FOUR SEASONS®
DIVISION OF STANDARD MOTOR PRODUCTS, INC

Tech Tip

Rapid Multiple Compressor Clutch Bearing Failures

The rapid multiple failure of a compressor clutch bearing is usually the result of forces that the clutch can not handle. When the A/C system generates excessive high side pressure, when the electrical system provides inadequate voltage to the clutch coil, or if an abnormality exist in the shape of the nosepiece of the compressor, rapid compressor clutch pulley bearing failure will occur.

The A/C compressor is exposed to tremendous heat as it moves the refrigerant through the system. When the high-side pressure climbs to any excessive amount, the compressor is exposed to an excessive heat load. This excessive heat will melt the grease out of the clutch bearing and cause rapid failure.

The *electro-magnetic coil* in the clutch requires a certain voltage to operate properly. The clutch coil will start to overheat if the available voltage is insufficient. The procedure we recommend in checking for available voltage to the coil is the voltage drop test. The test should consist of back probing the positive side of the compressor clutch coil with the positive lead from the Digital Volt/Ohm Meter, while taking the negative lead to battery ground. The voltage available should be <u>at least</u> battery voltage, minus 1-volt. If the clutch coil overheats it will cause the grease to melt out of the bearing, which results in rapid bearing failure.

We have found that on an aluminum compressor, when a pulley bearing fails, the shape and integrity of the nose housing may be compromised. Many times in the process of failing, the bearing will create great heat. This heat will cause a distortion in the compressor nose housing. This nose housing is the surface where the pulley bearing makes contact with the compressor. This surface must maintain the correct shape to support the pulley bearing. If the nose housing has become distorted, it may not support the bearing properly. If the bearing is not supported properly it will cause a rapid failure.