

# INSTALLATION INSTRUCTIONS

## VENTURI JET PUMP KIT

**WARNING: DO NOT EXPOSE WORK AREA TO ANY SPARKS OR FIRE. DO NOT SMOKE WHILE OPERATING ON THE FUEL SYSTEM. CLEAN UP ALL FUEL SPILLS IMMEDIATELY. WORK IN A WELL VENTILATED AREA.**

A venturi jet pump uses fuel flow to create suction for vehicles with saddle-style fuel tanks. This kit can be used to upgrade an internal OEM jet pump or could be mounted externally in a custom application but is designed to work with EFI systems only. All included barbed fittings can be used with 5/16" or 3/8" rubber hose (not supplied). **Lubricate O-rings prior to assembly.**

### NOTES:

1. DO NOT FORGET TO REMOVE THE OEM VENTURI JET PUMP! The system will NOT work properly if it's trying to push through the restrictive OEM venturi jet pump.
2. The colored orifice fitting is to be installed in the "FLOW" port. The black non-orifice fitting should be installed in the "SIPHON" port. Do NOT install an orifice fitting in the "SIPHON" port.



### 1. PLUMBING

Decide if the jet pump will be used on the return side or pressure side of the fuel system. Consult the diagram at the end of this document for details.

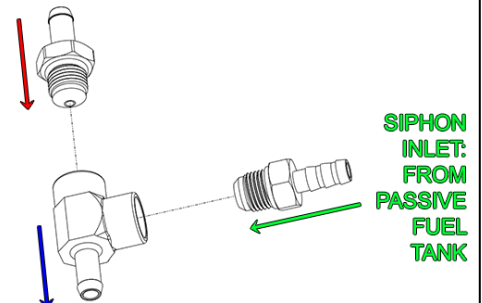
#### A. Fuel returning from the regulator.

Back pressure will be the main issue when installing on the regulator return line. The venturi jet pump will be a restriction in the returning fuel flow. This restriction is necessary to make the jet pump function.

#### B. Tee off the main pressurized feed line.

The jet pump can also be powered from the pressurized feed line from the pump. This avoids unwanted back pressure issues in the return line. The drawback is it essentially creates a "leak" in the feed line.

### VENTURI INLET: FUEL FROM FPR RETURN



### 2. CHOOSING THE CORRECT ORIFICE

**a. Silver Orifice-For use on the fuel pump feed line only:** this orifice has the smallest hole allowed to minimize pump flow loss while generating sufficient vacuum for proper suction. Expect to lose about 40 LPH of fuel (at 44 psi) from the pressure line. Make sure the fuel system can compensate for this loss. A short hose (at least 8") should be used on the jet pump outlet for optimal efficiency.

**b. Green Orifice-For use on the FPR return line only:** best for most applications using aftermarket fuel pumps.

**c. Gold Orifice-For use on the FPR return line only:** best for very high flow fuel pump applications (greater than 700lph) or multi-pump applications in order to minimize back pressure.

**NOTES:** The proper orifice size for return line jet pumps will be determined by the backpressure in the return line. This is dictated by several factors; the flow rate of the pump(s), if the pumps are staged, engine fuel consumption, the diameter and length of the return hose, etc. Some experimentation may be necessary to find the right balance between cross-over suction and return line backpressure.



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3. **JET PUMP SIPHON INLET:** The included siphon inlet fitting should be connected to a hose (rated for submersion in fuel) that travels to the lowest part of the passive side of the tank. If installing this system into an OEM fuel tank that was equipped with a crossover system, connect to the OEM crossover hose.

**NOTE:** If an OEM style SAE quick disconnect male fitting (shown) is required for the siphon inlet port, Radium has these available in different sizes (14-0146, 14-0147, and 14-0231). They can adapt to the jet pump's 6AN ORB female threads. Be sure to transfer the O-ring from the included barb fitting.

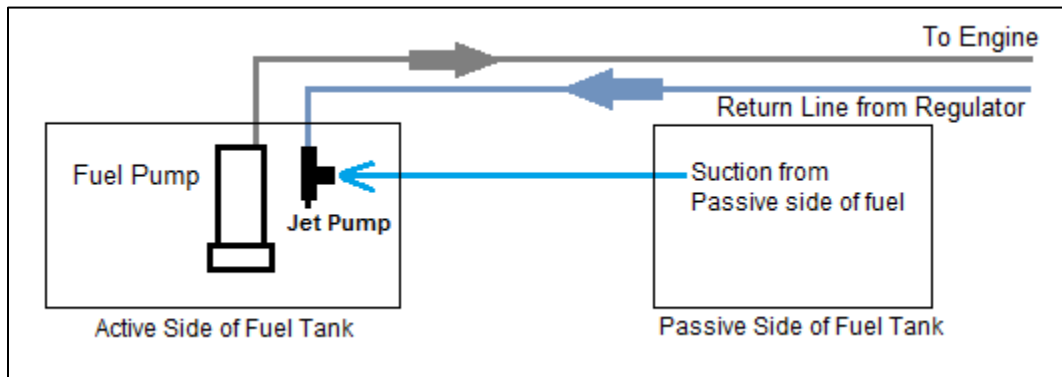
**JET PUMP OUTLET:** The 8.5mm outlet barb should deposit fuel near the pump inlet on the active side of the tank.



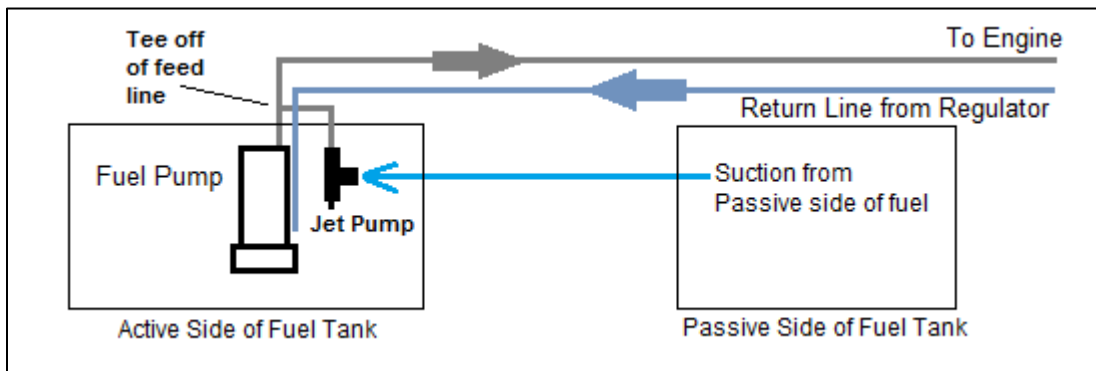
4. After installation is complete, check the performance of the saddle tank fuel system by monitoring fuel pressure at idle.

- A. If the minimum static fuel pressure is higher than usual, there is likely too much backpressure in the FPR return line. In this case, a larger orifice should be installed into the venturi jet pump body.
- B. If the vehicle unexpectedly and prematurely runs out of fuel while driving, it is likely that the venturi jet pump is not creating enough suction to transfer fuel from the passive side of the fuel tank to the active side. In this case, the orifice should be changed to create more suction.

### Plumbing Examples:



Use this plumbing if installing the jet pump on the return line from the regulator.



Use this plumbing if installing the jet pump on the fuel feed line.