

## **TECH TIP**

### **Thermal Fan Clutch Diagnosis**

Many times when an engine overheats the easy answer is to replace the thermal fan clutch. This usually does not correct the problem of overheating.

To understand whether the fan clutch is operating properly or not, you have to understand how it operates. The fan clutch contains a viscous liquid that allows the fan blade to turn at a percentage of the water pump speed. The temperature at which it engages is controlled by a thermal spring on the front of the clutch. This bi-metal spring is temperature sensitive, and is the control, which allows the engagement of the fan clutch at a certain temperature range. It is AIR temperature that controls the bi-metal spring action, not water temperature. The air that crosses the face of the clutch controls the engagement of the clutch.

We do not publish the temperature range of the bi-metal spring. This is to make sure that no one attempts to measure the temperature of the air crossing the fan clutch face, which could cause personal injury.

#### **Proper diagnosis procedure:**

Start with a cold engine. The thermal fan clutch will be engaged for a short period of time. This length of time depends upon the specifications of the vehicle tested. When air temperature is sufficient enough to activate the bi-metallic spring the fan clutch should engage. The pitch of the fan blade controls how fast the clutch disengages at cold startup. To measure the pitch of the fan blade, place it on a flat surface and measure the vertical height of the blade. When the vertical height is 2.5 inches or greater the fan blade requires a heavy-duty clutch. If it is less than 2.5 inches the blade will need a standard duty clutch.