

TECH TIP

DEFECTIVE MOTOR OR NOT?

Factory Air by Four Seasons has received numerous motors returned as defects that check out to be perfectly good. Something is missing in the diagnosis. We found that most of these have some of the wiring insulation stripped back on the B+ (hot) wire with no evidence that the ground wire was tested. The assumption is; “voltage at the motor, the motor doesn’t turn, must be a bad motor”. Twelve volts at the motor without a good ground will not operate the motor. Also, just because a test light lights up doesn’t mean that there are twelve volts. Some vehicles require that a scan tool be used for proper diagnosis.

Let’s review test points in a simple motor circuit:

- Use a digital voltmeter.
- Turn the ignition key on. Turn the blower speed control to high speed.
- Back-probe the connectors. It is not recommended that you strip back the insulation on the wires.
- Connect the black negative test lead to a good ground.
- Check the positive side of the motor wiring. It should read supply voltage. If it is more than ½ volt less than supply voltage, there is excessive resistance in the wire, connections, switch or relay contacts.
- Check the negative side of the motor wiring. It should be zero. If it is more than ½ volt, there is excessive resistance in the wire, connections, switch or relay contacts.
- Disconnect the ground wire. Be sure the positive wire is still connected. Check voltage at the motor ground connector. It should read supply voltage. If it is zero, the motor is defective.

Keep in mind: Is the switch device or relay on the positive or negative side of the circuit? What controls the relay? It is so easy to test only so far and not complete the entire circuit.