\*Note \* in this article the Barrel Valve is referred to as "Metering Valve'.

Enderle supercharger fuel injection schematic for nitro metering valve (barrel valve) on alcohol or nitro.

For Alcohol blue is fuel to engine, red is returned fuel, yellow is optional returned fuel. -- Alcohol fuel system components Metering valve (barrel valve), Main jet (pill) is installed in the metering valve, High speed by pass, Port nozzles, Pump relief valve (most alcohol systems don't have them), Idle check valve, 3 way shutoff, Fuel Pump most big cubic inch engines use a 110 fuel pump, some big cubic inch - high boost - high horse power engines use a 990 fuel pump. Minimum main fuel line size for alcohol is -16 or 1". Fuel return lines must discharge at opposite end of fuel tank from main fuel line pick up. Fuel tank must be vented.

For Nitro blue is fuel to engine, red is returned fuel, yellow is optional returned fuel. -- Nitro fuel system components Metering valve ( barrel valve ), Main jet ( pill ) is installed in the metering valve, High speed by pass, Port nozzles, Pump relief valve ( high psi. and two pump systems have them), Idle check valve, 3 way shutoff, Fuel Pump nitro fuel injection engines use a 990 to 1200 fuel pump, some big cubic inch - high boost - high house power engines use two fuel pumps. Minimum main fuel line size for nitro is -16 or 1". Fuel return lines must discharge at opposite end of fuel tank from main fuel line pick up. Fuel tank must be vented.

Explanation of Components

(Supercharger Fuel Injection Hat delivers air to the system) - ( Metering Valve controls fuel flow to all components ) - ( Main Jet richens or leans total fuel system) - ( Nozzles hat and port spray fuel into air intake system they are jets and come in all sizes ) - ( High Speed By Pass the body holds a jet ( pill ) and has a settable opening psi. check valve)- ( Pump Relief Check Valve allows high psi. fuel to return to tank when throttle is shut has a settable opening psi. ) - (Idle Check Valve has a settable opening psi.) - (Port Check Valve has a settable opening psi.) - (3 Way Shutoff allows pumped fuel to return to tank when shutoff ) - ( Fuel Pump delivers fuel to the system)

Explanation of System

Idle Control - the idle mixture is controlled by the turnbuckle on the side of the injector. To richen the idle rotate the turnbuckle towards the rear of the injector (shortening the linkage leans the mixture lengthening richens the mixture). These adjustments are for idle and throttle response only and have no effect on full throttle. The idle speed is controlled by the butterfly shaft stops on each side of the injector.

Main Bypass Jet - each fuel injector is furnished with a set of bypass pills. This bypass jet controls the fuel mixture at full throttle and has little to no effect on idle. The bypass pill is located under the 9/16 hex plug on the metering valve. Use a smaller bypass jet to richen the fuel mixture and a larger bypass jet to lean the fuel mixture. When installing the bypass jet make sure that it is seated at the bottom of the threads.

High Speed By Pass - some applications require the use of a hi-speed lean out. This consists of a bypass jet controlled by a high pressure check valve which leans the fuel mixture at high rpm. The check valve pressure is adjusted with shims to tailor the fuel curve to the engines requirements. The check valve opens when the fuel pressure is able to overcome the spring tension. The bypass jet controls the volume of fuel returned. Adding shim will make the check valve open at a higher rpm. Removing shim make the check valve open at a lower rpm. The hi-speed should be thought of as a fine tuning device. The main bypass jet is the primary control of the overall fuel mixture.

Fuel Pump - they are driven by the engine most are cam driven some by belt. As engine rpm.is incrusted more fuel is pumped then the engine can burn. By returning the excess fuel we can tailor the fuel curve to the engines requirements. (At is how mechanical fuel injection works) Pumps come in different sizes and are tailored to the requirements of your engine.

3 Way Shutoff - You must use a 3-way shutoff with a return to the fuel tank. A 2-way shutoff will damage the fuel pump. On mechanical fuel injected engines shut the engine off with the fuel shutoff not the ignition. (On burnt fuel can cause the engine to hydraulic.)

Maintenance - The fuel system should be drained between races. It is important to lubricate the fuel pump with LPS-3, WD-40 or some type of light oil. Remove the inlet line from the metering valve and lubricate the metering barrel to prevent stickiness and drying out.