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**AUTOMOTIVE AIR CONDITIONING REPAIR**

**Question:**

What is a variable displacement compressor?

**Answer:**

Variable displacement compressors have been used for a number of years by both domestic and import automobiles. It has advantages over a standard compressor in that it does not require much horsepower to turn the compressor once the heat load inside the vehicle has been lowered. It reduces fuel consumption by reducing what is called, parasitic drag.

On a standard system, the clutch cycles to prevent the evaporator from freezing. Air, crossing the evaporator, contains moisture and if the clutch doesn't cycle, the evaporator would freeze into a solid cake of ice. No air would be able to pass through the evaporator.

Although the cubic inches of displacement will vary from one compressor to another, they all work from the same principle. GM for example, in full displacement, has 9.9 cubic inches. When the heat load is down and the evaporator is too cold, the compressor will shift and lower its displacement to .9 cubic inches.

Variable displacement compressors have a control valve that is mounted in the compressor and controls the displacement. The valve can be serviced separately on GM products. This compressor also has an oil plug in the side of the compressor for installing oil.

The system has to be empty to replace the valve.

The following are readings that assist in diagnosing.

High side and low side pressures read nearly equal— valve stuck in minimum displacement. Replace the compressor or valve.

High side pressure is normal and the low side pressure is more than 35 pounds. Air delivery temperature will be warmer than desired. Replace the compressor or valve.

High side pressure is normal to lower than normal and the low side pressure reads below 24 pounds, the air delivery will

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be cold, the evaporator could freeze up, and burn up the compressor. Replace the compressor or valve.