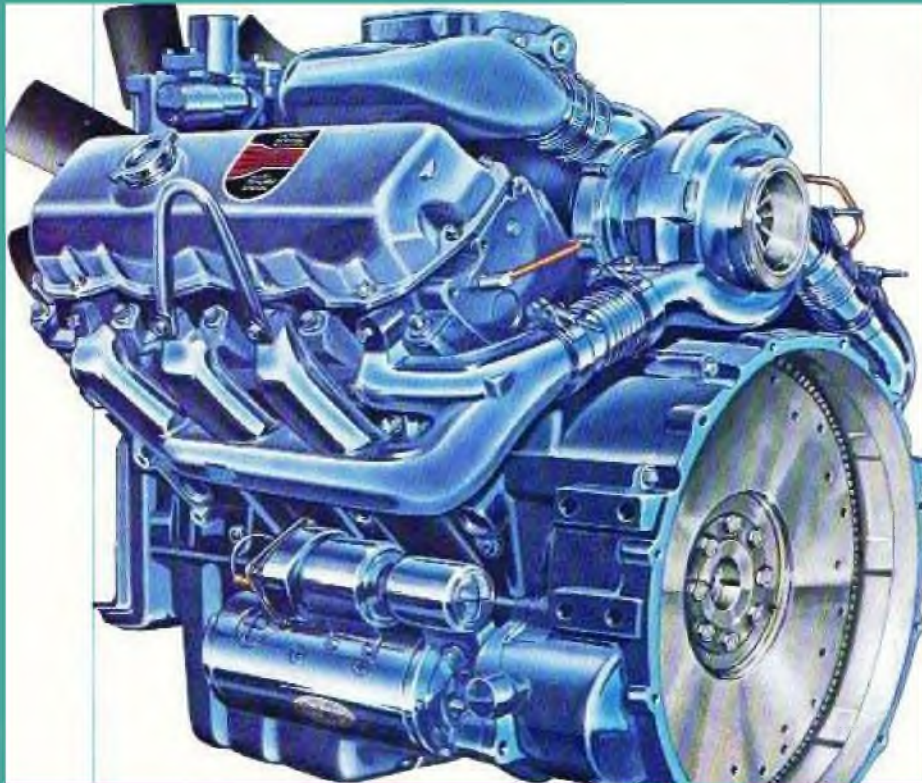


# Detroit Diesel

8.2 Liter

## Preventive Maintenance



Barrington Diesel Club



### LUBRICATION AND PREVENTIVE MAINTENANCE

The *Lubrication and Preventive Maintenance Schedule* is intended as a guide for establishing a preventive maintenance schedule. The suggestions and recommendations for preventive maintenance should be followed as closely as possible to obtain long life and best performance from a Detroit Diesel engine. The intervals indicated on the Chart are time or miles (in thousands) of actual operation.

### MAINTENANCE SCHEDULE EXPLANATION

The time or mileage increments shown apply only to the maintenance function described. These functions should be coordinated with other regularly scheduled maintenance such as chassis lubrication.

Maintenance functions 1 through 5 should be performed daily. Items 6 through 10 should be performed at 6,000 mile intervals. Item 11 should be performed at 12,000 mile intervals. Items 12 through 23 should be performed at the intervals (whichever comes first, the time or mileage increments) as shown in the Chart. Items 24 and 25 should be performed annually.

Instructions on the pages following the Chart describe the maintenance function involved.





**LUBRICATION AND PREVENTIVE MAINTENANCE CHART**

<b>DAILY</b>												
1. Lubricating Oil	I											
2. Fuel Tanks	I											
3. Fuel Lines	I											
4. Cooling System	I											
5. Turbocharger	I											
<b>6,000 MILE INTERVALS</b>												
6. Lubricating Oil (See Note Below)	R*											
7. Lubricating Oil Filters	R*											
8. Air System	I											
9. Drive Belts	I											
10. Air Compressor/Vacuum Pump	I											
<b>12,000 MILE INTERVALS</b>												
11. Fuel Filters	R											
<b>6 MONTHS OR 10,000 MILE INTERVALS</b>	Months	6	12	18	24	30	36	42	48	54	60	
	Mile In Thousands	10	20	30	40	50	60	70	80	90	100	
12. Air Cleaner			I		I		I		I		I	
13. Starting Motor	I	I	I	I	I	I	I	I	I	I	I	
14. Fuel Tanks			I		I		I		I		I	
15. Cooling System			I		I		I		I		I	
16. Exhaust System			I		I		I		I		I	
17. Air Compressor			I		I		I		I		I	
18. Radiator			I		I		I		I		I	
19. Oil Pressure			I		I		I		I		I	
20. Governor						I					I	
21. Fuel Injectors & Valve Clearance						I					I	
22. Alternator (Battery-Charging)								I				
23. Engine & Transmission Mounts								I				
<b>ANNUALLY</b>												
24. Thermostats & Seals	I											
25. Fan	I											

I = Inspect, Correct or Replace If Necessary  
 R = Replace  
 \* = Check Level Daily. Replace Oil and Filters Every 6,000 Miles or 200 Hours.





FUEL PINCHER

Item 1 - Lubricating Oil

Check the lubricating oil level with the engine stopped. If the engine has just been stopped, wait approximately ten minutes to allow the oil to drain back to the oil pan. Add the proper grade oil (refer to Section 13.3) as required to maintain the correct level on the dipstick.

NOTE: Oil may be blown out through the crankcase breather if the crankcase is overfilled or engine could overspeed.

Make a visual check of all lubricating oil lines for wear and chafing. If any indication of wear is evident, replace the oil lines and correct the cause.

Item 2 - Fuel Tanks

Keep the fuel tank filled to reduce condensation to a minimum. Select the proper grade of fuel in accordance with Fuel Specifications in Section 13.3. Open the drain at the bottom of the fuel tank every other month to drain off any water or sediment.

Every 12 months or 20,000 miles tighten all fuel tank mountings and brackets. At the same time, check the seal in the fuel tank cap, the breather hole in the cap and the condition of the crossover fuel line. Repair or replace the parts, if necessary.

Diesel Fuel Contamination

The most common form of diesel fuel contamination is water. Water is harmful to the fuel system in itself, but it also promotes the growth of microbiological organisms (microbes). These microbes clog fuel filters with a "slime" and restrict fuel flow.

Water can be introduced into the fuel supply through poor maintenance (loose or open fuel tank caps), contaminated fuel supply or condensation.

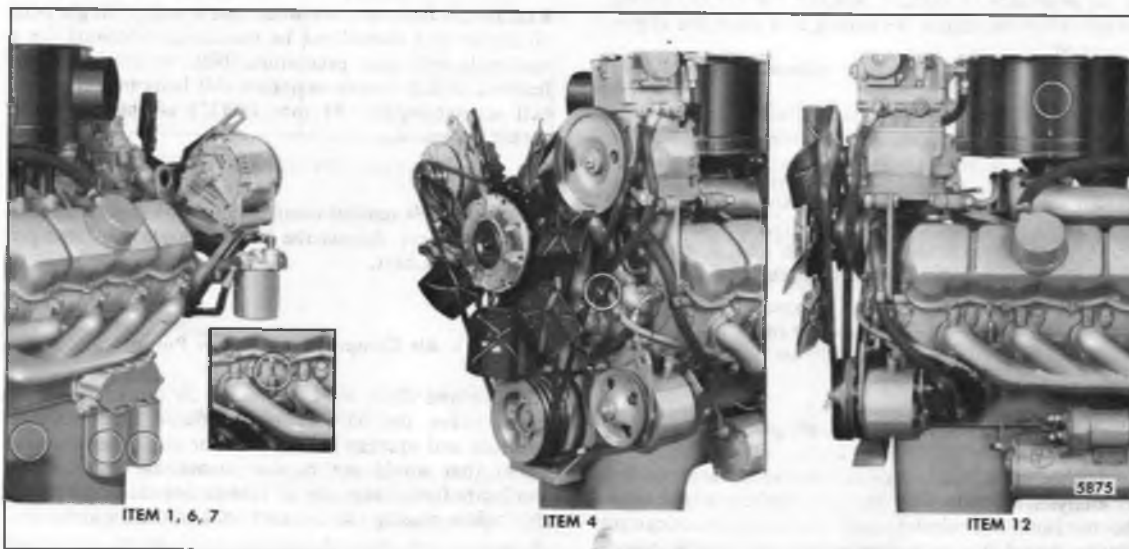
Condensation is particularly prevalent on units which stand idle for extended periods of time, such as marine units. Ambient temperature changes cause condensation in partially filled fuel tanks.

Water accumulation can be controlled by mixing isopropyl alcohol (dry gas) into the fuel oil at a ratio of one pint (.5 liter) per 125 gallons (473 liters) fuel (or 0.10% by volume).

Marine units in storage are particularly susceptible to microbe growth. The microbes live in the fuel-water interface. They need both liquids to survive. These microbes find excellent growth conditions in the dark, quiet, non-turbulent nature of the fuel tank.

Microbe growth can be eliminated through the use of commercially available biocides. There are two basic types on the market.

1. The water soluble type treats only the tank where it is introduced. Microbe growth can start again if fuel is transferred from a treated to an untreated tank.





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2. Diesel fuel soluble type, such as "Biobor" manufactured by U.S. Borax or equivalent, treats *the fuel* itself and therefore the entire fuel system.

Marine units, or any other application, going into storage should be treated as follows: Add the biocide according to the manufacturer's instructions. This operation is most effective when performed as the tank is being filled. Add dry gas in the correct proportions.

If the fuel tanks were previously filled, add the chemicals and stir with a clean rod.

#### Item 3 - Fuel Lines

Make a visual check for fuel leaks at the cross-over lines and at the fuel tank suction and return lines. Since fuel tanks are susceptible to road hazards, leaks in this area may best be detected by checking for accumulation of fuel under the tanks.

#### Item 4 - Cooling System

Before starting the engine each day, always check the coolant level. Make sure the coolant covers the radiator tubes. Add coolant as necessary. *Do not overfill.*

Make a visual check for cooling system leaks. Check for an accumulation of coolant beneath the vehicle during periods when the engine is running and when the engine is stopped.

#### Item 5 - Turbocharger

Inspect the mountings, intake and exhaust ducting and connections for leaks. Check for restrictions to air flow. Check for unusual noise or vibration and, if excessive, remove the turbocharger and correct the cause.

#### Item 6 - Lubricating Oil

Change the initial lubricating oil at approximately 6,000 mile intervals. The drain interval may be established on the recommendations of an independent oil analysis laboratory or the oil supplier (based upon the oil sample analysis) until the most practical oil change period has been determined. Select the proper grade of oil in accordance with the instructions given in *Lubrication Specifications* in Section 13.3.

#### Item 7 - Lubricating Oil Filters

Change the lubricating oil filters when the engine oil is changed. Any deviation, such as changing filters every other oil change, should be based on a laboratory analysis of the drained oil and the used filter elements to determine if such practice is practical for proper protection of the engine.

Make a visual check of all lubricating oil lines for wear and chafing. If any indication of wear is evident, replace the oil lines and correct the cause.

#### Item 8 - Air System

Check all of the connections in the air system to be sure they are tight. Check all hoses for punctures or other damage and replace, if necessary.

#### Item 9 - Drive Belts

New drive belts stretch during the first few hours of operation. Run the engine 30 *seconds*, to seat the belts and readjust the tension. Then, check the belts and retighten fan drive, pump drive and battery-charging alternator drive belts after 250 miles of operation. Thereafter, check the tension of the drive belts at the intervals shown in the Chart. Too tight a belt is destructive to the bearings of the driven part, a loose belt will slip.

Replace all belts in a set when one is worn. Single belts of similar size should not be used as a substitute for a matched belt set; premature belt wear can result because of belt length variation. All belts in a matched belt set are within .81 mm (.032") of their specified center distances.

Adjust the belt tension using belt tension gage J 23600-B or equivalent. Adjust the belt tension as outlined per belt tension Chart.

#### Item 10 - Air Compressor/Vacuum Pump

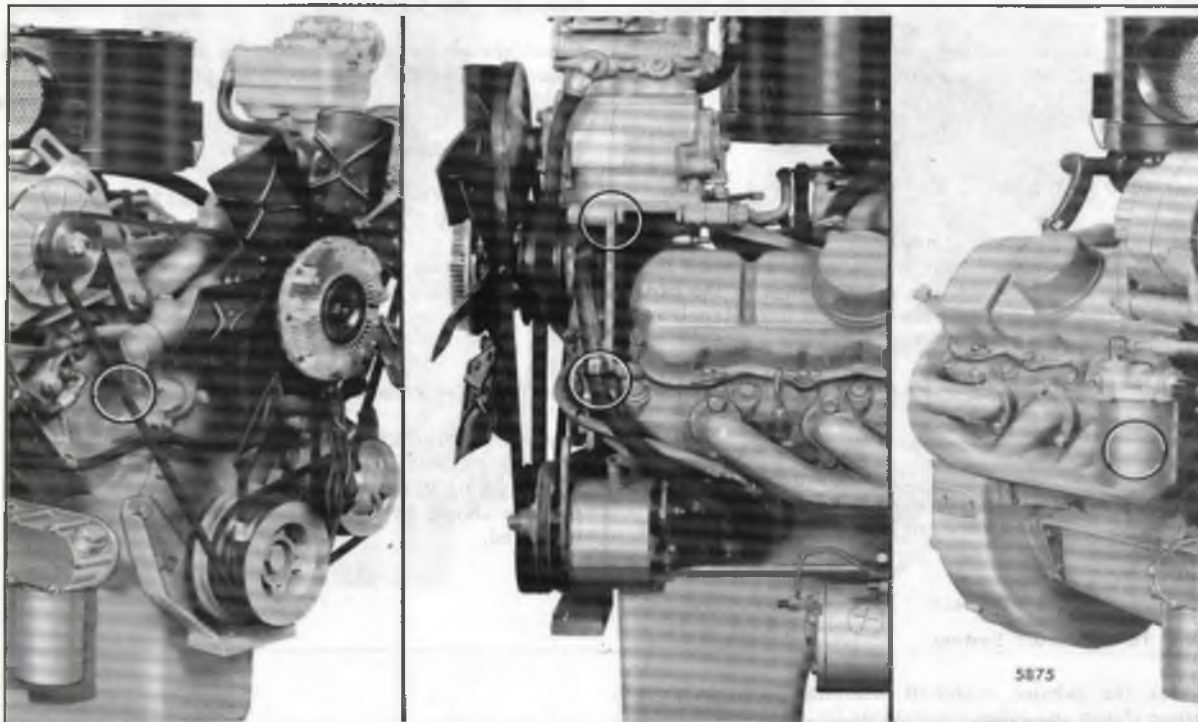
Remove and clean air compressor air intake parts. To clean either the hair or polyurethane type element, saturate and squeeze it in fuel oil, or any other cleaning agent that would not be detrimental to the element, until dirt free. Then, dip in lubricating oil and squeeze dry before placing the element back in the air strainer.

For replacement of the air strainer element, contact the air compressor manufacturer/dealer.





FUEL PINCHER



Item 9 Items 10, 17 Item 11

Alternator Drives		Fan/Accy. Drives
One 1/2" Belt	Two 1/2" Belt	One 1/2" Belt
60 ± 10	45 ± 5	90 ± 10

BELT TENSION CHART (lbs/belt)

Inspect the vacuum pump oil supply, oil return and vacuum lines and replace, if necessary.

**Item 11 - Fuel Filters**

Install new strainer and filter at the intervals shown in the chart, or when plugging is indicated.

A method of determining when elements are plugged to the extent that they should be changed is based on the inlet restriction at the fuel pump. In a clean system, the maximum pump inlet restriction must not exceed 6 inches of mercury. Change the fuel filter elements whenever the inlet restriction (suction) at the fuel pump

reaches 12 inches of mercury at normal operating speeds.

**Item 12 - Air Cleaner**

Inspect and service the air cleaner element every 20,000 miles, or more often if the engine is operated under severe dust conditions. Check the gaskets for deterioration and replace, if necessary. If the dry type air cleaner is equipped with an aspirator, check for aspirator damage or clogging. Clean and repair as necessary.

Under no engine operating conditions should the air inlet restriction exceed 20 inches of water. A clogged air cleaner element will cause excessive intake restriction and a reduced air supply to the engine.

**Item 13 - Starting Motor**

Starting motors which are provided with lubrication fittings (grease cups, hinge cap oilers, or oil tubes sealed with pipe plugs) should be lubricated at the intervals shown on the Chart. Add 8 to 10 drops of oil, of the same grade as used in the engine, to hinge cap oilers; if sealed tubes are provided, remove the pipe plugs add oil



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and reseal the tubes. Grease cups should be turned down one turn. Refill the grease cups, if necessary. However, some starting motors do not require lubrication except during overhaul.

Item 14 - Fuel Tanks

Check all fuel tank mountings and brackets and tighten or replace as necessary. At the same time, check the seal in the fuel tank cap, the breather hole in the cap, and the condition of the cross-over fuel line. Repair or replace the parts as necessary.

Item 15 - Cooling System

Check the cooling system hoses for deterioration or damage and replace, if necessary. Check all of the hose clamps to make sure they are tight and properly seated on the hoses.

Item 16 - Exhaust System

Check the exhaust manifold retaining bolts, exhaust flange clamp and other connections for tightness. Check for proper operation of the exhaust pipe rain cap, if one is used.

Item 17 - Air Compressor

Check the air compressor mounting bolts and tighten, if necessary. Check the drive belts for proper tension.

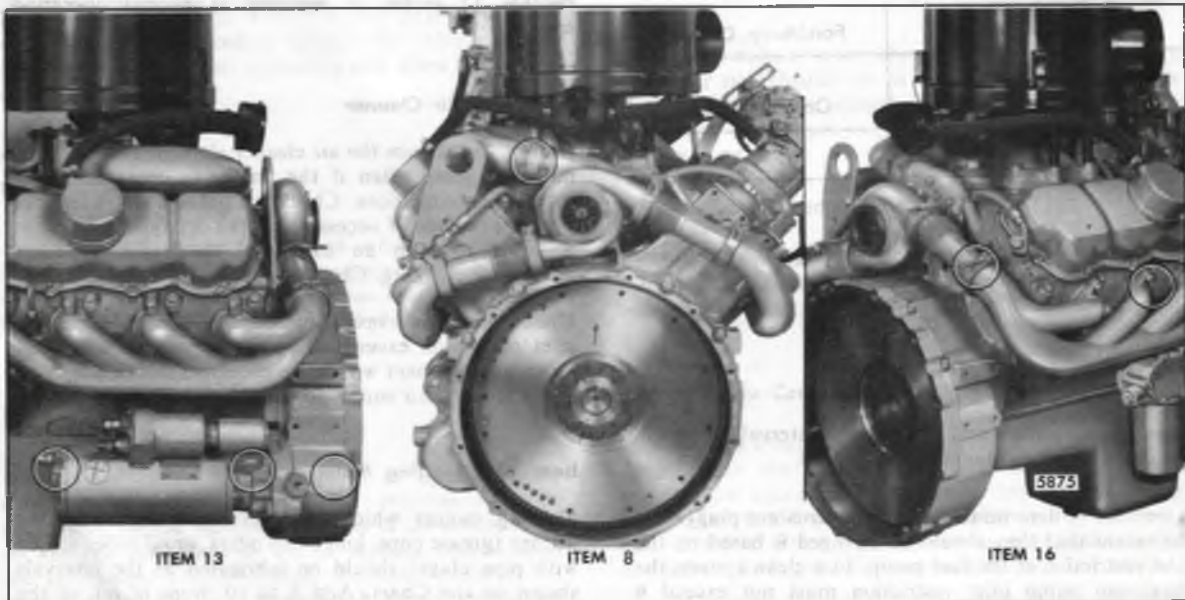
Item 18 - Radiator

Inspect the exterior of the radiator core and steam clean it, if necessary.

**NOTE:** Never use fuel oil, kerosene or petroleum base solvents for cleaning since they may leave an oil film on the radiator fins.

Item 19 - Oil Pressure

Under normal operation, oil pressure is noted each time the engine is started. In the event the engine is equipped with warning lights rather than pressure indicators, the pressure should be checked and recorded at the interval indicated.

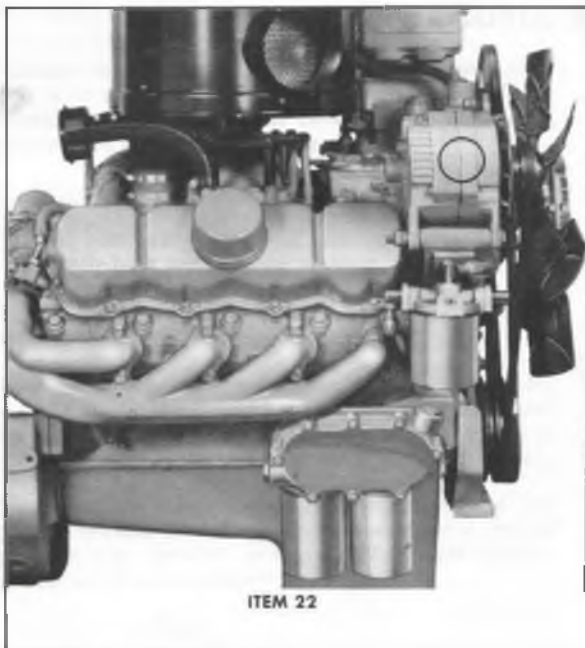




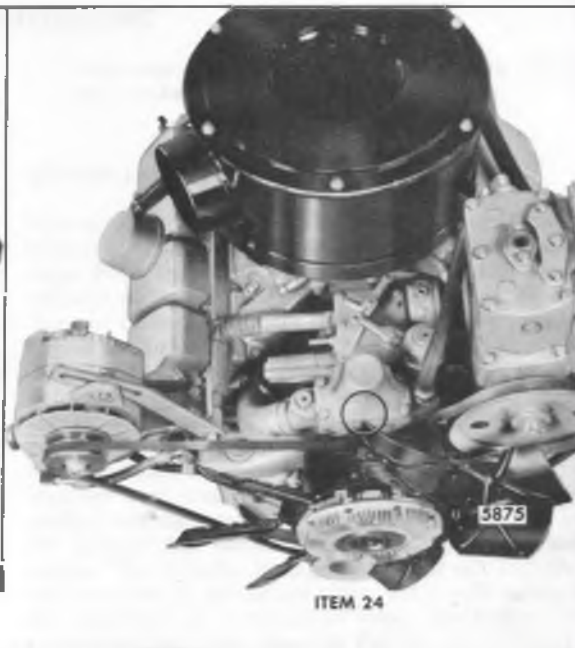


### FUEL PINCHER

Preventive Maintenance 15.1



ITEM 22



ITEM 24

#### Item 20 - Governor

Check and record the engine idle speed and no-load speed. Adjust as necessary.

An idle speed lower than recommended will cause the engine to be accelerated from a speed lower than the speed at which the engine was certified and may result in engine stalling.

A no-load speed higher than recommended will result in a full-load speed higher than rated and higher than the speed at which the engine was certified.

#### Item 21 - Fuel Injectors

Check the injector timing and intake and exhaust valve clearances. The proper adjustment of the injectors is of primary importance to emission control.

#### Item 22 - Alternator (Battery-Charging)

Check the alternator mounting bracket bolt torques and tighten if necessary. Check drive belts for proper belt tension.

#### Item 23 - Engine and Transmission Mounts

Check the engine and transmission mounting bolt torques and the condition of the mounting pads. Tighten and repair, as necessary.

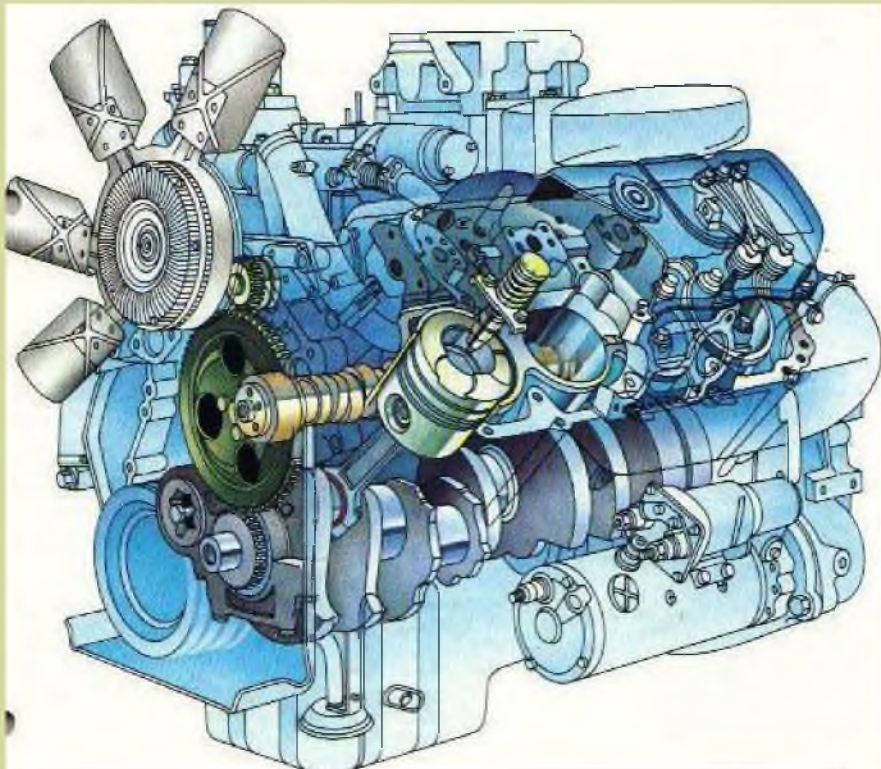
#### Item 24 - Thermostats

Check the thermostats (preferably at the time the cooling system is prepared for winter operation).

#### Item 25 - Fan

Check the cooling fan mounting bolt torques and tighten, if necessary. In installations where a viscous fan clutch is used, inspect and replace, if necessary. Tighten viscous fan clutch mounting bolts, if necessary.





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