

# NEW HOLLAND

## REPAIR MANUAL - TC SERIES TRACTORS

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**NEW HOLLAND**

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### Chapter 1 - Engine

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## GENERAL INFORMATION

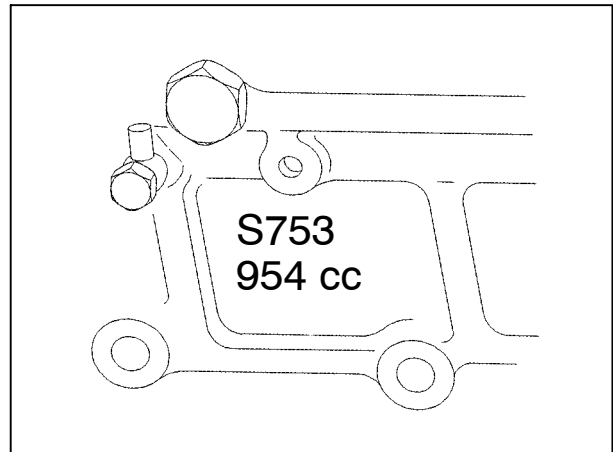
### DESCRIPTION AND OPERATION

This section describes the engine overhaul and repair procedures of the Models TC18D and TC21D tractors. Repair procedures are essentially the same for all models except as noted in the repair procedures.

The tractors are equipped with three-cylinder in-line engines. They are all four cycle, overhead valve, liquid cooled engines. The engines are identified by a code cast into the lower right side of the cylinder block, just behind the hydraulic pump. The identification numbers of the engines used is shown in the following chart.

### IDENTIFICATION CHART

ENGINE IDENTIFICATION	TRACTOR MODEL	HORSE-POWER
S753	TC18D	18.5
S773	TC21D	21.0

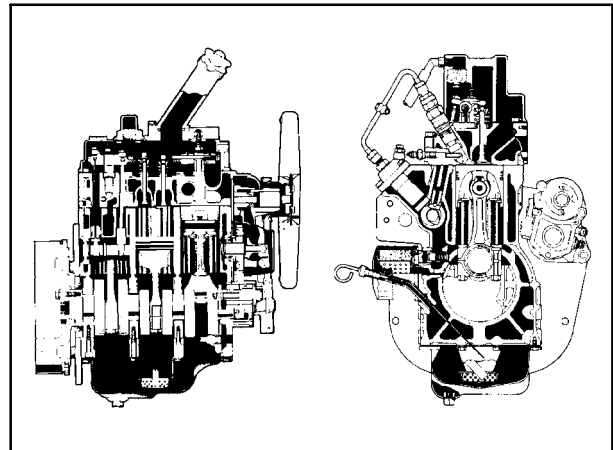


1

### CYLINDER HEAD AND VALVE TRAIN COMPONENTS

The cylinder head incorporates the valve assemblies, rocker arms, rocker shaft, push rods, lifters, and pre-combustion chambers. The air intake manifold is incorporated into the left hand side of the valve cover assembly. The exhaust manifold is bolted on the left-hand side of the cylinder head. The cylinder heads have integral valve guides. Standard size valves only are used. Figure 2 provides a cut-away front and side view of an engine.

A pre-combustion chamber is located between the injector assembly and the combustion chamber of the cylinder and provides an area for initial ignition of the fuel for improved starting. A glow plug located in the head extends into the pre-combustion chamber and, when energized, pre-heats the fuel-air mixture for improved fuel ignition under cold weather conditions.



2

**CYLINDER BLOCK ASSEMBLY**

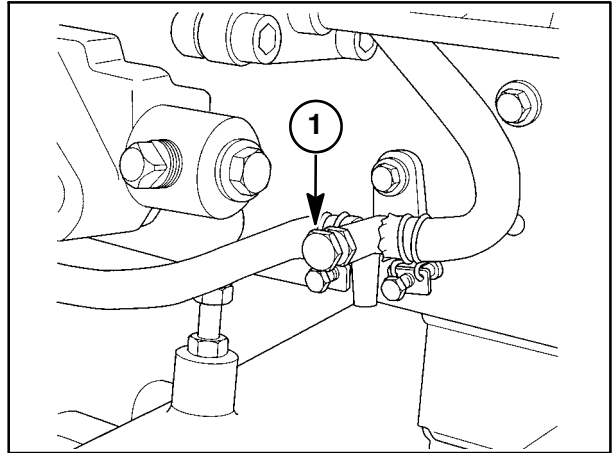
The cylinder block assembly contains the pistons, connecting rods, crankshaft, timing gears, and engine oil pump. The engine crankshaft is supported by four main bearings. The front main bearing is a full circle bearing positioned in a bore in the front of the block. The

second, third, and fourth main bearings are split liners located in holders bolted to the block. The camshaft is supported by two ball bearings one located on each end of the block. The engines utilize a straight connecting rod and a three ring piston.

## ENGINE OVERHAUL

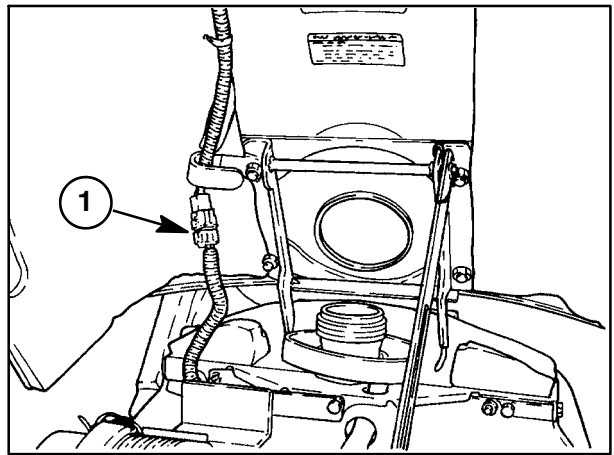
### ENGINE DISASSEMBLY

1. Open the radiator drain, 1, and drain and remove the radiator assembly. See "Radiator Removal" discussed later in this section, Page 55.



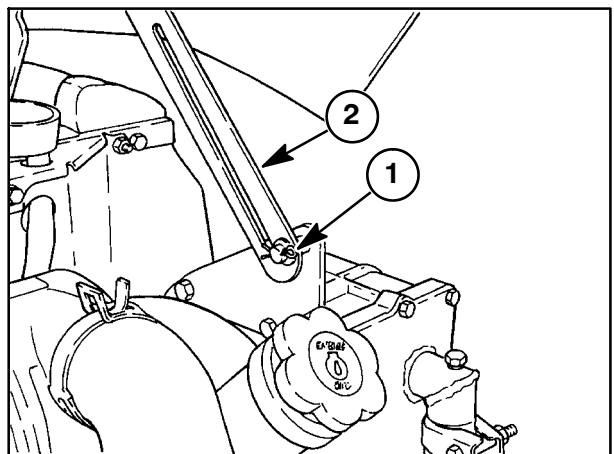
3

2. Disconnect the electrical connector, 1, for the head lamps.



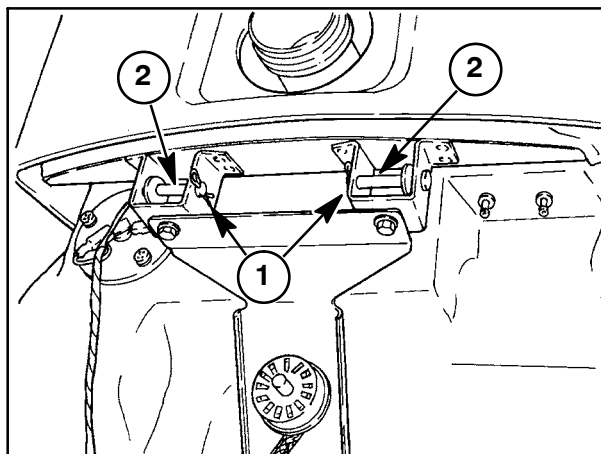
4

3. Remove the clip pin, 1, from the hood support, 2, and gradually lower the hood.



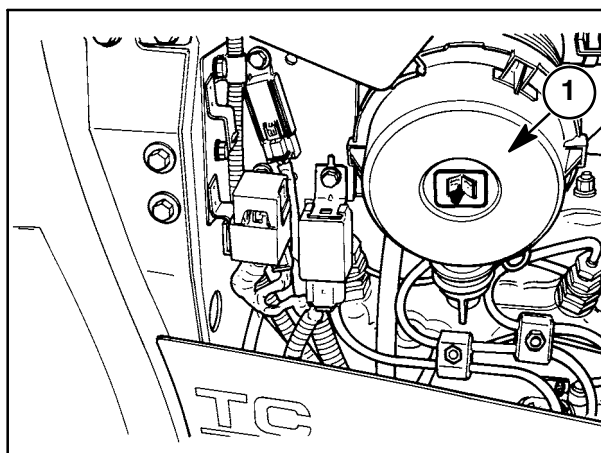
5

4. Pull the instrument panel out by hand and remove the clip pins, 1, from the hood hinge pins, 2. Then remove the hinge pins.
5. Raise the hood and remove from the tractor.



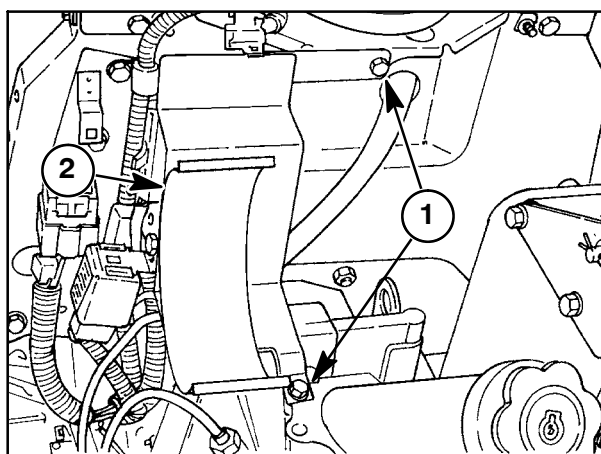
6

6. Remove the whole air cleaner assembly, 1, along with the air cleaner hoses.



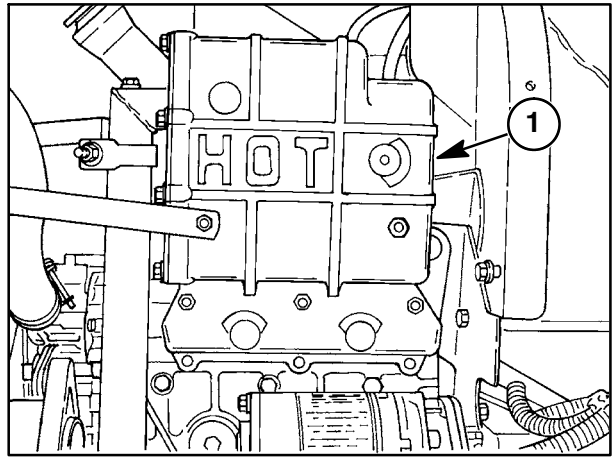
7

7. Remove the two capscrews, 1, and remove the air cleaner mounting bracket, 2.



8

8. Remove the exhaust muffler and manifold assembly, 1.

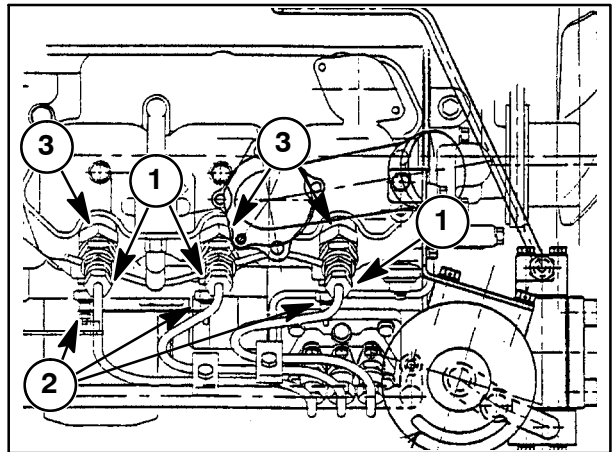


9

### FUEL INJECTOR AND GLOW PLUG REMOVAL

1. Clean all dirt and oil from the injectors and surrounding areas.
2. Disconnect the fuel lines, 1, from the injectors and cap all openings.
3. Remove the three glow plugs, 2.
4. Disconnect the return line to the fuel tank from the number three injector.
5. Remove the injector assemblies, 3.

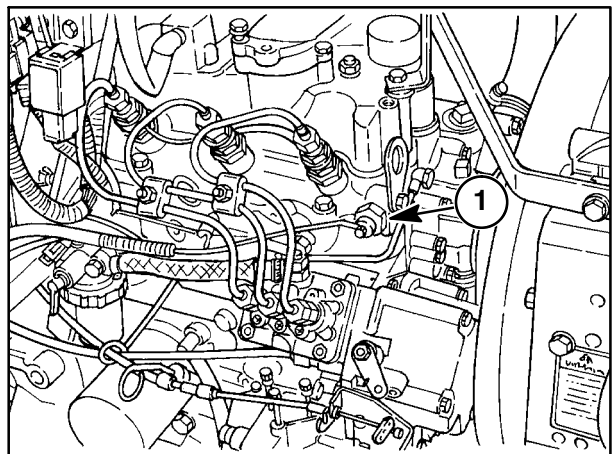
**NOTE:** Be sure to remove the injector sealing washer from the injector bore, if not removed with the injector.



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### OIL PRESSURE SWITCH REMOVAL

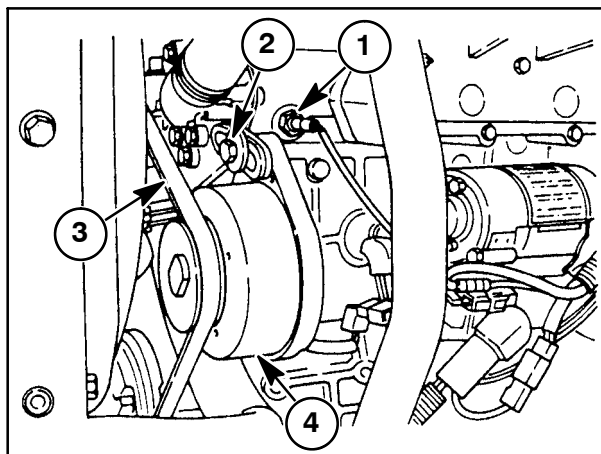
1. Disconnect and remove the oil pressure switch, 1.



11

### TEMPERATURE SENDING SWITCH AND ALTERNATOR REMOVAL

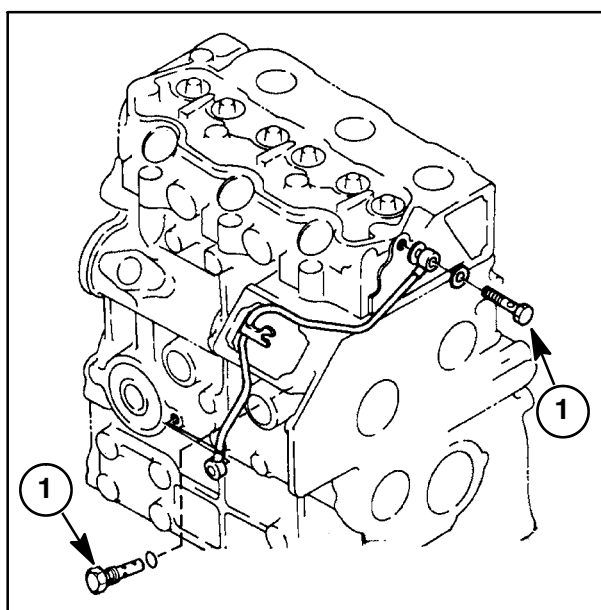
1. Remove the temperature sending switch, 1, from the front of the cylinder head.
2. Loosen the alternator mounting bolts, 2, and remove the V-belt, 3, from the drive pulley.
3. Disconnect the wires from the back of the alternator.
4. Remove the alternator mounting bolts and remove the alternator, 4.



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### FAN, WATER PUMP, AND EXTERNAL OIL TUBE REMOVAL

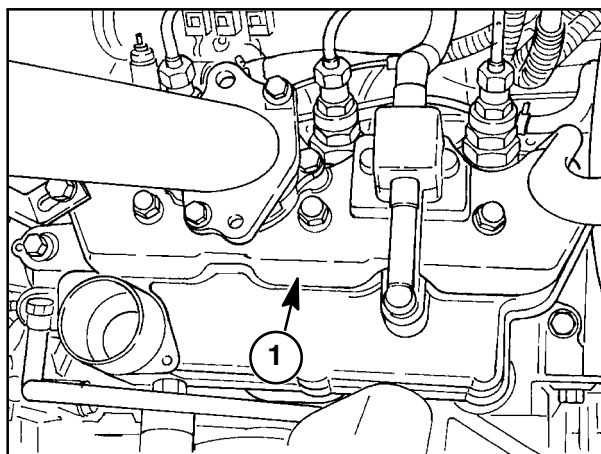
1. Remove the fan and water pump assembly. See "Water Pump and Thermostat Removal" discussed later in this section, page 57.
2. Remove the external oil transfer tube banjo bolts, 1, from the front of the cylinder head and the side of the cylinder block and remove the external oil transfer tube.



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### VALVE COVER REMOVAL

1. Remove the valve cover, 1, and gasket.

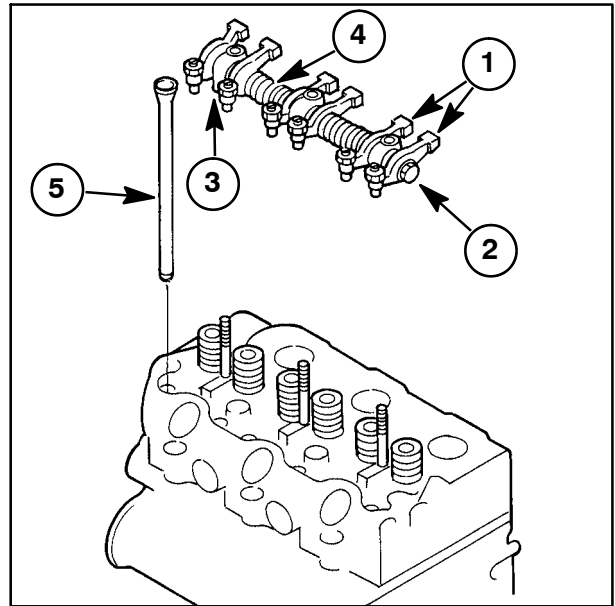


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### ROCKER SHAFT AND PUSH ROD REMOVAL

1. Remove the valve rocker arms, 1, shaft, 2, rocker arm supports, 3, and springs, 4, as an assembly
2. Remove the push rods, 5.

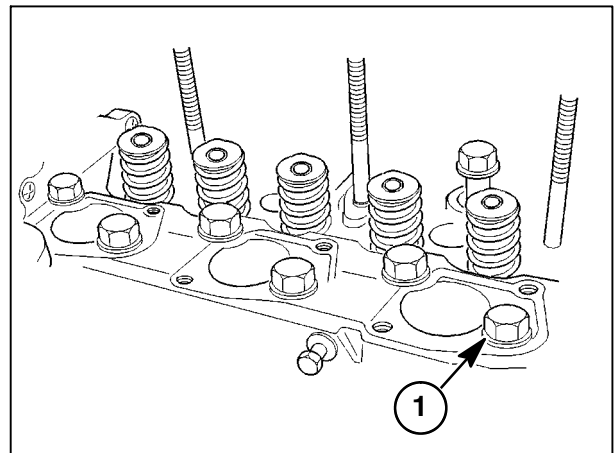
**NOTE:** Be sure to keep the valve components in separately marked containers for re-assembly in their original position.



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### CYLINDER HEAD REMOVAL

1. To remove the cylinder head, remove the cylinder head bolts, 1, by alternately loosening a half turn at a time to prevent warping the head.

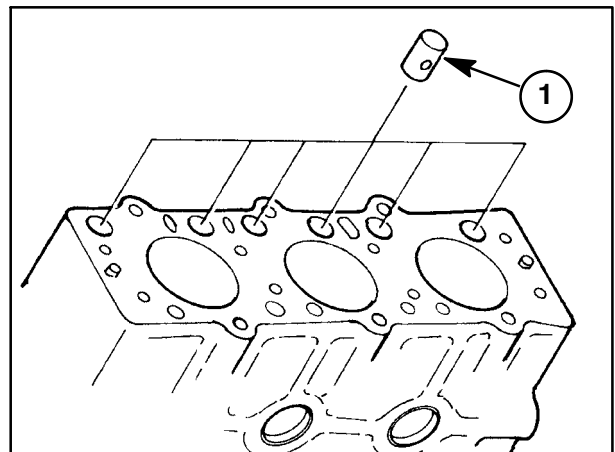


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### VALVE TAPPET REMOVAL

1. Remove the valve tappets, 1, from the machined bore in the cylinder block.

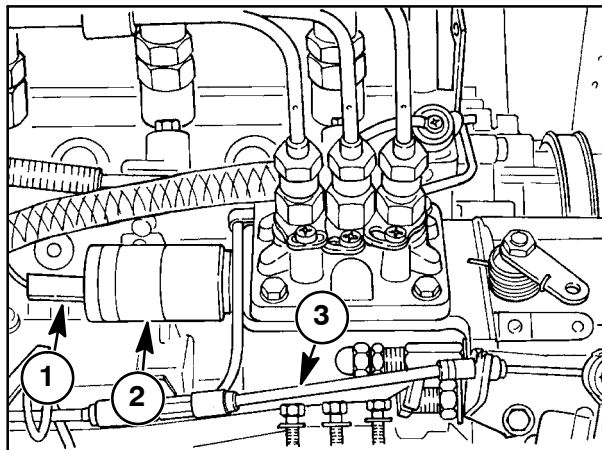
**NOTE:** Be sure to keep the valve components in separately marked containers for re-assembly in their original position.



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**FUEL SHUT-OFF SOLENOID REMOVAL**

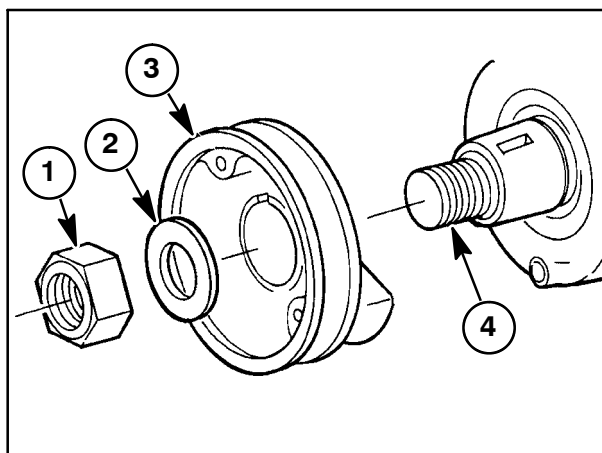
1. Remove the wire connector, 1, and unscrew the fuel shut-off solenoid, 2.



18

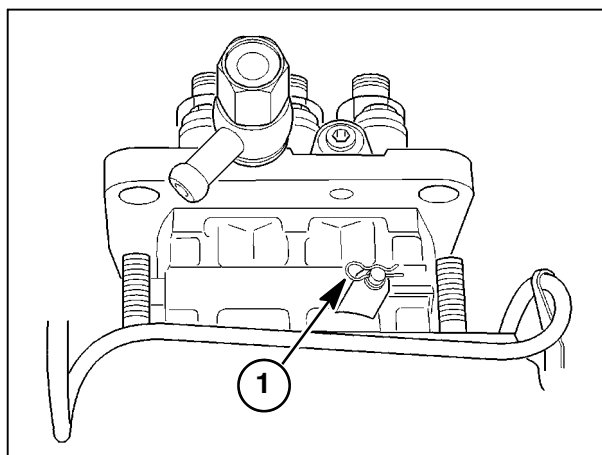
**ENGINE TIMING GEAR COVER, TIMING GEARS, AND CAMSHAFT**

1. Drain the engine crankcase oil into a suitable container.
2. Remove the nut, 1, and washer, 2, and remove the pulley, 3, from the crankshaft, 4.
3. Disconnect the throttle control cable from the governor lever, 3, Figure 18.



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4. Remove the injection pump mounting bolts and raise the injection pump enough to remove the spring pin, 1, and separate the governor link from the control rack.



20



**Suggest:**

**If the above button click is invalid.**

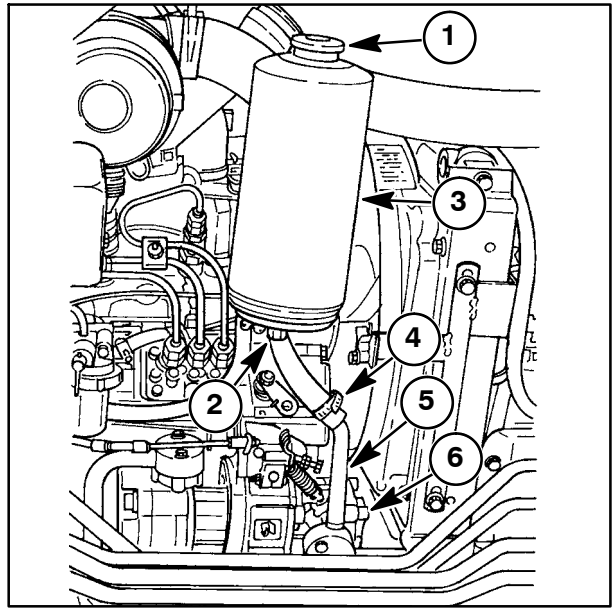
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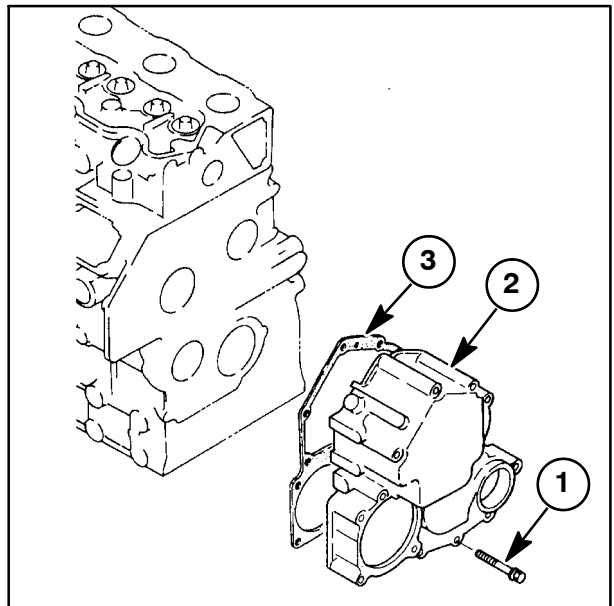
**Thank you so much for reading**

5. If equipped, remove the power steering pump reservoir tank dipstick-filler cap, 1. Remove the reservoir drain plug, 2, from the bottom of the reservoir, and drain the fluid out of the reservoir tank, 3, into a suitable container.
6. Loosen the hose clamp, 4, on the suction tube and disconnect the hose from the suction tube.
7. Remove the pressure tube, 5, from the engine side of the steering pump.
8. Remove the through bolts, 6, and remove the steering pump from the front cover. Cap and plug all lines and openings.



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9. Remove the retaining bolts, 1, and lift the front cover, 2, and gasket, 3, off the locating dowels.



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