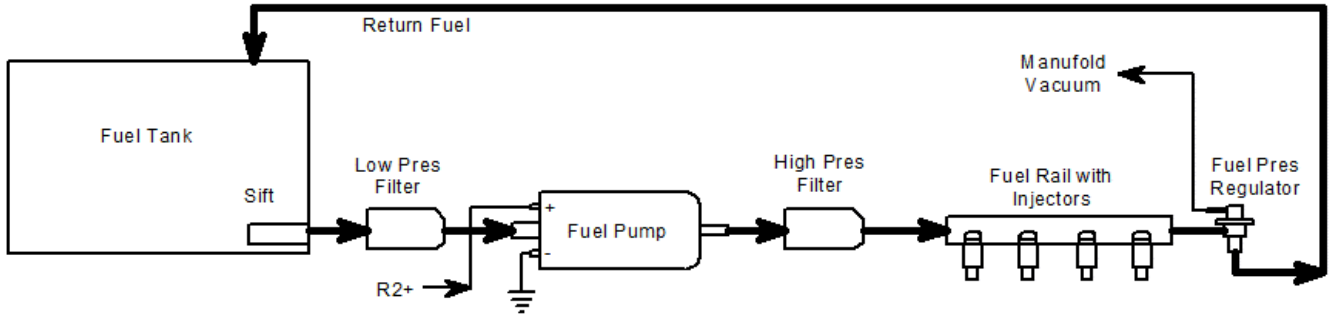
Fuel Supply

The fuel supply is mostly a basic mechanical system which is not controlled by the ECU except for switching and controlling the power of the fuel pump. Some of the Ecu's have the ability to do fuel pressure control. Below is a few schematics on basic fuel flow systems.

The basic fuel rail and pressure regulator system.

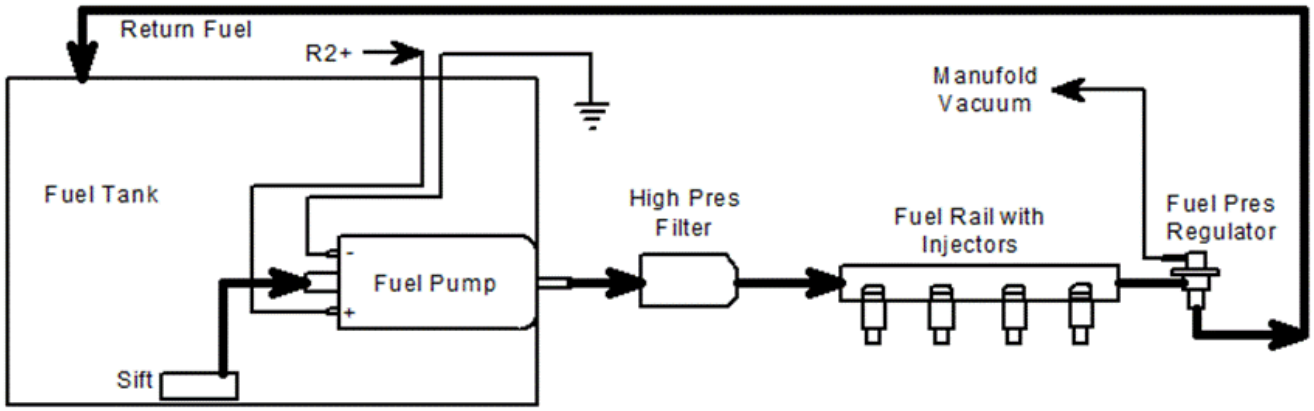
External Fuel Pump

In this system the fuel pump is supplied from the tank via a petrol filter through a thick pipe at gravity feed pressures. The pump pressurizes the fuel through the high-pressure fuel filter into the fuel rail with injectors. A fuel pressure regulator will bleed fuel back to the tank if the pressure is higher that it calibrated bypass diaphragms. The regulator senses the intake manifold pressure and adjusts the fuel pressure to a set level. The return fuel also cools the fuel pump. The fuel pump is always on full power.



Internal Fuel Pump

In this system the fuel pump is mounted inside the tank with a sift as a pre-filter. The pump pressurizes the fuel via a high-pressure fuel filter through the fuel rail with injectors against a fuel pressure regulator. The regulator senses the intake manifold pressure and adjusts the fuel pressure to a set level. This is done by returning the excess pressure and fuel via a return line straight back to the tank. The fuel in the tank cools the fuel pump. The fuel pump is always on full power. Some systems have the pressure regulator built into the tank and then there is only one fuel line to the fuel rail and injectors. No return lines.



Pressure controlled Fuel Pump

In this system the fuel pump is mounted inside or outside the tank with a pre-filter. The pump pressurizes the fuel via high pressure fuel filter through to the fuel rail and injectors. In the fuel rail a fuel pressure sensor will relay the pressure to the ECU. The ECU will speed control the fuel pump

with PWM to increase or decrease the pressure. There is no return line or mechanical fuel pressure regulator. The fuel DP fuel pressure sensor also senses the manifold pressure.