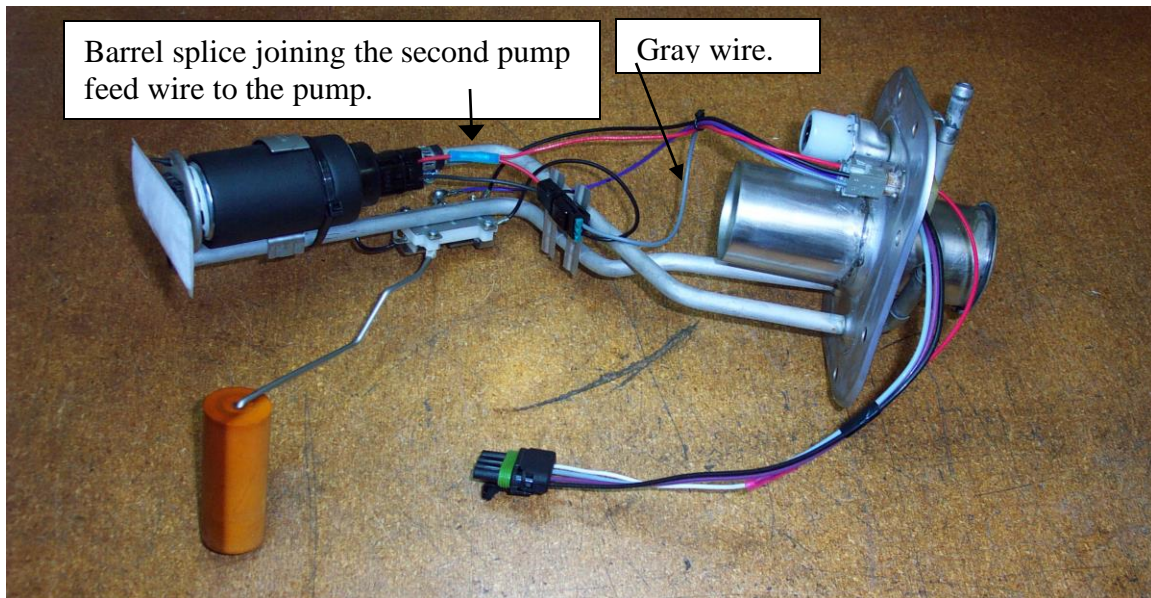


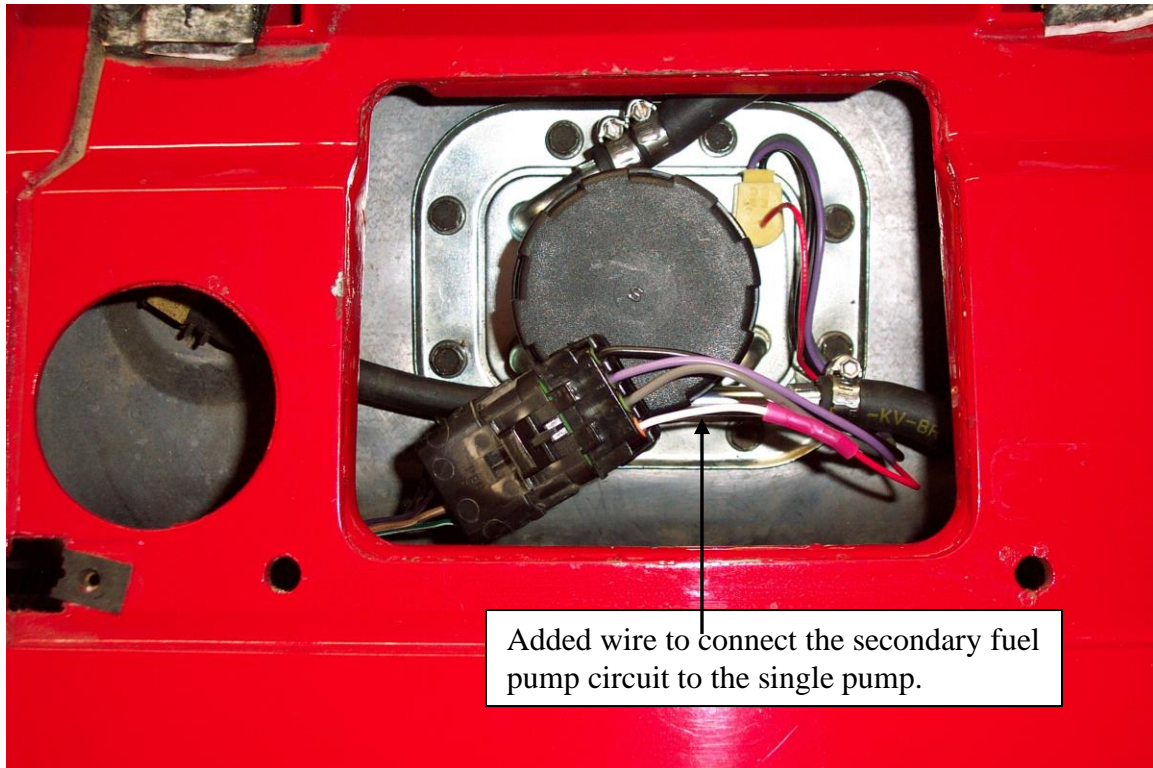
Converting the ZR-1 to Use a Single Fuel Pump

Marc Haibeck

Recently the ZR-1 dual fuel pump sender assembly has been difficult to find. One really needs one if the sender has severe rust due to excessive moisture in the fuel tank. There is a workaround for this dilemma.

An L98 fuel sender, Delphi HP10031, can be modified to deliver fuel sufficient for the LT5 engine. Discard the L98 pump. Modern fuel pumps are available that can deliver as much fuel as the dual pumps that a ZR-1 normally uses. I use a Walbro pump available from Summit Racing as PN VPN-GCA758-2. The OE pumps draw five amperes each. The single pump draws 12 amperes. It is rated as 67 GPH and 85 psi. Both of the fuel pump wires should be used in parallel to avoid overloading the fuel sender bulkhead connector. If the connector overheats it could fail as an open circuit. The Delphi sender has a modern thick film fuel level sensor. That can resolve a fuel level sensing problem.





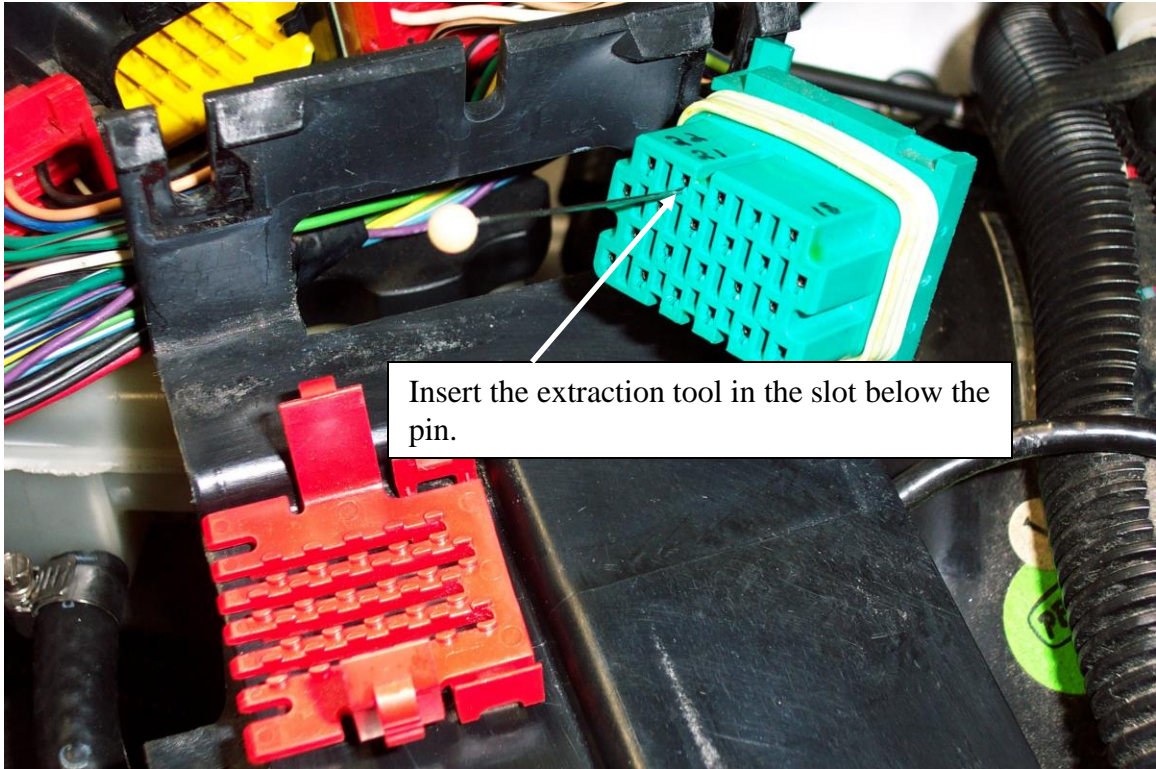
The picture shows the added wire used to continue the secondary fuel pump circuit green wire to the single pump. Using only the primary pump circuit would also result in lower performance from the pump because of the increased voltage drop in the gray wire.

Use an 18 gage wire with insulation rated for compatibility with gasoline. Ratings AWM, MTW, THHN or THUN are good. Measure the diameter of the wire that is going to be added and drill a hole in the bulkhead connector that is about .002" smaller than the wire for an airtight fit.

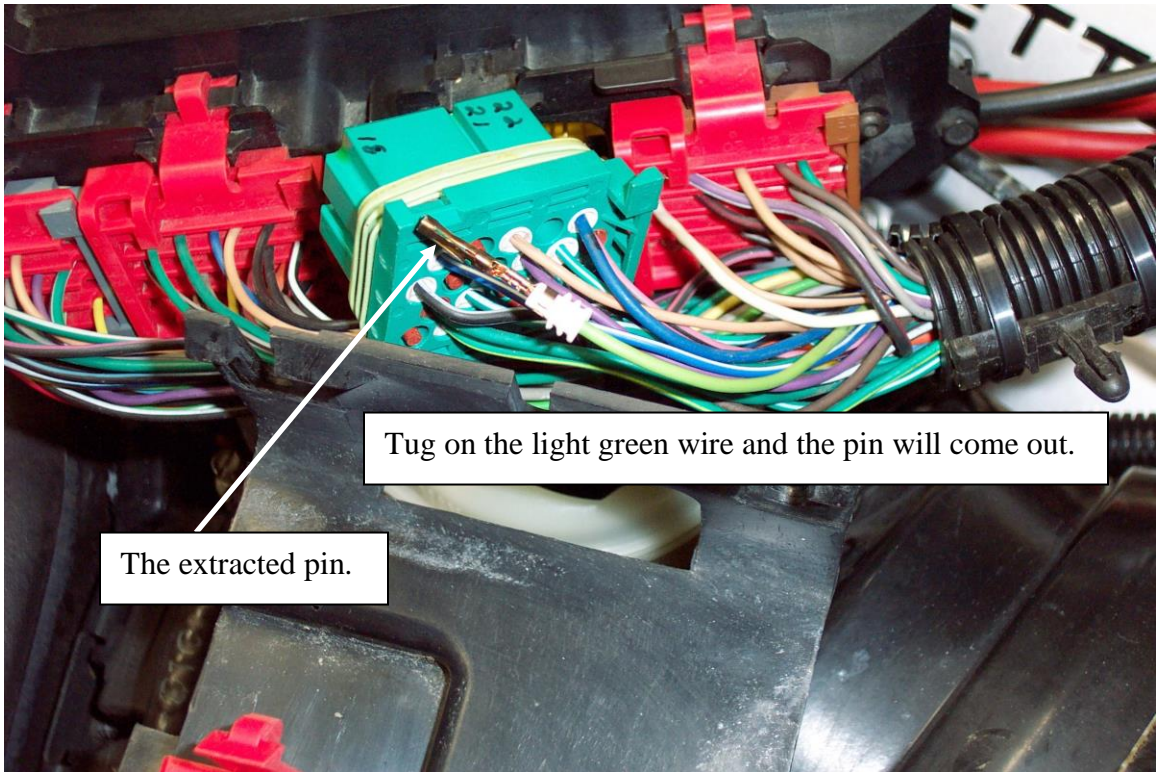
A pin needs to be added to the fuel sender's four-position connector pin D to connect to the chassis harness. It is available from Caspers Electronics as PN 106109.

When the engine warms to 176 degrees F. the engine control system turns off the secondary fuel pump. After that, it is energized only when the engine speed is greater than 4000 rpm. For a single pump conversion the secondary pump wire is needed fulltime to share the load from the high output pump. An easy way to keep the secondary fuel pump circuit active is to disconnect the circuit from the ECM that controls the secondary fuel pump relay. The secondary fuel pump relay uses negative control logic. The ECM commands it off, not on. The secondary fuel pump will deliver current to the pump fulltime if the ECM can't turn it off. Remove ECM pin C21, light green wire, from connector C (green connector) to accomplish this.

To extract pin C21. Remove the red strain relief from the green ECM connector. Then use a .025" to .030" wire or pin to release the connector as shown below.



Insert the extraction tool in the slot below the pin.



Tug on the light green wire and the pin will come out.

The extracted pin.

The Walbro pump does not make any more noise than the OE pumps.

If you would rather not build a fuel sender, you can obtain one made with stainless steel material from Dan Merrill at email address: dlmerrill27@gmail.com

A Backup Plan When Using the OE Fuel Sender

With the OE dual pump setup, it's interesting to note that the secondary fuel pump can be run full time as a backup pump by simply extracting ECM pin C21.