

INSTALLATION INSTRUCTIONS

FUEL SURGE TANK KIT

BMW E46 3-Series , Excl Convertible

Document: 19-0056
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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.

Relieve fuel pressure in vehicle before beginning the installation.



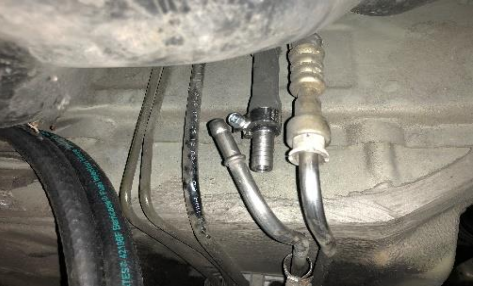



Disconnect the negative battery cable. Access to the underside of the vehicle is required for this installation. It is recommended to perform this installation with minimal fuel in tank.






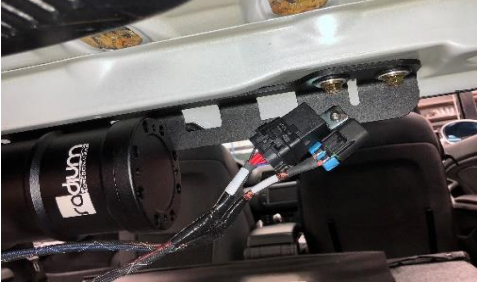

WARNING







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.

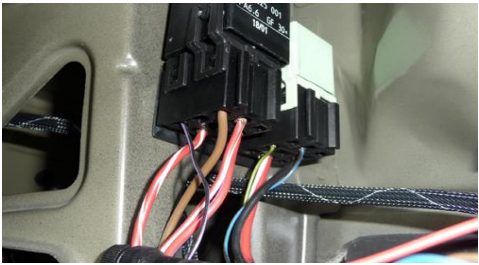
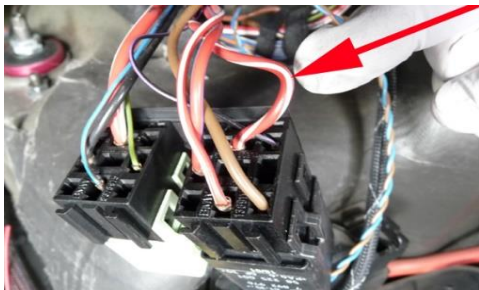


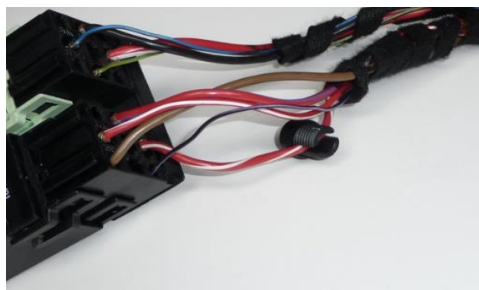
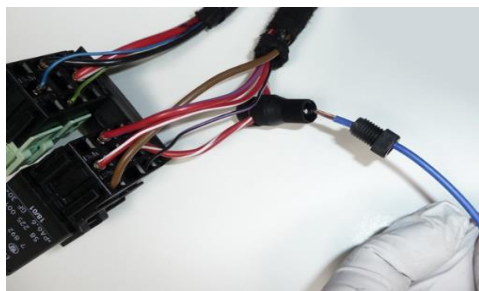
STEP	TOOLS NEEDED	INSTRUCTIONS	PHOTO
1		Remove the carpet in the trunk to gain access to the floor between the rear wheel wells. Pull up the carpet to expose the trunk floor.	
		The fuel line pass-through bulkhead will be installed on the left side of the trunk, circled in red.	
2	Permanent Marker	Use a tape measure to locate the first of the four drilled holes that are required. The first hole is located according to "H" and "V" measurements as shown. H is measured from the sheet-metal wall (under the carpet) and the V is measured from the edge of the sound deadening material.	
	Measuring Tape	H = 2-1/2"	
		V = 3-1/4"	
		It is not necessary to remove the carpeted wheel well cover, but it will be necessary to hold it out of the way to access the area of the holes.	
3	Permanent Marker	After the first hole is located, place the bulkhead plate down and use it as a template and mark the centers of the remaining holes. The plate should be angled slightly to create the hole pattern shown. After marking the hole centers, drill each one with a 1/4" drill bit. Then follow up with a second drill and enlarge the holes to 5/8". It is recommended to use a stepped drill bit.	
	1/4 Drill		
	5/8 Drill		
4	8mm Socket	From the underside of the car, remove the triangular metal brace and plastic panels from the area of the gas tank.	
	16mm Socket		


11		From the underside of the car, insert the bulkhead fittings for #1 and #3 hoses into the #1 and #3 holes in the floor. Be sure not to get mixed up when looking at the holes from the underside of the car.	
		The fittings should stay in place without the nuts on the opposite side. If they do not stay in place, loosely install the bulkhead nuts from inside the trunk.	
12		Route the #1 and #3 hoses around the rear of the fuel tank and toward the side of the car. Follow the shape of the fuel tank all the way around to the front of the tank.	
		When routing the lines, make sure they are clear of the moving suspension arms and make sure they are not kinked or pinched anywhere. Secure them to the adjacent brake lines using the included zip ties.	
13	Flat head screwdriver 9/32 Nutdriver	Route the lines completely around the tank until they reach the factory fuel line junction shown.	
		At the junction, disconnect and remove the small hose clamp holding the rubber hose on to the fuel return pipe. Pull the rubber hose off the pipe. Fuel may leak out.	
		Install the double-ended hose barb fitting into the BMW rubber hose and secure with one of the included EFI hose clamps. Slightly bend the fuel return pipe so that it angles as shown.	
14	9/32 Nut driver	Connect the hoses routed from the previous steps to the OEM return line. The #1 hose connects to the rubber hose with the double-ended barbed adapter. The #3 hose attaches to the fuel return pipe. Cut to length if necessary. Secure both with the provided EFI hose clamps.	
		Go back and inspect the hoses to make sure everything is tied up properly and no hose is contacting moving suspension components. Check clearance with the suspension compressed if necessary.	
15		Insert the #2 and #4 bulkhead fittings into the corresponding holes in the trunk floor. Route these two hoses over the top of the differential and subframe.	
16	13mm Socket	On the opposite side of the differential, route the hoses down to the fuel tank next to the subframe mount (shown with red arrow).	
		Remove the fuel tank mounting strap bolt circled in blue and allow the tank to hang down.	
		Route the hoses between the top of the fuel tank and the unibody.	

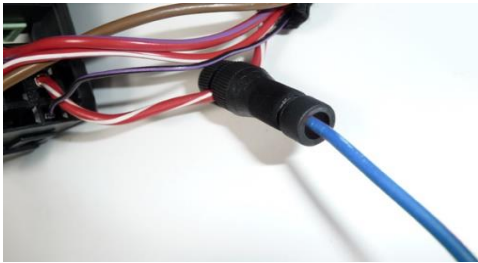

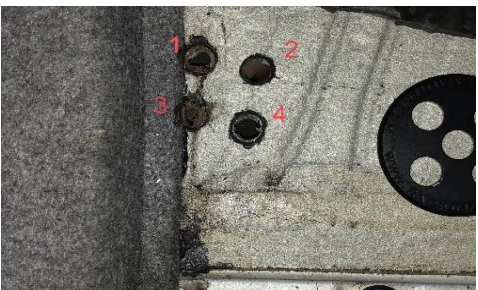

17	10mm Socket	From inside the cabin, remove the rear bottom seat cushion. Remove the access panel on the RH side of the vehicle (passenger side in US). This will expose the fuel pump module.	
		Disconnect the fuel feed line from the fuel pump module. This is done by pinching the two tabs on the black connector and first sliding it toward the fuel pump module to release the locks. Then slide it backward and off the blue fitting. Some fuel may spill out. Be prepared with a rag.	
18	5/64 Allen	Route the two hoses from step 16 to the fuel pump access area.	
	6AN Wrench	Locate the 6AN 180 degree hose-end in the kit and install it into Hose #2. Trim hose if necessary. Lubrication must be used.	
		Install the SAE adapter fitting into the 180 degree hose end and tighten.	
		Slide the SAE adapter on to the fuel pump outlet as shown. Lock the fitting in place using the green bracket and small screw.	
		Find the remaining 6AN straight hose end in the kit and install it into Hose #4. After the hose end is installed, screw in the green 6AN male to SAE male green fitting and tighten. Connect the OEM feed line to this fitting, pushing until it "clicks".	
19	13mm Socket	Reinstall the bolt for the fuel tank strap. Make sure the fuel lines are not being pinched before tightening the bolt.	
20	13/16 Socket	In the trunk, trim the carpet that goes around bulkhead fittings, then install the bulkhead plate over the fittings. Next, install and tighten all the bulkhead nuts using a socket and ratchet. It may be necessary to have someone under the car holding the bulkhead fittings straight while the bulkhead nuts are installed.	
		It is important these nuts are tight, in order to keep the fittings from rotating when the hoses are attached and tightened later in step 37.	
21	13mm Socket	Remove the four M8 bolts that hold the seat latches from the trunk ceiling. Mount the FST bracket to the underside of the underside of the trunk ceiling using the included 8mm bolts and washers. Make sure bracket is oriented as shown in the picture.	
22	3mm Allen Wrench	Locate the wiring harness and M5 screw and nut. Secure the fuse and relay to the hole on the RH side of the bracket as shown.	
	8mm Wrench		
	4mm Allen Wrench	Locate the four short M6 Allen head screws and use them to mount the	

23		surge tank to the bracket as shown. Make sure the surge tank is oriented so that the green fitting is at the bottom. If not, remove the top cap of the surge tank and clock the top plate so that, when installed, the green fitting is at the lowest point.		
24	Wire Cutters	FUEL SURGE TANK P/Ns: 20-0011-00, 20-0011-01, 20-0058-00, 20-0058-01, 20-0059-00, 20-0059-01, 20-0078-00, 20-0078-01, 20-0090-00, 20-0124-00, 20-0124-01, 20-0211-00, 20-0257-00 Install the circular flying lead connector. To secure, insert into the mating FST connector then spin fully clockwise to lock into place.		
	Wire Strippers			
	Wire Crimpers			
	Heat Gun			
		FUEL SURGE TANK P/N: 20-0960 Cut off the FST circular connector. Use the shrink tube and ring terminals provided with the FST. 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.		
25	Cutters	Make sure the wires are routed over the top of the surge tank. Tie the FST wiring harness up and out of the way using a zip tie.		
25		Remove the carpet covering the RH rear wheel well from inside the trunk.		
26	13mm Socket	Remove the plastic cover on the battery power cable master fuse. Remove the lower nut from the fuse terminal and install the "POWER" wire. Reinstall the nut and tighten. Reinstall the plastic cover.		
27	10mm Socket	Route the "GROUND" wire to the stud located on the body just above the battery. Remove some paint around the stud to ensure good electrical contact. Install the ring terminal and tighten down using the M6 nut included in the kit.		
	Sander			

		In the trunk, just above the RH rear shock mount, locate the black OEM fuel surge tank. This is the correct location for the correct surge tank.	
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28		pump relay. This is the common location for US market cars.	
29		Identify the switched fuel pump power wire by finding the heavy gauge red wire with white stripe coming from slot "55" on the relay connector. It is located next to the thin black wire. Mark this wire.	
30	Wire cutter	Find the flying lead labeled "TRIGGER" on the wiring harness. Cut the connector off at a good length to reach the OEM fuel pump relay.	
31	Wire stripper	Pull back the sheathing then strip about 3/8 of insulation off the end of the wire.	
32		Locate the Posi-tap connector in the kit and unscrew both ends. Put the slotted end around the red/white wire as shown.	
33		Screw the main section of the posi-tap into the slotted piece, some force is required. Next, insert the Posi-Tap end on to the trigger wire from step 31.	

		Push the trigger wire into the Posi-Tap connector and then tighten the	
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34		plastic nut. The finished assembly should look like the photo.	
35		<p>This picture shows the finished product.</p> <p>Tuck and zip tie all wires.</p> <p>The carpet over the wheel well can now be reinstalled.</p>	
36		<p>For the next steps, refer to the hole designations from Step 10.</p> <p>The four pre-fabricated PTFE hoses will now be installed to connect the fuel surge tank to the vehicle's fuel system.</p> <p>All four hoses are identical in length.</p>	
37	6AN Wrench	<p>Make sure the hoses are plumbed according to the information below:</p> <p>Bulkhead plate position #1: Top most port on surge tank</p> <p>Bulkhead plate position #2: Rear-most port on surge tank</p> <p>Bulkhead plate position #3: Forward-most port on surge tank</p> <p>Bulkhead plate position #4: Green fitting on surge tank</p> <p>Tighten all hoses using an aluminum AN wrench.</p> <p>Tie the hose together using two zip ties from the kit.</p>	
38		<p>Remove the fuse from the surge tank wiring harness.</p> <p>Reconnect the battery and key-on the ignition. Cycle the ignition several times to allow the factory fuel pump to prime and fill the surge tank. Check for leaks.</p> <p>Install the fuse back into the FST harness and key ON again. Make sure the pump inside the surge tank turns on and is working. If not, check wiring.</p> <p>Check again for leaks at all connections points and fix any that may occur.</p> <p>Start the car and let it idle. It may idle rough until all the air is bled out of the system.</p> <p>Replace all parts that were removed.</p> <p>INSTALLATION IS COMPLETE.</p>	