CHAPTER

12

SERVICING

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SERVICING - GENERAL

1. General

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

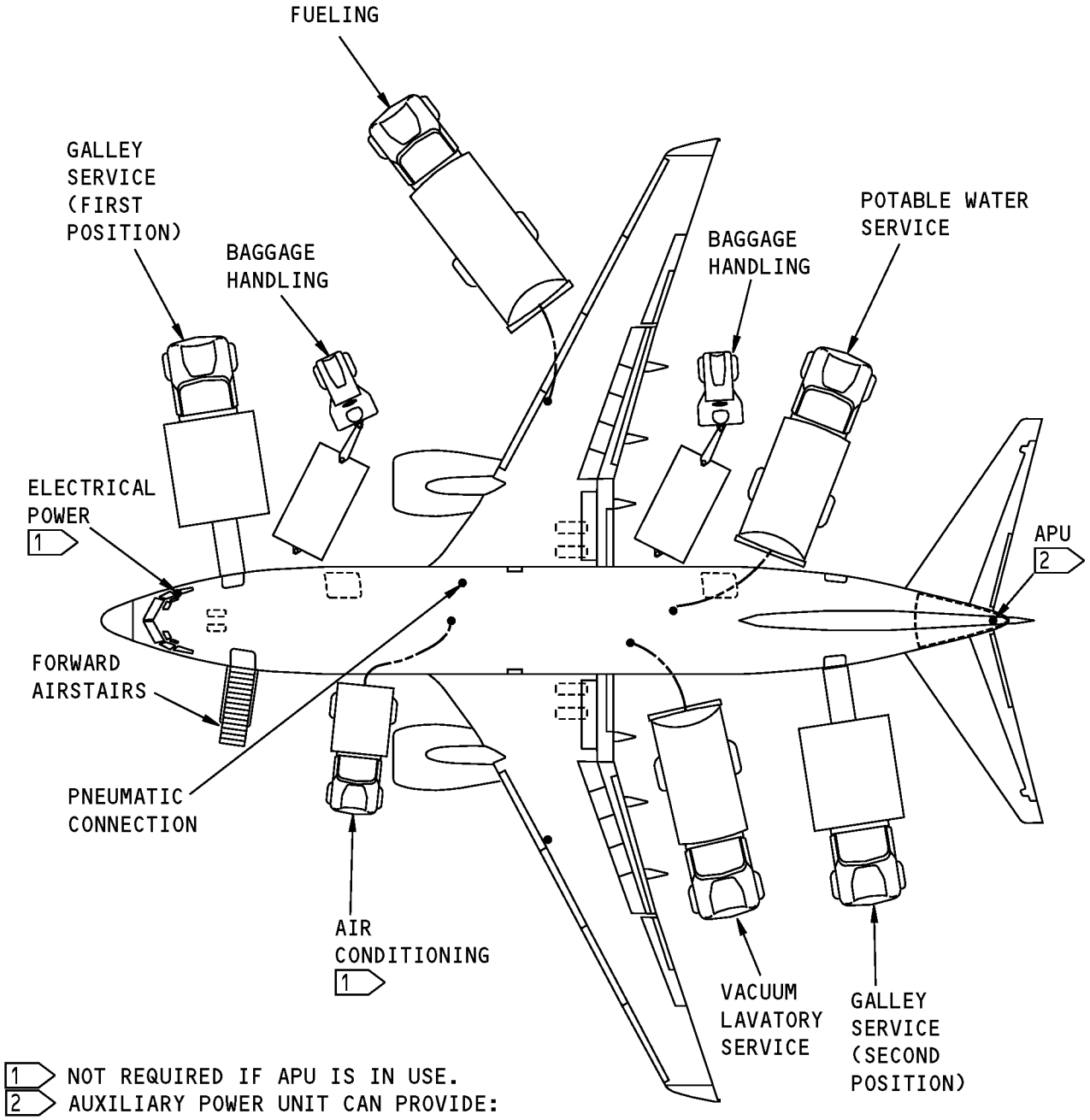
TASK 12-00-00-610-801

2. Servicing - General

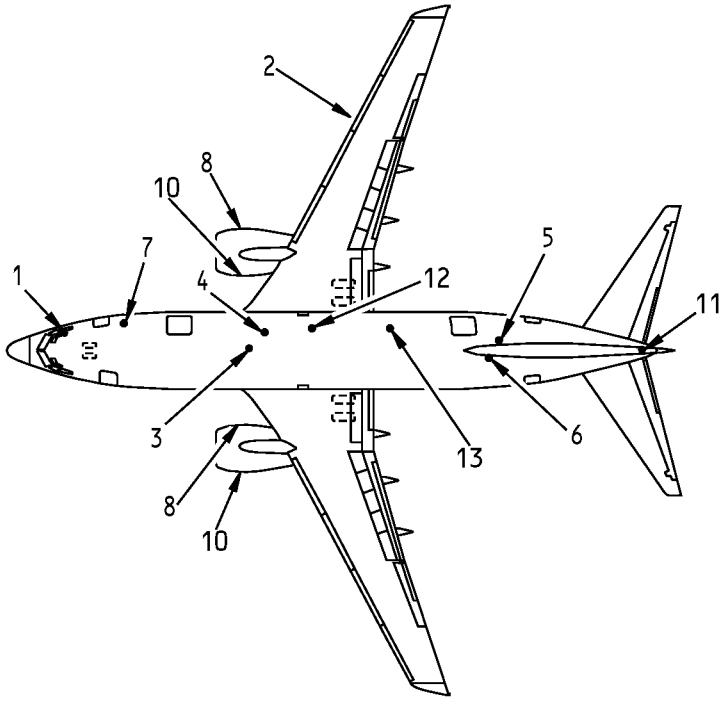
A. General

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

———————— END OF TASK ————————



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

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

A. General

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

B. References

Reference	Title
28-21-00-750-801	Refuel Receptacle Adapter Check (P/B 601)
28-26-00-650-802	Tank to Tank Fuel Transfer (P/B 201)
49-11-00-710-802	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
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 12-11-00-650-025

(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 12-11-00-650-026

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

SUBTASK 12-11-00-650-027

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

E. Fuel Spills

SUBTASK 12-11-00-650-028

(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 12-11-00-650-029

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

SUBTASK 12-11-00-650-030

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

(a) Stop the fuel flow.

(b) Unload and shutdown the APU. To do this, do this task: APU Usual Shutdown, 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 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.

F. Passenger Precautions

SUBTASK 12-11-00-650-031

WARNING: OBEY THE SUBSEQUENT PASSENGER PRECAUTIONS DURING A REFUEL OPERATION. IF YOU DO NOT OBEY THESE REQUIREMENTS INJURY TO PERSONS CAN OCCUR.

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

SUBTASK 12-11-00-650-032

(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 12-11-00-650-033

WARNING: OBEY THE SUBSEQUENT AIRPLANE SYSTEM PRECAUTIONS DURING A REFUEL OPERATION. IF YOU DO NOT OBEY THESE REQUIREMENTS A FIRE OR AN EXPLOSION CAN OCCUR.

(1) Do not operate these airplane systems during a refuel operation:

(a) HF communications system

SUBTASK 12-11-00-650-035

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

SUBTASK 12-11-00-650-036

(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 any part of the landing gear is unusually hot.

SUBTASK 12-11-00-650-037

CAUTION: DO NOT OPERATE THE HYDRAULIC SYSTEM WHEN THE TANK THAT CONTAINS THE EXCHANGER FOR THAT HYDRAULIC SYSTEM IS EMPTY. THE HYDRAULIC SYSTEM BECOMES TOO HOT IF THE EXCHANGER IS OUT OF THE FUEL.

(4) Do not operate a hydraulic system if the tank that contains the exchanger for that hydraulic system has less than 250 gallons (946 liters) of fuel.

(a) Do not operate hydraulic system A (placard controls) if the No. 1 tank has less than 250 gallons (946 liters) of fuel.

(b) Do not operate hydraulic system B or the standby hydraulic system (placard controls) if the No. 2 tank has less than 250 gallons (946 liters) of fuel.

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

SUBTASK 12-11-00-650-038

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

SUBTASK 12-11-00-420-004

(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 the mating surfaces of the fuel hose and refuel receptacle adapter are clean and free from unwanted material.

(c) Make sure the slots and lugs on the adapter are not damaged.

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

(d) Use a wear gage to make sure the adapter is within operational limits (TASK 28-21-00-750-801).

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

SUBTASK 12-11-00-650-039

(7) Make sure the landing gear wheel chocks do not touch the tires. The wheel chocks can wedge against the tire after you add fuel.

SUBTASK 12-11-00-650-040

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

H. APU Operations During Refueling and Defueling - Limits and Precautions

SUBTASK 12-11-00-860-019

WARNING: OBEY THE PROCEDURES FOR OPERATING THE APU DURING THE FUELING OPERATION. INJURY TO PERSONS 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. To do this, do this task: APU Operation Limits, TASK 49-11-00-710-802

and, do this task: APU Starting and Operation, 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 AGAIN DURING THE REFUELING OPERATION. INJURY TO PERSONS OR 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 DURING REFUELING. INJURY TO PERSONS 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 REFUELING. 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. To do this, do this task: APU Usual Shutdown, 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 FUELING VEHICLES ARE NOT PARKED IN THE EXHAUST STREAM OF THIS AIRPLANE OR ANY ADJACENT AIRPLANES. THE HOT EXHAUST CAN CAUSE A FIRE OR EXPLOSION.

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

NOTE: Make sure the APU exhaust stream does not impinge on fueling vehicles for other airplanes. Make sure the fueling vehicles for this airplane are out of the APU exhaust stream of adjacent airplanes.

I. Airplane Separation Distance Limits

SUBTASK 12-11-00-650-041

WARNING: OBEY THE SUBSEQUENT FUELING SEPARATION DISTANCES DURING A REFUEL OPERATION. IF YOU DO NOT OBEY THESE REQUIREMENTS A FIRE OR AN EXPLOSION CAN OCCUR.

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

TABLE 301

Table 301/12-11-00-993-807

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

(Continued)

EQUIPMENT OR IGNITION SOURCES	REFUEL/DEFUEL SEPARATION DISTANCE *[1]
Electrical transmitting equipment	Reference 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 12-11-00-650-042

WARNING: OBEY THE SUBSEQUENT ELECTRICAL SYSTEM SEPARATION DISTANCES DURING A REFUEL OPERATION. IF YOU DO NOT OBEY THESE REQUIREMENTS A FIRE OR AN EXPLOSION CAN OCCUR.

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

TABLE 302

Table 302/12-11-00-993-808

POWER (EIRP *[1] OF EQUIPMENT TRANSMITTING RADAR OR RADIO	REFUEL/DEFUEL SEPARATION DISTANCE *[2]
More than 100 watts (radio or radar)	200 feet (60 meters)
25 to 100 watts (radio or radar)	50 feet (15 meters)
Less than 25 watts *[3]	10 feet (3 meters)

*[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 12-11-00-650-043

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

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.

(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 737-600/700/800 model of airplane.

K. Fuel Servicing Equipment Precautions

SUBTASK 12-11-00-650-044

WARNING: OBEY THE SUBSEQUENT FUEL SERVICING EQUIPMENT PRECAUTIONS DURING A REFUEL OPERATION. IF YOU DO NOT OBEY THESE REQUIREMENTS A FIRE OR AN EXPLOSION CAN OCCUR.

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

SUBTASK 12-11-00-650-045

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

SUBTASK 12-11-00-650-046

(3) Do not disable 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 12-11-00-650-047

(4) When you position fuel servicing vehicles make sure 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 12-11-00-650-048

WARNING: OBEY THE SUBSEQUENT FUEL SERVICING EQUIPMENT PRECAUTIONS DURING A REFUEL OPERATION. IF YOU DO NOT OBEY THESE REQUIREMENTS A FIRE OR AN EXPLOSION CAN OCCUR.

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

SUBTASK 12-11-00-650-049

(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 12-11-00-650-050

(3) Added fuel weight will compress the landing gear shock struts and lower the airplane. Make sure 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 12-11-00-650-051

WARNING: OBEY THE SUBSEQUENT PERSONNEL PRECAUTIONS. IF YOU DO NOT OBEY THESE REQUIREMENTS, INJURIES TO PERSONS 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 12-11-00-650-052

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

N. Fueling Zone

SUBTASK 12-11-00-650-053

(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 12-11-00-650-054

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

SUBTASK 12-11-00-650-055

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

SUBTASK 12-11-00-650-056

(4) Within 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) All personnel must assume that a refuel operation is in progress any time a fuel servicing vehicle is in the fueling zone.

(e) Limit maintenance activity on the airplane to work that does not increase the risk of igniting fuel vapor.

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

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

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

(i) Do not approach within 50 feet (15 meters) of the airplane 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 12-11-00-650-057

WARNING: STOP THE REFUEL OPERATION DURING ATMOSPHERIC ELECTRICAL ACTIVITY. DO NOT CONNECT A HEADSET AND DO NOT TOUCH ELECTRICAL CONNECTIONS TO THE AIRPLANE. LIGHTNING STRIKES CAN CAUSE INJURIES TO PERSONNEL, AND A FIRE OR EXPLOSION DURING A REFUEL OPERATION.

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

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

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

(c) Disconnect and remove any external headsets.

(d) Do not touch any electrical connections.

SUBTASK 12-11-00-650-058

(2) Refueling operations must stop if strong wind conditions are present. 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 12-11-00-650-083

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 tank and the No. 2 tank.

SUBTASK 12-11-00-650-084

(2) If the center tank contains more than 1,000 pounds (453.6 kilograms) of fuel, you must fill the No. 1 tank and the No. 2 tank fully.

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

SUBTASK 12-11-00-650-085

(3) If the No. 1 tank and the No. 2 tank are scheduled to be filled fully, it is not necessary to put a specified quantity of fuel in the center tank.

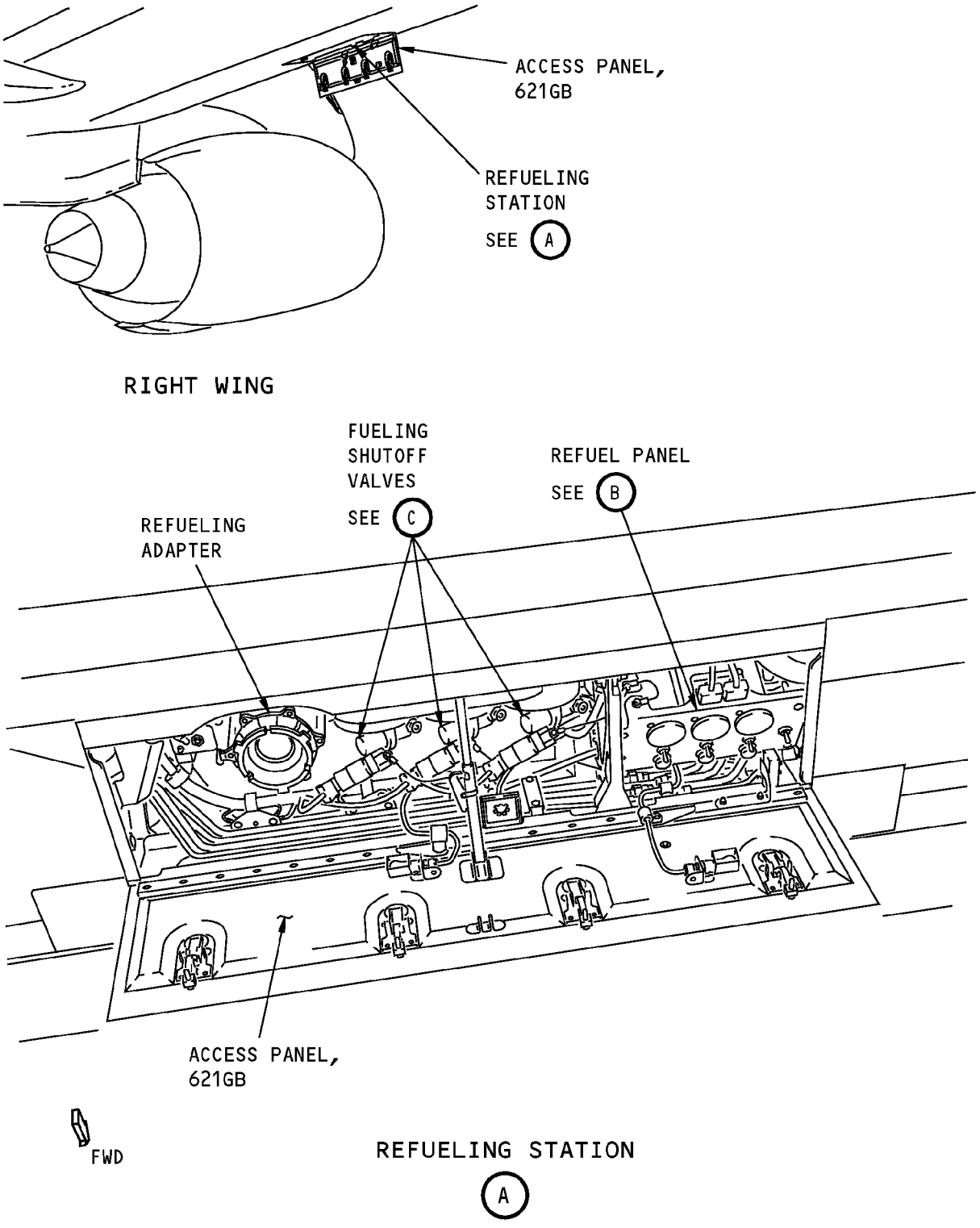
SUBTASK 12-11-00-650-086

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

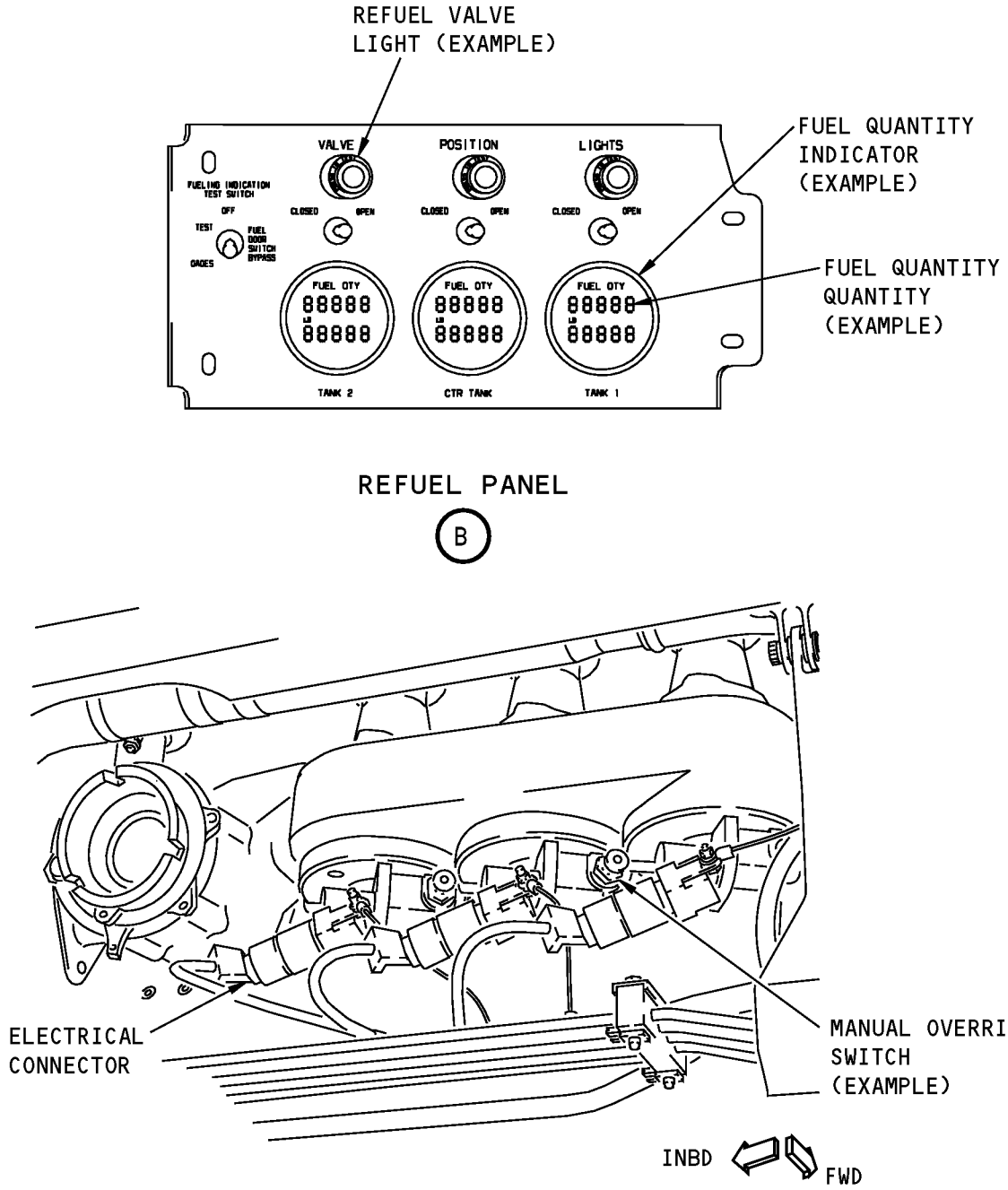
SUBTASK 12-11-00-940-003

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

——————— END OF TASK ———————



Pressure Refueling
Figure 301 (Sheet 1 of 2)/12-11-00-990-807



Pressure Refueling
Figure 301 (Sheet 2 of 2)/12-11-00-990-807

TASK 12-11-00-650-807

3. Prepare the Airplane for a Refuel Operation

A. References

Reference	Title
24-22-00-860-811	Supply Electrical Power (P/B 201)
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 12-11-00-650-059

(1) Read and obey the precautions for fuel servicing. To do this, do this task: Precautions and Limits for the Refuel Operation, TASK 12-11-00-650-801.

SUBTASK 12-11-00-860-021

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

NOTE: If you do not have 115-volt ac power, you can do the refuel operation with electrical power from the airplane battery.

SUBTASK 12-11-00-860-022

(3) 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
A	5	C01340	BATTERY BUS
L	32	C01341	STATIC INVERTER RCCB

(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 there will be sufficient power remaining in the battery to start the APU after the refueling operation.

SUBTASK 12-11-00-860-023

(4) If the APU is to supply power, obey all the applicable precautions. To do this, do this task: Precautions and Limits for the Refuel Operation, TASK 12-11-00-650-801

SUBTASK 12-11-00-860-024

(5) Make sure the airplane has a ground attitude of 1.14 degrees nose down pitch and 0.0 degree roll (+/- 2.0 degrees pitch and roll).

NOTE: A ground attitude of 1.14 degrees nose down pitch and 0.0 degrees roll permits you to put the maximum quantity of fuel in the tanks.

SUBTASK 12-11-00-680-011

(6) Drain the water from the fuel tank sumps before you refuel the airplane. To do this, do this task: Fuel System Sumping, TASK 12-11-00-680-801

SUBTASK 12-11-00-860-025

(7) Make sure the wing pressure relief valves (2 locations) are in the closed position. To do this, do this task: Pressure Relief Valve - Manual Operation, TASK 28-13-41-400-802.

SUBTASK 12-11-00-480-004

WARNING: INSTALL THE LOCKS ON ALL EXTENDED LEADING EDGE FLAPS. THIS WILL PREVENT INJURY FROM AN ACCIDENTAL OPERATION OF THE FLAPS.

(8) If the leading edge flaps are extended, make sure leading edge flap locks are installed. If leading edge flap locks are not installed, do this task: Leading Edge Flap and Slat Locks Installation, TASK 27-81-00-480-801.

SUBTASK 12-11-00-860-026

(9) Make sure 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 12-11-00-650-802

4. Pressure Refuel Procedure

(Figure 301)

A. General

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

(2) You can fill only one tank if it is necessary.

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

B. References

Reference	Title
20-40-11-760-801	Electrical Bonding (P/B 201)
24-22-00-860-812	Remove Electrical Power (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 Access Panel - Slat Station 143.27

E. Prepare the Airplane for a Refuel Operation

SUBTASK 12-11-00-650-020

WARNING: OBEY ALL OF THE APPLICABLE PRECAUTIONS AND LIMITS FOR PRESSURE FUELING. INJURY TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

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

SUBTASK 12-11-00-650-060

(2) Do this task: Prepare the Airplane for a Refuel Operation, TASK 12-11-00-650-807.

F. Connect the Fueling Equipment

SUBTASK 12-11-00-420-001

WARNING: OBEY THE APPLICABLE PRECAUTIONS FOR ATTACHMENT OF BONDING CABLES. AN ADEQUATE ELECTRICAL BOND MAY NOT EXIST IF THE BONDING CABLES ARE NOT INSTALLED AT APPROVED AIRPLANE GROUND CONNECTIONS. IF THE FUEL SERVICE EQUIPMENT AND AIRPLANE ARE NOT CORRECTLY BONDED, A FIRE OR EXPLOSION CAN OCCUR.

(1) Connect a bonding cable from the fueling source to an approved electrical ground or bonding connection on the airplane. To do this, do this task: Electrical Bonding, TASK 20-40-11-760-801.

SUBTASK 12-11-00-010-001

(2) Open this access panel:

(Figure 301)

Number	Name/Location
621GB	Refuel Access Panel - Slat Station 143.27

SUBTASK 12-11-00-650-061

(3) Connect the bonding cable attached to the refuel nozzle to an approved airplane electrical ground. To do this, do this task: Electrical Bonding, TASK 20-40-11-760-801.

NOTE: This bonding cable is not necessary if there is electrical continuity between the fueling source and the fueling nozzle.

SUBTASK 12-11-00-480-001

(4) Do these steps to connect the fuel nozzle to the refuel receptacle:

(a) Make sure there are no fuel leaks.

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

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

G. Prepare the Refuel Control Panel, P15

SUBTASK 12-11-00-010-005

(1) Make sure this access panel is open:

(Figure 301)

Number	Name/Location
621GB	Refuel Access Panel - Slat Station 143.27

SUBTASK 12-11-00-650-062

(2) Make sure the panel floodlights are on.

SUBTASK 12-11-00-650-063

(3) 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
A	5	C01340	BATTERY BUS
L	32	C01341	STATIC INVERTER RCCB

(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 there will be sufficient power remaining in the battery to start the APU after the refueling operation.

SUBTASK 12-11-00-710-003

(4) Push the position lights for the refuel valve to make sure they operate correctly.

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

SUBTASK 12-11-00-650-064

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

(a) Push and hold the FUELING INDICATION TEST SWITCH in the TEST GAGES position.

(b) Make sure all the indicator displays show blank for two seconds, then show 888.8 for two seconds.

NOTE: The test display will continue to cycle until you release the switch. If you hold the TEST SWITCH for more than 20 seconds, the test mode will time out and the indicator will go back to its usual operating mode. If an internal fault is found during the test, the indicator will show Ind FAIL.

(c) Release the test switch.

(d) Make sure all fuel quantity displays go back to the usual indication.

H. Prepare the Fuel Sheet

SUBTASK 12-11-00-650-065

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

SUBTASK 12-11-00-650-066

(2) Calculate the fuel to be uplifted converted to volume (if necessary).

SUBTASK 12-11-00-650-067

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

I. Set the Fuel Quantity

SUBTASK 12-11-00-860-027

(1) If you are scheduled to fill the tanks fully, do these steps:

(a) Set all of the refuel valve switches to the OPEN position.

SUBTASK 12-11-00-860-004

(2) If you are scheduled to refuel the tanks to a specified quantity (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 tank.

J. Start the Refuel Operation

SUBTASK 12-11-00-650-068

(1) Do these steps to start the refuel operation:

(a) Set the refuel valve switches for the tanks to be refueled to the OPEN position.

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

(c) Make sure the refuel pressure is between 35 and 55 psi.

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

(e) Make sure the No. 1 and No. 2 tanks refuel at approximately the same rate.

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.

CAUTION: DO NOT TRY TO PUT MORE FUEL INTO THE TANK AFTER THE REFUEL OPERATION STOPS AUTOMATICALLY. UNWANTED FUEL WILL FLOW ON THE GROUND.

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

NOTE: The float switch in each fuel tank closes each refuel shutoff valve when each tank is fully filled.

K. Stop the Refuel Operation

SUBTASK 12-11-00-650-069

(1) When the refuel indicators show the necessary quantities (calculated before), set the refuel valve switches to the CLOSE position.

(a) Release the deadman switch.

SUBTASK 12-11-00-650-071

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

SUBTASK 12-11-00-650-072

(3) Transfer fuel to balance the fuel load if it is necessary. To do this, do this task: Tank to Tank Fuel Transfer, TASK 28-26-00-650-802.

SUBTASK 12-11-00-650-073

(4) Wait one minute to let the FQIS system become stable.

SUBTASK 12-11-00-650-074

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

SUBTASK 12-11-00-650-075

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

SUBTASK 12-11-00-650-076

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

NOTE: Refer to the operator's requirement.

SUBTASK 12-11-00-650-077

(8) Complete the Fuel Sheet.

SUBTASK 12-11-00-650-078

(9) Complete the Delivery Receipt if it is necessary.

SUBTASK 12-11-00-650-079

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

L. Put the Airplane Back to its Usual Condition

SUBTASK 12-11-00-860-028

(1) Make sure all the P15 panel valve switches are in the CLOSED position.

SUBTASK 12-11-00-650-080

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

SUBTASK 12-11-00-860-031

(3) Disconnect the bonding cable for the fuel hose nozzle (if installed).

SUBTASK 12-11-00-860-032

(4) Make sure the receptacle adapter is not damaged.

SUBTASK 12-11-00-160-001

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

SUBTASK 12-11-00-860-039

(6) Push the position lights for the refuel shutoff valve to make sure they operate correctly.

SUBTASK 12-11-00-410-002

(7) Close and security latch this access panel:

Number	Name/Location
621GB	Refuel Access Panel - Slat Station 143.27

SUBTASK 12-11-00-080-008

(8) Disconnect the bonding cable that you connected between the fueling source and the airplane. To do this, do this task: Electrical Bonding, TASK 20-40-11-760-801.

SUBTASK 12-11-00-080-009

WARNING: DO THE APPLICABLE PROCEDURE TO REACTIVATE THE EXTENDED LEADING EDGE FLAPS. THE FLAPS MOVE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

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

SUBTASK 12-11-00-080-003

(10) Disconnect the ground cables for the fuel vehicle.

SUBTASK 12-11-00-080-004

(11) Disconnect the ground cables for the airplane.

SUBTASK 12-11-00-860-038

(12) Remove electrical power if it is not necessary for other tasks (TASK 24-22-00-860-812).

SUBTASK 12-11-00-860-030

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

(a) Set the standby power switch to AUTO.

(b) Set the battery switch to OFF.

SUBTASK 12-11-00-800-007

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

——————— END OF TASK ———————

TASK 12-11-00-650-808

5. Refuel Operation When the Refuel Quantity Indicators Flash

A. General

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

(2) If the refuel panel 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 tank. Do the steps below if the indicator continues to flash for 60 seconds or more. If the 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.

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)
FIM 28-21 TASK 816	Refuel Quantity Indicator Flashes - Fault Isolation

C. Procedure

SUBTASK 12-11-00-650-081

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

SUBTASK 12-11-00-810-003

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

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

NOTE: The volume 1288 gallons (4876 liters) is equivalent to 8630 pounds (3915 kilograms) 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) (Table 303).

Table 303/12-11-00-993-809

FMSM Number	Document Title
D634A122	737-600/700/800/900 Fuel Measuring Stick Manual - Pounds
D634A123	737-600/700/800/900 Fuel Measuring Stick Manual - Kilograms
D634A124	737-600/700/800/900 Fuel Measuring Stick Manual -Gallons
D634A125	737-600/700/800/900 Fuel Measuring Stick Manual - Liters

(b) For the center tank; if the fuel quantity is less than 4299 gallons (16273 liters), then use the fuel measuring sticks to put the correct quantity of fuel into the tank.

NOTE: The volume 4299 gallons (16273 liters) is equivalent to 28803 pounds (13066 kilograms) 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) (Table 303).

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

NOTE: The volume 1288 gallons (4876 liters) is equivalent to 8630 pounds (3915 kilograms) 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 tank to the desired quantity. To do this, do this task: Tank to Tank Fuel Transfer, TASK 28-26-00-650-802

or, do this task: Fuel Tank Defueling, TASK 28-26-00-650-801.

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

a) To measure the fuel quantity, refer to the applicable Fuel Measuring Stick Manual (FMSM) (Table 303).

(d) For the center tank; if the fuel quantity is more than 4299 gallons (16273 liters), then do these steps:

NOTE: The volume 4299 gallons (16273 liters) is equivalent to 28803 pounds (13066 kilograms) 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 tank to the desired quantity. To do this, do this task: Tank to Tank Fuel Transfer, TASK 28-26-00-650-802

or, do this task: Fuel Tank Defueling, TASK 28-26-00-650-801.

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

a) To measure the fuel quantity, refer to the applicable Fuel Measuring Stick Manual (FMSM) (Table 303).

SUBTASK 12-11-00-650-082

(3) At the next maintenance opportunity, do this task: Refuel Quantity Indicator Flashes - Fault Isolation, FIM 28-21 TASK 816.

——————— END OF TASK ———————

TASK 12-11-00-650-803

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

(Figure 301, Figure 302)

A. General

(1) You can refuel a tank with a fuel quantity indicating system that does not operate correctly (a bad indicator). You can do this task with the fuel measuring sticks in the No. 1 tank, the No. 2 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 wing tanks as an alternative to the fuel measuring stick procedure (TASK 28-26-00-650-802).

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 12-11-00-650-021

WARNING: OBEY ALL OF THE APPLICABLE PRECAUTIONS AND LIMITS FOR PRESSURE FUELING. INJURY TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

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

SUBTASK 12-11-00-860-007

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

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

SUBTASK 12-11-00-860-008

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

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

(b) Use the fuel measuring stick procedure in the FMSM to calculate the fuel quantity.

SUBTASK 12-11-00-650-008

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

SUBTASK 12-11-00-650-009

(5) Stop the refuel operation.

SUBTASK 12-11-00-650-010

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

SUBTASK 12-11-00-650-011

(7) Examine the fuel measuring sticks again.

SUBTASK 12-11-00-650-012

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

SUBTASK 12-11-00-650-013

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

SUBTASK 12-11-00-860-009

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

SUBTASK 12-11-00-650-014

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

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

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

SUBTASK 12-11-00-650-015

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

(1) Move the fuel from the tank with the bad indicators to a different 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 tank with the bad indicator.

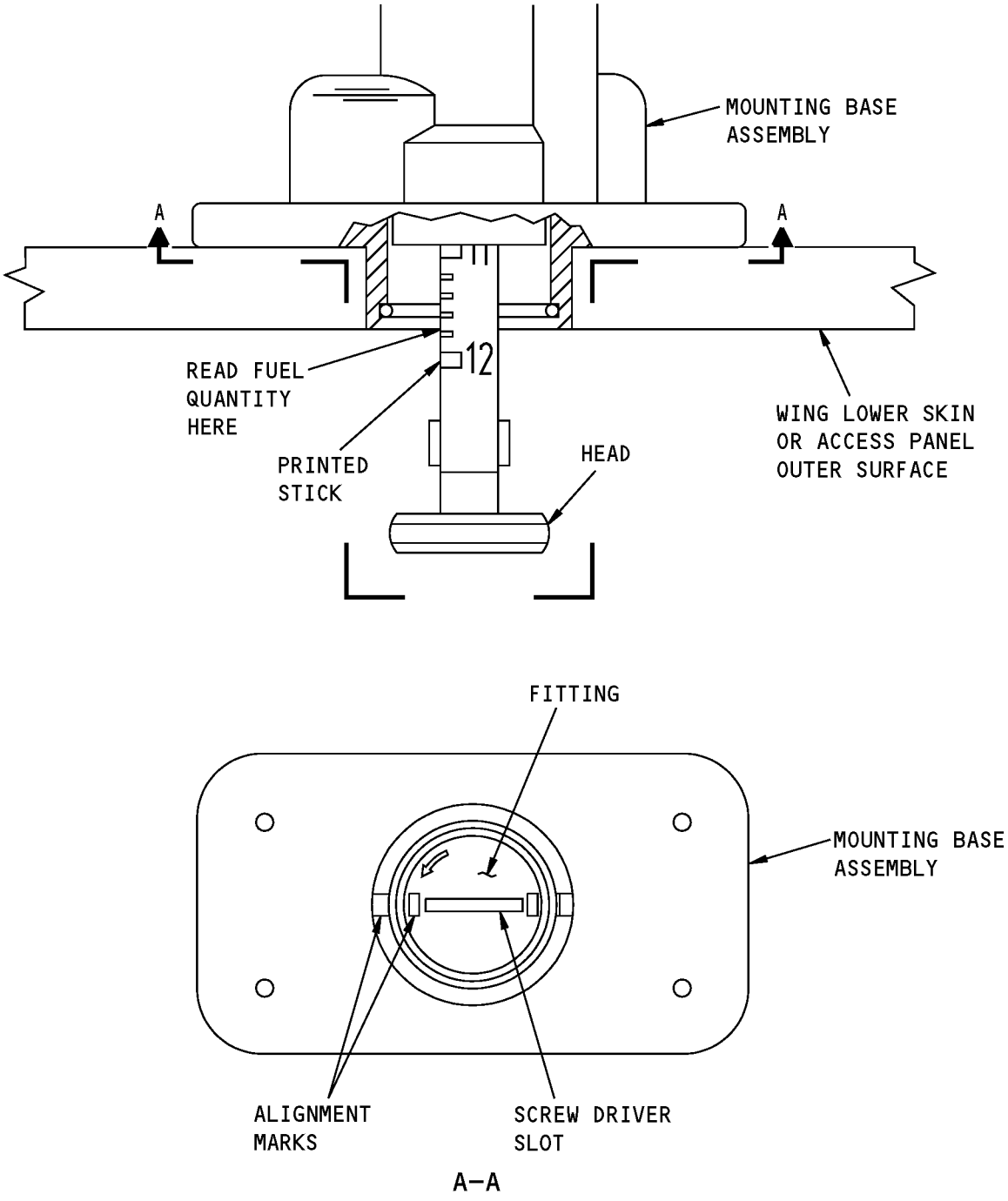
SUBTASK 12-11-00-650-016

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

SUBTASK 12-11-00-650-017

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

——————— END OF TASK ———————



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

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
20-40-11-910-801	Static Grounding (P/B 201)
28-21-00-700-801	Pressure Fueling System - Test (P/B 501)
FIM 28-21 TASK 808	Fuel Does Not Flow Into The Fuel Tank With Fueling Shutoff Valve Switch in the OPEN Position and Refueling Manifold Pressurized

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 Access Panel - Slat Station 143.27

E. Procedure

SUBTASK 12-11-00-650-023

WARNING: OBEY ALL OF THE APPLICABLE PRECAUTIONS AND LIMITS FOR PRESSURE FUELING. INJURY TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

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

SUBTASK 12-11-00-860-014

(2) Electrically ground the airplane and the fuel truck (TASK 20-40-11-910-801).

SUBTASK 12-11-00-480-003

(3) Connect the bonding cable on the refueling hose to the ground jack on the wing.

NOTE: The bonding cable is not necessary if there is electrical continuity between the nozzle and the receptacle.

SUBTASK 12-11-00-010-003

(4) Make sure this access panel is open:

(Figure 301)

Number	Name/Location
621GB	Refuel Access Panel - Slat Station 143.27

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

(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 adapters.

CAUTION: MAKE SURE 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 (TASK 28-21-00-700-801).

SUBTASK 12-11-00-650-024

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

(a) Connect refueling hose nozzle to the fueling receptacle.

(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 airplane refueling receptacle.

SUBTASK 12-11-00-080-005

(8) Disconnect the bonding cable that you connected between the fueling source and the airplane.

SUBTASK 12-11-00-080-006

(9) Disconnect the ground cables for the fuel source.

SUBTASK 12-11-00-080-007

(10) Disconnect the ground cables for the airplane.

SUBTASK 12-11-00-010-004

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

(Figure 301)

Number	Name/Location
621GB	Refuel Access Panel - Slat Station 143.27

SUBTASK 12-11-00-810-002

(12) At the first maintenance opportunity, do this task: Fuel Does Not Flow Into The Fuel Tank With Fueling Shutoff Valve Switch in the OPEN Position and Refueling Manifold Pressurized (FIM 28-21 TASK 808).

———————— END OF TASK ————————

TASK 12-11-00-680-801

8. Fuel System Sumping

(Figure 303, Figure 304)

A. General

(1) 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 if conditions cause fuel tanks to collect water.

(2) There are five sump drain valves in total, installed on the airplane. There is one sump drain valve 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 1.14 degree nose-down 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. Each fuel tank sump has a sump drain valve to permit you to drain water from the tank. 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 mixes in the fuel. In cold weather the water can freeze and prevent the sump drain valve from opening. You must melt the ice with heat around the sump to open the valve. You can also use an approved anti-ice additive that you can add to the fuel. For example, you can add Phillips PFA 55MB in a maximum concentration of 0.1 % by volume. For cold weather maintenance, refer to Cold Weather Maintenance Procedure, TASK 12-33-01-600-802.

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: IF YOU FIND THAT THE FUEL HAS A RED OR A PINK COLOR, DO THE APPLICABLE CHECK TO MAKE SURE THE FUEL IS NOT CONTAMINATED. DAMAGE TO EQUIPMENT CAN OCCUR.

(a) Drain fuel samples from each sump drain valve 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 737-SL-28-044A to do an inspection for contamination. Water in 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 Check, TASK 28-22-13-200-801.

(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), supply heat before you drain the sumps to make sure the fuel drains freely.

1) Use the explosion proof electric blower - heater, STD-3925, to supply heat to the bottom of the wing in the area of the tank sumps. For precautions, refer to Cold Weather Maintenance Procedure, TASK 12-33-01-600-802.

(4) FOR THE SUMP DRAIN VALVES INSTALLED IN THE SURGE TANKS;

The sump drain valves 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.

B. References

Reference	Title
12-33-01-600-802	Cold Weather Maintenance Procedure (P/B 301)
28-10-00-200-802	Detection Test for Microbial Growth (P/B 201)
28-11-00-100-802	Clean the Fuel Tanks Contaminated with Red Dye (P/B 701)
28-22-13-200-801	Center Tank Water Scavenge Jet Pump Check (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-10360	Equipment - Sampling, Fuel (Part #: 94-8136, Supplier: 99321, A/P Effectivity: 737-300, -400, -500, -600, -700, -700C, -700ER, -700QC, -800, -900, -900ER, -BBJ)
SPL-1530	Tool - Drain, Fuel Sump (Part #: F80201-1, Supplier: 81205, A/P Effectivity: 737-100, -200, -200C, -300, -400, -500, -600, -700, -700C, -700ER, -700QC, -800, -900, -900ER, -BBJ)
STD-1054	Container - Fuel Resistant, 5 Gallon (19 Liters)
STD-3925	Heater - Blower, Explosion Proof, Electric

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. Sumping Operation for the No. 1 Tank and the No. 2 Tank

SUBTASK 12-11-00-480-002

(1) Put the 5 gallon (19 liters) fuel resistant container, STD-1054, below the sump drain valve.

SUBTASK 12-11-00-860-010

(2) Put the top end of the fuel sampling equipment, COM-10360, or tool, SPL-1530, against the bottom side of the poppet on the sump drain valve.

(a) Push the tool up and turn it until the tabs on the tool hold it in the correct position and fuel flows into the 5 gallon (19 liters) fuel resistant container, STD-1054.

SUBTASK 12-11-00-680-001

(3) Drain each sump until the fuel that flows into the 5 gallon (19 liters) fuel resistant container, STD-1054, has no water.

SUBTASK 12-11-00-860-011

(4) Remove the fuel sampling equipment, COM-10360, from the sump and permit the valve to close.

SUBTASK 12-11-00-210-002

(5) Do a visual inspection of the fuel in the container.

(a) If you see red dye in the fuel, do this task: Clean the Fuel Tanks Contaminated with Red Dye, TASK 28-11-00-100-802.

(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 28-10-00-200-802.

H. Sumping Operation for the Center Fuel Tank

(Figure 303, Figure 304)

SUBTASK 12-11-00-860-012

(1) To drain the maximum quantity of water from the center tank sump, put the airplane in this attitude:

(a) Pitch: 1.14 degrees nose-down

(b) Roll: 0.0 degrees

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

SUBTASK 12-11-00-010-002

(2) For access to the sump drain valve, do this step:

Open this access panel:

Number	Name/Location
192G	Sump Drain Access Door

SUBTASK 12-11-00-680-002

(3) Pull the actuating rod [3] down.

(a) Hold the actuating rod in this position until the fuel that goes into the container has no water.

(b) Use a 0.5 inch ID hose and clamp that you can make locally or tool, SPL-1530, to help you drain the fuel.

SUBTASK 12-11-00-860-013

(4) Release the rod [3] to close the sump drain valve.

(a) Remove the hose.

(b) Close this access panel:

Number	Name/Location
192G	Sump Drain Access Door

SUBTASK 12-11-00-210-003

(5) Do a visual inspection of the fuel in the container.

(a) If you see red dye in the fuel, do this task: Clean the Fuel Tanks Contaminated with Red Dye, TASK 28-11-00-100-802.

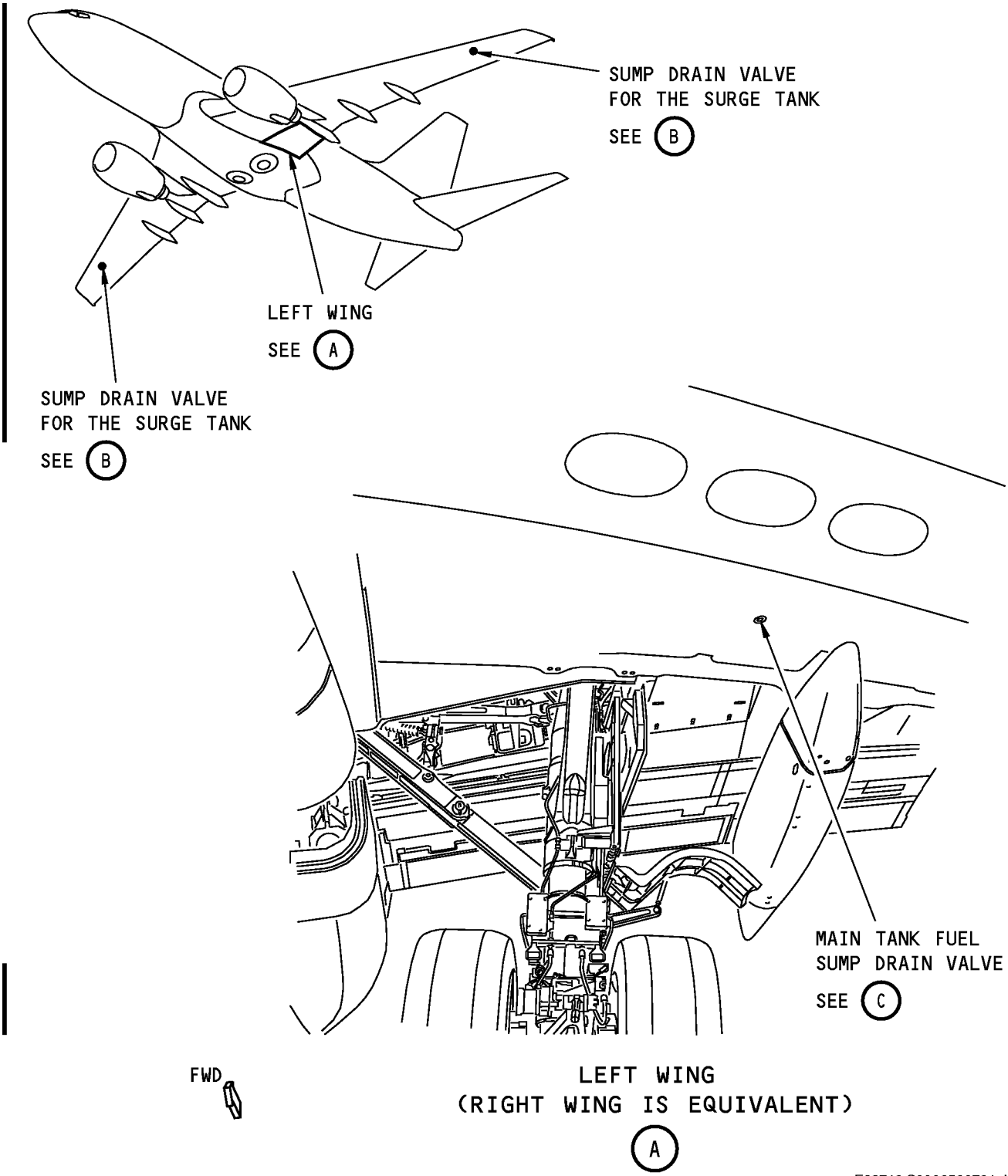
(b) If you see other contamination, do these steps:

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

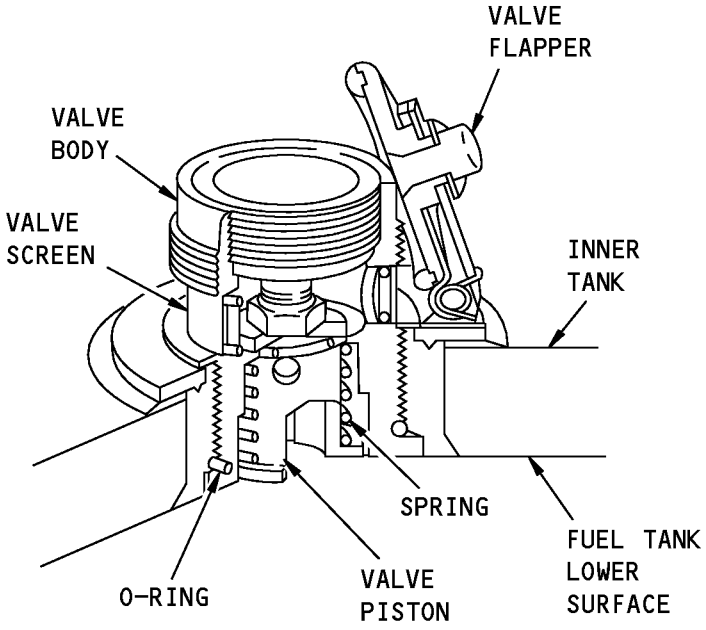
2) With a sterilized glass container, get another sample of fuel.

3) Do this task: Detection Test for Microbial Growth, TASK 28-10-00-200-802.

END OF TASK

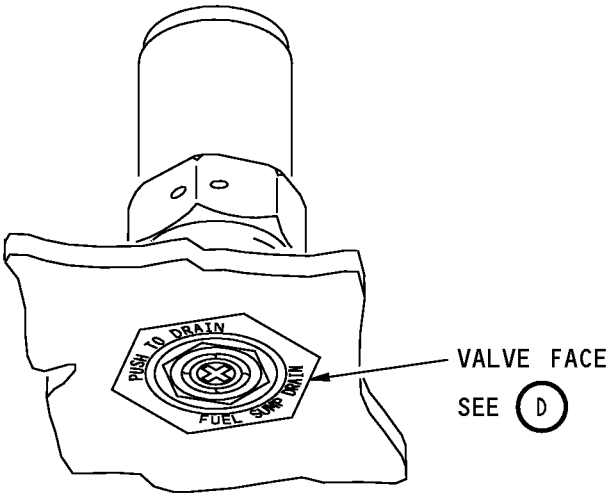


Main Tank Fuel Sump Drain Valve
Figure 303 (Sheet 1 of 2)/12-11-00-990-803



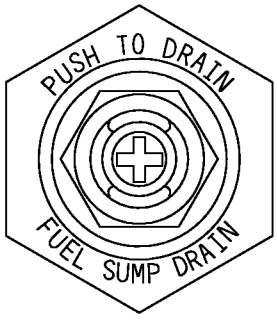
SURGE TANK FUEL SUMP DRAIN VALVE

B



MAIN TANK FUEL SUMP
DRAIN VALVE

C

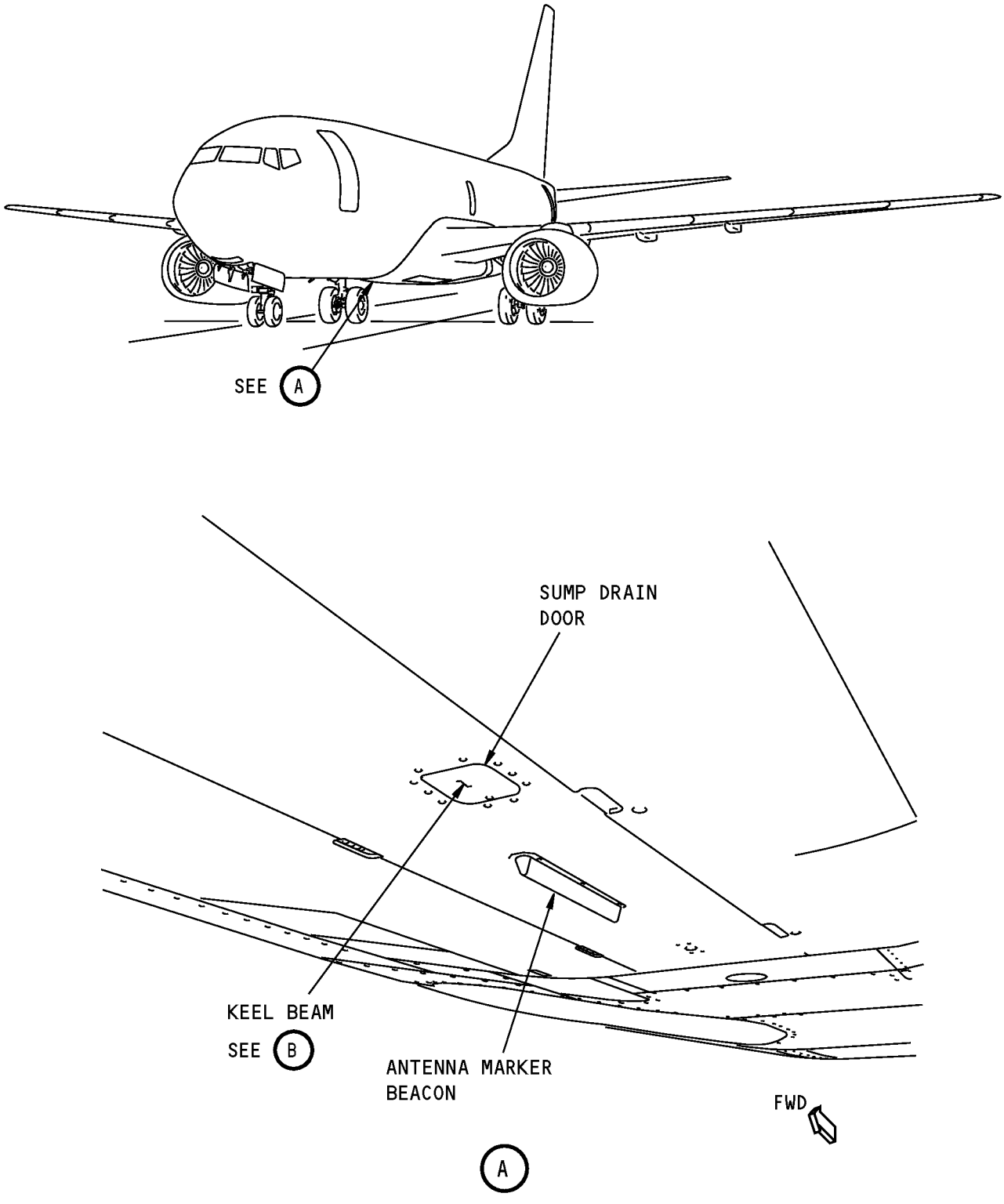


VALVE FACE

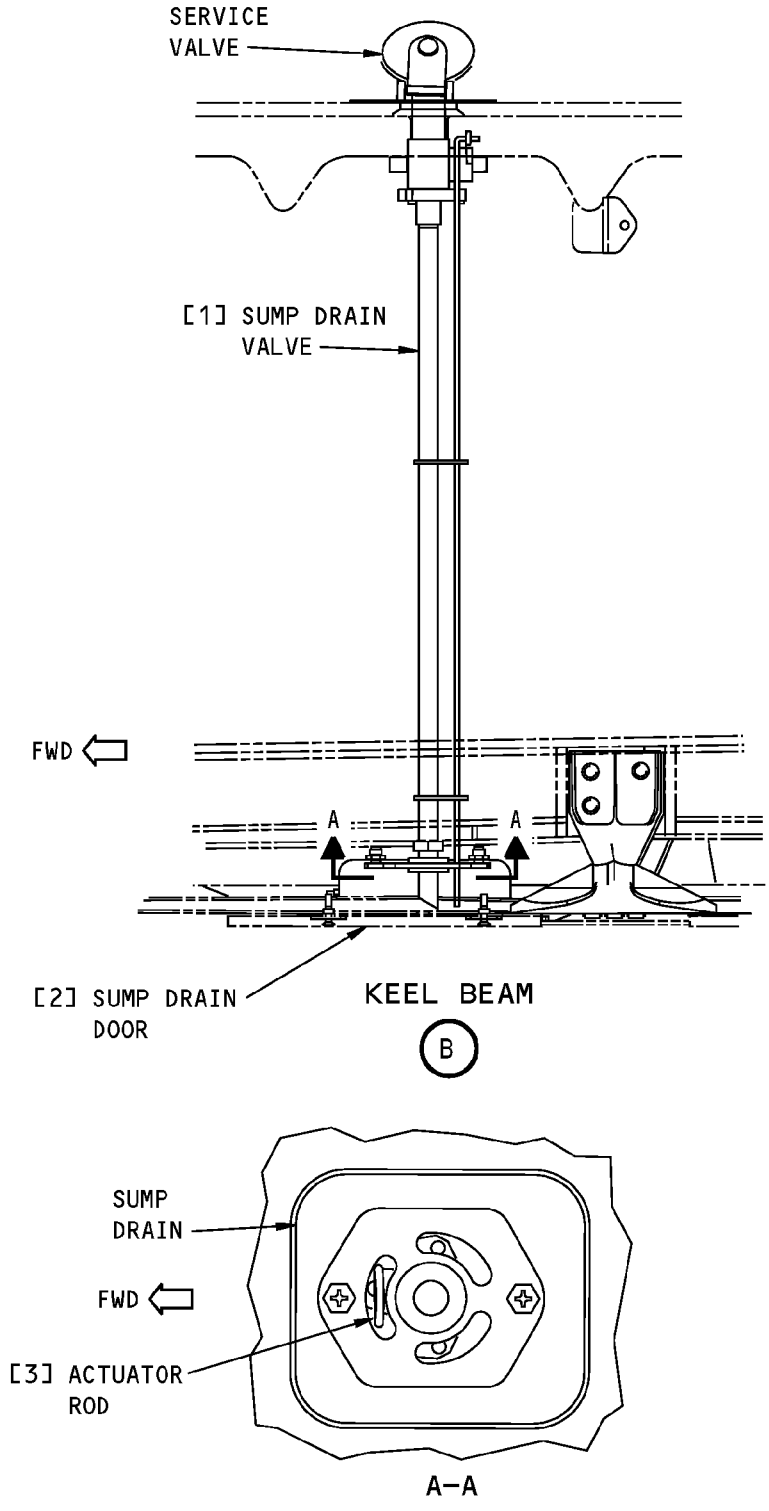
D

F82930 S0006560792_V2

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



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



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

TASK 12-11-00-650-804

9. Drain the Fuel from the Sumps after Defueling

(Figure 303, Figure 304)

A. General

(1) This task removes the fuel that remains after defueling each tank. There are two procedures:

(a) A procedure to drain the fuel from the sumps of the No. 1 or the No. 2 tank

(b) A procedure to drain the fuel from the sump of the center 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
COM-10360	Equipment - Sampling, Fuel (Part #: 94-8136, Supplier: 99321, A/P Effectivity: 737-300, -400, -500, -600, -700, -700C, -700ER, -700QC, -800, -900, -900ER, -BBJ)
STD-1054	Container - Fuel Resistant, 5 Gallon (19 Liters)

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 12-11-00-650-018

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 defueled.

NOTE: The best attitude to drain the sumps is 1.14 degrees pitch nose-down and zero degree roll.

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

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

(b) Put the top end of the fuel sampling equipment, COM-10360, against the bottom side of the poppet on the sump drain valve (Figure 303).

(c) Push the tool up and turn it until the tabs on the tool hold it in the correct position and fuel flows into the 5 gallon (19 liters) fuel resistant container, STD-1054.

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

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

SUBTASK 12-11-00-680-003

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 defueled center tank.

(a) Adjust the airplane attitude to 1.14 degrees pitch nose-down 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) Electrically ground the 5 gallon (19 liters) fuel resistant container, STD-1054, and other applicable equipment to the airplane structure (TASK 20-40-11-910-801).

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

(d) Turn the sump drain valve and push it up to open it.

(e) Hold the drain valve in this position until all of the fuel flow stops.

(f) Pull the rod that operates the sump drain valve down.

1) Hold the rod down until the fuel flow stops.

2) Use a 0.5 inch ID hose (approximately 30 inches long) and a clamp that you can make locally to help you drain the fuel.

(g) Release the sump drain valve and turn it counterclockwise to close it.

(h) Release the rod that operates the sump drain valve to close the valve.

1) Remove the clamp and the hose.

2) Close this access panel for the sump drain valve:

Number	Name/Location
192G	Sump Drain Access Door

SUBTASK 12-11-00-680-004

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

(a) Drain the fuel from the pumps.

SUBTASK 12-11-00-680-005

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

SUBTASK 12-11-00-680-006

WARNING: MAKE SURE YOU FULLY DRAINED THE SUMP FUEL WITH THE AIRPLANE IN THE CORRECT ATTITUDE BEFORE YOU GO INTO THE CENTER TANK. UNWANTED FUEL WILL COME OUT OF THE TANK WHEN YOU REMOVE THE ACCESS PANEL.

(4) If you are scheduled to go into the tank that you defueled, for the applicable tank, do this task: Purging and Fuel Tank Entry, TASK 28-11-00-910-802.

——————— END OF TASK ———————

HYDRAULIC RESERVOIR - SERVICING

1. General

A. This procedure contains this task:

(1) Hydraulc 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 (-6°C) or lower at an arrival location and a fluid level is below "REFILL", 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)
29-11-01-860-801	Hydraulic Reservoirs Pressurization (P/B 201)
29-11-01-860-802	Hydraulic Reservoirs Depressurization (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)

C. Tools/Equipment

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

Reference	Description
COM-1537	Cart - Servicing, Engine Oil (Part #: PF53361-2PWS, Supplier: 94861, A/P Effectivity: 737-ALL) (Part #: PF53361-8PWS, Supplier: 94861, A/P Effectivity: 737-ALL) (Part #: PF53481-8PWS, Supplier: 94861, A/P Effectivity: 737-ALL) (Part #: PF55451-2WS, Supplier: 94861, A/P Effectivity: 737-ALL) (Part #: PF55451-7WS, Supplier: 94861, A/P Effectivity: 737-ALL)
STD-1110	Container - Hydraulic Fluid Resistant, 5 Gallon (19 Liters)
STD-3901	Container - Hydraulic Fluid Resistant, 50 Gallon (190 l)

D. Consumable Materials

Reference	Description	Specification
D00153	Fluid - Hydraulic, Erosion Arresting, Fire Resistant	BMS3-11 Type IV (interchange˜able & intermixable with Type V)
D50036	Fluid - Hydraulic, Erosion Arresting, Fire Resistant (use at -65 to 275 Degree F)	BMS3-11, Type V (interchgable & intermixable with Type IV)

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 the flaps and the leading edge are up.

SUBTASK 12-12-00-866-001

(3) Make sure the spoilers are in the down position.

SUBTASK 12-12-00-860-001

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

NOTE: It is not necessary to release 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

(5) Before you fill the system B reservoir, make sure the brake accumulator has a minimum of 2800 psig (19305 kPa) of pressure in it (with the hydraulic pumps off).

SUBTASK 12-12-00-480-001

(6) If you use the hand pump, put the end of the suction hose in the 5 gallon (19 liters) 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.

(7) If you use a engine oil servicing cart, COM-1537 connect the hose from engine oil servicing cart, COM-1537 the to the pressure fill connection.

SUBTASK 12-12-00-860-002

(8) 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: PUT THE CORRECT QUANTITY OF FLUID IN THE HYDRAULIC RESERVOIR. IF THERE IS TOO MUCH FLUID, IT GOES INTO THE PNEUMATIC DUCTS AND THE AIR CONDITIONING PACKS. THIS CAUSES SMOKE AND FUMES THAT GO INTO THE FLIGHT COMPARTMENT AND PASSENGER COMPARTMENT. 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: DO NOT GET HYDRAULIC FLUID ON YOU. 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 THE 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 WHEN YOU FILL THE HYDRAULIC RESERVOIRS. DIRT CAN CAUSE DAMAGE TO THE HYDRAULIC SYSTEM.

(9) Add fluid, D00153 or fluid, D50036, using the following requirements until the reservoir indicators are as specified below:

(a) Fill the hydraulic reservoir until the quantity indicator on the side of the reservoir shows that the fluid level is nearer F (full) than RFL (refill) and is approximately two-thirds of the indication sweep between RFL and F.

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 degrees F (-6 degrees C) or lower and the fluid level is below RF (refill), 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 12-12-00-860-003

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

SUBTASK 12-12-00-080-001

(11) Put the handle and the suction hose for the hand pump in their usual positions, or disconnect the engine oil servicing cart, COM-1537.

SUBTASK 12-12-00-210-003

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

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

SUBTASK 12-12-00-870-001

(13) Do this task: Bleed the Hydraulic Systems, TASK 29-00-00-870-801.

G. Lower the Hydraulic Reservoir Fluid Level

SUBTASK 12-12-00-860-004

(1) Release pressure from the applicable hydraulic reservoir. To release it, do this task: Hydraulic Reservoirs Depressurization, TASK 29-11-01-860-802 or Hydraulic Reservoirs Depressurization, TASK 29-09-00-860-802.

SUBTASK 12-12-00-480-003

WARNING: DO NOT GET HYDRAULIC FLUID ON YOU. 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 THE 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.

(2) Install a drain hose:

(a) Put one end of a drain hose (1/2 I.D.) on the outlet of the reservoir drain valve.

(b) Put the opposite end of the drain hose into the 50 Gallon (190 l) hydraulic fluid resistant container, STD-3901 for the hydraulic fluid.

SUBTASK 12-12-00-610-002

(3) If you must lower fluid level because it is too high, do these steps:

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

(b) Open the reservoir drain valve to drain the hydraulic fluid into the 50 Gallon (190 l) hydraulic fluid resistant container, STD-3901.

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

SUBTASK 12-12-00-080-002

(4) Remove the drain hose from the reservoir drain valve.

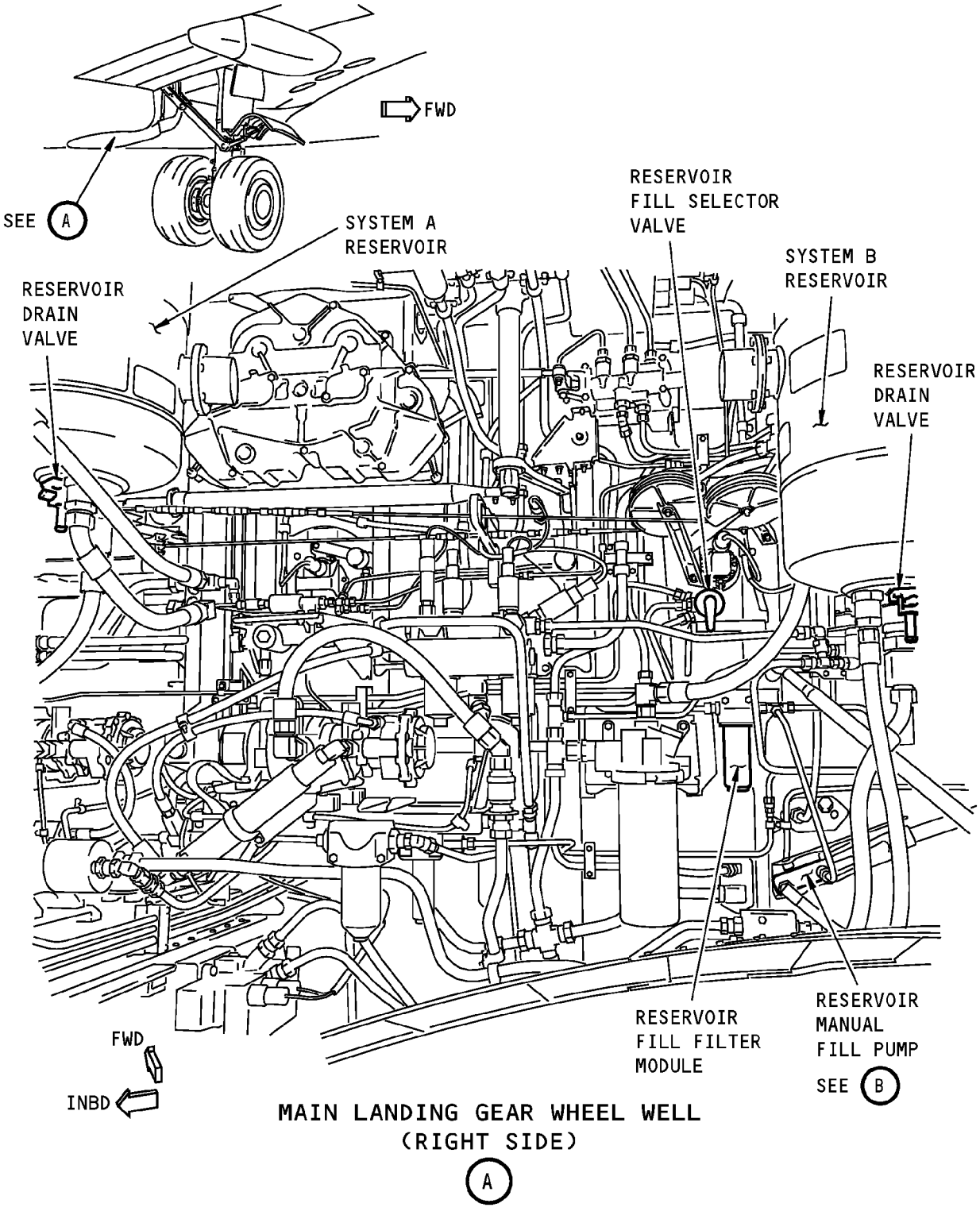
SUBTASK 12-12-00-420-001

(5) Install a lockwire on the handle of the reservoir drain valve.

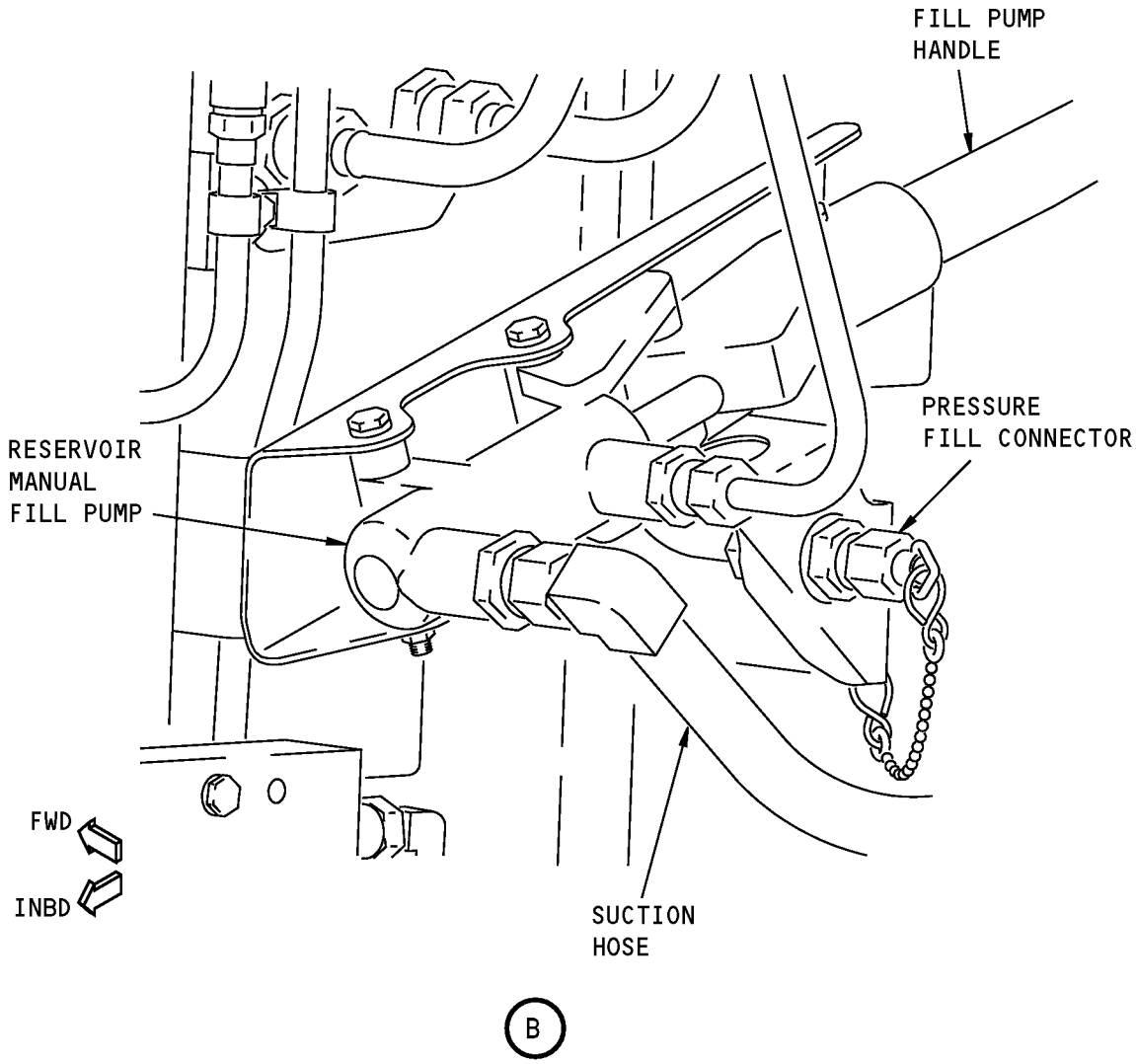
SUBTASK 12-12-00-860-005

(6) Pressurize the hydraulic reservoirs. To pressurize them, do this task: Hydraulic Reservoirs Pressurization, TASK 29-11-01-860-801 or Hydraulic Reservoirs Pressurization, TASK 29-09-00-860-801.

——————— END OF TASK ———————



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



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

ENGINE OIL - SERVICING

1. General

A. This procedure has these tasks:

(1) Replenish the Engine Oil.

(2) Replenish the Engine Oil (Remote Fill Procedure).

(3) Drain the Engine Oil.

(4) Flush the Engine Oil System.

(5) Oil Sampling for Analysis.

TASK 12-13-11-600-801

2. Replenish the Engine Oil

(Figure 301)

A. General

(1) This task is the procedure to replenish the engine oil.

(2) The total oil tank capacity for Engine 1 is 5.34 U.S. gallons (20.2 liters) and for Engine 2 is 5.4 U.S. gallons (20.4 liters).

(3) Oil should be added not less than 5 minutes and no greater than 30 minutes after engine shutdown while the oil in the tank is still warm. This will prevent the over-servicing of the engine.

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

(b) If the oil tank is over-serviced, this will not damage the engine. The extra oil will be blown overboard through the engine vent system.

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

(4) The oil tank should be serviced on a regular basis such that the oil level indication, with the engine not running, is equal to or greater than 60 percent full or 12.00 U.S. quarts (11.40 liters).

NOTE: An indicated oil level 60% minimum will prevent transient low oil level indications during takeoff phase due to gulping and airplane pitch and longitudinal acceleration.

(5) Oil tank servicing is usually done daily, after the last engine shutdown of the day. This frequency can, however, be increased depending on each operator's airplane use rate unless these conditions occur:

(a) The oil level indication is less than 60 percent full or 12.00 U.S. quarts (11.40 liters).

(b) The specific oil consumption rate is higher than usual.

(6) You must flush the oil system if the system contains contamination.

(7) Do not mix different approved brands of oil unless you refer to CFMI SB 79-001.

(8) When you change the fleet from one approved brand to a different approved brand, make sure that you follow the CFMI SB 79-001 instructions when you service the engine.

B. References

Reference	Title
73-11-07-000-801-F00	Servo Fuel Heater Removal (P/B 401)
73-11-07-400-801-F00	Servo Fuel Heater Installation (P/B 401)
79-11-01-300-801-F00	Replacement of the Filler Cap Packing or Filler Cap (P/B 801)
79-21-02-000-801-F00	Main Oil/Fuel Heat Exchanger Removal (P/B 401)
79-21-02-400-801-F00	Main Oil/Fuel Heat Exchanger Installation (P/B 401)

C. Tools/Equipment

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

Reference	Description
COM-7517	Test Kit - Oil Condition (Part #: MODEL V-3, Supplier: 96009, A/P Effectivity: 737-300, -400, -500, -600, -700, -700C, -700ER, -700QC, -800, -900, -900ER, -BBJ) (Part #: MODEL V-3A, Supplier: 96009, A/P Effectivity: 737-300, -400, -500, -600, -700, -700C, -700ER, -700QC, -800, -900, -900ER, -BBJ)

D. Consumable Materials

Reference	Description	Specification
D00599 [CP2442]	Oil - Engine (CFMI SB 79-001)	
G00034	Cotton Wiper - Process Cleaning Absorbent Wiper (Cheesecloth, Gauze)	BMS15-5

E. Location Zones

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

F. Access Panels

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

G. Oil Level Requirements

SUBTASK 12-13-11-970-002

(1) Find the minimum oil level necessary to dispatch the airplane with these recommendations:

(a) Before each flight, the indicated engine oil level in the flight compartment with the engine not in operation must be 60% full or 12.00 U.S. quarts (11.40 liters) or more.

1) If the airplane has more than one flight between oil servicing, make sure there is enough oil in the tank so the indicated level is always greater than 60% before each flight.

2) There must be 7 quarts (6.65 liters) or more of oil remaining in the tank by the end of the scheduled flights for possible takeoff and go-around (TOGA) operation.

(b) Calculate the oil usage from the flight(s) duration and the specific engine oil consumption.

(c) The minimum oil level necessary for dispatch should include the 60% and the oil usage.

H. Do a Check of the Oil Quantity

SUBTASK 12-13-11-610-026

(1) With the engine not in operation, examine the oil level indication in the flight compartment.

(a) Make sure the oil level is enough to meet the oil level requirements above.

(b) If the indicated oil level is less than the necessary minimum oil level, replenish the oil tank.

I. Replenish the Engine Oil

SUBTASK 12-13-11-010-009

(1) Open the applicable access doors on the right fan cowl panel.

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

SUBTASK 12-13-11-210-001

(2) Do a check of the oil quantity with the sight gage .

(a) If the oil level is below the full mark, add engine oil.

SUBTASK 12-13-11-020-001

WARNING: DO NOT REMOVE THE FILLER CAP OF THE OIL TANK FOR FIVE MINUTES AFTER AN ENGINE SHUTDOWN. IF THE CHECK VALVE IS DEFECTIVE, HOT OIL CAN SPRAY FROM THE OIL TANK AND CAUSE INJURY TO PERSONS. THE OIL IN THE TANK IS HOT AND PRESSURIZED DURING ENGINE OPERATION.

WARNING: YOU MUST FULLY CLEAN YOUR SKIN IF YOU TOUCH THE OIL. REMOVE OIL SOAKED CLOTHES IMMEDIATELY. IF THE OIL TOUCHES YOUR SKIN FOR A LONG TIME, IT COULD CAUSE DERMATITIS.

CAUTION: IMMEDIATELY CLEAN THE PAINTED SURFACES ON WHICH OIL FALLS. THE OIL WILL PUT STAINS ON CLOTHES AND CAN MAKE PAINT SOFT.

CAUTION: DO THE REPLENISH THE ENGINE OIL PROCEDURE BEFORE THE OIL TANK BECOMES COOL (30 MINUTES AFTER THE ENGINE SHUTDOWN). IF THE TANK IS COOL, YOU CAN FILL IT TOO MUCH AND CAUSE AN INCORRECT INDICATION OF THE OIL CONSUMPTION RATE.

(3) Do these steps to remove the filler cap to the oil tank :

NOTE: Samples must be taken 15 to 30 minutes after the engine shutdown and before you add oil to the oil tank.

CAUTION: MAKE SURE THAT THE OIL TANK AND SCUPPER ARE CLEAN. IF THE OIL TANK AND SCUPPER ARE NOT CLEAN, CONTAMINATION OF THE OIL TANK AND OIL SAMPLE CAN OCCUR DURING THE SAMPLING OPERATION.

(a) Use a cotton wiper, G00034, to clean the oil scupper.

(b) Lift the filler cap handle.

(c) Turn the filler cap handle counterclockwise to open it.

(d) Pull the filler cap from the gravity fill port.

SUBTASK 12-13-11-200-001

(4) When you open the filler cap, do a check for fuel in the oil:

CAUTION: IF YOU THINK THERE ARE FUEL FUMES WHEN YOU REMOVE THE OIL FILLER CAP, DO A CHECK FOR FUEL IN THE OIL. IF THERE IS FUEL IN THE OIL TANK, REPLACE THE MAIN OIL/FUEL HEAT EXCHANGER (AMM 79-21-02/401) AND THE SERVO FUEL HEATER (AMM 73-11-07/401), AND FLUSH THE ENGINE OIL SYSTEM. DAMAGE TO THE EQUIPMENT COULD OCCUR.

(a) If you think there is fuel in the oil, use the oil condition test kit, COM-7517 to examine the oil.

1) If the viscometer is not available, use a gas detector or do a flash point check of the oil to look for fuel.
2) If the viscosity test is incorrect then fuel is found, do these steps:
   a) Replace the main oil/fuel heat exchanger.

      These are the tasks:Main Oil/Fuel Heat Exchanger Removal, TASK 79-21-02-000-801-F00 and Main Oil/Fuel Heat Exchanger Installation, TASK 79-21-02-400-801-F00.

   b) Replace the servo fuel heater.

      These are the tasks:Servo Fuel Heater Removal, TASK 73-11-07-000-801-F00 and Servo Fuel Heater Installation, TASK 73-11-07-400-801-F00

      ,

   c) Do this task: Flush The Engine Oil System, TASK 12-13-11-100-801.
3) If the viscosity test is correct, no fuel is found.

SUBTASK 12-13-11-610-001

CAUTION: YOU MUST FLUSH THE ENGINE OIL SYSTEM IF IT CONTAINS CONTAMINATION. OIL CONTAMINATION CAN CAUSE ENGINE DAMAGE.

CAUTION: DO NOT MIX TYPE 1 AND TYPE 2 OILS. DO NOT DO OIL SERVICING WITH BRANDS THAT ARE NOT APPROVED. FLUSH AND REPLENISH THE OIL SYSTEM IMMEDIATELY WITH THE CORRECT ENGINE OIL IF ONE OF THE ERRORS THAT FOLLOW OCCURS: 1) IF 10 PERCENT OR MORE OF A DIFFERENT OIL TYPE WAS USED, OR 2) IF 10 PERCENT OR MORE OF A NON-APPROVED OIL WAS USED. DAMAGE TO EQUIPMENT CAN OCCUR IF YOU OPERATE THE ENGINE IN ONE OF THESE CONDITIONS.

CAUTION: DO THE REPLENISH THE ENGINE OIL PROCEDURE BEFORE THE OIL TANK BECOMES COOL (30 MINUTES AFTER THE ENGINE SHUTDOWN). IF THE TANK IS COOL, YOU CAN FILL IT TOO MUCH AND CAUSE AN INCORRECT INDICATION OF THE OIL CONSUMPTION RATE.

(5) Add oil, D00599 [CP2442], to the gravity fill port of the oil tank and stop before the full mark of the sight gage.
   (a) If non-approved oils or different oil types was added to the engine oil, do these steps:
      1) If the quantity is less than 10 percent (2 quarts or less) (1.9 liters or less), no action is necessary.
      2) If the quantity is more than 10 percent (2 quarts or more) (1.9 liters or more), you must drain and replenish the oil tank before the subsequent flight.

SUBTASK 12-13-11-420-001

(6) Do these steps to install the filler cap in the oil tank :
   (a) Examine the packing on the filler cap.
   (b) Make sure that the packing is in its position.
      1) If the packing is damaged or shows deterioration, replace the packing (TASK 79-11-01-300-801-F00).
   (c) Put the filler cap in its position in the gravity fill port.
   (d) Push the filler cap in and turn the filler cap handle clockwise to lock it.
   (e) Push the filler cap handle down to the closed position.

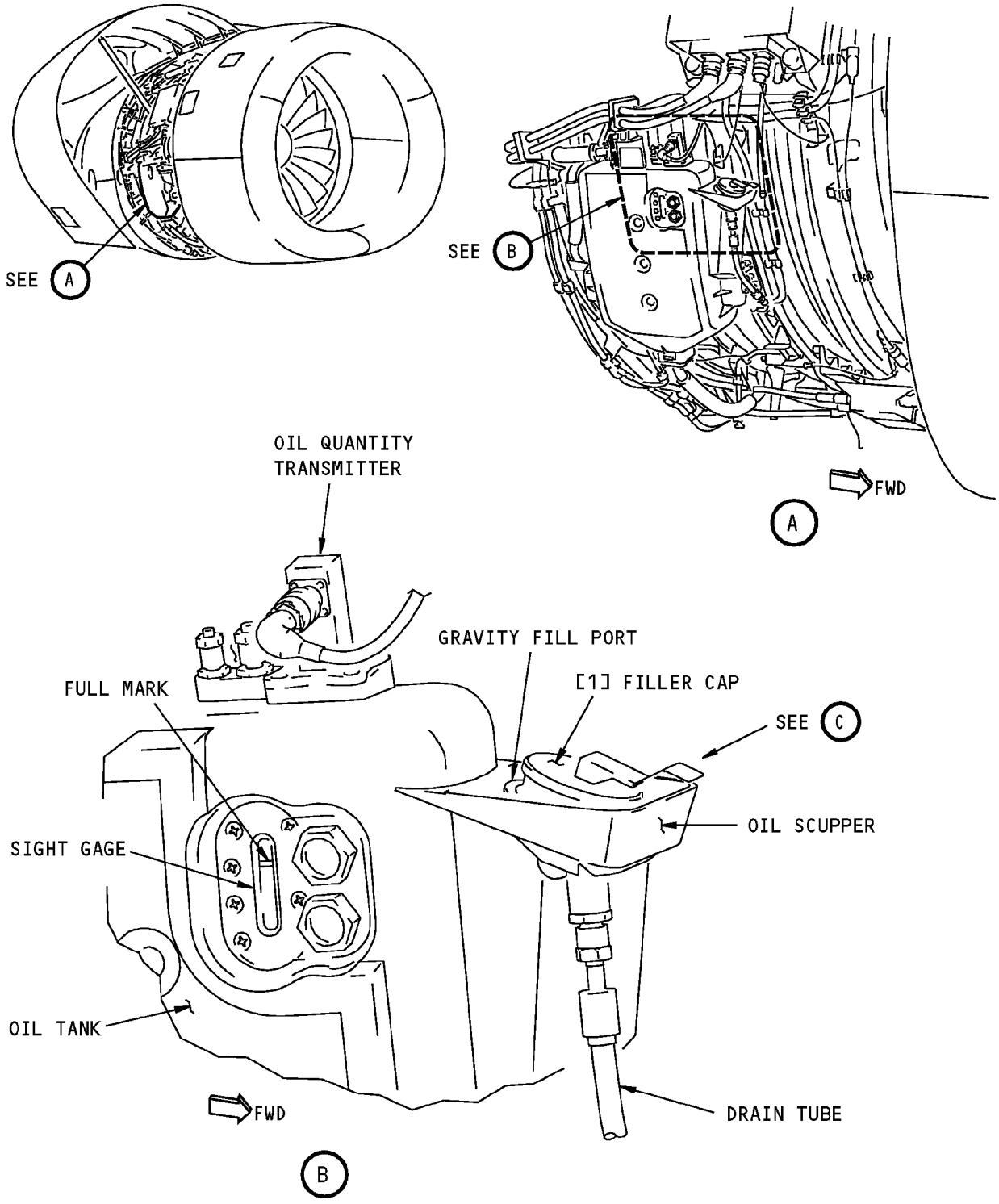
J. Put the Airplane Back to Its Usual Condition

SUBTASK 12-13-11-410-009

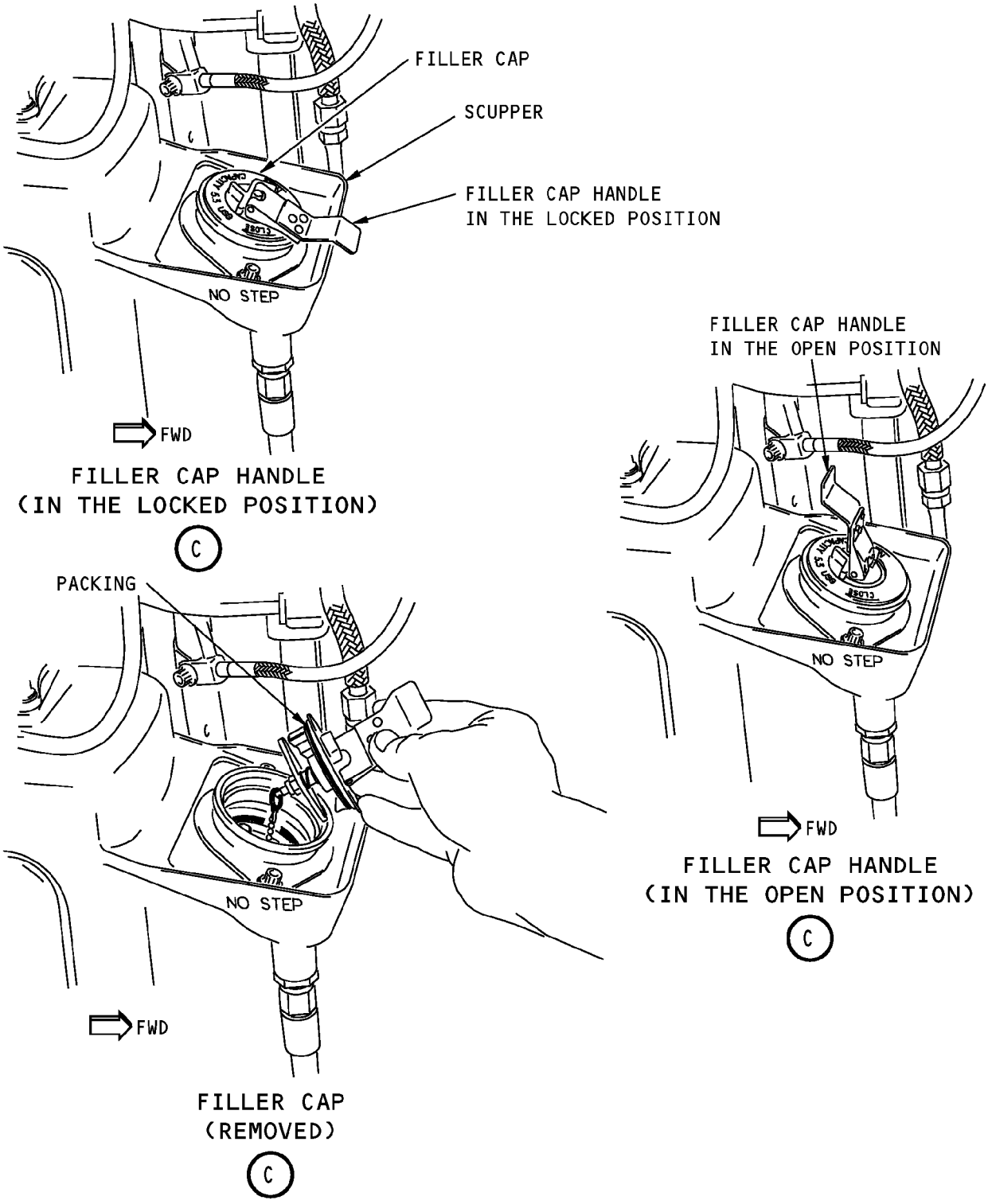
(1) Close the applicable access doors on the right fan cowl panel.

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

END OF TASK



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



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

TASK 12-13-11-600-806

3. Replenish the Engine Oil (Remote Fill Procedure)

A. General

(1) This task is the procedure to replenish the engine oil (Remote Fill Procedure).

(2) The total oil tank capacity for Engine 1 is 5.34 U.S. gallons (20.2 liters) and for Engine 2 is 5.4 U.S. gallons (20.4 liters).

(3) Oil should be added not less than 5 minutes and no greater than 30 minutes after engine shutdown while the oil in the tank is still warm. This will prevent the over-servicing of the engine.

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

(b) If the oil tank is over-serviced, this will not damage the engine. The extra oil will be blown overboard through the engine vent system.

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

(4) The oil tank should be serviced on a regular basis such that the oil level indication, with the engine not running, is equal to or greater than 60 percent full or 12.00 U.S. quarts (11.40 liters).

NOTE: An indicated oil level 60% minimum will prevent transient low oil level indications during takeoff phase due to gulping and airplane pitch and longitudinal acceleration.

(5) Oil tank servicing is usually done daily, after the last engine shutdown of the day. This frequency can, however, be increased depending on each operator's airplane use rate unless these conditions occur:

(a) The oil level indication is less than 60 percent full or 12.00 U.S. quarts (11.40 liters).

(b) The specific oil consumption rate is higher than usual.

(6) You must flush the oil system if the system contains contamination.

(7) Do not mix different approved brands of oil unless you refer to CFMI SB 79-001.

(8) When you change the fleet from one approved brand to a different approved brand, make sure that you follow the CFMI SB 79-001 instructions when you service the engine.

B. References

Reference	Title
73-11-07-000-801-F00	Servo Fuel Heater Removal (P/B 401)
73-11-07-400-801-F00	Servo Fuel Heater Installation (P/B 401)
79-21-02-000-801-F00	Main Oil/Fuel Heat Exchanger Removal (P/B 401)
79-21-02-400-801-F00	Main Oil/Fuel Heat Exchanger Installation (P/B 401)

C. Tools/Equipment

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

Reference	Description
COM-7517	Test Kit - Oil Condition (Part #: MODEL V-3, Supplier: 96009, A/P Effectivity: 737-300, -400, -500, -600, -700, -700C, -700ER, -700QC, -800, -900, -900ER, -BBJ) (Part #: MODEL V-3A, Supplier: 96009, A/P Effectivity: 737-300, -400, -500, -600, -700, -700C, -700ER, -700QC, -800, -900, -900ER, -BBJ)

D. Consumable Materials

Reference	Description	Specification
D00599 [CP2442]	Oil - Engine (CFMI SB 79-001)	

E. Location Zones

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

F. Access Panels

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

G. Oil Level Requirements

SUBTASK 12-13-11-970-003

(1) Find the minimum oil level necessary to dispatch the airplane with these recommendations:

(a) Before each flight, the indicated engine oil level in the flight compartment with the engine not in operation must be 60% full or 12.00 U.S. quarts (11.40 liters) or more.

1) If the airplane has more than one flight between oil servicing, make sure there is enough oil in the tank so the indicated level is always greater than 60% before each flight.

2) There must be 7 quarts (6.65 liters) or more of oil remaining in the tank by the end of the scheduled flights for possible takeoff and go-around (TOGA) operation.

(b) Calculate the oil usage from the flight(s) duration and the specific engine oil consumption.

(c) The minimum oil level necessary for dispatch should include the 60% and the oil usage.

H. Do a Check of the Oil Quantity

SUBTASK 12-13-11-210-007

(1) With the engine not in operation, examine the oil level indication in the flight compartment.

(a) Make sure the oil level is enough to meet the oil level requirements above.

(b) If the indicated oil level is less than the necessary minimum oil level, replenish the oil tank.

I. Replenish the Engine Oil

SUBTASK 12-13-11-010-015

(1) Open the applicable access doors on the right fan cowl panel.

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

SUBTASK 12-13-11-210-008

(2) Do a check of the oil quantity with the sight gage (Figure 302).

(a) If the oil level is below the full mark, add engine oil.

SUBTASK 12-13-11-020-008

WARNING: YOU MUST FULLY CLEAN YOUR SKIN IF YOU TOUCH THE OIL. REMOVE OIL SOAKED CLOTHES IMMEDIATELY. IF THE OIL TOUCHES YOUR SKIN FOR A LONG TIME, IT COULD CAUSE DERMATITIS.

(WARNING PRECEDES)

CAUTION: IMMEDIATELY CLEAN THE PAINTED SURFACES ON WHICH OIL FALLS. THE OIL WILL PUT STAINS ON CLOTHES AND CAN MAKE PAINT SOFT.

CAUTION: DO THE REPLENISH THE ENGINE OIL PROCEDURE BEFORE THE OIL TANK BECOMES COOL (30 MINUTES AFTER THE ENGINE SHUTDOWN). IF THE TANK IS COOL, YOU CAN FILL IT TOO MUCH AND CAUSE AN INCORRECT INDICATION OF THE OIL CONSUMPTION RATE.

(3) Remove the plugs from the remote fill coupling [4] and the remote overflow coupling [3] (Figure 302):

SUBTASK 12-13-11-612-006

CAUTION: MAKE SURE THAT THE PRESSURE LUBE SYSTEM HAS A HAND PUMP. IF YOU USE OTHER TYPES OF PRESSURE LUBE SYSTEMS, AN OVERFILL CONDITION CAN OCCUR.

(4) Connect a hose coupling from the pressure lube system to the remote fill coupling [4].

NOTE: It is recommended to use a pressure lube system equipped with a hand pump. The use of a hand pump will permit you to easily follow the increase in the oil level and to prevent the overservicing of the engine oil system. Do not use an oil pump with a flow rate more than 66 US gallons per hour (250 liters per hour) for the remote fill operation, or overfill of the engine oil system can occur.

SUBTASK 12-13-11-612-007

(5) Connect a Hose (overflow hose), made of clear plastic, to the remote overflow coupling [3].

NOTE: Use a clear plastic hose to permit the detection of oil at the overflow coupling location (oil tank is full). This will give a visual indication that the oil tank is full.

SUBTASK 12-13-11-200-004

CAUTION: IF YOU SMELL FUEL FUMES WHEN YOU REMOVE THE OIL FILLER CAP, DO A CHECK FOR FUEL IN THE OIL. IF THERE IS FUEL IN THE OIL TANK, DO THESE PROCEDURES: REPLACE THE MAIN OIL/FUEL HEAT EXCHANGER. REPLACE THE SERVO FUEL HEATER. FLUSH THE ENGINE OIL SYSTEM. FUEL CAN CAUSE DAMAGE TO THE EQUIPMENT.

(6) Open the filler cap [1] and do a check for fuel in the oil:

(a) If you think there is fuel in the oil, use the oil condition test kit, COM-7517 to examine the oil.

1) If the viscometer is not available, use a gas detector or do a flash point check of the oil to look for fuel.

2) If the viscosity test is incorrect then fuel is found, do these steps:

a) Replace the main oil/fuel heat exchanger.

These are the tasks:Main Oil/Fuel Heat Exchanger Removal, TASK 79-21-02-000-801-F00, Main Oil/Fuel Heat Exchanger Installation, TASK 79-21-02-400-801-F00.

b) Replace the servo fuel heater.

These are the tasks:Servo Fuel Heater Removal, TASK 73-11-07-000-801-F00, Servo Fuel Heater Installation, TASK 73-11-07-400-801-F00.

,

c) Do this task: Flush The Engine Oil System, TASK 12-13-11-100-801.

3) If the viscosity test is correct, no fuel is found.

(b) Close the filler cap [1].

SUBTASK 12-13-11-610-028

CAUTION: FLUSH THE ENGINE OIL SYSTEM IF IT CONTAINS CONTAMINATION. OIL CONTAMINATION CAN CAUSE ENGINE DAMAGE.

CAUTION: DO NOT MIX TYPE 1 AND TYPE 2 OILS. DO NOT DO OIL SERVICING WITH BRANDS THAT ARE NOT APPROVED. FLUSH AND REPLENISH THE OIL SYSTEM IMMEDIATELY WITH THE CORRECT ENGINE OIL IF ONE OF THE ERRORS THAT FOLLOW OCCURS: 1) IF 10 PERCENT OR MORE OF A DIFFERENT OIL TYPE WAS USED, OR 2) IF 10 PERCENT OR MORE OF A NON-APPROVED OIL WAS USED. DAMAGE TO EQUIPMENT CAN OCCUR IF YOU OPERATE THE ENGINE IN ONE OF THESE CONDITIONS.

CAUTION: DO THE REPLENISH THE ENGINE OIL PROCEDURE BEFORE THE OIL TANK BECOMES COOL (30 MINUTES AFTER THE ENGINE SHUTDOWN). IF THE TANK IS COOL, YOU CAN FILL IT TOO MUCH AND CAUSE AN INCORRECT INDICATION OF THE OIL CONSUMPTION RATE.

(7) Add oil, D00599 [CP2442], to the oil tank until the oil is visible through the Hose (overflow hose).

(a) If non-approved oils or different oil types was added to the engine oil, do these steps:

1) If the quantity is less than 10 percent (2 quarts or less) (1.9 liters or less), no action is necessary.

2) If the quantity is more than 10 percent (2 quarts or more) (1.9 liters or more), you must drain and replenish the oil tank before the subsequent flight.

SUBTASK 12-13-11-420-010

CAUTION: DO NOT REMOVE THE OVERFLOW HOSE BEFORE THE FLOW OF OIL STOPS. IF YOU REMOVE THE OVERFLOW HOSE, IT CAN CAUSE THE TANK TO BE MORE THAN FULL. THIS WILL NOT CAUSE DAMAGE TO THE ENGINE, BUT IT WILL BE A PROBLEM FOR THE SERVICE RECORDS.

(8) When the oil flow from the Hose (overflow hose) stops, disconnect the pressure lube system from the oil tank.

(a) Do a check for oil leakage from the remote fill coupling [4] and the remote overflow coupling [3].

1) No leaks are permitted.

NOTE: A lightly, wet surface, which is not sufficient to make one drop, is permitted.

SUBTASK 12-13-11-420-009

(9) Put the plugs on the remote fill coupling [4] and the remote overflow coupling [3].

(a) Tighten the remote overflow coupling to 270-300 inch-pounds (30.5-34 newton-meters).

(b) Tighten the remote fill coupling to 180-200 inch-pounds (20.5-23 newton-meters).

J. Put the Airplane Back to Its Usual Condition

SUBTASK 12-13-11-410-015

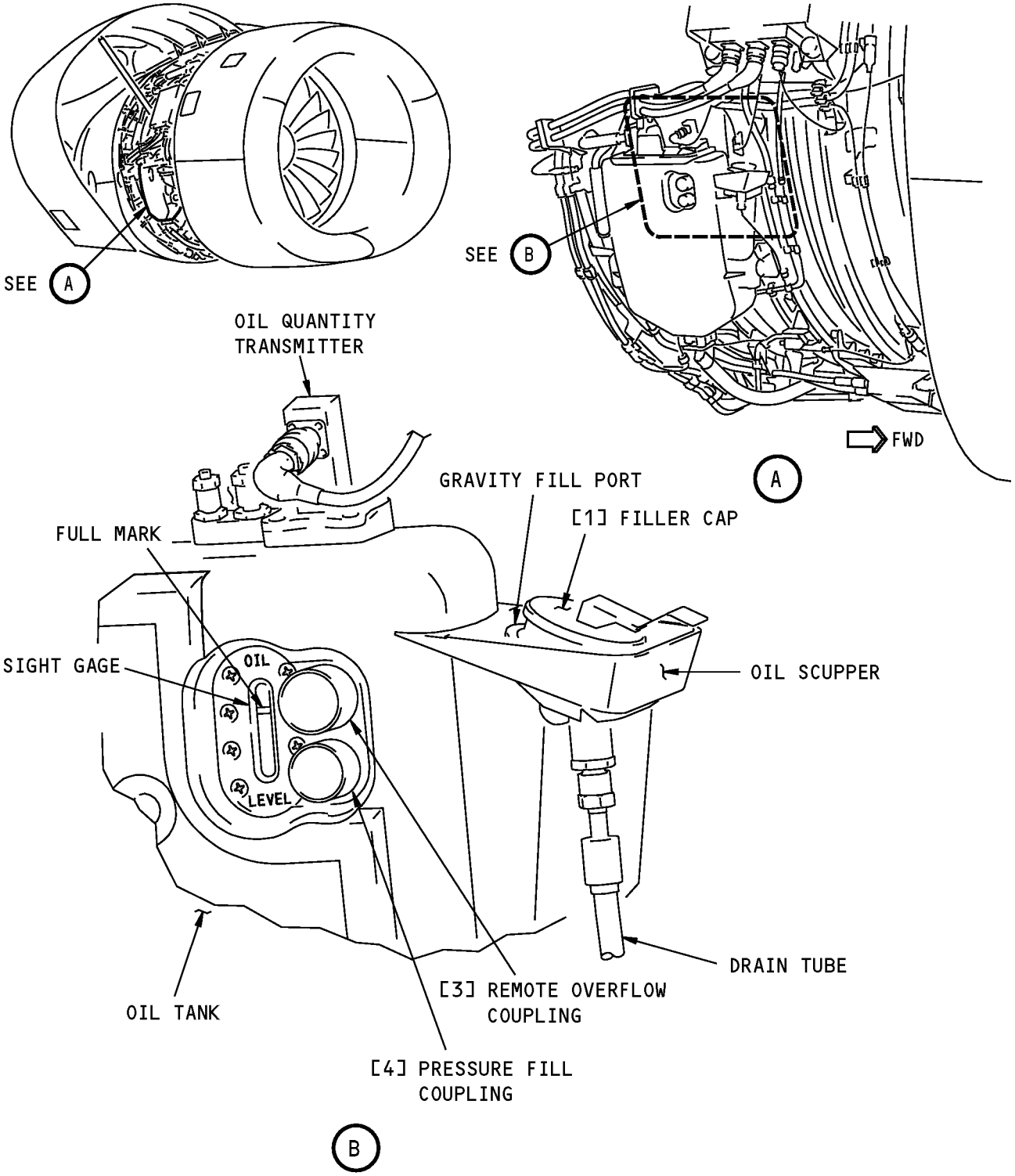
(1) Close the applicable access doors on the right fan cowl panel.

Number	Name/Location
414AR	Oil Tank Access Door, Engine 1

(Continued)

Number	Name/Location
424AR	Oil Tank Access Door, Engine 2

END OF TASK



Oil Tank Servicing (Remote Fill)
Figure 302/12-13-11-990-809

TASK 12-13-11-600-803

4. Drain the Engine Oil

(Figure 301 and Figure 303)

A. General

(1) This task is the procedure to drain the engine oil.

(2) The total oil tank capacity for Engine 1 is 5.34 US gallons (20.2 liters) and for Engine 2 is 5.4 US gallons (20.4 liters).

(3) Do these steps when you change the engine oil:

(a) Drain the oil tank and accessory gearbox.

(b) Replenish the oil tank with the same brand of oil.

(4) Do not mix different approved brands, if the oil belongs to a different type (CFMI SB 79-001).

(5) You must flush the oil system if the system contains contamination.

(6) When you change the fleet from one approved brand to a different approved brand, make sure that you follow the CFMI SB 79-001 instructions when you service the engine.

B. References

Reference	Title
71-00-00-800-811-F00	Power Plant Test Reference Table (P/B 501)
71-11-02-010-801-F00	Open the Fan Cowl Panels (P/B 201)
71-11-02-410-801-F00	Close the Fan Cowl Panels (P/B 201)

C. Tools/Equipment

Reference	Description
STD-200	Container - Fuel Resistant, 10 gallon (38 l)
STD-203	Container - Oil Resistant, 1 U.S.-Gal (3.8 l)

D. Consumable Materials

Reference	Description	Specification
D00599 [CP2442]	Oil - Engine (CFMI SB 79-001)	
G00034	Cotton Wiper - Process Cleaning Absorbent Wiper (Cheesecloth, Gauze)	BMS15-5
G02345 [CP8001]	Lockwire - Inconel (0.032 inch Dia.)	NASM20995˜ N32
G50065 [CP8006]	Cable, Safety, Stainless Steel, 0.8mm (0.032inch) Diameter	

E. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
21	Packing	79-11-01-01-115	HAP ALL
24	Packing	72-63-00-06-150	HAP ALL

F. Location Zones

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

G. Prepare to Drain the Engine Oil

SUBTASK 12-13-11-860-009

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

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
A	4	C01390	ENGINE 1 ALTN PWR CHAN B
A	5	C01314	ENGINE 1 ALTN PWR CHAN A

SUBTASK 12-13-11-860-010

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

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

SUBTASK 12-13-11-010-003

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

H. Drain the Engine Oil

SUBTASK 12-13-11-020-005

WARNING: DO NOT REMOVE THE FILLER CAP OF THE OIL TANK FOR FIVE MINUTES AFTER AN ENGINE SHUTDOWN. IF THE CHECK VALVE IS DEFECTIVE, HOT OIL CAN SPRAY FROM THE OIL TANK AND CAUSE INJURY TO PERSONS. THE OIL IN THE TANK IS HOT AND PRESSURIZED DURING ENGINE OPERATION.

WARNING: YOU MUST FULLY CLEAN YOUR SKIN IF YOU TOUCH THE OIL. REMOVE OIL SOAKED CLOTHES IMMEDIATELY. IF THE OIL TOUCHES YOUR SKIN FOR A LONG TIME, IT COULD CAUSE DERMATITIS.

CAUTION: IMMEDIATELY CLEAN THE PAINTED SURFACES ON WHICH OIL FALLS. THE OIL WILL PUT STAINS ON CLOTHES AND CAN MAKE PAINT SOFT.

CAUTION: DO THE REPLENISH THE ENGINE OIL PROCEDURE BEFORE THE OIL TANK BECOMES COOL (30 MINUTES AFTER THE ENGINE SHUTDOWN). IF THE TANK IS COOL, YOU CAN FILL IT TOO MUCH AND CAUSE AN INCORRECT INDICATION OF THE OIL CONSUMPTION RATE.

(1) Do these steps to remove the filler cap to the oil tank :

NOTE: Samples must be taken 15 to 30 minutes after the engine shutdown and before you add oil to the oil tank.

CAUTION: MAKE SURE THAT THE OIL TANK AND SCUPPER ARE CLEAN. IF THE OIL TANK AND SCUPPER ARE NOT CLEAN, CONTAMINATION OF THE OIL TANK AND OIL SAMPLE CAN OCCUR DURING THE SAMPLING OPERATION.

(a) Use a cotton wiper, G00034, to clean the oil scupper.

(b) Lift the filler cap handle.

(c) Turn the filler cap handle counterclockwise to open it.

(d) Pull the filler cap from the gravity fill port.

SUBTASK 12-13-11-610-003

WARNING: HOT OIL CAN CAUSE DEEP BURNS. TRY NOT TO TOUCH THE OIL OR OIL SPLASHES WHEN YOU REMOVE THE DRAIN PLUG.

(2) Do these steps to drain the oil tank :

(a) Put a 10 gallon (38 l) fuel resistant container, STD-200, below the oil tank.

(b) Remove the drain plug [22].

1) Let the oil drain in the container.

(c) Remove and discard the packing [21].

SUBTASK 12-13-11-420-003

(3) Do these steps to install the drain plug [22]:

CAUTION: DO NOT INSTALL THE DRAIN PLUG WITHOUT A PACKING. THE INSTALLATION OF A DRAIN PLUG WITHOUT A PACKING CAN CAUSE OIL LEAKAGE DURING ENGINE OPERATION, AND A POSSIBLE ENGINE FAILURE.

(a) Make sure that the groove in the drain plug [22] is clean.

(b) Lubricate a new packing [21] with oil, D00599 [CP2442].

(c) Install the packing [21] in the groove of the drain plug [22].

(d) Carefully install the drain plug [22] in the bottom of the oil tank.

1) Tighten the drain plug to 135-150 inch-pounds (15-17 newton-meters).

(e) Install the lockwire, G02345 [CP8001] or cable, G50065 [CP8006]

SUBTASK 12-13-11-610-004

(4) Do these steps to drain the Accessory Gearbox (AGB) :

(a) Put a 1 U.S.-gal (3.81 l) oil resistant container, STD-203, below the AGB.

(b) Remove the drain plug [23].

1) Let the oil drain in the container.

(c) Remove and discard the packing [24].

SUBTASK 12-13-11-420-004

(5) Do these steps to install the drain plug [23]:

CAUTION: DO NOT INSTALL THE DRAIN PLUG WITHOUT A PACKING. THE INSTALLATION OF A DRAIN PLUG WITHOUT A PACKING CAN CAUSE OIL LEAKAGE DURING ENGINE OPERATION, AND A POSSIBLE ENGINE FAILURE.

(a) Make sure that the groove in the drain plug [23] is clean.

(b) Lubricate a new packing [24] with oil, D00599 [CP2442].

(c) Install the packing [24] in the groove of the drain plug [23].

(d) Carefully install the drain plug [23] in the AGB.

1) Tighten the drain plug to 180-220 inch-pounds (20.5-25 newton-meters).

(e) Install the lockwire, G02345 [CP8001] or cable, G50065 [CP8006]

SUBTASK 12-13-11-610-005

(6) Do this task: Replenish the Engine Oil, TASK 12-13-11-600-801.

I. Put the Airplane Back to Its Usual Condition

SUBTASK 12-13-11-410-008

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

SUBTASK 12-13-11-860-025

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

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
A	4	C01390	ENGINE 1 ALTN PWR CHAN B
A	5	C01314	ENGINE 1 ALTN PWR CHAN A

SUBTASK 12-13-11-860-026

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

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

J. Installation Test

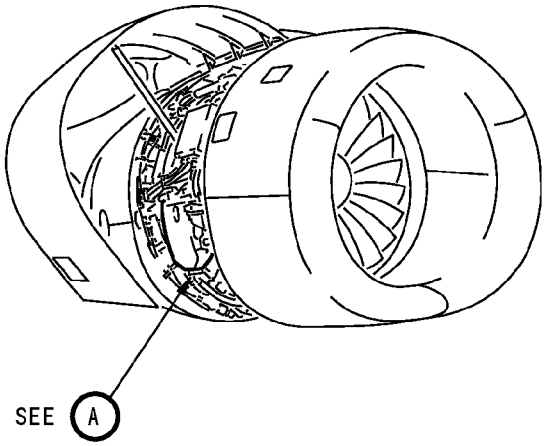
SUBTASK 12-13-11-800-001

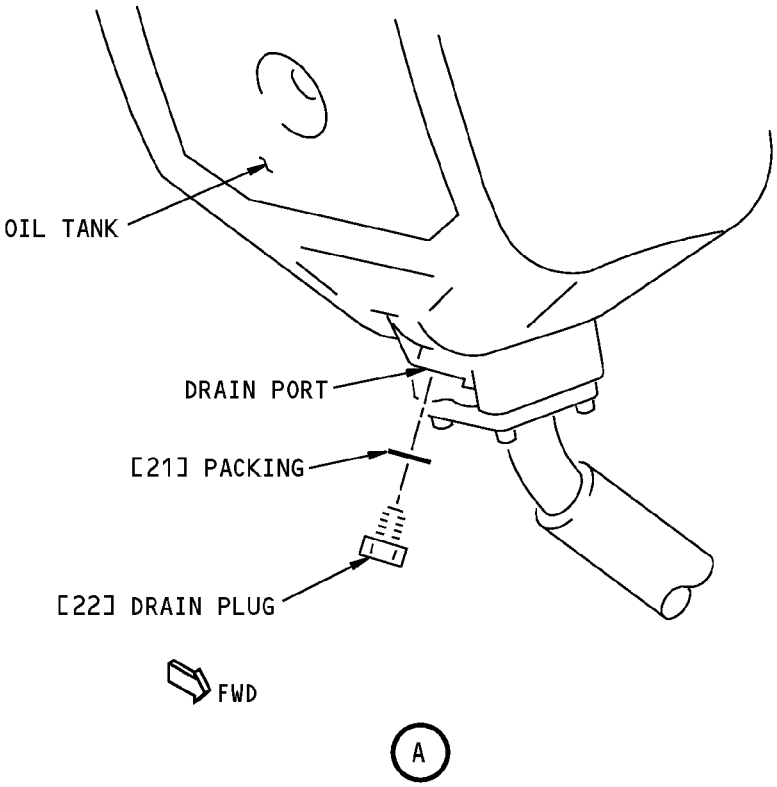
(1) Do the tests that are listed in the Power Plant Test Reference Table (TASK 71-00-00-800-811-F00).

SUBTASK 12-13-11-610-018

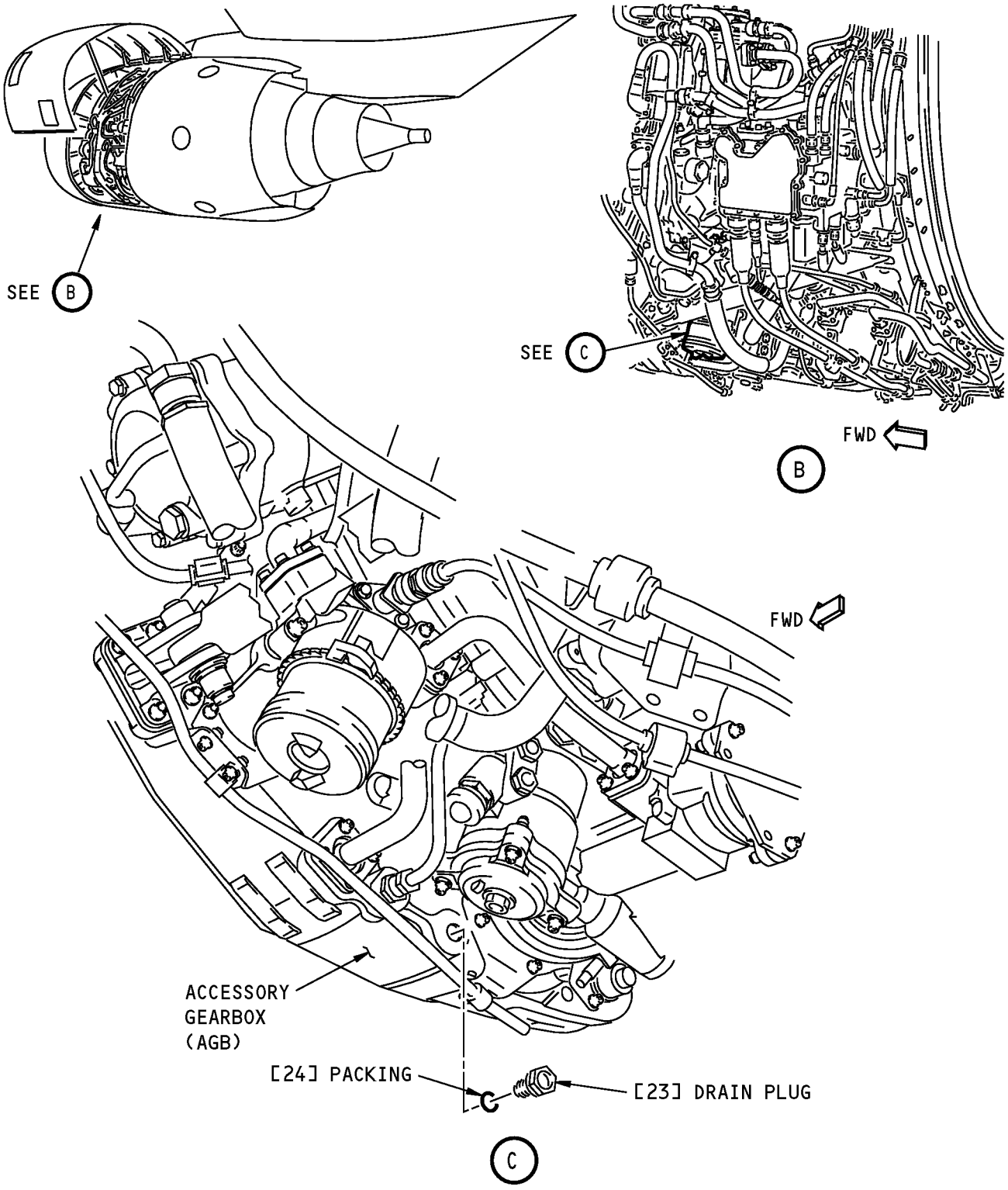
(2) If the oil level is low, do this task: Replenish the Engine Oil, TASK 12-13-11-600-801.

——————— END OF TASK ———————





Oil System Drain Plugs Installation
Figure 303 (Sheet 1 of 2)/12-13-11-990-802



Oil System Drain Plugs Installation
Figure 303 (Sheet 2 of 2)/12-13-11-990-802

TASK 12-13-11-100-801

5. Flush The Engine Oil System

(Figure 301, Figure 303)

A. General

(1) This task is the procedure to flush the engine oil.

(2) Fill the oil tank and the AGB with the same brand of oil.

NOTE: If you fill the oil tank when it is cool (30 minutes from engine shutdown), you can fill it too much. This cannot cause damage to the engine, but it can cause an incorrect indication of the oil consumption rate.

(3) Do not to mix different approved brands, if the oil belongs to a different type (CFMI SB 79-001).

(4) You must flush the oil system if the system contains contamination.

(5) When you change the fleet from one approved brand to a different approved brand, make sure that you follow the CFMI SB 79-001 instructions when you service the engine.

B. References

Reference	Title
71-00-00-700-819-F00	Stop the Engine Procedure (Usual Engine Stop) (P/B 201)
71-00-00-800-807-F00	Start the Engine Procedure (Selection) (P/B 201)
71-11-02-010-801-F00	Open the Fan Cowl Panels (P/B 201)
71-11-02-410-801-F00	Close the Fan Cowl Panels (P/B 201)
79-00-00-200-804-F00	Chip Detectors and Scavenge Screens Inspection (P/B 601)
79-21-03-000-802-F00	Oil Supply Filter Removal (P/B 401)
79-21-03-400-801-F00	Oil Supply Filter Installation (P/B 401)
79-21-06-000-801-F00	Scavenge Oil Filter Element Removal (P/B 401)
79-21-06-400-801-F00	Scavenge Oil Filter Element Installation (P/B 401)

C. Location Zones

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

D. Prepare to Flush the Engine Oil

SUBTASK 12-13-11-010-005

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

E. Flush the Engine Oil

SUBTASK 12-13-11-750-001

(1) If you think that there is contamination in the engine oil system, do this task: Oil Sampling For Analysis, TASK 12-13-11-750-801.

SUBTASK 12-13-11-610-019

(2) Do this task: Drain the Engine Oil, TASK 12-13-11-600-803.

SUBTASK 12-13-11-610-020

(3) Do this task: Replenish the Engine Oil, TASK 12-13-11-600-801.

NOTE: The engine manufacturer, CFMI, confirms that an oil tank that is 1/2 full is a sufficient quantity to operate the engines at idle power for 10 minutes and flush the oil system.

SUBTASK 12-13-11-710-001

(4) Start the engine and then, operate it at ground idle for 10 minutes (TASK 71-00-00-800-807-F00).

SUBTASK 12-13-11-710-003

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

SUBTASK 12-13-11-610-025

(6) Do these steps to make sure that the engine is serviceable and all contamination is removed to an acceptable level:

(a) Do this task: Drain the Engine Oil, TASK 12-13-11-600-803.

(b) Examine the chip detectors and scavenge screens (TASK 79-00-00-200-804-F00).

1) Do this step if you find deposits that are satisfactory:

a) Clean and install the chip detectors and scavenge screens, do this task: Chip Detectors and Scavenge Screens Inspection, TASK 79-00-00-200-804-F00.

2) If you find unsatisfactory deposits, do the applicable corrective action that is given in the reference task to, do this task: Chip Detectors and Scavenge Screens Inspection, TASK 79-00-00-200-804-F00.

(c) Do this task: Replenish the Engine Oil, TASK 12-13-11-600-801.

(d) Start the engine and then, operate it at ground idle for 10 minutes (TASK 71-00-00-800-807-F00).

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

(f) Do a visual and a smell inspection for the presence of contaminants in the oil.

1) If you still think there is contamination, repeat the above steps again to make sure the engine is serviceable; and, all contamination is removed to an acceptable level.

SUBTASK 12-13-11-960-002

(7) Replace the scavenge oil filter element.

These are the tasks:Scavenge Oil Filter Element Removal, TASK 79-21-06-000-801-F00, Scavenge Oil Filter Element Installation, TASK 79-21-06-400-801-F00.

SUBTASK 12-13-11-960-001

(8) Replace the oil supply filter.

These are the tasks:Oil Supply Filter Removal, TASK 79-21-03-000-802-F00, Oil Supply Filter Installation, TASK 79-21-03-400-801-F00.

SUBTASK 12-13-11-210-005

(9) After the engine shutdown, do a check of the oil quantity with the sight gage in 30 minutes or less.

SUBTASK 12-13-11-610-023

(10) If the oil level is low, do this task: Replenish the Engine Oil, TASK 12-13-11-600-801.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 12-13-11-410-005

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

END OF TASK

TASK 12-13-11-750-801

6. Oil Sampling For Analysis

(Figure 301 and Figure 304)

A. General

(1) This task is the procedure for oil sampling for analysis.

(2) Do not mix different approved brands, if the oil belongs to a different type (CFMI SB 79-001).

(3) You must flush the oil system if the system contains contamination.

(4) When you change the fleet from one approved brand to a different approved brand, make sure that you follow the CFMI SB 79-001 instructions when you service the engine.

B. References

Reference	Title
71-11-02-010-801-F00	Open the Fan Cowl Panels (P/B 201)
71-11-02-410-801-F00	Close the Fan Cowl Panels (P/B 201)
79-11-01-300-801-F00	Replacement of the Filler Cap Packing or Filler Cap (P/B 801)

C. Tools/Equipment

Reference	Description
STD-1283	Bottle - Plastic, Oil Resistant, 1 Quart

D. Consumable Materials

Reference	Description	Specification
G00034	Cotton Wiper - Process Cleaning Absorbent Wiper (Cheesecloth, Gauze)	BMS15-5

E. Location Zones

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

F. Oil Sampling for Analysis

SUBTASK 12-13-11-010-008

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

SUBTASK 12-13-11-020-003

WARNING: DO NOT REMOVE THE FILLER CAP OF THE OIL TANK FOR FIVE MINUTES AFTER AN ENGINE SHUTDOWN. IF THE CHECK VALVE IS DEFECTIVE, HOT OIL CAN SPRAY FROM THE OIL TANK AND CAUSE INJURY TO PERSONS. THE OIL IN THE TANK IS HOT AND PRESSURIZED DURING ENGINE OPERATION.

WARNING: YOU MUST FULLY CLEAN YOUR SKIN IF YOU TOUCH THE OIL. REMOVE OIL SOAKED CLOTHES IMMEDIATELY. IF THE OIL TOUCHES YOUR SKIN FOR A LONG TIME, IT COULD CAUSE DERMATITIS.

WARNING: HOT OIL CAN CAUSE DEEP BURNS. TRY NOT TO TOUCH THE OIL OR OIL SPLASHES WHEN YOU REMOVE THE DRAIN PLUG.

(WARNING PRECEDES)

CAUTION: IMMEDIATELY CLEAN THE PAINTED SURFACES ON WHICH OIL FALLS. THE OIL WILL PUT STAINS ON CLOTHES AND CAN MAKE PAINT SOFT.

(2) Do these steps to remove the filler cap to the oil tank :

NOTE: Samples must be taken 15 to 30 minutes after engine shutdown and before you add oil to the oil tank.

CAUTION: MAKE SURE THAT THE OIL SCUPPER IS CLEAN. IF THE OIL TANK IS NOT CLEAN, CONTAMINATION OF THE OIL TANK DURING THE SAMPLING OPERATIONS CAN OCCUR.

(a) Use a cotton wiper, G00034, to clean the oil scupper.

(b) Lift the filler cap handle.

(c) Turn the filler cap handle counterclockwise to open it.

(d) Pull the filler cap from the gravity fill port.

SUBTASK 12-13-11-110-001

CAUTION: USE VERY CLEAN, SCREW-TOP, PLASTIC BOTTLES AND PLASTIC TUBES THAT WERE NOT USED BEFORE. DO NOT USE THE PLASTIC BOTTLES AND PLASTIC TUBES AGAIN. CONTAMINATION OF THE SAMPLE COULD OCCUR.

(3) Squeeze a bottle, STD-1283, with your fingers and then dip the tube end in the oil to get a sample .

SUBTASK 12-13-11-970-001

(4) Put a label on the plastic bottle with oil sample data as follows:

NOTE: Samples for the chemical and the spectrometric analysis must be sent to the laboratory as soon as possible.

(a) Engine total operating time.

(b) Operating time since the last sample.

(c) The date of the sample.

(d) Identification of the engine (serial number).

(e) The type and the brand of oil you use.

SUBTASK 12-13-11-610-024

(5) If the oil level is low, do this task: Replenish the Engine Oil, TASK 12-13-11-600-801.

SUBTASK 12-13-11-420-007

(6) Do these steps to install the filler cap in the oil tank :

(a) Examine the packing on the filler cap.

(b) Make sure that the packing is in its position.

1) If the packing is damaged or shows deterioration, replace the packing (TASK 79-11-01-300-801-F00).

(c) Put the filler cap in its position in the gravity fill port.

(d) Push the filler cap in and turn the filler cap handle clockwise to lock it.

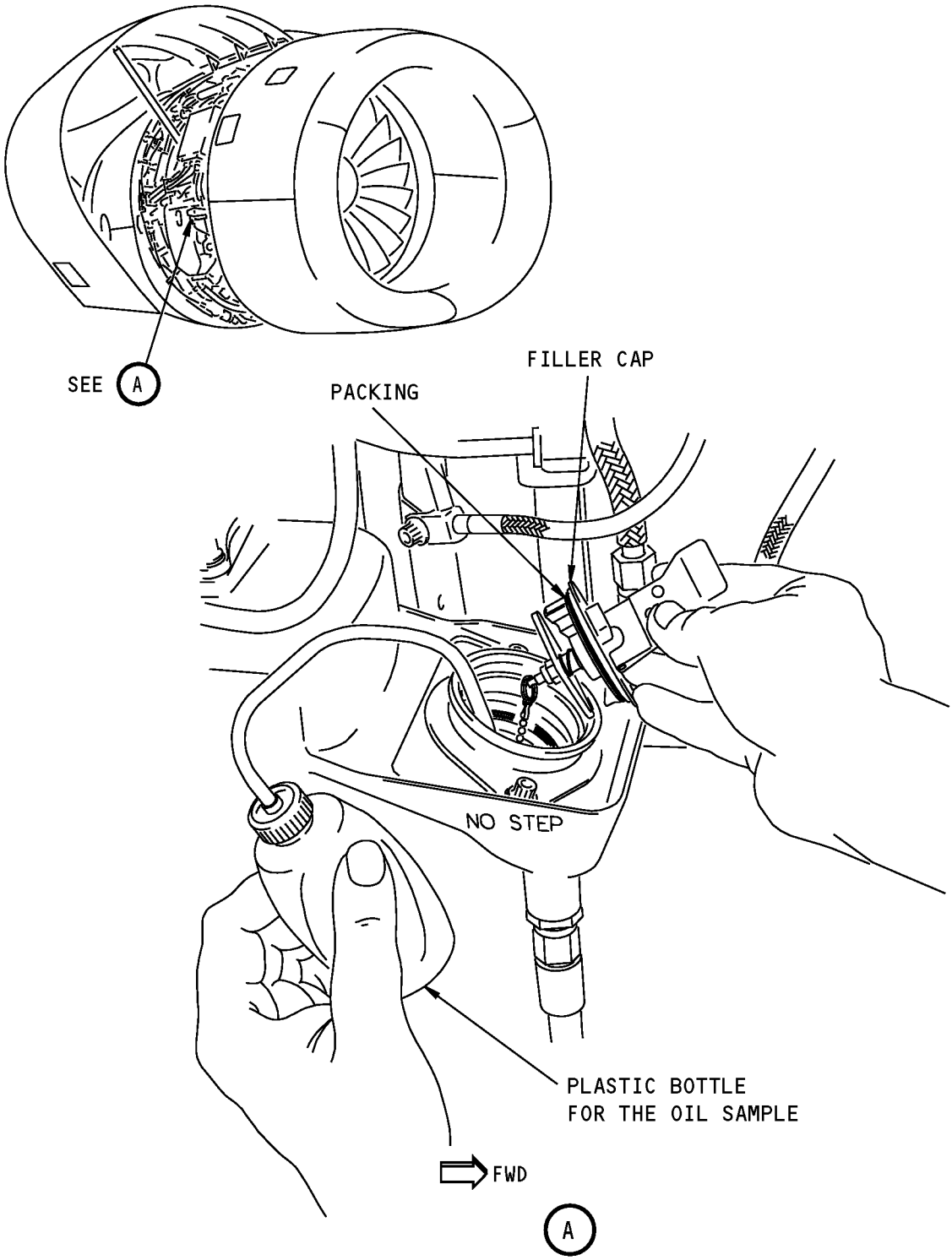
(e) Push the filler cap handle down to the closed position.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 12-13-11-410-006

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

—————— END OF TASK ——————



Oil Sampling for Analysis
Figure 304/12-13-11-990-803

INTEGRATED DRIVE GENERATOR (IDG) - SERVICING

1. General

A. This procedure contains scheduled maintenance task data.

B. 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)

A. General

(1) This procedure is a scheduled maintenance task.

(2) This task uses the sight glass on the IDG to check the oil level.

(3) The oil volume for the IDG and external cooling circuit is as follows:

(a) IDG oil volume - 6.84 qt (6473.05 cc).

(b) External cooling circuit oil volume - 2.16 qt (2044.12 cc).

(c) Total oil volume - 9 qt (8517 cc).

B. References

Reference	Title
71-11-02-010-801-F00	Open the Fan Cowl Panels (P/B 201)
71-11-02-410-801-F00	Close the Fan Cowl Panels (P/B 201)

C. Tools/Equipment

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

D. Consumable Materials

Reference	Description	Specification
D00068	Oil - Aircraft Turbine Engine, Synthetic Base	MIL-PR˜ F-23699F, Class STD (Standard)
D00071	Oil - Aircraft Turbine Engine, Synthetic Base	MIL-PRF-7808, Grade 3
G00034	Cotton Wiper - Process Cleaning Absorbent Wiper (Cheesecloth, Gauze)	BMS15-5
G01048	Lockwire - Corrosion Resistant Steel (0.032 In. Dia.)	NASM20995˜ C32

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 12-13-21-010-005

(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

H. Procedure

SUBTASK 12-13-21-210-001

(1) Do a check of the IDG oil level as follows:

NOTE: Do not do a check of the oil level on a disconnected IDG, because the indication will be incorrect.

(a) Make sure the engine has been shutdown for a minimum of 5 minutes before checking oil level.

(b) Clean the sight glass with a clean, cotton wiper, G00034, if necessary.

CAUTION: FAILURE TO DO THIS STEP CAN CAUSE AN INCORRECT OIL LEVEL INDICATION AND CAN CAUSE SUBSEQUENT 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, 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.

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. Some of the oil should be drained until the oil level is at the top of the silver band. Use the steps below to drain some of the oil.

CAUTION: IF THE OIL LEVEL IS TOO HIGH, THE FOLLOWING STEPS MUST BE DONE OR SUBSEQUENT DAMAGE CAN OCCUR TO THE IDG.

5) If the oil level is in the black area above the DRAIN line, the oil level is too high. Drain some of the IDG oil as follows:

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

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

b) Push the PUSH-TO-VENT VALVE for a minimum of 15 seconds.

c) Place an oil resistant container (5 gal)(19 Liters), 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.

g) Apply oil, D00071 or oil, D00068 to new o-ring [2].

h) Install new o-ring [2] onto case drain plug [1].

i) Install case drain plug [1] on the IDG.

j) Tighten the case drain plug to 65 ±10 in-lb (7 ±1 N·m).

k) Install lockwire, G01048.

l) Fill the IDG to the correct oil level. To fill the IDG, do this task: IDG Servicing (Oil Fill), TASK 12-13-21-600-801.

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

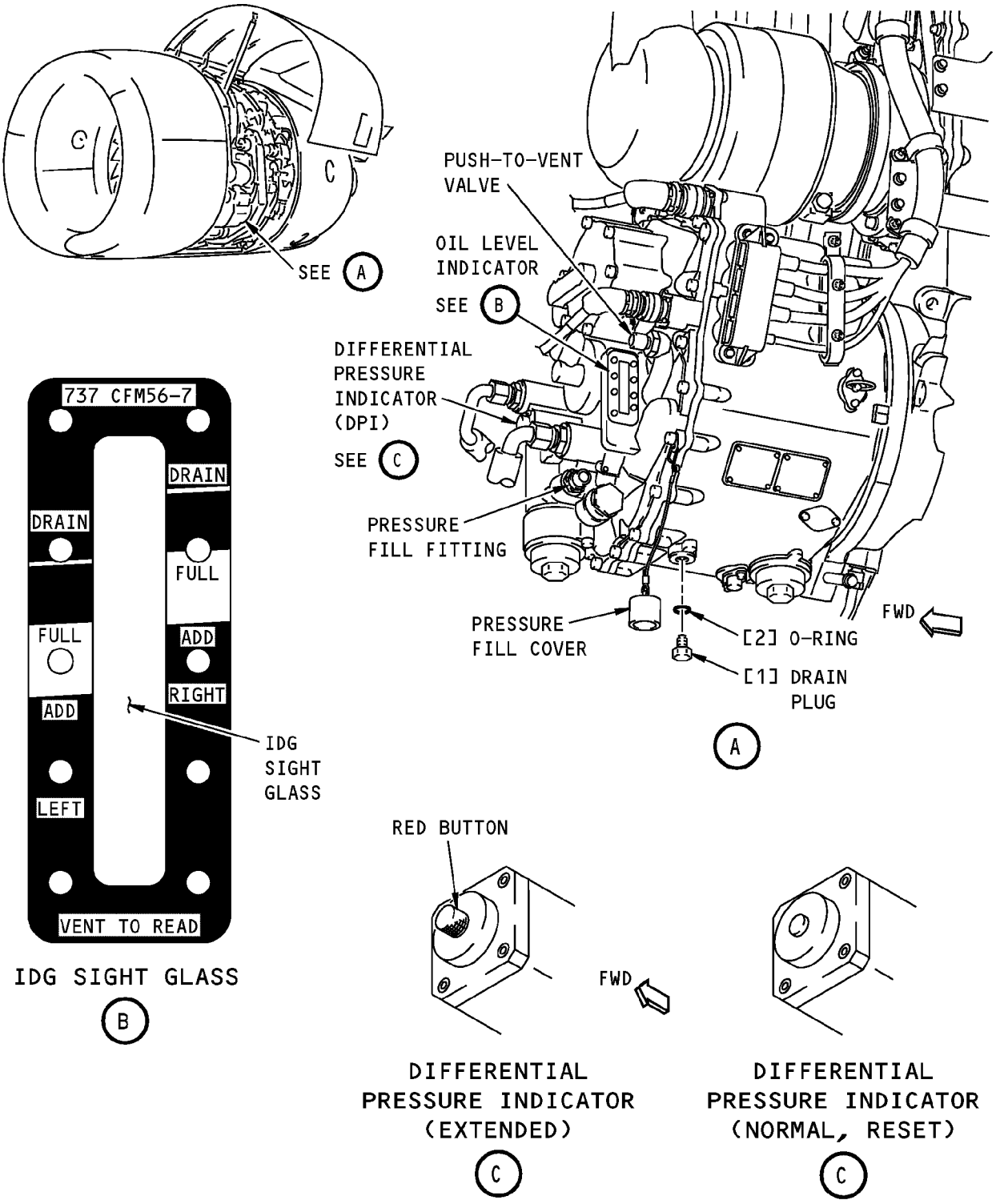
I. Put the airplane in its usual condition.

SUBTASK 12-13-21-410-005

(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 ———————



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)

A. General

(1) This task fills the IDG with oil to the proper level.

(2) The oil volume for the IDG and external cooling circuit is as follows:

(a) IDG oil volume - 6.84 qt (6473.05 cc).

(b) External cooling circuit oil volume - 2.16 qt (2044.12 cc).

(c) Total oil volume - 9 qt (8517 cc).

(3) Do not service a disconnected IDG.

B. Consumable Materials

Reference	Description	Specification
D00068	Oil - Aircraft Turbine Engine, Synthetic Base	MIL-PR˜ F-23699F, Class STD (Standard)
D00071	Oil - Aircraft Turbine Engine, Synthetic Base	MIL-PRF-7808, Grade 3

C. Location Zones

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

D. Access Panels

Number	Name/Location
413AL	IDG Access Door, Engine 1
423AL	IDG Access Door, Engine 2

E. Prepare for procedure

SUBTASK 12-13-21-010-006

(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

F. Procedure

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

(1) Do the IDG oil servicing as follows:

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

(a) Push the PUSH-TO-VENT VALVE for a minimum of 15 seconds.

(b) Remove the pressure fill cover from the pressure fill fitting on the IDG.

(c) Connect the pressure fill hose from the service equipment to the pressure fill fitting on the IDG.

CAUTION: DO NOT MIX DIFFERENT OIL TYPES IN IDG. MIXING OF DIFFERENT OIL TYPES CAN CAUSE DAMAGE TO IDG.

(d) Use the service equipment to fill the IDG with oil, D00071 or oil, D00068 using 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.

(e) Press the PUSH-TO-VENT valve frequently while filling the IDG with oil. Press the PUSH-TO-VENT valve when you are done filling the IDG and just prior to determining the final oil level.

CAUTION: DO NOT OVER FILL OR UNDER FILL THE IDG. OVER FILLING AND UNDER FILLING CAN CAUSE DAMAGE TO THE IDG.

(f) Use the sight glass on the IDG to determine the correct oil level.

1) For the number 1 IDG fill to the LEFT FULL mark on the sight glass. Do not fill above the FULL mark.

NOTE: The FULL mark is at the top of the silver band.

2) For the number 2 IDG fill to the RIGHT FULL mark on the sight glass. Do not fill above the FULL mark.

NOTE: The FULL mark is at the top of the silver band.

(g) Remove the pressure fill hose from the pressure fill fitting on the IDG.

(h) Install the cover on the IDG pressure fill fitting.

G. Put the airplane in its usual condition.

SUBTASK 12-13-21-410-006

(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 ———————

TASK 12-13-21-200-802

4. IDG Differential Pressure Indicator (DPI) Check

(Figure 301)

A. General

(1) This procedure is a scheduled maintenance task.

(2) 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
24-11-21 P/B 401	IDG AIR/OIL COOLER - REMOVAL/INSTALLATION
24-11-41 P/B 201	IDG SCAVENGE/CHARGE OIL FILTER - MAINTENANCE PRACTICES

C. Tools/Equipment

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

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 12-13-21-010-004

(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

G. Procedure

SUBTASK 12-13-21-210-003

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

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

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

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

1) If the IDG was replaced, no more work is necessary.

2) If the IDG was not replaced, check the DPI resets decal on the scavenge filter cover for the number of DPI resets that has been done.

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

a) If the DPI resets decal shows it is the fourth (4th) DPI extension, replace the IDG (PAGEBLOCK 24-11-11/401).

b) If the DPI resets decal shows it is not the fourth (4th) DPI extension, use a blunt tool to rub out the next number on the DPI resets decal and use finger to push the DPI red button down.

(b) If the button is in the down position, do these steps:

1) If other regular IDG service maintenance is not required, no more work is necessary.

2) If other regular IDG service maintenance tasks are required, do those tasks.

Table 301/24-11-41-993-803 DPI EXTENSION

SCAVENGE FILTER CONDITION	IDG OIL CONDITION	ACTION
No visible magnetic or non-metallic particles (See NOTE for more scavenge filter data) *[1]	No oil discoloration, no signs of over-heating or chemical contamination of the oil is not suspected	1. Drain the oil in the 5 U.S.-gal (19 l) oil resistant container, STD-205. 2. Replace the scavenge filter (PAGEBLOCK 24-11-41/201). 3. Service with oil (12-13-21/301).
No visible magnetic or non-metallic particles (See NOTE for more scavenge filter data)*[1]	Oil discoloration, signs of overheating or chemical contamination of the oil is suspected (Hydraulic fluid and water)	1. Drain the oil in the 5 U.S.-gal (19 l) oil resistant container, STD-205. 2. Replace the scavenge filter (PAGEBLOCK 24-11-41/201). 3. Service with oil (12-13-21/301). 4. Run the engine until the IDG oil temperature is 175 deg F. 5. Drain the oil in the 5 U.S.-gal (19 l) oil resistant container, STD-205. 6. Replace the scavenge filter (PAGEBLOCK 24-11-41/201). 7. Service with oil (12-13-21/301).
Visible magnetic or non-metallic particles in the scavenge filter and the scavenge filter is not breached. (See NOTE for more scavenge filter data)*[1]	No oil discoloration, no signs of over-heating or chemical contamination of the oil is not suspected	1. Replace the IDG (PAGEBLOCK 24-11-11/401).
Visible magnetic or non-metallic particles in the scavenge filter and the scavenge filter is not breached. (See NOTE for more scavenge filter data)*[1]	Oil discoloration, signs of overheating or chemical contamination of the oil is suspected (Hydraulic fluid and water)	1. Remove the IDG (PAGEBLOCK 24-11-11/401). 2. Flush the IDG oil system (12-13-21/301). 3. Install the IDG (PAGEBLOCK 24-11-11/401).
Visible magnetic or non-metallic particles in the scavenge filter and the scavenge filter is breached. (See NOTE for more scavenge filter data)*[1]	Oil condition is not a factor	1. Remove the IDG (PAGEBLOCK 24-11-11/401). 2. Replace the IDG air/oil cooler (PAGEBLOCK 24-11-21/401). 3. Replace the IDG oil cooler lines. 4. Install the IDG (PAGEBLOCK 24-11-11/401).

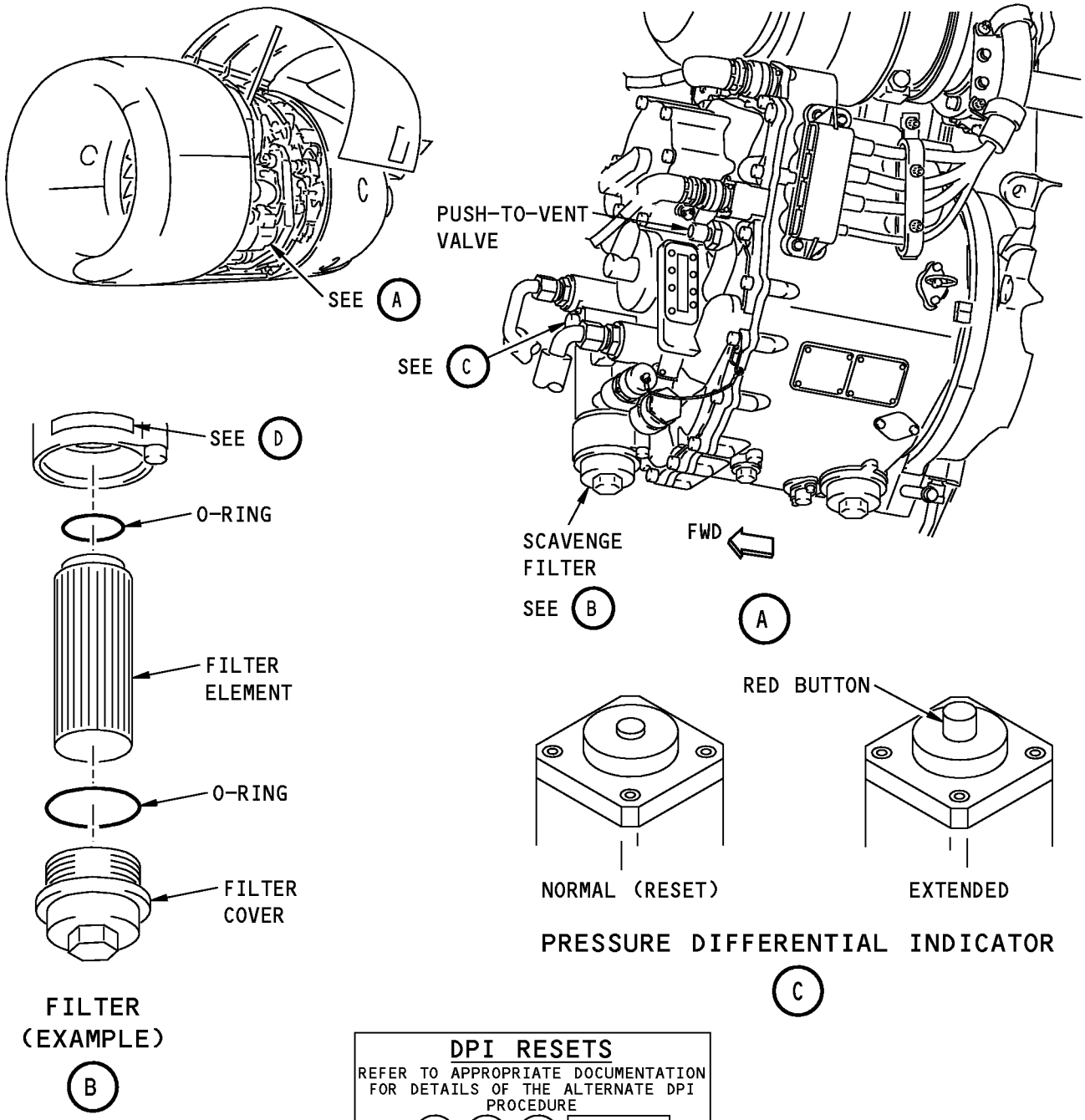
*[1] If the scavenge filter element or filter cover shows a number of moderately scattered, small metallic flakes (bronze or silver colored metal), flakes of generator insulation, black epoxy flakes, or sleeving, do not replace the IDG. These products are normal wear during IDG operation. If the filter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

SUBTASK 12-13-21-410-002

(2) 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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DPI Reset Procedure
Figure 302/12-13-21-990-803

TASK 12-13-21-600-802

5. IDG Oil Change

(Figure 301)

A. General

(1) This procedure is a scheduled maintenance task.

(2) This task removes the oil from the IDG system and replaces it with new oil.

(3) 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.

(4) The oil volume for the IDG and external cooling circuit is as follows:

(a) IDG oil volume - 6.84 qt (6473.05 cc).

(b) External cooling circuit oil volume - 2.16 qt (2044.12 cc).

(c) Total oil volume - 9 qt (8517 cc).

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)
71-00-00-800-807-F00	Start the Engine Procedure (Selection) (P/B 201)
71-11-02-010-801-F00	Open the Fan Cowl Panels (P/B 201)
71-11-02-410-801-F00	Close the Fan Cowl Panels (P/B 201)

C. 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, A/P Effectivity: 737-ALL) (Opt Part #: UZ/7/1826, Supplier: K6057, A/P Effectivity: 737-ALL)
COM-1537	Cart - Servicing, Engine Oil (Part #: PF53361-2PWS, Supplier: 94861, A/P Effectivity: 737-ALL) (Part #: PF53361-8PWS, Supplier: 94861, A/P Effectivity: 737-ALL) (Part #: PF53481-8PWS, Supplier: 94861, A/P Effectivity: 737-ALL) (Part #: PF55451-2WS, Supplier: 94861, A/P Effectivity: 737-ALL) (Part #: PF55451-7WS, Supplier: 94861, A/P Effectivity: 737-ALL)
COM-1542	Dispenser - Oil, One Quart (1 Liter) Container (Part #: 7011, Supplier: K6057, A/P Effectivity: 737-ALL) (Part #: MODEL 150, Supplier: 94861, A/P Effectivity: 737-ALL) (Part #: WF150-1, Supplier: 94861, A/P Effectivity: 737-ALL) (Opt Part #: UZ/7/1826, Supplier: K6057, A/P Effectivity: 737-ALL)
STD-1055	Container - Oil Resistant, 5 Gallon (19 Liters)

D. Consumable Materials

Reference	Description	Specification
D00068	Oil - Aircraft Turbine Engine, Synthetic Base	MIL-PR˜ F-23699F, Class STD (Standard)
D00071	Oil - Aircraft Turbine Engine, Synthetic Base	MIL-PRF-7808, Grade 3

(Continued)

Reference	Description	Specification
G01048	Lockwire - Corrosion Resistant Steel (0.032 In. Dia.)	NASM20995~ C32

E. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
2	O-ring	24-11-11-50-025	HAP ALL

F. Location Zones

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

G. Prepare for oil change

SUBTASK 12-13-21-010-002

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

H. Procedure

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 GOGGLES AND OTHER EQUIPMENT FOR PROTECTION OR LET THE ENGINE BECOME COOL. HOT OIL CAN BURN YOU.

(1) Change the IDG oil as follows:

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

(a) Push the PUSH-TO-VENT VALVE for a minimum of 15 seconds.

(b) Place an oil resistant container (5 gal)(19 Liters), STD-1055 below the IDG to catch the oil.

(c) Remove the lockwire from the case drain plug on the IDG.

(d) Remove the case drain plug [1], and let the oil drain into the container.

(e) Remove the used o-ring [2] from case drain plug and discard.

(f) Replace the IDG Scavenge and Charge Filters.

These are the tasks:IDG Scavenge and Charge Filter Removal, TASK 24-11-41-000-801, 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 cart, 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 using a maximum of 40 psi (276 kPa).

1) Pump oil into IDG until approximately 3 qt (2839 cc) to 4 qt (3785 cc) of oil drains from the IDG drain port.

NOTE: The 3 qt (2839 cc) to 4 qt (3785 cc) does not include the oil that was drained when the drain plug was removed.

(j) Apply oil, D00071 or oil, D00068 to new o-ring [2].

(k) Install new o-ring [2] onto case drain plug.

(l) Install case drain plug [1] on the IDG.

(m) Tighten the case drain plug to 65 ±10 in-lb (7 ±1 N·m).

(n) Install lockwire, G01048.

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

(p) If the IDG oil was changed because of possible contamination, do the steps that follow:

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

2) Operate the engine for 20-30 minutes. To operate the engine, do this task: Start the Engine Procedure (Selection), TASK 71-00-00-800-807-F00.

3) Repeat the IDG Oil Change Task.

I. Put the airplane in its usual condition.

SUBTASK 12-13-21-010-003

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

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

(a) You must do this task if you change oil types.

(4) Fill the APU gearbox.

B. You must drain the oil while the APU is warm from the operation, the last APU usual shutdown occurred in less than one hour or the oil temperature is more than 160°F (71°C). If it is necessary, start and operate the APU for two to five minutes. Permit the oil temperature to increase to the usual operation temperature. Stop the APU and drain the oil.

C. The auxiliary power unit is referred to as the APU.

TASK 12-13-31-200-801

2. APU Oil Level Inspection

(Figure 301)

A. General

HAP ALL; AIRPLANES WITH APU SOFTWARE PART NUMBER PRIOR TO 491A-TUS-A04-00

(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. If you do the APU BITE procedure, you must examine the APU oil level in the no APU operation (APU shutdown) condition. 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.

HAP ALL; AIRPLANES WITH APU SOFTWARE PART NUMBER 491A-TUS-A04-00 and on.

(2) 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. 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. 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.

HAP ALL

B. References

Reference	Title
49-61-00-700-801	APU BITE Procedure (P/B 201)

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 12-13-31-860-012

(1) Make sure the APU master switch on the P5 forward overhead panel is OFF.

SUBTASK 12-13-31-740-001

(2) Get access to the OIL QUANTITY REPORT page from the MAIN MENU page for the APU BITE TEST on the control display unit (CDU). To get access to the OIL QUANTITY REPORT page, do these steps:

(a) Get access to the MAIN MENU page for the APU BITE TEST. To get access to the MAIN MENU page, do this task: APU BITE Procedure, TASK 49-61-00-700-801.

(b) Get access to the OIL QUANTITY REPORT page by pushing the line select key adjacent to OIL QUANTITY > on the MAIN MENU page.

NOTE: The OIL QUANTITY REPORT page shows on the CDU display.

(c) If the OIL QUANTITY REPORT page shows FULL for the oil level, the APU oil level is satisfactory.

NOTE: If the oil level shows FULL, you will not see the APU hours for a FULL oil condition.

(d) If the OIL QUANTITY REPORT page shows ADD for the oil level, you must add oil to the APU gearbox in 30-50 APU hours.

(e) If the OIL QUANTITY REPORT page shows LOW for the oil level, do this task: Fill the APU Gearbox, TASK 12-13-31-610-803.

NOTE: If the oil level shows ADD or LOW, you will see the APU hours from the first time the electronic control unit senses this ADD or LOW oil condition.

F. APU Oil Level Inspection - Oil Sight Glass Procedure

SUBTASK 12-13-31-860-001

(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 after one hour from an APU usual shutdown to let the oil decrease in temperature (less than 160°F (71°C)). After one hour, the oil sight glass will show the correct oil level in the APU gearbox.

SUBTASK 12-13-31-010-001

(2) Open this access door. To open this access door, do these steps:

Number	Name/Location
315A	APU Cowl Door

(a) Open the three latches.

(b) Open the APU Cowl Door, 315A.

(c) Remove the retainer pin from the rod end of the forward hold-open rod on the APU Cowl Door, 315A.

(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. 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.

(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.

(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. To close this access door, do these steps:

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, 315A.

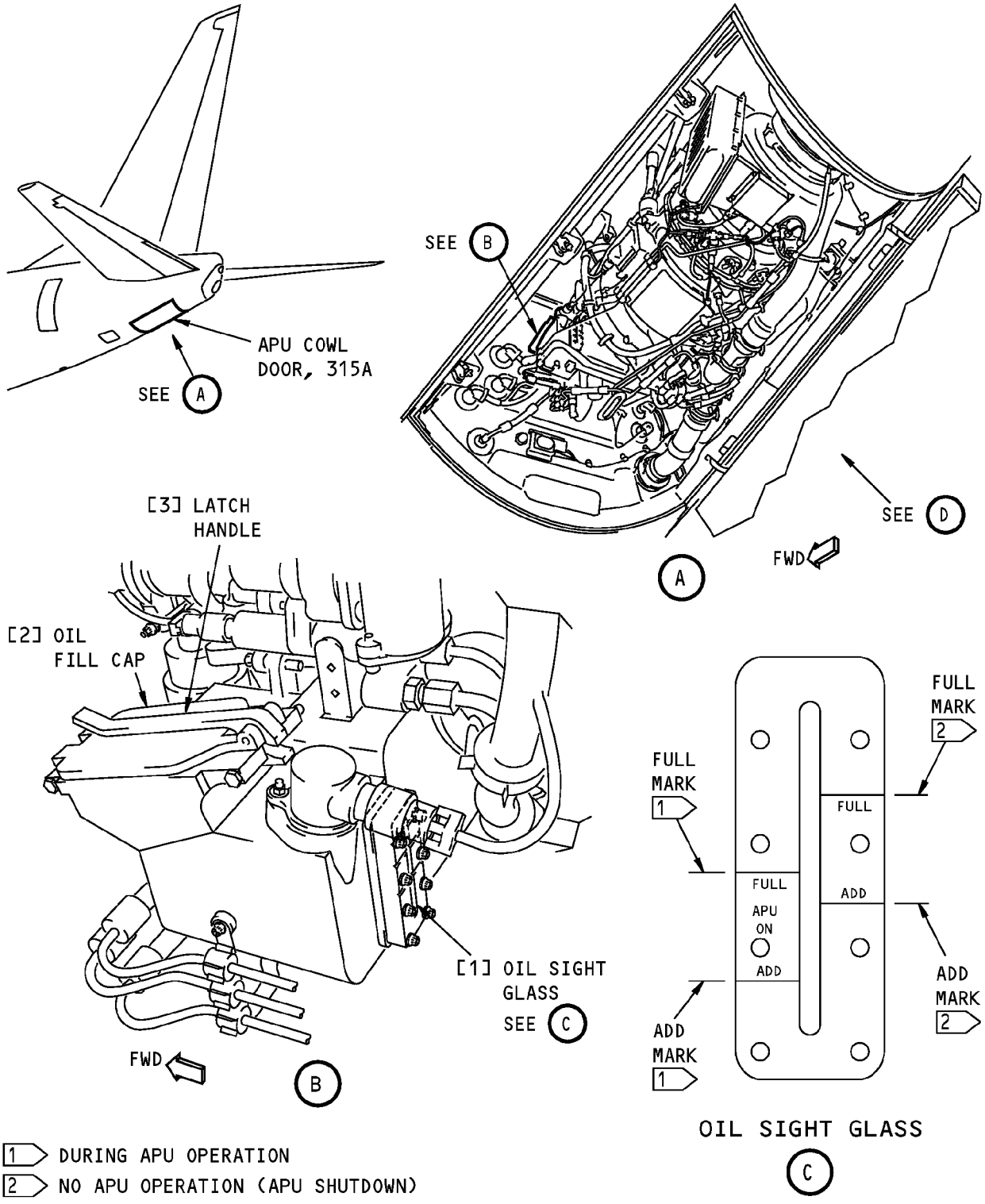
(d) Install the retainer pin in the rod end of the forward hold-open rod.

(e) Install the retainer pin to the spring clip on the aft hold-open rod.

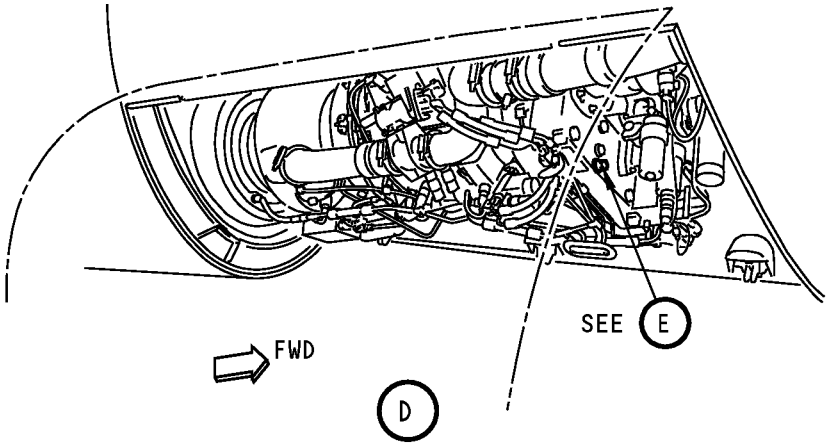
(f) Close the APU Cowl Door, 315A.

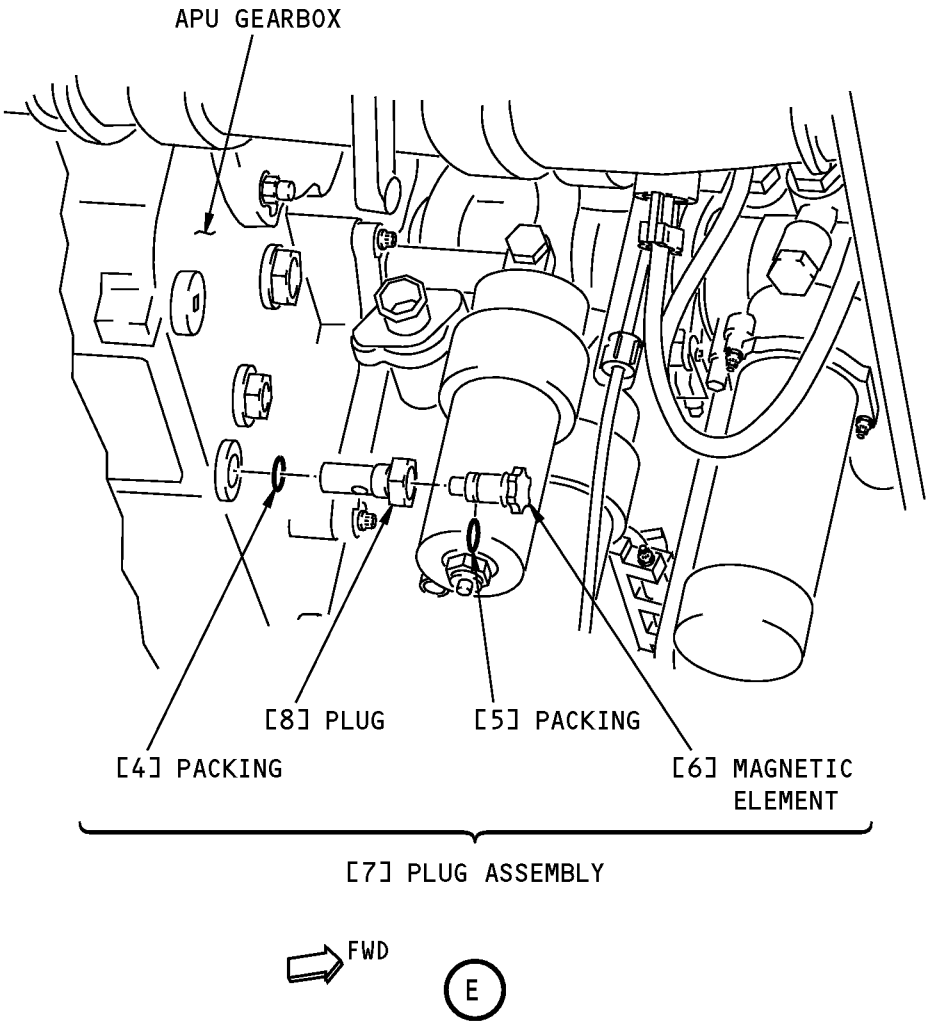
(g) Close the three latches.

END OF TASK



APU Gearbox Servicing
Figure 301 (Sheet 1 of 2)/12-13-31-990-801





APU Gearbox Servicing
Figure 301 (Sheet 2 of 2)/12-13-31-990-801

TASK 12-13-31-610-801

3. Drain the APU Oil

(Figure 301)

A. 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)

B. Tools/Equipment

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

C. Consumable Materials

Reference	Description	Specification
D00068	Oil - Aircraft Turbine Engine, Synthetic Base	MIL-PR˜ F-23699F, Class STD (Standard)
D00071	Oil - Aircraft Turbine Engine, Synthetic Base	MIL-PRF-7808, Grade 3
D00341	Lubricant - Polyphenyl Ether, Vacuum Pump - Santovac 5	
G01048	Lockwire - Corrosion Resistant Steel (0.032 In. Dia.)	NASM20995˜ C32

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
4	Packing	49-91-81-01-040	HAP 001-013, 015-026, 028-030
		49-91-81-02-035	HAP 031-054, 101-999
5	Packing	49-91-81-01-030	HAP 001-013, 015-026, 028-030
		49-91-81-02-030	HAP 031-054, 101-999
7	Plug assembly	49-91-81-01-025	HAP 001-013, 015-026, 028-030
		49-91-81-02-025	HAP 031-054, 101-999

E. Location Zones

Zone	Area
211	Flight Compartment - Left
315	APU Compartment - Left
316	APU Compartment - Right

F. Access Panels

Number	Name/Location
315A	APU Cowl Door

G. Prepare to Drain the APU Oil

SUBTASK 12-13-31-860-003

(1) Make sure the APU master switch on the P5 forward overhead panel is OFF and install a DO-NOT-OPERATE tag.

SUBTASK 12-13-31-860-004

(2) 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

(3) Open this access panel:

Number	Name/Location
315A	APU Cowl Door

(a) Open this access panel as follows:

1) Open the three latches.
2) Remove the retainer pin from the rod end of the forward hold-open rod on this access panel.
3) Remove the retainer pin from the spring clip on the aft hold-open rod.
4) Disconnect the two hold-open rods from the two spring clips.
5) Connect the two rod ends of the two hold-open rods to the two brackets in the APU compartment.
6) Install the two retainer pins in the two rod ends.

SUBTASK 12-13-31-860-005

(4) Do these steps if the time between the last APU usual shutdown and the start of draining the APU oil is 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 from the APU master switch on the P5 forward overhead panel.

(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 you operate the APU, 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 to the APU master switch on the P5 forward overhead panel.

(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

H. Procedure

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 [6] and turn the magnetic element counterclockwise for the removal.

NOTE: The plug assembly [7] has the magnetic element [6] and the plug [8].

(b) Remove the packing [5] from the magnetic element [6].

1) Discard the packing [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 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 PROTECTIVE CLOTHES, GOGGLES, AND EQUIPMENT, OR LET THE APU 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 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:

(a) Put the oil resistant container (5 gal)(19 Liters), STD-1055 below the plug [8].

CAUTION: IF THE OIL LEVEL IS AT THE TOP OF THE OIL SIGHT GLASS, THE OIL CAN FLOW OUT WHEN THE OIL FILL CAP IS LOOSENED. HOT OIL CAN BURN YOU.

(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 the plug [8] from the APU gearbox.

(e) Use the oil resistant container (5 gal)(19 Liters), STD-1055 to drain the oil from the APU gearbox.

(f) Remove the packing [4] from the plug [8].

1) Discard the packing [4].

(g) Remove the oil resistant container (5 gal)(19 Liters), STD-1055.

(h) Close the oil fill cap [2].

(i) Engage the latch handle [3] on the oil fill cap [2].

(j) Do these steps to install the plug assembly [7]:

NOTE: The plug assembly [7] has the plug [8] and the magnetic element [6]. You install the plug [8] in the APU gearbox. You then install the magnetic element [6] in the plug [8].

1) Lubricate the new packing [4] and new packing [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 80 in-lb (9.0 N·m)-90 in-lb (10.2 N·m).

4) Install the lockwire, G01048 on the plug [8].

5) Install the packing [5] on the magnetic element [6].

6) Install the magnetic element [6] in the plug [8].

NOTE: Push in on the magnetic element [6] and turn the magnetic element clockwise for the installation.

SUBTASK 12-13-31-860-010

(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
49-91-12-000-802	Lube Filter Element Removal (P/B 401)
49-91-12-000-803	Starter-Generator Filter Element Removal (P/B 401)
49-91-12-400-802	Lube Filter Element Installation (P/B 401)
49-91-12-400-803	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. Procedure

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) Replace the lube filter element.

These are the tasks:Lube Filter Element Removal, TASK 49-91-12-000-802,Lube Filter Element Installation, TASK 49-91-12-400-802

(c) Replace the starter-generator filter element.

These are the tasks:

Starter-Generator Filter Element Removal, TASK 49-91-12-000-803,

Starter-Generator Filter Element Installation, TASK 49-91-12-400-803.

(d) Do this task: Fill the APU Gearbox, TASK 12-13-31-610-803.

(e) Do this task: Drain the APU Oil, TASK 12-13-31-610-801.

(f) Do this task: Fill the APU Gearbox, TASK 12-13-31-610-803.

(g) Attach a service tag to the APU to show the oil brand and/or oil type in the APU gearbox.

END OF TASK

TASK 12-13-31-610-803

5. Fill the APU Gearbox

(Figure 301)

A. General

(1) This procedure gives the steps necessary to fill the 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 quarts (5.4 liters). The oil fill cap is located on the left side of the APU gearbox.

(3) APU OIL LEVEL INSPECTION - APU BITE PROCEDURE;

Before you fill the APU gearbox with oil, there are two initial conditions for the electronic control unit and the airplane:

NOTE: The two initial conditions are necessary if you do the APU BITE procedure for the APU oil level inspection or troubleshooting low oil quantity problems in the FIM.

(a) The first condition is that the power to the electronic control unit must be removed and then applied to show the correct oil level indication. 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. To remove and then apply power to the electronic control unit, the APU master switch is in the OFF position and then you do the APU BITE procedure.

(b) The second condition is that the air/ground switch must show GRD on the INPUT MONITORING page for the APU BITE procedure.

(4) Use only these types and brands of oil:

(a) MIL-PRF-7808, Type I (-65°F to 130°F, -54°C to 54°C):

1) BP Aero Turbine Oil 15
2) BP Turbo Oil 2389
3) Brayco 880
4) Castrol 399
5) Mobil Avrex S Turbo 256.

(b) Def Stan 91-94, Type I (-65°F to 130°F, -54°C to 54°C):

1) Aeroshell Turbine Oil 390
2) Castrol 325.

(c) MIL-PRF-23699, Type II (-40°F to 130°F, -40°C to 54°C):

1) BP Turbo Oil 2197
2) BP Turbo Oil 2380
3) Brayco 899
4) Castrol 5000
5) Castrol 5050
6) Hatcol 3211
7) Hatcol 3611
8) Mobil Jet Oil II

9) Mobil Jet Oil 254
10) Mobil Jet Oil 291
11) Royco 899
12) Royco or Aeroshell Turbine Oil 500
13) Royco or Aeroshell Turbine Oil 560.

(d) DOD-L-85734 or Def Stan 91-100, Type II (-40°F to 130°F, -40°C to 54°C):
1) BP Turbo Oil 25
2) Royco or Aeroshell Turbine Oil 555.

(e) Def Stan 91-98, Type II (-40°F to 130°F, -40°C to 54°C):
1) Castrol 98.

B. References

Reference	Title
32-09-00-860-802	Return the Airplane to the Ground Mode (P/B 201)
49-11-00-860-801	APU Starting and Operation (P/B 201)
49-11-00-860-802	APU Usual Shutdown (P/B 201)
49-61-00-700-801	APU BITE Procedure (P/B 201)

C. Consumable Materials

Reference	Description	Specification
D00068	Oil - Aircraft Turbine Engine, Synthetic Base	MIL-PR˜ F-23699F, Class STD (Standard)
D00071	Oil - Aircraft Turbine Engine, Synthetic Base	MIL-PRF-7808, Grade 3
D00513	Oil - Turbine - Aeroshell 555	
D00612	Oil - Assembly - Castrol 98	
D00635	Oil - Engine - Aeroshell 390	
D00636	Oil - Engine - Castrol 325	
D00671	Oil - Engine - BP Turbo Oil (BPTO) 25	DO˜ D-L-85734(AS) and DEF STAN 91-100/1 (DERD 2497)

D. Location Zones

Zone	Area
211	Flight Compartment - Left
315	APU Compartment - Left

E. Access Panels

Number	Name/Location
315A	APU Cowl Door

F. Prepare to Fill the APU Gearbox

SUBTASK 12-13-31-860-013

(1) Make sure the APU master switch on the P5 forward overhead panel is OFF and install a DO-NOT-OPERATE tag.

SUBTASK 12-13-31-740-002

(2) APU OIL LEVEL INSPECTION - APU BITE PROCEDURE;

Do a check of the oil quantity in the APU gearbox and the position of the air/ground switch:

(a) Do this task: APU BITE Procedure, TASK 49-61-00-700-801.

1) Look at the OIL QUANTITY REPORT page or the MAINTENANCE HISTORY page on the CDU display.

2) Make sure the OIL QUANTITY REPORT page shows ADD or LOW.

NOTE: If the OIL QUANTITY REPORT page shows ADD, there is a maximum of 4.3 quarts (4.1 liters) of oil in the APU gearbox. If the OIL QUANTITY REPORT page shows LOW, there is a maximum of 3.8 quarts (3.6 liters) of oil in the APU gearbox.

NOTE: If there was an APU protective shutdown for low oil pressure, there is a maximum of 0.7 quart (0.7 liter) of oil in the APU gearbox.

3) Make sure the MAINTENANCE HISTORY page shows LOW OIL QUANTITY.

NOTE: If the MAINTENANCE HISTORY page shows LOW OIL QUANTITY, there is a maximum of 3.8 quarts (3.6 liters) of oil in the APU gearbox.

4) Push the line select key adjacent to < INDEX to go back to the MAIN MENU page.

5) Push the line select key adjacent to < INPUT MONITORING to get access to the INPUT MONITORING page.

6) Push the next page key (NEXT PAGE) to go to the second page which shows the position of the air/ground switch (AIR/GROUND).

7) Make sure the position of the air/ground switch shows GRD. If the air/ground switch shows AIR, do this task: Return the Airplane to the Ground Mode, TASK 32-09-00-860-802.

8) Push the line select key adjacent to < INDEX to go back to the MAIN MENU page.

SUBTASK 12-13-31-860-007

(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 12-13-31-010-003

(4) Open this access panel:

Number	Name/Location
315A	APU Cowl Door

(a) Open this access panel as follows:

1) Open the three latches.

2) Remove the retainer pin from the rod end of the forward hold-open rod on this access panel.

3) Remove the retainer pin from the spring clip on the aft hold-open rod.

4) Disconnect the two hold-open rods from the two spring clips.

5) Connect the two rod ends of the two hold-open rods to the two brackets in the APU compartment.

6) Install the two retainer pins in the two rod ends.

G. Procedure

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 PROTECTIVE CLOTHES, GOGGLES, AND EQUIPMENT, OR LET THE APU 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 APU OR OTHER COMPONENTS. IMMEDIATELY CLEAN THE OIL WHEN IT FALLS ON THEM. OIL CAN CAUSE DAMAGE TO PAINT AND RUBBER.

(1) Do these steps to fill the APU gearbox with oil:

(a) Pull the latch handle [3] away from the oil fill cap [2].

(b) Open the oil fill cap [2].

WARNING: OIL CAN FLOW OUT OF THE APU GEARBOX WHEN YOU ADD OIL TO THE FULL MARK ON THE OIL SIGHT GLASS. BE CAREFUL WHEN YOU ADD THE OIL NEAR THE FULL MARK TO NOT LET OIL GET ON YOU AND TO PREVENT OIL CONTAMINATION ON THE APU OR OTHER 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.

CAUTION: DO NOT OVERFILL THE APU GEARBOX. THE APU GEARBOX IS OVERFILLED IF THE OIL LEVEL IS ABOVE THE FULL MARK.

(c) Slowly add the oil, D00071, oil, D00068, Aeroshell 390 oil, D00635, Castrol 325 oil, D00636, BP Turbo Oil 25, D00671, Aeroshell 555 oil, D00513 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: It is recommended that you use oil, D00071, Aeroshell 390 oil, D00635 or Castrol 325 oil, D00636 if the APU will be started in very cold conditions below -40°F(-40°C).

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 quarts (5.4 liters).

(d) Close the oil fill cap [2].

(e) Engage the latch handle [3] on the oil fill cap [2].

H. Oil Check

SUBTASK 12-13-31-860-008

(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 12-13-31-860-009

(2) Remove the DO-NOT-OPERATE tag from the APU master switch on the P5 forward overhead panel.

SUBTASK 12-13-31-790-001

(3) If you drain or flush the oil from the APU gearbox, do a leak check for the plug assembly [7]:

(a) Do this task: APU Starting and Operation, TASK 49-11-00-860-801.

(b) During the APU operation, 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 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 from the APU master switch on the P5 forward overhead panel.

5) Do this task: APU Starting and Operation, TASK 49-11-00-860-801.

6) During the APU operation, 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, do this task: APU Usual Shutdown, TASK 49-11-00-860-802.

(e) Make sure the APU oil system is full. To do a check of the oil level, do this task: APU Oil Level Inspection, TASK 12-13-31-200-801.

I. Put the Airplane Back to Its Usual Condition

SUBTASK 12-13-31-410-002

(1) Close this access panel:

Number	Name/Location
315A	APU Cowl Door

(a) Close this access panel as follows:

1) Remove the two retainer pins from the two hold-open rods in the APU compartment.

2) Disconnect the two hold-open rods from the two brackets.

3) Put the two hold-open rods in the two spring clips on this access panel.
4) Install the retainer pin in the rod end of the forward hold-open rod.
5) Install the retainer pin to the spring clip on the aft hold-open rod.
6) Close the three latches.

—————— END OF TASK ——————

POTABLE WATER SYSTEM - SERVICING

1. General

A. This procedure has these tasks:

(1) Potable water system - drain

(2) Potable water tank - fill

TASK 12-14-01-600-801

2. Potable Water System - Drain

(Figure 301, Figure 302)

A. Location Zones

Zone	Area
200	Upper Half of Fuselage

B. Access Panels

Number	Name/Location
146AR	Water Service Door

C. Drain the Potable Water System

SUBTASK 12-14-01-010-001

(1) Open this access panel:

Number	Name/Location
146AR	Water Service Door

SUBTASK 12-14-01-480-001

(2) 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 12-14-01-860-007

(3) Make sure 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 12-14-01-680-001

(4) 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 the water system aft of the wings.

SUBTASK 12-14-01-680-002

(5) Make sure 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 12-14-01-680-003

(6) 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 12-14-01-680-004

(7) If it is installed, open the drain valve to drain the water from each coffee maker or water boiler.

SUBTASK 12-14-01-680-005

(8) 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 12-14-01-860-002

(9) Make sure the potable water system is empty.

SUBTASK 12-14-01-040-001

(10) If you do not fill the potable water tank immediately after you drain the system, do these steps:

(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

Power Distribution Panel Number 1, P91

Row	Col	Number	Name
HAP 001-013, 015-026, 028-036			
A	18	C00873	POT WATER COMPRESSOR
HAP ALL			
C	9	C00138	WATER QTY IND
HAP 037-054, 101-999			
D	11	C00873	POT WATER COMPRESSOR
HAP ALL			

SUBTASK 12-14-01-860-003

(11) If it is installed, move the drain valve for each coffee maker or water boiler to the CLOSED position.

SUBTASK 12-14-01-860-004

(12) Move the drain valve in forward lavatory to the CLOSED position.

SUBTASK 12-14-01-860-005

(13) Turn the handle for the drain valve on the water service panel to close the water tank drain valve.

SUBTASK 12-14-01-080-001

(14) Disconnect the drain lines from the drain ports.

SUBTASK 12-14-01-410-001

(15) Close this access panel:

Number	Name/Location
146AR	Water Service Door

END OF TASK

TASK 12-14-01-600-802

3. Potable Water Tank - Fill

(Figure 301)

A. Tools/Equipment

Reference	Description
STD-1141	Equipment - Potable Water Servicing

B. Access Panels

Number	Name/Location
146AR	Water Service Door

C. Fill the Potable Water Tank

SUBTASK 12-14-01-480-002

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.

(1) Connect the service potable water servicing equipment, STD-1141 or the water source as follows:

(a) We recommend a water pressure of 25 psi (172 kPa).

NOTE: Do not use a water pressure of more than 55 psi (379 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 12-14-01-610-001

(2) Turn the handle to open the fill/overflow valve.

SUBTASK 12-14-01-610-002

(3) Start the water supply to the potable water tank.

SUBTASK 12-14-01-860-006

(4) Fill the potable water tank until you see water flow from the potable water drain/overflow port.

SUBTASK 12-14-01-610-003

(5) Stop the water supply to the potable water tank.

SUBTASK 12-14-01-710-001

(6) Turn the handle to close the fill/overflow valve.

SUBTASK 12-14-01-080-002

(7) Do these steps to disconnect the service potable water servicing equipment, STD-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 no water stays in the fill line.

NOTE: 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 12-14-01-440-001

(8) If the circuit breakers for the potable water system were opened after the system was drained, do these steps:

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

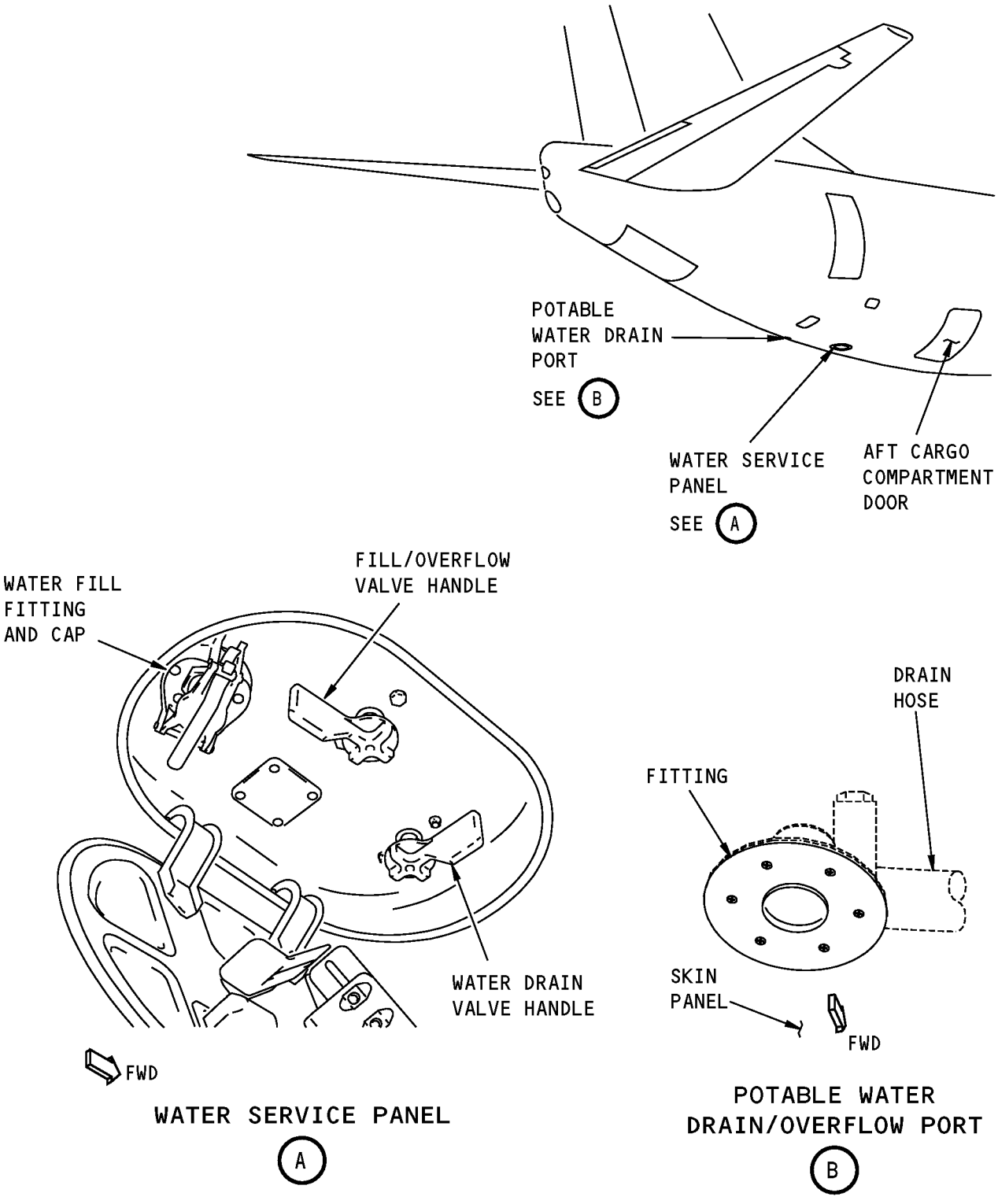
CAPT Electrical System Panel, P18-3

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

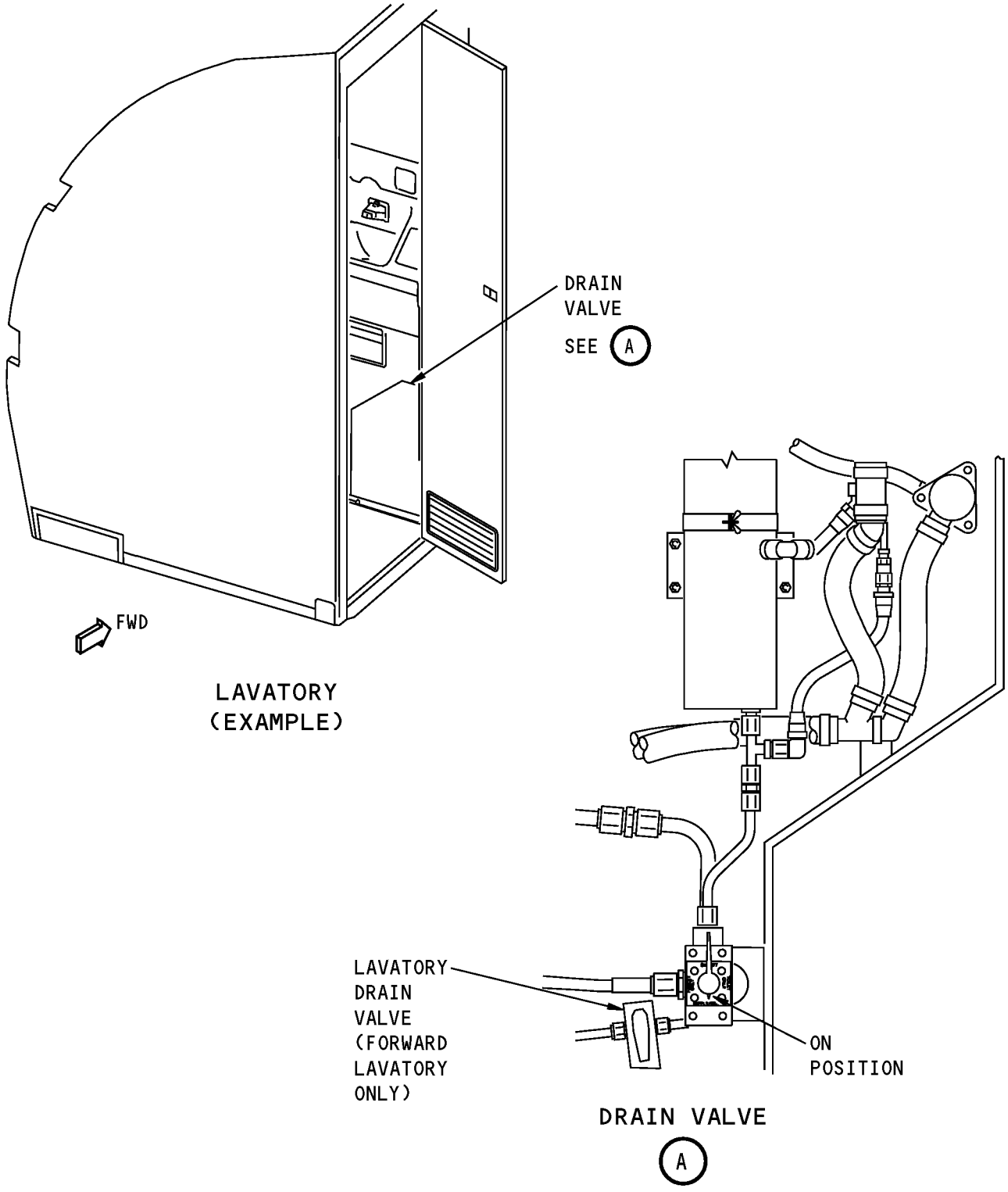
Power Distribution Panel Number 1, P91

Row	Col	Number	Name
HAP 001-013, 015-026, 028-036			
A	18	C00873	POT WATER COMPRESSOR
HAP ALL			
C	9	C00138	WATER QTY IND
HAP 037-054, 101-999			
D	11	C00873	POT WATER COMPRESSOR
HAP ALL			

——————— END OF TASK ———————



Potable Water System Servicing
Figure 301/12-14-01-990-801



Drain Valve Location
Figure 302/12-14-01-990-802

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 Precharge Pressure

(Figure 301)

A. General

(1) This procedure is a scheduled maintenance task.

B. References

Reference	Title
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. 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 Precharge 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 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 12-15-11-480-002

(2) Make sure the tires have chocks installed around them.

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) Operate the brake pedals until the pressure gage at the brake accumulator [104] shows no change in the pressure.

NOTE: You will have to operate the brake pedals approximately 12 times to fully release the oil pressure from the accumulator.

SUBTASK 12-15-11-860-003

(6) Wait ten minutes to allow accumulator gas to reach equilibrium.

SUBTASK 12-15-11-610-001

(7) Do the steps that follow to do a check of the accumulator precharge pressure:

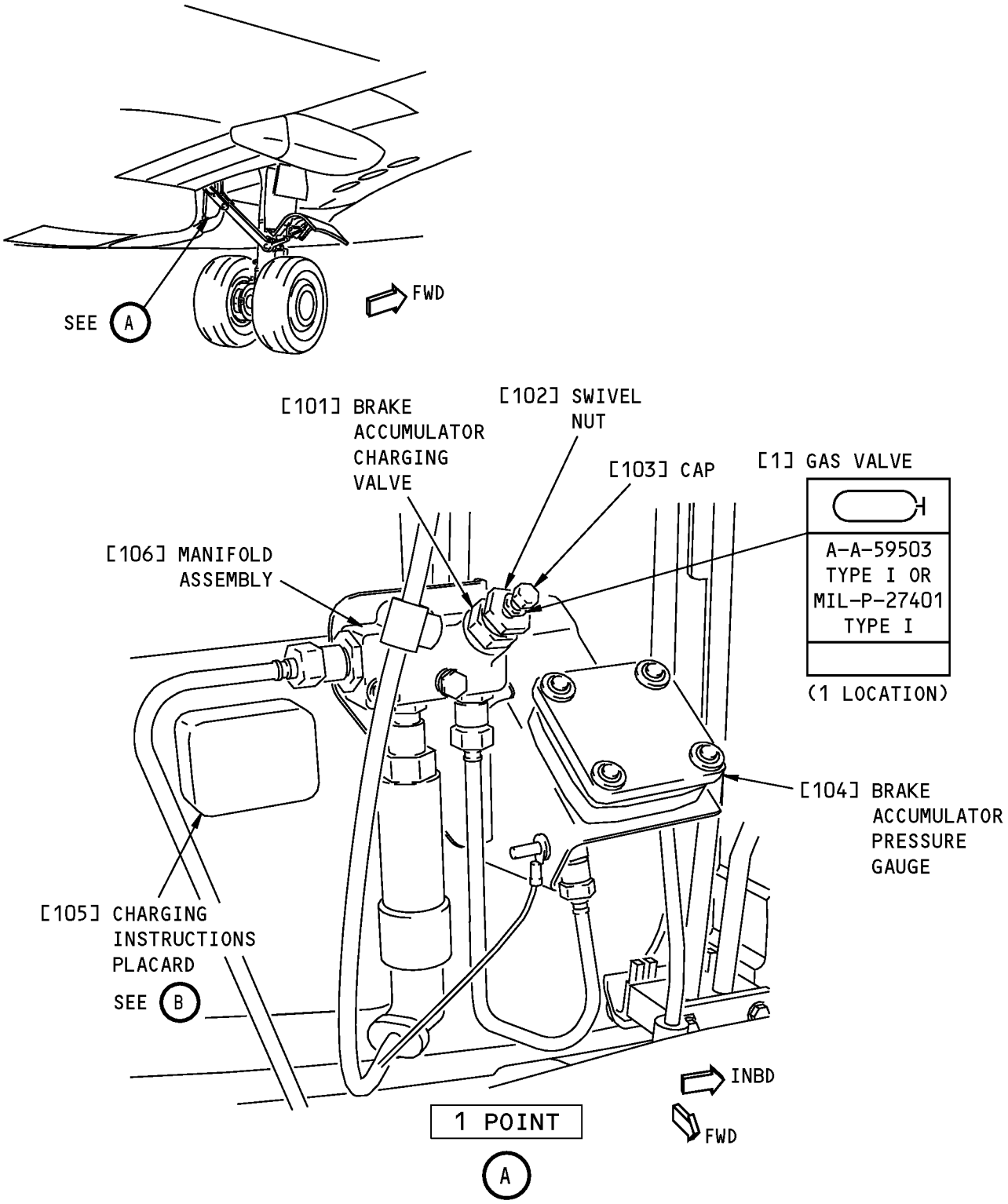
(a) Use the charging instructions placard [105] to find the correct accumulator pressure for the current ambient temperature of the airplane.

NOTE: The charging instructions placard [105] is located next to the brake accumulator pressure gage [104].

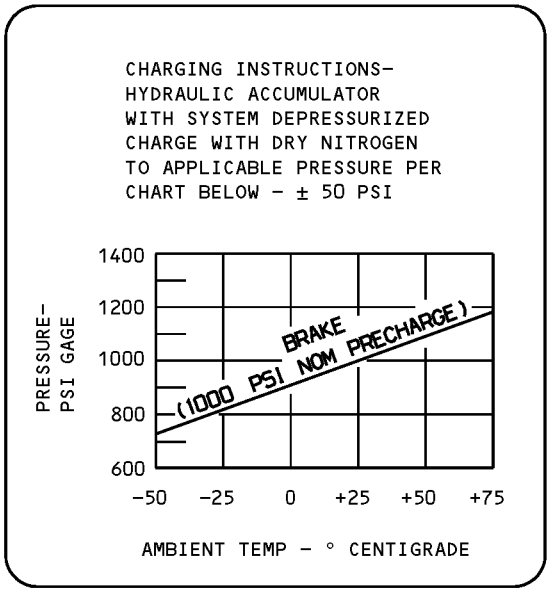
(b) Make sure the pressure that shows on the brake accumulator pressure gage [104] is within +/- 50 psi (+/- 300 kPa) of the pressure you obtained from the graph on the charging instructions placard [105].

(c) If the pressure shown on the pressure gage [104] is not in the correct pressure range of the charging instructions placard [105], do this task: Hydraulic Brake Accumulator Servicing, TASK 12-15-11-420-801.

END OF TASK



Hydraulic Brake Accumulator Servicing
Figure 301 (Sheet 1 of 2)/12-15-11-990-801



CHARGING INSTRUCTIONS PLACARD

B

Hydraulic Brake Accumulator Servicing
Figure 301 (Sheet 2 of 2)/12-15-11-990-801

TASK 12-15-11-420-801

3. Hydraulic Brake Accumulator Servicing

(Figure 301)

A. General

(1) This procedure is a scheduled maintenance task.

(2) 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 [105] adjacent to the brake accumulator pressure gage [104] to find the correct accumulator charge pressure for a given temperature (Figure 301).

(c) Use the brake accumulator pressure gage [104] adjacent to the charging valve [103] for indication of accumulator nitrogen gas pressure.

(d) The brake accumulator charging valve [103] 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
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. Consumable Materials

Reference	Description	Specification
G00018	Nitrogen - Gaseous, Pressurizing, 99.5 Percent Pure	A-A-59503, Type I, Grade B

D. 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

E. Hydraulic Brake Accumulator Servicing

SUBTASK 12-15-11-480-003

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 12-15-11-480-004

(2) Make sure the tires have chocks installed around them.

SUBTASK 12-15-11-860-012

(3) Release the parking brake.

SUBTASK 12-15-11-860-013

(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) Operate the brake pedals until the pressure gage at the brake accumulator [104] shows no change in the pressure.

NOTE: You will have to operate the brake pedals approximately 12 times to fully release the oil pressure from the accumulator.

SUBTASK 12-15-11-860-014

(6) Wait ten minutes to allow accumulator gas to reach equilibrium.

SUBTASK 12-15-11-610-002

(7) Do these steps to charge the brake accumulator:

(a) Remove the cap [103] from the brake accumulator charging valve [101].

(b) Attach a source of nitrogen, G00018, to the brake accumulator charging valve [101] (Table 301).

WARNING: DO NOT LOOSEN THE BODY OF THE HYDRAULIC BRAKE ACCUMULATOR CHARGING VALVE. THE PRESSURE IN THE BRAKE ACCUMULATOR CAN QUICKLY PUSH THE BRAKE ACCUMULATOR CHARGING VALVE OFF THE MANIFOLD ASSEMBLY. THIS CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(c) Turn the outer swivel nut [102] of the brake accumulator charging valve [101] one turn counterclockwise.

(d) Pressurize the brake accumulator to the correct pressure shown on the charging instructions placard [105] next to the brake accumulator pressure gage [104].

NOTE: Use the brake accumulator pressure gage for indication of the brake accumulator pressure.

NOTE: If a large charge was required to service the brake accumulator (for example from 0 psi to precharge pressure), wait ten minutes to allow the accumulator gas temperature to reach equilibrium and to make sure the precharge pressure is maintained.

(e) Turn the outer swivel nut [102] of the brake accumulator charging valve clockwise until it is tight.

Table 301/12-15-11-993-802 Main Landing Gear Brake Accumulator Servicing (Fig. 301)

Item No.	Nomenclature	Fluid	Method of Application	Number of Locations
1	Gas Valve	BB-N-411 Type I, or MIL-P-27401 Type I	Charge	1

(f) Operate the brake pedals until the pressure gage at the brake accumulator [104] shows no change in the pressure.

NOTE: You will have to operate the brake pedals approximately 12 times to fully release the oil pressure from the accumulator.

(g) Wait ten minutes to allow the accumulator gas to reach equilibrium.

(h) Make sure the pressure that shows on the brake accumulator pressure gage [104] is within +/-50 psi (+/-300 kPa) of the pressure you obtained from the graph on the charging instructions placard [105]. If not, repeat steps (c) through (h) until the precharge pressure stabilizes within placard [105] requirements.

SUBTASK 12-15-11-610-003

(8) Do these steps to make sure the brake accumulator pressure does not decrease.

(a) To pressurize the hydraulic system B to 3000 psi (21000 kPa), do this task: Hydraulic System A or B Pressurization, TASK 29-11-00-860-801.

(b) Make sure the brake accumulator pressure gage reads 3000 psi (21000 kPa) +/- 150 psi (1000 kPa).

(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) Operate the brake pedals until the brake accumulator pressure gage [104] shows no change in the pressure.

NOTE: You will have to operate the brake pedals approximately 12 times to fully release the oil pressure from the accumulator.

(e) Wait ten minutes to allow accumulator gas to reach equilibrium.

(f) Make sure the pressure that shows on the brake accumulator pressure gage [104] is within +/- 50 psi (+/- 300 kPa) of the pressure you obtained from the graph on the charging instructions placard [105].

SUBTASK 12-15-11-610-004

(9) Disconnect the source of nitrogen, G00018, from the brake accumulator charging valve [101].

SUBTASK 12-15-11-610-005

(10) Install the cap [103] on the brake accumulator charging valve [101].

SUBTASK 12-15-11-790-001

(11) 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 marker [105]

(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 [106].

3) The gas pressure tube connections to the brake accumulator pressure gage [104].

4) The brake accumulator charging valve [103].

END OF TASK

OXYGEN - SERVICING

1. General

A. This procedure contains scheduled maintenance task data.

B. This procedure contains this task:

(1) Crew Oxygen Cylinder Replacement

(2) Crew Oxygen Cylinder Dispatch Pressure Check.

TASK 12-15-21-600-801-001

2. Crew Oxygen Cylinder Replacement

(Figure 301)

A. General

(1) This procedure is a scheduled maintenance task.

(2) The crew oxygen system is serviced by the replacement of the crew oxygen cylinder installed in the forward cargo bay.

(3) The passenger oxygen system is serviced with the replacement of the chemical generators which are installed behind their respective service units (PSUs, ASUs and LSUs).

(4) The portable oxygen cylinders are serviced by the replacement of the used portable oxygen cylinders with fully-serviced portable oxygen cylinders.

(5) Steel oxygen cylinder and composite oxygen cylinder may be used interchangeably on the same cylinder support structure.

(a) Do these steps only if there was a replacement between a steel and composite oxygen cylinder.

NOTE: There is a weight difference of approximately 15 pounds between a steel and composite oxygen cylinder.

(b) Do a weight and balance change record on the aircraft.

(6) Oxygen Requirements

(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 aviation grade oxygen that you can breathe.

(e) Oxygen other than aviation grade can be satisfactory for you to breathe, but can contain too much water.

1) Too much water in the oxygen system can freeze and cause blockage in oxygen lines and cause problems with the operation of oxygen system regulators and valves.

2) The moisture content must not be more than 0.005 milligrams of water vapor for each liter of gas at a temperature of 70°F (21°C) and a pressure of 760 millimeters of mercury.

3) Refer to SAE (AS 1065) for the permitted moisture quantity.

B. References

Reference	Title
20-10-44-400-801	Lockwires Installation (P/B 401)
20-40-11-910-801	Static Grounding (P/B 201)
35-00-00-420-801	Installation of Caps on Open Oxygen Lines (P/B 201)

(Continued)

Reference	Title
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)

C. Consumable Materials

Reference	Description	Specification
G00034	Cotton Wiper - Process Cleaning Absorbent Wiper (Cheesecloth, Gauze)	BMS15-5
G01912	Lockwire - Monel (0.032 In. Dia.)	NASM20995N~ C32 (QQ-N-281)
G02479	Lockwire - Copper (0.020 inch Diameter)	NASM20995~ CY20
G50306	Compound - Leak Detection, Oxygen System	MIL-PRF-25567 (BAC5402)

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
4	Cylinder	35-12-52-01-050	HAP 001-013, 015-026, 028-030
		35-12-52-01-055	HAP 001-013, 015-026, 028-030
		35-12-52-01-065	HAP 001-013, 015-026, 028-030
		35-12-52-01A-050	HAP 031-054, 101-999
		35-12-52-01A-055	HAP 031-054, 101-999
		35-12-52-01A-060	HAP 051-053
		35-12-52-01A-065	HAP 031-054, 101-999

E. Location Zones

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

F. Access Panels

Number	Name/Location
821	Forward Cargo Door

G. Prepare for the Removal of the Crew Oxygen Cylinder

SUBTASK 12-15-21-910-001-001

(1) To read and obey the safety precautions and general instructions for the oxygen system before you do the servicing, do this task: Oxygen System General Maintenance Practices, TASK 35-00-00-910-801.

SUBTASK 12-15-21-860-001-001

(2) To make sure the airplane is grounded correctly, do this task: Static Grounding, TASK 20-40-11-910-801.

SUBTASK 12-15-21-840-001-001

(3) Make sure that these items are clean:

(a) White gloves used to service oxygen system components

(b) Clothes

(c) Tools

(d) Oxygen cylinder

(e) Other items used to service the oxygen system.

SUBTASK 12-15-21-840-002-001

(4) Make sure all materials are free from contamination.

H. Remove the Crew Oxygen Cylinder

SUBTASK 12-15-21-870-001-001

(1) Do this task: Bleed the Crew Oxygen System Prior to System Maintenance or Repair, TASK 35-12-00-800-801.

SUBTASK 12-15-21-860-024-001

(2) Open this access panel:

Number	Name/Location
821	Forward Cargo Door

SUBTASK 12-15-21-010-001-001

(3) Remove the access panel in the forward cargo compartment to get access to the oxygen cylinder [4], (Figure 301).

SUBTASK 12-15-21-860-003-001

(4) Make sure the shutoff valve [8] is closed, and the crew oxygen supply line [2] is not pressurized.

SUBTASK 12-15-21-020-001-001

(5) Do this task: Regulator/Transducer Assembly Removal, TASK 35-12-11-000-801.

SUBTASK 12-15-21-480-001-001

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.

(6) If the installation of the regulator, transducer and coupling assembly [7] will not occur within five minutes, do this task: Installation of Caps on Open Oxygen Lines, TASK 35-00-00-420-801.

NOTE: Oxygen clean fittings come from a sealed package labeled for oxygen system installation. Make sure that you use only oxygen clean fittings. Some fittings used in the oxygen system are the same as fittings in other systems and are not oxygen clean. If it is necessary to clean parts, use the applicable oxygen procedures to clean the parts. This also applies to tube caps or plugs which must be as clean as the installation connections.

SUBTASK 12-15-21-020-002-001

(7) Disconnect the overboard discharge line [3] from the oxygen cylinder [4].

SUBTASK 12-15-21-020-003-001

(8) Do these steps to remove the oxygen cylinder [4].

(a) Remove the nut [6] from the T-bolt [10].

(b) Remove the aft cylinder ring [5].

NOTE: Keep the nut [6] and aft cylinder ring [5] at a safe place for installation later.

(c) Slide the oxygen cylinder [4] out from the oxygen cylinder rack [9].

(d) Remove the oxygen cylinder [4] from the airplane.

1) Put the protective cap for the oxygen cylinder on the outlet port.

SUBTASK 12-15-21-480-002-001

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 the installation of the oxygen cylinder [4] will not occur within five minutes, do this task: Installation of Caps on Open Oxygen Lines, TASK 35-00-00-420-801.

NOTE: Oxygen clean fittings come from a sealed package labeled for oxygen system installation. Make sure that you use only oxygen clean fittings. Some fittings used in the oxygen system are the same as fittings in other systems and are not oxygen clean. If it is necessary to clean parts, use the applicable oxygen procedures to clean the parts. This also applies to tube caps or plugs which must be as clean as the installation connections.

I. Install the Crew Oxygen Cylinder

SUBTASK 12-15-21-210-013

(1) Check the hydrostatic test date on the replacement cylinder [4]:

(a) Make sure that the oxygen cylinder hydrostatic test date complies with current regulations.

NOTE: The hydrostatic test date must be within the prescribed service life limit. The service life of the hydrostatic test is established by national regulatory authorities, the cylinder manufacturer, and/or the airline.

SUBTASK 12-15-21-860-004-001

(2) Do these steps to check the replacement oxygen cylinder [4].

(a) Make sure the replacement oxygen cylinder [4] is fully serviced.

(b) Make sure the replacement oxygen cylinder [4] is free from any contamination.

SUBTASK 12-15-21-860-005-001

(3) Do these steps to prepare the replacement oxygen cylinder [4] for the installation:

(a) Remove the lockwire or cotter pin(s) that hold the protective cap on the replacement oxygen cylinder [4].

(b) Slowly loosen the protective cap from the replacement oxygen cylinder [4].

(c) Bleed off any remaining gas before you fully remove the protective cap.

(d) Remove the protective cap.

SUBTASK 12-15-21-420-001-001

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.

(4) Do these steps to install the replacement oxygen cylinder [4]:

NOTE: Oxygen clean fittings come from a sealed package labeled for oxygen system installation. Make sure that you use only oxygen clean fittings. Some fittings used in the oxygen system are the same as fittings in other systems and are not oxygen clean. If it is necessary to clean parts, use the applicable oxygen procedures to clean the parts. This also applies to tube caps or plugs which must be as clean as the installation connections.

(a) Go to the forward cargo compartment with the replacement oxygen cylinder [4].

(b) Remove the protective caps and plugs from the overboard discharge line [3] and the crew oxygen supply line [2].

(c) Put the replacement oxygen cylinder [4] on the oxygen cylinder rack [9].

(d) Push the replacement oxygen cylinder [4] forward until it is fully engaged in the forward cylinder ring [1].

(e) Align the replacement oxygen cylinder [4] with the overboard discharge line [3].

(f) Connect the overboard discharge line [3] to the replacement oxygen cylinder [4].

(g) Push and hold the cylinder against the forward cylinder ring [1]. Then put the aft cylinder ring [5] in its installed position.

1) Continue to hold the cylinder [4] against the forward cylinder ring [1]. Then install the T-bolt [10] and the nut [6] to the aft cylinder ring [5].

2) Try to move the cylinder forward, then aft. If the cylinder moves, then continue tightening the nut [6] of the T-bolt.

NOTE: Make sure that one or more threads of the T-bolt extend through the nut. Do not tighten the nut too tight. This can cause the aft cylinder ring [5] to twist.

NOTE: Make sure the T-bolt holds the oxygen cylinder tightly to prevent all forward or aft movement.

SUBTASK 12-15-21-410-001-001

(5) Do this task: Regulator/Transducer Assembly Installation, TASK 35-12-11-400-801.

NOTE: This task does a leak check and an electrical check of the oxygen pressure indication.

SUBTASK 12-15-21-210-016

(6) Apply the leak detection leak detection compound, G50306 to the regulator, transducer and coupling assembly [7] and the cylinder [4].

(a) Look for bubbles to find all the leaks.

(b) Remove the leak detection compound, G50306 with a clean cotton wiper, G00034 immediately after the check.

(c) Make sure the fitting and connection are dry.

SUBTASK 12-15-21-210-009-001

(7) Make sure the protective cap for the oxygen cylinder is properly attached to the regulator to prevent damage to adjacent wiring or equipment.

J. Lockwire the Shutoff Valve and Test the System

SUBTASK 12-15-21-420-002-001

(1) When the oxygen system is satisfactory, do these steps to lockwire the shutoff valve [8] in the open position:

CAUTION: DO NOT TIGHTEN THE SHUTOFF VALVE ON EACH OXYGEN CYLINDER MORE THAN 25 IN-LB (3 N·M). TOO MUCH TORQUE CAN CAUSE DAMAGE TO THE SHUTOFF VALVE.

(a) Fully open the shutoff valve [8].

NOTE: The shutoff valve on the 801307-00 steel cylinder is fully open at approximately 6-7 revolutions. The shutoff valve on the B42365-1 composite cylinder is fully open at approximately 4–5 revolutions. The valve will stop turning when it is fully open

(b) Close the shutoff valve [8] one forth of a turn.

(c) Use lockwire, G01912 or lockwire, G02479 to hold the shutoff valve [8] in the open position.

1) Wrap the lockwire around the regulator, transducer and coupling assembly [7] in a counter-clockwise direction.

2) To do the double-twist method for the lockwire, do this task: Lockwires Installation, TASK 20-10-44-400-801.

SUBTASK 12-15-21-210-026

(2) Make sure that this circuit breaker is closed:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
F	7	C00156	OXYGEN IND

K. System Operational Check (AIRPLANES WITH INTERTECHNIQUE/EROS MASKS)

SUBTASK 12-15-21-010-010

(1) Gain access to a crew oxygen mask regulator on the flight deck (Figure 302).

SUBTASK 12-15-21-860-031

(2) Push and hold the RESET lever, on the mask stowage box to the TEST position.

NOTE: Look at the flow indicator to make sure the flow indicator momentarily shows a yellow flow indication and goes black to show no-flow condition.

SUBTASK 12-15-21-212-001

(3) Make sure the pressure on the oxygen pressure indicator does not drop more than 100 psig.

NOTE: If there is a pressure drop of 100 psig, or a slow recovery of indicated pressure, verify the cylinder is in the full open position.

SUBTASK 12-15-21-860-032

(4) Momentarily push the EMERGENCY selector switch.

NOTE: Look at the flow indicator to make sure the flow indicator momentarily shows a yellow flow indication and goes black to show no-flow condition.

(a) Make sure you can hear the flow of oxygen.

SUBTASK 12-15-21-860-027

(5) Release the RESET lever.

NOTE: Make sure the reset-test lever goes to the closed position.

SUBTASK 12-15-21-010-011

(6) Open the left door on the mask stowage box.

NOTE: This step will open the shutoff valve.

SUBTASK 12-15-21-860-028

(7) Momentarily push the EMERGENCY selector switch.

(a) Make sure you can hear the flow of oxygen.

SUBTASK 12-15-21-860-029

(8) Push the N-100% control switch to the (N) normal position.

SUBTASK 12-15-21-410-008

(9) Close the left door on the mask stowage box.

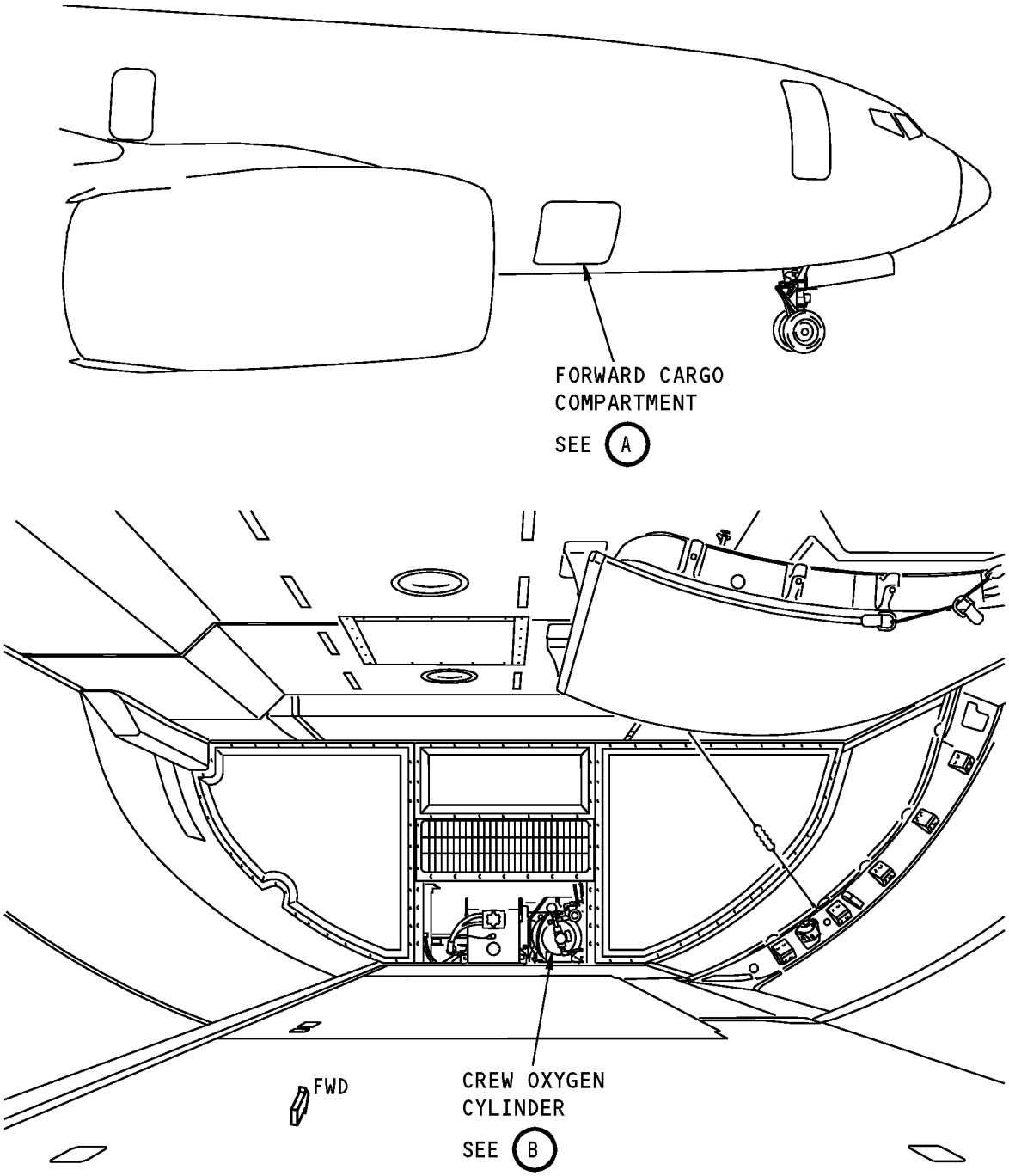
SUBTASK 12-15-21-860-030

(10) Push the RESET lever to reset, to set the shutoff valve again.

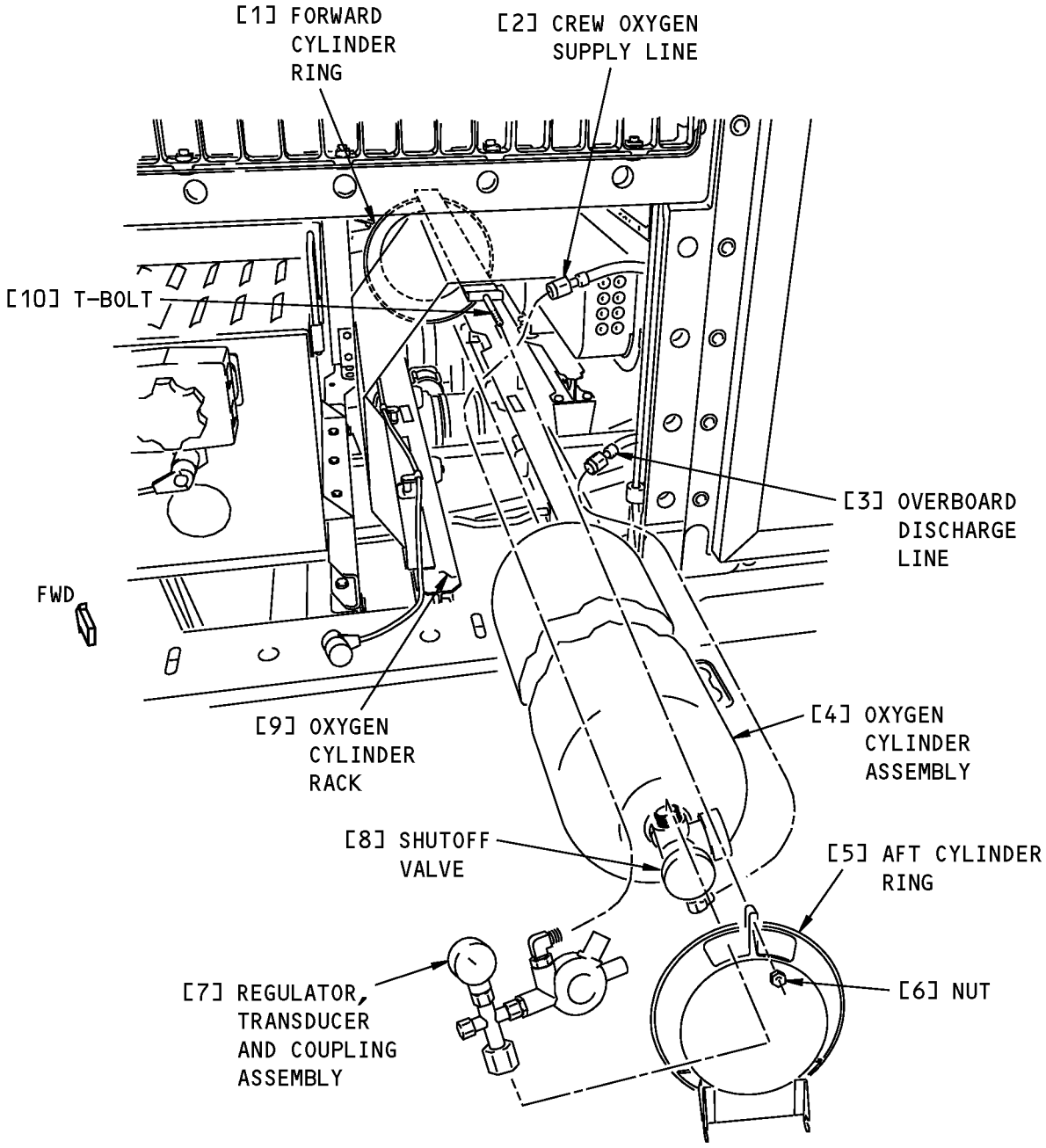
SUBTASK 12-15-21-910-006

(11) Repeat this test for the other crew member oxygen masks, if necessary.

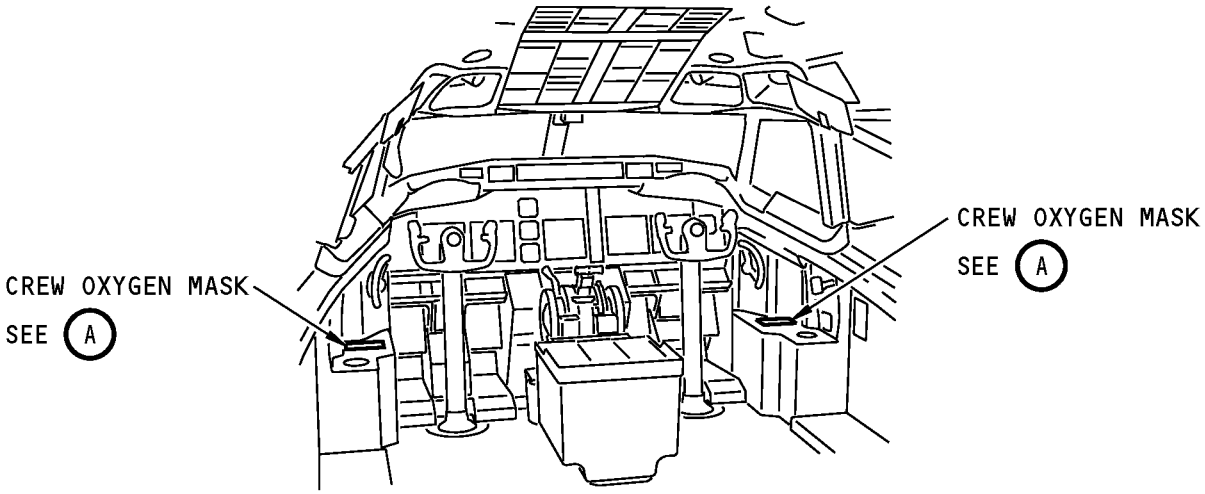
END OF TASK



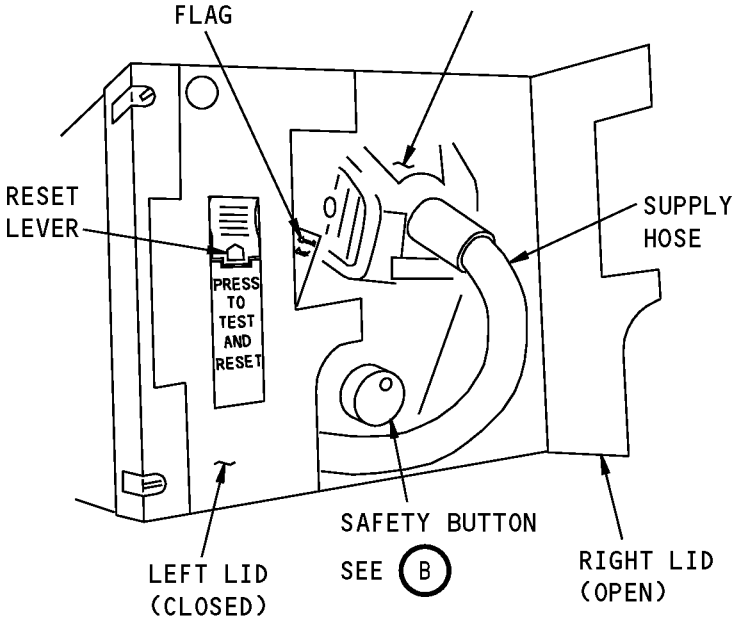
Oxygen System Servicing
Figure 301 (Sheet 1 of 2)/12-15-21-990-801-001



Oxygen System Servicing
Figure 301 (Sheet 2 of 2)/12-15-21-990-801-001

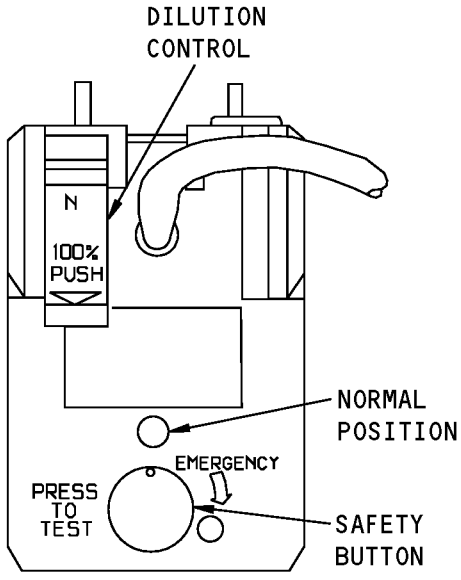


FLIGHT COMPARTMENT



MASK/REGULATOR

A



SAFETY BUTTON

B

Oxygen System Operational Check
Figure 302/12-15-21-990-804

TASK 12-15-21-210-801-001

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 12-15-21-910-005-001

(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 12-15-21-210-010-001

(2) Make sure the pressure shown on the pressure gage is above the minimum pressure necessary for dispatch. See Figure 303 for minimum dispatch pressure.

———————— END OF TASK ————————

REQUIRED PRESSURE (PSI) FOR 76 CUBIC FOOT CYLINDER

BOTTLE TEMPERATURE		NUMBER OF CREW USING OXYGEN		
°C	°F	2	3	4
50	122	735	1055	1360
45	113	725	1040	1340
40	104	715	1020	1320
35	95	700	1005	1300
30	86	690	990	1280
25	77	680	975	1255
20	68	670	960	1240
15	59	655	940	1215
10	50	645	925	1195
5	41	635	910	1175
0	32	620	890	1150
−5	23	610	875	1130
−10	14	600	860	1110

REQUIRED PRESSURE (PSI) FOR 114/115 CUBIC FOOT CYLINDER

BOTTLE TEMPERATURE		NUMBER OF CREW USING OXYGEN		
°C	°F	2	3	4
50	122	530	735	945
45	113	520	725	930
40	104	510	715	915
35	95	505	700	900
30	86	495	690	885
25	77	485	680	870
20	68	480	670	860
15	59	470	655	840
10	50	460	645	830
5	41	455	635	815
0	32	445	620	800
−5	23	440	610	785
−10	14	430	600	770

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Flight Crew Oxygen Requirements - Pressure Requirements
Figure 303/12-15-21-990-806

MAIN LANDING GEAR SHOCK STRUT - SERVICING

1. General

A. This procedure contains scheduled maintenance task data.

B. This procedure contains these two tasks:

(1) A check of the fluid levels for the shock strut of the main landing gear.

(2) A servicing of the shock strut for the main landing gear.

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 difference of 2 - 4 inches (50 - 100 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 #: F70200-1, Supplier: 81205, A/P Effectivity: 737-100, -200, -200C, -300, -400, -500, -600, -700, -700C, -700ER, -700QC, -800, -900, -900ER, -BBJ)
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
G02314	Air - Compressed, Breathing	BB-A-1034

E. Location Zones

Zone	Area
734	Left Main Landing Gear
744	Right Main Landing Gear

F. Prepare to Check the Hydraulic Fluid Level in the Shock Strut

SUBTASK 12-15-31-480-001

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.

G. Examine the Fluid Level of the Shock Strut for the Main Landing Gear

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 301/12-15-31-993-803 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, 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 12-15-31-420-005

(3) Tighten the swivel nut [107] to 5-7 pound-feet (6.8-9.5 newton-meters).

SUBTASK 12-15-31-420-006

(4) Install the gas valve cap [105].

——————— END OF TASK ———————

TASK 12-15-31-610-802

3. Main Landing Gear Shock Strut Servicing

(Figure 301)

A. General

(1) This procedure is a scheduled maintenance task.

(2) 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, MIL-H-5606 (Part #: 1104, Supplier: 30188, A/P Effectivity: 737-ALL) (Part #: PF53481-9P, Supplier: 94861, A/P Effectivity: 737-ALL) (Part #: PF55451-1, Supplier: 94861, A/P Effectivity: 737-ALL) (Part #: PF55451-23, Supplier: 94861, A/P Effectivity: 737-ALL)
SPL-1521	Tool - Strut Inflation, Landing Gear (Part #: F70200-1, Supplier: 81205, A/P Effectivity: 737-100, -200, -200C, -300, -400, -500, -600, -700, -700C, -700ER, -700QC, -800, -900, -900ER, -BBJ)
SPL-1829	Valve - Drain, Landing Gear Shock Strut Oil (Part #: J32060-1, Supplier: 81205, A/P Effectivity: 737-600, -700, -700C, -700ER, -700QC, -800, -900, -900ER, -BBJ) (Opt Part #: A32066-1, Supplier: 81205, A/P Effectivity: 737-600, -700, -700C, -700ER, -700QC, -800, -900, -900ER, -BBJ)
STD-1110	Container - Hydraulic Fluid Resistant, 5 Gallon (19 Liters)
STD-1157	Gauge - Pressure, 0-3000 PSIG (0-20685 KPa)

D. 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	
G00018	Nitrogen - Gaseous, Pressurizing, 99.5 Percent Pure	A-A-59503, Type I, Grade B
G02314	Air - Compressed, Breathing	BB-A-1034

E. Location Zones

Zone	Area
734	Left Main Landing Gear
744	Right Main Landing Gear

F. Prepare to Do the Servicing of the Shock Strut

SUBTASK 12-15-31-490-001

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 12-15-31-020-001

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 [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 [106].

(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 [101] is fully deflated when the dimension "X" is 0.81 to 1.11 inches (20-27 millimeters).

SUBTASK 12-15-31-680-001

(3) If you need to drain the oil from the shock strut [1], do these steps:

(a) Remove the cap [102] from the oil charging valve assembly [103].

(b) Put a 5 gallon (19 liters) hydraulic fluid resistant container, STD-1110 in a position to catch the shock strut fluid when the oil charging valve assembly [103] is opened.

(c) Install the drain equipment on the oil charging valve assembly [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 assembly [103] 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.

G. 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 fluid, D00467 (BMS 3-32, Type II). (Table 302):

NOTE: It is optional to use fluid, D00070 (MIL-H-5606) or fluid, D00106 (MIL-PRF-6083) mixed with Lubrizol 1395 lubricant, D00510 in a ratio of 41:1.

(a) Make sure the cap [102] for the oil charging valve assembly [103] is removed.

(b) Make sure the cap [105] for the gas charging valve [106] is removed.

(c) Attach the oil charging line from landing gear shock strut oil servicing cart, COM-1532 to the oil charging valve assembly [103].

(d) Make sure 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 fluid, D00467 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 12-15-31-420-002

(2) Install the cap [102] on the oil charging valve assembly [103].

SUBTASK 12-15-31-020-002

(3) Remove the hose from the gas valve [106].

(a) Install the cap [105] on 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 inches (89 mm) or you reach 1700 psig (11200 KPa).

NOTE: If nitrogen is not available, you can use air, G02314 as an alternative to inflate the shock strut [101].

(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 12-15-31-420-007

(5) Tighten the gas valve [106]:

(a) Tighten the swivel nut [107] to 5 -7 pound-feet (6.8 - 9.5 newton-meters).

SUBTASK 12-15-31-020-003

(6) Remove the tool, SPL-1521 from the gas valve.

SUBTASK 12-15-31-420-003

(7) Install the gas valve cap [105].

SUBTASK 12-15-31-020-004

(8) 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 pressure.

(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 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 5-7 pound-feet (6.8-9.5 newton-meters).

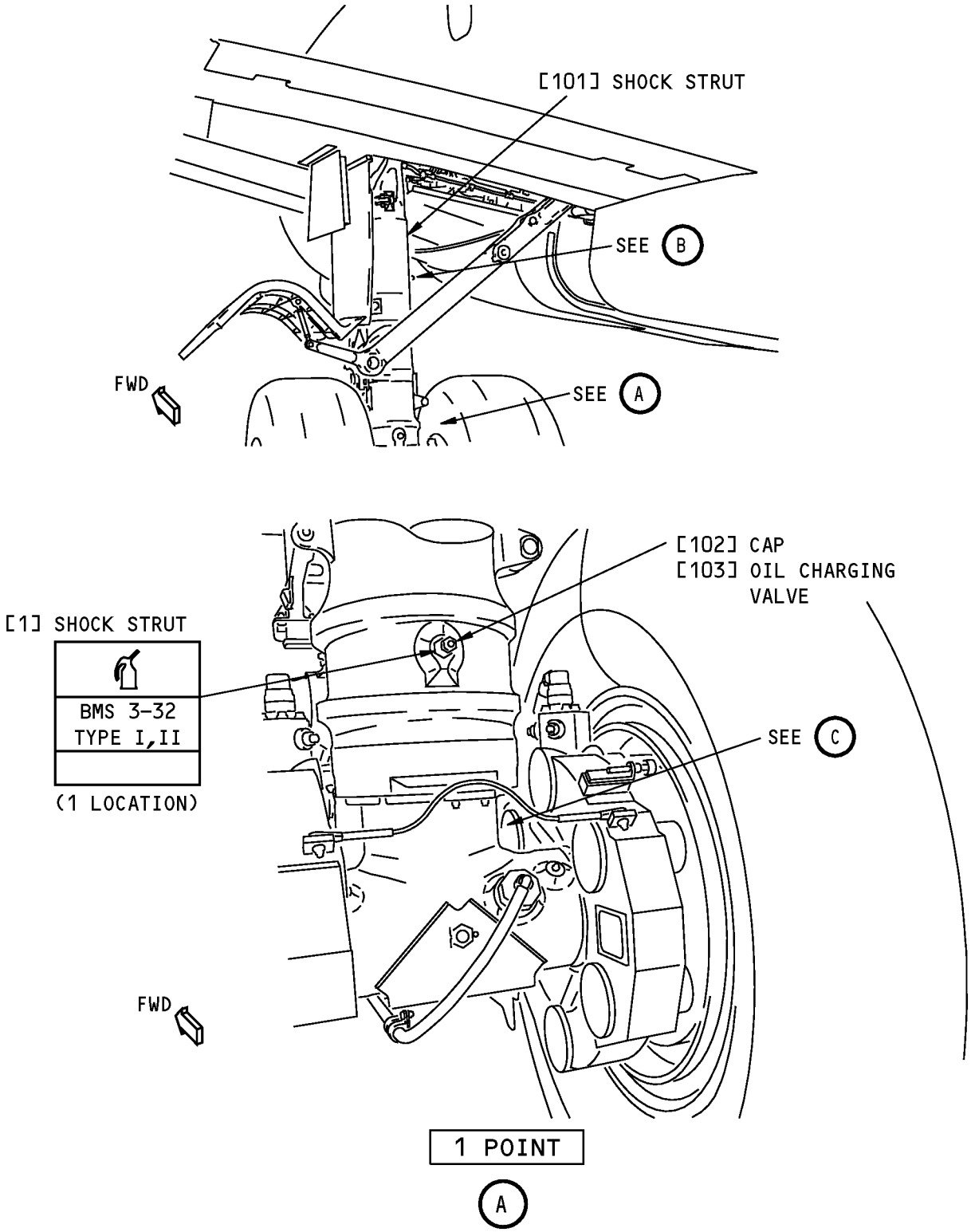
(e) Install the gas valve cap [105].

Table 302/12-15-31-993-804 Main Landing Gear Shock Strut Servicing

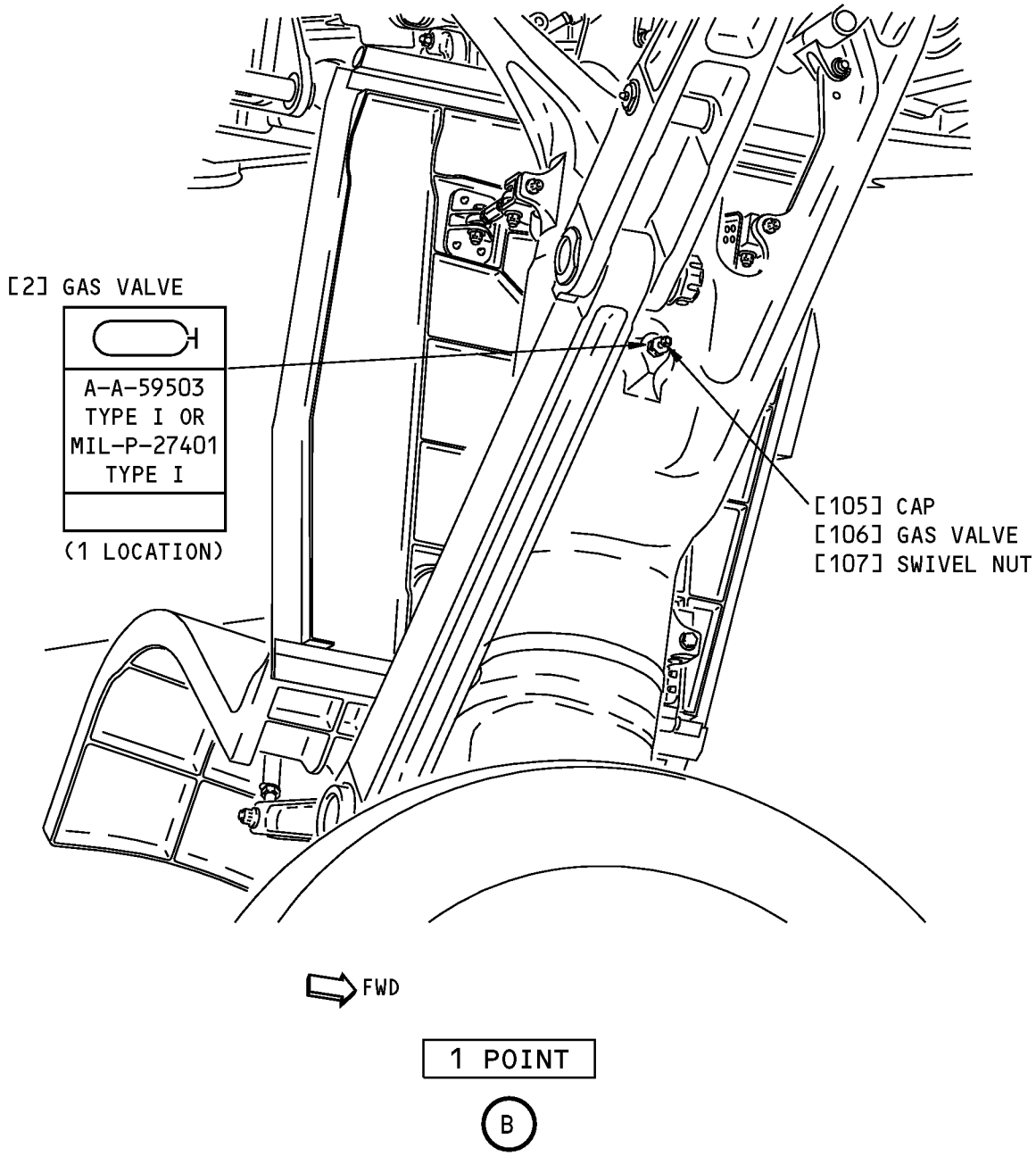
Item No.	Nomenclature	Fluid	Method of Application	Number of Locations
1	Shock Strut	BMS 3-32, Type I, II *[1]	Fill	1
2	Gas Valve	BB-N-411 Type I, or MIL-P-27401 Type I, or A-A-59503, Type 1, Grade B, or BB-A-1034(dry air)	Charge	1

*[1] For usage and alternative fluids, refer to Landing Gear Shock Strut Fluids, TASK 12-15-61-610-801.

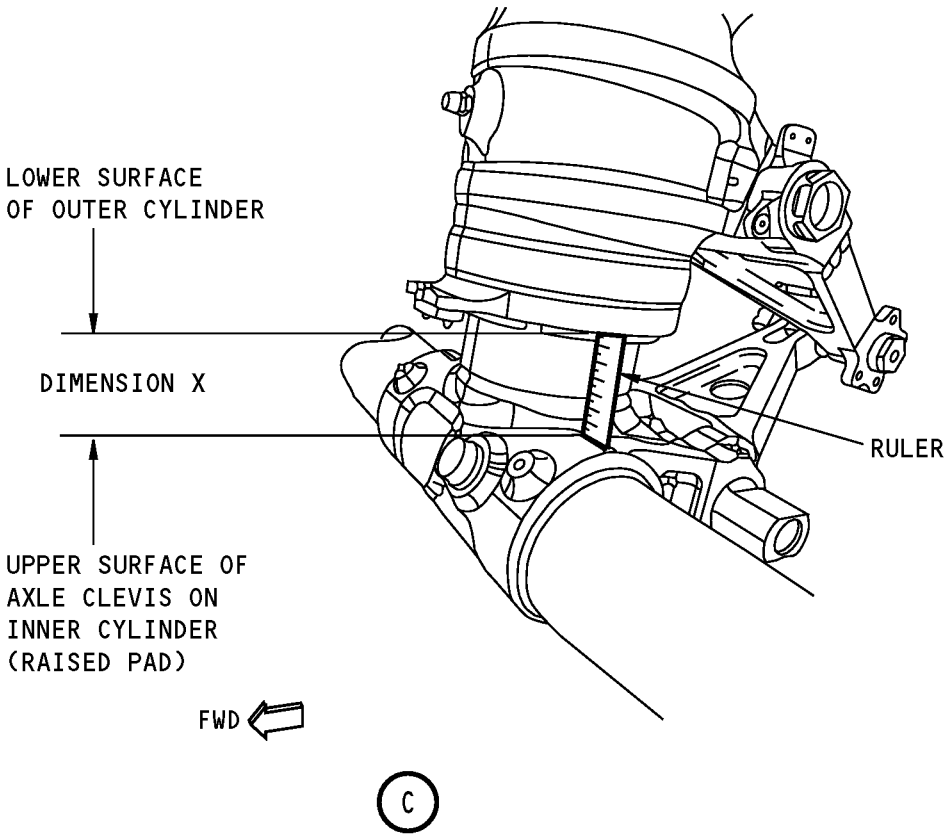
END OF TASK



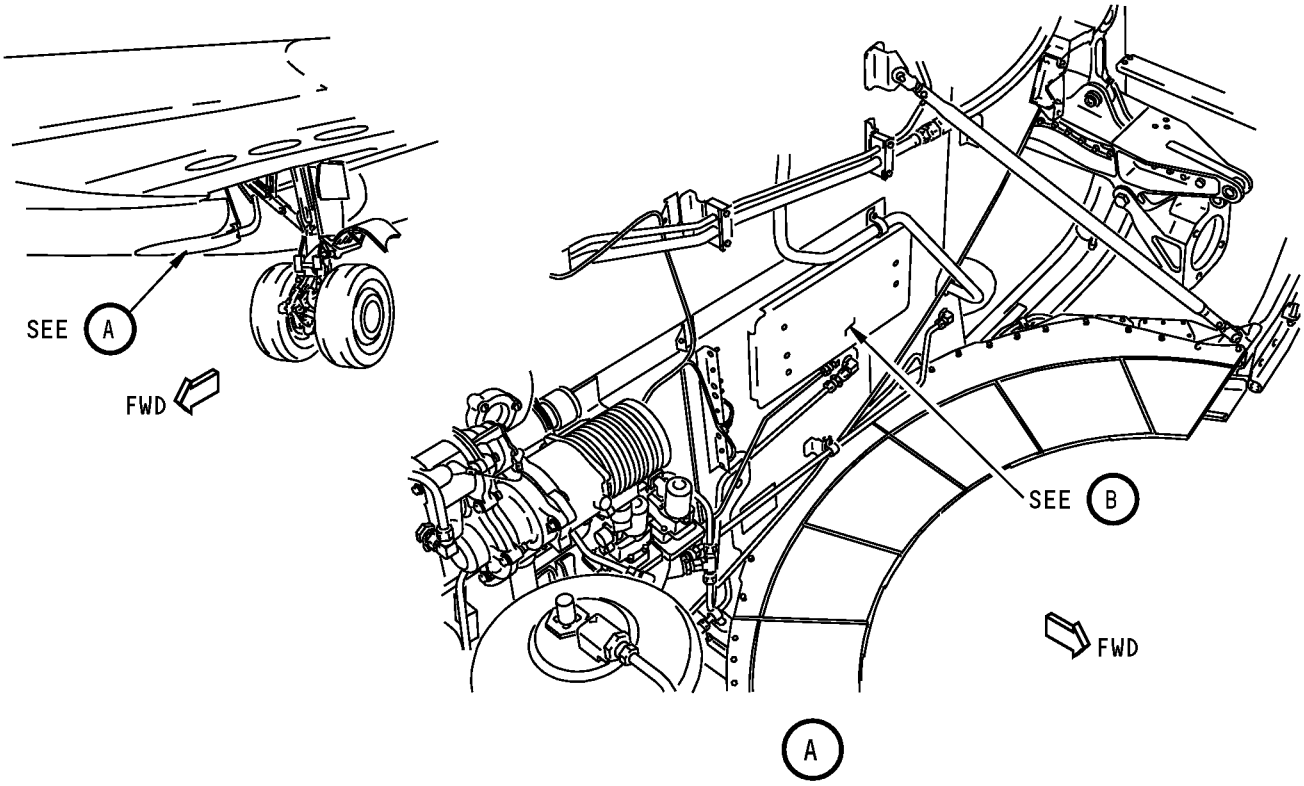
Main Landing Gear Shock Strut Servicing
Figure 301 (Sheet 1 of 3)/12-15-31-990-801

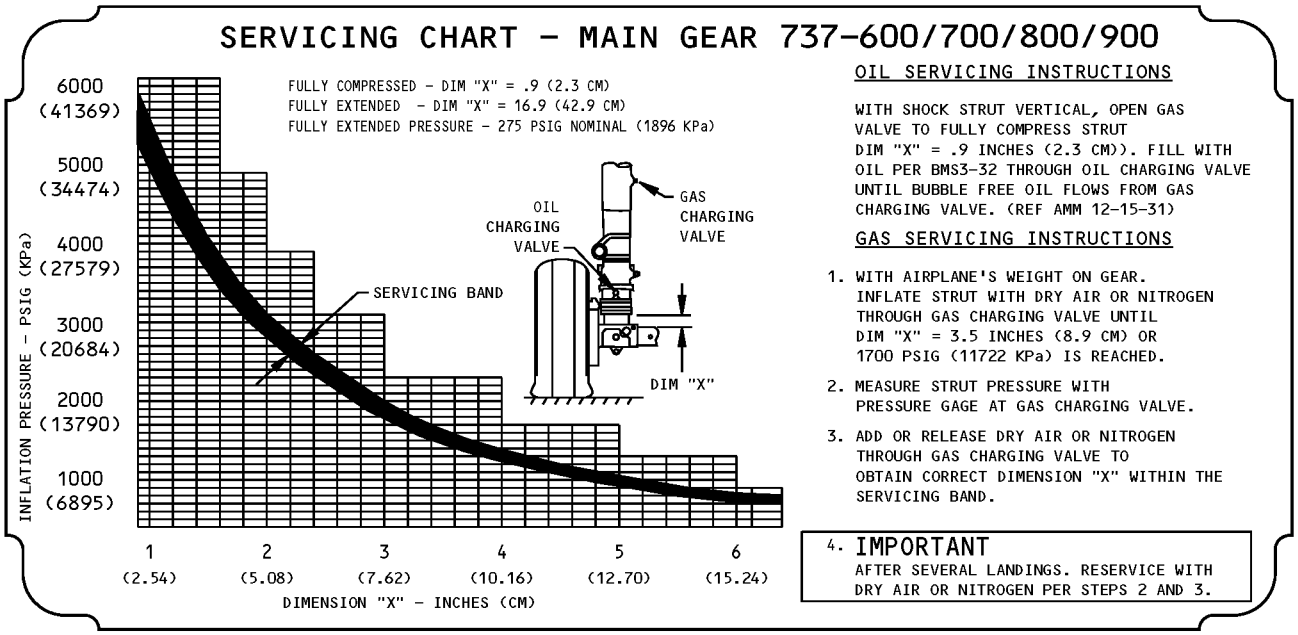


Main Landing Gear Shock Strut Servicing
Figure 301 (Sheet 2 of 3)/12-15-31-990-801



Main Landing Gear Shock Strut Servicing
Figure 301 (Sheet 3 of 3)/12-15-31-990-801





Main Landing Gear Shock Strut Servicing Chart
Figure 302/12-15-31-990-802

NOSE LANDING GEAR SHOCK STRUT - SERVICING

1. General

A. This procedure contains scheduled maintenance task data.

B. This procedure contains these two tasks:

(1) Nose landing Gear Shock Strut Fluid Check

(2) Nose Landing Gear Shock Strut Servicing

TASK 12-15-41-610-801

2. Nose 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 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 - 4 inches (50 - 100 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 #: F70200-1, Supplier: 81205, A/P Effectivity: 737-100, -200, -200C, -300, -400, -500, -600, -700, -700C, -700ER, -700QC, -800, -900, -900ER, -BBJ)
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
G02314	Air - Compressed, Breathing	BB-A-1034

E. Location Zones

Zone	Area
713	Nose Landing Gear

F. Prepare to Check the Hydraulic Fluid Level in the Shock Strut

SUBTASK 12-15-41-480-001

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.

G. Examine the Fluid Level of the Shock Strut for the Nose Landing Gear

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.

NOTE: You must loosen the swivel nut [104] to release the gas from the shock strut [101].

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, 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 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.

H. Put the Airplane Back to Its Usual Condition

SUBTASK 12-15-41-420-001

(1) Tighten the gas valve [103]:

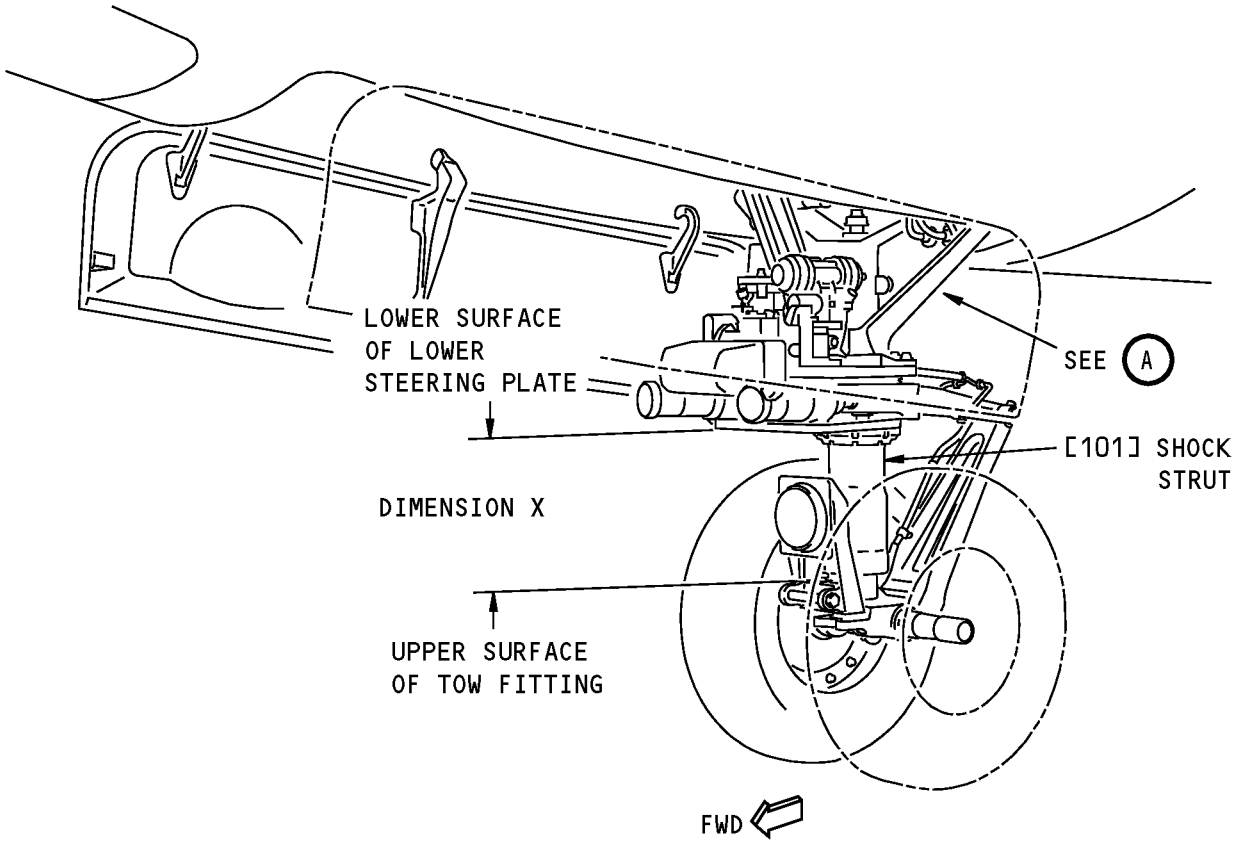
(a) Tighten the swivel nut [104] to 5-7 pound-feet (6.8-9.5 newton meters).

(b) Install the gas valve cap [102].

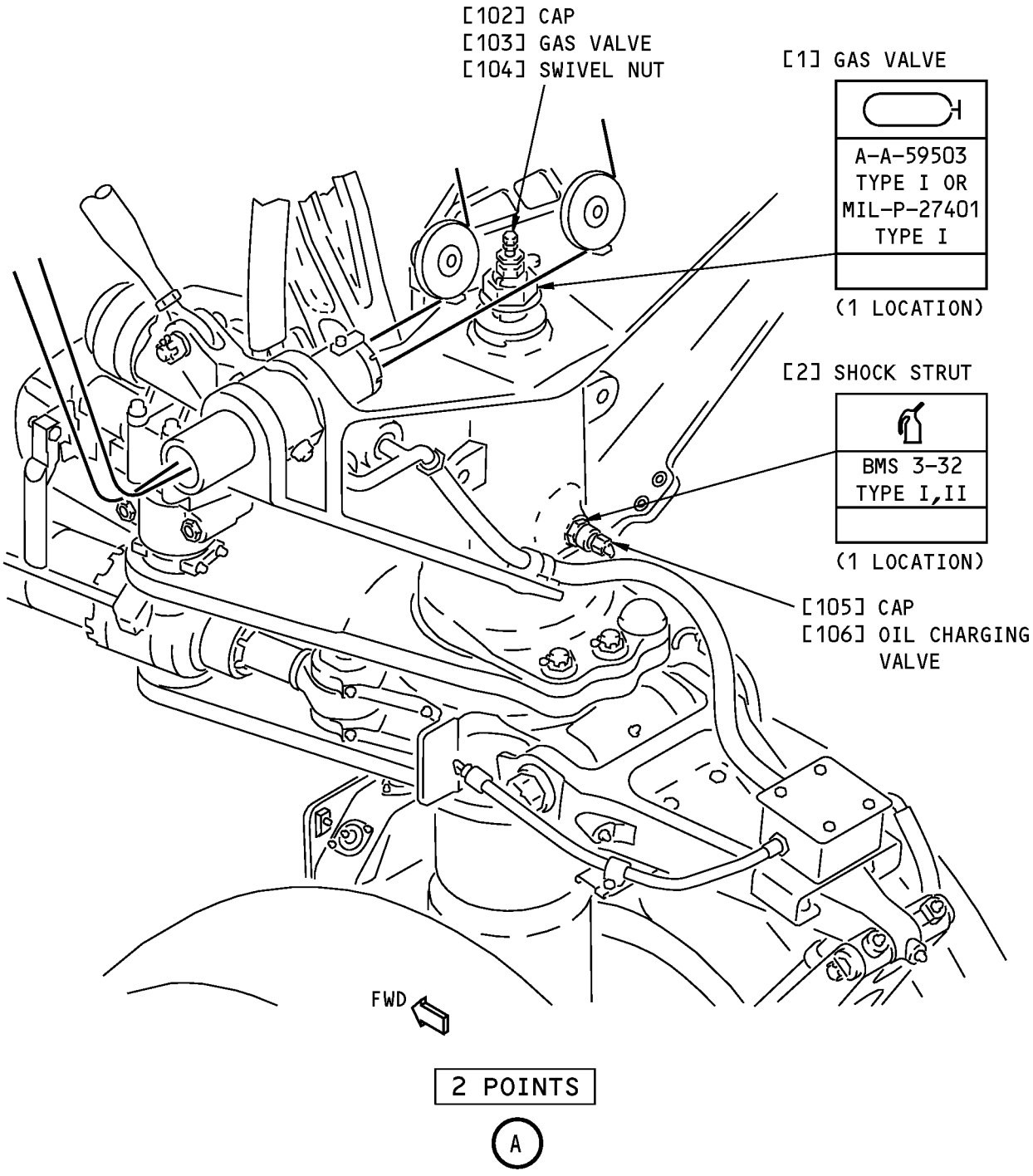
Table 301/12-15-41-993-801 Nose Landing Gear Shock Strut Servicing

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

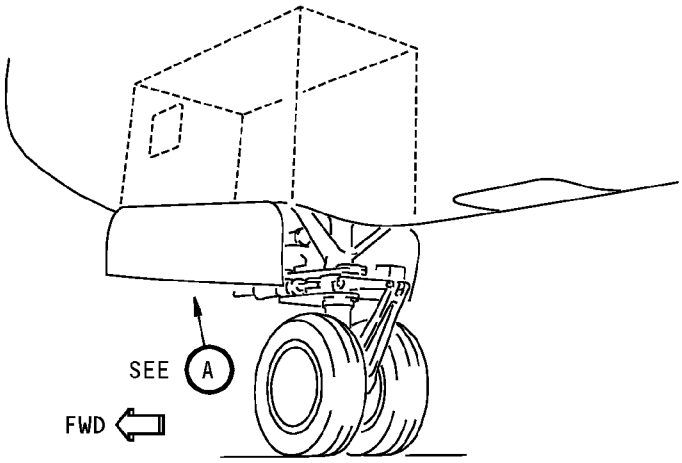
END OF TASK

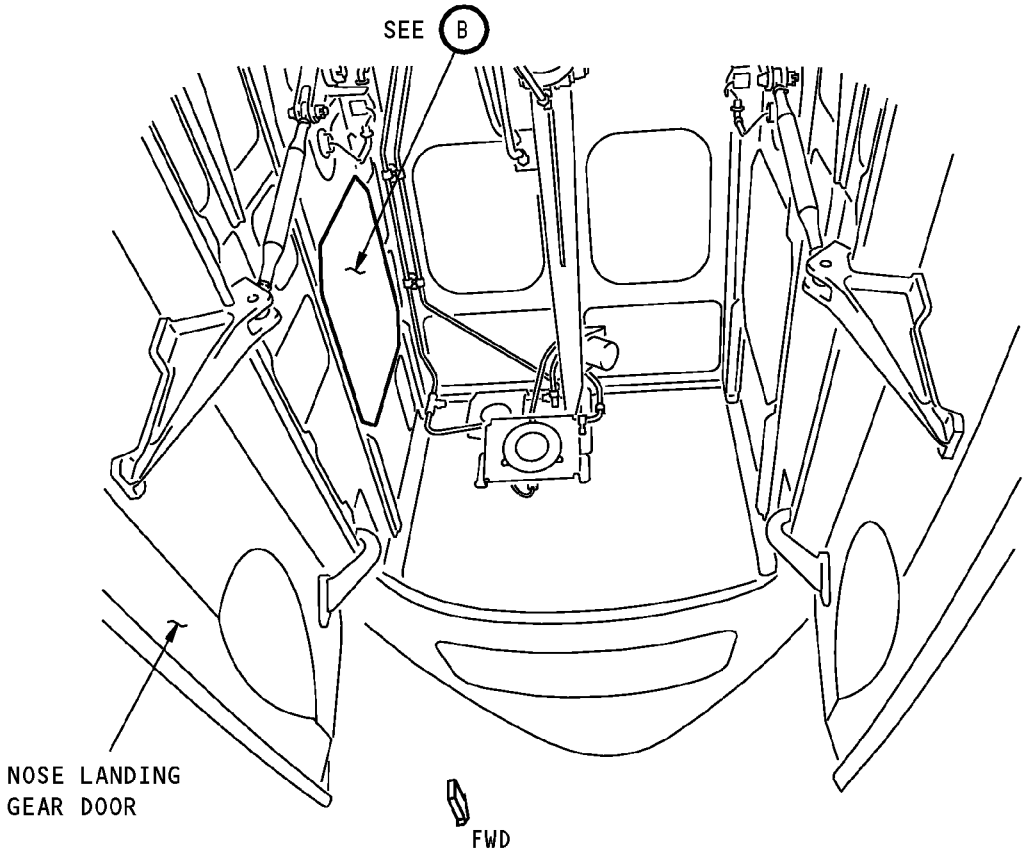


Nose Landing Gear Shock Strut Servicing
Figure 301 (Sheet 1 of 2)/12-15-41-990-801



Nose Landing Gear Shock Strut Servicing
Figure 301 (Sheet 2 of 2)/12-15-41-990-801

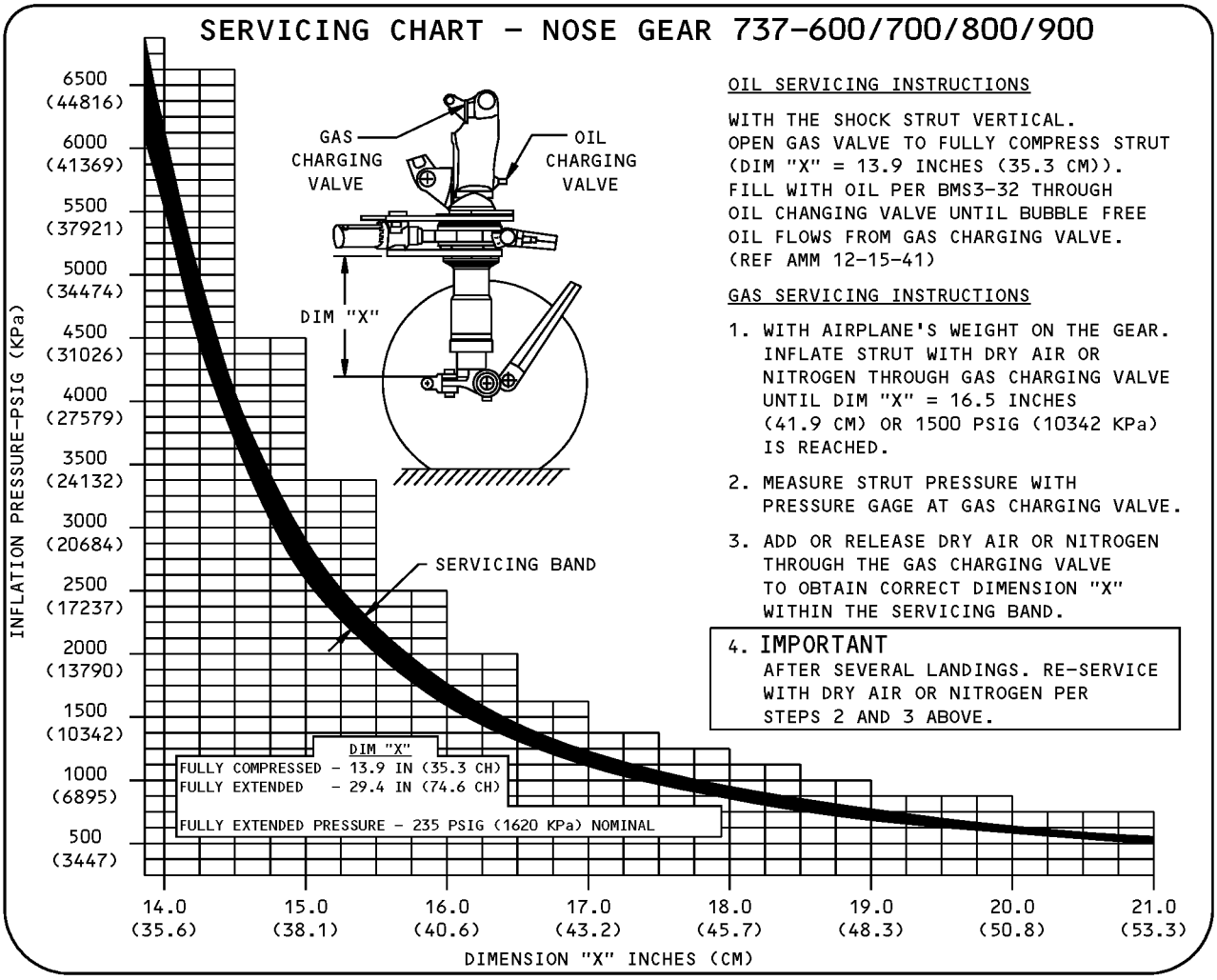




NOSE LANDING GEAR WHEEL WELL

A

Nose Landing Gear Shock Strut Servicing Chart
Figure 302 (Sheet 1 of 2)/12-15-41-990-802



B

Nose Landing Gear Shock Strut Servicing Chart
Figure 302 (Sheet 2 of 2)/12-15-41-990-802

TASK 12-15-41-610-802

3. Nose Landing Gear Shock Strut Servicing

(Figure 301)

A. General

(1) This procedure is a scheduled maintenance task.

(2) This procedure supplies instructions for the servicing of the shock strut of the nose landing gear.

(3) 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, MIL-H-5606 (Part #: 1104, Supplier: 30188, A/P Effectivity: 737-ALL) (Part #: PF53481-9P, Supplier: 94861, A/P Effectivity: 737-ALL) (Part #: PF55451-1, Supplier: 94861, A/P Effectivity: 737-ALL) (Part #: PF55451-23, Supplier: 94861, A/P Effectivity: 737-ALL)
SPL-1521	Tool - Strut Inflation, Landing Gear (Part #: F70200-1, Supplier: 81205, A/P Effectivity: 737-100, -200, -200C, -300, -400, -500, -600, -700, -700C, -700ER, -700QC, -800, -900, -900ER, -BBJ)
SPL-1829	Valve - Drain, Landing Gear Shock Strut Oil (Part #: J32060-1, Supplier: 81205, A/P Effectivity: 737-600, -700, -700C, -700ER, -700QC, -800, -900, -900ER, -BBJ) (Opt Part #: A32066-1, Supplier: 81205, A/P Effectivity: 737-600, -700, -700C, -700ER, -700QC, -800, -900, -900ER, -BBJ)
STD-1103	Hose - Flexible, 5/8 Inch ID, Oil or Hydraulic Fluid Resistant, 6 foot
STD-1110	Container - Hydraulic Fluid Resistant, 5 Gallon (19 Liters)
STD-1157	Gauge - Pressure, 0-3000 PSIG (0-20685 KPa)

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
G02314	Air - Compressed, Breathing	BB-A-1034

E. Location Zones

Zone	Area
713	Nose Landing Gear

F. Prepare to Do the Servicing of the Shock Strut

SUBTASK 12-15-41-490-001

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 13.9 inches (350 mm).

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 liters) 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: 8.4-15.4 ounces (250-425 ml) of fluid will drain out of the strut. More fluid is in the strut below the oil charging valve [106].

G. 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 [2] with fluid, D00467 (BMS 3-32, Type I or Type II) (Table 302). BMS 3-32 Type I and Type II shock strut fluids can both be used to service the nose landing gear shock strut.

NOTE: Optional fluids may be used (Landing Gear Shock Strut Fluids, TASK 12-15-61-610-801).

(a) Make sure the cap [105] for the oil charging valve [106] is removed.

(b) Attach the oil charging line from landing gear shock strut oil servicing cart, COM-1532 to the oil charging valve [106].

(c) Make sure the cap [102] for the gas valve [103] is removed.

(d) Make sure 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 fluid, D00467 until the hydraulic fluid flows out of the gas valve [103] and into the 5 gallon (19 liters) 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 liters) 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 50-70 pound-inches (5.7-7.9 newton meters).

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 inches (420 mm) or your reach 1500 psig (10300 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 12-15-41-420-004

(5) Tighten the gas valve [103]:

(a) Tighten the swivel nut [104] to 5 -7 pound-feet (7.8 - 9.5 Newton-meters).

SUBTASK 12-15-41-020-003

(6) Remove the tool, SPL-1521 from the gas valve [103].

SUBTASK 12-15-41-420-003

(7) Install the gas valve cap [102].

SUBTASK 12-15-41-020-004

(8) 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 pressure.

(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 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 5-7 pound-feet (7.8-9.5 newton meters).

(d) Install the gas valve cap [102].

Table 302/12-15-41-993-804 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	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.

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

C. The nitrogen that you use must have a minimum purity of 99.5 percent.

HAP 001-013, 015-026, 028-030

D. Some airplanes have a tire pressure gage installed in the wheels. The tire pressure gage is part of an assembly that includes the gage and the tire fill valve. You can use the gage for walk-around inspections and other fast checks. You must use a separate calibrated gage with an approved dial when you inflate a tire. You must also use a calibrated gage when the tire pressure indication must be very accurate.

HAP ALL

TASK 12-15-51-780-801

2. Landing Gear Tire Pressure Check and Tire Servicing

(Figure 301, Figure 302, Figure 303)

A. General

(1) This task has instructions for two methods to determine tire pressure.

(a) Use standardized pressures for the main gear and nose gear tires (recommended).

(b) Use the tire inflation limit charts to determine main gear and nose gear tire pressures (optional).

B. References

Reference	Title
32-00-01-480-801	Landing Gear Downlock Pins Installation (P/B 201)
32-45-11 P/B 401	MAIN LANDING GEAR WHEEL AND TIRE ASSEMBLY - REMOVAL/INSTALLATION
32-45-21 P/B 401	NOSE LANDING GEAR WHEEL AND TIRE ASSEMBLY - 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-1527	Inflator - Tire (Part #: F70199-1, Supplier: 81205, A/P Effectivity: 737-100, -200, -200C, -300, -400, -500, -600, -700, -700C, -700ER, -700QC, -800, -900, -900ER, -BBJ)
STD-1132	Gauge - Tire Pressure, 0-300 PSIG (0-2069 KPa)

D. Consumable Materials

Reference	Description	Specification
G00018	Nitrogen - Gaseous, Pressurizing, 99.5 Percent Pure	A-A-59503, Type I, Grade B

E. Location Zones

Zone	Area
713	Nose Landing Gear
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 nose and main landing gear, 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 12-15-51-600-023

(1) Make sure 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 main landing gear tires and nose gear tires 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 12-15-51-020-009

(2) For the nose landing gear tires, remove the cap [102].

SUBTASK 12-15-51-020-010

(3) For the main landing gear tires, remove the cap [101].

SUBTASK 12-15-51-600-024

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.

SUBTASK 12-15-51-610-012

(5) 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 accurate gage.

(c) Compare the measured pressure to the standardized pressure. Do the maintenance actions specified below:

SUBTASK 12-15-51-610-016

WARNING: USE A REGULATED PRESSURE SOURCE TO SERVICE THE TIRES. AN UNREGULATED PRESSURE SOURCE CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO THE EQUIPMENT.

(6) If the tires require inflation, connect the tire inflator, SPL-1527 to the gas valve [1], [2] and inflate the tire with nitrogen, G00018 to the correct pressure.

SUBTASK 12-15-51-610-013

(7) Inflate main and nose gear tires to 205 +/- 5 psig for the 737-600/-700/-800/-900 airplanes but not 737-900ER. See Table 301.

Table 301/12-15-51-993-812 Maintenance Actions for Main and Nose Gear Standardized Tire Pressures for 737-600/-700/-800/-900 but Not 737-900ER

Measured Tire Pressure Main and Nose Gear Tires (Tires Cold)	Maintenance Action
Greater than 210 psig	Adjust to correct pressure
Between 200 psig and 210 psig	No action required
Between 195 psig and 199 psig	Inflate the tire to the correct pressure
Between 185 psig and 194 psig	Inflate the tire to the correct pressure and check again in 24 hours. If the tire is found low again, replace the tire. *[1], *[2]
Between 165 psig and 184 psi	Replace wheel and tire assembly. *[1] , *[2]
Below 165 psig	Replace wheel and tire assembly. 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] CAUTION: 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 for 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 12-15-51-610-017

(8) Remove the tire inflator, SPL-1527 from the gas valve [1], [2].

(a) Install the cap [102] for the nose landing tires.

(b) Install the cap [101] for the main landing gear tires.

H. Landing Gear Tire Pressure Check Using the Tire Pressure Limit Charts (Optional)

NOTE: As an option, operators can select a tire pressure from the following variable tire inflation charts. These charts allow a reduced tire pressure if the airplane gross weight is not at the maximum. A reduced tire pressure should only be used if there is a specific reason to do so, such as a runway pressure restriction or to solve unusual tire wear patterns.

SUBTASK 12-15-51-600-001

(1) Make sure 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 main landing gear tires and nose gear tires 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 nose landing gear tires, remove the cap [102].

SUBTASK 12-15-51-020-002

(3) For the main landing gear tires, remove the cap [101].

SUBTASK 12-15-51-600-002

CAUTION: MAKE SURE THE DIRECT READING GAGE IS CORRECTLY CALIBRATED AND 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.

SUBTASK 12-15-51-600-004

(5) Check the main landing gear tire and nose gear tire pressures:(Figure 302, Figure 303)

NOTE: Use the tire pressure graphs for the main landing gear and nose gear.

NOTE: The inflation pressures that are shown are for cold, loaded tires (i.e. with the airplane resting on the tires). For unloaded tires, decrease the pressure by 4%.

(a) For the applicable airplane maximum taxi weight and tire, find the minimum service pressure from the pressure limits chart for the correct airplane model. (Figure 302, Figure 303)

NOTE: The minimum service pressure is the lowest line, for the correct tire size, on the chart.

NOTE: The maximum taxi weight is the actual maximum taxi weight. Not the certified maximum taxi weight.

(b) For the tires in use, find the maximum service pressure from the pressure limits chart for the correct airplane model. (Figure 302,Figure 303)

NOTE: The maximum service pressure is the upper line, for the correct tire size, on the chart.

(c) Select a nominal service tire pressure between the minimum service pressure and the maximum service pressure found above.

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 accurate gage.

(c) Compare the measured pressure to the nominal service pressure selected above. Verify that all tires on the same gear are inflated to the selected nominal service pressure +/-5 psig. (Figure 302, Figure 303).

(d) Do these steps for tires which have tire pressures below the selected nominal service pressure:

1) If the measured tire pressure is below the selected nominal service pressure by no more than 5%, 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], [2] and inflate the tire with nitrogen, G00018 to the necessary pressure.

b) Remove the tire inflator, SPL-1527 from the gas valve [1], [2].

2) If the measured pressure is between 5% - 10% below the selected nominal service tire pressure, 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], [2] and inflate the tire with nitrogen, G00018 to the selected nominal service pressure.

b) Remove the tire inflator, SPL-1527 from the gas valve [1], [2].

c) Do a check of the tire pressure again after 24 hours.

d) If the tire pressure is more than 5% below the selected nominal service pressure again, replace the wheel and tire assembly: MAIN LANDING GEAR WHEEL AND TIRE ASSEMBLY - REMOVAL/INSTALLATION, PAGEBLOCK 32-45-11/401, or NOSE LANDING GEAR WHEEL AND TIRE ASSEMBLY - REMOVAL/INSTALLATION, PAGEBLOCK 32-45-21/401.

NOTE: Replace tires that require frequent refills to maintain nominal service pressure. These tires can have tread loss or carcass rupture if you use them for too long. This can cause damage to equipment.

e) Send the wheel and tire assembly for an inspection to find the cause for the low tire pressure.

f) Mark the reason for the tire removal on the tire to aid the inspectors when they examine the tire.

3) If the measured tire pressure is between 10% - 20% below the selected nominal service tire pressure, do these steps:

a) Replace the wheel and tire assembly: MAIN LANDING GEAR WHEEL AND TIRE ASSEMBLY - REMOVAL/INSTALLATION, PAGEBLOCK 32-45-11/401, or NOSE LANDING GEAR WHEEL AND TIRE ASSEMBLY - REMOVAL/INSTALLATION, PAGEBLOCK 32-45-21/401.

b) Send the wheel and tire assembly for an inspection to find the cause for the low tire pressure.

c) Mark the reason for the tire removal on the tire to aid the inspectors when they examine the tire.

4) If the measured tire pressure is more than 20% below the selected nominal service tire pressure, do these steps:

a) Replace the tire and wheel assembly: MAIN LANDING GEAR WHEEL AND TIRE ASSEMBLY - REMOVAL/INSTALLATION, PAGEBLOCK 32-45-11/401, or NOSE LANDING GEAR WHEEL AND TIRE ASSEMBLY - REMOVAL/INSTALLATION, PAGEBLOCK 32-45-21/401.

b) Send the wheel and tire assembly for an inspection to find the cause for the low tire pressure.

c) Mark the reason for the tire removal on the tire to aid the inspectors when they examine the tire.

d) If the wheel and tire assembly has turned with the airplane weight on it after the pressure had decreased, replace the wheel and tire assembly installed on the opposite side of that axle.

e) 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.

f) Send the tire for inspection for damage.

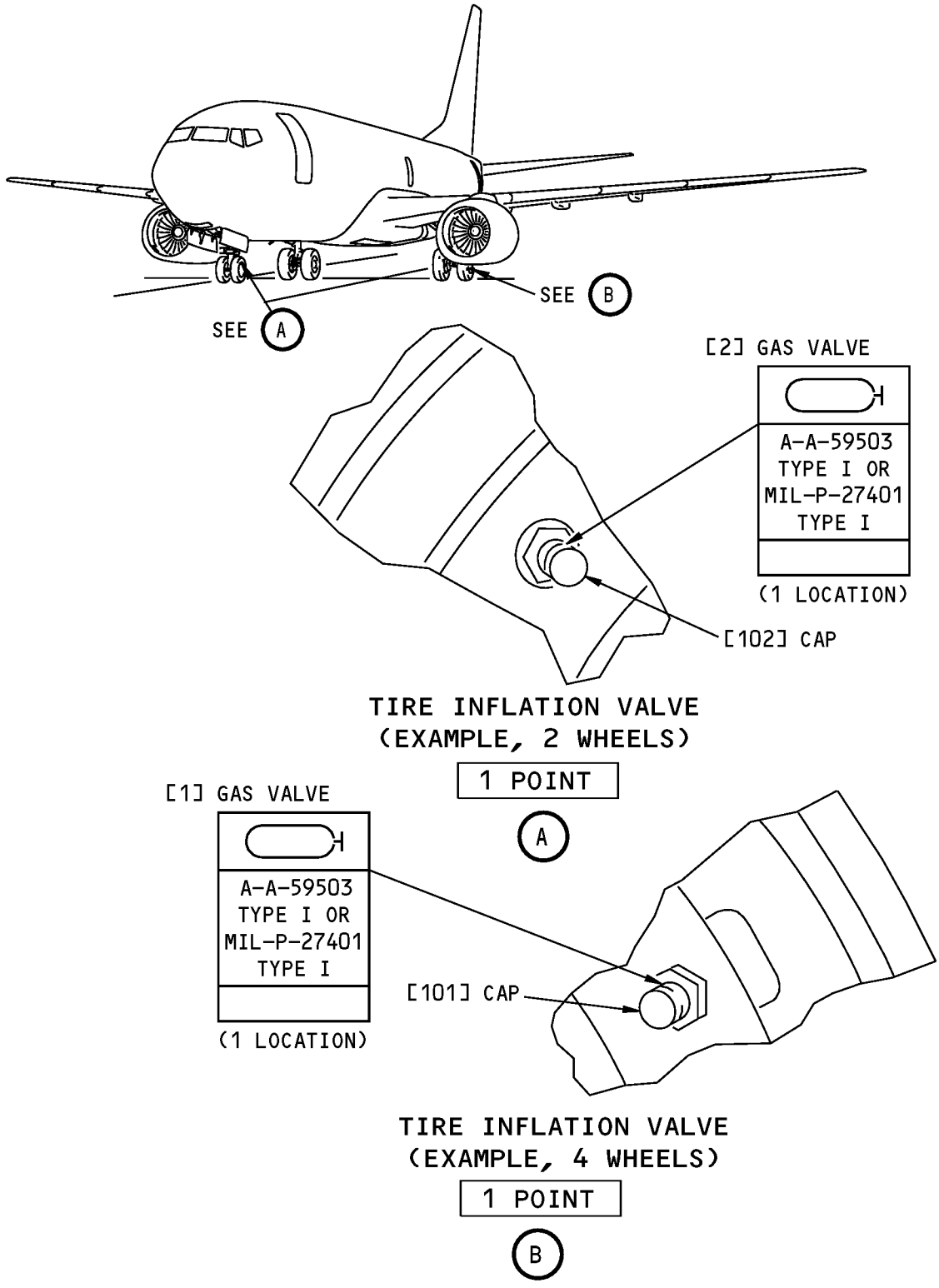
SUBTASK 12-15-51-020-003

(7) If you will not service the tires for the nose landing gear tires, install the cap [102].

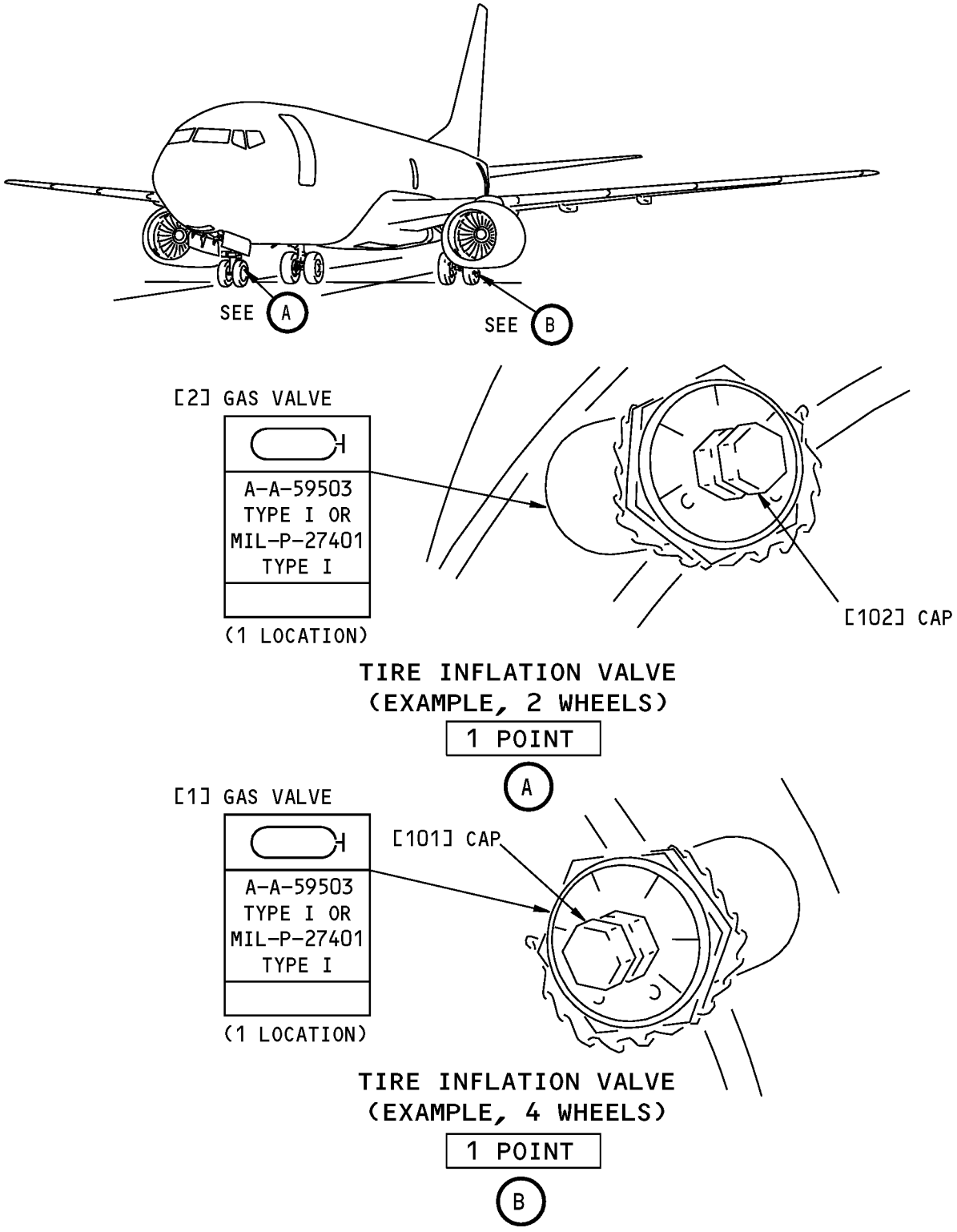
SUBTASK 12-15-51-020-004

(8) If you will not service the tires for the main landing gear tires, install the cap [101].

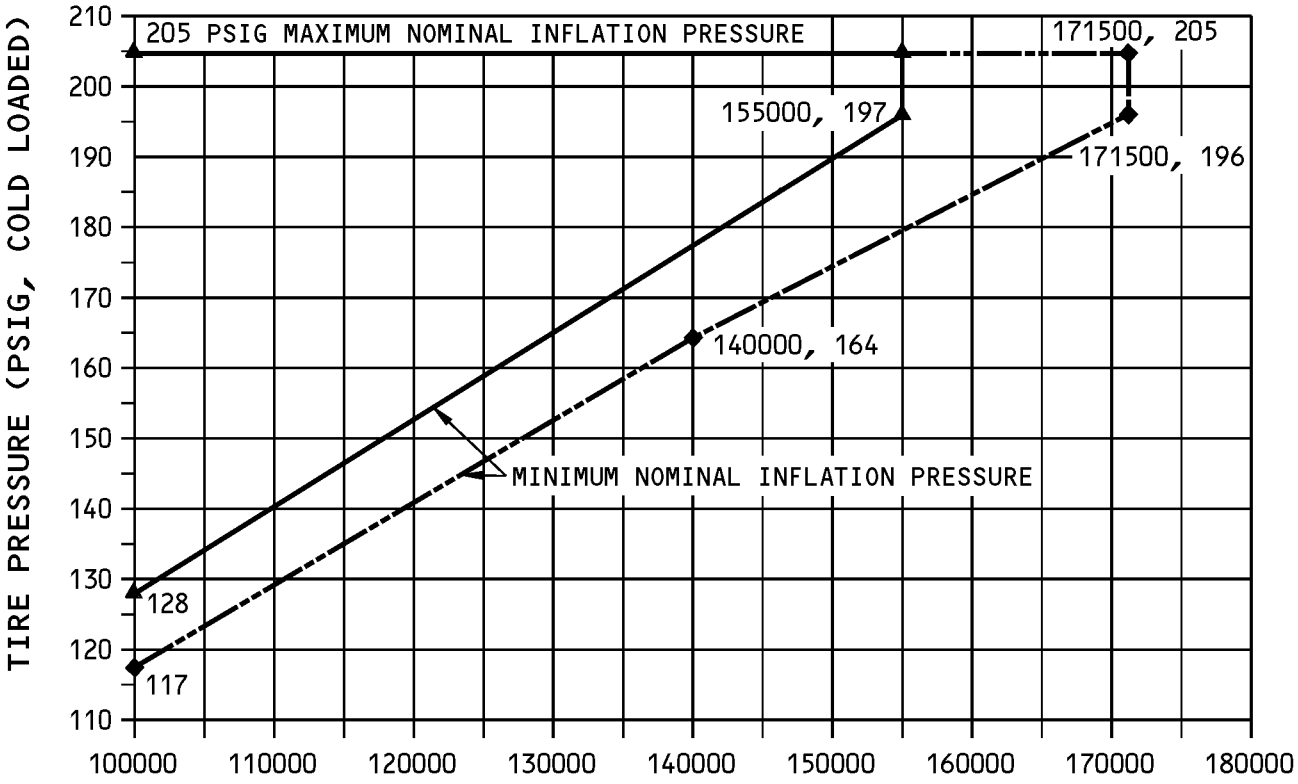
——————— END OF TASK ———————



Landing Gear Tire Servicing
Figure 301 (Sheet 1 of 2)/12-15-51-990-801



Landing Gear Tire Servicing
Figure 301 (Sheet 2 of 2)/12-15-51-990-801



737-700 MAIN LANDING GEAR TIRE PRESSURE LIMITS

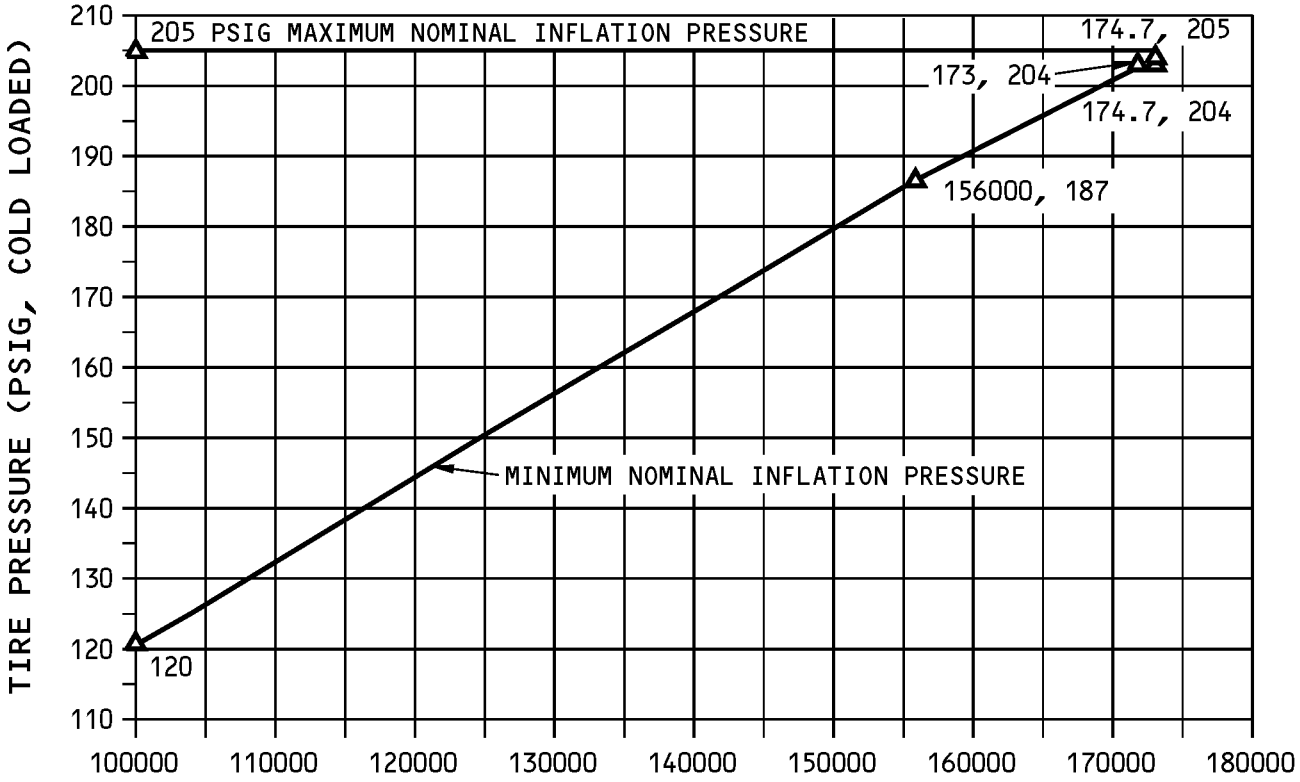
NOTE:
1. INFLATION PRESSURES SHOWN ARE FOR COLD LOADED TIRES (I.E. WITH AIRPLANE RESTING ON TIRES). FOR UNLOADED TIRES, REDUCE PRESSURE BY 4%.
2. FOR THE DESIRED MAXIMUM TAXI WEIGHT, DETERMINE THE MINIMUM SERVICE PRESSURE (SLOPED LINE) FROM THE CHART.
3. DETERMINE THE MAXIMUM SERVICE PRESSURE (HORIZONTAL LINE) FROM THE CHART.
4. SELECT A NOMINAL SERVICE PRESSURE BETWEEN THE MINIMUM AND MAXIMUM.
5. INFLATE ALL TIRES ON THE SAME GEAR TO THE SELECTED NOMINAL PRESSURE ±5 PSIG.
6. SEE AIRPLANE WEIGHT - CG CURVES FOR STRUCTURAL LIMITS.

LEGEND:

H43.5x16.0-21/26PR (737-700)

H44.5x16.5-21/28PR (737-700/700IGW/700C)

Main Landing Gear Tire Inflation Limits
Figure 302 (Sheet 1 of 2)/12-15-51-990-802



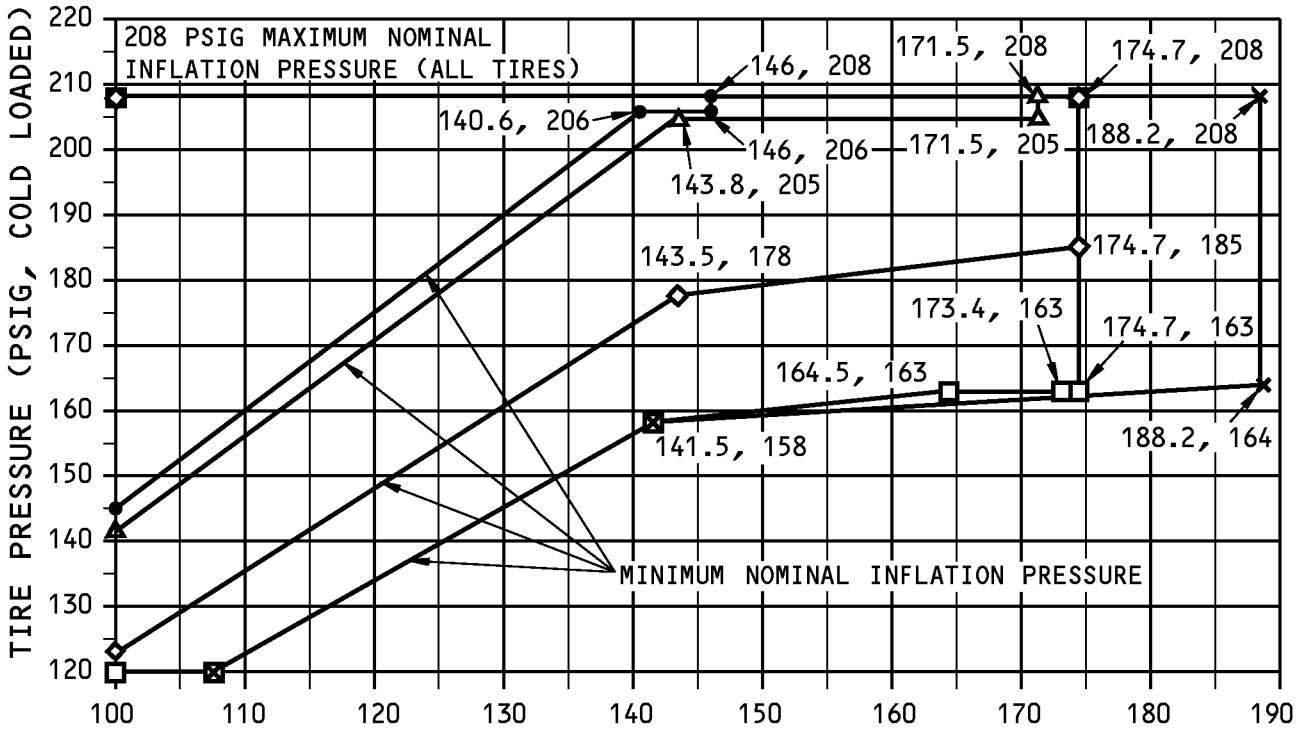
737-800 MAIN LANDING GEAR TIRE PRESSURE LIMITS

NOTE:
1. INFLATION PRESSURES SHOWN ARE FOR COLD LOADED TIRES (I.E. WITH AIRPLANE RESTING ON TIRES). FOR UNLOADED TIRES, REDUCE PRESSURE BY 4%.
2. FOR THE DESIRED MAXIMUM TAXI WEIGHT, DETERMINE THE MINIMUM SERVICE PRESSURE (SLOPED LINE) FROM THE CHART.
3. DETERMINE THE MAXIMUM SERVICE PRESSURE (HORIZONTAL LINE) FROM THE CHART.
4. SELECT A NOMINAL SERVICE PRESSURE BETWEEN THE MINIMUM AND MAXIMUM.
5. INFLATE ALL TIRES ON THE SAME GEAR TO THE SELECTED NOMINAL PRESSURE ±5 PSIG.
6. SEE AIRPLANE WEIGHT - CG CURVES FOR STRUCTURAL LIMITS.

LEGEND:

H44.5x16.5-21/28PR

Main Landing Gear Tire Inflation Limits
Figure 302 (Sheet 2 of 2)/12-15-51-990-802



NOSE LANDING GEAR TIRE PRESSURE LIMITS

NOTE:
1. THIS CHART APPLIES TO 27X7.75-15/12PR BIAS AND 27X7.75R15/12PR RADIAL TIRES, WHEN USED WITH 10-62237-9, -10, OR LATER NOSE WHEELS.
2. INFLATION PRESSURES SHOWN ARE FOR COLD LOADED TIRES (I.E. WITH AIRPLANE RESTING ON TIRES). FOR UNLOADED TIRES, REDUCE PRESSURE BY 4%.
3. FOR THE DESIRED MAXIMUM TAXI WEIGHT, DETERMINE THE MINIMUM SERVICE PRESSURE (SLOPED LINE) FROM THE CHART.
4. DETERMINE THE MAXIMUM SERVICE PRESSURE (HORIZONTAL LINE) FROM THE CHART.
5. SELECT A NOMINAL SERVICE PRESSURE BETWEEN THE MINIMUM AND MAXIMUM.
6. INFLATE ALL TIRES ON THE SAME GEAR TO THE SELECTED NOMINAL PRESSURE ±5 PSIG.
7. SEE AIRPLANE WEIGHT - CG CURVES FOR STRUCTURAL LIMITS.

LEGEND:

- 737-600
- 737-700/700IGW
- 737-800
- 737-900
- 737-900ER

Nose Landing Gear Tire Inflation Limits
Figure 303/12-15-51-990-803

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. DO THE PROCEDURE FOR HIGH ENERGY STOP/HEAT DAMAGE. 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, 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.

CAUTION: IF YOU USE A DIRECT READING GAGE TO MEASURE THE TIRE PRESSURES, MAKE SURE IT IS CORRECTLY CALIBRATED AND 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.

(5) Use a 0-300 psig (0-2069 kpa) tire pressure gauge, STD-1132 to measure the tire pressures.

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)
32-45-21-000-801	Nose Landing Gear Wheel and Tire Assembly Removal (P/B 401)

C. Tools/Equipment

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

Reference	Description
SPL-1527	Inflator - Tire (Part #: F70199-1, Supplier: 81205, A/P Effectivity: 737-100, -200, -200C, -300, -400, -500, -600, -700, -700C, -700ER, -700QC, -800, -900, -900ER, -BBJ)
STD-1132	Gauge - Tire Pressure, 0-300 PSIG (0-2069 KPa)

D. Consumable Materials

Reference	Description	Specification
G00018	Nitrogen - Gaseous, Pressurizing, 99.5 Percent Pure	A-A-59503, Type I, Grade B

E. Location Zones

Zone	Area
734	Left Main Landing Gear
744	Right Main Landing Gear

F. Prepare for the 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.

G. Procedure

SUBTASK 12-15-51-600-005

(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 tire pressures can be higher than normal; this could cause you to over-inflate a suspected low pressure tire.

SUBTASK 12-15-51-600-006

CAUTION: MAKE SURE THE DIRECT READING GAGE IS CORRECTLY CALIBRATED AND 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 main landing gear tires can be assumed to be at approximately the same temperature, measure all of the main landing gear tire pressures and make a record of the values.

(a) Use the pressure 0-300 psig (0-2069 kpa) tire pressure gauge, STD-1132 to measure the main landing gear tire pressures.

SUBTASK 12-15-51-600-007

CAUTION: DO NOT DEFLATE A HOT TIRE TO LOWER THE PRESSURE TO THE AVERAGE PRESSURE VALUE. PRESSURE SHOULD NEVER BE BLED FROM A HOT TIRE TO ACHIEVE A SPECIFIED VALUE. DAMAGE TO EQUIPMENT CAN OCCUR.

(3) Use the tire pressure tables for the main landing gear, do this task: Landing Gear Tire Pressure Check and Tire Servicing, TASK 12-15-51-780-801, Figure 301, Figure 302, Figure 303, Figure 304

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%.

(a) For the applicable airplane maximum taxi weight and tire, find the minimum service pressure.

SUBTASK 12-15-51-610-005

(4) Make sure that all of the main landing gear tire pressures are above the minimum "cold" specified pressures for the airplane's maximum taxi weight.

SUBTASK 12-15-51-610-006

CAUTION: DO NOT DEFLATE A HOT TIRE TO LOWER THE PRESSURE TO THE AVERAGE PRESSURE VALUE. PRESSURE SHOULD NEVER BE BLED FROM A HOT TIRE TO ACHIEVE A SPECIFIED VALUE. DAMAGE TO EQUIPMENT CAN OCCUR.

(5) If the pressure of one tire is low, calculate the average of the other three tires.

SUBTASK 12-15-51-610-007

(6) 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 EQUIPMENT.

(a) Connect the tire inflator, SPL-1527 to the inflation valve [1], [2] and inflate the tire with nitrogen, G00018 to the average value of the other three tires.

(b) Remove the tire inflator, SPL-1527 from the inflation valve [1], [2].

SUBTASK 12-15-51-610-008

(7) 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 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 12-15-51-780-001

(8) 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) Send the wheel and tire assembly for an inspection to find the cause for the low tire pressure.

2) Mark the reason for the tire removal on the tire to aid the inspectors when they examine the tire.

(b) Replace the wheel and tire assembly installed on the opposite side of that axle.

1) 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.

2) Send the tire for inspection for damage.

SUBTASK 12-15-51-200-001

(9) Use the pressure 0-300 psig (0-2069 kpa) tire pressure gauge, STD-1132 to measure the nose landing gear tire pressures.

SUBTASK 12-15-51-200-002

(10) For the applicable airplane maximum taxi weight and tire, find the minimum nose tire service pressure, do this task: Landing Gear Tire Pressure Check and Tire Servicing, TASK 12-15-51-780-801, (Figure 303).

SUBTASK 12-15-51-200-003

(11) Make sure both of the nose gear tires are above the minimum cold specified pressures for the airplane's maximum weight.

SUBTASK 12-15-51-600-008

CAUTION: DO NOT DEFLATE A HOT TIRE TO LOWER THE PRESSURE TO THE AVERAGE PRESSURE VALUE. PRESSURE SHOULD NEVER BE BLED FROM A HOT TIRE TO ACHIEVE A SPECIFIED VALUE. DAMAGE TO EQUIPMENT CAN OCCUR.

(12) If the pressure of one tire is 5% - 10% below the pressure of the other tire, do these steps:

(a) Inflate the tire to the pressure of the other tire.

WARNING: USE A REGULATED PRESSURE SOURCE TO SERVICE THE TIRES. AN UNREGULATED PRESSURE SOURCE CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(b) Connect the tire inflator, SPL-1527 to the inflation valve [2] and inflate the tire with nitrogen, G00018 to the value of the other tire.

(c) Remove the tire inflator, SPL-1527 from the inflation valve [2].

SUBTASK 12-15-51-000-001

(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 presure.

3) Mark the reason for the tire removal on the tire to aid the inspectors when they examine the tire.

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) Send the wheel and tire assembly for an inspection to find the cause for the low tire pressure.

2) Mark the reason for the tire removal on the tire to aid the inspectors when they examine the tire.

(b) Replace the wheel and tire assembly installed on the opposite side of that axle.

1) 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.

2) Send the tire for inspection for damage.

END OF TASK

TASK 12-15-51-610-802

4. Add Nitrogen or Air to the Tire

(Figure 301, Figure 302, Figure 303,)

NOTE: Also see Figure 304.

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 #: F70199-1, Supplier: 81205, A/P Effectivity: 737-100, -200, -200C, -300, -400, -500, -600, -700, -700C, -700ER, -700QC, -800, -900, -900ER, -BBJ)

D. Consumable Materials

Reference	Description	Specification
G00018	Nitrogen - Gaseous, Pressurizing, 99.5 Percent Pure	A-A-59503, Type I, Grade B

E. Location Zones

Zone	Area
713	Nose Landing Gear
734	Left Main Landing Gear
744	Right Main Landing Gear

F. Procedure

SUBTASK 12-15-51-480-002

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 12-15-51-020-005

(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 12-15-51-020-006

(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 12-15-51-610-003

(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 psig 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.

(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 304).

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 304).

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.

SUBTASK 12-15-51-090-001

(7) Remove the tire inflator, SPL-1527 from the gas valve [2].

SUBTASK 12-15-51-020-007

(8) For the nose landing gear tires, install the cap [102].

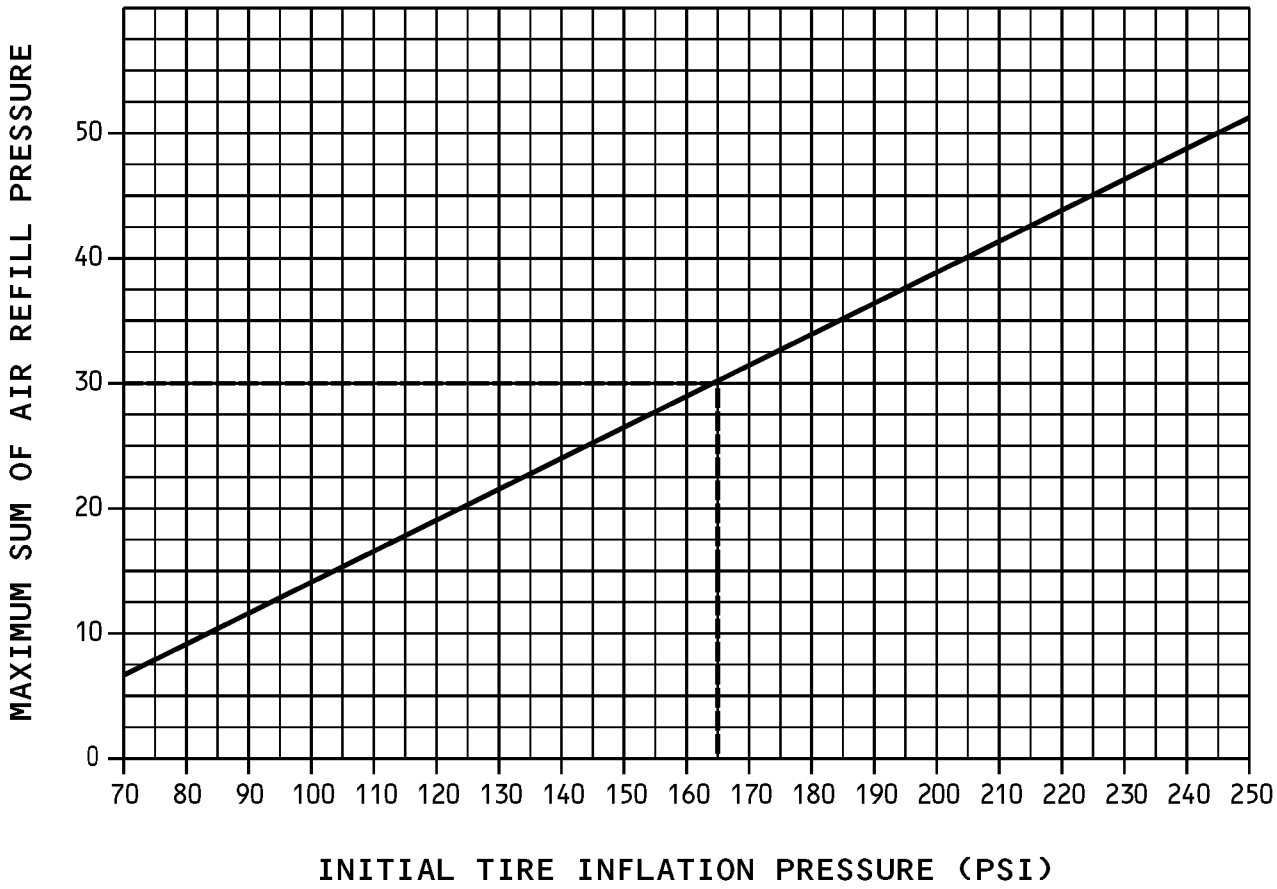
SUBTASK 12-15-51-090-002

(9) Remove the tire inflator, SPL-1527 from the gas valve [1].

SUBTASK 12-15-51-020-008

(10) For the main landing gear tires, install the cap [101].

END OF TASK



Air Refill Pressure
Figure 304/12-15-51-990-805

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. 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, BMS 3-32 Type I and Type II, 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 MIL-H-6083 or MIL-H-5606 fluids with a lubricant.

(4) Use BMS 3-32, Type I to fill the shock strut for the first time when new, or after overhaul. The Type I fluid contains a corrosion inhibitor.

(5) Use BMS 3-32, Type I or Type II at the operator's discretion, for subsequent refills or to top off the strut. These two types of fluid are compatible.

(6) If the BMS 3-32 is not available, You can use MIL-H-6083 or MIL-H-5606 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 and methyl oleate 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 the BMS 3-32 is not available, and you need to fill an empty shock strut, it is recommended that you pre-mix the MIL-H-6083 or MIL-H-5606 fluid 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.

B. Recommended (Pre-Mixed) Shock Strut Fluids

SUBTASK 12-15-61-610-002

(1) BMS 3-32, Type I - This is MIL-H-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-H-5606 fluid pre-mixed with 1. 5 percent by volume of Lubrizol 1395 and 1 percent by volume of methyl oleate.

C. Alternative (Not Pre-Mixed) Shock Strut Fluids

SUBTASK 12-15-61-610-003

(1) MIL-H-6083 fluid plus 2. 4 percent by volume of Lubrizol 1395 - This mixture can be made from any approved source for MIL-H-6083 and mixed with 2. 4 percent by volume of Lubrizol 1395.

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-H-5606 fluid plus 2. 4 percent by volume of Lubrizol 1395 - This mixture can be made from any approved source for MIL-H-5606 and mixed with 2. 4 percent by volume of Lubrizol 1395.

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.

D. 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) Clean the flight compartment windows.

B. It is recomended that you do not use 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 Flight Compartment Windows

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	
G02418	Water - De-ionized	

B. Location Zones

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

C. Prepare to Clean the Flight Compartment Windows

SUBTASK 12-16-02-860-001

WARNING: MAKE SURE THAT THE WINDOW HEAT SWITCHES ARE OFF AND THE CIRCUIT BREAKERS ARE OPEN. YOU CAN GET AN ELECTRICAL SHOCK IF YOU TOUCH THE WINDOWS.

(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
D	1	C00226	WINDOW HEAT CONTROL RIGHT FRONT AC
D	2	C00225	WINDOW HEAT CONTROL LEFT SIDE AC
E	1	C00224	WINDOW HEAT CONTROL LEFT FRONT AC
E	2	C00227	WINDOW HEAT CONTROL RIGHT SIDE AC

F/O Electrical System Panel, P6-11

Row	Col	Number	Name
B	8	C00393	WINDOW HEAT POWER RIGHT SIDE
B	9	C00228	WINDOW HEAT POWER LEFT FRONT

F/O Electrical System Panel, P6-12

Row	Col	Number	Name
B	8	C00394	WINDOW HEAT POWER RIGHT FRONT
B	9	C00392	WINDOW HEAT POWER LEFT SIDE

D. Clean 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. THE USE OF THESE CLEANERS WILL REMOVE THE HYDROPHOBIC COATING.

(1) For airplanes with hydrophobic coated windows, do the step that follows:

NOTE: Hydrophobic coated windows will be identified with the words HYDROPHOBIC COATED WINDSHIELD next to the window part number.

(a) Use a lint-free cloth, G00834 to apply a 50/50 mixture of alcohol, B00130 and de-ionized water, G02418 to the inner and outer surfaces of the window.

SUBTASK 12-16-02-160-002

CAUTION: DO NOT RUB DRY ACRYLIC WINDOWS WITH A DRY CLOTH. THIS CAN CAUSE SCRATCHES.

(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 and outer surfaces of the window.

NOTE: Hydrophobic coated windows will be identified with the words HYDROPHOBIC COATED WINDSHIELD next to the window part number.

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
D	1	C00226	WINDOW HEAT CONTROL RIGHT FRONT AC
D	2	C00225	WINDOW HEAT CONTROL LEFT SIDE AC
E	1	C00224	WINDOW HEAT CONTROL LEFT FRONT AC
E	2	C00227	WINDOW HEAT CONTROL RIGHT SIDE AC

F/O Electrical System Panel, P6-11

Row	Col	Number	Name
B	8	C00393	WINDOW HEAT POWER RIGHT SIDE
B	9	C00228	WINDOW HEAT POWER LEFT FRONT

F/O Electrical System Panel, P6-12

Row	Col	Number	Name
B	8	C00394	WINDOW HEAT POWER RIGHT FRONT
B	9	C00392	WINDOW HEAT POWER LEFT SIDE

——————— END OF TASK ———————

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)
56-31-00-000-801	Remove 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	

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 Compartmnet 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 PLASTIC WITH A DRY CLOTH. THIS CAN CAUSE SCRATCHES AND BUILD AN ELECTROSTATIC CHARGE WHICH WILL ATTRACT DUST AND PARTICLES.

CAUTION: DO NOT DISTURB HEAT SENSOR WIRES WHEN CLEANING THE INTERIOR SURFACE. DISRUPTION MAY CAUSE THE CONNECTORS TO BECOME LOOSE AND OVERHEAT.

(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.

——————— 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)	BMS15-5
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
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.

F. Procedure

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.

WARNING: DO NOT WET OR MAR THE WINDOW SURFACES AFTER ANTISTATIC TREATMENT. THE ANTISTATIC SOLUTION IS WATER SOLUBLE AND YOU CAN DAMAGE THE ANTISTATIC PROTECTION.

(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
12-14-01-600-802	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 - Pressurization (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 1476B as qualified to D6-17487

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 12-17-01-860-004

(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 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 12-17-01-860-005

(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 12-14-01-600-802.

(b) If it is necessary, do this task: Potable Water System - Pressurization, 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 12-17-01-860-008

(6) Push the flapper on the service panel drain valve assembly to close the service panel drain valve assembly.

SUBTASK 12-17-01-860-007

(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

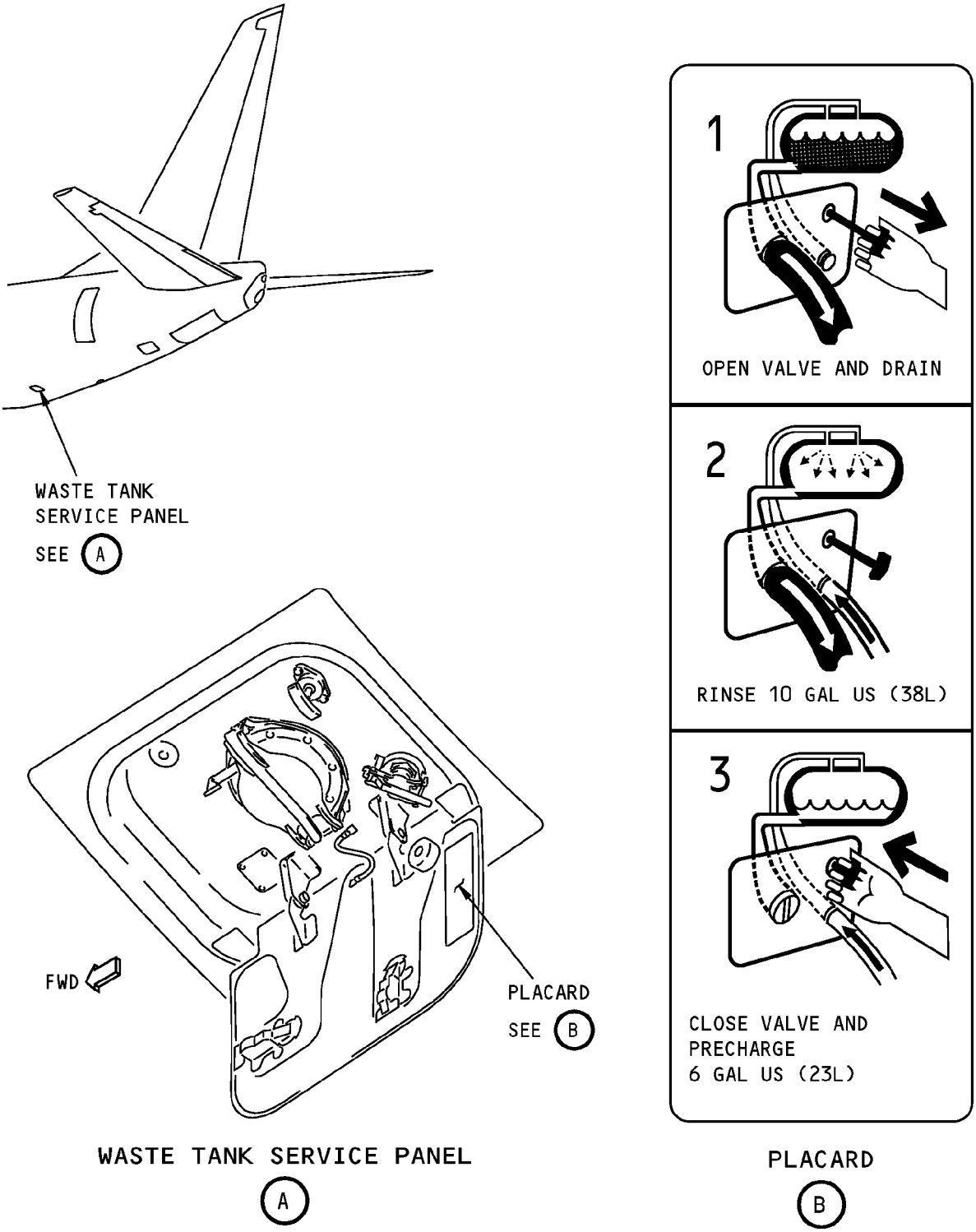
(9) Close this access panel:

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 Servicing
Figure 301/12-17-01-990-810

AIRPLANE LUBRICATION - SERVICING

TASK 12-20-00-640-801

1. General Instructions for Lubrication

A. General

(1) Description

(a) This section of the 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 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 to 250°F (-73 to 121°C) range:

1) BMS 3-33

2) MIL-PRF-23827

(b) BMS 3-33 is the preferred general-purpose aviation grease recommended by Boeing for applications exposed to temperatures of less than 250°F. It is recommended because it shows better wear, corrosion protection, and low temperature torque properties.

1) BMS 3-33 is satisfactory to be used:

a) When MIL-PRF-23827 was specified

b) When BMS 3-24 is specified for use in which the maximum service temperature is not more than 250°F

2) BMS 3-33 cannot be used where Royco 11MS is the only grease specified because BMS 3-33 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 flagnotes 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

2) MIL-PRF-81322 (NATO G-395)

3) BMS 3-24

(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) BMS 3-32, Type II Landing Gear Shock Strut Fluid, Anti-Wear

(b) MIL-H-5606, Hydraulic Fluid, Petroleum base, Aircraft (NATO H-515)

(c) MIL-PRF-7870, Lubricating Oil, General Purpose, Low Temperature (NATO O-142)

(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 SymbolsFigure 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. Lubrication Application Procedures and Cautions

SUBTASK 12-20-00-640-001

(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 12-20-00-640-003

(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 pressure that you set is less than 2500 psi (17237 KPa)

(c) Set the pressure at 100 to 200 psi (689 - 1379 KPa) unless otherwise specified.

NOTE: This is usually sufficient to push out the used grease.

(d) Find all of the lubrication points that are identified in the specific maintenance task.

1) Use the specified lubricant.
2) Use an Alemite Midget flush adapter (No. 314150) 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 wiper 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.

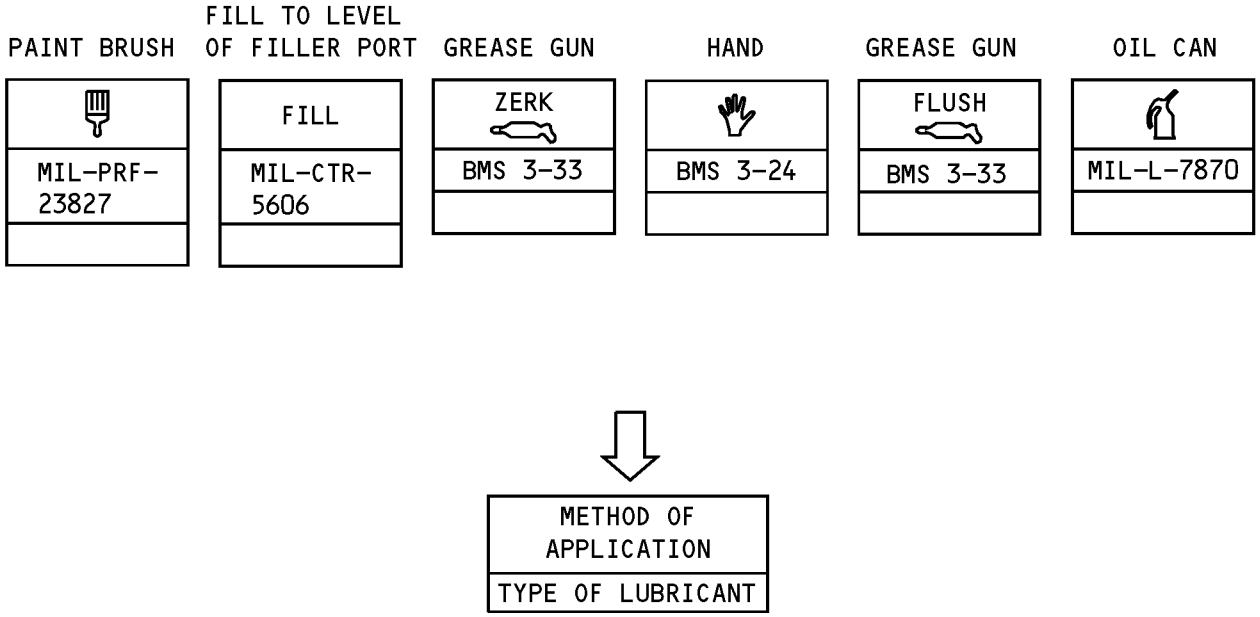
(g) If a grease fitting comes out, do these steps:

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 fittingLUBRICATION 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 ———————



Lubrication Symbols
Figure 301/12-20-00-990-801

TASK 12-20-00-640-802

2. Changing of Approved Grease Brands or Specification Types

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 12-20-00-640-004

(1) Make sure that the grease that you use is permitted by the specific AMM instructions and your local maintenance practices.

SUBTASK 12-20-00-640-005

(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 12-20-00-640-006

(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 ———————

MAIN LANDING GEAR - SERVICING

1. General

A. This procedure contains scheduled maintenance task data.

B. This procedure has these three tasks:

(1) Main Landing Gear Upper End Components Servicing.

(2) Main Landing Gear Lower End Components Servicing.

(3) Main Landing Gear Bushings Servicing.

C. 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

A. General

(1) This procedure is a scheduled maintenance task.

(2) This task provides 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

Table 301

SUBTASK 12-21-11-840-001

WARNING: USE GLOVES AND EYE PROTECTION WHEN YOU LUBRICATE WITH THE USE OF A GREASE GUN. LUBRICANT AT HIGH PRESSURE CAN CAUSE INJURY TO PERSONS.

(1) Put on protective gloves and eye protection.

SUBTASK 12-21-11-640-001

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 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 301/12-21-11-993-803 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 *[1]	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

*[1] It is necessary that the two trunnion zerk fittings on the outer cylinder be lubricated with BMS 3-33 grease as an alternative to the BMS 3-27 grease that is called out on the yellow decal.

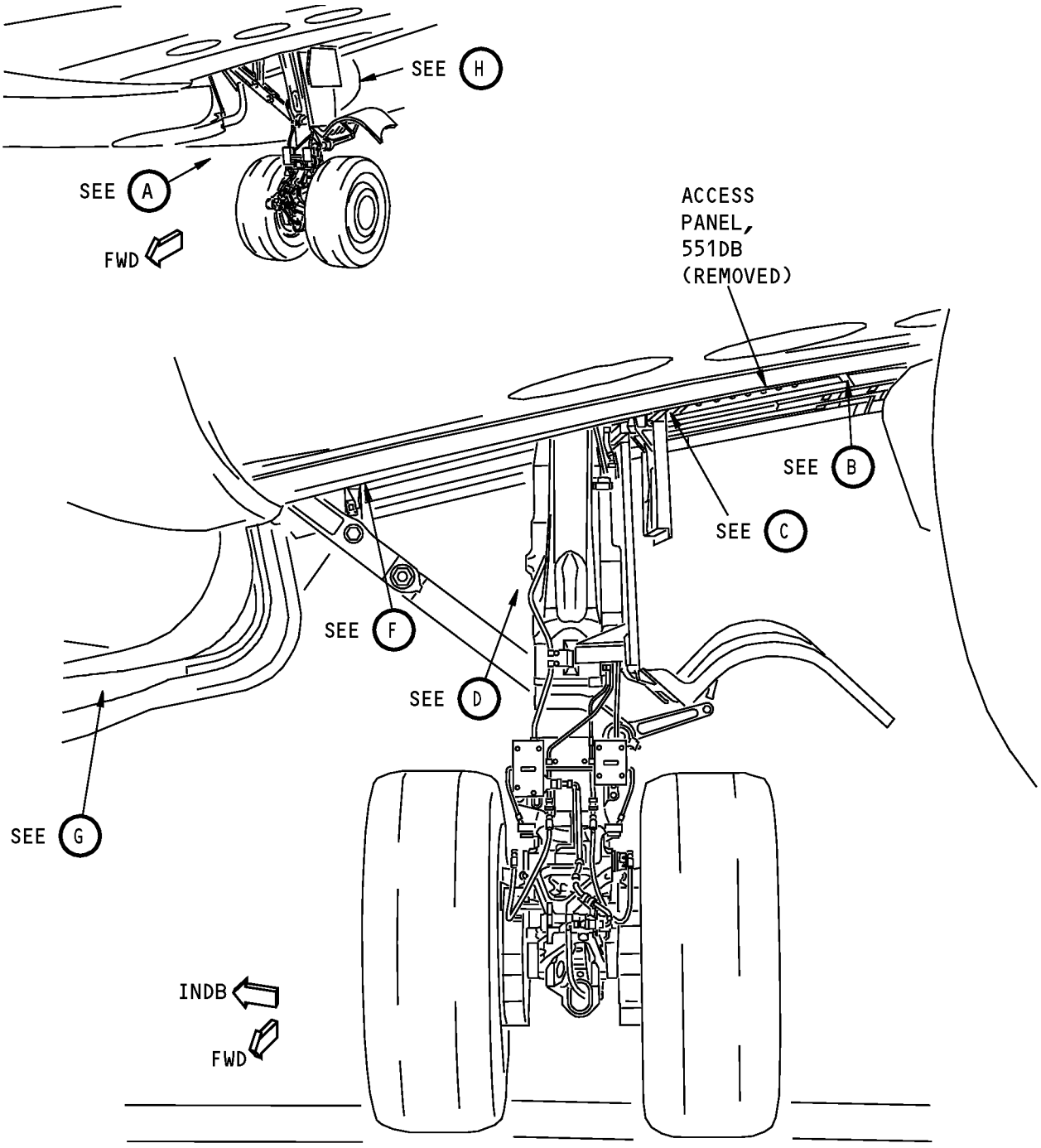
H. Put the Airplane Back to Its Usual Condition

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

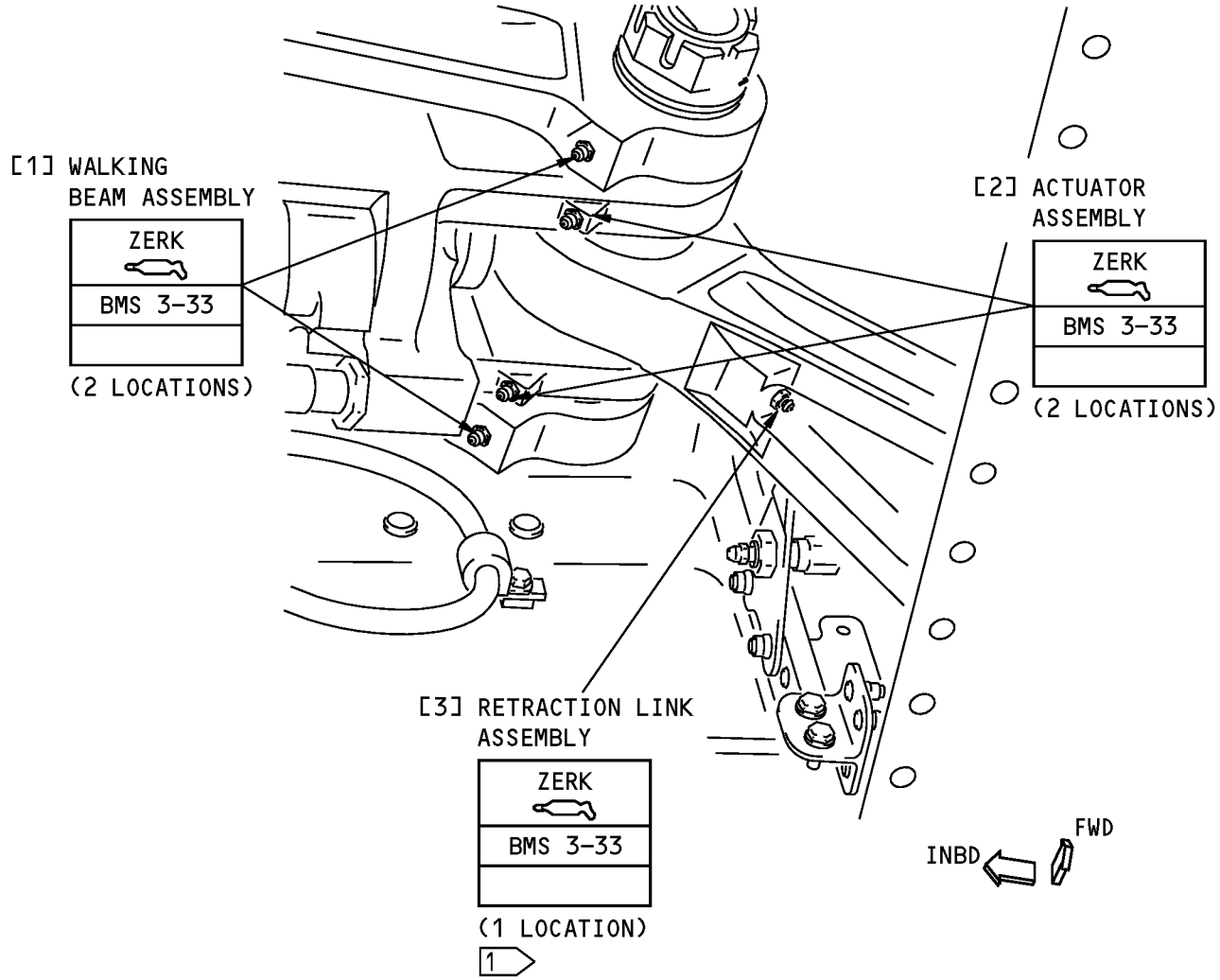
END OF TASK



LEFT MAIN LANDING GEAR
(RIGHT MAIN LANDING GEAR IS EQUIVALENT)

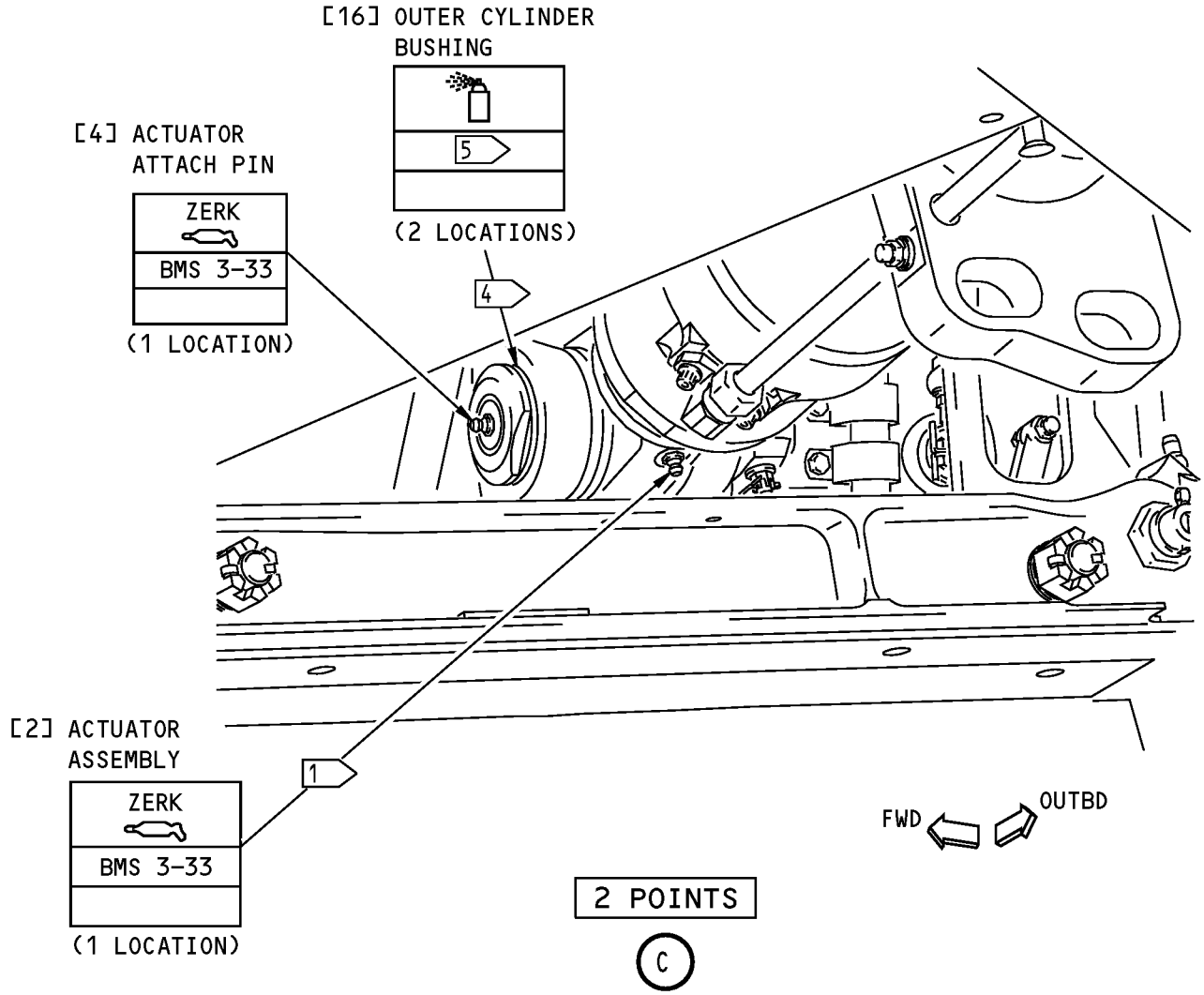
A

Main Landing Gear Upper End Components Servicing
Figure 301 (Sheet 1 of 8)/12-21-11-990-801



1 ONE MORE LUBE POINT IS ON THE OPPOSITE SIDE (NOT SHOWN). LUBRICATE ONLY ONE LUBE POINT.

Main Landing Gear Upper End Components Servicing
Figure 301 (Sheet 2 of 8)/12-21-11-990-801



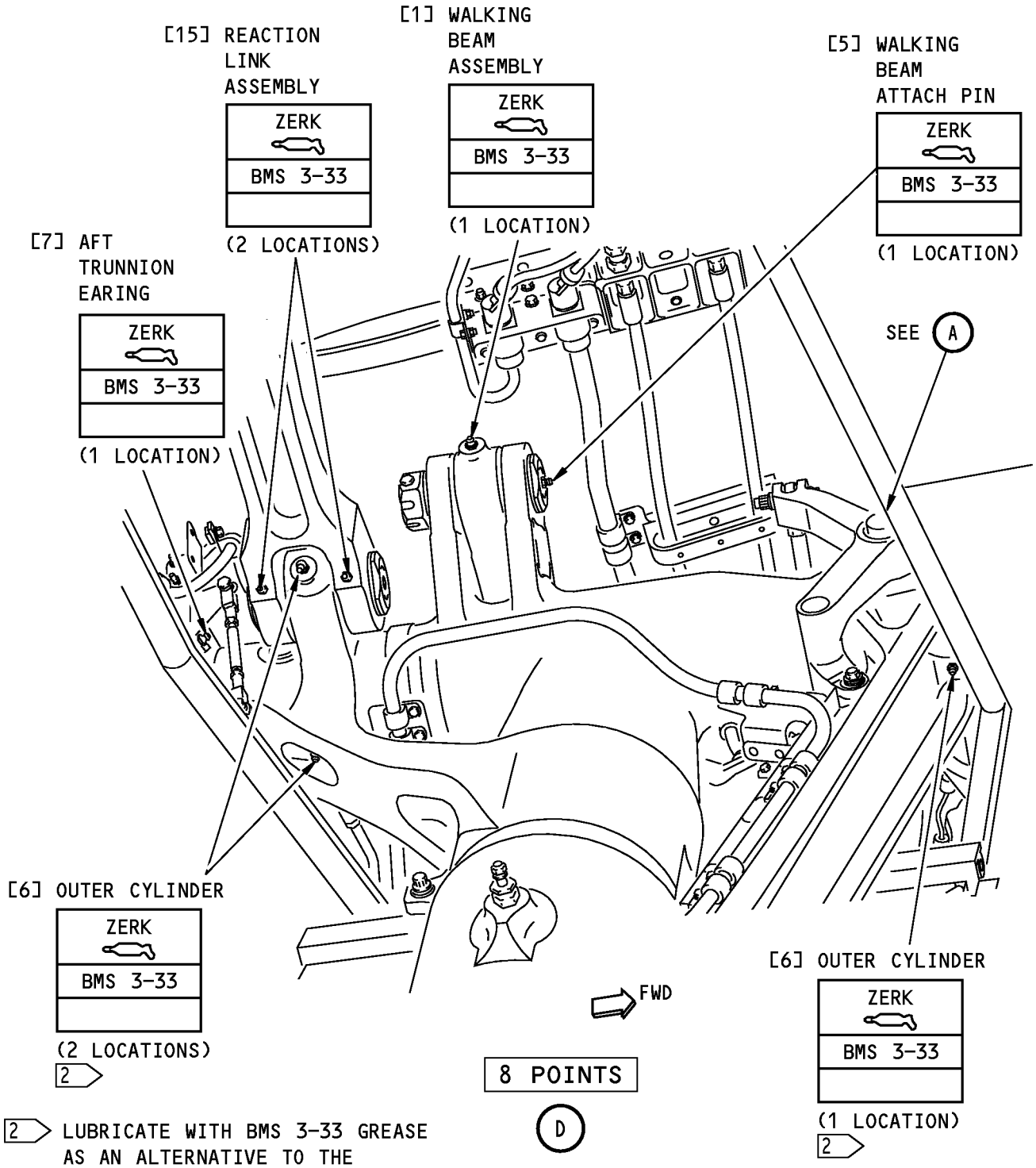
1 ONE MORE LUBE POINT IS ON THE OPPOSITE SIDE (NOT SHOWN). LUBRICATE ONLY ONE LUBE POINT

4 ONE MORE BUSHING IS ON THE OPPOSITE SIDE UNDER THE NUT AND WASHER.

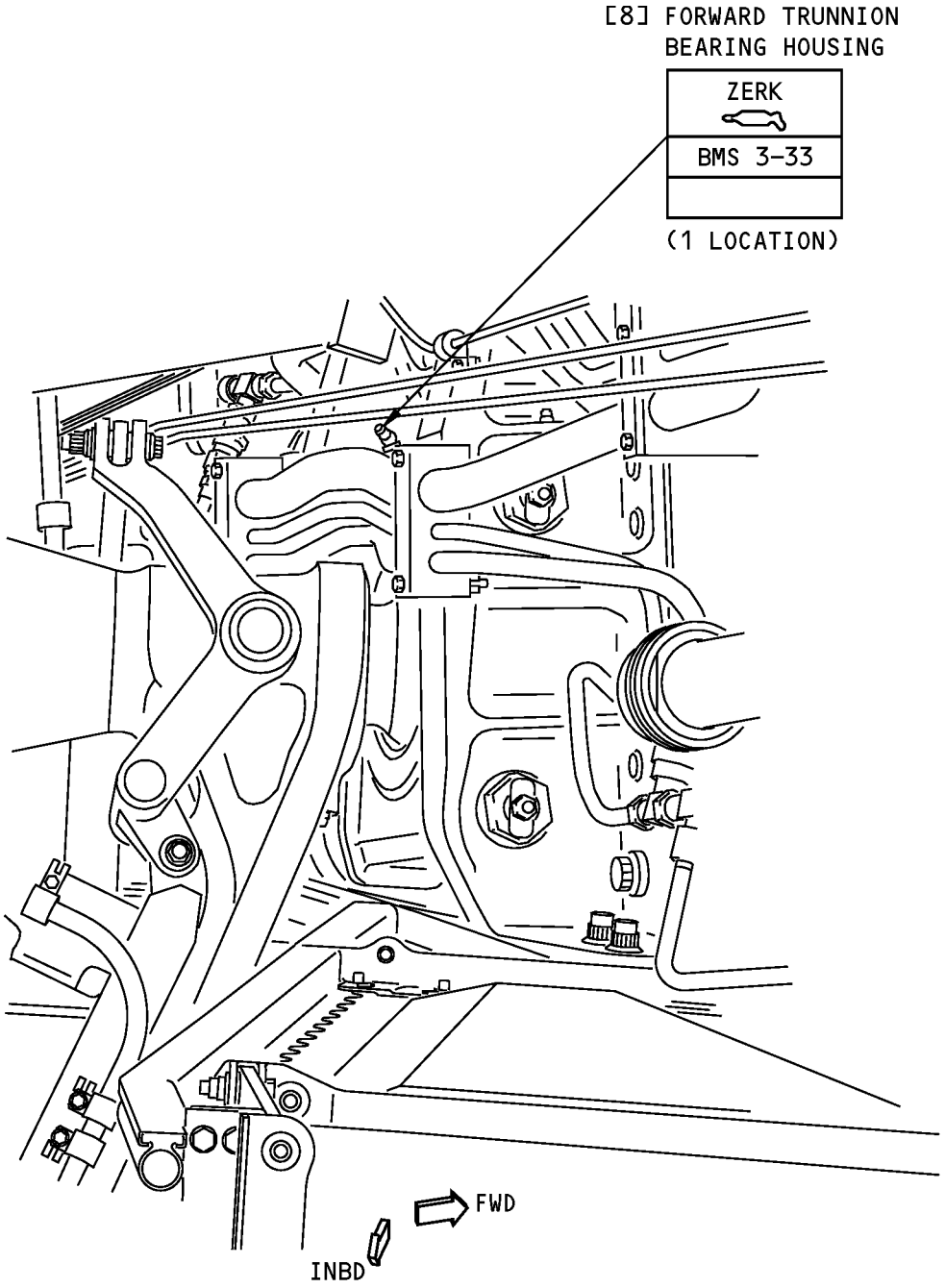
5 BUSHINGS WITH PAINTED WITNESS LINE (OR EQUIVALENT IDENTIFICATION MARK), DO THESE STEPS:

- 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.

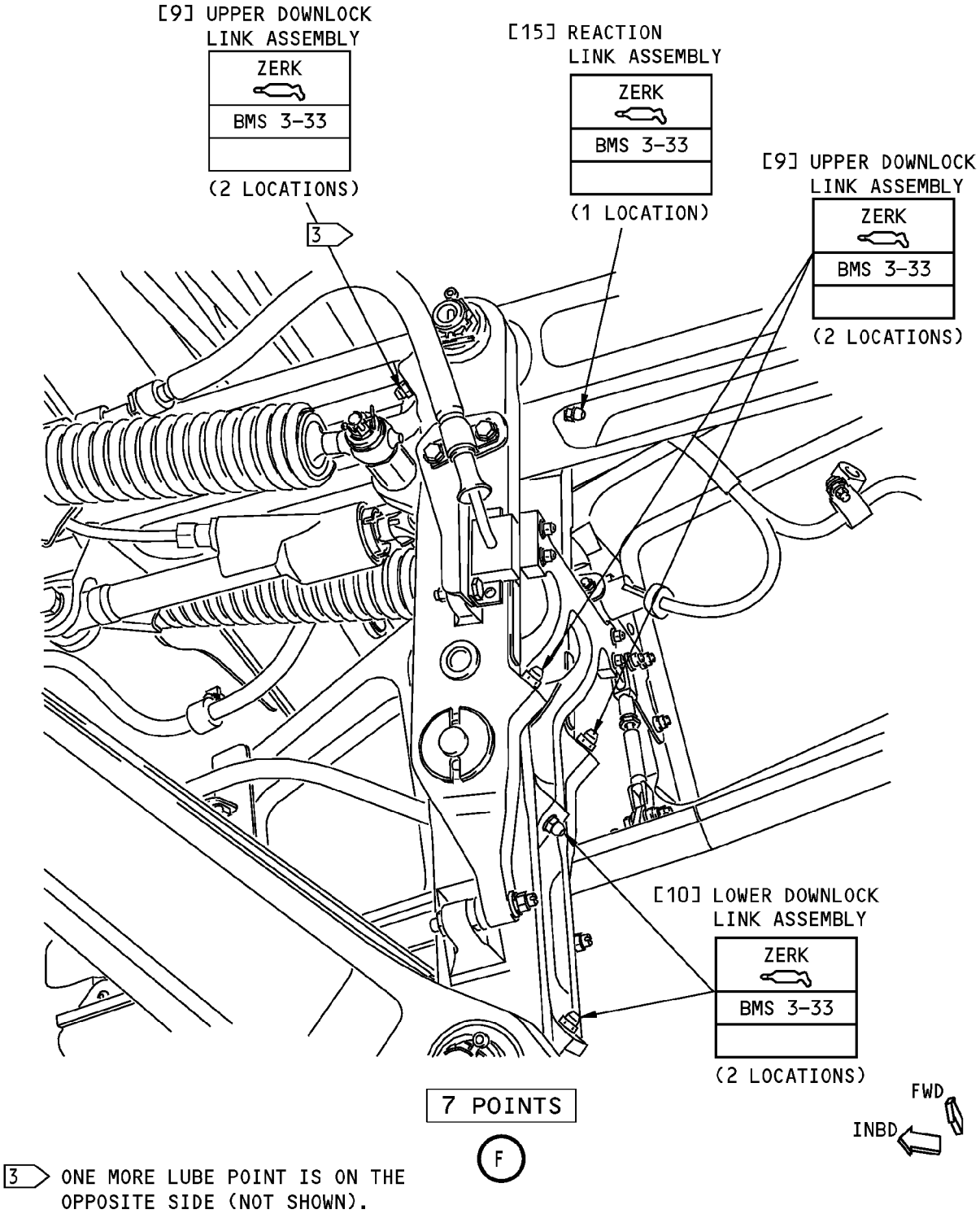
Main Landing Gear Upper End Components Servicing
Figure 301 (Sheet 3 of 8)/12-21-11-990-801



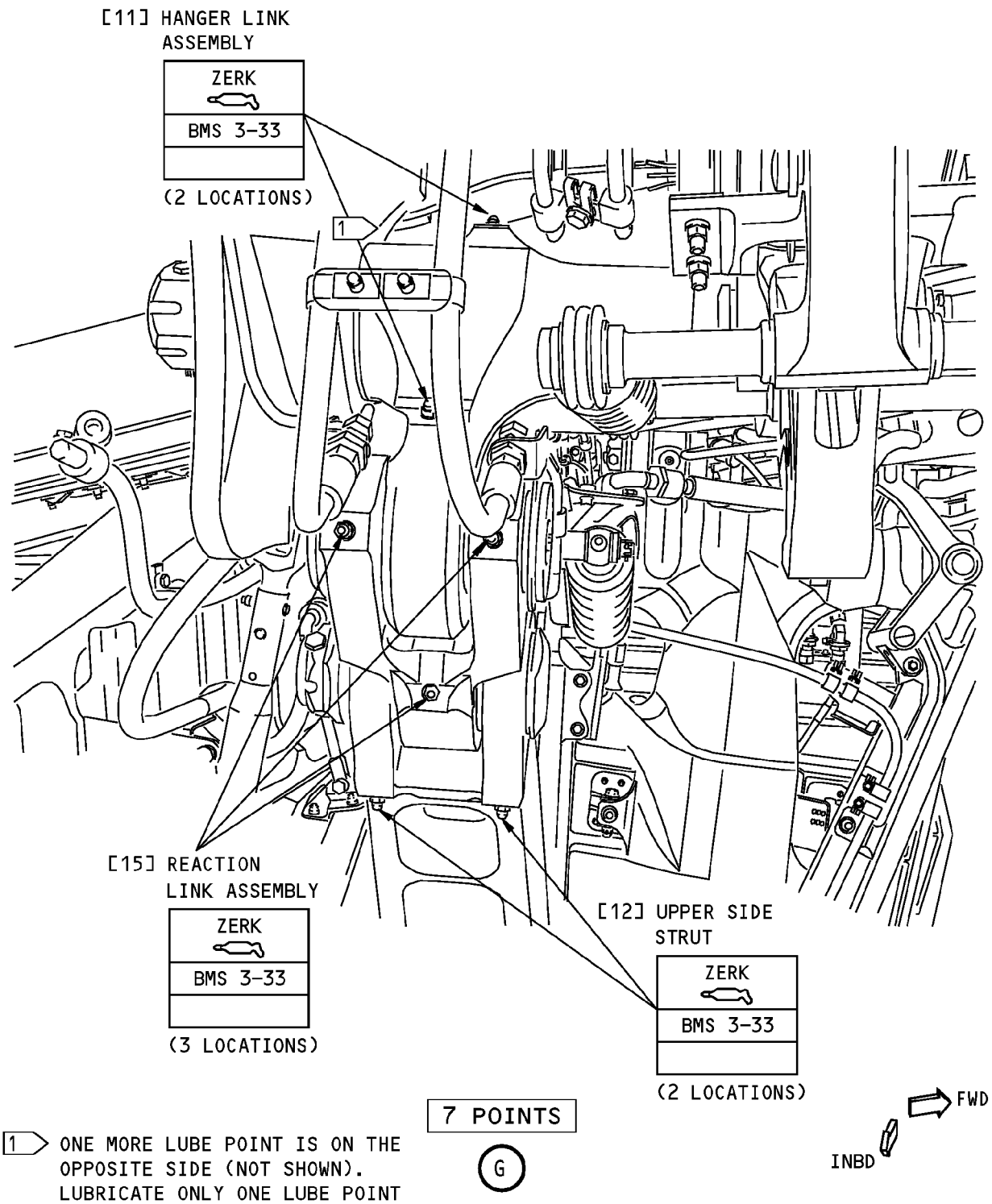
Main Landing Gear Upper End Components Servicing
Figure 301 (Sheet 4 of 8)/12-21-11-990-801



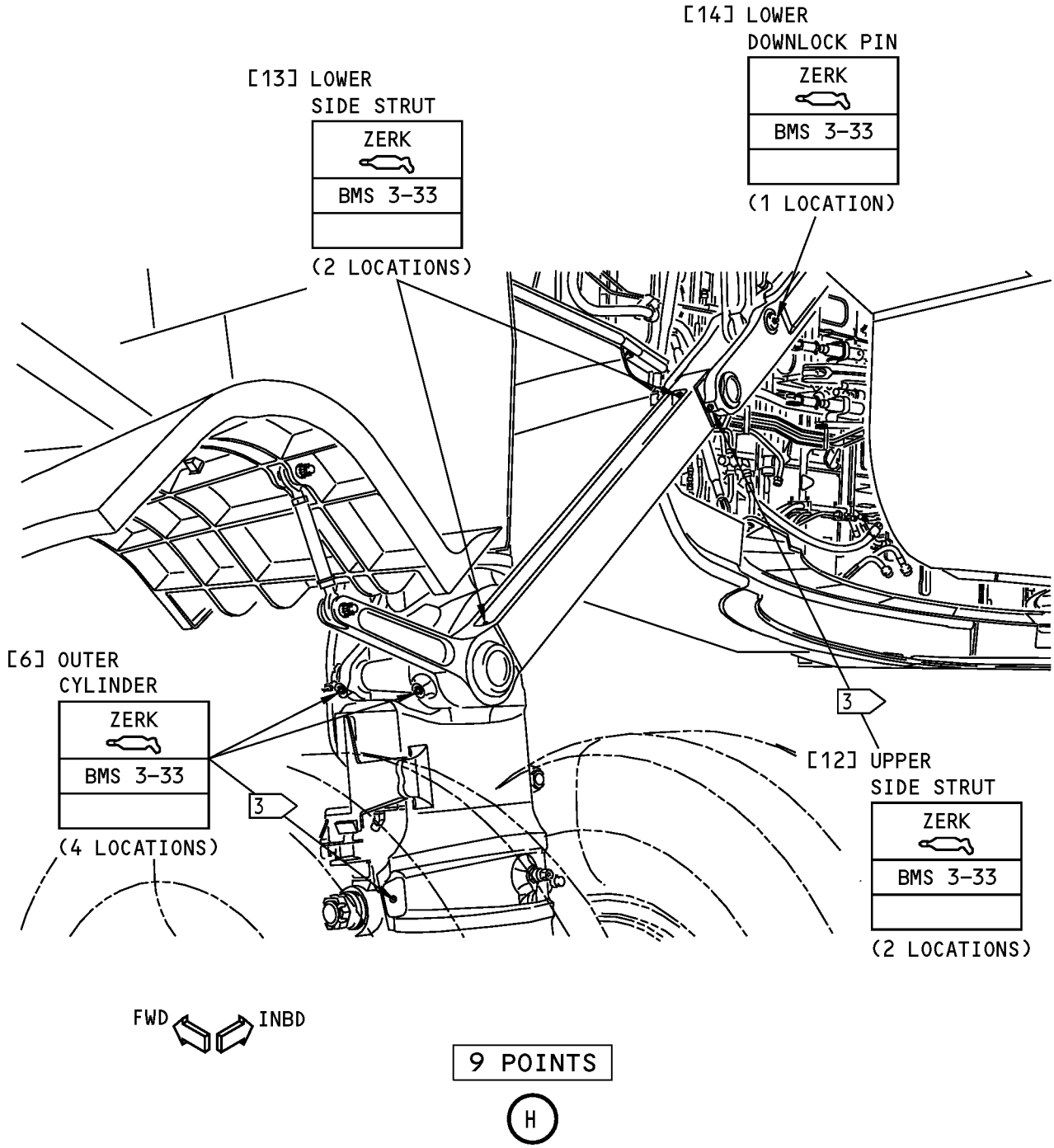
Main Landing Gear Upper End Components Servicing
Figure 301 (Sheet 5 of 8)/12-21-11-990-801



Main Landing Gear Upper End Components Servicing
Figure 301 (Sheet 6 of 8)/12-21-11-990-801



Main Landing Gear Upper End Components Servicing
Figure 301 (Sheet 7 of 8)/12-21-11-990-801



3 ONE MORE LUBE POINT IS ON THE OPPOSITE SIDE (NOT SHOWN).

Main Landing Gear Upper End Components Servicing
Figure 301 (Sheet 8 of 8)/12-21-11-990-801

TASK 12-21-11-640-802

3. Main Landing Gear Lower End Components Servicing

A. General

(1) This procedure is a scheduled maintenance task.

(2) This task provides 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
D00378	Grease - Aircraft, General Purpose, Wide Temperature - Aeroshell 22	MIL-PRF-81322
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 12-21-11-480-002

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.

F. Procedure

SUBTASK 12-21-11-840-002

WARNING: USE GLOVES AND EYE PROTECTION WHEN YOU LUBRICATE WITH THE USE OF A GREASE GUN. LUBRICANT AT HIGH PRESSURE CAN CAUSE INJURY TO PERSONS.

(1) Put on protective gloves and eye protection.

SUBTASK 12-21-11-640-002

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 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 BRAKE HOUSING BUSHINGS. A FIRE CAN OCCUR WHEN THE BRAKE BECOMES HOT. FIRE CAN CAUSE INJURIES TO PERSONNEL.

(a) Lubricate the MLG brake housing bushing after brake R/I only.

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.

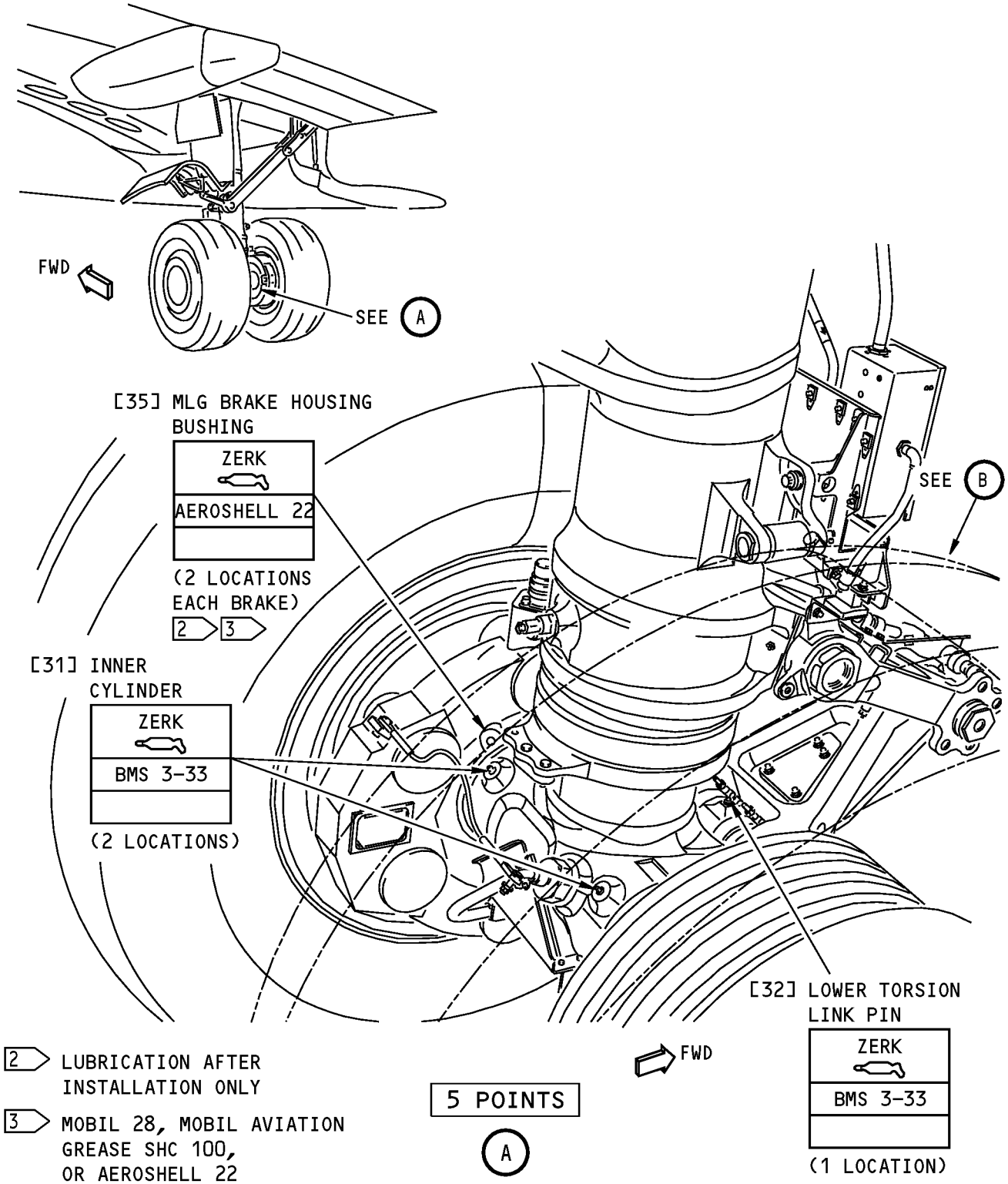
Table 302/12-21-11-993-804 Main Landing Gear Lower End Components Lubrication (Fig. 302)

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
35	MLG BRAKE HOUSING BUSHING *[1]*[2]	Aeroshell 22 grease, D00378	Zerk	2

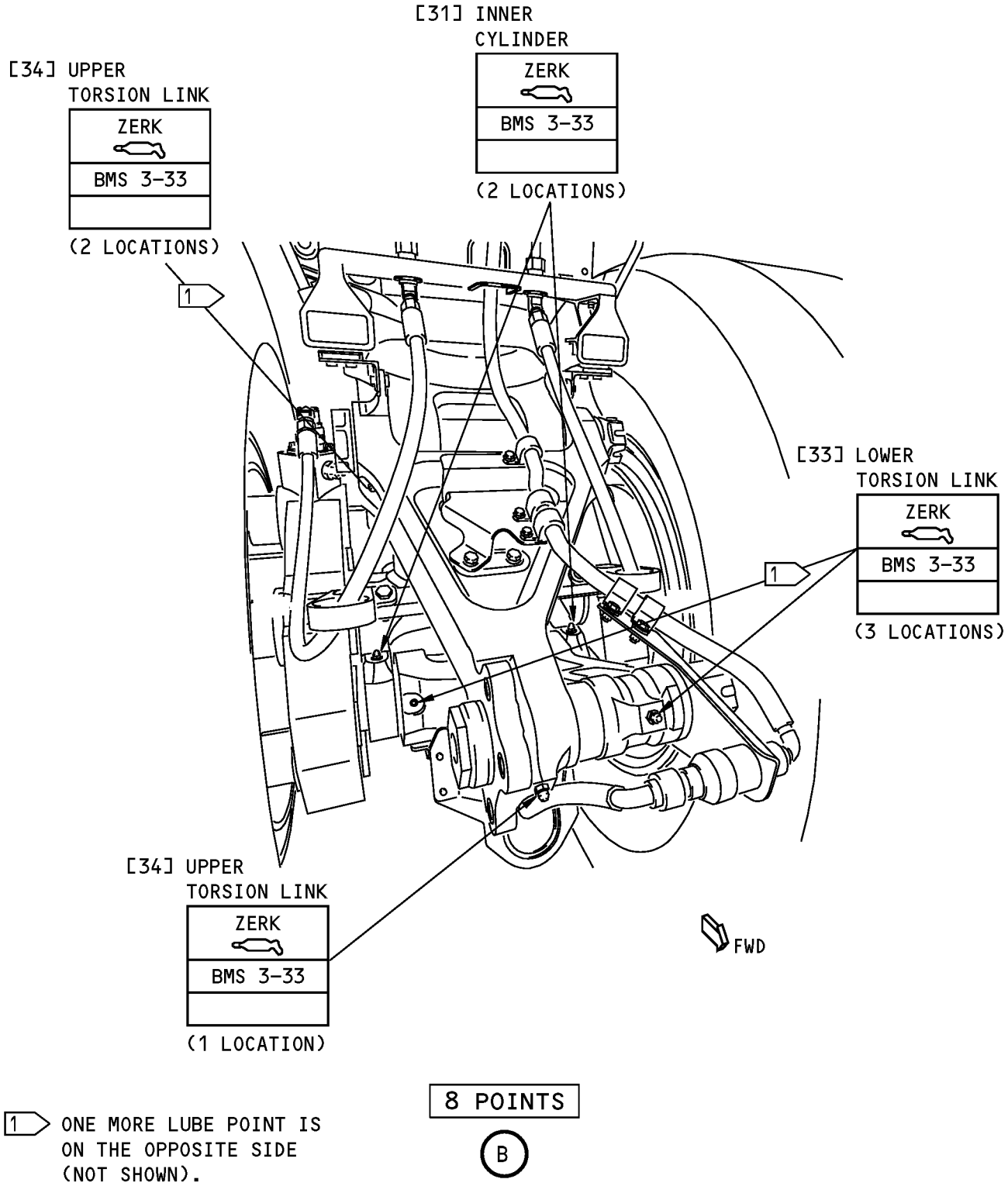
*[1] Equivalent greases are Mobil 28 and Mobil Aviation Grease SHC 100.

*[2] Lubricate after installation only.

END OF TASK



Main Landing Gear Lower End Components Servicing
Figure 302 (Sheet 1 of 2)/12-21-11-990-802



Main Landing Gear Lower End Components Servicing
Figure 302 (Sheet 2 of 2)/12-21-11-990-802

TASK 12-21-11-620-801

4. Main Landing Gear Bushings Servicing

A. General

(1) This task provides instructions to service the bushings of the main landing gear.

B. References

Reference	Title
32-00-01-480-801	Landing Gear Downlock Pins Installation (P/B 201)

C. Consumable Materials

Reference	Description	Specification
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. 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 sealant (no more steps are necessary).

NOTE: If you cannot replace the sealant right away spray the lug with corrosion inhibiting compound, G00009 and lubricate the joint to remove all compound from the joint.

c) Contact Boeing 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.

NOTE: If you suspect bushing migration or rotation, you can apply a red witness line or equivalent identification mark. This will help you identify a migrated or rotated bushing during a subsequent maintenance interval

1) Replace the rotated bushing and apply bushing fillet seal. Contact Boeing if lug corrosion is found.

2) If you cannot replace the bushing right away, do the steps that follow:

a) Remove the bushing fillet seal and spray the corrosion inhibiting compound, G00009 between the bushing flange and lug surface.

b) Lubricate the joint to remove all corrosion inhibiting compound from the joint.

c) If no corrosion is found during subsequent maintenance intervals, continue to apply corrosion inhibiting compound, G00009 between the bushing flange and lug surface until bushing is replaced.

d) Lubricate the joint to remove all compound from the joint after each subsequent application of corrosion inhibiting compound.

3) For migrated bushings with no signs of bushing rotation or lug corrosion, do the steps that follow:

a) Remove the bushing fillet seal and spray the corrosion inhibiting compound, G00009 between the bushing flange and the surface. Re-seat bushing.

b) Lubricate the joint to remove all corrosion inhibiting compound from the joint.

c) If no corrosion or bushing rotation is found during subsequent maintenance intervals, you can continue to apply corrosion inhibiting compound, G00009 between the bushing flange and lug surface.

d) Lubricate the joint to remove all compound from the joint after each subsequent application of corrosion inhibiting compound.

e) Replace migrated bushing at next gear overhaul.

END OF TASK

NOSE LANDING GEAR - SERVICING

1. General

A. This procedure contains scheduled maintenance task data.

B. This procedure has these tasks:

(1) The lubrication of the upper end components of the nose landing gear.

(2) The lubrication of the lower end components of the nose landing gear.

TASK 12-21-21-640-801

2. Nose Landing Gear Upper End Components Servicing

A. General

(1) This procedure is a scheduled maintenance task.

(2) This task supplies 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. Consumable Materials

Reference	Description	Specification
D00633	Grease - Aircraft General Purpose	BMS3-33

D. Location Zones

Zone	Area
115	Nose Landing Gear Wheel Well - Left
116	Nose Landing Gear Wheel Well - Right
713	Nose Landing Gear

E. Prepare for the Procedure

SUBTASK 12-21-21-480-001

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

F. Procedure

SUBTASK 12-21-21-840-001

WARNING: USE GLOVES AND EYE PROTECTION WHEN YOU LUBRICATE WITH THE USE OF A GREASE GUN. LUBRICANT AT HIGH PRESSURE CAN CAUSE INJURY TO PERSONS.

(1) Put on protective gloves and eye protection.

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 PRECEDES)

CAUTION: DO NOT USE A PRESSURE OF MORE THAN 2500 PSIG (17200 KPA) WHEN YOU LUBRICATE THE NOSE 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 nose 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 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.

SUBTASK 12-21-21-640-002

(3) If a fitting blows off, do these steps:

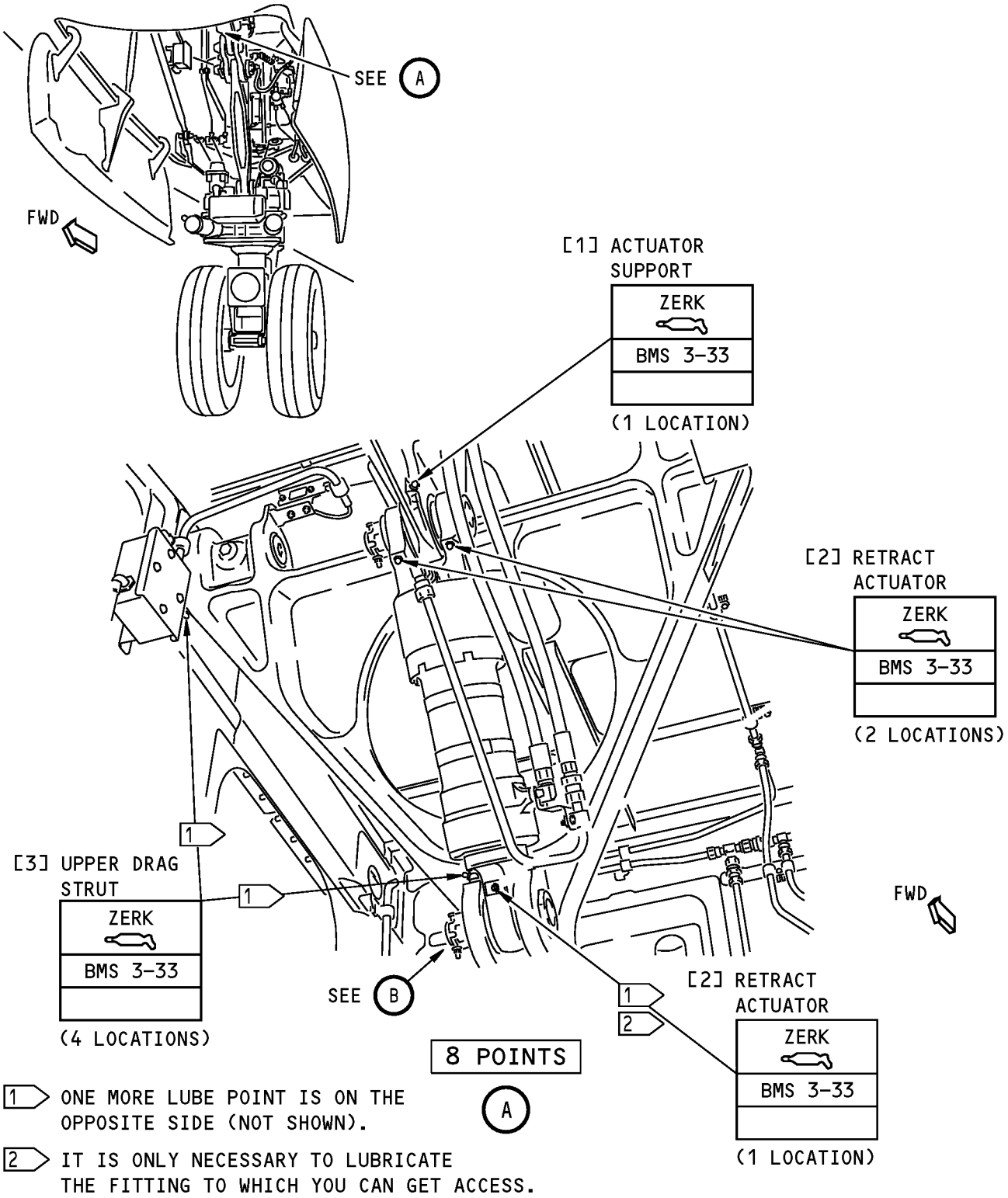
(a) Make sure there is not a blockage in the lubrication path.

(b) Do this task: Lubrication Fitting Installation, TASK 20-10-24-420-801.

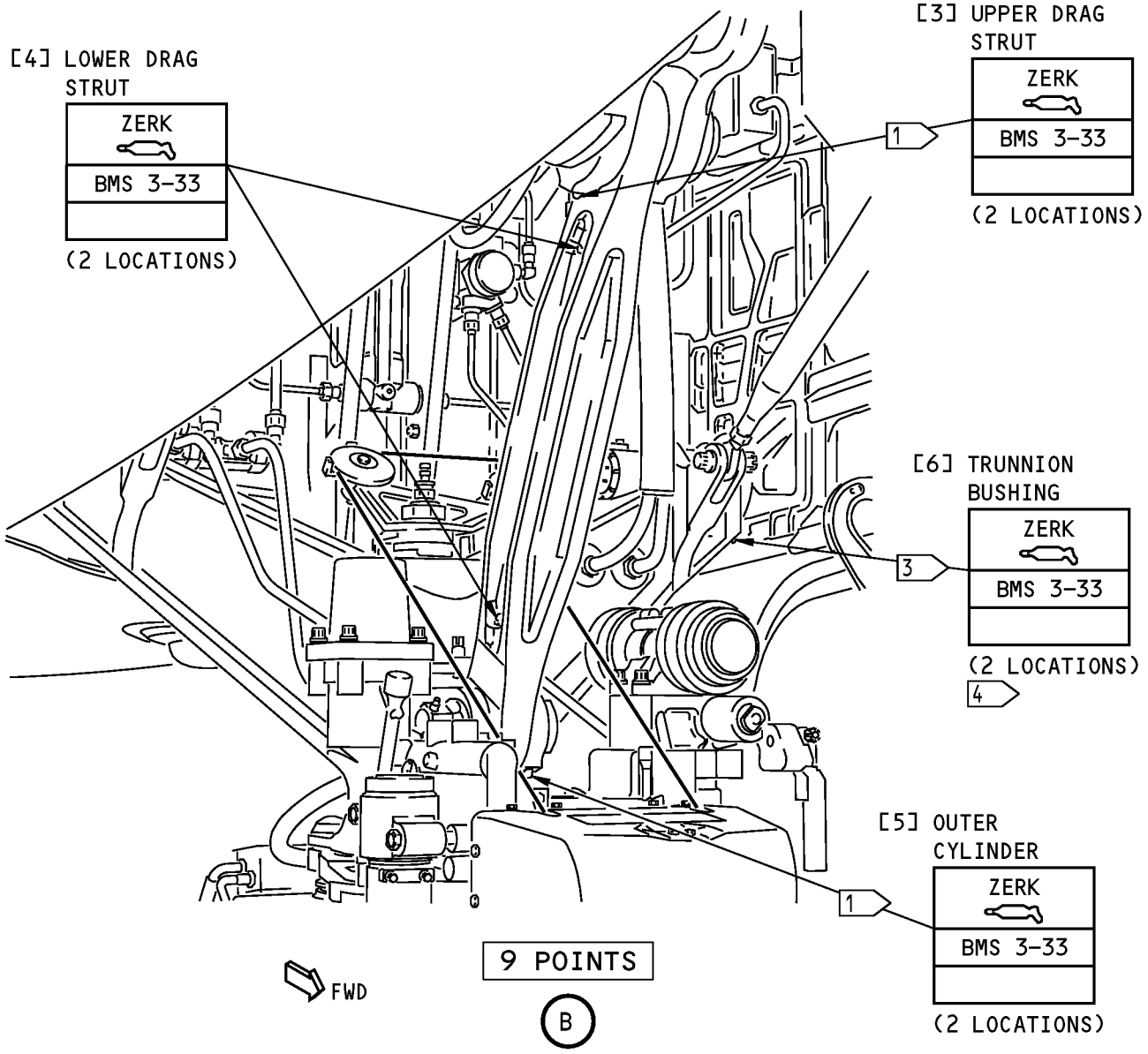
Table 301/12-21-21-993-803 Nose Landing Gear Upper End Components Lubrication (Fig. 301)

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
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

END OF TASK



Nose Landing Gear Upper End Components Servicing
Figure 301 (Sheet 1 of 2)/12-21-21-990-801



3 ONE MORE LUBE POINT IS ON OPPOSITE WHEEL WELL WALL (NOT SHOWN)

4 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.

Nose Landing Gear Upper End Components Servicing
Figure 301 (Sheet 2 of 2)/12-21-21-990-801

TASK 12-21-21-640-802

3. Nose Landing Gear Lower End Components Servicing

(Figure 302 or Figure 303)

A. General

(1) This procedure is a scheduled maintenance task.

(2) This task provides instructions to lubricate 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. Consumable Materials

Reference	Description	Specification
D00633	Grease - Aircraft General Purpose	BMS3-33

D. Location Zones

Zone	Area
115	Nose Landing Gear Wheel Well - Left
116	Nose Landing Gear Wheel Well - Right
713	Nose Landing Gear

E. Prepare for the Procedure

SUBTASK 12-21-21-490-001

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

F. Procedure

SUBTASK 12-21-21-840-002

WARNING: USE GLOVES AND EYE PROTECTION WHEN YOU LUBRICATE WITH THE USE OF A GREASE GUN. LUBRICANT AT HIGH PRESSURE CAN CAUSE INJURY TO PERSONS.

(1) Put on protective gloves and eye protection.

SUBTASK 12-21-21-640-003

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 PRECEDES)

CAUTION: DO NOT USE A PRESSURE OF MORE THAN 2500 PSIG (17200 KPA) WHEN YOU LUBRICATE THE NOSE 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 nose landing gear with grease, D00633, (Figure 302 or Figure 303, Table 302)

NOTE: The table makes a list of all the lubrication fittings for the lower end components of the nose landing gear.

SUBTASK 12-21-21-640-004

(3) If a fitting blows off, do these steps:

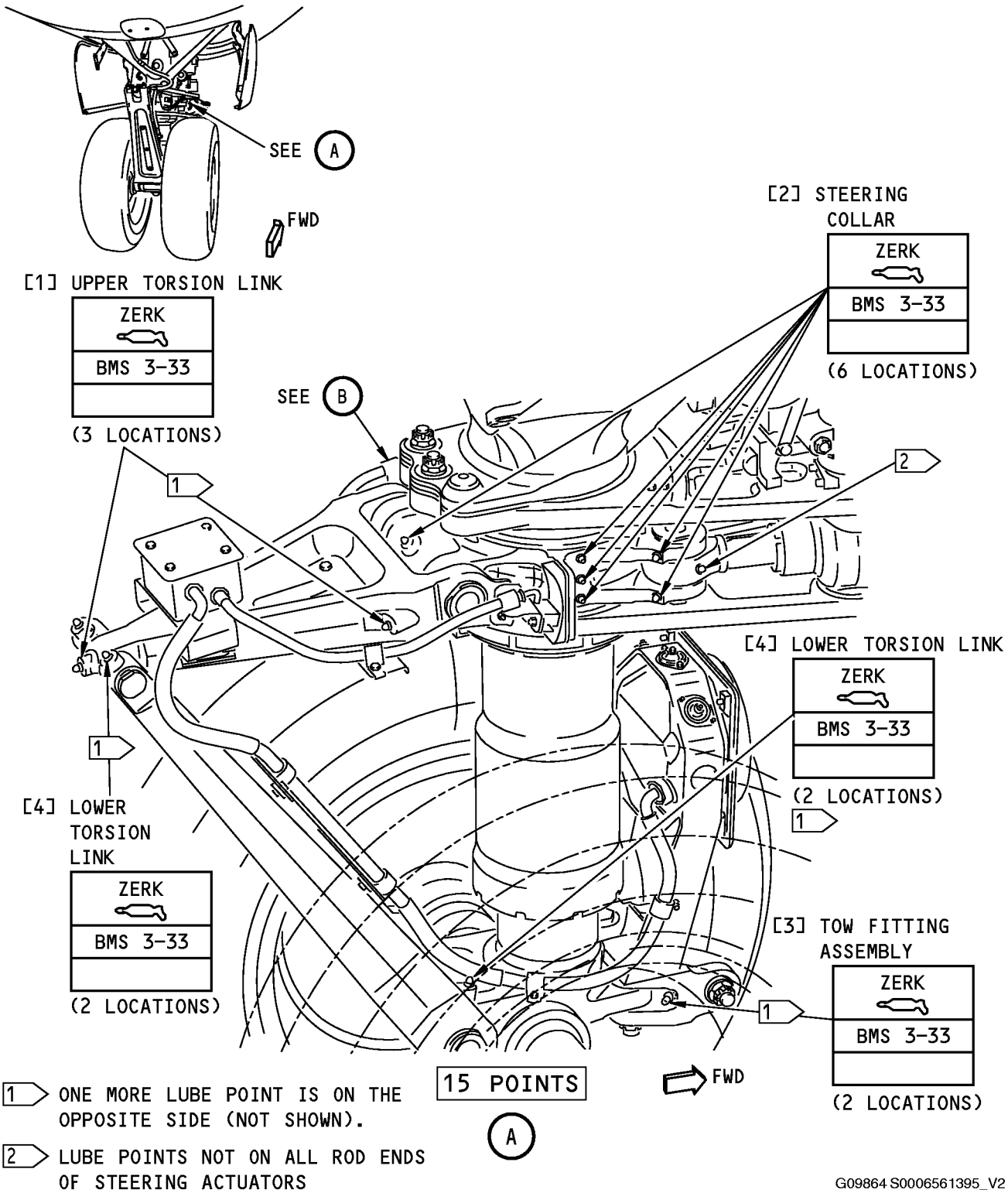
(a) Make sure there is not a blockage in the lubrication path.

(b) Do this task: Lubrication Fitting Installation, TASK 20-10-24-420-801.

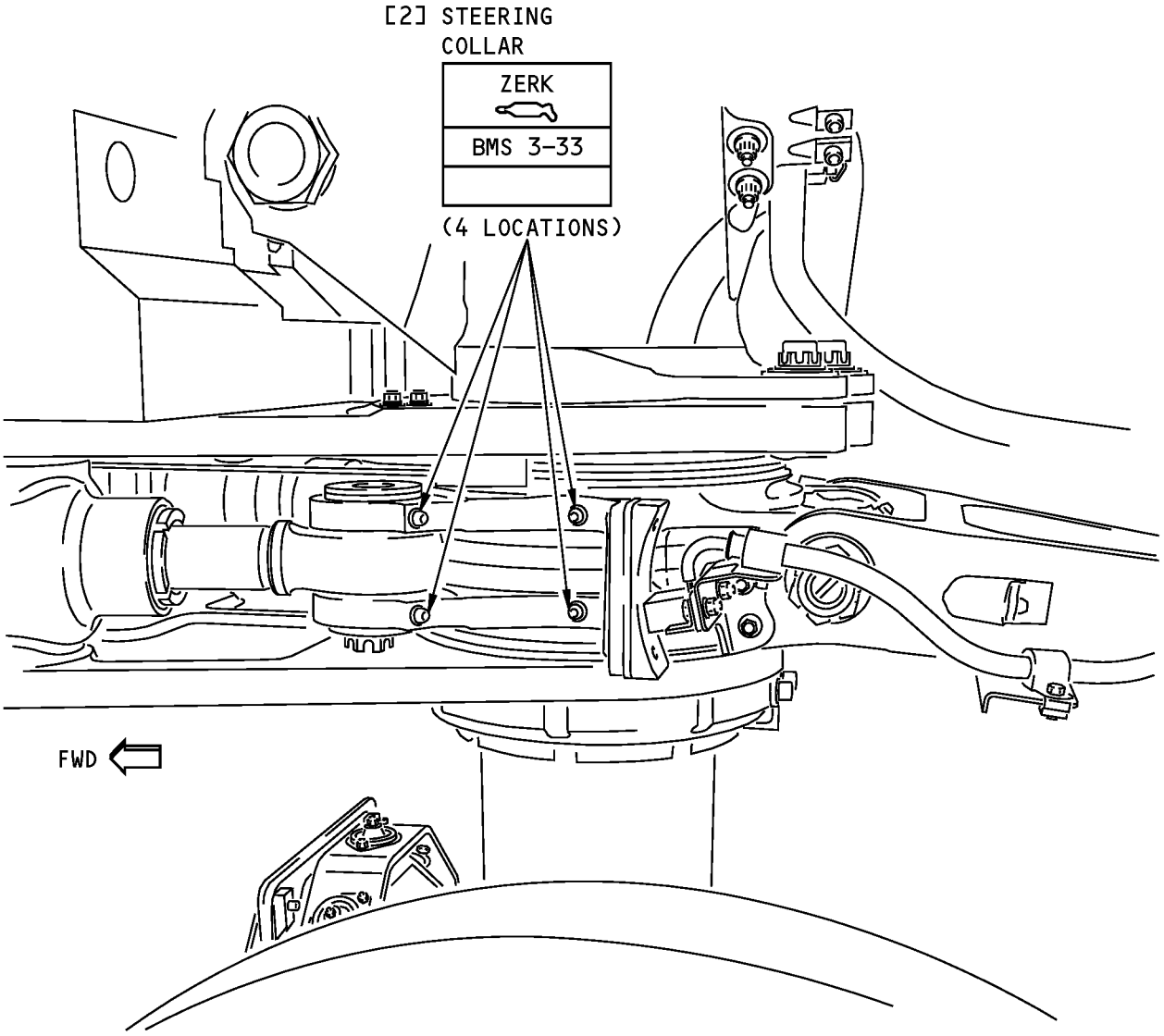
Table 302/12-21-21-993-804 Nose Landing Gear Lower End Components Lubrication (Fig. 302)

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
HAP 031-054, 101-999				
5	STEERING ACTUATOR	BMS 3-33	Zerk	4
HAP ALL				

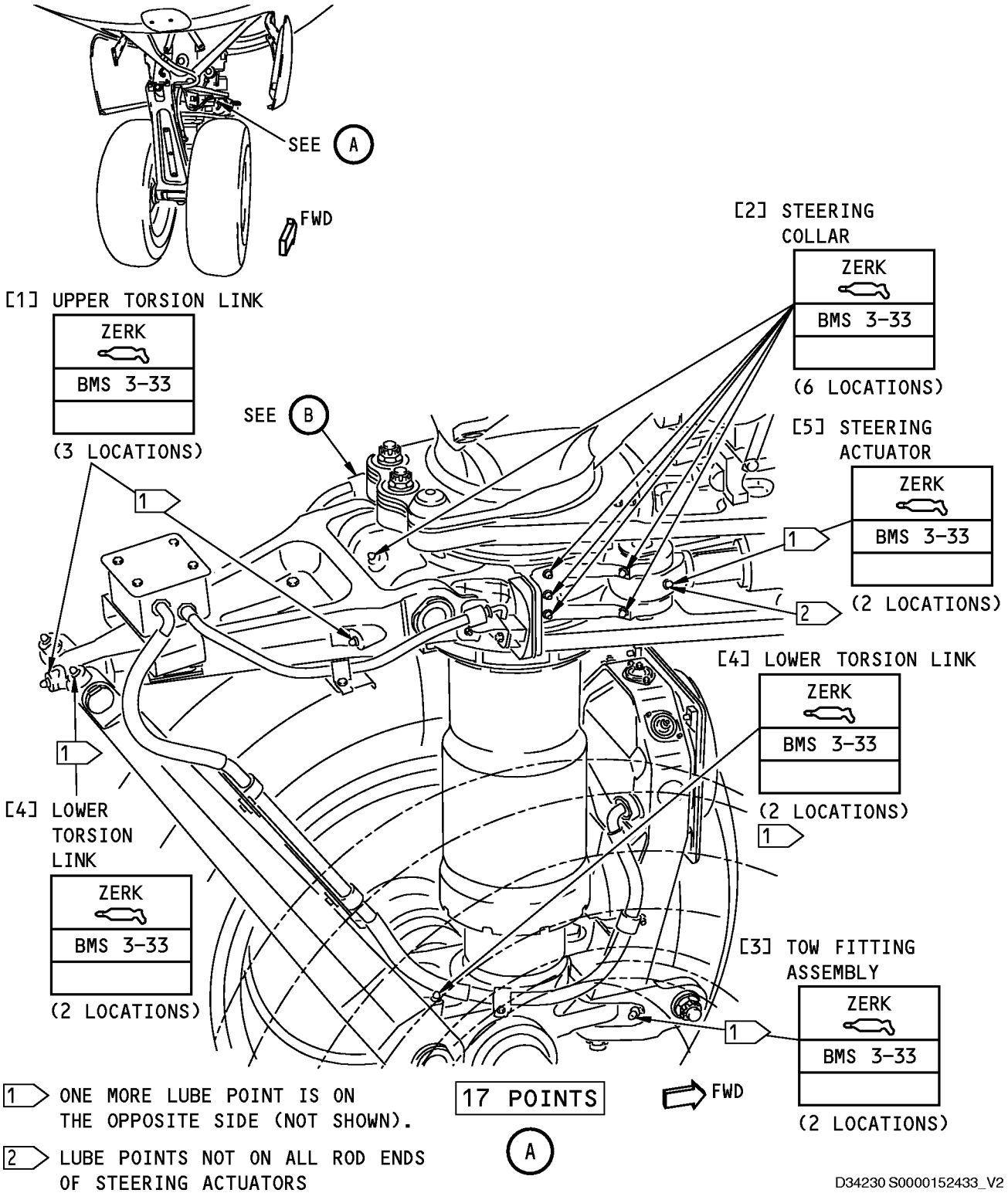
END OF TASK



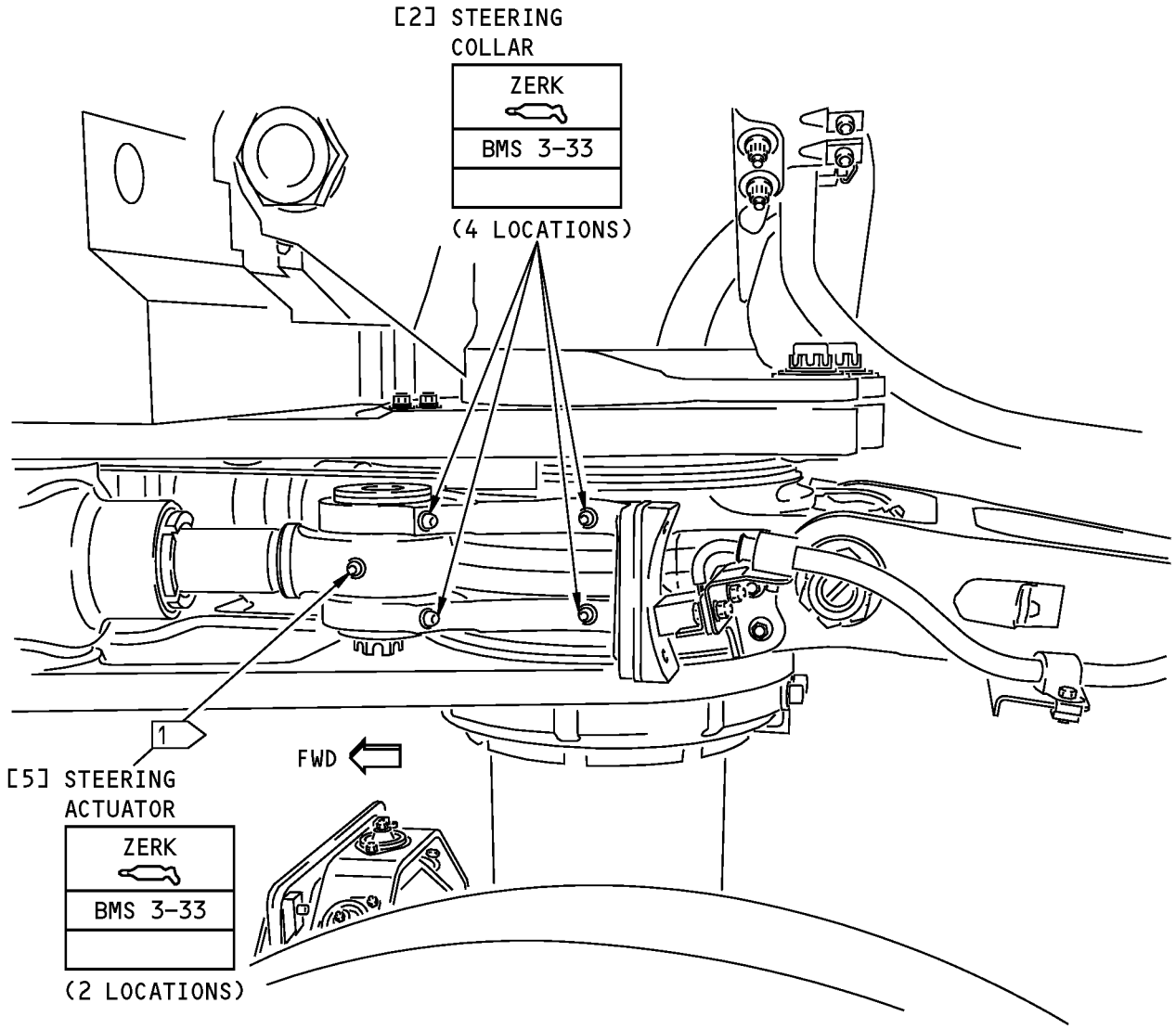
Nose Landing Gear Lower End Components Servicing
Figure 302 (Sheet 1 of 2)/12-21-21-990-802



Nose Landing Gear Lower End Components Servicing
Figure 302 (Sheet 2 of 2)/12-21-21-990-802



Nose Landing Gear Lower End Components Servicing
Figure 303 (Sheet 1 of 2)/12-21-21-990-803



6 POINTS

B

Nose Landing Gear Lower End Components Servicing
Figure 303 (Sheet 2 of 2)/12-21-21-990-803

STRUT ATTACH FITTING LUBRICATION

1. General

A. This procedure provides the data to 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)
54-52-03-010-801	Wing Junction Fairing Removal (P/B 401)
54-52-03-410-801	Wing Junction Fairing Installation (P/B 401)
54-52-06-010-801	Aft Fairing Access Panel Removal (P/B 401)
54-52-06-410-801	Aft Fairing Access Panel Installation (P/B 401)
54-53-02-000-802	Forward Strut Fairing Panel (Thrust Reverser Strut Fairing) Removal (P/B 401)
54-53-02-410-801	Forward Strut Fairing Panel (Thrust Reverser Strut Fairing) Installation (P/B 401)

B. Consumable Materials

Reference	Description	Specification
D00633	Grease - Aircraft General Purpose	BMS3-33

C. Location Zones

Zone	Area
432	Engine 1 - Fan Cowl Support Beam
433	Engine 1 - Strut Torque Box
442	Engine 2 - Fan Cowl Support Beam
443	Engine 2 - Strut Torque Box

D. Access Panels

Number	Name/Location
431CL	Forward Strut Fairing, Left Overwing Fairing, Strut 1
431CR	Forward Strut Fairing, Right Overwing Fairing, Strut 1
431EL	Forward Strut Fairing, Left T.R. Strut Fairing, Strut 1
431ER	Forward Strut Fairing, Right T.R. Strut Fairing, Strut 1
434BL	Aft Strut Fairing, Left Aft Panel, Strut 1
441CL	Forward Strut Fairing, Left Overwing Fairing, Strut 2
441CR	Forward Strut Fairing, Right Overwing Fairing, Strut 2
441EL	Forward Strut Fairing, Left T.R. Strut Fairing, Strut 2
441ER	Forward Strut Fairing, Right T.R. Strut Fairing, Strut 2
444BR	Aft Strut Fairing, Right Aft 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) To get access to the aft upper link fitting, do this task: Wing Junction Fairing Removal, TASK 54-52-03-010-801

Remove the appliable access panels:

Number	Name/Location
431CL	Forward Strut Fairing, Left Overwing Fairing, Strut 1
431CR	Forward Strut Fairing, Right Overwing Fairing, Strut 1
441CL	Forward Strut Fairing, Left Overwing Fairing, Strut 2
441CR	Forward Strut Fairing, Right Overwing Fairing, Strut 2

SUBTASK 12-21-32-010-002

(3) To get access to the aft diagonal brace fitting, do this task: (Aft Fairing Access Panel Removal, TASK 54-52-06-010-801)

Remove the applicable aft fairing access panels:

Number	Name/Location
434BL	Aft Strut Fairing, Left Aft Panel, Strut 1
444BR	Aft Strut Fairing, Right Aft Panel, Strut 2

SUBTASK 12-21-32-010-003

(4) To get access to the midspar fitting, do these steps to remove the applicable access panels: Forward Strut Fairing Panel (Thrust Reverser Strut Fairing) Removal, TASK 54-53-02-000-802

(a) Remove the applicable strut access panels:

Number	Name/Location
431EL	Forward Strut Fairing, Left T.R. Strut Fairing, Strut 1
431ER	Forward Strut Fairing, Right T.R. Strut Fairing, Strut 1
441EL	Forward Strut Fairing, Left T.R. Strut Fairing, Strut 2
441ER	Forward Strut Fairing, Right T.R. Strut Fairing, Strut 2

SUBTASK 12-21-32-640-001

(5) Do these steps to lubricate the applicable strut attach fitting as shown: (Figure 301,Table 301)

(a) Inject the grease, D00633 into the fitting until grease shows at the other side of the joint.

(b) Remove the unwanted grease from the fitting with a rag.

Table 301/12-21-32-993-802

Item No.	Nomenclature	Lubricant	Method of Application	Number of Locations
1	Midspar Fitting	BMS 3-33	Zerk	2
2	Aft Diagonal Brace Fitting	BMS 3-33	Zerk	1
3	Aft Upper Link Fitting	BMS 3-33	Zerk	2

F. Put the Airplane Back to Its Usual Condition

SUBTASK 12-21-32-010-004

(1) To close access to the aft upper link fitting, do this task: Wing Junction Fairing Installation, TASK 54-52-03-410-801

Install the applicable access panels:

Number	Name/Location
431CL	Forward Strut Fairing, Left Overwing Fairing, Strut 1
431CR	Forward Strut Fairing, Right Overwing Fairing, Strut 1
441CL	Forward Strut Fairing, Left Overwing Fairing, Strut 2
441CR	Forward Strut Fairing, Right Overwing Fairing, Strut 2

SUBTASK 12-21-32-010-005

(2) To close the access to the aft diagonal brace fitting, do this task: Aft Fairing Access Panel Installation, TASK 54-52-06-410-801

Install the applicable aft fairing access panels:

Number	Name/Location
434BL	Aft Strut Fairing, Left Aft Panel, Strut 1
444BR	Aft Strut Fairing, Right Aft Panel, Strut 2

SUBTASK 12-21-32-410-001

(3) To close access to the midspar fitting, do this task: Forward Strut Fairing Panel (Thrust Reverser Strut Fairing) Installation, TASK 54-53-02-410-801

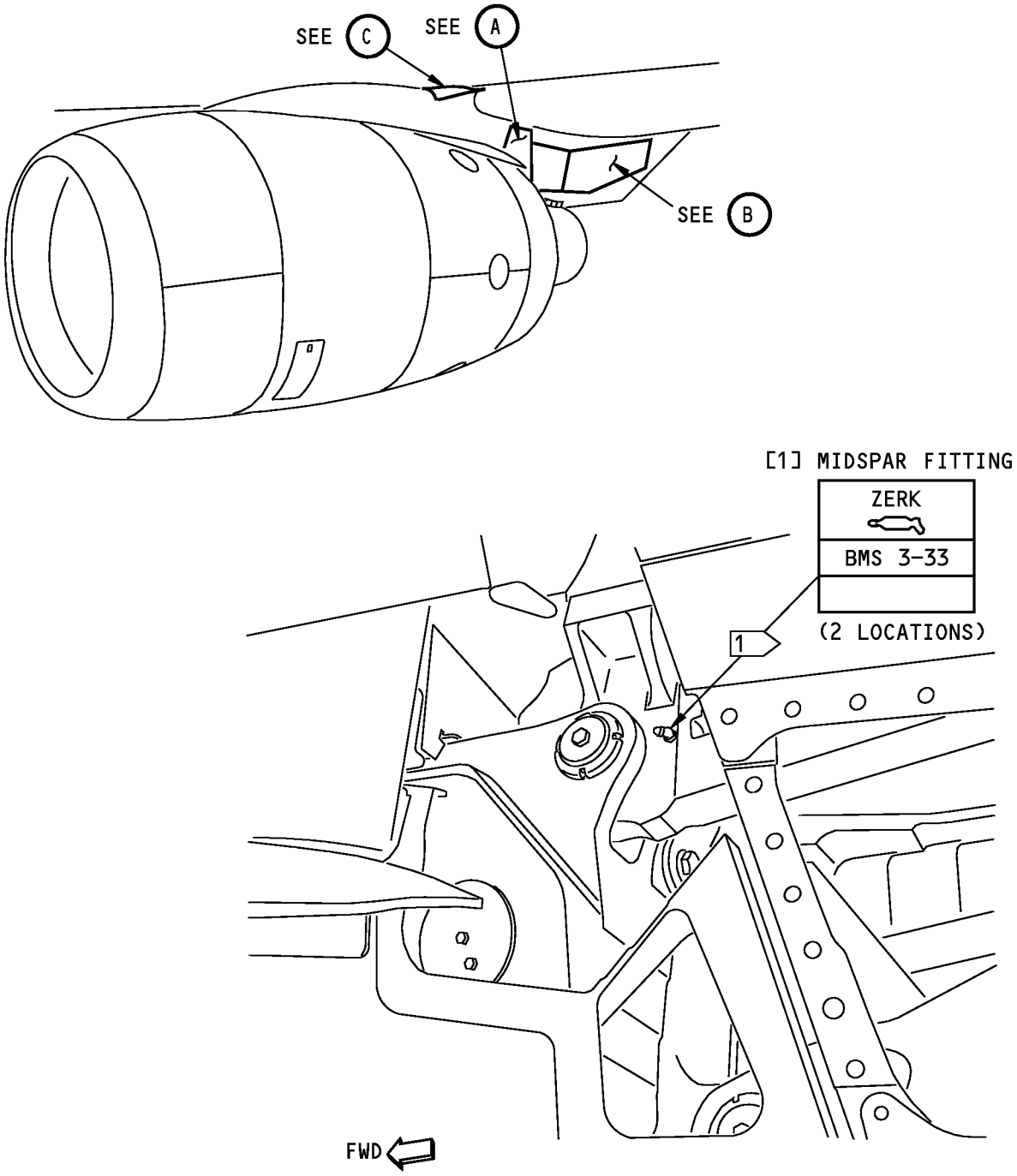
Install the strut access panels:

Number	Name/Location
431EL	Forward Strut Fairing, Left T.R. Strut Fairing, Strut 1
431ER	Forward Strut Fairing, Right T.R. Strut Fairing, Strut 1
441EL	Forward Strut Fairing, Left T.R. Strut Fairing, Strut 2
441ER	Forward Strut Fairing, Right T.R. Strut Fairing, Strut 2

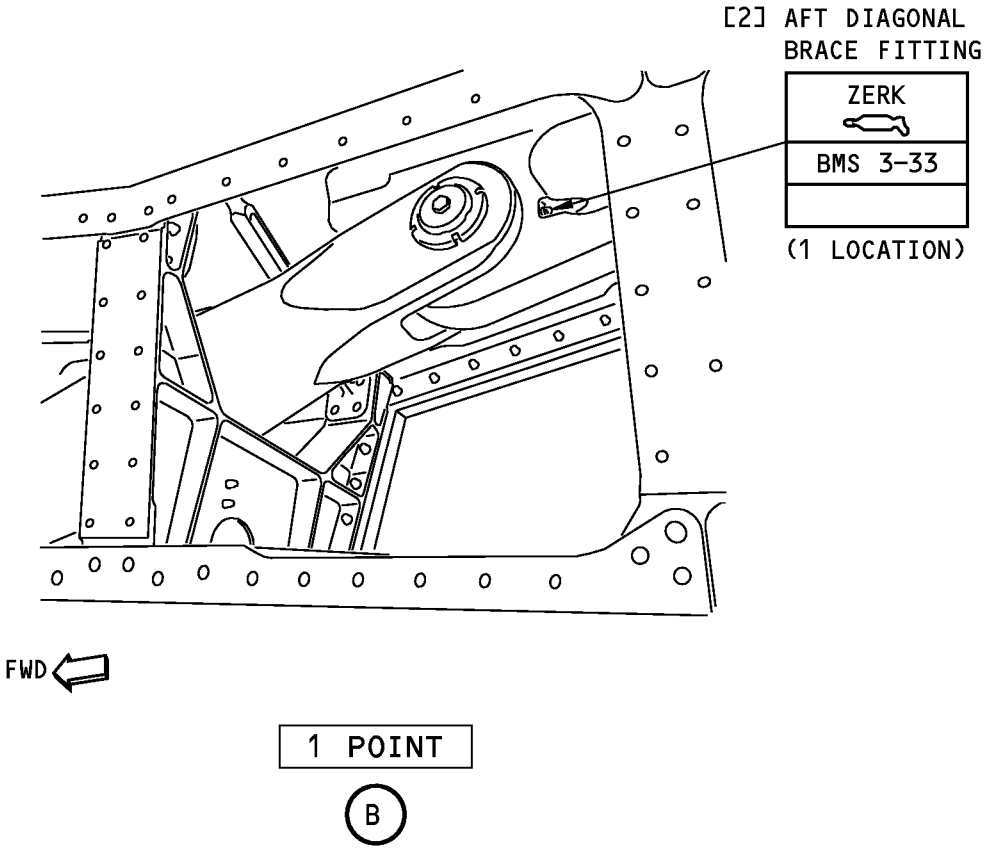
SUBTASK 12-21-32-440-001

(4) 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

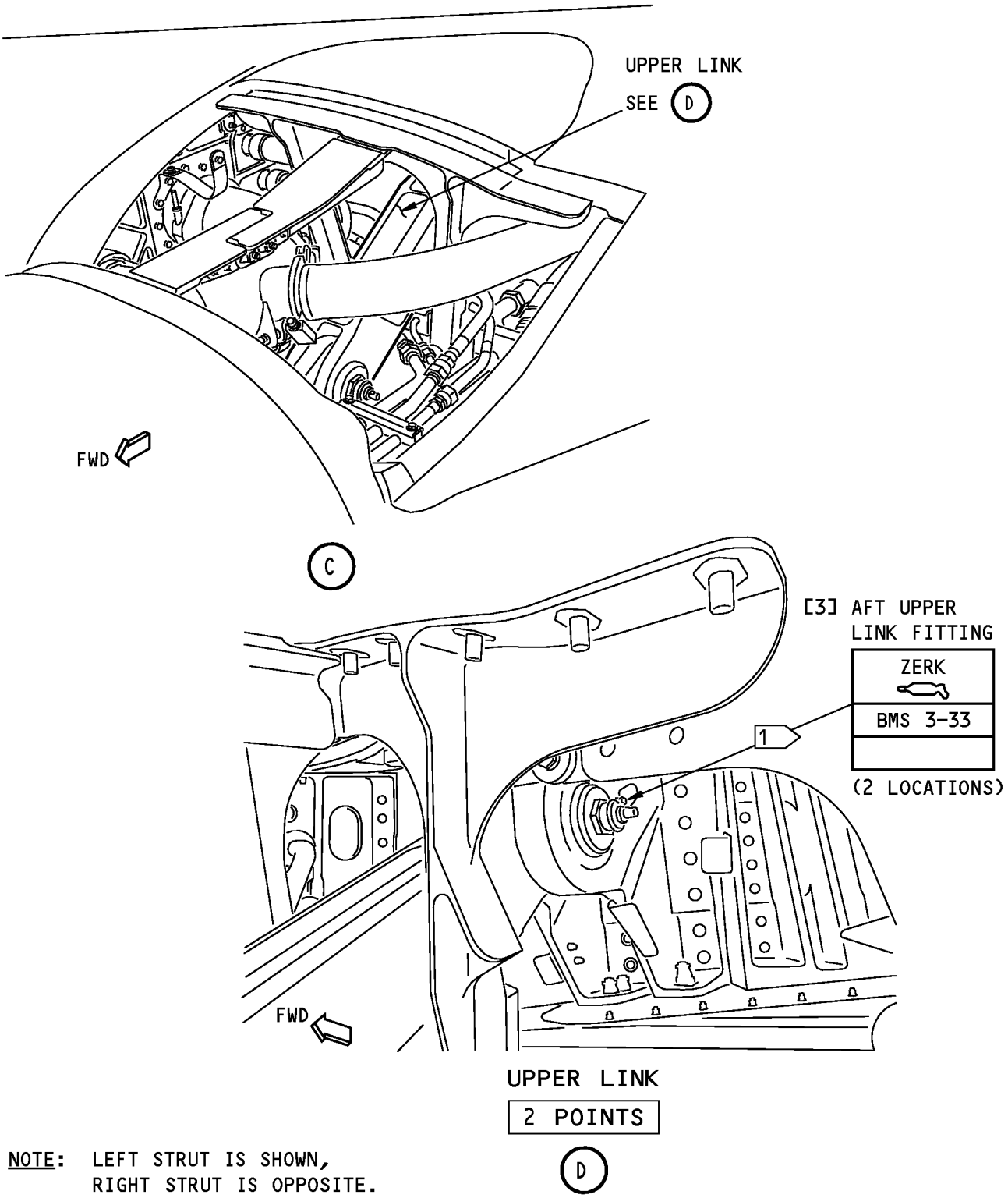


Strut Attach Fitting Lubrication
Figure 301 (Sheet 1 of 3)/12-21-32-990-801



NOTE: LEFT STRUT IS SHOWN,
RIGHT STRUT IS OPPOSITE.

Strut Attach Fitting Lubrication
Figure 301 (Sheet 2 of 3)/12-21-32-990-801



NOTE: LEFT STRUT IS SHOWN, RIGHT STRUT IS OPPOSITE.

Strut Attach Fitting Lubrication
Figure 301 (Sheet 3 of 3)/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.

TASK 12-22-11-640-801

2. Aileron Hinge Lubrication

(Figure 301)

A. General

(1) This procedure is a scheduled maintenance task.

B. References

Reference	Title
27-11-00-860-801	Remove Pressure from the Aileron Hydraulic Systems A and B (P/B 201)
27-11-00-860-802	Put the Aileron Hydraulic Systems A and B Back to the Condition Before Pressure Removal (P/B 201)

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 is in the full up position.

SUBTASK 12-22-11-860-001

(2) Do this task: Remove Pressure from the Aileron Hydraulic Systems A and B, TASK 27-11-00-860-801.

SUBTASK 12-22-11-010-001

(3) On hinges 1 to 5:

(a) Remove the hinge seals.

SUBTASK 12-22-11-010-007

(4) On hinge 6:

(a) Remove the removable fairing.

F. Aileron Hinge Lubrication

(Table 301)

SUBTASK 12-22-11-640-001

(1) Lubricate the aileron hinges with grease, D00633.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 12-22-11-010-002

(1) Install the seals and the fairing that you removed.

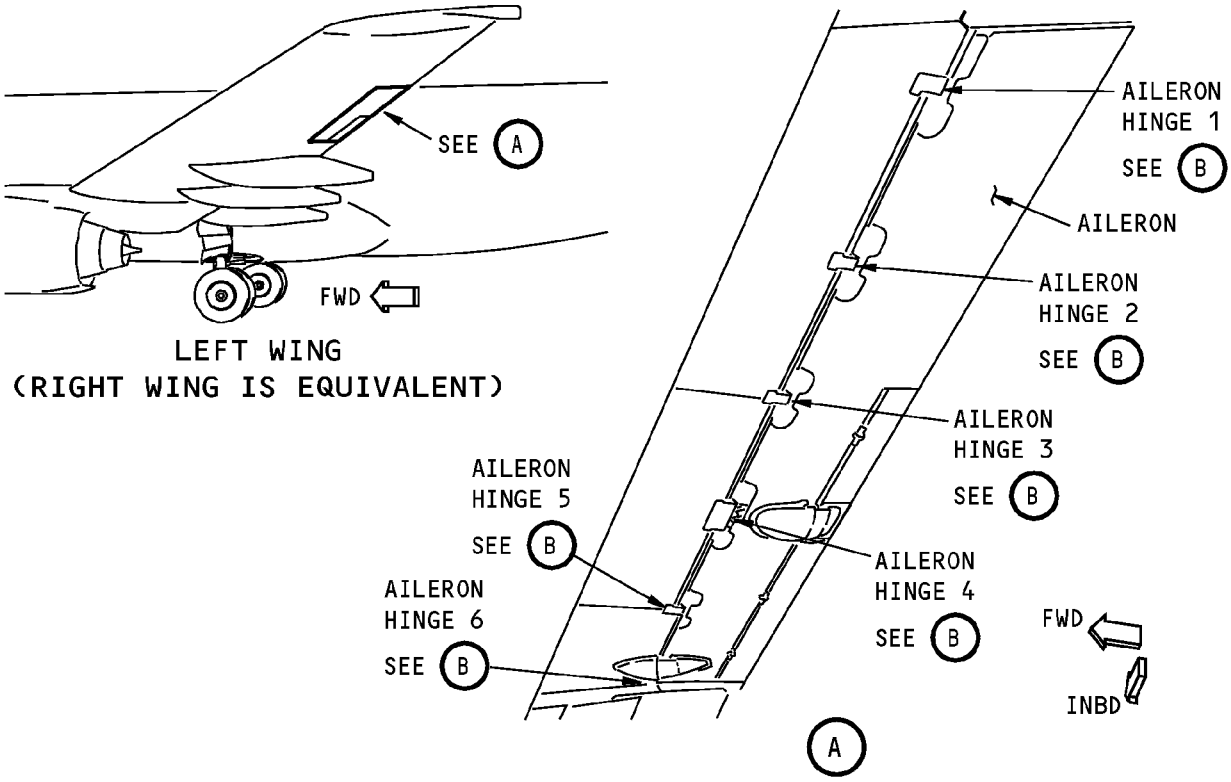
SUBTASK 12-22-11-860-002

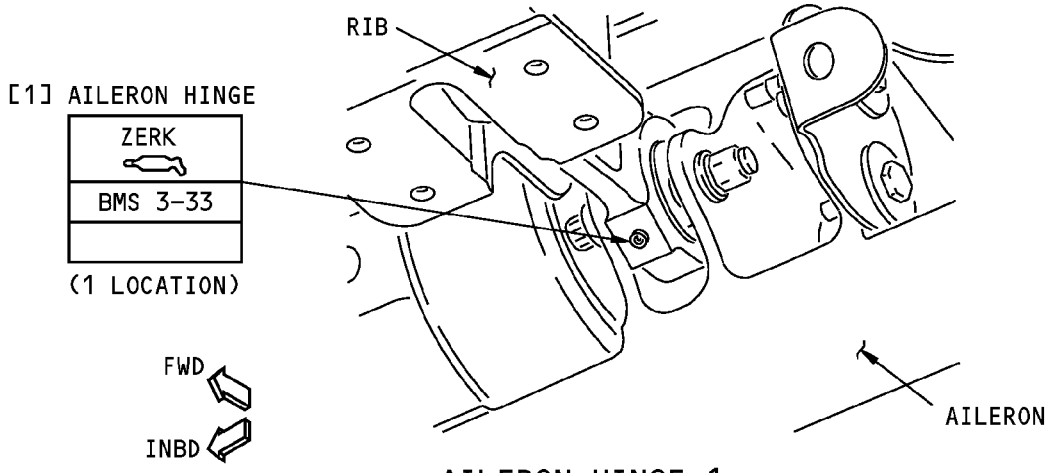
(2) Do this task: Put the Aileron Hydraulic Systems A and B Back to the Condition Before Pressure Removal, TASK 27-11-00-860-802.

Table 301/12-22-11-993-806 Aileron Hinge Servicing (Fig. 301)

Item No.	Nomenclature	Lubricant	Method of Application	Number of Locations
1	Aileron hinge	BMS 3-33	Zerk	6

END OF TASK





Aileron Hinge Servicing
Figure 301/12-22-11-990-801

TASK 12-22-11-600-801

3. Aileron Balance Tab Lubrication

(Figure 302)

A. General

(1) This procedure is a scheduled maintenance task.

B. References

Reference	Title
27-11-00-860-801	Remove Pressure from the Aileron Hydraulic Systems A and B (P/B 201)
27-11-00-860-802	Put the Aileron Hydraulic Systems A and B Back to the Condition Before Pressure Removal (P/B 201)

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 12-22-11-860-003

(1) Do this task: Remove Pressure from the Aileron Hydraulic Systems A and B, TASK 27-11-00-860-801.

SUBTASK 12-22-11-020-001

(2) Remove the forward removable fairing [101] and the aft removable fairing [103] to get access to tab hinges 2 and 3:

(a) Remove the bolts [106] that attach the forward removable fairing [101] to the aileron [102].

(b) Remove the forward removable fairing [101].

(c) Remove the bolts [104] that attach the aft removable fairing [103] to the aileron balance tab [105].

(d) Remove the aft removable fairing [103].

F. Aileron Balance Tab Lubrication

(Table 302)

SUBTASK 12-22-11-640-002

(1) Lubricate the tab hinges on the aileron balance tab [105] with grease, D00633:

(a) Fill the tab hinges 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.

(b) Wipe unwanted grease, D00633 from around the tab hinges.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 12-22-11-420-001

(1) Install the forward removable fairing [101] and the aft removable fairing [103] with the bolts [104]:

(a) Put the aft removable fairing [103] in its position.

(b) Install the aft removable fairing [103] with the bolts [104].

(c) Put the forward removable fairing [101] in its position.

(d) Install the forward removable fairing [101] with the bolts [106].

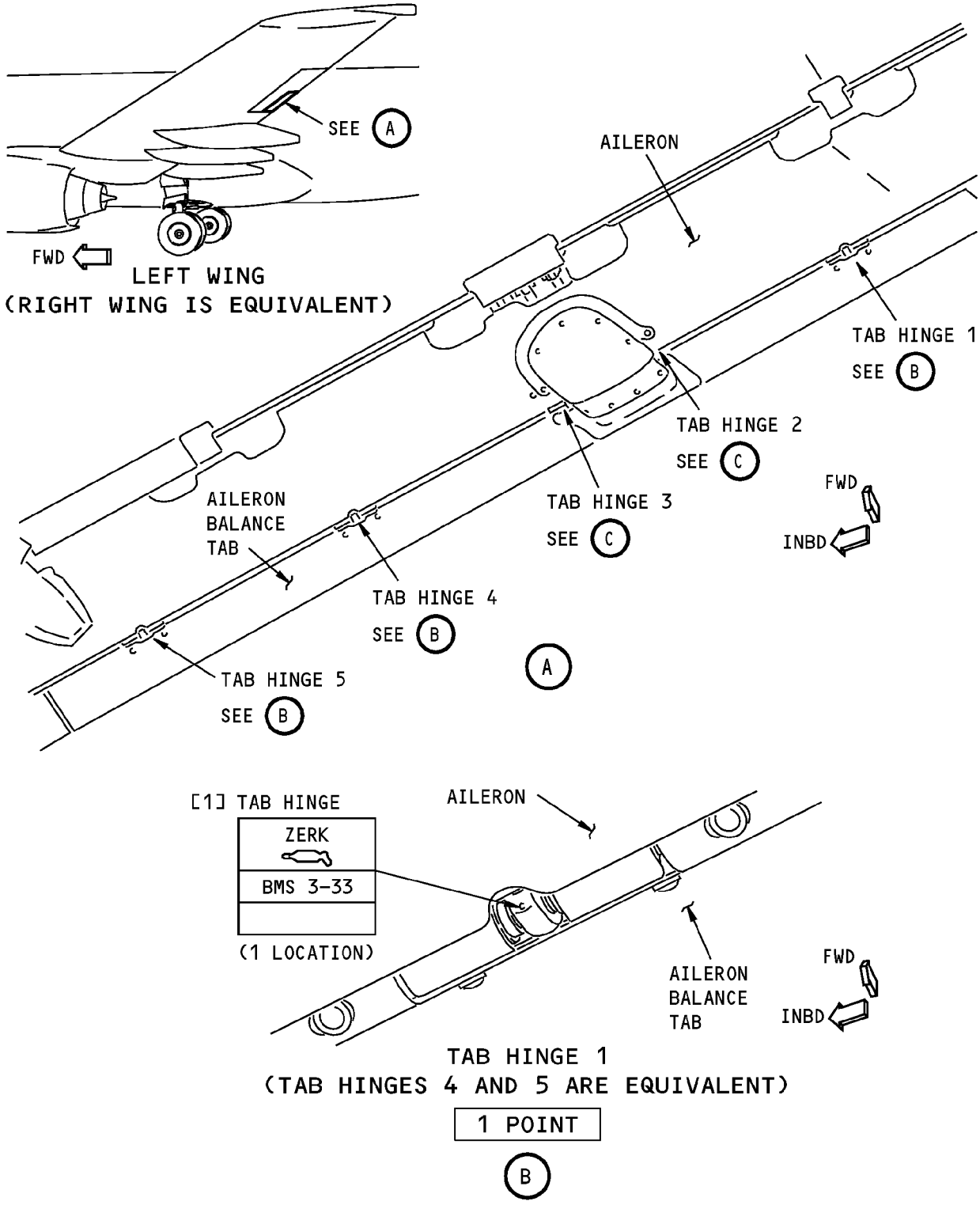
SUBTASK 12-22-11-860-004

(2) Do this task: Put the Aileron Hydraulic Systems A and B Back to the Condition Before Pressure Removal, TASK 27-11-00-860-802.

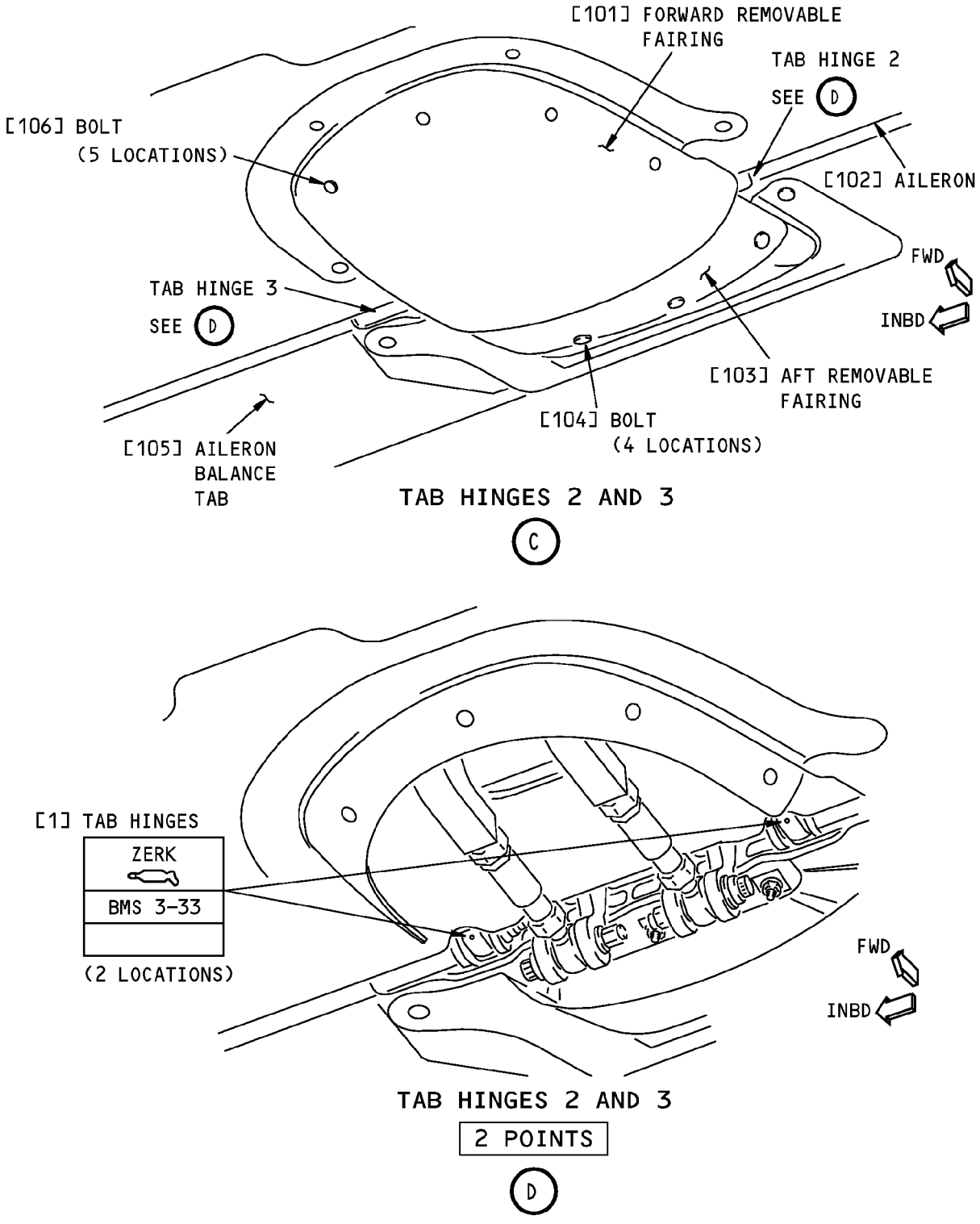
Table 302/12-22-11-993-807 Aileron Balance Tab Hinge Servicing (Fig. 302)

Item No.	Nomenclature	Lubricant	Method of Application	Number of Locations
1	Tab Hinge	BMS 3-33	Zerk	5

END OF TASK



Aileron Balance Tab Hinge Servicing
Figure 302 (Sheet 1 of 2)/12-22-11-990-802



Aileron Balance Tab Hinge Servicing
Figure 302 (Sheet 2 of 2)/12-22-11-990-802

TASK 12-22-11-640-802

4. Aileron Tab Control Rods Lubrication

(Figure 303)

A. General

(1) This procedure is a scheduled maintenance task.

B. References

Reference	Title
27-11-00-860-801	Remove Pressure from the Aileron Hydraulic Systems A and B (P/B 201)
27-11-00-860-802	Put the Aileron Hydraulic Systems A and B Back to the Condition Before Pressure Removal (P/B 201)

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 12-22-11-860-005

(1) Do this task: Remove Pressure from the Aileron Hydraulic Systems A and B, TASK 27-11-00-860-801.

SUBTASK 12-22-11-020-002

(2) Remove the forward removable fairing [101]:

(a) Remove the bolts [106] that attach the forward removable fairing [101] to the aileron [102].

(b) Remove the forward removable fairing [101].

SUBTASK 12-22-11-020-003

(3) Remove the aft removable fairing [103]:

(a) Remove the bolts [104] that attach the aft removable faring [103] to the aileron balance tab [105].

(b) Remove the aft removable fairing [103].

F. Aileron Tab Control Rods Lubrication

(Table 303)

SUBTASK 12-22-11-640-003

(1) Lubricate the rod end bearings of the aileron tab control rods with grease, D00633:

(a) At the aileron balance tab, fill the rod end bearings 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.

(b) At the aileron, fill the rod end bearings with grease, D00633.

(c) Wipe unwanted grease, D00633 from around the rod end bearings.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 12-22-11-420-003

(1) Install the aft removable fairing [103]:

(a) Put the aft removable fairing [103] in its position.

(b) Install the bolts [104] to attach the aft removable fairing [103].

SUBTASK 12-22-11-420-004

(2) Install the forward removable fairing [101]:

(a) Put the forward removable fairing [101] in its position.

(b) Install the bolts [106] to attach the forward removable fairing [101].

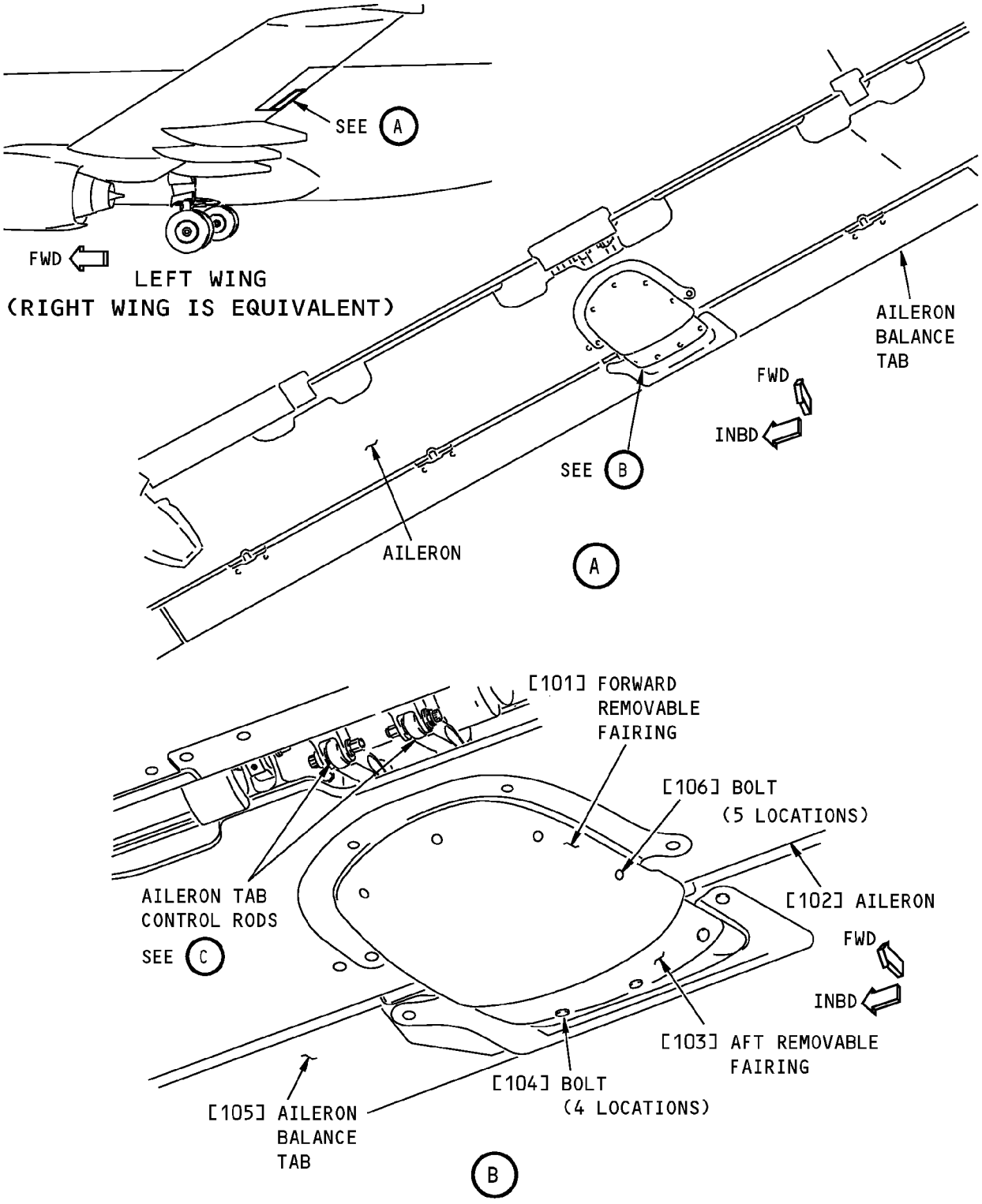
SUBTASK 12-22-11-860-006

(3) Do this task: Put the Aileron Hydraulic Systems A and B Back to the Condition Before Pressure Removal, TASK 27-11-00-860-802.

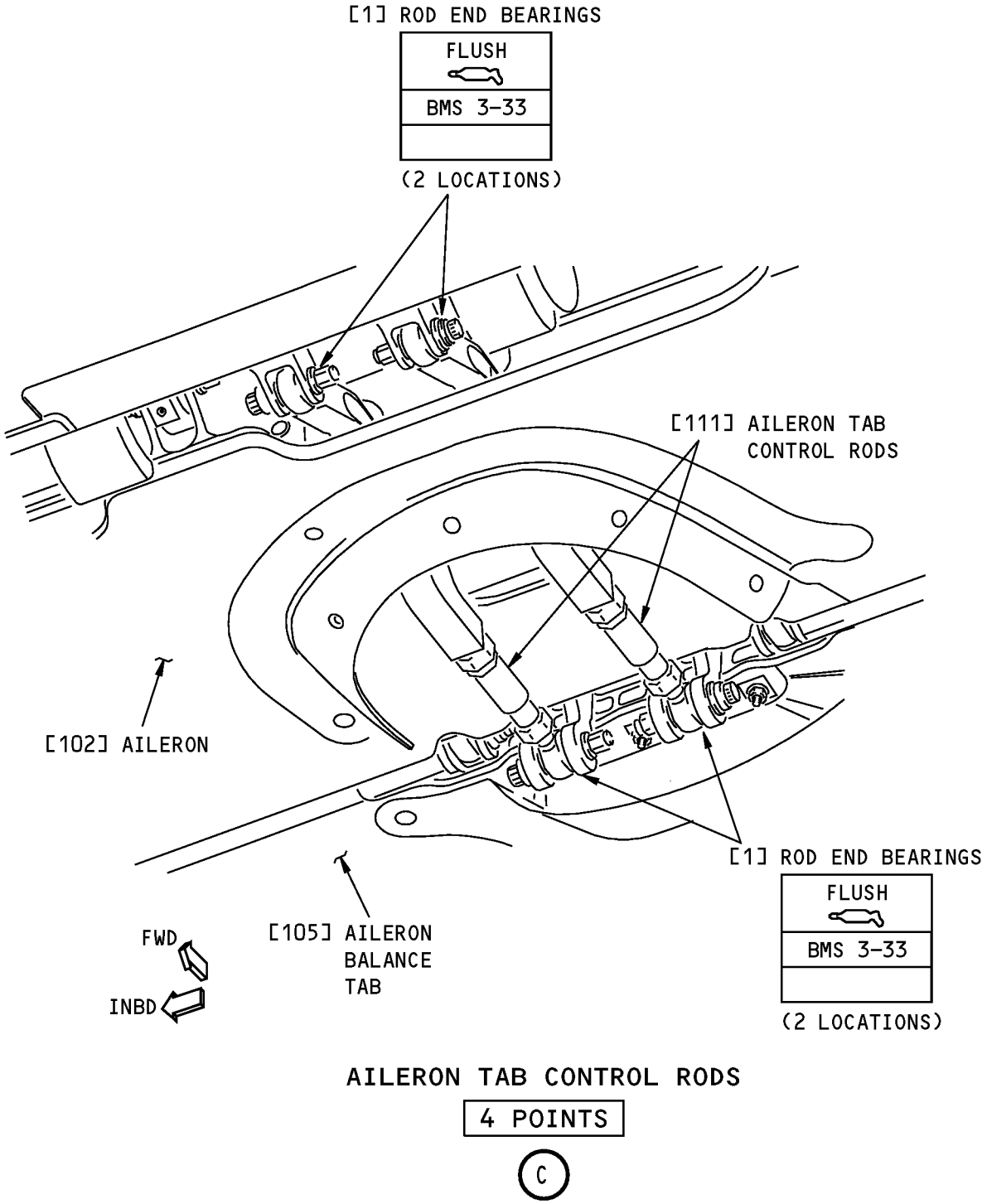
Table 303/12-22-11-993-808 Aileron Tab Control Rods Servicing (Fig. 303)

Item No.	Nomenclature	Lubricant	Method of Application	Number of Locations
1	Rod end bearing	BMS 3-33	Flush	4

END OF TASK



Aileron Tab Control Rods Servicing
Figure 303 (Sheet 1 of 2)/12-22-11-990-803



Aileron Tab Control Rods Servicing
Figure 303 (Sheet 2 of 2)/12-22-11-990-803

TASK 12-22-11-640-803

5. Aileron Wing Quadrant Control Rod Lubrication

(Figure 304)

A. General

(1) This procedure is a scheduled maintenance task.

B. References

Reference	Title
27-11-00-860-801	Remove Pressure from the Aileron Hydraulic Systems A and B (P/B 201)
27-11-00-860-802	Put the Aileron Hydraulic Systems A and B Back to the Condition Before Pressure Removal (P/B 201)

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. Access Panels

Number	Name/Location
571BB	Lower Outboard Fixed Trailing Edge Access Panel
572AB	Lower Aileron, Hinge Cover - WBL 423.00
671BB	Lower Outboard Fixed Trailing Edge Access Panel
672AB	Lower Aileron, Hinge Cover - WBL 423.00

F. Prepare for the Lubrication

SUBTASK 12-22-11-860-007

(1) Do this task: Remove Pressure from the Aileron Hydraulic Systems A and B, TASK 27-11-00-860-801.

SUBTASK 12-22-11-010-003

(2) If you work on the left wing, remove these access panels:

Number	Name/Location
571BB	Lower Outboard Fixed Trailing Edge Access Panel
572AB	Lower Aileron, Hinge Cover - WBL 423.00

SUBTASK 12-22-11-010-006

(3) If you work on the right wing, remove these access panels:

Number	Name/Location
671BB	Lower Outboard Fixed Trailing Edge Access Panel
672AB	Lower Aileron, Hinge Cover - WBL 423.00

G. Aileron Wing Quadrant Lubrication

(Table 304)

SUBTASK 12-22-11-640-004

(1) Lubricate the rod end bearings of the aileron control rod on the aileron wing quadrant with grease, D00633 .

(a) Fill the rod end bearings 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.

(b) Wipe unwanted grease, D00633 from around the rod end bearings.

H. Put the Airplane Back to Its Usual Condition

SUBTASK 12-22-11-010-004

(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
572AB	Lower Aileron, Hinge Cover - WBL 423.00

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

Number	Name/Location
671BB	Lower Outboard Fixed Trailing Edge Access Panel
672AB	Lower Aileron, Hinge Cover - WBL 423.00

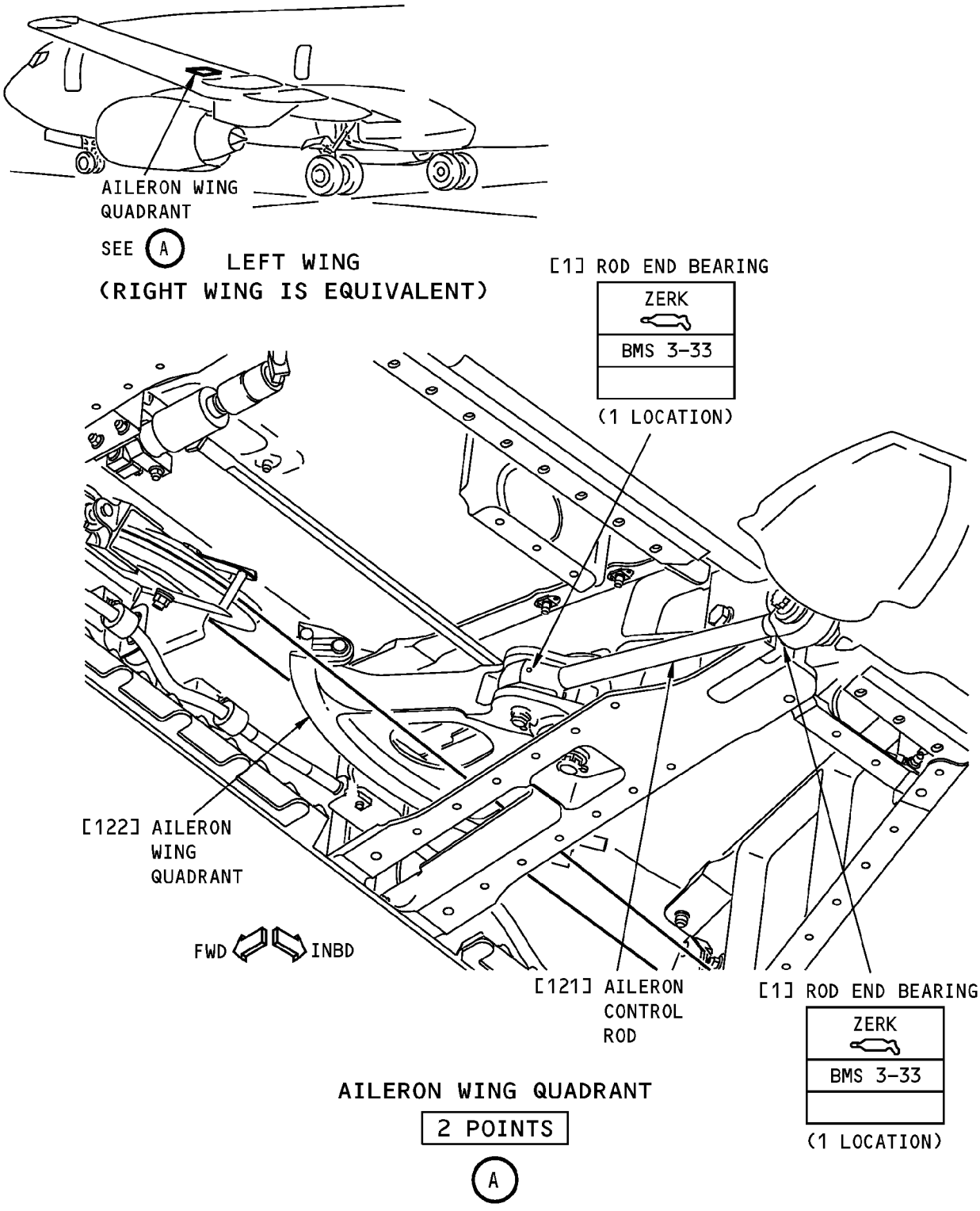
SUBTASK 12-22-11-860-008

(2) Do this task: Put the Aileron Hydraulic Systems A and B Back to the Condition Before Pressure Removal, TASK 27-11-00-860-802.

Table 304/12-22-11-993-809 Aileron Wing Quadrant Control Rod Servicing (Fig. 304)

Item No.	Nomenclature	Lubricant	Method of Application	Number of Locations
1	Rod end bearing	BMS 3-33	Zerk	2

END OF TASK



Aileron Wing Quadrant Control Rod Servicing
Figure 304/12-22-11-990-804

TASK 12-22-11-640-804

6. Aileron Power Output Lever Lubrication

(Figure 305)

A. General

(1) This procedure is a scheduled maintenance task.

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. Aileron Power Output Lever Lubrication

(Table 305)

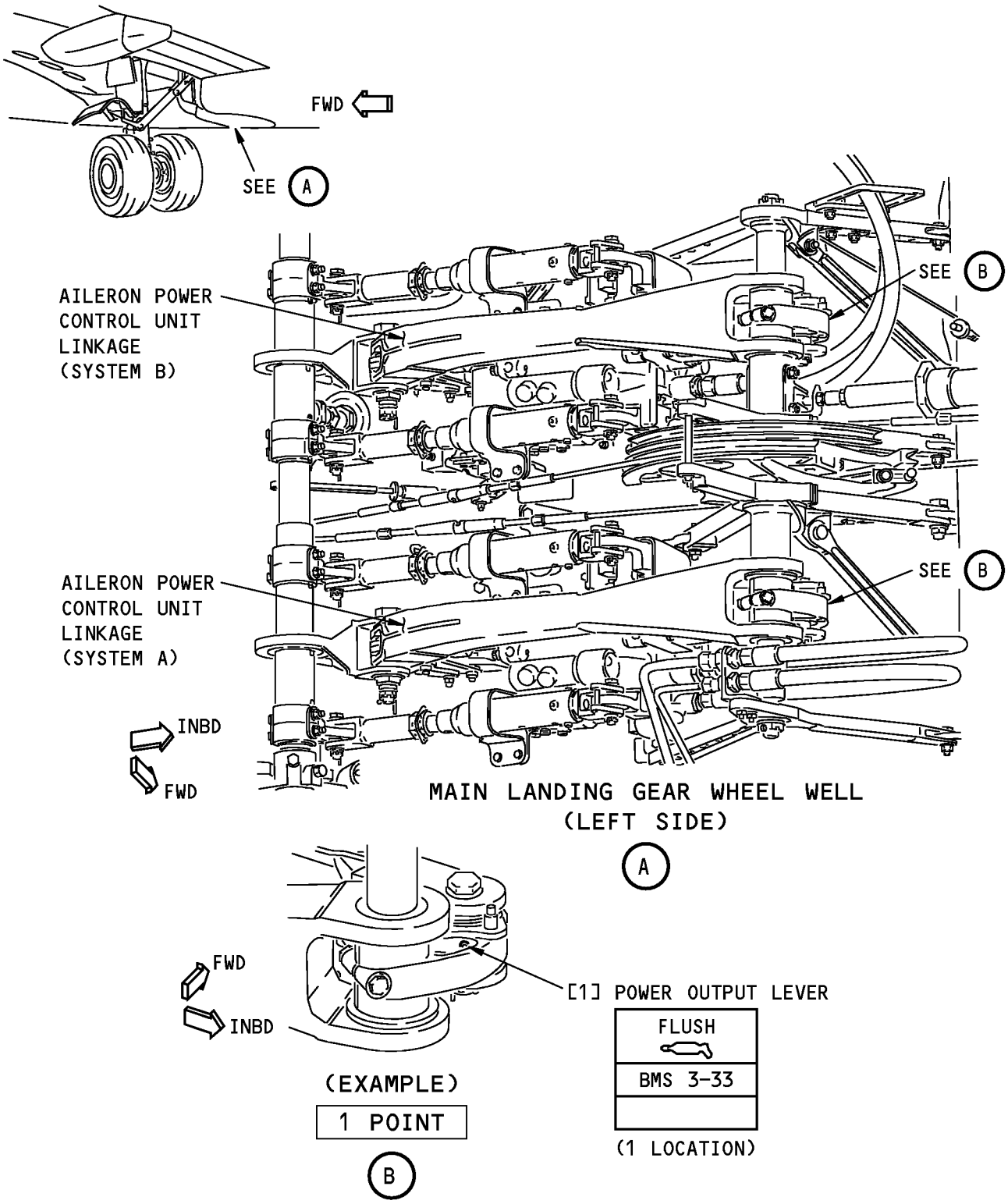
SUBTASK 12-22-11-640-005

(1) Lubricate the power output lever with grease, D00633.

Table 305/12-22-11-993-810 Aileron Power Output Lever Servicing (Fig. 305)

Item No.	Nomenclature	Lubricant	Method of Application	Number of Locations
1	Power Output Lever	BMS 3-33	Flush	2

END OF TASK



Aileron Power Output Lever Servicing
Figure 305/12-22-11-990-805

RUDDER - SERVICING

1. General

A. This procedure contains scheduled maintenance task data.

B. This procedure has these tasks:

(1) Lubricate the rudder power control units (PCUs) - Use this procedure to lubricate the bearings of the rudder main PCU and standby rudder PCU

(2) Lubricate the rudder spring slider shaft - Use this procedure to lubricate the spring slider shaft of the rudder feel and centering unit.

(3) Lubricate the rudder hinge - Use this procedure to lubricate the rudder hinges.

TASK 12-22-21-600-801

2. Rudder Power Control Units (PCUs) Lubrication

(Figure 301)

A. General

(1) This procedure is a scheduled maintenance task.

B. References

Reference	Title
27-21-00-800-802	Remove Pressure from the Rudder Hydraulic Systems A, B, and Standby (P/B 201)
27-21-00-840-802	Put the Rudder Systems A, B, and Standby Back to the Condition Before the Pressure Removal (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. Prepare for the Lubrication

SUBTASK 12-22-21-010-004

(1) Remove the rudder hinge cover.

SUBTASK 12-22-21-860-001

(2) Do this task: Remove Pressure from the Rudder Hydraulic Systems A, B, and Standby, TASK 27-21-00-800-802.

SUBTASK 12-22-21-640-003

(3) Move the rudder to the full left position to get access to the PCUs rod ends.

F. Rudder Power Control Units Lubrication

(Table 301)

SUBTASK 12-22-21-640-001

(1) Put grease, D00633 in the lubrication fittings of the rod end bearings for the PCUs and the 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

(2) Remove the excess grease, D00633 from around the bearing.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 12-22-21-410-002

(1) Install the rudder hinge cover.

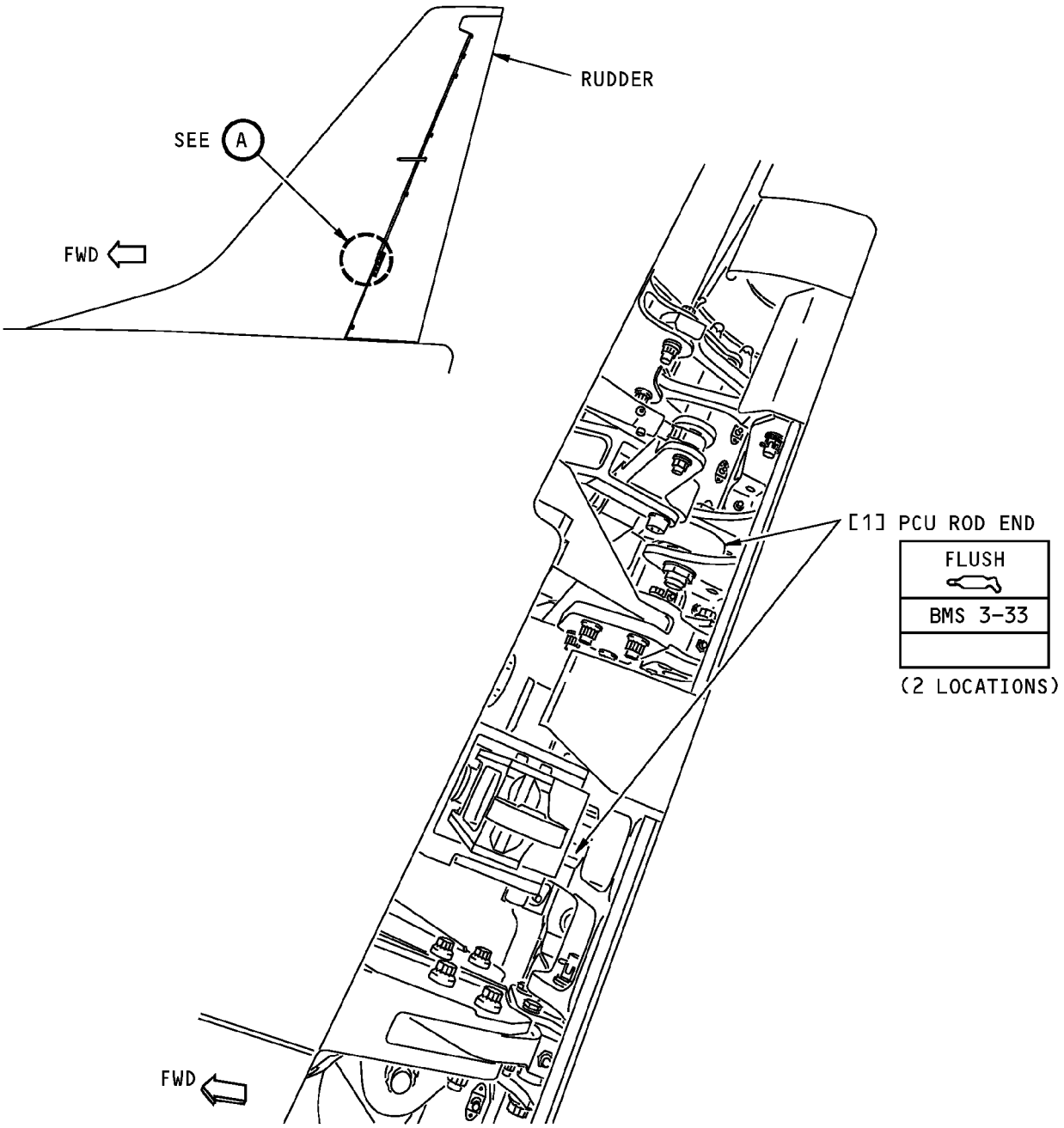
SUBTASK 12-22-21-860-002

(2) Do this task: Put the Rudder Systems A, B, and Standby Back to the Condition Before the Pressure Removal, TASK 27-21-00-840-802.

Table 301/12-22-21-993-803 Rudder Power Control Units (PCUs) Servicing (Fig. 301)

Item No.	Nomenclature	Lubricant	Method of Application	Number of Locations
1	PCU Rod End	grease, D00633	Flush	2

END OF TASK



RUDDER PCU TO RUDDER ATTACHMENTS

2 POINTS

A

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)

A. General

(1) This procedure is a scheduled maintenance task.

B. References

Reference	Title
27-21-00-800-802	Remove Pressure from the Rudder Hydraulic Systems A, B, and Standby (P/B 201)
27-21-00-840-802	Put the Rudder Systems A, B, and Standby Back to the Condition Before the Pressure Removal (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: Remove Pressure from the Rudder Hydraulic Systems A, B, and Standby, TASK 27-21-00-800-802.

SUBTASK 12-22-21-010-001

(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

(Table 302)

SUBTASK 12-22-21-640-002

(1) Do these steps to lubricate the spring slider shaft of the rudder feel and centering unit:

(a) Push one of the rudder pedals fully forward to get access to the spring slider shaft.

(b) Apply a thin layer of grease, D00633 to the part of the spring slider shaft that you can get access to.

NOTE: Put 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 that you can get access to through the spring cartridge.

NOTE: Put 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 12-22-21-860-004

(1) Do this task: Put the Rudder Systems A, B, and Standby Back to the Condition Before the Pressure Removal, TASK 27-21-00-840-802.

SUBTASK 12-22-21-410-001

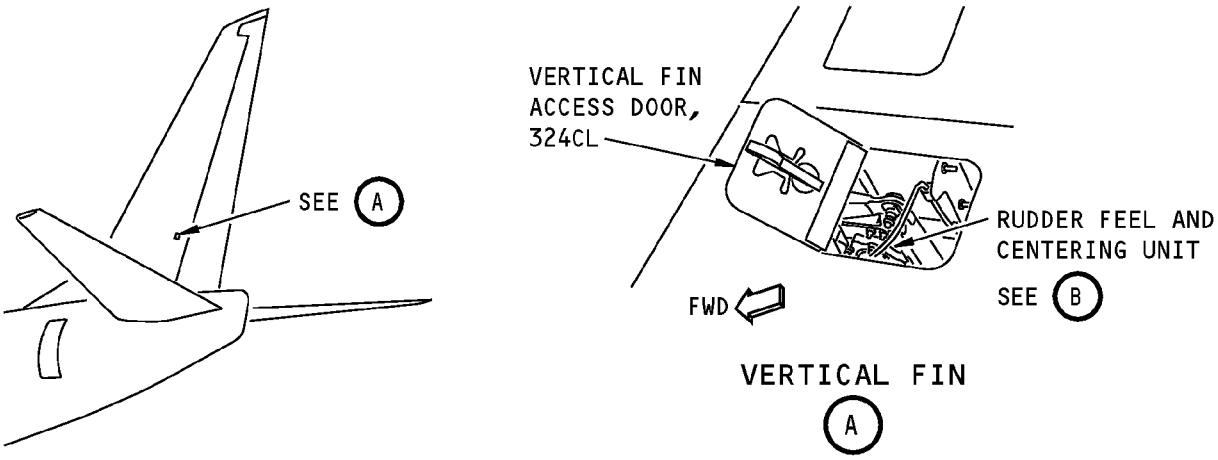
(2) Close this access panel:

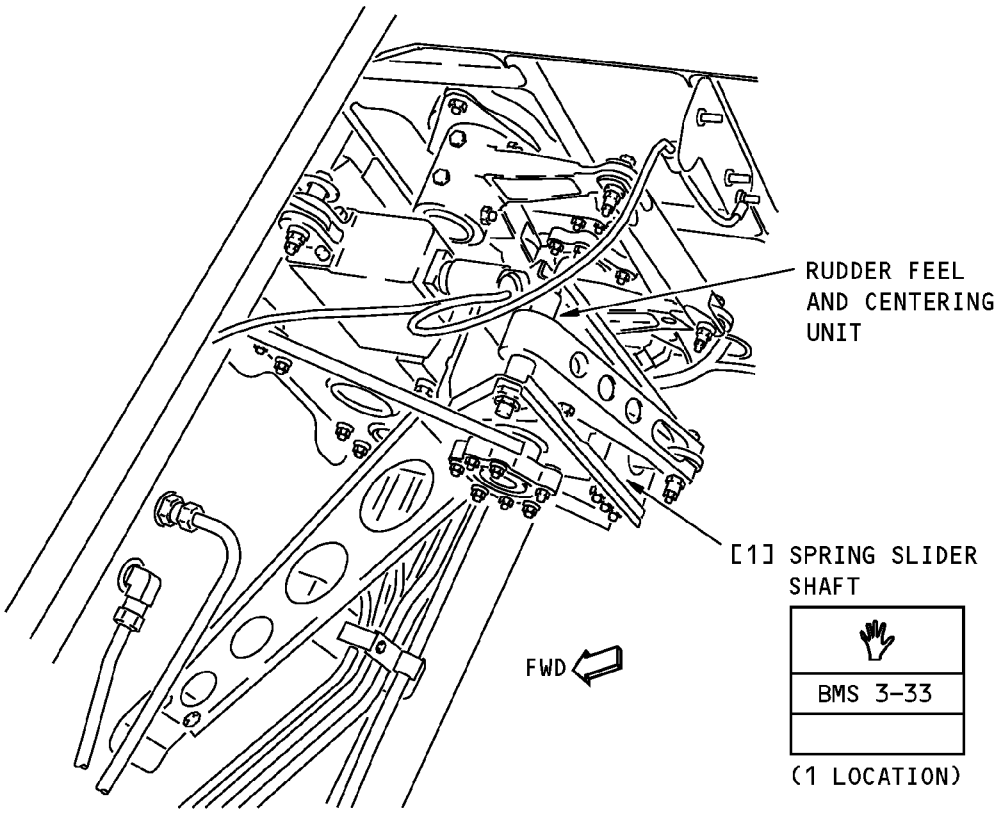
Number	Name/Location
324CL	Vertical Fin, Access

Table 302/12-22-21-993-804 Spring Slider Shaft Servicing (Fig. 302)

Item No.	Nomenclature	Lubricant	Method of Application	Number of Locations
1	Spring Slider Shaft	grease, D00633	Hand	1

END OF TASK





Spring Slider Shaft Servicing
Figure 302/12-22-21-990-802

TASK 12-22-21-640-801

4. Rudder Hinge Lubrication

(Figure 303)

A. General

(1) This procedure is a scheduled maintenance task.

B. References

Reference	Title
27-21-00-800-802	Remove Pressure from the Rudder Hydraulic Systems A, B, and Standby (P/B 201)
27-21-00-840-802	Put the Rudder Systems A, B, and Standby Back to the Condition Before the Pressure Removal (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 Lubrication

SUBTASK 12-22-21-860-005

(1) Do this task: Remove Pressure from the Rudder Hydraulic Systems A, B, and Standby, TASK 27-21-00-800-802.

SUBTASK 12-22-21-010-002

(2) Remove the applicable access panels:

(a) Hinge covers

F. Rudder Hinge Lubrication

(Table 303)

SUBTASK 12-22-21-640-004

(1) Move the rudder to the full right position to get access to the rudder hinge fittings.

SUBTASK 12-22-21-640-005

(2) Lubricate the rudder hinges with grease, D00633.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 12-22-21-010-003

(1) Install the applicable access panel:

(a) Hinge covers

SUBTASK 12-22-21-860-006

(2) Do this task: Put the Rudder Systems A, B, and Standby Back to the Condition Before the Pressure Removal, TASK 27-21-00-840-802.

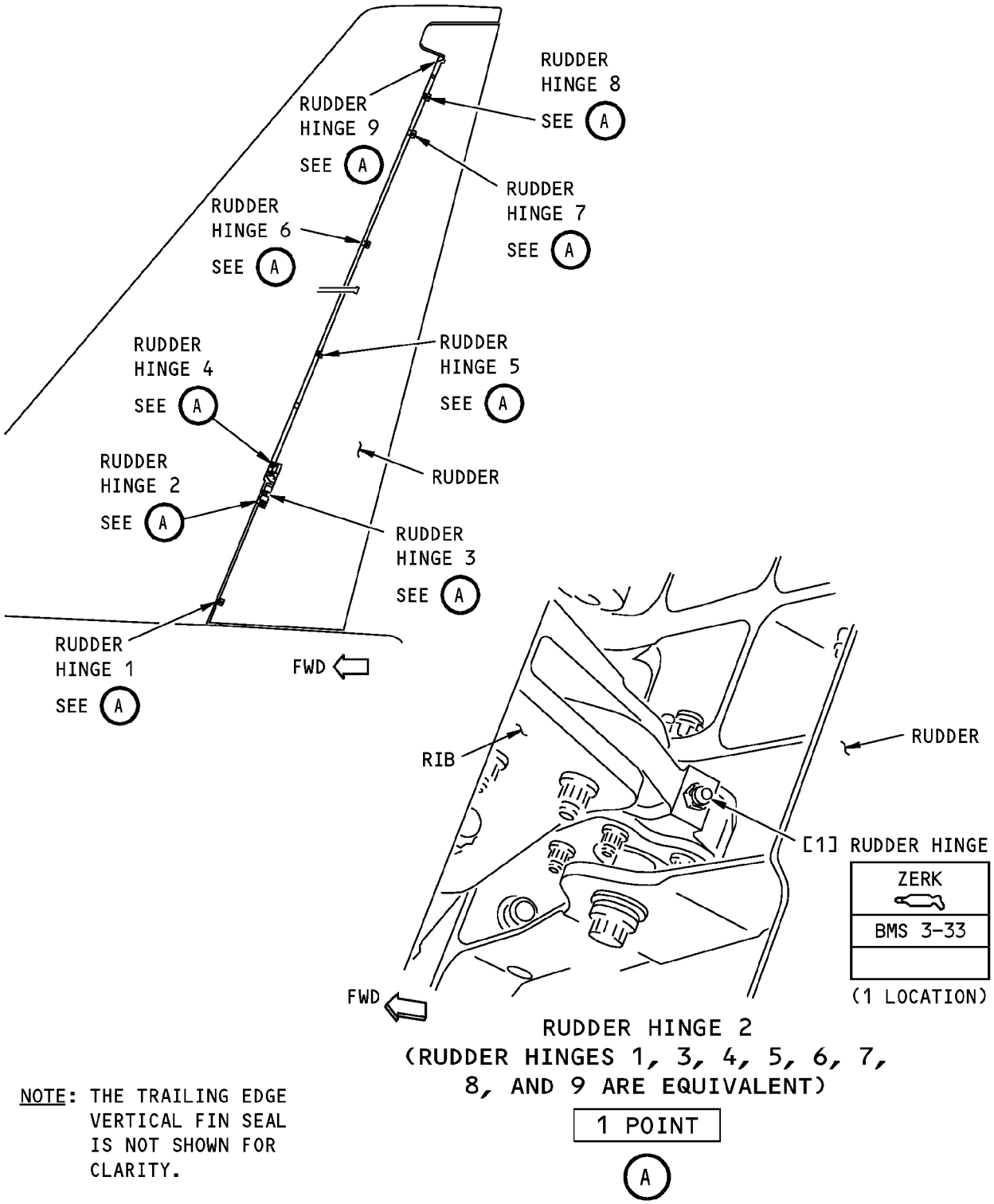
Table 303/12-22-21-993-806 Rudder Hinge Servicing (Fig. 303)

Item No.	Nomenclature	Lubricant	Method of Application	Number of Locations
1	Rudder Hinge	grease, D00633	Zerk	

(Continued)

Item No.	Nomenclature	Lubricant	Method of Application	Number of Locations
9				

END OF TASK



NOTE: THE TRAILING EDGE VERTICAL FIN SEAL IS NOT SHOWN FOR CLARITY.

Rudder Hinge Servicing
Figure 303/12-22-21-990-805

ELEVATOR - SERVICING

1. General

A. This procedure contains scheduled maintenance task data.

B. 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

(Figure 301)

A. General

(1) This procedure is a scheduled maintenance task.

B. References

Reference	Title
24-22-00-860-811	Supply Electrical Power (P/B 201)
27-31-00-800-801	Elevator Hydraulic System A and B - Pressurization (P/B 201)
27-31-00-800-802	Remove Pressure from the Elevator Hydraulic Systems A and B (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)

C. Consumable Materials

Reference	Description	Specification
D00633	Grease - Aircraft General Purpose	BMS3-33

D. Location Zones

Zone	Area
315	APU Compartment - Left
316	APU Compartment - Right

E. Access Panels

Number	Name/Location
333AT	Horizontal Stabilizer, Gap Cover, Horizontal Stabilizer to Body
343AT	Horizontal Stabilizer, Gap Cover - H. Stab. to Body

F. Prepare for the Lubrication

SUBTASK 12-22-31-860-010

(1) Position the control column in the neutral position and place a DO-NOT-MOVE tag on the control column.

SUBTASK 12-22-31-860-011

(2) Set the FLT CONTROL A and B switches to OFF.

SUBTASK 12-22-31-860-012

(3) Do this task: Remove Pressure from the Elevator Hydraulic Systems A and B, TASK 27-31-00-800-802.

SUBTASK 12-22-31-010-004

(4) For the left elevator buss crank and master arm fitting, do this step:

Open this access panel:

Number	Name/Location
333AT	Horizontal Stabilizer, Gap Cover, Horizontal Stabilizer to Body

SUBTASK 12-22-31-010-005

(5) For the right elevator buss crank and master arm fitting, do this step:

Open this access panel:

Number	Name/Location
343AT	Horizontal Stabilizer, Gap Cover - H. Stab. to Body

G. Elevator Buss Crank and Master Arm Fitting Lubrication

(Table 301)

SUBTASK 12-22-31-640-002

(1) Lubricate the elevator output torque tube buss crank [2], (Figure 301):

(a) Locate the buss crank lubrication fitting.

(b) Lubricate the buss crank 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

(2) 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.

H. Put the Airplane Back to Its Usual Condition

SUBTASK 12-22-31-410-004

(1) For the left elevator buss crank and master arm fitting, do this step:

Close this access panel:

Number	Name/Location
333AT	Horizontal Stabilizer, Gap Cover, Horizontal Stabilizer to Body

SUBTASK 12-22-31-410-005

(2) For the right elevator buss crank and master arm fitting, do this step:

Close this access panel:

Number	Name/Location
343AT	Horizontal Stabilizer, Gap Cover - H. Stab. to Body

SUBTASK 12-22-31-860-014

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

SUBTASK 12-22-31-860-013

(4) Do this task: Elevator Hydraulic System A and B - Pressurization, TASK 27-31-00-800-801.

SUBTASK 12-22-31-860-015

(5) Set the FLT CONTROL A and B switches to ON.

SUBTASK 12-22-31-080-001

(6) Remove the DO-NOT-MOVE tag from the control column.

SUBTASK 12-22-31-710-003

(7) 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.

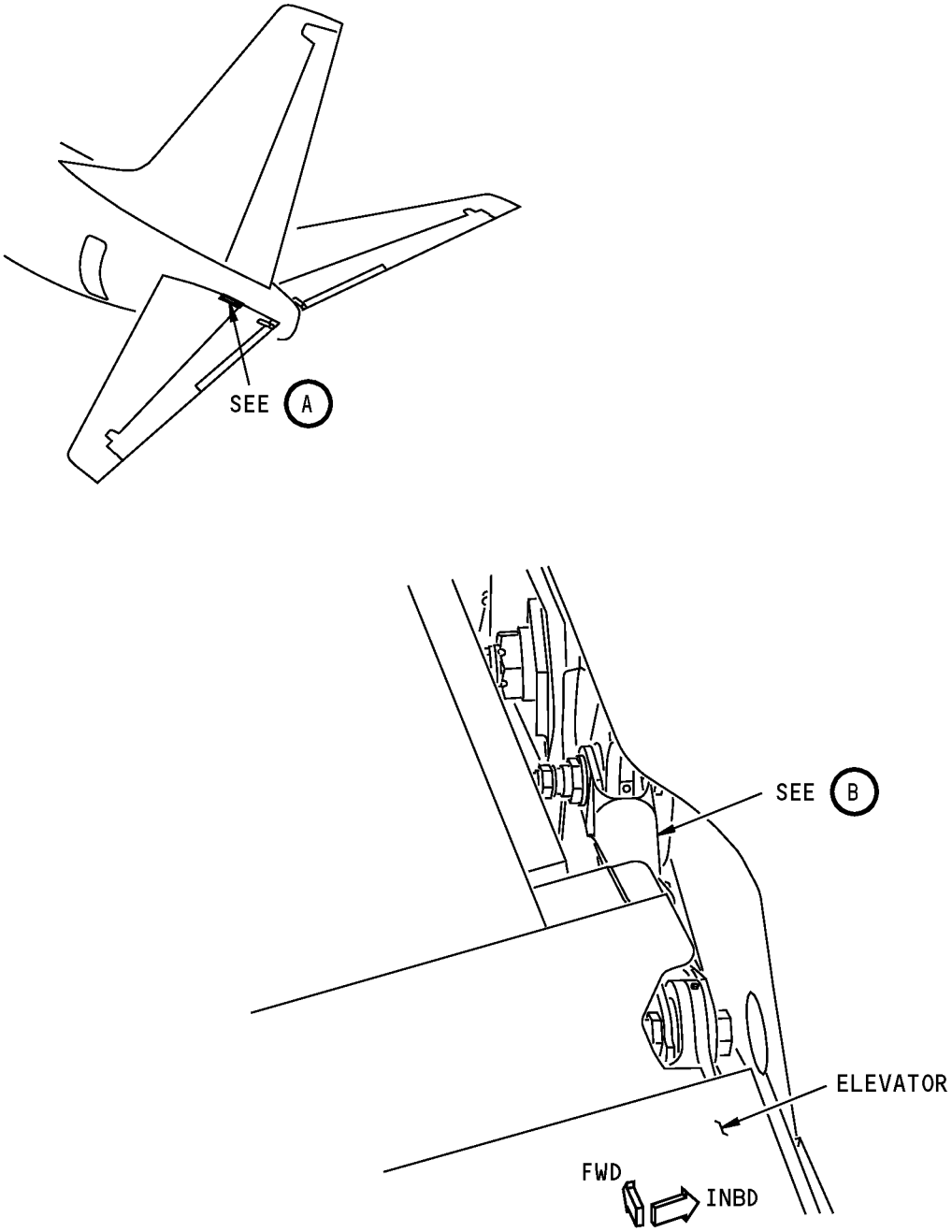
SUBTASK 12-22-31-600-001

(8) Do this task: Put the Elevator Hydraulic systems A and B Back to the Condition Before the Pressurization, TASK 27-31-00-840-801.

Table 301/12-22-31-993-804 Elevator Buss Crank and Master Arm Fitting Lubrication (Fig. 301)

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

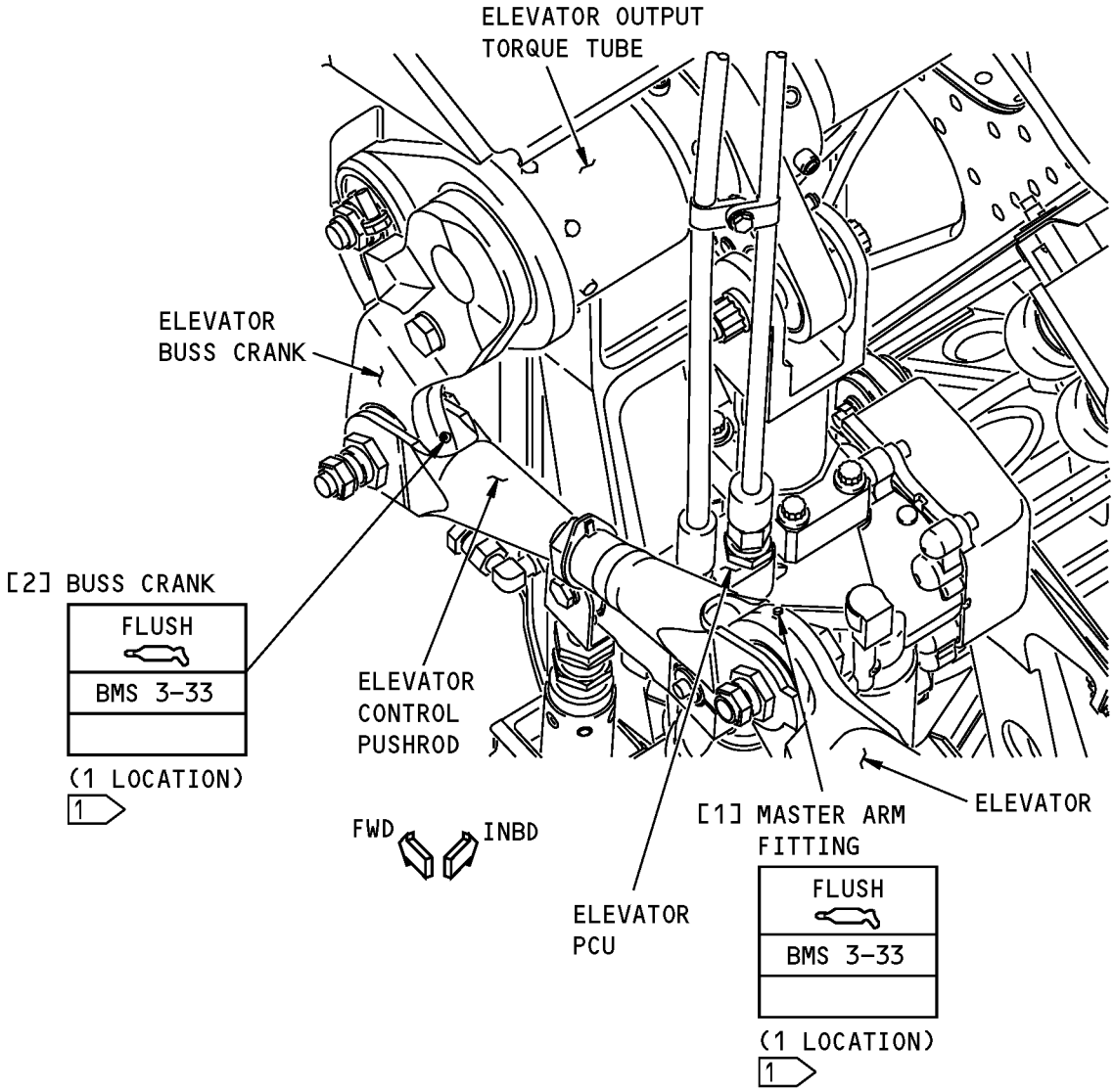
END OF TASK



ELEVATOR BUSS ASSEMBLY
(GAP COVER ACCESS PANEL REMOVED)

A

Elevator Buss Crank and Master Arm Fitting Lubrication
Figure 301 (Sheet 1 of 2)/12-22-31-990-801



LEFT ELEVATOR BUSS ASSEMBLY
(RIGHT ELEVATOR BUSS ASSEMBLY IS EQUIVALENT)

2 POINTS

B

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.

Elevator Buss Crank and Master Arm Fitting Lubrication
Figure 301 (Sheet 2 of 2)/12-22-31-990-801

TASK 12-22-31-640-801

3. Elevator Hinge Bearings - Lubrication

(Figure 302)

A. General

(1) This procedure is a scheduled maintenance task.

B. References

Reference	Title
27-31-00-800-802	Remove Pressure from the Elevator Hydraulic Systems A and B (P/B 201)

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
334HB	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
344HB	Horizontal Stabilizer, Elevator Hinge Cover, Elevator Sta 66.54
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 12-22-31-010-001

(1) For the left elevator, open these access panels:

Number	Name/Location
334GB	Horizontal Stabilizer, Elevator Hinge Cover
334HB	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 12-22-31-010-002

(2) For the right elevator, open these access panels:

Number	Name/Location
344GB	Horizontal Stabilizer, Hinge Cover, Elevator Station 24.09
344HB	Horizontal Stabilizer, Elevator Hinge Cover, Elevator Sta 66.54

(Continued)

Number	Name/Location
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 12-22-31-860-001

WARNING: MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACES BEFORE YOU SUPPLY HYDRAULIC POWER. AILERONS, RUDDERS, ELEVATORS, FLAPS, SPOILERS, LANDING GEAR CAN MOVE QUICKLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) Do this task: Remove Pressure from the Elevator Hydraulic Systems A and B, TASK 27-31-00-800-802.

SUBTASK 12-22-31-860-002

(2) Move the control column full aft and hold the control column in its position, attach a DO-NOT-MOVE tag.

SUBTASK 12-22-31-600-002

(3) Lubricate the elevator hinge fittings [1], [2], [3], [4] and [5], (Figure 302).

(a) Put grease, D00633 into the lube fittings of the elevator hinges [1], [2], [3], [4] and [5].

1) Add grease, D00633 until clean grease, D00633 comes out of the bearings.

2) Remove the excess grease, D00633 from around the bearing.

SUBTASK 12-22-31-410-001

(4) For the left elevator, install these access panels:

Number	Name/Location
334GB	Horizontal Stabilizer, Elevator Hinge Cover
334HB	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 12-22-31-410-002

(5) For the right elevator, install these access panels:

Number	Name/Location
344GB	Horizontal Stabilizer, Hinge Cover, Elevator Station 24.09
344HB	Horizontal Stabilizer, Elevator Hinge Cover, Elevator Sta 66.54

(Continued)

Number	Name/Location
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 12-22-31-860-003

(6) Return the control column to the neutral position and remove the DO-NOT-MOVE tag.

SUBTASK 12-22-31-710-001

(7) Move the elevator through the full range of travel to make sure it moves freely.

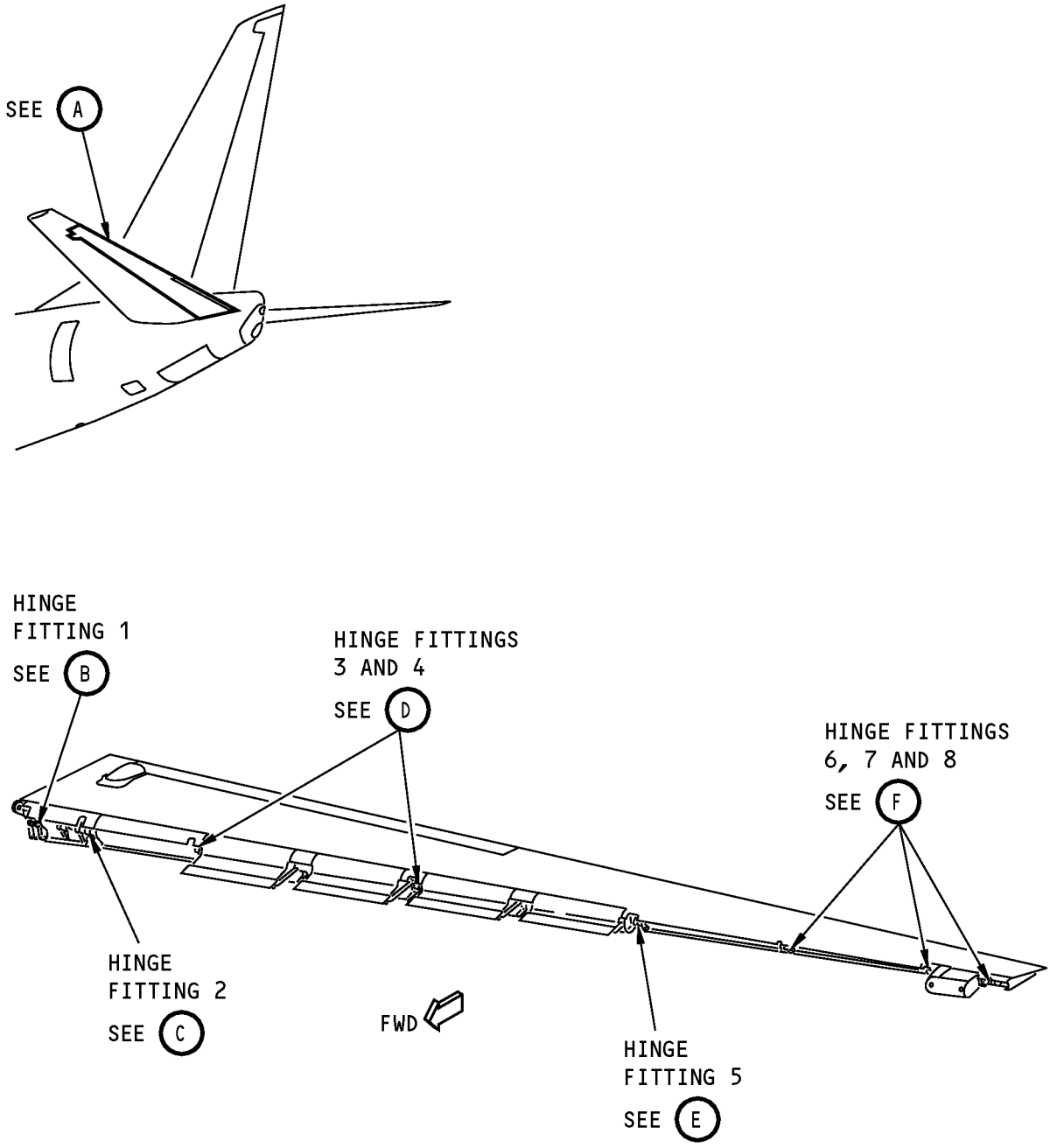
SUBTASK 12-22-31-860-004

(8) Push the control column all the way forward then pull the control column all the way aft, then release to the neutral position.

Table 302/12-22-31-993-805 Elevator Hinge Lubrication (Fig. 302)

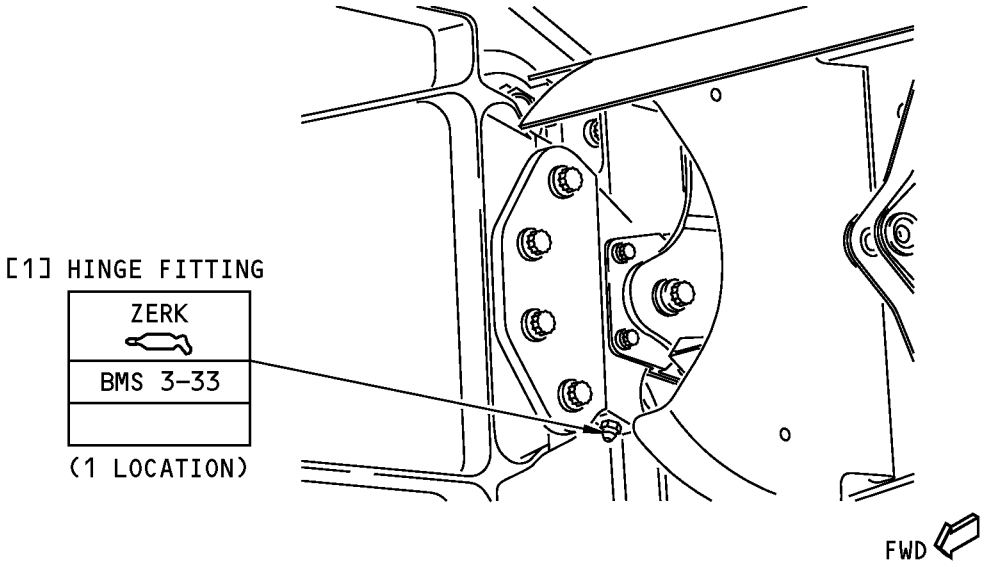
Item No.	Nomenclature	Lubricant	Method of Application	Number of Locations
1	Hinge Fitting	grease, D00633	Zerk	1
2	Hinge Fitting	grease, D00633	Zerk	1
3	Hinge Fitting	grease, D00633	Zerk	2
4	Hinge Fitting	grease, D00633	Zerk	1
5	Hinge Fitting	grease, D00633	Zerk	3

END OF TASK



LEFT ELEVATOR
(RIGHT ELEVATOR IS EQUIVALENT)
A

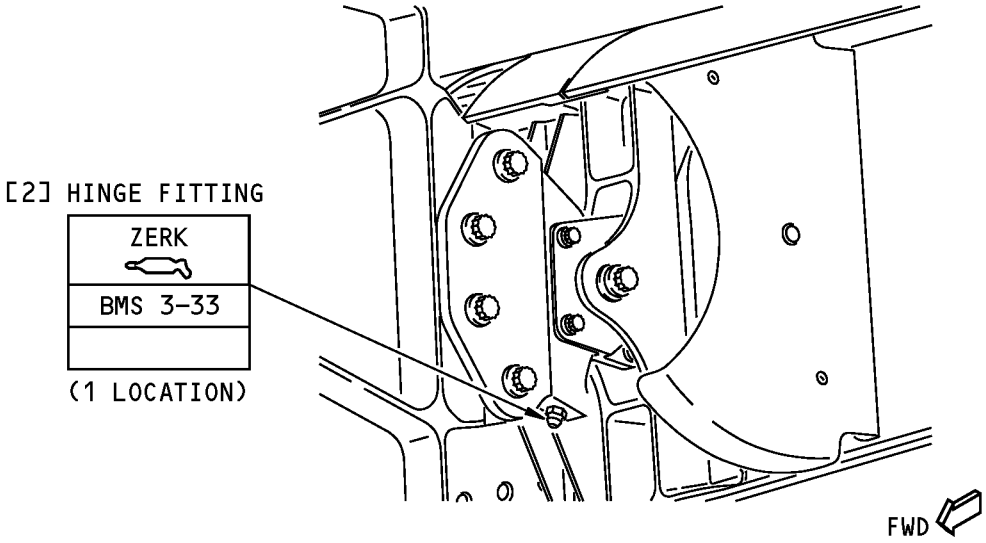
Elevator Hinge Servicing
Figure 302 (Sheet 1 of 4)/12-22-31-990-802



HINGE FITTING 1

1 POINT

B

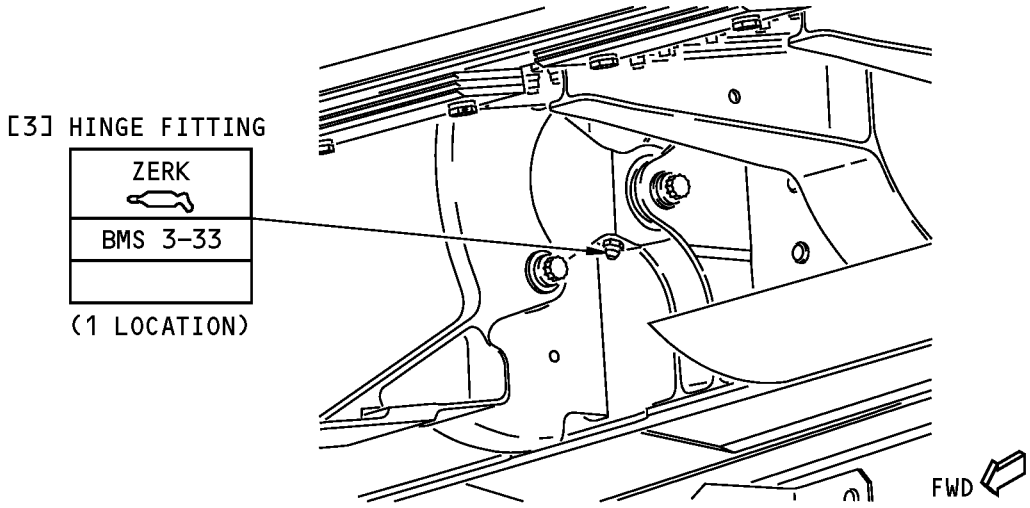


HINGE FITTING 2

1 POINT

C

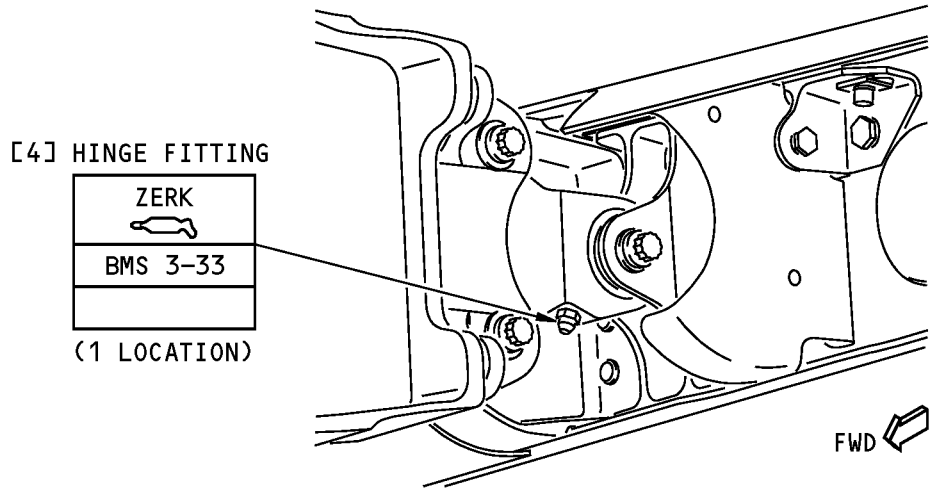
Elevator Hinge Servicing
Figure 302 (Sheet 2 of 4)/12-22-31-990-802



HINGE FITTING 3
(HINGE FITTING 4 IS EQUIVALENT)

1 POINT

D

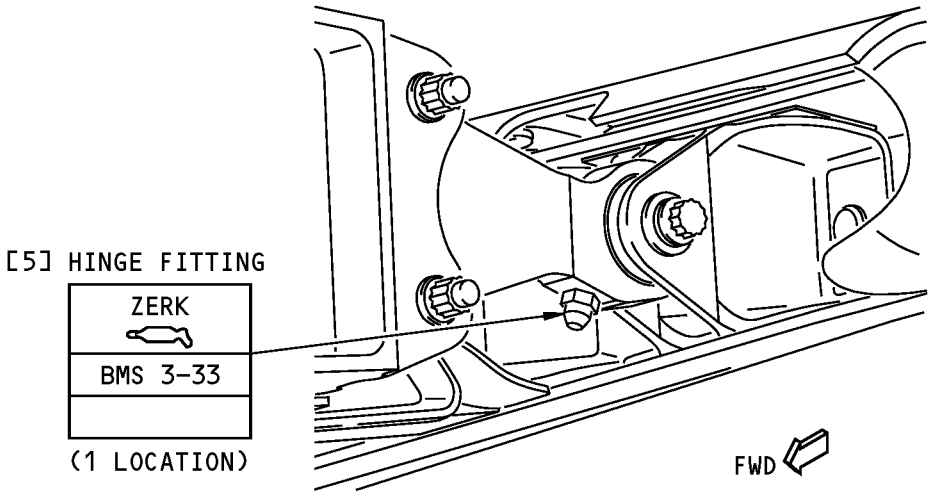


HINGE FITTING 5

1 POINT

E

Elevator Hinge Servicing
Figure 302 (Sheet 3 of 4)/12-22-31-990-802



HINGE FITTING 6
(HINGE FITTINGS 7 AND 8 ARE EQUIVALENT)

1 POINT

F

Elevator Hinge Servicing
Figure 302 (Sheet 4 of 4)/12-22-31-990-802

TASK 12-22-31-640-802

4. Elevator Tab Hinge Lubrication

NOTE: See Figure 303.

A. General

(1) This procedure is a scheduled maintenance task.

B. References

Reference	Title
27-31-00-800-801	Elevator Hydraulic System A and B - Pressurization (P/B 201)
27-31-00-800-802	Remove Pressure from the Elevator Hydraulic Systems A and B (P/B 201)

C. Consumable Materials

Reference	Description	Specification
D00633	Grease - Aircraft General Purpose	BMS3-33

D. Prepare for the lubrication

SUBTASK 12-22-31-860-006

(1) Do this task: Elevator Hydraulic System A and B - Pressurization, TASK 27-31-00-800-801.

SUBTASK 12-22-31-860-007

(2) Move the control column full aft and hold the control column in this position. Attach a Do-Not-Move tag.

SUBTASK 12-22-31-860-017

(3) Move the FLT CONTROL A and B switches to the OFF position.

E. Elevator Tab Hinge Lubrication

Table 303

SUBTASK 12-22-31-640-004

(1) Lubricate the elevator tab hinges [1] and [2], Figure 303.

Table 303/12-22-31-993-809 AIRPLANES WITH SIX HINGE ELEVATOR TABS; Elevator Tab Hinge Lubrication

Item No.	Nomenclature	Lubricant	Method of Application	Number of Locations
[1]	Tab Hinge Fitting	grease, D00633	Flush	1
[2]	Tab Hinge Fitting	grease, D00633	Flush	5

(a) Put grease, D00633 in tab hinge fittings [1] and [2] until clean grease, D00633 comes out of bearing.

(b) Remove any excess grease, D00633 from around the hinge bearing.

SUBTASK 12-22-31-860-021

(2) Return the control column to the neutral position and remove and the DO-NOT-MOVE tag.

SUBTASK 12-22-31-710-005

(3) Move the elevator through the full travel, to make sure it moves freely.

F. Put the Airplane Back to Its Usual Condition

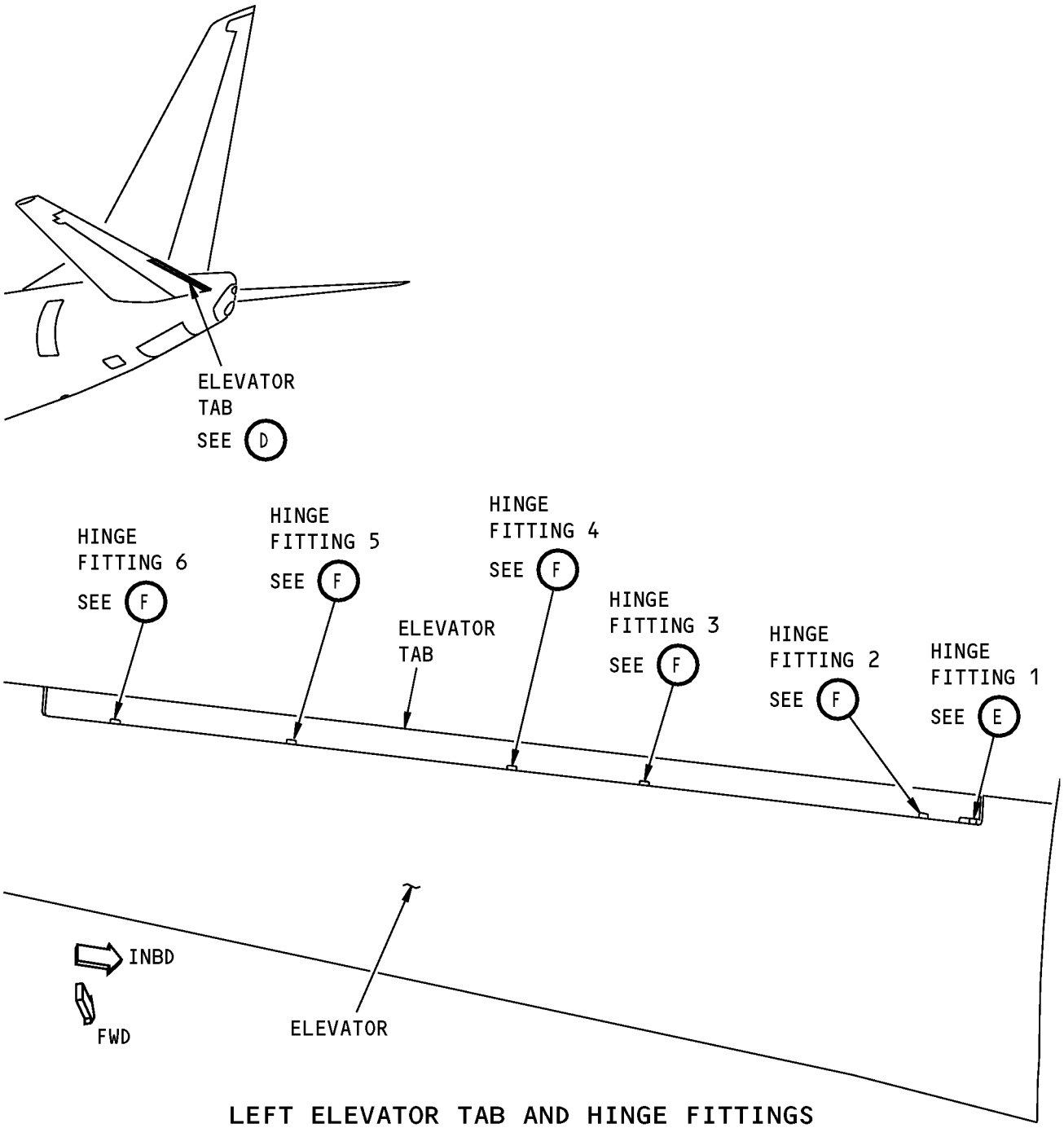
SUBTASK 12-22-31-860-009

(1) Do this task: Remove Pressure from the Elevator Hydraulic Systems A and B, TASK 27-31-00-800-802.

SUBTASK 12-22-31-860-018

(2) Move the FLT CONTROL A and B switches to ON, if necessary.

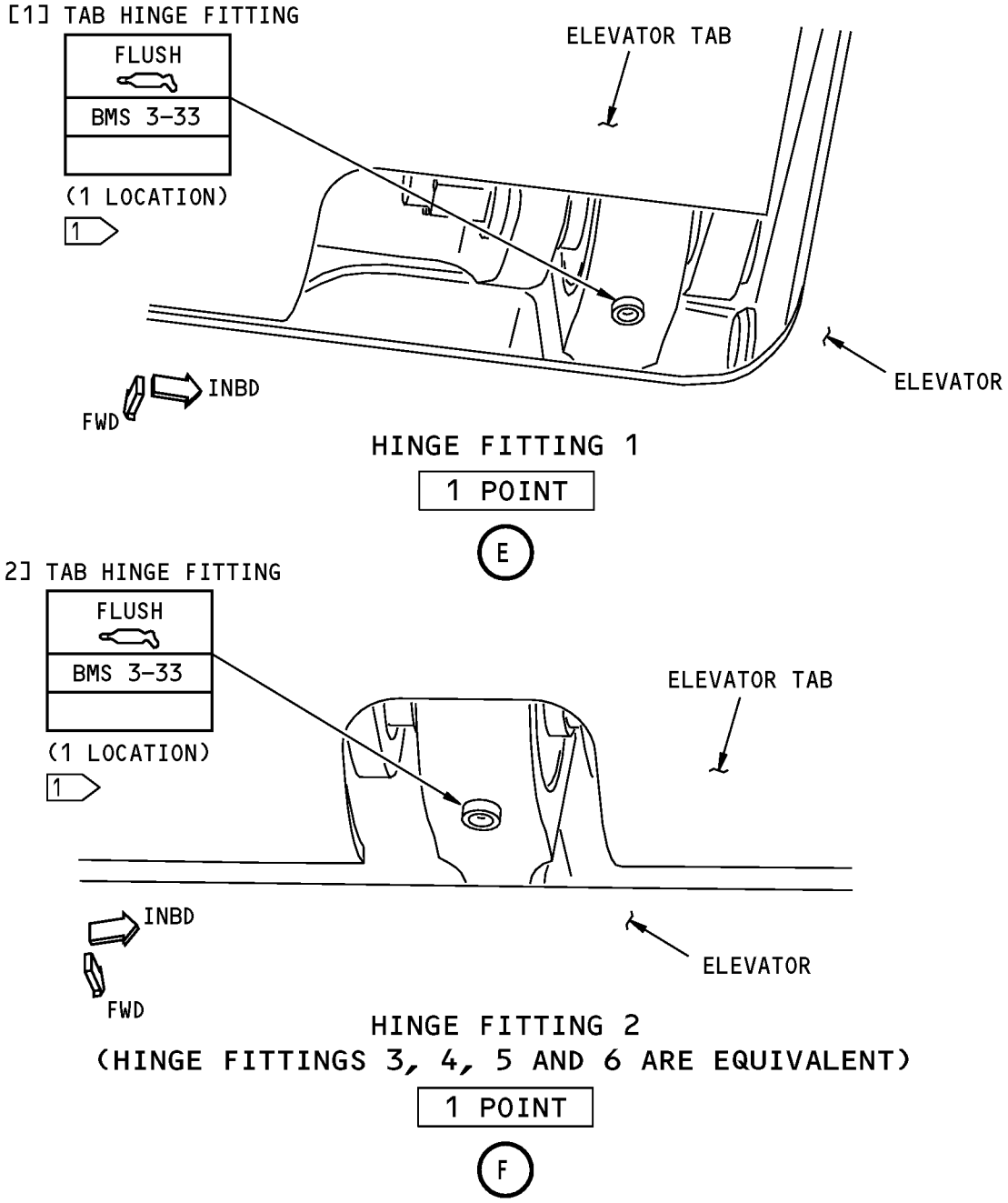
——————— END OF TASK ———————



LEFT ELEVATOR TAB AND HINGE FITTINGS
(RIGHT ELEVATOR TAB IS EQUIVALENT)
(VIEW IN THE UP DIRECTION)

D

Elevator Tab Hinge Lubrication (AIRPLANES WITH SIX HINGE ELEVATOR TABS (POST-SB 55A1080 OR PRR 38506))
Figure 303 (Sheet 1 of 2)/12-22-31-990-812



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.

Elevator Tab Hinge Lubrication (AIRPLANES WITH SIX HINGE ELEVATOR TABS (POST-SB 55A1080 OR PRR 38506))
Figure 303 (Sheet 2 of 2)/12-22-31-990-812

TASK 12-22-31-600-802

5. Elevator Balance Panel - Lubrication

(Figure 304)

A. General

(1) This procedure is a scheduled maintenance task.

B. References

Reference	Title
27-31-00-800-802	Remove Pressure from the Elevator Hydraulic Systems A and B (P/B 201)
27-31-00-840-802	Put the Elevator Systems A and B Back to the Condition Before the Pressure Removal (P/B 201)

C. Access Panels

Number	Name/Location
333CB	Horizontal Stabilizer, Access Panel, Trailing Edge
333DB	Horizontal Stabilizer, Access Panel, Trailing Edge
343CB	Horizontal Stabilizer, Access Panel - T.E. Area
343DB	Horizontal Stabilizer, Access Panel - T.E. Area

D. Prepare for the Lubrication

SUBTASK 12-22-31-860-019

(1) Do this task: Remove Pressure from the Elevator Hydraulic Systems A and B, TASK 27-31-00-800-802.

SUBTASK 12-22-31-010-006

(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

SUBTASK 12-22-31-010-007

(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

E. Elevator Balance Panel Hinge Lubrication

(Figure 304)

SUBTASK 12-22-31-020-001

(1) Get access to the balance panel [102] hinges (bays 2, 3, and 4):

(a) Remove the washers [104] and bolts [103] that attach the balance panel [102] to the idler hinge.

(b) Let the balance panel [102] and the idler hinge hang by their hinges.

SUBTASK 12-22-31-020-002

(2) Lubricate the three hinge points [1] of the elevator balance panels (Figure 304).

(a) Move the hinges during lubrication.

SUBTASK 12-22-31-410-006

(3) Install the washers [104] and bolts [103] that attach the balance panel [102] to the idler hinge.

SUBTASK 12-22-31-410-007

(4) 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

SUBTASK 12-22-31-410-008

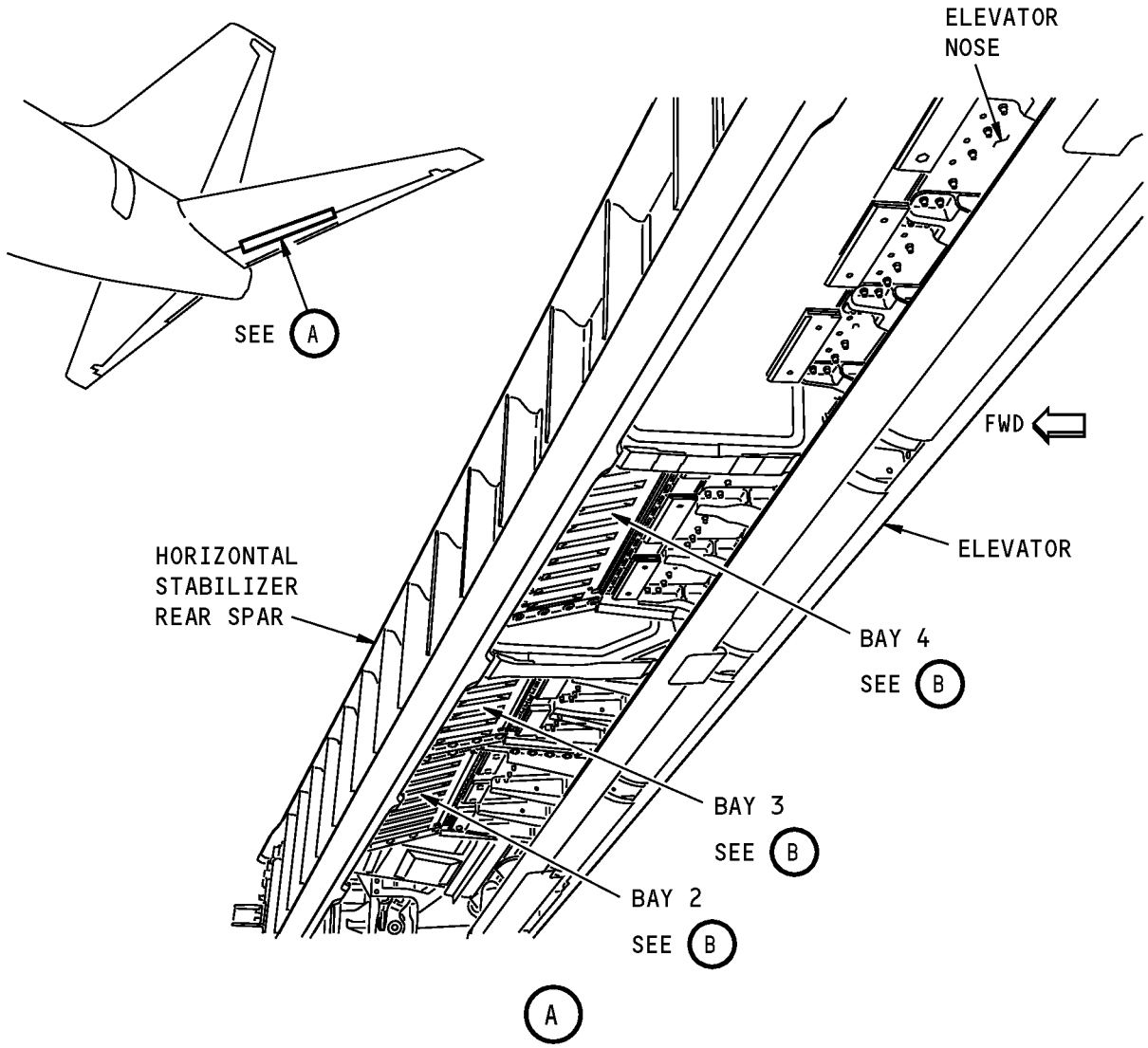
(5) For the right elevator, install these access panels:

Number	Name/Location
343CB	Horizontal Stabilizer, Access Panel - T.E. Area
343DB	Horizontal Stabilizer, Access Panel - T.E. Area

SUBTASK 12-22-31-860-020

(6) Do this task: Put the Elevator Systems A and B Back to the Condition Before the Pressure Removal, TASK 27-31-00-840-802.

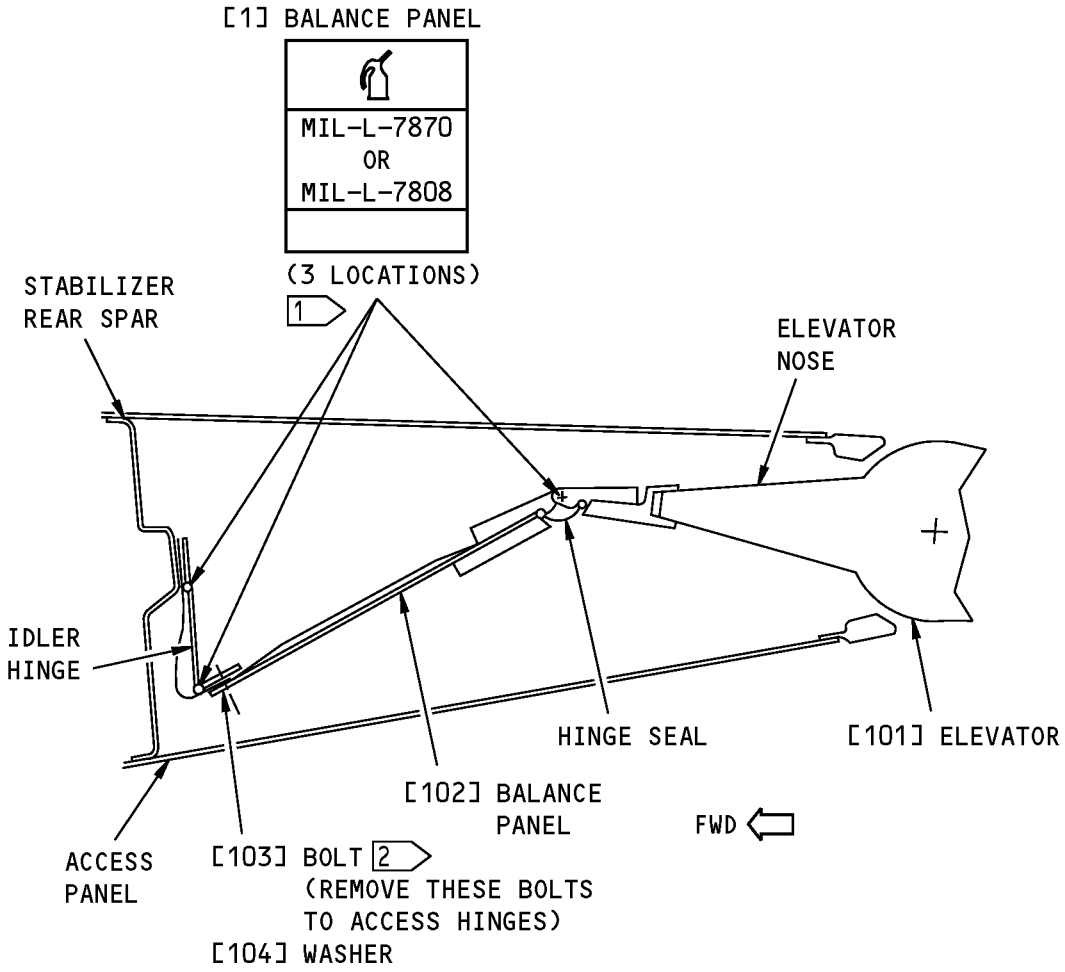
——————— END OF TASK ———————



1 REMOVE ACCESS PANEL. REMOVE BOLTS HOLDING FORWARD PORTION OF EACH BALANCE PANEL HINGE TO THE IDLER HINGE. LET FORWARD PORTION OF BALANCE PANEL HANG DOWN. GAIN ACCESS TO HINGE AND LUBRICATE. CYCLE HINGE DURING LUBRICATION. INSTALL BALANCE PANEL BOLTS AND ACCESS PANEL. CYCLE ELEVATOR FULL TRAVEL (BY HAND) TO CHECK FOR BINDING.

2 WHEN INSTALLING BALANCE PANEL BOLTS ENSURE IDLER HINGE IS POSITIONED DOWNWARD FROM STABILIZER REAR SPAR.

Elevator Balance Panel Lubrication
Figure 304 (Sheet 1 of 2)/12-22-31-990-808



Elevator Balance Panel Lubrication
Figure 304 (Sheet 2 of 2)/12-22-31-990-808

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 and flexible shaft.

(3) A servicing of the stabilizer trim brake mechanism.

TASK 12-22-41-600-801

2. Stabilizer Jackscrew, Ballnut and Gimbal - Lubrication

(Figure 301)

A. General

(1) This procedure is a scheduled maintenance task.

B. References

Reference	Title
24-22-00-860-811	Supply Electrical Power (P/B 201)
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. Consumable Materials

Reference	Description	Specification
D00633	Grease - Aircraft General Purpose	BMS3-33

D. Location Zones

Zone	Area
311	Area Aft of Pressure Bulkhead - Left
312	Area Aft of Pressure Bulkhead - Right

E. Access Panels

Number	Name/Location
311BL	Stabilizer Trim Access Door

F. Prepare for the Lubrication

SUBTASK 12-22-41-860-001

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

SUBTASK 12-22-41-010-001

(2) Open this access panel:

Number	Name/Location
311BL	Stabilizer Trim Access Door

SUBTASK 12-22-41-600-001

(3) This table supplies information for subsequent lubrication steps:

Table 301/12-22-41-993-803 Stabilizer Jackscrew, Ballnut and Gimbal Lubrication (Fig 301)

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
4	Lower Gimbal	grease, D00633	Zerk	2

SUBTASK 12-22-41-640-003

(4) Lubricate the stabilizer trim upper gimbal [2] and lower gimbal [4] with grease, (Figure 301).

SUBTASK 12-22-41-640-004

(5) Lubricate the stabilizer trim jackscrew [1], (Figure 301).

SUBTASK 12-22-41-860-020

(6) Make sure that the STAB TRIM switch on the stab trim and cabin door panel, P8-47 module, is in the NORMAL position.

SUBTASK 12-22-41-860-021

(7) Set the Main Cutout switch, S272 located on the aft area of the control stand, to the NORMAL position.

SUBTASK 12-22-41-860-002

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.

(8) Move the stabilizer to the maximum leading edge up (APL NOSE DOWN) position (the mechanical limits). This can be done using the STAB TRIM switches and then the stabilizer trim wheel.

(a) Make sure the upper gimbal [2] touches the upper stop [102].

SUBTASK 12-22-41-860-003

(9) Set the Main Cutout switch, S272 located on the aft area of the control stand, to the CUTOUT position.

SUBTASK 12-22-41-860-022

(10) Attach DO-NOT-OPERATE tags to the switches.

G. Stabilizer Jackscrew, Ballnut and Gimbal Lubrication

(Table 301)

SUBTASK 12-22-41-640-005

(1) Lubricate the bottom part of the stabilizer trim jackscrew [101] between the ball nut [3] and the lower stop [104] with grease, D00633.

SUBTASK 12-22-41-860-023

(2) Remove the DO-NOT-OPERATE tags on the STAB TRIM switches.

SUBTASK 12-22-41-860-004

(3) Set the Main Cutout switch, S272 located on the aft area of the control stand, to the NORMAL position.

SUBTASK 12-22-41-860-005

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.

(4) Move the stabilizer to the maximum leading edge down (APL NOSE UP) position (the mechanical limits). This can be done using the STAB TRIM switches and then the stabilizer trim wheel.

(a) Make sure the ballnut [3] touches the lower stop [104].

SUBTASK 12-22-41-860-006

(5) Set the Main Cutout switch, S272 located on the aft area of the control stand, to the CUTOUT position.

SUBTASK 12-22-41-860-024

(6) Attach DO-NOT-OPERATE tags to the switches.

SUBTASK 12-22-41-640-006

(7) Lubricate the top part of the stabilizer trim jackscrew [101] between the ballnut [3] and the upper stop [102] with grease, D00633.

SUBTASK 12-22-41-860-007

(8) Set the stabilizer trim cutout switches to NORMAL.

SUBTASK 12-22-41-640-007

(9) Put grease, D00633, into the ballnut [3] zerk fitting and do a visual check to make sure that one of the following two conditions is met:

(a) That new grease continuously comes out of the vent hole at the upper portion of the ballnut [3] while you operate the actuator for one complete cycle of the ballnut [3] (endstop to endstop).

1) If the grease coming out of the ballnut [3] shows signs of metallic debris, discolored water, rust, or other harmful particles, replace the jackscrew actuator (Stabilizer Ball Nut and Jackscrew Gearbox Removal, TASK 27-41-81-000-801)(Stabilizer Ball Nut and Jackscrew Gearbox Installation, TASK 27-41-81-400-801).

2) If a large amount of grease is present around the stabilizer trim actuator, grease may be escaping from the Ball nut and due to a faulty seal or raised/leaking return tube. Replace the jackscrew actuator (Stabilizer Ball Nut and Jackscrew Gearbox Removal, TASK 27-41-81-000-801), (Stabilizer Ball Nut and Jackscrew Gearbox Installation, TASK 27-41-81-400-801).

3) If any grease comes out of the ballnut [3] from any location other than the upper or lower seal or through the grease vent [106], replace the jackscrew actuator (Stabilizer Ball Nut and Jackscrew Gearbox Removal, TASK 27-41-81-000-801)(Stabilizer Ball Nut and Jackscrew Gearbox Installation, TASK 27-41-81-400-801).

4) If the majority of the grease comes out of the ballnut from any location other than the upper seal at the end of the ballnut opposite the zerk fitting, or through the grease vent [106], replace the jackscrew actuator (Stabilizer Ball Nut and Jackscrew Gearbox Removal, TASK 27-41-81-000-801)(Stabilizer Ball Nut and Jackscrew Gearbox Installation, TASK 27-41-81-400-801).

NOTE: Large amount of grease coming out of the upper and lower seal may indicate a faulty seal which may lead to water ingress and corrosion within the ballnut.

NOTE: Clean unwanted grease from the vent hole, as necessary. Do not remove grease from the ballscrew.

(b) That new grease continuously comes out of the ice scraper [103] at the upper portion of the ballnut while you operate the actuator for one complete cycle of the ballnut [3] (endstop to endstop).

1) If the grease coming out of the ice scraper [103] shows signs of metallic debris, discolored water, rust, or other harmful particles, replace the jackscrew actuator (Stabilizer Ball Nut and Jackscrew Gearbox Removal, TASK 27-41-81-000-801)(Stabilizer Ball Nut and Jackscrew Gearbox Installation, TASK 27-41-81-400-801).

NOTE: Clean unwanted grease from the ice scraper [103], as necessary. Do not remove grease from the jackscrew [1].

H. Put the Airplane Back to Its Usual Condition

SUBTASK 12-22-41-860-025

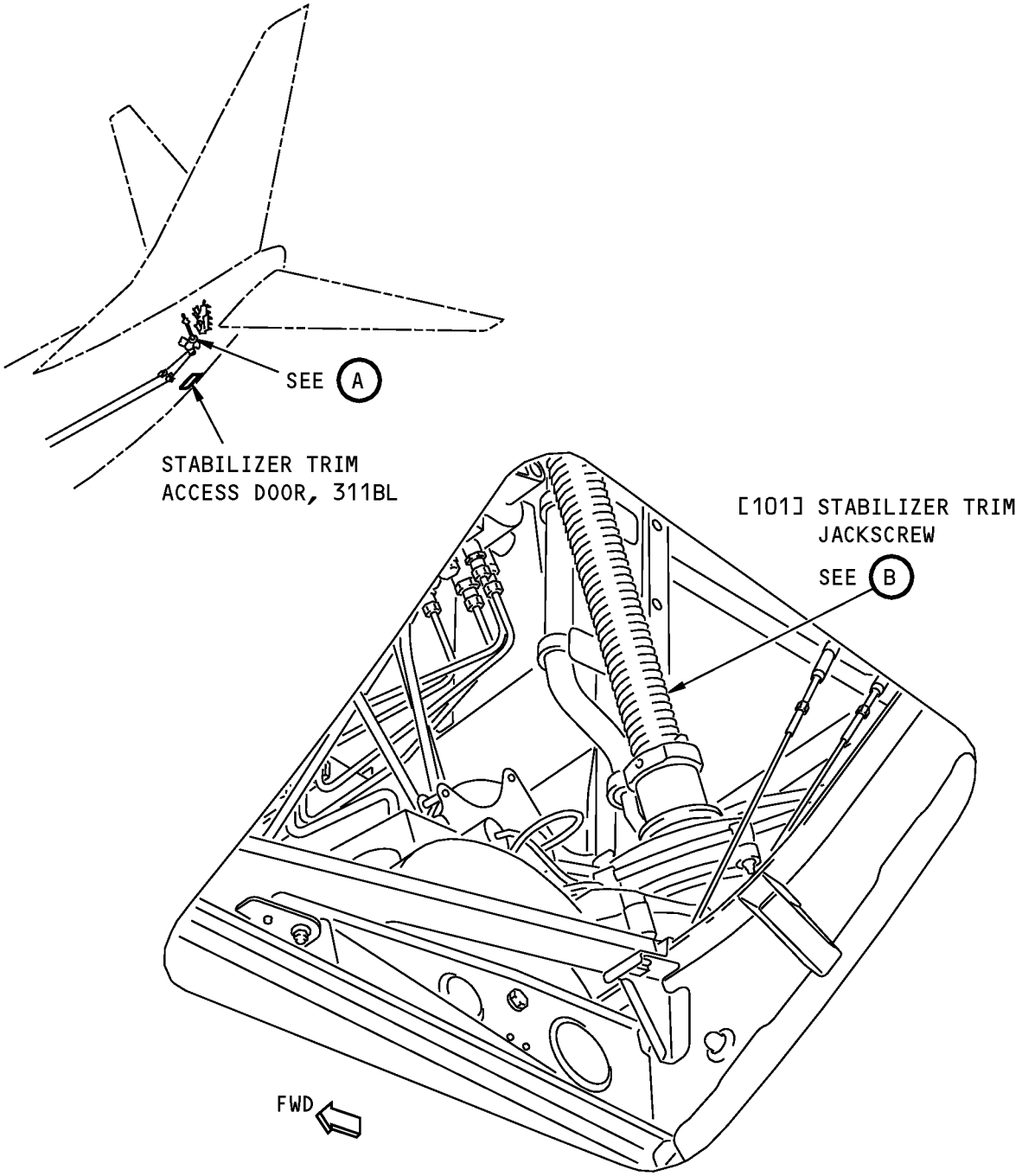
(1) Remove the DO-NOT-OPERATE tags on the STAB TRIM switches.

SUBTASK 12-22-41-410-001

(2) Close this access panel:

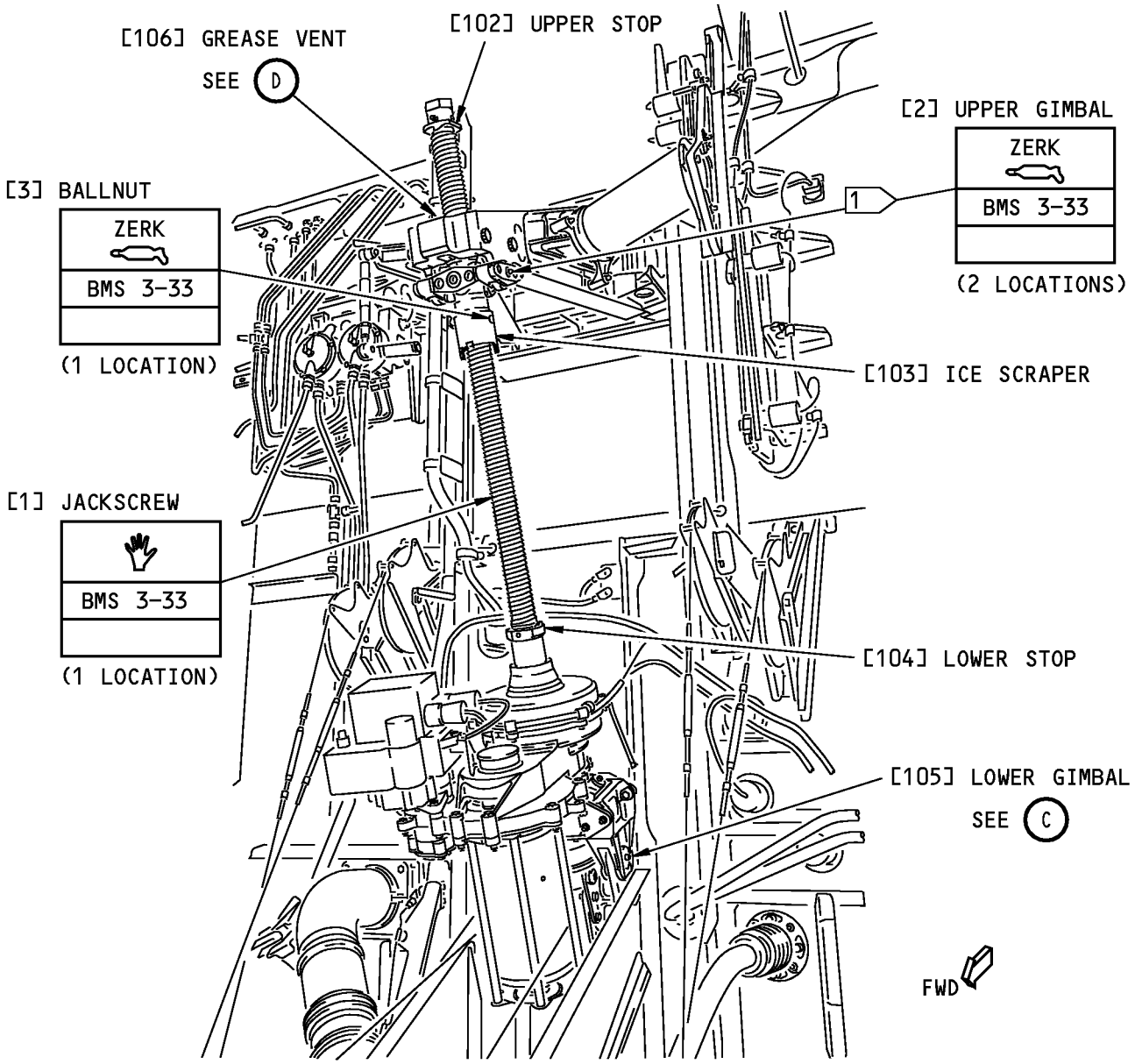
Number	Name/Location
311BL	Stabilizer Trim Access Door

——————— END OF TASK ———————



VIEW THROUGH THE STABILIZER TRIM
ACCESS DOOR, 311BL
A

Stabilizer Jackscrew, Ballnut and Gimbal Lubrication
Figure 301 (Sheet 1 of 4)/12-22-41-990-801



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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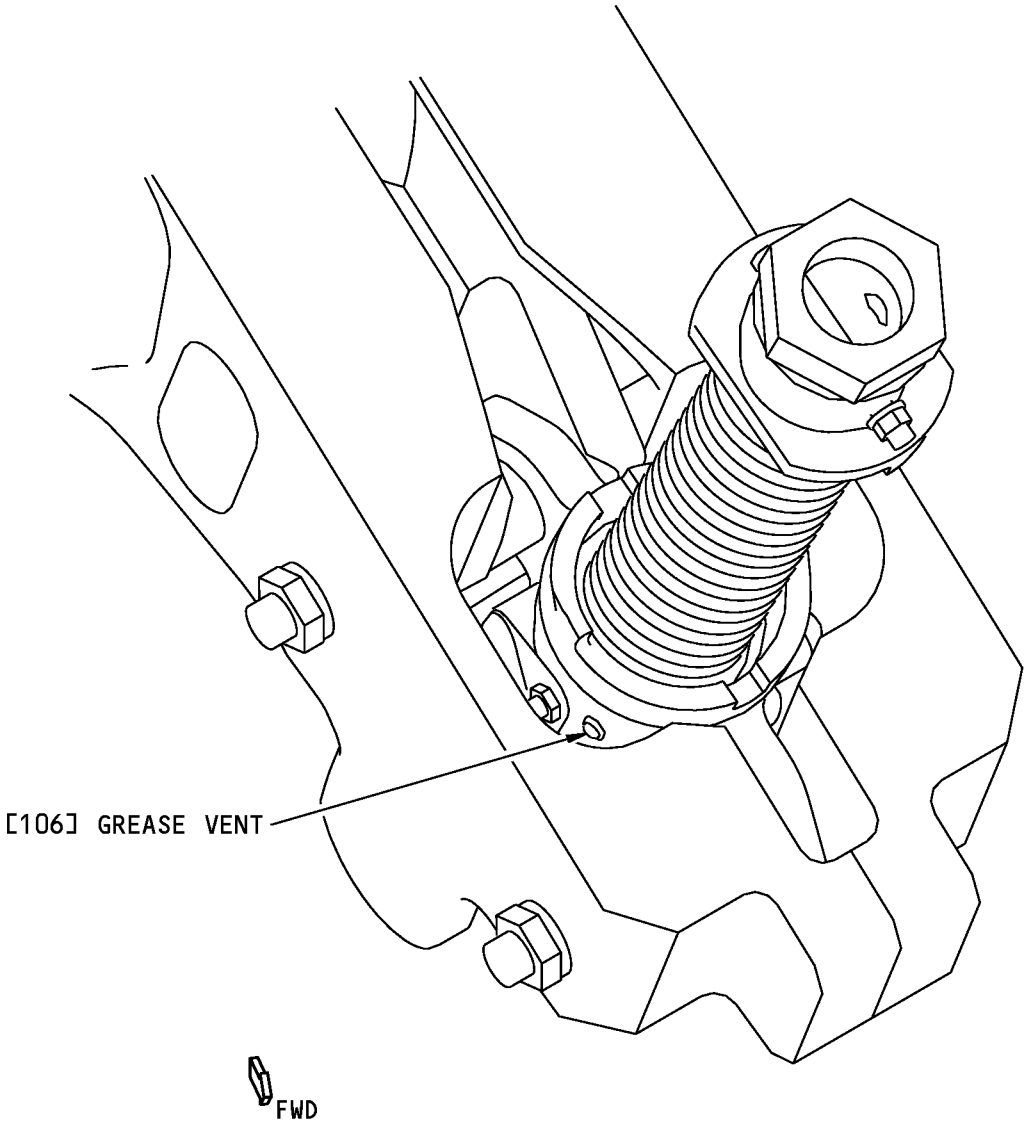
Stabilizer Jackscrew, Ballnut and Gimbal Lubrication
Figure 301 (Sheet 2 of 4)/12-22-41-990-801



GREASE VENT

1 POINT

D

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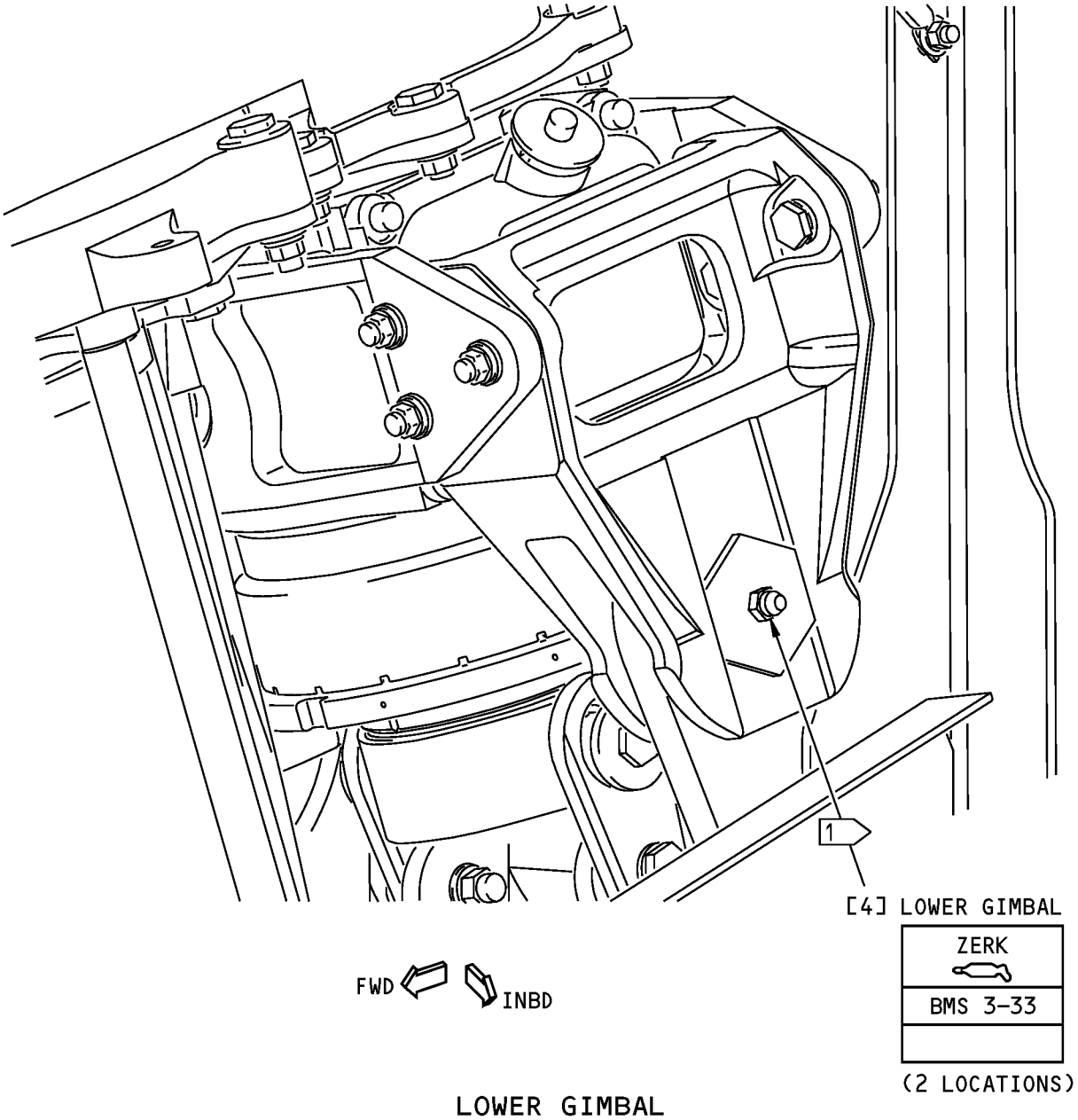
Stabilizer Jackscrew, Ballnut and Gimbal Lubrication
Figure 301 (Sheet 3 of 4)/12-22-41-990-801



Stabilizer Jackscrew, Ballnut and Gimbal Lubrication
Figure 301 (Sheet 4 of 4)/12-22-41-990-801

TASK 12-22-41-600-802

3. Stabilizer Trim System Chain and Flexible Shaft - Lubrication

(Figure 302)

A. General

(1) This procedure is a scheduled maintenance task.

B. References

Reference	Title
24-22-00-860-811	Supply Electrical Power (P/B 201)
25-11-01-000-801	Captain's and First Officer's Seat Removal (P/B 401)
25-11-01-400-801	Captain's and First Officer's Seat Installation (P/B 401)

C. 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

D. Location Zones

Zone	Area
112	Area Forward of Nose Landing Gear Wheel Well

E. Access Panels

Number	Name/Location
112A	Forward Access Door

F. Prepare for the Lubrication

SUBTASK 12-22-41-860-008

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

SUBTASK 12-22-41-860-009

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.

(2) Using the stabilizer trim wheel on the control stand, move the stabilizer to the NEUTRAL position (4 units of trim).

SUBTASK 12-22-41-860-026

(3) Make sure the Main Cutout switch, S272 located on the aft area of the control stand, is in the CUTOUT position.

SUBTASK 12-22-41-860-027

(4) Attach DO-NOT-OPERATE tags to the switches and stabilizer trim wheel.

SUBTASK 12-22-41-860-010

(5) 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

(6) Open this access panel:

Number	Name/Location
112A	Forward Access Door

G. Stabilizer Trim System Chain and Flexible Shaft Lubrication

SUBTASK 12-22-41-000-001

(1) Remove the Captain seat: Captain's and First Officer's Seat Removal, TASK 25-11-01-000-801

SUBTASK 12-22-41-010-007

(2) Remove the access covers from the control stand.

(a) The left upper side panel.

(b) The left lower side panel.

SUBTASK 12-22-41-640-008

(3) Do the following to lubricate the stabilizer trim flexible shaft [2] and the chain [1].

(a) Lubricate the flexible shaft [2], (Figure 302):

1) Remove flexible shaft [2] from the casing [5]:

a) Remove the safety wire from both ends of the coupling nuts [4] on the flexible shaft assembly.

b) Remove the flexible shaft coupling nuts [4] from both the flightdeck and lower 41 section connection to the cable drum.

c) Carefully remove the flexible shaft cable assembly from the aircraft.

NOTE: Make sure not to turn the stabilizer trim wheel while the flexible shaft is removed.

d) Expose the press pin [3] so that it can be removed.

e) Carefully remove the press-to-fit pin [3] that connects the upper part of the cable assembly to the flexible shaft [2] with a punch.

NOTE: Take care to retain washers and pin attached to the flexible shaft.

f) Remove the flex shaft end fitting [7] where the press pin [3] was removed and slide the flexible shaft [2] out of the casing [5].

2) Apply grease, D00633 (preferred) or grease, D00013 (alternate) to the flexible shaft [2].

Table 302/12-22-41-993-804 Stabilizer Chain and Flexible Shaft Lubrication

Item No.	Nomenclature	Lubricant	Method of Application	Number of Locations
1	Chain	grease, D00633	Hand	1
2	Flexible Shaft	grease, D00633 (preferred) or grease, D00013 (alternate)	Hand	1

3) Install the flexible shaft [2] into the casing [5].

a) If the control wheel was moved beyond the neutral position (4 units of trim), a ''B'' dimension check for connecting the flexible shaft may be necessary SUBTASK 27-41-00-420-003

b) Install the flex shaft end fitting [7].

c) Carefully install the press pin [3] into the flexible shaft end fitting [7].

d) Install the coupling nuts [4] to both the lower 41 section connection to the cable drum and flightdeck.

e) Install safety wire to both coupling nuts [4].

f) Remove the DO-NOT-OPERATE tag from the stabilizer trim wheel.

(b) Apply grease, D00633, to the stabilizer trim chain assembly [1] (Figure 302).

SUBTASK 12-22-41-410-003

(4) Install the access covers on the control stand.

(a) The left lower side panel.

(b) The left upper side panel.

SUBTASK 12-22-41-420-001

(5) Install the captain seat: Captain's and First Officer's Seat Installation, TASK 25-11-01-400-801.

H. Put the Airplane Back to Its Usual Condition

SUBTASK 12-22-41-410-002

(1) Close this access panel:

Number	Name/Location
112A	Forward Access Door

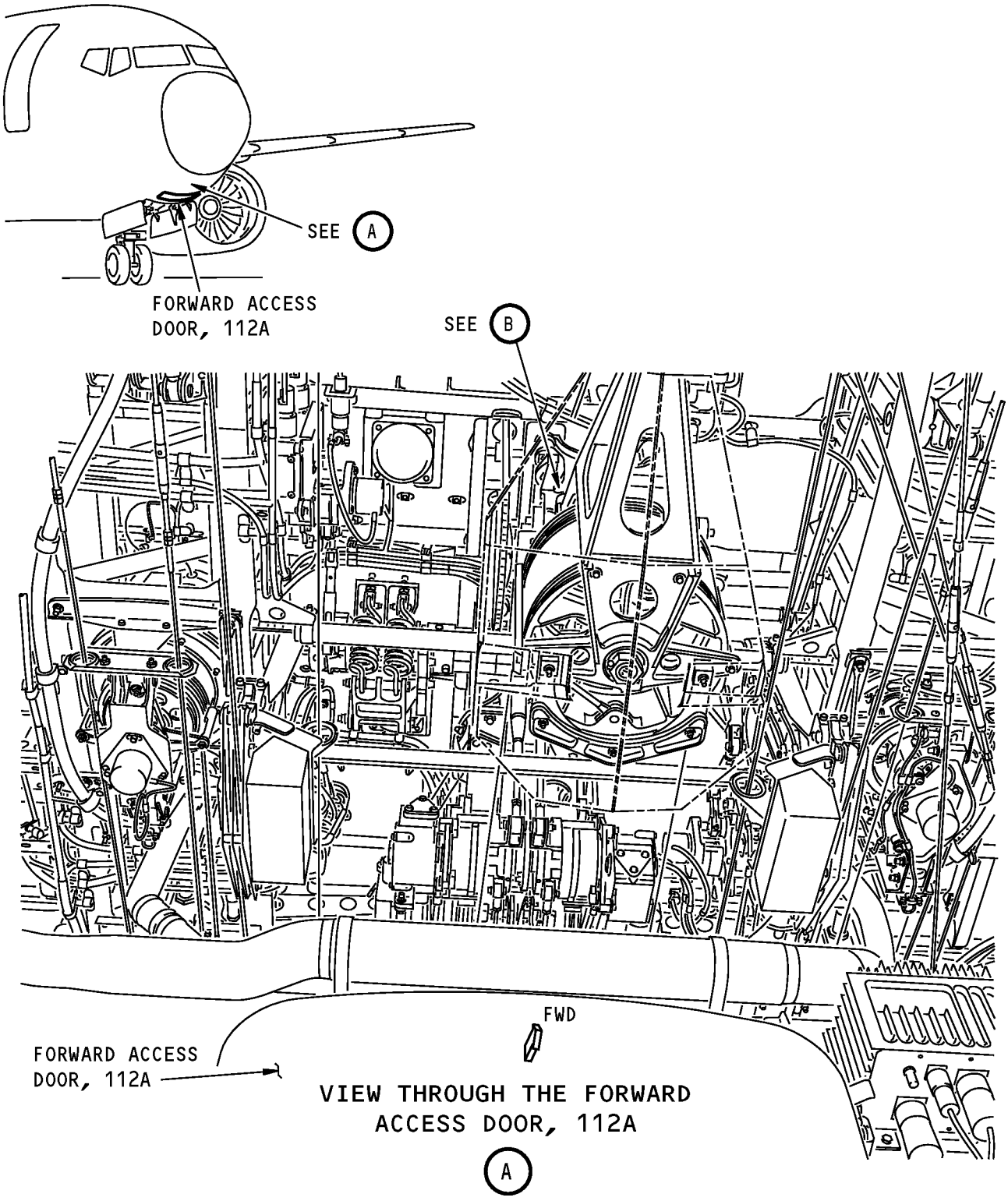
SUBTASK 12-22-41-860-011

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

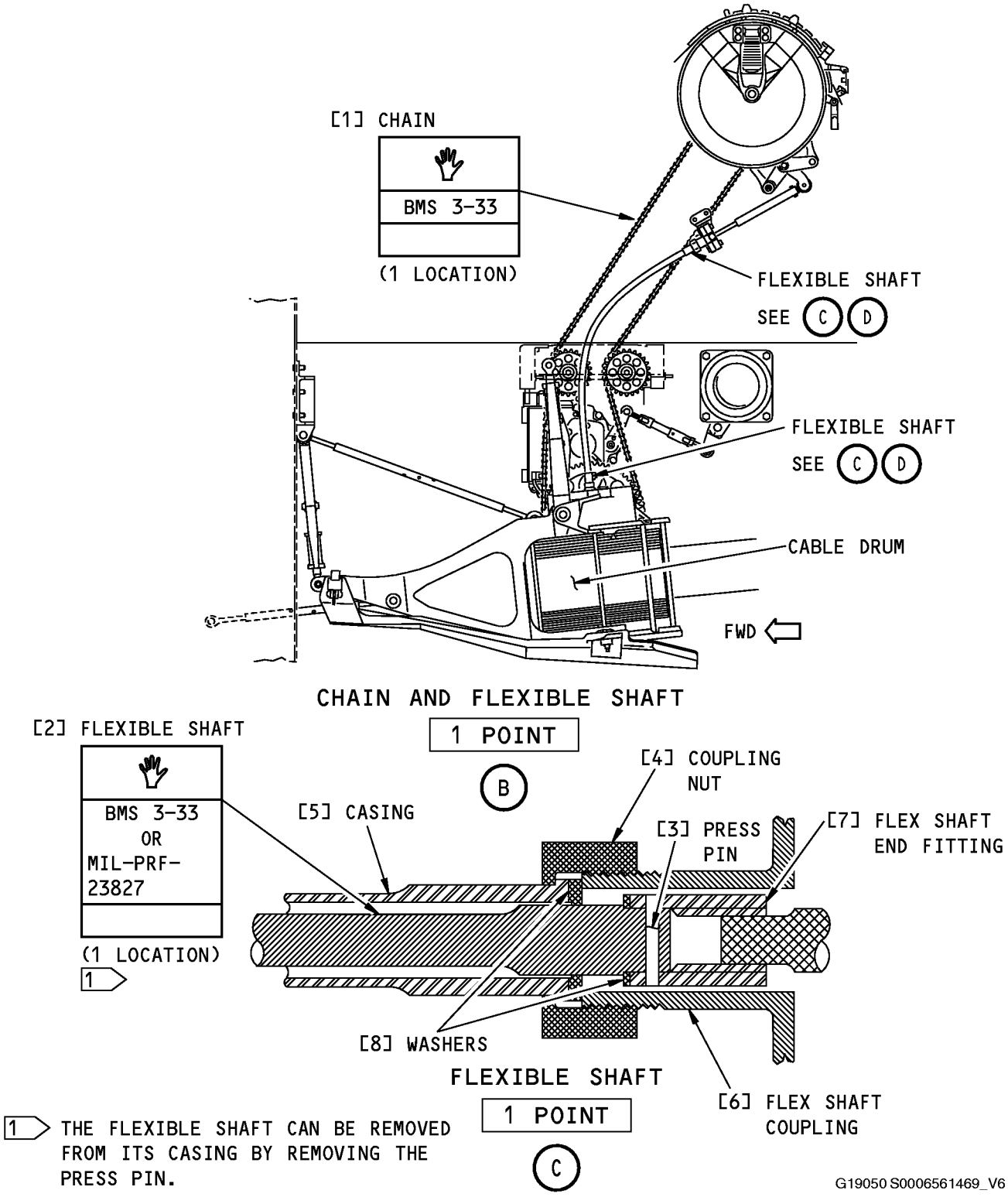
F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	10	C00207	FLIGHT CONTROL STAB TRIM CONT
D	10	C00840	FLIGHT CONTROL STAB TRIM ACTUATOR

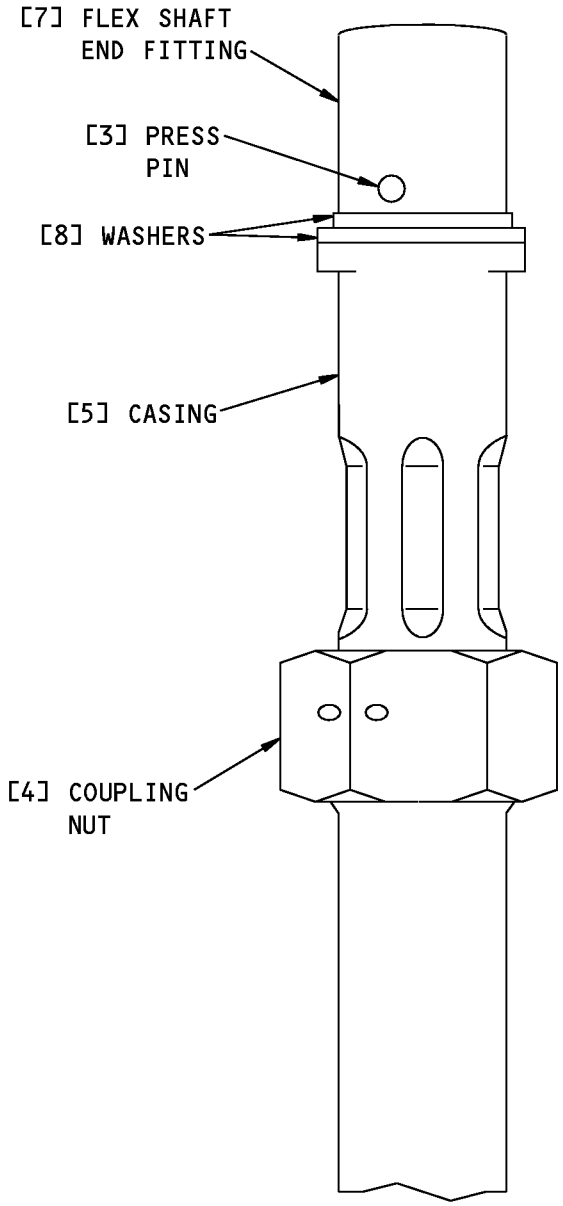
END OF TASK



Stabilizer Chain and Flexible Shaft Lubrication
Figure 302 (Sheet 1 of 3)/12-22-41-990-802



Stabilizer Chain and Flexible Shaft Lubrication
Figure 302 (Sheet 2 of 3)/12-22-41-990-802



FLEXIBLE SHAFT

D

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Stabilizer Chain and Flexible Shaft Lubrication
Figure 302 (Sheet 3 of 3)/12-22-41-990-802

TASK 12-22-41-610-802

4. Horizontal Stabilizer Actuator Brake - Servicing

(Figure 303)

A. General

(1) This procedure is a scheduled maintenance task.

B. Consumable Materials

Reference	Description	Specification
D00467	Fluid - Landing Gear Shock Strut	BMS3-32, Type II

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 12-22-41-860-016

(1) Move the stabilizer to APL NOSE DN position (stabilizer leading edge up).

SUBTASK 12-22-41-860-017

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

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
C	2	C00849	AFCS STABILIZER TRIM

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 12-22-41-010-005

(3) Open this access panel:

Number	Name/Location
311BL	Stabilizer Trim Access Door

F. Horizontal Stabilizer Actuator Brake Servicing

(Table 303)

SUBTASK 12-22-41-610-002

(1) Do a check of the fluid level in the stabilizer actuator brake assembly:

HAP ALL; STABILIZER TRIM ACTUATOR WITH THE PRIMARY AND SECONDARY BRAKES;

(a) Do these steps:

1) Service the primary brake:

a) Remove lockwire on the fill plug [1].

b) Remove the fill plug [1] and packing from the primary brake fill port.

c) Make sure the fluid is at the level of the primary brake fill port.

d) If the fluid is not at the level of the fill port, remove the cap [3] from the primary brake housing.

e) Fill the primary brake with fluid, D00467 through the cap port [3] until the fluid spills out of the fill plug [1] port. Using the stabilizer trim wheel, manually move the stabilizer as necessary, to remove any air from the brake assembly.

NOTE: Be sure to clean up any spilled lubricant before continuing with the procedure.

f) Lubricate a new packing with fluid, D00467.

g) Install the fill plug [1] and the new packing in the fill port.

h) Tighten the fill plug [1] to 60 - 80 pound-inches (6.8 - 9.0 newton-meters) more than the run-on torque.

i) Install the fill cap [3].

j) Install lockwire on the fill plug [1].

2) Service the secondary brake:

a) Remove lockwire on the fill plug [2].

b) Remove the fill plug [2] and packing from the secondary brake fill port.

c) Make sure the fluid is at the level of the fill port.

d) Fill the secondary brake with fluid, D00467 through the fill port until the fluid spills out of the fill port. Using the stabilizer trim wheel, manually move the stabilizer, as necessary, to remove any air from the secondary brake assembly.

NOTE: Be sure to clean up any spilled lubricant before continuing with the procedure.

e) Lubricate a new packing with fluid, D00467.

f) Install the secondary brake fill plug [2] and the new packing in the fill port.

g) Tighten the fill plug [2] to 60 - 80 pound-inches (6.8 - 9.0 newton-meters) more than the run-on torque.

h) Install lockwire on the fill plug [2].

HAP ALL

G. Put the Airplane Back to Its Usual Condition

SUBTASK 12-22-41-010-006

(1) Close this access panel:

Number	Name/Location
311BL	Stabilizer Trim Access Door

SUBTASK 12-22-41-860-018

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

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
C	2	C00849	AFCS STABILIZER TRIM

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 12-22-41-860-019

(3) Set the stabilizer to the neutral position, as necessary.

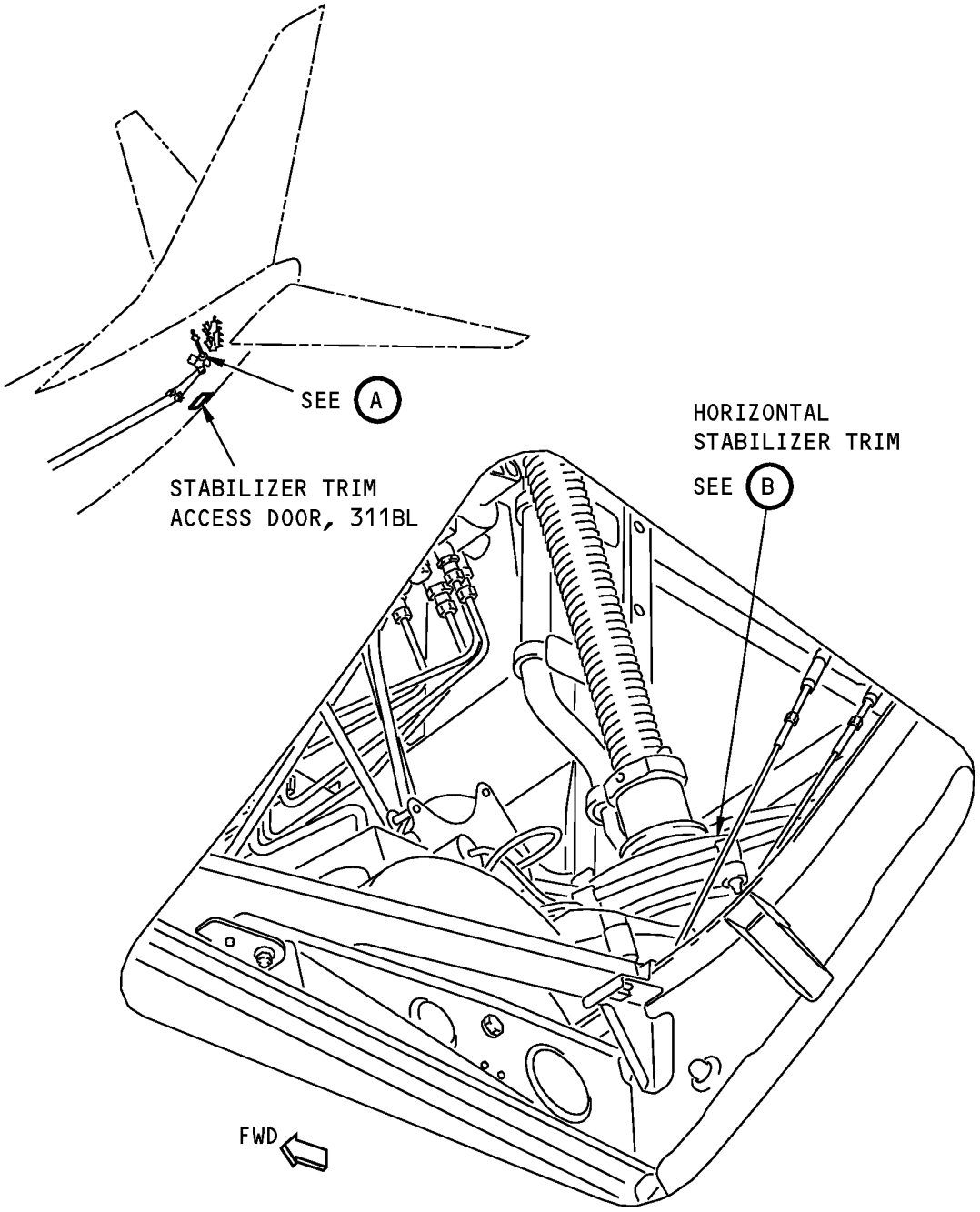
SUBTASK 12-22-41-440-002

(4) The table below supplies information for the Horizontal Stabilizer Brake Assembly servicing:

Table 303/12-22-41-993-807 Horizontal Stabilizer Brake Assembly Servicing (Fig. 303)

Item No.	Nomenclature	Lubricant	Method of Application	Number of Locations
1	Horizontal Stabilizer Primary Brake Assembly	BMS 3-32, Type II	Fill	1
2	Horizontal Stabilizer Secondary Brake Assembly	BMS 3-32, Type II	Fill	1

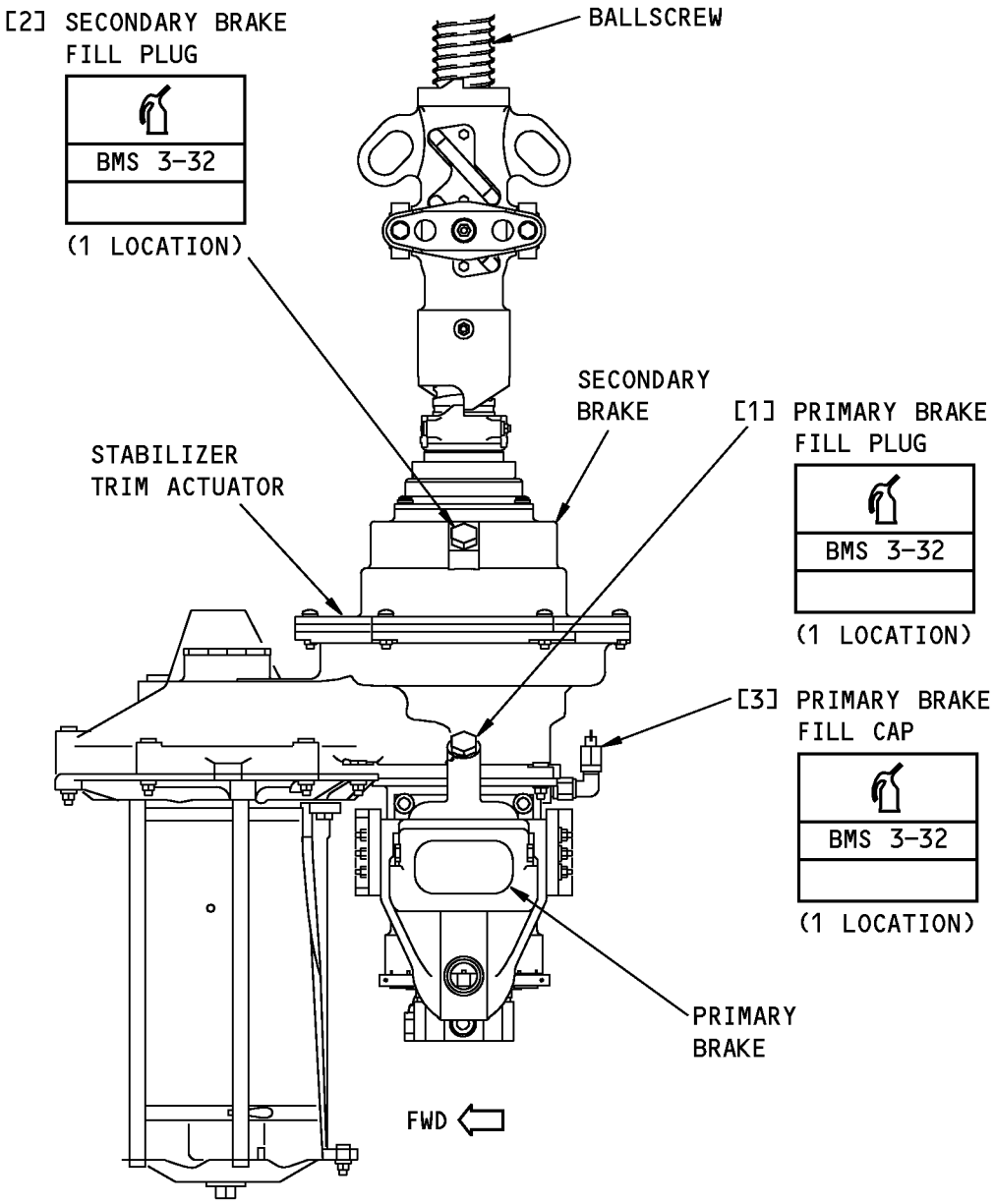
END OF TASK



VIEW THROUGH THE STABILIZER TRIM
ACCESS DOOR, 311BL

A

Horizontal Stabilizer Actuator Brake Servicing
Figure 303 (Sheet 1 of 2)/12-22-41-990-805



Horizontal Stabilizer Actuator Brake Servicing
Figure 303 (Sheet 2 of 2)/12-22-41-990-805

TRAILING EDGE FLAP SYSTEM - SERVICING

1. General

A. This procedure contains scheduled maintenance task data.

B. This procedure has these tasks:

(1) A task to lubricate the torque tubes and torque tube supports for the trailing edge flaps

(2) A task to lubricate the inboard ballscrew for the inboard flap

(3) A task to lubricate the outboard ballscrew and gimbal for the inboard flap

(4) A task to lubricate the inboard ballscrew and gimbal for the outboard flap

(5) A task to lubricate the outboard ballscrew and gimbal for the outboard flap

(6) A task to lubricate the U-joint and tee angle gearbox

(7) A task to lubricate the inboard skew mechanism for the inboard flap

(8) A task to lubricate the outboard skew mechanism for the inboard flap

(9) A task to lubricate the inboard skew mechanism for the outboard flap

(10) A task to lubricate the outboard skew mechanism for the outboard flap

(11) A task to lubricate the inboard main flap and aft flap rollers and linkages

(12) A task to lubricate the outboard main flap and aft flap rollers and linkages

(13) A task to lubricate the attach fittings on the inboard flap track for the inboard flap

(14) A task to lubricate the forward attach fitting on the outboard flap track for the inboard flap

(15) A task to lubricate the forward attach fitting on the inboard flap track for the outboard flap

(16) A task to lubricate the forward attach fitting on the outboard flap track for the outboard flap

(17) A task to fill the flap power drive unit (PDU) for the trailing edge flaps with oil.

(18) A task to change the oil in the flap power drive unit (PDU).

(19) A task to fill the transmissions for the trailing edge flaps with oil.

(20) A task to change the oil in the transmissions for the trailing edge flaps.

(21) A task to fill the flap electric motor with oil.

TASK 12-22-51-640-801

2. Trailing Edge Flap Torque Tube and Torque Tube Support Lubrication

(Figure 301)

A. General

(1) This procedure is a scheduled maintenance task.

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
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
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

E. Access Panels

Number	Name/Location
561BB	Midspan Ficed Trailing Edge Access Panel - WBL 305
661BB	Midspan Fixed T.E. Panel

F. Prepare for the Lubrication

SUBTASK 12-22-51-860-001

(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 12-22-51-040-001

(2) Do this task: Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801.

G. Trailing Edge Flap Torque Tube and Torque Tube Support Lubrication

(Table 301)

SUBTASK 12-22-51-640-001

(1) 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 12-22-51-640-002

(2) Open these access panels:

Number	Name/Location
561BB	Midspan Ficed Trailing Edge Access Panel - WBL 305
661BB	Midspan Fixed T.E. Panel

Lubricate the torque tube support with grease, D00633.

Close these access panels:

Number	Name/Location
561BB	Midspan Ficed Trailing Edge Access Panel - WBL 305
661BB	Midspan Fixed T.E. Panel

H. 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.

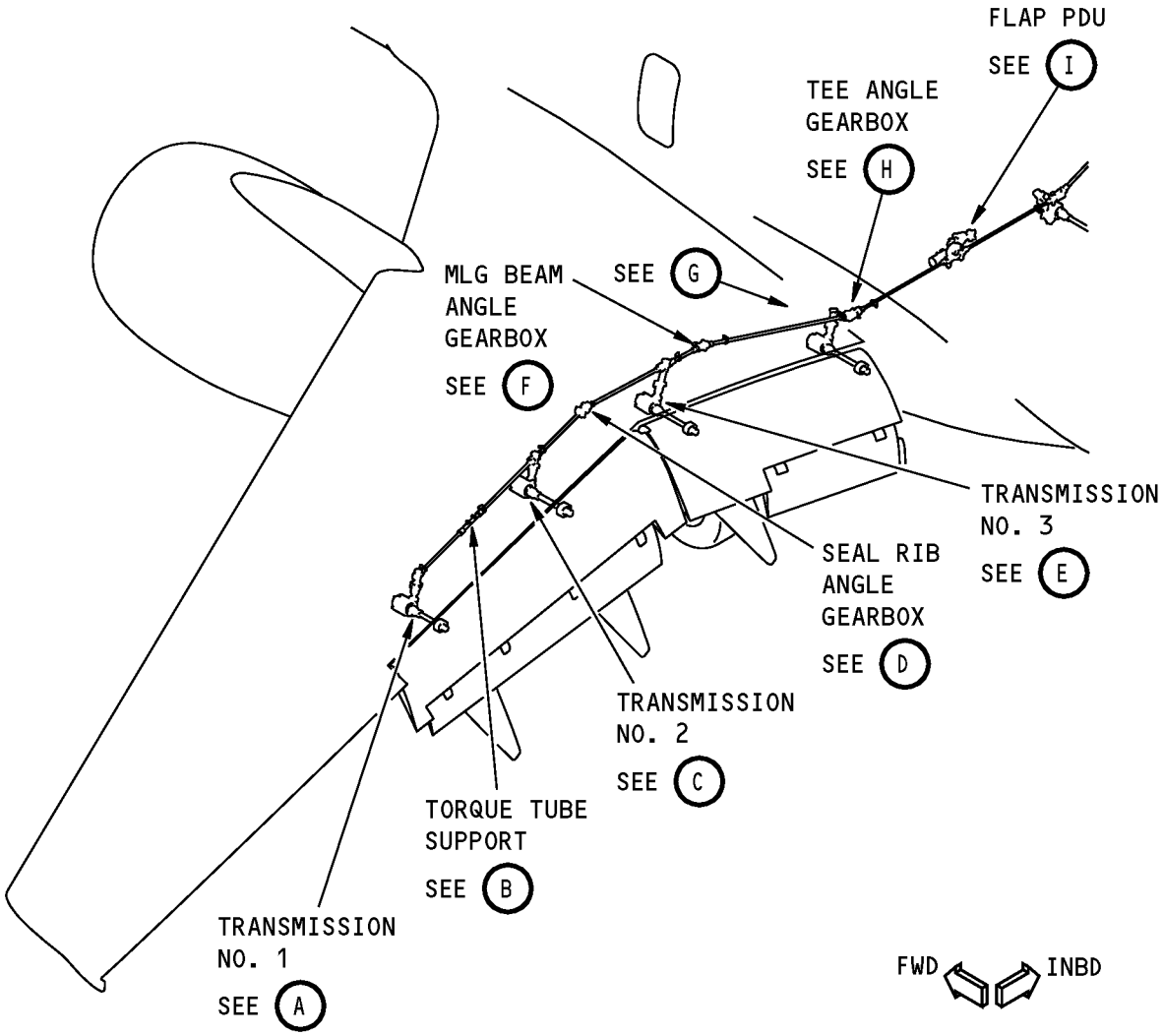
SUBTASK 12-22-51-860-002

(2) Retract the trailing edge flaps to the UP position. To retract them, do this task: Retract the Trailing Edge Flaps, TASK 27-51-00-860-804.

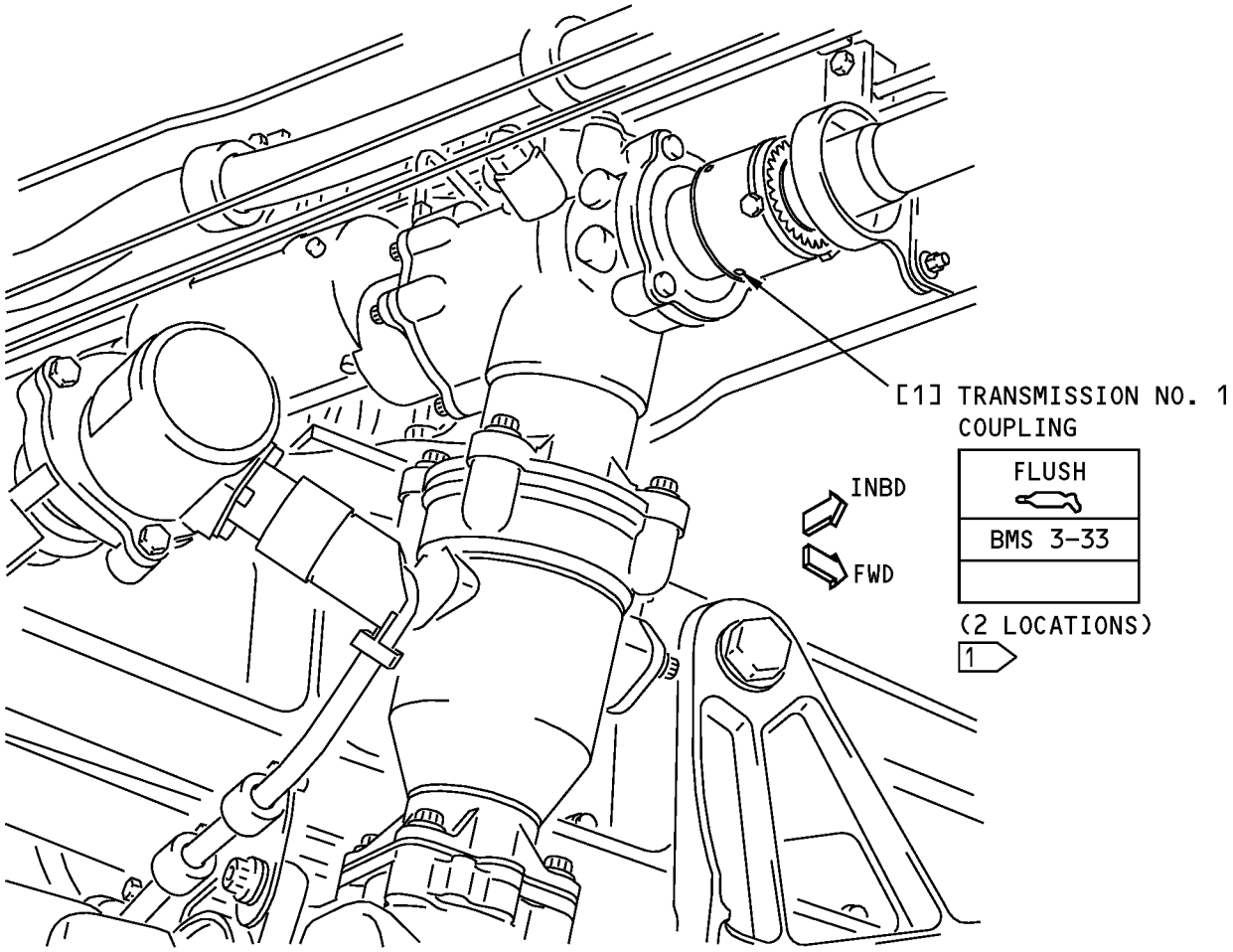
Table 301/12-22-51-993-821 Trailing Edge Flap Torque Tube and Torque Tube Support Servicing (Fig. 301)

Item No.	Nomenclature	Lubricant	Method of Application	Number of Locations
1	Transmission No. 1 Coupling (No. 8 Coupling Equivalent)	grease, D00633	Flush	2
2	Torque Tube Support Coupling	grease, D00633	Flush	4
3	Torque Tube Support	grease, D00633	Zerk	2
4	Transmission No. 2 Coupling (No. 7 Coupling Equivalent)	grease, D00633	Flush	4
5	Seal Rib Angle Gearbox Coupling	grease, D00633	Flush	4
6	Transmission No. 3 Coupling (No. 6 Coupling Equivalent)	grease, D00633	Flush	4
7	MLG Beam Angle Gearbox Coupling	grease, D00633	Flush	4
8	Tee Angle Gearbox Coupling	grease, D00633	Flush	4
9	Flap Power Drive Unit Coupling	grease, D00633	Flush	4

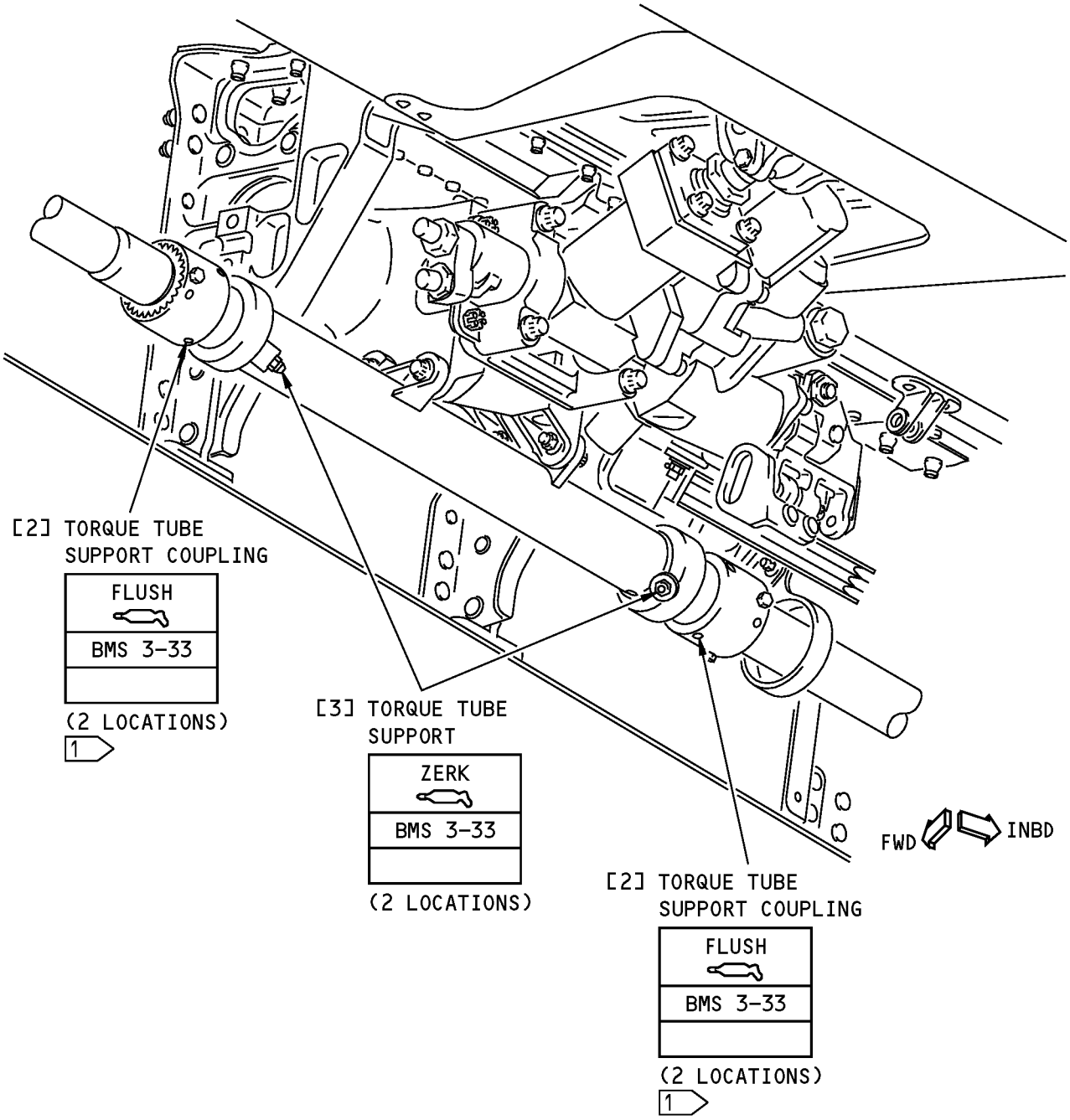
END OF TASK



Trailing Edge Flap Torque Tubes and Torque Tube Support Servicing
Figure 301 (Sheet 1 of 10)/12-22-51-990-801

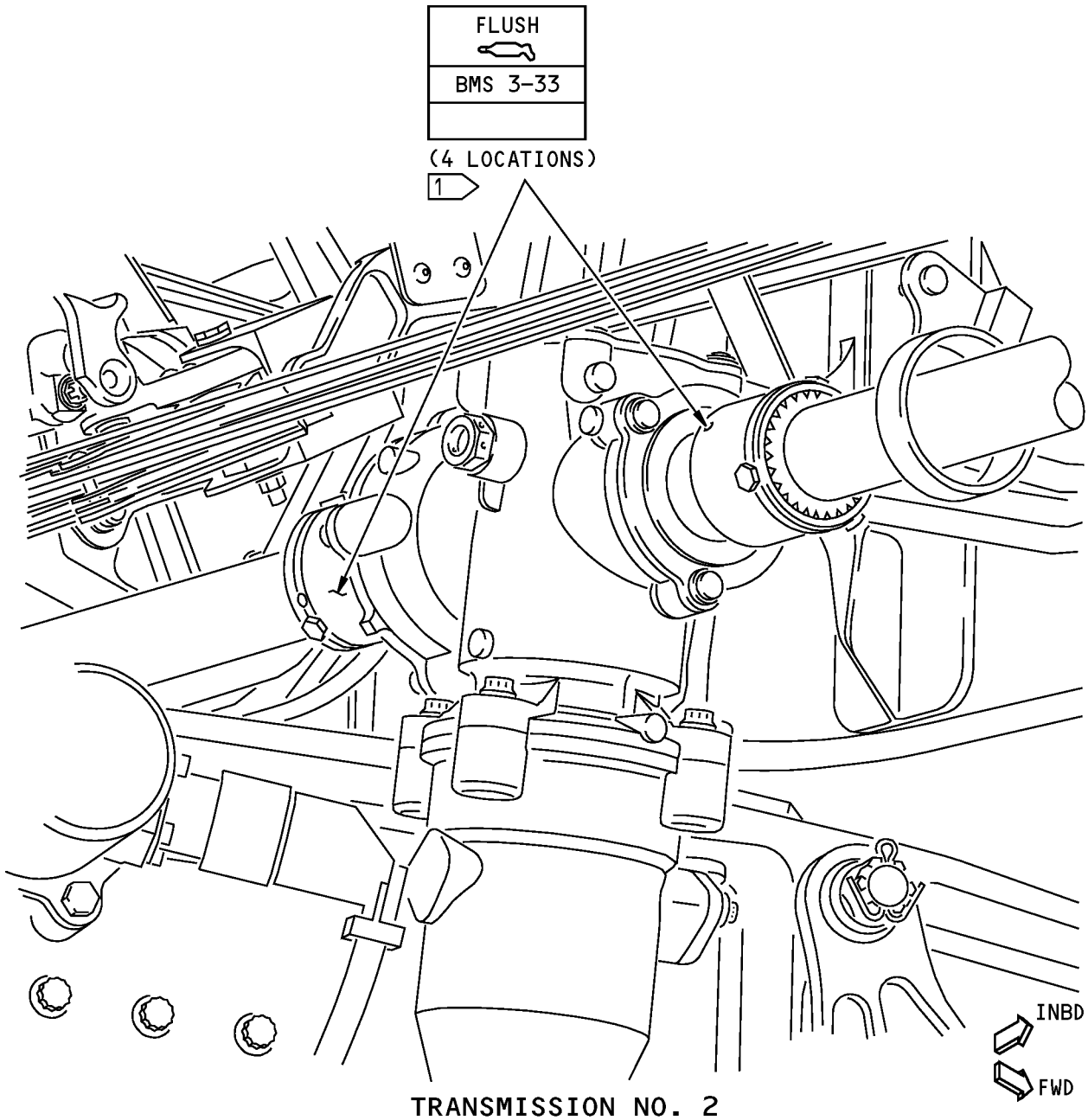


Trailing Edge Flap Torque Tubes and Torque Tube Support Servicing
Figure 301 (Sheet 2 of 10)/12-22-51-990-801

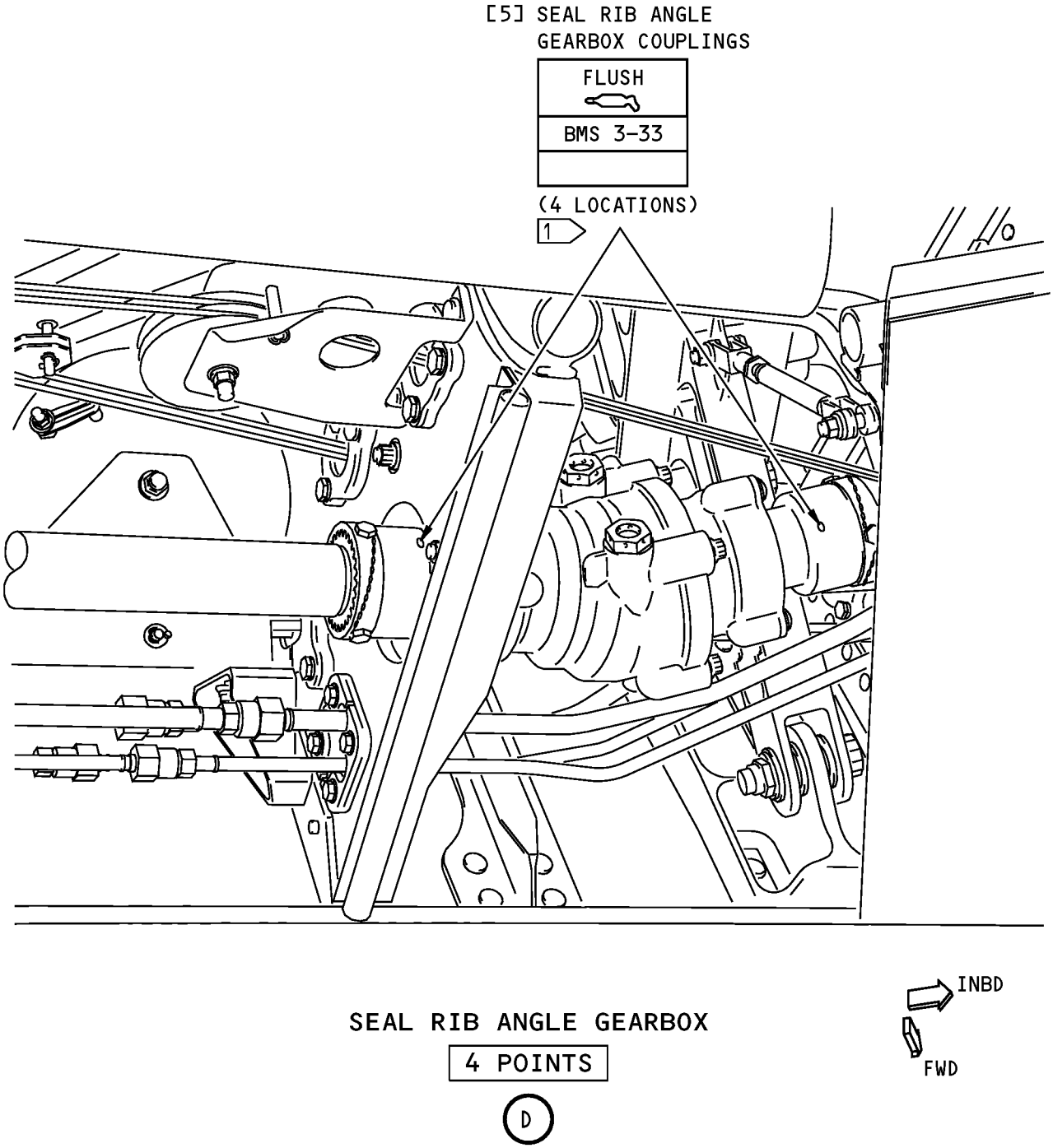


Trailing Edge Flap Torque Tubes and Torque Tube Support Servicing
Figure 301 (Sheet 3 of 10)/12-22-51-990-801

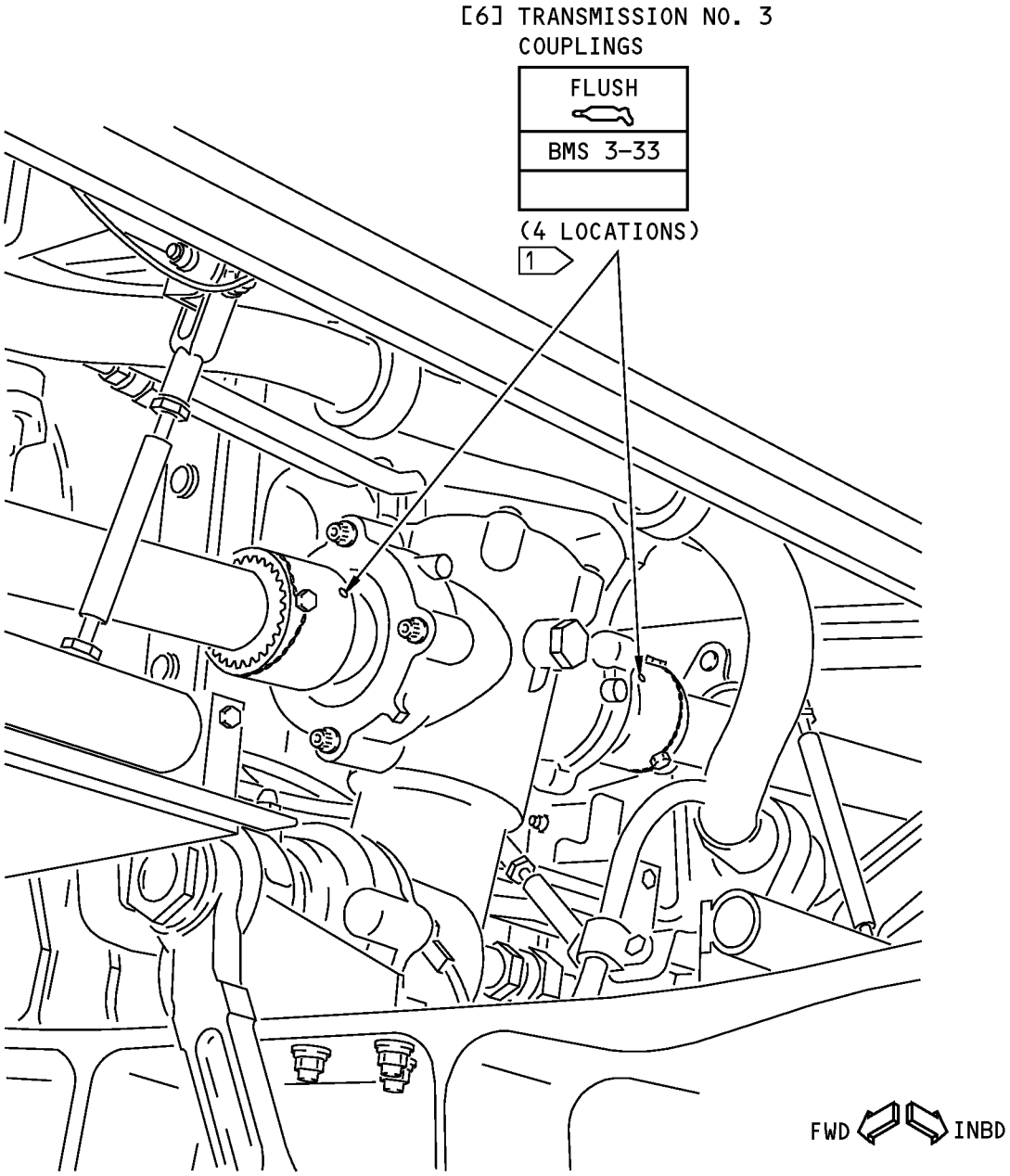
[4] TRANSMISSION NO. 2
COUPLINGS



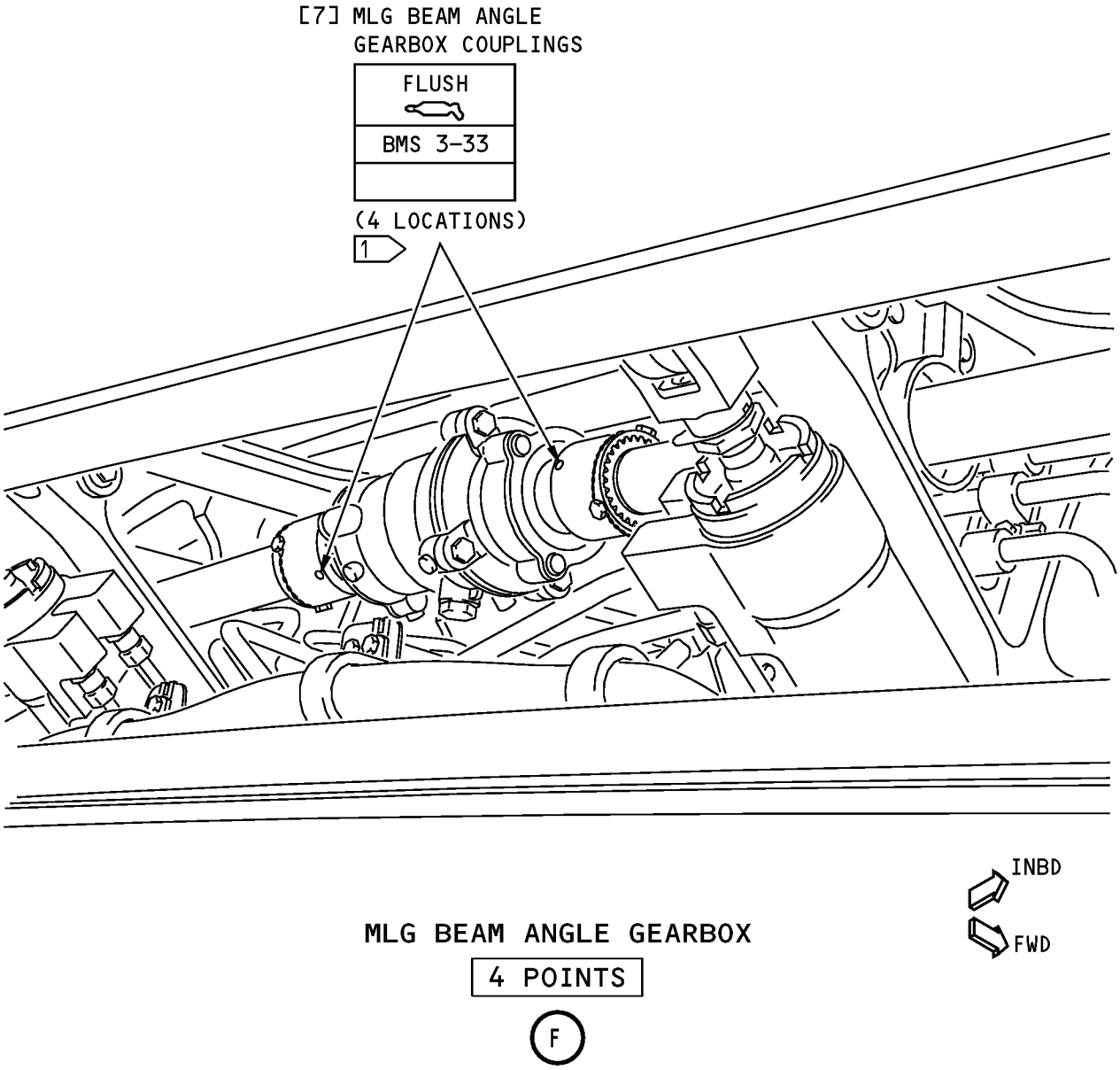
Trailing Edge Flap Torque Tubes and Torque Tube Support Servicing
Figure 301 (Sheet 4 of 10)/12-22-51-990-801



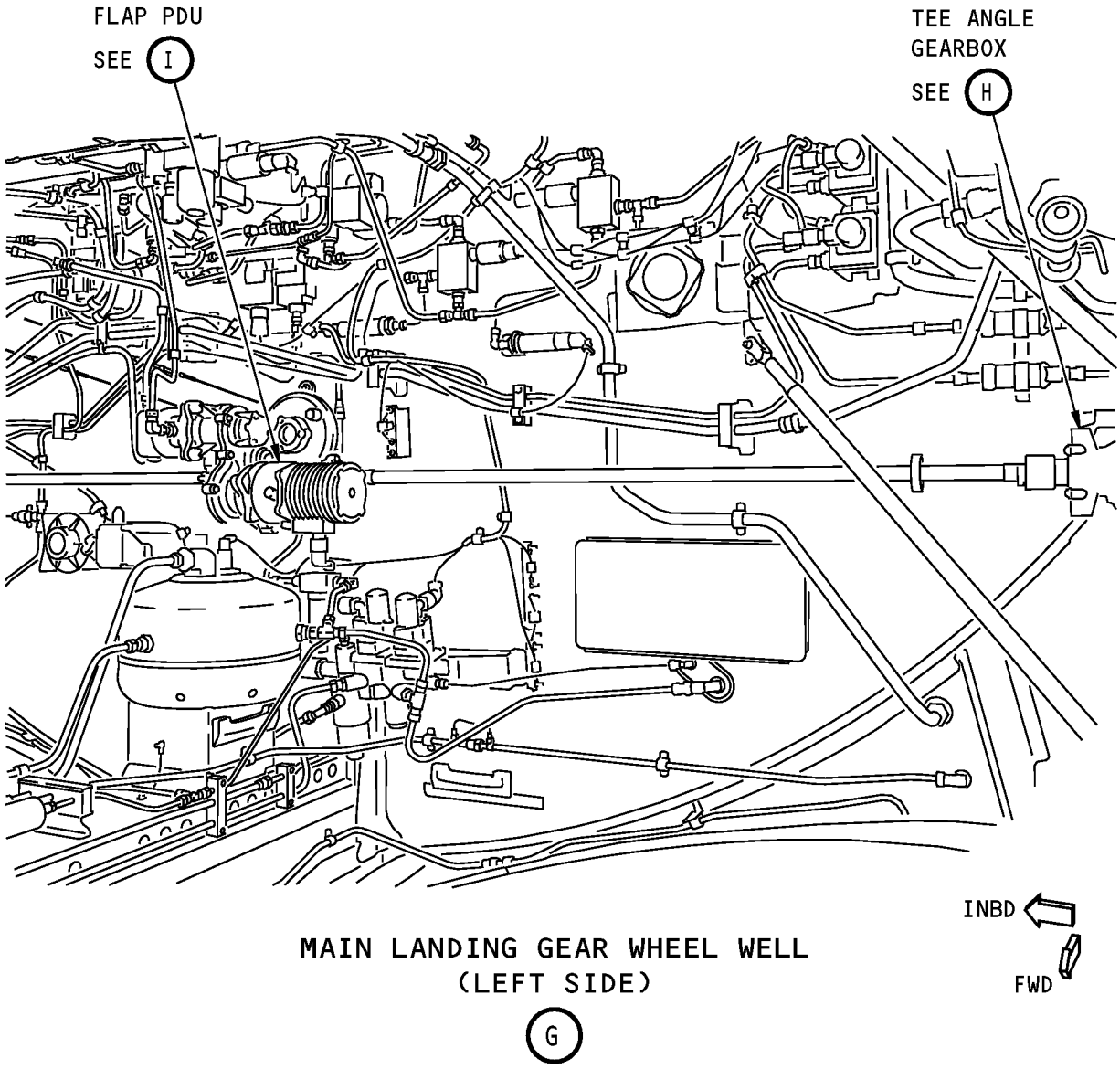
Trailing Edge Flap Torque Tubes and Torque Tube Support Servicing
Figure 301 (Sheet 5 of 10)/12-22-51-990-801



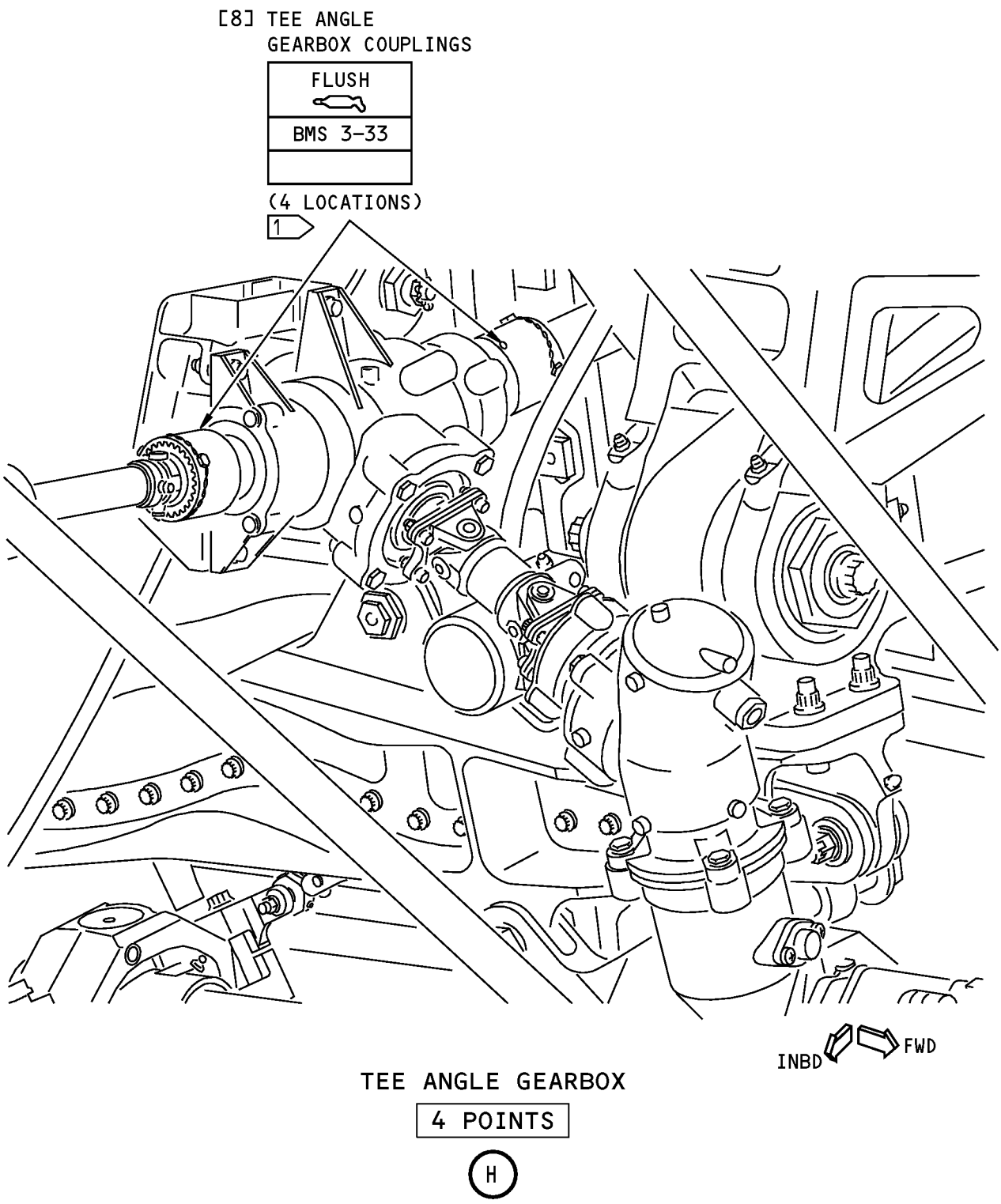
Trailing Edge Flap Torque Tubes and Torque Tube Support Servicing
Figure 301 (Sheet 6 of 10)/12-22-51-990-801



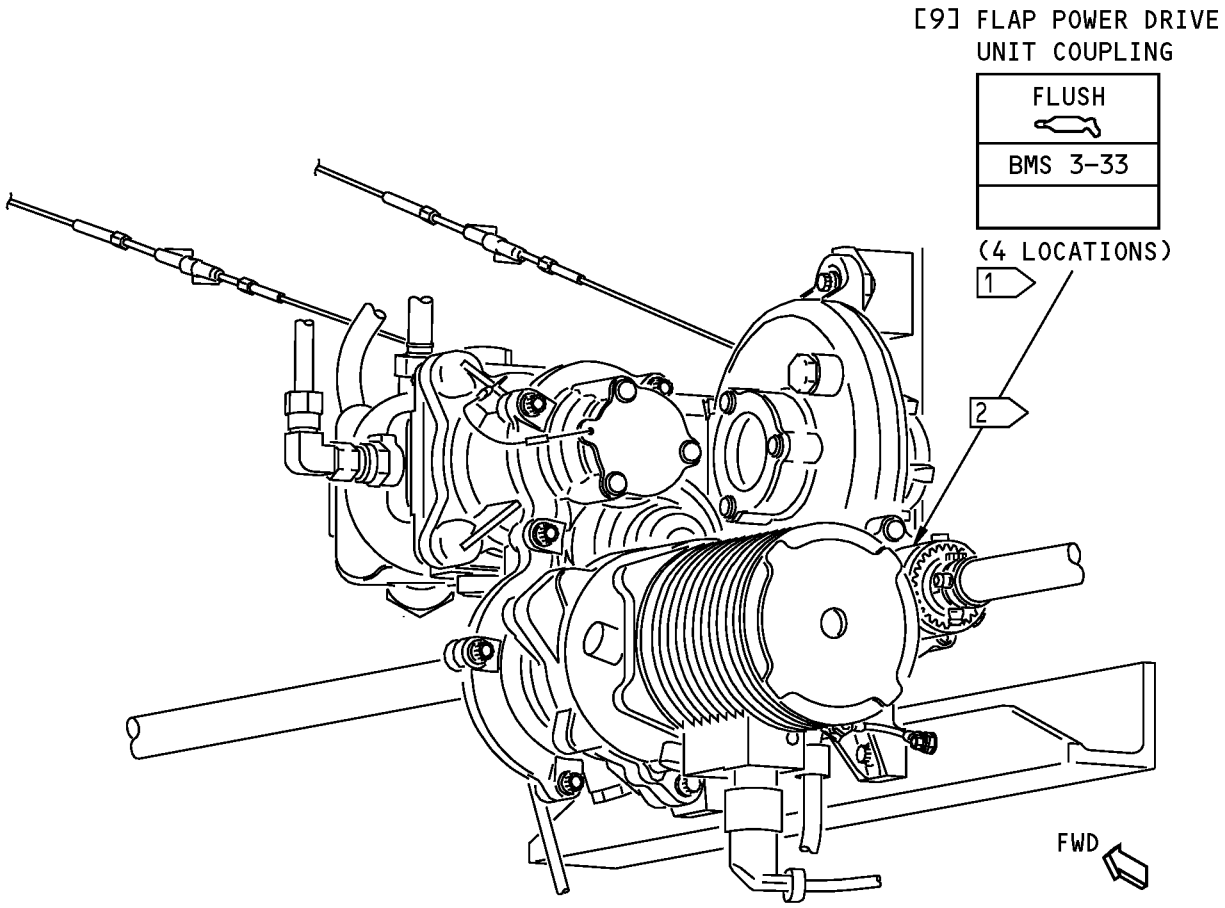
Trailing Edge Flap Torque Tubes and Torque Tube Support Servicing
Figure 301 (Sheet 7 of 10)/12-22-51-990-801



Trailing Edge Flap Torque Tubes and Torque Tube Support Servicing
Figure 301 (Sheet 8 of 10)/12-22-51-990-801



Trailing Edge Flap Torque Tubes and Torque Tube Support Servicing
Figure 301 (Sheet 9 of 10)/12-22-51-990-801



FLAP POWER DRIVE UNIT

4 POINTS

I

2 ONE MORE LUBE POINT IS ON THE OPPOSITE SIDE (NOT SHOWN).

Trailing Edge Flap Torque Tubes and Torque Tube Support Servicing
Figure 301 (Sheet 10 of 10)/12-22-51-990-801

TASK 12-22-51-640-802

3. Inboard Flap Inboard Ballscrew Lubrication

(Figure 302)

A. General

(1) This procedure is a scheduled maintenance task.

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)

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

E. 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.

F. Inboard Flap Inboard Ballscrew Lubrication

(Table 302)

SUBTASK 12-22-51-640-003

(1) Lubricate the ballscrew nut 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 12-22-51-640-004

(2) Lubricate the fittings on the U-joint with grease, D00633.

NOTE: There are four lubrication fittings on the U-joint. It is necessary to lubricate all of them.

G. Put the Airplane Back to Its Initial Condition

SUBTASK 12-22-51-440-002

(1) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

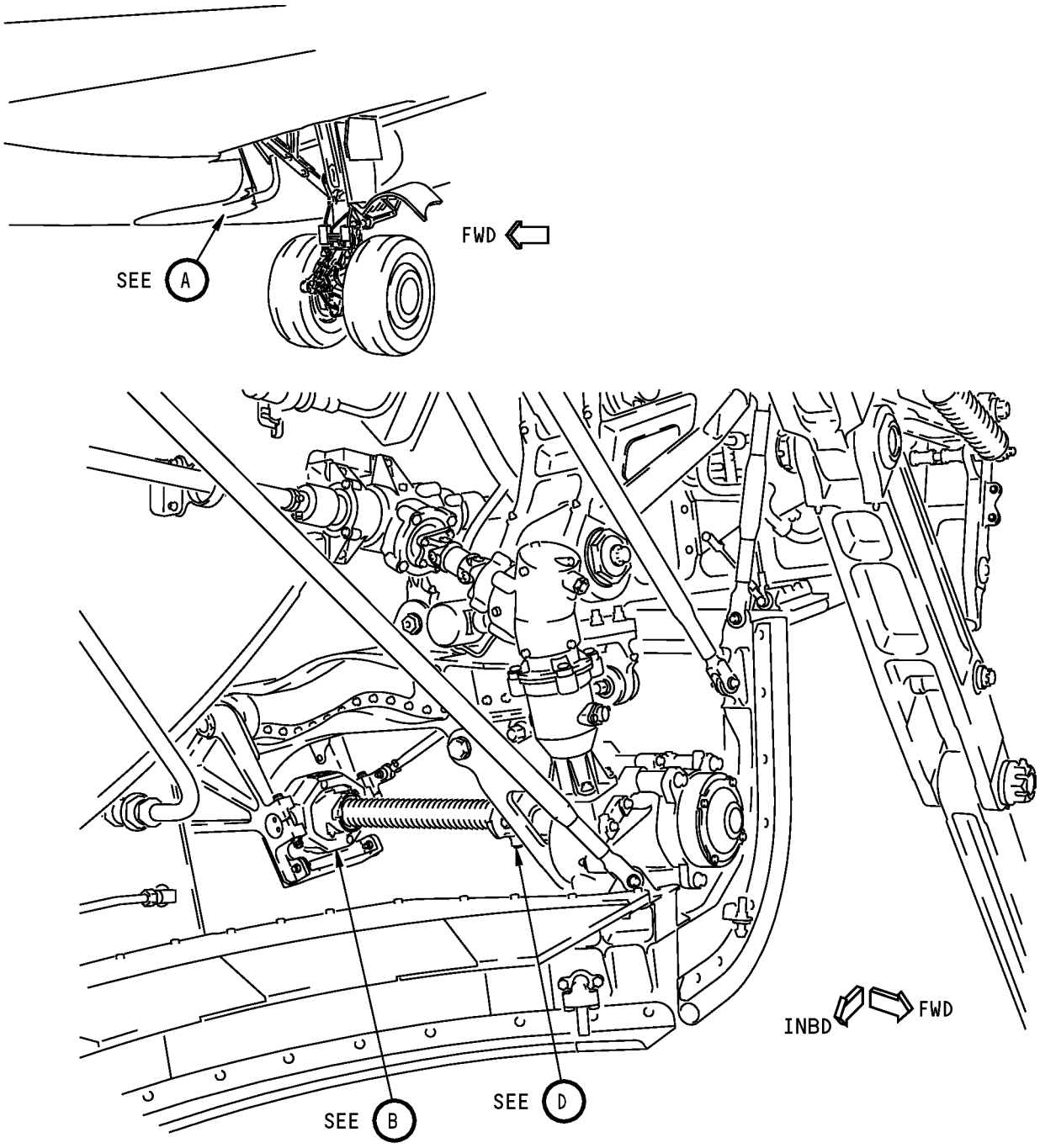
Table 302/12-22-51-993-822 Inboard Flap Inboard Ballscrew Servicing (Fig. 302)

Item No.	Nomenclature	Lubricant	Method of Application	Number of Locations
1	No. 4 Ballscrew Nut (No. 5 Ballscrew Nut is Equivalent)	grease, D00633	Zerk	1
2	No. 4 U-Joint (No. 5 U-Joint is Equivalent)	grease, D00633	Zerk	

(Continued)

Item No.	Nomenclature	Lubricant	Method of Application	Number of Locations
4				

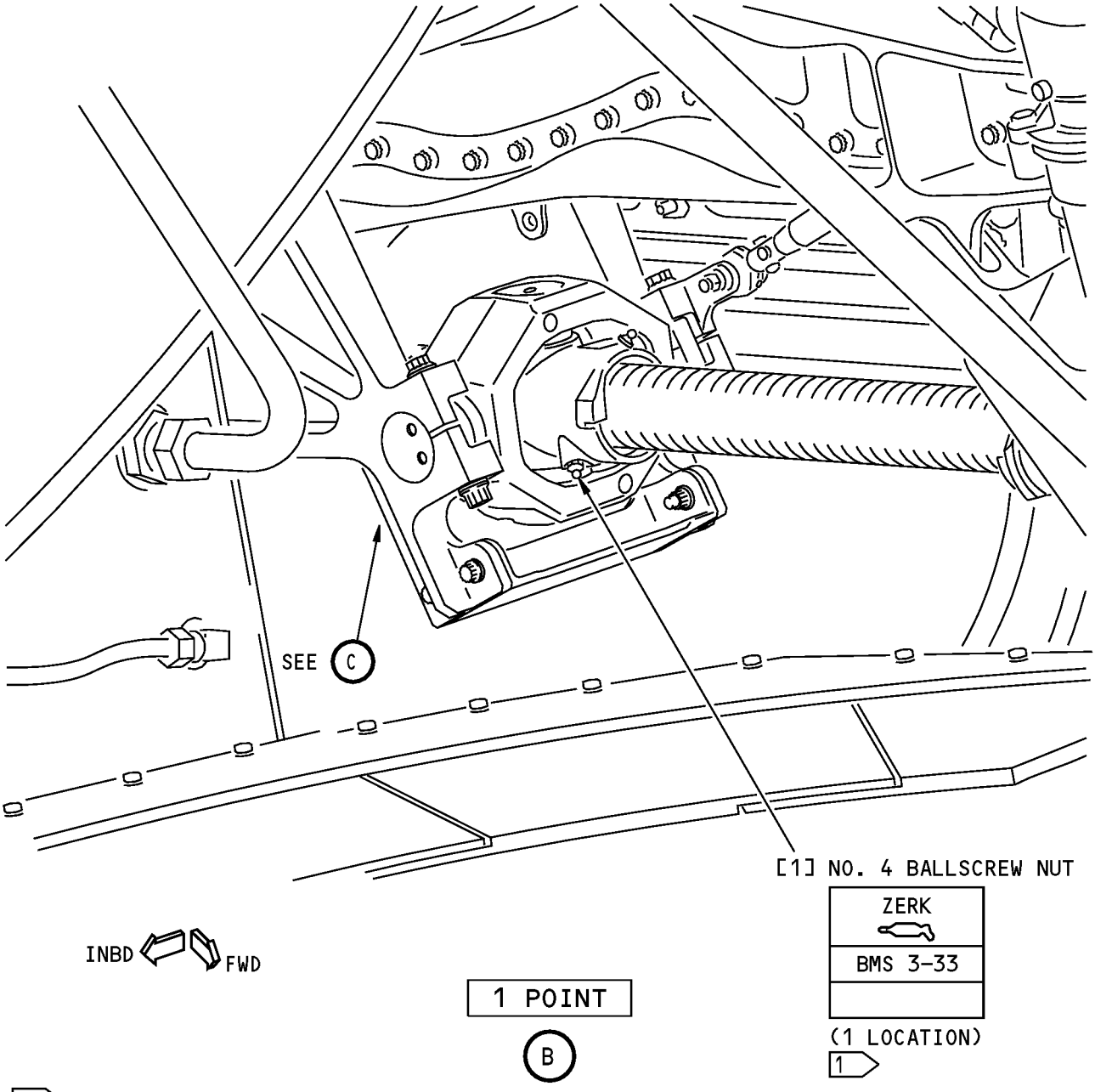
END OF TASK



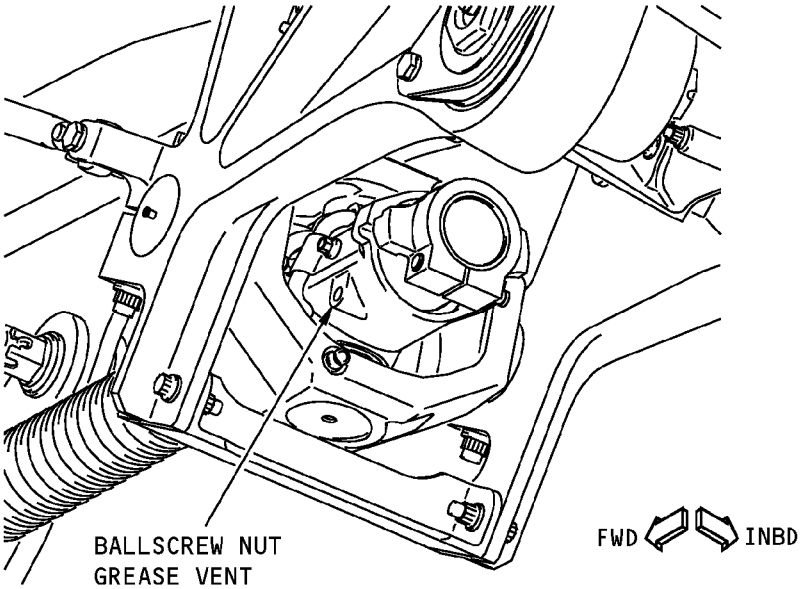
MAIN LANDING GEAR WHEEL WELL
(LEFT SIDE IS SHOWN, RIGHT SIDE IS EQUIVALENT)

A

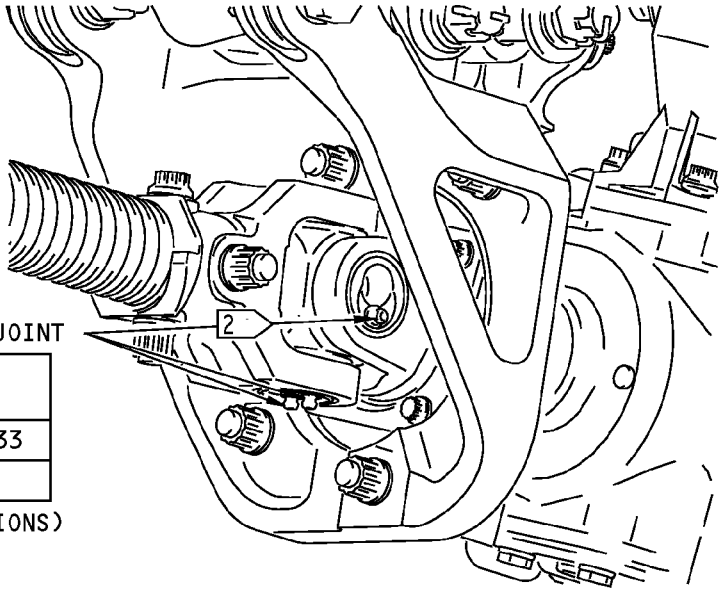
Inboard Flap Inboard Ballscrew Servicing
Figure 302 (Sheet 1 of 3)/12-22-51-990-802



Inboard Flap Inboard Ballscrew Servicing
Figure 302 (Sheet 2 of 3)/12-22-51-990-802



C



4 POINTS

D

2 ONE MORE LUBE POINT IS ON THE OPPOSITE SIDE (NOT SHOWN).

Inboard Flap Inboard Ballscrew Servicing
Figure 302 (Sheet 3 of 3)/12-22-51-990-802

TASK 12-22-51-640-803

4. Inboard Flap Outboard Ballscrew and Gimbal Lubrication

(Figure 303)

A. General

(1) This procedure is a scheduled maintenance task.

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
D00633	Grease - Aircraft General Purpose	BMS3-33

D. 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

E. Prepare for the Lubrication

SUBTASK 12-22-51-860-003

(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 12-22-51-040-003

(2) Do this task: Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801.

F. Inboard Flap Outboard Ballscrew and Gimbal Lubrication

(Table 303)

SUBTASK 12-22-51-640-005

(1) Lubricate the ballscrew nut 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.

HAP 001-013, 015-026 PRE SB 737-57-1264

SUBTASK 12-22-51-640-006

WARNING: DO NOT USE MORE THAN 2500 PSI (17237 KPA) WHEN YOU LUBRICATE THE CARRIAGE BUSHINGS. IF EXCESSIVE PRESSURE IS APPLIED TO THE CARRIAGE BUSHINGS, A CROSS BOLT ON THE CARRIAGE CAN BREAK. THIS CAN CAUSE INJURIES TO PERSON AND DAMAGE TO EQUIPMENT.

(2) Lubricate the fittings on the gimbal bushings and the carriage bushings with grease, D00633.

NOTE: Pressures from 100 to 200 psi (689.5-1379 KPa) should be enough to get the grease into the bushings. If more pressure is necessary, wear safety glasses. Do not use more than 2500 psi (17237 KPa).

HAP ALL

SUBTASK 12-22-51-640-007

(3) Lubricate the fittings on the U-joint with grease, D00633.

NOTE: There are four lubrication fittings on the U-joint. It is necessary to lubricate all of them.

G. Put the Airplane Back to Its Initial Condition

SUBTASK 12-22-51-440-003

(1) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

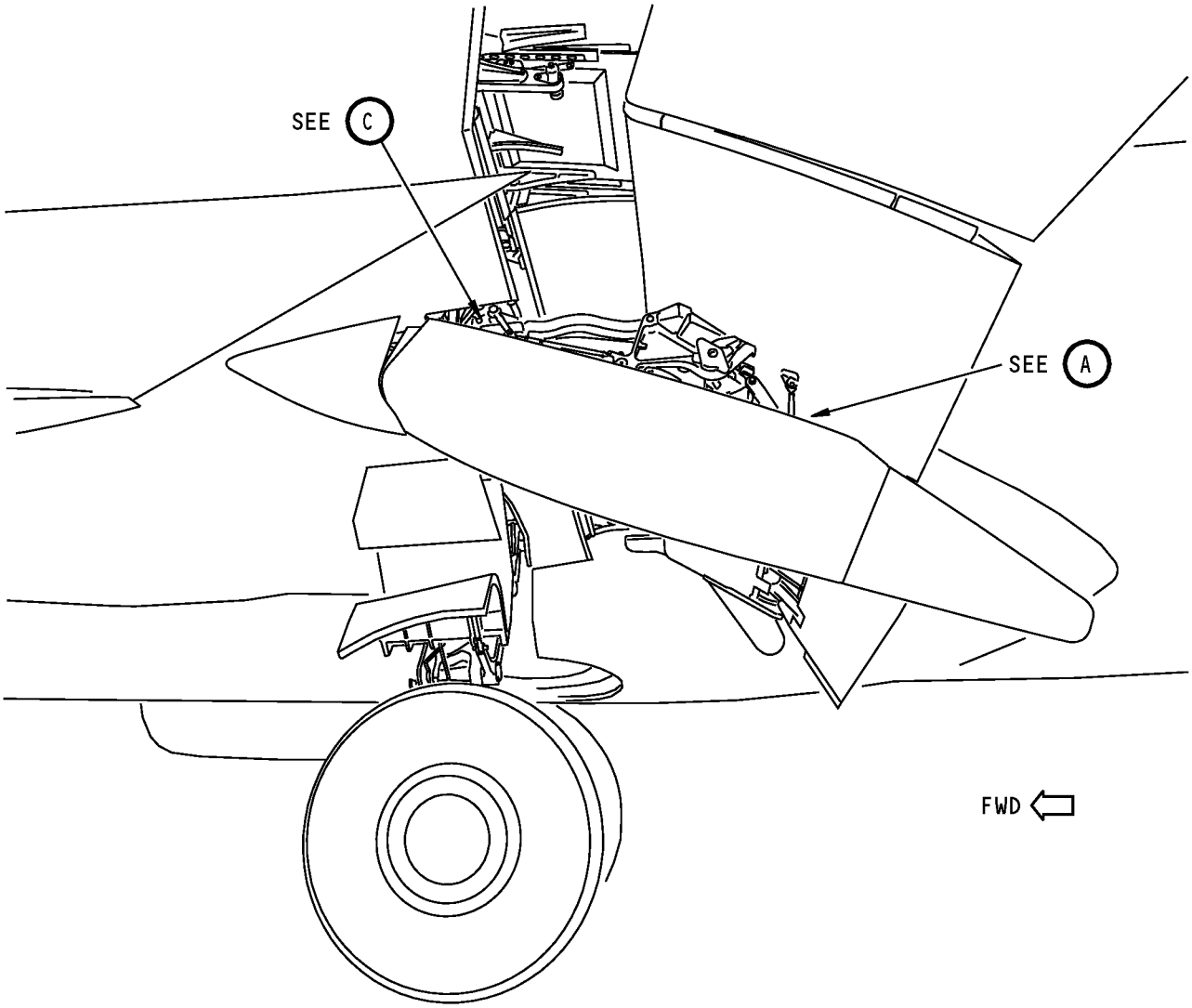
SUBTASK 12-22-51-860-004

(2) Retract the trailing edge flaps to the UP position. To retract them, do this task: Retract the Trailing Edge Flaps, TASK 27-51-00-860-804.

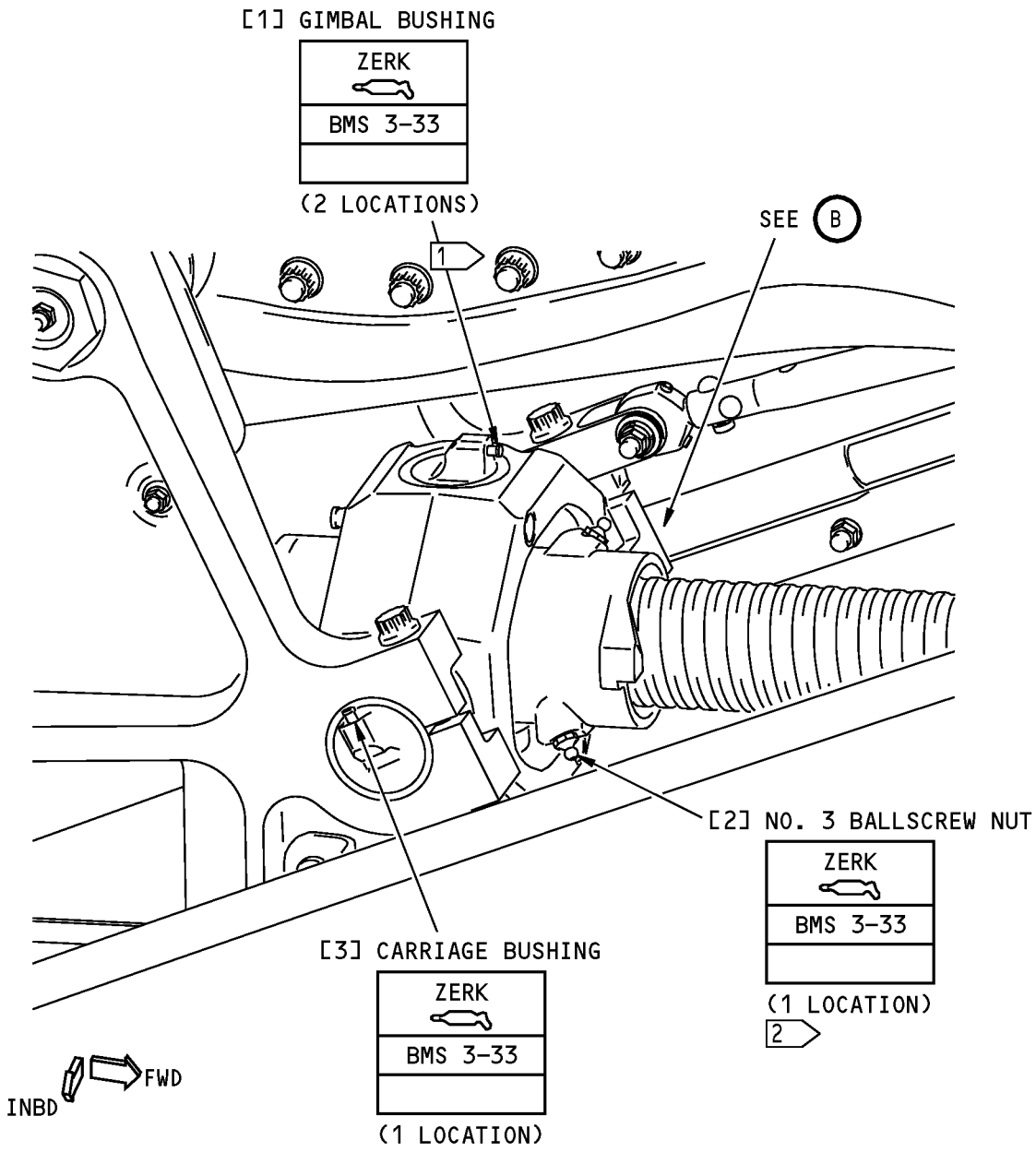
Table 303/12-22-51-993-823 Inboard Flap Outboard Ballscrew and Gimbal Servicing (Fig. 303)

Item No.	Nomenclature	Lubricant	Method of Application	Number of Locations
HAP 001-013, 015-026 PRE SB 737-57-1264				
1	Gimbal Bushing	grease, D00633	Zerk	2
HAP ALL				
2	No. 3 Ballscrew Nut (No. 6 Ballscrew Nut is Equivalent)	grease, D00633	Zerk	1
HAP 001-013, 015-026 PRE SB 737-57-1264				
3	Carriage Bushing	grease, D00633	Zerk	2
HAP ALL				
4	No. 3 U-Joint (No. 6 U-Joint is Equivalent)	grease, D00633	Zerk	4

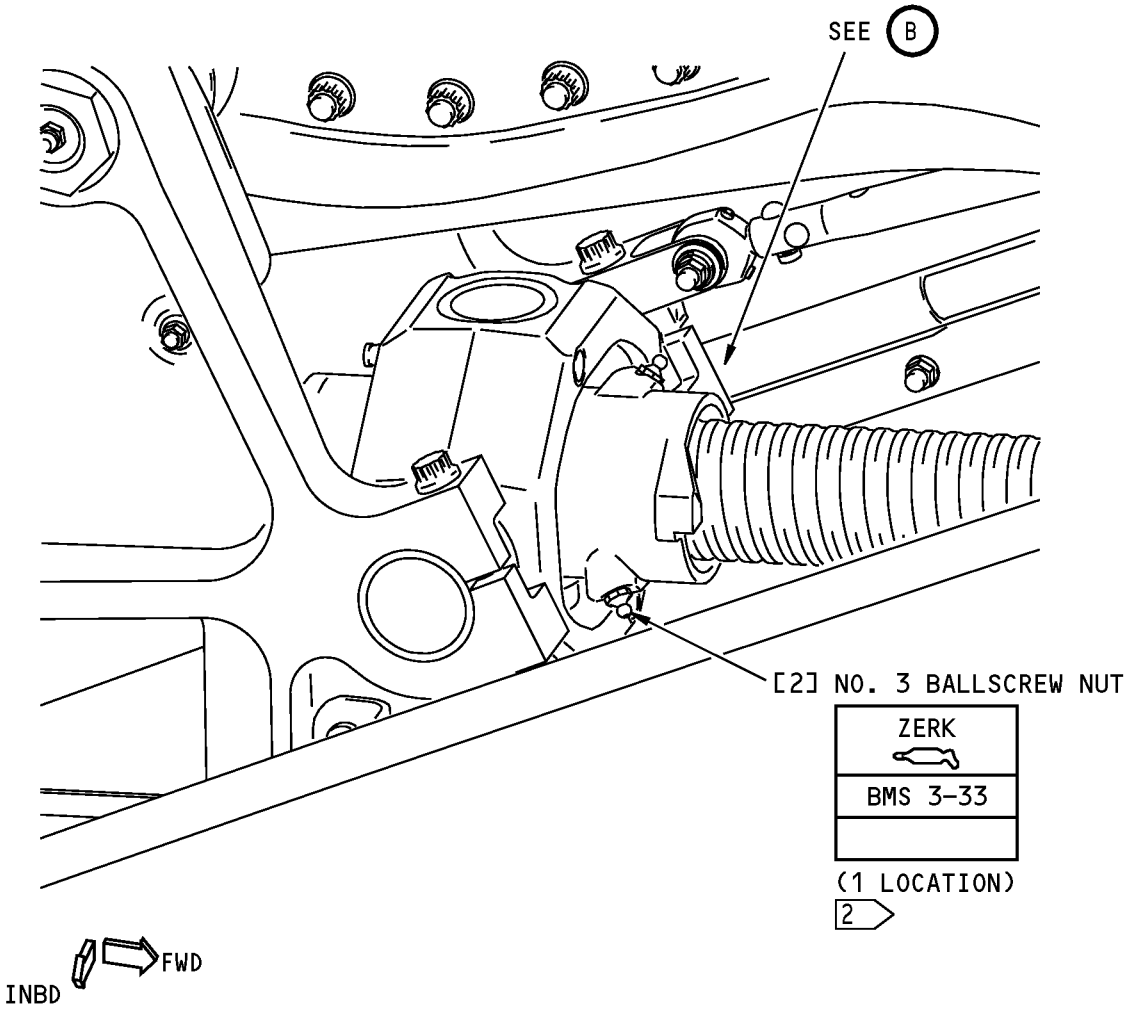
END OF TASK



Inboard Flap Outboard Ballscrew and Gimbal Servicing
Figure 303 (Sheet 1 of 5)/12-22-51-990-803



Inboard Flap Outboard Ballscrew and Gimbal Servicing
Figure 303 (Sheet 2 of 5)/12-22-51-990-803



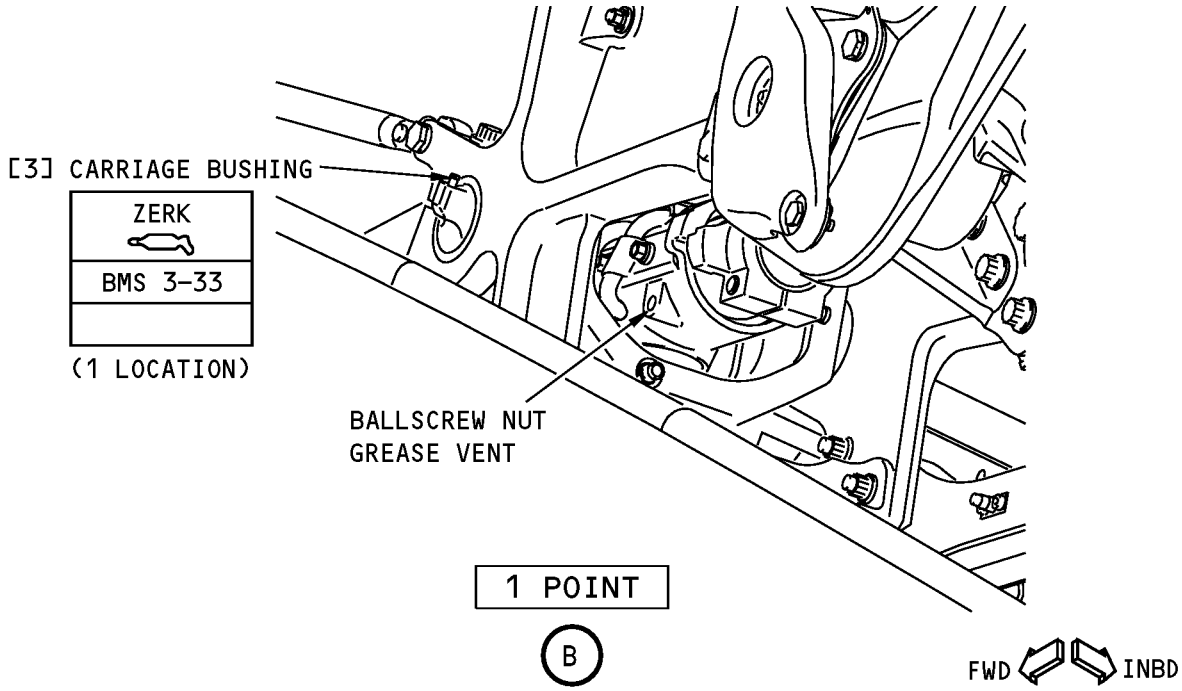
1 ONE MORE LUBE POINT IS ON THE OPPOSITE SIDE (NOT SHOWN).

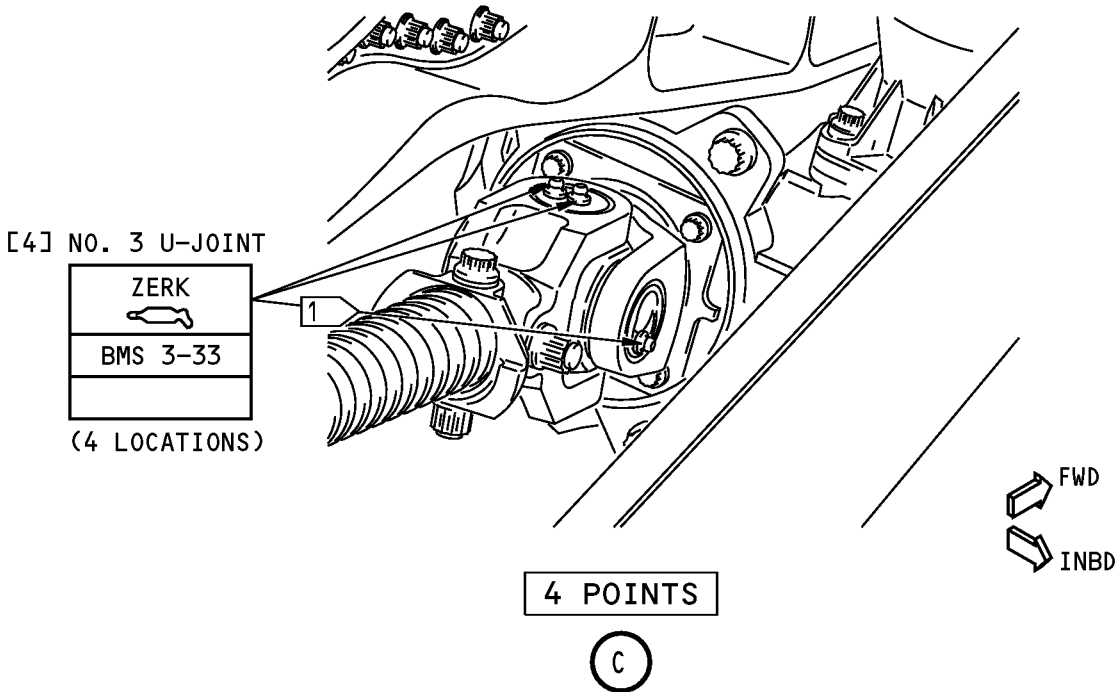
2 THE BALLSCREW NUT HAS TWO GREASE FITTINGS. IT IS ONLY NECESSARY TO GREASE ONE OF THEM.

1 POINT

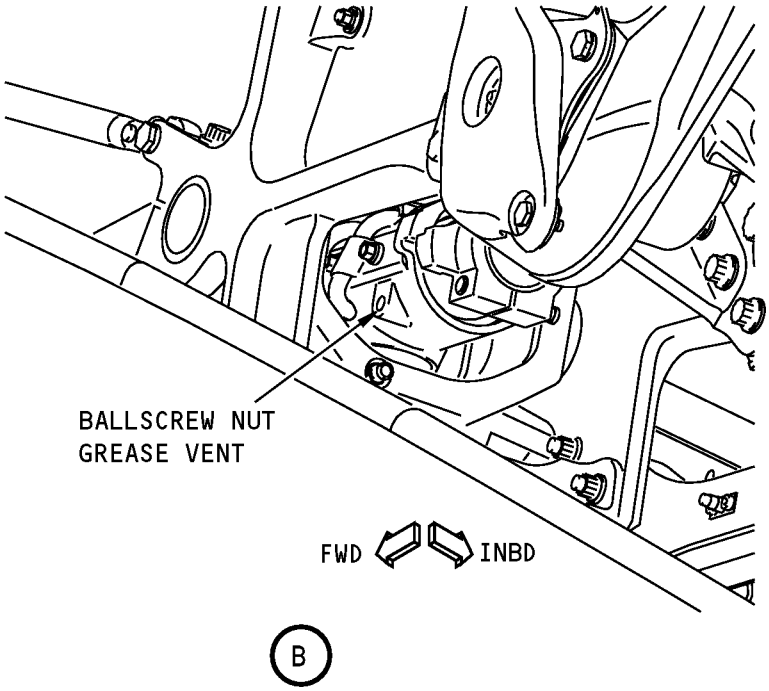
A

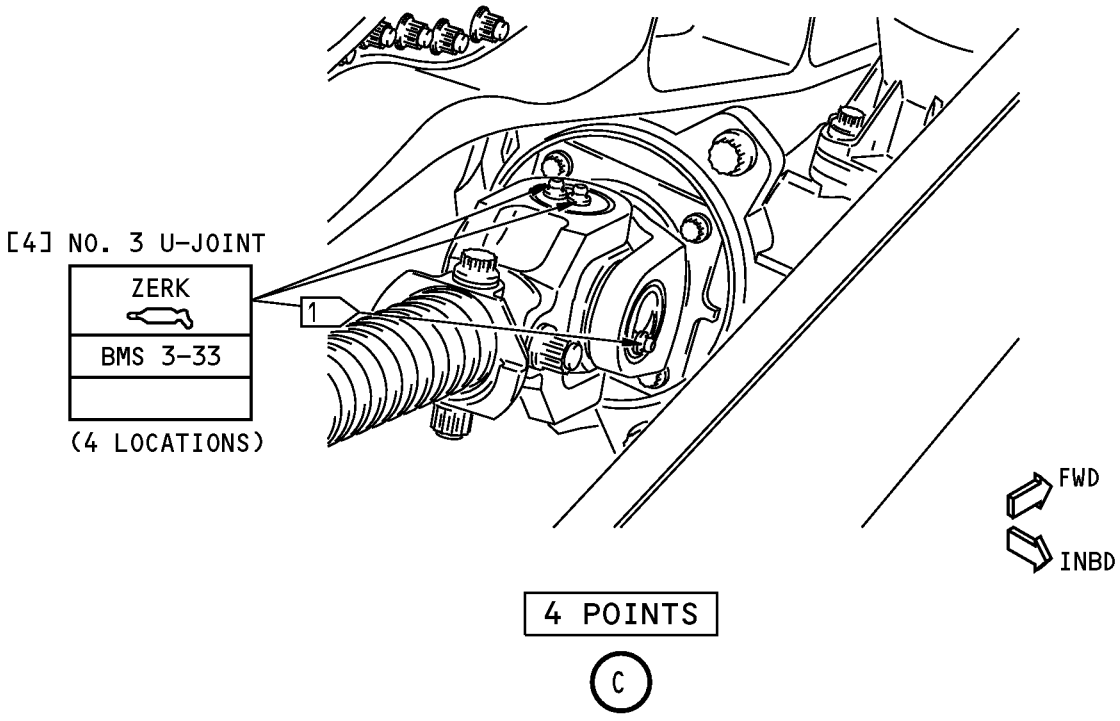
Inboard Flap Outboard Ballscrew and Gimbal Servicing
Figure 303 (Sheet 3 of 5)/12-22-51-990-803





Inboard Flap Outboard Ballscrew and Gimbal Servicing
Figure 303 (Sheet 4 of 5)/12-22-51-990-803





Inboard Flap Outboard Ballscrew and Gimbal Servicing
Figure 303 (Sheet 5 of 5)/12-22-51-990-803

TASK 12-22-51-640-804

5. Outboard Flap Inboard Ballscrew and Gimbal Lubrication

(Figure 304)

A. General

(1) This procedure is a scheduled maintenance task.

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
D00633	Grease - Aircraft General Purpose	BMS3-33

D. 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

E. Prepare for the Lubrication

SUBTASK 12-22-51-860-005

(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 12-22-51-040-004

(2) Do this task: Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801.

F. Outboard Flap Inboard Ballscrew and Gimbal Lubrication

(Table 304)

SUBTASK 12-22-51-640-008

(1) Lubricate the ballscrew nut 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.

HAP 001-013, 015-026 PRE SB 737-57-1264

SUBTASK 12-22-51-640-009

WARNING: DO NOT USE MORE THAN 2500 PSI (17237 KPA) WHEN YOU LUBRICATE THE CARRIAGE BUSHINGS. IF EXCESSIVE PRESSURE IS APPLIED TO THE CARRIAGE BUSHINGS, A CROSS BOLT ON THE CARRIAGE CAN BREAK. THIS CAN CAUSE INJURIES TO PERSON AND DAMAGE TO EQUIPMENT.

(2) Lubricate the fittings on the gimbal bushings and the carriage bushings with grease, D00633.

NOTE: Pressures from 100 to 200 psi (689.5-1379 KPa) should be enough to get the grease into the bushings. If more pressure is necessary, wear safety glasses. Do not use more than 2500 psi (17237 KPa).

HAP ALL

SUBTASK 12-22-51-640-010

(3) Lubricate the fittings on the U-joint with grease, D00633.

NOTE: There are four lubrication fittings on the U-joint. It is necessary to lubricate all of them.

G. Put the Airplane Back to Its Initial Condition

SUBTASK 12-22-51-440-004

(1) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

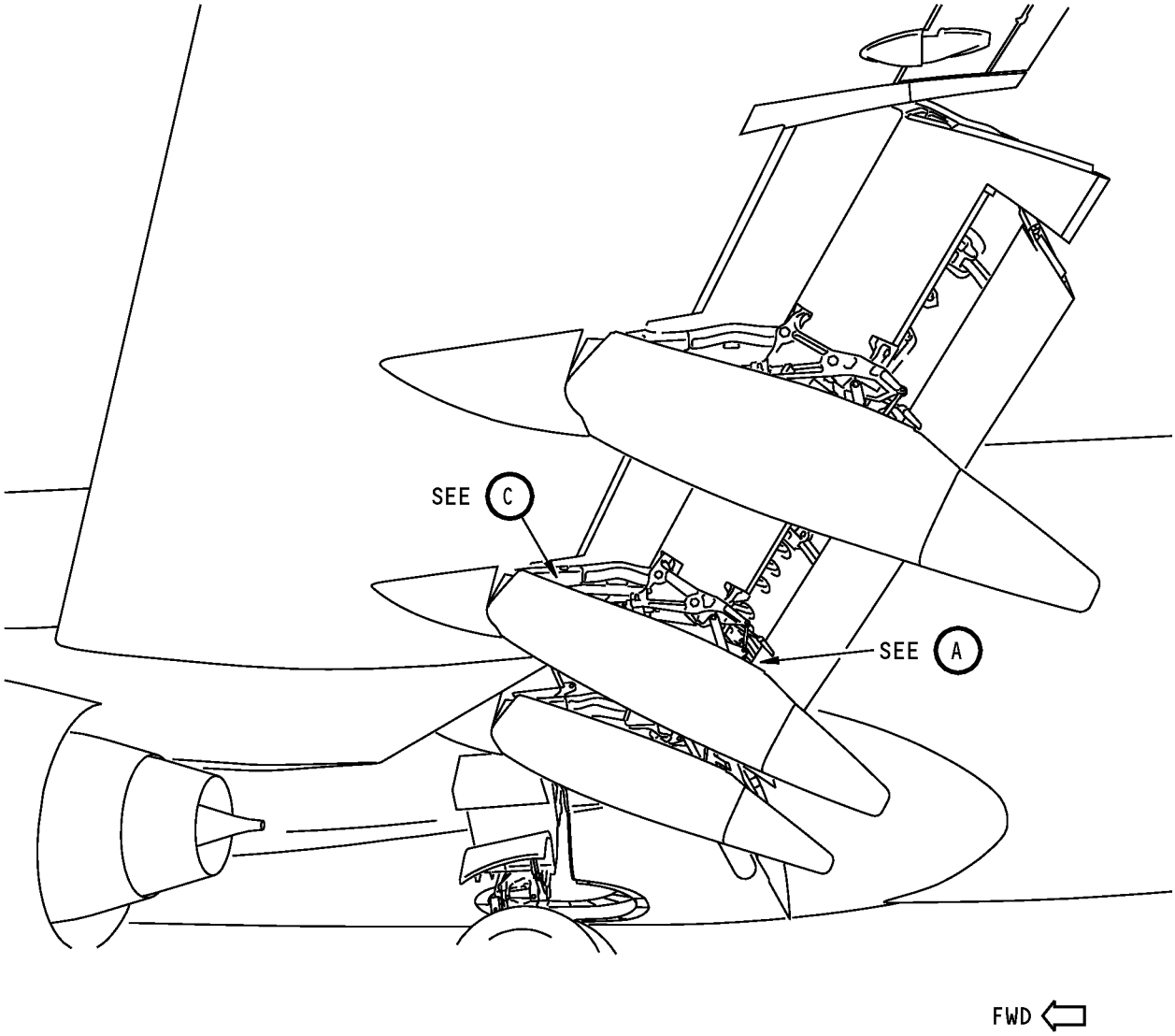
SUBTASK 12-22-51-860-006

(2) Retract the trailing edge flaps to the UP position. To retract them, do this task: Retract the Trailing Edge Flaps, TASK 27-51-00-860-804.

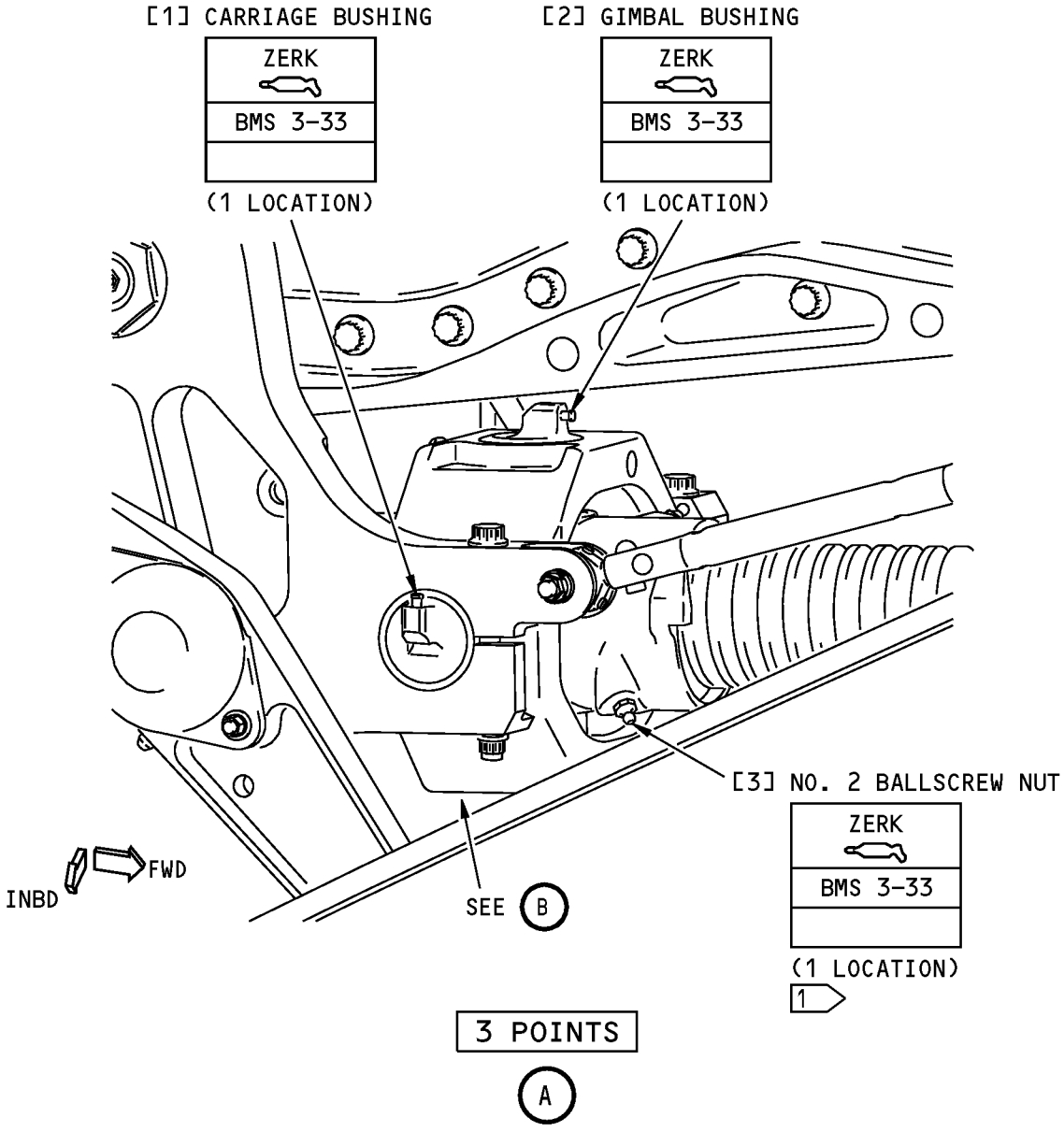
Table 304/12-22-51-993-824 Outboard Flap Inboard Ballscrew and Gimbal Servicing (Fig. 304)

Item No.	Nomenclature	Lubricant	Method of Application	Number of Locations
HAP 001-013, 015-026 PRE SB 737-57-1264				
1	Carriage Bushing	grease, D00633	Zerk	2
2	Gimbal Bushing	grease, D00633	Zerk	2
HAP ALL				
3	No. 2 Ballscrew Nut (No. 7 Ballscrew Nut is Equivalent)	grease, D00633	Zerk	1
4	No. 2 U-Joint (No. 7 U-Joint is Equivalent)	grease, D00633	Zerk	4

END OF TASK

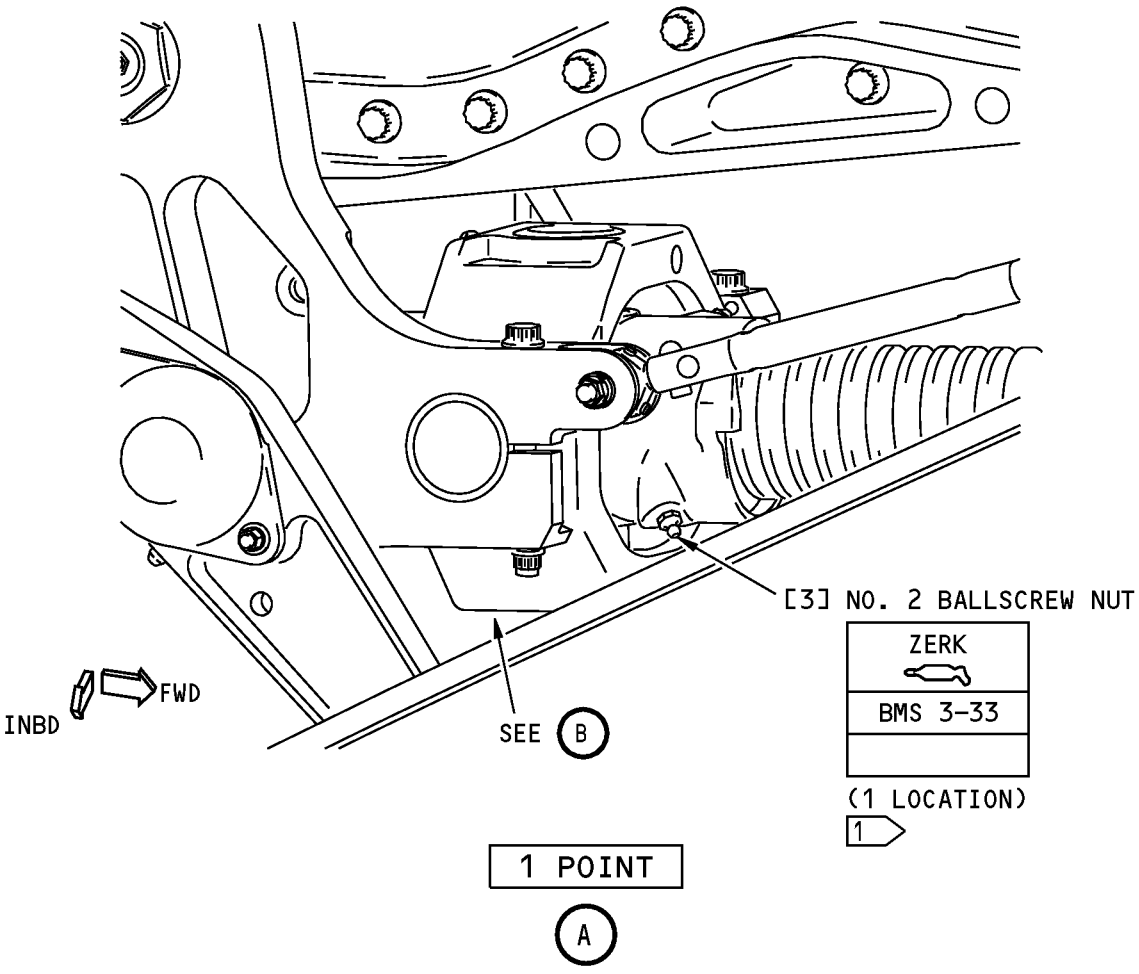


Outboard Flap Inboard Ballscrew and Gimbal Servicing
Figure 304 (Sheet 1 of 6)/12-22-51-990-804



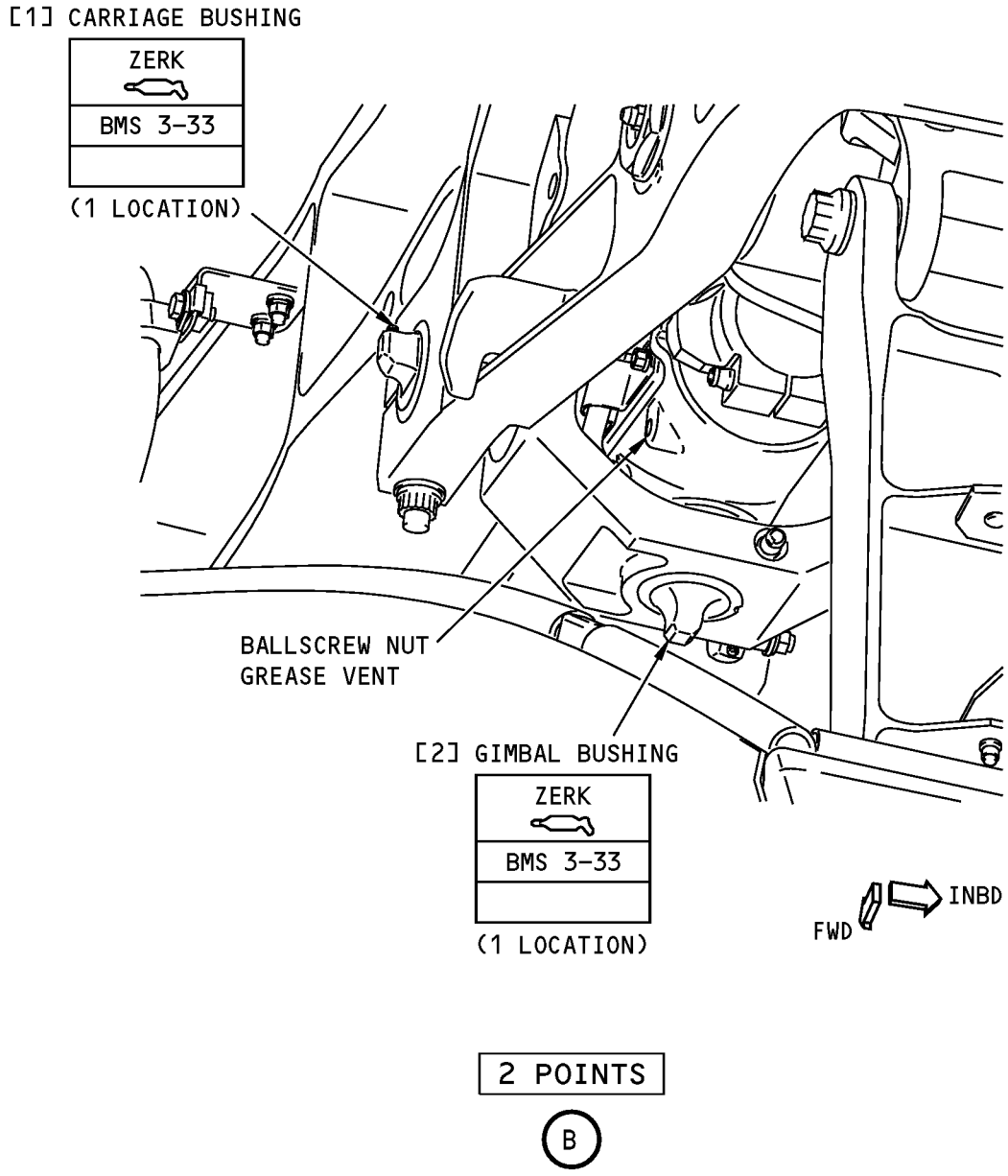
1 THE BALLSCREW NUT HAS TWO GREASE FITTINGS. IT IS ONLY NECESSARY TO GREASE ONE OF THEM.

Outboard Flap Inboard Ballscrew and Gimbal Servicing
Figure 304 (Sheet 2 of 6)/12-22-51-990-804

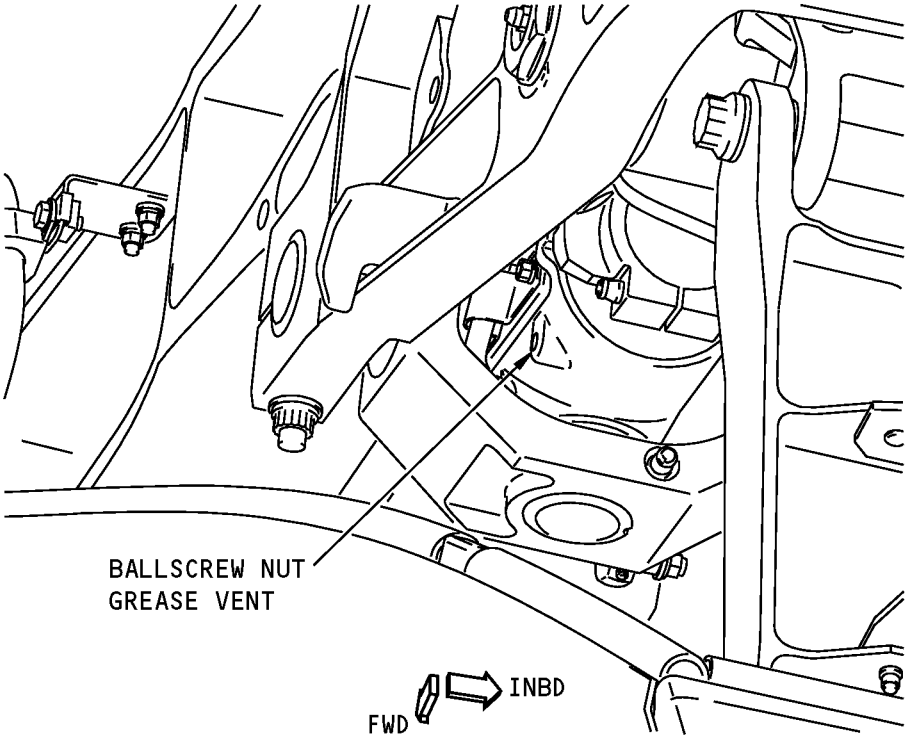


1 THE BALLSCREW NUT HAS TWO GREASE FITTINGS. IT IS ONLY NECESSARY TO GREASE ONE OF THEM.

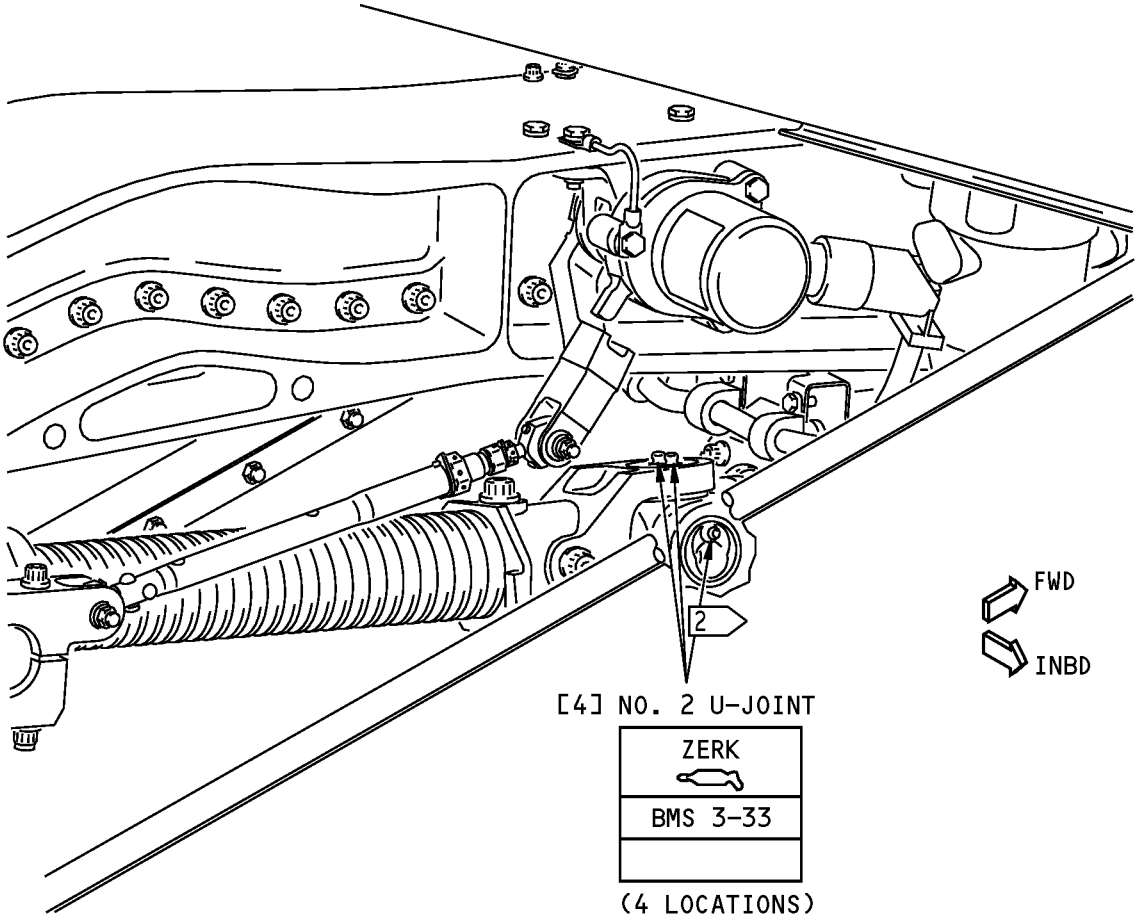
Outboard Flap Inboard Ballscrew and Gimbal Servicing
Figure 304 (Sheet 3 of 6)/12-22-51-990-804



Outboard Flap Inboard Ballscrew and Gimbal Servicing
Figure 304 (Sheet 4 of 6)/12-22-51-990-804



Outboard Flap Inboard Ballscrew and Gimbal Servicing
Figure 304 (Sheet 5 of 6)/12-22-51-990-804



Outboard Flap Inboard Ballscrew and Gimbal Servicing
Figure 304 (Sheet 6 of 6)/12-22-51-990-804

TASK 12-22-51-640-805

6. Outboard Flap Outboard Ballscrew and Gimbal Lubrication

(Figure 305)

A. General

(1) This procedure is a scheduled maintenance task.

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
D00633	Grease - Aircraft General Purpose	BMS3-33

D. 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

E. Prepare for the Lubrication

SUBTASK 12-22-51-860-007

(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 12-22-51-040-005

(2) Do this task: Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801.

F. Outboard Flap Outboard Ballscrew and Gimbal Lubrication

(Table 305)

SUBTASK 12-22-51-640-011

(1) Lubricate the ballscrew nut 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.

HAP 001-013, 015-026 PRE SB 737-57-1264

SUBTASK 12-22-51-640-012

WARNING: DO NOT USE MORE THAN 2500 PSI (17237 KPA) WHEN YOU LUBRICATE THE CARRIAGE BUSHINGS. IF EXCESSIVE PRESSURE IS APPLIED TO THE CARRIAGE BUSHINGS, A CROSS BOLT ON THE CARRIAGE CAN BREAK. THIS CAN CAUSE INJURIES TO PERSON AND DAMAGE TO EQUIPMENT.

(2) Lubricate the fittings on the gimbal bushings and the carriage bushings with grease, D00633.

NOTE: Pressures from 100 to 200 psi (689.5-1379 KPa) should be enough to get the grease into the bushings. If more pressure is necessary, wear safety glasses. Do not use more than 2500 psi (17237 KPa).

HAP ALL

SUBTASK 12-22-51-640-013

(3) Lubricate the fittings on the U-joint with grease, D00633.

NOTE: There are four lubrication fittings on the U-joint. It is necessary to lubricate all of them.

G. Put the Airplane Back to Its Initial Condition

SUBTASK 12-22-51-440-005

(1) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

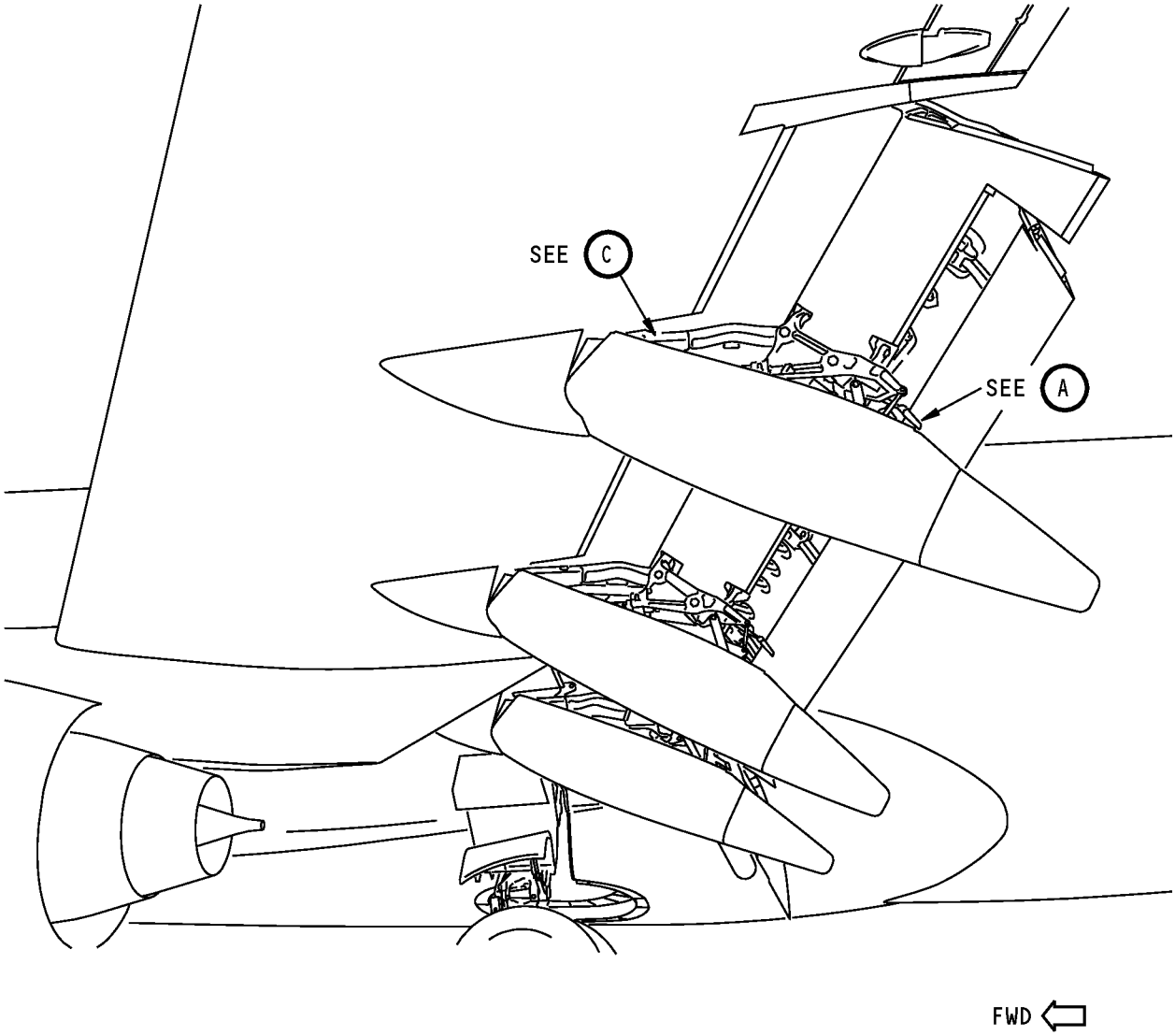
SUBTASK 12-22-51-860-008

(2) Retract the trailing edge flaps to the UP position. To retract them, do this task: Retract the Trailing Edge Flaps, TASK 27-51-00-860-804.

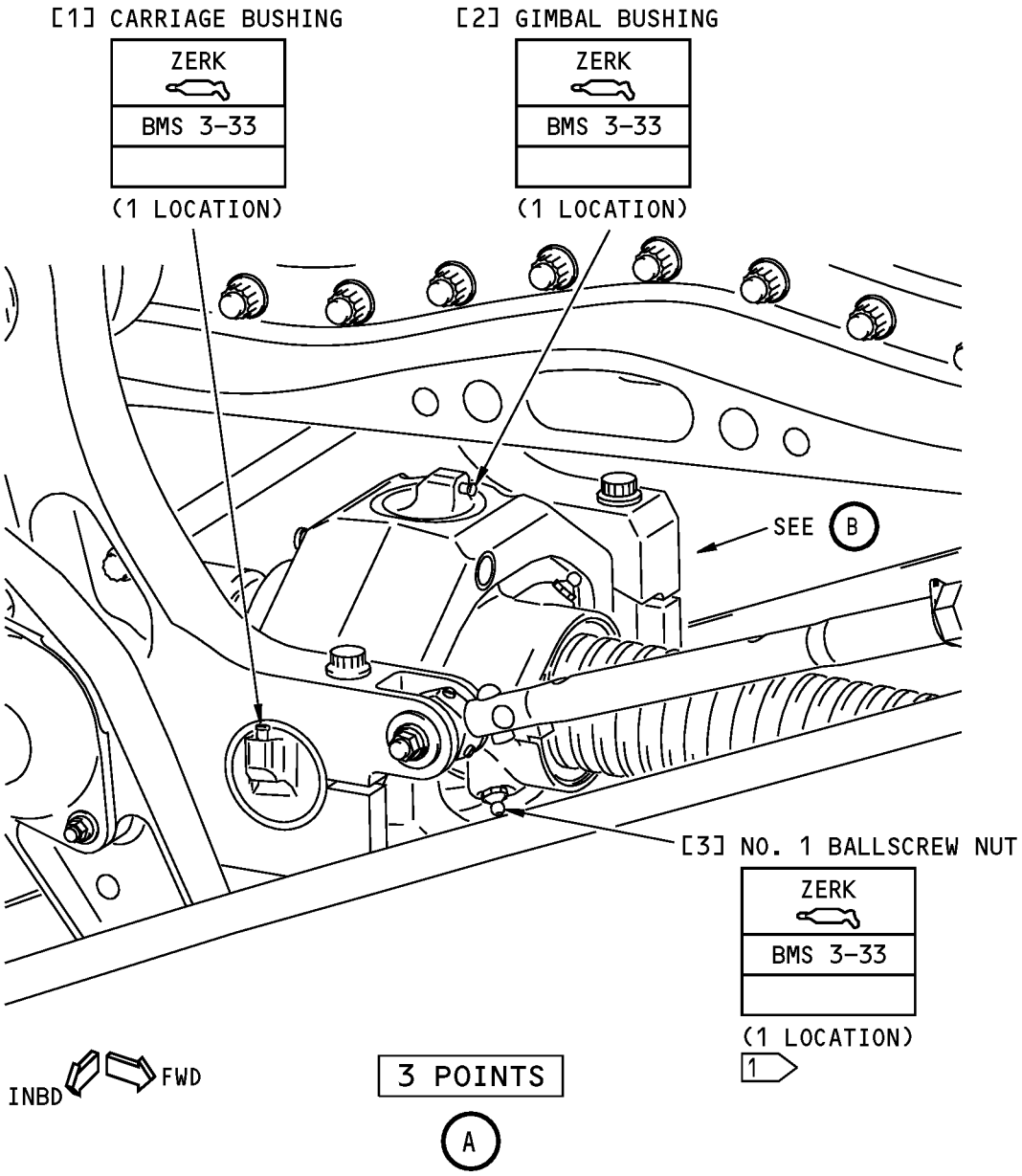
Table 305/12-22-51-993-825 Outboard Flap Outboard Ballscrew and Gimbal Servicing (Fig. 305)

Item No.	Nomenclature	Lubricant	Method of Application	Number of Locations
HAP 001-013, 015-026 PRE SB 737-57-1264				
1	Carriage Bushing	grease, D00633	Zerk	2
2	Gimbal Bushing	grease, D00633	Zerk	2
HAP ALL				
3	No. 1 Ballscrew Nut (No. 8 Ballscrew Nut is Equivalent)	grease, D00633	Zerk	1
4	No. 1 U-Joint (No. 8 U-Joint is Equivalent)	grease, D00633	Zerk	4

END OF TASK

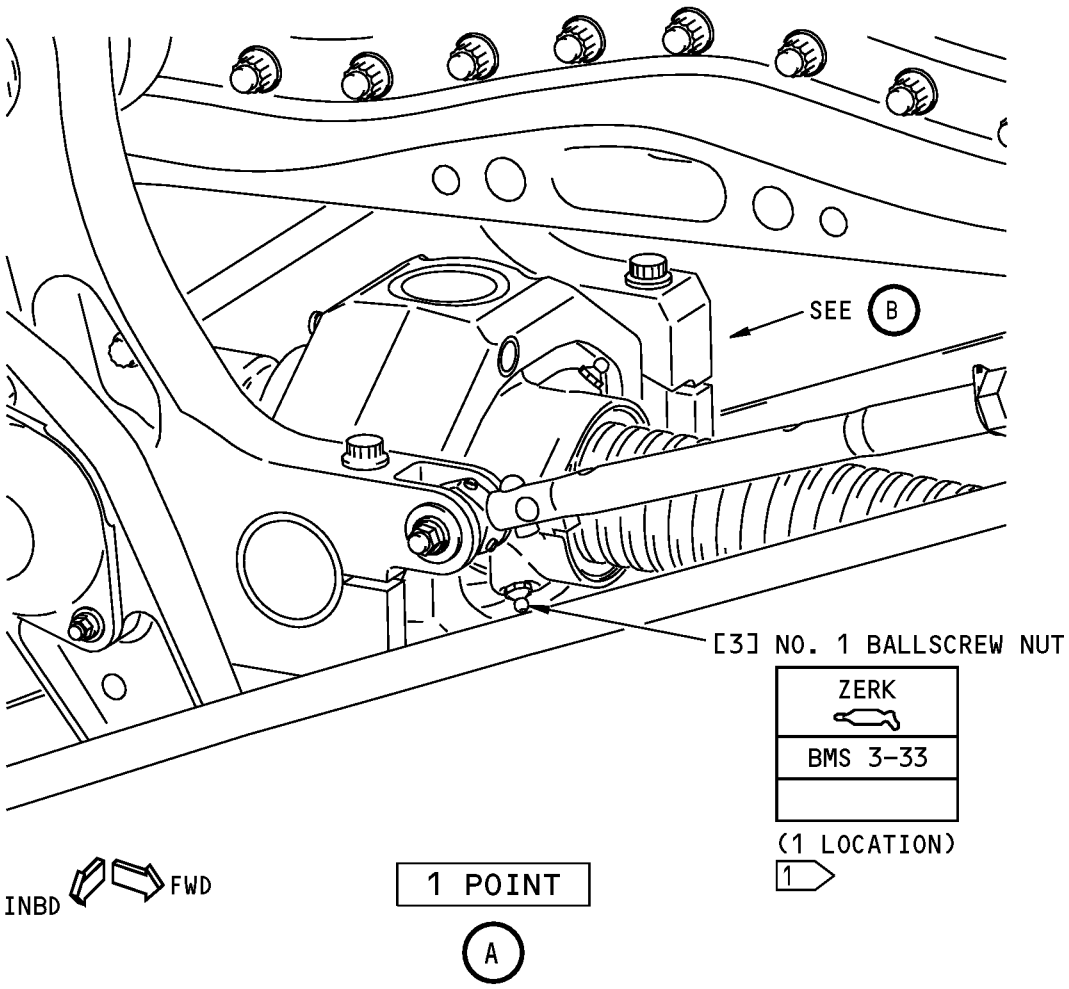


Outboard Flap Outboard Ballscrew and Gimbal Servicing
Figure 305 (Sheet 1 of 6)/12-22-51-990-805



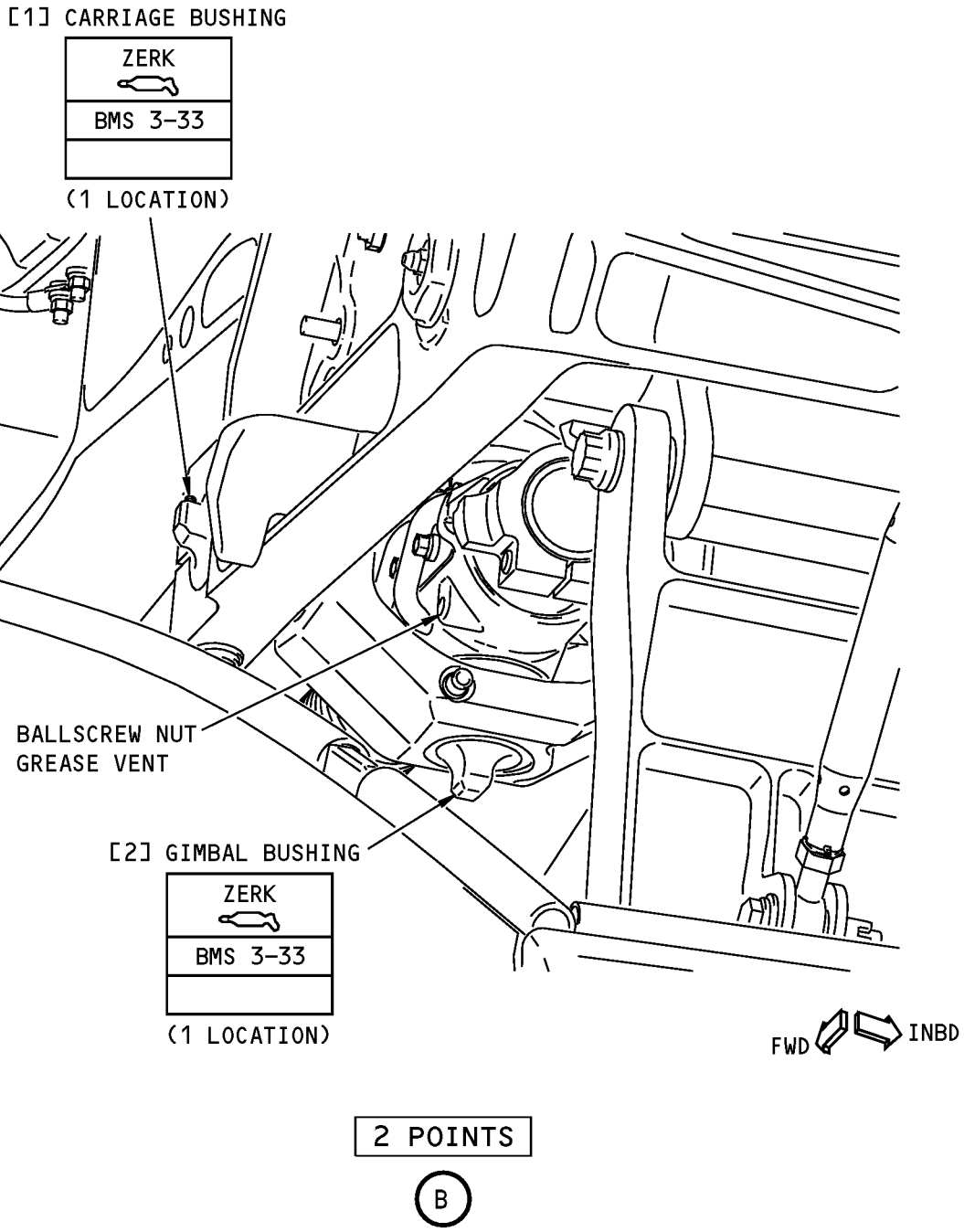
1 THE BALLSCREW NUT HAS TWO GREASE FITTINGS. IT IS ONLY NECESSARY TO GREASE ONE OF THEM.

Outboard Flap Outboard Ballscrew and Gimbal Servicing
Figure 305 (Sheet 2 of 6)/12-22-51-990-805

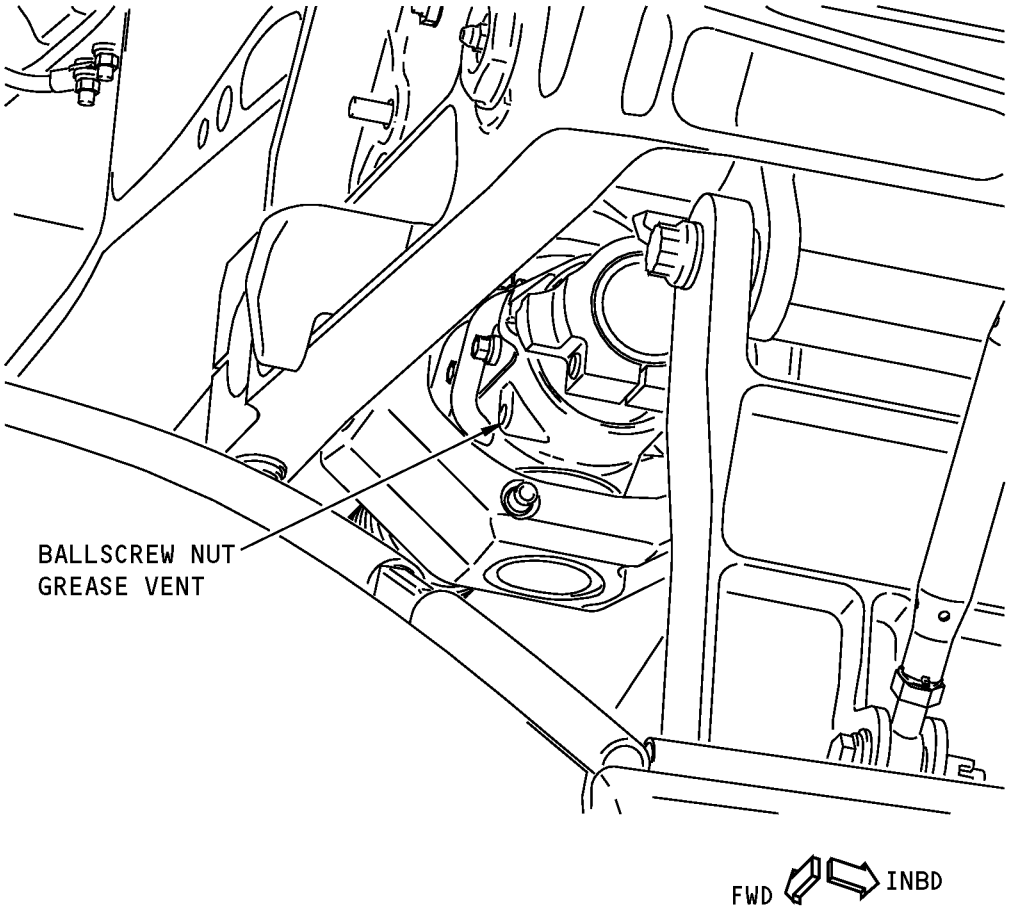


1 THE BALLSCREW NUT HAS TWO GREASE FITTINGS. IT IS ONLY NECESSARY TO GREASE ONE OF THEM.

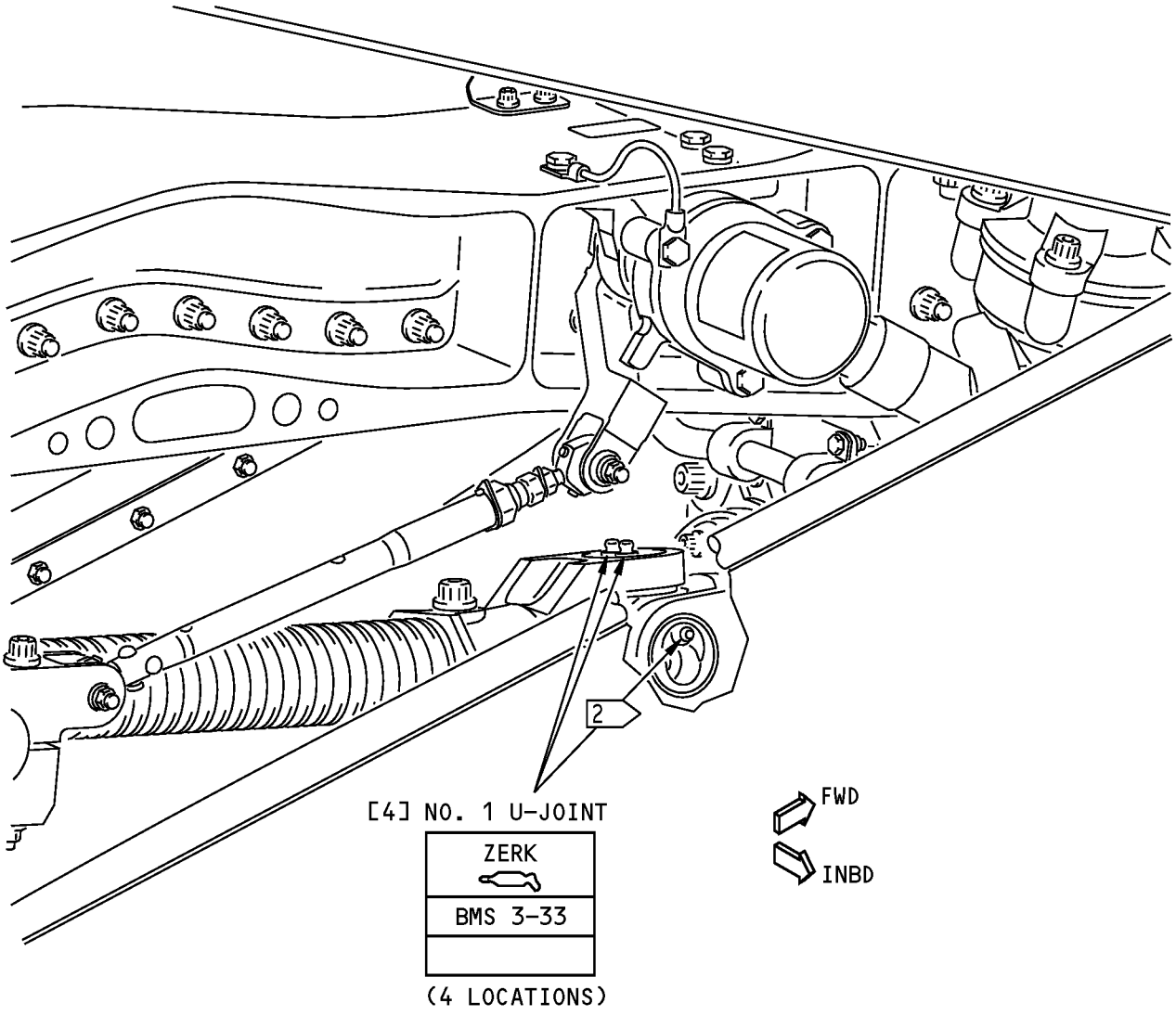
Outboard Flap Outboard Ballscrew and Gimbal Servicing
Figure 305 (Sheet 3 of 6)/12-22-51-990-805



Outboard Flap Outboard Ballscrew and Gimbal Servicing
Figure 305 (Sheet 4 of 6)/12-22-51-990-805



Outboard Flap Outboard Ballscrew and Gimbal Servicing
Figure 305 (Sheet 5 of 6)/12-22-51-990-805



2 ONE MORE LUBE POINT IS ON THE OPPOSITE SIDE (NOT SHOWN).

Outboard Flap Outboard Ballscrew and Gimbal Servicing
Figure 305 (Sheet 6 of 6)/12-22-51-990-805

TASK 12-22-51-640-806

7. U-Joint and Tee Angle Gearbox Lubrication

(Figure 306)

A. General

(1) This procedure is a scheduled maintenance task.

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)

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

E. 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.

F. U-Joint and Tee Angle Gearbox Lubrication

(Table 306)

SUBTASK 12-22-51-640-014

(1) Lubricate the U-joint with grease, D00633.

SUBTASK 12-22-51-640-015

(2) Lubricate the tee angle gearbox with grease, D00633.

NOTE: Put grease in the tee angle gearbox until grease comes out of the vent.

G. Put the Airplane Back to Its Initial Condition

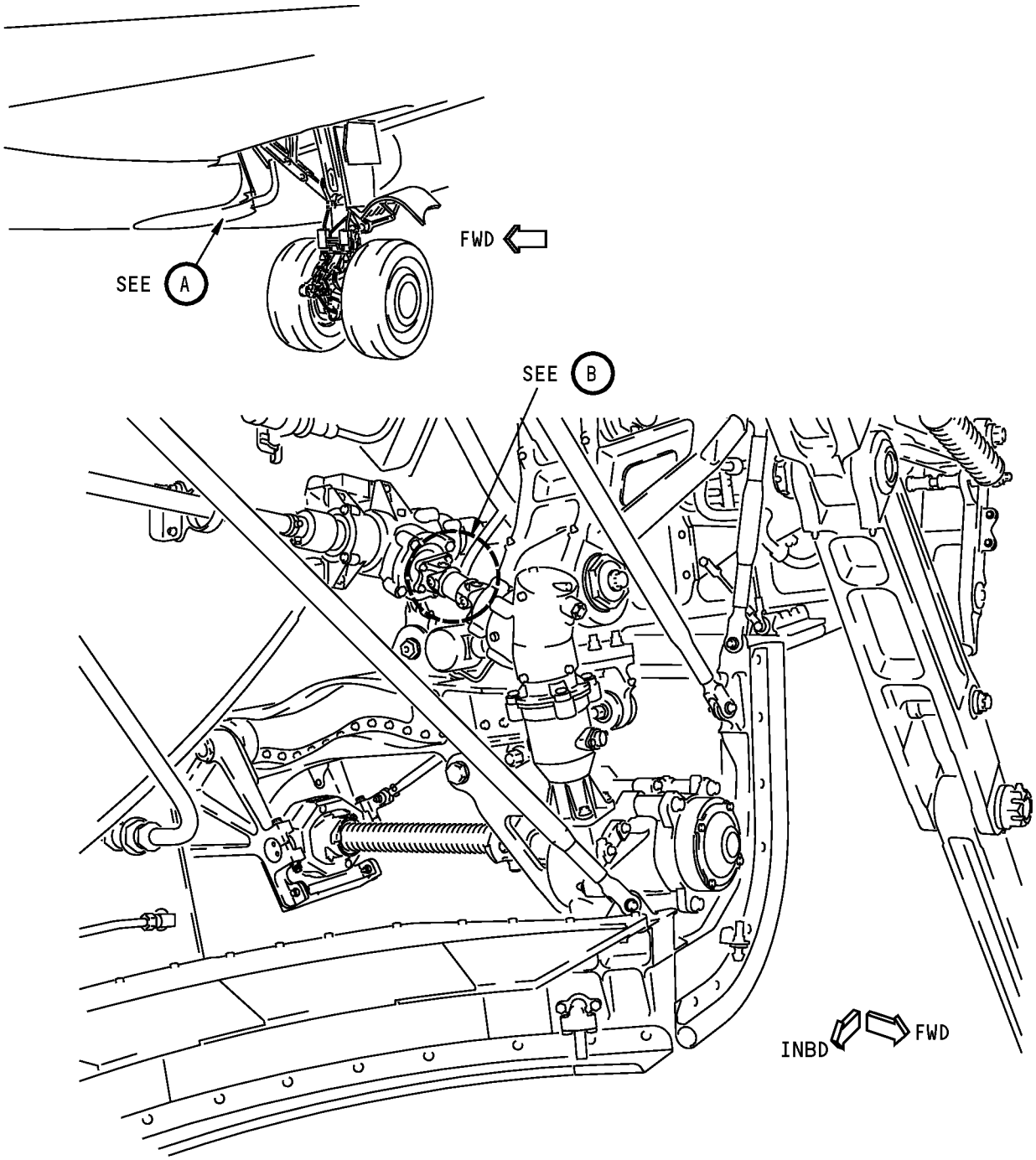
SUBTASK 12-22-51-440-006

(1) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

Table 306/12-22-51-993-826 U-Joint and Tee Angle Gearbox Servicing (Fig. 306)

Item No.	Nomenclature	Lubricant	Method of Application	Number of Locations
1	Tee Angle Gearbox	grease, D00633	Flush	1
2	U-Joint	grease, D00633	Flush	8

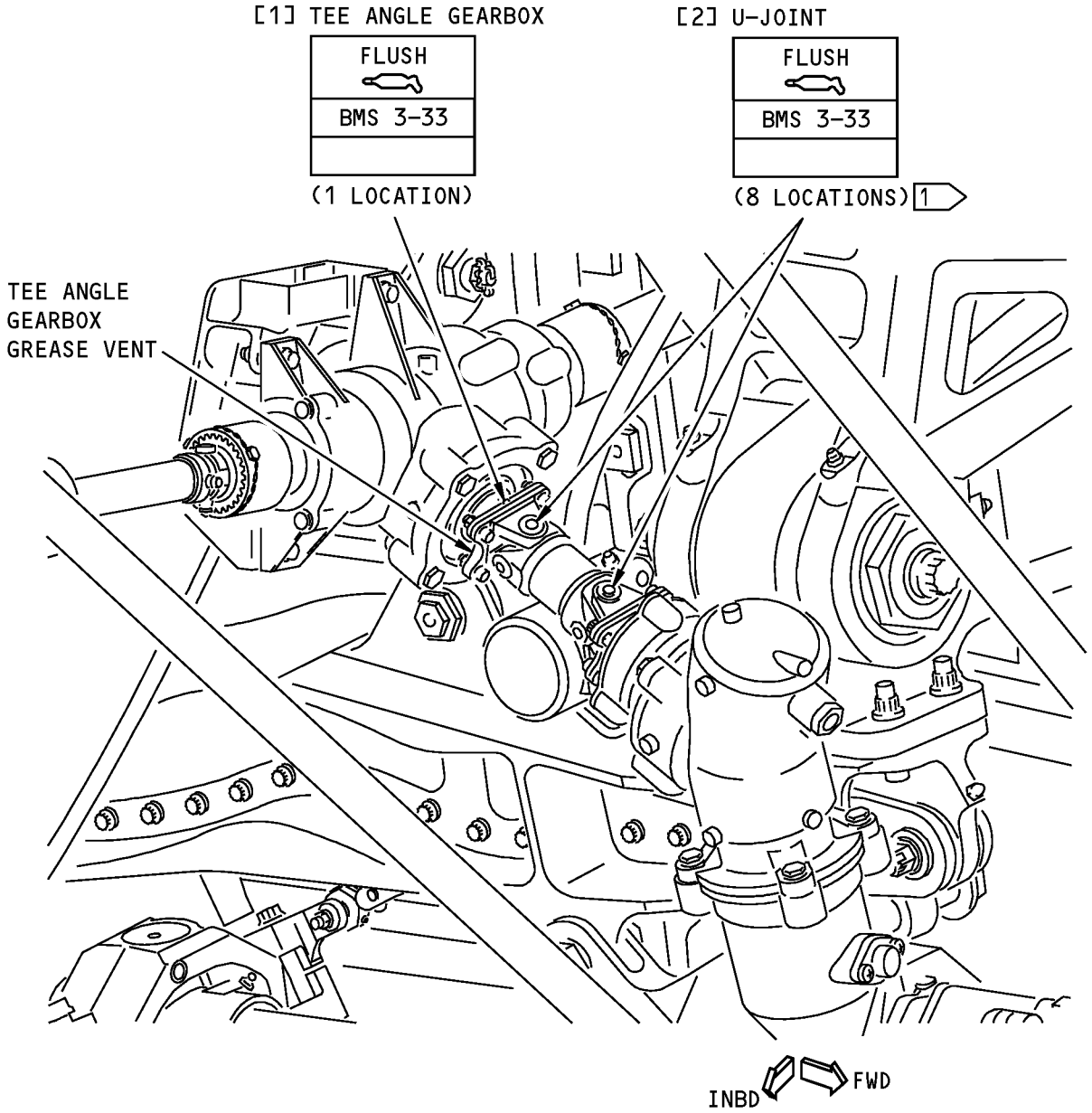
END OF TASK



MAIN LANDING GEAR WHEEL WELL
(LEFT SIDE IS SHOWN, RIGHT SIDE IS EQUIVALENT)

A

U-Joint and Tee Angle Gearbox Servicing
Figure 306 (Sheet 1 of 2)/12-22-51-990-806



U-Joint and Tee Angle Gearbox Servicing
Figure 306 (Sheet 2 of 2)/12-22-51-990-806

TASK 12-22-51-640-807

8. Inboard Flap Inboard Skew Mechanism Lubrication

(Figure 307)

A. General

(1) This procedure is a scheduled maintenance task.

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)

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

E. 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.

F. Inboard Flap Inboard Skew Mechanism Lubrication

(Table 307)

SUBTASK 12-22-51-640-016

(1) Lubricate the flap skew input assembly with grease, D00633.

SUBTASK 12-22-51-640-017

(2) Lubricate the rod ends on the skew control rod 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.

G. Put the Airplane Back to Its Initial Condition

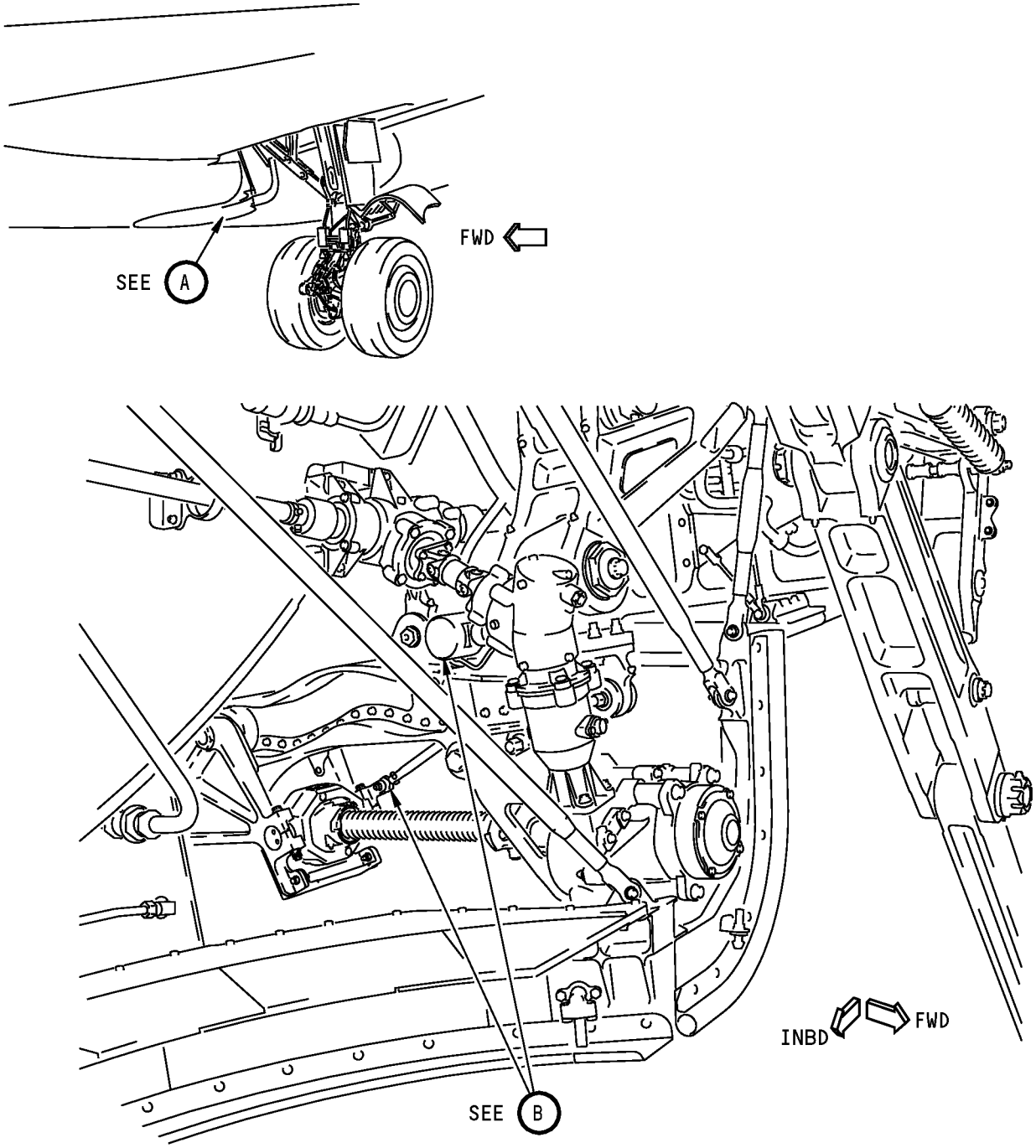
SUBTASK 12-22-51-440-007

(1) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

Table 307/12-22-51-993-827 Inboard Flap Inboard Skew Mechanism Servicing (Fig. 307)

Item No.	Nomenclature	Lubricant	Method of Application	Number of Locations
1	Skew Input Assembly	grease, D00633	Zerk	1
2	Skew Control Rod	grease, D00633	Flush	2

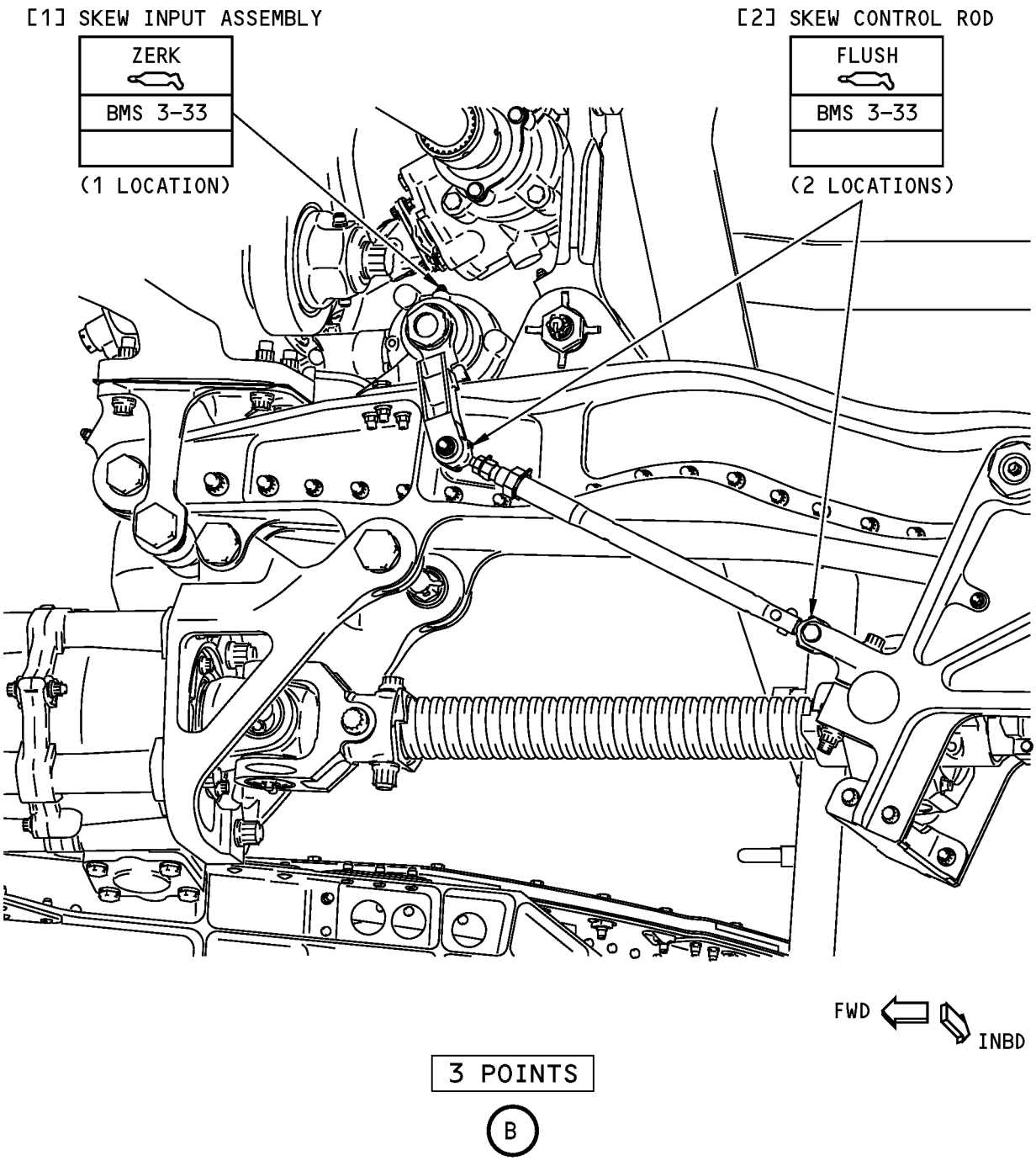
END OF TASK



MAIN LANDING GEAR WHEEL WELL
(LEFT SIDE IS SHOWN, RIGHT SIDE IS EQUIVALENT)

A

Inboard Flap Inboard Skew Mechanism Servicing
Figure 307 (Sheet 1 of 2)/12-22-51-990-807



Inboard Flap Inboard Skew Mechanism Servicing
Figure 307 (Sheet 2 of 2)/12-22-51-990-807

TASK 12-22-51-640-808

9. Inboard Flap Outboard Skew Mechanism Lubrication

(Figure 308)

A. General

(1) This procedure is a scheduled maintenance task.

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
D00633	Grease - Aircraft General Purpose	BMS3-33

D. 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

E. Prepare for the Lubrication

SUBTASK 12-22-51-860-009

(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 12-22-51-040-008

(2) Do this task: Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801.

F. Inboard Flap Outboard Skew Mechanism Lubrication

(Table 308)

SUBTASK 12-22-51-640-018

(1) Lubricate the flap skew input assembly with grease, D00633.

SUBTASK 12-22-51-640-019

(2) Lubricate the rod ends on the skew control rod 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.

G. Put the Airplane Back to Its Initial Condition

SUBTASK 12-22-51-440-008

(1) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

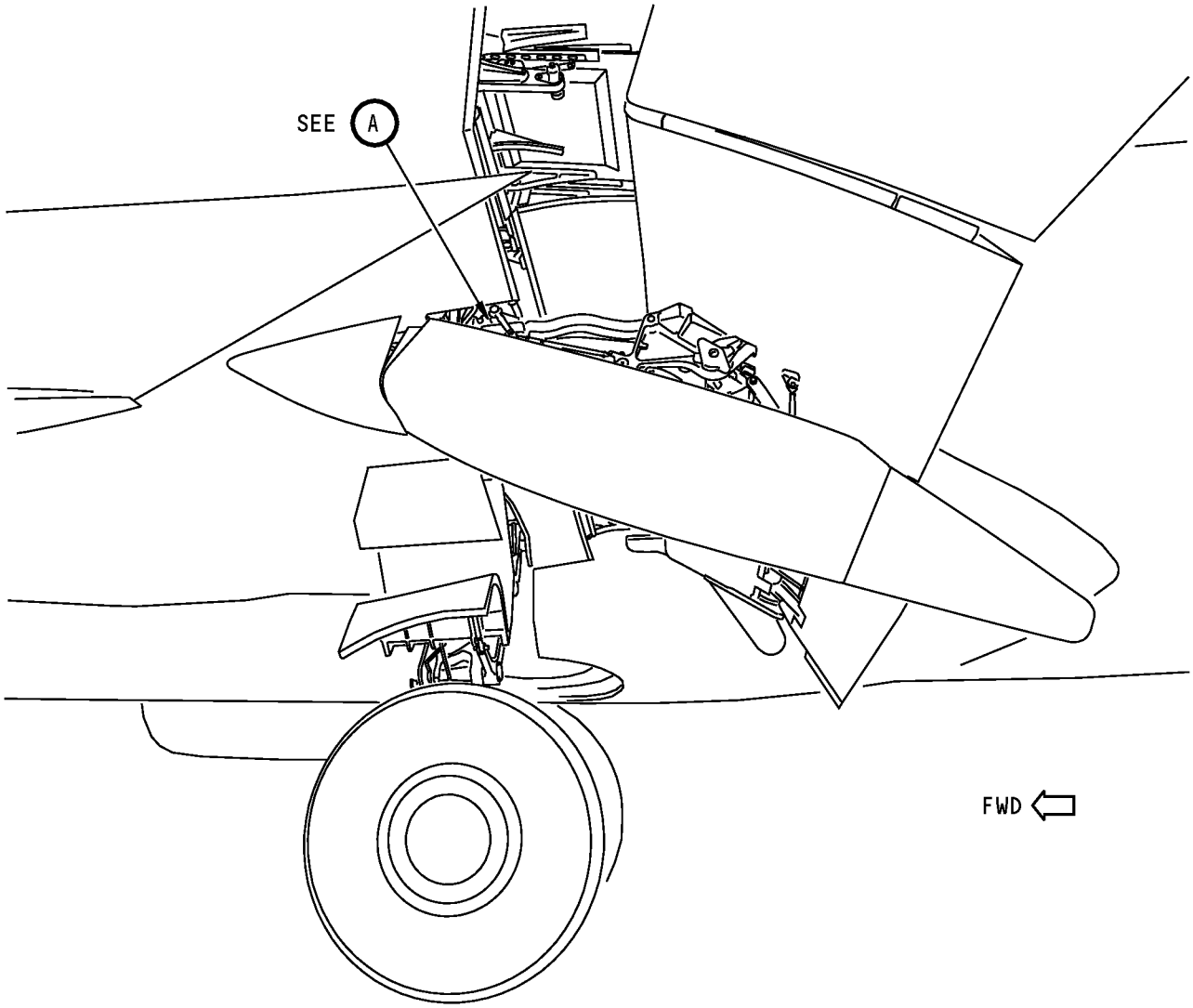
SUBTASK 12-22-51-860-010

(2) Retract the trailing edge flaps to the UP position. To retract them, do this task: Retract the Trailing Edge Flaps, TASK 27-51-00-860-804.

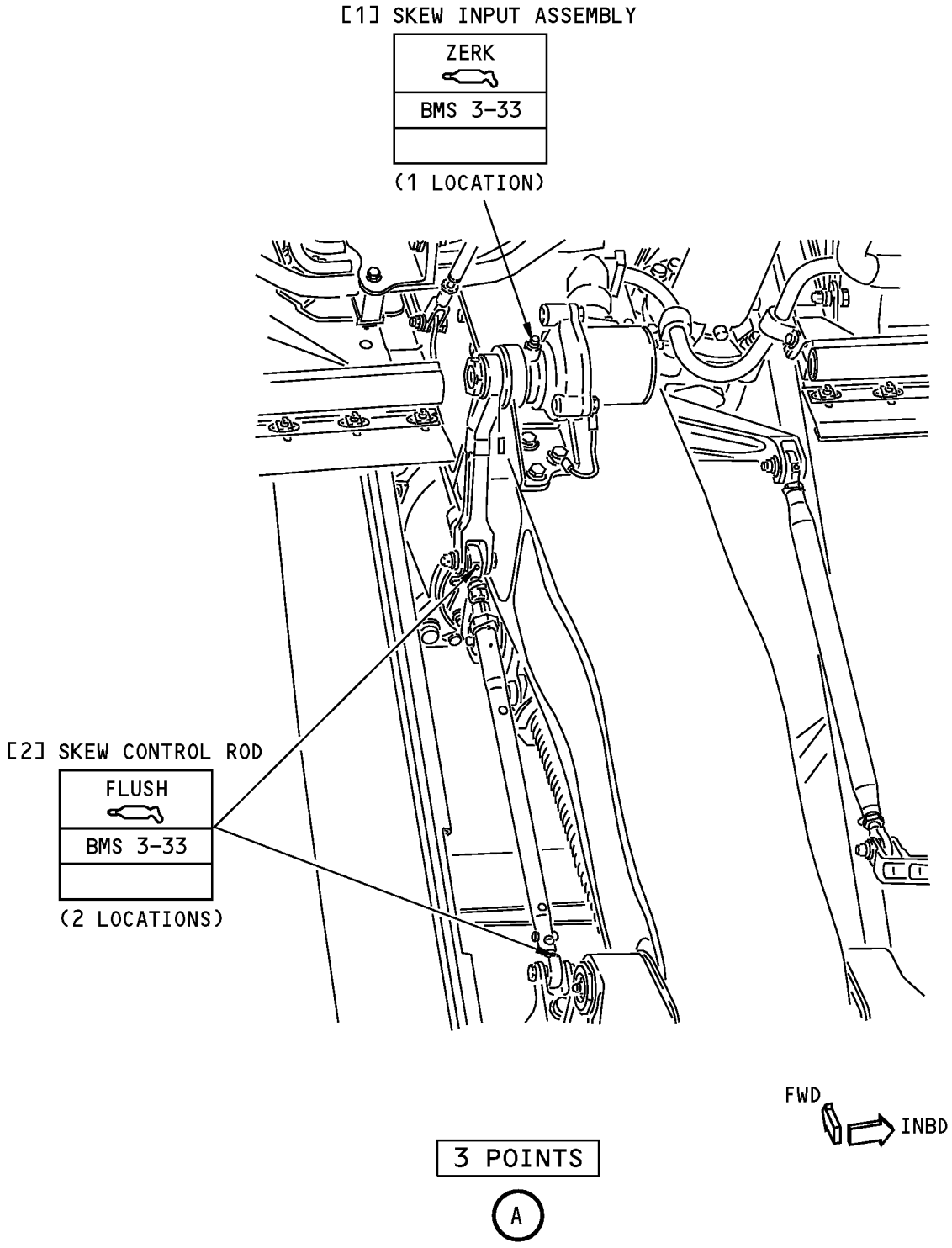
Table 308/12-22-51-993-828 Inboard Flap Outboard Skew Mechanism Servicing (Fig. 308)

Item No.	Nomenclature	Lubricant	Method of Application	Number of Locations
1	Skew Input Assembly	grease, D00633	Zerk	1
2	Skew Control Rod	grease, D00633	Flush	2

END OF TASK



Inboard Flap Outboard Skew Mechanism Servicing
Figure 308 (Sheet 1 of 2)/12-22-51-990-808



Inboard Flap Outboard Skew Mechanism Servicing
Figure 308 (Sheet 2 of 2)/12-22-51-990-808

TASK 12-22-51-640-809

10. Outboard Flap Inboard Skew Mechanism Lubrication

(Figure 309)

A. General

(1) This procedure is a scheduled maintenance task.

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
D00633	Grease - Aircraft General Purpose	BMS3-33

D. 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

E. Prepare for the Lubrication

SUBTASK 12-22-51-860-011

(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 12-22-51-040-009

(2) Do this task: Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801.

F. Outboard Flap Inboard Skew Mechanism Lubrication

(Table 309)

SUBTASK 12-22-51-640-020

(1) Lubricate the flap skew input assembly with grease, D00633.

SUBTASK 12-22-51-640-021

(2) Lubricate the rod ends on the skew control rod 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.

G. Put the Airplane Back to Its Initial Condition

SUBTASK 12-22-51-440-009

(1) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

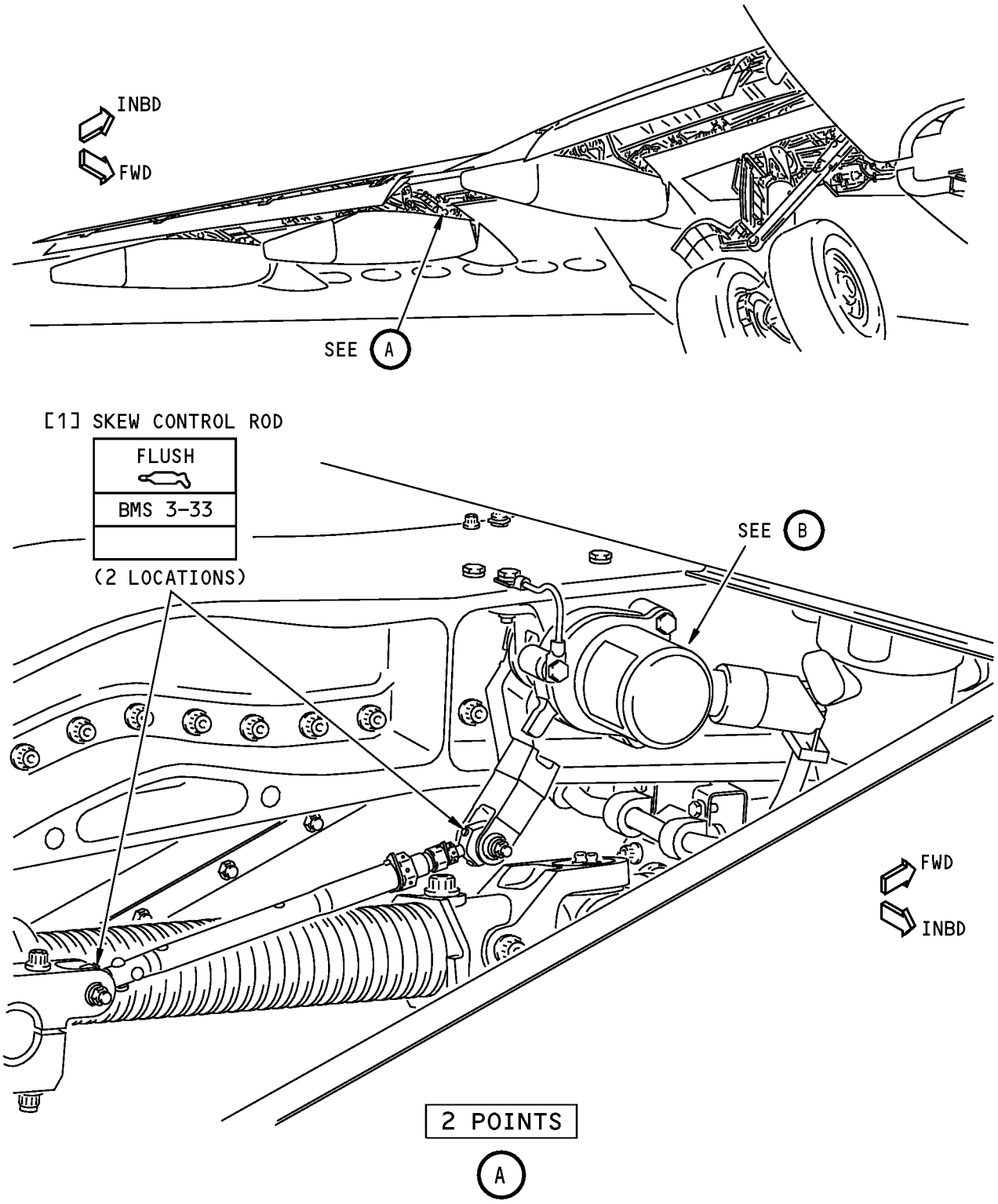
SUBTASK 12-22-51-860-012

(2) Retract the trailing edge flaps to the UP position. To retract them, do this task: Retract the Trailing Edge Flaps, TASK 27-51-00-860-804.

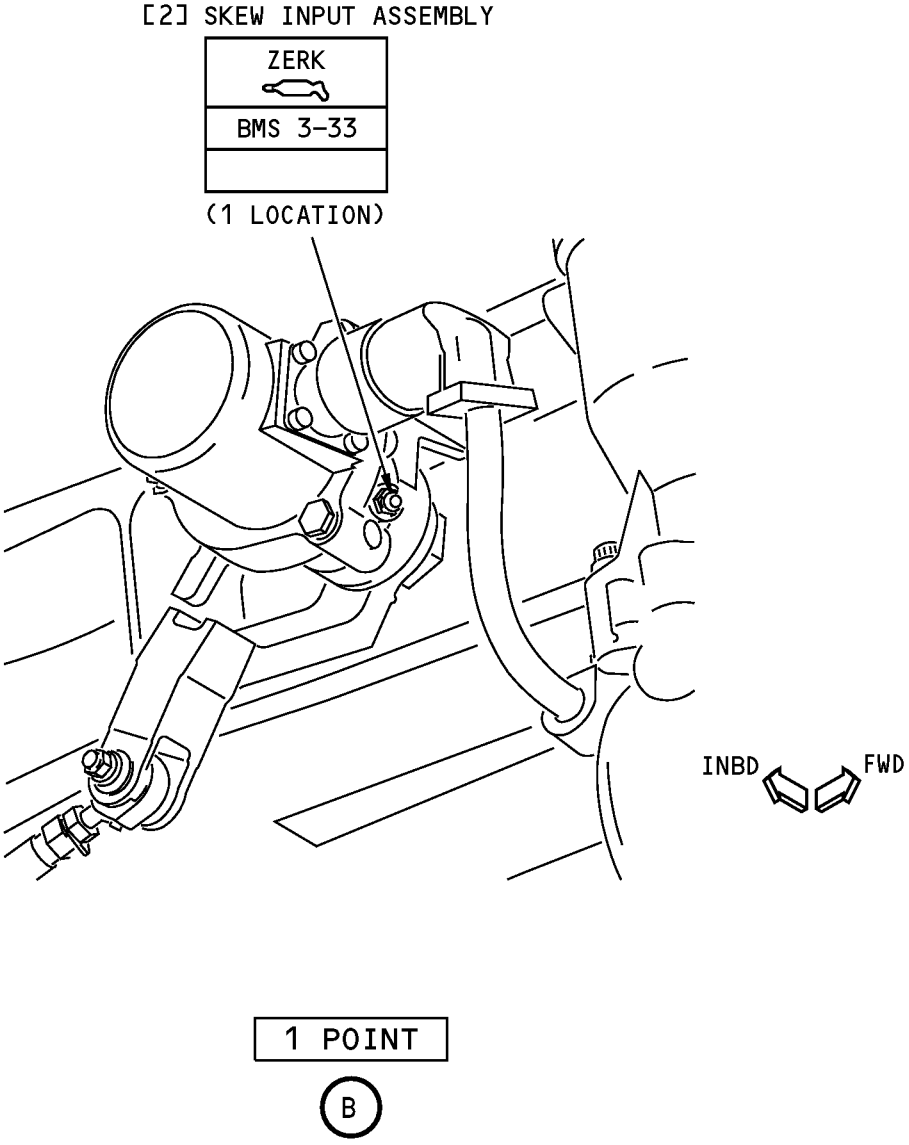
Table 309/12-22-51-993-829 Outboard Flap Inboard Skew Mechanism Servicing (Fig. 309)

Item No.	Nomenclature	Lubricant	Method of Application	Number of Locations
1	Skew Control Rod	grease, D00633	Flush	2
2	Skew Input Assembly	grease, D00633	Zerk	1

END OF TASK



Outboard Flap Inboard Skew Mechanism Servicing
Figure 309 (Sheet 1 of 2)/12-22-51-990-809



Outboard Flap Inboard Skew Mechanism Servicing
Figure 309 (Sheet 2 of 2)/12-22-51-990-809

TASK 12-22-51-640-810

11. Outboard Flap Outboard Skew Mechanism Lubrication

(Figure 310)

A. General

(1) This procedure is a scheduled maintenance task.

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
D00633	Grease - Aircraft General Purpose	BMS3-33

D. 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

E. Prepare for the Lubrication

SUBTASK 12-22-51-860-013

(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 12-22-51-040-010

(2) Do this task: Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801.

F. Outboard Flap Outboard Skew Mechanism Lubrication

(Table 310)

SUBTASK 12-22-51-640-022

(1) Lubricate the flap skew input assembly with grease, D00633.

SUBTASK 12-22-51-640-023

(2) Lubricate the rod ends on the skew control rod 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.

G. Put the Airplane Back to Its Initial Condition

SUBTASK 12-22-51-440-010

(1) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

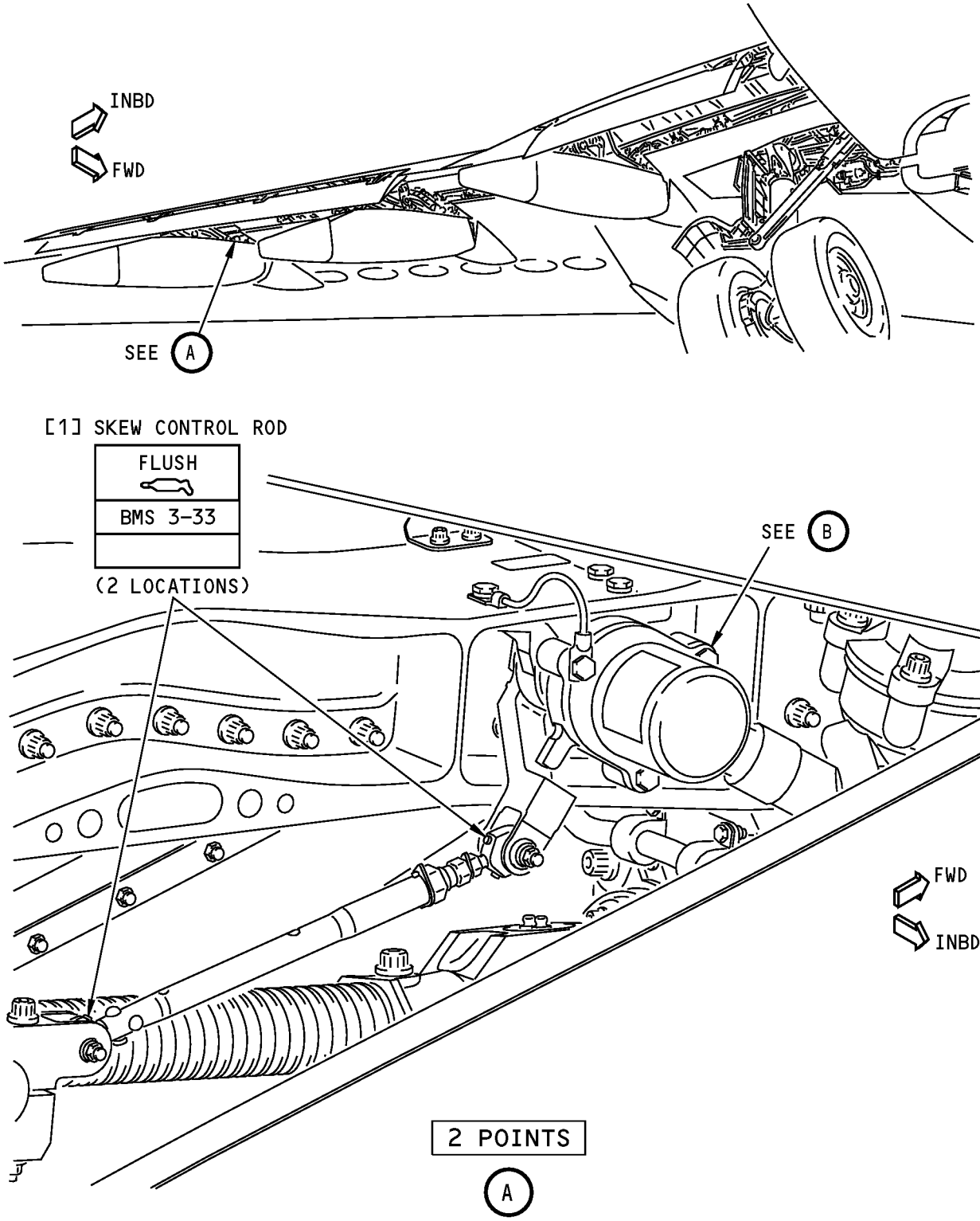
SUBTASK 12-22-51-860-014

(2) Retract the trailing edge flaps to the UP position. To retract them, do this task: Retract the Trailing Edge Flaps, TASK 27-51-00-860-804.

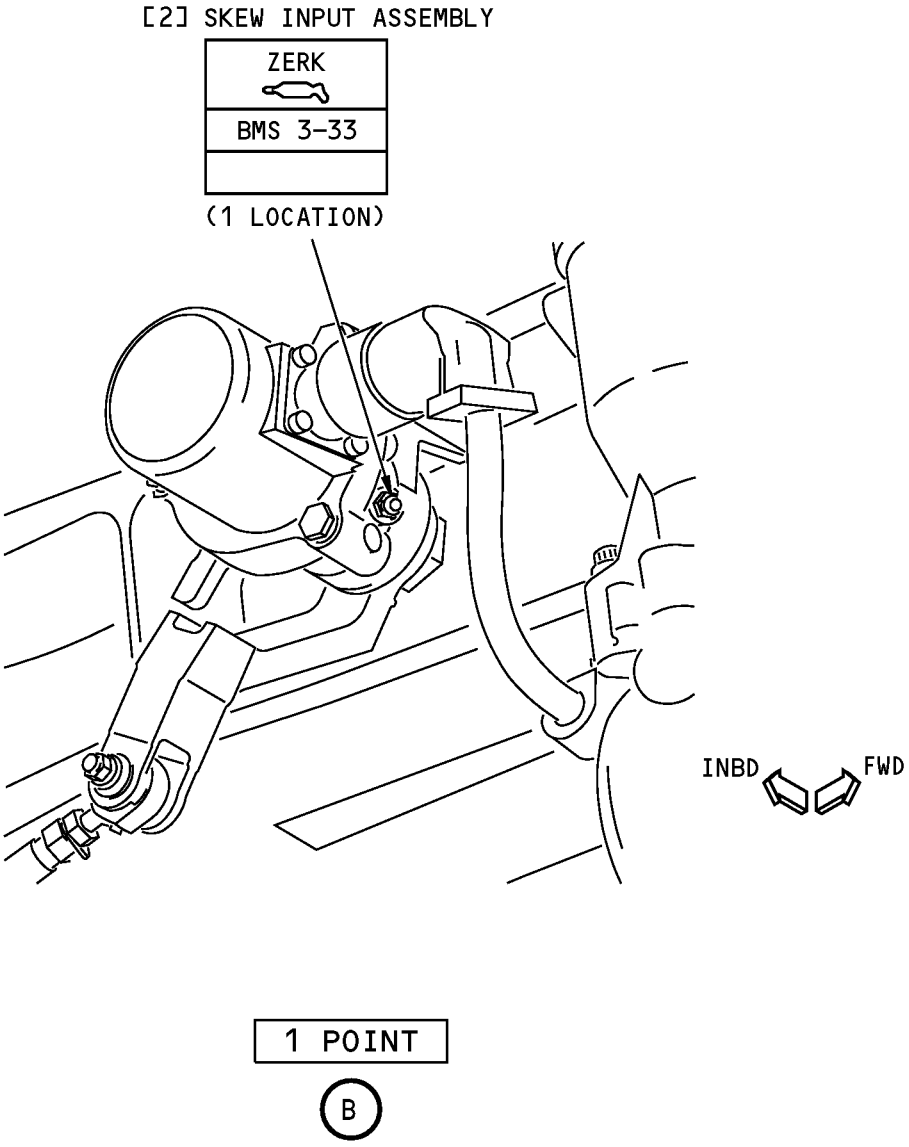
Table 310/12-22-51-993-830 Outboard Flap Outboard Skew Mechanism Servicing (Fig. 310)

Item No.	Nomenclature	Lubricant	Method of Application	Number of Locations
1	Skew Control Rod	grease, D00633	Flush	2
2	Skew Input Assembly	grease, D00633	Zerk	1

END OF TASK



Outboard Flap Outboard Skew Mechanism Servicing
Figure 310 (Sheet 1 of 2)/12-22-51-990-810



Outboard Flap Outboard Skew Mechanism Servicing
Figure 310 (Sheet 2 of 2)/12-22-51-990-810

TASK 12-22-51-640-811

12. Inboard Main Flap and Aft Flap Roller and Linkage Lubrication

(Figure 311)

A. General

(1) This procedure is a scheduled maintenance task.

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)
53-51-21-000-801	Aft Wing To Body Fairing Panel Removal (P/B 401)
53-51-21-400-801	Aft Wing To Body Fairing Panel Installation (P/B 401)

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
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

E. Access Panels

Number	Name/Location
194BL	Flap Track Lubrication Panel - Aft
194BR	Flap Track Lubrication Panel - Aft

F. Prepare for the Lubrication

SUBTASK 12-22-51-860-015

(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 12-22-51-040-011

(2) Do this task: Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801.

SUBTASK 12-22-51-010-005

(3) Remove these access panels on the wing to body fairing, do this task: Aft Wing To Body Fairing Panel Removal, TASK 53-51-21-000-801.

(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

G. Inboard Main Flap and Aft Flap Roller and Linkage Lubrication

(Table 311)

SUBTASK 12-22-51-640-024

(1) Lubricate the rollers on the inboard main flap carriage with grease, D00633.

SUBTASK 12-22-51-640-025

(2) Lubricate the rollers on the outboard main flap carriage with grease, D00633.

SUBTASK 12-22-51-640-026

(3) Lubricate the rollers on the aft flap tracks and aft flap track attach fittings with grease, D00633.

SUBTASK 12-22-51-640-027

(4) Lubricate the inboard and outboard programming rollers with grease, D00633.

SUBTASK 12-22-51-640-028

(5) Lubricate the rod ends on the aft flap drive rod 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.

H. Put the Airplane Back to Its Initial Condition

SUBTASK 12-22-51-410-005

(1) Install these access panels on the wing to body fairing, do this task: Aft Wing To Body Fairing Panel Installation, TASK 53-51-21-400-801.

(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

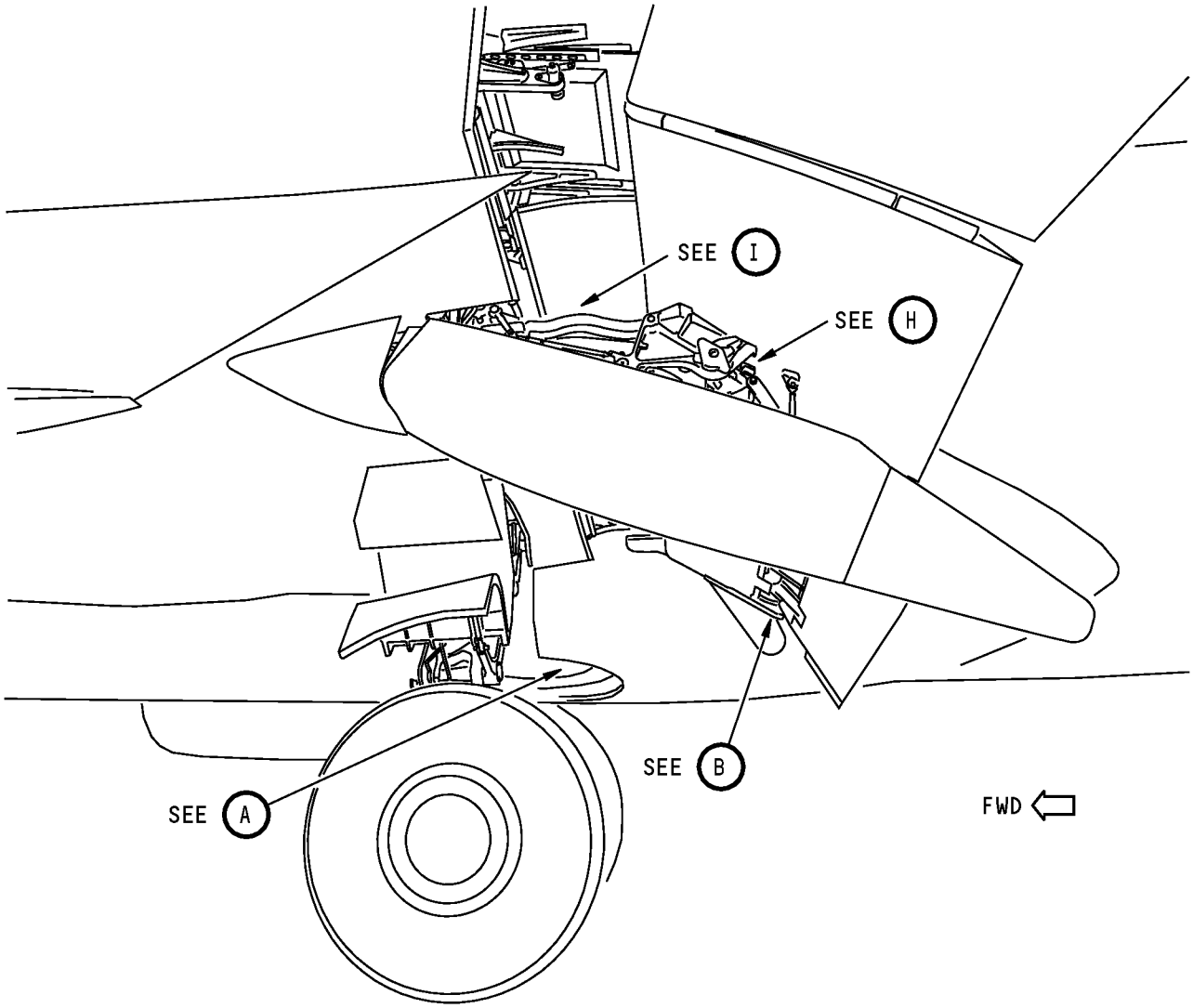
(3) Retract the trailing edge flaps to the UP position. To retract them, do this task: Retract the Trailing Edge Flaps, TASK 27-51-00-860-804.

Table 311/12-22-51-993-831 Inboard Main Flap and Aft Flap Roller and Linkage Servicing (Fig. 311)

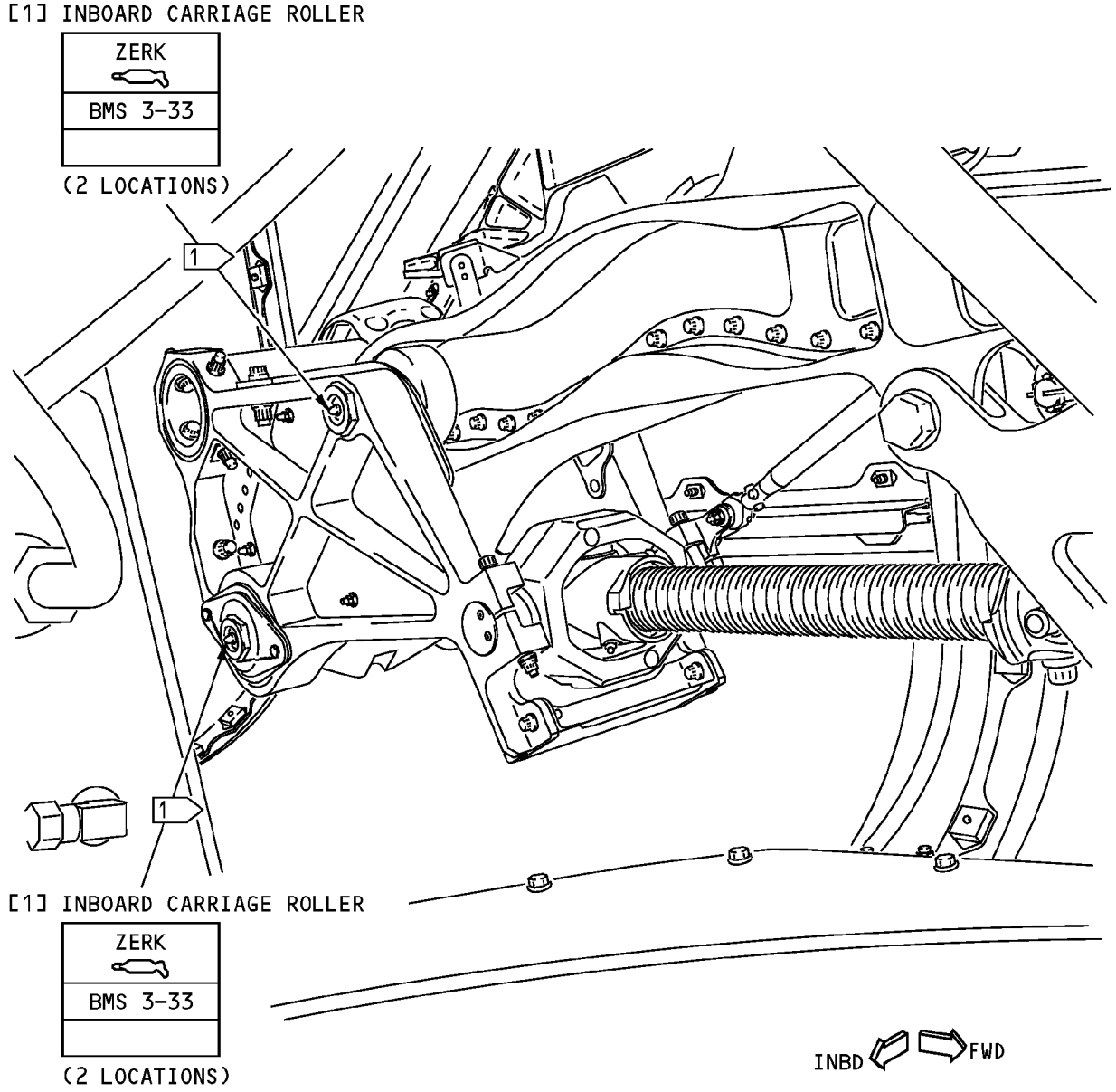
Item No.	Nomenclature	Lubricant	Method of Application	Number of Locations
1	Inboard Carriage Roller	grease, D00633	Zerk	4
2	Inboard Programming Roller	grease, D00633	Flush	1
3	Aft Flap Track Roller	grease, D00633	Zerk	8
4	*[1]Aft Flap Track Attach Fitting	grease, D00633	Zerk	2
5	Outboard Programming Roller	grease, D00633	Flush	1
6	Outboard Carriage Roller	grease, D00633	Zerk	4
7	Aft Flap Drive Rod	grease, D00633	Flush	2

*[1] Lube point not on all attach fittings.

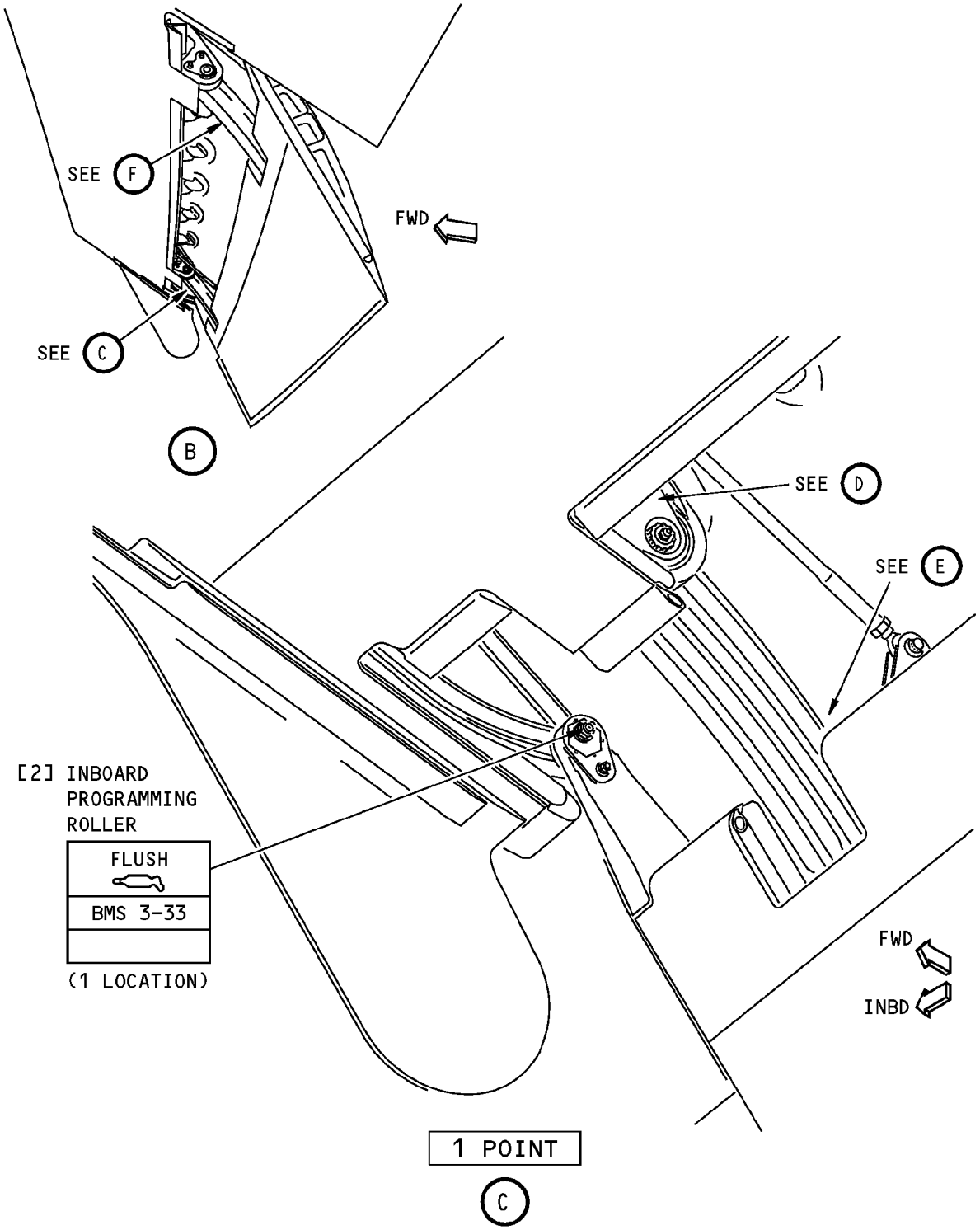
END OF TASK



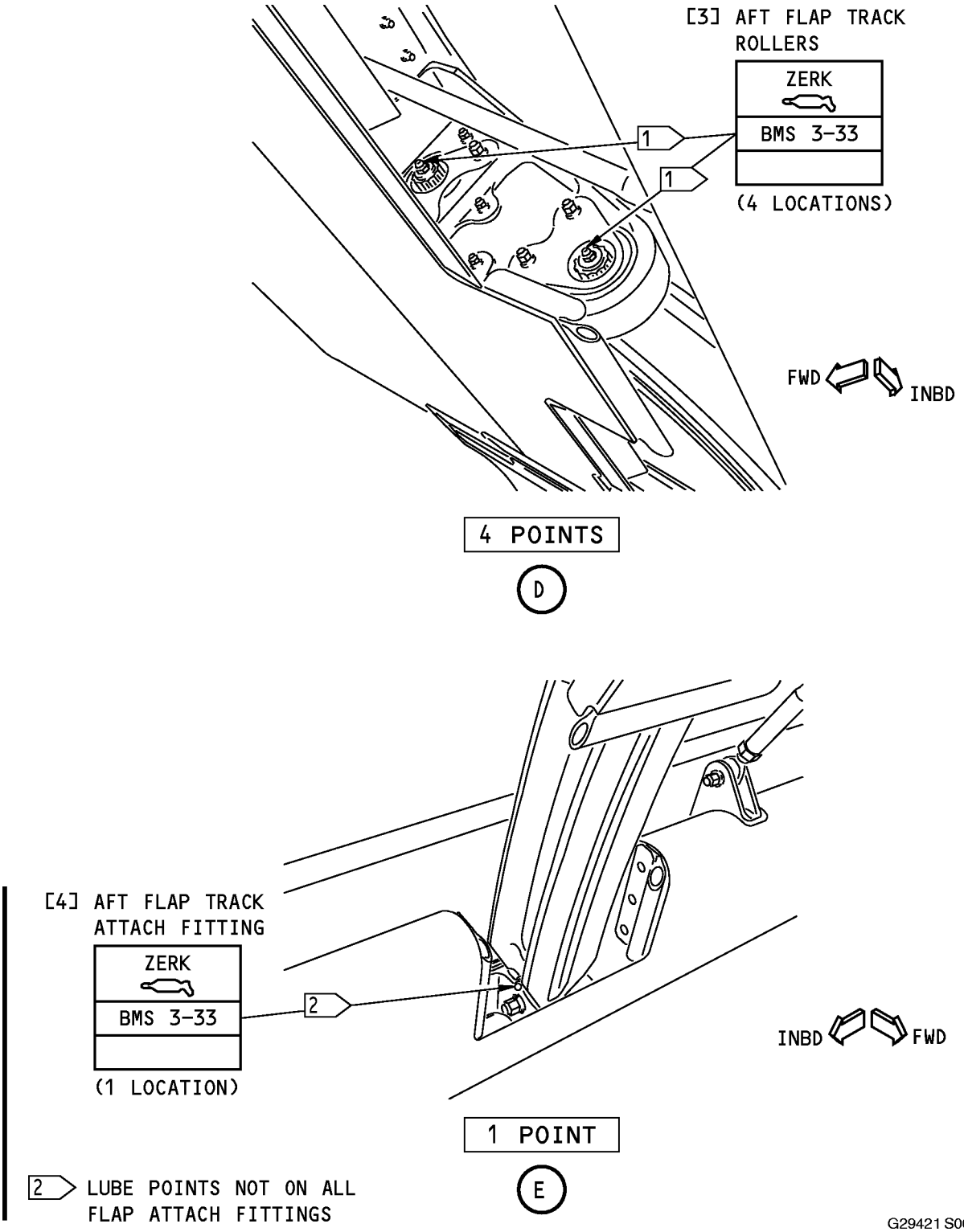
Inboard Main Flap and Aft Flap Roller and Linkage Servicing
Figure 311 (Sheet 1 of 7)/12-22-51-990-811



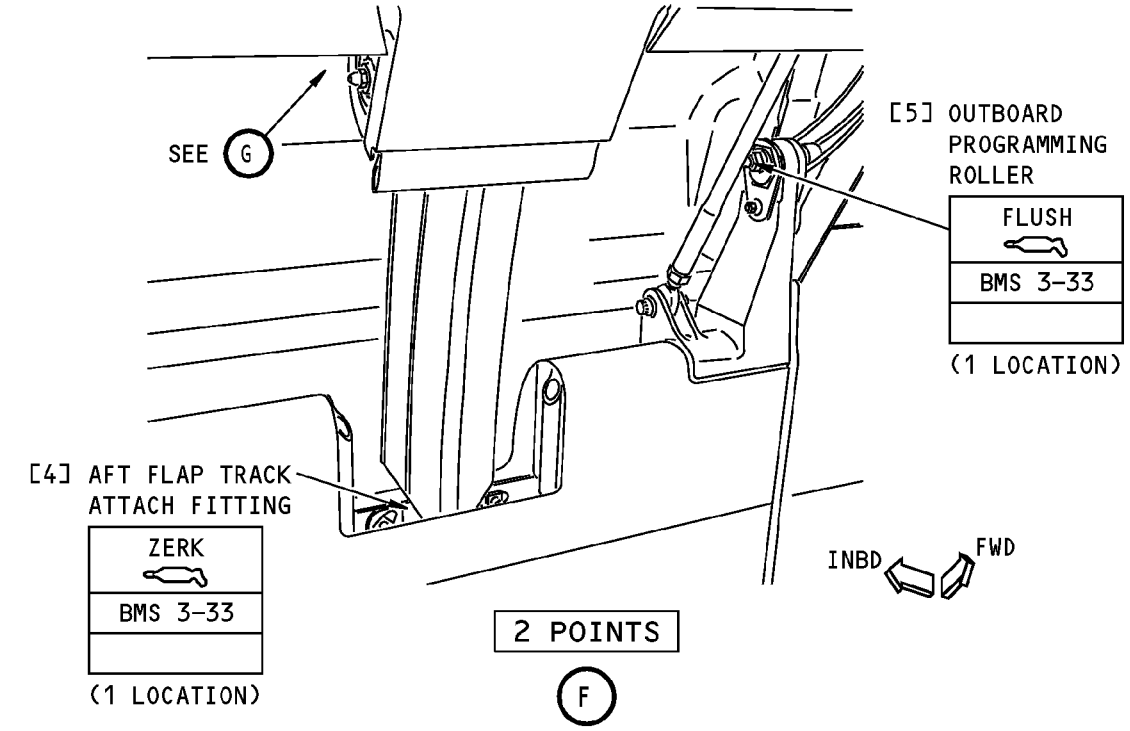
Inboard Main Flap and Aft Flap Roller and Linkage Servicing
Figure 311 (Sheet 2 of 7)/12-22-51-990-811

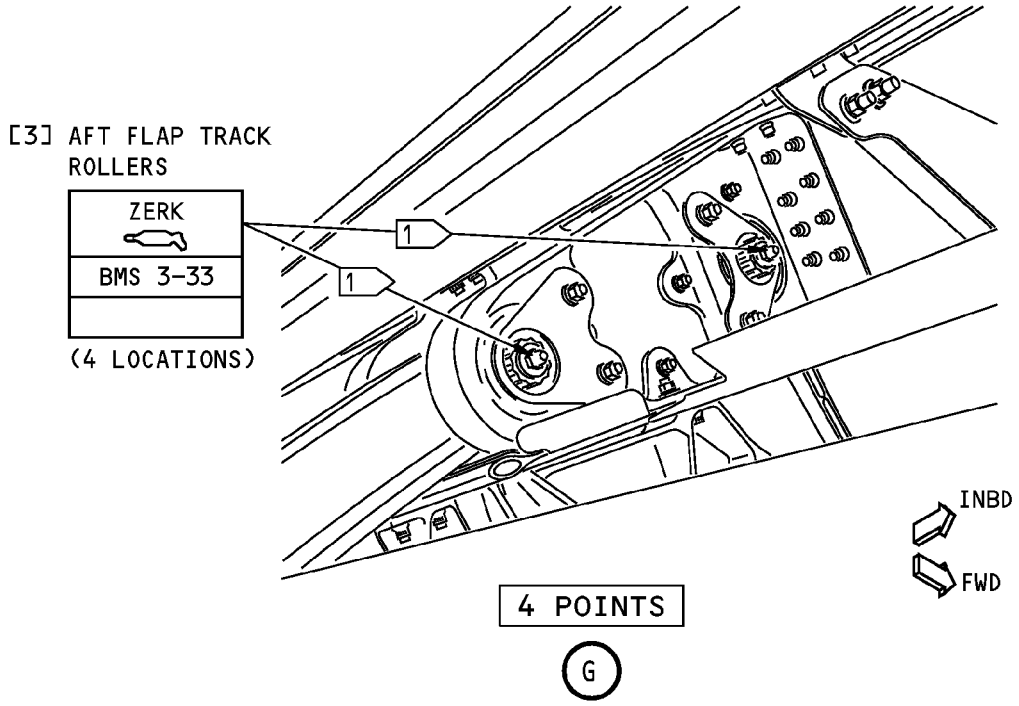


Inboard Main Flap and Aft Flap Roller and Linkage Servicing
Figure 311 (Sheet 3 of 7)/12-22-51-990-811

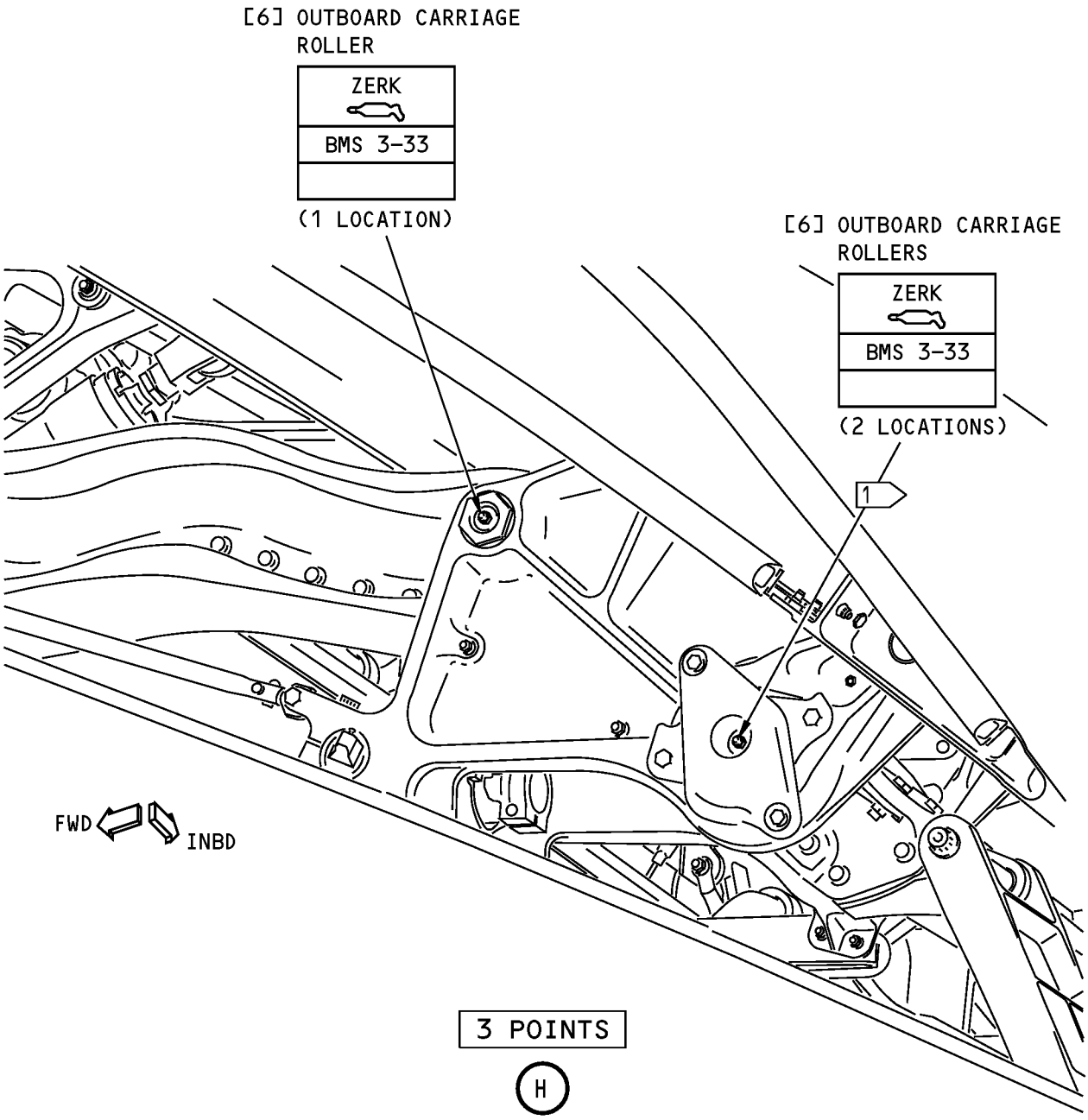


Inboard Main Flap and Aft Flap Roller and Linkage Servicing
Figure 311 (Sheet 4 of 7)/12-22-51-990-811

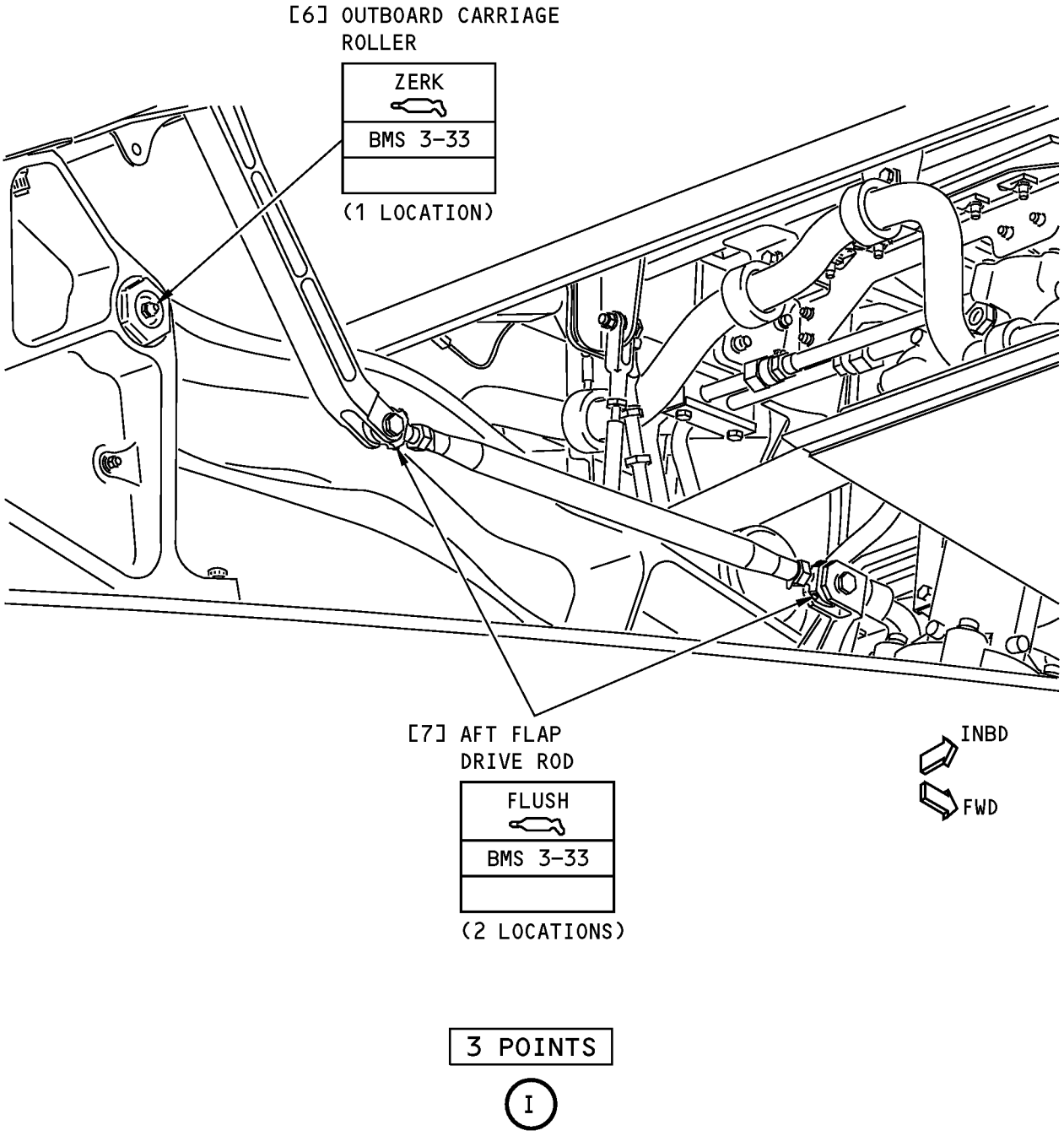




Inboard Main Flap and Aft Flap Roller and Linkage Servicing
Figure 311 (Sheet 5 of 7)/12-22-51-990-811



Inboard Main Flap and Aft Flap Roller and Linkage Servicing
Figure 311 (Sheet 6 of 7)/12-22-51-990-811



Inboard Main Flap and Aft Flap Roller and Linkage Servicing
Figure 311 (Sheet 7 of 7)/12-22-51-990-811

TASK 12-22-51-640-812

13. Outboard Main Flap and Aft Flap Roller and Linkage Lubrication

(Figure 312)

A. General

(1) This procedure is a scheduled maintenance task.

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
D00633	Grease - Aircraft General Purpose	BMS3-33

D. 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

E. Prepare for the Lubrication

SUBTASK 12-22-51-860-017

(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 12-22-51-040-012

(2) Do this task: Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801.

F. Outboard Main Flap and Aft Flap Roller and Linkage Lubrication

(Table 312)

SUBTASK 12-22-51-640-029

(1) Lubricate the inboard main flap carriage:

(a) Lubricate the main flap carriage rollers with grease, D00633.

(b) Lubricate the carriage attach fittings and links with grease, D00633.

(c) Lubricate the aft flap drive mechanism 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.

SUBTASK 12-22-51-640-030

(2) Lubricate the outboard main flap carriage:

(a) Lubricate the main flap carriage rollers with grease, D00633.

(b) Lubricate the carriage attach fittings and links with grease, D00633.

(c) Lubricate the aft flap drive mechanism 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.

SUBTASK 12-22-51-640-031

(3) Lubricate the rollers on the aft flap tracks and aft flap track attachment fittings with grease, D00633.

SUBTASK 12-22-51-640-032

(4) Lubricate the inboard and outboard aft flap programming rollers with grease, D00633.

G. Put the Airplane Back to Its Initial Condition

SUBTASK 12-22-51-440-012

(1) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

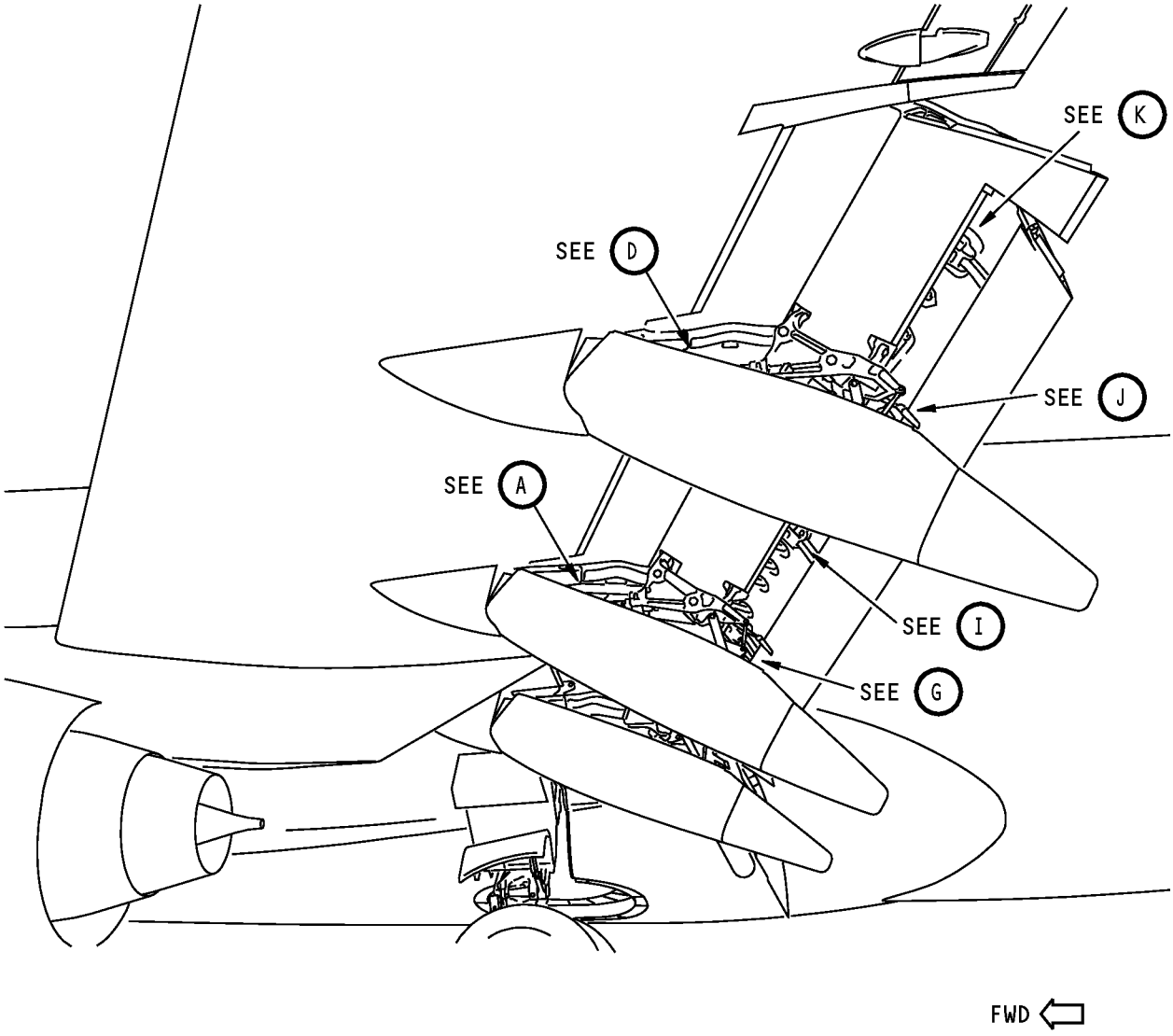
SUBTASK 12-22-51-860-018

(2) Retract the trailing edge flaps to the UP position. To retract them, do this task: Retract the Trailing Edge Flaps, TASK 27-51-00-860-804.

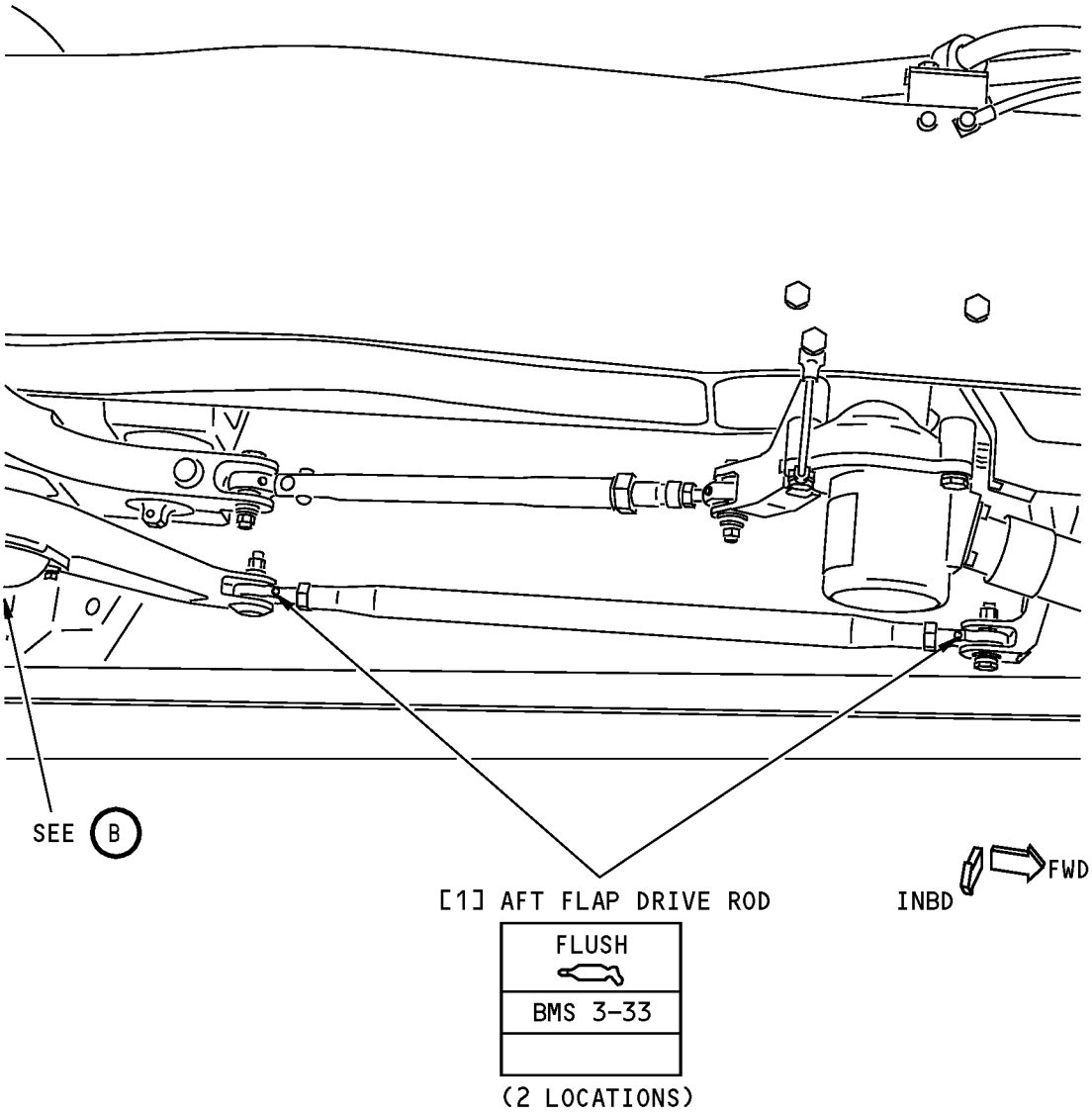
Table 312/12-22-51-993-832 Outboard Main Flap and Aft Flap Roller and Linkage Servicing (Fig. 312)

Item No.	Nomenclature	Lubricant	Method of Application	Number of Locations
1	Aft Flap Drive Rod	grease, D00633	Flush	4
2	Aft Flap Pushrod	grease, D00633	Flush	4
3	Inboard Carriage Roller	grease, D00633	Zerk	4
4	Bellcrank	grease, D00633	Zerk	2
5	Inboard Carriage Forward Attach Fitting	grease, D00633	Zerk	1
6	Inboard Carriage Attach Link	grease, D00633	Zerk	2
7	Outboard Carriage Roller	grease, D00633	Zerk	4
8	Outboard Carriage Forward Attach Fitting	grease, D00633	Zerk	1
9	Outboard Carriage Attach Link	grease, D00633	Zerk	2
10	Inboard Programming Roller	grease, D00633	Flush	1
11	Aft Flap Track Attach Fitting	grease, D00633	Flush	4
12	Aft Flap Track Roller	grease, D00633	Flush	16
13	Outboard Programming Roller	grease, D00633	Flush	1

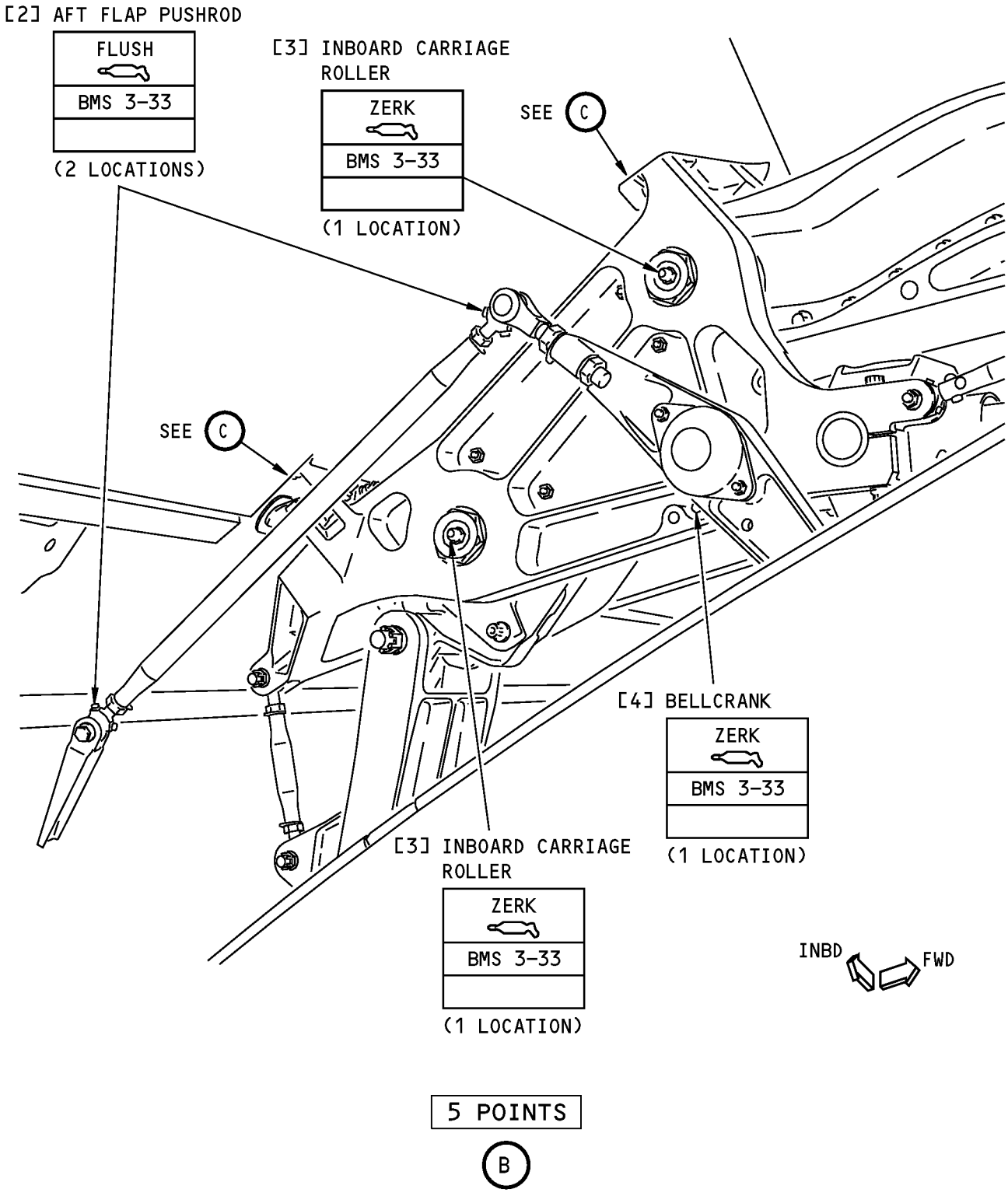
END OF TASK



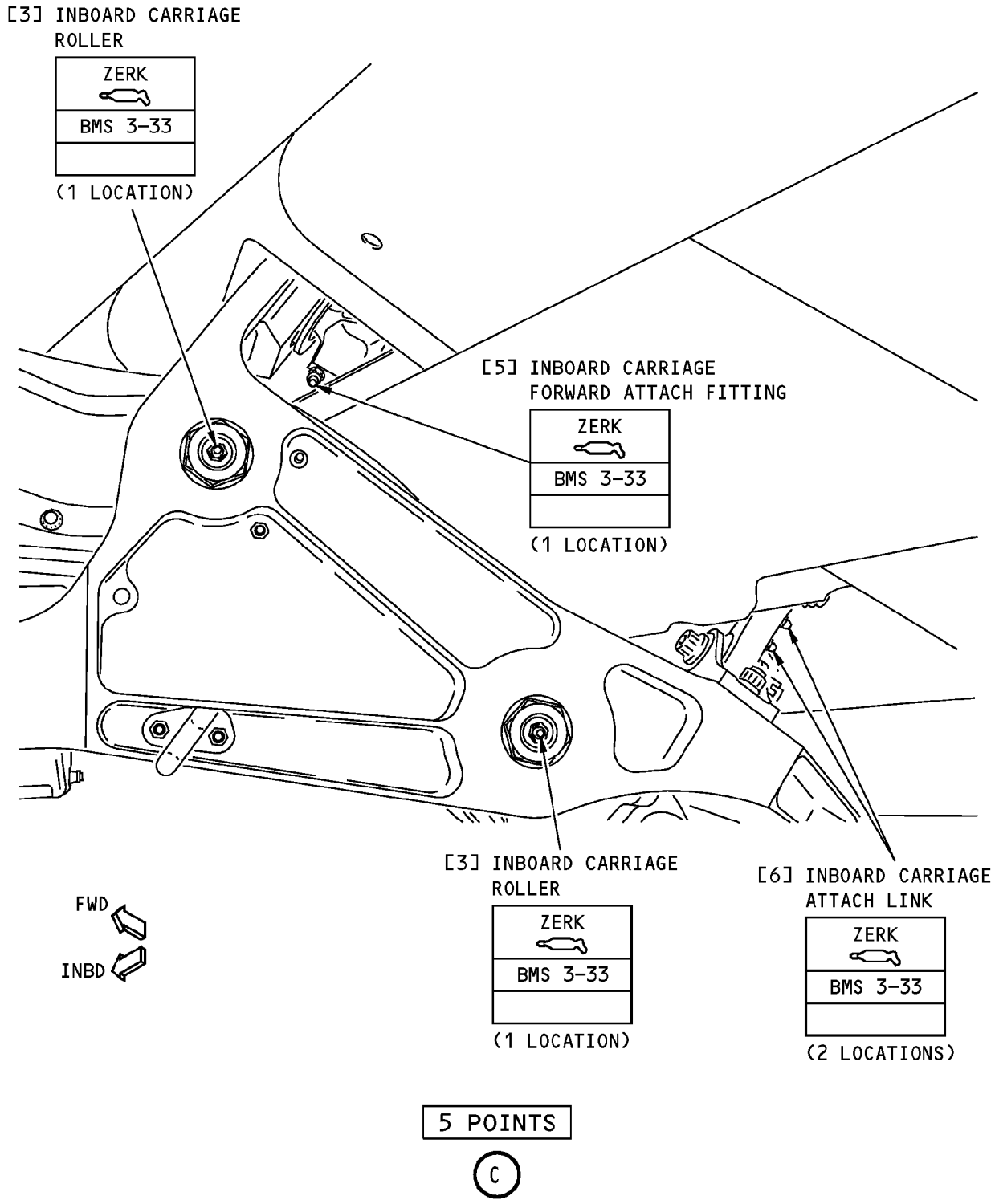
Outboard Main Flap and Aft Flap Roller and Linkage Servicing
Figure 312 (Sheet 1 of 11)/12-22-51-990-812



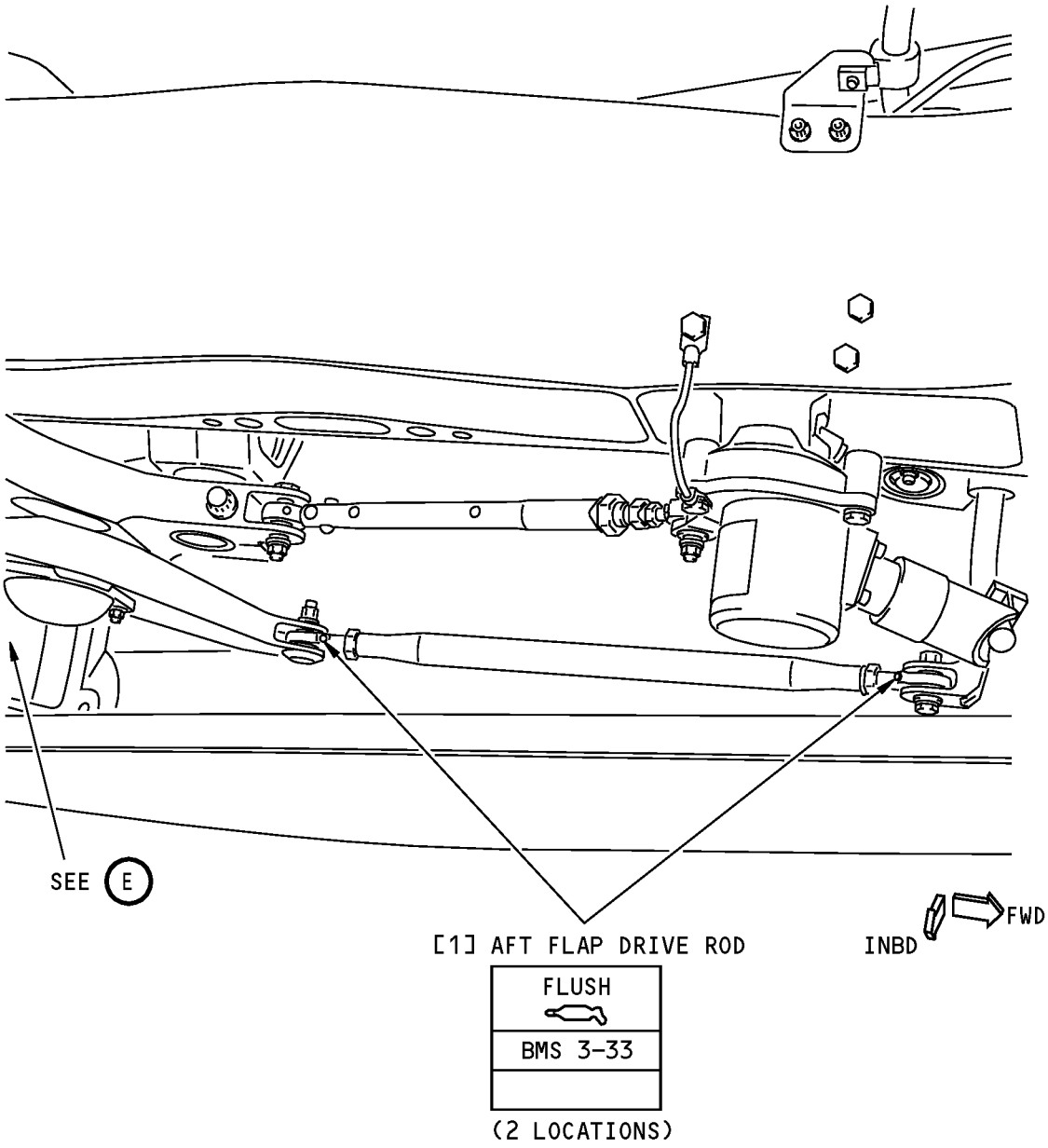
Outboard Main Flap and Aft Flap Roller and Linkage Servicing
Figure 312 (Sheet 2 of 11)/12-22-51-990-812



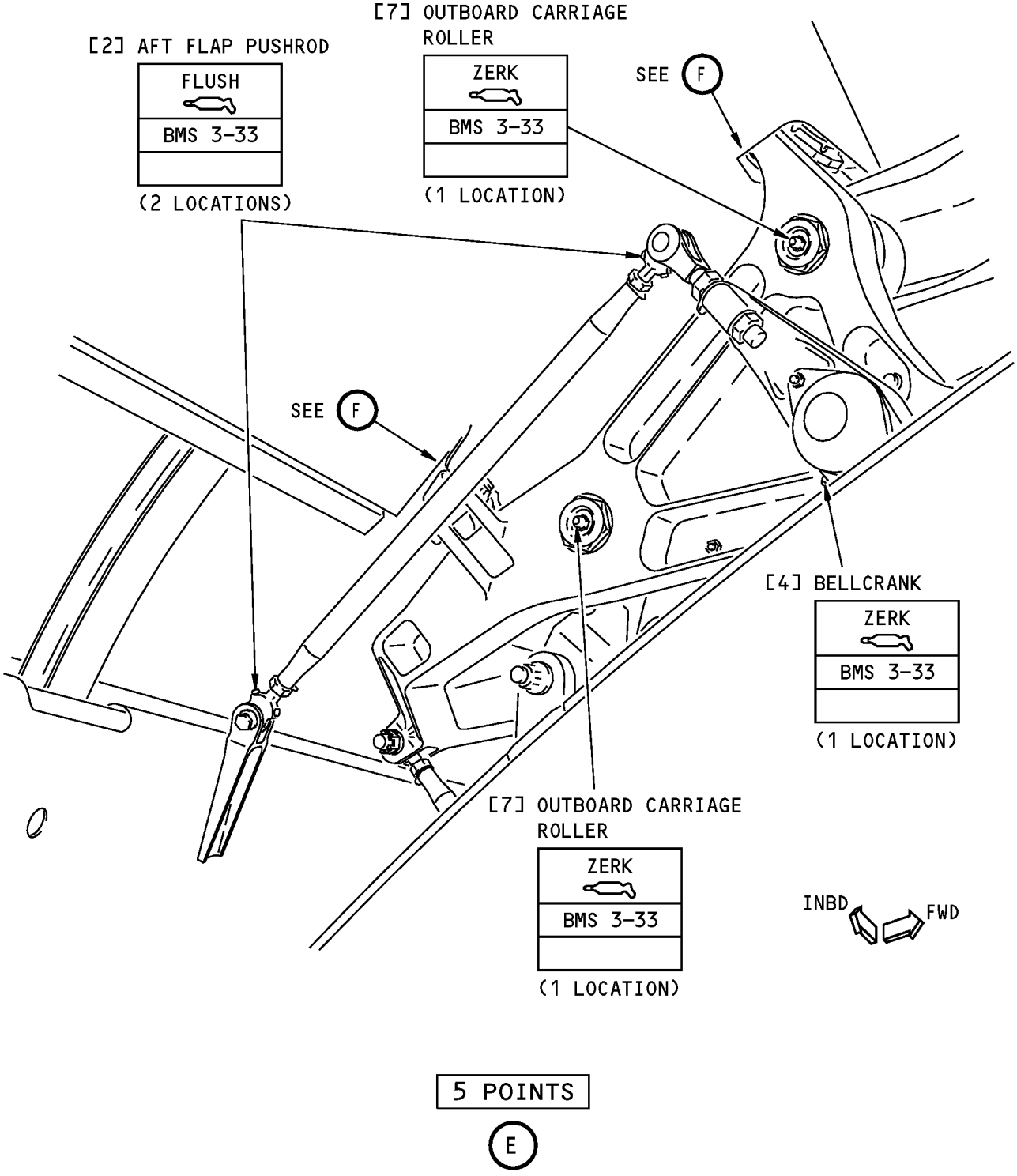
Outboard Main Flap and Aft Flap Roller and Linkage Servicing
Figure 312 (Sheet 3 of 11)/12-22-51-990-812



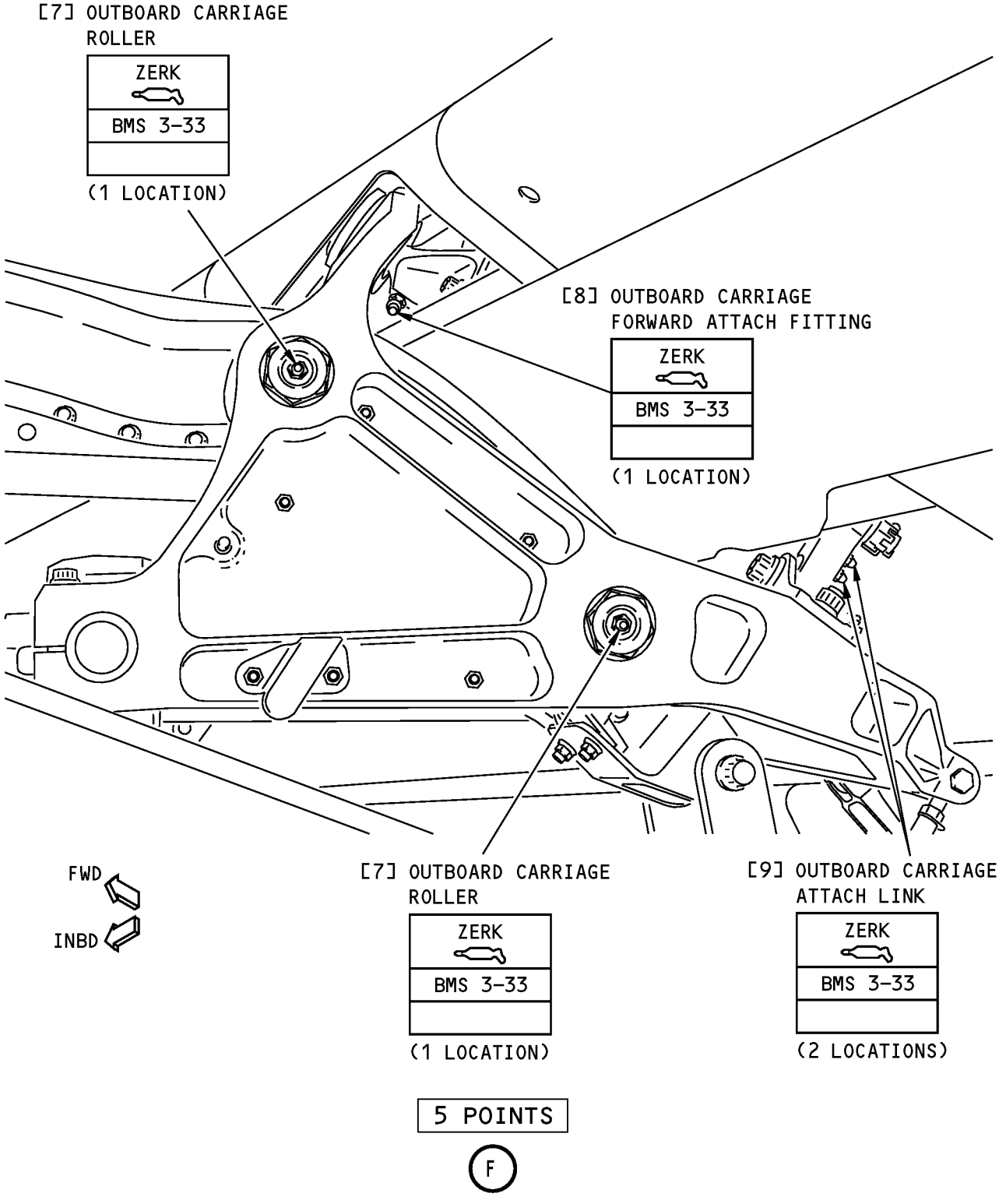
Outboard Main Flap and Aft Flap Roller and Linkage Servicing
Figure 312 (Sheet 4 of 11)/12-22-51-990-812



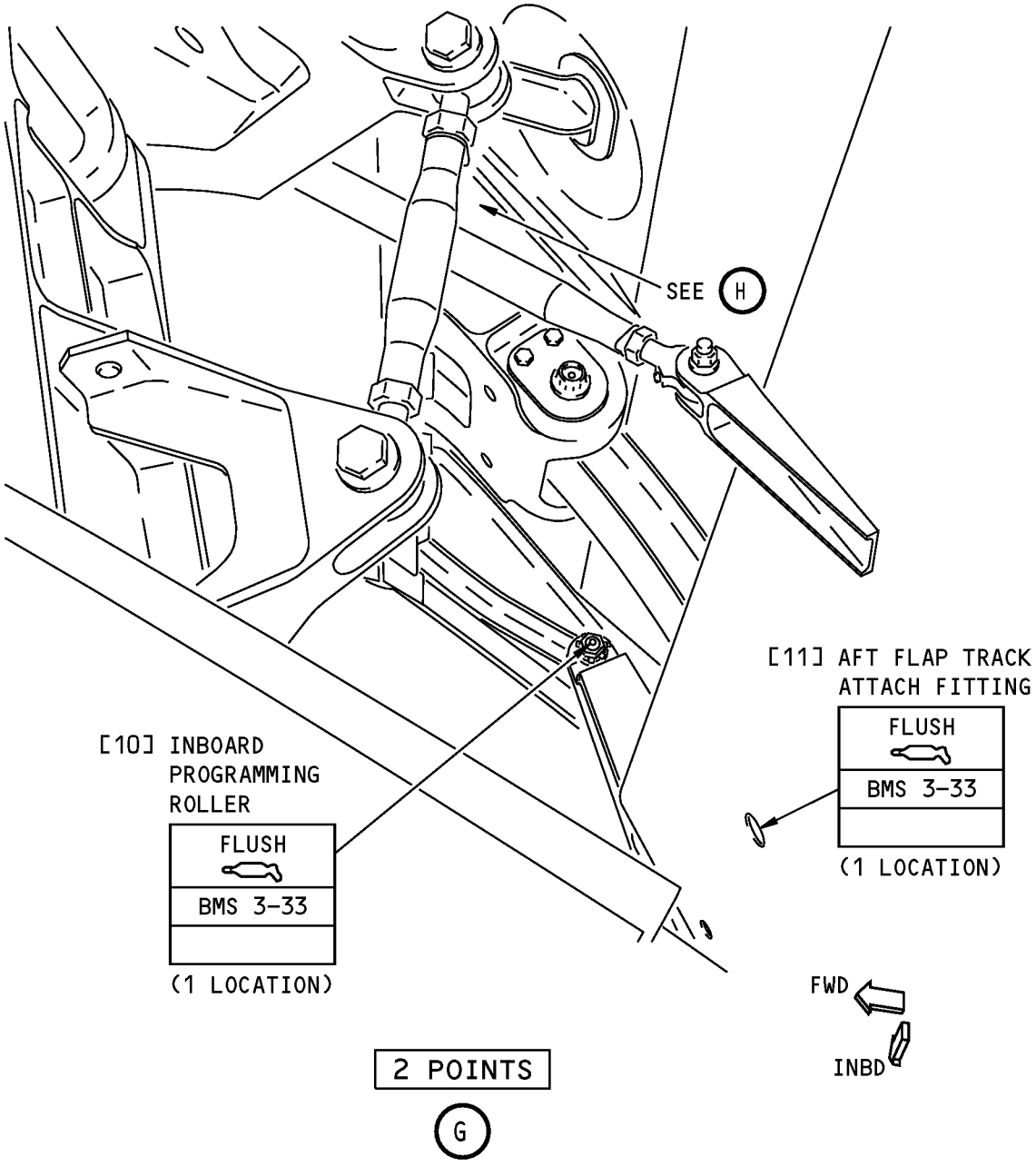
Outboard Main Flap and Aft Flap Roller and Linkage Servicing
Figure 312 (Sheet 5 of 11)/12-22-51-990-812



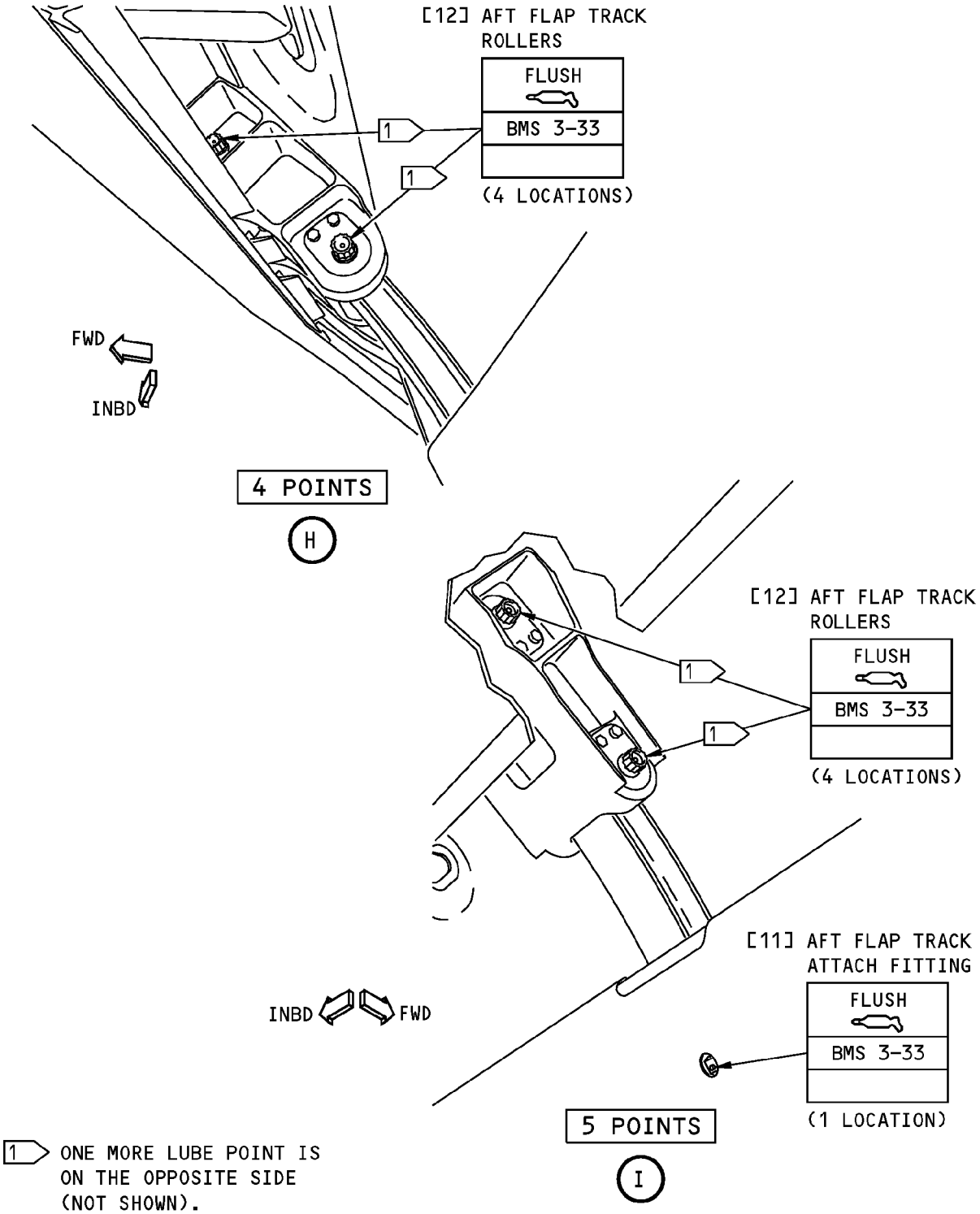
Outboard Main Flap and Aft Flap Roller and Linkage Servicing
Figure 312 (Sheet 6 of 11)/12-22-51-990-812



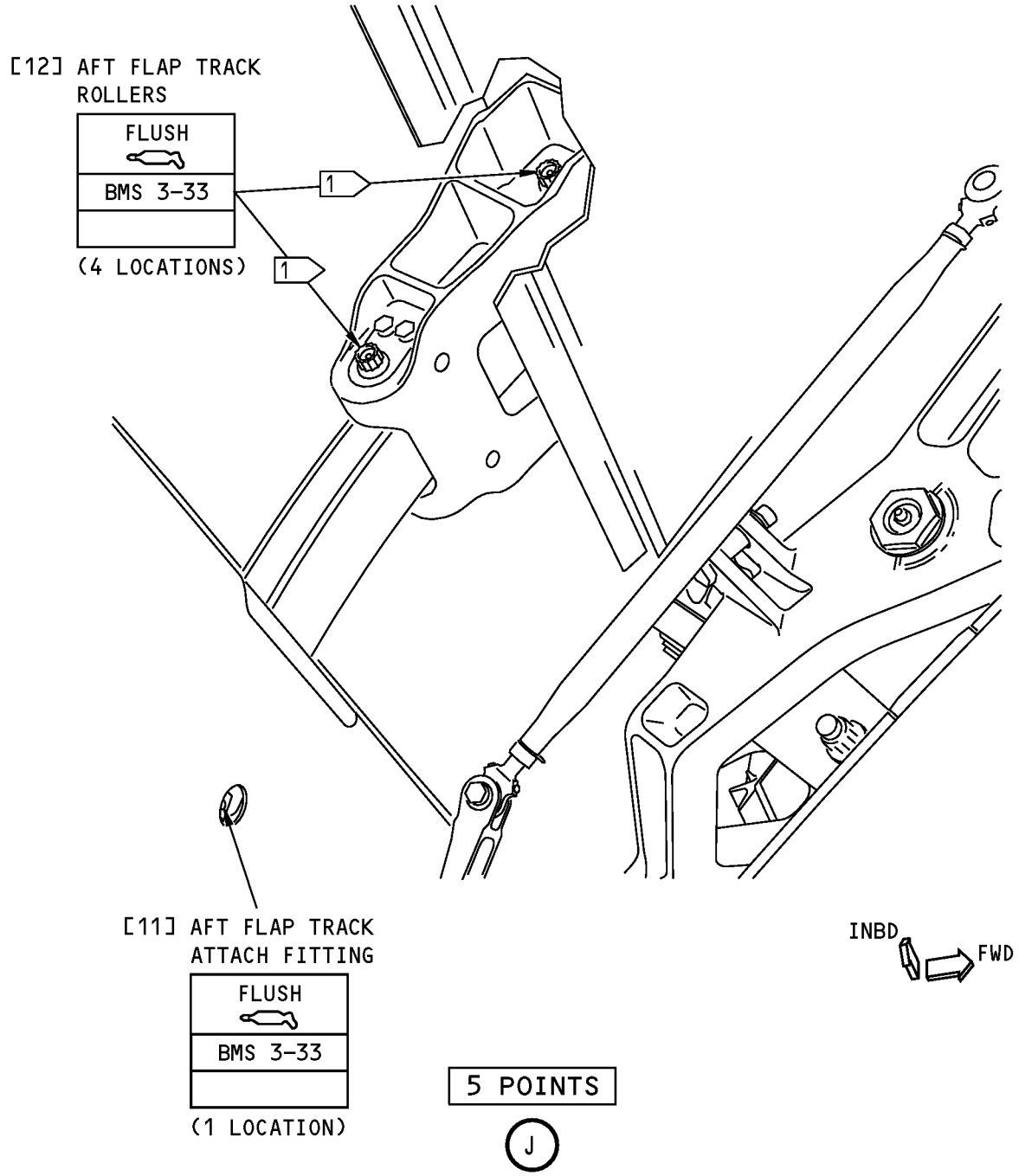
Outboard Main Flap and Aft Flap Roller and Linkage Servicing
Figure 312 (Sheet 7 of 11)/12-22-51-990-812



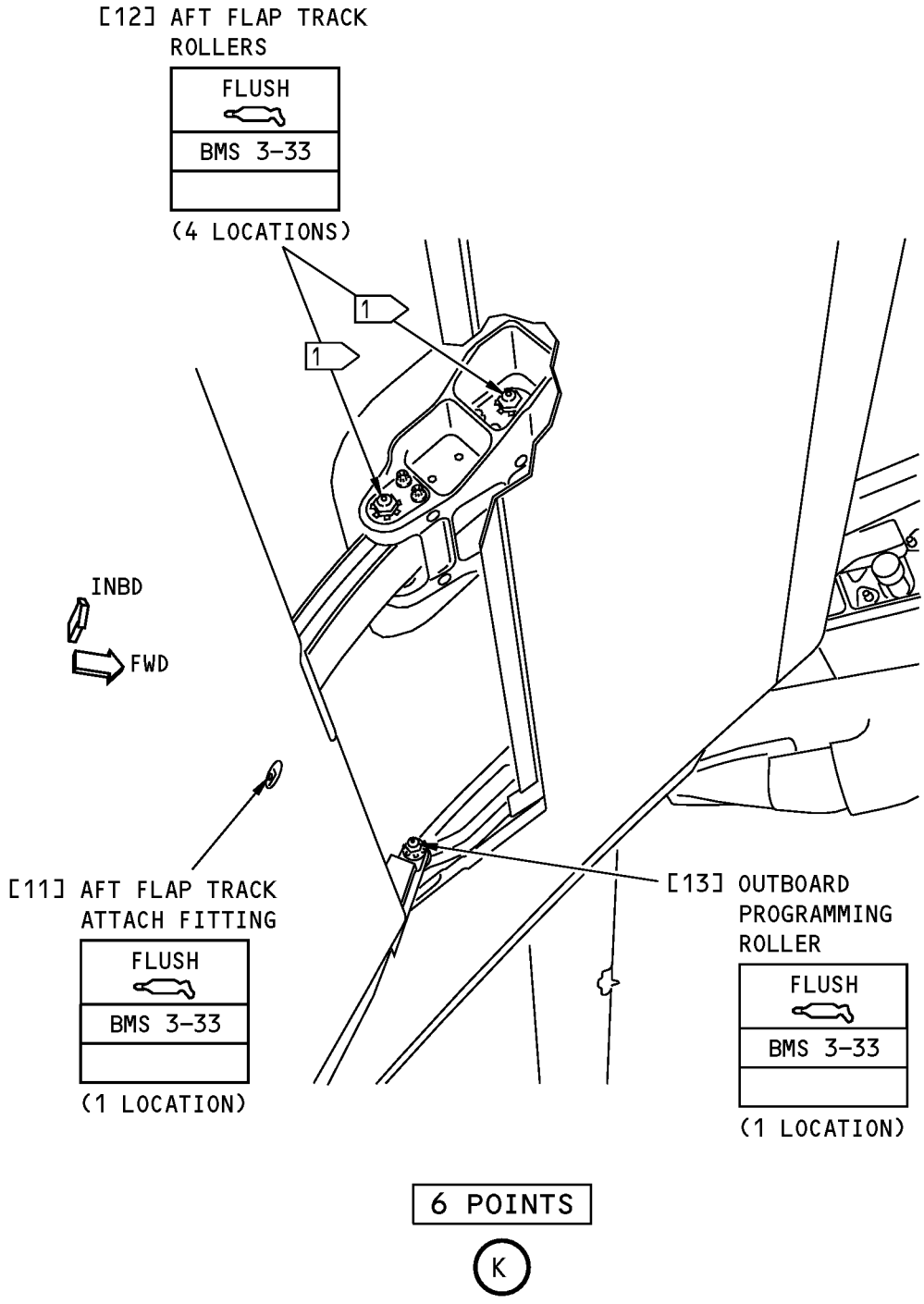
Outboard Main Flap and Aft Flap Roller and Linkage Servicing
Figure 312 (Sheet 8 of 11)/12-22-51-990-812



Outboard Main Flap and Aft Flap Roller and Linkage Servicing
Figure 312 (Sheet 9 of 11)/12-22-51-990-812



Outboard Main Flap and Aft Flap Roller and Linkage Servicing
Figure 312 (Sheet 10 of 11)/12-22-51-990-812



Outboard Main Flap and Aft Flap Roller and Linkage Servicing
Figure 312 (Sheet 11 of 11)/12-22-51-990-812

TASK 12-22-51-640-813

14. Inboard Flap Inboard Flap Track Lubrication

(Figure 313)

A. General

(1) This procedure is a scheduled maintenance task.

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)

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

E. 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.

F. Inboard Flap Inboard Flap Track Lubrication

(Table 313)

SUBTASK 12-22-51-640-033

(1) Lubricate the flap track attachment link with grease, D00633.

SUBTASK 12-22-51-640-034

(2) Lubricate the flap track forward attach fitting with grease, D00633.

G. Put the Airplane Back to Its Usual Condition

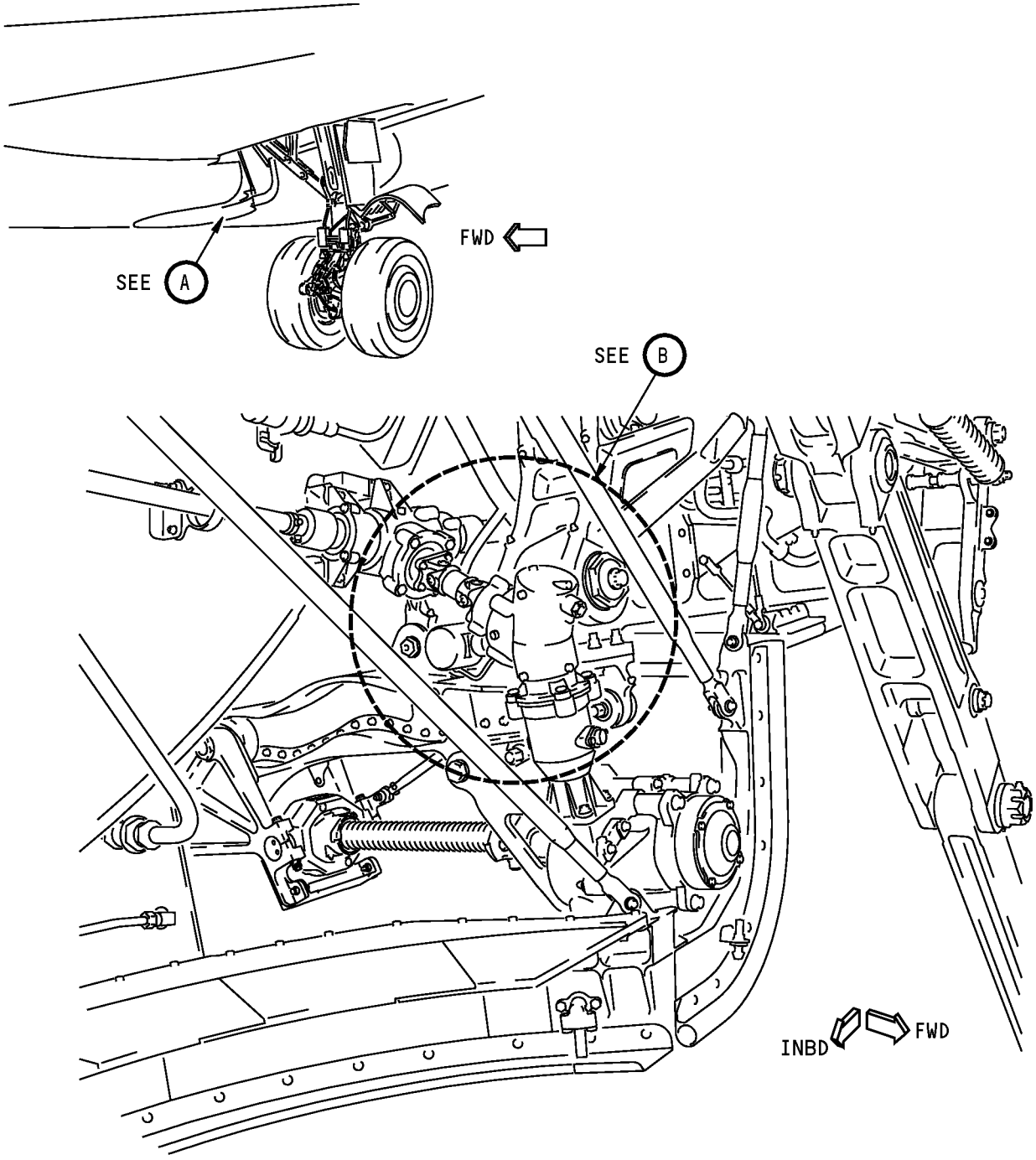
SUBTASK 12-22-51-440-013

(1) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

Table 313/12-22-51-993-833 Inboard Flap Inboard Flap Track Servicing (Fig. 313)

Item No.	Nomenclature	Lubricant	Method of Application	Number of Locations
1	Flap Track Attach Link	grease, D00633	Zerk	2
2	Flap Track Forward Attach Fitting	grease, D00633	Zerk	1

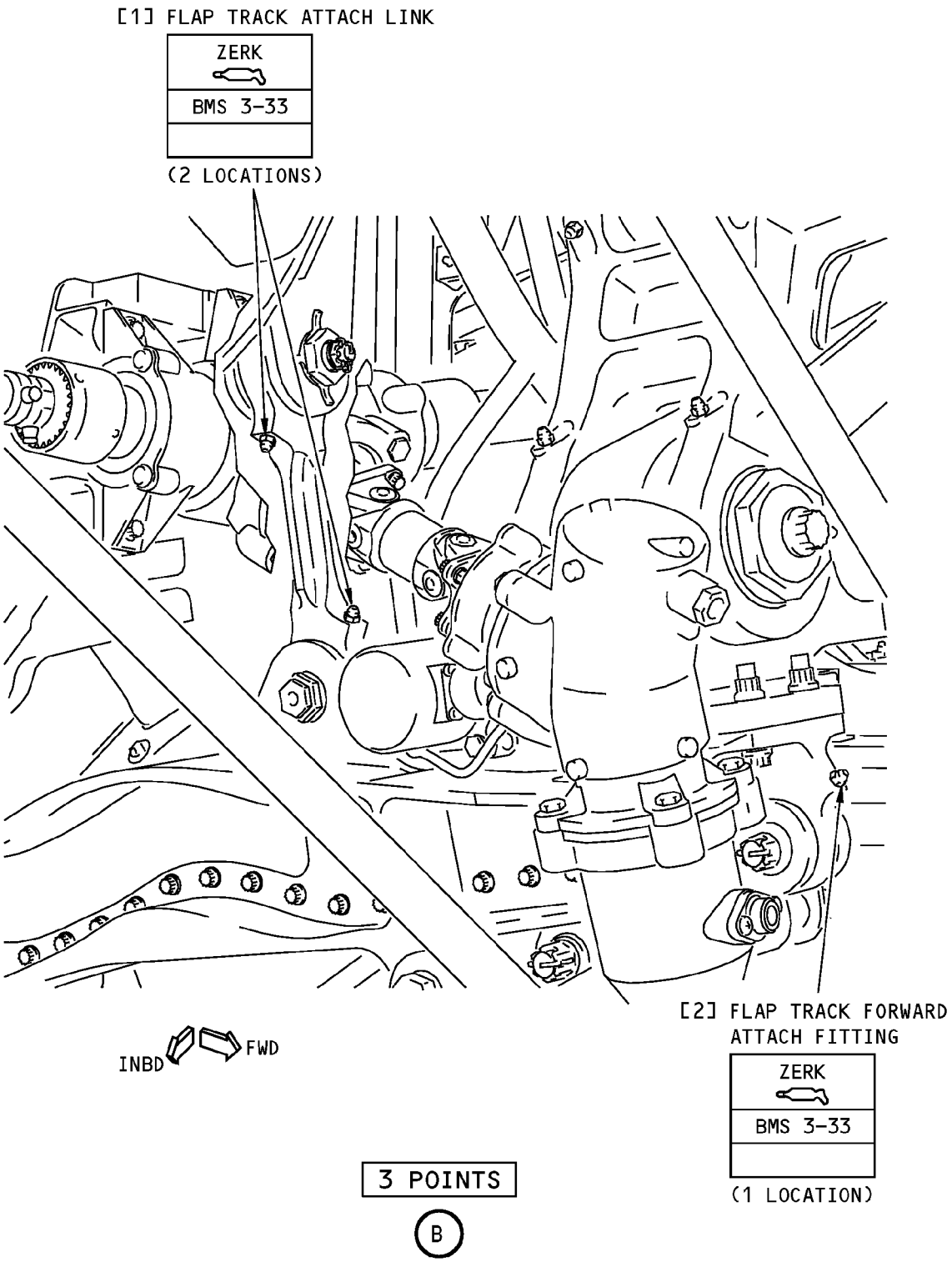
END OF TASK



MAIN LANDING GEAR WHEEL WELL
(LEFT SIDE IS SHOWN, RIGHT SIDE IS EQUIVALENT)

A

Inboard Flap Inboard Flap Track Servicing
Figure 313 (Sheet 1 of 2)/12-22-51-990-813



Inboard Flap Inboard Flap Track Servicing
Figure 313 (Sheet 2 of 2)/12-22-51-990-813

TASK 12-22-51-640-814

15. Inboard Flap Outboard Flap Track Lubrication

(Figure 314)

A. General

(1) This procedure is a scheduled maintenance task.

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)
27-51-18-000-801	Inboard Flap Support Forward Fairing Removal (P/B 401)
27-51-18-400-801	Inboard Flap Support Forward Fairing Installation (P/B 401)

C. Consumable Materials

Reference	Description	Specification
D00633	Grease - Aircraft General Purpose	BMS3-33

D. Location Zones

Zone	Area
542	Left Wing - Fairing Flap Support No. 3
642	Right Wing - Fairing Flap Support No. 6

E. 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 12-22-51-010-001

(2) Do this task: Inboard Flap Support Forward Fairing Removal, TASK 27-51-18-000-801.

F. Inboard Flap Outboard Flap Track Lubrication

(Table 314)

SUBTASK 12-22-51-640-035

(1) Lubricate the flap track forward attach fitting with grease, D00633.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 12-22-51-410-001

(1) Do this task: Inboard Flap Support Forward Fairing Installation, TASK 27-51-18-400-801.

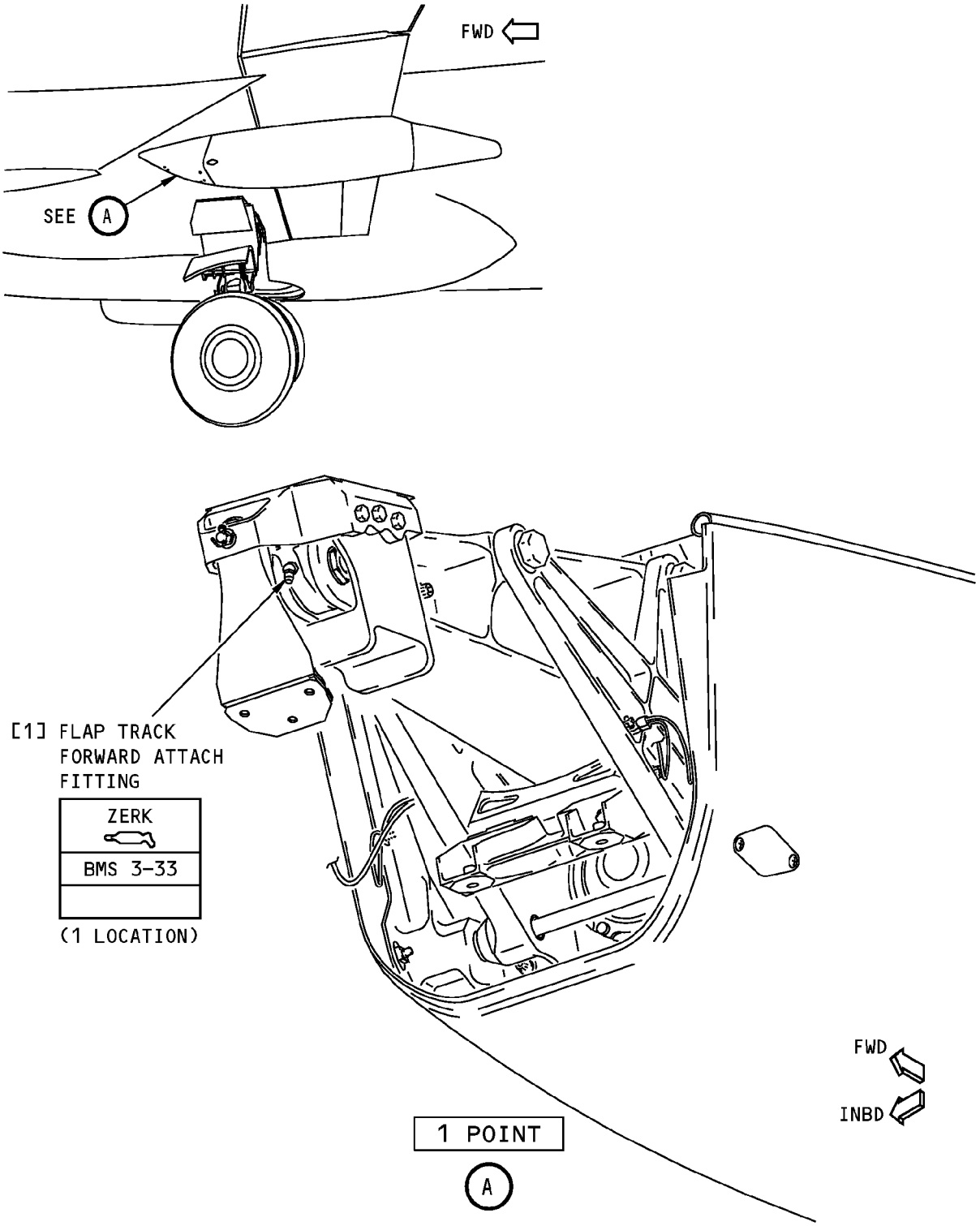
SUBTASK 12-22-51-440-014

(2) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

Table 314/12-22-51-993-834 Inboard Flap Outboard Flap Track Servicing (Fig. 314)

Item No.	Nomenclature	Lubricant	Method of Application	Number of Locations
1	Flap Track Forward Attach Fitting	grease, D00633	Zerk	1

END OF TASK



Inboard Flap Outboard Flap Track Servicing
Figure 314/12-22-51-990-814

TASK 12-22-51-640-815

16. Outboard Flap Inboard Flap Track Lubrication

(Figure 315)

A. General

(1) This procedure is a scheduled maintenance task.

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)
27-51-28-000-803	Outboard Flap Inboard Support Forward Fairing Removal (P/B 401)
27-51-28-400-803	Outboard Flap Inboard Support Forward Fairing Installation (P/B 401)

C. Consumable Materials

Reference	Description	Specification
D00633	Grease - Aircraft General Purpose	BMS3-33

D. Location Zones

Zone	Area
543	Left Wing - Fairing Flap Support No. 2
643	Right Wing - Fairing Flap Support No. 7

E. 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 12-22-51-010-002

(2) Do this task: Outboard Flap Inboard Support Forward Fairing Removal, TASK 27-51-28-000-803.

F. Outboard Flap Inboard Flap Track Lubrication

(Table 315)

SUBTASK 12-22-51-640-036

(1) Lubricate the flap track forward attach fitting with grease, D00633.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 12-22-51-410-002

(1) Do this task: Outboard Flap Inboard Support Forward Fairing Installation, TASK 27-51-28-400-803.

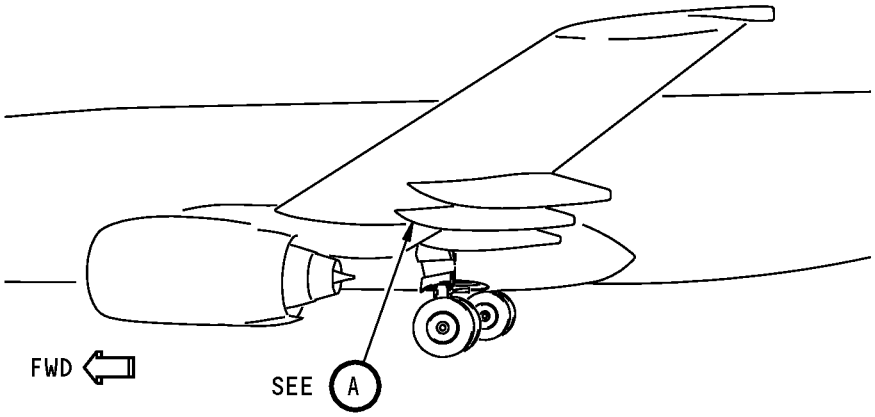
SUBTASK 12-22-51-440-015

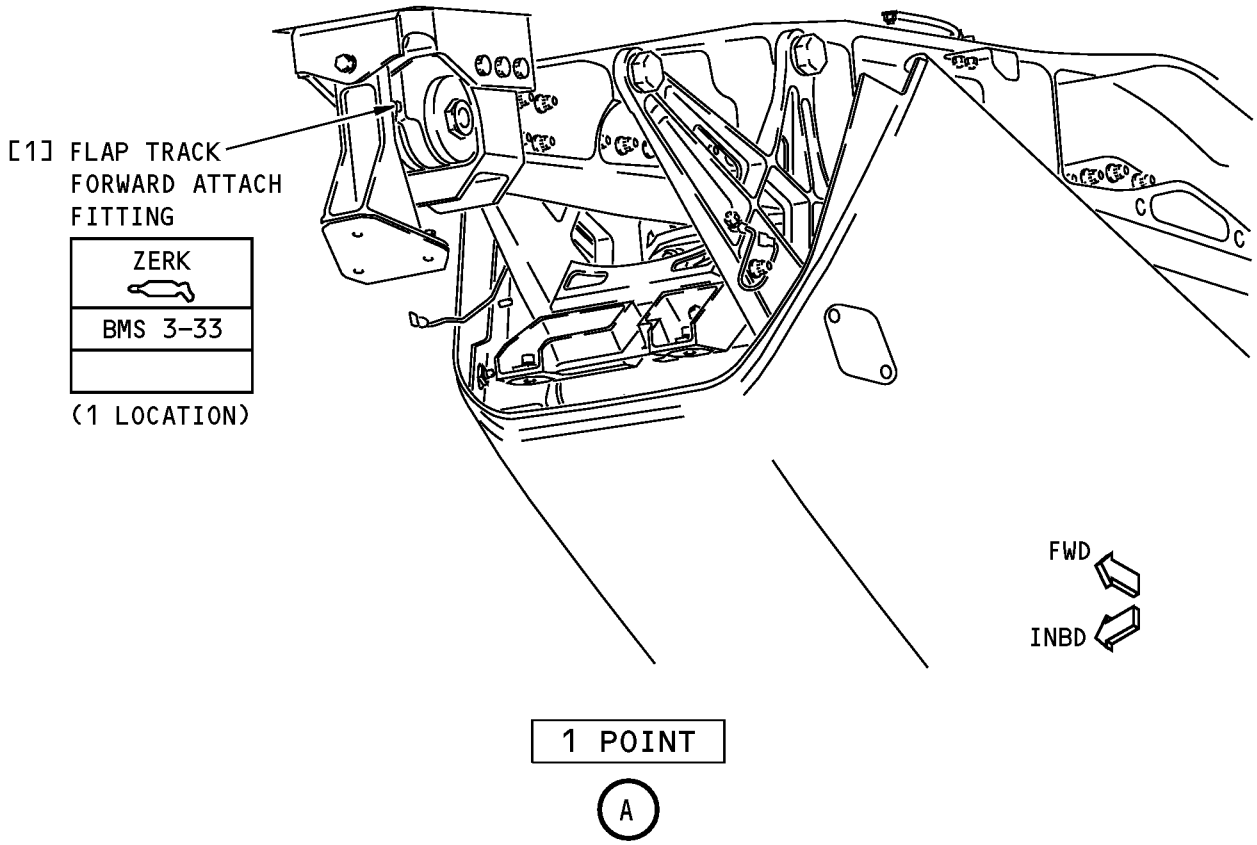
(2) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

Table 315/12-22-51-993-835 Outboard Flap Inboard Flap Track Servicing (Fig. 315)

Item No.	Nomenclature	Lubricant	Method of Application	Number of Locations
1	Flap Track Forward Attach Fitting	grease, D00633	Zerk	1

END OF TASK





Outboard Flap Inboard Flap Track Servicing
Figure 315/12-22-51-990-815

TASK 12-22-51-640-816

17. Outboard Flap Outboard Flap Track Lubrication

(Figure 316)

A. General

(1) This procedure is a scheduled maintenance task.

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)
27-51-28-000-801	Outboard Flap Outboard Support Forward Fairing Removal (P/B 401)
27-51-28-400-801	Outboard Flap Outboard Support Forward Fairing Installation (P/B 401)

C. Consumable Materials

Reference	Description	Specification
D00633	Grease - Aircraft General Purpose	BMS3-33

D. Location Zones

Zone	Area
544	Left Wing - Fairing Flap Support No. 1
644	Right Wing - Fairing Flap Support No. 8

E. 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 12-22-51-010-003

(2) Do this task: Outboard Flap Outboard Support Forward Fairing Removal, TASK 27-51-28-000-801.

F. Outboard Flap Outboard Flap Track Lubrication

(Table 316)

SUBTASK 12-22-51-640-037

(1) Lubricate the flap track forward attach fitting with grease, D00633.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 12-22-51-410-003

(1) Do this task: Outboard Flap Outboard Support Forward Fairing Installation, TASK 27-51-28-400-801.

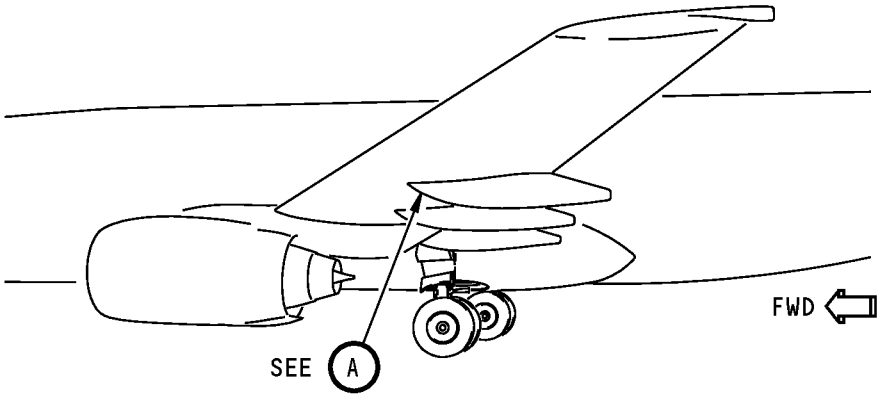
SUBTASK 12-22-51-440-016

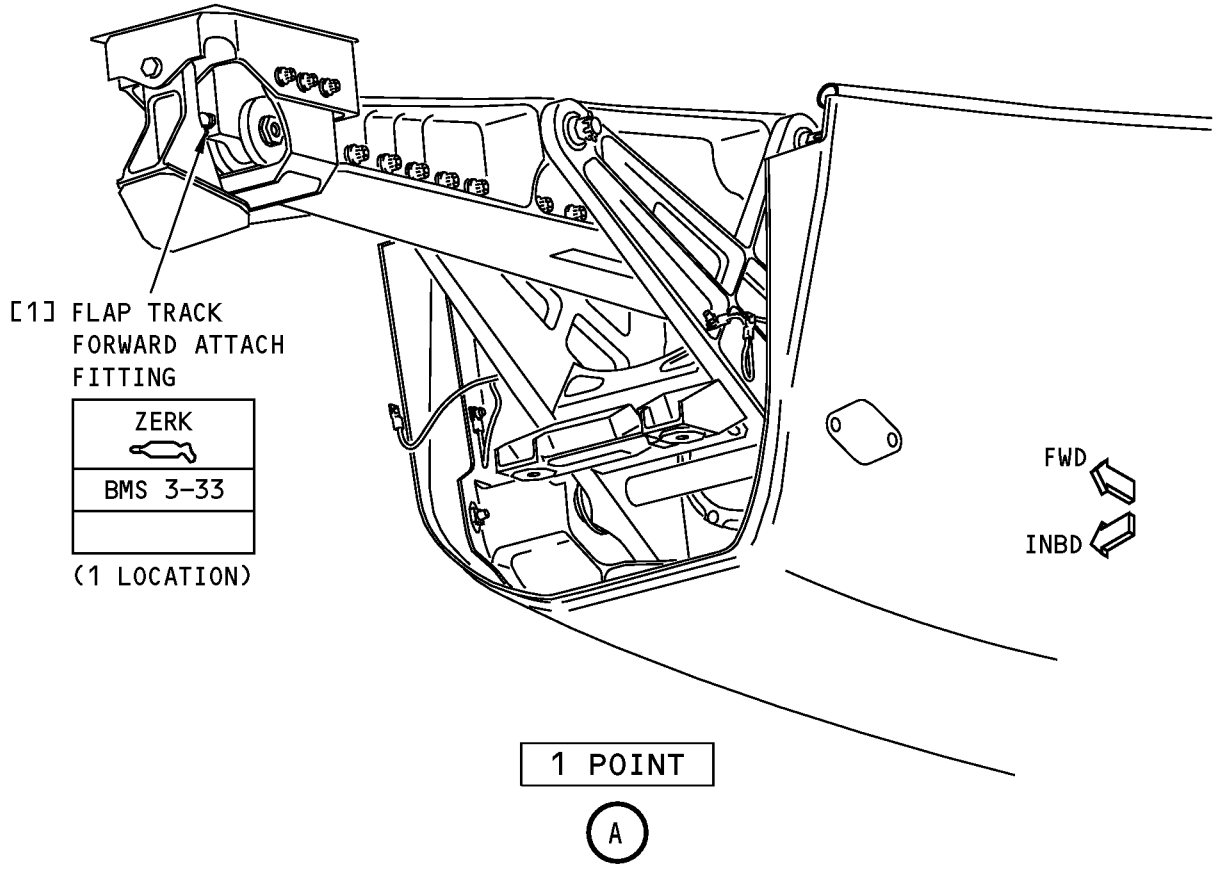
(2) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

Table 316/12-22-51-993-836 Outboard Flap Outboard Flap Track Servicing (Fig. 316)

Item No.	Nomenclature	Lubricant	Method of Application	Number of Locations
1	Flap Track Forward Attach Fitting	grease, D00633	Zerk	1

END OF TASK





Outboard Flap Outboard Flap Track Servicing
Figure 316/12-22-51-990-816

TASK 12-22-51-610-801

18. Trailing Edge Flap Power Drive Unit Servicing

(Figure 317)

A. General

(1) This procedure is a scheduled maintenance task.

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)

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
102	Packing	27-51-55-02-440	HAP 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 Lubrication

SUBTASK 12-22-51-040-017

(1) Do this task: Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801.

G. Trailing Edge Flap Power Drive Unit Servicing

(Table 317)

SUBTASK 12-22-51-610-001

(1) Do a check of the fluid level in the Power Drive Unit (PDU):

(a) Remove the fill plug [101] and new packing [102] from the fill port.

(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 PDU with fluid, D00467 to the level of the fill port.

(d) Lubricate the new packing [102] with fluid.

(e) Install the fill plug [101] and new packing [102] in the fill port.

(f) Tighten the fill plug [101] to 110-130 pound-inches (12.4-14.6 newton-meters) more than the run-on torque.

(g) Install lockwire on the fill plug [101].

H. Put the Airplane Back to Its Usual Condition

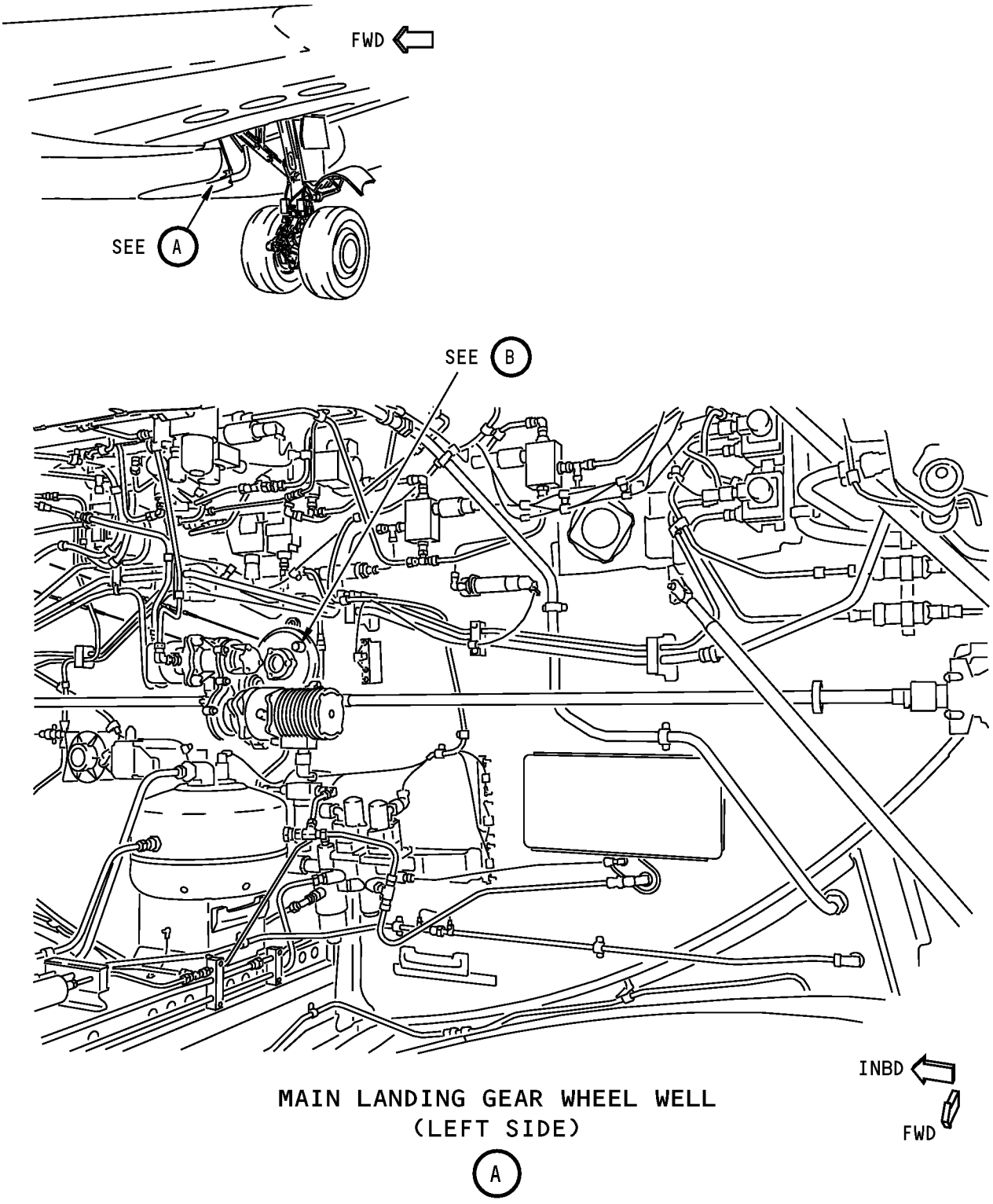
SUBTASK 12-22-51-440-017

(1) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

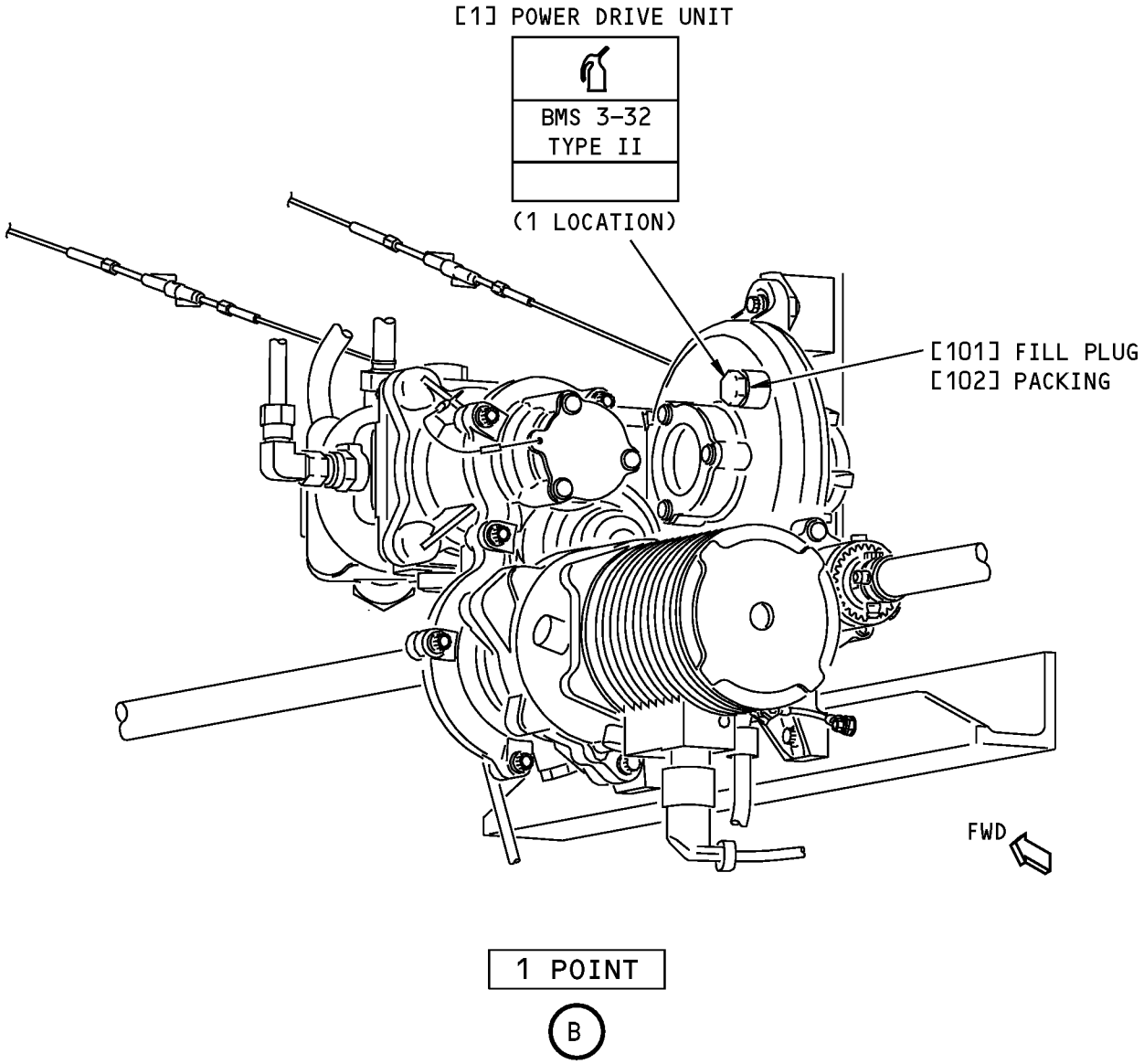
Table 317/12-22-51-993-837 Trailing Edge Flap Power Drive Unit Servicing (Fig. 317)

Item No.	Nomenclature	Lubricant	Method of Application	Number of Locations
1	Power Drive Unit	fluid, D00467	Fill	1

END OF TASK



Trailing Edge Flap Power Drive Unit Servicing
Figure 317 (Sheet 1 of 2)/12-22-51-990-817



Trailing Edge Flap Power Drive Unit Servicing
Figure 317 (Sheet 2 of 2)/12-22-51-990-817

TASK 12-22-51-610-802

19. Trailing Edge Flap Power Drive Unit Fluid Replacement

(Figure 318)

A. General

(1) This procedure is a scheduled maintenance task.

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)

C. Tools/Equipment

Reference	Description
STD-3938	Container - Oil Resistant, 10 gallon (38 l)

D. Consumable Materials

Reference	Description	Specification
D00467	Fluid - Landing Gear Shock Strut	BMS3-32, Type II

E. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
122	Packing	27-51-55-02-440	HAP ALL
124	Packing	27-51-55-02-440	HAP 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

G. 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.

H. Trailing Edge Flap Power Drive Unit Oil Replacement

(Table 318)

SUBTASK 12-22-51-480-001

(1) Put a 10 gallon (38 l) oil resistant container, STD-3938 below the power drive unit to catch the fluid.

SUBTASK 12-22-51-680-001

(2) Drain the fluid from the Power Drive Unit (PDU):

(a) Remove the drain plug [123] and packing [124] from the drain port.

(b) Wait for the fluid, D00467 to drain from the drain port.

(c) Lubricate the new packing [124] with fluid.

(d) Install the drain plug [123] and new packing [124] in the fill port.

(e) Tighten the drain plug [123] to 110-130 pound-inches (12.4-14.6 newton-meters) more than the run-on torque.

(f) Install lockwire on the drain plug [123].

SUBTASK 12-22-51-610-002

(3) Fill the PDU with fluid:

(a) Remove the fill plug [121] and packing [122] from the fill port.

(b) Add fluid, D00467 to the PDU until the fluid is at the level of the fill port.

(c) Lubricate the new packing [122] with fluid.

(d) Install the fill plug [121] and new packing [122] in the fill port.

(e) Tighten the fill plug [121] to 110-130 pound-inches (12.4-14.6 newton-meters) more than the run-on torque.

(f) Install lockwire on the fill plug [121].

I. Put the Airplane Back to Its Usual Condition

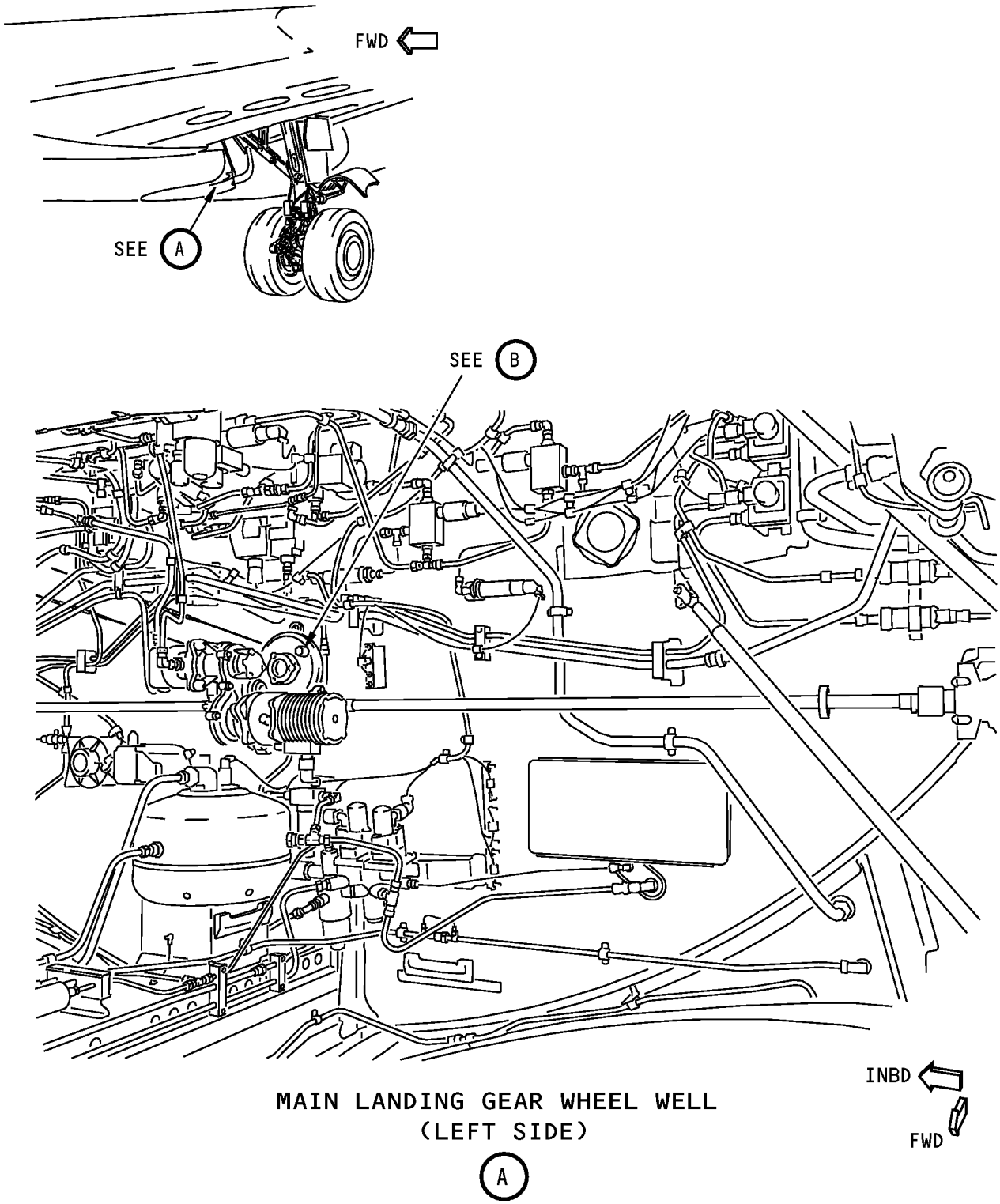
SUBTASK 12-22-51-440-018

(1) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

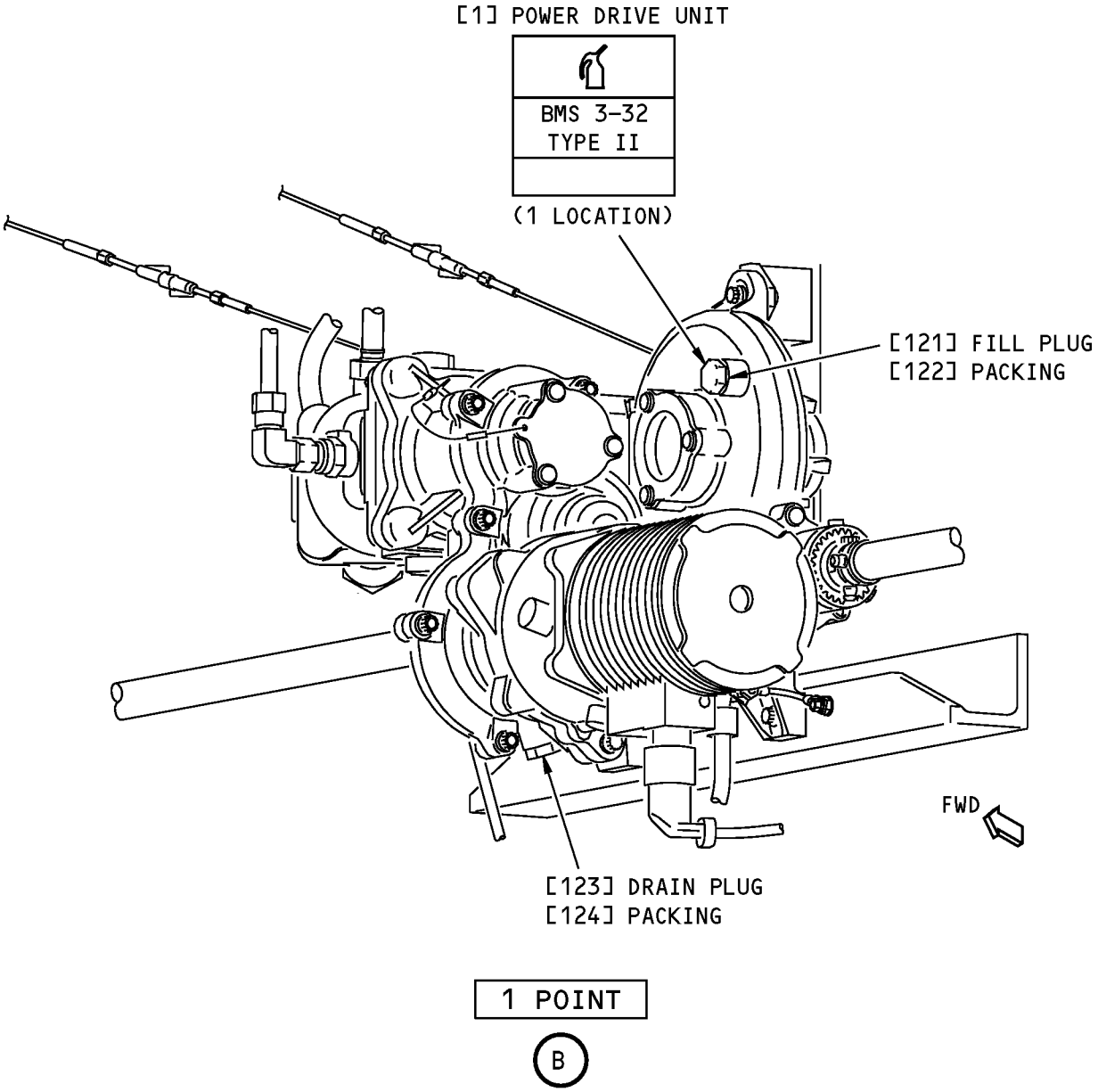
Table 318/12-22-51-993-838 Trailing Edge Flap Power Drive Unit Fluid Replacement (Fig. 318)

Item No.	Nomenclature	Lubricant	Method of Application	Number of Locations
1	Power Drive Unit	fluid, D00467	Fill	1

END OF TASK



Trailing Edge Flap Power Drive Unit Fluid Replacement
Figure 318 (Sheet 1 of 2)/12-22-51-990-818



Trailing Edge Flap Power Drive Unit Fluid Replacement
Figure 318 (Sheet 2 of 2)/12-22-51-990-818

TASK 12-22-51-610-803

20. Trailing Edge Flap Transmission Servicing

(Figure 319)

A. General

(1) This procedure is a scheduled maintenance task.

(2) 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
142	Packing	27-51-31-01-190	HAP 001-013, 015-026, 028-030
		27-51-31-02-190	HAP 001-013, 015-026, 028-030
		27-51-31-13-165	HAP 031-054, 101-999
		27-51-31-15-125	HAP 031-054, 101-999
		27-51-41-01-230	HAP 001-013, 015-026, 028-030
		27-51-41-02-190	HAP 001-013, 015-026, 028-036
		27-51-41-03-172	HAP 031-054, 101-999
		27-51-41-07-190	HAP 031-054, 101-999

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 12-22-51-610-003

(1) Do a check of the fluid level transmission:

(a) Remove the fill plug [141] and packing [142] from the fill port.

(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, D00590or fluid, D00467to the level of the fill port.

(d) Lubricate the new packing [142] with fluid.

(e) Install the fill plug [141] and new packing [142] in the fill port.

(f) Tighten the fill plug [141] to 110-130 pound-inches (12.4-14.6 newton-meters) more than the run-on torque.

(g) Install lockwire on the fill plug [141].

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.

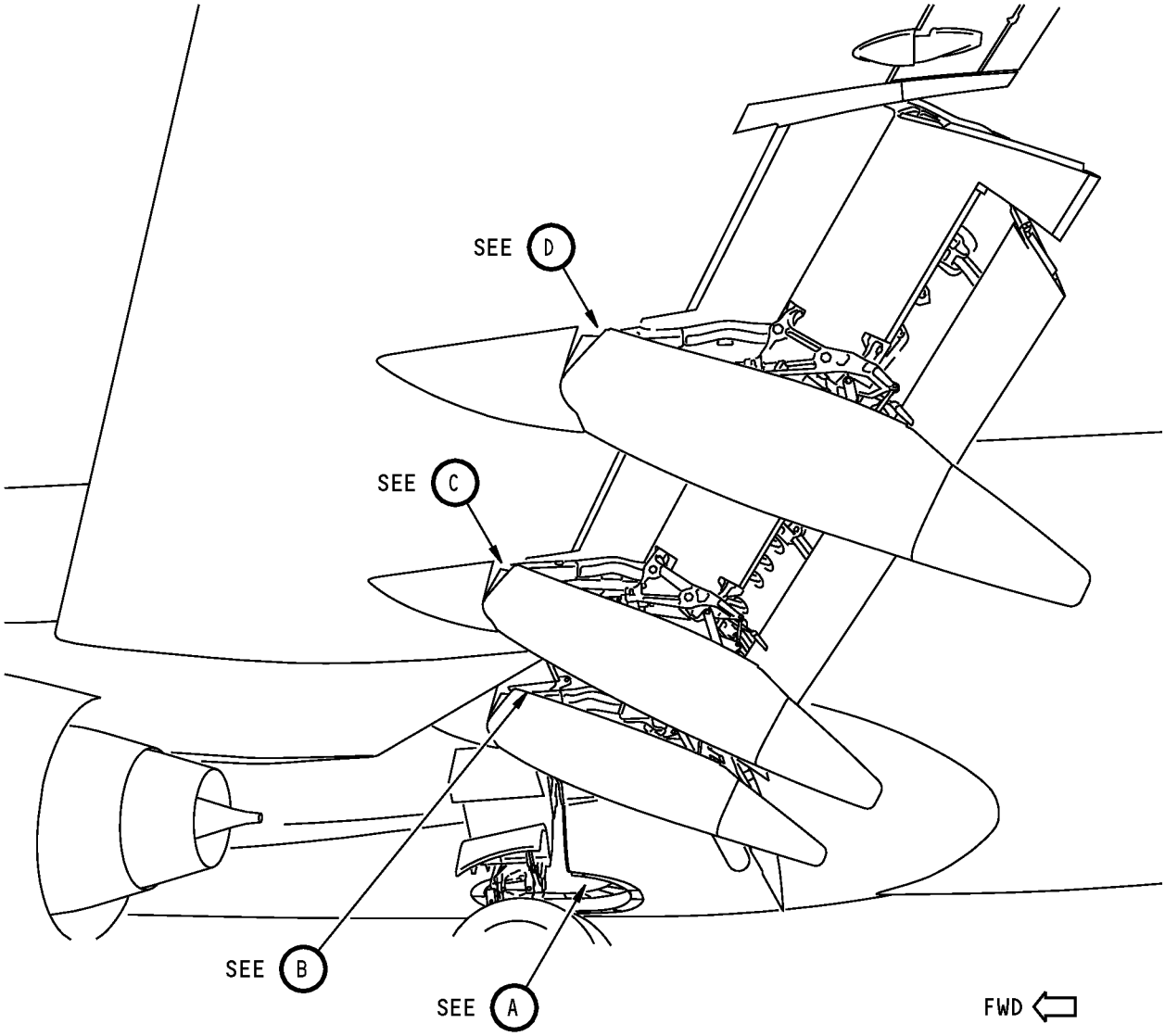
Table 319/12-22-51-993-839 Trailing Edge Flap Transmission Servicing (Fig. 319)

Item No.	Nomenclature	Lubricant	Method of Application	Number of Locations
1	Transmission No. 4 (Transmission No. 5 is Equivalent)	Brayco 795 fluid, D00590orfluid, D00467	Fill	1
2	Transmission No. 3 (Transmission No. 6 is Equivalent)	Brayco 795 fluid, D00590orfluid, D00467	Fill	1
3	Transmission No. 2 (Transmission No. 7 is Equivalent)	Brayco 795 fluid, D00590orfluid, D00467	Fill	1
4	Transmission No. 1 (Transmission No. 8 is Equivalent)	Brayco 795 fluid, D00590orfluid, D00467	Fill	

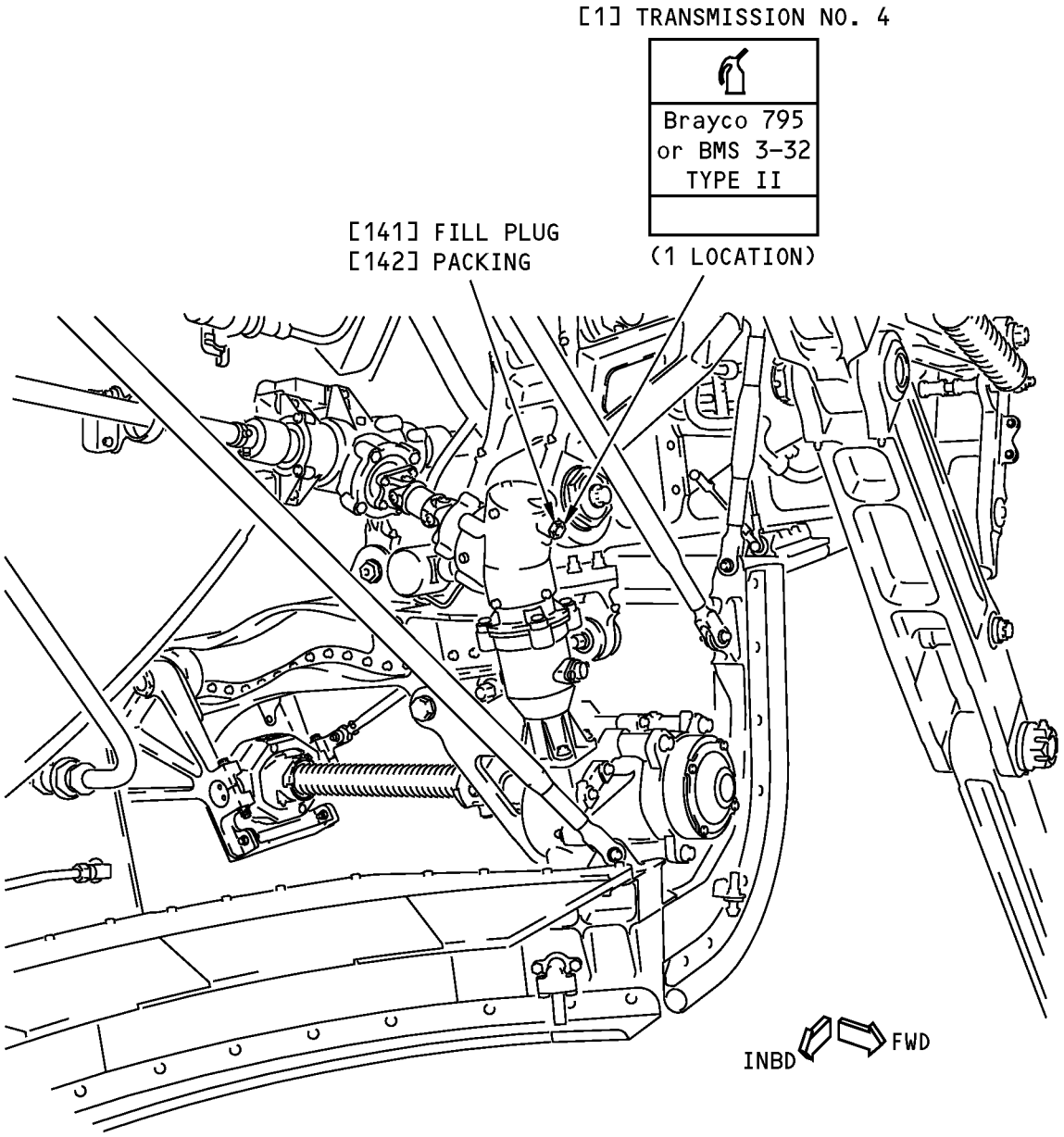
(Continued)

Item No.	Nomenclature	Lubricant	Method of Application	Number of Locations
1				

———————— END OF TASK ————————



Trailing Edge Flap Transmission Servicing
Figure 319 (Sheet 1 of 5)/12-22-51-990-819

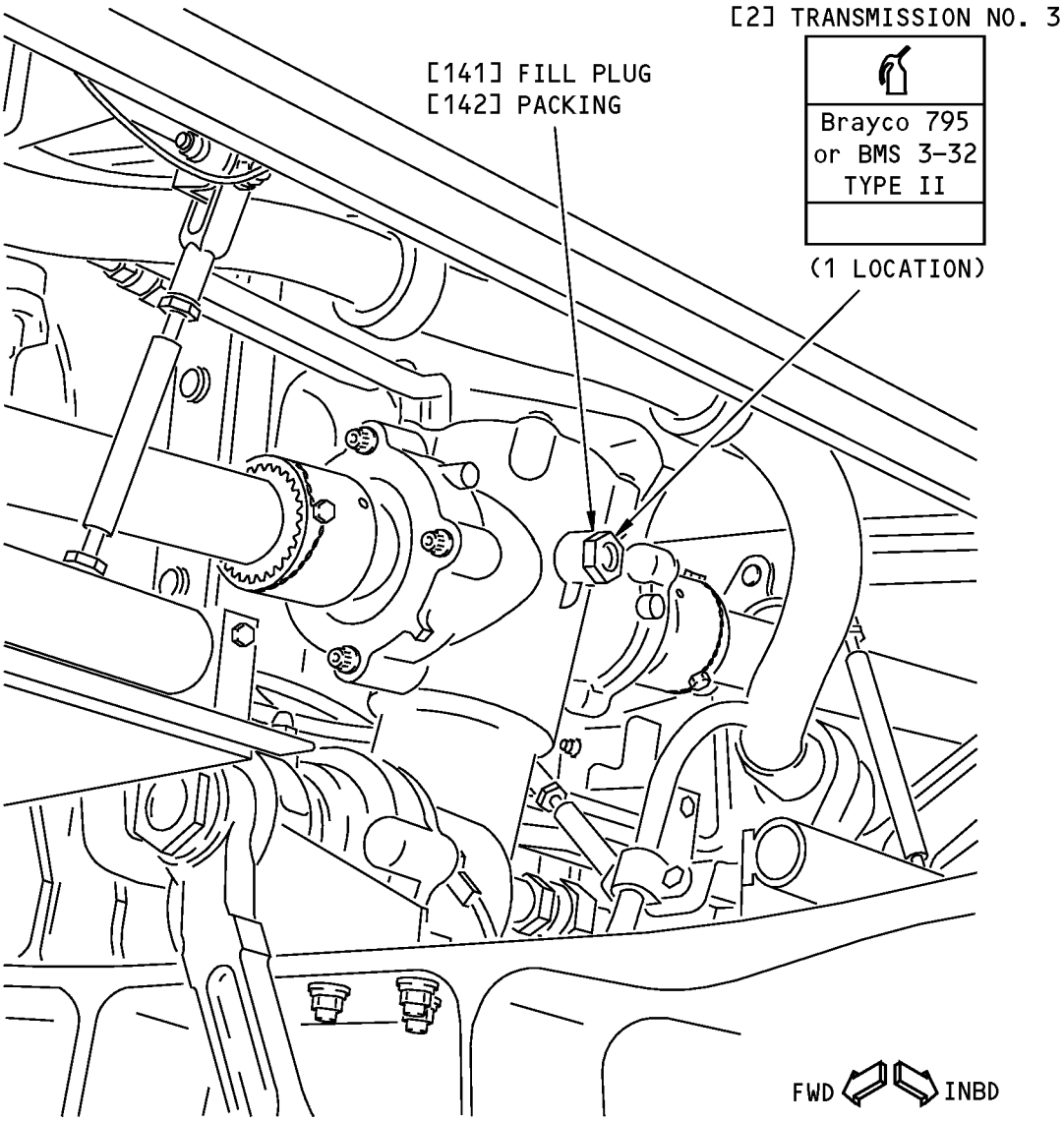


TRANSMISSION NO. 4
(TRANSMISSION NO. 5 IS EQUIVALENT)

1 POINT

A

Trailing Edge Flap Transmission Servicing
Figure 319 (Sheet 2 of 5)/12-22-51-990-819

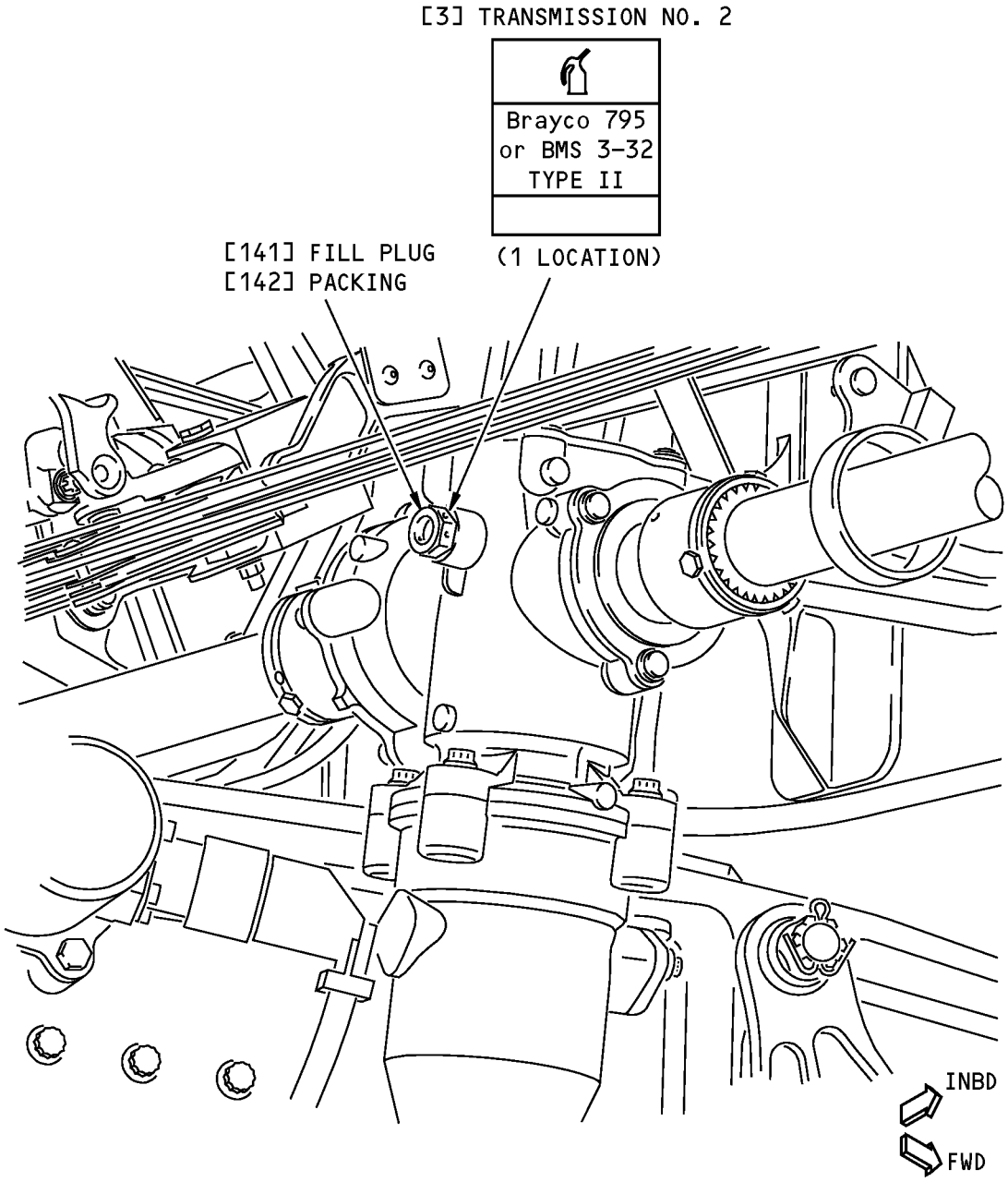


TRANSMISSION NO. 3
(TRANSMISSION NO. 6 IS EQUIVALENT)

1 POINT

B

Trailing Edge Flap Transmission Servicing
Figure 319 (Sheet 3 of 5)/12-22-51-990-819

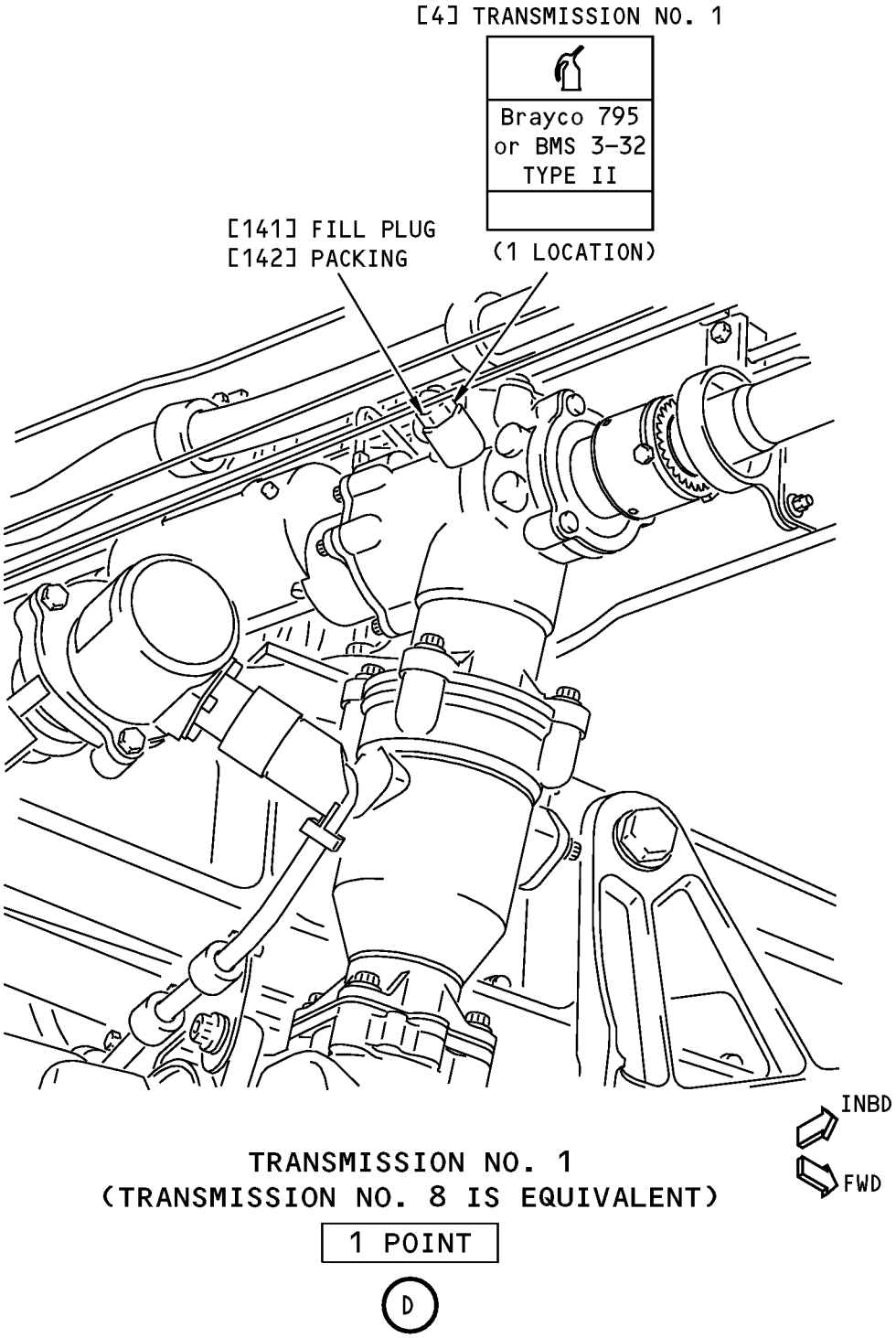


TRANSMISSION NO. 2
(TRANSMISSION NO. 7 IS EQUIVALENT)

1 POINT

C

Trailing Edge Flap Transmission Servicing
Figure 319 (Sheet 4 of 5)/12-22-51-990-819



Trailing Edge Flap Transmission Servicing
Figure 319 (Sheet 5 of 5)/12-22-51-990-819

TASK 12-22-51-610-804

21. Trailing Edge Flap Transmission Oil Replacement

(Figure 320)

A. General

(1) This procedure is a scheduled maintenance task.

(2) 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)
27-51-28-000-802	Outboard Flap Outboard Support Aft Fairing Removal (P/B 401)
27-51-28-000-804	Outboard Flap Inboard Support Aft Fairing Removal (P/B 401)
27-51-28-400-802	Outboard Flap Outboard Support Aft Fairing Installation (P/B 401)
27-51-28-400-804	Outboard Flap Inboard Support Aft Fairing Installation (P/B 401)

C. Tools/Equipment

Reference	Description
STD-3938	Container - Oil Resistant, 10 gallon (38 l)

D. Consumable Materials

Reference	Description	Specification
C00913	Compound - Corrosion Inhibiting Material, Nondrying Resin Mix	BMS 3-27
D00467	Fluid - Landing Gear Shock Strut	BMS3-32, Type II
D00590	Fluid - Flap Drive System - Brayco 795	

E. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
162	Packing	27-51-31-01-190	HAP 001-013, 015-026, 028-030
		27-51-31-02-190	HAP 001-013, 015-026, 028-030
		27-51-31-13-165	HAP 031-054, 101-999
		27-51-31-15-125	HAP 031-054, 101-999
		27-51-41-01-230	HAP 001-013, 015-026, 028-030
		27-51-41-02-190	HAP 001-013, 015-026, 028-036
		27-51-41-03-172	HAP 031-054, 101-999
		27-51-41-07-190	HAP 031-054, 101-999
163	Packing	27-51-31-01-320	HAP 001-013, 015-026, 028-030
		27-51-31-02-320	HAP 001-013, 015-026, 028-030

(Continued)

AMM Item	Description	AIPC Reference	AIPC Effectivity
163 (cont.)		27-51-31-13-265	HAP 031-054, 101-999
		27-51-31-15-225	HAP 031-054, 101-999
		27-51-41-01-360	HAP 001-013, 015-026, 028-030
		27-51-41-02-320	HAP 001-013, 015-026, 028-030
		27-51-41-03-275	HAP 031-054, 101-999
		27-51-41-07-290	HAP 031-054, 101-999

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
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 12-22-51-010-004

(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 27-51-28-000-802.

(b) For flap supports Number 2 and 7, do this task: Outboard Flap Inboard Support Aft Fairing Removal, TASK 27-51-28-000-804.

(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 12-22-51-480-002

(1) Put a 10 gallon (38 l) oil resistant container, STD-3938 below the applicable transmission to catch the fluid.

SUBTASK 12-22-51-680-002

(2) Drain the fluid from the transmission:

(a) Remove the bolts [166] and washers [165] that attach the cap [164] to the transmission.

(b) Remove the cap [164] and the packing [163] from the transmission.

(c) Wait for theBrayco 795 fluid, D00590orfluid, D00467 to drain from the transmission.

(d) Clean the fluid from the mating surface of the cap [164].

(e) Apply Brayco 795 fluid, D00590orfluid, D00467 to the new packing [163].

(f) Apply compound, C00913 to the mating surface of the cap [164].

(g) Install the cap [164] and the new packing [163] in the transmission.

(h) Install the bolts [166] and washers [165] to hold the cap [164].

SUBTASK 12-22-51-610-004

(3) Fill the transmission with fluid:

(a) Remove the fill plug [161] and packing [162] from the fill port.

(b) Add Brayco 795 fluid, D00590orfluid, D00467 to the transmission until the fluid is at the level of the fill port.

(c) Lubricate the new packing [162] with fluid.

(d) Install the fill plug [161] and new packing [162] in the fill port.

(e) Tighten the fill plug [161] to 110-130 pound-inches (12.4-14.6 newton-meters) more than the run-on torque.

(f) Install lockwire on the fill plug [161].

I. Put the Airplane Back to Its Usual Condition

SUBTASK 12-22-51-410-004

(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 27-51-28-400-802.

(b) For flap supports Number 2 and 7, do this task: Outboard Flap Inboard Support Aft Fairing Installation, TASK 27-51-28-400-804.

(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.

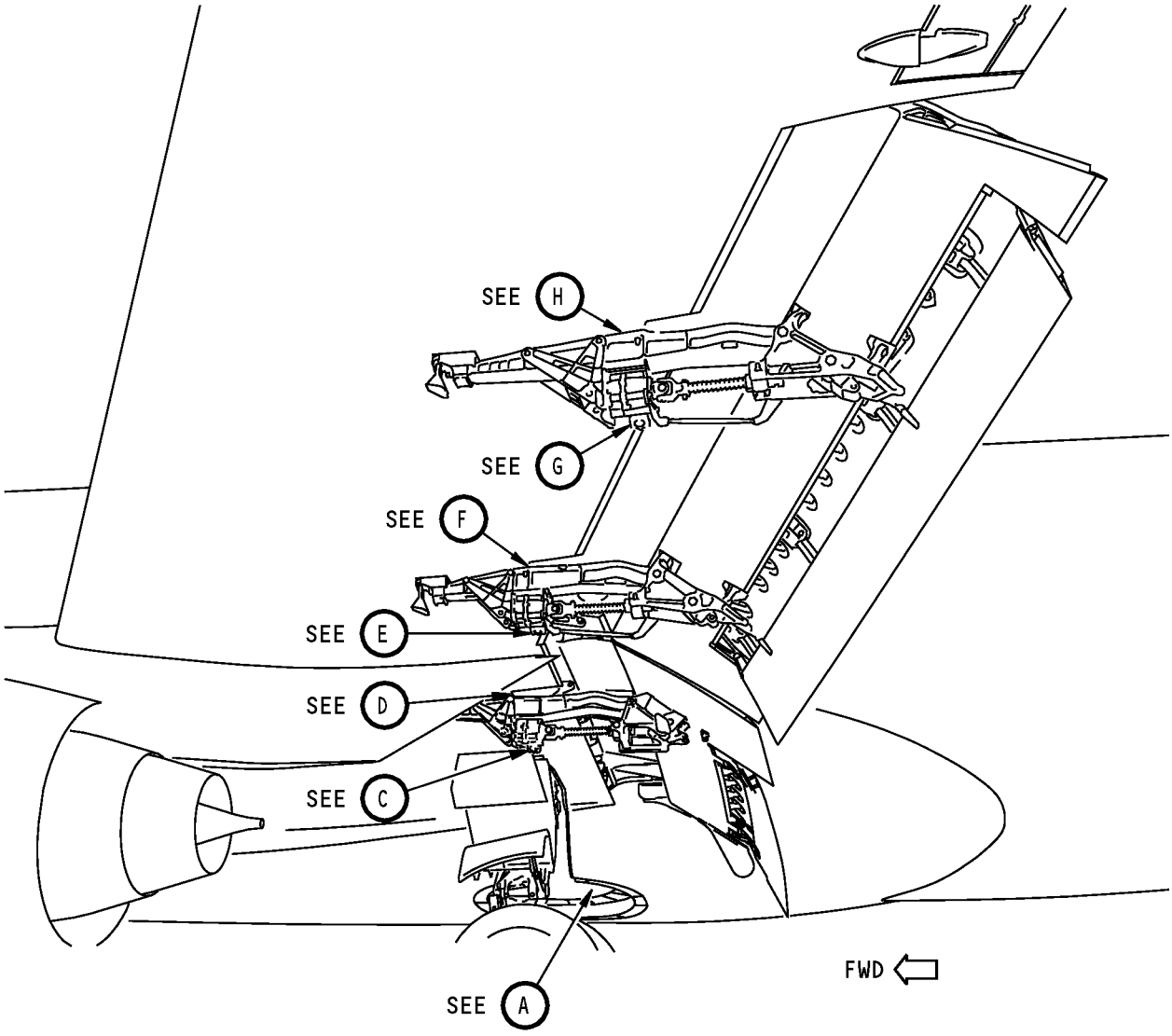
Table 320/12-22-51-993-840 Trailing Edge Flap Transmission Fluid Replacement (Fig. 320)

Item No.	Nomenclature	Lubricant	Method of Application	Number of Locations
1	Transmission No. 4 (Transmission No. 5 is Equivalent)	Brayco 795 fluid, D00590orfluid, D00467	Fill	1
2	Transmission No. 3 (Transmission No. 6 is Equivalent)	Brayco 795 fluid, D00590orfluid, D00467	Fill	1
3	Transmission No. 2 (Transmission No. 7 is Equivalent)	Brayco 795 fluid, D00590orfluid, D00467	Fill	1

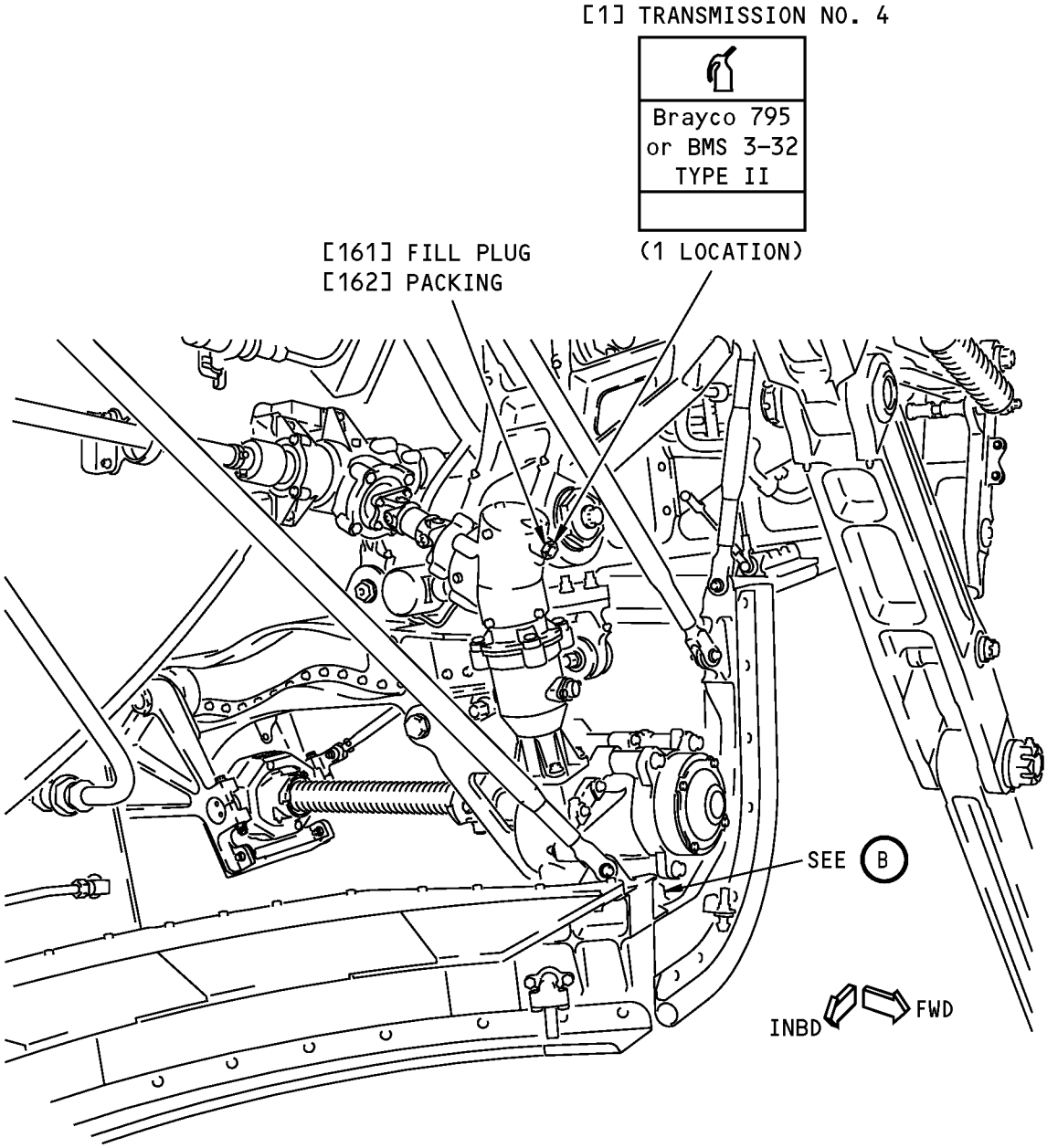
(Continued)

Item No.	Nomenclature	Lubricant	Method of Application	Number of Locations
4	Transmission No. 1 (Transmission No. 8 is Equivalent)	Brayco 795 fluid, D00590orfluid, D00467	Fill	1

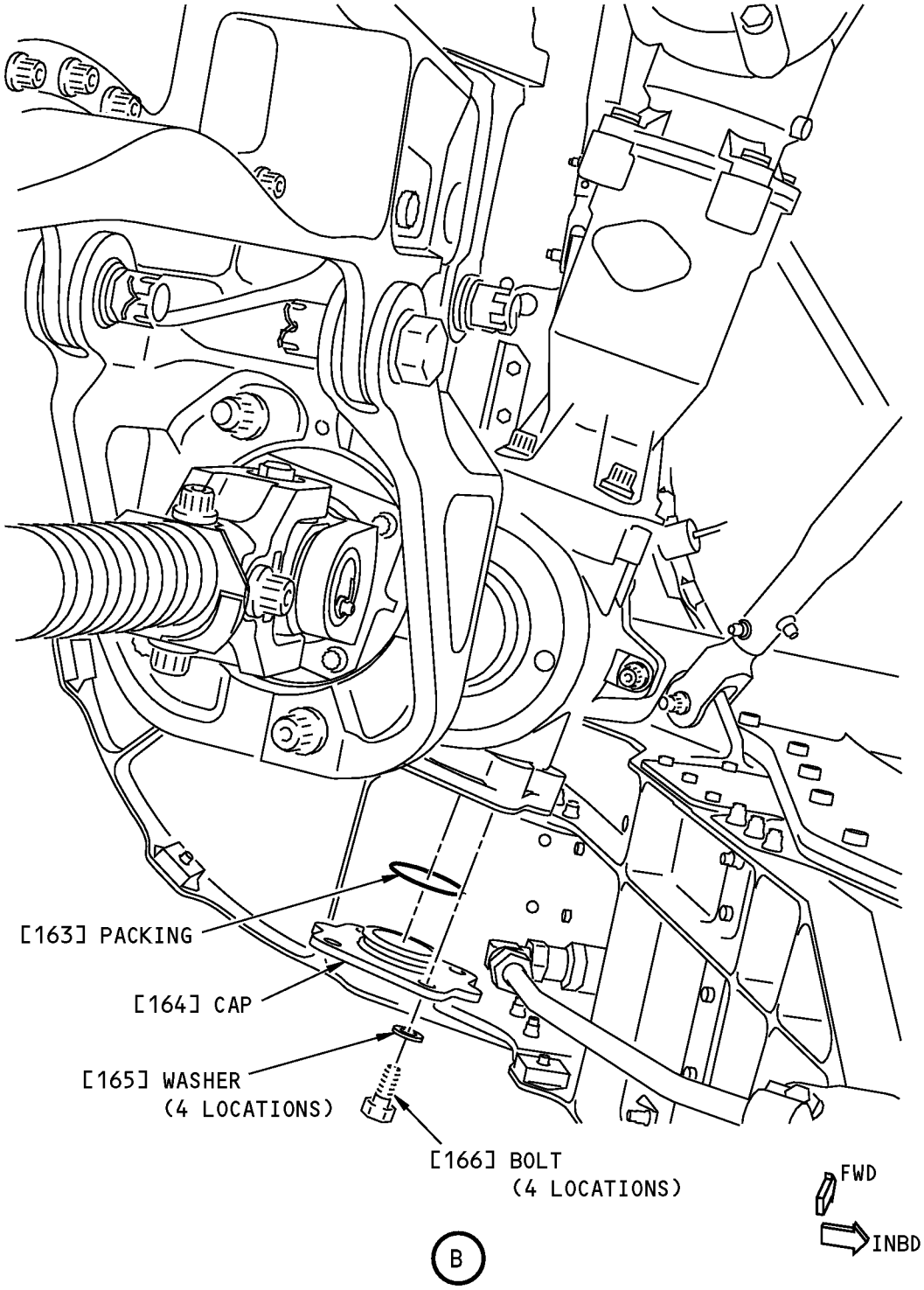
END OF TASK



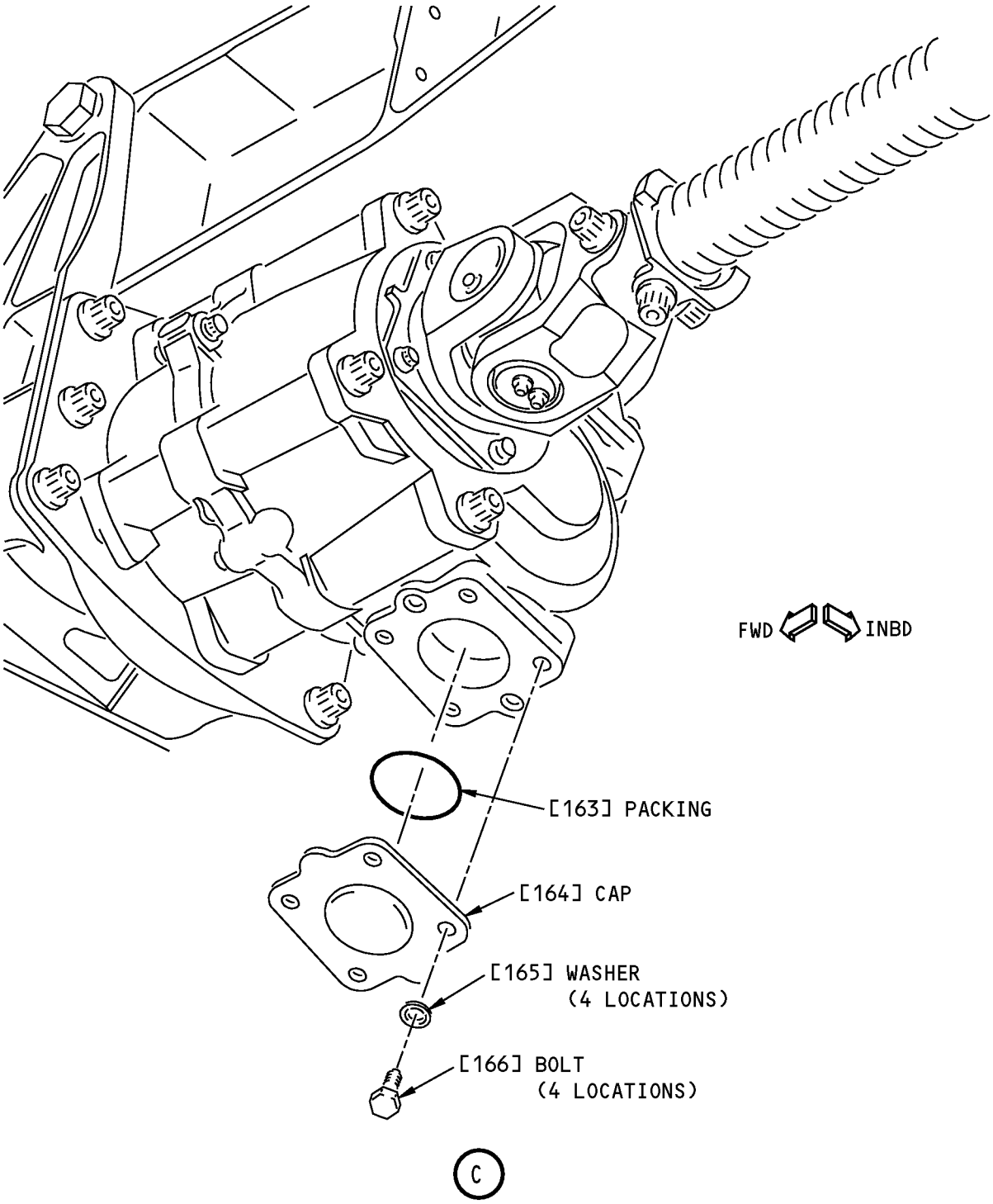
Trailing Edge Flap Transmission Fluid Replacement
Figure 320 (Sheet 1 of 9)/12-22-51-990-820



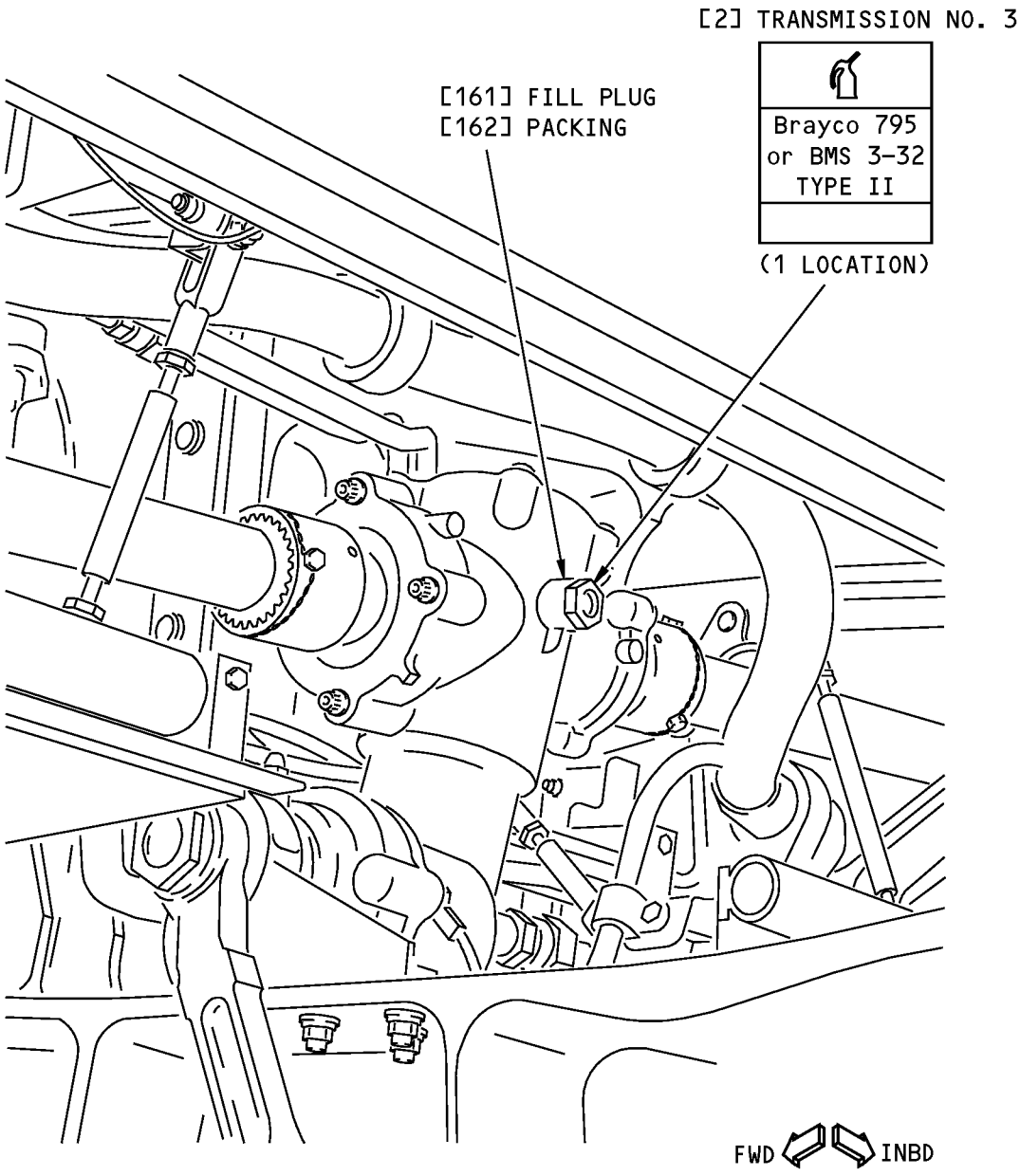
Trailing Edge Flap Transmission Fluid Replacement
Figure 320 (Sheet 2 of 9)/12-22-51-990-820



Trailing Edge Flap Transmission Fluid Replacement
Figure 320 (Sheet 3 of 9)/12-22-51-990-820



Trailing Edge Flap Transmission Fluid Replacement
Figure 320 (Sheet 4 of 9)/12-22-51-990-820

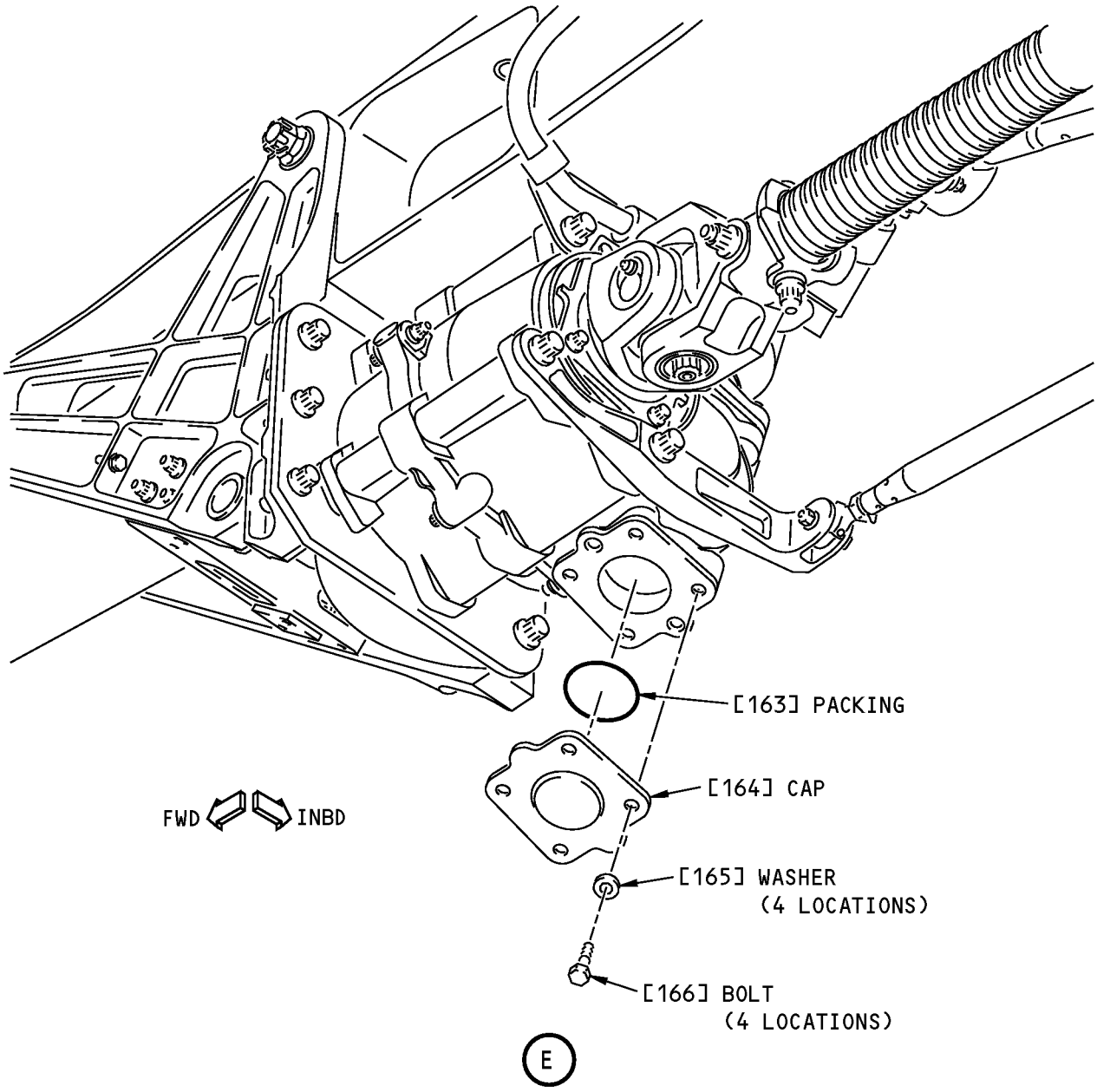


TRANSMISSION NO. 3
(TRANSMISSION NO. 6 IS EQUIVALENT)

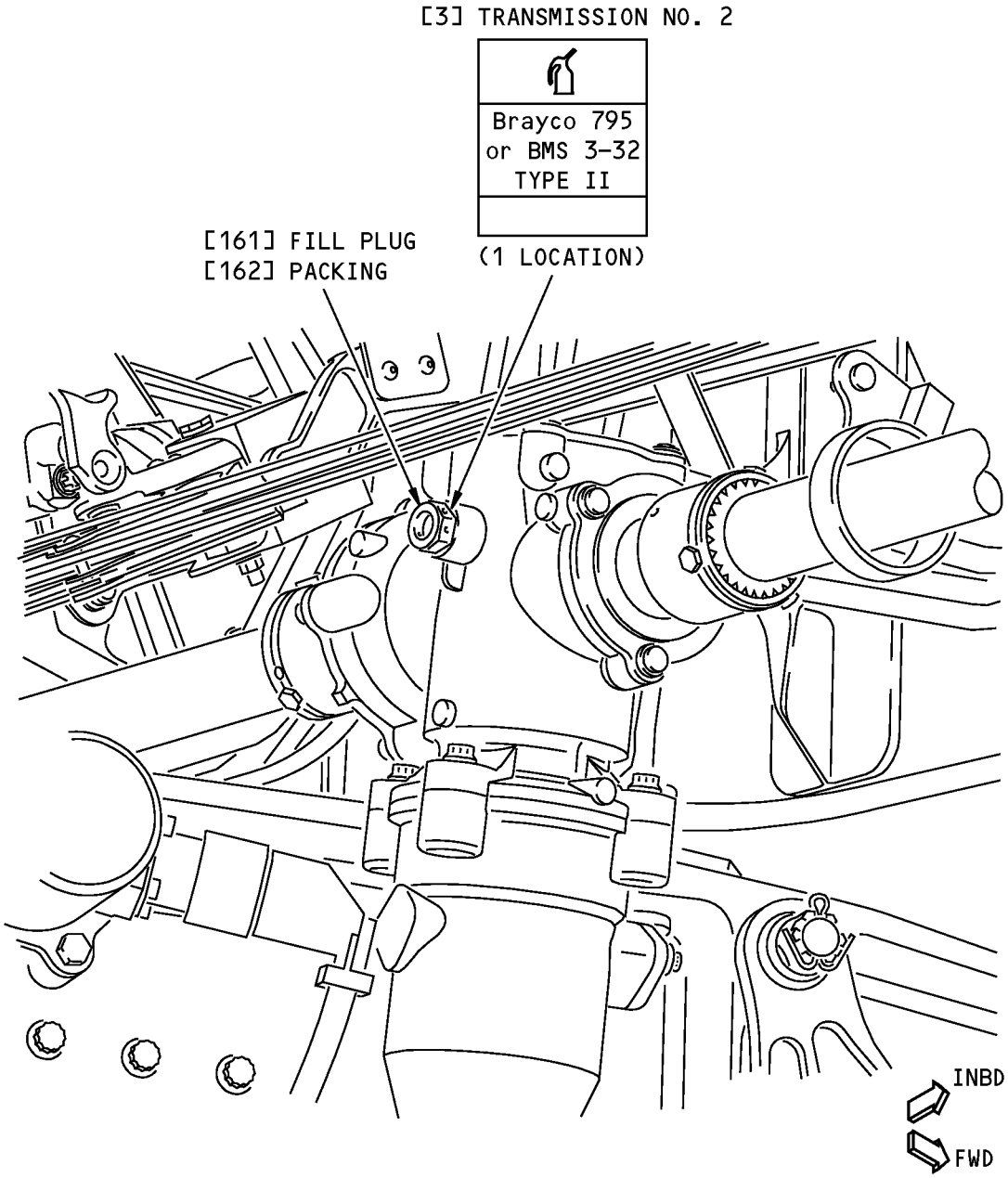
1 POINT

D

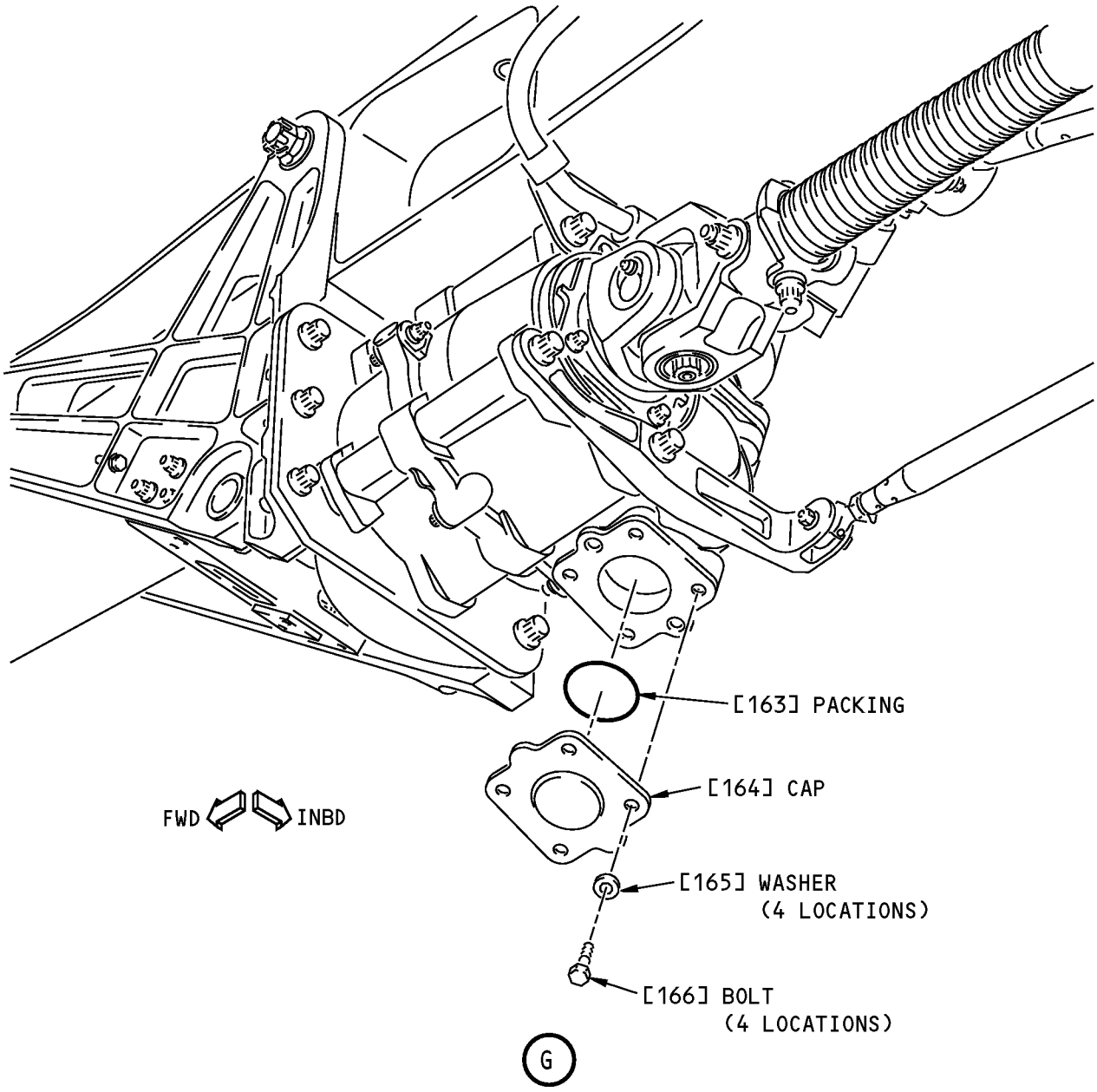
Trailing Edge Flap Transmission Fluid Replacement
Figure 320 (Sheet 5 of 9)/12-22-51-990-820



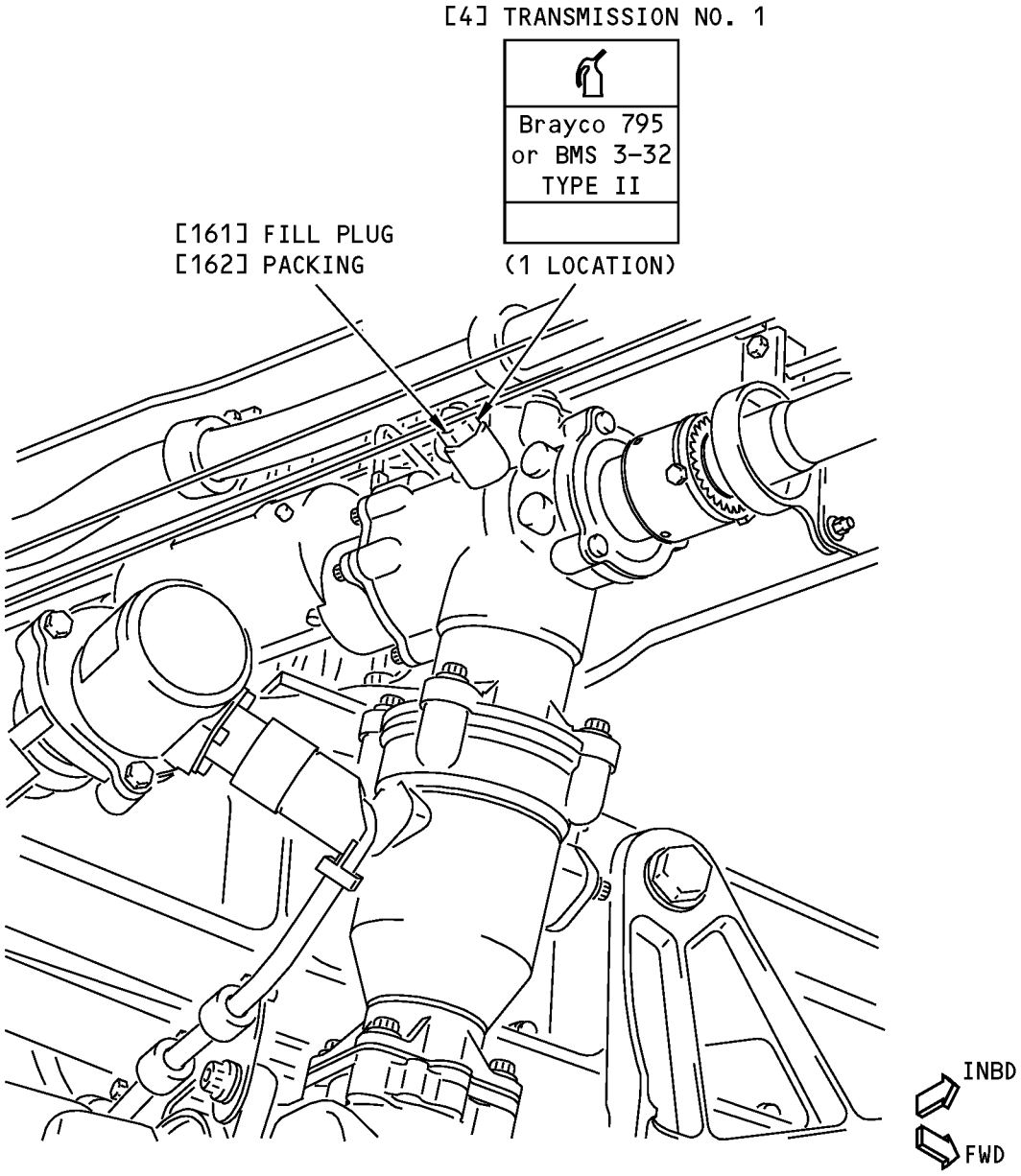
Trailing Edge Flap Transmission Fluid Replacement
Figure 320 (Sheet 6 of 9)/12-22-51-990-820



Trailing Edge Flap Transmission Fluid Replacement
Figure 320 (Sheet 7 of 9)/12-22-51-990-820



Trailing Edge Flap Transmission Fluid Replacement
Figure 320 (Sheet 8 of 9)/12-22-51-990-820



TRANSMISSION NO. 1
(TRANSMISSION NO. 8 IS EQUIVALENT)

1 POINT

H

Trailing Edge Flap Transmission Fluid Replacement
Figure 320 (Sheet 9 of 9)/12-22-51-990-820

TASK 12-22-51-610-805

22. Trailing Edge Flap Electric Motor Servicing

(Figure 321)

A. General

(1) This procedure is a scheduled maintenance task.

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)

C. Consumable Materials

Reference	Description	Specification
D00070	Fluid - Hydraulic, Petroleum Base	MIL-PRF-5606 (Replaces MIL-H-5606)

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
182	Packing	27-51-51-01-072	HAP 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 Lubrication

SUBTASK 12-22-51-040-021

(1) Do this task: Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801.

G. Trailing Edge Flap Electric Motor Servicing

(Table 321)

SUBTASK 12-22-51-610-005

(1) Do a check of the fluid level in the flap electric motor:

(a) Remove the fill plug [181] and packing [182] from the fill port.

(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 flap electric motor with fluid, D00070 to the level of the fill port.

(d) Lubricate the new packing [182] with fluid.

(e) Install the fill plug [181] and new packing [182] in the fill port.

(f) Install lockwire on the fill plug [181].

H. Put the Airplane Back to Its Usual Condition

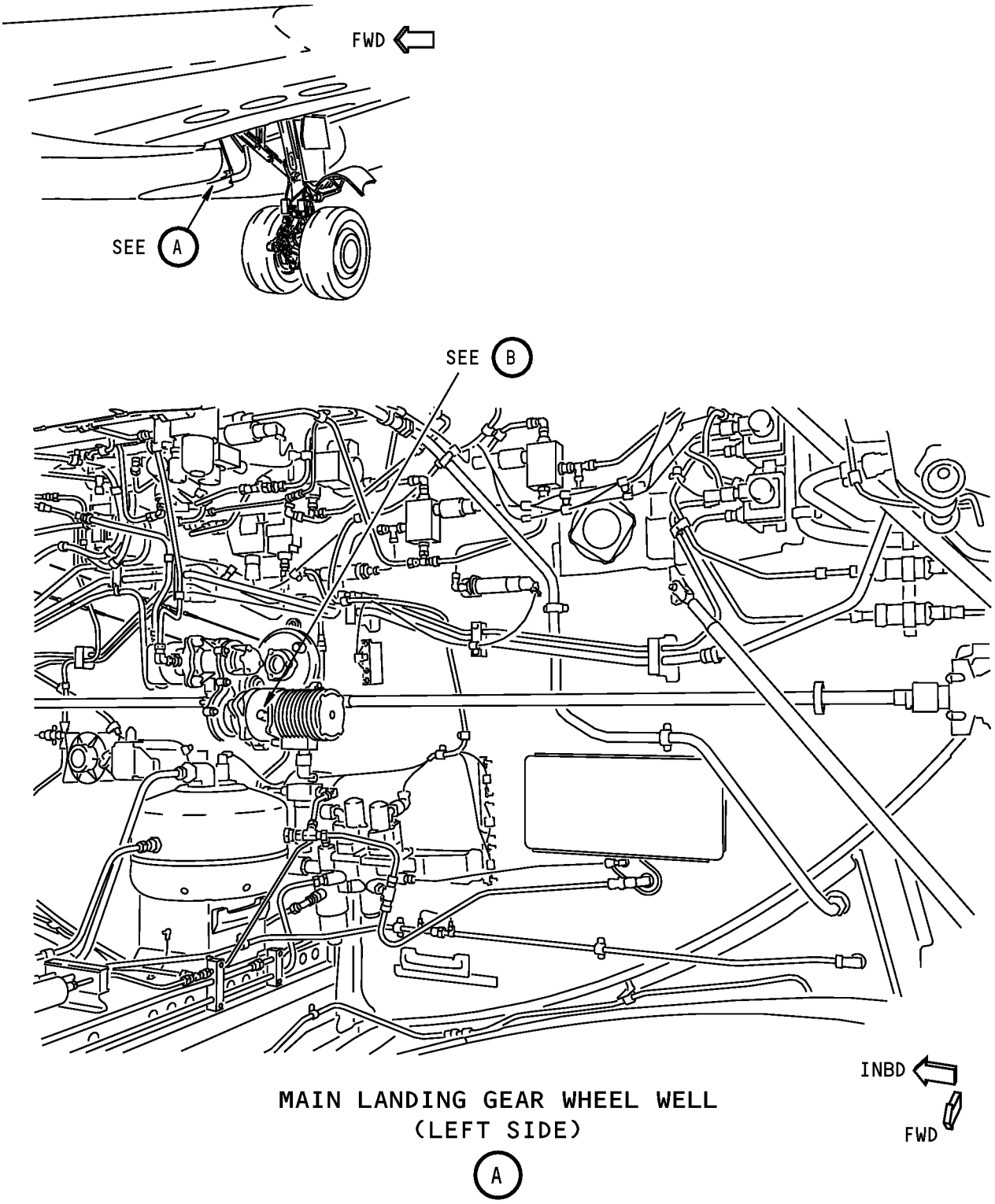
SUBTASK 12-22-51-440-021

(1) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

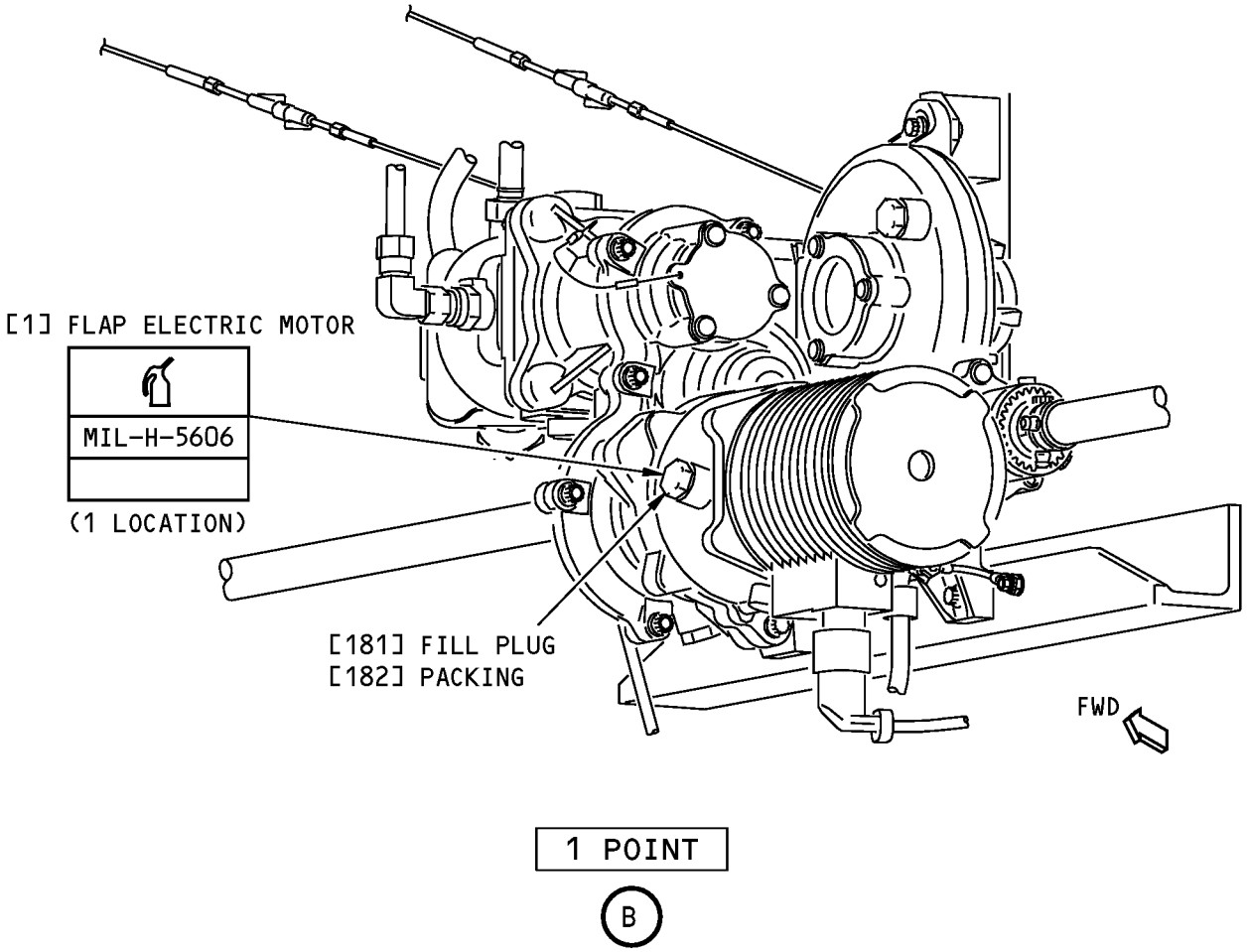
Table 321/12-22-51-993-842 Trailing Edge Flap Electric Motor Servicing (Fig. 321)

Item No.	Nomenclature	Lubricant	Method of Application	Number of Locations
1	Flap Electric Motor	fluid, D00070	Fill	1

—————— END OF TASK ——————



Trailing Edge Flap Electric Motor Servicing
Figure 321 (Sheet 1 of 2)/12-22-51-990-841



Trailing Edge Flap Electric Motor Servicing
Figure 321 (Sheet 2 of 2)/12-22-51-990-841

SPOILER CONTROL SYSTEM - SERVICING

1. General

A. This procedure contains scheduled maintenance task data.

B. This procedure has these tasks:

(1) A lubrication of the spoiler mixer.

(2) A lubrication of the flight spoiler actuators quadrants and the actuator rod ends.

(3) A lubrication of the outboard ground spoiler actuators.

TASK 12-22-61-600-801

2. Spoiler Mixer Lubrication

(Figure 301)

A. General

(1) This procedure is a scheduled maintenance task.

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. Procedure

(Table 301)

SUBTASK 12-22-61-010-001

(1) Remove the roller access covers [103] to get access to the rollers [1].

(a) Remove bolts [101] and washers [102].

SUBTASK 12-22-61-640-003

(2) Lubricate the rollers [1] with grease, D00633

SUBTASK 12-22-61-410-001

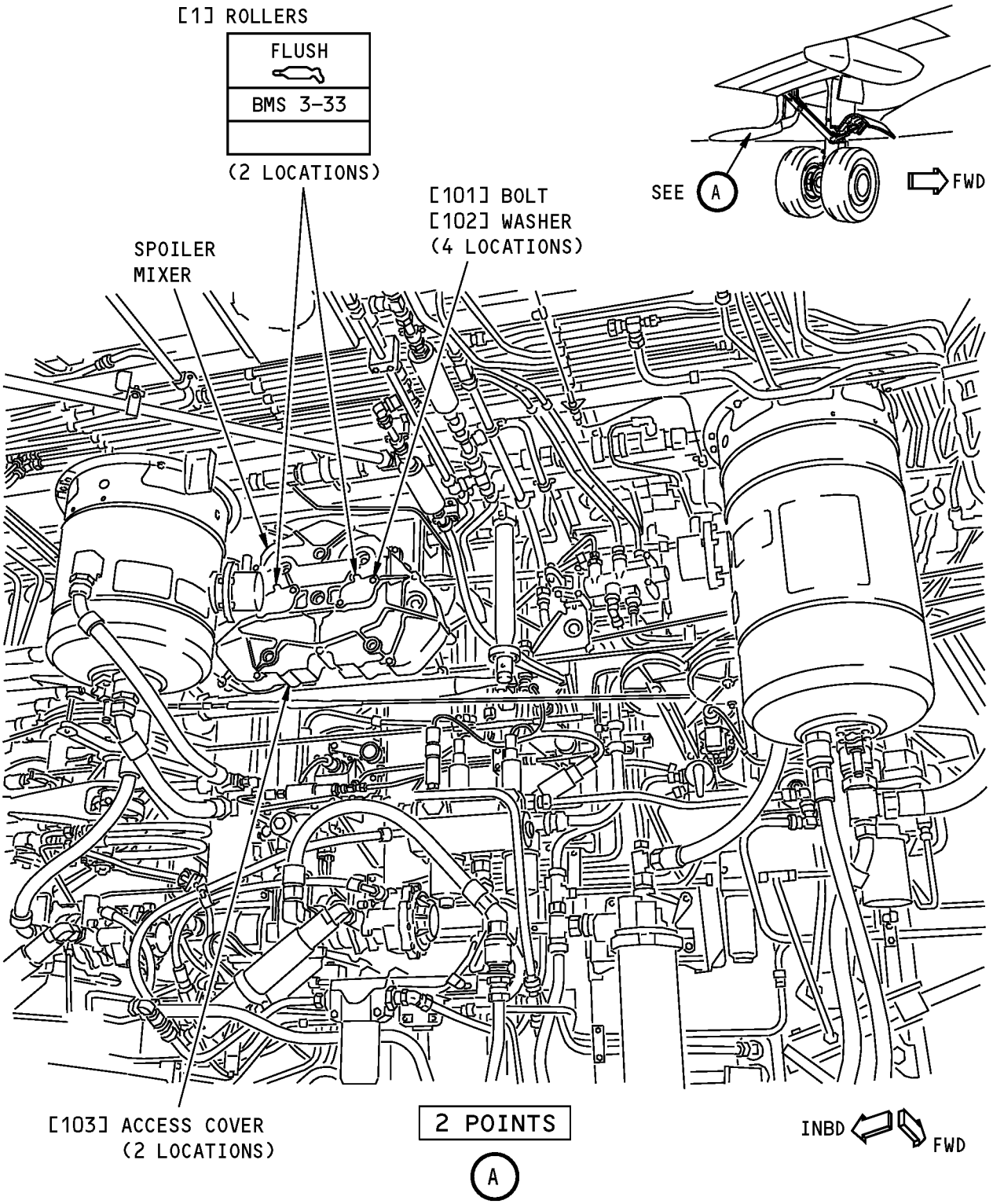
(3) Install the roller access covers [103].

(a) Install washers [102] and bolts [101].

Table 301/12-22-61-993-804 Spoiler Mixer Lubrication (Fig. 301)

Item No.	Nomenclature	Lubricant	Method of Application	Number of Locations
1	Rollers	grease, D00633	Flush	2

END OF TASK



Spoiler Mixer Servicing
Figure 301/12-22-61-990-801

TASK 12-22-61-600-802

3. Flight Spoiler Actuator Quadrant and Rod End Lubrication

(Figure 302)

A. General

(1) This procedure is a scheduled maintenance task.

B. References

Reference	Title
24-22-00-860-811	Supply Electrical Power (P/B 201)
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	Spoiler Hydraulic Systems A and B Pressurization (P/B 201)
27-61-00-840-801	Put the Spoiler Hydraulic systems A and B Back to the Condition Before the Pressurization (P/B 201)

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 24-22-00-860-811.

SUBTASK 12-22-61-860-002

WARNING: MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACES BEFORE YOU SUPPLY HYDRAULIC POWER. AILERONS, RUDDERS, 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: Spoiler Hydraulic Systems A and B Pressurization, TASK 27-61-00-800-801.

SUBTASK 12-22-61-860-003

(3) Do this task: Extend the Trailing Edge Flaps, TASK 27-51-00-860-803.

SUBTASK 12-22-61-860-004

(4) Move the speed brake lever to the UP position.

SUBTASK 12-22-61-860-005

(5) Do this task: Put the Spoiler Hydraulic systems A and B Back to the Condition Before the Pressurization, TASK 27-61-00-840-801.

F. Flight Spoiler Actuator Quadrant and Rod End Lubrication

(Table 302)

SUBTASK 12-22-61-610-001

(1) Lubricate the quadrant rod ends [1] with grease, D00633.

SUBTASK 12-22-61-610-003

(2) Lubricate the actuator rod end [2] with grease, D00633.

G. Put the Airplane Back to Its Usual Condition.

SUBTASK 12-22-61-860-006

WARNING: MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACES BEFORE YOU SUPPLY HYDRAULIC POWER. AILERONS, RUDDERS, 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.

(1) Do this task: Spoiler Hydraulic Systems A and B Pressurization, TASK 27-61-00-800-801.

SUBTASK 12-22-61-860-007

(2) Do this task: Retract the Trailing Edge Flaps, TASK 27-51-00-860-804.

SUBTASK 12-22-61-860-019

(3) Move the speed brake lever to the DOWN position.

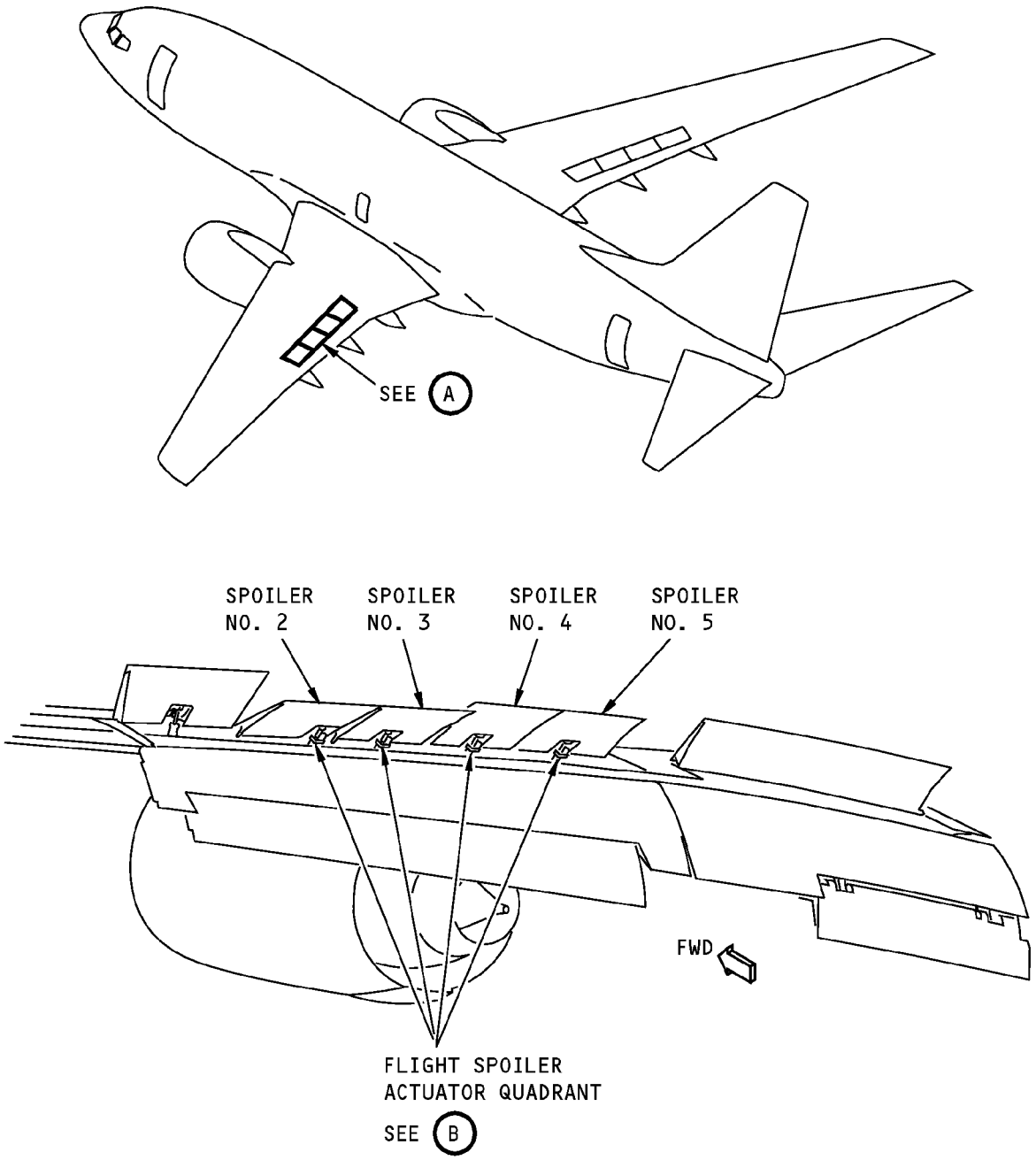
SUBTASK 12-22-61-860-008

(4) Do this task: Put the Spoiler Hydraulic systems A and B Back to the Condition Before the Pressurization, TASK 27-61-00-840-801.

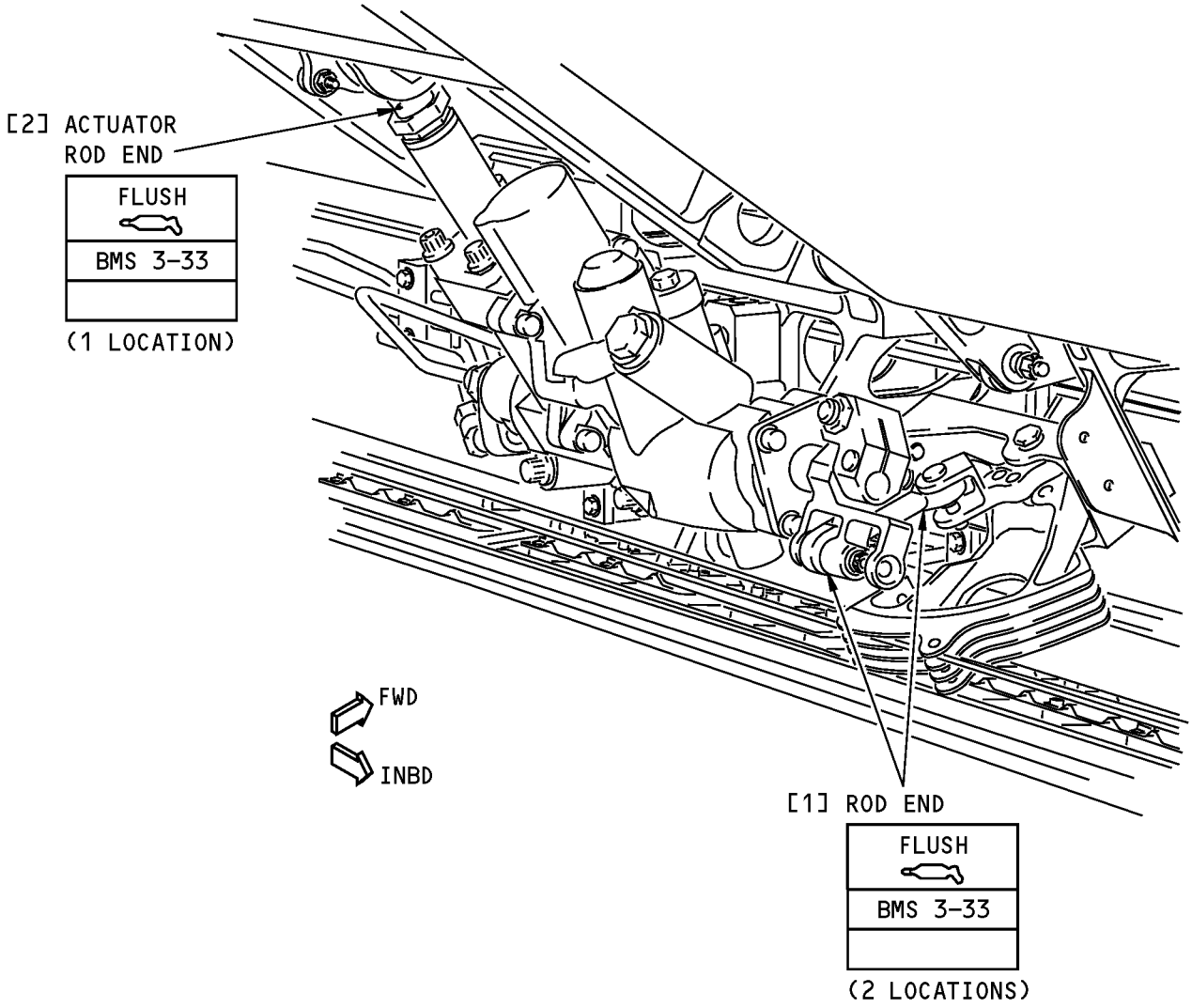
Table 302/12-22-61-993-805 Flight Spoiler Actuator Quadrant Lubrication (Fig. 302)

Item No.	Nomenclature	Lubricant	Method of Application	Number of Locations
1	Rod End	grease, D00633	Flush	8
2	Actuator Rod End	grease, D00633	Flush	4

END OF TASK



Flight Spoiler Actuator Quadrant and Rod End Servicing
Figure 302 (Sheet 1 of 2)/12-22-61-990-802



FLIGHT SPOILER ACTUATOR
(EXAMPLE, 4 LOCATIONS)

3 POINTS

B

Flight Spoiler Actuator Quadrant and Rod End Servicing
Figure 302 (Sheet 2 of 2)/12-22-61-990-802

TASK 12-22-61-640-801

4. Outboard Ground Spoiler Actuator Lubrication

(Figure 303)

A. General

(1) This procedure is a scheduled maintenance task.

B. References

Reference	Title
24-22-00-860-811	Supply Electrical Power (P/B 201)
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	Spoiler Hydraulic Systems A and B Pressurization (P/B 201)
27-61-00-840-801	Put the Spoiler Hydraulic systems A and B Back to the Condition Before the Pressurization (P/B 201)

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 12-22-61-860-009

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

SUBTASK 12-22-61-860-010

WARNING: MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACES BEFORE YOU SUPPLY HYDRAULIC POWER. AILERONS, RUDDERS, 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: Spoiler Hydraulic Systems A and B Pressurization, TASK 27-61-00-800-801.

SUBTASK 12-22-61-860-011

(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).

SUBTASK 12-22-61-860-012

(4) Do this task: Extend the Trailing Edge Flaps, TASK 27-51-00-860-803.

SUBTASK 12-22-61-860-013

(5) Move the speed brake lever to the UP position.

SUBTASK 12-22-61-860-014

(6) Do this task: Put the Spoiler Hydraulic systems A and B Back to the Condition Before the Pressurization, TASK 27-61-00-840-801.

F. Outboard Ground Spoiler Actuator Lubrication

(Table 303)

SUBTASK 12-22-61-610-002

(1) Lubricate the pillow blocks [1] for the outboard ground spoiler actuators with grease, D00633.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 12-22-61-860-015

WARNING: MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACES BEFORE YOU SUPPLY HYDRAULIC POWER. AILERONS, RUDDERS, 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.

(1) Do this task: Spoiler Hydraulic Systems A and B Pressurization, TASK 27-61-00-800-801.

SUBTASK 12-22-61-860-016

(2) Do this task: Retract the Trailing Edge Flaps, TASK 27-51-00-860-804.

SUBTASK 12-22-61-860-017

(3) Move the speed brake lever to the DOWN position.

SUBTASK 12-22-61-860-018

(4) Do this task: Put the Spoiler Hydraulic systems A and B Back to the Condition Before the Pressurization, TASK 27-61-00-840-801.

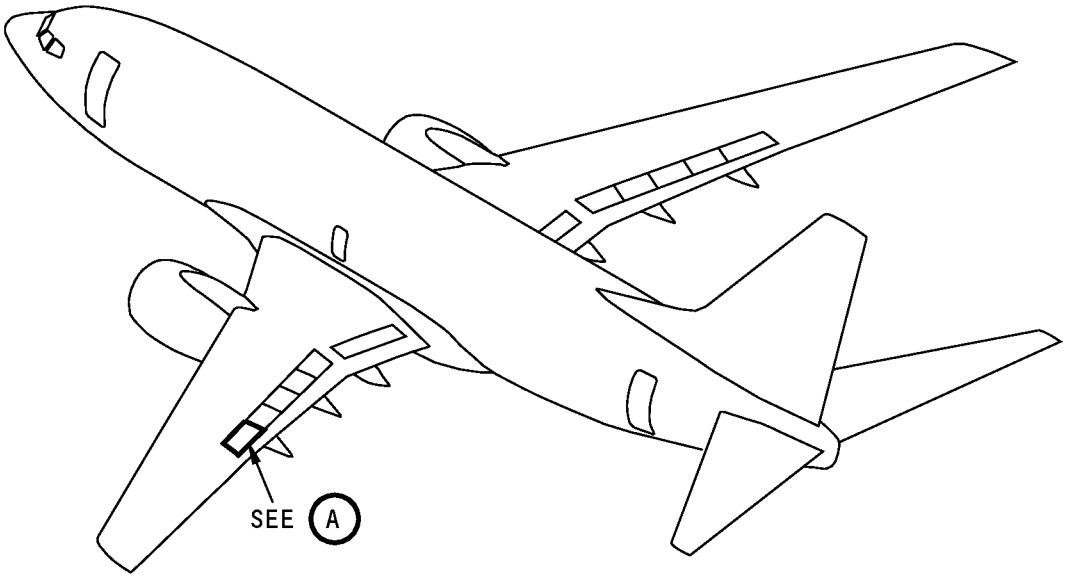
SUBTASK 12-22-61-640-002

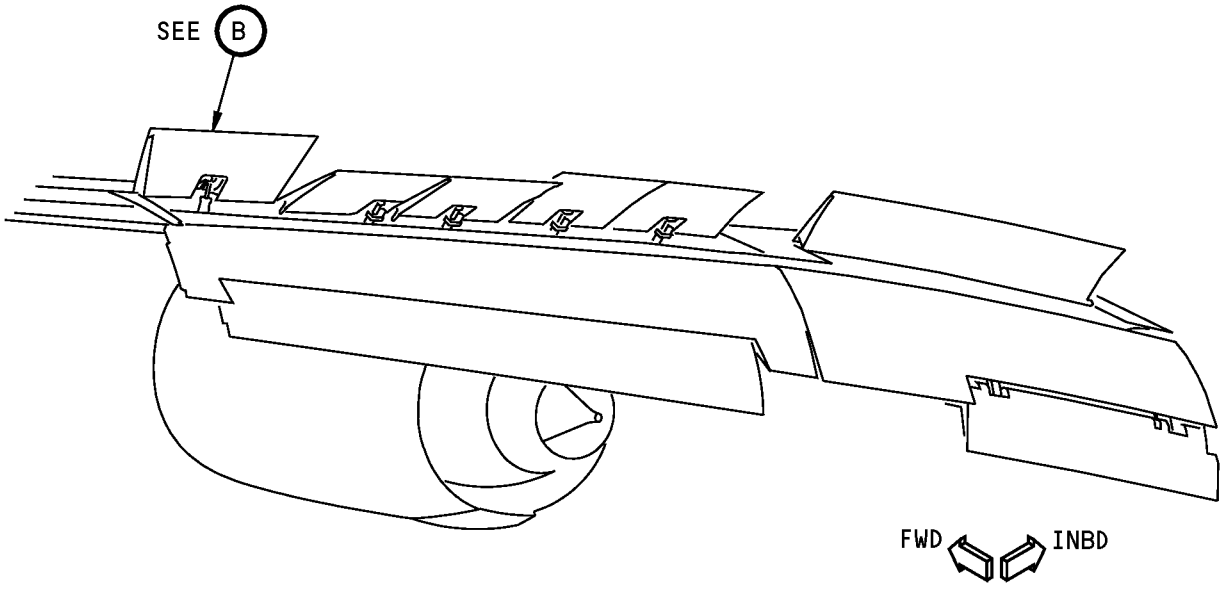
(5) Put the SPOILER A and B switches to the ON position.

Table 303/12-22-61-993-806 Outboard Ground Spoiler Actuator Lubrication (Fig. 303)

Item No.	Nomenclature	Lubricant	Method of Application	Number of Locations
1	Pillow Blocks	grease, D00633	Flush	2

END OF TASK

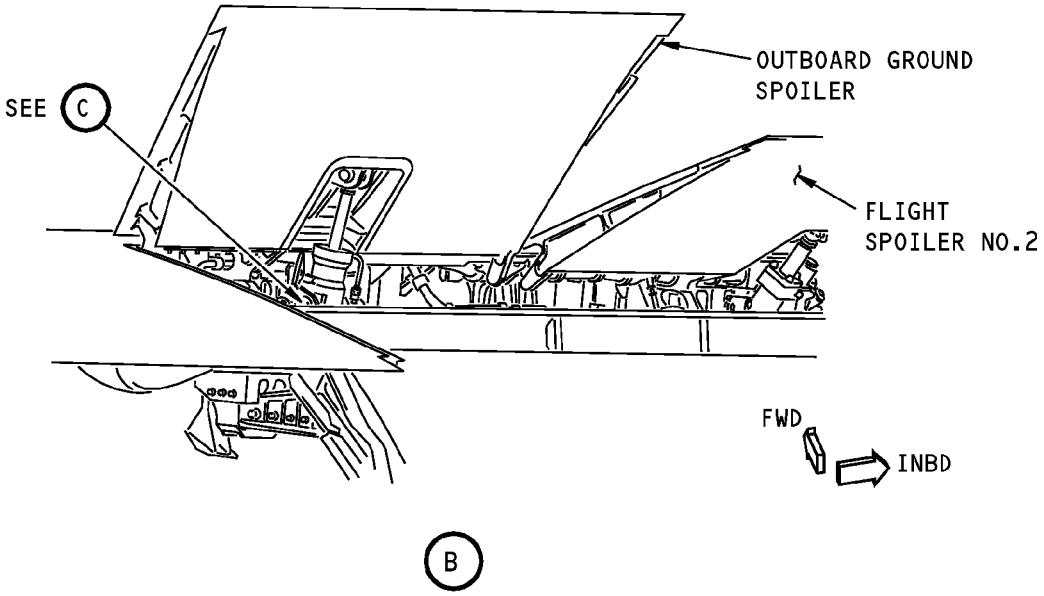


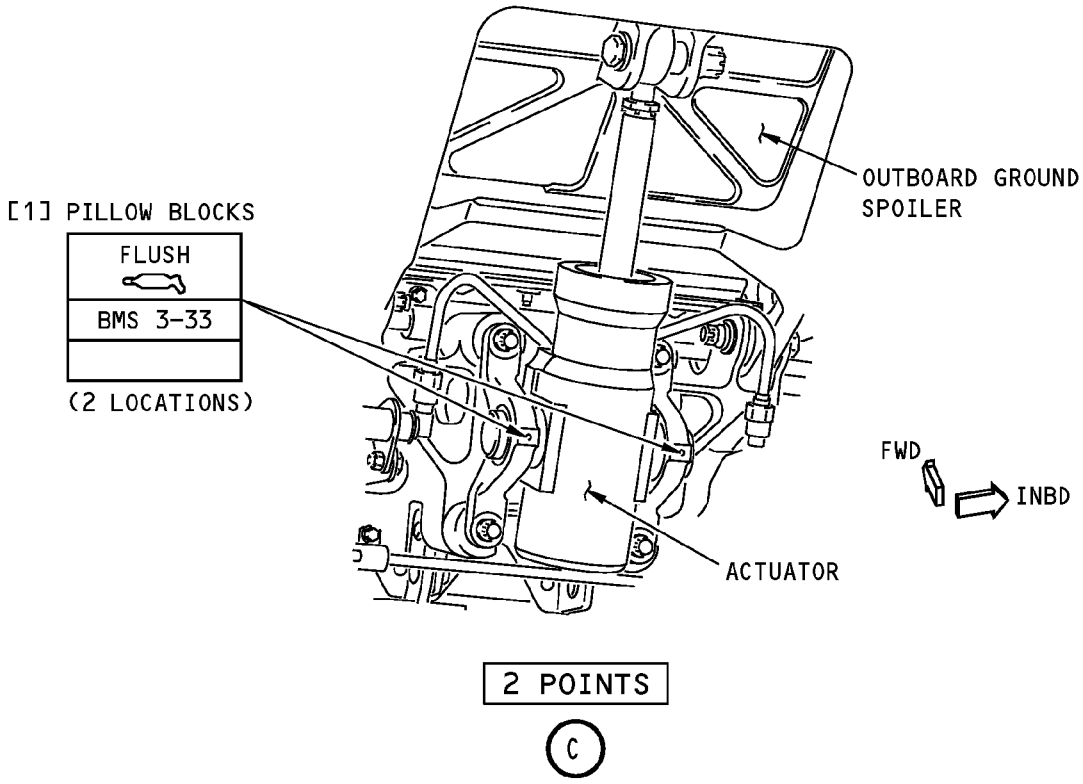


LEFT WING
(RIGHT WING IS EQUIVALENT)

A

Outboard Ground Spoiler Actuator Lubrication
Figure 303 (Sheet 1 of 2)/12-22-61-990-803





Outboard Ground Spoiler Actuator Lubrication
Figure 303 (Sheet 2 of 2)/12-22-61-990-803

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 slat 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

(Figure 301)

A. General

(1) This procedure is a scheduled maintenance task.

B. References

Reference	Title
27-81-00-080-801	Leading Edge Flap and Slat Locks Removal (P/B 201)
27-81-00-480-801	Leading Edge Flap and Slat Locks Installation (P/B 201)
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)

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
521	Left Wing - Leading Edge to Front Spar
621	Right Wing - Leading Edge to Front Spar

E. Access Panels

Number	Name/Location
521CB	Lower Leading Edge Access Panel - Slat Station 53.95
521FB	Lower Leading Edge Access Panel - Slat Station 116.32
521JB	Lower Leading Edge Access Panel - Slat Station 170.20
521MB	Lower Leading Edge Access Panel - Slat Station 234.65
521QB	Lower Leading Edge Access Panel - Slat Station 289.17
521TB	Lower Leading Edge Access Panel - Slat Station 356.14
521WB	Lower Leading Edge Access Panel - Slat Station 415.79
521ZB	Lower Leading Edge Access Panel - Slat Station 488.05
621CB	Lower Leading Edge Access Panel - Slat Station 53.95
621FB	Lower Leading Edge Access Panel - Slat Station 112.52
621HB	Lower Leading Edge Access Panel - Slat Station 170.21
621LB	Lower Leading Edge Access Panel - Slat Station 234.59
621PB	Lower Leading Edge Access Panel - Slat Station 289.18
621SB	Lower Leading Edge Access Panel - Slat Station 356.15

(Continued)

Number	Name/Location
621VB	Lower Leading Edge Access Panel - Slat Station 415.79
621YB	Lower Leading Edge Access Panel - Slat Station 488.04

F. Prepare for the Lubrication

SUBTASK 12-22-71-010-001

(1) For the left wing, remove these access panels:

Number	Name/Location
521CB	Lower Leading Edge Access Panel - Slat Station 53.95
521FB	Lower Leading Edge Access Panel - Slat Station 116.32
521JB	Lower Leading Edge Access Panel - Slat Station 170.20
521MB	Lower Leading Edge Access Panel - Slat Station 234.65
521QB	Lower Leading Edge Access Panel - Slat Station 289.17
521TB	Lower Leading Edge Access Panel - Slat Station 356.14
521WB	Lower Leading Edge Access Panel - Slat Station 415.79
521ZB	Lower Leading Edge Access Panel - Slat Station 488.05

SUBTASK 12-22-71-010-002

(2) For the right wing, remove these access panels:

Number	Name/Location
621CB	Lower Leading Edge Access Panel - Slat Station 53.95
621FB	Lower Leading Edge Access Panel - Slat Station 112.52
621HB	Lower Leading Edge Access Panel - Slat Station 170.21
621LB	Lower Leading Edge Access Panel - Slat Station 234.59
621PB	Lower Leading Edge Access Panel - Slat Station 289.18
621SB	Lower Leading Edge Access Panel - Slat Station 356.15
621VB	Lower Leading Edge Access Panel - Slat Station 415.79
621YB	Lower Leading Edge Access Panel - Slat Station 488.04

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.

(3) Keep clean and free of all unwanted objects (FOD), the housing (can) assemblies of the slat main tracks, at all time.

SUBTASK 12-22-71-860-001

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.

(4) To pressurize hydraulic system B, do this task: Hydraulic System A or B Pressurization, TASK 29-11-00-860-801.

HAP 001-013, 015-026, 028-036, 101-999

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.

(5) Move the flap control lever to the 10-unit detent to fully extend the leading edge slats.

HAP 037-054

SUBTASK 12-22-71-860-014

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.

(6) Move the flap control lever to the 30-unit detent to fully extend the leading edge slats.

HAP ALL

SUBTASK 12-22-71-860-003

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

G. Leading Edge Slat Main Track Rollers Lubrication

(Table 301)

SUBTASK 12-22-71-480-001

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

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

SUBTASK 12-22-71-640-001

(2) Lubricate the main track rollers on the leading edge slats with grease, D00633.

H. 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 clean and free of all unwanted objects (FOD), the housing (can) assemblies of the slat main tracks, at all time.

SUBTASK 12-22-71-080-001

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

(2) Do this task: Leading Edge Flap and Slat Locks 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.

(3) To pressurize hydraulic system B, do this task: Hydraulic System A or B Pressurization, TASK 29-11-00-860-801.

SUBTASK 12-22-71-860-005

(4) Move the flap control lever to the UP position to fully retract the leading edge slats.

SUBTASK 12-22-71-860-006

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

SUBTASK 12-22-71-410-005

(6) For the left wing, install these access panels:

Number	Name/Location
521CB	Lower Leading Edge Access Panel - Slat Station 53.95
521FB	Lower Leading Edge Access Panel - Slat Station 116.32
521JB	Lower Leading Edge Access Panel - Slat Station 170.20
521MB	Lower Leading Edge Access Panel - Slat Station 234.65
521QB	Lower Leading Edge Access Panel - Slat Station 289.17
521TB	Lower Leading Edge Access Panel - Slat Station 356.14
521WB	Lower Leading Edge Access Panel - Slat Station 415.79
521ZB	Lower Leading Edge Access Panel - Slat Station 488.05

SUBTASK 12-22-71-410-006

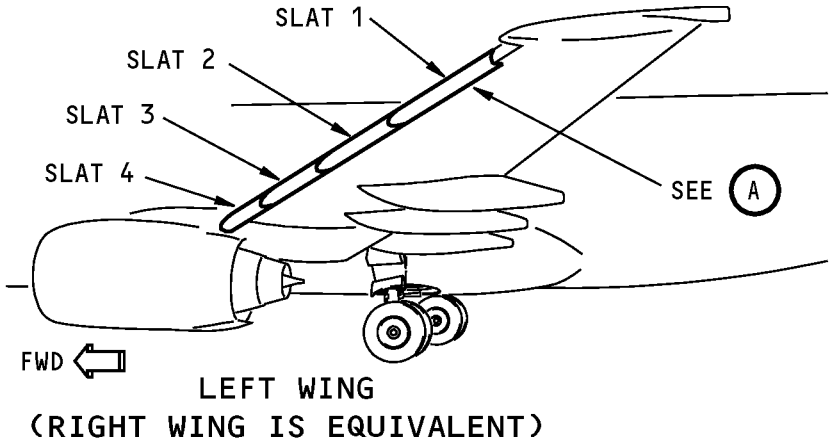
(7) For the right wing, install these access panels:

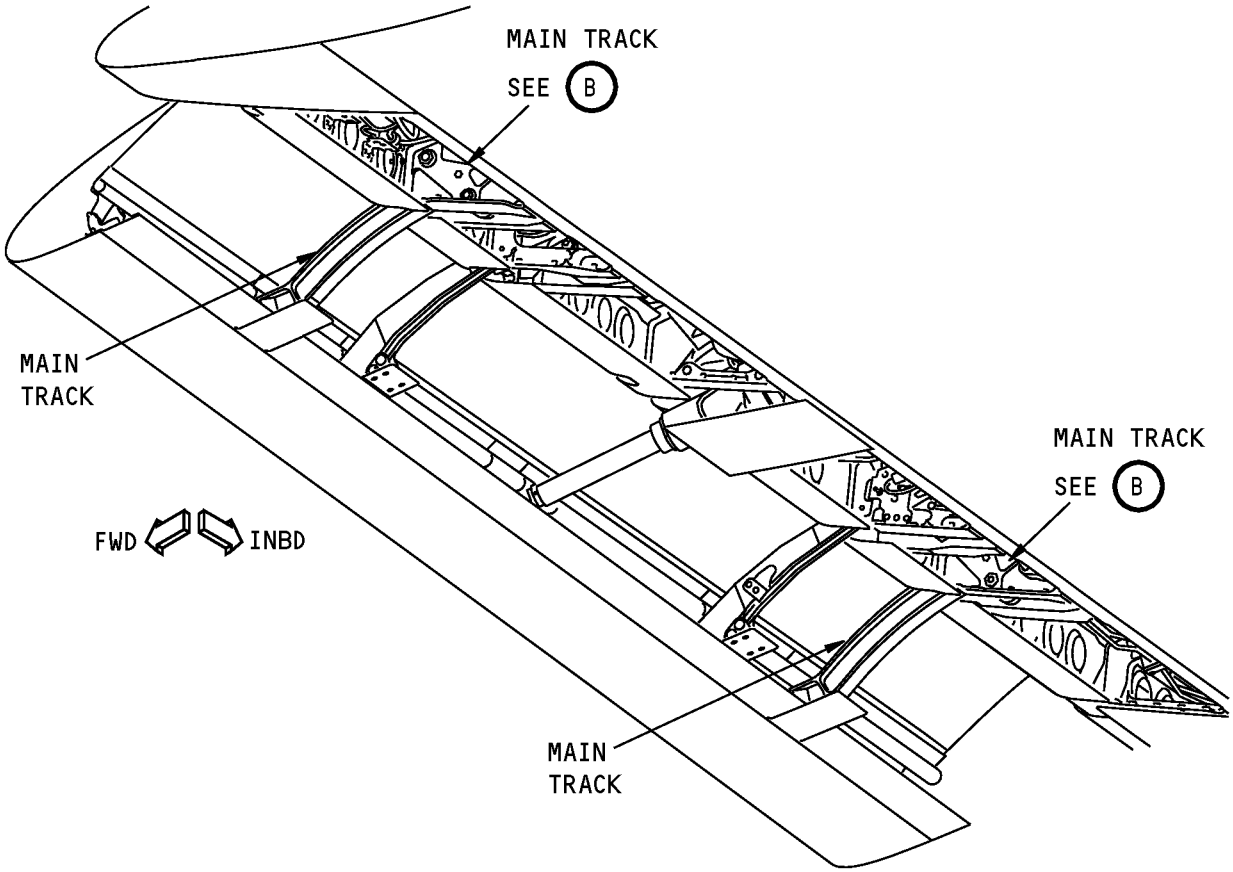
Number	Name/Location
621CB	Lower Leading Edge Access Panel - Slat Station 53.95
621FB	Lower Leading Edge Access Panel - Slat Station 112.52
621HB	Lower Leading Edge Access Panel - Slat Station 170.21
621LB	Lower Leading Edge Access Panel - Slat Station 234.59
621PB	Lower Leading Edge Access Panel - Slat Station 289.18
621SB	Lower Leading Edge Access Panel - Slat Station 356.15
621VB	Lower Leading Edge Access Panel - Slat Station 415.79
621YB	Lower Leading Edge Access Panel - Slat Station 488.04

Table 301/12-22-71-993-805 Leading Edge Slat Main Track Rollers Servicing (Fig. 301)

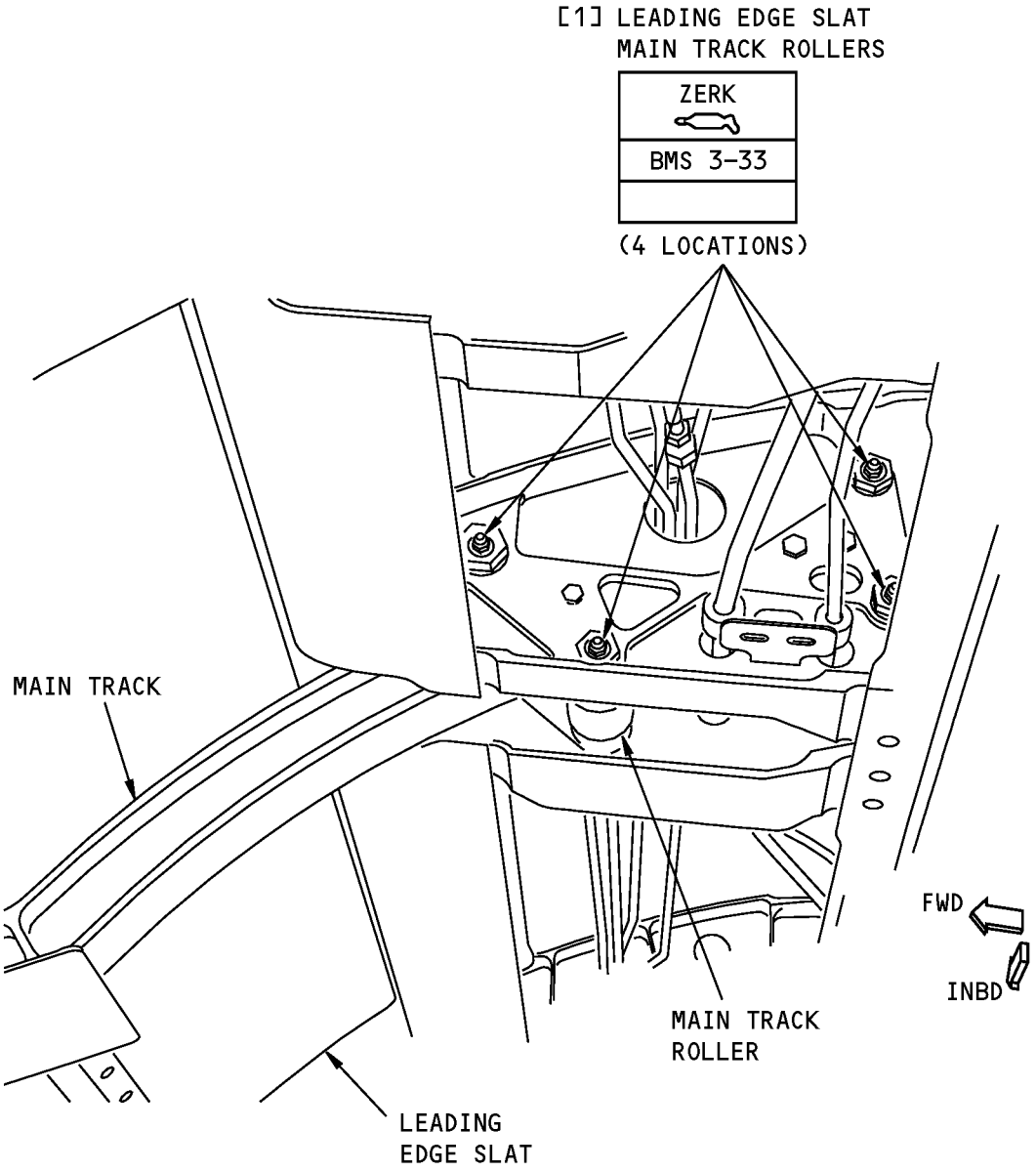
Item No.	Nomenclature	Lubricant	Method of Application	Number of Locations
1	Main track roller bearings	grease, D00633	Zerk	32

END OF TASK





Leading Edge Slat Main Track Rollers Servicing
Figure 301 (Sheet 1 of 2)/12-22-71-990-801



INBOARD MAIN TRACK
(OUTBOARD MAIN TRACK IS OPPOSITE)
(SLAT 1 IS SHOWN, SLATS 2, 3, AND 4 ARE EQUIVALENT)

4 POINTS

B

Leading Edge Slat Main Track Rollers Servicing
Figure 301 (Sheet 2 of 2)/12-22-71-990-801

TASK 12-22-71-640-801

3. Leading Edge Main and Auxiliary Tracks Lubrication

(Figure 302)

A. General

(1) This procedure is a scheduled maintenance task.

B. References

Reference	Title
27-81-00-080-801	Leading Edge Flap and Slat Locks Removal (P/B 201)
27-81-00-480-801	Leading Edge Flap and Slat Locks Installation (P/B 201)
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)

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
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

E. Access Panels

Number	Name/Location
521CB	Lower Leading Edge Access Panel - Slat Station 53.95
521FB	Lower Leading Edge Access Panel - Slat Station 116.32
521JB	Lower Leading Edge Access Panel - Slat Station 170.20
521MB	Lower Leading Edge Access Panel - Slat Station 234.65
521QB	Lower Leading Edge Access Panel - Slat Station 289.17
521TB	Lower Leading Edge Access Panel - Slat Station 356.14
521WB	Lower Leading Edge Access Panel - Slat Station 415.79
521ZB	Lower Leading Edge Access Panel - Slat Station 488.05
621CB	Lower Leading Edge Access Panel - Slat Station 53.95
621FB	Lower Leading Edge Access Panel - Slat Station 112.52
621HB	Lower Leading Edge Access Panel - Slat Station 170.21
621LB	Lower Leading Edge Access Panel - Slat Station 234.59
621PB	Lower Leading Edge Access Panel - Slat Station 289.18
621SB	Lower Leading Edge Access Panel - Slat Station 356.15
621VB	Lower Leading Edge Access Panel - Slat Station 415.79

(Continued)

Number	Name/Location
621YB	Lower Leading Edge Access Panel - Slat Station 488.04

F. Prepare for Lubrication

SUBTASK 12-22-71-010-005

(1) For the left wing, remove these access panels:

Number	Name/Location
521CB	Lower Leading Edge Access Panel - Slat Station 53.95
521FB	Lower Leading Edge Access Panel - Slat Station 116.32
521JB	Lower Leading Edge Access Panel - Slat Station 170.20
521MB	Lower Leading Edge Access Panel - Slat Station 234.65
521QB	Lower Leading Edge Access Panel - Slat Station 289.17
521TB	Lower Leading Edge Access Panel - Slat Station 356.14
521WB	Lower Leading Edge Access Panel - Slat Station 415.79
521ZB	Lower Leading Edge Access Panel - Slat Station 488.05

SUBTASK 12-22-71-010-006

(2) For the right wing, remove these access panels:

Number	Name/Location
621CB	Lower Leading Edge Access Panel - Slat Station 53.95
621FB	Lower Leading Edge Access Panel - Slat Station 112.52
621HB	Lower Leading Edge Access Panel - Slat Station 170.21
621LB	Lower Leading Edge Access Panel - Slat Station 234.59
621PB	Lower Leading Edge Access Panel - Slat Station 289.18
621SB	Lower Leading Edge Access Panel - Slat Station 356.15
621VB	Lower Leading Edge Access Panel - Slat Station 415.79
621YB	Lower Leading Edge Access Panel - Slat Station 488.04

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.

(3) Keep clean and free of all unwanted objects (FOD), the housing (can) assemblies of the slat main tracks, at all time.

SUBTASK 12-22-71-860-007

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.

(4) To pressurize hydraulic system B, do this task: Hydraulic System A or B Pressurization, TASK 29-11-00-860-801.

HAP 001-013, 015-026, 028-036, 101-999

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.

(5) Move the flap control lever to the 10-unit detent to fully extend the leading edge slats.

HAP 037-054

SUBTASK 12-22-71-860-013

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.

(6) Move the flap control lever to the 30-unit detent to fully extend the leading edge slats.

HAP ALL

SUBTASK 12-22-71-860-009

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

G. Leading Edge Main and Auxiliary Tracks Lubrication

(Table 302)

SUBTASK 12-22-71-480-002

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

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

SUBTASK 12-22-71-640-002

(2) Lubricate the surfaces of the main tracks [1] and the auxiliary tracks [2] with grease, D00633.

H. 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 12-22-71-080-002

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

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

SUBTASK 12-22-71-860-010

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.

(3) 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

(4) Move the flap control lever to the UP position to fully retract the leading edge slats.

SUBTASK 12-22-71-860-012

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

SUBTASK 12-22-71-410-007

(6) For the left wing, install these access panels:

Number	Name/Location
521CB	Lower Leading Edge Access Panel - Slat Station 53.95
521FB	Lower Leading Edge Access Panel - Slat Station 116.32
521JB	Lower Leading Edge Access Panel - Slat Station 170.20
521MB	Lower Leading Edge Access Panel - Slat Station 234.65
521QB	Lower Leading Edge Access Panel - Slat Station 289.17
521TB	Lower Leading Edge Access Panel - Slat Station 356.14
521WB	Lower Leading Edge Access Panel - Slat Station 415.79
521ZB	Lower Leading Edge Access Panel - Slat Station 488.05

SUBTASK 12-22-71-410-008

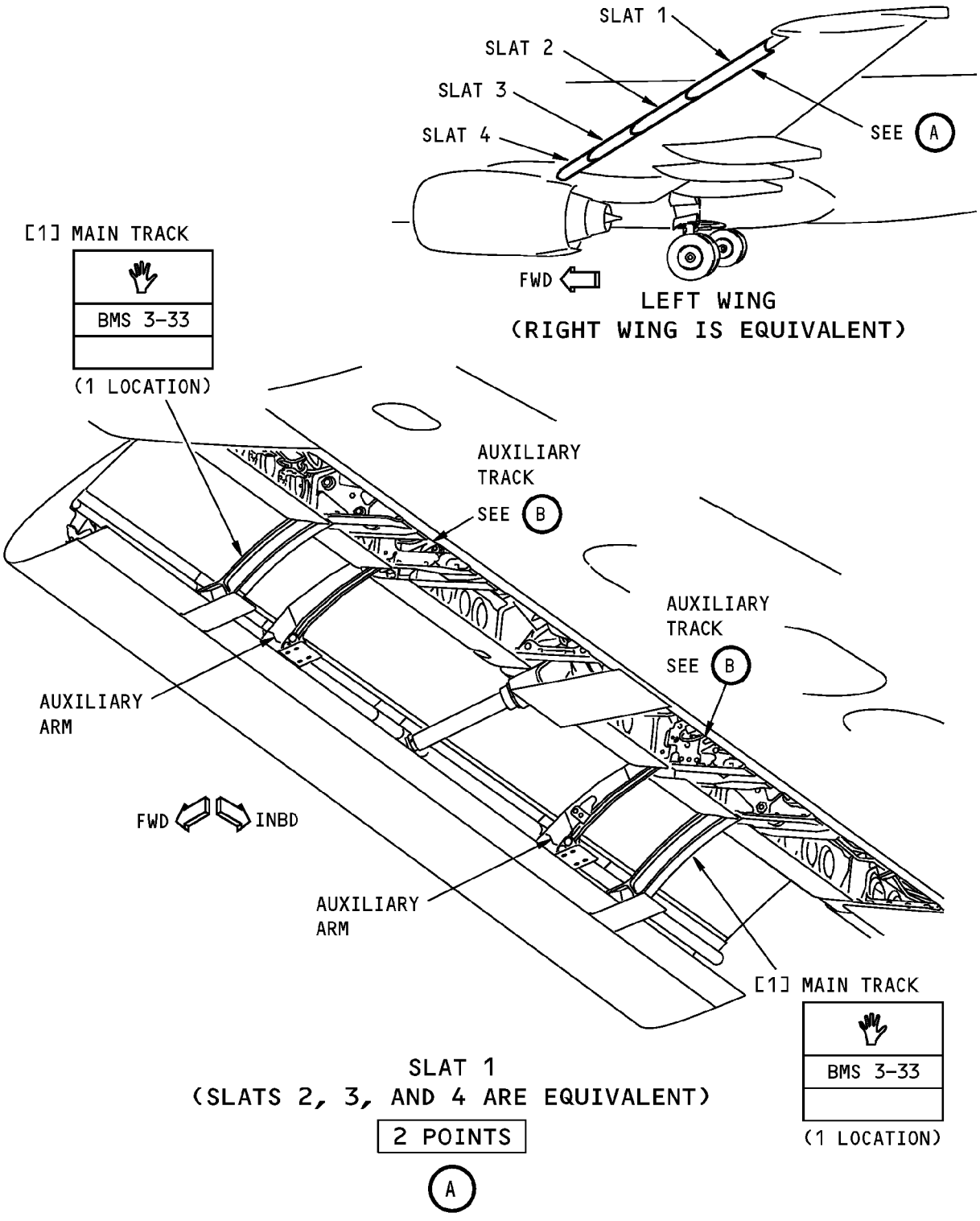
(7) For the right wing, install these access panels:

Number	Name/Location
621CB	Lower Leading Edge Access Panel - Slat Station 53.95
621FB	Lower Leading Edge Access Panel - Slat Station 112.52
621HB	Lower Leading Edge Access Panel - Slat Station 170.21
621LB	Lower Leading Edge Access Panel - Slat Station 234.59
621PB	Lower Leading Edge Access Panel - Slat Station 289.18
621SB	Lower Leading Edge Access Panel - Slat Station 356.15
621VB	Lower Leading Edge Access Panel - Slat Station 415.79
621YB	Lower Leading Edge Access Panel - Slat Station 488.04

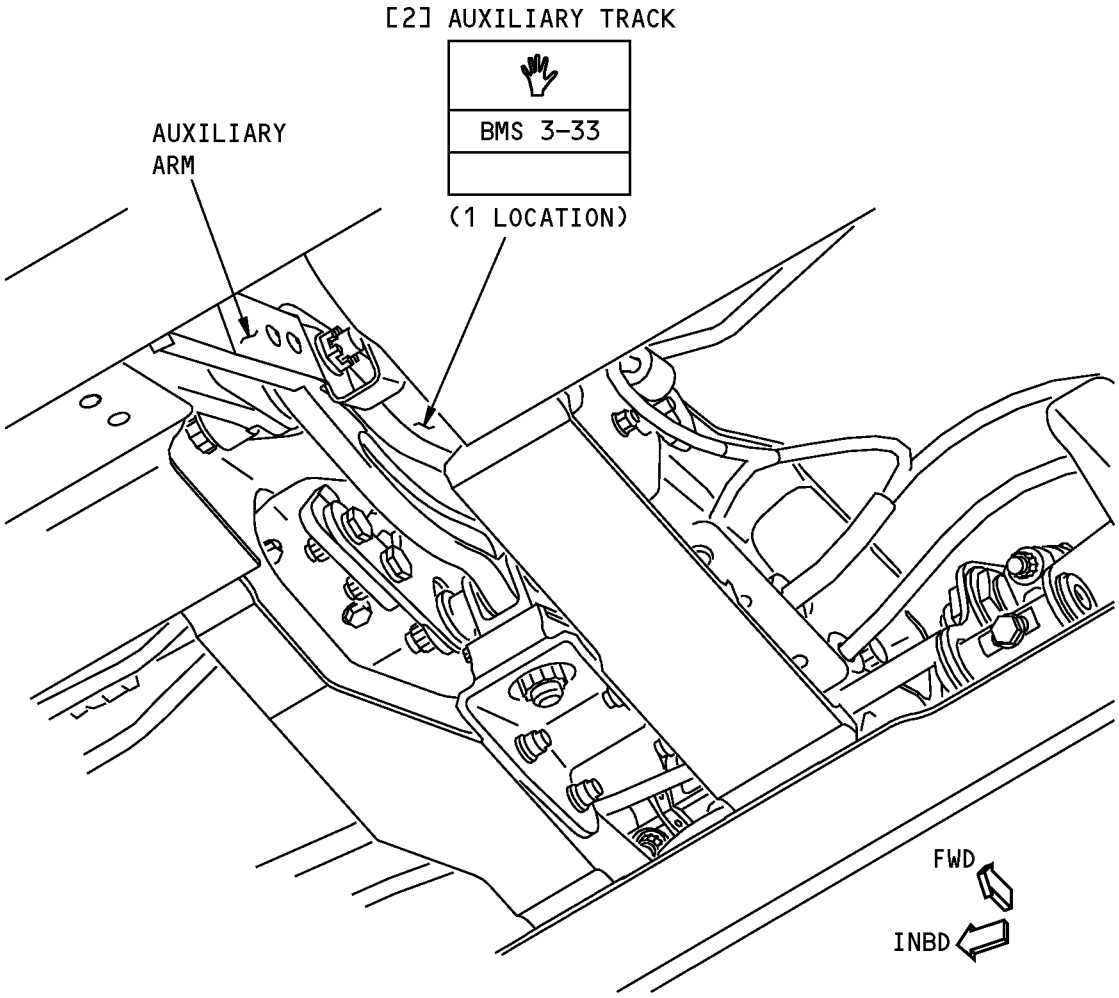
Table 302/12-22-71-993-806 Leading Edge Main and Auxiliary Tracks Servicing (Fig. 302)

Item No.	Nomenclature	Lubricant	Method of Application	Number of Locations
1	Main track	grease, D00633	Hand	8
2	Auxiliary track	grease, D00633	Hand	8

END OF TASK



Leading Edge Main and Auxiliary Tracks Servicing
Figure 302 (Sheet 1 of 2)/12-22-71-990-802



INBOARD AUXILIARY TRACK
(OUTBOARD AUXILIARY TRACK IS OPPOSITE)

1 POINT

B

Leading Edge Main and Auxiliary Tracks Servicing
Figure 302 (Sheet 2 of 2)/12-22-71-990-802

SPEED BRAKE LUBRICATION - SERVICING

1. General

A. This procedure contains scheduled maintenance task data.

B. This procedure has a task to lubricate the speedbrake lever brake assembly.

TASK 12-22-81-600-801

2. Speedbrake Lever Brake Assembly Lubrication

(Figure 301)

A. General

(1) This procedure is a scheduled maintenance task.

B. References

Reference	Title
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)

C. 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

D. Location Zones

Zone	Area
112	Area Forward of Nose Landing Gear Wheel Well
211	Flight Compartment - Left
212	Flight Compartment - Right

E. Access Panels

Number	Name/Location
112A	Forward Access Door

F. Prepare for Lubrication

SUBTASK 12-22-81-860-001

(1) Make sure the systems A and B hydraulic power is off. To remove it, do this task: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805

SUBTASK 12-22-81-860-002

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

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	9	C00440	FLIGHT CONTROL AUTO SPEED BRAKE

SUBTASK 12-22-81-860-003

(3) Put the speed brake lever in the DOWN position.

SUBTASK 12-22-81-010-001

(4) Open this access panel to get access the auto speed brake actuator lever brake mechanism [1].

Number	Name/Location
112A	Forward Access Door

G. Speedbrake Lever Brake Assembly Lubrication

(Table 301)

SUBTASK 12-22-81-640-001

(1) Apply a thin film of grease, D00633 (preferred) or grease, D00013 (alternate) to the speedbrake lever brake mechanism [1].

H. Put the Airplane Back to Its Usual Condition

SUBTASK 12-22-81-860-004

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

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	9	C00440	FLIGHT CONTROL AUTO SPEED BRAKE

SUBTASK 12-22-81-860-005

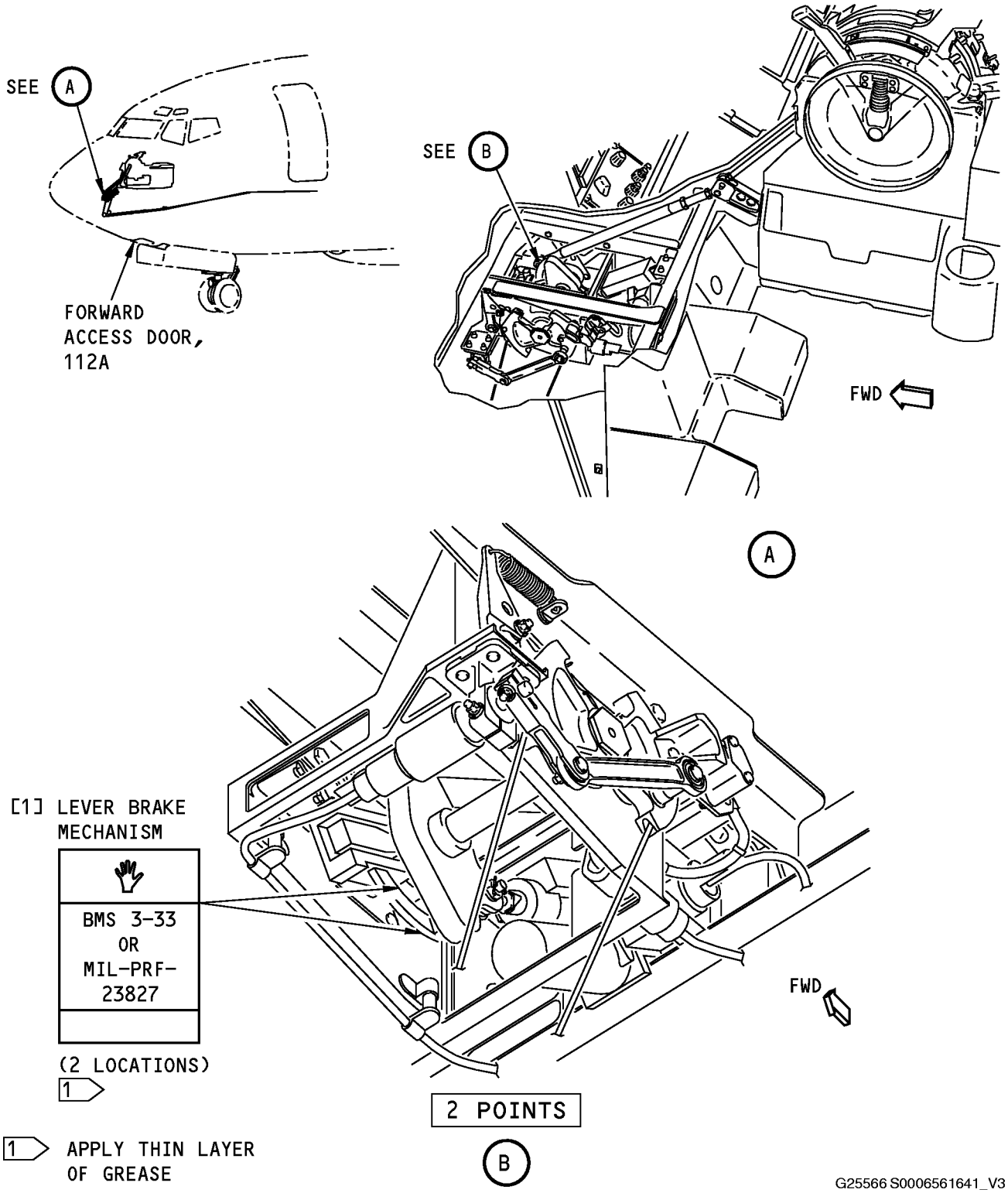
(2) Close this access panel:

Number	Name/Location
112A	Forward Access Door

Table 301/12-22-81-993-802 Auto Speed Brake Actuator Lever Brake Servicing (Fig. 301)

Item No.	Nomenclature	Lubricant	Method of Application	Number of Locations
1	Lever Brake Mechanism	grease, D00633 (preferred) or grease, D00013 (alternate)	Hand	2

END OF TASK



Auto Speed Brake Actuator Lever Brake Servicing
Figure 301/12-22-81-990-801

MAIN LANDING GEAR SUPPORT BEAM - SERVICING

1. General

A. This procedure contains scheduled maintenance task data.

B. This procedure contains one task:

(1) Lubricate the Support Beam Assembly of the Main Landing Gear.

TASK 12-25-07-600-801

2. Lubricate the Support Beam Assembly of the Main Landing Gear

(Figure 301)

A. General

(1) This procedure is a scheduled maintenance task.

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

E. Prepare to Lubricate the Support Beam Assembly.

SUBTASK 12-25-07-490-001

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

F. Lubricate the Support Beam Assembly

SUBTASK 12-25-07-840-001

WARNING: USE GLOVES AND EYE PROTECTION WHEN YOU LUBRICATE WITH THE USE OF A GREASE GUN. LUBRICANT AT HIGH PRESSURE CAN CAUSE INJURY TO PERSONS.

(1) Put on protective gloves and eye protection.

SUBTASK 12-25-07-640-002

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 in the locations shown in (Figure 301 and Table 301).

SUBTASK 12-25-07-430-001

(3) If a fitting blows off, do these steps:

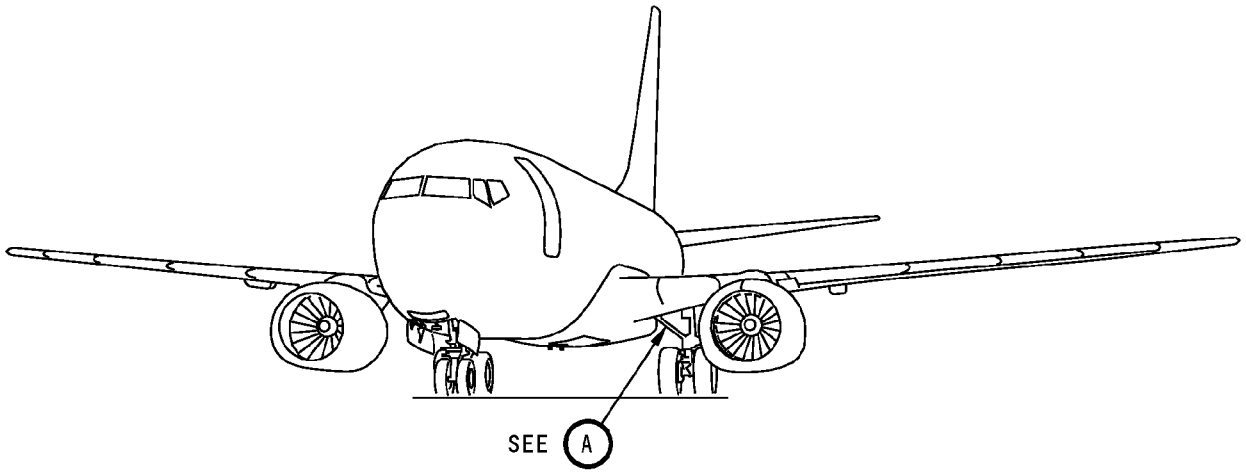
(a) Make sure there is not a blockage in the lubrication path.

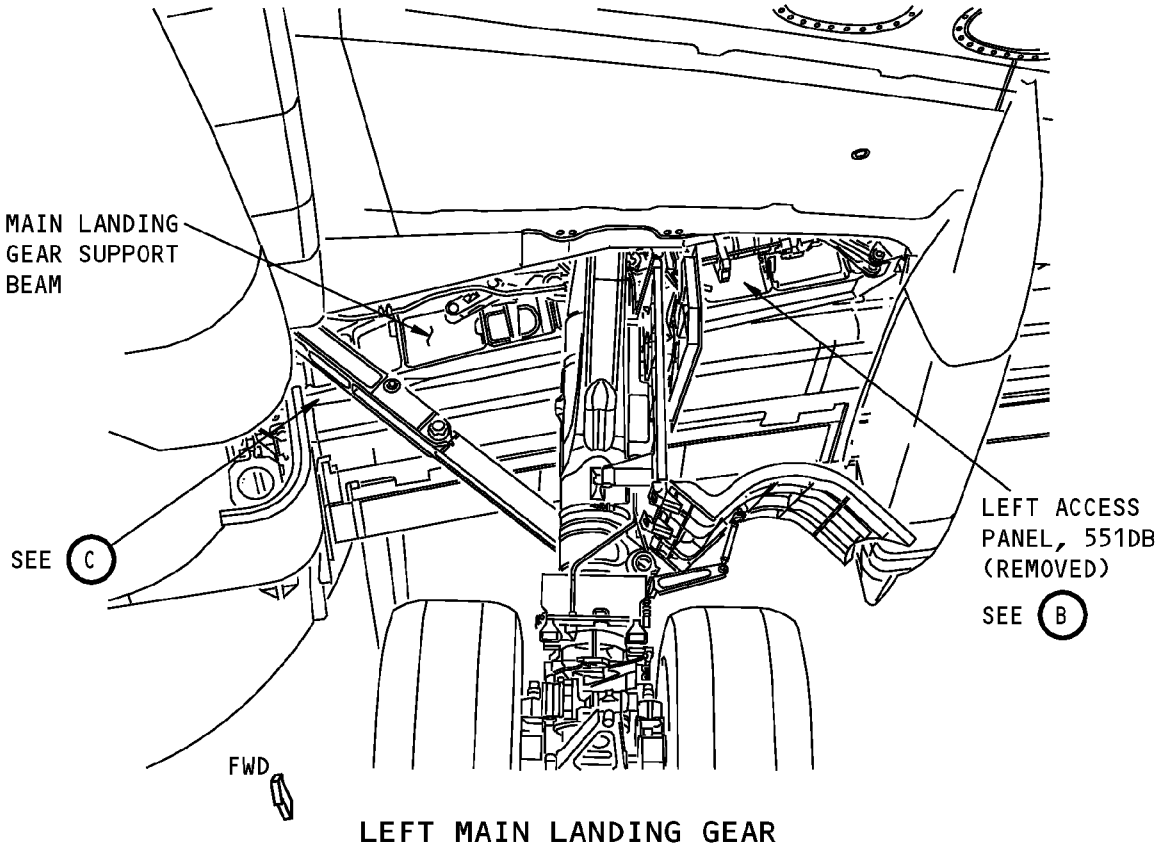
(b) Do this task: Lubrication Fitting Installation, TASK 20-10-24-420-801.

Table 301/12-25-07-993-802 Main Landing Gear Support Beam Assembly Lubrication (Fig.301)

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

END OF TASK

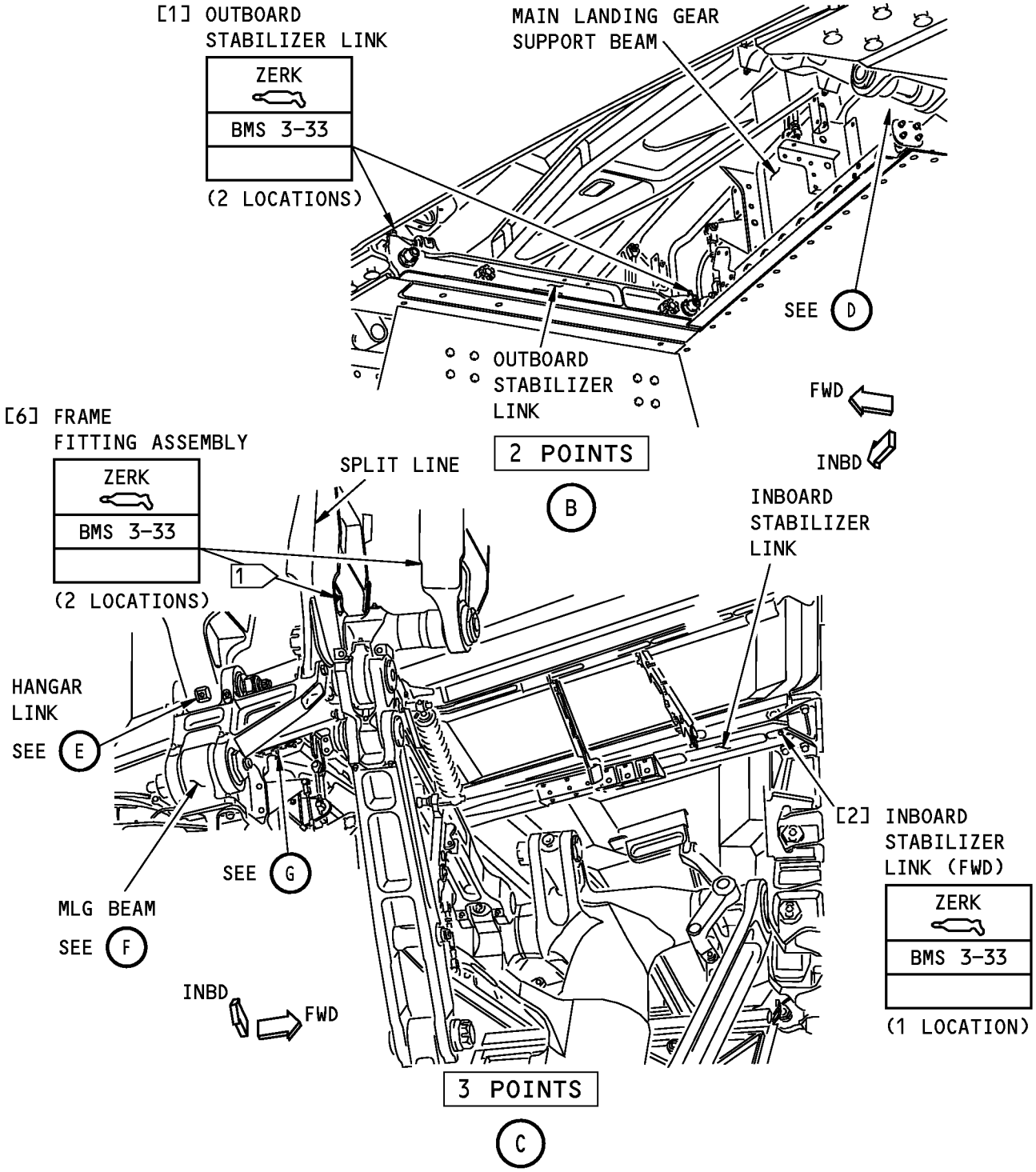




LEFT MAIN LANDING GEAR
(LEFT SIDE IS SHOWN, RIGHT SIDE IS EQUIVALENT)

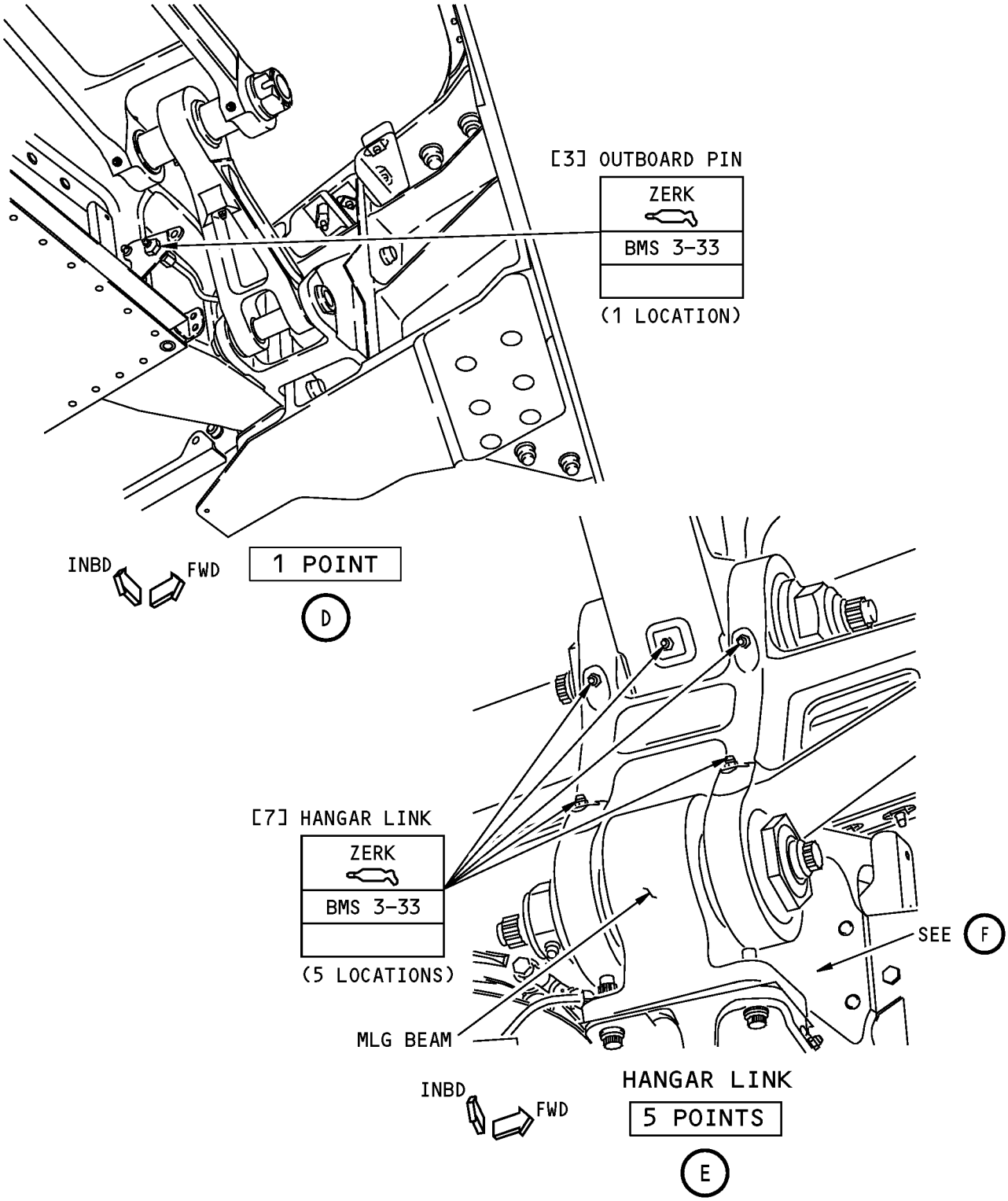
A

Main Landing Gear Support Beam Lubrication
Figure 301 (Sheet 1 of 4)/12-25-07-990-801

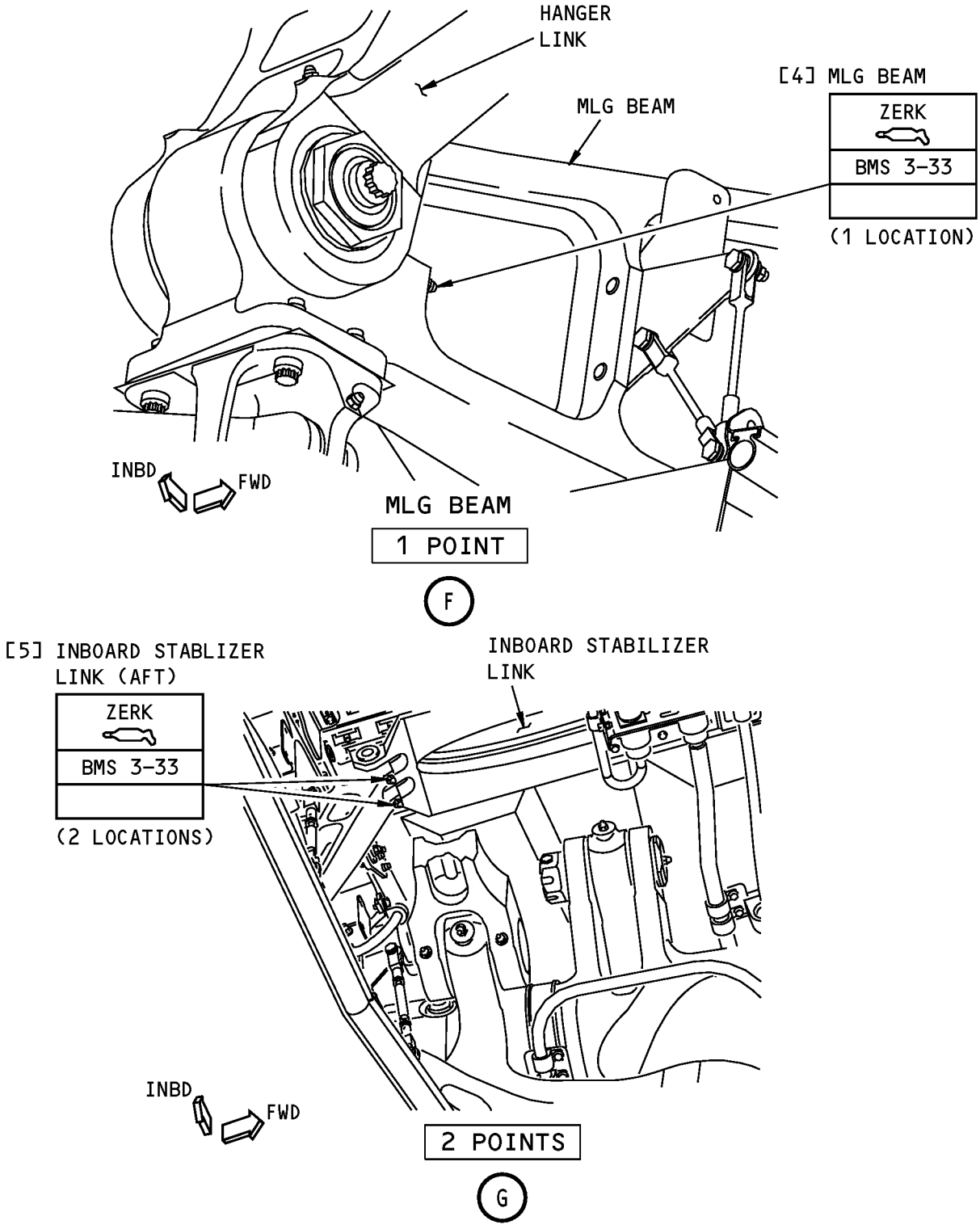


1 IF YOU SEE GREASE EXTRUDE FROM THE SPLIT LINE OF THE AFT FITTING HALVES, THEN LUBRICATE THE FITTING UNTIL ADDITIONAL GREASE EXTRUDES OUT.

Main Landing Gear Support Beam Lubrication
Figure 301 (Sheet 2 of 4)/12-25-07-990-801



Main Landing Gear Support Beam Lubrication
Figure 301 (Sheet 3 of 4)/12-25-07-990-801



Main Landing Gear Support Beam Lubrication
Figure 301 (Sheet 4 of 4)/12-25-07-990-801

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)

A. General

(1) This procedure is a scheduled maintenance task.

B. Consumable Materials

Reference	Description	Specification
D00015	Grease - Aircraft Bearing (Use BMS 3-24 until existing stocks are depleted, BMS 3-33 supersedes BMS 3-24)	BMS3-24 (Superseded by BMS 3-33)
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.

(b) To get access to the door components, move the door to the correct position.

E. Forward Entry Door Components Servicing

(Table 301)

SUBTASK 12-25-11-640-003

(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 12-25-11-640-001

(2) Lubricate the other components on the forward entry door with grease, D00633 or grease, D00015.

NOTE: BMS 3-33 (D00633) is the preferred lubricant, while BMS 3-24 (D00015) is an alternate.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 12-25-11-410-001

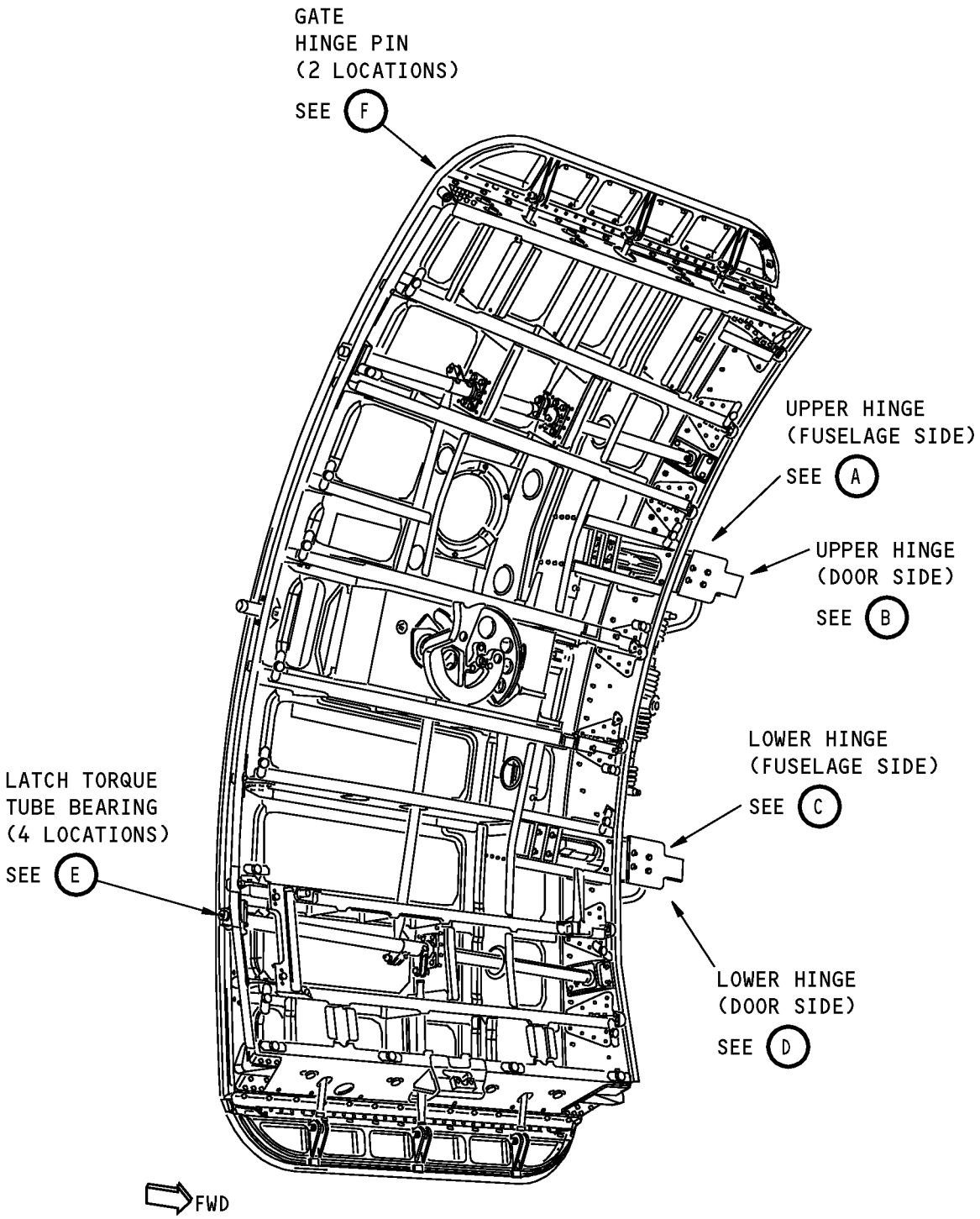
(1) Close access to the door as follows:

(a) Close and latch the door.

Table 301/12-25-11-993-803 Forward Entry Door Servicing - Components (Fig. 301)

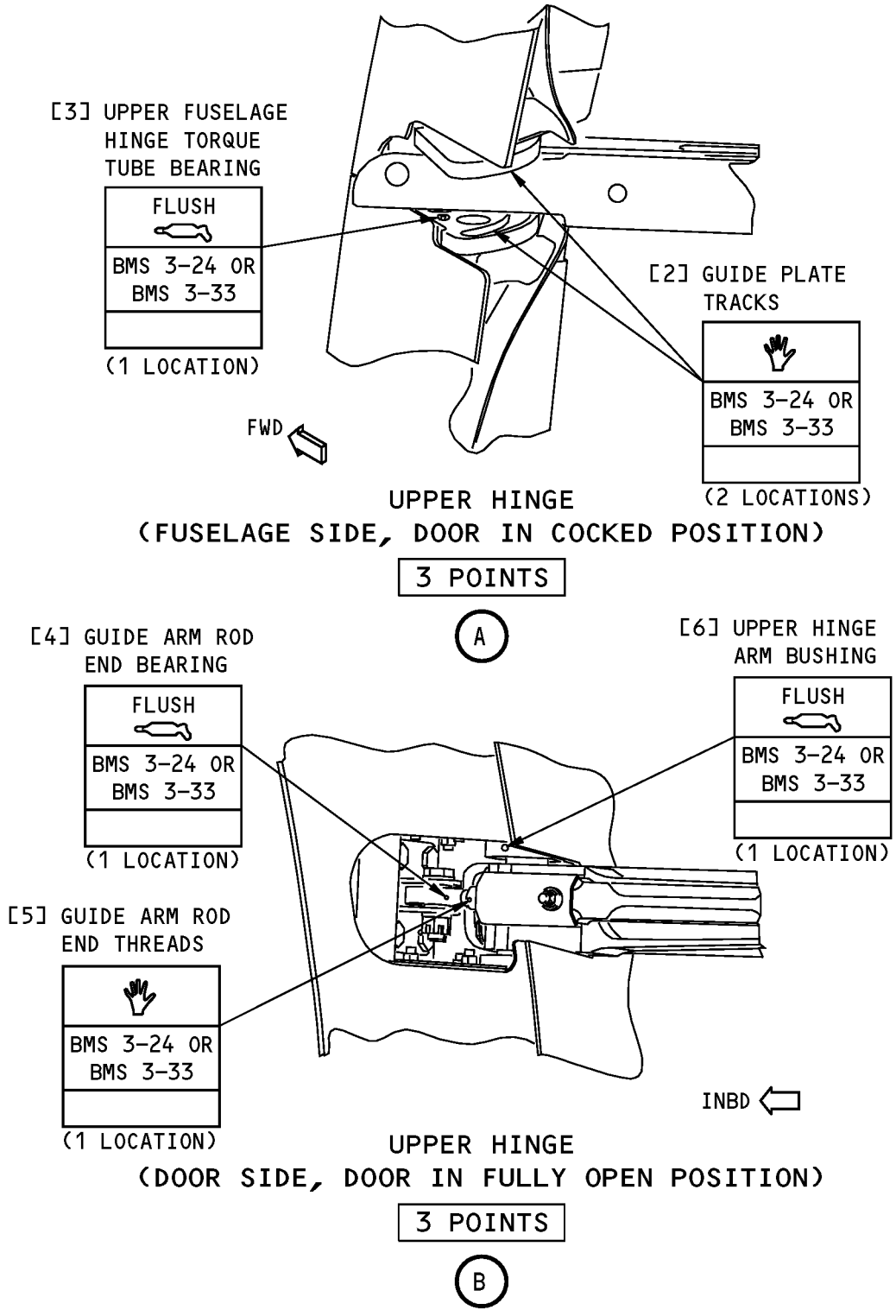
Item No.	Nomenclature	Lubricant	Method of Application	Number of Locations
1	Gate Hinge Pins	MIL-PR˜ F-32033 oil, D50101 orgrease, D00633	Oil Can, Hand	2
2	Guide Plate Tracks	grease, D00633 or grease, D00015	Hand	2
3	Upper Fuselage Hinge Torque Tube Bearing	grease, D00633 or grease, D00015	Flush	1
4	Guide Arm Rod End Bearing	grease, D00633 or grease, D00015	Flush	1
5	Guide Arm Rod End Threads	grease, D00633 or grease, D00015	Hand	1
6	Upper Hinge Arm Bushing	grease, D00633 or grease, D00015	Flush	1
7	Lower Fuselage Hinge Torque Tube Bearing	grease, D00633 or grease, D00015	Flush	1
8	Lower Hinge Arm Bushing	grease, D00633 or grease, D00015	Flush	1
9	Latch Torque Tube Bearing	grease, D00633 or grease, D00015	Flush	4

END OF TASK

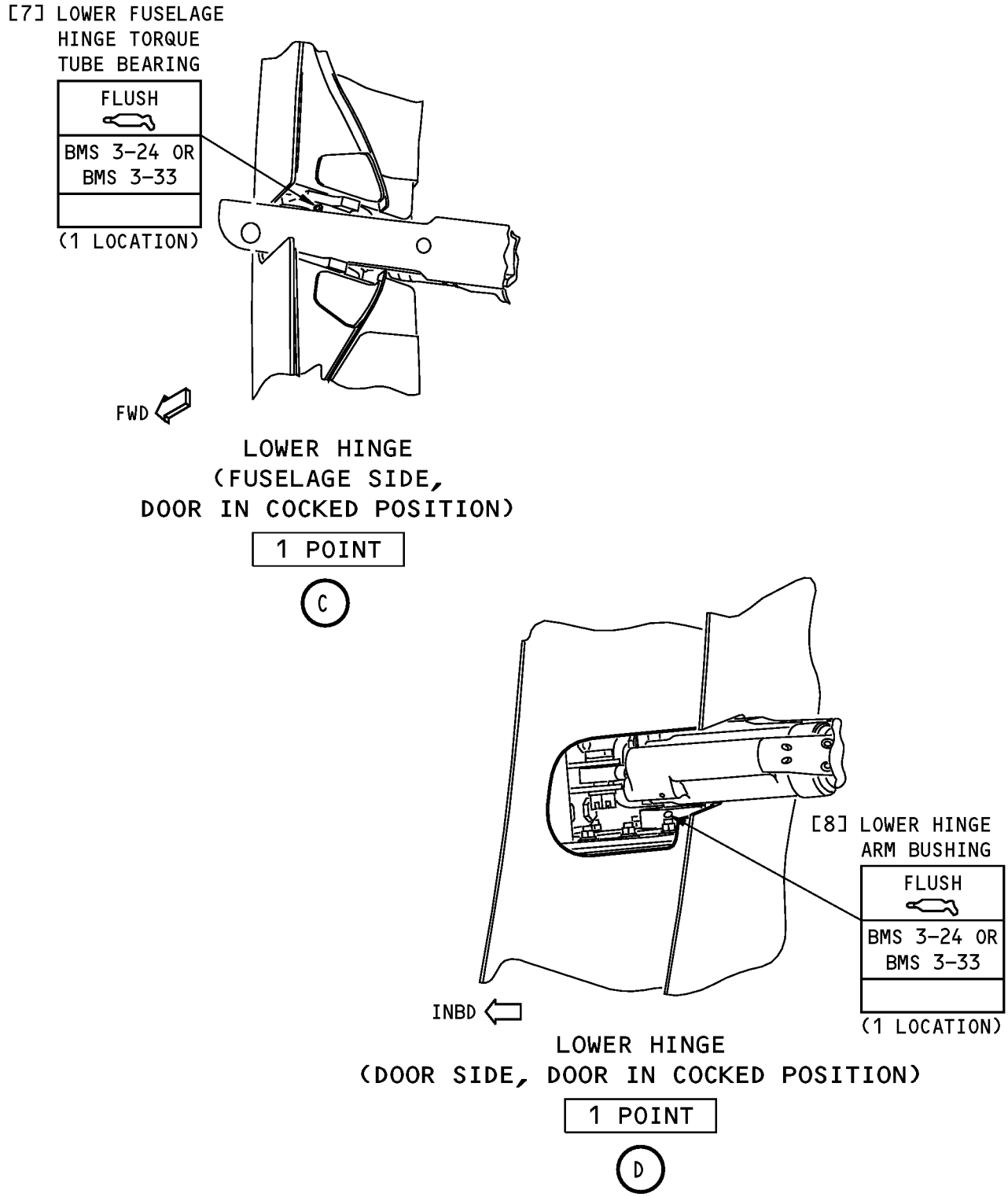


FORWARD ENTRY DOOR
(INNER SKIN AND PANELS NOT SHOWN)

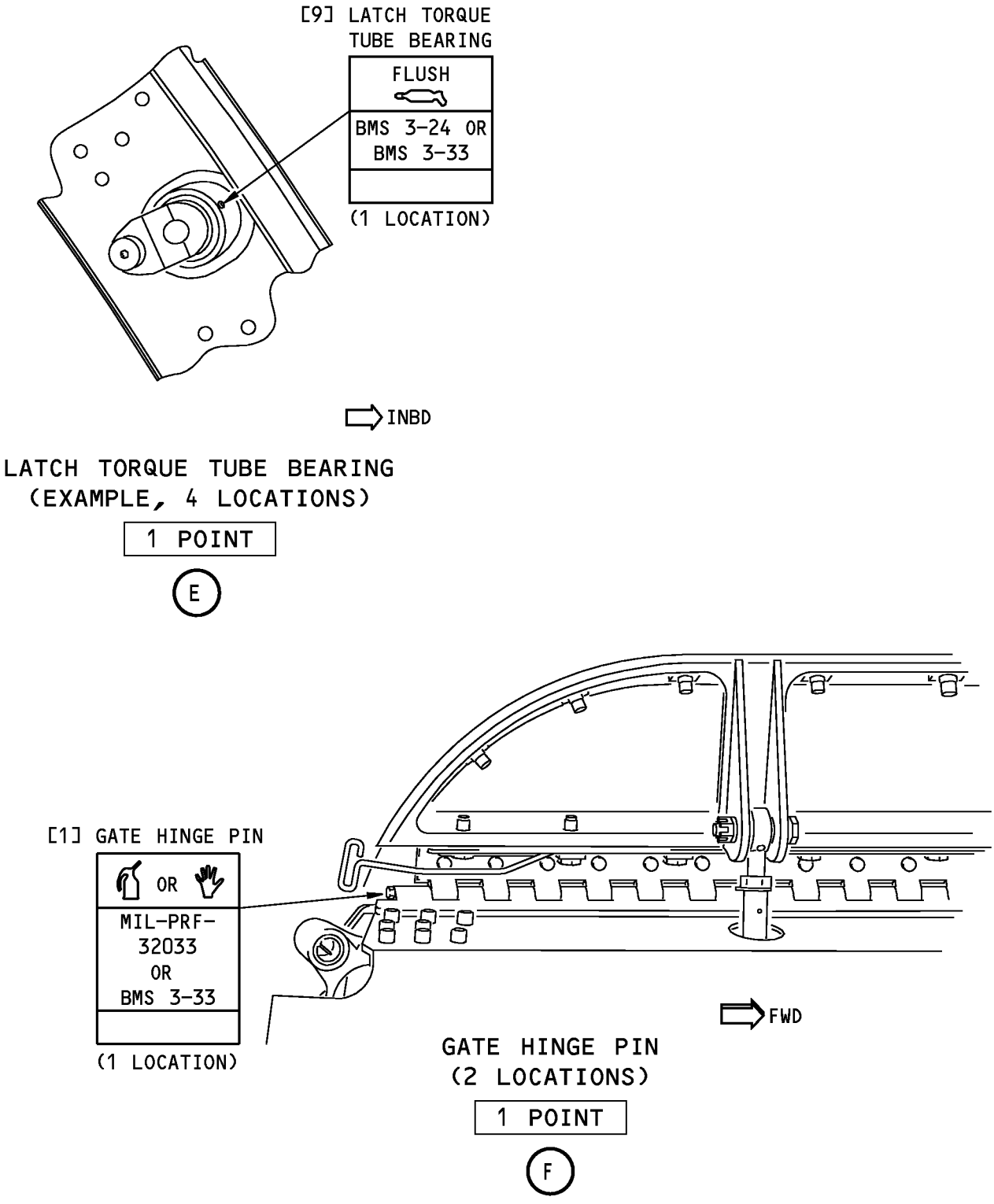
Forward Entry Door Servicing - Components
Figure 301 (Sheet 1 of 4)/12-25-11-990-803



Forward Entry Door Servicing - Components
Figure 301 (Sheet 2 of 4)/12-25-11-990-803



Forward Entry Door Servicing - Components
Figure 301 (Sheet 3 of 4)/12-25-11-990-803



Forward Entry Door Servicing - Components
Figure 301 (Sheet 4 of 4)/12-25-11-990-803

TASK 12-25-11-640-802

3. Forward Entry Door Servicing - Mechanism

(Figure 302)

A. General

(1) This procedure is a scheduled maintenance task.

B. References

Reference	Title
52-11-31-000-802	Forward Entry Door Lining Removal (P/B 401)
52-11-31-400-802	Forward Entry Door Lining Installation (P/B 401)

C. Consumable Materials

Reference	Description	Specification
D00015	Grease - Aircraft Bearing (Use BMS 3-24 until existing stocks are depleted, BMS 3-33 supersedes BMS 3-24)	BMS3-24 (Superseded by BMS 3-33)
D00633	Grease - Aircraft General Purpose	BMS3-33

D. Location Zones

Zone	Area
831	Forward Entry Door

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 52-11-31-000-802.

(b) Open the door.

(c) To get access to the door components, move the door to the correct position.

F. Forward Entry Door Mechanism Servicing

(Table 302)

SUBTASK 12-25-11-640-002

(1) Lubricate the mechanism on the forward entry door with grease, D00633 or grease, D00015.

(a) For the lubrication of the handle, operate the handle to move the grease, D00633 or grease, D00015 on the handle shaft.

NOTE: BMS 3–33 (D00633) is the preferred lubricant, while BMS 3–24 (D00015) is an alternate.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 12-25-11-410-002

(1) Close access to the door as follows:

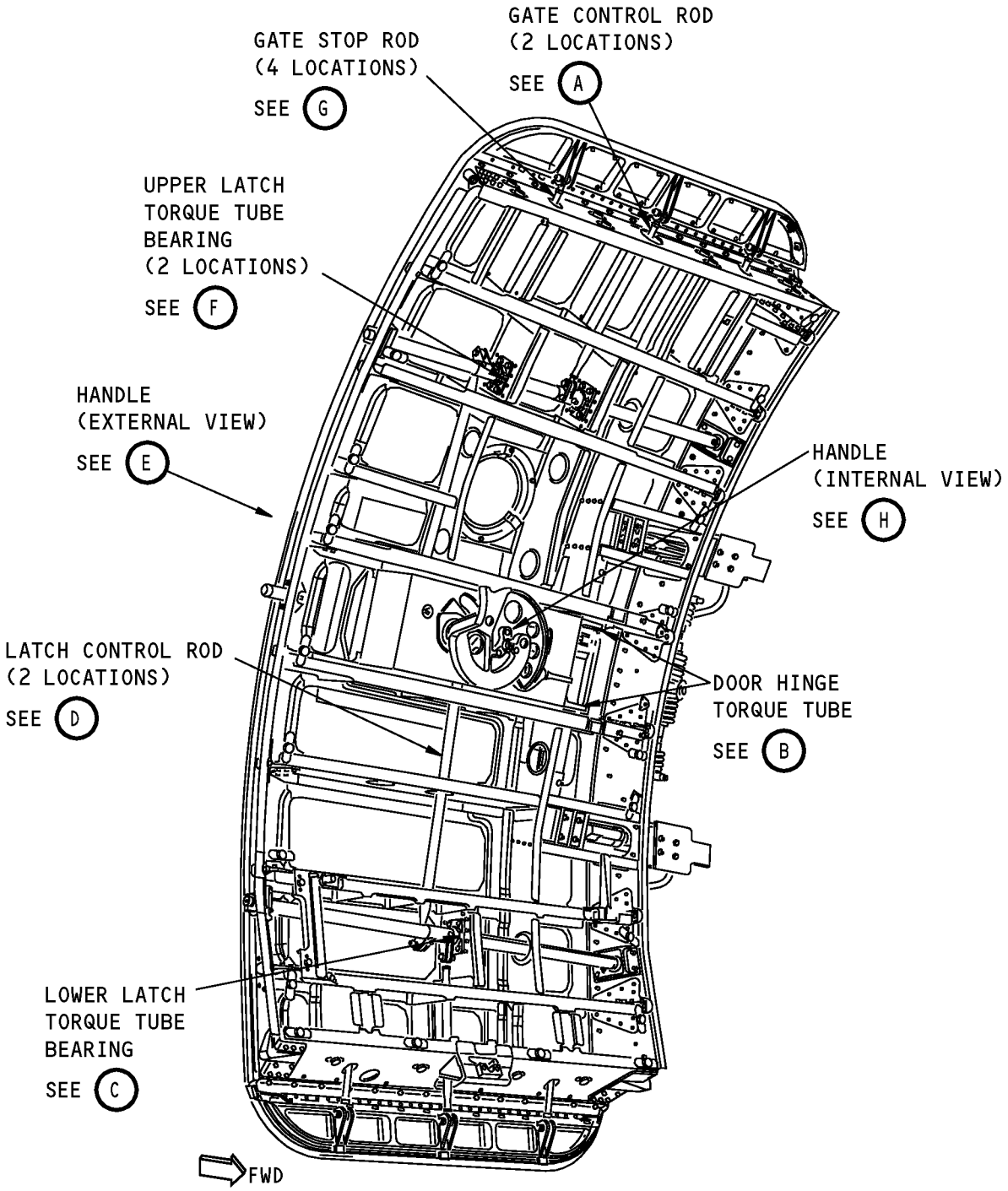
(a) Do this task: Forward Entry Door Lining Installation, TASK 52-11-31-400-802.

(b) Close and latch the door.

Table 302/12-25-11-993-804 Forward Entry Door Servicing - Mechanism (Fig. 302)

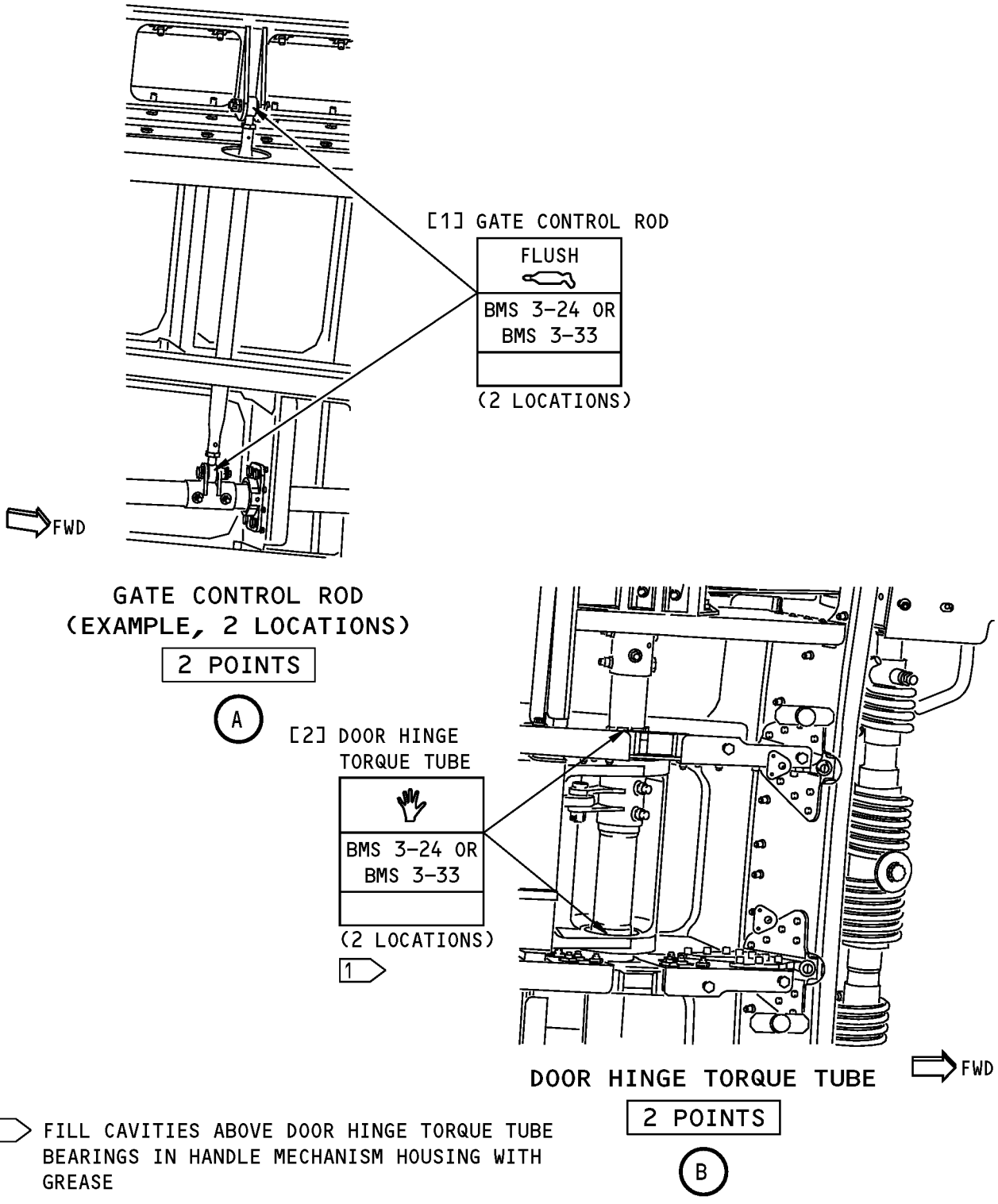
Item No.	Nomenclature	Lubricant	Method of Application	Number of Locations
1	Gate Control Rods	grease, D00633 or grease, D00015	Flush	4
2	Door Hinge Torque Tube	grease, D00633 or grease, D00015	Hand	2
3	Lower Latch Torque Tube Bearing	grease, D00633 or grease, D00015	Flush	1
4	Latch Control Rods	grease, D00633 or grease, D00015	Flush	2
5	Handle	grease, D00633 or grease, D00015	Hand	1
6	Upper Latch Torque Tube Bearings	grease, D00633 or grease, D00015	Flush	2
7	Gate Stop Rods	grease, D00633 or grease, D00015	Flush	8
8	Cam Follower Bearings	grease, D00633 or grease, D00015	Flush	2

—————— END OF TASK ——————

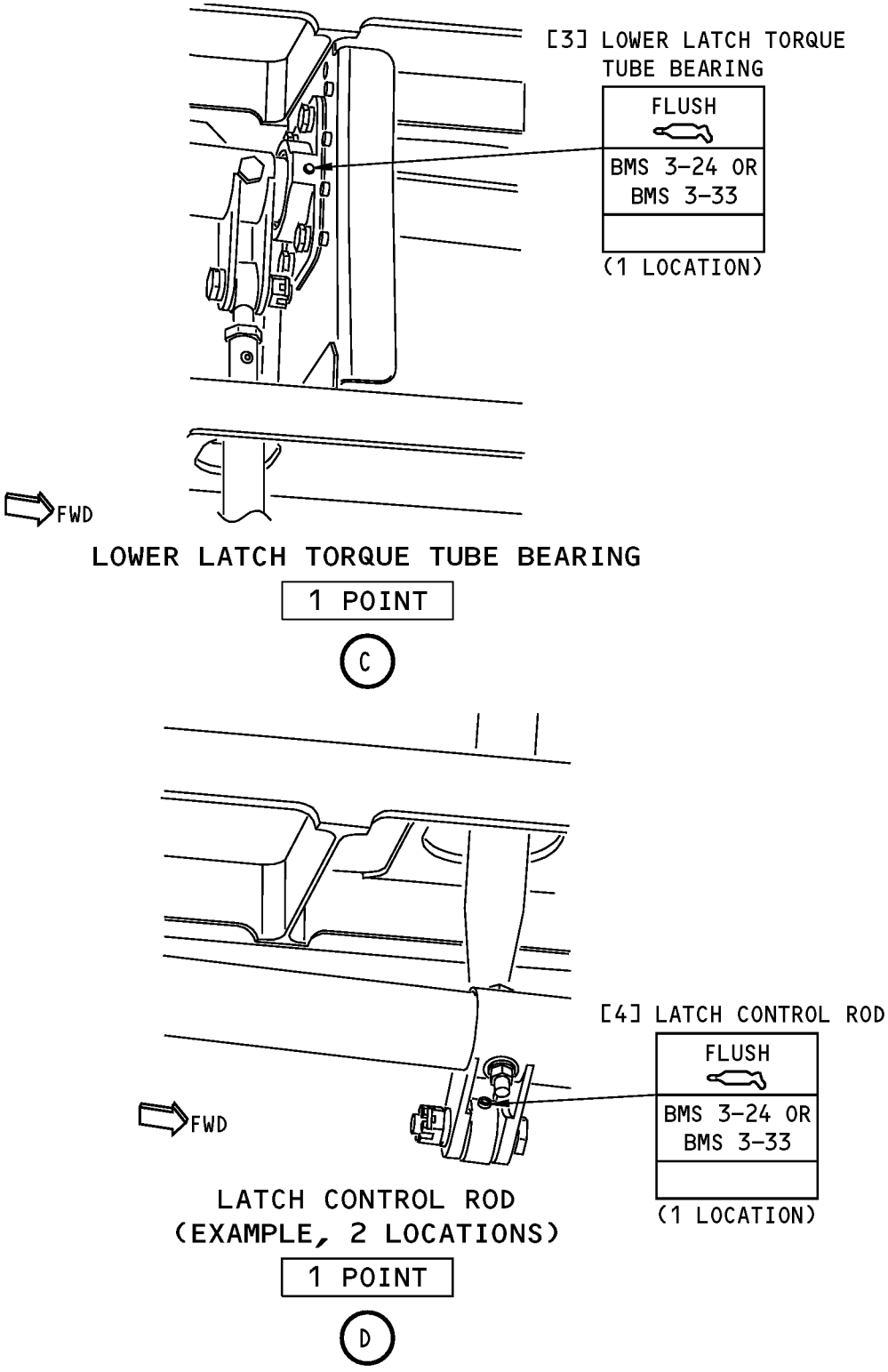


FORWARD ENTRY DOOR
(INNER SKIN AND PANELS REMOVED)

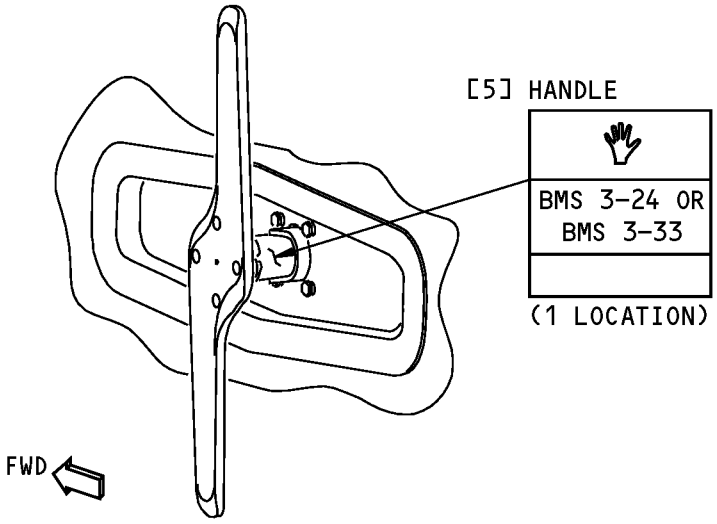
Forward Entry Door Servicing - Mechanism
Figure 302 (Sheet 1 of 5)/12-25-11-990-802



Forward Entry Door Servicing - Mechanism
Figure 302 (Sheet 2 of 5)/12-25-11-990-802



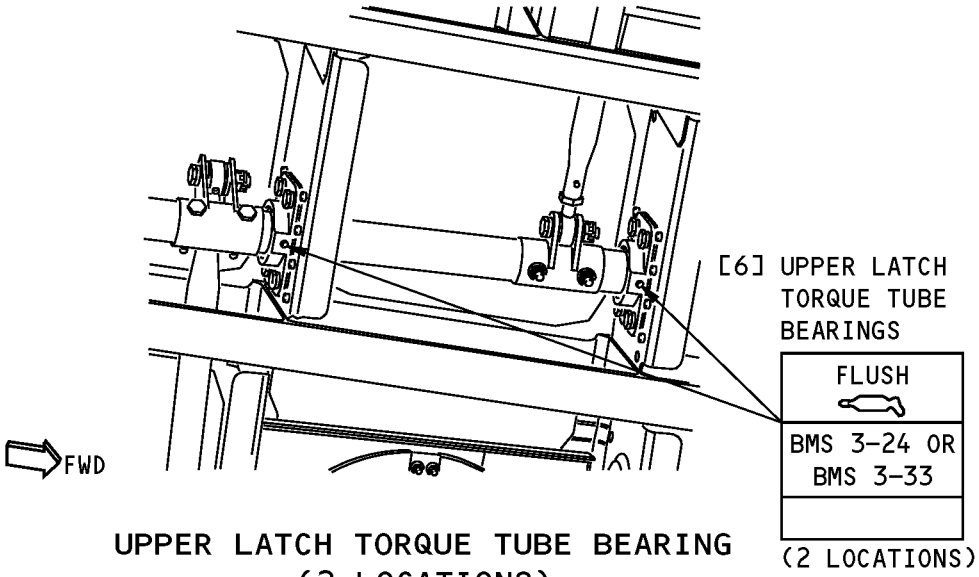
Forward Entry Door Servicing - Mechanism
Figure 302 (Sheet 3 of 5)/12-25-11-990-802



HANDLE
(EXTERNAL VIEW, HANDLE EXTENDED
AND TURNED 90 DEGREES)

1 POINT

E

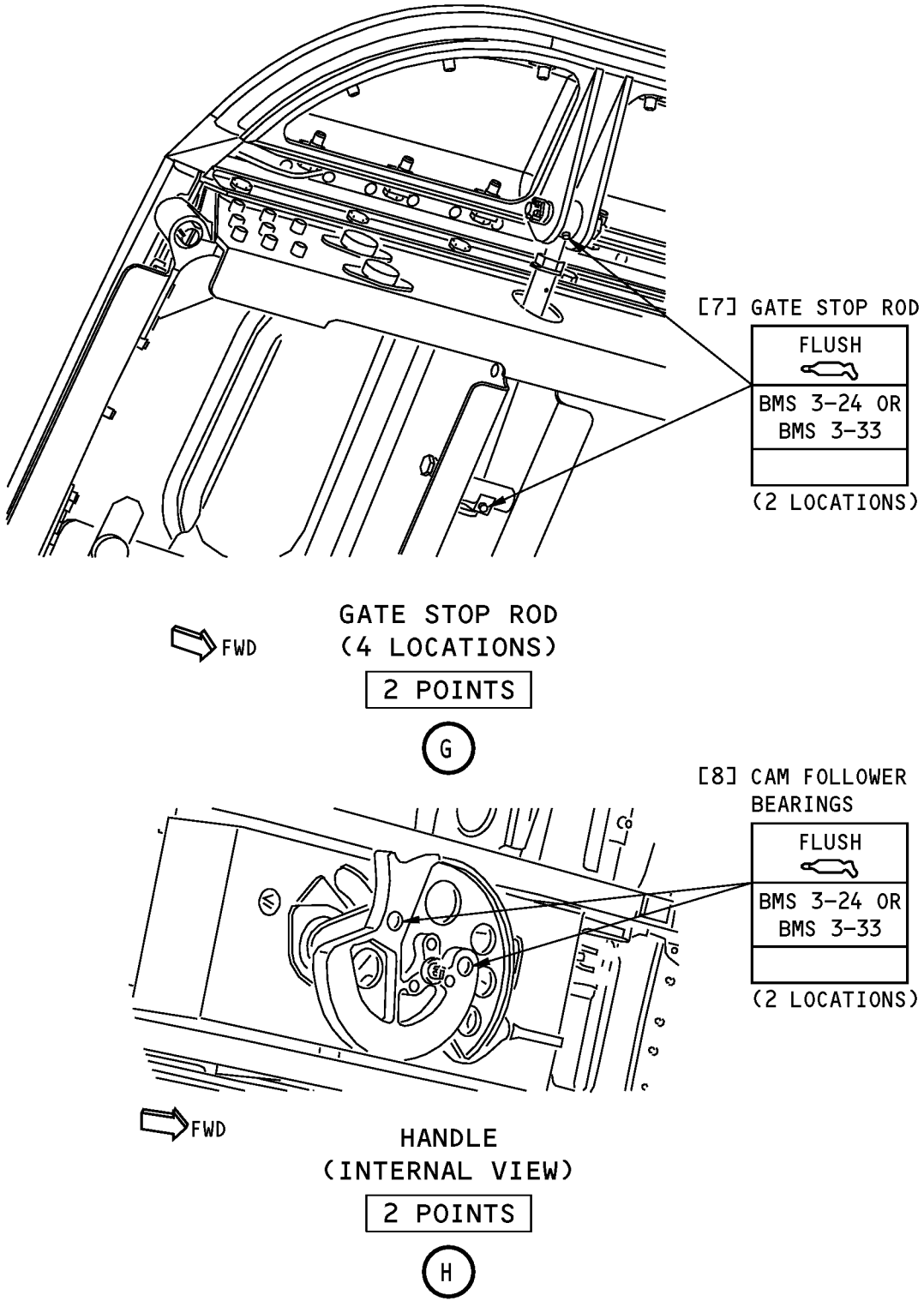


UPPER LATCH TORQUE TUBE BEARING
(2 LOCATIONS)

2 POINTS

F

Forward Entry Door Servicing - Mechanism
Figure 302 (Sheet 4 of 5)/12-25-11-990-802



Forward Entry Door Servicing - Mechanism
Figure 302 (Sheet 5 of 5)/12-25-11-990-802

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)

A. General

(1) This procedure is a scheduled maintenance task.

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 Servicing

SUBTASK 12-25-12-010-001

(1) Get access to the door components as follows:

(a) Open the door.

(b) To get access to the door components, move the door to the correct position.

E. Aft Entry Door Components Servicing

(Table 301)

SUBTASK 12-25-12-640-003

(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 12-25-12-640-001

(2) Lubricate the other components on the aft entry door with grease, D00633.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 12-25-12-410-001

(1) Close access to the door as follows:

(a) Close and latch the door.

Table 301/12-25-12-993-802 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
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

END OF TASK

TASK 12-25-12-640-802

3. Aft Entry Door Servicing - Mechanism

(Figure 302)

A. General

(1) This procedure is a scheduled maintenance task.

B. References

Reference	Title
52-13-31-000-802	Aft Entry Door Lining Removal (P/B 401)
52-13-31-400-802	Aft Entry Door Lining Installation (P/B 401)

C. Consumable Materials

Reference	Description	Specification
D00633	Grease - Aircraft General Purpose	BMS3-33

D. Location Zones

Zone	Area
834	Left Aft Entry Door

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 52-13-31-000-802.

(b) Open the door.

(c) To get access to the door components, move the door to the correct position.

F. Aft Entry Door Mechanism Servicing

(Table 302)

SUBTASK 12-25-12-640-002

(1) Lubricate the mechanism on the aft entry door with grease, D00633.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 12-25-12-410-002

(1) Close access to the door as follows:

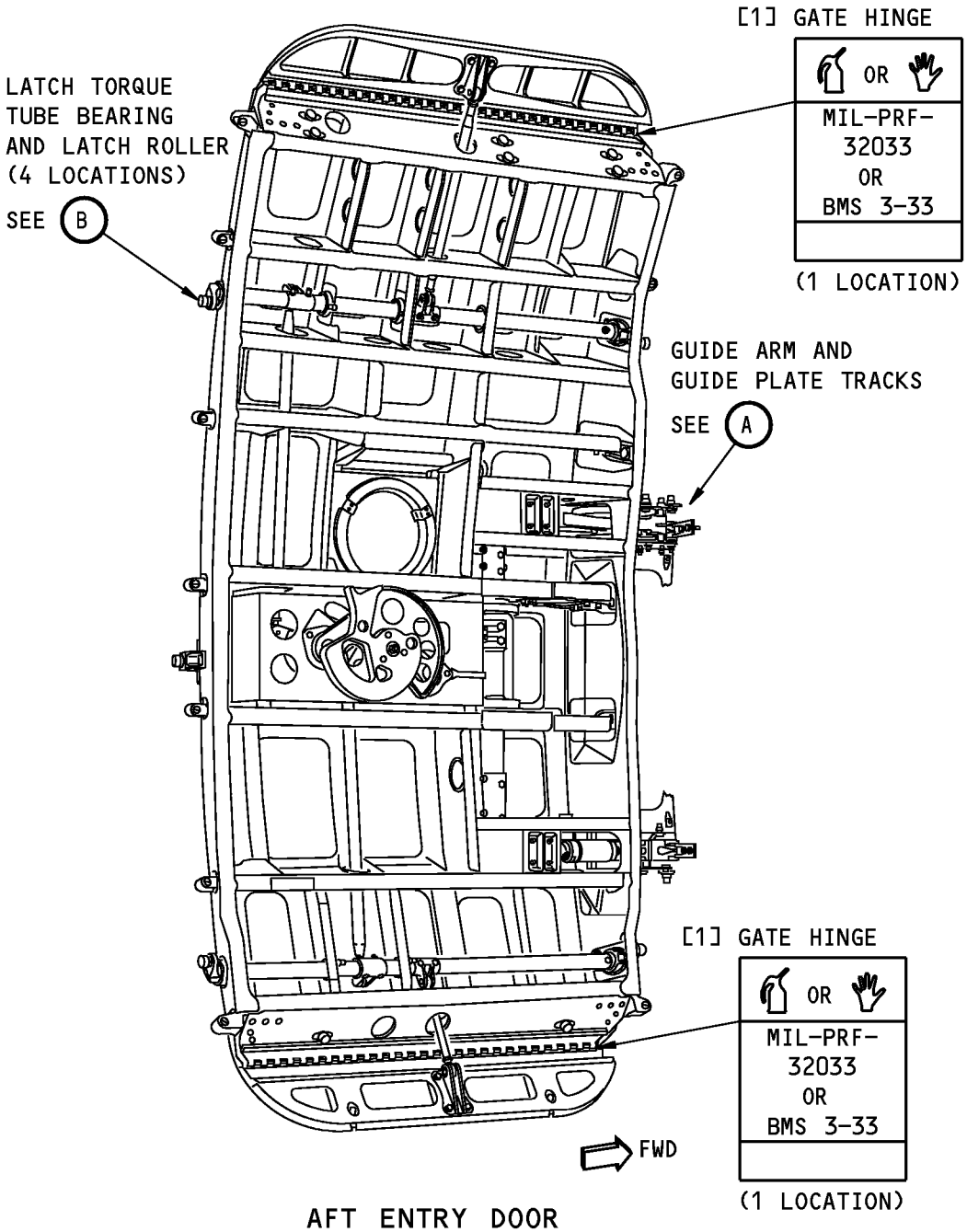
(a) Do this task: Aft Entry Door Lining Installation, TASK 52-13-31-400-802.

(b) Close and latch the door.

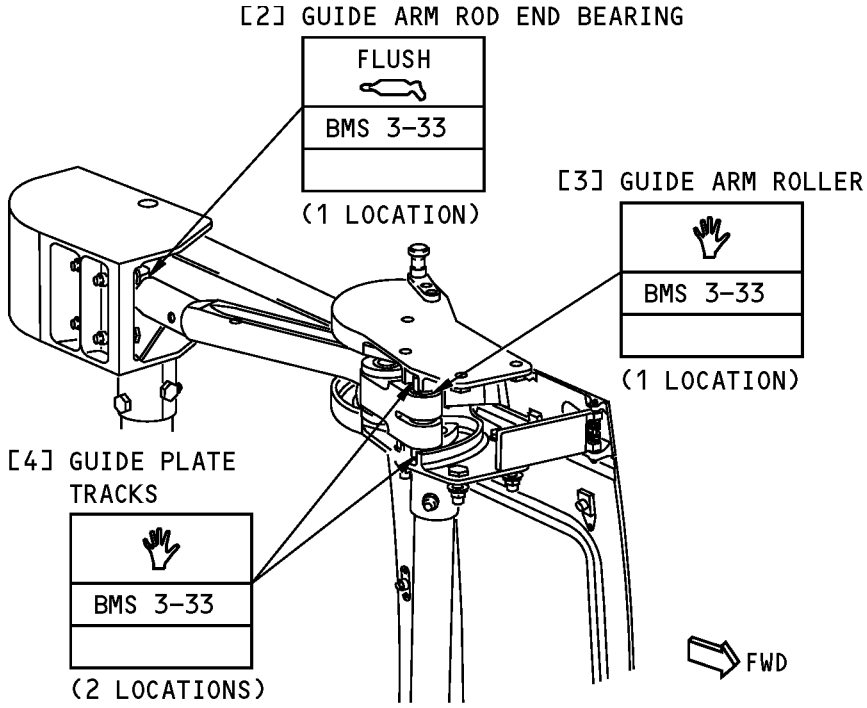
Table 302/12-25-12-993-804 Aft Entry Door Servicing - Mechanism (Fig. 302)

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	Flush	4

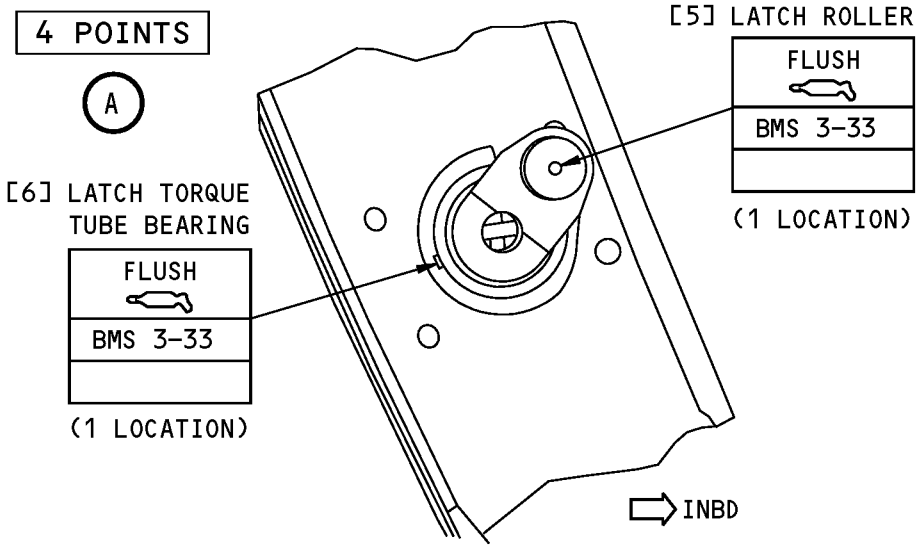
END OF TASK



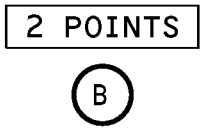
Aft Entry Door Servicing - Components
Figure 301 (Sheet 1 of 2)/12-25-12-990-801



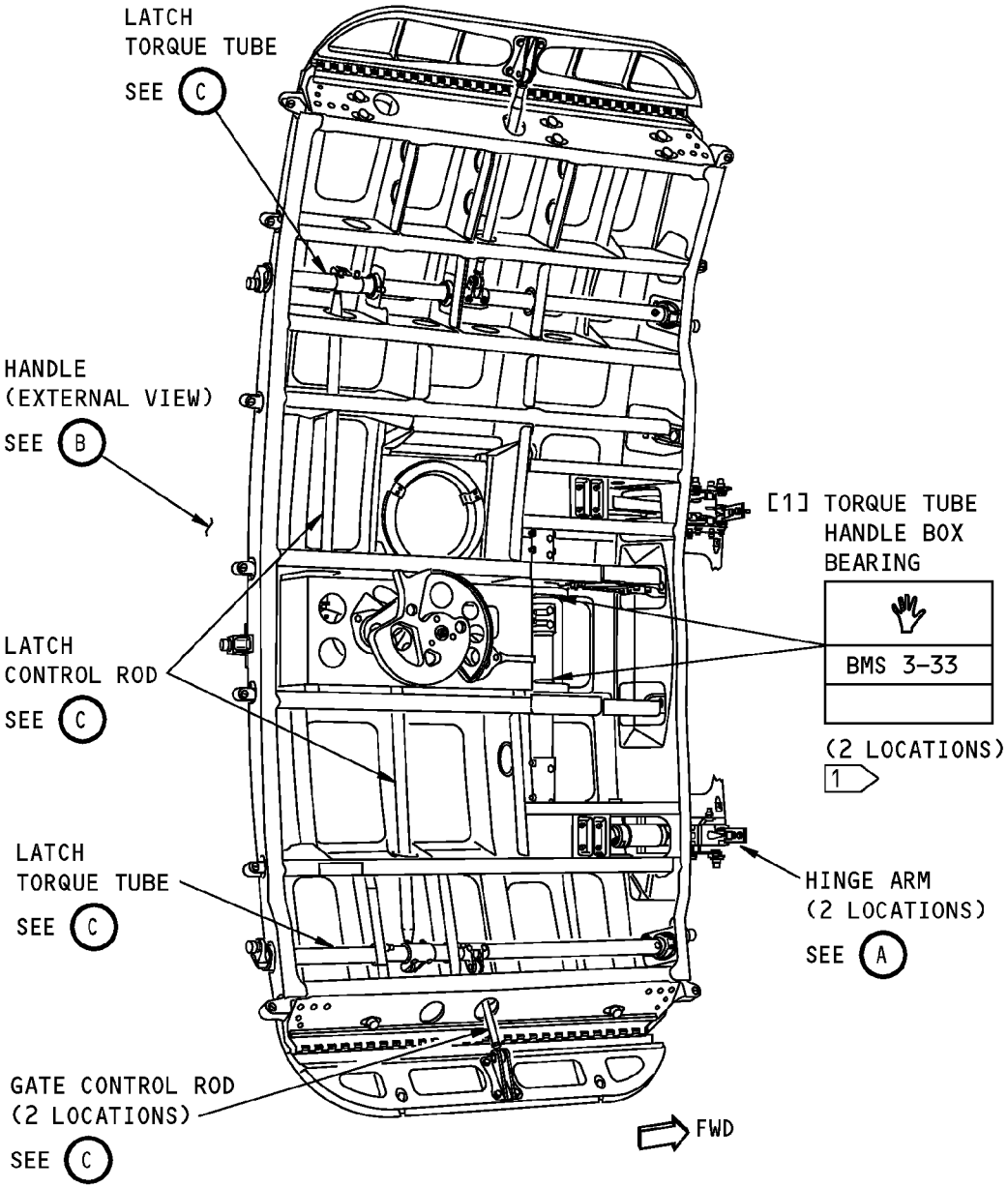
GUIDE ARM AND GUIDE PLATE TRACKS



LATCH TORQUE TUBE BEARING AND LATCH ROLLER
(EXAMPLE, 4 LOCATIONS)



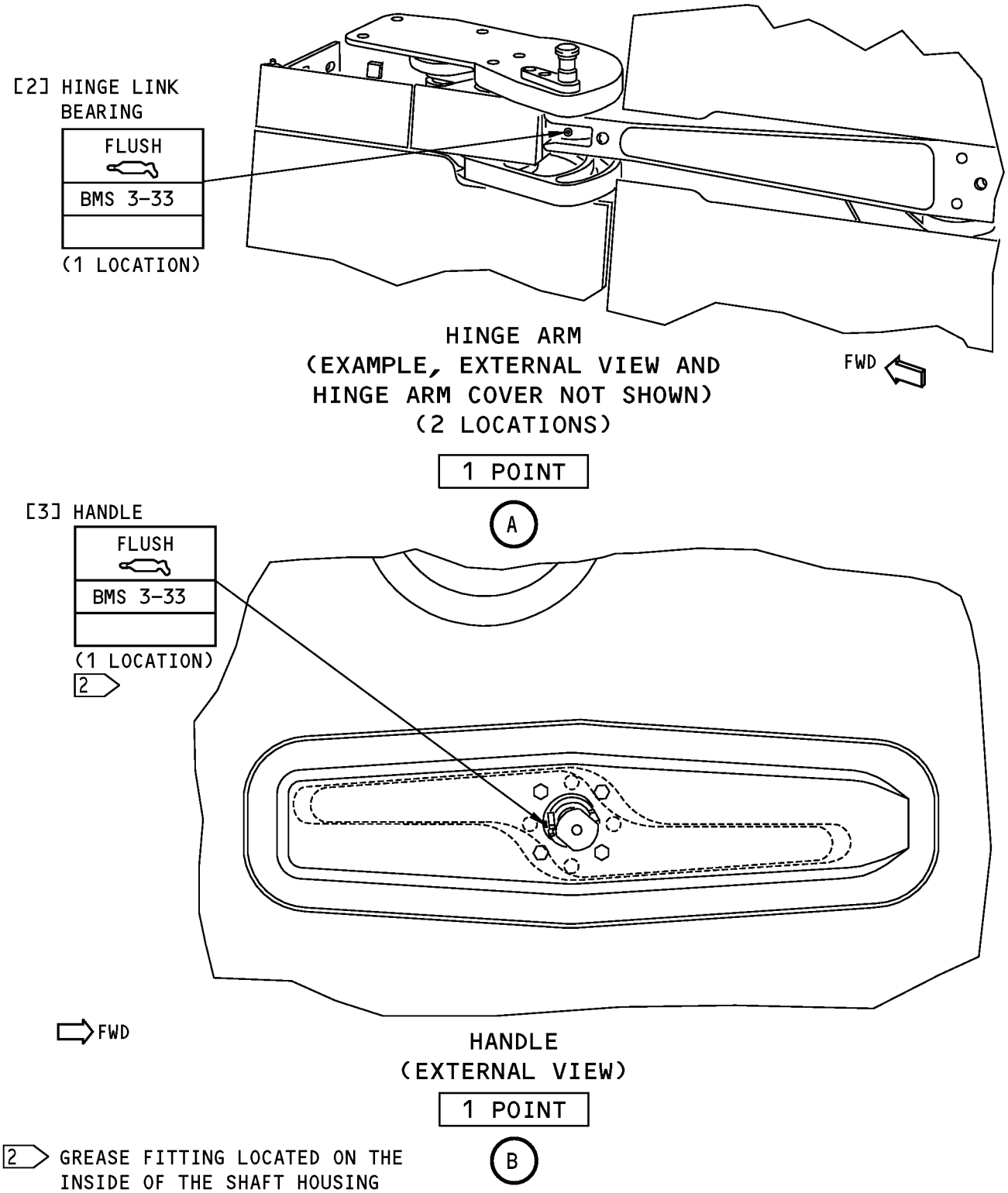
Aft Entry Door Servicing - Components
Figure 301 (Sheet 2 of 2)/12-25-12-990-801



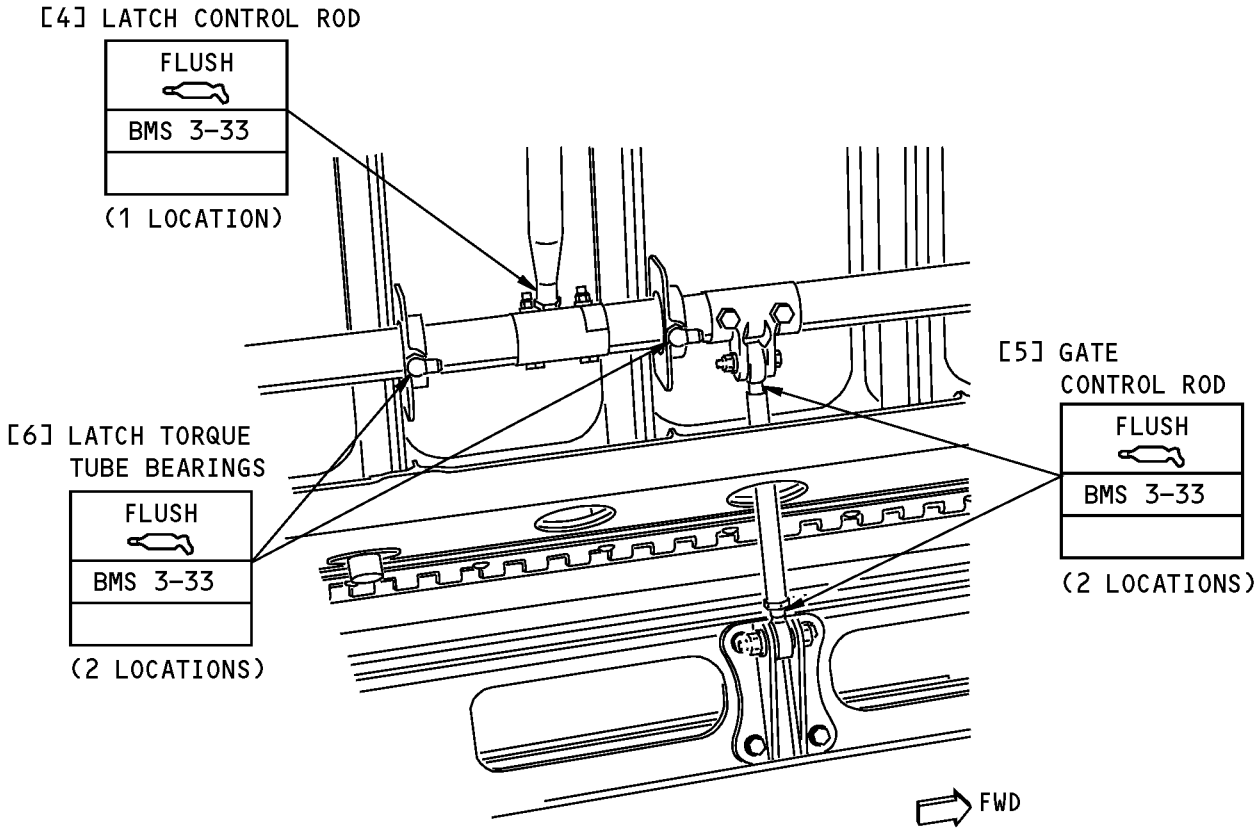
AFT ENTRY DOOR
(INNER SKIN AND PANELS REMOVED)
2 POINTS

1 FILL CAVITIES ABOVE DOOR HINGE TORQUE TUBE BEARINGS IN HANDLES MECHANISM HOUSING WITH GREASE.

Aft Entry Door Servicing - Mechanism
Figure 302 (Sheet 1 of 3)/12-25-12-990-803



Aft Entry Door Servicing - Mechanism
Figure 302 (Sheet 2 of 3)/12-25-12-990-803



LATCH CONTROL ROD, GATE CONTROL ROD,
AND LATCH TORQUE TUBE
(LOWER GATE IS SHOWN, UPPER GATE IS SIMILAR)
(EXAMPLE)

5 POINTS

C

Aft Entry Door Servicing - Mechanism
Figure 302 (Sheet 3 of 3)/12-25-12-990-803

GALLEY SERVICE DOORS - SERVICING

1. General

A. This procedure contains scheduled maintenance task data.

B. 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)

A. General

(1) This procedure is a scheduled maintenance task.

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.

(b) To get access to the door components, move the door to the correct position.

E. Galley Service Door Components Servicing

(Table 301)

SUBTASK 12-25-13-640-003

(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 12-25-13-640-001

(2) Lubricate the other components of the galley service door with grease, D00633.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 12-25-13-410-001

(1) Close access to the door as follows:

(a) Close and latch the door.

Table 301/12-25-13-993-802 Galley Service Door Servicing - Components (Fig. 301)

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
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

END OF TASK

TASK 12-25-13-640-802

3. Galley Service Door Lubrication - Mechanism

(Figure 302)

A. General

(1) This procedure is a scheduled maintenance task.

B. References

Reference	Title
52-41-31-000-802	Galley Service Door Lining Removal (P/B 401)
52-41-31-400-802	Galley Service Door Lining Installation (P/B 401)

C. Consumable Materials

Reference	Description	Specification
D00633	Grease - Aircraft General Purpose	BMS3-33

D. Location Zones

Zone	Area
841	Forward Galley Service Door
844	Aft Galley Service Door

E. Prepare for the Servicing

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 52-41-31-000-802.

(b) Open the door.

(c) To get access to the door components, move the door to the correct position.

F. Galley Service Door Mechanism Servicing

(Table 302)

SUBTASK 12-25-13-640-002

(1) Lubricate the mechanism of the galley service door with grease, D00633.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 12-25-13-410-002

(1) Close access to the door as follows:

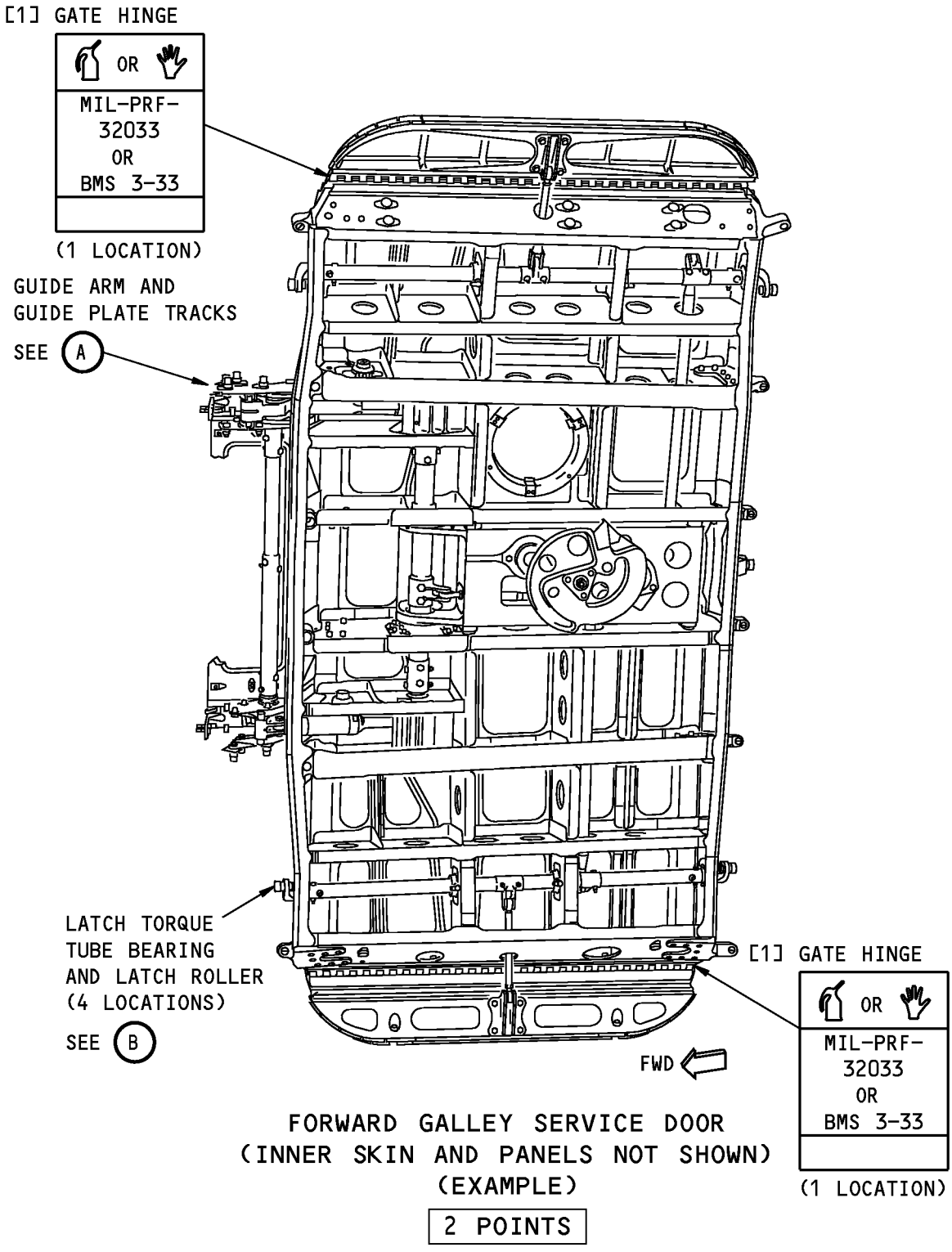
(a) Do this task: Galley Service Door Lining Installation, TASK 52-41-31-400-802.

(b) Close the door.

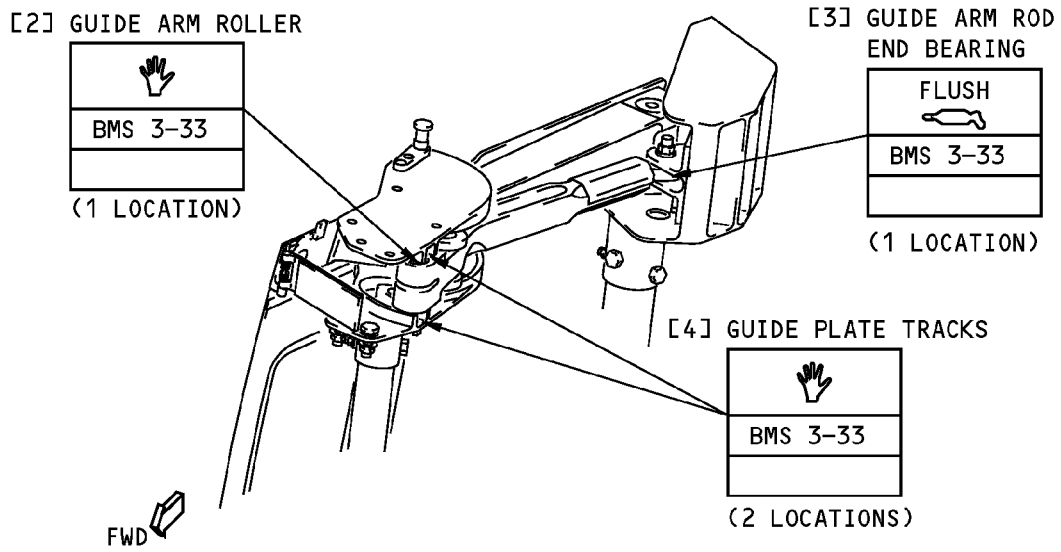
Table 302/12-25-13-993-804 Galley Service Door Servicing - Mechanism (Fig. 302)

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 Torque Tube Bearings	grease, D00633	Flush	4
5	Latch Control Rods	grease, D00633	Flush	2
6	Gate Control Rods	grease, D00633	Flush	4

—————— END OF TASK ——————



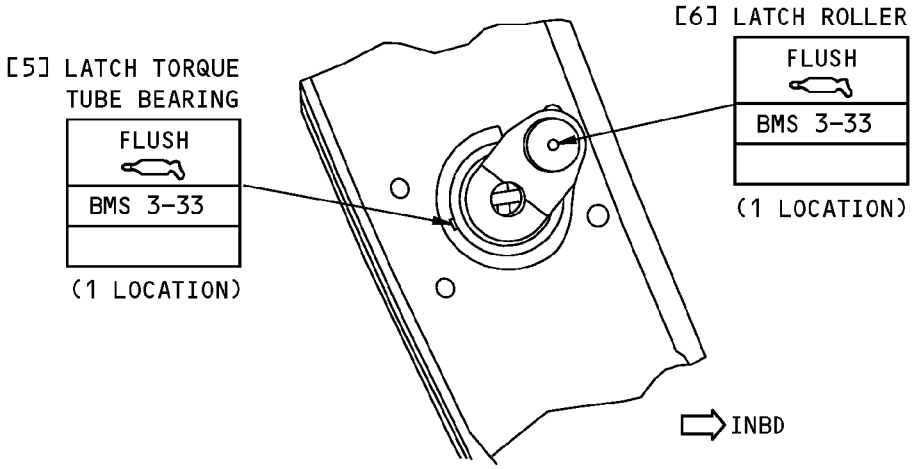
Galley Service Door Servicing - Components
Figure 301 (Sheet 1 of 2)/12-25-13-990-801



GUIDE ARM AND GUIDE PLATE TRACKS

4 POINTS

A

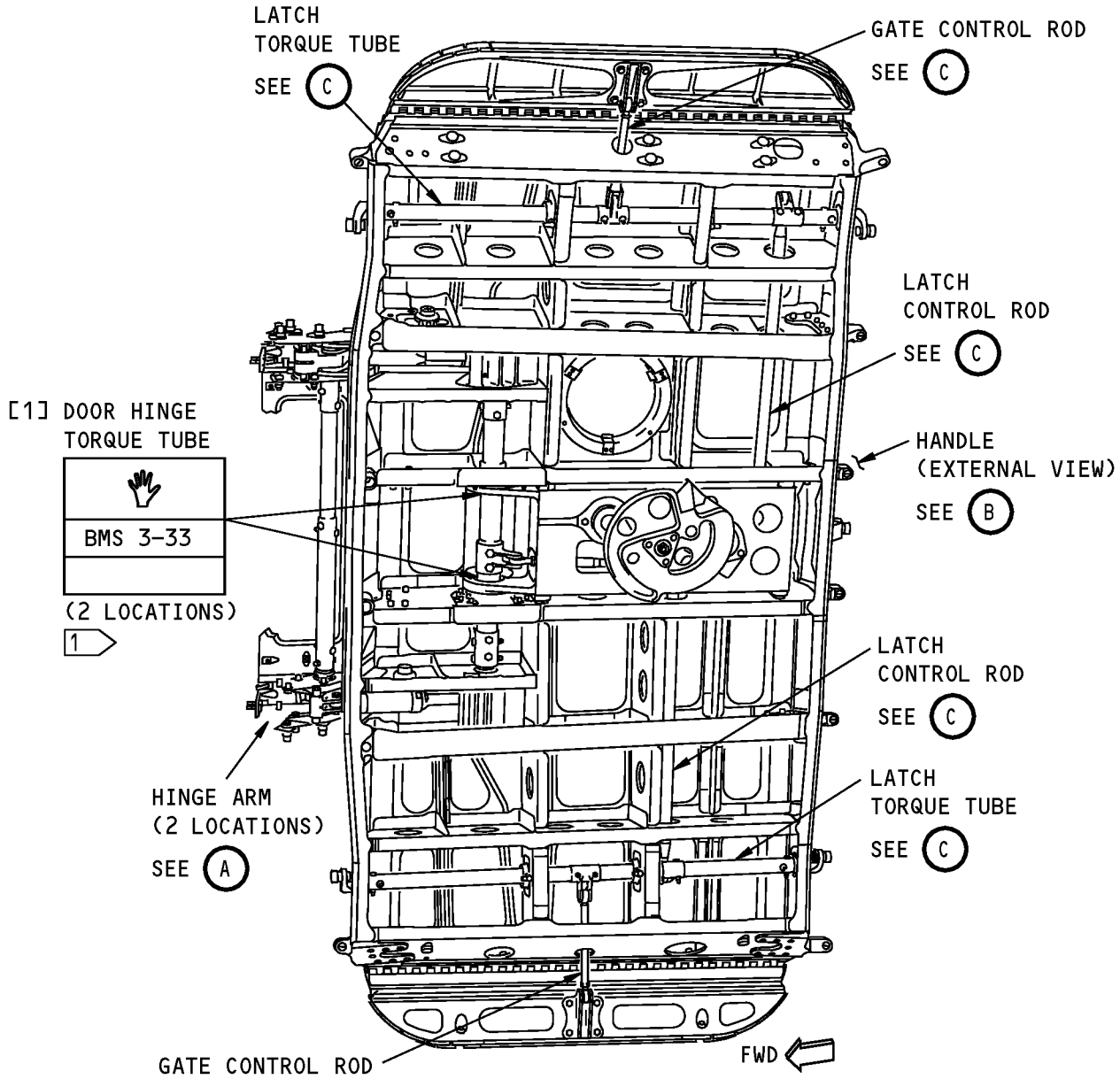


LATCH TORQUE TUBE BEARING AND LATCH ROLLER
(EXAMPLE, 4 LOCATIONS)

2 POINTS

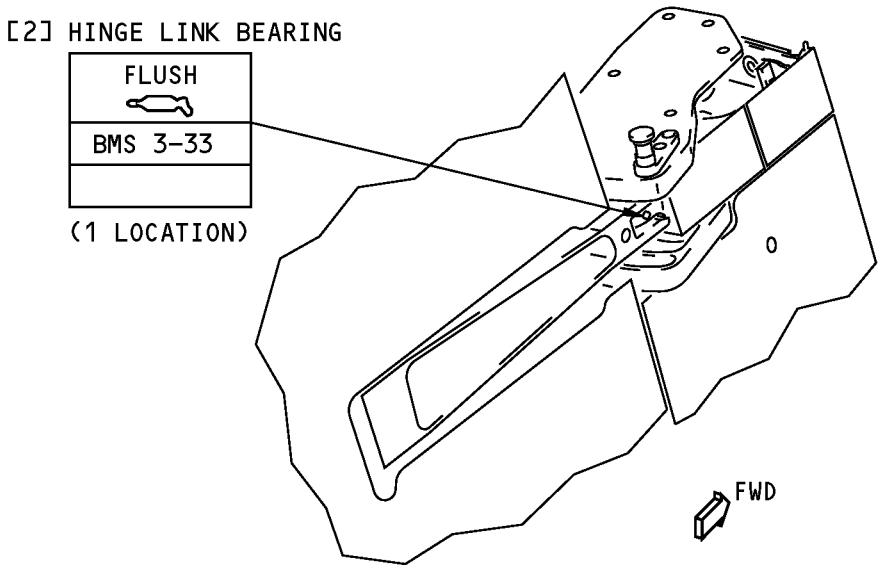
B

Galley Service Door Servicing - Components
Figure 301 (Sheet 2 of 2)/12-25-13-990-801

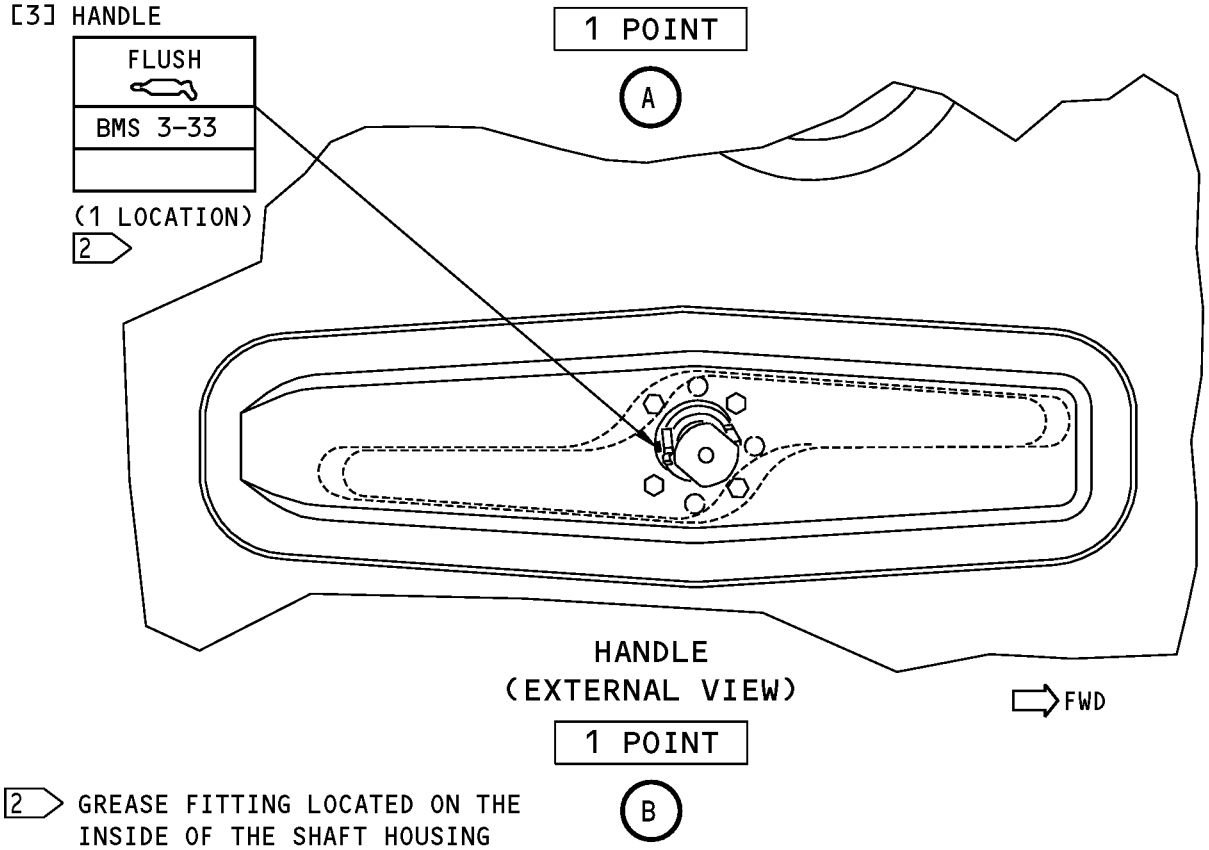


1 FILL CAVITIES ABOVE DOOR HINGE TORQUE TUBE BEARINGS IN HANDLE MECHANISM HOUSING WITH GREASE.

Galley Service Door Servicing - Mechanism
Figure 302 (Sheet 1 of 3)/12-25-13-990-803

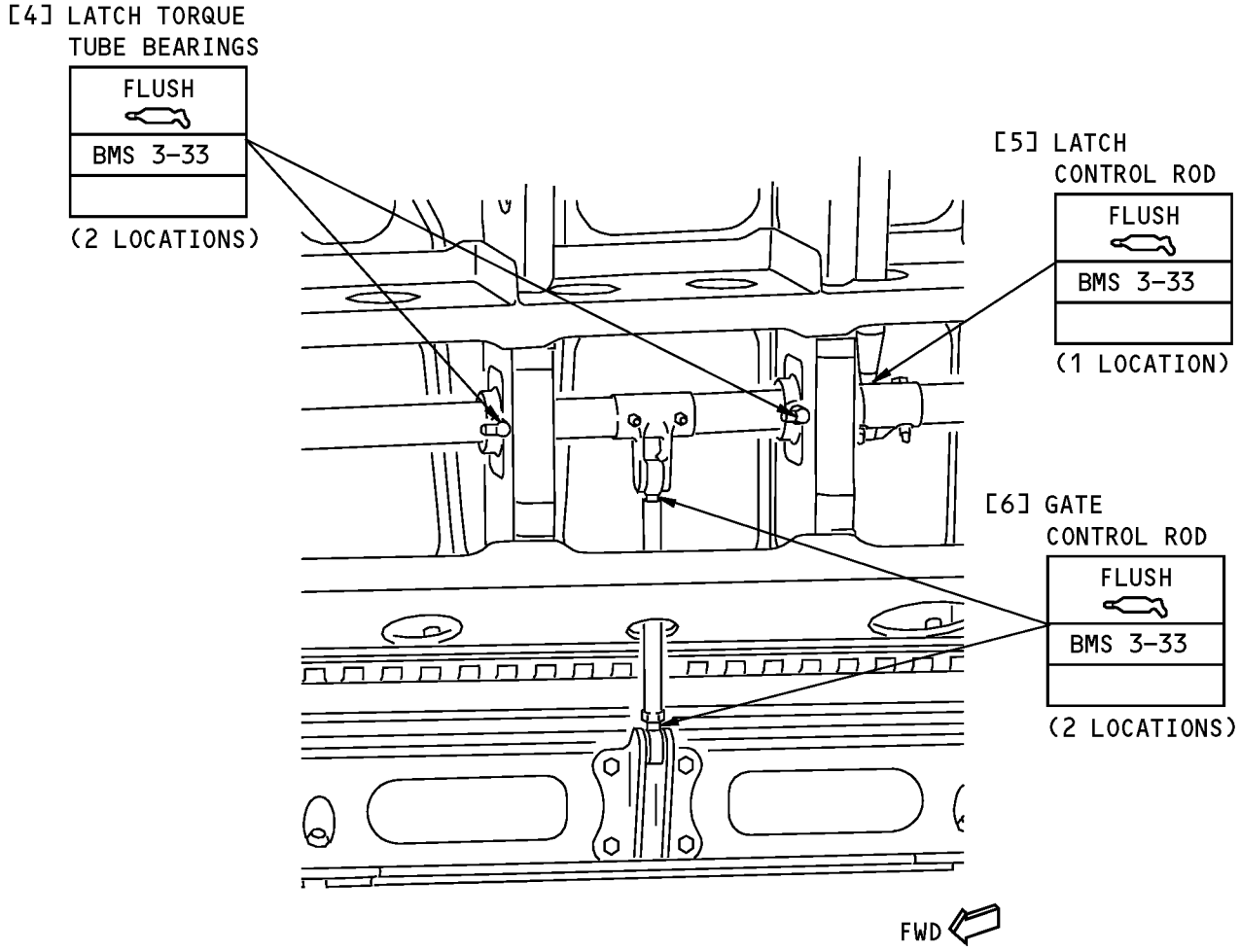


HINGE ARM
(EXAMPLE, EXTERNAL VIEW AND HINGE COVER NOT SHOWN)
(2 LOCATIONS)



2 GREASE FITTING LOCATED ON THE INSIDE OF THE SHAFT HOUSING

Galley Service Door Servicing - Mechanism
Figure 302 (Sheet 2 of 3)/12-25-13-990-803



LATCH CONTROL ROD, GATE CONTROL ROD,
AND LATCH TORQUE TUBE
(LOWER GATE IS SHOWN, UPPER GATE IS SIMILAR)
(EXAMPLE)

5 POINTS

C

Galley Service Door Servicing - Mechanism
Figure 302 (Sheet 3 of 3)/12-25-13-990-803

FORWARD AIRSTAIR DOOR - SERVICING (LUBRICATION)

1. General

A. This procedure contains scheduled maintenance task data.

B. This procedure contains this task:

(1) A task to lubricate the forward airstair door, actuator and lockpin.

TASK 12-25-14-600-801

2. Forward Airstair Door, Actuator and Lockpin Lubrication

(Figure 301)

A. General

(1) This procedure is a scheduled maintenance task.

B. References

Reference	Title
52-61-59-000-801	Forward Airstair Door Actuator Standby System Motor Removal (P/B 401)
52-61-59-400-801	Forward Airstair Door Actuator Standby System Motor Installation (P/B 401)

C. Consumable Materials

Reference	Description	Specification
D00015	Grease - Aircraft Bearing (Use BMS 3-24 until existing stocks are depleted, BMS 3-33 supersedes BMS 3-24)	BMS3-24 (Superseded by BMS 3-33)
D00633	Grease - Aircraft General Purpose	BMS3-33

D. Location Zones

Zone	Area
117	Electrical and Electronics Compartment - Left

E. Access Panels

Number	Name/Location
117A	Electronic Equipment Access Door
117BL	Forward Airstair Door

F. Prepare for Servicing

SUBTASK 12-25-14-010-004

(1) Open this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

SUBTASK 12-25-14-010-006

(2) Remove the plastic covers to get access to the airstair door, motors and jackscrew.

SUBTASK 12-25-14-980-001

(3) Make sure the airstair door is closed.

G. Forward Airstair Door Lubrication

(Table 301)

SUBTASK 12-25-14-640-004

(1) Lubricate the jackscrew [1] with grease, D00633 (preferred) or grease, D00015 (alternate).

SUBTASK 12-25-14-640-005

(2) Lubricate the bearing [4] and centering roller [5]:

(a) Do the step that follows. Do not extend the airstairs.

Open this access panel:

Number	Name/Location
117BL	Forward Airstair Door

(b) Lubricate the bearing [4] and centering roller [5] with grease, D00633 (preferred) orgrease, D00015 (alternate).

SUBTASK 12-25-14-010-002

(3) Lubricate the carriage rollers [2] and [2A]:

(a) Do this task: Forward Airstair Door Actuator Standby System Motor Removal, TASK 52-61-59-000-801.

(b) Turn the manual drive until the outboard carriage rollers [2] and [2A] align with the access holes in the rails.

(c) Lubricate the outboard carriage rollers [2] and [2A] with grease, D00633 (preferred) or grease, D00015 (alternate).

(d) Turn the manual drive until the inboard carriage rollers [2] and [2A] align with the access holes in the rails (Figure 301).

(e) Lubricate the inboard carriage rollers [2] and [2A] with grease, D00633 (preferred) or grease, D00015 (alternate) .

(f) Do this task: Forward Airstair Door Actuator Standby System Motor Installation, TASK 52-61-59-400-801.

SUBTASK 12-25-14-410-003

(4) Install the plastic covers over the airstair door, motors and jackscrew.

SUBTASK 12-25-14-640-006

(5) Lubricate the airstair door and lockpin:

(a) Go to the exterior of the airplane.

(b) Close this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

(c) Move the airstair door to the half-closed position.

(d) Lubricate the upper guide rollers [3] withgrease, D00633 (preferred) orgrease, D00015 (alternate) .

(e) Lubricate the lockpin bushing [6] with grease, D00633 (preferred) orgrease, D00015 (alternate).

H. Put the Airplane Back to Its Usual Condition

SUBTASK 12-25-14-410-002

(1) Fully close this access panel:

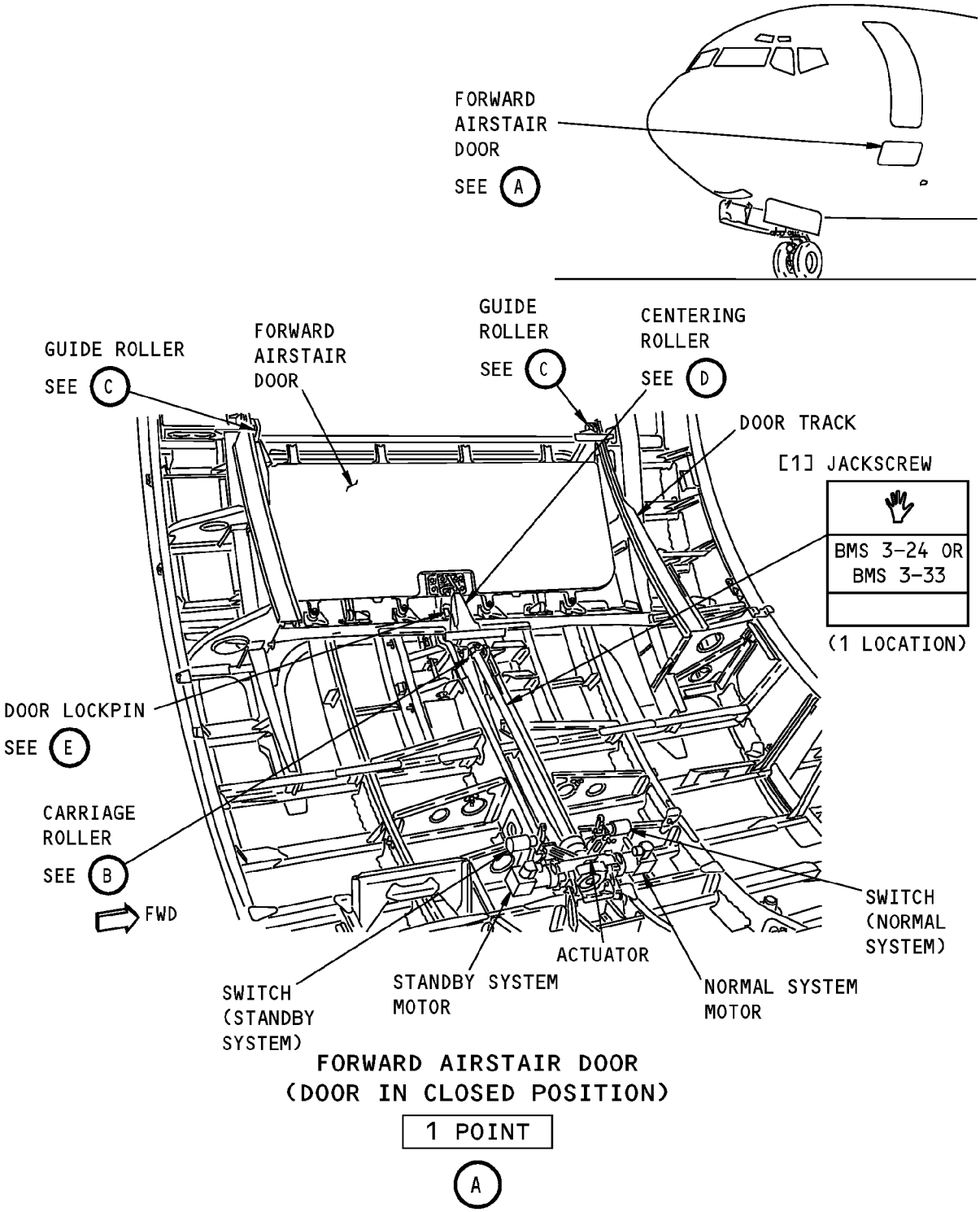
Number	Name/Location
117BL	Forward Airstair Door

Table 301/12-25-14-993-802 Forward Airstair Door Lubrication (Fig. 301)

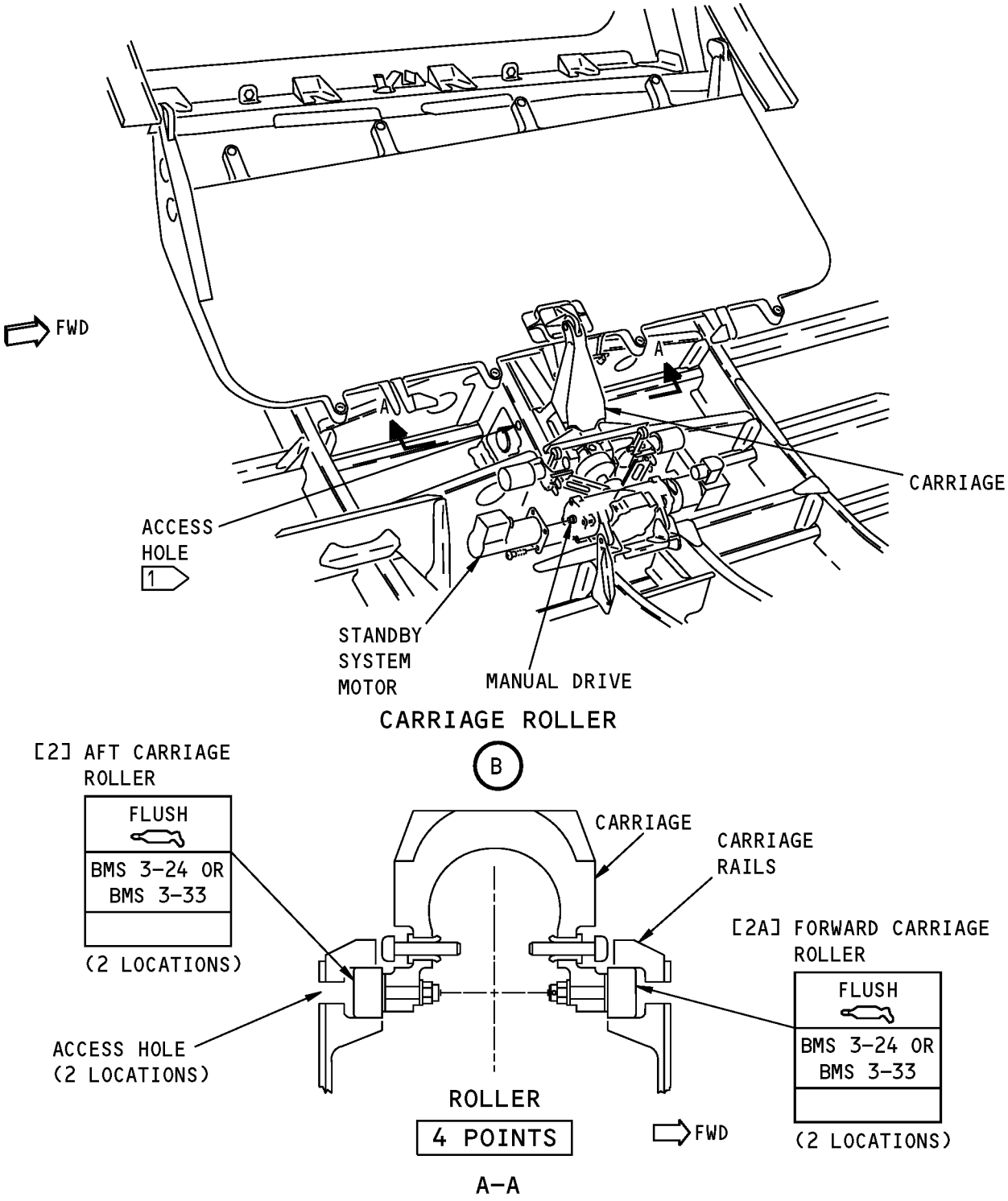
Item No.	Nomenclature	Lubricant	Method of Application	Number of locations
1	Jackscrew	grease, D00015 or grease, D00633*[1]	Hand	1
2	Aft Carriage Roller	grease, D00015 or grease, D00633*[1]	Flush Gun	2
2A	Forward Carriage Roller	grease, D00015 or grease, D00633*[1]	Flush Gun	2
3	Upper Guide Roller	grease, D00015 or grease, D00633*[1]	Flush Gun	2
4	Bearing	grease, D00015 or grease, D00633*[1]	Hand	1
5	Centering Roller	grease, D00015 or grease, D00633*[1]	Flush Gun	1
6	Lockpin Bushing	grease, D00015 or grease, D00633*[1]	Flush Gun	1

*[1] BMS 3–33 (D00633) is the preferred lubricant while BMS (D00015) is an alternate.

—————— END OF TASK ——————

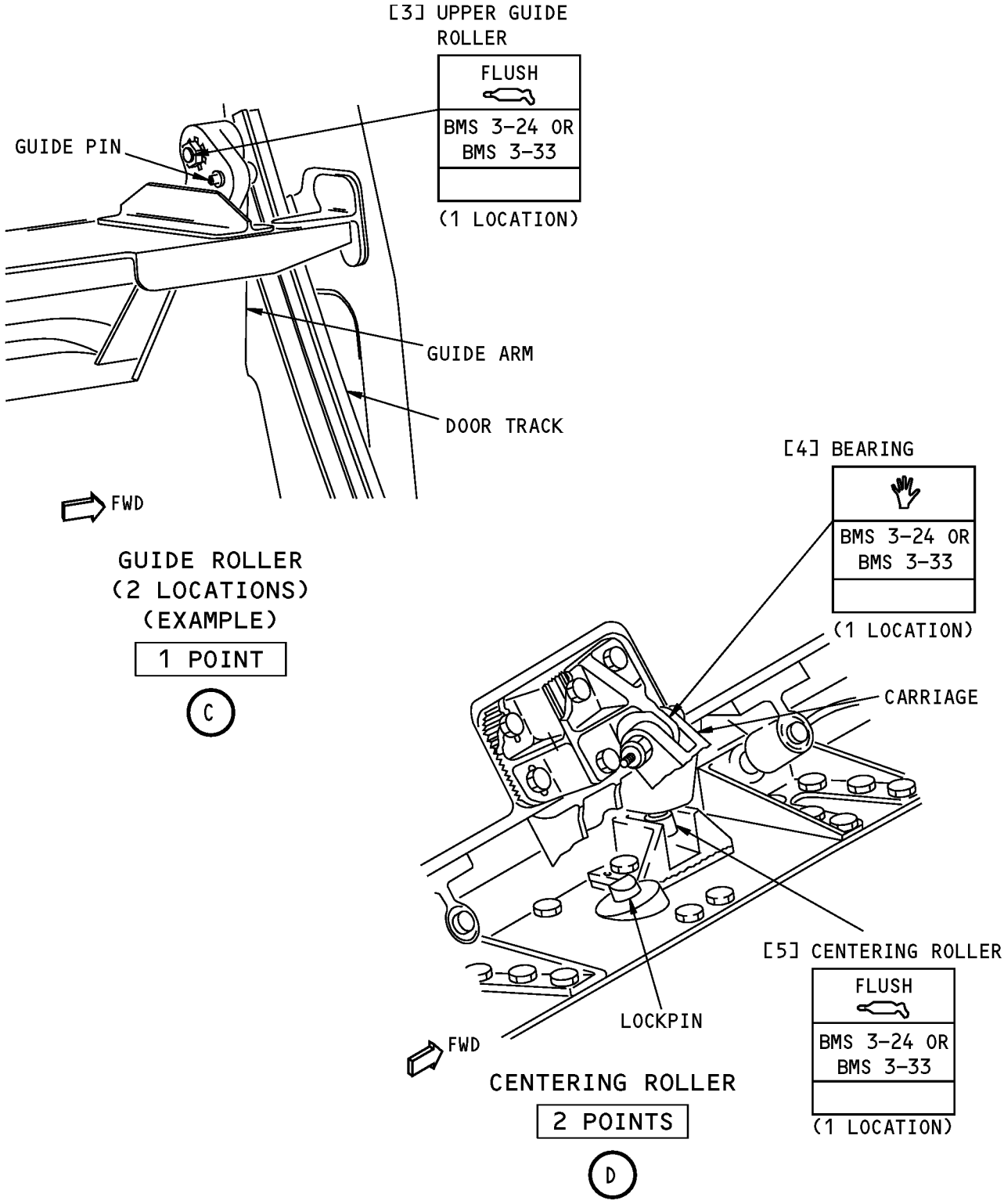


Forward Airstair Door Lubrication
Figure 301 (Sheet 1 of 4)/12-25-14-990-801

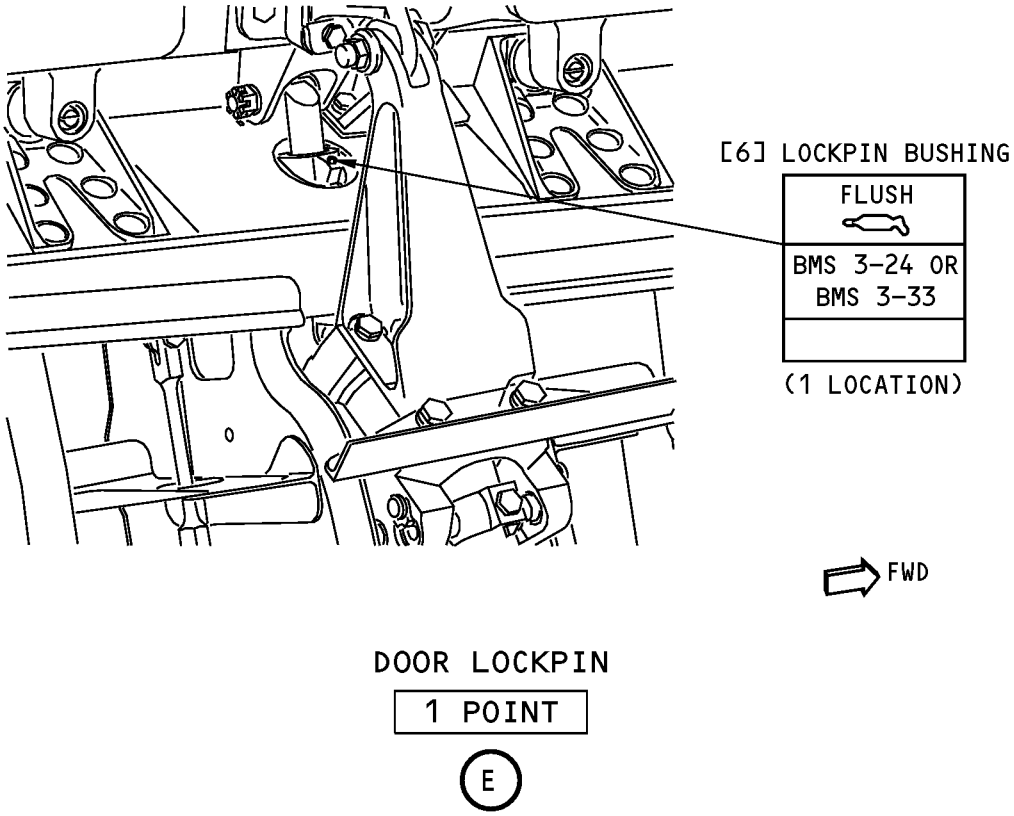


1 MOVE THE DOOR MANUALLY TO GET ACCESS TO THE ROLLERS THROUGH THE HOLES

Forward Airstair Door Lubrication
Figure 301 (Sheet 2 of 4)/12-25-14-990-801



Forward Airstair Door Lubrication
Figure 301 (Sheet 3 of 4)/12-25-14-990-801



Forward Airstair Door Lubrication
Figure 301 (Sheet 4 of 4)/12-25-14-990-801

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. Consumable Materials

Reference	Description	Specification
D00015	Grease - Aircraft Bearing (Use BMS 3-24 until existing stocks are depleted, BMS 3-33 supersedes BMS 3-24)	BMS3-24 (Superseded by BMS 3-33)
D00633	Grease - Aircraft General Purpose	BMS3-33

B. Location Zones

Zone	Area
HAP 001-013, 015-026, 028-054	
832	Left Forward Emergency Exit
833	Left Emergency Exit (STA 627.5)
842	Right Forward Emergency Exit
843	Right Emergency Exit (STA 627.5)

HAP ALL

C. Prepare for the Servicing

SUBTASK 12-25-22-010-001

WARNING: MAKE SURE THE DOOR OPENING PATH IS CLEAR BEFORE YOU RELEASE THE DOOR HANDLE. THE DOOR IS SPRING-LOADED TO OPEN AUTOMATICALLY AND INJURIES CAN OCCUR.

(1) To get access to the lubrication points, open the emergency exit doors.

D. Emergency Exit Door Servicing

(Table 301)

SUBTASK 12-25-22-640-001

(1) Lubricate all of the stop track surface, including the stop pads, with grease, D00633 or grease, D00015.

NOTE: BMS 3-33 (D00633) is the preferred lubricant, while BMS 3-24 (D00015) is an alternate.

SUBTASK 12-25-22-640-002

(2) Lubricate the torsion springs with grease, D00633 or grease, D00015.

NOTE: BMS 3-33 (D00633) is the preferred lubricant, while BMS 3-24 (D00015) is an alternate.

E. Put the Airplane Back to Its Usual Condition

SUBTASK 12-25-22-410-001

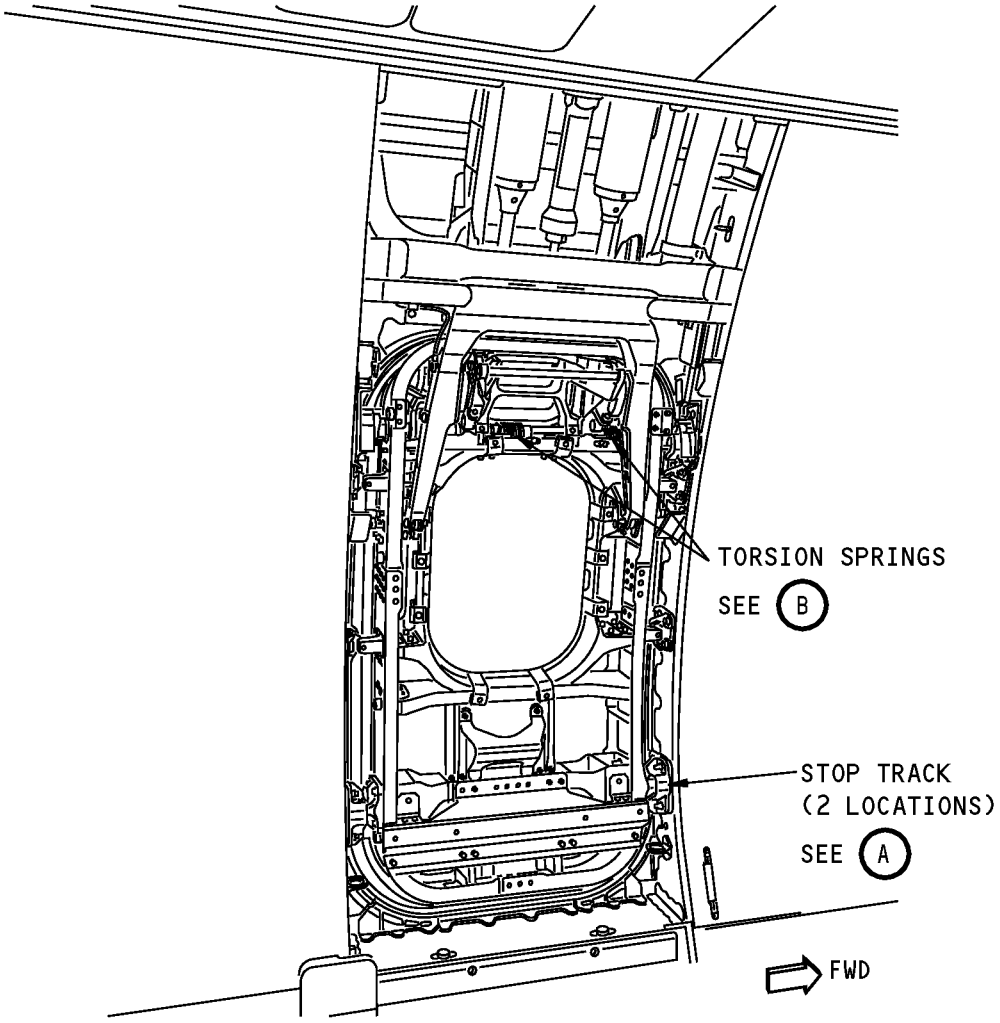
(1) Close and latch the emergency exit doors.

Table 301/12-25-22-993-802 Emergency Exit Door (Fig. 301)

Item No.	Nomenclature	Lubricant	Method of Application	Number of Locations
1	Stop Tracks and Stop Pads	grease, D00633 or grease, D00015*[1]	Hand	2
2	Torsion Springs	grease, D00633 or grease, D00015*[1]	Hand	2

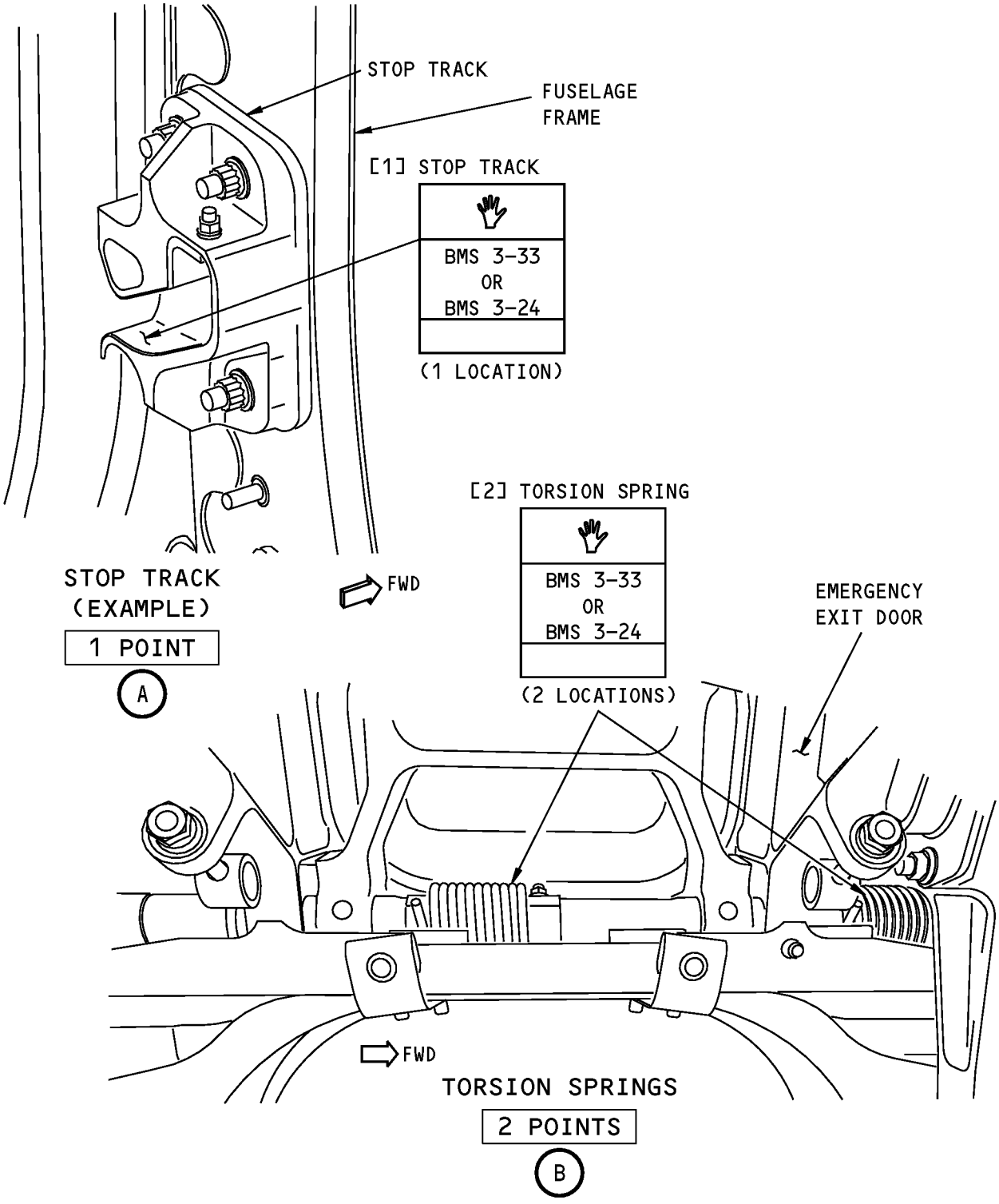
*[1] BMS 3-33 (D00633) is the preferred lubricant, while BMS 3-24 (D00015) is an alternate.

—————— END OF TASK ——————



EMERGENCY EXIT DOOR
(DOOR IN THE CLOSED POSITION
WITH DOOR LINING REMOVED)
(EXAMPLE)

Emergency Exit Door Servicing
Figure 301 (Sheet 1 of 2)/12-25-22-990-801



Emergency Exit Door Servicing
Figure 301 (Sheet 2 of 2)/12-25-22-990-801

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)

A. General

(1) This procedure is a scheduled maintenance task.

B. Consumable Materials

Reference	Description	Specification
D00015	Grease - Aircraft Bearing (Use BMS 3-24 until existing stocks are depleted, BMS 3-33 supersedes BMS 3-24)	BMS3-24 (Superseded by BMS 3-33)
D00633	Grease - Aircraft General Purpose	BMS3-33

C. Location Zones

Zone	Area
821	Forward Cargo Door
822	Aft Cargo Door

D. Prepare for the Servicing

SUBTASK 12-25-31-010-001

(1) Get access to the door as follows:

(a) Remove the door lining.

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.

(b) Remove the access panel [101].

E. Cargo Door Servicing

(Table 301)

SUBTASK 12-25-31-640-001

(1) Lubricate the components on the cargo door with grease, D00633 (preferred) or grease, D00015 (alternate).

F. Put the Airplane Back to Its Usual Condition

SUBTASK 12-25-31-010-003

(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 bolts [102] and washers [103] to attach the access panel [101] to the door.

SUBTASK 12-25-31-410-001

(2) Close access to the door as follows:

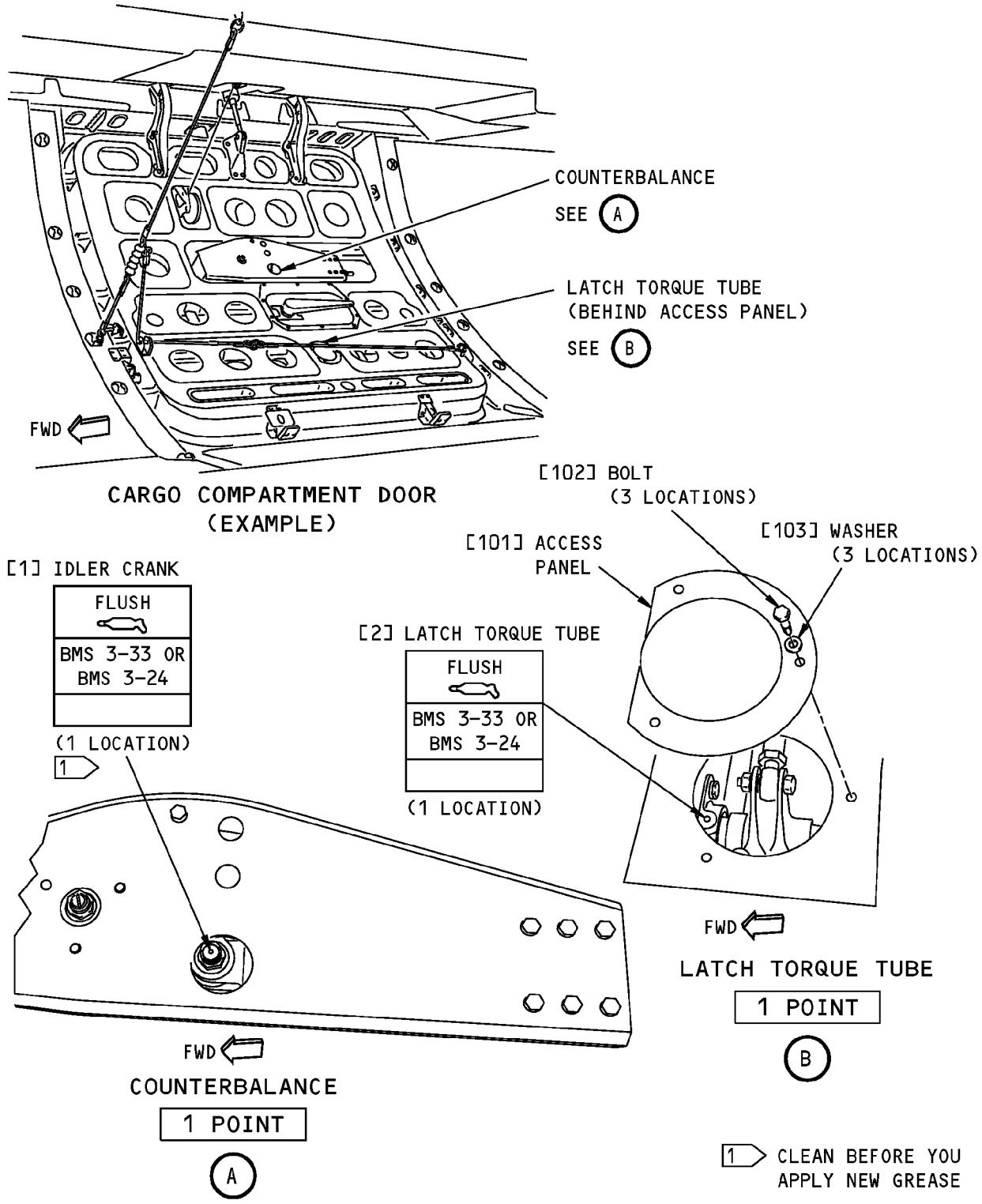
(a) Install the door lining.

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 or grease, D00015*[1]	Flush	1
2	Latch Torque Tube	grease, D00633 or grease, D00015*[1]	Flush	1

*[1] BMS 3–33 (D00633) is the preferred lubricant while BMS 3–24 (D00015) is an alternate.

——————— 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)

A. General

(1) This procedure is a scheduled maintenance task.

B. Consumable Materials

Reference	Description	Specification
D00015	Grease - Aircraft Bearing (Use BMS 3-24 until existing stocks are depleted, BMS 3-33 supersedes BMS 3-24)	BMS3-24 (Superseded by BMS 3-33)
D00633	Grease - Aircraft General Purpose	BMS3-33

C. Location Zones

Zone	Area
117	Electrical and Electronics Compartment - Left

D. Prepare for Servicing

SUBTASK 12-25-41-010-005

(1) Turn the latch handle to the closed position.

SUBTASK 12-25-41-010-002

(2) Remove the cover [103] for the latch mechanism [2] as follows (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 12-25-41-010-006

(3) 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] 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 (preferred)

(b) grease, D00015 (alternate)

Table 301/12-25-41-993-803 Electronic Equipment Access Door Lubrication (Fig. 301)

Item No.	Nomenclature	Lubricant	Method of Application	Number of Points
1	Latch Pins (4)	grease, D00015 or grease, D00633*[1]	Hand	4
2	Latch Mechanism (1)	grease, D00015 or grease, D00633*[1]	Hand	1

*[1] BMS 3–33 (D00633) is the preferred lubricant while BMS 3–24 (D00015) is an alternate.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 12-25-41-410-003

(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] and the bearings [113].

(c) Install the screws [109].

SUBTASK 12-25-41-010-003

(2) Install the cover [103] for the latch mechanism [2] as follows (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.

——————— END OF TASK ———————

TASK 12-25-41-640-802

3. Forward Access Door Servicing

(Figure 302, Table 302)

A. Consumable Materials

Reference	Description	Specification
D00015	Grease - Aircraft Bearing (Use BMS 3-24 until existing stocks are depleted, BMS 3-33 supersedes BMS 3-24)	BMS3-24 (Superseded by BMS 3-33)
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 12-25-41-010-004

(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 (preferred)

(b) grease, D00015 (alternate)

Table 302/12-25-41-993-804 Forward Access Door Lubrication (Fig. 302)

Item No.	Nomenclature	Lubricant	Method of Application	Number of Points
1	Latch Mechanism (1)	grease, D00015 or grease, D00633*[1]	Hand	2

*[1] BMS 3–33 (D00633) is the preferred lubricant while BMS 3–24 (D00015) is an alternate.

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.

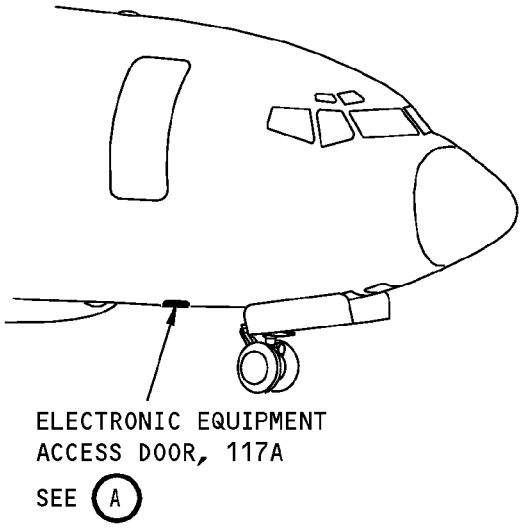
F. Put the Airplane Back to Its Usual Condition

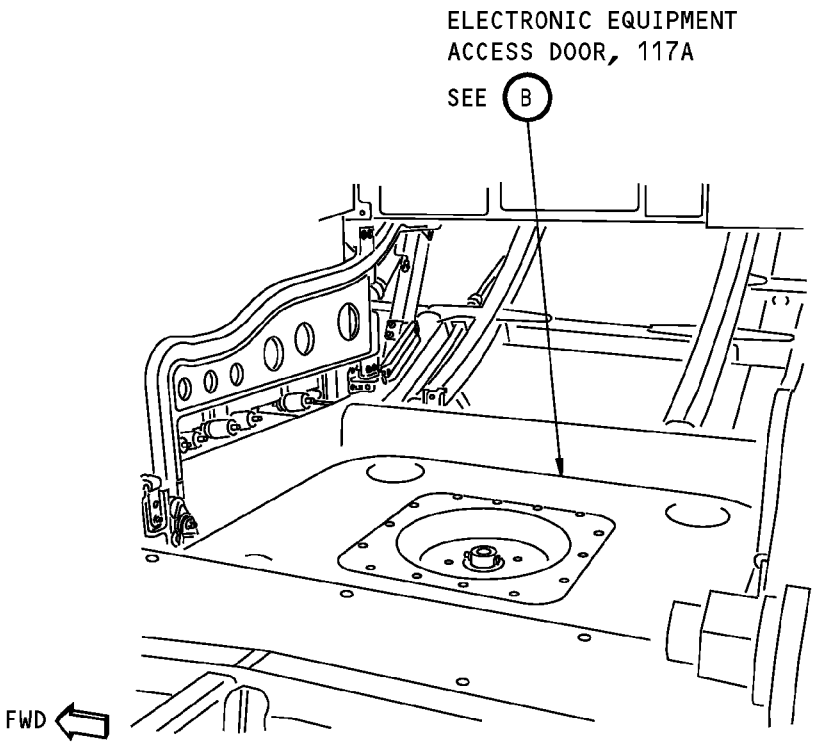
SUBTASK 12-25-41-410-002

(1) Close this access panel:

Number	Name/Location
112A	Forward Access Door

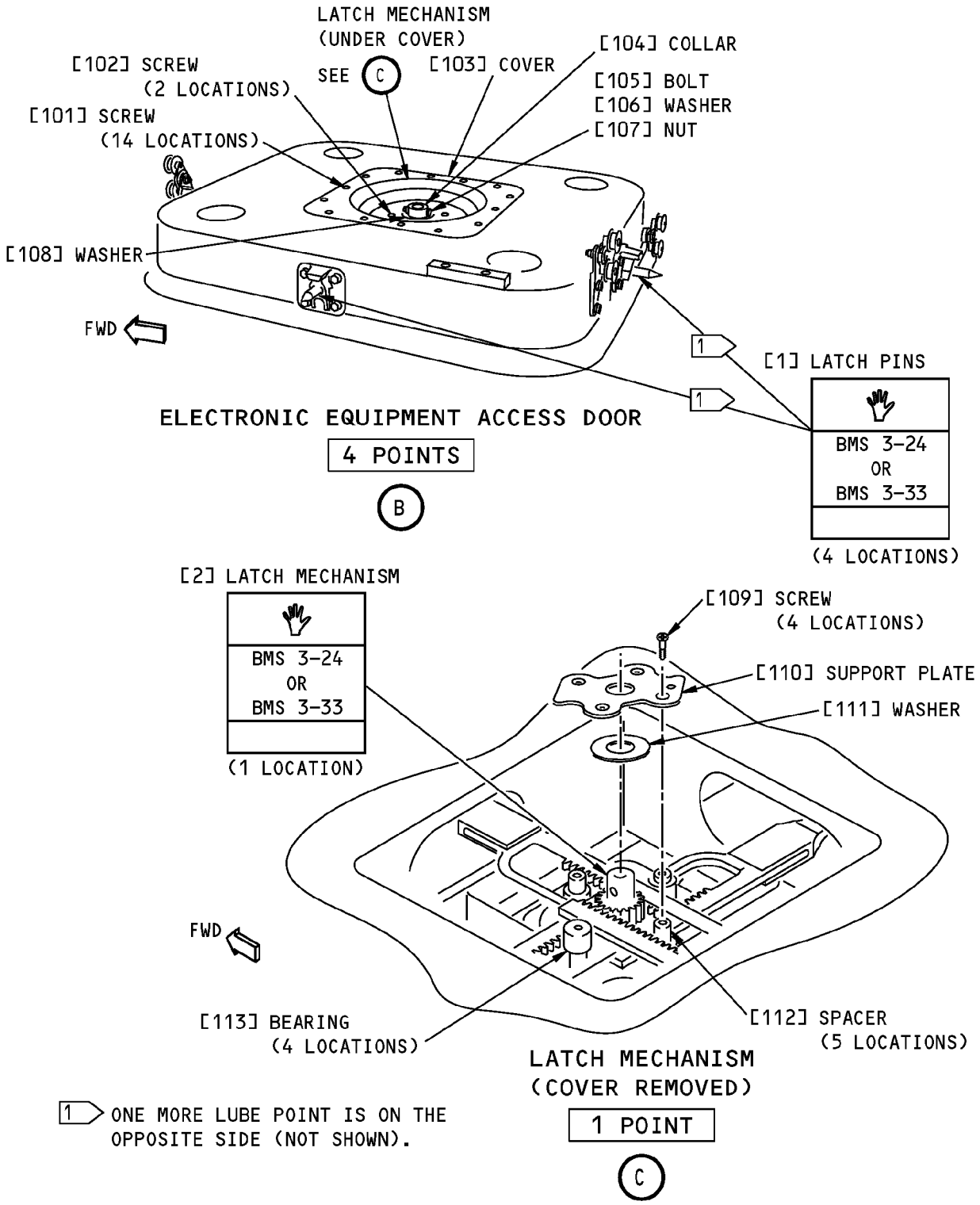
END OF TASK



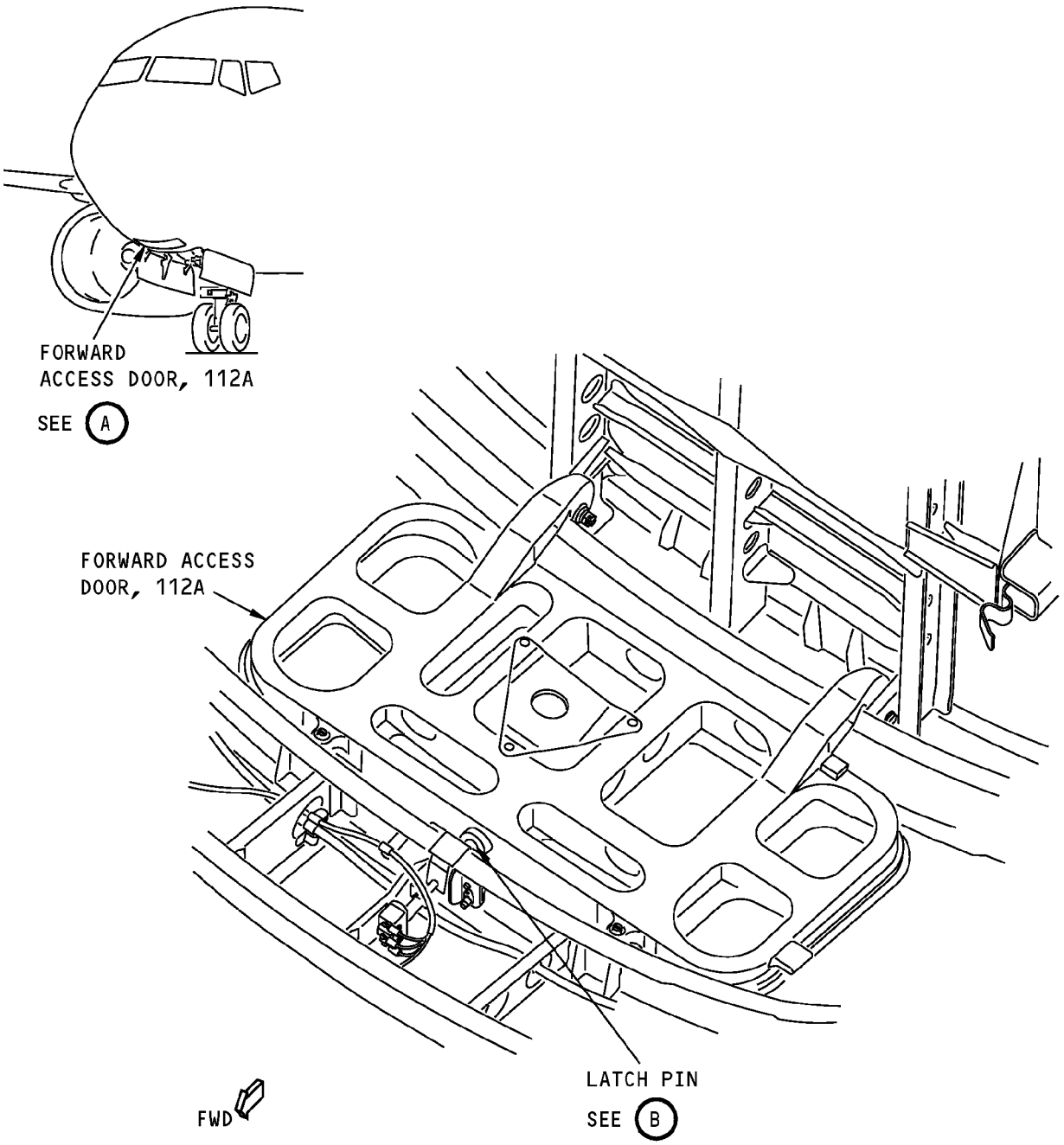


ELECTRONIC EQUIPMENT ACCESS DOOR
(INTERNAL VIEW, DOOR CLOSED POSITION)
A

Electronic Equipment Access Door Servicing
Figure 301 (Sheet 1 of 2)/12-25-41-990-801

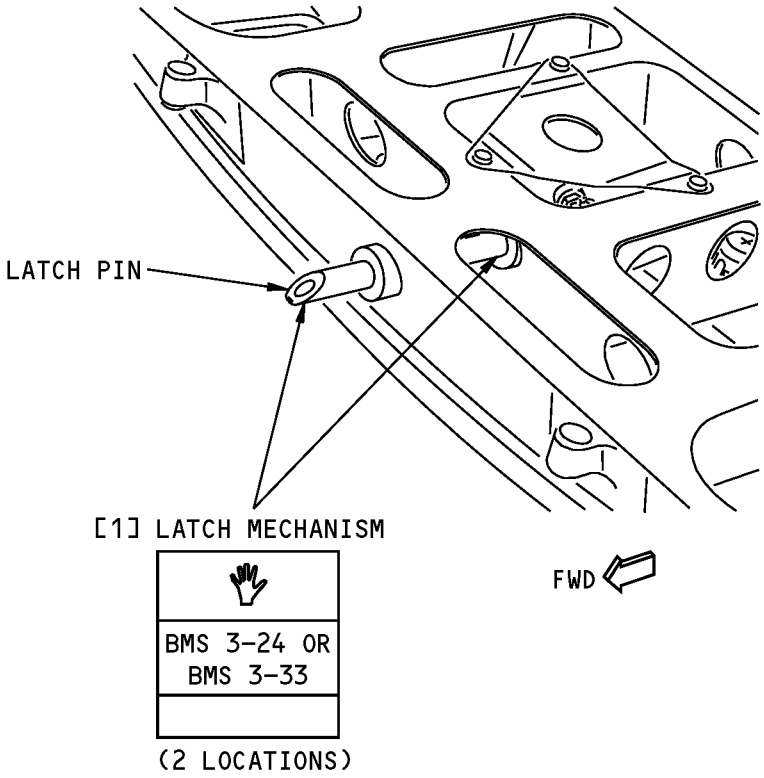


Electronic Equipment Access Door Servicing
Figure 301 (Sheet 2 of 2)/12-25-41-990-801



FORWARD ACCESS DOOR, 112A
(INTERNAL VIEW, DOOR CLOSED POSITION)
A

Forward Access Door Servicing
Figure 302 (Sheet 1 of 2)/12-25-41-990-802



Forward Access Door Servicing
Figure 302 (Sheet 2 of 2)/12-25-41-990-802

FORWARD AIRSTAIR LUBRICATION - SERVICING

1. General

A. This procedure contains scheduled maintenance task data.

B. This procedure contains a task to lubricate the forward airstair.

TASK 12-25-71-600-801

2. Forward Airstair Lubrication

(Figure 301)

A. General

(1) This procedure is a scheduled maintenance task.

B. References

Reference	Title
52-61-00-860-806	Forward Airstair Retraction in Normal Mode (P/B 201)
52-61-00-860-808	Forward Airstair Retraction in Standby Mode (P/B 201)

C. Consumable Materials

Reference	Description	Specification
D00015	Grease - Aircraft Bearing (Use BMS 3-24 until existing stocks are depleted, BMS 3-33 supersedes BMS 3-24)	BMS3-24 (Superseded by BMS 3-33)
D00633	Grease - Aircraft General Purpose	BMS3-33

D. Location Zones

Zone	Area
117	Electrical and Electronics Compartment - Left

E. Access Panels

Number	Name/Location
117A	Electronic Equipment Access Door

F. Prepare for Servicing

SUBTASK 12-25-71-860-001

WARNING: MAKE SURE THERE ARE NO PERSONS OR EQUIPMENT IN THE AREA OF THE FORWARD AIRSTAIR BEFORE IT OPERATES. THE AIRSTAIR CAN HIT PERSONS OR EQUIPMENT WHEN IT IS OPERATED. IF THE AIRSTAIR HITS PERSONS OR EQUIPMENT, INJURY TO PERSONS OR DAMAGE TO EQUIPMENT CAN OCCUR.

CAUTION: DO NOT OPERATE THE AIRSTAIR AFTER 3 FULL CYCLES IN LESS THAN 20 MINUTES. DO NOT OPERATE THE AIRSTAIR WHEN THE WIND IS MORE THAN 40 KNOTS. DO NOT OPERATE THE AIRSTAIR WHEN THE DOOR IS BETWEEN THE COCKED AND FULLY OPEN POSITIONS. DO NOT OPERATE THE AIRSTAIR WHEN THERE IS NO SUPPORT UNDER THE EXTENDED AIRSTAIR. DO NOT OPERATE THE AIRSTAIR WHEN THE AIRPLANE IS ON JACKS. IF THE AIRSTAIR IS OPERATED IN ANY OF THE ABOVE CONDITIONS, DAMAGE TO EQUIPMENT CAN OCCUR.

(1) Fully extend the forward airstair with NORMAL power.

G. Forward Airstair Lubrication

(Table 301)

SUBTASK 12-25-71-010-001

(1) Remove the airstair access panels:

(a) Remove the forward and aft access panels that are near the top of the upper ladder.

(b) Remove the forward and aft access panels that are behind the airstair middle stanchion.

(c) Remove the forward and aft access panels that are near the bottom of the upper ladder.

SUBTASK 12-25-71-860-002

(2) Lubricate the airstair components that have external airplane access:

NOTE: The grease, D00633 is the preferred lubricant, while the grease, D00015 is an alternate.

(a) Lubricate the stanchion fittings [1] with the grease, D00633.

(b) Lubricate the rods [2] with the grease, D00633.

(c) Lubricate the inboard truck rollers [3] with the grease, D00633.

(d) Lubricate the outboard support rollers [4] with the grease, D00633.

(e) Lubricate the inboard support/truck rollers [5] with the grease, D00633.

(f) Lubricate the carriage beam cam followers (outboard) [6] with the grease, D00633.

(g) Lubricate the carriage rollers [7] with the grease, D00633.

(h) Lubricate the top ladder cam followers [8] with the grease, D00633.

(i) Lubricate the top ladder rollers [9] with the grease, D00633.

(j) Lubricate the top step pivots [10] with the grease, D00633.

(k) Lubricate the outboard bearing blocks [11] with the grease, D00633.

(l) Lubricate the ballscrew trunnions [12] with the grease, D00633.

(m) Lubricate the ballscrews [13] with the grease, D00633.

(n) Lubricate the upper ladder gears [14] with the grease, D00633.

(o) Lubricate the upper ladder bearings [15] with the grease, D00633.

(p) Lubricate the lower ladder gears [16] with the grease, D00633.

(q) Lubricate the lower ladder bearings [17] with the grease, D00633.

SUBTASK 12-25-71-210-001

CAUTION: MAKE SURE THAT THE CONDUIT SWING ARM BETWEEN THE AIRSTAIR CARRIAGE AND THE LADDER IS IN ITS CORRECT POSITION. IF IT IS INCORRECTLY ALIGNED , IT CAN CAUSE DAMAGE TO EQUIPMENT.

(3) Examine the swing arm conduit between the outboard carriage beam and the ladder:

(a) Make sure that the carriage half of the swing arm conduit correctly aligns with the ladder half of the swing arm conduit..

1) If the carriage half of the swing arm conduit is not in its correct position, then movement of the airstair can cause damage to the conduit and the carriage beam.

SUBTASK 12-25-71-010-002

(4) Install the airstair access panels:

(a) Install the forward and aft access panels near the top of the upper ladder.

(b) Install the forward and aft access panels behind the airstair middle stanchion.

(c) Install the forward and aft access panels near the bottom of the upper ladder.

SUBTASK 12-25-71-010-003

(5) Open this access panel and enter the EE bay:

Number	Name/Location
117A	Electronic Equipment Access Door

SUBTASK 12-25-71-860-003

(6) Remove the plastic access cover from the airstair drain pan.

SUBTASK 12-25-71-860-004

(7) Lubricate the airstair components that have access in the EE bay:

NOTE: The grease, D00633 is the preferred lubricant, while the grease, D00015 is an alternate.

(a) Lubricate the forward and aft carriage rollers [18] with the grease, D00633.

(b) Lubricate the forward and aft carriage beam cam followers [19] with the grease, D00633.

(c) Lubricate the forward and aft pinion splines and rail racks [20] with the grease, D00633.

(d) Lubricate the forward and aft inboard bearing block fittings [21] with the grease, D00633.

(e) Lubricate the forward and aft pinion fittings [22] with the grease, D00633.

SUBTASK 12-25-71-860-005

(8) Install the plastic access cover on the airstair drain pan.

SUBTASK 12-25-71-010-004

(9) Go out of the EE bay and close this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

H. Put the airplane back to its usual condition.

SUBTASK 12-25-71-640-001

(1) Retract the airstair and fully close the airstair door. Do this task: Forward Airstair Retraction in Normal Mode, TASK 52-61-00-860-806 or Forward Airstair Retraction in Standby Mode, TASK 52-61-00-860-808.

Table 301/12-25-71-993-802 Forward Airstair Lubrication - Components (Fig. 301)

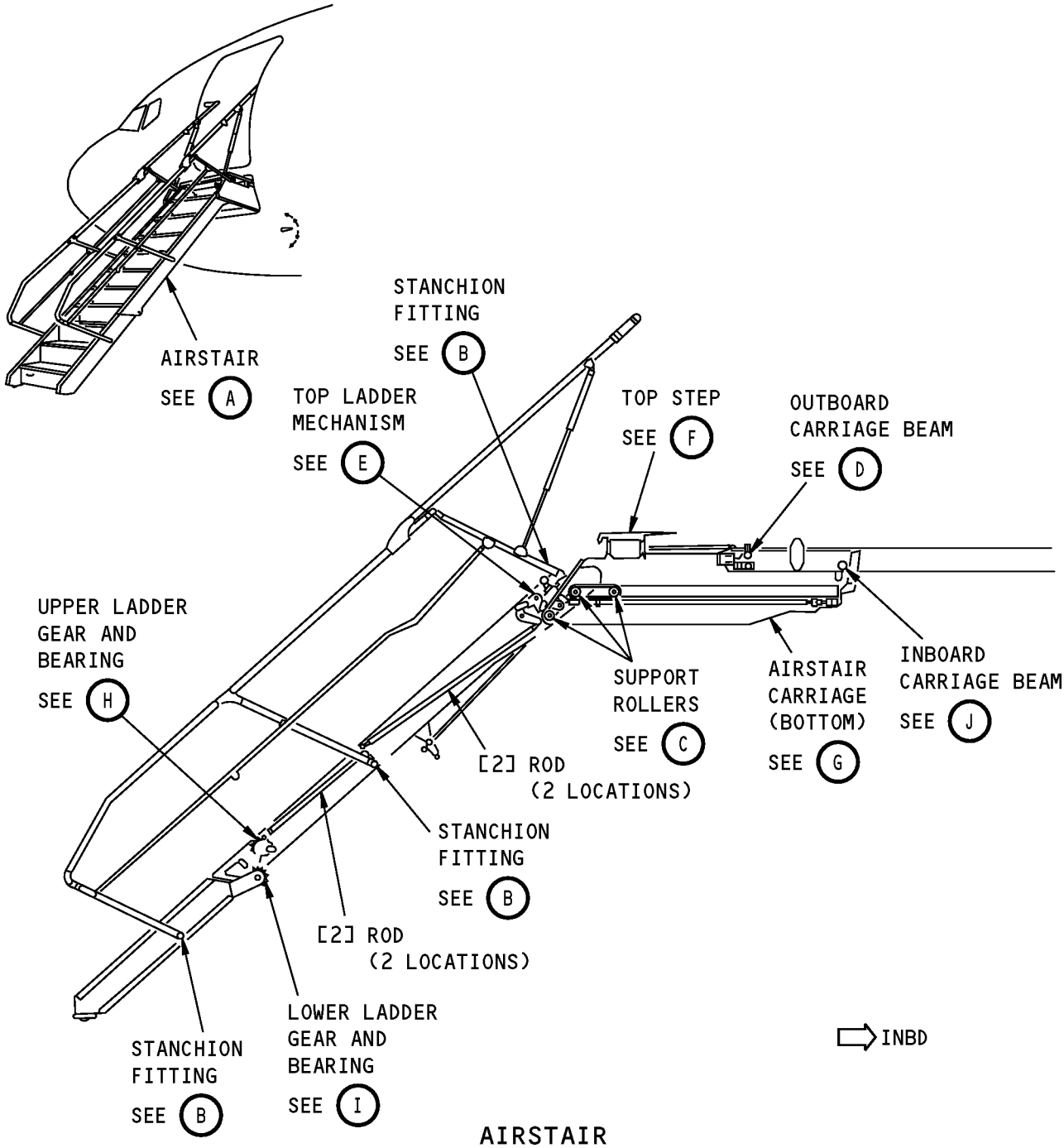
Item No.	Nomenclature	Lubricant	Method of Application	Number of locations
1	Stanchion Fitting	grease, D00633*[1]	Flush	6
2	Rod	grease, D00633*[1]	Flush/Hand	4
3	Inboard Truck Roller	grease, D00633*[1]	Zerk	2
4	Outboard Support Roller	grease, D00633*[1]	Zerk	2
5	Inboard Support/Truck Roller	grease, D00633*[1]	Flush	2
6	Carriage Beam Cam Follower, Outboard	grease, D00633*[1]	Flush	2
7	Carriage Roller	grease, D00633*[1]	Zerk	2
8	Top Ladder Cam Follower	grease, D00633*[1]	Flush	2
9	Top Ladder Roller	grease, D00633*[1]	Flush	2

(Continued)

Item No.	Nomenclature	Lubricant	Method of Application	Number of locations
10	Top Step Pivots	grease, D00633*[1]	Hand	8
11	Outboard Bearing Block	grease, D00633*[1]	Zerk	2
12	Ballscrew Trunnion	grease, D00633*[1]	Flush	2
13	Ballscrew Threads	grease, D00633*[1]	Hand	2
14	Upper Ladder Gear	grease, D00633*[1] or grease, D00015	Hand	2
15	Upper Ladder Bearing	grease, D00633*[1]	Flush	2
16	Lower Ladder Gear	grease, D00633*[1]	Hand	2
17	Lower Ladder Bearing	grease, D00633*[1]	Flush	2
18	Carriage Rollers	grease, D00633*[1]	Zerk	4
19	Carriage Beam Cam Follower, Inboard	grease, D00633*[1]	Flush	2
20	Pinion Spline and Rail Rack	grease, D00633*[1]	Hand	2
21	Inboard Bearing Block Fitting	grease, D00633*[1]	Zerk	2
22	Pinion Fitting	grease, D00633*[1]	Flush	2

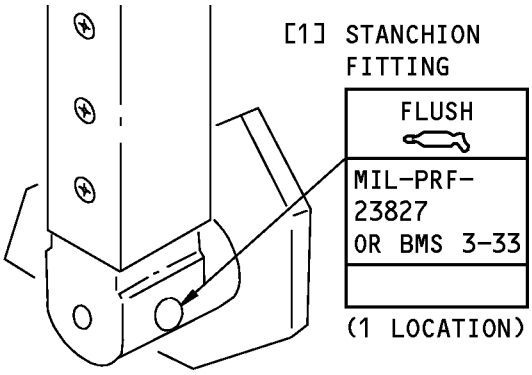
*[1] The grease, D00633 is the preferred lubricant, while the grease, D00015 is an alternate.

——————— END OF TASK ———————



AIRSTAIR
(AFT SIDE IS SHOWN,
FORWARD SIDE IS EQUIVALENT)
A

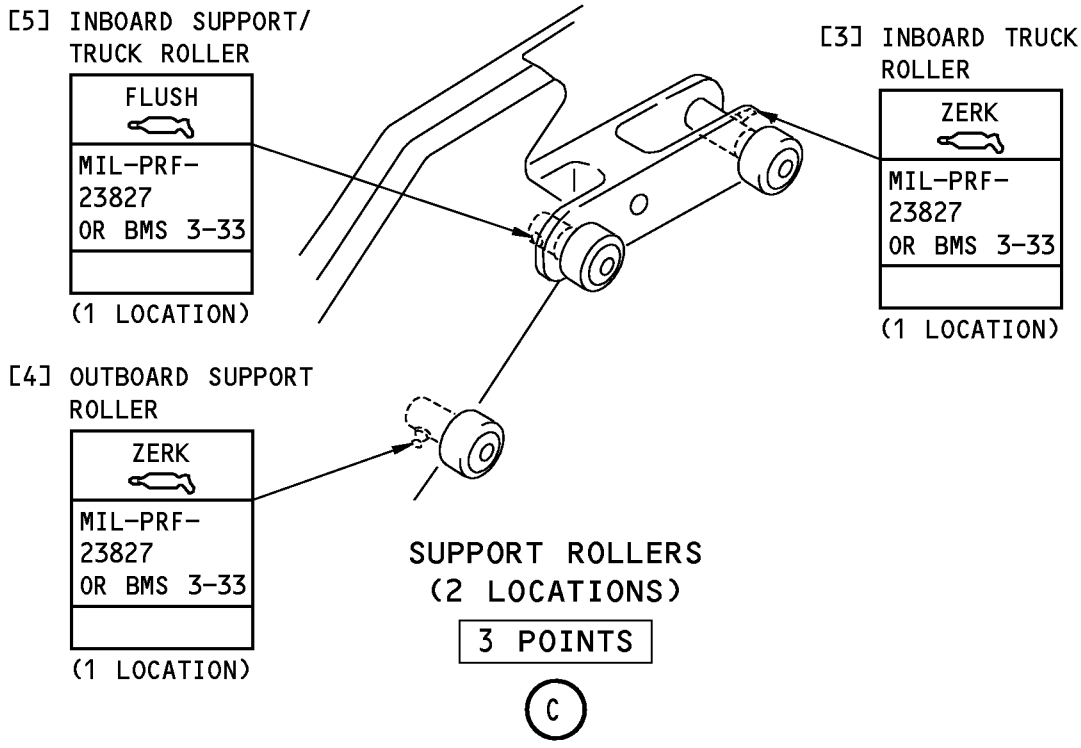
Forward Airstair Lubrication
Figure 301 (Sheet 1 of 7)/12-25-71-990-801



STANCHION FITTING
(EXAMPLE, 6 LOCATIONS)

1 POINT

B



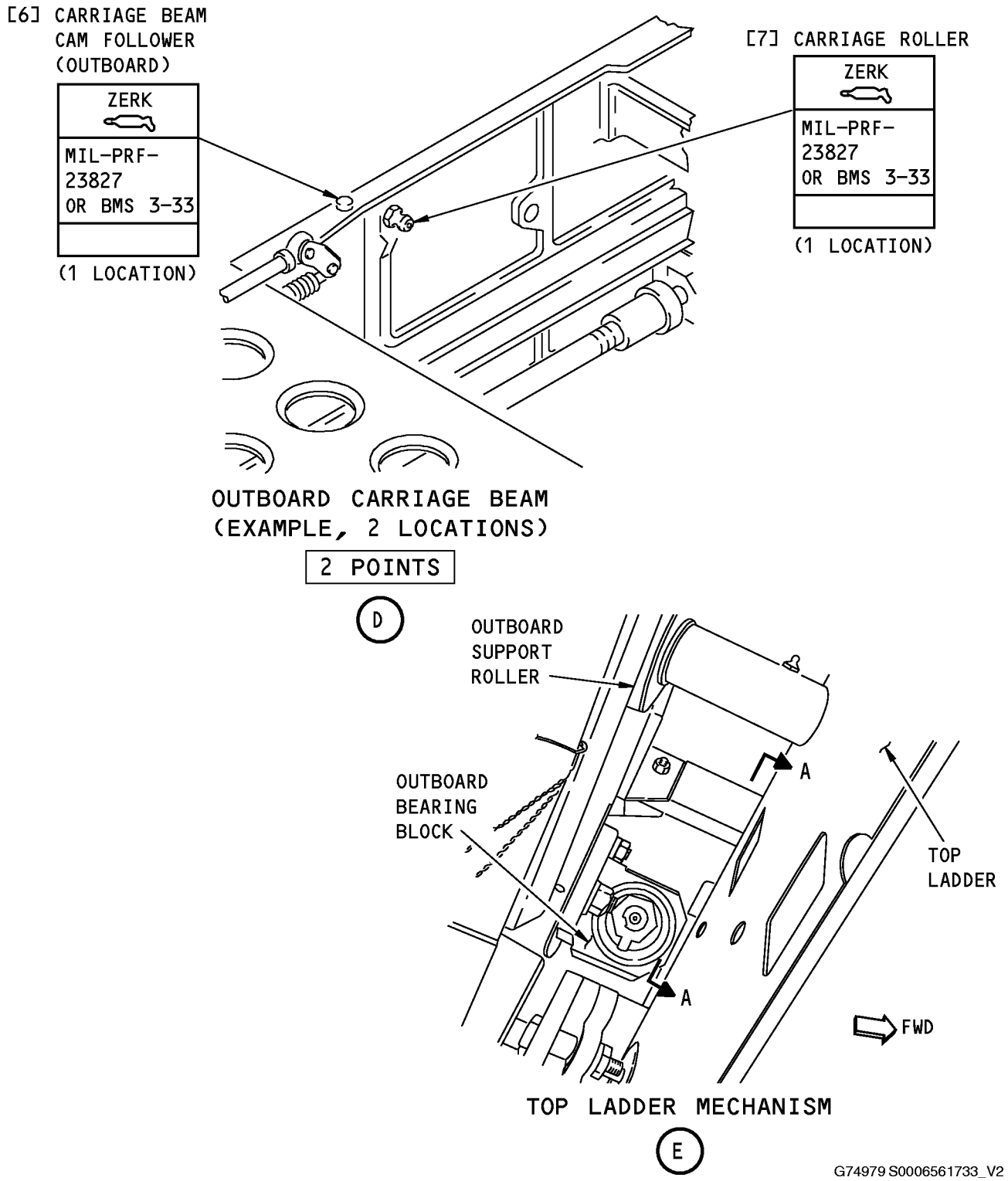
SUPPORT ROLLERS
(2 LOCATIONS)

3 POINTS

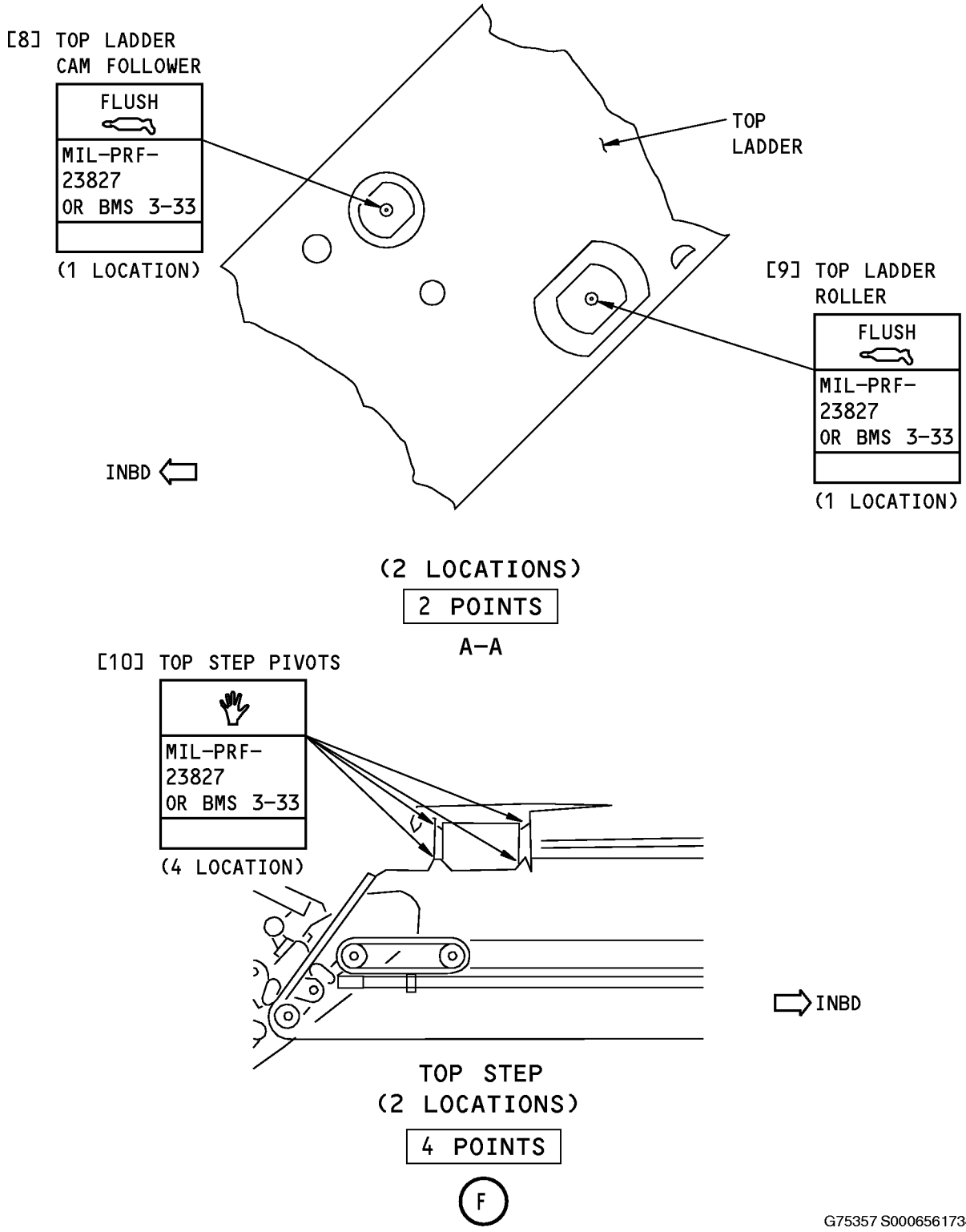
C

G75122 S0006561732_V2

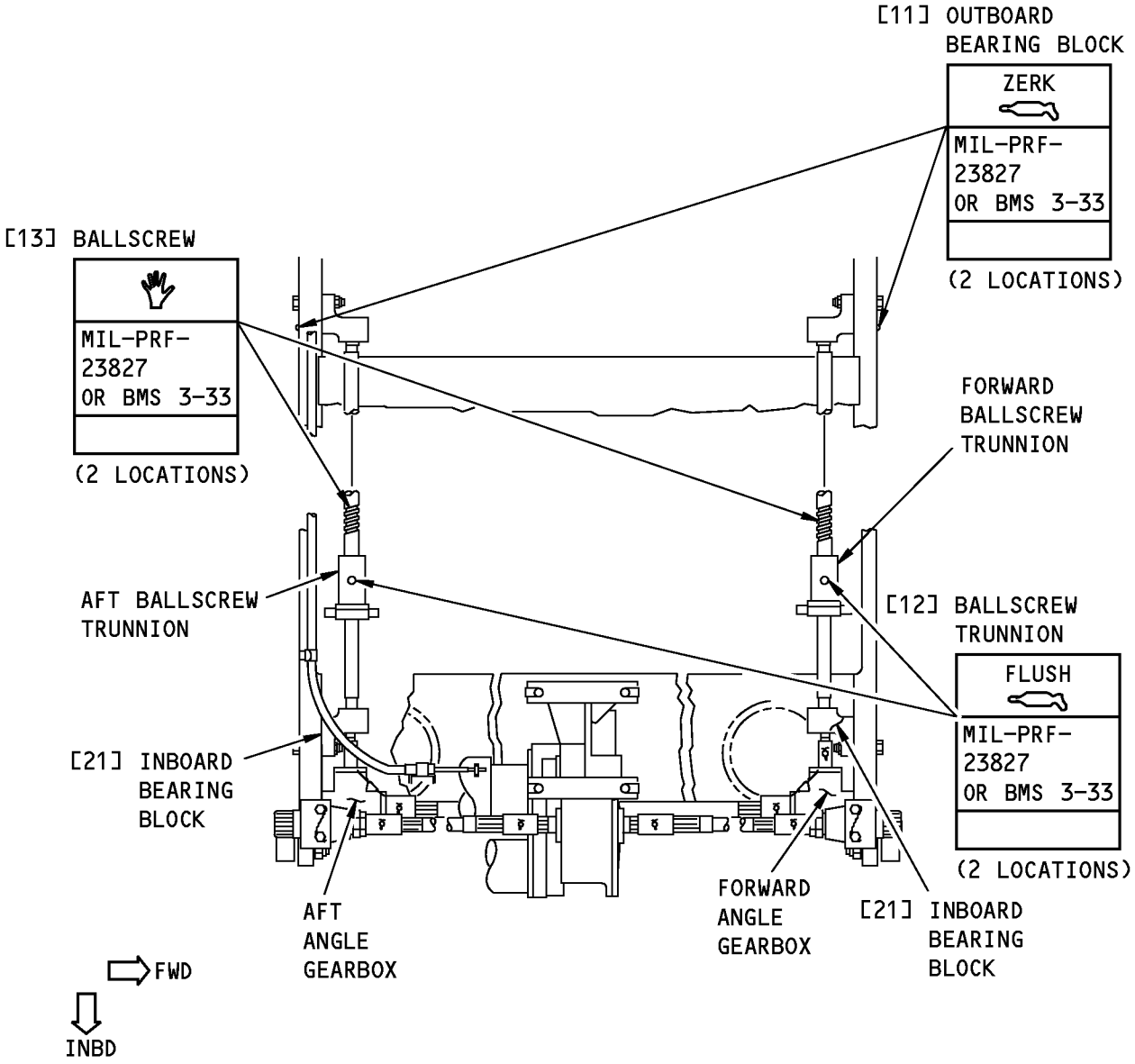
Forward Airstair Lubrication
Figure 301 (Sheet 2 of 7)/12-25-71-990-801



Forward Airstair Lubrication
Figure 301 (Sheet 3 of 7)/12-25-71-990-801

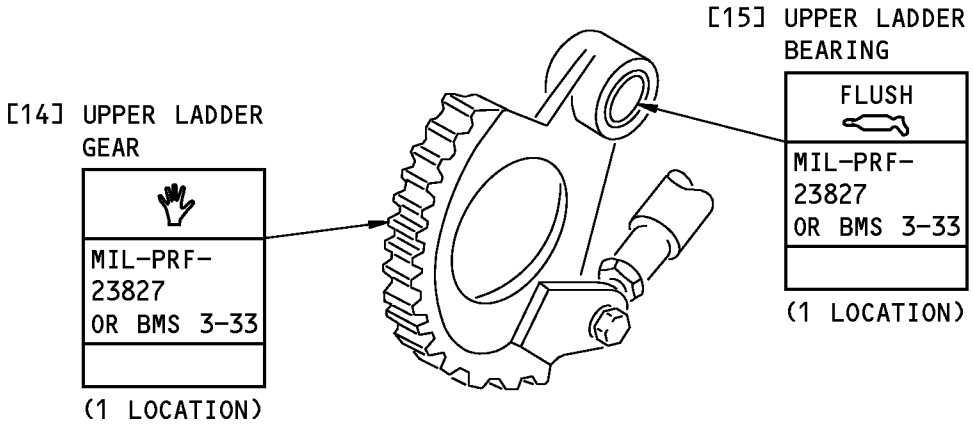


Forward Airstair Lubrication
Figure 301 (Sheet 4 of 7)/12-25-71-990-801



G75184 S0006561735_V3

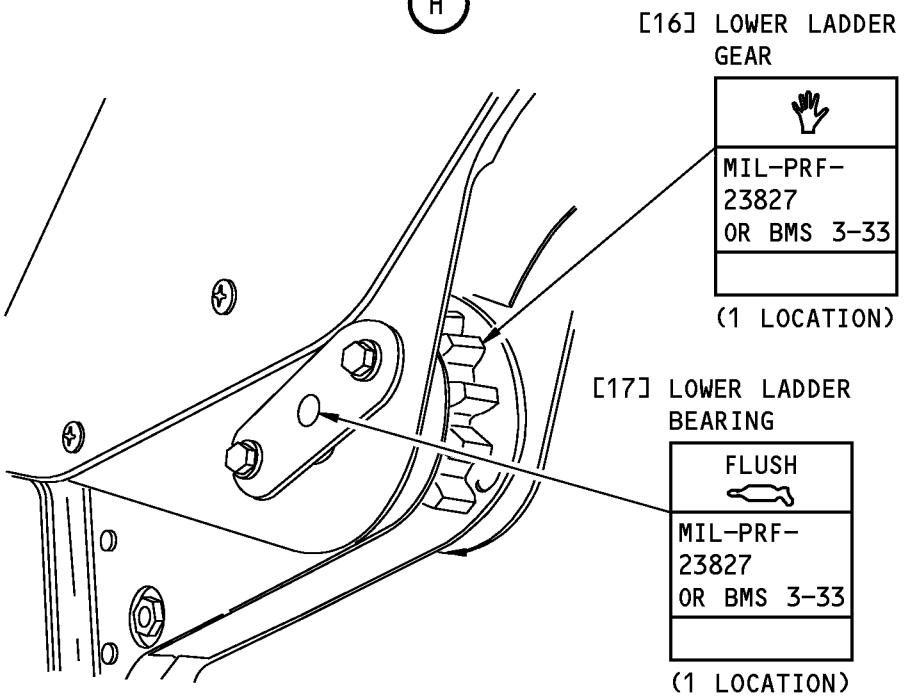
Forward Airstair Lubrication
Figure 301 (Sheet 5 of 7)/12-25-71-990-801



UPPER LADDER GEAR AND BEARING
(2 LOCATIONS)

2 POINTS

H



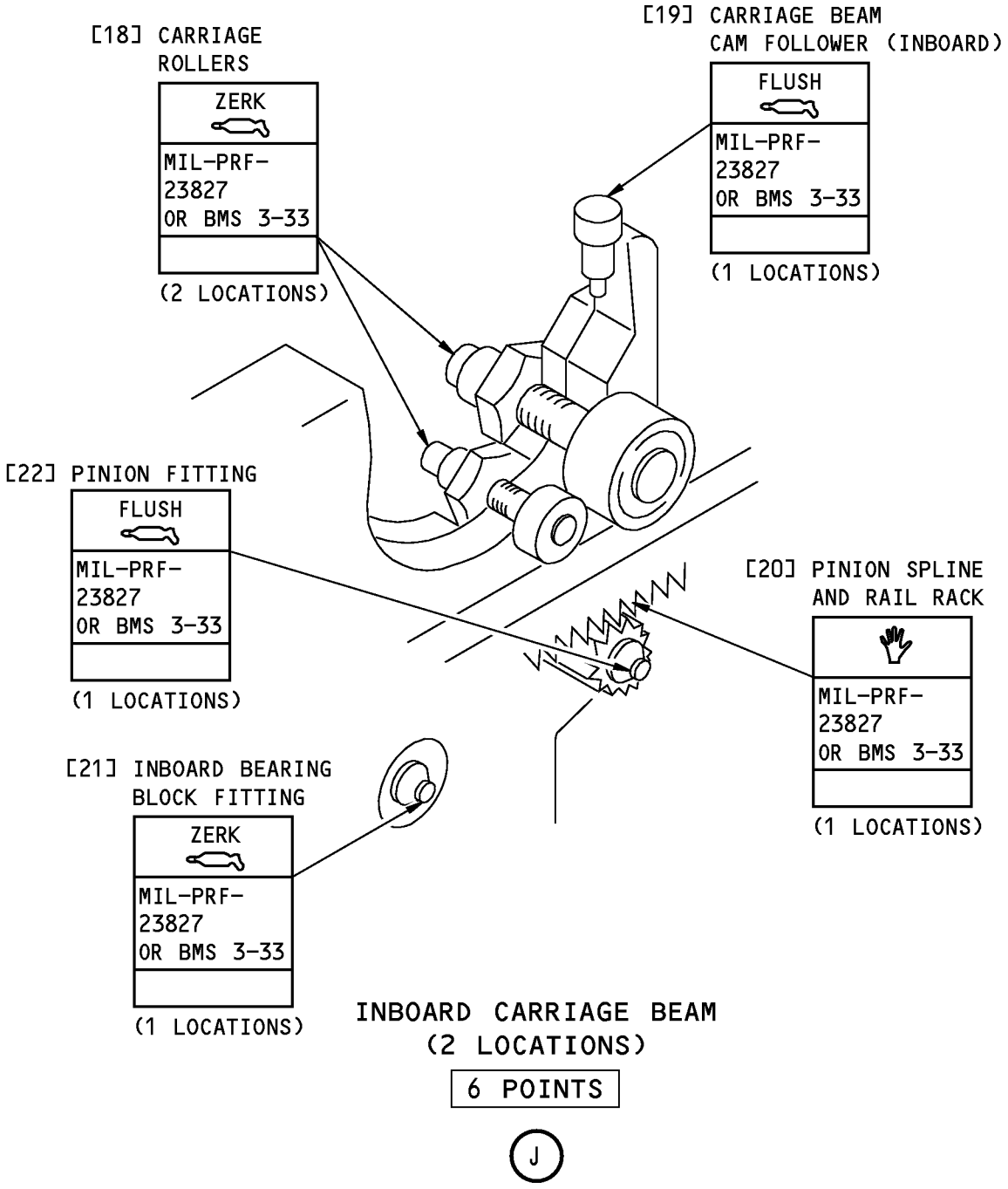
LOWER LADDER GEAR AND BEARING
(2 LOCATIONS)

2 POINTS

I

G75193 S0006561736_V2

Forward Airstair Lubrication
Figure 301 (Sheet 6 of 7)/12-25-71-990-801



G75172 S0006561737_V3

Forward Airstair Lubrication
Figure 301 (Sheet 7 of 7)/12-25-71-990-801

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)

A. General

(1) This procedure is a scheduled maintenance task.

B. References

Reference	Title
25-11-21-000-801	Flight Compartment Forward Ceiling Panel Removal (P/B 201)
25-11-21-400-801	Flight Compartment Ceiling Panel Installation (P/B 201)

C. Consumable Materials

Reference	Description	Specification
D00091	Oil - General Purpose, Low Temperature, Lubricating	MIL-PRF-7870 (NATO O-142)
D00113	Lubricant - Liquid Dispersed Solid Film Lubricant	BMS3-8, BAC 5811, TYPE VIII

D. Location Zones

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

E. Prepare for No. 2 Sliding Window Lubrication

SUBTASK 12-25-81-020-001

(1) Remove the window lining, do this task: Flight Compartment Forward Ceiling Panel Removal, TASK 25-11-21-000-801.

F. Procedure

(Table 301)

SUBTASK 12-25-81-640-001

(1) Lubricate the parts of the window in (Figure 301) with oil, D00091 or lubricant, D00113, where noted:

Table 301/12-25-81-993-802 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 lubricant, D00113	Oil Can	1
3	Latch Mechanism Rod	oil, D00091	Paint Brush	1

(Continued)

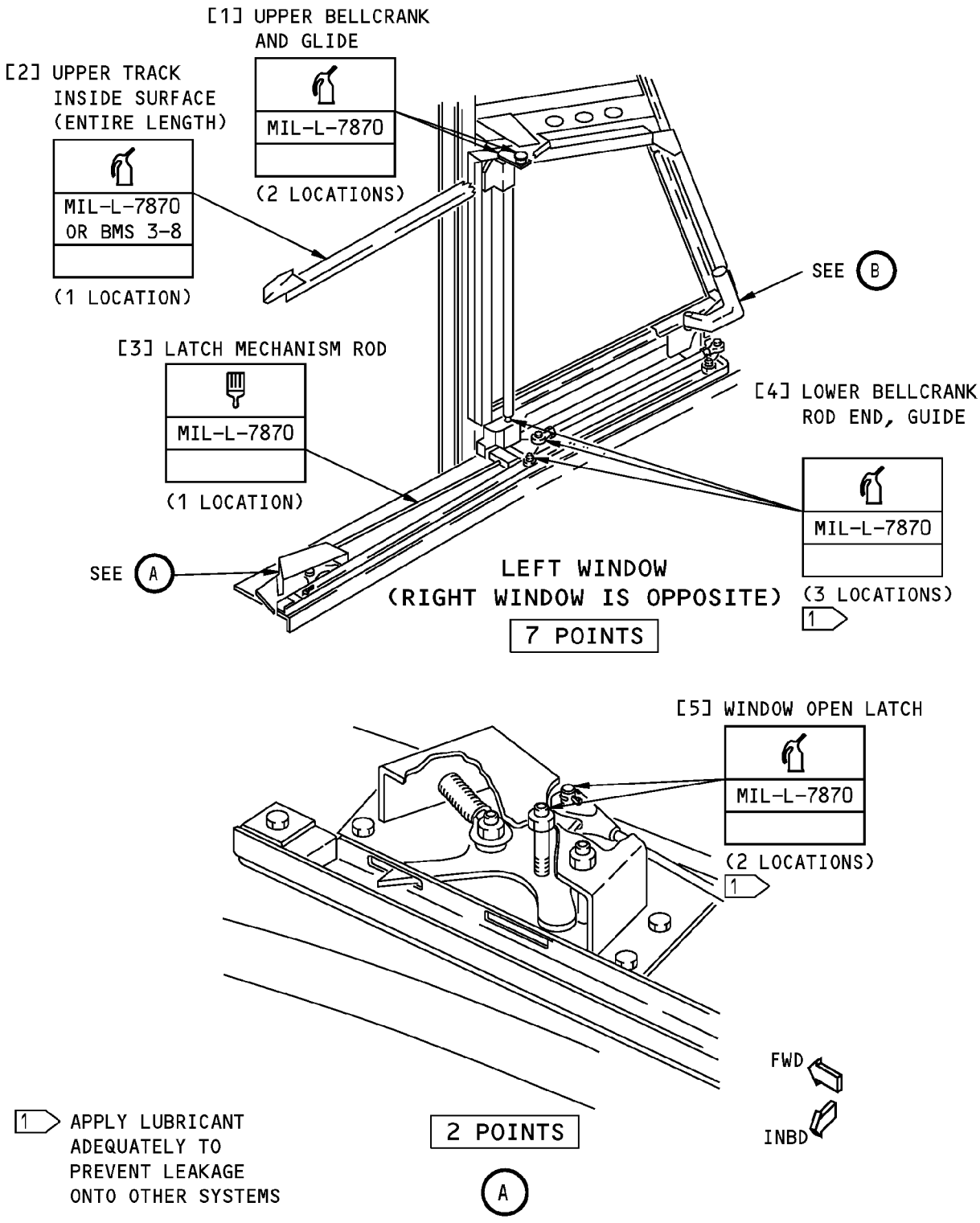
Item No.	Nomenclature	Lubricant	Method of Application	Number of Locations
4	Lower Bellcrank Rod End, Guide Roller and Shaft	oil, D00091	Oil Can	3
5	Window Open Latch	oil, D00091	Oil Can	2
6	Handle Pivot Area	oil, D00091	Oil Can	2
7	Window Release Guide Roller	oil, D00091	Paint Brush	1
8	Trigger Hinge 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 lubricant, D00113	Oil Can	1

G. Put the airplane back its usual condition.

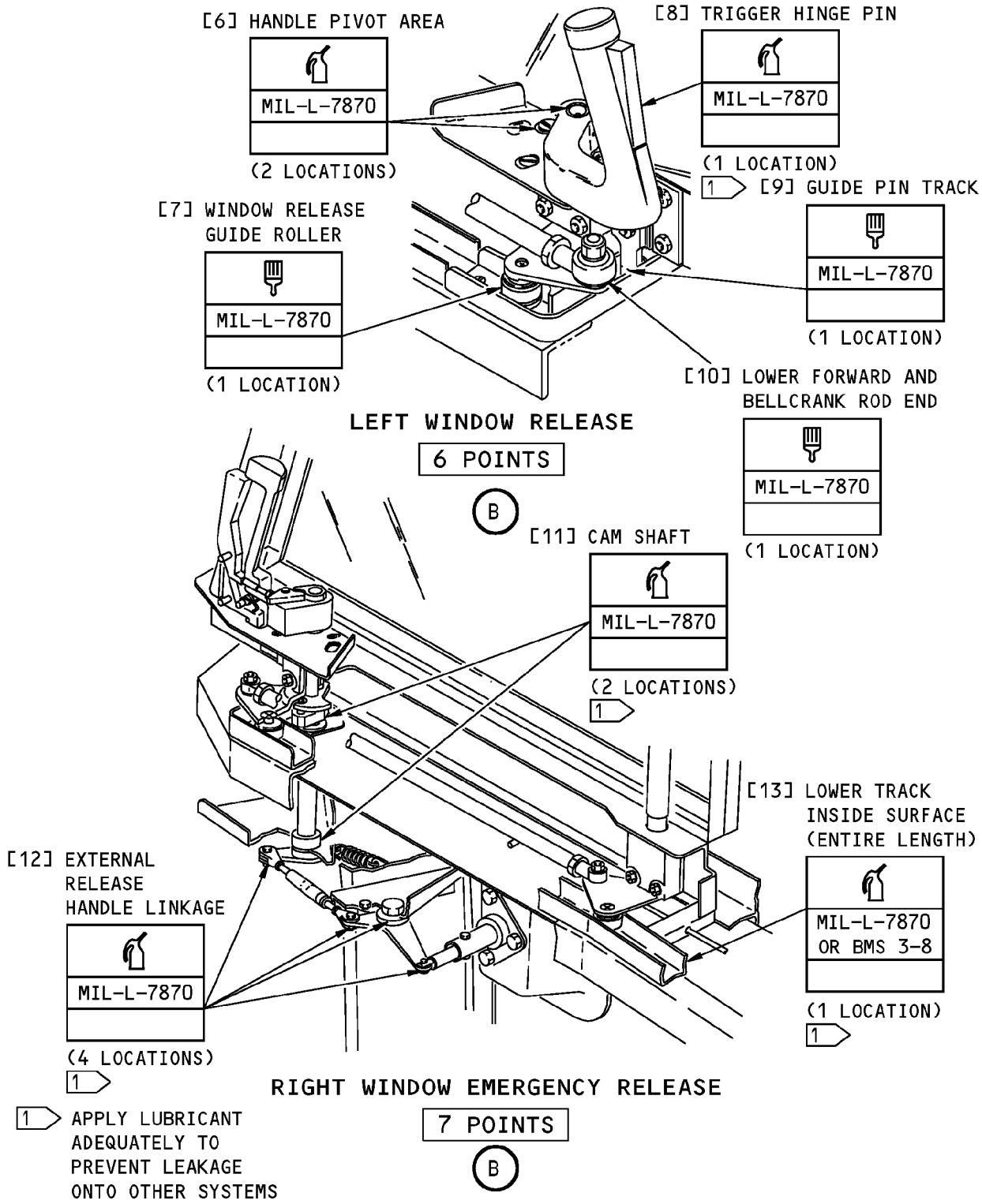
SUBTASK 12-25-81-840-001

(1) Install the window lining, do this task: Flight Compartment Ceiling Panel Installation, TASK 25-11-21-400-801.

——————— END OF TASK ———————



No. 2 Sliding Window Lubrication
Figure 301 (Sheet 1 of 2)/12-25-81-990-801



No. 2 Sliding Window Lubrication
Figure 301 (Sheet 2 of 2)/12-25-81-990-801

CABLE LUBRICATION - SERVICING

1. General

A. There is one task in this procedure, the lubrication of the control cables.

TASK 12-26-00-600-801

2. Control Cable Lubrication

A. References

Reference	Title
27-09-14-990-801	Figure: Aileron Control Cables (P/B 201)
27-09-14-990-802	Figure: Rudder Control Cables (P/B 201)
27-09-14-990-803	Figure: Elevator Control Cables (P/B 201)
27-09-14-990-804	Figure: Stabilizer Control Cables (P/B 201)
27-09-14-990-805	Figure: Trailing Edge Flap Control Cables (P/B 201)
27-09-14-990-806	Figure: Aft Flap Drive Cables (P/B 201)
27-09-14-990-807	Figure: Spoiler Control Cables (P/B 201)
27-09-14-990-808	Figure: Speedbrake Control Cables (P/B 201)
32-31-41-990-801	Figure: Landing Gear Control Cable Installation (P/B 401)
32-34-31-990-801	Figure: Main Gear Manual Extension System Cable Installation (P/B 401)
32-35-21-990-801	Figure: Nose Gear Manual Extension System Cable Installation (P/B 401)
32-41-81-990-801	Figure: Hydraulic Brake Control Cable Installation (P/B 401)
32-51-31-990-801	Figure: Steering System Cables Installation (P/B 401)
32-51-31-990-802	Figure: Steering System Cables Installation (P/B 401)

B. Consumable Materials

Reference	Description	Specification
D00015	Grease - Aircraft Bearing (Use BMS 3-24 until existing stocks are depleted, BMS 3-33 supersedes BMS 3-24)	BMS3-24 (Superseded by BMS 3-33)
D00633	Grease - Aircraft General Purpose	BMS3-33
G00034	Cotton Wiper - Process Cleaning Absorbent Wiper (Cheesecloth, Gauze)	BMS15-5

C. Location Zones

Zone	Area
100	Lower Half of Fuselage
300	Empennage
400	Powerplant and Nacelle Struts
500	Left Wing
600	Right Wing

D. Procedure

SUBTASK 12-26-00-160-001

CAUTION: DO NOT USE SOLVENT OR HEAT TO THIN THE GREASE ON THE CONTROL CABLES. DO NOT USE SOLVENT TO CLEAN THE CONTROL CABLES. THE SOLVENT REMOVES GREASE FROM THE CABLE. DO NOT APPLY OR SPRAY BMS 3-23 ON THE CONTROL CABLES.

(1) Use a lint-free cotton wiper, G00034 that is clean and dry to clean the control cables.

NOTE: Remove the old grease and dirt from the surface of the control cable. 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 12-26-00-640-001

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.

(2) Do these steps to identify and lubricate the carbon steel control cables only:

(a) Refer to these figures for carbon steel control cables: Figure 27-09-14-990-801 Figure 27-09-14-990-802 Figure 27-09-14-990-803 Figure 27-09-14-990-804 Figure 27-09-14-990-805 Figure 27-09-14-990-807 Figure 27-09-14-990-808 Figure 32-31-41-990-801 Figure 32-34-31-990-801 Figure 32-35-21-990-801 Figure 32-41-81-990-801

(b) Refer to this figure for corrosion resistant steel (CRES) control cables: Figure 27-09-14-990-806

(c) Refer to this figure for carbon steel and/or corrosion resistant steel (CRES) control cables: Figure 32-51-31-990-801 Figure 32-51-31-990-802

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.

CAUTION: THE CONTROL CABLES IN THE WING AND NACELLE AREA ARE NEAR HIGH TEMPERATURE SOURCES. THE LUBRICANTS WILL DETERIORATE AT A FASTER RATE THAN ON OTHER CONTROL CABLES. EXAMINE THE CONDITION OF THESE CABLES AT MORE FREQUENT INTERVALS.

1) Apply a light even coat of grease, D00633 (recommended) or grease, D00015 (optional) to the carbon steel control cable for the full length of travel.

2) Do not apply grease to these areas because they will receive grease during cable movement:

a) The clad areas.

b) Through the fairleads.

c) Through the air pressure seals.

d) On the pulleys.

e) On the quadrants.

f) On the drums.

3) After application of grease on the cable, the cable should be wiped with a clean cloth to remove grease, but leave a thin visible film.

END OF TASK

COLD WEATHER MAINTENANCE - SERVICING

1. General

A. This procedure contains one task. This task is cold weather maintenance, servicing.

TASK 12-33-01-600-802

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) In cold weather it is necessary to drain the fuel tank sumps prior to refueling to remove water from the fuel tanks if the airplane has been idle for more than 45 minutes prior to refueling. Drain the fuel tank sumps again after refueling if the airplane has been idle for 2 hours or more after refueling, prior to departure. In cold weather water can freeze, and not let the drain valves open.

(4) Low temperatures (below freezing) can affect grease viscosity. Lubricate landing gear and flight control components in warm weather or 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.

(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 take-off.

(b) Ice that has accumulated on the fan blades while the engine is 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 8000.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 A Serviceable Condition After the Storage, TASK 10-12-02-550-801.

(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: Procedure to Prepare the Engine for Operation, TASK 71-00-00-700-818-F00.

(10) The start the APU in cold weather, do this task: APU Starting and Operation, TASK 49-11-00-860-801.

B. References

Reference	Title
10-11-01-580-801	Airplane Parking (P/B 201)
10-11-03-580-801	Park the Airplane (P/B 201)
10-12-02-550-801	Put the Airplane Back to A Serviceable Condition After the Storage (P/B 201)
10-12-02-550-802	Prepare The Airplane For Storage for More Than Seven Days (P/B 201)
12-14-01-600-801	Potable Water System - Drain (P/B 301)
12-17-01-610-801	Waste Tank Servicing (P/B 301)
49-11-00-860-801	APU Starting and Operation (P/B 201)
71-00-00-700-818-F00	Procedure to Prepare the Engine for Operation (P/B 201)
71-00-00-700-821-F00	Dry Motor the Engine (P/B 201)
71-00-00-800-805-F00	Engine Ground Safety Precautions (P/B 201)

C. Consumable Materials

Reference	Description	Specification
G02301	Fluid - Aircraft Deicing/Anti-Icing (SAE Type I)	SAE AMS1424
G02460	Fluid - Aircraft Deicing/Anti-Icing, Non-Newtonian (SAE Type II, III, IV)	SAE AMS1428

D. Procedure

SUBTASK 12-33-01-660-003

(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 D6-17487, "Certification Test of Airplane Material" 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	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 degrees F (10 degrees 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 a maximum of 5 degrees F (3 degrees C) more than OAT		
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

(Continued)

OUTSIDE AIR TEMPERATURE OAT	ONE-STEP PROCEDURE DEICING/ANTI-ICING	TWO-STEP PROCEDURE	
		1ST STEP: DEICING	2ND STEP: ANTI-ICING
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 degrees F (3 degrees C) more than 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 degrees F (3 degrees C) more than 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 degrees F (7 degrees 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 degrees F (7 degrees 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) fluid, G02301, latest revision, Type I

(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 A SOLID FLOW OF FLUID DIRECTLY AT THE SURFACE. APPLY THE FLUID AT LOW ANGLE TO PREVENT DAMAGE TO THE AIRPLANE SURFACES. DO NOT USE A HIGH PRESSURE SPRAY TO BLOW THE ICE AND SNOW OFF THE AIRPLANE SURFACES.

(f) For the best ice or snow removal, the temperature of the deicing fluid and hot water should be 140–180°F (60–82°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. Make sure the maximum force of the solid flow of fluid on the surfaces in not more than 10 psi on an area of 25 square inches (161.3 square centimeters). This will prevent damage to the 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 mayl 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. EQUIPMENT THAT IS INSTALLED ON THE SURFACE OF THE WING OR FUSELAGE CAN BE DAMAGED BY THE MOVEMENT OF THE ROPES OR FABRIC.

(l) Use brooms with long handles to remove the snow form 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: DEICING/ANTI-ICING FLUID IS DANGEROUS. DO NOT LET IT TOUCH THE SKIN OR EYES, AND USE CLOTHING THAT GIVES SUFFICIENT PROTECTION.

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.

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) Do not point a spray of deicing/anti-icing fluid directly into the engine, APU, scoops, vents, drains, etc.
4) Do not use more than 10 psi (68.9 KPa) on an area of 25 square inches (161.3 square centimeters). Do not point a solid flow of fluid directly at the airplane surfaces.
5) Make sure that ice and/or snow is not pushed into the areas around the flight controls during ice and snow removal.
6) Remove all of the ice or snow from the door and girt bar areas before you close a door.
7) 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
8) Do not use hard or sharp tools to remove the ice from the airplane surface.
9) 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.
10) 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.

11) 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 MAY CAUSE PERSONAL INJURY OR AIRPLANE DAMAGE.

(s) Use a boomtruck, a cherry-picker or deicing/anti-icing truck to do deicing/anti-icing.

SUBTASK 12-33-01-580-002

(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.

(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: TO AVOID PERSONAL INJURY, ENSURE THAT THE STABILIZER TRIM WHEEL HANDLE IS STOWED PRIOR TO USING ELECTRIC TRIM.

3) Stabilizer trim - Full Airplane Nose Down (Figure 302):
   a) Set stabilizer to the APL NOSE DOWN limit to prevent deicing fluid and slush run-off from entering the stabilizer balance panel cavity.
   b) Trim the airplane to the electrical APL NOSE DOWN limit. Then continue trimming manually to the manual APL NOSE DOWN limit.

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 1/8-inch 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 AREA WHERE THERE ARE LIGHTS AND ANTENNA. IF YOU ARE NOT CAREFUL, YOU CAN CAUSE DAMAGE TO THE EQUIPMENT.

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.

3) Do not point a spray of deicing/anit-icing fluid directly into the inlet duct or exhaust for the APU.

4) 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: PERSONS MUST STAY CLEAR OF THE DANGEROUS AREAS IN FRONT OF OR IN BACK OF AN ENGINE AND IN THE APU EXHAUST WHEN THEY OPERATE. INJURY OR DEATH OF PERSONS CAN OCCUR IN THESE AREAS. (ENGINE GROUND SAFETY PRECAUTIONS, TASK 71-00-00-800-805-F00)

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: MAKE SURE THE APU INLET AREA IS CLEAR BEFORE YOU START THE APU. THE APU CAN BE DAMAGED BY THE ICE OR SNOW THAT COLLECTED IN THE INLET AREA.

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) Close the valves for the air conditioning pack to the cabin

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 the ice from the Vortex generator on the APU inlet door when the APU is not in operation.
5) 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 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 MOVE THE AIRPLANE IF THE TIRES FREEZE TO THE GROUND. MAKE SURE THE WHEELS TURN WHEN YOU MOVE THE AIRPLANE.

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 $\frac{1}{8}$ 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) 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.

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2) Air stairs

a) Retract the stairs as soon as possible. Too much ice or snow will not collect on the stairs if you do the brush or sweep away the snow that collects. If ice is still there, remove with the ice removal fluid. Be careful not to point the spray into the door openings.

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3) Windshield Wiper Blades

a) Remove the ice that collected on the windshield wiper blades.

SUBTASK 12-33-01-660-004

(3) Hot Water Ice Removal

(a) You can use hot water140°F (60°C) to180°F (82°C) maximum nozzle temperature to remove ice and snow from the airplane surfaces when the ambient temperature is27°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 12-33-01-660-005

(4) 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 to140°F (60°C) to180°F (82°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 12-33-01-660-006

(5) 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 12-33-01-710-002

(6) Operation Checks

(a) Before you start the engine, do the steps that follow to make sure the systems will operate correctly.

1) Operate all the control surfaces. Use a person on the ground to make sure the control surfaces move the full travel.

2) If you think that seals are frozen or there are blockages in the balance panel bays, then move the control surfaces manually before you move them with power.

3) Examine the openings in the pitot probe, probes installed on the strut or in the engine inlet, and the static ports. Make sure they are clear of ice or snow.

4) Make sure there is no ice or snow on the landing gear, and or in the wheel wells.

5) Make sure that all the inlets are clear of ice or snow.

6) Make sure all the drains are clear and not blocked.

7) Make sure the engine compressor can turn freely.

NOTE: If the fan (N1) cannot turn during an engine start because of ice, this can cause heavy damage. When it is possible that water collected in the engine at freezing temperatures, you must make sure the fan (N1) can turn before you start the engine. You can see the low pressure (LP) rotor fan blades turn from the ground. If the wind does not turn the fan, you can turn it by hand. If you will motor the engine to make sure the engine compressor turns, use this procedure (TASK 71-00-00-700-821-F00).

8) Make sure all of the doors are clear of ice.

SUBTASK 12-33-01-580-003

(7) To Park the Airplane

WARNING: IF HIGH WINDS ARE POSSIBLE, USE THE PROCEDURE IN (PARK THE AIRPLANE, TASK 10-11-03-580-801) TO SET THE STABILIZER. HIGH WIND CONDITIONS CAN CAUSE DAMAGE TO THE AIRPLANE AND INJURY TO PERSONNEL.

(a) 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 The Airplane For Storage for More Than Seven Days, TASK 10-12-02-550-802 if more steps are necessary because of the weather conditions and length of time the airplane will be parked.

(b) When it is possible, point the airplane in the direction the wind is usually from.

(c) Set the airplane control surfaces so that the rain and snow that melts will not flow into the balance bay area. Water in these areas can freeze and lock the controls. See Figure 302.

1) Put the wing flaps to the full up position.

2) Put the stabilizer position to 4 units of trim (2° stabilizer position).

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.

(d) 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: Procedure to Prepare the Engine for Operation, TASK 71-00-00-700-818-F00.

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

CAUTION: IF YOU CAN DRAIN THE FUEL FROM THE DRAIN VALVE AFTER YOU APPLIED HOT AIR TO THE EXTERIOR FOR 3 TO 5 MINUTES, DO NOT THINK THAT ALL THE ICE IS MELTED. THE ICE ADJACENT TO THE UNIT YOU ARE NOT SURE ABOUT CAN MELT AND LET SOME WATER AND FUEL TO FLOW FROM THE DRAIN. BUT, A PIECE OF ICE CAN STAY BEHIND. IF THE FUEL DOES NOT FLOW FROM THE DRAIN VALVE, CONTINUE TO APPLY HOT AIR FOR A SHORT TIME, AND FREQUENTLY DO A CHECK OF THE FLOW FROM THE DRAIN VALVE. CATCH THE FUEL IN A CONTAINER AND MAKE SURE ALL OF THE WATER IS REMOVED.

CAUTION: THE HEAT APPLIED TO THE SUMP DRAIN VALVES FOR THE OUTBOARD MAIN AND RESERVE TANKS WILL NOT REMOVE THE ICE WHICH HAS COLLECTED IN THE TANK SUMP OR IN THE DRAIN LINE BETWEEN THE TANK SUMP AND VALVE. TO REMOVE THIS ICE, YOU MUST PUT THE AIRPLANE IN A WARM HANGAR FOR SUFFICIENT TIME TO MELT THE ICE. THEN DRAIN THE SUMPS UNTIL THE WATER IS REMOVED.

(a) In cold weather drain the fuel tank sumps prior to refueling to remove water from the fuel tanks if the airplane has been idle for more than 45 minutes prior to refueling. Drain the fuel tank sumps again after refueling if the airplane has been idle for 2 hours or more after refueling, prior to departure.

(b) 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.

(c) 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 water has collected and frozen in the sumps (shown by no flow from the drain valves), do the step that follows:

1) Apply heat (hot air that is resistant to explosion) to the bottom of the wing in the area of the tank sumps.

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.

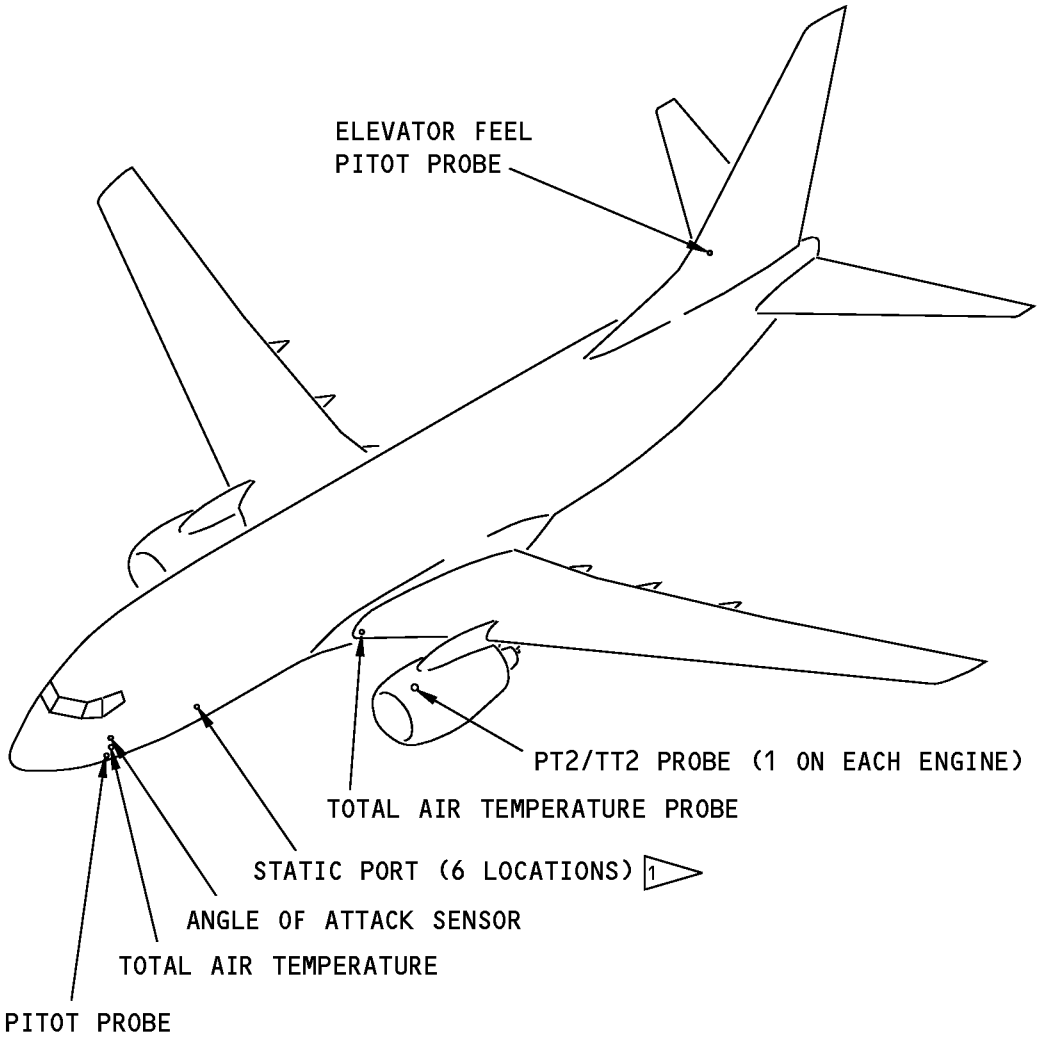
b) When the airplane will not be operated you must fully drain the toilet flushing system to make sure it will not freeze, do this task: Waste Tank Servicing, TASK 12-17-01-610-801.

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 12-14-01-600-801.

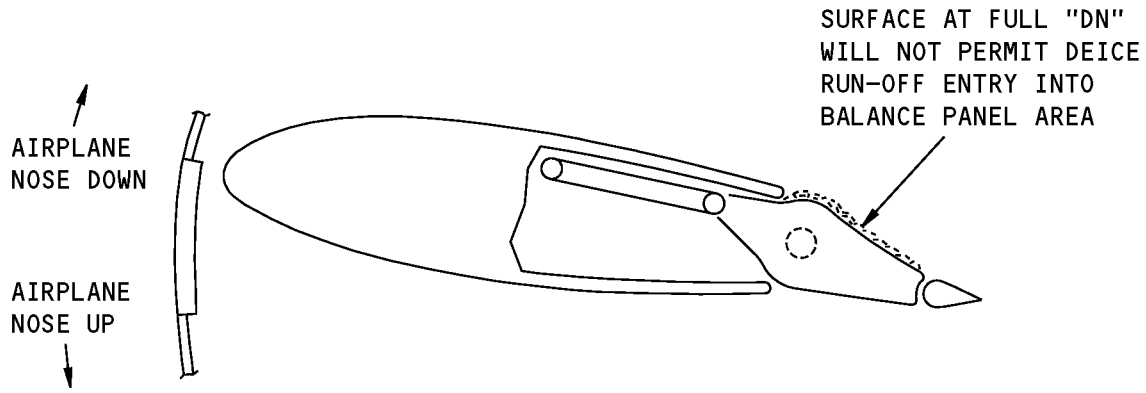
—————— END OF TASK ——————



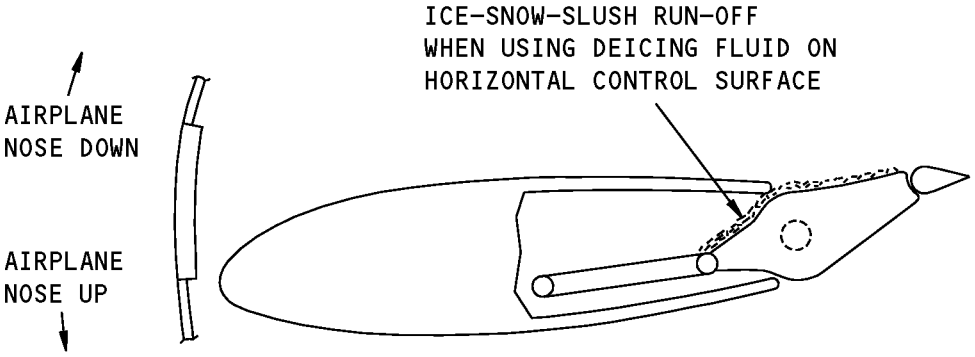
(LEFT SIDE IS SHOWN, RIGHT SIDE IS OPPOSITE)

1 ONE ALTERNATE STATIC PORT NEAR THE BOTTOM OF THE FUSELAGE IS NOT SHOWN.

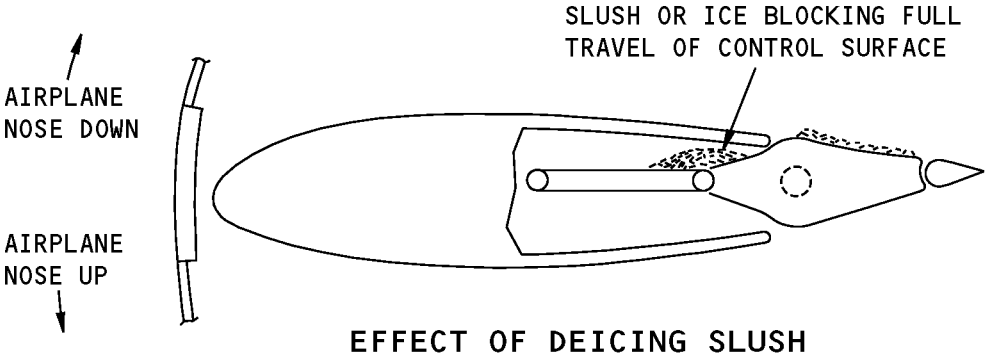
Probe Locations
Figure 301/12-33-01-990-806



RECOMMENDED POSITION OF HORIZONTAL
STABILIZER DURING DEICING OPERATIONS



DEICING SLUSH RUN-OFF
INTO BALANCE PANEL CAVITY



EFFECT OF DEICING SLUSH
ENTERING BALANCE PANEL CAVITY

Horizontal Stabilizer Position
Figure 302/12-33-01-990-807

EXTREME COLD WEATHER MAINTENANCE - SERVICING

1. General

A. This procedure has these tasks:

(1) Short Term Parking at Temperatures Below -22°F (-30°C)

(2) Return the Airplane to Service After Short Term Parking at Temperatures Below -22°F (-30°C)

(3) Overnight or Extended Parking (Airplane Unattended) at Temperatures Below 5°F (-15°C)

(4) Return the Airplane to Service After Overnight or Extended Parking at Temperatures Below 5°F (-15°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. In cold weather it is necessary to drain the fuel tank sumps prior to refueling to remove water from the fuel tanks if the airplane has been idle for more than 45 minutes prior to refueling or has been cold soaked. Drain the fuel tank sumps again after refueling if the airplane has been idle for 2 hours or more after refueling. In cold weather water can freeze, and not let the drain valves open.

D. 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 take-off.

(2) Ice that has accumulated on the engine fan blades while the engine is 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 12-33-02-600-804

2. Short Term Parking at Temperatures Below -22°F (-30°C)

A. General

(1) Short term parking at temperatures below -22°F (-30°C):

(a) When the cabin and flight deck temperature is maintained above 32°F (0°C) and the engine oil temperature is maintained at 6°F (3°C) above freeze point or -40°F (-40°C), whichever is higher while the airplane is on the ground.

(2) In cold weather it is necessary to drain the fuel tank sumps prior to refueling to remove water from the fuel tanks if the airplane has been idle for more than 45 minutes prior to refueling.

(3) In cold weather it is necessary to install covers on the pitot probes and static ports.

(4) When adding fuel, you must use these requirements:

(a) Make sure the fuel temperature is at least 6°F (3°C) above the fuel freeze point or -45.4°F (-43°C), whichever is higher. Use the ASTM method to determine the freeze point.

NOTE: The Fuel Quantity Indicator on the wing fuel station 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.

B. References

Reference	Title
10-11-01-580-801	Airplane Parking (P/B 201)
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)
12-33-01-600-802	Cold Weather Maintenance Procedure (P/B 301)
21-00-00-800-801	Supply Conditioned Air to the Airplane (P/B 201)
71-00-00-700-818-F00	Procedure to Prepare the Engine for Operation (P/B 201)
71-00-00-700-819-F00	Stop the Engine Procedure (Usual Engine Stop) (P/B 201)
71-00-00-800-806-F00	Engine Operation Limits (P/B 201)
71-00-00-800-807-F00	Start the Engine Procedure (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-2478	Heater - External Cabin, Trailer Mounted, Diesel Powered (Part #: ACU-2000, Supplier: 00365, A/P Effectivity: 737-ALL) (Part #: MARK IV COLDBUSTER, Supplier: 12008, A/P Effectivity: 737-ALL) (Opt Part #: MARK I COLDBUSTER, Supplier: 12008, A/P Effectivity: 737-ALL)

D. Consumable Materials

Reference	Description	Specification
D00071	Oil - Aircraft Turbine Engine, Synthetic Base	MIL-PRF-7808, Grade 3

E. 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

F. Access Panels

Number	Name/Location
117A	Electronic Equipment Access Door

G. 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 12-33-02-550-003

(2) Do this task: Cold Weather Maintenance Procedure, TASK 12-33-01-600-802.

SUBTASK 12-33-02-480-003

(3) Do this task: Airplane Parking, TASK 10-11-01-580-801.

SUBTASK 12-33-02-210-009

(4) 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 12-33-02-880-004

(5) Do one of the steps that follow to maintain the cabin temperature at or above 32°F (0°C):

(a) Use the APU or a ground air source to run both ECS packs:

1) Do this task: Supply Conditioned Air to the Airplane, TASK 21-00-00-800-801.

(b) Use a heater, COM-2478 to heat the airplane through the Low Pressure ECS Panel - Forward, 191E.

SUBTASK 12-33-02-420-004

(6) 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 -40°F (-40°C) can be greatly increased by the use of engine inlet and exhaust covers.

SUBTASK 12-33-02-210-010

(7) Use the Input Monitoring Page on the CDS Display Unit to monitor the engine oil temperature when the engines are not running.

(a) If the engine oil temperature shown on the CDS Display Unit approaches -40°F (-40°C), do the steps that follow:

1) Remove the inlet and exhaust covers.

2) Heat the engines with a heater, COM-2478:

a) 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 and starter.

b) If you use a single hose ground cart (Herman Nelson heater), direct the heater hose on the engine gearbox and starter.

3) Make sure the engine oil temperature on the CDS Display Unit is above -40°F (-40°C) to prevent damage to the engine bearings before you start the engines.

a) See cold weather starting procedures in TASK 71-00-00-700-818-F00.

b) See engine operating limits in TASK 71-00-00-800-806-F00.

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

5) Run the engines at idle until the oil temperature is at or above 32°F (0°C).

6) Make sure the oil temperature is at least 32°F (0°C) before you increase the power above idle.

7) Before shutdown of the engines, run the engines at idle for a minimum of 10 minutes.

NOTE: This will let the engine temperature stabilize.

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

9) 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 -40°F (-40°C) can be greatly increased by the use of engine inlet and exhaust covers.

10) Continue to use the Input Monitoring Page on the CDS Display Unit to monitor the engine oil temperature when the engines are not running.

SUBTASK 12-33-02-600-003

(8) Do this task: IDG Oil Level Check, TASK 12-13-21-200-801.

NOTE: If the IDG is serviced for cold weather operation, use the preferred oil, D00071 lubricant instead of MIL-L-23699 lubricant. The only MIL-PRF-7808 lubricants approved for use below -40°F (-40°C) for Hamilton Sundstrand IDGs are Exxon 2389, BPTO 2389, Aero Shell 390, and Castrol 325.

SUBTASK 12-33-02-210-021

(9) Visually check the wing lower surface for fuel leaks.

SUBTASK 12-33-02-210-022

(10) Visually check the landing gear.

(a) Wipe the inner cylinder with a clean cloth to check for hydraulic leakage from the seals.

SUBTASK 12-33-02-210-011

(11) Do this task: Landing Gear Tire Pressure Check and Tire Servicing, TASK 12-15-51-780-801.

SUBTASK 12-33-02-210-012

(12) Do this task: Main Landing Gear Shock Strut Fluid Check, TASK 12-15-31-610-801.

SUBTASK 12-33-02-210-013

(13) Do this task: Nose Landing Gear Shock Strut Fluid Check, TASK 12-15-41-610-801.

SUBTASK 12-33-02-650-001

CAUTION: IF YOU CAN DRAIN THE FUEL FROM THE DRAIN VALVES AFTER YOU APPLIED HOT AIR TO THE EXTERIOR FOR 3 TO 5 MINUTES, DO NOT THINK THAT ALL OF THE ICE HAS MELTED. THE ICE ADJACENT TO THE DRAIN VALVE UNIT CAN MELT AND LET SOME WATER AND FUEL FLOW FROM THE DRAIN. BUT, A PIECE OF ICE CAN STAY BEHIND. IF THE FUEL DOES NOT FLOW FROM THE DRAIN, CONTINUE TO APPLY HOT AIR FOR A SHORT TIME, AND FREQUENTLY DO A CHECK OF THE FLOW FROM THE DRAIN. CATCH THE FUEL IN A CONTAINER AND MAKE SURE ALL OF THE WATER IS REMOVED. THE HEAT APPLIED TO THE SUMP DRAIN VALVES FOR THE OUTBOARD MAIN AND RESERVE TANKS WILL NOT REMOVE THE ICE WHICH HAS COLLECTED IN THE TANK SUMP OR IN THE DRAIN LINE BETWEEN THE TANK SUMP AND VALVE. TO REMOVE THIS ICE, YOU MUST PUT THE AIRPLANE IN A WARM HANGAR FOR SUFFICIENT TIME TO MELT THE ICE. THEN DRAIN THE SUMPS UNTIL THE WATER IS REMOVED.

(14) In cold weather drain the fuel tank sumps prior to refueling to remove water from the fuel tanks if the airplane has been idle for more than 45 minutes prior to refueling. Drain the fuel tank sumps again after refueling if the airplane has been idle for 2 hours or more after refueling, prior to departure.

———————— END OF TASK ————————

TASK 12-33-02-600-810

3. Return the Airplane to Service After Short Term Parking at Temperatures Below -22F (-30C)

A. References

Reference	Title
12-33-01-600-802	Cold Weather Maintenance Procedure (P/B 301)
24-22-00-860-811	Supply Electrical Power (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)

(Continued)

Reference	Title
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)
71-00-00-700-818-F00	Procedure to Prepare the Engine for Operation (P/B 201)
71-00-00-800-806-F00	Engine Operation Limits (P/B 201)
71-00-00-800-807-F00	Start the Engine Procedure (Selection) (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-2478	Heater - External Cabin, Trailer Mounted, Diesel Powered (Part #: ACU-2000, Supplier: 00365, A/P Effectivity: 737-ALL) (Part #: MARK IV COLDBUSTER, Supplier: 12008, A/P Effectivity: 737-ALL) (Opt Part #: MARK I COLDBUSTER, Supplier: 12008, A/P Effectivity: 737-ALL)
STD-3925	Heater - Blower, Explosion Proof, Electric

C. Access Panels

Number	Name/Location
117A	Electronic Equipment Access Door

D. Procedure

NOTE: Do the steps that follow just prior to flight.

SUBTASK 12-33-02-090-001

(1) Remove the covers from the pitot probes and static ports.

(a) Make sure there is no ice blocking the pitot probe openings.

1) If ice causes a blockage of the pitot probe openings, carefully apply warm air until the ice melts.

SUBTASK 12-33-02-860-031

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

SUBTASK 12-33-02-860-032

(3) Turn on the hydraulic system electric motor pumps 30 minutes before starting the engines.

NOTE: This will make sure the hydraulic system operates normally and will prolong the life of the component.

NOTE: Leave the motor pumps running until the engine-driven pumps are operating.

(a) Make sure these electric pump switches are in the ON position, on the overhead Hydraulic Pump Panel.

1) HYD PUMPS - ELEC 1

2) HYD PUMPS - ELEC 2

(b) If the hydraulic pressure in one system increases, then drops to zero, do the steps that follow:

NOTE: Repeat the steps a maximum of three times. After three times (cycles), you must find the cause of the pressure drop.

1) Turn the electric motor pump OFF.

2) Turn the electric motor pump ON.

(c) Leave the motor pumps running until the engine-driven pumps are operating.

SUBTASK 12-33-02-860-033

(4) At temperatures below -22°F (-30°C), pump the brake pedals eight (8) times shortly before starting the engines. At each wheel, verify extension/retraction of brake pistons.

(a) If brake operation is not normal, do the steps that follow:

1) Provide local warming to the brake.

2) Repeat the test until proper operation is observed.

3) If the difficulty continues:

a) Do this task: Brake Disconnect Removal, TASK 32-41-11-000-801.

b) Do this task: Brake Disconnect Installation, TASK 32-41-11-400-801.

c) Do this task: Main Landing Gear Brake Removal, TASK 32-41-41-000-801.

d) Do this task: Main Landing Gear Brake Installation, TASK 32-41-41-400-801.

SUBTASK 12-33-02-860-034

(5) Do this task: Procedure to Prepare the Engine for Operation, TASK 71-00-00-700-818-F00.

SUBTASK 12-33-02-210-044

(6) Use the Input Monitoring Page on the CDS Display Unit to monitor the engine oil temperature when the engines are not running.

(a) If the engine oil temperature shown on the CDS Display Unit approaches -40°F (-40°C), do the steps that follow:

1) 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.

2) Make sure the engine oil temperature on the CDS Display Unit is above -40°F (-40°C) to prevent damage to the engine bearings before you start the engines.

a) See cold weather starting procedures in TASK 71-00-00-700-818-F00.

b) See engine operating limits in TASK 71-00-00-800-806-F00.

HAP 006-010

SUBTASK 12-33-02-100-003

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.

(7) 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.

(a) Remove the ice and snow from the airstair steps and structure.

(b) Stow the airstair.

(c) Gain access under the airstairs through this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

(d) Check for water on the drip shields and around the electronic equipment.

(e) Remove all water on the drip shields and around electronic equipment.

(f) Close this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

HAP ALL

SUBTASK 12-33-02-210-045

(8) Do the task that follows to prepare for flight:

(a) Do this task: Cold Weather Maintenance Procedure, TASK 12-33-01-600-802.

SUBTASK 12-33-02-860-035

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

(a) Run the engines at idle until the oil temperature is at or above 32°F (0°C).

(b) Make sure the oil temperature is at least 32°F (0°C) before you increase the power above idle.

———————— END OF TASK ————————

TASK 12-33-02-600-805

4. Overnight or Extended Parking (Airplane Unattended) at Temperatures Below 5°F (-15°C)

A. General

(1) When adding fuel, you must use these requirements:

(a) Make sure the fuel temperature is at least 6°F (3°C) above the fuel freeze point or -45.4°F (-43°C), whichever is higher. Use the ASTM method to determine the freeze point.

NOTE: The Fuel Quantity Indicator on the wing fuel station 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.

B. References

Reference	Title
09-11-00-580-801	Towing (P/B 201)
10-11-01-580-801	Airplane Parking (P/B 201)
10-12-02-550-802	Prepare The Airplane For Storage for More Than Seven Days (P/B 201)
12-13-21-200-801	IDG Oil Level Check (P/B 301)
12-14-01-600-801	Potable Water System - Drain (P/B 301)
12-17-01-610-801	Waste Tank Servicing (P/B 301)
12-33-01-600-802	Cold Weather Maintenance Procedure (P/B 301)
24-31-11-000-802-002	Battery Removal (P/B 401)
24-31-11-400-802-002	Battery Installation (P/B 401)
24-31-41 P/B 501	DUAL BATTERY REMOTE CONTROL CIRCUIT BREAKER (RCCB) - ADJUSTMENT/TEST

C. Consumable Materials

Reference	Description	Specification
D00071	Oil - Aircraft Turbine Engine, Synthetic Base	MIL-PRF-7808, Grade 3

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

F. Procedure

SUBTASK 12-33-02-420-005

(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 -40°F (-40°C) can be greatly increased by the use of engine inlet and exhaust covers.

SUBTASK 12-33-02-550-005

(2) Do this task: Cold Weather Maintenance Procedure, TASK 12-33-01-600-802.

SUBTASK 12-33-02-480-004

(3) 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 The Airplane For Storage for More Than Seven Days, TASK 10-12-02-550-802.

NOTE: Prepare to park the airplane for extended periods.

SUBTASK 12-33-02-600-004

(4) Do this task: IDG Oil Level Check, TASK 12-13-21-200-801.

NOTE: If the IDG is serviced for cold weather operation, use the preferred oil, D00071 lubricant instead of MIL-L-23699 lubricant. The only MIL-L-7808 lubricant approved for Sunstrand IDGs is Exxon 2389.

SUBTASK 12-33-02-210-024

(5) Visually check the wing lower surface for fuel leaks.

SUBTASK 12-33-02-210-025

(6) Visually check the landing gear.

(a) Wipe the inner cylinder with a clean cloth to check for hydraulic leakage from the seals.

SUBTASK 12-33-02-680-003

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.

(7) Do this task: Potable Water System - Drain, TASK 12-14-01-600-801.

NOTE: The potable water system must be fully drained.

SUBTASK 12-33-02-680-004

(8) Make sure all galley inserts, coffee pots, water heaters and boilers are empty and supply lines are drained using the manufacturers instructions.

SUBTASK 12-33-02-680-005

WARNING: THE GLYCOL (ANTI-FREEZE) MUST NOT CONTAIN ANY FORM OF "STOP LEAK" CHEMICAL AS THIS CAN CAUSE DAMAGE TO THE SYSTEM COMPONENTS.

(9) If you do not drain the waste system, add glycol.

NOTE: Use the fluid manufacturer's recommendations for mixture ratios (Waste Tank Servicing, TASK 12-17-01-610-801).

(a) If the glycol-water mixture does not provide adequate protection, do the step that follows:

1) Do this task: Waste Tank Servicing, TASK 12-17-01-610-801.

SUBTASK 12-33-02-210-016

(10) Look at the CDS Display Unit to make sure the main battery is fully charged.

NOTE: DUAL BATTERY REMOTE CONTROL CIRCUIT BREAKER (RCCB) - ADJUSTMENT/TEST, PAGEBLOCK 24-31-41/501.

SUBTASK 12-33-02-860-018

(11) If you use a multiple hose ground cart (YMP-350 heater) turn the outflow valve to the OPEN position.

SUBTASK 12-33-02-860-019

(12) If you use a single hose ground cart (Herman Nelson heater) turn the outflow valve to the one-half CLOSED position.

SUBTASK 12-33-02-860-020

WARNING: BE CAREFUL WHEN YOU ACCESS THE (ROW F) CIRCUIT BREAKERS ON THE INSIDE OF THE P91 AND P92 PANELS. IF POSSIBLE, REMOVE AIRPLANE ELECTRICAL POWER BEFORE YOU ACCESS THE CIRCUIT BREAKERS ON THE INSIDE OF THE P91 AND P92 PANELS. THE P91 AND P92 PANELS CONTAIN HIGH VOLTAGES AND CURRENTS THAT MAY CAUSE INJURIES TO PERSONS.

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

Power Distribution Panel Number 1, P91

Row	Col	Number	Name
F	6	C00815	MAIN BUS 1

Power Distribution Panel Number 2, P92

Row	Col	Number	Name
F	6	C00817	MAIN BUS 2

SUBTASK 12-33-02-020-003

(14) Do this task: Battery Removal, TASK 24-31-11-000-802-002.

(a) Put the battery in a warm location where the temperature remains above 50°F (10°C).

SUBTASK 12-33-02-020-004

(15) If you need to tow the airplane, follow the steps below:

(a) Do this task: Battery Installation, TASK 24-31-11-400-802-002.

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.

(b) 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.

1) Stow the airstair.

2) Gain access under the airstairs through this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

3) Check for water on the drip shields and around the electronic equipment.

4) Remove all water on the drip shields and around electronic equipment.

5) Close this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

WARNING: BOEING DOES NOT RECOMMEND TOWING THE AIRPLANE WHEN ELECTRICAL POWER IS NOT AVAILABLE TO OPERATE THE BRAKE HYDRAULIC SYSTEM. IF TOWING WITHOUT POWER IS REQUIRED, TELL THE TOW VEHICLE DRIVER. 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. WITHOUT ELECTRICAL POWER, THERE IS ONLY ACCUMULATOR PRESSURE AVAILABLE TO OPERATE THE BRAKES LESS THAN THREE (3) TIMES. IF YOU DO NOT OBEY THIS WARNING, IT CAN CAUSE INJURY TO PERSONS OR DAMAGE TO THE AIRPLANE.

(c) Do this task: Towing, TASK 09-11-00-580-801.

NOTE: With a minimum of 2800 psi (19305.3 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 12-33-02-550-001

(16) Prepare the airplane for storage:

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) 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.

1) Stow the airstair.

2) Gain access under the airstairs through this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

3) Check for water on the drip shields and around the electronic equipment.

4) Remove all water on the drip shields and around electronic equipment.

5) Close this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

(b) Close the outflow valve.

(c) Do this task: Battery Removal, TASK 24-31-11-000-802-002.

1) Put the battery in a warm location where the temperature remains above 50°F (10°C).

(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.

——————— END OF TASK ———————

TASK 12-33-02-600-806

5. Return the Airplane to Service After Overnight or Extended Parking at Temperatures Below 5°F (-15°C)

A. General

(1) If the temperature has remained above -40°F (-40°C) passenger cabin warming is not necessary.

(a) For temperatures below 5°F (-15°C), make sure the EE bay is warmed and maintained at 5°F (-15°C) for 30 minutes.

(b) For temperatures below -4°F (-20°C), make sure the flight deck is warmed and maintained at -4°F (-20°C) for 30 minutes.

(2) If the temperature has been below -40°F (-40°C) within the last 12 hours, then you must warm the airplane.

B. References

Reference	Title
10-12-02-550-801	Put the Airplane Back to A Serviceable Condition After the Storage (P/B 201)
12-13-21-200-801	IDG Oil Level Check (P/B 301)
12-15-21-600-801-001	Crew Oxygen Cylinder Replacement (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)
12-33-01-600-802	Cold Weather Maintenance Procedure (P/B 301)
24-31-11-400-802-002	Battery Installation (P/B 401)
29-11-00-860-801	Hydraulic System A or B Pressurization (P/B 201)
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)
32-42-00-400-802	Autobrake Shuttle Valve Operational Test (P/B 501)
32-42-00-720-801	Antiskid/Autobrake Control Unit Functional Test (P/B 501)
32-42-00-720-802	Antiskid Valve Functional Test (P/B 501)
49-11-00-860-801	APU Starting and Operation (P/B 201)
52-61-00-860-806	Forward Airstair Retraction in Normal Mode (P/B 201)
52-61-00-860-808	Forward Airstair Retraction in Standby Mode (P/B 201)
71-00-00-700-818-F00	Procedure to Prepare the Engine for Operation (P/B 201)
71-00-00-800-806-F00	Engine Operation Limits (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, Diesel Powered (Part #: ACU-2000, Supplier: 00365, A/P Effectivity: 737-ALL) (Part #: MARK IV COLDBUSTER, Supplier: 12008, A/P Effectivity: 737-ALL) (Opt Part #: MARK I COLDBUSTER, Supplier: 12008, A/P Effectivity: 737-ALL)
STD-3925	Heater - Blower, Explosion Proof, Electric

D. Consumable Materials

Reference	Description	Specification
D00071	Oil - Aircraft Turbine Engine, Synthetic Base	MIL-PRF-7808, Grade 3

E. 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

F. Access Panels

Number	Name/Location
112A	Forward Access Door
117A	Electronic Equipment Access Door
191E	Low Pressure ECS Panel - Forward

G. Procedure

SUBTASK 12-33-02-550-007

(1) Do this task: Cold Weather Maintenance Procedure, TASK 12-33-01-600-802.

SUBTASK 12-33-02-550-008

(2) Do this task: Put the Airplane Back to A Serviceable Condition After the Storage, TASK 10-12-02-550-801.

SUBTASK 12-33-02-650-002

CAUTION: IF YOU CAN DRAIN THE FUEL FROM THE DRAIN VALVES AFTER YOU APPLIED HOT AIR TO THE EXTERIOR FOR 3 TO 5 MINUTES, DO NOT THINK THAT ALL OF THE ICE HAS MELTED. THE ICE ADJACENT TO THE DRAIN VALVE UNIT CAN MELT AND LET SOME WATER AND FUEL FLOW FROM THE DRAIN. BUT, A PIECE OF ICE CAN STAY BEHIND. IF THE FUEL DOES NOT FLOW FROM THE DRAIN, CONTINUE TO APPLY HOT AIR FOR A SHORT TIME, AND FREQUENTLY DO A CHECK OF THE FLOW FROM THE DRAIN. CATCH THE FUEL IN A CONTAINER AND MAKE SURE ALL OF THE WATER IS REMOVED. THE HEAT APPLIED TO THE SUMP DRAIN VALVES FOR THE OUTBOARD MAIN AND RESERVE TANKS WILL NOT REMOVE THE ICE WHICH HAS COLLECTED IN THE TANK SUMP OR IN THE DRAIN LINE BETWEEN THE TANK SUMP AND VALVE. TO REMOVE THIS ICE, YOU MUST PUT THE AIRPLANE IN A WARM HANGAR FOR SUFFICIENT TIME TO MELT THE ICE. THEN DRAIN THE SUMPS UNTIL THE WATER IS REMOVED.

(3) In cold weather drain the fuel tank sumps prior to refueling to remove water from the fuel tanks if the airplane has been idle for more than 45 minutes prior to refueling. Drain the fuel tank sumps again after refueling if the airplane has been idle for 2 hours or more after refueling, prior to departure.

SUBTASK 12-33-02-880-005

(4) If the ambient temperature is -40°F (-40°C) or below within the last 12 hours, do the steps that follow:

(a) Secure the lavatory doors in the open position.

CAUTION: THE AIR ENTERING THE CONDITIONED AIR GROUND SERVICE PORT MUST NOT EXCEED 158°F (70°C) AND THE PRESSURE MUST NOT EXCEED 15 IN. (38 CM) OF WATER AT THE POINT WHERE THE AIR ENTERS THE BODY OF THE AIRPLANE.

(b) For ground equipment with multiple heating hoses (YMP-350), do the steps that follow:

NOTE: It will take approximately 60 minutes to raise the flight deck temperature from -65°F (-54°C) to -4°F (-20°C) with the YMP-350 heating unit. It will take approximately 90 minutes to raise the EE Bay temperature from -65°F (-54°C) to 5°F (-15°C) with the YMP-350 heating unit.

1) Connect one heating hose to this access panel:

Number	Name/Location
191E	Low Pressure ECS Panel - Forward

2) Insert one heating hose in this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

3) Insert one heating hose in this access panel or No. 1 Main Entry Door.

Number	Name/Location
112A	Forward Access Door

4) Make sure you maintain the flight deck temperature at or above -4°F (-20°C) for 30 minutes.

5) Make sure you maintain the EE Bay temperature at or above 5°F (-15°C) for 30 minutes.

CAUTION: THE AIR ENTERING THE LOW PRESSURE ECS PORT MUST NOT EXCEED158°F (70°C) AND THE PRESSURE MUST NOT EXCEED 15 IN. (38 CM) OF WATER AT THE POINT WHERE THE AIR ENTERS THE BODY OF THE AIRPLANE.

(c) For use of ground equipment explosion proof electric blower - heater, STD-3925 to warm the airplane, do the steps that follow:

1) Connect the heating hose to this access panel:

Number	Name/Location
191E	Low Pressure ECS Panel - Forward

2) Attach the return air hose to this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

3) Make sure you maintain the flight deck temperature at or above -4°F (-20°C) for 30 minutes.

4) Make sure you maintain the EE Bay temperature at or above 5°F (-15°C) for 30 minutes.

(d) Warm the engines, do this task: Procedure to Prepare the Engine for Operation, TASK 71-00-00-700-818-F00.

NOTE: It is not necessary to completely warm the engine before you proceed to the steps that follow.

SUBTASK 12-33-02-420-006

(5) Do this task: Battery Installation, TASK 24-31-11-400-802-002.

SUBTASK 12-33-02-880-006

(6) Make sure 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 cart.

(b) Close these access panels:

Number	Name/Location
112A	Forward Access Door
117A	Electronic Equipment Access Door
191E	Low Pressure ECS Panel - Forward

WARNING: BE CAREFUL WHEN YOU ACCESS THE (ROW F) CIRCUIT BREAKERS ON THE INSIDE OF THE P91 AND P92 PANELS. IF POSSIBLE, REMOVE AIRPLANE ELECTRICAL POWER BEFORE YOU ACCESS THE CIRCUIT BREAKERS ON THE INSIDE OF THE P91 AND P92 PANELS. THE P91 AND P92 PANELS CONTAIN HIGH VOLTAGES AND CURRENTS THAT MAY CAUSE INJURIES TO PERSONS.

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

Power Distribution Panel Number 1, P91

Row	Col	Number	Name
F	6	C00815	MAIN BUS 1

Power Distribution Panel Number 2, P92

Row	Col	Number	Name
F	6	C00817	MAIN BUS 2

(d) Make sure the outflow valves are in the OPEN position.

(e) Start the APU with the main battery or ground power.

NOTE: To improve starting capability of the APU at temperatures below -40°F (-40°C), use low viscosity oil, D00071.

NOTE: The CDS Display Unit may indicate low APU oil quantity for the first 5 minutes after the APU start or until the APU has warmed up.

1) Do this task: APU Starting and Operation, TASK 49-11-00-860-801.

HAP 101-999

(f) Make sure the recirculation fan switch is in the AUTO position.

HAP 001-013, 015-026, 028-054

(g) Make sure the left and right recirculation fan switches are in the AUTO position.

HAP ALL

(h) Close the pack and zone circuit breakers on the P6 panel if they are open.

(i) Put all zone selectors to the 12 o'clock position.

HAP 001-013, 015-026, 028-054

(j) Make sure the Trim Air switch is ON.

HAP ALL

(k) Turn the left and right pack switches to AUTO.

SUBTASK 12-33-02-860-021

CAUTION: DO NOT CYCLE THE CONTROL COLUMN, WHEEL, RUDDER PEDALS, BRAKE PEDALS, GROUND SPOILERS, STABILIZER OR FLAPS UNTIL THE PUMPS HAVE RUN FOR AT LEAST 15 MINUTES.

(7) Turn on the hydraulic system electric motor pumps 30 minutes before starting the engines.

NOTE: This will 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.

(b) Select these electric switches to the ON position, on the overhead Hydraulic Control Panel.

1) HYD PUMPS ELEC 1

2) HYD PUMPS ELEC 2

(c) Leave the electric motor pumps running until the engine-driven pumps are operating.

(d) If the hydraulic pressure in one system increases, then drops to zero, do the steps that follow:

NOTE: Repeat the steps a maximum of three times. After three times (cycles), you must find the cause of the pressure drop.

1) Turn the electric motor pump OFF

2) Turn the electric motor pump ON

SUBTASK 12-33-02-860-022

(8) 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 CDS Display Unit.

(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) Set the autopilot stab trim cutout switch, on the control stand, to the CUTOUT position.

2) Make sure that the VHF NAV and IRS switches, on the P5 forward overhead panel, are in the NORMAL positions.

3) Set the left and right IRS select switches, on the P5 aft overhead panel, to the ALIGN or NAV position.

WARNING: KEEP PERSONS AND EQUIPMENT AWAY FROM THE FLIGHT CONTROL SURFACES. THE AILERONS, ELEVATORS, RUDDER, FLAPS, SLATS, SPOILERS, STABILIZER AND NOSE GEAR CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

4) Make sure hydraulic power is applied to systems A and B. To supply hydraulic power, do this task: Hydraulic System A or B Pressurization, TASK 29-11-00-860-801

NOTE: Hydraulic power is necessary for surface test.

(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 12-33-02-860-023

(9) At temperatures below -22°F (-30°C) pump the brake pedals 8 times shortly before starting the engines. At each wheel, verify extension/retraction of brake pistons.

(a) If brake operation is not normal, do the steps that follow:

1) Provide local warming to the brake
2) Do this task: Antiskid/Autobrake Control Unit Functional Test, TASK 32-42-00-720-801.
3) Do this task: Antiskid Valve Functional Test, TASK 32-42-00-720-802.
4) Do this task: Autobrake Shuttle Valve Operational Test, TASK 32-42-00-400-802.
5) Repeat the test until proper operation is observed
6) If the difficulty continues:
   a) Do this task: Brake Disconnect Removal, TASK 32-41-11-000-801.
   b) Do this task: Brake Disconnect Installation, TASK 32-41-11-400-801.
   c) Do this task: Main Landing Gear Brake Removal, TASK 32-41-41-000-801.
   d) Do this task: Main Landing Gear Brake Installation, TASK 32-41-41-400-801.

SUBTASK 12-33-02-860-024

(10) Inspect the wheel wells for ice/snow/slush on the Alternate Landing Gear System Components. Clear as necessary.

SUBTASK 12-33-02-600-005

(11) Do this task: IDG Oil Level Check, TASK 12-13-21-200-801.

NOTE: If the IDG is serviced for cold weather operation, use the preferred oil, D00071 lubricant instead of MIL-L-23699 lubricant. The only MIL-L-7808 lubricant approved for Sunstrand IDGs is Exxon 2389.

SUBTASK 12-33-02-210-026

(12) Visually check the wing lower surface for fuel leaks.

SUBTASK 12-33-02-210-027

(13) Visually check the landing gear.

(a) Wipe the inner cylinder with a clean cloth to check for hydraulic leakage from the seals.

SUBTASK 12-33-02-210-017

(14) Do this task: Landing Gear Tire Pressure Check and Tire Servicing, TASK 12-15-51-780-801.

SUBTASK 12-33-02-210-018

(15) Do this task: Main Landing Gear Shock Strut Fluid Check, TASK 12-15-31-610-801.

(a) 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.

(b) For airplanes originating in a cold environment and terminating in a warm enviroment, 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.

SUBTASK 12-33-02-210-019

(16) Do this task: Nose Landing Gear Shock Strut Fluid Check, TASK 12-15-41-610-801.

(a) 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.

(b) For airplanes originating in a cold environment and terminating in a warm enviroment, 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.

SUBTASK 12-33-02-860-025

(17) When adding fuel, you must use these requirements:

(a) Make sure the fuel temperature is at least 6°F or 3.3°C above the fuel freeze point or -45.4°F (-43.0°C), whichever is higher. Use the ASTM method to determine the freeze point.

NOTE: The Fuel Quantity Indicator on the wing fuel station 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

2) Use fuels that meet specification GOST 10227:

a) RT (PT, Russian spelling)

b) TS-1 (TC-1, Russian spelling)

(b) 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.

SUBTASK 12-33-02-600-002

(18) Do this task: Procedure to Prepare the Engine for Operation, TASK 71-00-00-700-818-F00.

SUBTASK 12-33-02-210-020

(19) Use the Input Monitoring Page on the CDS Display Unit to monitor the engine oil temperature when the engines are not running.

(a) If the engine oil temperature shown on the CDS Display Unit approaches -40°F (-40°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 equivalent 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 on the CDS Display Unit is above -40°F (-40°C) to prevent damage to the engine bearings before you start the engines.

a) See cold weather starting procedures in (Procedure to Prepare the Engine for Operation, TASK 71-00-00-700-818-F00).

b) See engine operating limits in (TASK 71-00-00-800-806-F00).

SUBTASK 12-33-02-550-002

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.

(20) 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.

HAP 006-010

(a) Stow the airstair. Do this task: Forward Airstair Retraction in Normal Mode, TASK 52-61-00-860-806 or Forward Airstair Retraction in Standby Mode, TASK 52-61-00-860-808.

HAP ALL

(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 12-33-02-860-026

(21) Do this task: Procedure to Prepare the Engine for Operation, TASK 71-00-00-700-818-F00.

(a) Run the engines at idle until the oil temperature is at or above 32°F (0°C).

(b) Make sure the oil temperature is at least 32°F (0°C) before you increase the power above idle.

SUBTASK 12-33-02-800-001

(22) Observe the flight crew and portable oxygen systems.

(a) It may be noted that the pressure in the flight crew and portable oxygen systems may indicate lower than normal at cold temperatures (Crew Oxygen Cylinder Replacement, TASK 12-15-21-600-801-001 for temperature effects).

——————— END OF TASK ———————

AIRPLANE CLEANING AND POLISHING - MAINTENANCE PRACTICES

1. General

A. This procedure contains scheduled maintenance task data.

B. This procedure has these tasks:

(1) Clean the external surfaces of the airplane.

(2) Polish the external surfaces of the airplane.

TASK 12-40-00-100-801

2. Clean the External Surfaces of the Airplane

A. General

(1) Failure to remove covers from pitot probes or coverings from static ports before flight may cause large errors in airspeed-sensing and altitude-sensing signals which may lead to loss of safe flights.

(2) Use this procedure to clean and polish the external surfaces of the airplane. 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.

(3) This section includes these procedures:

NOTE: Boeing considers water pressure above 80 psi to be "high pressure".

(a) Remove light material (dust and dirt) from smooth surfaces.

(b) Remove moderately heavy material (oil and mud) from smooth surfaces.

(c) Remove heavy material (grease and exhaust particles) from smooth surfaces.

(d) Remove material around sensitive components.

(e) Remove unwanted hydraulic fluid.

(f) Clean with foam.

(4) Use the Remove Material Around Sensitive Components procedure to clean the areas that contain mechanical, electrical, or hydraulic components. These areas include the wheel wells, flight control surfaces, and landing gear.

(5) When moderately heavy or heavy material removal is necessary, remove the heavier material first. Then clean the airplane with the procedure for light material removal.

(6) To clean large areas, use non-atomizing spray equipment, swabs, and brushes. To clean small areas, use rags, brushes, and sponges. Do not clean an area so large that the cleaner dries on the surface before you can flush it with water.

(7) To clean the windows in the flight compartment, do this task: Clean the Flight Compartment Windows, TASK 12-16-02-100-801.

(8) To clean the windows in the passenger compartment, do this task: Clean The Passenger Compartment Windows, TASK 12-16-03-100-801.

(9) All cleaning materials should meet the requirements of D6-17487, Evaluation of Airplane Maintenance Materials.

B. References

Reference	Title
12-16-02-100-801	Clean the Flight Compartment Windows (P/B 301)
12-16-03-100-801	Clean The Passenger Compartment Windows (P/B 301)
12-26-00 P/B 301	CABLE LUBRICATION - SERVICING
20-40-11-910-801	Static Grounding (P/B 201)
24-22-00-860-814	Remove External Power (P/B 201)

C. Tools/Equipment

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

Reference	Description
COM-1501	Kit - Engine Cover (Part #: BBJ-2001-JB-R, Supplier: $0797, A/P Effectivity: 737-600, -700, -800, -900, -BBJ)
COM-1503	Cover - Probe, Pitot Static (Part #: KPC3-480-325, Supplier: 0P9C7, A/P Effectivity: 737-600, -700, -700C, -700ER, -700QC, -800, -900, -900ER, -BBJ) (Part #: KPC4-480-325, Supplier: 0P9C7, A/P Effectivity: 737-600, -700, -700C, -700ER, -700QC, -800, -900, -900ER, -BBJ)
COM-1509	Cover - Protective, Main Landing Gear Wheels/Brakes (Part #: WL07J99, Supplier: 8M213, A/P Effectivity: 737-600, -700, -700C, -700ER, -700QC, -800, -900, -900ER, -BBJ)
COM-1516	Cover - Engine Inlet, CFM56-7 (Part #: WL14L96A, Supplier: 8M213, A/P Effectivity: 737-600, -700, -700C, -700ER, -700QC, -800, -900, -900ER)
COM-1517	Cover - Engine Exhaust, CFM56-7 (Part #: WL15L96A, Supplier: 8M213, A/P Effectivity: 737-600, -700, -700C, -700ER, -700QC, -800, -900, -900ER)
COM-2499	Cover - Vane, Angle of Attack (Part #: R/C-AOAC-2, Supplier: 0P9C7, A/P Effectivity: 737-600, -700, -700C, -700ER, -700QC, -800, -900, -900ER, -BBJ)
SPL-1508	Pole - Pitot/Static Cover Removal/Installation (Part #: A10002-7, Supplier: 81205, A/P Effectivity: 737-100, -200, -200C, -300, -400, -500, -600, -700, -700C, -700ER, -700QC, -800, -900, -900ER, -BBJ)
STD-1086	Gloves - Rubber
STD-1137	Glasses - Safety

D. Consumable Materials

Reference	Description	Specification
B00003	Cleaner - Emulsion Alkaline - GMC 528B	
B00013	Cleaner - Alkaline - Dubois C-1102	
B00014	Cleaner - Aircraft, Multipurpose - Calla 301	NSN: 6850-00-159-8˜533
B00083	Solvent - Aliphatic Naphtha (For Acrylic Plastics)	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	

(Continued)

Reference	Description	Specification
B00434	Solvent - Alkaline - Metaclean AC	
B01023	Cleaner - Primary - Ardrox 6025	
B50085	Solvent - Skykleen 1000	BAC5750 PSD 6-80, PSD 9-22
B50093	Soap - Liquid - Kelite Spraywhite	BAC5507
B50114	Cleaner - General Purpose, Super Bee 210	AMS 1526A,AMS 1530B,~ D6-17487 Rev N,D6-7127 Rev K, DPM 5216
G00252	Film, Plastic Sheeting, Polyethylene	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	

E. Cleaner Mixing Instructions

SUBTASK 12-40-00-110-001

(1) For alkaline cleaners mix the cleaners in the proportions in (Water Base Alkaline Cleaners/Table 201).

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
Super Bee 210 cleaner, B50114	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

*[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 (Solvent Emulsion Cleaners/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**
Any Cleaner in Table 201	2	5 to 6

SUBTASK 12-40-00-110-009

(3) For heavy duty cleaners, mix the cleaners in the proportions in (Heavy Duty Cleaners/Table 203).

Table 203/12-40-00-993-808 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

F. Prepare to Clean the Airplane

NOTE: Be careful when you clean the airplane in very 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.

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 of the equipment that you will use with flammable solvents away from sources of heat.

SUBTASK 12-40-00-860-001

(2) Do this task: Static Grounding, TASK 20-40-11-910-801.

(3) Remove electrical power, do this task: Remove External Power, TASK 24-22-00-860-814.

SUBTASK 12-40-00-840-002

(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 12-40-00-840-003

WARNING: WHEN THE PITOT PROBES ARE COVERED, MAKE SURE THAT CONDITION IS VISIBLE FROM THE GROUND. IN ADDITION, ATTACH A TAG TO THE LEFT CONTROL WHEEL IN THE FLIGHT DECK AS A REMINDER THAT PITOT PROBES ARE COVERED. FAILURE TO OBSERVE AND REMOVE COVERINGS OVER PITOT PROBES BEFORE FLIGHT MAY CAUSE LARGE ERRORS IN AIRSPEED-SENSING AND ALTITUDE-SENSING SIGNALS, WHICH MAY LEAD TO LOSS OF SAFE FLIGHT.

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 PRECEDES)

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) Install covers on components to prevent contamination:

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 static probe cover, COM-1503 (elevator) and the (fuselage) on the pitot probes with the pole, SPL-1508 (see Pitot Static System - Component Location/Figure 201 for locations of the pitot probes).

(b) Install a angle of attack vane cover, COM-2499 on the angle-of-attack vane.

(c) Install the engine covers as follows:

1) For the GE CFM 56–7 inlet, use the kit, COM-1501 (prefered) inlet cover, COM-1516 (alternate)

2) For the GE CFM 56–7 exhaust, use the kit, COM-1501 (prefered) exhaust cover, COM-1517 (alternate)

(d) Install a cover, COM-1509 on each landing gear wheel/brake.

SUBTASK 12-40-00-840-009

(6) Attach a "PITOT PROBES COVERED" tag, G02447 that has "PITOT PROBES COVERED" printed on it in black letters, to the top of the left control wheel in the flight deck with wire.

SUBTASK 12-40-00-840-004

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.

(7) Use vinyl adhesive Scotch Brand No.471 tape, G02219 and black polyethylene sheet film, G00252, to cover and seal the following openings, but 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

SUBTASK 12-40-00-840-010

WARNING: WHEN THE STATIC PORTS ARE COVERED, MAKE SURE THAT CONDITION IS VISIBLE FROM THE GROUND. IN ADDITION, ATTACH A TAG TO THE LEFT CONTROL WHEEL IN THE FLIGHT DECK AS A REMINDER THAT STATIC PORTS ARE COVERED. FAILURE TO OBSERVE AND REMOVE COVERINGS OVER STATIC PORTS BEFORE FLIGHT MAY CAUSE LARGE ERRORS IN AIRSPEED-SENSING AND ALTITUDE-SENSING SIGNALS, WHICH MAY LEAD TO LOSS OF SAFE FLIGHT.

(WARNING PRECEDES)

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 THE STATIC PORTS OR DAMAGE TO THE STATIC PORTS COULD RESULT.

(8) Use yellow vinyl adhesive Scotch Brand No.471 tape, G02219, and barricade tape, G02443 that covers all of the alternate static ports in the following manner (see Static Port Cover Procedure/Figure 202).

WARNING: DO NOT PUT SCOTCH BRAND NO. 471 YELLOW VINYL ADHESIVE TAPE OVER THE HOLES OF THE STATIC PORTS.

(a) Clean the area around each static port with solvent, B00083 or equivalent, and a clean dry rag where you will put the Scotch Brand No.471 tape, G02219.

(b) Put one end of approximately a 4 ft (1 m) piece of barricade tape, G02443, over the holes of the static port and secure the upper edge with a 5 in. (13 cm) strip of the adhesive Scotch Brand No.471 tape, G02219 (see Static Port Cover Procedure/Figure 202).

NOTE: Smooth the 3M No. 471 yellow vinyl adhesive tape on the airplane surface to make sure the bond is satisfactory.

(c) Put a 5 in. (13 cm) piece of vinyl adhesive Scotch Brand No.471 tape, G02219 on each vertical edge of barricade tape, G02443 overlapping the first strip of vinyl adhesive Scotch Brand No.471 tape, G02219 (see Static Port Cover Procedure/Figure 202).

(d) Put an 8 in. (20 cm) piece of vinyl adhesive Scotch Brand No.471 tape, G02219 horizontally over the barricade tape, G02443, below the static port holes, overlapping the two vertical strips of adhesive Scotch Brand No.471 tape, G02219 (see Static Port Cover Procedure/Figure 202).

(e) The barricade tape, G02443 should be allowed to stream down so it is visible from the ground.

SUBTASK 12-40-00-620-001

(9) For the all of the primary static ports, use the following static port cover procedure (see Static Port Cover Procedure/Figure 202 for illustrations of the primary static ports cover placement procedure for the primary static ports).

WARNING: DO NOT PLACE 3M NO. 471 YELLOW VINYL ADHESIVE TAPE OVER THE HOLES OF THE STATIC PORTS.

(a) Clean the area around each primary static port with aliphatic naphtha or equivalent, and a clean dry rag where you will put the 3M No. 471 yellow vinyl adhesive tape (see Static Port Cover Procedure/Figure 202).

(b) Place one end of a 4 ft (1 m) piece of the barricade tape, G02443 over the holes of the upper primary static port and secure the upper edge with 5 in. (13 cm) of Scotch Brand No.471 tape, G02219 (see Static Port Cover Procedure/Figure 202).

NOTE: Smooth the 3M No. 471 yellow vinyl adhesive tape on the airplane surface to make sure the bond is satisfactory.

1) Do not put Scotch Brand No.471 tape, G02219 over the holes of the static ports.

(c) Put an 8 in. (20 cm) strip of Scotch Brand No.471 tape, G02219 on each vertical edge of the barricade tape, G02443 overlapping the first strip of adhesive tape (see Static Port Cover Procedure/Figure 202).

(d) Repeat this procedure for the other two primary static ports.

(e) Put an 8 in. (20 cm) strip of Scotch Brand No.471 tape, G02219 tape horizontally over the barricade tape, G02443 below the lower static port holes, overlapping the two vertical strips of adhesive tape (see Static Port Cover Procedure/Figure 202).

(f) The barricade tape, G02443 should be allowed to stream down so it is visible from the ground.

SUBTASK 12-40-00-840-011

(10) Attach a "STATIC PORTS COVERED" tag, G02444 that has "STATIC PORTS COVERED" printed on it in black letters, to the top of the left control wheel in the flight deck with wire.

SUBTASK 12-40-00-950-001

(11) Use plastic membranes to cover the components in (Wheel Well Component Protection/Table 204). All components are identified in the figures as follows:

- Aileron Power Control Unit/Figure 203
- A/P Aileron Actuator/Figure 204
- Figure 205
- Nose Gear Wheel Bearings/Figure 206

Table 204/12-40-00-993-809 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

(Continued)

DESCRIPTION	LOCATION	FIGURE NUMBER
Power Control - Aileron Control		
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
Quadrant - Spoiler Control		
Shaft Assembly		
Bearing	23	205
Support Assembly		
Bearing	24	205
Cartridge Assembly		
Rod End Bearing	25	205
Casing Assembly		
Rod End	26	205
Spoiler - Mixer Assembly	27	205
Spoiler Ratio Changer Assembly	28	205
Ground Spoiler Control Valve Assembly and Rod Bearings	29	205
Nose Landing Gear Wheel Bearings	32	206

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.

(12) Cover the nose landing gear wheel bearings with a plastic membrane before washing .

SUBTASK 12-40-00-840-005

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. WET AIRPLANE SURFACES ARE DANGEROUS WHEN YOU WALK ON THEM.

(13) Wear rubber gloves, STD-1086 and safety glasses, STD-1137 to prevent injury to your skin and eyes.

SUBTASK 12-40-00-840-006

(14) Do not let the tires stay in the liquid that was used to clean the airplane longer than the time necessary to clean the airplane.

SUBTASK 12-40-00-840-007

CAUTION: MAKE SURE MIXTURE OF WATER AND CLEANER DOES NOT GET IN THE STEEL OR CARBON BRAKE HEAT SINKS. CONTAMINATION CAN CAUSE DAMAGE TO CARBON BRAKES AND REDUCE BRAKE PERFORMANCE FOR CARBON AND STEEL BRAKES.

(15) Make sure the brakes are properly covered.

SUBTASK 12-40-00-840-008

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.

(16) Examine the cleaner before you use it.

(a) If cleaner does not look mixed, then mix it again.

(b) Examine the cleaner again after one hour.

1) Discard the cleaner if it does not stay in a mixed condition.

G. Clean the Airplane

SUBTASK 12-40-00-110-003

(1) Remove light material (dust and dirt) from smooth surfaces

(a) Move the flaps to the fully retracted position.

CAUTION: DO NOT USE THE CLEANERS IN HIGHER CONCENTRATIONS THAN SHOWN IN (WATER BASE ALKALINE CLEANERS/TABLE 201). HIGHER CONCENTRATIONS CAN CAUSE DAMAGE TO ACRYLIC WINDOWS, STAINS ON PAINTED SURFACES, AND CORROSION ON METALS.

(b) Mix the cleaner from (Water Base Alkaline Cleaners/Table 201) for the condition of the surface that you will clean.

WARNING: DO NOT USE HIGH-PRESSURE SPRAY EQUIPMENT TO CLEAN MECHANICAL, ELECTRICAL, OR HYDRAULIC COMPONENTS. LIQUIDS THAT GET INTO THESE AREAS CAN CAUSE CORROSION, FREEZE DURING FLIGHT, OR REMOVE NECESSARY LUBRICANTS.

(WARNING PRECEDES)

CAUTION: KEEP THE NOZZLE OF SPRAY EQUIPMENT MORE THAN 12 INCHES (30.5 CM) AWAY FROM THE SURFACE OF THE AIRPLANE. 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, 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 ON THE AIRPLANE. IF THE CLEANER DRIES IT CAN STAIN THE SURFACE.

(e) Let the cleaner soak for approximately five minutes.

1) Apply the cleaner again if necessary to keep the surface wet.

(f) Rub the surface with a brush to help remove unwanted material.

CAUTION: MAKE SURE YOU FLUSH THE SURFACE SUFFICIENTLY TO REMOVE ALL OF THE CLEANER. THE CLEANER CAN CAUSE CORROSION IF IT IS NOT REMOVED COMPLETELY FROM THE AIRPLANE SURFACE.

(g) Flush the surface with clean, warm water (160°F (71°C) maximum).

(h) Dry the wet surface with air or towels.

SUBTASK 12-40-00-110-004

(2) Remove moderately heavy material (oil and mud) from smooth surfaces.

(a) Move the flaps to the fully retracted position.

NOTE: To clean the flaps in the extended position, refer to the steps below shown under "Remove Material Around Sensitive Components".

WARNING: KEEP THE CLEANING SOLVENT THAT IS USED IN THE SOLVENT EMULSION CLEANERS AWAY FROM SOURCES OF HEAT. THE CLEANING SOLVENT IS FLAMMABLE.

(b) Mix the cleaner from (Solvent Emulsion Cleaners/Table 202).

(c) Mix the cleaner until it is thick and creamy.

WARNING: DO NOT USE HIGH-PRESSURE SPRAY EQUIPMENT TO CLEAN MECHANICAL, ELECTRICAL, OR HYDRAULIC COMPONENTS. LIQUIDS THAT GET INTO THESE AREAS CAN CAUSE CORROSION, FREEZE DURING AIRPLANE FLIGHT, OR REMOVE NECESSARY LUBRICANTS.

CAUTION: KEEP THE NOZZLE OF THE SPRAY EQUIPMENT MORE THAN 12 IN. (30 CM) AWAY FROM THE SURFACE OF THE AIRPLANE. 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, mops, or brushes.

(e) Let the cleaner soak for five to ten minutes. Do not let the cleaner dry on the surface.

(f) Rub the surface with a brush to help remove unwanted material.

CAUTION: MAKE SURE YOU FLUSH THE SURFACE SUFFICIENTLY TO REMOVE ALL OF THE CLEANER. THE CLEANER CAN CAUSE CORROSION IF IT IS NOT REMOVED COMPLETELY FROM THE AIRPLANE SURFACE.

(g) Flush the surface with clean, warm water (160°F (71°C) maximum).

(h) Dry the wet surfaces with air or towels.

SUBTASK 12-40-00-110-005

(3) Remove heavy material (grease and exhaust particles) from smooth surfaces

(a) Use the procedure to remove moderately heavy material (oil and mud) from smooth surfaces with these changes:

1) Use a cleaner from (Heavy Duty Cleaners/Table 203).

2) Let the cleaner soak for 15 minutes maximum.

CAUTION: USE SUPER BEE 210 CLEANER WITH CARE. THE ABRASIVES IN THIS CLEANER CAN REMOVE THE LUSTER ON CLAD ALUMINUM. THE CLEANER CAN ALSO DECREASE THE CORROSION RESISTANCE OF ANODIZED ALUMINUM.

3) For stains that are not removed by the cleaners in (Heavy Duty Cleaners/Table 203), use Super Bee 210 cleaner, B50114.

SUBTASK 12-40-00-110-006

(4) Remove Material Around Sensitive Components

(a) If you clean the flaps, extend them to the fully down position.

(b) Mix the cleaner from (Water Base Alkaline Cleaners/Table 201) for the condition of the surface that you will clean.

1) For heavy material (grease and exhaust particles), mix the cleaner from (Heavy Duty Cleaners/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 GET INTO THESE AREAS CAN CAUSE CORROSION, FREEZE DURING AIRPLANE FLIGHT, OR REMOVE NECESSARY LUBRICANTS.

(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.

1) Apply the cleaner again if necessary to keep the surface wet.

CAUTION: DO NOT REMOVE THE LAYER OF GREASE FROM MECHANICAL JOINTS. THIS GREASE LUBRICATES THE JOINT AND PREVENTS CORROSION.

(e) Carefully rub the surface with a clean brush to help remove unwanted material.

CAUTION: MAKE SURE YOU FLUSH THE SURFACE SUFFICIENTLY TO REMOVE ALL OF THE CLEANER. THE CLEANER CAN CAUSE CORROSION IF IT IS NOT REMOVED FULLY FROM THE AIRPLANE SURFACE.

(f) Flush the surface with clean, warm water (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 12-40-00-110-007

(5) 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.

(b) Use the solvent, B50085 to clean the hydraulic fluid from warm components.

SUBTASK 12-40-00-110-008

(6) 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. Use a liquid that contains one part of cleaner (from (Water Base Alkaline Cleaners/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 TO CLEAN MECHANICAL, ELECTRICAL, OR HYDRAULIC COMPONENTS. LIQUIDS THAT GET INTO THESE AREAS CAN CAUSE CORROSION, FREEZE DURING AIRPLANE FLIGHT, OR REMOVE NECESSARY LUBRICANTS.

CAUTION: KEEP THE NOZZLE OF SPRAY EQUIPMENT MORE THAN 12 INCHES (30.5 CM) AWAY FROM THE SURFACE OF THE AIRPLANE. THE SPRAY CAN CAUSE DAMAGE TO THE SURFACE.

(b) Apply water to the area you will clean.

(c) Apply a heavy layer of foam cleaner.

(d) Let the cleaner soak for 5 to 15 minutes.

1) Apply the cleaner again if necessary.

(e) Rub the surface with a brush to help remove unwanted material.

CAUTION: MAKE SURE YOU FLUSH THE SURFACE SUFFICIENTLY TO REMOVE ALL OF THE CLEANER. THE CLEANER CAN CAUSE CORROSION IF IT IS NOT REMOVED COMPLETELY FROM THE AIRPLANE SURFACE.

(f) Flush the surface with clean, warm water (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) Do this task to clean and lubricate the carbon steel control cables (Spring Cartridge/Figure 205) located in the wheel wells after cleaning or washing: CABLE LUBRICATION - SERVICING, PAGEBLOCK 12-26-00/301

H. Put the Airplane Back In 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 the following components:

(a) Pitot probes.

(b) Angle-of-attack vane.

(c) Engine inlet.

(d) Turbine exhaust.

(e) Each landing gear wheel/brake.

SUBTASK 12-40-00-840-012

(2) Remove the "PITOT PROBES COVERED" tag, G02447 from the left control wheel in the flight deck.

SUBTASK 12-40-00-840-013

WARNING: FAILURE TO REMOVE BARRICADE TAPE AND VINYL ADHESIVE TAPE FROM STATIC PORTS BEFORE FLIGHT MAY CAUSE LARGE ERRORS IN AIRSPEED-SENSING AND ALTITUDE-SENSING SIGNALS, WHICH MAY LEAD TO LOSS OF SAFE FLIGHT.

CAUTION: REMOVE ALL BARRICADE TAPE, COVERS, POLYETHYLENE SHEET AND VINYL ADHESIVE TAPE. ENGINES SHOULD NOT BE OPERATED WITH COVERS IN PLACE BECAUSE THE COVERS CAN COME OFF AND DAMAGE THE ENGINES.

(3) Remove all barricade tape, G02443, covers, polyethylene sheet film, G00252, and vinyl adhesive Scotch Brand No.471 tape, G02219 from the following openings:

(a) Static ports

1) Inspect each static port and if necessary use solvent, B00083, or equivalent, to remove all tape residue, dirt, and other contaminants from around the static ports.

(b) Surge tank and fuel tank vents

(c) APU exhaust duct outlet port

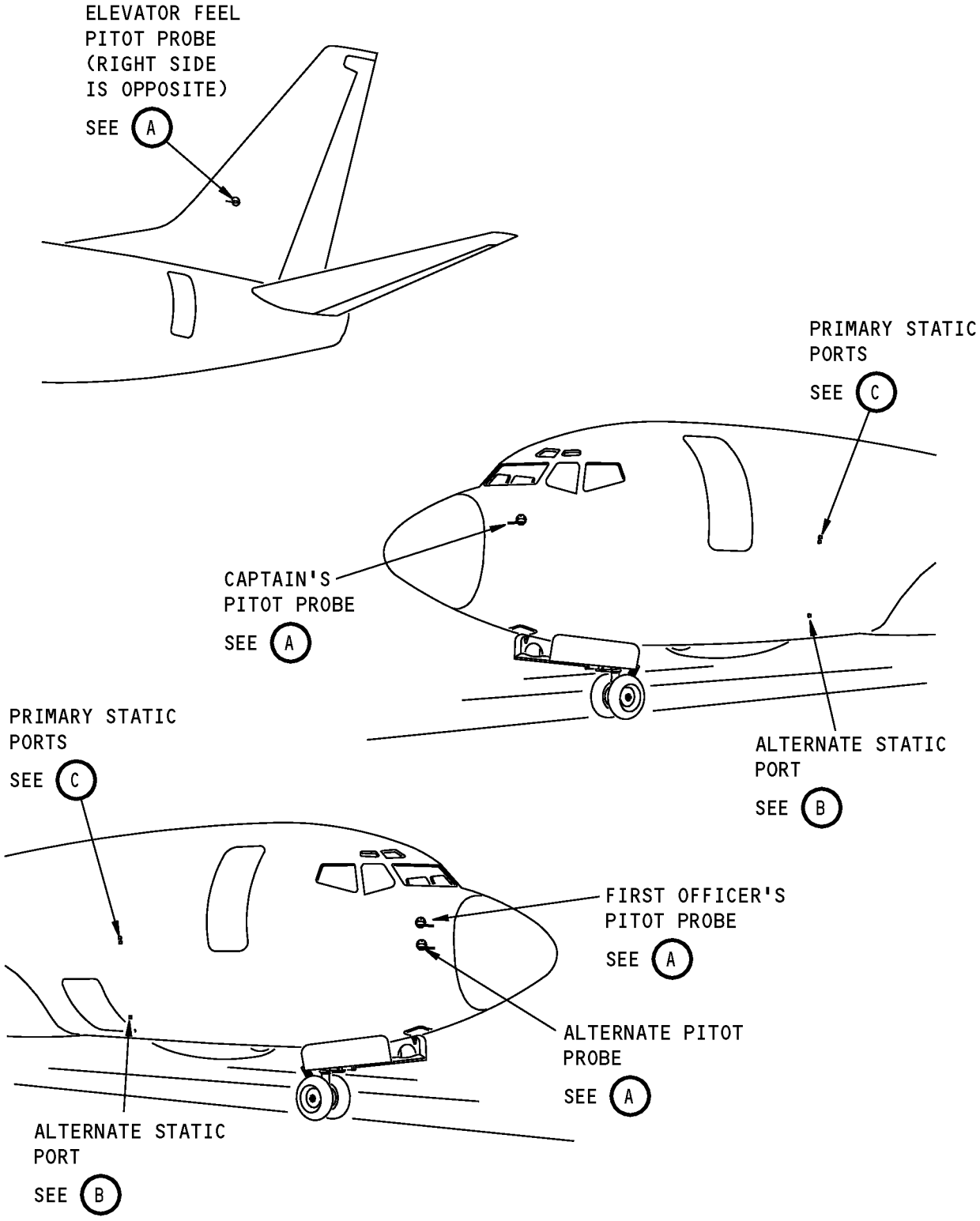
(d) Ram air inlet and outlet doors

(e) Outflow valve

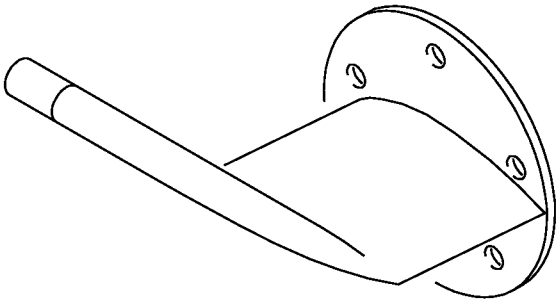
SUBTASK 12-40-00-840-014

(4) Remove the "STATIC PORTS COVERED" tag, G02444 from the left control wheel in the flight deck.

———————— END OF TASK ————————



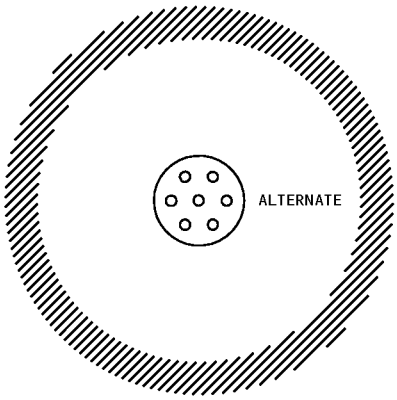
Pitot Static System - Component Location
Figure 201 (Sheet 1 of 2)/12-40-00-990-809



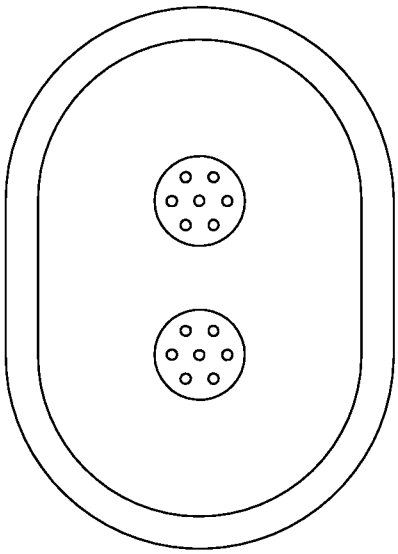
PITOT PROBE
(EXAMPLE)
A

STATIC PORT

DO NOT PLUG OR DEFORM HOLES
INDICATED AREAS MUST BE
SMOOTH AND CLEAN

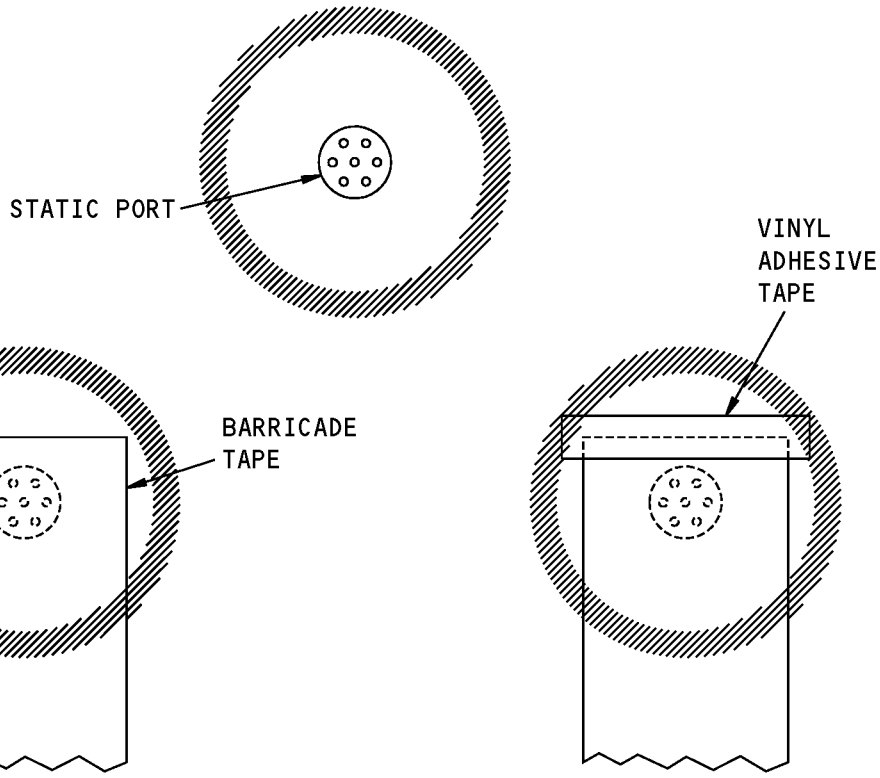


ALTERNATE STATIC PORT
(EXAMPLE)
B



PRIMARY STATIC PORTS
(EXAMPLE)
C

Pitot Static System - Component Location
Figure 201 (Sheet 2 of 2)/12-40-00-990-809



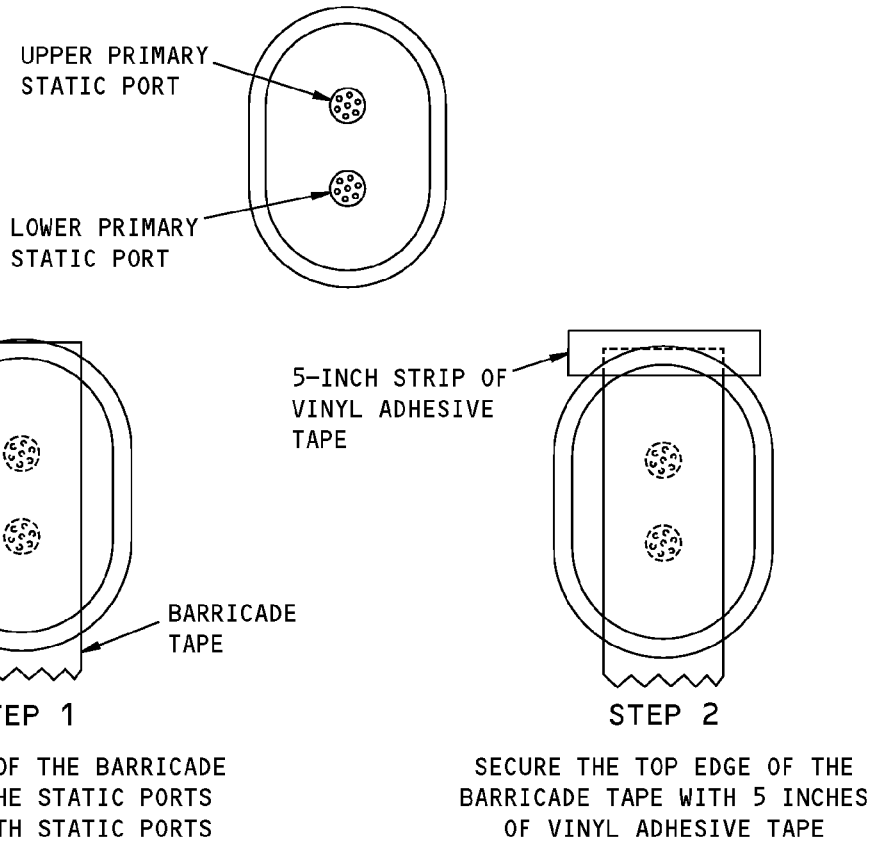
STEP 1
PUT ONE END OF THE BARRICADE TAPE OVER THE STATIC PORT TO COVER THE HOLES

STEP 2
SECURE THE TOP EDGE OF THE BARRICADE TAPE WITH 5 INCHES OF VINYL ADHESIVE TAPE

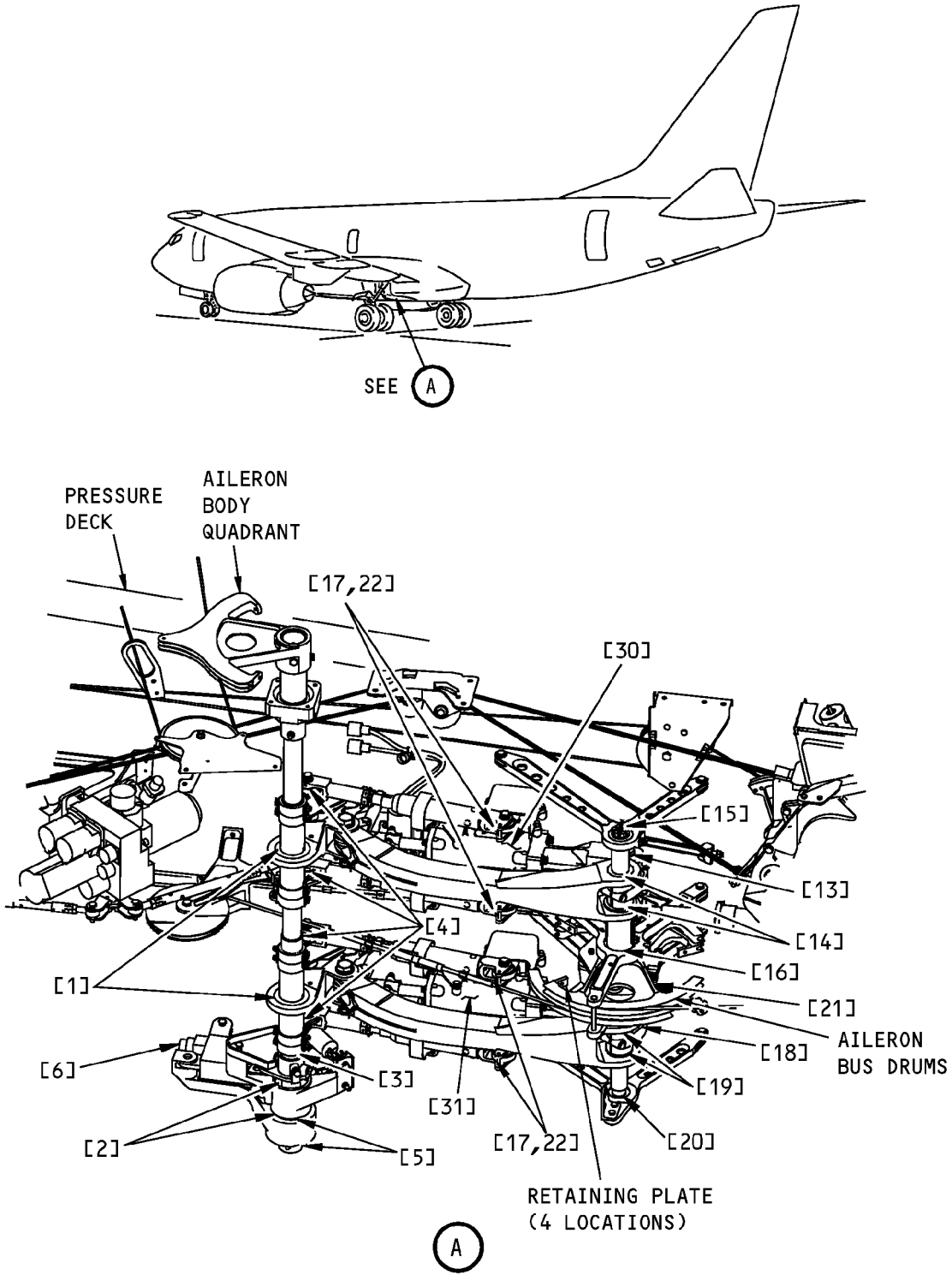
STEP 3
PUT TWO 5-INCH STRIPS OF VINYL ADHESIVE TAPE OVER THE SIDES OF THE BARRICADE TAPE OVERLAPPING THE TOP STRIP OF ADHESIVE TAPE

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

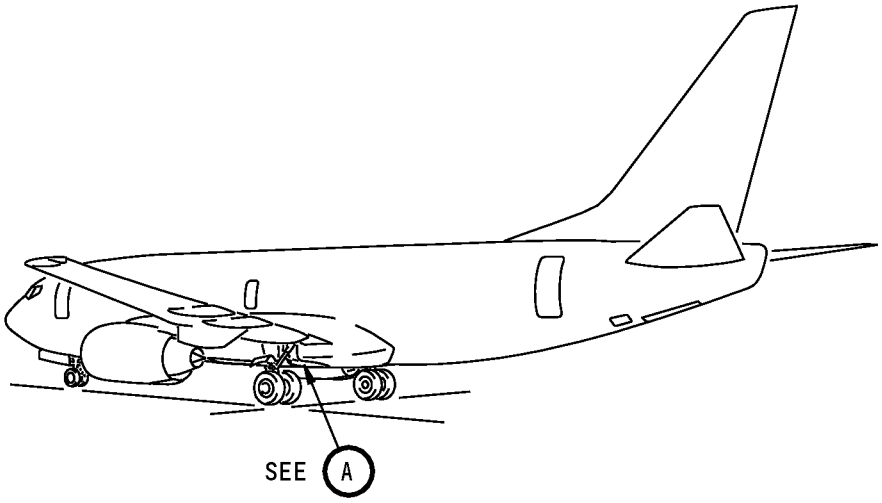
Static Port Cover Procedure
Figure 202 (Sheet 1 of 2)/12-40-00-990-811

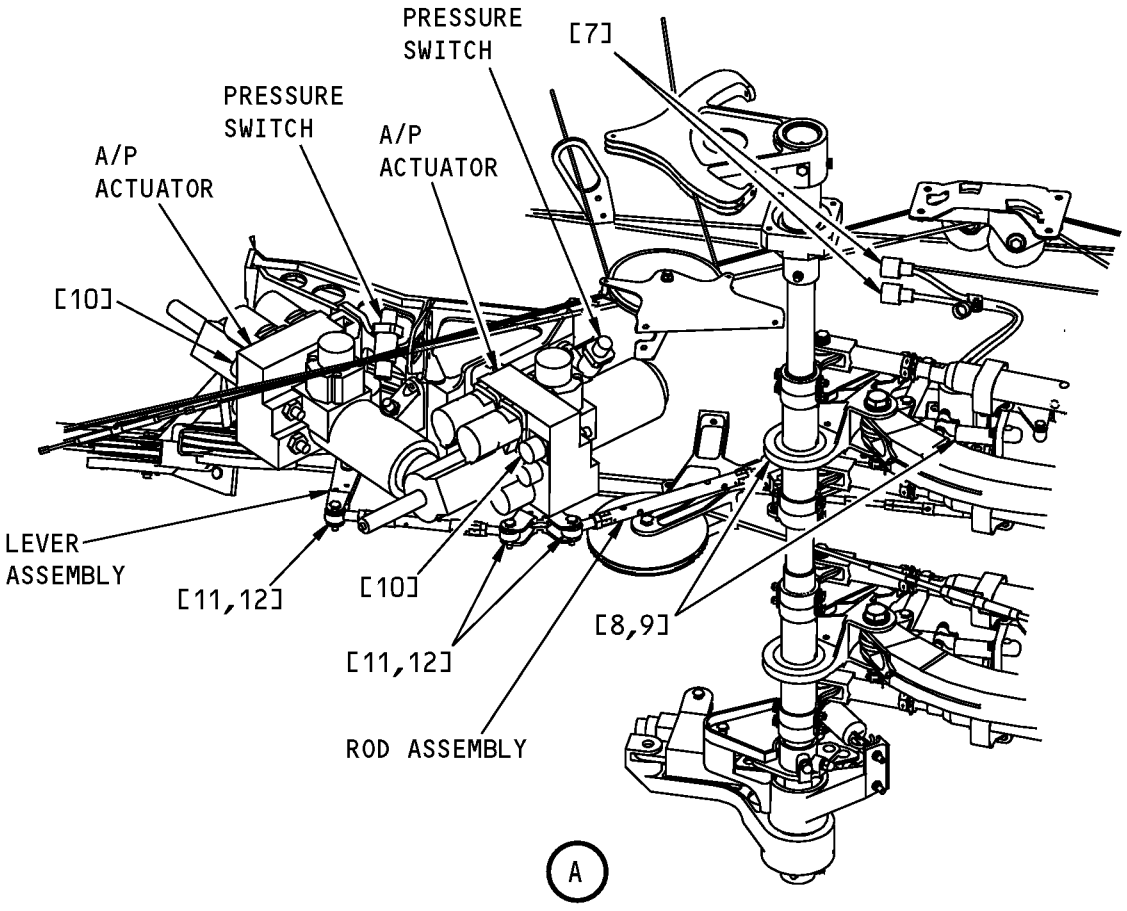


Static Port Cover Procedure
Figure 202 (Sheet 2 of 2)/12-40-00-990-811

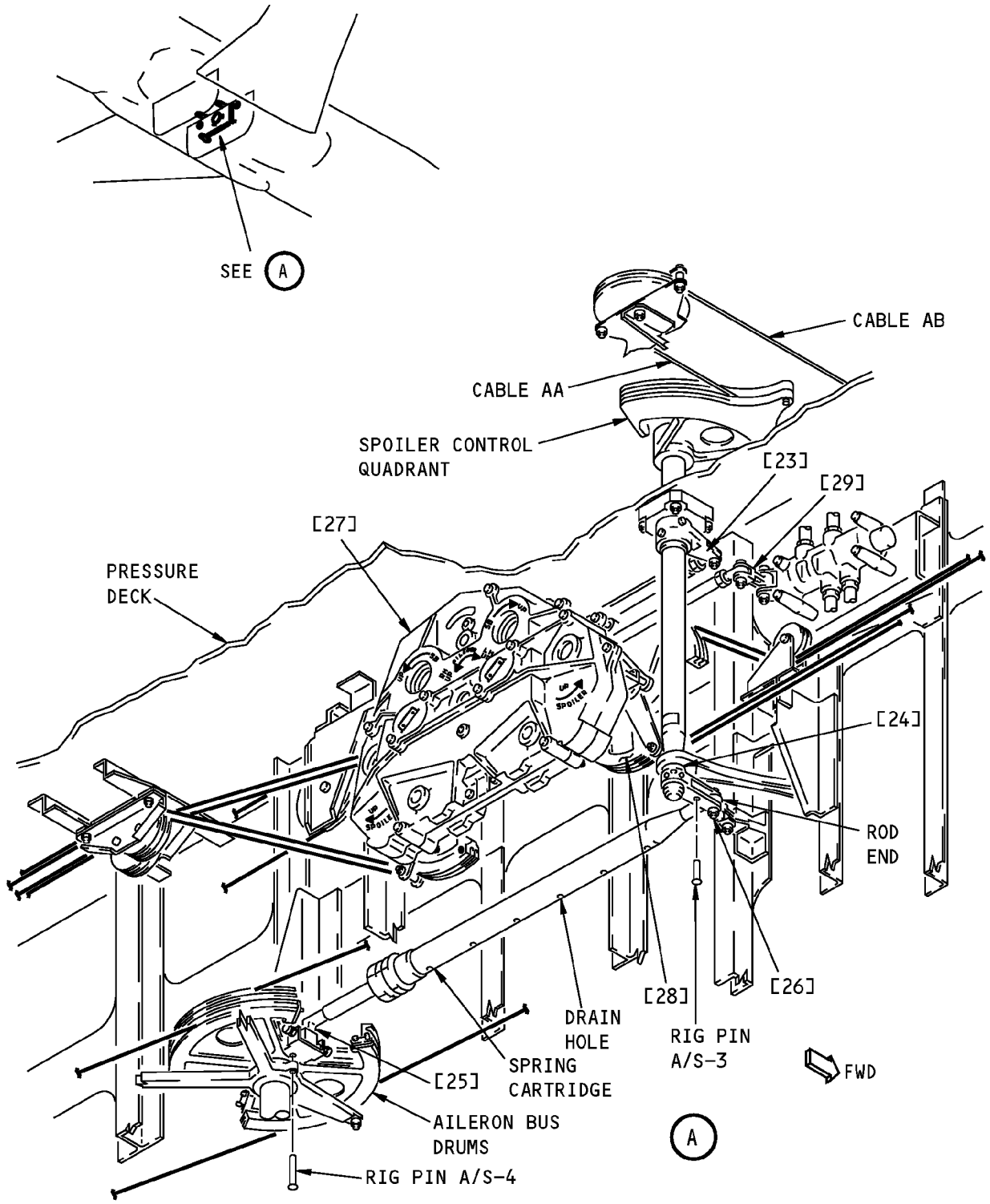


Aileron Power Control Unit
Figure 203/12-40-00-990-812

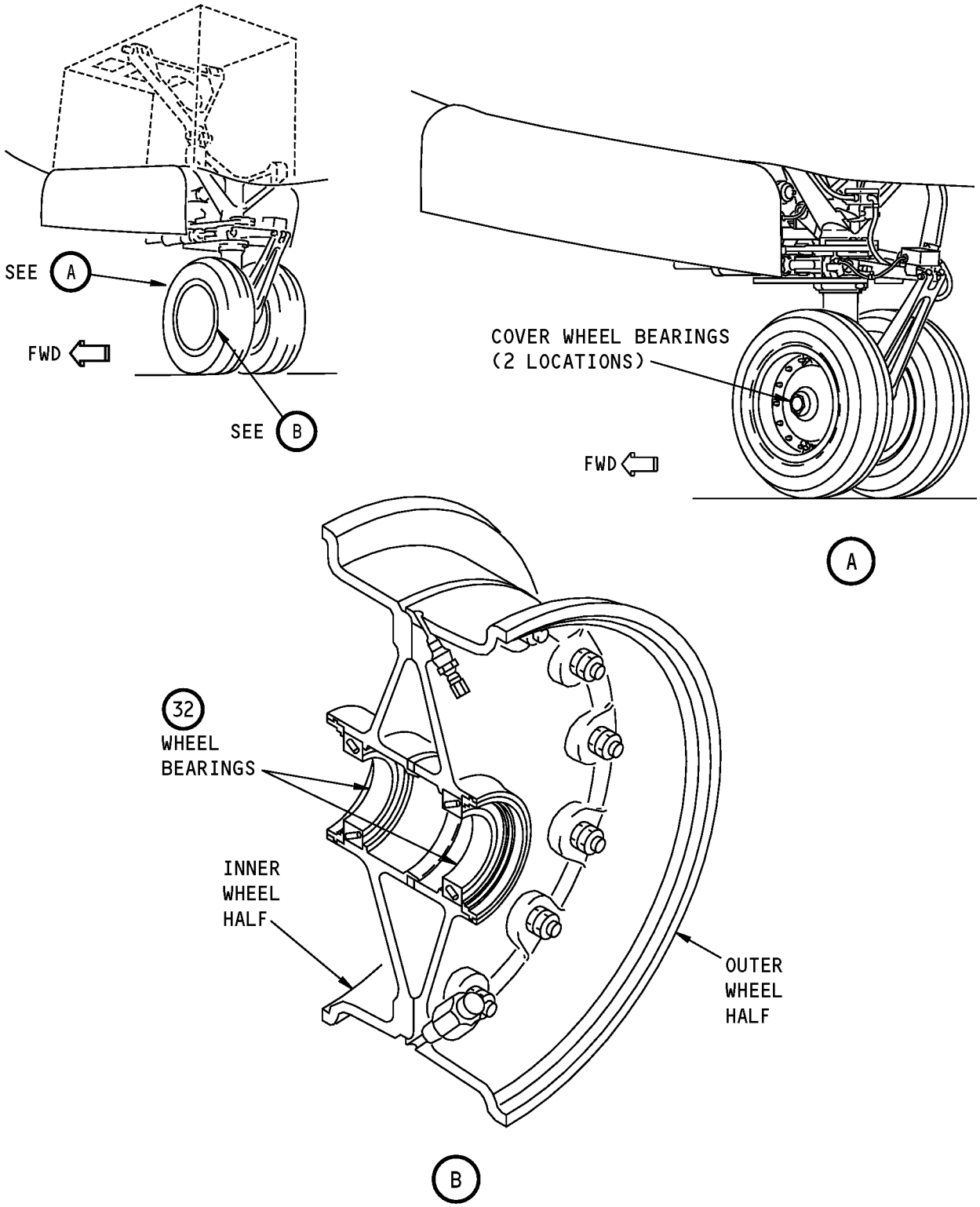




A/P Aileron Actuator
Figure 204/12-40-00-990-813



Spring Cartridge
Figure 205/12-40-00-990-814



Nose Gear Wheel Bearings
Figure 206/12-40-00-990-815

TASK 12-40-00-100-802

3. Polish the External Surfaces of the Airplane

A. References

Reference	Title
51-21-41-370-801	Apply Alodine 1000 Solution (P/B 701)

B. Tools/Equipment

Reference	Description
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

C. Consumable Materials

Reference	Description	Specification
B00047	Acid, Technical Grade, Nitric (61%-68.2% Purity)	A-A-59105
B00083	Solvent - Aliphatic Naphtha (For Acrylic Plastics)	TT-N-95 Type II, ASTM D-3735 Type III
B00232	Cleaner - Sodium Hydroxide	P-S-631
B00570	Polish - Exterior Aircraft - Turco 1495-X	
D00504	Grease - Petrolatum	VV-P-236
E00056	Compound - Potassium Nitrate	
G00034	Cotton Wiper - Process Cleaning Absorbent Wiper (Cheesecloth, Gauze)	BMS15-5
G00116	Sponge - Synthetic	
G00251	Abrasive - Mat, Non-Woven, Non-Metallic	A-A-58054
G00252	Film, Plastic Sheeting, Polyethylene	L-P-512
G00270	Tape - Scotch Flatback Masking 250	ASTM D6123 (Supersedes A-A-883)
G01659	Swab - Disposable, Cotton Or Rayon Applicator	GG-A-616
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	

D. Prepare to Polish the Surface

WARNING: DO NOT POLISH THE STATIC PORTS. IF POLISHING MATERIAL ENTERS THE STATIC PORTS, IT MAY CAUSE LARGE ERRORS IN AIRSPEED-SENSING AND ALTITUDE-SENSING SIGNALS, WHICH MAY LEAD TO LOSS OF SAFE FLIGHT.

SUBTASK 12-40-00-100-001

(1) Do the procedure to Clean the External Surfaces of the Airplane to clean the surfaces you will polish. (TASK 12-40-00-100-801)

E. Polish the Surface

NOTE: Polishing is only accomplished on unpainted surfaces. Painted surfaces do not get polished.

NOTE: Any polish that is listed in D6-9002 is acceptable for polishing.

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 Turco 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 Turco 1495-X polish, B00570 to the cotton cloth buffer wheel, STD-1205.

b) Polish the damaged area of the surface with the orbital air-driven 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 the water becomes drops.

(h) If the surface was conversion coated before it was polished, apply a new coating per BAC 5719 TY II, do this task: Apply Alodine 1000 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.

(a) Use these steps to find if the scratch penetrated the clad aluminum:

1) Apply solvent, B00083 to a cotton wiper, G00034.

2) Use the cotton wiper, G00034 to clean the area around the scratch.

3) Dry the surface.

4) Apply Scotch Flatback Masking Tape 250, G00270 around the scratch.

NOTE: Make sure there is no more than 1/32 inch (.794 mm) of bare metal around the scratch.

WARNING: DO NOT GET CLAD PENETRATING SOLUTION IN YOUR EYES, ON YOUR SKIN, OR ON YOUR CLOTHES. IF YOU GET CLAD PENETRATING SOLUTION IN YOUR EYES, IMMEDIATELY FLUSH YOUR EYES WITH WATER. IF YOU GET CLAD PENETRATING SOLUTION ON YOUR SKIN, IMMEDIATELY FLUSH YOUR SKIN WITH WATER. MAKE SURE YOU WEAR SPLASH GOGGLES OR A FACE SHIELD WHEN YOU PREPARE THE CLAD PENETRATING SOLUTION. MAKE SURE YOU WEAR CHEMICAL RESISTANT GLOVES WHEN YOU PREPARE THE CLAD PENETRATING SOLUTION.

5) Prepare the clad penetrating solution as follows:
   a) Mix 200 grams of potassium nitrate compound, E00056 and 100 grams of cleaner, B00232 with sufficient water to make one liter of clad penetrating solution.

WARNING: DO NOT GET CLAD PENETRATING SOLUTION IN YOUR EYES, ON YOUR SKIN, OR ON YOUR CLOTHES. IF YOU GET CLAD PENETRATING SOLUTION IN YOUR EYES, IMMEDIATELY FLUSH YOUR EYES WITH WATER. IF YOU GET CLAD PENETRATING SOLUTION ON YOUR SKIN, IMMEDIATELY FLUSH YOUR SKIN WITH WATER. MAKE SURE YOU WEAR SPLASH GOGGLES OR A FACE SHIELD WHEN YOU APPLY THE CLAD PENETRATING SOLUTION. MAKE SURE YOU WEAR CHEMICAL RESISTANT GLOVES WHEN YOU APPLY THE CLAD PENETRATING SOLUTION.

CAUTION: MAKE SURE 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 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. 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: ONLY ADD ACID TO WATER. NEVER ADD WATER TO ACID OR A VIOLENT REACTION MAY OCCUR.

WARNING: DO NOT GET NITRIC ACID IN YOUR EYES, ON YOUR SKIN, OR ON YOUR CLOTHES. IF NITRIC ACID GETS IN YOUR EYES, IMMEDIATELY FLUSH YOUR EYES WITH WATER. IF NITRIC ACID GETS ON YOUR SKIN, IMMEDIATELY FLUSH YOUR SKIN WITH WATER. MAKE SURE YOU WEAR SPLASH GOGGLES OR A FACE SHIELD WHEN YOU PREPARE THE NITRIC ACID SOLUTION. MAKE SURE YOU WEAR A RESPIRATOR AND ACID RESISTANT GLOVES WHEN YOU PREPARE THE NITRIC ACID SOLUTION.

8) Prepare the nitric acid solution as follows:
   a) Mix one volume of acid, B00047 with two to three volumes of water.

WARNING: DO NOT GET NITRIC ACID IN YOUR EYES, ON YOUR SKIN, OR ON YOUR CLOTHES. IF NITRIC ACID GETS IN YOUR EYES, IMMEDIATELY FLUSH YOUR EYES WITH WATER. IF NITRIC ACID GETS ON YOUR SKIN, IMMEDIATELY FLUSH YOUR SKIN WITH WATER. MAKE SURE YOU WEAR SPLASH GOGGLES OR A FACE SHIELD WHEN YOU APPLY THE NITRIC ACID SOLUTION. MAKE SURE YOU WEAR A RESPIRATOR AND ACID RESISTANT GLOVES WHEN YOU APPLY THE NITRIC ACID SOLUTION.

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 IN YOUR MOUTH, IN YOUR EYES, ON YOUR SKIN, OR ON YOUR CLOTHES. IF CHEMICAL CONVERSION COATING GETS IN YOUR EYES, IMMEDIATELY FLUSH YOUR EYES WITH WATER FOLLOWED BY AN EYE WASH OF BORIC ACID SOLUTION. IF CHEMICAL CONVERSION COATING GETS ON YOUR SKIN, IMMEDIATELY FLUSH YOUR SKIN WITH WATER. MAKE SURE YOU PUT ON SPLASH GOGGLES OR A FACE SHIELD WHEN YOU APPLY THE CHEMICAL CONVERSION COATING. MAKE SURE YOU PUT ON A RESPIRATOR AND PROTECTIVE GLOVES WHEN YOU APPLY THE CHEMICAL CONVERSION COATING. KEEP THE CHEMICAL CONVERSION COATING AWAY FROM SPARKS, FLAME AND HEAT. CHEMICAL CONVERSION COATING IS POISONOUS AND FLAMMABLE AND CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

12) Apply a new coating per BAC 5719 TYPE II (Alodine 1000) to the scratch with a swab, G01659, cotton wiper, G00034, or sponge, G00116, do this task: Apply Alodine 1000 Solution, 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 a new coating per BAC 5719 TY II.

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 as follows:

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.

F. Put the Airplane Back In Its Usual Condition

SUBTASK 12-40-00-020-002

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.

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.

(1) Remove all covers from the following components:

(a) Pitot probes

(b) Ice detector probes

(c) Angle-of-attack vane

(d) Engine inlet

(e) Turbine exhaust

(f) Each landing gear wheel/brake

SUBTASK 12-40-00-840-015

(2) Remove the "PITOT PROBES COVERED" tag, G02447 from the left control wheel in the flight deck.

SUBTASK 12-40-00-840-016

WARNING: FAILURE TO REMOVE BARRICADE TAPE AND VINYL ADHESIVE TAPE FROM STATIC PORTS BEFORE FLIGHT MAY CAUSE LARGE ERRORS IN AIRSPEED-SENSING AND ALTITUDE-SENSING SIGNALS, WHICH MAY LEAD TO LOSS OF SAFE FLIGHT.

CAUTION: REMOVE ALL BARRICADE TAPE, COVERS, POLYETHYLENE SHEET AND VINYL ADHESIVE TAPE. ENGINES SHOULD NOT BE OPERATED WITH COVERS IN PLACE BECAUSE THE COVERS CAN COME OFF AND DAMAGE THE ENGINES.

(3) Remove all barricade tape, G02443, covers, polyethylene sheet film, G00252, and vinyl adhesive Scotch Brand No.471 tape, G02219 from the following openings:

(a) Static ports

1) Inspect each static port and if necessary use solvent, B00083 or equivalent, to remove all tape residue, dirt, and other contaminants from around the static ports.

(b) Surge tank and fuel tank vents

(c) APU exhaust duct outlet port

(d) Ram air inlet and outlet doors

(e) Outflow valve

SUBTASK 12-40-00-840-017

(4) Remove the "STATIC PORTS COVERED" tag, G02444 from the left control wheel in the flight deck.

——————— END OF TASK ———————

BIRD STRIKE CLEANING - MAINTENANCE PRACTICES

1. General

A. This procedure contains one task.

(1) This procedure is to safely remove the remains of a bird strike from an airplane exterior.

TASK 12-40-04-100-801

2. Bird Strike Cleaning

A. General

(1) This procedure contains the steps for the safe removal of bird remains from an airplane exterior.

B. References

Reference	Title
05-51-18-210-801	Bird/Hail Strike Conditional Inspection (P/B 201)

C. Consumable Materials

Reference	Description	Specification
B00130	Alcohol - Isopropyl	TT-I-735
B50167	disinfectant - Calla 7127	
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) Gain 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 or disinfectant, B50167.

(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/Hail Strike Conditional Inspection, TASK 05-51-18-210-801

——————— END OF TASK ———————