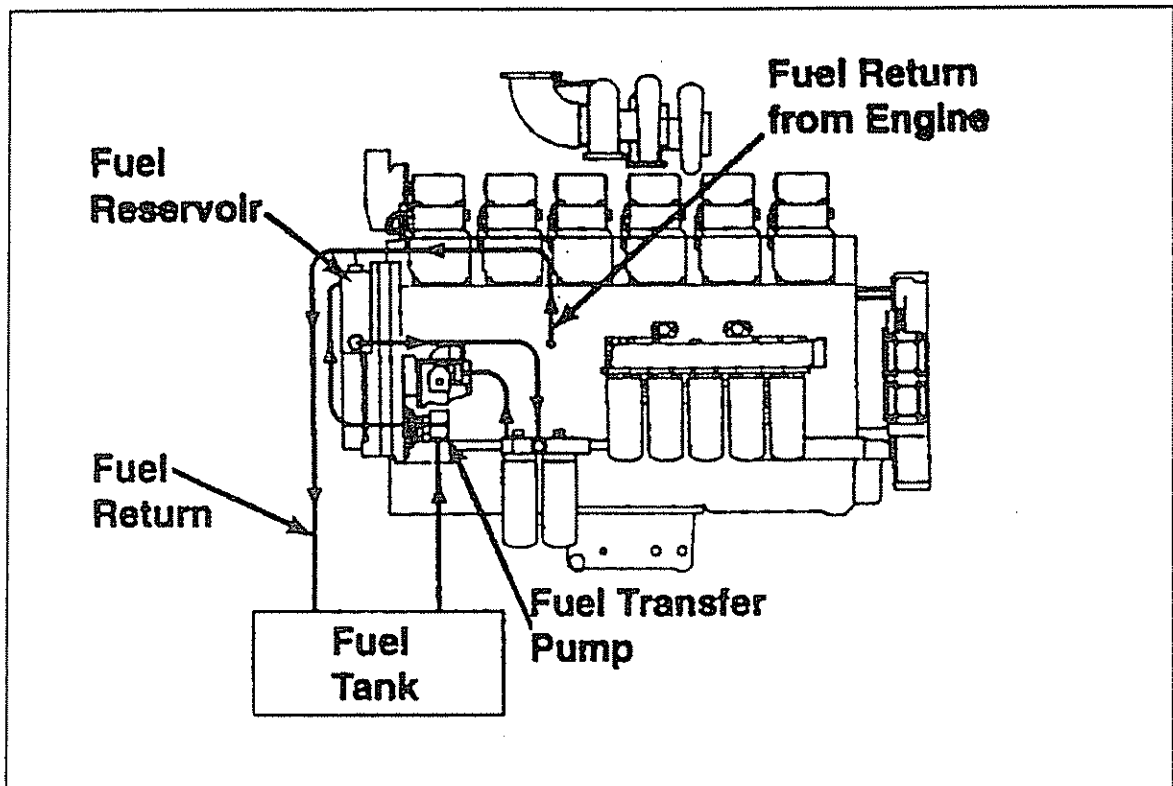




**Instructions for Installation of
Cummins Mechanical Fuel Transfer Pump Kit
for all KTA38 and KT(T)A50 Generator Drive Engines**



Instructions for Installation of Cummins Mechanical Fuel Transfer Pump Kit for all KTA38 and KT(T)A50 Generator Drive Engines

CAUTION!! *Disconnect battery charger from AC source before disconnecting battery cables. Otherwise, disconnecting cables can result in voltage spikes damaging to DC control circuits of the set.*

1. Disconnect the battery charger (if applicable). Remove all electrical supply sources.

WARNING!! *Accidental starting of the generator set while working on it can cause severe personal injury or death. Prevent accidental starting by disconnecting the starting battery cables (negative (-) first).*

Ventilate battery area before servicing battery. Arcing can ignite explosive hydrogen gas given off by batteries, causing severe personal injury. Always remove negative (-) cable first and reconnect it last. Make certain hydrogen from battery, engine fuel and other explosive fumes are fully dissipated. This is especially important if battery has been connected to battery charger.

2. Disconnect the generator set starting battery cable(s). Disconnect the negative (-) cable(s) first to reduce the risk of arcing.

Installation of Adjustable End Fittings

Use the following procedure for installation of adjustable end elbow and tee fittings.

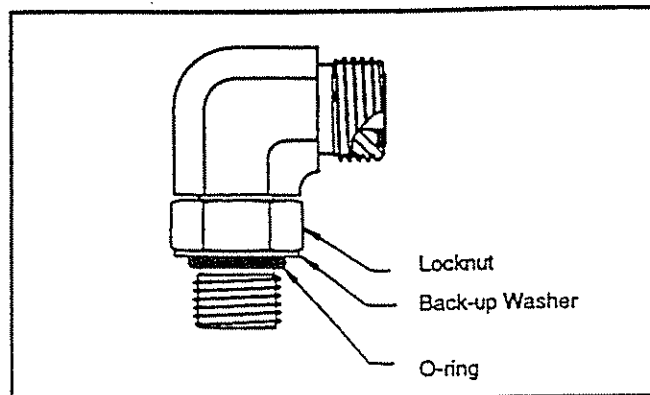
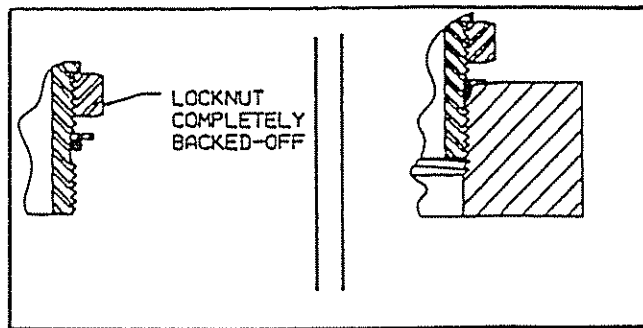


FIGURE 1. ADJUSTABLE END FITTING

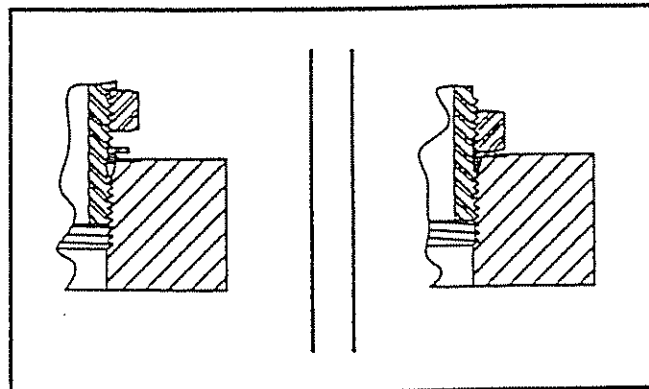
- a. Inspect to ensure that both mating parts are free of burrs, nicks, scratches or any foreign particles.
- b. Install O-ring on port end of fitting, if it is not pre-installed, taking care not to nick the O-ring.

- c. Lubricate O-ring with a light coat of vegetable or compatible oil.



**FIGURE 2. LOCKNUT BACKED OFF PRIOR TO ASSEMBLY/
THREADED INTO PORT UNTIL BACK-UP WASHER CONTACTS PORT FACE**

- d. Back off the lock nut as far as possible. Make sure back-up washer is not loose and is pushed up as far as possible.
- e. Screw fitting into port until the back-up washer contacts the face of the port. Light wrenching may be necessary.



- f. To align the tube end of the fitting to accept incoming tube or hose assembly, unscrew by required amount, but no more than one full turn.
- g. Using two wrenches hold fitting in desired position and tighten locknut to appropriate torque (as stated in later steps).
- h. Inspect to ensure that O-ring is not pinched and back-up washer seats flat on face of port.

NOTE:

- Inspect all fuel hose O-ring face seals (ORFS) to ensure O-ring is properly seated in fitting groove and is not cut or nicked.

- Inspect to ensure all mating parts are free of burrs, nicks, scratches or any foreign particles.

Special Tools Required

- A narrow head 1-1/2 inch wrench, 0.50 inch thick or less, is required for the locknut on the shutoff valve. Otherwise, the shutoff valve must be screwed outward one turn prior to tightening the locknut to provide wrench clearance.
- A crowfoot wrench may be required when tightening the two 45 degree elbow fittings located on the bottom of the fuel reservoir. A 1-5/8 inch crowfoot fits the #16 fitting locknut and a 1-3/8 inch crowfoot fits the #12 fitting locknut.

The fuel transfer pump drive must be mounted on the rear side of the KV front gear housing and both front and rear cover plates must be removed. The rear cover is located on the right bank of the engine directly below the water pump. The front cover is opposite the rear cover directly below the alternator drive pulley.

Installation of the Fuel Transfer Pump

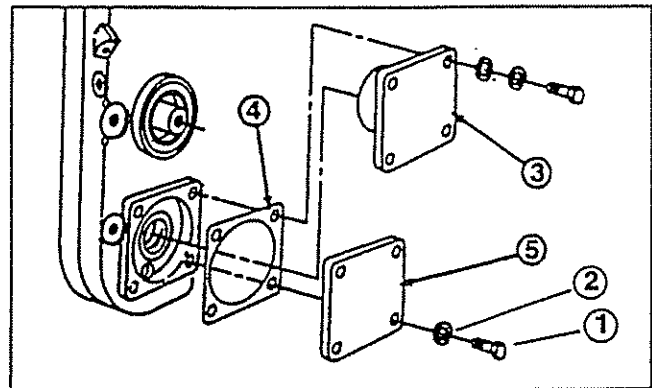


FIGURE 4. FRONT COVER PLATE REMOVAL

WARNING!! Diesel fuel is highly combustible. Spilled fuel can cause loss of life and property. Keep cigarettes, flames, pilot lights, sparks, arcing switches and equipment and other sources of ignition well away from fuel.

1. Remove four capscrews (1) and washers (2) from cover plate (3). Retain capscrews and washers.
2. Remove cover plate (3) and gasket (4) and discard.
3. Install new gasket (4) P/N 206407 and new cover plate (5) P/N 206405 on front gear cover using retained capscrews (1) and washers (2). Torque capscrews to 40 ft-lbs.

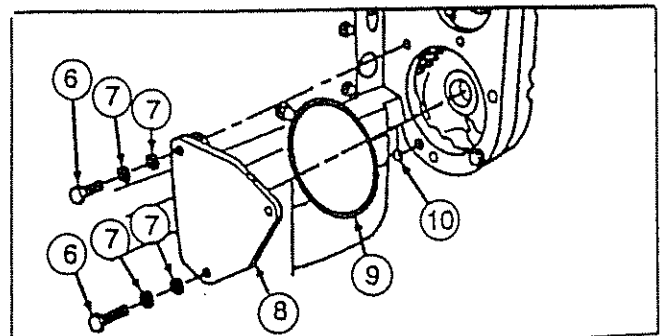


FIGURE 5. REAR COVER PLATE REMOVAL

4. Remove three capscrews (6), washers (7), O-rings (9) and (10) and cover plate (8) from engine gear housing. Note location of shortest capscrew and retain hardware.

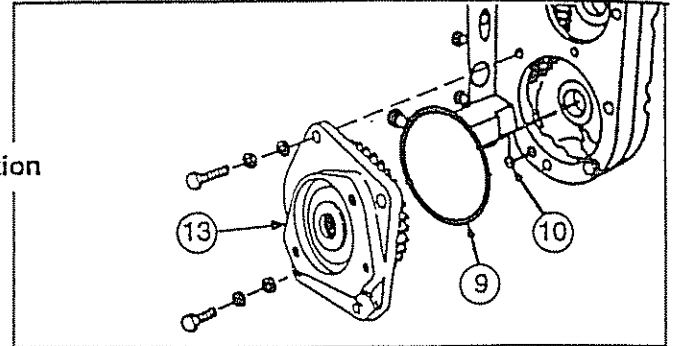


FIGURE 6. Fuel Transfer Pump Drive Gear Assembly Installation

5. Using vegetable oil, lubricate new small O-ring (10) P/N 3818885 and install in counterbore of engine gear housing.
6. Using vegetable oil, lubricate new large O-ring (9) P/N 145600 and install in counterbore of pump drive (13) P/N AR45023.
7. Install pump drive (13) in rear of engine gear housing using capscrews and washers retained in Step 4. Ensure shortest capscrew is installed in hole closest to the engine block. Torque capscrews to 40 ft-lbs.

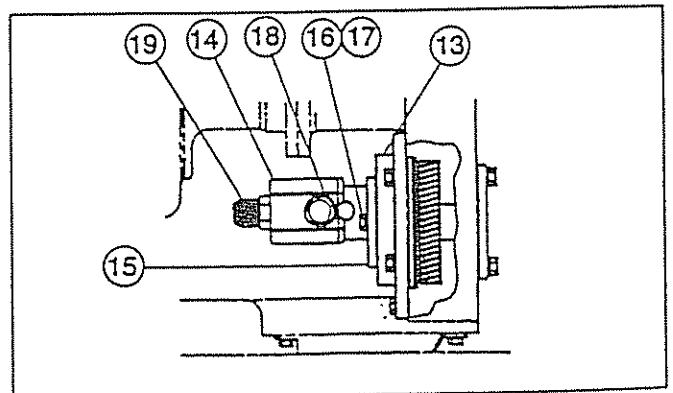


FIGURE 7. FUEL TRANSFER PUMP INSTALLATION

8. Install fuel transfer pump (14) P/N 3631035 and new gasket (15) P/N 154916 on pump drive (13) using capscrews (16) P/N S-112 and washers (17) P/N S-604. Torque capscrews to 30 ft-lbs.
9. Using vegetable oil, lubricate O-ring and install ORFS fitting (18) P/N 3631096 on fuel transfer pump outlet port. Torque fitting to 100 ft-lbs.
10. Using vegetable oil, lubricate O-ring and install flare fitting (19) P/N 3631109 on fuel transfer pump inlet port. Torque fitting to 100 ft-lbs.

- * *The numbers in parentheses correspond with the reference numbers in Figures 10 and 11.*

Installation of the Hose Brackets

1. Remove two capscrews (1) and washers from oil pan and retain capscrews. Install hose bracket (2) P/N 3631028 using retained capscrews (1) without washers. Tighten capscrews to 45 ft-lbs.
2. Repeat procedure for other hose bracket.

Installation of the Fuel Reservoir

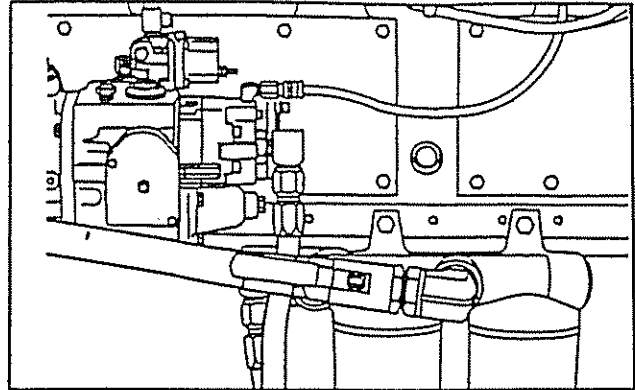
The fuel reservoir is mounted on the front of the KV front gear cover, left bank side of the engine. Four capscrews are used to fasten the reservoir to the gear cover plate.

1. Remove two upper capscrews (3) and washers (4) from front gear cover plate and discard.
2. Remove and retain the two lower capscrews (5) and washers (3) from the gear cover.
3. Install the fuel reservoir (6) on the gear cover using the two old capscrews (5) in the lower holes and the new capscrews (3) P/N 108708 and washers (4) P/N S-610 in the upper holes. Torque the capscrews to 45 ft-lbs.
4. Using vegetable oil, lubricate O-ring and install 45 degree elbow (7) P/N 3631102. Do not torque fitting locknut at this time.
5. Install the 90 degree elbow end of fuel hose (8) P/N 3631098 onto the fuel transfer pump outlet fitting and torque to 100 ft-lbs.
6. Install the other end of the hose (8) onto the fuel reservoir 45 degree elbow and orient the fitting to ensure that the hose does not contact the gear cover. Torque the locknut to 100 ft-lbs and the hose fitting to 100 ft-lbs.
7. Secure fuel hose to oil pan hose brackets using two hose clamps (9) P/N 218052 and capscrews (10) P/N S-181-B. Slide the hose in the clamps to ensure the hose does not contact the lower radiator tube. Tighten the hose clamps to 20 ft-lbs.
8. Torque 90 degree elbow end of fuel hose to 100 ft-lbs.
9. Orient the 45 degree elbow (7) on fuel reservoir to ensure that the hose does not contact the engine front gear cover.
10. Torque locknut on fuel reservoir 45 degree elbow (7) to 100 ft-lbs.

11. Torque fuel hose fitting on fuel reservoir 45 degree elbow to 100 ft-lbs.
12. Remove fuel supply hose from engine fuel filter head and from customer's fuel supply.
13. Remove the inlet fitting from the fuel filter head and discard.

The filter head must be located in the engine block holes as shown in Figure 8. Move the filter head to the correct location if necessary.

FIGURE 8. FILTER HEAD LOCATION



14. Install the 90 degree elbow (12) P/N 3631107 into the fuel filter head per the diagram. Do not torque the elbow locknut at this time.
15. Using vegetable oil, lubricate the O-ring on the fuel shutoff valve (11) P/N 3631106 and install the valve into the 90 degree elbow (12). The 90 degree elbow must be pointed downward to spin valve. Orient the elbow and valve assembly so that the valve handle faces outboard and torque the locknut to 100 ft-lbs.

NOTE: Do not leave the shutoff valve closed.

16. Using vegetable oil, lubricate the O-ring on the 45 degree elbow (13) P/N 3631100 and install the fitting into the fuel reservoir. Do not torque the fitting locknut at this time. Note that the lower fuel reservoir capscrew is obstructed by the fitting.
17. Install the male end of fuel hose (14) P/N 3631099 into the fuel shutoff valve (11) and torque to 100 ft-lbs.
18. Install the other end of the hose (14) onto the fuel reservoir 45 degree elbow and orient the fitting for the best fit. Torque the locknut to 100 ft-lbs and the hose fitting to 100 ft-lbs.
19. Torque locknut on 90 degree elbow (12) to 100 ft-lbs.

20. Remove and retain the lower outside capscrew from the fuel pump support. Position the hose bracket (15) P/N 3631015 with the weld nut portion of the bracket pointing toward the front of the generator set and install the retained capscrew. Do not tighten the bracket capscrew at this time.

The hoses should be situated so the large hose is on the top and small hose is on the bottom.

21. Position hose clamp (16) P/N 67949 around fuel hose (14) and hose clamp (17) P/N 218052 around fuel hose (8).
22. Secure hose clamp (16) and hose clamp (17) to hose bracket (15) using capscrew (18) P/N S-112.
23. Adjust the location of the clamps and bracket for the best fit and tighten capscrews. Torque bracket capscrew to 45 ft-lbs and clamp capscrew to 20 ft-lbs.
24. Using vegetable oil, lubricate the O-ring on the tee fitting (19) P/N 3631103 and install the fitting into the side port of the fuel reservoir. Orient the fitting toward the rear of the generator set. Do not torque the fitting locknut at this time.
25. Remove fuel return hose from engine fuel return port and customer's fuel return piping.
26. Install the flare fitting end of the fuel hose (20) P/N 3631105 onto the engine fuel return port straight fitting and the ORFS fitting end onto the tee fitting (19). Torque the flare end fitting to 45 ft-lbs and the ORFS end fitting to 100 ft-lbs. The hose can be deformed if twisted during assembly and could affect engine return fuel flow. Loosen one of the connections if necessary and rotate the hose to remove any kinks.
27. Remove and retain two capscrews from the aftercooler housing and install two hose clamps (21) P/N 218052 around fuel hose (20) (Figure 9). Torque the capscrews to 35 ft-lbs.

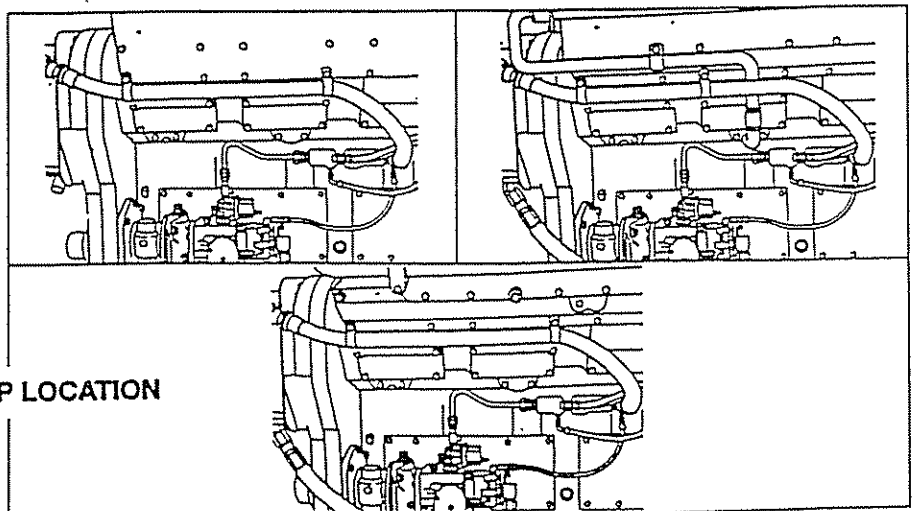


FIGURE 9. RETURN HOSE CLAMP LOCATION

28. Torque the tee fitting locknut (19) to 100 ft-lbs.

Installation of the Engine Fuel Supply Line

1. Apply thread sealant to a 3/8 inch pipe plug and install into the fuel strainer P/N 3631115.
2. Apply thread sealant to the 1 inch pipe threads of the fuel strainer and install the strainer onto the customer's fuel supply piping. Torque to 70 ft-lbs.
3. Apply thread sealant to the 1 inch pipe threads of the fuel inlet hose P/N 3631114 and install onto the strainer. Torque to 70 ft-lbs.
4. Install 90 degree elbow fitting end of fuel inlet hose P/N 3631114 onto the fuel transfer pump fitting. Torque fuel hose fitting on fuel transfer pump to 100 ft-lbs.

Installation of the Engine Fuel Return Line

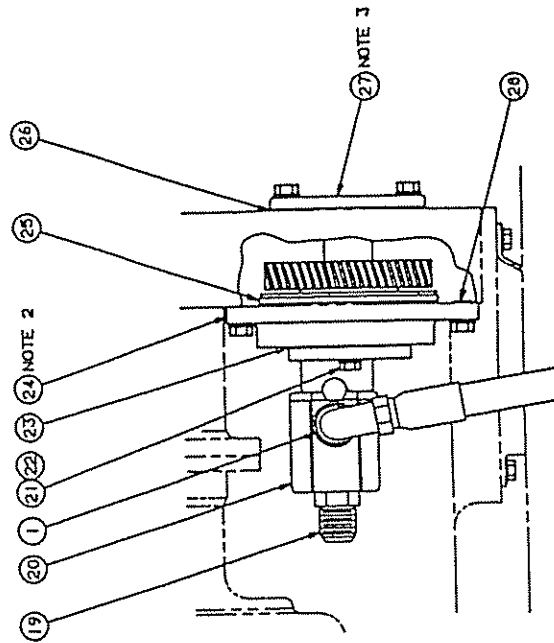
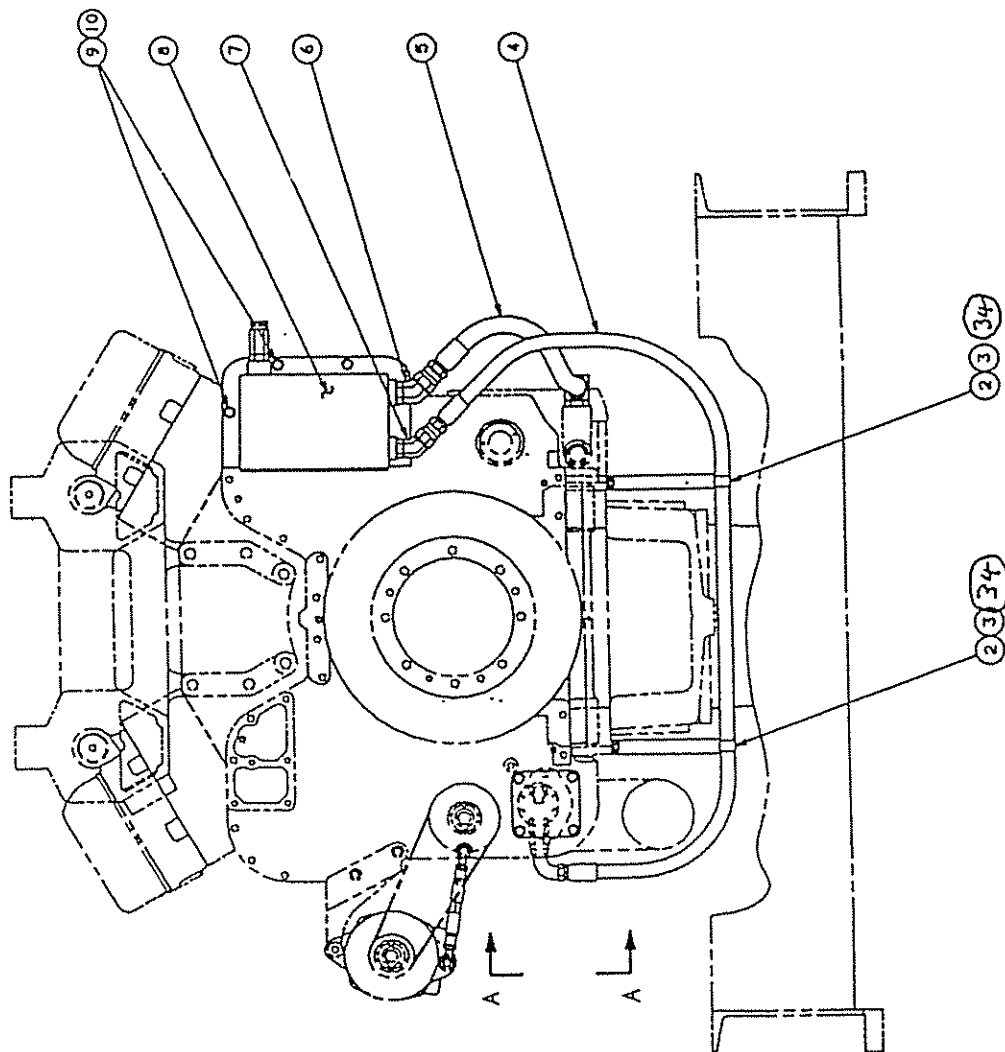
1. Apply thread sealant to the 3/4 inch pipe thread end of the fuel return hose P/N 3631113 and install the hose onto the customer's fuel return piping. Torque to 55 ft-lbs.
2. Install the ORFS fitting end of the hose onto the fuel reservoir tee fitting. Torque to 100 ft-lbs.

Preparation for Service

1. Reconnect the generator set battery charger (if applicable) and cables, negative battery cable last.
2. Ensure fuel shutoff valve is open.
3. Start the set and check fuel system for leaks.
4. Stop the set and repair any fuel system leaks immediately.

POSITIVE HEAD FUEL TRANSFER SYSTEM - PARTS LIST

REF	QTY	ID	CUMMINS P/N	CUMMINS MOUNT NAME	COMMENTS	FUNCTION
1	1	121-1	3631098	UNION, MALE	ID 15-1 P/N = 3631097, 'O' RINGS P/N 3040817 & 3086234	TRANSFER PUMP OUTLET
2	2	15-1	S 101 B	SCREW, HEX HD CAP		HOSE CLIPS TO OIL PAN BRACKETS
3	5	10	210652	CLIP		TRANS PUMP TO RESERVOIR HOSE TO BRACKET (2) & PUMP SUPPORT (1). FUEL BLOCK TO RESERVOIR HOSE TO INT MFLD (2)
4	1	13	3631098	HOSE, FLEXIBLE		TRANS PUMP TO RESERVOIR
5	1	13	3631099	HOSE, FLEXIBLE		RESERVOIR TO FILTER HEAD SHUT OFF VALVE
6	121-1	121-1	3631100	ELBOW, MALE UNION	ID 15-1 P/N = 3631101, 'O' RINGS P/N 3201585 & 3631205	RESERVOIR OUTLET TO FILTER HEAD S.O.V.
7	121-1	121-1	3631102	ELBOW, MALE UNION	ID 15-1 P/N = 3086041, 'O' RINGS P/N 3040813 & 3086234	INLET TO RESERVOIR FROM TRANS PUMP
8	1	13	3631017	RESERVOIR, FUEL		RESERVOIR TO GEAR COVER
9	2	15-1	108706	SCREW, HEX HD CAP	USED WITH ITEM 9	RESERVOIR TO GEAR COVER
10	2	15-1	S 810	WASHER, LOCK		RESERVOIR OUTLET TO DRAIN
11	1	121-1	3631103	TEE, MALE UNION	ID 15-1 P/N = 3631104, 'O' RINGS P/N 3086234 X 2 & 3046943	RESERVOIR TO FILTER HOSE TO GEAR COVER
12	1	10	67949	CLIP		FUEL BLOCK TO RESERVOIR
13	1	13	3631105	HOSE, FLEXIBLE		TRANSFER PUMP TO RESERVOIR HOSE TO OIL PAN BRACKET
14	2	13	3631028	BRACKET, FUEL PLUMBING		CAUTION DECAL ATTACHES TO SHUT-OFF VALVE
15	1	10	3631239	DECAL		FUEL PUMP SUPPORT BRACKET
16	1	13	3631015	BRACKET, FUEL PLUMBING		FUEL FILTER HEAD SHUT OFF VALVE
17	1	15-1	3631238	VALVE, SHUTOFF	ID 15-1 P/N 3631108, 'O' RING P/N 3201585	SHUT OFF VALVE TO FUEL FILTER HEAD
18	121-1	121-1	3631107	ELBOW, PLAIN UNION	ID 15-1 P/N = 3631108, 'O' RING P/N 3201585	INLET TO TRANSFER PUMP
19	121-1	121-1	3631109	UNION, MALE	ID 15-1 P/N = 3631110, 'O' P/N 3040817	TRANSFER PUMP TO HYDRAULIC DRIVE (2). HOSE CLIPS TO FUEL PUMP SUPPORT BRACKET (1)
20	1	15-1	3631035	PUMP, FUEL TRANSFER		TRANSFER PUMP TO HYDRAULIC DRIVE (2)
21	3	15-1	S 112	SCREW, HEX HD CAP		TRANSFER PUMP TO HYDRAULIC DRIVE
22	2	15-1	S 604	WASHER, LOCK		HYDRAULIC DRIVE TO GEAR HOUSING
23	1	10	154916	GASKET, HYDRAULIC PUMP		FRONT HYDRAULIC COVER
24	121-2	121-2	AR45023	DRIVE, HYDRAULIC PUMP		FRONT HYDRAULIC COVER
25	1	15-1	3018845	SEAL, O RING		LUBE OIL TO DRIVE 'O' RING
26	1	10	208407	GASKET, HAND HOLE		CAP FOR RESERVOIR OUTLET TEE
27	1	10	208405	PLATE, COVER		CAP FOR TRANSFER PUMP INLET UNION
28	1	15-1	145600	SEAL, O RING		RESERVOIR TO CUSTOMERS DRAIN
29	1	15-1	3631111	CAP, PIPE		INLET TO TRANSFER PUMP
30	1	15-1	3631112	CAP, PIPE		HOSE CLIPS TO OIL PAN BRACKET(S)2). TRANSFER PUMP TO HYDRAULIC DRIVE (2). HOSE CLIPS TO FUEL PUMP SUPPORT BRACKET (1)
31	1	13	3631113	HOSE, FLEXIBLE		STRAINER TO TRANSFER PUMP INLET HOSE
32	1	13	3631114	HOSE, FLEXIBLE		
33	1	15-1	3631115	STRAINER, FUEL		
34	5	15-1	S 602	WASHER, PLAIN	USED WITH ITEM 2 & 21	
35	121-1	121-1	3631216	UNION MALE	ID 15 P/N 3631220, 'O' RING P/N 3631205	
36	1	21-5	3631252	KIT, FUEL TRANSFER	KIT FOR SERVICE	
37	1	73	3084090	FUEL TRANSFER KIT INSTRUCTION	INSTALLATION INSTRUCTIONS	



SECTION A-A
SCALE: .50

NOTE:

1. USE EXISTING HARDWARE.
2. REMOVE EXISTING COVER AND O-RINGS, AND DISCARD. REPLACE WITH DRIVE-HYDRAULIC PUMP (ITEM 24) AND O-RINGS (ITEMS 25 & 26). REUSE EXISTING HARDWARE PLACING SHORTEST SCREW IN HOLE CLOSEST TO ENGINE BLOCK.
3. REMOVE EXISTING COVER AND GASKET, AND DISCARD. REPLACE WITH GASKET (ITEM 26) AND COVER (ITEM 27) REUSING EXISTING HARDWARE.
4. LEAVE WASHER OFF AND REUSE CAPSCREWS.
5. FIELD SERVICE KITS EXIST WHICH USE THE SAME COMPONENTS.
6. INSTALL TAG (ITEM) DURING SHUTOFF VALVE ASSEMBLY.

