

## Gently Waking a Sleeping LT5

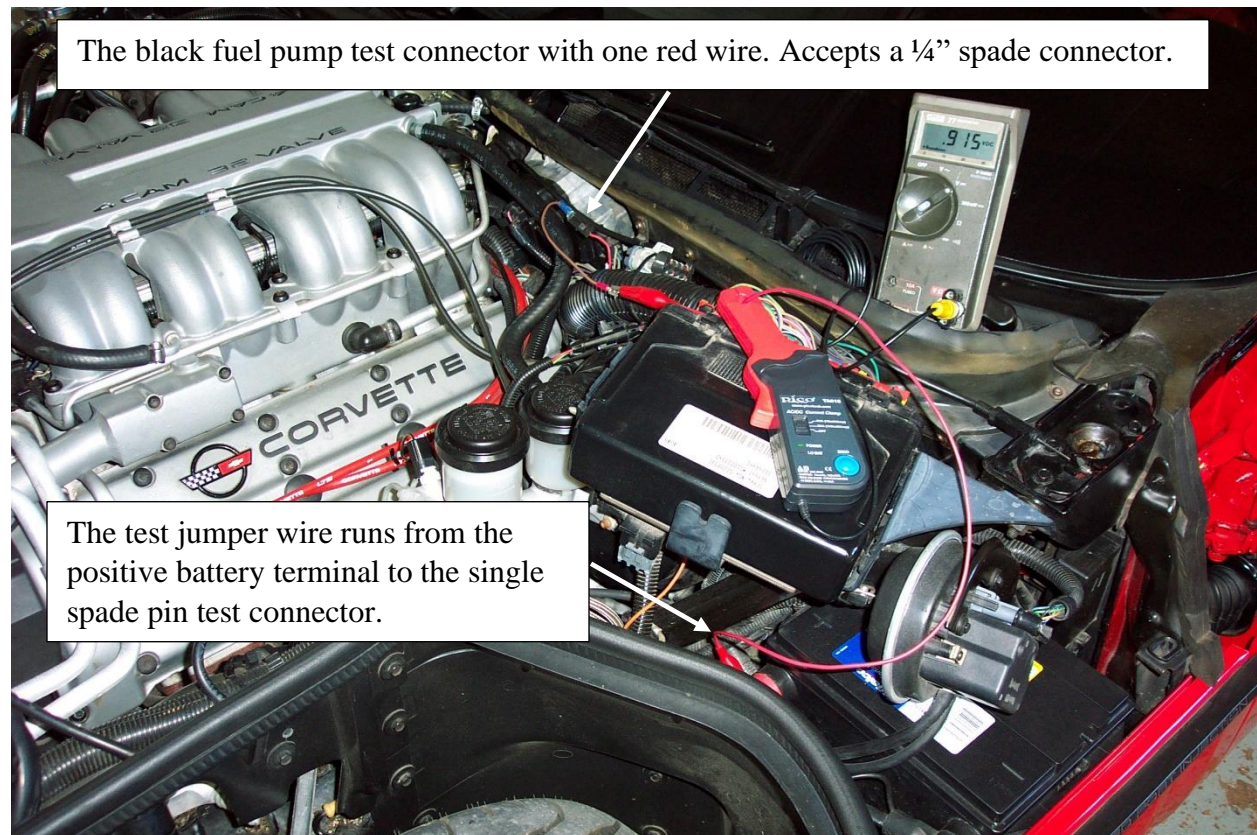
Marc Haibeck

What it takes to revive a car that has been in storage varies widely depending on how long the car has been stored and the storage environment. There are four areas that need to be addressed.

### The Fuel System

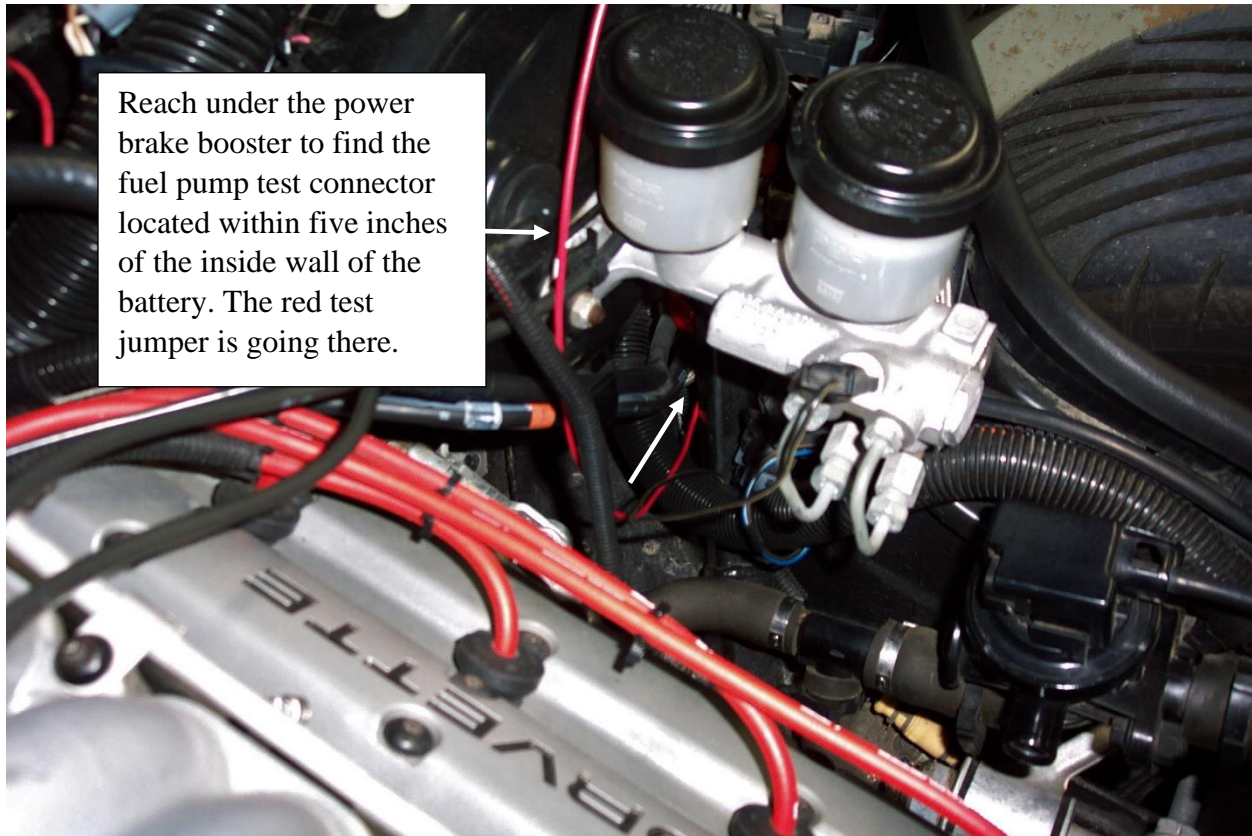
Look into the tank through the fuel filler with a focused light. The frame of the fuel sender assembly is normally silver and the fuel pickup tray is normally light yellow in color. Look for evidence of brown rust. Water will look like small ball bearings on the bottom of the tank. If the frame is rusty the sender should be removed and inspected.

If the fuel pumps are still submerged in fuel they might be okay. If the fuel is over four years old it should be removed. Install fresh fuel. The best way to test the pumps is by applying battery power to the fuel pump test connector. The test connector is located near the wiper motor on cars with '90 VIN approximately 500 through to the end of '95. The OE pumps draw about five amperes each. At the test connector they should draw 10 +/- 1 amperes. If there are less than five amperes a pump is not running. In the picture they are drawing 9.15 amperes. I use a clamp on current probe for expediency.



On '90 cars with VIN less than about 500 the test connector is located next to the inside side of the battery. It is usually difficult to see. You may be able to find it by reaching under the power

brake booster toward the battery. Try to locate the connector by probing with your hand. It is very difficult to view the area.



These replacement parts work well. Delphi FE0114 pumps. Pump strainer/socks, ACDelco TS10 short, and TS2 long. Spectra L0148 sender gasket. If the entire sender needs to be replaced refer to my article, Converting the ZR-1 Fuel system to Use a Single Pump. A complete sender made with stainless steel material is available from Dan Merrill at email address: [dlmerrill27@gmail.com](mailto:dlmerrill27@gmail.com)

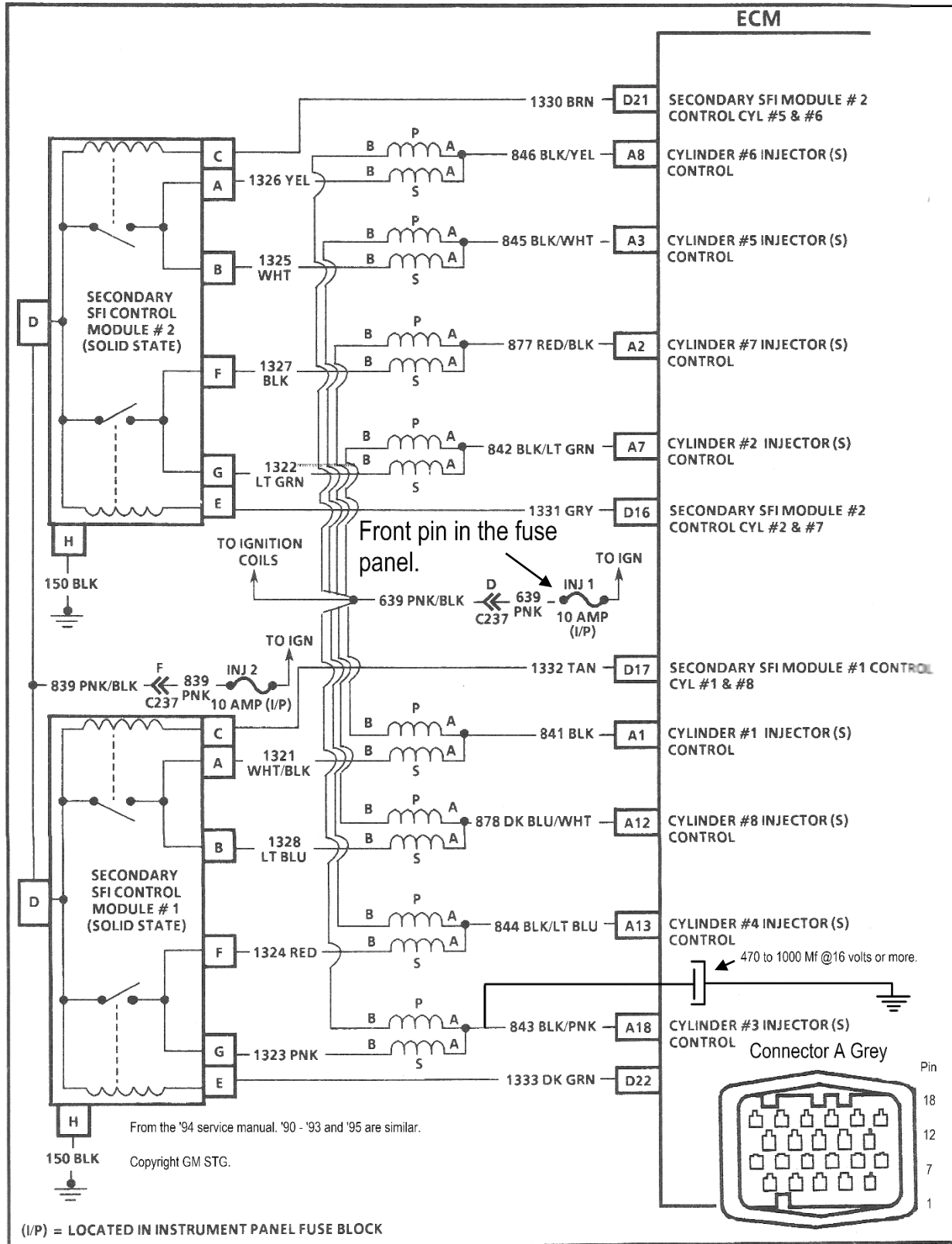
Replace the fuel filter if rust is found in the tank.

The fuel pressure should spike to 51 psi when the fuel pumps prime and settle to 43 psi when the engine fires. These readings are +/- 2 psi. At least 35 psi is need for the engine to fire.

### **The Fuel Injectors**

The OE '90 to '92 injectors will fail with electrically shorted solenoid coils after they are exposed to ethanol fuel additive for over five years. The best way to determine the condition of the solenoid coils is an electrical resistance test. The OE injectors measure 12.1 ohms at 70 degrees F. As they approach six ohms they run rich. At less than six ohms they stop spraying and cause a misfire. They get worse with engine heat. This diagram shows how to measure the resistance of the fuel injectors with the plenum in place. Remove the INJ1 fuse. Remove ECM connector A, the gray connector. Connect the meter to the appropriate ECM "A" connector pin and the front pin of fuse INJ1.

In a storage situation the fuel injectors may become glued shut with dried fuel. An on the engine flow test can be performed by grounding the fuel injector circuits on the ECM "A" connector. Install the INJ1 fuse. Verify fuel flow by first, pressurizing the fuel rail. Apply battery power for a few seconds with the fuel pump test connector. Observe the fuel rail pressure drop when the fuel injector is energized. This can be done precisely by using the charge time of a capacitor. This diagram shows how to use a capacitor as a timer. Turn the ignition on. As shown in the diagram connect the capacitor from ECM connector pin A18 to ground. The fuel injector will spray for about .3 second. It will stop spraying when the capacitor has become charged. Note the fuel pressure drop. About 4 psi. Discharge the capacitor by connecting the two capacitor leads together. Pressurize the rail again. Move on to the next fuel injector and perform the same spray test. The pressure drops should all be within 25%. What you are really looking for with an engine startup after storage is zero pressure drop. That indicates that the injector is clogged or glued shut.



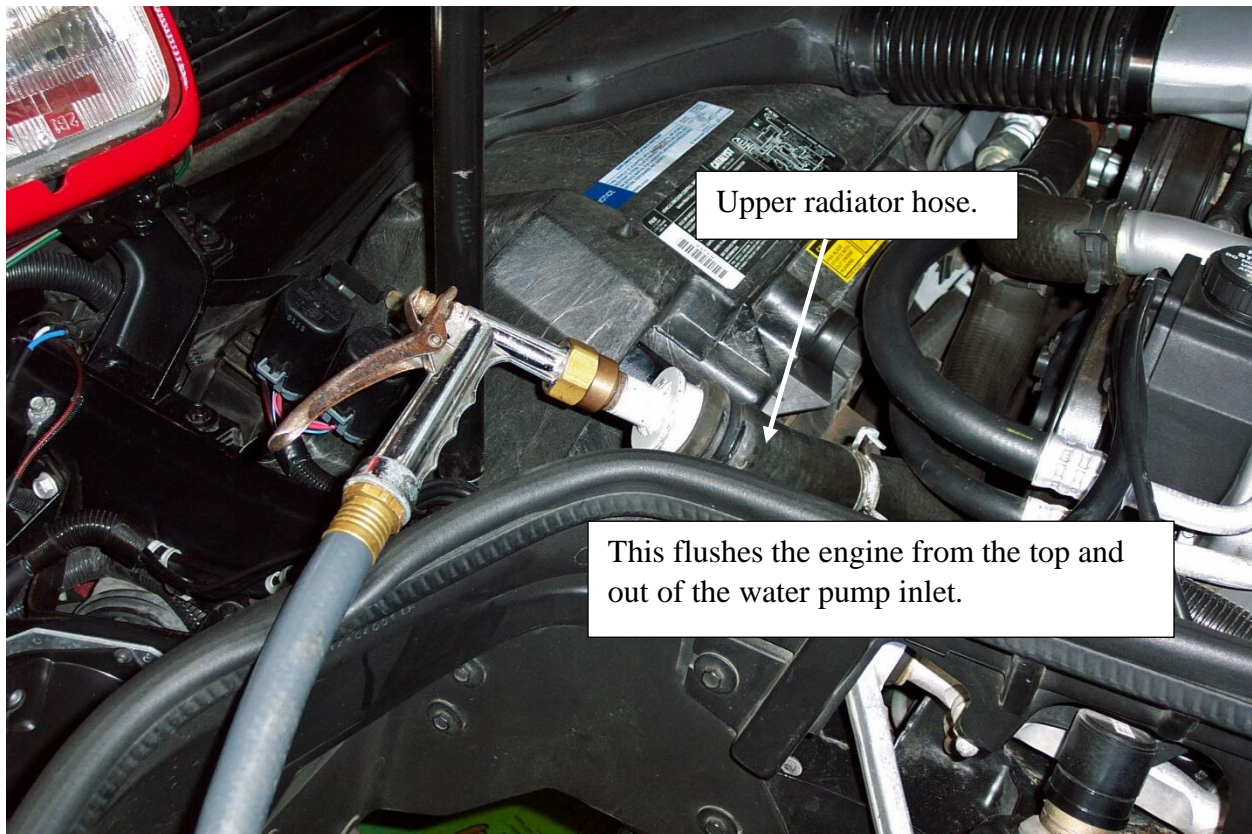
Accel 150821 fuel injectors work perfectly as replacements. Grind off the electrical connector alignment tab on the primary injectors.

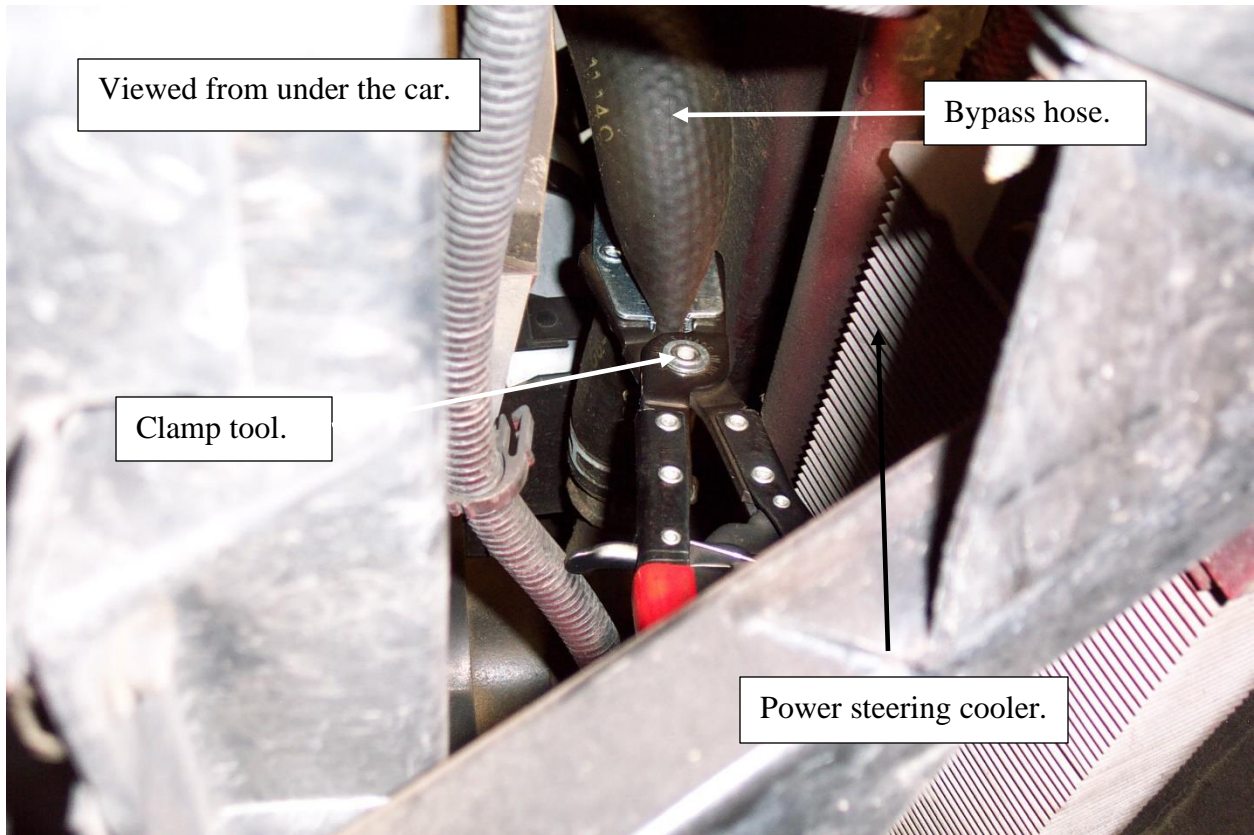
## The Cooling System

The cooling system is surprisingly stable when neglected. I have not seen any particular damage when green glycol coolant has not been replaced for 20 years.

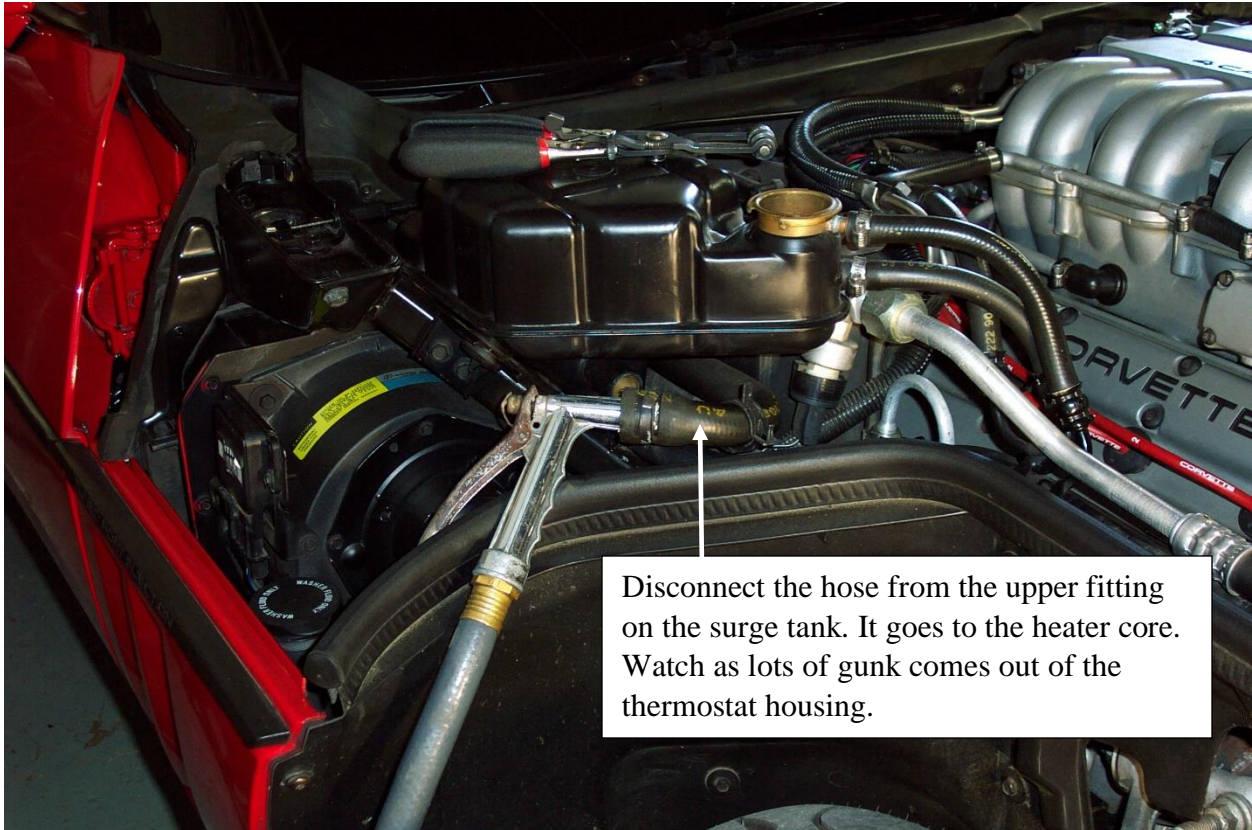
If the engine has plain water for coolant there could be a lot of damage. Water can rust a hole in the black crossover pipe. Also, the heater tubes running over the center of the right wheel house can rust through. The water pump impeller is iron and might be severely corroded.

Flush the cooling system. Remove the thermostat. Pinch the bypass hose. Run water into the top of the engine to flush the block. The block has drain plugs, but they are frozen in the block and can't be removed. Backflush the heater core.





Backflushing the heater core.



Disconnect the hose from the upper fitting on the surge tank. It goes to the heater core. Watch as lots of gunk comes out of the thermostat housing.

Fill the system with the OE type green color coded coolant. Avoid yellow universal coolant. Avoid Dexcool because it causes the head gaskets to swell with rust.

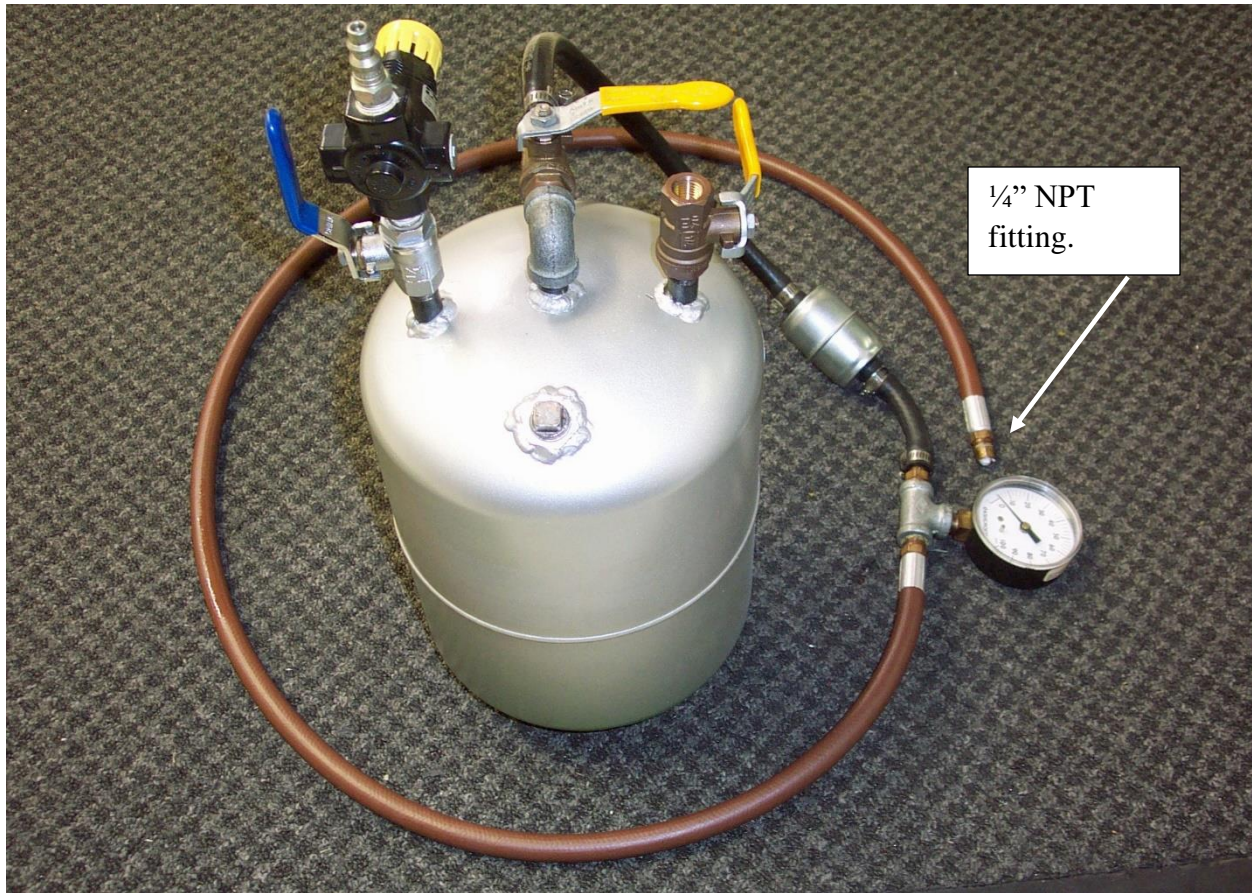
AutoZone AZ003 is a good coolant. The Motorad 4048 thermostat is good.

### **The Oiling System**

Remove the spark plugs and spray oil for a few seconds into each cylinder. Try to aim towards the top of the cylinder. Reinstall the spark plugs.

Drain the oil. If the engine has been off for more than two years the oil pump and the crankshaft will be nearly dry. Starting the engine would result in the engine running for about seven seconds before the oil pressure builds. During that time the camshafts will snap over center until the oil fills the chain tensioners. The engine should not be subjected to this abuse. If the oil system is pressurized just before starting, the oil pump pressure will build just as if the engine was shut down a day ago.

Remove the oil pressure sensor and pump three quarts of oil under 30 psi of pressure into the pressure sensor port. The fitting is 1/4" NPT. Add six additional quarts of oil via the oil fill port. Do this minutes prior to starting the engine.



This is a pressure pot pre-lubricator that I fabricated. They are also available from tool suppliers. Summit Racing has OTC-6492. There are others.

When you are ready to fire the engine, avoid a potential mess in the shop by pointing the rear of the car out the door. We have had various materials blow out of the exhaust system like dog food, building insulation, carpet padding and in this case acorns and fabric.



