

## VARIABLE SPEED COOLING FANS

### FAN CLUTCH WITH THERMOSTATIC CONTROL

#### DESCRIPTION

This unit consists of a thermostatically controlled fluid fan and torque control clutch. The thermal control drive is a silicone filled coupling connecting the fan to the fan pulley. The drive is operated by a control valve and the control valve is operated by a temperature sensitive bimetal coil or strip. The control valve maintains the flow of silicone through the clutch. During periods of operation when radiator discharge air temperature is low, the fan clutch limits the fan speed. High radiator discharge air temperature causes bimetal to allow a greater flow of silicone to enter the clutch. This increases the drag between the driven member and driving member, resulting in a higher fan speed and increased cooling.

#### TESTING

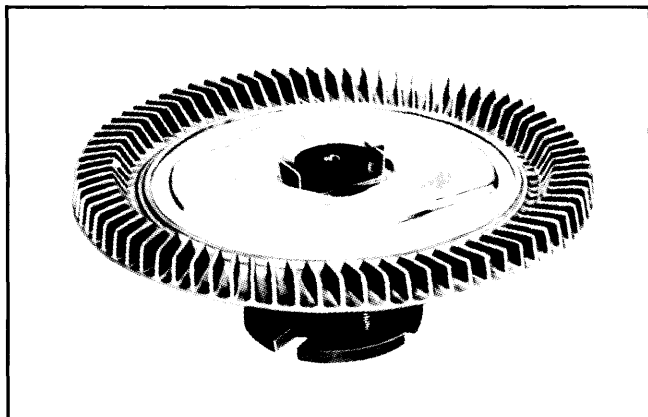
In cases of engine overheating or insufficient air conditioning, proceed as follows:

1) Start with a cool engine to ensure complete fan clutch disengagement. Cover radiator grille sufficiently to induce high engine temperature.

2) Start engine and operate at 2000 RPM and turn on air conditioning, if equipped. A fan roar will be noticed when fan clutch engages. It will take 5-10 minutes for fan to become engaged. While operating engine under these conditions, observe temperature light to prevent overheating. If hot light comes on, remove cover from radiator grille.

3) As soon as clutch engages, remove radiator grille cover and turn air conditioning off to assist in engine cooling. After several minutes fan clutch should disengage. This can be determined by a reduction in fan speed and roar. If fan fails to function as described, it should be replaced.

**Fig. 1: Thermal Control Fan Drive Unit**



*Rotation speed will vary with engine temperature.*

### FAN CLUTCH WITHOUT THERMOSTATIC CONTROL

#### DESCRIPTION

This unit is basically the same as the thermostatically controlled fan clutch except it is not controlled by a temperature sensitive coil. The fan clutch allows the fan to be driven in a normal manner at low speeds while a higher engine speed limits the rotational speed of the fan to a predetermined rate. The silicone in the clutch housing provides a more positive drive at lower speeds and allows greater slippage between the driven member and driving member at higher engine speeds.

#### TESTING

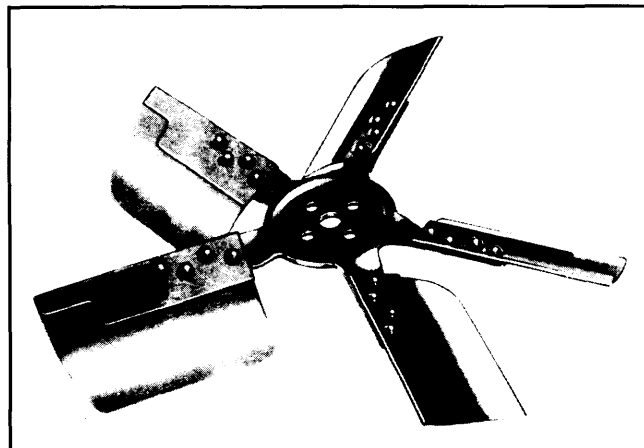
In case of engine overheating during low speed or idle operation, increase engine speed to approximately 1000 RPM in neutral gear. If condition is not corrected by increasing engine speed, replace fan drive unit with a unit that is known to be operating properly and test by operating vehicle under same conditions. Replace unit assembly if trouble is corrected with test unit. All units are non-adjustable. Replace, if unit is damaged or operating improperly.

### FLEX-BLADE FAN

#### DESCRIPTION

This unit is a fixed blade assembly designed to flex the blades as the engine RPM increases. As RPM increases, blade pitch decreases, saving power and decreasing noise level. No adjustment or test is required beyond keeping fan belt adjusted to proper tension and ensuring that unit is not damaged.

**Fig. 2: Flex-Blade Fan**



*Blades should flex as engine RPM increases.*