FUEL SYSTEMS

When designing a fuel system here is what you need to know in order to give the right information.

1. **Horsepower of the motor.**
2. **What is the system being used in (street or strip or street/strip. Based on the HP of the motor and recommended pump size, this information is needed so the proper regulator can be recommended.**
3. **If going from a Fuel Injected motor to carburated motor. Fuel return line size will be an issue here**

When determining what size fuel pump to recommend use this formula to calculate what is needed (HP X .5 div by 6 X 2 = GPH). A 600hp motor would require 100gph under maximum load. If you need a pump for a 700hp motor a return style regulator would be needed with a 140gph pump (4140 pump 4309 regulator.
Here are the recommended pumps for horsepower ratings.

a) **0 to 200hp = P/N 4070 (70gph)**
b) **0 to 200hp = P/N 4070LP (Used with 3psi Webber carbs)**
c) **200 to 400hp = P/N 4110 (110gph)**
d) **400 to 600hp = P/N 4140 (140pgh)**
e) **600 to 700ph = P/N 4142 (140gph w/4309 return regulator)**
f) **700 to 1200hp = P/N 5250 (250gph)**
g) **250 to 450hp = P/N 4160FI (throttle body injection) 60gph**
h) **400 to 700hp = P/N 5110FI (tuned port injection) 110gph**
i) **800 to 1500hp = P/N 5160FI (tune port injected only) 160gph**
j) **800 to 1200hp = P/N 5160FI (blown and injected) 160gph**

When deciding what regulator to use the type of use comes into play. The first 2 pumps do not require a regulator as they are pre-set at 6psi and they are the 4070 and 4110 pumps. The 4140 comes with a P/N 4207 dead head regulator as a package and the 4142 comes with a P/N 4309 return regulator as a package.

When a 5250 pump is recommended certain guidelines need to be followed.

1. **If in a car that is only used on the strip the P/N 4200 regulator would be recommended and the bypass return off of the pump would be used.**
2. **If the car is used in a street/strip application then the P/N 4300 return style regulator should be recommended. The bypass off of the pump would be blocked off and the return off of the regulator used instead. This will relieve the stress on the pump when driven on the street for long periods of time.**

Fuel line size plays a big part in the delivery of sufficient fuel forward to the motor. Here is the recommended fuel line sizes.

a) **0 to 250hp = #4 (5/16"ID)**
b) **0 to 375hp = #6 (3/8" ID)**
c) **0 to 550hp = #8 (1/2" ID)**
d) **0 to 800hp = #10 (5/8" ID)**
e) **0 to 1200hp = #12 (3/4" ID)**

When running a return style regulator system, the return line "MUST BE THE SAME SIZE OR LARGER AS THE FEED LINE". If the return line is too small or smaller than the feed line, the fuel will have a hard time returning to the tank and will be seen as "Pressure" on the gauge. For example; Using a 4140 fuel pump with a 4309 return style regulator, a #8 (1/2") feed line and a #6 (3/8") return line with a line length of 12 feet, the return line restriction pressure would be 7psi which would show on the gauge. If the return line were changed to a #8(1/2") line, the return pressure would only be 1.5psi. The simple test for return line restriction is to simply remove the adjusting screw from the regulator and turn the pump on. Any pressure shown on the gauge is "Return Line Restriction" and the retune line from the regulator back to the tank needs to be evaluated. ANY sharp 90's in the return line will cause 2psi of restriction in the line. This can be rectified by changing to a sweeping 90 which has virtually no restrictive characteristics. Once the pump size has been determined, fuel line size and ease of flow are very important in setting up a complete fuel system properly.

Whenever NOS is going to be used always recommend a separate fuel pump and return style regulator. If they are not already using our 3140 fuel filter, recommend upgrading to it as well. It has 2 inlets and 2 outlets and is rated at 200gph. The pump for the motor can be ran from 1 outlet and the NOS pump out of the 2nd outlet. The reason for using the return style regulator on the NOS is two fold. First and most important is a stable fuel pressure for the nitrous. Secondly, the pump is on and running at pressure when the NOS is activated eliminating "Lag Time" of fuel delivery. This hedges against leaning out the motor and possibly damaging the motor.