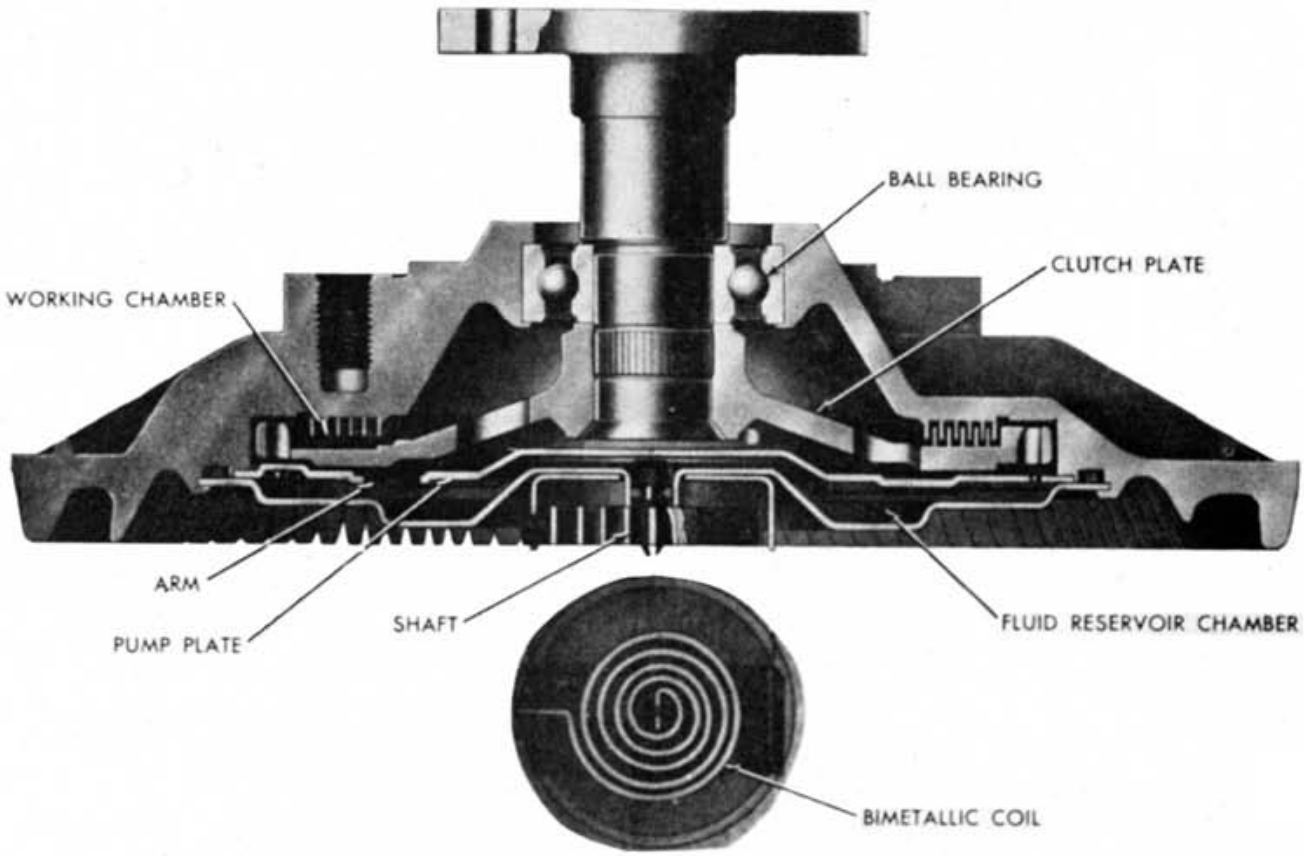
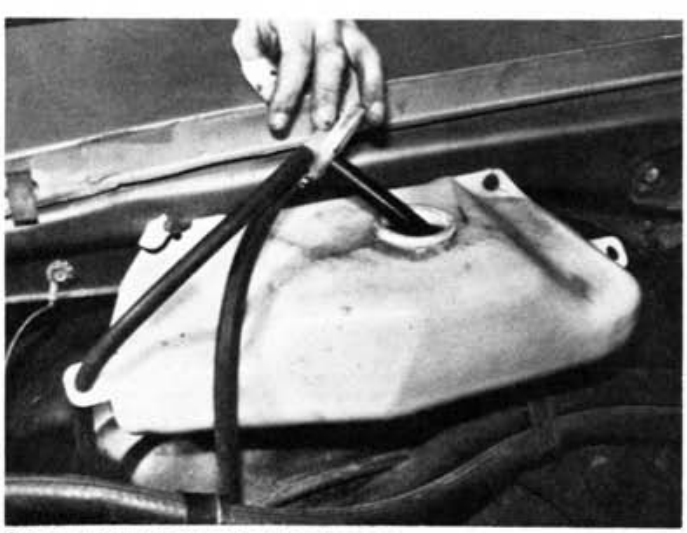


Fig. 2.6. Sectional view of the automatic fan clutch



2.2 Removing the expansion chamber cap

eject water from the top outlet, which is against the normal direction of flow.

6 Where the coolant is regularly drained and the system refilled with the correct antifreeze/inhibitor mixture there should be no need to employ chemical cleaners or descalers but if the system has been neglected then use a branded cleaning agent in accordance with the manufacturer's instructions.

7 To refill the system, reconnect the radiator hoses and install the drain plugs. Install the expansion reservoir and hose where applicable.

8 *On vehicles without an expansion reservoir:* refill the system through the radiator filler cap until the level is two inches below the filler neck.

9 *On vehicles with an expansion reservoir:* fill the radiator to the base of the filler neck and then add more coolant to the expansion reservoir so that it reaches the 'FULL HOT' mark. Fit the reservoir cap but not the radiator cap.

10 Run the engine until normal operating temperature is reached and with the engine idling, add coolant up to the correct level (see Section 2), then fit the radiator cap so that the arrows are in alignment with the overflow pipe.

11 Always refill the system with a mixture as described in the next Section.

4 Antifreeze and inhibiting solutions

1 It is recommended that the cooling system is filled with a water/ethylene glycol based antifreeze solution which will give protection down to at least −20°F at all times. This provides protection against corrosion and increases the coolant boiling point. When handling antifreeze, take care that it is not spilled on the vehicle paintwork, since it will invariably cause damage if not removed immediately.

2 The cooling system should be drained, flushed and refilled every alternate Fall. The use of antifreeze solutions for periods of longer than two years is likely to cause damage and encourage the formation of rust and scale due to the corrosion inhibitors gradually losing their efficiency.

3 Before adding antifreeze to the system, check all hose connections and check the tightness of the cylinder head bolts as such solutions are searching. The cooling system should be drained and refilled with a fresh solution of plain water and antifreeze.

4 The quantity of antifreeze which should be used for various levels of

protection is given in the table below, expressed as a percentage of the system capacity.

Antifreeze volume	*Protection to*	*Safe pump circulation*
25%	*−26°C (−15°F)*	*−12°C (10°F)*
30%	*−33°C (−28°F)*	*−16°C (−3°F)*
35%	*−39°C (−38°F)*	*−20°C (−4°F)*

5 Where the cooling system contains an antifreeze solution any topping-up should be done with a solution made up in similar proportions to the original in order to avoid dilution.
6 In addition to the antifreeze solution, it is recommended that a suitable cooling system inhibitor and sealer is added to the cooling system every Fall to retard the formation of rust and scale.

5 Radiator - removal, inspection and installation

1 The method of fitment of the radiator (and shroud, where applicable) has changed slightly throughout the production years of the Nova, but the following is a typical procedure.
2 In all cases, drain the cooling system (see Section 3).
3 Remove all the radiator hoses.
4 Remove the radiator upper panel (where applicable) (photo).
5 Remove the shroud from the radiator (where applicable) and hang it over the fan.
6 Remove the radiator support screws and lift out the radiator (photo).
7 The radiator should be cleared of dirt and bugs by blowing from the rear with a compressed-air line and the use of a soft brush. Take care that the fins are not bent.
8 Installation of the radiator is the reverse of the removal procedure. Refer to Section 3 and 4 for filling instructions and antifreeze/inhibitor mixture preparation.

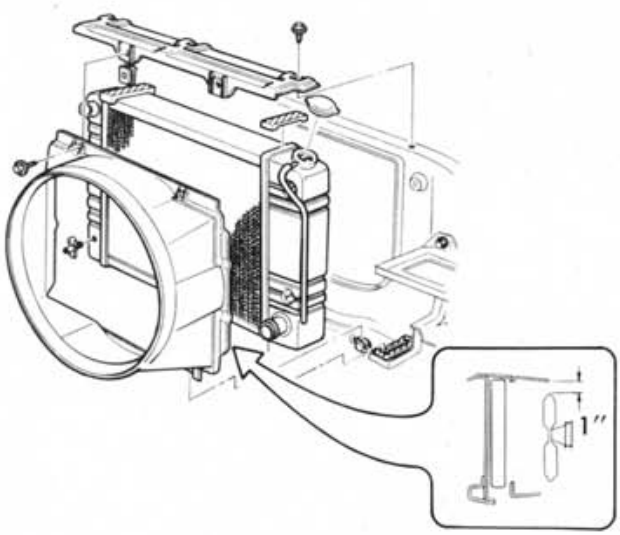


Fig. 2.7. Radiator support and shroud - 1971 model shown (Sec. 5)

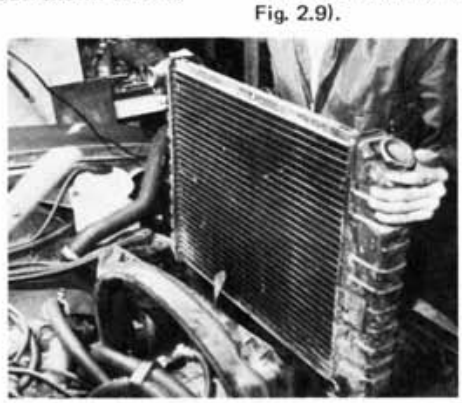
6 Thermostat - removal, testing and installation

1 Remove the radiator to water outlet hose.
2 Remove the thermostat housing bolts, then remove the water outlet and gasket from the thermostat housing.
3 Remove the thermostat and ensure that it is in good condition.
4 Place the thermostat in a 33% glycol/water solution which has been heated to 25°F above the temperature stamped on it.
5 Submerge the thermostat and agitate the water thoroughly. The thermostat should fully open; reject it if this does not occur.
6 Remove the thermostat and place in a similar mixture at 10°F below the temperature stamped on it.
7 Again agitate the water and check that the thermostat closes. Reject it if this fails to happen.
8 Installation of the thermostat is the reverse of the removal procedure, but ensure that a new gasket is used. Refer to Sections 3 and 4 for filling instructions and antifreeze/inhibitor mixture preparation.

7 Water pump - removal and installation (including fan belt adjustment)

1 Drain the cooling system (refer to Section 3), then loosen the fan pulley bolts.
2 Disconnect the heater hose, radiator lower hose and bypass hose (as required) at the water pump.
3 Remove the alternator upper brace, loosen the swivel bolt and remove the fan belt.
4 Remove the fan blade assembly attaching bolts, the fan and the pulley. If the fan is damaged in any way, no attempt should be made to straighten or repair it as the resulting repair will be out of balance; a replacement unit must be obtained and fitted. Where a thermostatic fan clutch is being removed, it must remain in the 'in-car' position (ie: in a vertical plane) to prevent leakage of the silicone hydraulic fluid.
5 Remove the pump to block and power steering to pump bolts, (and the AIR pump, where applicable), then remove the water pump and old gasket from the engine (photos).
6 A defective water pump cannot be repaired and a replacement item must be used if the original one is faulty. If the original is to be re-installed, ensure that the air vent and drain holes are unobstructed.
7 When installing, assemble the pump to the cylinder block using a new gasket and a non-setting jointing compound. Fit and torque tighten the bolts.
8 Install the pump pulley and fan on the pump hub, then torque tighten the bolts.
9 Where a thermostatic fan clutch is being reinstalled, follow the procedure in paragraph 10 thru 20. Where a standard fan is being reinstalled ignore paragraph 10 thru 16.
10 Secure the thermostatic fan clutch blade to prevent rotation (see Fig. 2.9).

5.4 Removing the radiator upper panel



5.6 Removing the radiator. The shroud is pushed back over the fan

7.5a Remove the AIR pump