



INSTALLATION INSTRUCTIONS

MULTI-PUMP FUEL SURGE TANK

DOCUMENT #19-0052

Support: info@radiamuto.com

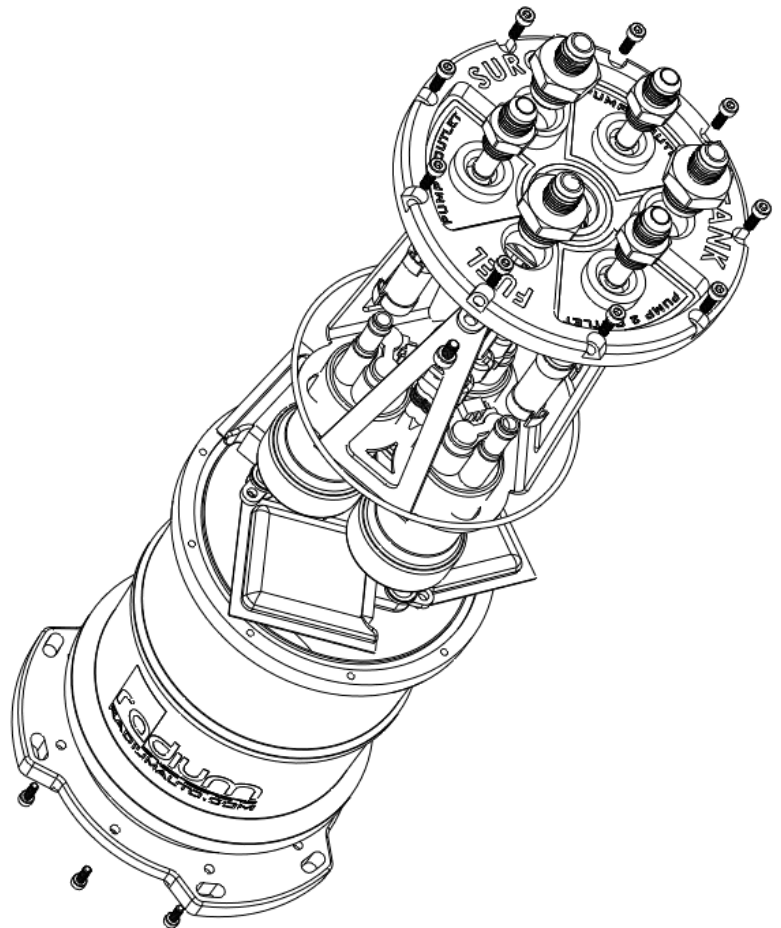
READ AND UNDERSTAND THESE INSTRUCTIONS COMPLETELY BEFORE BEGINNING INSTALLATION

The Radium Engineering Multi-Pump Fuel Surge Tank (MPFST) is designed to enhance the fuel system by providing resistance to starvation (from fuel slosh) and by increasing the fueling capability of the system. It is designed for fuel injected engines only and should not be used in carbureted applications.

The primary fuel pump in the vehicle's main gas tank will no longer directly feed the engine. This fuel pump will now be used to fill and maintain the level of fuel in the surge tank. When selecting this fuel pump, keep in mind that it will operate at a very low pressure since it simply cycles fuel right back into the gas tank. And because flow is inversely proportionate to pressure, this pump will be flowing much more than before.

The fuel pump(s) inside the MPFST will now be the high pressure source for the engine's demand. A fuel pressure regulator must be used. Fuel pressure should be checked before and after installation to ensure there is no difference with the MPFST operating. Any change in fuel pressure will affect engine performance.

If purchased with fuel pumps, everything is internally configured and is ready to be installed. Note: fuel pumps are typically factory tested with a harmless fluid. Some small trace amounts may be found in the MPFST.



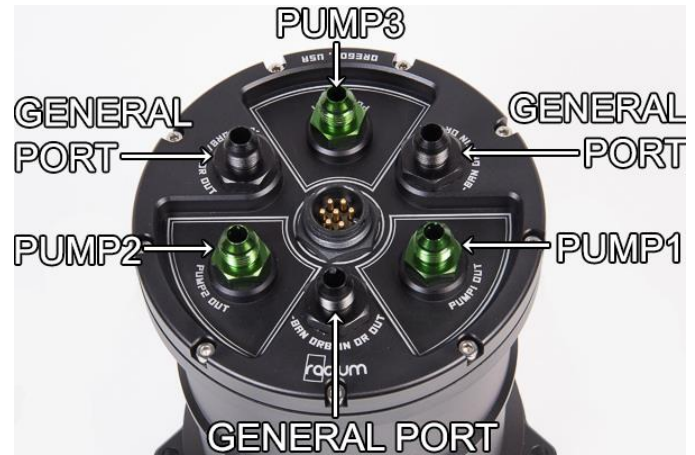
MOUNTING

The MPFST should be firmly mounted to a stable, structural component of the vehicle away from moving parts, excessive heat, and collision prone areas. The MPFST should not shake or vibrate excessively during operation. This MPFST is designed to be mounted in a standing vertical orientation only. Surge protection effectiveness will suffer if the tank is excessively tilted from the vertical position. At least three mounting bolts should be used (one at each foot).

PLUMBING

It is recommended that fuel entering the surge tank is filtered. There are six ports on the top of the MPFST; 3 general ports and 3 pump outlet ports.

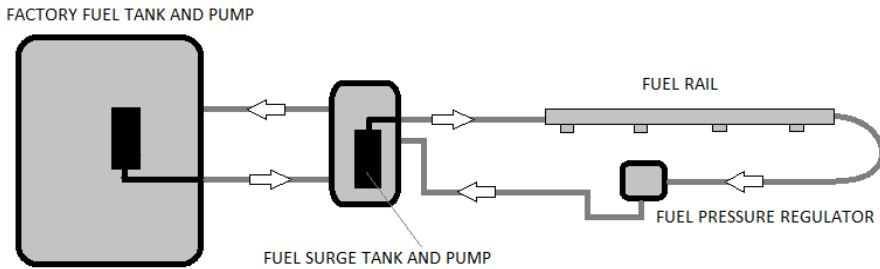
General Ports: These are not specific and can be interchanged to suit the best plumbing and routing of hoses. All 3 general ports come standard with -6AN male adapter fittings. If -8AN or -10AN is required, these fittings can be purchased from www.radiumauto.com. One port receives fuel from the main tank's "lift" pump. One port receives fuel from the fuel pressure regulator's return port. One port sends fuel back to the main fuel tank when the surge tank overflows.



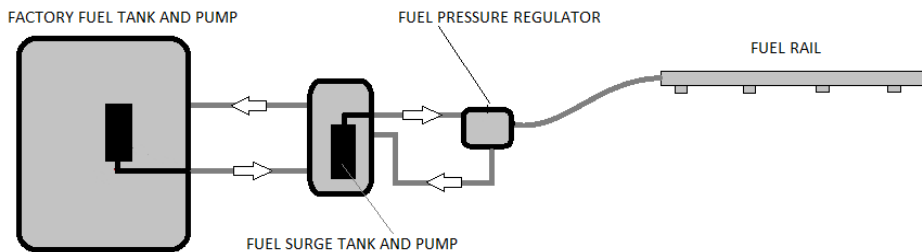
Pump Outlet Ports: These are the high pressure fuel pump outlets inside the MPFST. They are the main fuel supply to the engine. These ports are always -6AN male and are color coded green. Outlets that are not used will come plugged.

Plumbing the surge tank will vary from application to application based on the engine and fuel system requirements. The pump outlets from the MPFST can be Tee'd together into a single line and run to the engine, or they can be run separately and feed into opposing fuel rails, such as a V-engine. Illustrated below are several plumbing schematics.

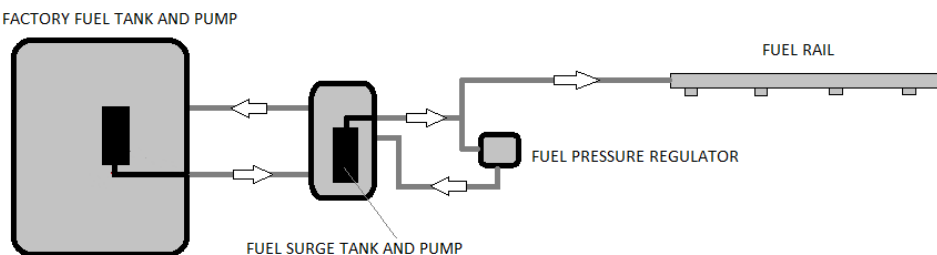
1: Traditional Return Fuel System - fuel pressure regulator on the injector fuel rail



2: Dead-End Fuel System - no return line from the injector fuel rail



3: Dead-End Fuel System - prevents any restriction that the fuel pressure regulator may present



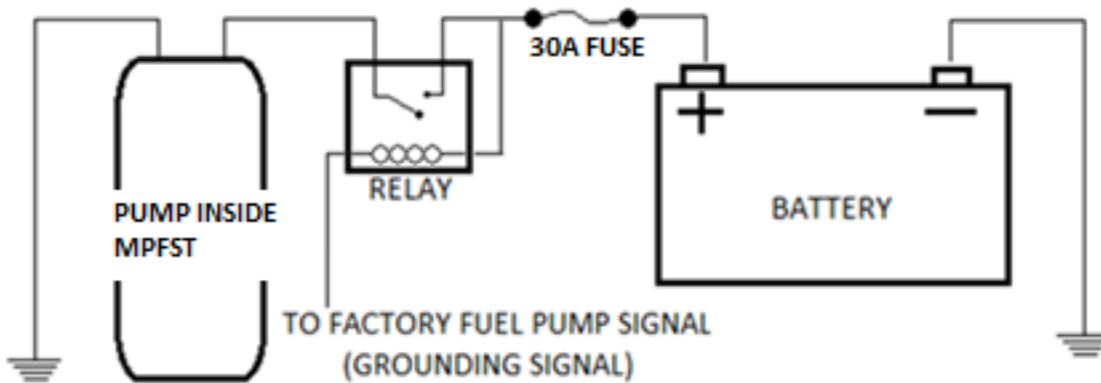
WIRING

Each fuel pump in the MPFST has dedicated wiring. The included external flying lead harness has color coded wires that correspond to each pump according to this legend:

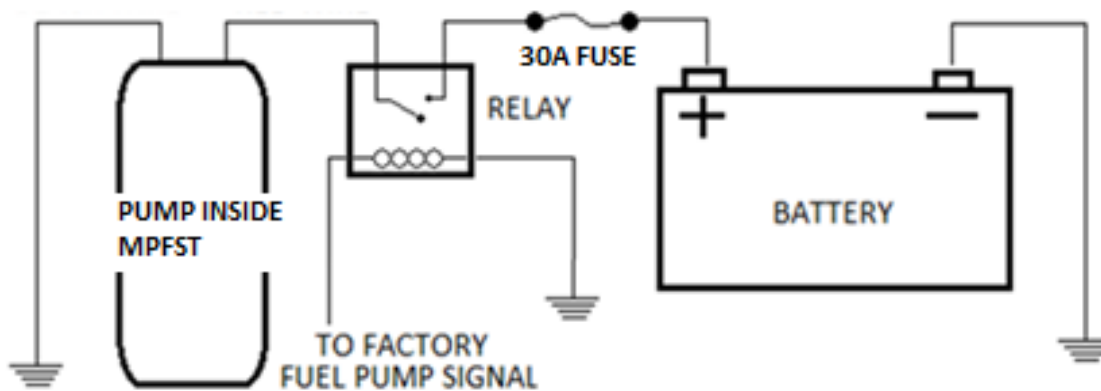
RADIUM PINOUTS

PUMP PIN COLOR FUNCTION			
1	1	RED	POWER
	2	BLACK	GROUND
2	3	ORANGE	POWER
	5	GRAY	GROUND
3	6	WHITE	POWER
	7	BROWN	GROUND

Radium recommends that each pump have a dedicated wiring circuit containing a relay and fuse for each pump. Some of the available pumps can draw up near 20 Amps at high pressure, so fuses and wiring should be sized accordingly. Check and understand what kind of signal will be used to activate the relays for the MPFST pumps.



Use this wiring diagram if the fuel pump relays will be triggered with a ground signal



Use this wiring diagram if the fuel pump relays will be triggered with a +12V signal

INITIAL START

The surge tank must be fully primed with fuel before the engine will start. Remove the MPFST pump fuses and cycle the vehicle's ignition power several times. This will activate the primary fuel pump for a few seconds each time. After 3-4 cycles the engine should be ready to start. Replace the MPFST pump fuses.

ASSEMBLY

If the MPFST was purchased without pumps pre-assembled, follow the steps below to install compatible pumps.

1. Unscrew the 9 perimeter bolts holding the top cap to the canister. Remove the top cap and hanger assembly.



2. Remove the three screws holding the green bracket to the underside of the top cap.



3. Small sections of submersible hose are pre-installed on the pump outlet fittings. Loosen the screw-drive hose clamp(s) as far as they will go without coming apart.



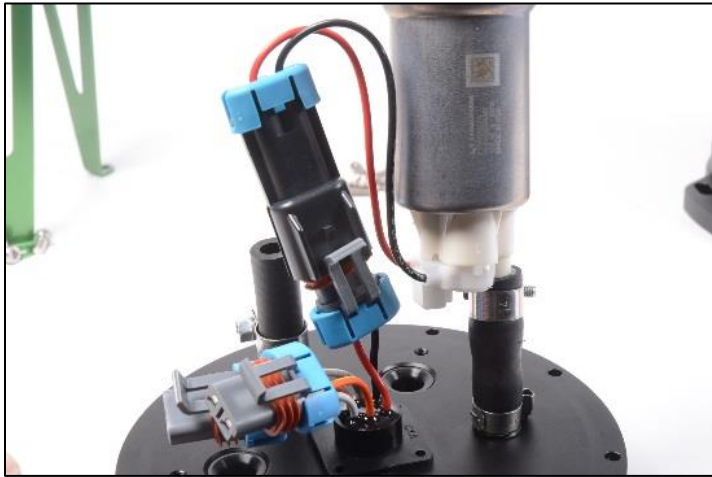
4. Slide the fuel pump into the hose until fully seated. Some light oil lubrication may help.



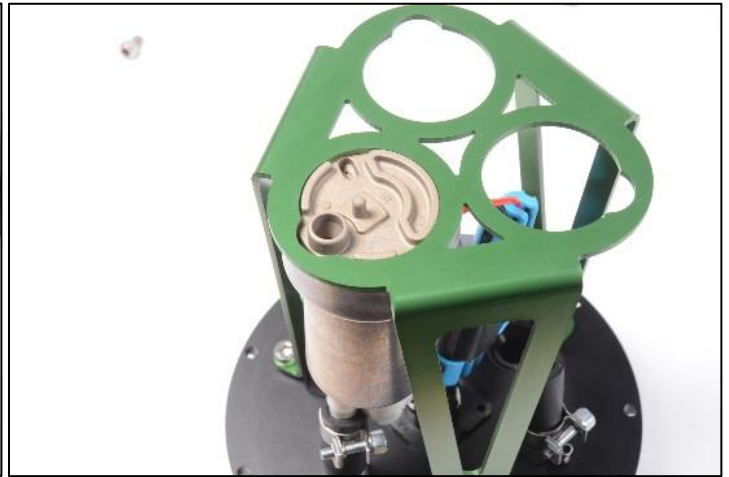
5. Position the hose clamp in place and tighten with a nut-driver. Repeat this process for the other pump(s).



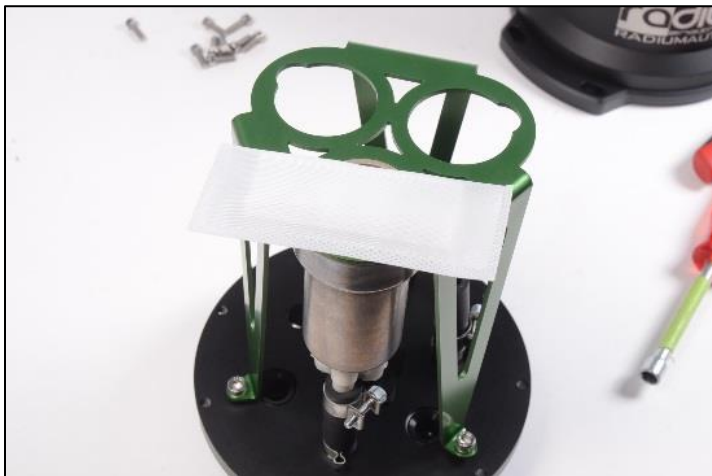
6. Connect the electrical plug(s) to the fuel pump(s). Pump1 Red/Black, Pump2 Orange/Gray, Pump3 Brown/White
NOTE: Unused connectors can remain loose. The orange rubber seals should be removed from the unused Walbro F90000267/274 fuel pump connectors.



7. Reinstall the green bracket and make sure the pump(s) are seated in the cutouts as shown. Make sure the pump inlet is centered in the relief cut in the bracket.



8. Install the filter sock onto the fuel pump inlets. Make sure a compatible filter sock is used, such as Radium P/N: 14-0143.



9. Insert the assembled top cap into the canister. Make sure the large O-ring does not unseat. Install and tighten all 9 screws and torque in an alternating pattern to 25 in-lb.

