

## Radiator and Heater Core failures?

### Check for Electrolysis

The ALLDATA Tech-Assist Team

Repeated or low-mileage coolant leaks from a radiator or heater core may be caused by electrolysis. Electrolysis is electricity flowing through your cooling system which causes an electrochemical charge across the metal components and passageways. It usually occurs if there is a corroded, loose or weak ground for one or more electrical components. The result is rapid corrosion and severe damage to the components in your cooling system including discoloration, pitting, flaking, and pinhole leaks. To tell if a cooling system is being affected by electrolysis, you will need to test the amount of voltage in the cooling system.

### Locating the Source

**Warning: Be careful opening the radiator or gas bottle when the engine is hot. Coolant can immediately boil when exposed to atmospheric pressure, causing a burn hazard.**

A simple and effective way to determine which electrical component is causing the problem is to first, connect the negative lead of a volt/ohm meter to the battery ground and inserting the positive lead of the volt meter into the coolant in the radiator or overflow/gas bottle. **NOTE:** If the radiator neck is metal, be sure not to contact it or the core with the positive lead.

Start a preferably cold engine and have someone switch components on and off one at a time as you monitor the volt/ohm meter. In some instances, fuses will need to be removed to switch an accessory off like the HVAC blower motor. If the test results are more than 0.10 Volts, it indicates that electrical current from that component is using the cooling system to find a ground.

You may also want to test with the ignition switch off. If voltage drops when disconnecting or shutting off an electrical circuit, that circuit represents a probable current source. Also, if you disconnect or pull a fuse for an individual component, such as one of the vehicle's control modules, and the voltage drops, it's likely that module has a bad ground. You may have one or more fault code associated with that module or circuit.

To identify a weak or corroded ground to a large component such as an engine to frame or frame to battery, check the voltage between the coolant and the engine and the frame by touching the negative lead to each respectively. You may also repeat test with the positive lead touching the radiator (if the radiator tank is metal) instead of the coolant.

### The Fix

Once you identify the circuit or component that's causing the problem, refer to a service manual to identify the ground wire color along with the ground and splice locations. If there are diagnostic trouble codes, you may also want to review the OEM diagnostic information related to those codes. It's likely that the codes will be related to the loss of ground issue. Once you have located the ground problem, make the repair, then retest for voltage in the coolant. Remember, loose connections and greasy, painted or otherwise coated surfaces do not make a good ground. A tight connection to a bare metal surface is a must.

If you are unable to find the source of the problem using the test methods mentioned, then it's time to call ALLDATA Tech-Assist. We will be happy to help!