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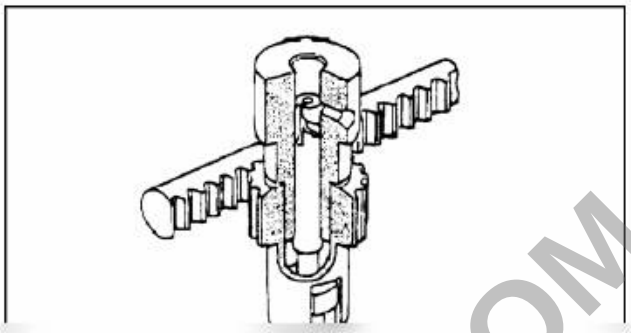
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Injection pump - Dynamic description – Fuel variation mechanism

As well as pressurizing the fuel oil, the injection pump also functions to vary the fuel injection quantity.

A control sleeve is installed around the plunger barrel, and a flange on the bottom of the plunger is inserted into a groove in the control sleeve. Teeth on the control sleeve are engaged with teeth on the control rack so that movement of the control rack results in rotation of the plunger and, consequently, variation of the fuel injection quantity.



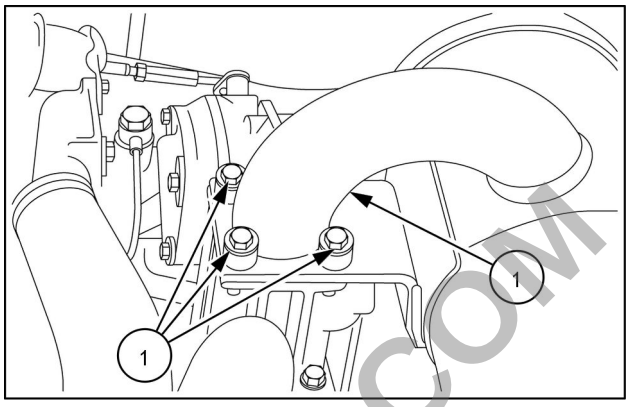
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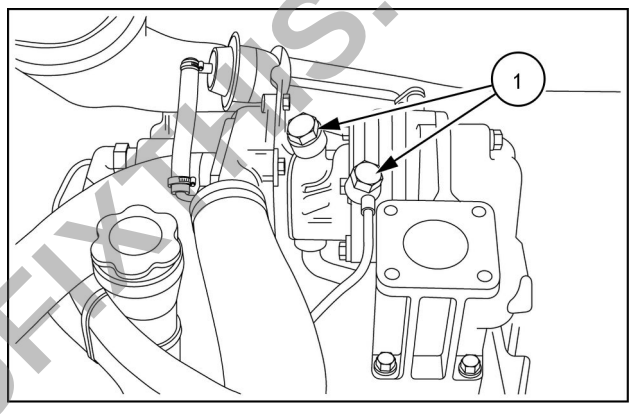
Turbocharger - Remove

1. Remove the bolts **(1)** securing the muffler to the turbo adapter assembly.



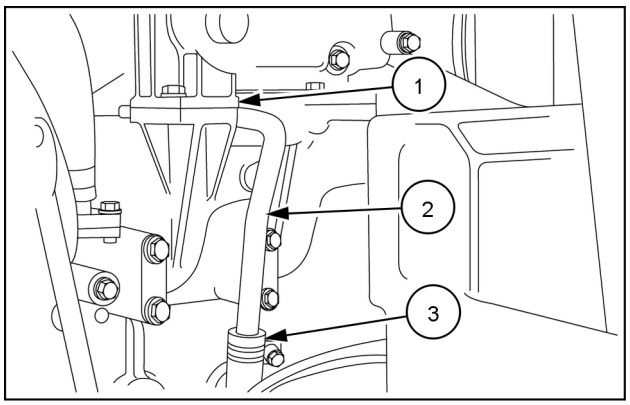
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2. Remove oil supply line **(1)** from turbocharger and engine block.



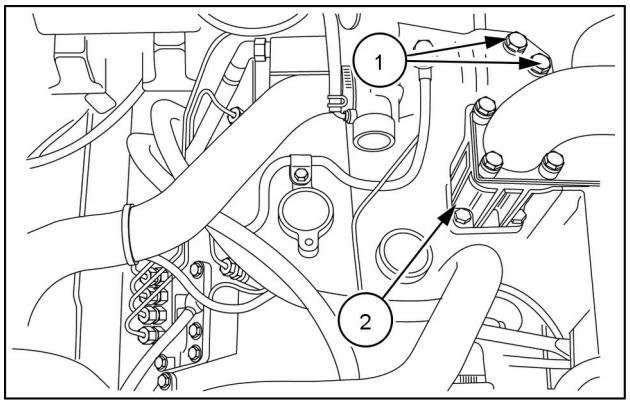
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3. Remove the oil return line **(2)** from the top of the hose clamp **(3)** and from the turbo assembly **(1)**.



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4. Unbolt the turbocharger from exhaust manifold **(2)** and adapter **(1)**.
5. Remove turbocharger.



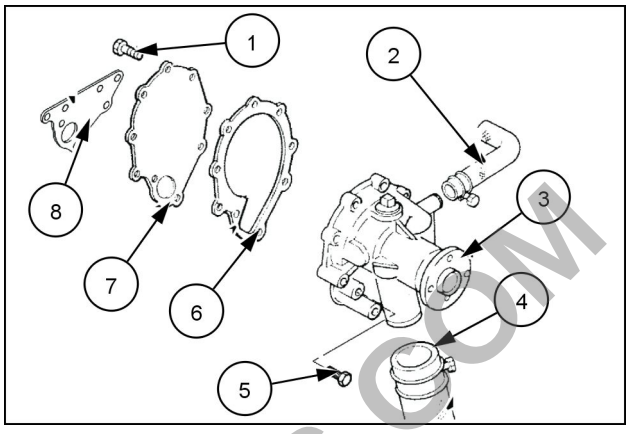
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Water pump - Install

1. Install the water pump mounting plate **(7)** and new gasket **(6)**.
2. Install the water pump **(3)** and new gasket **(8)** and tighten the retaining bolts **(1)** and **(5)**.
3. Install the bypass hose **(2)** and lower radiator hose **(4)** on the water pump and tighten the hose clamps.



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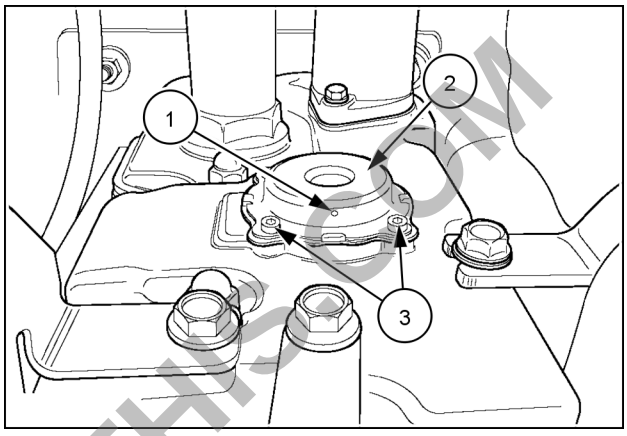
Blow-by recirculation system - Install - Engine breather valve

N843H	
N843L	
N843	
N844L	
N844	

1. Place breather valve **(2)** onto head cover. Make sure vent hole **(1)** is toward the front of the tractor.

NOTE: *Always keep small vent hole **(2)** free of oil and other debris, as to allow the crankcase, to vent properly.*

2. Secure the breather valve with the four screws **(3)**.

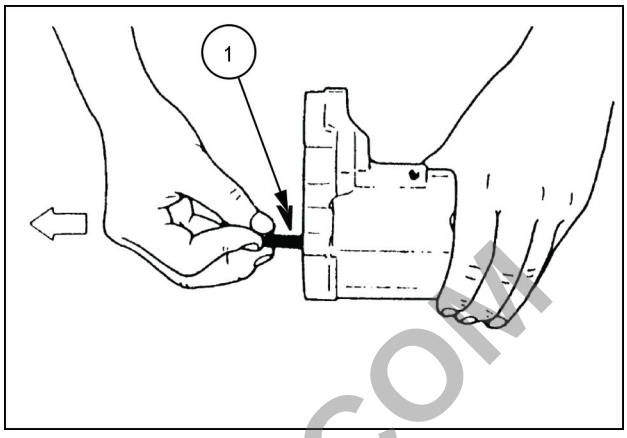


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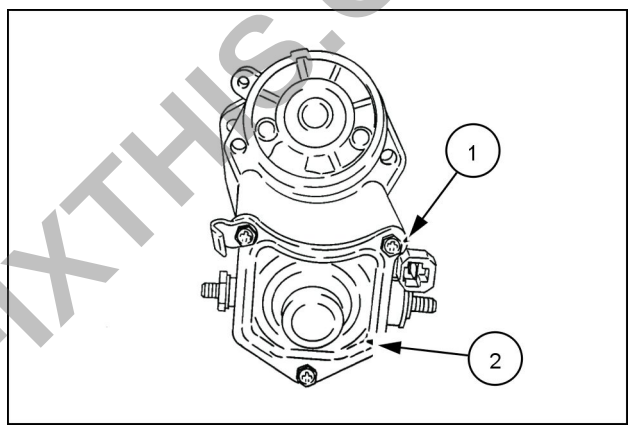
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13. Remove the return spring **(1)** from the electromagnetic solenoid.



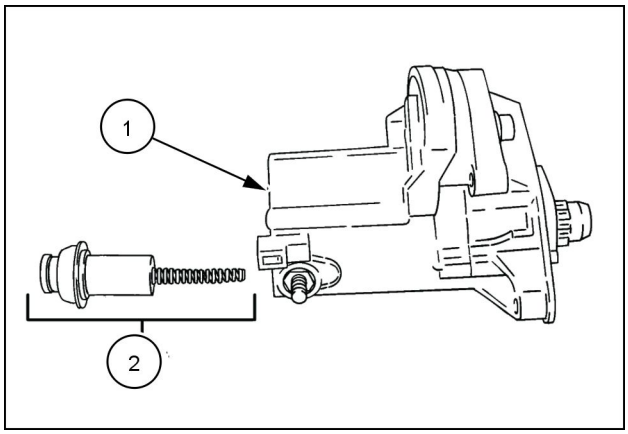
SEC55CH4PG34_1 11

14. Remove the screws **(1)** securing the solenoid cover **(2)** to the starter housing. Pry the cover from the housing.



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15. Remove the solenoid plunger and spring assembly **(2)** from the starter housing **(1)**.



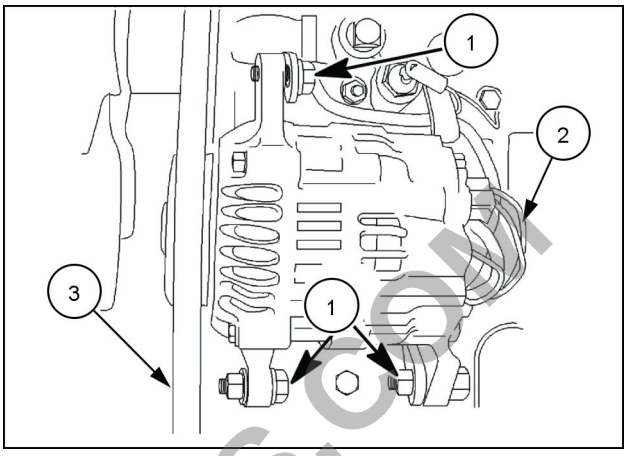
SEC55CH4PG34_3 13

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Alternator - Remove

1. Disconnect the negative (-) battery cable from the negative battery terminal.
2. Disconnect all wiring **(2)** from the rear of the alternator.
3. Loosen the alternator mounting bolts **(1)** and remove the V-belt **(3)** from the alternator drive pulley.
4. Remove the alternator mounting bolts **(1)** and remove the alternator from the engine.



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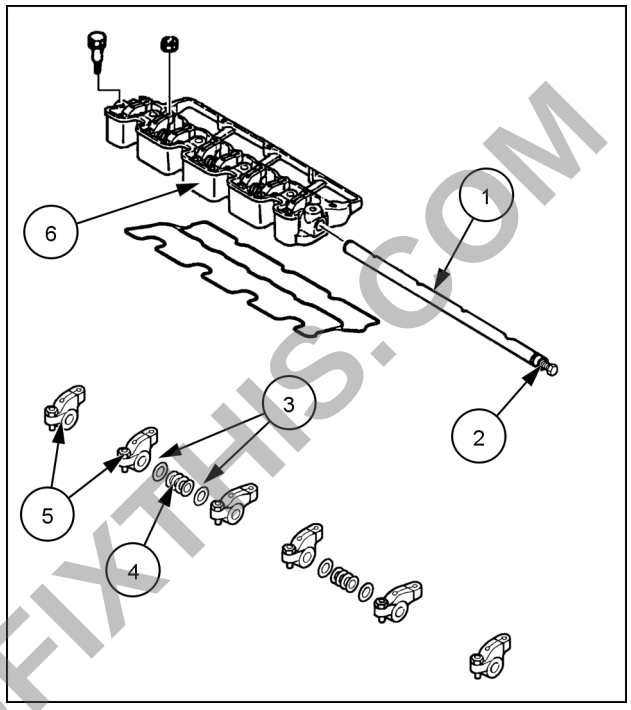
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Rocker arm - Install

Prior operation:
Rocker arm - Inspect (10.106)

1. Install the rocker shaft **(1)** into the rocker housing **(6)** while installing the rocker arms **(5)**, shims **(3)**, and springs **(4)**.
2. Remove the 8mm bolt **(2)** from the end of the shaft.



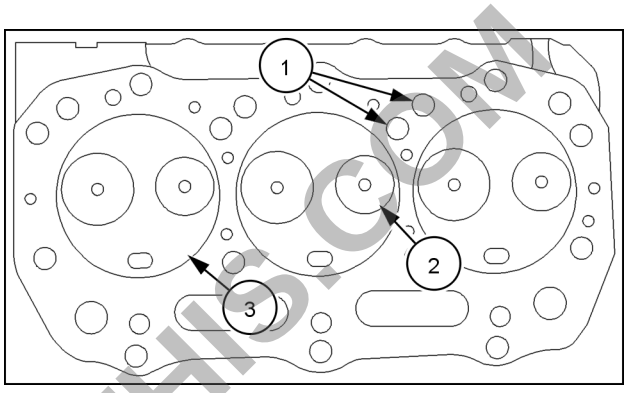
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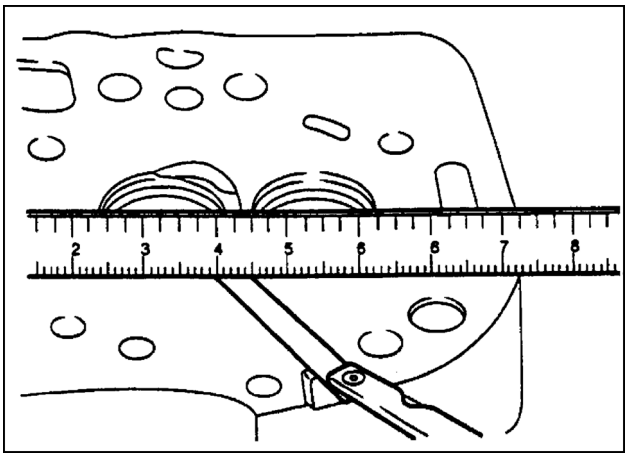
Cylinder head - Inspect

1. Clean all carbon deposits from the combustion chamber and valve ports using a wire brush and scraper.
2. Clean all dirt and residue from the gasket surface using care not to scratch or nick the machined surface.
3. Clean the cylinder head in solvent and air dry.
4. Inspect the head for cracks or damage in the following areas:
   - Valve ports
   - Water jackets **(1)**.
   - Valve seats **(2)**.
   - Prechamber **(3)**.



20093370 1

5. Inspect the gasket surfaces for scratches or nicks, which could cause leakage.
6. Examine the core hole plugs for rust or signs of leakage. If a plug shows signs of damaging rust or leakage, replace all plugs in the head.
7. Inspect the prechamber for carbon deposits and looseness. Remove any carbon deposits found. If prechamber is found to be loose, cylinder head may be warped.
8. Use a straight edge and a feeler gauge and check the cylinder head for warp lengthwise, crosswise, and diagonally



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NOTE: *If any cracks or other damage is found during inspection, cylinder head replacement is required.*

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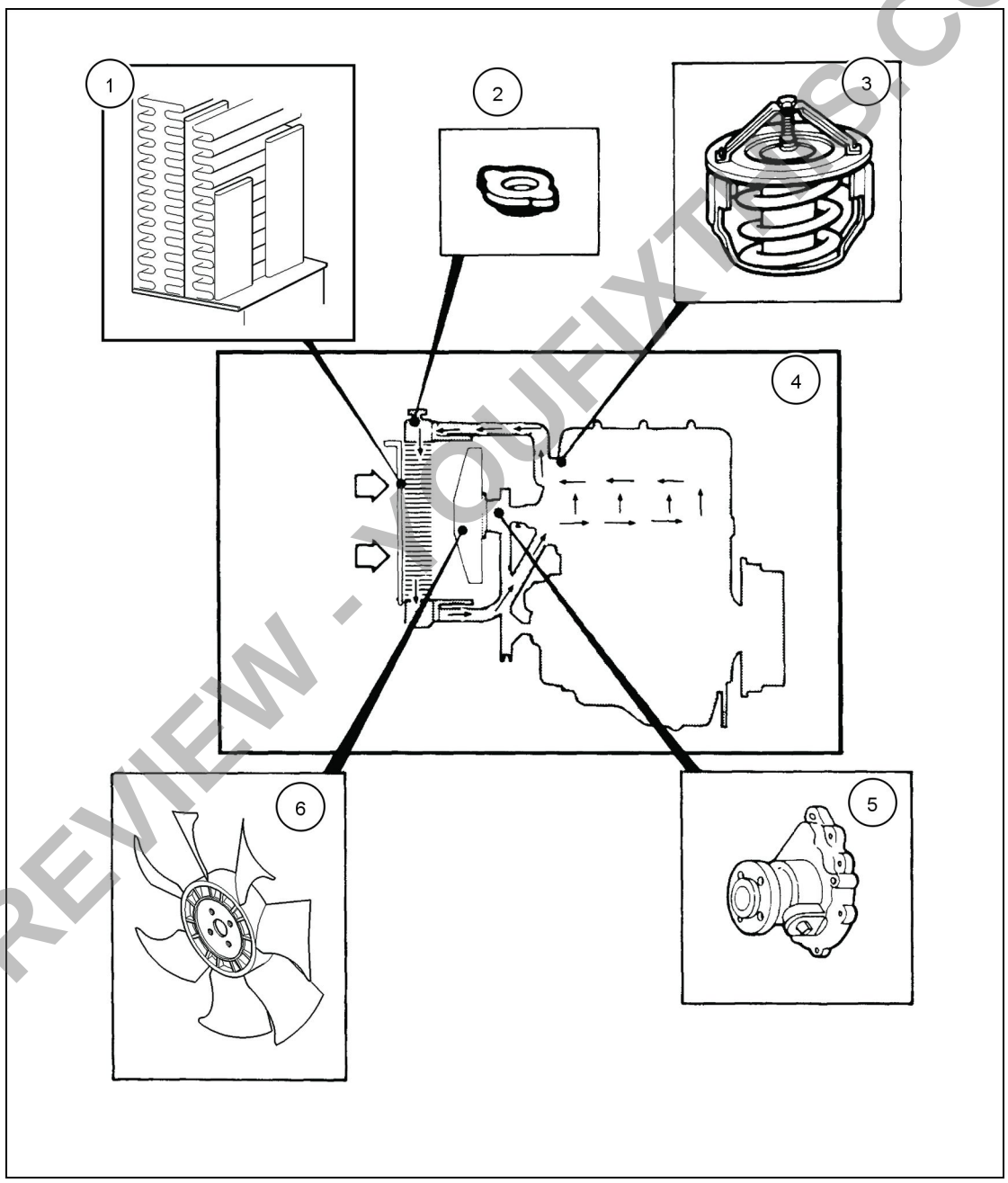
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Engine cooling system - Dynamic description

The cooling system is the recirculating bypass type with a full length water jacket for each cylinder cast into the block. The coolant is drawn from the bottom of the radiator by the water pump and passes around the cylinders and into the cylinder head.

The thermostat is located in the front of the cylinder head and thermostatically controls the flow of coolant from the engine to the radiator. When the thermostat is closed only a small amount of coolant is permitted to flow through the thermostat bypass to the radiator to effect a faster warm-up. When the thermostat is open, the coolant flows from the water outlet connection to the top tank of the radiator for maximum cooling.

Cooling occurs as the coolant passes down through the radiator cores which are exposed to the air flow created by the fan as air is drawn through the radiator.



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(1) Radiator
(2) Radiator cap
(3) Thermostat
(4) Air flow
(5) Water pump
(6) Fan

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Engine oil pump - Inspect - Pick-up tube

1. Clean the filter mesh to remove any debris or foreign objects.
2. Inspect the O-ring on the pick-up tube for wear or damage. Replace the O-ring if it becomes stiff or damaged.

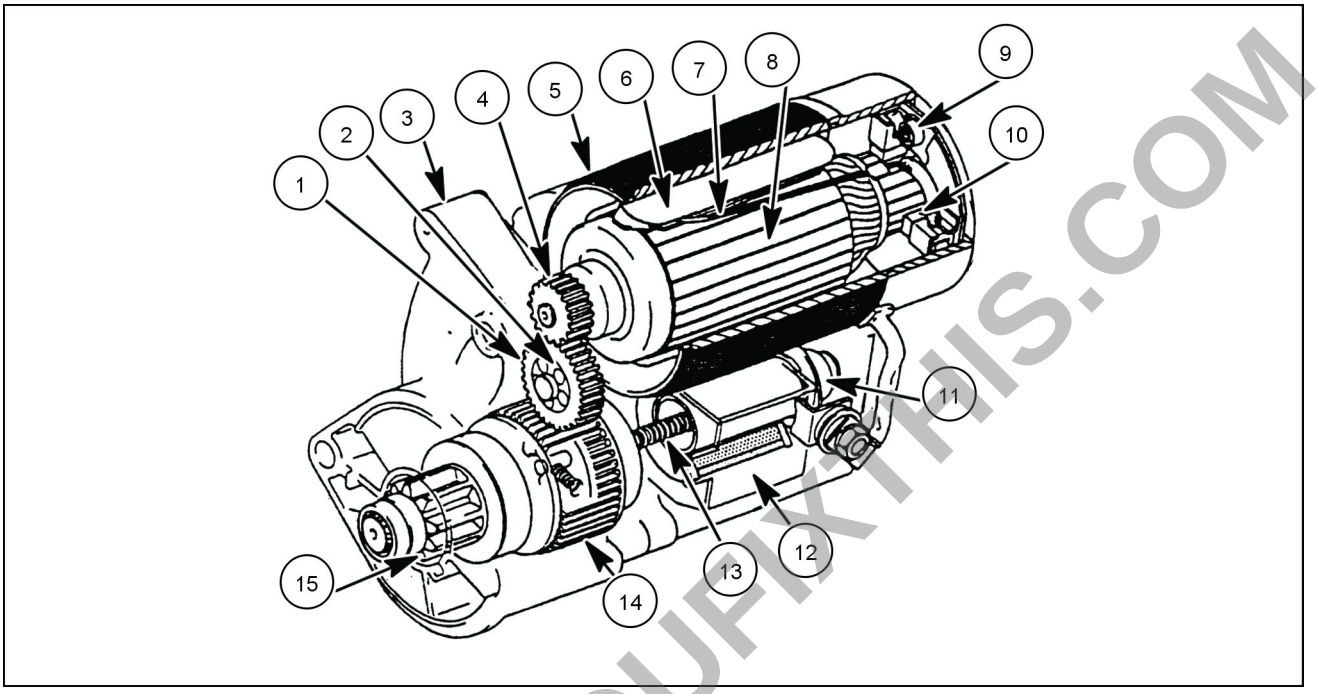
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Engine starting system - Dynamic description

The starting system consists of a starter motor equipped with an electromagnetic starter solenoid, a key switch, a start relay, several safety switches, and heavy-duty wiring.

Starter components



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(1) Idler gear
(2) Idler gear roller bearing
(3) Reduction uni cover
(4) Armature drive gear
(5) Motor/Field coil housing (Yoke)
(6) Permanent magnet
(7) Field coil
(8) Armature
(9) Brush spring
(10) Brush
(11) Plunger
(12) Solenoid
(13) Return spring
(14) Pinion clutch
(15) Pinion

Starter motor assembly

The starter motor features a high-speed motor that utilizes a gear reduction unit, an overrunning pinion clutch **(14)** and permanent magnets **(6)** in a field coil **(7)** for magnetic field induction. The reduction unit consists of a small drive gear **(4)** on the motor armature **(8)** which drives an idler gear **(1)** in the reduction unit. The idler gear is splined to the gear on the pinion clutch housing **(14)**. When the starter solenoid **(12)** is energized, the solenoid plunger **(11)** pushes the pinion gear **(15)** out, engaging with the engine flywheel. The starter motor then is turning the flywheel, which rotates the engine. The use of the gear reduction unit allows use of the compact, high-speed motor and provides more torque and power to turn the engine flywheel. The sliding pinion mechanism is enclosed, resulting in a more durable mechanism.

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