

480C LOADER BACKHOE

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AND

SERVICE MANUAL INTRODUCTION

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GENERAL ENGINE SPECIFICATIONS

480C TRACTORS

Technical drawing of a mechanical assembly, likely a pump or motor. The drawing shows a cylindrical component with a flange and a shaft. A callout box points to a specific part of the shaft, labeled with the number 1.

DIESEL ENGINES

Piston and Connecting Rods

Main Bearings

Engine Lubricating System

Fuel System

J I Case
A Tenneco Company



FLUIDS AND LUBRICANTS

COMPONENTS	CAPACITY		SPECIFICATIONS
	U.S.	Metric	
Fuel tank	22 gallons	83 litres	Refer to Operator's Manual.
Engine crankcase Without filter change	6 quarts	5.7 litres	Case HDM oil Engine oil, class CD, Above 32° F (0° C) SAE 30 10°-50° F (-12°-10° C) SAE 20W Below 32° F (0° C) SAE 10W
With filter change	7 quarts	6.6 litres	
Hydraulic system (approx.)			Case TCH Fluid Alternate oil Engine oil, SD or CA Above 32° F (0° C) SAE 10W Below 32° F (0° C) SAE 5W Type C-2 transmission/hydraulic fluid such as Tenneco Hytrans Fluid.
Loader/backhoe	23 gallons	87 litres	
Loader only	15 gallons	57 litres	
Loader/three point hitch	19 gallons	72 litres	
Three point hitch only	14 gallons	53 litres	
Reservoir refill	11.5 gallons	43 litres	
Power steering system Reservoir refill	3 quarts 1 quart	2.8 litres 0.9 litre	Case TCH Fluid.
Mechanical shuttle	2 quarts	1.9 litres	Case TCH Fluid.
Transaxle	20 quarts	19 litres	Case FDL gear lubricant or lubri- cant meeting API-GL-4, specification Above 0° F (-18° C) SAE 90 Below 0° F (-18° C) SAE 80
Grease fittings	As required		No. 2 moly disulfide grease.
Front wheel bearings	As required		No. 2 wheel bearing grease.
Cooling system	21 quarts	19.8 litres	Mix ethylene glycol type antifreeze and water for lowest anticipated temperature.
Battery	As required		Add colorless, odorless drinking water.
Brake master cylinders	As required		DOT 3 brake fluid.

MAINTENANCE CHART

NOTE: This chart is based on maximum service intervals. If operating in severe working conditions, service more often.

INTERVAL	SERVICE	INSTRUCTIONS
Run-in period, Every two hours until stable	<p>Torque front and rear wheel bolts to 115-130 foot-pounds (157-176 N m).</p> <p>Torque transaxle mounting bolts to 250-300 foot-pounds (339-407 N m).</p> <p>Torque swing cylinder trunnion plate mounting bolts to 520-640 foot-pounds (732-867 N m).</p> <p>Torque drive shaft cap screws to 20-24 foot-pounds (27-32 N m).</p>	
Run-in period after first 20 hours	<p>Change engine oil and filter.</p> <p>Change hydraulic oil filter.</p> <p>Check fan belt tension.</p>	<p>Section 4002</p> <p>Section 8007</p>
Every 10 hours of operation or daily, whichever occurs first	<p>Grease loader pivot points.</p> <p>Grease backhoe pivot points.</p> <p>Grease extendable dipper, if so equipped.</p> <p>Grease three point hitch, if so equipped.</p> <p>Grease front axle pivot.</p> <p>Grease front axle king pins.</p> <p>Grease shuttle control bellcrank.</p> <p>Check engine oil level.</p> <p>Check hydraulic oil level.</p> <p>Check radiator coolant level.</p> <p>Clean air cleaner dust cup.</p> <p>Check the machine and the ground under it for signs of leaks.</p> <p>Check injection pump sediment bowl for water. If bowl has water, drain fuel tank, first stage fuel filter and sediment bowl.</p>	Section 2051

U.S. AND METRIC TORQUE SPECIFICATIONS**Grade 5 Bolts, Nuts and Studs (Dry Threads)**

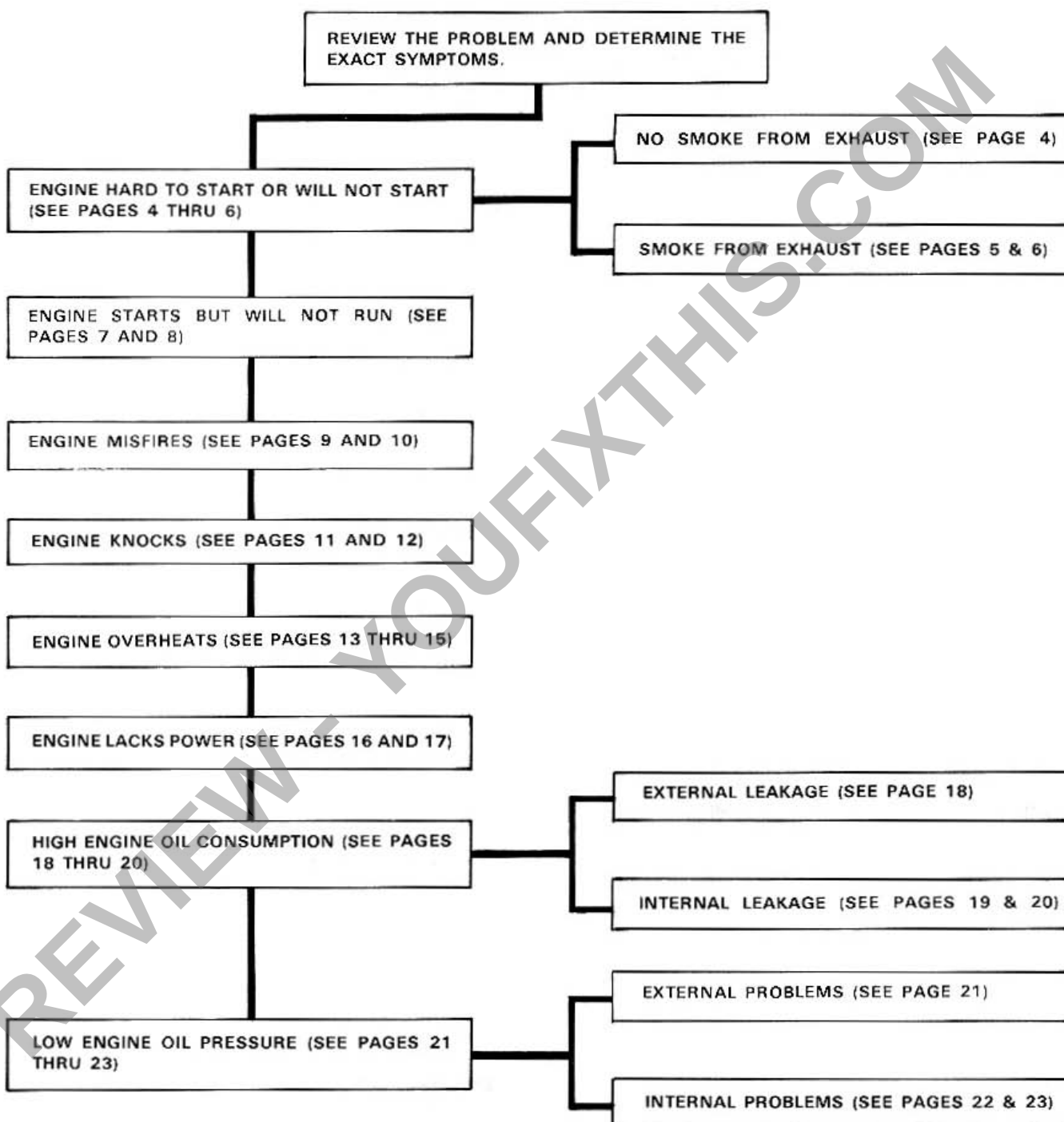
Thread size	Ft-lbs	N m		Thread size	Ft-lbs	N m
1/4"-20 NC	5-10	7-13		3/4"-10 NC	235-285	319-386
1/4"-28 NF	10-15	13-20		3/4"-16 NF	270-330	366-447
5/16"-18 NC	15-20	20-27		7/8"-9 NC	360-440	488-597
5/16"-24 NF	15-20	20-27		7/8"-14 NF	395-490	536-664
3/8"-16 NC	25-35	34-47		1"-8 NC	520-640	705-867
3/8"-24 NF	30-40	41-54		1"-12 NF	575-705	780-955
7/16"-14 NC	45-55	61-74		1-1/8"-7 NC	720-820	976-1111
7/16"-20 NF	50-60	68-81		1-1/8"-12 NF	790-970	1071-1315
1/2"-13 NC	65-85	88-115		1-1/4"-7 NC	1010-1240	1370-1681
1/2"-20 NF	80-100	109-135		1-1/4"-12 NF	1115-1365	1512-1850
9/16"-12 NC	100-120	135-163		1-3/8"-6 NC	1315-1610	1783-2182
9/16"-18 NF	110-130	149-176		1-3/8"-12 NF	1510-1850	2047-2508
5/8"-11 NC	135-165	183-223		1-1/2"-6 NC	1745-2135	2366-2894
5/8"-18 NF	160-200	216-271		1-1/2"-12 NF	1880-2420	2549-3281

Grade 8 Bolts, Nuts and Studs (Dry Threads)

Thread size	Ft-lbs	N m		Thread size	Ft-lbs	N m
1/4"-20 NC	10-15	13-20		3/4"-10 NC	340-420	461-569
1/4"-28 NF	15-20	20-27		3/4"-16 NF	380-460	515-623
5/16"-18 NC	20-30	27-40		7/8"-9 NC	540-660	732-894
5/16"-24 NF	25-30	34-40		7/8"-14 NF	595-725	807-982
3/8"-16 NC	40-50	54-67		1"-8 NC	810-990	1098-1342
3/8"-24 NF	45-55	61-74		1"-12 NF	900-1100	1220-1491
7/16"-14 NC	60-80	82-102		1-1/8"-7 NC	1150-1400	1559-1898
7/16"-20 NF	70-90	95-122		1-1/8"-12 NF	1295-1585	1756-2148
1/2"-13 NC	100-120	136-162		1-1/4"-7 NC	1640-2000	2224-2711
1/2"-20 NF	110-130	149-176		1-1/4"-12 NF	1800-2200	2440-2982
9/16"-12 NC	135-165	183-223		1-3/8"-6 NC	2140-2620	2901-3552
9/16"-18 NF	155-190	210-257		1-3/8"-12 NF	2450-3000	3322-4067
5/8"-11 NC	200-240	271-325		1-1/2"-6 NC	2845-3475	3857-4711
5/8"-18 NF	215-265	292-359		1-1/2"-12 NF	3200-3900	4339-4880

740313

ENGINE DIAGNOSIS CHART



INSTALLATION INSTRUCTIONS FOR M20611 TEFLON VALVE SEAL KIT

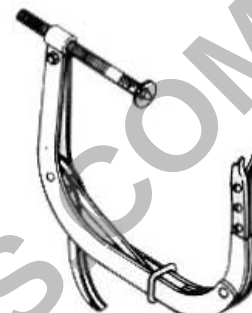
Special Tools Required



M20624 SEAL INSTALLATION TOOL



M20615 VALVE GUIDE CUTTING TOOL



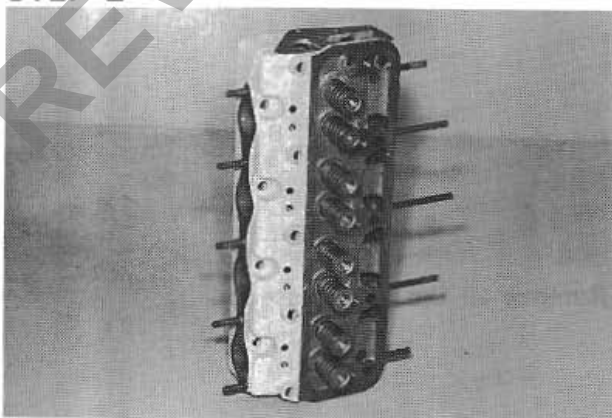
VALVE SPRING COMPRESSOR

STEP 1



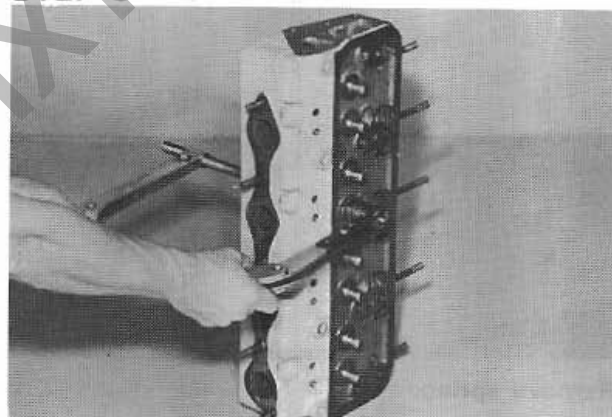
Remove the cylinder head from the engine block. Refer to section 2015 for head removal. **NOTE:** This cylinder head requires two M20611 Kits.

STEP 2



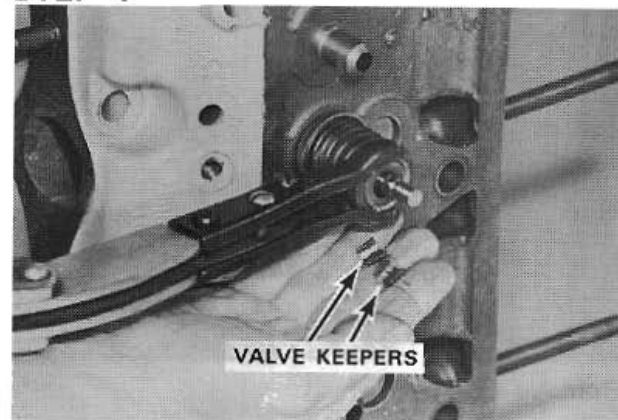
Place cylinder head on work bench.

STEP 3



Install a valve spring compressor.

STEP 4



Compress valve spring and remove valve keepers. **IMPORTANT:** Valves and valve keepers should be marked when removed to insure that they will be reinstated in their original location.

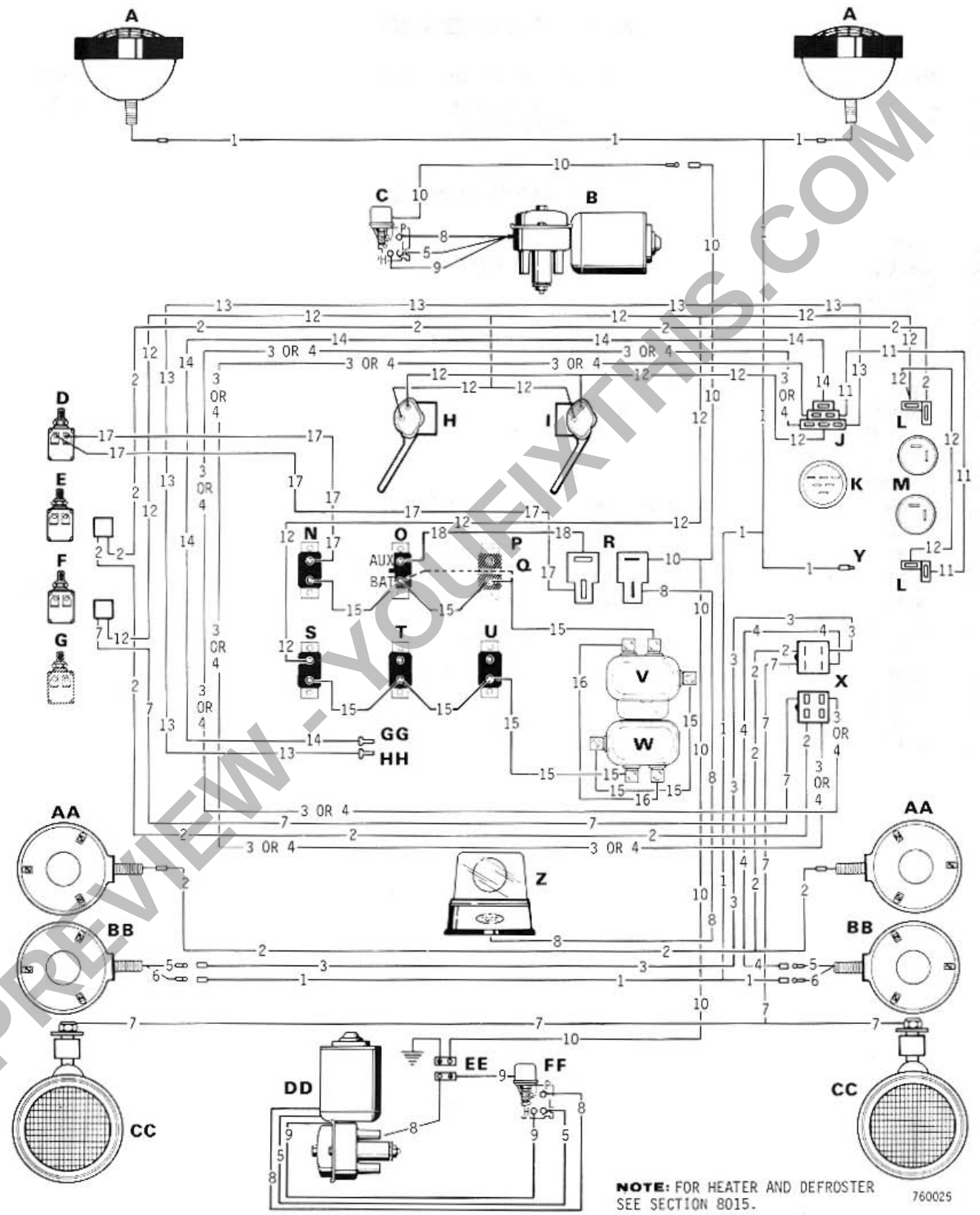


Figure 2 - Cab Wiring Diagram

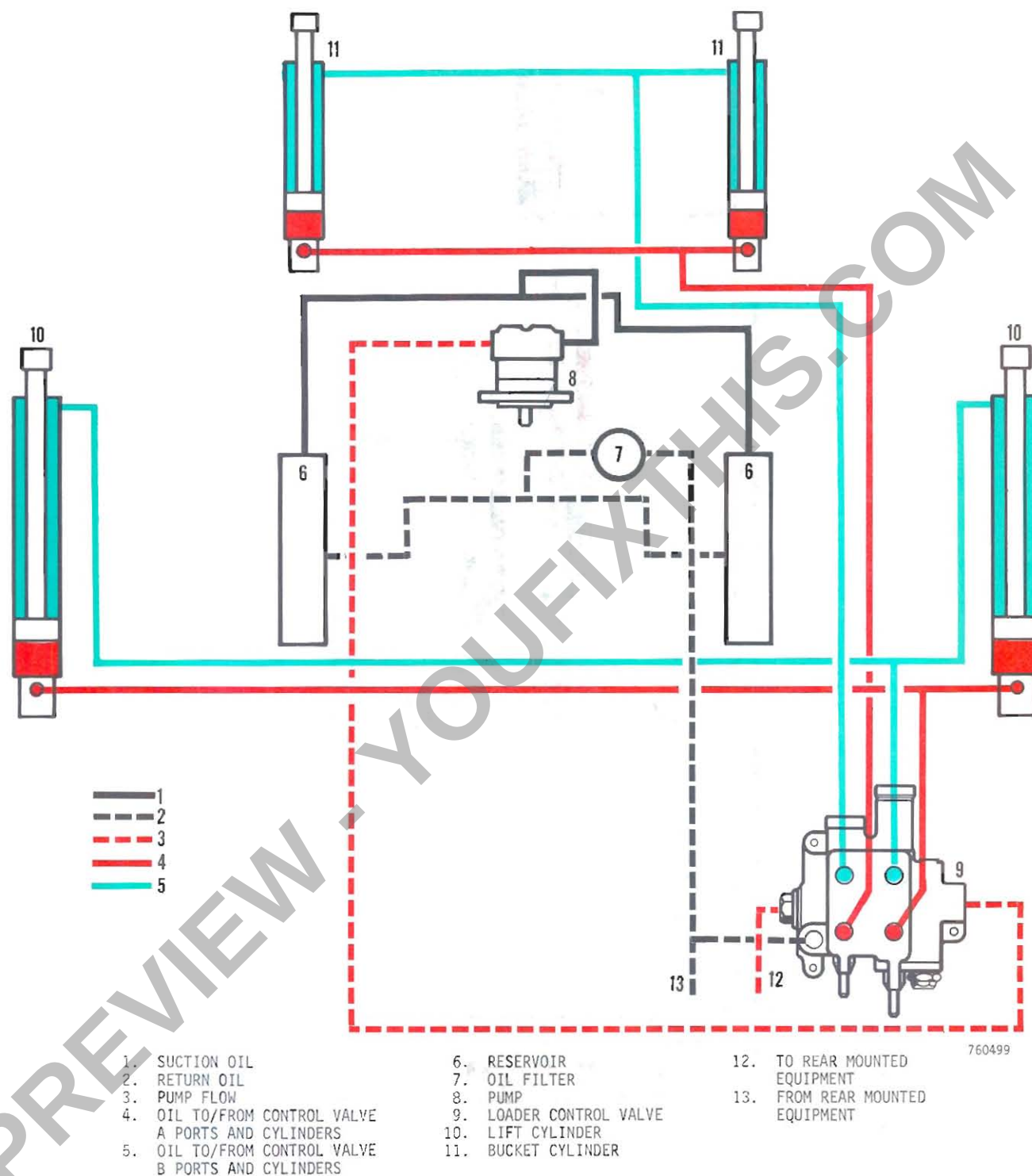
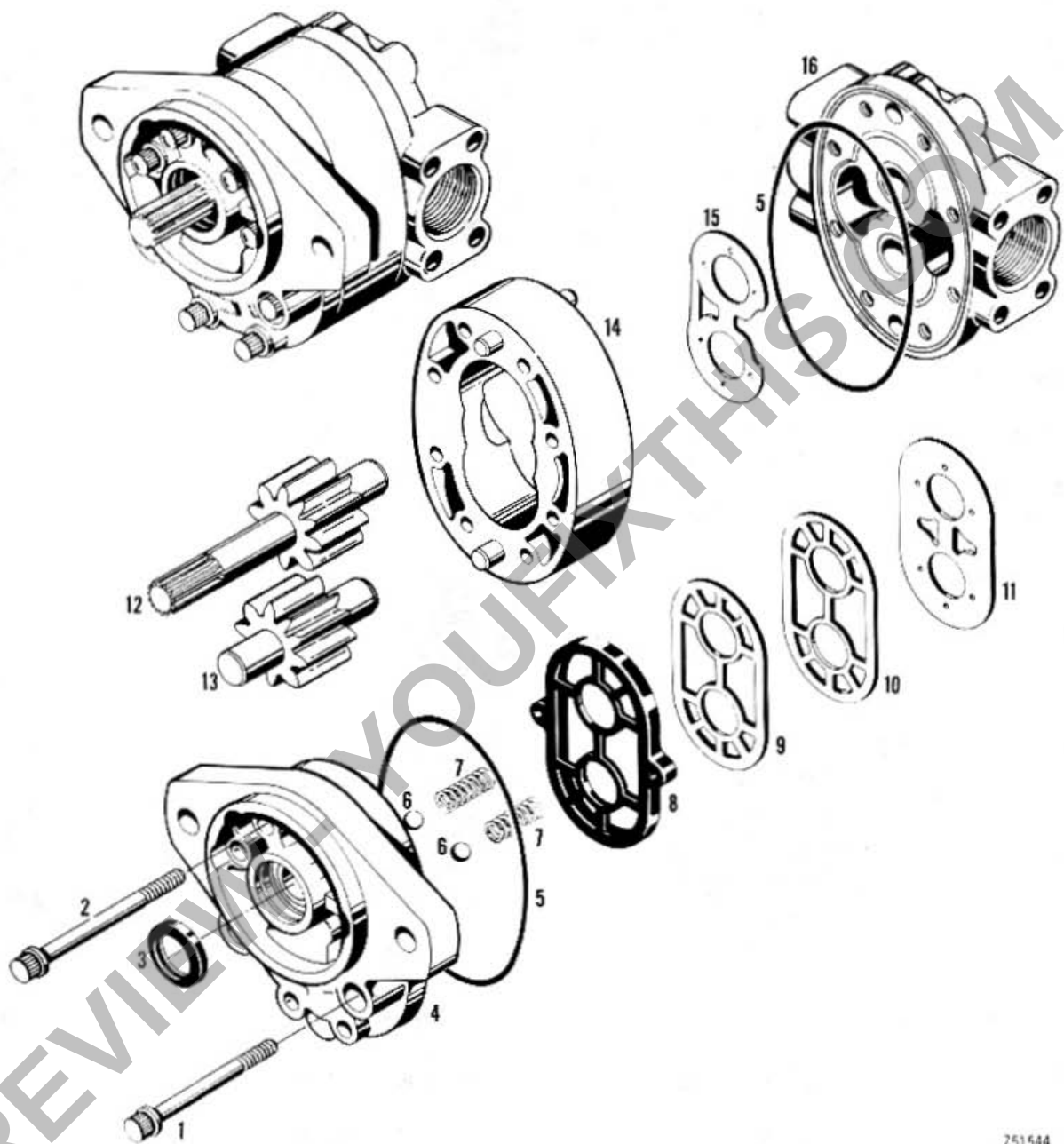


Figure 1 - Loader Hydraulic Diagram



751544

- 1. 82.6 mm (3-1/4") LONG CAP SCREW (4)
- 2. 88.9 mm (3-1/2") LONG CAP SCREW (4)
- 3. SEAL
- 4. DRIVE END COVER
- 5. O-RING
- 6. STEEL BALL

- 7. SPRING
- 8. DIAPHRAGM SEAL
- 9. PROTECTOR GASKET (THIN)
- 10. BACKUP GASKET (THICK)
- 11. DIAPHRAGM
- 12. DRIVE GEAR

- 13. IDLER GEAR
- 14. GEAR PLATE
- 15. THRUST PLATE
- 16. PORT END COVER

Figure 2 - Exploded View of Cessna Pump



WARNING: After installing tire on rim (wheel), place wheel in a safety cage before inflating tires. If proper equipment is not available, have a tire repair shop do the work. 40-5



WARNING: This is a one man machine, no riders allowed. 35-8



CAUTION: When using a hammer to remove and install pivot pins or separate parts, using compressed air or using a grinder, wear eye protection that completely encloses the eyes (approved goggles or other approved eye protectors). 46-13



CAUTION: When removing hardened pins such as a pivot pin, or a hardened shaft, use a soft head (brass or bronze) hammer or use a driver made from brass or bronze and a steel head hammer. 47-16



CAUTION: When servicing or repairing the machine, keep the shop floor and operator's compartment and steps free of oil, water, grease, tools, etc. Use an oil absorbing material and/or shop cloths as required. Use safe practices at all times. 40-8



CAUTION: Use suitable floor (service) jacks or chain hoists to raise wheels off the floor. Always block machine in place with suitable safety stands. 40-7



CAUTION: Pin sized and smaller streams of hydraulic oil under pressure can penetrate the skin and result in serious infection. Maintain all hoses and tubes in good condition. Make sure all connections are tight. Replace any hose or tube that is faulty or thought to be faulty. DO NOT use your hand to check for leaks; use a piece of cardboard or wood. 40-6



CAUTION: Some components of this machine are very heavy. Use suitable lifting equipment or additional help as instructed in this service manual. 40-10

General

This service manual has been prepared with the latest service information available. Trouble shooting, removal, disassembly, inspection and installation procedures coupled with complete specifications and tightening references can be found in most sections.

Continued on next page

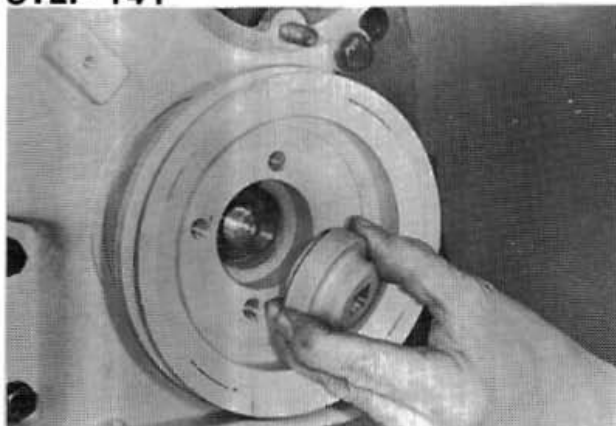
Section 2002

ENGINE TUNE-UP

188 and 207 Diesel Engines

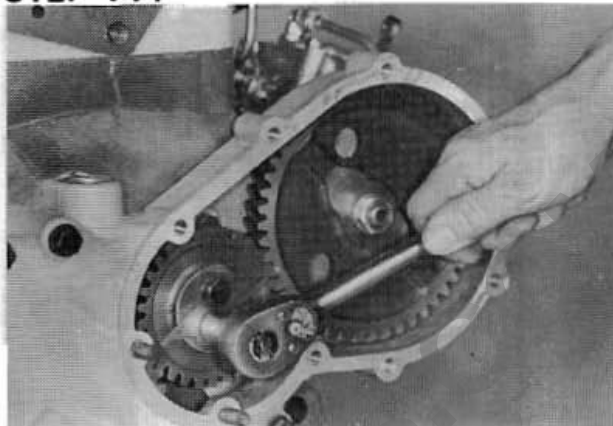
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STEP 141



Remove crankshaft pulley mounting nut.

STEP 144



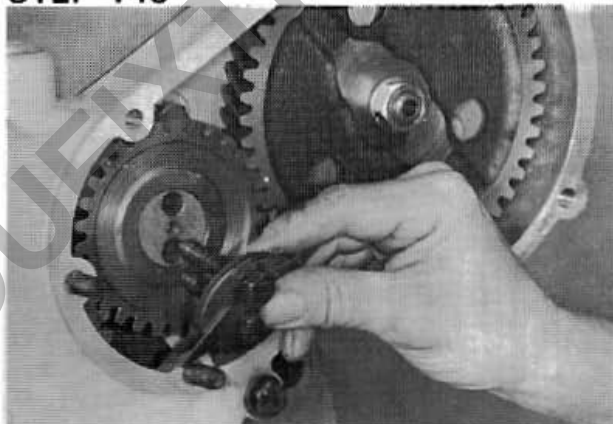
Loosen idler gear mounting bolts.

STEP 142



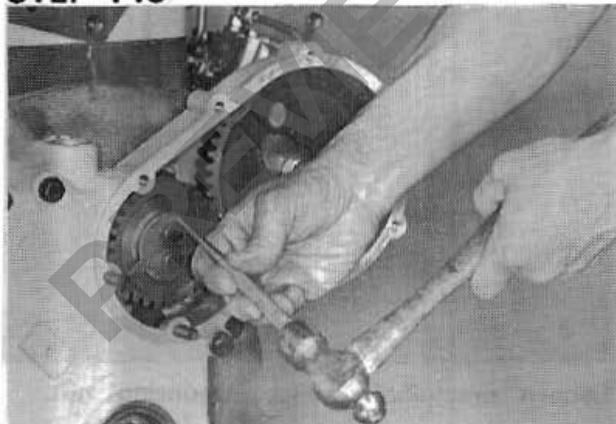
Remove crankshaft pulley.

STEP 145



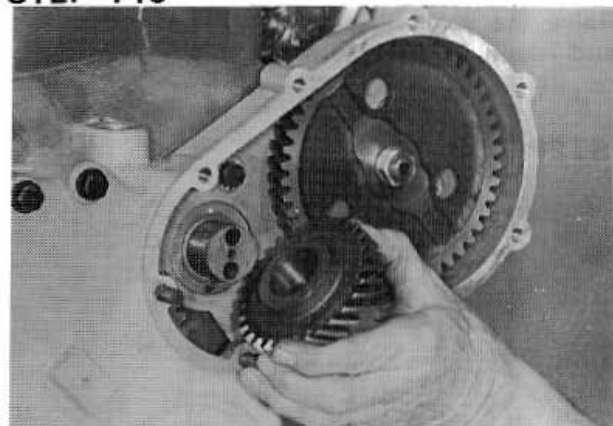
Remove bolts, lock plate, thrust plate and shims.

STEP 143



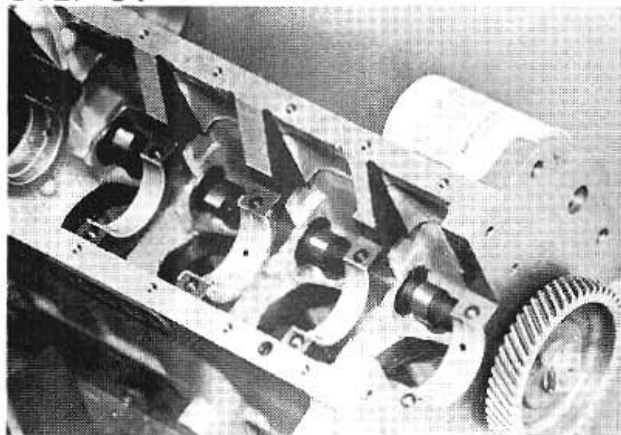
Using a punch and hammer, straighten out lock tab on the idler gear lock plate.

STEP 146



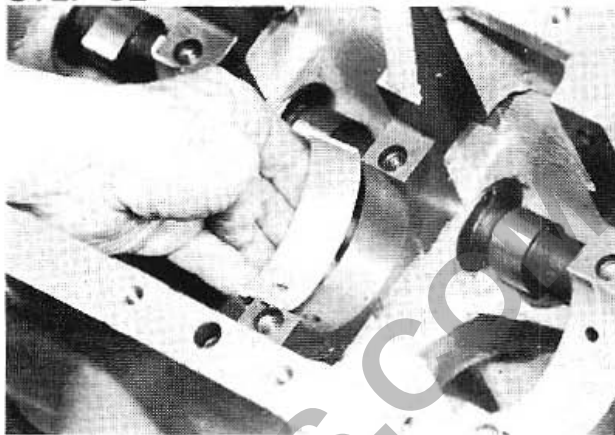
Remove idler gear.

STEP 51



Crankshaft removed from engine.

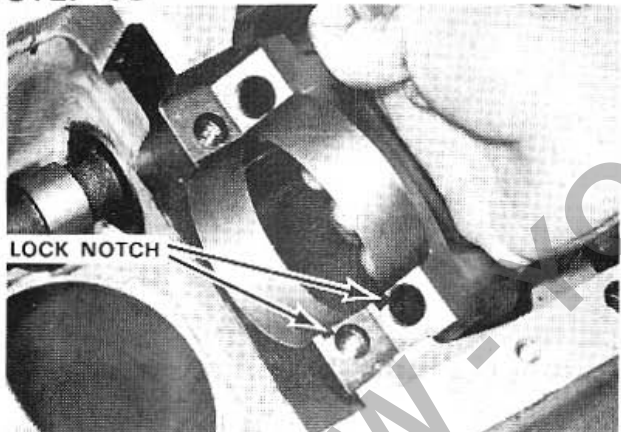
STEP 52



Remove main bearing liners from engine block.

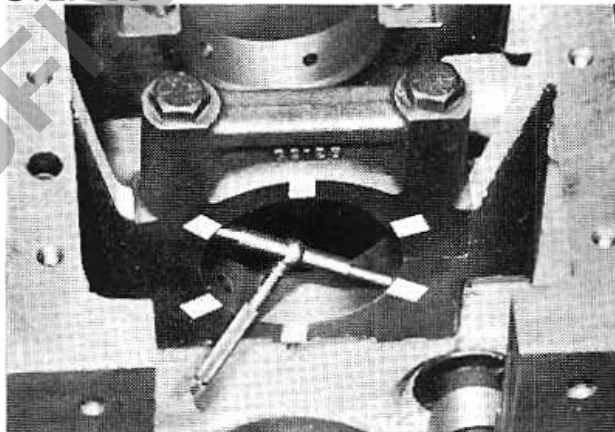
Main Bearing Cap Replacement

STEP 53



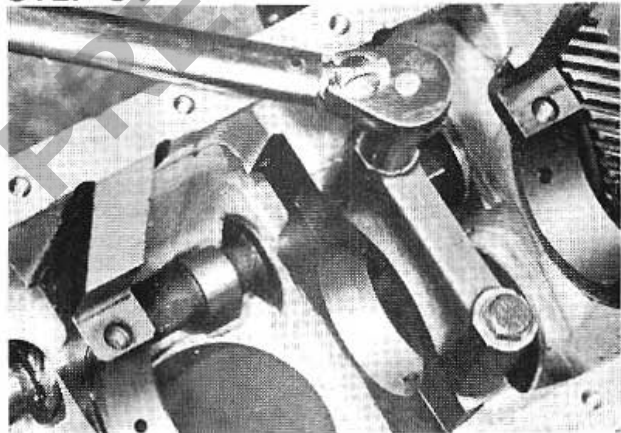
Place replacement bearing cap in engine block. **NOTE:** Lock notches must be on the same side of bearing.

STEP 55



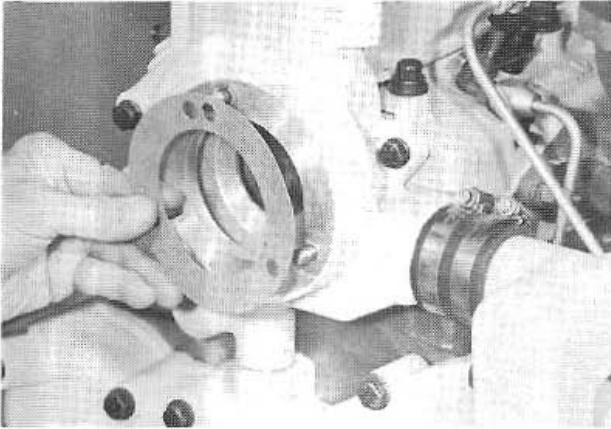
Check bore diameter at three angular locations indicated. Inside dimension must be 3.066" to 3.067"

STEP 54



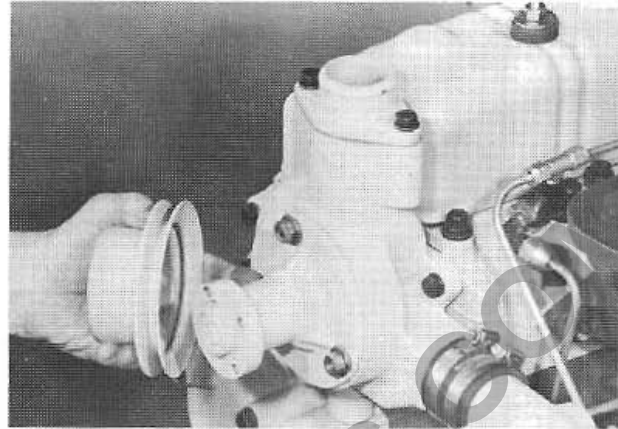
Install replacement main bearing caps and bolts. Torque bolts 90 to 100 ft. lbs.

STEP 27



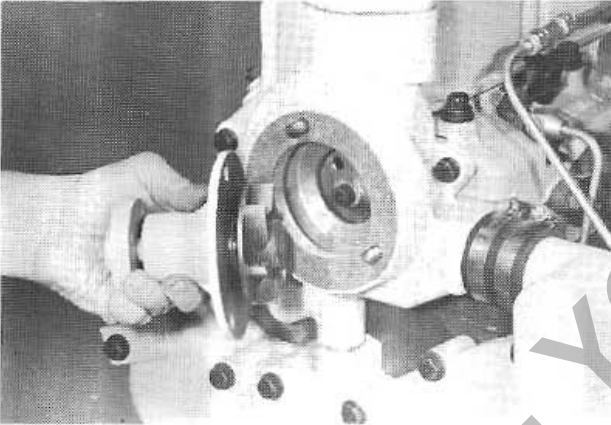
Remove all old gasket material from mounting surface. Install a new pump to housing gasket.

STEP 30



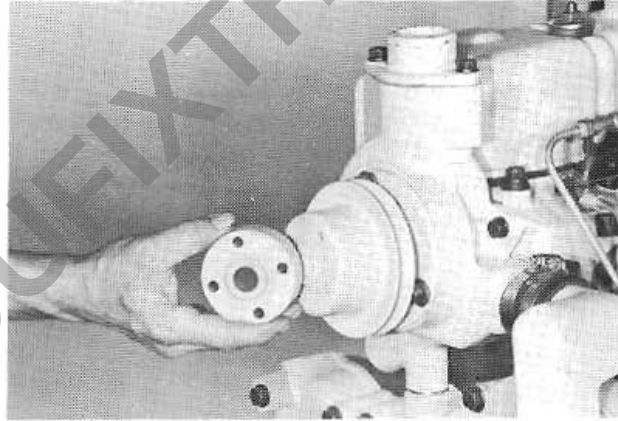
Install fan drive pulley.

STEP 28



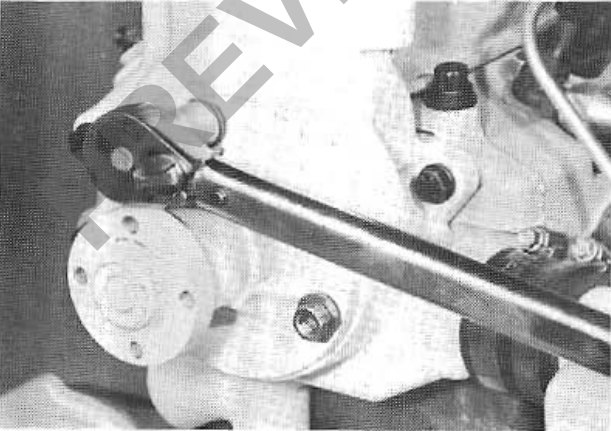
Install water pump on pump housing studs.
NOTE: The water pump is serviced as a unit. If pump is leaking or malfunctioning, replace the unit.

STEP 31



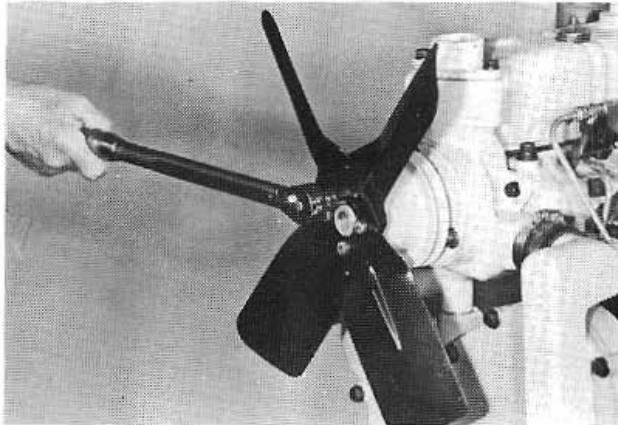
Install fan hub spacer, if equipped.

STEP 29



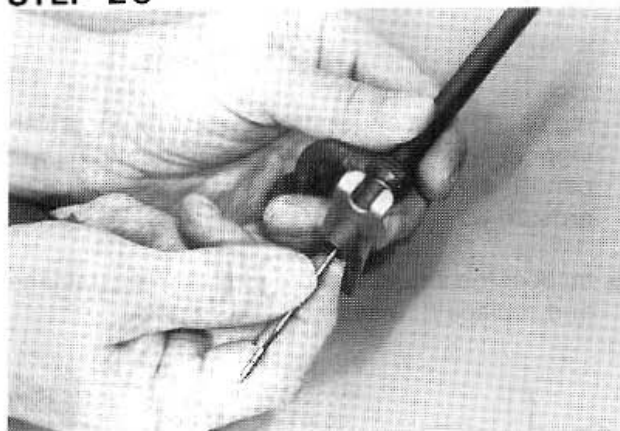
Install nuts and torque 35 to 42 ft. lbs.

STEP 32

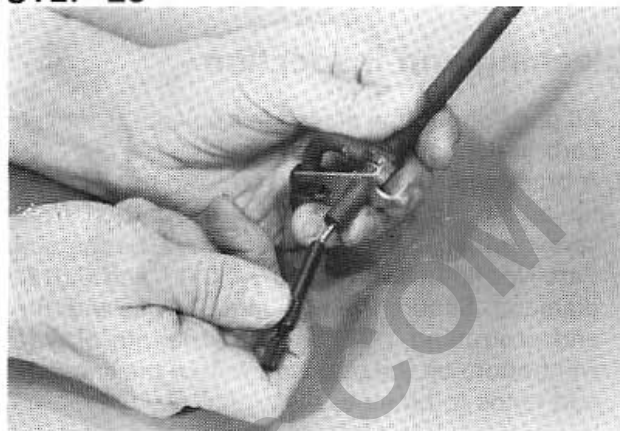


Check fan for damage or loose blades. Replace fan if required. Install fan on pulley and spacer, if required, and torque retaining bolts 17 to 21 ft. lbs.

NOTE: The JI Case Company reserves the right to make improvements in design or changes in specifications at any time without incurring any obligation to install them on units previously sold.

STEP 28

The valve may slide out of the body at this time and should be handled carefully by its' stem.

STEP 29

If the valve does not slide freely from the body, use valve retractor Bacharach Part No. 56-0148, to remove the valve. To prevent bending the valve, bottom it in the body with the retractor. Push down on the retractor body to mount the collet. Turn the knurled nut counterclockwise to secure the collet and withdraw the valve.

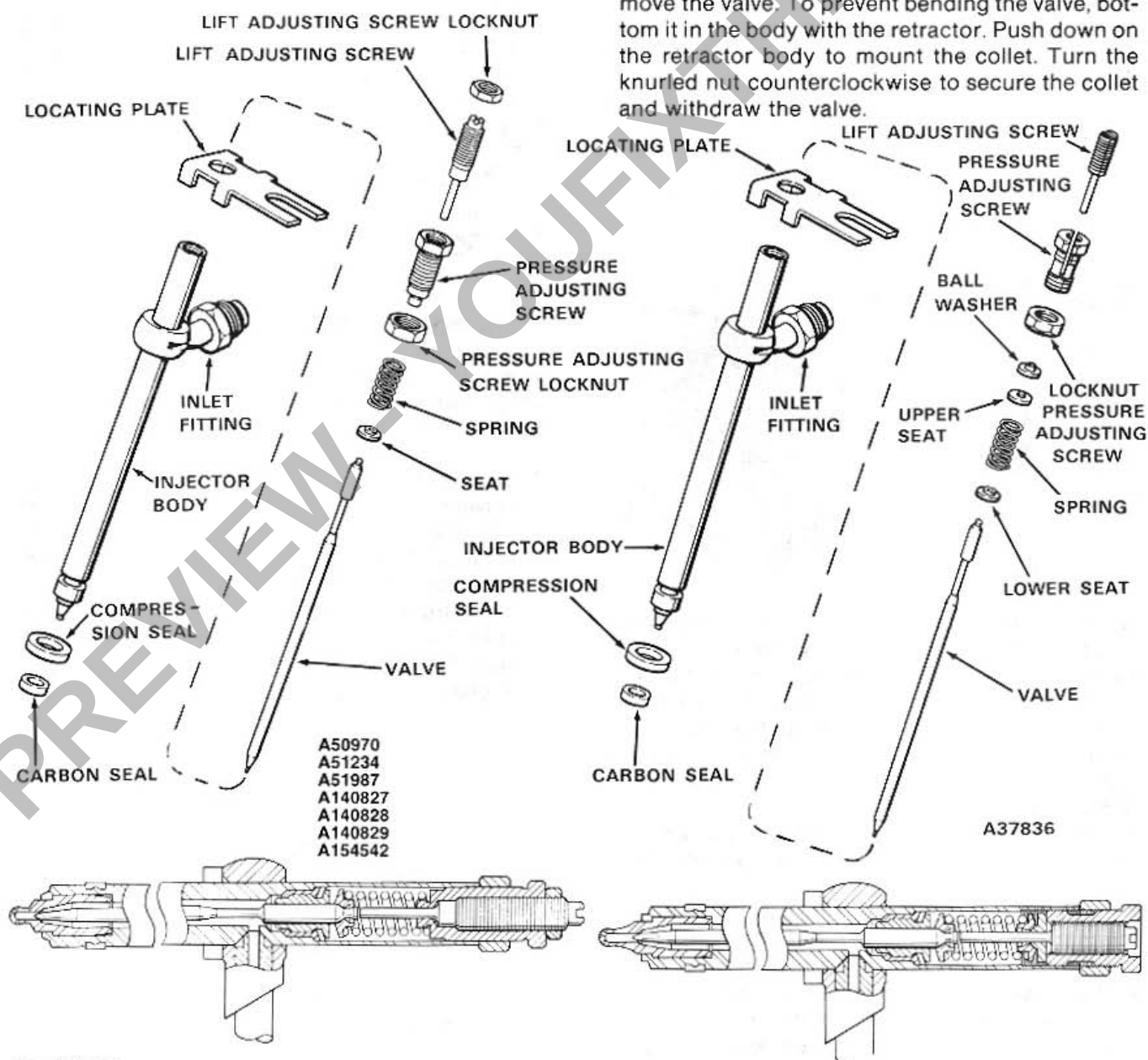


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Section 4090

CYLINDERS

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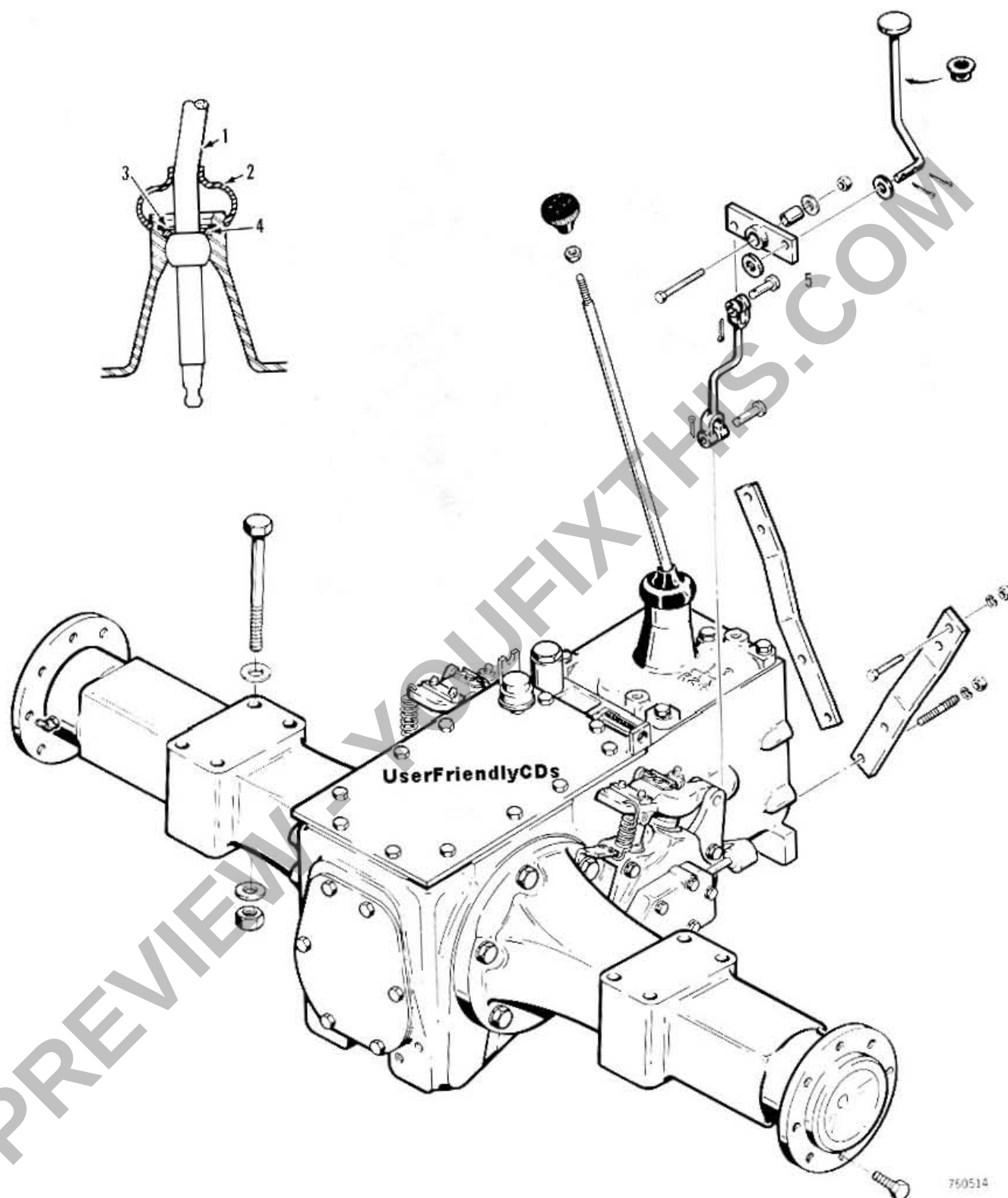
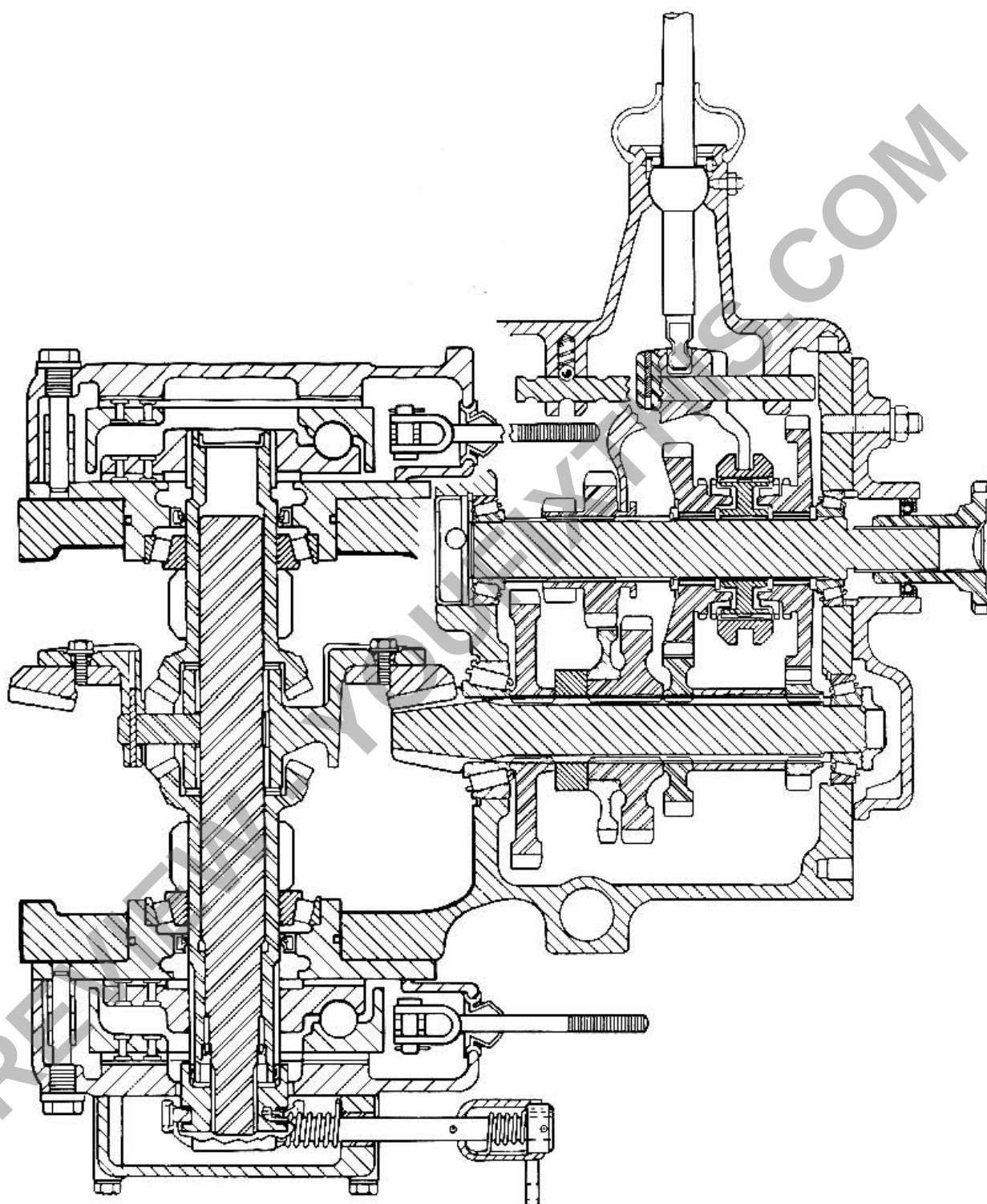
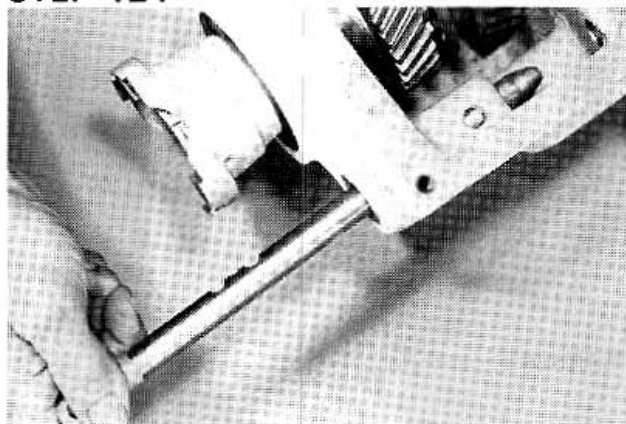
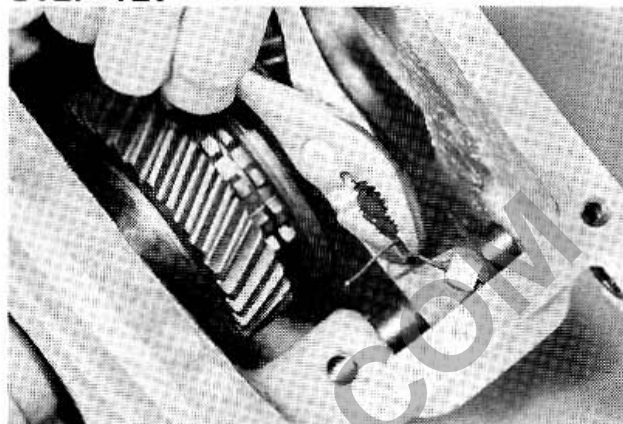


Figure 1 - Transaxle Installation

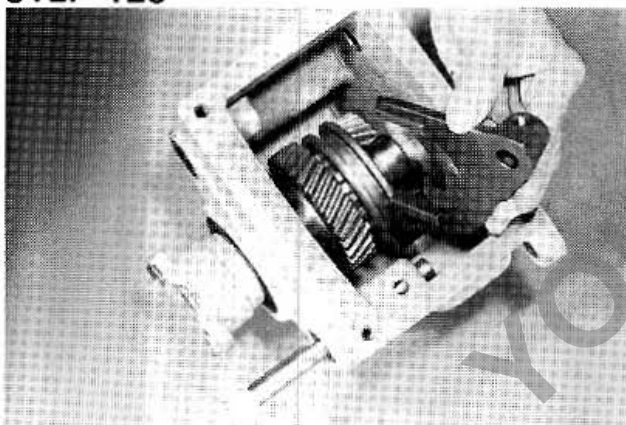


STEP 124

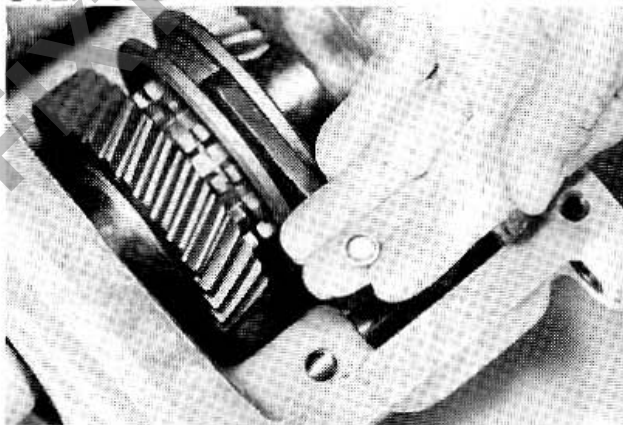
Press range shift rail (flat side down) part way into housing, forcing pilot sleeve out.

STEP 127

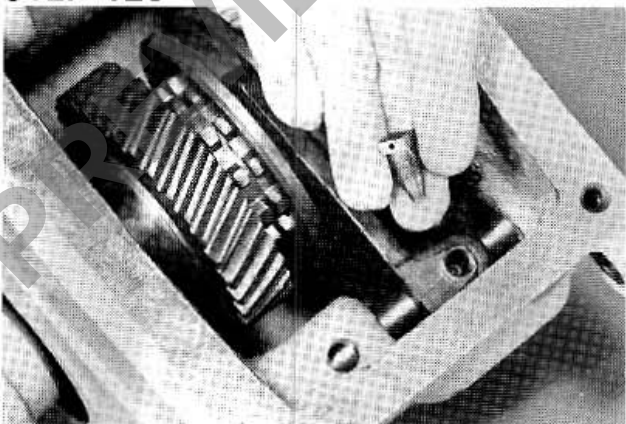
Lockwire set screw in place. Make sure lockwire does not interfere between fork and housing during shifting.

STEP 125

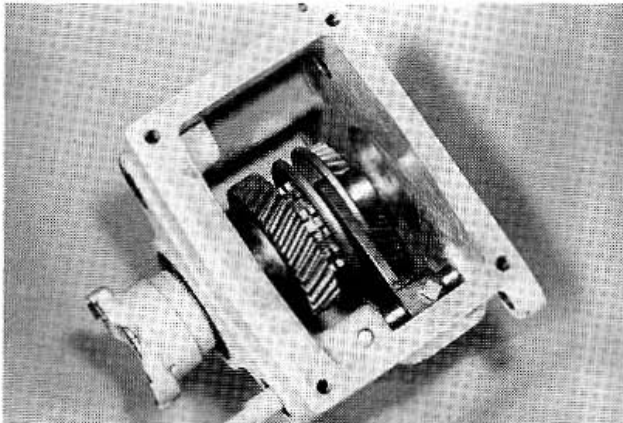
Install range shifter fork in housing and press shift rail through fork, and the rest of the way into housing.

STEP 128

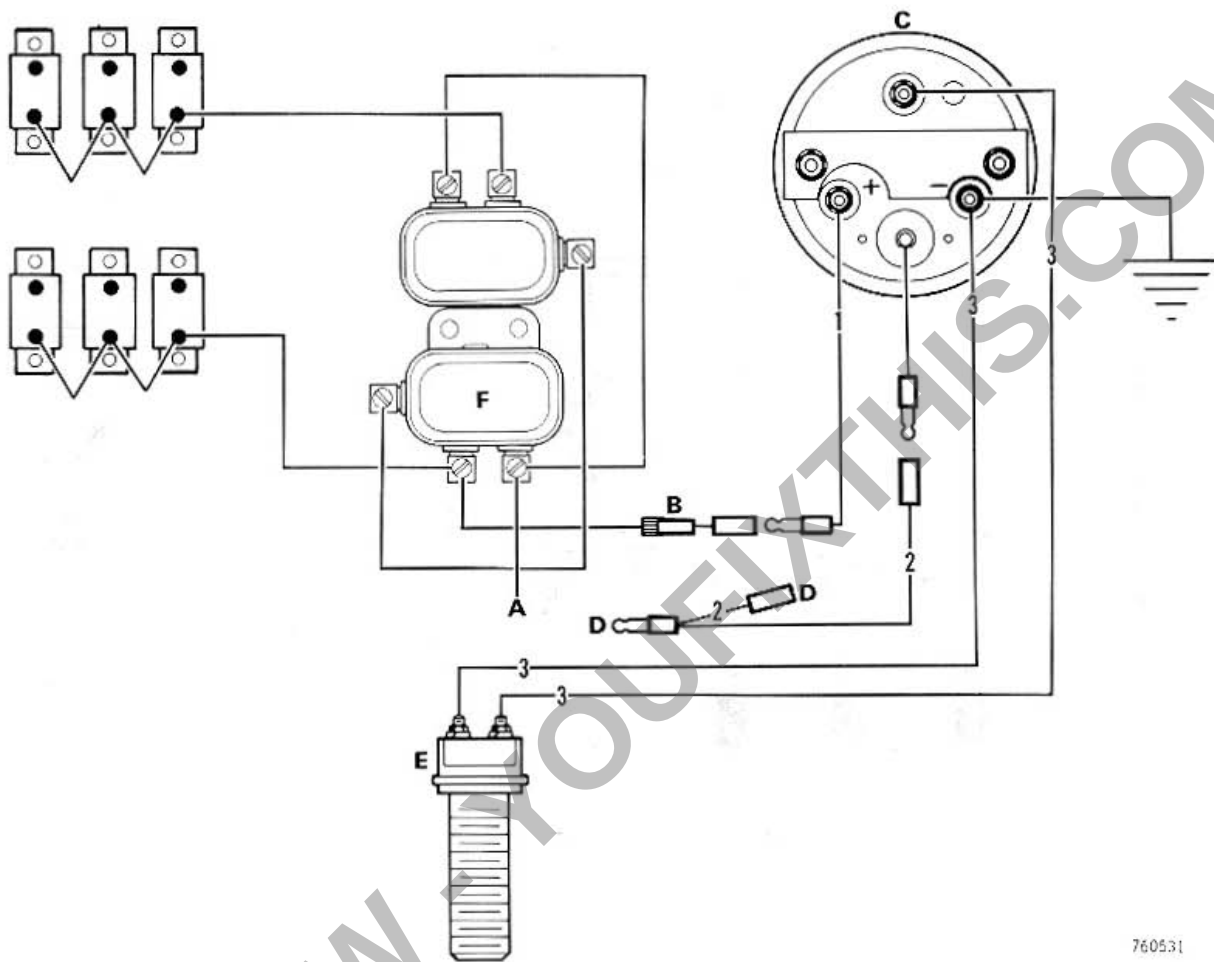
Install cup plug in housing detent opening.

STEP 126

Install fork retaining set screw.

STEP 129

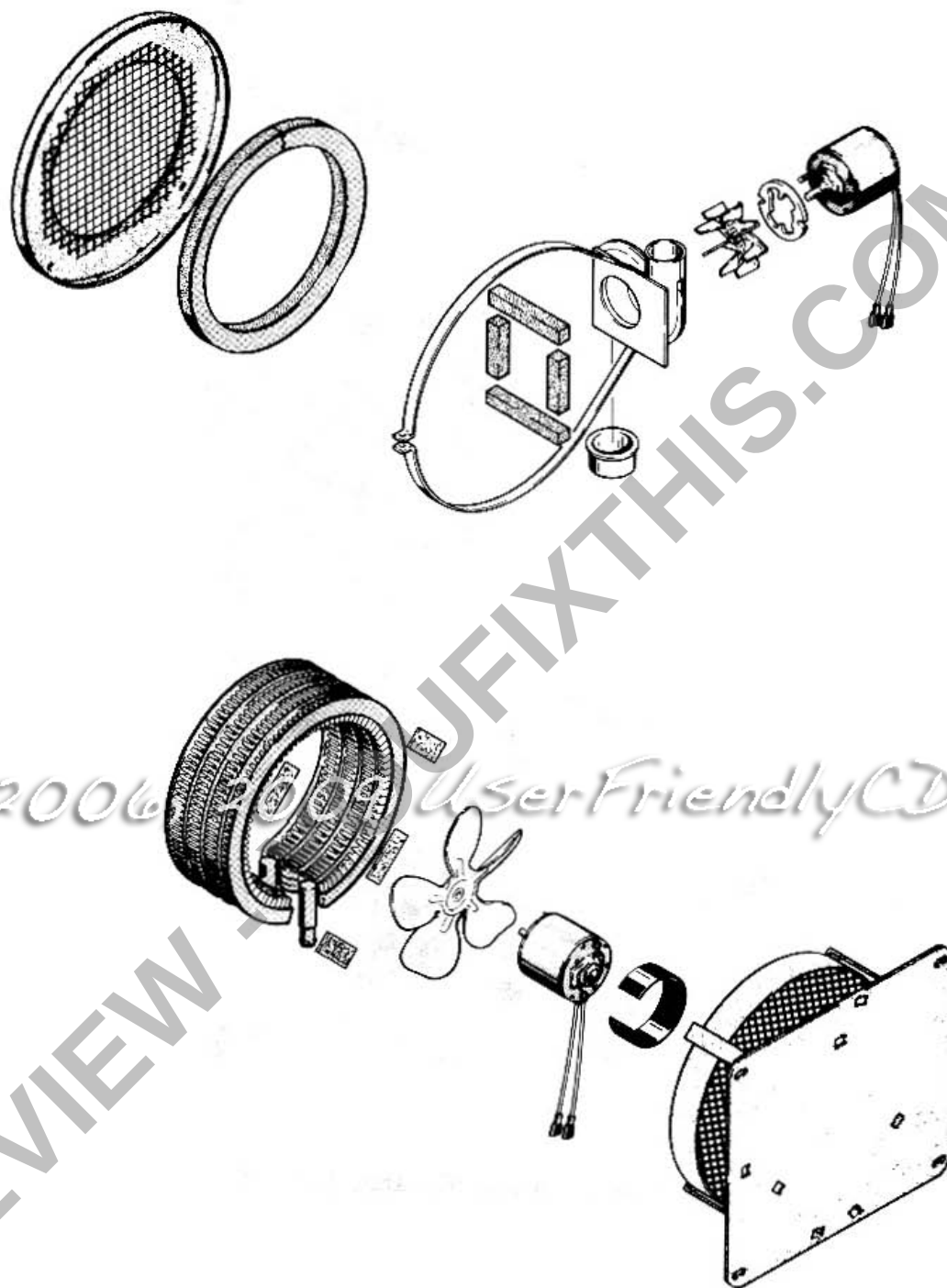
Range housing assembled.



- | | | |
|----------|--------------------|-------------------------|
| 1. GRAY | A. TO KEY SWITCH | D. TO HEADLIGHT CIRCUIT |
| 2. PINK | B. AGC 10 AMP FUSE | E. SENSING UNIT |
| 3. BLACK | C. TACHOMETER | F. RELAY |

Figure 4 - PTO Tachometer Circuit

760531



760031

Figure 5 - Heater and Defroster

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