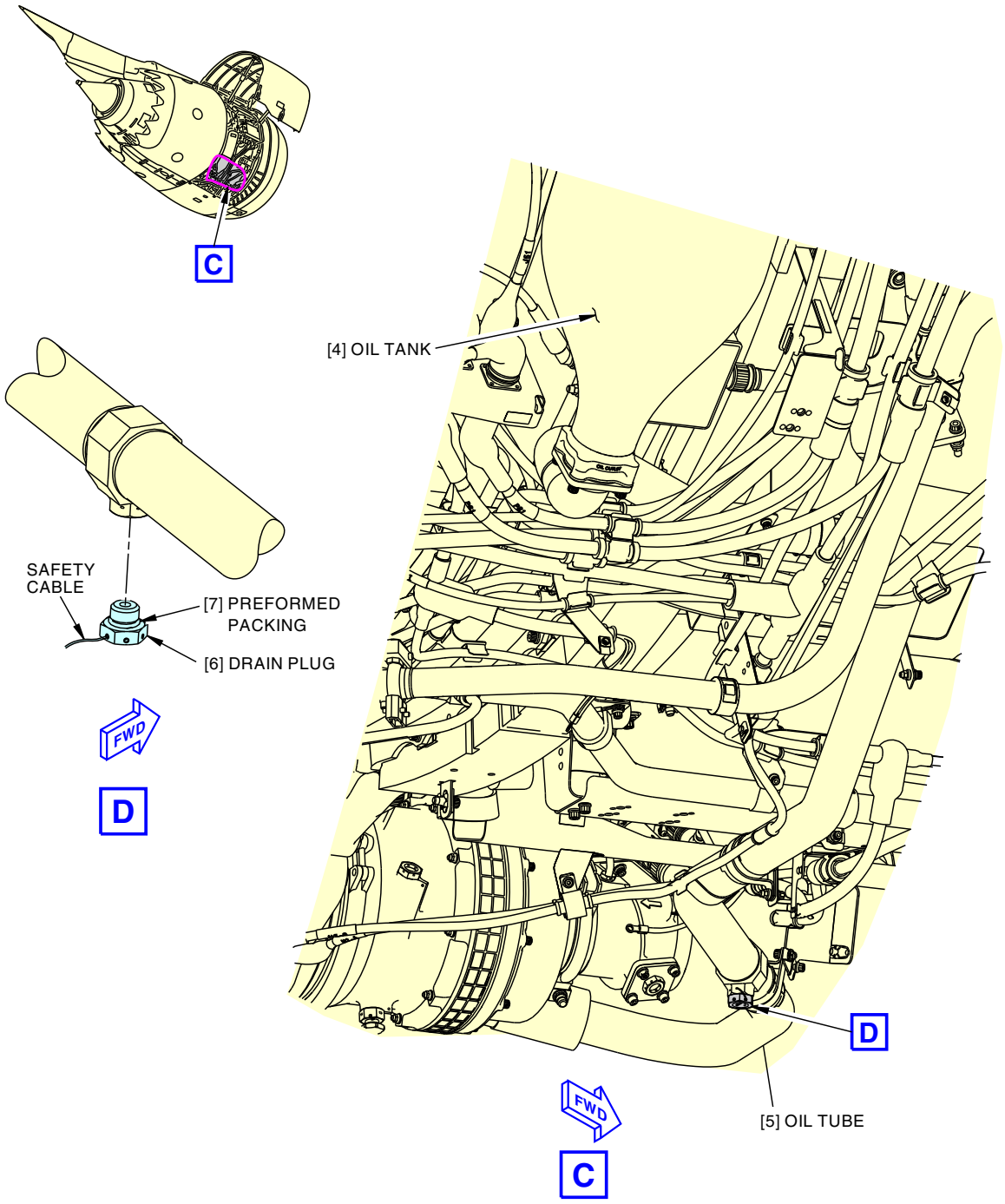
Engine Oil Change Servicing
Figure 302/12-13-11-990-803 (Sheet 2 of 4)



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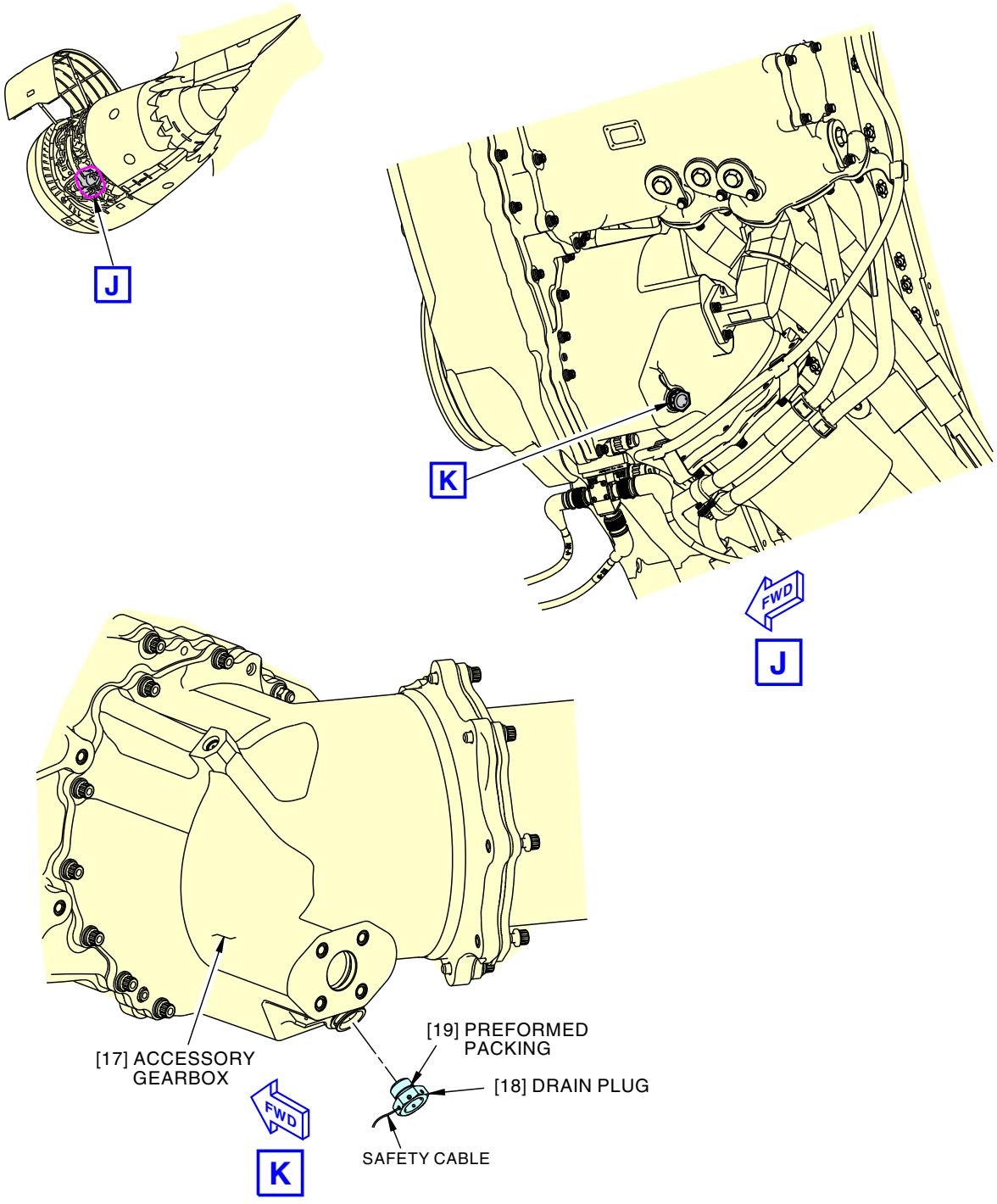
Engine Oil Change Servicing
Figure 302/12-13-11-990-803 (Sheet 3 of 4)



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Engine Oil Change Servicing
Figure 302/12-13-11-990-803 (Sheet 4 of 4)

TASK 12-13-11-100-801

4. Engine Oil System Flushing

(Figure 303)

A. General

(1) This task gives the instructions to flush the engine oil system.

(2) If you think that there is contamination in the engine oil system, do this task: Engine Oil System (Fluids (Fuel or Skydrol) and Solids Contamination) Detailed Inspection, TASK 79-00-00-211-801-G00.

B. References

Reference	Title
71-00-00-910-802-G00	Start the Engine (Selection) (P/B 201)
71-00-00-910-806-G00	Stop the Engine (Usual Engine Stop) (P/B 201)
71-11-04-010-801-G00	Open the Fan Cowl Panels (Selection) (P/B 201)
71-11-04-410-801-G00	Close the Fan Cowl Panels (Selection) (P/B 201)
78-31-00-010-801-G00	Open the Thrust Reverser (Selection) (P/B 201)
78-31-00-010-802-G00	Close the Thrust Reverser (Selection) (P/B 201)
78-31-00-040-801-G00	Thrust Reverser Deactivation For Ground Maintenance (P/B 201)
78-31-00-440-801-G00	Thrust Reverser Activation After Ground Maintenance (P/B 201)
79-00-00-210-804-G00	Oil Debris Monitoring System Sensor Inspection (P/B 601)
79-00-00-211-801-G00	Engine Oil System (Fluids (Fuel or Skydrol) and Solids Contamination) Detailed Inspection (P/B 601)
79-00-00-220-801-G00	Engine Oil System (Oil Debris Monitoring System Sensor (ODMS), Scavenge Screen Plugs, Starter Magnetic Plug, and Oil Filter) Detailed Dimensional Check (P/B 601)
79-21-02-000-801-G00	Engine Surface Air Cooling Oil Cooler 1 Removal (P/B 401)
79-21-02-000-802-G00	Engine Surface Air Cooling Oil Cooler 2 Removal (P/B 401)
79-21-02-400-801-G00	Engine Surface Air Cooling Oil Cooler 1 Installation (P/B 401)
79-21-02-400-802-G00	Engine Surface Air Cooling Oil Cooler 2 Installation (P/B 401)
79-21-04-211-801-G00	Scavenge Screen Plug Inspection (P/B 201)
79-21-07-200-801-G00	Oil Filter Cartridge Element Inspection (P/B 601)
80-11-09-200-801-G00	Engine Starter Magnetic Plug Inspection (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-13652	Oil Drain Tool Part #: 956A8674G03 Supplier: 58828
STD-366	Funnel - Oil Resistant
STD-858	Tag - DO NOT OPERATE
STD-3938	Container - Oil Resistant, 10 U.S. Gallon (38 Liter)

D. Consumable Materials

Reference	Description	Specification
D00599 [CP2442]	Oil - Engine	
D00672 [CP5070]	Vaseline - Pure Mineral	V V-P-236
G50065 [CP8006]	Cable, Safety, Stainless Steel, 0.032 inch (0.8 mm) Diameter	M50 TF 9 CL-A
G51335 [CP2674]	Lint-Free Cloth	

E. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
4	Preformed packing	79-11-51-02-005	SIA ALL
8	Preformed packing	72-63-01-03-380	SIA ALL
12	Preformed packing	79-21-07-01-020	SIA ALL
28	Preformed packing	79-11-01-01-100	SIA ALL
33	Preformed packing	72-00-00-14-020	SIA ALL

F. Location Zones

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

G. Access Panels

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

H. Prepare for the Servicing

SUBTASK 12-13-11-860-009

(1) Do these steps to make sure that the ENGINE START switch and the START LEVER switch are not operated:

(a) Make sure that the applicable ENGINE START switch, on the P5 overhead panel, is in the AUTO or OFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable ENGINE START switch.

(b) Make sure that the applicable START LEVER switch, on the P10 control stand, is in the CUTOFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable START LEVER switch.

SUBTASK 12-13-11-860-010

(2) Do these tasks in sequence to safely open the left and right thrust reversers on the applicable engine:

WARNING DO THE DEACTIVATION PROCEDURE FOR THE THRUST REVERSER TO PREVENT THE OPERATION OF THE THRUST REVERSER. ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT.

(a) Do this task: Thrust Reverser Deactivation For Ground Maintenance, TASK 78-31-00-040-801-G00.

(b) Open the applicable left or right fan cowl panels (TASK 71-11-04-010-801-G00).

1) Open these access panels:

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

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

(c) Open the applicable left or right thrust reversers (TASK 78-31-00-010-801-G00).

1) Open these access panels:

Number	Name/Location
415	Left Thrust Reverser, Engine 1
416	Right Thrust Reverser, Engine 1
425	Left Thrust Reverser, Engine 2
426	Right Thrust Reverser, Engine 2

I. Engine Oil System Flushing

SUBTASK 12-13-11-750-001

WARNING BE CAREFUL WHEN YOU DO WORK ON THE ENGINE PARTS AFTER THE ENGINE IS STOPPED. THE ENGINE PARTS CAN STAY HOT FOR ALMOST ONE HOUR. DO NOT TOUCH HOT PARTS WITHOUT APPLICABLE GLOVES. HOT PARTS CAN CAUSE INJURIES TO PERSONNEL.

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

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

WARNING DO NOT LET THE OIL STAY ON YOUR SKIN. YOU CAN ABSORB POISONOUS MATERIALS FROM THE OIL THROUGH YOUR SKIN.

(WARNING PRECEDES)

CAUTION

DO NOT LET OIL GET ON THE ENGINE OR OTHER COMPONENTS. IMMEDIATELY CLEAN THE OIL WHEN IT FALLS ON THEM. OIL CAN CAUSE DAMAGE TO EQUIPMENT.

(1) Flush the engine oil system:

(a) Drain the oil from the oil tank [1]:

1) Put a oil resistant container (10 gal), STD-3938, below the oil tank [1].

2) Remove the drain plug [3] from the oil tube [2]:

a) Cut the safety cable [5] from the drain plug [3].

b) Remove the drain plug [3] from the oil tube [2].

c) Remove and discard the preformed packing [4] from the drain plug [3].

d) Let the oil drain into the oil resistant container (10 gal), STD-3938.

3) Install the drain plug [3] on the oil tube [2]:

a) Make sure that the mating faces are clean and clear of unwanted materials.

b) Lubricate the threads of the drain plug [3] with oil, D00599 [CP2442].

c) Lubricate the new preformed packing [4] with vaseline, D00672 [CP5070].

d) Install the preformed packing [4] onto the groove of the drain plug [3].

e) Install the drain plug [3] in a correct position on the oil tube [2]

f) Tighten the drain plug [3] to 180 in-lb (20 N·m) - 200 in-lb (23 N·m).

g) Install the safety cable [5], cable, G50065 [CP8006], on the drain plug [3].

(b) Drain the oil from the accessory gearbox [6]:

1) Put a oil resistant container (10 gal), STD-3938, below the accessory gearbox [6].

2) Remove the drain plug [7] from the accessory gearbox [6]:

a) Cut the safety cable [9] from the drain plug [7].

b) Remove the drain plug [7] from the accessory gearbox [6].

c) Remove and discard the preformed packing [8] from the drain plug [7].

d) Let the oil drain into the oil resistant container (10 gal), STD-3938.

3) Install the drain plug [7] on the accessory gearbox [6]:

a) Make sure that the mating faces are clean and clear of unwanted materials.

b) Lubricate the threads of the drain plug [7] with oil, D00599 [CP2442].

c) Lubricate the new preformed packing [8] with vaseline, D00672 [CP5070].

d) Install the preformed packing [8] on the drain plug [7].

e) Install the drain plug [7] in a correct position on the accessory gearbox [6].

f) Tighten the drain plug [7] to 186 in-lb (21 N·m) - 212 in-lb (24 N·m).

g) Install the safety cable [9], cable, G50065 [CP8006], on the drain plug [7].

CAUTION

DO NOT SPILL THE OIL. USE A MINIMUM OF TWO CONTAINERS TO DRAIN THE OIL. A LARGE VOLUME OF OIL WILL DRAIN FROM THE LUBE PUMP.

(c) Drain the oil from the lubrication unit lube and scavenge pump [10]:

1) Put a oil resistant container (10 gal), STD-3938, below the lubrication unit lube and scavenge pump [10].
2) Remove the drain plug [11] from the lubrication unit lube and scavenge pump [10]:
   a) Cut the safety cable from the drain plug [11].
   b) Remove the drain plug [11] from the lubrication unit lube and scavenge pump [10].
   c) Remove and discard the preformed packing [12] from the drain plug [11].
   d) Let the oil drain into the oil resistant container (10 gal), STD-3938.
3) Install the drain plug [11] on the lubrication unit lube and scavenge pump [10]:
   a) Make sure that the mating faces are clean and clear of unwanted materials.
   b) Lubricate the threads of the drain plug [11] and new preformed packing [12] with oil, D00599 [CP2442].
   c) Install the preformed packing [12] on the drain plug [11].
   d) Install the drain plug [11] in a correct position on the lubrication unit lube and scavenge pump [10].
   e) Tighten the drain plug [11] to 67.45 in-lb (7.6 N·m) - 74.55 in-lb (8.4 N·m).
   f) Install the safety cable, cable, G50065 [CP8006], on the drain plug [11]

(d) Drain the oil from the oil tube [30]:

1) Put a oil resistant container (10 gal), STD-3938, below the lubrication unit lube and scavenge pump [10].
2) Install the oil drain tool, SPL-13652, or oil resistant funnel, STD-366, on the oil tube [30], under the drain plug [31].
3) Remove the drain plug [31] from the oil tube [30].
   a) Cut the safety cable [32] from the drain plug [31].
   b) Remove and discard the preformed packing [33] from the drain plug [31].
   c) Let the oil drain into the oil resistant container (10 gal), STD-3938, through the oil drain tool, SPL-13652, or oil resistant funnel, STD-366.
4) Install the drain plug [31] on the oil tube [30].
   a) Make sure that the mating faces are clean and clear of unwanted materials
   b) Apply oil, D00599 [CP2442], on the threads of the drain plug [31] and new preformed packing [33].
   c) Install the preformed packing [33] on the drain plug [31]
   d) Install the drain plug [31] in a correct position on the oil tube [30].
   e) Tighten the drain plug [31] to 180 in-lb (20 N·m) - 200 in-lb (23 N·m).
   f) Install the safety cable [32], cable, G50065 [CP8006], on the drain plug [31].

(e) Drain the oil from the engine surface air cooling oil cooler 1 [13]:

1) Put a oil resistant container (10 gal), STD-3938, below the engine surface air cooling oil cooler 1 [13].

2) Remove the engine surface air cooling oil cooler 1 [13] (TASK 79-21-02-000-801-G00).

WARNING USE EYE PROTECTION WHEN YOU USE COMPRESSED AIR TO CLEAN, COOL, OR DRY PARTS OR TOOLS. PARTICLES CAN CAUSE AN INJURY TO YOUR EYES. DO NOT USE MORE THAN 30 PSI (207 KPA). DO NOT POINT COMPRESSED AIR AT YOURSELF OR OTHER PERSONS.

3) Drain the oil from the engine surface air cooling oil cooler 1 [13] through the oil outlet port [15].

NOTE: It is permitted to use the filtered compressed air through the oil inlet port [14] to remove the oil from the engine surface air cooling oil cooler 1 [13].

4) Install the engine surface air cooling oil cooler 1 [13] (TASK 79-21-02-400-801-G00).

(f) Drain the oil from the engine surface air cooling oil cooler 2 [16]:

1) Put a oil resistant container (10 gal), STD-3938, below the engine surface air cooling oil cooler 2 [16].

2) Remove the engine surface air cooling oil cooler 2 [16] (TASK 79-21-02-000-802-G00).

WARNING USE EYE PROTECTION WHEN YOU USE COMPRESSED AIR TO CLEAN, COOL, OR DRY PARTS OR TOOLS. PARTICLES CAN CAUSE AN INJURY TO YOUR EYES. DO NOT USE MORE THAN 30 PSI (207 KPA). DO NOT POINT COMPRESSED AIR AT YOURSELF OR OTHER PERSONS.

3) Drain the oil from the engine surface air cooling oil cooler 2 [16] through the oil outlet port [18].

NOTE: It is permitted to use the filtered compressed air through the oil inlet port [17] to remove the oil from the engine surface air cooling oil cooler 2 [16].

4) Install the engine surface air cooling oil cooler 2 [16] (TASK 79-21-02-400-802-G00).

(g) Do a check of oil level for the oil tank [1].

NOTE: An oil tank [1] with 3.68 U.S. Gallon (13.93 l) filled is sufficient to flush the oil system.

NOTE: Oil must be added not less than five minutes and not more than 60 minutes after engine shutdown while the oil in the oil tank [1] is still warm. This will prevent the over-servicing of the engine.

If the oil in the oil tank [1] is cool or cold, the oil density will increase (volume decreases) and the oil tank [1] can be over-serviced.

If the oil tank [1] is over-serviced, the extra oil will be blown overboard through the engine vent system.

The quantity of oil can cause incorrect calculations for the consumption rate.

(h) Replenish the oil tank [1]:

1) Clean the oil tank filler cap handle [27] with lint-free cloth, G51335 [CP2674], before you open the oil tank filler cap [25].

2) Open the oil tank filler cap [25]:

a) Raise the oil tank filler cap handle [27] to the vertical (unlocked) position.

b) Turn the oil tank filler cap handle [27] on the oil tank filler cap [25] to the OPEN position.

3) Fill the oil tank [1] with oil, D00599 [CP2442], up to the full mark.

4) Close the oil tank filler cap [25]:

a) Make sure that the preformed packing [28] is in its position.

<1> Examine the preformed packing [28] on the oil tank filler cap [25].

<2> If defect in the preformed packing [28] is found, remove and discard the preformed packing [28].

<3> Lubricate the new preformed packing [28] with oil, D00599 [CP2442].

<4> Install the preformed packing [28] onto the groove of the oil tank filler cap [25].

b) Install the oil tank filler cap [25] with the oil tank filler cap handle [27] in the vertical position.

c) Turn the oil tank filler cap handle [27] on the oil tank filler cap [25] clockwise to the CLOSED position.

d) Put the oil tank filler cap handle [27] in the locked position.

NOTE: The oil tank filler cap handle [27] will be flat with the oil tank filler cap [25] when it is in the locked position.

e) Make sure that the oil tank filler cap [25] is tightly closed and locked.

(i) Operate the engine at ground idle for 10 minutes (TASK 71-00-00-910-802-G00).

(j) Stop the engine (TASK 71-00-00-910-806-G00).

(k) Drain the oil completely:

1) Drain the oil from the oil tank [1]:

a) Put a oil resistant container (10 gal), STD-3938, below the oil tank [1].

b) Remove the drain plug [3] from the oil tube [2]:

<1> Cut the safety cable [5] from the drain plug [3].

<2> Remove the drain plug [3] from the oil tube [2].

<3> Remove and discard the preformed packing [4] from the drain plug.

<4> Let the oil drain into the oil resistant container (10 gal), STD-3938.

c) Install the drain plug [3] on the oil tube [2]:

<1> Make sure that the mating faces are clean and clear of unwanted materials.

<2> Lubricate the threads of the drain plug [3] with oil, D00599 [CP2442].

<3> Lubricate the new preformed packing [4] with vaseline, D00672 [CP5070].

<4> Install the preformed packing [4] onto the groove of the drain plug [3].

<5> Install the drain plug [3] in a correct position on the oil tank [1]

<6> Tighten the drain plug [3] to 180 in-lb (20 N·m) - 200 in-lb (23 N·m).

<7> Install the safety cable [5], cable, G50065 [CP8006], on the drain plug [3].

2) Drain the oil from the accessory gearbox [6]:

a) Put a oil resistant container (10 gal), STD-3938, below the accessory gearbox [6].

b) Remove the drain plug [7] from the accessory gearbox [6]:

<1> Cut the safety cable [9] from the drain plug [7].

<2> Remove the drain plug [7] from the accessory gearbox [6].

<3> Remove and discard the preformed packing [8] from the drain plug [7].

<4> Let the oil drain into the oil resistant container (10 gal), STD-3938.

c) Install the drain plug [7] on the accessory gearbox [6]:

<1> Make sure that the mating faces are clean and clear of unwanted materials.

<2> Lubricate the threads of the drain plug [7] and new preformed packing [8] with oil, D00599 [CP2442].

<3> Install the preformed packing [8] on the drain plug [7].

<4> Install the drain plug [7] in a correct position on the accessory gearbox [6].

<5> Tighten the drain plug [7] to 186 in-lb (21 N·m) - 212 in-lb (24 N·m).

<6> Install the safety cable [9], cable, G50065 [CP8006], on the drain plug [7].

CAUTION

DO NOT SPILL THE OIL. USE A MINIMUM OF TWO CONTAINERS TO DRAIN THE OIL. A LARGE VOLUME OF OIL WILL DRAIN FROM THE LUBE PUMP.

3) Drain the oil from the lubrication unit lube and scavenge pump [10]:

a) Put a oil resistant container (10 gal), STD-3938, below the lubrication unit lube and scavenge pump [10].

b) Remove the drain plug [11] from the lubrication unit lube and scavenge pump [10]:

<1> Cut the safety cable from the drain plug [11].

<2> Remove the drain plug [11] from the lubrication unit lube and scavenge pump [10].

<3> Remove and discard the preformed packing [12] from the drain plug [11].

<4> Let the oil drain into the oil resistant container (10 gal), STD-3938.

c) Install the drain plug [11] on the lubrication unit lube and scavenge pump [10]:

<1> Make sure that the mating faces are clean and clear of unwanted materials.

<2> Lubricate the thread of the drain plug [11] and new preformed packing [12] with oil, D00599 [CP2442].

<3> Install the preformed packing [12] on the drain plug [11].

<4> Install the drain plug [11] in a correct position on the lubrication unit lube and scavenge pump [10].

<5> Tighten the drain plug [11] to 67.45 in-lb (7.6 N·m) - 74.55 in-lb (8.4 N·m).

<6> Install the safety cable, cable, G50065 [CP8006], on the drain plug [11]

4) Drain the oil from the engine surface air cooling oil cooler 1 [13]:

a) Put a oil resistant container (10 gal), STD-3938, below the engine surface air cooling oil cooler 1 [13].

b) Remove the engine surface air cooling oil cooler 1 [13] (TASK 79-21-02-000-801-G00).

WARNING USE EYE PROTECTION WHEN YOU USE COMPRESSED AIR TO CLEAN, COOL, OR DRY PARTS OR TOOLS. PARTICLES CAN CAUSE AN INJURY TO YOUR EYES. DO NOT USE MORE THAN 30 PSI (207 KPA). DO NOT POINT COMPRESSED AIR AT YOURSELF OR OTHER PERSONS.

c) Drain the oil from the engine surface air cooling oil cooler 1 [13] through the oil outlet port [15].

NOTE: It is permitted to use the filtered compressed air through the oil inlet port [14] to remove the oil from the engine surface air cooling oil cooler 1 [13].

d) Install the engine surface air cooling oil cooler 1 [13] (TASK 79-21-02-400-801-G00).

5) Drain the oil from the engine surface air cooling oil cooler 2 [16]:

a) Put a oil resistant container (10 gal), STD-3938, below the engine surface air cooling oil cooler 2 [16].

b) Remove the engine surface air cooling oil cooler 2 [16] (TASK 79-21-02-000-802-G00).

WARNING USE EYE PROTECTION WHEN YOU USE COMPRESSED AIR TO CLEAN, COOL, OR DRY PARTS OR TOOLS. PARTICLES CAN CAUSE AN INJURY TO YOUR EYES. DO NOT USE MORE THAN 30 PSI (207 KPA). DO NOT POINT COMPRESSED AIR AT YOURSELF OR OTHER PERSONS.

c) Drain the oil from the engine surface air cooling oil cooler 2 [16] through the oil outlet port [18].

NOTE: It is permitted to use the filtered compressed air through the oil inlet port [17] to remove the oil from the engine surface air cooling oil cooler 2 [16].

d) Install the engine surface air cooling oil cooler 2 [16] (TASK 79-21-02-400-802-G00).

CAUTION DO NOT REMOVE THE HEXAGONAL MAGNETIC CHIP PLUG FROM THE SCAVENGE SCREEN PLUG. IF YOU DO NOT OBEY, DAMAGE TO THE ENGINE CAN OCCUR.

CAUTION DO NOT USE THE HEXAGONAL MAGNETIC CHIP PLUG TO REMOVE THE SCAVENGE SCREEN PLUGS. IF YOU DO NOT OBEY, AN OIL LEAK CAN OCCUR.

(l) Examine the following parts:

- The Oil Debris Monitoring System (ODMS) sensor (TASK 79-00-00-210-804-G00)
- All the scavenge screen plugs (TASK 79-21-04-211-801-G00)
- The starter Magnetic Chip Detector (MCD) (TASK 80-11-09-200-801-G00)
- The oil filter cartridge element (TASK 79-21-07-200-801-G00).

1) If no particles are found, no further inspections are needed.

2) If particles are found, do this task: Engine Oil System (Oil Debris Monitoring System Sensor (ODMS), Scavenge Screen Plugs, Starter Magnetic Plug, and Oil Filter) Detailed Dimensional Check, TASK 79-00-00-220-801-G00.

(m) Fill the oil tank [1] with new oil, D00599 [CP2442].

(n) Do a check of oil level for the oil tank [1].

NOTE: An oil tank [1] with 3.68 U.S. Gallon (13.93 l) filled is sufficient to flush the oil system.

NOTE: Oil must be added not less than five minutes and not more than 60 minutes after engine shutdown while the oil in the oil tank [1] is still warm. This will prevent the over-servicing of the engine.

If the oil in the oil tank [1] is cool or cold, the oil density will increase (volume decreases) and the oil tank [1] can be over-serviced.

If the oil tank [1] is over-serviced, the extra oil will be blown overboard through the engine vent system.

The quantity of oil can cause incorrect calculations for the consumption rate.

(o) Replenish the oil tank [1]:

1) Clean the oil tank filler cap handle [27] with lint-free cloth, G51335 [CP2674], before you open the oil tank filler cap [25].

2) Open the oil tank filler cap [25]:

a) Raise the oil tank filler cap handle [27] to the vertical (unlocked) position.

b) Turn the oil tank filler cap handle [27] on the oil tank filler cap [25] to the OPEN position.

3) Fill the oil tank [1] with oil, D00599 [CP2442], up to the full mark.

4) Close the oil tank filler cap [25]:

a) Make sure that the preformed packing [28] is in its position.

<1> Examine the preformed packing [28] on the oil tank filler cap [25].

<2> If defect in the preformed packing [28] is found, remove and discard the preformed packing [28].

<3> Lubricate the new preformed packing [28] with oil, D00599 [CP2442].

<4> Install the preformed packing [28] onto the groove of the oil tank filler cap [25].

b) Install the oil tank filler cap [25] with the oil tank filler cap handle [27] in the vertical position.

c) Turn the oil tank filler cap handle [27] on the oil tank filler cap [25] clockwise to the CLOSED position.

d) Put the oil tank filler cap handle [27] in the locked position.

NOTE: The oil tank filler cap handle [27] will be flat with the oil tank filler cap [25] when it is in the locked position.

e) Make sure that the oil tank filler cap [25] is tightly closed and locked.

(p) Operate the engine at ground idle for 10 minutes (TASK 71-00-00-910-802-G00).

(q) Stop the engine (TASK 71-00-00-910-806-G00).

(r) Open the oil tank filler cap [25]:

1) Clean the oil tank filler cap handle [27] with lint-free cloth, G51335 [CP2674], before you open the oil tank filler cap [25].

2) Raise the oil tank filler cap handle [27] to the vertical (unlocked) position.

3) Turn the oil tank filler cap handle [27] on the oil tank filler cap [25] to the OPEN position.

(s) Do a visual and smell inspection for the presence of contamination in the oil.

1) If there is contamination, do the steps above again.

(t) Close the oil tank filler cap [25]:

1) Make sure that the preformed packing [28] is in its position.

a) Examine the preformed packing [28] on the oil tank filler cap [25].

b) If defect in the preformed packing [28] is found, remove and discard the preformed packing [28].

c) Lubricate the new preformed packing [28] with oil, D00599 [CP2442].

d) Install the preformed packing [28] onto the groove of the oil tank filler cap [25].

2) Install the oil tank filler cap [25] with the oil tank filler cap handle [27] in the vertical position.

3) Turn the oil tank filler cap handle [27] on the oil tank filler cap [25] clockwise to the CLOSED position.

4) Put the oil tank filler cap handle [27] in the locked position.

NOTE: The oil tank filler cap handle [27] will be flat with the oil tank filler cap [25] when it is in the locked position.

5) Make sure that the oil tank filler cap [25] is tightly closed and locked.

(u) After 30 minutes or less of engine shut down, do a check of the oil level through the oil tank sight glass [26].

(v) Fill the oil tank [1] to the maximum level.

(w) Do a check of the oil level on the oil tank sight glass [26].

NOTE: An oil tank [1] which is 1/2 filled is sufficient to flush the oil system.

NOTE: Oil must be added not less than five minutes and not more than 60 minutes after engine shutdown while the oil in the oil tank [1] is still warm. This will prevent the over-servicing of the engine.

If the oil in the oil tank [1] is cool or cold, the oil density will increase (volume decreases) and the oil tank [1] can be over-serviced.

If the oil tank [1] is over-serviced, the extra oil will be blown overboard through the engine vent system.

The quantity of oil can cause incorrect calculations for the consumption rate.

(x) Replenish the oil tank [1]:

1) Clean the oil tank filler cap handle [27] with lint-free cloth, G51335 [CP2674], before you open the oil tank filler cap [25].
2) Open the oil tank filler cap [25]:
   a) Raise the oil tank filler cap handle [27] to the vertical (unlocked) position.
   b) Turn the oil tank filler cap handle [27] on the oil tank filler cap [25] to the OPEN position.
3) Fill the oil tank [1] with oil, D00599 [CP2442], up to the full mark.
4) Close the oil tank filler cap [25]:
   a) Make sure that the preformed packing [28] is in its position.
      <1> Examine the preformed packing [28] on the oil tank filler cap [25].
      <2> If defect in the preformed packing [28] is found, remove and discard the preformed packing [28].
      <3> Lubricate the new preformed packing [28] with oil, D00599 [CP2442].
      <4> Install the preformed packing [28] onto the groove of the oil tank filler cap [25].
   b) Install the oil tank filler cap [25] with the oil tank filler cap handle [27] in the vertical position.
   c) Turn the oil tank filler cap handle [27] on the oil tank filler cap [25] clockwise to the CLOSED position.
   d) Put the oil tank filler cap handle [27] in the locked position.
      NOTE: The oil tank filler cap handle [27] will be flat with the oil tank filler cap [25] when it is in the locked position.
   e) Make sure that the oil tank filler cap [25] is tightly closed and locked.

(y) Clean the work area and clear the tools and other items.

J. Put the Airplane Back to Its Usual Condition

SUBTASK 12-13-11-860-011

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 these tasks in sequence to safely close the applicable left or right thrust reversers:

(a) Do this task: Close the Thrust Reverser (Selection), TASK 78-31-00-010-802-G00.

1) Close these access panels:

Number	Name/Location
415	Left Thrust Reverser, Engine 1
416	Right Thrust Reverser, Engine 1
425	Left Thrust Reverser, Engine 2
426	Right Thrust Reverser, Engine 2

(b) Do this task: Close the Fan Cowl Panels (Selection), TASK 71-11-04-410-801-G00.

1) Close these access panels:

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

(c) Do this task: Thrust Reverser Activation After Ground Maintenance, TASK 78-31-00-440-801-G00.

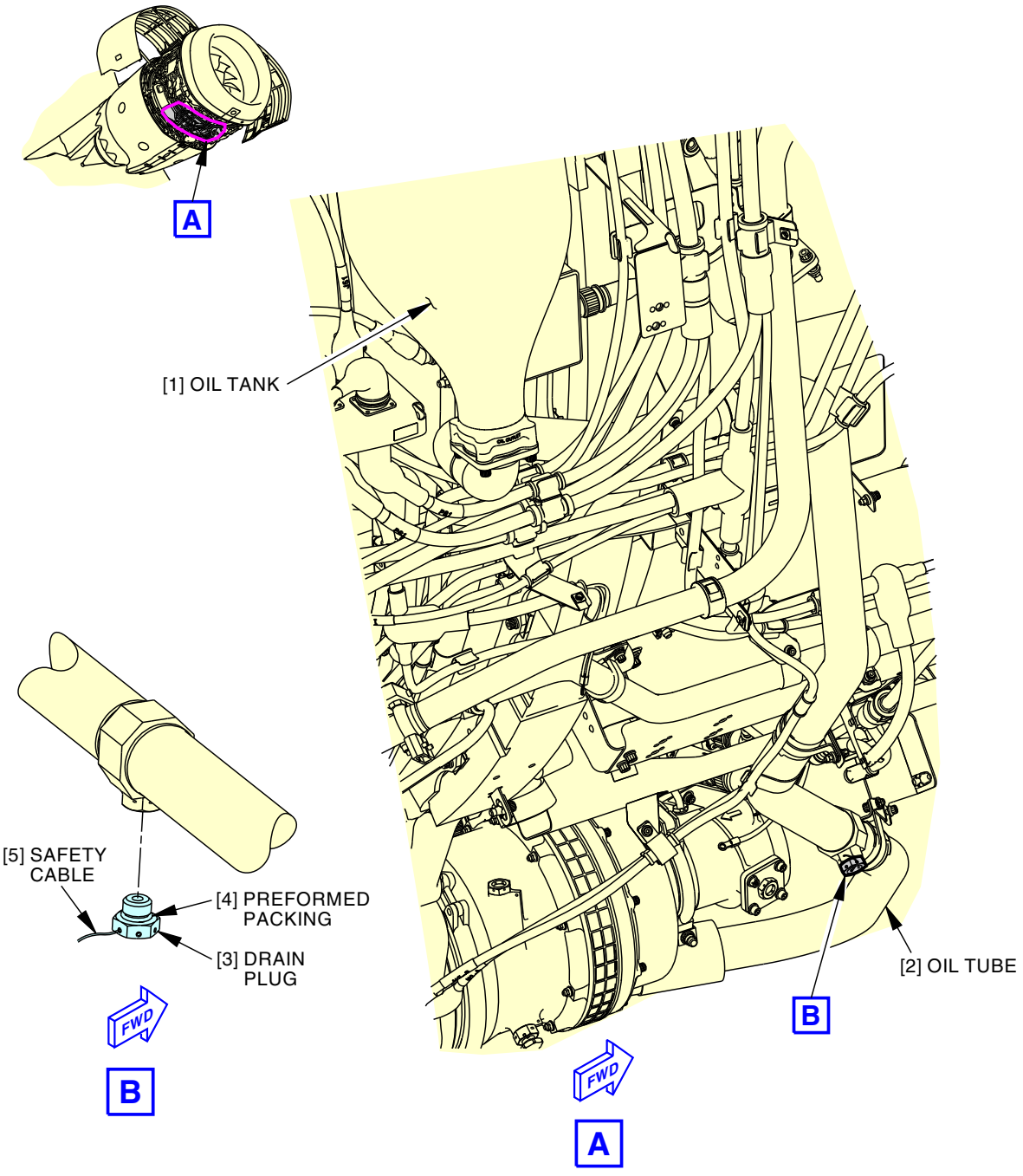
SUBTASK 12-13-11-860-012

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

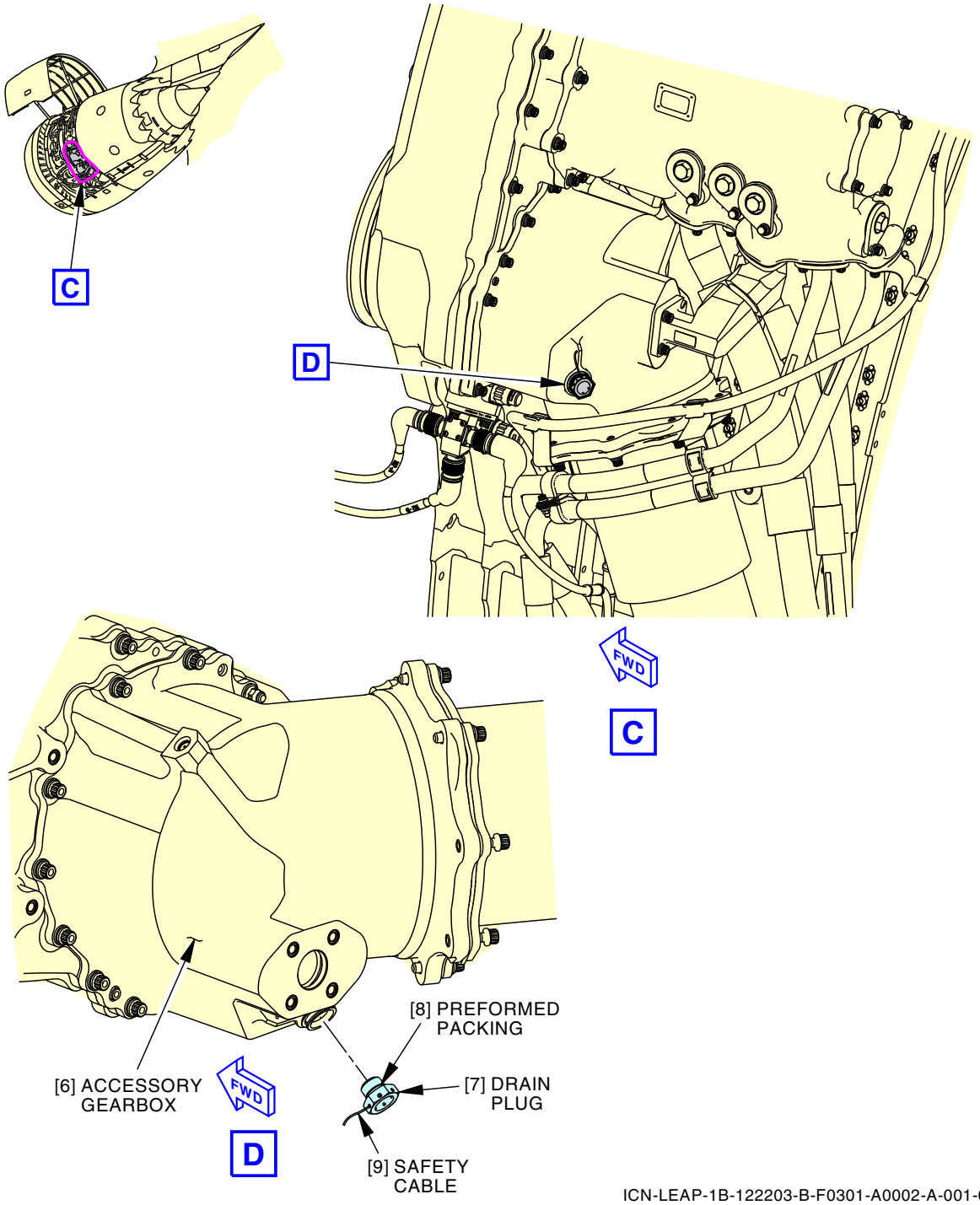
(a) On the P5 overhead panel, remove the DO NOT OPERATE tag, STD-858, from the applicable ENGINE START switch.

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

——— END OF TASK ———

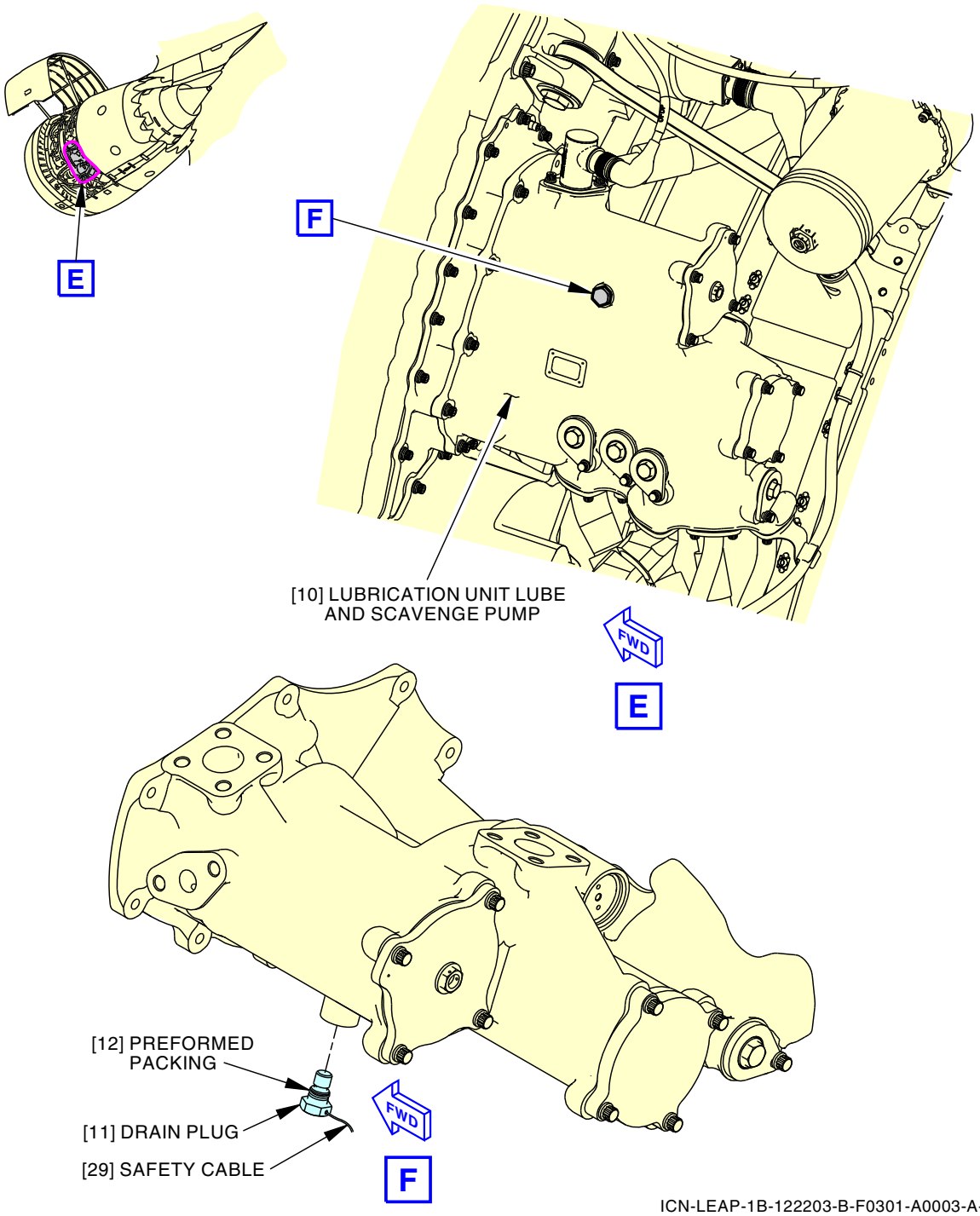


Engine Oil System Flushing
Figure 303/12-13-11-990-805 (Sheet 1 of 10)

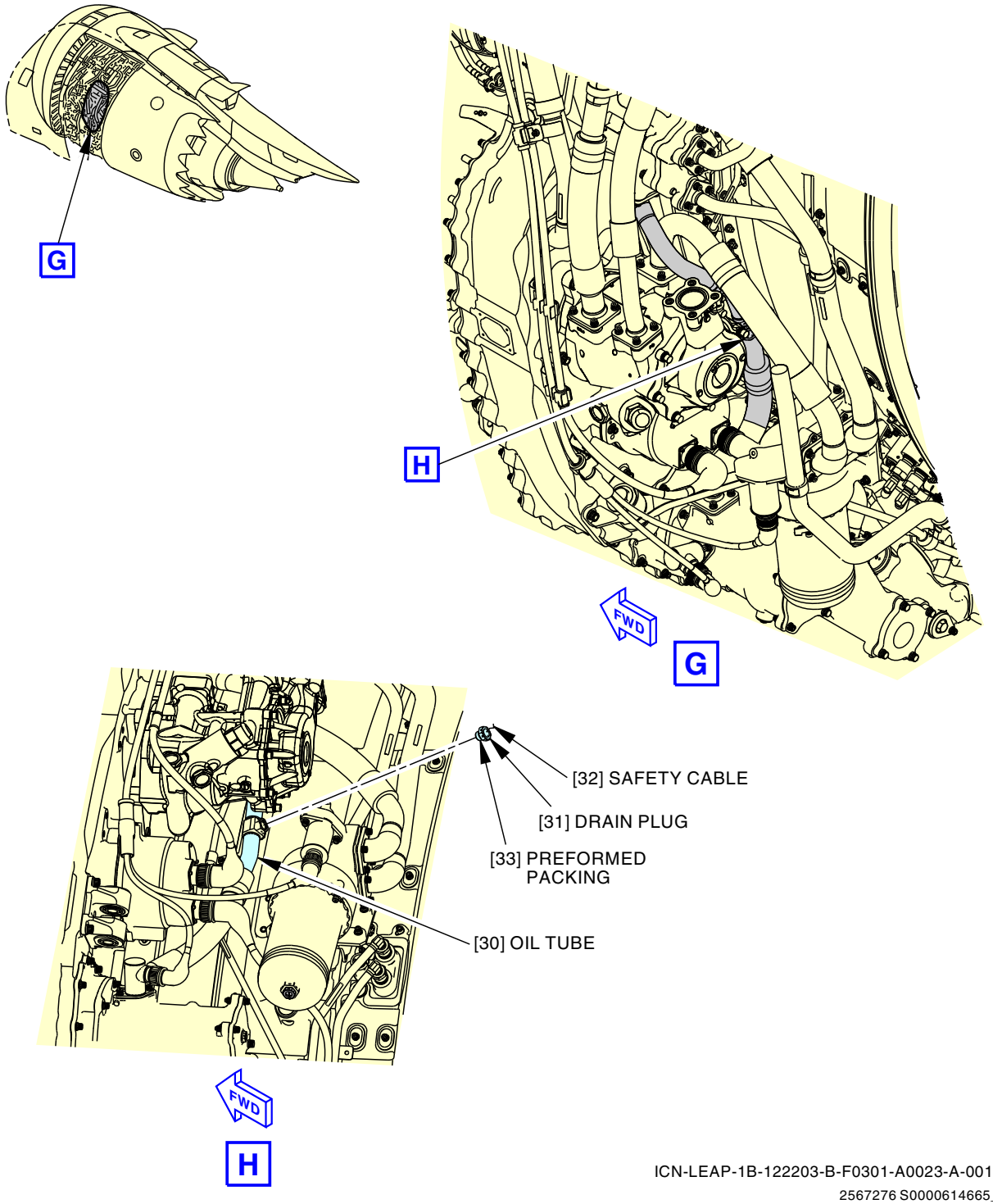


ICN-LEAP-1B-122203-B-F0301-A0002-A-001-01
2443256 S0000567815_V2

Engine Oil System Flushing
Figure 303/12-13-11-990-805 (Sheet 2 of 10)

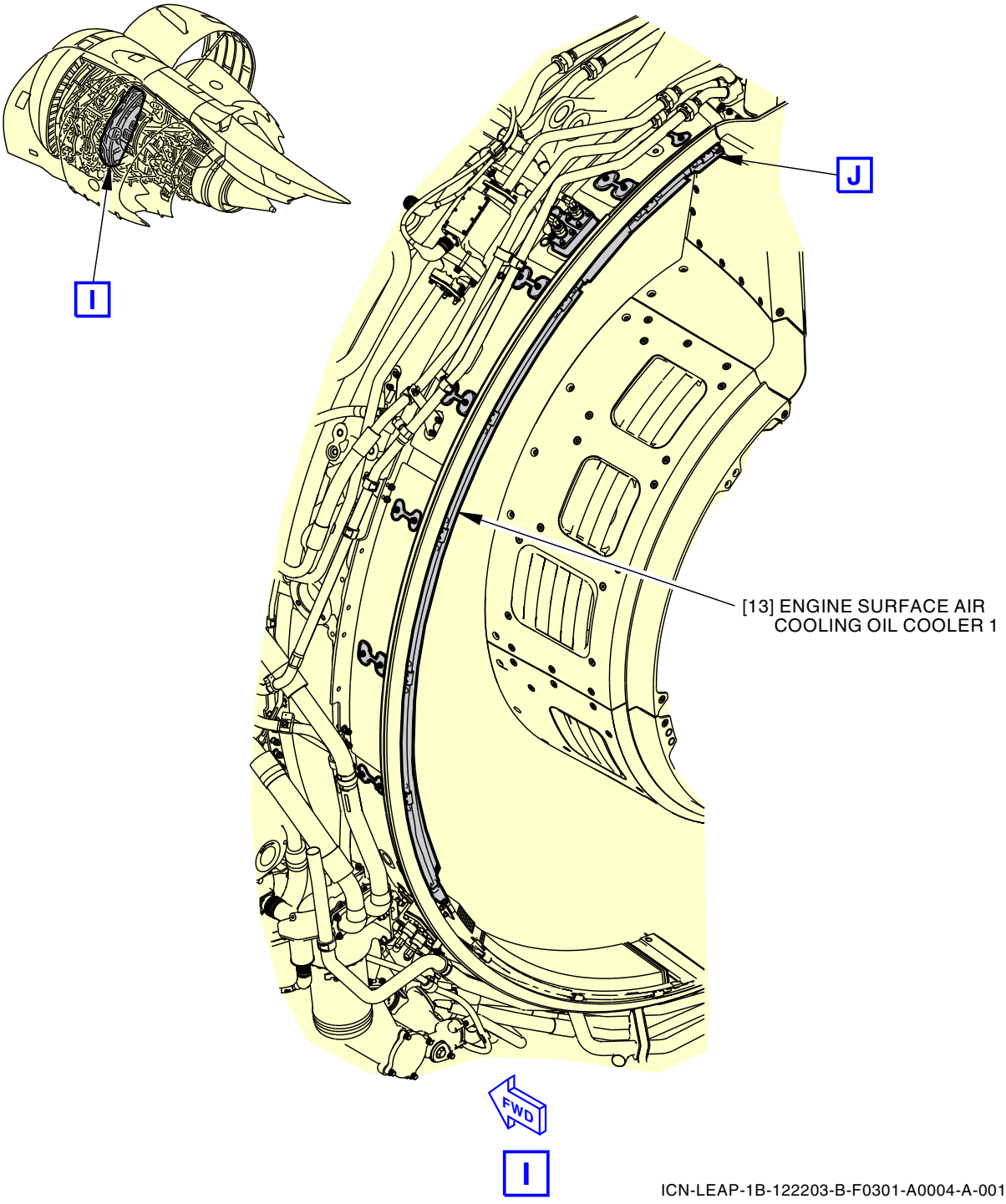


Engine Oil System Flushing
Figure 303/12-13-11-990-805 (Sheet 3 of 10)

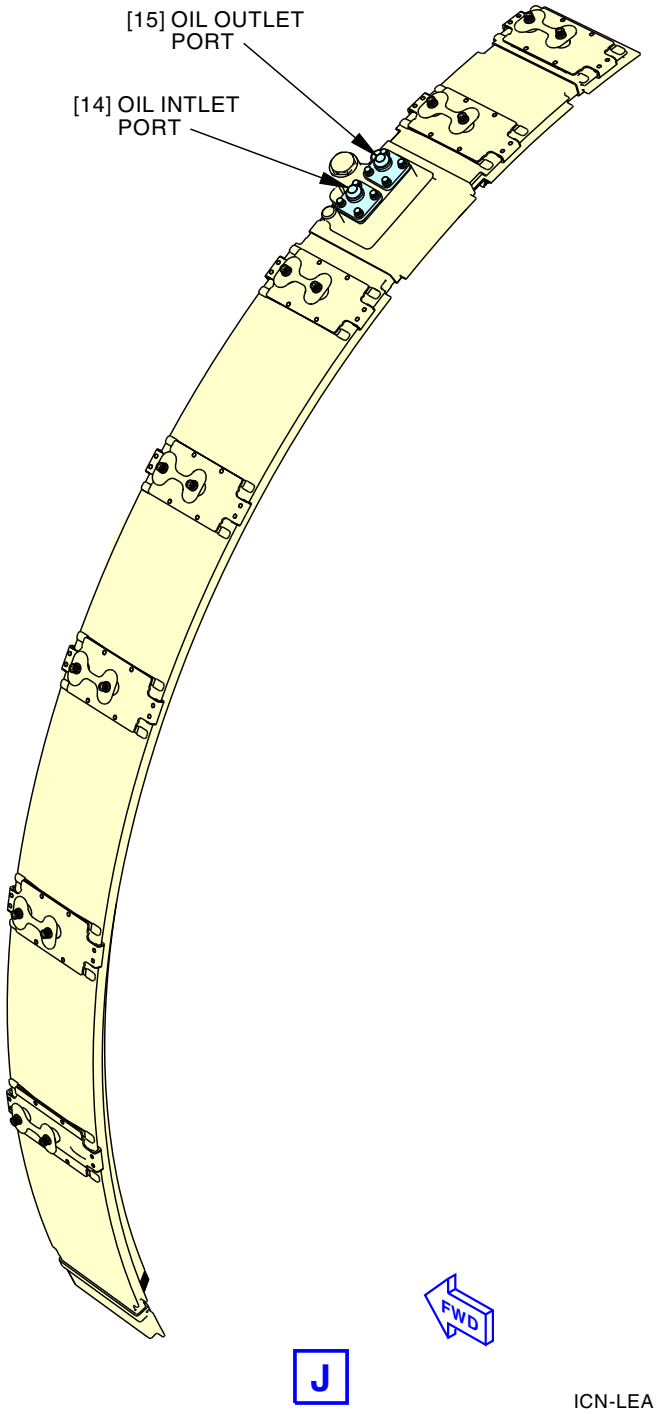


ICN-LEAP-1B-122203-B-F0301-A0023-A-001-01
2567276 S0000614665_V1

Engine Oil System Flushing
Figure 303/12-13-11-990-805 (Sheet 4 of 10)



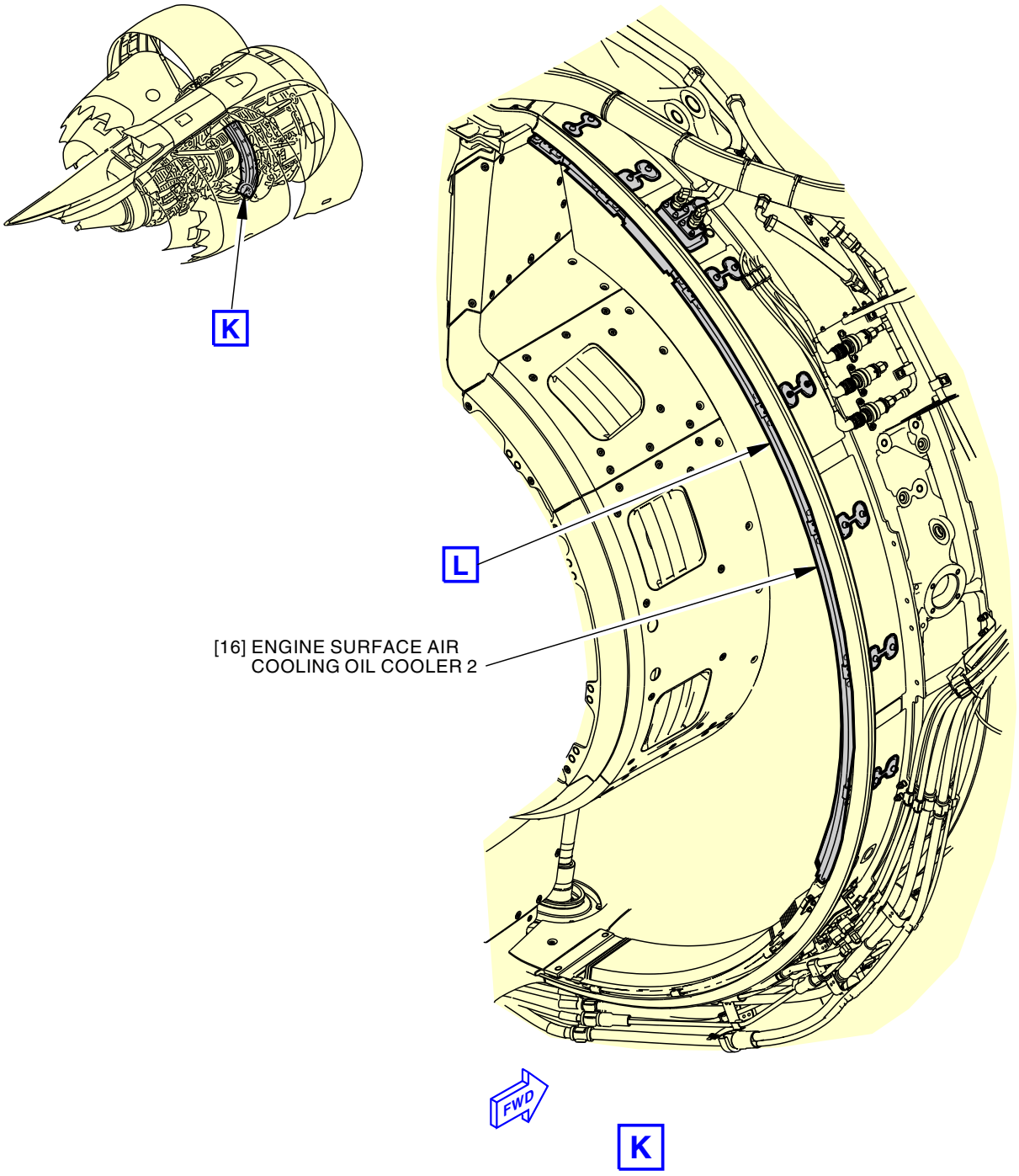
Engine Oil System Flushing
Figure 303/12-13-11-990-805 (Sheet 5 of 10)



ICN-LEAP-1B-122203-B-F0301-A0005-A-001-01

2443299 S0000567818_V2

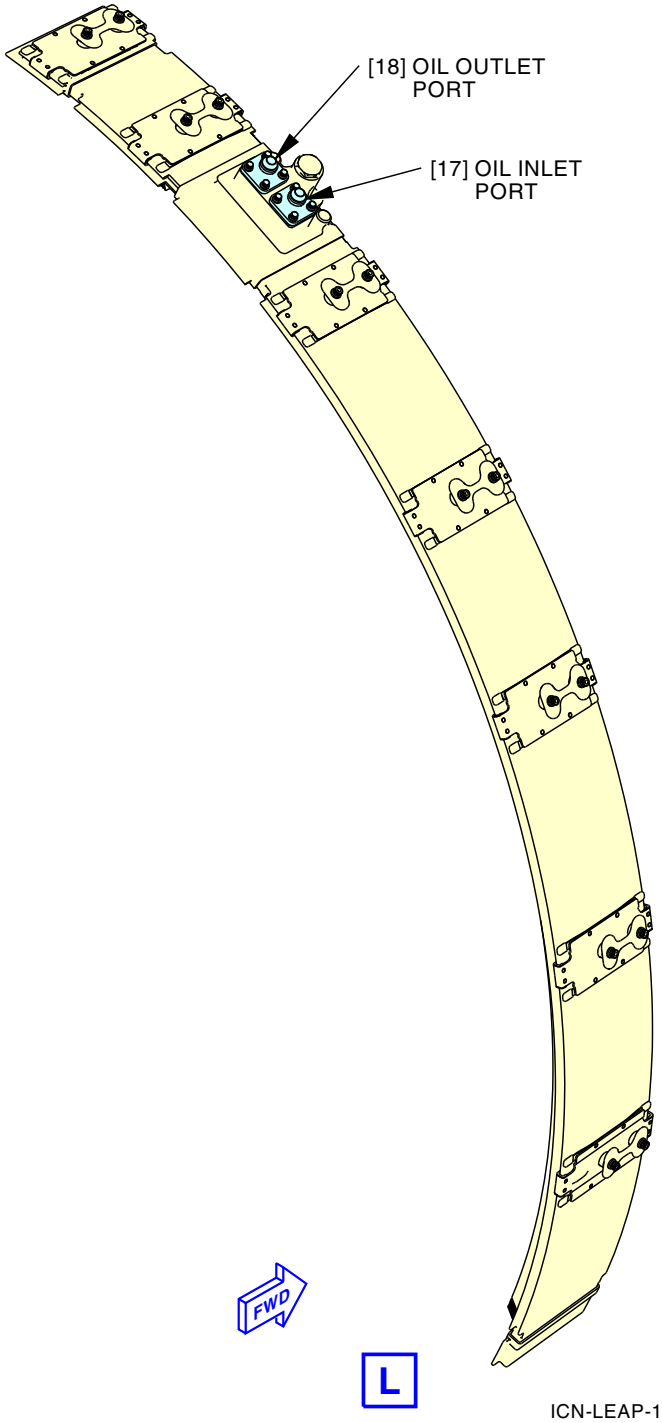
Engine Oil System Flushing
Figure 303/12-13-11-990-805 (Sheet 6 of 10)



ICN-LEAP-1B-122203-B-F0301-A0006-A-001-01

2443306 S0000567819_V2

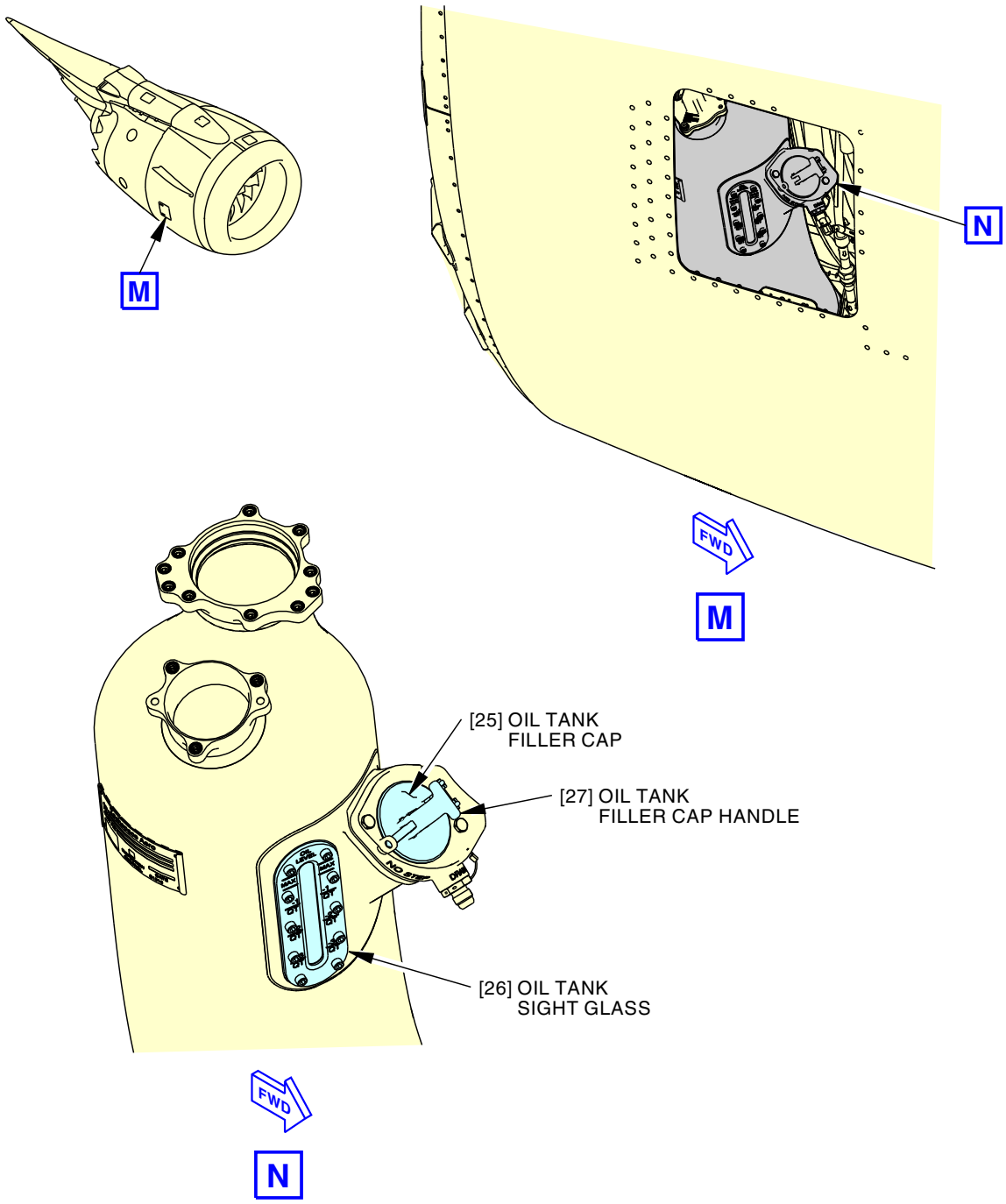
Engine Oil System Flushing
Figure 303/12-13-11-990-805 (Sheet 7 of 10)



ICN-LEAP-1B-122203-B-F0301-A0007-A-001-01

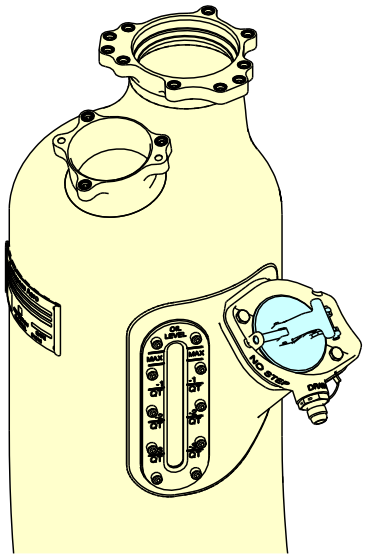
2443310 S0000567820_V2

Engine Oil System Flushing
Figure 303/12-13-11-990-805 (Sheet 8 of 10)

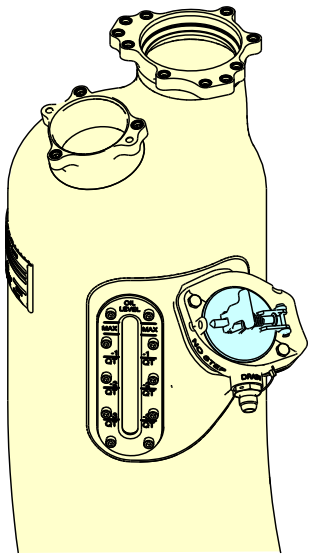


ICN-LEAP-1B-122203-B-F0301-A0010-A-001-01
2443452 S0000567823_V2

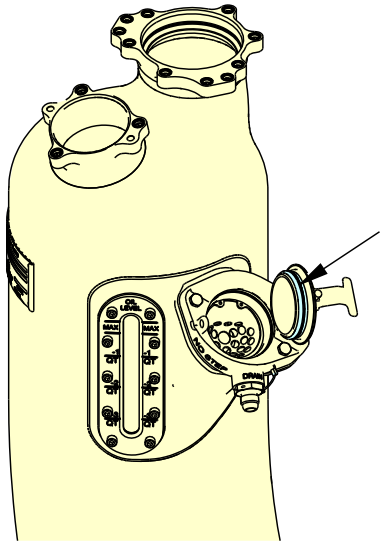
Engine Oil System Flushing
Figure 303/12-13-11-990-805 (Sheet 9 of 10)



FILLER CAP HANDLE
(IN LOCKED POSITION)



FILLER CAP HANDLE
(IN UNLOCKED POSITION)



FILLER CAP
(OPEN)

ICN-LEAP-1B-122203-B-F0301-A0011-A-001-01

2443458 S0000567824_V1

Engine Oil System Flushing
Figure 303/12-13-11-990-805 (Sheet 10 of 10)

TASK 12-13-11-170-801

5. Oil Tank Flushing

(Figure 304)

A. General

(1) This task provides the instructions on how to do the oil tank flushing in case of oil servicing error.

B. References

Reference	Title
71-00-00-910-802-G00	Start the Engine (Selection) (P/B 201)
71-00-00-910-806-G00	Stop the Engine (Usual Engine Stop) (P/B 201)
71-11-04-010-801-G00	Open the Fan Cowl Panels (Selection) (P/B 201)
71-11-04-410-801-G00	Close the Fan Cowl Panels (Selection) (P/B 201)
79-00-00-200-802-G00	Engine Oil System (Wear Metal Contamination) Inspection (P/B 601)

C. Tools/Equipment

Reference	Description
STD-199	Container - 2 U.S. Gallon (7.6 l) (oil resistant)
STD-858	Tag - DO NOT OPERATE

D. Consumable Materials

Reference	Description	Specification
D00599 [CP2442]	Oil - Engine	
D00672 [CP5070]	Vaseline - Pure Mineral	V V-P-236
G50065 [CP8006]	Cable, Safety, Stainless Steel, 0.032 inch (0.8 mm) Diameter	M50 TF 9 CL-A
G51335 [CP2674]	Lint-Free Cloth	

E. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
4	Preformed packing	79-11-51-02-005	SIA ALL
9	Preformed packing	79-11-01-01-100	SIA ALL

F. Location Zones

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

G. Access Panels

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

H. Prepare for the Flushing

SUBTASK 12-13-11-860-013

(1) Do these steps to make sure that the ENGINE START switch and the START LEVER switch are not operated:

(a) Make sure that the applicable ENGINE START switch, on the P5 overhead panel, is in the AUTO or OFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable ENGINE START switch.

(b) Make sure that the applicable START LEVER switch, on the P10 control stand, is in the CUTOFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable START LEVER switch.

SUBTASK 12-13-11-860-014

(2) Do this task: Open the Fan Cowl Panels (Selection), TASK 71-11-04-010-801-G00.

(a) On the applicable engine, open these access panels:

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

SUBTASK 12-13-11-680-002

(3) If you think that there is contamination in the engine oil system, do an oil sampling analysis (TASK 79-00-00-200-802-G00).

I. Oil Tank Flushing

SUBTASK 12-13-11-170-003

WARNING BE CAREFUL WHEN YOU DO WORK ON THE ENGINE PARTS AFTER THE ENGINE IS STOPPED. THE ENGINE PARTS CAN STAY HOT FOR ALMOST ONE HOUR. DO NOT TOUCH HOT PARTS WITHOUT APPLICABLE GLOVES. HOT PARTS CAN CAUSE INJURIES TO PERSONNEL.

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

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

WARNING DO NOT LET THE OIL STAY ON YOUR SKIN. YOU CAN ABSORB POISONOUS MATERIALS FROM THE OIL THROUGH YOUR SKIN.

CAUTION DO NOT LET OIL GET ON THE ENGINE OR OTHER COMPONENTS. IMMEDIATELY CLEAN THE OIL WHEN IT FALLS ON THEM. OIL CAN CAUSE DAMAGE TO EQUIPMENT.

(1) Flush the oil tank [1]:

(a) Drain the oil from the oil tank [1]:

1) Put a container, STD-199 below the oil tank [1].

2) Remove the drain plug [3] from the oil tube [2]:
   a) Cut and remove the safety cable [5] from the drain plug [3].
   b) Remove the drain plug [3] from the oil tube [2].
   c) Remove and discard the preformed packing [4] from the drain plug [3].
   d) Let the oil drain into the container, STD-199.
3) Install the drain plug [3] on the oil tube [2]:
   a) Make sure that the mating faces are clean and clear of unwanted materials.
   b) Lubricate the threads of the drain plug [3] with engine oil, D00599 [CP2442].
   c) Lubricate the new preformed packing [4] with vaseline, D00672 [CP5070].
   d) Install the new preformed packing [4] on the groove of the drain plug [3].
   e) Install the drain plug [3] on the oil tube [2].
   f) Tighten the drain plug [3] to 180 in-lb (20 N·m) to 200 in-lb (23 N·m).
   g) Install the cable, G50065 [CP8006] on the drain plug [3].

(b) Do a check of oil level in the oil tank [1].

NOTE: An oil tank [1] which is filled with 3.68 gal (13.9 l) is sufficient to flush the oil system.

NOTE: Oil must be added not less than five minutes and not more than 60 minutes after engine shutdown while the oil in the oil tank [1] is still warm. This will prevent the over-servicing of the engine. If the oil in the oil tank [1] cools or is cold, the oil density will increase and the volume will decrease. This can cause the oil tank [1] to be over-serviced. If the oil tank [1] is over-serviced, the extra oil will be blown overboard through the engine vent system. This can cause incorrect calculations of the oil consumption rate.

(c) If it is necessary, replenish the oil tank [1]:
1) Clean the oil tank filler cap [7] with the lint-free cloth, G51335 [CP2674], before you open it.
2) Open the oil tank filler cap [7]:
   a) Raise the oil tank filler cap handle [8] to the vertical (unlocked) position.
   b) Raise the oil tank filler cap [7] to the OPEN position.
3) Fill the oil tank [1] with the oil, D00599 [CP2442] up to the full mark.
4) Close the oil tank filler cap [7]:
   a) Make sure that the preformed packing [9] is in its position.
   b) Examine the preformed packing [9] on the oil tank filler cap [7].
      <1> If you find defect, remove and discard the preformed packing [9].
      <2> Lubricate the new preformed packing [9] with the oil, D00599 [CP2442].
      <3> Install the new preformed packing [9] onto the groove of the oil tank filler cap [7].
   c) Turn the oil tank filler cap [7] down to the CLOSED position.
   d) Put the oil tank filler cap handle [8] in the locked position.

      NOTE: The oil tank filler cap handle [8] will be flat with the oil tank filler cap [7] when it is in the locked position.
   e) Make sure that the oil tank filler cap [7] is tightly closed and locked.

(d) Do this task: Start the Engine (Selection), TASK 71-00-00-910-802-G00.

(e) Operate the engine at ground idle for 10 minutes.

(f) Do this task: Stop the Engine (Usual Engine Stop), TASK 71-00-00-910-806-G00.

(g) Drain the oil from the oil tank [1]:

1) Put a container, STD-199 below the oil tank [1].

2) Remove the drain plug [3] from the oil tube [2]:

a) Cut and remove the safety cable [5] from the drain plug [3].

b) Remove the drain plug [3] from the oil tube [2].

c) Remove and discard the preformed packing [4] from the drain plug [3].

d) Let the oil drain into the container, STD-199.

3) Install the drain plug [3] on the oil tube [2]:

a) Make sure that the mating faces are clean and clear of unwanted materials.

b) Lubricate the threads of the drain plug [3] with the oil, D00599 [CP2442].

c) Lubricate the new preformed packing [4] with vaseline, D00672 [CP5070].

d) Install the new preformed packing [4] on groove of the drain plug [3].

e) Install the drain plug [3] on the oil tube [2].

f) Tighten the drain plug [3] to 180 in-lb (20 N·m) to 200 in-lb (23 N·m).

g) Install the cable, G50065 [CP8006] on the drain plug [3].

(h) Do the visual and smell inspection for the presence of contamination in the oil.

1) If you think that there is contamination in the engine oil system, do an oil sampling analysis (TASK 79-00-00-200-802-G00).

2) If there is contamination, do the steps again to flush the oil tank.

(i) After 30 minutes or less of engine shut down, do a check of the oil level through the oil tank sight glass [6].

(j) Make sure that the quantity in the oil tank [1] is at the MAX level.

(k) If it is necessary, replenish the oil tank [1]:

1) Clean the oil tank filler cap [7] with the lint-free cloth, G51335 [CP2674].

2) Raise the oil tank filler cap handle [8] to the vertical (unlocked) position.

3) Raise the oil tank filler cap [7] to the open position.

4) Fill the oil tank [1] with the oil, D00599 [CP2442] up to the full mark.

5) Close the oil tank filler cap [7]:

a) Make sure that the preformed packing [9] is in its position.

b) Examine the preformed packing [9] on the oil tank filler cap [7].

<1> If you find defect, remove and discard the preformed packing [9].

<2> Lubricate the new preformed packing [9] with the oil, D00599 [CP2442].

<3> Install the new preformed packing [9] on the groove of the oil tank filler cap [7].

c) Turn the oil tank filler cap [7] down to the closed position.

d) Put the oil tank filler cap handle [8] in the locked position.

NOTE: The oil tank filler cap handle [8] will be flat with the oil tank filler cap [7] when it is in the locked position.

e) Make sure that the oil tank filler cap [7] is tightly closed and locked.

SUBTASK 12-13-11-160-001

(2) Clean the work area and remove the tools you used for the task.

J. Put the Airplane Back to Its Usual Condition

SUBTASK 12-13-11-860-015

(1) Do this task: Close the Fan Cowl Panels (Selection), TASK 71-11-04-410-801-G00.

(a) On the applicable engine, close these access panels:

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

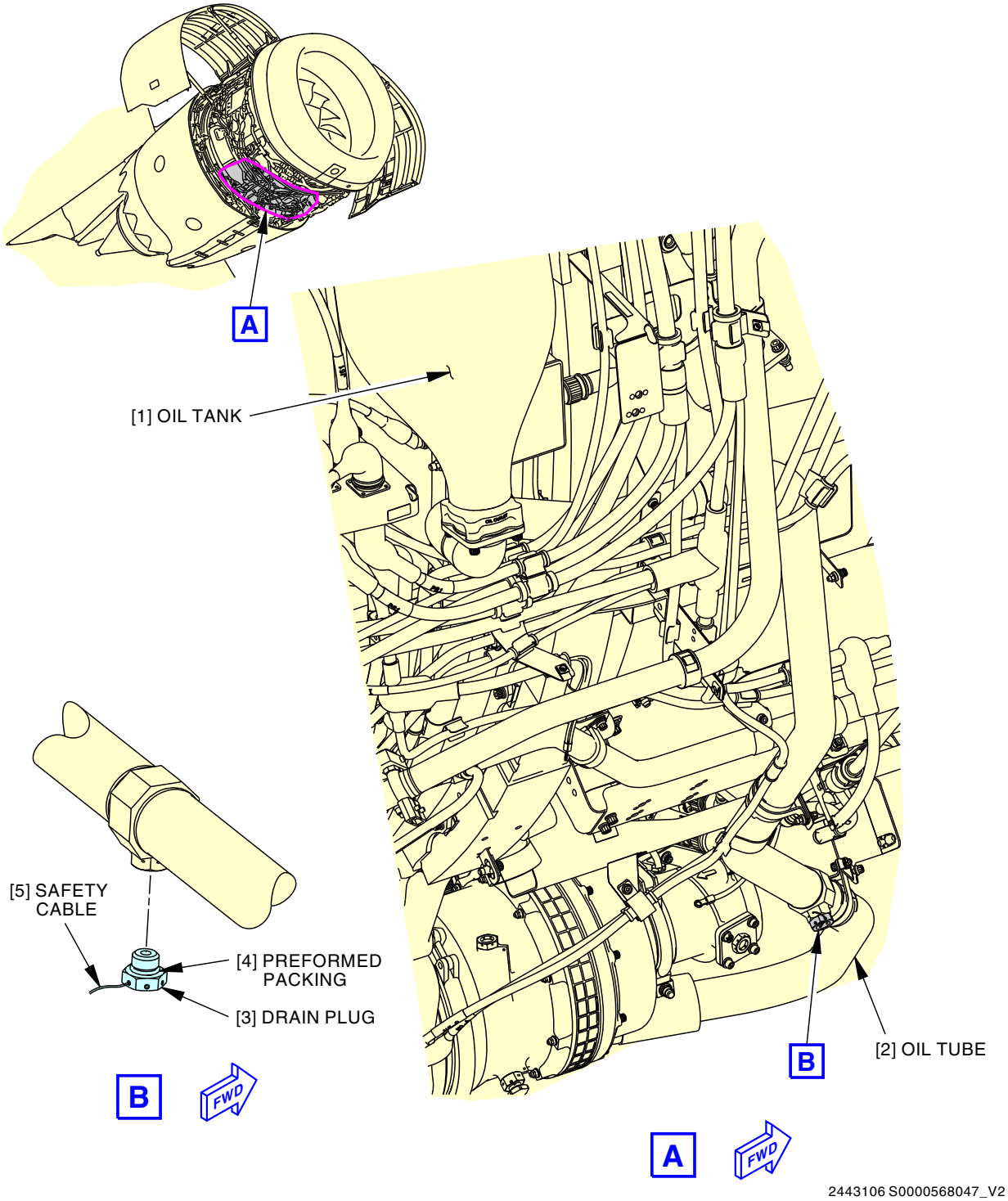
SUBTASK 12-13-11-860-016

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

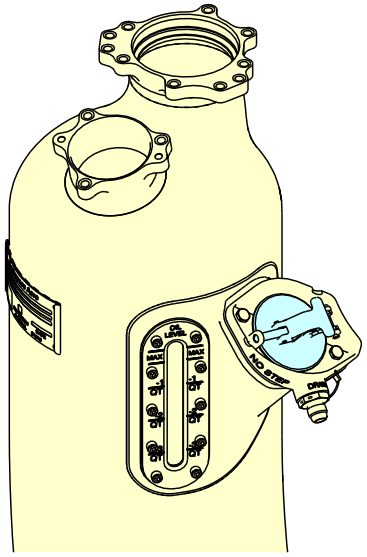
(a) On the P5 overhead panel, remove the DO NOT OPERATE tag, STD-858, from the applicable ENGINE START switch.

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

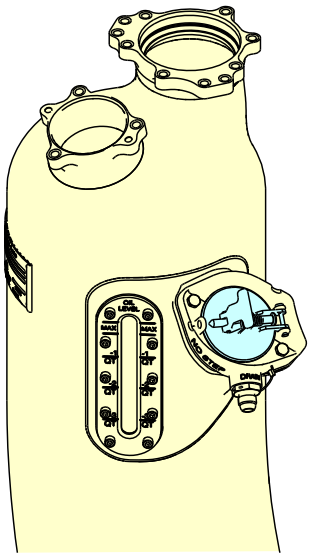
END OF TASK



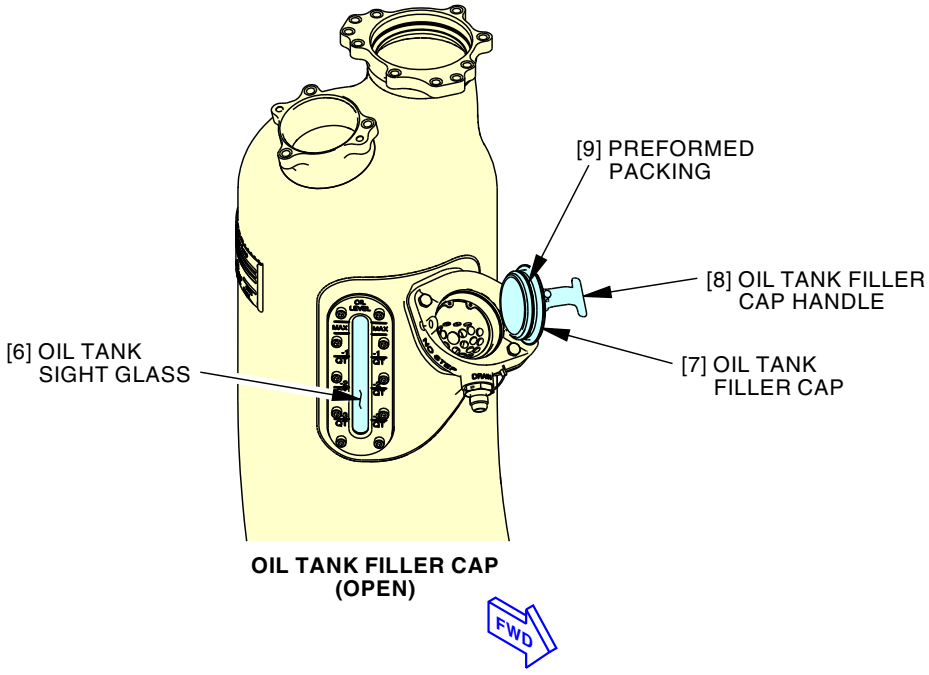
Oil Tank Flushing
Figure 304/12-13-11-990-806 (Sheet 1 of 2)



OIL TANK FILLER CAP HANDLE
(IN LOCKED POSITION)



OIL TANK FILLER CAP HANDLE
(IN UNLOCKED POSITION)



OIL TANK FILLER CAP
(OPEN)

2443107 S0000568048_V1

Oil Tank Flushing
Figure 304/12-13-11-990-806 (Sheet 2 of 2)

INTEGRATED DRIVE GENERATOR (IDG) - SERVICING

1. General

A. This procedure has these tasks:

(1) IDG Oil Level Check

(2) IDG Servicing (Oil Fill)

(3) IDG Differential Pressure Indicator (DPI) Check

(4) IDG Oil Change.

TASK 12-13-21-200-801

2. IDG Oil Level Check

(Figure 301)

NOTE: This procedure is a scheduled maintenance task.

A. General

(1) This task uses the sight glass on the Integrated Drive Generator (IDG) to do a check of the oil level.

(2) The oil volume for the IDG and external cooling circuit is as follows:

(a) IDG oil volume - 6.84 qt (6.47 l).

(b) External cooling circuit oil volume - 2.16 qt (2.04 l).

(c) Total oil volume - 9.0 qt (8.5 l).

B. References

Reference	Title
71-00-00-910-808-G00	Dry Motor Procedure (P/B 201)
71-11-04-010-801-G00	Open the Fan Cowl Panels (Selection) (P/B 201)
71-11-04-410-801-G00	Close the Fan Cowl Panels (Selection) (P/B 201)

C. Tools/Equipment

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

D. Consumable Materials

Reference	Description	Specification
D00068	Oil - Aircraft Turbine Engine, Synthetic Base	MIL-PRF-23699 Class STD (Standard)
D00071	Oil - Aircraft Turbine Engine, Synthetic Base	MIL-PRF-7808 Grade 3
D00523	Oil - Lubricating Oil, Aircraft Turbine Engine, Synthetic Base, NATO Code Number O-156	MIL-PRF-23699 (Supersedes MIL-L-23699)
D50369	Oil - Aircraft Turbine Engine, Synthetic Base	MIL-PRF-23699 Class HTS (High Thermal Stability)
G00034	Cotton Wiper - Process Cleaning Absorbent Wiper (Cheesecloth, Gauze)	AMS3819 Class 1 Grade A or B Form 1 (Supersede BMS15-5 CL A)

(Continued)

Reference	Description	Specification
G01048	Lockwire - MS20995C32, Corrosion Resistant Steel - 0.032 Inch (0.8128 mm) Diameter	NASM20995

E. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
2	O-ring	24-11-11-05-030	SIA ALL
		24-11-11-05A-075	SIA ALL

F. Location Zones

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

G. Access Panels

Number	Name/Location
413AL	IDG Access Door, Engine 1
423AL	IDG Access Door, Engine 2

H. Prepare for IDG Oil Level Check

SUBTASK 12-13-21-010-001

(1) If the Fan Cowl Panels are not open. Open the applicable IDG access panels:

Number	Name/Location
413AL	IDG Access Door, Engine 1
423AL	IDG Access Door, Engine 2

I. IDG Oil Level Check

SUBTASK 12-13-21-210-001

(1) Do a check of the IDG oil level.

NOTE: Do not do a check of the oil level on a disconnected IDG, because the indication will be incorrect.

(a) Make sure that the engine has been shutdown for a minimum of 5 minutes before you do a check of the oil level.

(b) If it is necessary, clean the sight glass with a clean, cotton wiper, G00034.

CAUTION DO THE CHECK OF THE OIL LEVEL. THE OPERATION OF THE IDG WITH AN INCORRECT OIL INDICATION CAN CAUSE DAMAGE TO THE IDG.

(c) Push the PUSH-TO-VENT valve for a minimum of 15 seconds before you view the sight glass.

NOTE: The PUSH-TO-VENT valve is located near the top of the sight glass.

(d) View the sight glass for the oil level.

1) If the oil level is in the black area below the silver band, the oil level is too low and servicing is necessary.

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

2) If the oil level is within the silver band, the oil level is correct and no servicing is necessary.

3) When the oil is warm or hot and the oil level is above the silver band but below the DRAIN line, the oil level is correct and no servicing is necessary.

NOTE: Warm or hot is defined as 50°F above ambient temperature. The IDG should be considered warm or hot up to 2 hours after engine shutdown.

4) When the oil is cold and the oil level is above the silver band but below the DRAIN line, the IDG has been overfilled a little.

a) Drain some of the oil until the oil level is at the top of the silver band.

b) Do the steps that follow to drain some of the oil.

CAUTION

DO NOT OPERATE THE IDG IF THE OIL LEVEL IS TOO HIGH OR TOO LOW. THIS CAN CAUSE DAMAGE TO THE IDG.

5) If the oil level is in the black area above the DRAIN line, do the steps that follow to drain some of the oil:

NOTE: The oil level is too high.

a) Do this task: Open the Fan Cowl Panels (Selection), TASK 71-11-04-010-801-G00.

WARNING

MAKE SURE THAT YOU PUSH THE PUSH-TO-VENT VALVE. IF YOU DO NOT DO THIS, IT COULD CAUSE HOT OIL TO SPRAY AND CAN CAUSE INJURY TO PERSONS.

b) Push the PUSH-TO-VENT VALVE for a minimum of 15 seconds.

c) Put an oil resistant container (5 gal)(19 Liter), STD-1055, below the IDG to catch the oil.

d) Remove the lockwire from the case drain plug [1] on the IDG.

e) Remove the case drain plug [1], and let the oil drain into the container.

f) Remove the O-ring [2] from the case drain plug and discard.

CAUTION

USE ONLY THE M83485 O-RING ON THE IDG INPUT SHAFT WHEN YOU USE HIGH THERMAL STABILITY (HTS) OIL COMPATIBLE TO MILSPEC-23699 IN THE ENGINE (FOR EXAMPLE: BP/EASTMAN TURBO OIL 2197, AEROSHELL TURBINE OIL 560, MOBIL JET OIL 254). DO NOT USE OTHER O-RING STANDARDS (FOR EXAMPLE: M83248 OR AS3209) WITH HTS OIL. IF YOU DO, IT WILL CAUSE A DECREASE IN O-RING LIFE, ENGINE OIL LEAKAGE, AND A POSSIBLE ENGINE SHUTDOWN.

g) Apply oil, D00071, or oil, D00068, or oil, D50369, or oil, D00523, to the new O-ring [2].

h) Install the new O-ring [2] onto case drain plug [1].

i) Install the case drain plug [1] on the IDG.

j) Tighten the case drain plug [1] to 65 ±10 in-lb (7 ±1 N·m).

k) Install MS20995C32 lockwire, G01048, onto the case drain plug [1].

l) Fill the IDG to the correct oil level.

<1> Do this task: IDG Servicing (Oil Fill), TASK 12-13-21-600-801.

m) Do this task: Close the Fan Cowl Panels (Selection), TASK 71-11-04-410-801-G00.

n) Do this task: Dry Motor Procedure, TASK 71-00-00-910-808-G00.

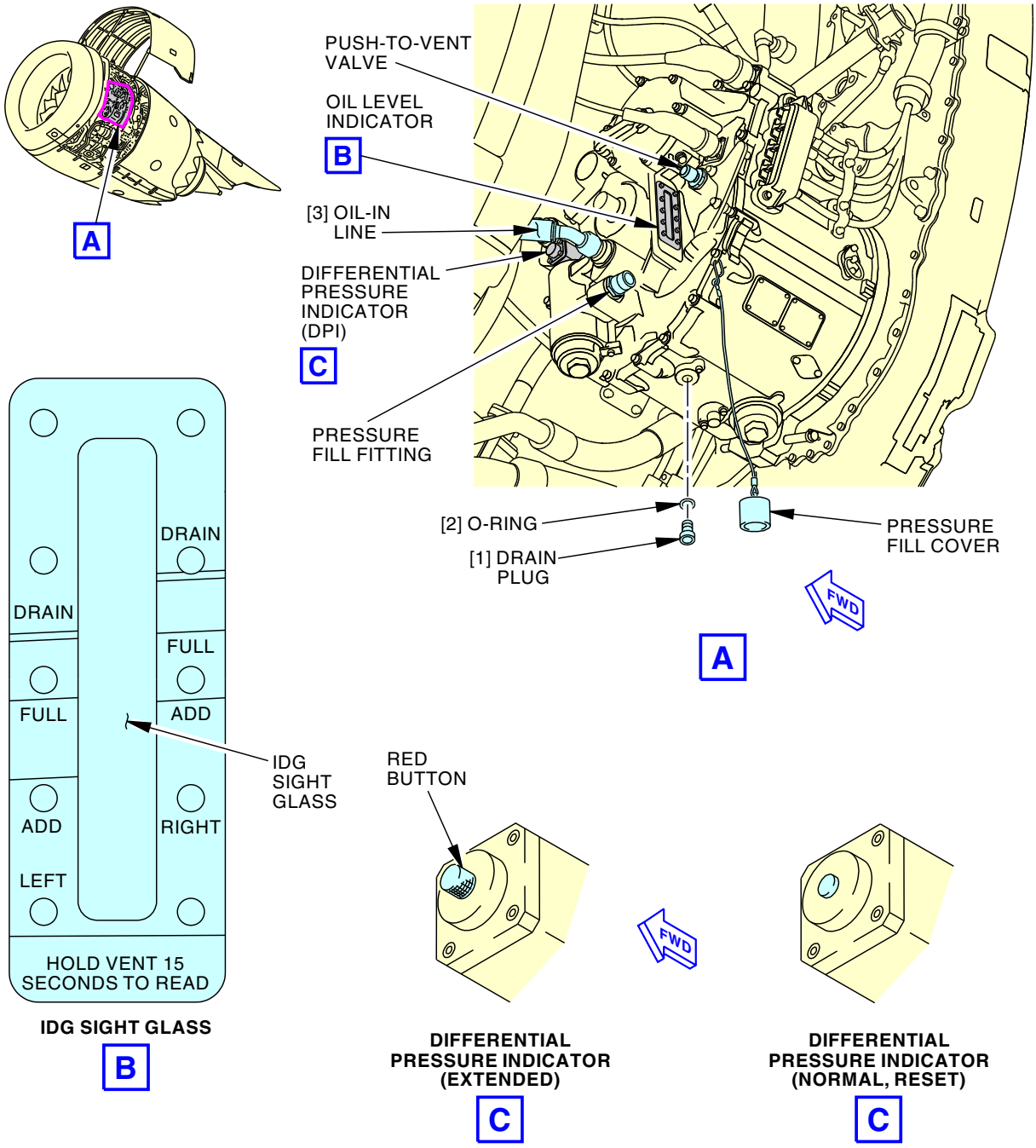
J. Put the Airplane Back to Its Usual Condition

SUBTASK 12-13-21-410-001

(1) If the Fan Cowl Panels are not open, close the applicable access panels:

Number	Name/Location
413AL	IDG Access Door, Engine 1
423AL	IDG Access Door, Engine 2

——— END OF TASK ———



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Integrated Drive Generator (IDG) Servicing
Figure 301/12-13-21-990-801

TASK 12-13-21-600-801

3. IDG Servicing (Oil Fill)

(Figure 301 and Figure 302)

A. General

(1) This task fills the IDG with oil to the correct level.

(2) If the IDG Air/Oil Cooler was removed or drained, make sure that air is removed from the external cooling circuit.

(3) The oil volume for the IDG and external cooling circuit is as follows:

(a) IDG oil volume - 6.84 qt (6.47 l).

(b) External cooling circuit oil volume - 2.16 qt (2.04 l).

(c) Total oil volume - 9.0 qt (8.5 l).

(4) Do not service a disconnected IDG.

(5) A leakage from the IDG or IDG cooling system can cause the IDG frequent servicing or adding an increasing volumes of oil during servicing.

(a) Make sure that the leakage meets the limits in the Engine Vents and Drains Inspection, TASK 71-71-00-200-801-G00.

B. References

Reference	Title
71-71-00-200-801-G00	Engine Vents and Drains Inspection (P/B 601)

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-1529	Gun - Oil Replenishment, Portable, Manual, Hand Held Part #: 7011 Supplier: K6057 Opt Part #: UZ/7/1826 Supplier: K6057
COM-1537	Dispenser - Servicing, Engine Oil Part #: 7011 Supplier: K6057 Part #: 7036 Supplier: K6057 Part #: BOB02 Supplier: D2029 Part #: BOB05 Supplier: D2029 Part #: BOB20 Supplier: D2029 Part #: MODEL 150 Supplier: 94861 Part #: PF53361-2PWS Supplier: 94861 Part #: PF53361-8PWS Supplier: 94861 Part #: PF53481-3P Supplier: 94861 Part #: PF53481-5PWS Supplier: 94861 Part #: PF53481-8PWS Supplier: 94861 Part #: PF55451-2WS Supplier: 94861 Part #: PF55451-7WS Supplier: 94861 Part #: WF150-1 Supplier: 94861 Opt Part #: 150-3 Supplier: 94861 Opt Part #: UZ/7/1826 Supplier: K6057 Opt Part #: WF174410 Supplier: 94861

(Continued)

Reference	Description
COM-1542	Dispenser - Oil, One Quart (1 Liter) Container Part #: 7011 Supplier: K6057 Part #: 7036 Supplier: K6057 Part #: MODEL 150 Supplier: 94861 Part #: WF150-1 Supplier: 94861 Opt Part #: UZ/7/1826 Supplier: K6057 Opt Part #: WF174410 Supplier: 94861
STD-203	Container - Oil Resistant, 1 U.S.-Gal (3.8 l)

D. Consumable Materials

Reference	Description	Specification
B00679 [C04-035]	Alcohol - Isopropyl	
D00068	Oil - Aircraft Turbine Engine, Synthetic Base	MIL-PRF-23699 Class STD (Standard)
D00071	Oil - Aircraft Turbine Engine, Synthetic Base	MIL-PRF-7808 Grade 3
D00599 [CP2442]	Oil - Engine	
G00034	Cotton Wiper - Process Cleaning Absorbent Wiper (Cheesecloth, Gauze)	AMS3819 Class 1 Grade A or B Form 1 (Supersede BMS15-5 CL A)

E. Location Zones

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

F. Access Panels

Number	Name/Location
413AL	IDG Access Door, Engine 1
423AL	IDG Access Door, Engine 2

G. Prepare for Procedure

SUBTASK 12-13-21-010-002

(1) If the Fan Cowl Panels are not open. Open the applicable access panels:

Number	Name/Location
413AL	IDG Access Door, Engine 1
423AL	IDG Access Door, Engine 2

H. IDG Servicing (Oil Fill)

SUBTASK 12-13-21-610-001

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 PRECEDES)

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

(1) Do the IDG oil servicing:

WARNING MAKE SURE THAT YOU PUSH THE PUSH-TO-VENT VALVE. IF YOU DO NOT DO THIS, IT COULD CAUSE HOT OIL TO SPRAY AND CAN CAUSE INJURY TO PERSONS.

(a) Push the PUSH-TO-VENT VALVE for a minimum of 15 seconds.

(b) Remove the pressure fill cover from the pressure fill fitting on the IDG.

(c) To prevent the IDG oil contamination during oil servicing, make sure that the oil service area is clean.

1) If it is necessary, wipe all engine service fittings with a clean cotton wiper, G00034, wet with alcohol, B00679 [C04-035], and blow dry with dry air or nitrogen to remove airborne contamination before oil servicing.

(d) Connect the pressure fill hose from the service equipment, engine oil servicing dispenser, COM-1537, dispenser, COM-1542, or oil replenishment gun, COM-1529, to the pressure fill fitting on the IDG.

CAUTION DO NOT MIX OILS OF DIFFERENT TYPES OR BRAND NAMES. SOME OILS WILL CHEMICALLY CHANGE WHEN YOU MIX THEM. THIS CAN CAUSE DAMAGE TO THE EQUIPMENT.

(e) Use the service equipment to fill the IDG with oil, D00071, or oil, D00068, with a maximum of 40 psi (276 kPa).

NOTE: If you change the oil type or brand, contact the vendor, Hamilton Sundstrand, for their list of approved oils.

(f) Push and hold the PUSH-TO-VENT valve the entire time while filling the IDG with oil.

CAUTION MAKE SURE THAT YOU DO NOT OVER OR UNDER FILL THE IDG. IF YOU DO NOT OBEY, DAMAGE TO THE IDG CAN OCCUR.

(g) Use the sight glass on the IDG to find the correct oil level.

1) For the number 1 IDG, fill to the LEFT FULL mark on the left sight glass.

NOTE: The FULL mark is at the top of the silver band.

a) Do not fill above the FULL mark.

2) For the number 2 IDG, fill to the RIGHT FULL mark on the right sight glass.

NOTE: The FULL mark is at the top of the silver band.

a) Do not fill above the FULL mark.

(h) Release the PUSH-TO-VENT valve.

SUBTASK 12-13-21-610-003

(2) If the IDG or the IDG air/oil heat exchanger was replaced or drained, or if the engine was replaced and the replacement engine requires IDG servicing, do the following steps (Figure 301):

(a) Disconnect the oil-in line [3] from the IDG.

1) Disconnect the oil-in line [3] from the oil-in union on the IDG.

2) Install a protective cover on the oil-in line union on the IDG.

(b) Place the oil-in line [3] end in a 1 U.S.-gal (3.81 l) oil resistant container, STD-203.

(c) Fill the external circuit until oil is constantly flowing out of the hose into the container (no signs of "sputtering" from air in the external cooling circuit).

(d) Stop filling the external circuit.

(e) Connect the oil-in line [3] to the IDG.

1) Remove the protective cover from the oil-in line union on the IDG.

2) Connect the oil-in line [3] to the oil-in union.

3) Tighten the oil-in line [3] to 675 in-lb (76 N·m) to 725 in-lb (82 N·m).

(f) Disconnect the left IDG air/oil heat exchanger oil outlet tube from the left IDG air/oil heat exchanger (Figure 302).

(g) Place a 1 U.S.-gal (3.81 l) oil resistant container, STD-203, under the left IDG air/oil heat exchanger outlet.

(h) Fill the external circuit until oil is constantly flowing out of the left IDG air/oil heat exchanger oil (no signs of "sputtering" from air in the external cooling circuit).

(i) Connect the IDG air/oil heat exchanger oil outlet tube to the left IDG air/oil heat exchanger as follows:

1) Make sure that the mating faces are clean and clear of unwanted materials.

2) Lubricate the threads of the coupling nut with oil, D00599 [CP2442].

3) Connect the coupling nut in a correct position on the left IDG air/oil heat exchanger.

4) Tighten the coupling nut of the left IDG air/oil heat exchanger to 443 in-lb (50 N·m) - 531 in-lb (60 N·m).

(j) Disconnect the right IDG air/oil heat exchanger oil outlet tube from the right IDG air/oil heat exchanger (Figure 302).

(k) Fill the external circuit until oil is constantly flowing out of the right IDG air/oil heat exchanger oil (no signs of "sputtering" from air in the external cooling circuit).

(l) Place a 1 U.S.-gal (3.81 l) oil resistant container, STD-203, under the right IDG air/oil heat exchanger outlet.

(m) Connect the right IDG air/oil heat exchanger oil outlet tube to the right IDG air/oil heat exchanger as follows:

1) Make sure that the mating faces are clean and clear of unwanted materials.

2) Lubricate the threads of the coupling nut with oil, D00599 [CP2442].

3) Connect the coupling nut in a correct position on the right IDG air/oil heat exchanger.

4) Tighten the coupling nut of the right IDG air/oil heat exchanger to 443 in-lb (50 N·m) - 531 in-lb (60 N·m).

(n) Press and hold the PUSH-TO-VENT valve to check IDG oil level.

CAUTION

MAKE SURE THAT YOU DO NOT OVER OR UNDER FILL THE IDG. IF YOU DO NOT OBEY, DAMAGE TO THE IDG CAN OCCUR.

1) Use the sight glass on the IDG to find the correct oil level.
2) For the number 1 IDG, fill to the LEFT FULL mark on the left sight glass.

   NOTE: The FULL mark is at the top of the silver band.

   a) Add IDG oil as required.
   b) Do not fill above the FULL mark.
3) For the number 2 IDG, fill to the RIGHT FULL mark on the left sight glass.

   NOTE: The FULL mark is at the top of the silver band.

   a) Add IDG oil as required.
   b) Do not fill above the FULL mark.

(o) Release the PUSH-TO-VENT valve.

SUBTASK 12-13-21-080-001

(3) Remove the pressure fill hose from the pressure fill fitting on the IDG.

SUBTASK 12-13-21-410-004

(4) Install the cover on the IDG pressure fill fitting.

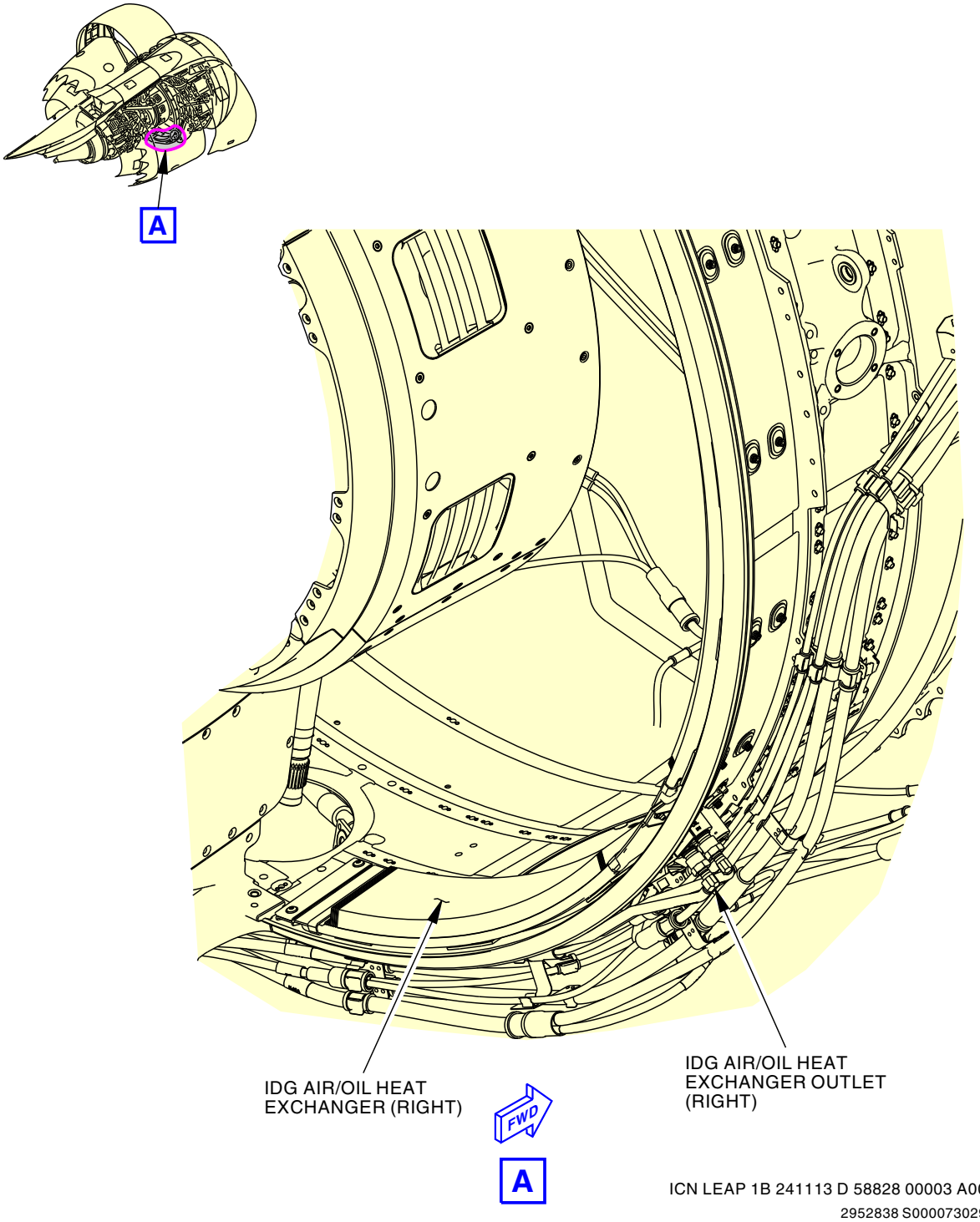
I. Put the Airplane Back to Its Usual Condition

SUBTASK 12-13-21-410-002

(1) If the Fan Cowl Panels are not open, close the applicable access panels:

Number	Name/Location
413AL	IDG Access Door, Engine 1
423AL	IDG Access Door, Engine 2

END OF TASK



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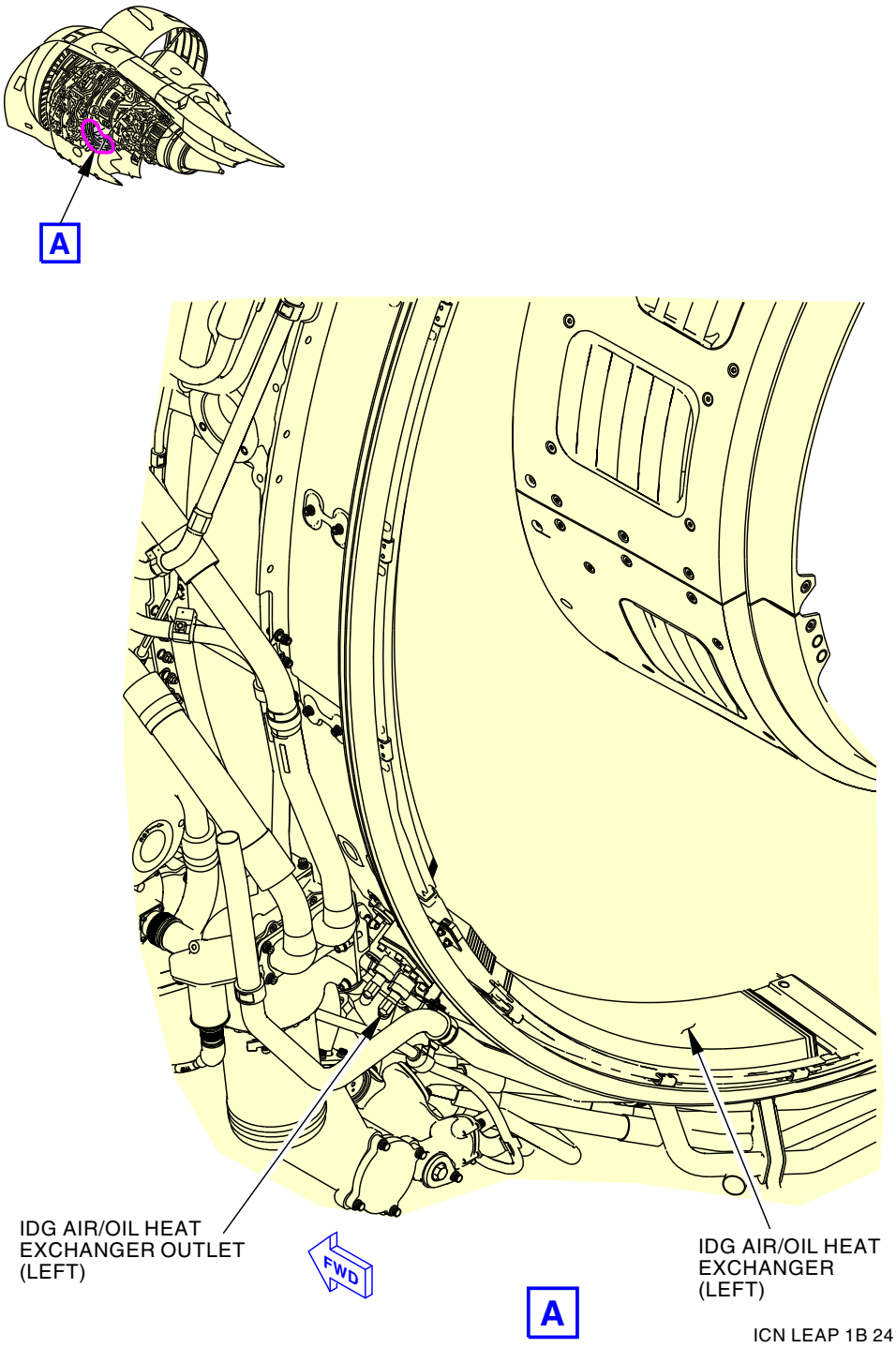
Integrated Drive Generator (IDG) Air/Oil Heat Exchanger
Figure 302/12-13-21-990-803 (Sheet 1 of 2)



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Integrated Drive Generator (IDG) Air/Oil Heat Exchanger
Figure 302/12-13-21-990-803 (Sheet 2 of 2)

TASK 12-13-21-200-802

4. IDG Differential Pressure Indicator (DPI) Check

(Figure 301)

NOTE: This procedure is a scheduled maintenance task.

A. General

(1) This task does visual check of the Differential Pressure Indicator (DPI) located on the IDG.

B. References

Reference	Title
24-11-11 P/B 401	INTEGRATED DRIVE GENERATOR (IDG) - REMOVAL/INSTALLATION
24-11-13 P/B 401	INTEGRATED DRIVE GENERATOR AIR/OIL HEAT EXCHANGER - REMOVAL/INSTALLATION
24-11-41 P/B 201	IDG SCAVENGE/CHARGE OIL FILTER - MAINTENANCE PRACTICES
24-11-42-000-801	IDG Differential Pressure Indicator Removal (P/B 401)
24-11-42-400-801	IDG Differential Pressure Indicator Installation (P/B 401)

C. Tools/Equipment

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

D. Location Zones

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

E. Access Panels

Number	Name/Location
413AL	IDG Access Door, Engine 1
423AL	IDG Access Door, Engine 2

F. Prepare for DPI check

SUBTASK 12-13-21-010-003

(1) Open the applicable access panels to get access to IDG DPI:

Number	Name/Location
413AL	IDG Access Door, Engine 1
423AL	IDG Access Door, Engine 2

SUBTASK 12-13-21-210-002

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

SUBTASK 12-13-21-210-003

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

SUBTASK 12-13-21-210-004

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

NOTE: The DPI can be reset up to three times without removing the IDG, provided:

1. The filters are removed and the filter and filter covers are examined for metal debris.

2. No other indications of electrical power system problems are present, for example, IDG fault indication or DP (feeder) fault.

3. The filters and oil are changed prior to resetting the DPI.

4. The DPI is inspected every 100 hours.

5. For any given IDG, the IDG is removed upon the discovery of the fourth DPI extension.

6. Prior to implementation of this procedure on a new airplane, operators perform a one-time oil and filter change, at some time between 125 and 500 operating hours.

(5) If the scavenge/charge filter and the IDG oil condition are satisfactory, and the DPI Resets decal (if installed) shows it is the 1st extension, replace the DPI.

G. Procedure

SUBTASK 12-13-21-210-005

(1) Visually examine the differential pressure indicator (DPI):

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

(a) If the DPI is in the up position, examine the scavenge/charge 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 (if installed) 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 (if installed) on the scavenge/charge 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.

NOTE: When the DPI is set, an inspection must occur at an interval of 100 flight hours.

NOTE: After four consecutive 100 flight hour check without DPI extension, the DPI check can revert back to the normal interval.

a) If the DPI resets decal (if installed) shows it is the fourth (4th) DPI extension, replace the IDG (PAGEBLOCK 24-11-11/401).

b) If the DPI resets decal (if installed) 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.

c) If there is no scavenge/charge filter condition and IDG oil condition, and it is the first (1st) DPI extension, do these steps:

NOTE: Table 301 shows the scavenge/charge filter condition and IDG oil condition.

<1> Do this task: IDG Differential Pressure Indicator Removal, TASK 24-11-42-000-801.

<2> Do this task: IDG Differential Pressure Indicator Installation, TASK 24-11-42-400-801.

(b) If the button is in the down position, do the steps that follow:

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 301/12-13-21-993-801 DPI EXTENSION

SCAVENGE/CHARGE FILTER CONDITION	IDG OIL CONDITION	ACTION
No visible magnetic or non-metallic particles (See NOTE for more scavenge/charge 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 oil resistant container (5 gal), STD-205. 2. Replace the scavenge/charge filter (PAGEBLOCK 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/charge 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 oil resistant container (5 gal), STD-205. 2. Replace the scavenge/charge filter (PAGEBLOCK 24-11-41/201). 3. Service with oil (PAGEBLOCK 12-13-21/301). 4. Run the engine for 5 minutes to raise the temperature of the oil. 5. Drain the oil in the oil resistant container (5 gal), STD-205. 6. Replace the scavenge/charge filter (PAGEBLOCK 24-11-41/201). 7. Service with oil (PAGEBLOCK 12-13-21/301).
Visible magnetic or non-metallic particles in the scavenge/charge filter and the scavenge/charge filter is not breached. (See NOTE for more scavenge/charge 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/charge filter and the scavenge/charge filter is not breached. (See NOTE for more scavenge/charge filter data)*[1]	Oil discoloration, signs of overheating or chemical contamination of the oil is suspected (Hydraulic fluid and water)	1. Flush the IDG oil system (IDG Oil Change, TASK 12-13-21-600-802).
Visible magnetic or non-metallic particles in the scavenge/charge filter and the scavenge/charge filter is breached. (See NOTE for more scavenge/charge filter data)*[1]	Oil condition is not a factor	1. Remove the IDG (PAGEBLOCK 24-11-11/401). 2. Replace the IDG air/oil heat exchanger (PAGEBLOCK 24-11-13/401). 3. Replace the IDG oil cooler lines. 4. Install the IDG (PAGEBLOCK 24-11-11/401).

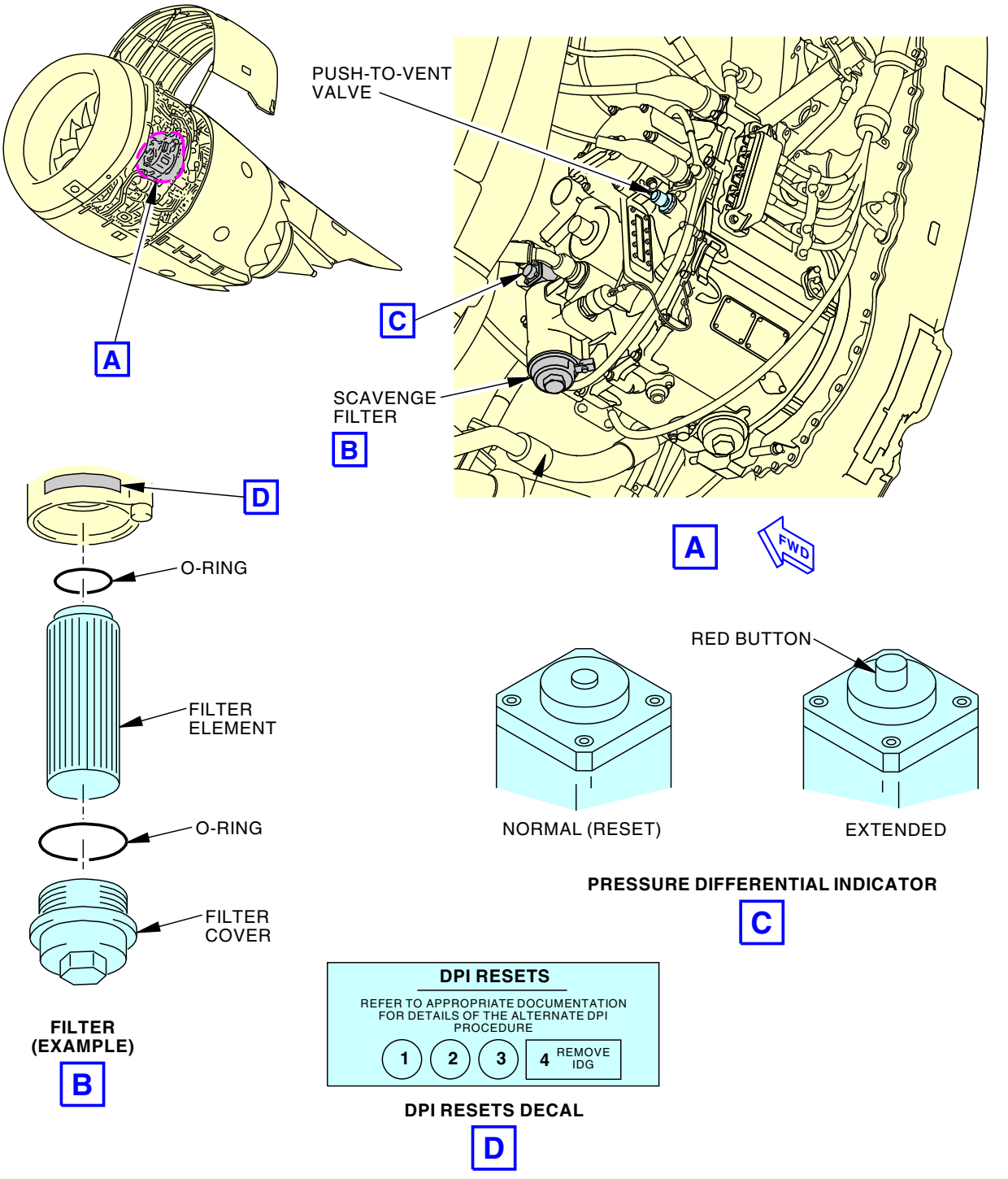
*[1] If the scavenge/charge filter element or filter cover shows a number of moderately scattered, small metallic flakes (bronze or silver colored metal), flakes of generator insulation, black epoxy flakes, or sleeving, do not replace the IDG. These products are normal wear during IDG operation. If the 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 12-13-21-410-003

(2) Close the applicable access panels:

Number	Name/Location
413AL	IDG Access Door, Engine 1
423AL	IDG Access Door, Engine 2

——— END OF TASK ———



DPI Reset Procedure
Figure 303/12-13-21-990-802

TASK 12-13-21-600-802

5. IDG Oil Change

(Figure 301)

NOTE: This procedure is a scheduled maintenance task.

A. General

(1) This task removes the oil from the Integrated Drive Generator (IDG) system and replaces it with new oil.

(2) If IDG oil is being replaced because of possible contamination, you must do the IDG Oil Change, operate the engine, and repeat the IDG Oil Change.

(3) If IDG oil is being replaced because of different type or brand of oil, you must do the IDG Oil Change, operate the engine, and repeat the IDG Oil Change.

(4) The oil volume for the IDG and external cooling circuit is as follows:

(a) IDG oil volume - 6.84 qt (6.47 l).

(b) External cooling circuit oil volume - 2.16 qt (2.04 l).

(c) Total oil volume - 9.0 qt (8.5 l).

B. References

Reference	Title
24-11-41-000-801	IDG Scavenge and Charge Filter Removal (P/B 201)
24-11-41-400-801	IDG Scavenge and Charge Filter Installation (P/B 201)
71-00-00-790-802-G00	Test No. 2 - Dry Motor Leak Test (P/B 501)
71-00-00-910-808-G00	Dry Motor Procedure (P/B 201)
71-11-04-010-801-G00	Open the Fan Cowl Panels (Selection) (P/B 201)
71-11-04-410-801-G00	Close the Fan Cowl Panels (Selection) (P/B 201)

C. 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-1529	Gun - Oil Replenishment, Portable, Manual, Hand Held Part #: 7011 Supplier: K6057 Opt Part #: UZ/7/1826 Supplier: K6057

(Continued)

Reference	Description
COM-1537	Dispenser - Servicing, Engine Oil Part #: 7011 Supplier: K6057 Part #: 7036 Supplier: K6057 Part #: BOB02 Supplier: D2029 Part #: BOB05 Supplier: D2029 Part #: BOB20 Supplier: D2029 Part #: MODEL 150 Supplier: 94861 Part #: PF53361-2PWS Supplier: 94861 Part #: PF53361-8PWS Supplier: 94861 Part #: PF53481-3P Supplier: 94861 Part #: PF53481-5PWS Supplier: 94861 Part #: PF53481-8PWS Supplier: 94861 Part #: PF55451-2WS Supplier: 94861 Part #: PF55451-7WS Supplier: 94861 Part #: WF150-1 Supplier: 94861 Opt Part #: 150-3 Supplier: 94861 Opt Part #: UZ/7/1826 Supplier: K6057 Opt Part #: WF174410 Supplier: 94861
COM-1542	Dispenser - Oil, One Quart (1 Liter) Container Part #: 7011 Supplier: K6057 Part #: 7036 Supplier: K6057 Part #: MODEL 150 Supplier: 94861 Part #: WF150-1 Supplier: 94861 Opt Part #: UZ/7/1826 Supplier: K6057 Opt Part #: WF174410 Supplier: 94861
STD-1055	Container - Oil Resistant, 5 Gallon (19 Liter)

D. Consumable Materials

Reference	Description	Specification
D00068	Oil - Aircraft Turbine Engine, Synthetic Base	MIL-PRF-23699 Class STD (Standard)
D00071	Oil - Aircraft Turbine Engine, Synthetic Base	MIL-PRF-7808 Grade 3
D50369	Oil - Aircraft Turbine Engine, Synthetic Base	MIL-PRF-23699 Class HTS (High Thermal Stability)
G01048	Lockwire - MS20995C32, Corrosion Resistant Steel - 0.032 Inch (0.8128 mm) Diameter	NASM20995

E. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
2	O-ring	24-11-11-05-030	SIA ALL
		24-11-11-05A-075	SIA ALL

F. Location Zones

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

G. Prepare for the IDG Oil Change

SUBTASK 12-13-21-010-004

(1) Do this task: Open the Fan Cowl Panels (Selection), TASK 71-11-04-010-801-G00.

H. IDG Oil Change

SUBTASK 12-13-21-610-002

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 CLOTHES, GOGGLES, AND OTHER EQUIPMENT FOR PROTECTION, OR LET THE ENGINE BECOME COOL. HOT OIL CAN BURN YOU.

(1) Change the IDG oil:

WARNING MAKE SURE THAT YOU PUSH THE PUSH-TO-VENT VALVE. IF YOU DO NOT DO THIS, IT COULD CAUSE HOT OIL TO SPRAY AND CAN CAUSE INJURY TO PERSONS.

(a) Push the PUSH-TO-VENT VALVE for a minimum of 15 seconds.

(b) Put an oil resistant container (5 gal)(19 Liter), STD-1055, below the IDG to catch the oil.

(c) Remove the lockwire from the case drain plug [1] on the IDG.

(d) Remove the case drain plug [1], and let the oil drain into the oil resistant container (5 gal)(19 Liter), STD-1055.

(e) Remove the used O-ring [2] from case drain plug [1] and discard it.

(f) Replace the IDG Scavenge and Charge Filters.

NOTE: If the oil change procedure is performed as a part of the oil/brand switch, the filter removed during first round of oil flush, can be re-used for this first round provided that:

A. After filter is removed it is drained and no metallic particulates are found.

B. The filter and its O-ring are not damaged and the DPI is not extended.

NOTE: If metal particles are found in the removed filter then generator will need to be removed, oil flushed from the circuit, and a new generator installed.

1) Do these tasks:

a) IDG Scavenge and Charge Filter Removal, TASK 24-11-41-000-801

b) IDG Scavenge and Charge Filter Installation, TASK 24-11-41-400-801.

(g) Remove the cover from the pressure fill fitting on the IDG.

(h) Connect the pressure fill hose from the service equipment, engine oil servicing dispenser, COM-1537, dispenser, COM-1542, or oil replenishment gun, COM-1529, to the pressure fill fitting on the IDG.

(i) Use the service equipment to flush the IDG external cooling circuit with oil, D00071, or oil, D00068, with a maximum of 40 psi (276 kPa).

1) Pump oil into IDG until approximately 3 qt (2.8 l) to 4 qt (3.8 l) of oil drains from the IDG drain port.

NOTE: The 3 qt (2.8 l) to 4 qt (3.8 l) does not include the oil that was drained when the drain plug was removed.

CAUTION

USE ONLY THE M83485 O-RING ON THE IDG INPUT SHAFT WHEN YOU USE HIGH THERMAL STABILITY (HTS) OIL COMPATIBLE TO MILSPEC-23699 IN THE ENGINE (FOR EXAMPLE: BP/EASTMAN TURBO OIL 2197, AEROSHELL TURBINE OIL 560, MOBIL JET OIL 254). DO NOT USE OTHER O-RING STANDARDS (FOR EXAMPLE: M83248 OR AS3209) WITH HTS OIL. IF YOU DO, IT WILL CAUSE A DECREASE IN O-RING LIFE, ENGINE OIL LEAKAGE, AND A POSSIBLE ENGINE SHUTDOWN.

(j) Apply oil, D00071, or oil, D00068, or oil, D50369, to the new O-ring [2].

(k) Install the new O-ring [2] onto the case drain plug [1].

(l) Install the case drain plug [1] on the IDG.

(m) Tighten the case drain plug [1] to 65 ±10 in-lb (7 ±1 N·m).

(n) Install MS20995C32 lockwire, G01048.

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

SUBTASK 12-13-21-610-004

(2) If the IDG oil is replaced because of possible contamination, or you changed the type or brand of oil, do these steps:

(a) Do this task: Dry Motor Procedure, TASK 71-00-00-910-808-G00.

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 CLOTHES, GOGGLES, AND OTHER EQUIPMENT FOR PROTECTION, OR LET THE ENGINE BECOME COOL. HOT OIL CAN BURN YOU.

(b) Change the IDG oil:

WARNING

MAKE SURE THAT YOU PUSH THE PUSH-TO-VENT VALVE. IF YOU DO NOT DO THIS, IT COULD CAUSE HOT OIL TO SPRAY AND CAN CAUSE INJURY TO PERSONS.

1) Push the PUSH-TO-VENT VALVE for a minimum of 15 seconds.

2) Put an oil resistant container (5 gal)(19 Liter), STD-1055, below the IDG to catch the oil.

3) Remove the lockwire from the case drain plug [1] on the IDG.

4) Remove the case drain plug [1], and let the oil drain into the oil resistant container (5 gal)(19 Liter), STD-1055.

NOTE: It is not necessary to replace the O-ring [2] again if there is no damage.

5) Replace the IDG Scavenge and Charge Filters.

a) Do these tasks:

<1> IDG Scavenge and Charge Filter Removal, TASK 24-11-41-000-801

<2> IDG Scavenge and Charge Filter Installation, TASK 24-11-41-400-801.

6) Remove the cover from the pressure fill fitting on the IDG.

7) Connect the pressure fill hose from the service equipment, engine oil servicing dispenser, COM-1537, dispenser, COM-1542, or oil replenishment gun, COM-1529, to the pressure fill fitting on the IDG.

8) Use the service equipment to flush the IDG external cooling circuit with oil, D00071, or oil, D00068, with a maximum of 40 psi (276 kPa).

   a) Pump oil into the IDG until approximately 3 qt (2.8 l) to 4 qt (3.8 l) of oil drains from the IDG drain port.

      NOTE: The 3 qt (2.8 l) to 4 qt (3.8 l) does not include the oil that was drained when the drain plug was removed.

9) Install the case drain plug [1] on the IDG.

10) Tighten the case drain plug [1] to 65 ±10 in-lb (7 ±1 N·m).

11) Install MS20995C32 lockwire, G01048, on the case drain plug [1].

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

SUBTASK 12-13-21-610-005

(3) Do this task: Test No. 2 - Dry Motor Leak Test, TASK 71-00-00-790-802-G00.

I. Put the Airplane Back to Its Usual Condition

SUBTASK 12-13-21-010-005

(1) Do this task: Close the Fan Cowl Panels (Selection), TASK 71-11-04-410-801-G00.

——— END OF TASK ———

APU GEARBOX - SERVICING

1. General

A. This procedure has these tasks:

(1) APU oil level inspection

(2) Drain the APU oil

(3) Flush the APU oil

(4) Fill the APU gearbox.

TASK 12-13-31-200-801

2. APU Oil Level Inspection

(Figure 301)

A. General

(1) There are two procedures to examine the APU oil level. The first procedure uses the APU BITE to examine the APU oil level. The second procedure uses the oil sight glass on the aft side of the APU gearbox.

(2) If you do the APU BITE procedure, you must examine the APU oil level in the no APU operation (APU shutdown) condition or within one hour of starting the APU and before operating the main engines.

NOTE: Refer to APU CONTROLS, SUBJECT 49-61-00 for more information about the APU BITE procedure.

(3) If you do the oil sight glass procedure, you can examine the APU oil level during an APU operation or in the no APU operation (APU shutdown) condition.

(4) When dry, the APU oil capacity is approximately 8.8 qt (8.3 l), after the APU Oil lines and oil cooler are filled, the gearbox sump holds approximately 5.7 qt (5.4 l).

(a) The FULL level is approximately 5.7 qt (5.4 l).

(b) The ADD level is approximately 4.0 qt (3.8 l).

(c) The LOW level is below approximately 4.0 qt (3.8 l).

(5) Use one of the two procedures that follow to do a check of the APU oil level.

NOTE: Refer to task: APU Operation Limits, TASK 49-11-00-710-801, for more information about oil consumption.

B. References

Reference	Title
49-11-00-710-801	APU Operation Limits (P/B 201)
49-61-00	APU CONTROLS
49-61-00-700-801	APU BITE Procedure (P/B 201)
IFIM and do the applicable procedure(s)	Interactive Fault Isolation Manual

C. Location Zones

Zone	Area
211	Flight Compartment - Left
315	APU Compartment - Left

D. Access Panels

Number	Name/Location
315A	APU Cowl Door

E. APU Oil Level Inspection - APU BITE Procedure

SUBTASK 12-13-31-860-002

(1) If it is necessary, set the APU master switch on the P5 forward overhead panel to the OFF position.

NOTE: You can examine the APU oil level during an APU operation or in the no APU operation (APU shutdown) condition. You must examine the APU oil level within one hour from an APU start and before operating the main engines.

NOTE: APU maintenance page oil quantity will be blank, after 60 minutes of APU running, for 2 minutes after APU is shutdown, aircraft is in the air, or engines running.

SUBTASK 12-13-31-740-001

(2) Do this task: APU BITE Procedure, TASK 49-61-00-700-801.

(a) Look at OIL QTY on the MDS for the APU oil level.

1) If a fault message shows for the APU oil indicating system or the oil quantity, go to IFIM and do the applicable procedure(s).

2) Make sure the OIL QTY shows FULL for the oil level.

3) If oil is required, do this task: Fill the APU Gearbox, TASK 12-13-31-610-803.

F. APU Oil Level Inspection - Oil Sight Glass Procedure

SUBTASK 12-13-31-860-003

(1) If it is necessary, set the APU master switch on the P5 forward overhead panel to the OFF position.

NOTE: You can examine the APU oil level during an APU operation or in the no APU operation (APU shutdown) condition.

NOTE: It is recommended that you examine the APU oil level one hour after APU shutdown. This will let the oil decrease in temperature (less than 160°F (71°C)). This will let the oil sight glass show the correct oil level in the APU gearbox.

NOTE: It is normal to see air bubbles in the sight glass during APU operation.

SUBTASK 12-13-31-010-001

(2) Open this access door as follows:

Number	Name/Location
315A	APU Cowl Door

(a) Support the APU access door under the center latch.

(b) Open the three latches.

NOTE: Use this sequence: forward latch, aft latch, middle latch.

(c) Remove the retainer pin from the rod end of the forward hold-open rod on this access panel.

(d) Remove the retainer pin from the spring clip on the aft hold-open rod.

(e) Disconnect the two hold-open rods from the two spring clips.

(f) Connect the two rod ends of the two hold-open rods to the two brackets in the APU compartment.

(g) Install the two retainer pins in the two rod ends.

SUBTASK 12-13-31-210-001

(3) To examine the APU oil level on the oil sight glass [1], do these steps:

(a) If the oil level is on the FULL mark on the oil sight glass [1], the APU oil level is satisfactory.

NOTE: There are two FULL and ADD marks on the oil sight glass [1]. The left side of the oil sight glass [1] shows the oil level during APU operation. The right side of the oil sight glass [1] shows the oil level for the no APU operation (APU shutdown) condition.

(b) If the oil level is above the ADD mark on the oil sight glass [1], the APU oil level is satisfactory.

NOTE: It is not necessary to add oil to the APU gearbox if the oil level is above the ADD mark. If the oil level is on the ADD mark, you must add oil to the APU gearbox in 30-50 APU hours.

NOTE: If present on oil sight glass, the 1QT line is one quart lower than FULL with APU OFF and checked within 20-30 minutes after shutdown.

(c) If the APU oil level is below the ADD mark, do this task: Fill the APU Gearbox, TASK 12-13-31-610-803.

SUBTASK 12-13-31-410-001

(4) Close this access door as follows:

Number	Name/Location
315A	APU Cowl Door

(a) Remove the two retainer pins from the two hold-open rods in the APU compartment.

(b) Disconnect the two hold-open rods from the two brackets.

(c) Put the two hold-open rods in the two spring clips on the APU Cowl Door.

(d) Install the retainer pin in the rod end of the forward hold-open rod.

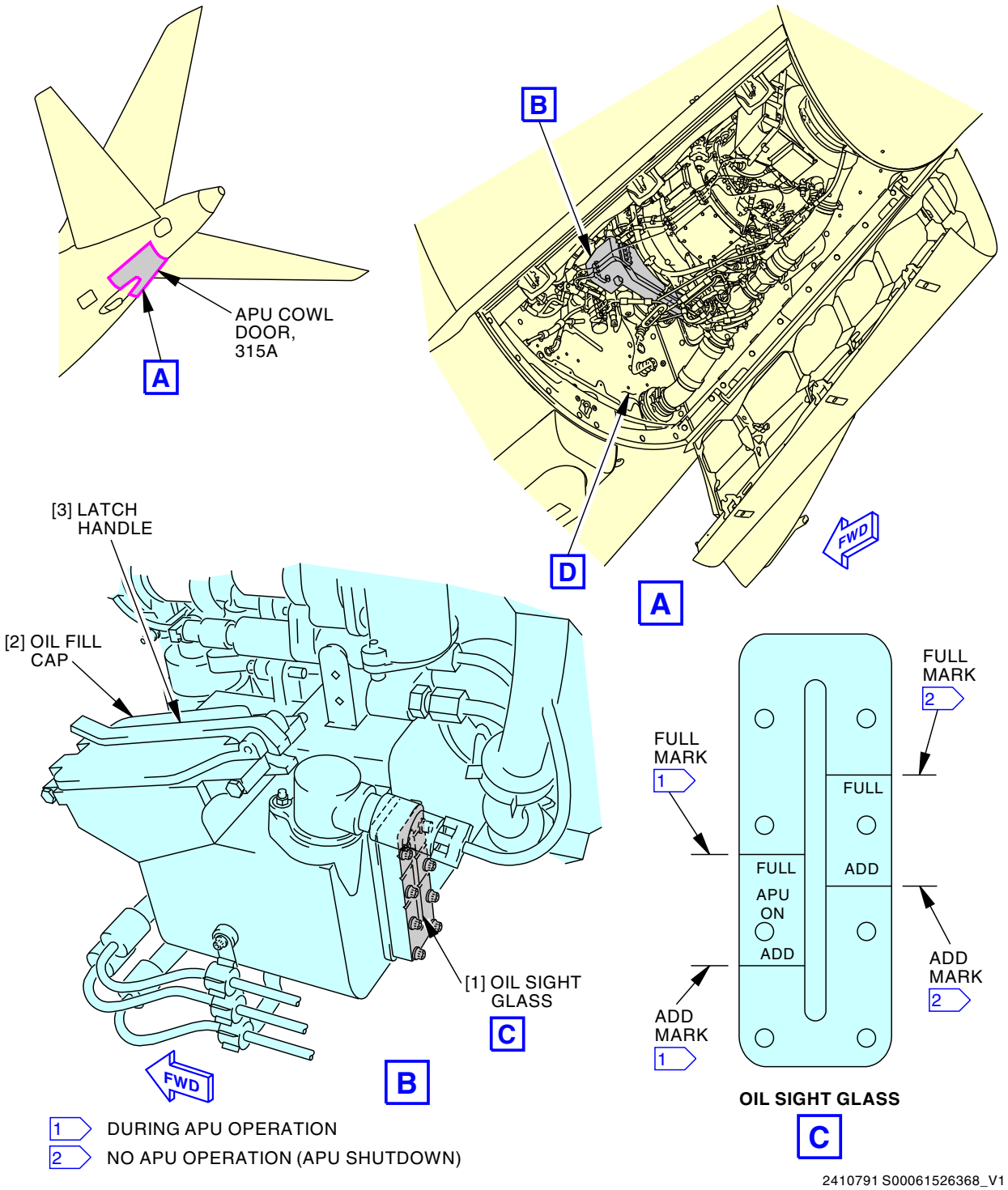
(e) Install the retainer pin to the spring clip on the aft hold-open rod.

(f) Close the APU Cowl Door.

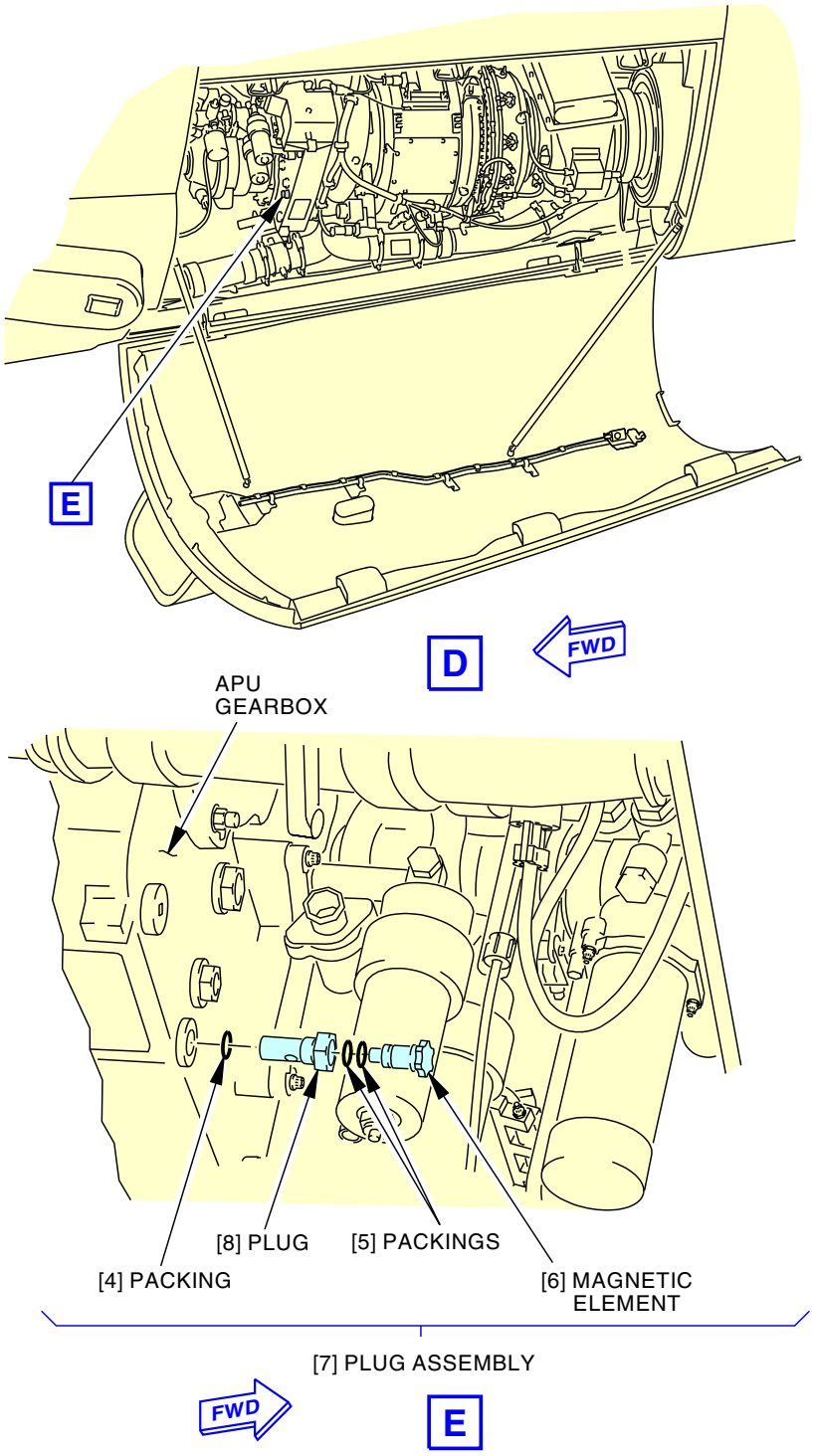
(g) Close the three latches.

NOTE: Use this sequence: middle latch, aft latch, forward latch

——— END OF TASK ———



APU Gearbox Servicing
Figure 301/12-13-31-990-801 (Sheet 1 of 2)



APU Gearbox Servicing
Figure 301/12-13-31-990-801 (Sheet 2 of 2)

TASK 12-13-31-610-801

3. Drain the APU Oil

(Figure 301)

A. General

(1) This task gives the steps on how to drain the Auxiliary Power Unit (APU) oil.

B. References

Reference	Title
49-11-00-860-801	APU Starting and Operation (P/B 201)
49-11-00-860-802	APU Usual Shutdown (P/B 201)
49-91-81-200-801	Magnetic Drain Plug Inspection (P/B 601)

C. Tools/Equipment

Reference	Description
STD-858	Tag - DO NOT OPERATE
STD-1055	Container - Oil Resistant, 5 Gallon (19 Liter)

D. Consumable Materials

Reference	Description	Specification
D00068	Oil - Aircraft Turbine Engine, Synthetic Base	MIL-PRF-23699 Class STD (Standard)
D00071	Oil - Aircraft Turbine Engine, Synthetic Base	MIL-PRF-7808 Grade 3
D00341	Lubricant - Polyphenyl Ether, Vacuum Pump - Santovac 5	
G01048	Lockwire - MS20995C32, Corrosion Resistant Steel - 0.032 Inch (0.8128 mm) Diameter	NASM20995

E. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
4	Packing	49-91-81-01-035	SIA ALL
5	Packing	49-91-81-01-030	SIA ALL
7	Plug assembly	49-91-81-01-025	SIA ALL

F. Location Zones

Zone	Area
211	Flight Compartment - Left
315	APU Compartment - Left
316	APU Compartment - Right

G. Access Panels

Number	Name/Location
315A	APU Cowl Door

H. Prepare to Drain the APU Oil

SUBTASK 12-13-31-860-004

(1) Make sure that the APU master switch, on the P5 forward overhead panel, is in OFF.

SUBTASK 12-13-31-930-001

(2) Install a DO NOT OPERATE tag, STD-858, on the APU master switch.

SUBTASK 12-13-31-860-005

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

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
A	14	C00033	AUX POWER UNIT CONT

SUBTASK 12-13-31-010-002

(4) Open this access door as follows:

Number	Name/Location
315A	APU Cowl Door

(a) Support the APU access door under the center latch.

(b) Open the three latches.

NOTE: Use this sequence: forward latch, aft latch, middle latch.

(c) Remove the retainer pin from the rod end of the forward hold-open rod on this access panel.

(d) Remove the retainer pin from the spring clip on the aft hold-open rod.

(e) Disconnect the two hold-open rods from the two spring clips.

(f) Connect the two rod ends of the two hold-open rods to the two brackets in the APU compartment.

(g) Install the two retainer pins in the two rod ends.

SUBTASK 12-13-31-860-006

(5) Do these steps if the time from the last APU shutdown to the start of the APU oil is drain more than one hour or the APU oil temperature is less than 160°F (71°C):

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

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
A	14	C00033	AUX POWER UNIT CONT

(b) Remove the DO NOT OPERATE tag, STD-858, from the APU master switch.

(c) Do this task: APU Starting and Operation, TASK 49-11-00-860-801.

(d) Operate the APU at a no load condition for a minimum of five minutes.

NOTE: When the APU is operated, the oil will flow through the engine. When the oil flows, it will collect the unwanted material that the oil filter elements do not collect.

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

(f) Install a DO NOT OPERATE tag, STD-858, to the APU master switch.

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

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
A	14	C00033	AUX POWER UNIT CONT

I. Drain the APU Oil

SUBTASK 12-13-31-020-001

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

(1) Do these steps to remove the magnetic element [6] from the plug [8]:

(a) Remove the magnetic element [6] from the plug [8].

NOTE: Push in on the magnetic element and turn the it counterclockwise for the removal.

NOTE: The plug assembly has the magnetic element and plug.

(b) Remove the two packings [5] from the magnetic element [6].

1) Discard the two packings [5].

SUBTASK 12-13-31-210-002

(2) Do these steps to inspect the magnetic element [6] for metal particles:

NOTE: Metal particles on the magnetic element give an indication of internal damage to the engine. If you see metal particles on the magnetic element, examine the engine to find the cause and quantity of the damage.

(a) If the magnetic element [6] is free of metal particles, the APU is satisfactory.

(b) A small quantity of metal particles that are not silver color is permitted.

(c) If you find silver color particles or a medium quantity of metal particles that are not silver color, do this task: Magnetic Drain Plug Inspection, TASK 49-91-81-200-801.

SUBTASK 12-13-31-680-001

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

WARNING DO NOT LET OIL STAY ON YOUR SKIN. YOU CAN ABSORB POISONOUS MATERIALS FROM THE OIL THROUGH YOUR SKIN.

(WARNING PRECEDES)

CAUTION DO NOT LET OIL GET ON THE APU OR OTHER COMPONENTS. IMMEDIATELY CLEAN THE OIL WHEN IT FALLS ON THEM. OIL CAN CAUSE DAMAGE TO PAINT AND RUBBER.

(3) Do these steps to drain the APU oil:

WARNING DO NOT LET OIL GET ON YOU. OIL CAN FLOW OUT OF THE APU GEARBOX WHEN YOU ADD OIL TO THE FULL MARK ON THE SIGHT GLASS. BE CAREFUL WHEN YOU ADD THE OIL NEAR THE FULL MARK. OIL CAN CAUSE INJURIES TO PERSONNEL, AND DAMAGE TO THE APU AND AIRPLANE COMPONENTS.

(a) Put the oil resistant container (5 gal)(19 Liter), STD-1055, below the plug [8].

(b) Pull the latch handle [3] away from the oil fill cap [2].

(c) Loosen the oil fill cap [2] to help the oil drain from the APU gearbox.

(d) Remove lockwire from the plug [8].

(e) Remove the plug [8] from the APU gearbox.

(f) Use the oil resistant container (5 gal)(19 Liter), STD-1055, to drain the oil from the APU gearbox.

(g) Remove the packing [4] from the plug [8].

1) Discard the packing [4].

(h) Remove the oil resistant container (5 gal)(19 Liter), STD-1055.

(i) Close the oil fill cap [2].

(j) Engage the latch handle [3] on the oil fill cap [2].

(k) Do these steps to install the plug assembly [7]:

1) Lubricate the new packing [4] and two new packings [5] with a light coat of Santovac 5 lubricant, D00341, oil, D00071, or oil, D00068.

2) Install the packing [4] on the plug [8].

3) Install the plug [8] in the APU gearbox.

a) Tighten the plug [8] to 85 ±5 in-lb (9.6 ±0.6 N·m).

4) Install the MS20995C32 lockwire, G01048, on the plug [8].

5) Install the two packings [5] on the magnetic element [6].

6) Install the magnetic element [6] in the plug [8].

a) Push in on the magnetic element [6] and turn the magnetic element [6] clockwise for the installation.

SUBTASK 12-13-31-860-007

(4) Do this step if you do not fill the APU gearbox immediately or it is necessary to do other tasks.

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

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
A	14	C00033	AUX POWER UNIT CONT

——— END OF TASK ———

TASK 12-13-31-610-802

4. Flush the APU Oil

A. General

(1) If you change oil types, you must flush the APU oil. This procedure gives the steps necessary to flush the APU gearbox.

B. References

Reference	Title
49-91-12-000-801	Lube Filter Element Removal (P/B 401)
49-91-12-000-802	Starter-Generator Filter Element Removal (P/B 401)
49-91-12-400-801	Lube Filter Element Installation (P/B 401)
49-91-12-400-802	Starter-Generator Filter Element Installation (P/B 401)

C. Location Zones

Zone	Area
211	Flight Compartment - Left
315	APU Compartment - Left
316	APU Compartment - Right

D. Flush the APU Oil

SUBTASK 12-13-31-170-001

(1) Do these steps to flush the oil from the APU gearbox:

(a) Do this task: Drain the APU Oil, TASK 12-13-31-610-801.

NOTE: It is not necessary to install the lockwire on the plug at this time.

(b) Fill the APU gearbox with the new oil type (TASK 12-13-31-610-803).

(c) Do this task: Drain the APU Oil, TASK 12-13-31-610-801.

(d) Do this task: Fill the APU Gearbox, TASK 12-13-31-610-803.

(e) Attach a service tag to the APU to show the oil brand and/or oil type in the APU gearbox.

(f) Replace the lube filter element (TASK 49-91-12-000-801 and TASK 49-91-12-400-801).

(g) Replace the starter-generator filter element (TASK 49-91-12-000-802 and TASK 49-91-12-400-802).

——— END OF TASK ———

TASK 12-13-31-610-803

5. Fill the APU Gearbox

(Figure 301)

A. General

(1) This procedure gives the steps on how to fill the Auxiliary Power Unit (APU) gearbox with oil. It is recommended that you fill the APU gearbox in the no APU operation (APU shutdown) condition for an accurate indication of the oil quantity level and to prevent oil contamination.

(2) The APU gearbox holds 5.7 qt (5.4 l). The oil fill cap [2] is located on the left side of the APU gearbox.

(3) It is recommended that you use Type 1 oil if the APU will be started in very cold conditions below -40°F (-40°C) or if periodic in-flight starts (start sampling) is performed.

B. References

Reference	Title
49-11-00-860-801	APU Starting and Operation (P/B 201)
49-11-00-860-802	APU Usual Shutdown (P/B 201)
49-61-00-700-801	APU BITE Procedure (P/B 201)
IFIM and do the applicable procedure(s)	Interactive Fault Isolation Manual

C. Tools/Equipment

Reference	Description
STD-858	Tag - DO NOT OPERATE

D. Consumable Materials

Reference	Description	Specification
D00068	Oil - Aircraft Turbine Engine, Synthetic Base	MIL-PRF-23699 Class STD (Standard)
D00071	Oil - Aircraft Turbine Engine, Synthetic Base	MIL-PRF-7808 Grade 3
D00513	Oil - Turbine - Aeroshell 555	
D00519	Oil - Engine - Eastman Turbo Oil 2380	MIL-PRF-23699-STD and UK spec DEF STAN 91-101/2
D00520	Oil - Engine - Mobil Jet Oil II	MIL-PRF-23699-Class STD (Standard)
D00521	Oil - Engine - Mobil Jet Oil 254	MIL-PRF-23699 - HTS (High Thermal Stability)
D00612	Oil - Assembly - Castrol 98	
D00635	Oil - Engine - Aeroshell 390	
D00636	Oil - Engine - Castrol 325	
D00637	Oil - Engine - Eastman Turbo Oil 2389	MIL-PRF-7808L grade 3
D00668	Lubricant - Turbine Oil - Aeroshell 500	
D00671	Oil - Engine - Eastman Turbo Oil 25	DOD-L-85734(AS) and DEF STAN 91-100/1 (DERD 2497)
D50016	Oil - Engine - Eastman Turbo Oil 2197	MIL-PRF-23699 Class HTS (High Thermal Stability)
D50031	Oil - Turbine Engine, Type II (5 Centistokes) - Royco 555	
D50169	Oil - Turbine Engine (NYCO Turbonycoil 600)	MIL-PRF-23699 Class STD (Standard)
D50178	Oil - Lubricating - Castrol 5000 (use until stock depleted)	
D50202	Lubricant - Royco 560 Turbine Oil	MIL-PRF-23699 - HTS (High Thermal Stability)

(Continued)

Reference	Description	Specification
D50311	Oil - Engine - Mobil Jet Oil 387	SAE AS5780, MIL-PRF-23699
D50338	Oil - Engine - Hatcol 3211	MIL-PRF-23699 Class STD (Standard)
D50339	Oil - Engine - Hatcol 3611	MIL-PRF-23699 Class STD (Standard)
D50340	Oil - Engine - Royco 899	MIL-PRF-23699 Class C/I (Corrosion Inhibiting)
D50341	Oil - Engine - Royco Turbine Oil 500	MIL-PRF-23699 Class STD (Standard)

E. Location Zones

Zone	Area
211	Flight Compartment - Left
315	APU Compartment - Left

F. Access Panels

Number	Name/Location
315A	APU Cowl Door

G. Prepare to Fill the APU Gearbox

SUBTASK 12-13-31-860-012

(1) Remove and re-apply power to the APU electronic control unit as follows:

NOTE: This step and the steps that follow are necessary initial conditions if you do the APU Built-In-Test Equipment (BITE) procedure for the APU oil level inspection or troubleshooting low oil quantity problems in the Interactive Fault Isolation Manual (IFIM) (Refer to: IFIM and do the applicable procedure(s)).

NOTE: The electronic control unit does a check of the APU oil level during its power-up cycle only. The electronic control unit cannot sense a change in the oil level when energized.

(a) Make sure that the APU master switch, on the P5 forward overhead panel, is in the OFF position.

(b) Do this task: APU BITE Procedure, TASK 49-61-00-700-801.

(c) Make a note of the oil quantity in the maintenance data page.

SUBTASK 12-13-31-210-003

(2) Make sure that the air/ground switch show GRD on the INPUT MONITORING page for the APU BITE procedure.

SUBTASK 12-13-31-860-008

(3) Install a DO NOT OPERATE tag, STD-858.

SUBTASK 12-13-31-860-009

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

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
A	14	C00033	AUX POWER UNIT CONT

SUBTASK 12-13-31-010-003

(5) Open this access panel:

Number	Name/Location
315A	APU Cowl Door

(a) Open this access panel as follows:

1) Support the APU panel under the center latch.
2) Open the three latches.

NOTE: Use this sequence: forward latch, aft latch, middle latch.

3) Remove the retainer pin from the rod end of the forward hold-open rod on this access panel.
4) Remove the retainer pin from the spring clip on the aft hold-open rod.
5) Disconnect the two hold-open rods from the two spring clips.
6) Connect the two rod ends of the two hold-open rods to the two brackets in the APU compartment.
7) Install the two retainer pins in the two rod ends.

H. Fill the APU Gearbox

SUBTASK 12-13-31-610-002

(1) Use only these types and brands of oil:

NOTE: For additional information about approved oils for the APU, please refer to Honeywell SB 49-7933. This Service Bulletin (SB) also contains information about approved oils that are no longer produced.

(a) Synthetic Base Oil, Type I - MIL-PRF-7808 (-65°F (-54°C) to 130°F (54°C)):

1) Castrol 399
2) Eastman Turbo Oil 2389, D00637.

(b) Def Stan 91-94, Type I (-65°F (-54°C) to 130°F (54°C)):

1) Aeroshell 390 oil, D00635
2) Castrol 325 oil, D00636.

(c) Synthetic Base Oil, Type II - MIL-PRF-23699 (-40°F (-40°C) to 130°F (54°C)):

1) Aeroshell 500 lubricant, D00668
2) Asto 560
3) Eastman Turbo Oil 2380, D00519
4) Mobil Jet Oil II, D00520
5) Royco Turbine Oil 500, D50341
6) Royco 560 Turbine Oil, D50202
7) turbonycoil 600 engine oil, D50169.

(d) Synthetic Base Oil, Type II - MIL-PRF-23699 (High Performance capability):

1) Eastman Turbo Oil 2197, D50016

2) Mobil Jet Oil 254, D00521
3) Mobil Jet Oil 387, D50311.

(e) Type II - MIL-PRF-23699 (Standard):
1) Aeroshell 500 lubricant, D00668
2) Eastman Turbo Oil 2380, D00519
3) lubricating oil, D50178
4) Hatcol 3211, D50338
5) Hatcol 3611, D50339
6) Mobil Jet Oil II, D00520
7) Royco Turbine Oil 500, D50341
8) turbonycoil 600 engine oil, D50169

(f) Type II - MIL-PRF-23699 (Corrosion Inhibiting):
1) Royco 899, D50340.

(g) Type II, MIL-PRF-23699, (High Thermal Stability):
1) Eastman Turbo Oil 2197, D50016
2) Mobil Jet Oil 254, D00521
3) Royco 560 Turbine Oil, D50202
4) ASTO 560
5) Mobil Jet Oil 387, D50311.

(h) DOD-L-85734 and Def Stan 91-100, Type II (-40°F (-40°C) to 130°F (54°C)):
1) Aeroshell 555 oil, D00513
2) Royco 555 oil, D50031
3) Eastman Turbo Oil 25, D00671.

SUBTASK 12-13-31-610-001

WARNING DO NOT TOUCH THE COMPONENTS OF THE OIL SYSTEM IF THE APU 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 CLOTHES, GOGGLES, AND OTHER EQUIPMENT FOR PROTECTION, OR LET THE ENGINE BECOME COOL. HOT OIL CAN BURN YOU.

WARNING DO NOT LET OIL STAY ON YOUR SKIN. YOU CAN ABSORB POISONOUS MATERIALS FROM THE OIL THROUGH YOUR SKIN.

(WARNING PRECEDES)

CAUTION

DO NOT LET OIL GET ON THE APU OR OTHER COMPONENTS. IMMEDIATELY CLEAN THE OIL WHEN IT FALLS ON THEM. OIL CAN CAUSE DAMAGE TO PAINT AND RUBBER.

(2) Do these steps to fill the APU gearbox with oil:

NOTE: It is recommended that you service the APU oil level after one hour from an APU usual shutdown to let the oil temperature decrease (less than 160°F (71°C)). After one hour, the oil sight glass will show an accurate oil level in the APU gearbox.

(a) Pull the latch handle [3] away from the oil fill cap [2].

(b) Open the oil fill cap [2].

WARNING

DO NOT LET OIL GET ON YOU. OIL CAN FLOW OUT OF THE APU GEARBOX WHEN YOU ADD OIL TO THE FULL MARK ON THE SIGHT GLASS. BE CAREFUL WHEN YOU ADD THE OIL NEAR THE FULL MARK. OIL CAN CAUSE INJURIES TO PERSONNEL, AND DAMAGE TO THE APU AND AIRPLANE COMPONENTS.

CAUTION

DO NOT MIX TWO TYPES OF OIL WHEN YOU ADD THE OIL IN THE APU. IT IS PERMITTED TO MIX DIFFERENT BRANDS OF OIL WITH THE SAME TYPE OF OIL WHEN YOU ADD THE OIL IN THE APU. A MIXTURE OF TWO TYPES OF OIL IN THE APU CAN CAUSE DAMAGE TO THE APU.

(c) Slowly add the oil, D00071, oil, D00068, Aeroshell 390 oil, D00635, Castrol 325 oil, D00636, Eastman Turbo Oil 25, D00671, Aeroshell 555 oil, D00513, Mobil Jet Oil II, D00520 or Castrol 98 oil, D00612, to the APU gearbox until the oil level is at the FULL mark on the oil sight glass [1].

NOTE: Do not overfill the APU gearbox. The APU gearbox is overfilled if the oil level is above the full mark. Over-servicing can cause the excess oil to 'vent-off' through the APU exhaust duct. This means that the air/oil separator would not be able to handle the additional oil.

NOTE: There are two FULL and ADD marks on the oil sight glass. The left side of the oil sight glass shows the oil level during APU operation. The right side of the oil sight glass shows the oil level for the no APU operation (APU shutdown) condition.

NOTE: The oil level is full when the oil level is at the FULL mark on the oil sight glass. The APU gearbox holds 5.7 qt (5.4 l).

(d) Close the oil fill cap [2].

(e) Engage the latch handle [3] on the oil fill cap [2].

I. Oil Check

SUBTASK 12-13-31-860-010

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

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
A	14	C00033	AUX POWER UNIT CONT

SUBTASK 12-13-31-860-011

(2) Remove the DO NOT OPERATE tag, STD-858, from the APU master switch.

SUBTASK 12-13-31-790-001

(3) If you drain or flush the oil from the APU gearbox, do a leak check of the plug assembly [7] as follows:

(a) Do this task: APU Starting and Operation, TASK 49-11-00-860-801.

(b) Examine the plug assembly [7] for signs of oil leakage.

(c) If you find oil leakage, do these steps to repair the leakage:

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

2) Install a DO NOT OPERATE tag, STD-858, to the APU master switch, on the P5 forward overhead panel.

3) Repair the cause of the oil leakage.

4) Remove the DO NOT OPERATE tag, STD-858, from the APU master switch.

5) Do this task: APU Starting and Operation, TASK 49-11-00-860-801.

6) Examine the plug assembly [7] for signs of oil leakage.

7) If you find oil leakage, do the leakage repair again.

(d) If it is not necessary to do other tasks, shutdown the APU (TASK 49-11-00-860-802).

(e) Make sure that the APU oil system is full (TASK 12-13-31-200-801).

J. Put the Airplane Back to Its Usual Condition

SUBTASK 12-13-31-410-002

(1) Close this access door as follows:

Number	Name/Location
315A	APU Cowl Door

(a) Remove the two retainer pins from the two hold-open rods in the APU compartment.

(b) Disconnect the two hold-open rods from the two brackets.

(c) Put the two hold-open rods in the two spring clips on the APU Cowl Door.

(d) Install the retainer pin in the rod end of the forward hold-open rod.

(e) Install the retainer pin to the spring clip on the aft hold-open rod.

(f) Close the APU Cowl Door.

(g) Close the three latches.

NOTE: Use this sequence: middle latch, aft latch, forward latch.

——— END OF TASK ———

POTABLE WATER SYSTEM - SERVICING

1. General

A. This procedure contains the following tasks:

(1) A drainage of the portable water system

(2) A filling of the portable water system.

TASK 12-14-00-600-801

2. Potable Water System - Drain

(Figure 301, Figure 302)

A. Location Zones

Zone	Area
117	Electrical and Electronics Compartment - Left
200	Upper Half of Fuselage

B. Access Panels

Number	Name/Location
117A	Electronic Equipment Access Door
146AR	Water Service Door

C. Drain the Potable Water System

SUBTASK 12-14-00-480-003

WARNING

DRAIN, OR USE THE POTABLE WATER SYSTEM A MINIMUM OF ONE TIME EACH THREE DAYS. IF YOU DO NOT DRAIN, OR USE THE WATER SYSTEM FREQUENTLY, BACTERIA CAN GROW IN THE WATER. IF YOU DRINK WATER WITH BACTERIA IN IT, ILLNESS CAN OCCUR.

(1) Make sure to drain or use the potable water system a minimum of one time each three days.

SUBTASK 12-14-00-010-001

CAUTION

DO NOT USE SHARP INSTRUMENT TO CLEAR THE ICE BUILD-UP BLOCKAGE. THIS CAN CAUSE DAMAGE TO THE WATERLINES.

(2) Open this access panel:

Number	Name/Location
146AR	Water Service Door

SUBTASK 12-14-00-480-001

(3) Connect a drain line to each of the drain ports.

NOTE: There are two drain port locations. The first is the forward drain port for the forward lavatory/galley. The second is the aft drain/overflow port for the water service panel. The drain ports have 1/2 - 14 ANPT threads.

SUBTASK 12-14-00-860-001

(4) Make sure that the shutoff valve for each wet galley is in the OPEN position.

NOTE: The shutoff valve is found adjacent to the sink of a wet galley.

SUBTASK 12-14-00-680-001

(5) Turn the handle for the water drain valve on the water service panel to open the water tank drain valve.

NOTE: This drains the potable water tank and water system aft of the wings.

SUBTASK 12-14-00-680-002

(6) Make sure that the supply shutoff valve for each lavatory is in the ON position.

NOTE: The supply shutoff valve is found below the sink in the lavatory.

SUBTASK 12-14-00-680-003

(7) Turn the handle, of the drain valve, for the forward lavatory to the OPEN position.

NOTE: The drain valve is found below the sink in the lavatory.

SUBTASK 12-14-00-680-004

(8) If it is installed, open the drain valve to drain the water from each coffee maker or water boiler.

SUBTASK 12-14-00-680-005

(9) Open the galley water faucet to drain the water from the galley water system.

(a) Close the galley water faucet when the water flow stops.

SUBTASK 12-14-00-860-002

(10) Make sure that the potable water system is empty.

SUBTASK 12-14-00-040-001

(11) If the potable water tank is not filled immediately after the system is drained, do one of these steps to deactivate the lavatory water heater:

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

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
F	13	C00104	LAVATORY WATER HEATER A
F	14	C01073	LAVATORY WATER HEATER D
F	15	C01096	LAVATORY WATER HEATER E

(b) Set the water heater power switch (S1) to the OFF position.

SUBTASK 12-14-00-010-002

(12) To get access to the P91 and P92 panels, open this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

SUBTASK 12-14-00-040-002

(13) If the portable water tank is not filled immediately after the system is drained, do this step:

WARNING

WHEN YOU OPEN THE P91 AND P92 PANELS, MAKE SURE THAT THE OUTER DOOR STAYS AS OPEN AS POSSIBLE. IF THE OUTER DOOR TURNS IN, THE ATTACHED DOOR COMPONENTS COULD TOUCH THE INNER DOOR COMPONENTS. THIS CAN CAUSE AN ARC CONDITION WHEN YOU SUPPLY POWER. IF YOU DO NOT OBEY, DAMAGE TO EQUIPMENT AND INJURY TO PERSONNEL CAN OCCUR.

(WARNING PRECEDES)

WARNING

DO NOT TOUCH THE CONDUCTORS IN THE P91 AND P92 PANELS. BE CAREFUL WHEN YOU GET ACCESS TO THE CIRCUIT BREAKERS ON THE INNER SIDE OF THE P91 AND P92 PANELS (ROW F). IF IT IS POSSIBLE, REMOVE AIRPLANE ELECTRICAL POWER FIRST. THE P91 AND P92 PANELS HAVE HIGH VOLTAGES AND CURRENTS. ELECTRICAL VOLTAGE AND CURRENT CAN KILL YOU OR CAUSE INJURIES.

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

Power Distribution Panel Number 1, P91

Row	Col	Number	Name
C	9	C00138	WATER QTY IND
D	11	C00873	POT WATER COMPRESSOR

SUBTASK 12-14-00-860-003

(14) If it is installed, move the drain valve for each coffee maker or water boiler to the CLOSED position.

SUBTASK 12-14-00-860-004

(15) Move the drain valve in the forward lavatory to the CLOSED position.

SUBTASK 12-14-00-860-010

(16) Move the supply shutoff valve to the OFF position.

SUBTASK 12-14-00-860-005

(17) Turn the handle for the drain valve on the water service panel to close the water tank drain valve.

SUBTASK 12-14-00-080-001

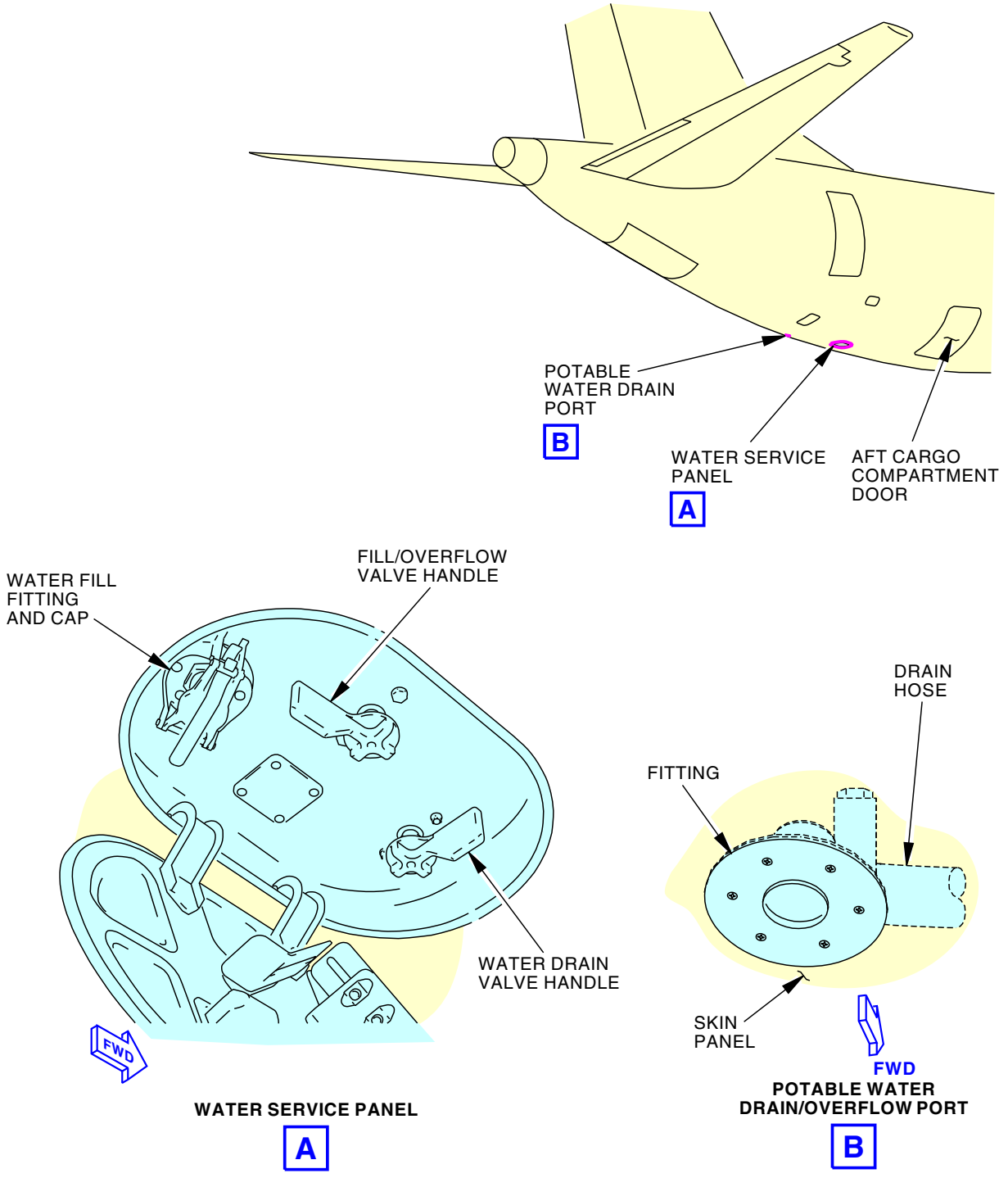
(18) Disconnect the drain lines from the drain ports.

SUBTASK 12-14-00-410-001

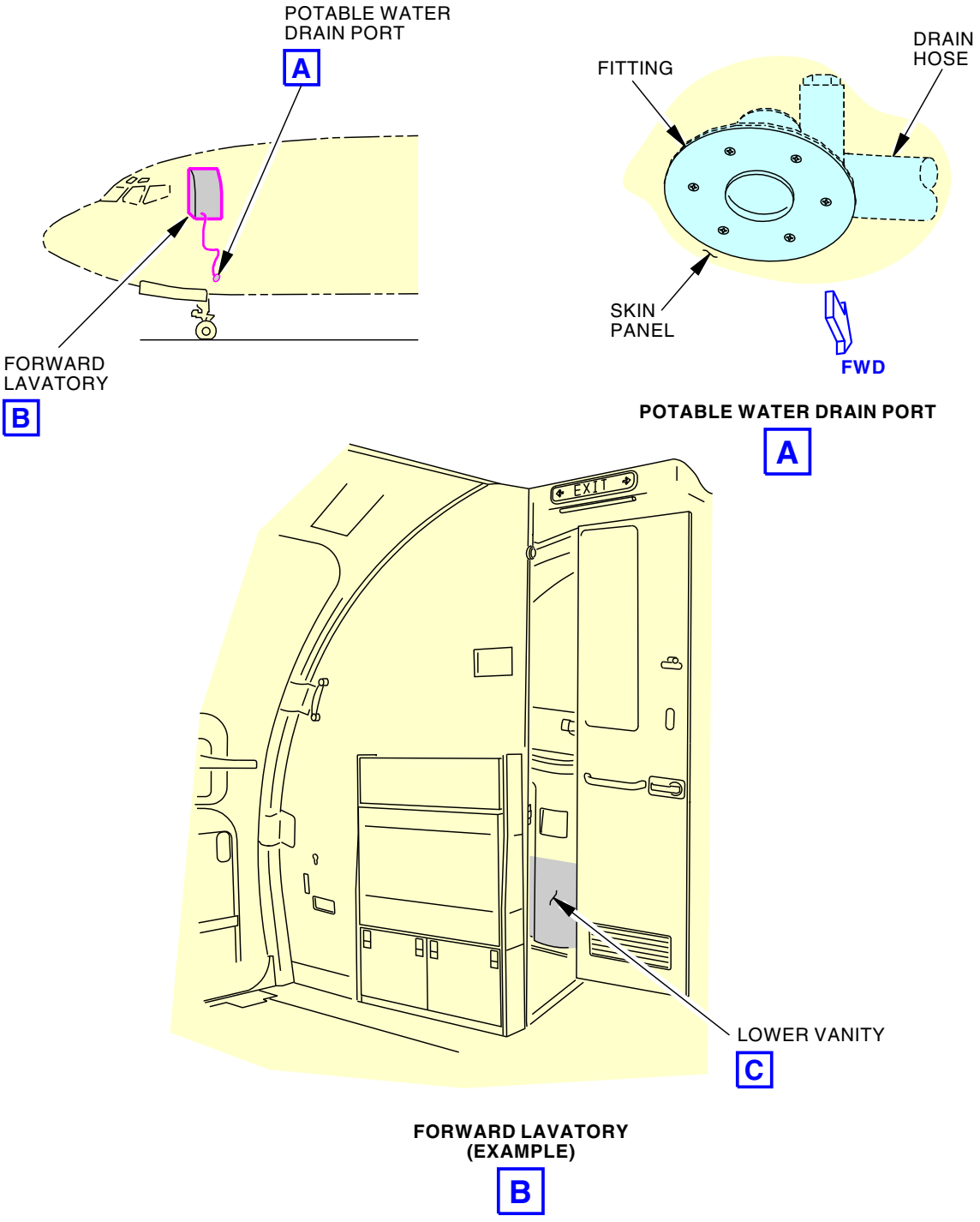
(19) Close this access panel:

Number	Name/Location
146AR	Water Service Door

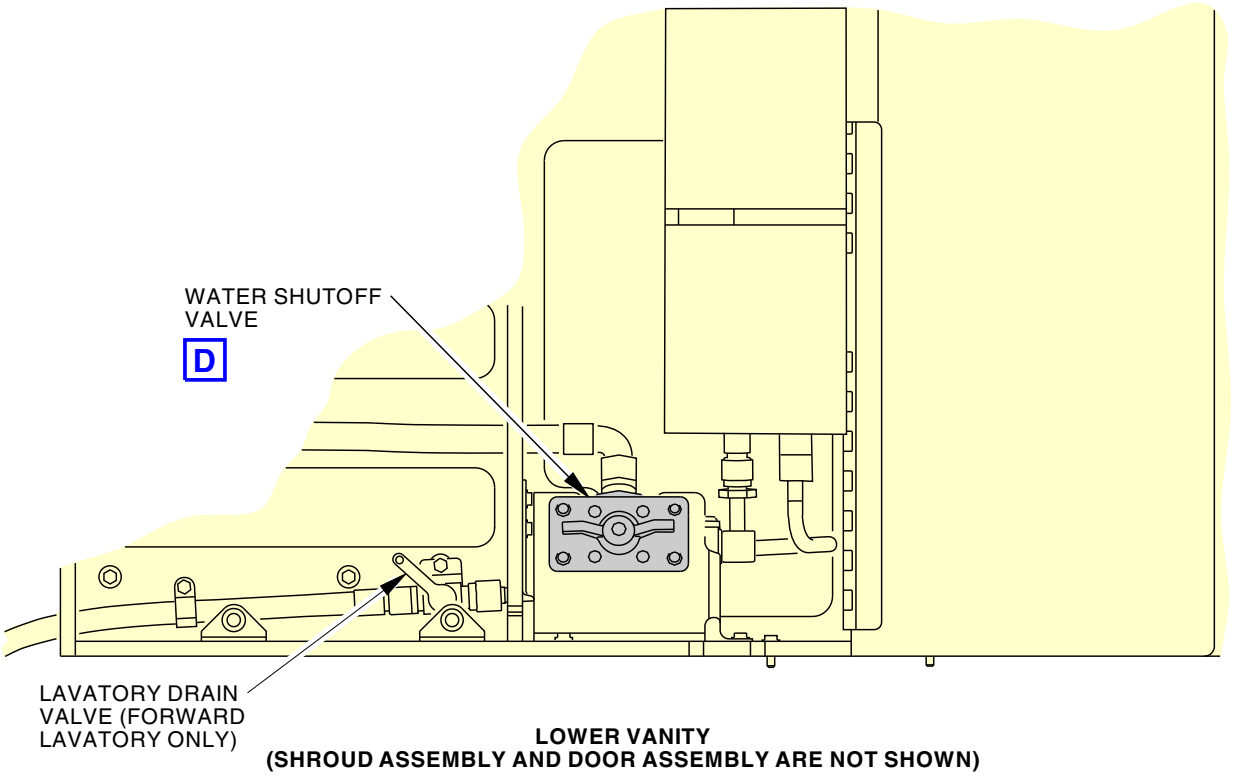
END OF TASK



Potable Water System Servicing
Figure 301/12-14-00-990-803

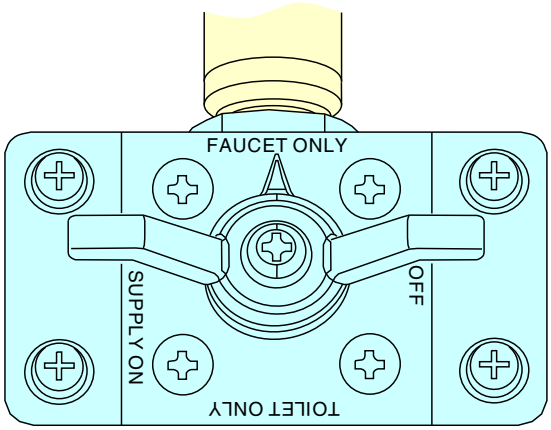


Drain Valve Location
Figure 302/12-14-00-990-804 (Sheet 1 of 2)



LOWER VANITY
(SHROUD ASSEMBLY AND DOOR ASSEMBLY ARE NOT SHOWN)

C



WATER SHUTOFF VALVE

D

2438590 S0000563898_V1

Drain Valve Location
Figure 302/12-14-00-990-804 (Sheet 2 of 2)

TASK 12-14-00-600-802

3. Potable Water Tank - Fill

(Figure 301, Figure 302)

A. Tools/Equipment

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

Reference	Description
COM-1141	Equipment - Potable Water Servicing Part #: 19-4301-0000 Supplier: 59603 Part #: 19-4303-0000 Supplier: 59603 Part #: 2198-310 Supplier: 6L481 Part #: CPW-100 Supplier: 32526 Part #: CPW-100-1 Supplier: 32526 Part #: CPW-100-2 Supplier: 32526 Part #: PW100 Supplier: 1CSJ2 Part #: SPW-350 Supplier: 32526 Part #: SPW-500PL Supplier: 32526 Part #: WC100E (ID 2026505) Supplier: 0T652 Part #: WSP-900 Supplier: 6L481 Part #: WTM-900 Supplier: 6L481 Opt Part #: 2303 Supplier: 00365 Opt Part #: SPW-250 Supplier: 32526

B. Location Zones

Zone	Area
117	Electrical and Electronics Compartment - Left
200	Upper Half of Fuselage

C. Access Panels

Number	Name/Location
117A	Electronic Equipment Access Door
146AR	Water Service Door

D. Fill the Potable Water Tank

SUBTASK 12-14-00-860-007

(1) Make sure that the supply shutoff valve is in the OFF position.

SUBTASK 12-14-00-480-002

WARNING DRAIN, OR USE THE POTABLE WATER SYSTEM A MINIMUM OF ONE TIME EACH THREE DAYS. IF YOU DO NOT DRAIN, OR USE THE WATER SYSTEM FREQUENTLY, BACTERIA CAN GROW IN THE WATER. IF YOU DRINK WATER WITH BACTERIA IN IT, ILLNESS CAN OCCUR.

(2) Connect the service potable water servicing equipment, COM-1141, or the water source as follows:

(a) Do not use a water pressure of more than 55 psi (379 kPa).

NOTE: The recommended pressure is 25 psi (172 kPa).

(b) Open this access panel:

Number	Name/Location
146AR	Water Service Door

(c) Open the cap on the water fill fitting.

(d) Connect the water supply hose to the water fill fitting.

SUBTASK 12-14-00-610-001

(3) Turn the handle to open the fill/overflow valve.

SUBTASK 12-14-00-610-002

(4) Start the water supply to the potable water tank.

SUBTASK 12-14-00-860-006

(5) Fill the potable water tank until you see water flow from the potable water drain/overflow port.

SUBTASK 12-14-00-610-003

(6) Stop the water supply to the potable water tank.

SUBTASK 12-14-00-710-001

(7) Turn the handle to close the fill/overflow valve.

SUBTASK 12-14-00-080-002

(8) Disconnect the service potable water servicing equipment, COM-1141, or the water source:

(a) Disconnect the water supply hose from the water fill fitting.

(b) Let the water drain from the water fill line to make sure that no water stays in the fill line.

1) Keep the cap for the water fill fitting open for approximately one minute to permit the liquid to drain from the fill line.

(c) Close the cap on the water fill fitting.

(d) Close this access panel:

Number	Name/Location
146AR	Water Service Door

SUBTASK 12-14-00-440-001

(9) Do one of these steps to activate the lavatory water heater:

(a) Close these circuit breakers:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
F	13	C00104	LAVATORY WATER HEATER A
F	14	C01073	LAVATORY WATER HEATER D
F	15	C01096	LAVATORY WATER HEATER E

(b) Set the water heater power switch (S1) to the ON position.

SUBTASK 12-14-00-440-002

WARNING

WHEN YOU OPEN THE P91 AND P92 PANELS, MAKE SURE THAT THE OUTER DOOR STAYS AS OPEN AS POSSIBLE. IF THE OUTER DOOR TURNS IN, THE ATTACHED DOOR COMPONENTS COULD TOUCH THE INNER DOOR COMPONENTS. THIS CAN CAUSE AN ARC CONDITION WHEN YOU SUPPLY POWER. IF YOU DO NOT OBEY, DAMAGE TO EQUIPMENT AND INJURY TO PERSONNEL CAN OCCUR.

(WARNING PRECEDES)

WARNING

DO NOT TOUCH THE CONDUCTORS IN THE P91 AND P92 PANELS. BE CAREFUL WHEN YOU GET ACCESS TO THE CIRCUIT BREAKERS ON THE INNER SIDE OF THE P91 AND P92 PANELS (ROW F). IF IT IS POSSIBLE, REMOVE AIRPLANE ELECTRICAL POWER FIRST. THE P91 AND P92 PANELS HAVE HIGH VOLTAGES AND CURRENTS. ELECTRICAL VOLTAGE AND CURRENT CAN KILL YOU OR CAUSE INJURIES.

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

Power Distribution Panel Number 1, P91

Row	Col	Number	Name
C	9	C00138	WATER QTY IND
D	11	C00873	POT WATER COMPRESSOR

SUBTASK 12-14-00-410-002

(11) Close this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

SUBTASK 12-14-00-860-008

(12) Move the supply shutoff valve to the SUPPLY ON position.

SUBTASK 12-14-00-860-009

(13) Push the lavatory faucet until the water flows into the lavatory sink.

SUBTASK 12-14-00-790-001

(14) If the potable water system was drained before the system was filled, examine the AFT and FWD drain ports for leakage.

NOTE: Leakage from the AFT drain port shows an open water tank valve. Leakage from the FWD drain port shows an open lavatory drain valve.

END OF TASK

HYDRAULIC BRAKE ACCUMULATOR - SERVICING

1. General

A. This procedure contains scheduled maintenance task data.

B. This procedure has these tasks:

(1) A check of the brake accumulator precharge pressure

(2) Servicing the brake accumulator if it has an incorrect precharge pressure.

TASK 12-15-11-610-801

2. Check of the Brake Accumulator Pre-charge Pressure

(Figure 301)

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
10-11-05 P/B 201	CHOCK INSTALLATION
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)
32-00-01-480-801	Landing Gear Downlock Pins Installation (P/B 201)

B. Tools/Equipment

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

Reference	Description
COM-931	Thermometer - Hand Held, -112 to 1400 degree F (-80 to 760 degree C) Range
STD-1179	Tester - Pyrometer

C. Location Zones

Zone	Area
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right
211	Flight Compartment - Left
212	Flight Compartment - Right

D. Check of the Brake Accumulator Pre-charge Pressure.

SUBTASK 12-15-11-480-001

WARNING MAKE SURE THE DOWNLOCK PINS ARE INSTALLED ON ALL THE LANDING GEAR. WITHOUT THE DOWNLOCK PINS, THE LANDING GEAR CAN RETRACT AND CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) If the downlock pins are not installed in the nose and main landing gear, do this task: Landing Gear Downlock Pins Installation, TASK 32-00-01-480-801.

SUBTASK 12-15-11-480-002

(2) Make sure that the tires have chocks installed around them (PAGEBLOCK 10-11-05/201).

SUBTASK 12-15-11-860-001

(3) Release the parking brake.

SUBTASK 12-15-11-860-002

(4) For hydraulic systems A and B, do this task: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805.

SUBTASK 12-15-11-870-001

(5) Slowly operate the Captain's or First Officer's left and right brake pedals to the stop for a minimum of 10 times.

NOTE: This may take 15 or more brake applications (brake application: holding brakes for 1 second depressed and 1 second released).

NOTE: This will release the hydraulic pressure at the accumulator until only the gas pre-charge pressure remains.

NOTE: The brakes will go soft, and they will slowly spring back after the accumulator is depleted of hydraulic fluid pressure.

(6) Operate the brake pedal an additional 10 times.

(7) Make sure there is no further pressure decrease on the gauge in the flight deck.

NOTE: This step will ensure that the accumulator is fully depleted of hydraulic fluid pressure.

SUBTASK 12-15-11-860-003

(8) The accumulator body temperature must be within 5 degrees C (9 degrees F) of ambient temperature across the entire length.

NOTE: This step is required as removing hydraulic pressure will allow the accumulator pre-charge gas to expand and chill the gas inside of the accumulator.

(a) Measure the surface temperature using a pyrometer, STD-1179 or thermometer, COM-931.

1) Make sure the accumulator surface temperature is uniform across the entire length.

NOTE: It may require 10 minutes or more for each end of the accumulator to reach a steady state temperature.

NOTE: Air may be blown on the accumulator to decrease the time required to reach a steady state temperature.

SUBTASK 12-15-11-610-001

(9) Do the steps that follow to do a check of the accumulator pre-charge pressure:

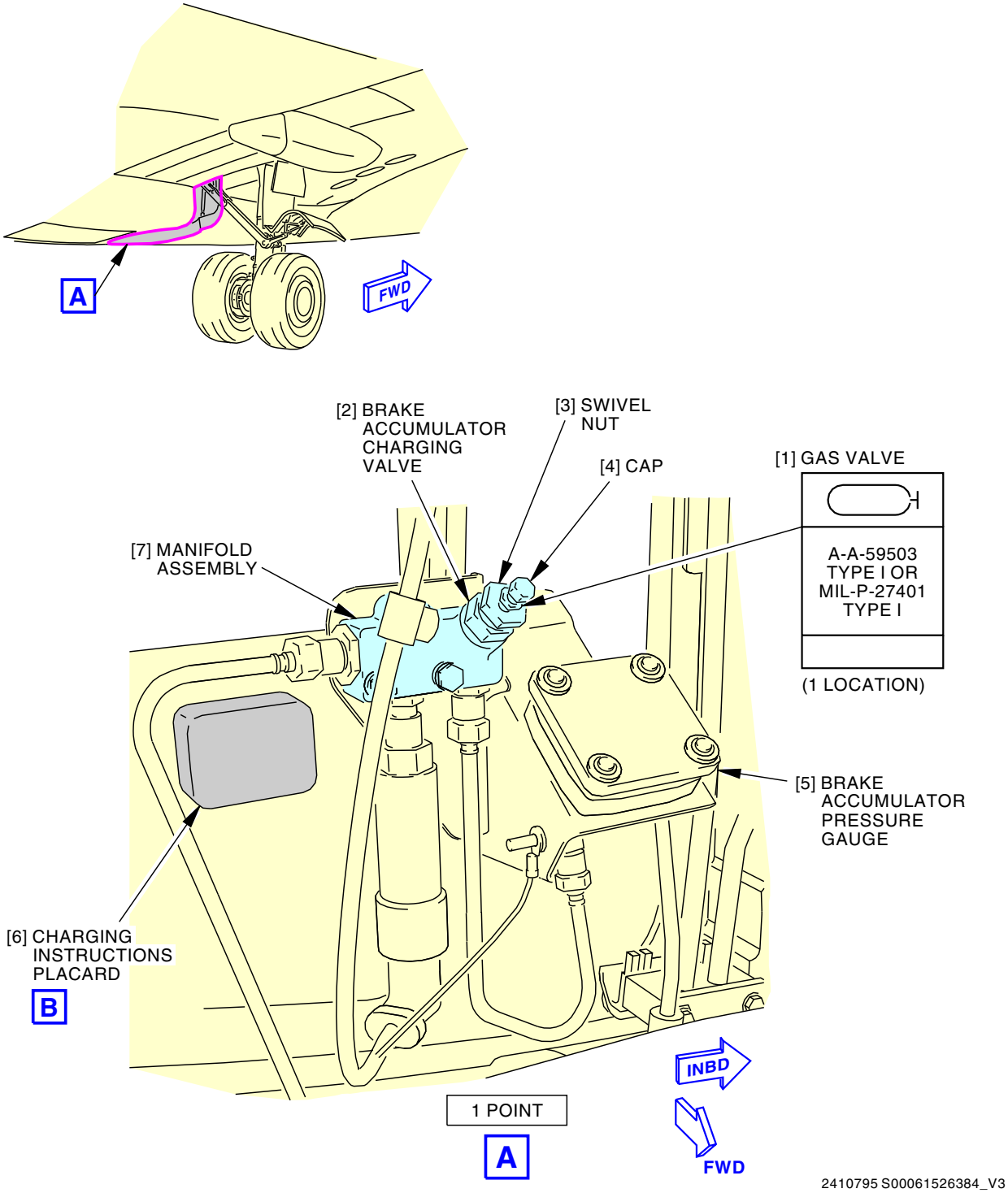
(a) Use the charging instructions placard [6] to find the correct accumulator pressure for the current ambient temperature of the airplane.

NOTE: The charging instructions placard [6] is located next to the brake accumulator pressure gauge.

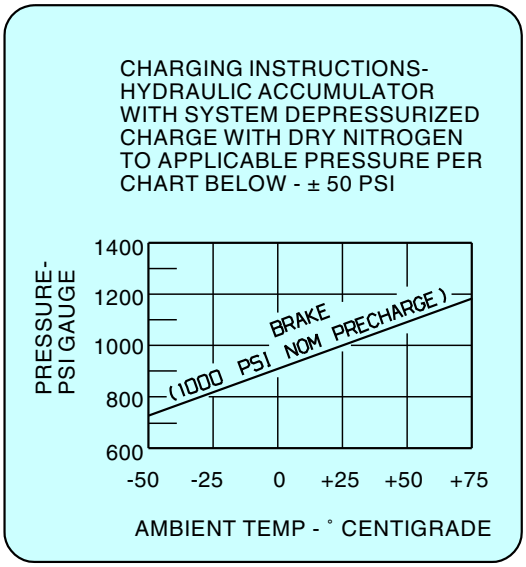
(b) Make sure that the pressure that shows on the brake accumulator pressure gauge [5] is within 50 psi (345 kPa) of the pressure you obtained from the graph on the charging instructions placard [6].

(c) If the pressure shown on the brake accumulator pressure gauge [5] is not in the correct pressure range of the charging instructions placard [6], do this task: Hydraulic Brake Accumulator Servicing, TASK 12-15-11-420-801.

——— END OF TASK ———



Hydraulic Brake Accumulator Servicing
Figure 301/12-15-11-990-801 (Sheet 1 of 2)



CHARGING INSTRUCTIONS PLACARD

B

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Hydraulic Brake Accumulator Servicing
Figure 301/12-15-11-990-801 (Sheet 2 of 2)

TASK 12-15-11-420-801

3. Hydraulic Brake Accumulator Servicing

(Figure 301)

NOTE: This procedure is a scheduled maintenance task.

A. General

(1) This procedure supplies instructions to service the hydraulic brake accumulator.

(a) You must charge the brake accumulator with nitrogen.

(b) Use the charging instructions placard [6] adjacent to the brake accumulator pressure gauge [5] to find the correct accumulator charge pressure for a given temperature (Figure 301).

(c) Use the brake accumulator pressure gauge [5] adjacent to the brake accumulator charging valve [2] for indication of accumulator nitrogen gas pressure.

(d) The brake accumulator charging valve [2] is located on the aft wall of the right wheel well.

NOTE: The brake accumulator is located behind the access panel, aft of the right wheel well. It is not necessary to gain access to the brake accumulator to service it.

B. References

Reference	Title
10-11-05 P/B 201	CHOCK INSTALLATION
29-11-00-860-801	Hydraulic System A or B Pressurization (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)
32-00-01-480-801	Landing Gear Downlock Pins Installation (P/B 201)

C. Tools/Equipment

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

Reference	Description
COM-931	Thermometer - Hand Held, -112 to 1400 degree F (-80 to 760 degree C) Range
STD-1179	Tester - Pyrometer

D. Consumable Materials

Reference	Description	Specification
G00018	Nitrogen - Gaseous, Pressurizing, 99.5 Percent Pure	A-A-59503 Type I Grade B, MIL-PRF-27401 Type I Grade A

E. Location Zones

Zone	Area
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right
211	Flight Compartment - Left
212	Flight Compartment - Right

F. Hydraulic Brake Accumulator Servicing

SUBTASK 12-15-11-480-003

WARNING MAKE SURE THAT THE DOWNLOCK PINS ARE INSTALLED ON ALL THE LANDING GEAR. WITHOUT THE DOWNLOCK PINS, THE LANDING GEAR CAN RETRACT. THIS CAN CAUSE INJURIES TO PERSONS, AND DAMAGE TO EQUIPMENT.

(1) If the downlock pins are not installed in the nose and main landing gear, do this task: Landing Gear Downlock Pins Installation, TASK 32-00-01-480-801.

SUBTASK 12-15-11-480-004

(2) Make sure that the tires have chocks installed around them (PAGEBLOCK 10-11-05/201).

SUBTASK 12-15-11-860-004

(3) Release the parking brake.

SUBTASK 12-15-11-860-005

(4) For hydraulic systems A and B, do this task: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805.

SUBTASK 12-15-11-870-002

(5) Slowly operate the Captain's or First Officer's left and right brake pedals to the stop for a minimum of 10 times.

NOTE: This may take 15 or more brake applications (brake application: holding brakes for 1 second depressed and 1 second released).

NOTE: This will release the hydraulic pressure at the accumulator until only the gas pre-charge pressure remains.

NOTE: The brakes will go soft, and they will slowly spring back after the accumulator is depleted of hydraulic fluid pressure.

(6) Operate the brake pedal an additional 10 times.

(7) Make sure that there is no further pressure decrease on the gauge in the flight deck.

NOTE: This step will make sure that the accumulator is fully depleted of hydraulic fluid pressure.

SUBTASK 12-15-11-860-006

(8) The accumulator body temperature must be within 5 degrees C (9 degrees F) of ambient temperature across the entire length.

NOTE: This step is required as removing hydraulic pressure will allow the accumulator pre-charge gas to expand and chill the gas inside of the accumulator.

(a) Measure the surface temperature using a pyrometer, STD-1179 or thermometer, COM-931.

1) Make sure the accumulator surface temperature is uniform across the entire length.

NOTE: It may require 10 minutes or more for each end of the accumulator to reach a steady state temperature.

NOTE: Air may be blown on the accumulator to decrease the time required to reach a steady state temperature.

SUBTASK 12-15-11-780-001

(9) Examine the brake accumulator pressure on the brake accumulator pressure gauge [5].

(a) Use the charging instructions placard [6] to find the correct accumulator pressure for the current ambient temperature of the airplane.

NOTE: The charging instructions placard [6] is located next to the brake accumulator pressure gauge.

(b) Make sure that the pressure that shows on the brake accumulator pressure gauge [5] is within 50 psi (345 kPa) of the pressure you obtained from the graph on the charging instructions placard [6].

(c) If the pressure shown on the brake accumulator pressure gauge [5] is not in the correct pressure range of the charging instructions placard [6] do the subsequent steps.

SUBTASK 12-15-11-610-002

(10) Do these steps to charge the brake accumulator:

(a) Remove the cap [4] from the brake accumulator charging valve [2].

(b) Attach a source of nitrogen, G00018, to the brake accumulator charging valve [2] (Table 301).

WARNING DO NOT LOOSEN THE BODY OF THE BRAKE ACCUMULATOR CHARGING-VALVE. THE PRESSURE IN THE BRAKE ACCUMULATOR CAN QUICKLY PUSH THE CHARGING VALVE OFF THE MANIFOLD. THIS CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(c) Turn the outer swivel nut [3] of the brake accumulator charging valve [2] one turn counterclockwise.

(d) Pressurize the brake accumulator to the correct pressure shown on the charging instructions placard [6] next to the brake accumulator pressure gauge [5].

NOTE: Use the brake accumulator pressure gauge for indication of the brake accumulator pressure.

NOTE: The accumulator body temperature must be within 5 degrees C (9 degrees F) across the entire length.

(e) Torque the outer swivel nut [3] of the brake accumulator charging valve clockwise to 60 ±10 in-lb (7 ±1 N·m).

Table 301/12-15-11-993-801 Main Landing Gear Brake Accumulator Servicing (Fig. 301)

Item No.	Nomenclature	Fluid	Method of Application	Number of Locations
1	Gas Valve	A-A-59503 Type I, or MIL-P-27401 Type I	Charge	1

(f) Slowly operate the Captain's or First Officer's left and right brake pedals to the stop for a minimum of 10 times.

NOTE: This may take 15 or more brake applications (brake application: holding brakes for 1 second depressed and 1 second released).

NOTE: This will release the hydraulic pressure at the accumulator until only the gas pre-charge pressure remains.

NOTE: The brakes will go soft, and they will slowly spring back after the accumulator is depleted of hydraulic fluid pressure.

(g) Operate the brake pedal an additional 10 times.

(h) Make sure that there is no further pressure decrease on the gauge in the flight deck.

NOTE: This step will make sure that the accumulator is fully depleted of hydraulic fluid pressure.

(i) The accumulator body temperature must be within 5 degrees C (9 degrees F) of ambient temperature across the entire length.

NOTE: This step is required as removing hydraulic pressure will allow the accumulator pre-charge gas to expand and chill the gas inside of the accumulator.

1) Measure the surface temperature using a pyrometer, STD-1179 or thermometer, COM-931.

a) Make sure the accumulator surface temperature is uniform across the entire length.

NOTE: It may require 10 minutes or more for each end of the accumulator to reach a steady state temperature.

NOTE: Air may be blown on the accumulator to decrease the time required to reach a steady state temperature.

(j) Make sure that the pressure that shows on the brake accumulator pressure gauge [5] is within 50 psi (345 kPa) of the pressure you obtained from the graph on the charging instructions placard [6]. If not, repeat steps (c) through (h) until the pre-charge pressure stabilizes within charging instructions placard [6] requirements.

SUBTASK 12-15-11-610-003

(11) Do these steps to make sure that the brake accumulator pressure does not decrease.

(a) To pressurize the hydraulic system B to 3000 psi (20,684 kPa), do this task: Hydraulic System A or B Pressurization, TASK 29-11-00-860-801.

(b) Make sure that the brake accumulator pressure gauge [5] reads 3000 ±150 psi (20,684 ±1034 kPa).

NOTE: If you use the Engine Driven Pump (EDP) or the Electric Motor-Driven Pump (EMDP), to pressurize the system B, the brake accumulator pressure gauge must read within 150 psi (1034 kPa) of the hydraulic system B pressure.

(c) For the hydraulic A and B systems, do this task: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805.

(d) Slowly operate the Captain's or First Officer's left and right brake pedals to the stop for a minimum of 10 times.

NOTE: This may take 15 or more brake applications (brake application: holding brakes for 1 second depressed and 1 second released).

NOTE: This will release the hydraulic pressure at the accumulator until only the gas pre-charge pressure remains.

NOTE: The brakes will go soft, and they will slowly spring back after the accumulator is depleted of hydraulic fluid pressure.

(e) Operate the brake pedal an additional 10 times.

(f) Make sure that there is no further pressure decrease on the gauge in the flight deck.

NOTE: This step will make sure that the accumulator is fully depleted of hydraulic fluid pressure.

(g) The accumulator body temperature must be within 5 degrees C (9 degrees F) of ambient temperature across the entire length.

NOTE: This step is required as removing hydraulic pressure will allow the accumulator pre-charge gas to expand and chill the gas inside of the accumulator.

1) Measure the surface temperature using a pyrometer, STD-1179 or thermometer, COM-931.

a) Make sure the accumulator surface temperature is uniform across the entire length.

NOTE: It may require 10 minutes or more for each end of the accumulator to reach a steady state temperature.

NOTE: Air may be blown on the accumulator to decrease the time required to reach a steady state temperature.

(h) Make sure that the pressure that shows on the brake accumulator pressure gauge [5] is within 50 psi (345 kPa) of the pressure you obtained from the graph on the charging instructions placard [6].

SUBTASK 12-15-11-610-004

(12) Disconnect the source of nitrogen, G00018, from the brake accumulator charging valve [2].

SUBTASK 12-15-11-610-005

(13) Install the cap [4] on the brake accumulator charging valve [2].

SUBTASK 12-15-11-790-001

(14) If the brake accumulator pressure was less than the minimum service pressure before you serviced the accumulator, do the steps that follow:

NOTE: You can find the minimum pressure on the graph of ambient temperature and pressure on the charging instructions placard.

(a) Use a soap solution to make sure there are no gas leaks from these components:

1) The gas pressure tube connection to the brake accumulator.

2) The gas pressure tube connections to the manifold assembly [7].

3) The gas pressure tube connections to the brake accumulator pressure gauge [5].

4) The brake accumulator charging valve [2].

5) The brake accumulator pressure gauge dial face and gauge body.

——— END OF TASK ———

OXYGEN - SERVICING

1. General

A. This procedure contains this task:

(1) Crew Oxygen Cylinder Replacement

(2) Crew Oxygen Cylinder Dispatch Pressure Check

TASK 12-15-21-600-804

2. Crew Oxygen Cylinder Replacement

(Figure 301)

NOTE: This procedure is a scheduled maintenance task.

A. General

(1) Servicing of the crew oxygen system is by the replacement of the crew oxygen cylinder installed in the forward cargo bay.

(2) Servicing of the passenger oxygen system is by the replacement of the chemical generators which are installed in the service units (Passenger Service Unit (PSU), Attendant Service Unit (ASU), and Lavatory Service Unit (LSU)).

(3) Servicing of the portable oxygen cylinders is by the replacement of the portable oxygen cylinders with full portable oxygen cylinders.

(4) Use steel or composite oxygen cylinders on the same cylinder support structure.

(5) The shutoff valve on the 801307-00 steel cylinder or 806835-01 composite cylinder is fully open at approximately 6.5 revolutions.

(6) The shutoff valve on the B42365-1 composite cylinder is fully open at approximately 4.25 revolutions.

(7) For replacement between a steel or composite oxygen cylinder, a weight and balance change record for the aircraft is necessary.

(8) For replacement between cylinders of similar material and weight, no additional steps are needed.

(9) The oxygen requirements are as follows:

(a) Oxygen of specification MIL-0-27210 Type 1 is recommended.

(b) The oxygen must contain a minimum of 99.5% oxygen by volume.

(c) The oxygen must be free from all poisonous contamination to the maximum possible level.

(d) Use only oxygen specified for aviation use.

(e) Oxygen that is not aviation grade can contain too much water.

(f) Too much water in the oxygen system can freeze and cause blockage in the oxygen lines.

(g) The moisture contents must not be more than 0.02 milligrams of water vapor for each liter of gas at a temperature of 70°F (21°C) and a pressure of 30 in. (760 mm) of mercury.

(h) Refer to SAE (AS 1065A) for the permitted moisture quantity.

B. References

Reference	Title
20-40-11-910-801	Static Grounding (P/B 201)

(Continued)

Reference	Title
35-00-00-420-801	Installation of Caps on Open Oxygen Lines (P/B 201)
35-00-00-910-801	Oxygen System General Maintenance Practices (P/B 201)
35-12-00-800-801	Bleed the Crew Oxygen System Prior to System Maintenance or Repair (P/B 201)
35-12-11-000-801	Regulator/Transducer Assembly Removal (P/B 401)
35-12-11-400-801	Regulator/Transducer Assembly Installation (P/B 401)
50-11-01-000-801	Forward Cargo Compartment Forward Bulkhead Liner Removal (P/B 401)
50-11-01-400-801	Forward Cargo Compartment Forward Bulkhead Liner Installation (P/B 401)

C. Consumable Materials

Reference	Description	Specification
D50011	Grease - Perfluoropolyether - Christo-lube MCG111	
D50063	Grease - Perfluoropolyether, fuel and oxygen resistant - Krytox 240AC	MIL-PRF- 27617 Type III

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
11	Union	35-12-52-01-125	SIA 001-004
		35-12-52-03-128	SIA 005-999
12	Packing	35-12-52-01-165	SIA 001-004
		35-12-52-03-160	SIA 005-999

E. Location Zones

Zone	Area
122	Forward Cargo Compartment - Right

F. Access Panels

Number	Name/Location
121NW	PANEL ASSY - FORWARD CARGO COMPARTMENT FWD BULKHEAD

G. Prepare for the Replacement

SUBTASK 12-15-21-910-007

(1) Do this task: Oxygen System General Maintenance Practices, TASK 35-00-00-910-801.

SUBTASK 12-15-21-860-019

(2) Make sure that the airplane is grounded correctly (TASK 20-40-11-910-801).

SUBTASK 12-15-21-010-007

(3) Remove this access panel (TASK 50-11-01-000-801):

(a) FWD bulkhead liner:

Number	Name/Location
121NW	PANEL ASSY - FORWARD CARGO COMPARTMENT FWD BULKHEAD

SUBTASK 12-15-21-840-005

(4) Make sure that these items are free of contamination and clean:

(a) White gloves used to service oxygen system components

(b) Clothes

(c) Tools

(d) Oxygen cylinder

(e) All items used to service oxygen system components.

SUBTASK 12-15-21-020-022

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

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
F	7	C00156	OXYGEN IND

H. Crew Oxygen Cylinder Removal

SUBTASK 12-15-21-870-005

(1) Do this task: Bleed the Crew Oxygen System Prior to System Maintenance or Repair, TASK 35-12-00-800-801.

SUBTASK 12-15-21-020-015

(2) Do this task: Regulator/Transducer Assembly Removal, TASK 35-12-11-000-801.

SUBTASK 12-15-21-480-009

WARNING USE ONLY OXYGEN-CLEAN COMPONENTS IN THE OXYGEN SYSTEM. IF YOU DO NOT USE OXYGEN-CLEAN COMPONENTS, A FIRE OR AN EXPLOSION CAN OCCUR. THIS CAN CAUSE DAMAGE TO EQUIPMENT OR INJURIES TO PERSONS.

(3) If you do not install the regulator, transducer and coupling assembly [7] in five minutes, install the caps on the open oxygen lines as follows:

(a) Make sure that you use only oxygen clean fittings.

NOTE: Oxygen clean fittings come from a sealed container with a label for the oxygen system installation. Some fittings in the oxygen system are also used in other systems. Those fittings used in the other systems are not oxygen clean

(b) If it is necessary to clean parts, use the applicable oxygen procedures to clean the parts.

NOTE: This also applies to tube caps or plugs that must be as clean as the installation connections.

(c) Do this task: Installation of Caps on Open Oxygen Lines, TASK 35-00-00-420-801.

SUBTASK 12-15-21-020-016

(4) Disconnect the overboard discharge line [3] from the oxygen cylinder assembly [4].

SUBTASK 12-15-21-480-011

(5) Put the protective cap on the overboard discharge line [3].

SUBTASK 12-15-21-020-017

(6) Remove the union [11] of the overboard discharge line [3] from the shutoff valve [8] as follows:

(a) Remove the packing [12] from the union [11].

1) Discard the packing [12].

(b) Keep the union [11] for the oxygen cylinder assembly [4] installation.

SIA 002-999; SIA 001 POST SB 737-35-1163

SUBTASK 12-15-21-020-019

(7) Do these steps to remove the oxygen cylinder assembly [4].

(a) Remove the knurl nut [6], washer [18], and washer [19] from the T-bolt [10].

(b) Remove the aft cylinder ring [5].

(c) Keep the nut [6] and aft cylinder ring [5] in a safe area for installation.

(d) Move the oxygen cylinder assembly [4] out from the oxygen cylinder rack [9].

(e) Remove the oxygen cylinder assembly [4] from the airplane.

(f) Install the protective cap on the outlet port of the oxygen cylinder with lockwire or cotter pin(s).

SIA 001 PRE SB 737-35-1163

SUBTASK 12-15-21-020-020

(8) Do these steps to remove the oxygen cylinder assembly [4]:

(a) Remove the nuts [6] from the T-bolts [10] on the band strap clamps [13].

(b) Keep the nuts [6] in a safe area for installation.

(c) Open the band strap clamps [13].

(d) Move the oxygen cylinder assembly [4] out from the oxygen cylinder rack [9].

(e) Remove the oxygen cylinder assembly [4] from the airplane.

(f) Install the protective cap on the outlet port of the oxygen cylinder with lockwire or cotter pin(s).

SIA ALL

SUBTASK 12-15-21-480-010

WARNING USE ONLY OXYGEN-CLEAN COMPONENTS IN THE OXYGEN SYSTEM. IF YOU DO NOT USE OXYGEN-CLEAN COMPONENTS, A FIRE OR AN EXPLOSION CAN OCCUR. THIS CAN CAUSE DAMAGE TO EQUIPMENT OR INJURIES TO PERSONS.

(9) If you do not install the regulator, transducer and coupling assembly [7] in five minutes, install caps on the open oxygen lines as follows:

(a) Make sure that you use only oxygen clean fittings.

NOTE: Oxygen clean fittings come from a sealed container with a label for the oxygen system installation. Some fittings in the oxygen system are also used in other systems. Those fittings used in the other systems are not oxygen clean

(b) If it is necessary to clean parts, use the applicable oxygen procedures to clean the parts.

NOTE: This also applies to tube caps or plugs that must be as clean as the installation connections.

(c) Do this task: Installation of Caps on Open Oxygen Lines, TASK 35-00-00-420-801.

I. Crew Oxygen Cylinder Installation

SUBTASK 12-15-21-860-020

(1) Do these steps to make sure that the oxygen cylinder assembly [4] replacement obeys the requirements:

(a) Make sure that the oxygen cylinder assembly [4] is fully serviced.

(b) Make sure that the oxygen cylinder assembly [4] have no contamination.

SUBTASK 12-15-21-860-021

(2) Do these steps to prepare the replacement oxygen cylinder assembly [4] for the installation:

(a) Remove the lockwire or cotter pin(s) that hold the protective cap on the outlet port of the replacement oxygen cylinder assembly [4].

(b) Slowly loosen the protective cap to bleed off the remaining gas.

(c) Remove the protective cap.

(d) Install the new packing [12] on the union [11].

(e) Install the union [11] on the shutoff valve [8].

1) Tighten the union [11] to 190 ±10 in-lb (21 ±1 N·m).

SIA 001 PRE SB 737-35-1163

SUBTASK 12-15-21-420-006

CAUTION

BEFORE YOU INSTALL THE OXYGEN CYLINDER, MAKE SURE THAT THE CORRECT BAND CLAMPS ARE INSTALLED. INCORRECT BAND CLAMPS CAN CAUSE A LOOSE OXYGEN CYLINDER INSTALLATION. INJURIES TO PERSONNEL, AND DAMAGE TO EQUIPMENT CAN OCCUR.

(3) Make sure that the correct band strap clamps [13] are installed.

NOTE: Oxygen cylinder P/N 806835-01 or P/N 801307-00 require band clamps P/N BACC10FY094SE. Oxygen cylinder B42365-1 install band clamps P/N BACC10FY095SE.

SUBTASK 12-15-21-020-021

(4) If it is necessary to replace the band clamps, do these steps:

(a) Remove the pads from the band clamps.

(b) Remove band strap clamps [13] from the oxygen cylinder rack [9] mounts.

(c) Install the correct band strap clamps [13] in the oxygen cylinder rack [9] mounts with the T-bolts [10] positioned upright and inboard.

(d) Install the pads on the band strap clamps [13] as follows:

1) Position the top pad [14], bottom pad [15], and inboard pad [16] as shown.

NOTE: Each pad is a different size.

2) Install the pads on the band clamp with the open side of the pads outboard of the band strap clamps [13].

SIA ALL

SUBTASK 12-15-21-420-005

(5) Do these steps to install the oxygen cylinder assembly [4]:

(a) Make sure that you use only oxygen clean fittings.

NOTE: Oxygen clean fittings come from a sealed container with a label for the oxygen system installation. Some fittings in the oxygen system are also used in other systems. Those fittings used in the other systems are not oxygen clean

(b) If it is necessary to clean parts, use the applicable oxygen procedures to clean the parts.

NOTE: This also applies to tube caps or plugs that must be as clean as the installation connections.

(c) Go to the forward cargo compartment with the full oxygen cylinder assembly [4].

(d) Remove the protective caps and plugs from the overboard discharge line [3] and crew oxygen supply line [2].

WARNING USE ONLY OXYGEN-CLEAN COMPONENTS IN THE OXYGEN SYSTEM. IF YOU DO NOT USE OXYGEN-CLEAN COMPONENTS, A FIRE OR AN EXPLOSION CAN OCCUR. THIS CAN CAUSE DAMAGE TO EQUIPMENT OR INJURIES TO PERSONS.

(e) Put the replacement oxygen cylinder assembly [4] on the oxygen cylinder rack [9].

SIA 002-999; SIA 001 POST SB 737-35-1163

(f) Push the replacement oxygen cylinder assembly [4] forward until it is fully engaged in the forward cylinder ring [1].

(g) Put the aft cylinder ring [5] in its installed position.

1) Install the T-bolt [10], washer [18], washer [19], and knurl nut [6] to the aft cylinder ring [5].

a) Make sure that the end of the trunnion [20] is installed in the same direction as the end of the T-bolt [10] (View D, Figure 301).

2) Tighten knurl nut [6] finger tight.

3) Try to move the cylinder forward, then aft.

4) If the cylinder moves, tighten the knurl nut [6] as follows:

a) Make sure that one or more threads of the T-bolt [10] extend through the nut [6].

CAUTION DO NOT TIGHTEN THE KNURL NUT TOO TIGHT. THIS CAN CAUSE THE AFT CYLINDER RING TO TWIST. IF YOU DO NOT OBEY INSTRUCTIONS, DAMAGE TO EQUIPMENT CAN OCCUR.

b) Continue to tighten the knurl nut [6] finger tight to hold the cylinder in place.

c) Make sure that the T-bolt [10] holds the oxygen cylinder tightly to prevent all forward or aft movement.

SIA 001 PRE SB 737-35-1163

(h) Push the replacement oxygen cylinder assembly [4] forward until it is fully engaged against the end stop of the oxygen cylinder rack [9].

SIA ALL

(i) Align the replacement oxygen cylinder assembly [4] with the overboard discharge line [3].

(j) Connect the overboard discharge line [3] to the replacement oxygen cylinder assembly [4].

SIA 001 PRE SB 737-35-1163

(k) Do these steps to secure the cylinder in its installed position.

1) Close the band strap clamps [13].

2) Apply Christo-lube MCG111 grease, D50011, or Krytox 240AC perfluoropolyether grease, D50063, to the strap T-bolts [10].

3) Install the nuts [6] on the T-bolts [10].

a) Tighten until the band strap clamps [13] contact the cylinder.

SIA 001 PRE SB 737-35-1163 (Continued)

4) Make sure that the cylinder is against the end stop.
   a) Continue to tighten the nuts [6] of the T-bolts [10].
5) Try to move the cylinder forward, then aft.
6) If the cylinder moves, continue to tighten the nuts [6] of the T-bolts [10].

SIA ALL

SUBTASK 12-15-21-410-008

(6) Do this task: Regulator/Transducer Assembly Installation, TASK 35-12-11-400-801.

NOTE: This task does a leak check of the connections and an electrical check of the oxygen pressure indication.

SUBTASK 12-15-21-420-008

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

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
F	7	C00156	OXYGEN IND

SUBTASK 12-15-21-210-022

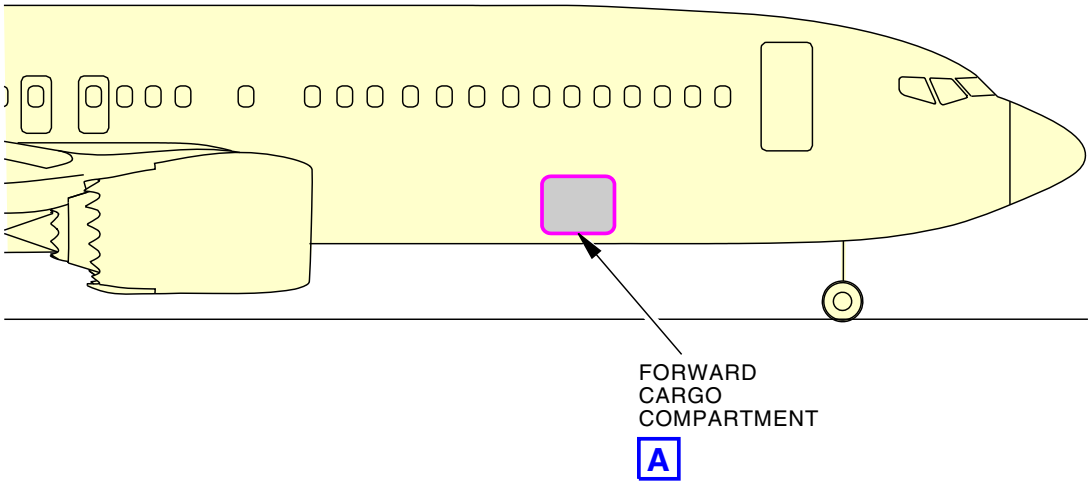
(8) Make sure that the cap for the oxygen cylinder is attached to the regulator to prevent damage to equipment.

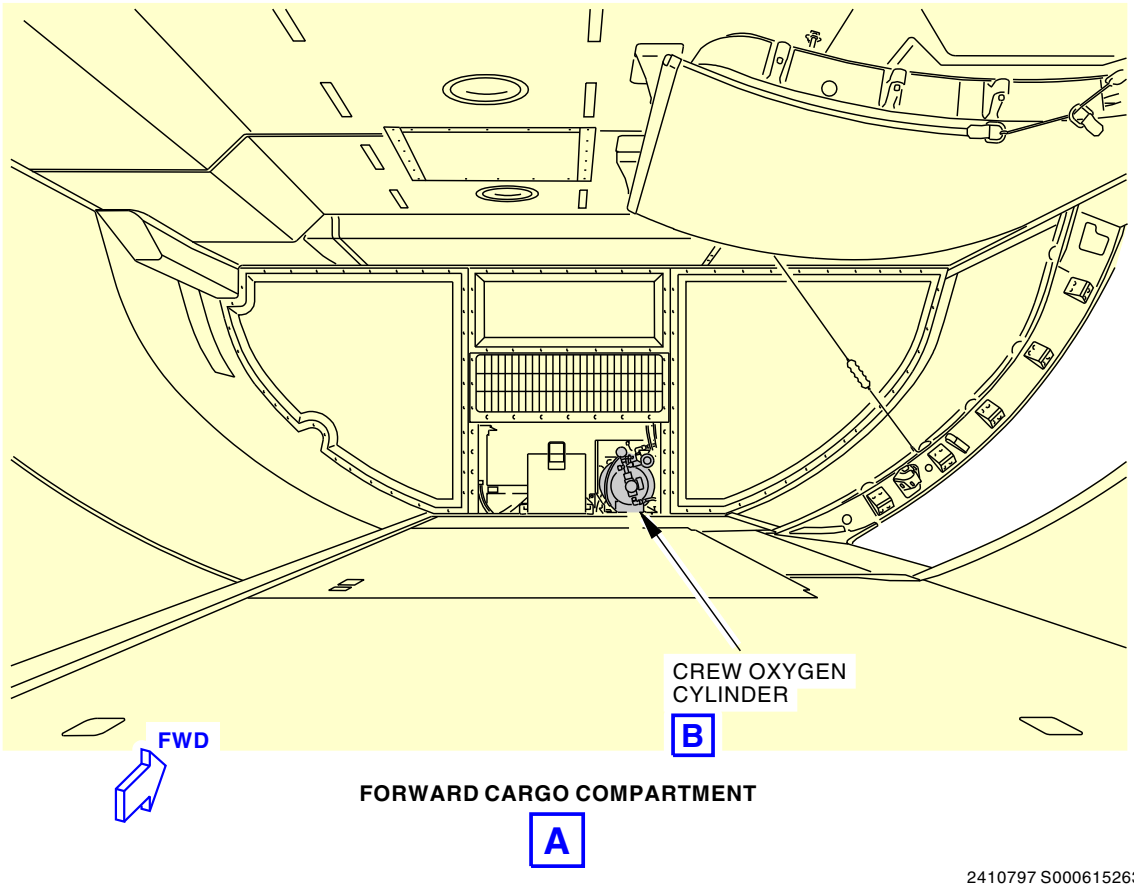
SUBTASK 12-15-21-410-009

(9) Install this access panel (TASK 50-11-01-400-801):
   (a) FWD bulkhead liner:

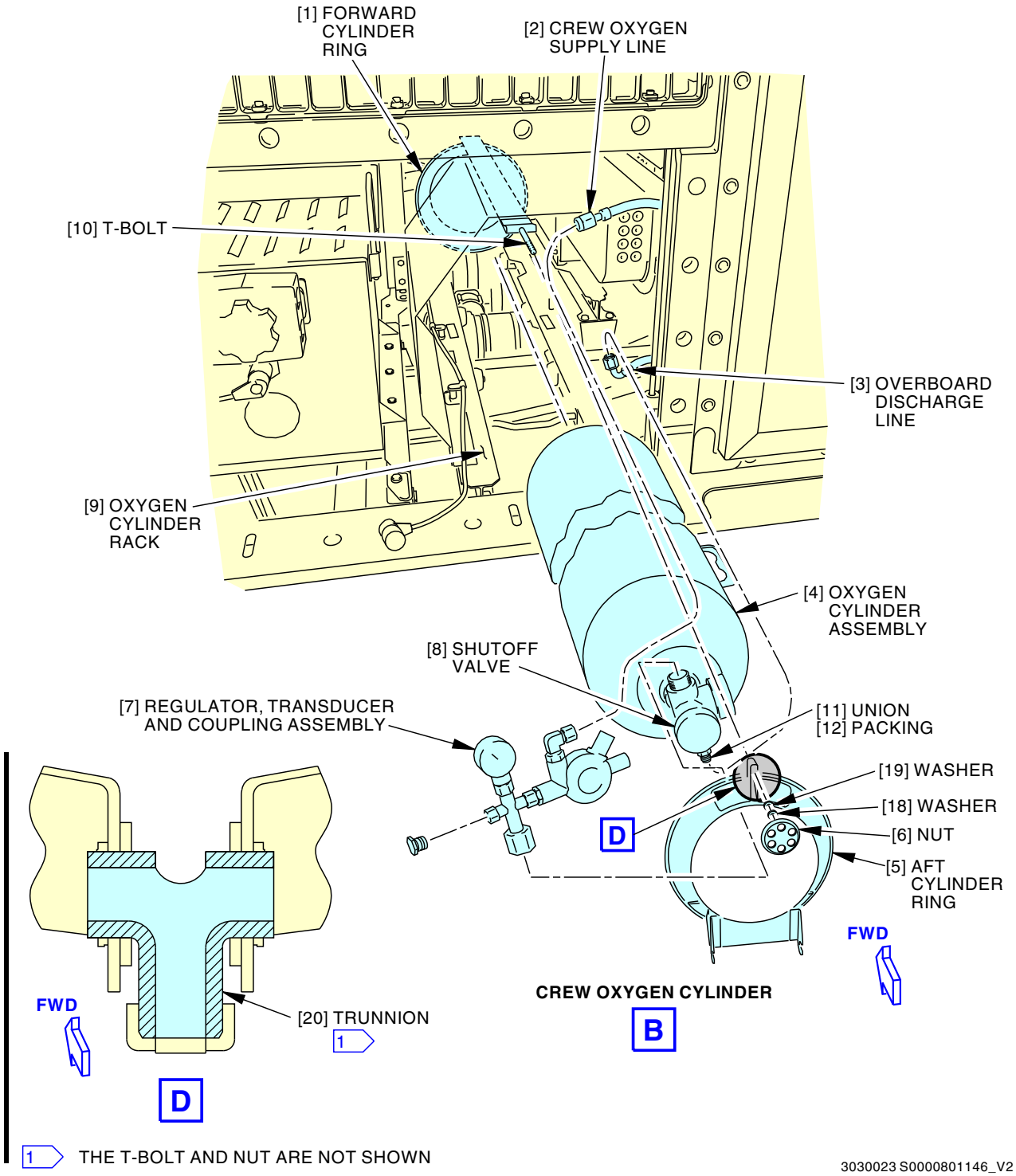
Number	Name/Location
121NW	PANEL ASSY - FORWARD CARGO COMPARTMENT FWD BULKHEAD

END OF TASK

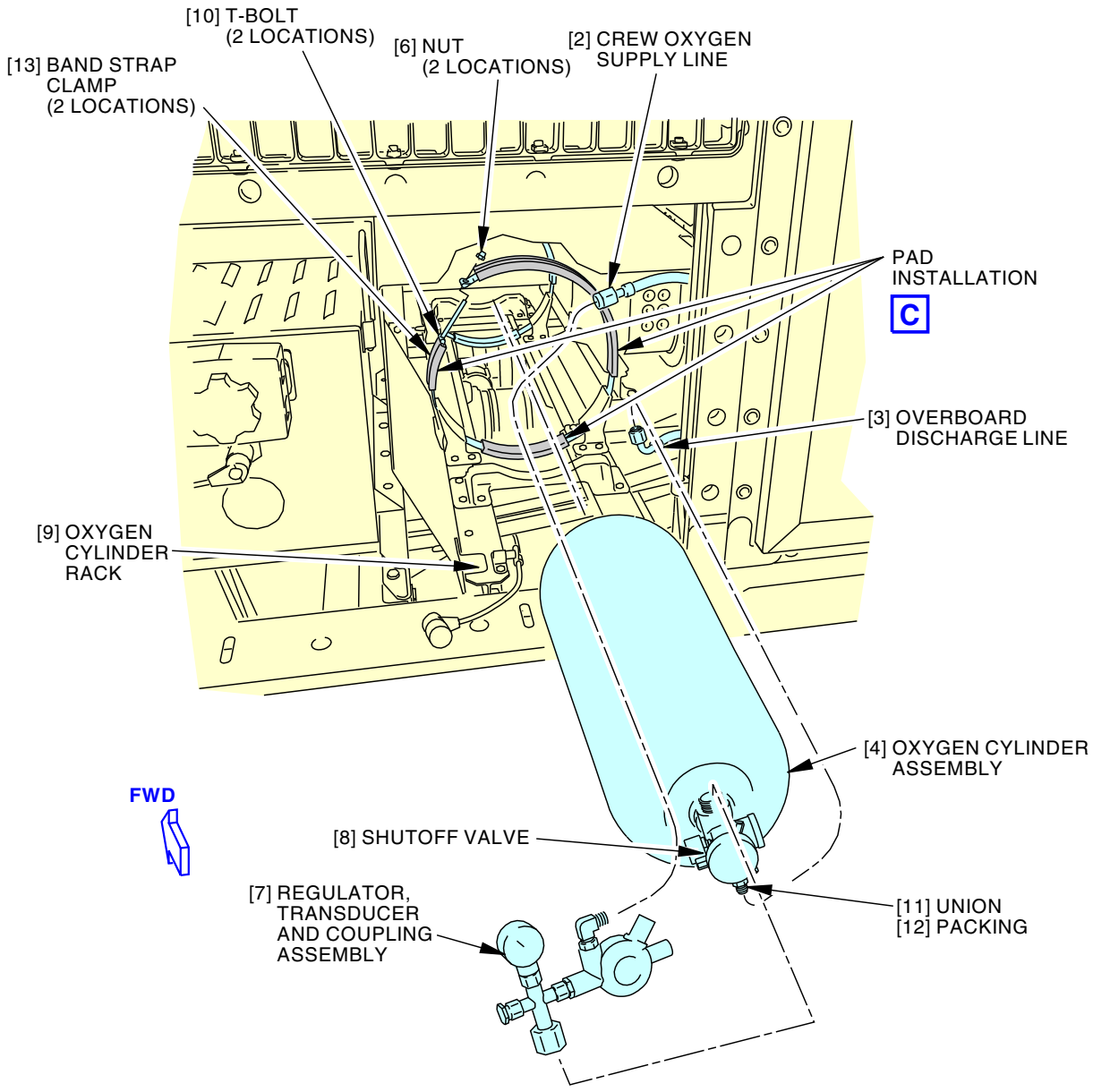




Crew Oxygen Cylinder Replacement
Figure 301/12-15-21-990-806 (Sheet 1 of 4)



Crew Oxygen Cylinder Replacement
Figure 301/12-15-21-990-806 (Sheet 2 of 4)



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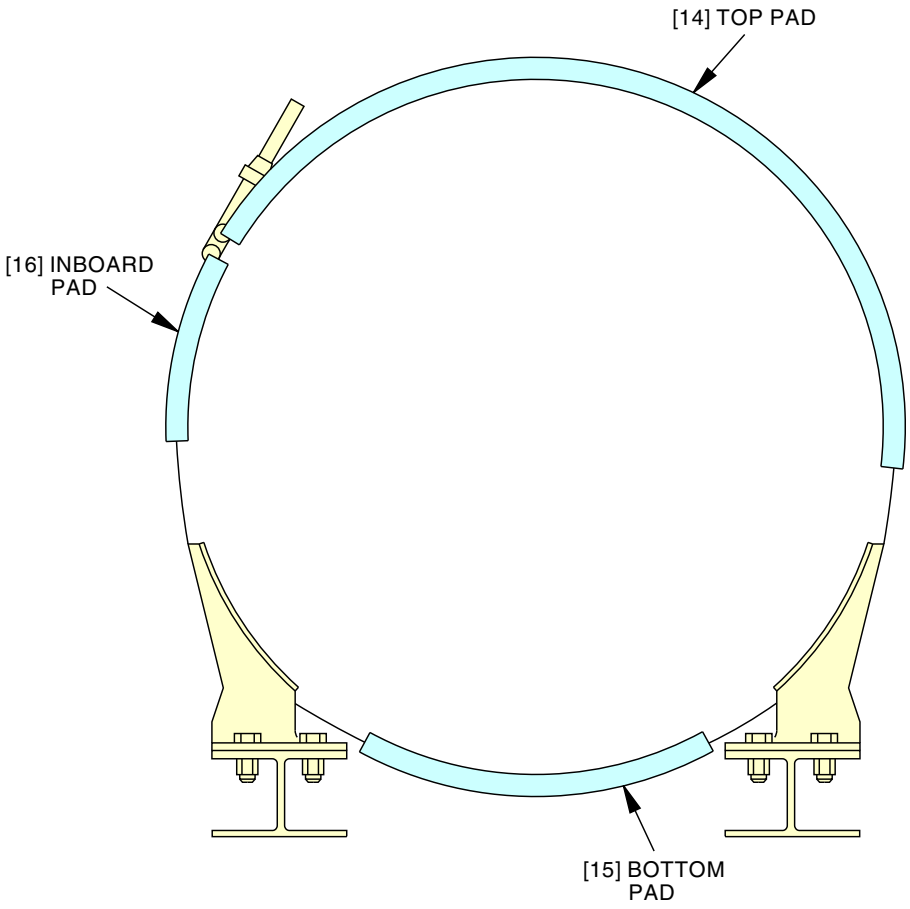
Crew Oxygen Cylinder Replacement
Figure 301/12-15-21-990-806 (Sheet 3 of 4)



**PAD INSTALLATION
(VIEW IN THE FORWARD DIRECTION)**

C

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**Crew Oxygen Cylinder Replacement
Figure 301/12-15-21-990-806 (Sheet 4 of 4)**

TASK 12-15-21-200-801

3. Crew Oxygen Cylinder Dispatch Pressure Check

A. References

Reference	Title
35-00-00-910-801	Oxygen System General Maintenance Practices (P/B 201)

B. Location Zones

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

C. Procedure

SUBTASK 12-15-21-910-008

(1) To read and obey the safety precautions and general instructions for the oxygen system before you do the maintenance, do this task: Oxygen System General Maintenance Practices, TASK 35-00-00-910-801.

SUBTASK 12-15-21-210-023

(2) Make sure the pressure shown on the pressure gage is above the minimum pressure necessary for dispatch.

NOTE: Contact dispatch or your flight operations organization for minimum dispatch pressure.

——— END OF TASK ———

MAIN LANDING GEAR SHOCK STRUT - SERVICING

1. General

A. This procedure has these tasks:

(1) Main Landing Gear Shock Strut Fluid Check

(2) Main Landing Gear Shock Strut Servicing, Airplane on the Ground

(3) Main Landing Gear Shock Strut Servicing, Airplane on Jacks

TASK 12-15-31-610-801

2. Main Landing Gear Shock Strut Fluid Check

(Figure 301)

A. General

(1) This procedure supplies instructions to check the level of the hydraulic fluid in the shock strut of the main landing gear.

(a) To do a check of the fluid level, you must measure the pressure and the extension of the shock strut twice, at two different shock strut extensions. The greater the difference in the shock strut extensions, the more accurate the fluid measurement will be.

1) You can obtain the different shock strut extension one of two ways:

a) You can take the shock strut measurements at two different airplane weights, for example, before and after fueling the airplane, or,

b) If the airplane is on jacks, you can use floor jacks or the airplane jacks to compress or extend the shock struts.

2) You should have a minimum difference of 2 in. (51 mm) between the two shock strut extensions to do the check.

3) There are no maximum strut extension allowable difference measurements between the left hand and right hand struts.

4) The extension and pressure measurements for both the left hand and right hand struts must lie within the respective strut servicing bands for proper operation.

B. References

Reference	Title
32-00-01-480-801	Landing Gear Downlock Pins Installation (P/B 201)

C. Tools/Equipment

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

Reference	Description
SPL-1521	Tool - Strut Inflation, Landing Gear Part #: F70200-35 Supplier: 81205 Opt Part #: F70200-1 Supplier: 81205 Opt Part #: F70200-14 Supplier: 81205 Opt Part #: F70200-17 Supplier: 81205 Opt Part #: F70200-18 Supplier: 81205
STD-1157	Gauge - Pressure, 0-3000 PSIG (0-20685 KPa)

D. Consumable Materials

Reference	Description	Specification
G00018	Nitrogen - Gaseous, Pressurizing, 99.5 Percent Pure	A-A-59503 Type I Grade B, MIL-PRF-27401 Type I Grade A
G02314	Air - Compressed, Breathing	BB-A-1034 Source I Grade A

E. Location Zones

Zone	Area
734	Left Main Landing Gear
744	Right Main Landing Gear

F. Precautions for the Tail Stand

SUBTASK 12-15-31-840-001

(1) Obey the tail stand precautions that follow:

CAUTION DO NOT TOW THE AIRPLANE WHILE THE TAIL STAND IS INSTALLED. WHEN YOU TOW THE AIRPLANE WHILE THE TAIL STAND IS INSTALLED, IT CAN CAUSE DAMAGE TO EQUIPMENT.

(a) Do not tow the airplane while the tail stand is installed.

CAUTION DO NOT DEFLATE OR SERVICE THE SHOCK STRUTS WHILE THE TAIL STAND IS INSTALLED. IF YOU DEFLATE OR SERVICE THE SHOCK STRUTS, THE LOAD ON THE TAIL STAND CAN BE TOO LARGE. THIS CAN CAUSE DAMAGE TO EQUIPMENT.

(b) Do not deflate or service the shock struts while the tail stand is installed.

CAUTION DO NOT JACK THE AIRPLANE AT THE MAIN JACK POINTS OR AXLES WHILE THE TAIL STAND IS INSTALLED. IF YOU JACK THE AIRPLANE, THE LOAD ON THE TAIL STAND CAN BE TOO HIGH WHICH CAN CAUSE DAMAGE TO EQUIPMENT.

(c) Do not jack the airplane at the main jack points or axles while the tail stand is installed.

G. Prepare to Check the Hydraulic Fluid Level in the Shock Strut

SUBTASK 12-15-31-480-001

WARNING MAKE SURE THAT THE DOWNLOCK PINS ARE INSTALLED ON ALL THE LANDING GEAR. WITHOUT THE DOWNLOCK PINS, THE LANDING GEAR CAN RETRACT. THIS CAN CAUSE INJURIES TO PERSONS, AND DAMAGE TO EQUIPMENT.

(1) If the downlock pins are not installed in the nose and main landing gear, do this task: Landing Gear Downlock Pins Installation, TASK 32-00-01-480-801.

H. Examine the Fluid Level of the Shock Strut for the Main Landing Gear

WARNING

KEEP ALL PERSONS AND EQUIPMENT AWAY FROM THE AIRPLANE WHEN YOU CHANGE SHOCK STRUT HEIGHT OF THE LANDING GEAR. THIS CHANGE WILL CAUSE THE AIRPLANE ATTITUDE TO MOVE. IF YOU DO NOT OBEY, DAMAGE TO EQUIPMENT AND INJURY TO PERSONNEL CAN OCCUR.

NOTE: To do a check of the fluid level, you must measure the pressure and the extension of the shock strut twice, at different shock strut extensions.

SUBTASK 12-15-31-200-001

(1) Check the hydraulic fluid level with the airplane at the first shock strut extension (Figure 302):

(a) Remove the gas valve cap [105] and use a pressure gauge (0-3000 PSIG), STD-1157 to measure the pressure of the shock strut [101].

NOTE: You must loosen the swivel nut [107] to release the gas from the shock strut [101].

(b) Measure the extension of the shock strut [101] (Dimension X) (Figure 301).

(c) Compare the extension and pressure you measured with the servicing chart (Figure 302).

(d) If the shock strut [101] pressure and the shock strut extension are not on the servicing curve on the servicing chart, do one of the steps that follow:

1) If the extension and pressure you measured are above the servicing curve, deflate the shock strut [101] until they are on the servicing curve.

2) If the extension and pressure you measured are below the servicing curve, use the tool, SPL-1521 to inflate the shock strut [101] with nitrogen, G00018 until they are on the servicing curve (Table 301).

NOTE: If dry nitrogen is not available, you can use air, G02314 as an alternative to inflate the shock strut [101].

Table 301/12-15-31-993-801 Main Landing Gear Shock Strut Servicing

Item No.	Nomenclature	Fluid	Method of Application	Number of Locations
2	Gas Valve	BB-N-411 Type I, or MIL-P-27401 Type I, or A-A-59503, Type 1, Grade B, or BB-A-1034 (dry air)	Charge	1

SUBTASK 12-15-31-200-002

(2) Check the hydraulic fluid level with the airplane at the second shock strut extension (Figure 302):

(a) Measure the pressure and extension of the shock strut [101].

(b) Compare the extension and pressure you measured with the servicing chart.

(c) If the measured extension and pressure are on the curve in the service chart, the fluid level is correct.

(d) If the measured extension and pressure are not on the curve in the service chart, the fluid level is not correct, do this task: Main Landing Gear Shock Strut Servicing, Airplane on the Ground, TASK 12-15-31-610-802.

1) If you cannot service the shock strut immediately, you can add or remove nitrogen until the measured extension and pressure are on the service chart.

NOTE: If the amount of fluid in the shock strut is very low, you will not be able to obtain the correct extension and pressure on the servicing chart; you will need to service the shock strut before you dispatch the airplane.

SUBTASK 12-15-31-420-001

(3) Tighten the swivel nut [107] to 5 ft-lb (6.8 N·m) to 7 ft-lb (9.5 N·m).

SUBTASK 12-15-31-420-002

(4) Install the gas valve cap [105].

——— END OF TASK ———

TASK 12-15-31-610-802

3. Main Landing Gear Shock Strut Servicing, Airplane on the Ground

(Figure 301)

NOTE: This procedure is a scheduled maintenance task.

A. General

(1) This procedure supplies instructions for the servicing of the shock strut of the main landing gear.

B. References

Reference	Title
12-15-61-610-801	Landing Gear Shock Strut Fluids (P/B 301)
32-00-01-480-801	Landing Gear Downlock Pins Installation (P/B 201)

C. Tools/Equipment

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

Reference	Description
COM-1532	Cart - Servicing, Strut Oil Part #: 1104 Supplier: 30188 Part #: 8774B Supplier: 94861 Part #: 8844A Supplier: 94861 Part #: 8844B Supplier: 94861 Part #: HM-GT1-C-VS Supplier: 1HV74 Part #: PF53481-9P Supplier: 94861 Part #: PF54124-3P Supplier: 94861 Part #: PF55451-1 Supplier: 94861 Part #: PF55451-23 Supplier: 94861 Part #: SH001 Supplier: D2029 Opt Part #: 8774 Supplier: 94861 Opt Part #: HM-GT1-C Supplier: 1HV74
COM-1588	Wrench - Torque (0-50 ft-lbs) Part #: TE50FFUA Supplier: 55719 Part #: TE50FUA Supplier: 55719

(Continued)

Reference	Description
SPL-1521	Tool - Strut Inflation, Landing Gear Part #: F70200-35 Supplier: 81205 Opt Part #: F70200-1 Supplier: 81205 Opt Part #: F70200-14 Supplier: 81205 Opt Part #: F70200-17 Supplier: 81205 Opt Part #: F70200-18 Supplier: 81205
SPL-1829	Valve - Drain, Landing Gear Shock Strut Oil Part #: J32108-16 Supplier: 81205 Opt Part #: A32066-1 Supplier: 81205
STD-1110	Container - Hydraulic Fluid Resistant, 5 Gallon (19 Liter)
STD-1157	Gauge - Pressure, 0-3000 PSIG (0-20685 KPa)
STD-6839	Wrench - Torque (0-150 in-lbs) with Dial Indicator or Digital Readout

D. Consumable Materials

Reference	Description	Specification
G00018	Nitrogen - Gaseous, Pressurizing, 99.5 Percent Pure	A-A-59503 Type I Grade B, MIL-PRF-27401 Type I Grade A
G01048	Lockwire - MS20995C32, Corrosion Resistant Steel - 0.032 Inch (0.8128 mm) Diameter	NASM20995
G02314	Air - Compressed, Breathing	BB-A-1034 Source I Grade A

E. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
103	Valve	32-11-21-01-025	SIA ALL
106	Gas valve	32-11-21-01-020	SIA ALL

F. Location Zones

Zone	Area
734	Left Main Landing Gear
744	Right Main Landing Gear

G. Precautions for the Tail Stand

SUBTASK 12-15-31-840-002

(1) Obey the tail stand precautions that follow:

CAUTION

DO NOT TOW THE AIRPLANE WHILE THE TAIL STAND IS INSTALLED. WHEN YOU TOW THE AIRPLANE WHILE THE TAIL STAND IS INSTALLED, IT CAN CAUSE DAMAGE TO EQUIPMENT.

(a) Do not tow the airplane while the tail stand is installed.

CAUTION

DO NOT DEFLATE OR SERVICE THE SHOCK STRUTS WHILE THE TAIL STAND IS INSTALLED. IF YOU DEFLATE OR SERVICE THE SHOCK STRUTS, THE LOAD ON THE TAIL STAND CAN BE TOO LARGE. THIS CAN CAUSE DAMAGE TO EQUIPMENT.

(b) Do not deflate or service the shock struts while the tail stand is installed.

CAUTION DO NOT JACK THE AIRPLANE AT THE MAIN JACK POINTS OR AXLES WHILE THE TAIL STAND IS INSTALLED. IF YOU JACK THE AIRPLANE, THE LOAD ON THE TAIL STAND CAN BE TOO HIGH WHICH CAN CAUSE DAMAGE TO EQUIPMENT.

(c) Do not jack the airplane at the main jack points or axles while the tail stand is installed.

H. Prepare to Do the Servicing of the Shock Strut

SUBTASK 12-15-31-040-001

WARNING MAKE SURE THAT YOU INSTALL THE DOWNLOCKS ON THE NOSE AND MAIN LANDING GEAR. WITHOUT THE DOWNLOCKS, THE LANDING GEAR CAN RETRACT AND CAUSE INJURIES TO PERSONS AND DAMAGE THE EQUIPMENT.

(1) If the downlock pins are not installed in the nose and main landing gear, do this task: Landing Gear Downlock Pins Installation, TASK 32-00-01-480-801

SUBTASK 12-15-31-020-001

WARNING MAKE SURE THAT PERSONNEL AND EQUIPMENT ARE AWAY FROM THE AREA BELOW THE WING BEFORE YOU DEFLATE THE SHOCK STRUT. WHEN YOU DEFLATE ONE SHOCK STRUT, THE WINGTIP CAN MOVE DOWN. THIS CAN CAUSE INJURIES TO PERSONNEL OR DAMAGE TO EQUIPMENT.

(2) Deflate the shock strut [101] for the main landing gear:

(a) Remove the cap [105] for the gas valve [106].

WARNING DO NOT REMOVE THE VALVE BODY UNTIL YOU DEFLATE THE SHOCK STRUT FULLY. THE AIR PRESSURE CAN BLOW THE VALVE BODY OUT AND CAUSE INJURIES TO PERSONNEL.

(b) Loosen the gas valve swivel nut [107] a maximum of two turns.

NOTE: Fluid in the shock strut will have bubbles when you release the pressure. Deflate the shock strut slowly to prevent the leakage of the fluid through the gas valve.

(c) Loosen the gas valve swivel nut [107] fully when all of the pressure in the shock strut [101] is released.

NOTE: The shock strut is fully deflated when the dimension "X" is 0.81 in. (20.57 mm) to 1.11 in. (28.19 mm).

SUBTASK 12-15-31-680-001

(3) If you need to drain oil from the shock strut [101], do these steps:

(a) Remove the lockwire from the cap [102].

1) Discard the lockwire.

(b) Remove the cap [102] from the oil charging valve [103].

(c) Put a 5 gallon (19 liter) hydraulic fluid resistant container, STD-1110, in a position to catch the shock strut fluid when the oil charging valve [103] is opened.

(d) Install the drain equipment on the oil charging valve [103]:

NOTE: The tool, landing gear shock strut drain valve, SPL-1829, could also be used, but it will take much longer to drain the shock strut.

1) Cut a length of plastic tubing, long enough to reach the container on the floor.
2) Insert a small allen wrench in the end of the length of tubing, such that the long end of the allen wrench is flush with the end of the tube and the short end penetrates the wall of the tube.
3) Install the tubing on the oil charging valve [103] such that the allen wrench goes into the check valve and holds it open to drain the hydraulic fluid.

(e) Remove the drain equipment when you have removed all of the shock strut oil.

I. Service the Shock Strut

SUBTASK 12-15-31-600-001

CAUTION USE ONLY THE TYPE OF FLUID THAT IS SPECIFIED IN THIS TASK TO FILL THE SHOCK STRUT. IF YOU USE AN INCORRECT FLUID, IT CAN CAUSE DAMAGE TO THE SEALS.

(1) Fill the shock strut with hydraulic fluid (Table 302):

Table 302/12-15-31-993-802 Main Landing Gear Shock Strut Servicing

Item No.	Nomenclature	Fluid	Method of Application	Number of Locations
1	Shock Strut	BMS 3-32, Type I, II *[1]	Fill	1
2	Gas Valve	BB-N-411 Type I, or MIL-P-27401 Type I, or A-A-59503, Type 1, Grade B, or BB-A-1034(dry air)	Charge	1

*[1] For usage and alternative fluids, refer to Landing Gear Shock Strut Fluids, TASK 12-15-61-610-801.

(a) Make sure that the cap [102] for the oil charging valve [103] is removed.
(b) Make sure that the cap [105] for the gas valve [106] is removed.
(c) Attach the oil charging line from servicing cart, COM-1532, to the oil charging valve [103].
(d) Make sure that the gas valve swivel nut [107] is fully open.
(e) Attach a hose to the gas valve [106] with the end of the hose in a drain bucket.

CAUTION CLEAN THE HYDRAULIC FLUID FROM THE TIRES IMMEDIATELY IF THE FLUID FALLS ON THE TIRES. THE FLUID CAN CAUSE DETERIORATION OF THE TIRES.

(f) Fill the shock strut with hydraulic fluid until the hydraulic fluid flows out of the gas valve [106] and into a hydraulic fluid resistant container.
1) Continue to fill the shock strut [101] until the hydraulic fluid which flows into the container is free of bubbles.

(g) Remove the oil charging line.

SUBTASK 12-15-31-420-003

(2) Install the cap [102] on the oil charging valve [103].
(a) Tighten the cap [102] to 60 in-lb (6.78 N·m) - 84 in-lb (9.49 N·m).
(b) Install MS20995C32 lockwire, G01048, on the cap [102].
1) Use the double twist method to twist MS20995C32 lockwire, G01048.

SUBTASK 12-15-31-020-002

(3) Remove the hose from the gas valve [106].

SUBTASK 12-15-31-600-002

(4) Inflate the shock strut [101] for the main landing gear (Table 302):

(a) Install the tool, SPL-1521, on the gas valve [106].

(b) Inflate the shock strut [101] with nitrogen, G00018, until the dimension "X" is approximately 3.5 in. (88.9 mm) or you reach 1700 psig (11,721 kPa).

NOTE: If nitrogen is not available, you can use air, G02314, as an alternative to inflate the shock strut.

(c) Use a pressure gauge (0-3000 PSIG), STD-1157, to measure the pressure of the shock strut.

(d) Inflate or deflate the shock strut until the shock strut extension dimension "X" for the pressure is on the servicing curve on the servicing chart.

NOTE: Dimension "X" and the pressure must be within the servicing curve for a correctly serviced shock strut.

SUBTASK 12-15-31-420-004

(5) Tighten the gas valve [106]:

(a) Tighten the swivel nut [107] to 5.0 ft-lb (6.8 N·m) - 7.0 ft-lb (9.5 N·m) with torque wrench (0-50 ft-lbs), COM-1588 or torque wrench (0-150 in-lbs), STD-6839.

SUBTASK 12-15-31-020-003

(6) Remove the tool, SPL-1521, from the gas valve [106].

SUBTASK 12-15-31-610-018

(7) Use a soap solution to make sure that there are no gas leaks from the gas valve [106].

SUBTASK 12-15-31-420-005

(8) Install the gas valve cap [105].

SUBTASK 12-15-31-020-004

(9) Five to ten in-service landings after a complete oil and nitrogen servicing, do the steps that follow to check the pressure of the shock strut:

NOTE: The shock strut fluid can absorb nitrogen after a complete servicing, reducing the shock strut “X” dimension.

(a) Check the pressure of the shock strut:

1) Remove the cap [105] for the gas valve [106].

(b) Loosen the swivel nut [107].

1) Use a pressure gauge (0-3000 PSIG), STD-1157, to measure the pressure of the shock strut.

2) Make sure that the pressure you measure is still correct for the extension of the shock strut (Figure 302).

(c) If the shock strut does not have enough pressure, inflate the shock strut for the main landing gear (Table 302):

1) Install the tool, SPL-1521, on the gas valve [106].

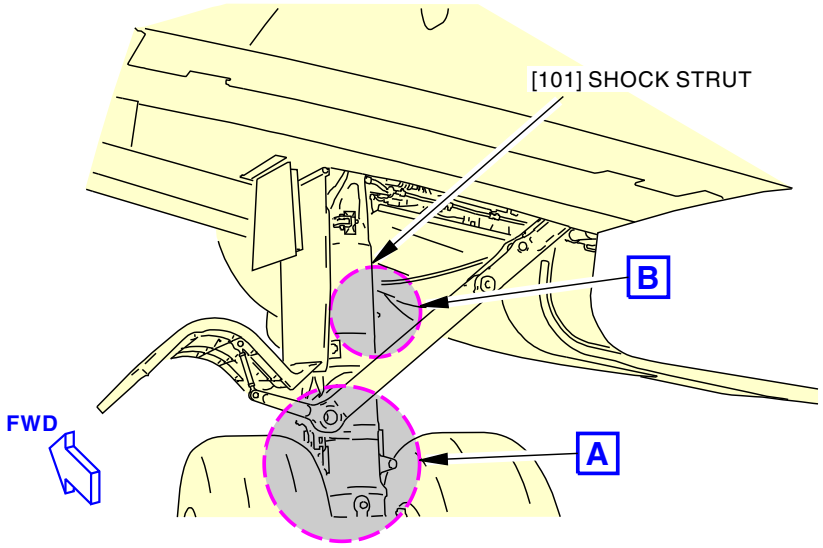
2) Inflate the shock strut with nitrogen, G00018, until the shock strut extension dimension "X" for the pressure is on the servicing curve on the servicing chart (Figure 302).

(d) Tighten the swivel nut [107] to 5.0 ft-lb (6.8 N·m) - 7.0 ft-lb (9.5 N·m) with torque wrench (0-50 ft-lbs), COM-1588 or torque wrench (0-150 in-lbs), STD-6839.

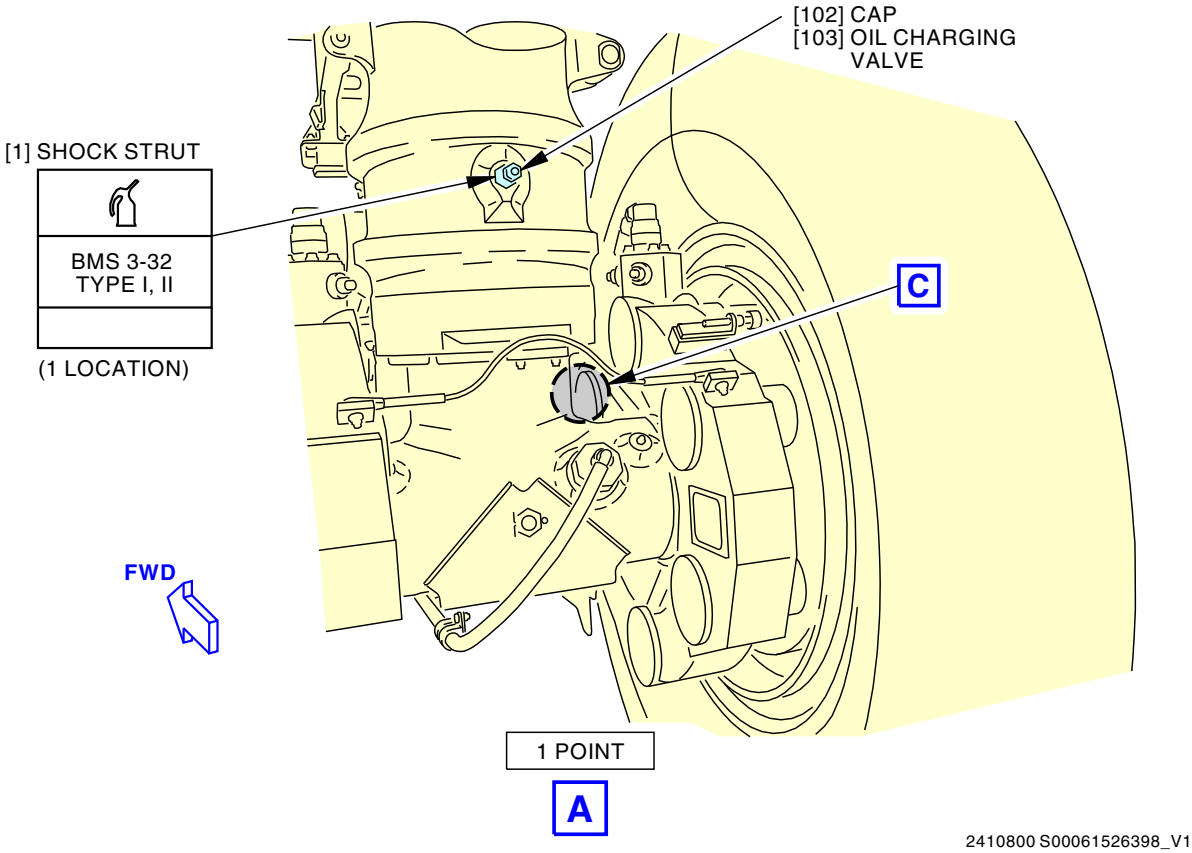
(e) Remove the tool, SPL-1521, from the gas valve [106].

(f) Install the gas valve cap [105].

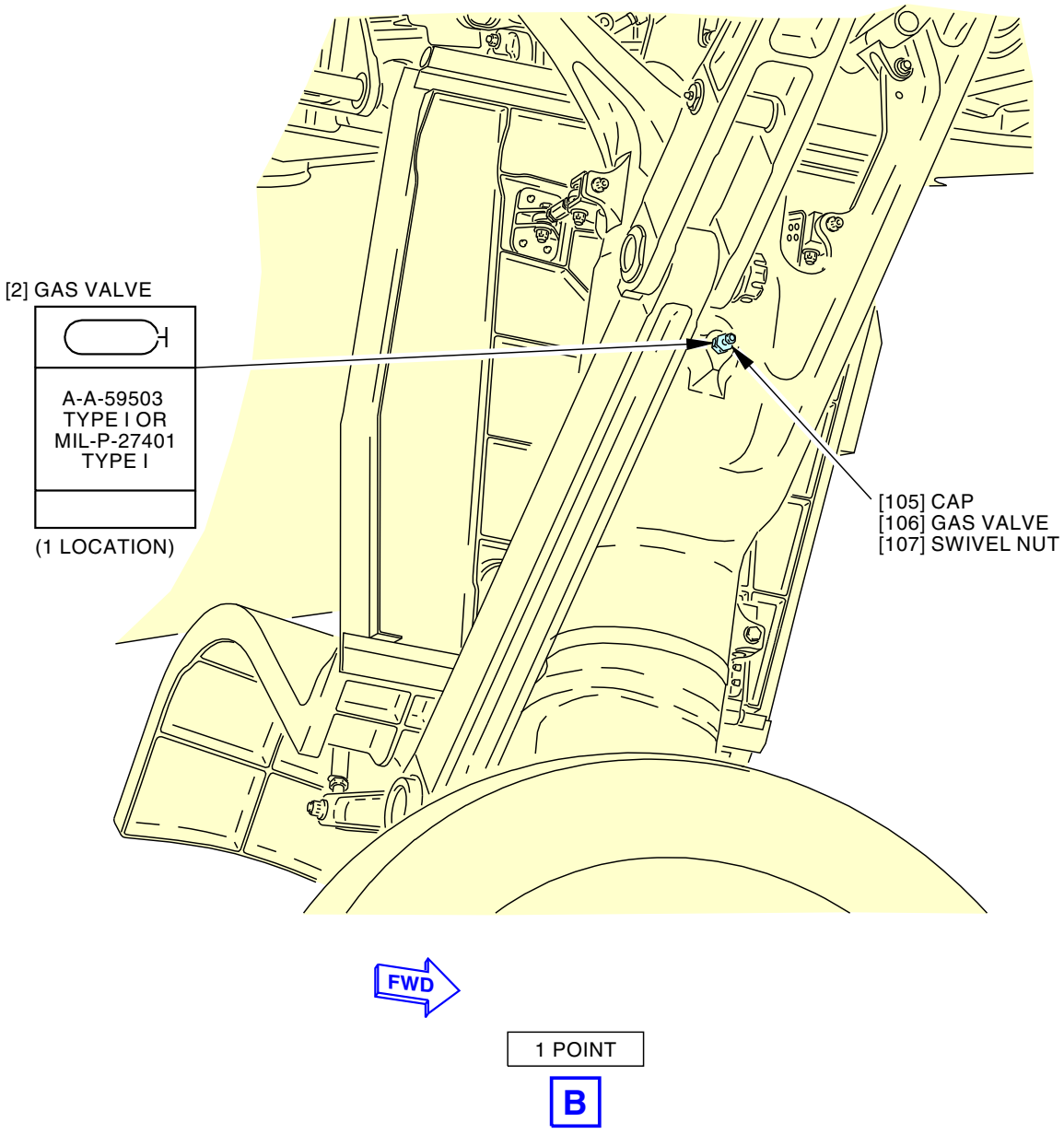
END OF TASK



(LEFT MAIN LANDING GEAR IS SHOWN, RIGHT MAIN LANDING GEAR IS EQUIVALENT)



Main Landing Gear Shock Strut Servicing
Figure 301/12-15-31-990-801 (Sheet 1 of 3)



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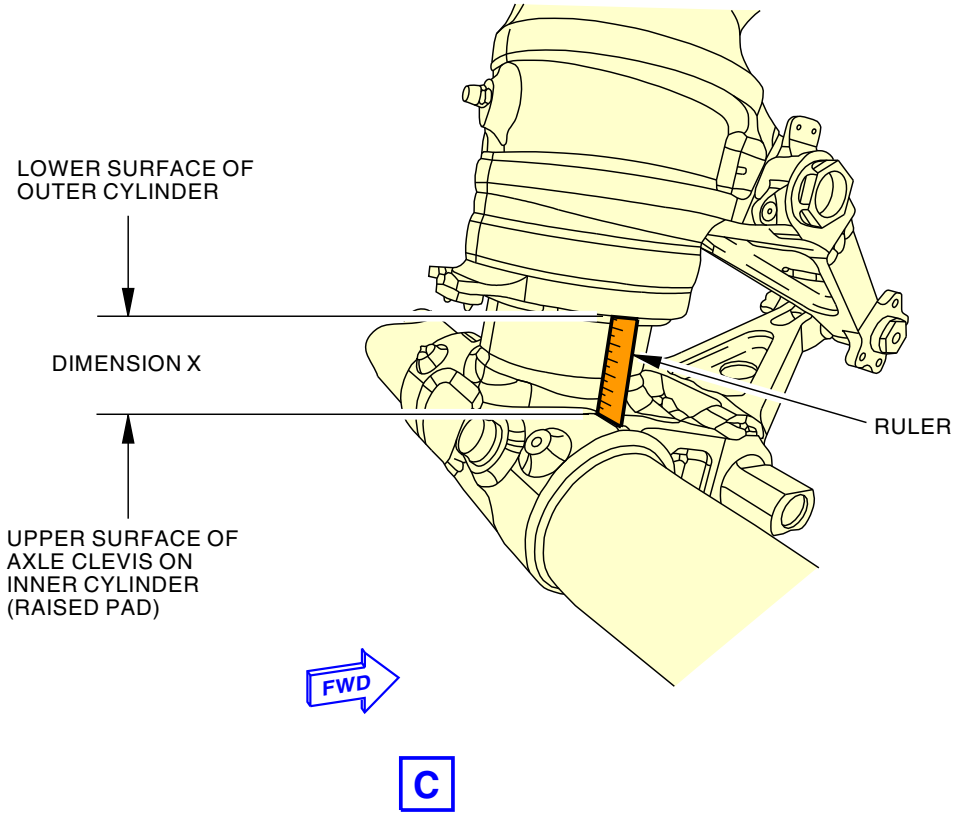
Main Landing Gear Shock Strut Servicing
Figure 301/12-15-31-990-801 (Sheet 2 of 3)



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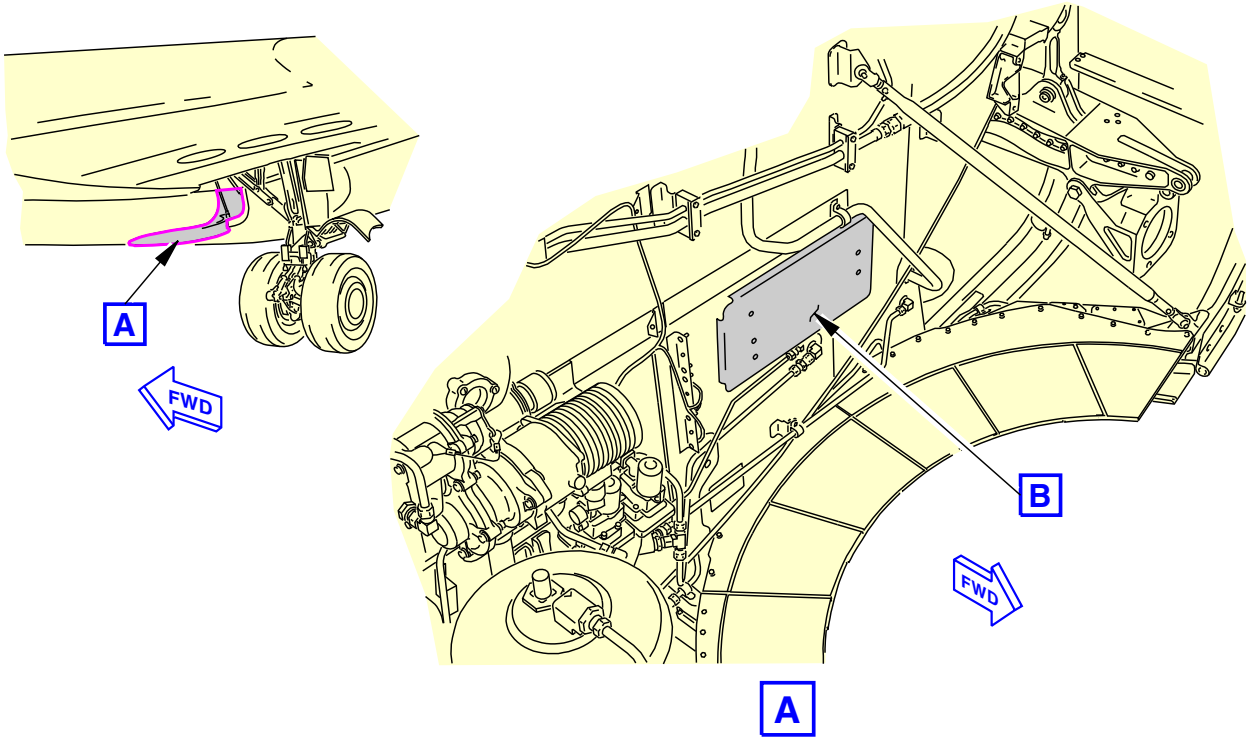
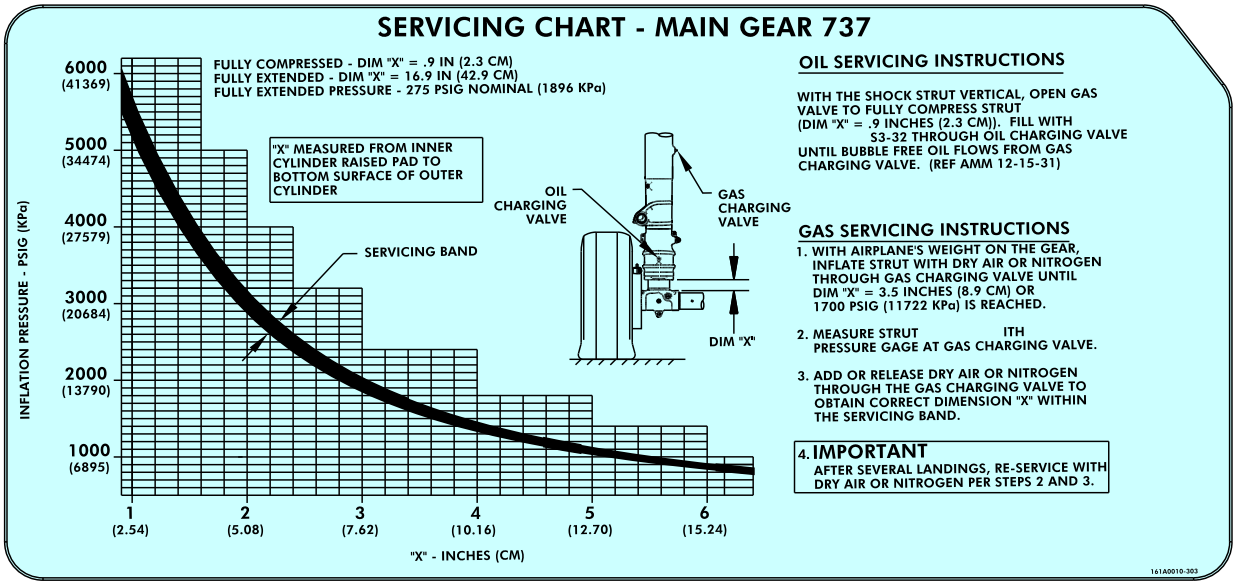
Main Landing Gear Shock Strut Servicing
Figure 301/12-15-31-990-801 (Sheet 3 of 3)





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Main Landing Gear Shock Strut Servicing Chart
Figure 302/12-15-31-990-802

TASK 12-15-31-610-803

4. Main Landing Gear Strut Servicing, Airplane on Jacks

(Figure 301, Figure 302)

NOTE: This procedure is a scheduled maintenance task.

A. General

(1) This task gives the instructions for the servicing of the shock strut of the main landing gear.

B. References

Reference	Title
12-15-61-610-801	Landing Gear Shock Strut Fluids (P/B 301)
32-00-01-480-801	Landing Gear Downlock Pins Installation (P/B 201)

C. Tools/Equipment

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

Reference	Description
COM-1532	Cart - Servicing, Strut Oil Part #: 1104 Supplier: 30188 Part #: 8774B Supplier: 94861 Part #: 8844A Supplier: 94861 Part #: 8844B Supplier: 94861 Part #: HM-GT1-C-VS Supplier: 1HV74 Part #: PF53481-9P Supplier: 94861 Part #: PF54124-3P Supplier: 94861 Part #: PF55451-1 Supplier: 94861 Part #: PF55451-23 Supplier: 94861 Part #: SH001 Supplier: D2029 Opt Part #: 8774 Supplier: 94861 Opt Part #: HM-GT1-C Supplier: 1HV74
SPL-1521	Tool - Strut Inflation, Landing Gear Part #: F70200-35 Supplier: 81205 Opt Part #: F70200-1 Supplier: 81205 Opt Part #: F70200-14 Supplier: 81205 Opt Part #: F70200-17 Supplier: 81205 Opt Part #: F70200-18 Supplier: 81205
SPL-1829	Valve - Drain, Landing Gear Shock Strut Oil Part #: J32108-16 Supplier: 81205 Opt Part #: A32066-1 Supplier: 81205
STD-1110	Container - Hydraulic Fluid Resistant, 5 Gallon (19 Liter)
STD-1157	Gauge - Pressure, 0-3000 PSIG (0-20685 KPa)
STD-6620	Jack - Automotive Type, One Ton Minimum Rated Load

D. Consumable Materials

Reference	Description	Specification
G00018	Nitrogen - Gaseous, Pressurizing, 99.5 Percent Pure	A-A-59503 Type I Grade B, MIL-PRF-27401 Type I Grade A
G01048	Lockwire - MS20995C32, Corrosion Resistant Steel - 0.032 Inch (0.8128 mm) Diameter	NASM20995

(Continued)

Reference	Description	Specification
G02314	Air - Compressed, Breathing	BB-A-1034 Source I Grade A

E. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
103	Valve	32-11-21-01-025	SIA ALL
106	Gas valve	32-11-21-01-020	SIA ALL

F. Location Zones

Zone	Area
734	Left Main Landing Gear
744	Right Main Landing Gear

G. Precautions for the Tail Stand

SUBTASK 12-15-31-840-003

(1) Obey the tail stand precautions as follows:

CAUTION

DO NOT TOW THE AIRPLANE WHILE THE TAIL STAND IS INSTALLED. WHEN YOU TOW THE AIRPLANE WHILE THE TAIL STAND IS INSTALLED, IT CAN CAUSE DAMAGE TO EQUIPMENT.

(a) Do not tow the airplane while the tail stand is installed.

CAUTION

DO NOT DEFLATE OR SERVICE THE SHOCK STRUTS WHILE THE TAIL STAND IS INSTALLED. IF YOU DEFLATE OR SERVICE THE SHOCK STRUTS, THE LOAD ON THE TAIL STAND CAN BE TOO LARGE. THIS CAN CAUSE DAMAGE TO EQUIPMENT.

(b) Do not deflate or service the shock struts while the tail stand is installed.

CAUTION

DO NOT JACK THE AIRPLANE AT THE MAIN JACK POINTS OR AXLES WHILE THE TAIL STAND IS INSTALLED. IF YOU JACK THE AIRPLANE, THE LOAD ON THE TAIL STAND CAN BE TOO HIGH WHICH CAN CAUSE DAMAGE TO EQUIPMENT.

(c) Do not jack the airplane at the main jack points or axles while the tail stand is installed.

H. Prepare to the Servicing of the Shock Strut

SUBTASK 12-15-31-610-017

WARNING

MAKE SURE THAT YOU INSTALL THE DOWNLOCKS IN THE NOSE LANDING GEAR BEFORE YOU MOVE THE CONTROL LEVER. IF YOU DO NOT INSTALL THE DOWNLOCKS, LANDING GEAR CAN RETRACT AND CAUSE INJURY TO PERSONNEL AND DAMAGE TO EQUIPMENT.

(1) If the downlock pins are not installed in the nose and main landing gear, do this task: TASK 32-00-01-480-801.

SUBTASK 12-15-31-610-001

NOTE: If it is possible, deflate the shock strut while the airplane is on the ground. Restrain the inner cylinder in the fully compressed position, when the airplane is jacked.

WARNING MAKE SURE THAT PERSONNEL AND EQUIPMENT ARE AWAY FROM THE AREA BELOW THE WING BEFORE YOU DEFLATE THE SHOCK STRUT. WHEN YOU DEFLATE ONE SHOCK STRUT, THE WINGTIP CAN MOVE DOWN. THIS CAN CAUSE INJURIES TO PERSONNEL OR DAMAGE TO EQUIPMENT.

(2) Deflate the shock strut [101] for the main landing gear:

(a) Remove the cap [105] for the gas valve [106].

WARNING DO NOT REMOVE THE VALVE BODY UNTIL YOU DEFLATE THE SHOCK STRUT FULLY. THE AIR PRESSURE CAN BLOW THE VALVE BODY OUT AND CAUSE INJURIES TO PERSONNEL.

(b) Loosen the gas valve swivel nut [107] a maximum of two turns.

NOTE: Fluid in the shock strut will have bubbles when the pressure is released. Deflate the shock strut slowly to prevent the leakage of the fluid through the gas valve.

(c) If the shock strut [101] was not deflated while the airplane was on the ground, do this step:

1) Use an automotive type jack, STD-6620, and lift the inner cylinder slowly up until the shock strut [101] is in the fully compressed position.

(d) Loosen the gas valve swivel nut [107] fully when all of the pressure in the shock strut [101] is released.

NOTE: The shock strut is fully deflated when the dimension "X" is 0.81 in. (20.57 mm) - 1.11 in. (28.19 mm).

SUBTASK 12-15-31-610-002

(3) To drain the oil from the shock strut [101], do these steps:

(a) Remove the lockwire from the cap [102].

1) Discard the lockwire.

(b) Remove the cap [102] from the oil charging valve [103].

(c) Put a 5 gallon (19 liter) hydraulic fluid resistant container, STD-1110, in a position to catch the shock strut fluid when the oil charging valve [103] is opened.

(d) Install the drain equipment on the oil charging valve [103]:

NOTE: The landing gear shock strut drain valve, SPL-1829, can also be used. It will take much longer to drain the shock strut.

1) Cut a length of plastic tubing, long enough to reach the container on the floor.

2) Insert a small allen wrench in the end of the length of tubing.

NOTE: The long end of the allen wrench should be flush with the end of the tube and the short end should penetrate the wall of the tube.

3) Install the tubing on the oil charging valve [103].

NOTE: The allen wrench should go into the check valve and hold it open to drain the hydraulic fluid.

(e) Remove the drain equipment when all of the shock strut oil is removed.

I. Service the Shock Strut

SUBTASK 12-15-31-610-003

NOTE: The shock strut must be in the fully compressed position when adding hydraulic fluid. Dimension X = 0.9 in. (22.9 mm).

CAUTION USE ONLY THE TYPE OF FLUID THAT IS SPECIFIED IN THIS TASK TO FILL THE SHOCK STRUT. IF YOU USE AN INCORRECT FLUID, IT CAN CAUSE DAMAGE TO THE SEALS.

(1) Fill the shock strut [101] with hydraulic fluid (Table 302):

(a) To use hydraulic fluid and alternative fluids, do this task: Landing Gear Shock Strut Fluids, TASK 12-15-61-610-801.

(b) Make sure that the cap [102] for the oil charging valve [103] is removed.

(c) Make sure that the cap [105] for the gas valve [106] is removed.

(d) Attach the oil charging line from the servicing cart, COM-1532, to the oil charging valve [103].

(e) Make sure that the gas valve swivel nut [107] is fully open.

(f) Attach a hose to the gas valve [106] with the end of the hose in a drain bucket.

CAUTION CLEAN THE HYDRAULIC FLUID FROM THE TIRES IMMEDIATELY IF THE FLUID FALLS ON THE TIRES. THE FLUID CAN CAUSE DETERIORATION OF THE TIRES.

(g) Fill the shock strut [101] with hydraulic fluid until the hydraulic fluid flows out of the gas valve [106] and into a hydraulic fluid resistant container.

1) Continue to fill the shock strut [101] until the hydraulic fluid which flows into the container is free of bubbles.

(h) Remove the oil charging line.

SUBTASK 12-15-31-610-004

(2) Install the cap [102] on the oil charging valve [103].

(a) Tighten the cap [102] to 60 in-lb (6.78 N·m) - 84 in-lb (9.49 N·m).

(b) Install MS20995C32 lockwire, G01048, on the cap [102].

1) Use the double twist method to twist MS20995C32 lockwire, G01048.

SUBTASK 12-15-31-610-005

(3) Remove the hose from the gas valve [106].

(a) Install the cap [105] on the gas valve [106].

SUBTASK 12-15-31-610-006

(4) Remove the automotive type jack, STD-6620, from the inner cylinder.

(a) Make sure that the inner cylinder is not restrained.

SUBTASK 12-15-31-610-012

(5) Inflate the shock strut [101] for the main landing gear (Table 302):

(a) Install the tool, SPL-1521, on the gas valve [106].

(b) Inflate the shock strut [101] with nitrogen, G00018, until the dimension "X" is approximately 16.9 in. (42.9 cm) and reach 275 psig (1896 kPa).

NOTE: If nitrogen is not available, use air, G02314, as an alternative to inflate the shock strut.

(c) Use a tool, SPL-1521, or pressure gauge (0-3000 PSIG), STD-1157, to measure the pressure of the shock strut [101].

(d) Inflate or deflate the shock strut [101] until the shock strut extension dimension “X” for the pressure is on the servicing curve on the servicing chart.

NOTE: Dimension “X” and the pressure must be on the servicing curve for a correctly serviced shock strut.

SUBTASK 12-15-31-610-007

(6) Tighten the gas valve [106]:

(a) Tighten the swivel nut [107] to 60 in-lb (6.8 N·m) - 84 in-lb (9.5 N·m).

SUBTASK 12-15-31-610-008

(7) Remove the tool, SPL-1521, from the gas valve [106].

SUBTASK 12-15-31-610-009

(8) Install the cap [105].

SUBTASK 12-15-31-610-010

(9) With the airplane on the ground, do these steps:

(a) Check the pressure of the shock strut [101]:

1) Remove the cap [105] for the gas valve [106].

(b) Loosen the swivel nut [107] on the gas valve [106].

1) Use a tool, SPL-1521, or pressure gauge (0-3000 PSIG), STD-1157, to measure the pressure of the shock strut [101].

2) Make sure that the pressure is still correct for the extension of the shock strut [101] (Figure 302).

(c) If the shock strut [101] does not have enough pressure, inflate the shock strut [101] for the main landing gear (Table 302):

1) Install the tool, SPL-1521, on the gas valve [106].

2) Inflate the shock strut [101] with nitrogen, G00018, until the shock strut extension dimension “X” for the pressure is on the servicing curve on the servicing chart (Figure 302).

(d) Tighten the swivel nut [107] to 60 in-lb (6.8 N·m) - 84 in-lb (9.5 N·m).

(e) Remove the tool, SPL-1521, from the gas valve [106].

(f) Install the cap [105].

SUBTASK 12-15-31-610-011

(10) Five to ten in-service landings after a complete oil and nitrogen servicing, check the pressure of the shock strut [101]:

NOTE: The shock strut fluid can absorb nitrogen after a complete servicing, reducing the shock strut “X” dimension.

(a) Check the pressure of the shock strut [101]:

1) Remove the cap [105] for the gas valve [106].

(b) Loosen the swivel nut [107].

1) Use a tool, SPL-1521, or pressure gauge (0-3000 PSIG), STD-1157, to measure the pressure of the shock strut [101].
2) Make sure that the pressure is still correct for the extension of the shock strut [101] (Figure 302).

(c) If the shock strut [101] does not have enough pressure, inflate the shock strut [101] for the main landing gear (Table 302):
1) Install the tool, SPL-1521, on the gas valve [106].
2) Inflate the shock strut [101] with nitrogen, G00018, until the shock strut extension dimension "X" for the pressure is on the servicing curve on the servicing chart (Figure 302).

(d) Tighten the swivel nut [107] to 60 in-lb (6.8 N·m) - 84 in-lb (9.5 N·m).

(e) Remove the tool, SPL-1521, from the gas valve [106].

(f) Install the cap [105].

END OF TASK

NOSE LANDING GEAR SHOCK STRUT - SERVICING

1. General

A. This procedure contains these tasks:

(1) Nose landing Gear Shock Strut Fluid Check

(2) Nose Landing Gear Shock Strut Servicing, Airplane on the Ground.

(3) Nose Landing Gear Shock Strut Servicing, Airplane on Jacks.

TASK 12-15-41-610-801

2. Nose Landing Gear Shock Strut Fluid Check

(Figure 301, Figure 302)

A. General

(1) This procedure supplies instructions to check the level of the hydraulic fluid in the shock strut of the nose landing gear.

(a) To do a check of the fluid level, you must measure the pressure and the extension of the shock strut twice, at two different strut extensions. The greater the difference in the shock strut extensions, the more accurate the fluid measurement will be.

1) You can obtain the different shock strut extension one of two ways:

a) You can take the shock strut measurements at two different airplane weights, for example, before and after fueling the airplane, or,

b) If the airplane is on jacks, you can use floor jacks or the airplane jacks to compress or extend the shock struts.

2) You should have a difference of 2 in. (51 mm) to 4 in. (102 mm) between the two shock strut extensions to do the check.

B. References

Reference	Title
32-00-01-480-801	Landing Gear Downlock Pins Installation (P/B 201)

C. Tools/Equipment

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

Reference	Description
SPL-1521	Tool - Strut Inflation, Landing Gear Part #: F70200-35 Supplier: 81205 Opt Part #: F70200-1 Supplier: 81205 Opt Part #: F70200-14 Supplier: 81205 Opt Part #: F70200-17 Supplier: 81205 Opt Part #: F70200-18 Supplier: 81205
STD-1157	Gauge - Pressure, 0-3000 PSIG (0-20685 KPa)

D. Consumable Materials

Reference	Description	Specification
G00018	Nitrogen - Gaseous, Pressurizing, 99.5 Percent Pure	A-A-59503 Type I Grade B, MIL-PRF-27401 Type I Grade A

(Continued)

Reference	Description	Specification
G02314	Air - Compressed, Breathing	BB-A-1034 Source I Grade A

E. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
103	Gas valve	32-21-00-01-360	SIA ALL

F. Location Zones

Zone	Area
713	Nose Landing Gear

G. Precautions for the Tail Stand

SUBTASK 12-15-41-840-001

(1) Obey the tail stand precautions that follow:

CAUTION DO NOT TOW THE AIRPLANE WHILE THE TAIL STAND IS INSTALLED. WHEN YOU TOW THE AIRPLANE WHILE THE TAIL STAND IS INSTALLED, IT CAN CAUSE DAMAGE TO EQUIPMENT.

(a) Do not tow the airplane while the tail stand is installed.

CAUTION DO NOT DEFLATE OR SERVICE THE SHOCK STRUTS WHILE THE TAIL STAND IS INSTALLED. IF YOU DEFLATE OR SERVICE THE SHOCK STRUTS, THE LOAD ON THE TAIL STAND CAN BE TOO LARGE. THIS CAN CAUSE DAMAGE TO EQUIPMENT.

(b) Do not deflate or service the shock struts while the tail stand is installed.

CAUTION DO NOT JACK THE AIRPLANE AT THE MAIN JACK POINTS OR AXLES WHILE THE TAIL STAND IS INSTALLED. IF YOU JACK THE AIRPLANE, THE LOAD ON THE TAIL STAND CAN BE TOO HIGH WHICH CAN CAUSE DAMAGE TO EQUIPMENT.

(c) Do not jack the airplane at the main jack points or axles while the tail stand is installed.

H. Prepare to Check the Hydraulic Fluid Level in the Shock Strut

SUBTASK 12-15-41-480-001

WARNING MAKE SURE THAT THE DOWNLOCK PINS ARE INSTALLED ON ALL THE LANDING GEAR. WITHOUT THE DOWNLOCK PINS, THE LANDING GEAR CAN RETRACT. THIS CAN CAUSE INJURIES TO PERSONS, AND DAMAGE TO EQUIPMENT.

(1) If the downlock pins are not installed in the nose and main landing gear, do this task: Landing Gear Downlock Pins Installation, TASK 32-00-01-480-801.

I. Examine the Fluid Level of the Shock Strut for the Nose Landing Gear

WARNING

KEEP ALL PERSONS AND EQUIPMENT AWAY FROM THE AIRPLANE WHEN YOU CHANGE SHOCK STRUT HEIGHT OF THE LANDING GEAR. THIS CHANGE WILL CAUSE THE AIRPLANE ATTITUDE TO MOVE. IF YOU DO NOT OBEY, DAMAGE TO EQUIPMENT AND INJURY TO PERSONNEL CAN OCCUR.

NOTE: To do a check of the fluid level, you must measure the pressure and the extension of the shock strut twice, at different shock strut extensions.

SUBTASK 12-15-41-200-001

(1) Check the hydraulic fluid level with the airplane at the first shock strut extension:

(a) Remove the gas valve cap [102] and use a pressure gauge (0-3000 PSIG), STD-1157, to measure the pressure of the shock strut [101].

(b) Measure the extension of the shock strut [101] (Dimension X, Figure 301).

(c) Compare the extension and pressure you measured with the servicing chart (Figure 302).

(d) If the shock strut pressure and the shock strut extension are not on the servicing curve on the servicing chart, do one of these steps:

1) If the extension and pressure you measured are above the servicing curve, deflate the shock strut [101] until they are on the servicing curve.

a) To release the gas from the shock strut [101] loosen the swivel nut [104].

2) If the extension and pressure you measured are below the servicing curve, use the tool, SPL-1521, to inflate the shock strut [101] with nitrogen, G00018, until they are on the servicing curve (Figure 302).

NOTE: If dry nitrogen is not available, you can use air, G02314, as an alternative to inflate the shock strut [101].

SUBTASK 12-15-41-200-002

(2) Check the hydraulic fluid level with the airplane at the second shock strut extension (Figure 302):

(a) Measure the pressure and extension of the shock strut [101].

(b) Compare the extension and pressure you measured with the servicing chart.

(c) If the measured extension and pressure are on the curve in the service chart, the fluid level is correct.

(d) If the measured extension and pressure are not on the curve in the service chart, the fluid level is not correct, do this task: Nose Landing Gear Shock Strut Servicing, Airplane on the Ground, TASK 12-15-41-610-802.

1) If you cannot service the shock strut immediately, you can add or remove nitrogen until the measured extension and pressure are on the service chart.

NOTE: If the amount of fluid in the shock strut is low, you will not be able to obtain the correct extension and pressure on the servicing chart; you will need to service the shock strut before you dispatch the airplane.

J. Put the Airplane Back to Its Usual Condition

SUBTASK 12-15-41-420-001

(1) Tighten the gas valve [103]:

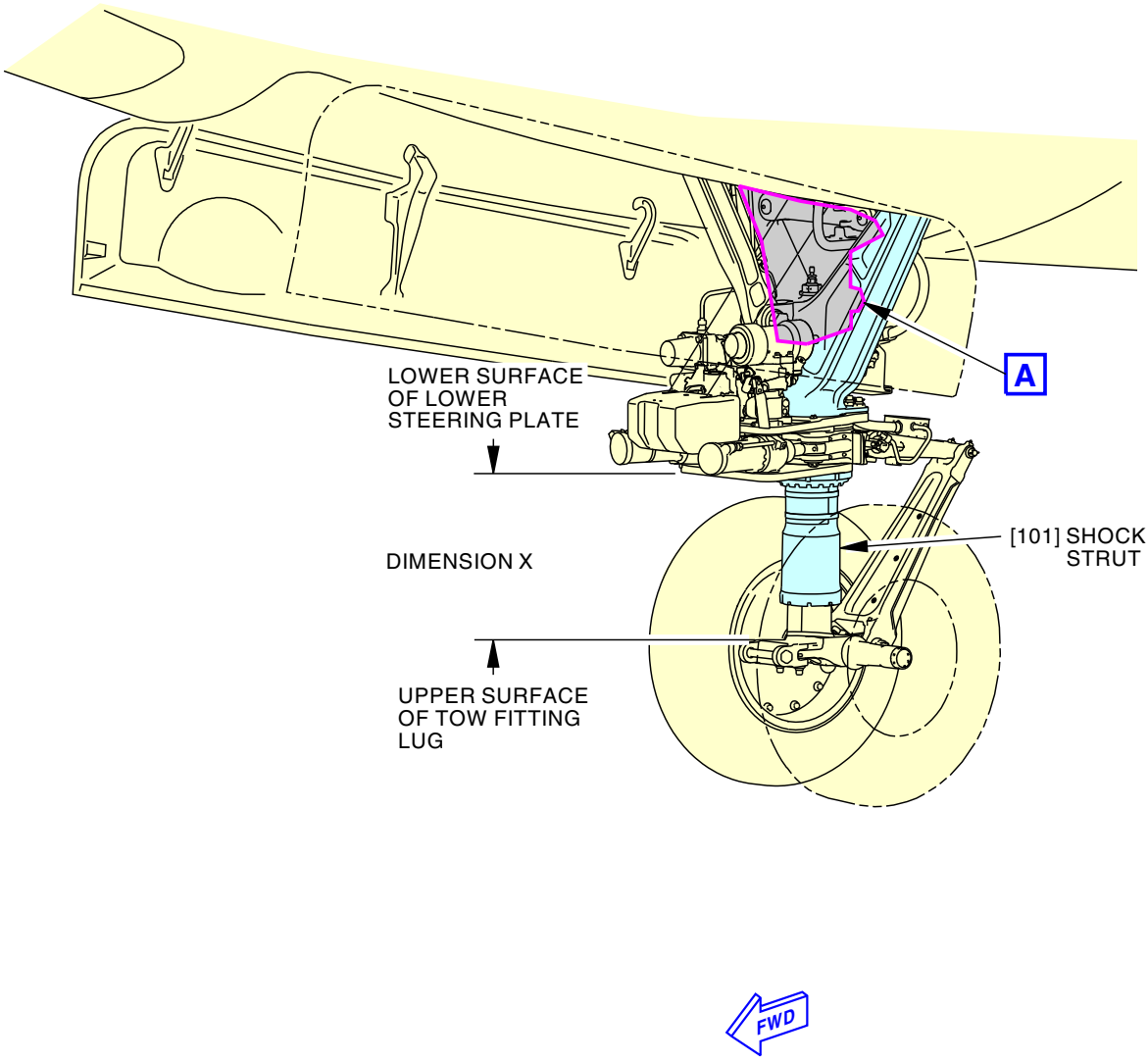
(a) Tighten the swivel nut [104] to 5 ft-lb (6.8 N·m) - 7 ft-lb (9.5 N·m).

(b) Install the gas valve cap [102].

Table 301/12-15-41-993-801 Nose Landing Gear Shock Strut Servicing

Item No.	Nomenclature	Fluid	Method of Application	Number of Locations
1	Gas Valve	BB-N-411 Type I, or MIL-P-27401 Type I or BB-A-1034 (dry air)	Charge	1

——— END OF TASK ———



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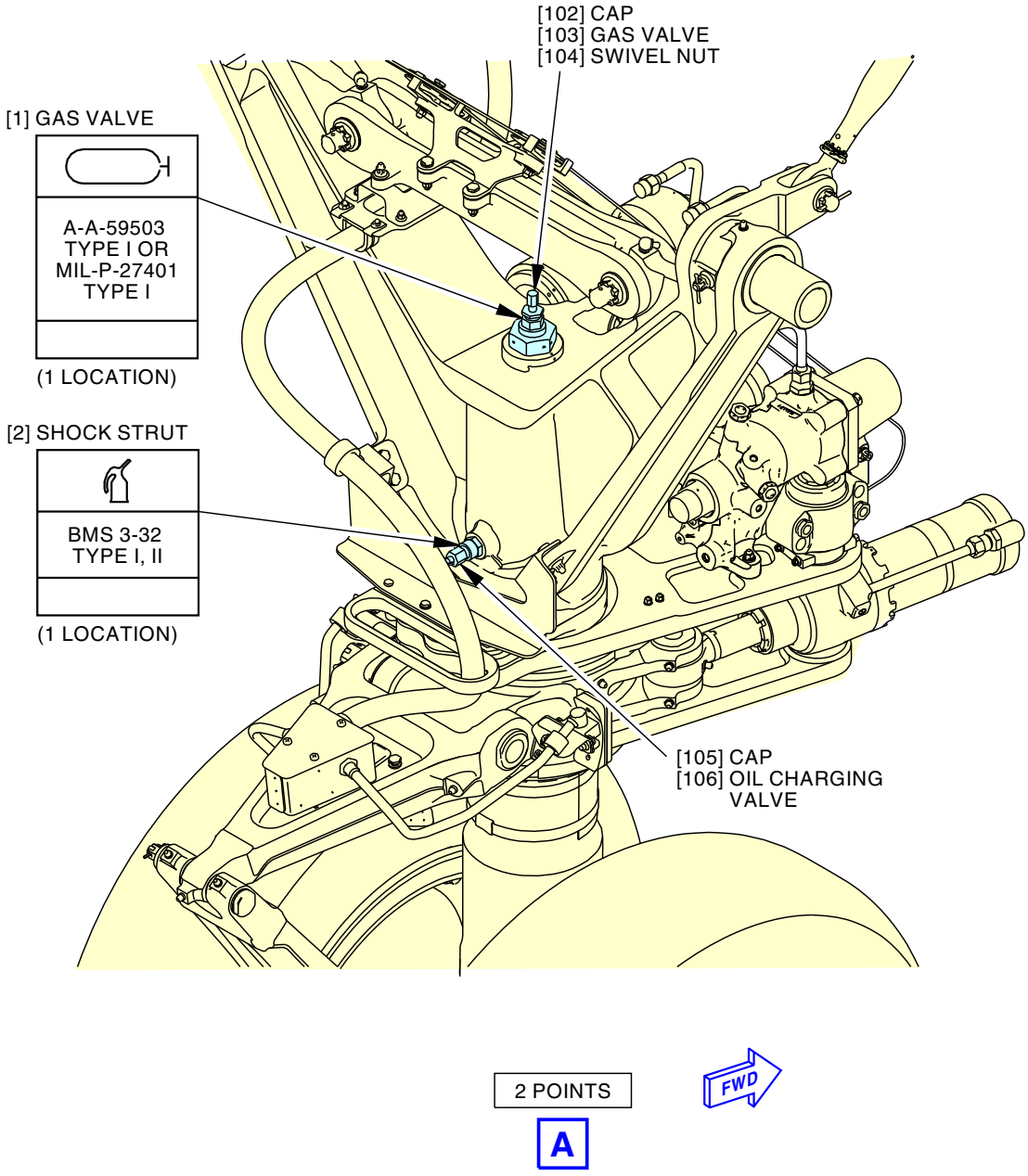
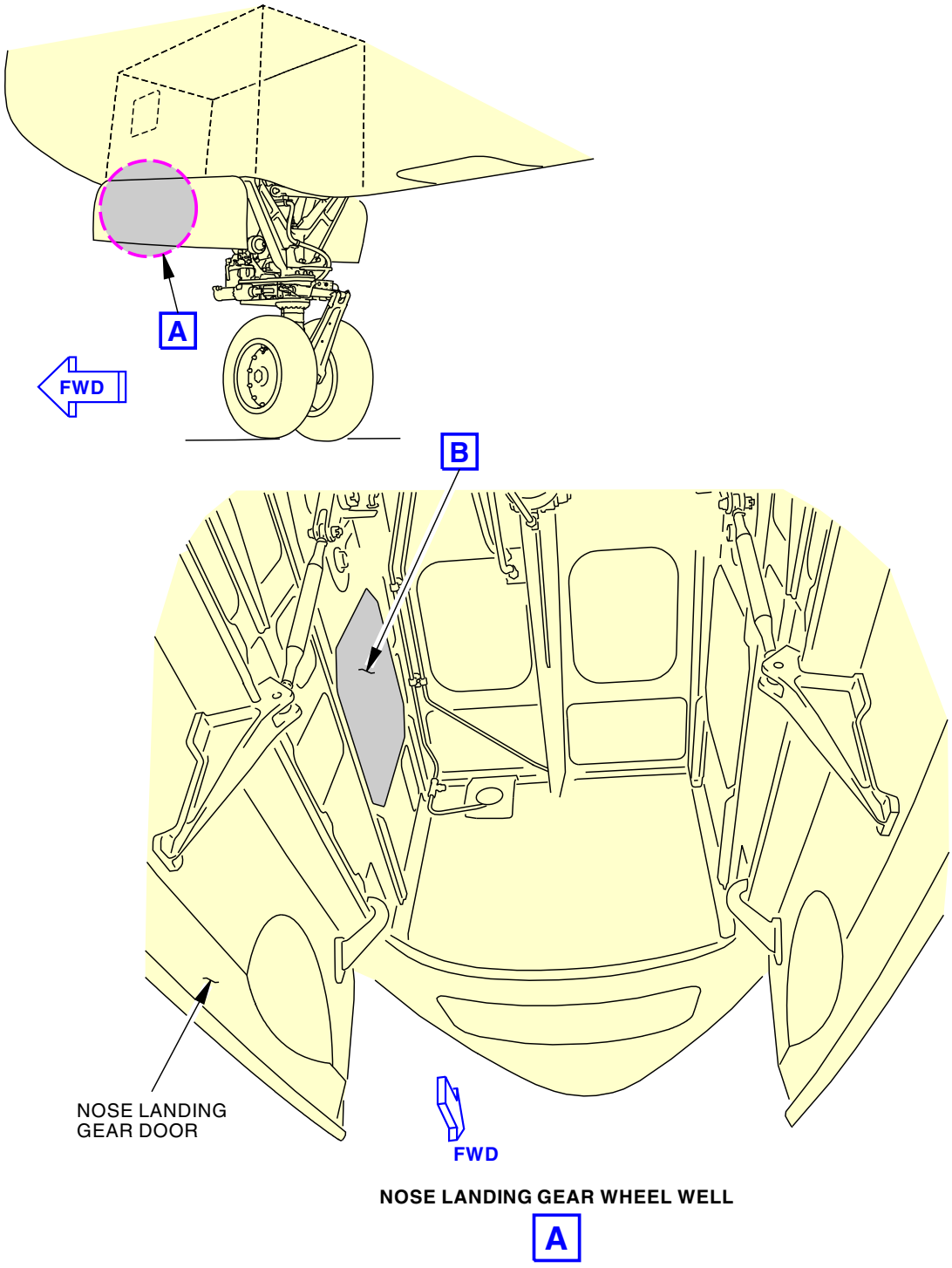
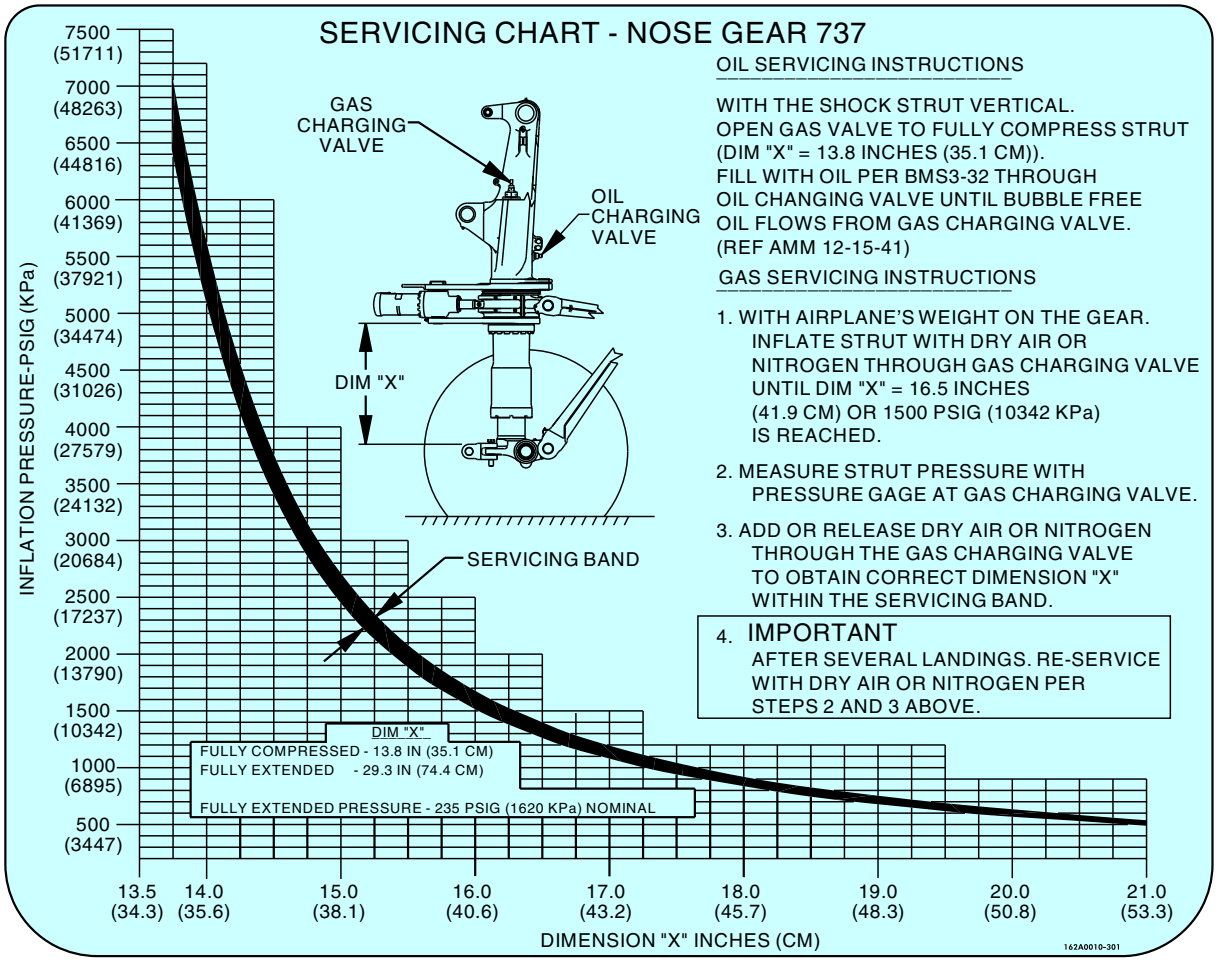
Nose Landing Gear Shock Strut Servicing
Figure 301/12-15-41-990-801 (Sheet 1 of 2)



Nose Landing Gear Shock Strut Servicing
Figure 301/12-15-41-990-801 (Sheet 2 of 2)



Nose Landing Gear Shock Strut Servicing Chart
Figure 302/12-15-41-990-802 (Sheet 1 of 2)



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Nose Landing Gear Shock Strut Servicing Chart
Figure 302/12-15-41-990-802 (Sheet 2 of 2)

TASK 12-15-41-610-802

3. Nose Landing Gear Shock Strut Servicing, Airplane on the Ground

(Figure 301)

NOTE: This procedure is a scheduled maintenance task.

A. General

(1) This procedure supplies instructions for the servicing of the shock strut of the nose landing gear.

(2) The airplane weight must be on the nose landing gear to service the shock strut.

B. References

Reference	Title
12-15-61-610-801	Landing Gear Shock Strut Fluids (P/B 301)
32-00-01-480-801	Landing Gear Downlock Pins Installation (P/B 201)

C. Tools/Equipment

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

Reference	Description
COM-1532	Cart - Servicing, Strut Oil Part #: 1104 Supplier: 30188 Part #: 8774B Supplier: 94861 Part #: 8844A Supplier: 94861 Part #: 8844B Supplier: 94861 Part #: HM-GT1-C-VS Supplier: 1HV74 Part #: PF53481-9P Supplier: 94861 Part #: PF54124-3P Supplier: 94861 Part #: PF55451-1 Supplier: 94861 Part #: PF55451-23 Supplier: 94861 Part #: SH001 Supplier: D2029 Opt Part #: 8774 Supplier: 94861 Opt Part #: HM-GT1-C Supplier: 1HV74
SPL-1521	Tool - Strut Inflation, Landing Gear Part #: F70200-35 Supplier: 81205 Opt Part #: F70200-1 Supplier: 81205 Opt Part #: F70200-14 Supplier: 81205 Opt Part #: F70200-17 Supplier: 81205 Opt Part #: F70200-18 Supplier: 81205
SPL-1829	Valve - Drain, Landing Gear Shock Strut Oil Part #: J32108-16 Supplier: 81205 Opt Part #: A32066-1 Supplier: 81205
STD-1103	Hose - Flexible, 5/8 Inch ID, Oil or Hydraulic Fluid Resistant, 6 foot
STD-1110	Container - Hydraulic Fluid Resistant, 5 Gallon (19 Liter)
STD-1157	Gauge - Pressure, 0-3000 PSIG (0-20685 KPa)

D. Consumable Materials

Reference	Description	Specification
G00018	Nitrogen - Gaseous, Pressurizing, 99.5 Percent Pure	A-A-59503 Type I Grade B, MIL-PRF-27401 Type I Grade A

(Continued)

Reference	Description	Specification
G02314	Air - Compressed, Breathing	BB-A-1034 Source I Grade A
G50135	Leak Detector - Liquid, Non-Corrosive Soap Compound	MIL-PRF-25567

E. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
103	Gas valve	32-21-00-01-360	SIA ALL

F. Location Zones

Zone	Area
713	Nose Landing Gear

G. Precautions for the Tail Stand

SUBTASK 12-15-41-840-002

(1) Obey the tail stand precautions that follow:

CAUTION DO NOT TOW THE AIRPLANE WHILE THE TAIL STAND IS INSTALLED. WHEN YOU TOW THE AIRPLANE WHILE THE TAIL STAND IS INSTALLED, IT CAN CAUSE DAMAGE TO EQUIPMENT.

(a) Do not tow the airplane while the tail stand is installed.

CAUTION DO NOT DEFLATE OR SERVICE THE SHOCK STRUTS WHILE THE TAIL STAND IS INSTALLED. IF YOU DEFLATE OR SERVICE THE SHOCK STRUTS, THE LOAD ON THE TAIL STAND CAN BE TOO LARGE. THIS CAN CAUSE DAMAGE TO EQUIPMENT.

(b) Do not deflate or service the shock struts while the tail stand is installed.

CAUTION DO NOT JACK THE AIRPLANE AT THE MAIN JACK POINTS OR AXLES WHILE THE TAIL STAND IS INSTALLED. IF YOU JACK THE AIRPLANE, THE LOAD ON THE TAIL STAND CAN BE TOO HIGH WHICH CAN CAUSE DAMAGE TO EQUIPMENT.

(c) Do not jack the airplane at the main jack points or axles while the tail stand is installed.

H. Prepare to Service the Shock Strut

SUBTASK 12-15-41-040-001

WARNING MAKE SURE THAT THE DOWNLOCK PINS ARE INSTALLED IN ALL OF THE LANDING GEAR. WITHOUT THE DOWNLOCK PINS, THE LANDING GEAR CAN RETRACT AND CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) If the downlock pins are not installed in the nose and main landing gear, do this task: Landing Gear Downlock Pins Installation, TASK 32-00-01-480-801

SUBTASK 12-15-41-020-001

WARNING MAKE SURE THAT PERSONNEL AND EQUIPMENT ARE AWAY FROM THE AREA BELOW THE NOSE BEFORE YOU DEFLATE THE SHOCK STRUT. WHEN YOU DEFLATE THE SHOCK STRUT, THE NOSE CAN MOVE DOWN. THIS CAN CAUSE INJURIES TO PERSONNEL OR DAMAGE TO EQUIPMENT.

(2) Deflate the shock strut [101] for the nose landing gear:

(a) Remove the cap [102] for the gas valve [103] which is on the top of the shock strut [101].

WARNING DO NOT REMOVE THE VALVE BODY UNTIL YOU DEFLATE THE SHOCK STRUT FULLY. THE AIR PRESSURE CAN BLOW THE VALVE BODY OUT AND CAUSE INJURIES TO PERSONNEL.

(b) Loosen the gas valve swivel nut [104] a maximum of two turns.

NOTE: Fluid in the shock strut [101] will have bubbles when you release the pressure. Deflate the shock strut slowly to prevent the leakage of the fluid through the gas valve [103].

(c) Loosen the gas valve swivel nut [104] fully when all of the pressure in the shock strut [101] is released.

NOTE: The shock strut [101] is fully deflated when the dimension "X" is 13.8 in. (35.1 cm).

SUBTASK 12-15-41-680-001

(3) If you need to drain the oil from the shock strut [101], do these steps:

(a) Remove the cap [105] from the oil charging valve [106].

(b) Put a 5 gallon (19 liter) hydraulic fluid resistant container, STD-1110 in a position to catch the shock strut fluid when the oil charging valve [106] is opened.

(c) Install the drain equipment on the oil charging valve [106]:

NOTE: The tool, landing gear shock strut drain valve, SPL-1829, could also be used, but it will take much longer to drain the shock strut.

1) Cut a length of plastic tubing, long enough to reach the container on the floor.

2) Insert a small allen wrench in the end of the length of tubing, such that the long end of the allen wrench is flush with the end of the tube and the short end penetrates the wall of the tube.

3) Install the tubing on the oil charging valve [106] such that the allen wrench goes into the check valve and holds it open to drain the hydraulic fluid.

(d) Remove the drain equipment when you have removed all of the shock strut oil.

NOTE: 8.4 fl-oz (248.4 ml) to 15.4 fl-oz (455.4 ml) of fluid will drain out of the strut. More fluid is in the strut below the oil charging valve [106].

I. Service the Shock Strut

SUBTASK 12-15-41-600-001

CAUTION USE ONLY THE TYPE OF FLUID THAT IS SPECIFIED IN THIS TASK TO FILL THE SHOCK STRUT. IF YOU USE AN INCORRECT FLUID, IT CAN CAUSE DAMAGE TO THE SEALS.

(1) Fill the shock strut with Hydraulic fluid, for usage and alternative fluids, refer to Landing Gear Shock Strut Fluids, TASK 12-15-61-610-801. (Table 302).

Table 302/12-15-41-993-802 Nose Landing Gear Shock Strut Servicing

Item No.	Nomenclature	Fluid	Method of Application	Number of Locations
1	Gas Valve	A-A-59503 Type I, or MIL-P-27401 Type I	Charge	1
2	Shock Strut	BMS 3-32 Type I,II*[1]	Fill	1

*[1] For usage and alternative fluids, refer to (Landing Gear Shock Strut Fluids, TASK 12-15-61-610-801).

(a) Make sure that the cap [105] for the oil charging valve [106] is removed.

(b) Attach the oil charging line from servicing cart, COM-1532 to the oil charging valve [106].

(c) Make sure that the cap [102] for the gas valve [103] is removed.

(d) Make sure that the gas valve swivel nut [104] is fully open.

(e) Attach a oil resistant hose, STD-1103 to the gas valve [103] with the end of the hose in a container.

CAUTION CLEAN THE HYDRAULIC FLUID FROM THE TIRES IMMEDIATELY IF THE FLUID FALLS ON THE TIRES. THE FLUID CAN CAUSE DETERIORATION OF THE TIRES.

(f) Fill the shock strut [101] with hydraulic fluid until the hydraulic fluid flows out of the gas valve [103] and into the 5 gallon (19 liter) hydraulic fluid resistant container, STD-1110.

1) Continue to fill the shock strut [101] until the hydraulic fluid which flows into the 5 gallon (19 liter) hydraulic fluid resistant container, STD-1110 is free of bubbles.

(g) Remove the oil charging line.

SUBTASK 12-15-41-420-002

(2) Do the steps that follow for the oil charging valve [106]:

(a) Install the cap [105].

(b) Tighten the cap [105] to 50.0 in-lb (5.6 N·m) – 70.0 in-lb (7.9 N·m).

SUBTASK 12-15-41-020-002

(3) Remove the hose from the gas valve [103].

SUBTASK 12-15-41-600-002

(4) Inflate the shock strut [101] for the nose landing gear (Table 302):

(a) Install the tool, SPL-1521 on the gas valve [103].

(b) Inflate the shock strut [101] with nitrogen, G00018 until dimension “X” is approximately 16.5 in. (419.1 mm) or you reach 1500 psig (10,342 kPa) (Figure 302).

NOTE: If dry nitrogen is not available, you can use air, G02314 as an alternative to inflate the shock strut.

(c) Use a pressure gauge (0-3000 PSIG), STD-1157 to measure the pressure of the shock strut [101].

(d) Inflate or deflate the shock strut [101] until the shock strut extension dimension "X" for the pressure is on the servicing curve on the servicing chart.

NOTE: Dimension "X" and the pressure must be on the servicing curve for a correctly serviced shock strut.

SUBTASK 12-15-41-420-003

(5) Tighten the gas valve [103]:

(a) Tighten the swivel nut [104] to 5.0 ft-lb (6.8 N·m) – 7.0 ft-lb (9.5 N·m).

SUBTASK 12-15-41-020-003

(6) Remove the tool, SPL-1521 from the gas valve [103].

SUBTASK 12-15-41-200-003

(7) Use a leak detector, G50135, to make sure that there are no gas leaks from the gas valve [103].

SUBTASK 12-15-41-420-004

(8) Install the gas valve cap [102].

SUBTASK 12-15-41-020-004

(9) Five to ten in-service landings after a complete oil and nitrogen servicing, do the steps that follow to check the pressure of the shock strut:

NOTE: The shock strut fluid can absorb nitrogen after a complete servicing, reducing the shock strut dimension “X'.

(a) Check the pressure of the shock strut:

1) Remove the cap [102] for the gas valve [103].

2) Use a pressure gauge (0-3000 PSIG), STD-1157 to measure the pressure of the shock strut.

3) Loosen swivel nut [104].

4) Make sure that the pressure you measure is still correct for the extension of the shock strut (Figure 302).

(b) If the shock strut does not have enough pressure, Inflate the shock strut for the nose landing gear (Table 302):

1) Install the tool, SPL-1521 on the gas valve [103].

2) Inflate the shock strut with nitrogen, G00018 until the shock strut extension dimension "X" for the pressure is on the servicing curve on the servicing chart (Figure 302).

(c) Tighten the swivel nut [104] to 5.0 ft-lb (6.8 N·m) – 7.0 ft-lb (9.5 N·m).

(d) Remove the tool, SPL-1521 from the gas valve [103].

(e) Install the gas valve cap [102].

END OF TASK

TASK 12-15-41-610-803

4. Nose Landing Gear Shock Strut Servicing, Airplane on Jacks

(Figure 301, Figure 302)

NOTE: This procedure is a scheduled maintenance task.

A. General

(1) This task gives the instructions for the servicing of the shock strut of the nose landing gear.

B. References

Reference	Title
12-15-61-610-801	Landing Gear Shock Strut Fluids (P/B 301)
32-00-01-480-801	Landing Gear Downlock Pins Installation (P/B 201)

C. Tools/Equipment

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

Reference	Description
COM-1532	Cart - Servicing, Strut Oil Part #: 1104 Supplier: 30188 Part #: 8774B Supplier: 94861 Part #: 8844A Supplier: 94861 Part #: 8844B Supplier: 94861 Part #: HM-GT1-C-VS Supplier: 1HV74 Part #: PF53481-9P Supplier: 94861 Part #: PF54124-3P Supplier: 94861 Part #: PF55451-1 Supplier: 94861 Part #: PF55451-23 Supplier: 94861 Part #: SH001 Supplier: D2029 Opt Part #: 8774 Supplier: 94861 Opt Part #: HM-GT1-C Supplier: 1HV74
SPL-1521	Tool - Strut Inflation, Landing Gear Part #: F70200-35 Supplier: 81205 Opt Part #: F70200-1 Supplier: 81205 Opt Part #: F70200-14 Supplier: 81205 Opt Part #: F70200-17 Supplier: 81205 Opt Part #: F70200-18 Supplier: 81205
SPL-1829	Valve - Drain, Landing Gear Shock Strut Oil Part #: J32108-16 Supplier: 81205 Opt Part #: A32066-1 Supplier: 81205
STD-1103	Hose - Flexible, 5/8 Inch ID, Oil or Hydraulic Fluid Resistant, 6 foot
STD-1110	Container - Hydraulic Fluid Resistant, 5 Gallon (19 Liter)
STD-1157	Gauge - Pressure, 0-3000 PSIG (0-20685 KPa)
STD-6620	Jack - Automotive Type, One Ton Minimum Rated Load

D. Consumable Materials

Reference	Description	Specification
D00467	Fluid - Landing Gear Shock Strut	BMS3-32 Type II
G00018	Nitrogen - Gaseous, Pressurizing, 99.5 Percent Pure	A-A-59503 Type I Grade B, MIL-PRF-27401 Type I Grade A

(Continued)

Reference	Description	Specification
G02314	Air - Compressed, Breathing	BB-A-1034 Source I Grade A

E. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
103	Gas valve	32-21-00-01-360	SIA ALL

F. Location Zones

Zone	Area
713	Nose Landing Gear

G. Precautions for the Tail Stand

SUBTASK 12-15-41-840-004

(1) Obey the tail stand precautions as follows:

CAUTION DO NOT TOW THE AIRPLANE WHILE THE TAIL STAND IS INSTALLED. WHEN YOU TOW THE AIRPLANE WHILE THE TAIL STAND IS INSTALLED, IT CAN CAUSE DAMAGE TO EQUIPMENT.

(a) Do not tow the airplane while the tail stand is installed.

CAUTION DO NOT DEFLATE OR SERVICE THE SHOCK STRUTS WHILE THE TAIL STAND IS INSTALLED. IF YOU DEFLATE OR SERVICE THE SHOCK STRUTS, THE LOAD ON THE TAIL STAND CAN BE TOO LARGE. THIS CAN CAUSE DAMAGE TO EQUIPMENT.

(b) Do not deflate or service the shock struts while the tail stand is installed.

CAUTION DO NOT JACK THE AIRPLANE AT THE MAIN JACK POINTS OR AXLES WHILE THE TAIL STAND IS INSTALLED. IF YOU JACK THE AIRPLANE, THE LOAD ON THE TAIL STAND CAN BE TOO HIGH WHICH CAN CAUSE DAMAGE TO EQUIPMENT.

(c) Do not jack the airplane at the main jack points or axles while the tail stand is installed.

H. Prepare to Service the Shock Strut

SUBTASK 12-15-41-610-015

WARNING MAKE SURE THAT THE DOWNLOCK PINS ARE INSTALLED ON ALL THE LANDING GEAR. WITHOUT THE DOWNLOCK PINS, THE LANDING GEAR CAN RETRACT. THIS CAN CAUSE INJURIES TO PERSONS, AND DAMAGE TO EQUIPMENT.

(1) Make sure that the downlock pins are installed on the nose and main landing gear (TASK 32-00-01-480-801).

SUBTASK 12-15-41-610-017

NOTE: If it is possible, the shock strut should be deflated while the airplane is on the ground and restrained, in the fully compressed condition, while the airplane is jacked.

WARNING MAKE SURE THAT PERSONNEL AND EQUIPMENT ARE AWAY FROM THE AREA BELOW THE NOSE BEFORE YOU DEFLATE THE SHOCK STRUT. WHEN YOU DEFLATE THE SHOCK STRUT, THE NOSE CAN MOVE DOWN. THIS CAN CAUSE INJURIES TO PERSONNEL OR DAMAGE TO EQUIPMENT.

(2) Deflate the shock strut [101] for the nose landing gear:

(a) Remove the cap [102] from the gas valve [103] that is on the top of the shock strut [101].

WARNING DO NOT REMOVE THE VALVE BODY UNTIL YOU DEFLATE THE SHOCK STRUT FULLY. THE AIR PRESSURE CAN BLOW THE VALVE BODY OUT AND CAUSE INJURIES TO PERSONNEL.

(b) Loosen the gas valve swivel nut [104] a maximum of two turns.

NOTE: Fluid in the shock strut will have bubbles when the pressure is released. Deflate the shock strut slowly to prevent the leakage of the fluid through the gas valve.

(c) Use an automotive type jack, STD-6620, to slowly lift the inner cylinder to the fully compressed position.

(d) Loosen the gas valve swivel nut [104] fully when all of the pressure in the shock strut [101] is released.

NOTE: The shock strut is fully deflated when the dimension "X" is 13.8 in. (350.5 mm).

SUBTASK 12-15-41-610-018

(3) To drain the oil from the shock strut [101], do these steps:

(a) Remove the cap [105] from the oil charging valve [106].

(b) Put a 5 gallon (19 liter) hydraulic fluid resistant container, STD-1110, in a position to catch the shock strut fluid when the oil charging valve [106] is opened.

(c) Install the drain equipment on the oil charging valve [106]:

NOTE: The landing gear shock strut drain valve, SPL-1829, can also be used. It will take much longer to drain the shock strut.

1) Cut a length of plastic tubing, long enough to reach the container on the floor.

2) Insert a small allen wrench in the end of the length of tubing.

NOTE: The long end of the allen wrench should be flush with the end of the tube and the short end should penetrate the wall of the tube.

3) Install the tubing on the oil charging valve [106].

NOTE: The allen wrench should go into the check valve and hold it open to drain the hydraulic fluid.

(d) Remove the drain equipment when all of the shock strut oil is removed.

NOTE: About 8.4 fl-oz (248.4 ml) - 15.4 fl-oz (455.4 ml) of fluid will drain out of the strut. More fluid is in the strut below the oil charging valve.

SUBTASK 12-15-41-610-019

CAUTION USE ONLY THE TYPE OF FLUID THAT IS SPECIFIED IN THIS TASK TO FILL THE SHOCK STRUT. IF YOU USE AN INCORRECT FLUID, IT CAN CAUSE DAMAGE TO THE SEALS.

(4) Fill the shock strut [101] with hydraulic fluid (Table 302):

(a) To use hydraulic fluid and alternative fluids, do this task: Landing Gear Shock Strut Fluids, TASK 12-15-61-610-801.

(b) Make sure that the shock strut is in the fully compressed position while filling with hydraulic fluid.

(c) Make sure that the cap [105] for the oil charging valve [106] is removed.

(d) Attach the oil charging line from servicing cart, COM-1532, to the oil charging valve [106].

(e) Make sure that the cap [102] for the gas valve [103] is removed.

(f) Make sure that the gas valve swivel nut [104] is fully open.

(g) Attach a oil resistant hose, STD-1103, to the gas valve [103] with the end of the hose in a container.

CAUTION

CLEAN THE HYDRAULIC FLUID FROM THE TIRES IMMEDIATELY IF THE FLUID FALLS ON THE TIRES. THE FLUID CAN CAUSE DETERIORATION OF THE TIRES.

(h) Fill the shock strut [101] with fluid, D00467, until the hydraulic fluid flows out of the gas valve [103] and into the 5 gallon (19 liter) hydraulic fluid resistant container, STD-1110.

1) Continue to fill the shock strut [101] until the hydraulic fluid that flows into the 5 gallon (19 liter) hydraulic fluid resistant container, STD-1110, is free of bubbles.

(i) Remove the oil charging line.

SUBTASK 12-15-41-610-020

(5) For the oil charging valve [106], do these steps:

(a) Install the cap [105].

(b) Tighten the cap [105] to 50.0 in-lb (5.6 N·m) - 70.0 in-lb (7.9 N·m).

SUBTASK 12-15-41-610-021

(6) Remove the hose from the gas valve [103].

SUBTASK 12-15-41-610-022

(7) Prior to inflating the shock strut [101] remove any restraints and automotive type jack, STD-6620, from below the inner cylinder.

SUBTASK 12-15-41-610-023

(8) Inflate the shock strut [101] for the nose landing gear (Table 302):

(a) Install the tool, SPL-1521, on the gas valve [103].

(b) Inflate the shock strut [101] with nitrogen, G00018, until dimension “X” is approximately 29.3 in. (744.2 mm) and reach 235 psig (1620 kPa) (Figure 302).

NOTE: If dry nitrogen is not available, use air, G02314, as an alternative to inflate the shock strut.

(c) Use a tool, SPL-1521, or pressure gauge (0-3000 PSIG), STD-1157, to measure the pressure of the shock strut [101].

(d) Inflate or deflate the shock strut [101] until the shock strut extension dimension "X" for the pressure is on the servicing curve on the servicing chart.

NOTE: Dimension "X" and pressure must be on the servicing curve for a correctly serviced shock strut.

SUBTASK 12-15-41-610-024

(9) Tighten the gas valve [103]:

(a) Tighten the swivel nut [104] to 60 in-lb (6.8 N·m) - 84 in-lb (9.5 N·m).

SUBTASK 12-15-41-610-025

(10) Remove the tool, SPL-1521, from the gas valve [103].

SUBTASK 12-15-41-610-026

(11) Install the cap [102].

SUBTASK 12-15-41-610-027

(12) With the airplane on the ground, do these steps:

(a) Check the pressure of the shock strut [101]:

1) Remove the cap [102] from the gas valve [103].

(b) Loosen the swivel nut [104] on the gas valve [103].

1) Use a tool, SPL-1521, or pressure gauge (0-3000 PSIG), STD-1157, to measure the pressure of the shock strut [101].

2) Make sure that the pressure is still correct for the extension of the shock strut [101] (Figure 302).

(c) If the shock strut [101] does not have enough pressure, inflate the shock strut [101] for the nose landing gear (Table 302):

1) Install the tool, SPL-1521, on the gas valve [103].

2) Inflate the shock strut [101] with nitrogen, G00018, until the shock strut extension dimension “X” for the pressure is on the servicing chart (Figure 302).

(d) Tighten the swivel nut [104] to 60 in-lb (6.8 N·m) - 84 in-lb (9.5 N·m).

(e) Remove the tool, SPL-1521, from the gas valve [103].

(f) Install the cap [102].

SUBTASK 12-15-41-610-028

(13) Five to ten in-service landings after a complete oil and nitrogen servicing, check the pressure of the shock strut [101]:

NOTE: The shock strut fluid can absorb nitrogen after a complete servicing, reducing the shock strut dimension “X”.

(a) Check the pressure of the shock strut [101]:

1) Remove the cap [102] from the gas valve [103].

2) Use a tool, SPL-1521, or pressure gauge (0-3000 PSIG), STD-1157, to measure the pressure of the shock strut [101].

3) Loosen the swivel nut [104].

4) Make sure that the pressure is still correct for the extension of the shock strut [101] (Figure 302).

(b) If the shock strut [101] does not have enough pressure, inflate the shock strut for the nose landing gear (Table 302):

1) Install the tool, SPL-1521, on the gas valve [103].

2) Inflate the shock strut [101] with nitrogen, G00018, until the shock strut extension dimension "X" for the pressure is on the servicing curve on the servicing chart (Figure 302).

(c) Tighten the swivel nut [104] to 60 in-lb (6.8 N·m) - 84 in-lb (9.5 N·m).

(d) Remove the tool, SPL-1521, from the gas valve [103].

(e) Install the cap [102].

——— END OF TASK ———

LANDING GEAR TIRE - SERVICING

1. General

A. This procedure contains scheduled maintenance task data.

B. This procedure has these tasks:

(1) Landing Gear Tire Pressure Check

(2) Landing Gear Tire Servicing

(3) Add Nitrogen to the Tire

(4) Tire Pressure Indication System Check.

C. The nitrogen that you use must have a minimum purity of 99.5 percent.

TASK 12-15-51-780-801

2. Landing Gear Tire Pressure Check and Tire Servicing

(Figure 301)

NOTE: This procedure is a scheduled maintenance task.

A. General

(1) This task gives the instructions to use standardized pressures for servicing the Main Landing Gear (MLG) and Nose Landing Gear (NLG) tires.

B. References

Reference	Title
32-00-01-480-801	Landing Gear Downlock Pins Installation (P/B 201)

C. Tools/Equipment

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

Reference	Description
SPL-1527	Inflator - Tire Part #: F70199-52 Supplier: 81205
SPL-12301	Sensor - Tire Pressure, Smartstem (TPS), Handheld Reader Part #: KIT83-008-04 Supplier: 81982 Part #: KIT83-008-04E Supplier: 81982 Opt Part #: KIT83-008-02 Supplier: 81982 Opt Part #: KIT83-008-03 Supplier: 81982 Opt Part #: KIT83-008-03E Supplier: 81982
STD-1132	Gauge - Tire Pressure, 0-300 PSIG (0-2069 KPa), +/- 3 psig accuracy

D. Consumable Materials

Reference	Description	Specification
G00018	Nitrogen - Gaseous, Pressurizing, 99.5 Percent Pure	A-A-59503 Type I Grade B, MIL-PRF-27401 Type I Grade A

E. Location Zones

Zone	Area
713	Nose Landing Gear

(Continued)

Zone	Area
734	Left Main Landing Gear
744	Right Main Landing Gear

F. Prepare for the Landing Gear Tire Pressure Check

SUBTASK 12-15-51-480-001

WARNING MAKE SURE THE DOWNLOCK PINS ARE INSTALLED ON ALL THE LANDING GEAR. WITHOUT THE DOWNLOCK PINS, THE LANDING GEAR COULD RETRACT AND CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) If the downlock pins are not installed in the NLG and MLG, do this task: Landing Gear Downlock Pins Installation, TASK 32-00-01-480-801.

G. Landing Gear Tire Pressure Check Using Standardized Nose and Main Gear Tire Pressures (Recommended)

SUBTASK 12-15-51-600-001

(1) Make sure that the tires are cool before you measure the tire pressures.

NOTE: Let the tires cool for a minimum of two hours after the airplane has landed.

(a) If the MLG tires and NLG are too hot to check the tire pressures, and there is not enough time to allow the tires to cool before the airplane is dispatched, do this task: Main Landing Gear and Nose Gear Hot Tire Pressure Check, TASK 12-15-51-780-802

SUBTASK 12-15-51-020-001

(2) For the NLG tires, remove the cap [102].

SUBTASK 12-15-51-020-002

(3) For the MLG tires, remove the cap [101].

SUBTASK 12-15-51-600-002

CAUTION MAKE SURE THAT THE DIRECT READING GAGE IS CORRECTLY CALIBRATED. MAKE SURE THAT IT HAS AN APPROVED DIAL. IF THE GAGE IS NOT ACCURATE, YOU CAN INFLATE THE TIRES TO AN INCORRECT PRESSURE. THIS CAN CAUSE DAMAGE TO THE TIRES.

(4) Use the 0-300 psig (0-2069 kpa) tire pressure gauge, STD-1132, to measure the tire pressures.

NOTE: If installed, the Tire and Brake Monitoring System (TBMS) can be used as an alternative.

SUBTASK 12-15-51-610-010

(5) If the combination tire pressure fill valve and tire pressure transmitter is installed in the tire/wheel, use the hand held device tire pressure sensor reader, SPL-12301, to measure the tire pressure.

SUBTASK 12-15-51-610-001

(6) Do the tire inflation pressure check.

(a) Let the tires cool for a minimum of two hours after a flight.

(b) Do a check of the tire inflation pressure with an 0-300 psig (0-2069 kpa) tire pressure gauge, STD-1132, or tire pressure sensor reader, SPL-12301.

(c) Compare the measured pressure to the standardized pressure, use the table below.

Standardized Nose and Main Gear Tire Pressures

Airplane Model	Cold Inflation Pressure, +0/-5 (psig)	
	Nose Landing Gear	Main Landing Gear
737-8	190	212

SUBTASK 12-15-51-610-002

WARNING USE A REGULATED PRESSURE SOURCE TO SERVICE THE TIRES. AN UNREGULATED PRESSURE SOURCE CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO THE EQUIPMENT.

(7) If the tires require inflation, connect the tire inflator, SPL-1527, to the gas valve [1] or gas valve [2].

(a) Inflate the tire with nitrogen, G00018, to the correct pressure (Table 301).

Table 301/12-15-51-993-802 Maintenance Actions for Main and Nose Gear Standardized Tire Pressures for 737-7/-8/-8200/-9

Airplane Model	Measured Tire Pressure Nose Gear Tires (Tires Cold)	Measured Tire Pressure Main Gear Tires (Tires Cold)	Maintenance Action
737-8	Greater than 190 psig	Greater Than 212 psig	Adjust to the correct pressure
	Between 185 psig and 190 psig	Between 207 psig and 212 psig	No action required
	Between 180 psig and 184 psig	Between 200 psig and 206 psig	Inflate the tire to the correct pressure
	Between 170 psig and 179 psig	Between 190 psig and 199 psig	Inflate the tire to the correct pressure. It is recommended to check tire pressure again in 24 hours. If the tire is found low again, replace the tire.*[1]*[2]
	Between 155 psig and 169 psig	Between 170 psig and 189 psig	Replace wheel and tire assembly. *[1]*[2]
	Below 155 psig	Below 170 psig	Replace the wheel and tire assembly if the pressure cannot be maintained above these limits. If the wheel and tire assembly has turned with the airplane weight on it after the pressure decreased, replace the wheel and tire assembly installed on the opposite side of that axle.*[2]

*[1] ATTENTION: Replace the tires that require frequent refills to maintain nominal service pressure. These tires can have tread loss or carcass rupture if you use them too long. This can cause damage to equipment

*[2] Send the wheel and tire assembly for an inspection to find the cause for the low tire pressure. Mark the reason for removal on the tire to aid the inspectors when they examine the tires.

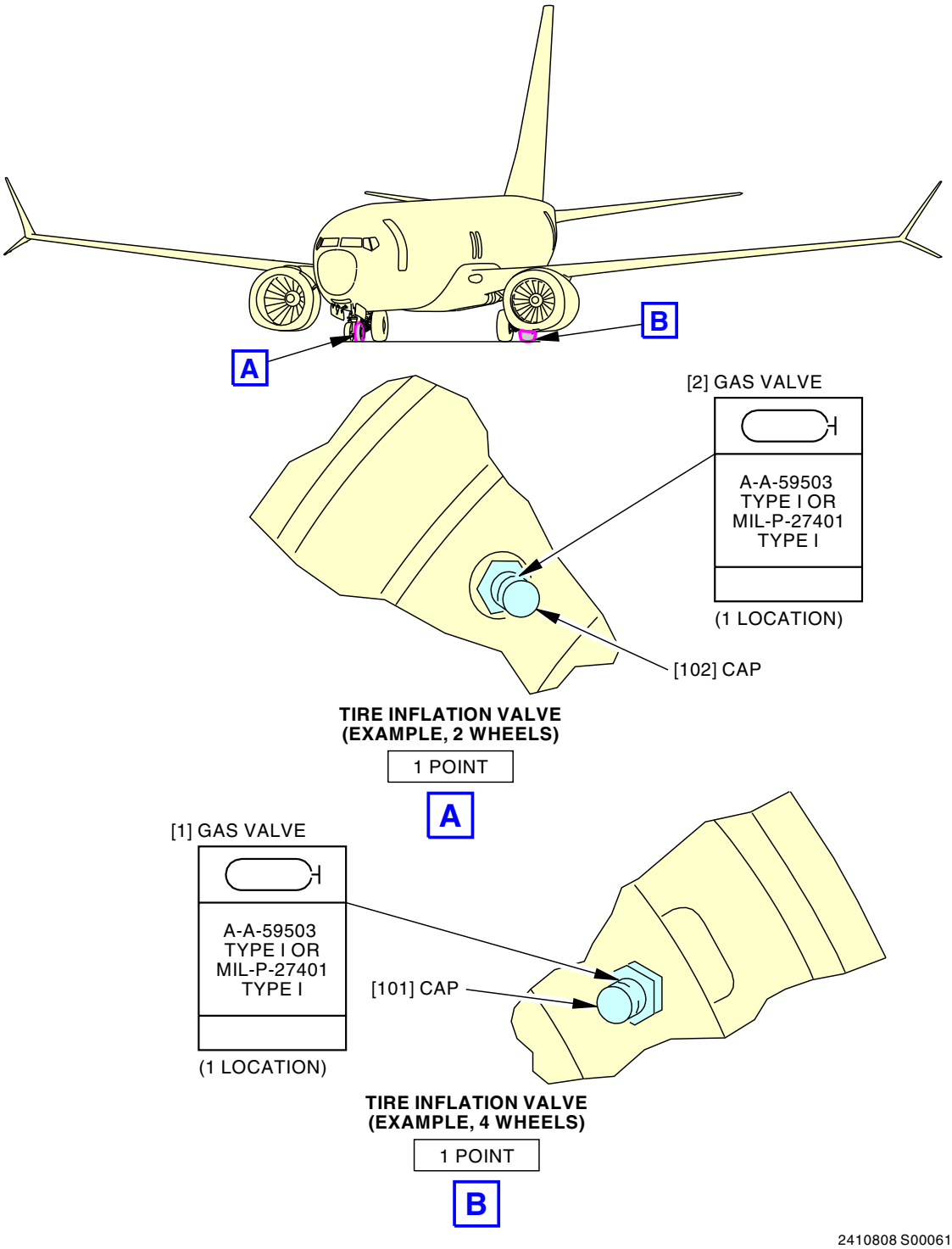
SUBTASK 12-15-51-610-004

(8) Remove the tire inflator, SPL-1527, from the gas valve [1] and gas valve [2].

(a) Install the cap [102] for the NLG tires and hand tighten.

(b) Install the cap [101] for the MLG tires and hand tighten.

——— END OF TASK ———



Landing Gear Tire Servicing
Figure 301/12-15-51-990-801

TASK 12-15-51-780-802

3. Main Landing Gear and Nose Gear Hot Tire Pressure Check

(Figure 301)

A. General

WARNING

DO NOT GO NEAR WHEEL, BRAKE, OR TIRE EQUIPMENT WHICH ARE SUSPECTED OF BEING OVERHEATED. INJURY TO PERSONS CAN OCCUR.

(1) If the wheel, brake, or tire equipment is suspected of being overheated, do this task: High Energy Stop, TASK 05-51-07-210-801.

(2) The intent of this task is to provide a method to check tire pressures prior to a two hour cool down of the tires, or for pressure checks subsequent to the required daily pressure check.

(3) It is recommended that you check the tire pressure after you let the tires cool for a minimum of two hours since the airplane landed.

(4) If it is not possible to wait the recommended two hours for the tires to cool down before the airplane is dispatched or if you touch the tires with hand and feel that they are still hotter than ambient temperature after more than two hours since the airplane landed, you can use this task as an alternative inspection just prior to dispatch.

NOTE: The hot tire pressure check procedure is intended for occasional use only. It is not intended to be used as permanent alternative method to performing the more accurate cold tire checks. The more accurate cold tire pressure check method should be used as frequently as possible to avoid possible tire service life problems such as tread losses and carcass ruptures.

(5) Use a 0-300 psig (0-2069 kpa) tire pressure gauge, STD-1132, to measure the tire pressures.

(6) If the combination tire pressure fill valve and tire pressure transmitter is installed in the tire/wheel, use the hand held device tire pressure sensor reader, SPL-12301, to measure the tire pressure.

B. References

Reference	Title
05-51-07-210-801	High Energy Stop (P/B 201)
32-00-01-480-801	Landing Gear Downlock Pins Installation (P/B 201)
32-45-11-000-801	Main Landing Gear Wheel and Tire Assembly Removal (P/B 401)
32-45-11-400-801	Main Landing Gear Wheel and Tire Assembly - Installation (P/B 401)
32-45-21-000-801	Nose Landing Gear Wheel and Tire Assembly Removal (P/B 401)
32-45-21-400-801	Nose Landing Gear Wheel and Tire Assembly 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-1527	Inflator - Tire Part #: F70199-52 Supplier: 81205
SPL-12301	Sensor - Tire Pressure, Smartstem (TPS), Handheld Reader Part #: KIT83-008-04 Supplier: 81982 Part #: KIT83-008-04E Supplier: 81982 Opt Part #: KIT83-008-02 Supplier: 81982 Opt Part #: KIT83-008-03 Supplier: 81982 Opt Part #: KIT83-008-03E Supplier: 81982
STD-1132	Gauge - Tire Pressure, 0-300 PSIG (0-2069 KPa), +/- 3 psig accuracy

D. Consumable Materials

Reference	Description	Specification
G00018	Nitrogen - Gaseous, Pressurizing, 99.5 Percent Pure	A-A-59503 Type I Grade B, MIL-PRF-27401 Type I Grade A

E. Location Zones

Zone	Area
734	Left Main Landing Gear
744	Right Main Landing Gear

F. Prepare for the Hot Tire Pressure Check

SUBTASK 12-15-51-480-004

WARNING MAKE SURE THAT THE DOWNLOCK PINS ARE INSTALLED ON ALL THE LANDING GEAR. WITHOUT THE DOWNLOCK PINS, THE LANDING GEAR CAN RETRACT. THIS CAN CAUSE INJURIES TO PERSONS, AND DAMAGE TO EQUIPMENT.

(1) Make sure that the downlock pins are installed on the nose and main landing gear (TASK 32-00-01-480-801).

G. Hot Tire Pressure Check

SUBTASK 12-15-51-600-004

(1) Make sure that all antiskid and autobrake system equipment is serviceable.

NOTE: If there are problems with the antiskid or autobrake systems, your average Main Landing Gear (MLG) tire pressures can be higher than normal; this could cause you to over-inflate a suspected low pressure tire.

SUBTASK 12-15-51-600-005

CAUTION MAKE SURE THAT THE DIRECT READING GAGE IS CORRECTLY CALIBRATED. MAKE SURE THAT IT HAS AN APPROVED DIAL. IF THE GAGE IS NOT ACCURATE, YOU CAN INFLATE THE TIRES TO AN INCORRECT PRESSURE. THIS CAN CAUSE DAMAGE TO THE TIRES.

(2) If all of the MLG tires can be assumed to be at approximately the same temperature, measure all of the MLG tire pressures and make a record of the values.

(a) Remove the cap [101].

CAUTION DO NOT DEFLATE A HOT TIRE TO LOWER THE PRESSURE. PRESSURE SHOULD NEVER BE BLED FROM A HOT TIRE TO ACHIEVE A SPECIFIED VALUE. DAMAGE TO EQUIPMENT CAN OCCUR.

(b) Use the pressure 0-300 psig (0-2069 kpa) tire pressure gauge, STD-1132, to measure the MLG tire pressures.

NOTE: Tire and Brake Monitoring System (TBMS) can also be used as an alternate method.

(c) If the combination tire pressure fill valve and tire pressure transmitter is installed in the tire/wheel, use the hand held device tire pressure sensor reader, SPL-12301, to measure the tire pressure.

(d) Use the tire standardized nose and main tire pressure table (Table 302).

Table 302/12-15-51-993-803 Standardized Nose and Main Gear Tire Pressures

Airplane Model	Cold Inflation Pressure, +0/-5 (psig)	
	Nose Landing Gear	Main Landing Gear
737-8	190	212

NOTE: The inflation pressures that are shown are for cold, loaded tires (for example, with the airplane resting on the tires). For unloaded tires, decrease the pressure by 4%.

SUBTASK 12-15-51-610-005

(3) Make sure that all of the MLG tire pressures are above the minimum "cold" specified pressures for the airplane's maximum taxi weight.

(a) Replace any tire and wheel assembly that is below the minimum cold value.

1) Do this task: Main Landing Gear Wheel and Tire Assembly Removal, TASK 32-45-11-000-801.

2) Send the wheel and tire assemblies for an inspection to find the cause for the low tire pressures.

3) Mark the reason for the tire removal on each tire to aid the inspectors when they examine the tires.

SUBTASK 12-15-51-610-006

(4) If the pressure of one tire is low, calculate the average of the other three tires.

SUBTASK 12-15-51-610-007

(5) If the pressure of one tire is 5% - 10% below the average pressure of the other three tires, do these steps:

WARNING USE A REGULATED PRESSURE SOURCE TO SERVICE THE TIRES. AN UNREGULATED PRESSURE SOURCE CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO THE EQUIPMENT.

(a) Connect the tire inflator, SPL-1527, to the gas valve [1].

(b) Inflate the tire with nitrogen, G00018, to the average value of the other three tires.

(c) Remove the tire inflator, SPL-1527, from the gas valve [1].

SUBTASK 12-15-51-610-008

CAUTION

DO NOT DEFLATE A HOT TIRE TO LOWER THE PRESSURE. PRESSURE SHOULD NEVER BE BLED FROM A HOT TIRE TO ACHIEVE A SPECIFIED VALUE. DAMAGE TO EQUIPMENT CAN OCCUR.

(6) If the pressure of one tire is more than 10% below the average of the other three tires, do these steps:

(a) Replace the tire and wheel assembly.

1) Do this task: Main Landing Gear Wheel and Tire Assembly Removal, TASK 32-45-11-000-801.

2) Send the wheel and tire assembly for an inspection to find the cause of the low tire pressure.

3) Mark the reason for the tire removal on the tire to aid the inspectors when they examine the tire.

4) Do this task: Main Landing Gear Wheel and Tire Assembly - Installation, TASK 32-45-11-400-801.

SUBTASK 12-15-51-780-001

(7) If the tire pressure of one tire is more than 20% below the average pressure of the other three tires, do these steps:

(a) Replace the tire and wheel assembly.

1) Do this task: Main Landing Gear Wheel and Tire Assembly Removal, TASK 32-45-11-000-801.

2) Send the wheel and tire assembly for an inspection to find the cause for the low tire pressure.

3) Mark the reason for the tire removal on the tire to aid the inspectors when they examine the tire.

4) Do this task: Main Landing Gear Wheel and Tire Assembly - Installation, TASK 32-45-11-400-801.

(b) Replace the wheel and tire assembly installed on the opposite side of that axle.

1) Do this task: Main Landing Gear Wheel and Tire Assembly Removal, TASK 32-45-11-000-801.

2) Mark on the tire that it was on the same axle with a wheel and tire assembly that was replaced because of low tire pressure.

3) Send the tire for inspection for damage.

4) Do this task: Main Landing Gear Wheel and Tire Assembly - Installation, TASK 32-45-11-400-801.

SUBTASK 12-15-51-200-001

(8) Use the pressure 0-300 psig (0-2069 kpa) tire pressure gauge, STD-1132, to measure the Nose Landing Gear (NLG) tire pressures.

NOTE: TBMS can also be used as an alternate method.

SUBTASK 12-15-51-200-004

(9) If the combination tire pressure fill valve and tire pressure transmitter is installed in the tire/wheel, use the hand held device tire pressure sensor reader, SPL-12301, to measure the tire pressure.

SUBTASK 12-15-51-200-002

(10) For the applicable airplane maximum taxi weight and tire, find the minimum nose tire service pressure (TASK 12-15-51-780-801).

SUBTASK 12-15-51-200-003

(11) Make sure that the NLG tires are above the minimum “cold” specified pressures for the airplane's maximum weight.

(a) Replace the tire and wheel assemblies if both tires are below the minimum cold value.

1) Do this task: Nose Landing Gear Wheel and Tire Assembly Removal, TASK 32-45-21-000-801.

2) Send the wheel and tire assemblies for an inspection to find the cause for the low tire pressures.

3) Mark the reason for the tire removal on the tires to aid the inspectors when they examine the tires.

(b) If the pressure of one tire is 5% below the minimum cold value, do these steps:

1) Do this task: Nose Landing Gear Wheel and Tire Assembly Removal, TASK 32-45-21-000-801.

2) Send the wheel and tire assembly for an inspection to find the cause for the low tire pressure.

3) Mark the reason for the tire removal on the tire to aid the inspectors when they examine the tire.

SUBTASK 12-15-51-600-007

(12) If the pressure of one tire is 5% - 10% below the pressure of the other tire, do these steps:

WARNING USE A REGULATED PRESSURE SOURCE TO SERVICE THE TIRES. AN UNREGULATED PRESSURE SOURCE CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO THE EQUIPMENT.

(a) Connect the tire inflator, SPL-1527, to the gas valve [2].

(b) Inflate the tire with nitrogen, G00018, to the value of the other tire.

(c) Remove the tire inflator, SPL-1527, from the gas valve [2].

SUBTASK 12-15-51-000-001

CAUTION DO NOT DEFLATE A HOT TIRE TO LOWER THE PRESSURE. PRESSURE SHOULD NEVER BE BLED FROM A HOT TIRE TO ACHIEVE A SPECIFIED VALUE. DAMAGE TO EQUIPMENT CAN OCCUR.

(13) If the tire pressure of the one tire is more than 10% below the other tire, do these steps:

(a) Replace the tire and wheel assembly.

1) Do this task: Nose Landing Gear Wheel and Tire Assembly Removal, TASK 32-45-21-000-801.

2) Send the wheel and tire assembly for an inspection to find the cause for the low tire pressure.

3) Mark the reason for the tire removal on the tire to aid the inspectors when they examine the tire.

4) Do this task: Nose Landing Gear Wheel and Tire Assembly Installation, TASK 32-45-21-400-801.

SUBTASK 12-15-51-780-002

(14) If the tire pressure of one tire is more than 20% below the pressure of the other tire, do these steps:

(a) Replace the tire and wheel assembly.

1) Do this task: Nose Landing Gear Wheel and Tire Assembly Removal, TASK 32-45-21-000-801.

2) Send the wheel and tire assembly for an inspection to find the cause for the low tire pressure.

3) Mark the reason for the tire removal on the tire to aid the inspectors when they examine the tire.

4) Do this task: Nose Landing Gear Wheel and Tire Assembly Installation, TASK 32-45-21-400-801.

(b) Replace the wheel and tire assembly installed on the opposite side of that axle.

1) Do this task: Nose Landing Gear Wheel and Tire Assembly Removal, TASK 32-45-21-000-801.

2) Mark on the tire that it was on the same axle with a wheel and tire assembly that was replaced because of low tire pressure.

3) Send the tire for inspection for damage.

4) Do this task: Nose Landing Gear Wheel and Tire Assembly Installation, TASK 32-45-21-400-801.

——— END OF TASK ———

TASK 12-15-51-610-802

4. Add Nitrogen or Air to the Tire

(Figure 301, Figure 302)

NOTE: This procedure is a scheduled maintenance task.

A. General

(1) You can add air to the tire when nitrogen is not available, but the oxygen in the air that you add must not be more than 5 percent of the total tire volume.

B. References

Reference	Title
32-00-01-480-801	Landing Gear Downlock Pins Installation (P/B 201)

C. Tools/Equipment

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

Reference	Description
SPL-1527	Inflator - Tire Part #: F70199-52 Supplier: 81205

D. Consumable Materials

Reference	Description	Specification
G00018	Nitrogen - Gaseous, Pressurizing, 99.5 Percent Pure	A-A-59503 Type I Grade B, MIL-PRF-27401 Type I Grade A

E. Location Zones

Zone	Area
713	Nose Landing Gear
734	Left Main Landing Gear
744	Right Main Landing Gear

F. Procedure

SUBTASK 12-15-51-480-003

WARNING MAKE SURE THE DOWNLOCK PINS ARE INSTALLED ON ALL THE LANDING GEAR. WITHOUT THE DOWNLOCK PINS, THE LANDING GEAR COULD RETRACT AND CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) If the downlock pins are not installed in the nose and main landing gear, do this task: Landing Gear Downlock Pins Installation, TASK 32-00-01-480-801.

SUBTASK 12-15-51-020-003

(2) For the nose landing gear tires, remove the cap [102].

SUBTASK 12-15-51-490-001

(3) Connect the tire inflator, SPL-1527 to the gas valve [2].

SUBTASK 12-15-51-020-004

(4) For the main landing gear tires, remove the cap [101].

SUBTASK 12-15-51-490-002

(5) Connect the tire inflator, SPL-1527 to the gas valve [1].

SUBTASK 12-15-51-610-009

WARNING DO NOT EXCEED 5 PERCENT OXYGEN WHEN INFLATING THE TIRE. INFLATING THE TIRE WITH MORE THAN 5 PERCENT OXYGEN CAN CAUSE INJURY TO PERSONNEL AND DAMAGE TO EQUIPMENT.

(6) If you used dry air to inflate the tire, make sure the oxygen content does not exceed 5 percent, do one of the steps that follow:

(a) Procedure #1, a minimum quantity of dry air:

1) Make a record of the quantity of the dry air inflation psi that you added to the tire.

2) Make sure the sum of all of the dry air inflations to the tire are not more than 18 psi.

3) If the sum of all of the dry air inflations are more than 18 psi, you must deflate the tire and re-inflate with nitrogen, G00018.

a) If you will deflate the tire, raise the axle on jacks to provide clearance between the wheel and tire assembly and the ground to prevent the tire beads from separating from the wheel.

(b) Procedure #2, the quantity of air determined from a graph:

1) Make a record of the quantity of the dry air inflation psi that you added to the tire.

2) Determine the amount of dry air that you can add to the tire, using the initial inflation pressure of the tire and Figure 302.

3) Make sure the sum of all of the dry air inflations to the tire are not more than the value that you determined from Figure 302.

4) If the sum of all of the dry air inflations are more than the determined amount, you must deflate the tire and re-inflate with nitrogen, G00018.

a) If you will deflate the tire, raise the axle on jacks to provide clearance between the wheel and tire assembly and the ground to prevent the tire beads from separating from the wheel.

SUBTASK 12-15-51-090-001

(7) Remove the tire inflator, SPL-1527 from the gas valve [2].

SUBTASK 12-15-51-020-005

(8) Install the cap [102] for the nose landing gear tires and hand tighten.

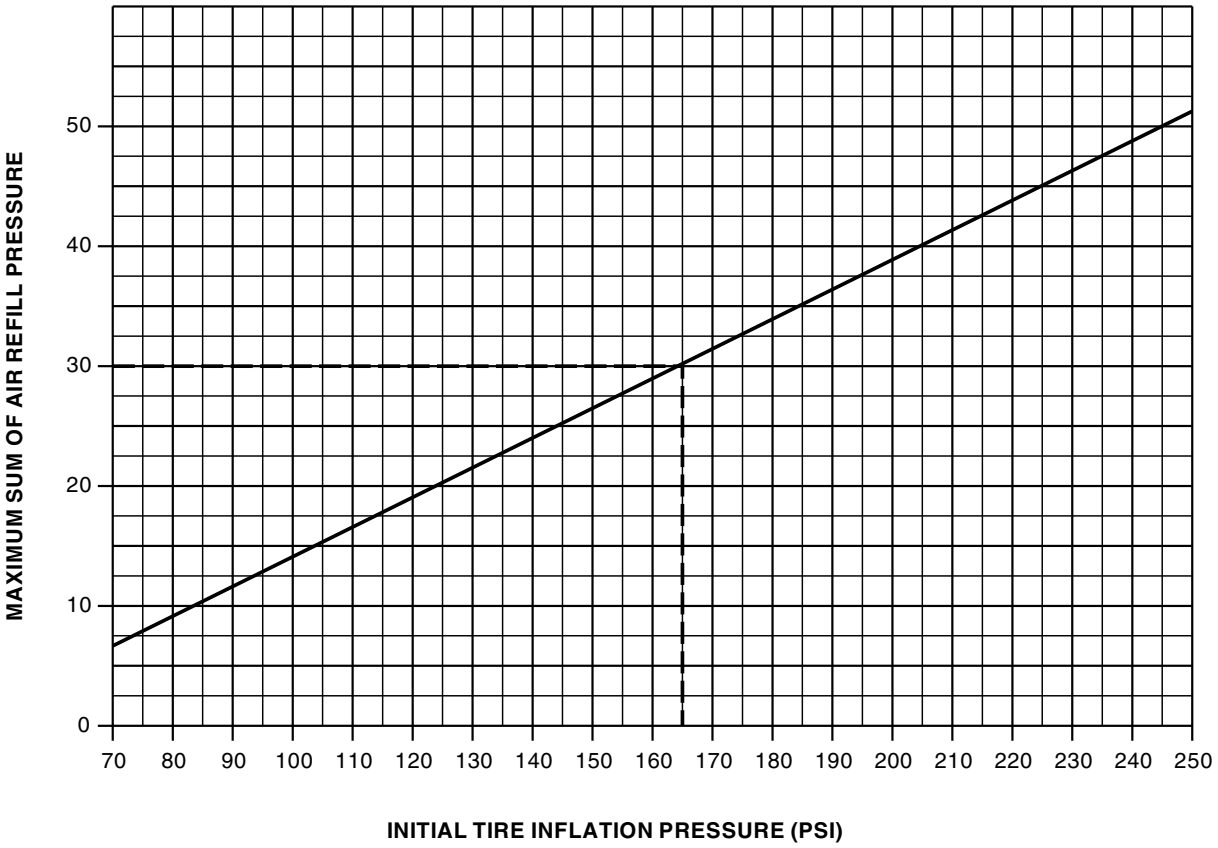
SUBTASK 12-15-51-090-002

(9) Remove the tire inflator, SPL-1527 from the gas valve [1].

SUBTASK 12-15-51-020-006

(10) Install the cap [101] for the main landing gear tires and hand tighten.

——— END OF TASK ———



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Air Refill Pressure
Figure 302/12-15-51-990-804

LANDING GEAR SHOCK STRUT FLUID - SERVICING

1. General

A. This procedure contains a description of the fluids that are used to service the shock strut.

TASK 12-15-61-610-801

2. Landing Gear Shock Strut Fluids

A. Consumable Materials

Reference	Description	Specification
D00070	Fluid - Hydraulic, Petroleum Base	MIL-PRF-5606 (Replaces MIL-H-5606)
D00106	Fluid - Hydraulic, Petroleum Base, For Preservation And Operation	MIL-PRF-6083 (NATO C-635)
D00467	Fluid - Landing Gear Shock Strut	BMS3-32 Type II
D00510	Lubricant - Landing Gear Shock Strut Additive - Lubrizol 1395	
D50022	Fluid - Landing Gear Shock Strut (Specifically For Preservation)	BMS3-32 Type I
D50193	Lubricant - Landing Gear Shock Strut Additive - Methyl Oleate	

B. General

SUBTASK 12-15-61-610-001

(1) All of the fluids that are listed here are compatible. Use any of these fluids to top off the strut even if the strut was originally filled with one of the other fluids.

(2) It is not necessary to change the seals in the shock strut if you drained the strut and filled it with one of the other fluids.

(3) It is recommended to use the pre-mixed fluid, fluid, D00467 and fluid, D50022, if it is available. This is more convenient for the operator and will remove the possiblility of error that can occur when the operator mixes the fluid, D00106 or fluid, D00070 fluids with a lubricant.

(4) Use fluid, D50022 to fill the shock strut for the first time when new, or after overhaul. The Type I fluid contains a corrosion inhibitor.

(5) Use fluid, D00467 orfluid, D50022 at the operator's discretion, for subsequent refills or to top off the strut. These two types of fluid are compatible.

(6) If the fluid, D00467 orfluid, D50022 is not available, You can use fluid, D00106 or fluid, D00070 fluid without lubricants to top off the strut. Try not to do this too often because the lubricant that is already in the strut will become more diluted. This will make the fluid less effective.

(7) The shock strut fluid must contain a lubricant to be effective in service. Lubrizol 1395 lubricant, D00510 and methyl oleate, D50193 are heavy duty lubricants. They are added to the fluid to reduce the wear on the parts of the shock strut that move.

(8) If fluid, D00467 or fluid, D50022 are not available, and you need to fill an empty shock strut, it is recommended that you pre-mix the fluid, D00106 or fluid, D00070 with the lubricants before you add the fluid to the strut. If this is not possible, you can pre-mix 1 part lubricant with 10 parts (minimum) fluid before you add the lubricant into the shock strut.

C. Recommended (Pre-Mixed) Shock Strut Fluids

SUBTASK 12-15-61-610-002

(1) BMS 3-32, Type I - This is MIL-PRF-6083 fluid pre-mixed with 1. 5 percent by volume of Lubrizol 1395 and 1 percent by volume of methyl oleate.

(2) BMS 3-32, Type II - This is MIL-PRF-5606 fluid pre-mixed with 1. 5 percent by volume of Lubrizol 1395 and 1 percent by volume of methyl oleate.

D. Alternative (Not Pre-Mixed) Shock Strut Fluids

SUBTASK 12-15-61-610-003

(1) MIL-PRF-6083 fluid plus 2. 4 percent by volume of Lubrizol 1395 - This mixture can be made from any approved source for fluid, D00106 and mixed with 2. 4 percent by volume of Lubrizol 1395 lubricant, D00510.

NOTE: Operators can choose to add 1. 5 percent by volume of Lubrizol 1395 and 1 percent by volume of methyl oleate instead of 2. 4 percent by volume of Lubrizol 1395.

(2) MIL-PRF-5606 fluid plus 2. 4 percent by volume of Lubrizol 1395 - This mixture can be made from any approved source for fluid, D00070 and mixed with 2. 4 percent by volume of Lubrizol 1395 lubricant, D00510.

NOTE: Operators can choose to add 1. 5 percent by volume of Lubrizol 1395 and 1 percent by volume of methyl oleate instead of 2. 4 percent by volume of Lubrizol 1395.

E. Shock Strut Fluid Precautions

SUBTASK 12-15-61-610-004

(1) Do not add undiluted lubrizol directly into the shock strut. If you put undiluted lubrizol into a strut it will collect at the bottom and not mix correctly with the fluid. Undiluted lubrizol can cause the strut seals to expand and become soft, which will reduce the service life of the seals.

(2) To add lubrizol directly into the shock strut, the lubrizol must be pre-mixed with shock strut fluid. You must mix 1 part of lubrizol with 10 parts (minimum) of shock strut fluid before you put the lubrizol into the shock strut.

(3) When it is necessary to top off the shock strut with fluid. Do not add small quantities of hydraulic fluid without lubrizol many times. This can decrease the lubricity of the fluid in the strut which can cause damage to the strut.

——— END OF TASK ———

FLIGHT COMPARTMENT WINDOWS - SERVICING

1. General

A. This procedure has these tasks:

(1) Inner window surface – cleaning (Glass Type)

(2) Outer window surface - cleaning (Glass Type)

(3) Inner window surface – cleaning (Acrylic Type)

(4) Outer window surface – cleaning (Acrylic Type)

B. Boeing recommends using a 50/50 mixture of alcohol, B00130 and de-ionized water, G02418 on acrylic windows (No. 3).

TASK 12-16-02-100-801

2. Clean the Glass Flight Compartment Windows — Inner Surface

A. Consumable Materials

Reference	Description	Specification
B00106	Cloth - Chamois Leather, Sheepskin, Oil Tanned	CS99-1970, KK-C-300
B00130	Alcohol - Isopropyl	TT-I-735
G00834	Cloth - Lint-free Cotton	
G01989	Soap - Castile (Vegetable Oil Based)	
G02418	Water - De-ionized	

B. Location Zones

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

C. Prepare to Clean the Inner Surface Of The Flight Compartment Windows

SUBTASK 12-16-02-860-001

WARNING THE WINDOW HEAT SYSTEM POWER MUST BE OFF WHEN YOU CLEAN THE WINDOWS. THIS WILL HELP TO PREVENT ELECTRICAL SHOCK INJURY TO PERSONNEL.

(1) Make sure that the WINDOW HEAT switches are off.

SUBTASK 12-16-02-860-002

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

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
B	1	C00055	ANTI-ICE & RAIN WSHLD WIPER RIGHT
B	3	C00054	ANTI-ICE & RAIN WSHLD WIPER LEFT

F/O Electrical System Panel, P6-5

Row	Col	Number	Name
B	7	C01649	WINDOW HEAT POWER R3
B	8	C00394	WINDOW HEAT POWER RIGHT FRONT
B	9	C00392	WINDOW HEAT POWER LEFT SIDE

(Continued)

F/O Electrical System Panel, P6-5

Row	Col	Number	Name
B	19	C01650	WINDOW HEAT POWER L3
B	20	C00393	WINDOW HEAT POWER RIGHT SIDE
B	21	C00228	WINDOW HEAT POWER LEFT FRONT

D. Clean the Inner Surface of the Flight Compartment Windows

SUBTASK 12-16-02-160-001

CAUTION

DO NOT USE ABRASIVE CLEANERS, OR CLEANERS THAT CONTAIN FLUORIDES ON HYDROPHOBIC-COATED WINDOWS. THESE CLEANERS WILL REMOVE THE HYDROPHOBIC LAYER.

(1) For airplanes with hydrophobic coated windows, do the step that follows:

(a) Use a lint-free cloth, G00834 to apply a 50/50 mixture of alcohol, B00130 and de-ionized water, G02418 to the inner surface of the window.

SUBTASK 12-16-02-160-002

CAUTION

DO NOT RUB ACRYLIC WINDOWS WITH A DRY CLOTH. IT CAN CAUSE SCRATCHES. A RUBBED WINDOW IS ELECTROSTATICALLY CHARGED AND WILL ATTRACT DUST AND ABRASIVE PARTICLES.

(2) For airplanes with non-hydrophobic coated windows, do the step that follows:

(a) Use a lint-free cloth, G00834 to apply a solution of castile soap, G01989 and water to the inner surface of the window.

SUBTASK 12-16-02-160-003

(3) Clean the windows with as light a pressure as possible.

SUBTASK 12-16-02-160-004

(4) Remove the cleaning solution from the windows with clean water.

SUBTASK 12-16-02-160-005

(5) Wipe the window dry with a chamois cloth, B00106.

E. Put The Airplane Back to Its Usual Condition

SUBTASK 12-16-02-860-003

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

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
B	1	C00055	ANTI-ICE & RAIN WSHLD WIPER RIGHT
B	3	C00054	ANTI-ICE & RAIN WSHLD WIPER LEFT

F/O Electrical System Panel, P6-5

Row	Col	Number	Name
B	7	C01649	WINDOW HEAT POWER R3
B	8	C00394	WINDOW HEAT POWER RIGHT FRONT
B	9	C00392	WINDOW HEAT POWER LEFT SIDE
B	19	C01650	WINDOW HEAT POWER L3

(Continued)

F/O Electrical System Panel, P6-5

Row	Col	Number	Name
B	20	C00393	WINDOW HEAT POWER RIGHT SIDE
B	21	C00228	WINDOW HEAT POWER LEFT FRONT

——— END OF TASK ———

TASK 12-16-02-100-802

3. Clean The Glass Flight Compartment Windows - Outer Surface

A. Consumable Materials

Reference	Description	Specification
B00106	Cloth - Chamois Leather, Sheepskin, Oil Tanned	CS99-1970, KK-C-300
B00130	Alcohol - Isopropyl	TT-I-735
G00834	Cloth - Lint-free Cotton	
G01989	Soap - Castile (Vegetable Oil Based)	
G02418	Water - De-ionized	

B. Location Zones

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

C. Prepare to clean the Outer Surface of the Flight Compartment Windows.

SUBTASK 12-16-02-860-004

WARNING THE WINDOW HEAT SYSTEM POWER MUST BE OFF WHEN YOU CLEAN THE WINDOWS. THIS WILL HELP TO PREVENT ELECTRICAL SHOCK INJURY TO PERSONNEL.

(1) Make sure that the WINDOW HEAT switches are off.

D. Clean The Outer Surface Of The Flight Compartment Windows

SUBTASK 12-16-02-160-006

CAUTION DO NOT USE ABRASIVE CLEANERS, OR CLEANERS THAT CONTAIN FLUORIDES ON HYDROPHOBIC-COATED WINDOWS. THESE CLEANERS WILL REMOVE THE HYDROPHOBIC LAYER.

(1) For airplanes with hydrophobic coated windows, do the step that follows:

(a) Use a lint-free cloth, G00834 to apply a 50/50 mixture of alcohol, B00130 and de-ionized water, G02418 to the outer surface of the window.

SUBTASK 12-16-02-160-007

(2) Use a chamois cloth, B00106 to apply castile soap, G01989 solution to the outer surface of the window.

SUBTASK 12-16-02-160-008

(3) Clean the windows with as light a pressure as possible.

SUBTASK 12-16-02-160-009

(4) Remove the castile soap, G01989 solution from the windows with clean water.

SUBTASK 12-16-02-160-010

(5) Wipe the window dry with a clean, damp chamois cloth, B00106.

E. Put The Airplane Back To Its Usual Condition.

SUBTASK 12-16-02-860-005

(1) Make sure that the WINDOW HEAT switches are on.

——— END OF TASK ———

TASK 12-16-02-100-803

4. Clean The Acrylic Flight Compartment Windows - Inner Surface

A. Consumable Materials

Reference	Description	Specification
B00106	Cloth - Chamois Leather, Sheepskin, Oil Tanned	CS99-1970, KK-C-300
G01989	Soap - Castile (Vegetable Oil Based)	
G50316	Cloth - Clean, Dry, Lint-free, White, Cotton	

B. Location Zones

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

C. Prepare To Clean The Inner Surface Of The Flight Compartment Windows.

SUBTASK 12-16-02-860-006

WARNING THE WINDOW HEAT SYSTEM POWER MUST BE OFF WHEN YOU CLEAN THE WINDOWS. THIS WILL HELP TO PREVENT ELECTRICAL SHOCK INJURY TO PERSONNEL.

(1) Make sure that the WINDOW HEAT switches are off.

SUBTASK 12-16-02-860-007

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

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
B	1	C00055	ANTI-ICE & RAIN WSHLD WIPER RIGHT
B	3	C00054	ANTI-ICE & RAIN WSHLD WIPER LEFT

F/O Electrical System Panel, P6-5

Row	Col	Number	Name
B	7	C01649	WINDOW HEAT POWER R3
B	8	C00394	WINDOW HEAT POWER RIGHT FRONT
B	9	C00392	WINDOW HEAT POWER LEFT SIDE
B	19	C01650	WINDOW HEAT POWER L3
B	20	C00393	WINDOW HEAT POWER RIGHT SIDE
B	21	C00228	WINDOW HEAT POWER LEFT FRONT

D. Clean the Inner Surface of the Flight Compartment Windows

SUBTASK 12-16-02-160-011

CAUTION

DO NOT RUB ACRYLIC WINDOWS WITH A DRY CLOTH. IT CAN CAUSE SCRATCHES. A RUBBED WINDOW IS ELECTROSTATICALLY CHARGED AND WILL ATTRACT DUST AND ABRASIVE PARTICLES.

(1) Apply the castile soap, G01989, solution to the window with cotton cloth, G50316.

SUBTASK 12-16-02-160-012

(2) Clean the window surface with your bare hand only.

NOTE: Your bare hand can detect dirt before it can scratch the window.

SUBTASK 12-16-02-160-013

(3) Dry the window with a clean damp chamois cloth, B00106.

E. Put the Airplane Back to Its Usual Condition

SUBTASK 12-16-02-860-008

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

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
B	1	C00055	ANTI-ICE & RAIN WSHLD WIPER RIGHT
B	3	C00054	ANTI-ICE & RAIN WSHLD WIPER LEFT

F/O Electrical System Panel, P6-5

Row	Col	Number	Name
B	7	C01649	WINDOW HEAT POWER R3
B	8	C00394	WINDOW HEAT POWER RIGHT FRONT
B	9	C00392	WINDOW HEAT POWER LEFT SIDE
B	19	C01650	WINDOW HEAT POWER L3
B	20	C00393	WINDOW HEAT POWER RIGHT SIDE
B	21	C00228	WINDOW HEAT POWER LEFT FRONT

SUBTASK 12-16-02-860-009

(2) Make sure that the WINDOW HEAT switches are on.

END OF TASK

TASK 12-16-02-100-804

5. Clean The Acrylic Flight Compartment Windows - Outer Surface

A. Consumable Materials

Reference	Description	Specification
B00106	Cloth - Chamois Leather, Sheepskin, Oil Tanned	CS99-1970, KK-C-300
G01989	Soap - Castile (Vegetable Oil Based)	
G50316	Cloth - Clean, Dry, Lint-free, White, Cotton	

B. Location Zones

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

C. Prepare to Clean the Outer Surface of the Flight Compartment Windows.

SUBTASK 12-16-02-860-010

WARNING THE WINDOW HEAT SYSTEM POWER MUST BE OFF WHEN YOU CLEAN THE WINDOWS. THIS WILL HELP TO PREVENT ELECTRICAL SHOCK INJURY TO PERSONNEL.

(1) Make sure that the WINDOW HEAT switches are off.

D. Clean the Outer Surface of the Flight Compartment Windows

SUBTASK 12-16-02-160-014

CAUTION DO NOT RUB ACRYLIC WINDOWS WITH A DRY CLOTH. IT CAN CAUSE SCRATCHES. A RUBBED WINDOW IS ELECTROSTATICALLY CHARGED AND WILL ATTRACT DUST AND ABRASIVE PARTICLES.

(1) Apply the castile soap, G01989, solution to the window with cotton cloth, G50316.

SUBTASK 12-16-02-160-015

(2) Clean the window surface with your bare hand only.

NOTE: Your bare hand can detect dirt before it can scratch the window.

SUBTASK 12-16-02-160-016

(3) Dry the window with a clean damp chamois cloth, B00106.

E. Put the Airplane Back to Its Usual Condition

SUBTASK 12-16-02-160-017

(1) Make sure that the WINDOW HEAT switches are on.

END OF TASK

PASSENGER COMPARTMENT WINDOWS - SERVICING

1. General

A. This procedure has these tasks for passenger compartment windows, window plugs and door windows:

(1) Clean the passenger compartment windows.

(2) Apply antistatic solution to the passenger windows (optional).

TASK 12-16-03-100-801

2. Clean The Passenger Compartment Windows

A. References

Reference	Title
56-21-00-000-801	Removal of a Passenger Cabin Window (P/B 401)
56-21-00-400-801	Passenger Cabin Window Installation (P/B 401)
56-31-00-000-801	Remove the Door-Mounted Windows (P/B 401)
56-31-00-400-801	Install the Door-Mounted Windows (P/B 401)

B. Consumable Materials

Reference	Description	Specification
B00106	Cloth - Chamois Leather, Sheepskin, Oil Tanned	CS99-1970, KK-C-300
G01989	Soap - Castile (Vegetable Oil Based)	

C. Location Zones

Zone	Area
220	Subzone - Passenger Compartment - Body Station 259.50 to 360.00
230	Subzone - Passenger Compartment - Body Station 360.00 to 663.75
240	Subzone - Passenger Compartment - Body Station 663.75 to Body Station 1016.00
831	Forward Entry Door
832	Left Forward Emergency Exit
834	Left Aft Entry Door
841	Forward Galley Service Door
842	Right Forward Emergency Exit
844	Aft Galley Service Door

D. Clean the Passenger Compartment Windows

SUBTASK 12-16-03-020-001

(1) Do one of the steps as necessary that follows:

(a) Do this task: Removal of a Passenger Cabin Window, TASK 56-21-00-000-801.

(b) Do this task: Remove the Door-Mounted Windows, TASK 56-31-00-000-801.

SUBTASK 12-16-03-160-001

CAUTION

DO NOT RUB THE SURFACE WITH DRY CLOTH. THIS CAUSES SCRATCHES AND CAN CAUSE AN ELECTROSTATIC CHARGE WHICH ATTRACTS DUST PARTICLES.

(CAUTION PRECEDES)

CAUTION

DO NOT MOVE THE HEAT SENSOR WIRES WHEN YOU CLEAN THE INNER SURFACE. IF YOU MOVE THE WIRES, IT CAN CAUSE THE ELECTRICAL CONNECTORS TO BECOME LOOSE. IF THE CONNECTORS ARE LOOSE, THEY CAN BECOME TOO HOT AND CAUSE DAMAGE TO THE EQUIPMENT.

(2) Clean the inner and outer surfaces of the middle and outer window panes with a mixture of lukewarm water and castile soap, G01989.

SUBTASK 12-16-03-100-001

(3) Rinse the window panes with clean water.

SUBTASK 12-16-03-100-002

(4) Dry the window panes with a chamois cloth, B00106.

E. Put the Airplane Back to Its Usual Condition

SUBTASK 12-16-03-600-001

(1) Apply antistatic solution to the passenger windows (optional) (TASK 12-16-03-600-801).

SUBTASK 12-16-03-420-002

(2) If it is necessary, do one of the following steps:

(a) Do this task: Passenger Cabin Window Installation, TASK 56-21-00-400-801.

(b) Do this task: Install the Door-Mounted Windows, TASK 56-31-00-400-801.

——— END OF TASK ———

TASK 12-16-03-600-801

3. Apply Antistatic Solution to the Passenger Compartment Windows

A. General

(1) The application of antistatic solution is an optional procedure.

B. References

Reference	Title
56-21-00-400-801	Passenger Cabin Window Installation (P/B 401)
56-31-00-400-801	Install the Door-Mounted Windows (P/B 401)

C. Consumable Materials

Reference	Description	Specification
G00034	Cotton Wiper - Process Cleaning Absorbent Wiper (Cheesecloth, Gauze)	AMS3819 Class 1 Grade A or B Form 1 (Supersede BMS15-5 CL A)
G00073	Agent - Anti-Static (Harry Miller Corporation - Activol 1390-M)	

D. Location Zones

Zone	Area
220	Subzone - Passenger Compartment - Body Station 259.50 to 360.00
230	Subzone - Passenger Compartment - Body Station 360.00 to 663.75
240	Subzone - Passenger Compartment - Body Station 663.75 to Body Station 1016.00
831	Forward Entry Door
832	Left Forward Emergency Exit

(Continued)

Zone	Area
834	Left Aft Entry Door
841	Forward Galley Service Door
842	Right Forward Emergency Exit
844	Aft Galley Service Door

E. Prepare for the Procedure

SUBTASK 12-16-03-100-003

(1) Do this task: Clean The Passenger Compartment Windows, TASK 12-16-03-100-801.

(a) Do not install the windows at this time.

F. Apply Antistatic Solution to the Passenger Compartment Windows

SUBTASK 12-16-03-620-001

(1) Apply the antistatic solution to the window as follows:

(a) Mix 10 parts of antistatic Activol 1390-M agent, G00073,with 120 parts of water by weight.

(b) Soak a boiled piece of cotton wiper, G00034, with the antistatic solution.

(c) Apply the antistatic solution to the inner surface of the outer pane and the inner and outer surfaces of the middle pane.

(d) Let the window surfaces dry.

NOTE: Do not wet the window surfaces after polishing the windows or it can dissolve the antistatic solution.

(e) Polish the window with a dry piece of boiled cotton wiper, G00034.

NOTE: Use brisk straight motions of your hand and maintain as light a pressure as possible.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 12-16-03-420-001

(1) Do one of the steps that follow:

(a) Do this task: Passenger Cabin Window Installation, TASK 56-21-00-400-801.

(b) Do this task: Install the Door-Mounted Windows, TASK 56-31-00-400-801.

——— END OF TASK ———

WASTE TANK - SERVICING

1. General

A. This procedure has the this task:

(1) waste tank - servicing

TASK 12-17-01-610-801

2. Waste Tank Servicing

(Figure 301)

A. General

(1) After you drain the waste tank, you must flush the waste tank, then add a chemical precharge.

B. References

Reference	Title
12-14-00-600-802	Potable Water Tank - Fill (P/B 301)
38-32-00-910-801	Standard Practices for Work with the Toilet Waste and Equipment (P/B 201)
38-42-00-800-802	Potable Water System - Activation (P/B 201)

C. Tools/Equipment

Reference	Description
STD-1142	Equipment - Waste System Servicing

D. Consumable Materials

Reference	Description	Specification
B00490	Chemical, Toilet Flushing Deodorant	AMS 1476

E. Location Zones

Zone	Area
144	Area Below Aft Cargo Compartment - Right

F. Access Panels

Number	Name/Location
145AL	Waste Service Door

G. Drain and Flush the Waste Tank

SUBTASK 12-17-01-910-001

(1) Do this task: Standard Practices for Work with the Toilet Waste and Equipment, TASK 38-32-00-910-801.

SUBTASK 12-17-01-010-001

(2) Open this access panel:

Number	Name/Location
145AL	Waste Service Door

SUBTASK 12-17-01-860-001

(3) Open the cap on the service panel drain valve assembly.

SUBTASK 12-17-01-480-001

(4) Connect the waste drain hose from the toilet service waste system servicing equipment, STD-1142 to the service panel drain valve assembly.

NOTE: The toilet service line pressure should not exceed 8.8 PSID.

SUBTASK 12-17-01-860-002

(5) Push the PUSH-TO-OPEN lever on the service panel drain valve assembly.

SUBTASK 12-17-01-680-001

(6) Drain the waste tank.

(a) Pull a handle to open the waste drain ball valve.

NOTE: While the tank drains, feel the waste drain hose to make sure the liquid flows.

H. Flush the Waste Tank

SUBTASK 12-17-01-860-003

(1) Open the cap on the rinse fitting assembly.

SUBTASK 12-17-01-480-002

(2) Connect a rinse water hose from the toilet service waste system servicing equipment, STD-1142 to the rinse fitting assembly.

(a) Make sure that the water pressure is a minimum of 30 psig (207 kPa).

NOTE: The recommended rinse water pressure is from 30 psig (207 kPa) to 50 psig (345 kPa). If the water pressure is less than 30 psig (207 kPa), the waste tank will not get clean.

(b) The maximum water pressure measured at the rinse nozzle is 80 psig (552 kPa)).

SUBTASK 12-17-01-170-001

(3) Flush the waste tank.

(a) Flush the waste tank with 10 gallons to 50 gallons (38-189 liters) of water.

NOTE: While you flush the tank, feel the waste drain hose to make sure the liquid flows. Use a minimum of 10 gallons (38 liters) of fluid to flush the waste tank.

SUBTASK 12-17-01-680-002

(4) Make sure the liquid drains fully.

SUBTASK 12-17-01-860-004

(5) At the service panel, push the handle to close the waste drain ball valve.

I. Add the precharge chemical to the waste tank.

SUBTASK 12-17-01-610-001

WARNING OBEY THE MANUFACTURER'S INSTRUCTIONS WHEN YOU USE THE PRECHARGE CHEMICAL. THE PRECHARGE CHEMICAL IS POISONOUS AND CAN CAUSE CORROSION. THIS CAN CAUSE INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT.

CAUTION DO NOT ADD THE PRECHARGE CHEMICAL TO THE WASTE TANK IF THE AIRPLANE CAN FREEZE. FROZEN PRECHARGE CAN CAUSE DAMAGE TO THE WASTE SYSYEM.

(1) Use Procedure I or Procedure II to add the precharge chemical, B00490.

SUBTASK 12-17-01-610-002

(2) Procedure I - Add the precharge chemical, B00490 liquid through the rinse fitting assembly for each waste tank.

(a) Connect the precharge hose from the toilet service waste system servicing equipment, STD-1142 to the rinse fitting assembly.

(b) Put six gallons of the precharge chemical, B00490 into the waste tank.

(c) Disconnect the precharge hose from the rinse fitting assembly.

NOTE: Keep the rinse fitting assembly open for approximately one minute to permit the liquid to drain from the line.

(d) Close the cap on the rinse fitting assembly.

SUBTASK 12-17-01-610-003

(3) Procedure II - Use one of the toilets to add the precharge chemical, B00490.

(a) If it is necessary, do this task: Potable Water Tank - Fill, TASK 12-14-00-600-802.

(b) If it is necessary, do this task: Potable Water System - Activation, TASK 38-42-00-800-802.

(c) Put a quantity of the dry precharge chemical (per the manufacturer instructions) in an aft toilet.

(d) After you put the dry precharge chemical in the applicable toilet, operate the toilet 2 to 3 times.

NOTE: This will make sure the precharge is in the waste tank.

SUBTASK 12-17-01-080-001

(4) Disconnect the waste drain hose from the service panel drain valve assembly to the toilet service waste system servicing equipment, STD-1142.

SUBTASK 12-17-01-790-001

CAUTION

DO NOT LET THE LIQUID STAY IN THE LINES. FROZEN LIQUIDS CAN CAUSE DAMAGE TO THE WASTE SYSYEM.

(5) Make sure there is no liquid leakage from the waste service panel.

SUBTASK 12-17-01-860-005

(6) Push the flapper on the service panel drain valve assembly to close the service panel drain valve assembly.

SUBTASK 12-17-01-860-006

(7) Close the cap for the service panel drain valve assembly.

SUBTASK 12-17-01-160-001

(8) Clean all the components and the door for the waste service panel.

(a) Dry all the components and the door for the waste service panel.

SUBTASK 12-17-01-410-001

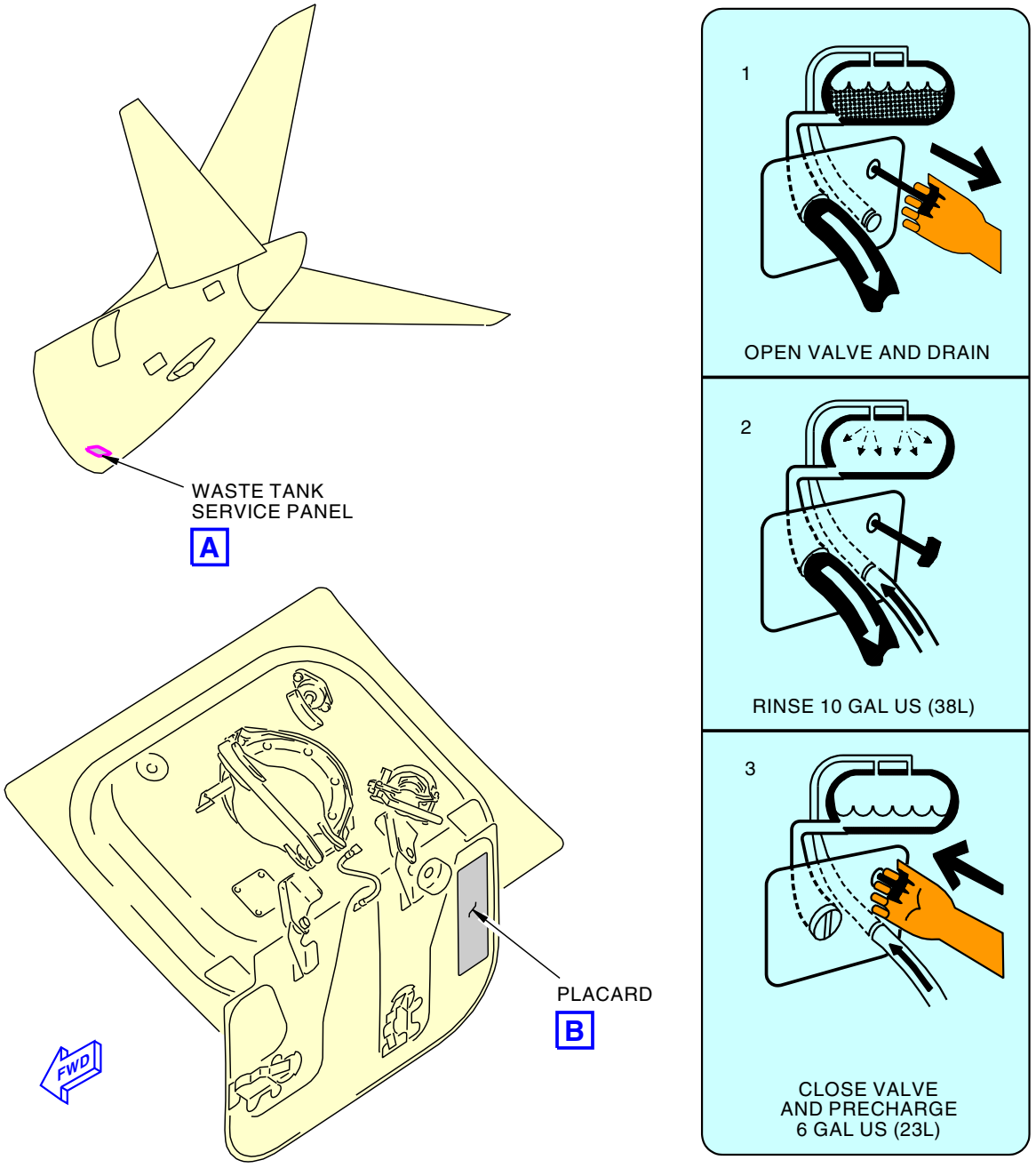
(9) Close this access panel:

Number	Name/Location
145AL	Waste Service Door

SUBTASK 12-17-01-710-001

(10) Make sure all the toilets operate.

END OF TASK



WASTE TANK SERVICE PANEL

A

PLACARD

B

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Waste Tank Servicing
Figure 301/12-17-01-990-801

AIRPLANE LUBRICATION - SERVICING

1. General

A. This procedure contains these tasks:

(1) General Instruction for Lubrication

(2) Intermixing or Purging of Greases

(3) Lubrication of Landing Gear During Cold Weather Operation

TASK 12-20-01-640-801

2. General Instructions for Lubrication

A. General

(1) Description

(a) This section of the Aircraft Maintenance Manual (AMM) gives the usual on-airplane lubrication procedures. Specific data about where to lubricate is given in the subsequent subjects of this section.

(b) There are other lubrication instructions in other Air Transport Association (ATA) sections of the AMM about equipment removal and replacement.

(2) General-Purpose Aviation Grease

(a) Boeing chooses the grease to use based on the specific application. Greases that meet the following specifications are considered general-purpose aviation grease for applications that operate in the -100°F (-73°C) to 250°F (121°C) range:

1) grease, D00633

2) grease, D00013

(b) grease, D00633 is the preferred general-purpose aviation grease recommended by Boeing for applications exposed to temperatures of less than 250°F (121°C). It is recommended because it shows better wear, corrosion protection, and low temperature torque properties.

1) grease, D00633 is satisfactory to be used:

a) When grease, D00013 was specified.

2) grease, D00633 cannot be used where Royco 11MS grease, D00528 is the only grease specified because grease, D00633 was found not to be satisfactory in heavily loaded sliding applications.

3) Greases that have been used before and approved by Boeing for the specific assembly are listed as flag notes on the lubrication instructions for the specific assembly. If there is an application where only one grease must be used, it will be listed with the word "Only" after it.

(3) Special Performance Greases

(a) Special performance greases include:

1) Royco 11MS grease, D00528

2) grease, D00016

(b) In some applications, a special purpose grease is necessary. Where only one grease is recommended for a specific application, it will be listed with the word "Only" after it.

(4) Other Lubricants

(a) Landing gear shock strut fluid, D00467, Anti-Wear.

(b) hydraulic fluid, D50090, Petroleum base, Aircraft.

(c) Lubricating oil, D00091, General Purpose, Low Temperature.

(5) Lubrication Symbols

(a) Lubrication blocks are used to show the part or unit to be lubricated.

(b) Examples of Lubrication blocks used in the manual are shown in Lubrication Symbols (Figure 301). If necessary, more data is given near the lubrication block to help you lubricate the airplane correctly. Each block shows this data:

1) The lubrication method.

2) The type of lubricant.

3) The access panel number is given above or below the lubrication block for points if it is not easy to find the area you must lubricate.

(c) More data on commonly used grease is available in Boeing Service Letter 737-SL-20-027, Summary of Most Commonly Used Greases on Boeing Airplanes.

B. References

Reference	Title
20-10-24 P/B 401	LUBRICATION FITTINGS - REMOVAL/INSTALLATION

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-4879	Coupler - Grease, Midget Part #: 314150 Supplier: 0FKM1

D. Consumable Materials

Reference	Description	Specification
D00013	Grease - Aircraft And Instrument Grease	MIL-PRF-23827 (NATO G-354) (Supersedes MIL-G-23827)
D00016	Grease - Aircraft, General Purpose, Wide Temperature Range	MIL-PRF-81322
D00091	Oil - General Purpose, Low Temperature, Lubricating	MIL-PRF-7870 (NATO O-142)
D00467	Fluid - Landing Gear Shock Strut	BMS3-32 Type II
D00528	Grease - Aircraft - Royco 11MS	
D00633	Grease - Aircraft General Purpose	BMS3-33
D50090	Hydraulic Fluid - Petroleum Base NATO H-515 PETROLEUM BASE AIRCRAFT HYDRAULIC FLUID	MIL-PRF-5606H (NATO H-515)
G00034	Cotton Wiper - Process Cleaning Absorbent Wiper (Cheesecloth, Gauze)	AMS3819 Class 1 Grade A or B Form 1 (Supersede BMS15-5 CL A)

E. Lubrication Application Procedures and Cautions

SUBTASK 12-20-01-640-001

(1) Do these steps to prevent lubricant contamination:

(a) Put lubricant identification labels on all containers, guns, and dispensers.

(b) Keep lubricants in containers that have tight covers.

1) Make sure that the container material will not absorb contamination.

(c) Do not let contamination get in the lubricant.

1) Keep out dust and other contamination when the container is open.

2) Keep the grease guns, brushes, and oil cans clean.

SUBTASK 12-20-01-640-002

(2) Do these steps for correct lubrication:

CAUTION DO NOT LET DIRT, METAL PARTICLES, AND OTHER UNWANTED MATERIAL GET IN THE LUBRICANT. CONTAMINATION IN THE LUBRICANT WILL CAUSE DAMAGE TO THE COMPONENT.

(a) Remove dirt from the grease fittings before you attach the grease gun.

WARNING DO NOT SET THE GUN TO A PRESSURE OF MORE THAN THE LIMIT GIVEN. TOO MUCH PRESSURE WILL CAUSE THE FITTING TO COME OUT AT A HIGH SPEED. THIS CAN CAUSE INJURIES TO PERSONNEL OR DAMAGE TO EQUIPMENT.

(b) Make sure that the maximum operating pressure is less than 2500 psi (17,237 kPa).

(c) Set the pressure at 100 psi (689 kPa) to 200 psi (1379 kPa) unless otherwise specified.

NOTE: The grease pressure delivered by a specific grease gun should be measured or estimated from the manufacturer's specifications. Refer to the manufacturer's information for pumping ratios. Use an inlet air pressure that will result in a maximum operating pressure of 2500 psi (17,237 kPa) that is calculated using the pumping ratios.

NOTE: This is usually sufficient to push out the used grease.

NOTE: Use of pneumatic or electric grease guns is not recommended unless the grease delivery pressure can be measured or controlled. Manually operated grease guns with maximum operating pressures of 2500 psi (17,237 kPa) or less are recommended. Use low input forces to operate the gun.

(d) Find all of the lubrication points that are identified in the specific maintenance task.

1) Use the specified lubricant.

2) Use grease coupler, SPL-4879 for flush-type grease fittings.

3) Apply all lubricants slowly and smoothly.

4) Dispense grease into the grease fitting until the used grease is visually removed and only new grease comes out.

NOTE: This removes contamination along with the used grease.

(e) After lubrication, remove the unwanted grease or lubricating fluid that is around the part or on other parts with a cotton wiper, G00034 to prevent contamination and damage to other surfaces.

CAUTION

LUBRICATE ONLY THE COMPONENTS THAT HAVE LUBRICATION FITTINGS. DO NOT LUBRICATE TEFLON BEARINGS AND BUSHINGS. LUBRICANTS CAUSE DAMAGE TO THE TEFLON, AND DECREASE THE LIFE OF THE BEARINGS.

(f) Do not lubricate Teflon bearings and bushings.

NOTE: It is not necessary to lubricate these bearings.

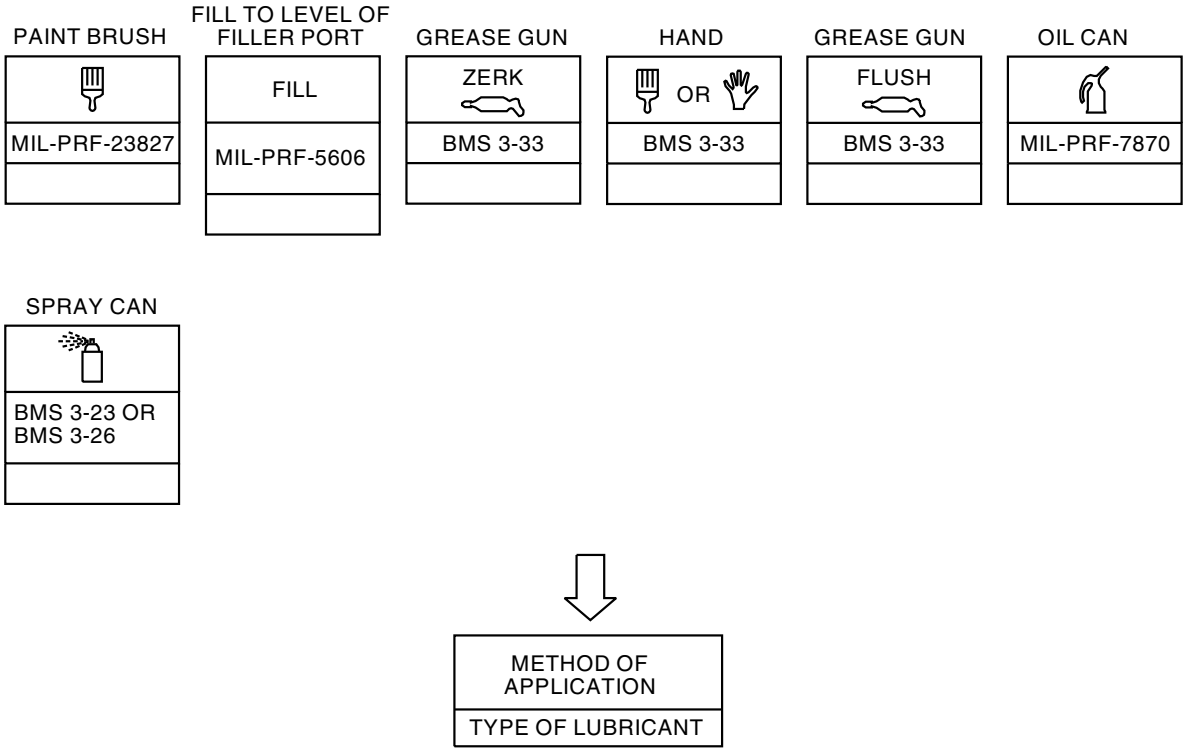
(g) If a grease fitting comes out, do these steps:

1) Look for blockage in the fitting or part.
2) If it is necessary, disassemble the part to remove the blockage.
3) Install a new fitting LUBRICATION FITTINGS - REMOVAL/INSTALLATION, PAGEBLOCK 20-10-24/401.

(h) Be careful when you lubricate sealed-ball, or sealed-roller bearings that have a grease fitting.

1) Do not push the seal out with the grease.
2) Use a restrictor-type adapter to decrease the flow rate of the grease.
3) Stop the operation if the shape of the seal starts to change, or if the grease comes out of the bearing.

END OF TASK



(SAMPLE SYMBOLS)

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Lubrication Symbols
Figure 301/12-20-01-990-801

TASK 12-20-01-640-802

3. Intermixing or Purging of Greases

A. General

(1) Boeing and grease manufacturers agree it is a best practice to limit intermixing of different types or brand-names of grease.

(2) If you mix two different types or brand-names of greases, the performance and properties of the mixture may be degraded when compared with the performance and properties of the original, unmixed greases.

(3) Use a different grease (alternative, optional, or brand-name) only after you remove the used grease as discussed below either by pumping or disassembly.

(4) Purging

(a) Purging is the industry-recognized practice of replacing one grease with another. It is also the recommended procedure to be following in all lubrication tasks, even when not switching from one grease brand or type to another. It is used to ensure that as much of the used grease as possible or practical is removed from the assembly and is replaced by new grease.

1) Purge the grease only when it is not possible or practical to disassemble to remove the used grease.

2) The new grease can be the same type or a different type of grease if permitted for the application.

3) Purging removes the contamination (wear debris, etc.) along with the used grease.

(b) Purging applies both to greasing with a new brand of grease and to usual greasing with the same grease.

(c) When an assembly is purged with a new brand of grease, a quantity of the previously used grease can continue to be in the assembly. The subsequent purging from the second and third lubrication operations with the new grease will decrease the remaining concentration of the previously used grease.

B. Procedure

SUBTASK 12-20-01-640-003

(1) Make sure that the grease that you use is permitted by the specific AMM instructions and your local maintenance practices.

SUBTASK 12-20-01-640-004

(2) Where surfaces are exposed or disassembly is a practical part of the lubrication procedure (e.g., wheel bearings), do these steps to replace the used grease:

(a) Remove all of the used grease from the bearing surfaces, and internal spaces of the mechanism with wipes.

(b) Lubricate the bearing surfaces with the new grease.

SUBTASK 12-20-01-640-005

(3) Where it is not possible or practical to disassemble the mechanism, do these steps to purge the used grease:

(a) Slowly put the new grease into each grease fitting.

(b) Continue to add grease until all used grease is visually removed and only the new grease comes out.

END OF TASK

TASK 12-20-01-600-801

4. Lubrication of Landing Gear During Cold Weather Operation

A. General

(1) This task provides maintenance instructions for the landing gear during cold weather operation. For the purposes of this task, cold weather is defined as the point where the temperature drops below 32°F (0°C).

CAUTION

MAKE SURE THAT YOU OBEY WITH SPECIAL PRECAUTIONS RECOMMENDED BY MANUFACTURER WHEN YOU LUBRICATE THE LANDING GEAR BELOW 32 DEG F (0 DEG C). THE GREASE WILL FLOW CORRECTLY AT APPLICABLE TEMPERATURE OPERATION. IF YOU DO NOT OBEY, YOU WILL NOT LUBRICATE JOINT CORRECTLY AND THIS CAN CAUSE DAMAGE TO THE EQUIPMENT.

(2) Landing gear maintenance such as lubrication, shock strut servicing, and tire servicing are affected by cold weather operation. Proper maintenance procedures during cold weather operation for landing gear can help reduce degradation of the structural joints and ensure optimal shock strut performance. Lubrication is affected at lower temperatures due to increased viscosity of the grease and/or restricted (blocked) lubrication passages due to frozen moisture. Shock strut servicing and tire servicing are affected due to the reduced volume of air/nitrogen at lower temperatures. Special precautions, as described in this procedure, should be taken to ensure that the landing gear is properly maintained. Improperly maintained landing gear can potentially lead to excessive wear of bushings/joints, corrosion, heat damage, component fractures and reduced shock absorption capability.

(3) Washing the landing gear should be avoided or reduced in frequency as much as possible. The practice of washing removes protective grease films in bearings and joints and accelerates corrosion and wear. When it is necessary to wash the gear for inspection purposes, it is recommended to re-grease the entire gear within approximately six hours to displace moisture and detergents.

B. References

Reference	Title
12-15-31-610-801	Main Landing Gear Shock Strut Fluid Check (P/B 301)
12-15-41-610-801	Nose Landing Gear Shock Strut Fluid Check (P/B 301)
12-15-51-780-801	Landing Gear Tire Pressure Check and Tire Servicing (P/B 301)

C. Consumable Materials

Reference	Description	Specification
D00070	Fluid - Hydraulic, Petroleum Base	MIL-PRF-5606 (Replaces MIL-H-5606)
D00467	Fluid - Landing Gear Shock Strut	BMS3-32 Type II
D00504	Grease - Petrolatum	VV-P-236

D. Landing Gear Structures Maintenance

SUBTASK 12-20-01-640-006

(1) Where possible, perform scheduled lubrication at maintenance bases where the weather is above 32°F (0°C), or in a heated hangar.

SUBTASK 12-20-01-640-008

(2) If necessary, use pressurized equipment to enable the grease to reach all surfaces of the joint.

NOTE: Attempting to grease a joint at higher pressures increases the risk of dislodging a lube fitting.

SUBTASK 12-20-01-640-009

(3) Heat the landing gear structure using one of the methods below. The minimum time required to warm the structure is dependent on the surrounding temperature.

(a) Blow hot air directly onto the structure

1) Position the heater so that the warm air is directed to each zerk fitting and lubrication cavity prior to lubrication.

(b) Blow hot air into an enclosure around the structure

1) Use a tent-like enclosure (fabricated tent or parachute) made from heavy-duty material that is large enough to enclose the entire truck assembly.

NOTE: You can also use the cover for wheel/tire/brake protection during deicing/anti-icing or washing of the aircraft.

SUBTASK 12-20-01-640-010

(4) Apply heat until the “touch temperature” of the steel landing gear structure (not the surrounding air temperature) has warmed above 32°F (0°C).

(a) Use a thermocouple or infrared device to determine the temperature of the structure.

SUBTASK 12-20-01-640-011

(5) Do not apply the heated air directly to the tires, as high temperatures can damage tires.

SUBTASK 12-20-01-640-012

(6) Use one of the following heat sources to supply hot air directly to the structure or to the confined (tented) area surrounding the structure:

(a) Space heaters (commercially available and can be used inside or outside hangars).

(b) Spencer Coldbuster Mark IV Flameless Heaters (can be used only outside or placed outside with ducting to direct hot air into the hangar/tented area).

(c) Herman-Nelson or Polar GSH-1 Heaters (placed outside with heat output directed into the hangar/tented area).

(d) Electric powered heaters (commercially available and may be used when the airplane is parked at the gate).

(e) Electric heat blankets connected to the airplane power.

SUBTASK 12-20-01-640-013

(7) Continue to supply hot air to the area until the re-lubrication is completed.

SUBTASK 12-20-01-640-014

(8) To ensure that grease can flow freely, make sure that the grease gun itself is warmed to room temperature prior to grease application.

(a) Heat the grease gun and spare grease tube using a portable grease gun heater for approximately 15 minutes.

SUBTASK 12-20-01-640-015

(9) If you find a plugged lubrication passage, do these steps:

(a) Fill a hand-held grease gun with a warm mineral-based oil such as fluid, D00070.

(b) Flush the joint using a rapid pumping action.

(c) Purge the oil with grease (Intermixing or Purging of Greases, TASK 12-20-01-640-802).

(d) If the passage is still blocked or if the fitting becomes dislodged, do these steps:

1) Disassemble the joint to remove the blockage.

2) Install a new fitting.

SUBTASK 12-20-01-640-016

(10) If desired, you may use a Grease Joint Rejuvenator to open clogged grease joints and fittings.

E. Shock Strut Maintenance and Servicing

SUBTASK 12-20-01-640-017

(1) During cold weather operation, some leakage of the shock strut fluid may occur. Minor leakage is acceptable.

(a) To prevent leakage during long layovers at temperatures below 0°F (-18°C), apply grease, D00504 to cover the gap between the gland nut and inner cylinder.

SUBTASK 12-20-01-880-001

(2) For airplanes originating in a warm environment and terminating in a cold environment, do these steps:

(a) At the origin, over-inflate the shock struts by approximately 1 in. (25 mm).

(b) At the destination, perform a pressure/extension check (Main Landing Gear Shock Strut Fluid Check, TASK 12-15-31-610-801 or Nose Landing Gear Shock Strut Fluid Check, TASK 12-15-41-610-801).

1) If you will use a two-point check, do these steps:

a) Make sure that the difference in ambient temperature at which the two measurements are made is not more than 20°F (-7°C).

b) Take the first measurement when the airplane is empty after arrival.

c) Take the second measurement when the airplane is fully loaded, at the same location as the first.

2) If the strut is under-inflated, then service with nitrogen to bring the strut back onto the low end of the servicing band.

SUBTASK 12-20-01-710-001

(3) For airplanes originating in a cold environment and terminating in a warm environment, do these steps:

(a) At the origin, perform a pressure/extension check (Main Landing Gear Shock Strut Fluid Check, TASK 12-15-31-610-801 or Nose Landing Gear Shock Strut Fluid Check, TASK 12-15-41-610-801).

1) If the strut is under-inflated, then service with nitrogen to bring the strut back onto the low end of the servicing band.

(b) At the destination, re-service the strut only if the airplane will remain in service in a warm environment.

NOTE: When the airplane arrives in the warmer location, the shock strut will appear slightly over-inflated. It is not recommended to re-service the strut if the airplane will soon return to a colder environment.

SUBTASK 12-20-01-210-001

(4) Do these steps to ensure that the shock strut scraper functions properly:

(a) Wipe the chrome surface of the landing gear inner cylinder with fluid, D00467.

(b) Inspect the scraper ring and shock strut seals to make sure that there is no damage.

F. Parking and Tire Maintenance

SUBTASK 12-20-01-550-001

(1) Do one of the following steps to park the airplane in an area where there is snow, ice, or slush:

(a) If possible, clear snow, ice, or slush from the areas directly under where the main and nose gear tires will be positioned, prior to parking the airplane.

(b) If the parking area is covered with packed snow or ice, park the airplane with the main gear tires on a thin layer of sand or a mat.

SUBTASK 12-20-01-880-002

CAUTION

DO NOT TRY TO MOVE THE AIRPLANE IF THE TIRES ARE FROZEN TO THE GROUND. MAKE SURE THAT THE WHEELS TURN WHEN YOU MOVE THE AIRPLANE. IF THE WHEELS DO NOT TURN, DAMAGE TO THE WHEELS AND THE AIRPLANE CAN OCCUR.

(2) If wheel assemblies are frozen to the ramp, thaw ice around the tires with a ground heater, or soften ice by spraying a glycol mixture around the base of the tires.

(a) Make sure that the glycol or deicing fluid is not applied to the brake assemblies.

SUBTASK 12-20-01-610-001

(3) For airplanes originating in a warm environment and terminating in a cold environment, do these steps:

(a) Service the tires (Landing Gear Tire Pressure Check and Tire Servicing, TASK 12-15-51-780-801) to ensure that they have sufficient pressure, even if the airplane will fly to a warmer environment.

NOTE: It is better for the tires to be slightly over-inflated in a warmer environment than under-inflated in a colder environment.

SUBTASK 12-20-01-580-001

NOTE: If the airplane sits stationary in cold weather, the tires may develop flat spots. These flat spots are temporary and will go away when the tires are rolled. However, they may cause objectional vibration during taxi or takeoff.

(4) If desired, taxi the airplane to smooth out the flat spots.

END OF TASK

MAIN LANDING GEAR - SERVICING

1. General

A. This procedure has these tasks:

(1) Main Landing Gear Upper End Components Servicing

(2) Main Landing Gear Lower End Components Servicing

(3) Main Landing Gear Bushings Servicing.

B. This procedure shows only the left main landing gear, but it is applicable to the right main landing gear also.

TASK 12-21-11-640-801

2. Main Landing Gear Upper End Components Servicing

(Figure 301)

NOTE: This procedure is a scheduled maintenance task.

A. General

(1) This task gives the instructions to lubricate the upper end components of the main landing gear.

B. References

Reference	Title
20-10-24-420-801	Lubrication Fitting Installation (P/B 401)
32-00-01-480-801	Landing Gear Downlock Pins Installation (P/B 201)

C. Consumable Materials

Reference	Description	Specification
C00755	Compound - Organic Corrosion Inhibiting, Heavy Duty	BMS3-26
D00633	Grease - Aircraft General Purpose	BMS3-33
G00009	Compound - Organic Corrosion Inhibiting	BMS3-23

D. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right
734	Left Main Landing Gear
744	Right Main Landing Gear

E. Access Panels

Number	Name/Location
551DB	Lower Inboard Fixed Trailing Edge, Lube Actuator & MLG Beam Outboard Attach Pin Access Panel
651DB	Lower Inboard Fixed Trailing Edge, Lube Actuator & MLG Beam Outboard Attach Pin Access Panel

F. Prepare for the Main Landing Gear Upper End Components Servicing.

SUBTASK 12-21-11-480-001

WARNING MAKE SURE THE DOWNLOCK PINS ARE INSTALLED ON ALL THE LANDING GEAR. WITHOUT THE DOWNLOCK PINS, THE LANDING GEAR COULD RETRACT AND CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) If the downlock pins are not installed in the nose and main landing gear, do this task: Landing Gear Downlock Pins Installation, TASK 32-00-01-480-801.

SUBTASK 12-21-11-010-001

(2) Open the applicable access panels:

Number	Name/Location
551DB	Lower Inboard Fixed Trailing Edge, Lube Actuator & MLG Beam Outboard Attach Pin Access Panel
651DB	Lower Inboard Fixed Trailing Edge, Lube Actuator & MLG Beam Outboard Attach Pin Access Panel

NOTE: You must open this panel to lubricate the walking beam assembly, actuator assembly, and the retraction link assembly.

G. Main landing gear upper end components servicing

SUBTASK 12-21-11-840-001

WARNING USE GLOVES AND EYE PROTECTION WHEN YOU LUBRICATE WITH A GREASE GUN. LUBRICANT AT HIGH PRESSURE CAN CAUSE INJURIES TO PERSONNEL.

(1) Put on protective gloves and eye protection.

SUBTASK 12-21-11-640-001

CAUTION YOU MUST BE CAREFUL WHEN YOU CONNECT AND DISCONNECT THE GREASE GUN TO THE LUBRICATION FITTINGS. IF YOU ARE NOT CAREFUL, THE GREASE GUN CAN CAUSE DAMAGE TO THE LUBRICATION FITTINGS.

CAUTION DO NOT USE A PRESSURE OF MORE THAN 2500 PSIG (17200 KPA) WHEN YOU LUBRICATE THE MAIN LANDING GEAR AND ACTUATING MECHANISMS. IF YOU USE A PRESSURE OF MORE THAN 2500 PSIG (17200 KPA), YOU CAN BLOW THE LUBRICATION FITTINGS OFF THE LANDING GEAR.

(2) Use the grease gun to lubricate the main landing gear with grease, D00633, (Figure 301, Table 301)

NOTE: The table makes a list of all the lubrication fittings for the upper end components of the main landing gear.

SUBTASK 12-21-11-420-001

(3) If a fitting blows off, do these steps:

(a) Make sure there is not a blockage in the lubrication path.

(b) Do this task: Lubrication Fitting Installation, TASK 20-10-24-420-801.

Table 301/12-21-11-993-801 Main Landing Gear Upper End Components Lubrication (Fig. 301)

Item No.	Nomenclature	Lubricant	Method of Application	Number of Locations
1	WALKING BEAM ASSEMBLY	grease, D00633	Zerk	3
2	ACTUATOR ASSEMBLY	grease, D00633	Zerk	3
3	RETRACTION LINK ASSEMBLY	grease, D00633	Zerk	1
4	ACTUATOR ATTACH PIN	grease, D00633	Zerk	1
5	WALKING BEAM ATTACH PIN	grease, D00633	Zerk	1
6	OUTER CYLINDER	grease, D00633	Zerk	7
7	AFT TRUNNION BEARING	grease, D00633	Zerk	1
8	FORWARD TRUNNION BEARING HOUSING	grease, D00633	Zerk	1
9	UPPER DOWNLOCK LINK ASSEMBLY	grease, D00633	Zerk	4
10	LOWER DOWNLOCK LINK ASSEMBLY	grease, D00633	Zerk	2
11	HANGER LINK ASSEMBLY	grease, D00633	Zerk	2
12	UPPER SIDE STRUT	grease, D00633	Zerk	4
13	LOWER SIDE STRUT	grease, D00633	Zerk	2
14	LOWER DOWNLOCK PIN	grease, D00633	Zerk	1
15	REACTION LINK ASSEMBLY	grease, D00633	Zerk	6
16	OUTER CYLINDER BUSHING	corrosion inhibiting compound, G00009 OR compound, C00755	SPRAY	2

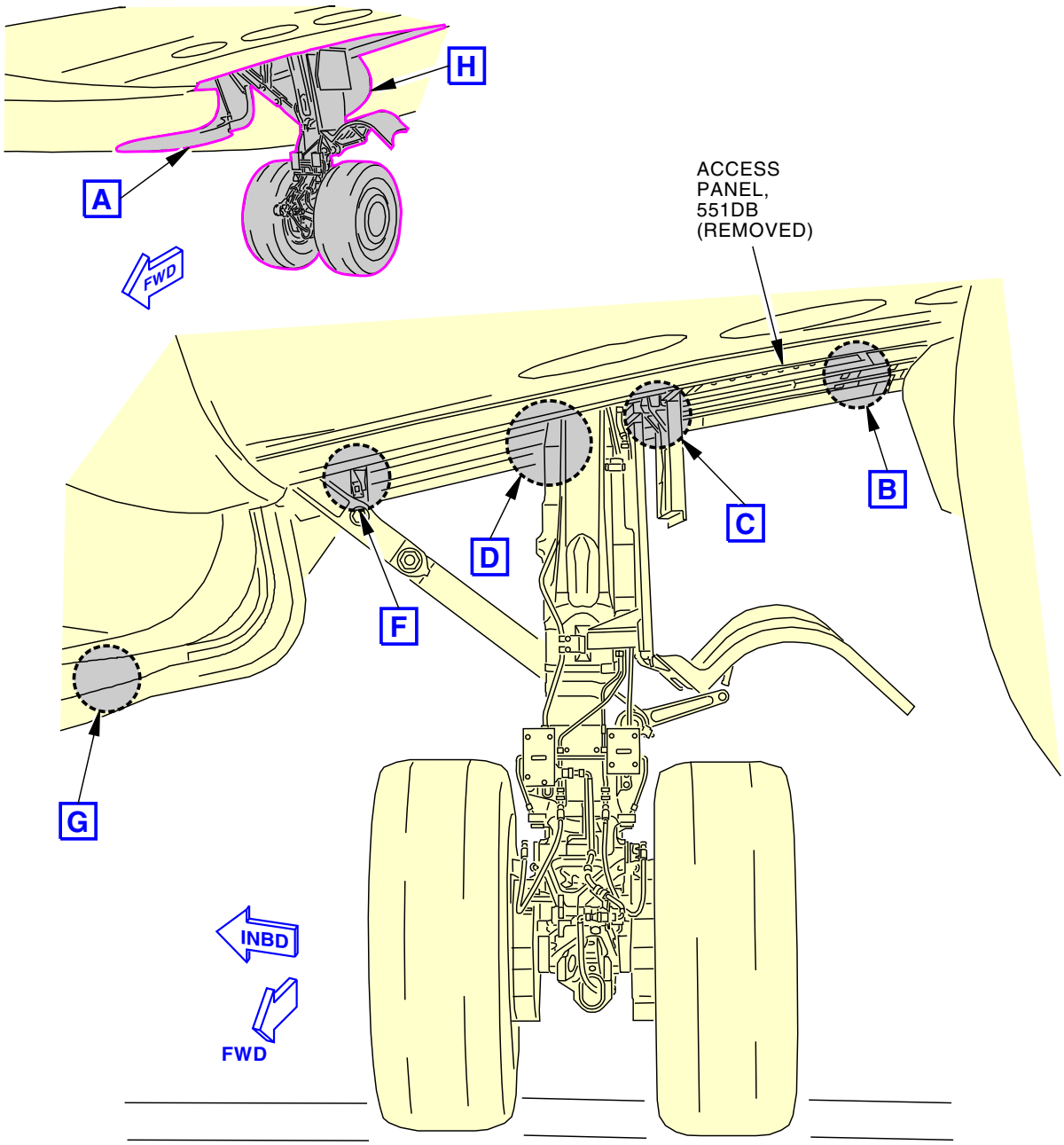
H. Put the Airplane Back to Its Usual Condition

SUBTASK 12-21-11-010-002

(1) Close the applicable access panels:

Number	Name/Location
551DB	Lower Inboard Fixed Trailing Edge, Lube Actuator & MLG Beam Outboard Attach Pin Access Panel
651DB	Lower Inboard Fixed Trailing Edge, Lube Actuator & MLG Beam Outboard Attach Pin Access Panel

——— END OF TASK ———

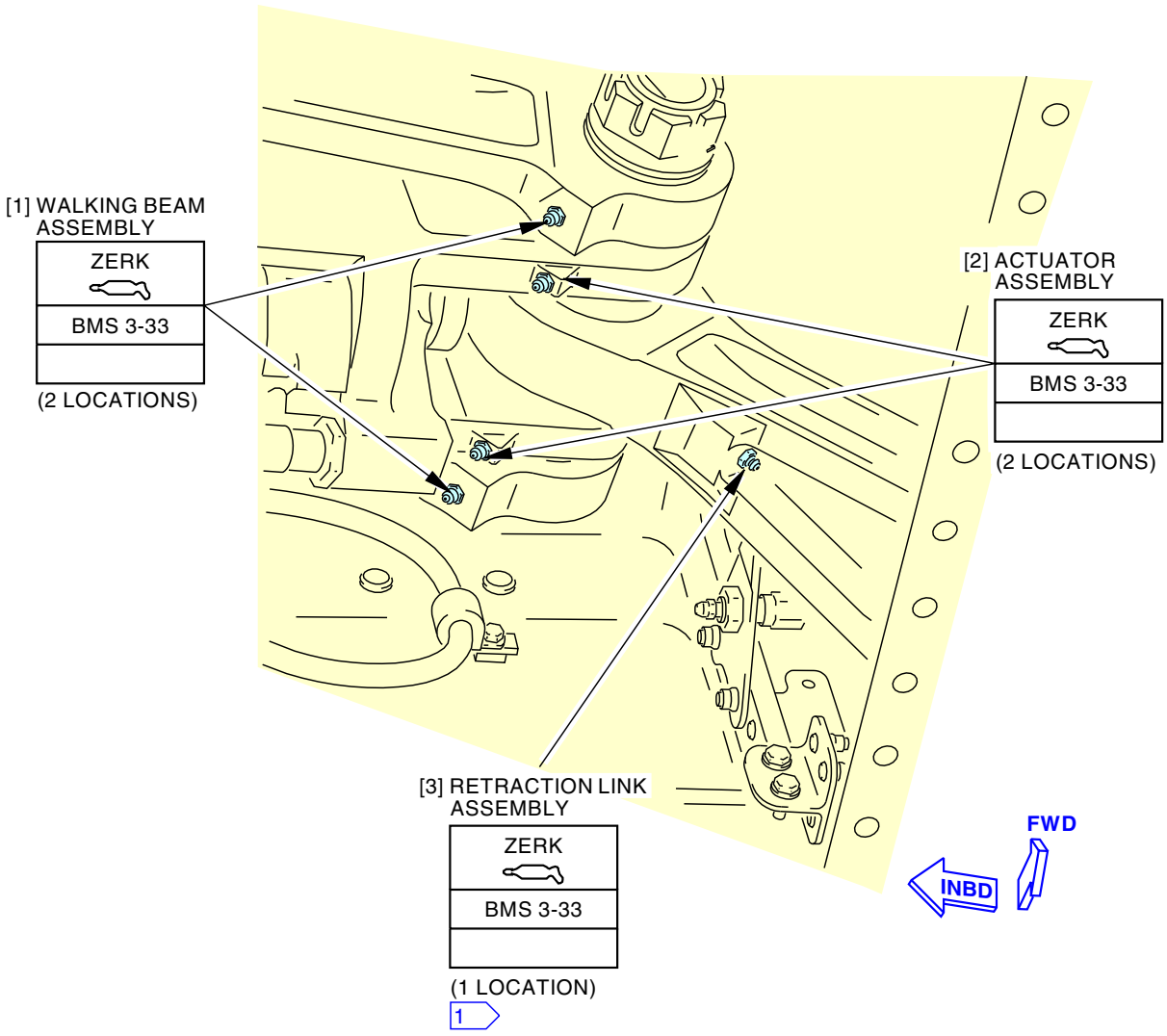


LEFT MAIN LANDING GEAR
(RIGHT MAIN LANDING GEAR IS EQUIVALENT)

A

2410814 S00061526451_V2

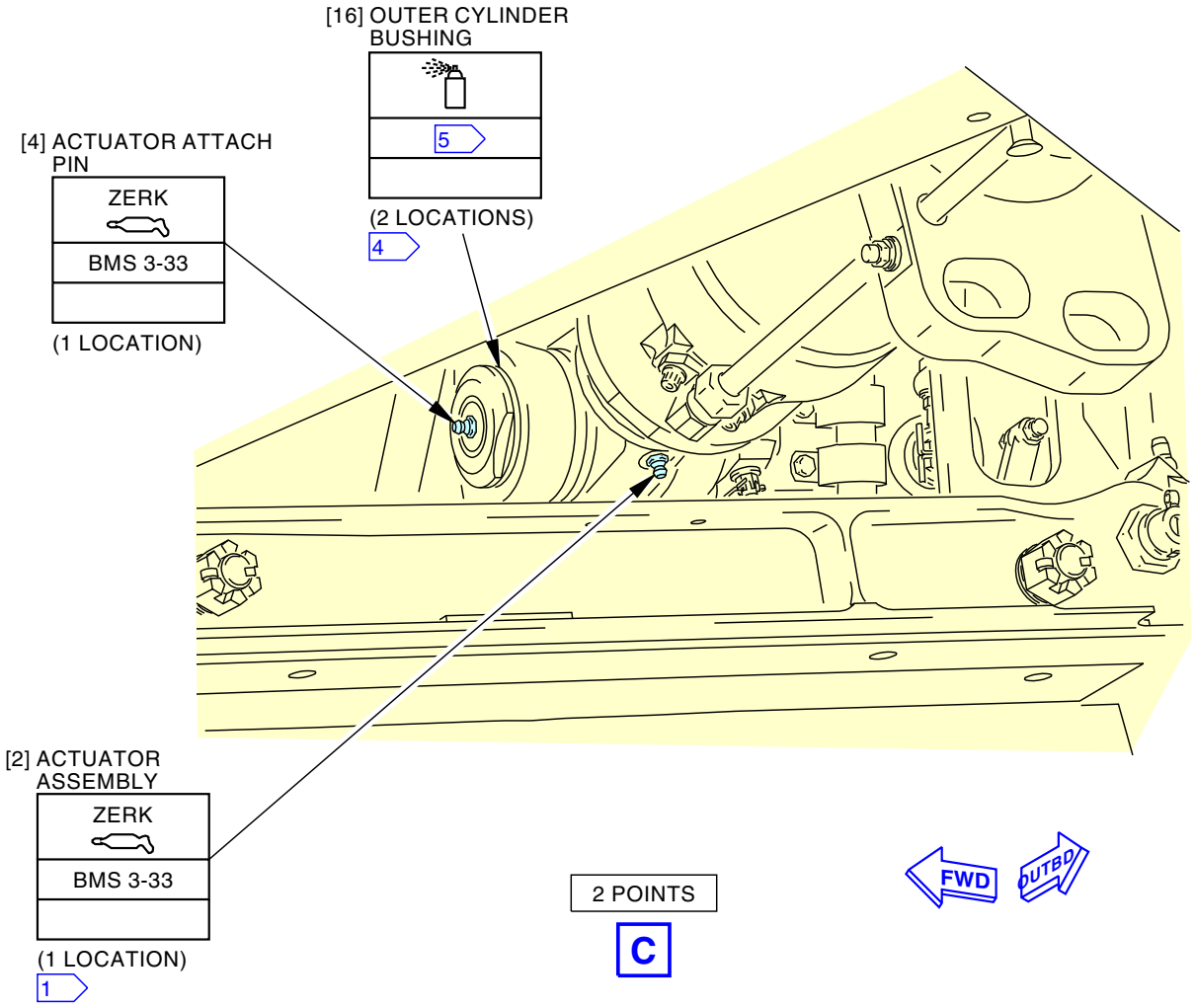
Main Landing Gear Upper End Components Servicing
Figure 301/12-21-11-990-801 (Sheet 1 of 8)



1 ONE MORE LUBE POINT IS ON THE OPPOSITE SIDE (NOT SHOWN). LUBRICATE ONLY ONE LUBE POINT.

2410815 S00061526452_V1

Main Landing Gear Upper End Components Servicing
Figure 301/12-21-11-990-801 (Sheet 2 of 8)



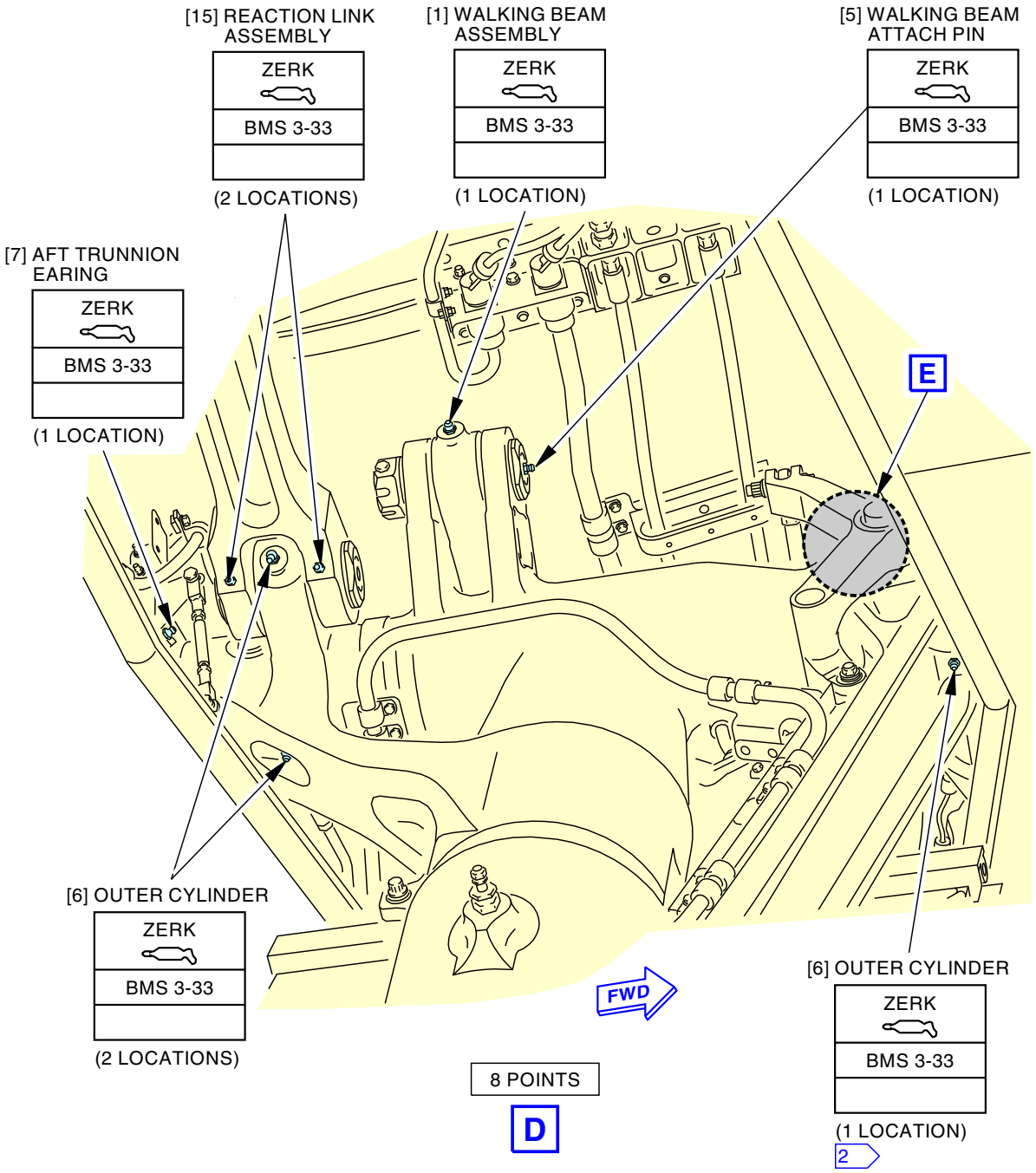
1 ONE MORE LUBE POINT IS ON THE OPPOSITE SIDE (NOT SHOWN). LUBRICATE ONLY ONE LUBE POINT

4 ONE MORE BUSHING IS ON THE OPPOSITE SIDE UNDER THE NUT AND WASHER.

5 BUSHINGS WITH PAINTED WITNESS LINE (OR EQUIVALENT IDENTIFICATION MARK), DO THESE STEPS:
- LUBRICATE THE JOINT
- APPLY BMS 3-23 OR BMS 3-26. COMPOUND, POINT THE SPRAY AROUND THE BUSHING FLANGE BETWEEN THE BUSHING AND THE MATING LUG SURFACE.
- LUBRICATE THE JOINT AGAIN TO REMOVE ALL COMPOUND FROM THE JOINT.

2410816 S00061526453_V1

Main Landing Gear Upper End Components Servicing
Figure 301/12-21-11-990-801 (Sheet 3 of 8)



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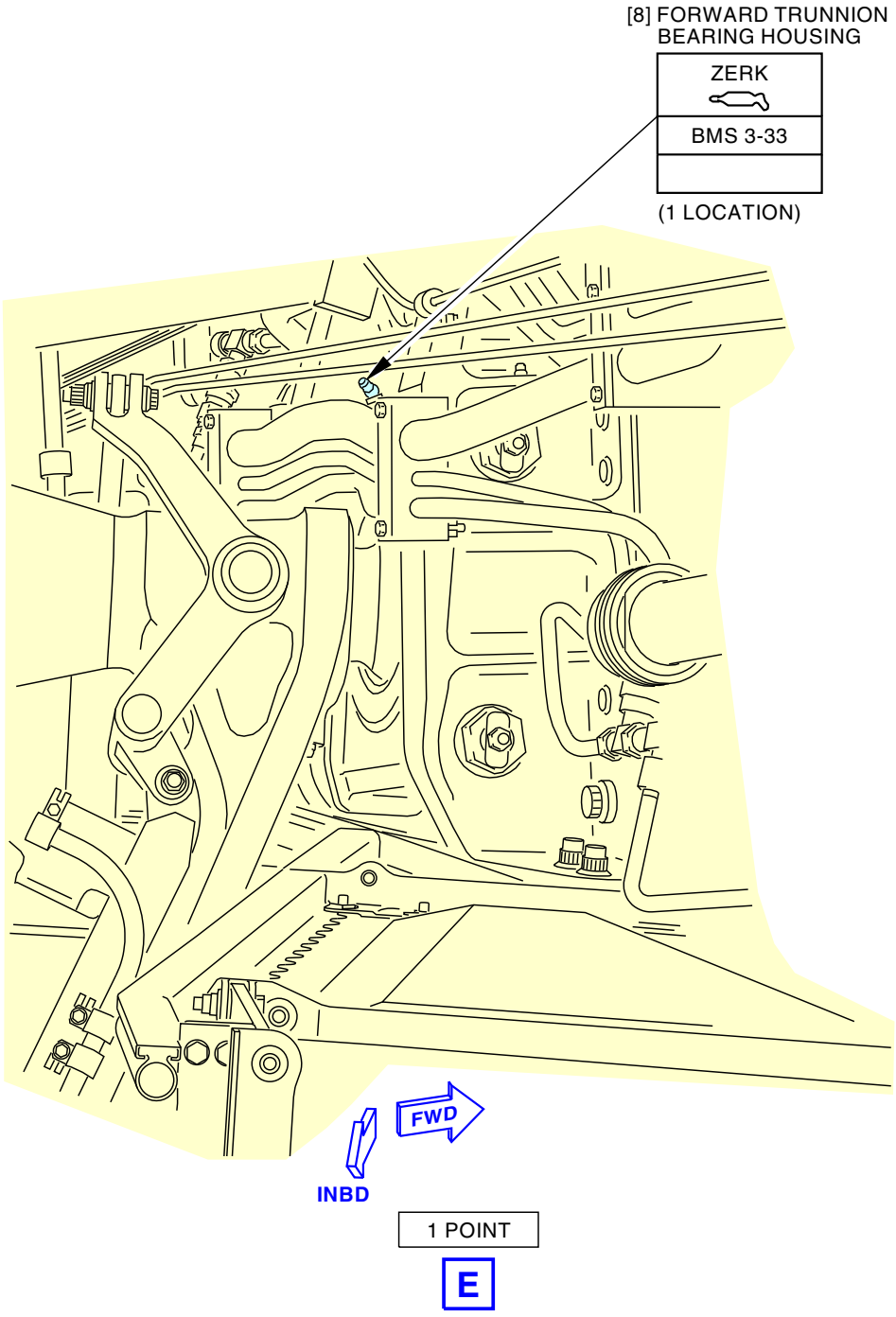
Main Landing Gear Upper End Components Servicing
Figure 301/12-21-11-990-801 (Sheet 4 of 8)



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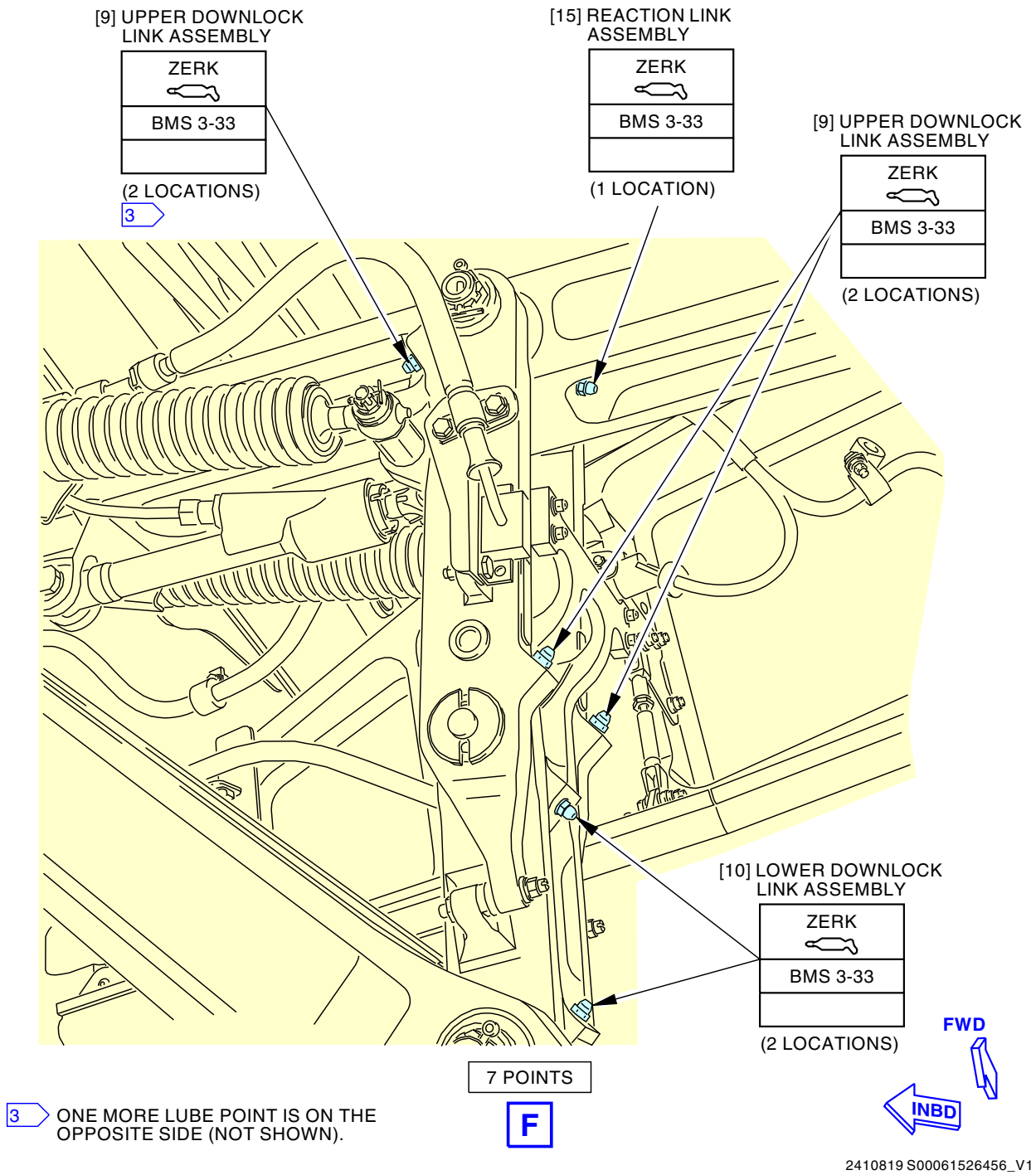
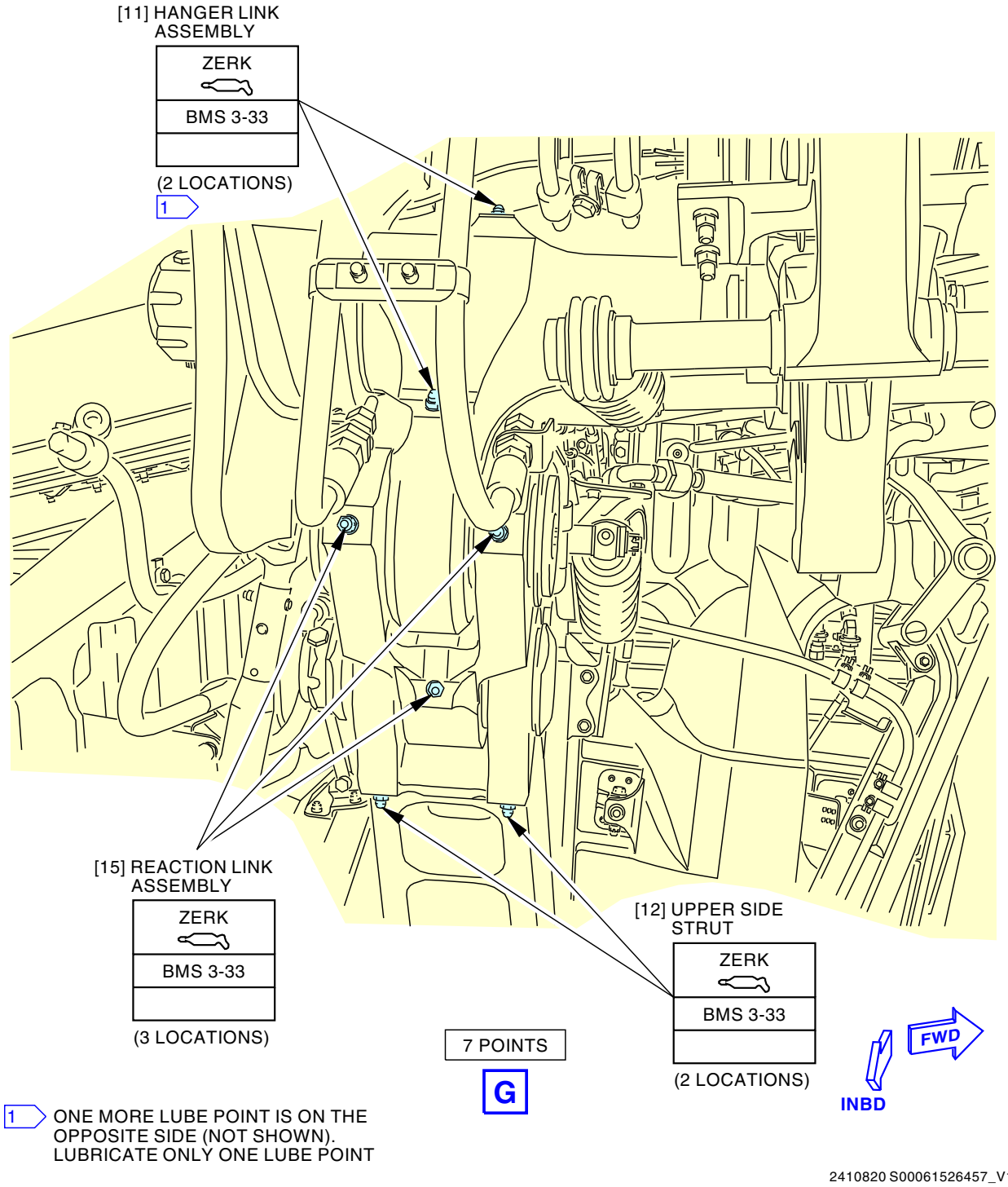
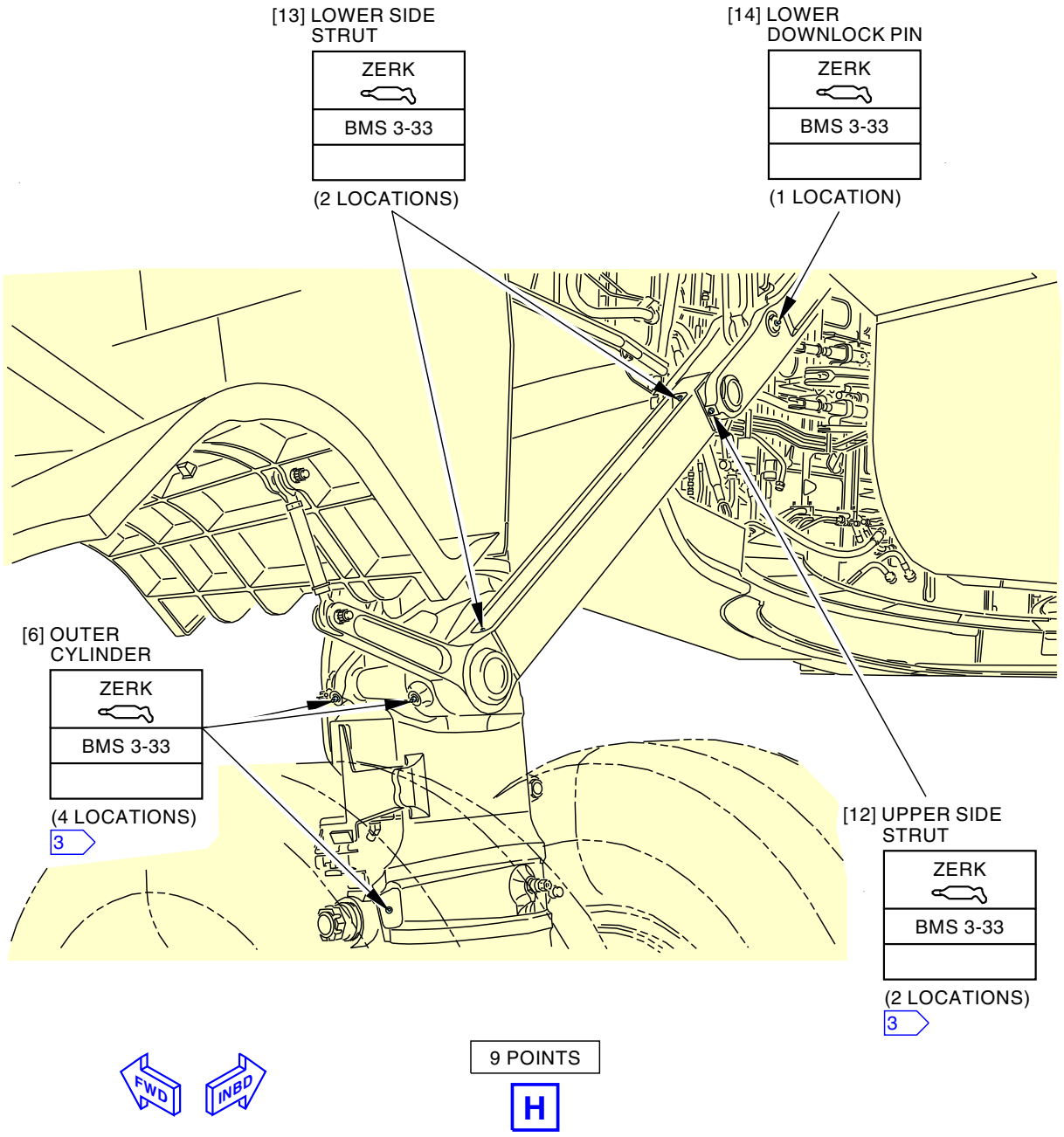
Main Landing Gear Upper End Components Servicing
Figure 301/12-21-11-990-801 (Sheet 5 of 8)



Main Landing Gear Upper End Components Servicing
Figure 301/12-21-11-990-801 (Sheet 6 of 8)



Main Landing Gear Upper End Components Servicing
Figure 301/12-21-11-990-801 (Sheet 7 of 8)



3 ONE MORE LUBE POINT IS ON THE OPPOSITE SIDE (NOT SHOWN).

2410821 S00061526458_V1

Main Landing Gear Upper End Components Servicing
Figure 301/12-21-11-990-801 (Sheet 8 of 8)

TASK 12-21-11-640-802

3. Main Landing Gear Lower End Components Servicing

(Figure 302)

NOTE: This procedure is a scheduled maintenance task.

A. General

(1) This task gives the instructions to lubricate the lower end components of the main landing gear.

B. References

Reference	Title
20-10-24-420-801	Lubrication Fitting Installation (P/B 401)
32-00-01-480-801	Landing Gear Downlock Pins Installation (P/B 201)

C. Consumable Materials

Reference	Description	Specification
D00633	Grease - Aircraft General Purpose	BMS3-33

D. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right
734	Left Main Landing Gear
744	Right Main Landing Gear

E. Prepare for the Main Landing Gear Lower End Components Servicing

SUBTASK 12-21-11-480-004

WARNING MAKE SURE THAT THE DOWNLOCK PINS ARE INSTALLED ON ALL THE LANDING GEAR. WITHOUT THE DOWNLOCK PINS, THE LANDING GEAR CAN RETRACT. THIS CAN CAUSE INJURIES TO PERSONS, AND DAMAGE TO EQUIPMENT.

(1) Make sure that the downlock pins are installed on the nose and main landing gear (TASK 32-00-01-480-801).

F. Procedure

SUBTASK 12-21-11-840-002

WARNING USE GLOVES AND EYE PROTECTION WHEN YOU LUBRICATE WITH A GREASE GUN. LUBRICANT AT HIGH PRESSURE CAN CAUSE INJURIES TO PERSONNEL.

(1) Put on protective gloves and eye protection.

SUBTASK 12-21-11-640-002

CAUTION YOU MUST BE CAREFUL WHEN YOU CONNECT AND DISCONNECT THE GREASE GUN TO THE LUBRICATION FITTINGS. IF YOU ARE NOT CAREFUL, THE GREASE GUN CAN CAUSE DAMAGE TO THE LUBRICATION FITTINGS.

(CAUTION PRECEDES)

CAUTION

DO NOT USE A PRESSURE OF MORE THAN 2500 PSIG (17200 KPA) WHEN YOU LUBRICATE THE MAIN LANDING GEAR AND ACTUATING MECHANISMS. IF YOU USE A PRESSURE OF MORE THAN 2500 PSIG (17200 KPA), YOU CAN BLOW THE LUBRICATION FITTINGS OFF THE LANDING GEAR.

(2) Use the grease gun to lubricate the main landing gear with grease, D00633, (Figure 302, Table 302)

NOTE: The table makes a list of all the lubrication fittings for the lower end components of the main landing gear.

WARNING

DO NOT APPLY TOO MUCH GREASE TO THE LANDING-GEAR LUBRICATION-POINTS. UNWANTED GREASE THAT TOUCHES THE HOT BRAKES CAN CAUSE A FIRE. IF THE GREASE CATCHES ON FIRE, INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT CAN OCCUR.

WARNING

MAKE SURE THAT YOU REMOVE ALL UNWANTED GREASE FROM THE LANDING GEAR. UNWANTED GREASE THAT TOUCHES THE HOT BRAKES CAN CAUSE A FIRE. IF THE GREASE CATCHES ON FIRE, INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT CAN OCCUR.

(a) Remove all unwanted grease from the Main Landing Gear (MLG) lubrication points.

(b) Remove all grease from the MLG brake housing.

SUBTASK 12-21-11-420-002

(3) If a fitting blows off, do these steps:

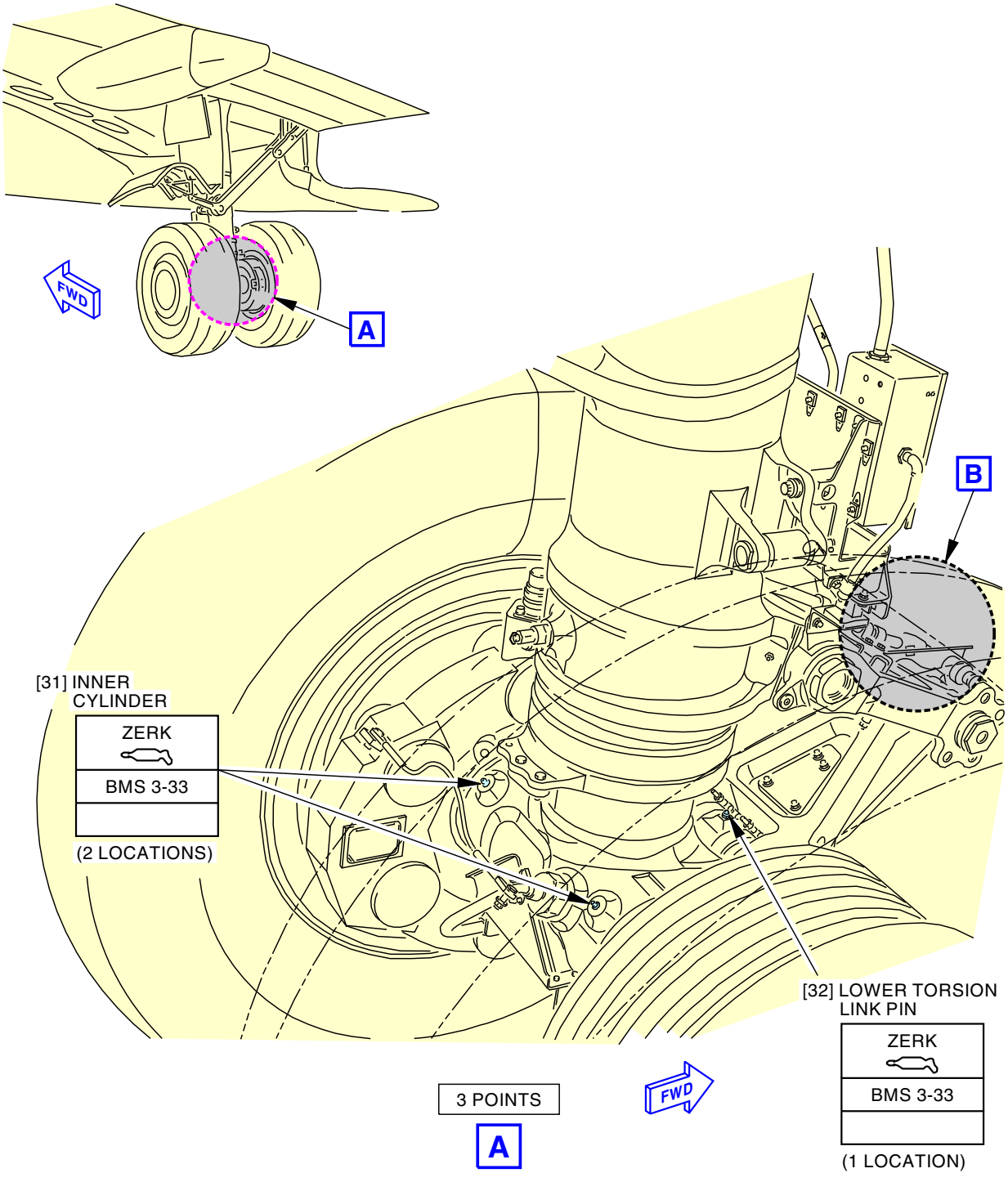
(a) Make sure there is not a blockage in the lubrication path.

(b) Do this task: Lubrication Fitting Installation, TASK 20-10-24-420-801.

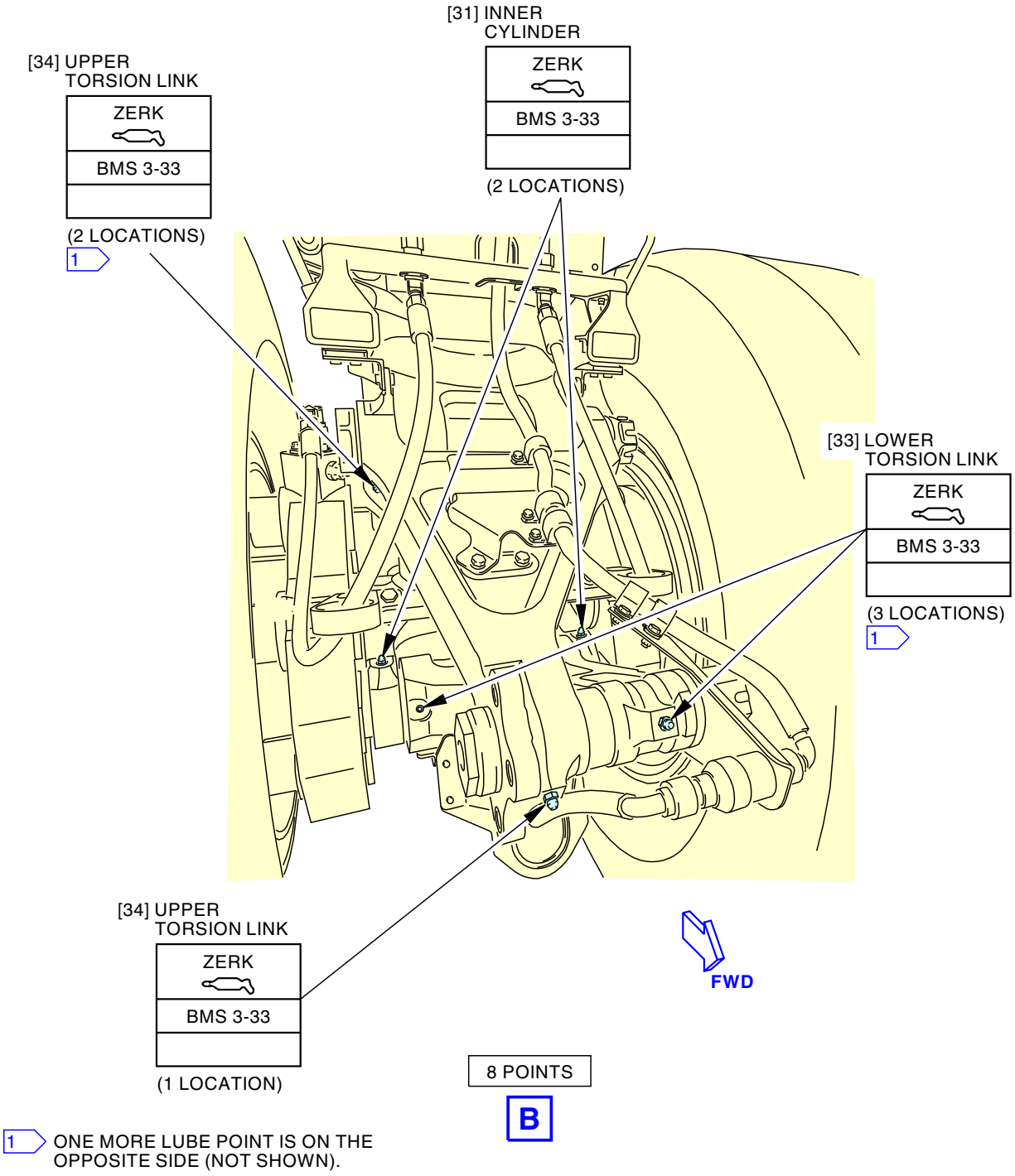
Table 302/12-21-11-993-802 Main Landing Gear Lower End Components Lubrication (Fig. 302)

Item No.	Nomenclature	Lubricant	Method of Application	Number of Locations
31	INNER CYLINDER	grease, D00633	Zerk	4
32	LOWER TORSION LINK PIN	grease, D00633	Zerk	1
33	LOWER TORSION LINK	grease, D00633	Zerk	3
34	UPPER TORSION LINK	grease, D00633	Zerk	3

END OF TASK



Main Landing Gear Lower End Components Servicing
Figure 302/12-21-11-990-802 (Sheet 1 of 2)



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Main Landing Gear Lower End Components Servicing
Figure 302/12-21-11-990-802 (Sheet 2 of 2)

TASK 12-21-11-620-801

4. Main Landing Gear Bushings Servicing

(Figure 303)

A. General

(1) This task provides instructions to service the specific bushings of the Main Landing Gear (MLG).

(2) Contact The Boeing Company (TBC) with findings in any other bushings of the MLG.

B. References

Reference	Title
32-00-01-480-801	Landing Gear Downlock Pins Installation (P/B 201)

C. Consumable Materials

Reference	Description	Specification
C00755	Compound - Organic Corrosion Inhibiting, Heavy Duty	BMS3-26
G00009	Compound - Organic Corrosion Inhibiting	BMS3-23
G51751	Putty/Lacquer - Tamper-proof, Hydraulic Fluid Resistant	BMS8-45 Type III

D. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right
734	Left Main Landing Gear
744	Right Main Landing Gear

E. Prepare for the Main Landing Gear Bushings Servicing.

SUBTASK 12-21-11-480-003

WARNING MAKE SURE THAT THE DOWNLOCK PINS ARE INSTALLED IN ALL OF THE LANDING GEAR. WITHOUT THE DOWNLOCK PINS, THE LANDING GEAR CAN RETRACT AND CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) If the downlock pins are not installed in the nose and main landing gear, do this task: Landing Gear Downlock Pins Installation, TASK 32-00-01-480-801.

F. Main Landing Gear Bushings Servicing.

SUBTASK 12-21-11-620-001

(1) JOINTS THAT HAVE BUSHING FILLET SEALS

(a) In joints that have bushing fillet seals, do the steps that follow:

1) If there are no cracks in the sealant, no more steps are necessary (cracks in the paint are OK).

2) If there are cracks in the sealant, but the cracks do not go to the lug surface:

NOTE: You can remove a section of sealant to see the depth of the crack.

a) Apply sealant to fill the cracks or replace sealant removed for check (no more steps are necessary).

3) If there are cracks that go to the lug surface, do these steps:

a) Look for corrosion on the lug surface. You may remove additional sealant as required to see the lug surface.

b) If there is no corrosion, replace the sealant (no more steps are necessary).

c) If you cannot replace the sealant right away, do this step:

<1> Apply corrosion inhibiting compound, G00009 (preferred) compound, C00755 (optional) to the lug.

d) Contact TBC if lug corrosion is found.

(b) In the joints that have migrated or rotated bushings, do the steps that follow:

NOTE: A migrated bushing is a bushing which has moved away from the lug surface. A rotated bushing is a bushing that rotates in a lug bore. Cracks or separation of the bushing fillet seal around the bushing flange is an indication that bushing migration or rotation has occurred.

1) Replace the rotated bushing and apply bushing fillet seal.

a) Contact TBC for repair instructions.

2) If you cannot replace the bushing right away, do the steps that follow:

a) Remove the bushing fillet seal.

b) Do an inspection of the lug surface and the area adjacent to the bushing flange interface for corrosion.

c) Apply tamper-proof putty/lacquer, G51751 to the part to make an identification mark (red witness line).

NOTE: This will help you identify a migrated or rotated bushing during a subsequent maintenance interval.

d) Apply the corrosion inhibiting compound, G00009 (preferred) compound, C00755 (optional) between the bushing flange and lug surface.

e) Contact TBC if you find lug corrosion.

f) On subsequent maintenance intervals, do the steps that follow until you replace the bushing:

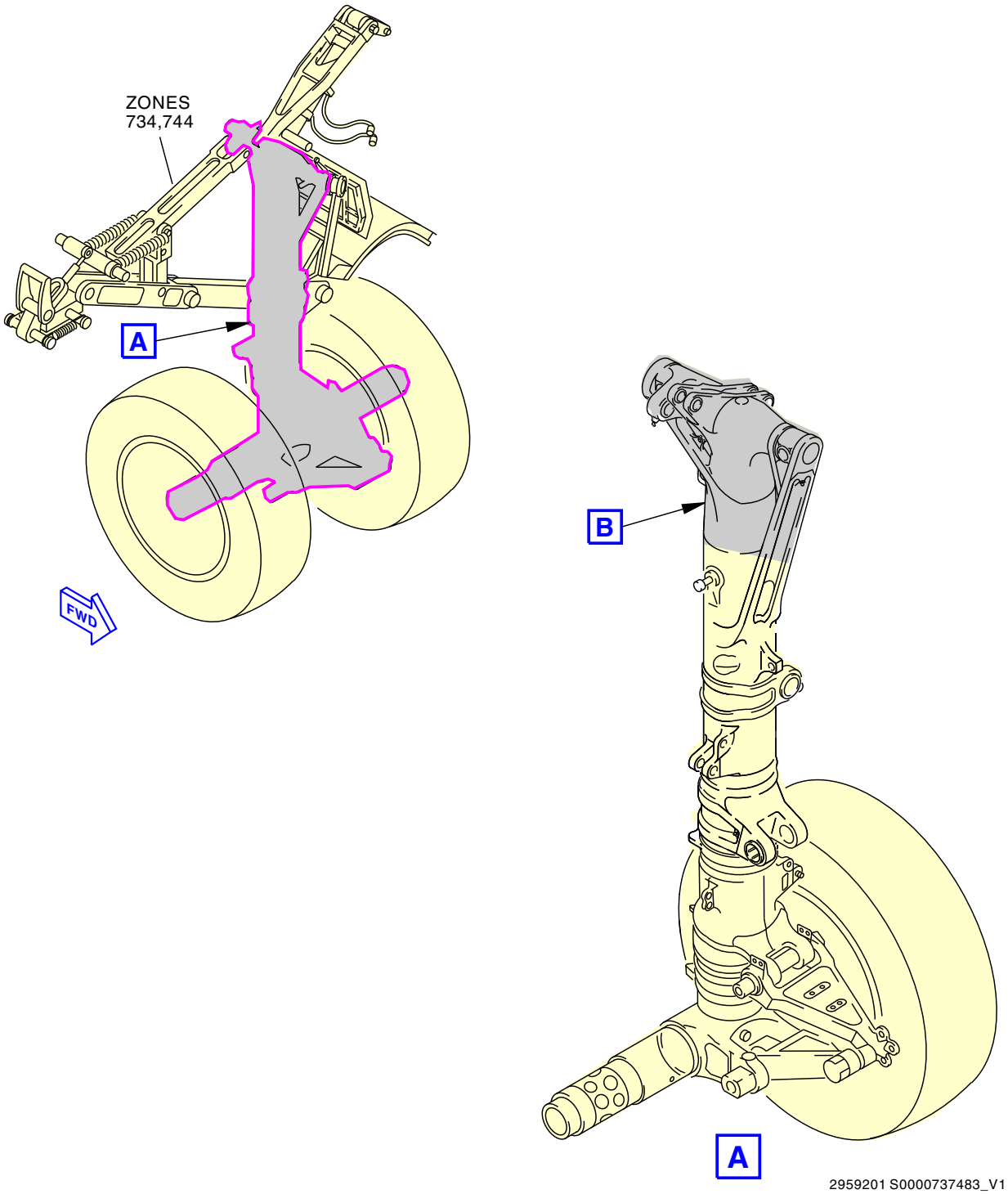
<1> Make sure all corrosion inhibiting compound is removed from the joint.

<2> Do an inspection of the joint and lug surface for signs of corrosion.

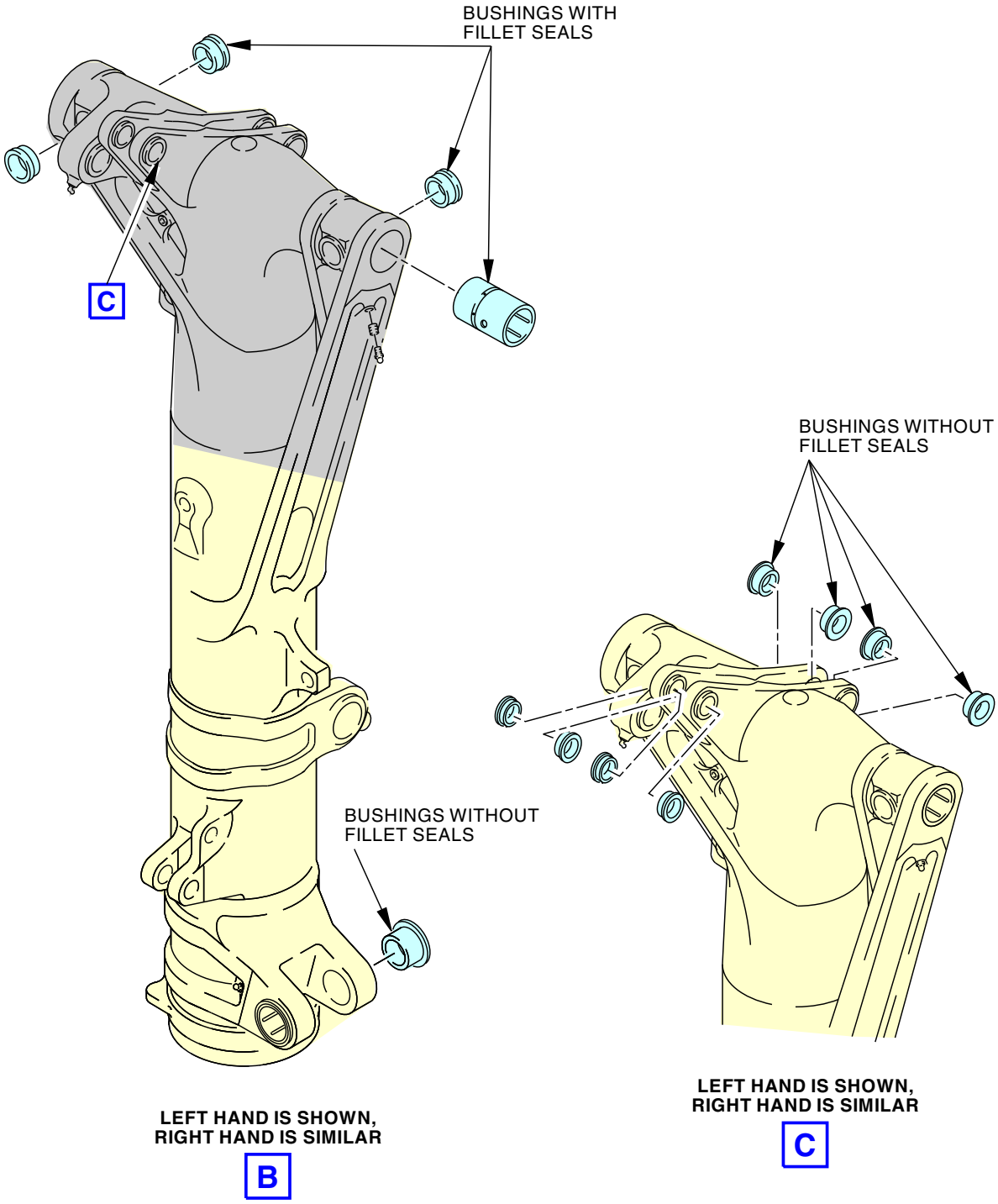
<3> If you do not find corrosion, Apply the corrosion inhibiting compound, G00009 (preferred) compound, C00755 (optional) between the bushing flange and lug surface.

<4> Contact TBC if you find lug corrosion.

——— END OF TASK ———



MLG WALKING BEAM CLEVIS BUSHINGS AND OUTER CYLINDER RETRACT ACTUATOR BUSHINGS
Figure 303/12-21-11-990-807 (Sheet 1 of 2)



MLG WALKING BEAM CLEVIS BUSHINGS AND OUTER CYLINDER RETRACT ACTUATOR BUSHINGS
Figure 303/12-21-11-990-807 (Sheet 2 of 2)

NOSE LANDING GEAR - SERVICING

1. General

A. This procedure has these tasks:

(1) A servicing of the nose landing gear upper end components

(2) A servicing of the nose landing gear lower end components servicing.

TASK 12-21-21-640-801

2. Nose Landing Gear Upper End Components Servicing

(Figure 301)

NOTE: This procedure is a scheduled maintenance task.

A. General

(1) This task gives the instructions to lubricate the upper end components of the nose landing gear.

B. References

Reference	Title
20-10-24-420-801	Lubrication Fitting Installation (P/B 401)
32-00-01-480-801	Landing Gear Downlock Pins Installation (P/B 201)

C. Tools/Equipment

Reference	Description
STD-421	Goggles - Eye Protection
STD-438	Gun - Grease

D. Consumable Materials

Reference	Description	Specification
D00633	Grease - Aircraft General Purpose	BMS3-33

E. Location Zones

Zone	Area
115	Nose Landing Gear Wheel Well - Left
116	Nose Landing Gear Wheel Well - Right
713	Nose Landing Gear

F. Prepare for the Servicing

SUBTASK 12-21-21-420-003

WARNING MAKE SURE THAT THE DOWNLOCK PINS ARE INSTALLED ON ALL THE LANDING GEAR. WITHOUT THE DOWNLOCK PINS, THE LANDING GEAR CAN RETRACT. THIS CAN CAUSE INJURIES TO PERSONS, AND DAMAGE TO EQUIPMENT.

(1) Make sure that the downlock pins are installed on the nose and main landing gear (TASK 32-00-01-480-801).

G. Nose Landing Gear Upper End Components Servicing

SUBTASK 12-21-21-840-001

WARNING WEAR GLOVES AND EYE PROTECTION WHEN YOU OPERATE THE GREASE GUN. LUBRICANT AT HIGH-PRESSURE CAN CAUSE INJURY TO PERSONS.

(1) Put on protective gloves and eye protection goggles, STD-421.

SUBTASK 12-21-21-640-001

CAUTION YOU MUST BE CAREFUL WHEN YOU CONNECT THE GREASE GUN TO THE LUBRICATION FITTINGS. YOU MUST ALSO BE CAREFUL WHEN YOU DISCONNECT THE GREASE GUN FROM THE LUBRICATION FITTINGS. IF YOU ARE NOT CAREFUL, THE GREASE GUN CAN CAUSE DAMAGE TO THE LUBRICATION FITTINGS.

CAUTION DO NOT USE A PRESSURE OF MORE THAN 2500 PSIG (17200 KPA) WHEN YOU LUBRICATE THE MAIN LANDING GEAR AND ACTUATING MECHANISMS. IF YOU USE A PRESSURE OF MORE THAN 2500 PSIG (17200 KPA), YOU CAN BLOW THE LUBRICATION FITTINGS OFF THE LANDING GEAR.

(2) Use a grease gun, STD-438, to lubricate the nose landing gear with grease, D00633 (Figure 301 and Table 301).

NOTE: The Table 301 lists all the lubrication fittings for the upper end components of the nose landing gear.

NOTE: Actuator rod ends have two grease fittings. It is only necessary to lubricate the fitting to which you can get access.

Table 301/12-21-21-993-805 Nose Landing Gear Upper End Components Lubrication

Item No.	Nomenclature	Lubricant	Method of Application	Number of Locations
1	Actuator Support	BMS 3-33	Zerk	1
2	Retract Actuator	BMS 3-33	Zerk	3
3	Upper Drag Strut	BMS 3-33	Zerk	6
3A	Upper Drag Strut Support	BMS 3-33	Zerk	2
4	Lower Drag Strut	BMS 3-33	Zerk	2
5	Outer Cylinder	BMS 3-33	Zerk	2
6	Trunnion Bushing	BMS 3-33	Zerk	2
6A	Trunnion Bushing Support	BMS 3-33	Zerk	2
7	Outer Cylinder	BMS 3-33	Zerk	2
8	Stabilizer Link Bolt	BMS 3-33	Zerk	2

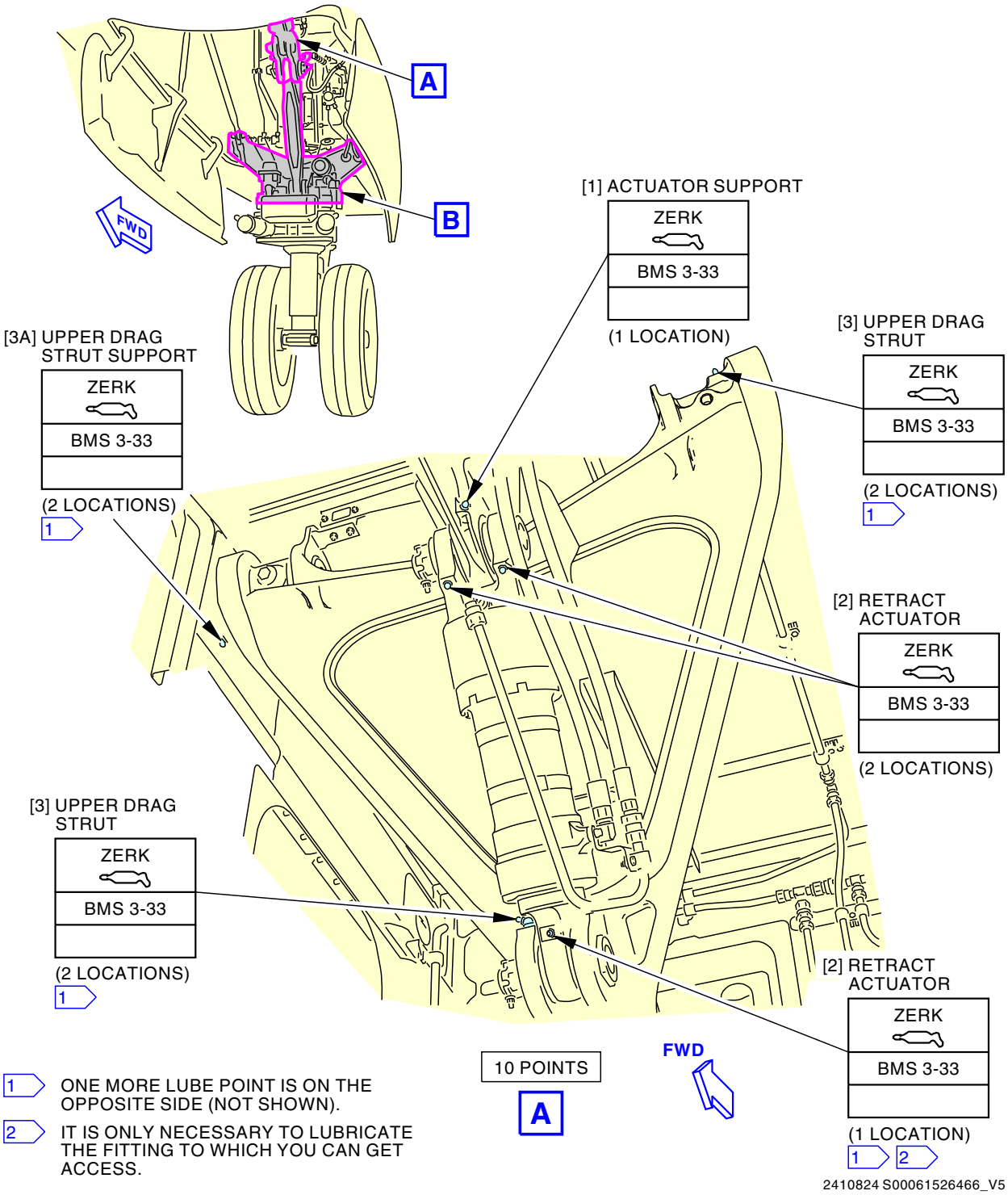
SUBTASK 12-21-21-640-002

(3) If a fitting blows off, do these steps:

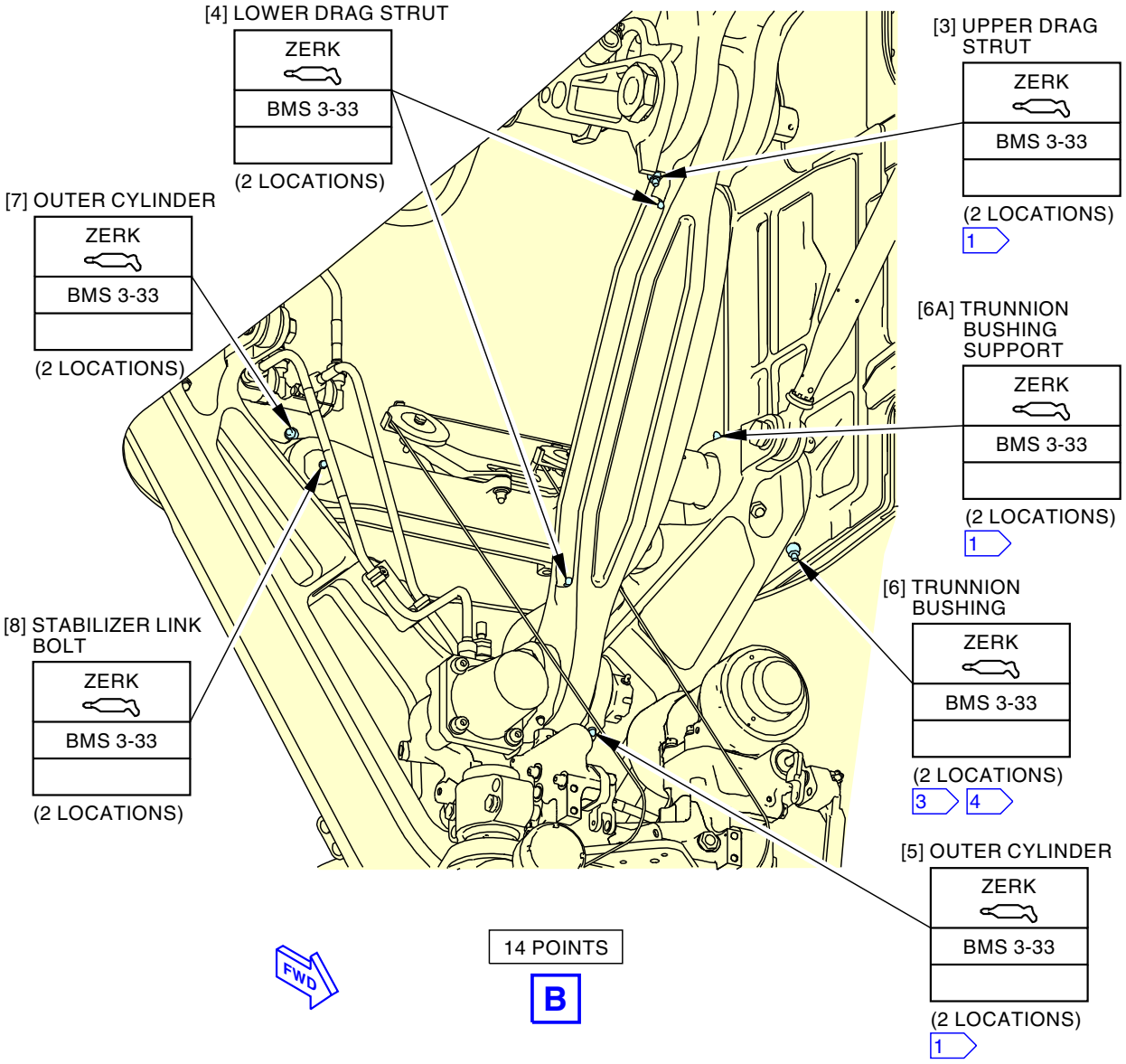
(a) Make sure that there is no blockage in the lubrication path.

(b) Do this task: Lubrication Fitting Installation, TASK 20-10-24-420-801.

——— END OF TASK ———



Nose Landing Gear Upper End Components Servicing
Figure 301/12-21-21-990-801 (Sheet 1 of 2)



3 ONE MORE LUBE POINT IS ON OPPOSITE WHEEL WELL WALL (NOT SHOWN)

4 IF NECESSARY, DO A CHECK BEHIND THE WHEEL WELL WALL FOR UNWANTED GREASE. THE GREASE CAN FLOW OUT OF THE TRUNNION PIN BUSHING AND COLLECT ON THE CABLES, PULLEYS AND STRUCTURE. REMOVE THE UNWANTED GREASE TO PREVENT DAMAGE TO THE CABLES AND A BLOCKAGE OF THE DRAIN PATHS.

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Nose Landing Gear Upper End Components Servicing
Figure 301/12-21-21-990-801 (Sheet 2 of 2)

TASK 12-21-21-640-802

3. Nose Landing Gear Lower End Components Servicing

(Figure 302)

NOTE: This procedure is a scheduled maintenance task.

A. General

(1) This task provides the instructions for lubrication of the lower end components of the nose landing gear.

B. References

Reference	Title
20-10-24-420-801	Lubrication Fitting Installation (P/B 401)
32-00-01-480-801	Landing Gear Downlock Pins Installation (P/B 201)

C. Tools/Equipment

Reference	Description
STD-421	Goggles - Eye Protection
STD-438	Gun - Grease

D. Consumable Materials

Reference	Description	Specification
D00633	Grease - Aircraft General Purpose	BMS3-33

E. Location Zones

Zone	Area
115	Nose Landing Gear Wheel Well - Left
116	Nose Landing Gear Wheel Well - Right
713	Nose Landing Gear

F. Prepare for the Servicing

SUBTASK 12-21-21-420-002

WARNING MAKE SURE THAT THE DOWNLOCK PINS ARE INSTALLED ON ALL THE LANDING GEAR. WITHOUT THE DOWNLOCK PINS, THE LANDING GEAR CAN RETRACT. THIS CAN CAUSE INJURIES TO PERSONS, AND DAMAGE TO EQUIPMENT.

(1) Make sure that the downlock pins are installed on the nose and main landing gear (TASK 32-00-01-480-801).

G. Nose Landing Gear Lower End Components Servicing

SUBTASK 12-21-21-840-002

WARNING WEAR GLOVES AND EYE PROTECTION WHEN YOU OPERATE THE GREASE GUN. LUBRICANT AT HIGH-PRESSURE CAN CAUSE INJURY TO PERSONS.

(1) Put on protective gloves and eye protection goggles, STD-421.

SUBTASK 12-21-21-640-003

CAUTION YOU MUST BE CAREFUL WHEN YOU CONNECT AND DISCONNECT THE GREASE GUN TO THE LUBRICATION FITTINGS. IF YOU ARE NOT CAREFUL, THE GREASE GUN CAN CAUSE DAMAGE TO THE LUBRICATION FITTINGS.

CAUTION DO NOT USE A PRESSURE OF MORE THAN 2500 PSIG (17200 KPA) WHEN YOU LUBRICATE THE MAIN LANDING GEAR AND ACTUATING MECHANISMS. IF YOU USE A PRESSURE OF MORE THAN 2500 PSIG (17200 KPA), YOU CAN BLOW THE LUBRICATION FITTINGS OFF THE LANDING GEAR.

(2) Use a grease gun, STD-438, to lubricate the nose landing gear with grease, D00633 (Figure 302 and Table 302)

NOTE: The Table 302 lists all the lubrication fittings for the lower end components of the nose landing gear.

NOTE: To lubricate the steering collar, start with the grease fitting in the center on the right side. Supply sufficient grease into the grease fitting until the used grease visually comes out and only new grease comes out.

Table 302/12-21-21-993-804 Nose Landing Gear Lower End Components Lubrication

Item No.	Nomenclature	Lubricant	Method of Application	Number of Locations
1	UPPER TORSION LINK	BMS 3-33	Zerk	3
2	STEERING COLLAR	BMS 3-33	Zerk	10
3	TOW FITTING ASSEMBLY	BMS 3-33	Zerk	2
4	LOWER TORSION LINK	BMS 3-33	Zerk	4
5	INNER CYLINDER	BMS 3-33	Zerk	1
6	STEERING ACTUATOR	BMS 3-33	Zerk	4

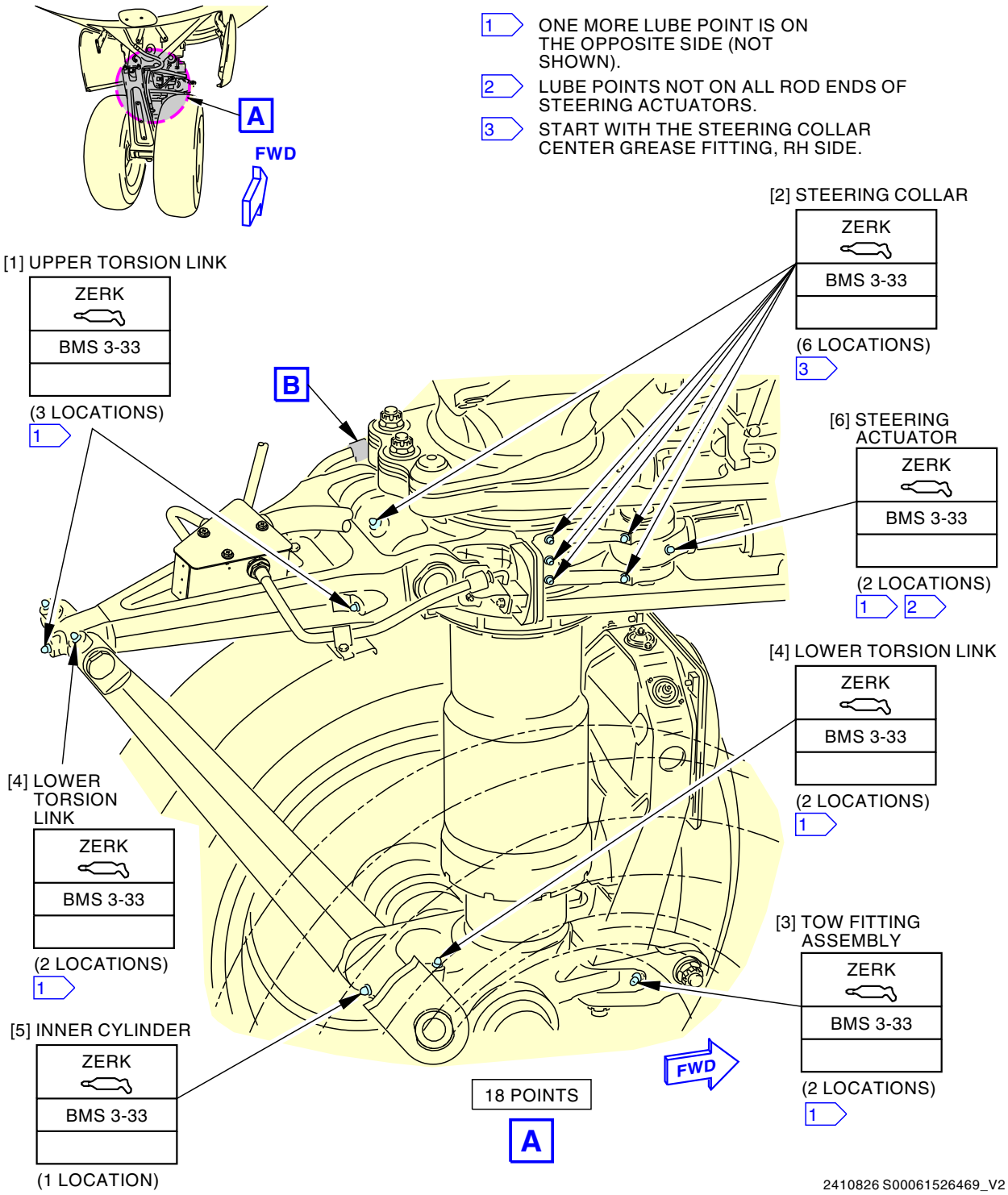
SUBTASK 12-21-21-640-004

(3) If a fitting blows off, do these steps:

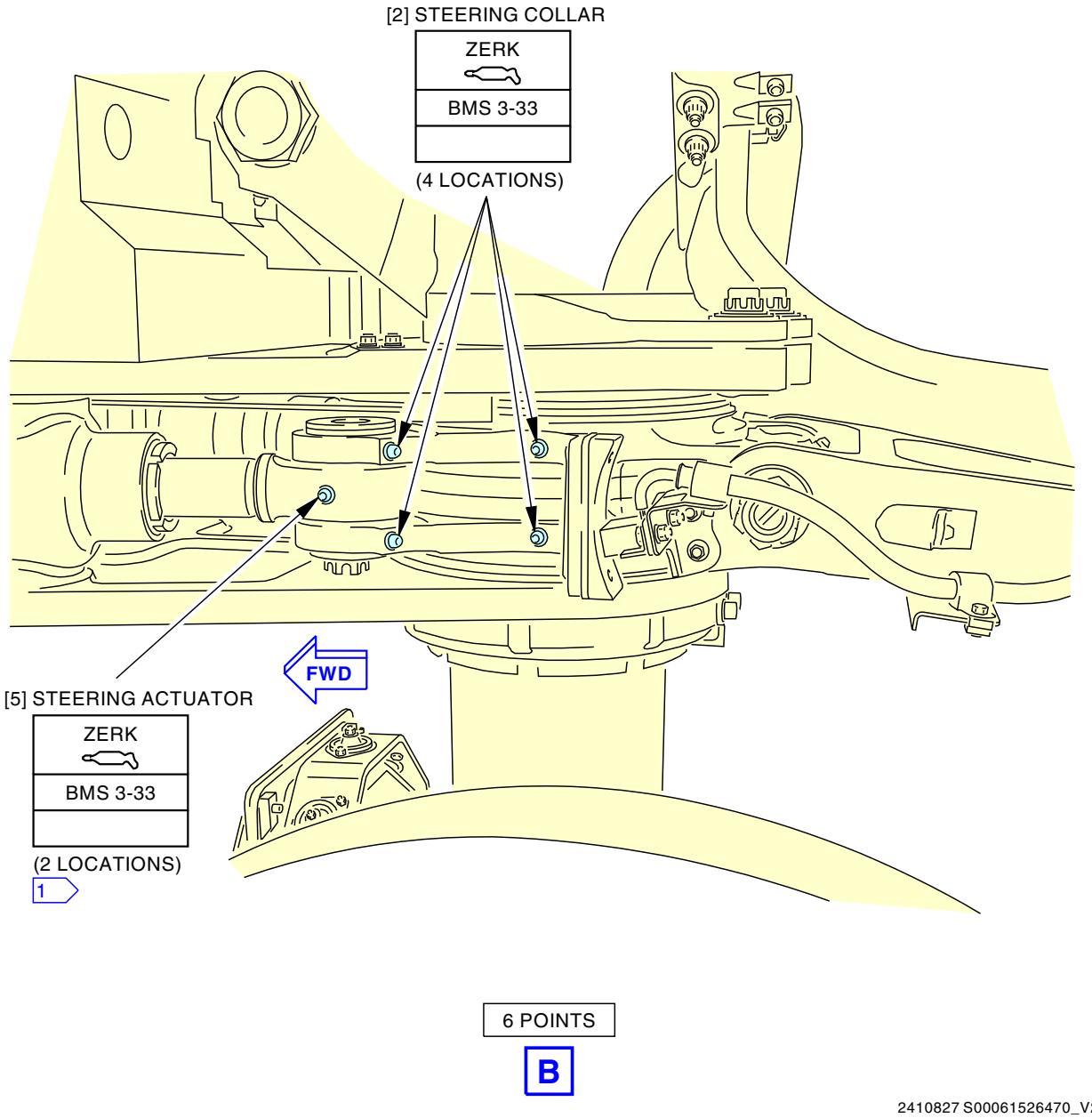
(a) Make sure that there is no blockage in the lubrication path.

(b) Do this task: Lubrication Fitting Installation, TASK 20-10-24-420-801.

END OF TASK



Nose Landing Gear Lower End Components Servicing
Figure 302/12-21-21-990-802 (Sheet 1 of 2)



Nose Landing Gear Lower End Components Servicing
Figure 302/12-21-21-990-802 (Sheet 2 of 2)

STRUT ATTACH FITTING LUBRICATION

1. General

A. This procedure has this task:

(1) Lubricate the strut attach fittings.

TASK 12-21-32-600-801

2. Lubricate the Strut Attach Fittings

(Figure 301)

A. References

Reference	Title
54-51-01-040-801	Prepare the Strut for Maintenance Operations (P/B 201)
54-51-01-440-801	Put the Strut Back to Its Usual Condition (P/B 201)
54-52-06-000-801	Aft Fairing Access Panel Removal (P/B 401)
54-52-06-400-801	Aft Fairing Access Panel Installation (P/B 401)

B. Consumable Materials

Reference	Description	Specification
D00014	Grease - Molybdenum Disulfide, Low & High Temperature	MIL-G-21164 (NATO G-353)

C. Location Zones

Zone	Area
433	Engine 1 - Strut Torque Box
434	Engine 1 - Aft Strut Fairing
443	Engine 2 - Strut Torque Box
444	Engine 2 - Aft Strut Fairing

D. Access Panels

Number	Name/Location
434AL	Aft Strut Fairing, Left Panel, Strut 1
434AR	Aft Strut Fairing, Right Panel, Strut 1
444AL	Aft Strut Fairing, Left Panel, Strut 2
444AR	Aft Strut Fairing, Right Panel, Strut 2

E. Lubricate the Strut Attach Fittings

SUBTASK 12-21-32-040-001

(1) Do this task: Prepare the Strut for Maintenance Operations, TASK 54-51-01-040-801.

SUBTASK 12-21-32-010-001

(2) Open these access panels:

(Aft Fairing Access Panel Removal, TASK 54-52-06-000-801)

Number	Name/Location
434AL	Aft Strut Fairing, Left Panel, Strut 1
434AR	Aft Strut Fairing, Right Panel, Strut 1
444AL	Aft Strut Fairing, Left Panel, Strut 2
444AR	Aft Strut Fairing, Right Panel, Strut 2

SUBTASK 12-21-32-640-001

(3) Do these steps to lubricate the applicable strut attach fitting as shown (Figure 301, Table 301):

(a) Inject the grease, D00014 into the fitting until grease shows on both ends of the pin.

(b) Remove the unwanted grease from the fitting with a rag.

Table 301/12-21-32-993-801

Item No.	Nomenclature	Lubricant	Method of Application	Number of Locations
[1]	Aft Upper Spar Fitting	MIL-G-21164	Zerk	2

F. Put the Airplane Back to Its Usual Condition

SUBTASK 12-21-32-410-001

(1) Close these access panels:

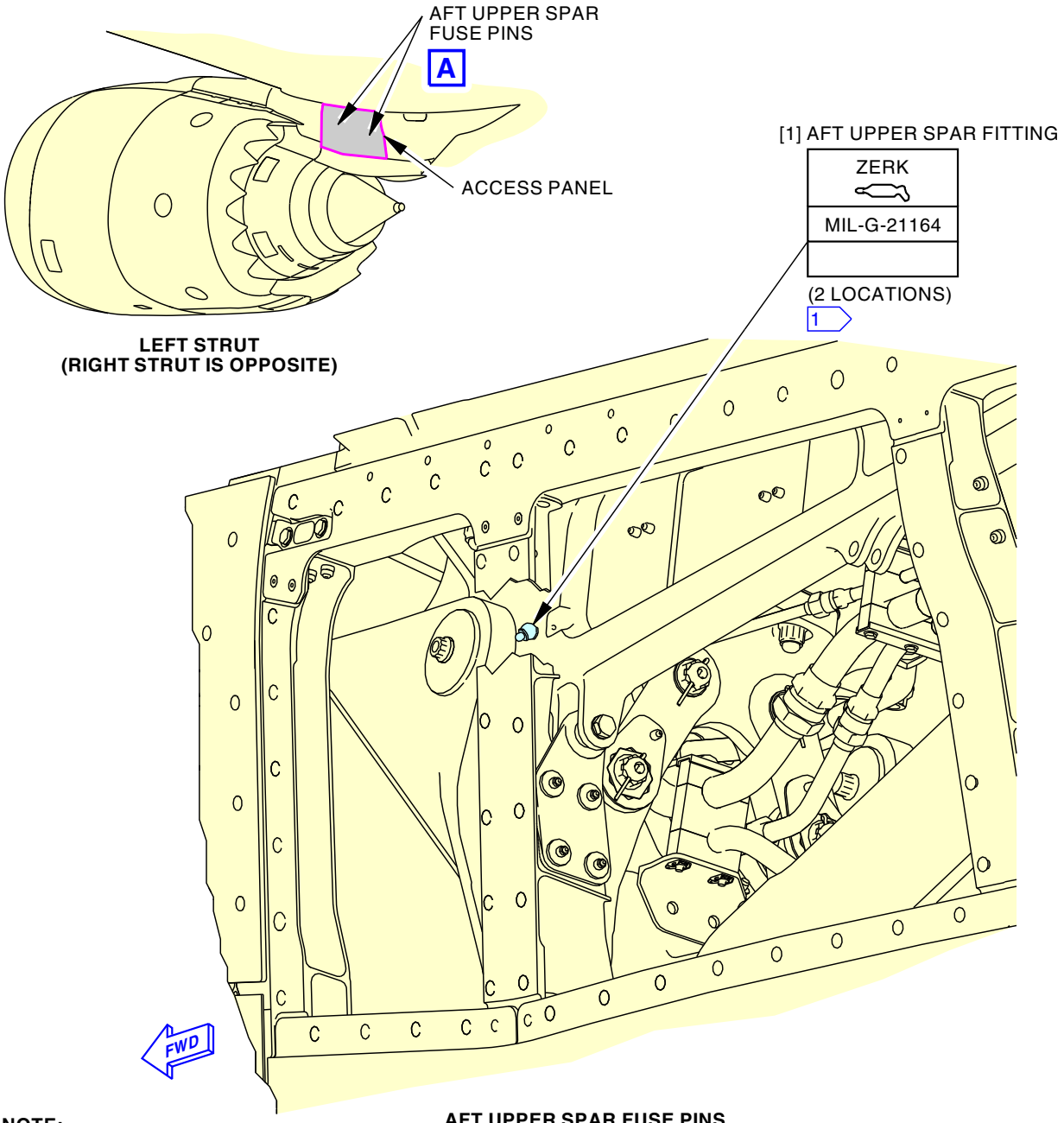
(Aft Fairing Access Panel Installation, TASK 54-52-06-400-801)

Number	Name/Location
434AL	Aft Strut Fairing, Left Panel, Strut 1
434AR	Aft Strut Fairing, Right Panel, Strut 1
444AL	Aft Strut Fairing, Left Panel, Strut 2
444AR	Aft Strut Fairing, Right Panel, Strut 2

SUBTASK 12-21-32-440-001

(2) If you will do no more maintenance operations on the strut, do this task: Put the Strut Back to Its Usual Condition, TASK 54-51-01-440-801.

——— END OF TASK ———



NOTE:

LEFT STRUT IS SHOWN,RIGHT STRUT IS OPPOSITE.

1 ONE MORE LUBE POINT IS ON THE INBOARD SIDE (NOT SHOWN).

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Strut Attach Fitting Lubrication
Figure 301/12-21-32-990-801

AILERON - SERVICING

1. General

A. This procedure contains scheduled maintenance task data.

B. This procedure has these tasks:

(1) A task to lubricate the aileron hinge support

(2) A task to lubricate the aileron balance tab

(3) A task to lubricate the aileron tab control rods

(4) A task to lubricate the control rod on the aileron wing quadrant

(5) A task to lubricate the aileron power output lever.

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TASK 12-22-11-640-801

2. Aileron Hinge Lubrication

(Figure 301)

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
27-11-00-860-801	Pressure from the Aileron Hydraulic Systems A and B - Deactivation (P/B 201)
27-11-00-860-802	Pressure to the Aileron Hydraulic Systems A and B - Activation (P/B 201)

B. Tools/Equipment

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

Reference	Description
SPL-15268	Lock Equipment - Aileron Full-up Lubrication Part #: C12006-14 Supplier: 81205

C. Consumable Materials

Reference	Description	Specification
D00633	Grease - Aircraft General Purpose	BMS3-33

D. Location Zones

Zone	Area
572	Left Wing - Aileron
672	Right Wing - Aileron

E. Prepare for the Lubrication

SUBTASK 12-22-11-700-001

(1) Make sure that the aileron [1] is in the full up position.

(a) Optional to use the lock equipment, SPL-15268.

NOTE: See usage placard for details.

SUBTASK 12-22-11-860-001

(2) Do this task: Pressure from the Aileron Hydraulic Systems A and B - Deactivation, TASK 27-11-00-860-801.

SUBTASK 12-22-11-010-001

(3) On hinges 1 to 5:

(a) Remove the hinge seals.

SUBTASK 12-22-11-010-002

(4) On hinge 6:

(a) Remove the removable fairing.

F. Aileron Hinge Lubrication

(Table 301, Figure 301)

SUBTASK 12-22-11-640-001

(1) This table supplies data for the subsequent lubrication step:

Table 301/12-22-11-993-801 Aileron Hinge Servicing

Item No.	Nomenclature	Lubricant	Method of Application	Number of Locations
2	Aileron hinge	grease, D00633	Zerk	6

SUBTASK 12-22-11-640-002

(2) Lubricate the aileron hinges [2] with grease, D00633.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 12-22-11-010-003

(1) Install the seals and the fairing that you removed.

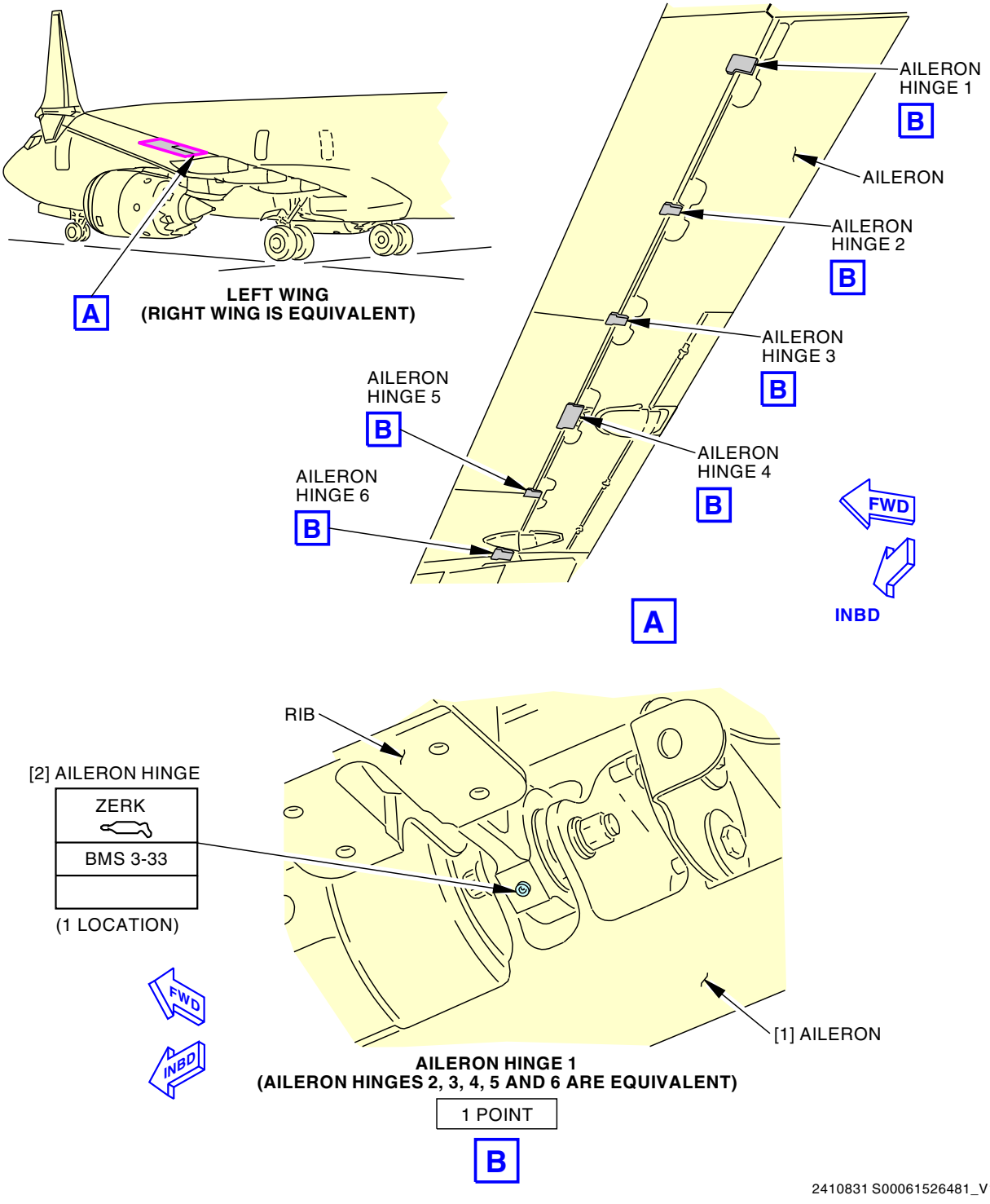
SUBTASK 12-22-11-080-001

(2) If it is installed, remove the lock equipment, SPL-15268.

SUBTASK 12-22-11-860-002

(3) Do this task: Pressure to the Aileron Hydraulic Systems A and B - Activation, TASK 27-11-00-860-802.

——— END OF TASK ———



Aileron Hinge Servicing
Figure 301/12-22-11-990-801

27-CMR-03

TASK 12-22-11-600-801

3. Aileron Balance Tab Lubrication

(Figure 302)

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
27-11-00-860-801	Pressure from the Aileron Hydraulic Systems A and B - Deactivation (P/B 201)
27-11-00-860-802	Pressure to the Aileron Hydraulic Systems A and B - Activation (P/B 201)

B. Consumable Materials

Reference	Description	Specification
D00633	Grease - Aircraft General Purpose	BMS3-33

C. Location Zones

Zone	Area
572	Left Wing - Aileron
672	Right Wing - Aileron

D. Prepare for the Lubrication

SUBTASK 12-22-11-860-003

(1) Do this task: Pressure from the Aileron Hydraulic Systems A and B - Deactivation, TASK 27-11-00-860-801.

SUBTASK 12-22-11-020-001

(2) Remove the forward removable fairing [10] and aft removable fairing [12] to get access to the tab hinges 2 and 3.

(a) Remove the bolts [11] that attach the forward removable fairing [10] to the aileron [1].

(b) Remove the forward removable fairing [10].

(c) Remove the bolts [13] that attach the aft removable fairing [12] to the aileron balance tab [9].

(d) Remove the aft removable fairing [12].

E. Aileron Balance Tab Lubrication

SUBTASK 12-22-11-640-003

(1) This table supplies data for the subsequent lubrication step:

Table 302/12-22-11-993-802 Aileron Balance Tab Hinge Servicing

Item No.	Nomenclature	Lubricant	Method of Application	Number of Locations
3	Tab Hinge	grease, D00633	Flush	5

SUBTASK 12-22-11-640-004

(2) Lubricate the tab hinges [3] on the aileron balance tab [9] with grease, D00633, as follows:

(a) Hold the cap in its position when you apply the grease, D00633.

NOTE: The cap can get pushed out during the grease application.

(b) Fill the tab hinges [3] with grease, D00633, until clean grease comes out of the bearings.

NOTE: It is only necessary to put grease in one of the lubrication holes on each tab hinge.

(c) Wipe unwanted grease, D00633, from around the tab hinges [3].

F. Put the Airplane Back to Its Usual Condition

SUBTASK 12-22-11-420-001

(1) Install the forward removable fairing [10] and aft removable fairing [12].

(a) Put the aft removable fairing [12] in its position.

(b) Install the aft removable fairing [12] with the bolts [13].

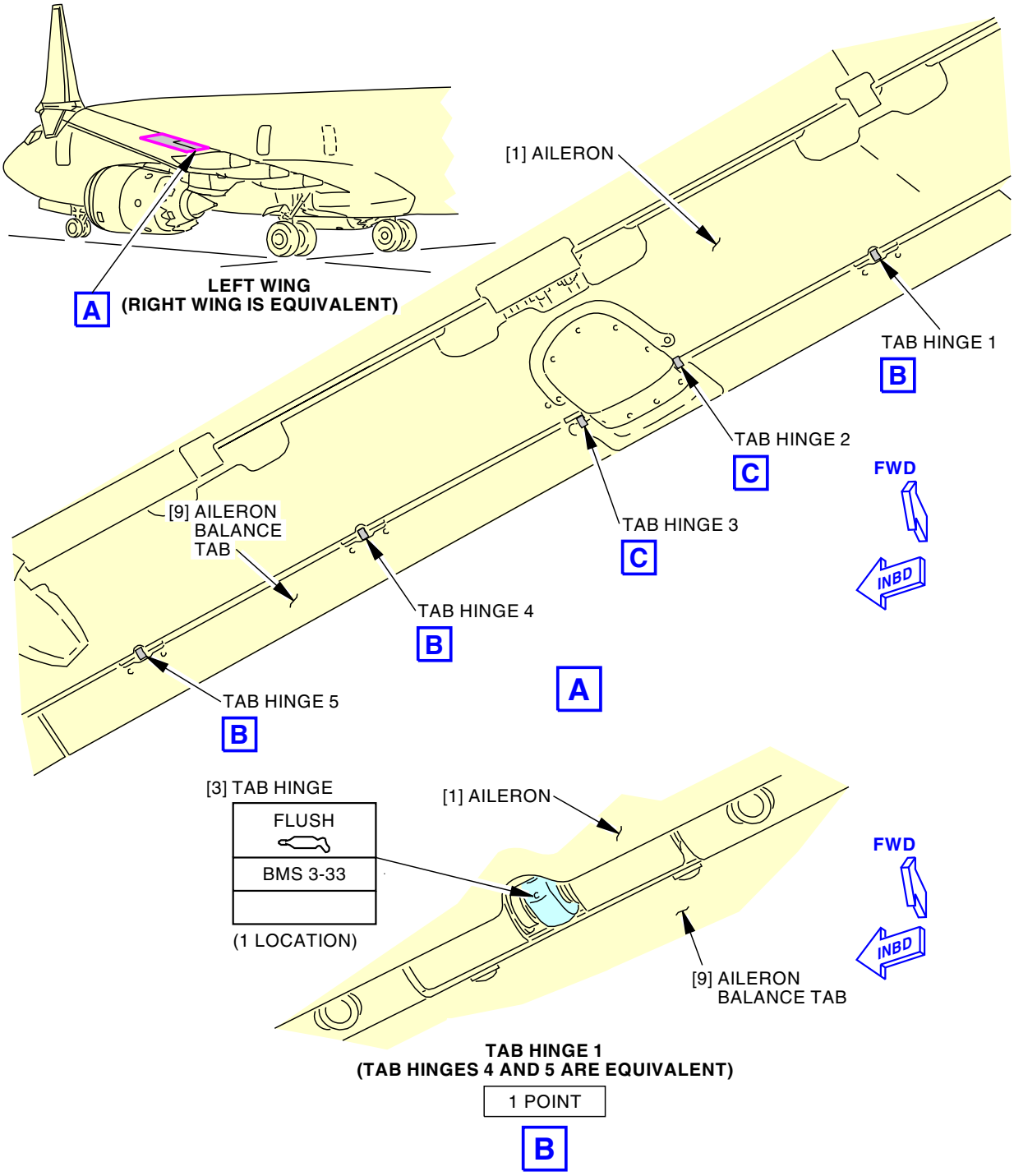
(c) Put the forward removable fairing [10] in its position.

(d) Install the forward removable fairing [10] with the bolts [11].

SUBTASK 12-22-11-860-008

(2) Do this task: Pressure to the Aileron Hydraulic Systems A and B - Activation, TASK 27-11-00-860-802.

——— END OF TASK ———



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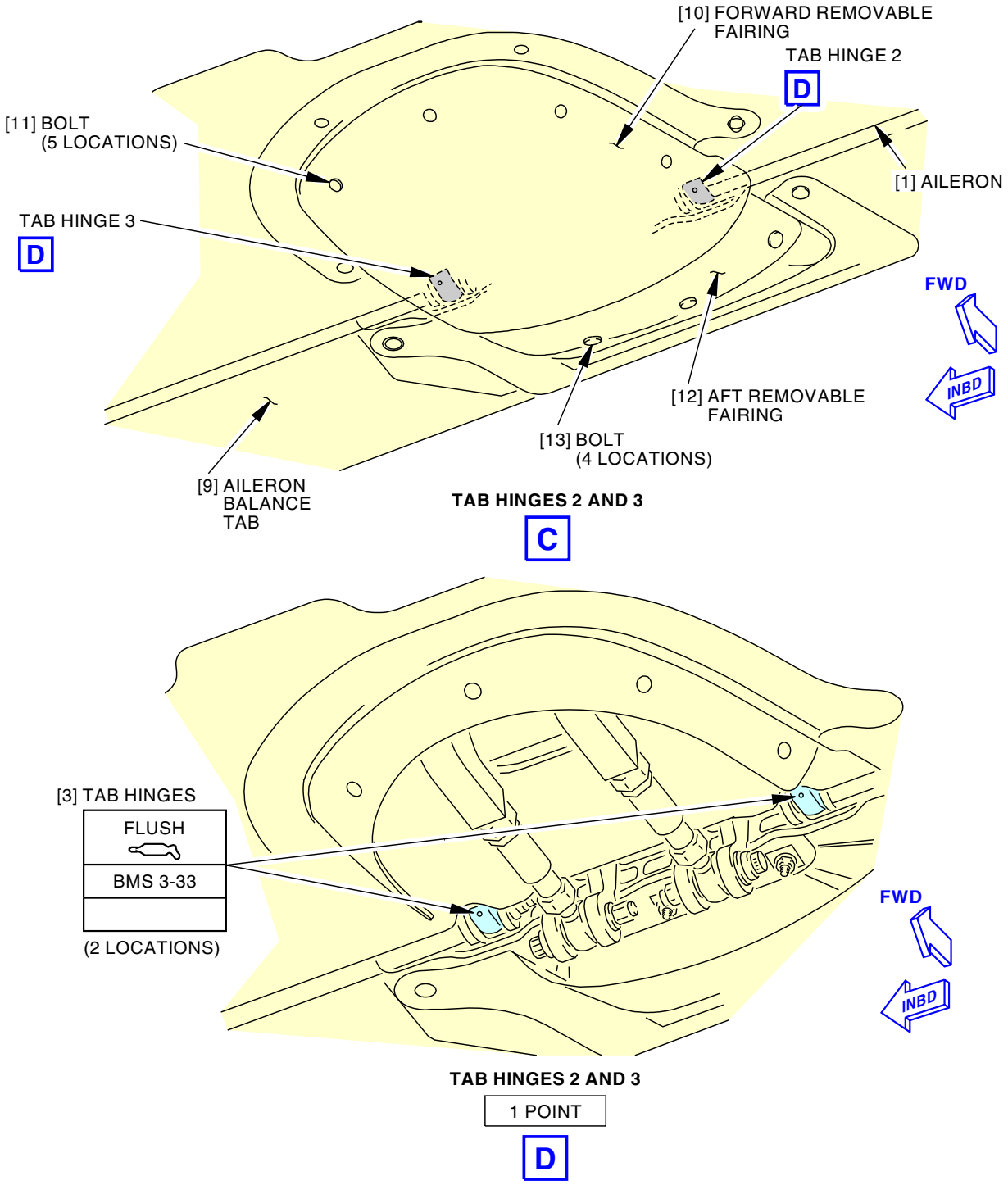
Aileron Balance Tab Hinge Servicing
Figure 302/12-22-11-990-802 (Sheet 1 of 2)



Aileron Balance Tab Hinge Servicing
Figure 302/12-22-11-990-802 (Sheet 2 of 2)

27-CMR-03

TASK 12-22-11-640-802

4. Aileron Tab Control Rods Lubrication

(Figure 303)

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
27-11-00-860-801	Pressure from the Aileron Hydraulic Systems A and B - Deactivation (P/B 201)
27-11-00-860-802	Pressure to the Aileron Hydraulic Systems A and B - Activation (P/B 201)

B. Consumable Materials

Reference	Description	Specification
D00633	Grease - Aircraft General Purpose	BMS3-33

C. Location Zones

Zone	Area
572	Left Wing - Aileron
672	Right Wing - Aileron

D. Prepare for the Lubrication

SUBTASK 12-22-11-860-004

(1) Do this task: Pressure from the Aileron Hydraulic Systems A and B - Deactivation, TASK 27-11-00-860-801.

SUBTASK 12-22-11-020-002

(2) Remove the forward removable fairing [10]:

(a) Remove the bolts [11] that attach the forward removable fairing [10] to the aileron [1].

(b) Remove the forward removable fairing [10].

SUBTASK 12-22-11-020-003

(3) Remove the aft removable fairing [12]:

(a) Remove the bolts [13] that attach the aft removable fairing [12] to the aileron balance tab [9].

(b) Remove the aft removable fairing [12].

E. Aileron Tab Control Rods Lubrication

(Table 303, Figure 303)

SUBTASK 12-22-11-640-005

(1) This table supplies data for the subsequent lubrication step:

Table 303/12-22-11-993-803 Aileron Tab Control Rods Servicing

Item No.	Nomenclature	Lubricant	Method of Application	Number of Locations
4, 5	Rod end bearing	grease, D00633	Flush	2

SUBTASK 12-22-11-640-006

(2) Lubricate the rod end bearings [4] and rod end bearings [5] of the aileron tab control rods [14] with grease, D00633:

(a) At the aileron balance tab [9], fill the rod end bearings [4] with grease, D00633 until clean grease comes out of the bearings.

NOTE: It is only necessary to put grease in one of the lubrication holes on each rod end bearing [4].

(b) At the aileron [1], fill the rod end bearings [5] with grease, D00633.

(c) Wipe unwanted grease, D00633 from around the rod end bearings [4] and rod end bearings [5].

F. Put the Airplane Back to Its Usual Condition

SUBTASK 12-22-11-420-002

(1) Install the aft removable fairing [12]:

(a) Put the aft removable fairing [12] in its position.

(b) Install the bolts [13] to attach the aft removable fairing [12].

SUBTASK 12-22-11-420-003

(2) Install the forward removable fairing [10]:

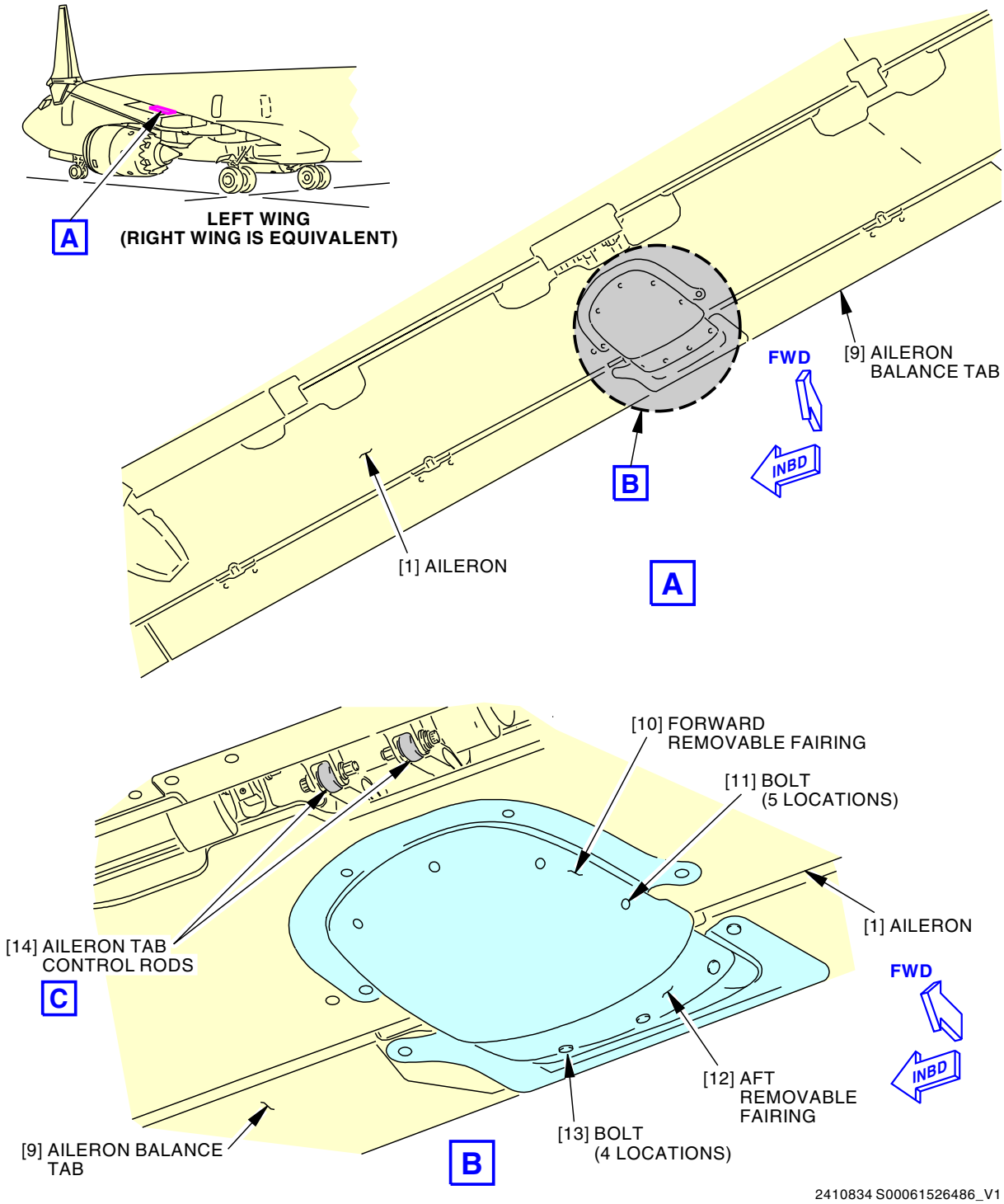
(a) Put the forward removable fairing [10] in its position.

(b) Install the bolts [11] to attach the forward removable fairing [10].

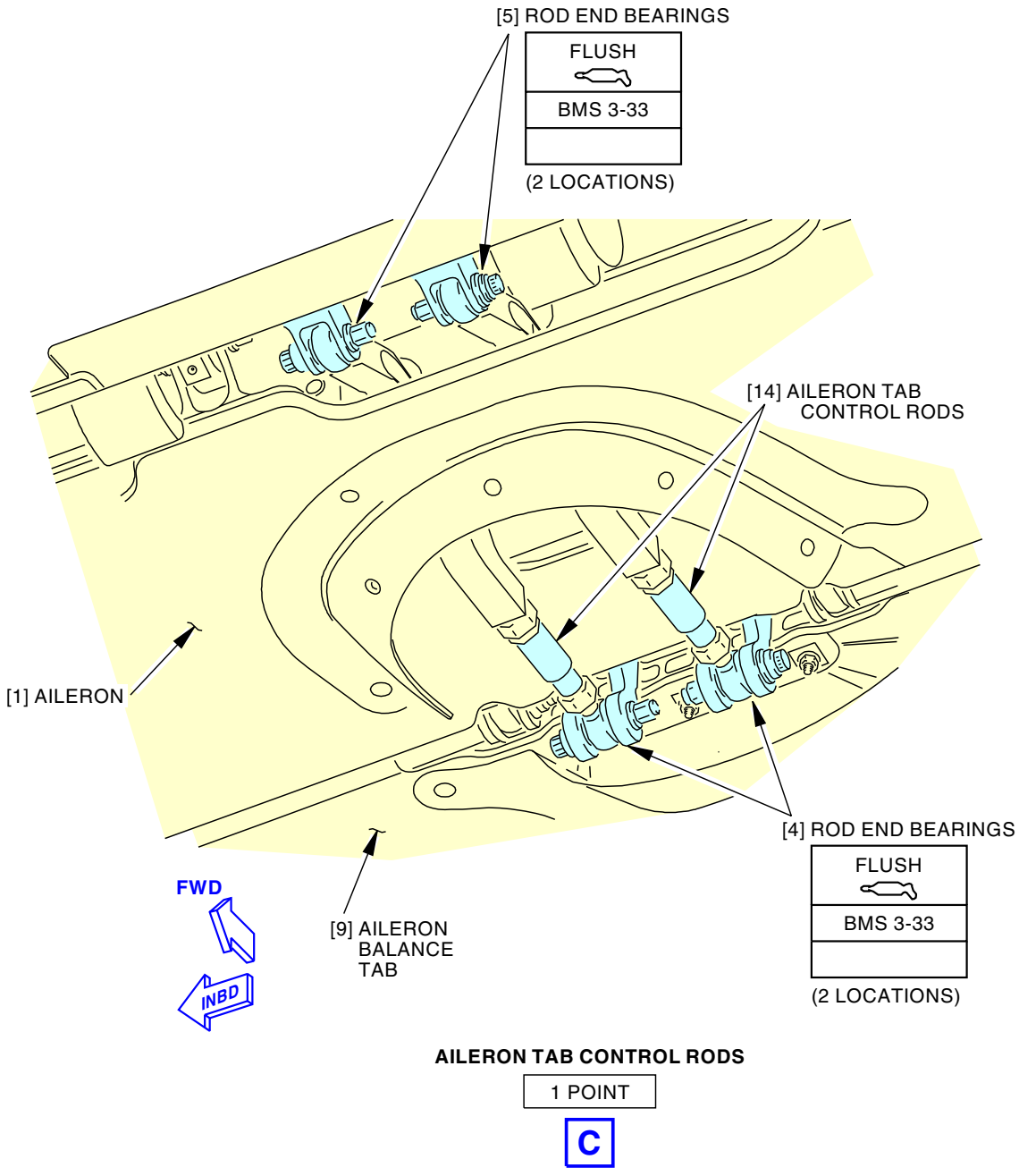
SUBTASK 12-22-11-860-005

(3) Do this task: Pressure to the Aileron Hydraulic Systems A and B - Activation, TASK 27-11-00-860-802.

END OF TASK



Aileron Tab Control Rods Servicing
Figure 303/12-22-11-990-803 (Sheet 1 of 2)



Aileron Tab Control Rods Servicing
Figure 303/12-22-11-990-803 (Sheet 2 of 2)

27-CMR-03

TASK 12-22-11-640-803

5. Aileron Wing Quadrant Control Rod Lubrication

(Figure 304)

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
27-11-00-860-801	Pressure from the Aileron Hydraulic Systems A and B - Deactivation (P/B 201)
27-11-00-860-802	Pressure to the Aileron Hydraulic Systems A and B - Activation (P/B 201)

B. Consumable Materials

Reference	Description	Specification
D00633	Grease - Aircraft General Purpose	BMS3-33

C. Location Zones

Zone	Area
572	Left Wing - Aileron
672	Right Wing - Aileron

D. Access Panels

Number	Name/Location
571BB	Lower Outboard Fixed Trailing Edge Access Panel
572BB	Lower Aileron, Actuator Rod Fairing - WBL 472.00
671BB	Lower Outboard Fixed Trailing Edge Access Panel
672BB	Lower Aileron, Actuator Rod Fairing - WBL 472.00

E. Prepare for the Lubrication

SUBTASK 12-22-11-860-006

(1) Do this task: Pressure from the Aileron Hydraulic Systems A and B - Deactivation, TASK 27-11-00-860-801.

SUBTASK 12-22-11-010-004

(2) If you work on the left wing, remove these access panels:

Number	Name/Location
571BB	Lower Outboard Fixed Trailing Edge Access Panel
572BB	Lower Aileron, Actuator Rod Fairing - WBL 472.00

SUBTASK 12-22-11-010-005

(3) If you work on the right wing, remove these access panels:

Number	Name/Location
671BB	Lower Outboard Fixed Trailing Edge Access Panel
672BB	Lower Aileron, Actuator Rod Fairing - WBL 472.00

F. Aileron Wing Quadrant Lubrication

SUBTASK 12-22-11-640-007

(1) This table supplies data for the subsequent lubrication step:

Table 304/12-22-11-993-804 Aileron Wing Quadrant Control Rod Servicing

Item No.	Nomenclature	Lubricant	Method of Application	Number of Locations
6	Rod end bearing	grease, D00633	Flush	2

SUBTASK 12-22-11-640-008

(2) Lubricate the rod end bearings [6] of the aileron control rod [15] on the aileron wing quadrant [16] with grease, D00633.

(a) Fill the rod end bearings [6] with grease, D00633 until clean grease comes out of the bearings.

NOTE: It is only necessary to put grease in one of the lubrication holes on each rod end bearing [6].

(b) Wipe unwanted grease, D00633 from around the rod end bearings [6].

G. Put the Airplane Back to Its Usual Condition

SUBTASK 12-22-11-010-006

(1) Install the applicable access panels.

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

Number	Name/Location
571BB	Lower Outboard Fixed Trailing Edge Access Panel
572BB	Lower Aileron, Actuator Rod Fairing - WBL 472.00

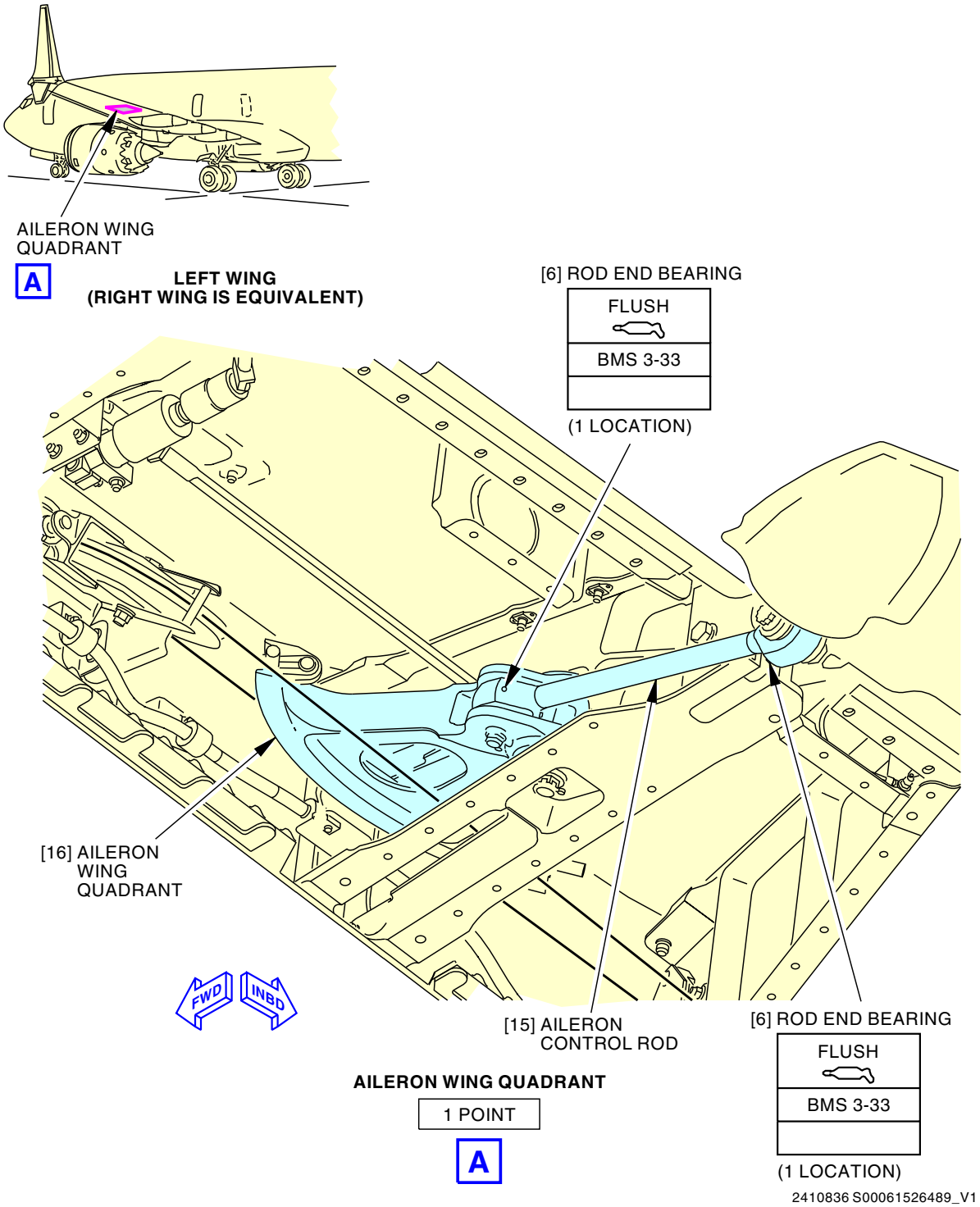
(b) For the right wing, close these access panels:

Number	Name/Location
671BB	Lower Outboard Fixed Trailing Edge Access Panel
672BB	Lower Aileron, Actuator Rod Fairing - WBL 472.00

SUBTASK 12-22-11-860-007

(2) Do this task: Pressure to the Aileron Hydraulic Systems A and B - Activation, TASK 27-11-00-860-802.

——— END OF TASK ———



Aileron Wing Quadrant Control Rod Servicing
Figure 304/12-22-11-990-804

27-CMR-03

TASK 12-22-11-640-804

6. Aileron Power Output Lever Lubrication

(Figure 305)

NOTE: This procedure is a scheduled maintenance task.

A. Consumable Materials

Reference	Description	Specification
D00633	Grease - Aircraft General Purpose	BMS3-33

B. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left

C. Aileron Power Output Lever Lubrication

(Table 305, Figure 305)

SUBTASK 12-22-11-640-009

(1) This table supplies data for the subsequent lubrication step:

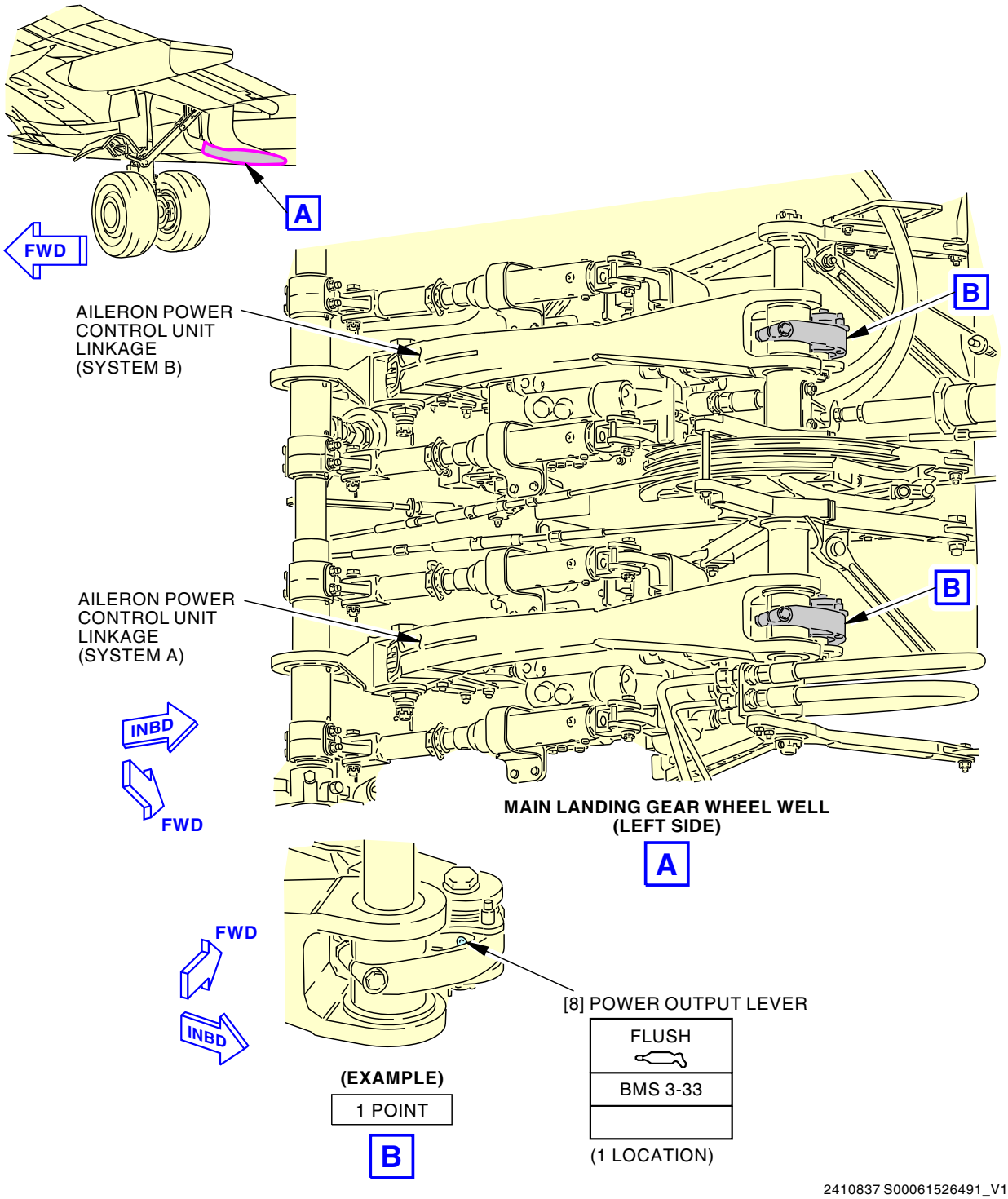
Table 305/12-22-11-993-805 Aileron Power Output Lever Servicing

Item No.	Nomenclature	Lubricant	Method of Application	Number of Locations
8	Power Output Lever	grease, D00633	Flush	2

SUBTASK 12-22-11-640-010

(2) Lubricate the power output lever [8] with grease, D00633.

END OF TASK



Aileron Power Output Lever Servicing
Figure 305/12-22-11-990-805

RUDDER - SERVICING

1. General

A. This procedure has these tasks:

(1) A lubrication of the rudder Power Control Units (PCUs)

(2) A lubrication of the rudder spring slider shaft

(3) A lubrication of the rudder hinge.

TASK 12-22-21-600-801

2. Rudder Power Control Units (PCUs) Lubrication

(Figure 301)

NOTE: This procedure is a scheduled maintenance task.

A. General

(1) This task includes steps to lubricate rudder main Power Control Unit (PCU) and standby rudder PCU bearings.

B. References

Reference	Title
27-21-00-800-802	Pressure from the Rudder Hydraulic Systems A, B, and Standby - Deactivation (P/B 201)
27-21-00-840-802	Pressure to the Rudder Systems A, B, and Standby - Activation (P/B 201)

C. Consumable Materials

Reference	Description	Specification
D00633	Grease - Aircraft General Purpose	BMS3-33

D. Location Zones

Zone	Area
324	Vertical Fin - Rear Spar To Trailing Edge

E. Access Panels

Number	Name/Location
324DR	Vertical Fin, Trailing Edge Access

F. Prepare for the Lubrication

SUBTASK 12-22-21-860-001

(1) Do this task: Pressure from the Rudder Hydraulic Systems A, B, and Standby - Deactivation, TASK 27-21-00-800-802.

SUBTASK 12-22-21-010-001

(2) Open this access panel:

Number	Name/Location
324DR	Vertical Fin, Trailing Edge Access

SUBTASK 12-22-21-640-001

(3) Move the rudder to the full left position to get access to the PCU rod ends.

G. Rudder Power Control Units Lubrication

SUBTASK 12-22-21-640-002

(1) This table supplies data for the subsequent lubrication step:

Table 301/12-22-21-993-801 Rudder Power Control Units (PCUs) Servicing

Item No.	Nomenclature	Lubricant	Method of Application	Number of Locations
1	PCU Rod End	grease, D00633	Flush	2

SUBTASK 12-22-21-640-003

(2) Put grease, D00633, in the lubrication fittings of the PCU rod ends [1] and rudder.

NOTE: Only the bearing at the aft end of each PCU use lubricant. The bearings at the front of the PCU do not use lubricant.

(a) Add grease, D00633, until clean grease, D00633, comes out of the bearings.

SUBTASK 12-22-21-100-001

(3) Remove the excess grease, D00633, from around the bearing.

H. Put the Airplane Back to Its Usual Condition

SUBTASK 12-22-21-410-001

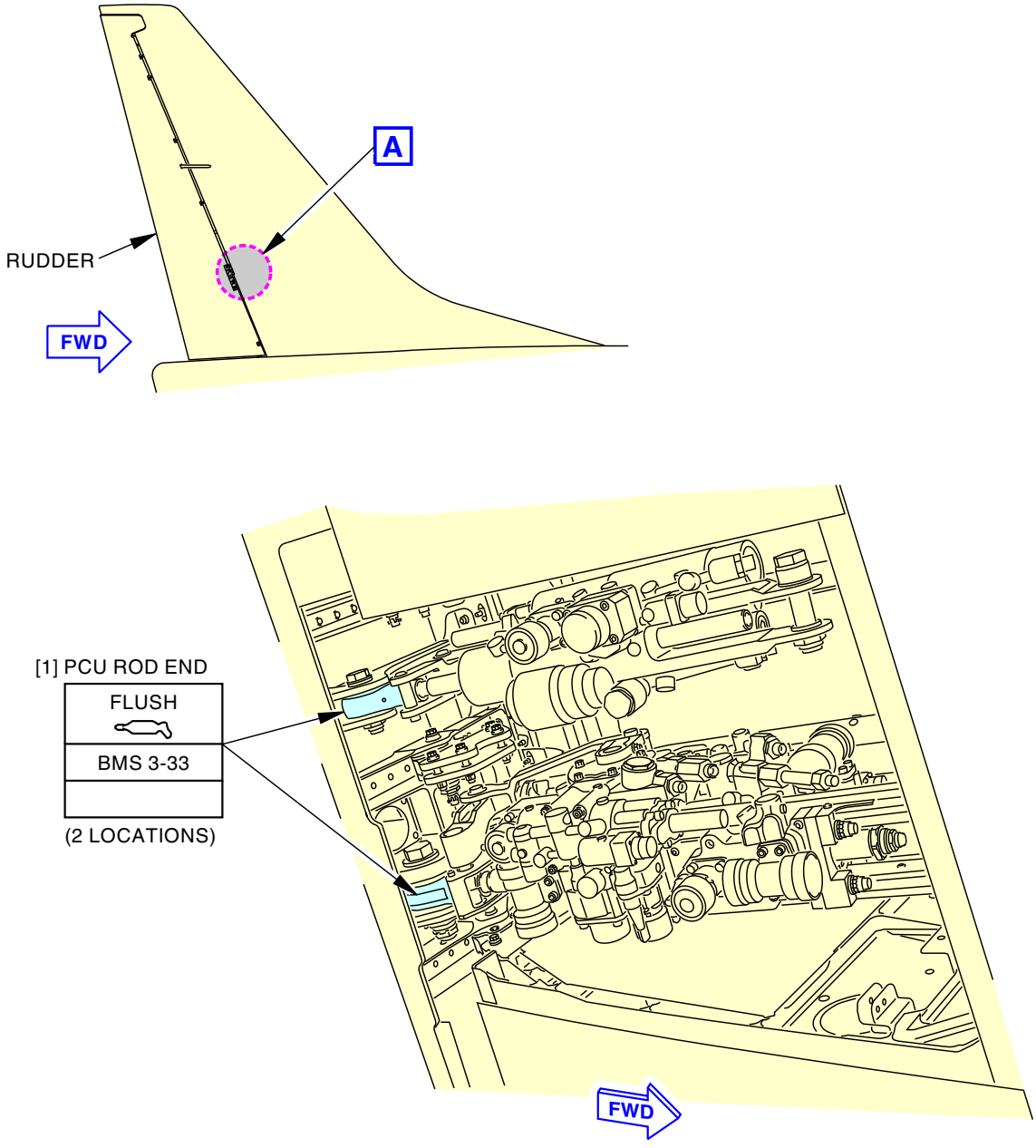
(1) Close this access panel:

Number	Name/Location
324DR	Vertical Fin, Trailing Edge Access

SUBTASK 12-22-21-860-002

(2) Do this task: Pressure to the Rudder Systems A, B, and Standby - Activation, TASK 27-21-00-840-802.

——— END OF TASK ———



Rudder Power Control Units (PCUs) Servicing
Figure 301/12-22-21-990-801

TASK 12-22-21-600-802

3. Spring Slider Shaft Lubrication

(Figure 302)

NOTE: This procedure is a scheduled maintenance task.

A. General

(1) This task includes steps to lubricate the spring slider shaft of the rudder feel and centering unit.

B. References

Reference	Title
27-21-00-800-802	Pressure from the Rudder Hydraulic Systems A, B, and Standby - Deactivation (P/B 201)
27-21-00-840-802	Pressure to the Rudder Systems A, B, and Standby - Activation (P/B 201)

C. Consumable Materials

Reference	Description	Specification
D00633	Grease - Aircraft General Purpose	BMS3-33

D. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right
324	Vertical Fin - Rear Spar To Trailing Edge

E. Access Panels

Number	Name/Location
324CL	Vertical Fin, Access

F. Prepare for the Lubrication

SUBTASK 12-22-21-860-003

(1) Do this task: Pressure from the Rudder Hydraulic Systems A, B, and Standby - Deactivation, TASK 27-21-00-800-802.

SUBTASK 12-22-21-010-002

(2) To get access to the rudder feel and centering unit, open this access panel:

Number	Name/Location
324CL	Vertical Fin, Access

G. Lubricate the Spring Slider Shaft

SUBTASK 12-22-21-640-004

(1) This table supplies data for the subsequent lubrication step:

Table 302/12-22-21-993-802 Spring Slider Shaft Servicing

Item No.	Nomenclature	Lubricant	Method of Application	Number of Locations
2	Spring Slider Shaft	grease, D00633	Hand	1

SUBTASK 12-22-21-640-005

(2) Do these steps to lubricate the spring slider shaft [2] of the rudder feel and centering unit:

(a) Push one of the rudder pedals fully forward to get access to the spring slider shaft [2].

(b) Apply a thin layer of grease, D00633, to the part of the spring slider shaft [2] that you can get access to.

NOTE: There must be sufficient grease on the spring slider shaft for you to see the grease.

(c) Put the rudder pedals back to the center position.

(d) Apply a thin layer of grease, D00633, to the part of the spring slider shaft [2] that you can get access to through the spring cartridge.

NOTE: There must be sufficient grease on the spring slider shaft for you to see the grease.

(e) Move the rudder pedals through 10 cycles to apply the grease equally.

H. Put the Airplane Back to Its Usual Condition

SUBTASK 12-22-21-410-002

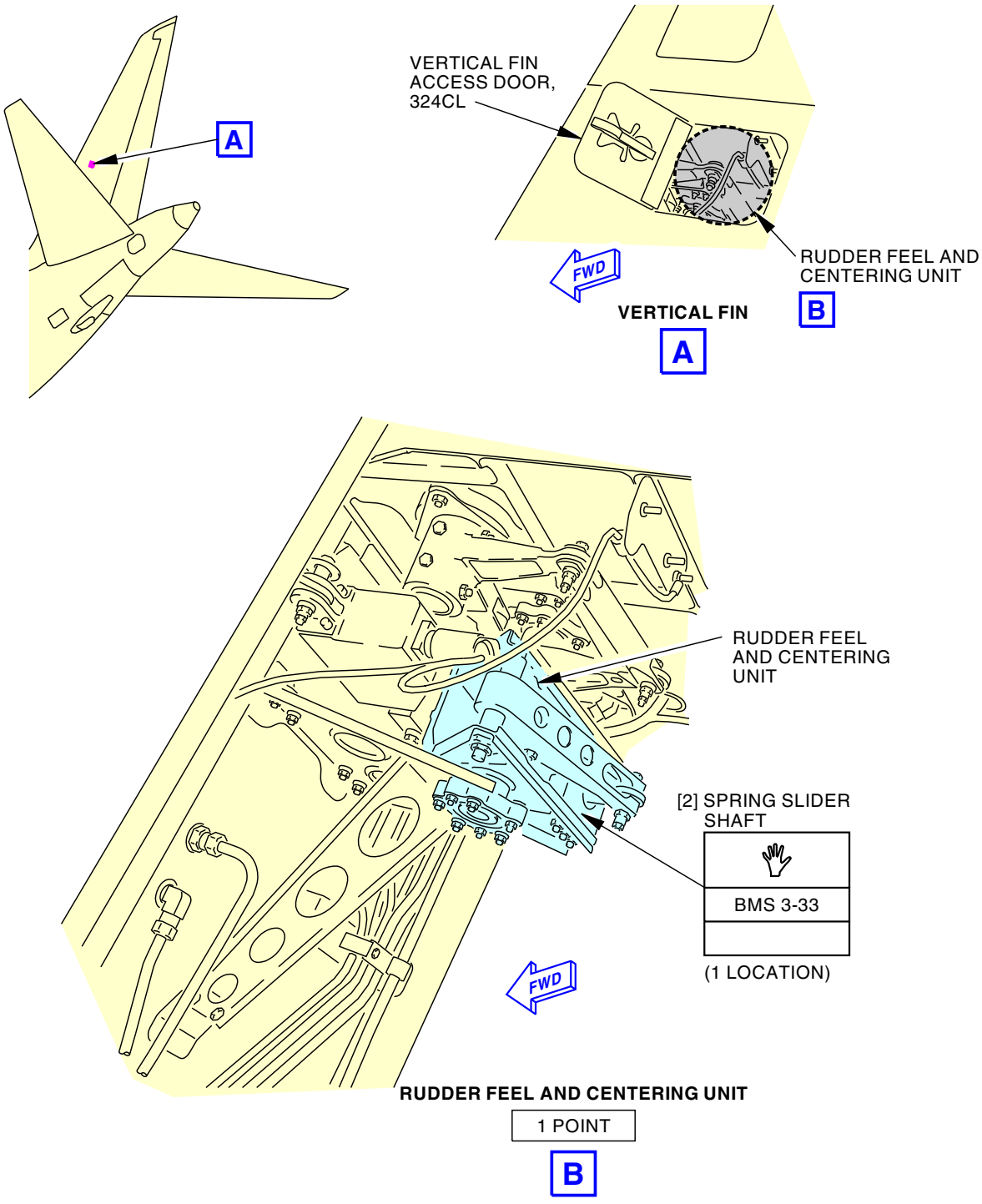
(1) Close this access panel:

Number	Name/Location
324CL	Vertical Fin, Access

SUBTASK 12-22-21-860-004

(2) Do this task: Pressure to the Rudder Systems A, B, and Standby - Activation, TASK 27-21-00-840-802.

——— END OF TASK ———



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Spring Slider Shaft Servicing
Figure 302/12-22-21-990-802

TASK 12-22-21-640-801

4. Rudder Hinge Lubrication

(Figure 303)

NOTE: This procedure is a scheduled maintenance task.

A. General

(1) This task includes steps to lubricate rudder hinges.

B. References

Reference	Title
27-21-00-800-802	Pressure from the Rudder Hydraulic Systems A, B, and Standby - Deactivation (P/B 201)
27-21-00-840-802	Pressure to the Rudder Systems A, B, and Standby - Activation (P/B 201)

C. Consumable Materials

Reference	Description	Specification
D00633	Grease - Aircraft General Purpose	BMS3-33

D. Location Zones

Zone	Area
325	Vertical Fin - Rudder

E. Prepare for the Lubrication

SUBTASK 12-22-21-860-005

(1) Do this task: Pressure from the Rudder Hydraulic Systems A, B, and Standby - Deactivation, TASK 27-21-00-800-802.

SUBTASK 12-22-21-010-003

(2) Remove the applicable hinge covers.

F. Rudder Hinge Lubrication

SUBTASK 12-22-21-640-006

(1) This table supplies data for the subsequent lubrication step:

Table 303/12-22-21-993-803 Rudder Hinge Servicing

Item No.	Nomenclature	Lubricant	Method of Application	Number of Locations
3	Rudder Hinge	grease, D00633	Zerk	9

SUBTASK 12-22-21-640-007

(2) Move the rudder to the full right position to get access to the rudder hinge [3] fittings.

SUBTASK 12-22-21-640-008

(3) Lubricate the rudder hinges [3] with grease, D00633.

G. Put the Airplane Back to Its Usual Condition

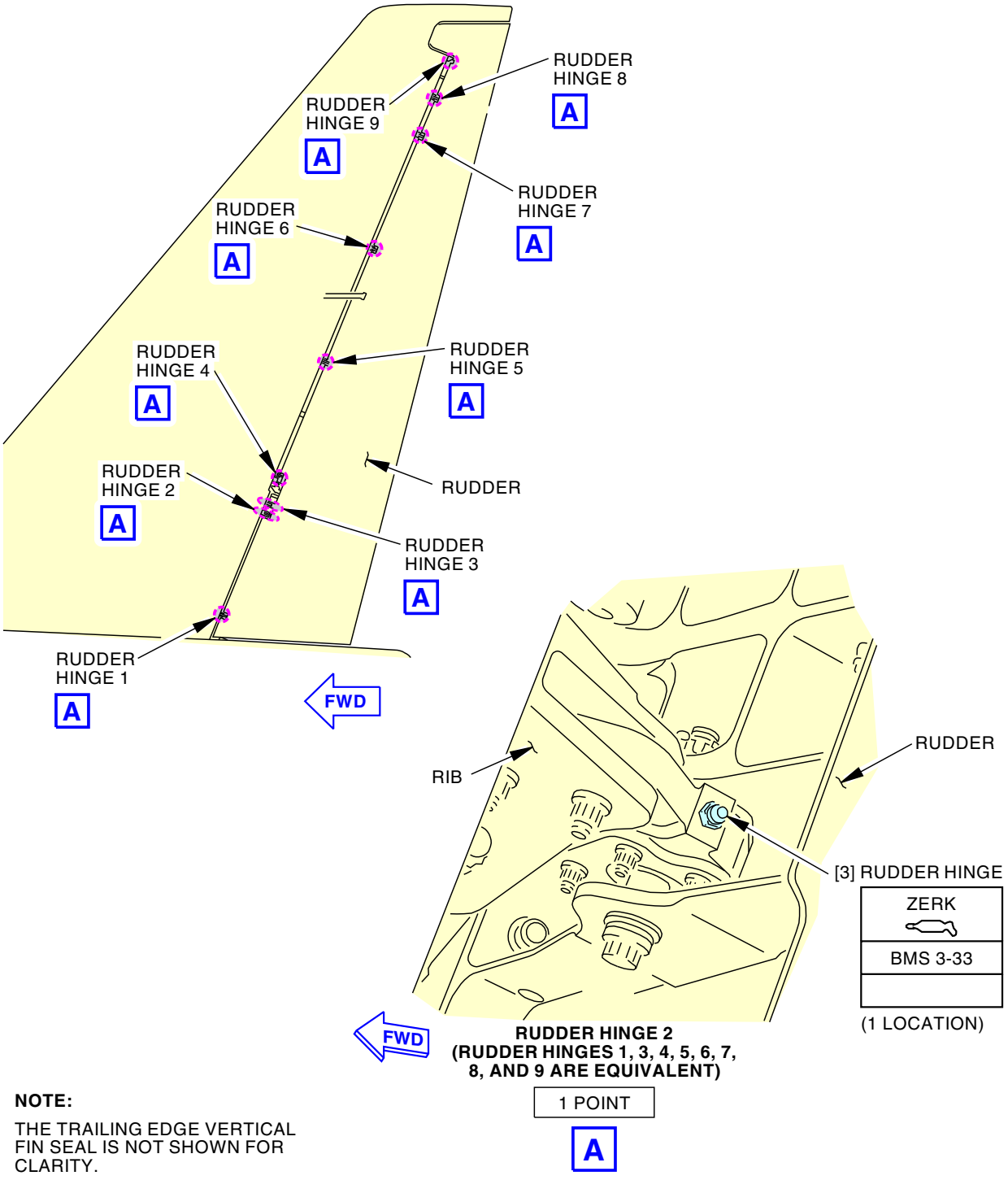
SUBTASK 12-22-21-010-004

(1) Install the applicable hinge covers.

SUBTASK 12-22-21-860-006

(2) Do this task: Pressure to the Rudder Systems A, B, and Standby - Activation, TASK 27-21-00-840-802.

——— END OF TASK ———



NOTE:

THE TRAILING EDGE VERTICAL FIN SEAL IS NOT SHOWN FOR CLARITY.

2410840 S00061526499_V1

Rudder Hinge Servicing
Figure 303/12-22-21-990-803

ELEVATOR - SERVICING

1. General

A. This procedure has these tasks:

(1) A lubrication of the elevator buss crank and lubrication of the master arm hinge fitting

(2) A lubrication of the elevator hinges

(3) A lubrication of the elevator tab hinges

(4) A lubrication of the elevator balance panel hinges.

TASK 12-22-31-600-801

2. Elevator Buss Crank and Master Arm Fitting - Lubrication

(Table 301, Figure 301)

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
24-22-00-860-801	Supply Electrical Power (P/B 201)
27-31-00-800-801	Elevator Hydraulic System A and B - Pressurization (P/B 201)
27-31-00-800-802	Pressure from the Elevator Hydraulic Systems A and B Removal (P/B 201)
27-31-00-840-801	Put the Elevator Hydraulic Systems A and B Back to the Condition Before the Pressurization (P/B 201)
27-31-00-840-802	Putting the Elevator Systems A and B Back to the Condition Before the Pressure Removal (P/B 201)

B. Consumable Materials

Reference	Description	Specification
D00633	Grease - Aircraft General Purpose	BMS3-33

C. Location Zones

Zone	Area
317	Tail Cone Compartment - Left
318	Tail Cone Compartment - Right

D. Access Panels

Number	Name/Location
317BL	Tailcone Access Door
318BR	Tailcone Access Door

E. Prepare for the Lubrication

SUBTASK 12-22-31-860-001

(1) Position the control column in the neutral position and place a DO-NOT-MOVE tag on the control column.

SUBTASK 12-22-31-860-002

(2) Set the FLT CONTROL A and B switches to OFF.

SUBTASK 12-22-31-860-003

(3) Do this task: Pressure from the Elevator Hydraulic Systems A and B Removal, TASK 27-31-00-800-802.

SUBTASK 12-22-31-010-001

(4) For the left elevator buss crank and master arm fitting, do this step:

Open this access panel:

Number	Name/Location
317BL	Tailcone Access Door

SUBTASK 12-22-31-010-002

(5) For the right elevator buss crank and master arm fitting, do this step:

Open this access panel:

Number	Name/Location
318BR	Tailcone Access Door

F. Elevator Buss Crank and Master Arm Fitting Lubrication

(Table 301)

SUBTASK 12-22-31-640-001

(1) This table supplies data for the subsequent lubrication step:

Table 301/12-22-31-993-801 Elevator Buss Crank and Master Arm Fitting Lubrication

Item No.	Nomenclature	Lubricant	Method of Application	Number of Locations
1	Master Arm Hinge Fitting	grease, D00633	Flush	1
2	Buss Crank Assembly	grease, D00633	Flush	1

SUBTASK 12-22-31-640-002

(2) Lubricate the elevator output torque tube buss crank [2] (Figure 301).

(a) Locate the buss crank [2] lubrication fitting.

(b) Lubricate the buss crank [2] with grease, D00633.

1) Add grease, D00633, into lubrication fitting until clean grease, D00633, comes out of the bearing.

SUBTASK 12-22-31-640-003

(3) Lubricate the master arm hinge fitting [1] (Figure 301).

(a) Put grease, D00633, into the master arm hinge fitting [1].

1) Add grease, D00633, until clean grease, D00633, comes out of the bearing.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 12-22-31-410-001

(1) For the left elevator buss crank [2] and master arm hinge fitting [1], do this step:

Close this access panel:

Number	Name/Location
317BL	Tailcone Access Door

SUBTASK 12-22-31-410-002

(2) For the right elevator buss crank [2] and master arm hinge fitting [1], do this step:

Close this access panel:

Number	Name/Location
318BR	Tailcone Access Door

SUBTASK 12-22-31-860-004

(3) Do this task: Supply Electrical Power, TASK 24-22-00-860-801.

SUBTASK 12-22-31-840-001

(4) Do this task: Putting the Elevator Systems A and B Back to the Condition Before the Pressure Removal, TASK 27-31-00-840-802.

SUBTASK 12-22-31-860-005

(5) Do this task: Elevator Hydraulic System A and B - Pressurization, TASK 27-31-00-800-801.

SUBTASK 12-22-31-860-006

(6) Set the FLT CONTROL A and B switches to ON.

SUBTASK 12-22-31-080-001

(7) Remove the DO-NOT-MOVE tag from the control column.

SUBTASK 12-22-31-710-001

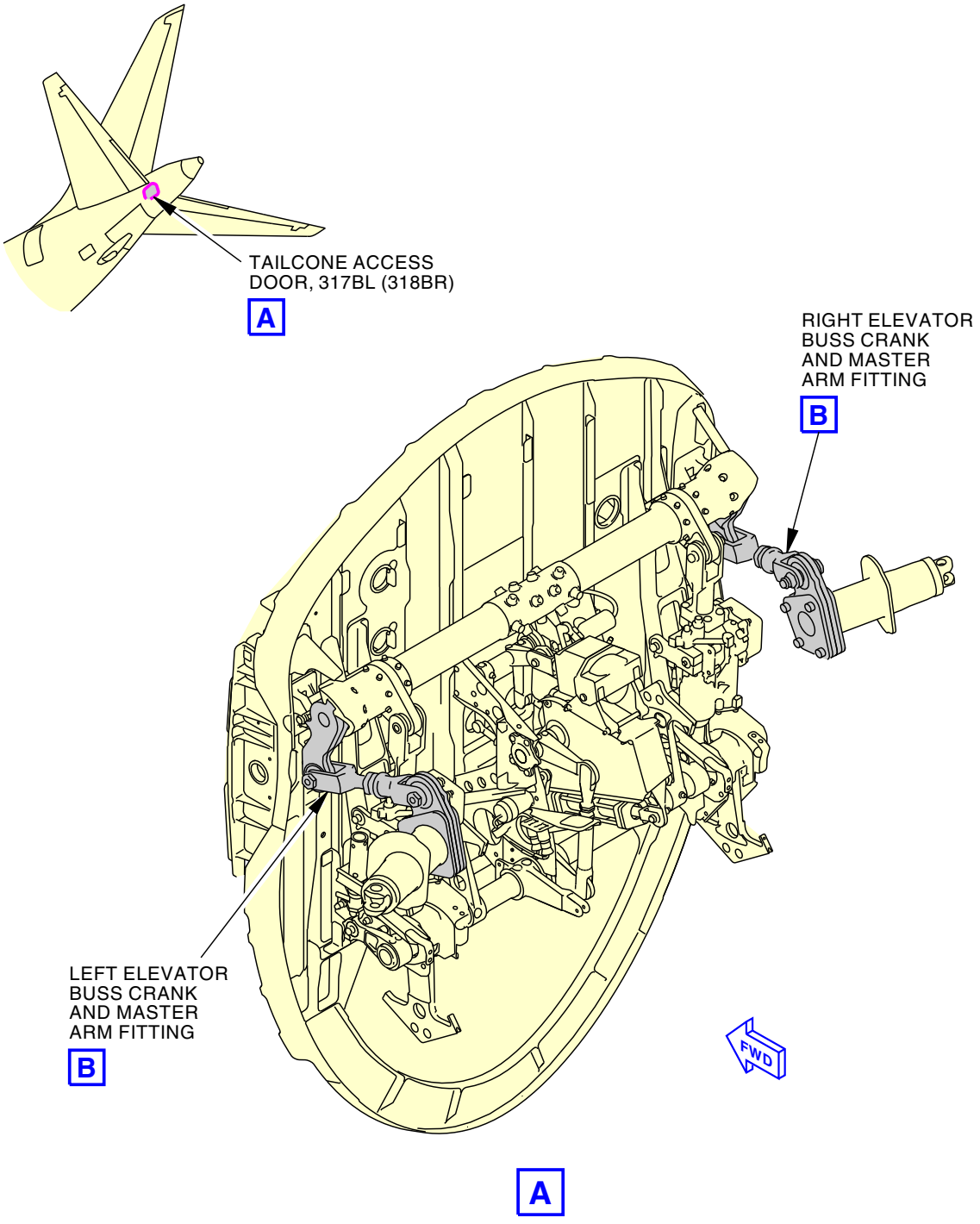
(8) Move the elevator through the full range of travel to make sure it moves freely.

(a) Push the control column all the way forward then pull the control column all the way aft, then release the column to the neutral position.

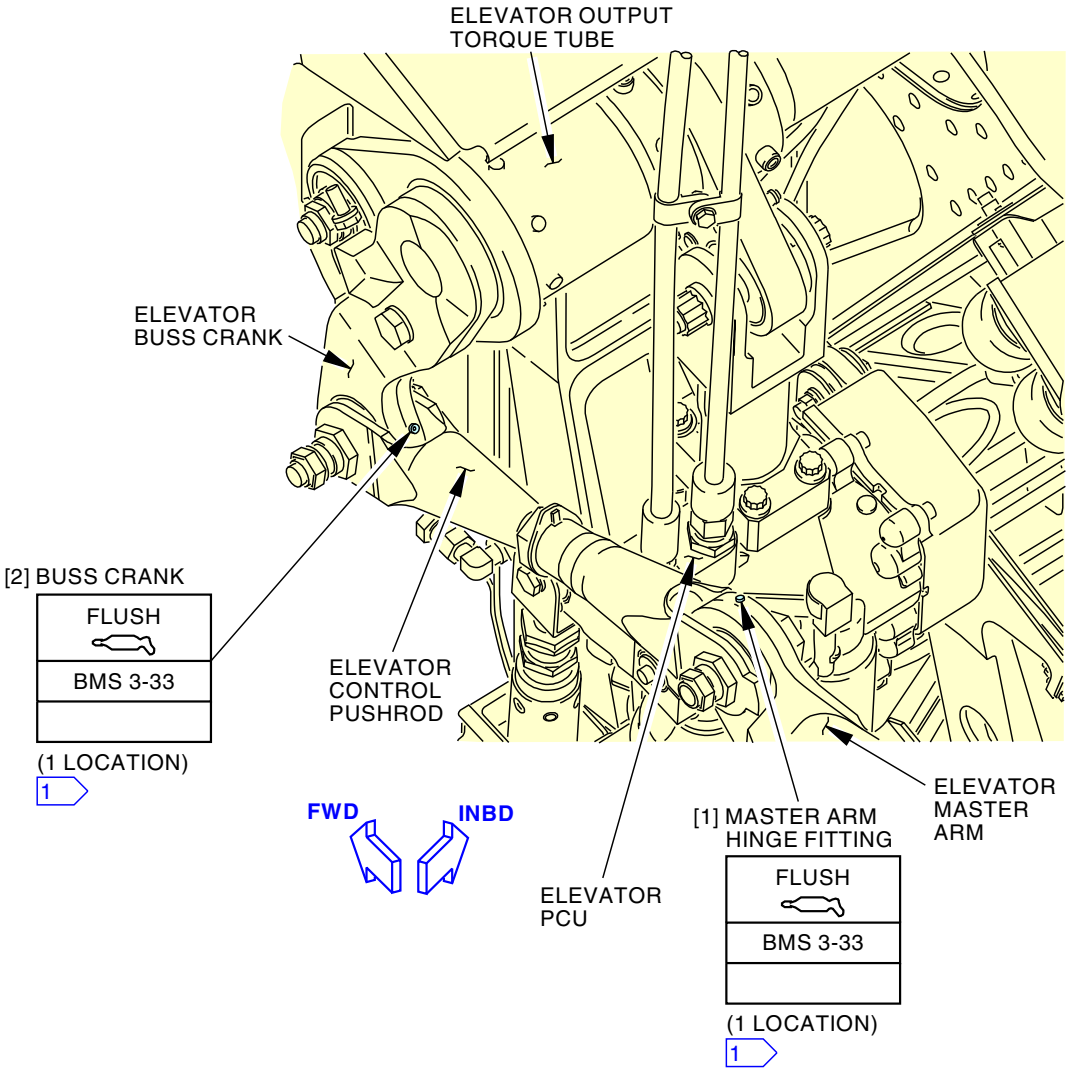
SUBTASK 12-22-31-600-001

(9) Do this task: Put the Elevator Hydraulic Systems A and B Back to the Condition Before the Pressurization, TASK 27-31-00-840-801.

END OF TASK



Elevator Buss Crank and Master Arm Fitting Lubrication
Figure 301/12-22-31-990-801 (Sheet 1 of 2)



LEFT ELEVATOR BUSS CRANK AND MASTER ARM FITTING
(RIGHT ELEVATOR BUSS CRANK AND MASTER ARM FITTING ARE EQUIVALENT)

2 POINTS

B

CAUTION:

1 ON SEALED BEARINGS, DO NOT APPLY GREASE WITH A PRESSURE MORE THAN 1000 PSI (6900 kPa) AND AT A RATE MORE THAN 0.07 GALLON (0.25 LITER) PER MINUTE. WHEN YOU USE A HAND-OPERATED GREASE GUN, DO NOT USE AN EXTENSION HANDLE TO GET MORE FORCE. SEALED BEARINGS CAN BE DAMAGED BY TOO MUCH PRESSURE.

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Elevator Buss Crank and Master Arm Fitting Lubrication
Figure 301/12-22-31-990-801 (Sheet 2 of 2)

TASK 12-22-31-640-801

3. Elevator Hinge Bearings - Lubrication

(Table 302, Figure 302)

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
27-31-00-800-801	Elevator Hydraulic System A and B - Pressurization (P/B 201)
27-31-00-800-802	Pressure from the Elevator Hydraulic Systems A and B Removal (P/B 201)
27-31-00-840-801	Put the Elevator Hydraulic Systems A and B Back to the Condition Before the Pressurization (P/B 201)
27-31-00-840-802	Putting the Elevator Systems A and B Back to the Condition Before the Pressure Removal (P/B 201)

B. Tools/Equipment

Reference	Description
STD-858	Tag - DO NOT OPERATE

C. Consumable Materials

Reference	Description	Specification
D00633	Grease - Aircraft General Purpose	BMS3-33

D. Access Panels

Number	Name/Location
334GB	Horizontal Stabilizer, Elevator Hinge Cover
334JB	Horizontal Stabilizer, Elevator Hinge Cover
334KB	Horizontal Stabilizer, Elevator Hinge Cover
334MB	Horizontal Stabilizer, Elevator Hinge Cover
334NB	Horizontal Stabilizer, Elevator Hinge Cover
344GB	Horizontal Stabilizer, Hinge Cover, Elevator Station 24.09
344JB	Horizontal Stabilizer, Elevator Hinge Cover, Elevator Sta 121.59
344KB	Horizontal Stabilizer, Elevator Hinge Cover, Elevator Sta 176.64
344MB	Horizontal Stabilizer, Elevator Hinge Cover, Elevator Sta 250.04
344NB	Horizontal Stabilizer, Elevator Hinge Cover, Elevator Sta 265.45

E. Prepare for the Lubrication

SUBTASK 12-22-31-860-019

(1) Do this task: Elevator Hydraulic System A and B - Pressurization, TASK 27-31-00-800-801.

SUBTASK 12-22-31-860-008

(2) Move the control column full aft and hold the control column in its position.

(a) Attach a DO NOT OPERATE tag, STD-858, on the control column.

SUBTASK 12-22-31-860-020

(3) Move the FLT CONTROL A and B switches to the OFF position.

SUBTASK 12-22-31-860-007

(4) Do this task: Pressure from the Elevator Hydraulic Systems A and B Removal, TASK 27-31-00-800-802.

SUBTASK 12-22-31-010-003

(5) For the left elevator, open these access panels:

Number	Name/Location
334GB	Horizontal Stabilizer, Elevator Hinge Cover
334JB	Horizontal Stabilizer, Elevator Hinge Cover
334KB	Horizontal Stabilizer, Elevator Hinge Cover
334MB	Horizontal Stabilizer, Elevator Hinge Cover
334NB	Horizontal Stabilizer, Elevator Hinge Cover

SUBTASK 12-22-31-010-004

(6) For the right elevator, open these access panels:

Number	Name/Location
344GB	Horizontal Stabilizer, Hinge Cover, Elevator Station 24.09
344JB	Horizontal Stabilizer, Elevator Hinge Cover, Elevator Sta 121.59
344KB	Horizontal Stabilizer, Elevator Hinge Cover, Elevator Sta 176.64
344MB	Horizontal Stabilizer, Elevator Hinge Cover, Elevator Sta 250.04
344NB	Horizontal Stabilizer, Elevator Hinge Cover, Elevator Sta 265.45

F. Elevator Hinge Bearings Lubrication

(Table 302)

SUBTASK 12-22-31-640-004

(1) This table supplies data for the subsequent lubrication step:

Table 302/12-22-31-993-802 Elevator Hinge Lubrication

Item No.	Nomenclature	Lubricant	Method of Application	Number of Locations
3	Hinge Fitting	grease, D00633	Zerk	1
4	Hinge Fitting	grease, D00633	Zerk	1
5	Hinge Fitting	grease, D00633	Zerk	2
6	Hinge Fitting	grease, D00633	Zerk	1
7	Hinge Fitting	grease, D00633	Zerk	3

SUBTASK 12-22-31-600-002

(2) Use the item number [3], [4], [5], [6] and [7] in Table 302 to locate the elevator hinge fittings for lubrication.

SUBTASK 12-22-31-600-003

(3) Put grease, D00633 into the lube fitting of the elevator hinges.

(a) Add grease, D00633 until clean grease, D00633 comes out of the bearings.

(b) Remove the excess grease, D00633 from around the bearing.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 12-22-31-410-008

(1) For the left elevator, install these access panels:

Number	Name/Location
334GB	Horizontal Stabilizer, Elevator Hinge Cover
334JB	Horizontal Stabilizer, Elevator Hinge Cover

(Continued)

Number	Name/Location
334KB	Horizontal Stabilizer, Elevator Hinge Cover
334MB	Horizontal Stabilizer, Elevator Hinge Cover
334NB	Horizontal Stabilizer, Elevator Hinge Cover

SUBTASK 12-22-31-410-009

(2) For the right elevator, install these access panels:

Number	Name/Location
344GB	Horizontal Stabilizer, Hinge Cover, Elevator Station 24.09
344JB	Horizontal Stabilizer, Elevator Hinge Cover, Elevator Sta 121.59
344KB	Horizontal Stabilizer, Elevator Hinge Cover, Elevator Sta 176.64
344MB	Horizontal Stabilizer, Elevator Hinge Cover, Elevator Sta 250.04
344NB	Horizontal Stabilizer, Elevator Hinge Cover, Elevator Sta 265.45

SUBTASK 12-22-31-840-002

(3) Do this task: Putting the Elevator Systems A and B Back to the Condition Before the Pressure Removal, TASK 27-31-00-840-802.

SUBTASK 12-22-31-860-021

(4) Do this task: Elevator Hydraulic System A and B - Pressurization, TASK 27-31-00-800-801.

SUBTASK 12-22-31-860-022

(5) Set the FLT CONTROL A and B switches to ON.

SUBTASK 12-22-31-860-009

(6) Remove the DO NOT OPERATE tag, STD-858, from the control column.

SUBTASK 12-22-31-710-002

(7) Move the elevator through the full range of travel to make sure it moves freely.

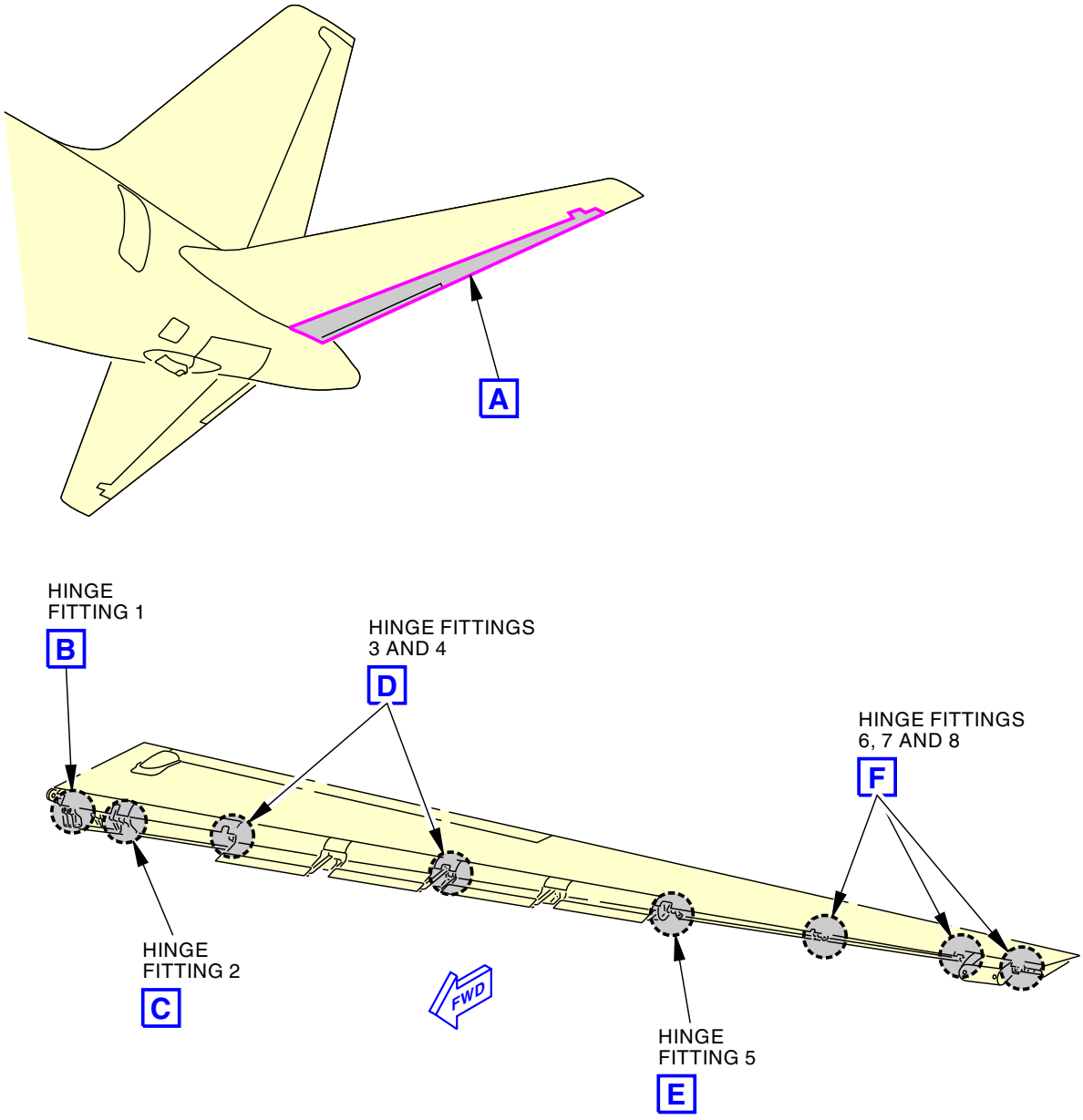
SUBTASK 12-22-31-860-010

(8) Push the control column all the way forward then pull the control column all the way aft, then release to the neutral position.

SUBTASK 12-22-31-860-024

(9) Do this task: Put the Elevator Hydraulic Systems A and B Back to the Condition Before the Pressurization, TASK 27-31-00-840-801.

——— END OF TASK ———



LEFT ELEVATOR
(RIGHT ELEVATOR IS EQUIVALENT)

A

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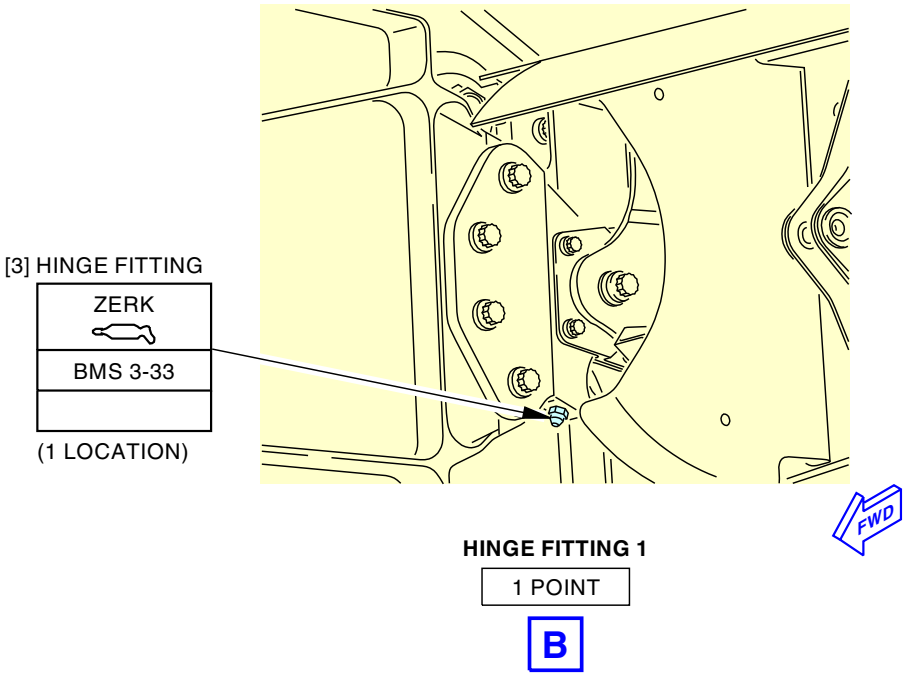
Elevator Hinge Servicing
Figure 302/12-22-31-990-802 (Sheet 1 of 4)



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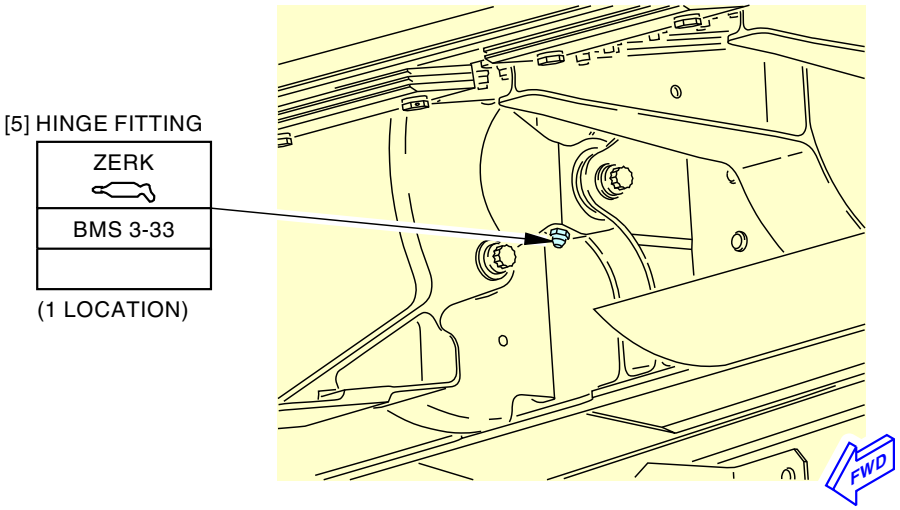
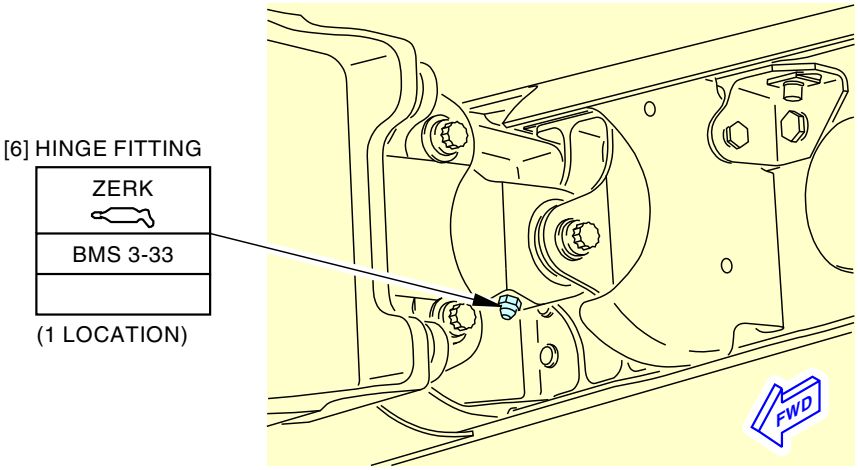
Elevator Hinge Servicing
Figure 302/12-22-31-990-802 (Sheet 2 of 4)



HINGE FITTING 3
(HINGE FITTING 4 IS EQUIVALENT)

1 POINT

D



HINGE FITTING 5

1 POINT

E

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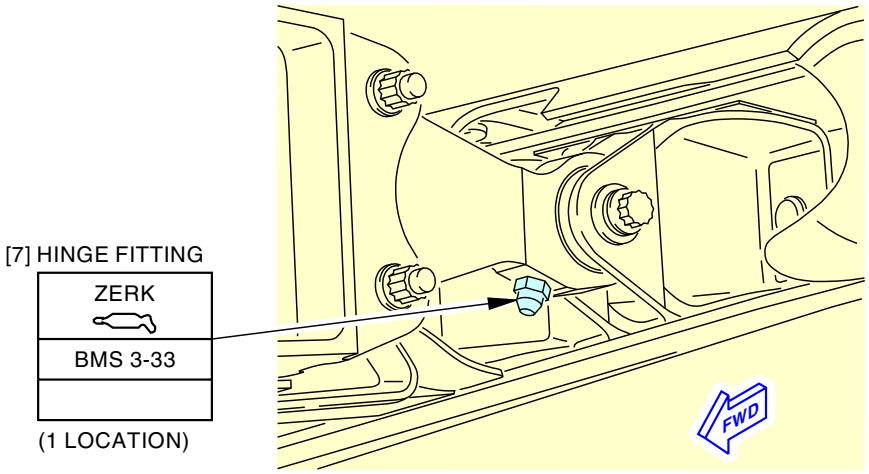
Elevator Hinge Servicing
Figure 302/12-22-31-990-802 (Sheet 3 of 4)



HINGE FITTING 6
(HINGE FITTINGS 7 AND 8 ARE EQUIVALENT)

1 POINT

F

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Elevator Hinge Servicing
Figure 302/12-22-31-990-802 (Sheet 4 of 4)

TASK 12-22-31-640-802

4. Elevator Tab Hinge Lubrication

(Table 303, Figure 303)

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
27-31-00-800-801	Elevator Hydraulic System A and B - Pressurization (P/B 201)
27-31-00-800-802	Pressure from the Elevator Hydraulic Systems A and B Removal (P/B 201)

B. Consumable Materials

Reference	Description	Specification
D00633	Grease - Aircraft General Purpose	BMS3-33

C. Prepare for the lubrication

SUBTASK 12-22-31-860-011

(1) Do this task: Elevator Hydraulic System A and B - Pressurization, TASK 27-31-00-800-801.

SUBTASK 12-22-31-860-012

(2) Move the control column full aft and hold the control column in this position. Attach a Do-Not-Move tag.

SUBTASK 12-22-31-860-013

(3) Move the FLT CONTROL A and B switches to the OFF position.

SUBTASK 12-22-31-860-014

(4) Do this task: Pressure from the Elevator Hydraulic Systems A and B Removal, TASK 27-31-00-800-802.

D. Elevator Tab Hinge Lubrication

Table 303

SUBTASK 12-22-31-640-005

(1) This table supplies data for the subsequent lubrication step:

Table 303/12-22-31-993-803 Elevator Tab Hinge Lubrication

Item No.	Nomenclature	Lubricant	Method of Application	Number of Locations
8	Tab Hinge Fitting	grease, D00633	Flush	1
9	Tab Hinge Fitting	grease, D00633	Flush	5

SUBTASK 12-22-31-640-006

(2) Lubricate the elevator tab hinge fitting [8], and tab hinge fittings [9], Figure 303.

(a) Put grease, D00633 in tab hinge fitting [8], and tab hinge fittings [9] until clean grease, D00633 comes out of bearing.

(b) Remove any excess grease, D00633 from around the hinge bearing.

SUBTASK 12-22-31-860-015

(3) Remove the DO-NOT-MOVE tag and return the control column to the neutral position.

SUBTASK 12-22-31-710-003

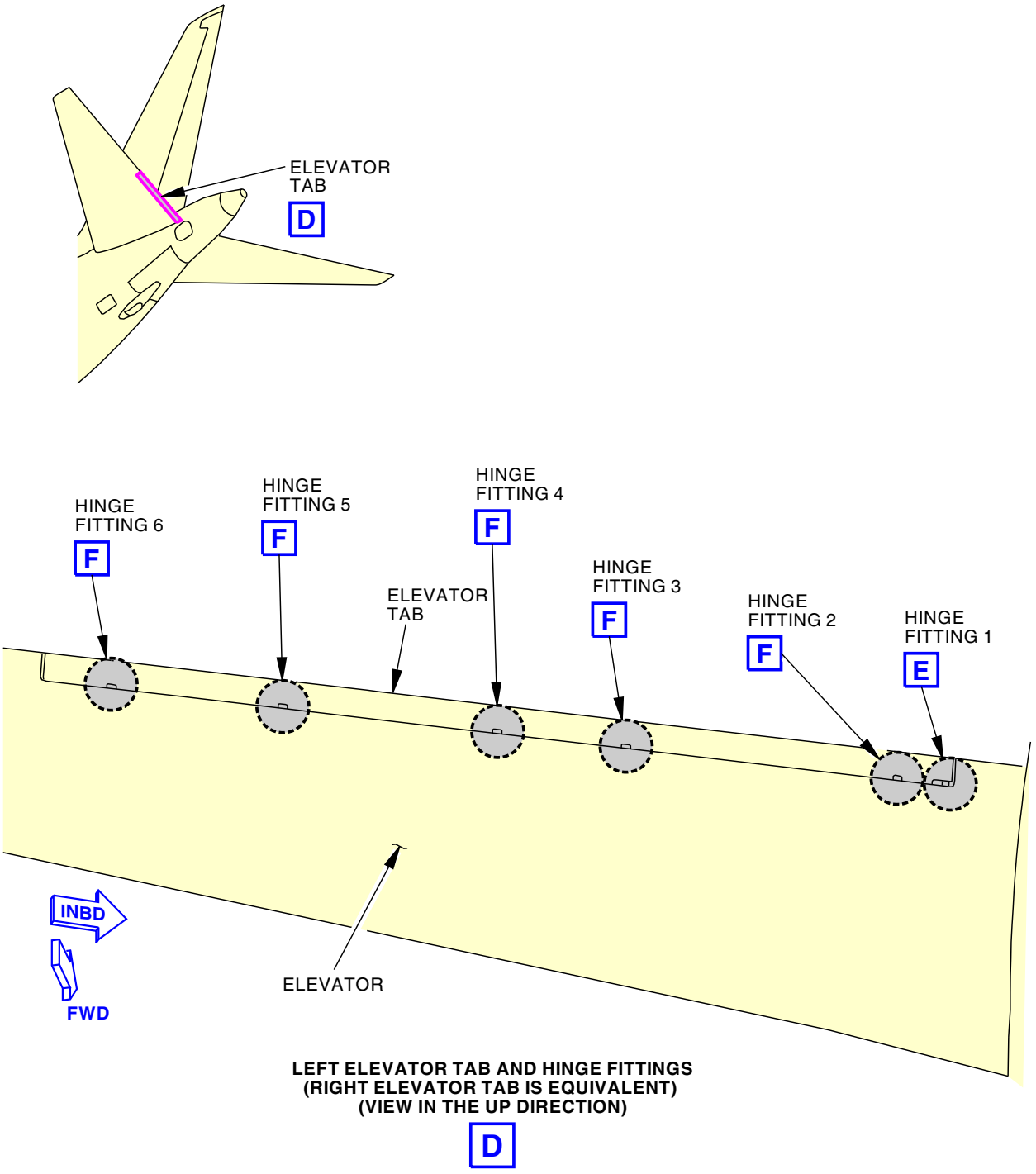
(4) Move the elevator through the full travel, to make sure it moves freely.

E. Put the Airplane Back to Its Usual Condition

SUBTASK 12-22-31-860-016

(1) Move the FLT CONTROL A and B switches to ON, if necessary.

——— END OF TASK ———

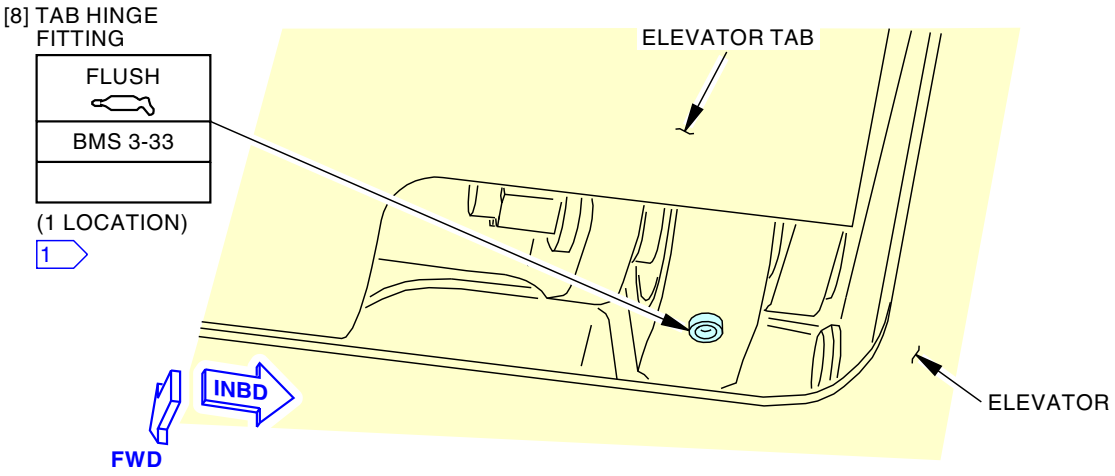


LEFT ELEVATOR TAB AND HINGE FITTINGS
(RIGHT ELEVATOR TAB IS EQUIVALENT)
(VIEW IN THE UP DIRECTION)

D

2410847 S00061526511_V1

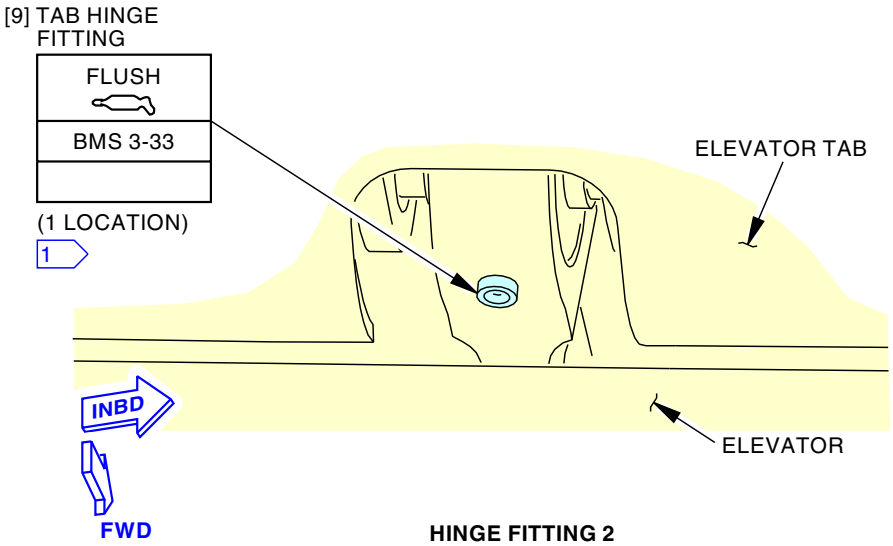
Elevator Tab Hinge Lubrication
Figure 303/12-22-31-990-803 (Sheet 1 of 2)



HINGE FITTING 1

1 POINT

E



HINGE FITTING 2
(HINGE FITTINGS 3, 4, 5 AND 6 ARE EQUIVALENT)

1 POINT

F

1 **CAUTION:**

ON SEALED BEARINGS, DO NOT APPLY GREASE WITH A PRESSURE MORE THAN 1000 PSI (6900 kPa) AND AT A RATE MORE THAN 0.07 GALLON (0.25 LITER) PER MINUTE. WHEN YOU USE A HAND-OPERATED GREASE GUN, DO NOT USE AN EXTENSION HANDLE TO GET MORE FORCE. SEALED BEARINGS CAN BE DAMAGED BY TOO MUCH PRESSURE.

2410848 S00061526512_V1

Elevator Tab Hinge Lubrication
Figure 303/12-22-31-990-803 (Sheet 2 of 2)

TASK 12-22-31-600-802

5. Elevator Balance Panel - Lubrication

(Figure 304)

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
27-31-00-700-804	Elevator Balance Panels - Test (P/B 501)
27-31-00-800-802	Pressure from the Elevator Hydraulic Systems A and B Removal (P/B 201)
27-31-00-840-802	Putting the Elevator Systems A and B Back to the Condition Before the Pressure Removal (P/B 201)

B. Consumable Materials

Reference	Description	Specification
D00109	Oil - Lubricating Oil, Aircraft Turbine Engine, Synthetic Base	MIL-PRF-7808 (Supersedes MIL-L-7808)
D50102	Lubricating Oil - General Purpose, Low Temperature	MIL-L-7870

C. Access Panels

Number	Name/Location
333CB	Horizontal Stabilizer, Access Panel, Trailing Edge
333DB	Horizontal Stabilizer, Access Panel, Trailing Edge
334HB	Horizontal Stabilizer, Elevator Hinge Cover
343CB	Horizontal Stabilizer, Access Panel - T.E. Area
343DB	Horizontal Stabilizer, Access Panel - T.E. Area
344HB	Horizontal Stabilizer, Elevator Hinge Cover, Elevator Sta 66.54

D. Prepare for the Lubrication

SUBTASK 12-22-31-860-017

(1) Do this task: Pressure from the Elevator Hydraulic Systems A and B Removal, TASK 27-31-00-800-802.

SUBTASK 12-22-31-010-005

(2) For the left elevator, remove these access panels:

Number	Name/Location
333CB	Horizontal Stabilizer, Access Panel, Trailing Edge
333DB	Horizontal Stabilizer, Access Panel, Trailing Edge
334HB	Horizontal Stabilizer, Elevator Hinge Cover

SUBTASK 12-22-31-010-006

(3) For the right elevator, remove these access panels:

Number	Name/Location
343CB	Horizontal Stabilizer, Access Panel - T.E. Area
343DB	Horizontal Stabilizer, Access Panel - T.E. Area
344HB	Horizontal Stabilizer, Elevator Hinge Cover, Elevator Sta 66.54

E. Elevator Balance Panel Hinge Lubrication

SUBTASK 12-22-31-640-007

(1) This table supplies data for the subsequent lubrication step:

Table 304/12-22-31-993-804 Elevator Balance Panel Lubrication

Item No.	Nomenclature	Lubricant	Method of Application	Number of Locations
[10]	Balance Panel Hinge	MIL-L-7870 oil, D50102 or oil, D00109	Flush	3
NOTE: Do not mix MIL-L-7870 oil, D50102 with oil, D00109. It is recommended for the surface to be cleaned prior to the application of the new lubricant.				

SUBTASK 12-22-31-020-001

(2) Get access to the balance panel hinges [10] (bays 2, 3, and 4).

(a) Remove the bolts [11], washers [13], bolts [14], and washers [15] that attach the fwd end of the balance panel [12] to the idler hinge.

(b) Let the balance panel [12] hang by its aft end.

SUBTASK 12-22-31-020-003

(3) If necessary, remove the bolt [16], washer [17], bolts [18] and washers [19] that attach the aft end of the balance panel [12].

NOTE: In some cases removing the bolts [11], washers [13], bolts [14], and washers [15] that attach the fwd end of the balance panel [12] does not allow access to the balance panel hinges [10].

SUBTASK 12-22-31-020-002

(4) Lubricate the three balance panel hinges [10] (Figure 304).

(a) Move the balance panel hinges [10] during lubrication.

SUBTASK 12-22-31-420-006

(5) Position the loose end of the seal cloth [21] between the balance panel and idler hinge.

(a) Make sure that the seal cloth [21] will not be tight at all elevator positions.

SUBTASK 12-22-31-410-005

(6) Install the bolts [11] and washers [13] that attach the fwd end of the balance panel [12] to the idler hinge.

(a) Do not tighten the bolts [11] until the elevator has moved through the full range of travel.

SUBTASK 12-22-31-420-004

(7) If the aft end of the balance panel [12] was removed from the idler hinge and seal, do these steps:

(a) Position the loose end of the seal cloth [22] between the balance panel and idler hinge.

(b) Install the bolt [16], washer [17], bolts [18], and washers [19] that attach the aft end of the balance panel [12] to the idler hinge and hinge seal.

(c) Do not tighten the bolt [16] and bolts [18] until the elevator has moved through the full range of travel.

SUBTASK 12-22-31-420-001

(8) Manually move the elevator through the full range of travel.

(a) Make sure that the hinge seal is not tight for all elevator positions.

SUBTASK 12-22-31-420-002

(9) Tighten the bolts [11] to 23 in-lb (2.6 N·m) - 27 in-lb (3.1 N·m).

SUBTASK 12-22-31-420-003

(10) Install the bolts [14] and washers [15] to attach the balance panel [12] to the idler hinge.

(a) Tighten the bolts [14] to 23 in-lb (2.6 N·m) - 27 in-lb (3.1 N·m).

SUBTASK 12-22-31-420-005

(11) If bolt [16] and bolts [18] were removed, tighten them as follows:

(a) Tighten the bolt [16] to 23 in-lb (2.6 N·m) - 27 in-lb (3.1 N·m).

(b) Tighten the bolts [18] to 68 in-lb (7.7 N·m) - 82 in-lb (9.3 N·m).

SUBTASK 12-22-31-710-004

(12) Do this task: Elevator Balance Panels - Test, TASK 27-31-00-700-804.

SUBTASK 12-22-31-410-006

(13) For the left elevator, install these access panels:

Number	Name/Location
333CB	Horizontal Stabilizer, Access Panel, Trailing Edge
333DB	Horizontal Stabilizer, Access Panel, Trailing Edge
334HB	Horizontal Stabilizer, Elevator Hinge Cover

SUBTASK 12-22-31-410-007

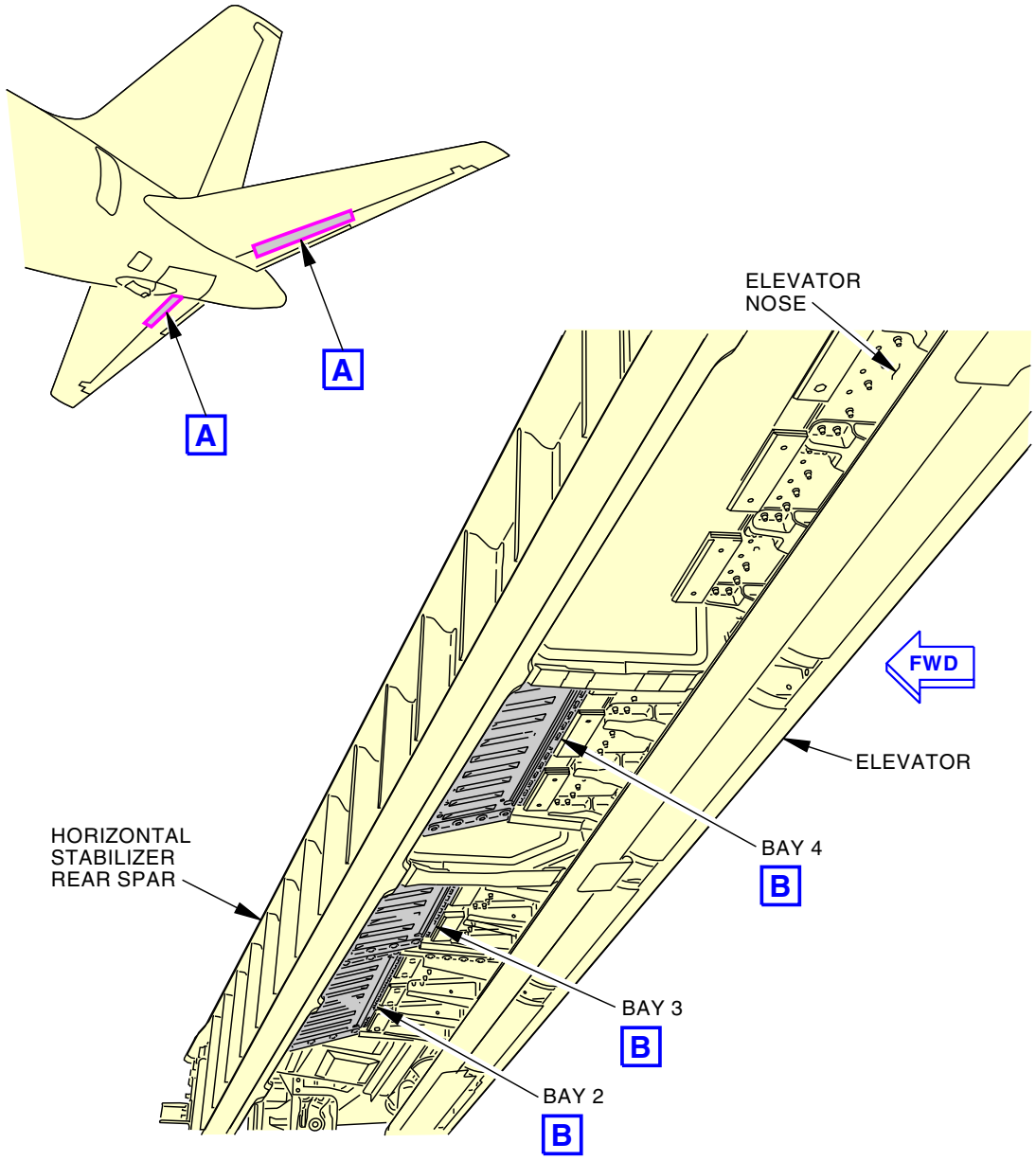
(14) For the right elevator, install these access panels:

Number	Name/Location
343CB	Horizontal Stabilizer, Access Panel - T.E. Area
343DB	Horizontal Stabilizer, Access Panel - T.E. Area
344HB	Horizontal Stabilizer, Elevator Hinge Cover, Elevator Sta 66.54

SUBTASK 12-22-31-860-018

(15) Do this task: Putting the Elevator Systems A and B Back to the Condition Before the Pressure Removal, TASK 27-31-00-840-802.

——— END OF TASK ———

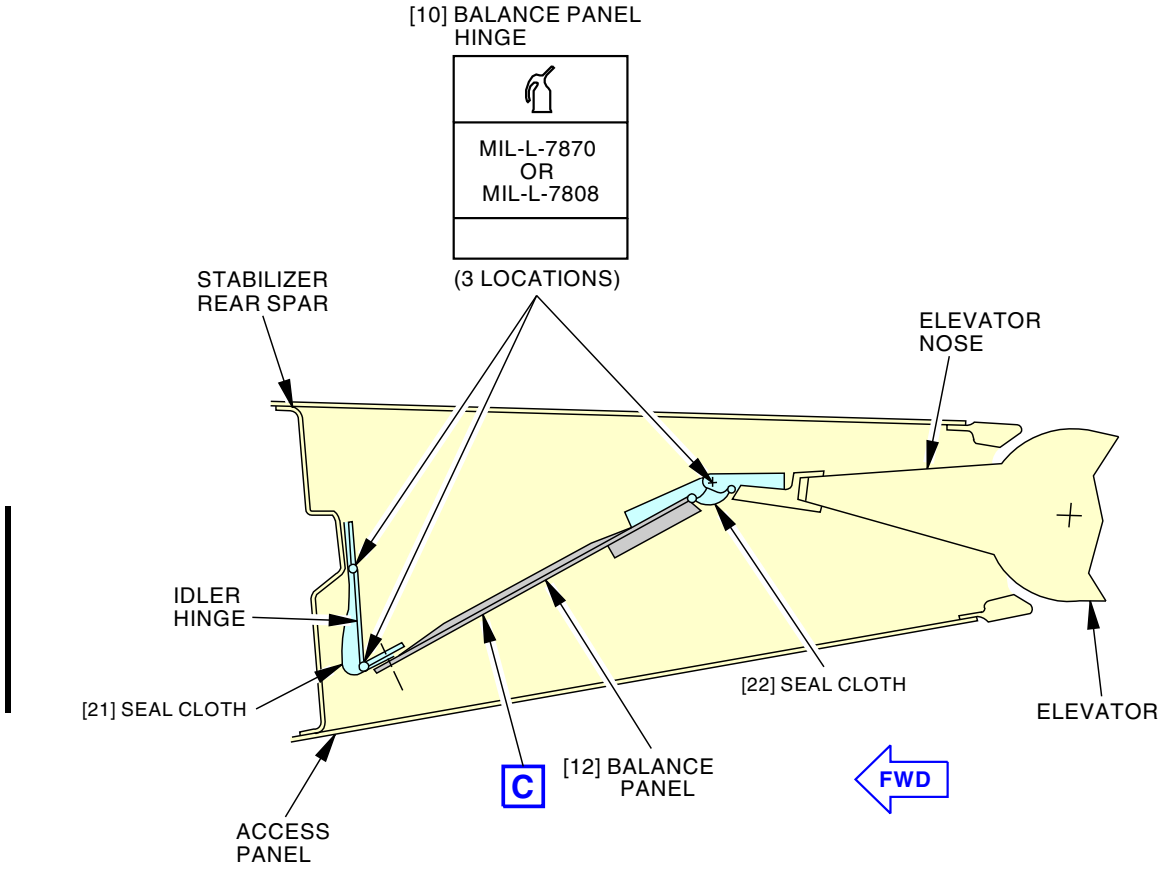


LEFT ELEVATOR
(RIGHT ELEVATOR IS OPPOSITE)

A

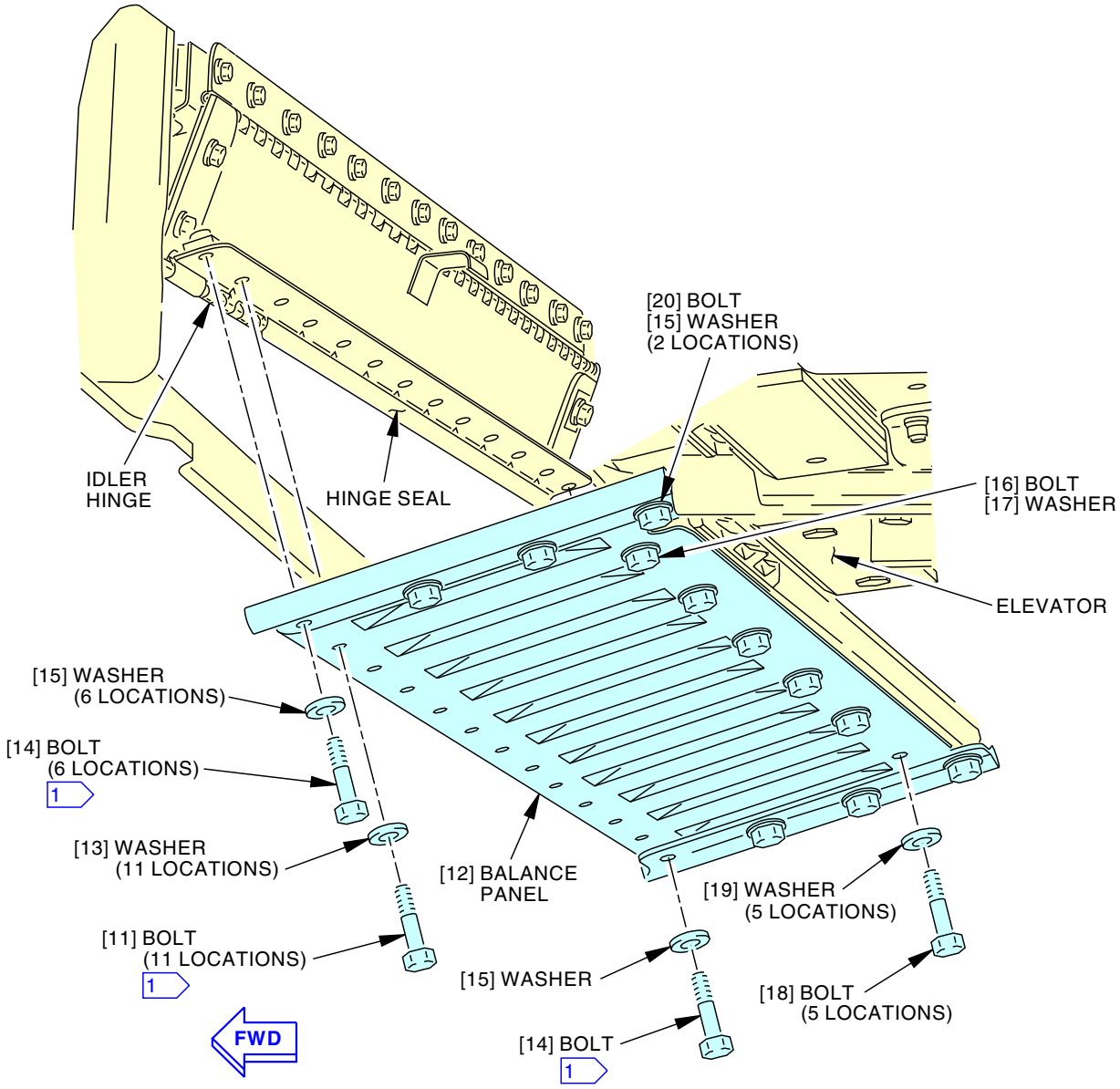
2410849 S00061526514_V3

Elevator Balance Panel Lubrication
Figure 304/12-22-31-990-804 (Sheet 1 of 3)



2410850 S00061526515_V4

Elevator Balance Panel Lubrication
Figure 304/12-22-31-990-804 (Sheet 2 of 3)



ELEVATOR BALANCE PANEL
(EXAMPLE)

C

1 WHEN INSTALLING BALANCE PANEL BOLTS ENSURE IDLER HINGE IS POSITIONED DOWNWARD FROM STABILIZER REAR SPAR.

2958672 S0000736485_V3

Elevator Balance Panel Lubrication
Figure 304/12-22-31-990-804 (Sheet 3 of 3)

STABILIZER CONTROL SYSTEM - SERVICING

1. General

A. This procedure contains scheduled maintenance task data.

B. This procedure has these tasks:

(1) A lubrication of the stabilizer trim jackscrew, ballnut and upper and lower gimbal fittings.

(2) A lubrication of the stabilizer trim control system chain.

(3) A lubrication of the stabilizer trim flexible shaft.

(4) A servicing of the stabilizer trim brake mechanism.

27-CMR-06

TASK 12-22-41-600-801

2. Stabilizer Jackscrew, Ballnut and Gimbal - Lubrication

(Figure 301)

NOTE: This procedure is a scheduled maintenance task.

A. General

(1) This task is for the lubrication of the stabilizer jackscrew, ball nut and gimbal.

B. References

Reference	Title
27-41-81-000-801	Stabilizer Ball Nut and Jackscrew Gearbox Removal (P/B 401)
27-41-81-400-801	Stabilizer Ball Nut and Jackscrew Gearbox Installation (P/B 401)

C. Tools/Equipment

Reference	Description
STD-858	Tag - DO NOT OPERATE

D. Consumable Materials

Reference	Description	Specification
B50124	Cleaner - Thermoplastic	
D00633	Grease - Aircraft General Purpose	BMS3-33

E. Location Zones

Zone	Area
311	Area Aft of Pressure Bulkhead - Left
312	Area Aft of Pressure Bulkhead - Right

F. Access Panels

Number	Name/Location
311BL	Stabilizer Trim Access Door

G. Prepare for the Lubrication

SUBTASK 12-22-41-010-001

(1) Open this access panel:

Number	Name/Location
311BL	Stabilizer Trim Access Door

H. Stabilizer Jackscrew, Ballnut and Gimbal - Lubrication

SUBTASK 12-22-41-860-001

(1) If electrical power is not available, use the stabilizer trim wheel for movement of the stabilizer.

SUBTASK 12-22-41-600-001

(2) This table supplies information for subsequent lubrication steps:

Table 301/12-22-41-993-801 Stabilizer Jackscrew, Ballnut and Gimbal Lubrication

Item No.	Nomenclature	Lubricant	Method of Application	Number of Locations
1	Stabilizer Jackscrew	grease, D00633	Hand	1
2	Upper Gimbal	grease, D00633	Zerk	2
3	Ballnut	grease, D00633	Zerk	1
8	Lower Gimbal	grease, D00633	Zerk	2

SUBTASK 12-22-41-860-002

(3) Set the STAB TRIM PRI switch, S272, located on the aft area of the control stand, to the CUTOUT position.

SUBTASK 12-22-41-480-001

(4) Attach a DO NOT OPERATE tag, STD-858, to the PRI switch and stabilizer trim wheel.

SUBTASK 12-22-41-640-001

(5) Lubricate the stabilizer trim upper gimbal [2] and lower gimbal [8] with grease, D00633, (Figure 301).

NOTE: The lower gimbal zerk fittings may accept grease at a slow rate, which could make the grease flow coming out of the joint difficult to detect.

(a) Apply grease, D00633, slowly to the zerk fittings to prevent the gimbal bushings from dislodging.

NOTE: It is recommended to use a hand pump grease gun over a pneumatic gun to limit the pressure and flow of grease.

(b) Make sure that the grease, D00633, flows into the gimbal joint.

SUBTASK 12-22-41-640-002

WARNING

MAKE SURE THAT ALL PERSONNEL, AND EQUIPMENT ARE AWAY FROM THE HORIZONTAL STABILIZER. THE MOVEMENT OF THE HORIZONTAL STABILIZER DURING MAINTENANCE CAN CAUSE INJURY TO PERSONNEL, AND DAMAGE TO EQUIPMENT.

(6) Lubricate the stabilizer trim jackscrew [1] as follows:

NOTE: If electrical power is not available, the use of only the stabilizer trim wheel is acceptable for movement of the stabilizer.

(a) Make sure that the STAB TRIM switch on the stab trim and flight deck door panel, P8-47 module, is in the NORMAL position.

(b) Set the STAB TRIM PRI switch, S272, located on the aft area of the control stand, to the NORMAL position.

(c) Remove the DO NOT OPERATE tag, STD-858, from the PRI switch and stabilizer trim wheel.

(d) Move the stabilizer to the maximum leading edge up (APL NOSE DOWN) position (the mechanical limits).

NOTE: This can be done using the STAB TRIM switches and then the stabilizer trim wheel.

(e) Make sure that the upper gimbal [2] touches the upper stop [4].

(f) Set the STAB TRIM PRI switch, S272, located on the aft area of the control stand, to the CUTOUT position.

(g) Attach a DO NOT OPERATE tag, STD-858, to the PRI switch and stabilizer trim wheel.

(h) Remove the old grease and dirt from the bottom part of the jackscrew [1] threads with a clean, dry, non-abrasive cloth.

(i) Lubricate the bottom part of the stabilizer trim jackscrew [1] between the ballnut [3] and the lower stop [7] with grease, D00633.

(j) Set the STAB TRIM PRI switch, S272, located on the aft area of the control stand, to the NORMAL position.

(k) Remove the DO NOT OPERATE tag, STD-858, from the PRI switch and stabilizer trim wheel.

(l) Move the stabilizer to the maximum leading edge down (APL NOSE UP) position (the mechanical limits).

NOTE: This can be done using the STAB TRIM switches and then the stabilizer trim wheel.

(m) Set the STAB TRIM PRI switch, S272, located on the aft area of the control stand, to the CUTOUT position.

(n) Attach a DO NOT OPERATE tag, STD-858, to the PRI switch and stabilizer trim wheel.

(o) Remove the old grease and dirt from the top part of the jackscrew [1] threads with a clean, dry, non-abrasive cloth.

(p) Lubricate the top part of the stabilizer trim jackscrew [1] between the ballnut [3] and the upper stop [4] with grease, D00633.

SUBTASK 12-22-41-640-003

WARNING MAKE SURE THAT ALL PERSONNEL, AND EQUIPMENT ARE AWAY FROM THE HORIZONTAL STABILIZER. THE MOVEMENT OF THE HORIZONTAL STABILIZER DURING MAINTENANCE CAN CAUSE INJURY TO PERSONNEL, AND DAMAGE TO EQUIPMENT.

(7) Lubricate the stabilizer trim jackscrew ballnut [3] as follows:

(a) Remove the old grease and dirt on and around the stabilizer trim jackscrew ballnut [3] and grease vent [5], with a clean, dry, non-abrasive cloth.

(b) Set the STAB TRIM PRI switch, S272, located on the aft area of the control stand, to the NORMAL position.

(c) Remove the DO NOT OPERATE tag, STD-858, from the PRI switch and stabilizer trim wheel.

(d) While the jackscrew [1] moves between upper stop [4] and the lower stop [7] (one complete cycle), slowly add grease, D00633, into the ballnut [3].

NOTE: If electrical power is not available, the use of only the stabilizer trim wheel is acceptable for movement of the stabilizer.

1) Make sure that clean grease exits the grease vent [5].

2) Small amounts of grease may exit the upper ballnut [3] seal and is considered acceptable.

NOTE: Normally fresh grease should exit through the grease vent [5]. Small amount of grease can also exit through the upper ballnut [3] seal at the same time, but it should be a small amount. Fresh grease must primarily exit through the grease vent [5] to make sure that the old grease has been pushed out.

3) Small amounts of grease may exit the ballnut [3] lower seal and is considered acceptable.

NOTE: If the large amount of grease exit below the actuator, this is not acceptable.

a) If no fresh grease comes out of both the grease vent [5] and upper ballnut [3] seal, indicates a faulty seal, do this step:

<1> Replace the actuator (TASK 27-41-81-000-801 and TASK 27-41-81-400-801)

4) Examine the grease that exits the ballnut [3] for metallic particles, discolored water, rust, or other solid particles.

a) If these conditions exists, replace the actuator (TASK 27-41-81-000-801 and TASK 27-41-81-400-801).

5) If you see large amounts of grease present around the stabilizer trim actuator, do these steps:

NOTE: This may indicate that grease is escaping from the ballnut [3] due to a faulty seal or raised/leaking return tube.

a) Do a detailed inspection of the ballnut [3] tube retainers for deformation, corrosion, or lifted return tubes.

b) If the ballnut [3] tube retainers have deformation or corrosion, replace the actuator (TASK 27-41-81-000-801 and TASK 27-41-81-400-801).

NOTE: If no damage of the tube retainers is found, the condition is acceptable.

c) Remove unwanted grease from the ballnut [3].

6) Move the stabilizer to the NEUTRAL position (4 units of trim).

7) Set the STAB TRIM PRI switch, S272, located on the aft area of the control stand, to the CUTOUT position.

8) Attach a DO NOT OPERATE tag, STD-858, to the PRI switch and stabilizer trim wheel.

9) Apply grease, D00633, to the jackscrew [1] threads at both ends of the jackscrew.

NOTE: The thin film of grease, D00633, to the jackscrew [1] threads at both the upper and lower ends of the jackscrew will protect these areas from corrosion.

10) Remove excess grease from Stabilizer Trim Motor (STM) and Stabilizer Trim Actuator (STA).

11) Clean the electrical connectors with thermoplastic cleaner, B50124, (isopropyl alcohol) as required.

SUBTASK 12-22-41-860-003

(8) Set the STAB TRIM PRI switch, S272, located on the aft area of the control stand, to the NORMAL position.

SUBTASK 12-22-41-080-003

(9) Remove the DO NOT OPERATE tag, STD-858, from the PRI switch and stabilizer trim wheel.

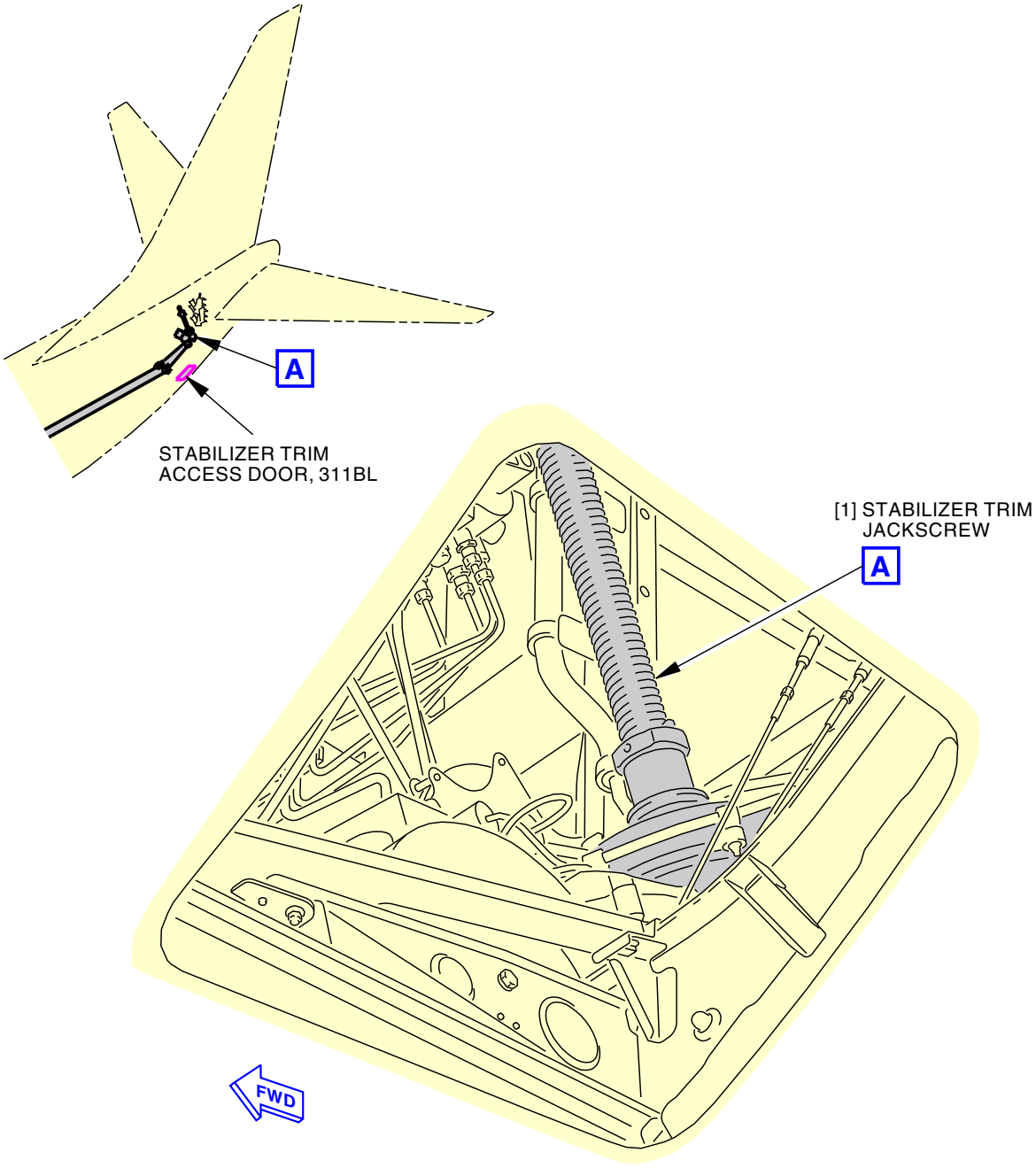
I. Put the Airplane Back to Its Usual Condition

SUBTASK 12-22-41-410-001

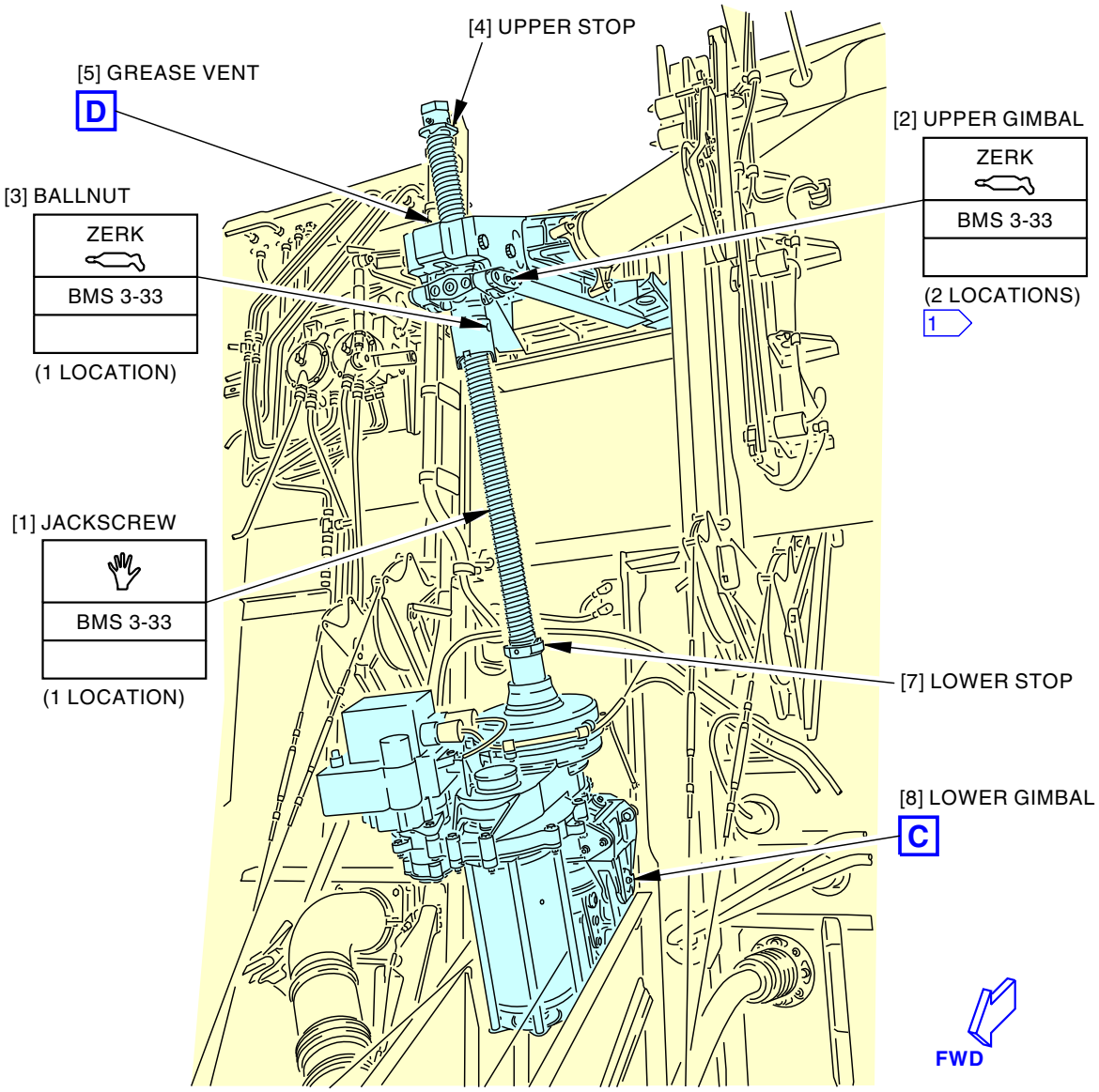
(1) Close this access door:

Number	Name/Location
311BL	Stabilizer Trim Access Door

——— END OF TASK ———



Stabilizer Jackscrew, Ballnut and Gimbal Lubrication
Figure 301/12-22-41-990-801 (Sheet 1 of 4)



STABILIZER TRIM JACKSCREW, BALLNUT AND GIMBAL

4 POINTS

B

1 ONE MORE LUBE POINT IS ON THE OPPOSITE SIDE (NOT SHOWN).

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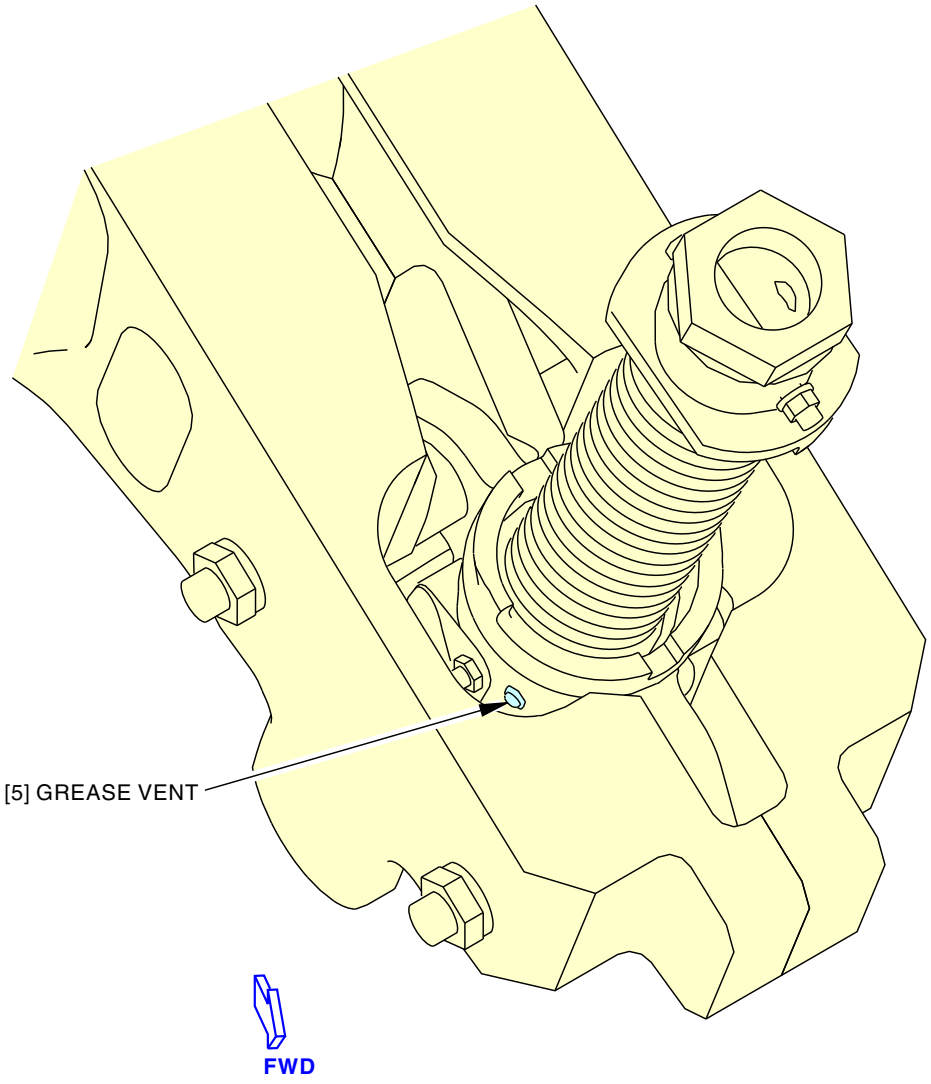
Stabilizer Jackscrew, Ballnut and Gimbal Lubrication
Figure 301/12-22-41-990-801 (Sheet 2 of 4)



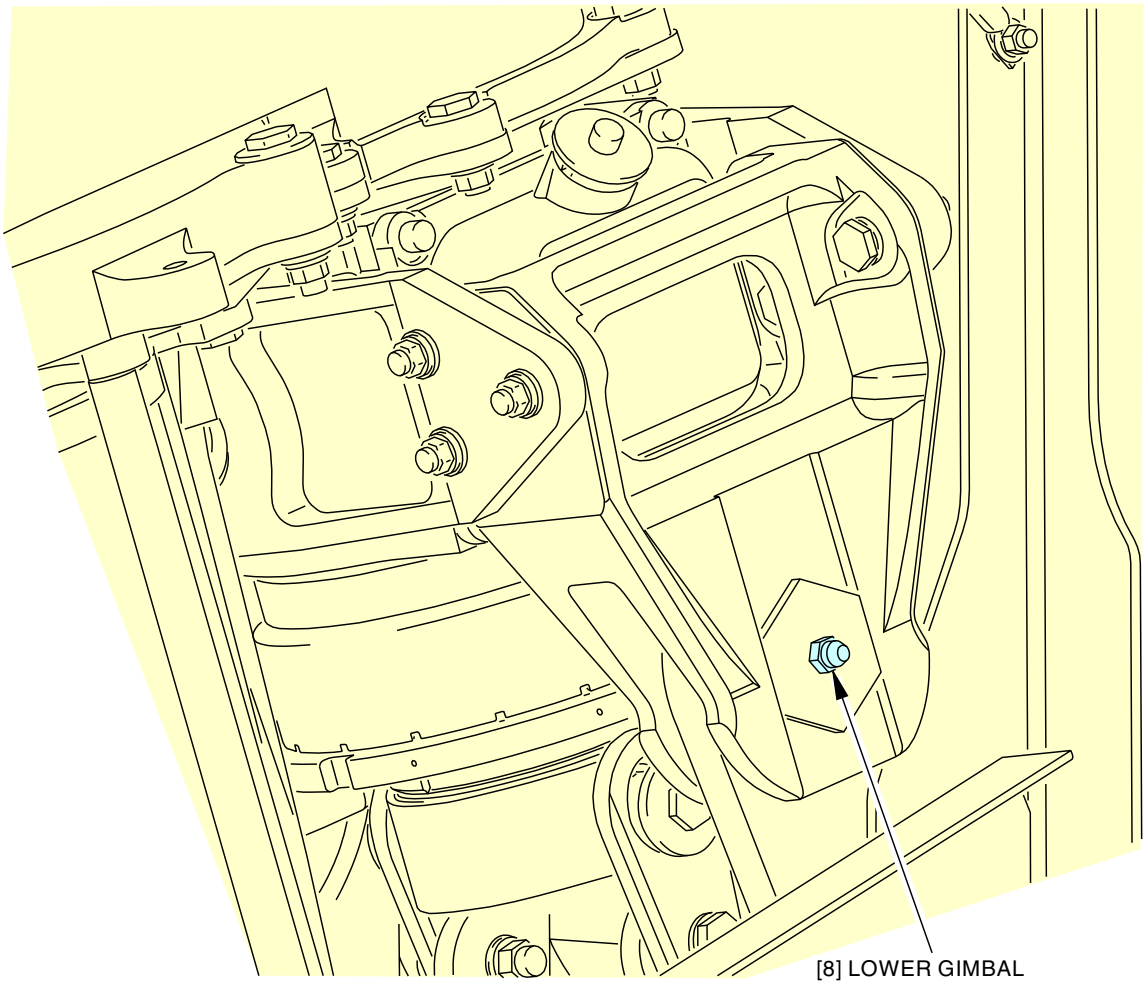
GREASE VENT

1 POINT

D

2410853 S00061526521_V1

Stabilizer Jackscrew, Ballnut and Gimbal Lubrication
Figure 301/12-22-41-990-801 (Sheet 3 of 4)



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Stabilizer Jackscrew, Ballnut and Gimbal Lubrication
Figure 301/12-22-41-990-801 (Sheet 4 of 4)

TASK 12-22-41-600-802

3. Stabilizer Trim System Chain - Lubrication

(Figure 302)

NOTE: This procedure is a scheduled maintenance task.

A. General

(1) This task is for the lubrication of the stabilizer trim chain.

B. References

Reference	Title
25-11-01-000-801	Captain and First Officer Seat Removal (P/B 401)
25-11-01-400-801	Captain and First Officer Seat Installation (P/B 401)

C. Tools/Equipment

Reference	Description
STD-858	Tag - DO NOT OPERATE

D. Consumable Materials

Reference	Description	Specification
D00633	Grease - Aircraft General Purpose	BMS3-33

E. Location Zones

Zone	Area
112	Area Forward of Nose Landing Gear Wheel Well

F. Access Panels

Number	Name/Location
112A	Forward Access Door
211A	Panel Assy - Control Stand Access
211B	Panel Assy - Control Stand Access
212A	Panel Assy - Control Stand Access
212B	Panel Assy - Control Stand Access

G. Prepare for the Lubrication

SUBTASK 12-22-41-860-006

WARNING MAKE SURE THAT ALL PERSONNEL, AND EQUIPMENT ARE AWAY FROM THE HORIZONTAL STABILIZER. THE MOVEMENT OF THE HORIZONTAL STABILIZER DURING MAINTENANCE CAN CAUSE INJURY TO PERSONNEL, AND DAMAGE TO EQUIPMENT.

(1) Using the stabilizer trim wheel on the control stand, move the stabilizer to the NEUTRAL position (4 units of trim).

SUBTASK 12-22-41-860-007

(2) Set the STAB TRIM PRI switch, S272, located on the aft area of the control stand, to the CUTOUT position.

SUBTASK 12-22-41-860-008

(3) Attach DO NOT OPERATE tags, STD-858, to the STAB TRIM PRI switch, S272 and stabilizer trim wheel.

SUBTASK 12-22-41-860-009

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

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	10	C00207	FLIGHT CONTROL STAB TRIM CONT
D	10	C00840	FLIGHT CONTROL STAB TRIM ACTUATOR

SUBTASK 12-22-41-010-002

(5) To lubricate the stabilizer trim chain [9] from the forward access door, do this step:

(a) Open this access panel:

Number	Name/Location
112A	Forward Access Door

SUBTASK 12-22-41-000-001

(6) To lubricate the stabilizer trim chain [9] from the flight compartment, do these steps:

(a) If it is necessary, remove either the Captain or First Officer's seat (TASK 25-11-01-000-801).

(b) Remove the access covers from the control stand:

1) From the Captain's seat side:

a) On the left upper side, remove this access panel:

Number	Name/Location
211A	Panel Assy - Control Stand Access

b) On the left lower side, remove this access panel:

Number	Name/Location
211B	Panel Assy - Control Stand Access

2) From the First Officer's seat side:

a) On the right upper side, remove this access panel:

Number	Name/Location
212A	Panel Assy - Control Stand Access

b) On the right lower side, remove this access panel:

Number	Name/Location
212B	Panel Assy - Control Stand Access

H. Stabilizer Trim System Chain Lubrication

SUBTASK 12-22-41-600-002

(1) This table supplies information for subsequent lubrication steps:

Table 302/12-22-41-993-802 Stabilizer Trim System Chain Lubrication

Item No.	Nomenclature	Lubricant	Method of Application	Number of Locations
9	Stabilizer Chain	grease, D00633	Hand	1

SUBTASK 12-22-41-640-004

(2) Apply grease, D00633, to the stabilizer trim chain [9] (Figure 302).

NOTE: The stabilizer trim chain can be lubricated from the flight compartment or from the forward access door.

I. Put the Airplane Back to Its Usual Condition

SUBTASK 12-22-41-410-002

(1) If the stabilizer trim chain [9] is lubricated from the flight compartment, do these steps:

(a) Install the access covers on the control stand:

1) To the Captain's seat side:

a) On the left upper side, install this access panel:

Number	Name/Location
211A	Panel Assy - Control Stand Access

b) On the left lower side, install this access panel:

Number	Name/Location
211B	Panel Assy - Control Stand Access

2) To the First Officer's seat side:

a) On the right upper side, install this access panel:

Number	Name/Location
212A	Panel Assy - Control Stand Access

b) On the right lower side, install this access panel:

Number	Name/Location
212B	Panel Assy - Control Stand Access

(b) If it is necessary, install either the Captain or the First Officer's seat (TASK 25-11-01-400-801).

SUBTASK 12-22-41-410-003

(2) If the stabilizer trim chain [9] is lubricated from the forward access door, do this step:

(a) Close this access panel:

Number	Name/Location
112A	Forward Access Door

SUBTASK 12-22-41-860-010

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

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	10	C00207	FLIGHT CONTROL STAB TRIM CONT
D	10	C00840	FLIGHT CONTROL STAB TRIM ACTUATOR

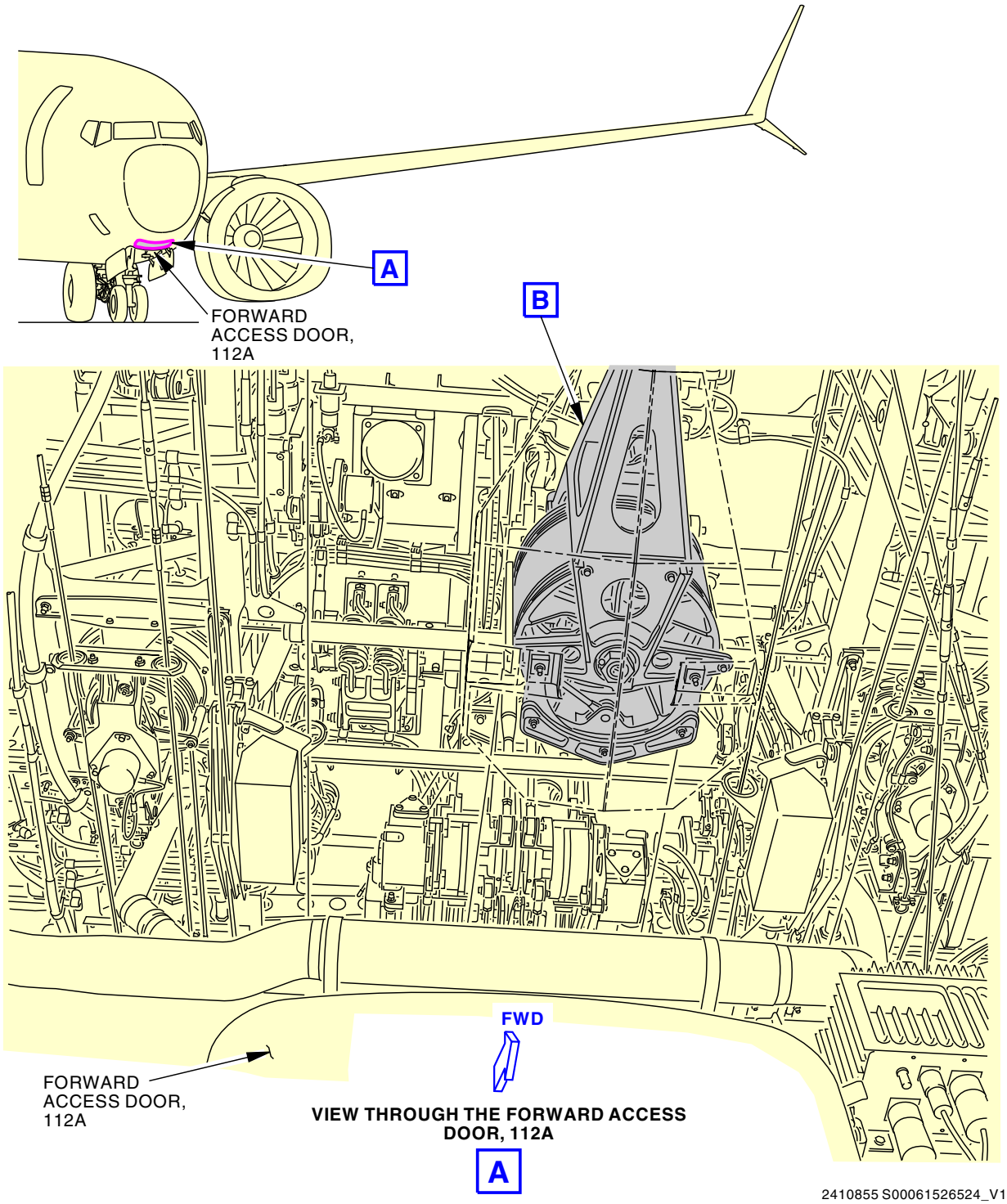
SUBTASK 12-22-41-080-001

(4) Remove the DO NOT OPERATE tags, STD-858, from the STAB TRIM PRI switch, S272 and stabilizer trim wheel.

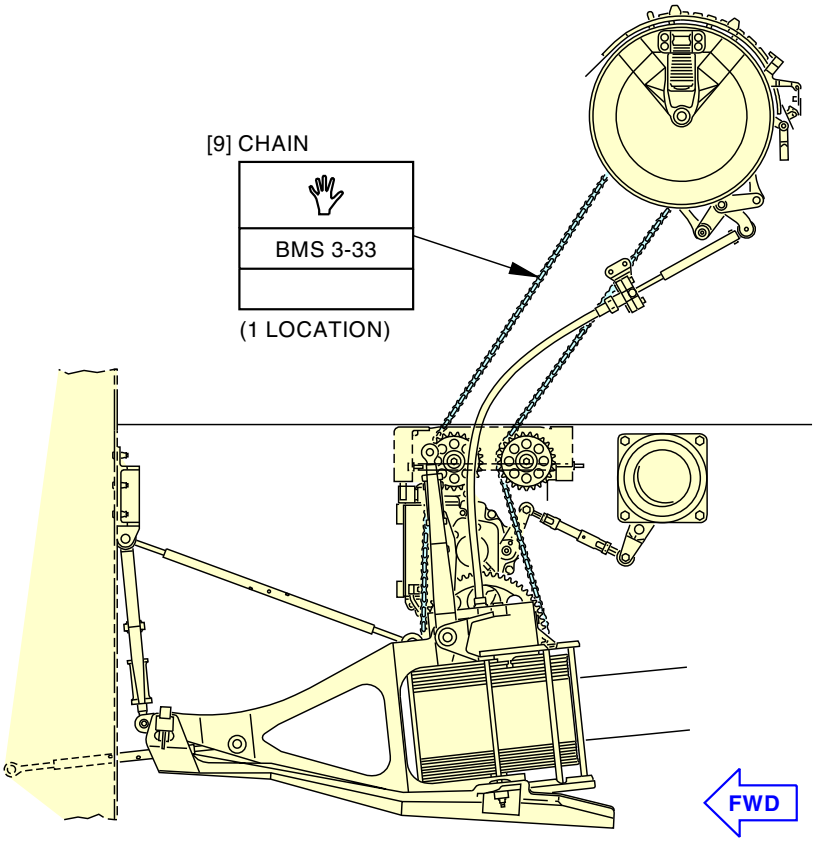
SUBTASK 12-22-41-860-022

(5) Set the STAB TRIM PRI switch, S272, located on the aft area of the control stand, to the NORMAL position.

——— END OF TASK ———



Stabilizer Trim System Chain Lubrication
Figure 302/12-22-41-990-802 (Sheet 1 of 2)



CHAIN

1 POINT

B

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Stabilizer Trim System Chain Lubrication
Figure 302/12-22-41-990-802 (Sheet 2 of 2)

TASK 12-22-41-600-803

4. Stabilizer Trim Flexible Shaft - Lubrication

(Figure 303)

A. General

(1) This task is for the lubrication of the stabilizer trim flexible shaft.

B. References

Reference	Title
25-11-01-000-801	Captain and First Officer Seat Removal (P/B 401)
25-11-01-400-801	Captain and First Officer Seat Installation (P/B 401)
27-41-00-820-801	Stabilizer Control Cable and Chain - Adjustment (P/B 501)

C. Tools/Equipment

Reference	Description
STD-858	Tag - DO NOT OPERATE

D. Consumable Materials

Reference	Description	Specification
D00013	Grease - Aircraft And Instrument Grease	MIL-PRF-23827 (NATO G-354) (Supersedes MIL-G-23827)
D00633	Grease - Aircraft General Purpose	BMS3-33

E. Location Zones

Zone	Area
112	Area Forward of Nose Landing Gear Wheel Well

F. Access Panels

Number	Name/Location
112A	Forward Access Door
211A	Panel Assy - Control Stand Access
211B	Panel Assy - Control Stand Access

G. Prepare for the Lubrication

SUBTASK 12-22-41-860-012

WARNING MAKE SURE THAT ALL PERSONNEL, AND EQUIPMENT ARE AWAY FROM THE HORIZONTAL STABILIZER. THE MOVEMENT OF THE HORIZONTAL STABILIZER DURING MAINTENANCE CAN CAUSE INJURY TO PERSONNEL, AND DAMAGE TO EQUIPMENT.

(1) Using the stabilizer trim wheel on the control stand, move the stabilizer to the NEUTRAL position (4 units of trim).

SUBTASK 12-22-41-860-013

(2) Set the STAB TRIM PRI switch, S272, located on the aft area of the control stand, to the CUTOUT position.

SUBTASK 12-22-41-860-014

(3) Attach a DO NOT OPERATE tag, STD-858, to the PRI switch and the stabilizer trim wheel.

SUBTASK 12-22-41-860-015

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

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	10	C00207	FLIGHT CONTROL STAB TRIM CONT
D	10	C00840	FLIGHT CONTROL STAB TRIM ACTUATOR

SUBTASK 12-22-41-010-004

(5) Open this access panel:

Number	Name/Location
112A	Forward Access Door

SUBTASK 12-22-41-000-002

(6) If necessary, remove the captain seat (TASK 25-11-01-000-801).

SUBTASK 12-22-41-010-005

(7) Remove these access covers from the control stand:

(a) On the left upper side, remove this access panel:

Number	Name/Location
211A	Panel Assy - Control Stand Access

(b) On the left lower side, remove this access panel:

Number	Name/Location
211B	Panel Assy - Control Stand Access

H. Stabilizer Trim Flexible Shaft Lubrication

SUBTASK 12-22-41-600-003

(1) Remove the flexible shaft [10] from the casing as follows:

Table 303/12-22-41-993-803 Stabilizer Trim Flexible Shaft Lubrication

Item No.	Nomenclature	Lubricant	Method of Application	Number of Locations
10	Stabilizer Flexible Shaft	grease, D00633 or grease, D00013	Hand	1

(a) Remove the safety wire from both ends of the coupling nuts [12] on the flexible shaft assembly.

(b) Remove the flexible shaft coupling nuts [12] from both the flight deck and lower 41 section connection to the cable drum.

(c) Carefully remove the flexible shaft cable assembly from the aircraft.

NOTE: Make sure that you do not turn the stabilizer trim wheel when you remove the flexible shaft [10].

(d) Expose the press pin [11] so that you can remove it.

(e) Carefully remove the press pin [11] that connects the upper part of the cable assembly to the flexible shaft [10] with a punch.

NOTE: Take care to retain washers [15] and press pin [11] attached to the flexible shaft [10].

(f) Remove the flex shaft end fitting [14] where the press pin [11] was removed and slide the flexible shaft [10] out of the casing [13].

SUBTASK 12-22-41-640-006

(2) Apply the grease, D00633, (preferred) or grease, D00013, (alternate) to the flexible shaft [10].

SUBTASK 12-22-41-640-005

(3) Install the flexible shaft [10] into the casing [13] as follows:

(a) If it is necessary, set the “B” dimension for the flexible shaft connection to the forward mechanism (TASK 27-41-00-820-801).

NOTE: If the control wheel was moved beyond the neutral position (4 units of trim), a “B” dimension check for connection of the flexible shaft may be necessary.

(b) Install the flex shaft end fitting [14].

(c) Carefully install the press pin [11] into the flex shaft end fitting [14].

(d) Install the coupling nuts [12] to both the lower 41 section connection to the cable drum and flight deck.

(e) Install safety wire to both coupling nuts [12].

I. Put the Airplane Back to Its Usual Condition

SUBTASK 12-22-41-410-004

(1) Install these access covers on the control stand:

(a) On the left lower side, install this access panel:

Number	Name/Location
211A	Panel Assy - Control Stand Access

(b) On the left upper side, install this access panel:

Number	Name/Location
211B	Panel Assy - Control Stand Access

SUBTASK 12-22-41-420-002

(2) If removed, install the captain seat (TASK 25-11-01-400-801).

SUBTASK 12-22-41-410-005

(3) Close this access panel:

Number	Name/Location
112A	Forward Access Door

SUBTASK 12-22-41-860-016

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

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	10	C00207	FLIGHT CONTROL STAB TRIM CONT
D	10	C00840	FLIGHT CONTROL STAB TRIM ACTUATOR

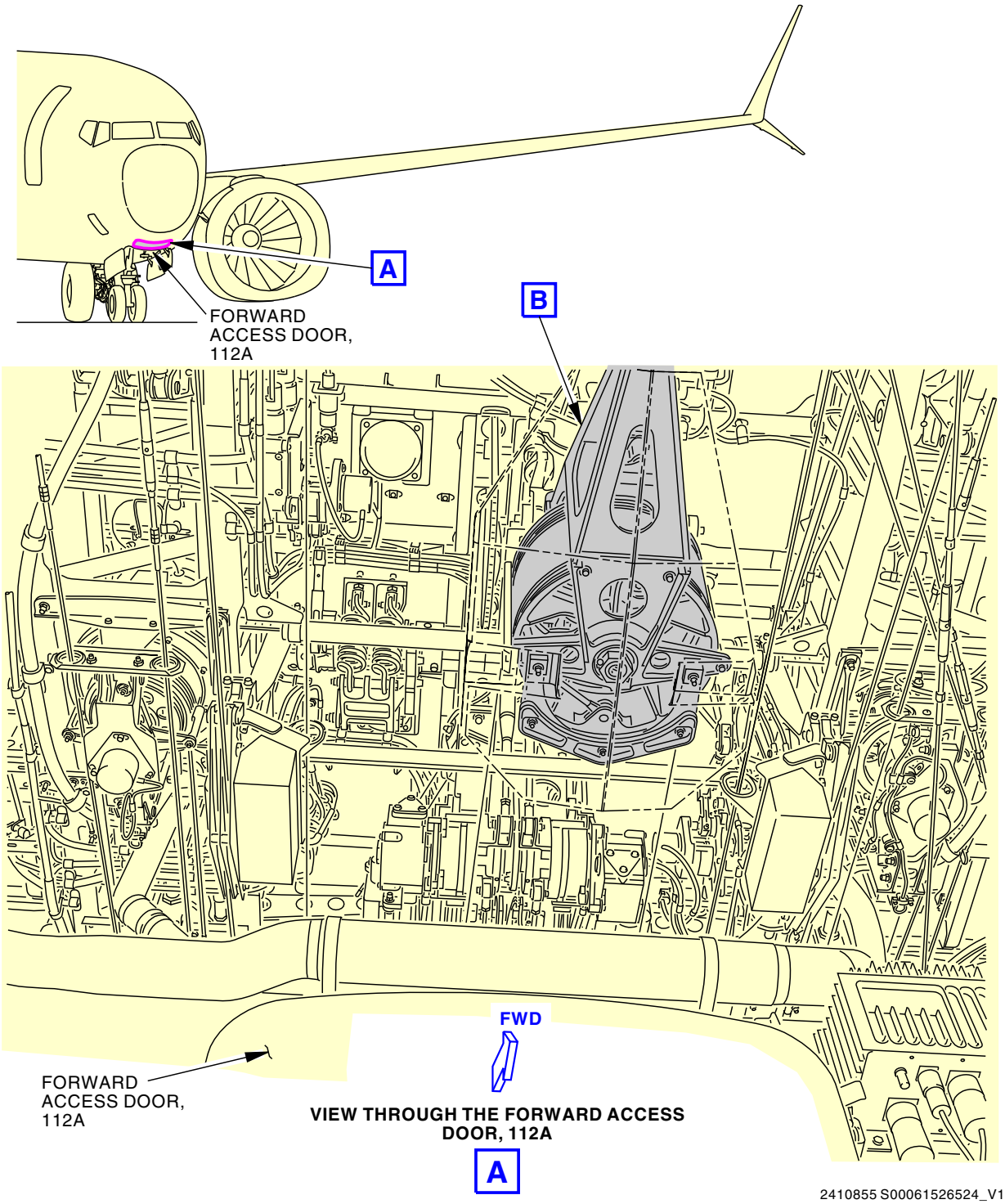
SUBTASK 12-22-41-080-002

(5) Remove the DO NOT OPERATE tag, STD-858, from the PRI switch and the stabilizer trim wheel.

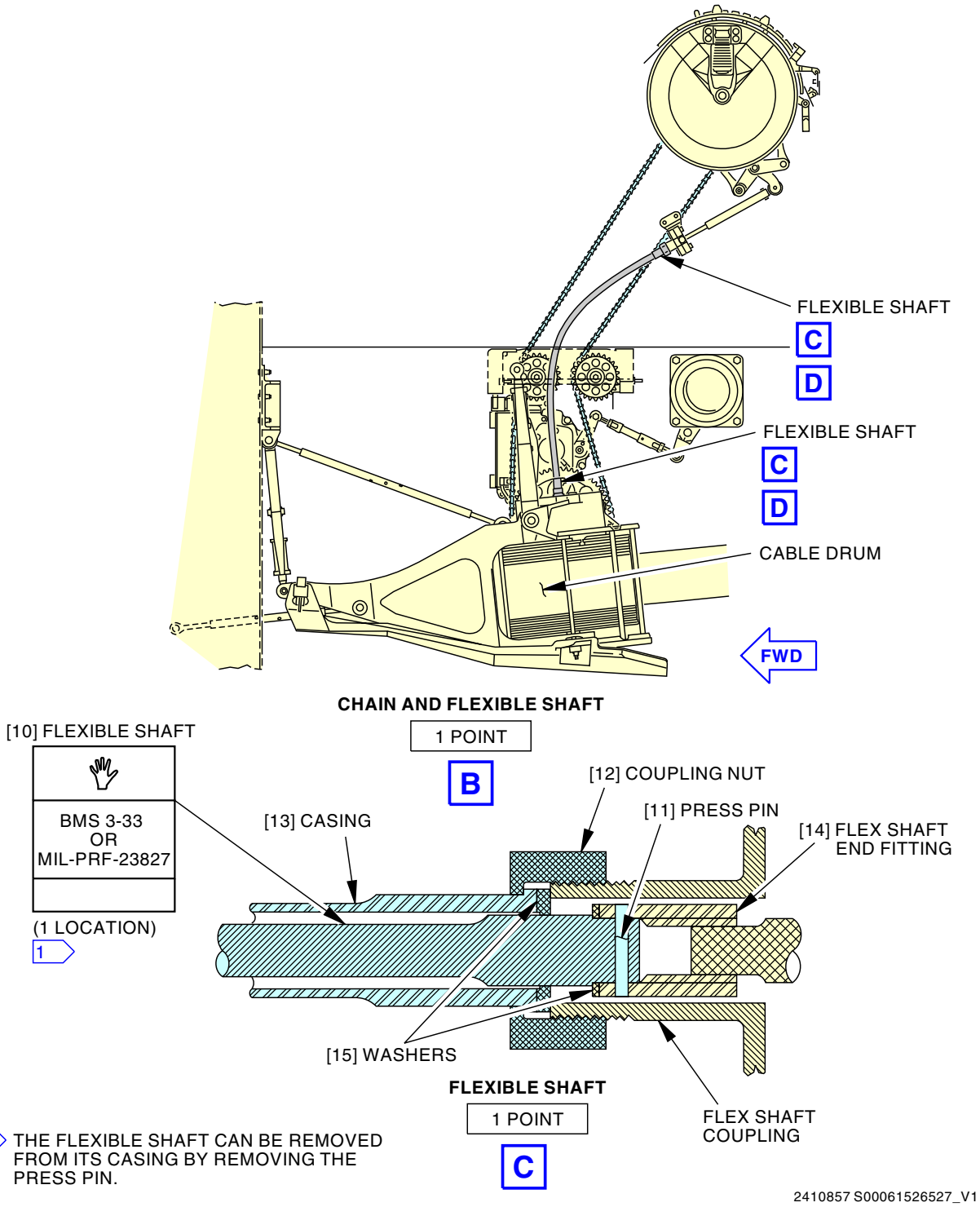
SUBTASK 12-22-41-860-021

(6) Set the STAB TRIM PRI switch, S272, located on the aft area of the control stand, to the NORMAL position.

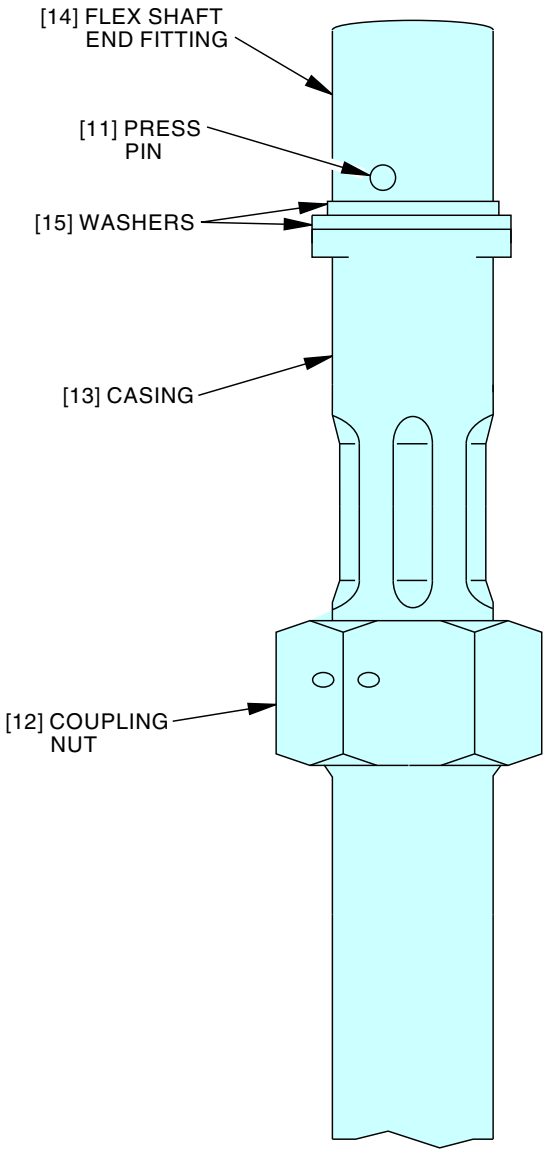
END OF TASK



Stabilizer Trim Flexible Shaft Lubrication
Figure 303/12-22-41-990-803 (Sheet 1 of 3)



Stabilizer Trim Flexible Shaft Lubrication
Figure 303/12-22-41-990-803 (Sheet 2 of 3)



FLEXIBLE SHAFT

D

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Stabilizer Trim Flexible Shaft Lubrication
Figure 303/12-22-41-990-803 (Sheet 3 of 3)

TASK 12-22-41-610-801

5. Horizontal Stabilizer Actuator Brake - Servicing

(Table 304, Figure 304)

NOTE: This procedure is a scheduled maintenance task.

A. Consumable Materials

Reference	Description	Specification
D00467	Fluid - Landing Gear Shock Strut	BMS3-32 Type II

B. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
19	Packing	27-41-81-01-250	SIA ALL
20	Packing	27-41-81-01-093	SIA ALL

C. Location Zones

Zone	Area
311	Area Aft of Pressure Bulkhead - Left
312	Area Aft of Pressure Bulkhead - Right

D. Access Panels

Number	Name/Location
311BL	Stabilizer Trim Access Door

E. Prepare for the Servicing

SUBTASK 12-22-41-860-017

(1) Move the stabilizer to APL NOSE DN position (stabilizer leading edge up).

SUBTASK 12-22-41-860-018

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

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	10	C00207	FLIGHT CONTROL STAB TRIM CONT
D	10	C00840	FLIGHT CONTROL STAB TRIM ACTUATOR

SUBTASK 12-22-41-010-006

(3) Open this access panel:

Number	Name/Location
311BL	Stabilizer Trim Access Door

F. Horizontal Stabilizer Actuator Brake Servicing

SUBTASK 12-22-41-440-001

(1) The table below supplies information for the Horizontal Stabilizer Brake Assembly servicing:

Table 304/12-22-41-993-804 Horizontal Stabilizer Actuator Brake Servicing

Item No.	Nomenclature	Lubricant	Method of Application	Number of Locations
16	Stabilizer Primary Brake Fill Plug	fluid, D00467	Fill	1
17	Stabilizer Primary Brake Fill Cap	fluid, D00467	Fill	1
18	Stabilizer Secondary Brake Fill Plug	fluid, D00467	Fill	1

SUBTASK 12-22-41-610-001

(2) Check the fluid level in the stabilizer actuator brake assembly.

(a) Do these steps:

1) Service the primary brake.

a) Position the actuator assembly 19 - 28 degrees forward of vertical.

b) Remove lockwire on the fill plug [16].

c) Remove the fill plug [16] and packing [19] from the primary brake fill port.

d) Make sure the fluid is at the level of the primary brake fill port.

e) If the fluid is not at the level of the fill port, remove the fill cap [17] from the primary brake housing.

f) Fill the primary brake with fluid, D00467, through the fill cap [17] port until the fluid spills out of the fill plug [16] port.

<1> Using the stabilizer trim wheel, manually move the stabilizer as necessary, to remove any air from the brake assembly.

<2> Be sure to clean up any spilled lubricant before continuing with the procedure.

g) Lubricate a new packing [19] with fluid, D00467.

h) Install the fill plug [16] and the new packing [19] in the fill port.

i) Tighten the fill plug [16] to 60 in-lb (7 N·m) - 80 in-lb (9 N·m) more than the run-on torque.

j) Install the fill cap [17].

k) Install lockwire on the fill plug [16].

2) Service the secondary brake.

a) Position the actuator assembly within ± 2 degrees of vertical.

b) Remove lockwire on the fill plug [18].

c) Remove the fill plug [18] and packing [20] from the secondary brake fill port.

d) Make sure the fluid is at the level of the fill port.

I e) If the fluid is not at the level of the fill port, fill the secondary brake with fluid, D00467, through the fill port until the fluid spills out of the fill port.

<1> Using the stabilizer trim wheel, manually move the stabilizer, as necessary, to remove any air from the secondary brake assembly.

<2> Be sure to clean up any spilled lubricant before continuing with the procedure.

f) Lubricate a new packing [20] with fluid, D00467.

g) Install the secondary brake fill plug [18] and the new packing [20] in the fill port.

h) Tighten the fill plug [18] to 60 in-lb (7 N·m) - 80 in-lb (9 N·m) more than the run-on torque.

i) Install lockwire on the fill plug [18].

G. Put the Airplane Back to Its Usual Condition

SUBTASK 12-22-41-010-007

(1) Close this access panel:

Number	Name/Location
311BL	Stabilizer Trim Access Door

SUBTASK 12-22-41-860-019

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

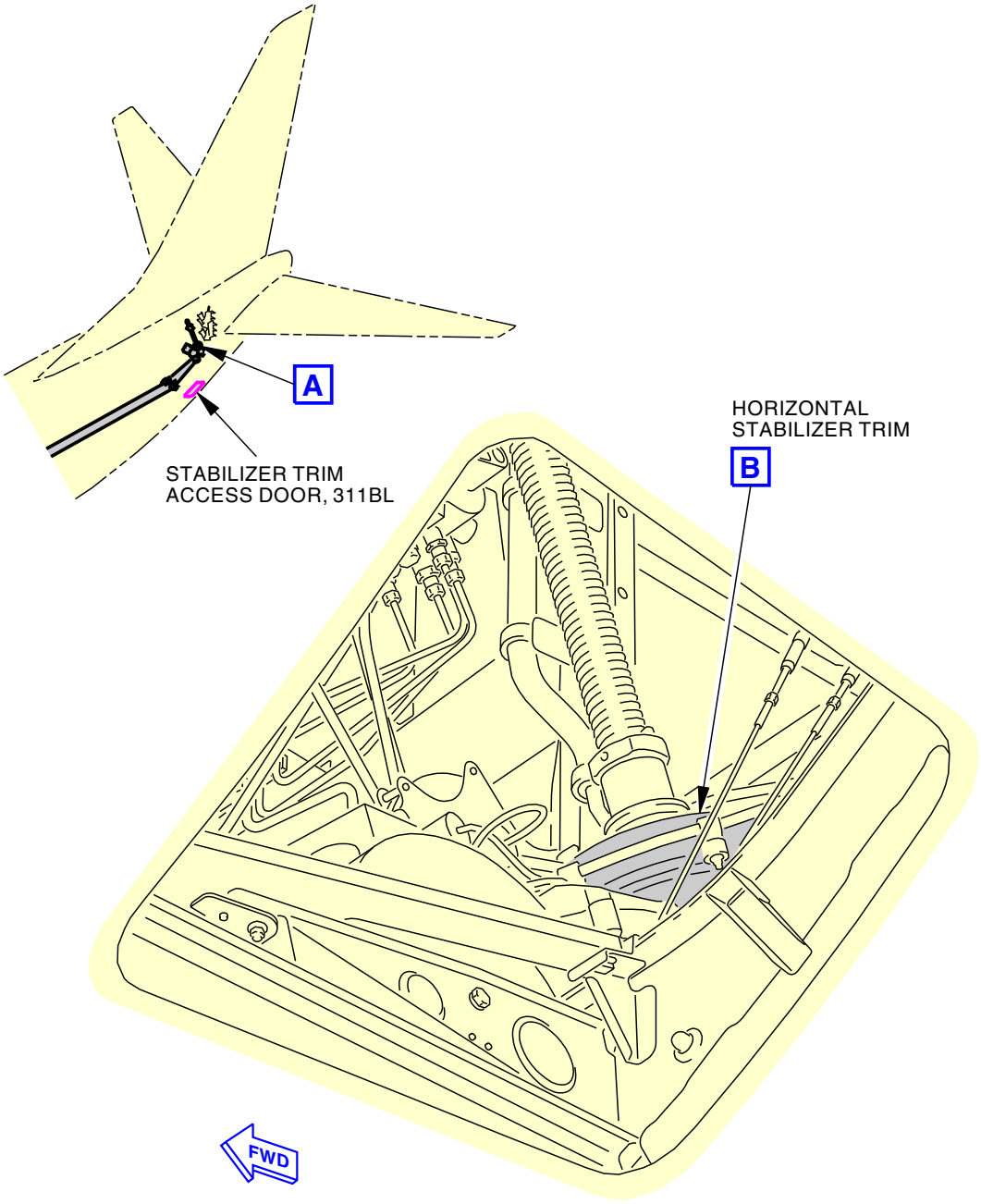
F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	10	C00207	FLIGHT CONTROL STAB TRIM CONT
D	10	C00840	FLIGHT CONTROL STAB TRIM ACTUATOR

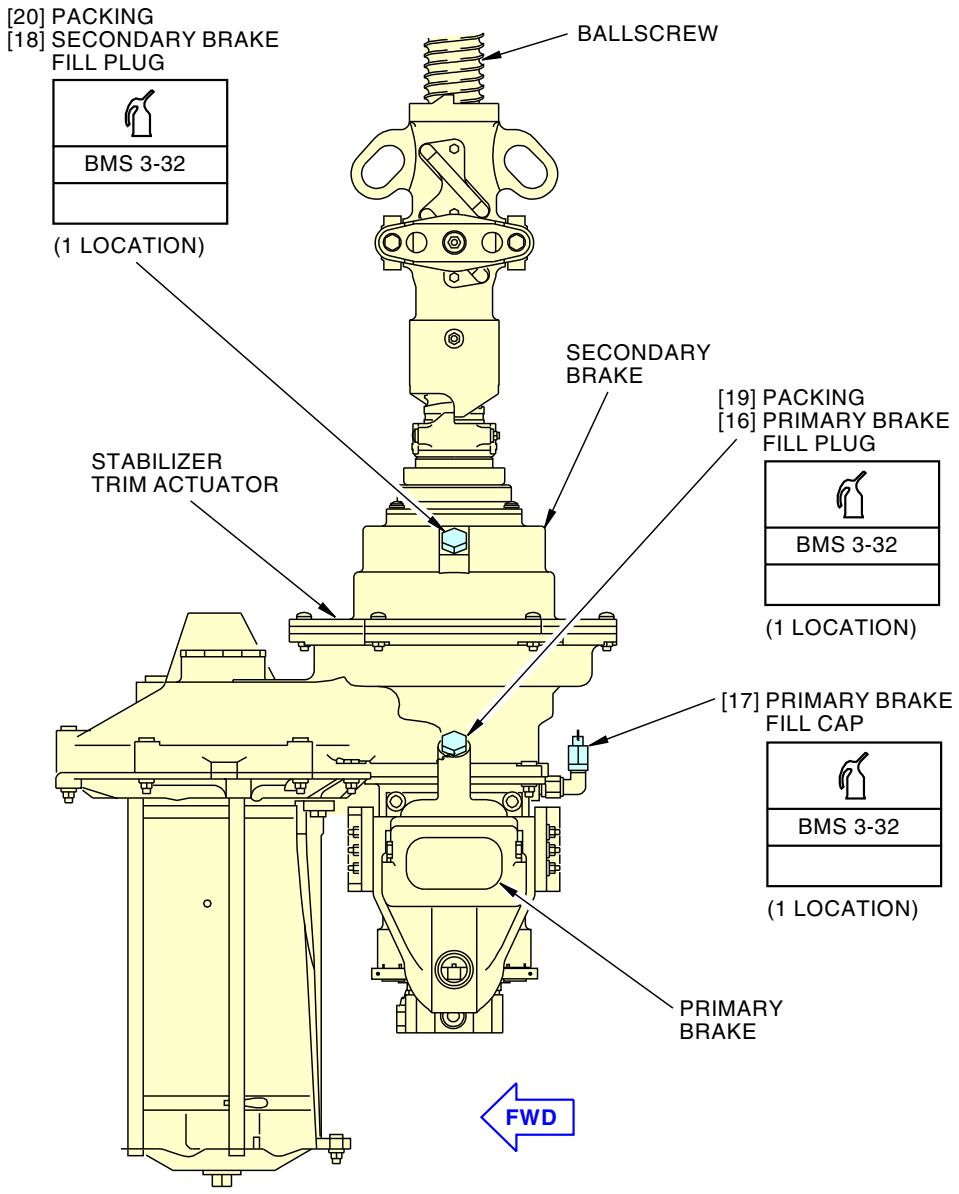
SUBTASK 12-22-41-860-020

(3) Set the stabilizer to the neutral position, as necessary.

——— END OF TASK ———



Horizontal Stabilizer Actuator Brake Servicing
Figure 304/12-22-41-990-804 (Sheet 1 of 2)



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Horizontal Stabilizer Actuator Brake Servicing
Figure 304/12-22-41-990-804 (Sheet 2 of 2)

TRAILING EDGE FLAP SYSTEM - SERVICING

1. General

A. This procedure has these tasks:

(1) Trailing Edge Flap Torque Tube and Torque Tube Support Lubrication
(2) Inboard Flap Inboard Ballscrew Lubrication
(3) Inboard Flap Outboard Ballscrew and Gimbal Lubrication
(4) Outboard Flap Inboard Ballscrew and Gimbal Lubrication
(5) Outboard Flap Outboard Ballscrew and Gimbal Lubrication
(6) U-Joint and Tee Angle Gearbox Lubrication
(7) Inboard Flap Inboard Skew Mechanism Lubrication
(8) Inboard Flap Outboard Skew Mechanism Lubrication
(9) Outboard Flap Inboard Skew Mechanism Lubrication
(10) Outboard Flap Outboard Skew Mechanism Lubrication
(11) Inboard Main Flap and Aft Flap Roller and Linkage Lubrication
(12) Outboard Main Flap and Aft Flap Roller and Linkage Lubrication
(13) Inboard Flap Inboard Flap Track Lubrication
(14) Inboard Flap Outboard Flap Track Lubrication
(15) Outboard Flap Inboard Flap Track Lubrication
(16) Outboard Flap Outboard Flap Track Lubrication
(17) Trailing Edge Flap Power Drive Unit Servicing
(18) Trailing Edge Flap Power Drive Unit Fluid Replacement
(19) Trailing Edge Flap Transmission Servicing
(20) Trailing Edge Flap Transmission Oil Replacement
(21) Trailing Edge Flap Electric Motor Servicing.

TASK 12-22-51-640-801

2. Trailing Edge Flap Torque Tube and Torque Tube Support Lubrication

(Figure 301)

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
27-51-00-040-801	Trailing Edge Flap System Deactivation (P/B 201)
27-51-00-440-801	Trailing Edge Flap System Reactivation (P/B 201)
27-51-00-860-803	Extend the Trailing Edge Flaps (P/B 201)
27-51-00-860-804	Retract the Trailing Edge Flaps (P/B 201)

B. Consumable Materials

Reference	Description	Specification
D00633	Grease - Aircraft General Purpose	BMS3-33

C. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right
550	Subzone - Left Wing: Trailing Edge, Aft of Rear Spar, Inbd of Outboard Trailing Edge Flap
553	Left Wing - Inboard Flap
561	Left Wing - Rear Spar to Trailing Edge, Outboard Of Inboard Flap, Inboard of Fixed Trailing Edge
567	Left Wing - Outboard Flap
650	Subzone - Right Wing: Trailing Edge, Aft of Rear Spar, Inboard of Outboard Trailing Edge Flap
653	Right Wing - Inboard Flap
661	Right Wing - Rear Spar to Trailing Edge, Outboard of Inboard Flap, Inboard of Fixed Trailing Edge
667	Right Wing - Outboard Flap

D. Access Panels

Number	Name/Location
561BB	Midspan Fixed Trailing Edge Access Panel - WBL 305
661BB	Midspan Fixed Trailing Edge Access Panel - WBL 305

E. Prepare for the Lubrication

SUBTASK 12-22-51-860-001

(1) Extend the trailing edge flaps to the 40-unit position (TASK 27-51-00-860-803).

SUBTASK 12-22-51-040-001

(2) Do this task: Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801.

F. Trailing Edge Flap Torque Tube and Torque Tube Support Lubrication

SUBTASK 12-22-51-640-001

(1) This table supplies data for the subsequent lubrication steps:

Table 301/12-22-51-993-801 Trailing Edge Flap Torque Tube and Torque Tube Support Servicing

Item No.	Nomenclature	Lubricant	Method of Application	Number of Locations
1	Transmission No. 1 Coupling Lube Point (No. 8 Coupling Equivalent)	grease, D00633	Flush	2
2	Torque Tube Support Coupling Lube Point	grease, D00633	Flush	4
3	Torque Tube Support Lube Fittings	grease, D00633	Zerk	2
4	Transmission No. 2 Coupling Lube Point (No. 7 Coupling Equivalent)	grease, D00633	Flush	4
5	Seal Rib Angle Gearbox Coupling Lube Point	grease, D00633	Flush	4

Table 301/12-22-51-993-801 Trailing Edge Flap Torque Tube and Torque Tube Support Servicing (Continued)

Item No.	Nomenclature	Lubricant	Method of Application	Number of Locations
6	Transmission No. 3 Coupling Lube Point (No. 6 Coupling Equivalent)	grease, D00633	Flush	4
7	MLG Beam Angle Gearbox Coupling Lube Point	grease, D00633	Flush	4
8	Tee Angle Gearbox Coupling Lube Point	grease, D00633	Flush	4
9	Flap Power Drive Unit Coupling Lube Point	grease, D00633	Flush	4

SUBTASK 12-22-51-640-002

(2) Lubricate the torque tube couplings on each end of the torque tube:

(a) Manually move the torque tube axially in the direction of the coupling you will lubricate.

(b) Fill the coupling with grease, D00633 through a minimum of two of the three grease holes.

NOTE: Fill the coupling until clean grease comes out of the curled end of the coupling, or until grease comes out of the other grease holes.

(c) Move the torque tube in the opposite direction until it stops.

(d) Wipe the grease from around the coupling and the grease holes.

SUBTASK 12-22-51-010-006

(3) Open these access panels:

Number	Name/Location
561BB	Midspan Fixed Trailing Edge Access Panel - WBL 305
661BB	Midspan Fixed Trailing Edge Access Panel - WBL 305

SUBTASK 12-22-51-640-003

(4) Lubricate the torque tube support lube fittings [3] with grease, D00633.

SUBTASK 12-22-51-410-006

(5) Close these access panels:

Number	Name/Location
561BB	Midspan Fixed Trailing Edge Access Panel - WBL 305
661BB	Midspan Fixed Trailing Edge Access Panel - WBL 305

G. Put the Airplane Back to Its Usual Condition

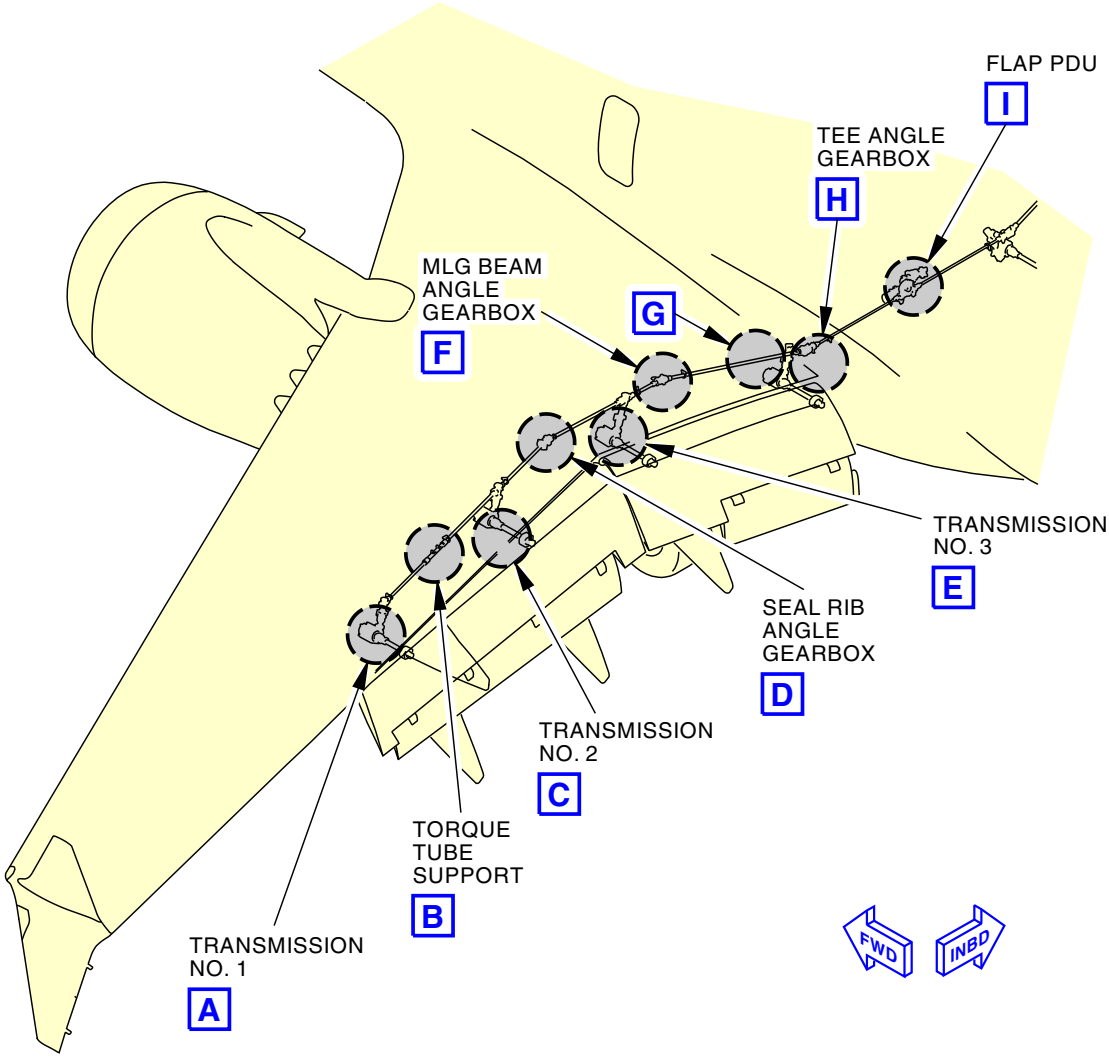
SUBTASK 12-22-51-440-001

(1) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

SUBTASK 12-22-51-860-002

(2) Retract the trailing edge flaps to the UP position (TASK 27-51-00-860-804).

END OF TASK



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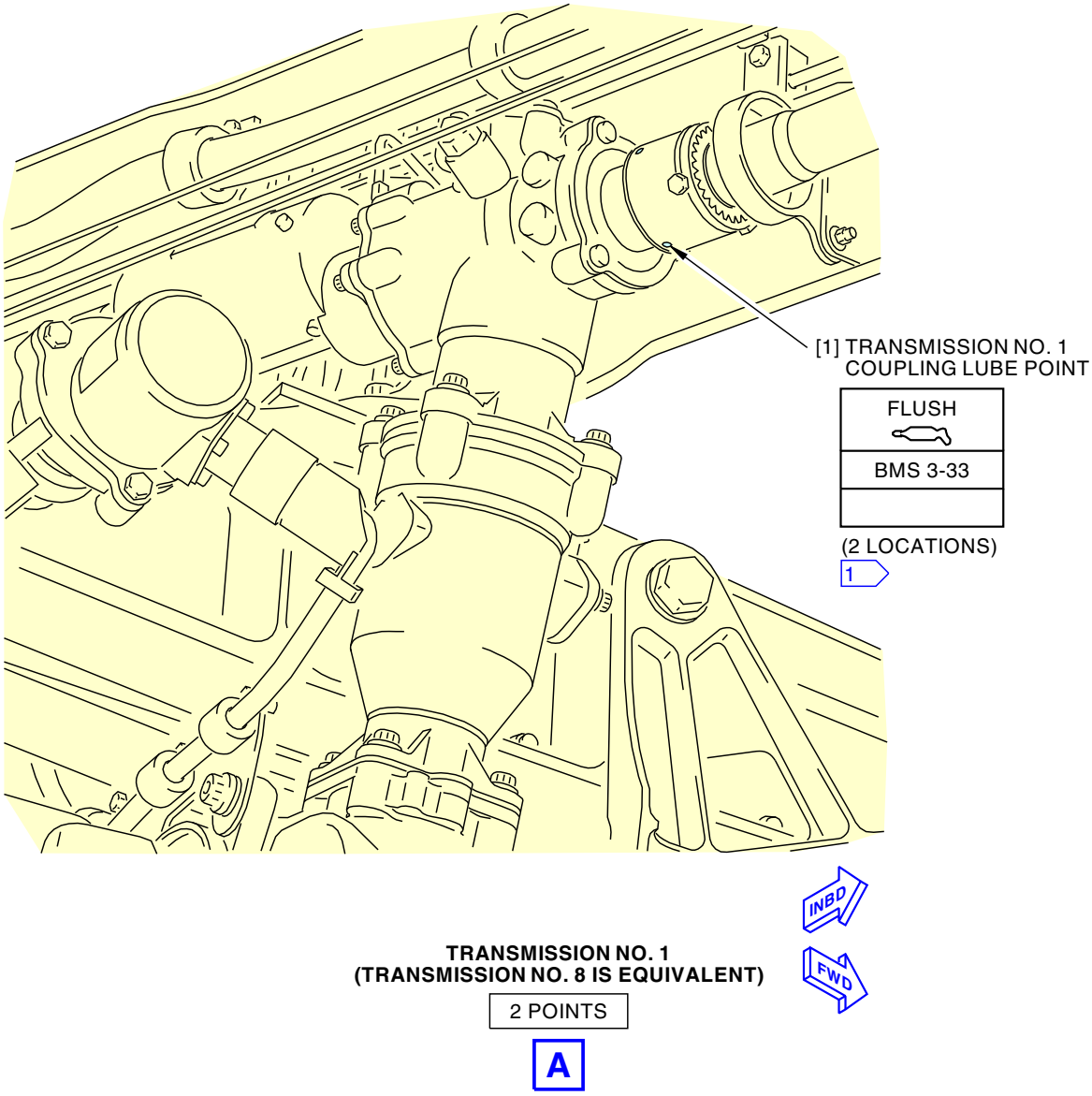
Trailing Edge Flap Torque Tubes and Torque Tube Support Servicing
Figure 301/12-22-51-990-801 (Sheet 1 of 10)



1 LUBRICATE A MINIMUM OF TWO LUBE POINTS ON EACH COUPLING UNTIL GREASE COMES OUT OF THE COUPLING.

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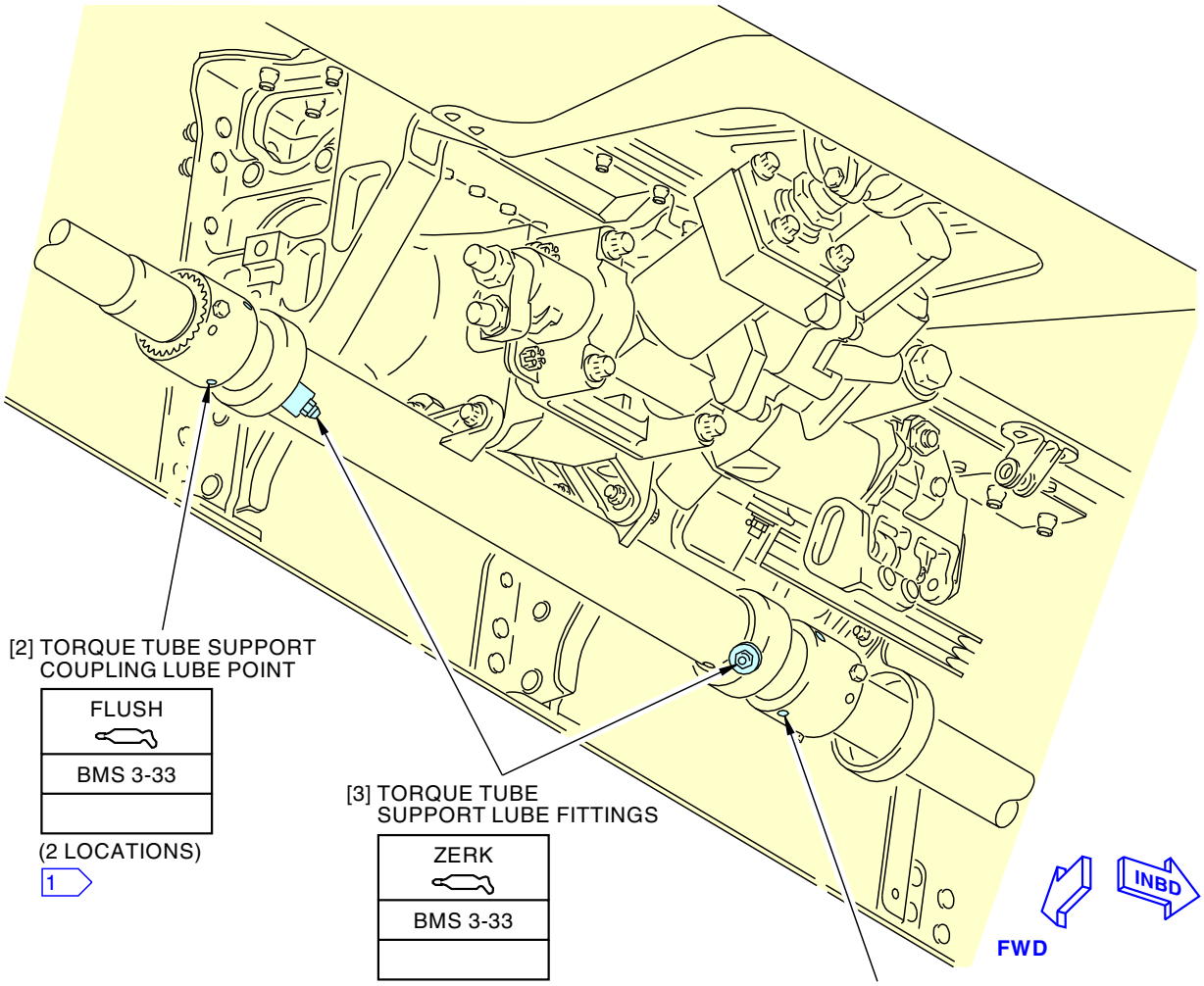
Trailing Edge Flap Torque Tubes and Torque Tube Support Servicing
Figure 301/12-22-51-990-801 (Sheet 2 of 10)



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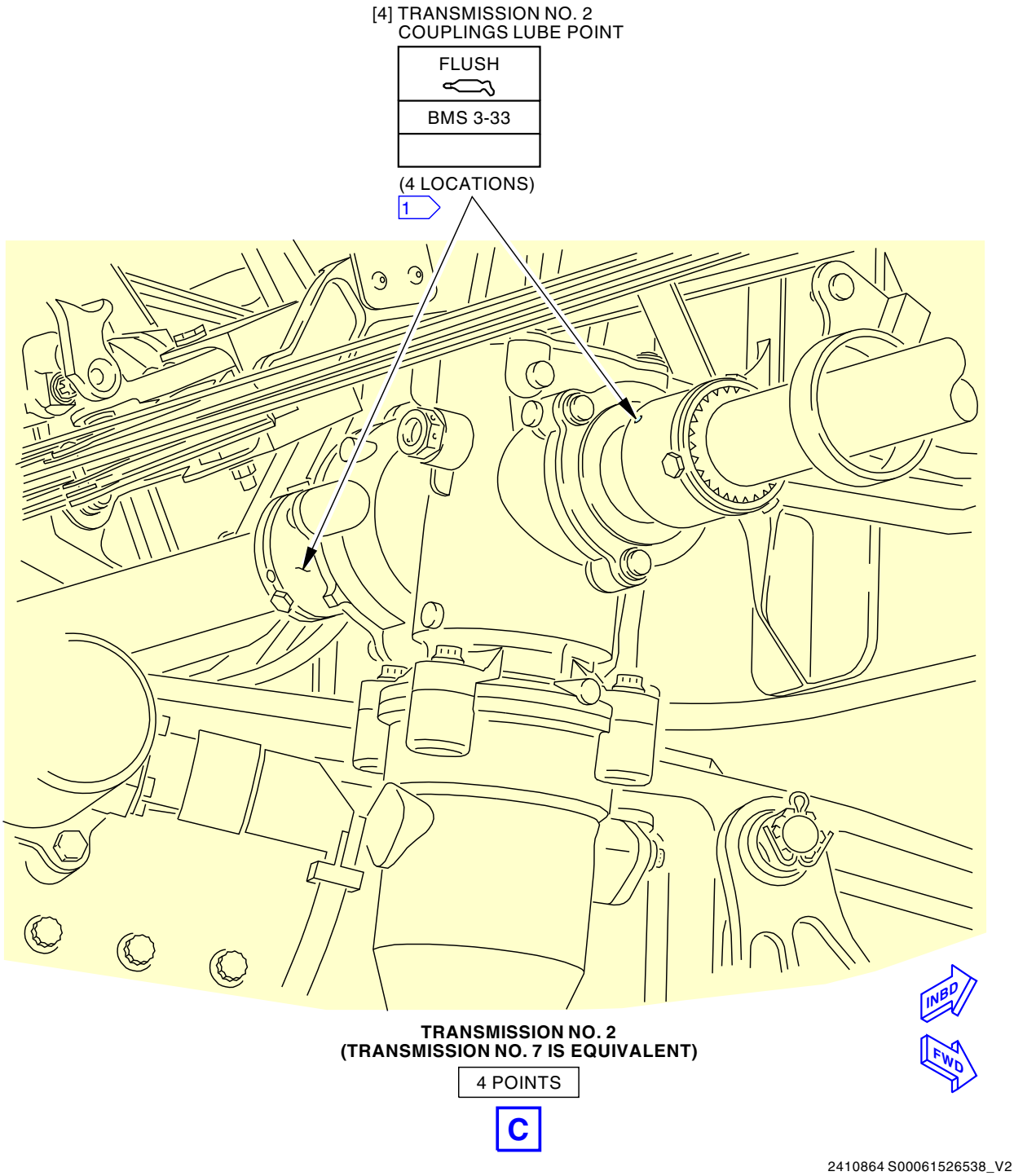
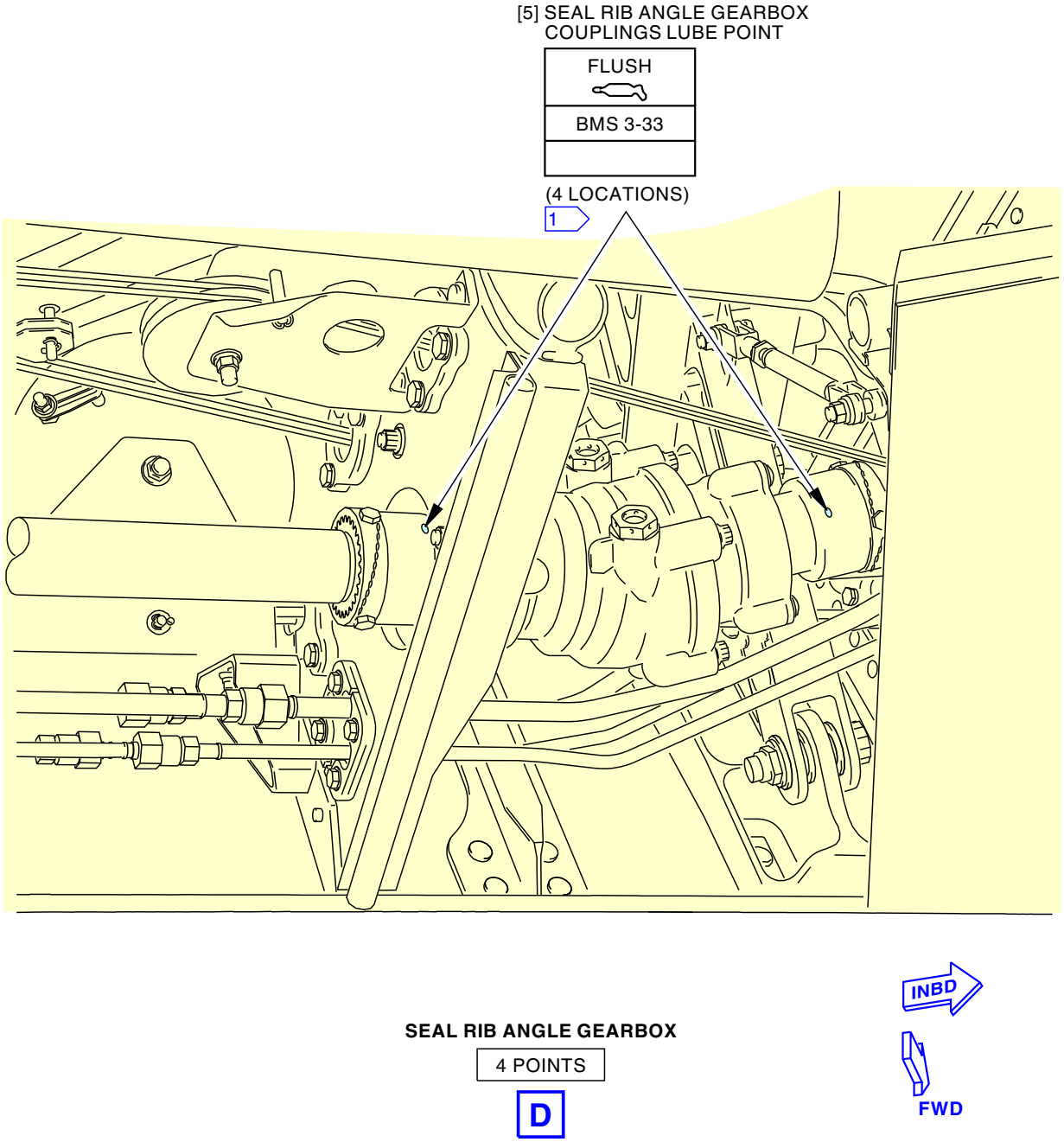
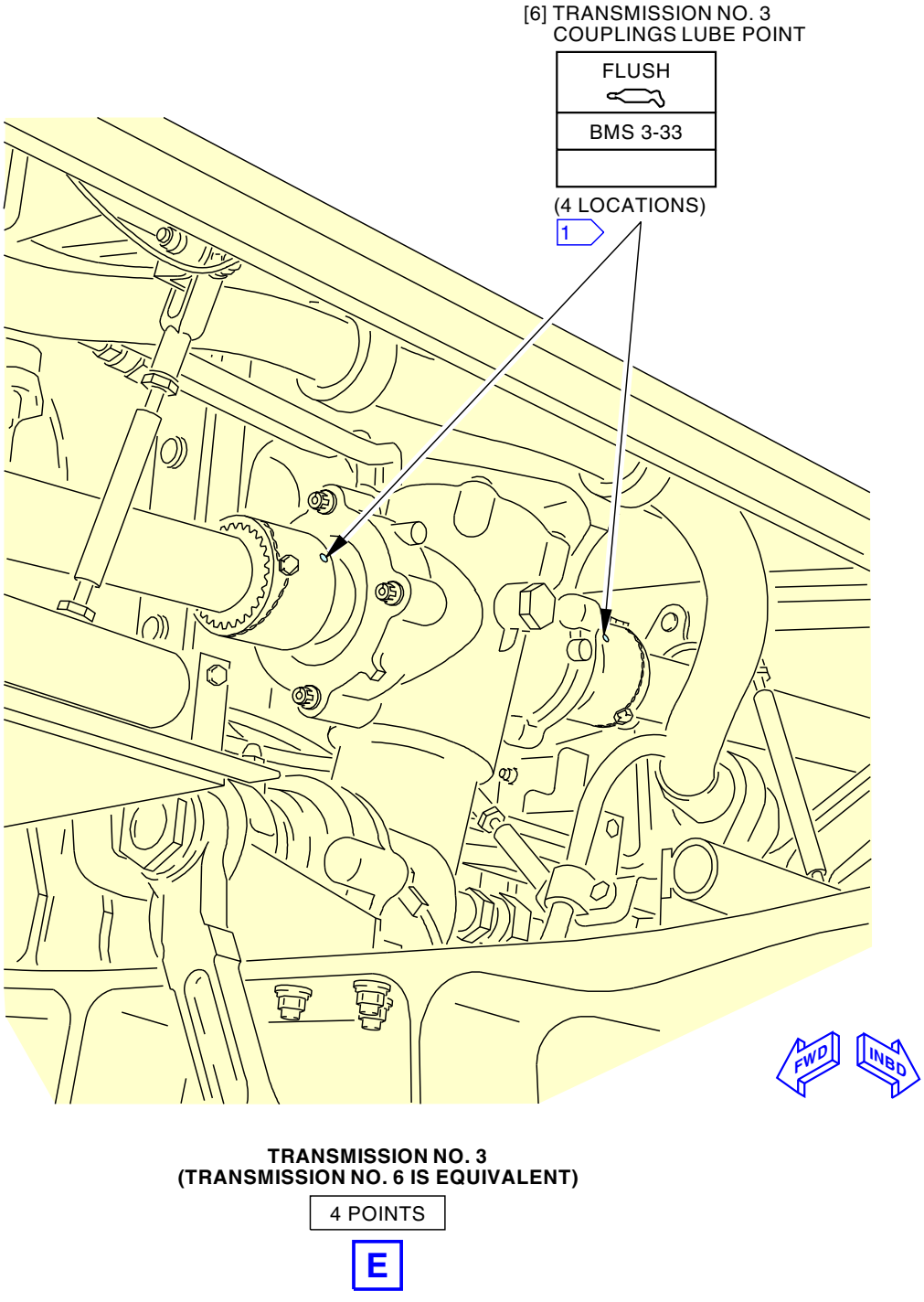
Trailing Edge Flap Torque Tubes and Torque Tube Support Servicing
Figure 301/12-22-51-990-801 (Sheet 3 of 10)



Trailing Edge Flap Torque Tubes and Torque Tube Support Servicing
Figure 301/12-22-51-990-801 (Sheet 4 of 10)



Trailing Edge Flap Torque Tubes and Torque Tube Support Servicing
Figure 301/12-22-51-990-801 (Sheet 5 of 10)



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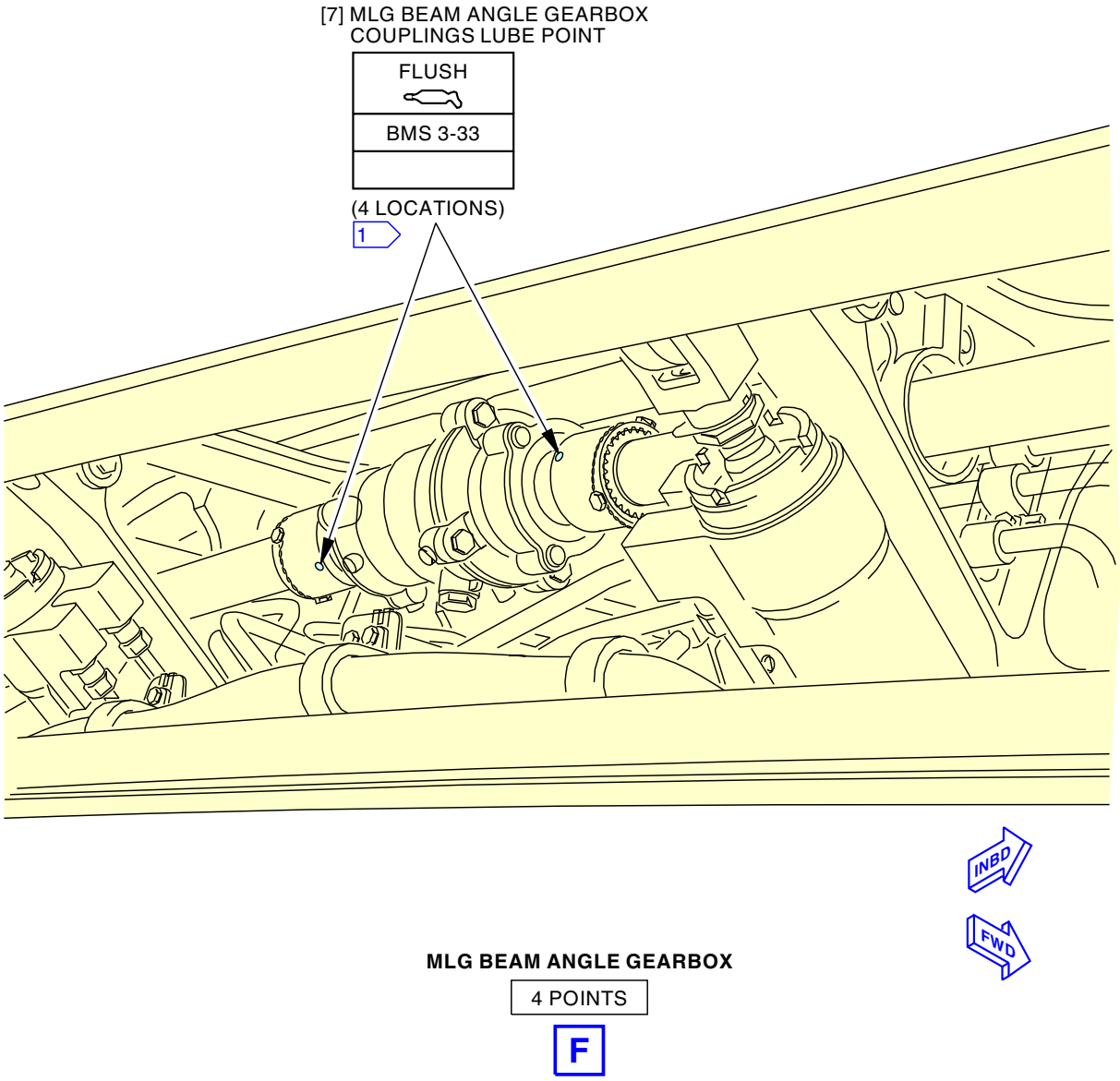
Trailing Edge Flap Torque Tubes and Torque Tube Support Servicing
Figure 301/12-22-51-990-801 (Sheet 6 of 10)



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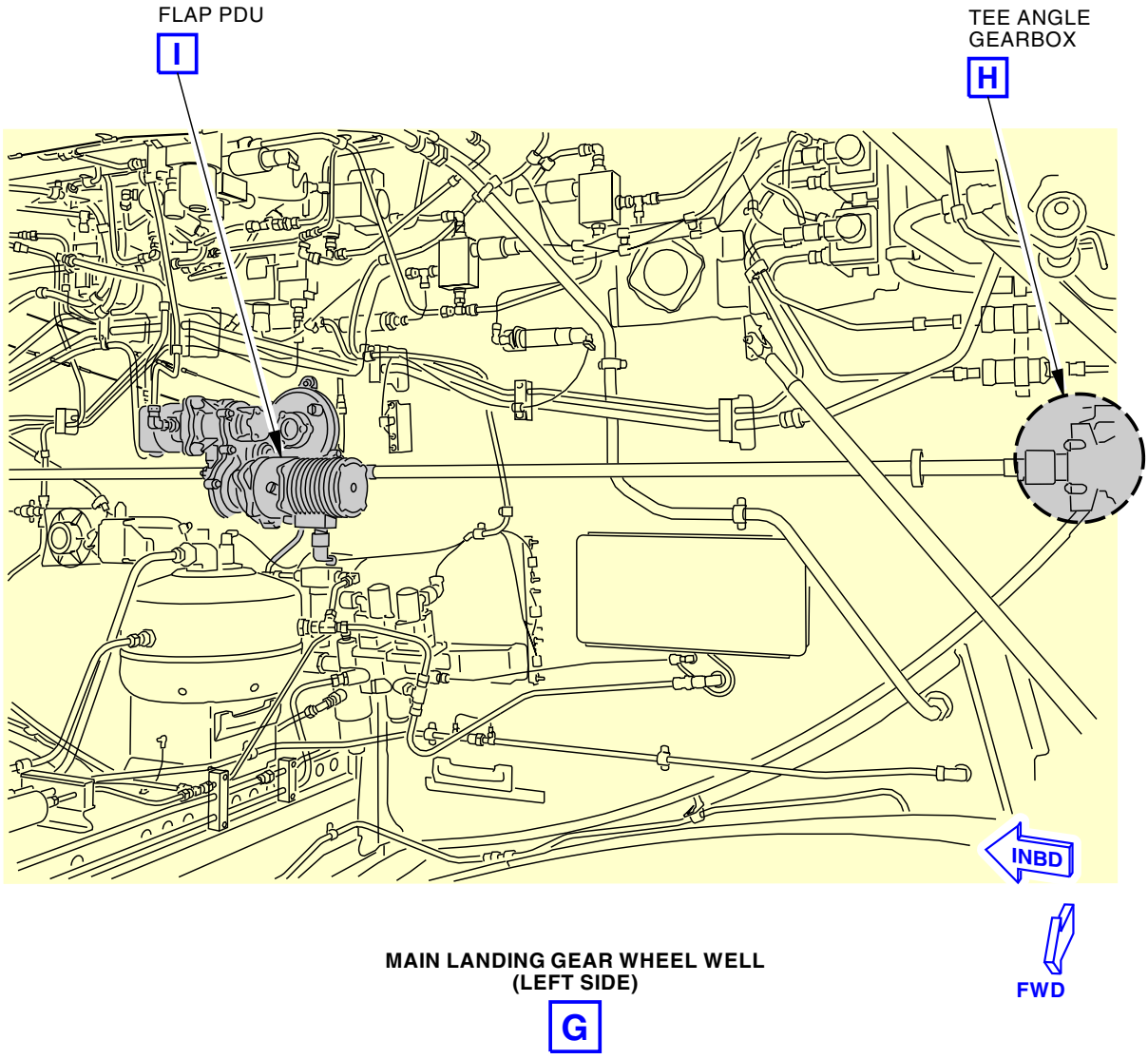
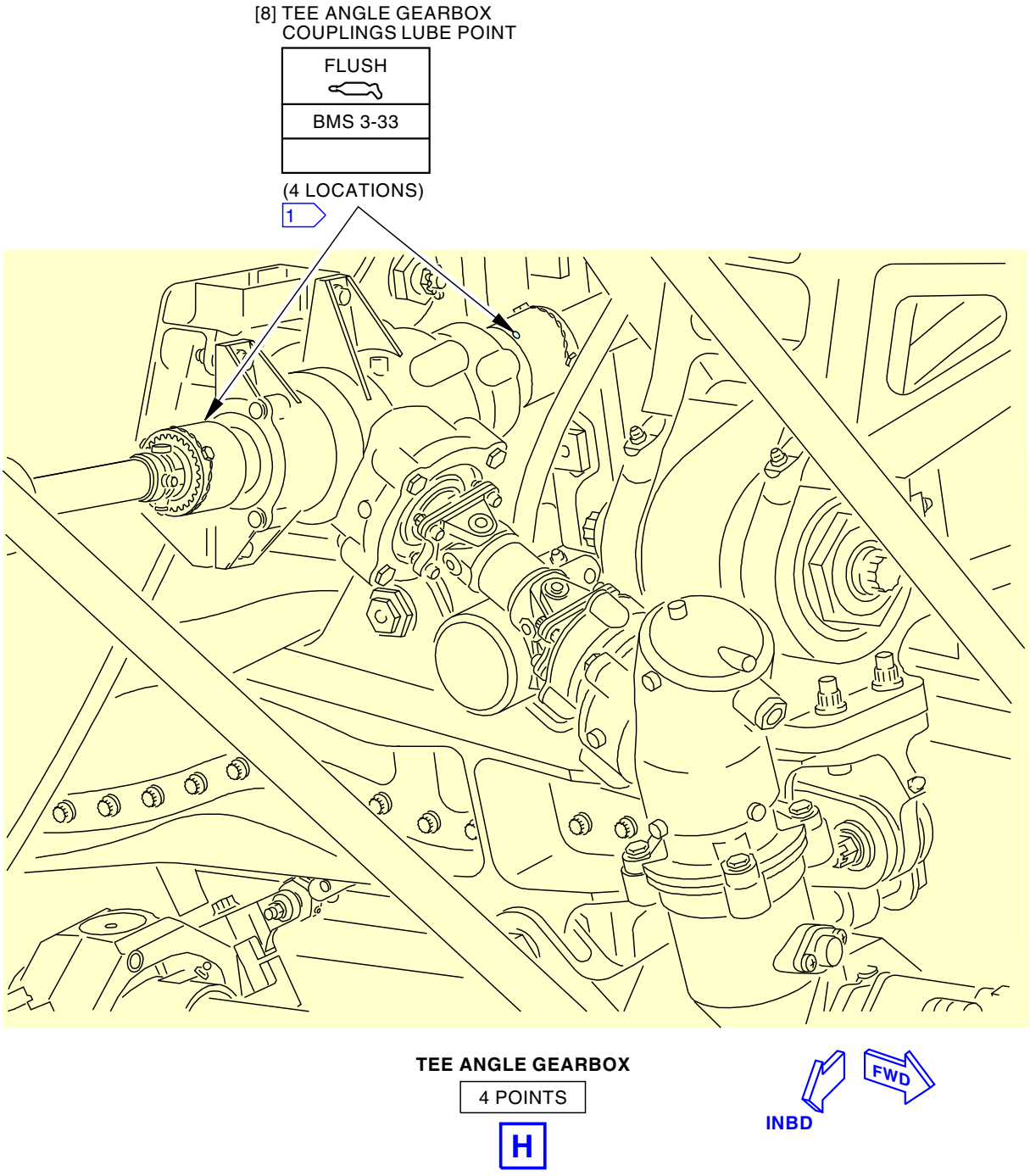
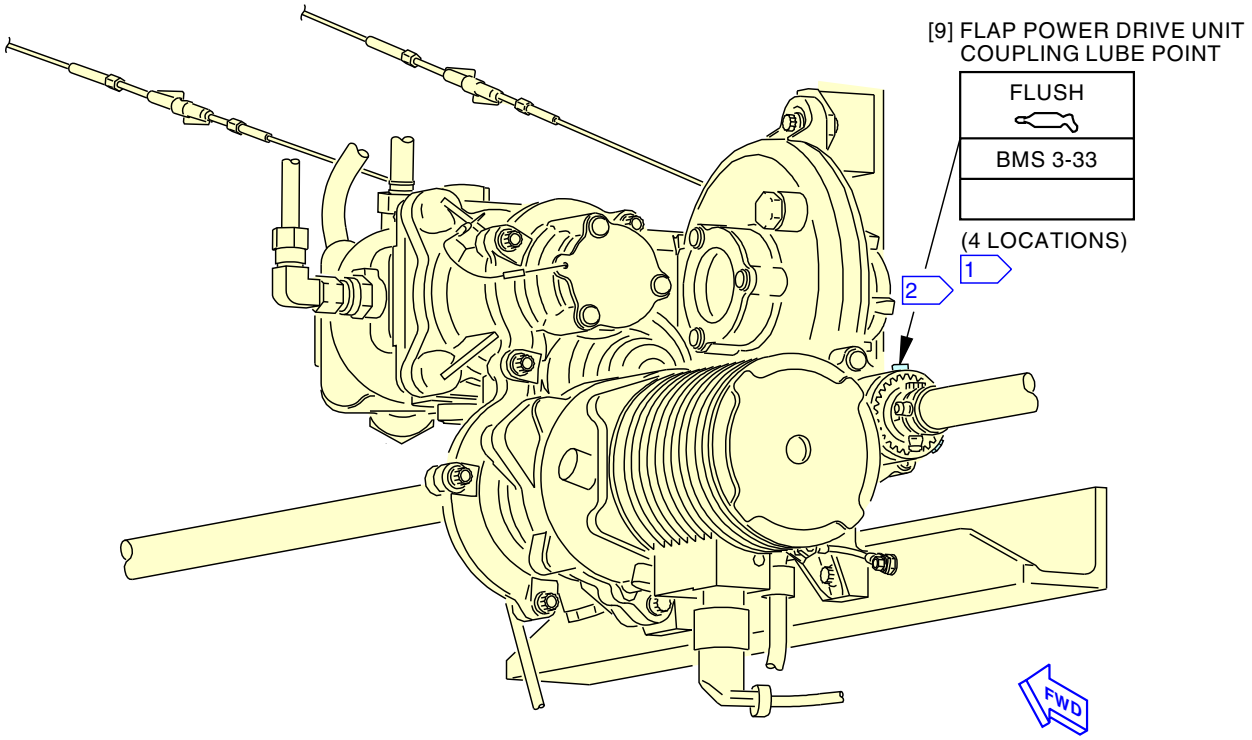
Trailing Edge Flap Torque Tubes and Torque Tube Support Servicing
Figure 301/12-22-51-990-801 (Sheet 7 of 10)



Trailing Edge Flap Torque Tubes and Torque Tube Support Servicing
Figure 301/12-22-51-990-801 (Sheet 8 of 10)



Trailing Edge Flap Torque Tubes and Torque Tube Support Servicing
Figure 301/12-22-51-990-801 (Sheet 9 of 10)



FLAP POWER DRIVE UNIT

4 POINTS

I

2 ONE MORE LUBE POINT IS ON THE OPPOSITE SIDE (NOT SHOWN).

2410870 S00061526544_V2

Trailing Edge Flap Torque Tubes and Torque Tube Support Servicing
Figure 301/12-22-51-990-801 (Sheet 10 of 10)

TASK 12-22-51-640-802

3. Inboard Flap Inboard Ballscrew Lubrication

(Figure 302)

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
27-51-00-040-801	Trailing Edge Flap System Deactivation (P/B 201)
27-51-00-440-801	Trailing Edge Flap System Reactivation (P/B 201)

B. Consumable Materials

Reference	Description	Specification
D00633	Grease - Aircraft General Purpose	BMS3-33

C. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right

D. Prepare for the Lubrication

SUBTASK 12-22-51-040-002

(1) Do this task: Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801.

E. Inboard Flap Inboard Ballscrew Lubrication

SUBTASK 12-22-51-640-004

(1) This table supplies data for the subsequent lubrication steps:

Table 302/12-22-51-993-802 Inboard Flap Inboard Ballscrew Servicing

Item No.	Nomenclature	Lubricant	Method of Application	Number of Locations
10	No. 4 Ballscrew Nut Lube Fitting (No. 5 Ballscrew Nut is Equivalent)	grease, D00633	Zerk	1
11	No. 4 U-Joint Lube Fittings (No. 5 U-Joint is Equivalent)	grease, D00633	Zerk	4

SUBTASK 12-22-51-640-005

(2) Lubricate the ballscrew nut with grease, D00633 through one of the No. 4 ballscrew nut lube fitting [10].

NOTE: Put grease in the ballscrew nut until new grease comes out of the vent. The ballscrew nut has two lube fittings. It is only necessary to lubricate one of them.

SUBTASK 12-22-51-640-006

(3) Lubricate the U-joint with grease, D00633 through the four No. 4 U-joint lube fittings [11].

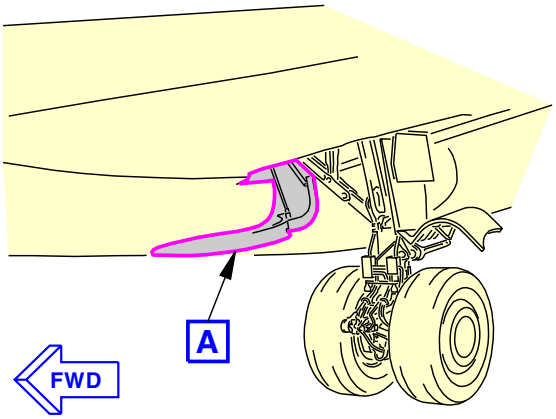
NOTE: There are four lube fittings on the U-joint. It is necessary to lubricate all of them.

F. Put the Airplane Back to Its Usual Condition

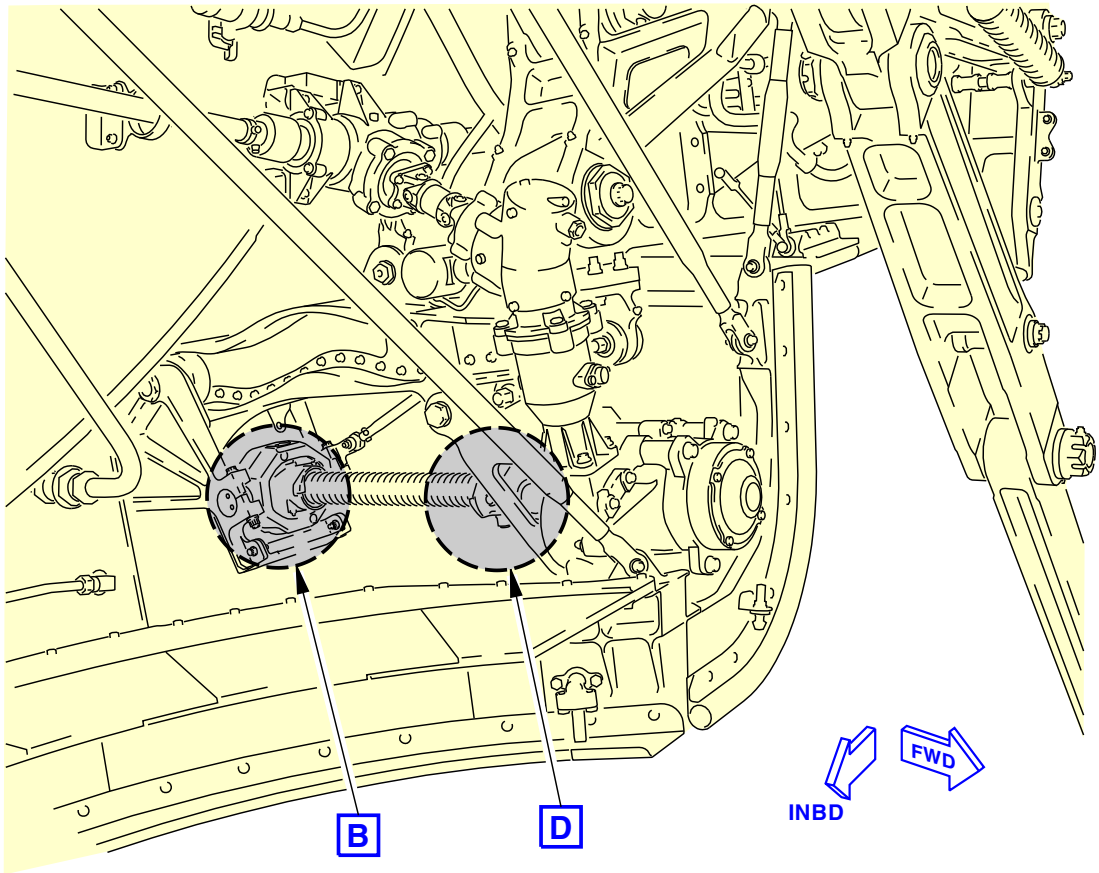
SUBTASK 12-22-51-440-002

(1) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

END OF TASK



(EXAMPLE)

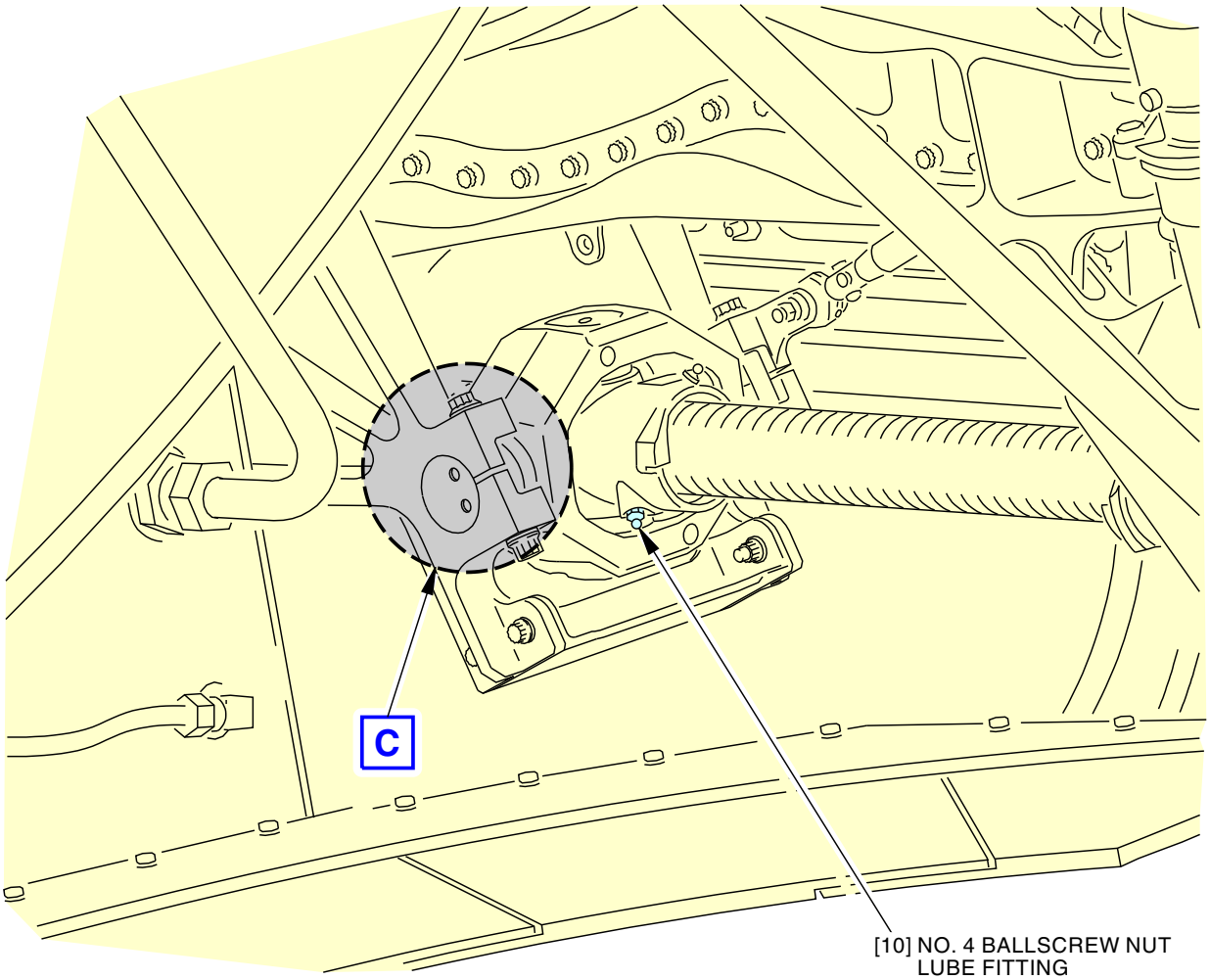


MAIN LANDING GEAR WHEEL WELL
(LEFT SIDE IS SHOWN, RIGHT SIDE IS EQUIVALENT)

A

2410871 S00061526546_V2

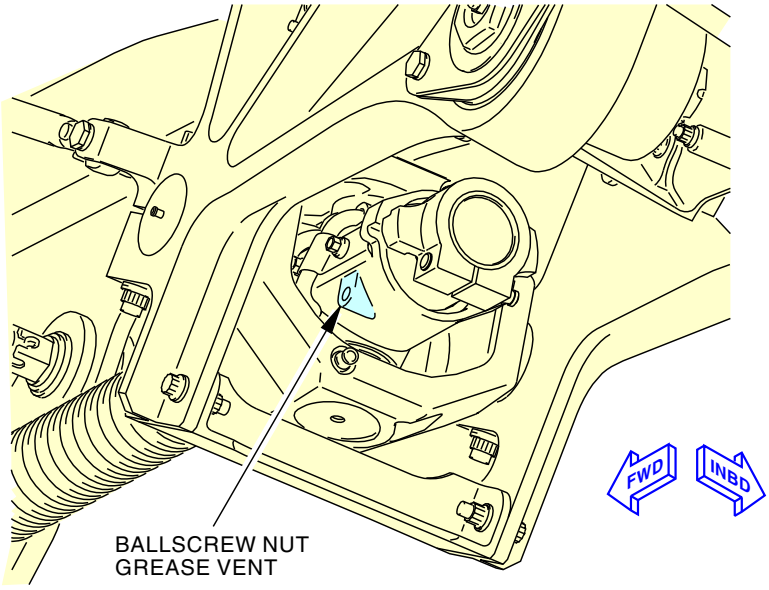
Inboard Flap Inboard Ballscrew Servicing
Figure 302/12-22-51-990-802 (Sheet 1 of 3)



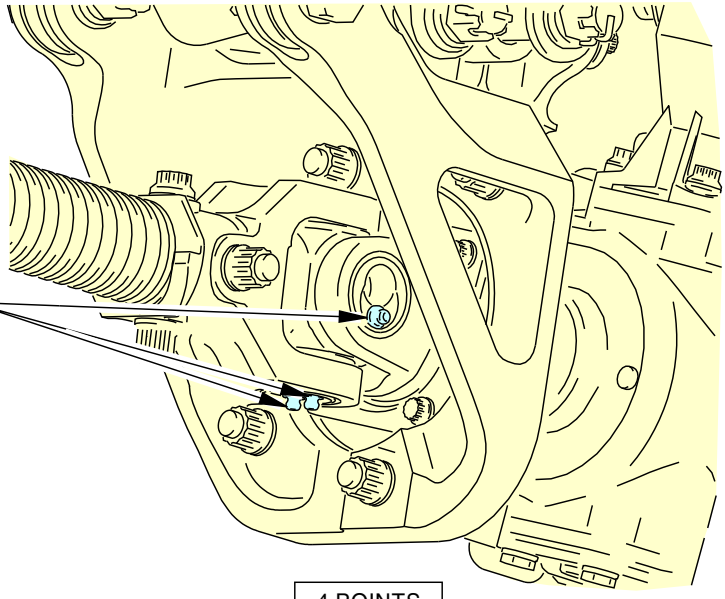
1 THE BALLSCREW NUT HAS TWO LUBE FITTINGS. IT IS ONLY NECESSARY TO PUT GREASE ON ONE OF THEM.

2410872 S00061526547_V2

Inboard Flap Inboard Ballscrew Servicing
Figure 302/12-22-51-990-802 (Sheet 2 of 3)



C



D

2 ONE MORE LUBE FITTING IS ON THE OPPOSITE SIDE (NOT SHOWN).

2410873 S00061526548_V2

Inboard Flap Inboard Ballscrew Servicing
Figure 302/12-22-51-990-802 (Sheet 3 of 3)

TASK 12-22-51-640-803

4. Inboard Flap Outboard Ballscrew and Gimbal Lubrication

(Figure 303)

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
27-51-00-040-801	Trailing Edge Flap System Deactivation (P/B 201)
27-51-00-440-801	Trailing Edge Flap System Reactivation (P/B 201)
27-51-00-860-803	Extend the Trailing Edge Flaps (P/B 201)
27-51-00-860-804	Retract the Trailing Edge Flaps (P/B 201)

B. Consumable Materials

Reference	Description	Specification
D00633	Grease - Aircraft General Purpose	BMS3-33

C. Location Zones

Zone	Area
542	Left Wing - Fairing Flap Support No. 3
553	Left Wing - Inboard Flap
642	Right Wing - Fairing Flap Support No. 6
653	Right Wing - Inboard Flap

D. Prepare for the Lubrication

SUBTASK 12-22-51-860-003

(1) Extend the trailing edge flaps to the 40-unit position (TASK 27-51-00-860-803).

SUBTASK 12-22-51-040-003

(2) Do this task: Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801.

E. Inboard Flap Outboard Ballscrew and Gimbal Lubrication

(Table 303)

SUBTASK 12-22-51-640-007

(1) This table supplies data for the subsequent lubrication step (Figure 303).

Table 303/12-22-51-993-803 Inboard Flap Outboard Ballscrew and Gimbal Servicing

Item No.	Nomenclature	Lubricant	Method of Application	Number of Locations
12	No. 3 Ballscrew Nut Lube Fitting (No. 6 Ballscrew Nut is Equivalent)	grease, D00633	Zerk	1
13	No. 3 U-Joint Lube Fitting (No. 6 U-Joint is Equivalent)	grease, D00633	Zerk	4

SUBTASK 12-22-51-640-008

(2) Lubricate the ballscrew nut with grease, D00633 through one of the No. 3 ballscrew nut lube fitting [12].

NOTE: Put grease in the ballscrew nut until new grease comes out of the vent. The ballscrew nut has two grease fittings. It is only necessary to lubricate one of them.

SUBTASK 12-22-51-640-009

(3) Lubricate the four No. 3 U-joint lube lube fittings [13] with grease, D00633.

NOTE: There are four lubrication fittings on the U-joint. It is necessary to lubricate all of them.

F. Put the Airplane Back to Its Usual Condition

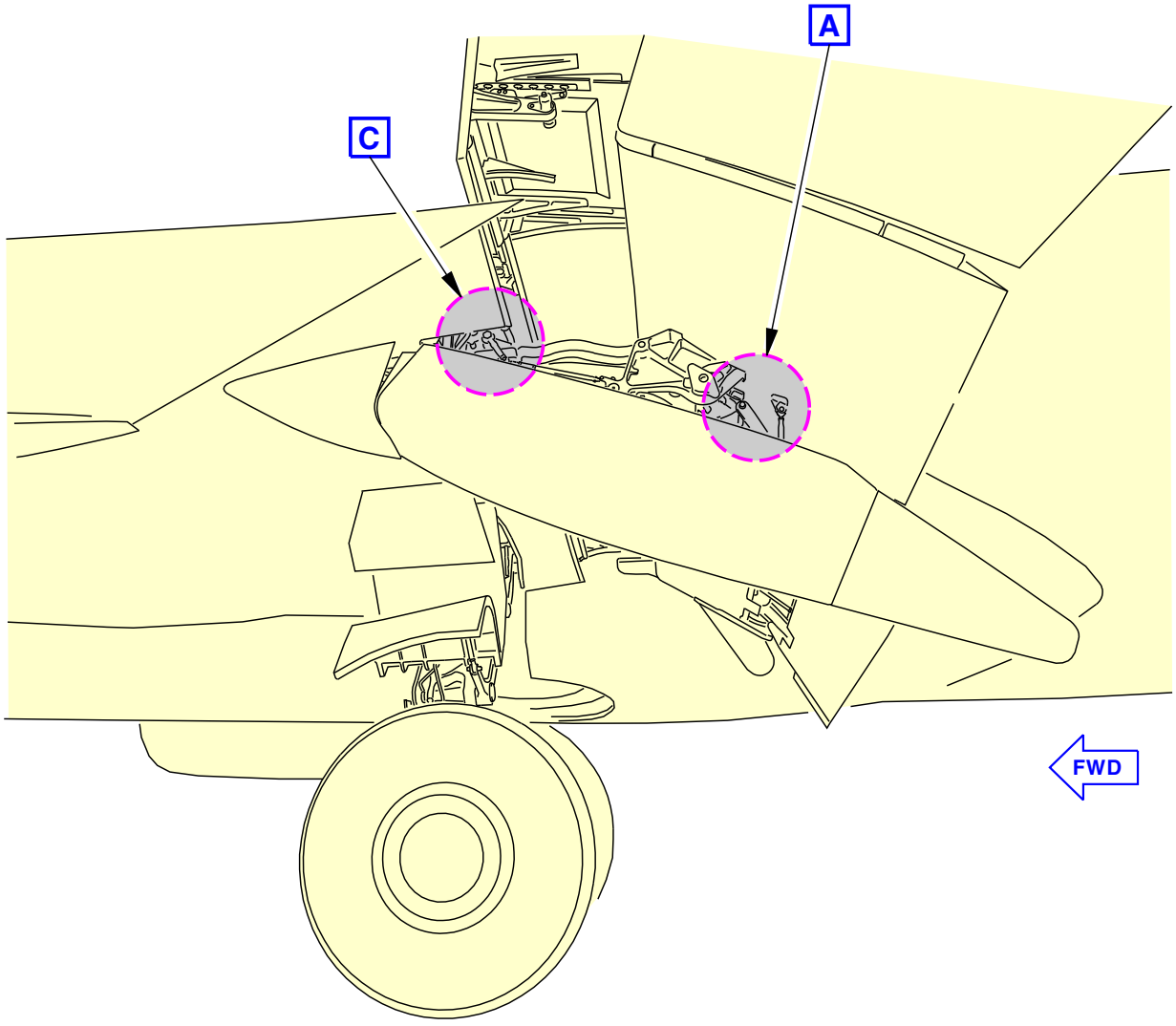
SUBTASK 12-22-51-440-003

(1) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

SUBTASK 12-22-51-860-004

(2) Retract the trailing edge flaps to the UP position (TASK 27-51-00-860-804).

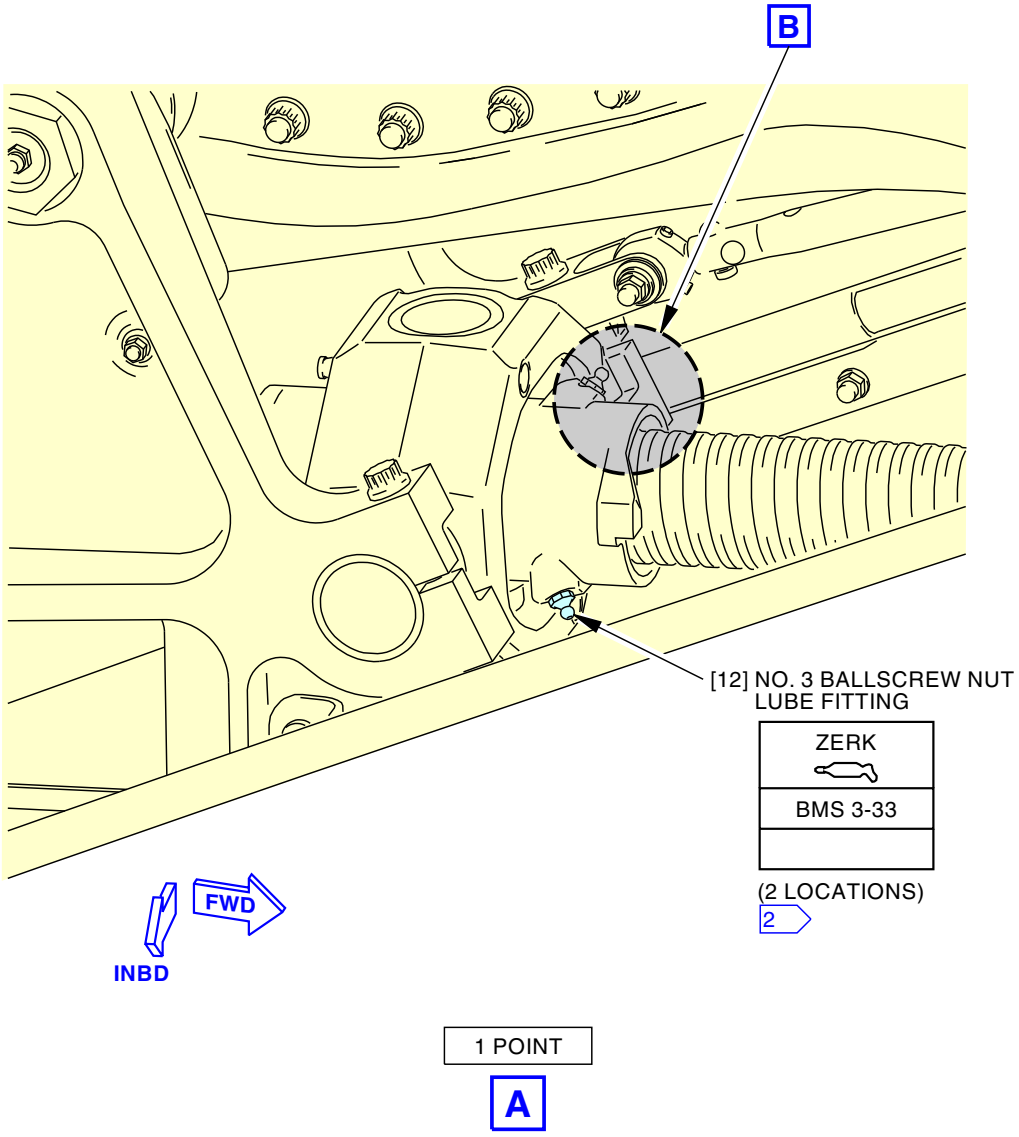
——— END OF TASK ———



(EXAMPLE)

2410874 S00061526550_V2

Inboard Flap Outboard Ballscrew and Gimbal Servicing
Figure 303/12-22-51-990-803 (Sheet 1 of 3)

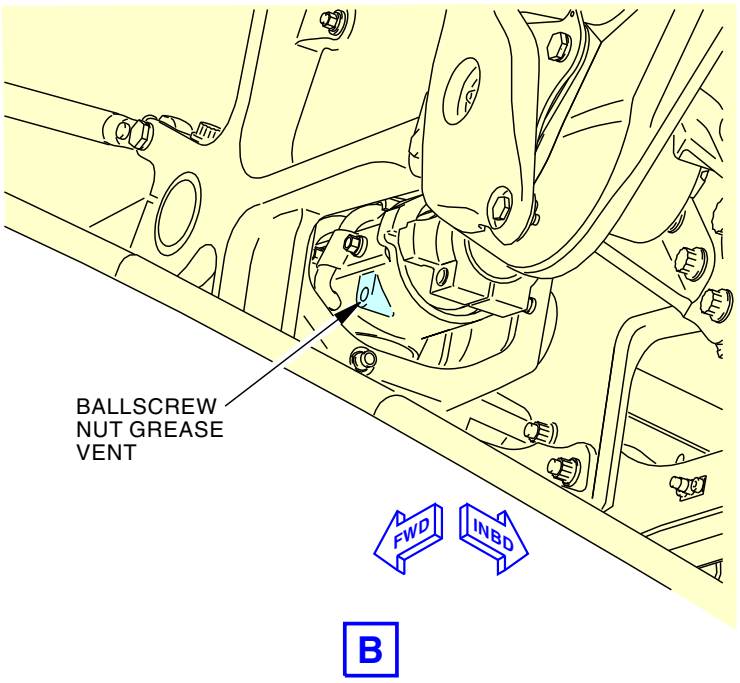


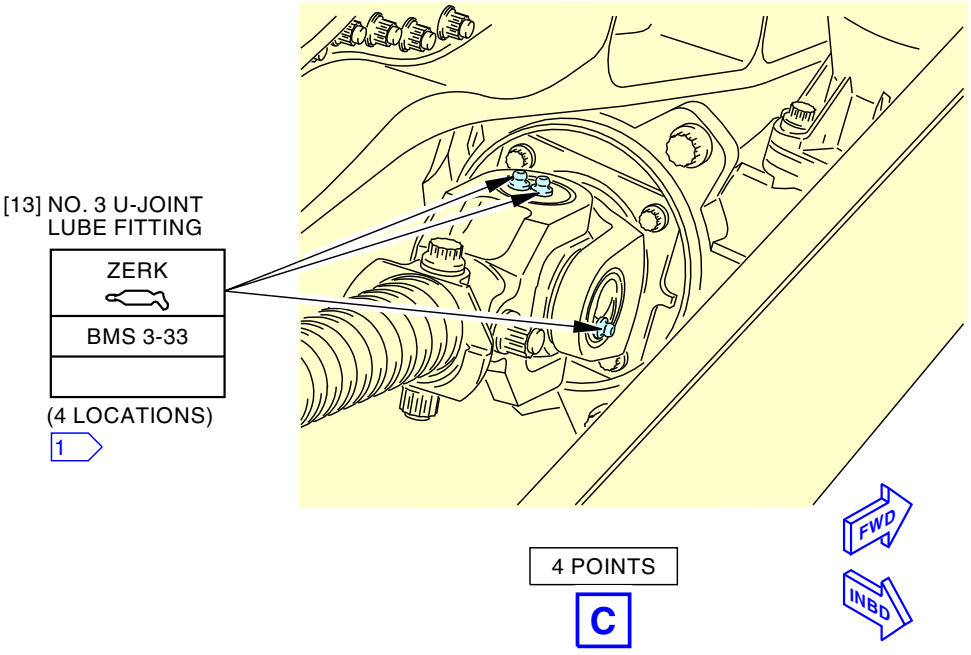
1 ONE MORE LUBE POINT IS ON THE OPPOSITE SIDE (NOT SHOWN).

2 THE BALLSCREW NUT HAS TWO LUBE FITTINGS. IT IS ONLY NECESSARY TO PUT GREASE ON ONE OF THEM.

2410875 S00061526551_V2

Inboard Flap Outboard Ballscrew and Gimbal Servicing
Figure 303/12-22-51-990-803 (Sheet 2 of 3)





2410876 S00061526552_V2

Inboard Flap Outboard Ballscrew and Gimbal Servicing
Figure 303/12-22-51-990-803 (Sheet 3 of 3)

TASK 12-22-51-640-804

5. Outboard Flap Inboard Ballscrew and Gimbal Lubrication

(Figure 304)

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
27-51-00-040-801	Trailing Edge Flap System Deactivation (P/B 201)
27-51-00-440-801	Trailing Edge Flap System Reactivation (P/B 201)
27-51-00-860-803	Extend the Trailing Edge Flaps (P/B 201)
27-51-00-860-804	Retract the Trailing Edge Flaps (P/B 201)

B. Consumable Materials

Reference	Description	Specification
D00633	Grease - Aircraft General Purpose	BMS3-33

C. Location Zones

Zone	Area
543	Left Wing - Fairing Flap Support No. 2
567	Left Wing - Outboard Flap
643	Right Wing - Fairing Flap Support No. 7
667	Right Wing - Outboard Flap

D. Prepare for the Lubrication

SUBTASK 12-22-51-860-005

(1) Extend the trailing edge flaps to the 40-unit position (TASK 27-51-00-860-803).

SUBTASK 12-22-51-040-004

(2) Do this task: Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801.

E. Outboard Flap Inboard Ballscrew and Gimbal Lubrication

SUBTASK 12-22-51-640-010

(1) This table supplies data for the subsequent lubrication steps:

Table 304/12-22-51-993-804 Outboard Flap Inboard Ballscrew and Gimbal Servicing

Item No.	Nomenclature	Lubricant	Method of Application	Number of Locations
14	No. 2 Ballscrew Nut Lube Fitting (No. 7 Ballscrew Nut is Equivalent)	grease, D00633	Zerk	1
15	No. 2 U-Joint Lube Fittings (No. 7 U-Joint is Equivalent)	grease, D00633	Zerk	4

SUBTASK 12-22-51-640-011

(2) Lubricate the ballscrew nut through the No. 2 ballscrew nut lube fitting [14] with grease, D00633.

NOTE: Put grease in the ballscrew nut until new grease comes out of the vent. The ballscrew nut has two lube fittings. It is only necessary to put grease on one of them.

SUBTASK 12-22-51-640-012

(3) Lubricate the U-joint with grease, D00633 through the four No. 2 U-joint lube fittings [15].

NOTE: There are four lubrication fittings on the U-joint. It is necessary to lubricate all of them.

F. Put the Airplane Back to Its Usual Condition

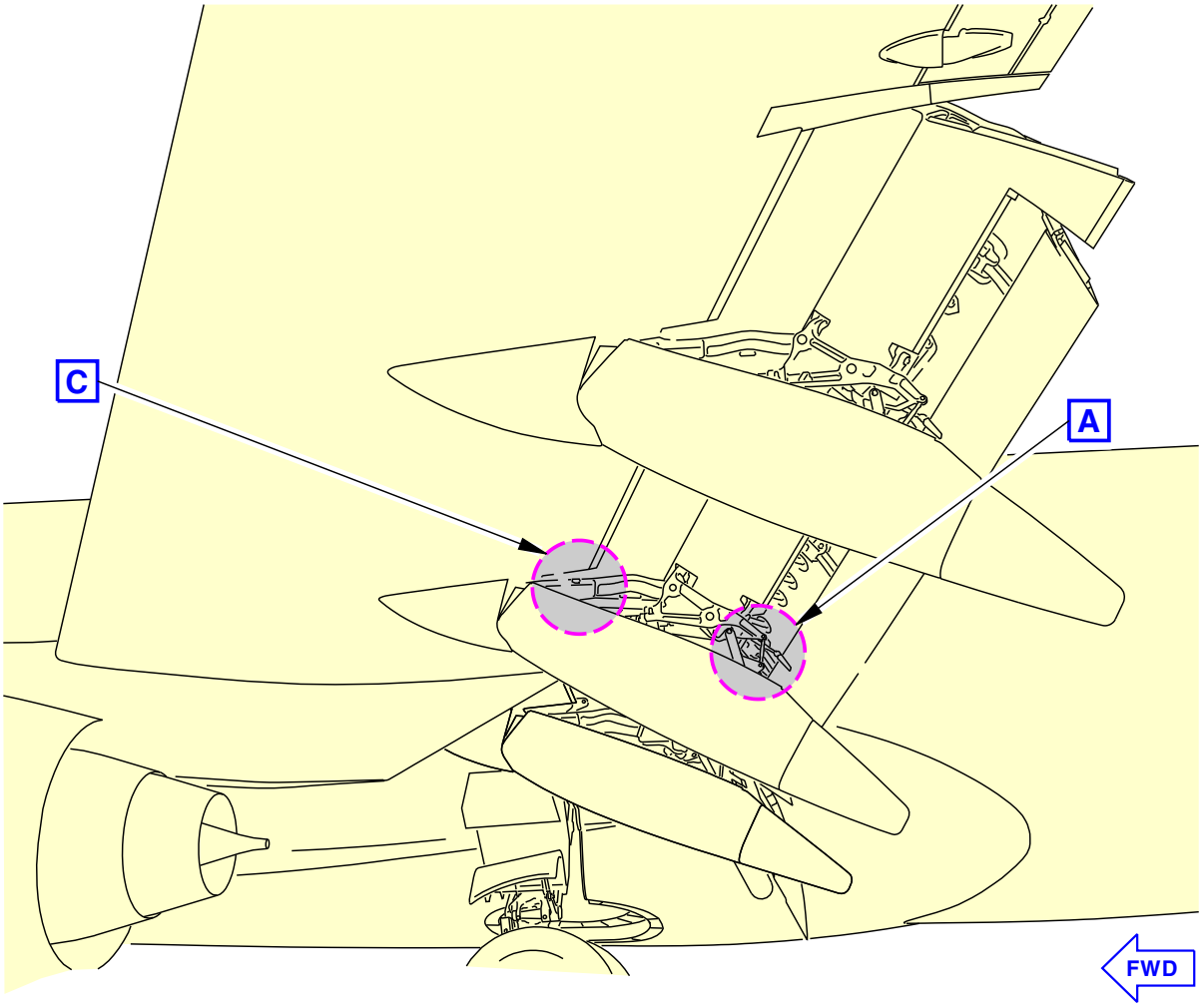
SUBTASK 12-22-51-440-004

(1) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

SUBTASK 12-22-51-860-006

(2) Retract the trailing edge flaps to the UP position (TASK 27-51-00-860-804).

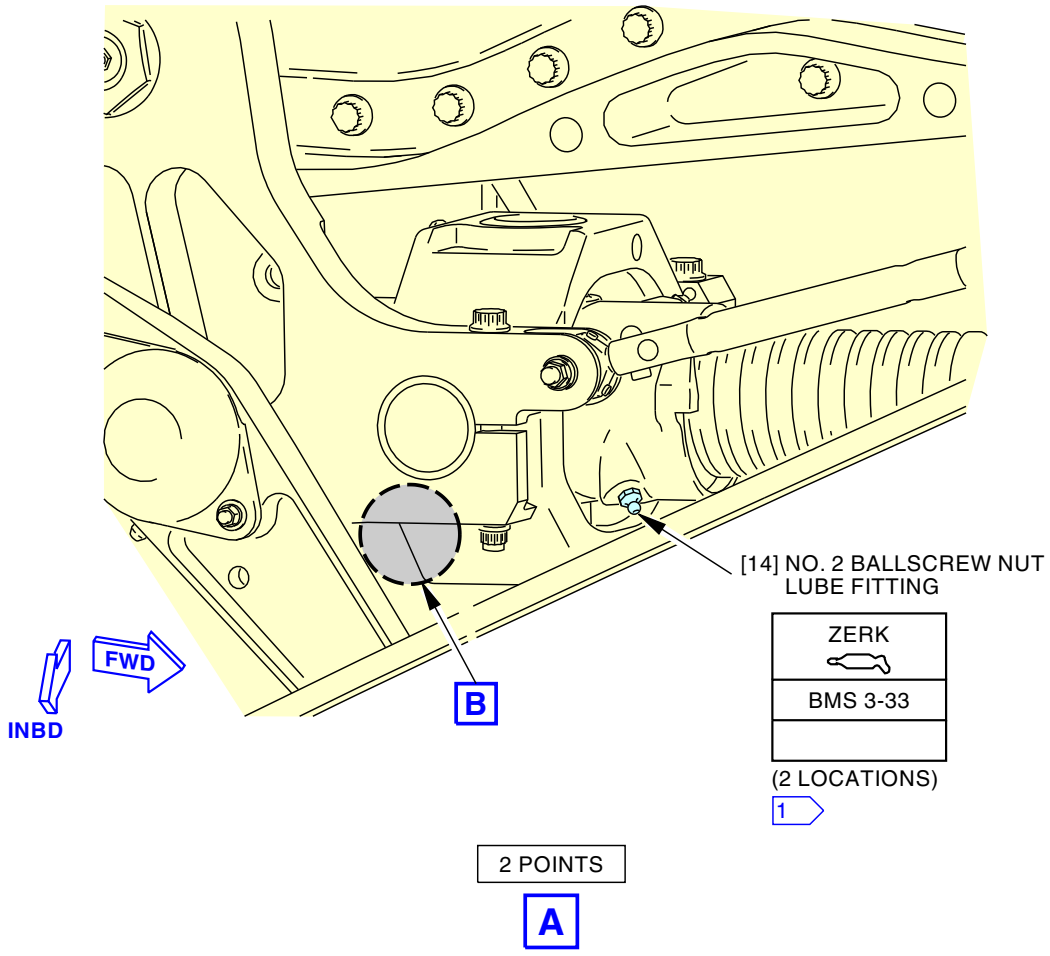
——— END OF TASK ———



(EXAMPLE)

2410877 S00061526554_V2

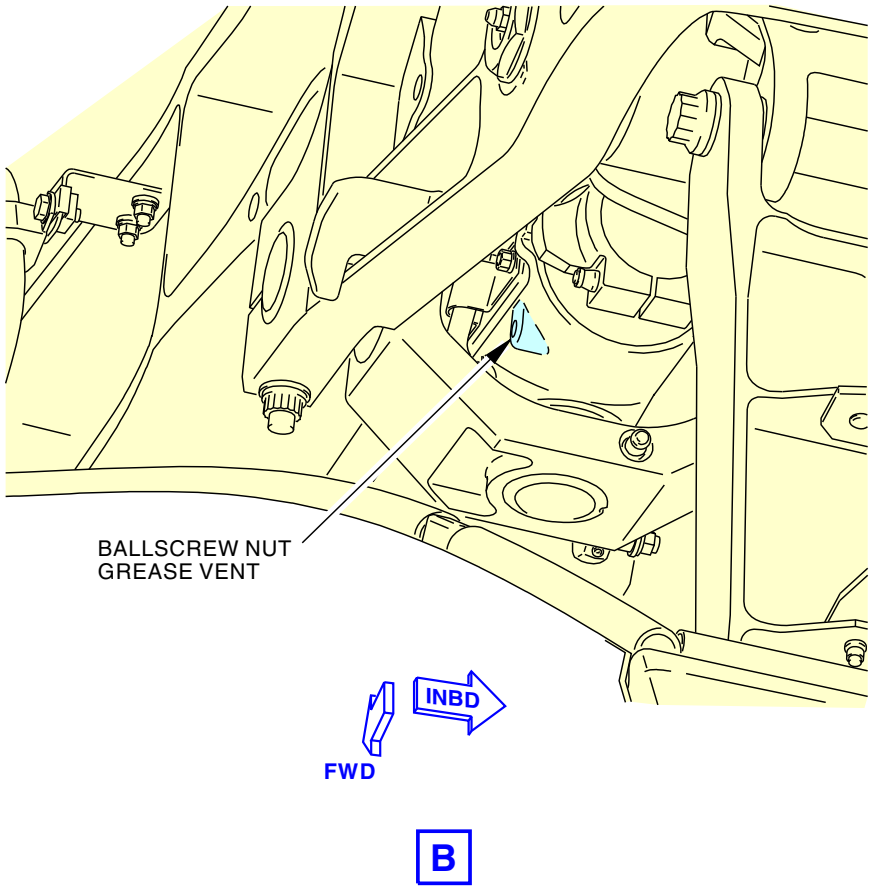
Outboard Flap Inboard Ballscrew and Gimbal Servicing
Figure 304/12-22-51-990-804 (Sheet 1 of 4)



1 THE BALLSCREW NUT HAS TWO LUBE FITTINGS. IT IS ONLY NECESSARY TO PUT GREASE ON ONE OF THEM.

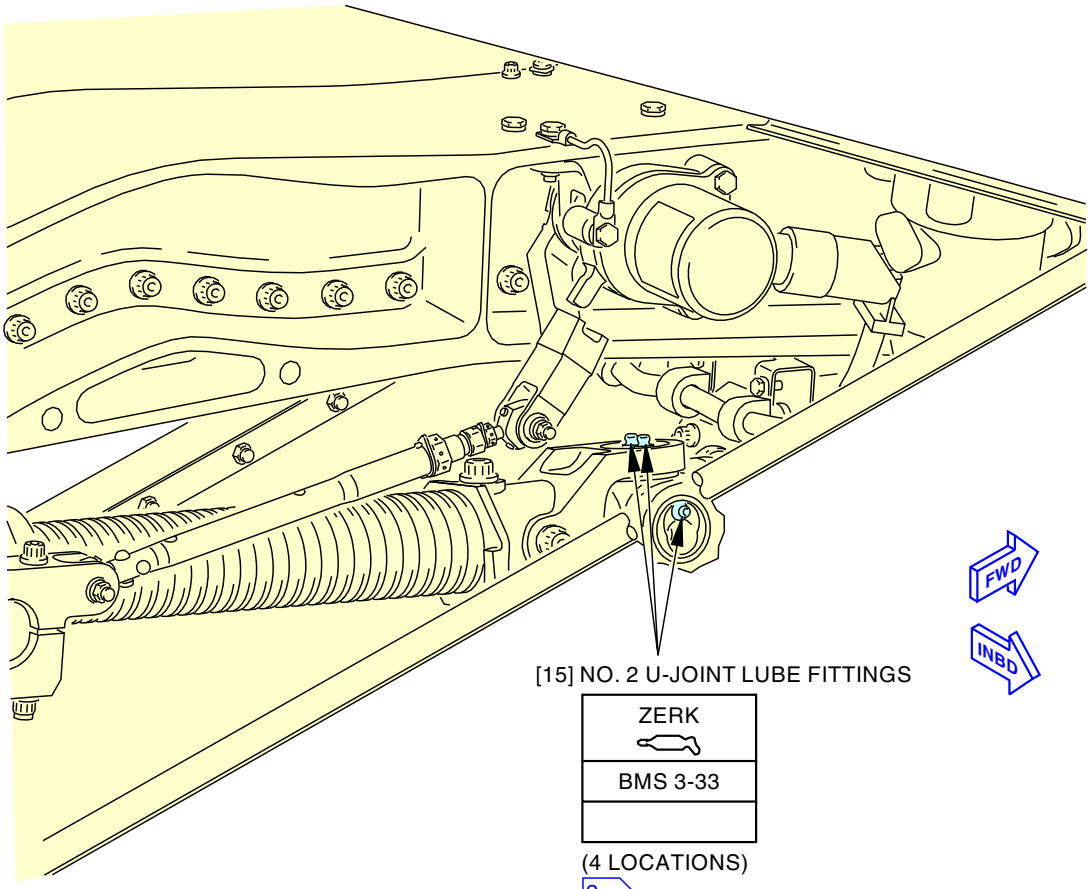
2410878 S00061526555_V2

Outboard Flap Inboard Ballscrew and Gimbal Servicing
Figure 304/12-22-51-990-804 (Sheet 2 of 4)



2410879 S00061526556_V1

Outboard Flap Inboard Ballscrew and Gimbal Servicing
Figure 304/12-22-51-990-804 (Sheet 3 of 4)



2 ONE MORE LUBE POINT IS ON THE OPPOSITE SIDE (NOT SHOWN).

2410880 S00061526557_V2

Outboard Flap Inboard Ballscrew and Gimbal Servicing
Figure 304/12-22-51-990-804 (Sheet 4 of 4)

TASK 12-22-51-640-805

6. Outboard Flap Outboard Ballscrew and Gimbal Lubrication

(Figure 305)

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
27-51-00-040-801	Trailing Edge Flap System Deactivation (P/B 201)
27-51-00-440-801	Trailing Edge Flap System Reactivation (P/B 201)
27-51-00-860-803	Extend the Trailing Edge Flaps (P/B 201)
27-51-00-860-804	Retract the Trailing Edge Flaps (P/B 201)

B. Consumable Materials

Reference	Description	Specification
D00633	Grease - Aircraft General Purpose	BMS3-33

C. Location Zones

Zone	Area
544	Left Wing - Fairing Flap Support No. 1
567	Left Wing - Outboard Flap
644	Right Wing - Fairing Flap Support No. 8
667	Right Wing - Outboard Flap

D. Prepare for the Lubrication

SUBTASK 12-22-51-860-007

(1) Extend the trailing edge flaps to the 40-unit position (TASK 27-51-00-860-803).

SUBTASK 12-22-51-040-005

(2) Do this task: Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801.

E. Outboard Flap Outboard Ballscrew and Gimbal Lubrication

SUBTASK 12-22-51-640-013

(1) This table supplies data for the subsequent lubrication steps:

Table 305/12-22-51-993-805 Outboard Flap Outboard Ballscrew and Gimbal Servicing (Fig. 305)

Item No.	Nomenclature	Lubricant	Method of Application	Number of Locations
16	No. 1 Ballscrew Nut Lube Fittings (No. 8 Ballscrew Nut is Equivalent)	grease, D00633	Zerk	1
17	No. 1 U-Joint Lube Fittings (No. 8 U-Joint is Equivalent)	grease, D00633	Zerk	4

SUBTASK 12-22-51-640-014

(2) Lubricate the No. 1 ballscrew nut lube fitting [16] with grease, D00633.

NOTE: Put grease in the ballscrew nut until new grease comes out of the vent. The ballscrew nut has two grease fittings. It is only necessary to lubricate one of them.

SUBTASK 12-22-51-640-015

(3) Lubricate the four No. 1 U-joint lube fittings [17] with grease, D00633.

NOTE: There are four lubrication fittings on the U-joint. It is necessary to lubricate all of them.

F. Put the Airplane Back to Its Usual Condition

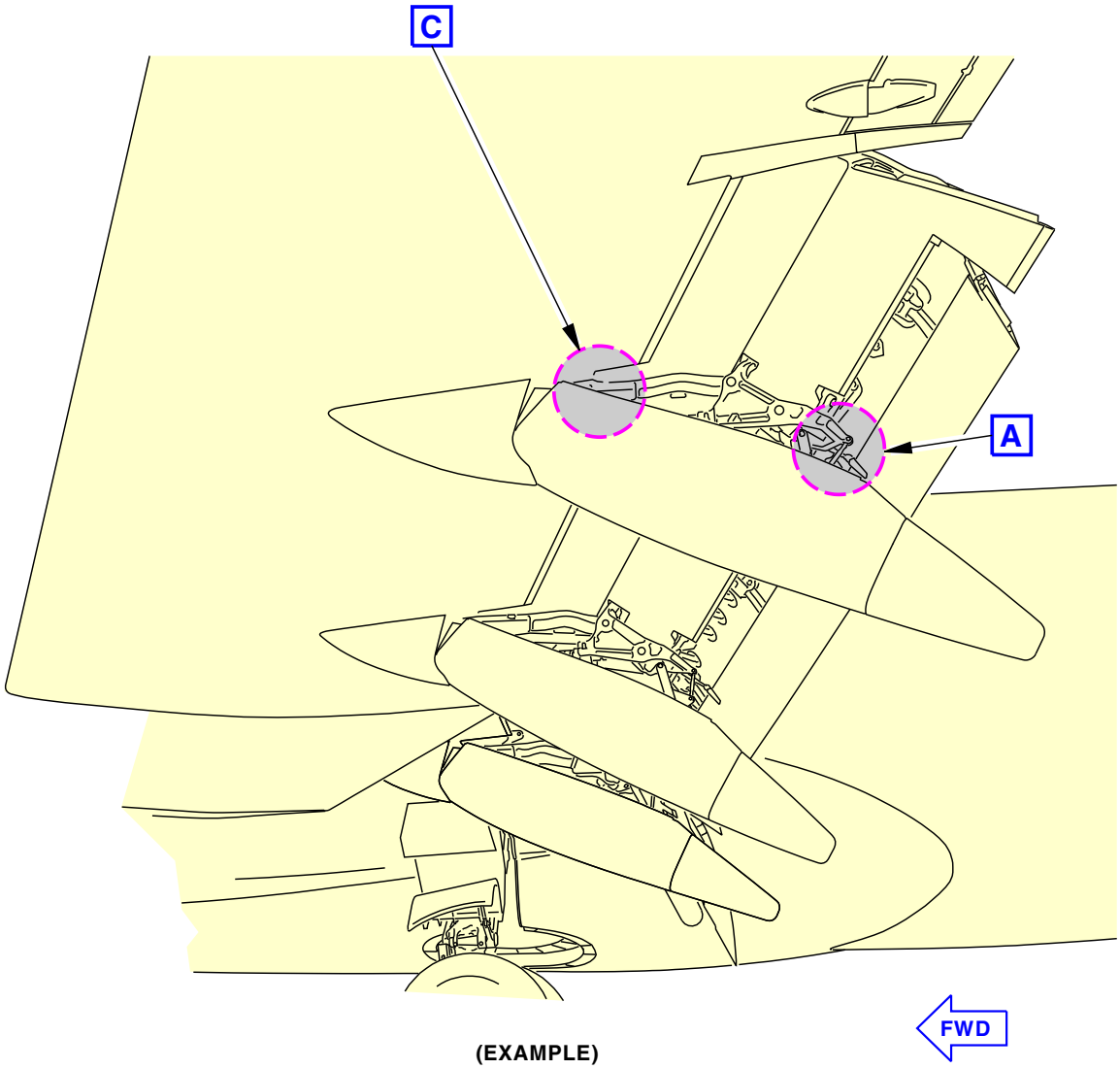
SUBTASK 12-22-51-440-005

(1) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

SUBTASK 12-22-51-860-008

(2) Retract the trailing edge flaps to the UP position (TASK 27-51-00-860-804).

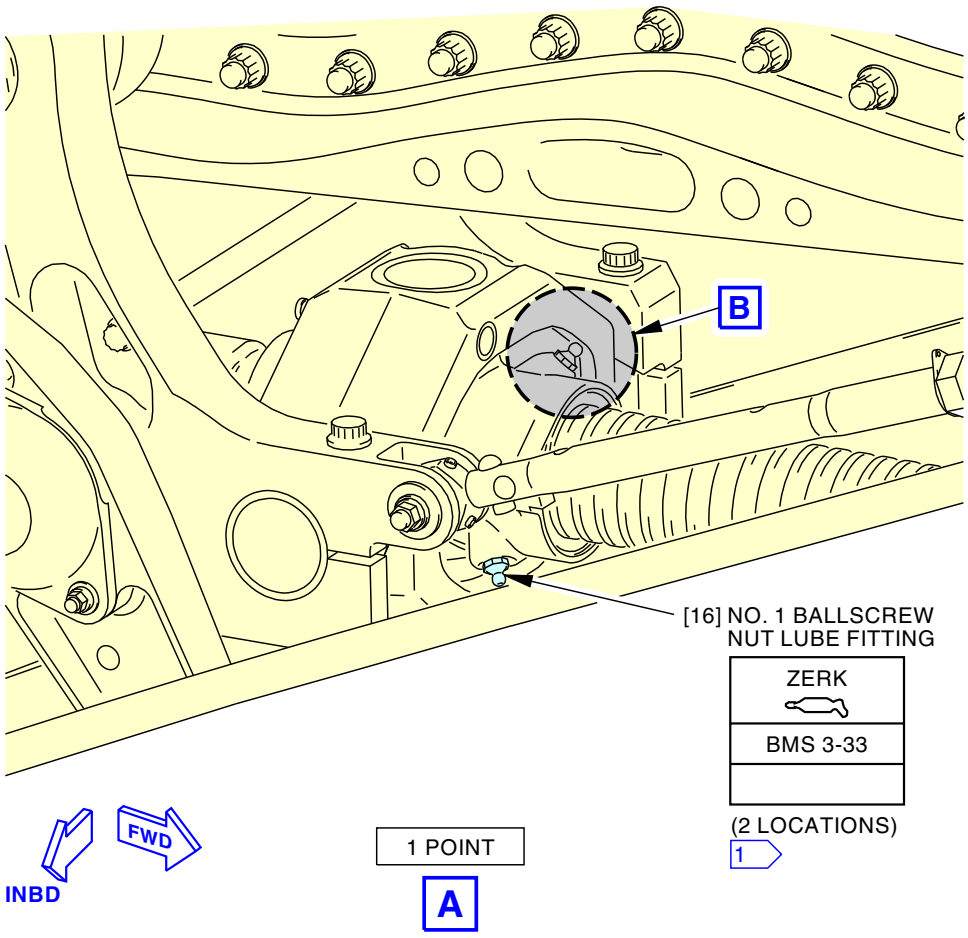
——— END OF TASK ———



(EXAMPLE)

2410881 S00061526559_V2

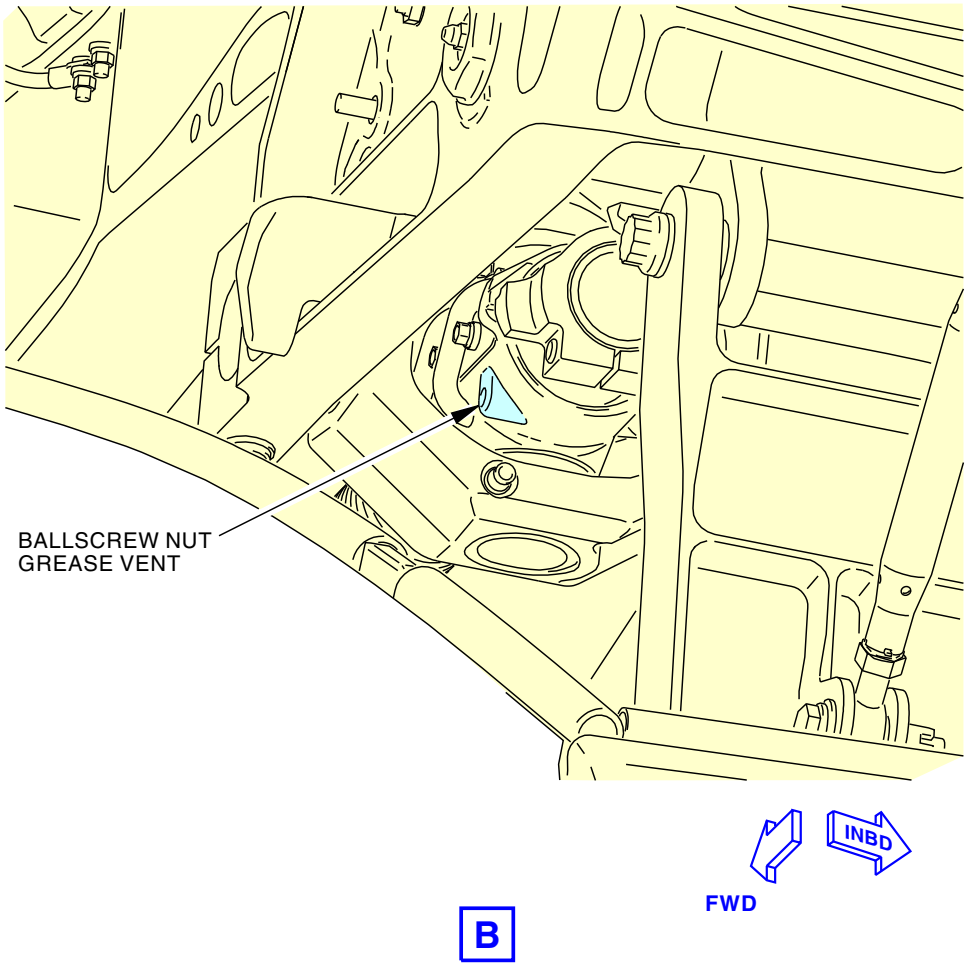
Outboard Flap Outboard Ballscrew and Gimbal Servicing
Figure 305/12-22-51-990-805 (Sheet 1 of 4)



1 THE BALLSCREW NUT HAS TWO LUBE FITTINGS. IT IS ONLY NECESSARY TO PUT GREASE ON ONE OF THEM.

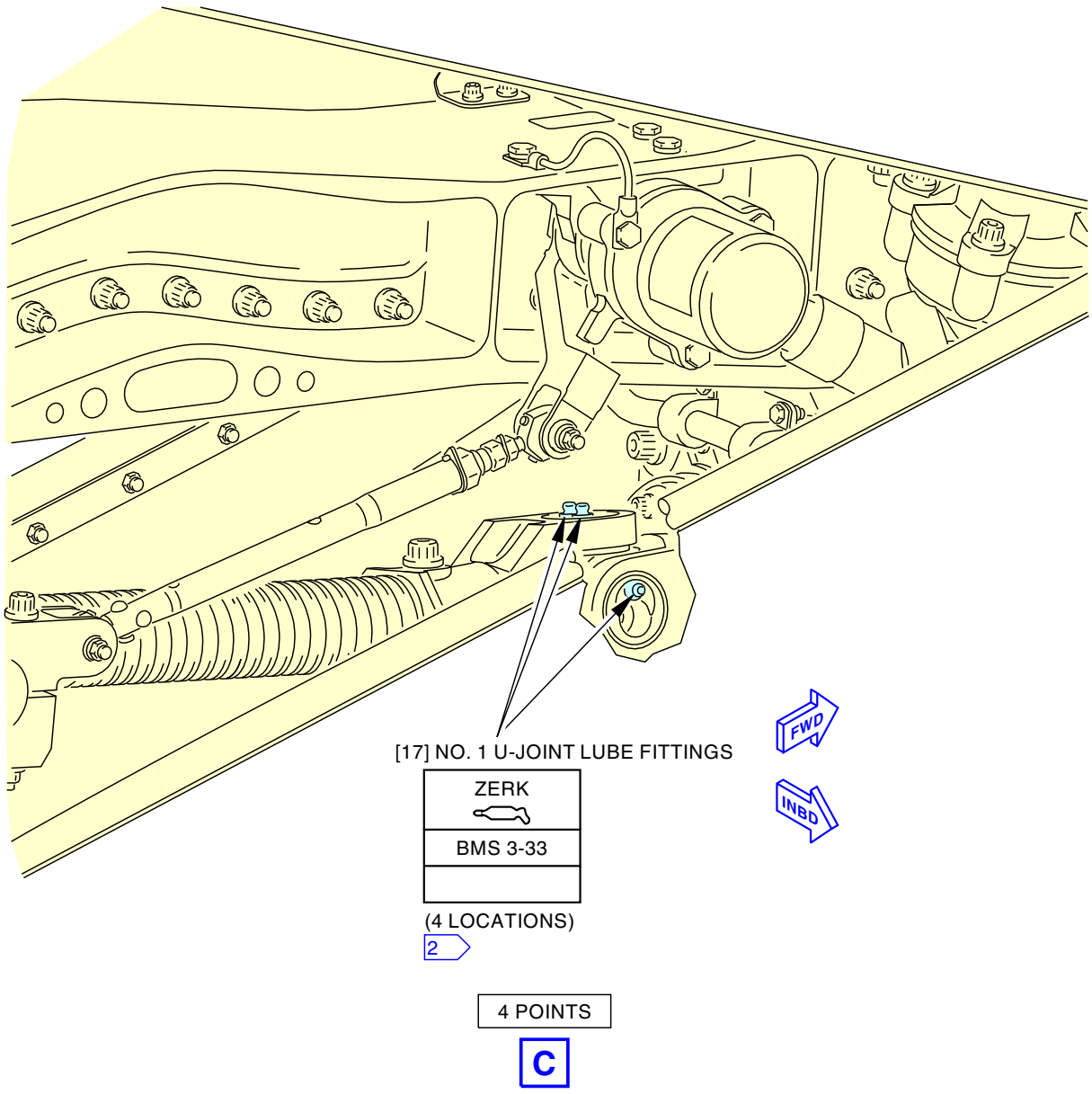
2410882 S00061526560_V2

Outboard Flap Outboard Ballscrew and Gimbal Servicing
Figure 305/12-22-51-990-805 (Sheet 2 of 4)



2410883 S00061526561_V1

Outboard Flap Outboard Ballscrew and Gimbal Servicing
Figure 305/12-22-51-990-805 (Sheet 3 of 4)



2 ONE MORE LUBE POINT IS ON THE OPPOSITE SIDE (NOT SHOWN).

2410884 S00061526562_V2

Outboard Flap Outboard Ballscrew and Gimbal Servicing
Figure 305/12-22-51-990-805 (Sheet 4 of 4)

TASK 12-22-51-640-806

7. U-Joint and Tee Angle Gearbox Lubrication

(Table 306, Figure 306)

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
27-51-00-040-801	Trailing Edge Flap System Deactivation (P/B 201)
27-51-00-440-801	Trailing Edge Flap System Reactivation (P/B 201)

B. Consumable Materials

Reference	Description	Specification
D00633	Grease - Aircraft General Purpose	BMS3-33

C. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right

D. Prepare for the Lubrication

SUBTASK 12-22-51-040-006

(1) Do this task: Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801.

E. U-Joint and Tee Angle Gearbox Lubrication

(Table 306)

SUBTASK 12-22-51-640-016

(1) This table supplies data for the subsequent lubrication steps:

Table 306/12-22-51-993-806 U-Joint and Tee Angle Gearbox Servicing

Item No.	Nomenclature	Lubricant	Method of Application	Number of Locations
18	Tee Angle Gearbox Lube Point	grease, D00633	Flush	1
19	U-Joint Lube Points	grease, D00633	Flush	8

SUBTASK 12-22-51-640-017

(2) Lubricate the U-joint lube points [19] with grease, D00633.

SUBTASK 12-22-51-640-018

(3) Lubricate the tee angle gearbox lube point [18] with grease, D00633.

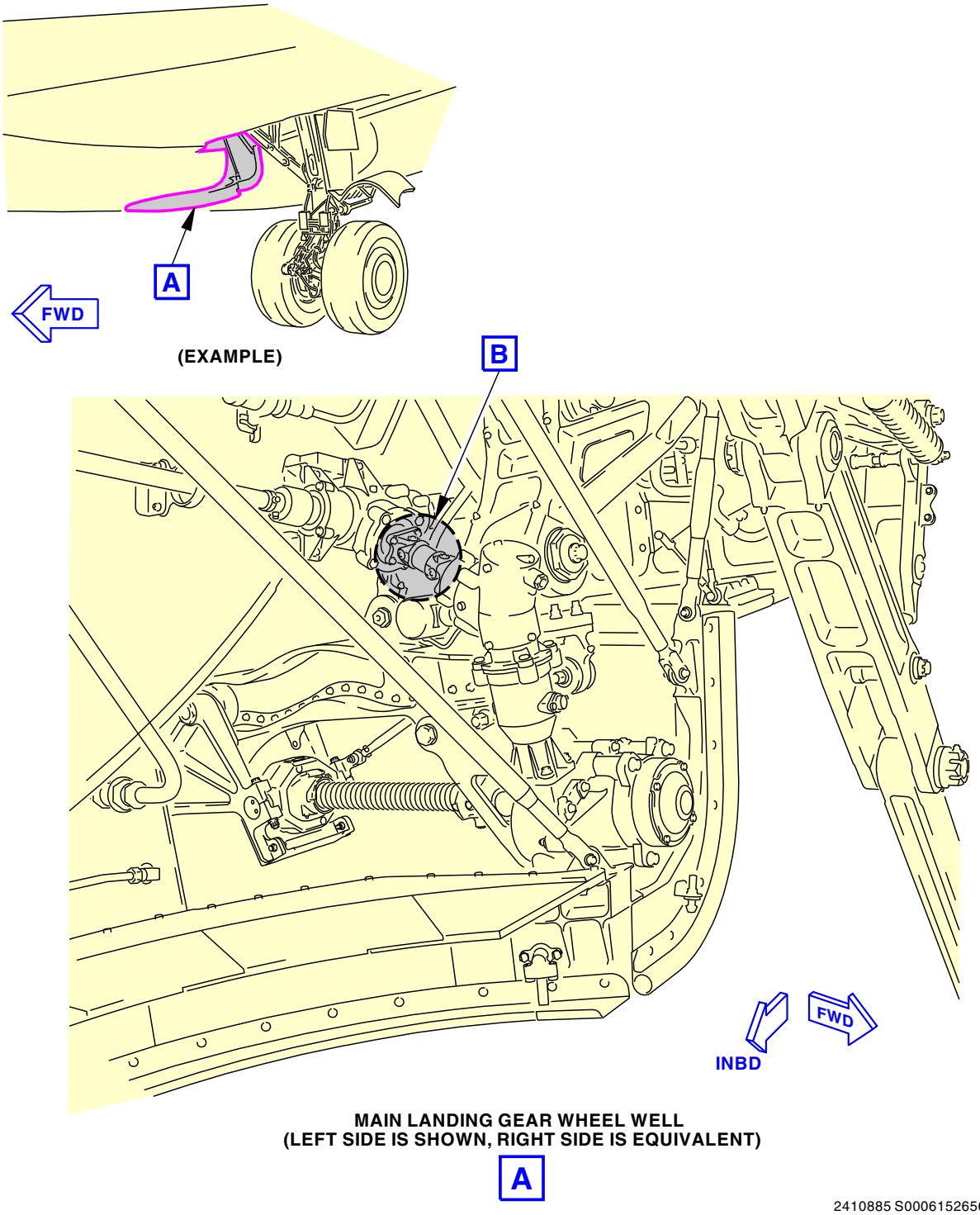
NOTE: Put grease in the tee angle gearbox until grease comes out of the vent.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 12-22-51-440-006

(1) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

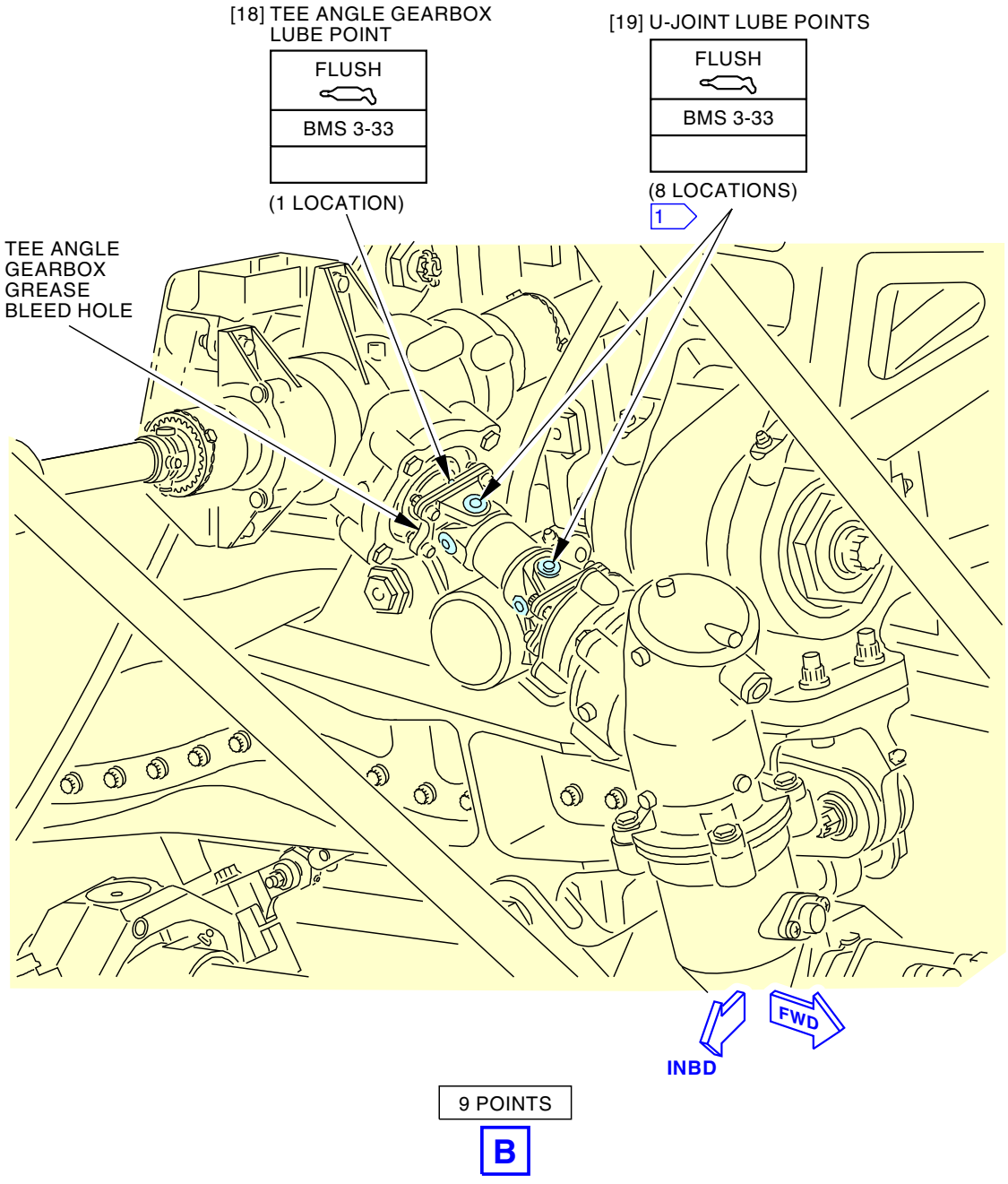
——— END OF TASK ———



MAIN LANDING GEAR WHEEL WELL
(LEFT SIDE IS SHOWN, RIGHT SIDE IS EQUIVALENT)

2410885 S00061526564_V2

U-Joint and Tee Angle Gearbox Servicing
Figure 306/12-22-51-990-806 (Sheet 1 of 2)



1 4 LOCATIONS ON SOME AIRPLANES

2410886 S00061526565_V2

U-Joint and Tee Angle Gearbox Servicing
Figure 306/12-22-51-990-806 (Sheet 2 of 2)

TASK 12-22-51-640-807

8. Inboard Flap Inboard Skew Mechanism Lubrication

(Figure 307)

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
27-51-00-040-801	Trailing Edge Flap System Deactivation (P/B 201)
27-51-00-440-801	Trailing Edge Flap System Reactivation (P/B 201)

B. Consumable Materials

Reference	Description	Specification
D00633	Grease - Aircraft General Purpose	BMS3-33

C. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right

D. Prepare for the Lubrication

SUBTASK 12-22-51-040-007

(1) Do this task: Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801.

E. Inboard Flap Inboard Skew Mechanism Lubrication

SUBTASK 12-22-51-640-019

(1) This table supplies data for the subsequent lubrication steps:

Table 307/12-22-51-993-807 Inboard Flap Inboard Skew Mechanism Servicing

Item No.	Nomenclature	Lubricant	Method of Application	Number of Locations
20	Skew Input Assembly Lube Fitting	grease, D00633	Zerk	1
21	Skew Control Rod Lube Points	grease, D00633	Flush	2

SUBTASK 12-22-51-640-020

(2) Lubricate the flap skew input assembly lube fitting [20] with grease, D00633.

SUBTASK 12-22-51-640-021

(3) Lubricate the skew control rod end lube points [21] with grease, D00633.

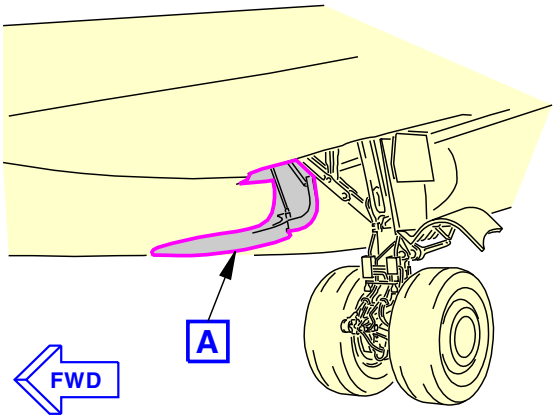
NOTE: The rod ends on the control rod are fitted with two lube fittings. It is only necessary to lubricate the fitting which you can get access to.

F. Put the Airplane Back to Its Usual Condition

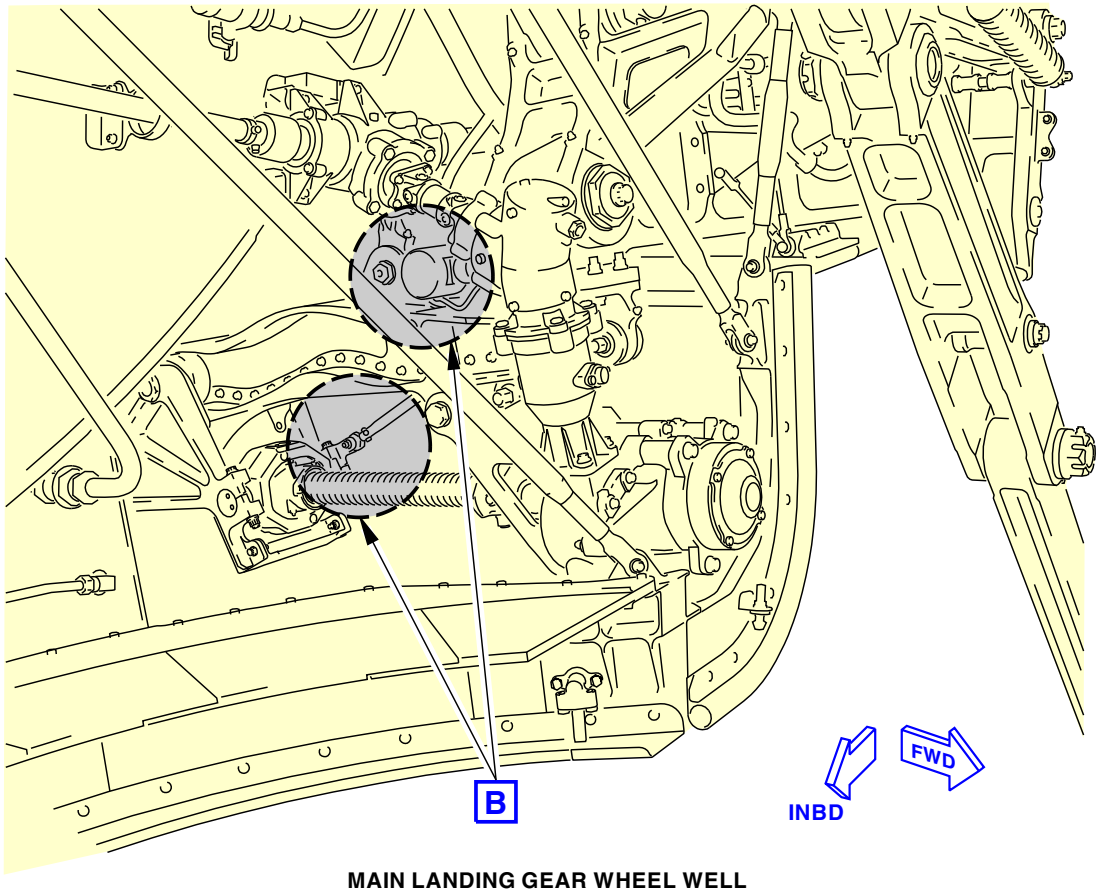
SUBTASK 12-22-51-440-007

(1) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

——— END OF TASK ———



(EXAMPLE)

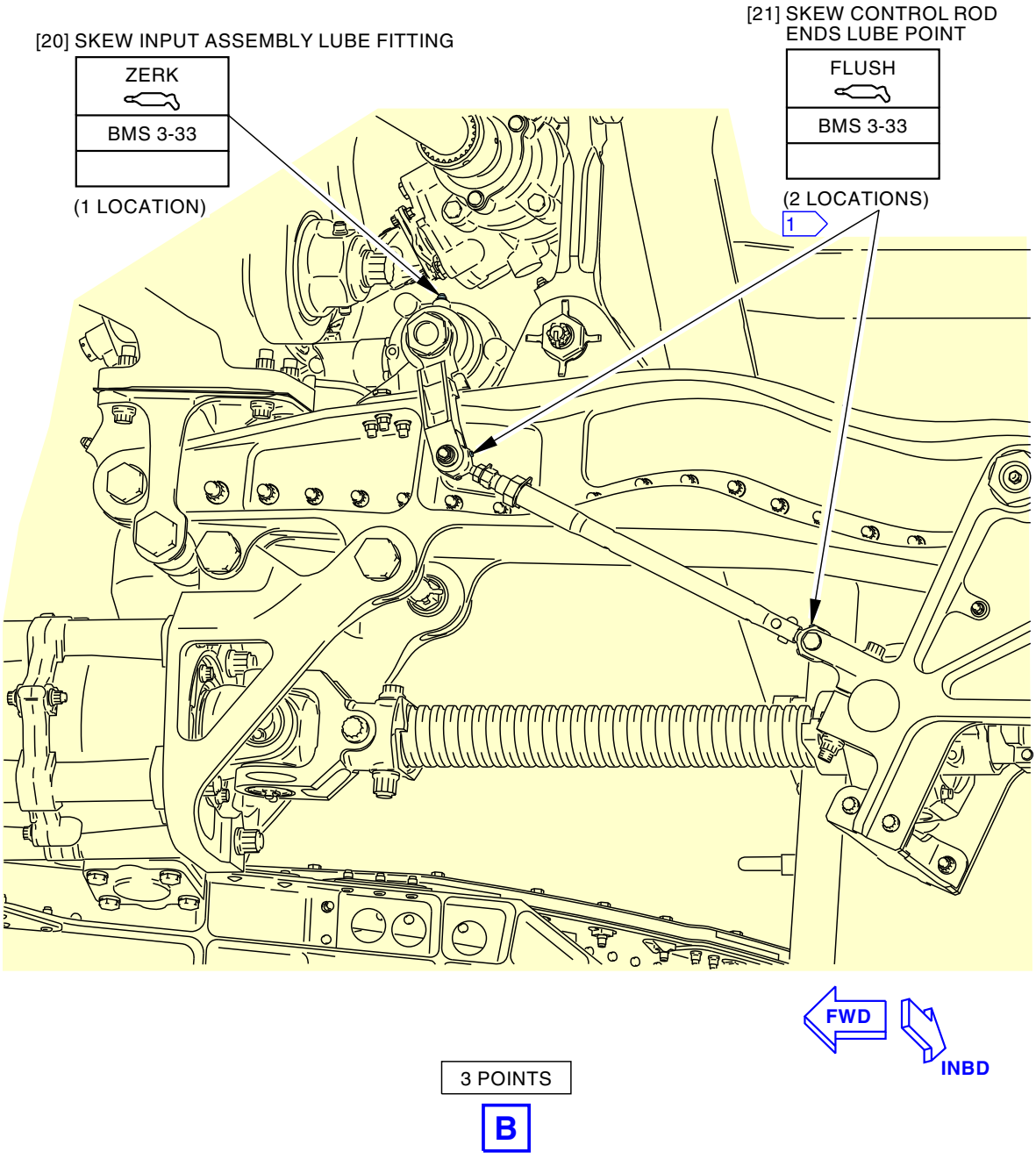


MAIN LANDING GEAR WHEEL WELL
(LEFT SIDE IS SHOWN, RIGHT SIDE IS EQUIVALENT)

A

2410887 S00061526567_V2

Inboard Flap Inboard Skew Mechanism Servicing
Figure 307/12-22-51-990-807 (Sheet 1 of 2)



1 THE ROD ENDS ON THE CONTROL ROD EACH HAVE TWO LUBE POINTS. IT IS ONLY NECESSARY TO GREASE ONETHAT YOU CAN GET ACCESS TO.

2410888 S00061526568_V2

Inboard Flap Inboard Skew Mechanism Servicing
Figure 307/12-22-51-990-807 (Sheet 2 of 2)

TASK 12-22-51-640-808

9. Inboard Flap Outboard Skew Mechanism Lubrication

(Figure 308)

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
27-51-00-040-801	Trailing Edge Flap System Deactivation (P/B 201)
27-51-00-440-801	Trailing Edge Flap System Reactivation (P/B 201)
27-51-00-860-803	Extend the Trailing Edge Flaps (P/B 201)
27-51-00-860-804	Retract the Trailing Edge Flaps (P/B 201)

B. Consumable Materials

Reference	Description	Specification
D00633	Grease - Aircraft General Purpose	BMS3-33

C. Location Zones

Zone	Area
542	Left Wing - Fairing Flap Support No. 3
553	Left Wing - Inboard Flap
642	Right Wing - Fairing Flap Support No. 6
653	Right Wing - Inboard Flap

D. Prepare for the Lubrication

SUBTASK 12-22-51-860-009

(1) Extend the trailing edge flaps to the 40-unit position (TASK 27-51-00-860-803).

SUBTASK 12-22-51-040-008

(2) Do this task: Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801.

E. Inboard Flap Outboard Skew Mechanism Lubrication

SUBTASK 12-22-51-640-022

(1) This table supplies data for the subsequent lubrication steps:

Table 308/12-22-51-993-808 Inboard Flap Outboard Skew Mechanism Servicing

Item No.	Nomenclature	Lubricant	Method of Application	Number of Locations
22	Skew Input Assembly Lube Fitting	grease, D00633	Zerk	1
23	Skew Control Rod Lube Points	grease, D00633	Flush	2

SUBTASK 12-22-51-640-023

(2) Lubricate the flap skew input assembly lube fitting [22] with grease, D00633.

SUBTASK 12-22-51-640-024

(3) Lubricate the rod ends on the skew control rod ends lube points [23] with grease, D00633.

NOTE: The rod ends on the control rod are fitted with two grease fittings. It is only necessary to lubricate the fitting which you can get access to.

F. Put the Airplane Back to Its Usual Condition

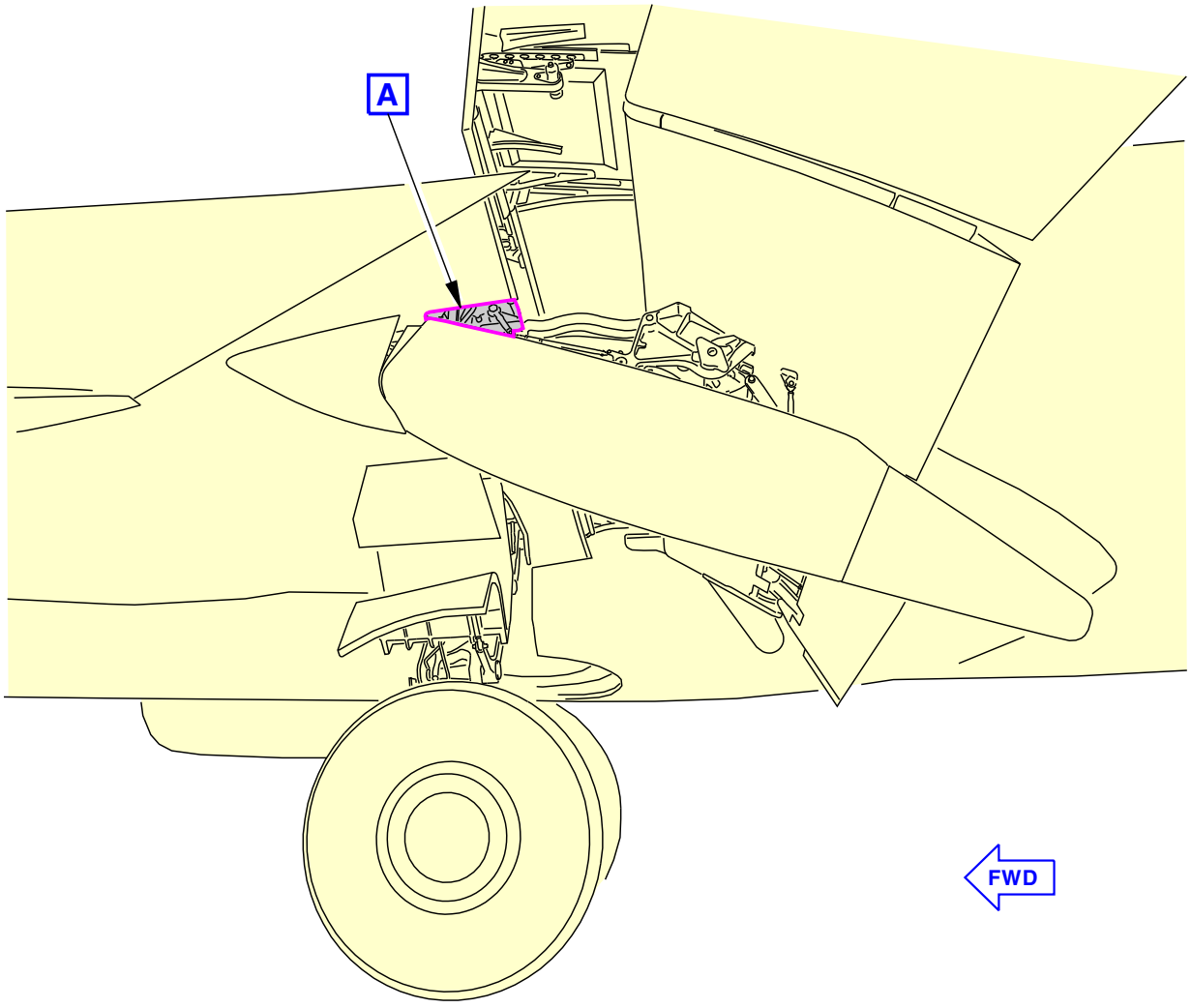
SUBTASK 12-22-51-440-008

(1) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

SUBTASK 12-22-51-860-010

(2) Retract the trailing edge flaps to the UP position (TASK 27-51-00-860-804).

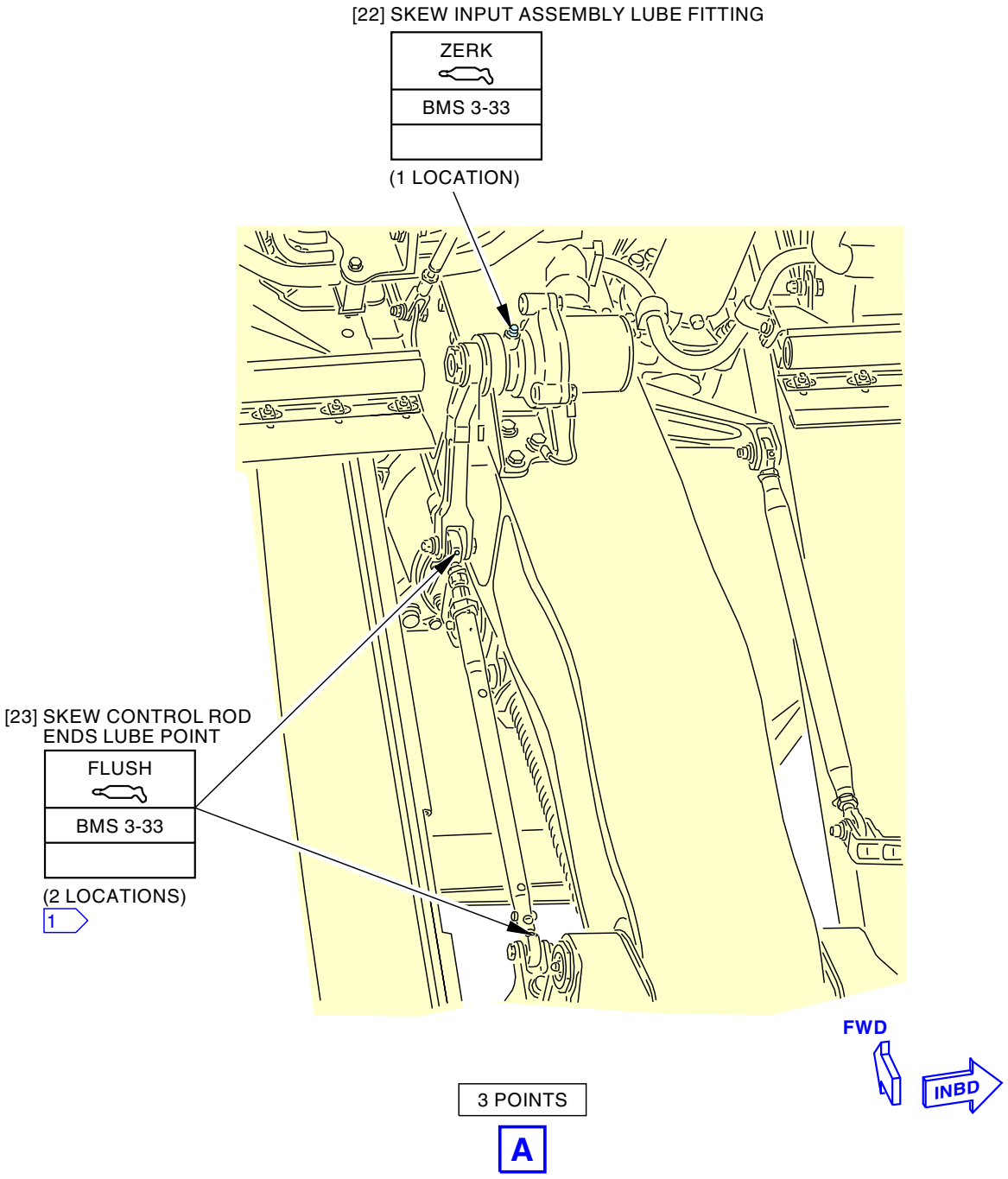
——— END OF TASK ———



(EXAMPLE)

2410889 S00061526570_V2

Inboard Flap Outboard Skew Mechanism Servicing
Figure 308/12-22-51-990-808 (Sheet 1 of 2)



1 THE ROD ENDS ON THE CONTROL ROD EACH HAVE TWO LUBE POINTS. IT IS ONLY NECESSARY TO GREASE ONE THAT YOU CAN GET ACCESS TO.

2410890 S00061526571_V2

Inboard Flap Outboard Skew Mechanism Servicing
Figure 308/12-22-51-990-808 (Sheet 2 of 2)

TASK 12-22-51-640-809

10. Outboard Flap Inboard Skew Mechanism Lubrication

(Figure 309)

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
27-51-00-040-801	Trailing Edge Flap System Deactivation (P/B 201)
27-51-00-440-801	Trailing Edge Flap System Reactivation (P/B 201)
27-51-00-860-803	Extend the Trailing Edge Flaps (P/B 201)
27-51-00-860-804	Retract the Trailing Edge Flaps (P/B 201)

B. Consumable Materials

Reference	Description	Specification
D00633	Grease - Aircraft General Purpose	BMS3-33

C. Location Zones

Zone	Area
543	Left Wing - Fairing Flap Support No. 2
567	Left Wing - Outboard Flap
643	Right Wing - Fairing Flap Support No. 7
667	Right Wing - Outboard Flap

D. Prepare for the Lubrication

SUBTASK 12-22-51-860-011

(1) Extend the trailing edge flaps to the 40-unit position (TASK 27-51-00-860-803).

SUBTASK 12-22-51-040-009

(2) Do this task: Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801.

E. Outboard Flap Inboard Skew Mechanism Lubrication

SUBTASK 12-22-51-640-025

(1) This table supplies data for the subsequent lubrication steps:

Table 309/12-22-51-993-809 Outboard Flap Inboard Skew Mechanism Servicing

Item No.	Nomenclature	Lubricant	Method of Application	Number of Locations
24	Skew Control Rod Lube Points	grease, D00633	Flush	2
25	Skew Input Assembly Lube Fitting	grease, D00633	Zerk	1

SUBTASK 12-22-51-640-026

(2) Lubricate the flap skew input assembly lube fitting [25] with grease, D00633.

SUBTASK 12-22-51-640-027

(3) Lubricate the skew control rod ends lube points [24] with grease, D00633.

NOTE: The rod ends on the control rod are fitted with two grease fittings. It is only necessary to lubricate the fitting which you can get access to.

F. Put the Airplane Back to Its Usual Condition

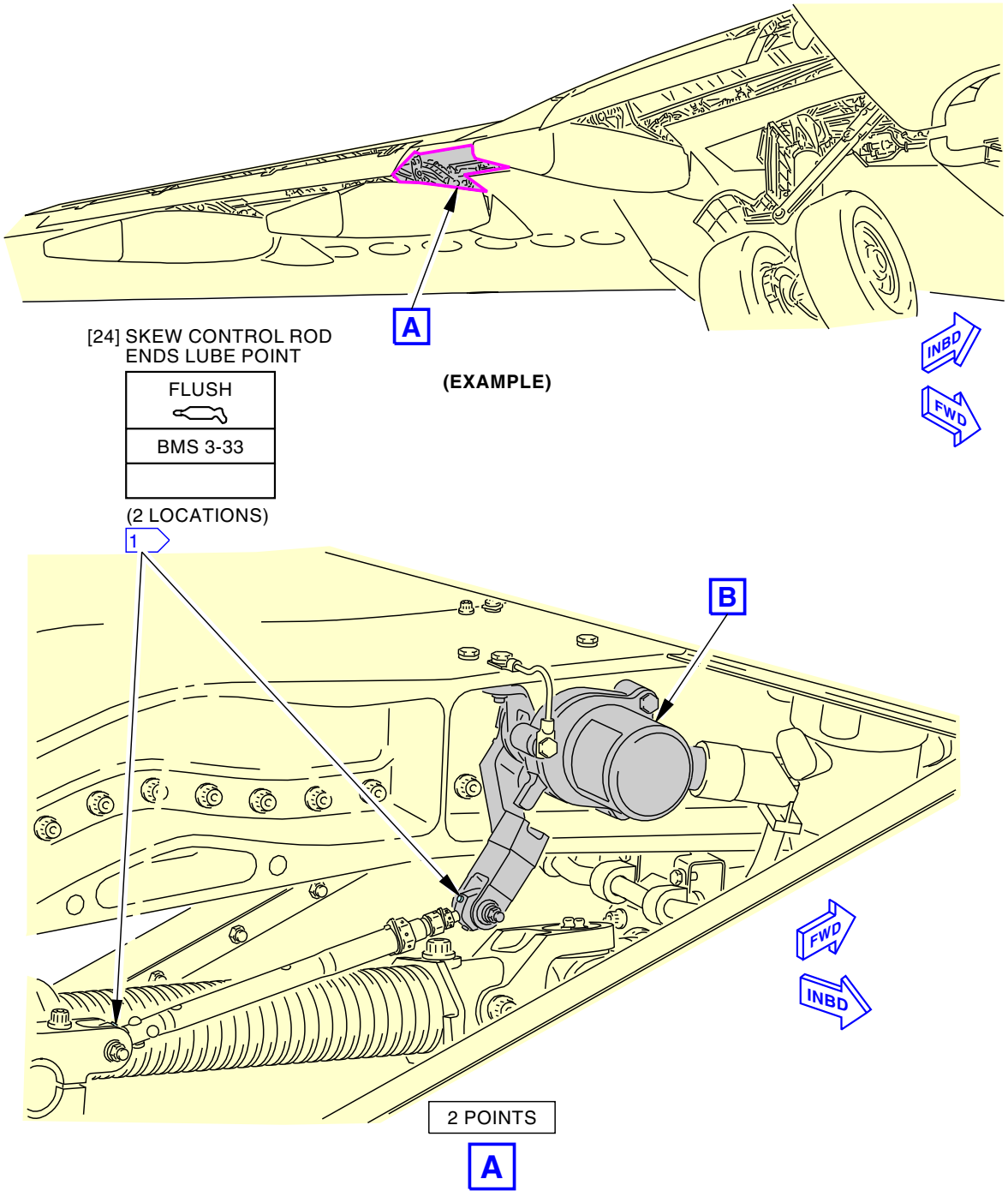
SUBTASK 12-22-51-440-009

(1) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

SUBTASK 12-22-51-860-012

(2) Retract the trailing edge flaps to the UP position (TASK 27-51-00-860-804).

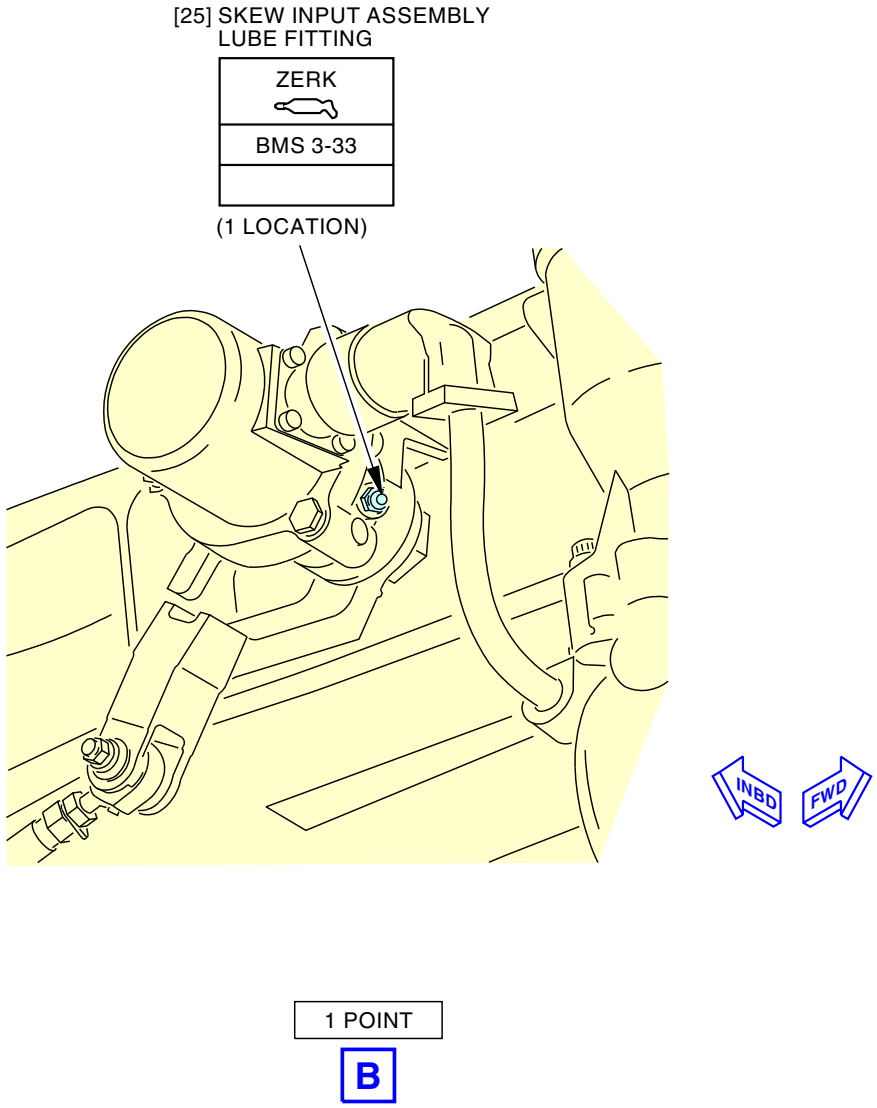
——— END OF TASK ———



1 THE ROD ENDS ON THE CONTROL ROD EACH HAVE TWO LUBE POINTS. IT IS ONLY NECESSARY TO GREASE ONE THAT YOU CAN GET ACCESS TO.

2410891 S00061526573_V3

Outboard Flap Inboard Skew Mechanism Servicing
Figure 309/12-22-51-990-809 (Sheet 1 of 2)



2410892 S00061526574_V2

Outboard Flap Inboard Skew Mechanism Servicing
Figure 309/12-22-51-990-809 (Sheet 2 of 2)

TASK 12-22-51-640-810

11. Outboard Flap Outboard Skew Mechanism Lubrication

(Figure 310)

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
27-51-00-040-801	Trailing Edge Flap System Deactivation (P/B 201)
27-51-00-440-801	Trailing Edge Flap System Reactivation (P/B 201)
27-51-00-860-803	Extend the Trailing Edge Flaps (P/B 201)
27-51-00-860-804	Retract the Trailing Edge Flaps (P/B 201)

B. Consumable Materials

Reference	Description	Specification
D00633	Grease - Aircraft General Purpose	BMS3-33

C. Location Zones

Zone	Area
544	Left Wing - Fairing Flap Support No. 1
567	Left Wing - Outboard Flap
644	Right Wing - Fairing Flap Support No. 8
667	Right Wing - Outboard Flap

D. Prepare for the Lubrication

SUBTASK 12-22-51-860-013

(1) Extend the trailing edge flaps to the 40-unit position (TASK 27-51-00-860-803).

SUBTASK 12-22-51-040-010

(2) Do this task: Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801.

E. Outboard Flap Outboard Skew Mechanism Lubrication

SUBTASK 12-22-51-640-028

(1) This table supplies data for the subsequent lubrication steps:

Table 310/12-22-51-993-810 Outboard Flap Outboard Skew Mechanism Servicing

Item No.	Nomenclature	Lubricant	Method of Application	Number of Locations
26	Skew Control Rod Lube Points	grease, D00633	Flush	2
27	Skew Input Assembly Lube Fitting	grease, D00633	Zerk	1

SUBTASK 12-22-51-640-029

(2) Lubricate the flap skew input assembly lube fitting [27] with grease, D00633.

SUBTASK 12-22-51-640-030

(3) Lubricate the skew control rod ends [26] with grease, D00633.

NOTE: The rod ends on the control rod are fitted with two grease fittings. It is only necessary to lubricate the fitting which you can get access to.

F. Put the Airplane Back to Its Usual Condition

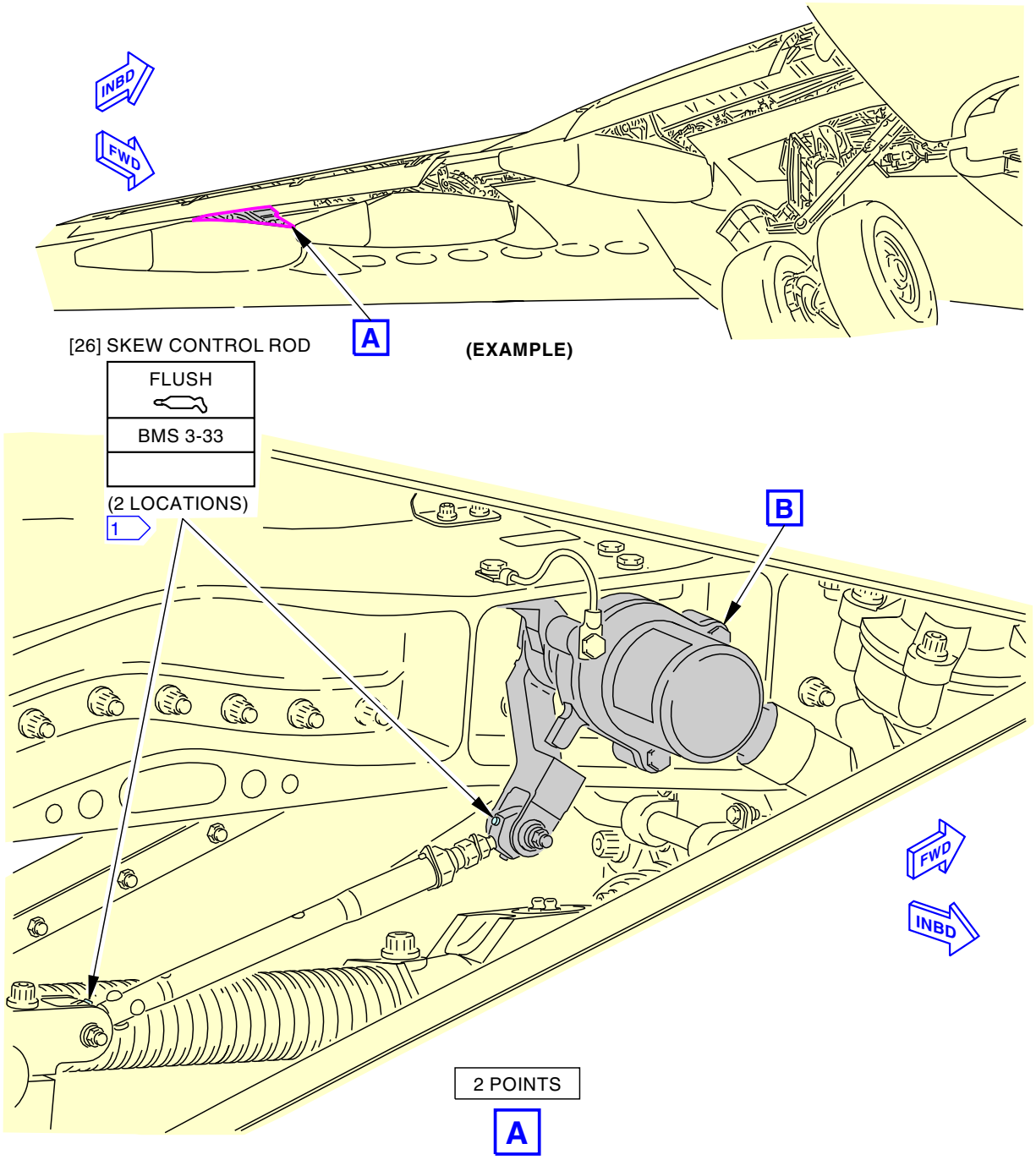
SUBTASK 12-22-51-440-010

(1) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

SUBTASK 12-22-51-860-014

(2) Retract the trailing edge flaps to the UP position (TASK 27-51-00-860-804).

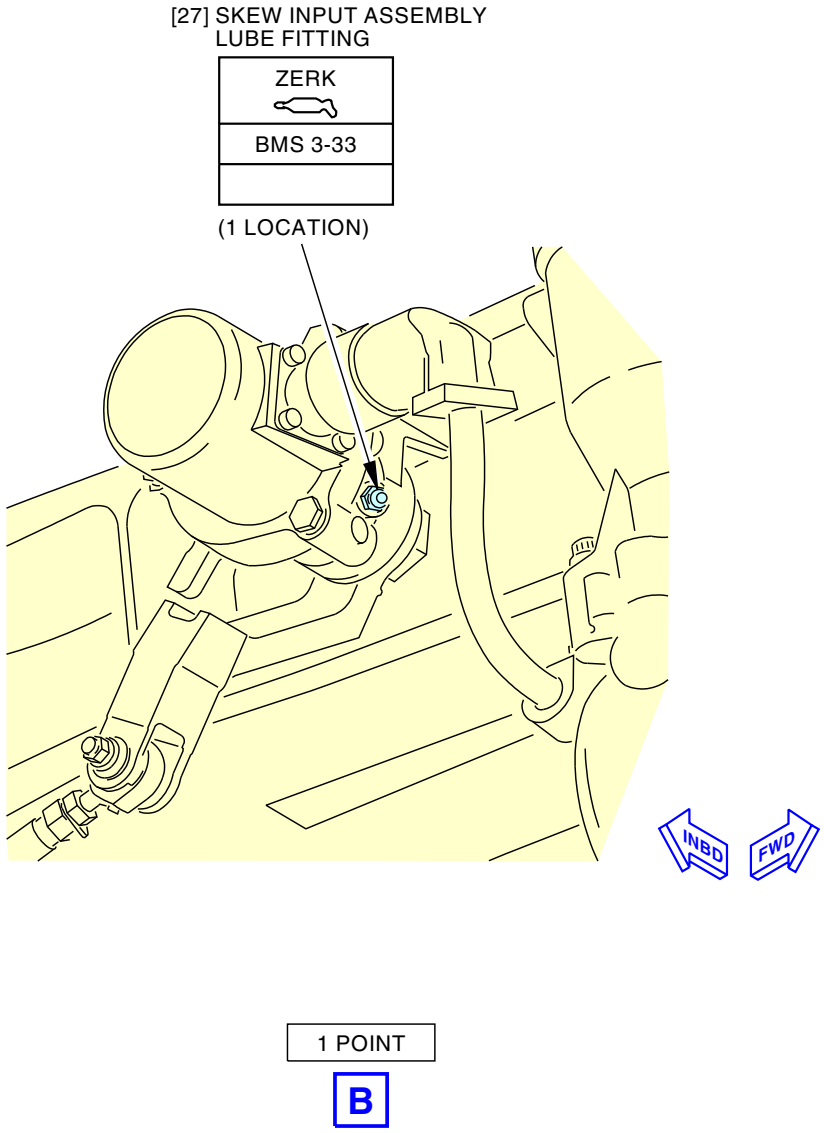
——— END OF TASK ———



1 THE ROD ENDS ON THE CONTROL ROD HAVE TWO GREASE FITTINGS. IT IS ONLY NECESSARY TO GREASE THE FITTING WHICH YOU CAN GET ACCESS TO.

2410893 S00061526576_V2

Outboard Flap Outboard Skew Mechanism Servicing
Figure 310/12-22-51-990-810 (Sheet 1 of 2)



2410894 S00061526577_V2

Outboard Flap Outboard Skew Mechanism Servicing
Figure 310/12-22-51-990-810 (Sheet 2 of 2)

TASK 12-22-51-640-811

12. Inboard Main Flap and Aft Flap Roller and Linkage Lubrication

(Figure 311 and Figure 312)

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
27-51-00-040-801	Trailing Edge Flap System Deactivation (P/B 201)
27-51-00-440-801	Trailing Edge Flap System Reactivation (P/B 201)
27-51-00-860-803	Extend the Trailing Edge Flaps (P/B 201)
27-51-00-860-804	Retract the Trailing Edge Flaps (P/B 201)
53-51-21-000-803	Aft Wing-To-Body Fairing Panel Removal (P/B 401)
53-51-21-400-803	Aft Wing-To-Body Fairing Panel - Installation (P/B 401)

B. Consumable Materials

Reference	Description	Specification
D00633	Grease - Aircraft General Purpose	BMS3-33

C. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right
541	Left Wing - Fairing Flap Support No. 4
542	Left Wing - Fairing Flap Support No. 3
553	Left Wing - Inboard Flap
641	Right Wing - Fairing Flap Support No. 5
642	Right Wing - Fairing Flap Support No. 6
653	Right Wing - Inboard Flap

D. Access Panels

Number	Name/Location
194BL	Flap Track Lubrication Panel - Aft
194BR	Flap Track Lubrication Panel - Aft

E. Prepare for the Lubrication

SUBTASK 12-22-51-860-015

(1) Extend the trailing edge flaps to the 40-unit position (TASK 27-51-00-860-803).

SUBTASK 12-22-51-040-011

(2) Do this task: Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801.

SUBTASK 12-22-51-010-001

(3) Remove these access panels on the wing to body fairing (TASK 53-51-21-000-803):

(a) On the left wing, open this access panel:

Number	Name/Location
194BL	Flap Track Lubrication Panel - Aft

(b) On the right wing, open this access panel:

Number	Name/Location
194BR	Flap Track Lubrication Panel - Aft

F. Inboard Main Flap and Aft Flap Roller and Linkage Lubrication

SUBTASK 12-22-51-640-031

(1) This table supplies data for the subsequent lubrication steps:

Table 311/12-22-51-993-811 Inboard Main Flap and Aft Flap Roller and Linkage Servicing (Fig. 311)

Item No.	Nomenclature	Lubricant	Method of Application	Number of Locations
28	Inboard Carriage Roller	grease, D00633	Zerk	4
29	Inboard Programming Roller	grease, D00633	Flush	1
30	Aft Flap Track Roller	grease, D00633	Zerk	8
31	*[1] Aft Flap Track Attach Fitting	grease, D00633	Zerk	2
32	Outboard Programming Roller Lube Fitting	grease, D00633	Flush	1
33	Outboard Carriage Roller Lube Fitting	grease, D00633	Zerk	4
34	Aft Flap Drive Rod End Lube Points	grease, D00633	Flush	2

*[1] Lube point not on all attach fittings. Some attach fittings have greaseless bearings with no lubrication needed.

SUBTASK 12-22-51-640-032

(2) Lubricate the inboard carriage roller lube fittings [28] on the inboard main flap carriage with grease, D00633.

(a) Remove excess grease, D00633, from the flap carriages and linkages.

(b) Make sure that there is no grease, D00633, on the surfaces of the flap track flange.

SUBTASK 12-22-51-640-033

(3) Lubricate the outboard carriage roller lube fittings [33] on the outboard main flap carriage with grease, D00633.

(a) Remove excess grease, D00633, from the flap carriages and linkages.

(b) Make sure that there is no grease, D00633, on the surfaces of the flap track flange.

SUBTASK 12-22-51-640-034

(4) Lubricate the aft flap track roller lube fittings [30] and aft flap track attach fittings [31] with grease, D00633.

NOTE: Some aft flap track attach fittings have greaseless bearings. If no lube point are found on aft flap track attach fittings, no lubrication is necessary.

(a) Make sure that there is no grease, D00633, on the surfaces of the flap track flange.

SUBTASK 12-22-51-640-035

(5) Lubricate the inboard programming roller lube fitting [29] and outboard programming roller lube point [32] with grease, D00633.

SUBTASK 12-22-51-640-036

(6) Lubricate the aft flap drive rod end lube pointss [34] with grease, D00633.

NOTE: The rod ends on the drive rod are fitted with two grease fittings. It is only necessary to lubricate the fitting which you can get access to.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 12-22-51-410-001

(1) Install these access panels on the wing to body fairing (TASK 53-51-21-400-803):

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

Number	Name/Location
194BL	Flap Track Lubrication Panel - Aft

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

Number	Name/Location
194BR	Flap Track Lubrication Panel - Aft

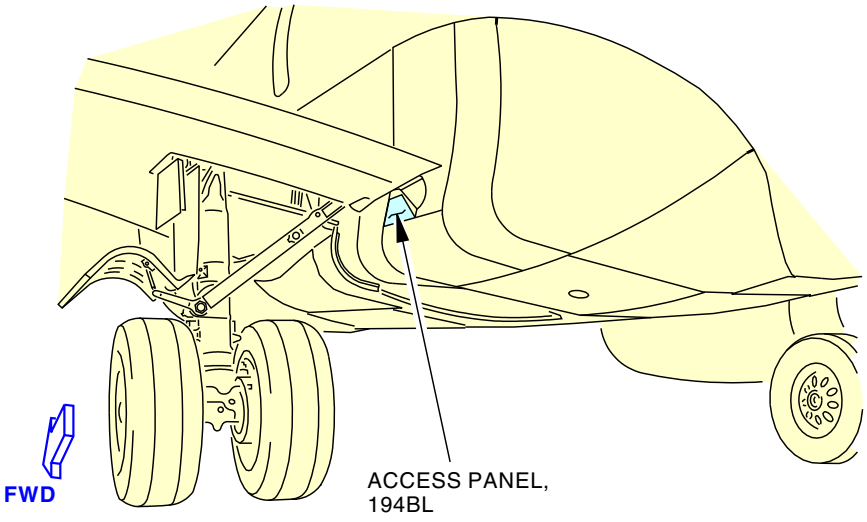
SUBTASK 12-22-51-440-011

(2) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

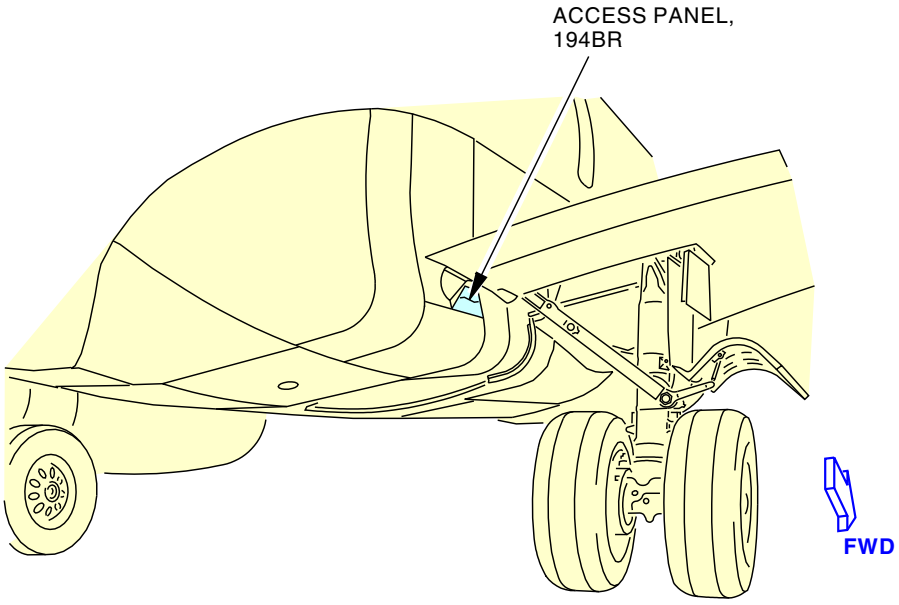
SUBTASK 12-22-51-860-016

(3) Retract the trailing edge flaps to the UP position (TASK 27-51-00-860-804).

——— END OF TASK ———



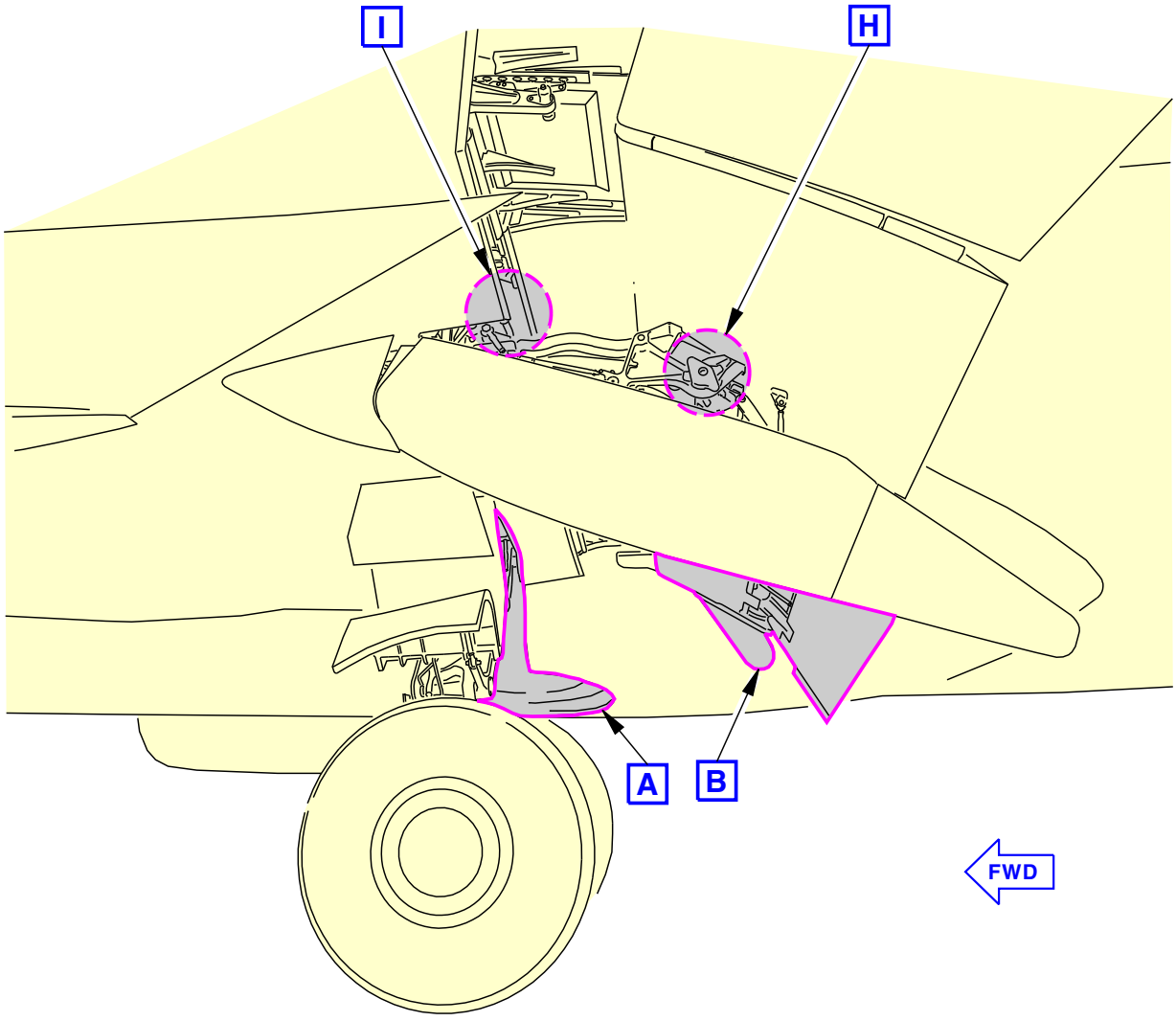
(EXAMPLE)



(EXAMPLE)

2410895 S00061526579_V2

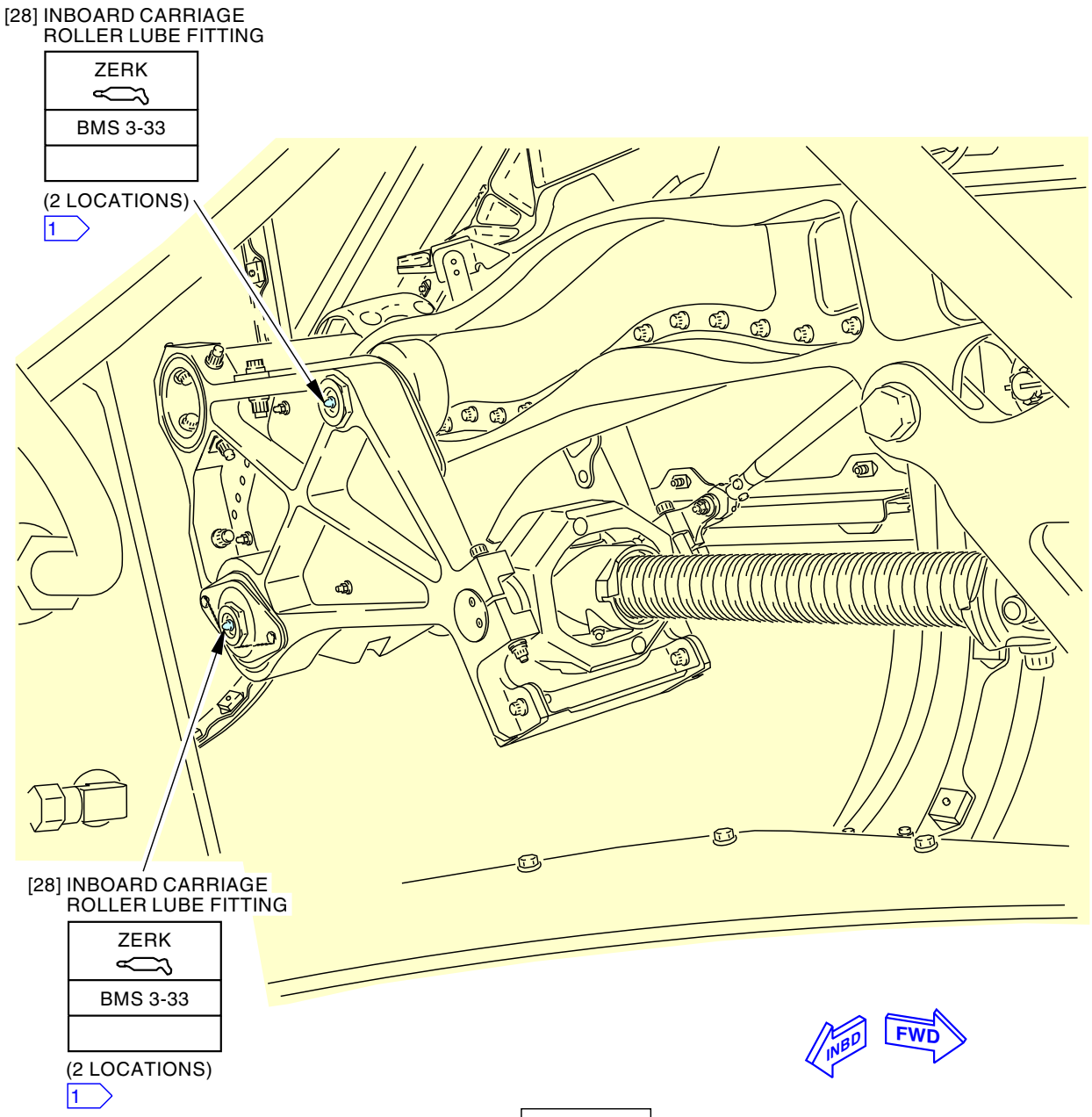
Inboard Main Flap and Aft Flap Roller and Linkage Access
Figure 311/12-22-51-990-811



(EXAMPLE)

2410896 S00061526580_V3

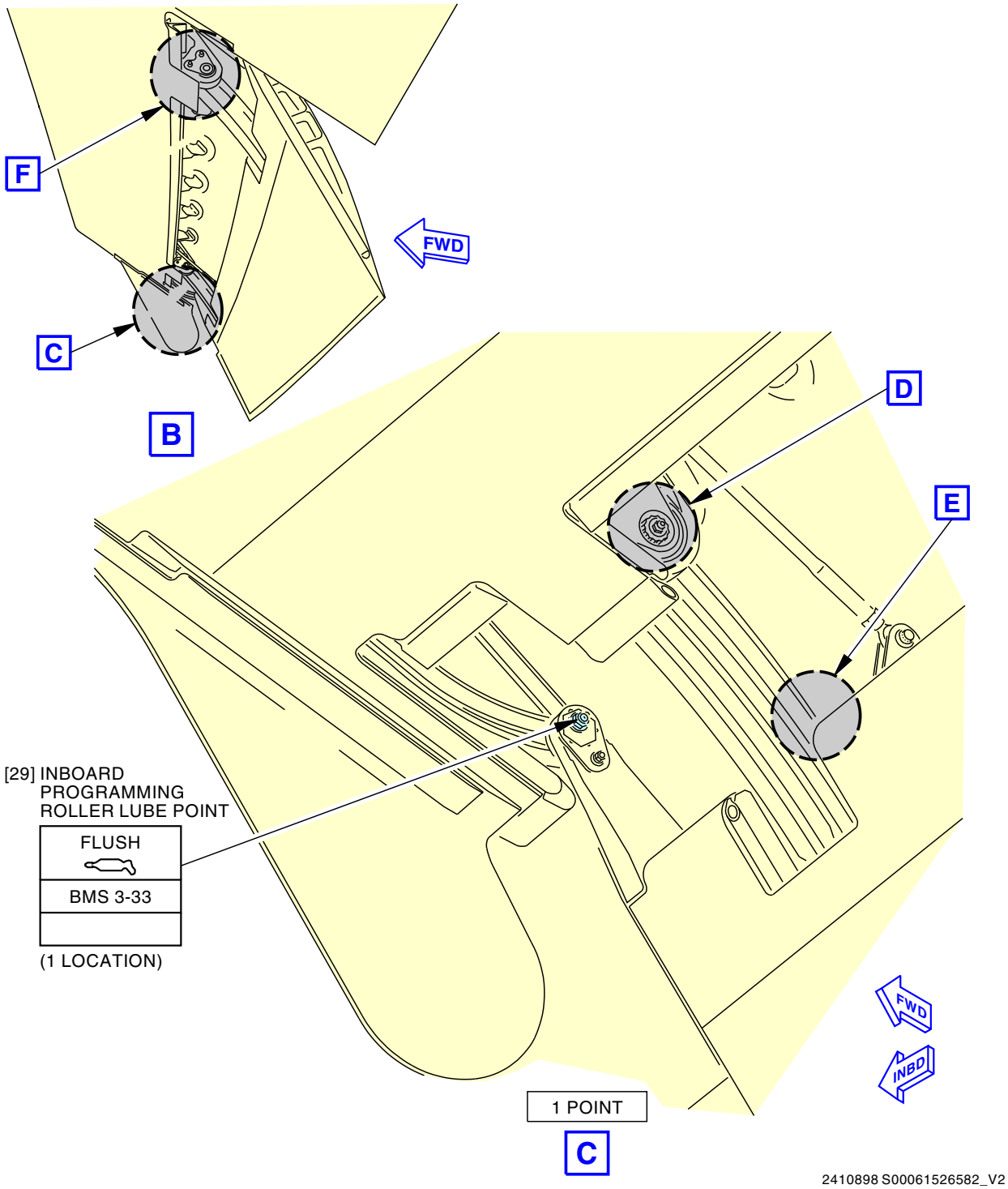
Inboard Main Flap and Aft Flap Roller and Linkage Servicing
Figure 312/12-22-51-990-812 (Sheet 1 of 7)



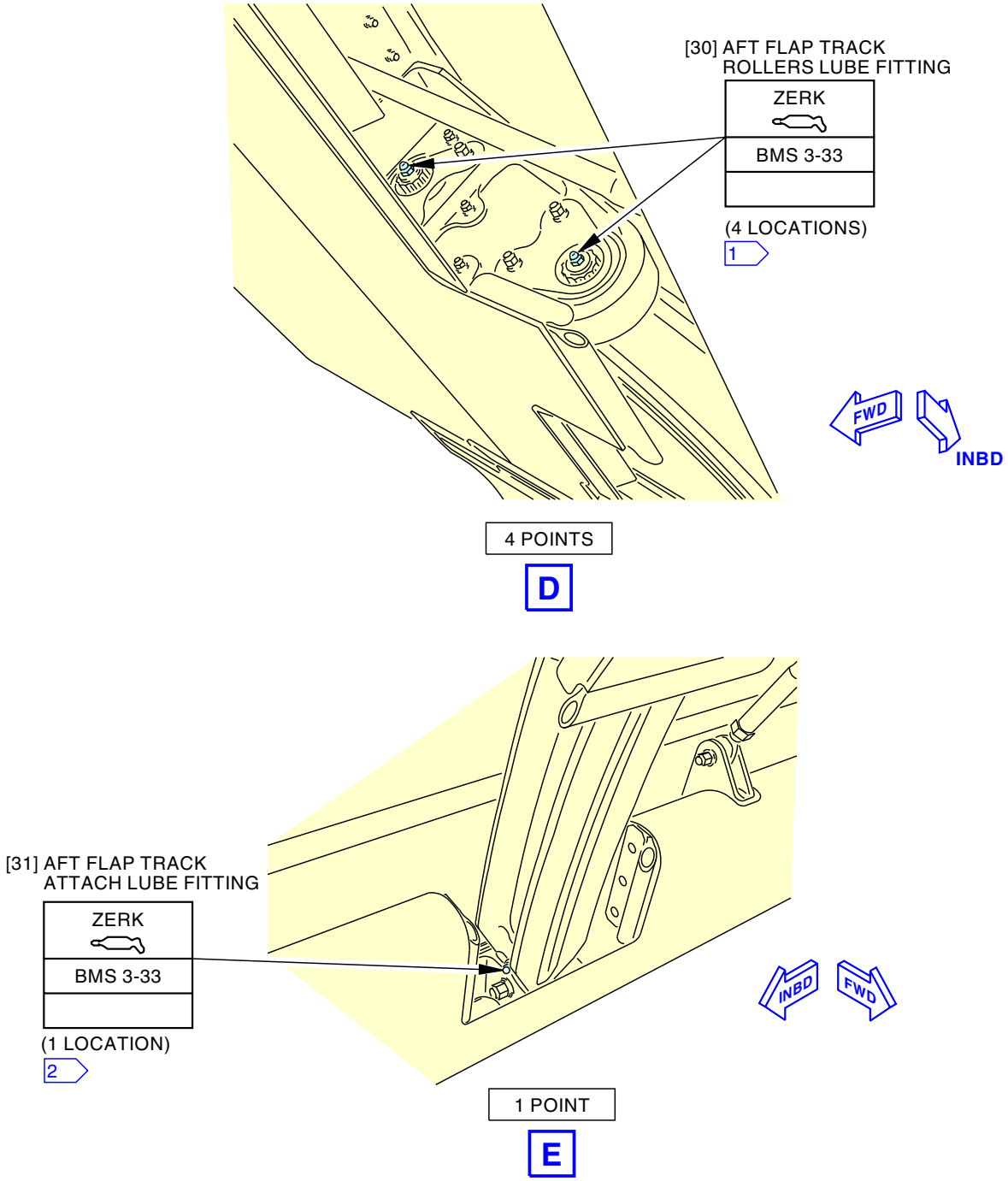
1 ONE MORE LUBE POINT IS ON THE OPPOSITE SIDE (NOT SHOWN).

2410897 S00061526581_V2

Inboard Main Flap and Aft Flap Roller and Linkage Servicing
Figure 312/12-22-51-990-812 (Sheet 2 of 7)



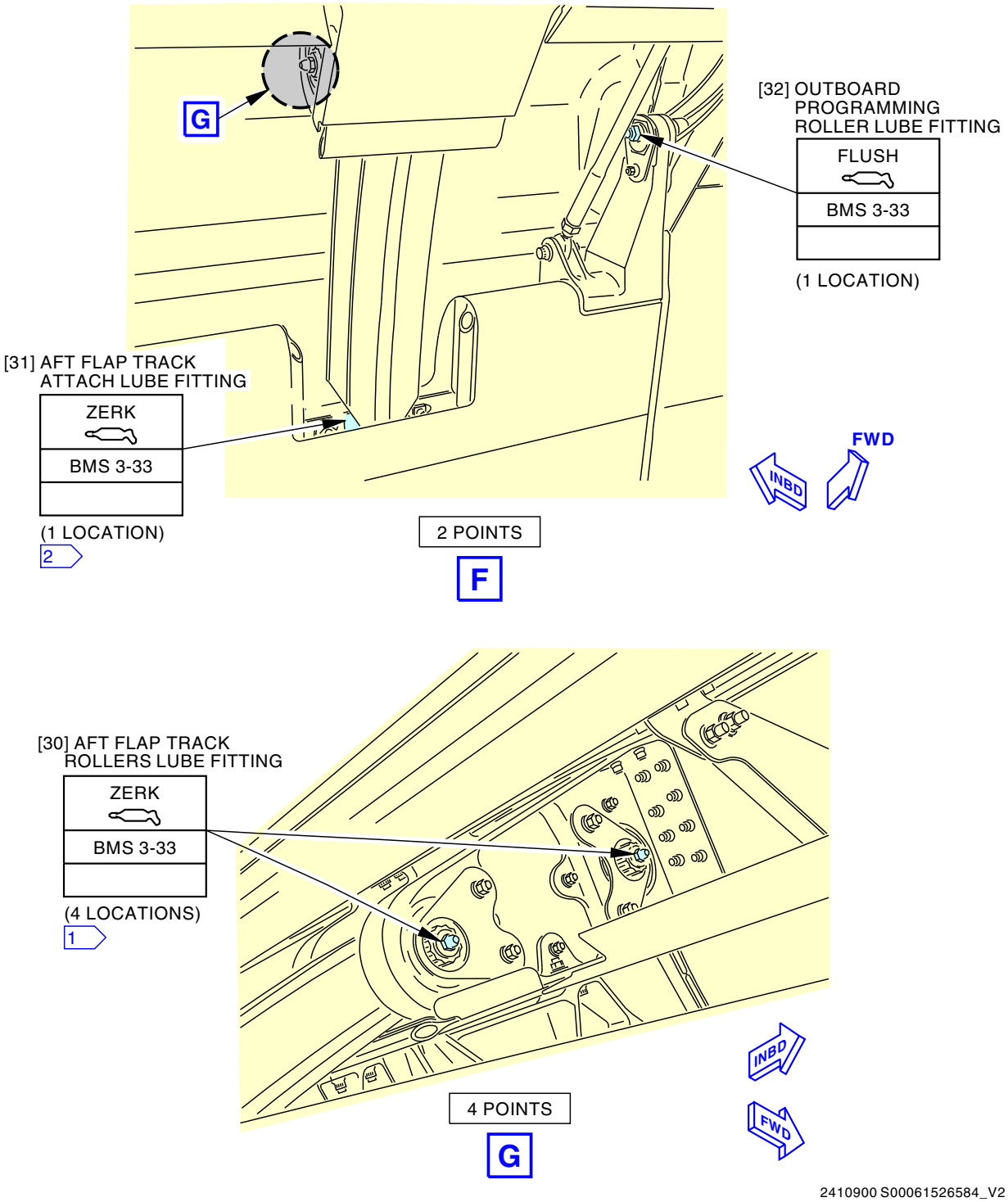
Inboard Main Flap and Aft Flap Roller and Linkage Servicing
Figure 312/12-22-51-990-812 (Sheet 3 of 7)



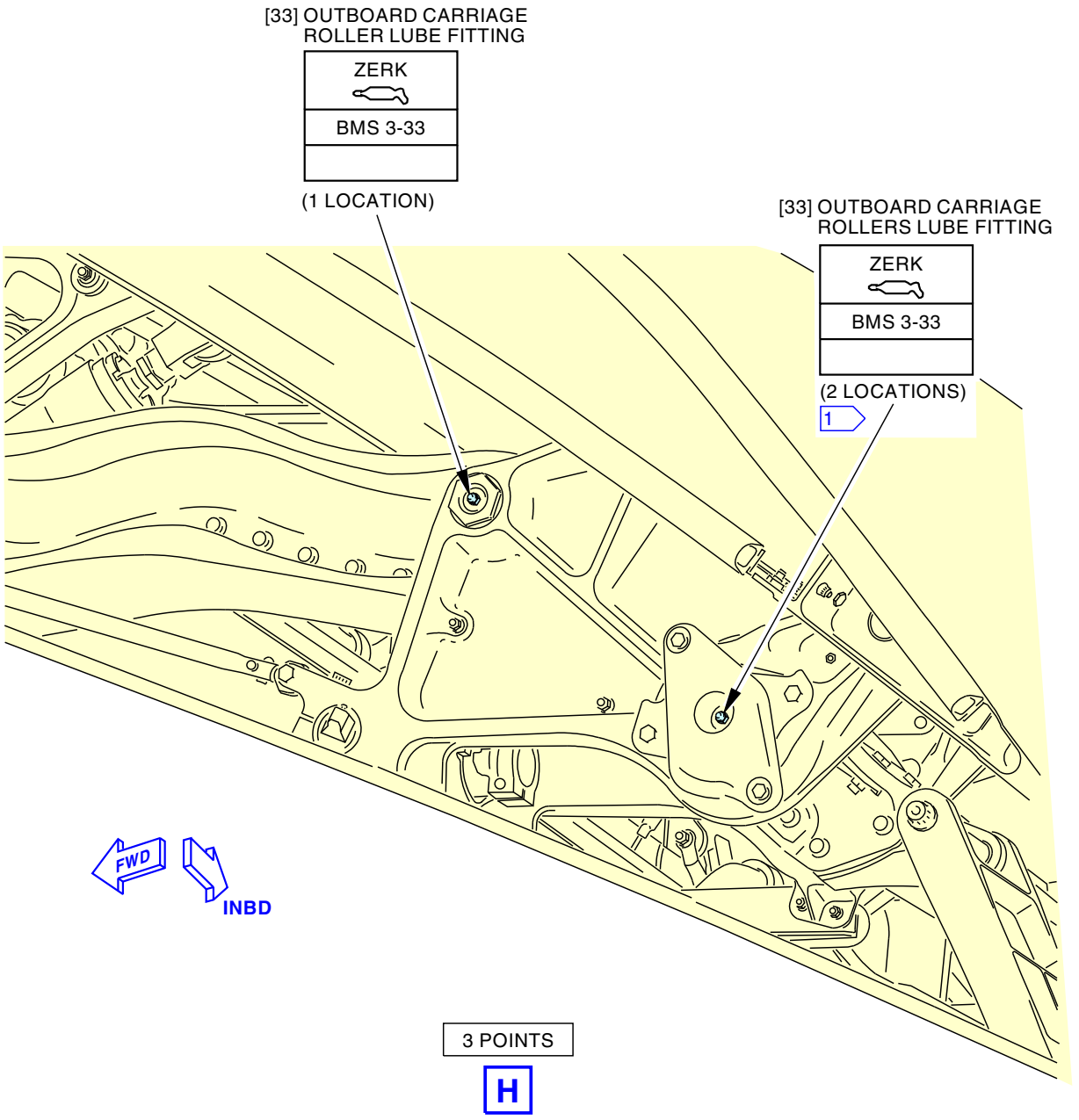
2 LUBE POINTS NOT ON ALL FLAP ATTACH FITTINGS

2410899 S00061526583_V2

Inboard Main Flap and Aft Flap Roller and Linkage Servicing
Figure 312/12-22-51-990-812 (Sheet 4 of 7)

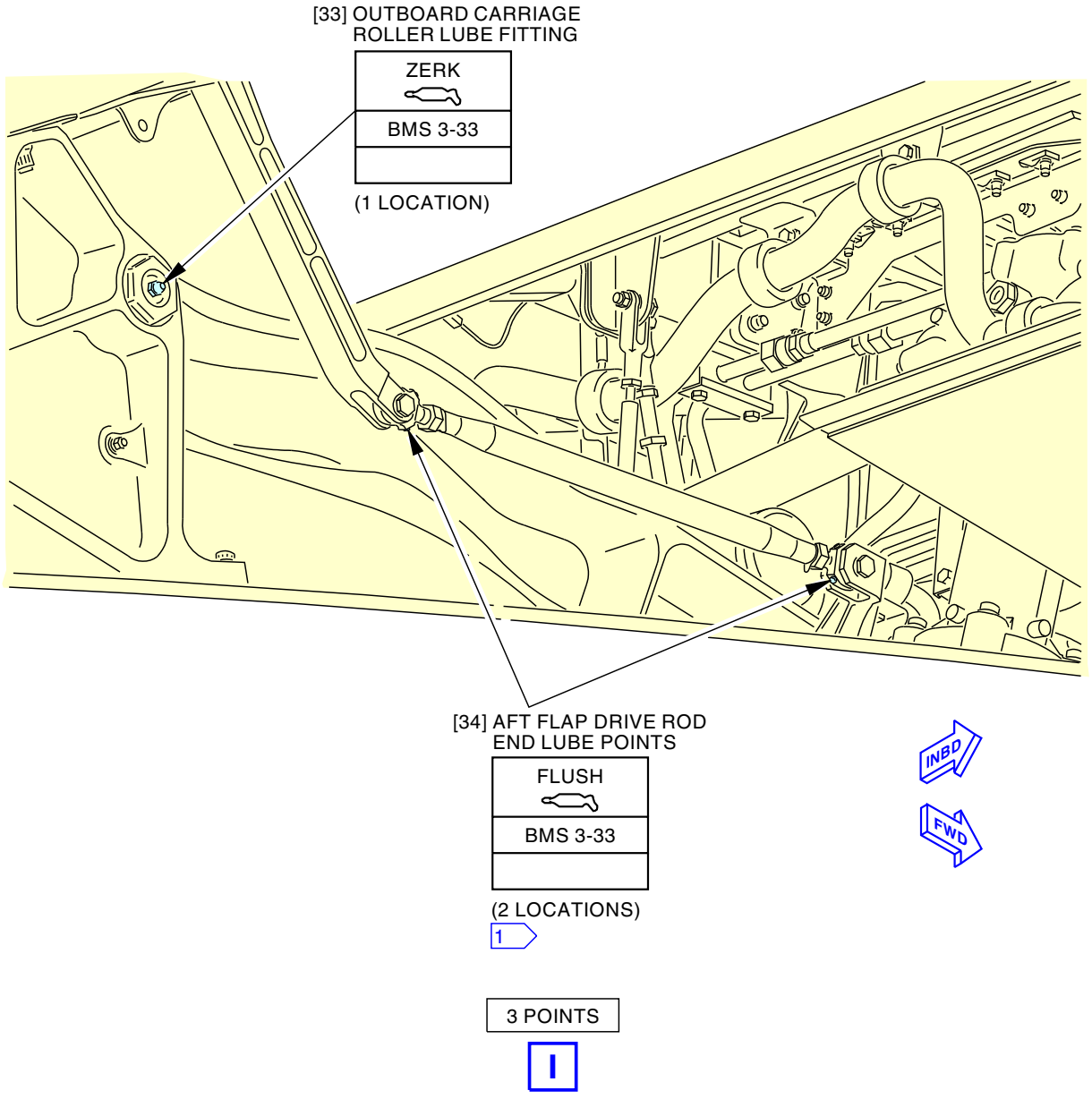


Inboard Main Flap and Aft Flap Roller and Linkage Servicing
Figure 312/12-22-51-990-812 (Sheet 5 of 7)



2410901 S00061526585_V2

Inboard Main Flap and Aft Flap Roller and Linkage Servicing
Figure 312/12-22-51-990-812 (Sheet 6 of 7)



1 THE ROD ENDS ON THE CONTROL ROD EACH HAVE TWO LUBE POINTS. IT IS ONLY NECESSARY TO GREASE ONE THAT YOU CAN GET ACCESS TO.

2410902 S00061526586_V2

Inboard Main Flap and Aft Flap Roller and Linkage Servicing
Figure 312/12-22-51-990-812 (Sheet 7 of 7)

TASK 12-22-51-640-812

13. Outboard Main Flap and Aft Flap Roller and Linkage Lubrication

(Figure 313)

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
27-51-00-040-801	Trailing Edge Flap System Deactivation (P/B 201)
27-51-00-440-801	Trailing Edge Flap System Reactivation (P/B 201)
27-51-00-860-803	Extend the Trailing Edge Flaps (P/B 201)
27-51-00-860-804	Retract the Trailing Edge Flaps (P/B 201)

B. Consumable Materials

Reference	Description	Specification
D00633	Grease - Aircraft General Purpose	BMS3-33

C. Location Zones

Zone	Area
543	Left Wing - Fairing Flap Support No. 2
544	Left Wing - Fairing Flap Support No. 1
567	Left Wing - Outboard Flap
643	Right Wing - Fairing Flap Support No. 7
644	Right Wing - Fairing Flap Support No. 8
667	Right Wing - Outboard Flap

D. Prepare for the Lubrication

SUBTASK 12-22-51-860-017

(1) Extend the trailing edge flaps to the 40-unit position (TASK 27-51-00-860-803).

SUBTASK 12-22-51-040-012

(2) Do this task: Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801.

E. Outboard Main Flap and Aft Flap Roller and Linkage Lubrication

SUBTASK 12-22-51-640-037

(1) This table supplies data for the subsequent lubrication steps:

Table 312/12-22-51-993-812 Outboard Main Flap and Aft Flap Roller and Linkage Servicing

Item No.	Nomenclature	Lubricant	Method of Application	Number of Locations
35	Aft Flap Drive Rod End Lube Point	grease, D00633	Flush	4
36	Aft Flap Pushrod End Lube Point	grease, D00633	Flush	4
37	Inboard Carriage Roller Lube Fitting	grease, D00633	Zerk	4
39	Inboard Carriage Forward Attach Lube Fitting	grease, D00633	Zerk	1
40	Inboard Carriage Attach Link Lube Fitting	grease, D00633	Zerk	2

Table 312/12-22-51-993-812 Outboard Main Flap and Aft Flap Roller and Linkage Servicing (Continued)

Item No.	Nomenclature	Lubricant	Method of Application	Number of Locations
41	Outboard Carriage Roller	grease, D00633	Zerk	4
42	Outboard Carriage Forward Attach Lube Fitting	grease, D00633	Zerk	1
43	Outboard Carriage Attach Link Lube Fitting	grease, D00633	Zerk	2
44	Inboard Programming Roller Lube Point	grease, D00633	Flush	1
46	Aft Flap Track Roller Lube Point	grease, D00633	Flush	16
47	Outboard Programming Roller Lube Point	grease, D00633	Flush	1

SUBTASK 12-22-51-640-038

(2) Lubricate the inboard main flap carriage:

(a) Lubricate the main flap inboard carriage roller lube fittings [37] with grease, D00633.

1) Remove excess grease, D00633, from the flap carriages and linkages.

2) Make sure that there is no grease, D00633, on the flap track flange surfaces.

(b) Lubricate the inboard carriage forward attach fitting [39] and inboard carriage attach link lube fittings [40] with grease, D00633.

1) Remove excess grease, D00633, from the flap carriages and linkages.

(c) Lubricate the aft flap drive rod ends lube points [35] with grease, D00633.

NOTE: The rod ends on the drive rod and pushrod are fitted with two grease fittings. It is only necessary to lubricate the fitting which you can get access to.

(d) Remove the dust cap [38].

(e) Examine the condition of the seal retainer for movement.

(f) Install the dust cap [38].

SUBTASK 12-22-51-640-039

(3) Lubricate the outboard main flap carriage:

(a) Lubricate the main flap outboard carriage roller lube fittings [41] with grease, D00633.

1) Remove excess grease, D00633, from the flap carriages and linkages.

2) Make sure that there is no grease, D00633, on the flap track flange surfaces.

(b) Lubricate the outboard carriage forward attach fitting [42] and outboard carriage attach links [43] with grease, D00633.

1) Remove excess grease, D00633, from the flap carriages and linkages.

(c) Lubricate the aft flap pushrod lube points [36] with grease, D00633.

NOTE: The rod ends on the drive rod and pushrod are fitted with two grease fittings. It is only necessary to lubricate the fitting which you can get access to.

(d) Remove the dust cap [38].

(e) Examine the condition of the seal retainer for movement.

(f) Install the dust cap [38].

SUBTASK 12-22-51-640-040

(4) Lubricate the aft flap track roller lube points [46] with grease, D00633.

(a) Ensure that there is no grease, D00633, on the flap track flange surfaces.

SUBTASK 12-22-51-640-041

(5) Lubricate the inboard programming roller lube point [44] and outboard programming roller lube point [47] with grease, D00633.

F. Put the Airplane Back to Its Usual Condition

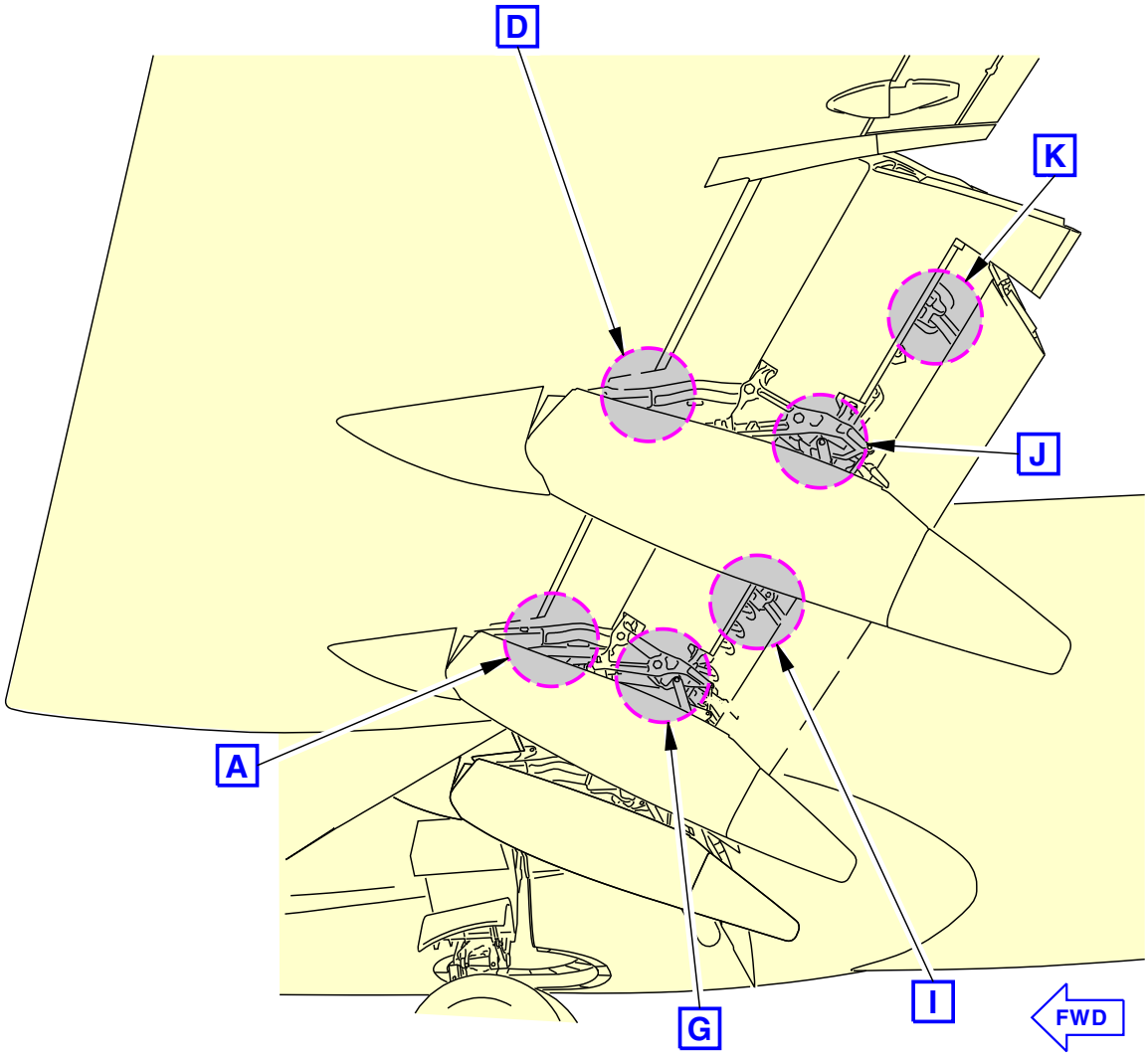
SUBTASK 12-22-51-440-012

(1) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

SUBTASK 12-22-51-860-018

(2) Retract the trailing edge flaps to the UP position (TASK 27-51-00-860-804).

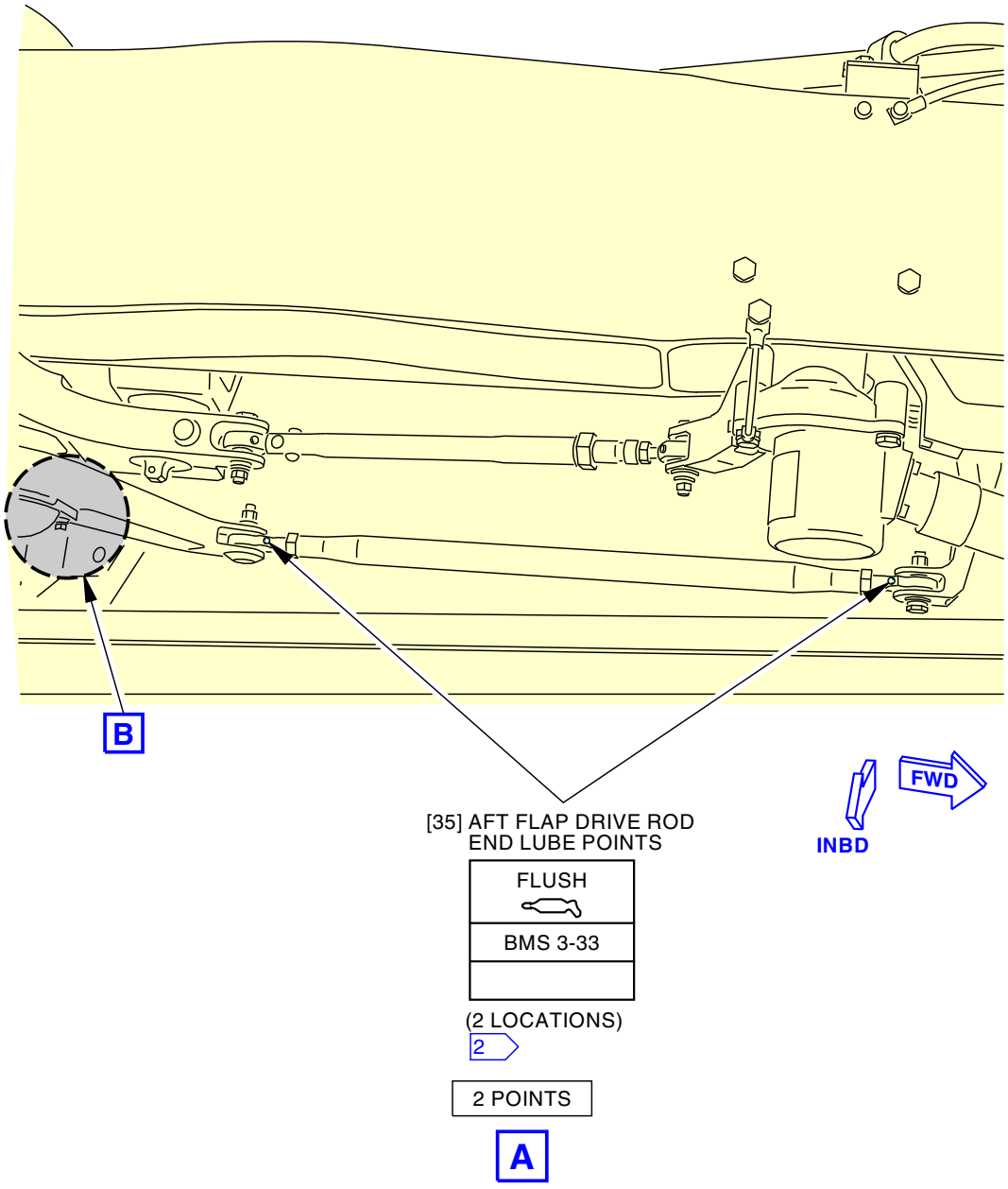
——— END OF TASK ———



(EXAMPLE)

2410903 S00061526588_V2

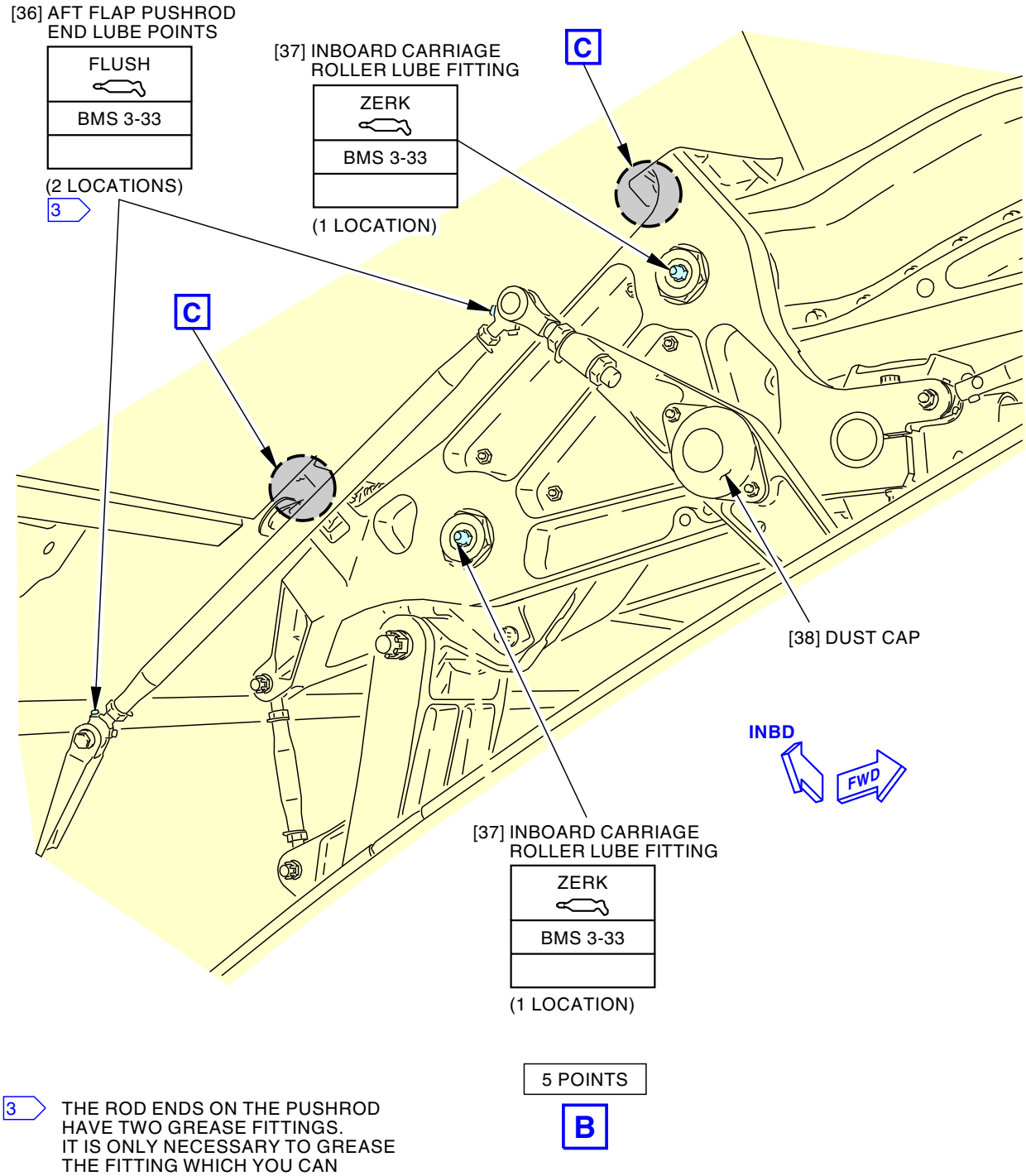
Outboard Main Flap and Aft Flap Roller and Linkage Servicing
Figure 313/12-22-51-990-813 (Sheet 1 of 11)



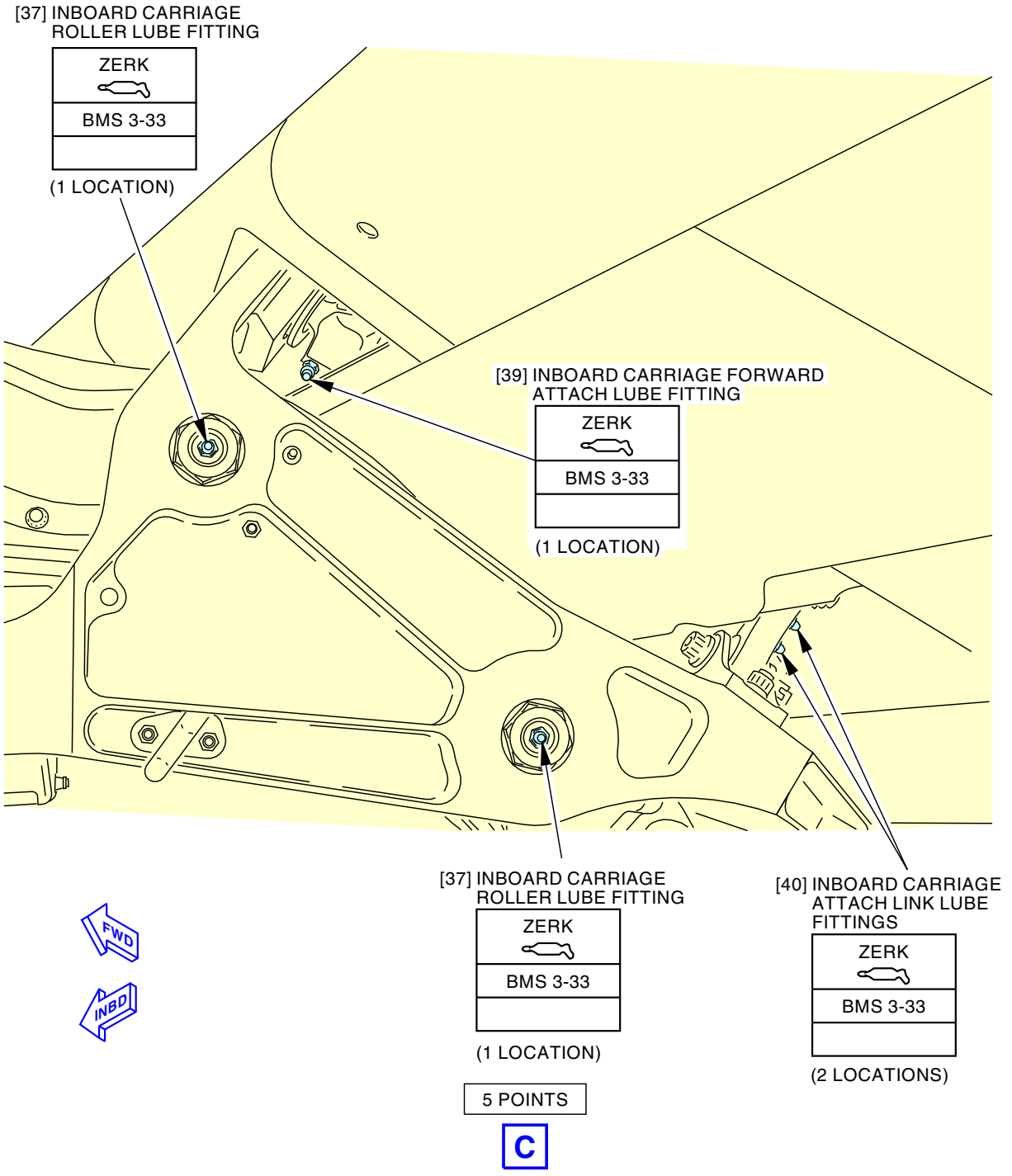
2 THE ROD ENDS ON THE CONTROL ROD EACH HAVE TWO LUBE POINTS. IT IS ONLY NECESSARY TO GREASE ONE THAT YOU CAN GET ACCESS TO.

2410904 S00061526589_V2

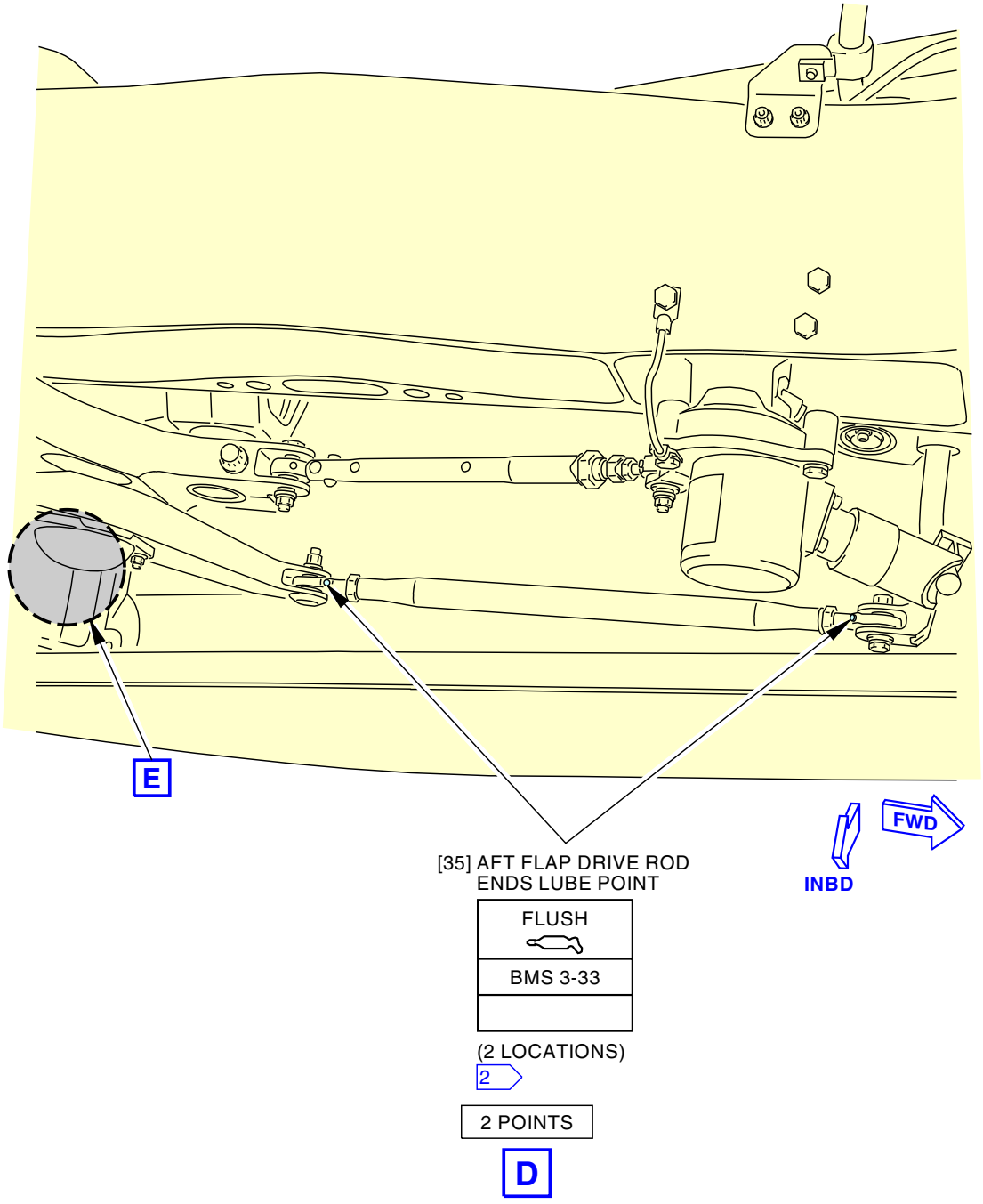
Outboard Main Flap and Aft Flap Roller and Linkage Servicing
Figure 313/12-22-51-990-813 (Sheet 2 of 11)



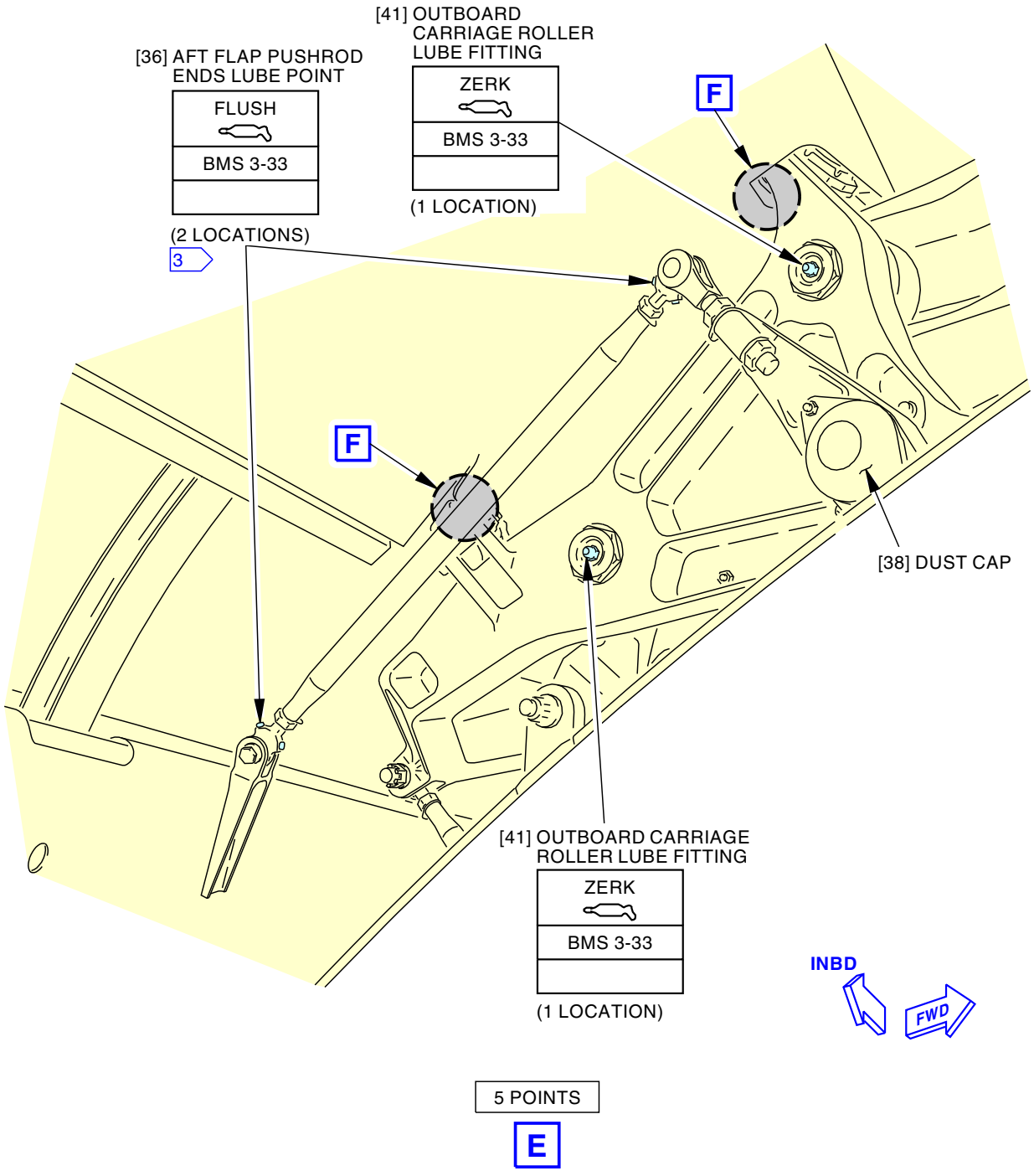
Outboard Main Flap and Aft Flap Roller and Linkage Servicing
Figure 313/12-22-51-990-813 (Sheet 3 of 11)



Outboard Main Flap and Aft Flap Roller and Linkage Servicing
Figure 313/12-22-51-990-813 (Sheet 4 of 11)

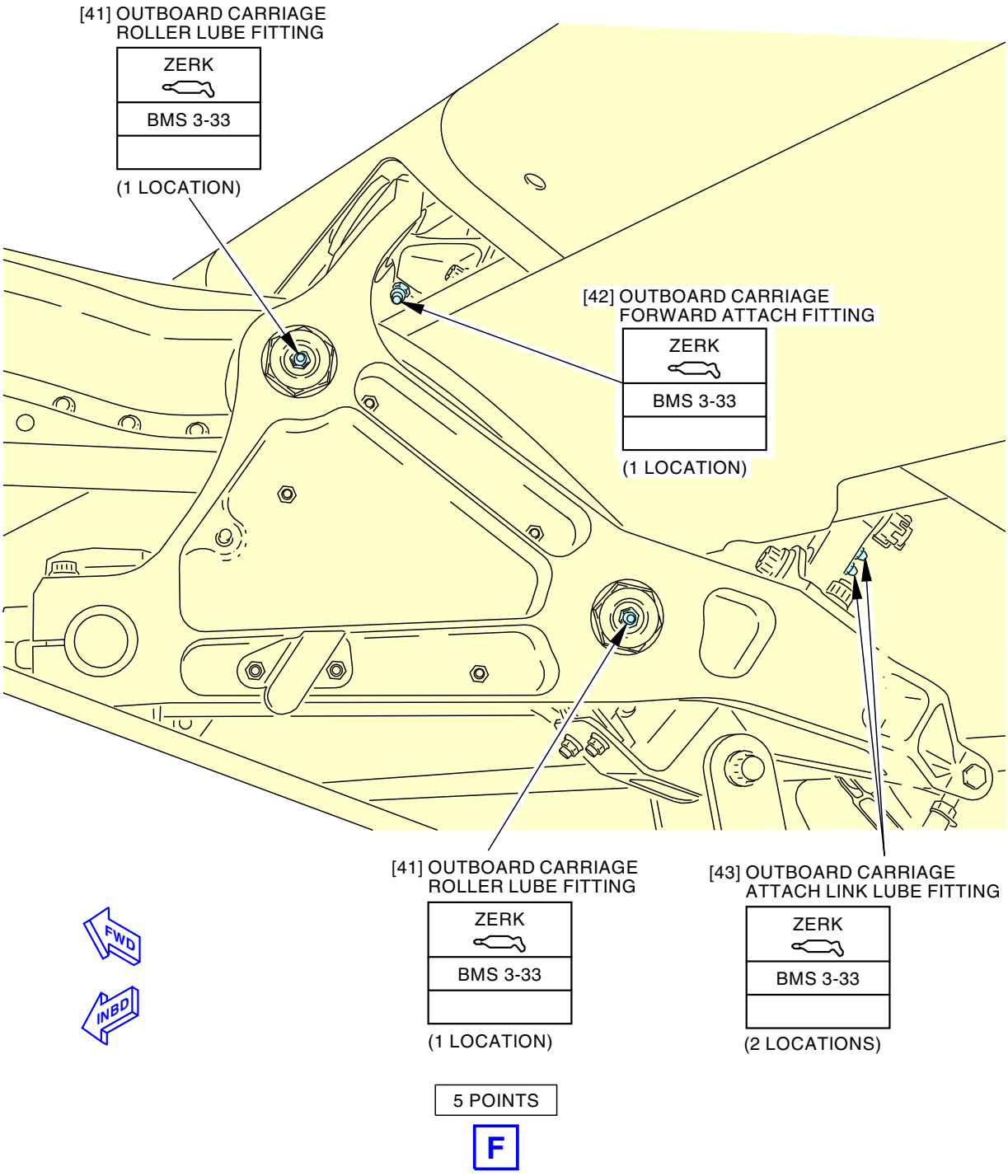


Outboard Main Flap and Aft Flap Roller and Linkage Servicing
Figure 313/12-22-51-990-813 (Sheet 5 of 11)

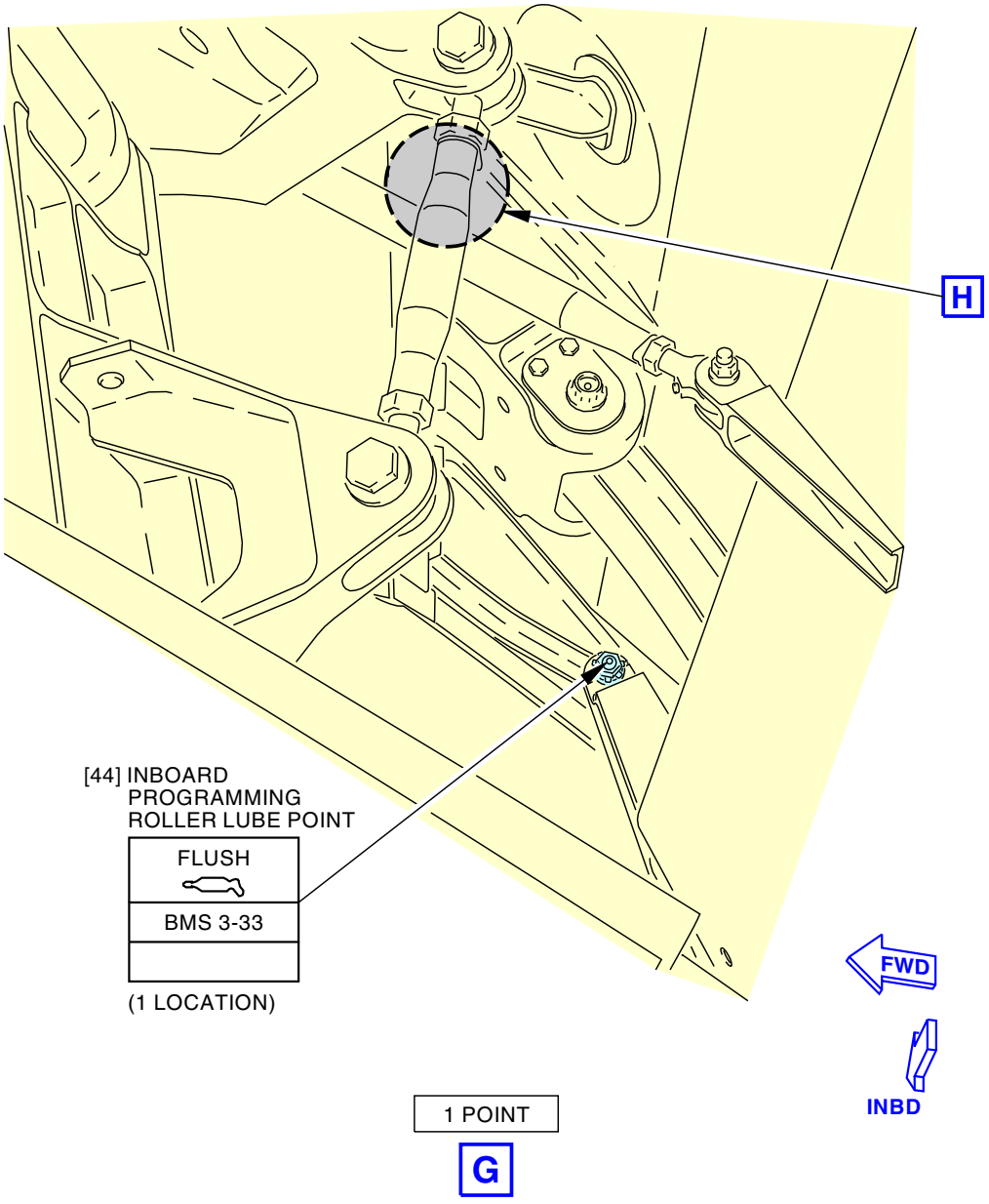


2410908 S00061526593_V2

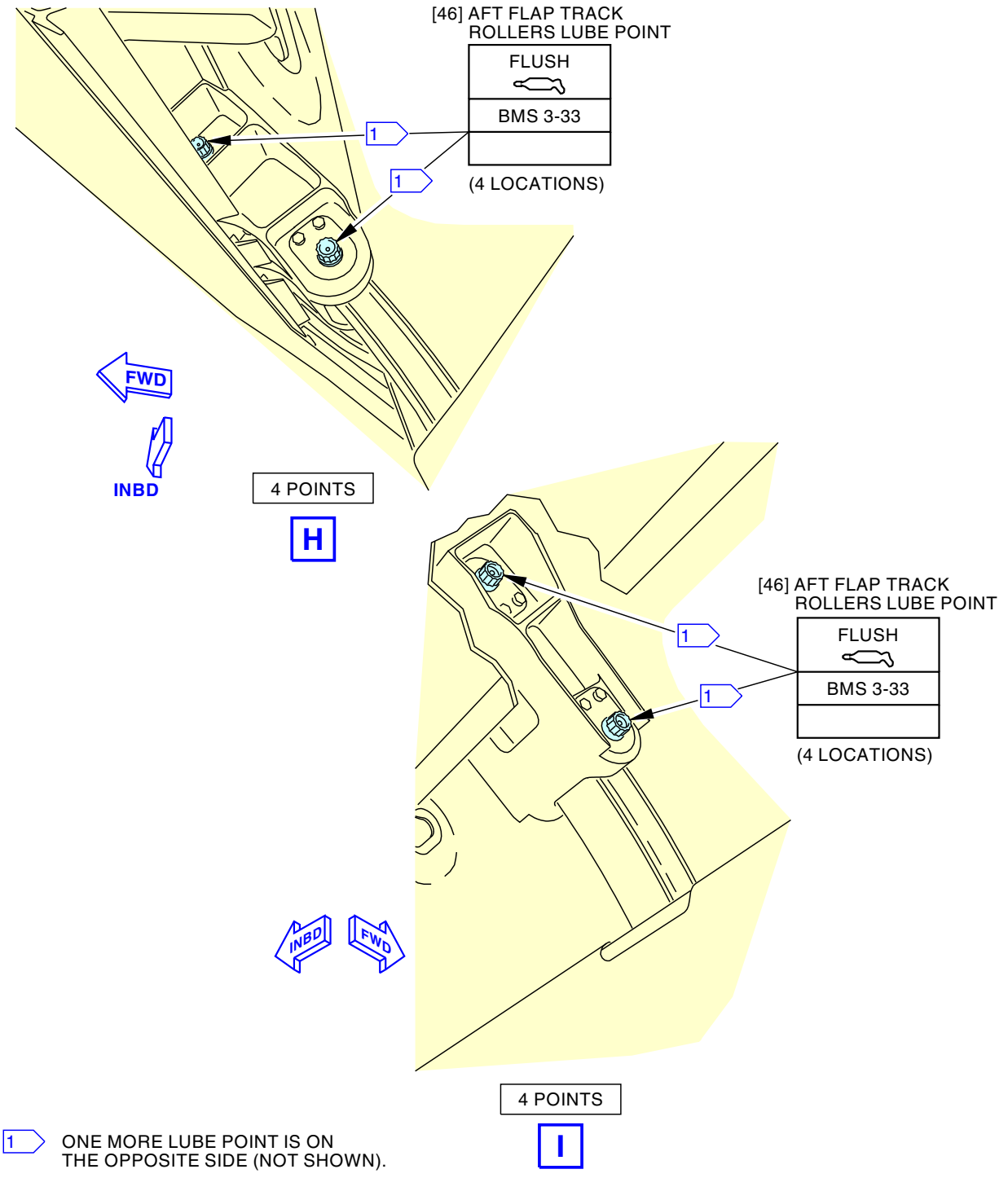
Outboard Main Flap and Aft Flap Roller and Linkage Servicing
Figure 313/12-22-51-990-813 (Sheet 6 of 11)



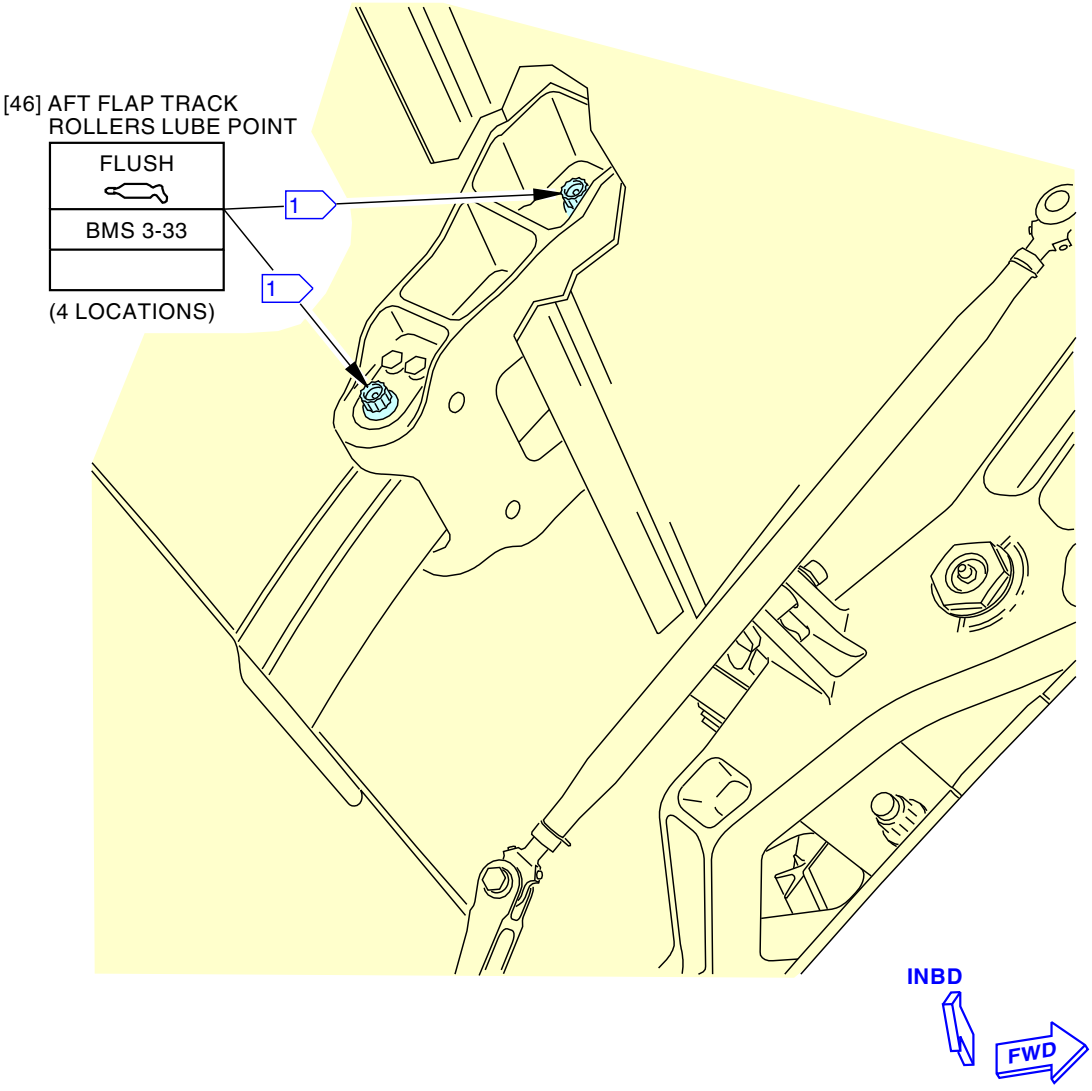
Outboard Main Flap and Aft Flap Roller and Linkage Servicing
Figure 313/12-22-51-990-813 (Sheet 7 of 11)



Outboard Main Flap and Aft Flap Roller and Linkage Servicing
Figure 313/12-22-51-990-813 (Sheet 8 of 11)

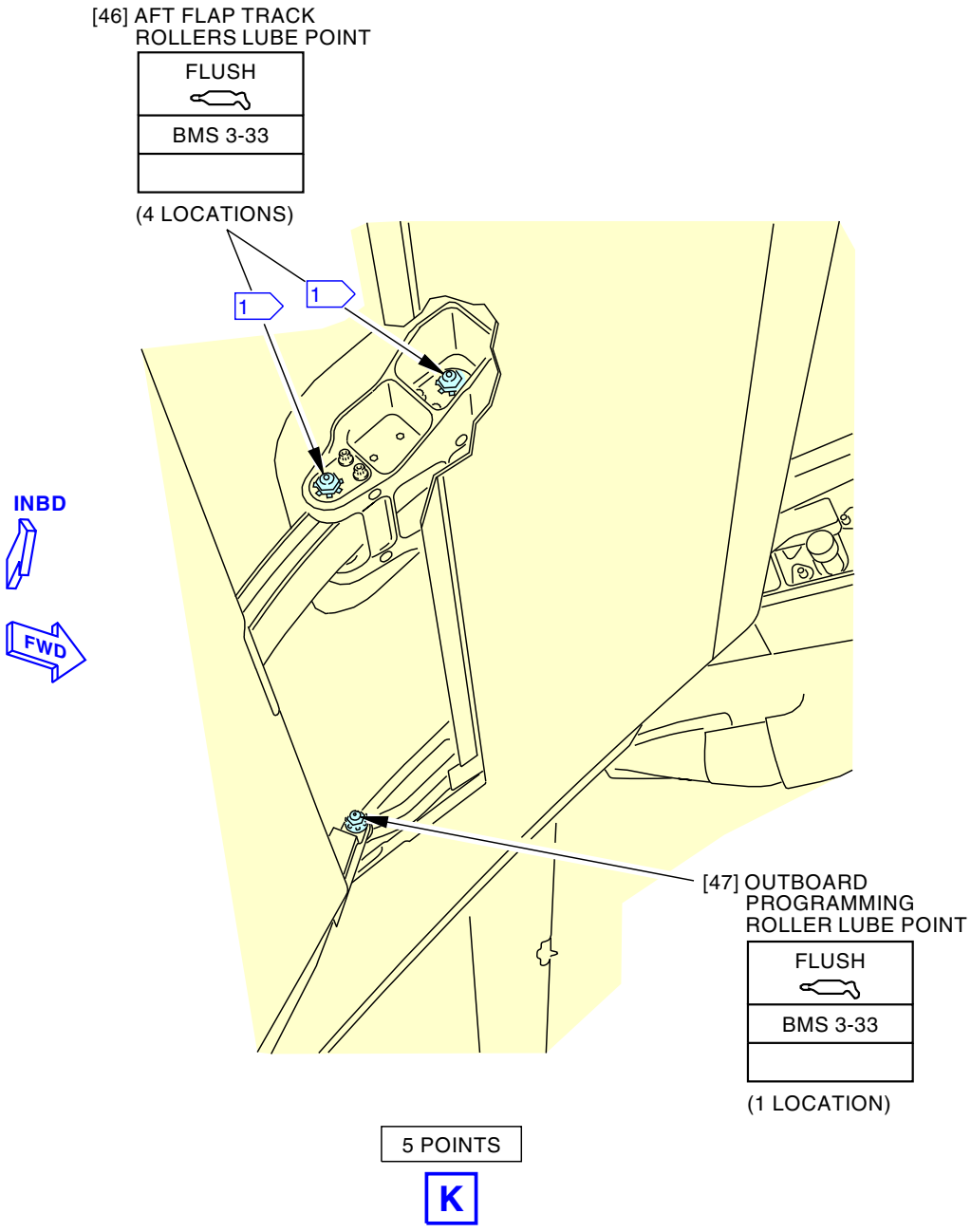


Outboard Main Flap and Aft Flap Roller and Linkage Servicing
Figure 313/12-22-51-990-813 (Sheet 9 of 11)



2410912 S00061526597_V3

Outboard Main Flap and Aft Flap Roller and Linkage Servicing
Figure 313/12-22-51-990-813 (Sheet 10 of 11)



2410913 S00061526598_V3

Outboard Main Flap and Aft Flap Roller and Linkage Servicing
Figure 313/12-22-51-990-813 (Sheet 11 of 11)

TASK 12-22-51-640-813

14. Inboard Flap Inboard Flap Track Lubrication

(Figure 314)

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
27-51-00-040-801	Trailing Edge Flap System Deactivation (P/B 201)
27-51-00-440-801	Trailing Edge Flap System Reactivation (P/B 201)

B. Consumable Materials

Reference	Description	Specification
D00633	Grease - Aircraft General Purpose	BMS3-33

C. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right

D. Prepare for the Lubrication

SUBTASK 12-22-51-040-013

(1) Do this task: Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801.

E. Inboard Flap Inboard Flap Track Lubrication

SUBTASK 12-22-51-640-042

(1) This table supplies data for the subsequent lubrication steps:

Table 313/12-22-51-993-813 Inboard Flap Inboard Flap Track Servicing

Item No.	Nomenclature	Lubricant	Method of Application	Number of Locations
48	Flap Track Attach Link Lube Fitting	grease, D00633	Zerk	2
49	Flap Track Forward Attach Fitting	grease, D00633	Zerk	1

SUBTASK 12-22-51-640-043

(2) Lubricate the flap track attach link lube fittings [48] with grease, D00633.

SUBTASK 12-22-51-640-044

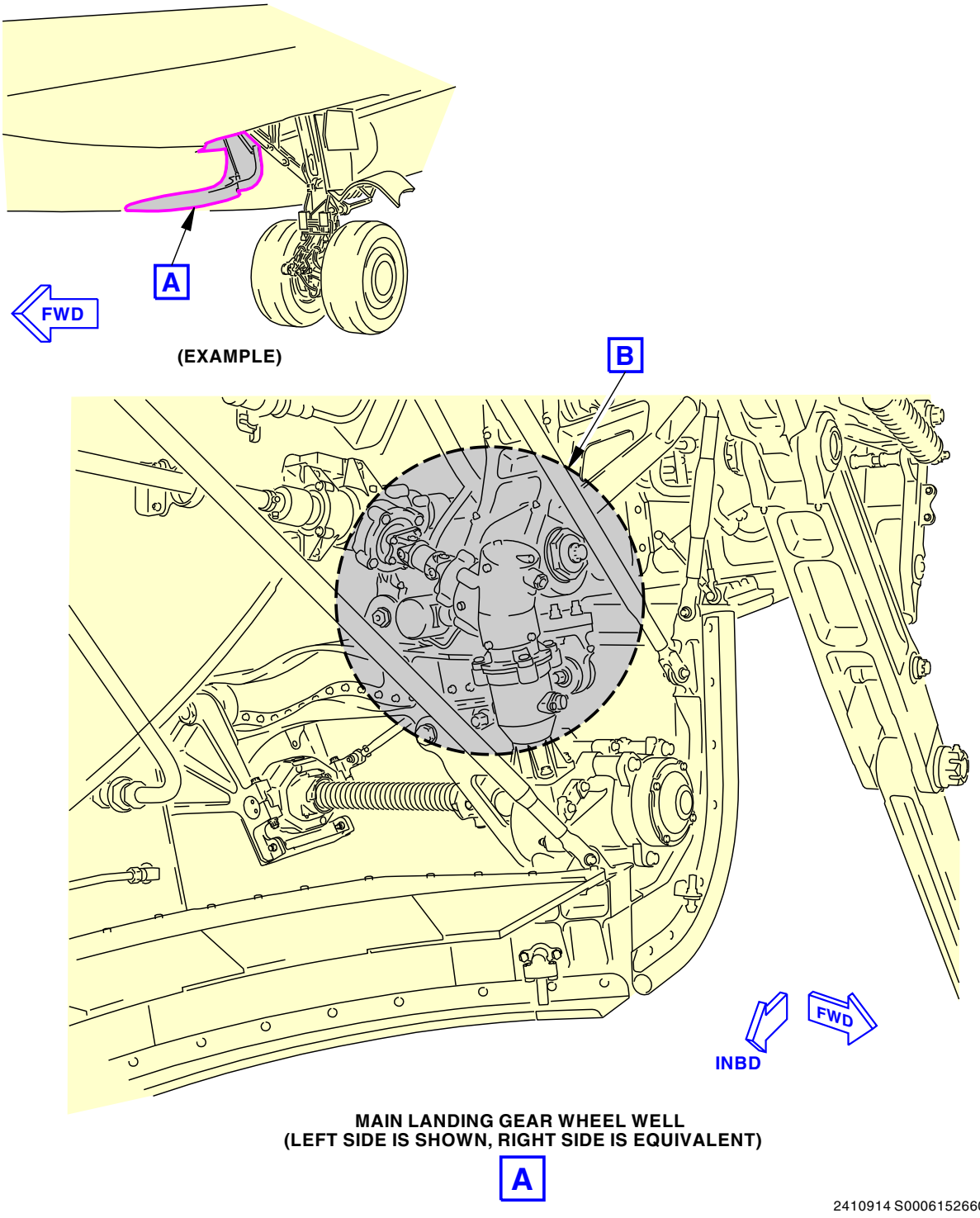
(3) Lubricate the flap track forward attach fitting [49] with grease, D00633.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 12-22-51-440-013

(1) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

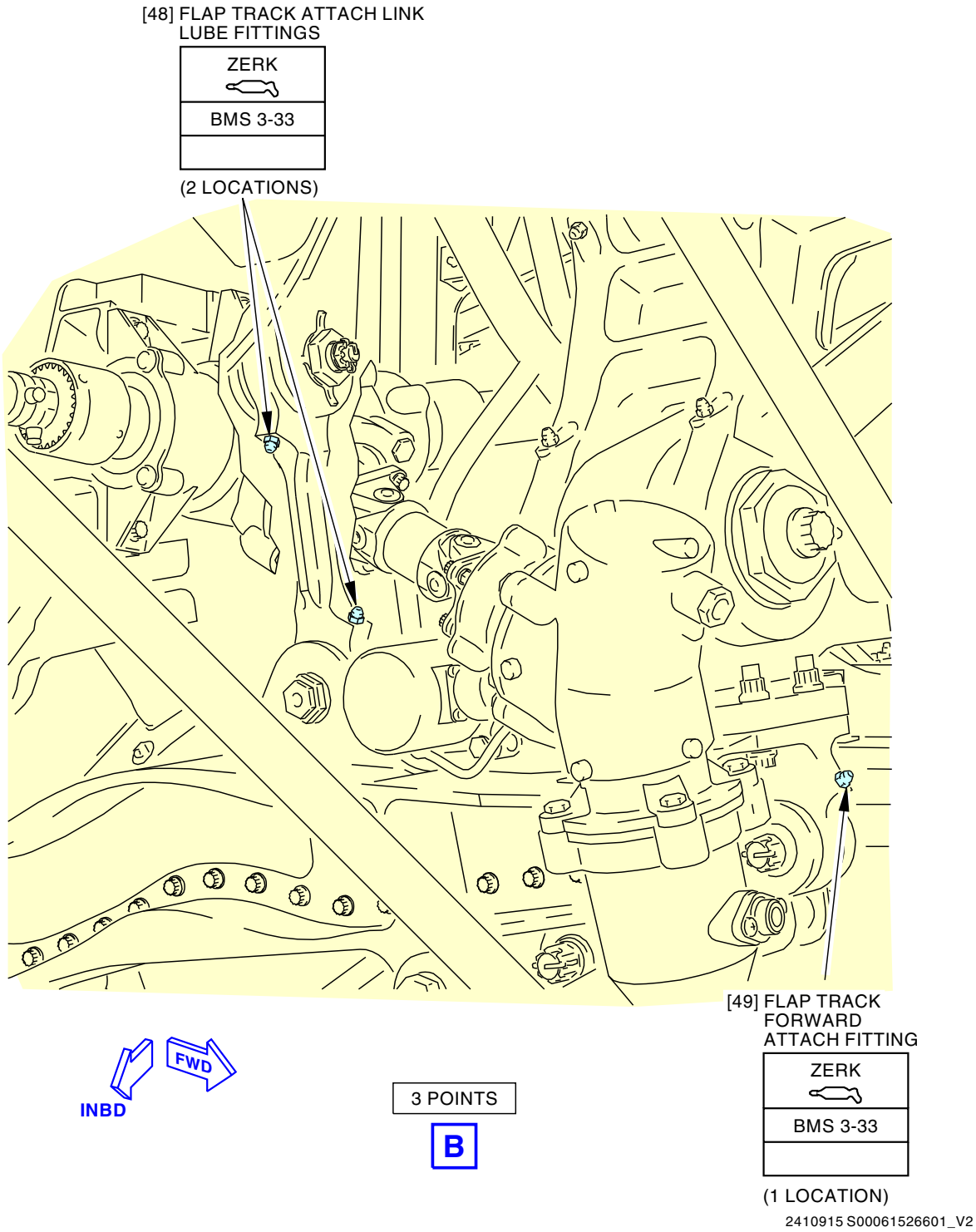
——— END OF TASK ———



MAIN LANDING GEAR WHEEL WELL
(LEFT SIDE IS SHOWN, RIGHT SIDE IS EQUIVALENT)

2410914 S00061526600_V2

Inboard Flap Inboard Flap Track Servicing
Figure 314/12-22-51-990-814 (Sheet 1 of 2)



Inboard Flap Inboard Flap Track Servicing
Figure 314/12-22-51-990-814 (Sheet 2 of 2)

TASK 12-22-51-640-814

15. Inboard Flap Outboard Flap Track Lubrication

(Table 314, Figure 315)

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
27-51-00-040-801	Trailing Edge Flap System Deactivation (P/B 201)
27-51-00-440-801	Trailing Edge Flap System Reactivation (P/B 201)
27-51-18-000-801	Inboard Flap Support Forward Fairing Removal (P/B 401)
27-51-18-400-801	Inboard Flap Support Forward Fairing Installation (P/B 401)

B. Consumable Materials

Reference	Description	Specification
D00633	Grease - Aircraft General Purpose	BMS3-33

C. Location Zones

Zone	Area
542	Left Wing - Fairing Flap Support No. 3
642	Right Wing - Fairing Flap Support No. 6

D. Prepare for the Lubrication

SUBTASK 12-22-51-040-014

(1) Do this task: Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801.

SUBTASK 12-22-51-010-002

(2) Do this task: Inboard Flap Support Forward Fairing Removal, TASK 27-51-18-000-801.

E. Inboard Flap Outboard Flap Track Lubrication

(Table 314)

SUBTASK 12-22-51-640-045

(1) This table supplies data for the subsequent lubrication step:

Table 314/12-22-51-993-814 Inboard Flap Outboard Flap Track Servicing

Item No.	Nomenclature	Lubricant	Method of Application	Number of Locations
50	Flap Track Forward Attach Fitting	grease, D00633	Zerk	1

SUBTASK 12-22-51-640-046

(2) Lubricate the flap track forward attach fitting [50] with grease, D00633.

F. Put the Airplane Back to Its Usual Condition

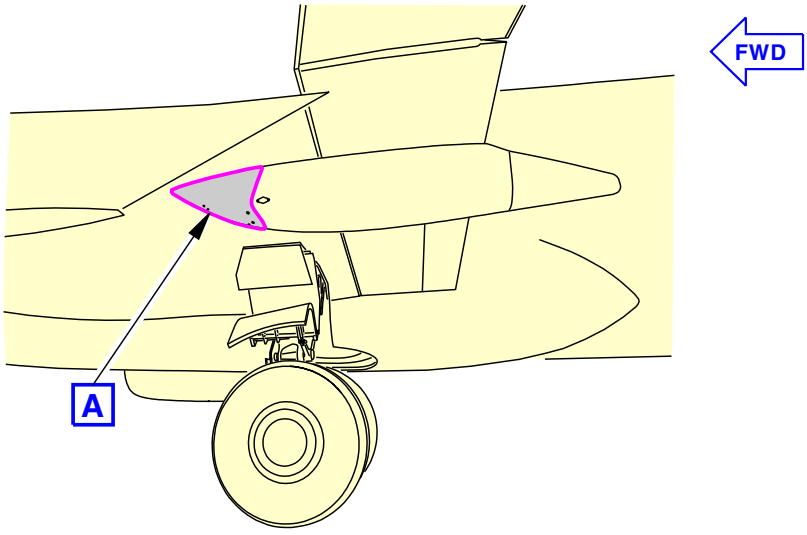
SUBTASK 12-22-51-410-002

(1) Do this task: Inboard Flap Support Forward Fairing Installation, TASK 27-51-18-400-801.

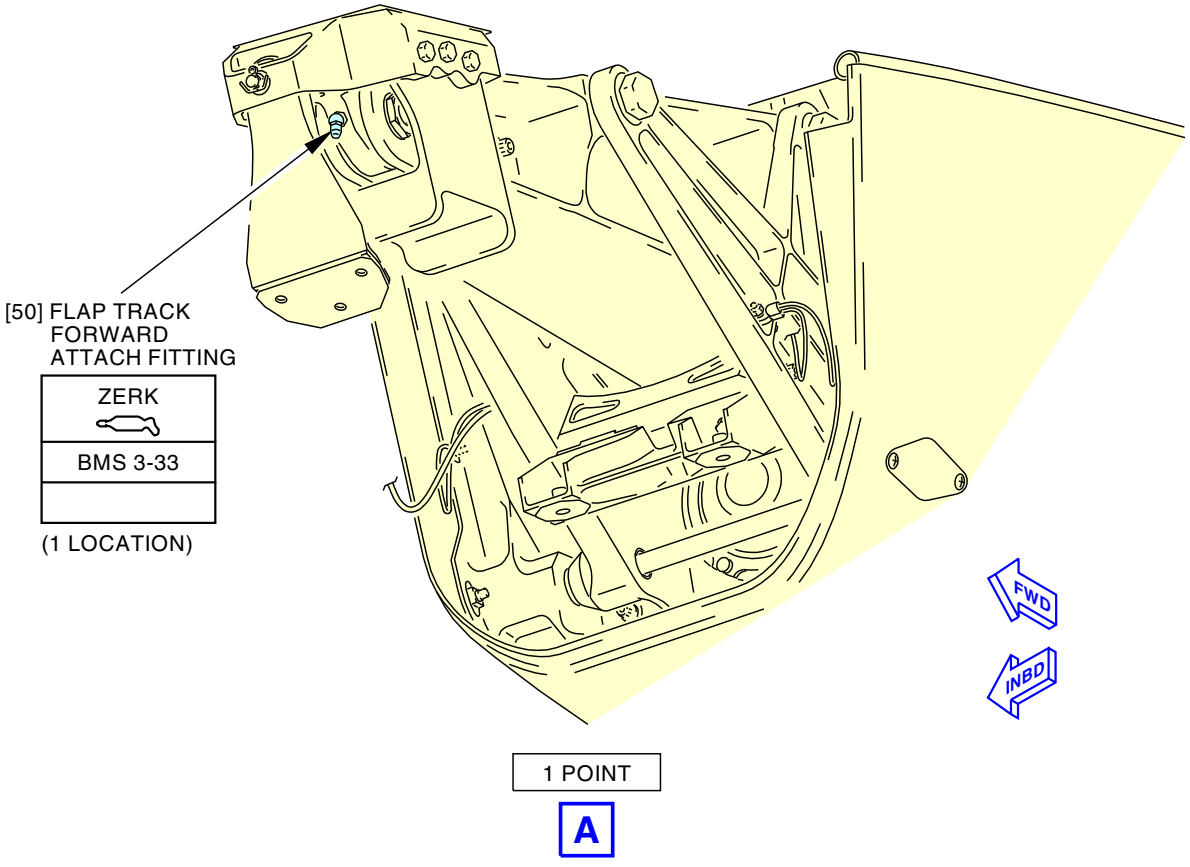
SUBTASK 12-22-51-440-014

(2) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

END OF TASK



(EXAMPLE)



2410916 S00061526603_V2

Inboard Flap Outboard Flap Track Servicing
Figure 315/12-22-51-990-815

TASK 12-22-51-640-815

16. Outboard Flap Inboard Flap Track Lubrication

(Table 315, Figure 316)

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
27-51-00-040-801	Trailing Edge Flap System Deactivation (P/B 201)
27-51-00-440-801	Trailing Edge Flap System Reactivation (P/B 201)
27-51-28-000-804	Outboard Flap Inboard Support Forward Fairing Removal (P/B 401)
27-51-28-400-804	Outboard Flap Inboard Support Forward Fairing Installation (P/B 401)

B. Consumable Materials

Reference	Description	Specification
D00633	Grease - Aircraft General Purpose	BMS3-33

C. Location Zones

Zone	Area
543	Left Wing - Fairing Flap Support No. 2
643	Right Wing - Fairing Flap Support No. 7

D. Prepare for the Lubrication

SUBTASK 12-22-51-040-015

(1) Do this task: Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801.

SUBTASK 12-22-51-010-003

(2) Do this task: Outboard Flap Inboard Support Forward Fairing Removal, TASK 27-51-28-000-804.

E. Outboard Flap Inboard Flap Track Lubrication

(Table 315)

SUBTASK 12-22-51-640-047

(1) This table supplies data for the subsequent lubrication step:

Table 315/12-22-51-993-815 Outboard Flap Inboard Flap Track Servicing

Item No.	Nomenclature	Lubricant	Method of Application	Number of Locations
51	Flap Track Forward Attach Fitting	grease, D00633	Zerk	1

SUBTASK 12-22-51-640-048

(2) Lubricate the flap track forward attach fitting [51] with grease, D00633.

F. Put the Airplane Back to Its Usual Condition

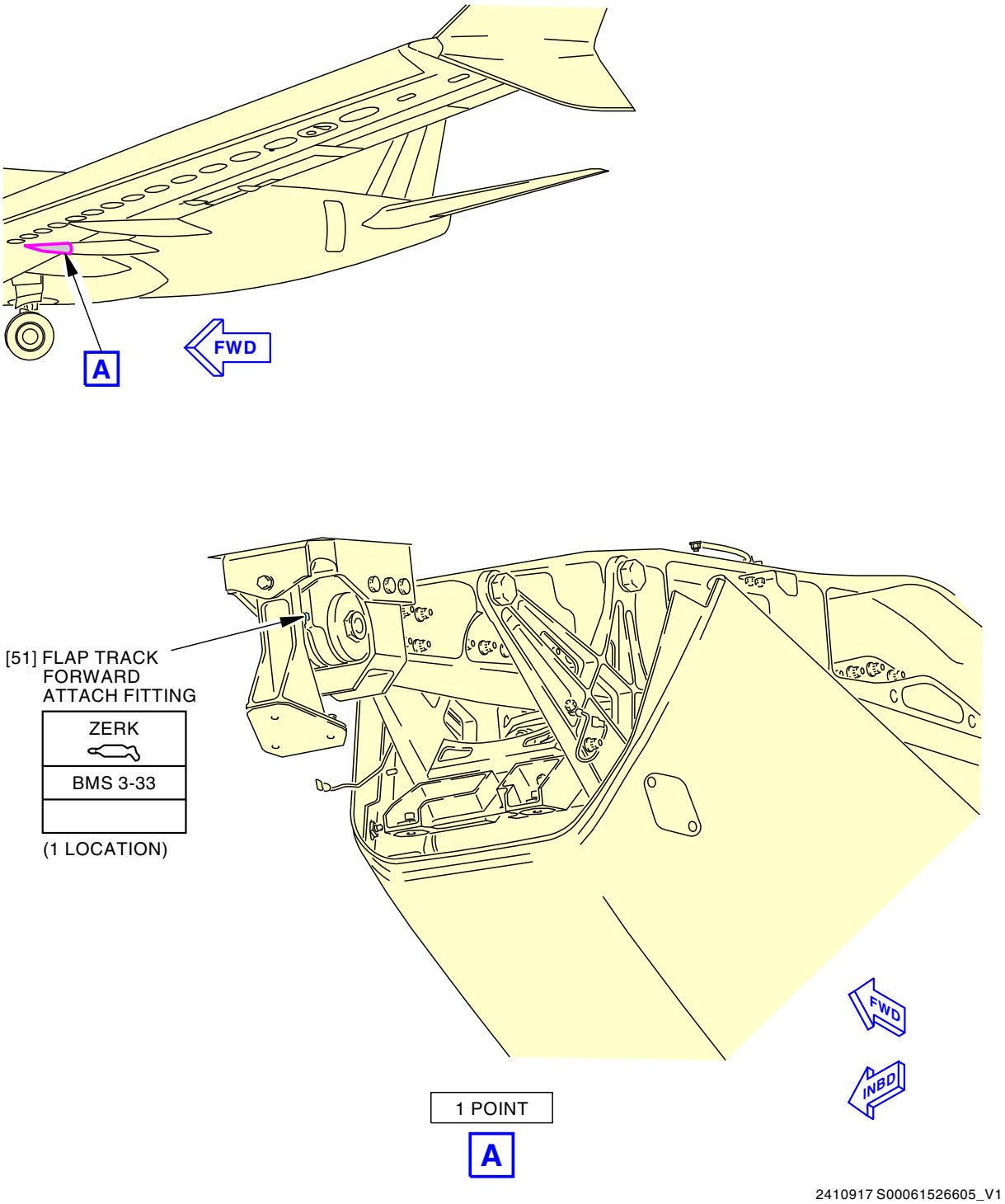
SUBTASK 12-22-51-410-003

(1) Do this task: Outboard Flap Inboard Support Forward Fairing Installation, TASK 27-51-28-400-804.

SUBTASK 12-22-51-440-015

(2) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

——— END OF TASK ———



Outboard Flap Inboard Flap Track Servicing
Figure 316/12-22-51-990-816

TASK 12-22-51-640-816

17. Outboard Flap Outboard Flap Track Lubrication

(Table 316, Figure 317)

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
27-51-00-040-801	Trailing Edge Flap System Deactivation (P/B 201)
27-51-00-440-801	Trailing Edge Flap System Reactivation (P/B 201)
27-51-28-000-802	Outboard Flap Outboard Support Forward Fairing Removal (P/B 401)
27-51-28-400-802	Outboard Flap Outboard Support Forward Fairing Installation (P/B 401)

B. Consumable Materials

Reference	Description	Specification
D00633	Grease - Aircraft General Purpose	BMS3-33

C. Location Zones

Zone	Area
544	Left Wing - Fairing Flap Support No. 1
644	Right Wing - Fairing Flap Support No. 8

D. Prepare for the Lubrication

SUBTASK 12-22-51-040-016

(1) Do this task: Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801.

SUBTASK 12-22-51-010-004

(2) Do this task: Outboard Flap Outboard Support Forward Fairing Removal, TASK 27-51-28-000-802.

E. Outboard Flap Outboard Flap Track Lubrication

(Table 316)

SUBTASK 12-22-51-640-049

(1) This table supplies data for the subsequent lubrication step:

Table 316/12-22-51-993-816 Outboard Flap Outboard Flap Track Servicing

Item No.	Nomenclature	Lubricant	Method of Application	Number of Locations
52	Flap Track Forward Attach Fitting	grease, D00633	Zerk	1

SUBTASK 12-22-51-640-050

(2) Lubricate the flap track forward attach fitting [52] with grease, D00633.

F. Put the Airplane Back to Its Usual Condition

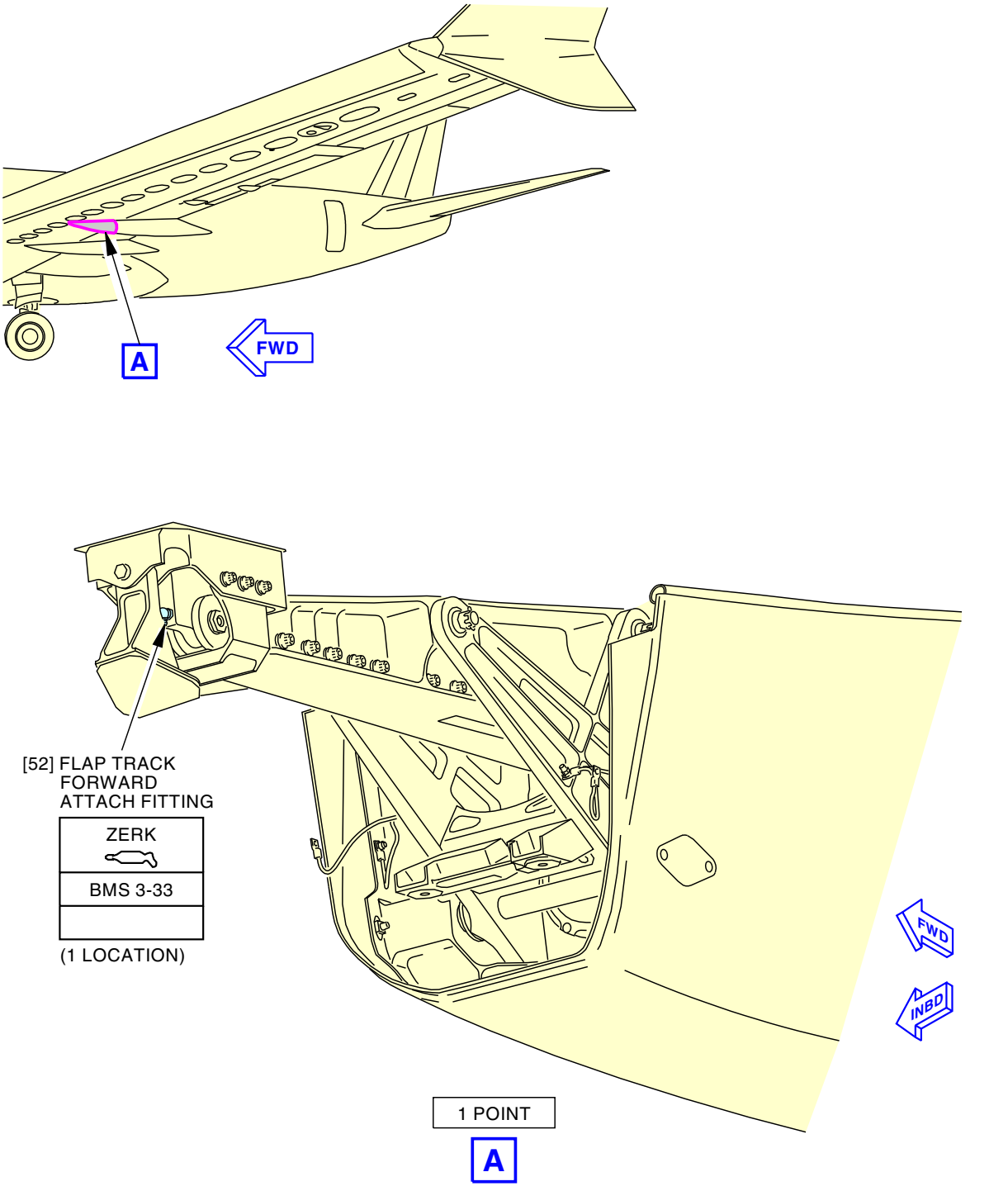
SUBTASK 12-22-51-410-004

(1) Do this task: Outboard Flap Outboard Support Forward Fairing Installation, TASK 27-51-28-400-802.

SUBTASK 12-22-51-440-016

(2) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

END OF TASK



Outboard Flap Outboard Flap Track Servicing
Figure 317/12-22-51-990-817

TASK 12-22-51-610-801

18. Trailing Edge Flap Power Drive Unit Servicing

(Table 317, Figure 318)

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
27-51-00-040-801	Trailing Edge Flap System Deactivation (P/B 201)
27-51-00-440-801	Trailing Edge Flap System Reactivation (P/B 201)

B. Consumable Materials

Reference	Description	Specification
D00467	Fluid - Landing Gear Shock Strut	BMS3-32 Type II

C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
55	Packing	27-51-51-10-440	SIA ALL

D. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right

E. Prepare for the Lubrication

SUBTASK 12-22-51-040-017

(1) Do this task: Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801.

F. Trailing Edge Flap Power Drive Unit Servicing

(Table 317)

SUBTASK 12-22-51-640-051

(1) This table supplies data for the subsequent servicing steps:

Table 317/12-22-51-993-817 Trailing Edge Flap Power Drive Unit Servicing

Item No.	Nomenclature	Lubricant	Method of Application	Number of Locations
53	Power Drive Unit	fluid, D00467	Fill	1

SUBTASK 12-22-51-610-001

(2) Do a check of the fluid level in the power drive unit [53]:

(a) Remove the fill plug [54] and packing [55] from the fill port.

1) Discard the packing [55].

(b) Make sure the fluid is at the level of the fill port.

(c) If the fluid is not at the level of the fill port, fill the power drive unit [53] with fluid, D00467, to the level of the fill port.

(d) Lubricate the new packing [55] with fluid, D00467.

(e) Install the fill plug [54] and new packing [55] in the fill port.

(f) Torque the fill plug [54] to 120 ±10 in-lb (14 ±2 N·m) more than the run-on torque.

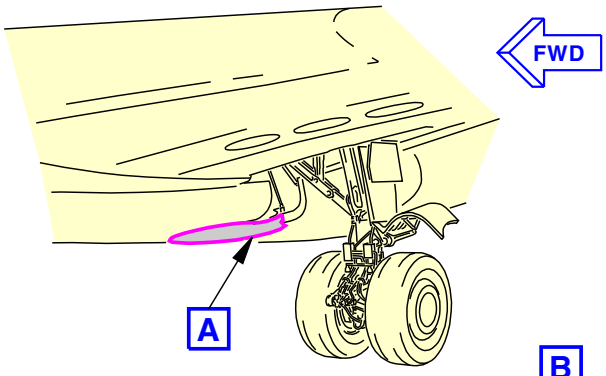
(g) Install lockwire on the fill plug [54].

G. Put the Airplane Back to Its Usual Condition

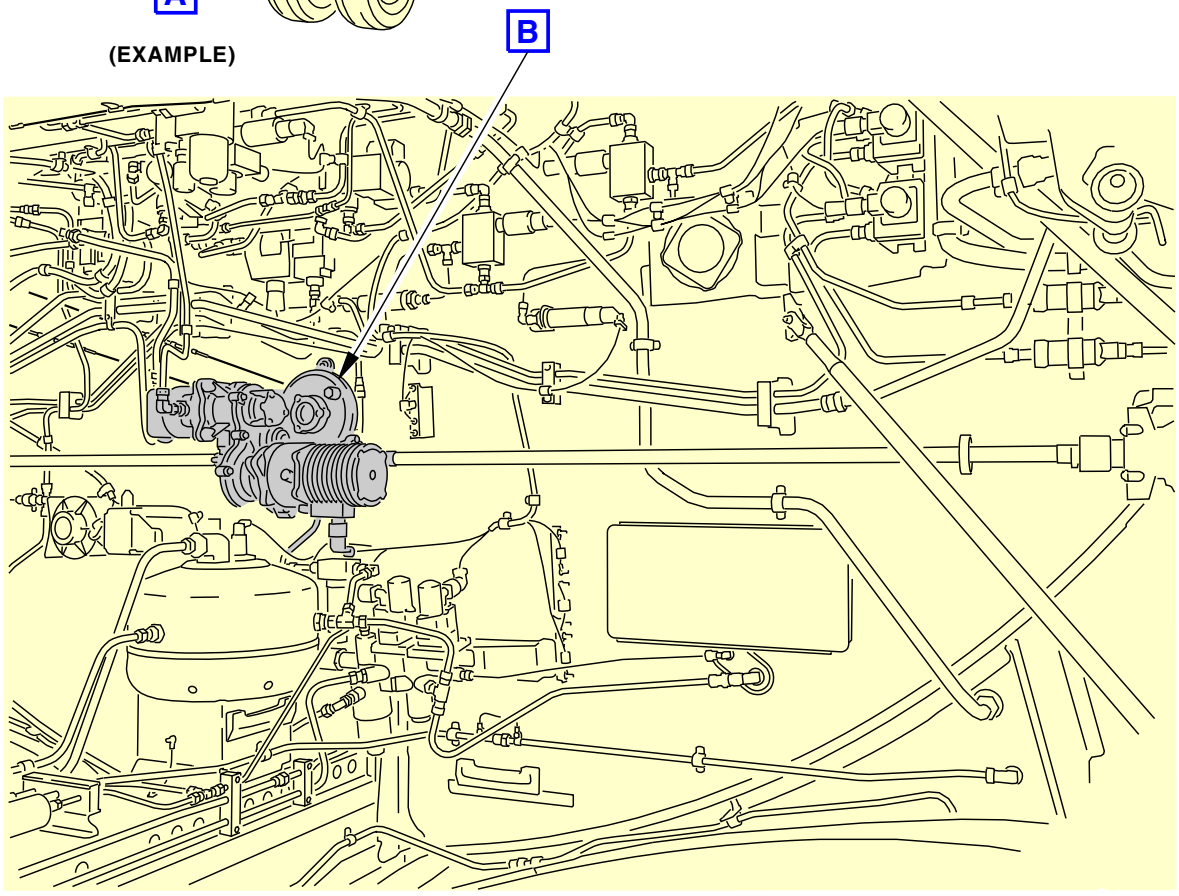
SUBTASK 12-22-51-440-017

(1) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

——— END OF TASK ———

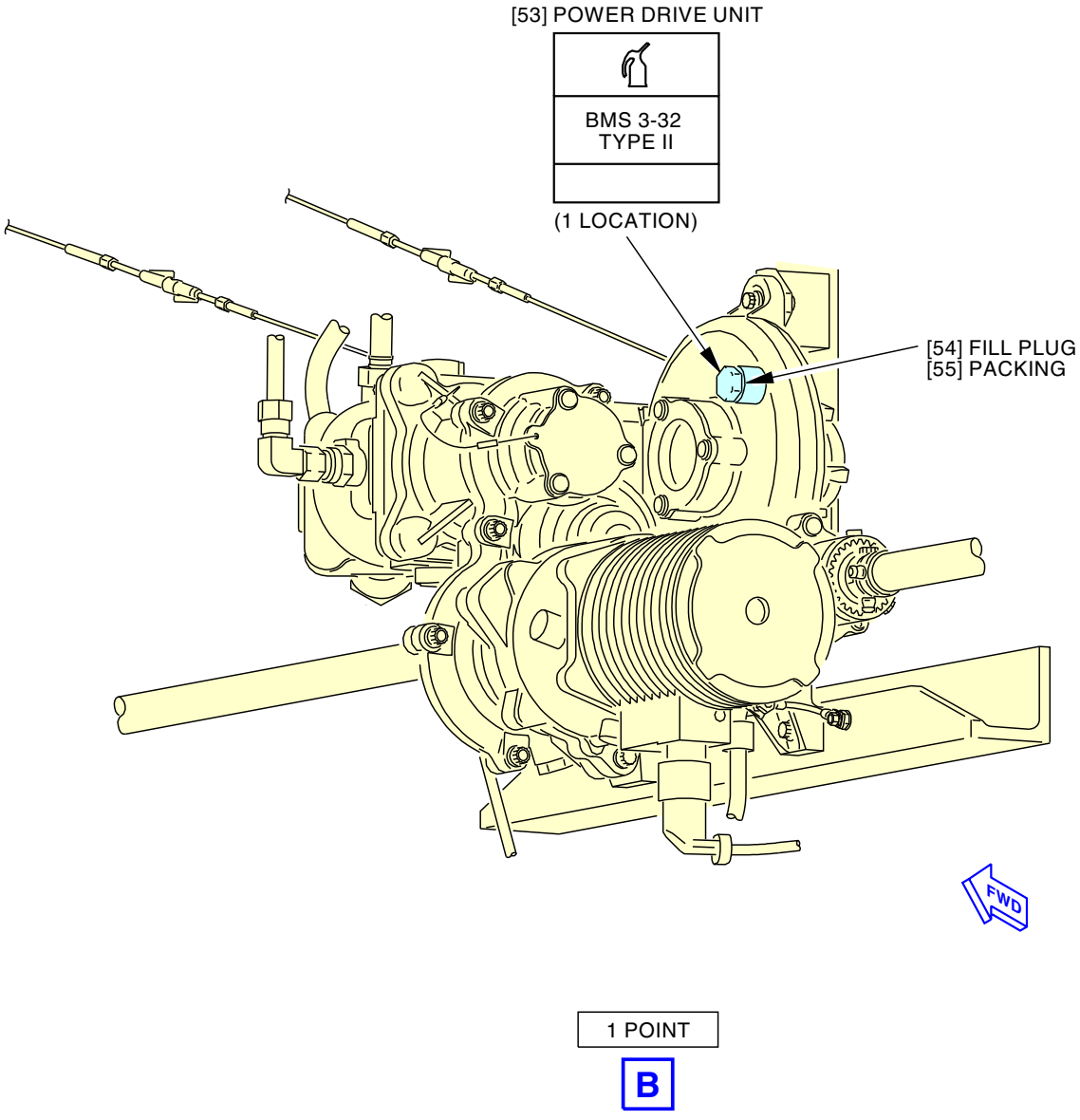


(EXAMPLE)



2410919 S00061526609_V2

Trailing Edge Flap Power Drive Unit Servicing
Figure 318/12-22-51-990-818 (Sheet 1 of 2)



2410920 S00061526610_V1

Trailing Edge Flap Power Drive Unit Servicing
Figure 318/12-22-51-990-818 (Sheet 2 of 2)

TASK 12-22-51-610-802

19. Trailing Edge Flap Power Drive Unit Fluid Replacement

(Table 318, Figure 319)

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
27-51-00-040-801	Trailing Edge Flap System Deactivation (P/B 201)
27-51-00-440-801	Trailing Edge Flap System Reactivation (P/B 201)

B. Tools/Equipment

Reference	Description
STD-3938	Container - Oil Resistant, 10 U.S. Gallon (38 Liter)

C. Consumable Materials

Reference	Description	Specification
D00467	Fluid - Landing Gear Shock Strut	BMS3-32 Type II

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
58	Packing	27-51-51-10-440	SIA ALL
79	Packing	27-51-51-10-440	SIA ALL

E. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right

F. Prepare for the Fluid Replacement

SUBTASK 12-22-51-040-018

(1) Do this task: Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801.

G. Trailing Edge Flap Power Drive Unit Oil Replacement

(Table 318)

SUBTASK 12-22-51-640-052

(1) This table supplies data for the subsequent fluid replacement steps:

Table 318/12-22-51-993-818 Trailing Edge Flap Power Drive Unit Fluid Replacement

Item No.	Nomenclature	Lubricant	Method of Application	Number of Locations
56	Power Drive Unit	fluid, D00467	Fill	1

SUBTASK 12-22-51-480-001

(2) Put a oil resistant container (10 gal), STD-3938 below the power drive unit to catch the fluid.

SUBTASK 12-22-51-680-001

(3) Drain the fluid from the power drive unit [56] (PDU):

(a) Remove the drain plug [78] and packing [79] from the drain port.

1) Discard the packing [79].

(b) Wait for the fluid, D00467 to drain from the drain port.

(c) Lubricate the new packing [79] with fluid.

(d) Install the drain plug [78] and new packing [79] in the fill port.

(e) Tighten the drain plug [78] to 120 ±10 in-lb (14 ±2 N·m) more than the run-on torque.

(f) Install lockwire on the drain plug [78].

SUBTASK 12-22-51-610-002

(4) Fill the PDU with fluid:

(a) Remove the fill plug [57] and packing [58] from the fill port.

1) Discard the packing [58].

(b) Add fluid, D00467 to the PDU until the fluid is at the level of the fill port.

(c) Lubricate the new packing [58] with fluid.

(d) Install the fill plug [57] and new packing [58] in the fill port.

(e) Tighten the fill plug [57] to 120 ±10 in-lb (14 ±2 N·m) more than the run-on torque.

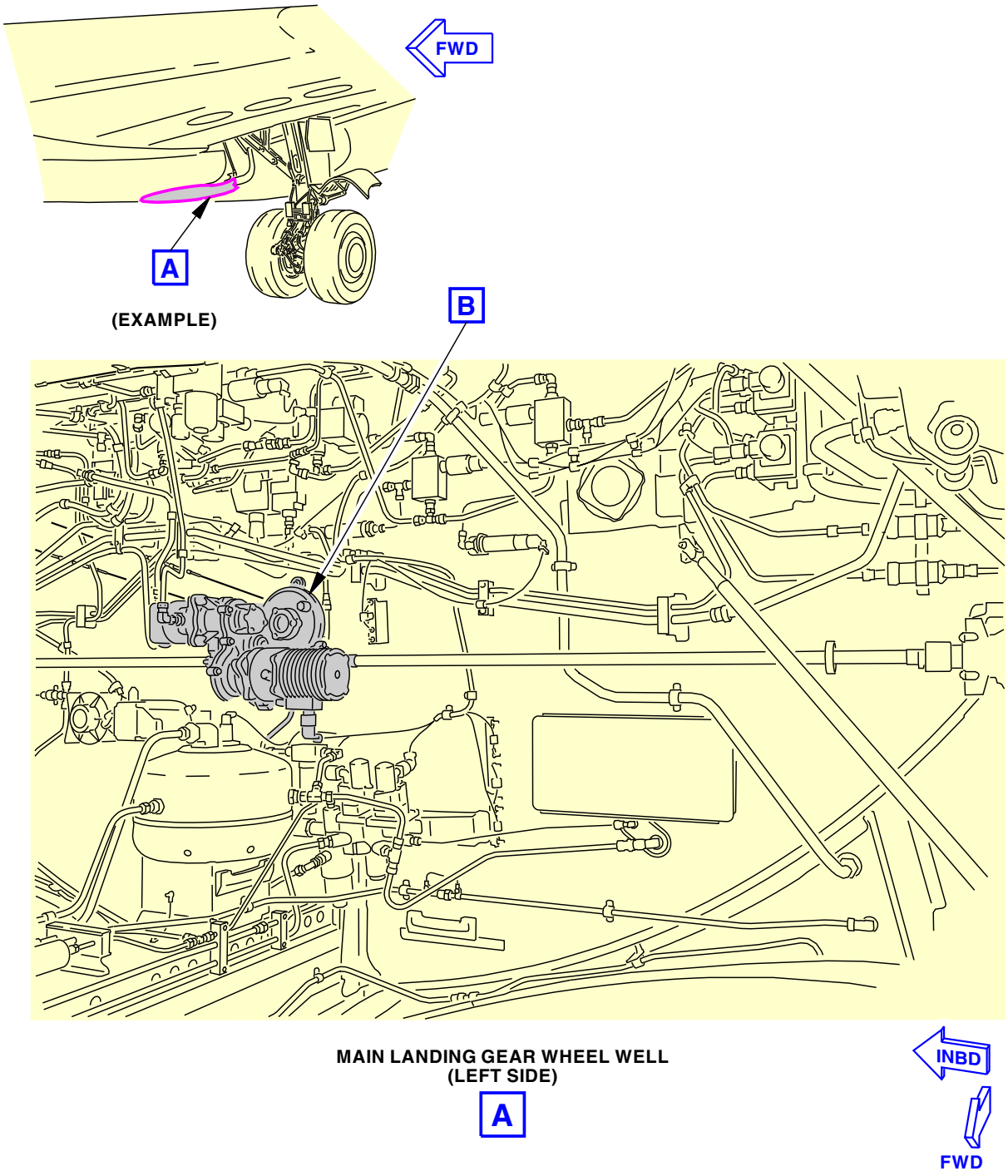
(f) Install lockwire on the fill plug [57].

H. Put the Airplane Back to Its Usual Condition

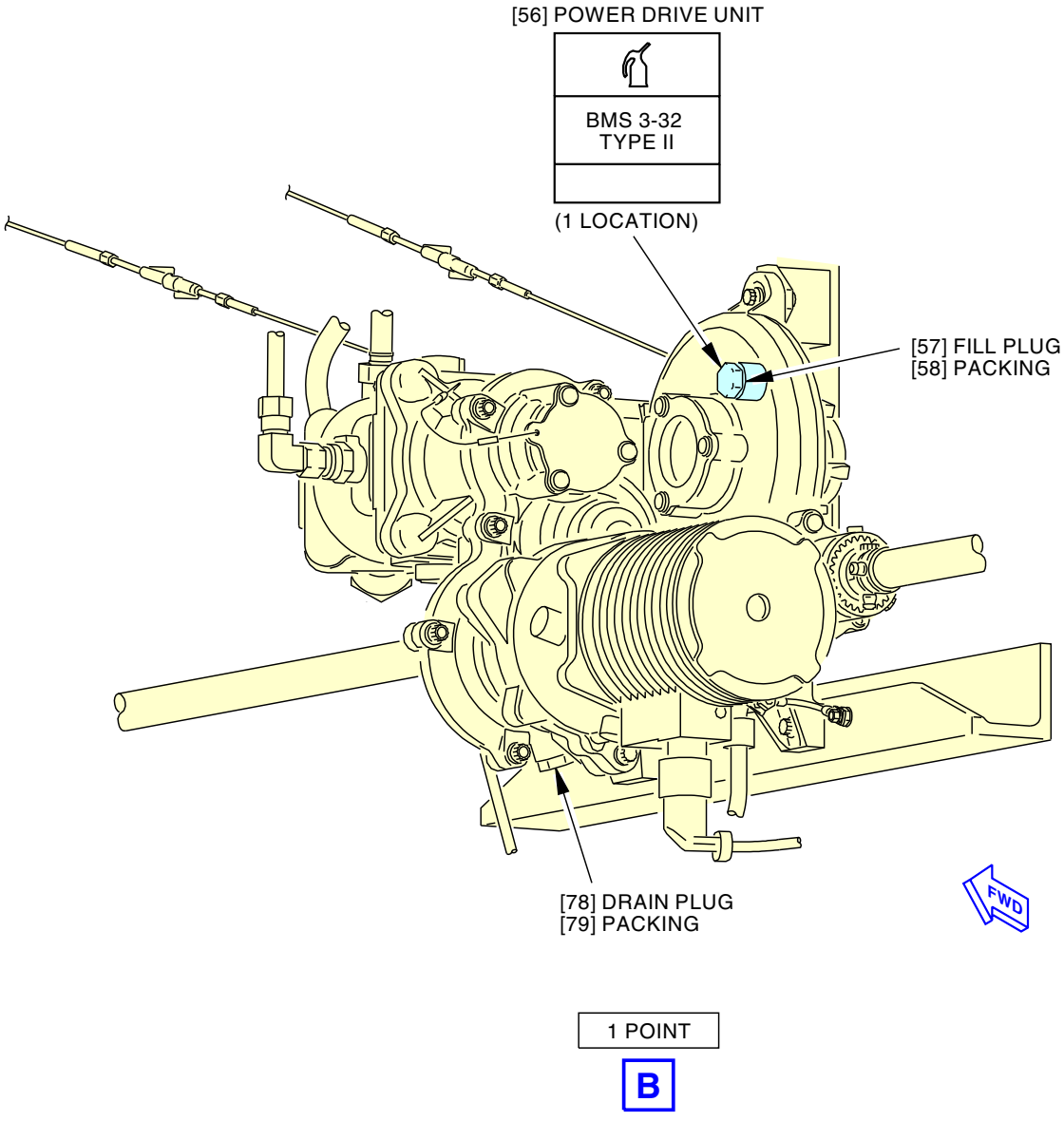
SUBTASK 12-22-51-440-018

(1) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

END OF TASK



Trailing Edge Flap Power Drive Unit Fluid Replacement
Figure 319/12-22-51-990-819 (Sheet 1 of 2)



2410922 S00061526613_V1

Trailing Edge Flap Power Drive Unit Fluid Replacement
Figure 319/12-22-51-990-819 (Sheet 2 of 2)

TASK 12-22-51-610-803

20. Trailing Edge Flap Transmission Servicing

(Table 319, Figure 320)

NOTE: This procedure is a scheduled maintenance task.

A. General

(1) This task is applicable to all of the transmissions on the trailing edge flaps.

B. References

Reference	Title
27-51-00-040-801	Trailing Edge Flap System Deactivation (P/B 201)
27-51-00-440-801	Trailing Edge Flap System Reactivation (P/B 201)
27-51-00-860-803	Extend the Trailing Edge Flaps (P/B 201)
27-51-00-860-804	Retract the Trailing Edge Flaps (P/B 201)

C. Consumable Materials

Reference	Description	Specification
D00467	Fluid - Landing Gear Shock Strut	BMS3-32 Type II
D00590	Fluid - Flap Drive System - Brayco 795	

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
60	Packing	27-51-31-13-165	SIA ALL
		27-51-31-15-125	SIA ALL
		27-51-41-03-172	SIA ALL
		27-51-41-07-190	SIA ALL

E. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right
542	Left Wing - Fairing Flap Support No. 3
543	Left Wing - Fairing Flap Support No. 2
544	Left Wing - Fairing Flap Support No. 1
642	Right Wing - Fairing Flap Support No. 6
643	Right Wing - Fairing Flap Support No. 7
644	Right Wing - Fairing Flap Support No. 8

F. Prepare for the Lubrication

SUBTASK 12-22-51-860-019

(1) Extend the trailing edge flaps to the 40-unit position. To extend them, do this task: Extend the Trailing Edge Flaps, TASK 27-51-00-860-803.

SUBTASK 12-22-51-040-019

(2) Do this task: Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801.

G. Trailing Edge Flap Transmission Servicing

(Table 319)

SUBTASK 12-22-51-640-053

(1) This table supplies data for the subsequent servicing steps:

Table 319/12-22-51-993-819 Trailing Edge Flap Transmission Servicing

Item No.	Nomenclature	Lubricant	Method of Application	Number of Locations
64	Transmission No. 4 (Transmission No. 5 is Equivalent)	Brayco 795 fluid, D00590 or fluid, D00467	Fill	1
63	Transmission No. 3 (Transmission No. 6 is Equivalent)	Brayco 795 fluid, D00590 or fluid, D00467	Fill	1
62	Transmission No. 2 (Transmission No. 7 is Equivalent)	Brayco 795 fluid, D00590 or fluid, D00467	Fill	1
61	Transmission No. 1 (Transmission No. 8 is Equivalent)	Brayco 795 fluid, D00590 or fluid, D00467	Fill	1

SUBTASK 12-22-51-610-003

(2) Do a check of the fluid level transmission:

(a) Remove the fill plug [59] and packing [60] from the fill port.

1) Discard the packing [60].

(b) Make sure the fluid is at the level of the fill port.

NOTE: BMS 3-32, Type II may be red or yellow. The color of the BMS 3-32, Type II was changed from red to yellow, but they are interchangeable and may be mixed. Brayco 795 is red and can be mixed with BMS 3-32, Type II.

(c) If the fluid is not at the level of the fill port, fill the transmission with Brayco 795 fluid, D00590 or fluid, D00467 to the level of the fill port.

(d) Lubricate the new packing [60] with fluid.

(e) Install the fill plug [59] and new packing [60] in the fill port.

(f) Tighten the fill plug [59] to 140 ±10 in-lb (15.8 ±1.1 N·m).

(g) Install lockwire on the fill plug [59].

H. Put the Airplane Back to Its Usual Condition

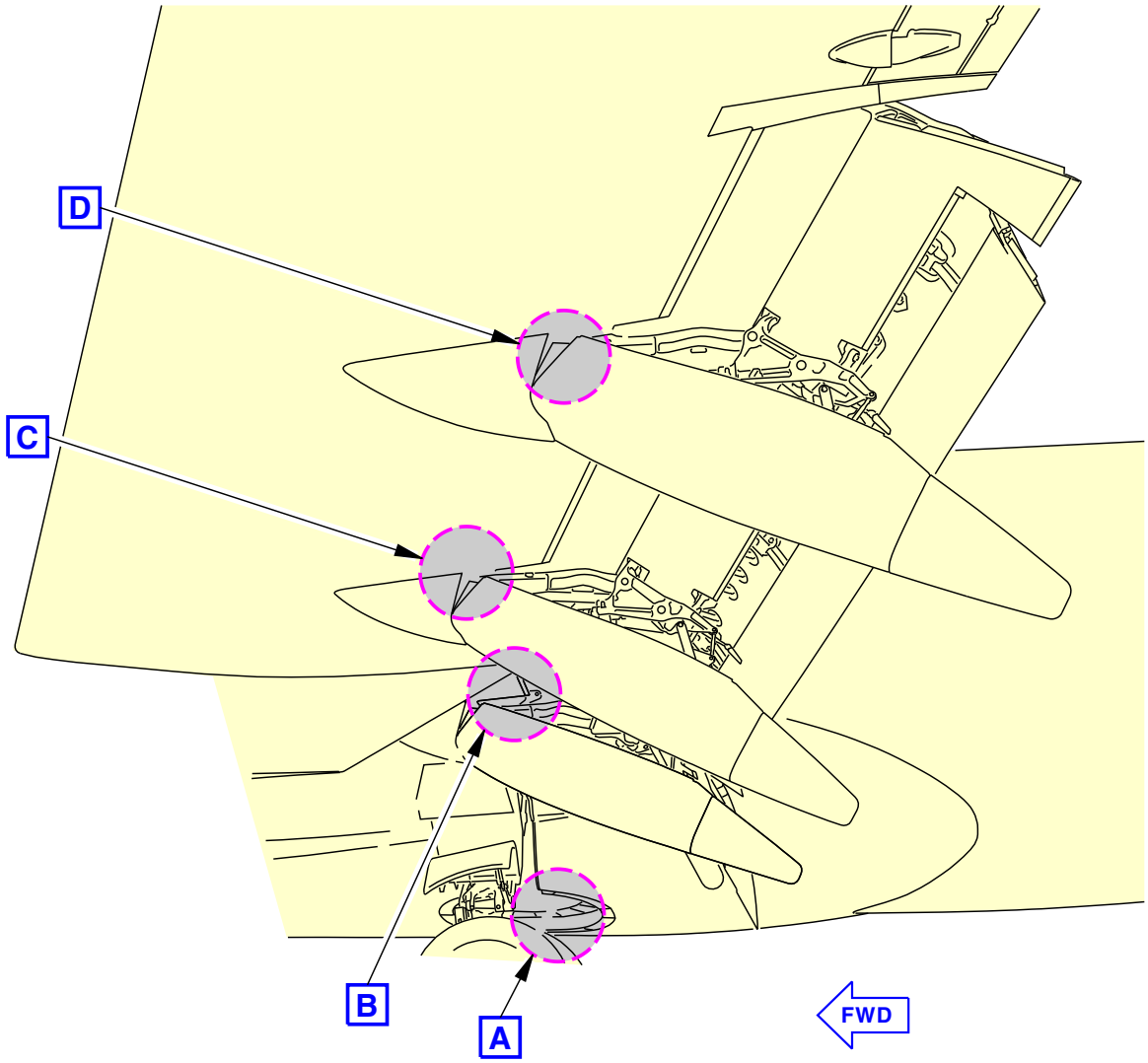
SUBTASK 12-22-51-440-019

(1) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

SUBTASK 12-22-51-860-020

(2) Retract the trailing edge flaps to the UP position. To retract them, do this task: Retract the Trailing Edge Flaps, TASK 27-51-00-860-804.

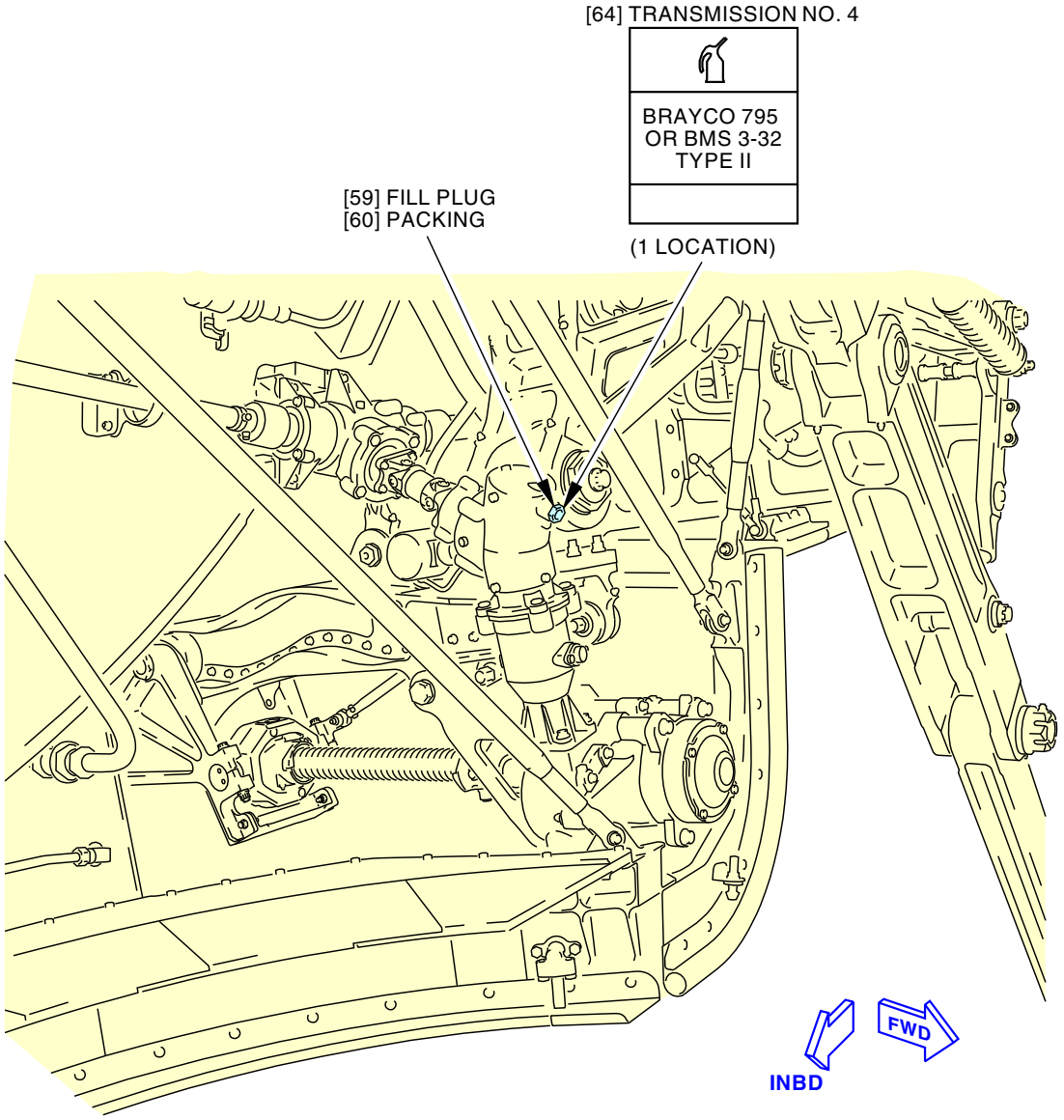
END OF TASK



(EXAMPLE)

2410923 S00061526615_V2

Trailing Edge Flap Transmission Servicing
Figure 320/12-22-51-990-820 (Sheet 1 of 5)



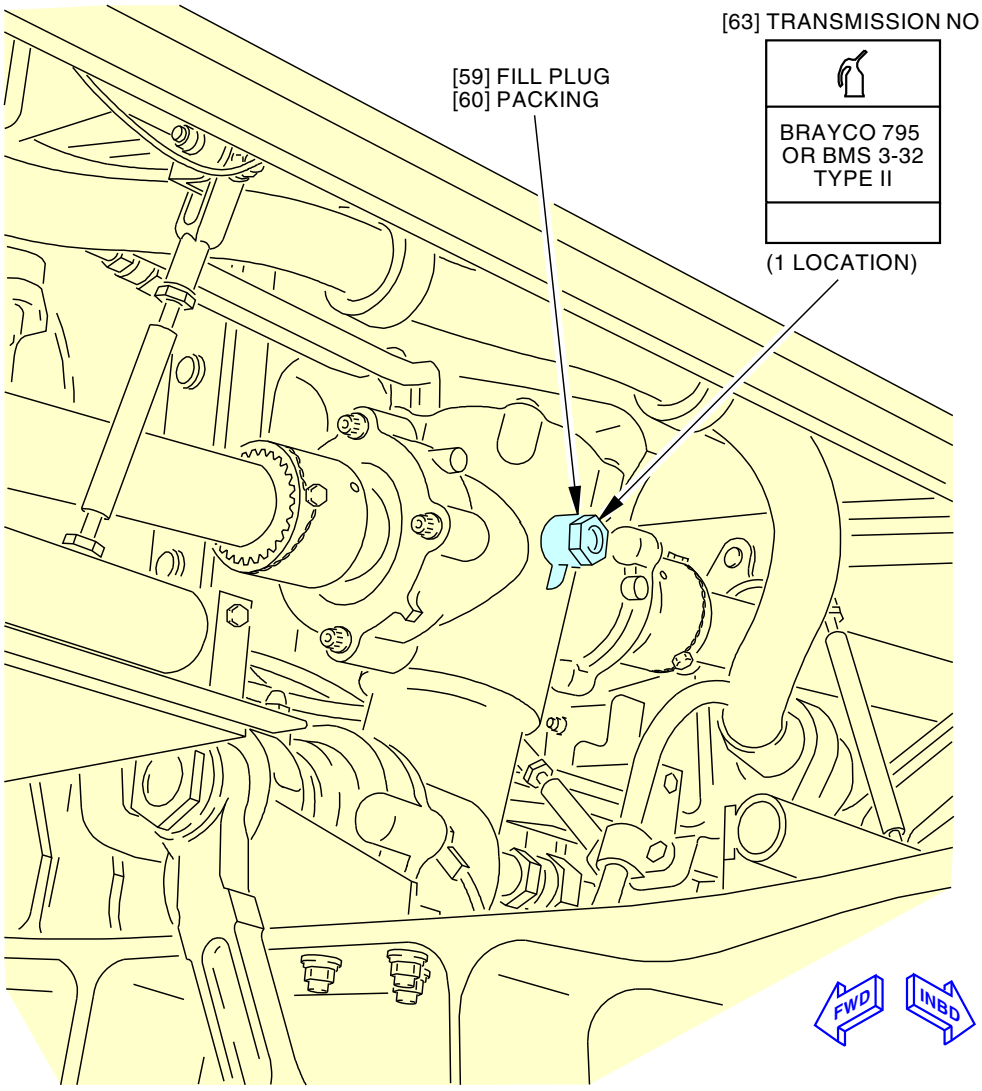
TRANSMISSION NO. 4
(TRANSMISSION NO. 5 IS EQUIVALENT)
(EXAMPLE)

1 POINT

A

2410924 S00061526616_V2

Trailing Edge Flap Transmission Servicing
Figure 320/12-22-51-990-820 (Sheet 2 of 5)



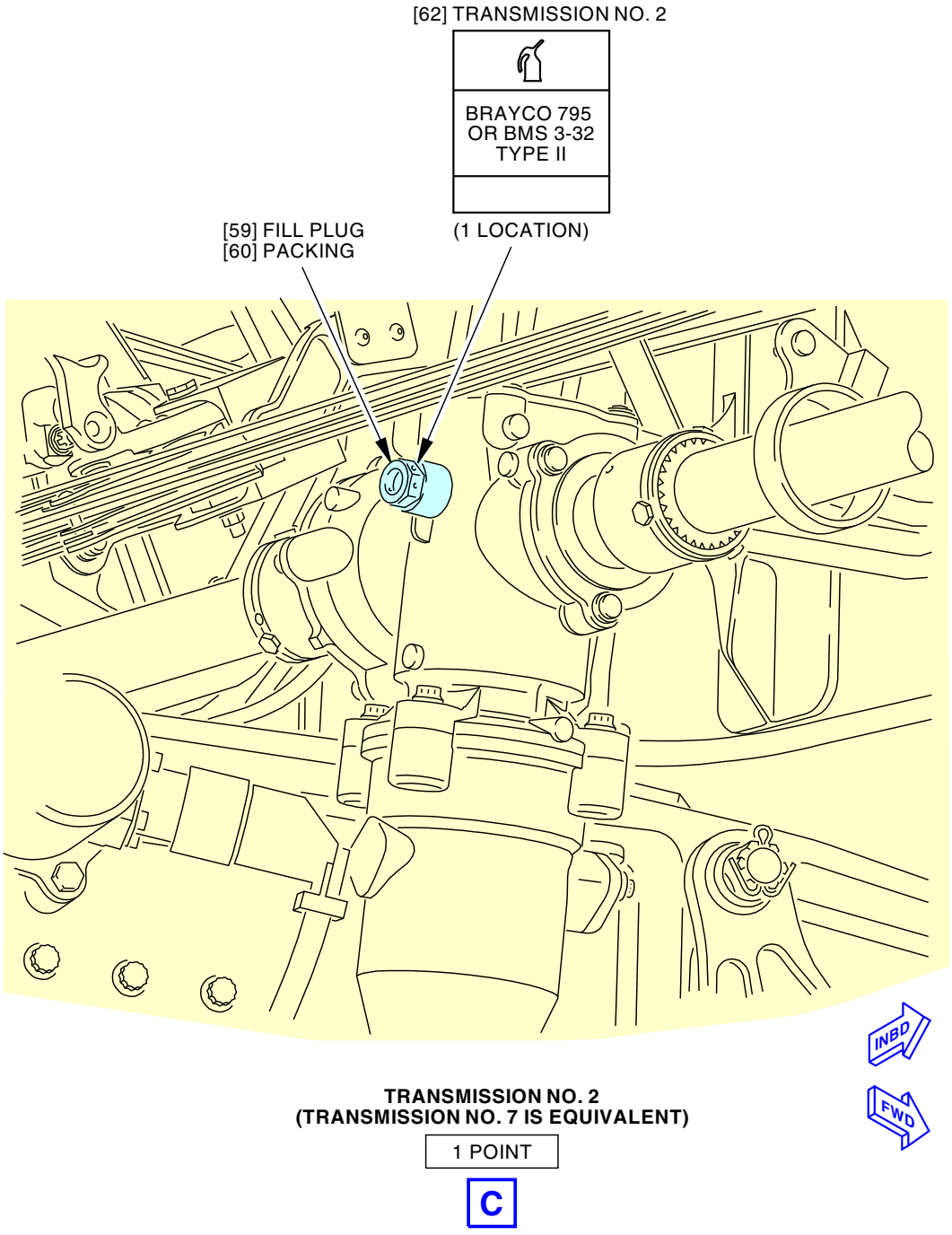
TRANSMISSION NO. 3
(TRANSMISSION NO. 6 IS EQUIVALENT)

1 POINT

B

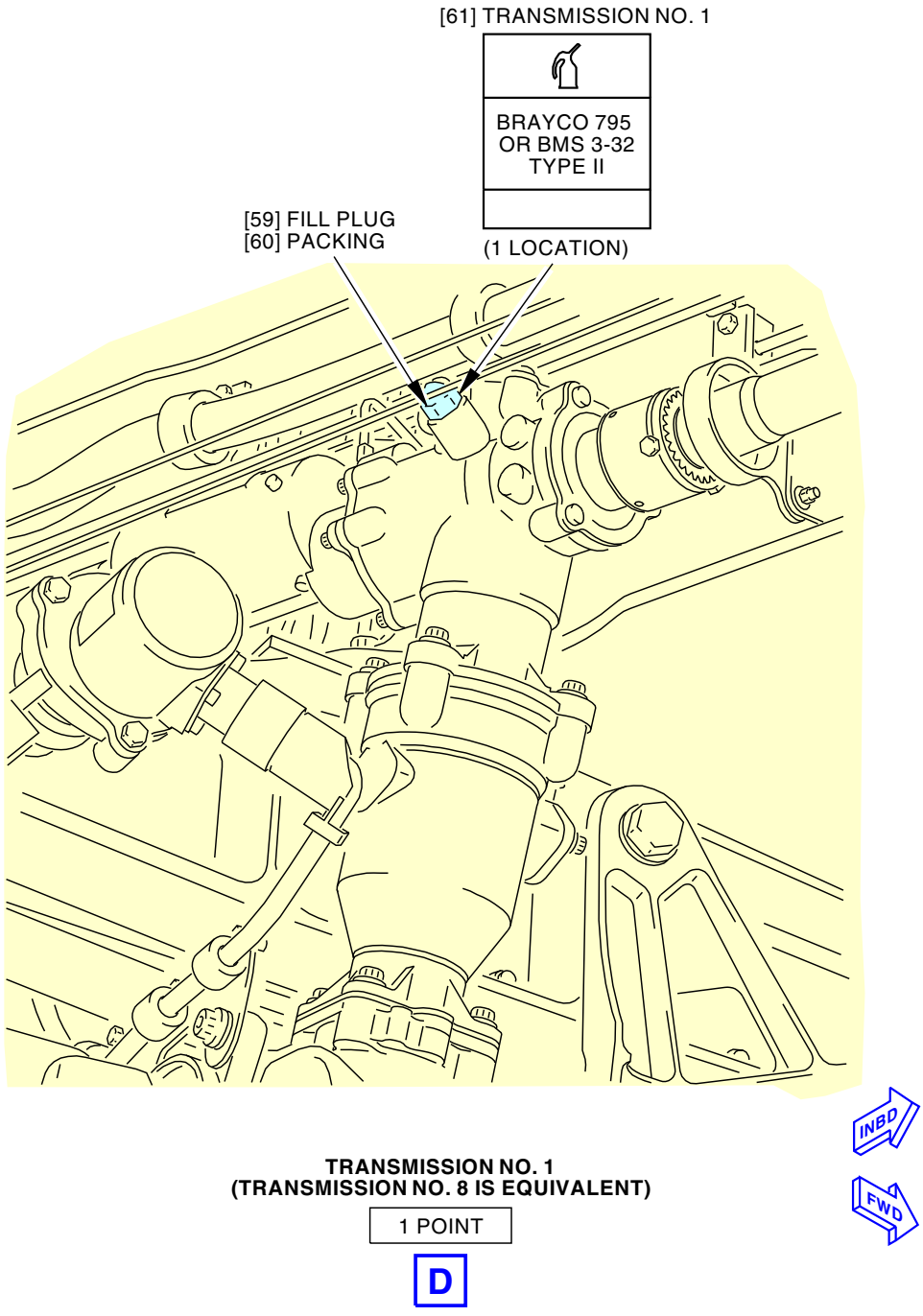
2410925 S00061526617_V1

Trailing Edge Flap Transmission Servicing
Figure 320/12-22-51-990-820 (Sheet 3 of 5)



2410926 S00061526618_V1

Trailing Edge Flap Transmission Servicing
Figure 320/12-22-51-990-820 (Sheet 4 of 5)



Trailing Edge Flap Transmission Servicing
Figure 320/12-22-51-990-820 (Sheet 5 of 5)

TASK 12-22-51-610-804

21. Trailing Edge Flap Transmission Oil Replacement

(Table 320, Figure 321)

NOTE: This procedure is a scheduled maintenance task.

A. General

(1) This task is applicable to all of the transmissions on the trailing edge flaps.

B. References

Reference	Title
27-51-00-040-801	Trailing Edge Flap System Deactivation (P/B 201)
27-51-00-440-801	Trailing Edge Flap System Reactivation (P/B 201)
27-51-00-860-803	Extend the Trailing Edge Flaps (P/B 201)
27-51-00-860-804	Retract the Trailing Edge Flaps (P/B 201)
27-51-18-000-802	Inboard Flap Support Aft Fairing Removal (P/B 401)
27-51-18-400-802	Inboard Flap Support Aft Fairing Installation (P/B 401)
27-51-28-000-803	Outboard Flap Outboard Support Aft Fairing Removal (P/B 401)
27-51-28-000-805	Outboard Flap Inboard Support Aft Fairing Removal (P/B 401)
27-51-28-400-803	Outboard Flap Outboard Support Aft Fairing Installation (P/B 401)
27-51-28-400-805	Outboard Flap Inboard Support Aft Fairing Installation (P/B 401)

C. Tools/Equipment

Reference	Description
STD-3938	Container - Oil Resistant, 10 U.S. Gallon (38 Liter)

D. Consumable Materials

Reference	Description	Specification
D00467	Fluid - Landing Gear Shock Strut	BMS3-32 Type II
D00590	Fluid - Flap Drive System - Brayco 795	
G50237	Compound - Corrosion Inhibiting, Non-drying - Cor-Ban 27L	BMS3-38

E. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
66	Packing	27-51-31-15-125	SIA ALL
67	Packing	27-51-31-13-265	SIA ALL
		27-51-41-03-275	SIA ALL
		27-51-41-07-290	SIA ALL

F. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right
542	Left Wing - Fairing Flap Support No. 3
543	Left Wing - Fairing Flap Support No. 2
544	Left Wing - Fairing Flap Support No. 1
642	Right Wing - Fairing Flap Support No. 6
643	Right Wing - Fairing Flap Support No. 7

(Continued)

Zone	Area
644	Right Wing - Fairing Flap Support No. 8

G. Prepare for the Fluid Replacement

SUBTASK 12-22-51-860-021

(1) Extend the trailing edge flaps to the 40-unit position. To extend them, do this task: Extend the Trailing Edge Flaps, TASK 27-51-00-860-803.

SUBTASK 12-22-51-040-020

(2) Do this task: Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801.

SUBTASK 12-22-51-010-005

(3) Remove the aft fairings from the flap supports:

(a) For flap supports Number 1 and 8, do this task: Outboard Flap Outboard Support Aft Fairing Removal, TASK 27-51-28-000-803.

(b) For flap supports Number 2 and 7, do this task: Outboard Flap Inboard Support Aft Fairing Removal, TASK 27-51-28-000-805.

(c) For flap supports Number 3 and 6, do this task: Inboard Flap Support Aft Fairing Removal, TASK 27-51-18-000-802.

H. Trailing Edge Flap Transmission Oil Replacement

(Table 320)

SUBTASK 12-22-51-640-054

(1) This table supplies data for the subsequent servicing steps:

Table 320/12-22-51-993-820 Trailing Edge Flap Transmission Fluid Replacement

Item No.	Nomenclature	Lubricant	Method of Application	Number of Locations
74	Transmission No. 4 (Transmission No. 5 is Equivalent)	Brayco 795 fluid, D00590 or fluid, D00467	Fill	1
73	Transmission No. 3 (Transmission No. 6 is Equivalent)	Brayco 795 fluid, D00590 or fluid, D00467	Fill	1
72	Transmission No. 2 (Transmission No. 7 is Equivalent)	Brayco 795 fluid, D00590 or fluid, D00467	Fill	1
71	Transmission No. 1 (Transmission No. 8 is Equivalent)	Brayco 795 fluid, D00590 or fluid, D00467	Fill	1

SUBTASK 12-22-51-480-002

(2) Put a oil resistant container (10 gal), STD-3938 below the applicable transmission to catch the fluid.

SUBTASK 12-22-51-680-002

(3) Drain the fluid from the transmission:

(a) Remove the bolts [70] and washers [69] that attach the cap [68] to the transmission.

(b) Remove the cap [68] and the packing [67] from the transmission.

1) Discard the packing [67].

(c) Wait for theBrayco 795 fluid, D00590 or fluid, D00467 to drain from the transmission.

(d) Clean the fluid from the mating surface of the cap [68].

(e) Apply Brayco 795 fluid, D00590 or fluid, D00467 to the new packing [67].

WARNING

USE NITRILE GLOVES FOR SKIN PROTECTION WHEN YOU USE COR-BAN 27L, G50237. IF IT GETS ON YOUR SKIN, IMMEDIATELY REMOVE IT WITH WATER. IF THIS MATERIAL GETS IN YOUR EYES, IMMEDIATELY FLUSH YOUR EYES WITH WATER. GET MEDICAL AID. THIS MATERIAL CONTAINS FLAMMABLE AGENTS WHICH CAN CAUSE INJURIES TO PERSONNEL.

(f) Apply Cor-Ban 27L Compound, G50237to the mating surface of the cap [68].

(g) Install the cap [68] and the new packing [67] in the transmission.

(h) Install the bolts [70] and washers [69] to hold the cap [68].

SUBTASK 12-22-51-610-004

(4) Fill the transmission with fluid:

(a) Remove the fill plug [65] and packing [66] from the fill port.

1) Discard the packing [66].

(b) Add Brayco 795 fluid, D00590 or fluid, D00467 to the transmission until the fluid is at the level of the fill port.

(c) Lubricate the new packing [66] with fluid.

(d) Install the fill plug [65] and new packing [66] in the fill port.

(e) Tighten the fill plug [65] to 120 ±10 in-lb (14 ±2 N·m) more than the run-on torque.

(f) Install lockwire on the fill plug [65].

I. Put the Airplane Back to Its Usual Condition

SUBTASK 12-22-51-410-005

(1) Install the aft fairings on the flap supports:

(a) For flap supports Number 1 and 8, do this task: Outboard Flap Outboard Support Aft Fairing Installation, TASK 27-51-28-400-803.

(b) For flap supports Number 2 and 7, do this task: Outboard Flap Inboard Support Aft Fairing Installation, TASK 27-51-28-400-805.

(c) For flap supports Number 3 and 6, do this task: Inboard Flap Support Aft Fairing Installation, TASK 27-51-18-400-802.

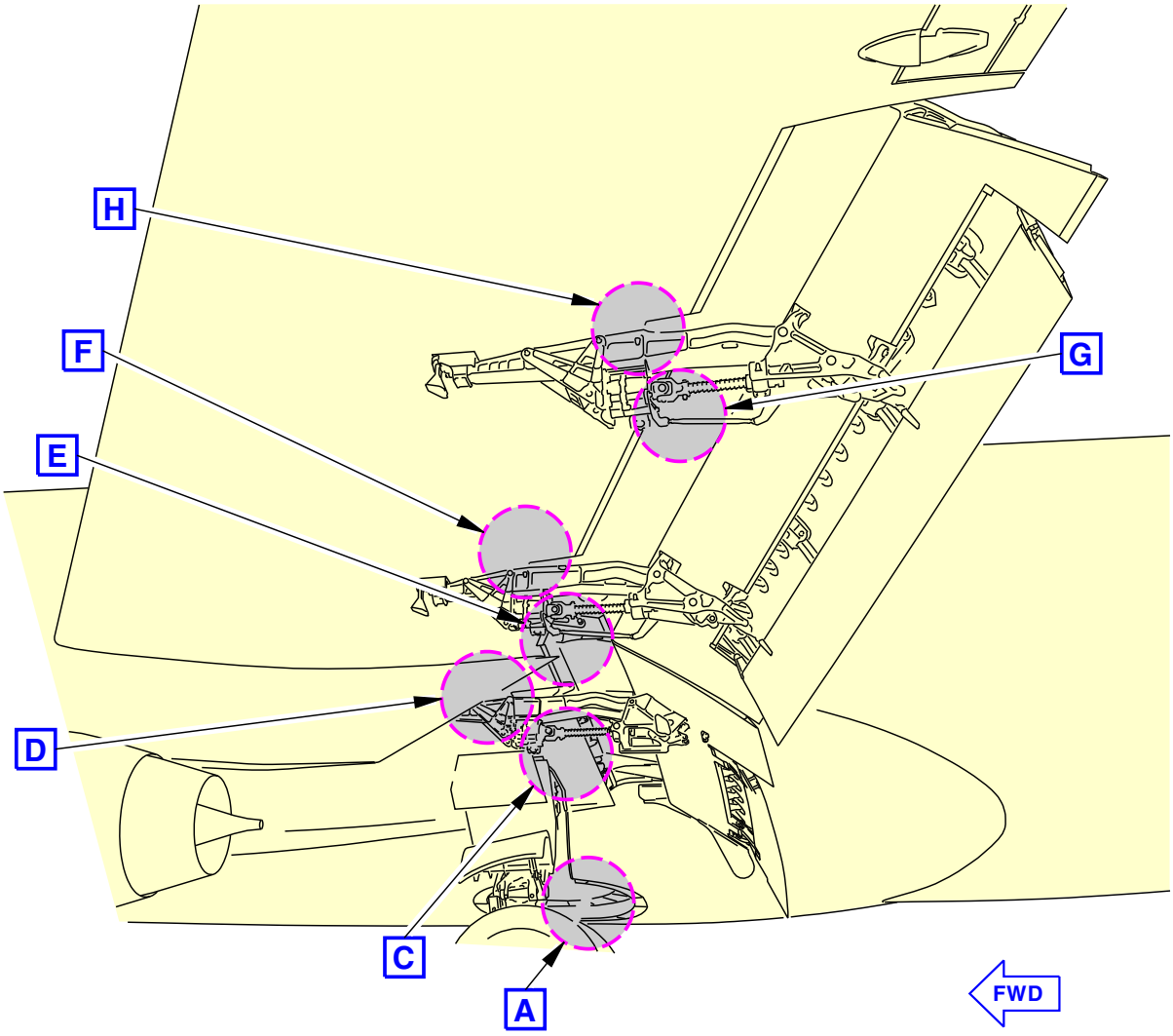
SUBTASK 12-22-51-440-020

(2) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

SUBTASK 12-22-51-860-022

(3) Retract the trailing edge flaps to the UP position. To retract them, do this task: Retract the Trailing Edge Flaps, TASK 27-51-00-860-804.

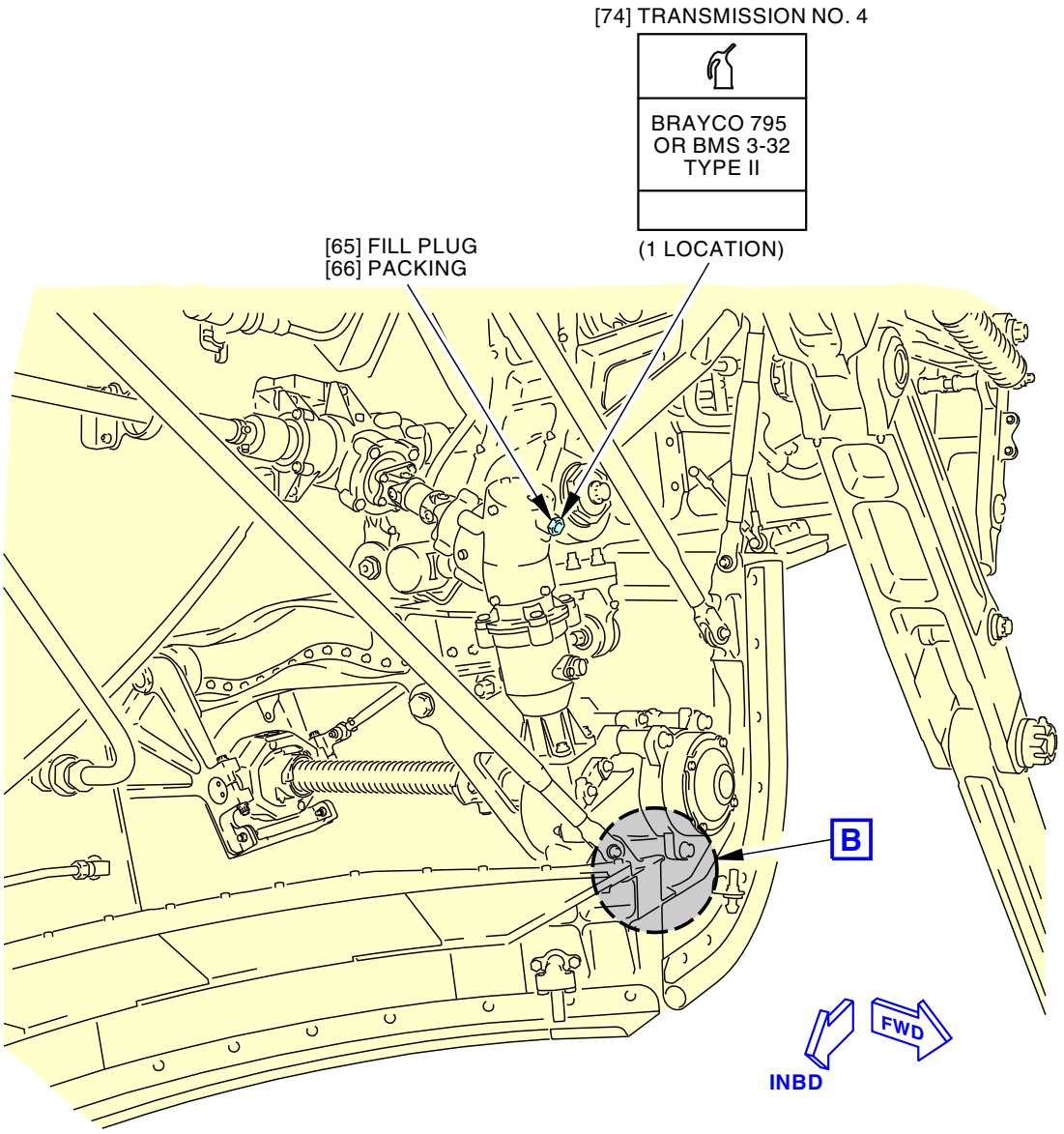
END OF TASK



(EXAMPLE)

2410928 S00061526621_V2

Trailing Edge Flap Transmission Oil Replacement
Figure 321/12-22-51-990-821 (Sheet 1 of 9)



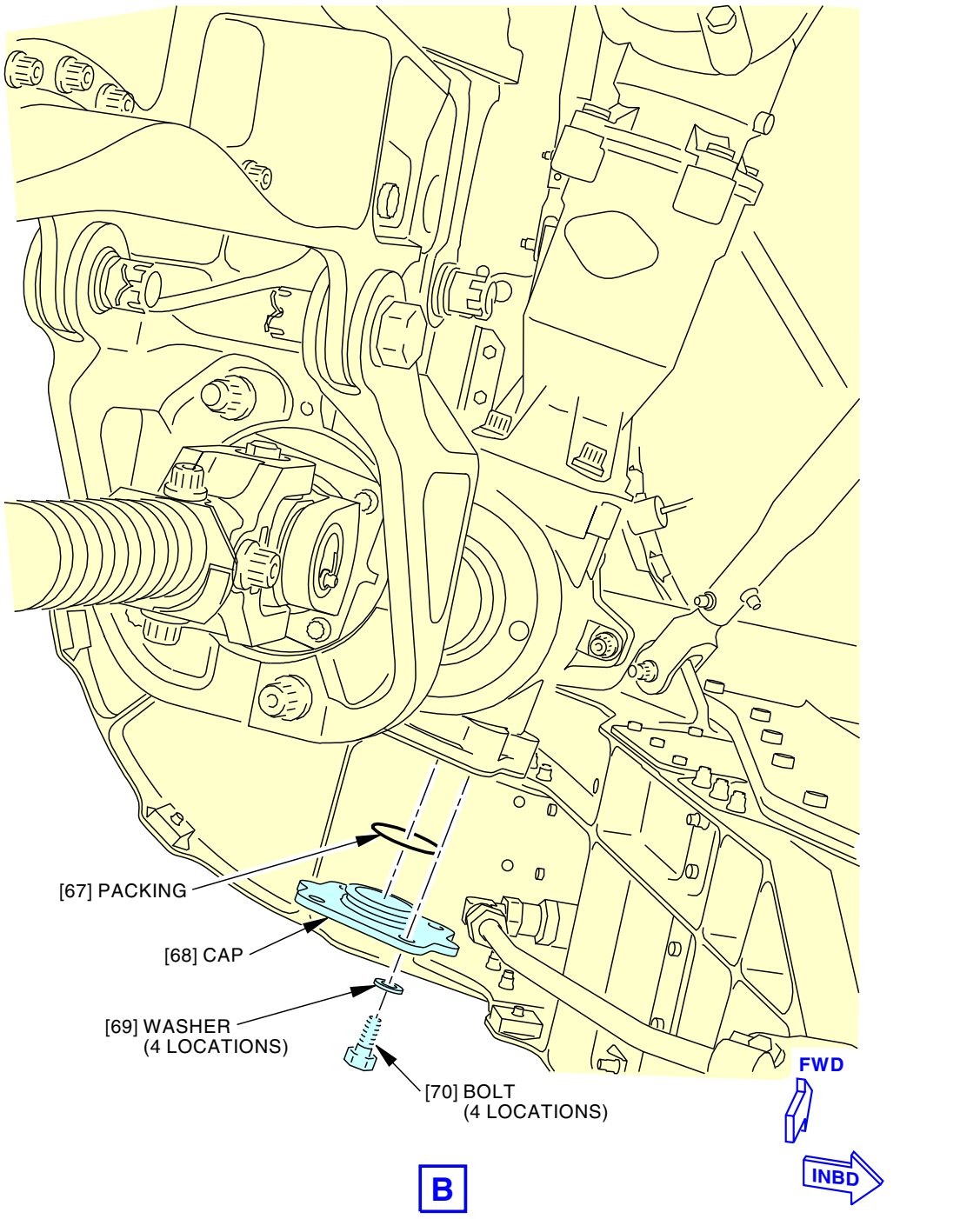
TRANSMISSION NO. 4
(TRANSMISSION NO. 5 IS EQUIVALENT)
(EXAMPLE)

1 POINT

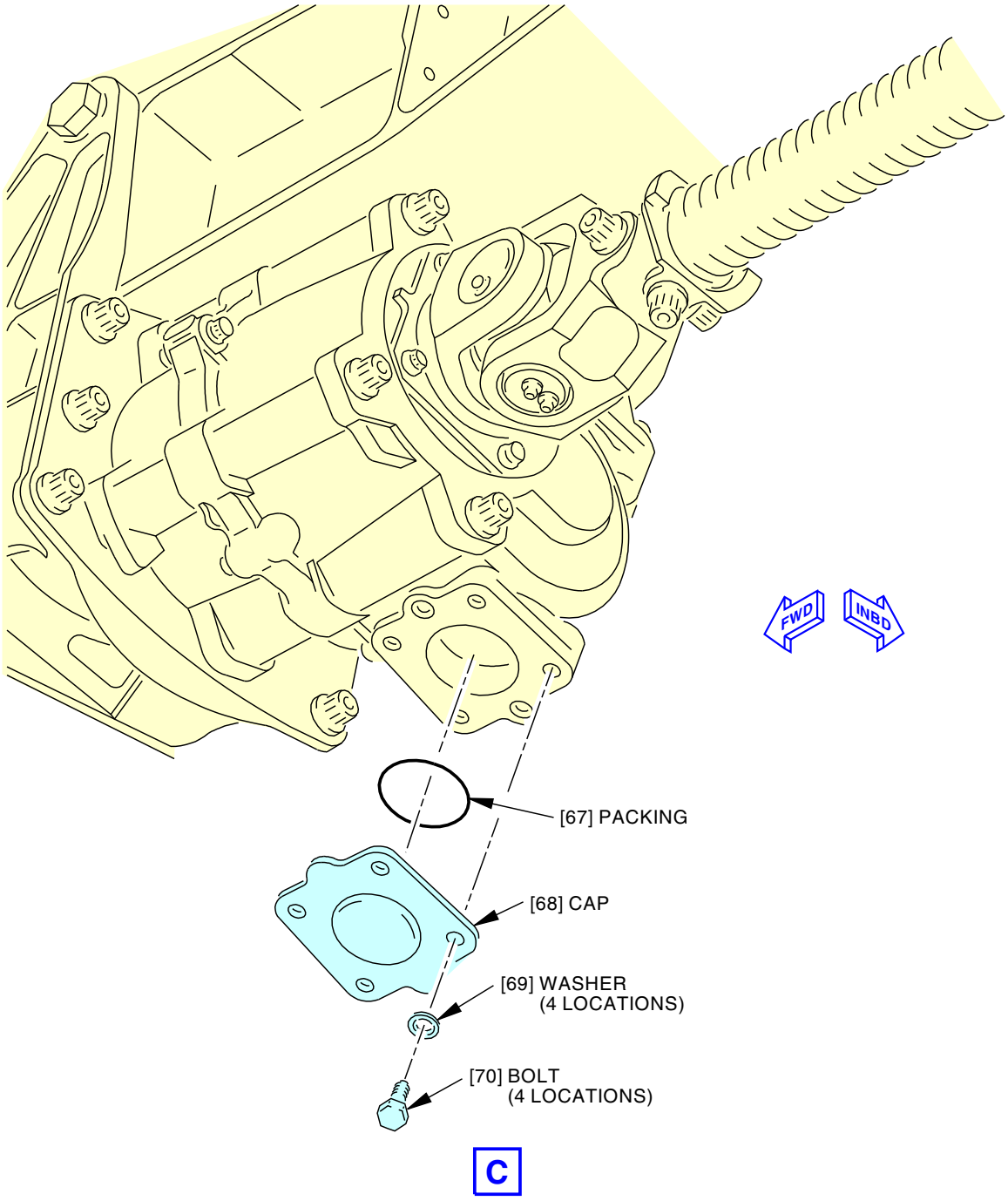
A

2410929 S00061526622_V2

Trailing Edge Flap Transmission Oil Replacement
Figure 321/12-22-51-990-821 (Sheet 2 of 9)

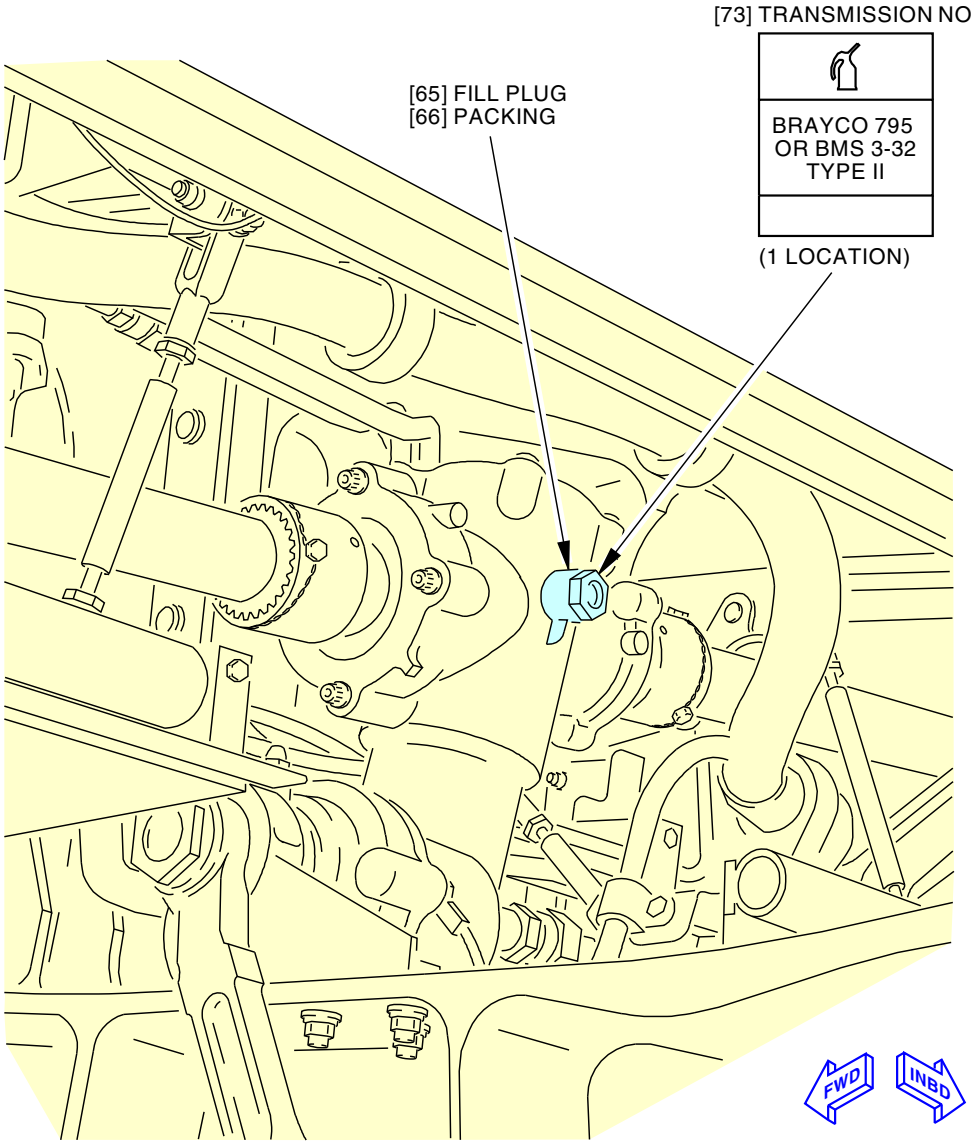


Trailing Edge Flap Transmission Oil Replacement
Figure 321/12-22-51-990-821 (Sheet 3 of 9)



2410931 S00061526624_V1

Trailing Edge Flap Transmission Oil Replacement
Figure 321/12-22-51-990-821 (Sheet 4 of 9)



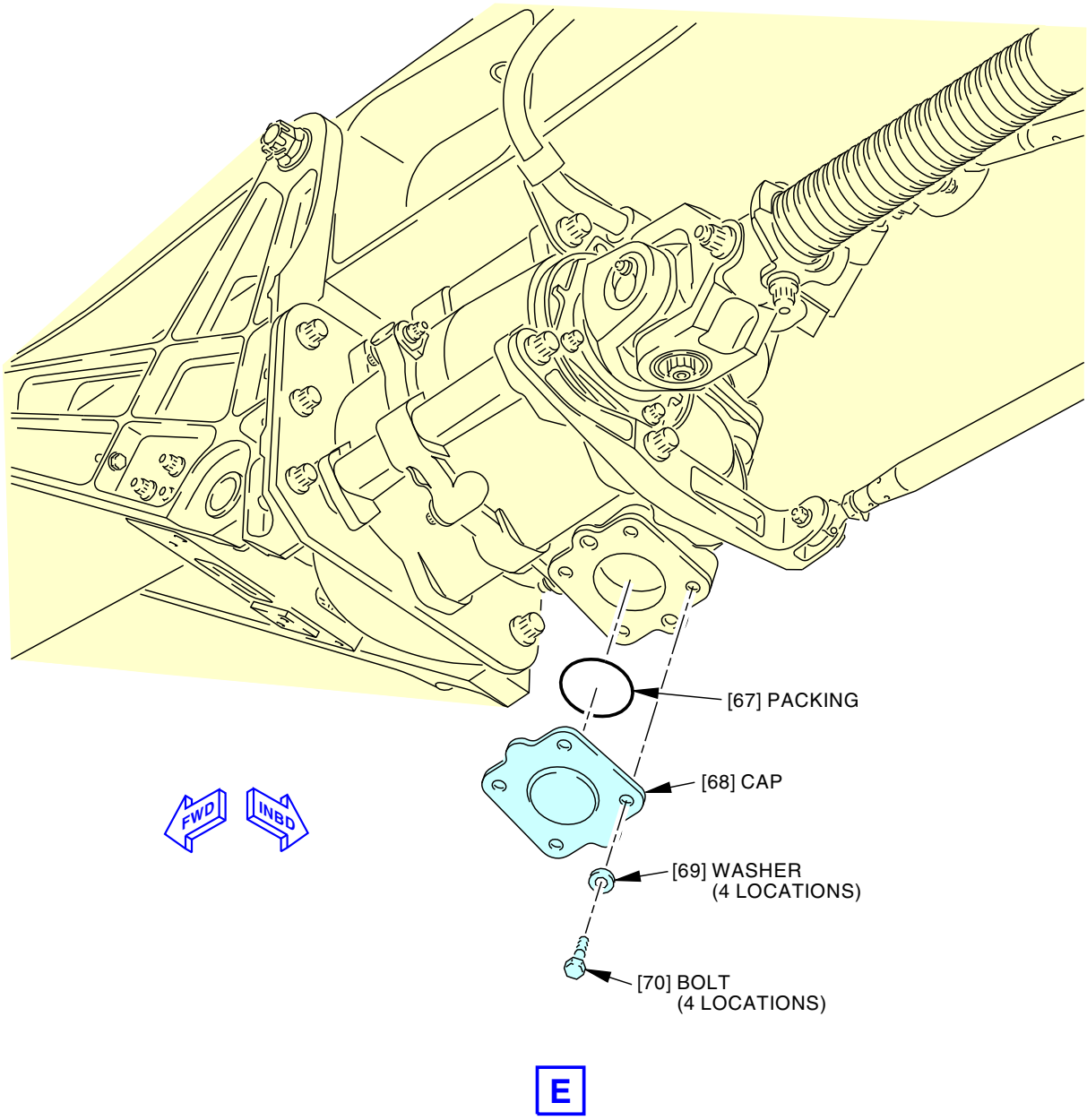
TRANSMISSION NO. 3
(TRANSMISSION NO. 6 IS EQUIVALENT)

1 POINT

D

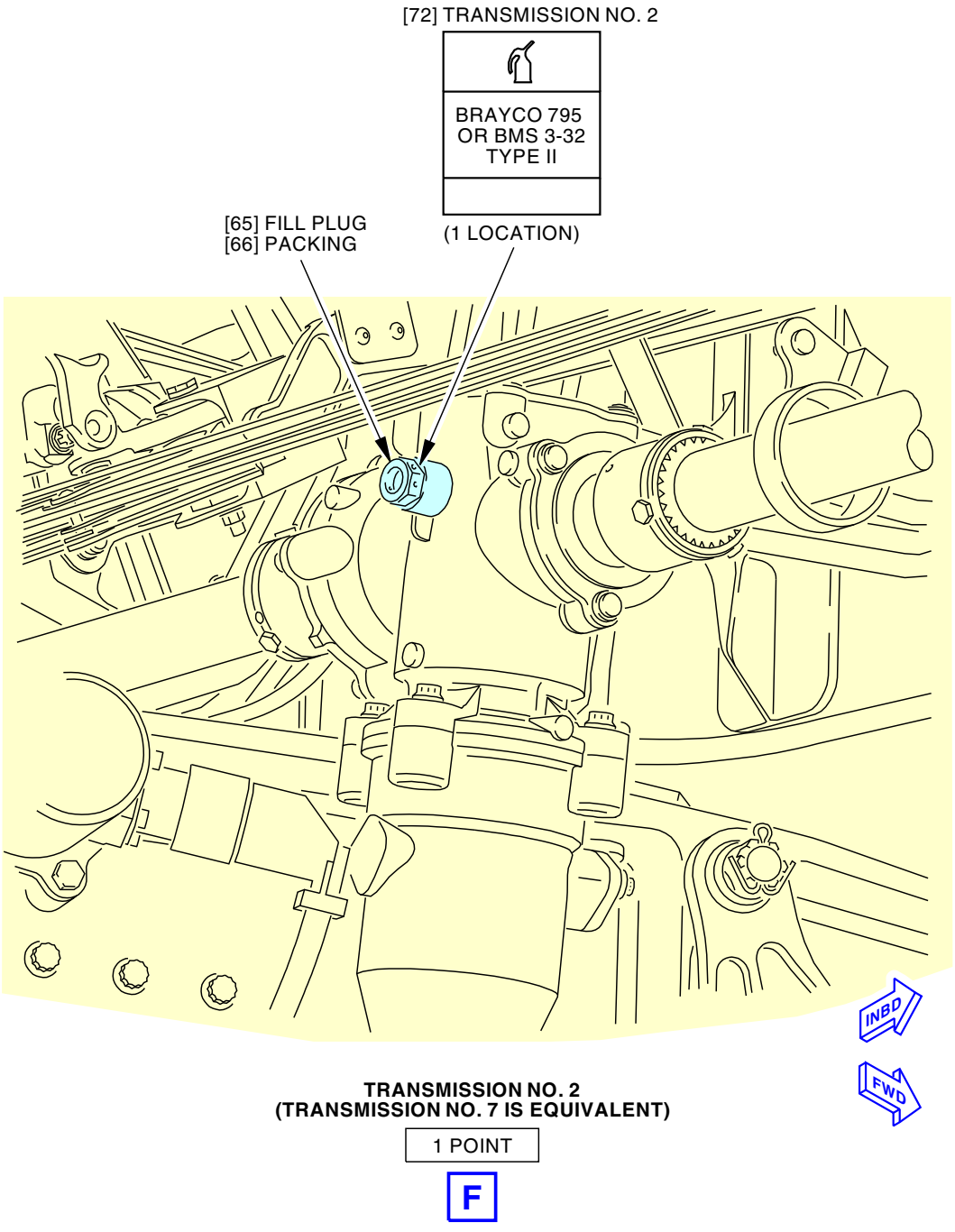
2410932 S00061526625_V1

Trailing Edge Flap Transmission Oil Replacement
Figure 321/12-22-51-990-821 (Sheet 5 of 9)



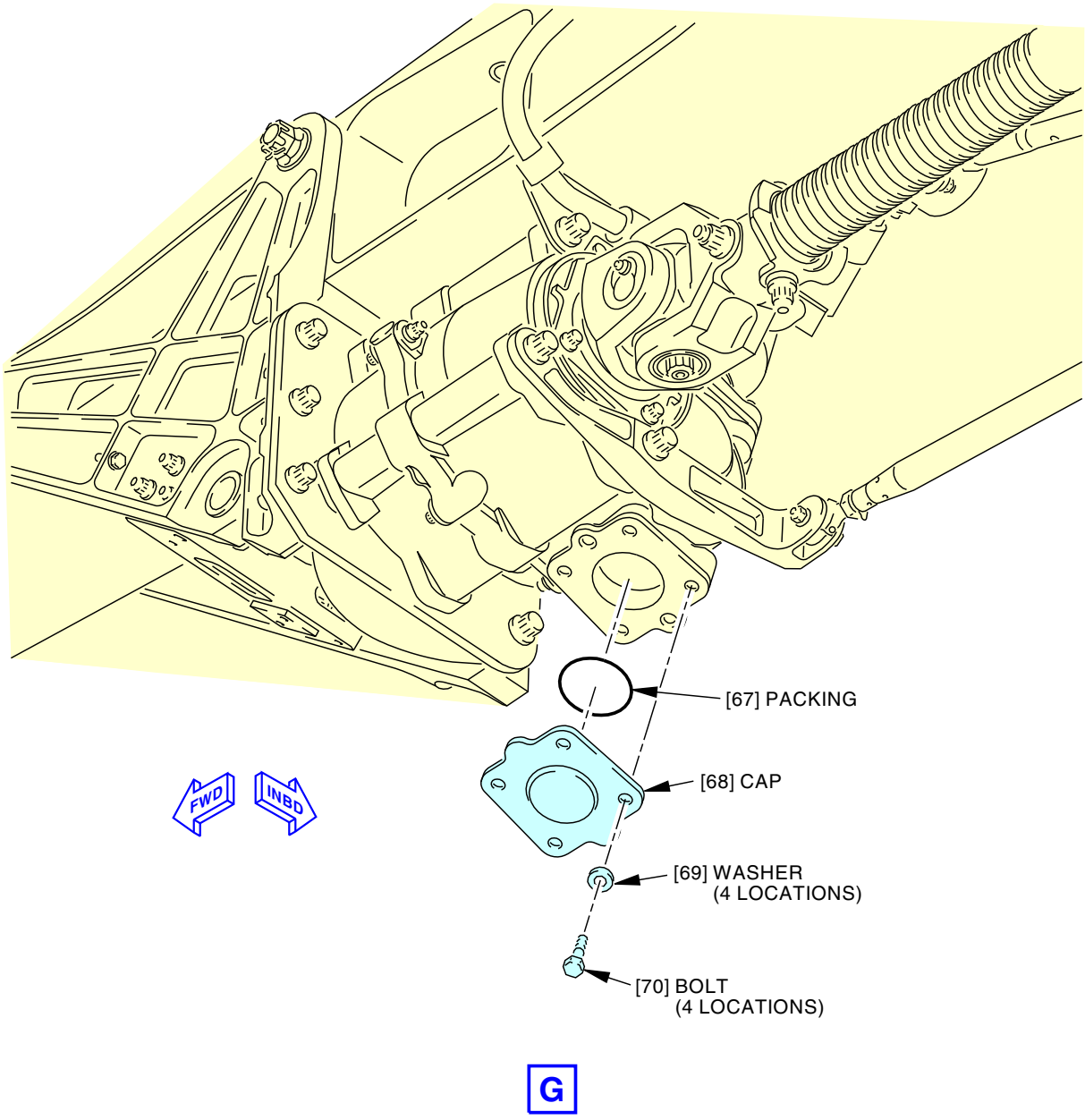
2410933 S00061526626_V1

Trailing Edge Flap Transmission Oil Replacement
Figure 321/12-22-51-990-821 (Sheet 6 of 9)



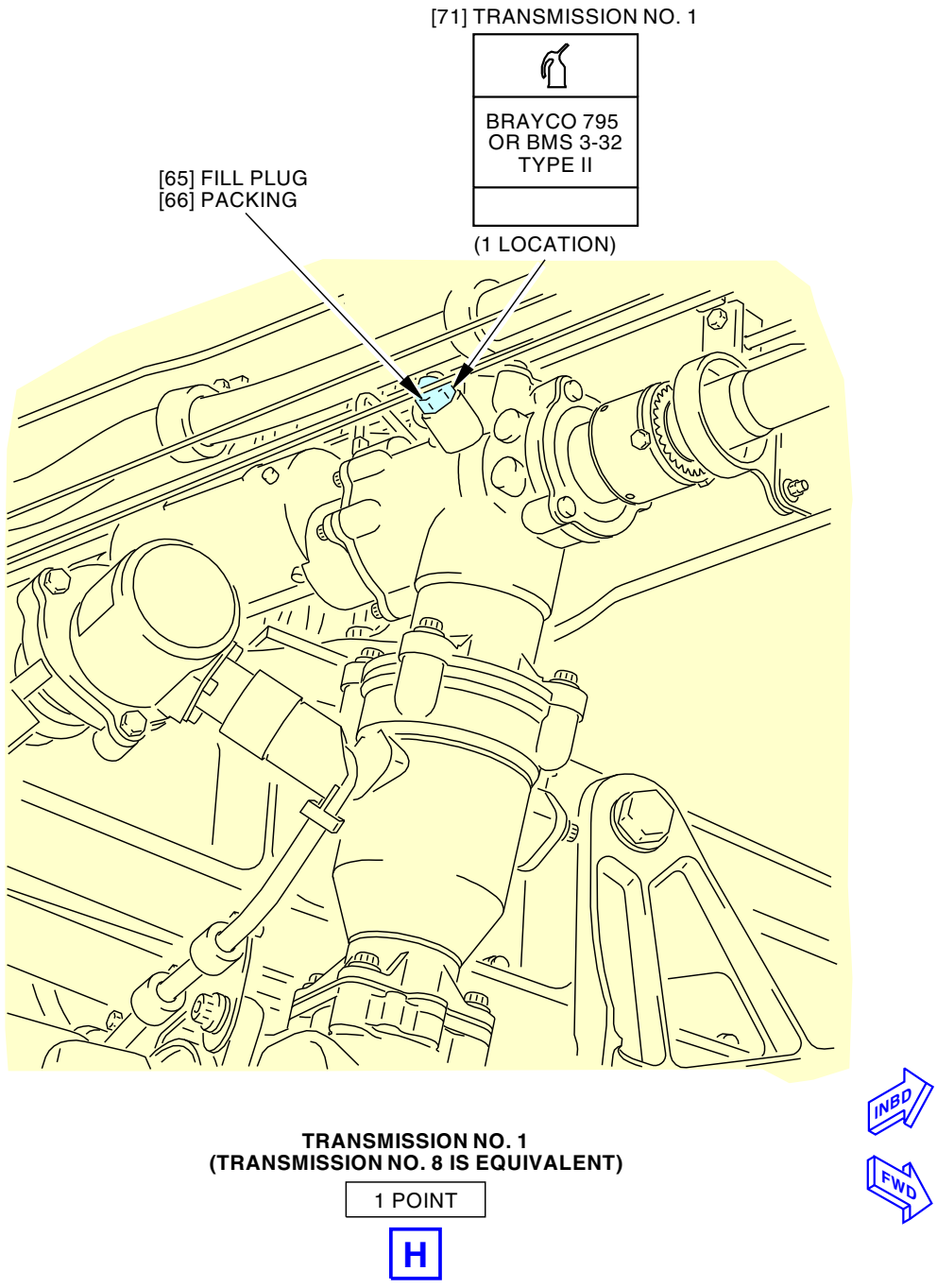
2410934 S00061526627_V1

Trailing Edge Flap Transmission Oil Replacement
Figure 321/12-22-51-990-821 (Sheet 7 of 9)



2410935 S00061526628_V1

Trailing Edge Flap Transmission Oil Replacement
Figure 321/12-22-51-990-821 (Sheet 8 of 9)



2410936 S00061526629_V1

Trailing Edge Flap Transmission Oil Replacement
Figure 321/12-22-51-990-821 (Sheet 9 of 9)

TASK 12-22-51-610-805

22. Trailing Edge Flap Electric Motor Servicing

(Table 321, Figure 322)

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
27-51-00-040-801	Trailing Edge Flap System Deactivation (P/B 201)
27-51-00-440-801	Trailing Edge Flap System Reactivation (P/B 201)

B. Consumable Materials

Reference	Description	Specification
D00070	Fluid - Hydraulic, Petroleum Base	MIL-PRF-5606 (Replaces MIL-H-5606)

C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
77	Packing	27-51-53-10-060	SIA ALL

D. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right

E. Prepare for the Servicing

SUBTASK 12-22-51-040-021

(1) Do this task: Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801.

F. Trailing Edge Flap Electric Motor Servicing

(Table 321)

SUBTASK 12-22-51-640-055

(1) This table supplies data for the subsequent servicing steps:

Table 321/12-22-51-993-821 Trailing Edge Flap Electric Motor Servicing

Item No.	Nomenclature	Lubricant	Method of Application	Number of Locations
75	Flap Electric Motor	fluid, D00070	Fill	1

SUBTASK 12-22-51-610-005

(2) Do a check of the fluid level in the flap electric motor [75].

(a) Remove the fill plug [76] and packing [77] from the fill port.

1) Discard the packing [77].

(b) Make sure that the fluid is at the level of the fill port.

(c) If the fluid is not at the level of the fill port, fill the flap electric motor [75] with fluid, D00070, to the level of the fill port.

(d) Lubricate the new packing [77] with fluid.

(e) Install the fill plug [76] and new packing [77] in the fill port.

1) Tighten the fill plug [76] to 30 in-lb (3.4 N·m) - 35 in-lb (4.0 N·m) above run-on torque.

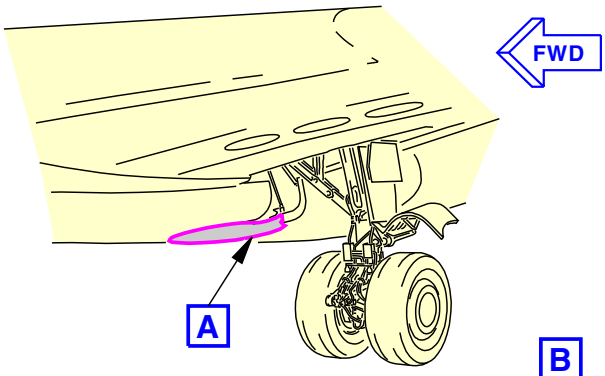
(f) Install a lockwire on the fill plug [76].

G. Put the Airplane Back to Its Usual Condition

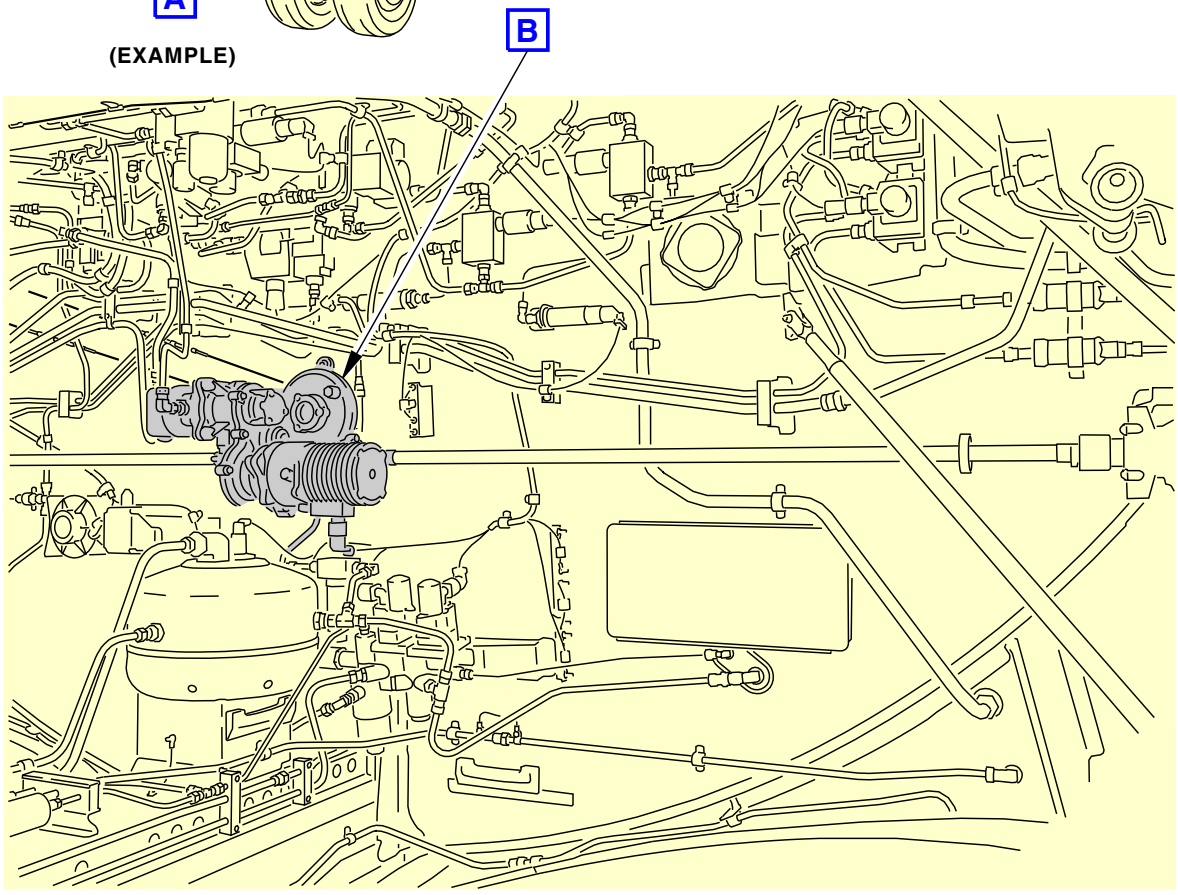
SUBTASK 12-22-51-440-021

(1) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

——— END OF TASK ———



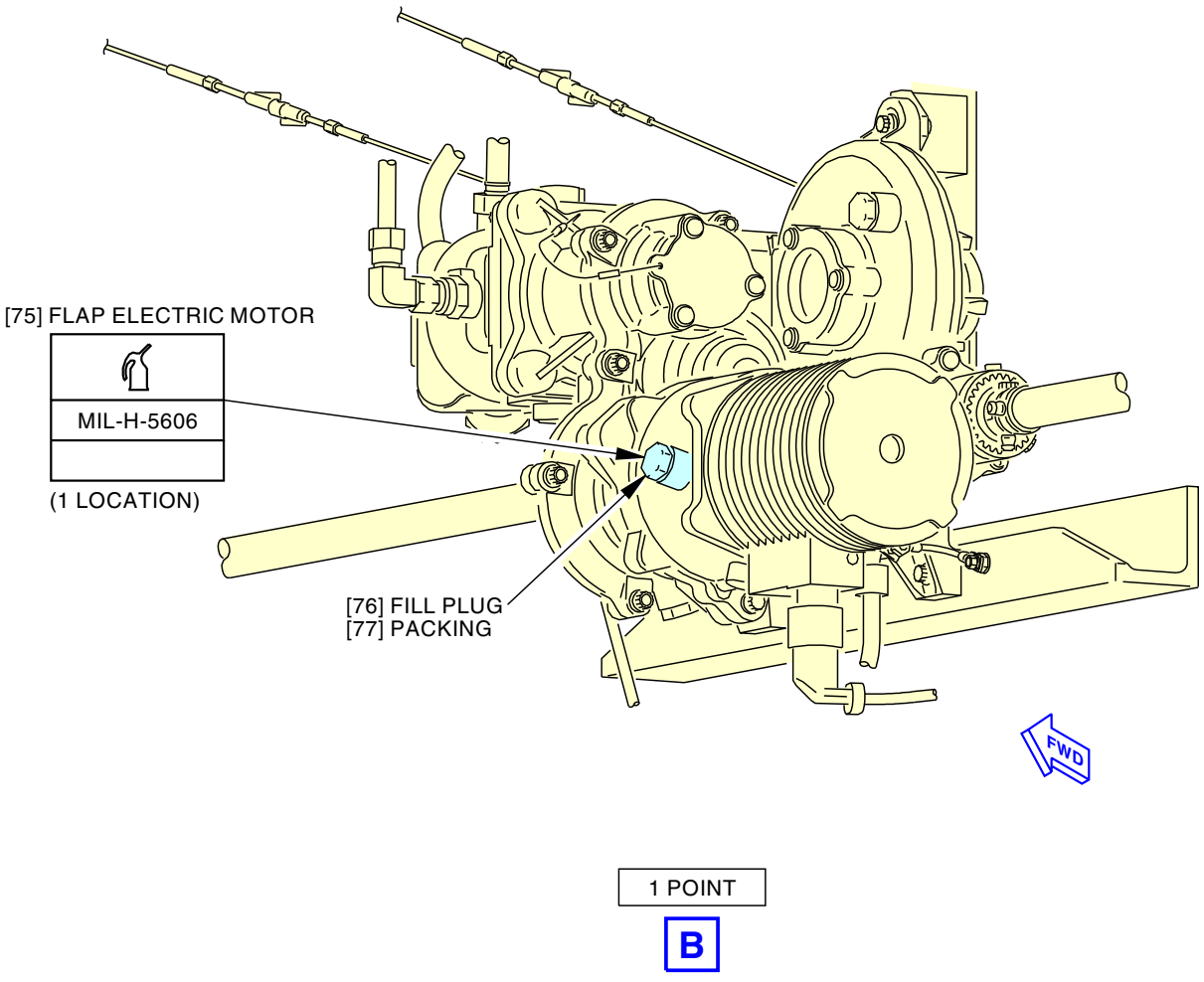
(EXAMPLE)



MAIN LANDING GEAR WHEEL WELL
(LEFT SIDE)

2410937 S00061526631_V2

Trailing Edge Flap Electric Motor Servicing
Figure 322/12-22-51-990-822 (Sheet 1 of 2)



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Trailing Edge Flap Electric Motor Servicing
Figure 322/12-22-51-990-822 (Sheet 2 of 2)

SPOILER CONTROL SYSTEM - SERVICING

1. General

A. This procedure has these tasks:

(1) A lubrication of the flight spoiler actuators quadrants and the actuator rod ends.

(2) A lubrication of the outboard ground spoiler actuators.

TASK 12-22-61-600-802

2. Flight Spoiler Actuator and Rod End Lubrication

(Table 301, Figure 301)

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
24-22-00-860-801	Supply Electrical Power (P/B 201)
27-51-00-040-801	Trailing Edge Flap System Deactivation (P/B 201)
27-51-00-440-801	Trailing Edge Flap System Reactivation (P/B 201)
27-51-00-860-803	Extend the Trailing Edge Flaps (P/B 201)
27-51-00-860-804	Retract the Trailing Edge Flaps (P/B 201)
27-61-00-800-801	Apply Pressure to the Spoiler Hydraulic Systems A and B (P/B 201)
27-61-00-840-801	Shut Down the Spoiler Hydraulic Systems A and B (P/B 201)
27-61-45-730-805	Flight Spoiler Test (P/B 501)

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-14632	Flight Spoiler Actuator Lock Set Part #: C27107-1 Supplier: 81205
STD-858	Tag - DO NOT OPERATE

C. Consumable Materials

Reference	Description	Specification
D00633	Grease - Aircraft General Purpose	BMS3-33

D. Location Zones

Zone	Area
210	Subzone - Control Compartment - Body Station 178.00 to Body Station 259.50
562	Left Wing - Spoiler No. 5
563	Left Wing - Spoiler No. 4
564	Left Wing - Spoiler No. 3
565	Left Wing - Spoiler No. 2
662	Right Wing - Spoiler No. 8
663	Right Wing - Spoiler No. 9
664	Right Wing - Spoiler No. 10
665	Right Wing - Spoiler No. 11

E. Prepare for Lubrication

SUBTASK 12-22-61-860-001

(1) Do this task: Supply Electrical Power, TASK 24-22-00-860-801.

SUBTASK 12-22-61-860-002

WARNING MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACES BEFORE YOU SUPPLY HYDRAULIC POWER. THE AILERONS, RUDDER, ELEVATORS, FLAPS, SLATS, SPOILERS, LANDING GEAR, AND THRUST REVERSERS CAN MOVE QUICKLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(2) Do this task: Apply Pressure to the Spoiler Hydraulic Systems A and B, TASK 27-61-00-800-801.

SUBTASK 12-22-61-860-003

(3) Extend the trailing edge flaps to the 40-unit position, do this task: Extend the Trailing Edge Flaps, TASK 27-51-00-860-803.

SUBTASK 12-22-61-040-001

(4) Do this task: Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801.

SUBTASK 12-22-61-860-004

(5) Move the speed brake lever to the UP position and install the DO NOT OPERATE tag, STD-858 on the lever.

NOTE: The manual release cam on the flight spoiler actuators can be used to extend the actuator if the flight spoilers did not fully extend.

SUBTASK 12-22-61-860-005

(6) Do this task: Shut Down the Spoiler Hydraulic Systems A and B, TASK 27-61-00-840-801.

SUBTASK 12-22-61-480-001

(7) Install the actuator lock set, SPL-14632 on the spoiler actuators.

F. Flight Spoiler Actuator and Rod End Lubrication

(Table 301)

SUBTASK 12-22-61-640-003

(1) This table supplies data for the subsequent lubrication step:

Table 301/12-22-61-993-802 Flight Spoiler Actuator Quadrant Lubrication

Item No.	Nomenclature	Lubricant	Method of Application	Number of Locations
6	Actuator Rod End	grease, D00633	Flush	4
7	Hydraulic Journal	grease, D00633	Flush	4
8	Trunnion Block	grease, D00633	Flush	4

SUBTASK 12-22-61-610-002

(2) Lubricate the actuator rod end [6] with grease, D00633.

SUBTASK 12-22-61-610-003

(3) Lubricate the hydraulic journal [7] with grease, D00633.

SUBTASK 12-22-61-610-004

(4) Lubricate the trunnion block [8] with grease, D00633.

G. Put the Airplane Back to Its Usual Condition.

SUBTASK 12-22-61-080-001

(1) Remove the actuator lock set, SPL-14632 from the spoiler actuators.

SUBTASK 12-22-61-720-001

(2) Do this task to unlatch the SPOILER ACTUATOR status message: Flight Spoiler Test, TASK 27-61-45-730-805.

NOTE: The SPOILER ACTUATOR status message can be latched when the spoilers are locked in the up position.

SUBTASK 12-22-61-860-006

WARNING

MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACES BEFORE YOU SUPPLY HYDRAULIC POWER. THE AILERONS, RUDDER, ELEVATORS, FLAPS, SLATS, SPOILERS, LANDING GEAR, AND THRUST REVERSERS CAN MOVE QUICKLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(3) Do this task: Apply Pressure to the Spoiler Hydraulic Systems A and B, TASK 27-61-00-800-801.

SUBTASK 12-22-61-440-001

(4) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

SUBTASK 12-22-61-860-007

(5) Do this task: Retract the Trailing Edge Flaps, TASK 27-51-00-860-804.

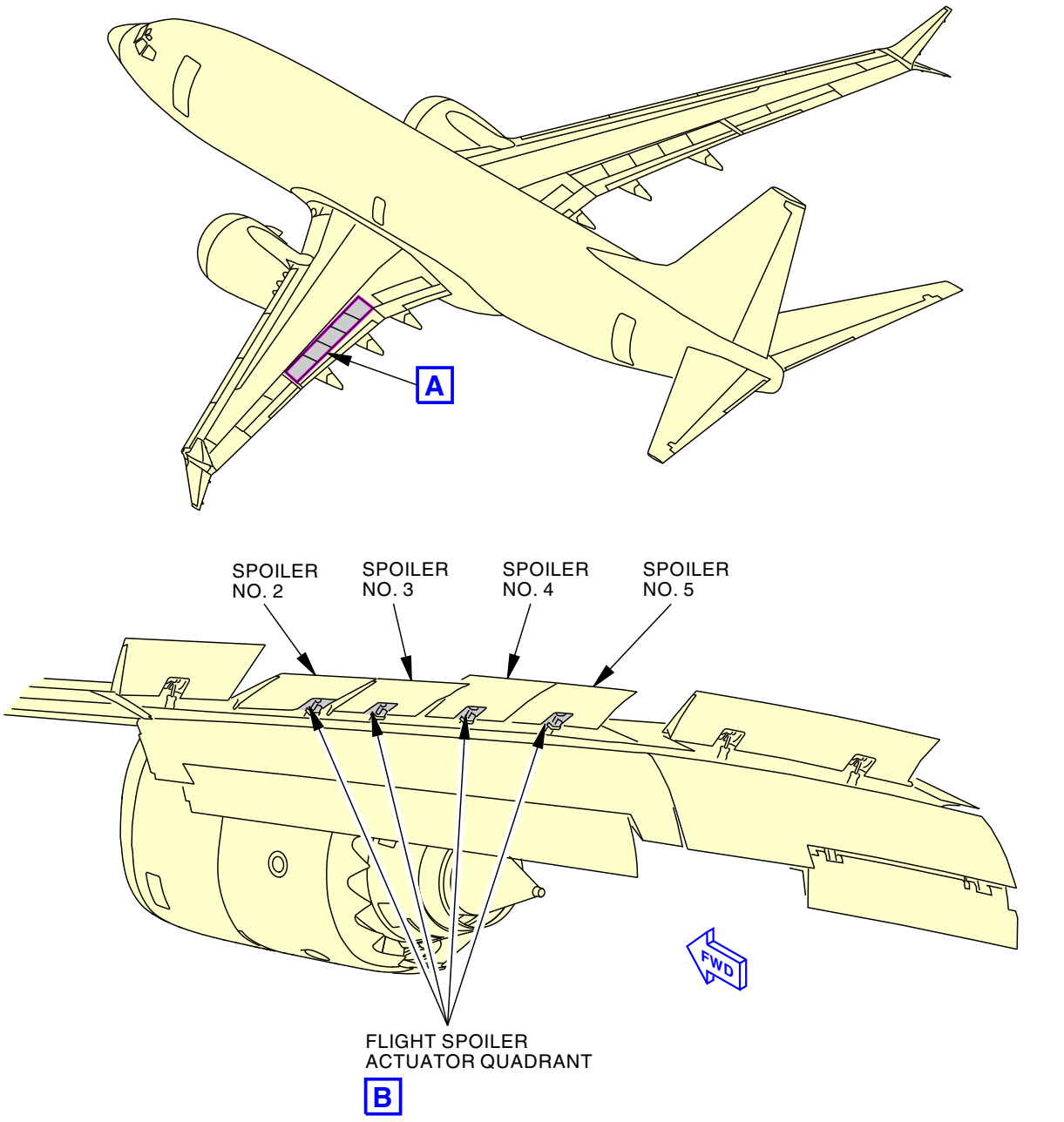
SUBTASK 12-22-61-860-008

(6) Move the speed brake lever to the DOWN position and remove the DO NOT OPERATE tag, STD-858 on the lever.

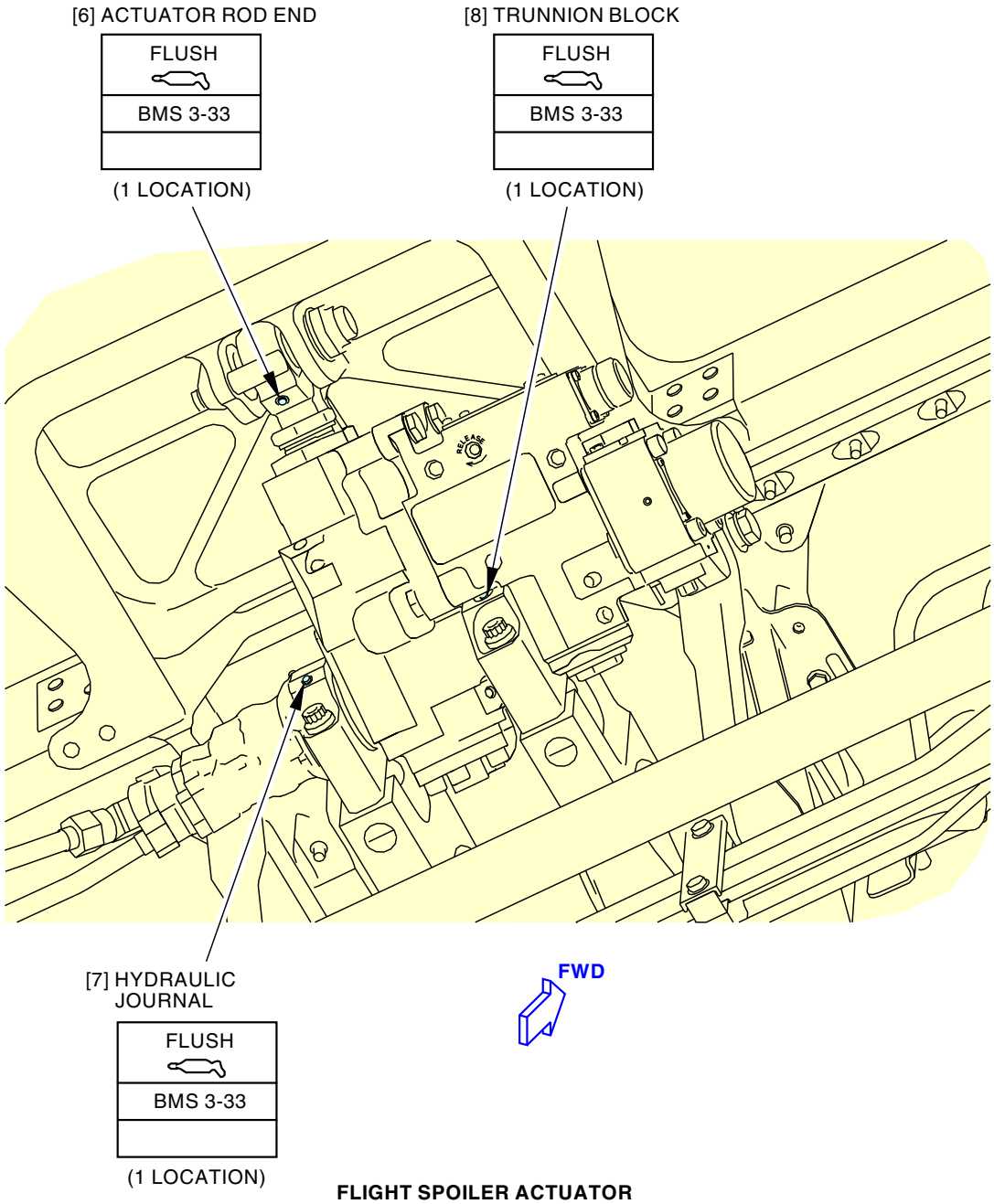
SUBTASK 12-22-61-860-009

(7) Do this task: Shut Down the Spoiler Hydraulic Systems A and B, TASK 27-61-00-840-801.

END OF TASK



Flight Spoiler Actuator Rod End Servicing
Figure 301/12-22-61-990-802 (Sheet 1 of 2)



Flight Spoiler Actuator Rod End Servicing
Figure 301/12-22-61-990-802 (Sheet 2 of 2)

TASK 12-22-61-640-801

3. Outboard Ground Spoiler Actuator Lubrication

(Table 302, Figure 302)

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
24-22-00-860-801	Supply Electrical Power (P/B 201)
27-51-00-040-801	Trailing Edge Flap System Deactivation (P/B 201)
27-51-00-440-801	Trailing Edge Flap System Reactivation (P/B 201)
27-51-00-860-803	Extend the Trailing Edge Flaps (P/B 201)
27-51-00-860-804	Retract the Trailing Edge Flaps (P/B 201)
27-61-00-800-801	Apply Pressure to the Spoiler Hydraulic Systems A and B (P/B 201)
27-61-00-840-801	Shut Down the Spoiler Hydraulic Systems A and B (P/B 201)
27-62-41-720-801	Ground Spoiler Control Module Functional Test (P/B 401)

B. Tools/Equipment

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

Reference	Description
SPL-1743	Set - Ground Lock, Outboard Spoiler Actuators Part #: C27001-51 Supplier: 81205
STD-858	Tag - DO NOT OPERATE

C. Consumable Materials

Reference	Description	Specification
D00633	Grease - Aircraft General Purpose	BMS3-33

D. Location Zones

Zone	Area
210	Subzone - Control Compartment - Body Station 178.00 to Body Station 259.50
566	Left Wing - Spoiler No. 1
666	Right Wing - Spoiler No. 12

E. Prepare for the Lubrication

SUBTASK 12-22-61-860-010

(1) Do this task: Supply Electrical Power, TASK 24-22-00-860-801.

SUBTASK 12-22-61-860-011

WARNING

MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACES BEFORE YOU SUPPLY HYDRAULIC POWER. THE AILERONS, RUDDER, ELEVATORS, FLAPS, SLATS, SPOILERS, LANDING GEAR, AND THRUST REVERSERS CAN MOVE QUICKLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(2) Do this task: Apply Pressure to the Spoiler Hydraulic Systems A and B, TASK 27-61-00-800-801.

SUBTASK 12-22-61-860-012

(3) Put the SPOILER A and B switches to the OFF position to remove the hydraulic power from the flight spoilers.

NOTE: SPOILER A and B switches are on the flight control panel (P5-3).

(a) Install the DO NOT OPERATE tag, STD-858 on the spoiler A and B switches.

SUBTASK 12-22-61-860-013

(4) Extend the trailing edge flaps to the 40-unit position, do this task: Extend the Trailing Edge Flaps, TASK 27-51-00-860-803.

SUBTASK 12-22-61-040-002

(5) Do this task:Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801 .

SUBTASK 12-22-61-860-014

(6) Move the speed brake lever to the UP position and install the DO NOT OPERATE tag, STD-858.

SUBTASK 12-22-61-860-015

(7) Do this task: Shut Down the Spoiler Hydraulic Systems A and B, TASK 27-61-00-840-801.

SUBTASK 12-22-61-480-002

(8) Install ground lock set, SPL-1743.

F. Outboard Ground Spoiler Actuator Lubrication

(Table 302)

SUBTASK 12-22-61-640-004

(1) This table supplies data for the subsequent lubrication step:

Table 302/12-22-61-993-803 Outboard Ground Spoiler Actuator Lubrication

Item No.	Nomenclature	Lubricant	Method of Application	Number of Locations
9	Pillow Blocks	grease, D00633	Flush	2

SUBTASK 12-22-61-610-005

(2) Lubricate the pillow blocks [9] for the outboard ground spoiler actuators with grease, D00633.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 12-22-61-080-002

(1) Remove ground lock set, SPL-1743.

SUBTASK 12-22-61-720-002

(2) Do this task to unlatch the SPOILER ACTUATOR status message: Ground Spoiler Control Module Functional Test, TASK 27-62-41-720-801.

NOTE: The SPOILER ACTUATOR status message can be latched when the spoilers are locked in the up position.

SUBTASK 12-22-61-860-016

WARNING

MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACES BEFORE YOU SUPPLY HYDRAULIC POWER. THE AILERONS, RUDDER, ELEVATORS, FLAPS, SLATS, SPOILERS, LANDING GEAR, AND THRUST REVERSERS CAN MOVE QUICKLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(3) Do this task: Apply Pressure to the Spoiler Hydraulic Systems A and B, TASK 27-61-00-800-801.

SUBTASK 12-22-61-440-002

(4) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

SUBTASK 12-22-61-860-017

(5) Do this task: Retract the Trailing Edge Flaps, TASK 27-51-00-860-804.

SUBTASK 12-22-61-860-018

(6) Move the speed brake lever to the DOWN position.

SUBTASK 12-22-61-860-019

(7) Do this task: Shut Down the Spoiler Hydraulic Systems A and B, TASK 27-61-00-840-801.

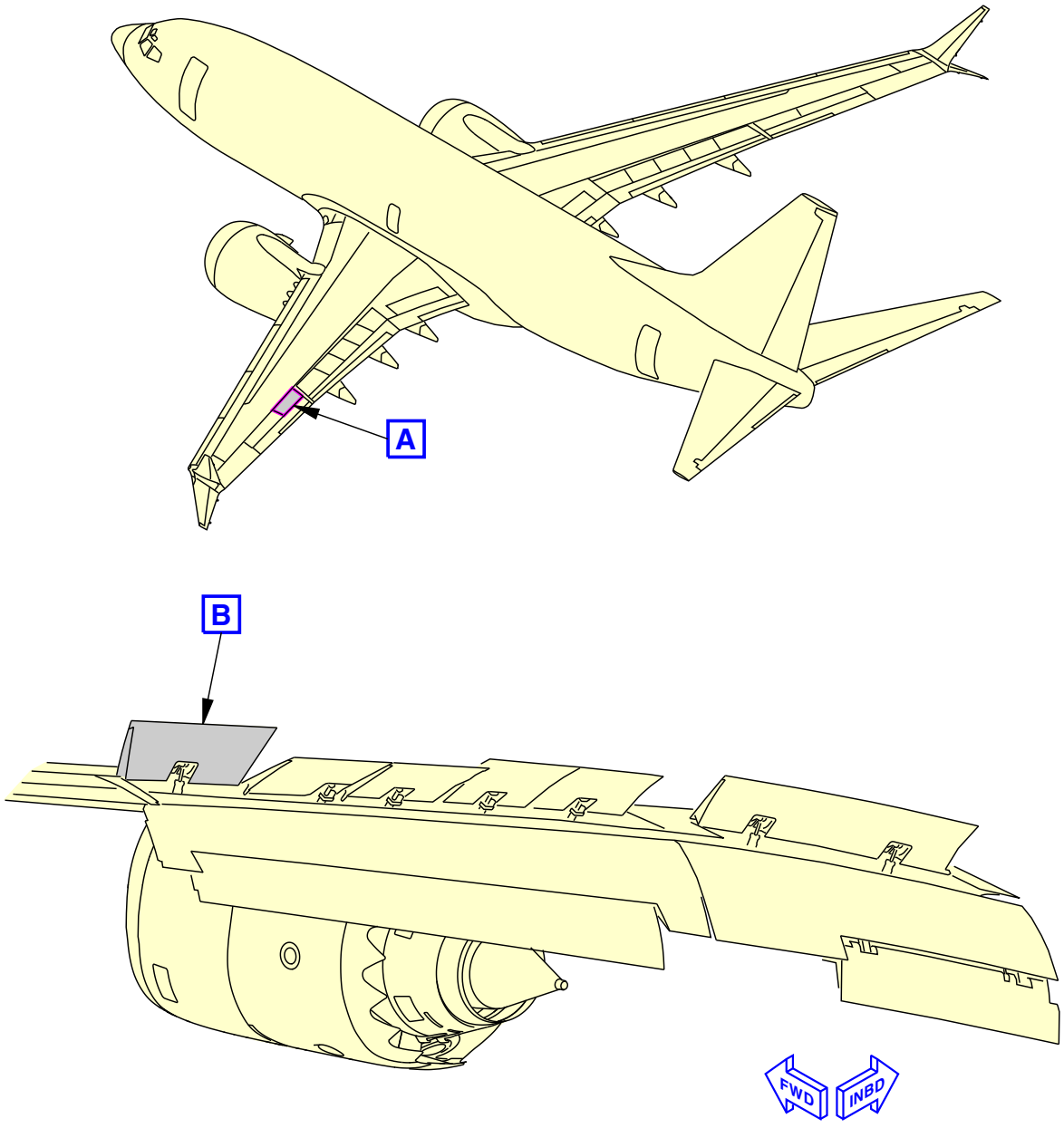
SUBTASK 12-22-61-640-005

(8) Put the SPOILER A and B switches to the ON position.

SUBTASK 12-22-61-860-020

(9) Remove the DO NOT OPERATE tag, STD-858, from the applicable SPOILER A and B switches and speed brake lever.

END OF TASK



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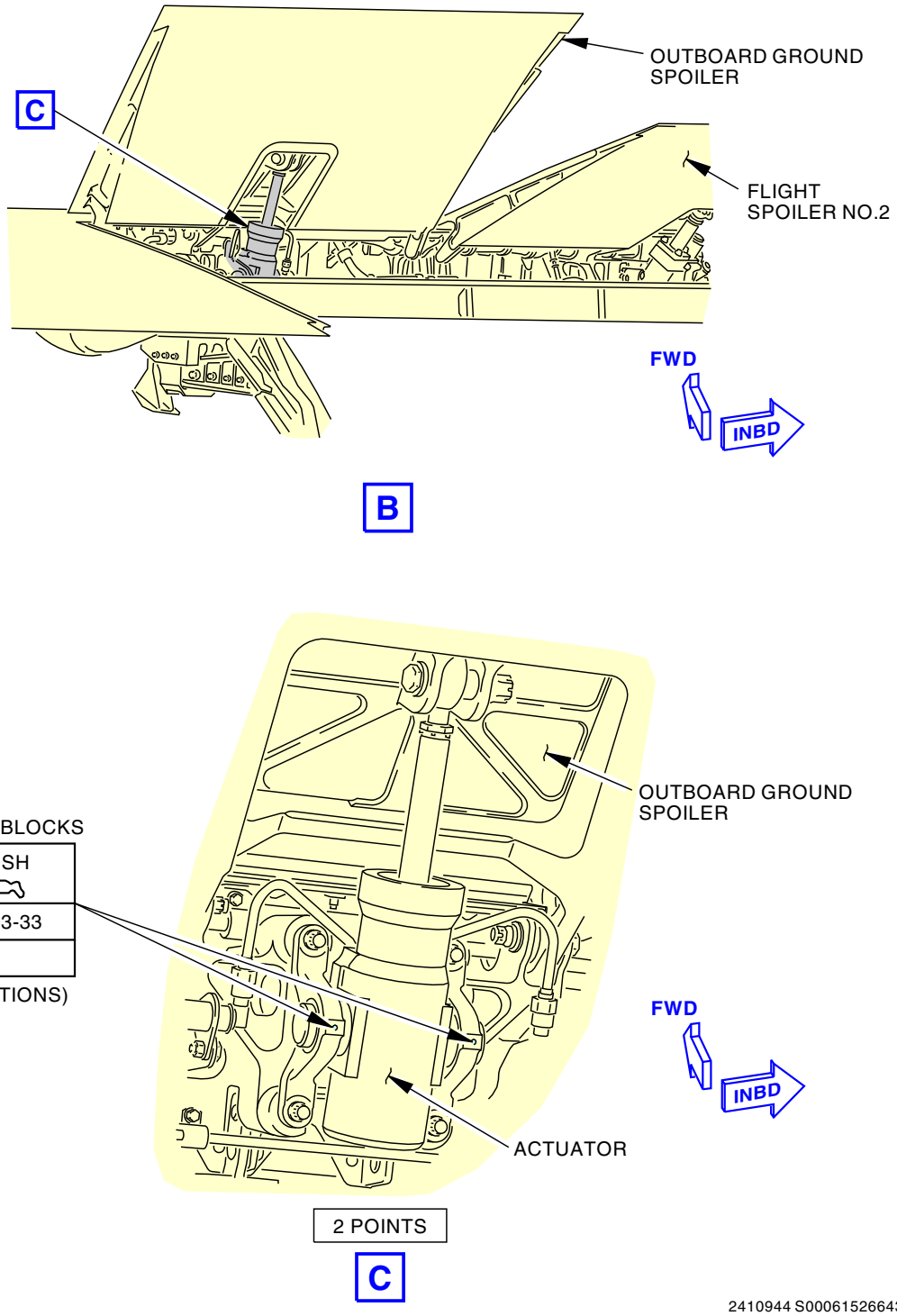
Outboard Ground Spoiler Actuator Lubrication
Figure 302/12-22-61-990-803 (Sheet 1 of 2)



Outboard Ground Spoiler Actuator Lubrication
Figure 302/12-22-61-990-803 (Sheet 2 of 2)

LEADING EDGE SLAT - SERVICING

1. General

A. This procedure contains scheduled maintenance task data.

B. This procedure has these tasks:

(1) A task to lubricate the leading edge slat main track rollers

(2) A task to lubricate the leading edge slat track.

TASK 12-22-71-600-801

2. Leading Edge Slat Main Track Rollers Lubrication

(Table 301, Figure 301)

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
27-81-00-080-801	Leading Edge Flap and Slat Locks Removal (P/B 201)
27-81-00-480-801	Leading Edge Flap and Slat Locks Installation (P/B 201)
29-11-00-860-801	Hydraulic System A or B Pressurization (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)
57-41-02-000-801	Leading Edge Access Panel Removal (P/B 201)
57-41-02-400-801	Leading Edge Access Panel Installation (P/B 201)

B. Consumable Materials

Reference	Description	Specification
D00633	Grease - Aircraft General Purpose	BMS3-33

C. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right
521	Left Wing - Leading Edge to Front Spar
621	Right Wing - Leading Edge to Front Spar

D. Access Panels

Number	Name/Location
521CB	Lower Leading Edge Access Panel - Slat Station 50
521FB	Lower Leading Edge Access Panel - Slat Station 107
521JB	Lower Leading Edge Access Panel - Slat Station 161
521MB	Lower Leading Edge Access Panel - Slat Station 226
521QB	Lower Leading Edge Access Panel - Slat Station 280
521TB	Lower Leading Edge Access Panel - Slat Station 347
521WB	Lower Leading Edge Access Panel - Slat Station 406
521ZB	Lower Leading Edge Access Panel - Slat Station 479
621CB	Lower Leading Edge Access Panel - Slat Station 50
621FB	Lower Leading Edge Access Panel - Slat Station 107
621GB	Refuel Valve Door - Slat Station 125
621MB	Lower Leading Edge Access Panel - Slat Station 226
621QB	Lower Leading Edge Access Panel - Slat Station 280

(Continued)

Number	Name/Location
621TB	Lower Leading Edge Access Panel - Slat Station 347
621WB	Lower Leading Edge Access Panel - Slat Station 406
621ZB	Lower Leading Edge Access Panel - Slat Station 479

E. Prepare for the Lubrication

SUBTASK 12-22-71-200-001

WARNING DO NOT LET OBJECTS GET IN THE HOUSING ASSEMBLY OF THE SLAT TRACK. THIS WILL HELP PREVENT A PUNCTURE OF THE HOUSING ASSEMBLY THAT COULD CAUSE A FUEL LEAK. THE FUEL LEAK COULD CAUSE A FIRE AND POSSIBLE DEATH OR INJURY TO PERSONNEL.

(1) Keep the housing (can) assemblies of the slat main tracks clean and free of all unwanted objects (FOD), at all time.

SUBTASK 12-22-71-860-001

WARNING MAKE SURE ALL PERSONS AND EQUIPMENT ARE CLEAR OF THE FLIGHT CONTROLS SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(2) Pressurize hydraulic system B. Do this task: Hydraulic System A or B Pressurization, TASK 29-11-00-860-801.

SUBTASK 12-22-71-860-002

WARNING MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF THE LEADING EDGE AND TRAILING EDGE FLAPS AND FLAP DRIVE MECHANISMS BEFORE YOU MOVE THE FLAP CONTROL LEVER. WITH HYDRAULIC POWER REMOVED, THE FLAPS WILL MOVE AUTOMATICALLY BY ELECTRICAL POWER WHEN YOU MOVE THE FLAP CONTROL LEVER.

(3) Move the flap control lever to the 30-unit detent to fully extend the leading edge slats.

SUBTASK 12-22-71-860-003

(4) Remove hydraulic pressure. Do this task: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805.

SUBTASK 12-22-71-480-001

WARNING MAKE SURE TO INSTALL THE LEADING EDGE FLAP AND SLAT ACTUATORS LOCKOUT SET TO PREVENT ACCIDENTAL OPERATION OF THE LEADING EDGE FLAPS AND SLATS. THE LEADING EDGE FLAPS AND SLATS CAN MOVE QUICKLY. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

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

SUBTASK 12-22-71-010-001

(6) Remove the lower leading edge access panels (on the left and right wing) per Leading Edge Access Panel Removal, TASK 57-41-02-000-801.

SUBTASK 12-22-71-010-002

(7) For the left wing, remove these access panels:

Number	Name/Location
521CB	Lower Leading Edge Access Panel - Slat Station 50
521FB	Lower Leading Edge Access Panel - Slat Station 107
521JB	Lower Leading Edge Access Panel - Slat Station 161
521MB	Lower Leading Edge Access Panel - Slat Station 226
521QB	Lower Leading Edge Access Panel - Slat Station 280
521TB	Lower Leading Edge Access Panel - Slat Station 347
521WB	Lower Leading Edge Access Panel - Slat Station 406
521ZB	Lower Leading Edge Access Panel - Slat Station 479

SUBTASK 12-22-71-010-003

(8) For the right wing, remove these access panels:

Number	Name/Location
621CB	Lower Leading Edge Access Panel - Slat Station 50
621FB	Lower Leading Edge Access Panel - Slat Station 107
621GB	Refuel Valve Door - Slat Station 125
621MB	Lower Leading Edge Access Panel - Slat Station 226
621QB	Lower Leading Edge Access Panel - Slat Station 280
621TB	Lower Leading Edge Access Panel - Slat Station 347
621WB	Lower Leading Edge Access Panel - Slat Station 406
621ZB	Lower Leading Edge Access Panel - Slat Station 479

F. Leading Edge Slat Main Track Rollers Lubrication

(Table 301)

SUBTASK 12-22-71-640-001

(1) This table supplies data for the subsequent lubrication step:

Table 301/12-22-71-993-801 Leading Edge Slat Main Track Rollers Servicing

Item No.	Nomenclature	Lubricant	Method of Application	Number of Locations
1	Main track roller bearings	grease, D00633	Zerk	32

SUBTASK 12-22-71-640-002

(2) Lubricate the main track rollers [1] on the leading edge slats with grease, D00633.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 12-22-71-200-002

WARNING DO NOT LET OBJECTS GET IN THE HOUSING ASSEMBLY OF THE SLAT TRACK. THIS WILL HELP PREVENT A PUNCTURE OF THE HOUSING ASSEMBLY THAT COULD CAUSE A FUEL LEAK. THE FUEL LEAK COULD CAUSE A FIRE AND POSSIBLE DEATH OR INJURY TO PERSONNEL.

(1) Keep the housing (can) assemblies of the slat main tracks clean and free of all unwanted objects (FOD), at all times.

SUBTASK 12-22-71-410-001

(2) Install the lower leading edge access panels (on the left and right wing) per Leading Edge Access Panel Installation, TASK 57-41-02-400-801.

SUBTASK 12-22-71-410-002

(3) For the left wing, install these access panels:

Number	Name/Location
521CB	Lower Leading Edge Access Panel - Slat Station 50
521FB	Lower Leading Edge Access Panel - Slat Station 107
521JB	Lower Leading Edge Access Panel - Slat Station 161
521MB	Lower Leading Edge Access Panel - Slat Station 226
521QB	Lower Leading Edge Access Panel - Slat Station 280
521TB	Lower Leading Edge Access Panel - Slat Station 347
521WB	Lower Leading Edge Access Panel - Slat Station 406
521ZB	Lower Leading Edge Access Panel - Slat Station 479

SUBTASK 12-22-71-410-003

(4) For the right wing, install these access panels:

Number	Name/Location
621CB	Lower Leading Edge Access Panel - Slat Station 50
621FB	Lower Leading Edge Access Panel - Slat Station 107
621GB	Refuel Valve Door - Slat Station 125
621MB	Lower Leading Edge Access Panel - Slat Station 226
621QB	Lower Leading Edge Access Panel - Slat Station 280
621TB	Lower Leading Edge Access Panel - Slat Station 347
621WB	Lower Leading Edge Access Panel - Slat Station 406
621ZB	Lower Leading Edge Access Panel - Slat Station 479

SUBTASK 12-22-71-080-001

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

SUBTASK 12-22-71-860-004

WARNING

MAKE SURE ALL PERSONS AND EQUIPMENT ARE 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 INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(6) Pressurize hydraulic system B. Do this task: Hydraulic System A or B Pressurization, TASK 29-11-00-860-801.

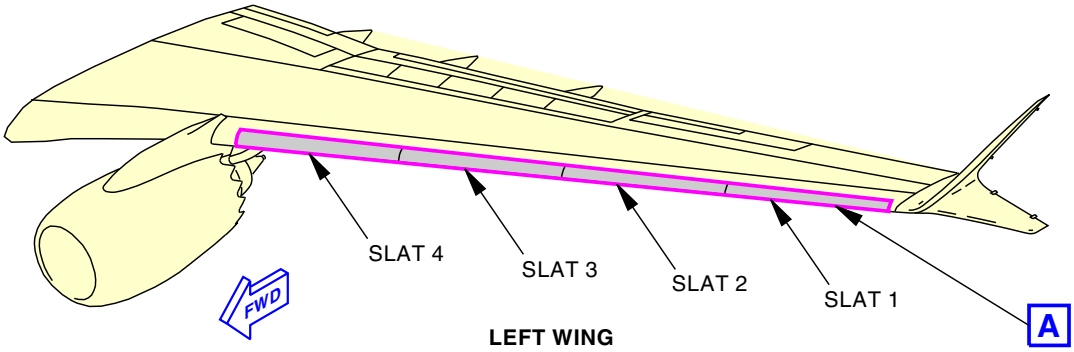
SUBTASK 12-22-71-860-005

(7) Move the flap control lever to the UP position to fully retract the leading edge slats.

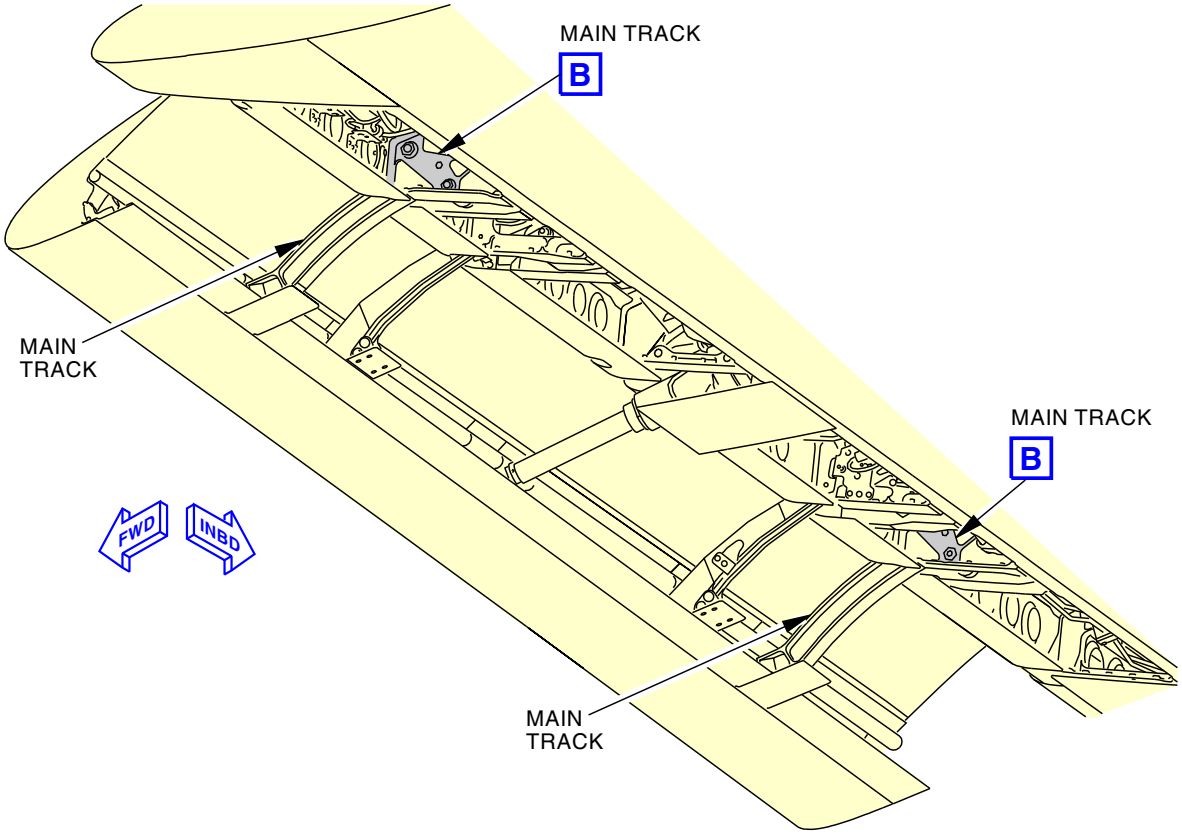
SUBTASK 12-22-71-860-006

(8) Remove hydraulic pressure. Do this task: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805.

END OF TASK



LEFT WING
(RIGHT WING IS EQUIVALENT)



SLAT 1
(SLATS 2, 3, AND 4 ARE EQUIVALENT)

A

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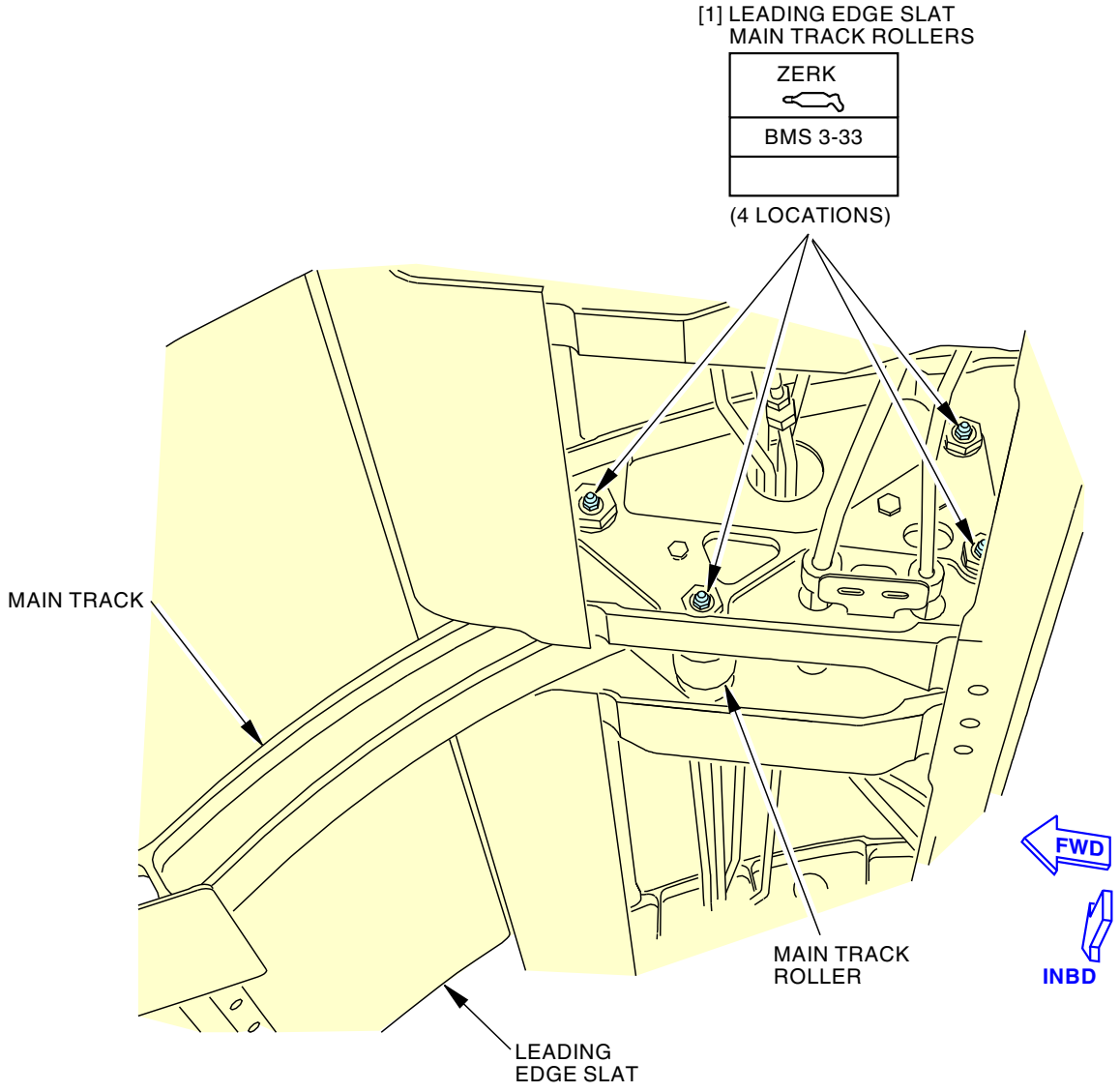
Leading Edge Slat Main Track Rollers Servicing
Figure 301/12-22-71-990-801 (Sheet 1 of 2)



INBOARD MAIN TRACK
(OUTBOARD MAIN TRACK IS OPPOSITE)
(SLAT 1 IS SHOWN, SLATS 2, 3, AND 4 ARE EQUIVALENT)

4 POINTS

B

2410946 S00061526648_V1

Leading Edge Slat Main Track Rollers Servicing
Figure 301/12-22-71-990-801 (Sheet 2 of 2)

TASK 12-22-71-640-801

3. Leading Edge Main and Auxiliary Tracks Lubrication

(Table 302, Figure 302)

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
27-81-00-080-801	Leading Edge Flap and Slat Locks Removal (P/B 201)
27-81-00-480-801	Leading Edge Flap and Slat Locks Installation (P/B 201)
29-11-00-860-801	Hydraulic System A or B Pressurization (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)
57-41-02-000-801	Leading Edge Access Panel Removal (P/B 201)
57-41-02-400-801	Leading Edge Access Panel Installation (P/B 201)

B. Consumable Materials

Reference	Description	Specification
D00633	Grease - Aircraft General Purpose	BMS3-33

C. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right
522	Left Wing - Slat No. 4
523	Left Wing - Slat No. 3
524	Left Wing - Slat No. 2
525	Left Wing - Slat No. 1
622	Right Wing - Slat No. 5
623	Right Wing - Slat No. 6
624	Right Wing - Slat No. 7
625	Right Wing - Slat No. 8

D. Access Panels

Number	Name/Location
521CB	Lower Leading Edge Access Panel - Slat Station 50
521FB	Lower Leading Edge Access Panel - Slat Station 107
521JB	Lower Leading Edge Access Panel - Slat Station 161
521MB	Lower Leading Edge Access Panel - Slat Station 226
521QB	Lower Leading Edge Access Panel - Slat Station 280
521TB	Lower Leading Edge Access Panel - Slat Station 347
521WB	Lower Leading Edge Access Panel - Slat Station 406
521ZB	Lower Leading Edge Access Panel - Slat Station 479
621CB	Lower Leading Edge Access Panel - Slat Station 50
621FB	Lower Leading Edge Access Panel - Slat Station 107
621JB	Lower Leading Edge Access Panel - Slat Station 161
621MB	Lower Leading Edge Access Panel - Slat Station 226
621QB	Lower Leading Edge Access Panel - Slat Station 280
621TB	Lower Leading Edge Access Panel - Slat Station 347
621WB	Lower Leading Edge Access Panel - Slat Station 406

(Continued)

Number	Name/Location
621ZB	Lower Leading Edge Access Panel - Slat Station 479

E. Prepare for the Lubrication

SUBTASK 12-22-71-200-003

WARNING DO NOT LET OBJECTS GET IN THE HOUSING ASSEMBLY OF THE SLAT TRACK. THIS WILL HELP PREVENT A PUNCTURE OF THE HOUSING ASSEMBLY THAT COULD CAUSE A FUEL LEAK. THE FUEL LEAK COULD CAUSE A FIRE AND POSSIBLE DEATH OR INJURY TO PERSONNEL.

(1) Keep clean and free of all unwanted objects (FOD), the housing (can) assemblies of the slat main tracks, at all times.

SUBTASK 12-22-71-860-007

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.

(2) To pressurize hydraulic system B, do this task: Hydraulic System A or B Pressurization, TASK 29-11-00-860-801.

SUBTASK 12-22-71-860-008

WARNING MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF THE LEADING EDGE AND TRAILING EDGE FLAPS AND FLAP DRIVE MECHANISMS BEFORE YOU MOVE THE FLAP CONTROL LEVER. WITH HYDRAULIC POWER REMOVED, THE FLAPS WILL MOVE AUTOMATICALLY BY ELECTRICAL POWER WHEN YOU MOVE THE FLAP CONTROL LEVER.

(3) Move the flap control lever to the 30-unit detent to fully extend the leading edge slats.

SUBTASK 12-22-71-860-009

(4) Do this task: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805.

SUBTASK 12-22-71-480-002

WARNING MAKE SURE TO INSTALL THE LEADING EDGE FLAP AND SLAT ACTUATORS LOCKOUT SET TO PREVENT ACCIDENTAL OPERATION OF THE LEADING EDGE FLAPS AND SLATS. THE LEADING EDGE FLAPS AND SLATS CAN MOVE QUICKLY. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

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

SUBTASK 12-22-71-010-004

(6) Remove the lower leading edge access panels (on the left and right wing) per Leading Edge Access Panel Removal, TASK 57-41-02-000-801.

SUBTASK 12-22-71-010-005

(7) For the left wing, remove these access panels:

Number	Name/Location
521CB	Lower Leading Edge Access Panel - Slat Station 50

(Continued)

Number	Name/Location
521FB	Lower Leading Edge Access Panel - Slat Station 107
521JB	Lower Leading Edge Access Panel - Slat Station 161
521MB	Lower Leading Edge Access Panel - Slat Station 226
521QB	Lower Leading Edge Access Panel - Slat Station 280
521TB	Lower Leading Edge Access Panel - Slat Station 347
521WB	Lower Leading Edge Access Panel - Slat Station 406
521ZB	Lower Leading Edge Access Panel - Slat Station 479

SUBTASK 12-22-71-010-006

(8) For the right wing, remove these access panels:

Number	Name/Location
621CB	Lower Leading Edge Access Panel - Slat Station 50
621FB	Lower Leading Edge Access Panel - Slat Station 107
621JB	Lower Leading Edge Access Panel - Slat Station 161
621MB	Lower Leading Edge Access Panel - Slat Station 226
621QB	Lower Leading Edge Access Panel - Slat Station 280
621TB	Lower Leading Edge Access Panel - Slat Station 347
621WB	Lower Leading Edge Access Panel - Slat Station 406
621ZB	Lower Leading Edge Access Panel - Slat Station 479

F. Leading Edge Main and Auxiliary Tracks Lubrication

(Table 302)

SUBTASK 12-22-71-640-003

(1) This table supplies data for the subsequent lubrication step:

Table 302/12-22-71-993-802 Leading Edge Main and Auxiliary Tracks Servicing

Item No.	Nomenclature	Lubricant	Method of Application	Number of Locations
2	Main track	grease, D00633	Hand	8
3	Auxiliary track	grease, D00633	Hand	8

SUBTASK 12-22-71-640-004

(2) Lubricate the rub strip (side) surfaces of the main tracks [2] and the wear paths of the auxiliary tracks and the rub strip (side) surfaces of the auxilary tracks [3] with grease, D00633.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 12-22-71-200-004

WARNING DO NOT LET OBJECTS GET IN THE HOUSING ASSEMBLY OF THE SLAT TRACK. THIS WILL HELP PREVENT A PUNCTURE OF THE HOUSING ASSEMBLY THAT COULD CAUSE A FUEL LEAK. THE FUEL LEAK COULD CAUSE A FIRE AND POSSIBLE DEATH OR INJURY TO PERSONNEL.

(1) Keep clean and free of all unwanted objects (FOD), the housing (can) assemblies of the slat main tracks, at all time.

SUBTASK 12-22-71-410-004

(2) Install the lower leading edge access panels (on the left and right wing) per Leading Edge Access Panel Installation, TASK 57-41-02-400-801.

SUBTASK 12-22-71-410-005

(3) For the left wing, install these access panels:

Number	Name/Location
521CB	Lower Leading Edge Access Panel - Slat Station 50
521FB	Lower Leading Edge Access Panel - Slat Station 107
521JB	Lower Leading Edge Access Panel - Slat Station 161
521MB	Lower Leading Edge Access Panel - Slat Station 226
521QB	Lower Leading Edge Access Panel - Slat Station 280
521TB	Lower Leading Edge Access Panel - Slat Station 347
521WB	Lower Leading Edge Access Panel - Slat Station 406
521ZB	Lower Leading Edge Access Panel - Slat Station 479

SUBTASK 12-22-71-410-006

(4) For the right wing, install these access panels:

Number	Name/Location
621CB	Lower Leading Edge Access Panel - Slat Station 50
621FB	Lower Leading Edge Access Panel - Slat Station 107
621JB	Lower Leading Edge Access Panel - Slat Station 161
621MB	Lower Leading Edge Access Panel - Slat Station 226
621QB	Lower Leading Edge Access Panel - Slat Station 280
621TB	Lower Leading Edge Access Panel - Slat Station 347
621WB	Lower Leading Edge Access Panel - Slat Station 406
621ZB	Lower Leading Edge Access Panel - Slat Station 479

SUBTASK 12-22-71-080-002

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

SUBTASK 12-22-71-860-010

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.

(6) To pressurize hydraulic system B, do this task: Hydraulic System A or B Pressurization, TASK 29-11-00-860-801.

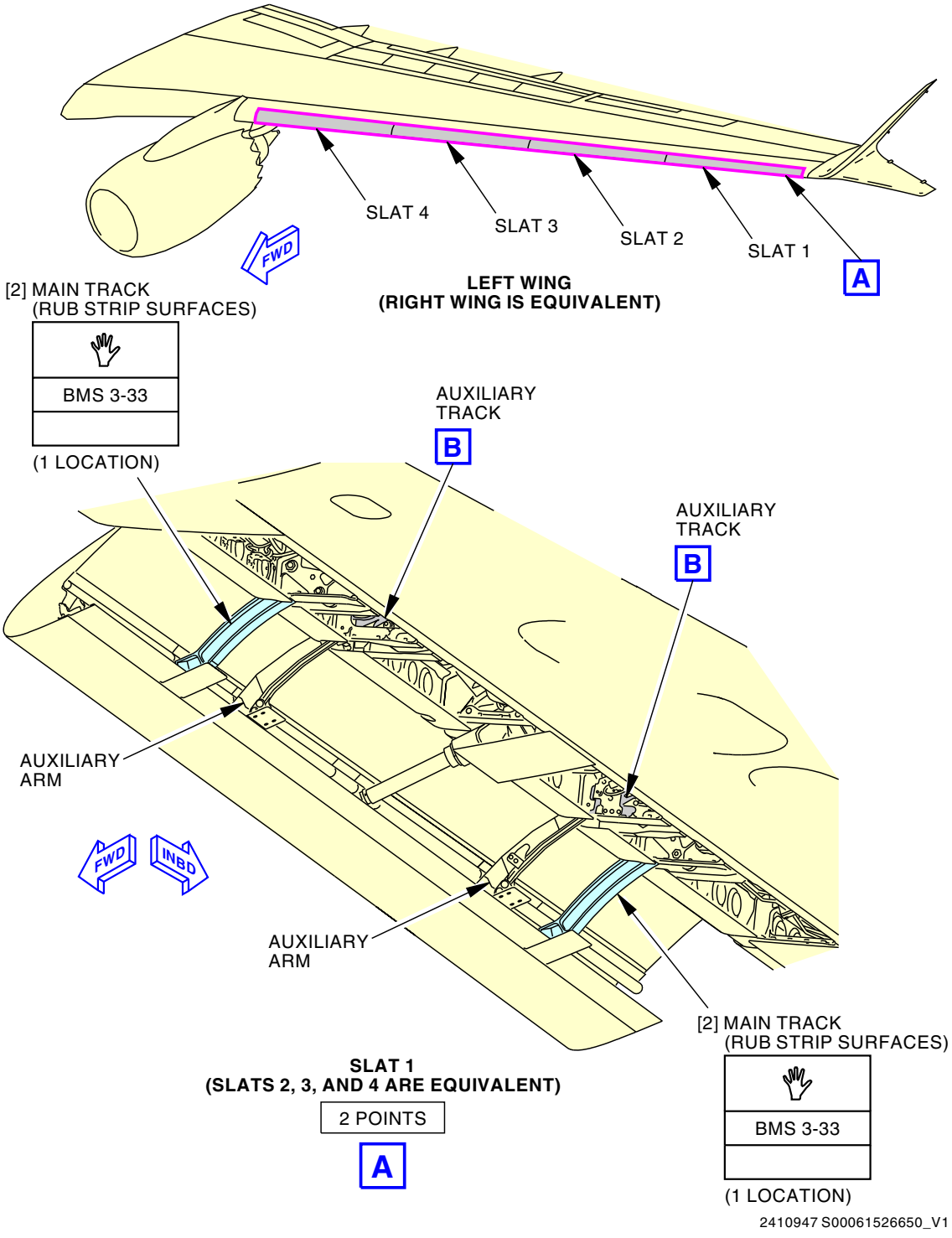
SUBTASK 12-22-71-860-011

(7) Move the flap control lever to the UP position to fully retract the leading edge slats.

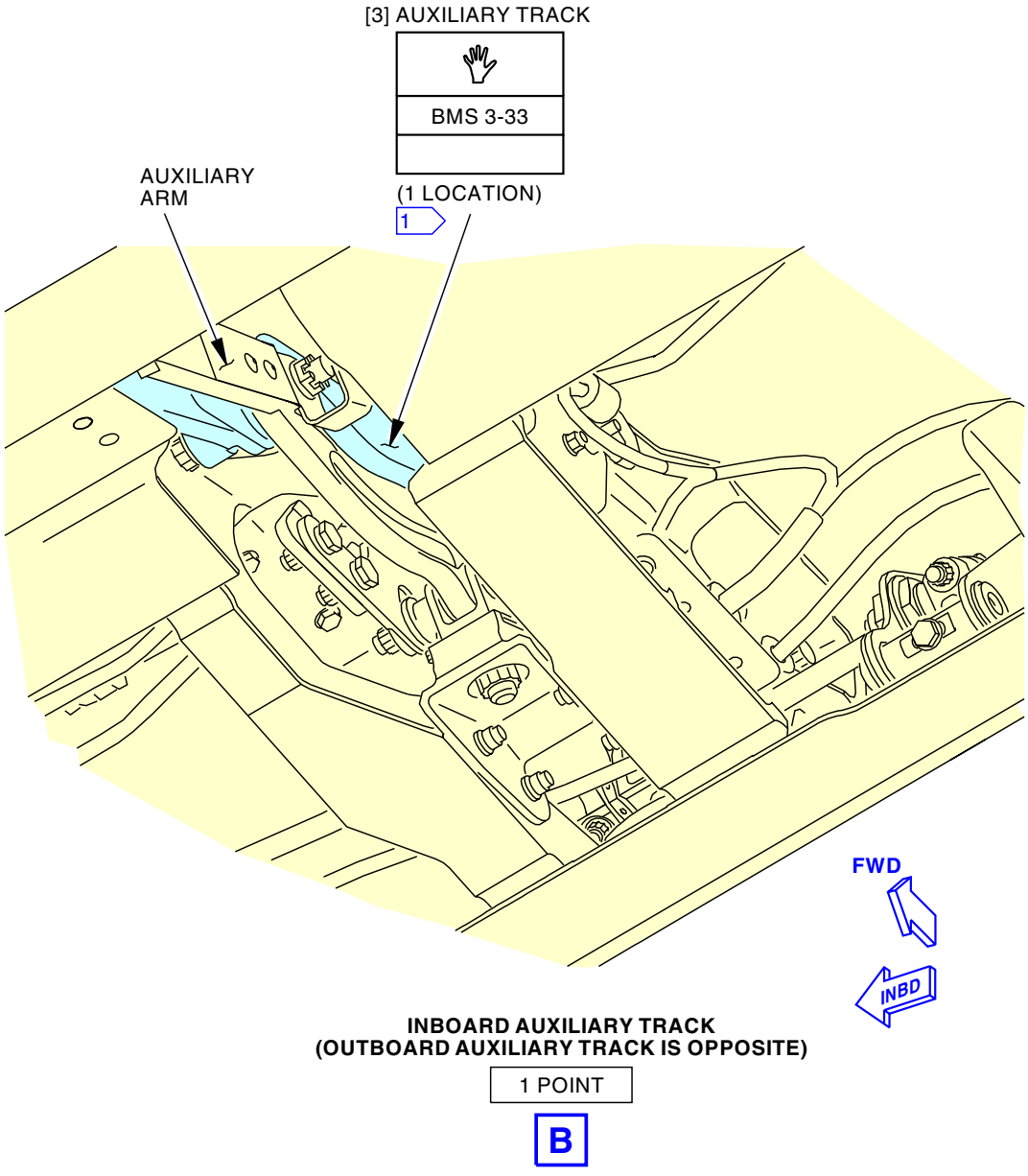
SUBTASK 12-22-71-860-012

(8) Do this task: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805.

——— END OF TASK ———



Leading Edge Main and Auxiliary Tracks Servicing
Figure 302/12-22-71-990-802 (Sheet 1 of 2)



1 APPLY GREASE TO THE WEAR PATHS ON THE AUXILIARY TRACKS AND ON THE RUB STRIP SURFACES.

2410948 S00061526651_V1

Leading Edge Main and Auxiliary Tracks Servicing
Figure 302/12-22-71-990-802 (Sheet 2 of 2)

MAIN LANDING GEAR SUPPORT BEAM - SERVICING

1. General

A. This procedure has this task:

(1) A lubrication of the main landing gear support beam.

TASK 12-25-07-600-801

2. Main Landing Gear Support Beam Lubrication

(Figure 301)

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
20-10-24-420-801	Lubrication Fitting Installation (P/B 401)
32-00-01-480-801	Landing Gear Downlock Pins Installation (P/B 201)

B. Consumable Materials

Reference	Description	Specification
D00633	Grease - Aircraft General Purpose	BMS3-33

C. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right

D. Prepare for the Lubrication

SUBTASK 12-25-07-420-002

WARNING MAKE SURE THAT THE DOWNLOCK PINS ARE INSTALLED ON ALL THE LANDING GEAR. WITHOUT THE DOWNLOCK PINS, THE LANDING GEAR CAN RETRACT. THIS CAN CAUSE INJURIES TO PERSONS, AND DAMAGE TO EQUIPMENT.

(1) Make sure that the downlock pins are installed on the nose and main landing gear (TASK 32-00-01-480-801).

E. Main Landing Gear Support Beam Lubrication

SUBTASK 12-25-07-840-001

WARNING WEAR GLOVES AND EYE PROTECTION WHEN YOU OPERATE THE GREASE GUN. LUBRICANT AT HIGH-PRESSURE CAN CAUSE INJURY TO PERSONS.

(1) Put on protective gloves and eye protection.

SUBTASK 12-25-07-640-001

CAUTION DO NOT USE A PRESSURE OF MORE THAN 2500 PSIG WHEN YOU LUBRICATE THE STRUCTURE. IF YOU USE A PRESSURE OF MORE THAN 2500 PSIG, DAMAGE TO THE LUBRICATION FITTINGS CAN OCCUR.

(CAUTION PRECEDES)

CAUTION

CONNECT AND DISCONNECT THE GREASE GUN TO THE LUBRICATION FITTINGS CAREFULLY. IF YOU ARE NOT CAREFUL, THE GREASE GUN CAN CAUSE DAMAGE TO THE LUBRICATION FITTINGS.

(2) Lubricate the support beam assembly with grease, D00633 (Figure 301 and Table 301).

Table 301/12-25-07-993-804 Main Landing Gear Support Beam Assembly Lubrication

Item No.	Nomenclature	Lubricant	Method of Application	Number of Locations
1	OUTBOARD STABILIZER LINK	grease, D00633	Zerk	2
2	INBOARD STABILIZER LINK (FWD)	grease, D00633	Zerk	1
3	OUTBOARD PIN	grease, D00633	Zerk	1
4	MLG BEAM	grease, D00633	Zerk	1
5	INBOARD STABILIZER LINK (AFT)	grease, D00633	Zerk	2
6	FRAME FITTING ASSEMBLY	grease, D00633	Zerk	2
7	HANGER LINK	grease, D00633	Zerk	5

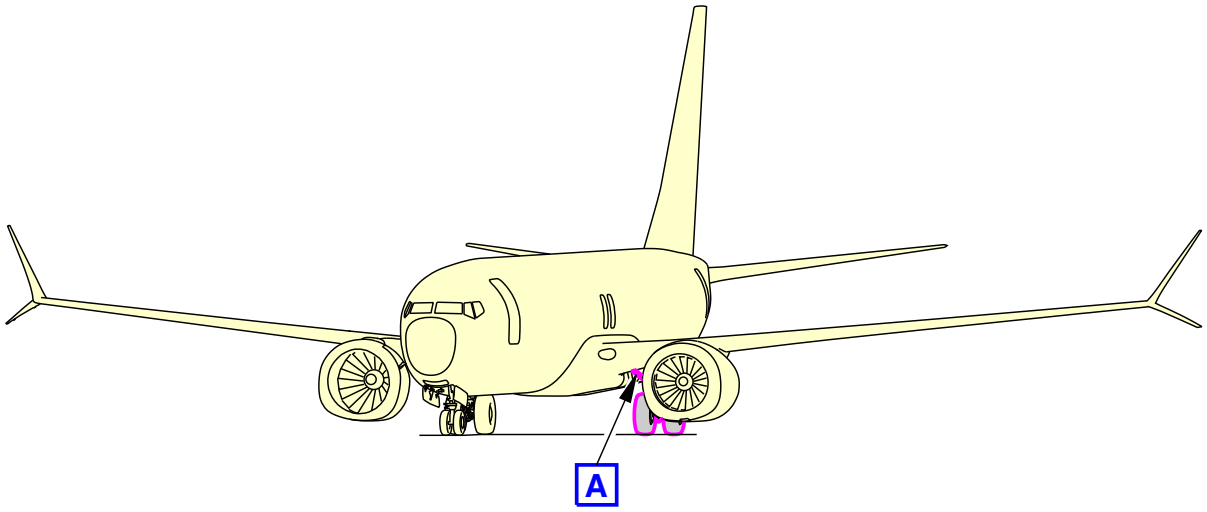
SUBTASK 12-25-07-430-001

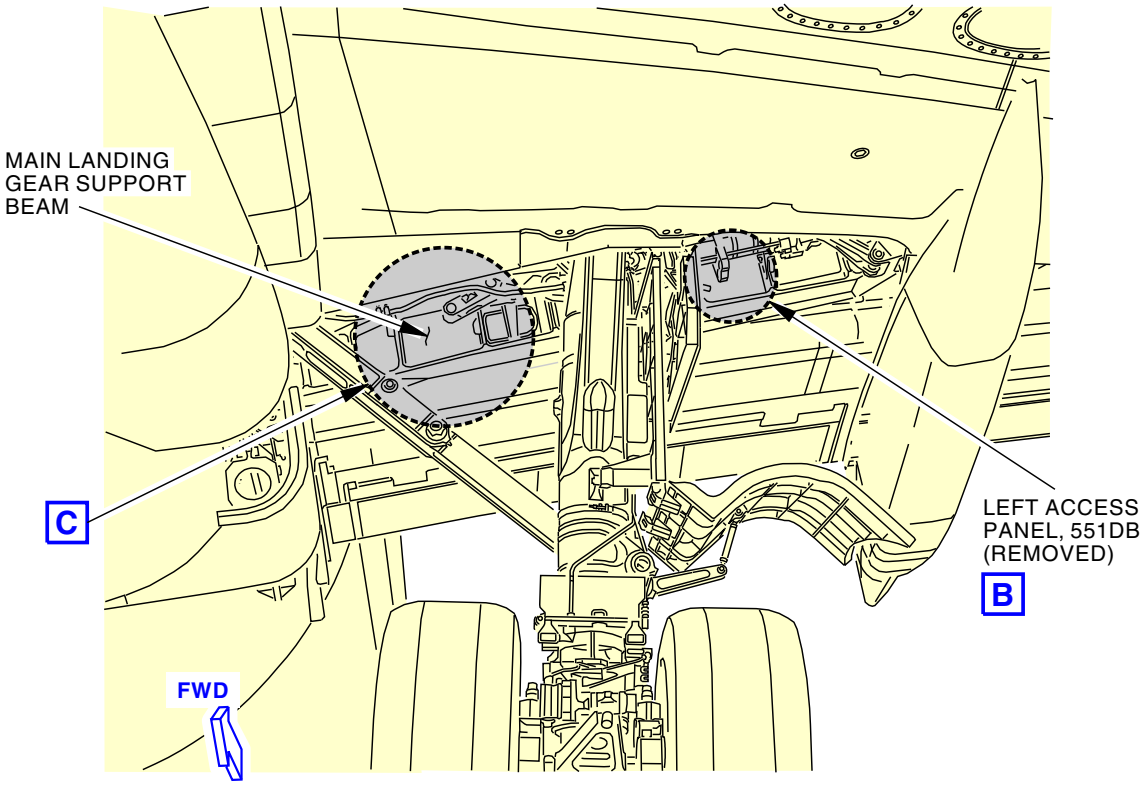
(3) If a fitting blows off, do these steps:

(a) Make sure that there is not a blockage in the lubrication path.

(b) Do this task: Lubrication Fitting Installation, TASK 20-10-24-420-801.

——— END OF TASK ———



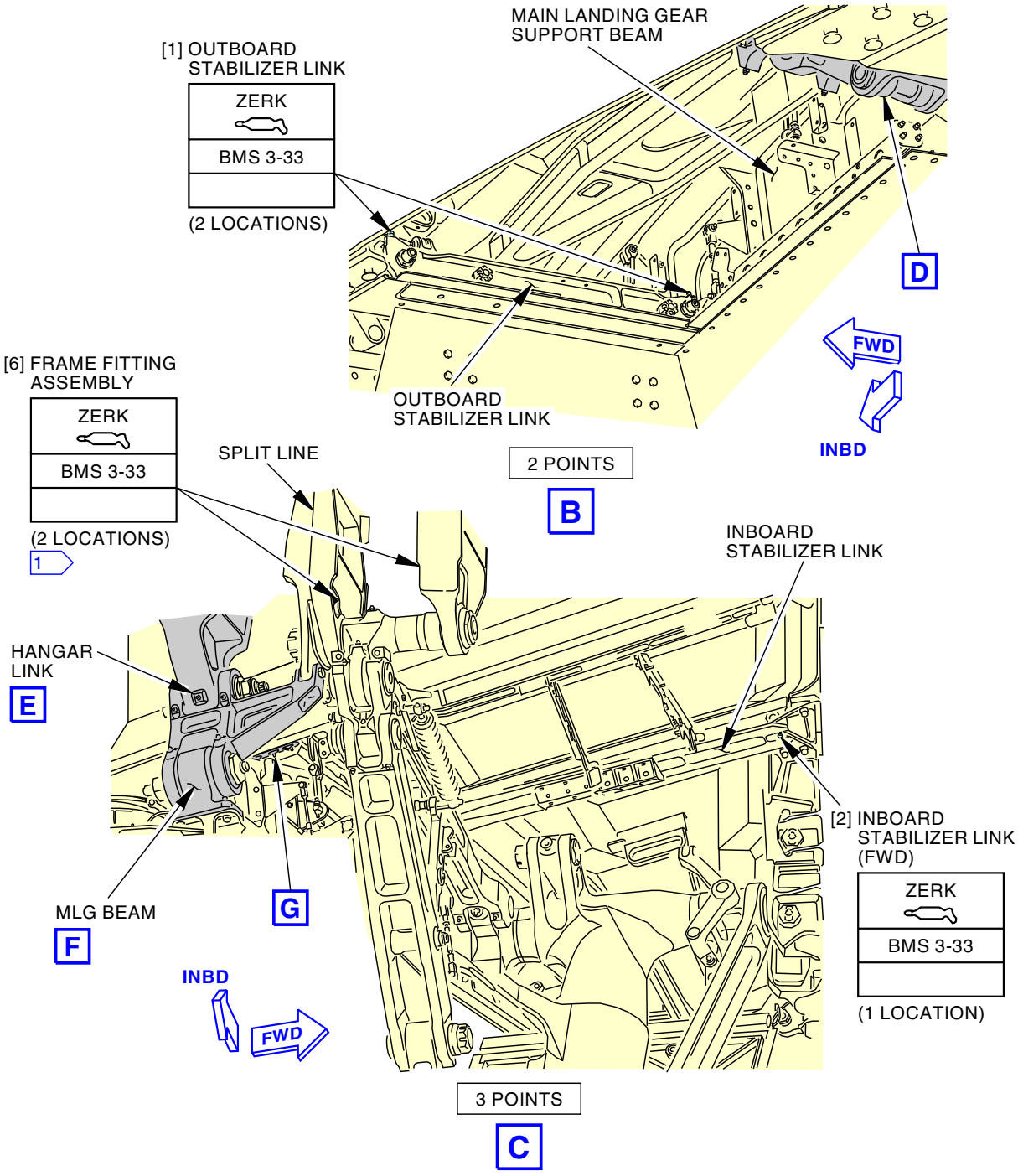


LEFT MAIN LANDING GEAR
(LEFT SIDE IS SHOWN, RIGHT SIDE IS EQUIVALENT)

A

2410950 S00061526660_V1

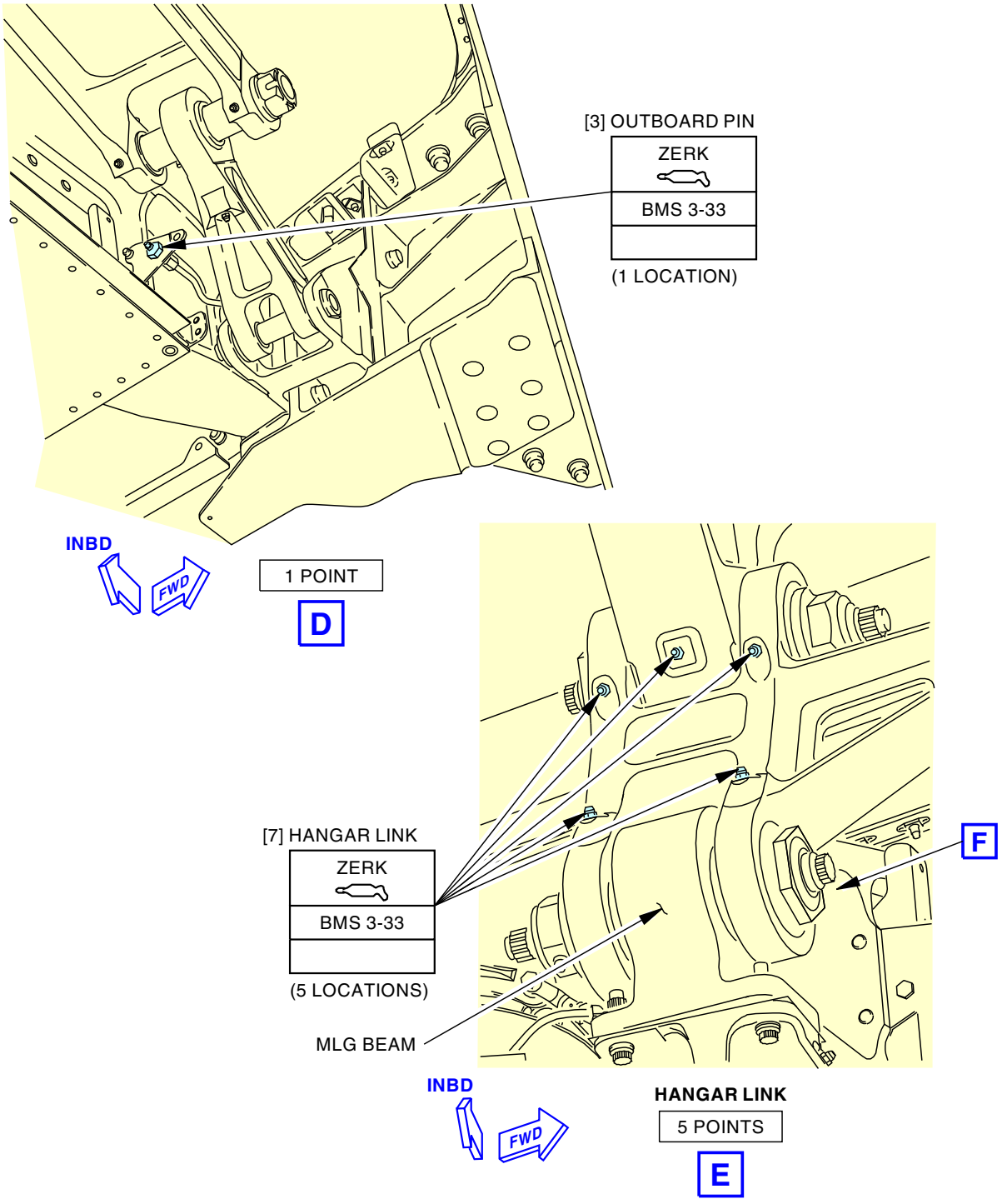
Main Landing Gear Support Beam Lubrication
Figure 301/12-25-07-990-801 (Sheet 1 of 4)



1 IF YOU SEE GREASE EXTRUDE FROM THE SPLIT LINE OF THE AFT FITTING HALVES, THEN LUBRICATE THE FITTING UNTIL ADDITIONAL GREASE EXTRUDES OUT.

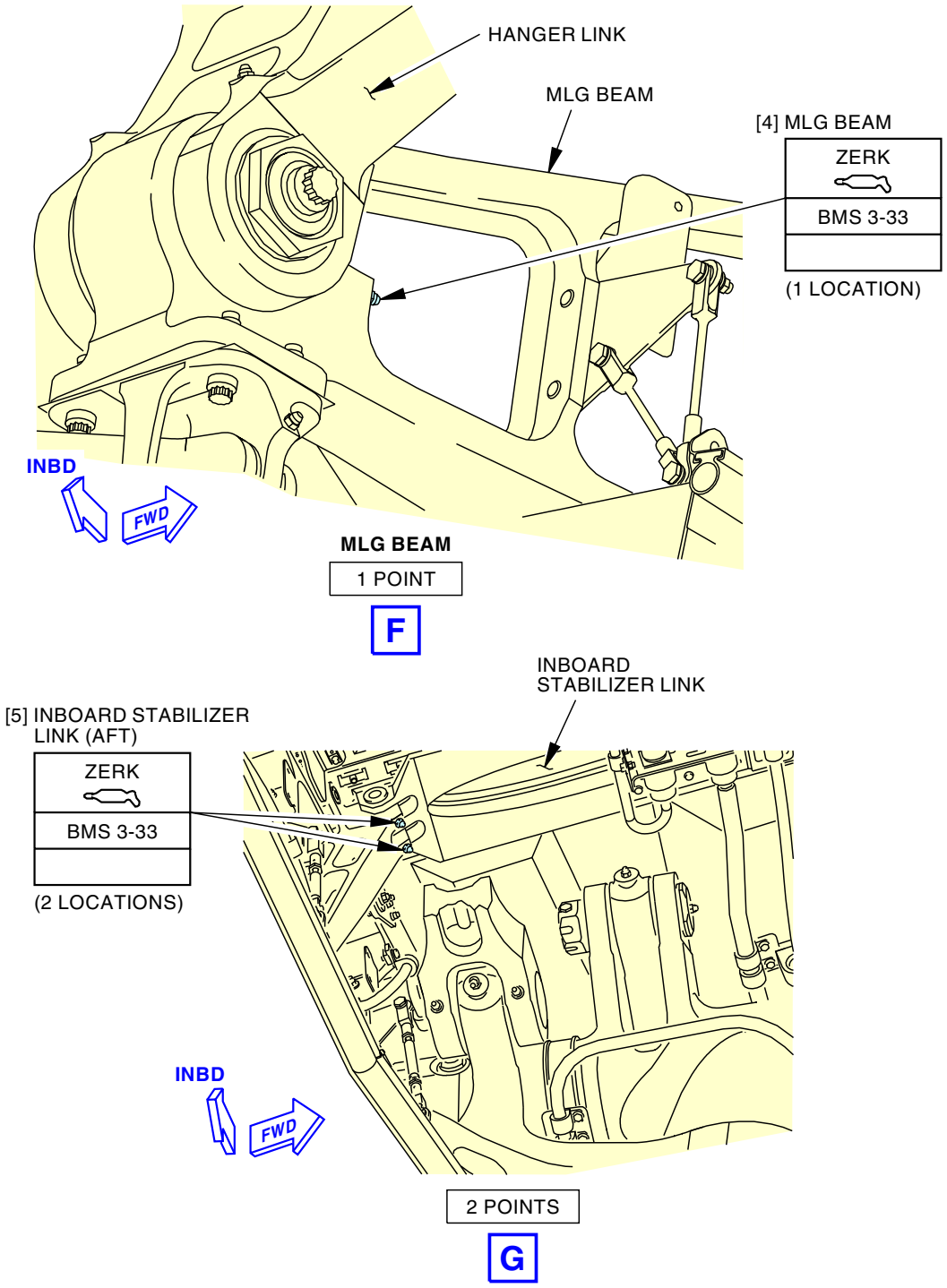
2410951 S00061526661_V1

Main Landing Gear Support Beam Lubrication
Figure 301/12-25-07-990-801 (Sheet 2 of 4)



2410952 S00061526662_V1

Main Landing Gear Support Beam Lubrication
Figure 301/12-25-07-990-801 (Sheet 3 of 4)



2410953 S00061526663_V1

Main Landing Gear Support Beam Lubrication
Figure 301/12-25-07-990-801 (Sheet 4 of 4)

FORWARD ENTRY DOOR - SERVICING

1. General

A. This procedure contains scheduled maintenance task data.

B. This procedure has these tasks:

(1) The servicing of the forward entry door components.

(2) The servicing of the forward entry door mechanism.

TASK 12-25-11-640-801

2. Forward Entry Door Servicing - Components

(Figure 301)

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
52-11-00 P/B 201	FORWARD ENTRY DOOR - MAINTENANCE PRACTICES

B. Consumable Materials

Reference	Description	Specification
D00633	Grease - Aircraft General Purpose	BMS3-33
D50101	Lubricating Oil - General Purpose, Preservative (Water-Displacing, Low Temperature)	MIL-PRF-32033 (NATO O-190)

C. Location Zones

Zone	Area
831	Forward Entry Door

D. Prepare for the Servicing

SUBTASK 12-25-11-010-001

(1) Get access to the door components as follows:

(a) Open the door (PAGEBLOCK 52-11-00/201).

(b) Move the door to the correct position to get access to the door components.

E. Forward Entry Door Components Servicing

SUBTASK 12-25-11-640-001

(1) Lubricate the gate hinge pins with MIL-PRF-32033 oil, D50101 or grease, D00633.

NOTE: MIL-PRF-32033 (D50101) is the preferred lubricant, while BMS 3-33 (D00633) is an alternate.

SUBTASK 12-25-11-640-002

(2) Lubricate the other components on the forward entry door with grease, D00633.

Table 301/12-25-11-993-803 Forward Entry Door Servicing - Components (Fig. 301)

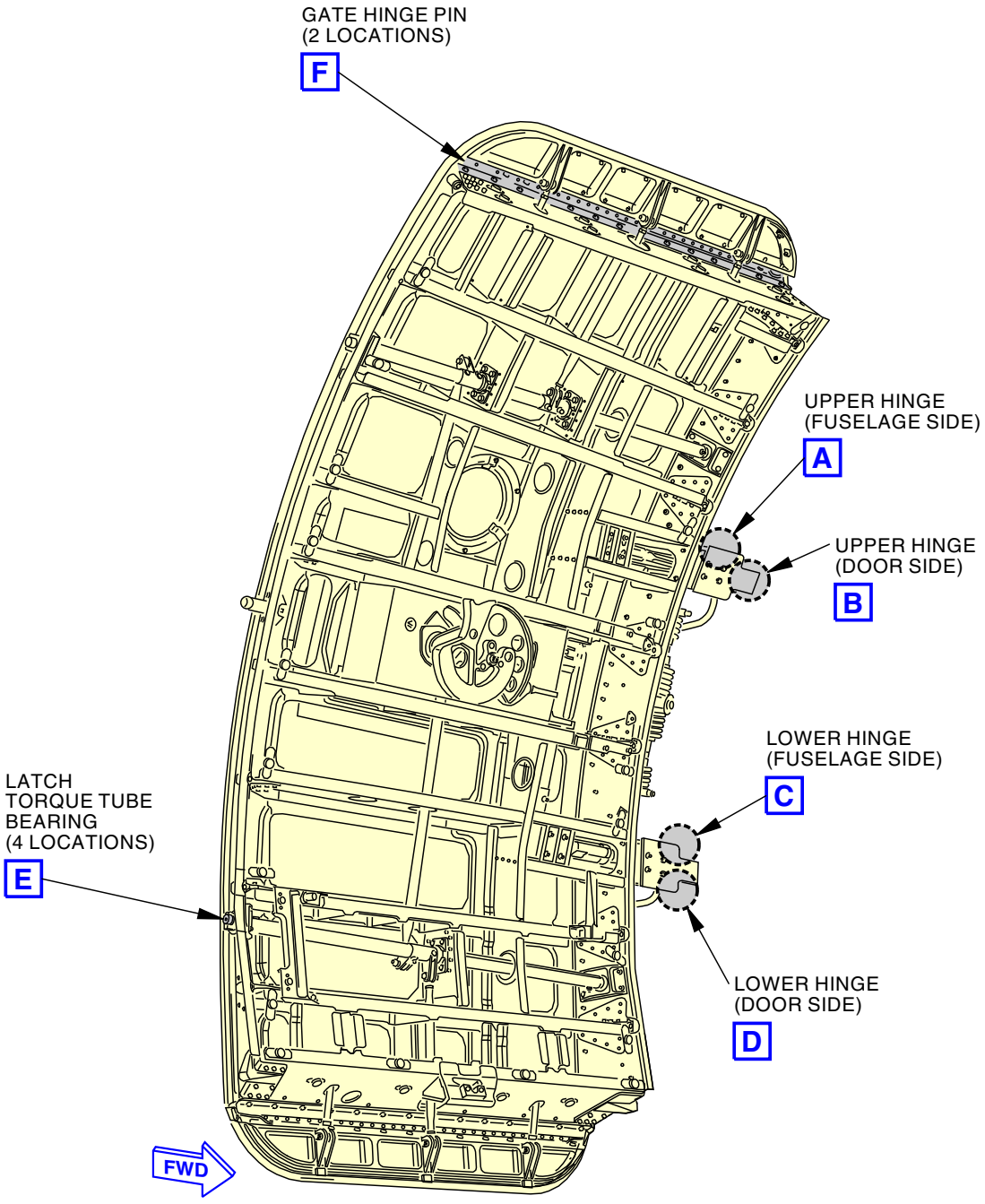
Item No.	Nomenclature	Lubricant	Method of Application	Number of Locations
1	Gate Hinge Pins	MIL-PRF-32033 oil, D50101 orgrease, D00633	Oil Can, Hand	2
2	Guide Plate Tracks	grease, D00633	Hand	2
3	Upper Fuselage Hinge Torque Tube Bearing	grease, D00633	Flush	1
4	Guide Arm Rod End Bearing	grease, D00633	Flush	1
5	Guide Arm Rod End Threads	grease, D00633	Hand	1
6	Upper Hinge Arm Bushing	grease, D00633	Flush	1
7	Lower Fuselage Hinge Torque Tube Bearing	grease, D00633	Flush	1
8	Lower Hinge Arm Bushing	grease, D00633	Flush	1
9	Latch Torque Tube Bearing	grease, D00633	Flush	4

F. Put the Airplane Back to Its Usual Condition

SUBTASK 12-25-11-410-001

(1) Close and latch the forward entry door as required (PAGEBLOCK 52-11-00/201).

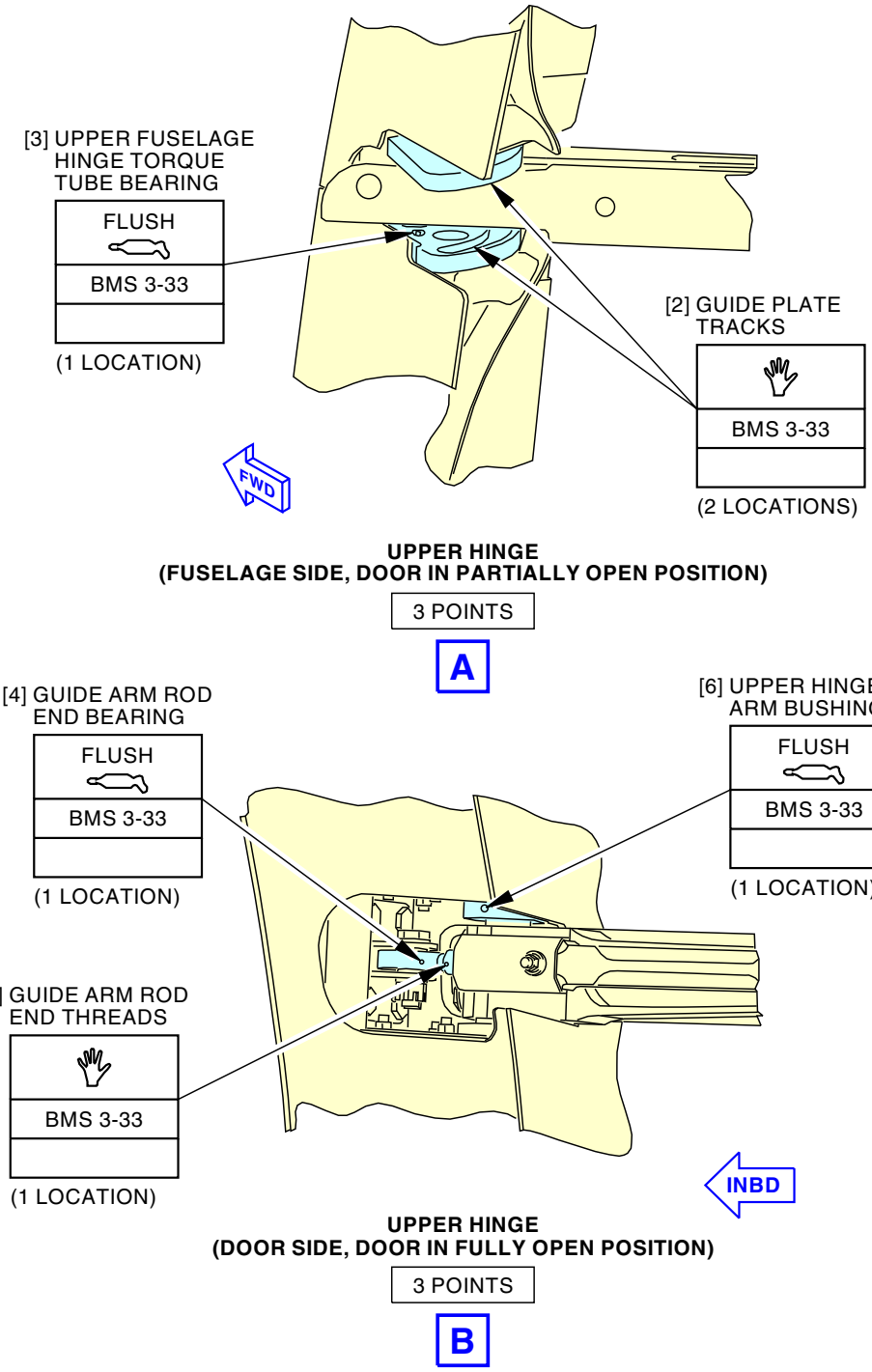
——— END OF TASK ———



FORWARD ENTRY DOOR
(INNER SKIN AND PANELS NOT SHOWN)

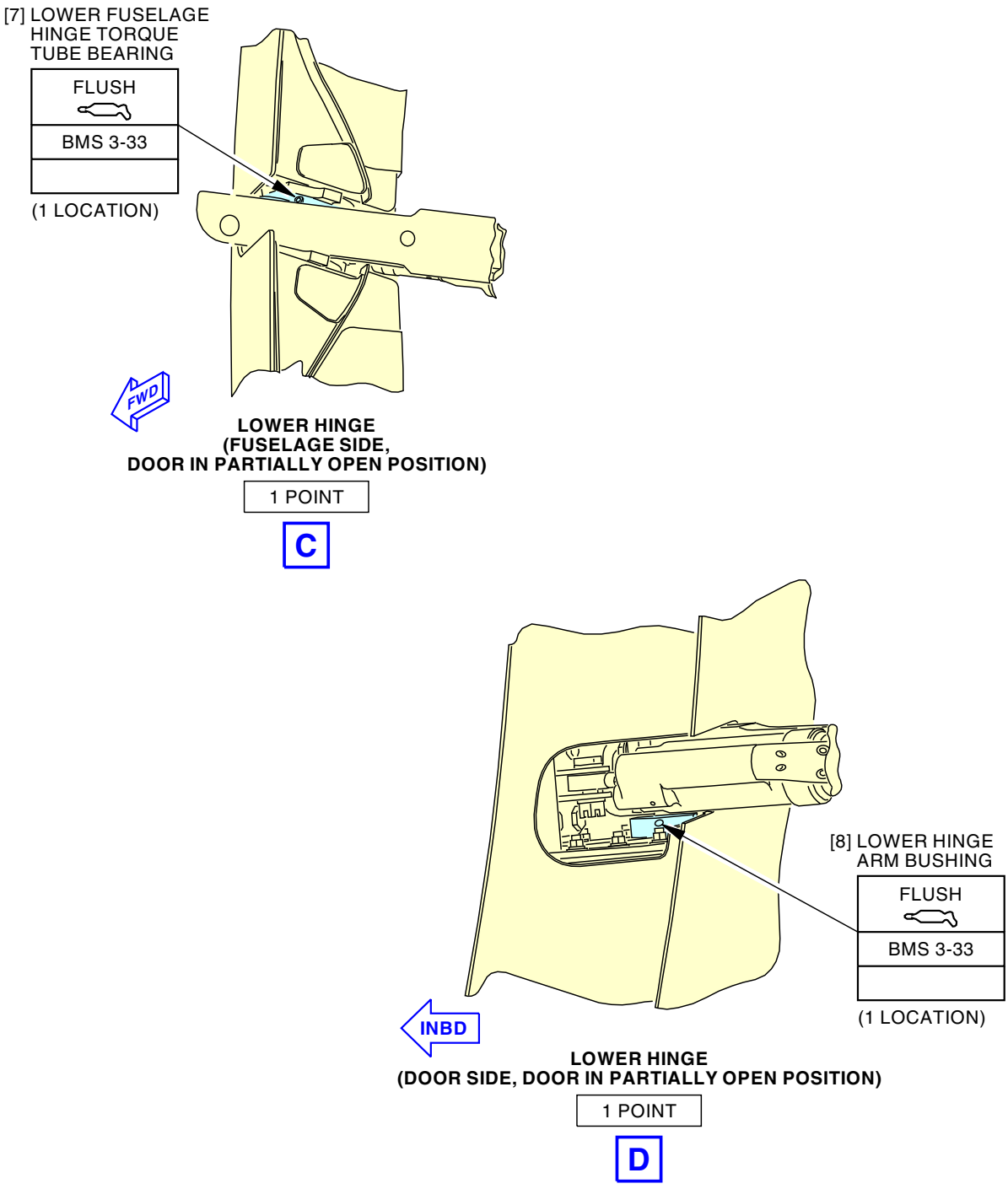
2410954 S00061526667_V1

Forward Entry Door Servicing - Components
Figure 301/12-25-11-990-801 (Sheet 1 of 4)



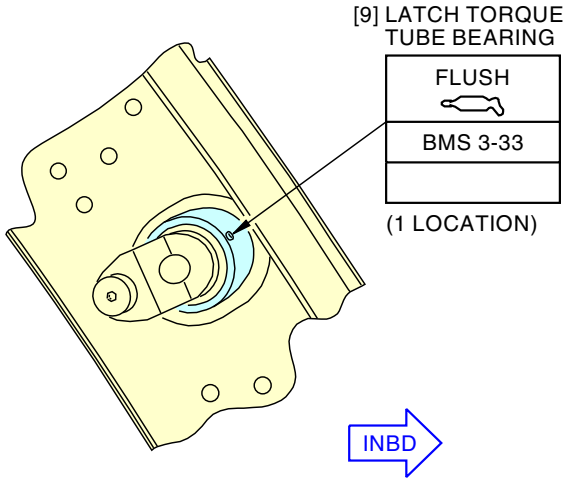
2410955 S00061526668_V1

Forward Entry Door Servicing - Components
Figure 301/12-25-11-990-801 (Sheet 2 of 4)



2410956 S00061526669_V1

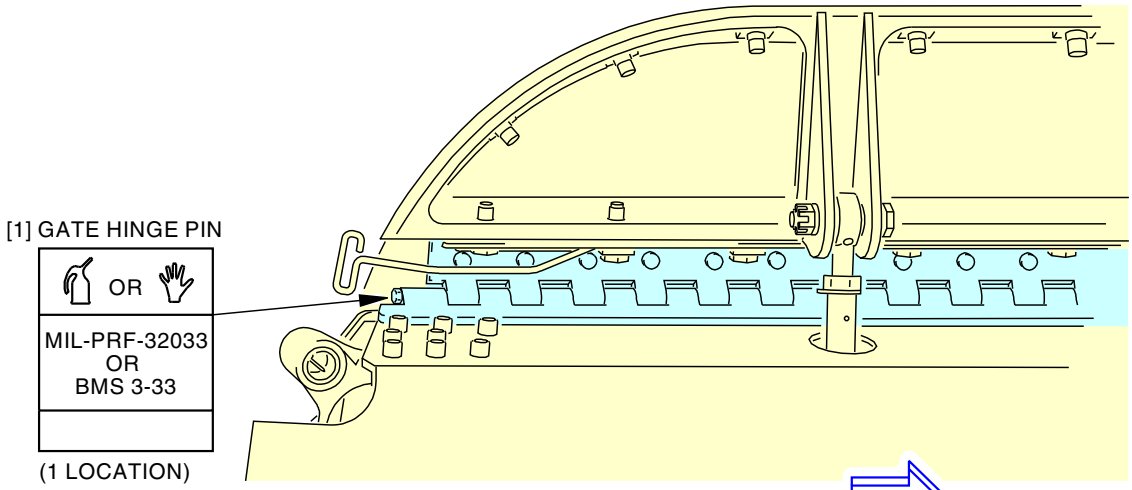
Forward Entry Door Servicing - Components
Figure 301/12-25-11-990-801 (Sheet 3 of 4)



LATCH TORQUE TUBE BEARING (EXAMPLE, 4 LOCATIONS)

1 POINT

E



GATE HINGE PIN (2 LOCATIONS)

1 POINT

F

2410957 S00061526670_V1

Forward Entry Door Servicing - Components
Figure 301/12-25-11-990-801 (Sheet 4 of 4)

TASK 12-25-11-640-802

3. Forward Entry Door Servicing - Mechanism

(Figure 302)

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
52-11-00 P/B 201	FORWARD ENTRY DOOR - MAINTENANCE PRACTICES
52-11-31-000-801	Forward Entry Door Lining Removal (P/B 401)
52-11-31-400-801	Forward Entry Door Lining Installation (P/B 401)

B. Consumable Materials

Reference	Description	Specification
D00633	Grease - Aircraft General Purpose	BMS3-33

C. Location Zones

Zone	Area
831	Forward Entry Door

D. Access Panels

Number	Name/Location
831AZ	Forward Entry Door - Torque Tube Access
831BZ	Forward Entry Door - Handle Box and Cam for Handle Box Access
831CZ	Forward Entry Door - Handle Box Access
831DZ	Forward Entry Door - Gate Hinge Pin Access
831EZ	Forward Entry Door - Gate Hinge Pin Access

E. Prepare for the Servicing

SUBTASK 12-25-11-010-002

(1) Get access to the door mechanism as follows:

(a) Do this task: Forward Entry Door Lining Removal, TASK 52-11-31-000-801.

(b) Open these access panels:

Number	Name/Location
831AZ	Forward Entry Door - Torque Tube Access
831BZ	Forward Entry Door - Handle Box and Cam for Handle Box Access
831CZ	Forward Entry Door - Handle Box Access
831DZ	Forward Entry Door - Gate Hinge Pin Access
831EZ	Forward Entry Door - Gate Hinge Pin Access

(c) Open the door (PAGEBLOCK 52-11-00/201).

(d) To get access to the door components, move the door to the correct position.

F. Forward Entry Door Mechanism Servicing

(Table 302)

SUBTASK 12-25-11-640-003

(1) Lubricate the mechanism on the forward entry door with grease, D00633.

(a) For the lubrication of the handle, operate the handle to move the grease, D00633 on the handle shaft.

Table 302/12-25-11-993-804 Forward Entry Door Servicing - Mechanism (Fig. 302)

Item No.	Nomenclature	Lubricant	Method of Application	Number of Locations
1	Gate Control Rods	grease, D00633	Flush	4
2	Door Hinge Torque Tube	grease, D00633	Hand	2
3	Lower Latch Torque Tube Bearing	grease, D00633	Flush	1
4	Latch Control Rods	grease, D00633	Flush	2
5	Handle	grease, D00633	Hand	1
6	Upper Latch Torque Tube Bearings	grease, D00633	Flush	2
7	Gate Stop Rods	grease, D00633	Flush	8
8	Cam Follower Bearings	grease, D00633	Flush	2

G. Put the Airplane Back to Its Usual Condition

SUBTASK 12-25-11-410-002

(1) Close access to the door as follows:

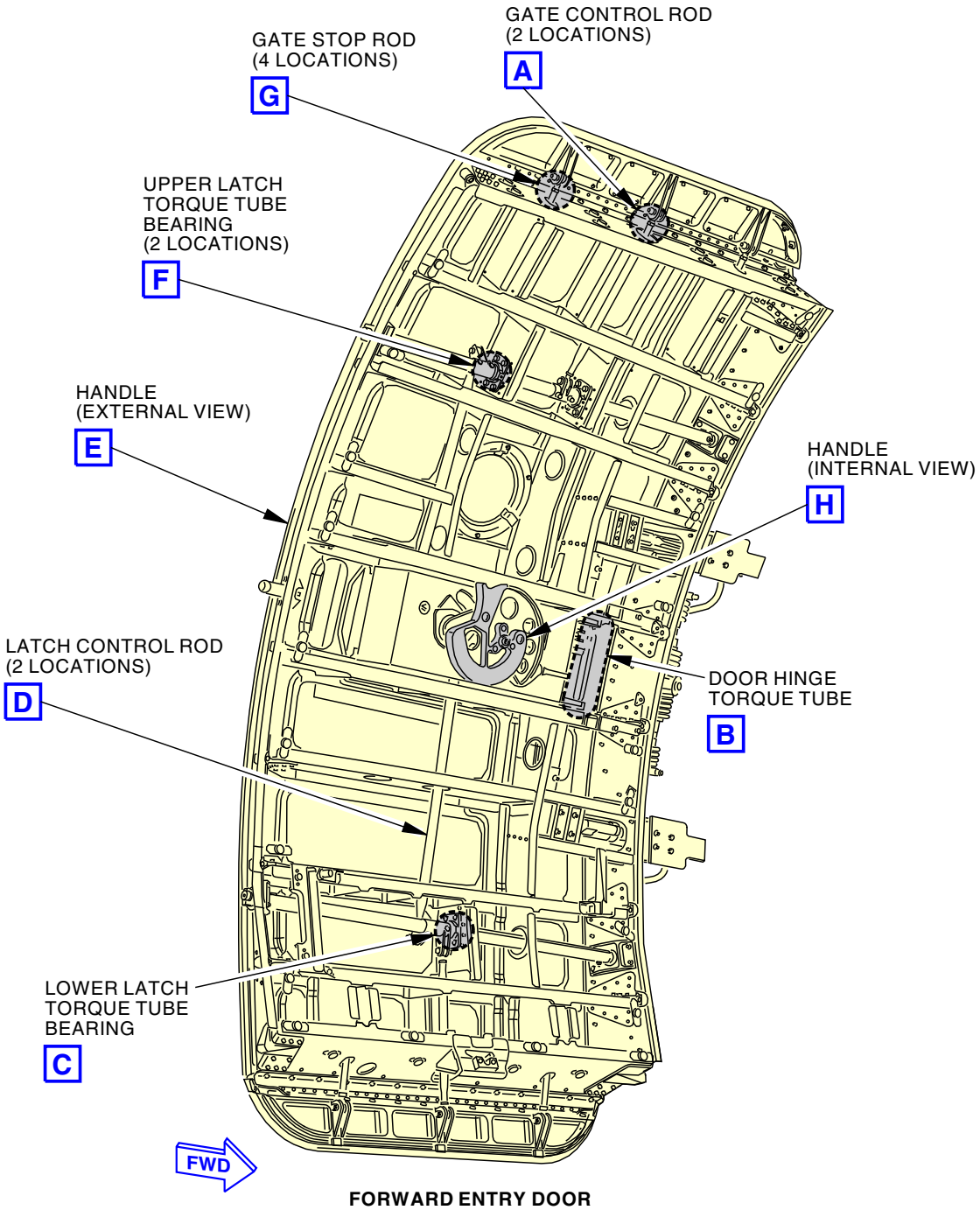
(a) Close and latch the door (PAGEBLOCK 52-11-00/201).

(b) Close these access panels:

Number	Name/Location
831AZ	Forward Entry Door - Torque Tube Access
831BZ	Forward Entry Door - Handle Box and Cam for Handle Box Access
831CZ	Forward Entry Door - Handle Box Access
831DZ	Forward Entry Door - Gate Hinge Pin Access
831EZ	Forward Entry Door - Gate Hinge Pin Access

(c) Do this task: Forward Entry Door Lining Installation, TASK 52-11-31-400-801.

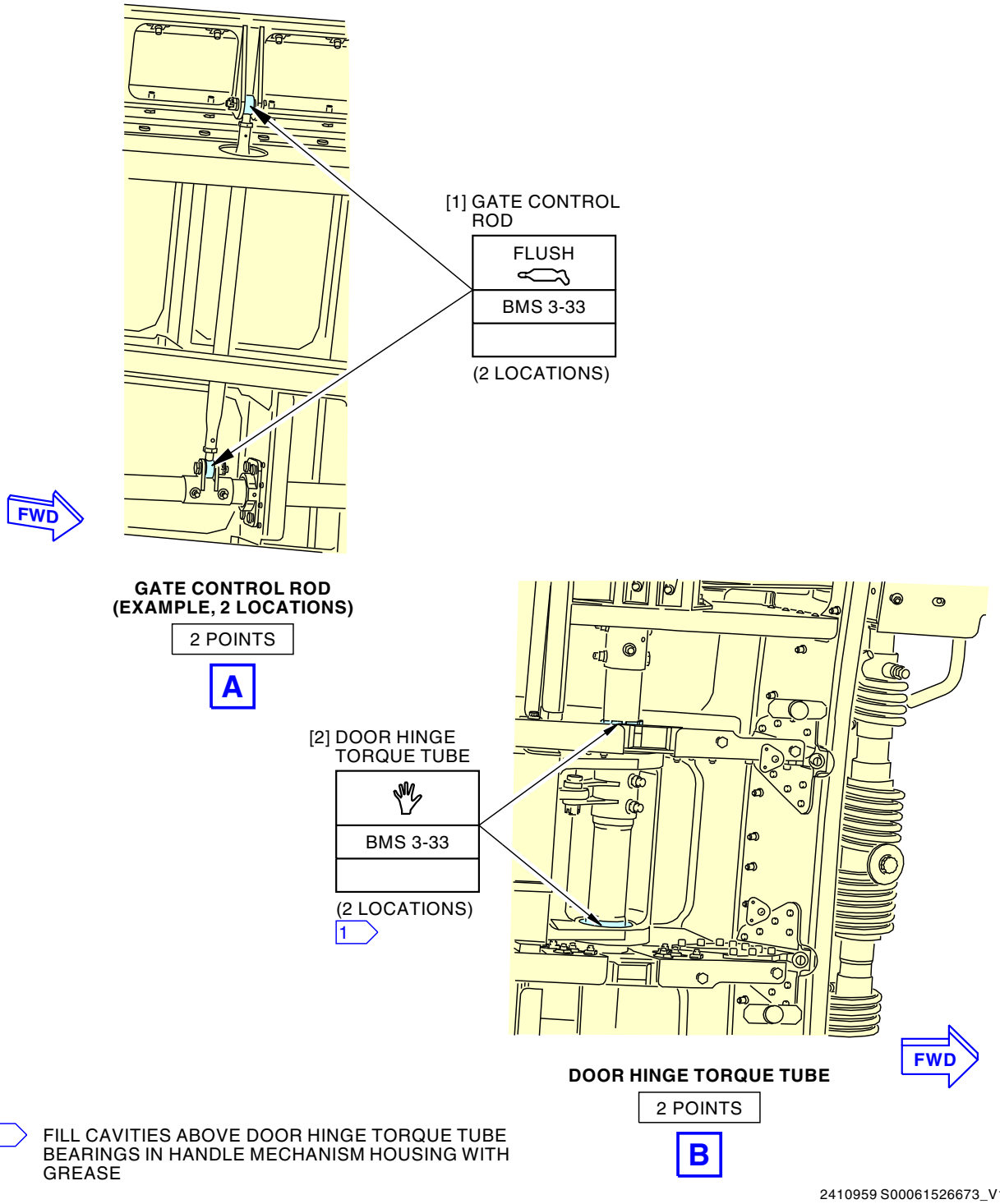
——— END OF TASK ———



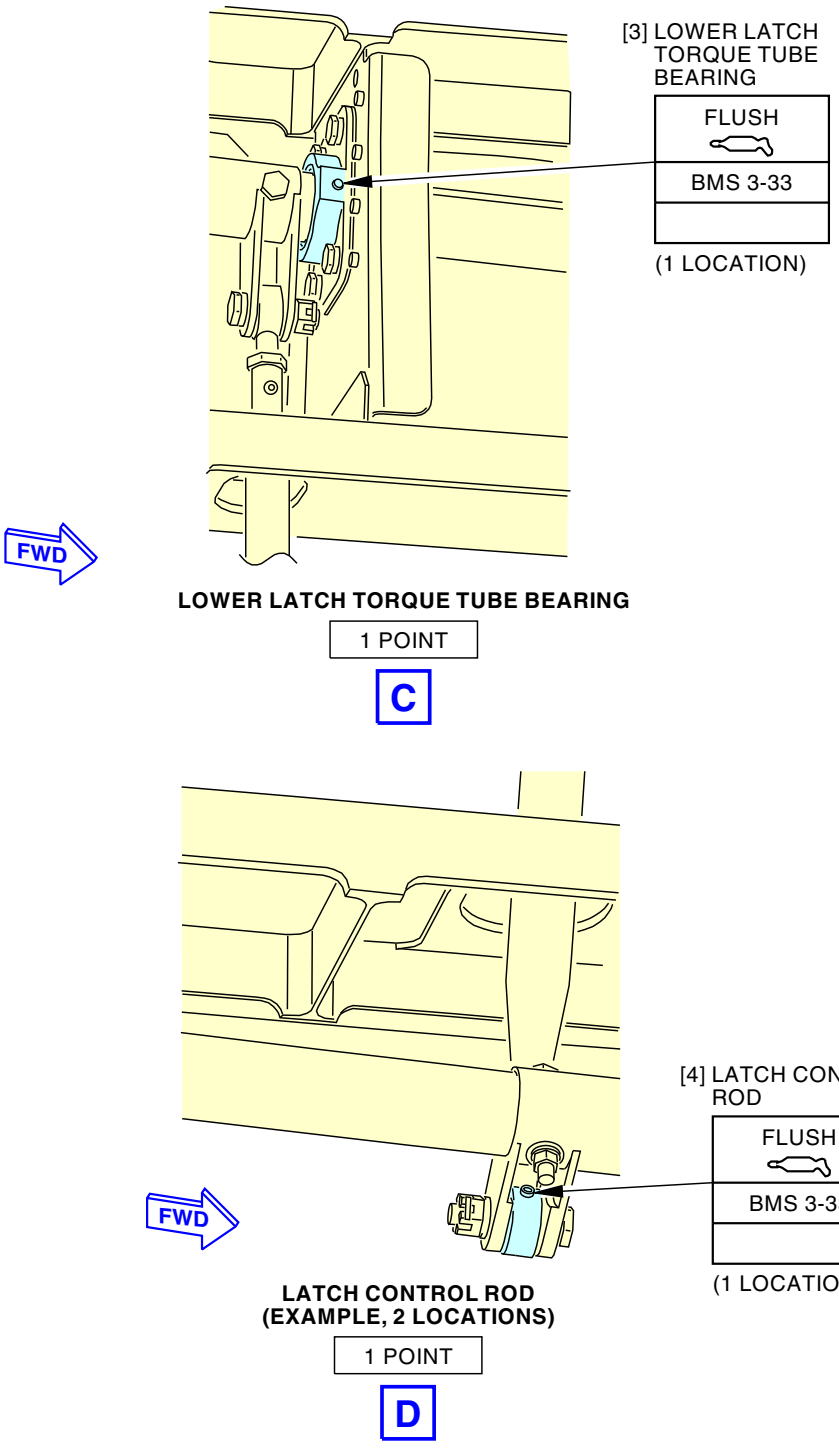
FORWARD ENTRY DOOR
(INNER SKIN AND PANELS REMOVED)

2410958 S00061526672_V1

Forward Entry Door Servicing - Mechanism
Figure 302/12-25-11-990-802 (Sheet 1 of 5)

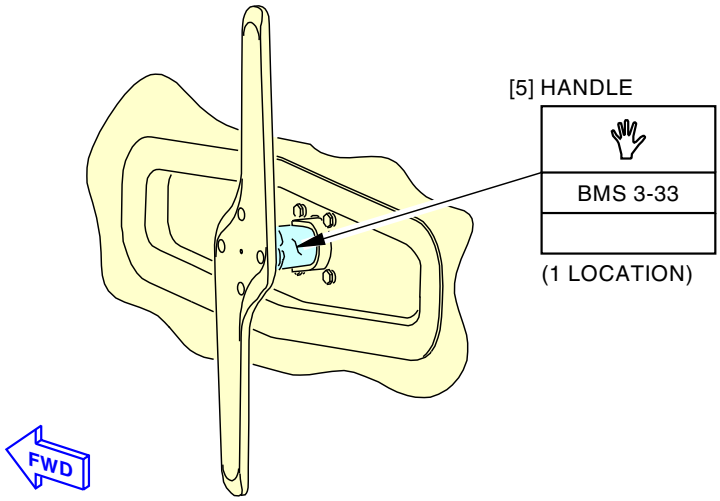


Forward Entry Door Servicing - Mechanism
Figure 302/12-25-11-990-802 (Sheet 2 of 5)



2410960 S00061526674_V1

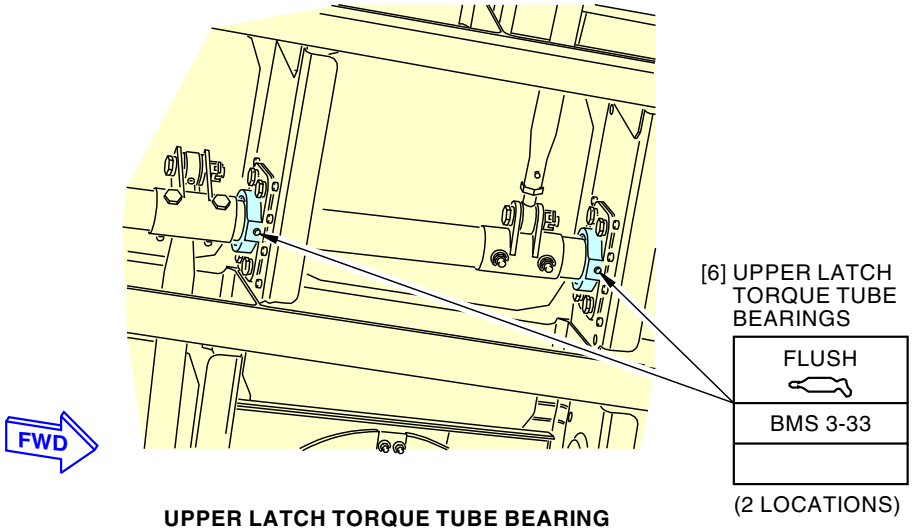
Forward Entry Door Servicing - Mechanism
Figure 302/12-25-11-990-802 (Sheet 3 of 5)



HANDLE
(EXTERNAL VIEW, HANDLE EXTENDED AND TURNED 90 DEGREES)

1 POINT

E



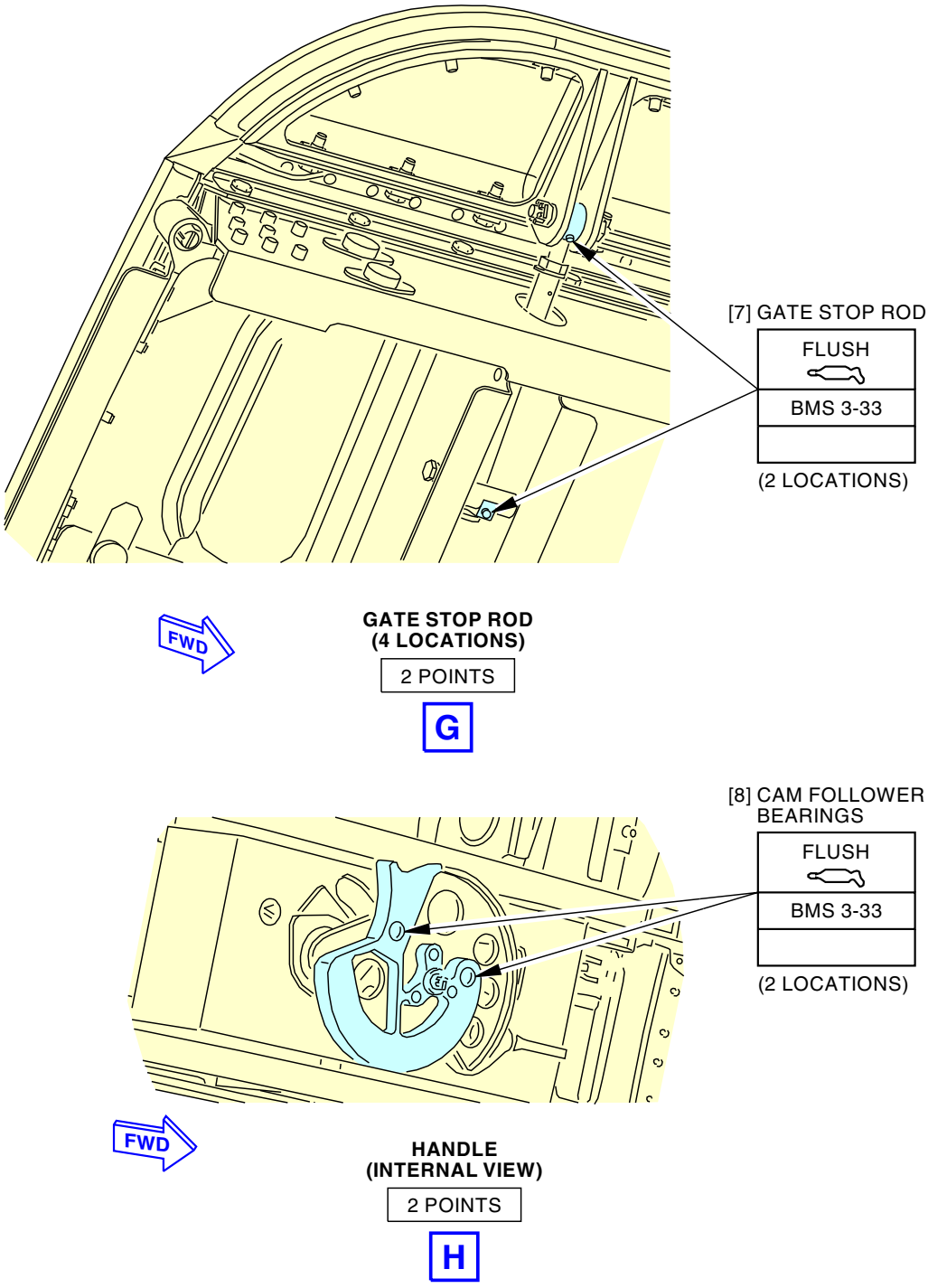
UPPER LATCH TORQUE TUBE BEARING
(2 LOCATIONS)

2 POINTS

F

2410961 S00061526675_V1

Forward Entry Door Servicing - Mechanism
Figure 302/12-25-11-990-802 (Sheet 4 of 5)



2410962 S00061526676_V1

Forward Entry Door Servicing - Mechanism
Figure 302/12-25-11-990-802 (Sheet 5 of 5)

AFT ENTRY DOOR - SERVICING

1. General

A. This procedure contains scheduled maintenance task data.

B. This procedure has these tasks:

(1) The servicing of the aft entry door components.

(2) The servicing of the aft entry door mechanism.

TASK 12-25-12-640-801

2. Aft Entry Door Lubrication - Components

(Figure 301)

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
52-13-00 P/B 201	AFT ENTRY DOOR - MAINTENANCE PRACTICES

B. Consumable Materials

Reference	Description	Specification
D00633	Grease - Aircraft General Purpose	BMS3-33
D50101	Lubricating Oil - General Purpose, Preservative (Water-Displacing, Low Temperature)	MIL-PRF-32033 (NATO O-190)

C. Location Zones

Zone	Area
834	Left Aft Entry Door

D. Prepare for the Lubrication

SUBTASK 12-25-12-010-001

(1) Get access to the door components as follows:

(a) Open the aft entry door (PAGEBLOCK 52-13-00/201).

(b) Move the door to the correct position to get access to the door components.

E. Aft Entry Door Components Lubrication

SUBTASK 12-25-12-640-001

(1) Lubricate the gate hinges [1] with MIL-PRF-32033 oil, D50101, or grease, D00633.

NOTE: MIL-PRF-32033 (D50101) is the preferred lubricant, while BMS 3-33 (D00633) is an alternate.

SUBTASK 12-25-12-640-002

(2) Lubricate the other components on the aft entry door with grease, D00633.

Table 301/12-25-12-993-803 Aft Entry Door Servicing - Components (Fig. 301)

Item No.	Nomenclature	Lubricant	Method of Application	Number of Locations
1	Gate Hinges	MIL-PRF-32033 oil, D50101, orgrease, D00633	Oil Can, Hand	2

Table 301/12-25-12-993-803 Aft Entry Door Servicing - Components (Fig. 301) (Continued)

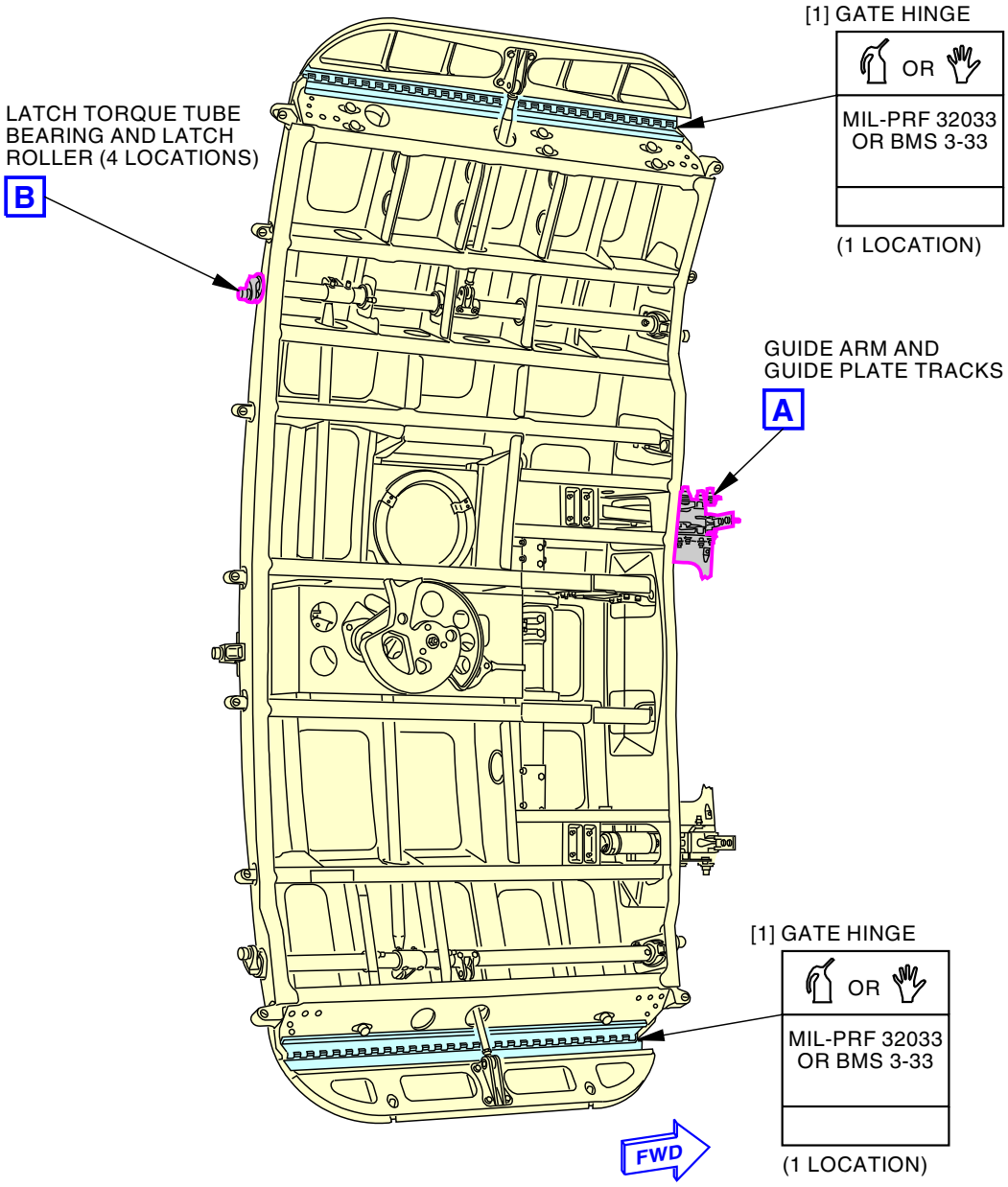
Item No.	Nomenclature	Lubricant	Method of Application	Number of Locations
2	Guide Arm Rod End Bearing	grease, D00633	Flush	1
3	Guide Arm Roller	grease, D00633	Hand	1
4	Guide Plate Tracks	grease, D00633	Hand	2
5	Latch Rollers	grease, D00633	Flush	4
6	Latch Torque Tube Bearings	grease, D00633	Flush	4

F. Put the Airplane Back to Its Usual Condition

SUBTASK 12-25-12-410-001

(1) Close and latch the aft entry door as required (PAGEBLOCK 52-13-00/201).

——— END OF TASK ———

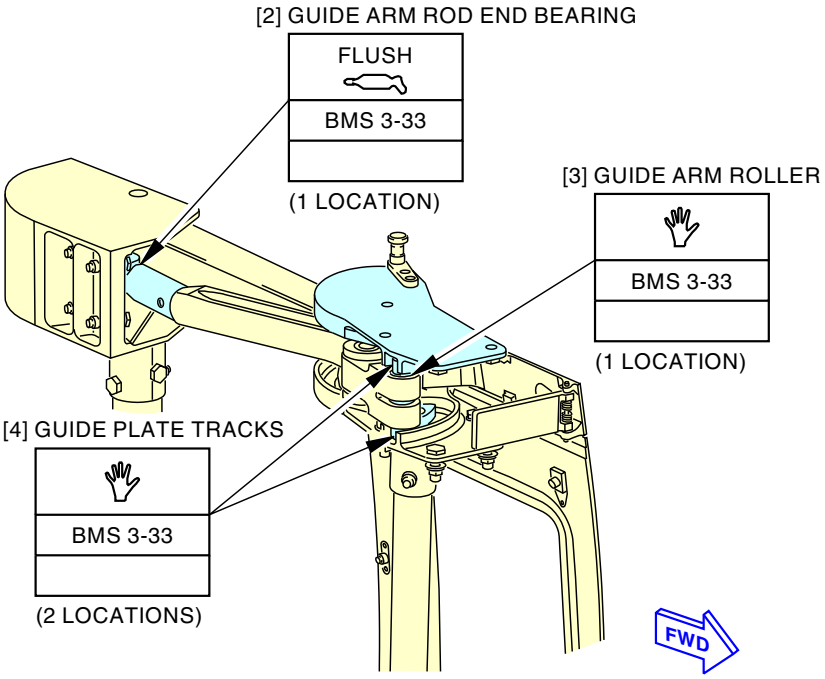


AFT ENTRY DOOR
(INNER SKIN AND PANELS NOT SHOWN)

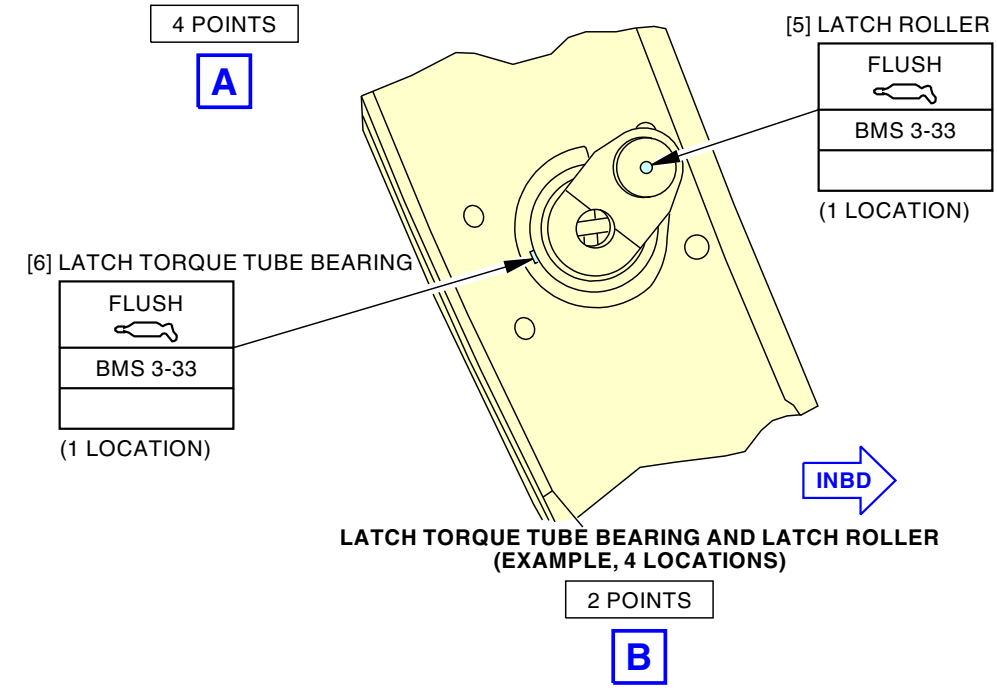
2 POINTS

2410963 S00061526680_V1

Aft Entry Door Servicing - Components
Figure 301/12-25-12-990-801 (Sheet 1 of 2)



GUIDE ARM AND GUIDE PLATE TRACKS



LATCH TORQUE TUBE BEARING AND LATCH ROLLER (EXAMPLE, 4 LOCATIONS)

2410964 S00061526681_V1

Aft Entry Door Servicing - Components
Figure 301/12-25-12-990-801 (Sheet 2 of 2)

TASK 12-25-12-640-802

3. Aft Entry Door Servicing - Mechanism

(Figure 302)

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
52-13-00 P/B 201	AFT ENTRY DOOR - MAINTENANCE PRACTICES
52-13-31-000-801	Aft Entry Door Lining Removal (P/B 401)
52-13-31-400-801	Aft Entry Door Lining Installation (P/B 401)
SOPM 20-50-19	General Sealing

B. Consumable Materials

Reference	Description	Specification
A00247	Sealant - Pressure And Environmental - Chromate Type	BMS5-95
D00633	Grease - Aircraft General Purpose	BMS3-33

C. Location Zones

Zone	Area
834	Left Aft Entry Door

D. Access Panels

Number	Name/Location
834AZ	Aft Entry Door - Torque Tube Access
834BZ	Aft Entry Door - Handle Box and Cam for Handle Box Access
834CZ	Aft Entry Door - Handle Box Access
834DZ	Aft Entry Door - Lower Hinge Access
834EZ	Aft Entry Door - Upper Hinge Access
834FZ	Aft Entry Door - Torque Tube Access
834GZ	AFT Entry Door - Torque Tube Access

E. Prepare for the Servicing

SUBTASK 12-25-12-010-002

(1) Get access to the door mechanism as follows:

(a) Do this task: Aft Entry Door Lining Removal, TASK 52-13-31-000-801.

(b) Open these access panels:

Number	Name/Location
834AZ	Aft Entry Door - Torque Tube Access
834BZ	Aft Entry Door - Handle Box and Cam for Handle Box Access
834CZ	Aft Entry Door - Handle Box Access
834DZ	Aft Entry Door - Lower Hinge Access
834EZ	Aft Entry Door - Upper Hinge Access

(c) Remove these access doors:

Number	Name/Location
834FZ	Aft Entry Door - Torque Tube Access
834GZ	AFT Entry Door - Torque Tube Access

1) Remove a pressure fay surface seal that was previously applied between the

mating surfaces of the cover plate and the inner skin (SOPM 20-50-19).

2) Remove a parting agent that was previously applied to the mating surfaces of the cover plate (SOPM 20-50-19).

(d) Open the door (PAGEBLOCK 52-13-00/201).

(e) To get access to the door components, move the door to the correct position.

F. Aft Entry Door Mechanism Servicing

SUBTASK 12-25-12-640-003

(1) Lubricate the mechanism on the aft entry door with grease, D00633 (Table 302).

Table 302/12-25-12-993-804 Aft Entry Door Servicing - Mechanism

Item No.	Nomenclature	Lubricant	Method of Application	Number of Locations
1	Door Hinge Torque Tube	grease, D00633	Hand	2
2	Hinge Link Bearings	grease, D00633	Flush	2
3	Handle	grease, D00633	Flush	1
4	Latch Control Rods	grease, D00633	Flush	2
5	Gate Control Rods	grease, D00633	Flush	4
6	Latch Torque Tube Bearings	grease, D00633	Zerk	4
7	Cam Follower Bearings	grease, D00633	Hand	2

G. Put the Airplane Back to Its Usual Condition

SUBTASK 12-25-12-410-002

(1) Close access to the door as follows:

(a) Close and latch the door (PAGEBLOCK 52-13-00/201).

(b) Close these access panels:

Number	Name/Location
834AZ	Aft Entry Door - Torque Tube Access
834BZ	Aft Entry Door - Handle Box and Cam for Handle Box Access
834CZ	Aft Entry Door - Handle Box Access
834DZ	Aft Entry Door - Lower Hinge Access
834EZ	Aft Entry Door - Upper Hinge Access

(c) Install the access doors that were removed:

Number	Name/Location
834FZ	Aft Entry Door - Torque Tube Access
834GZ	AFT Entry Door - Torque Tube Access

1) Apply a parting agent to the mating surfaces of the cover plate (SOPM 20-50-19).

2) Apply a pressure fay surface seal with sealant, A00247, between the mating surfaces of the cover plate and the inner skin (SOPM 20-50-19).

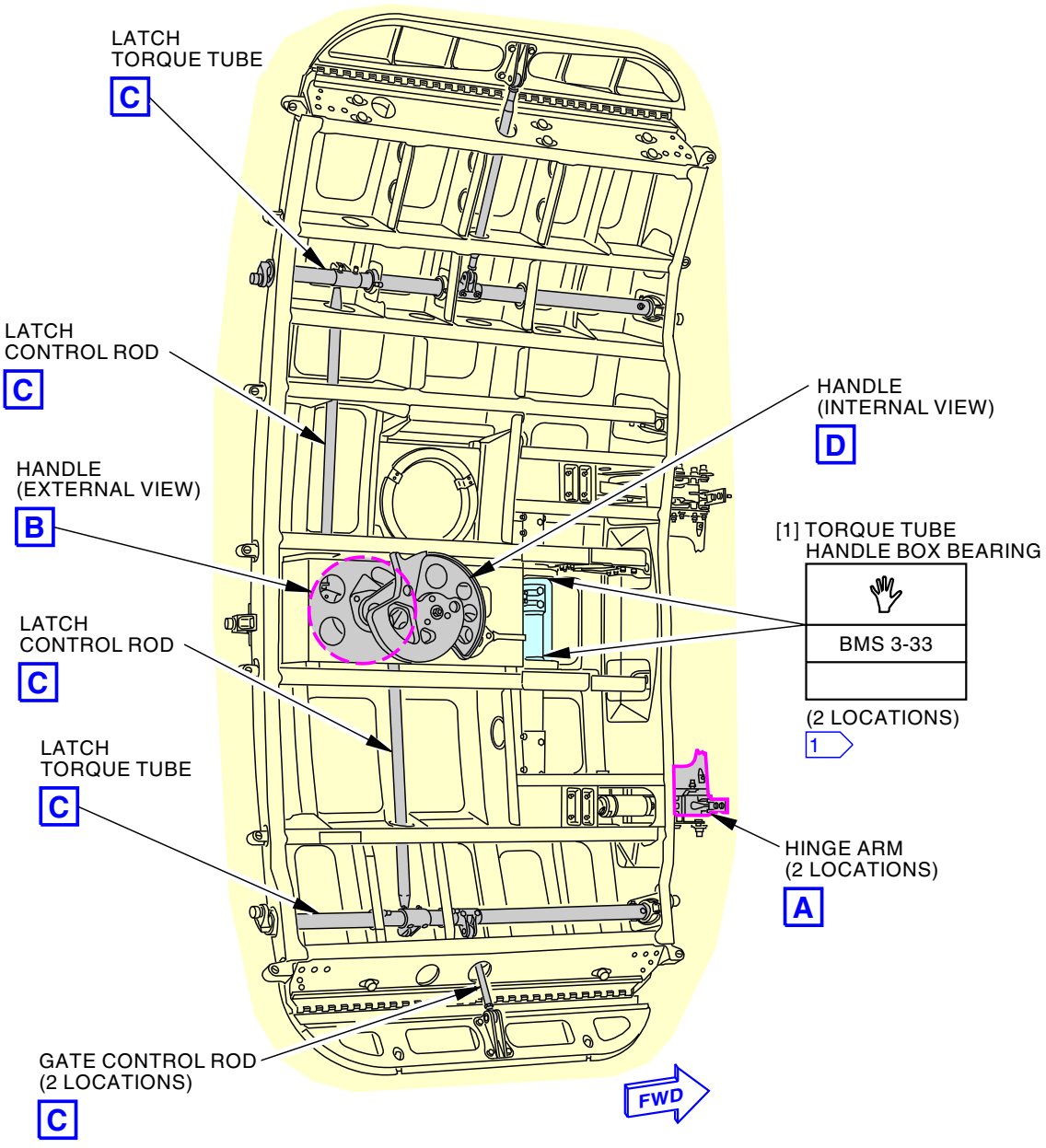
3) Install the cover plate onto the door structure with the bolts and the washers.

a) If a new bolt is to be used, make sure that the grip length is the same as the original bolt.

NOTE: Grip length is important.

(d) Do this task: Aft Entry Door Lining Installation, TASK 52-13-31-400-801.

——— END OF TASK ———



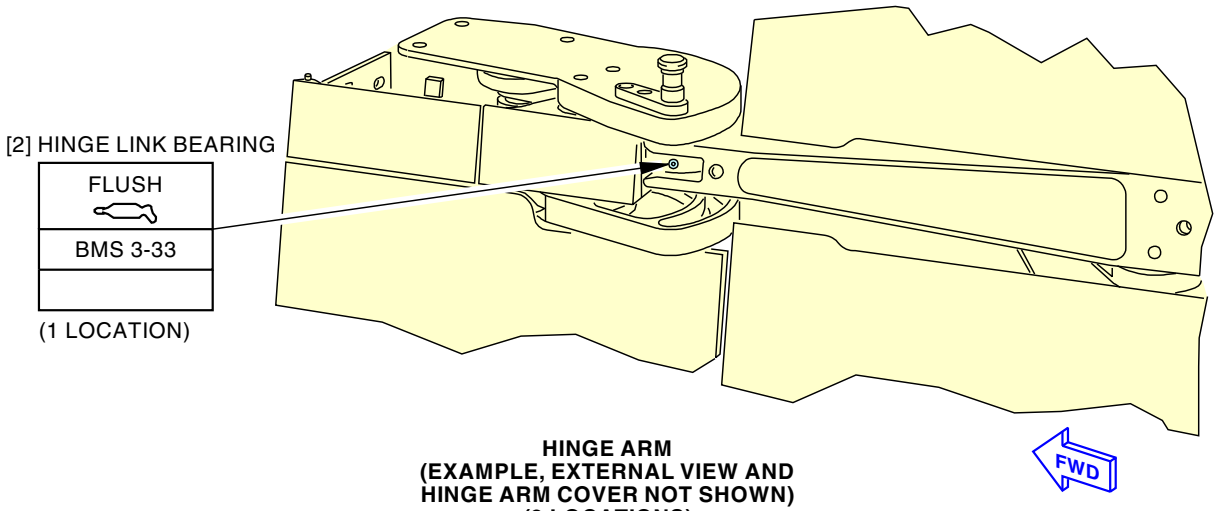
AFT ENTRY DOOR
(INNER SKIN AND PANELS ARE REMOVED)

2 POINTS

1 FILL CAVITIES ABOVE DOOR HINGE TORQUE TUBE BEARINGS IN HANDLES MECHANISM HOUSING WITH GREASE.

2410965 S00061526683_V2

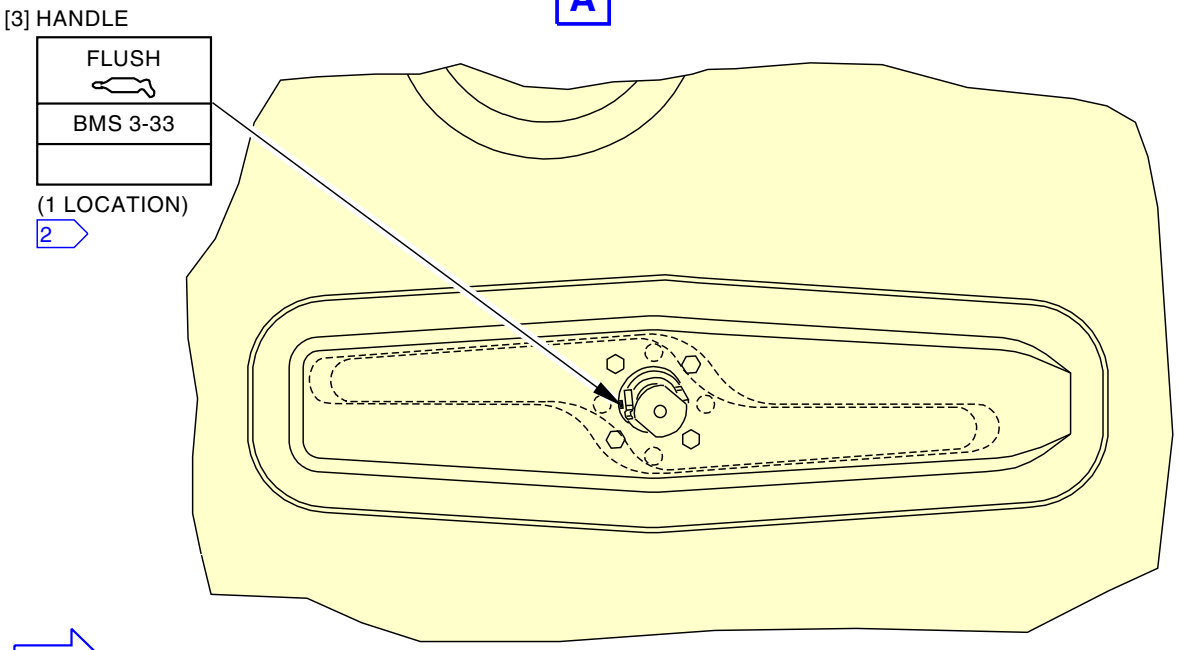
Aft Entry Door Servicing - Mechanism
Figure 302/12-25-12-990-802 (Sheet 1 of 3)



HINGE ARM
(EXAMPLE, EXTERNAL VIEW AND HINGE ARM COVER NOT SHOWN)
(2 LOCATIONS)

1 POINT

A



HANDLE
(EXTERNAL VIEW)

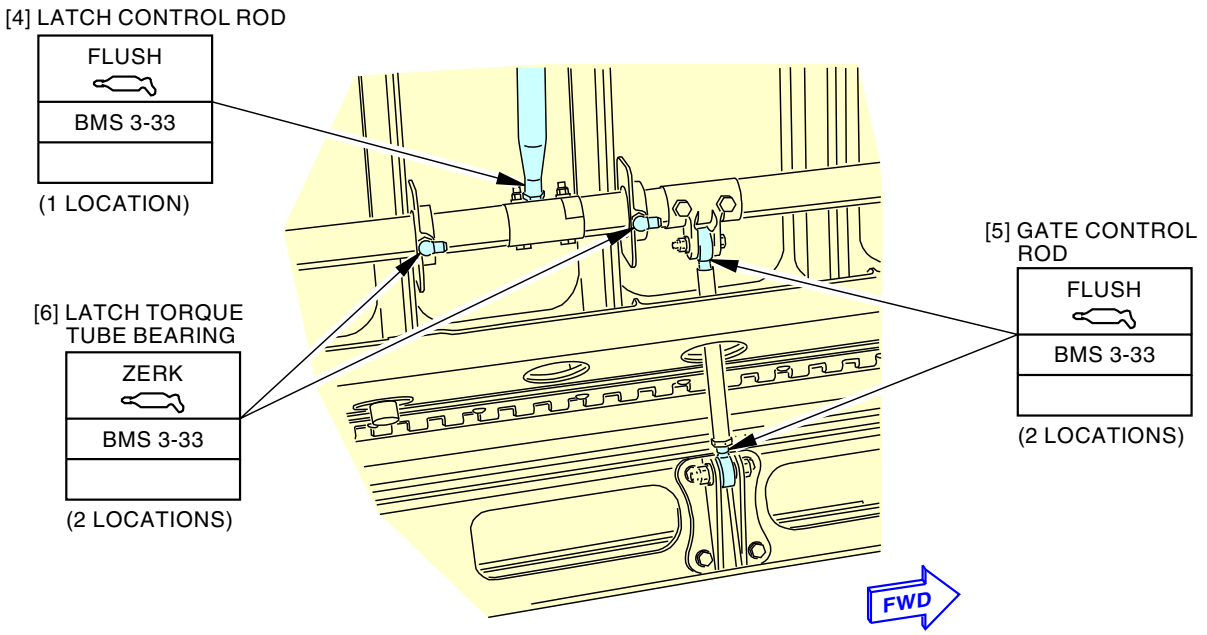
1 POINT

B

2 GREASE FITTING LOCATED ON THE INSIDE OF THE SHAFT HOUSING

2410966 S00061526684_V1

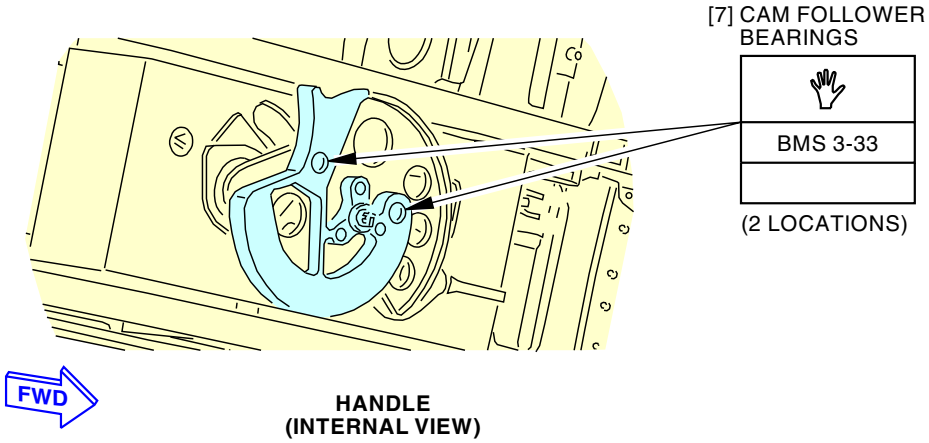
Aft Entry Door Servicing - Mechanism
Figure 302/12-25-12-990-802 (Sheet 2 of 3)



LATCH CONTROL ROD, GATE CONTROL ROD, AND LATCH TORQUE TUBE
(LOWER GATE IS SHOWN, UPPER GATE IS EQUIVALENT)
(EXAMPLE)

5 POINTS

C



HANDLE
(INTERNAL VIEW)

2 POINTS

D

2410967 S00061526685_V2

Aft Entry Door Servicing - Mechanism
Figure 302/12-25-12-990-802 (Sheet 3 of 3)

GALLEY SERVICE DOORS - SERVICING

1. General

A. This procedure has these tasks:

(1) The servicing of the forward or aft galley service door components.

(2) The servicing of the forward or aft galley service door mechanism.

TASK 12-25-13-640-801

2. Galley Service Door Servicing - Components

(Figure 301)

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
52-41-00 P/B 201	GALLEY SERVICE DOORS - MAINTENANCE PRACTICES

B. Consumable Materials

Reference	Description	Specification
D00633	Grease - Aircraft General Purpose	BMS3-33
D50101	Lubricating Oil - General Purpose, Preservative (Water-Displacing, Low Temperature)	MIL-PRF-32033 (NATO O-190)

C. Location Zones

Zone	Area
841	Forward Galley Service Door
844	Aft Galley Service Door

D. Prepare for the Servicing

SUBTASK 12-25-13-010-001

(1) Get access to the door components as follows:

(a) Open the door (PAGEBLOCK 52-41-00/201).

(b) Move the door to the correct position to get access to the door components.

E. Galley Service Door Components Servicing

SUBTASK 12-25-13-640-001

(1) Lubricate the gate hinges [1] with MIL-PRF-32033 oil, D50101, or grease, D00633.

NOTE: MIL-PRF-32033 oil, D50101, is the preferred lubricant, while BMS 3-33 grease, D00633, is an alternate.

SUBTASK 12-25-13-640-002

(2) Lubricate the other components of the galley service door with grease, D00633.

Table 301/12-25-13-993-803 Galley Service Door Servicing - Components

Item No.	Nomenclature	Lubricant	Method of Application	Number of Locations
1	Gate Hinges	MIL-PRF-32033 oil, D50101 or grease, D00633	Oil Can, Hand	2

Table 301/12-25-13-993-803 Galley Service Door Servicing - Components (Continued)

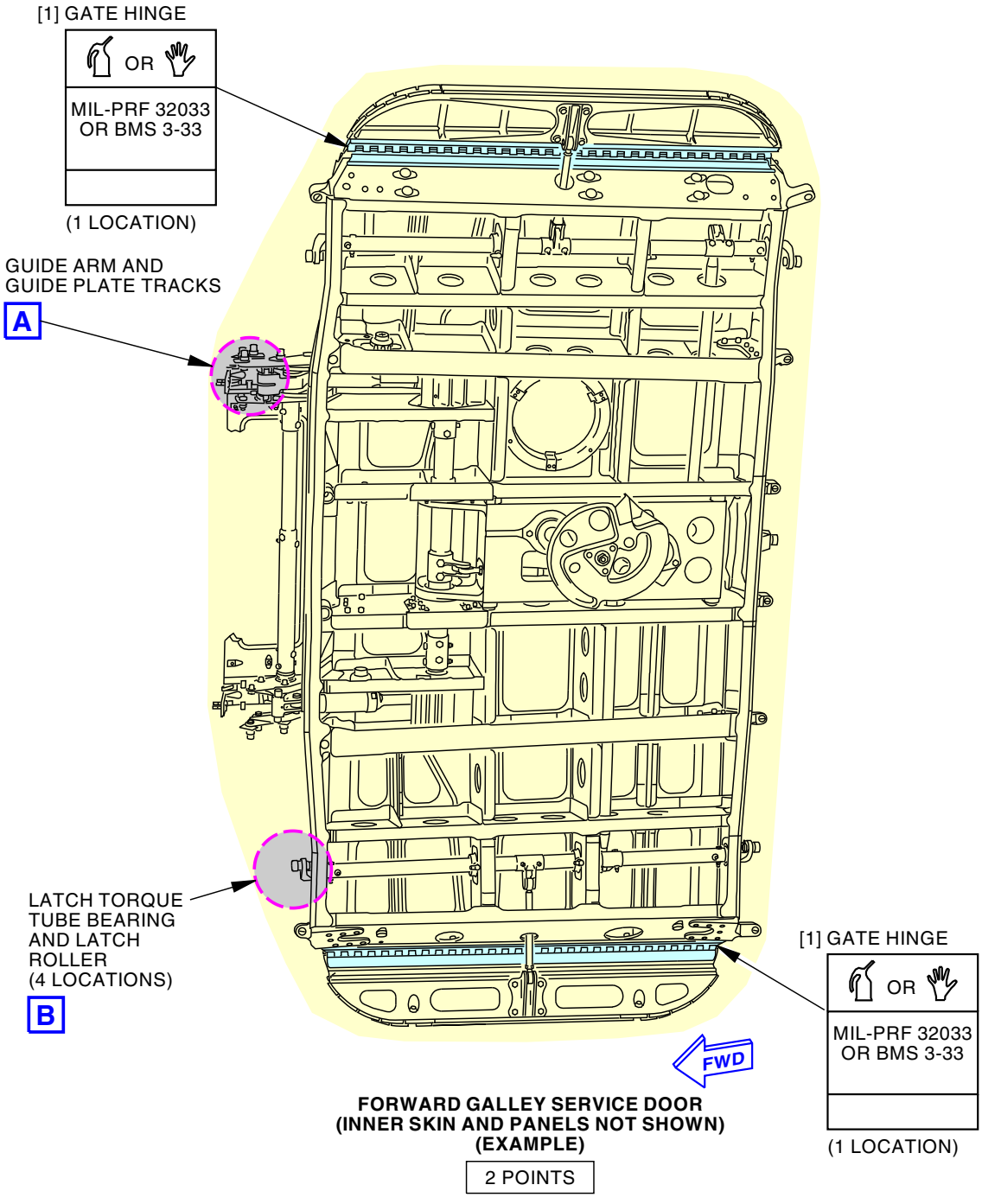
Item No.	Nomenclature	Lubricant	Method of Application	Number of Locations
2	Guide Arm Roller	grease, D00633	Hand	1
3	Guide Arm Rod End Bearing	grease, D00633	Flush	1
4	Guide Plate Tracks	grease, D00633	Hand	2
5	Latch Torque Tube Bearings	grease, D00633	Flush	4
6	Latch Rollers	grease, D00633	Flush	4

F. Put the Airplane Back to Its Usual Condition

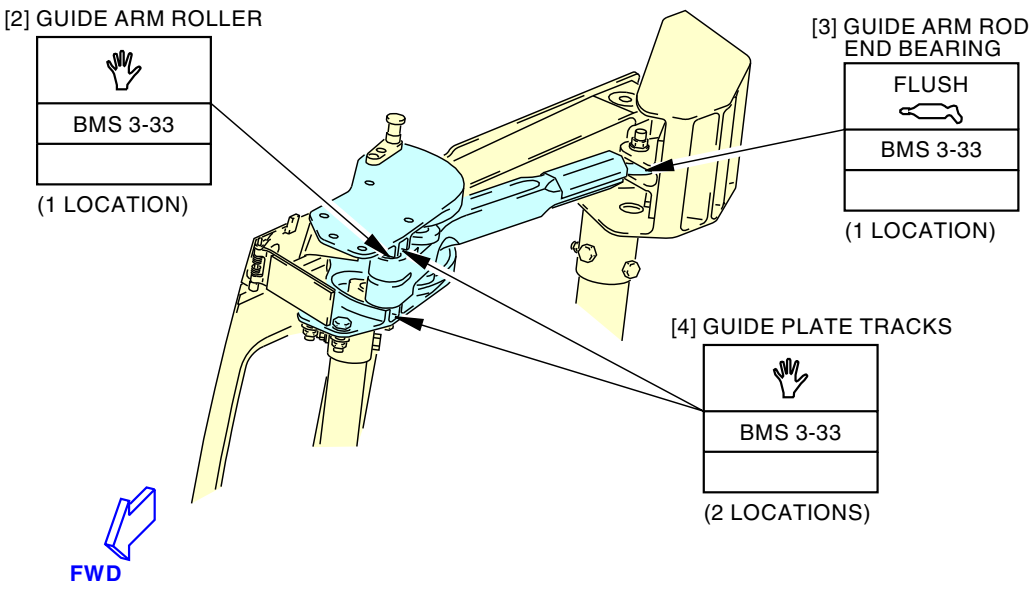
SUBTASK 12-25-13-410-001

(1) Close and latch the galley service door as required (PAGEBLOCK 52-41-00/201).

——— END OF TASK ———



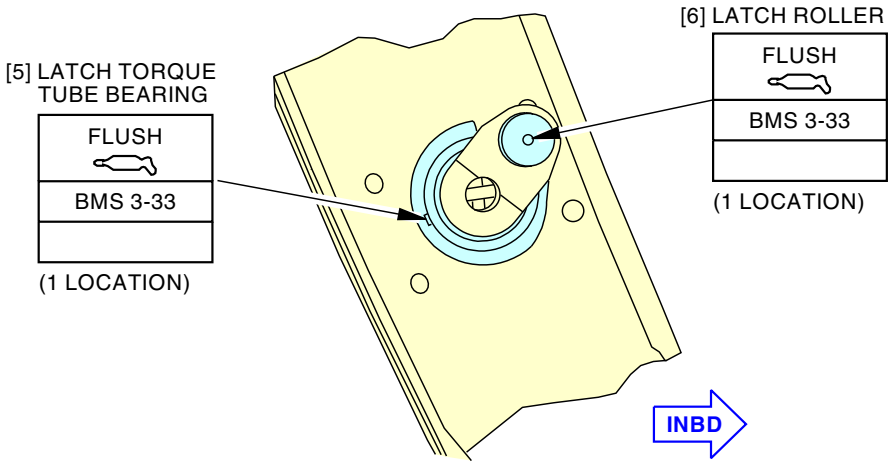
Galley Service Door Servicing - Components
Figure 301/12-25-13-990-801 (Sheet 1 of 2)



GUIDE ARM AND GUIDE PLATE TRACKS

4 POINTS

A



LATCH TORQUE TUBE BEARING AND LATCH ROLLER (EXAMPLE, 4 LOCATIONS)

2 POINTS

B

2410969 S00061526690_V1

Galley Service Door Servicing - Components
Figure 301/12-25-13-990-801 (Sheet 2 of 2)

TASK 12-25-13-640-802

3. Galley Service Door Lubrication - Mechanism

(Figure 302)

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
52-41-00 P/B 201	GALLEY SERVICE DOORS - MAINTENANCE PRACTICES
52-41-31-000-801	Galley Service Door Lining Removal (P/B 401)
52-41-31-400-801	Galley Service Door Lining Installation (P/B 401)
SOPM 20-50-19	General Sealing

B. Consumable Materials

Reference	Description	Specification
A00247	Sealant - Pressure And Environmental - Chromate Type	BMS5-95
D00633	Grease - Aircraft General Purpose	BMS3-33

C. Location Zones

Zone	Area
841	Forward Galley Service Door
844	Aft Galley Service Door

D. Access Panels

Number	Name/Location
841AZ	Forward Galley Service Door - Torque Tube Access
841BZ	Forward Galley Service Door - Handle Box and Cam for Handle Box Access
841CZ	Forward Galley Service Door - Handle Box Access
841DZ	Forward Galley Service Door - Lower Hinge Access
841EZ	Forward Galley Service Door - Upper Hinge Access
841FZ	Forward Galley Service Door - Torque Tube Access
841GZ	Forward Galley Service Door - Torque Tube Access
844AZ	Aft Galley Service Door - Torque Tube Access
844BZ	Aft Galley Service Door - Handle Box and Cam for Handle Box Access
844CZ	Aft Galley Service Door - Handle Box Access
844DZ	Aft Galley Service Door - Lower Hinge Access
844EZ	Aft Galley Service Door - Upper Hinge Access
844FZ	Aft Galley Service Door - Torque Tube Access
844GZ	Aft Galley Service Door - Torque Tube Access

E. Prepare for the Lubrication

SUBTASK 12-25-13-010-002

(1) Get access to the door mechanism as follows:

(a) Do this task: Galley Service Door Lining Removal, TASK 52-41-31-000-801.

(b) Open these access panels:

Number	Name/Location
841AZ	Forward Galley Service Door - Torque Tube Access

(Continued)

Number	Name/Location
841BZ	Forward Galley Service Door - Handle Box and Cam for Handle Box Access
841CZ	Forward Galley Service Door - Handle Box Access
841DZ	Forward Galley Service Door - Lower Hinge Access
841EZ	Forward Galley Service Door - Upper Hinge Access
844AZ	Aft Galley Service Door - Torque Tube Access
844BZ	Aft Galley Service Door - Handle Box and Cam for Handle Box Access
844CZ	Aft Galley Service Door - Handle Box Access
844DZ	Aft Galley Service Door - Lower Hinge Access
844EZ	Aft Galley Service Door - Upper Hinge Access

NOTE: Only open the panels for the applicable door being serviced.

(c) Remove the access doors for the applicable galley service door being serviced:

Number	Name/Location
841FZ	Forward Galley Service Door - Torque Tube Access
841GZ	Forward Galley Service Door - Torque Tube Access
844FZ	Aft Galley Service Door - Torque Tube Access
844GZ	Aft Galley Service Door - Torque Tube Access

1) Remove a pressure fay surface seal that was previously applied between the mating surfaces of the cover plate and the inner skin (SOPM 20-50-19).

2) Remove a parting agent that was previously applied to the mating surfaces of the cover plate (SOPM 20-50-19).

(d) Open the door (PAGEBLOCK 52-41-00/201).

(e) To get access to the door components, move the door to the correct position.

F. Galley Service Door Mechanism Lubrication

(Table 302)

SUBTASK 12-25-13-640-003

(1) Lubricate the mechanism of the galley service door with grease, D00633.

Table 302/12-25-13-993-804 Galley Service Door Servicing - Mechanism (Fig. 302)

Item No.	Nomenclature	Lubricant	Method of Application	Number of Locations
7	Door Hinge Torque Tube	grease, D00633	Hand	2
8	Hinge Link Bearings	grease, D00633	Flush	2
9	Handle	grease, D00633	Flush	1
10	Latch Torque Tube Bearings	grease, D00633	Zerk	4
11	Latch Control Rods	grease, D00633	Flush	2
12	Gate Control Rods	grease, D00633	Flush	4
13	Cam Follower Bearings	grease, D00633	Hand	2

G. Put the Airplane Back to Its Usual Condition

SUBTASK 12-25-13-410-002

(1) Close access to the door as follows:

(a) Close the door (PAGEBLOCK 52-41-00/201).

(b) Close these access panels:

Number	Name/Location
841AZ	Forward Galley Service Door - Torque Tube Access
841BZ	Forward Galley Service Door - Handle Box and Cam for Handle Box Access
841CZ	Forward Galley Service Door - Handle Box Access
841DZ	Forward Galley Service Door - Lower Hinge Access
841EZ	Forward Galley Service Door - Upper Hinge Access
844AZ	Aft Galley Service Door - Torque Tube Access
844BZ	Aft Galley Service Door - Handle Box and Cam for Handle Box Access
844CZ	Aft Galley Service Door - Handle Box Access
844DZ	Aft Galley Service Door - Lower Hinge Access
844EZ	Aft Galley Service Door - Upper Hinge Access

NOTE: Only close the panels for the applicable door being serviced.

(c) Install the access doors that were removed:

Number	Name/Location
841FZ	Forward Galley Service Door - Torque Tube Access
841GZ	Forward Galley Service Door - Torque Tube Access
844FZ	Aft Galley Service Door - Torque Tube Access
844GZ	Aft Galley Service Door - Torque Tube Access

1) Apply a parting agent to the mating surfaces of the cover plate (SOPM 20-50-19).

2) Apply a pressure fay surface seal with sealant, A00247, between the mating surfaces of the cover plate and the inner skin (SOPM 20-50-19).

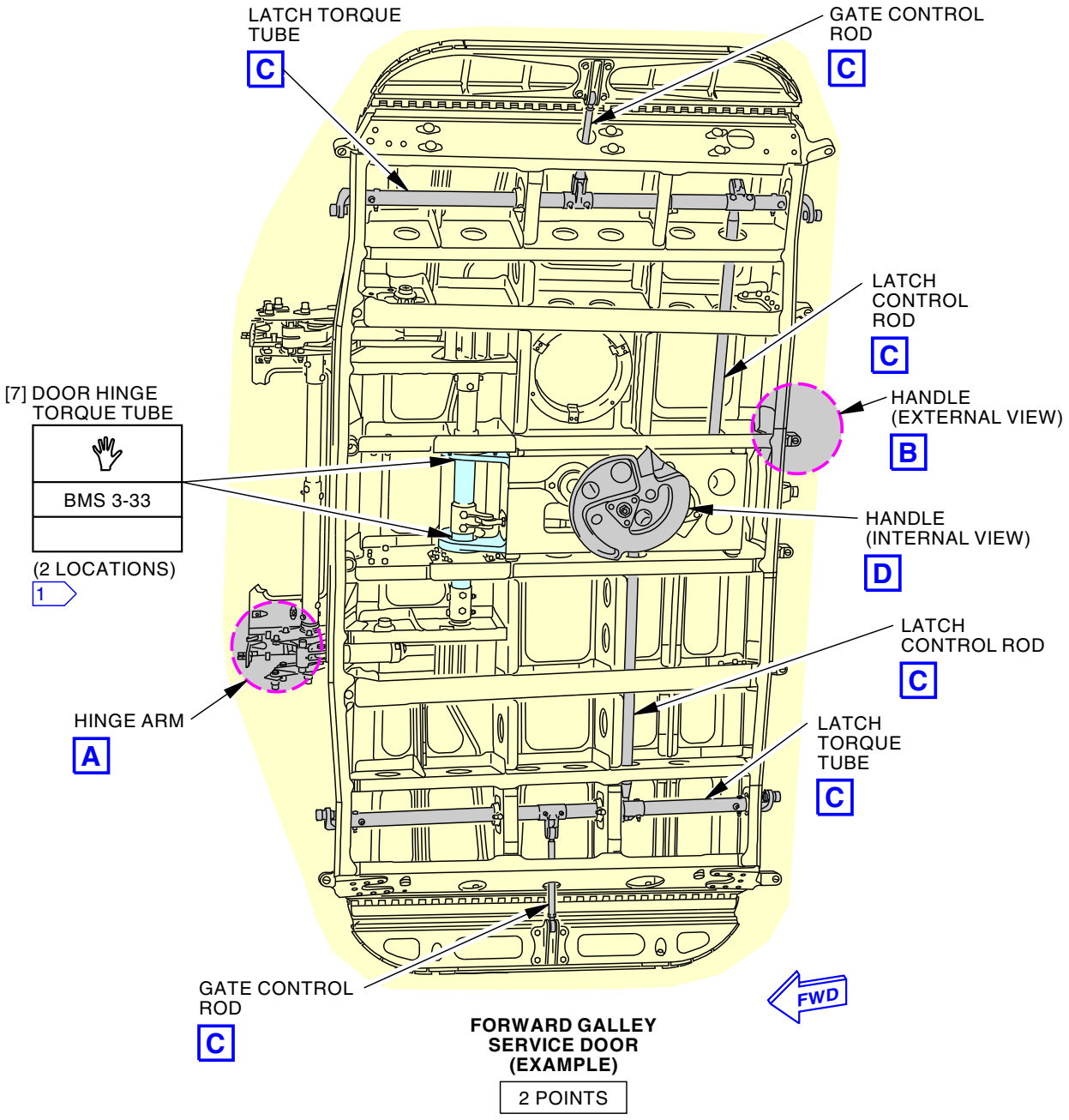
3) Install the cover plate onto the door structure with the bolts and the washers.

a) If a new bolt is to be used, make sure that the grip length is the same as the original bolt.

NOTE: Grip length is important.

(d) Do this task: Galley Service Door Lining Installation, TASK 52-41-31-400-801.

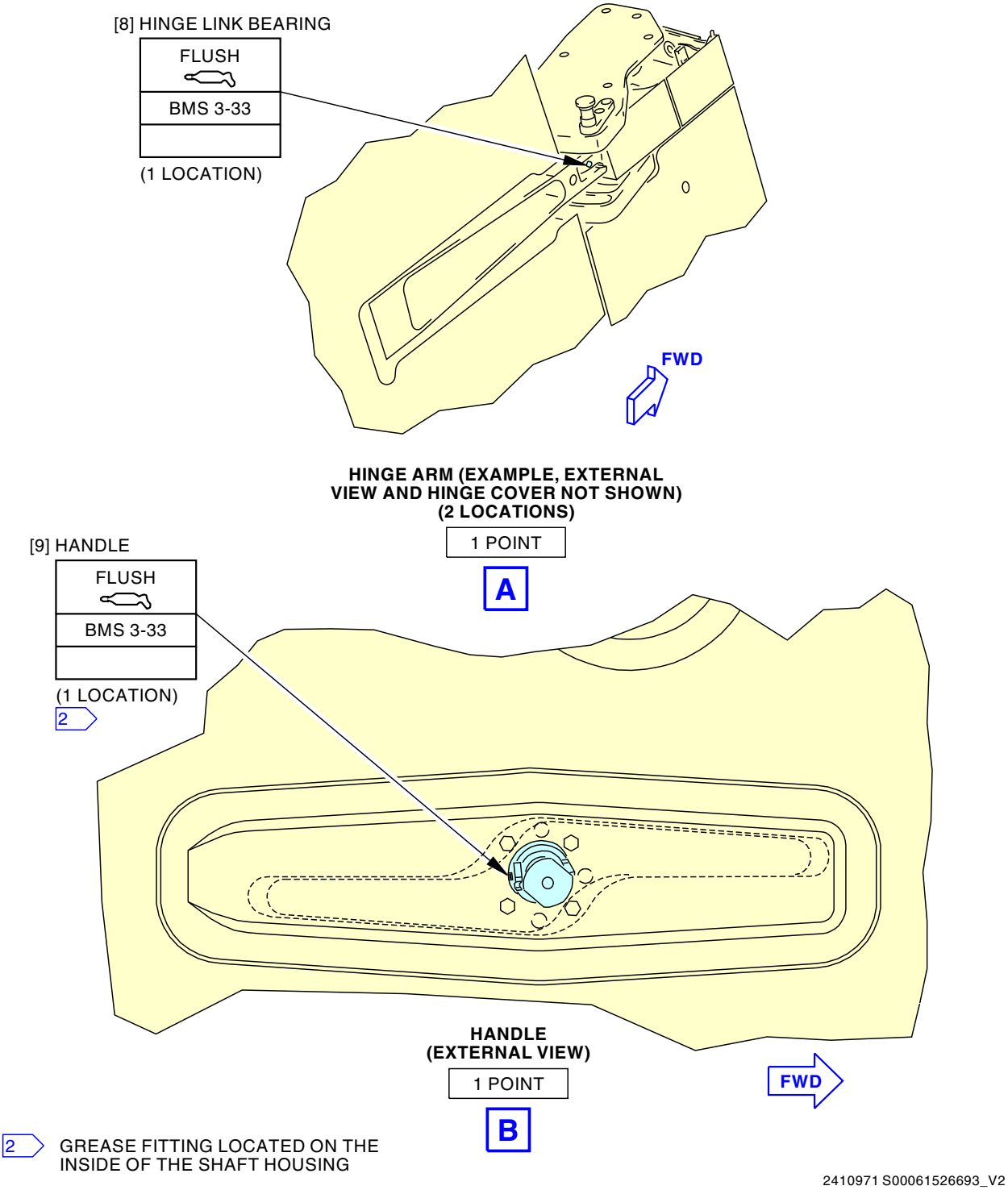
END OF TASK



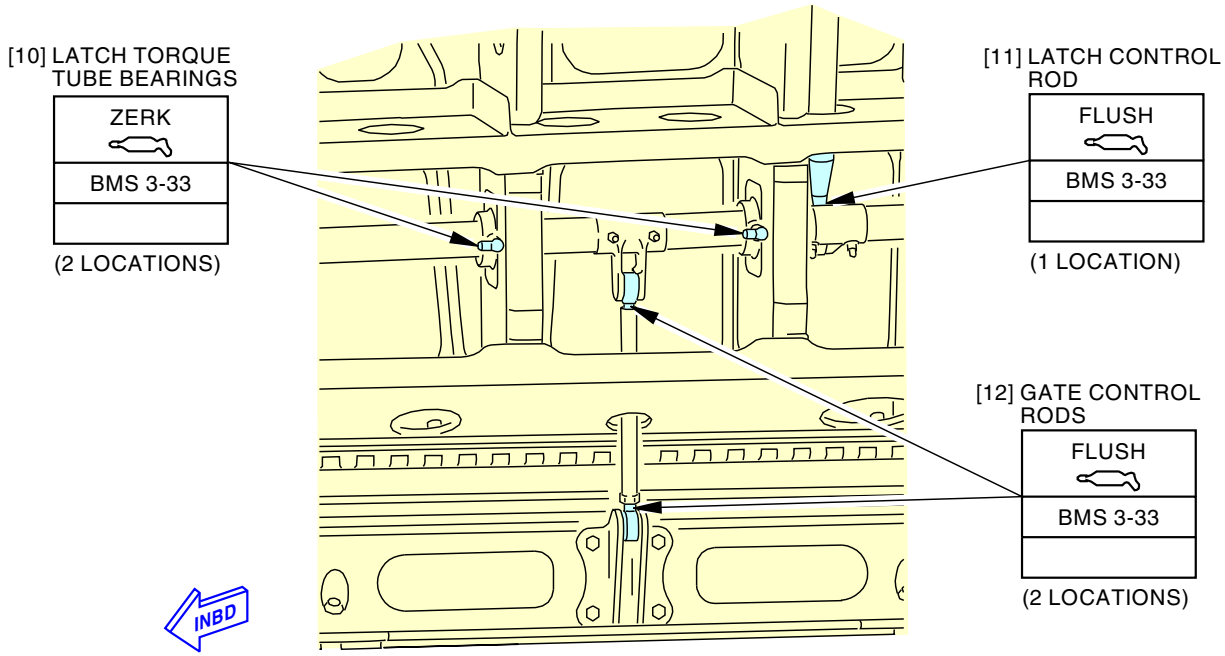
1 FILL CAVITIES ABOVE DOOR HINGE TORQUE TUBE BEARINGS IN HANDLE MECHANISM HOUSING WITH GREASE.

2410970 S00061526692_V3

Galley Service Door Servicing - Mechanism
Figure 302/12-25-13-990-802 (Sheet 1 of 3)



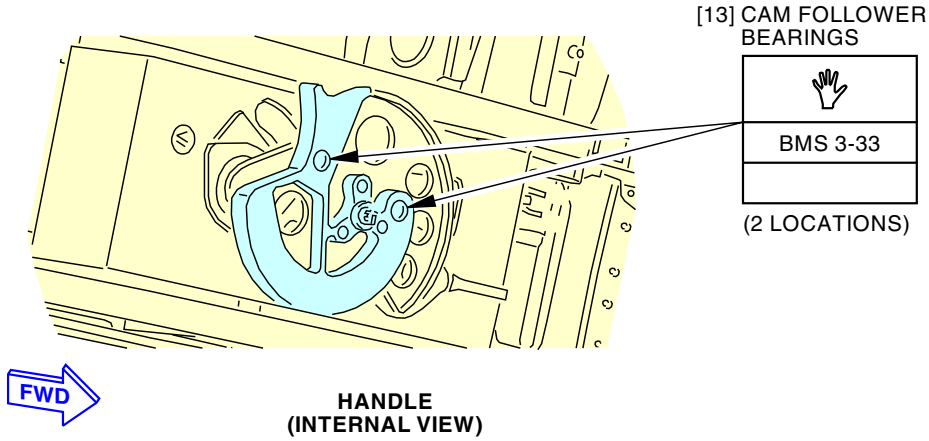
Galley Service Door Servicing - Mechanism
Figure 302/12-25-13-990-802 (Sheet 2 of 3)



LATCH CONTROL ROD, GATE CONTROL ROD, AND LATCH TORQUE TUBE (LOWER GATE IS SHOWN, UPPER GATE IS EQUIVALENT) (EXAMPLE)

5 POINTS

C



HANDLE (INTERNAL VIEW)

2 POINTS

D

2410972 S00061526694_V3

Galley Service Door Servicing - Mechanism
Figure 302/12-25-13-990-802 (Sheet 3 of 3)

EMERGENCY EXIT DOOR - SERVICING

1. General

A. This procedure has this task:

(1) The servicing of the emergency exit door.

TASK 12-25-22-640-801

2. Emergency Exit Door Servicing

(Figure 301)

A. References

Reference	Title
52-22-00-580-801	Open the Emergency Exit Door (P/B 201)
52-22-00-580-802	Open the Emergency Exit Door from the Outside (P/B 201)
52-22-00-580-803	Close the Emergency Exit Door (P/B 201)

B. Consumable Materials

Reference	Description	Specification
D00633	Grease - Aircraft General Purpose	BMS3-33

C. Location Zones

Zone	Area
832	Left Forward Emergency Exit
833	Left Emergency Exit (STA 627.5)
842	Right Forward Emergency Exit
843	Right Emergency Exit (STA 627.5)

D. Access Panels

Number	Name/Location
832	Emergency Exit Door (AOE)
833	Emergency Exit Door (AOE)
842	Emergency Exit Door (AOE)
843	Emergency Exit Door (AOE)

E. Prepare for the Servicing

SUBTASK 12-25-22-010-001

WARNING MAKE SURE THAT THE DOOR OPENING PATH IS CLEAR BEFORE YOU RELEASE THE DOOR HANDLE. THE DOOR IS SPRING-LOADED TO OPEN AUTOMATICALLY AND INJURIES COULD OCCUR.

(1) To get access to the lubrication points, open the applicable emergency exit door:

(a) Open these access panels:

(TASK 52-22-00-580-801 or TASK 52-22-00-580-802)

Number	Name/Location
832	Emergency Exit Door (AOE)
833	Emergency Exit Door (AOE)
842	Emergency Exit Door (AOE)
843	Emergency Exit Door (AOE)

F. Emergency Exit Door Servicing

SUBTASK 12-25-22-640-001

(1) Lubricate all surface of the stop tracks [1] , including the stop pads, with grease, D00633, by hand.

SUBTASK 12-25-22-640-002

(2) Lubricate the torsion springs [2] with grease, D00633, by hand.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 12-25-22-410-001

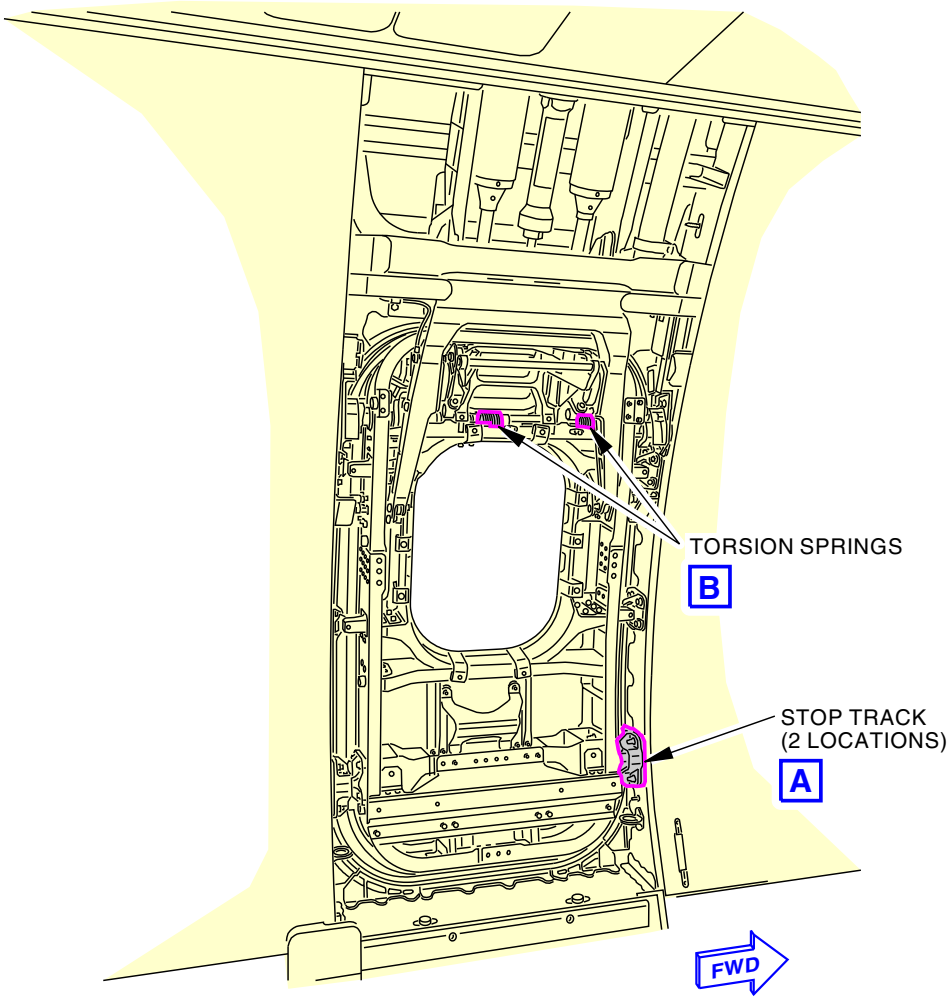
(1) Close and latch the applicable emergency exit door:

(a) Close these access panels:

(TASK 52-22-00-580-803)

Number	Name/Location
832	Emergency Exit Door (AOE)
833	Emergency Exit Door (AOE)
842	Emergency Exit Door (AOE)
843	Emergency Exit Door (AOE)

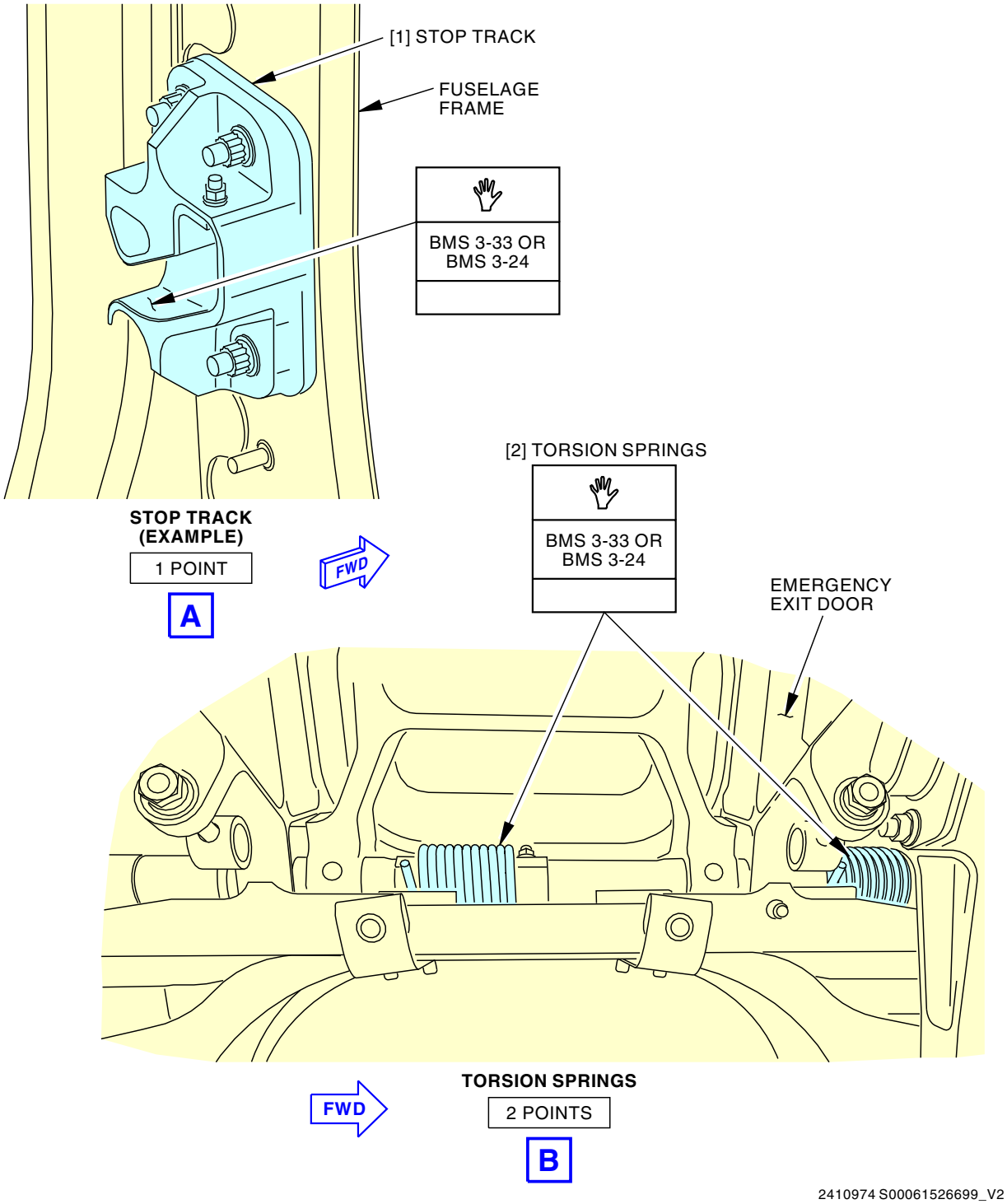
——— END OF TASK ———



**EMERGENCY EXIT DOOR
(DOOR IN THE CLOSED POSITION
WITH DOOR LINING REMOVED)
(EXAMPLE)**

2410973 S00061526698_V1

**Emergency Exit Door Servicing
Figure 301/12-25-22-990-801 (Sheet 1 of 2)**



Emergency Exit Door Servicing
Figure 301/12-25-22-990-801 (Sheet 2 of 2)

CARGO DOORS - SERVICING

1. General

A. This procedure contains scheduled maintenance task data.

B. This procedure has these tasks:

(1) The servicing of the cargo door.

C. This procedure is the same for the forward or aft cargo door.

TASK 12-25-31-640-801

2. Cargo Door Servicing

(Figure 301)

NOTE: This procedure is a scheduled maintenance task.

A. Consumable Materials

Reference	Description	Specification
D00633	Grease - Aircraft General Purpose	BMS3-33

B. Location Zones

Zone	Area
821	Forward Cargo Door
822	Aft Cargo Door

C. Access Panels

Number	Name/Location
821AZ	Panel Assy - Forward Cargo Door - Protective Pad Liner
822AZ	Panel Assy - Aft Cargo Door - Protective Pad Liner

D. Prepare for the Servicing

SUBTASK 12-25-31-010-001

(1) Get access to the door as follows:

(a) Open these access panels:

Number	Name/Location
821AZ	Panel Assy - Forward Cargo Door - Protective Pad Liner
822AZ	Panel Assy - Aft Cargo Door - Protective Pad Liner

NOTE: Only open the panels for the applicable door being serviced.

SUBTASK 12-25-31-010-002

(2) Remove the access panel [101] for the latch torque tube as follows:

(a) Remove the bolts [102] and washers [103] that attach the access panel [101] to the door.

E. Cargo Door Servicing

(Table 301)

SUBTASK 12-25-31-640-001

(1) Lubricate the components on the cargo door with grease, D00633.

Table 301/12-25-31-993-802 Cargo Door Servicing (Fig. 301)

Item No.	Nomenclature	Lubricant	Method of Application	Number of Locations
1	Idler Crank	grease, D00633	Flush	1
2	Latch Torque Tube	grease, D00633	Flush	1

F. Put the Airplane Back to Its Usual Condition

SUBTASK 12-25-31-410-001

(1) Install the access panel [101] for the latch torque tube as follows:

(a) Put the access panel [101] in its correct position over the latch torque tube.

(b) Install the washers [103] and bolts [102] to attach the access panel [101] to the door.

SUBTASK 12-25-31-410-002

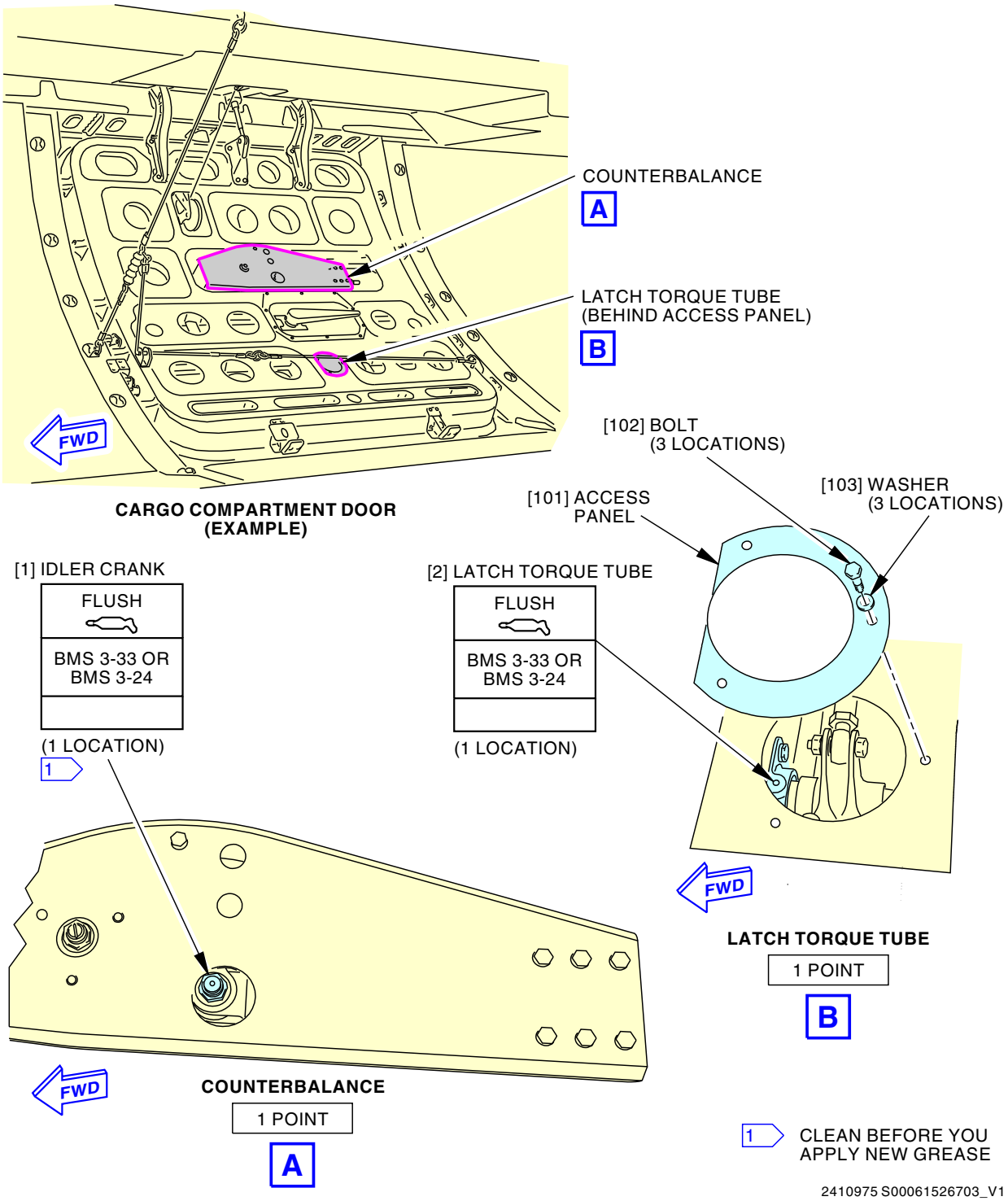
(2) Close access to the door as follows:

(a) Close these access panels:

Number	Name/Location
821AZ	Panel Assy - Forward Cargo Door - Protective Pad Liner
822AZ	Panel Assy - Aft Cargo Door - Protective Pad Liner

NOTE: Only close the panels for the applicable door being serviced.

——— END OF TASK ———



Cargo Door Servicing
Figure 301/12-25-31-990-801

ACCESS AND SERVICE DOORS - SERVICING

1. General

A. This procedure contains scheduled maintenance task data.

B. This procedure has these tasks:

(1) The servicing of the electronic equipment access door.

(2) The servicing of the forward access door.

TASK 12-25-41-640-801

2. Electronic Equipment Access Door Servicing

(Figure 301, Table 301)

NOTE: This procedure is a scheduled maintenance task.

A. Consumable Materials

Reference	Description	Specification
D00633	Grease - Aircraft General Purpose	BMS3-33

B. Location Zones

Zone	Area
117	Electrical and Electronics Compartment - Left

C. Access Panels

Number	Name/Location
117A	Electronic Equipment Access Door
117AW	Equipment Access Door Cover

D. Prepare for Servicing

SUBTASK 12-25-41-010-001

(1) Turn the latch handle to the closed position.

SUBTASK 12-25-41-010-002

(2) Open this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

SUBTASK 12-25-41-010-003

(3) Do the following to open this access panel:

Number	Name/Location
117AW	Equipment Access Door Cover

(Figure 301)

(a) Remove the bolt [105], washer [106], and nut [107] that attach the collar [104] to the latch mechanism [2].

(b) Remove the collar [104] and the washer [108].

(c) Remove the screws [101] and the screws [102] that attach the cover [103] to the door.

(d) Remove the cover [103].

SUBTASK 12-25-41-010-004

(4) Remove the support plate [110] from the latch mechanism [2] as follows (Figure 301):

(a) Remove the screws [109] that attach the support plate [110] to the latch mechanism [2].

NOTE: After you remove the screws [109], the bearings [113] and the spacers [112, 114, 115, 116 and 117] are not held in position.

(b) Remove the support plate [110] and the washer [111].

E. Procedure

SUBTASK 12-25-41-640-001

(1) Lubricate the components with the applicable material shown in (Table 301, Figure 301):

(a) grease, D00633

Table 301/12-25-41-993-801 Electronic Equipment Access Door Lubrication (Fig. 301)

Item No.	Nomenclature	Lubricant	Method of Application	Number of Points
1	Latch Pins (4)	grease, D00633	Hand	4
2	Latch Mechanism (1)	grease, D00633	Hand	1

F. Put the Airplane Back to Its Usual Condition

SUBTASK 12-25-41-410-001

(1) Install the support plate [110] on the latch mechanism [2] as follows (Figure 301):

(a) Install the washer [111] on the latch mechanism [2].

(b) Put the support plate [110] in its correct position over the spacers [112, 114, 115, 116 and 117] and the bearings [113].

(c) Install the screws [109].

SUBTASK 12-25-41-010-005

(2) Do the following to close this access panel:

Number	Name/Location
117AW	Equipment Access Door Cover

(Figure 301):

(a) Put the cover [103] in its correct position over the latch mechanism [2].

(b) Install the washer [108] and the collar [104] on the latch mechanism [2].

(c) Install the bolt [105], washer [106], and nut [107] to attach the collar [104] to the latch mechanism [2].

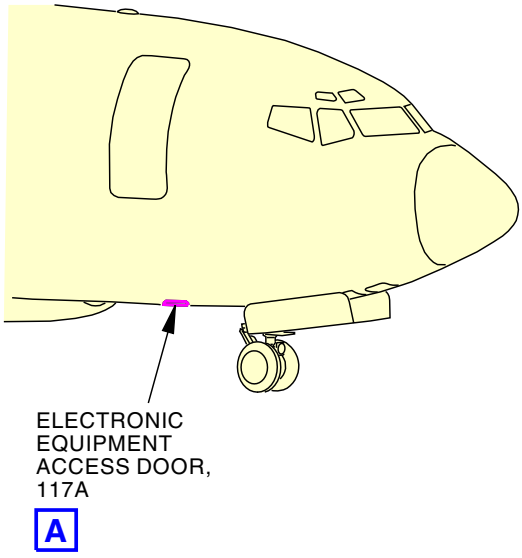
(d) Install the screws [101] and screws [102] to attach the cover [103] to the door.

SUBTASK 12-25-41-410-002

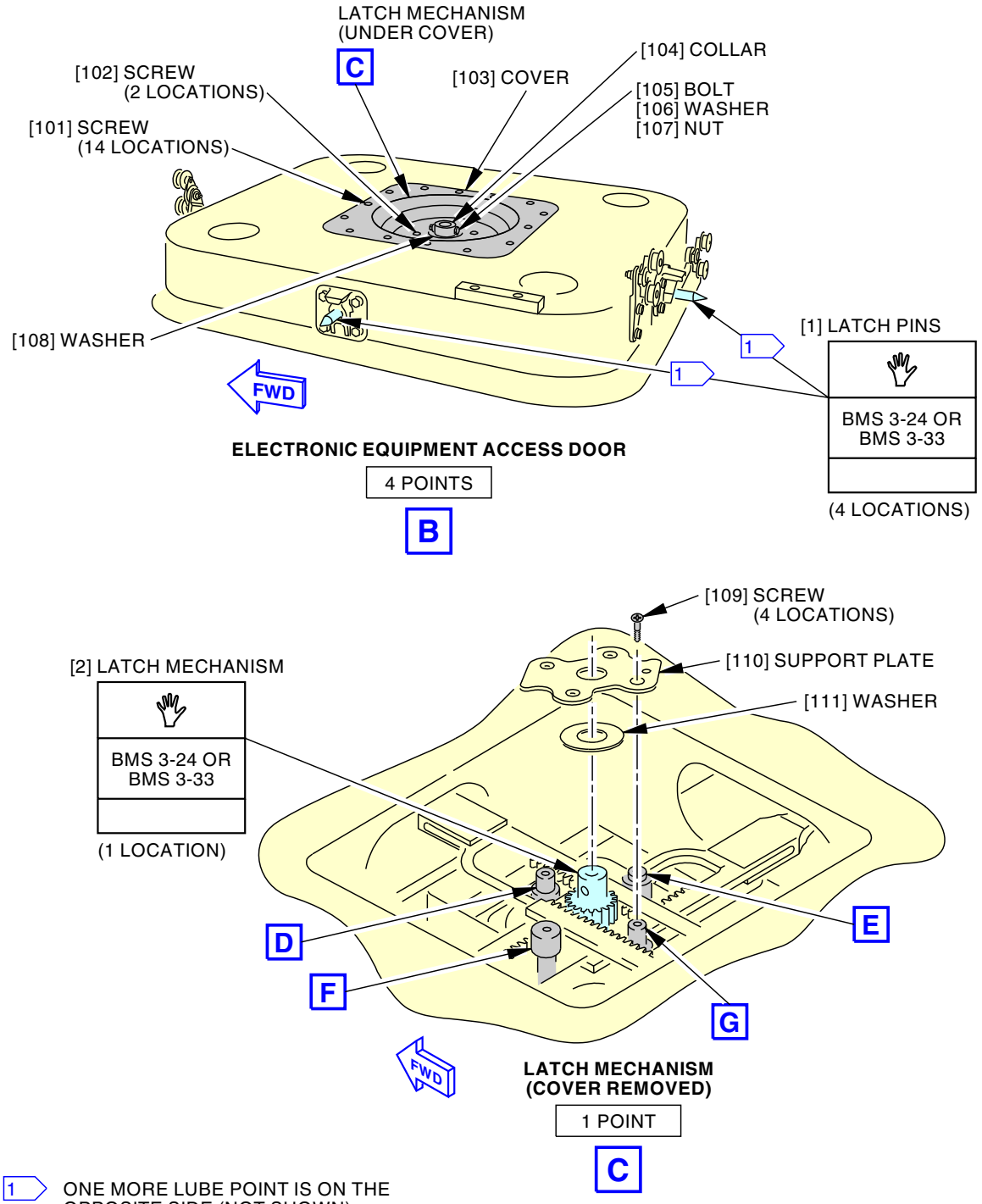
(3) Close this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

END OF TASK

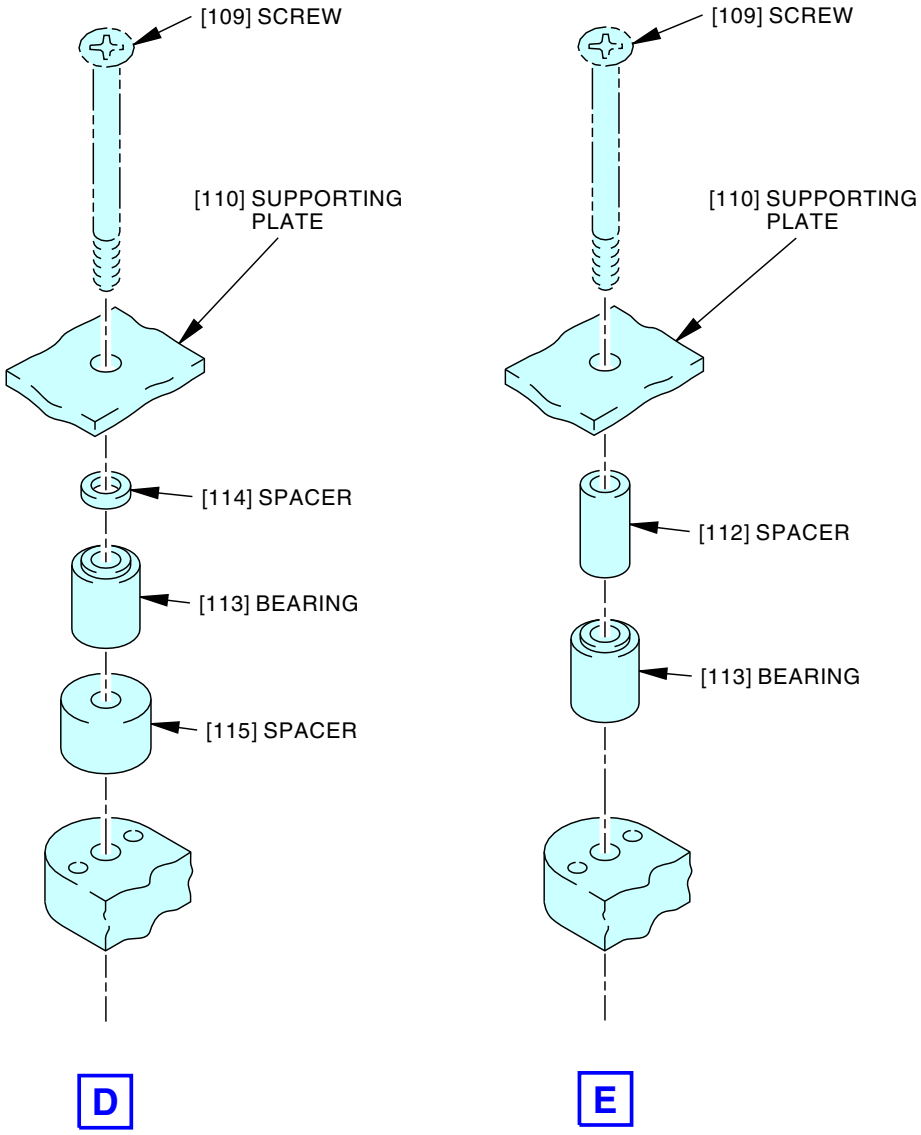


Electronic Equipment Access Door Servicing
Figure 301/12-25-41-990-801 (Sheet 1 of 4)



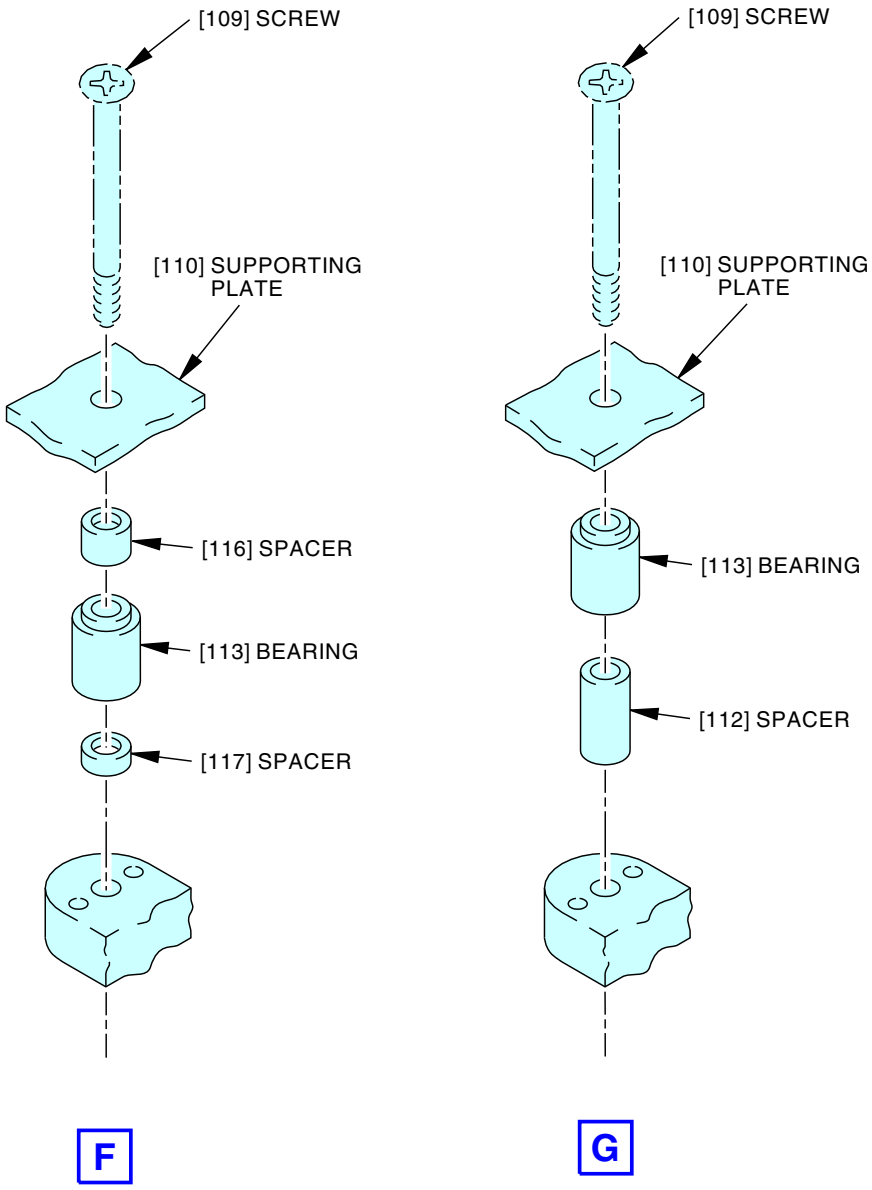
2410977 S00061526708_V1

Electronic Equipment Access Door Servicing
Figure 301/12-25-41-990-801 (Sheet 2 of 4)



2410978 S00061526709_V1

Electronic Equipment Access Door Servicing
Figure 301/12-25-41-990-801 (Sheet 3 of 4)



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Electronic Equipment Access Door Servicing
Figure 301/12-25-41-990-801 (Sheet 4 of 4)

TASK 12-25-41-640-802

3. Forward Access Door Servicing

(Figure 302, Table 302)

A. Consumable Materials

Reference	Description	Specification
D00633	Grease - Aircraft General Purpose	BMS3-33

B. Location Zones

Zone	Area
112	Area Forward of Nose Landing Gear Wheel Well

C. Access Panels

Number	Name/Location
112A	Forward Access Door

D. Prepare for Servicing

SUBTASK 12-25-41-010-006

(1) Open this access panel:

Number	Name/Location
112A	Forward Access Door

E. Procedure

SUBTASK 12-25-41-640-002

(1) Lubricate the components with the applicable material shown in (Table 302):

(a) grease, D00633

Table 302/12-25-41-993-802 Forward Access Door Lubrication (Fig. 302)

Item No.	Nomenclature	Lubricant	Method of Application	Number of Points
1	Latch Mechanism (1)	grease, D00633	Hand	4

SUBTASK 12-25-41-640-003

(2) Operate the handle to move the grease on the latch pin into the bushing.

SUBTASK 12-25-41-100-001

(3) Remove the unwanted grease.

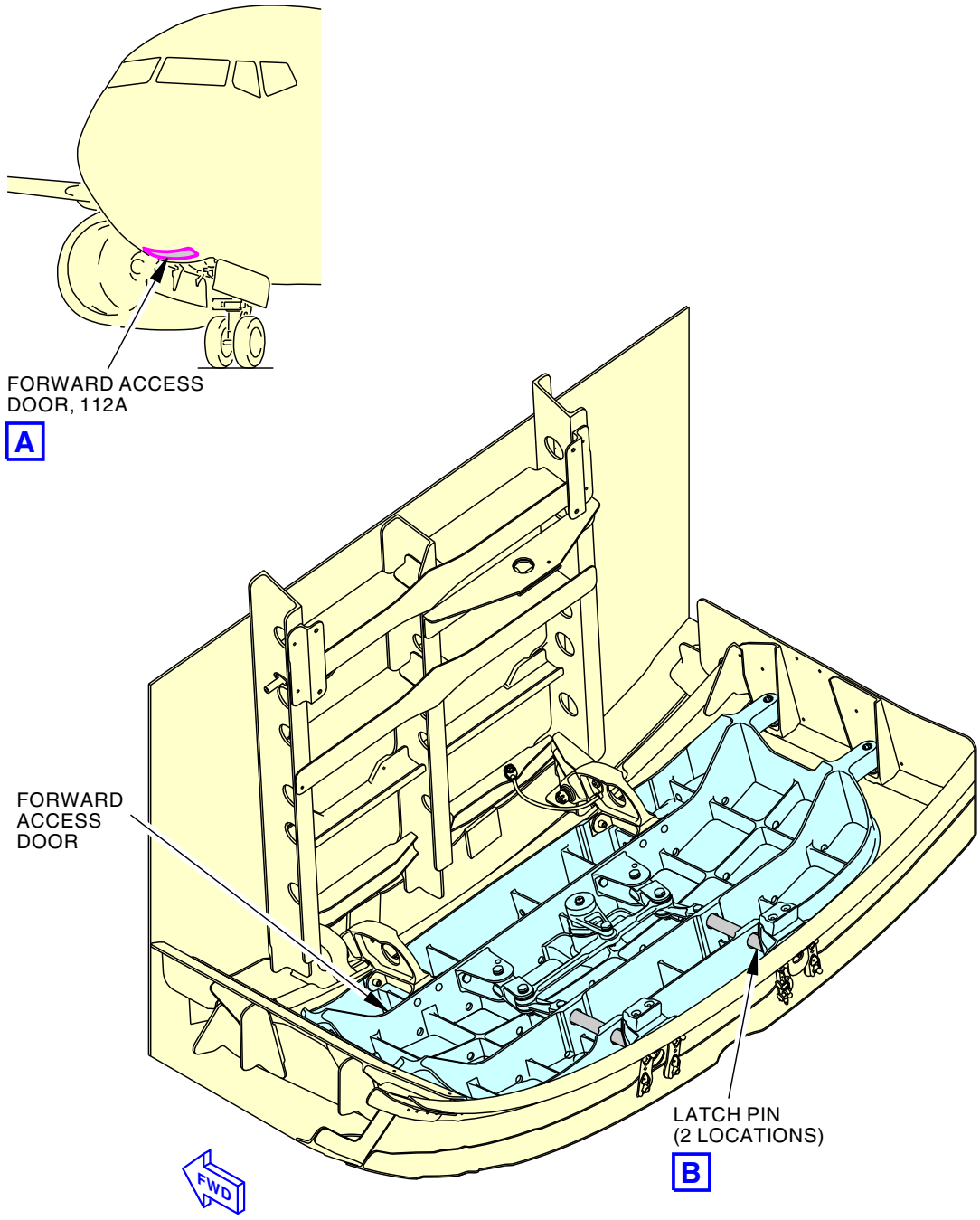
F. Put the Airplane Back to Its Usual Condition

SUBTASK 12-25-41-410-003

(1) Close this access panel:

Number	Name/Location
112A	Forward Access Door

——— END OF TASK ———

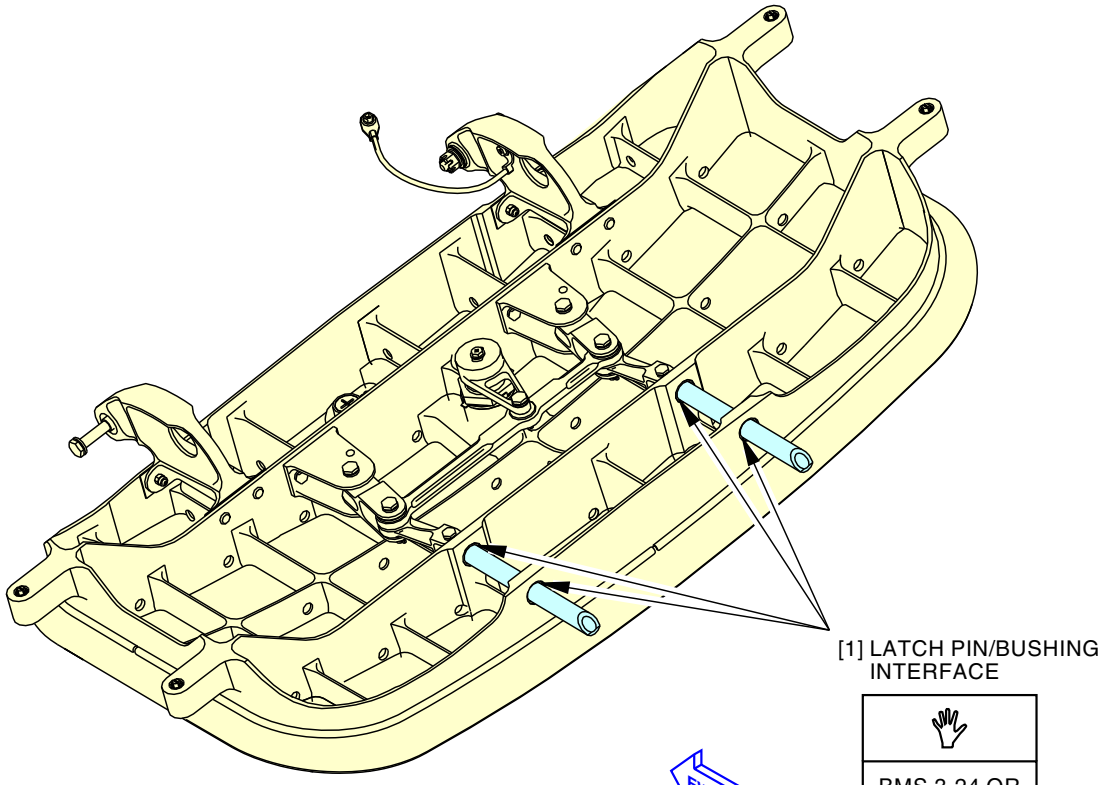


FORWARD ACCESS DOOR, 112A
(INTERNAL VIEW, DOOR CLOSED POSITION)

A

2410980 S00061526712_V1

Forward Access Door Servicing
Figure 302/12-25-41-990-802 (Sheet 1 of 2)



2410981 S00061526713_V1

Forward Access Door Servicing
Figure 302/12-25-41-990-802 (Sheet 2 of 2)

NO. 2 SLIDING WINDOW LUBRICATION - SERVICING

1. General

A. This procedure contains scheduled maintenance task data.

B. This procedure has this task:

(1) Lubricate the No. 2 Sliding Window.

TASK 12-25-81-600-801

2. No. 2 Sliding Window Lubrication

(Figure 301)

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
25-11-21-000-801	Flight Compartment Forward Ceiling Panel Removal (P/B 201)
25-11-21-400-801	Flight Compartment Forward Ceiling Panel Installation (P/B 201)

B. Consumable Materials

Reference	Description	Specification
D00091	Oil - General Purpose, Low Temperature, Lubricating	MIL-PRF-7870 (NATO O-142)
D00113	Lubricant - Solid Film, Liquid Dispersed	BMS3-8

C. Location Zones

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

D. Access Panels

Number	Name/Location
211GW	Panel Assy - Flight Compartment Console - Edging
212GW	Panel Assy - Flight Compartment Console - Edging

E. Prepare for No. 2 Sliding Window Lubrication

SUBTASK 12-25-81-020-002

(1) Remove these panels as necessary for access:

(Flight Compartment Forward Ceiling Panel Removal, TASK 25-11-21-000-801)

Number	Name/Location
211GW	Panel Assy - Flight Compartment Console - Edging
212GW	Panel Assy - Flight Compartment Console - Edging

SUBTASK 12-25-81-020-004

(2) Remove the linings from the No. 2 sliding window as necessary for access (TASK 25-11-21-000-801).

F. No. 2 Sliding Window Lubrication

SUBTASK 12-25-81-640-001

(1) Lubricate the parts of the window with oil, D00091, or solid film lubricant, D00113, where noted (Figure 301):

Table 301/12-25-81-993-801 No. 2 Sliding Window Lubrication

Item No.	Nomenclature	Lubricant	Method of Application	Number of Locations
1	Upper Bellcrank and Glide	oil, D00091	Oil Can	2
2	Upper Track Inside Surface (entire length)	oil, D00091 or solid film lubricant, D00113	Oil Can	1
3	Latch Mechanism Rod	oil, D00091	Paint Brush	1
4	Lower Bellcrank Rod End, Guide Roller and Shaft	oil, D00091	Oil Can	3
5	Window Open Latch	oil, D00091	Oil Can	2
6	Handle Pivot Area	oil, D00091	Oil Can	2
7	Window Release Guide Roller	oil, D00091	Paint Brush	1
8	Trigger Hinge Pin	oil, D00091	Oil Can	1
9	Guide Pin Track	oil, D00091	Paint Brush	1
10	Lower Forward and Bellcrank Rod End	oil, D00091	Paint Brush	1
11	Cam Shaft	oil, D00091	Oil Can	2
12	External Release Handle Linkage	oil, D00091	Oil Can	4
13	Lower Track Inside Surface (entire length)	oil, D00091 or solid film lubricant, D00113	Oil Can	1

G. Put the Airplane Back to Its Usual Condition

SUBTASK 12-25-81-420-001

(1) Install the linings to the No. 2 sliding window as necessary (TASK 25-11-21-400-801).

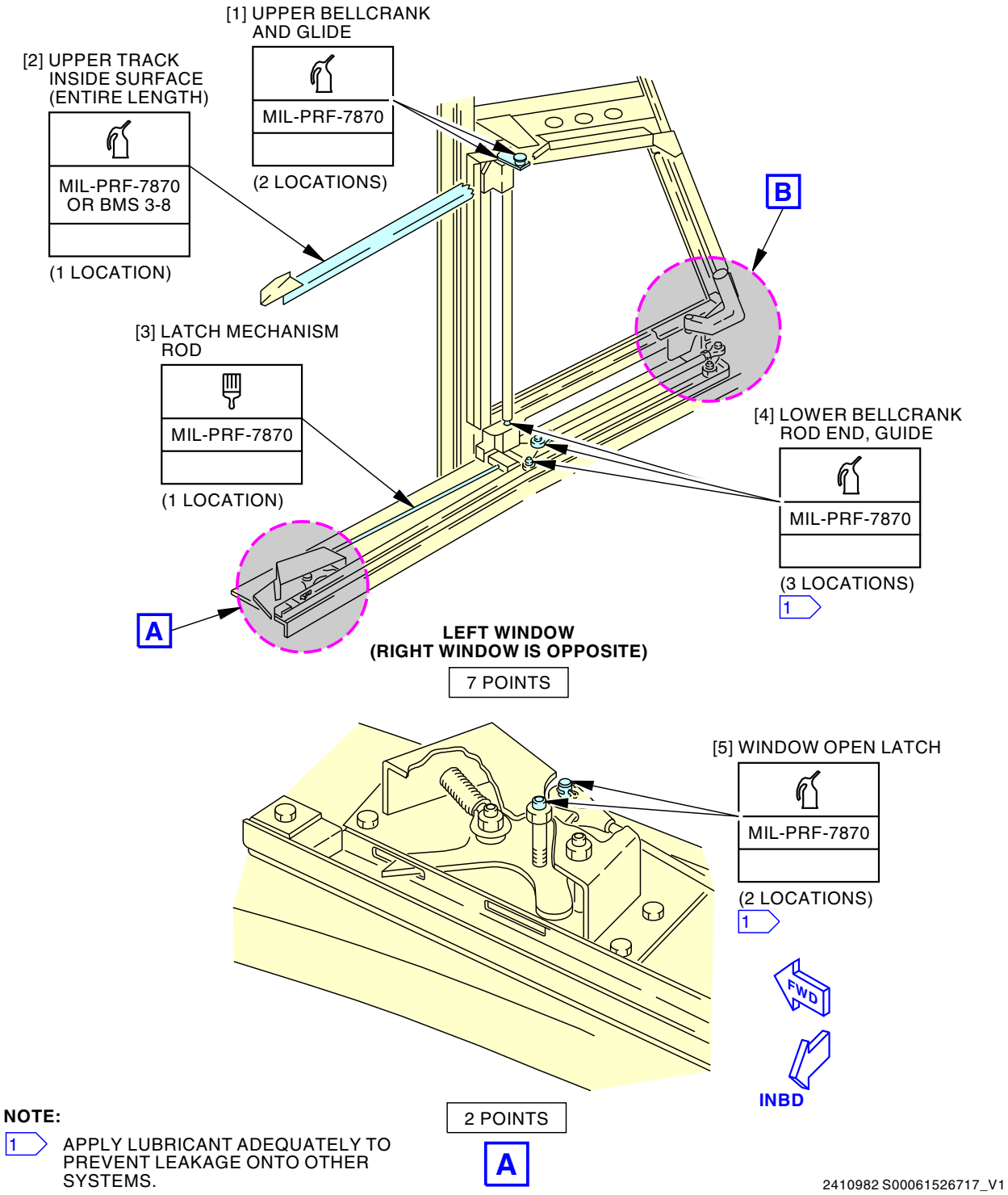
SUBTASK 12-25-81-840-002

(2) Install these panels as necessary:

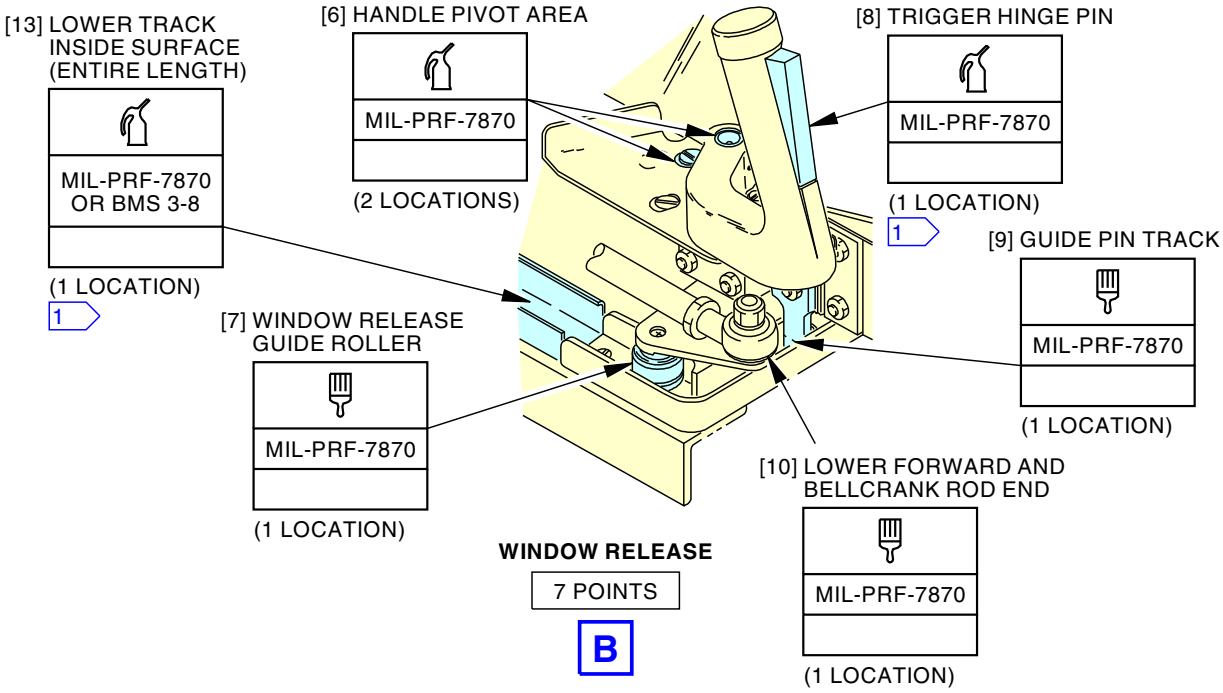
(Flight Compartment Forward Ceiling Panel Installation, TASK 25-11-21-400-801)

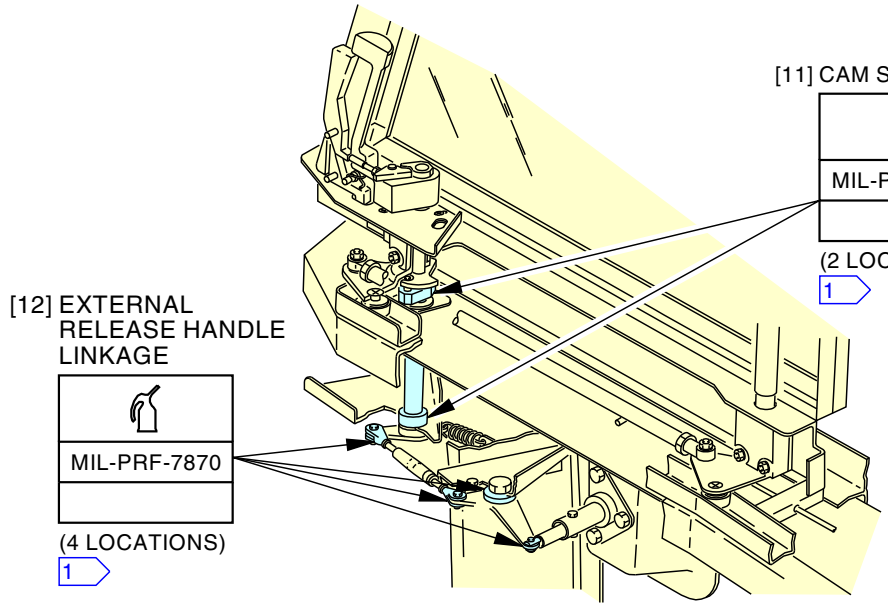
Number	Name/Location
211GW	Panel Assy - Flight Compartment Console - Edging
212GW	Panel Assy - Flight Compartment Console - Edging

END OF TASK



No. 2 Sliding Window Lubrication
Figure 301/12-25-81-990-801 (Sheet 1 of 2)





NOTE:

1 APPLY LUBRICANT ADEQUATELY TO PREVENT LEAKAGE ONTO OTHER SYSTEMS.

2410983 S00061526718_V1

No. 2 Sliding Window Lubrication
Figure 301/12-25-81-990-801 (Sheet 2 of 2)

CABLE LUBRICATION - SERVICING

1. General

A. This procedure has one task:

(1) Control cable lubrication

TASK 12-26-00-600-801

2. Control Cable Lubrication

A. Consumable Materials

Reference	Description	Specification
D00633	Grease - Aircraft General Purpose	BMS3-33
G00034	Cotton Wiper - Process Cleaning Absorbent Wiper (Cheesecloth, Gauze)	AMS3819 Class 1 Grade A or B Form 1 (Supersede BMS15-5 CL A)

B. Location Zones

Zone	Area
100	Lower Half of Fuselage
100	Lower Half of Fuselage
300	Empennage
400	Powerplant and Nacelle Struts
500	Left Wing
600	Right Wing

C. Control Cable Lubrication

SUBTASK 12-26-00-640-001

CAUTION

DO NOT APPLY SOLVENTS, GREASE, OR OIL TO STAINLESS STEEL CONTROL CABLES. THESE MATERIALS CAN COLLECT CONTAMINATION THAT CAN CAUSE DAMAGE TO THE INTERNAL SURFACES OF THE CRES CABLE STRANDS. THIS CAN DECREASE THE SERVICE LIFE OF THE CABLE.

(1) Do these steps to identify the carbon steel control cables:

(a) Refer to these figures for carbon steel control cables: Figure 301, Figure 302, Figure 303, Figure 304, Figure 305, Figure 306, Figure 308.

(b) Refer to this figure for corrosion resistant steel (CRES) control cables: Figure 309.

(c) Refer to this figures for carbon steel and/or corrosion resistant steel (CRES) control cables: Figure 307, Figure 310, Figure 311.

NOTE: All of the nose wheel steering cables are carbon steel with the exception of the NWSA/B loop. Refer to the referenced figure to verify the location and material type.

SUBTASK 12-26-00-160-001

CAUTION

DO NOT USE SOLVENT OR HEAT TO THIN GREASE. DO NOT USE SOLVENT TO CLEAN CABLES, SINCE SOLVENT DILUTES AND REMOVES GREASE FROM INSIDE CABLE STRANDS. DO NOT APPLY OR SPRAY BMS 3-23 ON CONTROL CABLES.

(2) Use a lint-free cotton wiper, G00034, that is clean and dry to clean the control cables.

(a) Remove the old grease and dirt from the surface of the control cable.

(b) Clean the control cable for the full length of the cable for the full length of travel through fairleads, air pressure seals, over pulleys, quadrants, and drums.

SUBTASK 12-26-00-640-002

(3) Do these steps to lubricate the carbon steel control cables only:

NOTE: The control cables in the wing and nacelle area are near high temperature sources. Deterioration of the lubricants will occur at a faster rate than on other control cables.

(a) Apply a light even coat of grease, D00633, to the carbon steel control cable for the full length of travel.

1) Move the cable full travel to apply lubricant to full length of cable.

(b) Do not apply grease to these areas because they will receive grease during cable movement:

1) The clad areas.

2) Through the fairleads.

3) Through the air pressure seals.

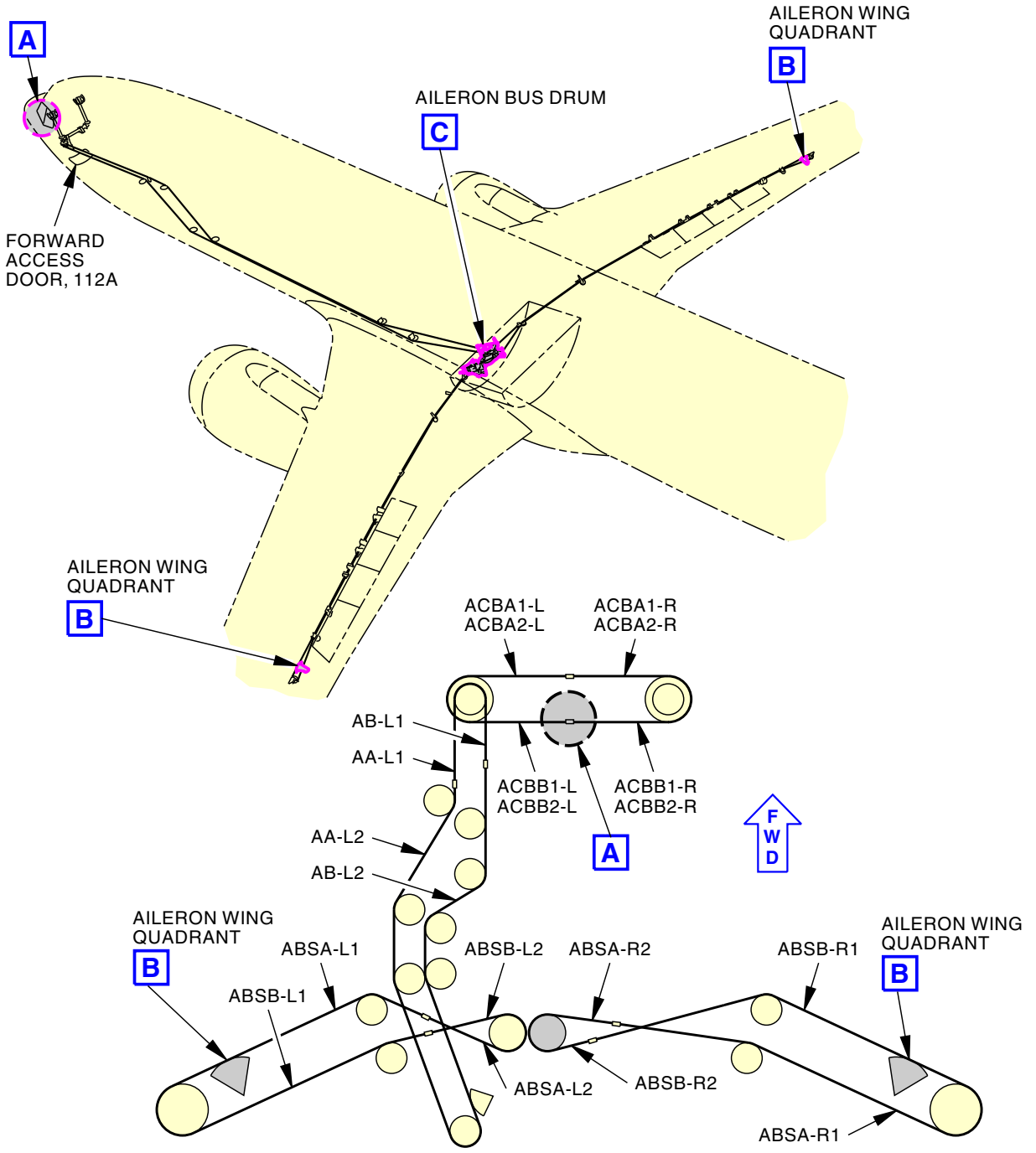
4) On the pulleys.

5) On the quadrants.

6) On the drums.

(c) After application of grease on the cable, the cable should be wiped with a clean cotton wiper, G00034, to remove the grease, but leave a thin visible film.

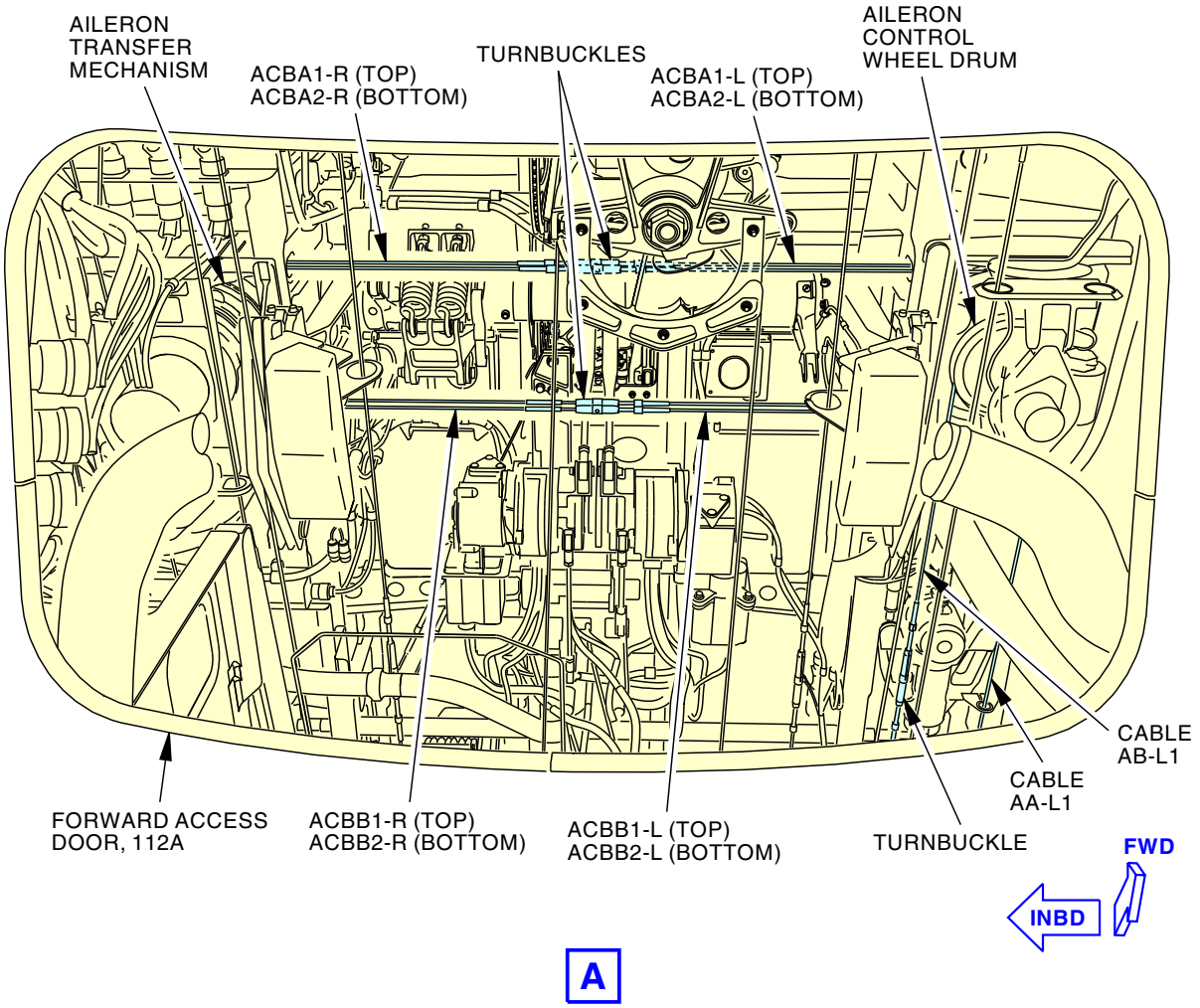
——— END OF TASK ———



AILERON CONTROL CABLE SCHEMATIC

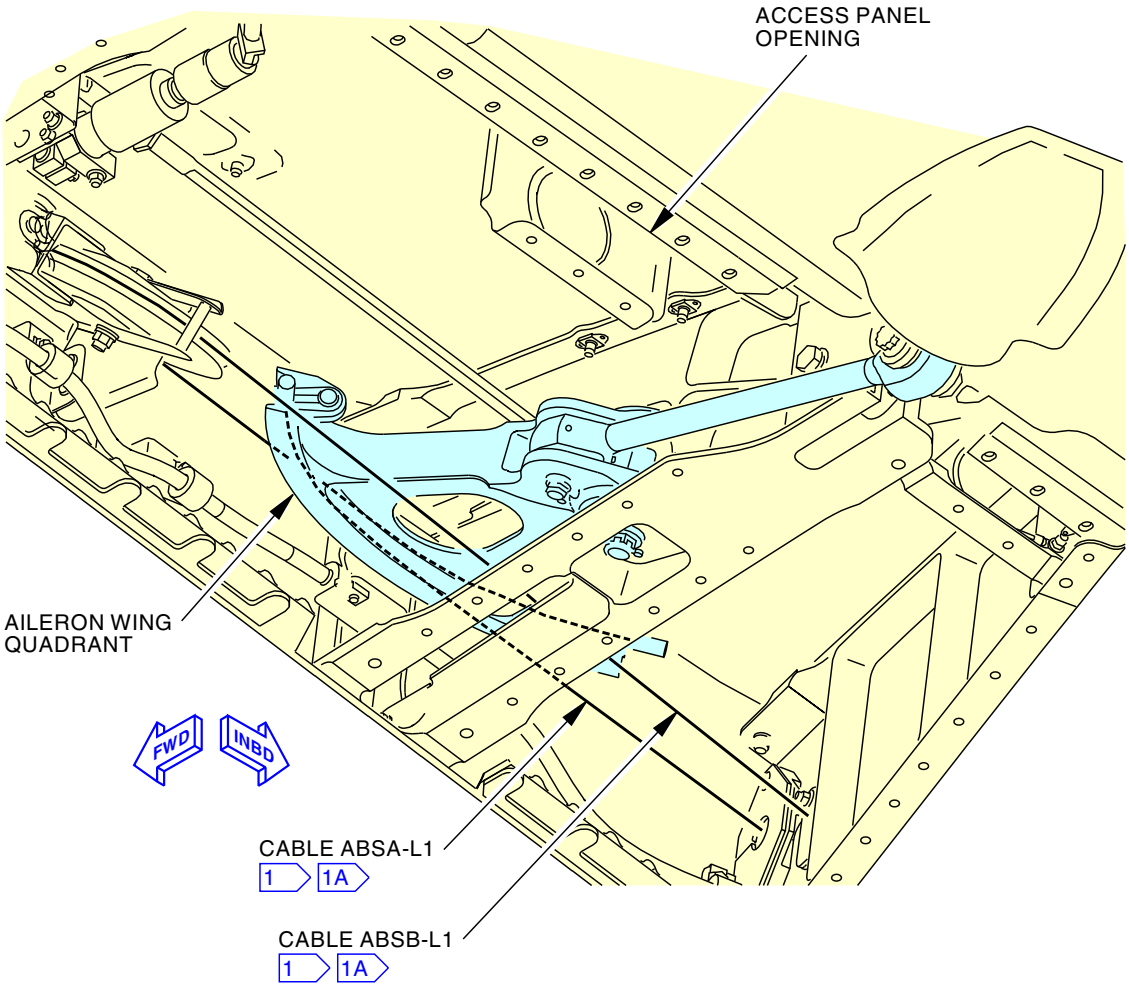
2410984 S00061526723_V3

Aileron Control Cables
Figure 301/12-26-00-990-801 (Sheet 1 of 6)



2410985 S00061526724_V2

Aileron Control Cables
Figure 301/12-26-00-990-801 (Sheet 2 of 6)



LEFT AILERON WING QUADRANT
(RIGHT AILERON WING QUADRANT IS EQUIVALENT)

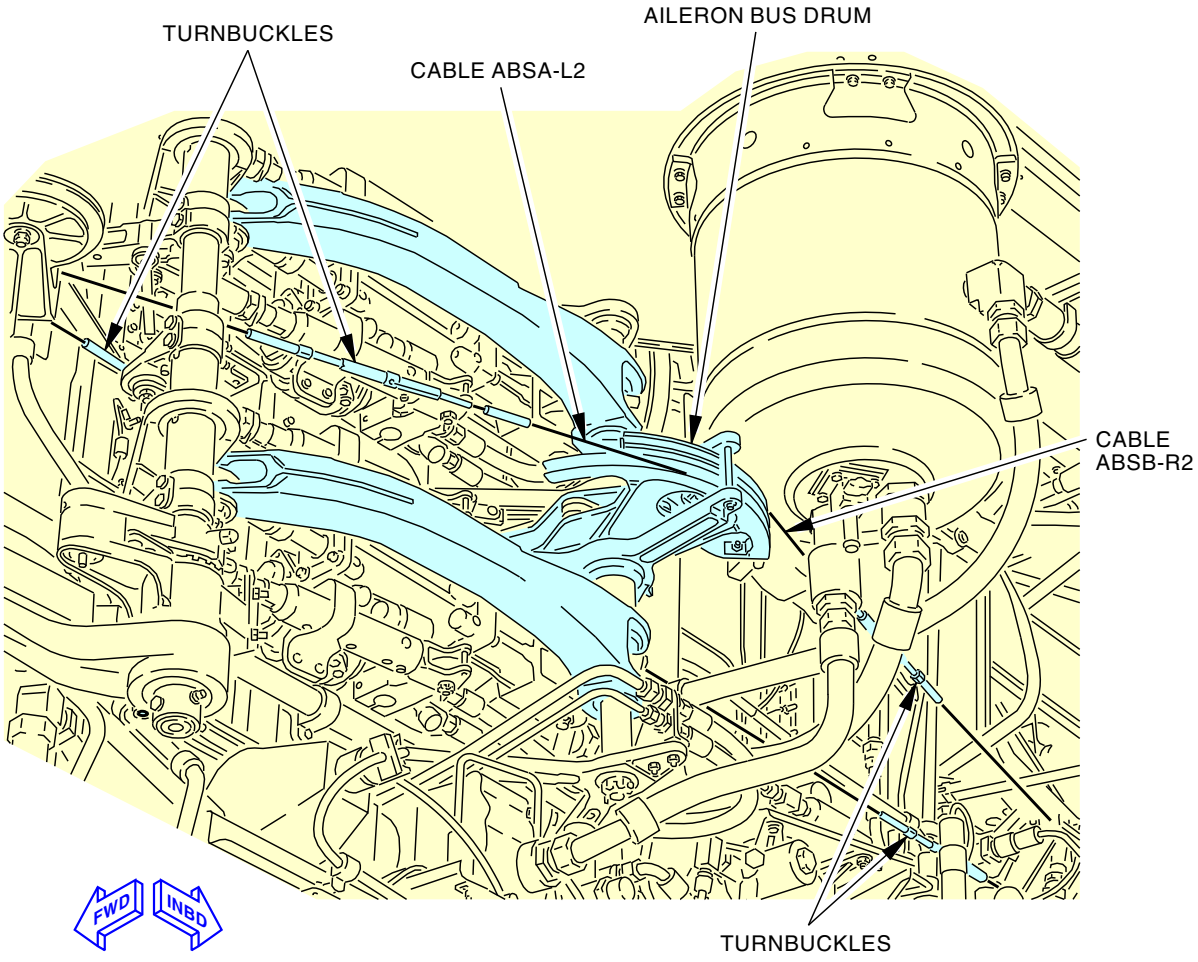
B

1 FOR THE RIGHT AILERON WING QUADRANT, INSTALL CABLE ABSB-R1 BELOW CABLE ABSA-R1.

1A FIT ABSA-L1 TO THE LOWER GROOVE OF THE QUADRANT
FIT ABSB-L1 TO THE UPPER GROOVE OF THE QUADRANT.

2410986 S00061526725_V2

Aileron Control Cables
Figure 301/12-26-00-990-801 (Sheet 3 of 6)

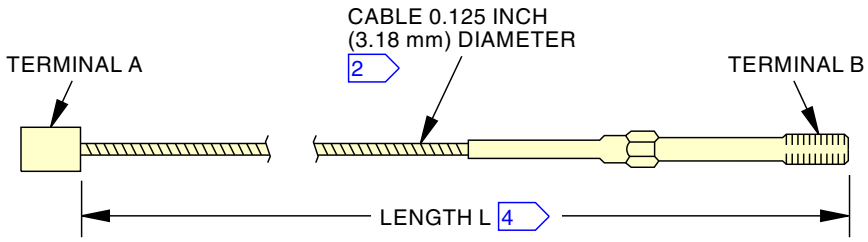


AILERON BUS DRUM
(MAIN LANDING GEAR WHEEL WELL)
(EXAMPLE)

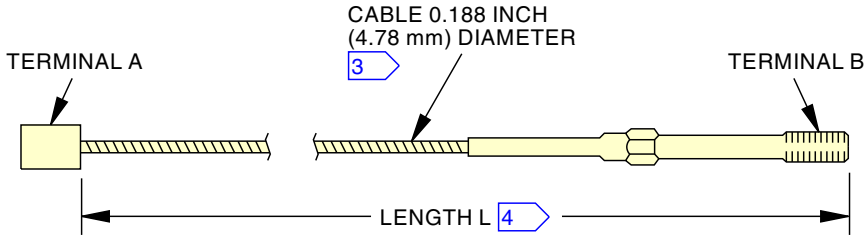
C

2410987 S00061526726_V4

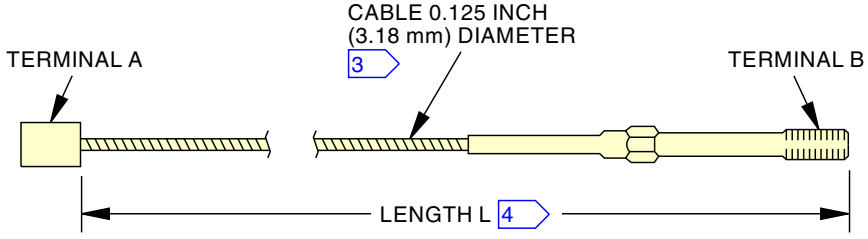
Aileron Control Cables
Figure 301/12-26-00-990-801 (Sheet 4 of 6)



AA-L1, AA-L2, AB-L1, AB-L2



**ABSA-L1, ABSA-L2, ABSA-R1, ABSA-R2,
ABSB-L1, ABSB-L2, ABSB-R1, ABSB-R2**



**ACBA1-L, ACBA1-R, ACBA2-L, ACBA2-R,
ACBB1-L, ACBB1-R, ACBB2-L, ACBB2-R**

2 CABLE CONSTRUCTION IS CARBON STEEL:
BMS 7-265, TYPE 1, COMPOSITION A (TIN OVER ZINC), 7 X 19.

3 CABLE CONSTRUCTION IS CARBON STEEL: MIL-DTL-83420, TYPE 1,
COMPOSITION A (ZINC), 7 X 19.

4 MEASURE CABLE WITH A LOAD OF 40 ±3 POUNDS (178 ±13 NEWTONS).

2410988 S00061526727_V2

**Aileron Control Cables
Figure 301/12-26-00-990-801 (Sheet 5 of 6)**

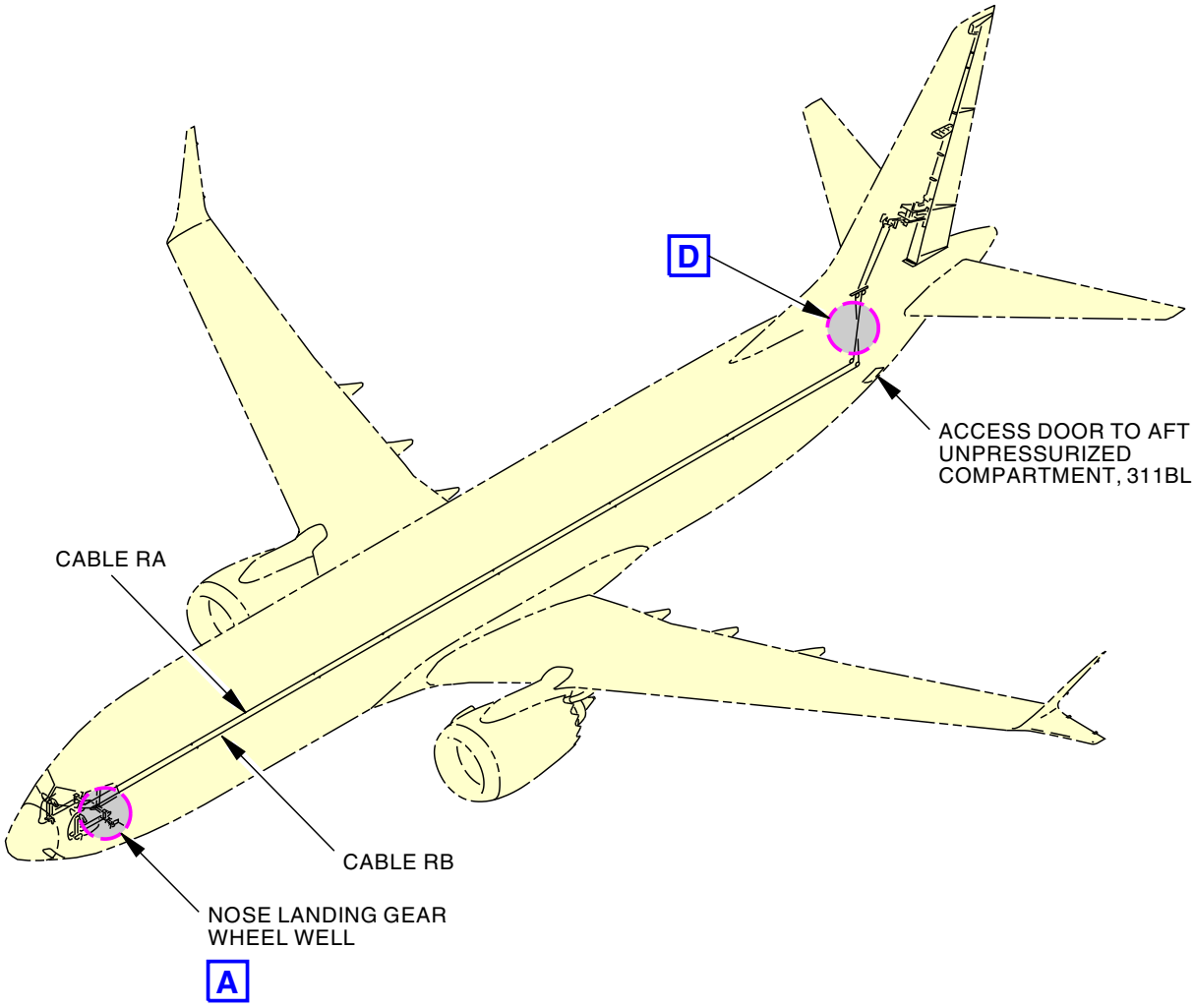
CABLE NAME	LENGTH L [4] INCHES (MILLIMETERS)	TERMINAL A	TERMINAL B
AA-L1 AA-L2	38.5 ±0.12 (978 ±3) 671.8 ±0.25 (17,064 ±6)	BACT14A BACT14A	MS21260L4RH MS21260L4LH
AB-L1 AB-L2	26.2 ±0.12 (665 ±3) 652.3 ±0.25 (16,568 ±6)	BACT14A BACT14A	MS21260L4LH MS21260L4RH
ABSA-L1 ABSA-L2	439.8 ±0.20 (11,171 ±5) 18.4 ±0.12 (467 ±3)	BACT14A BACT14A	MS21260L6LH MS21260L6RH
ABSA-R1 ABSA-R2	462.9 ±0.20 (11,758 ±5) 35.4 ±0.12 (899 ±3)	BACT14A BACT14A	MS21260L6LH MS21260L6RH
ABSB-L1 ABSB-L2	466.9 ±0.20 (11,859 ±5) 21.7 ±0.12 (551 ±3)	BACT14A BACT14A	MS21260L6RH MS21260L6LH
ABSB-R1 ABSB-R2	449.9 ±0.20 (11,427 ±5) 17.4 ±0.12 (442 ±3)	BACT14A BACT14A	MS21260L6RH MS21260L6LH
ACBA1-L	32.1 ±0.12 (815 ±3)	BACT14A	MS21260S4LH
ACBA1-R	32.1 ±0.12 (815 ±3)	BACT14A	MS21260S4RH
ACBA2-L	32.1 ±0.12 (815 ±3)	BACT14A	MS21260S4LH
ACBA2-R	32.1 ±0.12 (815 ±3)	BACT14A	MS21260S4RH
ACBB1-L	32.1 ±0.12 (815 ±3)	BACT14A	MS21260S4RH
ACBB1-R	32.1 ±0.12 (815 ±3)	BACT14A	MS21260S4LH
ACBB2-L	32.1 ±0.12 (815 ±3)	BACT14A	MS21260S4RH
ACBB2-R	32.1 ±0.12 (815 ±3)	BACT14A	MS21260S4LH

TABLE A

[4] MEASURE CABLE WITH A LOAD OF 40 ±3 POUNDS (178 ±13 NEWTONS).

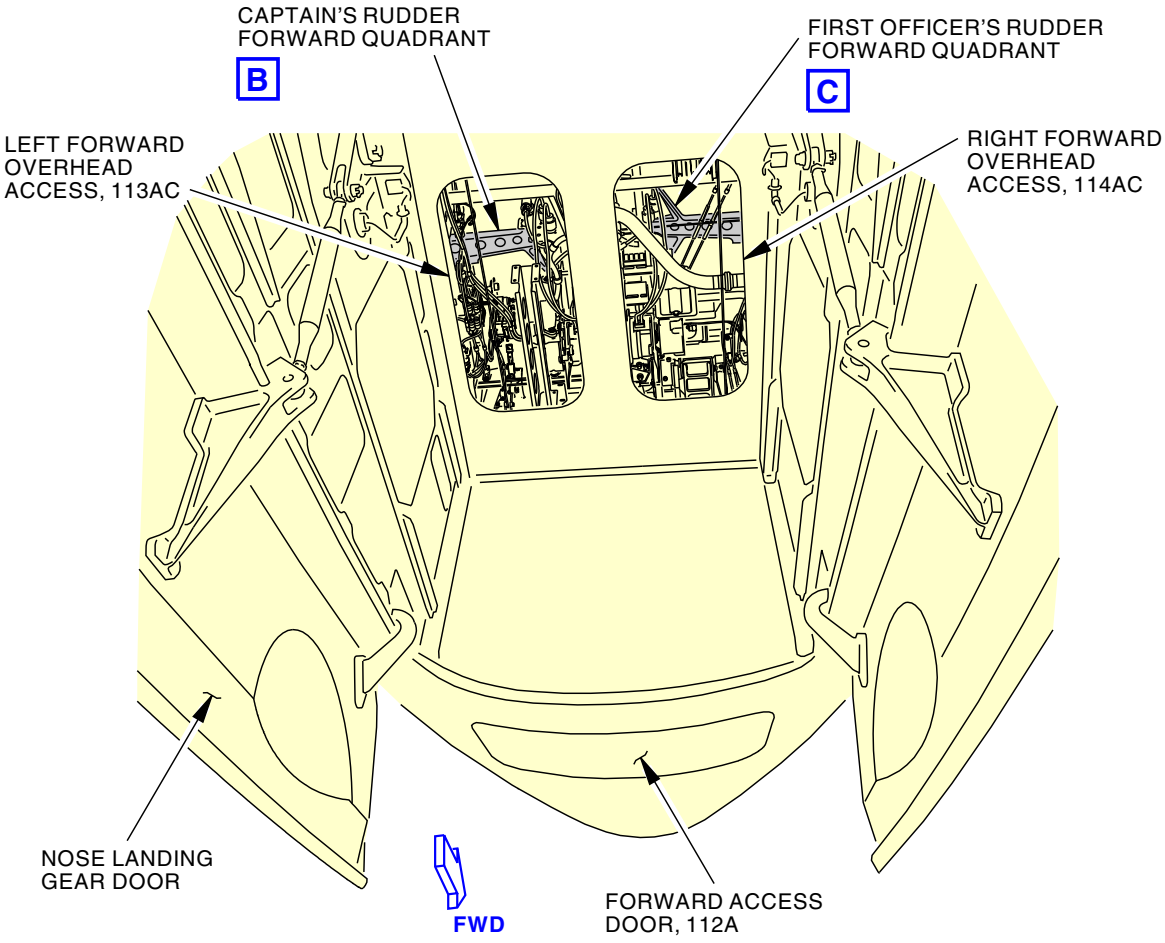
2410989 S00061526728_V1

Aileron Control Cables
Figure 301/12-26-00-990-801 (Sheet 6 of 6)



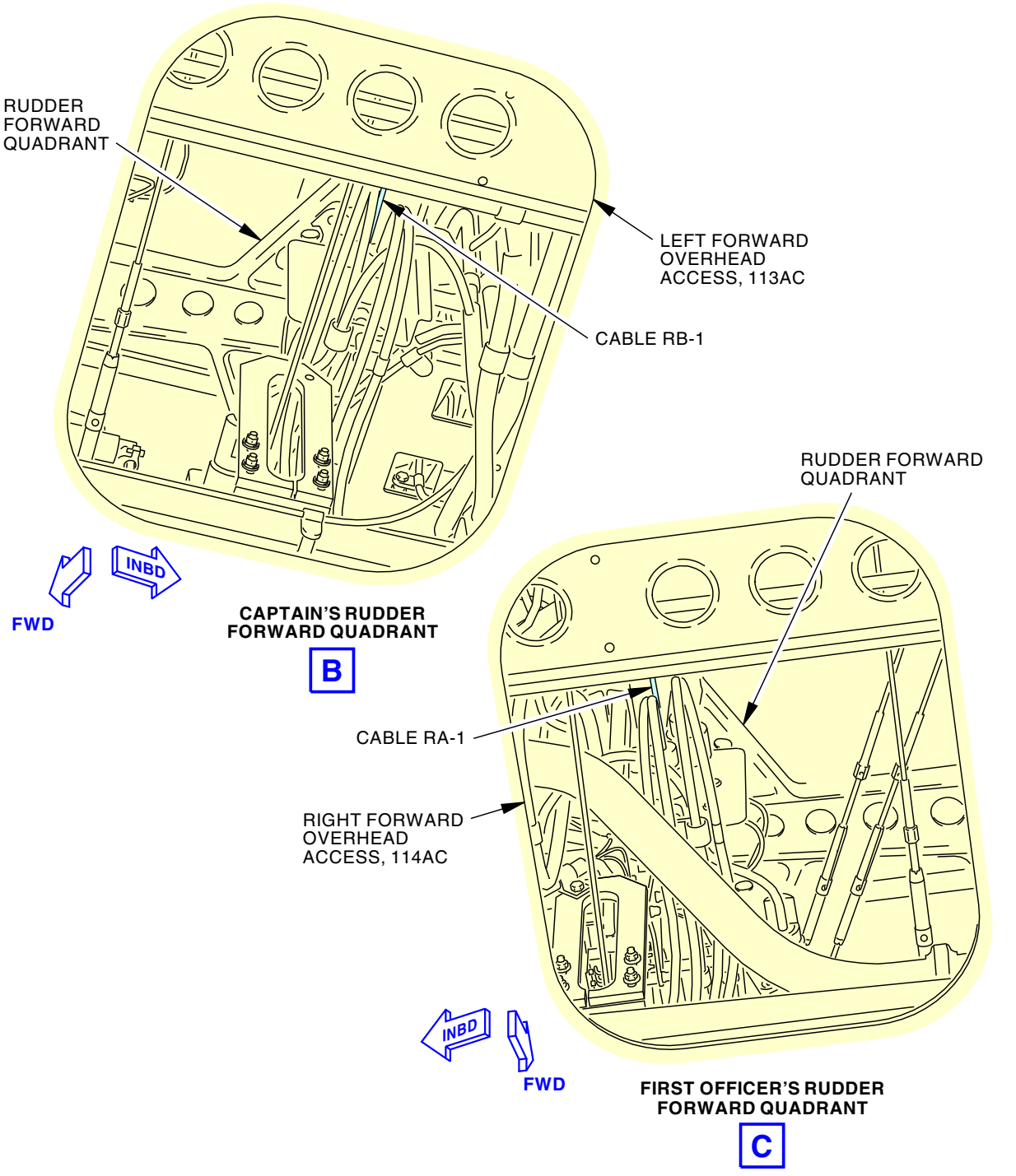
2410990 S00061526729_V2

Rudder Control Cables
Figure 302/12-26-00-990-802 (Sheet 1 of 5)

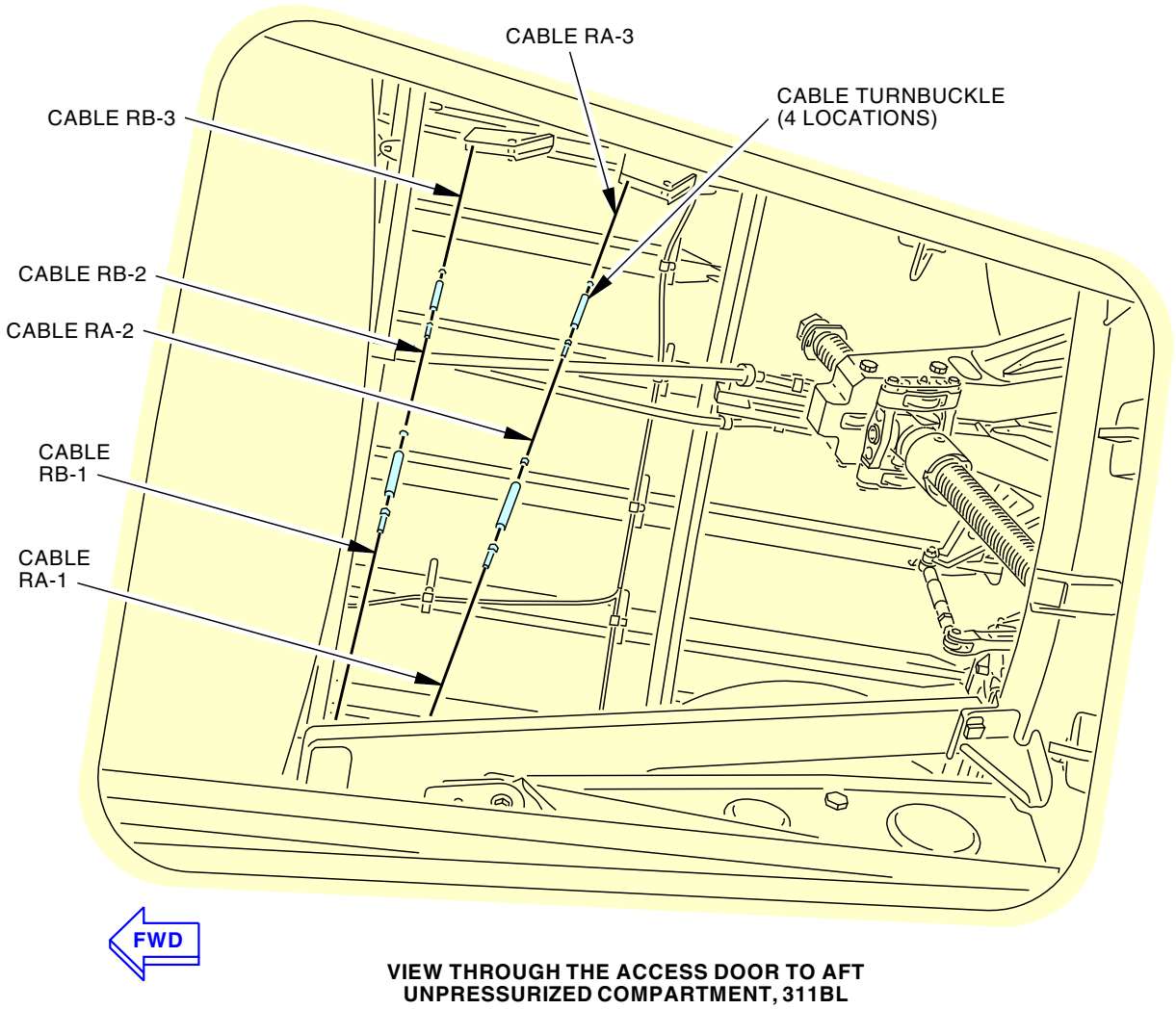


2410991 S00061526730_V2

Rudder Control Cables
Figure 302/12-26-00-990-802 (Sheet 2 of 5)

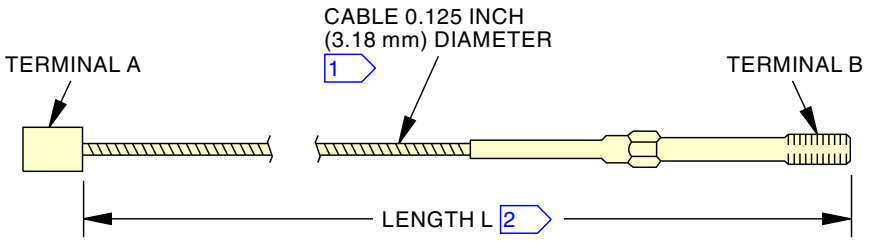


Rudder Control Cables
Figure 302/12-26-00-990-802 (Sheet 3 of 5)

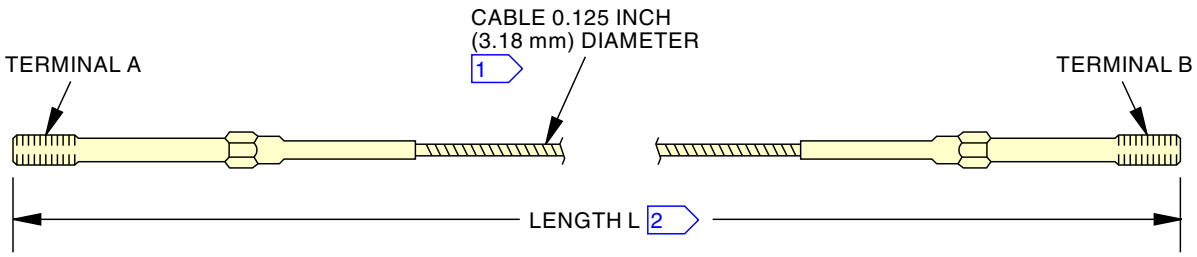


2410993 S00061526732_V1

Rudder Control Cables
Figure 302/12-26-00-990-802 (Sheet 4 of 5)



RA-1, RA-3, RB-1, RB-3



RA-2, RB-2

CABLE NAME		LENGTH L 2 INCHES (MILLIMETERS)	TERMINAL A	TERMINAL B
RIGHT SIDE	RA-1	1272.5 ±0.50 (32,321 ±13)	BACT14A	MS21260L4RH
	RA-2	18.8 ±0.12 (478 ±3)	MS21260L4RH	MS21260L4LH
	RA-3	111.0 ±0.12 (2,819 ±3)	BACT14A	MS21260L4LH
LEFT SIDE	RB-1	1265.2 ±0.50 (32,136 ±13)	BACT14A	MS21260L4LH
	RB-2	18.8 ±0.12 (478 ±3)	MS21260L4RH	MS21260L4LH
	RB-3	123.7 ±0.12 (3,142 ±3)	BACT14A	MS21260L4RH

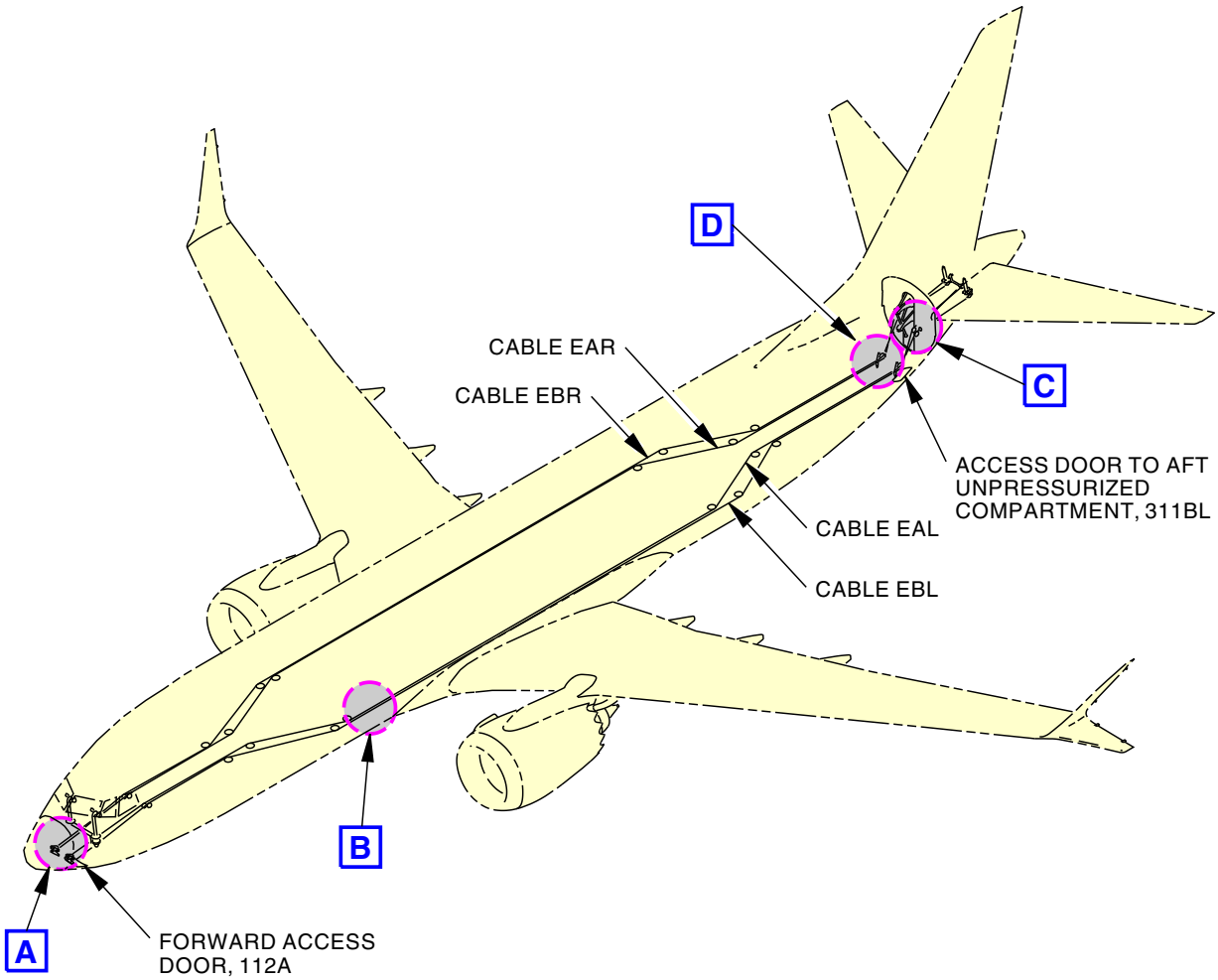
TABLE A

1 CABLE CONSTRUCTION IS CARBON STEEL: BMS 7-265, TYPE 1, COMPOSITION A (TIN OVER ZINC), 7 X 19

2 MEASURE CABLE WITH A LOAD OF 40 ±3 POUNDS (178 ±13 NEWTONS).

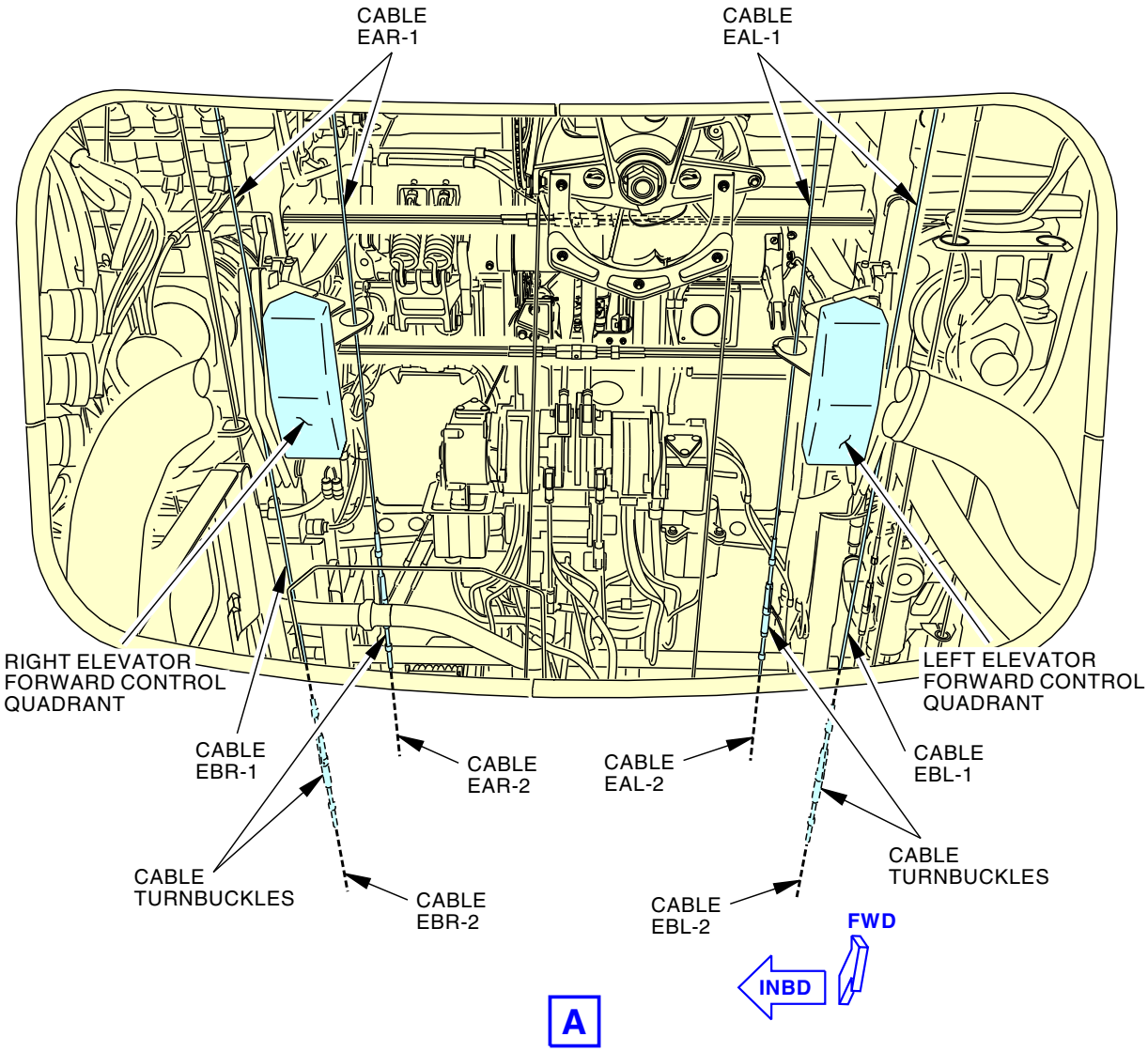
2410994 S00061526733_V1

Rudder Control Cables
Figure 302/12-26-00-990-802 (Sheet 5 of 5)



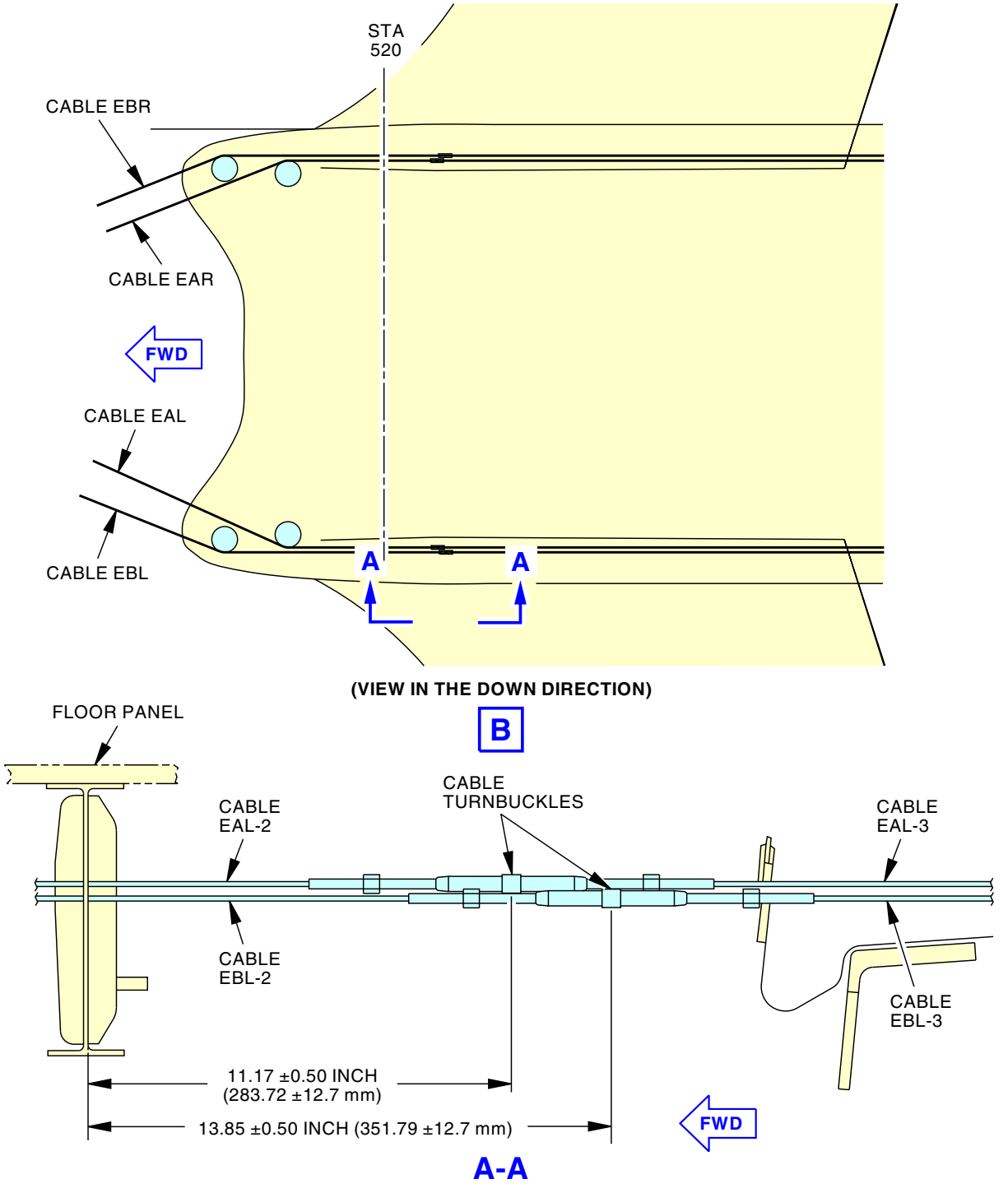
2410995 S00061526734_V1

Elevator Control Cables
Figure 303/12-26-00-990-803 (Sheet 1 of 5)

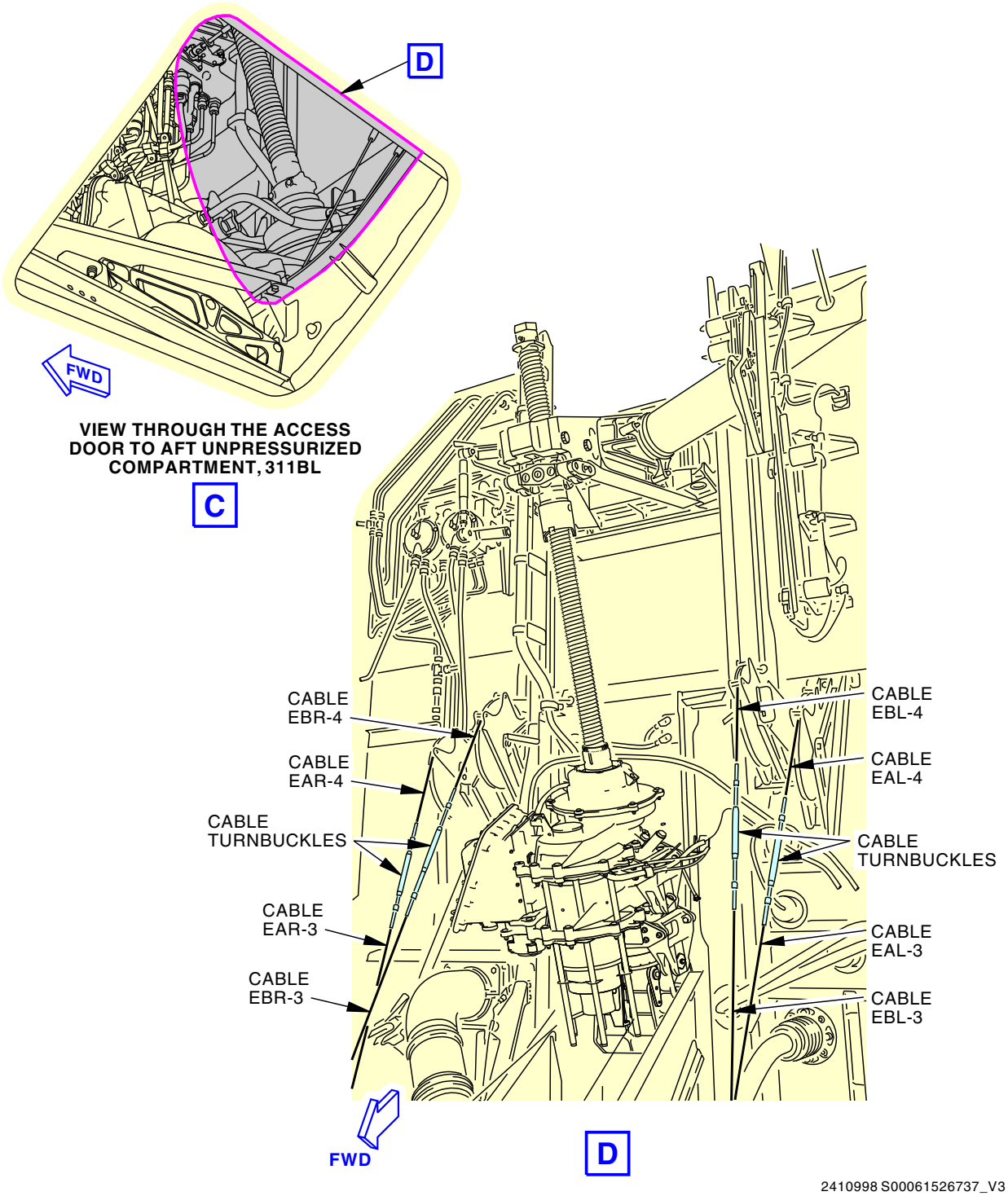


2410996 S00061526735_V3

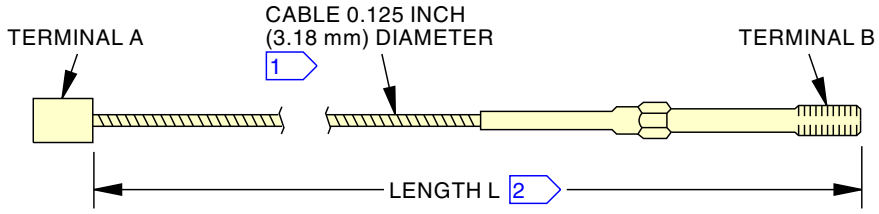
Elevator Control Cables
Figure 303/12-26-00-990-803 (Sheet 2 of 5)



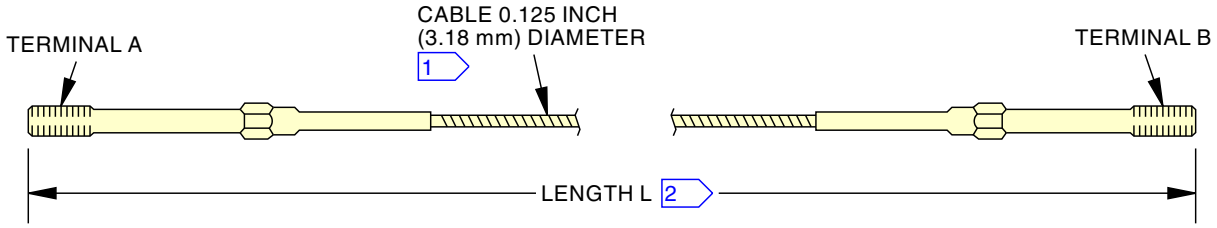
Elevator Control Cables
Figure 303/12-26-00-990-803 (Sheet 3 of 5)



Elevator Control Cables
Figure 303/12-26-00-990-803 (Sheet 4 of 5)



EAL-1, EAL-4, EAR-1, EAR-4, EBL-1, EBL-4, EBR-1, EBR-4



EAL-2, EAL-3, EAR-2, EAR-3, EBL-2, EBL-3, EBR-2, EBR-3

CABLE NAME		LENGTH L 2 INCHES (MILLIMETERS)	TERMINAL A	TERMINAL B
LEFT SIDE	EAL-1 EAL-2 EAL-3 EAL-4	97.6 ±0.12 (2,479 ±3) 502.2 ±0.25 (12,756 ±6) 780.0 ±0.38 (19,812 ±9) 102.8 ±0.12 (2,611 ±3)	BACT14A MS21260L4RH MS21260L4RH BACT14A	MS21260L4LH MS21260L4LH MS21260L4RH MS21260L4LH
RIGHT SIDE	EAR-1 EAR-2 EAR-3 EAR-4	97.6 ±0.12 (2,479 ±3) 502.2 ±0.25 (12,756 ±6) 782.1 ±0.38 (19,865 ±9) 102.8 ±0.12 (2,611 ±3)	BACT14A MS21260L4RH MS21260L4RH BACT14A	MS21260L4LH MS21260L4LH MS21260L4RH MS21260L4LH
LEFT SIDE	EBL-1 EBL-2 EBL-3 EBL-4	31.5 ±0.12 (800 ±3) 495.8 ±0.25 (12,593 ±6) 778.4 ±0.38 (19,771 ±9) 102.1 ±0.12 (2,593 ±3)	BACT14A MS21260L4RH MS21260L4LH BACT14A	MS21260L4RH MS21260L4LH MS21260L4LH MS21260L4RH
RIGHT SIDE	EBR-1 EBR-2 EBR-3 EBR-4	31.5 ±0.12 (800 ±3) 495.8 ±0.25 (12,593 ±6) 781.8 ±0.38 (19,858 ±9) 102.1 ±0.12 (2,593 ±3)	BACT14A MS21260L4RH MS21260L4LH BACT14A	MS21260L4RH MS21260L4LH MS21260L4LH MS21260L4RH

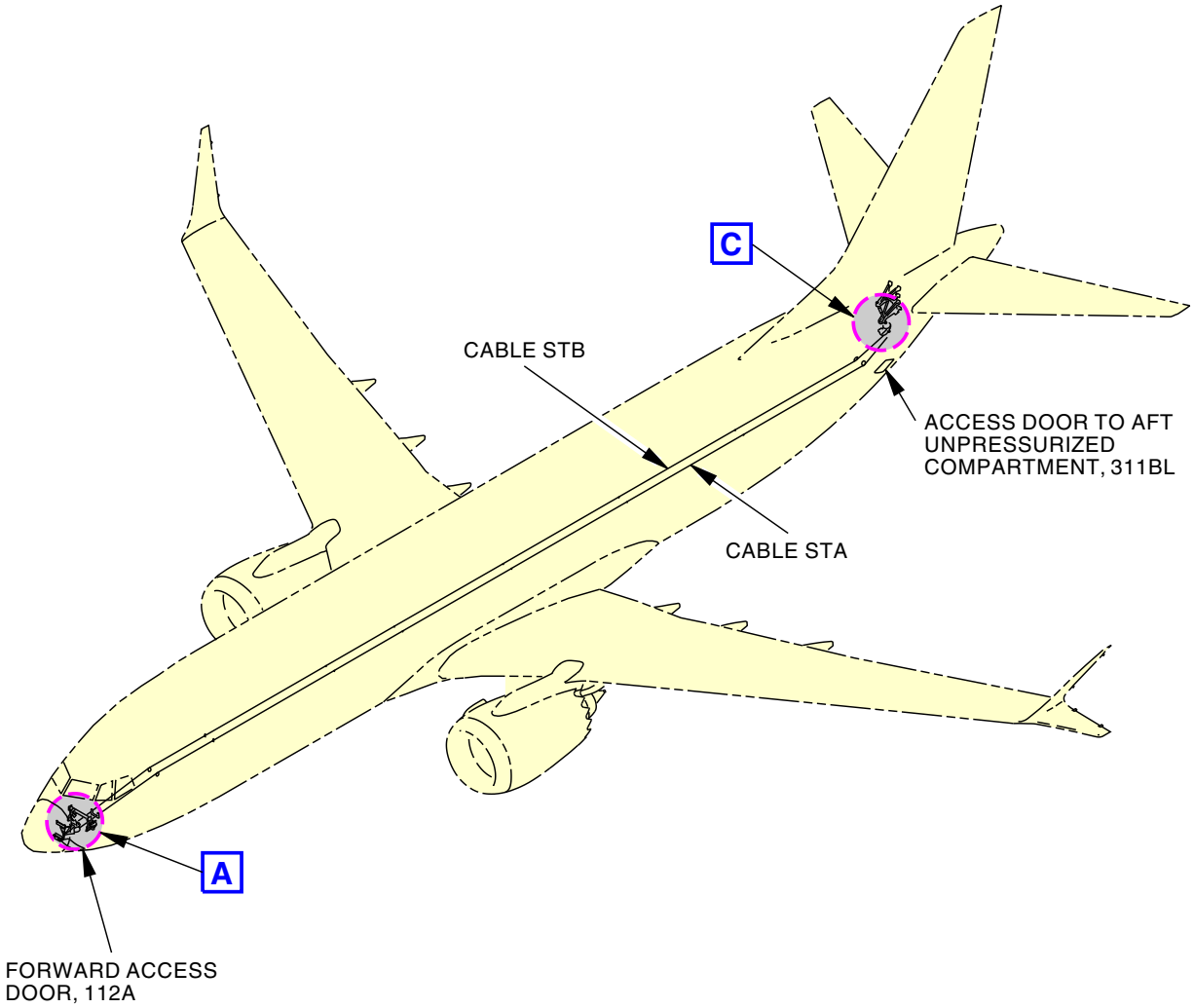
TABLE A

1 CABLE CONSTRUCTION IS CARBON STEEL: BMS 7-265, TYPE 1, COMPOSITION A (TIN OVER ZINC), 7 X 19.

2 MEASURE CABLE WITH A LOAD OF 40 ±3 POUNDS (178 ±13 NEWTONS).

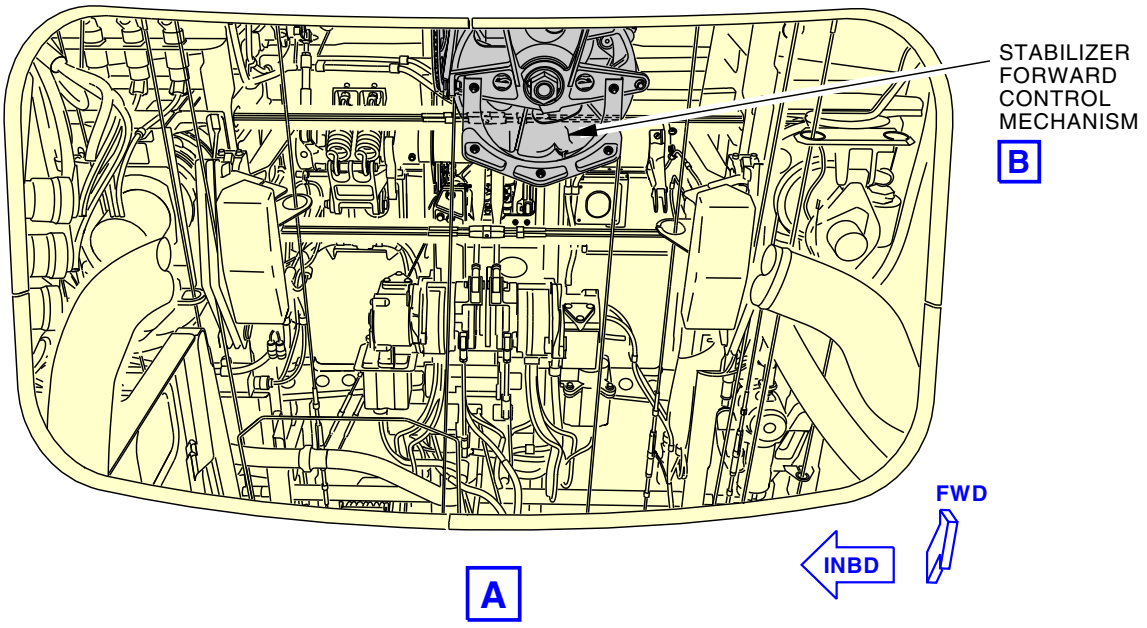
2410999 S00061526738_V2

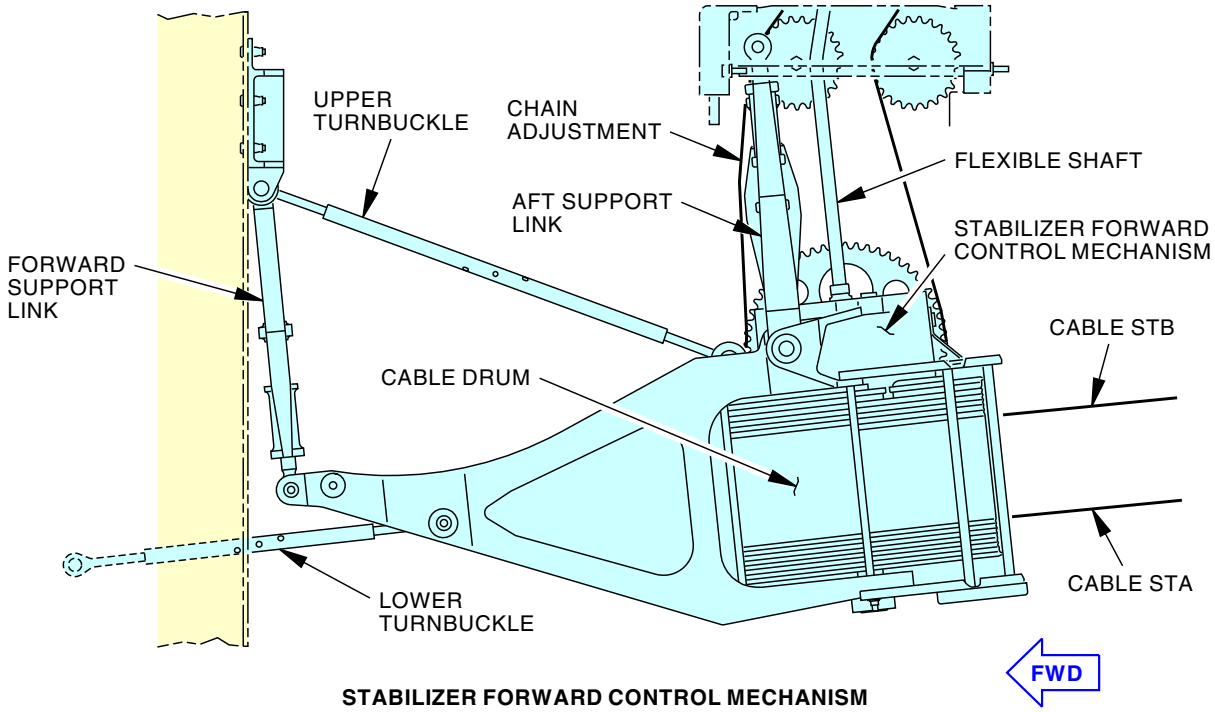
Elevator Control Cables
Figure 303/12-26-00-990-803 (Sheet 5 of 5)



2411000 S00061526739_V1

Stabilizer Control Cables
Figure 304/12-26-00-990-804 (Sheet 1 of 5)



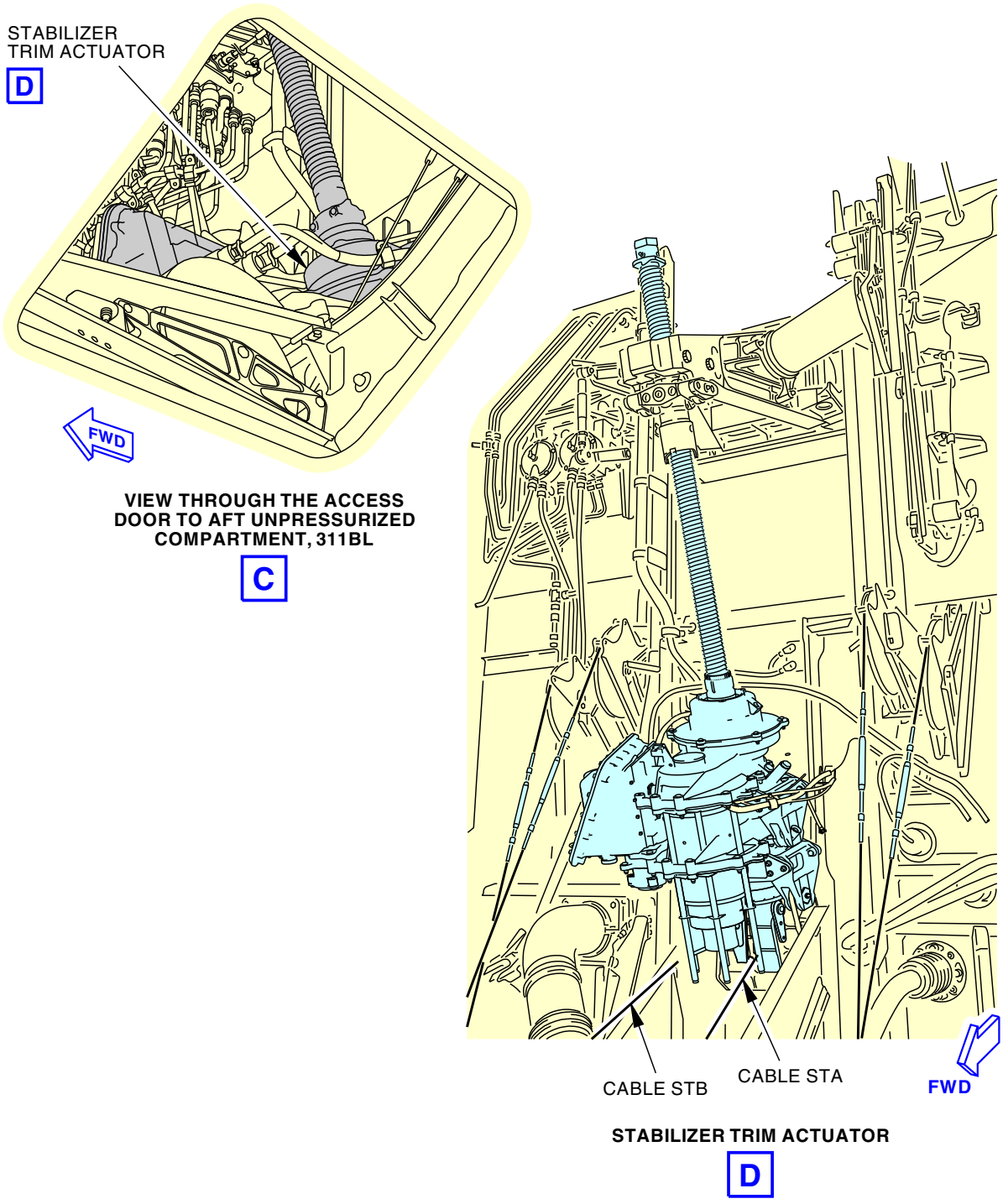


STABILIZER FORWARD CONTROL MECHANISM

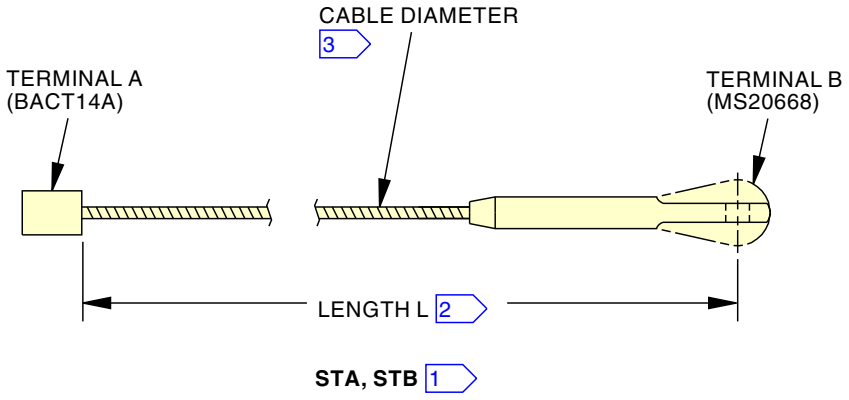
B

2411001 S00061526740_V2

Stabilizer Control Cables
Figure 304/12-26-00-990-804 (Sheet 2 of 5)



Stabilizer Control Cables
Figure 304/12-26-00-990-804 (Sheet 3 of 5)



1 CABLE CONSTRUCTION IS CARBON STEEL: BMS 7-265, TYPE 1, (TIN OVER ZINC), 7 X 19.

2 MEASURE CABLE LENGTH WITH A LOAD OF 140 ±5 POUNDS (623 ±22 NEWTONS) OF FORCE. SEE TABLE A.

3 MEASURE THE NEW CABLE DIAMETER AT 3 PLACES AND AVERAGE. THIS CABLE DIAMETER MEASUREMENT SHOULD NOT BE TAKEN WHILE THE CABLE IS UNDER LOAD.

2411003 S00061526742_V1

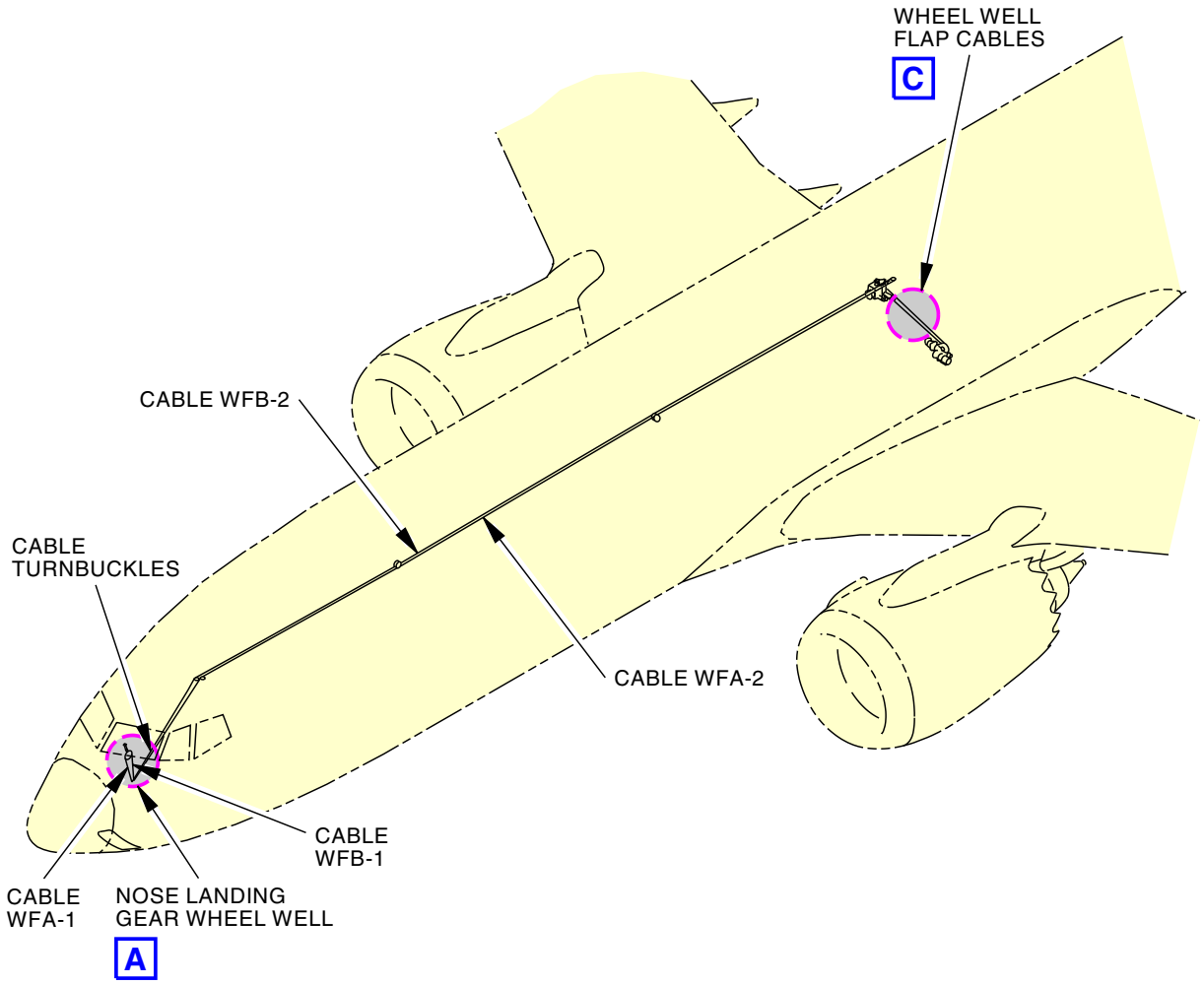
Stabilizer Control Cables
Figure 304/12-26-00-990-804 (Sheet 4 of 5)

CABLE DIAMETER 3	CABLE LENGTH L INCHES (METERS) 2	
	STA (LEFT)	STB (RIGHT)
0.125	2199.55 ±0.50 (55.869 ±0.013)	2186.02 ±0.50 (55.525 ±0.013)
0.126	2199.69 ±0.50 (55.872 ±0.013)	2186.16 ±0.50 (55.528 ±0.013)
0.127	2199.83 ±0.50 (55.876 ±0.013)	2186.30 ±0.50 (55.532 ±0.013)
0.128	2199.97 ±0.50 (55.879 ±0.013)	2186.44 ±0.50 (55.536 ±0.013)
0.129	2200.11 ±0.50 (55.883 ±0.013)	2186.58 ±0.50 (55.539 ±0.013)
0.130	2200.25 ±0.50 (55.886 ±0.013)	2186.72 ±0.50 (55.543 ±0.013)
0.131	2200.39 ±0.50 (55.890 ±0.013)	2186.86 ±0.50 (55.546 ±0.013)
0.132	2200.53 ±0.50 (55.893 ±0.013)	2187.00 ±0.50 (55.550 ±0.013)
0.133	2200.67 ±0.50 (55.897 ±0.013)	2187.14 ±0.50 (55.553 ±0.013)
0.134	2200.81 ±0.50 (55.901 ±0.013)	2187.28 ±0.50 (55.557 ±0.013)
0.135	2200.95 ±0.50 (55.904 ±0.013)	2187.42 ±0.50 (55.560 ±0.013)
0.136	2201.09 ±0.50 (55.907 ±0.013)	2187.56 ±0.50 (55.564 ±0.013)
0.137	2201.23 ±0.50 (55.911 ±0.013)	2187.70 ±0.50 (55.568 ±0.013)
0.138	2201.37 ±0.50 (55.915 ±0.013)	2187.84 ±0.50 (55.571 ±0.013)
0.139	2201.51 ±0.50 (55.918 ±0.013)	2187.98 ±0.50 (55.575 ±0.013)

TABLE A

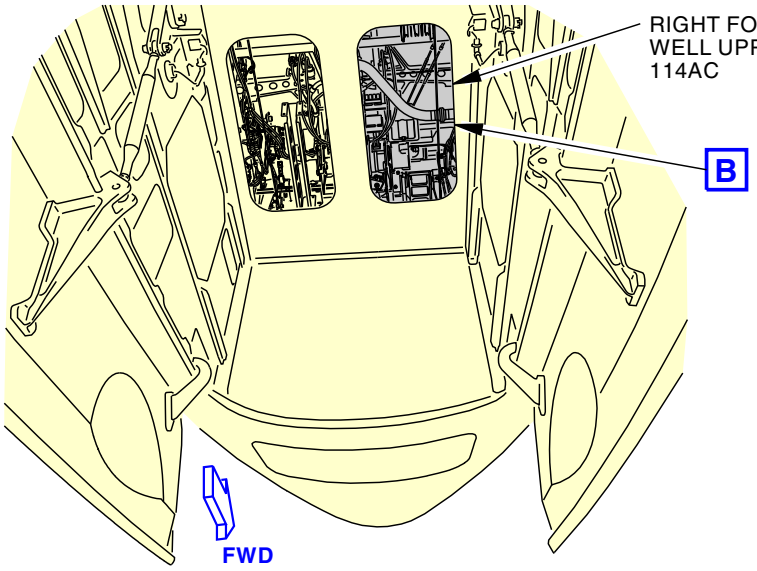
2411004 S00061526743_V1

Stabilizer Control Cables
Figure 304/12-26-00-990-804 (Sheet 5 of 5)



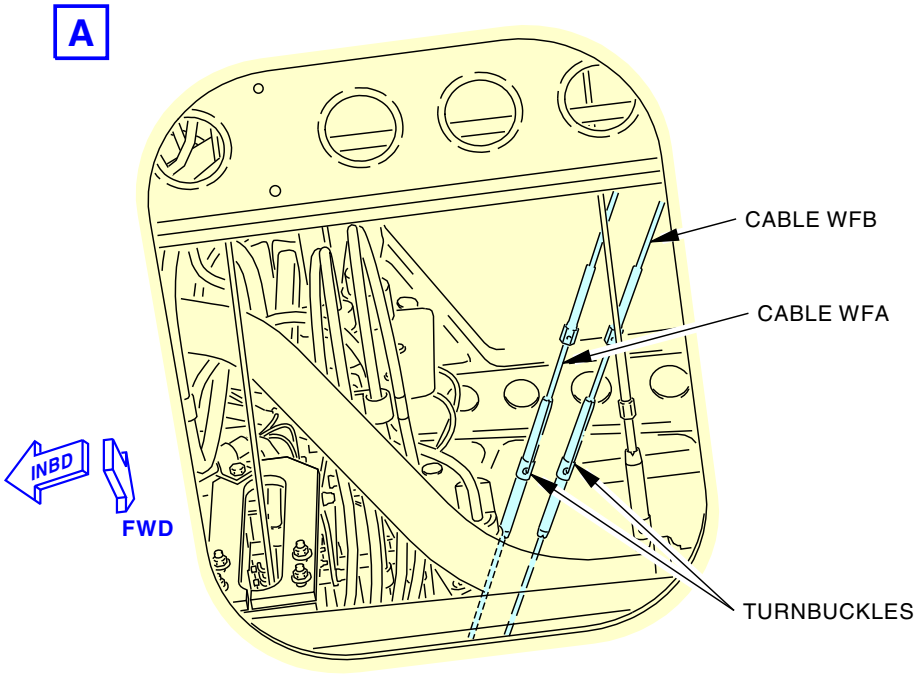
2411005 S00061526744_V1

Trailing Edge Flap Control Cables
Figure 305/12-26-00-990-805 (Sheet 1 of 5)



NOSE LANDING GEAR WHEEL WELL

A

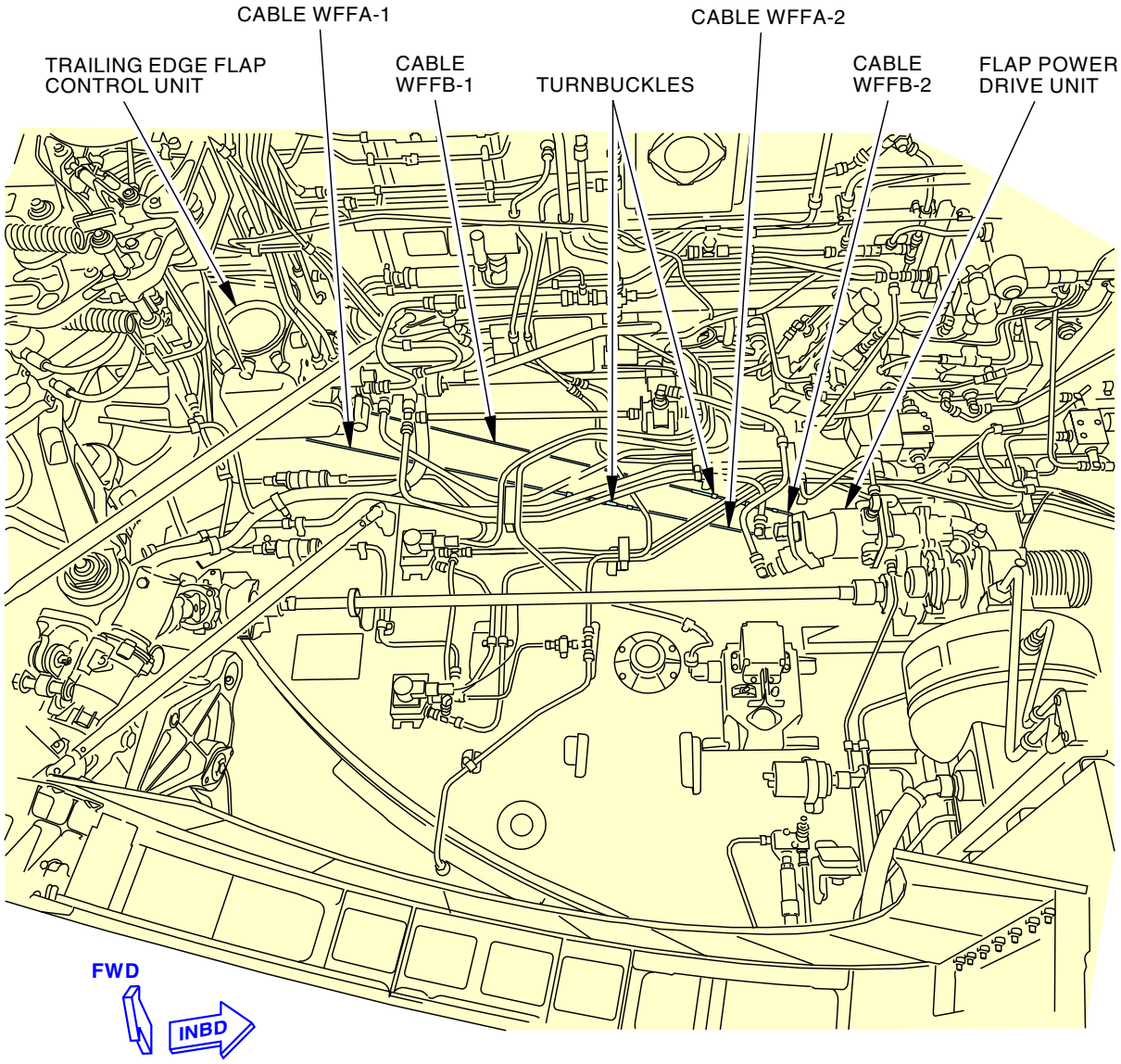


VIEW THROUGH RIGHT FORWARD NOSE WHEEL WELL UPPER ACCESS PANEL, 114AC

B

2411006 S00061526745_V2

Trailing Edge Flap Control Cables
Figure 305/12-26-00-990-805 (Sheet 2 of 5)

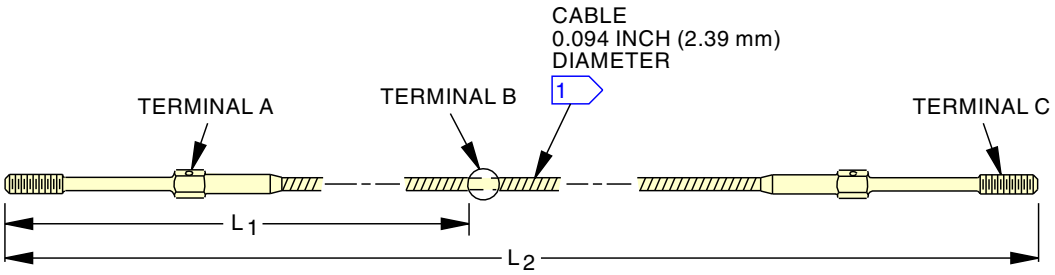


MAIN LANDING GEAR WHEEL WELL
(RIGHT SIDE)
(EXAMPLE)

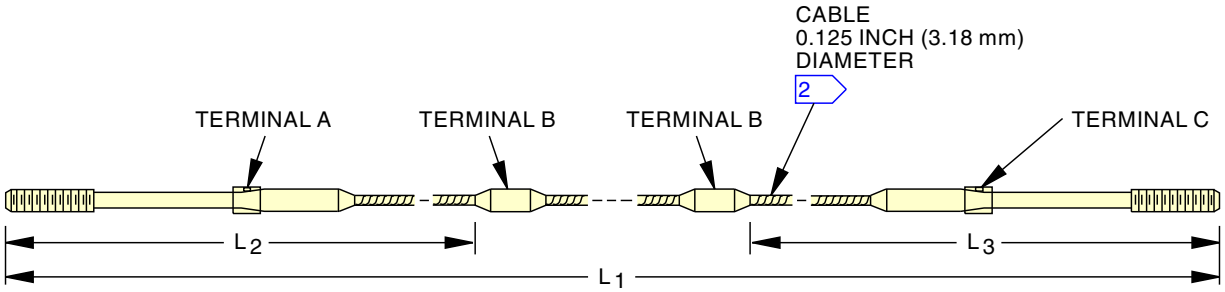
C

2411007 S00061526746_V2

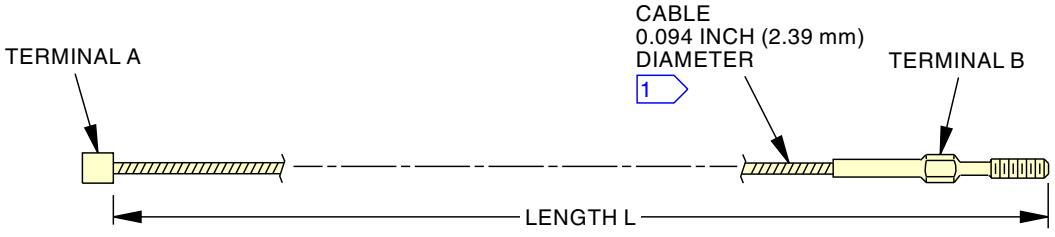
Trailing Edge Flap Control Cables
Figure 305/12-26-00-990-805 (Sheet 3 of 5)



WFA-1, WFB-1



WFA-2, WFB-2



**WFFA-1, WFFA-2,
WFFB-1, WFFB-2**

1 CABLE CONSTRUCTION IS CARBON STEEL:
BMS 7-265, TYPE 1, COMPOSITION A (TIN OVER ZINC), 7 X 7

2 CABLE CONSTRUCTION IS CARBON STEEL:
BMS 7-265, TYPE 1, COMPOSITION A (TIN OVER ZINC), 7 X 19

2411008 S00061526747_V2

**Trailing Edge Flap Control Cables
Figure 305/12-26-00-990-805 (Sheet 4 of 5)**

CABLE NAME	LENGTH L [3] INCHES (MILLIMETERS)	TERMINAL A	TERMINAL B	TERMINAL C
WFA-1, WFB-1	L_1 - 41.5 ±0.12 (1,054 ±3) [1] L_2 - 84.8 ±0.25 (2,154 ±6) [4]	MS21260L3LH	BACT14B3	MS21260L3RH
WFA-2, WFB-2	L_1 - 1418.8 (35,758) [3] L_2 - 712.4 (18,095) [3] L_3 - 695.4 (17,663) [3]	69-38195-2	BACT14A4	69-38195-1
WFFA-1	30.4 (772) [4]	BACT14A3	MS21260S3RH	
WFFB-1	32.9 (836) [4]	BACT14A3	MS21260S3RH	
WFFA-2 WFFB-2	46.8 (1,189) [4]	BACT14A3	MS21260S3LH	

TABLE A

1 CABLE CONSTRUCTION IS CARBON STEEL: BMS 7-265, TYPE 1, COMPOSITION A (TIN OVER ZINC), 7 X 7.

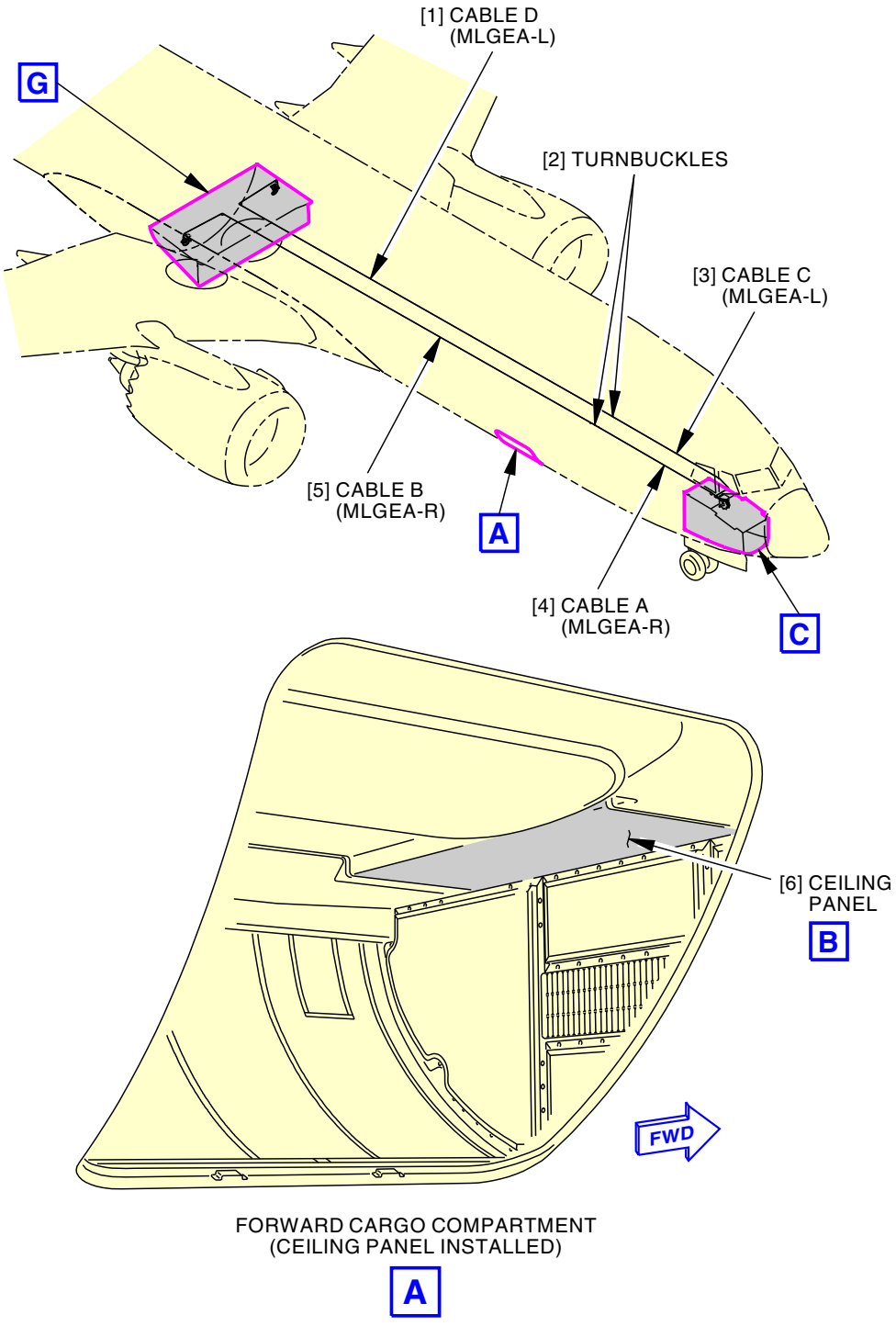
2 CABLE CONSTRUCTION IS CARBON STEEL: BMS 7-265, TYPE 1, COMPOSITION A (TIN OVER ZINC), 7 X 19.

3 MEASURE CABLE WITH A LOAD OF 40 ±3 POUNDS (178 ±13 NEWTONS).

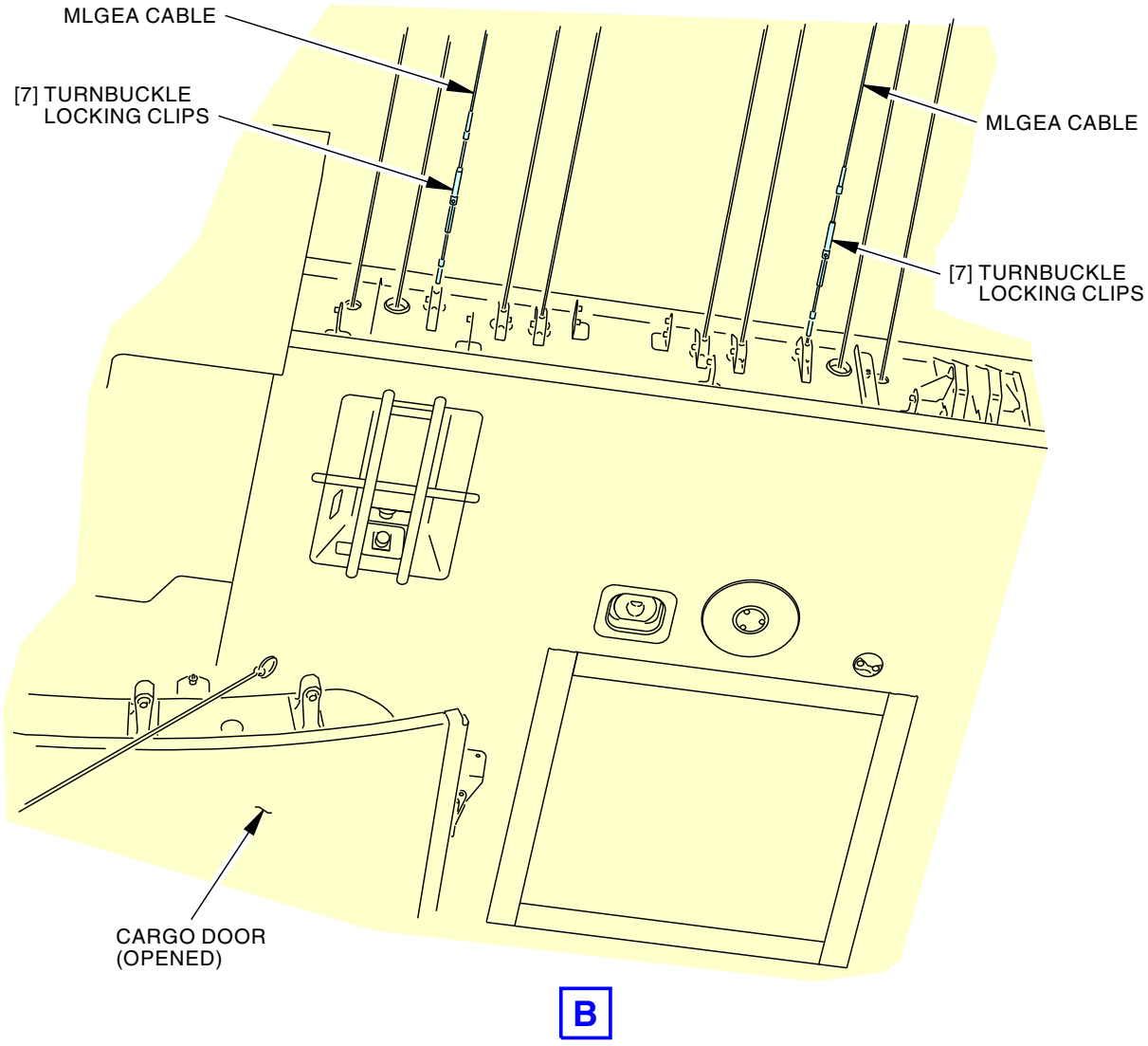
4 MEASURE CABLE WITH A LOAD OF 20 ±3 POUNDS (89 ±13 NEWTONS).

2411009 S00061526748_V1

Trailing Edge Flap Control Cables
Figure 305/12-26-00-990-805 (Sheet 5 of 5)

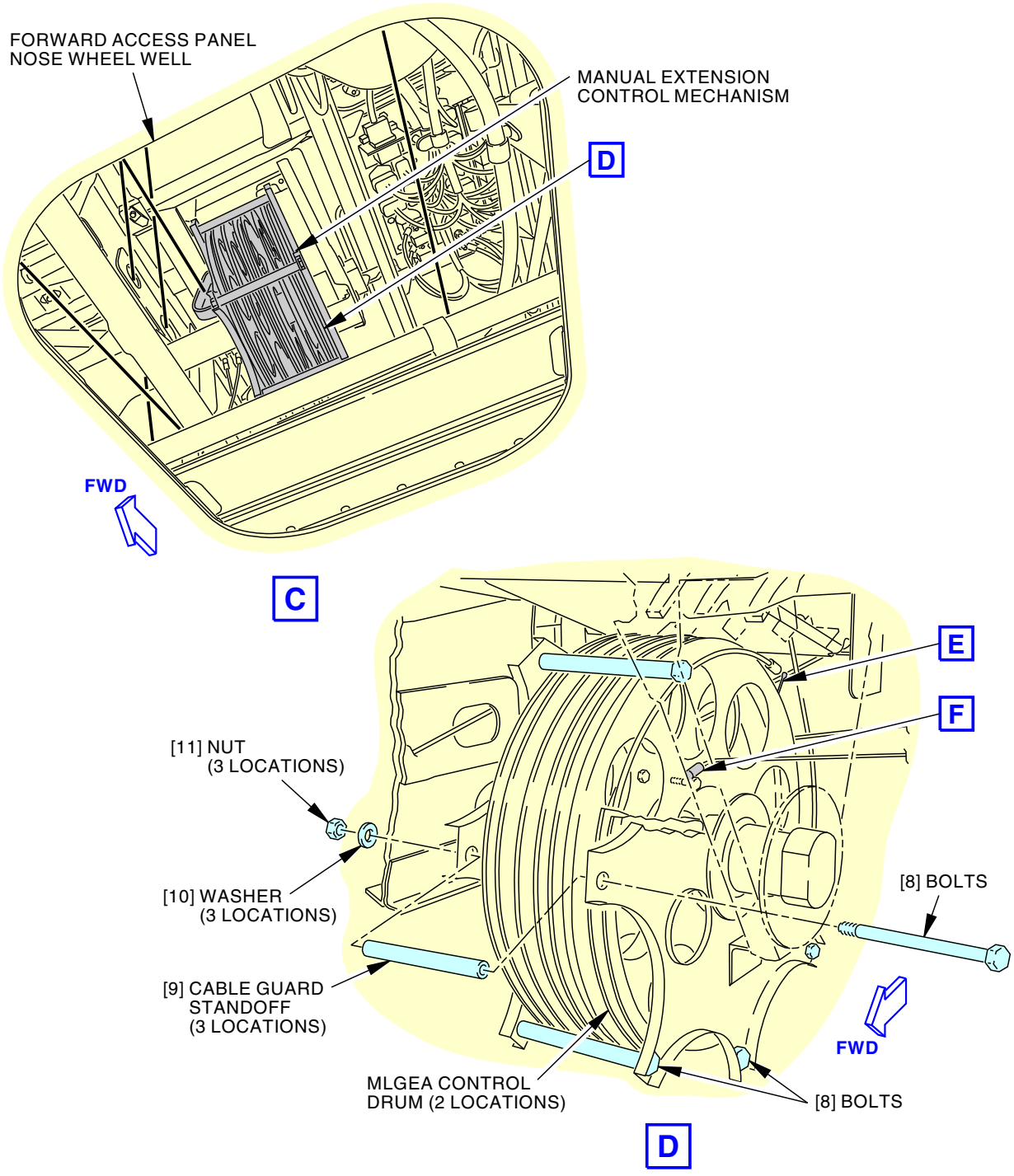


Main Gear Manual Extension System Cable Installation
Figure 306/12-26-00-990-809 (Sheet 1 of 6)

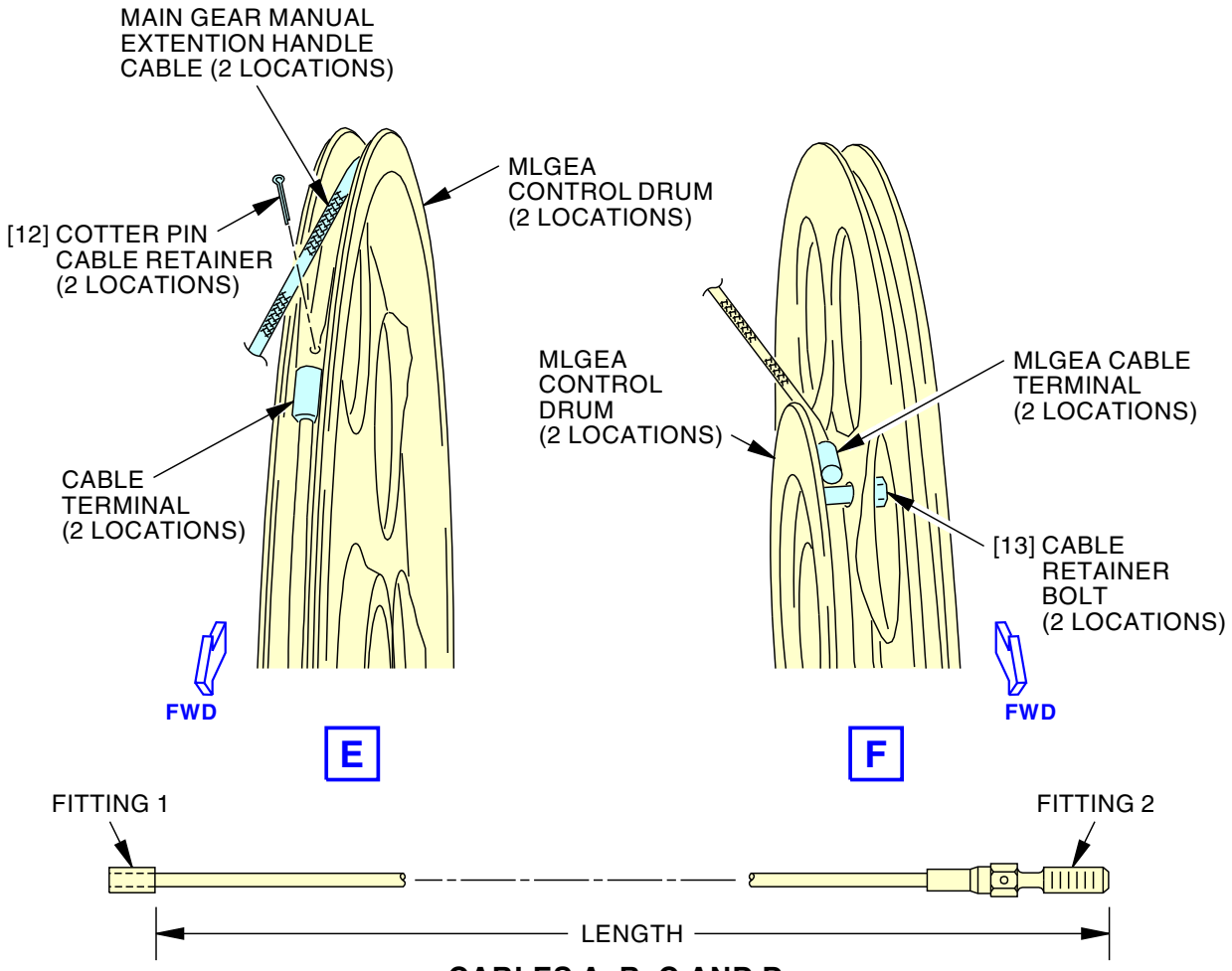


2411023 S00061526762_V1

Main Gear Manual Extension System Cable Installation
Figure 306/12-26-00-990-809 (Sheet 2 of 6)



Main Gear Manual Extension System Cable Installation
Figure 306/12-26-00-990-809 (Sheet 3 of 6)



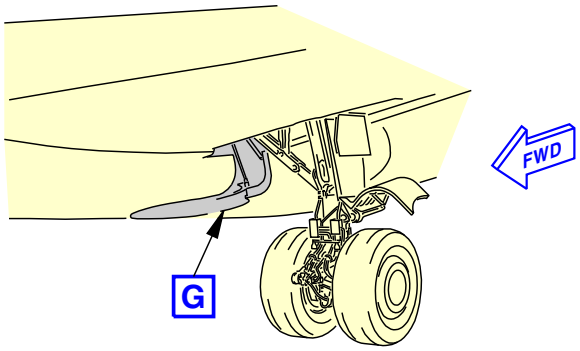
CABLES A, B, C AND D

CABLE REF	FUNCTION	NO. REQ	LENGTH INCHES (METERS)	CABLE SIZE	FITTINGS	
					1	2
A	MLGEA-R	1	163.7 (4.158)	3/32 7x7	BACT14A3	MS21260L3 LH
B	MLGEA-R	1	543.9 (13.815)	3/32 7x7	BACT14A3	MS21260L3 RH
C	MLGEA-L	1	182.4 (4.633)	3/32 7x7	BACT14A3	MS21260L3 LH
D	MLGEA-L	1	543.9 (13.815)	3/32 7x7	BACT14A3	MS21260L3 RH

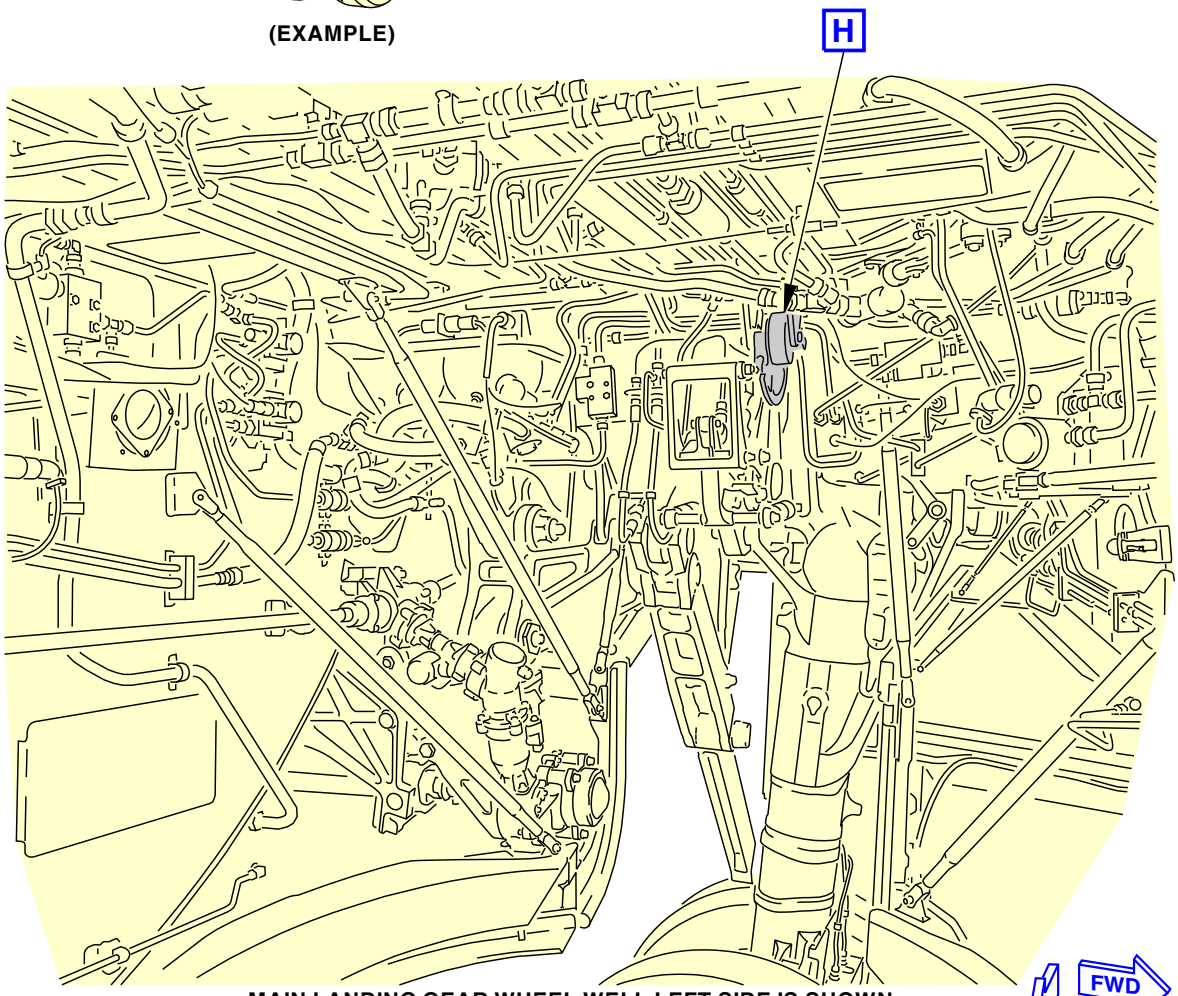
MATERIAL: CABLE - CARBON STEEL PER BMS 7-265, TYPE I, COMPOSITION A, TIN-ZINC (TZ).

2411025 S00061526764_V1

Main Gear Manual Extension System Cable Installation
Figure 306/12-26-00-990-809 (Sheet 4 of 6)



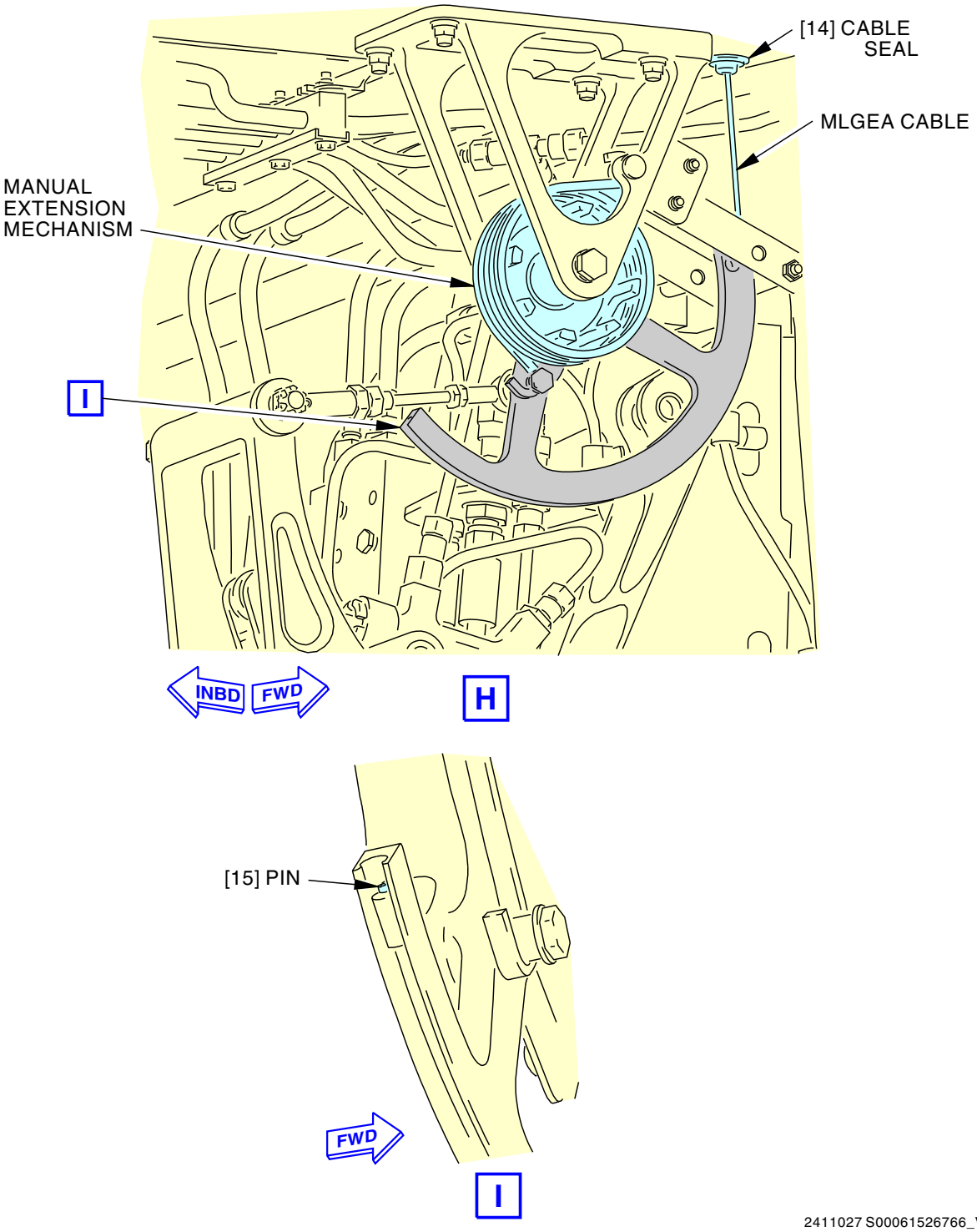
(EXAMPLE)



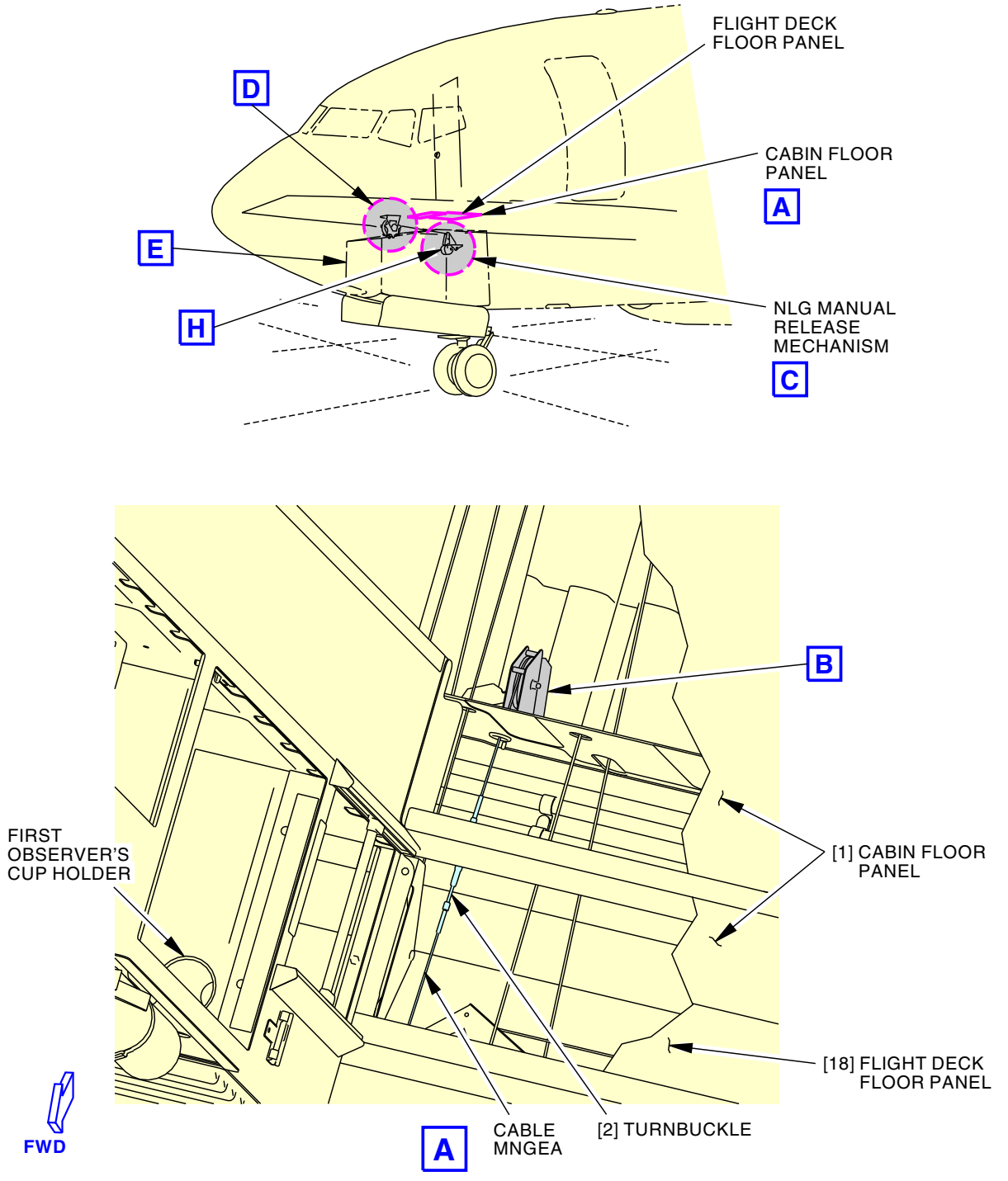
MAIN LANDING GEAR WHEEL WELL LEFT SIDE IS SHOWN,
(RIGHT SIDE IS EQUIVALENT)
(EXAMPLE)

2411026 S00061526765_V2

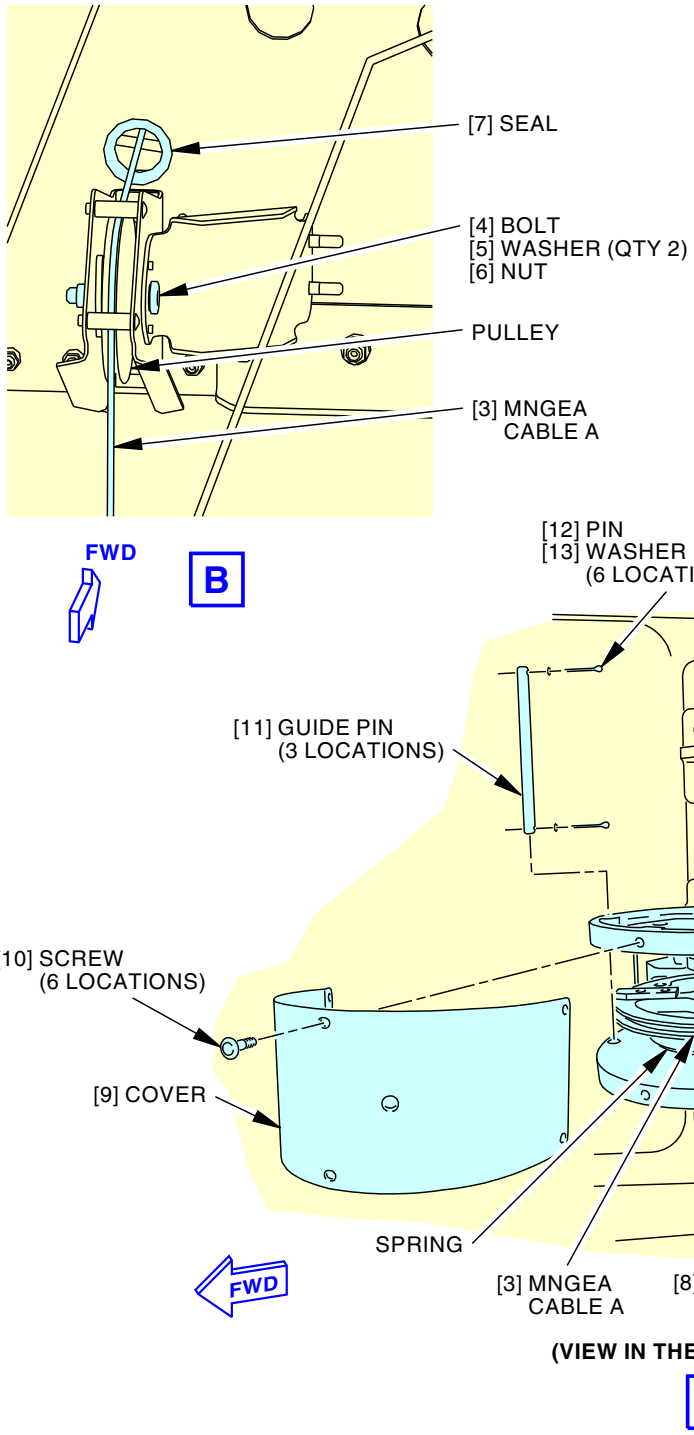
Main Gear Manual Extension System Cable Installation
Figure 306/12-26-00-990-809 (Sheet 5 of 6)



Main Gear Manual Extension System Cable Installation
Figure 306/12-26-00-990-809 (Sheet 6 of 6)

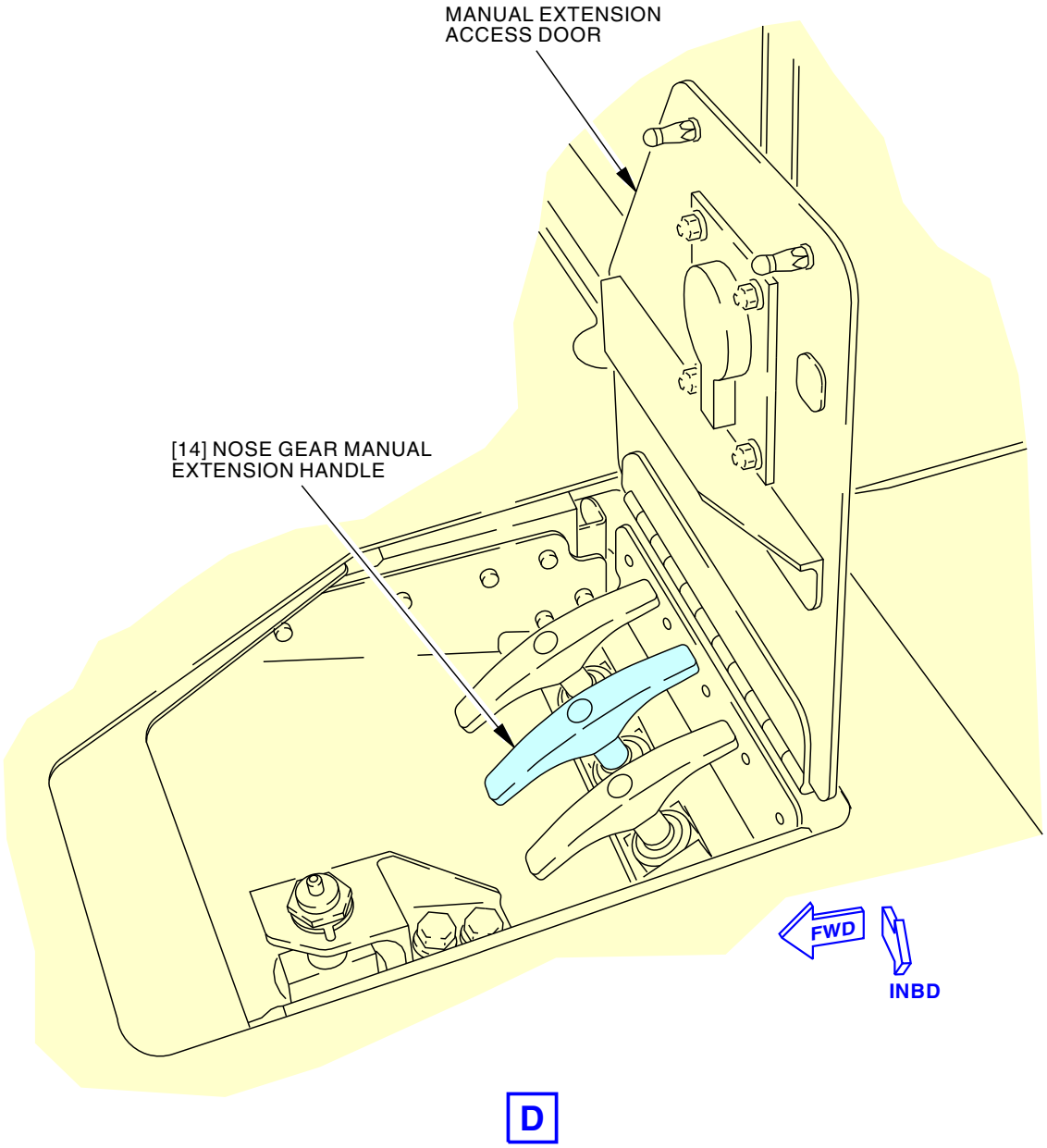


Nose Gear Manual Extension System Cable Installation
Figure 307/12-26-00-990-810 (Sheet 1 of 6)



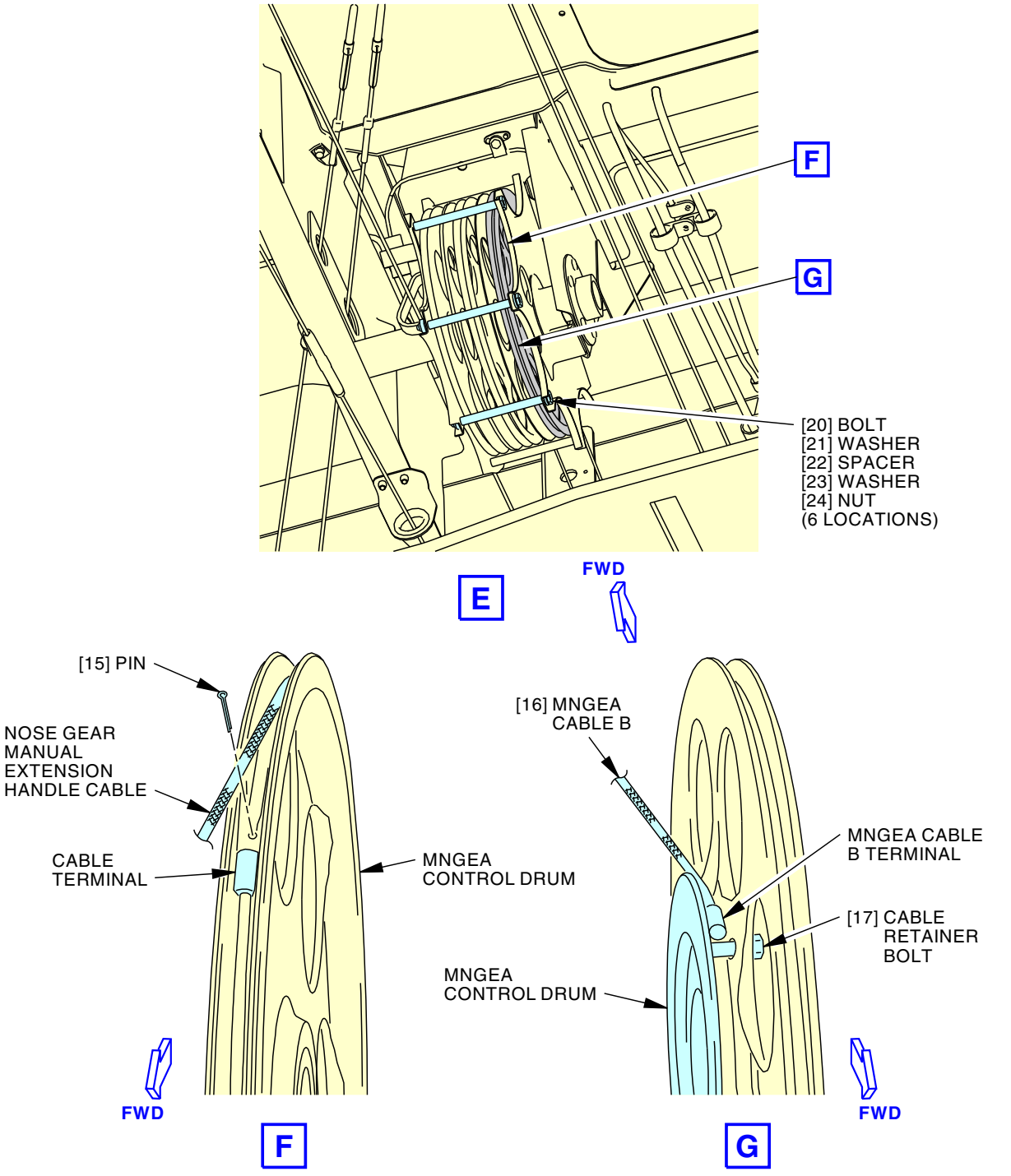
2411029 S00061526768_V2

Nose Gear Manual Extension System Cable Installation
Figure 307/12-26-00-990-810 (Sheet 2 of 6)



2411030 S00061526769_V1

Nose Gear Manual Extension System Cable Installation
Figure 307/12-26-00-990-810 (Sheet 3 of 6)



Nose Gear Manual Extension System Cable Installation
Figure 307/12-26-00-990-810 (Sheet 4 of 6)

CABLES A AND B

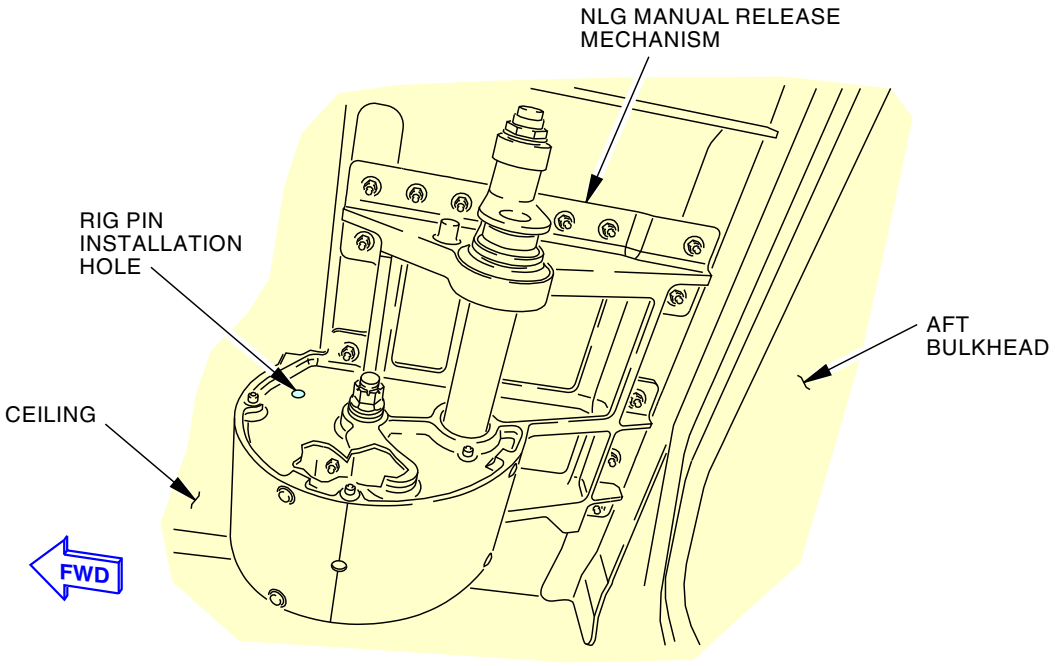
CABLE NAME	FUNCTION	NO. REQ	LENGTH (INCHES)	CABLE SIZE	FITTINGS	
					1	2
A	MNGEA	1	30.2	3/32 7x7	BACT14A3	MS21260S3(RH)
B	MNGEA	1	21.7	3/32 7x7	BACT14A3	MS21260S3(LH)

MATERIAL: CABLE A - C0RROSION RESISTANT STEEL PER BMS 7-265, TYPE I, COMPOSITION B

CABLE B - CARBON STEEL PER BMS 7-265, TYPE I, COMPOSITION A (TIN OVER ZINC)

3020229 S0000792649_V1

Nose Gear Manual Extension System Cable Installation
Figure 307/12-26-00-990-810 (Sheet 5 of 6)

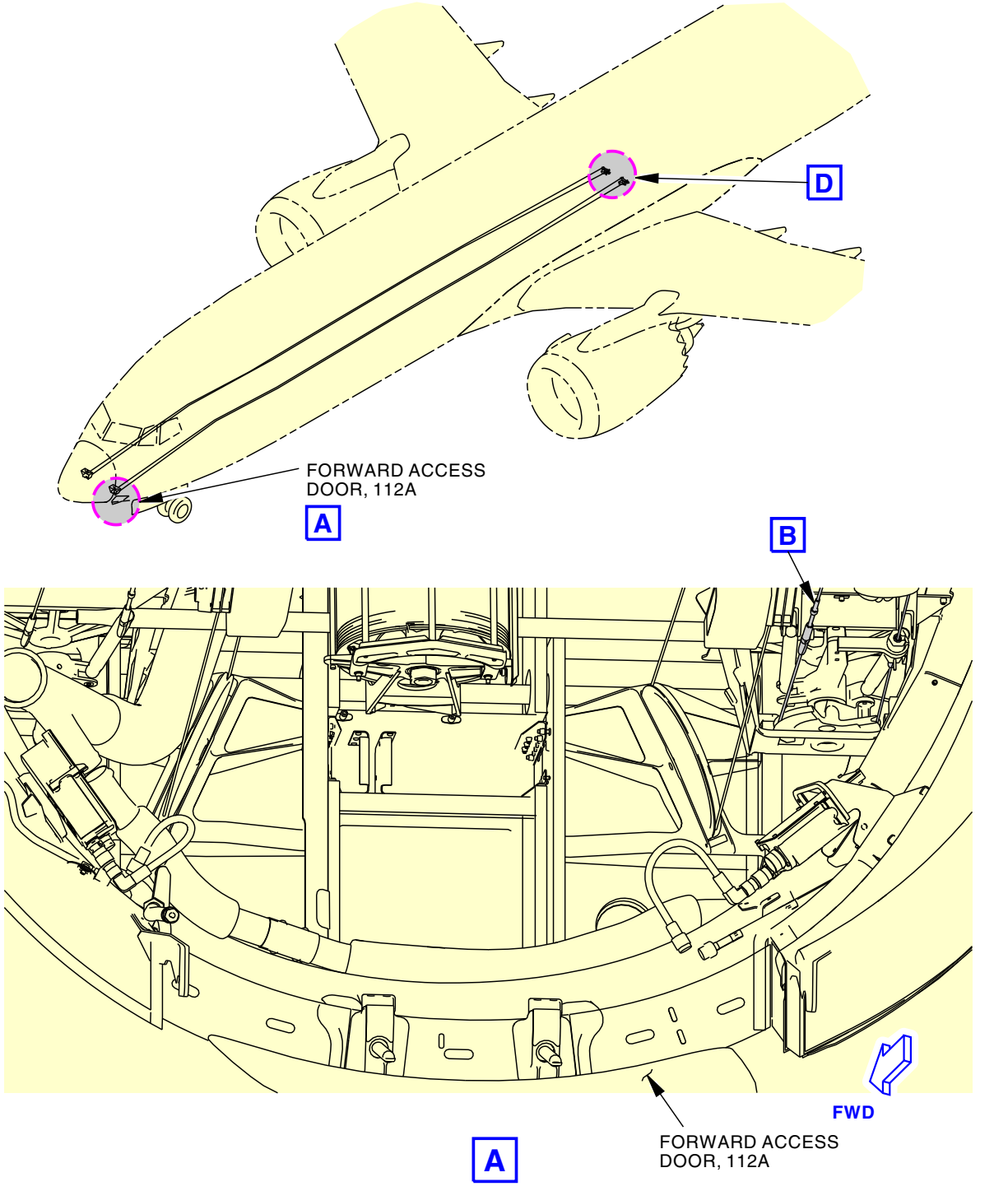


(VIEW FROM NOSE LANDING GEAR WHEEL WHEEL)

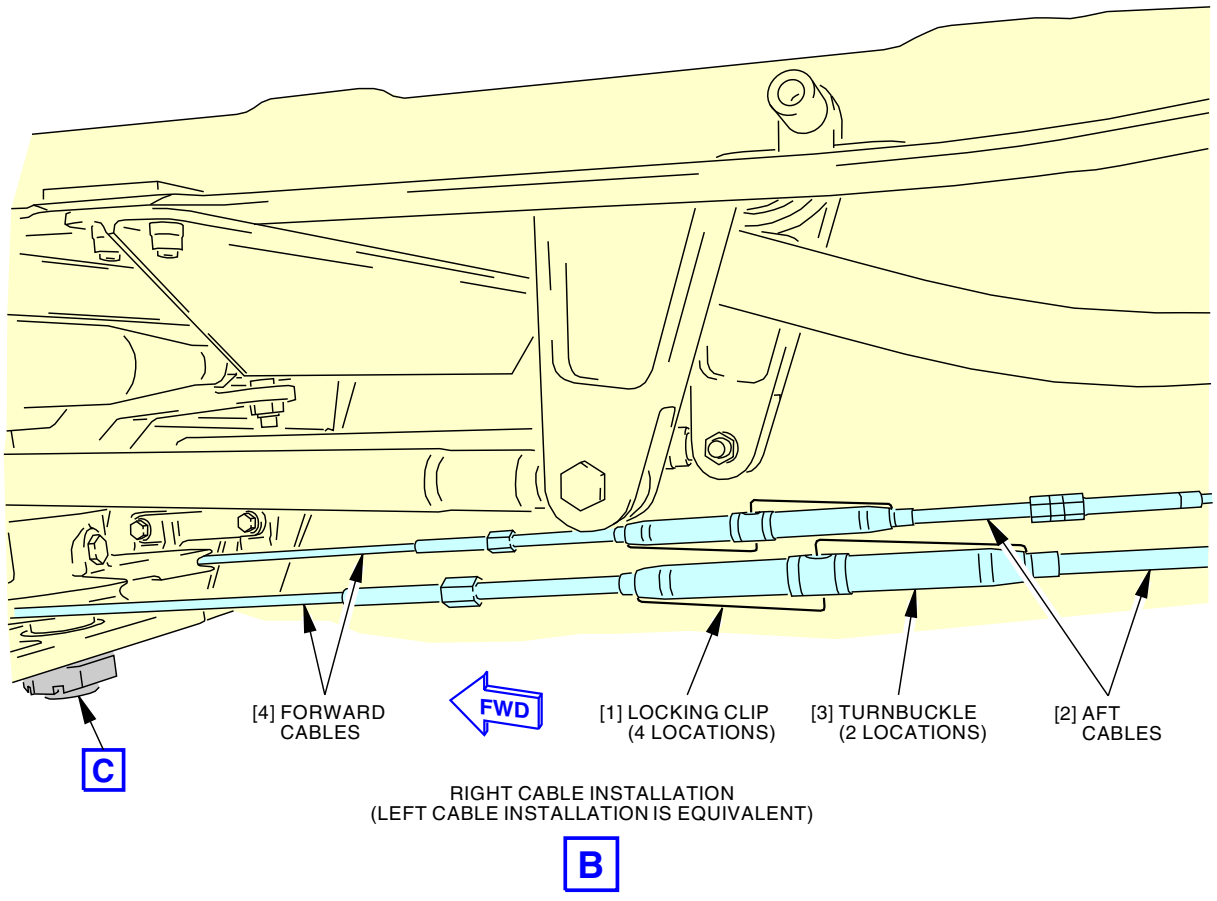
H

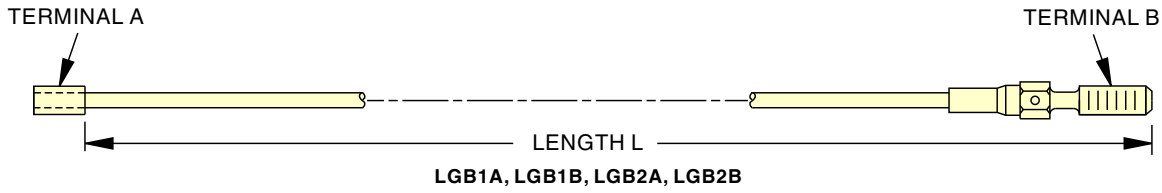
2411033 S00061526772_V1

Nose Gear Manual Extension System Cable Installation
Figure 307/12-26-00-990-810 (Sheet 6 of 6)



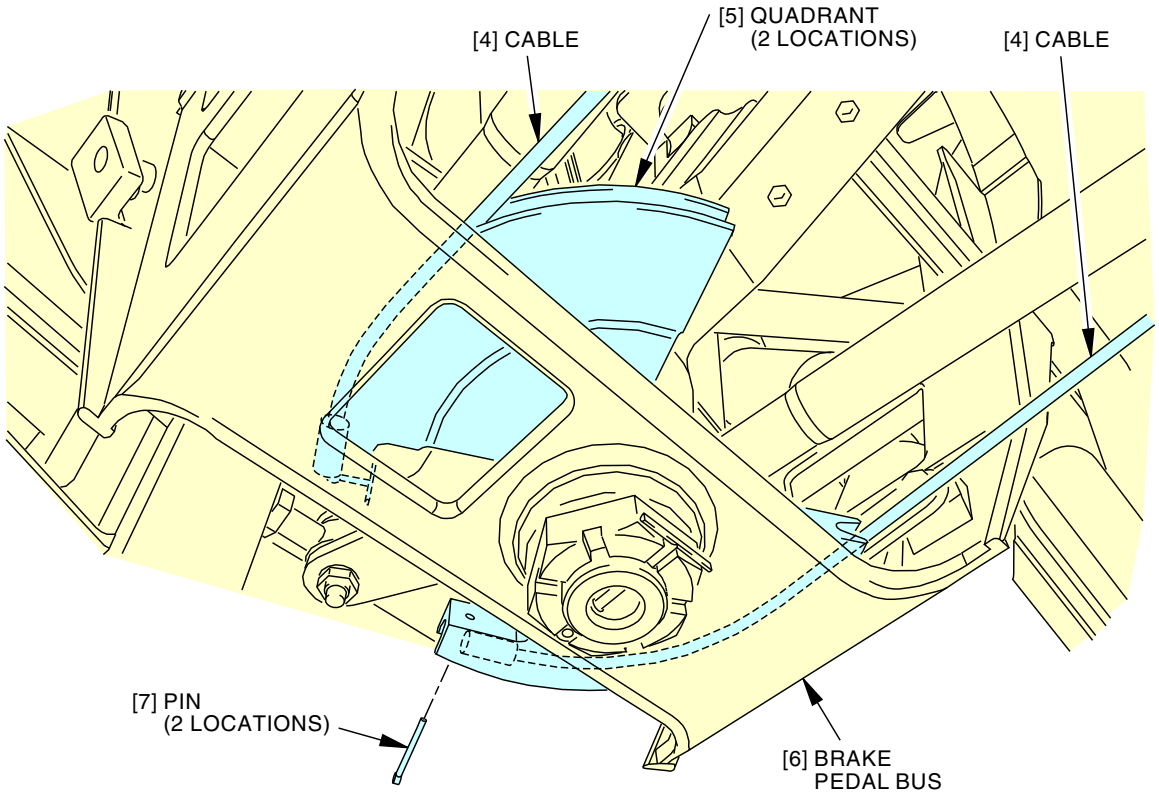
Hydraulic Brake Control Cable Installation
Figure 308/12-26-00-990-811 (Sheet 1 of 5)





2411035 S00061526774_V2

Hydraulic Brake Control Cable Installation
Figure 308/12-26-00-990-811 (Sheet 2 of 5)

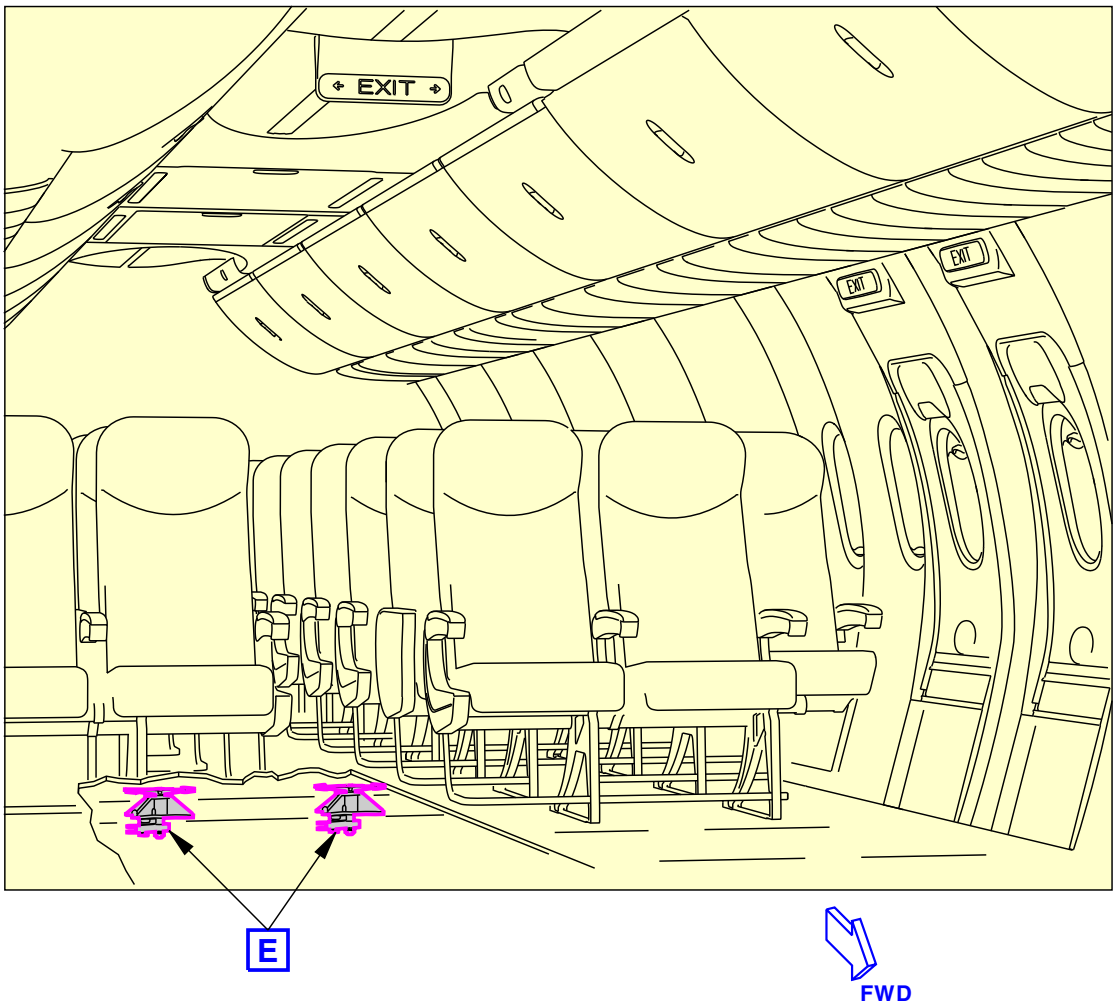


RIGHT BUS INSTALLATION
(LEFT BUS INSTALLATION IS EQUIVALENT)

C

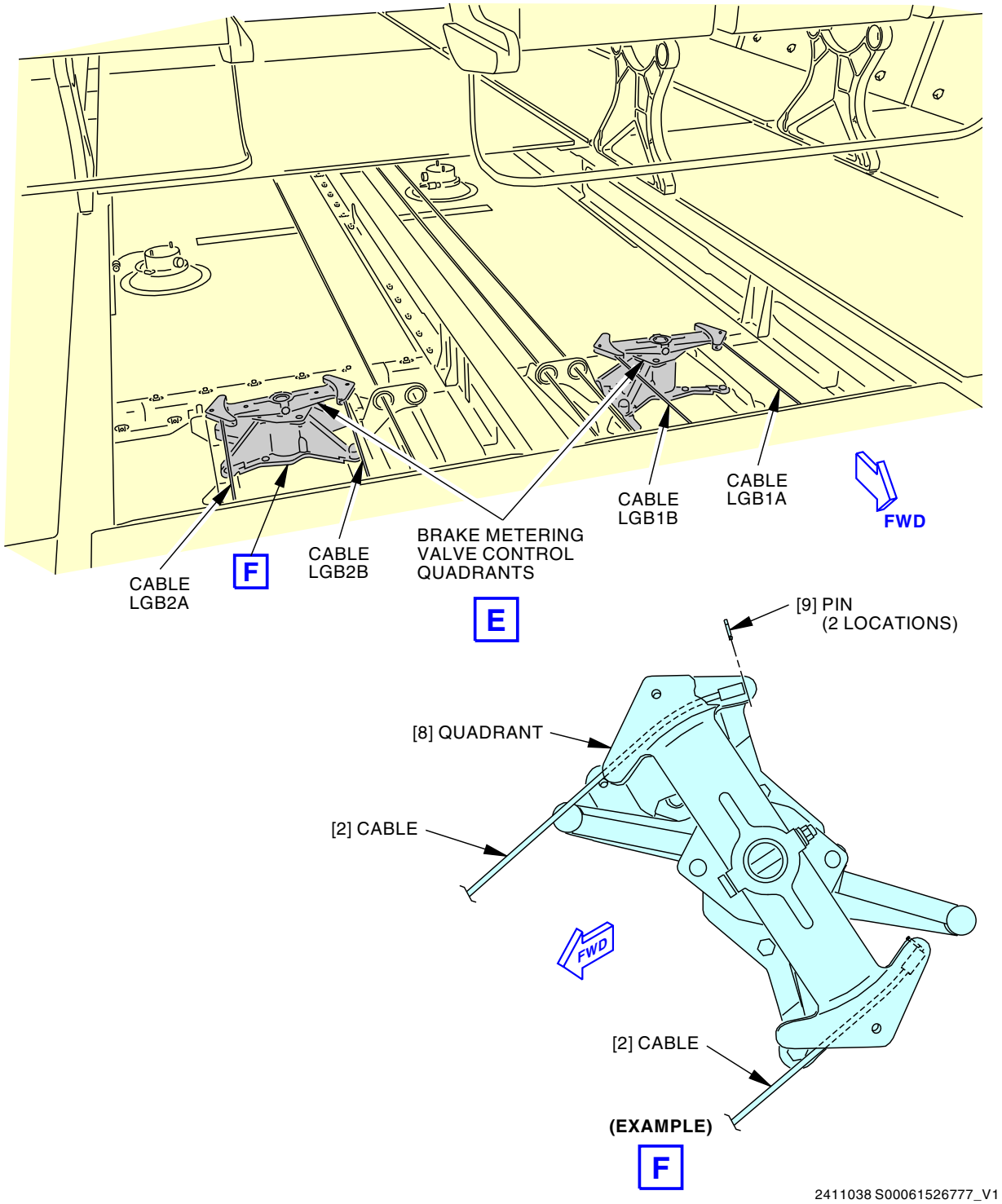
2411036 S00061526775_V1

Hydraulic Brake Control Cable Installation
Figure 308/12-26-00-990-811 (Sheet 3 of 5)

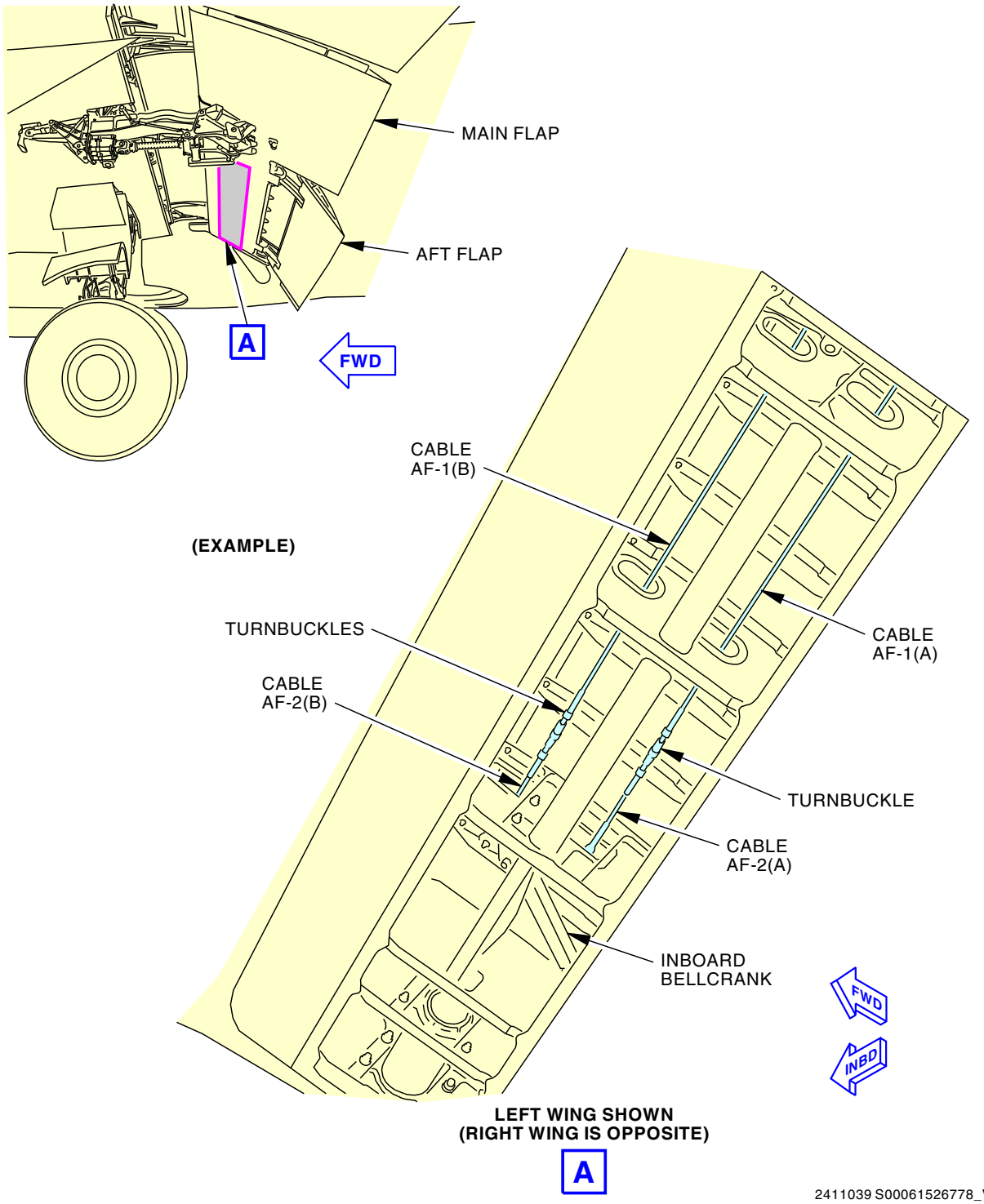


2411037 S00061526776_V1

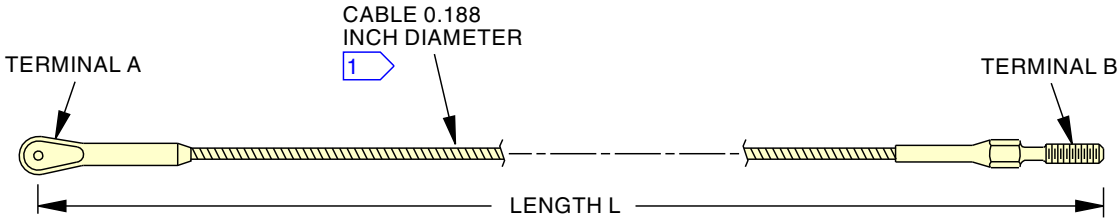
Hydraulic Brake Control Cable Installation
Figure 308/12-26-00-990-811 (Sheet 4 of 5)



Hydraulic Brake Control Cable Installation
Figure 308/12-26-00-990-811 (Sheet 5 of 5)



Aft Flap Drive Cables
Figure 309/12-26-00-990-812 (Sheet 1 of 2)



**AF-1(A), AF-1(B),
AF-2(A), AF-2(B)**

CABLE NAME	LENGTH L (INCHES) 1	TERMINAL A	TERMINAL B
AF-1(A) AF-1(B)	47.3384	113A2641-1	MS21260S6RH
AF-2(A) AF-2(B)	10.6360	113A2641-1	MS21260S6LH

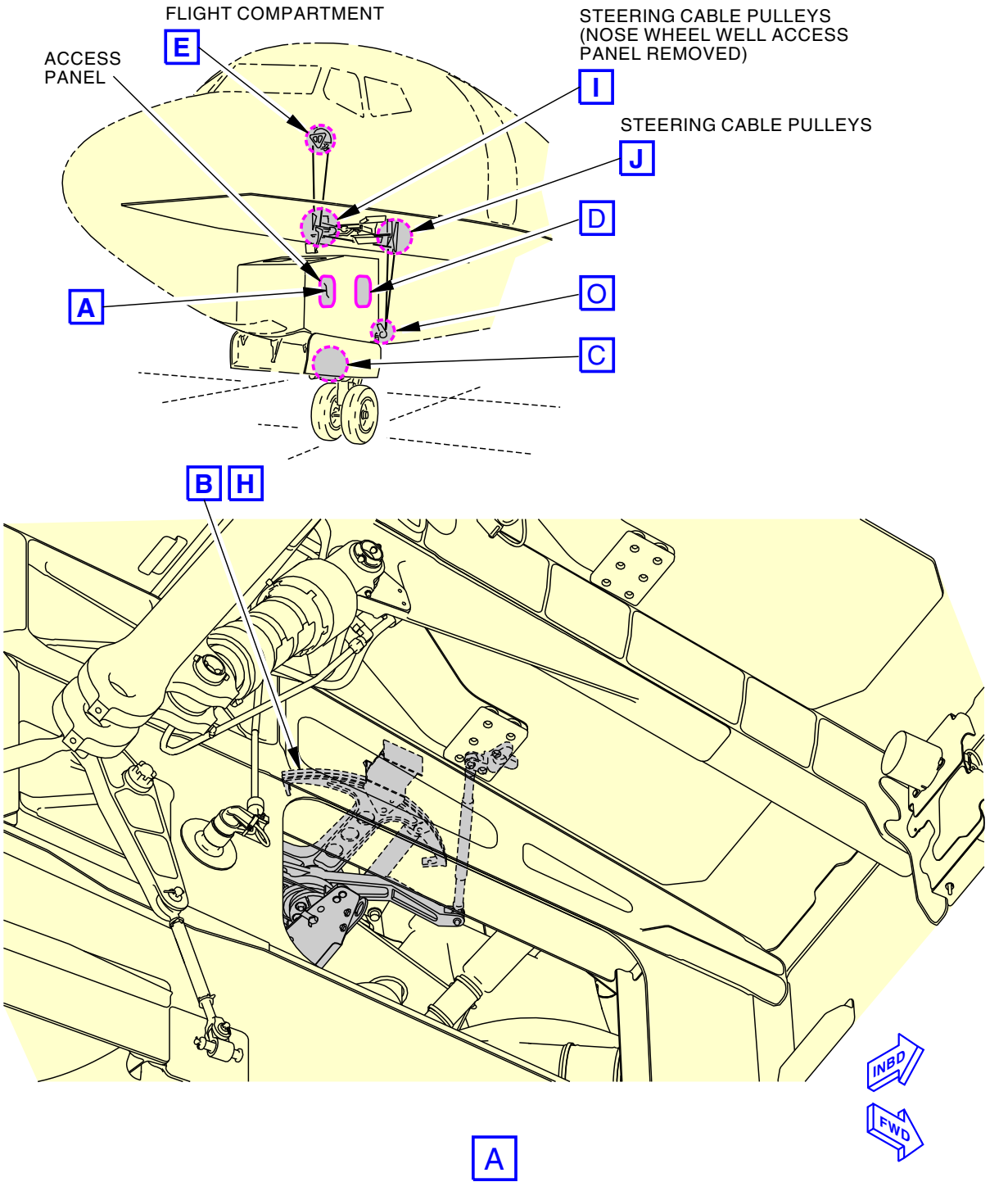
TABLE A

1 CABLE CONSTRUCTION IS CORROSION RESISTANT STEEL: MIL-W-83420, COMPOSITION B, 7 X 19

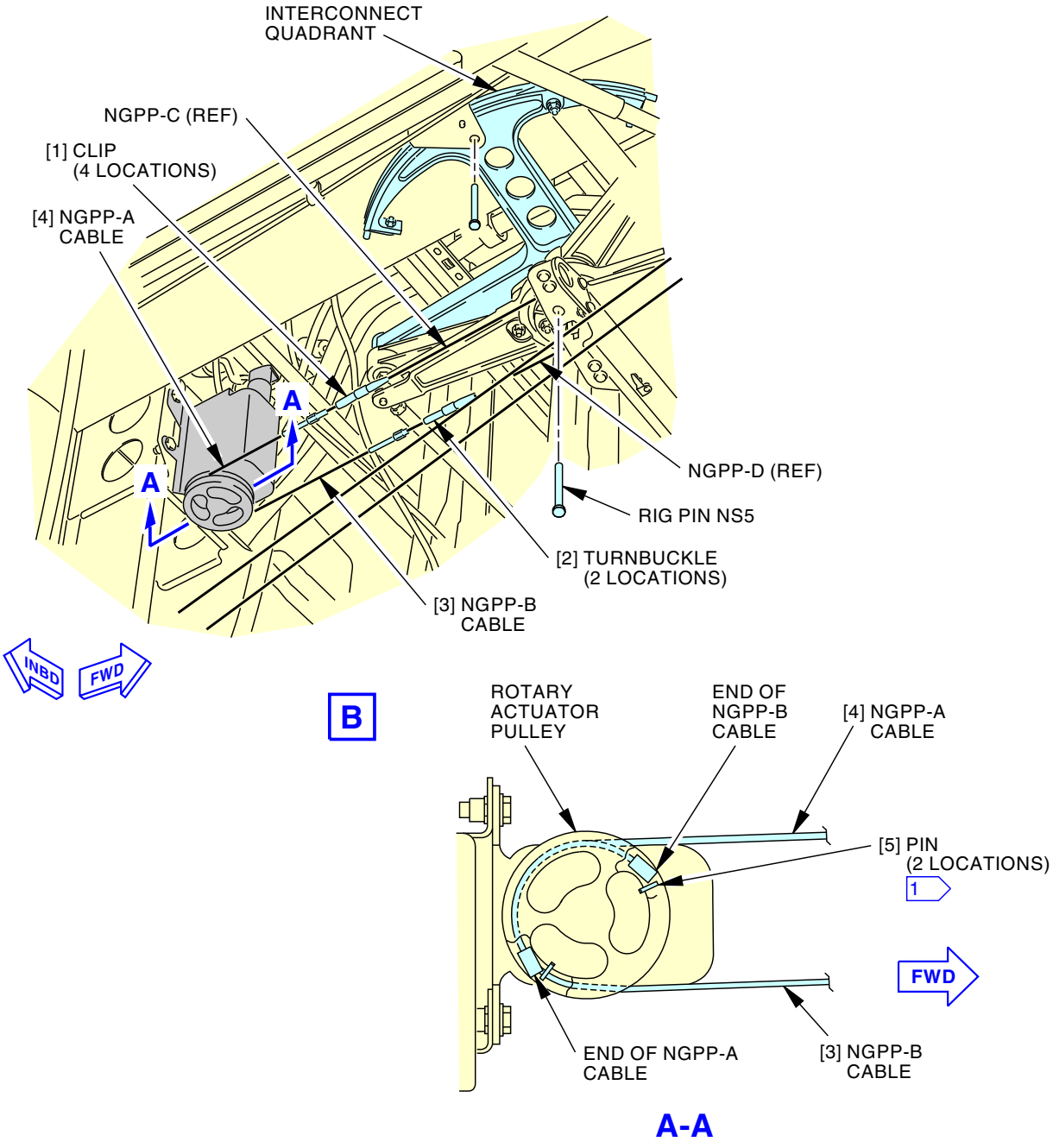
2 MEASURE CABLE WITH A LOAD OF 40 ±3 POUNDS.

2411040 S00061526779_V1

**Aft Flap Drive Cables
Figure 309/12-26-00-990-812 (Sheet 2 of 2)**



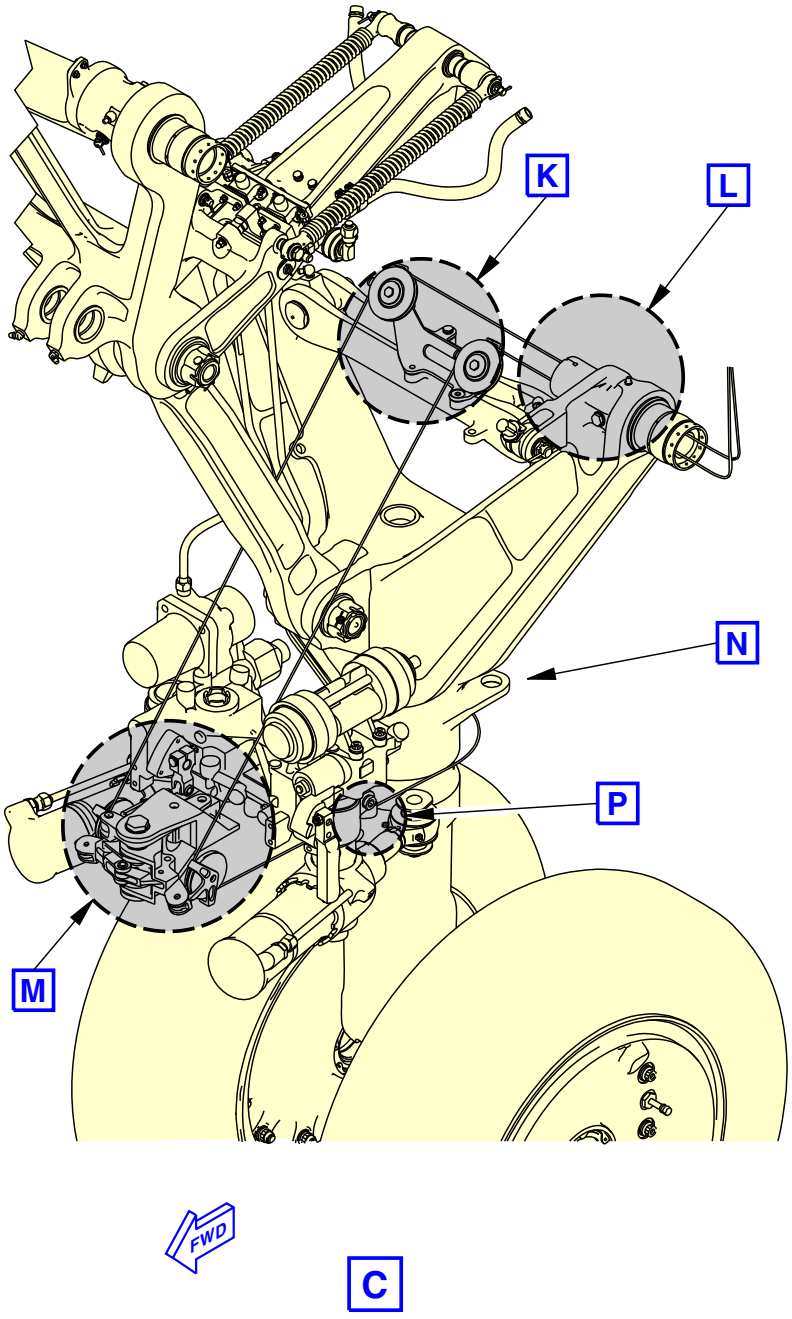
Steering System Cables Installation
Figure 310/12-26-00-990-813 (Sheet 1 of 10)



1 **CAUTION:**
MAKE SURE THE ENDS OF THE PINS [5] DO NOT TOUCH THE HOUSING OF THE ROTARY ACTUATOR AFTER INSTALLATION. IF THE PINS TOUCH THE HOUSING, DAMAGE TO EQUIPMENT CAN OCCUR.

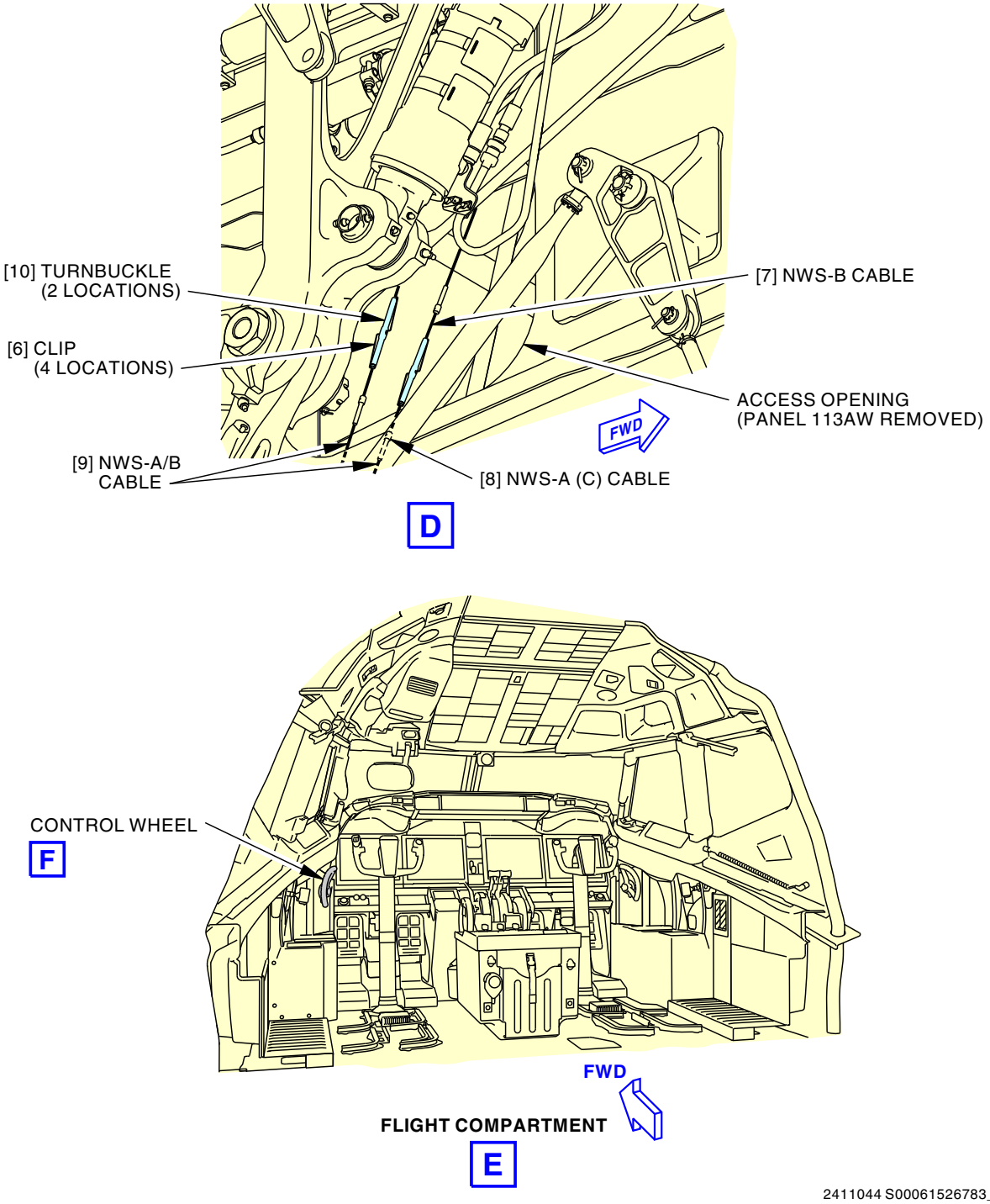
2411042 S00061526781_V3

Steering System Cables Installation
Figure 310/12-26-00-990-813 (Sheet 2 of 10)

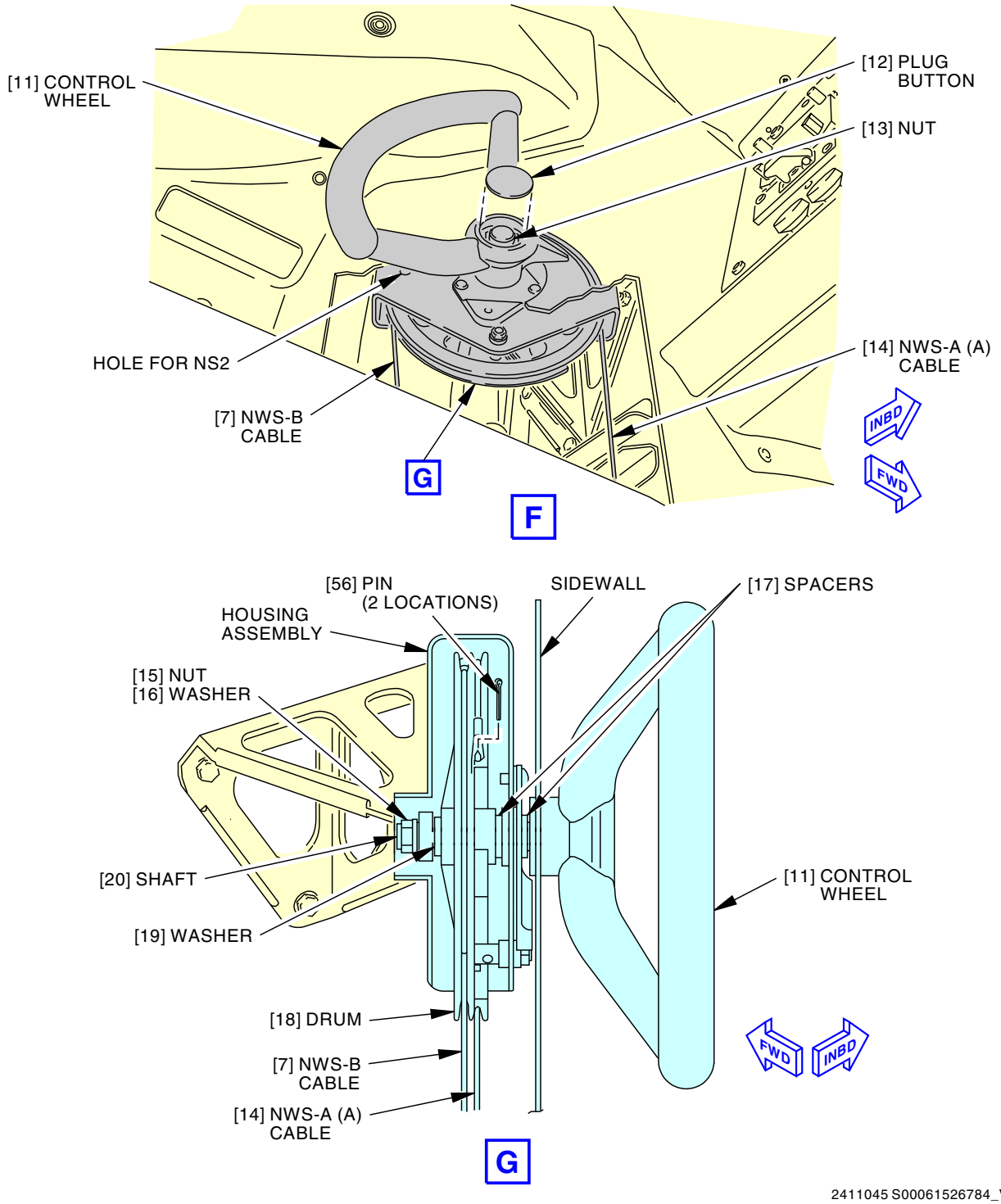


2411043 S00061526782_V2

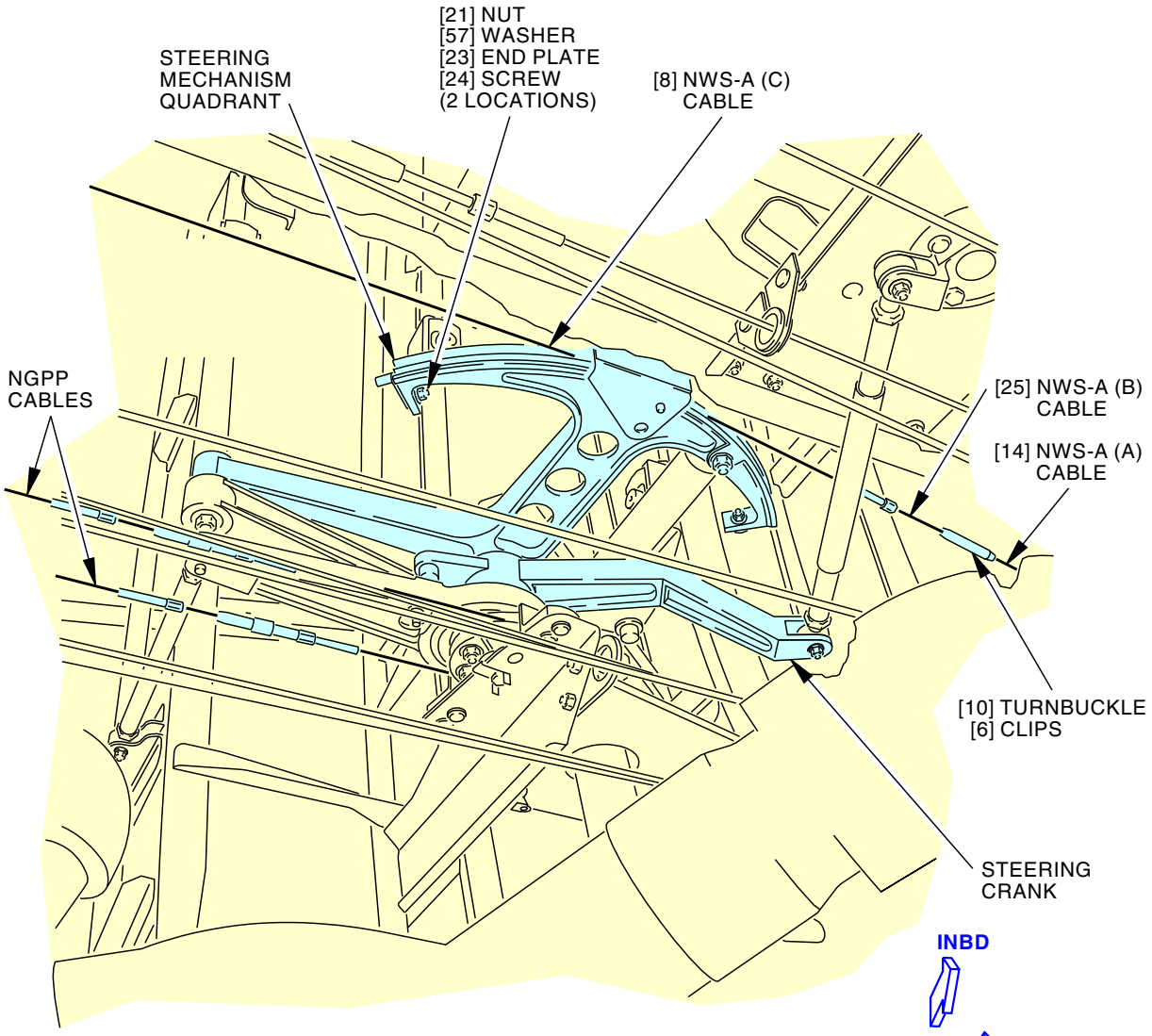
Steering System Cables Installation
Figure 310/12-26-00-990-813 (Sheet 3 of 10)



Steering System Cables Installation
Figure 310/12-26-00-990-813 (Sheet 4 of 10)

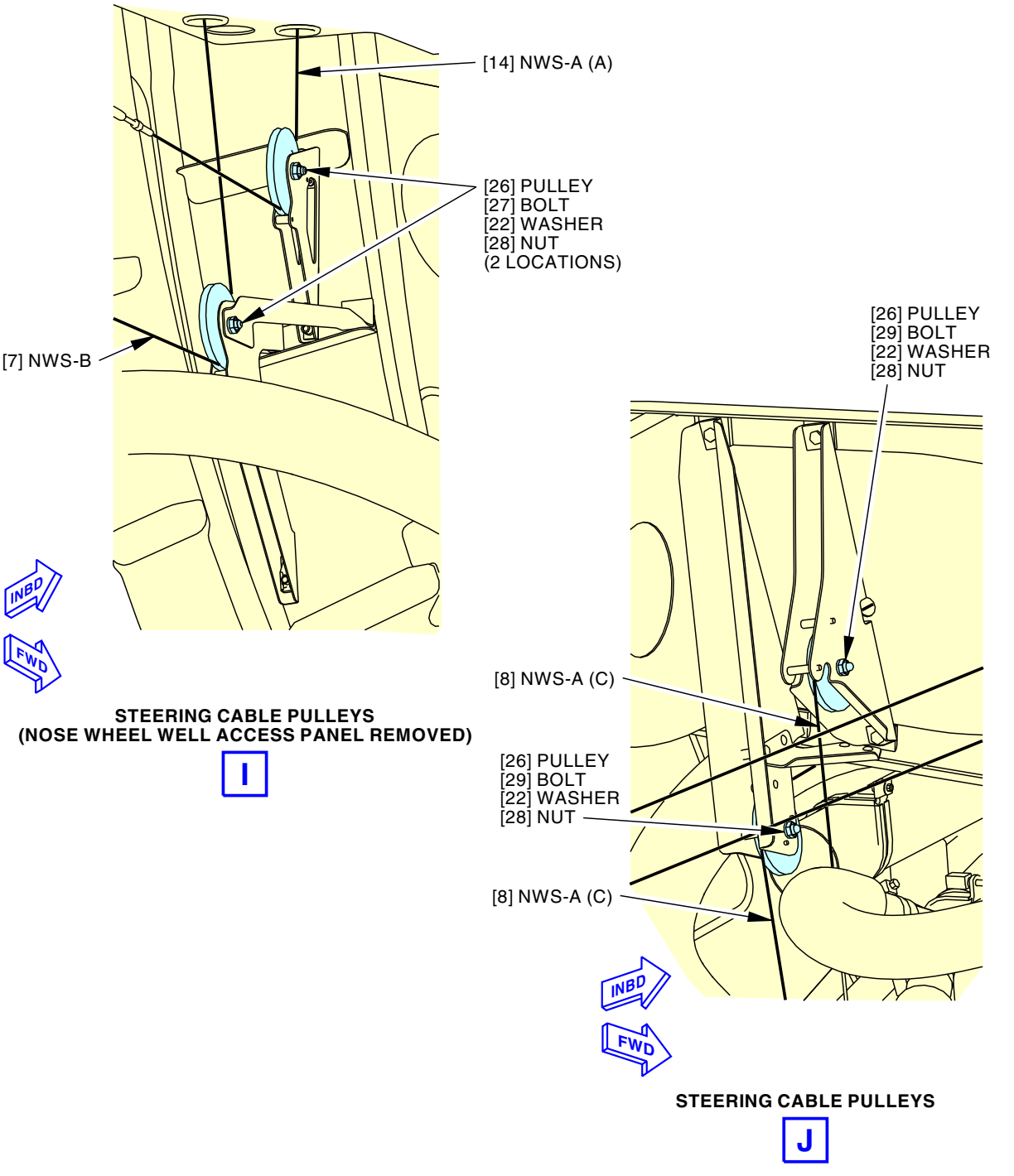


Steering System Cables Installation
Figure 310/12-26-00-990-813 (Sheet 5 of 10)

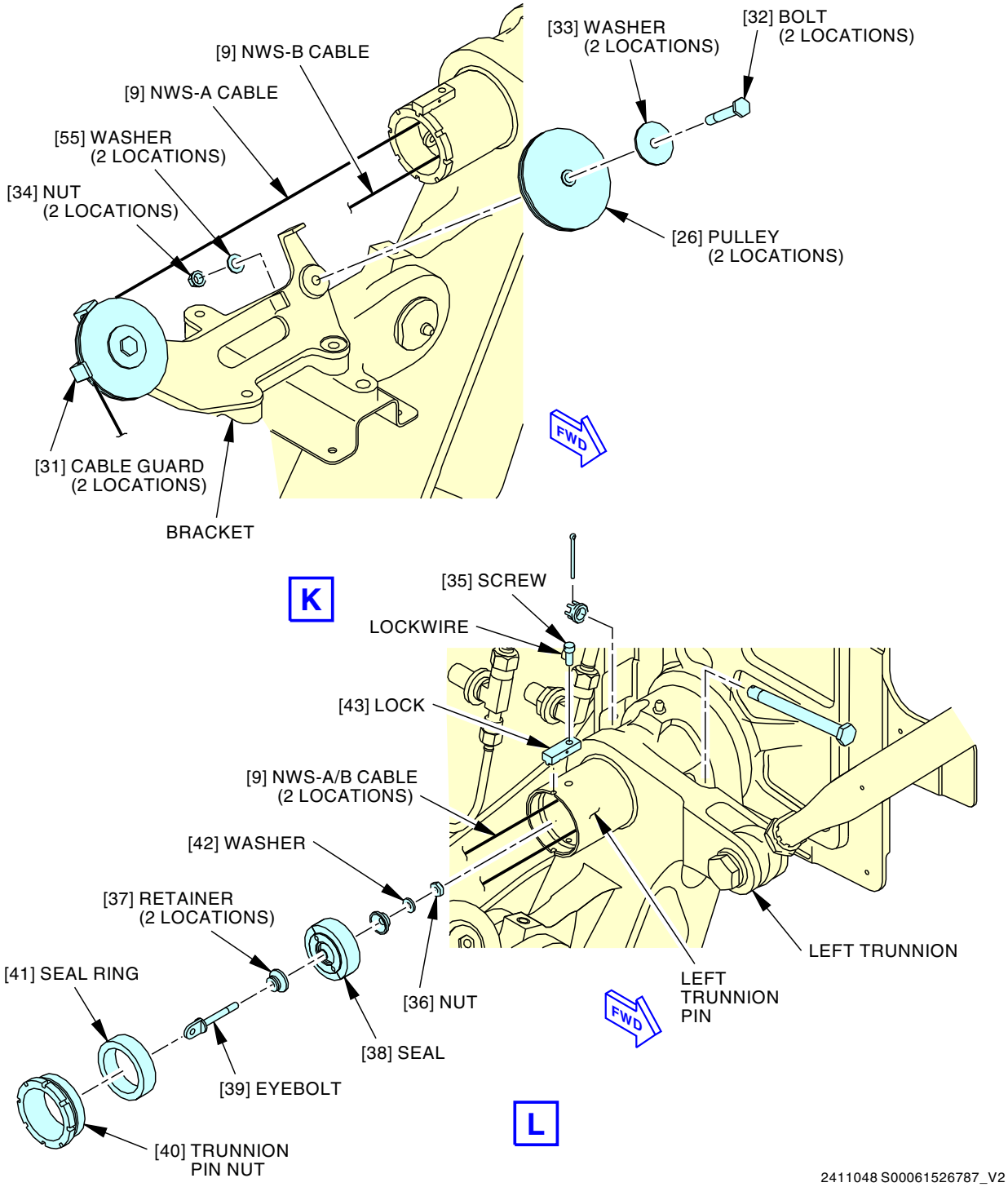


2411046 S00061526785_V2

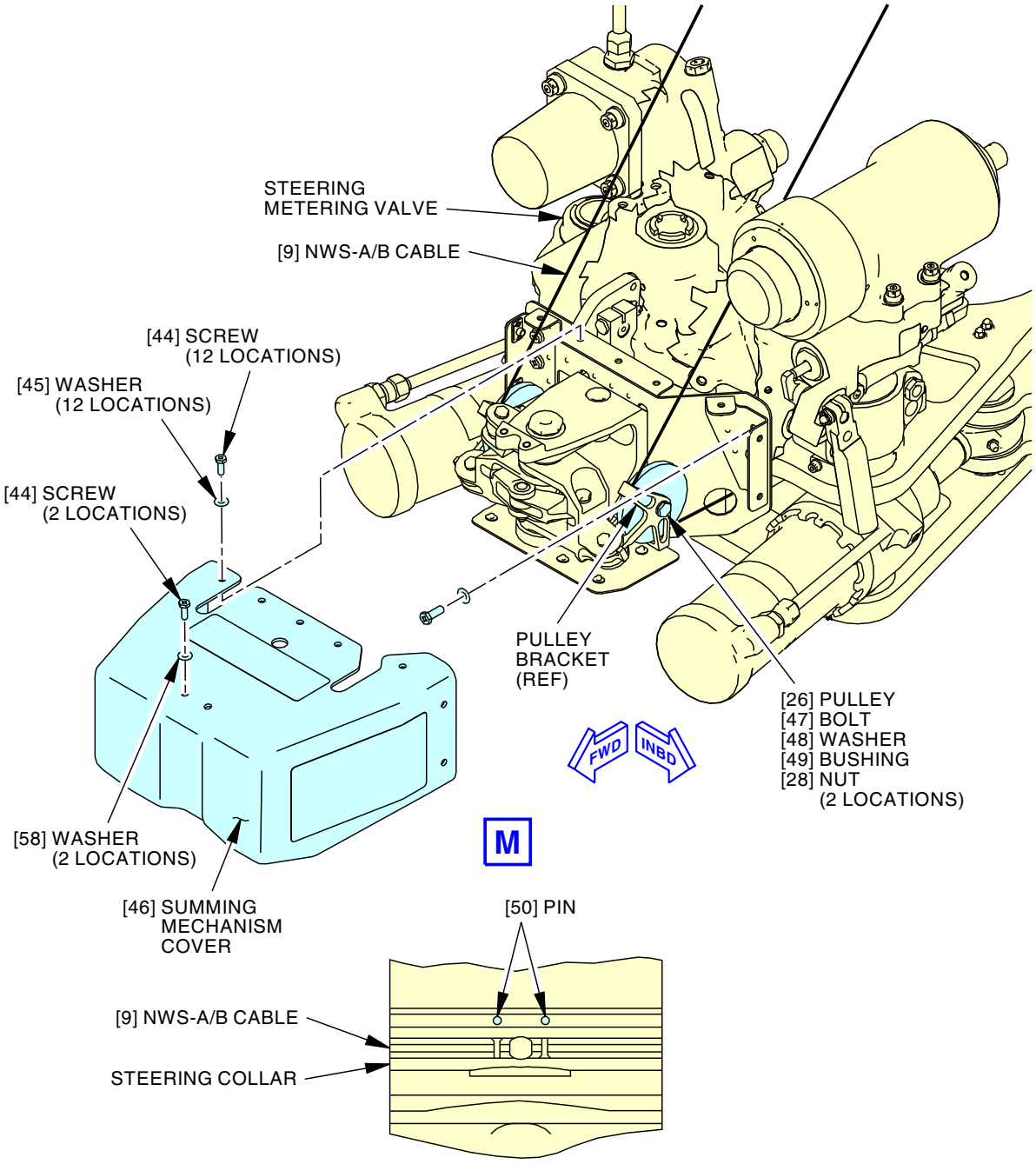
Steering System Cables Installation
Figure 310/12-26-00-990-813 (Sheet 6 of 10)



Steering System Cables Installation
Figure 310/12-26-00-990-813 (Sheet 7 of 10)

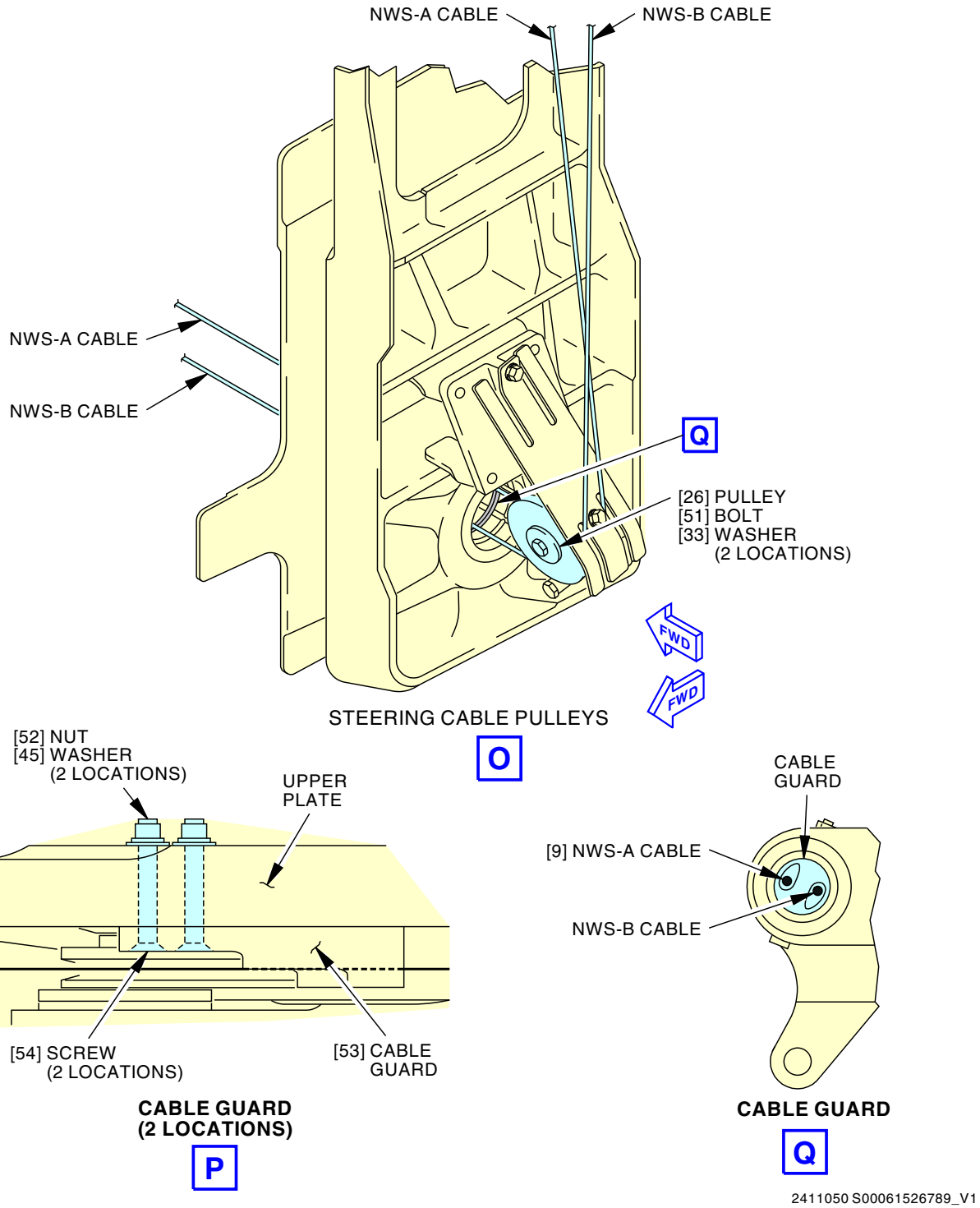


Steering System Cables Installation
Figure 310/12-26-00-990-813 (Sheet 8 of 10)

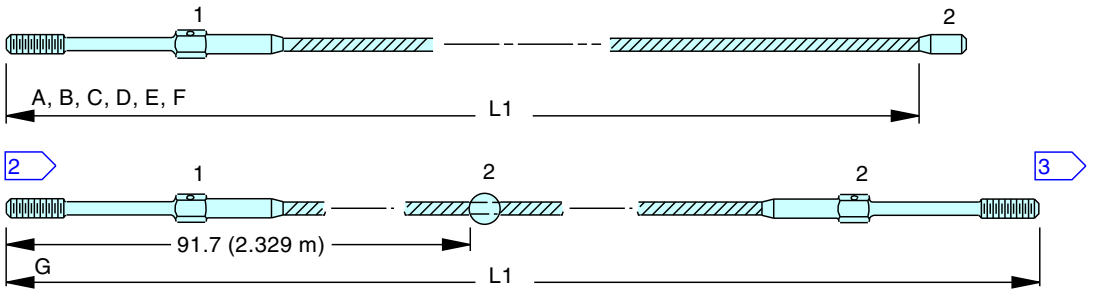


2411049 S00061526788_V3

Steering System Cables Installation
Figure 310/12-26-00-990-813 (Sheet 9 of 10)



Steering System Cables Installation
Figure 310/12-26-00-990-813 (Sheet 10 of 10)



CABLE REFERENCE	FUNCTION	NUMBER REQUIRED	LENGTH INCHES 1	FITTINGS 1	
				1	2
A 5	NWSA (A)	1	L1 52.3 (1.328 m)	MS21260L3LH	BACT14A3
B 5	NWSA (B)	1	L1 16.8 (0.427 m)	MS21260L3RH	BACT14A3
C 5	NGPPB	1	L1 13.9 (0.353 m)	MS21260S3LH	BACT14A3
D 5	NGPPA	1	L1 14.1 (0.358 m)	MS21260S3RH	BACT14A3
E 5	NWSA (C)	1	L1 68.0 (1.727 m)	MS21260L3RH	BACT14A3
F 5	NWSB	1	L1 127.2 (3.231 m)	MS21260L3LH	BACT14A3
G 4	NWSA/B	1	L1 201.0 (5.105 m)	MS21260L3RH/LH	BACT14A3

1 REFERENCE ONLY. REFER TO CURRENT IPC FOR SPECIFIC PART NUMBER, LENGTH, MATERIAL AND END FITTING ASSEMBLY FABRICATION TENSIONING LOADS, AND TOLERANCES.

2 THIS END TAKES A RIGHT HAND THREADED FITTING.

3 THIS END TAKES A LEFT HAND THREADED FITTING.

4 CABLE MATERIAL: 3/32 CRES 7X7 PER BMS7-265, TYPE 1, COMPOSITION B.

5 CABLE MATERIAL: 3/32 TIN OVER ZINC CARBON STEEL, 7X7 PER BMS 7-265, TYPE 1, COMPOSITION A.

2411051 S00061526790_V2

Steering System Cables Installation
Figure 311/12-26-00-990-814

COLD WEATHER MAINTENANCE - SERVICING

1. General

A. This procedure contains one task. This task is cold weather maintenance, servicing.

TASK 12-33-01-600-801

2. Cold Weather Maintenance Procedure

(Figure 301, Figure 302)

A. General

(1) Airplane operation in cold weather conditions can cause special problems. These problems occur because of the effects of the ice, snow, slush, frost, and low temperatures. This procedure gives data for removal of ice, snow, slush and frost from the airplane. This procedure also gives data for the prevention of subsequent accumulation of ice, snow, slush and frost. It also includes other related data for the operation of the airplane in cold weather. The operator must find and use the correct procedures for the weather conditions that occur.

(2) You must make sure the maintenance procedures for operation during ice, snow and/or frost conditions are satisfactory for the conditions. Use the data that follow to make sure the procedures are satisfactory:

(a) Previous weather conditions.

(b) The equipment or materials that are available.

(c) The weather conditions at the airport where you will operate.

(3) Low temperatures (below freezing) can affect grease viscosity. Lubricate landing gear and flight control components in warm weather prior to cold weather ground operations or in a heated hangar.

(a) If lubrication must be accomplished in cold weather, warm air or electric heat blankets can be used to heat the components and the grease gun.

(b) For the landing gear, an enclosure can be fabricated around the strut to make the heating more efficient.

(c) Do not apply heat directly to tires.

(4) If the temperature of the fuel is below 32°F (0°C), do not drain the fuel tank sumps.

(5) Definitions:

(a) Ice that has accumulated on the fan blades while the airplane has been on the ground for a prolonged stop, such as a plane that has been parked overnight, is considered ground-accumulated ice.

1) Ground-accumulated ice must be removed before engine start.

(b) Ice that has accumulated on the fan blades while the engine is running at idle is considered Operational Ice.

1) Operational Ice is allowed before departure because it can be removed by engine run-ups during taxi-out.

(c) Deicing is a procedure to remove the frost, ice or snow from the airplane. Hot water or a hot mixture of water and deicing/anti-icing fluid is applied.

1) Alternate methods of deicing are forced air and infrared deicing. Refer to FAA Notice 8900.XXX for the current winter season, which includes industry information on these alternate methods.

(d) Anti-icing is a procedure to make sure that ice, snow and/or frost does not collect and become attached to the airplane surfaces. Anti-icing fluid or a mixture of anti-icing fluid and water is applied to the airplane.

(e) One step ice removal/anti-icing applies a hot deicing/anti-icing fluid or mixture of fluid and water. Use the conditions that follow to make a decision on how hot to make the fluid or the fluid and water mixture:

1) The ambient temperature.

2) The weather conditions.

(f) Two step ice removal/anti-icing has the steps that follow:

1) Apply hot water or a hot mixture of deicing/anti-icing fluid and water to remove the ice.

2) Immediately follow with a spray of a deicing/anti-icing fluid or a mixture of deicing/anti-icing fluid and water for anti-icing. This step must be done less than 3 minutes after you started the first step. If it is necessary, do the procedure area by area.

(g) Holdover time is the approximate time anti-icing fluid will keep the frost, ice, or snow off the airplane surfaces that have protection.

NOTE: You cannot find the level of protection or the holdover time with precision. The weather conditions and the fluid/fluid mixture will have an effect on the holdover time. Refer to FAA Notice 8000.XXX for the current winter season. This document includes tables for holdover times for all commercially available deicing fluids that have been certified for the current winter season.

WARNING

USE THE CORRECT EQUIPMENT FOR EACH TYPE OF FLUID. THE INCORRECT EQUIPMENT WILL DECREASE THE TIME THAT THE FLUID WILL PREVENT ICE. ICE CAN PREVENT THE FREE MOVEMENT OF FLIGHT CONTROL SURFACES. THIS CAUSES A DANGEROUS CONDITION DURING FLIGHT.

(h) Type I (not thickened) deicing/anti-icing fluids usually have a minimum of 80 percent Glycol. The temperature makes the viscosity change, but the shear stress does not change. These fluids give anti-icing protection for only a short time.

(i) Type II, Type III and Type IV (thickened) deicing/anti-icing fluids usually have a minimum of 50 percent Glycol. There is also 45 to 50 percent water plus thickeners and inhibitors. The temperature and the shear stress that is applied can make the viscosity of these fluids change. They are usually very viscous at low levels of shear stress. When the shear stress changes, their viscosity decreases very quickly. Type II, Type III and Type IV fluids give longer holdover times than Type I deicing/anti-icing fluids.

WARNING

KEEP WATER OUT OF THE STATIC PORTS. WATER CAN FREEZE AND CAUSE A BLOCKAGE OF THE PORTS. ICE IN THE STATIC PORTS IS DANGEROUS DURING FLIGHT.

(j) An airplane that is parked, for this cold weather procedure, is an airplane in the loading area for a short time to be prepared for the departure. If the airplane stays in the loading area through the night in cold weather conditions, refer to the guidelines for Parked Airplanes in this procedure.

1) Cold weather operation does not include an airplane that is parked for a long time. If the airplane has been parked for a long time, do this task: Put the Airplane Back to Serviceable Condition After Storage, TASK 10-12-00-550-805.

(k) Slush is ice and/or snow that is not fully melted. Thus, the ice removal/anti-icing procedures for ice and snow removal apply to slush. A special procedure for slush is not necessary.

(6) The application of Type II, III, and IV fluid, especially when used in a one-step process or in the first step of a two-step process, may cause residues to collect in aerodynamically quiet areas, cavities and gaps. The application of hot water or heated Type I fluid in the first step of a two-step process will minimize the formation of residues. Residues may rehydrate and freeze under certain temperature, high humidity and/or rain conditions and may block or impede critical flight control systems. If a Type II, III, or IV fluid is used in a one-step process or in the first step of a two-step process, then an appropriate inspection and cleaning program should be established. Whenever suitable, deice and anti-ice with only Type I.

(7) Deicing fluid residues can slowly migrate out of crevice areas after being removed from open areas by cleaning. Repeated cleaning of the aircraft may be necessary. The deicing fluid residue inspection and cleaning steps in this procedure should be used to remove these residues.

(8) Start electronic equipment in the cold weather conditions the same as in the usual conditions. A special procedure is not necessary.

(9) To start the engines in cold weather, do this task: Prepare the Engine for Operation, TASK 71-00-00-910-801-G00.

(10) To start the APU in cold weather, do this task: APU Starting and Operation, TASK 49-11-00-860-801.

(11) It is acceptable to install the spare dynamic seal in place of the active dynamic seal (cap seal assembly) to reduce leakage past the shock strut dynamic seal in cold weather. Re-install the cap seal assembly as the active dynamic seal when warm weather returns. See NOSE LANDING GEAR SHOCK STRUT SEALS - REPAIRS, PAGEBLOCK 32-21-11/801 for details.

B. References

Reference	Title
10-11-01-580-801	Airplane Parking (P/B 201)
10-11-03-580-801	Prepare the Airplane to be Parked in High Winds - Preferred Configuration (P/B 201)
10-12-00-550-801	Prepare to Park the Airplane for Storage, More Than 7 Days (1 Week) - Preserving (P/B 201)
10-12-00-550-805	Put the Airplane Back to Serviceable Condition After Storage (P/B 201)
12-14-00-600-801	Potable Water System - Drain (P/B 301)
12-17-01-610-801	Waste Tank Servicing (P/B 301)
32-21-11 P/B 801	NOSE LANDING GEAR SHOCK STRUT SEALS - REPAIRS
49-11-00-860-801	APU Starting and Operation (P/B 201)
71-00-00-910-801-G00	Prepare the Engine for Operation (P/B 201)

C. Consumable Materials

Reference	Description	Specification
G02219	Tape - Yellow Vinyl Adhesive, Scotch Brand No.471, 1.5 Inches (38.1 mm) Wide	

(Continued)

Reference	Description	Specification
G02301	Fluid - Aircraft Deicing/Anti-Icing (SAE Type I)	AMS 1424/1
G02460	Fluid - Aircraft Deicing/Anti-Icing, Non-Newtonian (SAE Type II, III, IV)	SAE AMS1428
G51576	Tape - Pressure Sensitive Adhesive - BA6866	BAC5034-4
G51663	Tape - Duct, Outdoor - 3M 8979	BAC5034-4
G51664	Tape - Duct, Outdoor - 3M 8979N (MIL-STD-2041 Compliant)	BAC5034-4

D. Cold Weather Maintenance Procedure

SUBTASK 12-33-01-660-001

(1) Guidelines

(a) Many conditions can have an effect on which procedure you use to remove ice, snow, or frost or to make sure it does not collect and become attached to the airplane surfaces. Each operator must look at the local weather conditions. If it is possible, use the procedures that were used before with the same conditions. In general, Type II, Type III and Type IV fluids give a longer holdover time than Type I fluids. Use Type II, Type III and Type IV fluids to decrease the risk that ice, snow, or frost will collect on the airplane during a long taxi. The figure that follows gives general guidelines to help you find the correct ice, snow, or frost removal procedure. This gives you the same procedure you will find when you use the full guidelines in this procedure (Table 301, Table 302).

NOTE: The applicable fluids which meet the Boeing document BSS7432, "Evaluation Of Airplane Maintenance Materials" and conform to any of the following specifications, are acceptable fluids.

Table 301/12-33-01-993-801 Guideline for the Application of Type I Fluid Mixture

OUTSIDE AIR TEMPERATURE (OAT)	TWO-STEP PROCEDURE		ONE-STEP PROCEDURE DEICING/ANTI-ICING
	1ST STEP: DEICING	2ND STEP: ANTI-ICING	
27°F (-3°C) or more	Water, or a mixture of fluid and water at a minimum temperature of 140°F (60°C) at the nozzle	Mixture of fluid and water at a minimum temperature of 140°F (60°C), 180°F (82°C) maximum at the nozzle with freezing point of at least 18° F or 10° C below the OAT.	Mixture of fluid and water at a minimum temperature of 140°F (60°C), 180°F (82°C) maximum at the nozzle with a maximum freezing point of 18° F or 10° C less than the OAT (subtract 18 degrees F from the OAT to get the maximum freezing point)
Less than 27°F (-3°C)	The freezing point of the heated fluid mixture must be at the OAT or below		
NOTE: Upper temperature limit can not be more than the fluid manufacturer's recommendation. NOTE: This table is applicable for the use of Type I Holdover Time Guidelines. If holdover times are not required, a temperature of 140°F (60°C), 180°F (82°C) maximum at the nozzle is desirable. CAUTION: WING SKIN TEMPERATURE MAY DIFFER AND, IN SOME CASES, BE LOWER THAN OAT. A STRONGER MIX (MORE GLYCOL) CAN BE USED UNDER THESE CONDITIONS.			
1) To be applied before first step fluid freezes, typically within 3 minutes.			

Table 302/12-33-01-993-802 Guideline for the Application of Type II, Type III and Type IV Fluid Mixtures

OUTSIDE AIR TEMPERATURE OAT	ONE-STEP PROCEDURE DEICING/ANTI-ICING	TWO-STEP PROCEDURE	
		1ST STEP: DEICING	2ND STEP: ANTI-ICING
27°F (-3°C) and above	50/50 Heated Type II / IV or 100/0 Heated Type III	Heated water or a heated mixture of Type I, Type II, Type III or Type IV and water	50/50 Type II / IV or 100/0 Type III
Below 27°F (-3°C) to 7°F (-14°C)	75/25 Heated Type II / IV or 100/0 Heated Type III	Heated mixture of Type I, Type II, Type III, or Type IV, and water with a maximum freezing point of 5° F or 3° C more than the OAT.	75/25 Type II / IV or 100/0 Type III
Below 7°F (-14°C) to -13°F (-25°C)	100/0 Heated Type II / III or IV	Heated mixture of Type I, Type II, Type III, or Type IV, and water with a maximum freezing point of 5° F or 3° C more than the OAT,	100/0 Type II / III or IV
Below -13°F (-25°C)	You can use Type II / IV fluid at temperatures that are less than -13°F (-25°C) if the freezing point of the fluid is a maximum of 13° F or 7° C less than the OAT, and aerodynamic acceptance criteria are met. You can use Type III fluid when the temperature is less than 14°F (-10°C) if the fluid freezing point is a maximum of 13° F or 7° C less than the OAT, and aerodynamic acceptance criteria are met. Consider the use of Type I when Type II, III, or IV fluid can not be used.		
1) To be applied before first step fluid freezes, typically within 3 minutes. 2) Clean aircraft may be anti-iced with unheated fluid.			
NOTE: For heated fluids, a fluid temperature not less than 140°F (60°C) and not more than 180°F (82°C) at the nozzle is desirable. Upper temperature limit shall not exceed fluid manufacturers recommendations.			
CAUTION: • WING SKIN TEMPERATURE MAY DIFFER AND, IN SOME CASES, BE LOWER THAN OAT. A STRONGER MIX (MORE GLYCOL) CAN BE USED UNDER THESE CONDITION. • AS FLUID FREEZING MAY OCCUR, 50/50 TYPE II OR IV FLUID SHALL NOT BE USED FOR THE ANTI-ICING STEP OF A COLD-SOAKED WING AS INDICATED BY FROST OR ICE ON THE LOWER SURFACE OF THE WING IN THE AREA OF THE FUEL TANK. • AN INSUFFICIENT AMOUNT OF ANTI-ICING FLUID, ESPECIALLY IN THE SECOND STEP OF A TWO-STEP PROCEDURE, MAY CAUSE A SUBSTANTIAL LOSS OF HOLDOVER TIME, PARTICULARLY WHEN USING A TYPE I FLUID MIXTURE FOR THE FIRST STEP (DEICING).			

(b) The following is a list of Type I (newtonian) fluids:

1) aircraft deicing fluid, G02301

(c) The following is a list of Type II, Type III and Type IV (non-newtonian) fluids:

1) fluid, G02460

(d) Use a hot mixture of water and Type I, Type II, Type III, or Type IV deicing/anti-icing fluids when you do the one-step ice removal/anti-icing procedure. The quantity of water mixed with the fluid, and the temperature you use, are affected by the following:

1) The weather conditions

2) The holdover protection that is necessary

3) The condition of the airplane

(e) It is necessary to have sufficient fluid temperature and flow rate to flush the ice and snow from the airplane surfaces when it collects there. More ice, snow or frost will not collect on the airplane surfaces where there is remaining fluid. The mixture and type of fluid used will have an effect on the holdover time. The weather conditions can make it necessary to apply the fluid/water mixture again. This will be necessary to remove the frozen fluid that collected since the fluid/water mixture was last applied. This is also done to increase the protection time.

CAUTION

DO NOT POINT THE FLUID STREAM DIRECTLY ON THE SURFACE OF THE AIRPLANE (NORMAL, OR PERPENDICULAR TO THE SURFACE). APPLY THE FLUID AT A LOW ANGLE TO PREVENT DAMAGE TO AIRPLANE SURFACES. HIGH-PRESSURE FLUID CAN CAUSE DAMAGE TO AIRPLANE SURFACES.

(f) For the best ice or snow removal, the temperature of the deicing fluid and hot water should be 160 ±20°F (71 ±11°C), at the nozzle. A fine to medium spray is recommended to apply the fluid across a large area of ice or snow. This will cause the ice or snow to melt the fastest. A solid flow of fluid is recommended to flush the ice or snow from the airplane surfaces.

(g) A layer of anti-icing fluid will give protection from ice, snow, and frost if you apply the fluid to a dry wing on a cold soaked airplane. A mixture of anti-icing fluid and water (the ambient temperature will have an effect on when to use a mixture with water) will also give protection if you apply it to a dry wing.

(h) Since the temperature of the external surfaces of the airplane can be below freezing, ice can attach to the surface. There can be clear ice below the layer of snow or slush, which is not easy to find. Make sure that all the ice is removed after you do the ice removal or ice removal/anti-icing procedure. It may be necessary to feel the surface to do the inspection.

(i) When the precipitation is continuous, the two-step ice removal/anti-icing procedure is usually recommended. The quantity of fluid used in the mixture is affected by the following:

1) The airline experience
2) The instructions of the fluid manufacturer
3) The air temperature.

(j) Make sure there is no ice, snow, or frost on the wing for the takeoff. To do this, you must carefully examine the airplane before the departure.

(k) You must remove snow from a parked airplane regularly. This will make sure that a large quantity of snow will not collect and possibly freeze on the airplane surface.

CAUTION

CAREFULLY MOVE ROPES OR FABRIC HOSES ON THE WING OR FUSELAGE. THE MOVEMENT OF THE ROPES OR HOSES CAN CAUSE DAMAGE TO EQUIPMENT THAT IS INSTALLED ON THE SURFACE OF THE WING OR FUSELAGE.

(l) Use brooms with long handles to remove the snow from the wings and horizontal stabilizers. You can use ropes or a fabric hose to remove the snow from the fuselage. Move the rope or hose back and forth on the top of the fuselage as you move it aft.

(m) Before you move an airplane out of a warm hangar during icing conditions, do the anti-icing procedure on the airplane. This will make it less likely that ice or snow will melt when it touches the warm airplane and freeze again.

(n) If you remove ice with water that is not hot you must do it in a warm hangar. Keep the airplane in the hangar until the surfaces are dry. It will be necessary to do a check of those areas where the water can collect and freeze. If anti-icing fluid is applied, it is not as necessary for the airplane to dry.

(o) General Precautions

WARNING DO NOT GET DEICING/ANTI-ICING FLUID IN YOUR MOUTH OR EYES, OR ON YOUR SKIN. PUT ON GOGGLES, GLOVES, AND CLOTHING FOR PROTECTION WHEN YOU USE DEICING/ANTI-ICING FLUID. DEICING/ANTI-ICING FLUID IS POISONOUS. IT CAN CAUSE INJURIES TO PERSONNEL.

WARNING DO NOT DIRECTLY SPRAY DEICING FLUIDS INTO APU OR ENGINE INLETS, EXHAUSTS, DUCTS AND PITOT-STATIC PROBES. THESE FLUIDS CAN CAUSE DAMAGE TO THE EQUIPMENT AND CAN CAUSE BAD AIR FLIGHT DATA.

CAUTION DO NOT POINT THE FLUID STREAM DIRECTLY ON THE SURFACE OF THE AIRPLANE (NORMAL, OR PERPENDICULAR TO THE SURFACE). APPLY THE FLUID AT A LOW ANGLE TO PREVENT DAMAGE TO AIRPLANE SURFACES. HIGH-PRESSURE FLUID CAN CAUSE DAMAGE TO AIRPLANE SURFACES.

1) Do not point a spray of deicing/anti-icing fluid directly at or into the pitot inlets, TAT probes or static ports shown in (Figure 301).
2) Do not point a spray of hot deicing fluid or hot water directly at cold windows.
3) Make sure that the air conditioning pack switches are in the OFF position prior to deicing.
4) Do not point a spray of deicing/anti-icing fluid directly into the engine, APU, scoops, vents, drains, and Ram Air inlets, etc.
5) Do not exceed an impingement of 50 psi (345 kPa) at the surface.
6) Do not point a solid flow of fluid directly at the airplane surfaces.
7) Make sure that ice and/or snow is not pushed into the areas around the flight controls during ice and snow removal.
8) Remove all of the ice or snow from the door and girt bar areas before you close a door.
9) Do not open the cargo doors if it is not necessary. Remove the ice and snow from the cargo containers before you put them on the airplane. Before the doors are closed for flight put anti-icing fluid on these areas:
   a) The pressure relief doors
   b) The lower door sills
   c) The bottom edge of the door
10) Do not use hard or sharp tools to remove the ice from the airplane surface.

11) The right and left sides of the wing and horizontal stabilizer must get the same ice removal/anti-icing procedure.

    a) If contamination exists only in a limited area (such as a spoiler panel) and there is no active precipitation, it is permitted to deice only that area, but the same area should also be treated on the other wing.

12) If SAE Type II, III, or IV fluids are used, then remove all of the deicing/anti-icing fluid from the cockpit windows before the departure. Make sure you carefully examine the windows with the wipers installed. Make sure that fluid is removed from all the forward areas where it can flow back on the windshields during the taxi and takeoff. These areas must be clean before the departure.

    NOTE: Deicing/anti-icing fluid can be removed by rinsing with approved cleaner and a soft cloth or flushing with type I fluid.

WARNING

YOU MUST REMOVE DEICING/ANTI-ICING FLUID RESIDUES BEFORE TOO MUCH COLLECTS. RESIDUES CAN COLLECT IN AERODYNAMICALLY QUIET AREAS. THESE RESIDUES CAN PREVENT THE MOVEMENT OF CRITICAL FLIGHT CONTROL SYSTEMS. THIS CAN CAUSE SYSTEM DAMAGE, AND DANGEROUS FLIGHT CONDITIONS.

13) After ice removal/anti-icing procedure has been done many times, you must examine the following areas for deicing/anti-icing fluid residues, remove the residues, and re-lubricate affected components as follows:

    a) If the ambient temperature is at or below freezing, move the airplane to a heated hangar.

    b) Gain access to the following areas where flight controls and other system components are located:

        <1> Wing rear spar areas, including the actuating components for the spoilers, ailerons, flaps, and the control surface hinges and balance bays.

        <2> Wing leading edge devices, including the actuating components.

        <3> Horizontal stabilizer rear spar, including the actuating components for the elevators, elevator tabs (if applicable) and the control surface hinges and balance bays.

        <4> Vertical stabilizer, including actuating components for the rudder, and the control surface hinges.

        <5> APU bay and bilge area of the tailcone.

    c) Visually inspect for dry or rehydrated residues in the areas mentioned above.

        NOTE: Dry residue will normally be a thin film that may be partially covered with dirt or grease. Rehydrated residue will often be a thicker, gel-like substance.

        NOTE: It may be necessary to use a borescope to inspect inside the elevator panels where the tab control rods go through. Residues can get into this area and cause an unbalance condition in the elevator.

WARNING DO NOT APPLY WATER TO THE CONTROL CABLES WHEN THE TEMPERATURE IS AT OR BELOW 32°F (0°C). ICE CAN FORM ON THE CABLES AND PREVENT THE OPERATION OF IMPORTANT FLIGHT CONTROL SYSTEMS DURING FLIGHT.

d) Spray the area with a fine mist of warm water to rehydrate any residue and wait at least 15 minutes to allow the rehydration to occur.

e) Remove the residues by hand with rags or soft brushes using warm water or a mixture of warm water and Type I fluid.

<1> You can also use a low pressure stream of water or compressed air to rinse away the residues.

<a> When rinsing the residues away, make sure the residues do not flow into crevice areas that are not accessible.

f) Check all drain holes in the areas where residues were removed to make sure that they are clear and not blocked by the residues.

g) Re-lubricate bearings, fittings, and control cables in areas that were cleaned as required.

h) Re-apply corrosion inhibiting compound to all surfaces and components in areas that were cleaned as required.

(p) When there is slush on the runways, examine the aircraft when it gets to the ramp. Look for slush that collected on the airplane or damage to the airplane surfaces.

1) Examine the areas that follow for ice that collected and damage to the skin panels (remove the ice if it is necessary):

a) The leading edges

b) The flaps

c) The flap wells

d) The vertical stabilizer

e) The rudder

f) The bottom and the top surface of the horizontal stabilizers and elevators.

2) Examine the wheel well areas for ice, slush and snow that collected. Remove the ice if it is necessary.

3) Examine the skin panels behind the wheel wells for damaged edges.

(q) Use the applicable Structural Repair Manual (SRM) procedure to repair any damaged skin panels.

(r) Make sure the concentration of the deicing/anti-icing fluid is correct before you apply it to the airplane.

WARNING DO NOT WALK ON THE WINGS OR THE HORIZONTAL STABILIZER. ICE OR SNOW ON THESE SURFACES IS NOT SAFE. MAINTENANCE PERSONS CAN FALL WHICH WILL CAUSE INJURIES TO PERSONNEL OR DAMAGE TO EQUIPMENT OR THE AIRPLANE.

(s) Use a boomtruck, a cherry-picker or deicing/anti-icing truck to do deicing/anti-icing.

SUBTASK 12-33-01-580-001

(2) Specific Requirements

(a) Probes and Sensors

1) All of the probes and sensors must have no ice, snow, or frost on them. After you remove the ice, make sure there is no moisture collected on them. This moisture could subsequently freeze. Apply deicing/anti-icing fluid for protection.

2) Pitot Probe, Static Ports, and Total Air Temperature (TAT) Probes (Figure 301):

   a) Look for ice that is attached to the surface 4 feet or less from the pitot inlets, static ports, and TAT probe inlets. Remove all the ice in these areas.

   b) Do not point a spray of deicing/anti-icing fluid directly at or into the pitot inlets, static ports, or the TAT probes.

   c) If ice causes a blockage of the static openings, carefully apply warm air until the ice melts.

   d) If you applied too much fluid to the fuselage near the static ports, examine the nearest in-line drain.

3) Angle-of-Attack Sensor (Figure 301).

   a) Make sure that no ice and/or snow is on the sensors. Make sure the sensors are free to move. Apply deicing fluid if it is necessary.

WARNING

YOU MUST REMOVE THE ICE FROM CONTROL SURFACES BEFORE THE HYDRAULIC SYSTEM PRESSURIZATION. HYDRAULIC PRESSURIZATION CAN CAUSE MOVEMENT OF CONTROL SURFACES WITHOUT CONTROL INPUT. IF YOU DO NOT OBEY, DAMAGE TO EQUIPMENT AND INJURY TO PERSONNEL CAN OCCUR.

(b) Control Surfaces

1) Retract the wing flaps, slats, and spoilers during icing conditions or when snow falls. If it is necessary to operate these controls, make sure they are not blocked by ice or snow before you retract them.

   NOTE: If an airplane comes to the gate with the flaps not fully retracted during icing conditions or when snow falls, examine those flaps that are not fully retracted. Look for ice or snow that has collected before they are retracted.

2) All of the control surfaces must have no ice, snow, or frost on them. After you remove the ice, make sure there is no moisture collected in the hinges, guide tracks and actuators for the flight controls. This moisture could subsequently freeze. Apply deicing/anti-icing fluid for protection.

WARNING

STAY AWAY FROM THE STABILIZER TRIM WHEEL ON THE CONTROL STAND IF YOU USE THE STABILIZER TRIM SWITCH ON THE CONTROL WHEEL. THE STABILIZER TRIM SWITCH CAN CAUSE THE STABILIZER TRIM WHEEL TO TURN QUICKLY. INJURY TO PERSONS CAN OCCUR IF YOU TOUCH IT WHEN IT TURNS.

3) Stabilizer trim

   a) Set the stabilizer position to 5 units.

   b) Deicing operations should be conducted from the forward side of the stabilizer to minimize liquids that might enter the tailcone area.

4) Open the leading edge devices and look for ice or snow.

(c) Wing and Horizontal Tail Surfaces

CAUTION BE CAREFUL WHEN YOU REMOVE THE ICE AND SNOW FROM THE WING AND TAIL SURFACES NEAR THE VORTEX GENERATORS. IF YOU ARE NOT CAREFUL, YOU CAN CAUSE DAMAGE TO THE VORTEX GENERATORS.

1) The wing, including winglets (if installed) and horizontal tail surfaces must have no ice, snow, and frost on them.

   NOTE: A layer of frost ⅛ in. (3 mm) thick or less on the lower wing surfaces (in the spar area) is permitted if it is caused by very cold fuel. But, all of these areas must have no ice, snow, or frost on them:

   Leading edge devices

   Control surfaces, including both sides of horizontal and vertical stabilizers

   Tab surfaces

   The top wing surface

2) The leading edge surfaces must have no ice, snow or frost on them. Examine the areas between the surfaces that move and the surfaces that do not move to make sure there is no ice.

3) The right and left sides of the horizontal stabilizer must get the same ice removal/anti-icing procedure.

   a) If contamination exists only in a limited area (such as a spoiler panel) and there is no active precipitation, it is permitted to deice only that area, but the same area should also be treated on the other wing.

(d) Fuselage and Vertical Tail Surfaces

CAUTION BE CAREFUL WHEN YOU REMOVE THE ICE AND SNOW FROM THE FUSELAGE, WING AND TAIL AREAS. IF YOU ARE NOT CAREFUL, YOU CAN CAUSE DAMAGE TO THE EQUIPMENT ATTACHED TO THE SURFACES.

1) The fuselage and the vertical tail surfaces must have no ice or snow on them. Ice and snow increase the aerodynamic drag and the weight of the airplane.

   NOTE: Thin hoar frost is permitted on the top surface of the fuselage if all the vents and ports are clear. Thin hoar frost is a white layer of constant thickness with a sharp crystalline texture. It usually occurs on surfaces that are out on a cold night with no clouds. Hoar frost is thin. You can see items on the surface below the layer of frost, such as paint lines, marks or letters.

2) Do not apply hot deicing fluid or hot water directly on the pilots' windshield or the passenger windows. You can let the fluid flow on the windows after you apply it to the top of the cabin. This is permitted since the fluid will be cool when it gets to the window.

WARNING DO NOT POINT DEICING/ANTI-ICING FLUID IN THE DIRECTION OF THE ELEVATOR FEEL PITOT PROBES. IN THE AREA ADJACENT TO THE ELEVATOR PROBES POINT THE FLUID FLOW IN A FORWARD DIRECTION (AWAY FROM THE PROBES OPENING). FLUID IN THE ELEVATOR PROBES CAN CAUSE HIGHER THAN EXPECTED CONTROL COLUMN FORCES. THIS CAN CAUSE A DANGEROUS CONDITION DURING LANDING THAT CAN CAUSE INJURY TO PERSONNEL.

3) Do not spray any fluid into the elevator feel system pitot probes that are located on each side of the vertical stabilizer.

4) Do not point a spray of deicing/anti-icing fluid directly into the inlet duct or exhaust for the APU.

5) If SAE Type II, III or IV fluids are used, then all of the deicing/anti-icing fluid on the cockpit windows must be removed before the departure. Carefully examine the windows with the wipers installed. Also, examine the forward areas where the fluid can flow aft on the windshields during the taxi and takeoff. These areas must be clear before the departure.

NOTE: Deicing/anti-icing fluid can be removed by rinsing with approved cleaner and a soft cloth or flushing with type I fluid.

(e) Engines and APU

WARNING KEEP ALL PERSONNEL AND EQUIPMENT AWAY FROM THE FRONT, SIDES AND REAR OF THE ENGINE WHILE IT OPERATES. THESE AREAS ARE DANGEROUS. IF YOU ARE TO THE FRONT OR THE SIDES, THERE IS SUFFICIENT SUCTION TO PULL PERSONNEL OR EQUIPMENT INTO THE ENGINE. IF YOU ARE BEHIND THE ENGINE, THE EXHAUST AND FAN AIR HAVE HIGH VELOCITY AND HEAT. THESE CONDITIONS CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

WARNING KEEP ALL PERSONNEL AWAY FROM THE EXHAUST AREA WHILE THE APU OPERATES. THE FORCE OF THE APU EXHAUST CAN KILL YOU OR CAUSE INJURIES.

1) For the safety of persons, do not operate the engines or the APU during the ice removal/anti-icing operations. But, if it is necessary to do the ice removal/anti-icing procedure during engine and/or APU operation, do the steps that follow:

a) Make sure the engine and/or the APU is at idle speed.

b) Do not point the spray of deicing/anti-icing fluids directly into the engine and/or APU inlet.

CAUTION DO NOT START THE ENGINES IN AREAS WHERE THERE ARE PUDDLES OF DEICING OR ANTI-ICING FLUID. MOVE THE AIRPLANE TO A DIFFERENT LOCATION. THE FLUID CAN GO INTO THE ENGINE COMPRESSOR. THESE FLUIDS CAN CAUSE COMPRESSOR STALL, AND ENGINE SURGE.

(CAUTION PRECEDES)

CAUTION MAKE SURE THAT THERE IS NO SNOW, ICE, OR EQUIPMENT IN THE APU INLET AREA BEFORE YOU START THE APU. DAMAGE TO THE APU CAN OCCUR.

2) If the engines/APU are on, do the steps that follow to keep the fumes out of the cabin when you apply deicing/anti-icing fluid in the area of the engines/APU inlets.
   a) Put the air conditioning pack switches for the cabin in the off position.
   b) Close the shutoff valves for the APU air supply.

WARNING DO NOT DIRECTLY SPRAY DEICING FLUIDS INTO APU OR ENGINE INLETS, EXHAUSTS, DUCTS AND PITOT-STATIC PROBES. THESE FLUIDS CAN CAUSE DAMAGE TO THE EQUIPMENT AND CAN CAUSE BAD AIR FLIGHT DATA.

3) Do not point a spray of deicing/anti-icing fluid directly into the areas below:
   a) The inlet ducts for the engine or APU
   b) Exhausts
   c) Engine thrust reversers
   d) Engine inlet
   e) Probes attached to the strut
   f) Engine bleed air ducts.
4) Remove ground-accumulated ice from fan blades prior to take-off.

(f) Brakes

1) When deicing or anti-icing the airplane, protect the wheels and brakes from fluid contamination with the methods below:
   a) Do not direct a spray of deicing or anti-icing fluids at the wheels or brakes.
   b) Use suitable covers on the wheels and brakes when operationally feasible.
   c) Apply the parking brake to reduce incidental contamination of brake friction surfaces when operationally feasible.

      NOTE: The brakes do not need to be re-applied if the wheels have not rotated since the last brake application.

   d) Manually remove snow or ice accumulation from the wheels, brakes, or tires. A hot air blower may be used for this purpose.

(g) Landing Gear and Doors

1) Make sure that there is not a layer of ice or snow on the movable parts and the position indication switches for the landing gear.
   a) This could prevent the correct operation of the landing gear.
   b) Make sure that you do not remove lubricants, or make the lubricants thinner when you apply deicing, or anti-icing fluids.
   c) Parts that are not lubricated can seize, or they will not operate correctly.
2) Remove the ice and snow from these areas:

   NOTE: It is the airline's decision to apply or not apply anti-icing fluid as protection after the ice is removed.

a) The landing gear doors
b) The door latches
c) The uplock mechanism
d) The uplock hook
e) The downlock mechanism
f) The bungee springs
g) The lock actuators
h) The position indication switches.

3) Make sure that ice did not collect on the steering cables for the nose wheel.
   a) If there is ice, remove it from the cables.
4) Examine the alternate extend system for ice in these areas because they are open, and do not have heat:
   a) Examine control cables for landing gear extension.
   b) The external mechanism for the landing gear.

CAUTION DO NOT TRY TO MOVE THE AIRPLANE IF THE TIRES ARE FROZEN TO THE GROUND. MAKE SURE THAT THE WHEELS TURN WHEN YOU MOVE THE AIRPLANE. IF THE WHEELS DO NOT TURN, DAMAGE TO THE WHEELS AND THE AIRPLANE CAN OCCUR.

5) Remove the ice and snow from the ground areas around the landing gear. This will make it less possible that the tires will freeze to the ground. This will also prevent unwanted airplane movement because of the wind or engine operation.
   a) Use warm air or deicing fluid to release the tires from the ground or to remove frozen material.
   b) Do not use salt because it can collect on the metal parts, and it causes corrosion.

(h) Wing Fuel Tanks
1) Frost can occur on the bottom of the wings in the fuel tank areas in temperatures that are more than 32°F (0°C).
   a) The condensation of moisture in the air causes frost when it touches cold surfaces that are less than 32°F (0°C).
   b) The frost will usually melt when you add fuel.
   c) If the frost stays on the wing, and it is more than ⅛ in. (3 mm) thick, remove it before flight.
2) Clear ice can occur on the top of the wing when these conditions occur:
   a) The temperature of the fuel in the tank is less than 32°F (0°C)
   b) The ambient temperature is more than 32°F (0°C)
   c) There is rain, drizzle, or fog.
3) Carefully examine the top of the wing to see if there is clear ice. Use the equipment that is necessary to get sufficient access to the top of the wing to do this check. It is possible that the clear ice can only be found by touch. You must remove clear ice and anti-ice the wing, if it is necessary, before the takeoff.

(i) If the temperature of the fuel is below 32°F (0°C), do not drain the fuel tank sumps.

(j) Miscellaneous

1) Drains

a) Examine all of the waste water and condensate drains on the airplane to make sure there are not blockages because of ice or other material. It is not necessary to put a plug on the drains during the ice removal or anti-icing procedure. But, do not point a fluid spray at these drain areas.

2) Windshield Wiper Blades

a) Remove the ice that collected on the windshield wiper blades.

SUBTASK 12-33-01-600-001

(3) Tape Application Requirements

NOTE: This step is for airplanes that parked in Active Storage or Prolonged Parking.

(a) If necessary to apply Scotch Brand No.471 tape, G02219, to attach cover for openings (vent, engine inlet and exhaust, APU, air conditioning system etc), use one of these alternative tapes for cold weather:

- 3M 8979 tape, G51663
- 3M 8979N tape, G51664
- tape, G51576

NOTE: It is recommended to keep the roll of tape warm until it is needed for better application capabilities.

SUBTASK 12-33-01-660-002

(4) Hot Water Ice Removal

(a) You can use hot water 160 ±20°F (71 ±11°C) maximum nozzle temperature to remove ice and snow from the airplane surfaces when the ambient temperature is 27°F (-3°C), stable or on the increase.

(b) To prevent the water from freezing again you must apply anti-icing fluid to the surface immediately after you remove the ice with hot water.

SUBTASK 12-33-01-660-003

(5) One-Step Ice Removal/Anti-Icing

(a) The application of Type II, III, and IV fluid, especially when used in a one-step process or in the first step of a two-step process, may cause residues to collect in aerodynamically quiet areas, cavities and gaps. The application of hot water or heated Type I fluid in the first step of a two-step process will minimize the formation of residues. Residues may rehydrate and freeze under certain temperature, high humidity and/or rain conditions and may block or impede critical flight control systems. If a Type II, III, or IV fluid is used in a one-step process or in the first step of a two-step process, then an appropriate inspection and cleaning program should be established. Whenever suitable, deice and anti-ice with only Type I.

(b) You can do the one-step ice removal/anti-icing procedure, with the deicing/anti-icing fluid heated to 160 ±20°F (71 ±11°C) at the nozzle. Use this procedure to remove the ice and snow from the airplane when the temperature is less than 28°F (-2°C).

1) After you use the mixture to make the airplane surfaces are clean, the remaining fluid will give some anti-icing protection.

(c) The fluid mixed with the water can be Type I deicing (ice removal)/anti-icing fluid or Type II, Type III or Type IV deicing/anti-icing fluid. The holdover time will be longer with the Type II, Type III or Type IV deicing/anti-icing fluid. With each fluid, quantity of fluid to use in the mixture is affected by the following:

1) The airline experience
2) The fluid specifications
3) The manufacturer's recommendations
4) The weather conditions.

(d) If additional treatment is required before flight, the full deicing/anti-icing procedure must be performed. Ensure that any residues from previous treatments are flushed off.

SUBTASK 12-33-01-660-004

(6) Two-Step Ice Removal/Anti-Icing

(a) The application of Type II, III, and IV fluid, especially when used in a one-step process or in the first step of a two-step process, may cause residues to collect in aerodynamically quiet areas, cavities and gaps. The application of hot water or heated Type I fluid in the first step of a two-step process will minimize the formation of residues. Residues may rehydrate and freeze under certain temperature, high humidity and/or rain conditions and may block or impede critical flight control systems. If a Type II, III, or IV fluid is used in a one-step process or in the first step of a two-step process, then an appropriate inspection and cleaning program should be established. Whenever suitable, deice and anti-ice with only Type I.

(b) The two-step ice removal/anti-icing procedure is usually the recommended procedure when the precipitation conditions are continuous. The second step must be done no more than 3 minutes after you begin the first step. Do the procedure area by area if it is necessary.

(c) The items that follow will have an effect on the holdover time you get after you do the anti-icing procedure.

1) The fluid that was used
2) The weather conditions.

(d) Do not apply an additional coating of anti-icing fluid on top of contaminated fluid (fluid that has been absorbing precipitation). If additional treatment is required before flight, the full deicing/anti-icing procedure must be performed. Ensure that any residues from previous treatment are flushed off.

SUBTASK 12-33-01-580-002

(7) To Park the Airplane

WARNING IF HIGH WINDS ARE POSSIBLE, OBEY THE INSTRUCTIONS IN THIS TASK. HIGH WINDS CAN CAUSE INJURIES TO PERSONNEL, AND DAMAGE TO THE AIRPLANE

(a) If high winds are possible, do this task: (Prepare the Airplane to be Parked in High Winds - Preferred Configuration, TASK 10-11-03-580-801).

(b) The area where you will park the airplane must be clear of ice and snow. (Airplane Parking, TASK 10-11-01-580-801 gives the full procedures to park the airplane.

NOTE: Use Prepare to Park the Airplane for Storage, More Than 7 Days (1 Week) - Preserving, TASK 10-12-00-550-801 if more steps are necessary because of the weather conditions and length of time the airplane will be parked.

(c) When it is possible, point the airplane in the direction the wind.

(d) Set the airplane control surfaces so that the airplane is ready for deicing/anti-icing operations if necessary to remove accumulated snow and ice.

1) Put the wing flaps to the full up position.

2) Put the stabilizer position to 5 units of trim.

CAUTION

EXAMINE THE ENGINE INTAKE AREAS IMMEDIATELY AFTER SHUTDOWN FOR ICE THAT IS THERE. REMOVE THE ICE WHILE THE TEMPERATURE OF THE ENGINE DECREASES AND BEFORE YOU INSTALL THE ENGINE PROTECTIVE PLUGS AND COVERS. IF YOU INSTALL THE PLUGS BEFORE THE TEMPERATURE OF THE ENGINE DECREASES, THE REMAINING HEAT IN THE ENGINE WILL MELT THE ICE TO WATER. THIS WATER WILL FLOW TO THE BOTTOM OF THE FAN SECTION. IT WILL FREEZE AGAIN WHEN THE TEMPERATURE OF THE ENGINE IS BELOW FREEZING. THIS WILL LOCK THE TIPS OF THE FAN LOWER BLADES IN ICE.

(e) Install all the plugs and covers, where available, for the intake or exhaust ducts and the different probes such as the pitot tubes. Use a brush to apply a thin layer of anti-ice fluid to the airplane surface before you install the cover. The covers will not freeze to the airplane if you do this.

SUBTASK 12-33-01-860-001

(8) Engine Operation

(a) The full procedures to operate the engines in cold weather conditions, do this task: Prepare the Engine for Operation, TASK 71-00-00-910-801-G00.

CAUTION

REMOVE ICE AND SNOW FROM THE ENGINE. IF YOU DO NOT REMOVE THE ICE AND SNOW, DAMAGE TO THE ENGINE CAN OCCUR.

(b) Remove ground-accumulated ice.

(c) Large pieces of ice and/or snow that go into the engine inlet can cause damage to the internal engine parts. Remove all the ice or snow from the engine inlet ducts and fan blades before you start the engines.

(d) Engine icing can occur when the conditions that follow occur:

NOTE: You must use the thermal anti-icing system for the engines/nacelles when these conditions occur.

1) There is moisture you can see such as clouds, fog, rain, snow, sleet or ice crystals.

2) You will do ground operations with the static air temperature is less than 50°F (10°C).

(e) Before you start the engines, make sure there are no fluids around the exhaust areas that can start ignition.

SUBTASK 12-33-01-680-001

(9) Fuel Icing

(a) The items that follow have the most effect on the quantity of water in aviation fuels:

1) Where the fuel is kept

2) How the fuel is moved.

(b) Fuel that is open to moisture or the usual atmospheric conditions contains more water than that kept in tightly sealed containers. This water in the fuel, when there is high humidity and temperature conditions that change, can be more than 3 gallons in each thousand gallons of fuel. As the temperatures decrease, there is a separation of the water and the fuel. The water will collect at the lowest point in the tank and freeze if the temperature is sufficiently low. If the temperature of the fuel is below 32°F (0°C), do not drain the fuel tank sumps. To check for water at the fuel tank sump drain valves with fuel temperature below 32°F (0°C), do one of the following to raise the temperature of the fuel:

1) Fill the fuel tanks with warm fuel.

2) Move the airplane in to a warm hangar.

SUBTASK 12-33-01-610-001

(10) Toilets and Potable Water

(a) The water will not freeze in an airplane that operates because there is sufficient heat in the area. When the airplane does not operate and is let stay in an area that is not heated, more servicing is necessary. Do the steps that follow if the cabin temperature will decrease below the freezing point.

1) Toilets

a) When the airplane will be operated you can add antifreeze fluids to the solution used to precharge the waste tank to make sure it will not freeze. Be careful in the selection of the materials you use. The antifreeze and the flushing deodorizer detergent can make foam when mixed. Foam can also occur when antifoam agents break down when they mix with a deodorizing detergent. Look at the fluid manufacturers' instructions to see if they can be mixed.

b) When the airplane will not be operated you must fully drain the toilet flushing system to make sure it will not freeze, do this task: Waste Tank Servicing, TASK 12-17-01-610-801.

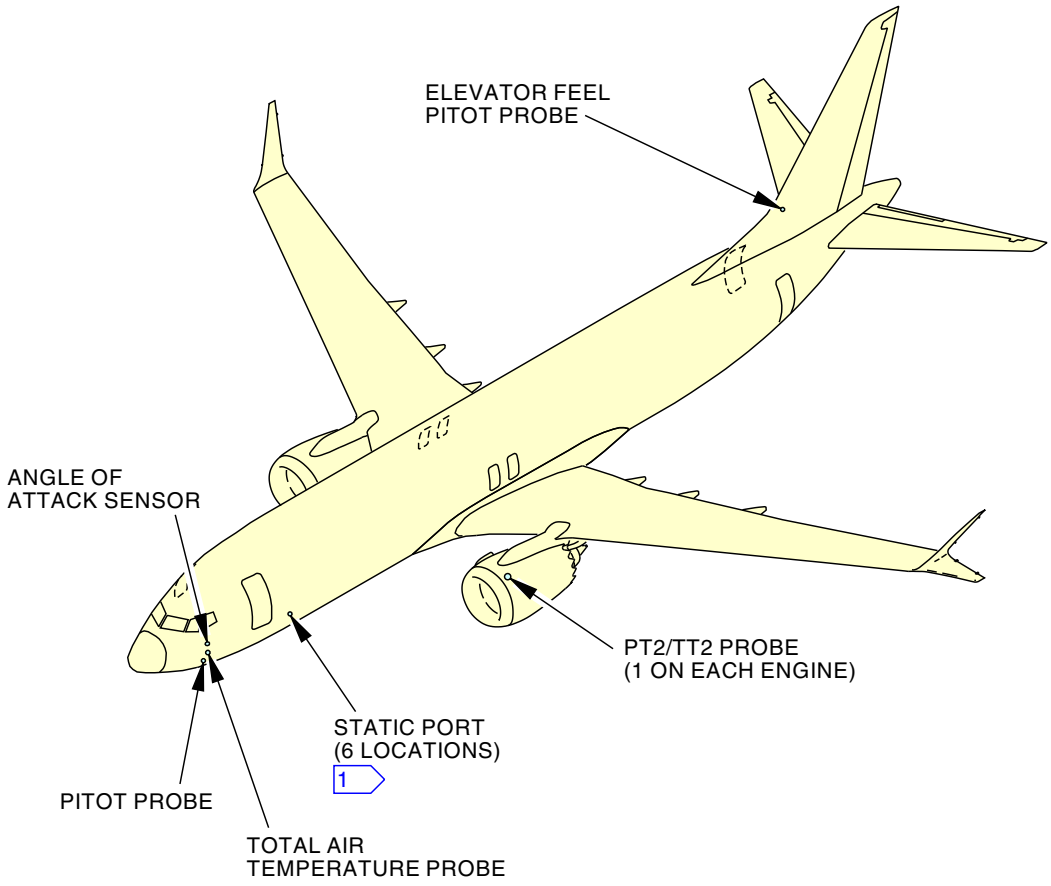
2) Potable Water

CAUTION

DRAIN THE WATER SYSTEM. IF THE WATERLINES HAVE WATER IN THEM, THEY CAN FREEZE IN COLD WEATHER. THIS CAN CAUSE DAMAGE TO THE WATERLINES.

a) You must drain all of the water from the potable water system, do this task: Potable Water System - Drain, TASK 12-14-00-600-801.

——— END OF TASK ———



(LEFT SIDE IS SHOWN, RIGHT SIDE IS OPPOSITE)

1 ONE ALTERNATE STATIC PORT NEAR THE BOTTOM OF THE FUSELAGE IS NOT SHOWN.

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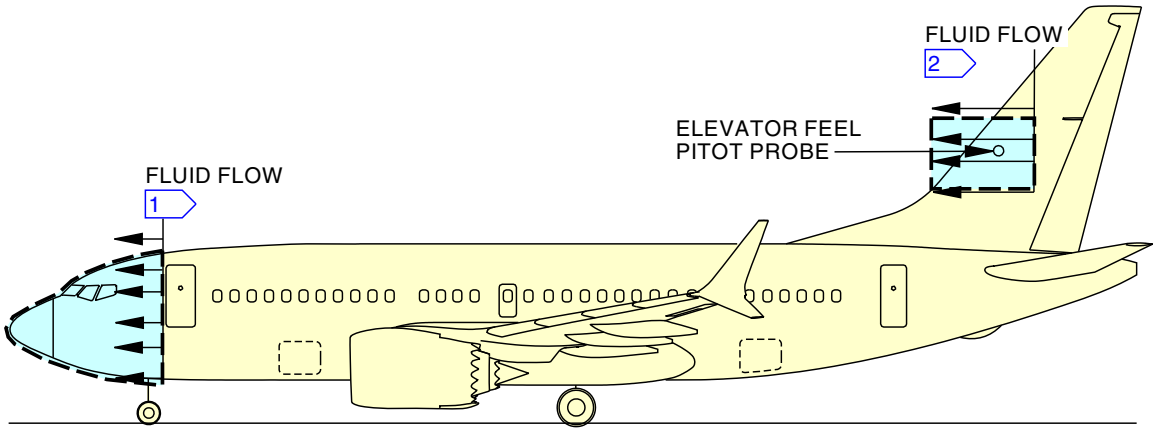
Probe Locations
Figure 301/12-33-01-990-801



(LEFT SIDE IS SHOWN, RIGHT SIDE IS OPPOSITE)

1 FROM THE FORWARD ENTRY DOOR, SPRAY DEICING/ANTI-ICING FLUID ONLY IN THE FORWARD DIRECTION TO PREVENT INGESTION INTO THE PITOT PROBES, STATIC PORTS, AND TOTAL AIR TEMPERATURE PROBES.

2 IN THE AREA ADJACENT TO THE ELEVATOR PITOT PROBES, 3 FT (0.91 M) AFT TO 10 FT (3.04 M) FORWARD, SPRAY DEICING/ANTI-ICING FLUID ONLY IN THE FORWARD DIRECTION TO PREVENT INGESTION INTO THE PITOT PROBES.

2988775 S0000765745_V1

Deicing/Anti-icing Fluid Application
Figure 302/12-33-01-990-802

EXTREME COLD WEATHER MAINTENANCE - SERVICING

1. General

A. This procedure has these tasks:

(1) Cold Weather Attended Parking

(2) Return the Airplane to Service After Cold Weather Attended Parking

(3) Cold Weather Unattended Parking at Temperatures Below 32°F (0°C)

(4) Return the Airplane to Service After Cold Weather Unattended Parking at Temperatures Below 32°F (0°C)

B. In the usual operation of the airplane, air comes through the airplane structure. During flight, the water vapor in the air can condense and freeze in the airplane. When you continuously operate the airplane in cold weather, ground temperatures below the freezing point will not let the ice melt. To remove the ice, do this task: Interior Ice Removal, TASK 05-51-53-210-801.

C. Definitions:

(1) Ice that has accumulated on the engine fan blades while the airplane has been on the ground for a prolonged stop, such as a plane that has been parked overnight, is considered Ground-Accumulated Ice.

(a) Ground-Accumulated Ice must be removed before engine start.

(2) Ice that has accumulated on the engine fan blades while the engine is running at idle is considered Operational Ice.

(a) Operational Ice is allowed before departure because it can be removed by engine run-ups during taxi-out.

TASK 12-33-02-600-801

2. Cold Weather Attended Parking

A. General

(1) This task is to park the airplane during extreme cold weather in an attended parking condition. Attended parking is generally used when the airplane will be on the ground for a period of time between flights and ready for immediate operation.

(2) During attended parking, the temperatures of the cabin and flight deck are maintained warmer than 32°F (0°C) and the engines are maintained warmer than -40°F (-40°C) while the airplane is on the ground.

(3) For airplanes that operate continuously in extreme cold weather, put the airplane into a heated hangar periodically to thaw the insulation blankets and other equipment

(4) If the temperature of the fuel is below 32°F (0°C), do not to drain the fuel tank sumps. To check for water at the fuel tank sump drain valves with fuel temperature below 32°F (0°C), do one of the following to raise the temperature of the fuel:

(a) Do this task: Fuel Tank Sumps - Fuel Sampling, TASK 12-11-00-680-801.

(5) When adding fuel, you must use these requirements:

(a) Make sure the fuel temperature is at least 6°F or 3°C above the fuel freeze point. Use the ASTM method to determine the freeze point.

NOTE: The refuel quantity indicator on the refuel panel (P15) can indicate slowly or not show numbers in extreme cold conditions. Use an external fuel flow meter to show the amount of fuel added to the airplane.

(b) Use fuels that meet specification ASTM D1655; or

(c) Use fuels that meet specification GOST 10227:

1) RT (PT, Russian spelling)

2) TS-1 (TC-1, Russian spelling)

(d) Approved fuel additive is:

NOTE: Adding an anti-icing fuel additive may help in the sumping of the fuel tanks.

1) Fuel Additive, specification GOST 8313, Fluid I (also known as Fluid E)

a) Fluid I may be used at a mixture of no more than 0.15 percent by volume.

2) Fuel additive, specification ASTM D4171.

a) ASTM D4171 may be used at a mixture of no more than 0.15 percent by volume.

B. References

Reference	Title
10-11-01-580-801	Airplane Parking (P/B 201)
12-11-00-680-801	Fuel Tank Sumps - Fuel Sampling (P/B 301)
12-13-21-200-801	IDG Oil Level Check (P/B 301)
12-15-51-780-801	Landing Gear Tire Pressure Check and Tire Servicing (P/B 301)
21-00-00-800-801	Supply Conditioned Air to the Airplane (P/B 201)
32-21-11 P/B 801	NOSE LANDING GEAR SHOCK STRUT SEALS - REPAIRS
71-00-00-800-802-G00	Engine Operation Limits (P/B 201)
71-00-00-910-801-G00	Prepare the Engine for Operation (P/B 201)
71-00-00-910-802-G00	Start the Engine (Selection) (P/B 201)
71-00-00-910-806-G00	Stop the Engine (Usual Engine Stop) (P/B 201)

C. 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-2478	Heater - External Cabin, Trailer Mounted Part #: ACU-2000 Supplier: 6L481 Part #: MARK IV-900 COLDBUSTER Supplier: 12008 Part #: MARK IV-TDSL COLDBUSTER Supplier: 12008 Opt Part #: MARK I COLDBUSTER Supplier: 12008 Opt Part #: MARK IV COLDBUSTER Supplier: 12008 Opt Part #: MARK IV-700 COLDBUSTER Supplier: 12008
STD-3925	Heater - Blower, Explosion Proof, Electric

D. Location Zones

Zone	Area
100	Lower Half of Fuselage
200	Upper Half of Fuselage
300	Empennage
400	Powerplant and Nacelle Struts
500	Left Wing
600	Right Wing
700	Landing Gear and Landing Gear Doors

(Continued)

Zone	Area
800	Doors

E. Access Panels

Number	Name/Location
117A	Electronic Equipment Access Door

F. Procedure

SUBTASK 12-33-02-490-001

WARNING WHEN THE PITOT PROBES HAVE COVERS ON THEM, MAKE SURE THAT A PERSON ON THE GROUND CAN SEE THE COVERS. ALSO MAKE SURE YOU ATTACH A TAG TO THE LEFT CONTROL WHEEL IN THE FLIGHT COMPARTMENT AS A REMINDER THAT THE PITOT PROBES HAVE COVERS ON THEM. IF THE COVERS ARE NOT REMOVED FROM THE PITOT PROBES, INCORRECT AIRSPEED-SENSING AND ALTITUDE-SENSING SIGNALS CAN OCCUR. THIS CAN CAUSE DANGEROUS FLIGHT CONDITIONS.

(1) Install covers on the pitot probes and static ports.

SUBTASK 12-33-02-480-001

(2) Install the engine inlet and exhaust covers as soon as possible after landing.

NOTE: Keep the engine covers in a warm location before you install them on the airplane. Covers that are cold or frozen may be difficult to install, and may freeze to the engine inlet and exhaust.

NOTE: At very low ambient air temperatures, the time for the engine to cool to -35°F (-37°C) can be greatly increased by the use of engine inlet and exhaust covers.

SUBTASK 12-33-02-010-002

(3) Keep entry door closed at all times when access is not required.

NOTE: While the airplane is heated with ground conditioned air or with the ECS, warm air is vented through the outflow valve. This provides heated air to the potable water and waste systems in the lower lobe aft compartment. When the entry door is open, the heated air escapes through the entry door and may cause the water or waste systems to freeze in the aft compartment. From in-service experience, water and waste lines can freeze within 15 minutes if the entry door remains open in extreme low temperatures.

SUBTASK 12-33-02-480-002

(4) Do this task: Airplane Parking, TASK 10-11-01-580-801.

SUBTASK 12-33-02-210-001

(5) If the airplane has a forward airstair, you must follow the steps below each time the airstair is put in the stow position:

CAUTION REMOVE ALL ICE AND SNOW FROM THE AIRSTAIRS BEFORE YOU STOW THE AIRSTAIR IN THE FUSELAGE. ICE AND SNOW WILL MELT INSIDE THE FUSELAGE AND CAN DRAIN ONTO THE ELECTRONIC EQUIPMENT.

(a) Remove all ice and snow completely from the airstair steps and structure before the airstair is put in the stow position.

(b) After the airstairs are in the stow position, do the steps that follow:

1) Gain access under the airstairs through this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

2) Check for water on the drip shields and around the electronic equipment.

3) Remove all water on the drip shields and around electronic equipment.

4) Close this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

SUBTASK 12-33-02-880-001

(6) Do one of the steps that follow to maintain the flight deck and cabin temperature above 32°F (0°C):

(a) Use the APU or a ground air source to run both ECS packs:

NOTE: If the APU is off and the APU oil temp is below -35°F (-37°C), warm the APU prior to starting.

1) Run the APU.

2) Do this task: Supply Conditioned Air to the Airplane, TASK 21-00-00-800-801.

(b) Use a heater, COM-2478 or suitable substitute to heat the airplane through the Low Pressure ECS Panel - Forward, 191E (if applicable).

(c) Use a heater, COM-2478 or suitable substitute to heat the airplane through the forward and aft entry doors

SUBTASK 12-33-02-210-002

(7) Use the MAX Display System Maintenance Page to monitor the engine oil temperature when the engines are not running.

(a) If the engine oil temperature approaches -35°F (-37°C), do the steps that follow:

1) Remove the inlet and exhaust covers.

2) Heat the engines with a explosion proof electric blower - heater, STD-3925 or suitable substitute:

a) If you use a multiple hose ground cart heater, COM-2478, direct one heater hose in the inlet to heat the engine core, and one heater hose on the engine gearbox.

b) If you use a multiple hose ground cart (YMP-350 heater), direct one heater hose in the inlet to heat the engine core, and one heater hose on the engine gearbox.

c) If you use a single hose ground cart (Herman Nelson heater), direct the heater hose on the engine gearbox.

3) Make sure the engine oil temperature is above -35°F (-37°C), then follow one of these steps:

a) Remove the heater from the engine and install the engine covers; or

NOTE: Heaters can be used to maintain the engine oil temp above -35°F (-37°C) for extended periods if necessary.

b) Run engines to increase the oil temperature.

4) If you will run the engines, follow these steps:

a) Make sure the engine oil temperature is above -35°F (-37°C).

b) See engine operating limits in Engine Operation Limits, TASK 71-00-00-800-802-G00.

c) Prepare the engine for operation and cold weather starting, do this task: Prepare the Engine for Operation, TASK 71-00-00-910-801-G00.

CAUTION REMOVE ICE AND SNOW FROM THE ENGINE. IF YOU DO NOT REMOVE THE ICE AND SNOW, DAMAGE TO THE ENGINE CAN OCCUR.

d) Remove Ground-Accumulated Ice from fan blades.

e) Large pieces of ice and/or snow that go into the engine inlet can cause damage to the internal engine parts. Remove all the ice or snow from the engine inlet ducts and fan blades before you start the engines.

f) Engine icing can occur when the conditions that follow occur:

NOTE: You must use the thermal anti-icing system for the engines/nacelles when these conditions occur.

<1> There is moisture you can see such as clouds, fog, rain, snow, sleet or ice crystals.

<2> You will do ground operations with the static air temperature is less than 50°F (10°C).

g) Do this task: IDG Oil Level Check, TASK 12-13-21-200-801.

h) Before you start the engines, make sure there are no fluids around the exhaust areas that can start ignition.

NOTE: If a fluid leak (other than a continuous stream) from any of the engine drains is discovered during the Exterior Inspection, the engine can be started. If during engine start, the ground crew reports a fluid leak from an engine drain, the engine start may be continued. In either case, run the engine at idle thrust for up to 5 minutes. If the fluid leak stops during this time, no maintenance action is needed. If the fluid leak continues after 5 minutes, shut down the engine for maintenance action. See AMM (SUBTASK 71-71-00-220-001-G00, containing leakage limits and required actions.

i) Do this task: Start the Engine (Selection), TASK 71-00-00-910-802-G00.

j) If the ambient temperature is below -31°F (-35°C), idle the engine for 2 minutes before changing thrust lever position.

k) Before shutdown of the engines, run the engines at idle for a minimum of 10 minutes.

NOTE: This will let the engine temperature stabilize.

l) Do this task: Stop the Engine (Usual Engine Stop), TASK 71-00-00-910-806-G00.

m) Install the inlet and exhaust covers.

NOTE: Keep the engine covers in a warm location before you install them on the airplane. Covers that are cold or frozen may be difficult to install, and may freeze to the engine inlet and exhaust.

NOTE: At very low ambient air temperatures, the time for the engine to cool to -35°F (-37°C) can be greatly increased by the use of engine inlet and exhaust covers.

(b) Continue to use the MAX Display System Maintenance Page to monitor the engine oil temperature when the engines are not running.

SUBTASK 12-33-02-210-003

(8) Visually check the wing lower surface for fuel leaks.

SUBTASK 12-33-02-210-004

(9) Do this task: Landing Gear Tire Pressure Check and Tire Servicing, TASK 12-15-51-780-801.

SUBTASK 12-33-02-600-001

(10) Visually check the landing gear and service if necessary.

(a) Wipe the inner cylinder with a clean cloth to check for hydraulic leakage from the seals.

(b) For airplanes originating in a warm environment and terminating in a cold environment, do the following:

1) Over-inflate the shock struts by approximately 1 in. (25 mm).

2) Perform a single point pressure/extension check while in the colder location.

a) If the strut is under-inflated and no leaks are present, then service with nitrogen to bring the strut back onto the low end of the AMM shock strut servicing band.

(c) For airplanes originating in a cold environment and terminating in a warm environment, do the following:

1) Perform a single point pressure/extension check before departure.

a) If the strut is under-inflated and no leaks are present, then service with nitrogen to bring the strut back onto the low end of the servicing band.

NOTE: When the airplane arrives in the warmer location, the strut will appear slightly over-inflated. Do not re-service the struts if the airplane will soon return to the colder climate. However, if the airplane will remain in service at a warmer location, then re-service the struts.

(d) If is acceptable to install the spare dynamic seal in place of the active dynamic seal (cap seal assembly) to reduce leakage past the shock strut dynamic seal in cold weather. Re-install the cap seal assembly as the active dynamic seal when warm weather returns. See NOSE LANDING GEAR SHOCK STRUT SEALS - REPAIRS, PAGEBLOCK 32-21-11/801 for details.

——— END OF TASK ———

TASK 12-33-02-600-802

3. Return the Airplane to Service After Cold Weather Attended Parking

A. General

(1) This task is for airplanes that are parked during extreme cold weather in an attended parking condition. Attended parking is generally used when the airplane is on the ground for a period of time between flights and ready for immediate operation.

(2) During attended parking, the temperatures of the cabin and flight deck are maintained warmer than 32°F (0°C) and the engines are maintained warmer than -40°F (-40°C) while the airplane is on the ground.

(3) Do this task just prior to flight.

B. References

Reference	Title
12-12-00-610-801	Hydraulic Reservoir Servicing (P/B 301)
12-13-21-200-801	IDG Oil Level Check (P/B 301)
12-33-01-600-801	Cold Weather Maintenance Procedure (P/B 301)
29-11-00-860-803	Hydraulic System Pressurization with an Electric Motor-Driven Pump (EMDP) (P/B 201)
32-41-11-000-801	Brake Disconnect Removal (P/B 401)
32-41-11-400-801	Brake Disconnect Installation (P/B 401)
32-41-41-000-801	Main Landing Gear Brake Removal (P/B 401)
32-41-41-400-801	Main Landing Gear Brake Installation (P/B 401)
71-00-00-800-802-G00	Engine Operation Limits (P/B 201)
71-00-00-910-801-G00	Prepare the Engine for Operation (P/B 201)
71-00-00-910-802-G00	Start the Engine (Selection) (P/B 201)
71-71-00-200-801-G00	Engine Vents and Drains Inspection (P/B 601)

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-2478	Heater - External Cabin, Trailer Mounted Part #: ACU-2000 Supplier: 6L481 Part #: MARK IV-900 COLDBUSTER Supplier: 12008 Part #: MARK IV-TDSL COLDBUSTER Supplier: 12008 Opt Part #: MARK I COLDBUSTER Supplier: 12008 Opt Part #: MARK IV COLDBUSTER Supplier: 12008 Opt Part #: MARK IV-700 COLDBUSTER Supplier: 12008
STD-3925	Heater - Blower, Explosion Proof, Electric

D. Location Zones

Zone	Area
100	Lower Half of Fuselage
200	Upper Half of Fuselage
300	Empennage
400	Powerplant and Nacelle Struts
500	Left Wing
600	Right Wing
700	Landing Gear and Landing Gear Doors
800	Doors

E. Access Panels

Number	Name/Location
413AL	IDG Access Door, Engine 1

(Continued)

Number	Name/Location
423AL	IDG Access Door, Engine 2

F. Procedure

SUBTASK 12-33-02-090-001

(1) Remove the covers from the pitot probes and static ports.

SUBTASK 12-33-02-210-014

(2) Make sure that there is no ice blocking the pitot probe openings.

NOTE: If ice causes a blockage of the pitot probe openings, carefully apply warm air until the ice melts.

SUBTASK 12-33-02-800-002

(3) Make sure that snow or ice is removed from the pavement or surface directly below the Radio Altimeter antennas.

NOTE: Snow and/or ice can scatter the signal from the radio altimeters. If snow and/or ice are present underneath the aircraft, introduce a reflector under the LRRA antennas to provide a signal return path other than the snow/ice. Reflectors can be anything such as radar absorbing material, ladders, etc.

SUBTASK 12-33-02-010-003

(4) Keep entry door closed at all times when access is not required.

NOTE: While the airplane is heated with ground conditioned air or with the ECS, warm air is vented through the outflow valve. This provides heated air to the potable water and waste systems in the lower lobe aft compartment. When the entry door is open, the heated air escapes through the entry door and may cause the water or waste systems to freeze in the aft compartment. From in-service experience, water and waste lines can freeze within 15 minutes if the entry door remains open in extreme low temperatures.

SUBTASK 12-33-02-860-002

CAUTION

DO NOT OPERATE THE AILERONS, RUDDER, ELEVATOR, BRAKES, SPOILERS, STABILIZERS OR FLAPS UNTIL THE PUMPS OPERATE FOR A MINIMUM OF 15 MINUTES. IF YOU OPERATE THE HYDRAULIC COMPONENTS BEFORE THE SYSTEM IS WARM, DAMAGE TO THE PUMPS AND COMPONENTS CAN OCCUR.

(5) Turn on the hydraulic system electric motor pumps 30 minutes before starting the engines (TASK 29-11-00-860-803)

NOTE: This will make sure that the hydraulic system operates normally and will prolong the life of the component.

(a) If the hydraulic pressure in one system increases, then drops to zero, do these steps:

NOTE: Repeat the steps a maximum of three times. After three times (cycles), if the condition remains you must find the cause of the pressure drop.

1) Turn the electric motor pump for the system to OFF.

2) Turn the electric motor pump for the system to ON.

(b) Leave the motor pumps running until after the engine start.

(c) Monitor the hydraulic reservoir levels while the pumps are on.

NOTE: The hydraulic system reservoir level can decrease until you actuate the flight controls.

SUBTASK 12-33-02-860-003

CAUTION

DO NOT OPERATE THE AILERONS, RUDDER, ELEVATOR, BRAKES, SPOILERS, STABILIZERS OR FLAPS UNTIL THE PUMPS OPERATE FOR A MINIMUM OF 15 MINUTES. IF YOU OPERATE THE HYDRAULIC COMPONENTS BEFORE THE SYSTEM IS WARM, DAMAGE TO THE PUMPS AND COMPONENTS CAN OCCUR.

(6) Do the functions of the flight control systems that follows:

(a) Slowly (1 to 2 seconds), move the control column, wheel, rudder pedals, and the ground spoilers.

NOTE: You must complete at least 10 cycles of each control to near full travel.

1) Verify that the movement of the flight control systems are normal on the MAX Display System Maintenance Page.

(b) Run the stabilizer trim full travel nose up and nose down using the column mounted trim switch.

(c) Select the flaps to the full down position.

NOTE: Wait for the flaps to reach the full down position.

(d) Select the flaps to the full up position.

NOTE: Wait for the flaps to reach the full up position.

(e) Prepare for the autopilot check:

1) Make sure that the VHF NAV and IRS switches, on the P5 forward overhead panel, are in the NORMAL positions.

2) Set the left and right IRS select switches, on the P5 aft overhead panel, to the ALIGN or NAV position.

(f) Operate the autopilot servos as follows:

1) Engage one autopilot channel

2) Engage vertical speed mode

a) Select vertical speed of 2000 fpm.

NOTE: Wait for column motion to stop.

b) Select vertical speed of -2000 fpm.

NOTE: Wait for column motion to stop.

3) Engage heading select mode.

a) Select 30 degree heading change to the left of airplane heading.

NOTE: Wait for wheel motion to stop.

b) Select 30 degree heading change to the right of airplane heading.

NOTE: Wait for wheel motion to stop.

4) Repeat steps 1 thru 3 for the other autopilot channel.

SUBTASK 12-33-02-610-001

(7) Service the hydraulic system if necessary (TASK 12-12-00-610-801)

SUBTASK 12-33-02-860-004

(8) At temperatures below -22°F (-30°C), do these steps before starting the engines:

(a) Apply localized heat to the inner cylinder of the nose and main gear.

(b) Pump the brake pedals 20 times shortly and verify extension/retraction of brake pistons at each brake.

1) If brake operation is not normal, do the steps that follow:

a) Provide local warming to the brake.

b) Repeat the test until proper operation is observed.

c) If the difficulty continues, do these steps:

<1> Do this task: Brake Disconnect Removal, TASK 32-41-11-000-801.

<2> Do this task: Brake Disconnect Installation, TASK 32-41-11-400-801.

<3> Do this task: Main Landing Gear Brake Removal, TASK 32-41-41-000-801.

<4> Do this task: Main Landing Gear Brake Installation, TASK 32-41-41-400-801.

SUBTASK 12-33-02-210-005

(9) Use the MAX Display System Maintenance Page to monitor the engine oil temperature with the engines not running as follows:

(a) If the engine oil temperature approaches -35°F (-37°C), do the steps that follow:

1) Heat the engines with a explosion proof electric blower - heater, STD-3925 or suitable substitute as follows:

a) If you use a multiple hose ground cart heater, COM-2478, direct one heater hose in the engine fan outlet, and one heater hose on the engine gearbox.

Open these access panels and direct one heater hose on the engine gearboxes:

Number	Name/Location
413AL	IDG Access Door, Engine 1
423AL	IDG Access Door, Engine 2

b) If you use a multiple hose ground cart (YMP-350 heater), direct one heater hose in the engine fan outlet, and one heater hose on the engine gearbox.

Open these access panels and direct one heater hose on the engine gearboxes:

Number	Name/Location
413AL	IDG Access Door, Engine 1
423AL	IDG Access Door, Engine 2

c) If you use a single hose ground cart (Herman Nelson heater), direct the heater hose on the engine gearbox.

Open these access panels and direct one heater hose on the engine gearboxes:

Number	Name/Location
413AL	IDG Access Door, Engine 1
423AL	IDG Access Door, Engine 2

2) Make sure that the engine oil temperature is above -35°F (-37°C) to prevent

damage to the engine bearings before you start the engines.

a) See engine operating limits (TASK 71-00-00-800-802-G00).

b) Prepare the engine for operation and cold weather starting (TASK 71-00-00-910-801-G00).

CAUTION REMOVE ICE AND SNOW FROM THE ENGINE. IF YOU DO NOT REMOVE THE ICE AND SNOW, DAMAGE TO THE ENGINE CAN OCCUR.

c) Remove the ground-accumulated ice as follows:

NOTE: Large pieces of ice and/or snow that go into the engine inlet can cause damage.

d) Remove all the ice or snow from the engine inlet ducts and fan blades before you start the engines.

e) Engine icing can occur when these conditions occur:

NOTE: You must use the thermal anti-icing system for the engines/nacelles when these conditions occur.

<1> There is visible moisture such as clouds, fog, rain, snow, sleet or ice crystals.

<2> You will do ground operations with the static air temperature less than 50°F (10°C).

f) Do this task: IDG Oil Level Check, TASK 12-13-21-200-801.

g) Before you start the engines, make sure there are no fluids around the exhaust areas that can start ignition.

NOTE: A fluid leak other than a continuous stream from the engine drains discovered during the exterior inspection is permitted and the engine can be started. If during engine start, the ground crew reports a fluid leak from an engine drain, the engine start may be continued. In either case, run the engine at idle thrust for up to 5 minutes. If the fluid leak stops during this time, no maintenance action is needed. If the fluid leak continues after 5 minutes, shut down the engine for maintenance action. Refer to Engine Vents and Drains Inspection, TASK 71-71-00-200-801-G00 for leakage limits and corrective actions.

3) Do this task: Start the Engine (Selection), TASK 71-00-00-910-802-G00.

4) If the ambient temperature is below -31°F (-35°C), idle the engine for 2 minutes before changing thrust lever position.

SUBTASK 12-33-02-210-006

(10) Do this task: Cold Weather Maintenance Procedure, TASK 12-33-01-600-801.

——— END OF TASK ———

TASK 12-33-02-600-803

4. Cold Weather Unattended Parking at Temperatures Below 32°F (0°C)

A. General

(1) This task is to park the airplane during extreme cold weather in an unattended parking condition. Unattended parking is generally used when the airplane will be on the ground in a non-operational condition between flights.

(2) During unattended parking, the temperatures of the cabin and flight deck were not maintained warmer than 32°F (0°C) and the engines were not maintained warmer than -40°F (-40°C) while the airplane is on the ground.

(3) For extreme cold weather unattended parking, drain the potable water and lavatory systems immediately after landing or as soon as possible.

(4) For airplanes that operate continuously in extreme cold weather, put the airplane into a heated hangar periodically to thaw the insulation blankets and other equipment

(5) If the temperature of the fuel is below 32°F (0°C), do not to drain the fuel tank sumps. To check for water at the fuel tank sump drain valves with fuel temperature below 32°F (0°C), do one of the following to raise the temperature of the fuel:

(a) Do this task: Fuel Tank Sumps - Fuel Sampling, TASK 12-11-00-680-801.

(6) When adding fuel, you must use these requirements:

(a) Make sure the fuel temperature is at least 6°F or 3°C above the fuel freeze point. Use the ASTM method to determine the freeze point.

NOTE: The refuel quantity indicator on the refuel panel (P15) can indicate slowly or not show numbers in extreme cold conditions. Use an external fuel flow meter to show the amount of fuel added to the airplane.

(b) Use fuels that meet specification ASTM D1655; or

(c) Use fuels that meet specification GOST 10227:

1) RT (PT, Russian spelling)

2) TS-1 (TC-1, Russian spelling)

(d) Approved fuel additive is:

NOTE: Adding an anti-icing fuel additive may help in the sumping of the fuel tanks.

1) Fuel Additive, specification GOST 8313, Fluid I (also known as Fluid E)

a) Fluid I may be used at a mixture of no more than 0.15 percent by volume.

2) Fuel additive, specification ASTM D4171.

a) ASTM D4171 may be used at a mixture of no more than 0.15 percent by volume.

B. References

Reference	Title
09-10-00-580-801	Nose Gear Maintenance Towing (P/B 201)
10-11-01-580-801	Airplane Parking (P/B 201)
10-12-00-550-801	Prepare to Park the Airplane for Storage, More Than 7 Days (1 Week) - Preserving (P/B 201)
12-11-00-680-801	Fuel Tank Sumps - Fuel Sampling (P/B 301)
12-14-00-600-801	Potable Water System - Drain (P/B 301)
12-15-51-780-801	Landing Gear Tire Pressure Check and Tire Servicing (P/B 301)
12-17-01-610-801	Waste Tank Servicing (P/B 301)
23-42-03-000-801	Cabin Attendant LCD Control Panel Removal (P/B 401)
24-31-11-000-801-002	Battery Removal (P/B 401)
32-21-11 P/B 801	NOSE LANDING GEAR SHOCK STRUT SEALS - REPAIRS

C. Location Zones

Zone	Area
100	Lower Half of Fuselage
200	Upper Half of Fuselage
300	Empennage
400	Powerplant and Nacelle Struts
500	Left Wing
600	Right Wing
700	Landing Gear and Landing Gear Doors
800	Doors

D. Access Panels

Number	Name/Location
117A	Electronic Equipment Access Door

E. Procedure

SUBTASK 12-33-02-420-001

(1) Install the inlet and exhaust covers.

NOTE: Keep the engine covers in a warm location before you install them on the airplane. Covers that are cold or frozen may be difficult to install, and may freeze to the engine inlet and exhaust.

NOTE: At very low ambient air temperatures, the time for the engine to cool to -35°F (-37°C) can be greatly increased by the use of engine inlet and exhaust covers.

SUBTASK 12-33-02-680-001

CAUTION

DRAIN THE WATER SYSTEM. IF THE WATERLINES HAVE WATER IN THEM, THEY CAN FREEZE IN COLD WEATHER. THIS CAN CAUSE DAMAGE TO THE WATERLINES.

(2) Do this task: Potable Water System - Drain, TASK 12-14-00-600-801.

NOTE: The potable water system and all components must be fully drained to make sure it will not freeze.

(a) Make sure all galley inserts, coffee pots, water heaters and boilers are empty and supply lines are drained.

(b) Remove the steam ovens (if installed).

NOTE: Steam ovens do not have drains.

(c) Remove the water heaters and galley boilers..

SUBTASK 12-33-02-680-002

(3) Drain and flush the waste system, do this task: Waste Tank Servicing, TASK 12-17-01-610-801.

NOTE: The toilet flushing system must be fully drained to make sure it will not freeze.

SUBTASK 12-33-02-020-002

WARNING

WHEN ELECTRICAL POWER IS NOT AVAILABLE TO OPERATE THE BRAKE HYDRAULIC SYSTEM, TELL THE TOW VEHICLE DRIVER. YOU MUST DECREASE THE SPEED OR YOU MUST NOT TOW THE AIRPLANE. WITHOUT ELECTRICAL POWER, THERE IS ONLY ACCUMULATOR PRESSURE AVAILABLE TO OPERATE THE BRAKES. IF YOU DO NOT OBEY THIS INSTRUCTION, INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT WILL OCCUR.

(4) If you need to tow the airplane, do this task: Nose Gear Maintenance Towing, TASK 09-10-00-580-801.

(a) If you need to tow the airplane without electrical power, then follow the steps below:

NOTE: Boeing does not recommend towing the airplane when electrical power is not available to operate the brake hydraulic system. If towing without power is necessary, you must obey the following steps:

1) Tell the tow vehicle driver of the situation.

2) Tow speeds must be decreased to walking speed (or a speed which will allow the tow vehicle to stop the airplane in a short distance) or you must not tow the airplane.

3) Make sure the brake accumulator is charged with a minimum of 2800 psi (19,305 kPa).

NOTE: With a minimum of 2800 psi (19,305 kPa) in the accumulator, you can apply the brakes no more than three (3) times before the accumulator is depleted below the precharge (red band) level where no brakes will be available.

SUBTASK 12-33-02-480-003

(5) Do this task: Airplane Parking, TASK 10-11-01-580-801.

(a) If the airplane will be parked for longer than 7 days, follow the task below:

1) Do this task: Prepare to Park the Airplane for Storage, More Than 7 Days (1 Week) - Preserving, TASK 10-12-00-550-801.

SUBTASK 12-33-02-210-007

(6) Visually check the wing lower surface for fuel leaks.

SUBTASK 12-33-02-600-002

(7) Do this task: Landing Gear Tire Pressure Check and Tire Servicing, TASK 12-15-51-780-801.

SUBTASK 12-33-02-210-008

(8) Visually check the landing gear and service if necessary.

(a) Wipe the inner cylinder with a clean cloth to check for hydraulic leakage from the seals.

(b) For airplanes originating in a warm environment and terminating in a cold environment, do the following:

1) Over-inflate the shock struts by approximately 1 in. (25 mm).

2) Perform a single point pressure/extension check while in the colder location.

a) If the strut is under-inflated and no leaks are present, then service with nitrogen to bring the strut back onto the low end of the AMM shock strut servicing band.

(c) For airplanes originating in a cold environment and terminating in a warm environment, do the following:

1) Perform a single point pressure/extension check before departure.

a) If the strut is under-inflated and no leaks are present, then service with nitrogen to bring the strut back onto the low end of the servicing band.

NOTE: When the airplane arrives in the warmer location, the strut will appear slightly over-inflated. Do not re-service the struts if the airplane will soon return to the colder climate. However, if the airplane will remain in service at a warmer location, then re-service the struts.

b) Install a spare dynamic seal in place of the active dynamic seal (cap seal assembly) if necessary to reduce leakage past the shock strut dynamic seal.

<1> Re-install the cap seal assembly as the active dynamic seal when warm weather returns.

<2> See NOSE LANDING GEAR SHOCK STRUT SEALS - REPAIRS, PAGEBLOCK 32-21-11/801 for more details.

SUBTASK 12-33-02-550-001

(9) Prepare the airplane for storage:

(a) Close the outflow valve.

(b) Remove portable fire extinguishers, emergency flashlights, first aid kits, smoke protection hoods, portable oxygen equipment, and bull horns.

(c) Remove the galley boilers and steam ovens if installed.

(d) Close all the main cabin doors, galley service doors, cargo compartment doors, access doors, and flight compartment windows.

NOTE: This will prevent snow from getting into the airplane interior.

SUBTASK 12-33-02-010-001

(10) If the ambient temperature will be less than -13°F (-25°C), remove the attendant control panels (FWD and AFT) (TASK 23-42-03-000-801).

SUBTASK 12-33-02-860-005

(11) If the ambient temperature will be less than -35°F (-37°C) during the unattended period, Turn off flight control hydraulic power.

(a) Move the FLT CONTROL A and B switches on the P5 Flight Control Panel to OFF.

(b) Move the SPOILER A and B switches on the P5 Flight Control Panel to OFF

SUBTASK 12-33-02-680-003

(12) If the airplane has a forward airstair, all ice and snow must be removed completely each time the airstairs are put in the stow position.

CAUTION REMOVE ALL ICE AND SNOW FROM THE AIRSTAIRS BEFORE YOU MOVE THE AIRSTAIRS IN THE FUSELAGE. ICE AND SNOW WILL MELT IN THE FUSELAGE AND CAN DRAIN ON THE ELECTRONIC EQUIPMENT. DAMAGE TO ELECTRONIC EQUIPMENT CAN OCCUR.

(a) Stow the airstair.

(b) Gain access under the airstairs through this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

(c) Check for water on the drip shields and around the electronic equipment.

(d) Remove all water on the drip shields and around electronic equipment.

(e) Close this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

SUBTASK 12-33-02-550-002

(13) Make sure the DC meter on the P5-13 panel shows that the battery is fully charged.

SUBTASK 12-33-02-550-003

(14) Remove the main and auxiliary batteries, do this task: Battery Removal, TASK 24-31-11-000-801-002.

(a) Put the batteries in a warm location where the temperature remains above 50°F (10°C).

NOTE: The batteries can stay in the airplane that is left without personnel during an cold soak down to -15C, but return to service time will be increased.

——— END OF TASK ———

TASK 12-33-02-600-804

5. Return the Airplane to Service After Cold Weather Unattended Parking at Temperatures Below 32°F (0°C)

A. General

(1) This task is for airplanes that are parked during extreme cold weather in an unattended parking condition. Unattended parking is generally used when the airplane is on the ground in a non-operational condition between flights.

(2) During unattended parking, the temperatures of the cabin and flight deck are not maintained warmer than 32°F (0°C) and the engines are not maintained warmer than -40°F (-40°C) while the airplane is on the ground.

(3) If the temperature has remained above -40°F (-40°C) passenger cabin warming is not necessary, but warming is required for the flight deck and EE bay.

(4) For temperatures below 5°F (-15°C), the EE bay must be warmed before the electronics are energized.

(5) For temperatures below -4°F (-20°C), the flight deck must be warmed before the electronics are energized.

B. References

Reference	Title
10-11-01-580-802	Return Airplane to Service After Parking (P/B 201)
10-12-00-550-805	Put the Airplane Back to Serviceable Condition After Storage (P/B 201)
12-12-00-610-801	Hydraulic Reservoir Servicing (P/B 301)
12-13-21-200-801	IDG Oil Level Check (P/B 301)
12-15-31-610-801	Main Landing Gear Shock Strut Fluid Check (P/B 301)
12-15-41-610-801	Nose Landing Gear Shock Strut Fluid Check (P/B 301)
12-15-51-780-801	Landing Gear Tire Pressure Check and Tire Servicing (P/B 301)
12-33-01-600-801	Cold Weather Maintenance Procedure (P/B 301)
20-10-44-400-801	Lockwire, Cotter Pins, and Lockrings - Installation (P/B 401)
23-42-03-400-801	Cabin Attendant LCD Control Panel Installation (P/B 401)
24-31-11-400-801-002	Battery Installation (P/B 401)

(Continued)

Reference	Title
29-11-00-860-803	Hydraulic System Pressurization with an Electric Motor-Driven Pump (EMDP) (P/B 201)
32-41-11-000-801	Brake Disconnect Removal (P/B 401)
32-41-11-400-801	Brake Disconnect Installation (P/B 401)
32-41-41-000-801	Main Landing Gear Brake Removal (P/B 401)
32-41-41-400-801	Main Landing Gear Brake Installation (P/B 401)
32-42-00-710-802	Autobrake Shuttle Valve Operational Test (P/B 501)
32-42-00-720-801	Antiskid/Autobrake Control Unit Operational Test (P/B 501)
35-31-01-990-803	Figure: Portable Oxygen Cylinder-Pressure/Temperature Correction Chart (P/B 601)
49-11-00-860-801	APU Starting and Operation (P/B 201)
71-00-00-800-802-G00	Engine Operation Limits (P/B 201)
71-00-00-910-801-G00	Prepare the Engine for Operation (P/B 201)
71-00-00-910-802-G00	Start the Engine (Selection) (P/B 201)
71-71-00-200-801-G00	Engine Vents and Drains Inspection (P/B 601)

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-2478	Heater - External Cabin, Trailer Mounted Part #: ACU-2000 Supplier: 6L481 Part #: MARK IV-900 COLDBUSTER Supplier: 12008 Part #: MARK IV-TDSL COLDBUSTER Supplier: 12008 Opt Part #: MARK I COLDBUSTER Supplier: 12008 Opt Part #: MARK IV COLDBUSTER Supplier: 12008 Opt Part #: MARK IV-700 COLDBUSTER Supplier: 12008
STD-464	Heater - Ductable, Heavy Duty, Air
STD-1125	Heater - Blower, Explosion Proof
STD-3925	Heater - Blower, Explosion Proof, Electric

D. Location Zones

Zone	Area
100	Lower Half of Fuselage
200	Upper Half of Fuselage
300	Empennage
400	Powerplant and Nacelle Struts
500	Left Wing
600	Right Wing
700	Landing Gear and Landing Gear Doors
800	Doors

E. Access Panels

Number	Name/Location
117A	Electronic Equipment Access Door

(Continued)

Number	Name/Location
191E	Low Pressure ECS Panel - Forward
413AL	IDG Access Door, Engine 1
423AL	IDG Access Door, Engine 2

F. Procedure

SUBTASK 12-33-02-550-004

(1) Do this task: Return Airplane to Service After Parking, TASK 10-11-01-580-802.

SUBTASK 12-33-02-550-007

(2) For airplanes that were parked for longer than 7 days, do this task: Put the Airplane Back to Serviceable Condition After Storage, TASK 10-12-00-550-805.

SUBTASK 12-33-02-800-003

(3) Make sure that snow or ice is removed from the pavement or surface directly below the Radio Altimeter antennas.

NOTE: Snow and/or ice can scatter the signal from the Radio Altimeters. If snow and/or ice are present underneath the aircraft, introduce a reflector under the LRRA antennas to provide a signal return path other than the snow/ice. (Reflectors can be anything such as radar absorbing material, ladders, etc.)

SUBTASK 12-33-02-880-002

(4) Do these steps to warm the interior of the airplane:

(a) Secure the following doors in the open position:

1) Lavatory doors
2) Flight deck door
3) Closet doors
4) Galley bin doors
5) Overhead stowage bin doors.

CAUTION

THE AIR ENTERING THE CONDITIONED AIR GROUND SERVICE PORT MUST NOT EXCEED 158°F (70°C) AND THE PRESSURE MUST NOT EXCEED 15IN (38CM) OF WATER AT THE POINT WHERE THE AIR ENTERS THE BODY OF THE AIRPLANE. IF THE AIR TEMPERATURE AND PRESSURE EXCEEDS 158°F (70°C) AND 15IN (38CM) OF WATER, DAMAGE TO THE EQUIPMENT CAN OCCUR.

(b) Do these steps to attach one or more ground heater equipment to the airplane:

NOTE: Use explosion proof electric blower - heater, STD-3925, explosion proof heater, STD-1125, ductable heavy duty portable air heater, STD-464, heater, COM-2478, or suitable substitute.

1) Connect one heater hose to this access panel (if applicable):

Number	Name/Location
191E	Low Pressure ECS Panel - Forward

2) Insert one heater hose in this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

3) Insert one or more heater hoses in the forward and aft entry doors.

4) If additional heater hoses are available, insert one heater hoses in the forward cargo compartment in the area of the main battery and EE bay wall.

(c) Warm the interior of the airplane before you energize any of the electronics:

1) For heating schedule, see Figure 301.

NOTE: It will take approximately 60 minutes to raise the flight deck temperature from -65°F (-54°C) to -4°F (-20°C) with one heating unit (reference YMP-350). It will take approximately 90 minutes to raise the EE Bay temperature from -65°F (-54°C) to 5°F (-15°C) with one heating unit.

2) Make sure that you maintain the flight deck temperature at or above -4°F (-20°C) for 30 minutes before you energize any of the electronics.

3) Make sure that you maintain the EE Bay temperature at or above 5°F (-15°C) for 30 minutes before you energize any of the electronics.

4) If an additional ground heating cart is available, heat the aft galley.

NOTE: Heating of the passenger cabin is not necessary before APU start, but can decrease the time it takes to raise the cabin to operating temperature with the ECS system.

SUBTASK 12-33-02-420-002

(5) Do this task: Battery Installation, TASK 24-31-11-400-801-002.

SUBTASK 12-33-02-010-004

(6) Keep entry door closed at all times when access is not required.

NOTE: While the airplane is heated with ground conditioned air or with the ECS, warm air is vented through the outflow valve. This provides heated air to the potable water and waste systems in the lower lobe aft compartment. When the entry door is open, the heated air escapes through the entry door and may cause the water or waste systems to freeze in the aft compartment. From in-service experience, water and waste lines can freeze within 15 minutes if the entry door remains open in extreme low temperatures.

SUBTASK 12-33-02-880-003

(7) Make sure that the flight deck is maintained at or above -4°F (-20°C) for 30 minutes and the EE Bay is maintained at or above 5°F (-15°C) for 30 minutes, then do these steps:

(a) Disconnect the ground heater equipment.

(b) Close these access panels (if applicable):

Number	Name/Location
117A	Electronic Equipment Access Door
191E	Low Pressure ECS Panel - Forward

(c) Start the APU with the main battery or ground power.

1) Use the MAX Display System Maintenance Page to monitor the APU oil temperature before you start the APU.

NOTE: To improve starting capability and longevity of the APU, make sure APU oil temperatures is above -35°F (-37°C) before starting. If the APU oil temperature is below -35°F (-37°C), you must warm the APU before starting.

a) If the APU oil temperature is below -35°F (-37°C), heat the APU compartment for 15 minutes before starting the APU.

2) Do this task: APU Starting and Operation, TASK 49-11-00-860-801.

(d) Make sure that the outflow valves are in the OPEN position.

(e) Make sure that the left and right recirculation fan switches are in the AUTO position.

(f) Close the pack and zone circuit breakers on the P6 panel if they are open.

(g) Put all zone selectors to the 12 o'clock position.

(h) Make sure that the isolation valve is open.

(i) Make sure that the Trim Air switch is ON.

(j) Turn the left and right pack switches to AUTO.

SUBTASK 12-33-02-410-001

(8) If you removed the attendant control panels, install the panels (TASK 23-42-03-400-801).

SUBTASK 12-33-02-860-006

WARNING MAKE SURE ALL PERSONS AND EQUIPMENT ARE CLEAR OF THE FLIGHT CONTROLS SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(9) Make sure the flight control hydraulic powers are OFF.

(a) Move the FLT CONTROL A and B switches on the P5 Flight Control Panel to OFF.

(b) Move the SPOILER A and B switches on the P5 Flight Control Panel to OFF.

SUBTASK 12-33-02-860-007

CAUTION DO NOT OPERATE THE AILERONS, RUDDER, ELEVATOR, BRAKES, SPOILERS, STABILIZERS OR FLAPS UNTIL THE PUMPS OPERATE FOR A MINIMUM OF 15 MINUTES. IF YOU OPERATE THE HYDRAULIC COMPONENTS BEFORE THE SYSTEM IS WARM, DAMAGE TO THE PUMPS AND COMPONENTS CAN OCCUR.

(10) Turn on the hydraulic system pumps 15 minutes before actuating the flight controls:

NOTE: This will warm the hydraulic systems (A and B, and Standby) to make sure the hydraulic system operates normally and will prolong the life of the components.

(a) Do this task: Hydraulic System Pressurization with an Electric Motor-Driven Pump (EMDP), TASK 29-11-00-860-803.

1) Make sure these electric switches are in the ON position.

a) HYD PUMPS ELEC 1

b) HYD PUMPS ELEC 2

CAUTION DO NOT START THE PUMP MORE THAN FIVE TIMES IN A FIVE MINUTE PERIOD. THE PUMP CAN BECOME TOO HOT. THIS CAN CAUSE DAMAGE TO THE PUMP.

2) If the amber LOW PRESSURE light illuminates on the Hydraulic Control Panel for ELEC 1 or ELEC 2, do the steps that follow:

a) Move the switch for the electric motor pump with the low pressure to OFF

b) Move the switch for the electric motor pump with the low pressure to ON

(b) Cut the frangible wire on the guard for the ALTERNATE FLAPS switch on the P5 Flight Control Panel and move it to ARM.

(c) While the hydraulic pumps are on, check the hydraulic systems for leaks:

1) Monitor the hydraulic reservoir levels.

NOTE: The hydraulic system reservoir level can decrease slightly until you actuate the flight controls.

2) Visually check these areas for hydraulic leaks:

a) main wheel well

b) empennage

c) wing root

d) nose wheel well.

(d) Keep the electric motor pumps ON until the engine-driven pumps are operating.

SUBTASK 12-33-02-860-008

WARNING MAKE SURE ALL PERSONS AND EQUIPMENT ARE CLEAR OF THE FLIGHT CONTROLS SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(11) Make sure the hydraulic pumps have been on for a minimum of 15 minutes, then turn on flight control and spoiler hydraulic power:

(a) Move the FLT CONTROL A and B switches on the P5 Flight Control Panel to ON.

(b) Move the SPOILER A and B switches on the P5 Flight Control Panel to ON.

(c) Move the ALTERNATE FLAPS switch on the P5 Flight Control Panel to OFF.

1) Close the switch guard for the ALTERNATE FLAPS switch and secure with 0.020 in. (0.508 mm) copper wire, do this task Lockwire, Cotter Pins, and Lockrings - Installation, TASK 20-10-44-400-801..

SUBTASK 12-33-02-860-009

CAUTION DO NOT OPERATE THE AILERONS, RUDDER, ELEVATOR, BRAKES, SPOILERS, STABILIZERS OR FLAPS UNTIL THE PUMPS OPERATE FOR A MINIMUM OF 15 MINUTES. IF YOU OPERATE THE HYDRAULIC COMPONENTS BEFORE THE SYSTEM IS WARM, DAMAGE TO THE PUMPS AND COMPONENTS CAN OCCUR.

(12) Do the functions of the flight control systems that follow:

(a) Slowly (1 to 2 seconds), move the control column, wheel, rudder pedals, and the ground spoilers.

NOTE: You must complete at least 10 cycles of each control to near full travel.

1) Verify that the movement of the flight control systems are normal on the MAX Display System Maintenance Page.

(b) Run the stabilizer trim full travel nose up and nose down using the column mounted trim switch.

(c) Prepare for the autopilot check:

1) Make sure that the VHF NAV and IRS switches, on the P5 forward overhead panel, are in the NORMAL positions.

2) Set the left and right IRS select switches, on the P5 aft overhead panel, to the ALIGN or NAV position.

(d) Operate the autopilot servos as follows:

1) Engage one autopilot channel.

2) Engage vertical speed mode.

a) Select vertical speed of 2000 fpm.

NOTE: Wait for column motion to stop.

b) Select vertical speed of -2000 fpm.

NOTE: Wait for column motion to stop.

3) Engage heading select mode.

a) Select 30 degree heading change to the left of airplane heading.

NOTE: Wait for wheel motion to stop.

b) Select 30 degree heading change to the right of airplane heading.

NOTE: Wait for wheel motion to stop.

4) Repeat steps 1 thru 3 for the other autopilot channel.

SUBTASK 12-33-02-860-010

(13) If necessary, clear the ice/snow/slush on the alternate landing gear system components on the wheel wells.

SUBTASK 12-33-02-210-009

(14) Visually check the wing lower surface for fuel leaks.

SUBTASK 12-33-02-210-010

(15) Visually check the landing gear and do these steps:

(a) Wipe the inner cylinder with a clean cloth to check for hydraulic leakage from the seals.

(b) Look for leaks on the MLG and NLG retract actuators.

SUBTASK 12-33-02-210-011

(16) Do this task: Landing Gear Tire Pressure Check and Tire Servicing, TASK 12-15-51-780-801.

SUBTASK 12-33-02-210-012

(17) Do this task: Main Landing Gear Shock Strut Fluid Check, TASK 12-15-31-610-801.

SUBTASK 12-33-02-210-013

(18) Do this task: Nose Landing Gear Shock Strut Fluid Check, TASK 12-15-41-610-801.

SUBTASK 12-33-02-610-002

(19) Service the hydraulic system if necessary (TASK 12-12-00-610-801).

SUBTASK 12-33-02-860-011

(20) When adding fuel, you must use these requirements:

(a) To check for water at the fuel tank sump drain valves with fuel temperature below 32°F (0°C), do one of the following to raise the temperature of the fuel:

NOTE: If the temperature of the fuel is below 32°F (0°C), do not to drain the fuel tank sumps.

1) Fill the tanks with warm fuel

2) Move the airplane in to a warm hangar.

(b) Make sure that the fuel temperature is at least 6°F or 3.3°C above the fuel freeze point.

NOTE: Use the ASTM method to determine the freeze point.

NOTE: The refuel quantity indicator on the refuel panel (P15) can indicate slowly or not show numbers in extreme cold conditions. Use an external fuel flow meter to show the amount of fuel added to the airplane.

1) Use fuels that meet specification ASTM D1655 or use fuels that meet specification GOST 10227:

a) RT (PT, Russian spelling)

b) TS-1 (TC-1, Russian spelling)

(c) Use these approved fuel additive:

NOTE: Adding an anti-icing fuel additive may help in the sumping of the fuel tanks.

1) Fuel Additive, specification GOST 8313, Fluid I (also known as Fluid E)

a) Fluid I may be used at a mixture of no more than 0.15 percent by volume.

2) Fuel additive, specification ASTM D4171.

a) ASTM D4171 may be used at a mixture of no more than 0.15 percent by volume.

SUBTASK 12-33-02-860-012

(21) At temperatures below -22°F (-30°C), do these steps before starting the engines:

(a) Apply localized heat to the inner cylinder of the nose and main gear.

(b) Pump the brake pedals 20 times shortly and verify extension/retraction of brake pistons at each brake.

1) If brake operation is not normal, do the steps that follow:

a) Provide local warming to the brake.

b) Repeat the test until proper operation is observed.

c) If the difficulty continues:

<1> Do this task: Brake Disconnect Removal, TASK 32-41-11-000-801.

<2> Do this task: Brake Disconnect Installation, TASK 32-41-11-400-801.

<3> Do this task: Main Landing Gear Brake Removal, TASK 32-41-41-000-801.

<4> Do this task: Main Landing Gear Brake Installation, TASK 32-41-41-400-801.

SUBTASK 12-33-02-700-001

(22) Do a check of the antiskid/autobrake system (TASK 32-42-00-710-802 and TASK 32-42-00-720-801).

SUBTASK 12-33-02-600-003

(23) Use the MAX Display System Maintenance Page to monitor the engine oil temperature before you start the engines.

(a) If the engine oil temperature is below -35°F (-37°C), heat the engines with a explosion proof electric blower - heater, STD-3925 or suitable substitute:

1) If you use a multiple hose ground cart (reference heater, COM-2478), direct one heater hose in the engine fan outlet, and one heater hose on the engine gearbox.

Open these access panels and direct one heater hose on the engine gearboxes:

Number	Name/Location
413AL	IDG Access Door, Engine 1
423AL	IDG Access Door, Engine 2

2) If you use a multiple hose ground cart, direct one heater hose in the engine fan outlet, and one heater hose on the engine gearbox.

Open these access panels and direct one heater hose on the engine gearboxes:

Number	Name/Location
413AL	IDG Access Door, Engine 1
423AL	IDG Access Door, Engine 2

3) If you use a single hose ground cart, direct the heater hose on the engine gearbox.

Open these access panels and direct one heater hose on the engine gearboxes:

Number	Name/Location
413AL	IDG Access Door, Engine 1
423AL	IDG Access Door, Engine 2

(b) Make sure that the engine oil temperature is above -35°F (-37°C), then follow the steps below to start the engines:

1) Refer to the engine operating limits (TASK 71-00-00-800-802-G00).

2) Prepare the engine for operation and cold weather starting (TASK 71-00-00-910-801-G00).

CAUTION REMOVE ICE AND SNOW FROM THE ENGINE. IF YOU DO NOT REMOVE THE ICE AND SNOW, DAMAGE TO THE ENGINE CAN OCCUR.

3) Remove ground-accumulated ice as follows:

4) Engine icing can occur when the conditions that follow occur:

NOTE: You must use the thermal anti-icing system for the engines/nacelles when these conditions occur.

a) There is visible moisture such as clouds, fog, rain, snow, sleet or ice crystals.

b) You will do ground operations with the static air temperature is less than 50°F (10°C).

5) Do this task: IDG Oil Level Check, TASK 12-13-21-200-801.

6) Before you start the engines, remove all heater hoses from the engine fan outlet and engine gear box.

7) Make sure that there are no fluids around the exhaust areas that can start ignition.

NOTE: A fluid leak other than a continuous stream from the engine drains discovered during the exterior inspection is permitted and the engine can be started. If during engine start, the ground crew reports a fluid leak from an engine drain, the engine start may be continued. In either case, run the engine at idle thrust for up to 5 minutes. If the fluid leak stops during this time, no maintenance action is needed. If the fluid leak continues after 5 minutes, shut down the engine for maintenance action. Refer to Engine Vents and Drains Inspection, TASK 71-71-00-200-801-G00 for leakage limits and corrective actions.

8) Do this task: Start the Engine (Selection), TASK 71-00-00-910-802-G00.

9) If the ambient temperature is below -31°F (-35°C), idle the engine for 2 minutes before changing thrust lever position.

SUBTASK 12-33-02-700-002

(24) Do a function of the flaps as follows:

(a) Select the flaps to the full down position.

1) Make sure that the flaps move to the full down position.

(b) Select the flaps to the full up position.

1) Make sure that the flaps move to the full up position.

SUBTASK 12-33-02-550-005

CAUTION REMOVE ALL ICE AND SNOW FROM THE AIRSTAIRS BEFORE YOU MOVE THE AIRSTAIRS IN THE FUSELAGE. ICE AND SNOW WILL MELT IN THE FUSELAGE AND CAN DRAIN ON THE ELECTRONIC EQUIPMENT. DAMAGE TO ELECTRONIC EQUIPMENT CAN OCCUR.

(25) If the airplane has a forward airstair, remove all ice and snow completely each time before you stow the airstairs.

(a) Gain access under the airstairs through this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

(b) Check for water on the drip shields and around the electronic equipment.

(c) Remove all water on the drip shields and around electronic equipment.

(d) Close this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

SUBTASK 12-33-02-550-006

(26) Prior to flight, do these steps:

(a) Do this task: Cold Weather Maintenance Procedure, TASK 12-33-01-600-801.

(b) Install portable fire extinguishers, emergency flashlights, first aid kits, smoke protection hoods, portable oxygen equipment, and bull horns.

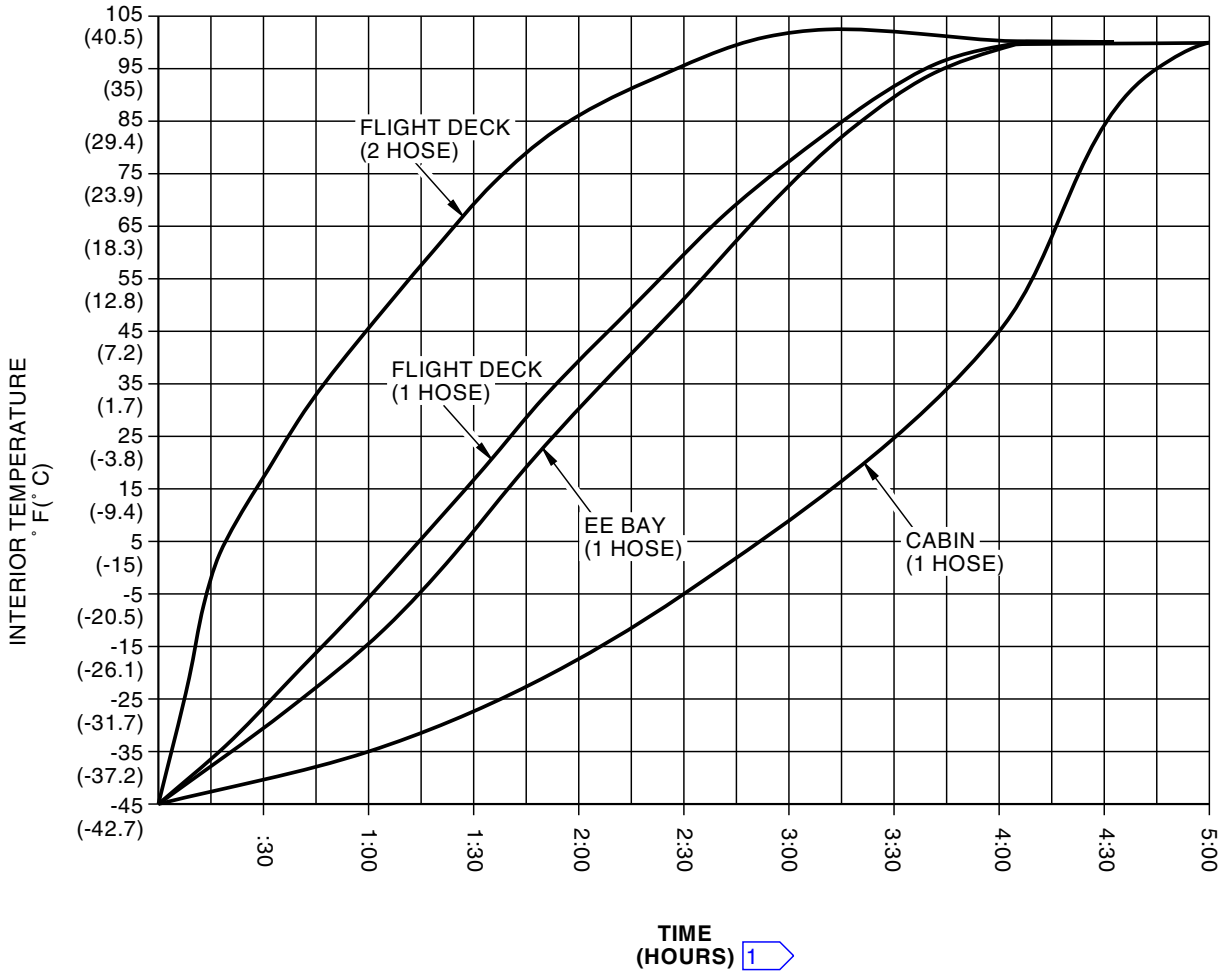
(c) Install the galley boilers and steam ovens.

SUBTASK 12-33-02-800-001

(27) Do a check of the flight crew and portable oxygen systems for indication of oxygen flow.

NOTE: The pressure in the flight crew and portable oxygen systems may indicate lower than normal at cold temperatures. For temperature effects, refer to Figure 35-31-01-990-803.

——— END OF TASK ———



1 TIME TO WARM INTERIOR COMPONENTS TO AVERAGE STABLE TEMPERATURE CONDITION

2411053 S00061526802_V1

Heating Schedule
Figure 301/12-33-02-990-801

AIRPLANE CLEANING AND POLISHING - MAINTENANCE PRACTICES

1. General

A. This procedure has these tasks:

(1) Clean (Wet Wash) the external surfaces of the airplane

(2) Clean (Waterless Wash) the external surfaces of the airplane

(3) Polish the external surfaces of the airplane

(4) Clean the Exterior Surface of Volcanic and Fire Ash.

TASK 12-40-00-100-801

2. Clean (Wet Wash) the External Surfaces of the Airplane

(Figure 201, Figure 202 and Figure 208)

A. General

(1) Use this task to clean and polish the external surfaces of the airplane except the flight and passenger compartment windows. Use this procedure to help decrease filiform corrosion under paint on clad aluminum surfaces. Clean the external surfaces frequently to help prevent corrosion and to extend the life of the airplane structure. Clean the surfaces that do not have paint more frequently than the painted surfaces.

WARNING

ALWAYS WEAR PROTECTIVE CLOTHING THAT WILL PREVENT INJURY WHEN YOU CLEAN THE AIRPLANE. THE LIQUIDS USED IN THIS PROCEDURE CAN CAUSE INJURY TO THE SKIN AND EYES, OR DAMAGE TO THE AIRPLANE. THE CLEANERS CAN CAUSE CORROSION IF THEY ARE NOT REMOVED COMPLETELY FROM THE AIRPLANE SURFACES. THE SOLVENT THAT IS MIXED WITH THE CLEANERS IS FLAMMABLE. KEEP THE SOLVENT AWAY FROM SOURCES OF HEAT.

(2) This task includes these procedures:

NOTE: Water pressure above 80 psi (552 kPa) is considered to be "high pressure".

(a) Removal of light materials (dust and dirt) from smooth surfaces.

(b) Removal of moderately heavy materials (oil and mud) from smooth surfaces.

(c) Removal of heavy materials (grease and exhaust particles) from smooth surfaces.

(d) Removal of materials around sensitive components.

(e) Removal of unwanted hydraulic fluid.

(f) Cleaning with foam.

(3) Do the procedure to remove material around sensitive components to clean the areas that contain mechanical, electrical, or hydraulic components.

(a) These areas include the wheel wells, flight control surfaces, and landing gear.

(4) When moderately heavy or heavy material removal is necessary, remove the heavier material first then do the procedure to remove light material.

(5) Do not clean an area so large that the cleaner dries on the surface before you can flush it with water.

(6) To clean the windows in the flight compartment, do this task: Clean the Glass Flight Compartment Windows — Inner Surface, TASK 12-16-02-100-801.

(7) To clean the windows in the passenger compartment, do this task: Clean The Passenger Compartment Windows, TASK 12-16-03-100-801.

(8) All cleaning materials should meet the requirements of BSS7432, Evaluation of Airplane Maintenance Materials.

B. References

Reference	Title
12-11-00-680-801	Fuel Tank Sumps - Fuel Sampling (P/B 301)
12-16-02-100-801	Clean the Glass Flight Compartment Windows — Inner Surface (P/B 301)
12-16-03-100-801	Clean The Passenger Compartment Windows (P/B 301)
12-26-00-600-801	Control Cable Lubrication (P/B 301)
20-40-11-910-801	Static Grounding (P/B 201)
24-22-00-860-804	Remove External Power (P/B 201)
27-51-00-860-803	Extend the Trailing Edge Flaps (P/B 201)
27-51-00-860-804	Retract the Trailing Edge Flaps (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-1503	Cover - Probe, Pitot Part #: B737-415 Supplier: 1LE67 Part #: KPC3-480-325 Supplier: 0P9C7 Part #: PC737 Supplier: 3BSK6 Part #: PC757-01SB Supplier: 38002 Part #: PCDH8-400 Supplier: 3BSK6 Opt Part #: KPC4-480-325 Supplier: 0P9C7
COM-1519	Cover - Protective, Total Air Temperature Probe Part #: B737-420 Supplier: 1LE67 Part #: FTC-102 Supplier: 0P9C7 Part #: TAT102 Supplier: 3BSK6
COM-2499	Cover - Vane, Angle of Attack Part #: R/C-AOAC-2 Supplier: 0P9C7
COM-2500	Cover - Protective, Main Landing Gear Wheels/Brakes Part #: B737-455 Supplier: 1LE67 Part #: WL07J99 Supplier: 8M213
SPL-1508	Pole - Removal/Installation, Pitot Static Probe Cover Part #: A10002-9 Supplier: 81205 Part #: IP100 Supplier: 0P9C7 Opt Part #: A10002-7 Supplier: 81205
SPL-1517	Cover - Engine Exhaust Part #: 896812 Supplier: SBK11 Part #: C10006-1 Supplier: 81205
SPL-14189	Protective Cover - AOA Vane Part #: AOA100 Supplier: 3BSK6 Part #: C10004-1 Supplier: 81205

(Continued)

Reference	Description
SPL-14650	Cover, Engine Inlet - LEAP 1B Part #: 892812 Supplier: SBK11 Part #: B737-104 Supplier: 1LE67 Part #: B737-153 Supplier: 1LE67 Part #: C10005-23 Supplier: 81205 Opt Part #: C10005-1 Supplier: 81205
STD-1086	Gloves - Rubber
STD-1137	Glasses - Safety

D. Consumable Materials

Reference	Description	Specification
B00003	Cleaner - Emulsion Alkaline - GMC 528B (use until stock depleted)	
B00005	Cleaner - Alkaline - Cee Bee 280	
B00013	Cleaner - Alkaline - Dubois C-1102	
B00014	Cleaner - Zip-Chem Products Calla 301 Heavy Duty Cleaner	
B00083	Solvent - VM&P Naphthas	TT-N-95 Type II, ASTM D-3735 Type III
B00314	Compound - Aircraft Surface Cleaning	MIL-C-43616
B00325	Cleaner - Alkaline - Turco Jet Clean E	
B00434	Solvent - Alkaline - Metaclean AC	
B01023	Cleaner - Primary - Ardrox 6025	
B50085	Solvent - Skykleen 1000	BAC5750
B50093	Soap - Liquid - Kelite Spraywhite	BAC5507
B50114	Cleaner - General Purpose, Super Bee 210	
G00252	Film - Polyethylene Film And Sheeting	ASTM D2103 (Supersedes L-P-512)
G02219	Tape - Yellow Vinyl Adhesive, Scotch Brand No.471, 1.5 Inches (38.1 mm) Wide	
G02443	Tape - Barricade, Non-Adhesive, Orange, 3 (76 mm) Inches Wide, 4 mils (0.102 mm) Thick, "REMOVE BEFORE FLIGHT"	
G02444	Tag - Red Paper, "STATIC PORTS COVERED" - 3 inches (76.2 mm) Wide, 6 inches (152.4 mm) Long	
G02447	Tag - Red Paper, "PITOT PROBES COVERED" - 3 inches (76.2 mm) Wide, 6 inches (152.4 mm) Long	
G50330	Fabric - Insulation Covering, Flame Propagation Resistant	BMS8-377

E. Cleaner Mixing Instructions

SUBTASK 12-40-00-110-001

(1) For alkaline cleaners, mix the cleaners in the proportions in Table 201.

NOTE: Be careful when you clean the airplane in hot weather. The heated surface of the airplane can dry the cleaners before you can flush them with water. The dried cleaners can stain the surface.

Table 201/12-40-00-993-801 Water Base Alkaline Cleaners

Dilution Ratios (Number of Volumes of Water per One Volume of Cleaner)			
Cleaner	**Lightly Dirty**	**Moderately Dirty**	**Very Dirty**
GMC 528B cleaner, B00003*[1] *[2]	7	3	2
Kelite Spraywhite, B50093	10	4	2
Cee Bee 280 cleaner, B00005	10	4	2
Ardrox 6025 cleaner, B01023	9	5	1
Metaclean AC solvent, B00434	10	4	2
Dubois C-1102 cleaner, B00013	10	4	3
Calla 301 cleaner, B00014	10	4	3
Turco Jet Clean E cleaner, B00325	10	5	3
Super Bee 210 cleaner, B50114	4	3	2

*[1] Solution should not be allowed to contact acrylic plastics – crazing may occur.

*[2] This cleaner should not be used on exterior decorative areas painted with BMS10–4 enamel.

SUBTASK 12-40-00-110-002

(2) For solvent emulsion cleaners, mix the cleaners in the proportions in Table 202.

Table 202/12-40-00-993-802 Solvent Emulsion Cleaners

Dilution Ratio (Number of Volumes of Water and Cleaning Solvent per One Volume of Cleaner)		
Cleaner	**Water**	**Cleaning Solvent**
All Cleaners in Table 201	2	5 to 6

SUBTASK 12-40-00-110-003

(3) For heavy duty cleaners, mix the cleaners in the proportions in Table 203.

NOTE: Be careful when you clean the airplane in hot weather. The heated surface of the airplane can dry the cleaners before you can flush them with water. The dried cleaners can stain the surface.

Table 203/12-40-00-993-803 Heavy Duty Cleaners

Dilution Ratio (Number of Volumes of Water and Cleaning Solvent per One Volume of Cleaner)		
Cleaner	**Water**	**Cleaning Solvent**
Heavy duty cleaning compound, B00314	2	1
Super Bee 210 cleaner, B50114	1	1 to 3

F. Prepare to Clean the Airplane

SUBTASK 12-40-00-500-001

WARNING KEEP ALL OF THE EQUIPMENT THAT YOU USE WITH FLAMMABLE SOLVENTS AWAY FROM SOURCES OF HEAT. IF THERE IS WIND, MAKE SURE THE SOLVENTS DO NOT FALL ON ELECTRICAL EQUIPMENT OR WARM COMPONENTS.

(1) Move all equipment that you will use with flammable solvents away from sources of heat.

SUBTASK 12-40-00-910-001

(2) Do this task: Static Grounding, TASK 20-40-11-910-801.

SUBTASK 12-40-00-860-004

(3) Do this task: Remove External Power, TASK 24-22-00-860-804.

SUBTASK 12-40-00-840-001

(4) Close all of the passenger doors, cargo doors, emergency exits, and access doors and panels.

NOTE: If the doors cannot be closed because of other servicing, be careful that no fluid gets into the cabin area.

SUBTASK 12-40-00-840-002

CAUTION USE COVERS, BLACK POLYETHYLENE SHEET, AND YELLOW VINYL ADHESIVE TAPE TO KEEP LIQUIDS OUT OF AREAS THAT CONTAIN MECHANICAL, ELECTRICAL, OR HYDRAULIC COMPONENTS. LIQUIDS THAT GET INTO THESE AREAS CAN CAUSE CORROSION, FREEZE DURING AIRPLANE FLIGHT, OR REMOVE NECESSARY LUBRICANTS.

CAUTION WHENEVER AN OPENING IS COVERED, MAKE SURE THAT CONDITION IS VISIBLE FROM THE GROUND. ENGINES SHOULD NOT BE OPERATED WITH COVERS IN PLACE BECAUSE THE COVERS CAN COME OFF AND DAMAGE THE ENGINES.

(5) Do the steps that follow to install component covers:

CAUTION MAKE SURE THE PROBE COVER IS IN GOOD WORKING CONDITION WITH NO EVIDENCE OF DAMAGE, ESPECIALLY FRAYING AROUND THE COVER OPENING. FRAYED FIBERS FROM THE COVER COMBINED WITH OTHER SUBSTANCES SUCH AS DIRT, GREASE AND FLUIDS CAN CAUSE OBSTRUCTION IN THE PROBE.

(a) Install the pitot probe cover, COM-1503 with the pitot static probe cover removal/installation pole, SPL-1508.

(b) Install the probe cover, COM-1519, on the total air temperature probes.

(c) Install the AOA vane protective cover, SPL-14189 (recommended) or angle of attack vane cover, COM-2499 (alternate).

(d) Install the engine inlet cover, SPL-14650.

(e) Install the engine exhaust cover, SPL-1517.

(f) Install a main landing gear wheels/brakes protective cover, COM-2500.

SUBTASK 12-40-00-840-004

CAUTION

WHENEVER AN OPENING IS COVERED, MAKE SURE THAT CONDITION IS VISIBLE FROM THE GROUND. ENGINES SHOULD NOT BE OPERATED WITH COVERS IN PLACE BECAUSE THE COVERS CAN COME OFF AND DAMAGE THE ENGINES.

CAUTION

DO NOT UNDER ANY CIRCUMSTANCES SPRAY DETERGENT OR WATER DIRECTLY INTO OR AT ANY OF THE OPENINGS LISTED BELOW OR DAMAGE TO THE AIRPLANE COULD RESULT.

(6) Use vinyl adhesive Scotch Brand No.471 tape, G02219, and black polyethylene film, G00252, to cover and seal these areas:

NOTE: Do not seal them air-tight.

(a) The surge tank and fuel tank vents

(b) The exhaust duct outlet port of the Auxiliary Power Unit (APU)

(c) Ram air inlet and outlet doors

(d) Outflow valve

(e) Positive Pressure Relief Valve (PPRV) pressure ports.

SUBTASK 12-40-00-840-005

WARNING

DO NOT PUT VINYL ADHESIVE TAPE ON THE STATIC PORTS. THE TAPE, OR THE REMAINING CONTAMINATION AFTER YOU REMOVE THE TAPE CAN CAUSE LARGE ERRORS IN AIRSPEED, AND ALTITUDE SIGNALS. THIS MAKES FLIGHT DANGEROUS.

(7) Do the steps that follow to cover the alternate static ports:

NOTE: The tapes you will use have the words “REMOVE BEFORE FLIGHT” printed on them.

WARNING

DO NOT GET SOLVENTS IN YOUR MOUTH, EYES, OR SKIN. DO NOT BREATHE FUMES FROM SOLVENTS. REFER TO PRODUCT MATERIAL SAFETY DATA SHEETS (MSDS AND LOCAL REQUIREMENTS FOR PROPER HANDLING. SOLVENTS ARE HAZARDOUS MATERIALS AND MAY BE FLAMMABLE OR HARMFUL TO THE ENVIRONMENT.

(a) Clean the area around each alternate static port with naphtha solvent, B00083 or equivalent and a clean dry rag.

NOTE: Clean the area where you will put the yellow vinyl adhesive Scotch Brand No.471 tape, G02219.

(b) Put one end of approximately a 4 ft (1.2 m) piece of the orange barricade tape, G02443, over the holes of the alternate static port.

NOTE: Step 1 in Figure 202 (Sheet 1).

WARNING DO NOT PLACE THE SCOTCH BRAND (3M) NUMBER 471 YELLOW VINYL ADHESIVE TAPE OVER THE HOLES OF THE STATIC PORTS. FAILURE TO REMOVE VINYL ADHESIVE TAPE FROM STATIC PORTS BEFORE FLIGHT CAN LEAD TO LOSS OF SAFE FLIGHT AND INJURY.

(c) Secure the upper edge of the barricade tape with 5 in. (13 cm) of yellow vinyl adhesive Scotch Brand No.471 tape, G02219.

NOTE: Step 2 in Figure 202 (Sheet 1).

NOTE: Make the yellow vinyl adhesive smooth on the airplane surface to make sure that the bond is satisfactory.

(d) Put a 5 in. (127 mm) piece of Scotch Brand No.471 tape, G02219, on each vertical edge of the barricade tape.

NOTE: Step 3 in Figure 202 (Sheet 1).

NOTE: The 5 in. (127 mm) tape should overlap the first yellow tape that you put on the upper edge.

(e) Put an 8 in. (20 cm) piece of yellow Scotch Brand No.471 tape, G02219, horizontally over the orange barricade tape, G02443, below the static port holes.

NOTE: Step 4 in Figure 202 (Sheet 1).

NOTE: This 8 in. (20 cm) tape should overlap the vertical yellow tape.

WARNING WHEN THERE ARE COVERS ON THE STATIC PORTS, MAKE SURE THAT PERSONNEL CAN SEE THAT CONDITION FROM THE GROUND. ATTACH A TAG TO THE LEFT CONTROL WHEEL IN THE FLIGHT COMPARTMENT TO SHOW THAT THE STATIC PORTS HAVE COVERS. COVERS ON THE STATIC PORTS CAN CAUSE LARGE ERRORS IN AIRSPEED AND ALTITUDE SIGNALS. THIS IS DANGEROUS DURING FLIGHT.

CAUTION WHENEVER AN OPENING IS COVERED, MAKE SURE THAT CONDITION IS VISIBLE FROM THE GROUND. ENGINES SHOULD NOT BE OPERATED WITH COVERS IN PLACE BECAUSE THE COVERS CAN COME OFF AND DAMAGE THE ENGINES.

(f) Let the orange barricade tape, G02443, fall down so it is visible from the ground.

(g) Repeat this procedure for the other alternate static port.

SUBTASK 12-40-00-620-001

(8) Do the steps that follow to cover the primary static ports:

NOTE: The tapes you will use have the words “REMOVE BEFORE FLIGHT” printed on them.

WARNING DO NOT GET SOLVENTS IN YOUR MOUTH, EYES, OR SKIN. DO NOT BREATHE FUMES FROM SOLVENTS. REFER TO PRODUCT MATERIAL SAFETY DATA SHEETS (MSDS AND LOCAL REQUIREMENTS FOR PROPER HANDLING. SOLVENTS ARE HAZARDOUS MATERIALS AND MAY BE FLAMMABLE OR HARMFUL TO THE ENVIRONMENT.

(a) Clean the area around each primary static port with naphtha solvent, B00083 or equivalent and a clean, dry rag.

NOTE: Clean the area where you will put the yellow vinyl adhesive Scotch Brand No.471 tape, G02219.

(b) Put one end of approximately a 4 ft (1.2 m) piece of the orange barricade tape, G02443, over the holes of both primary static ports.

NOTE: Step 1 in Figure 202 (Sheet 2).

WARNING

DO NOT PLACE THE SCOTCH BRAND (3M) NUMBER 471 YELLOW VINYL ADHESIVE TAPE OVER THE HOLES OF THE STATIC PORTS. FAILURE TO REMOVE VINYL ADHESIVE TAPE FROM STATIC PORTS BEFORE FLIGHT CAN LEAD TO LOSS OF SAFE FLIGHT AND INJURY.

(c) Secure the upper edge of the barricade tape with 5 in. (13 cm) of yellow vinyl adhesive Scotch Brand No.471 tape, G02219.

NOTE: Step 2 in Figure 202 (Sheet 2).

NOTE: Make the yellow vinyl adhesive smooth on the airplane surface to make sure that the bond is satisfactory.

(d) Put an 8 in. (203 mm) piece of Scotch Brand No.471 tape, G02219, on each vertical edge of the barricade tape.

NOTE: Step 3 in Figure 202 (Sheet 2).

NOTE: The 8 in. (203 mm) tape should overlap the first yellow tape that you put on the upper edge.

(e) Put an 8 in. (20 cm) piece of yellow Scotch Brand No.471 tape, G02219, horizontally over the orange barricade tape, G02443, below the static port holes.

NOTE: Step 4 in Figure 202 (Sheet 2).

NOTE: This 8 in. (20 cm) tape should overlap the vertical yellow tape.

CAUTION

WHENEVER AN OPENING IS COVERED, MAKE SURE THAT CONDITION IS VISIBLE FROM THE GROUND. ENGINES SHOULD NOT BE OPERATED WITH COVERS IN PLACE BECAUSE THE COVERS CAN COME OFF AND DAMAGE THE ENGINES.

(f) Let the orange barricade tape, G02443, fall down so it is visible from the ground.

(g) Repeat this procedure for the other two primary static ports.

SUBTASK 12-40-00-840-006

(9) Attach a "PITOT PROBES COVERED" tag, G02447 and "STATIC PORTS COVERED" tag, G02444, to the top of the left control wheel in the flight deck with wire.

SUBTASK 12-40-00-930-001

(10) Write “AOA SENSORS COVERED” on a red tag.

SUBTASK 12-40-00-840-007

(11) Attach the red tag with wire to the top of the left control wheel in the flight compartment.

SUBTASK 12-40-00-840-008

(12) If the angle of attack vane cover, COM-2499, or AOA vane protective cover, SPL-14189, is not available for the Angle of Attack (AOA), do these steps (Figure 208):

(a) Use a piece of fabric, G50330, sheeting to cover each of the AOA sensors.

NOTE: Step 1 in Figure 208.

(b) Attach a 4 ft (1 m) piece of barricade tape, G02443, to the piece of fabric sheeting.

(c) Do the step that follows to put the fabric sheeting along the upper edge of the AOA sensor:

1) Make sure that the edge of the fabric on the upper edge of the AOA sensor is opposite the end with the piece of barricade tape.

(d) Put one piece of Scotch Brand No.471 tape, G02219, on the upper edge of the fabric sheeting.

NOTE: Step 2 in Figure 208.

(e) Do the step that follows to put a piece of Scotch Brand No.471 tape, G02219, on each vertical edge of the fabric sheeting:

NOTE: Step 3 in Figure 208.

1) Overlap the horizontal piece of tape with the two vertical pieces of tape.

(f) Do the step that follows to put a piece of Scotch Brand No.471 tape, G02219, horizontally over the fabric sheeting below the AOA sensor:

NOTE: Step 4 in Figure 208.

1) Overlap the two vertical strips of tape.

SUBTASK 12-40-00-950-001

(13) Use sheets of plastic to cover the components in Table 204.

NOTE: All components are identified in these figures: (Figure 203, Figure 204, Figure 205, Figure 206, and Figure 207).

Table 204/12-40-00-993-804 Wheel Well Component Protection

DESCRIPTION	LOCATION	FIGURE NUMBER
Aileron Centering Mechanism Assembly		
Aileron Upper Reaction Support Assembly		
Bearing	1	203
Bearing	2	203
Centering Cam Follower		
Bearing	3	203
Lever Assembly		
Bearing	4	203
Aileron Lower Reaction Support Assembly		
Bearing	5	203
Aileron Trim Mechanism		
Aileron Trim Actuator/Electrical Connector	6	203
Aileron Position Sensor		
Transmitter/Electrical Connector	7	204
Rod Assembly/Bearings	8,9	204
Aileron Control Autopilot Actuator		
Autopilot Actuator/Electrical Connector	10	204
Rod Assembly/Bearings	11,12	204
Power Control - Aileron Control		

Table 204/12-40-00-993-804 Wheel Well Component Protection (Continued)

DESCRIPTION	LOCATION	FIGURE NUMBER
Power Control Assembly (B System)	30	203
Bearing	13	203
Bearing	14	203
Support Assembly (Upper)		
Bearing	15	203
Bearing	16	203
Lever Assembly		
Bearing	17	203
Power Control Assembly (A System)	31	203
Bearing	18	203
Bearing	19	203
Support Assembly (Lower)		
Bearing	20	203
Support Assembly		
Bearing	21	203
Lever Assembly		
Bearing	22	203
Nose Landing Gear Wheel Bearings	32	205
Boost pump low pressure switch	33, 34, 35	206
Control Valve Module (CVM)	36	207

SUBTASK 12-40-00-950-002

CAUTION PUT A COVER ON THE WHEEL BEARINGS OF THE NOSE LANDING GEAR BEFORE YOU CLEAN THE AIRPLANE. WATER OR CLEANING SOLUTIONS CAN CAUSE DAMAGE TO THE WHEEL BEARINGS AND MAKE THEM UNSERVICEABLE.

(14) Put a sheet of plastic on the wheel bearings of the nose landing gear.

SUBTASK 12-40-00-840-009

WARNING WEAR CLOTHING AND EQUIPMENT THAT WILL PREVENT INJURY WHEN YOU CLEAN THE AIRPLANE. THE LIQUIDS USED IN THIS PROCEDURE CAN CAUSE INJURY TO SKIN AND EYES.

(15) Wear rubber glove, STD-1086, and safety glasses, STD-1137.

SUBTASK 12-40-00-840-010

(16) Make sure that the tires do not stay in the liquid used to clean the airplane longer than necessary.

SUBTASK 12-40-00-840-011

CAUTION

MAKE SURE THAT MIXTURE OR WATER DO NOT GET IN THE STEEL OR CARBON BRAKE HEAT-SINKS. CONTAMINATION CAN CAUSE DAMAGE TO CARBON BRAKES AND DECREASE BRAKE PERFORMANCE FOR CARBON AND STEEL BRAKES.

(17) Make sure that you cover the brakes correctly.

SUBTASK 12-40-00-840-012

CAUTION

DO NOT USE A CLEANER IF IT IS IN A STRATIFIED (NOT MIXED) CONDITION. A CLEANER THAT IS STRATIFIED CAN STAIN OR CAUSE CORROSION TO AIRPLANE SURFACES.

(18) Do the steps that follow to examine the cleaner before you use it:

(a) If the cleaner does not look mixed, then mix it again.

(b) Examine the cleaner again after one hour.

(c) Discard the cleaner if it does not stay in a mixed condition.

G. Clean the Airplane

SUBTASK 12-40-00-110-004

(1) Do the steps that follow to remove light material (dust and dirt) from the smooth surfaces:

(a) Move the flaps to the fully retracted position (TASK 27-51-00-860-804).

CAUTION

DO NOT USE THE CLEANERS IN HIGHER CONCENTRATIONS THAN RECOMMENDED IN THE TABLE “WATER BASE ALKALINE CLEANERS”. HIGHER CONCENTRATIONS CAN CAUSE DAMAGE TO ACRYLIC WINDOWS, STAINS ON PAINTED SURFACES, AND CORROSION ON METALS.

(b) Mix the water base alkaline cleaners specified for the condition of the surface that you will clean (Table 201).

WARNING

DO NOT USE HIGH-PRESSURE SPRAY EQUIPMENT. HIGH-PRESSURE SPRAY EQUIPMENT CAN PUT LIQUIDS INTO BEARINGS, JOINTS, BRAKES, ELECTRICAL CONNECTORS, AND OTHER SEALED COMPONENTS. LIQUIDS THAT GO INTO THESE AREAS CAN CAUSE CORROSION, FREEZE DURING AIRPLANE FLIGHT, OR REMOVE NECESSARY LUBRICANTS. FREEZE DURING AIRPLANE FLIGHT CAN CAUSE LOSS OF AIRPLANE CONTROL AND POSSIBLE PERSONAL INJURY.

CAUTION

MAKE SURE THAT YOU KEEP THE SPRAY EQUIPMENT NOZZLE MORE THAN 12 INCHES AWAY FROM THE SURFACE OF THE AIRPLANE. IF YOU DO NOT OBEY, THE SPRAY CAN CAUSE DAMAGE TO THE SURFACE.

(c) Apply water to the area that you will clean.

(d) Apply the cleaner to the applicable area with non-atomizing spray equipment, or swabs, or brushes.

NOTE: To prevent scratches on the surface, soak the brushes in the cleaner before you use them.

CAUTION

DO NOT LET THE CLEANER DRY. THE DRIED CLEANER CAN CAUSE CORROSION AND DAMAGE TO THE AIRPLANE SURFACE.

(e) Let the cleaner soak for approximately five minutes.

NOTE: Apply the cleaner again if necessary to keep the surface wet.

CAUTION

MAKE SURE THAT YOU FLUSH THE SURFACE SUFFICIENTLY TO REMOVE ALL OF THE CLEANER. IF YOU DO NOT REMOVE ALL OF THE CLEANER, IT CAN CAUSE CORROSION ON THE AIRPLANE SURFACE.

(f) Flush the surface with clean, warm water heated to 160°F (71°C) maximum.

(g) Dry the wet surface with air or towels.

SUBTASK 12-40-00-110-005

(2) Do the steps that follow to remove moderately heavy material (oil and mud) from smooth surfaces:

(a) Move the flaps to the fully retracted position (TASK 27-51-00-860-804).

NOTE: To clean the flaps in the extended position, refer to the steps shown under "Remove Material Around Sensitive Components".

WARNING

KEEP EMULSION CLEANER SOLVENT AWAY FROM SOURCES OF HEAT. THE SOLVENT IS FLAMMABLE AND CAN CAUSE INJURY.

(b) Mix the cleaner specified in Table 202.

(c) Mix the cleaner until it is thick and creamy.

WARNING

DO NOT USE HIGH-PRESSURE SPRAY EQUIPMENT. HIGH-PRESSURE SPRAY EQUIPMENT CAN PUT LIQUIDS INTO BEARINGS, JOINTS, BRAKES, ELECTRICAL CONNECTORS, AND OTHER SEALED COMPONENTS. LIQUIDS THAT GO INTO THESE AREAS CAN CAUSE CORROSION, FREEZE DURING AIRPLANE FLIGHT, OR REMOVE NECESSARY LUBRICANTS. FREEZE DURING AIRPLANE FLIGHT CAN CAUSE LOSS OF AIRPLANE CONTROL AND POSSIBLE PERSONAL INJURY.

CAUTION

MAKE SURE THAT YOU KEEP THE SPRAY EQUIPMENT NOZZLE MORE THAN 12 INCHES AWAY FROM THE SURFACE OF THE AIRPLANE. IF YOU DO NOT OBEY, THE SPRAY CAN CAUSE DAMAGE TO THE SURFACE.

(CAUTION PRECEDES)

CAUTION

DO NOT LET THE SOLVENT EMULSION CLEANER TOUCH ACRYLIC WINDOWS OR RUBBER PARTS. THE SOLVENT EMULSION CLEANER WILL CAUSE DAMAGE TO ITEMS THAT CONTAIN ACRYLIC OR RUBBER.

(d) Apply a heavy layer of cleaner to the applicable area with non-atomizing spray equipment, or mops, or brushes.

CAUTION

DO NOT LET THE CLEANER DRY. THE DRIED CLEANER CAN CAUSE CORROSION AND DAMAGE TO THE AIRPLANE SURFACE.

(e) Let the cleaner soak for five to ten minutes.

NOTE: Do not let the cleaner dry on the surface.

(f) Rub the surface with a brush to help remove unwanted material.

CAUTION

MAKE SURE THAT YOU FLUSH THE SURFACE SUFFICIENTLY TO REMOVE ALL OF THE CLEANER. IF YOU DO NOT REMOVE ALL OF THE CLEANER, IT CAN CAUSE CORROSION ON THE AIRPLANE SURFACE.

(g) Flush the surface with clean, warm water heated to 160°F (71°C) maximum.

(h) Dry the wet surfaces with air or towels.

SUBTASK 12-40-00-110-006

(3) Do the steps that follow to remove heavy material (grease and exhaust particles) from smooth surfaces:

(a) Move the flaps to the fully retracted position (TASK 27-51-00-860-804).

NOTE: To clean the flaps in the extended position, refer to the steps shown under "Remove Material Around Sensitive Components".

WARNING

KEEP EMULSION CLEANER SOLVENT AWAY FROM SOURCES OF HEAT. THE SOLVENT IS FLAMMABLE AND CAN CAUSE INJURY.

(b) Mix the cleaner specified in Table 203.

(c) Mix the cleaner until it is thick and creamy.

WARNING

DO NOT USE HIGH-PRESSURE SPRAY EQUIPMENT. HIGH-PRESSURE SPRAY EQUIPMENT CAN PUT LIQUIDS INTO BEARINGS, JOINTS, BRAKES, ELECTRICAL CONNECTORS, AND OTHER SEALED COMPONENTS. LIQUIDS THAT GO INTO THESE AREAS CAN CAUSE CORROSION, FREEZE DURING AIRPLANE FLIGHT, OR REMOVE NECESSARY LUBRICANTS. FREEZE DURING AIRPLANE FLIGHT CAN CAUSE LOSS OF AIRPLANE CONTROL AND POSSIBLE PERSONAL INJURY.

(WARNING PRECEDES)

CAUTION MAKE SURE THAT YOU KEEP THE SPRAY EQUIPMENT NOZZLE MORE THAN 12 INCHES AWAY FROM THE SURFACE OF THE AIRPLANE. IF YOU DO NOT OBEY, THE SPRAY CAN CAUSE DAMAGE TO THE SURFACE.

CAUTION DO NOT LET THE SOLVENT EMULSION CLEANER TOUCH ACRYLIC WINDOWS OR RUBBER PARTS. THE SOLVENT EMULSION CLEANER WILL CAUSE DAMAGE TO ITEMS THAT CONTAIN ACRYLIC OR RUBBER.

(d) Apply a heavy layer of cleaner to the applicable area with non-atomizing spray equipment, or mops, or brushes.

CAUTION DO NOT LET THE CLEANER DRY. THE DRIED CLEANER CAN CAUSE CORROSION AND DAMAGE TO THE AIRPLANE SURFACE.

(e) Let the cleaner soak for a maximum of 15 minutes.

NOTE: Do not let the cleaner dry on the surface.

(f) Rub the surface with a brush to help remove unwanted material.

CAUTION MAKE SURE THAT YOU FLUSH THE SURFACE SUFFICIENTLY TO REMOVE ALL OF THE CLEANER. IF YOU DO NOT REMOVE ALL OF THE CLEANER, IT CAN CAUSE CORROSION ON THE AIRPLANE SURFACE.

(g) Flush the surface with clean, warm water heated to 160°F (71°C) maximum.

(h) Dry the wet surfaces with air or towels.

(i) For stains that are not removed by the solvent emulsion cleaners, use Cee Bee 280 cleaner, B00005.

SUBTASK 12-40-00-110-007

(4) Do the steps that follow to remove material around sensitive components:

(a) If you clean the flaps, extend them to the fully down position (TASK 27-51-00-860-803).

(b) Mix the cleaner that you will use for the condition of the surface that you will clean (Water Base Alkaline Cleaners/Table 201).

1) For heavy material (grease and exhaust particles), mix the cleaner specified in Table 203.

WARNING DO NOT USE HIGH-PRESSURE SPRAY EQUIPMENT. HIGH-PRESSURE SPRAY EQUIPMENT CAN PUT LIQUIDS INTO BEARINGS, JOINTS, BRAKES, ELECTRICAL CONNECTORS, AND OTHER SEALED COMPONENTS. LIQUIDS THAT GO INTO THESE AREAS CAN CAUSE CORROSION, FREEZE DURING AIRPLANE FLIGHT, OR REMOVE NECESSARY LUBRICANTS. FREEZE DURING AIRPLANE FLIGHT CAN CAUSE LOSS OF AIRPLANE CONTROL AND POSSIBLE PERSONAL INJURY.

(c) Apply the cleaner to the applicable area with swabs or brushes.

NOTE: To prevent scratches on the surface, soak the brushes in the cleaner before you use them.

(d) Let the cleaner soak for approximately five minutes.

NOTE: If it is necessary, apply the cleaner again to keep the surface wet.

CAUTION DO NOT REMOVE THE LAYER OF GREASE FROM MECHANICAL JOINTS. THIS GREASE LUBRICATES THE JOINT AND PREVENTS CORROSION. IF YOU REMOVE THE GREASE, IT CAN CAUSE DAMAGE.

(e) Carefully rub the surface with a clean brush to help remove unwanted material.

CAUTION MAKE SURE THAT YOU FLUSH THE SURFACE SUFFICIENTLY TO REMOVE ALL OF THE CLEANER. IF YOU DO NOT REMOVE ALL OF THE CLEANER, IT CAN CAUSE CORROSION ON THE AIRPLANE SURFACE.

(f) Flush the surface with clean, warm water heated to 160°F (71°C) maximum.

(g) Dry the wet surface with air or towels.

CAUTION YOU MUST LUBRICATE ALL THE BEARINGS AND JOINTS IN THE AREA YOU CLEANED. THE LUBRICANT WILL REMOVE THE UNWANTED FLUIDS WHICH COULD FREEZE, OR CAUSE CORROSION TO THE BEARING OR THE JOINT. IF YOU DO NOT LUBRICATE THE BEARINGS AND JOINTS, DAMAGE TO THE COMPONENTS CAN OCCUR.

(h) Lubricate all bearings and joints in the cleaned area.

SUBTASK 12-40-00-110-008

(5) Do the steps that follow to remove unwanted hydraulic fluid:

(a) Clean the unwanted hydraulic fluid with a mop or rags.

CAUTION DO NOT USE WATER OR CLEANERS THAT CONTAIN FLAMMABLE SOLVENTS TO CLEAN WARM COMPONENTS. DAMAGE TO THE EQUIPMENT CAN OCCUR.

(b) Use the solvent, B50085, to clean the hydraulic fluid from warm components.

SUBTASK 12-40-00-110-009

(6) Do the steps that follow to clean with foam:

NOTE: Use foam when it is possible that the cleaner will stay on the surface for up to 15 minutes.

(a) Fill the tank of the foam generator.

NOTE: Use a liquid that contains one part of cleaner from Table 201 and 10 to 20 parts of water.

NOTE: If you do not have a foam generator, mix the liquid quickly to make foam.

WARNING

DO NOT USE HIGH-PRESSURE SPRAY EQUIPMENT. HIGH-PRESSURE SPRAY EQUIPMENT CAN PUT LIQUIDS INTO BEARINGS, JOINTS, BRAKES, ELECTRICAL CONNECTORS, AND OTHER SEALED COMPONENTS. LIQUIDS THAT GO INTO THESE AREAS CAN CAUSE CORROSION, FREEZE DURING AIRPLANE FLIGHT, OR REMOVE NECESSARY LUBRICANTS. FREEZE DURING AIRPLANE FLIGHT CAN CAUSE LOSS OF AIRPLANE CONTROL AND POSSIBLE PERSONAL INJURY.

CAUTION

MAKE SURE THAT YOU KEEP THE SPRAY EQUIPMENT NOZZLE MORE THAN 12 INCHES AWAY FROM THE SURFACE OF THE AIRPLANE. IF YOU DO NOT OBEY, THE SPRAY CAN CAUSE DAMAGE TO THE SURFACE.

(b) Apply water to the area that you will clean.

(c) Apply a heavy layer of foam cleaner.

CAUTION

DO NOT LET THE CLEANER DRY. THE DRIED CLEANER CAN CAUSE CORROSION AND DAMAGE TO THE AIRPLANE SURFACE.

(d) Let the cleaner soak for 5 to 15 minutes.

NOTE: If it is necessary, apply the cleaner again to keep the surface wet.

(e) Rub the surface with a brush to help remove unwanted material.

CAUTION

MAKE SURE THAT YOU FLUSH THE SURFACE SUFFICIENTLY TO REMOVE ALL OF THE CLEANER. IF YOU DO NOT REMOVE ALL OF THE CLEANER, IT CAN CAUSE CORROSION ON THE AIRPLANE SURFACE.

(f) Flush the surface with clean, warm water heated to 160°F (71°C) maximum.

(g) Dry the wet surface with air or towels.

CAUTION

DO NOT APPLY SOLVENTS, GREASE, OR OIL TO STAINLESS STEEL CONTROL CABLES. THESE MATERIALS CAN COLLECT CONTAMINATION THAT CAN CAUSE DAMAGE TO THE INTERNAL SURFACES OF THE CRES CABLE STRANDS. THIS CAN DECREASE THE SERVICE LIFE OF THE CABLE.

(h) Clean and lubricate the carbon steel control cables located in the wheel wells after cleaning or washing (TASK 12-26-00-600-801).

H. Put the Airplane Back to Its Usual Condition

SUBTASK 12-40-00-020-001

WARNING FAILURE TO REMOVE COVERS FROM PITOT PROBES BEFORE FLIGHT MAY CAUSE LARGE ERRORS IN AIRSPEED-SENSING AND ALTITUDE-SENSING SIGNALS, WHICH MAY LEAD TO LOSS OF SAFE FLIGHT.

CAUTION REMOVE ALL COVERS. ENGINES SHOULD NOT BE OPERATED WITH COVERS IN PLACE BECAUSE THE COVERS CAN COME OFF AND DAMAGE THE ENGINES.

(1) Remove all covers from these components:

(a) Pitot probes

(b) Total air temperature probes

(c) Engine inlet

(d) Turbine exhaust

(e) Each landing gear wheel/brake.

SUBTASK 12-40-00-840-014

WARNING DO NOT GET SOLVENTS IN YOUR MOUTH, EYES, OR SKIN. DO NOT BREATHE FUMES FROM SOLVENTS. REFER TO PRODUCT MATERIAL SAFETY DATA SHEETS (MSDS AND LOCAL REQUIREMENTS FOR PROPER HANDLING. SOLVENTS ARE HAZARDOUS MATERIALS AND MAY BE FLAMMABLE OR HARMFUL TO THE ENVIRONMENT.

WARNING FAILURE TO REMOVE BARRICADE TAPE AND VINYL ADHESIVE TAPE FROM ALL OF THE STATIC PORTS BEFORE FLIGHT MAY CAUSE LARGE ERRORS IN AIRSPEED-SENSING AND ALTITUDE-SENSING SIGNALS, WHICH MAY LEAD TO LOSS OF SAFE FLIGHT.

WARNING DRAIN THE FUEL TANK SUMPS AND ASSOCIATED SURGE TANKS IF THE PRESSURE RELIEF VALVE IS FOUND OPEN. WATER MAY HAVE ENTERED THE TANK AND MUST BE DRAINED. EXCESS WATER CAN CAUSE ENGINE OPERATIONAL ISSUES INCLUDING SHUTDOWN.

CAUTION REMOVE ALL BARRICADE TAPE AND VINYL ADHESIVE TAPE. ENGINES SHOULD NOT BE OPERATED WITH COVERINGS IN PLACE BECAUSE THE COVERINGS CAN COME OFF AND DAMAGE THE ENGINES.

(2) Do the steps that follow to remove all tapes, covers and polyethylene sheet from these openings:

(a) Remove the tapes and covers from the static ports.

(b) If it is necessary, use solvent, B00083, or equivalent, to remove all tape residue, dirt, and other contaminants from around the static ports.

(c) Remove the AOA vane protective cover, SPL-14189 or angle of attack vane cover, COM-2499.

(d) If it is necessary, use solvent, B00083, or equivalent, to remove all tape residue, dirt, and other contaminants from around the AOA sensors.

(e) Remove the covers from the surge tank and fuel tank vents.

(f) Remove the covers from the APU exhaust duct outlet port.

(g) Remove the covers from the ram air inlet and outlet doors.

(h) Remove the covers from the outflow valve.

(i) Remove the covers from the PPRV pressure ports.

SUBTASK 12-40-00-680-001

WARNING MAKE SURE THAT YOU DRAIN THE FUEL TANK SUMPS AFTER WASH. LEFT-OVER WATER CAN CAUSE THE ENGINE TO OPERATE INCORRECTLY OR SHUTDOWN. IF YOU DO NOT OBEY, INJURY TO PERSONNEL AND DAMAGE TO EQUIPMENT CAN OCCUR.

(3) Drain fuel from the fuel tank sump drains, do this task: Fuel Tank Sumps - Fuel Sampling, TASK 12-11-00-680-801.

NOTE: A large quantity of water can enter the fuel tank during washing.

(a) Continue to drain fuel/water from the tank until no water drains from the tanks.

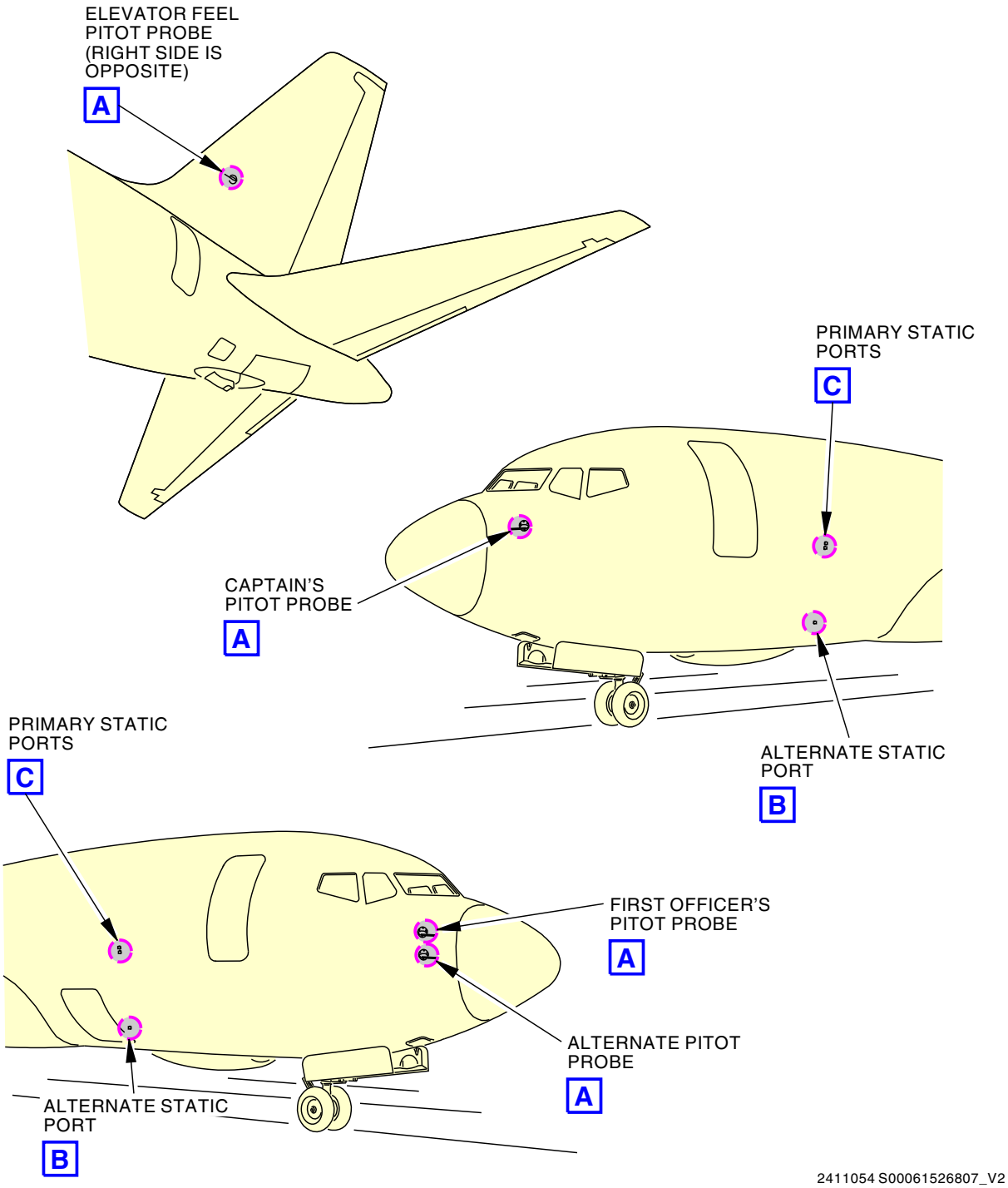
SUBTASK 12-40-00-840-015

(4) Remove the "PITOT PROBES COVERED" tag, G02447 and "STATIC PORTS COVERED" tag, G02444, from the left control wheel in the flight deck.

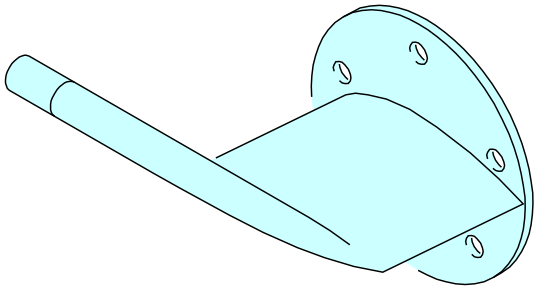
SUBTASK 12-40-00-840-016

(5) Remove the “AOA SENSORS COVERED” tag from the left control wheel in the flight deck.

——— END OF TASK ———



Pitot Static System - Component Location
Figure 201/12-40-00-990-801 (Sheet 1 of 2)

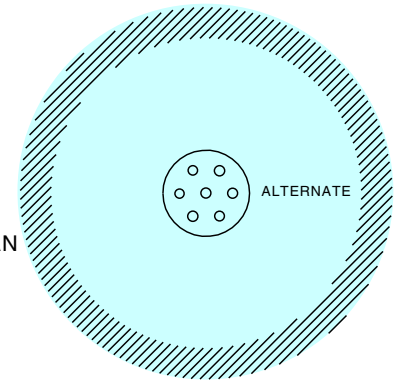


PITOT PROBE
(EXAMPLE)

A

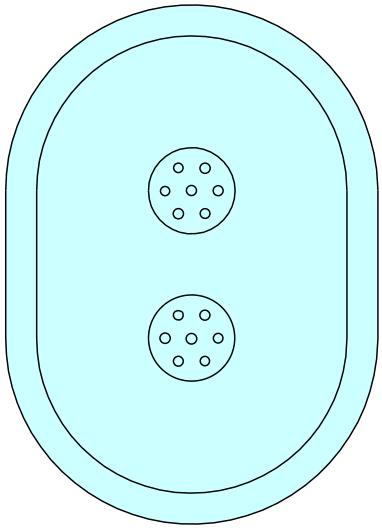
STATIC PORT

DO NOT PLUG OR DEFORM
HOLES INDICATED AREAS
MUST BE SMOOTH AND CLEAN



ALTERNATE STATIC PORT
(EXAMPLE)

B

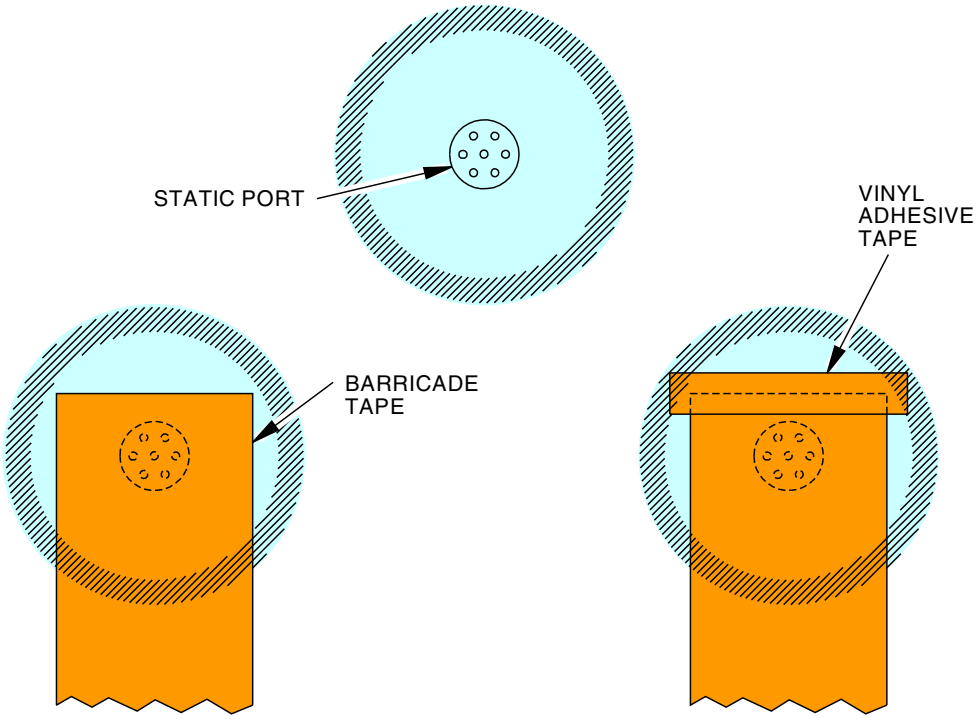


PRIMARY STATIC PORTS
(EXAMPLE)

C

2411055 S00061526808_V1

Pitot Static System - Component Location
Figure 201/12-40-00-990-801 (Sheet 2 of 2)

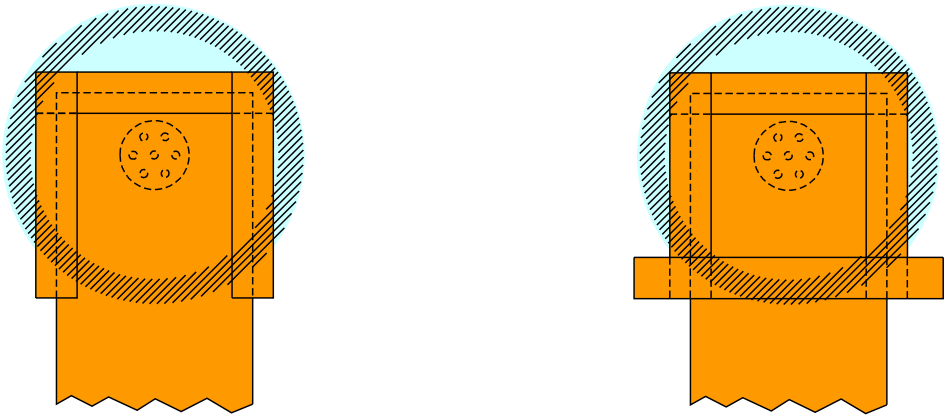


STEP 1

PUT ONE END OF THE BARRICADE TAPE OVER THE STATIC PORT TO COVER THE HOLES

STEP 2

SECURE THE TOP EDGE OF THE BARRICADE TAPE WITH 5 INCHES OF VINYL ADHESIVE TAPE



STEP 3

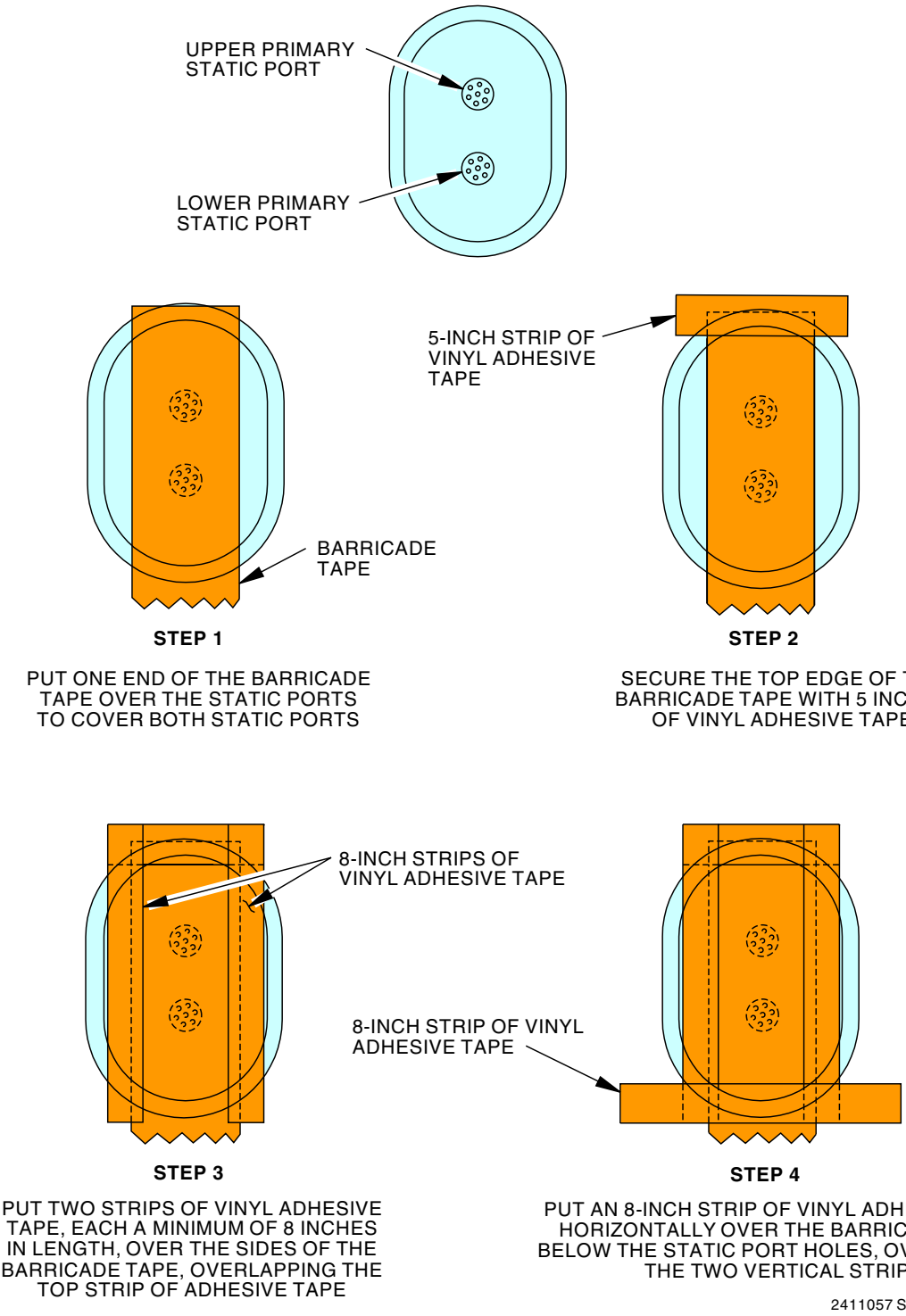
PUT TWO 5-INCH STRIPS OF VINYL ADHESIVE TAPE OVER THE SIDES OF THE BARRICADE TAPE OVERLAPPING THE TOP STRIP OF ADHESIVE TAPE

STEP 4

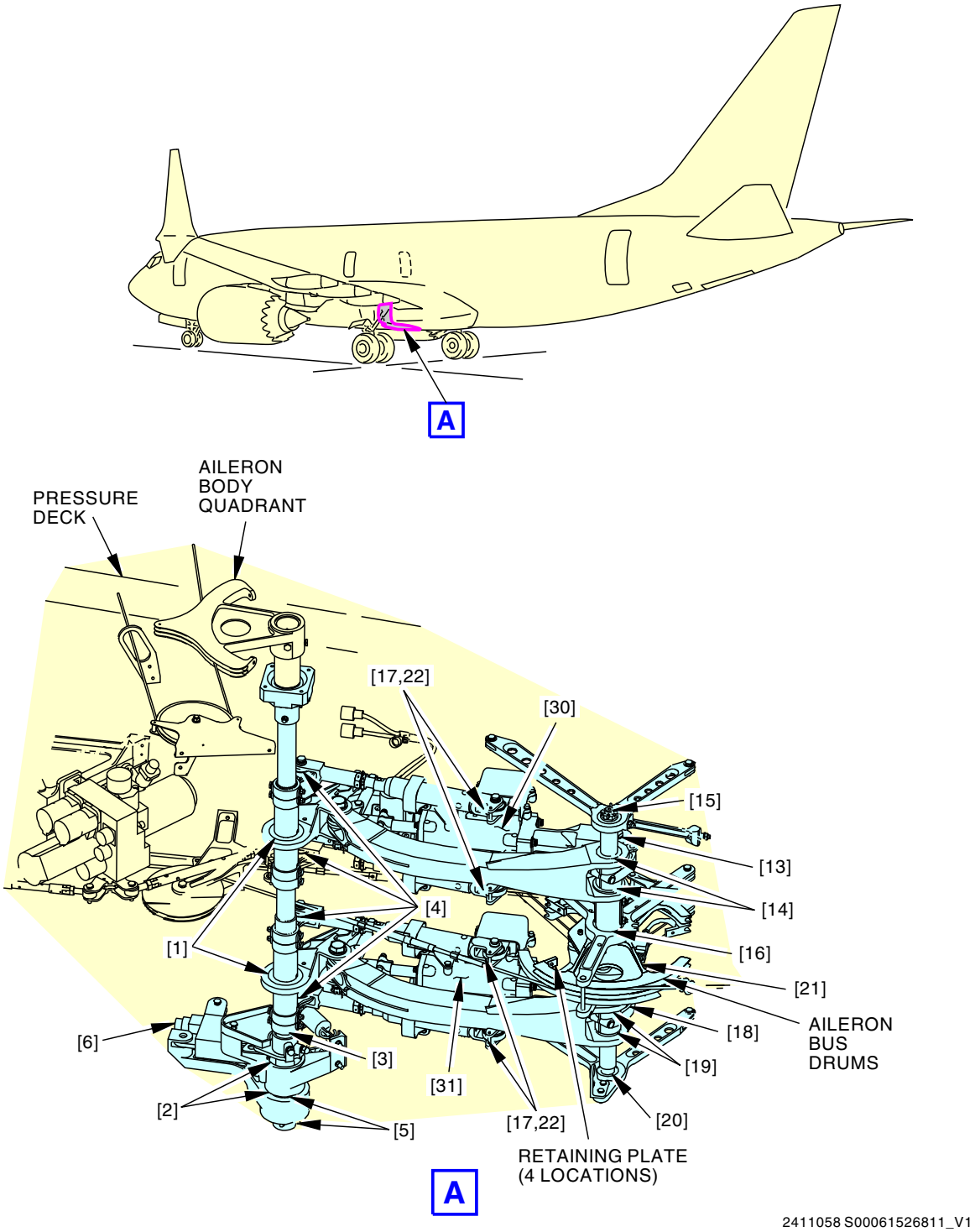
PUT AN 8-INCH HORIZONTAL STRIP OF VINYL ADHESIVE TAPE OVER THE BARRICADE TAPE BELOW THE STATIC PORT HOLES OVERLAPPING THE TWO VERTICAL STRIPS

2411056 S00061526809_V1

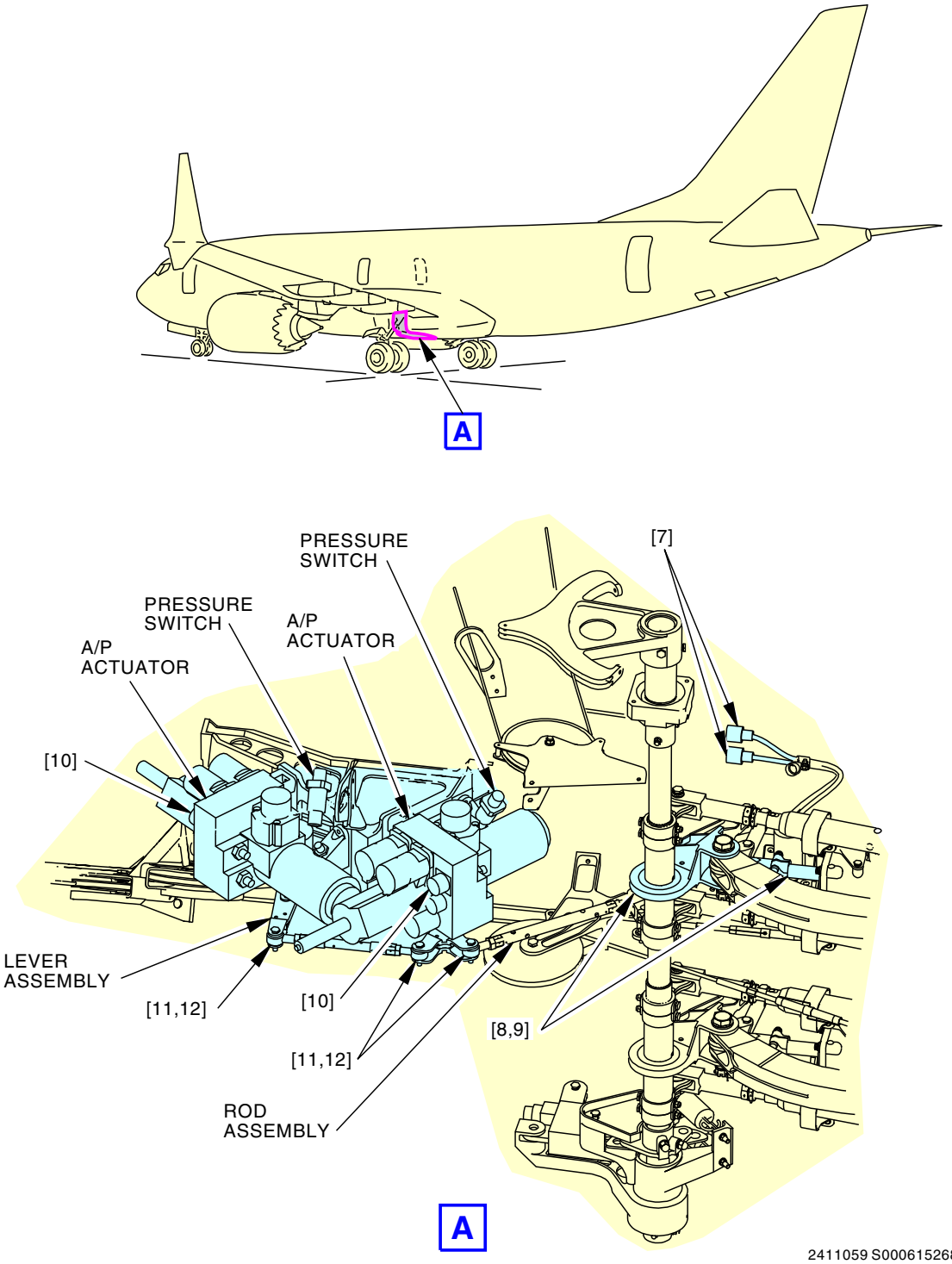
Static Port Cover Procedure
Figure 202/12-40-00-990-802 (Sheet 1 of 2)



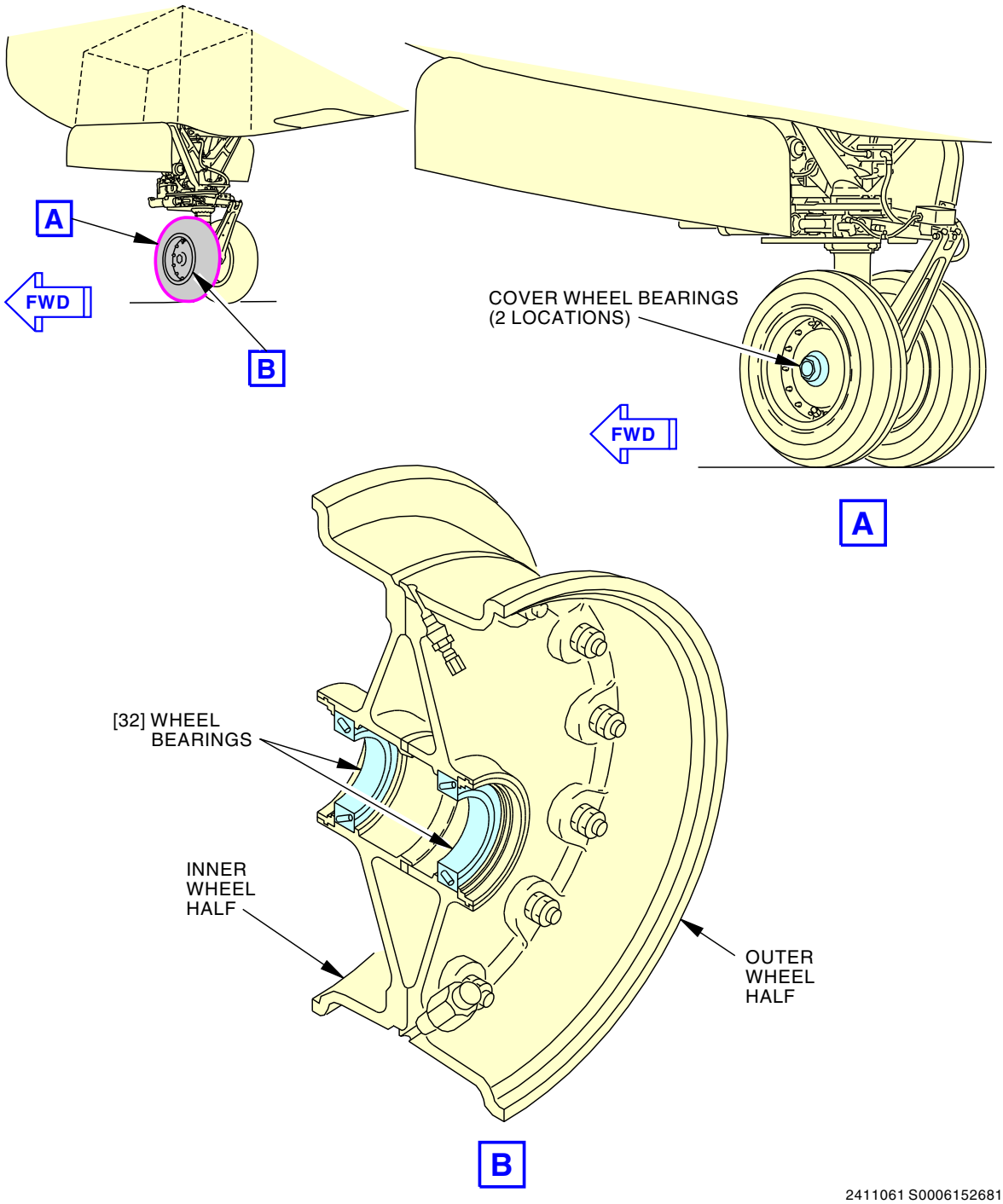
Static Port Cover Procedure
Figure 202/12-40-00-990-802 (Sheet 2 of 2)



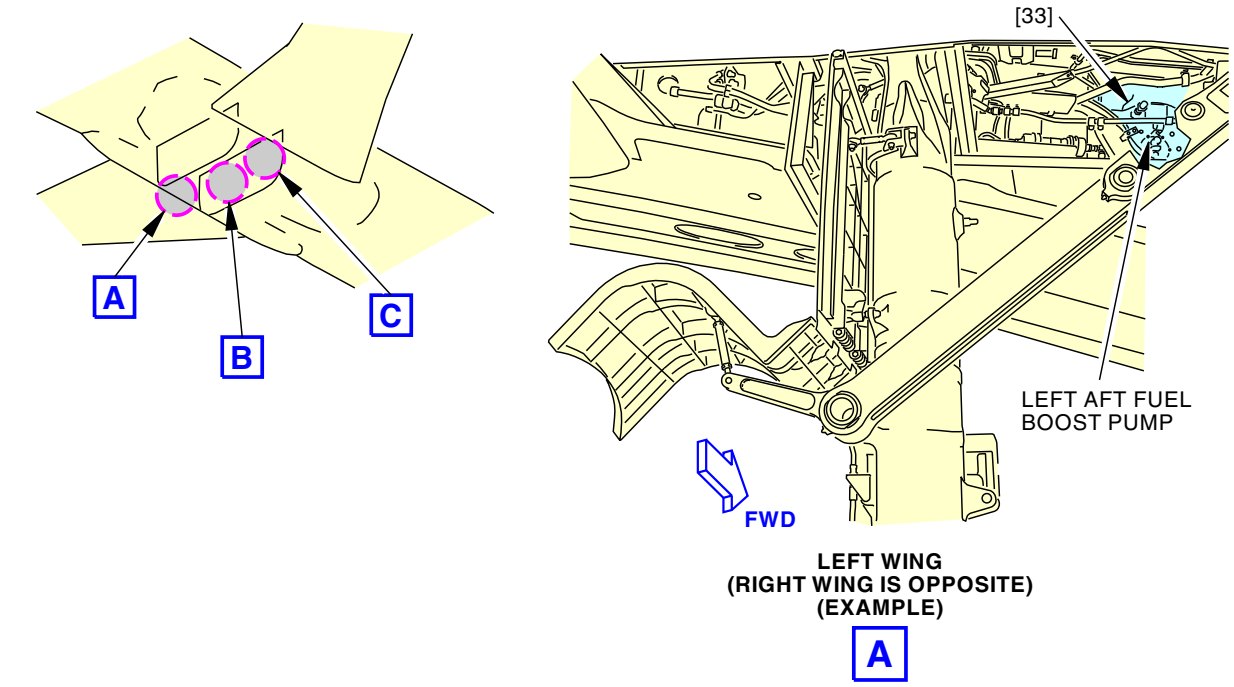
Aileron Power Control Unit
Figure 203/12-40-00-990-803



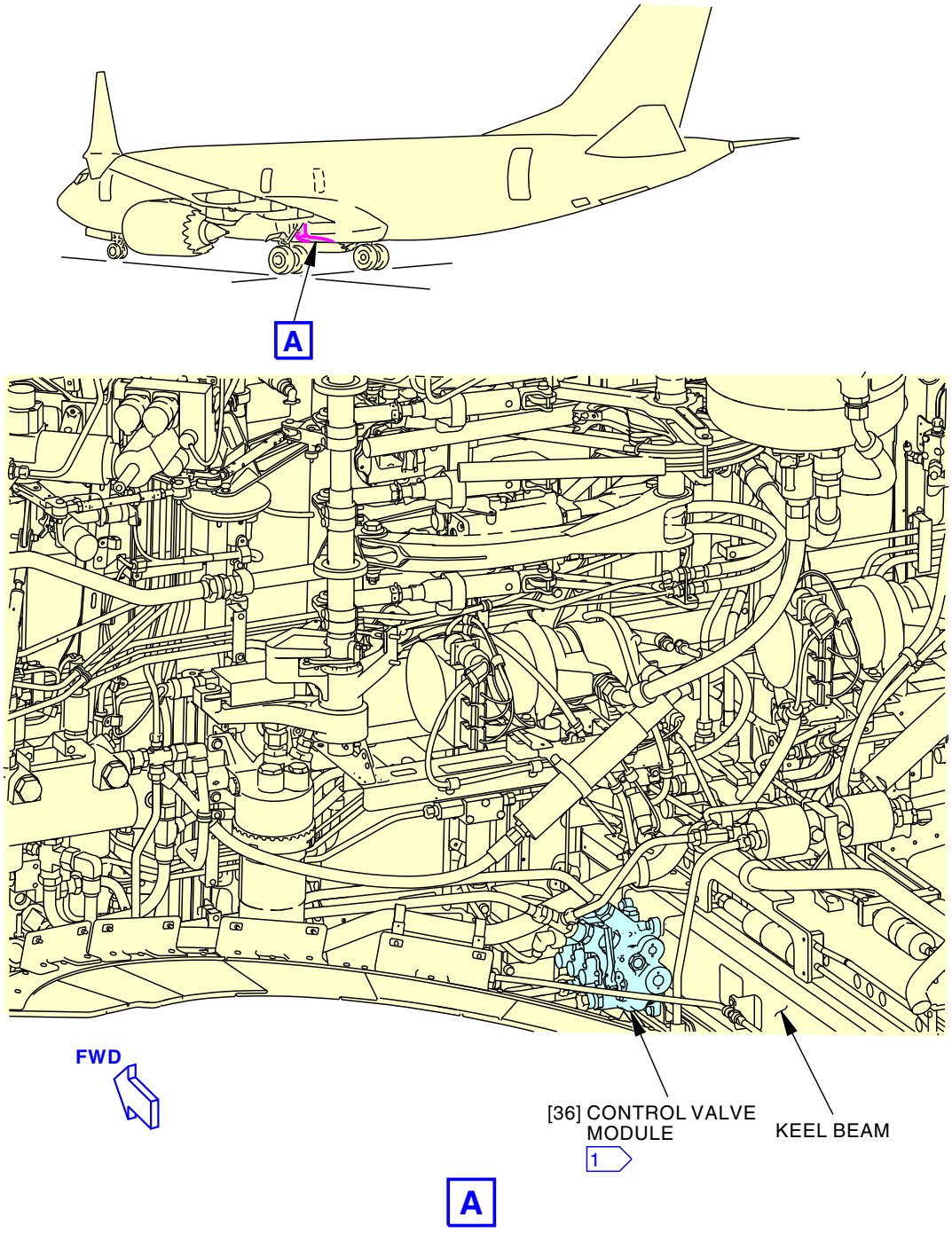
A/P Aileron Actuator
Figure 204/12-40-00-990-804



Nose Gear Wheel Bearings
Figure 205/12-40-00-990-805



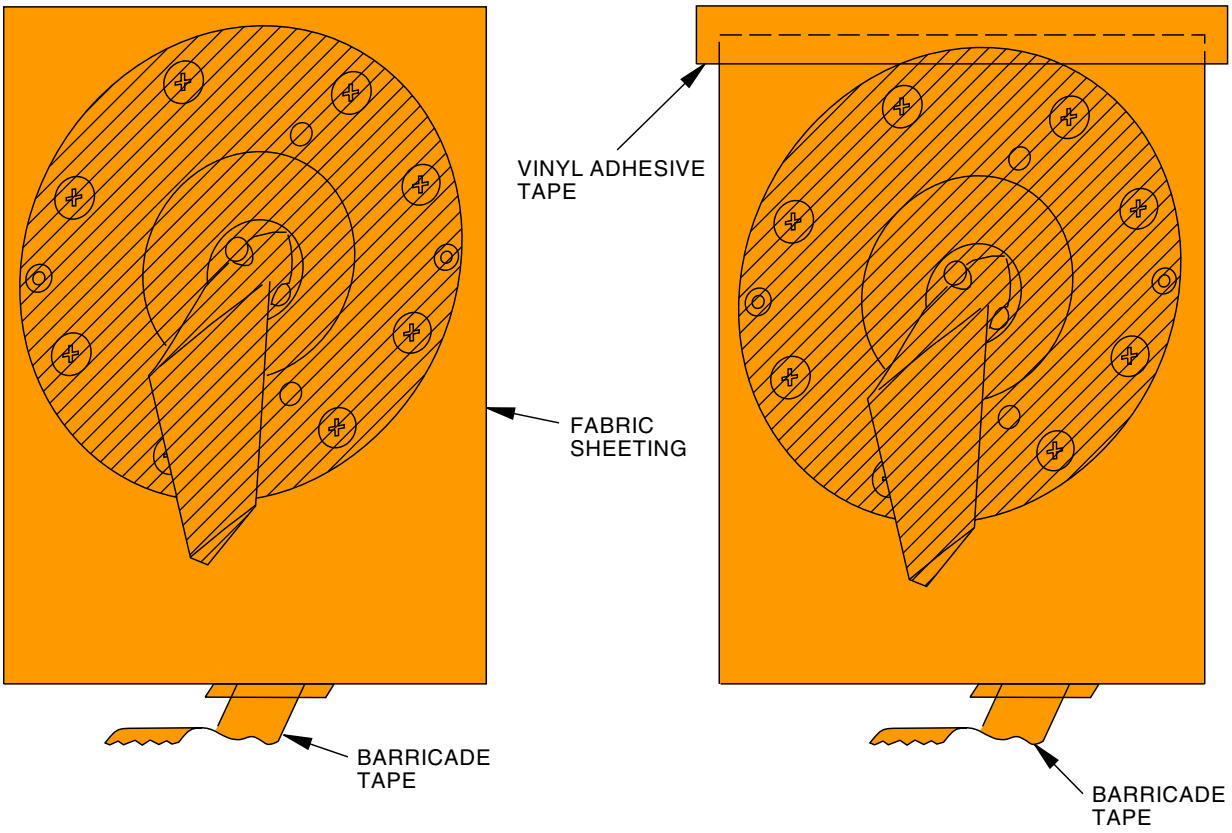
Boost Pump Low Pressure Switches
Figure 206/12-40-00-990-806



1 ENGINE 1 CONTROL VALVE MODULE IS SHOWN, ENGINE 2 CONTROL VALVE IS ON THE RIGHT SIDE OF THE KEEL BEAM

3027735 S0000799093_V1

Thrust Reverser Control Valve Module
Figure 207/12-40-00-990-808



STEP 1

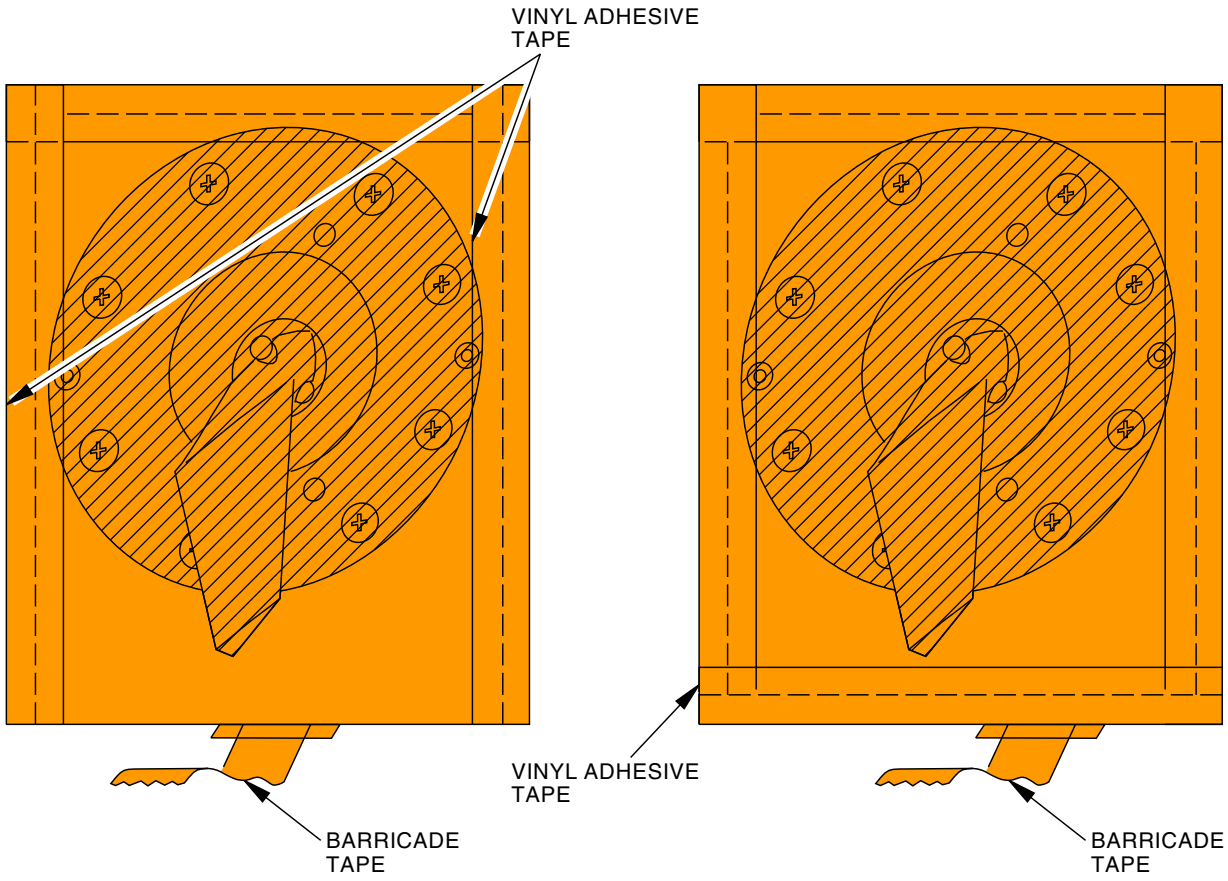
PUT THE FABRIC SHEETING OVER THE ANGLE-OF-ATTACK VANE WITH THE END WITH THE BARRICADE TAPE ATTACHED DOWN.

STEP 2

ATTACH THE TOP EDGE OF THE FABRIC SHEETING WITH VINYL ADHESIVE TAPE.

2410700 S00061526159_V2

Angle-Of-Attack Sensor Cover Procedure
Figure 208/12-40-00-990-807 (Sheet 1 of 2)



STEP 3

ATTACH THE FABRIC SHEETING WITH ONE PIECE OF VINYL TAPE ON EACH VERTICAL EDGE, OVERLAPPING THE HORIZONTAL PIECE OF TAPE WITH THE TWO VERTICAL PIECES OF TAPE.

STEP 4

ATTACH THE FABRIC SHEETING ON THE LOWER EDGE WITH ONE PIECE OF VINYL TAPE, OVERLAPPING EACH VERTICAL STRIP OF TAPE.

2410701 S00061526160_V2

Angle-Of-Attack Sensor Cover Procedure
Figure 208/12-40-00-990-807 (Sheet 2 of 2)

TASK 12-40-00-100-802

3. Clean (Waterless Wash) the External Surfaces of the Airplane

A. General

(1) For all dry wash materials and dry wash systems, Boeing recommends diluting the dry wash material and washing the airplane according to the manufacturer's instructions.

(2) To clean the windows in the flight compartment, do this task: Clean the Glass Flight Compartment Windows — Inner Surface, TASK 12-16-02-100-801.

(3) To clean the windows in the passenger compartment, do this task: Clean The Passenger Compartment Windows, TASK 12-16-03-100-801.

(4) Dry wash materials should not be used near the static ports.

(5) All dry wash cleaning materials should meet the requirements of BSS7432, Evaluation of Airplane Maintenance Materials.

B. References

Reference	Title
12-16-02-100-801	Clean the Glass Flight Compartment Windows — Inner Surface (P/B 301)
12-16-03-100-801	Clean The Passenger Compartment Windows (P/B 301)
20-40-11-910-801	Static Grounding (P/B 201)
24-22-00-860-802	Remove Electrical Power (P/B 201)

C. Tools/Equipment

Reference	Description
STD-1086	Gloves - Rubber
STD-1137	Glasses - Safety

D. Consumable Materials

Reference	Description	Specification
B00083	Solvent - VM&P Naphthas	TT-N-95 Type II, ASTM D-3735 Type III
G01043	Cloth - Lint-free	
G02219	Tape - Yellow Vinyl Adhesive, Scotch Brand No.471, 1.5 Inches (38.1 mm) Wide	
G02443	Tape - Barricade, Non-Adhesive, Orange, 3 (76 mm) Inches Wide, 4 mils (0.102 mm) Thick, "REMOVE BEFORE FLIGHT"	
G02444	Tag - Red Paper, "STATIC PORTS COVERED" - 3 inches (76.2 mm) Wide, 6 inches (152.4 mm) Long	
G50398	Pad - Adbrasive, Scotch-Brite Type S, Abrasive Pad	

E. Prepare to Clean the Airplane

SUBTASK 12-40-00-860-002

(1) Do this task: Static Grounding, TASK 20-40-11-910-801.

SUBTASK 12-40-00-860-003

(2) Do this task: Remove Electrical Power, TASK 24-22-00-860-802.

SUBTASK 12-40-00-840-017

(3) Close all of the passenger doors, cargo doors, emergency exits, and access doors and panels.

NOTE: If the doors cannot be closed because of other servicing, be careful that no dry wash material gets into the cabin area.

SUBTASK 12-40-00-840-018

WARNING WHEN THERE ARE COVERS ON THE STATIC PORTS, MAKE SURE THAT PERSONNEL CAN SEE THAT CONDITION FROM THE GROUND. ATTACH A TAG TO THE LEFT CONTROL WHEEL IN THE FLIGHT COMPARTMENT TO SHOW THAT THE STATIC PORTS HAVE COVERS. COVERS ON THE STATIC PORTS CAN CAUSE LARGE ERRORS IN AIRSPEED AND ALTITUDE SIGNALS. THIS IS DANGEROUS DURING FLIGHT.

WARNING DO NOT PUT VINYL ADHESIVE TAPE ON THE STATIC PORTS. THE TAPE, OR THE REMAINING CONTAMINATION AFTER YOU REMOVE THE TAPE CAN CAUSE LARGE ERRORS IN AIRSPEED, AND ALTITUDE SIGNALS. THIS MAKES FLIGHT DANGEROUS.

(4) Cover the static ports as follows:

NOTE: The tapes you will use has the words “REMOVE BEFORE FLIGHT” printed on it.

WARNING DO NOT GET SOLVENTS IN YOUR MOUTH, EYES, OR SKIN. DO NOT BREATHE FUMES FROM SOLVENTS. REFER TO PRODUCT MATERIAL SAFETY DATA SHEETS (MSDS AND LOCAL REQUIREMENTS FOR PROPER HANDLING. SOLVENTS ARE HAZARDOUS MATERIALS AND MAY BE FLAMMABLE OR HARMFUL TO THE ENVIRONMENT.

(a) Clean the area around each static port with naphtha solvent, B00083 or equivalent and a clean dry rag.

NOTE: Clean the area where you will put the yellow vinyl adhesive Scotch Brand No.471 tape, G02219.

(b) Put one end of approximately a 4 ft (1.2 m) piece of the orange barricade tape, G02443, over the holes of the static port.

NOTE: Step 1 in the figure.

(c) Secure the upper edge of the barricade tape with 5 in. (13 cm) of yellow vinyl adhesive Scotch Brand No.471 tape, G02219.

NOTE: Step 2 in the figure.

NOTE: Smooth the yellow vinyl adhesive on the airplane surface to make sure the bond is satisfactory.

(d) Put a 5 in. (127 mm) piece of Scotch Brand No.471 tape, G02219, on each vertical edge of the barricade tape.

NOTE: Step 3 in the figure.

NOTE: The 5 in. (127 mm) tape should overlap the first yellow tape that you put on the upper edge.

(e) Put an 8 in. (20 cm) piece of yellow Scotch Brand No.471 tape, G02219, horizontally over the orange barricade tape, G02443, below the static port holes.

NOTE: Step 4 in the figure.

NOTE: This 8 in. (20 cm) should overlap the vertical yellow tape.

(f) Let the orange barricade tape, G02443, stream down so it is visible from the ground.

SUBTASK 12-40-00-840-019

(5) Attach a "STATIC PORTS COVERED" tag, G02444, printed on it in black letters, to the top of the left control wheel in the flight deck with wire.

SUBTASK 12-40-00-840-020

(6) Wear rubber glove, STD-1086, and safety glasses, STD-1137, to prevent injury to your skin and eyes.

F. Clean the Airplane

SUBTASK 12-40-00-110-010

(1) Clean the airplane using the dry wash material as follows:

(a) Move the flaps to the fully retracted position.

(b) Apply the dry wash material to the area that you will clean with a clean lint-free cloth, G01043, or Scotch-Brite Type S pad, G50398.

(c) Let the cleaning material dry per the manufacturer's recommendations.

(d) Wipe the area with a clean, dry cloth.

(e) Do a check of the area to make sure that you remove all dirt and contaminants.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 12-40-00-840-021

WARNING MAKE SURE THAT ALL BARRICADE TAPE, VINYL ADHESIVE TAPE, AND TAPE RESIDUE IS REMOVED FROM THE STATIC PORTS. IF THE HOLES BECOME CLOGGED WITH TAPE RESIDUE, INCORRECT AIRSPEED-SENSING AND ALTITUDE-SENSING SIGNALS CAN OCCUR. THIS CAN CAUSE DANGEROUS FLIGHT CONDITIONS.

CAUTION REMOVE ALL BARRICADE TAPE AND VINYL ADHESIVE TAPE. ENGINES SHOULD NOT BE OPERATED WITH COVERINGS IN PLACE BECAUSE THE COVERINGS CAN COME OFF AND DAMAGE THE ENGINES.

(1) Remove all orange barricade tape, G02443, and yellow Scotch Brand No.471 tape, G02219, from the static ports.

SUBTASK 12-40-00-160-001

(2) If it is necessary, use naphtha solvent, B00083, or equivalent, and a clean dry rag to remove residue, dirt and other contaminants from around the ports.

SUBTASK 12-40-00-840-022

(3) Remove the "STATIC PORTS COVERED" tag, G02444, from the left control wheel in the flight deck.

END OF TASK

TASK 12-40-00-100-803

4. Polish the External Surfaces of the Airplane

(Figure 201 and Figure 202)

A. General

(1) This task is for polishing unpainted clad aluminum surfaces. Anodized surfaces do not get polished.

(2) Any polish that is listed in D6-9002 is acceptable for polishing.

(3) To polish the painted surfaces, do the applicable task in this procedure: PAGEBLOCK 51-21-99/701.

B. References

Reference	Title
51-21-41-370-801	Apply Bonderite M-CR 1001 Aero Solution (P/B 701)
51-21-99 P/B 701	DECORATIVE EXTERIOR PAINT SYSTEM - CLEANING/PAINTING

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-1503	Cover - Probe, Pitot Part #: B737-415 Supplier: 1LE67 Part #: KPC3-480-325 Supplier: 0P9C7 Part #: PC737 Supplier: 3BSK6 Part #: PC757-01SB Supplier: 38002 Part #: PCDH8-400 Supplier: 3BSK6 Opt Part #: KPC4-480-325 Supplier: 0P9C7
COM-1519	Cover - Protective, Total Air Temperature Probe Part #: B737-420 Supplier: 1LE67 Part #: FTC-102 Supplier: 0P9C7 Part #: TAT102 Supplier: 3BSK6
COM-2499	Cover - Vane, Angle of Attack Part #: R/C-AOAC-2 Supplier: 0P9C7
COM-2500	Cover - Protective, Main Landing Gear Wheels/Brakes Part #: B737-455 Supplier: 1LE67 Part #: WL07J99 Supplier: 8M213
SPL-1508	Pole - Removal/Installation, Pitot Static Probe Cover Part #: A10002-9 Supplier: 81205 Part #: IP100 Supplier: 0P9C7 Opt Part #: A10002-7 Supplier: 81205
SPL-1513	Cover - Probe, Ice Detector Part #: 0061BN1 Supplier: 0P9C7 Part #: ID400-1 Supplier: 3BSK6
SPL-1517	Cover - Engine Exhaust Part #: 896812 Supplier: SBK11 Part #: C10006-1 Supplier: 81205

(Continued)

Reference	Description
SPL-14189	Protective Cover - AOA Vane Part #: AOA100 Supplier: 3BSK6 Part #: C10004-1 Supplier: 81205
SPL-14650	Cover, Engine Inlet - LEAP 1B Part #: 892812 Supplier: SBK11 Part #: B737-104 Supplier: 1LE67 Part #: B737-153 Supplier: 1LE67 Part #: C10005-23 Supplier: 81205 Opt Part #: C10005-1 Supplier: 81205
STD-1205	Wheel - Buffer, Cotton Cloth, 80/92 Thread Count, Spiral Sewn, 6 Inch Diameter, 7/8 Inch Thick, 1/4 Inch Arbor Hole
STD-1206	Tool - Burnishing
STD-1207	Sander/Polisher - Orbital, Air Driven

D. Consumable Materials

Reference	Description	Specification
B00047	Acid - Technical Grade, Nitric (61%-68.2% Purity)	A-A-59105
B00083	Solvent - VM&P Naphthas	TT-N-95 Type II, ASTM D-3735 Type III
B00232	Cleaner - Sodium Hydroxide	P-S-631
B00570	Polish - Exterior Aircraft - Bonderite C-MC 1495 X polish (Formerly Turco 1495-X)	
C50015	Coating - Chemical Conversion - Bonderite M-CR 1001 Aero (Formerly Alodine 1000)	BAC5719 Class B, MIL-DTL-81706 Type I Class 3
D00504	Grease - Petrolatum	VV-P-236
E00056	Compound - Potassium Nitrate	
G00034	Cotton Wiper - Process Cleaning Absorbent Wiper (Cheesecloth, Gauze)	AMS3819 Class 1 Grade A or B Form 1 (Supersede BMS15-5 CL A)
G00116	Sponge - Synthetic	
G00251	Abrasive - Mat, Non-Woven, Non-Metallic	A-A-58054
G00252	Film - Polyethylene Film And Sheeting	ASTM D2103 (Supersedes L-P-512)
G00270	Tape - Scotch Flatback Masking 250	ASTM D6123 (Supersedes A-A-883)
G01043	Cloth - Lint-free	
G01659	Swab - Cotton Or Rayon, (Disposable)	
G02219	Tape - Yellow Vinyl Adhesive, Scotch Brand No.471, 1.5 Inches (38.1 mm) Wide	
G02443	Tape - Barricade, Non-Adhesive, Orange, 3 (76 mm) Inches Wide, 4 mils (0.102 mm) Thick, "REMOVE BEFORE FLIGHT"	

(Continued)

Reference	Description	Specification
G02444	Tag - Red Paper, "STATIC PORTS COVERED" - 3 inches (76.2 mm) Wide, 6 inches (152.4 mm) Long	
G02447	Tag - Red Paper, "PITOT PROBES COVERED" - 3 inches (76.2 mm) Wide, 6 inches (152.4 mm) Long	
G50398	Pad - Adbrasive, Scotch-Brite Type S, Abrasive Pad	

E. Prepare to Polish the Surface

WARNING DO NOT POLISH THE STATIC PORTS. IT CAN CAUSE LARGE ERRORS IN AIRSPEED-SENSING AND ALTITUDE-SENSING SIGNALS. IF YOU DO NOT OBEY, A LOSS OF SAFE FLIGHT CAN OCCUR.

SUBTASK 12-40-00-100-001

(1) Clean the external surfaces of the airplane you will polish (TASK 12-40-00-100-801 or TASK 12-40-00-100-802).

SUBTASK 12-40-00-080-003

CAUTION USE COVERS, BLACK POLYETHYLENE SHEET, AND YELLOW VINYL ADHESIVE TAPE TO KEEP LIQUIDS OUT OF AREAS THAT CONTAIN MECHANICAL, ELECTRICAL, OR HYDRAULIC COMPONENTS. LIQUIDS THAT GET INTO THESE AREAS CAN CAUSE CORROSION, FREEZE DURING AIRPLANE FLIGHT, OR REMOVE NECESSARY LUBRICANTS.

CAUTION WHENEVER AN OPENING IS COVERED, MAKE SURE THAT CONDITION IS VISIBLE FROM THE GROUND. ENGINES SHOULD NOT BE OPERATED WITH COVERS IN PLACE BECAUSE THE COVERS CAN COME OFF AND DAMAGE THE ENGINES.

(2) Install component covers as follows:

CAUTION MAKE SURE THE PROBE COVER IS IN GOOD WORKING CONDITION WITH NO EVIDENCE OF DAMAGE, ESPECIALLY FRAYING AROUND THE COVER OPENING. FRAYED FIBERS FROM THE COVER COMBINED WITH OTHER SUBSTANCES SUCH AS DIRT, GREASE AND FLUIDS CAN CAUSE OBSTRUCTION IN THE PROBE.

(a) Install the pitot probe cover, COM-1503, with the pitot static probe cover removal/installation pole, SPL-1508.

(b) Install the probe cover, COM-1519, on the total air temperature probes.

(c) Install the AOA vane protective cover, SPL-14189 (recommended), or angle of attack vane cover, COM-2499 (alternate).

(d) Install the engine inlet cover, SPL-14650.

(e) Install the engine exhaust cover, SPL-1517.

(f) Install a main landing gear wheels/brakes protective cover, COM-2500.

(g) Install probe cover, SPL-1513, on the ice detector probes.

SUBTASK 12-40-00-910-002

(3) Use vinyl adhesive Scotch Brand No.471 tape, G02219, and black sheet of polyethylene film, G00252, to cover and seal these areas:

NOTE: Do not seal them air-tight.

(a) Surge tank and fuel tank vents

(b) APU exhaust duct outlet port

(c) Ram air inlet and outlet doors

(d) Outflow valve

(e) Positive Pressure Relief Valve (PPRV) pressure ports.

SUBTASK 12-40-00-480-003

WARNING

WHEN THERE ARE COVERS ON THE STATIC PORTS, MAKE SURE THAT PERSONNEL CAN SEE THAT CONDITION FROM THE GROUND. ATTACH A TAG TO THE LEFT CONTROL WHEEL IN THE FLIGHT COMPARTMENT TO SHOW THAT THE STATIC PORTS HAVE COVERS. COVERS ON THE STATIC PORTS CAN CAUSE LARGE ERRORS IN AIRSPEED AND ALTITUDE SIGNALS. THIS IS DANGEROUS DURING FLIGHT.

WARNING

DO NOT PUT VINYL ADHESIVE TAPE ON THE STATIC PORTS. THE TAPE, OR THE REMAINING CONTAMINATION AFTER YOU REMOVE THE TAPE CAN CAUSE LARGE ERRORS IN AIRSPEED, AND ALTITUDE SIGNALS. THIS MAKES FLIGHT DANGEROUS.

(4) Cover the static ports as follows:

NOTE: The tapes you will use has the words “REMOVE BEFORE FLIGHT” printed on it.

WARNING

DO NOT GET SOLVENTS IN YOUR MOUTH, EYES, OR SKIN. DO NOT BREATHE FUMES FROM SOLVENTS. REFER TO PRODUCT MATERIAL SAFETY DATA SHEETS (MSDS AND LOCAL REQUIREMENTS FOR PROPER HANDLING. SOLVENTS ARE HAZARDOUS MATERIALS AND MAY BE FLAMMABLE OR HARMFUL TO THE ENVIRONMENT.

(a) Clean the area around each static port with naphtha solvent, B00083, or equivalent and a clean dry rag.

NOTE: Clean the area where you will put the yellow vinyl adhesive Scotch Brand No.471 tape, G02219.

(b) Put one end of approximately a 4 ft (1.2 m) piece of the orange barricade tape, G02443, over the holes of the static port.

NOTE: Step 1 in the figure.

(c) Secure the upper edge of the barricade tape with 5 in. (13 cm) of yellow vinyl adhesive Scotch Brand No.471 tape, G02219.

NOTE: Step 2 in the figure.

NOTE: Smooth the yellow vinyl adhesive on the airplane surface to make sure the bond is satisfactory.

(d) Put a 5 in. (127 mm) piece of Scotch Brand No.471 tape, G02219, on each vertical edge of the barricade tape.

NOTE: Step 3 in the figure.

NOTE: The 5 in. (127 mm) tape should overlap the first yellow tape that you put on the upper edge.

(e) Put an 8 in. (20 cm) piece of yellow Scotch Brand No.471 tape, G02219, horizontally over the orange barricade tape, G02443, below the static port holes.

NOTE: Step 4 in the figure.

NOTE: This 8 in. (20 cm) should overlap the vertical yellow tape.

CAUTION

WHENEVER AN OPENING IS COVERED, MAKE SURE THAT CONDITION IS VISIBLE FROM THE GROUND. ENGINES SHOULD NOT BE OPERATED WITH COVERS IN PLACE BECAUSE THE COVERS CAN COME OFF AND DAMAGE THE ENGINES.

(f) Let the orange barricade tape, G02443, stream down so it is visible from the ground.

SUBTASK 12-40-00-480-002

(5) Install the "STATIC PORTS COVERED" tag, G02444, and "PITOT PROBES COVERED" tag, G02447 on the left control wheel in the flight deck.

F. Polish the Surface

SUBTASK 12-40-00-600-001

(1) PROCEDURE I - Polish the surface to repair light stains or to make the surface bright.

(a) Use the cotton wiper, G00034, to remove any outer layer of protection as necessary.

(b) Manually or mechanically polish the surface as follows:

1) ALTERNATIVE I - Manually polish the surface.

a) Apply Bonderite C-MC 1495 X polish, B00570, to the cotton wiper, G00034.

b) Rub the damaged area of the surface with the cotton wiper, G00034.

NOTE: Rub in the direction of the grain of the metal until you get the necessary finish.

2) ALTERNATIVE II - Mechanically polish the surface.

a) Apply Bonderite C-MC 1495 X polish, B00570, to the cotton cloth buffer wheel, STD-1205.

b) Polish the damaged area of the surface with a sander/polisher, STD-1207, and cotton cloth buffer wheel, STD-1205.

(c) Remove the remaining polish material with solvent and wipers.

NOTE: Always wipe in the direction of the grain of the metal.

(d) If necessary, use ALTERNATIVE I or II to polish the surface again.

NOTE: If the polished area is too bright, rub the area with an ultrafine abrasive mat, G00251. Remove the dried polish with solvent and wipers.

(e) Rub the area around the polished area to get a constant finish.

(f) Clean the external surfaces of the airplane in the polished area.

(g) Put some water on the surface, and make sure that the water becomes drops.

(h) If the surface was conversion coated before it was polished, do this task: Apply Bonderite M-CR 1001 Aero Solution, TASK 51-21-41-370-801.

SUBTASK 12-40-00-600-002

(2) PROCEDURE II - Polish the surface to remove heavy stains or scratches that do not penetrate the clad aluminum.

WARNING DO NOT GET SOLVENTS IN YOUR MOUTH, EYES, OR SKIN. DO NOT BREATHE FUMES FROM SOLVENTS. REFER TO PRODUCT MATERIAL SAFETY DATA SHEETS (MSDS AND LOCAL REQUIREMENTS FOR PROPER HANDLING. SOLVENTS ARE HAZARDOUS MATERIALS AND MAY BE FLAMMABLE OR HARMFUL TO THE ENVIRONMENT.

(a) Use these steps to find if the scratch penetrated the clad aluminum:

1) Apply solvent, B00083, to a cotton wiper, G00034.
2) Clean the area around the scratch with a cotton wiper, G00034.
3) Dry the surface.
4) Apply Scotch Flatback Masking Tape 250, G00270, around the scratch.

NOTE: Make sure that there is no more than 0.03125 in. (0.79 mm) of bare metal around the scratch.

WARNING MAKE SURE THAT YOU PUT ON SPLASH GOGGLES OR A FACE SHIELD AND CHEMICAL RESISTANT GLOVES WHEN YOU APPLY THE CLAD PENETRATING SOLUTION. IF YOU GET THE CLAD PENETRATING SOLUTION IN YOUR EYES OR ON YOUR SKIN, IMMEDIATELY FLUSH IT WITH CLEAN WATER. INJURIES TO PERSONNEL CAN OCCUR.

5) Prepare the clad penetrating solution as follows:

a) Mix 7 oz (200 g) of potassium nitrate compound, E00056, and 4 oz (100 g) of cleaner, B00232, with sufficient water to make one liter of clad penetrating solution.

CAUTION MAKE SURE THAT YOU PUT THE CLAD PENETRATING SOLUTION ONLY ON THE SCRATCH. THE SOLUTION WILL CAUSE DAMAGE TO THE SURFACE WHERE IT IS APPLIED.

6) Apply one drop of the clad penetrating solution with the point of a toothpick to the deepest part of the scratch.

NOTE: Use the minimum quantity of the clad penetrating solution necessary to flow to the bottom of the scratch.

7) If there is a positive reaction, immediately flush the scratch with water.

NOTE: Do not let the clad penetrating solution stay on the scratch for more than three minutes.

NOTE: If the bottom of the scratch becomes black, then the scratch penetrated the clad to the base metal.

WARNING ALWAYS ADD THE ACID TO THE WATER. DO NOT ADD THE WATER TO THE ACID. THE ACID WILL SPLASH OUT OF THE CONTAINER. THE ACID WILL BURN AND CAUSE INJURY TO YOUR SKIN AND EYES IF IT GETS ON YOU. IF IT GETS ON YOU FLUSH WITH WATER IMMEDIATELY.

(WARNING PRECEDES)

WARNING

DO NOT GET THE NITRIC ACID IN YOUR MOUTH, EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM THE ACID. PUT ON SPLASH GOGGLES, AND GLOVES FOR PROTECTION WHEN YOU USE THE NITRIC ACID. KEEP THE ACID AWAY FROM SPARKS, FLAME, AND HEAT. NITRIC ACID IS A POISONOUS AND FLAMMABLE SOLVENT. IT CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

8) Prepare the nitric acid solution as follows:
   a) Mix one volume of acid, B00047, with two to three volumes of water.
9) Apply one drop of the nitric acid solution to the scratch.
10) Let the nitric acid solution stay on the scratch for one-half to one minute.
11) Flush the scratch with clean water.

WARNING

DO NOT GET CHEMICAL CONVERSION COATING SOLUTION IN YOUR MOUTH, IN YOUR EYES, ON YOUR SKIN, OR ON YOUR CLOTHES. DO NOT BREATHE THE FUMES FROM THIS MATERIAL. AIR MUST FLOW FREELY THROUGH THE WORK AREA. USE THE NECESSARY RESPIRATORY PROTECTION. KEEP THIS MATERIAL AWAY FROM SPARKS, FLAME, AND HEAT. THIS MATERIAL IS POISONOUS AND FLAMMABLE AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

12) Apply a new Bonderite M-CR 1001 Aero coating, C50015, to the scratch with a swab, G01659, cotton wiper, G00034, or sponge, G00116, (TASK 51-21-41-370-801).

(b) If the scratch penetrated the clad aluminum, do PROCEDURE III.

(c) Clean the area around the scratch.

(d) If the surface is badly scratched, rub it with fine or ultrafine abrasive mat, G00251, to make it smoother.

(e) Polish with the air-driven sander/polisher as follows:

NOTE: Polish with the Schaffner No. 521 white bar compound until all of the gray undercast is removed. Then apply the No 4094 green coloring bar compound.

NOTE: Always clean the surface with solvent before you change to a different bar compound.

1) Remove the dried polish material from the buffer wheel with a wheel rasp or a coarse file.
2) Apply the applicable polishing compound to the buffer wheel.
3) Hold the buffer wheel parallel to the direction that you polish.
4) Polish in the forward-to-aft direction.
5) Use sufficient pressure to remove the stains and scratches.
6) Move the buffer wheel in the correct direction to keep the finish in a good condition.
7) Apply the applicable polishing compound to the buffer wheel frequently.
8) Remove the dried polish material from buffer wheel frequently.

9) Remove the dried polish material from the airplane surface with the wipers and solvent.

NOTE: Put solvent on the heavy polish material to make it soft before you wipe it off.

10) Clean the external surfaces of the airplane in the polished area.

11) Put some water on the surface, and make sure the water becomes drops.

12) If the surface was conversion coated before it was polished, apply the Bonderite M-CR 1001 Aero coating, C50015 (TASK 51-21-41-370-801).

SUBTASK 12-40-00-600-003

(3) PROCEDURE III - Polish the surface to repair damage that penetrates the clad aluminum.

NOTE: There is a test in PROCEDURE II to find if a scratch penetrates the clad aluminum.

(a) Use the cotton wiper, G00034, to clean the damaged area.

NOTE: Wipe the damaged area carefully to prevent scratches.

(b) Remove the burr edge:

1) Apply the grease, D00504, to the burnishing tool, STD-1206.

2) Move the burnishing tool in the direction of the scratch so that the clad aluminum material is moved into the defective area.

NOTE: Keep the area that you burnish to a minimum.

3) Move the burnishing tool on the repaired area so the area has a smooth surface, and so the stress is applied on a large area.

4) If the burnished area blends in with the adjacent surface, no further work is necessary.

5) If the burnished area does not blend in with the adjacent surface, continue as shown in PROCEDURE II.

SUBTASK 12-40-00-120-001

(4) PROCEDURE IV - Clean (waterless wash) the external surfaces of the airplane.

(a) Clean the airplane using the dry wash material.

(b) Move the flaps to the fully retracted position.

(c) Apply the dry wash material to the area that you will clean with a clean lint-free cloth, G01043, or Scotch-Brite Type S pad, G50398.

(d) Allow the cleaning material to dry per the manufacturer's recommendations.

(e) Wipe the area with a clean, dry cloth.

(f) Check the area that has just been cleaned to make sure that all dirt and contaminants have been removed.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 12-40-00-840-025

WARNING

MAKE SURE THAT ALL BARRICADE TAPE, VINYL ADHESIVE TAPE, AND TAPE RESIDUE IS REMOVED FROM THE STATIC PORTS. IF THE HOLES BECOME CLOGGED WITH TAPE RESIDUE, INCORRECT AIRSPEED-SENSING AND ALTITUDE-SENSING SIGNALS CAN OCCUR. THIS CAN CAUSE DANGEROUS FLIGHT CONDITIONS.

(WARNING PRECEDES)

CAUTION REMOVE ALL BARRICADE TAPE AND VINYL ADHESIVE TAPE. ENGINES SHOULD NOT BE OPERATED WITH COVERINGS IN PLACE BECAUSE THE COVERINGS CAN COME OFF AND DAMAGE THE ENGINES.

(1) Remove all orange barricade tape, G02443, and yellow Scotch Brand No.471 tape, G02219, from the static ports.

SUBTASK 12-40-00-110-011

WARNING DO NOT GET SOLVENTS IN YOUR MOUTH, EYES, OR SKIN. DO NOT BREATHE FUMES FROM SOLVENTS. REFER TO PRODUCT MATERIAL SAFETY DATA SHEETS (MSDS AND LOCAL REQUIREMENTS FOR PROPER HANDLING. SOLVENTS ARE HAZARDOUS MATERIALS AND MAY BE FLAMMABLE OR HARMFUL TO THE ENVIRONMENT.

(2) If it is necessary, use naphtha solvent, B00083, or equivalent, and a clean dry rag to remove residue, dirt and other contaminants from around the ports.

SUBTASK 12-40-00-080-002

WARNING FAILURE TO REMOVE COVERS FROM PITOT PROBES BEFORE FLIGHT MAY CAUSE LARGE ERRORS IN AIRSPEED-SENSING AND ALTITUDE-SENSING SIGNALS, WHICH MAY LEAD TO LOSS OF SAFE FLIGHT.

CAUTION REMOVE ALL COVERS. ENGINES SHOULD NOT BE OPERATED WITH COVERS IN PLACE BECAUSE THE COVERS CAN COME OFF AND DAMAGE THE ENGINES.

(3) Remove the component covers as follows:

(a) Remove the pitot probe cover, COM-1503, from the pitot probes with the pitot static probe cover removal/installation pole, SPL-1508.

(b) Remove the probe cover, COM-1519, from the total air temperature probes.

(c) Remove the AOA vane protective cover, SPL-14189, or angle of attack vane cover, COM-2499.

(d) Remove the engine inlet cover, SPL-14650.

(e) Remove the engine exhaust cover, SPL-1517.

(f) Remove the main landing gear wheels/brakes protective cover, COM-2500.

(g) Remove the cover on the APU exhaust duct outlet port.

(h) Remove the cover from the ram air inlet and outlet doors.

(i) Remove the cover from the outflow valve.

(j) Remove the cover from the Positive Pressure Relief Valve (PPRV) pressure ports.

(k) Remove the probe cover, SPL-1513, from the ice detector probes.

SUBTASK 12-40-00-840-026

(4) Remove the "STATIC PORTS COVERED" tag, G02444, and "PITOT PROBES COVERED" tag, G02447, from the left control wheel in the flight deck.

END OF TASK

TASK 12-40-00-100-804

5. Clean the Exterior Surface of Volcanic and Fire Ash

A. General

(1) Fallout is identified as ash drifting down from the air, or is blown about by the wind. Fallout is also caused by the ash being blown or moved about because of the movement of airplanes and ramp vehicles.

(2) For airplanes parked in fallout conditions, protect all inlets of systems, probes, static ports, engines, gaps, etc. with suitable covers.

(a) Any covered areas should have appropriate streamers or markings, to be removed before operation.

(3) Volcanic ash has the qualities that follow:

(a) It is hard and highly abrasive.

(b) It usually contains trace amounts of acidic chemicals (pH level of 2 to neutral).

(c) It can cause erosion/abrasion, etching or shot peening on exposed surfaces and remove protective finishes.

(d) The dimensions of most ash particles are less than 5 microns with trace amounts that are more than 50 microns.

(e) It resembles talcum powder.

(f) It stays on exposed lubricated surfaces.

(g) Able to enter small orifices and pass by seals.

(h) Can cause unusual wear and contamination of many airplane systems and filter elements.

(4) Fire ash has the qualities that follow:

(a) It is light weight and white to gray in color.

(b) It usually contains trace amounts of acidic chemicals (pH level of 2 to neutral).

(c) It can cause corrosion or etching on exposed surfaces and remove protective finishes.

(d) The dimensions of most ash particles are less than 5 microns with trace amounts that are more than 50 microns.

(e) It stays on exposed lubricated surfaces.

(f) Able to enter small orifices and pass by seals.

(g) Can cause contamination of airplane systems and filter elements.

WARNING

DO NOT GET VOLCANIC ASH IN YOUR MOUTH, EYES, OR ON YOUR SKIN. PUT ON A RESPIRATOR MASK THAT REMOVES VOLCANIC ASH PARTICLES SUFFICIENTLY. PUT ON CLOTHES AND GOGGLES (OR OTHER APPROVED EYE PROTECTION) THAT KEEP VOLCANIC ASH OFF YOU. VOLCANIC ASH CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

(5) Volcanic ash can cause discomfort and injury to persons during fallout conditions, and during inspection and cleaning.

(a) Precautions must be followed when you work in a volcanic ash environment. This will prevent the entry of volcanic ash into your eyes and your respiratory (breathing) system.

(6) The following is a guide to help identify positive volcanic ash findings versus false positive findings. Minimum experience inspecting for volcanic ash may induce a number of probable findings which have not been recognized previously, but are well known findings caused by normal operation.

(a) Black or dark debris on the aircraft skin, engine and fan blades are normal debris usually caused by industrial dust.

(b) Yellow or green debris inside of pitot tubes and/or similar sensors are typical of plant pollen.

(c) White debris on acoustic panels of the engine inlet, fan blades, outlet guide vanes etc. can be residuals of water.

(d) White signs on the fuselage and wings can be caused by aircraft dry cleaning.

B. References

Reference	Title
10-11-01-580-801	Airplane Parking (P/B 201)
10-11-07 P/B 201	ACTIVE STORAGE - MAINTENANCE PRACTICES
10-12-00 P/B 201	PROLONGED PARKING - MAINTENANCE PRACTICES
20-40-11-910-801	Static Grounding (P/B 201)
24-22-00-860-802	Remove Electrical Power (P/B 201)
32-00-01-480-801	Landing Gear Downlock Pins Installation (P/B 201)
71-00-00-200-806-G00	Heavy Sand/Dust Ingestion and Volcanic Ash Ingestion Inspection (P/B 601)

C. Tools/Equipment

Reference	Description
STD-1086	Gloves - Rubber
STD-1137	Glasses - Safety
STD-6636	Vacuum Cleaner - wet and dry type

D. Consumable Materials

Reference	Description	Specification
G50412	Paper - Litmus (Used to find the acidity or alkalinity of a liquid solution)	

E. Prepare to Clean the Airplane

SUBTASK 12-40-00-910-003

(1) Make sure that the covers are installed and the static ports are sealed (Airplane Parking, TASK 10-11-01-580-801).

SUBTASK 12-40-00-480-004

WARNING MAKE SURE THE DOWNLOCK PINS ARE INSTALLED ON ALL THE LANDING GEAR. WITHOUT THE DOWNLOCK PINS, THE LANDING GEAR COULD RETRACT AND CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(2) If the downlock pins are not installed in the nose and main landing gear, do this task: Landing Gear Downlock Pins Installation, TASK 32-00-01-480-801.

SUBTASK 12-40-00-910-004

(3) Do this task: Static Grounding, TASK 20-40-11-910-801.

SUBTASK 12-40-00-860-005

(4) Do this task: Remove Electrical Power, TASK 24-22-00-860-802.

SUBTASK 12-40-00-910-005

(5) Close all of the passenger doors, cargo doors, emergency exits, and access doors and panels.

NOTE: If the doors cannot be closed because of other servicing, be careful that no dry wash material gets into the cabin area.

SUBTASK 12-40-00-910-006

(6) Wear rubber gloves, STD-1086, and safety glasses, STD-1137, to prevent injury to your skin and eyes.

F. Procedure

SUBTASK 12-40-00-160-002

CAUTION

MAKE SURE ALL VOLCANIC ASH IS REMOVED FROM THE AIRCRAFT EXTERNAL SURFACE BEFORE YOU DO THE WASHING PROCEDURES. WHEN VOLCANIC ASH IS WET, IT BECOMES A CORROSIVE PASTE. THIS CAN CAUSE DAMAGE TO THE SURFACE OF THE AIRCRAFT.

CAUTION

DO NOT RUB THE SURFACE WITH A BRUSH OR COTTON WIPER. VOLCANIC ASH IS ABRASIVE. THIS CAN CAUSE ABRASIONS AND SCRATCHES THAT CAN CAUSE DAMAGE TO THE SURFACE.

(1) If any ash is found, remove all traces of the ash, including areas such as the fuselage crown, horizontal surfaces, inlets, wheel wells, and exposed chrome common to landing gear.

(a) If the ash is not wet, use the vacuum cleaner, STD-6636 to remove the ash contamination from the airplane surfaces.

(b) Rinse the ash from the airplane exterior surfaces.

NOTE: Ash is known to contain trace amounts of Sulfur Dioxide and/or nitrates. Mixture of ash and water can result in an acidic solution.

CAUTION

DO NOT WATER WASH AN ENGINE WHICH HAS HAD VOLCANIC ASH INGESTION, SEVERE DUST OR SAND CONDITIONS UNTIL THIS MATERIAL HAS BEEN REMOVED FROM THE ENGINE AND WAIT A MINIMUM OF 5 FLIGHTS BEFORE WATER WASH. WATER WASH CAN CAUSE VOLCANIC ASH TO COLLECT IN THE HPT NOZZLE AND BLADE COOLING PATHS. THIS CAN RESULT IN REDUCED COOLING FLOW AND CAN ALSO CAUSE ROTOR IMBALANCE FROM COLLECTION OF MATERIAL SETTLING AND DRYING IN THE ROTOR SPOOLS.

1) Make sure that the ash from engine and Auxiliary Power Unit (APU) inlets, inside the tail cone, areas around probes and ports, and ram air ducts are removed.

a) If the engine has ingested volcanic ash, and/or heavy sand/dust do this task: Heavy Sand/Dust Ingestion and Volcanic Ash Ingestion Inspection, TASK 71-00-00-200-806-G00.

SUBTASK 12-40-00-100-002

(2) Do the water wash with water base alkaline cleaners (Clean (Wet Wash) the External Surfaces of the Airplane, TASK 12-40-00-100-801).

SUBTASK 12-40-00-280-001

(3) Do a test of the aircraft with litmus paper strips as follows:

(a) Tape litmus paper, G50412 on different parts of the aircraft. Wet the strips with distilled water.

(b) Make sure that the pH factor is above 4.

1) If the pH factor is 4 or below, do the water wash with water base alkaline cleaners again until the pH factor is above 4 (Clean (Wet Wash) the External Surfaces of the Airplane, TASK 12-40-00-100-801).

G. Put the Airplane Back To Usual Condition

SUBTASK 12-40-00-840-027

(1) If the airplane was in a Parking or Storage configuration, install new tape and covers and follow the applicable lubrication steps in the storage prep procedures (ACTIVE STORAGE - MAINTENANCE PRACTICES, PAGEBLOCK 10-11-07/201, PROLONGED PARKING - MAINTENANCE PRACTICES, PAGEBLOCK 10-12-00/201).

END OF TASK

BIRD STRIKE CLEANING - MAINTENANCE PRACTICES

1. General

A. This procedure has this task:

(1) Bird Strike Cleaning.

TASK 12-40-04-100-801

2. Bird Strike Cleaning

A. General

(1) This task gives the instructions to remove the bird remains from an airplane exterior.

B. References

Reference	Title
05-51-18-210-801	Bird Strike and In-flight Hail Strike Conditional Inspection (P/B 201)

C. Consumable Materials

Reference	Description	Specification
B00130	Alcohol - Isopropyl	TT-I-735
B50167	Cleaner - Zip-Chem Products Calla 7127 Disinfectant	
B50280	Cleaner - Disinfectant - Zip-Chem Products Calla 1452	
G01043	Cloth - Lint-free	
G50140	Gloves - Protective, Latex or Nitrile	
G50436	Disinfectant - EnviroTru 1453 (Supersedes EcoTru 1453)	

D. Procedure

SUBTASK 12-40-04-010-001

(1) Get access to the suspected bird strike area.

SUBTASK 12-40-04-940-001

WARNING PUT ON EQUIPMENT FOR PROTECTION BEFORE YOU TOUCH THE BIRD CARCASS, BLOOD, GUTS, AND RESIDUE. THIS CAN CONTAIN BACTERIA AND VIRUSES THAT CAN CAUSE ILLNESSES, AND INJURIES TO PERSONNEL.

WARNING DO NOT LET THE BIRD CARCASS OR OTHER PIECES OF THE BIRD TOUCH YOUR SKIN. DISCARD THE BIRD PIECES IN A PLASTIC DISPOSAL BAG. THE BIRD PIECES CAN CONTAIN INFECTIOUS MATERIALS (BACTERIA AND VIRUSES). THEY CAN CAUSE ILLNESSES, AND INJURIES TO PERSONNEL.

(2) Before you touch any of the bird remains, put on protective gloves, G50140.

SUBTASK 12-40-04-140-001

(3) Clean the bird pieces from the airplane.

WARNING PUT THE BIRD PIECES INTO PLASTIC DISPOSAL BAGS WHEN YOU REMOVE THEM FROM THE AIRPLANE. OBEY THE AIRLINE POLICY, LOCAL HEALTH DEPARTMENT, AND LAW ENFORCEMENT REGULATIONS WHEN YOU DISCARD THIS MATERIAL. OBEY THESE INSTRUCTIONS TO PREVENT INJURIES TO PERSONNEL.

(a) Discard the bird pieces in a plastic bag.

(b) Using a lint-free cloth, G01043, clean the area with alcohol, B00130 and EnviroTru 1453 Disinfectant, G50436, Calla 7127 cleaner, B50167, or Calla 1452 cleaner, B50280.

(c) Make sure that you remove all of the bird material from the airplane.

SUBTASK 12-40-04-940-002

(4) After you remove the bird pieces from the airplane, do this task: Bird Strike and In-flight Hail Strike Conditional Inspection, TASK 05-51-18-210-801.

——— END OF TASK ———