



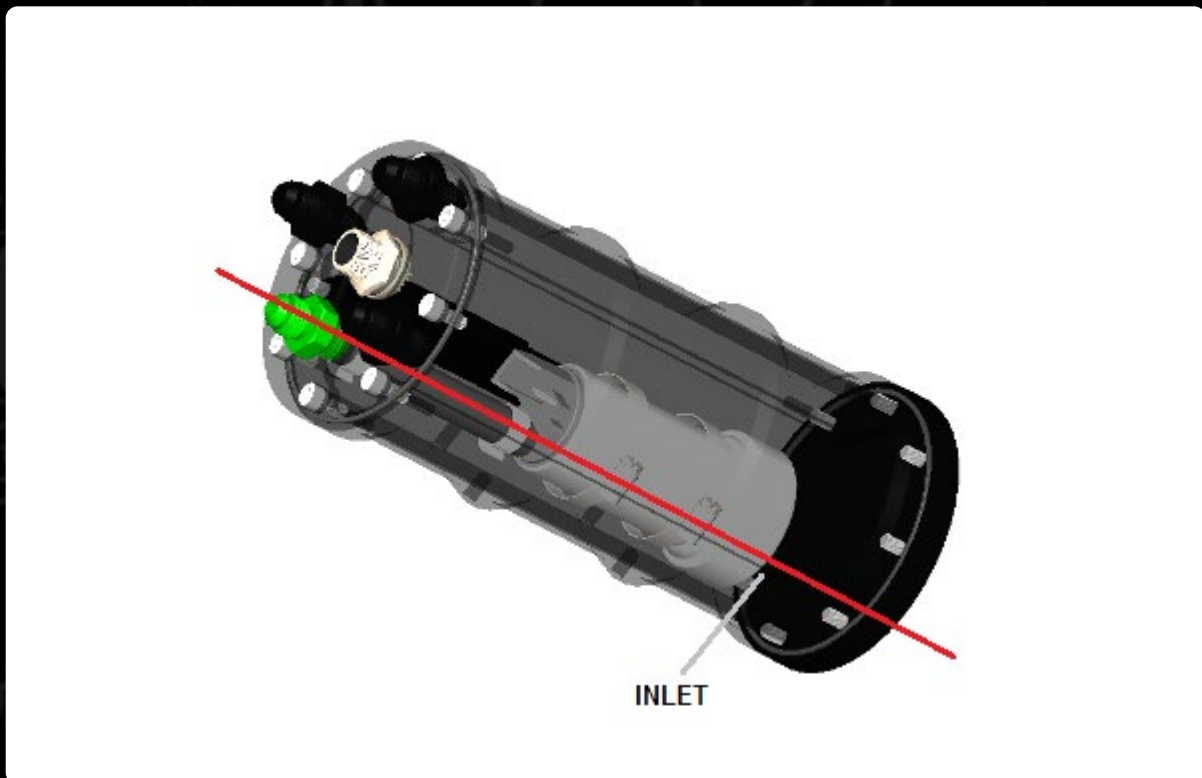
### Horizontal or Vertical? Radium Fuel Surge Tank Mounting

Radium Engineering offers the industry's largest selection of configurable fuel surge tanks. Many customers who build custom street or race cars have limits on where they can package a fuel surge tank in the vehicle. It is often ideal to consider a fuel surge tank that can be mounted flat (or horizontally). So the question comes up; with the large selection of Radium Engineering fuel surge tanks available, which can be mounted horizontally?

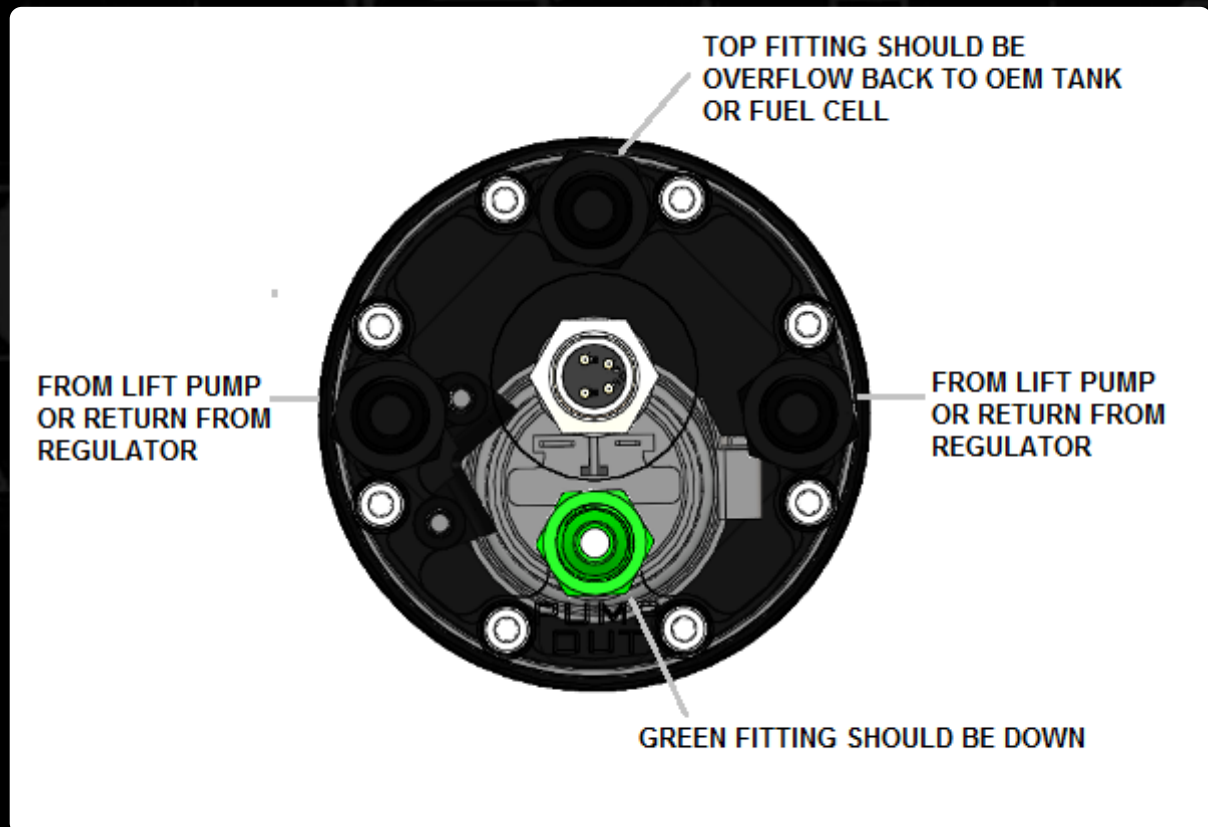
To answer that question, we have to look at the different surge tanks and how they function. Obviously, all Radium fuel surge tanks can be used mounted vertically. This is the optimum position as the fuel pump inlet is situated at the bottom of the tank, so the full volume of the surge tank can be utilized before the pump inlet is starved of fuel. But many can work equally as well when mounted horizontally. When mounting horizontally, we always recommend that any amount of positive angle be implemented (top upward) if possible, and NEVER at a negative angle (top downward). Mounting at a negative angle can trap an air pocket inside the surge tank, near the fuel pump inlets.

### Standard Fuel Surge Tanks

These can be built with one or two internal pumps.



When considering how to mount the surge tank, it is helpful to know what is going on inside. Shown above is a standard fuel surge tank equipped with a single fuel pump. All of the pumps we use are configured with the inlets situated in-line with the outlet (red line). This holds true for the Walbro and AEM pumps offered (39mm body pumps). On Radium fuel surge tanks, the green fittings always denote the fuel pump outputs. By observing where the green fitting is located, you can deduce where the pump inlet is and mount the surge tank with that side downward. Sometimes, clocking of the body of the surge tank is required in order to get the mounting holes on the correct side. This is done by disassembling the surge tank and reassembling with the canister in the proper orientation.

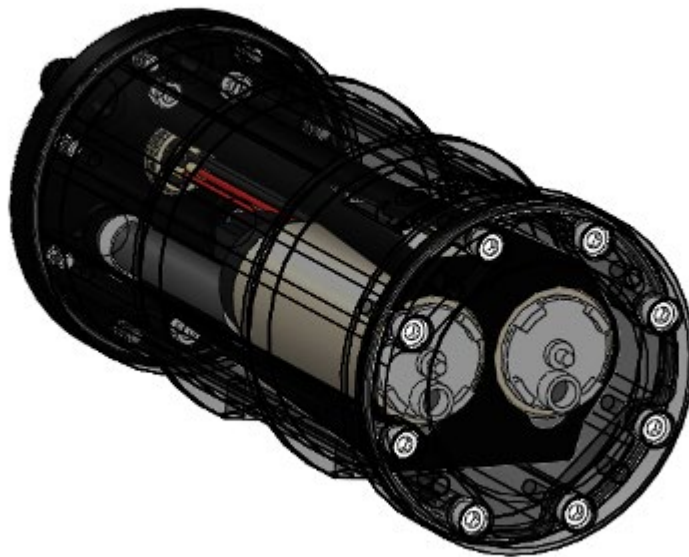


With the green fitting downward, the opposite side fitting should be used as the return back to the OEM fuel tank or fuel cell (shown above). This allows any air pockets to get pushed out.

When considering a standard fuel surge tank with twin internal pumps, it is a slightly different situation. As shown below, it is clear that pumps are on opposite sides of the surge tank. When rotated with one pump down, horizontal mounting increases the chances that the top pump may become starved, should the fuel level in the surge tank start to decrease.



If a dual pump standard fuel surge tank **MUST** be mounted in horizontal configuration, it should be oriented as shown below, with the pumps side by side. This is not 100% optimal, but will work. In a situation like this, any sort of positive mounting angle will be very helpful to allow the surge tank to utilize its full volume as much as possible.



### Standard Fuel Surge Tank with Single Bosch 044 Internal

The standard fuel surge tank with the Bosch 044 fuel pump has a specially designed pickup machined into the base (shown below). This allows the surge tank to be mounted horizontally without losing effectiveness. Observe the labeling on the bottom of the surge tank for proper orientation when mounting horizontally. Avoid mounting at a negative angle.



### Multi-Pump Fuel Surge Tanks

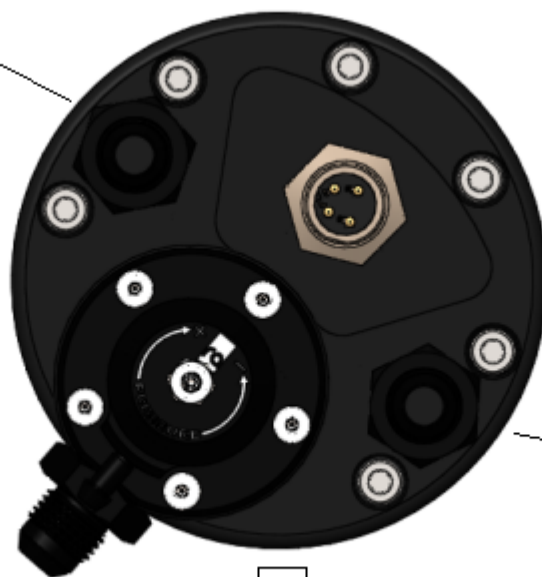
The family of Multi-Pump FSTs (MPFST) all must be mounted vertically or as close to vertical as possible within +/- 10 degrees.



### Regulated Fuel Surge Tanks (FST-R)

The FST-R is only available with a single internal pump (not compatible with Bosch 044). This pump is situated slightly differently than the standard fuel surge tank. When mounting this horizontally, be sure to have the correct side down according to the diagram below. Reclocking of the canister may be necessary depending on what side the mount will attach to. Once again, always avoid a negative angle (top lower than base) and always try to mount with as much positive angle as possible (top higher than base).

THIS PORT OVERFLOW  
BACK TO OEM TANK



LIFT PUMP SUPPLIES  
THIS PORT

THIS SIDE DOWN

The table below summarizes the horizontal mounting guidelines discussed above:

<b>Surge Tank Configuration</b>	<b>Horizontal Mounting?</b>	<b>Notes</b>
Standard FST with single internal pump 39mm style pumps (AEM, All Walbro pumps, etc)	<b>YES</b>	Make sure green Pump Outlet fitting is lowest point.
Standard FST with single internal pump BOSCH 044	<b>YES</b>	See label on end of surge tank for proper orientation.
Standard FST with dual internal pumps 39mm style pumps	<b>NO</b>	Pumps are installed opposite each other. Impossible to have both pumps mounted at lowest point.
FST-R Surge tank with integrated regulator (only available with single internal pump)	<b>YES</b>	Observe orientation requirements shown above.
Multi-Pump Fuel Surge Tank MPFST (All)	<b>NO</b>	The family of MPFST surge tanks can only be mounted vertically.
Surge Tank with Dual External Bosch 044-style Pumps (vertical)	<b>NO</b>	Several parts must be reconfigured to convert to horizontal mounting. Contact Radium for details.
Surge Tank with Dual External Bosch 044-style Pumps (Horizontal)	<b>YES</b>	Designed for horizontal mounting. Mount as close to level as possible.