CT7-2E INCREMENTAL CHANGE Release Notification Date: 03/04/2021

MM 73-00-00
FUEL SYSTEM - REMOVAL AND INSTALLATION

DISCLAIMER

The Incremental Changes published by GE Aviation are considered Instructions for Continued Airworthiness. These Incremental Changes, along with the current Manual revision and published Temporary Revisions, constitute the latest Instructions for Continued Airworthiness.

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HIGHLIGHTS

HIGHLIGHT REFERENCE	DESCRIPTION OF CHANGE
tk73-00-00-400-802	Technical Change: Changed paragraphs 2.A.(4) and 2.B.(20) and Figure 401 and Figure 402 to permit the use of safety wire.
tk73-00-00-400-802	Technical Change: Added a new procedure to remove and install the differential pressure switch in paragraph 9.

*** * * FOR CT7-2E1**

TASK 73-00-00-400-802

1. General Information.
   A. This section provides instructions for removing and installing components of the fuel system. Before starting any of the following procedures read ASSEMBLY AND DISASSEMBLY TECHNIQUES in Standard Practices Manual GEK 9250, 70-10-00.
   B. Unless otherwise specified, lubricate threads of all nuts, bolts, studs, and threaded connectors (except electrical) with a light coat of lubricating oil.

WARNING: REFER TO THE PRODUCT LABEL AND THE MANUFACTURER'S (MATERIAL) SAFETY DATA SHEET (SDS) FOR INSTRUCTIONS ON THE HAZARDS, STORAGE, SAFE HANDLING AND PROPER USE OF THIS PRODUCT.

   C. All packings used in the fuel system must be lubricated with Molykote 55M grease or Cosmolube grease 615.

WARNING: DELETED

   D. Deleted.

WARNING: ELECTRICAL COMPONENTS

BE SURE THAT POWER SOURCE IS DISCONNECTED BEFORE WORKING WITH ELECTRICAL COMPONENTS. DANGEROUS OR POSSIBLY FATAL VOLTAGE MAY BE PRESENT.

WARNING: ELECTRICAL SHOCK HAZARD

* PERSONS WORKING ON LINE ELECTRICAL SYSTEMS SHOULD HAVE PROPER TRAINING BEFORE DOING SO. USE PROPER PERSONAL PROTECTIVE EQUIPMENT.
* USE CARE WHEN APPLYING INPUT POWER AND WHEN MEASURING VOLTAGE. DANGEROUS OR POSSIBLY FATAL

VOLTAGE MAY BE PRESENT.

CAUTION: ENSURE THAT ELECTRICAL POWER IS OFF BEFORE ATTEMPTING ANY ENGINE WORK INVOLVING REMOVAL OF LRUs FROM ENGINE INSTALLED IN AIRCRAFT.

E. The following is a list of major line replaceable units (LRUs) that can be removed and installed, per this section, with the engine installed on the aircraft.

* Differential Pressure Switch
* Fuel Boost Pump
* Fuel Filter
* Fuel Metering Unit (FMU)

*** * * FOR CT7-2E1 NOT MODIFIED TO 72-0013**

* Fuel Pressure Switch

*** * * FOR CT7-2E1**

2. Main Fuel Manifold and Fuel Injectors.

A. Removal.

WARNING: HANDLING FUEL SYSTEM COMPONENTS IN COLD WEATHER
WHEN REMOVING FUEL SYSTEM COMPONENTS IN COLD WEATHER, WEAR APPROVED GLOVES TO PREVENT FROSTBITE.

(1) Remove bolt (1, Figure 401) that attaches clamp (2) on the main fuel manifold (3) to the diffuser case bracket (4).

WARNING: REFER TO THE PRODUCT LABEL AND THE MANUFACTURER'S (MATERIAL) SAFETY DATA SHEET (SDS) FOR INSTRUCTIONS ON THE HAZARDS, STORAGE, SAFE HANDLING AND PROPER USE OF THIS PRODUCT.

CAUTION: TWO WRENCHES (COUNTER-TORQUE) ARE REQUIRED FOR REMOVING THE FUEL HOSE. OTHERWISE, THE HOSE CAN BE DAMAGED.

(2) Using two wrenches, disconnect coupling on the main fuel manifold (3) at the FMU manifold connector (5).

CAUTION: THE DISTANCE BETWEEN FUEL INJECTOR CONNECTORS DOES NOT PERMIT THE COMPLETE REMOVAL OF AN INDIVIDUAL COUPLING NUT WITHOUT FIRST LOOSENING ADJACENT COUPLING NUTS. DAMAGE TO THE FUEL MANIFOLD COUPLING NUTS AND FUEL INJECTOR THREADS WILL RESULT IF THE COUPLING NUTS ARE REMOVED ONE AT A TIME.

(3) Remove the main fuel manifold (3) from clip (6) that is on the anti-icing bleed valve aft bracket (7).

(4) Remove safety cable or safety wire (8) from 12 coupling nuts (9) and main fuel manifold (3).

(5) Start at the 6:00 o'clock position and work upward alternating on each side of the engine. Break torque and loosen all 12 fuel manifold coupling nuts (9).

(6) Return to the 6:00 o'clock position. Work up sequentially and disconnect the fuel manifold coupling nuts (9) from the fuel injectors (10).

(7) Remove 12 packings (11) from fuel manifold.

(8) Remove packing (12) from the connector on the FMU manifold (5).

WARNING: REFER TO THE PRODUCT LABEL AND THE MANUFACTURER'S (MATERIAL) SAFETY DATA SHEET (SDS) FOR INSTRUCTIONS ON THE HAZARDS, STORAGE, SAFE HANDLING AND PROPER USE OF THIS PRODUCT.

WARNING: ABUSIVE FORCE/TORQUE ON FUEL INJECTOR

* DO NOT USE ABUSIVE FORCE/TORQUE WHEN REMOVING A FUEL INJECTOR.
* DO NOT HAMMER WRENCH-END TO SHOCK NUT.
* DO NOT EXCEED 175 FOOT-POUNDS (237.3 N.m) LOOSENING TORQUE.
* ABUSIVE FORCE/TORQUE MAY RESULT IN A BROKEN OR DAMAGED MIDFRAME.

(9) Loosen 12 retaining nuts (13) and back out of the bosses (14). If the nuts are hard to loosen, apply fluorescent dye penetrant on the threads of the nuts. Let the penetrant soak for 30 minutes. Remove nuts.

(10) Remove the 12 injectors (10) from the midframe bosses.

B. Installation.

WARNING: REFER TO THE PRODUCT LABEL AND THE MANUFACTURER'S (MATERIAL) SAFETY DATA SHEET (SDS) FOR INSTRUCTIONS ON THE HAZARDS, STORAGE, SAFE HANDLING AND PROPER USE OF THIS PRODUCT.

CAUTION: ALL PACKINGS USED IN THE FUEL SYSTEM MUST BE LUBRICATED WITH MOLYKOTE 55M GREASE OR COSMOLUBE GREASE 615.

CAUTION: INSTALL AND TORQUE ALL INJECTORS BEFORE INSTALLING THE MANIFOLD. FAILURE TO DO THIS IN THIS SEQUENCE COULD RESULT IN FUEL LEAKAGE FROM FITTING MISALIGNMENT.

CAUTION: DO NOT POKE AT TIP OF FUEL INJECTOR. THIS CAN DAMAGE FUEL INJECTOR AND COULD CAUSE EXCESSIVE FUEL FLOW FROM FUEL INJECTOR AND SEVERE ENGINE DISTRESS DURING ENGINE OPERATION.

(1) Inspect the midframe bosses (14, Figure 401) on the midframe for carbon buildup or high metal on the fuel injector seating surfaces. Remove any carbon buildup or high metal and clean the midframe bosses.

(2) Be sure all parts being assembled are free of dirt or foreign matter.

(3) Install the fuel injector (10) into the midframe boss (14) at the 6:00 o'clock position, as follows:

(a) Position the fuel injector (10) so that the fuel injector tip faces 90° away from the slots on the midframe port.

(b) Insert fuel injector into the port as far as it will go. Angle of stem goes forward, not straight in.

NOTE: The round boss markings found on top of the mating flange of the injector can be utilized as a visual aid to ensure proper installation and spray direction. Both round markings shall be in line forward and aft with the large round marking being aft.

(c) Turn the fuel injector (10) 90° so that fuel injector nozzle faces aft and push it until the locating pins enter the slots. Be sure that the fuel injector is seated firmly in the midframe boss.

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(d) Lubricate the threads of the fuel injector retaining nuts (13) using anti-seize compound graphite-petrolatum GP-640 (A50TF201), or equivalent.

WARNING: ABUSIVE FORCE/TORQUE ON FUEL INJECTOR

* DO NOT USE ABUSIVE FORCE/TORQUE WHEN REMOVING A FUEL INJECTOR.
* DO NOT HAMMER WRENCH-END TO SHOCK NUT.
* DO NOT EXCEED 175 FOOT-POUNDS (237.3 N.m) LOOSENING TORQUE.
* ABUSIVE FORCE/TORQUE MAY RESULT IN A BROKEN OR DAMAGED MIDFRAME.

CAUTION: THE RETAINING NUT MUST BE HAND-TIGHTENED AT LEAST THREE FULL THREADS TO BE PROPERLY SEATED IN THE MIDFRAME BOSS. OTHERWISE, THE FUEL INJECTOR OR MIDFRAME COULD BE DAMAGED.

CAUTION: DO NOT EXCEED 15° WRENCH ARC. OTHERWISE, THE MIDFRAME WILL CRACK.

CAUTION: IF THE INJECTOR IS NOT SEATED FLUSH IN THE BOSS WHEN TORQUING THE COLLAR NUT, THE INJECTOR WILL NOT SEAT PROPERLY AND CAUSE AN AIR LEAK AT TEST.

(e) Support the injector (10) from the I.D. and start turning the retaining nut (13). Make sure that the injector is seated flush, without rocking. Hold the injector flush on the midframe boss and to torque to 15° wrench arc.

CAUTION: INSTALL AND TORQUE ALL INJECTORS BEFORE INSTALLING THE MANIFOLD. FAILURE TO DO THIS IN THIS SEQUENCE COULD RESULT IN FUEL LEAKAGE FROM FITTING MISALIGNMENT.

(4) Repeat the same procedure and install the remaining 11 fuel injectors in a clockwise direction.

WARNING: REFER TO THE PRODUCT LABEL AND THE MANUFACTURER'S (MATERIAL) SAFETY DATA SHEET (SDS) FOR INSTRUCTIONS ON THE HAZARDS, STORAGE, SAFE HANDLING AND PROPER USE OF THIS PRODUCT.

CAUTION: ALL PACKINGS USED IN THE FUEL SYSTEM MUST BE LUBRICATED WITH MOLYKOTE 55M GREASE OR COSMOLUBE GREASE 615.

(5) Lubricate packing (12) with Molykote 55M or Cosmolube 615 and install on FMU manifold connector (5).

CAUTION: DO NOT ALLOW LUBRICATING GREASE TO ENTER ENDS OF THE MANIFOLD OUTLET FITTINGS (15).

(6) Lubricate and install packings (11) into the fuel manifold outlet fittings (15).

WARNING: REFER TO THE PRODUCT LABEL AND THE MANUFACTURER'S (MATERIAL) SAFETY DATA SHEET (SDS) FOR INSTRUCTIONS ON THE HAZARDS, STORAGE, SAFE HANDLING AND PROPER USE OF THIS PRODUCT.

(7) Lubricate the threads of connector on fuel manifold (3) with lubricating oil MIL-PRF-23699 or MIL-PRF-7808.

(8) Align the fuel manifold (3) to the engine and install fuel manifold connector to connector on FMU manifold (5), handtight.

(9) Lubricate the threads of the fuel injectors (10) with lubricating oil MIL-PRF-23699 or MIL-PRF-7808.

CAUTION: DO NOT COMPLETELY TIGHTEN THE FUEL MANIFOLD COUPLING NUTS ONE AT A TIME. THE DISTANCE BETWEEN FUEL INJECTOR CONNECTORS DOES NOT PERMIT SINGLE INSTALLATION WITHOUT POSSIBLE CROSSTHREADING.

(10) Verify that preformed packings (11) have been installed onto the fuel manifold outlet fittings (15). Lubricate the fuel manifold preformed packing and the lead-in chamfers of the mating fuel injector fitting with lubricating oil MIL-PRF-23699 or MIL-PRF-7808.

(11) Start at the 6:00 o'clock position and work up, alternating on each side of the engine, and install all 12 fuel manifold coupling nuts (9) onto the threads of the injectors (10) by hand. Be careful not to damage the packings (11) when you insert the fuel manifold fitting (15) onto the fuel injector fittings.

(12) Return to the 6:00 o'clock position and work up, alternating on each side of the engine, and screw each coupling nut (9) three turns by hand. If three turns cannot be made, remove the fuel manifold (3) and inspect the fuel manifold coupling nuts (9) and fuel injector (10) threads for dirt or thread damage. Inspect the packing (11) for nicks and cuts. Discard any damaged hardware.

(13) Return to the 6:00 o'clock position and work up sequentially in a clockwise direction (aft looking forward) and tighten coupling nuts (9) by hand, or gently use a wrench, until all coupling nuts are snug.

NOTE: Deleted.

(14) Return to the 6:00 position and work up sequentially from the 6:00 position, in a clockwise direction (aft looking forward), and torque the coupling nuts to 215 to 245 lb in. (24.3 to 27.7 N.m).

NOTE: After correct assembly and torquing, approximately three injector threads will not be covered by the nut. Figure 402 shows a correctly assembled coupling.

(15) After all nuts are torqued, do a twist test on each manifold tee or elbow joint. Do not use tools. Use hand pressure only. No relative motion is permitted between the manifold and the fuel injector. Slight rotation between the fuel injector and midframe boss is permitted due to the gap between the fuel injector pins and midframe slots. If unacceptable, remove the manifold as specified in paragraph 2.B.(16) and inspect the coupling nut and injector threads (INSPECTION).

CAUTION: DELETED.

(16) If it is necessary to remove the manifold, follow these steps:

(a) Beginning at one end of the manifold, back off each coupling nut three turns. Do not completely remove the coupling nuts one at a time or crossthreading will occur.
(b) Return to the beginning coupling nut and completely disconnect each coupling nut.

(17) Using two wrenches, tighten fuel manifold (3) connector to the connector on FMU manifold (5) as follows:
(a) Tighten the coupling nut 60° wrench arc (1 wrench flat).
(b) Loosen the coupling nut and reseat snug.
(c) Tighten the coupling nut 60° wrench arc (1 wrench flat).
(d) Repeat paragraphs 2.B.(17)(b) and 2.B.(17)(c).

(18) Install main fuel manifold (3) into clip (6).

(19) Install bolt (1) and attach clamp (2) on the main fuel manifold (3) to the diffuser case bracket (4). Tighten bolt to 45 to 50 lb in. (5.1 to 5.6 N.m).

(20) Install safety cable or safety wire (8) to 12 coupling nuts (Figure 402) (Refer to GEK 9250).

(21) Do required checks (72-00-00, TEST).

*** * * FOR CT7-2E1**

1. Bolt
2. Clamp
3. Main fuel manifold
4. Bracket
5. FMU manifold connector
6. Clip
7. Anti-icing bleed and start valve aft bracket
8. Safety cable or Safety wire
9. Coupling nut
10. Fuel injector
11. Packing
12. Packing
13. Retaining nut
14. Midframe boss
15. Manifold outlet fitting

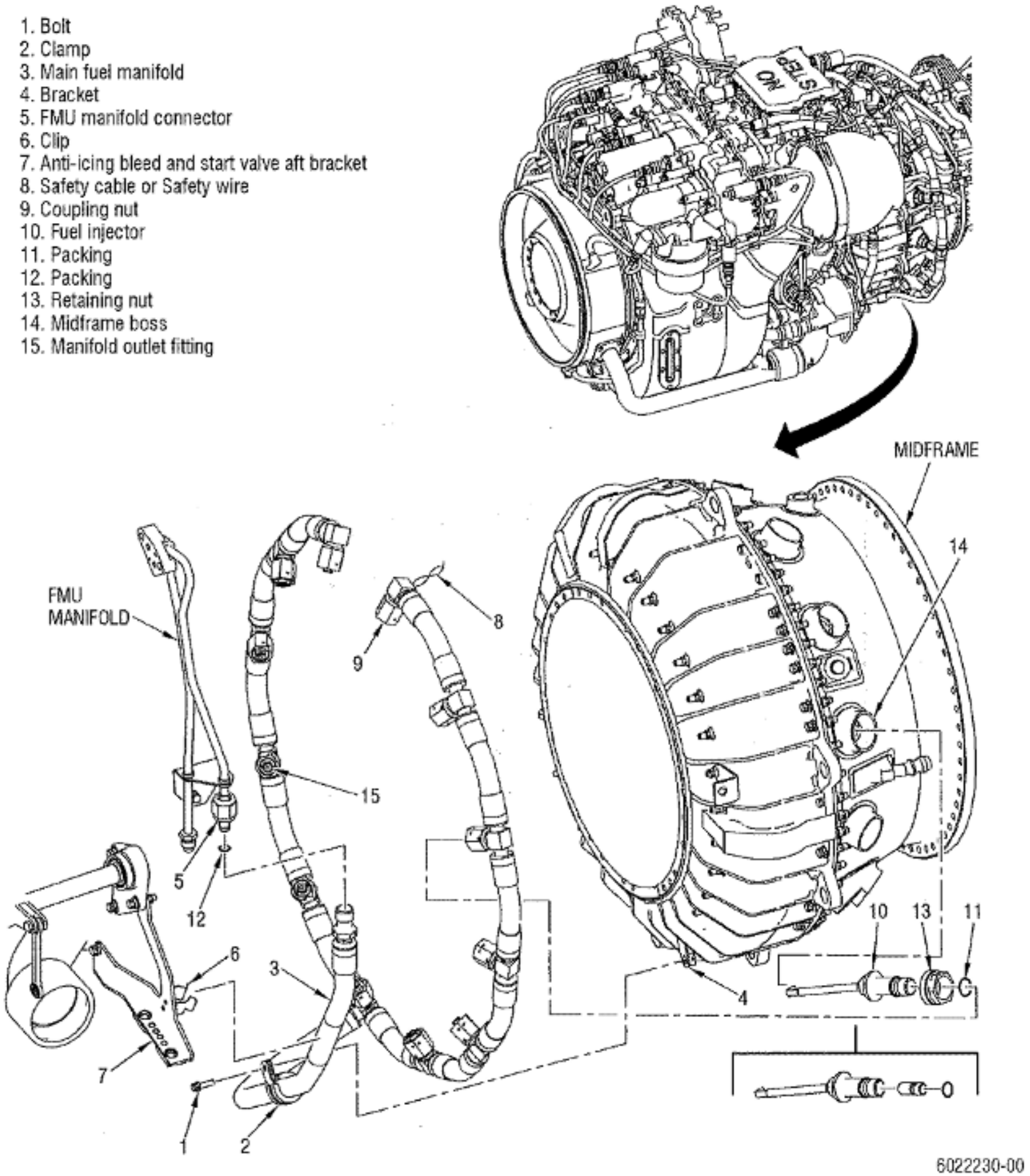

Figure 401 Main Fuel Manifold and Fuel Injectors - Removal and Installation

*** * * FOR CT7-2E1**

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Figure 402 Assembled 5160T81P01 Main Fuel Manifold-to-Fuel Injector Coupling Showing Safety Cable/Safety Wire Nut Locking Feature and Permitted Exposed Threads

3. Fuel Metering Unit (FMU) Manifold.

A. Removal.

(1) Remove safety cable from FMU manifold coupling nut (1). Refer to Figure 403.

WARNING: HANDLING FUEL SYSTEM COMPONENTS IN COLD WEATHER

WHEN REMOVING FUEL SYSTEM COMPONENTS IN COLD WEATHER, WEAR APPROVED GLOVES TO PREVENT FROSTBITE.

CAUTION: TWO WRENCHES (COUNTER-TORQUE) ARE REQUIRED FOR REMOVING AND INSTALLING COUPLING NUTS. OTHERWISE, NUTS OR TUBES WILL BE DAMAGED.

(2) Using two wrenches, disconnect coupling nut (1, Figure 403) from fuel manifold (2). Remove and discard packing (3).
(3) Remove bolt (4) from bracket (5).
(4) Loosen two captive bolts (6) that secure FMU manifold (7) to the FMU (8).
(5) Remove FMU manifold (7) with adapter gasket (9) attached. Do not discard gasket unless sealing material is damaged.

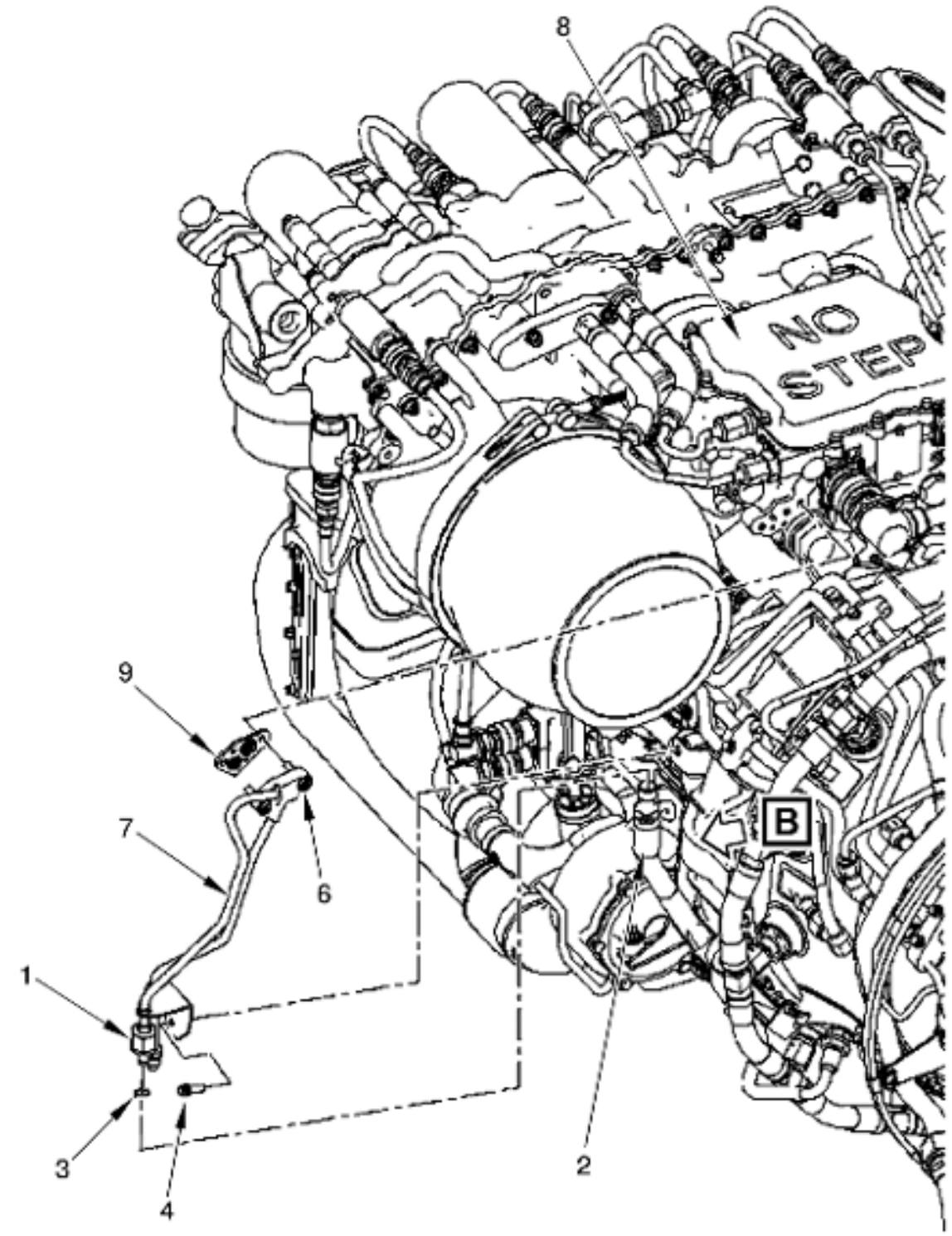
B. Installation.

WARNING: REFER TO THE PRODUCT LABEL AND THE MANUFACTURER'S (MATERIAL) SAFETY DATA SHEET (SDS) FOR INSTRUCTIONS ON THE HAZARDS, STORAGE, SAFE HANDLING AND PROPER USE OF THIS PRODUCT.

CAUTION: ALL PACKINGS USED IN THE FUEL SYSTEM MUST BE LUBRICATED WITH MOLYKOTE 55M GREASE OR COSMOLUBE GREASE 615.

(1) Check condition of and, if necessary, replace adapter gasket (9). If adapter gasket is not attached to FMU manifold, attach it with set screw. Turn screw just until gasket touches metal-to-metal.
(2) Install packing (3, Figure 403) onto FMU manifold (7).
(3) Position FMU manifold (7) to FMU (8), install two captive bolts (6) into FMU, and hand-tighten bolts.
(4) Install bolt (4) through flange on FMU manifold (7) to bracket (5), hand-tight. Torque bolt to 45 to 50 lb in. (5.1 to 5.6 N.m).
(5) Torque two captive bolts (6) to 45 to 50 lb in. (5.1 to 5.6 N.m).
(6) Using two wrenches attach fuel manifold (2) to coupling nut (1) on FMU manifold. Tighten (60° wrench arc) coupling nut.
(7) Install safety cable to FMU coupling nut. Refer to Figure 403, Sheet 2 and GEK 9250, 70-11-02.
(8) Do required checks (72-00-00, TEST).

*** * * FOR CT7-2E1**



LEGEND:
1. COUPLING NUT
2. FUEL MANIFOLD
3. PACKING
4. BOLT
5. BRACKET
6. CAPTIVE BOLTS (QTY-2)
7. FMU MANIFOLD
8. FMU
9. ADAPTER GASKET

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Figure 403 (Sheet 1) Fuel Metering Unit (FMU) Manifold - Removal and Installation

*** * * FOR CT7-2E1**

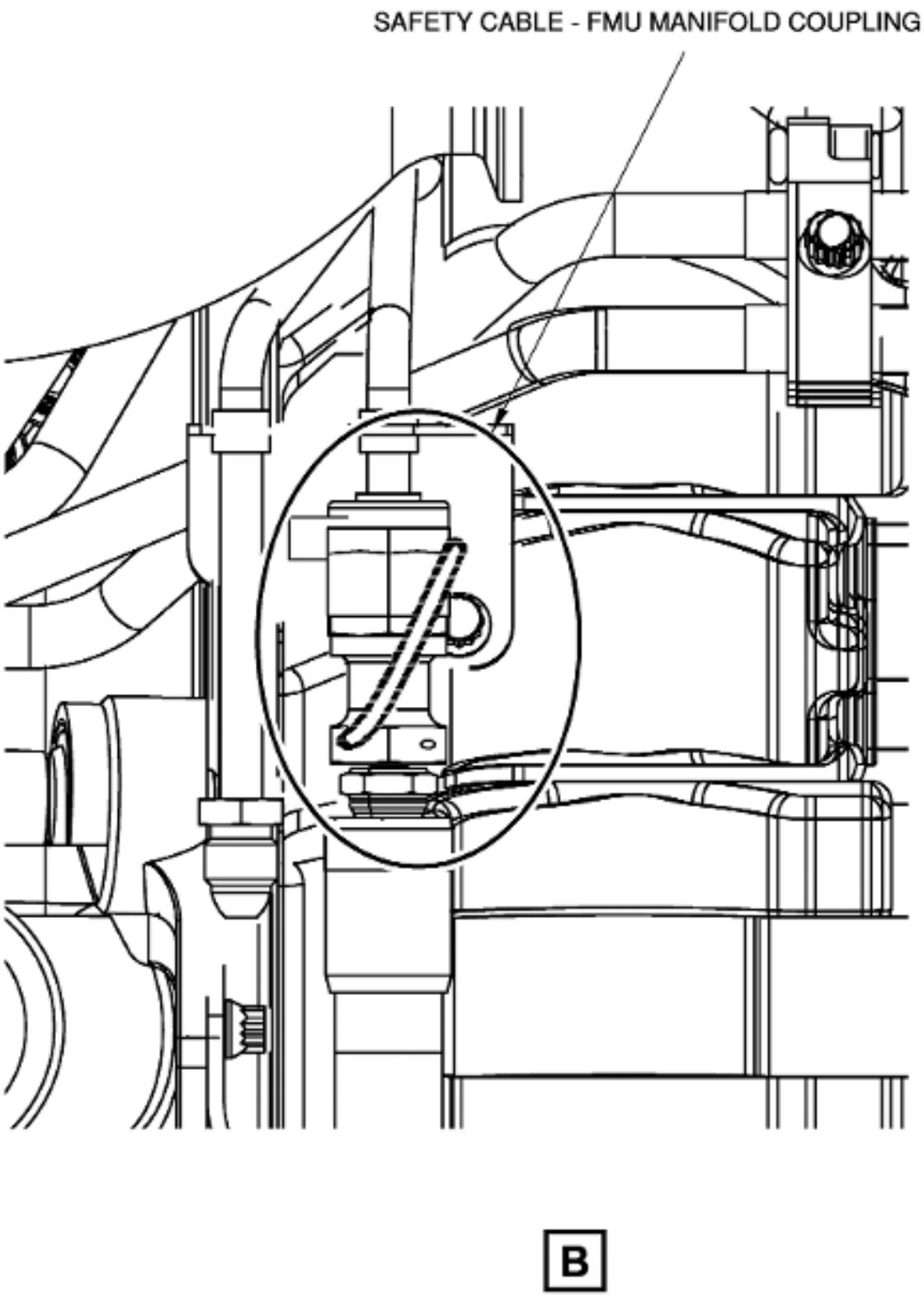

Figure 403 (Sheet 2) Fuel Metering Unit (FMU) Manifold - Removal and Installation

4. Fuel Boost Pump.

A. Removal.

WARNING: HANDLING FUEL SYSTEM COMPONENTS IN COLD WEATHER
WHEN REMOVING FUEL SYSTEM COMPONENTS IN COLD WEATHER, WEAR APPROVED GLOVES TO PREVENT FROSTBITE.

CAUTION: * WHEN REMOVING AIRFRAME FUEL HOSE FROM FUEL BOOST PUMP, THE HOSE MUST BE REMOVED FIRST AT FUEL BOOST PUMP.
* WHEN REMOVING FUEL BOOST PUMP, HEX HEAD BOLTS MUST NOT BE REMOVED. REMOVAL OF THESE BOLTS WILL DISASSEMBLE FUEL BOOST PUMP.

NOTE: Refer to applicable Aircraft Maintenance Manual for instructions on fuel inlet fitting removal and installation.

(1) Loosen three captive bolts (2, Figure 404).
(2) Remove fuel boost pump (1).
(3) Remove and discard four packings (3, 4, 6).

B. Installation.

WARNING: REFER TO THE PRODUCT LABEL AND THE MANUFACTURER'S (MATERIAL) SAFETY DATA SHEET (SDS) FOR INSTRUCTIONS ON THE HAZARDS, STORAGE, SAFE HANDLING AND PROPER USE OF THIS PRODUCT.

CAUTION: ALL PACKINGS USED IN THE FUEL SYSTEM MUST BE LUBRICATED WITH MOLYKOTE 55M GREASE OR COSMOLUBE GREASE 615.

(1) Using Molykote grease 55M or Cosmolube grease 615, lubricate four packings (3, 4, 6, Figure 404), and install onto fuel boost pump (1).

(2) Position fuel boost pump (1) on gearbox mounting flange (5). Be sure that splines on pump engage with gearbox splines.

(3) If splines on pump do not easily engage gearbox splines, remove pump, rotate male spline by hand, and attempt to install it again. Repeat this procedure, as necessary, until splines engage easily.

(4) Tighten three captive bolts (2). Torque bolts to 45 to 50 lb in. (5.1 to 5.6 N.m).

(5) Using applicable Aircraft Maintenance Manual, install fuel inlet fitting.

(6) Do required checks (72-00-00, TEST).

*** * * FOR CT7-2E1**

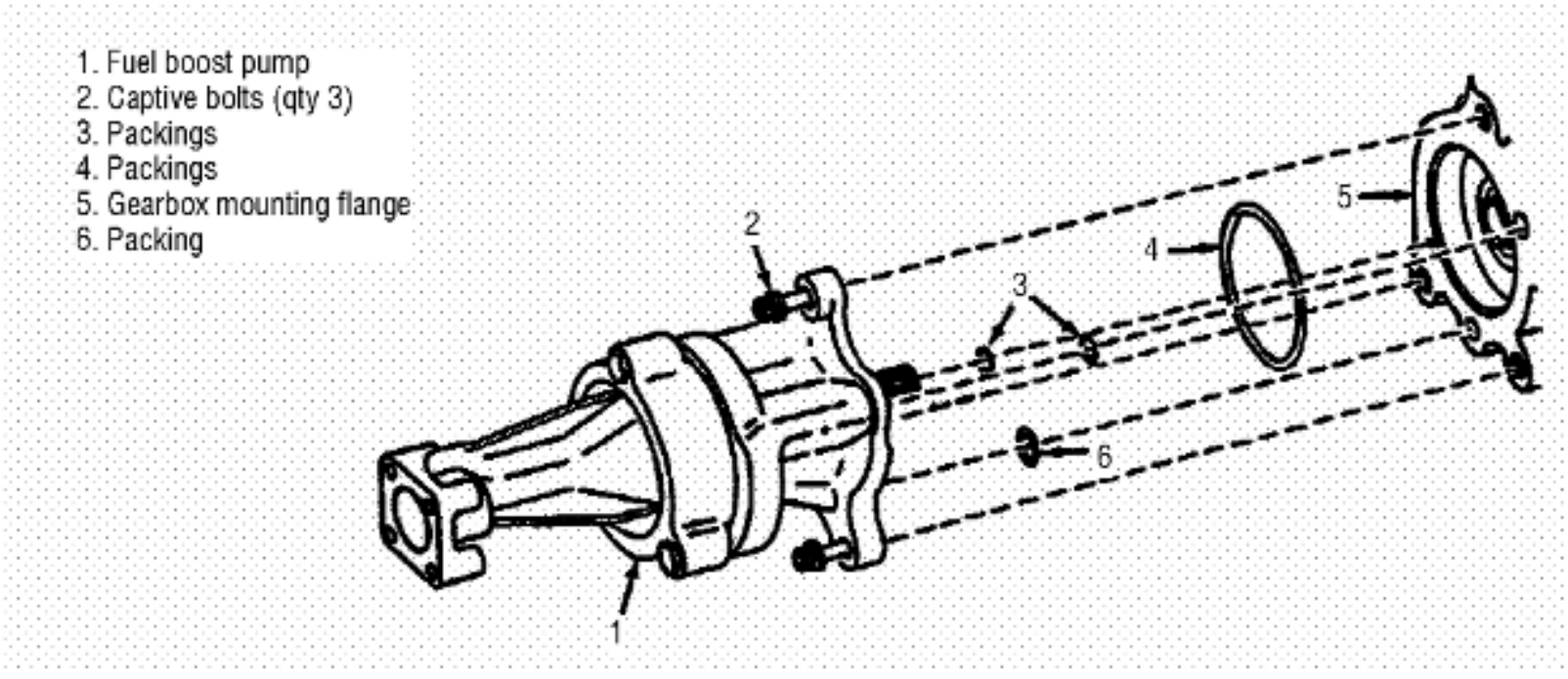

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Figure 404 Fuel Boost Pump - Removal and Installation

5. Fuel Metering Unit (FMU), Grooved Clamp Coupling, and Gearbox-to-FMU Hose Assemblies.

A. Removal.

CAUTION: * OPERATION OF ENGINE WITH AN IMPROPERLY SEATED FMU FLANGE CAN CAUSE FAILURE OF THE FMU AND LOSS OF ENGINE POWER. IF ENGINE HAS OPERATED WITH AN IMPROPERLY SEATED FMU, EVEN IF ONLY A START WAS ATTEMPTED, REPLACE SUSPECTED FMU.

* DENTS IN T2 SENSOR CAN CAUSE FUEL SCHEDULING ERRORS. DO NOT FORCE T2 SENSOR WHEN REMOVING OR INSTALLING IT. THE T2 SENSOR CAN DEVELOP LEAKS IF IT IS DENTED.

CAUTION: DO NOT USE HARD-JAW PLIERS WHEN YOU LOOSEN THE KNURLED COUPLING RING ON THE ELECTRICAL CONNECTOR. DAMAGE TO THE CABLE ASSEMBLY CAN OCCUR.

(1) Use your hand and disconnect the electrical connectors (1, 2, Figure 405, sheet 1) from the FMU (3). If either electrical connector is difficult to loosen, do as follows:

NOTE: The use of soft-jaw pliers (padded) is recommended to loosen the electrical connector.

(a) Use soft-jaw pliers and loosen the knurled coupling ring on the electrical connector of the cable.

(b) Use your hand and disconnect the electrical connector from the mating connector on the FMU (3).

(2) Use protective caps and cover the electrical connectors.

(3) Remove safety cable from the coupling nuts of the gearbox-from-FMU (4) and gearbox-to-FMU (6) hose assemblies, at the gearbox and at the FMU.

WARNING: REFER TO THE PRODUCT LABEL AND THE MANUFACTURER'S (MATERIAL) SAFETY DATA SHEET (SDS) FOR INSTRUCTIONS ON THE HAZARDS, STORAGE, SAFE HANDLING AND PROPER USE OF THIS PRODUCT.

WARNING: HANDLING FUEL SYSTEM COMPONENTS IN COLD WEATHER

WHEN REMOVING FUEL SYSTEM COMPONENTS IN COLD WEATHER, WEAR APPROVED GLOVES TO PREVENT FROSTBITE.

(4) Disconnect coupling on the gearbox-from-FMU hose assembly (4) from the FMU (3). Remove and discard packing (5).

NOTE: If the gearbox-from-FMU hose assembly (4) cannot be easily disconnected from the accessory gearbox (AGB) (21), go to REPAIR 007.

(5) Disconnect coupling on the gearbox-from-FMU hose assembly (4) from the AGB (21). Remove and discard packing (30).

(6) Disconnect coupling on the gearbox-to-FMU hose assembly (6) from the FMU (3). Remove and discard packing (7).
(7) Disconnect coupling on the gearbox-to-FMU hose assembly (6) from the AGB (21). Remove and discard packing (31).
(8) Remove bolt (8) that attaches FMU manifold (9) to manifold bracket (10).
(9) Loosen two captive bolts (11) that attach FMU manifold (9) to the FMU (3). Separate FMU manifold (9) from the FMU (3) with adapter gasket (29) attached. Do not discard adapter gasket unless sealing material is damaged.

*** * * FOR CT7-2E1 NOT MODIFIED TO SB 72-0008**

(10) Using an open-end wrench as a lever, carefully disengage quick-disconnect pin (12) from link (13) and from actuating shaft (14).

*** * * FOR CT7-2E1 MODIFIED TO SB 72-0008**

(10) Remove self-locking nut (32) and shear bolt (33) from link (13) and from actuating shaft (14).

*** * * FOR CT7-2E1**

(11) Release latch (15, sheet 2) on holster (16). Carefully remove T2 sensor (17) from holster (16).
(12) Loosen locknut (18) on grooved clamp coupling (19).

CAUTION: T2 SENSOR (17) HAS A LIQUID-FILLED PROBE. DO NOT DENT SENSOR WHEN REMOVING THE FMU TO WHICH IT IS ATTACHED. DENTS IN SENSOR CAN DEVELOP LEAKS AND FUEL-SCHEDULING ERRORS.

(13) While supporting the FMU (3), loosen coupling (19) by rotating clamp coupling bolt (20). Remove FMU (3) from accessory gearbox (AGB) (21) by pulling aft three inches (76 mm).
(14) Remove clamp coupling (19).
(15) Remove and discard packings (22, 23, 24, 25, sheet 1).
(16) Cover all openings with protective caps.
(17) If it is necessary to remove the T2 sensor (17) from the FMU, use your hand to disconnect the electrical connector on the T2 sensor cable from the electrical receptacle (26) on the FMU. If the electrical connector on the T2 sensor (17) is difficult to loosen, do as follows:

NOTE: The use of soft-jaw pliers (padded) is recommended to loosen the electrical connector.

(a) Use soft-jaw pliers and loosen the knurled coupling ring on the electrical connector of the cable.
(b) Use your hand and disconnect the electrical connector from the mating receptacle (26) on the FMU (3).

(18) Use protective caps and cover the electrical connectors.

B. Installation.

(1) Visually inspect T2 sensor (17, Figure 405, sheet 1). If the T2 sensor was removed from the FMU (3), connect the T2 sensor to the electrical receptacle (26) on the FMU (3) as follows:
(a) Remove the protective caps from the electrical connectors.

CAUTION: * DO NOT USE HARD-JAW PLIERS WHEN YOU TIGHTEN THE KNURLED COUPLING RING ON THE ELECTRICAL CONNECTORS. DAMAGE TO THE CABLE ASSEMBLY CAN OCCUR.
* DO NOT LUBRICATE THE ELECTRICAL CONNECTORS. DAMAGE TO THE ELECTRICAL SYSTEM CAN OCCUR.

(b) Use your hand and thread the knurled coupling ring (on the cable connector) onto the mating receptacle connector. If the coupling ring is difficult to thread, do an inspection of the connectors for crossed threads, bent pins, and damaged keys or slots.
(c) Alternately, push the backshell of the cable connector into the receptacle and turn the coupling ring with your hand until the connector is firmly seated into its mating connector (the colored witness line is covered). Tighten the knurled coupling ring to its maximum extent.
(d) If you cannot turn the knurled coupling ring beyond the colored witness line or to its maximum extent, use soft-jaw pliers and turn the knurled coupling ring to fully cover the colored witness line and to tighten the connector to its maximum extent.

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CAUTION: ALL PACKINGS USED IN THE FUEL SYSTEM MUST BE LUBRICATED WITH MOLYKOTE 55M GREASE OR COSMOLUBE GREASE 615.

(2) Install packings (22, 23, 24, 25) on FMU.

CAUTION: BE SURE THAT COUPLING ANTI-ROTATION TAB FALLS BELOW AND AGAINST GEARBOX LUG AT THE 9:00 O'CLOCK POSITION. CLAMP COUPLING BOLT (20) MUST BE POINTING UP TOWARDS THE 12:00 O'CLOCK POSITION.

(3) Install clamp coupling (19) onto FMU mounting flange of accessory gearbox (AGB) (21) so that coupling bolt (20) is pointing toward the 12:00 o'clock position. Loosen coupling bolt (20) until clamp coupling (19) lies inside the three gearbox lugs and against the gearbox.
(4) Wipe seating surface of T2 sensor (17) with a lint-free towel.

CAUTION: T2 SENSOR HAS A LIQUID-FILLED PROBE. DO NOT FORCE OR DENT SENSOR WHEN INSTALLING IT. DENTS IN SENSOR CAN DEVELOP LEAKS AND FUEL-SCHEDULING ERRORS.

CAUTION: * DO NOT DAMAGE PACKINGS WHEN INSTALLING FMU.
* OPERATION OF ENGINE WITH AN IMPROPERLY SEATED FMU CAN CAUSE FAILURE OF THE FMU AND LOSS OF ENGINE POWER. IF ENGINE HAS OPERATED WITH A MISMOUNTED FMU, EVEN IF ONLY A START WAS ATTEMPTED, REPLACE SUSPECTED FMU.

(5) Position FMU (3) near mounting flange on AGB (21) and slide T2 sensor (17) into holster (16) using finger pressure only.

(6) Install FMU (3) onto AGB (21) mounting flange while keeping VG actuator link (13, sheet 1, view A) above the VG actuator shaft (14). Engage splines on FMU with those in AGB. If splines do not align, do one of the following:
  (a) Rotate splines on FMU (3) until splines align with splines on AGB (21).
  (b) Handcrank radial drive shaft at axis "A" on gearbox (72-00-00, SERVICING).
(7) Rotate FMU (3) to align locating pin (27) on FMU with hole in AGB. Packing (22) makes FMU fit tightly in AGB mounting flange.
(8) Firmly seat FMU (3) against AGB (21) mounting flange. Be sure that mating flanges are flush.
(9) Position grooved clamp coupling (19) over FMU and AGB flange. Tighten clamp coupling (19) by rotating clamp coupling bolt (20). Torque bolt to 32 to 35 lb in. (3.6 to 4.0 N.m).
(10) Tighten (60° wrench arc) locknut (18, sheet 2, view B). When locknut is fully torqued it must not contact strap of clamp coupling (19).
(11) Be sure that the FMU is installed correctly. Refer to sheet 2, view B and make the following checks:
  (a) Be sure threads on clamp coupling are visible below flat after tightening.
  (b) Be sure that clamp coupling is seated correctly. Clamp coupling must be parallel to surface of AGB. Gap between clamp coupling and surface of gearbox must be about 0.125 inch (3.18 mm).
  (c) Be sure the FMU mounting flange is flush with AGB mounting flange. Flanges can be seen through inspection hole in clamp coupling.
  (d) Be sure that locknut on clamp coupling does not contact strap.
  (e) If any of these inspections indicate that the FMU is not installed correctly, remove FMU and repeat installation procedure.
(12) Lift latch (15) to secure T2 sensor (17). Be sure that latch has enough tension to seat sensor tightly. If latch is not tight, push down on center of latch.

*** * * FOR CT7-2E1 NOT MODIFIED TO SB 72-0008**

(13) Align link (13, sheet 1, view A) in FMU actuating arm (28) with actuating shaft (14), and re-engage quick-disconnect pin (12). If pin was removed from link assembly, be sure it is installed from thick end of link assembly, as shown in view A.

*** * * FOR CT7-2E1 MODIFIED TO SB 72-0008**

(13) Align link (13, sheet 1, view A) in FMU actuating arm (28) with actuating shaft (14), and install shear bolt (33) and self-locking nut (32). Make sure that the self-locking nut is on the thick side of the clevis. Torque self-locking nut to 32 to 35 lb in. (3.6 to 4.0 N.m).

*** * * FOR CT7-2E1**

(14) Check full FMU actuator rod travel of 1.81 inches (46.0 mm) by using an open-end wrench on flats on actuating shaft to set linkage assembly in fully closed position (FMU actuator rod fully extended (view A)).
(15) Check condition of and, if necessary, replace adapter gasket (29). If adapter gasket is not attached to FMU manifold (9), attach it with a flathead screw. Turn screw just until gasket touches metal-to-metal.
(16) Align FMU manifold (9) to manifold bracket (10). Install bolt (8) and secure manifold (9) to bracket (10). Torque bolt to 45 to 50 lb in. (5.1 to 5.6 N.m).
(17) Install two captive bolts (11) into FMU (3) and secure the FMU manifold (9) to the FMU hand-tight.

WARNING: REFER TO THE PRODUCT LABEL AND THE MANUFACTURER'S (MATERIAL) SAFETY DATA SHEET (SDS) FOR INSTRUCTIONS ON THE HAZARDS, STORAGE, SAFE HANDLING AND PROPER USE OF THIS PRODUCT.

CAUTION: ALL PACKINGS USED IN THE FUEL SYSTEM MUST BE LUBRICATED WITH MOLYKOTE 55M GREASE OR COSMOLUBE GREASE 615.

(18) Install packings (7, 31) onto couplings on gearbox-to-FMU hose assembly (6). Attach gearbox-to-FMU hose assembly (6) to the FMU (3) and the AGB (21). Tighten (60° wrench arc) both coupling nuts on gearbox-to-FMU hose assembly (6).
(19) Install packings (5, 30) onto couplings on the gearbox-from-FMU hose assembly (4). Attach the gearbox-from-FMU hose assembly (4) to the FMU (3) and to the AGB (21). Tighten (60° wrench arc) both coupling nuts on the gearbox-from-FMU hose assembly (4).
(20) Install safety cable between the gearbox-to-FMU (6) and gearbox-from-FMU (4) hose assembly coupling nuts at the FMU and at the gearbox (2 places total). Refer to Figure 405, Sheet 3 and GEK 9250, 70-11-02.
(21) Connect the electrical connectors (1, 2) to the FMU (3) as follows:
  (a) Remove the protective caps from the electrical connectors.

  CAUTION:
  * DO NOT USE HARD-JAW PLIERS WHEN YOU TIGHTEN THE KNURLED COUPLING RING ON THE ELECTRICAL CONNECTORS. DAMAGE TO THE CABLE ASSEMBLY CAN OCCUR.
  * DO NOT LUBRICATE THE ELECTRICAL CONNECTORS. DAMAGE TO THE ELECTRICAL SYSTEM CAN OCCUR.

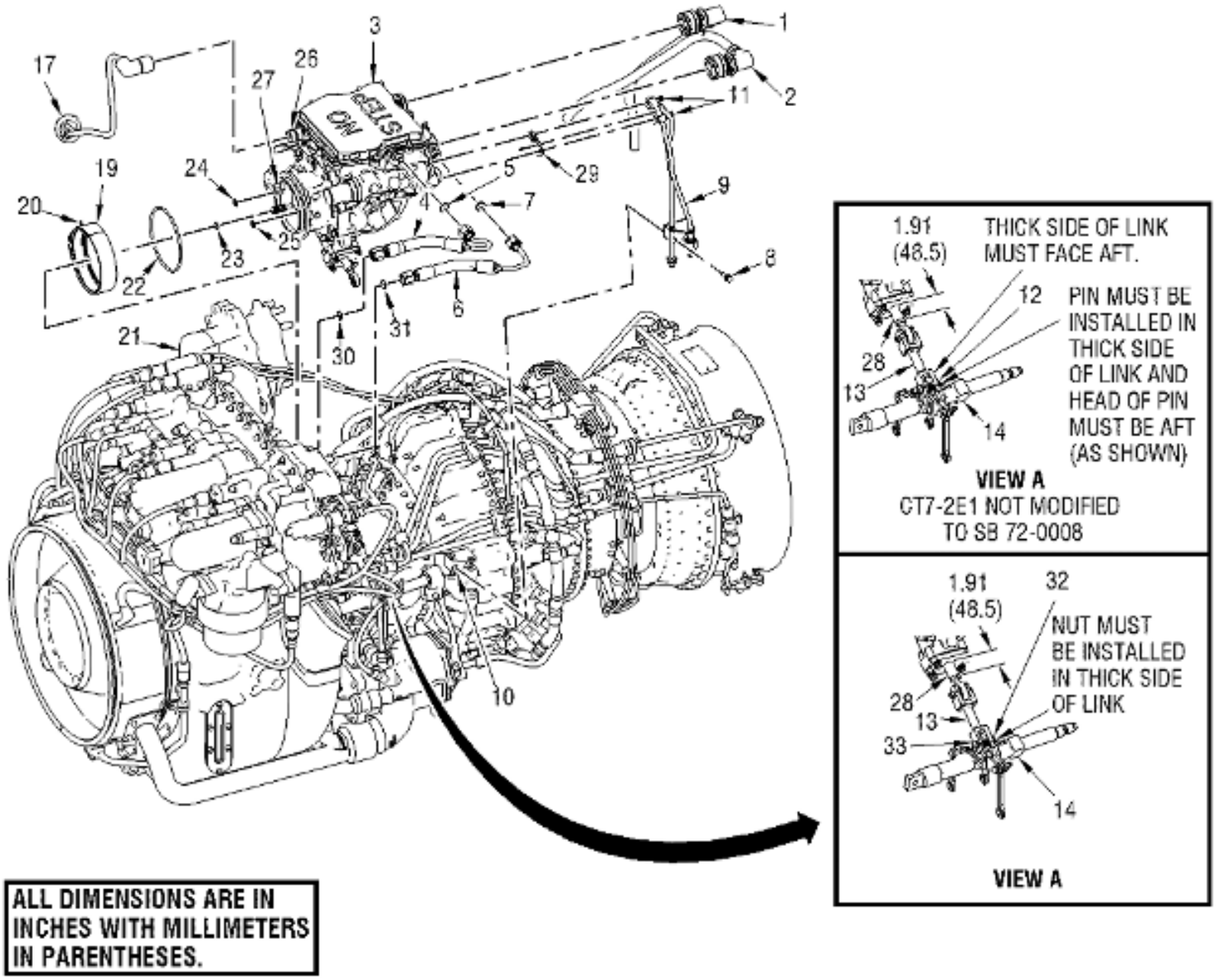
  NOTE: Ensure that the blue cable FMU branch is routed over the Np/Q branch.

  (b) Use your hand and thread the knurled coupling ring (on the cable connector) onto the mating receptacle connector. If the coupling ring is difficult to thread, do an inspection of the connectors for crossed threads, bent pins, and damaged keys or slots.
  (c) Alternately, push the backshell of the cable connector into the receptacle and turn the coupling ring with your hand until the connector is firmly seated into its mating connector (the colored witness line is covered). Tighten the knurled coupling ring to its maximum extent.
  (d) If you cannot turn the knurled coupling ring beyond the colored witness line or to its

maximum extent, use soft-jaw pliers and turn the knurled coupling ring to fully cover the colored witness line and to tighten the connector to its maximum extent.

(22) Do required checks (72-00-00, TEST).

*** * * FOR CT7-2E1**



LEGEND:

1. ELECTRICAL CONNECTOR (GREEN)
2. ELECTRICAL CONNECTOR (BLUE)
3. FMU
4. GEARBOX-FROM-FMU HOSE ASSEMBLY
5. PACKING
6. GEARBOX-TO-FMU HOSE ASSEMBLY
7. PACKING
8. BOLT
9. FMU MANIFOLD
10. BRACKET
11. CAPTIVE BOLTS (QTY 2)
12. QUICK-DISCONNECT PIN
13. LINK
14. ACTUATING SHAFT
17. T2 SENSOR
19. COUPLING
20. BOLT
21. ACCESSORY GEARBOX (AG8)
22. PACKING
23. PACKING
24. PACKING
25. PACKING
26. ELECTRICAL RECEPTACLE
27. LOCATING PIN
28. ACTUATING ARM
29. ADAPTER GASKET
30. PACKING
31. PACKING
32. SELF-LOCKING NUT
33. SHEAR BOLT

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Figure 405 (Sheet 1) Fuel Metering Unit (FMU) - Removal and Installation

*** * * FOR CT7-2E1**

1. Electrical connector (green)
2. Electrical connector (blue)
15. Latch
16. Holster
17. T2 sensor
18. Locknut
19. Coupling
20. Bolt
21. Accessory gearbox (AGB)

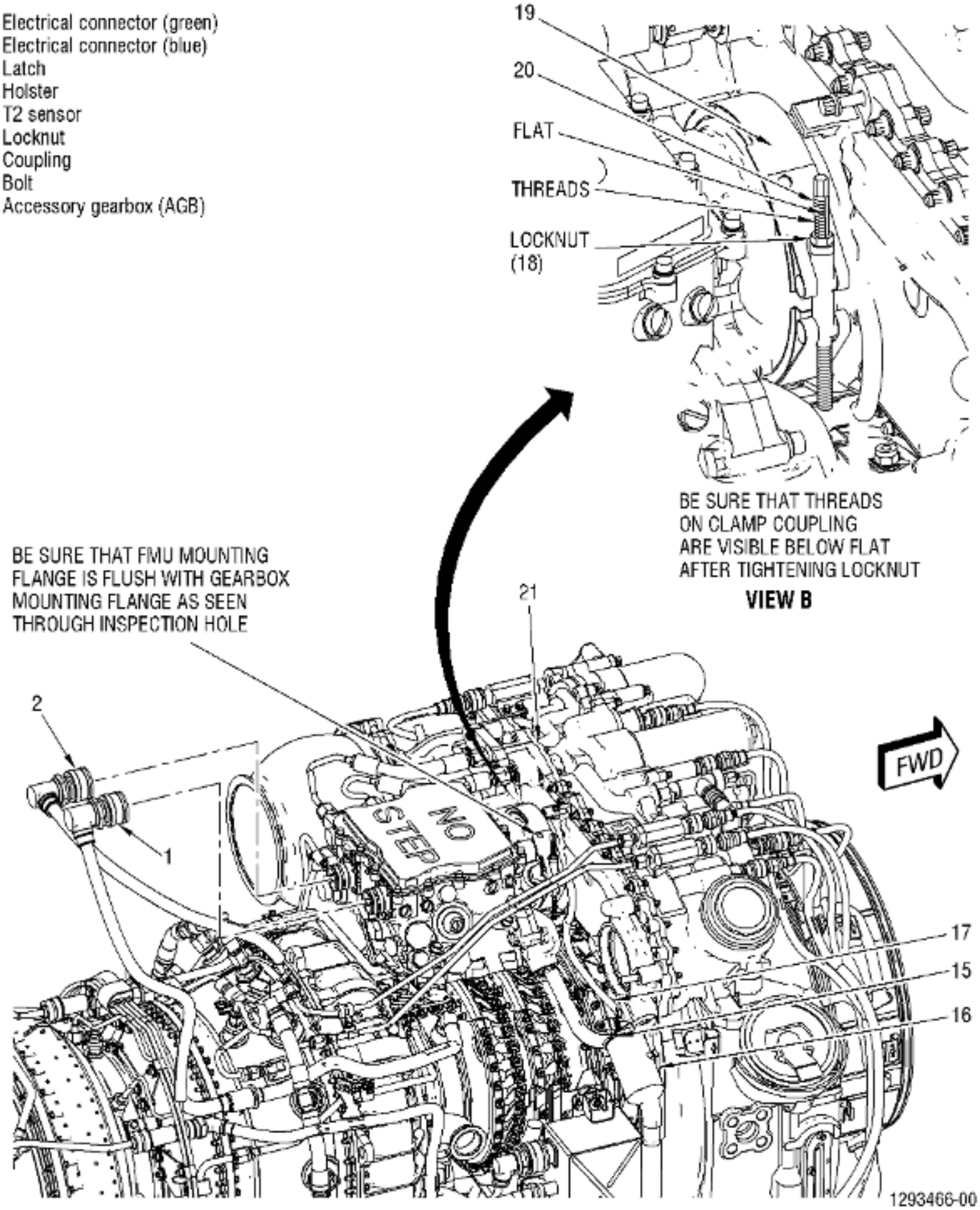


Figure 405 (Sheet 2) Fuel Metering Unit (FMU) - Removal and Installation

*** * * FOR CT7-2E1**

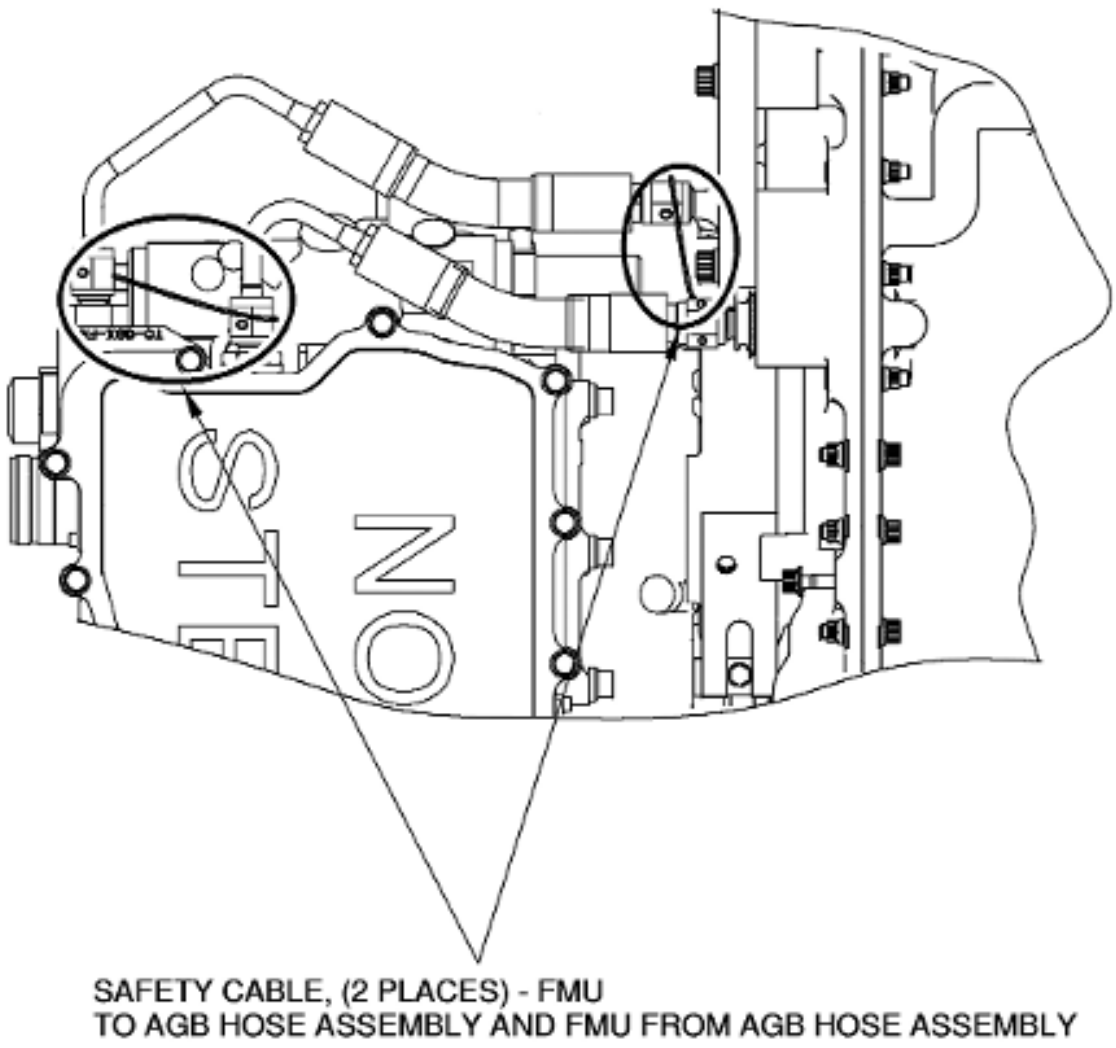


Figure 405 (Sheet 3) Fuel Metering Unit (FMU) - Removal and Installation

6. Fuel Filter.

A. Removal.

WARNING: HANDLING FUEL SYSTEM COMPONENTS IN COLD WEATHER
WHEN REMOVING FUEL SYSTEM COMPONENTS IN COLD WEATHER, WEAR APPROVED GLOVES TO PREVENT FROSTBITE.

CAUTION: DO NOT USE HARD-JAW PLIERS WHEN YOU LOOSEN THE KNURLED COUPLING RING ON THE ELECTRICAL CONNECTOR. DAMAGE TO THE CABLE ASSEMBLY CAN OCCUR.

(1) Use your hand, and disconnect the cable electrical connector (1, Figure 406). If the electrical connector is difficult to loosen, do as follows:

NOTE: The use of soft-jaw pliers (padded) is recommended to loosen the electrical connector.

(a) Use soft-jaw pliers and loosen the knurled coupling ring on the electrical connector of the cable.

(b) Use your hand and disconnect the electrical connector from the mating connector on the fuel filter.

(c) Use protective caps and cover the electrical connectors.

(2) Loosen three captive bolts (3) and remove fuel filter (2).

(3) Remove and discard two packings (4).

B. Installation.

WARNING: REFER TO THE PRODUCT LABEL AND THE MANUFACTURER'S (MATERIAL) SAFETY DATA SHEET (SDS) FOR INSTRUCTIONS ON THE HAZARDS, STORAGE, SAFE HANDLING AND PROPER USE OF THIS PRODUCT.

CAUTION: ALL PACKINGS USED IN THE FUEL SYSTEM MUST BE LUBRICATED WITH MOLYKOTE 55M GREASE OR COSMOLUBE GREASE 615.

(1) Install two packings (4, Figure 406) onto flange of filter.

(2) Position filter on gearbox flange. Tighten three captive bolts (3). Torque bolts to 45 to 50 lb in. (5.1 to 5.6 N.m).

(3) Connect the electrical connector (1) as follows:

(a) Remove the protective caps from the electrical connectors.

CAUTION: * DO NOT USE HARD-JAW PLIERS WHEN YOU TIGHTEN THE KNURLED COUPLING RING ON THE ELECTRICAL CONNECTORS. DAMAGE TO THE CABLE ASSEMBLY CAN OCCUR.

* DO NOT LUBRICATE THE ELECTRICAL CONNECTORS. DAMAGE TO THE ELECTRICAL SYSTEM CAN OCCUR.

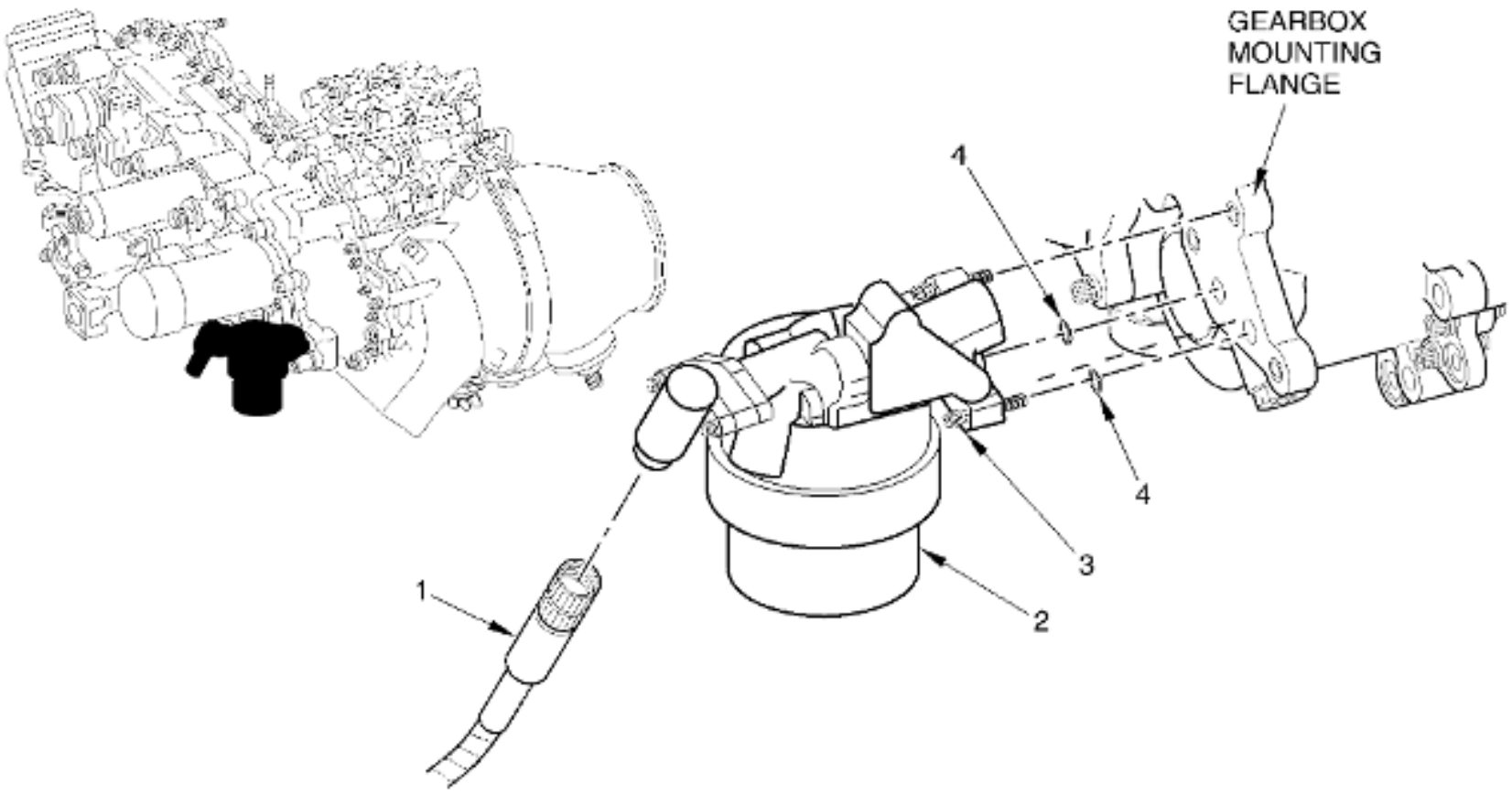
(b) Use your hand and thread the knurled coupling ring (on the cable connector) onto the mating receptacle connector. If the coupling ring is difficult to thread, do an inspection of the connectors for crossed threads, bent pins, and damaged keys or slots.

(c) Alternately, push the backshell of the cable connector into the receptacle, and turn the coupling ring with your hand until the connector is firmly seated onto its mating connector (the colored witness line is covered). Tighten the knurled coupling ring to its maximum extent.

(d) If you cannot turn the knurled coupling ring beyond the colored witness line or to its maximum extent, use soft-jaw pliers and turn the knurled coupling ring to fully cover the colored witness line, and to tighten the connector to its maximum extent.

(4) Do required checks (72-00-00, TEST).

*** * * FOR CT7-2E1**



LEGEND:
1. ELECTRICAL CONNECTOR
2. FUEL FILTER
3. CAPTIVE BOLT (QTY-3)
4. PACKING (QTY-2)

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Figure 406 Fuel Filter - Removal and Installation

7. Fuel Filter Element and Bowl.

A. Removal.

WARNING: HANDLING FUEL SYSTEM COMPONENTS IN COLD WEATHER
WHEN REMOVING FUEL SYSTEM COMPONENTS IN COLD WEATHER, WEAR APPROVED GLOVES TO PREVENT FROSTBITE.

(1) Remove safety wire.

(2) Use a 0.25 inch (6.4 mm) square drive extension and ratchet wrench to break the torque on the fuel filter bowl; then unscrew fuel filter bowl (5, Figure 407).

(3) Remove filter element (4).

(4) Discard two packings (3).

(5) Remove and discard two packings (1, 2) from fuel filter bowl (5).

B. Installation.

WARNING: REFER TO THE PRODUCT LABEL AND THE MANUFACTURER'S (MATERIAL) SAFETY DATA SHEET (SDS) FOR INSTRUCTIONS ON THE HAZARDS, STORAGE, SAFE HANDLING AND PROPER USE OF THIS PRODUCT.

CAUTION: ALL PACKINGS USED IN THE FUEL SYSTEM MUST BE LUBRICATED WITH MOLYKOTE 55M GREASE OR COSMOLUBE GREASE 615.

(1) Install two packings (3, Figure 407) on filter element (4).

(2) Install two packings (1, 2) in grooves in fuel filter bowl (5).
(3) Place filter element (4) into fuel filter bowl (4).
(4) Screw filter bowl (5) into filter head. Tighten bowl handtight.
(5) Safety wire filter bowl, using 0.032 inch (0.81 mm) safety wire.
(6) Do required checks (72-00-00, TEST).

*** * * FOR CT7-2E1**

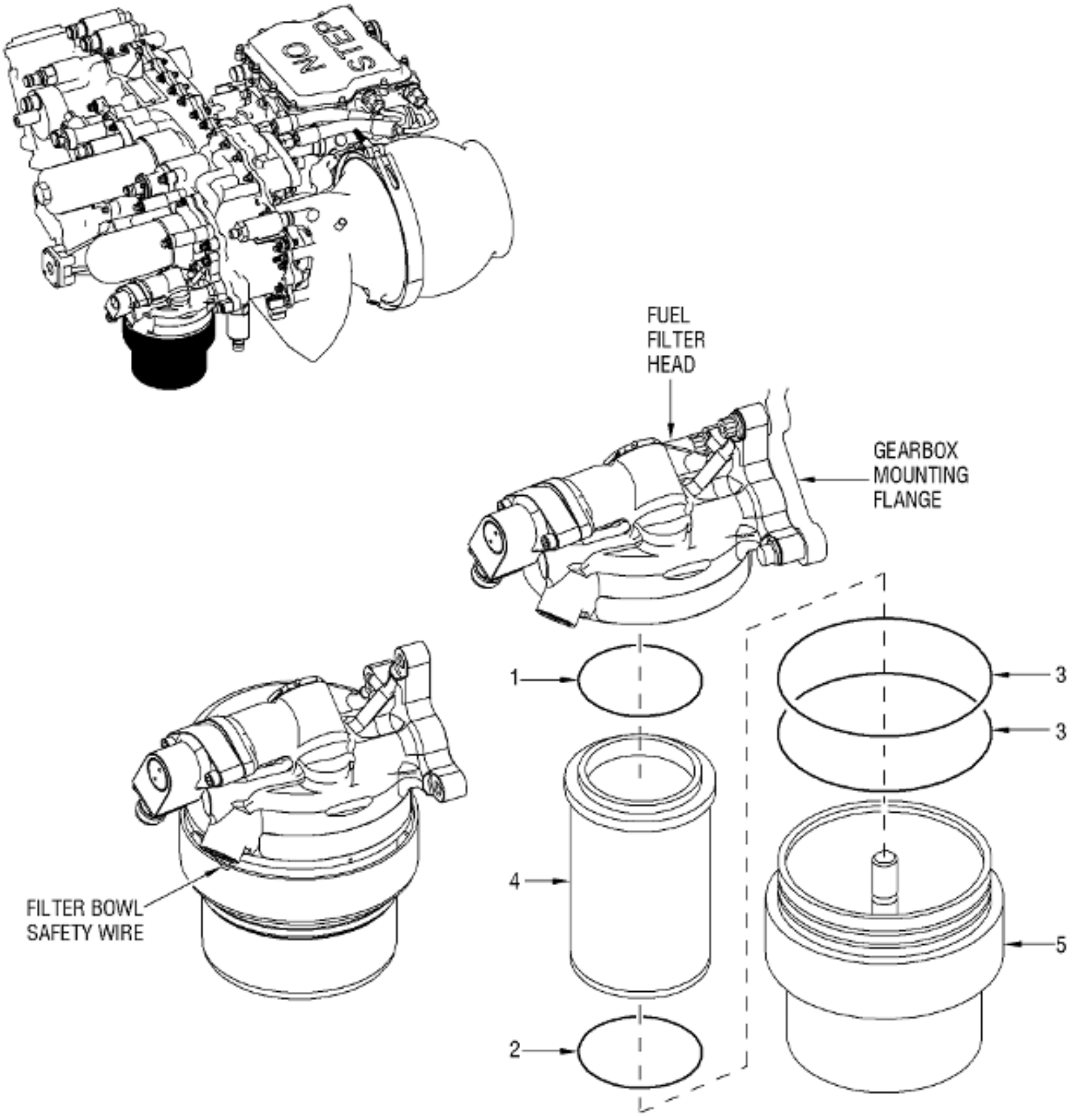


Figure 407 Fuel Filter Element and Bowl - Removal and Installation

*** * * FOR CT7-2E1 NOT MODIFIED TO SB 72-0013**

8. Fuel Pressure Switch.
A. Removal.

CAUTION: DO NOT USE HARD-JAW PLIERS WHEN YOU LOOSEN THE KNURLED COUPLING RING ON THE ELECTRICAL CONNECTOR. DAMAGE TO THE CABLE ASSEMBLY CAN OCCUR.

(1) Use your hand, and disconnect the electrical connector (4, Figure 408). If the electrical connector is difficult to loosen, do as follows:

NOTE: The use of soft-jaw pliers (padded) is recommended to loosen the electrical connector.

(a) Use soft-jaw pliers and loosen the knurled coupling ring on the electrical connector of the cable.

(b) Use your hand and disconnect the electrical connector from the mating connector on the fuel pressure switch (3).

(c) Use protective caps and cover electrical connectors.

WARNING: HANDLING FUEL SYSTEM COMPONENTS IN COLD WEATHER

WHEN REMOVING FUEL SYSTEM COMPONENTS IN COLD WEATHER, WEAR APPROVED GLOVES TO PREVENT FROSTBITE.

(2) Remove switch (3) from accessory gearbox (1).

(3) Remove and discard packing (2).

B. Installation.

WARNING: REFER TO THE PRODUCT LABEL AND THE MANUFACTURER'S (MATERIAL) SAFETY DATA SHEET (SDS) FOR INSTRUCTIONS ON THE HAZARDS, STORAGE, SAFE HANDLING AND PROPER USE OF THIS PRODUCT.

CAUTION: ALL PACKINGS USED IN THE FUEL SYSTEM MUST BE LUBRICATED WITH MOLYKOTE 55M GREASE OR COSMOLUBE GREASE 615.

(1) Install packing (2, Figure 408) onto fuel pressure switch (3).

(2) Thread switch into accessory gearbox (1), handtight.

(3) Tighten (15° wrench-arc) switch (3).

(4) Connect the green cable electrical connectors (4) to switch (3) as follows:

(a) Remove the protective caps from the electrical connectors.

CAUTION: * DO NOT USE HARD-JAW PLIERS WHEN YOU TIGHTEN THE KNURLED COUPLING RING ON THE ELECTRICAL CONNECTORS. DAMAGE TO THE CABLE ASSEMBLY CAN OCCUR.

* DO NOT LUBRICATE THE ELECTRICAL CONNECTORS. DAMAGE TO THE ELECTRICAL SYSTEM CAN OCCUR.

(b) Use your hand and thread the knurled coupling ring (on the cable connector) onto the mating receptacle connector. If the coupling ring is difficult to thread, do an inspection of the connectors for crossed threads, bent pins, and damaged keys or slots.

(c) Alternately, push the backshell of the cable connector into the receptacle, and turn the coupling ring with your hand until the connector is firmly seated onto its mating connector (the colored witness line is covered). Tighten the knurled coupling ring to its maximum extent.

(d) If you cannot turn the knurled coupling ring beyond the colored witness line or to its maximum extent, use soft-jaw pliers and turn the knurled coupling ring to fully cover the colored witness line, and to tighten the connector to its maximum extent.

(e) Do required checks (72-00-00, TEST).

*** * * FOR CT7-2E1 NOT MODIFIED TO SB 72-0013**

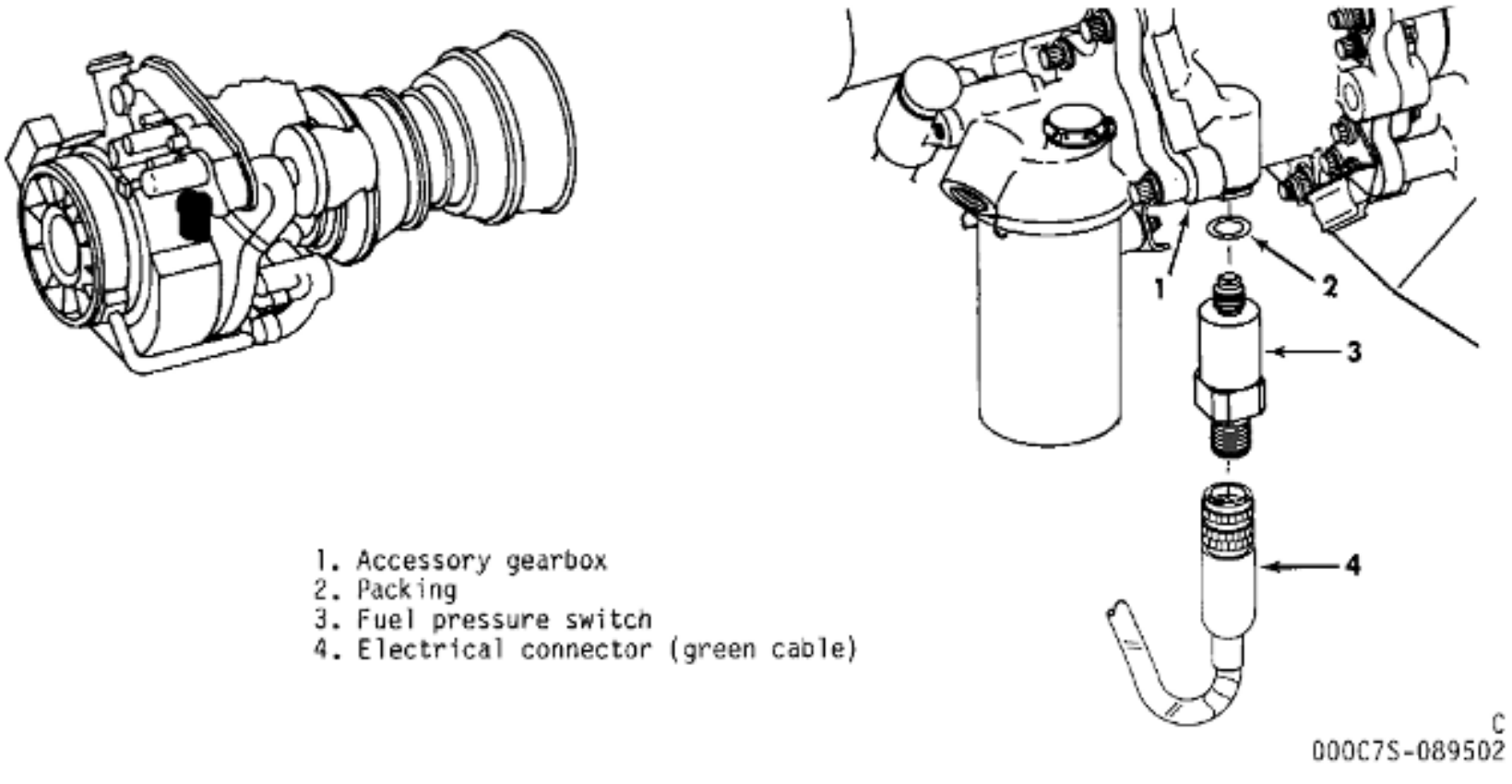
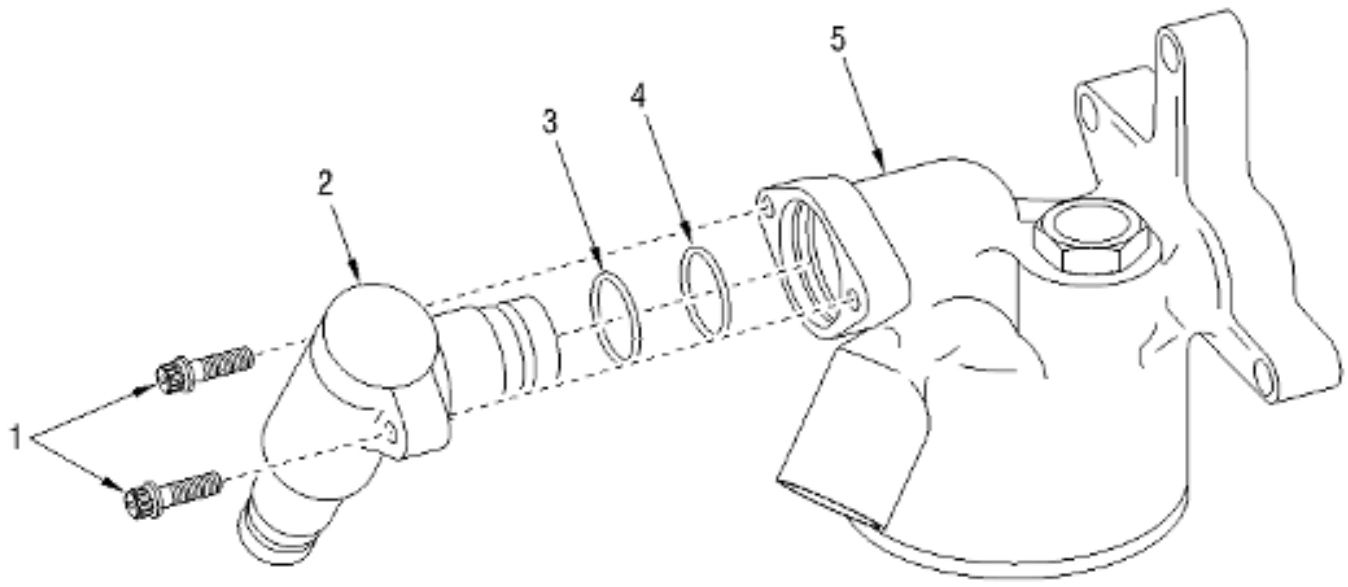


Figure 408 Fuel Pressure Switch - Removal and Installation

*** * * FOR CT7-2E1**

9. Differential Pressure Switch.
   A. Removal.
      (1) Remove two capscrews (1, Figure 409), and remove the differential pressure switch (2) from the fuel filter head (5).
      (2) Remove and discard the packings (3, 4).
   B. Installation.
      WARNING: REFER TO THE PRODUCT LABEL AND THE MANUFACTURER'S (MATERIAL) SAFETY DATA SHEET (SDS) FOR INSTRUCTIONS ON THE HAZARDS, STORAGE, SAFE HANDLING AND PROPER USE OF THIS PRODUCT.
      CAUTION: ALL PACKINGS USED IN THE FUEL SYSTEM MUST BE LUBRICATED WITH MOLYKOTE 55M GREASE OR COSMOLUBE GREASE 615.
      (1) Install new packings (3, 4) onto the new differential pressure switch (2).
      (2) Install two capscrews (1). Cross-tighten the capscrews until the differential pressure switch (2) is seated. Torque the capscrews to 13-15 lb in. (1.5-1.7 N.m).

*** * * FOR CT7-2E1**



LEGEND:
1. CAPSCREWS
2. DIFFERENTIAL PRESSURE SWITCH
3. PACKING (PN J228P908)
4. PACKING (PN J228P014)
5. FILTER HEAD

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Figure 409 Differential Pressure Switch - Removal and Installation