INSTALLATION INSTRUCTIONS
FUEL SURGE TANK KIT
2013+ FORD FOCUS ECOBOOST

Document: 19-0168
Support: info@radiumauto.com

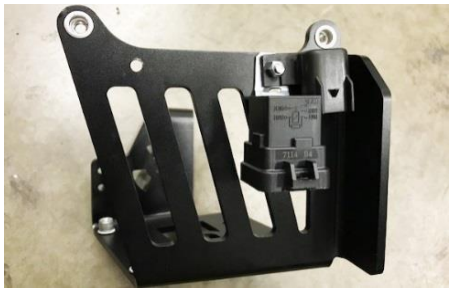
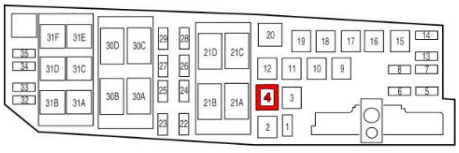
Working under the vehicle is required.
This installation is best performed with the vehicle raised on a lift.
If a lift is not available, be prepared to raise and safely support the vehicle.
When installing any part which has an O-ring, lubricate with light oil.

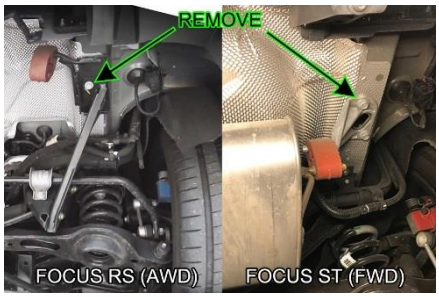
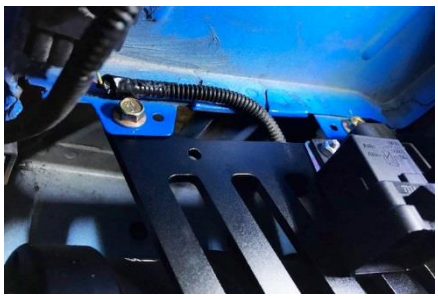
CAUTION

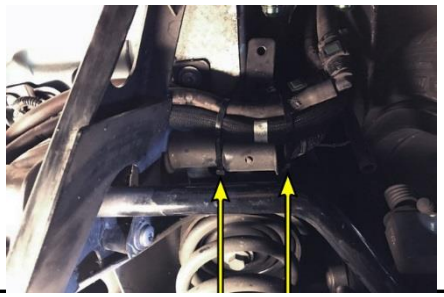
Only a qualified technician following applicable safety procedures should perform the installation of this product.
One must have knowledge in repair and modification of fuel systems and general vehicle modifications to install this product.
Gasoline and other fuels are flammable and can be explosive.
Only install in a well-ventilated location to minimize buildup of fuel vapors.
No sparks, open flames, smoking or other ignition sources are to be present. Draining and removal of all fuel from the fuel system is recommended.
Proper eye and personal protection is required at all times during installation.

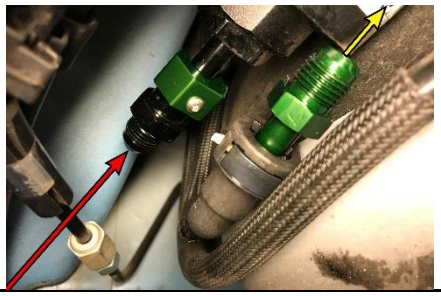
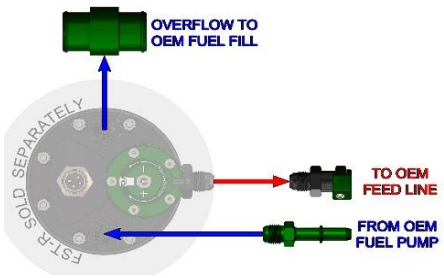
WARNING

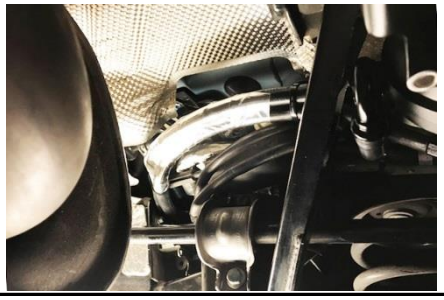
The fuel system is under pressure! Do not loosen any connections until relieving the fuel system pressure.
Consult a service manual for instructions on relieving fuel pressure safely. This product is designed for off-highway and racing use only.
Fuel system components may not be legal for sale or use on emissions controlled motor vehicles. Consult local, state, and federal laws.

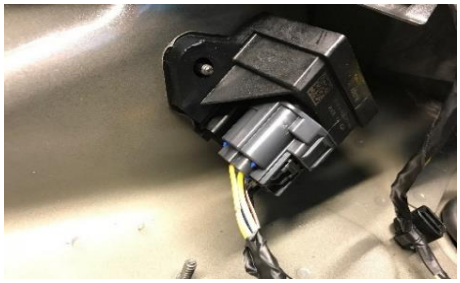
STEP	TOOLS NEEDED	INSTRUCTIONS	PHOTO
1	8mm Wrench 3mm Allen Wrench	Find the relay and fuse provided in the kit. Using the thumb tab, unlock the flying lead connector from the relay. Using the thumb tab, unlock the fuse flying lead wires from the holder. Secure the relay and fuse holder to the Focus mounting bracket. Overlap the mounting tabs, as shown.	
2	4mm Allen Wrench	It is likely the FST-R (sold separately) will need to be reclocked (proper orientation shown). This will ensure that there is a spare port at the highest point of the surge tank canister for overflow purposes. To reclock FST-R; remove 6 perimeter bolts, lift up top plate, rotate accordingly, retighten bolts. Make sure the gasket does not kink. Replace the FST-R pump outlet -6AN male side fitting with the 90deg low profile -6AN banjo fitting provided in the this kit, as shown. Secure the FST-R to the mount using the 4 provided countersink screws.	
3	10mm Wrench	Prop the hood and remove the fuse cover panel. Remove the 20A fuel pump fuse at terminal 4. To relieve fuel pressure, start the engine and allow it to stall. Switch the vehicle OFF and replace the fuse and panel. Release the battery cover tabs and pull upwards to remove. Disconnect the battery.	
4		Safely raise the vehicle. From the RH rear of the vehicle (near the muffler), pop out the electrical connector from the chassis holes, as shown.	

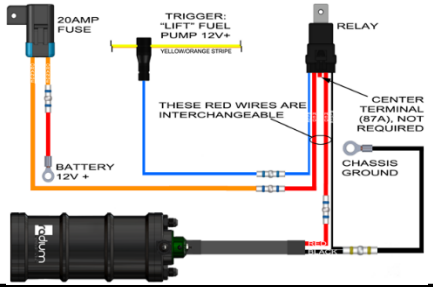
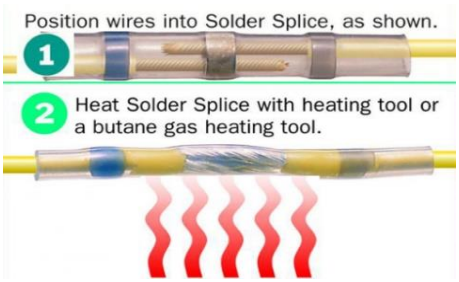
5	Sand Paper	Next, remove the clip from the rearward hole, as shown. These holes will be used to secure the Focus mounting bracket. The rear hole will also be used to chassis ground the electrical circuits described later. Remove a 1/2" diameter (minimum) of paint from both sides of the hole pointed to in the picture.	
6	Diagonal Cutters	From the rubber grommet, route the wire loom in between the 2 tabs. Next, find the OEM sheet metal hole towards the RH rear side of this area. Using the included zip tie, secure the OEM wire connector to this hole. As shown, the connector will nestle nicely in this area and free up the required space for the kit.	
7	13mm Socket Wrench	Remove the M8 bolt shown in the picture. The function of this bolt is slightly different between the AWD Focus RS and the FWD Focus ST, but is found in the same chassis location.	
8	13mm Socket Wrench 10mm Socket Wrench	Raise the FST assembly up to this area. Run the 2 provided M6 bolts (shown in gold) through the chassis and into the bracket rivet nuts. **<u>Ford Focus ST (FWD) ONLY</u>** The OEM M8 bolt will NOT be reused. Use the longer M8 bolt provided in this kit (shown) to secure the inner mounting tab. **<u>Ford Focus RS (AWD) ONLY</u>** The OEM M8 bolt WILL be reused for securing the inner mounting tab. The extra M8 bolt provided in this kit can be discarded.	
9		If there is interference between the FST-R and the OEM muffler chassis mount (AWD Focus RS), place the included washer on top of the inner mount to shim the assembly slightly downwards.	
10	Diagonal Cutter	Find the 3 OEM hoses directly in front of the FST. Pull out the OEM clips and cut the corresponding OEM zip ties to free up the hoses.	

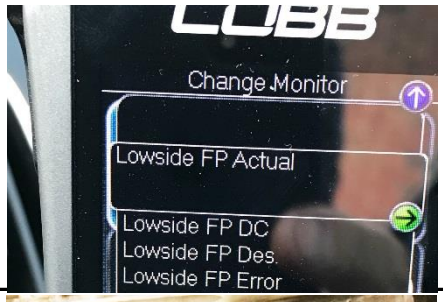
11	Diagonal Cutter	Just in front of the FST port fittings is a metal tab where the clip was secured. Bend this tab up and out of the way. Use the provided zip ties to secure the OEM hoses, as shown. Repositioning these OEM hoses permits additional space for the new fuel hoses.	
12	Pipe Thread Paste	The FST overflow port will return fuel into the gas tank via the OEM rubber fuel filler tube. The included barbed coupler will replace a small cut away section from the OEM fuel filler tube. Apply pipe thread paste to the 1/4" NPT threads on the included 90 degree 6AN adapter fitting. Install the fitting in the barbed coupler. Install finger tight, then add another 1.5 to 3 turns. Make sure the black fitting is clocked so that it runs parallel with the barbed coupler.	
13	Marker	Find the OEM rubber hose that connects the fuel filler tube to the gas tank port. NOTE: Access to the AWD Focus RS and FWD Focus ST models will be slightly different. Make "upstream" and "downstream" cut marks on the hose where the barbed coupler will be located (AWD Focus RS shown). Make sure to allow enough room to access the hose end fitting that will be installed later.	
14	7mm Socket Wrench Hose Cutter	Loosen the worm drive hose clamp near the gas tank. Dislodge the rubber fuel filler hose from the gas tank and pull the hose down just enough to reach the cut lines. Cut at the upstream mark.	
15	Hose Cutter	Place the OEM fuel filler hose onto a workbench. As shown, cut out a 1/2" section near the downstream mark. Slide the OEM rubber hose onto the side of the barbed coupler that is on the opposite side of the -6AN male fitting. In other words, the -6AN fitting will be pointing towards the rear of the vehicle when reinstalled.	
16	7mm Socket Wrench 1/4" Socket Wrench	Using a 1/4" socket, secure the short hose to the barbed coupler using one of the included hose clamps. Place the assembly onto the gas tank port. Orientate the coupler so there is room to install a hose end to the -6AN fitting. Secure using the OEM clamp and a 7mm socket. As shown, reinstall the upstream fuel filler hose to the barbed coupler and secure using the other provided hose clamp.	

17		**Ford Focus ST (FWD) ONLY** **THE PROVIDED 3/8" SAE CONNECTOR FITTINGSS WILL NOT BE USED.** Find the SAE quick connect fuel line junction just in front of the gas tank on the RH side (shown). NOTE: The tubing with the green locking clip (shown) does NOT need to be removed. Gently pry and remove the white locking clip from the 5/16" SAE connector. Be careful as these are brittle. Have a rag handy as about a cup of fuel will spill from this connection. Press the white 5/16" SAE quick connect thumb tab inwards and release the fuel tube.	
18		**Ford Focus RS (AWD) ONLY** **THE PROVIDED 5/16" SAE CONNECTOR FITTINGS WILL NOT BE USED.** Find the OEM fuel filter under the vehicle located just in front of the gas tank on the RH side. There are 3 SAE quick connect fittings in this area. Only the pre filter fitting will be unplugged. It is located furthest to the RH side of the car and has a black thumb tab (shown). The green and white thumb tab SAE connections do NOT need to be unplugged. Gently pry and remove the white locking clip from the SAE connector, as shown. Be careful as these are brittle. Have a rag handy as about a cup of fuel will spill from this connection. Press the black 3/8" SAE quick connect thumb tab inwards and	
19	5/64" Allen Wrench Light Oil	Find the SAE female fittings provided in the kit (Focus ST = 5/16", Focus RS = 3/8"). Remove the green lock and lubricate the internal O-rings. Insert the fitting onto the OEM SAE male connection that was just unplugged. After engaged, reinstall the green retaining clip onto the fitting and secure with the small screw. Find the SAE male fittings provided in the kit (Focus ST = 5/16", Focus RS = 3/8"). Lubricate the male portion and insert into the OEM SAE female connector until a "click" is felt. Reinstall the OEM SAE white lock.	
20		Use the included EFI fuel line and various Pusk Lok hose ends to route the plumbing, as shown. When routing the hoses, be sure to stay away from moving components such as suspension as well as areas that get excessively hot. NOTE: The hose lengths listed in the following steps are only recommendations. Depending on the vehicle and how the hoses are exactly plumbed, variations will be present. Measure before cutting and assembling.	
21	Light Oil	To properly install the 6AN Push Lok hose ends into the provided 3/8" EFI fuel hose, first lubricate the barbs. Fully push the hose onto the barbs until it bottoms out, as shown. NOTE: Hose clamps are not necessary for Push Lok connections.	
22		The highest point on the FST is used as the overflow port. It is important to route this hose to the Radium barbed coupler fitting that is attached to the OEM fuel filler hose. Route this hose along the same path and next to the OEM fuel filler hose, as shown. **Hose Recommendations:** Highest FST Port: 90 Degree Hose End Barbed Coupler: Straight Hose End Hose Cut Length: 25 inches	

23		The OEM fuel pump inside the gas tank will supply fuel to the FST-R. Assemble a hose from the Radium SAE male fitting (shown) to the lowest FST-R port. Direct the hose along the RH side of the gas tank then route it along a similar path as the previous "overflow" hose keeping it high up and away from hot and/or moving components. **Hose Recommendations:** Lower FST-R Port: 90 Degree Hose End Radium SAE Male Fitting: 180 Degree Hose End Hose Cut Length: 63 inches	
24		The fuel pump in the FST-R will supply fuel to the OEM fuel system. Assemble a hose from the FST-R pump outlet side port to the Radium SAE female fitting connected to the OEM feed line (shown). Route this hose along a similar path as the previous hose. **Hose Recommendations:** FST-R Pump Outlet Side Port: 180 Degree Hose End Radium SAE Female Fitting: 45 Degree Hose End Hose Cut Length: 63 inches	
25	11/16" Wrench	Tighten all connections. It is recommended to use an aluminum wrench to prevent marring.	
26	Diagonal Cutter	Using the provided cable zip ties, secure the 3 hoses in place as shown. Make sure they are kept away from excessively hot areas and moving components.	
27	Scissors	Use the provided heat tape to wrap the bundle of fuel hoses that route in front of the exhaust muffler, as shown.	
28	T40 Torx	Plug in the electrical relay and fuse flying lead connectors and allow them to dangle. Lower the vehicle. Open the rear RH door. Remove the bottom 2 RH rear seat bolts (shown). Pull the seat up and move out of the way.	

29		Gently pull the panel (shown) to the RH side to pop out the plastic retainer from the door sill. Gently pull up to release the plastic door sill panel. Pull up the carpet and secure the seat belt out of the way so it does not interfere while working in this area.	
30		To activate the FST-R fuel pump, the relay will be triggered from the OEM fuel pump's power wire. The FWD Focus ST (shown) uses 1 fuel pump controller. The AWD Focus RS uses 2 fuel pump controllers (shown in following picture). Unplug the connector by squeezing the lock and simultaneously pulling away. For AWD Focus RS, use the rearward fuel pump controller.	
31	Wire Stripper	Unscrew both ends off the included black Posi-Tap connector. Insert the OEM power wire (yellow/orange stripe) from the fuel pump module connector into the slotted end of the Posi-Tap connector. Screw the center section back on making sure the wire gets pierced. Slide the Posi-Tap collar end piece over the blue wire provided in the kit. Strip the blue insulation back to expose 3/8" of copper and insert into the end of the Posi-tap connector. Finally, smash the blue wire by tightening the collar end into the Posi-Tap connector, as shown. See the online Posi-Tap tutorial videos for more information.	
32		Next to the OEM fuel pump controller is a rubber grommet plug. As shown, pull up to release. Looking in the hole, there is a passage for the blue trigger wire to route back to the new fuel pump relay. Poke a small hole and insert the blue wire through the middle of the rubber grommet. Feed the wire down until it can be found underneath the car. Reattach the rubber grommet. For strain relief, allow slack in the wire so it does not pull away from the OEM fuel pump controller. Use the included split wire loom to protect the wire. Route it safely avoiding any sharp edges that could cause unwanted chaffing.	
33	Electrical Pick RTV Slicone	Find the included relay flying lead connector. The large red wire located in the center (terminal 87A) will not be used. To remove, first pry off the large red rubber seal and slide it along the 5 wires to dislodge it from the connector. As shown, insert a pick into the socket and pry the terminal loose from its internal lock. Simultaneously push the wire through the front of the connector. Discard the wire/terminal and reattach the large red rubber seal. Apply a small dab of silicone RTV into the ununsed hole of the red rubber seal.	
34		**FUEL SURGE TANK P/N: 20-0933** Use the shrink tube and ring terminals provided with the FST-R. Cut each piece of shrink tube to length and insert onto each wire. Crimp a ring terminal to each wire. As shown, heat shrink into place. _____ **FUEL SURGE TANK P/Ns: 20-0129-00, 20-0129-01, 20-0130-00, 20-0130-01 20-0133-01, 20-0134-00, 20-0134-01, 20-0135-00, 20-0135-01, 20-0368-00** The circular flying lead connector has a keyway that must be properly oriented prior to inserting into the mating FST-R connector. Spin fully clockwise to lock into place.	

35		Plug the fuse and relay into their respective connectors. Run the FST-R wiring through the mounting bracket, as shown.	
36	Wire Cutters Wire Strippers Wire Crimpers	Assemble the components as shown in the wiring schematic (not to scale). Cut all wires to length.	
37	Heat Gun	Note the different locations of the included solder butt connectors in the wiring schematic diagram above. There are 4 blue (small) connectors and 1 yellow (large) connector. To properly use the solder butt connectors, strip each wire insulation back and insert both wires into the butt connector ends. Use a heat gun. Be careful with the surrounding area as the internal solder will take a few minutes to melt. Verify the connection is solid by giving it a tug.	
38	10mm Socket	For strain relief, always allow some slack in the wire so it does not pull.	
39	10mm Socket	As shown, ground the components to the chassis using the metal underneath the rear M6 bolt. NOTE: The paint in this area was ground down in an earlier step.	
40	Diagonal Cutter	Use the included split wire loom for protection. Route it safely avoiding hot areas or any sharp edges that could cause unwanted chaffing. Use the small zip ties included to secure the wire loom in place.	

41		Temporarily remove the new fuel pump fuse. Reconnect the battery. Switch the ignition to the ON position a few times without starting the engine. This will prime the OEM fuel pump and fill the FST. Check for leaks and fix any that may have occurred. Reinstall the fuse. It may take longer than usual to start the engine as air pockets are being bled from the system. Start and idle the engine. Recheck for leaks. The FST-R is NOT preassembled to a specific fuel pressure (see below).	
42		There a couple of ways to calibrate the fuel pressure from the FST-R. If the car already uses special OBDII software which monitors the OEM fuel pressure sensor in low pressure feed line, installing an auxiliary gauge or sensor is not necessary. The "Lowside FP Actual" parameter is shown using a COBB Access Port. NOTE: Ford does not send this low fuel pressure signal out for standard OBDII scan tools to read.	
43	Pipe Thread Paste 7/16" Wrench 11/16" Wrench	Alternatively, Radium Engineering P/N: 20-0152 includes a liquid-filled fuel pressure gauge and -6AN inline adapter fitting. This can be installed onto the FST-R fuel pump outlet port, as shown. No other parts are required. Adjust the FST-R (discussed below) until 65psi is achieved.