FOUR SEASONS®
DIVISION OF STANDARD MOTOR PRODUCTS, INC

Tech Tip

COMPRESSOR CLUTCH COIL DIAGNOSIS

The clutch coil on a compressor is a simple electro-magnetic coil, which pulls the clutch hub into contact with the spinning clutch pulley. A defective clutch coil can be easily diagnosed.

The proper diagnosis procedure for a clutch coil is:

1. **Resistance Checks:**
- Unplug the coil connector and, using an ohm meter, read the resistance of the coil. Normal resistance of the coil is 3 to 5 Ω (ohms). Less than 2 Ω or greater than 5Ω is unacceptable.
- If the coil resistance is incorrect replace the coil, if not continue the diagnosis.

2. **Operational Voltage:**
- Plug the coil connector back onto the compressor.
- Start the engine and place the air conditioning system in the max position.
- **Be careful of hot and moving parts: fan, pulley, belts, radiator, exhaust, etc. Keep hands, clothing, meter wires, etc., safely out of the way of hot and moving parts.**
- Using a DVOM, back-probe the positive side of the clutch coil connector with the positive probe and the negative side of the clutch coil connector with the negative probe.
- The measurement at the clutch coil should be within 1-volt of alternator output voltage.
- An excessive drop in the available voltage can make the coil develop excessive heat, which can lead to premature failure of the clutch. If the operational voltage is not correct, utilize the wiring diagram and voltage drop testing to find the cause of the excessive resistance.

3. **Voltage Drop Testing Feed (Positive) Circuit:**
- Start the engine and place the air conditioning system in the max position.
- Using a DVOM place the positive lead at the battery positive post and back-probe the positive side of the clutch coil connector with the negative probe.
- The DVOM should show 1.0 volts or less. Readings higher than 1.0 volts indicate excessive resistance in the circuit. The cause for the resistance will need to be found and corrected.

4. **Voltage Drop Testing Feed (Negative) Circuit:**
- Start the engine and place the air conditioning system in the max position.
- Using a DVOM back-probe the negative side of the clutch coil connector with the positive probe and place the negative lead at the battery negative post.
- The DVOM should show 0.2 volts or less. Readings higher than 0.2 volts indicate excessive resistance in the circuit. The cause for the resistance will need to be found and corrected.