

# INSTALLATION INSTRUCTIONS

## FUEL FILTER/FPR KIT

2001-2006 BMW E46 M3

Document: 19-0205

Support: info@radiumauto.com

### 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.



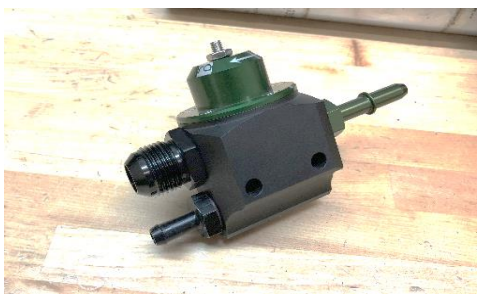



### WARNING




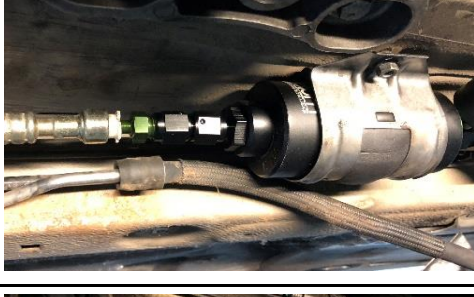
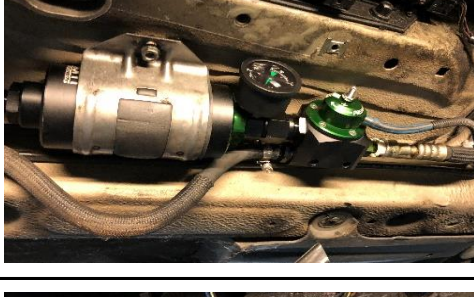

The fuel system is under pressure! Do not loosen any connections until relieving the fuel system pressure. Consult a service manual for instructions on relieving fuel pressure safely. This product is designed for off-highway and racing use only. Fuel system components may not be legal for sale or use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

STEP	TOOLS NEEDED	INSTRUCTIONS	PHOTO
1	8MM Socket	Raise and safely support the vehicle. Remove the metal cover from the area of the fuel filter.	
	10MM Socket		
2	Rag	<p>Disconnect the vacuum line from the fuel pressure regulator (FPR).</p> <p>To relieve fuel pressure, access the Schrader valve on the FPR just in the front of the fuel filter. Remove the metal cap and surround the valve with a towel. Use a small screwdriver or other tool to press the center of the valve. Have a rag handy as fuel will release under pressure.</p> <p>Once pressure is relieved, disconnect the fuel lines from the inlet of the filter and the outlet of the regulator. This is done by pressing the plastic retainers into the hoses and then pulling off the fittings.</p>	
3	10MM Socket	Remove the nut holding the fuel filter bracket in place and remove the fuel filter/FPR assembly from the vehicle.	







Follow steps 4-16 for P/N: 20-0430

Follow steps 17-22 for P/N: 20-0429

4	Oil Lubrication	<b>P/N: 20-0430 INSTALLATION</b>	
		NOTE: There are 2 provided orifices. Preinstalled is the smaller silver orifice and is generally best for most applications. For very high flow pump(s), the gold orifice can be installed if minimum base static fuel pressure cannot be achieved. See the MPR instructions for more details.	
		Find one of the green SAE adapter fittings in the kit and install the smaller brown o-ring onto the 6AN male side. Screw the 6AN male fitting into the port shown on the Radium FPR. <b>All o-rings should be lubricated with oil prior to installation.</b>	
5	5/64 Allen wrench	Install the two 6AN plugs into the other two ports on the Radium FPR.	
		At this time, check the orientation of the top cap. The vacuum nipple should be pointing toward the port with the green fitting installed. If this is not the case, remove the FPR top cap and clock it to the correct position.	
		Take care not to disrupt the internal spring and other components.	
		Reassemble the regulator and tighten down the screws evenly in an alternating pattern.	
6	Oil Lubrication	On the opposite side of the FPR, install the -10AN male adapter into the top port and the hose barb adapter into the bottom port, as shown. Tighten these fittings.	
	19MM Socket		
	25MM Socket		
7	Oil Lubrication	On the inlet (black end) of the fuel filter, install the 10AN ORB to 6AN male adapter and tighten. Then install the female/female 6AN coupler and 6AN male to 5/16" SAE quick connect adapter, as shown. Tighten all fittings.	
	25MM Socket		
	9/18" Wrench		
	5/8" Wrench		
8	Oil Lubrication	Apply Teflon paste to the fuel pressure gauge threads and screw it into the inline 1/8" NPT adapter fitting. Tighten finger tight, then add another 1.5 to 3 turns with a wrench.	
	PTFE Teflon Paste		
	1" Wrench		
9	Scissors	Remove the rubber sleeve from the OEM fuel filter and make a single cut down its length as shown.	

10		Slide the filter sleeve over the Radium fuel filter.		
12	10MM Socket	Install the fuel filter/FPR assembly in to the factory clamp as shown.		
		Check the orientation of the pressure gauge and FPR and adjust them if necessary by loosening the fitting installed in step 8.		
		When clocking is complete, tighten the nut for the mounting bracket.		
13		Connect the fuel feed line to the fuel filter outlet. Push until a "click" is felt.		
		Confirm the OEM vacuum hose will reach the FPR vacuum port. NOTE: fuel pressure is typically adjusted at atmospheric pressure so this vacuum line can be temporarily removed.		
14		Connect the fuel feed line to the inlet of the filter as shown. Push until a "click" is felt.		
15	Screwdriver	Hook up the fuel return line to the FPR hose barb fitting, as shown. Re-use the factory hose clamp. The hose can be cut shorter for best fit. Ensure all connections are tight.		
	Hose cutter			
				NOTE: The FPR is not pre-set to any particular pressure.
				Turn on the fuel pump and check for leaks. If no leaks are present, proceed to the next step for fuel pressure calibrating.
16	3/32" Allen Wrench	With the pump running, and no vacuum connection to the FPR, turn the set screw until the desired fuel pressure is achieved while referencing the gauge. For reference, the stock BMW fuel system operates at 5bar (72.5 psi).		
	3/8" Wrench			
	10mm Socket			
				Once adjustment is complete, tighten down the lock nut for the adjustment screw. Install the metal cover as shown. Some trimming in the area of the pressure gauge will be required. Alternatively, the pressure gauge can be removed and a 1/8" NPT plug installed (not included).



17	Adjustable Wrench	<b>P/N: 20-0429 INSTALLATION</b> Use a vice to hold the factory pressure regulator and a wrench to remove the filter from the regulator.  With the regulator removed, install the provided 6AN to metric thread adapter into the regulator, as shown. Use the included crush washer to create the necessary seal.	
	Oil Lubrication	On the inlet (black) end of the fuel filter, install the 10AN ORB to 6AN male adapter and tighten. Then install the female/female 6AN coupler and 6AN male to 5/16" SAE quick connect adapter, as shown. Tighten all fittings.  Apply oil to all o-rings.	
	25MM Socket		
	9/18" Wrench		
	5/8" Wrench		
18	9/18" Wrench	On the outlet (green) end of the filter, install the other 10AN ORB to 6AN male adapter. Next, install the other female/female 6AN coupler. Make sure to use oil on all fitting o-rings.  Now screw the female/female coupler to the fitting that was installed in the regulator in step 17 and tighten.	
	5/8" Wrench		
19	Scissors	Remove the rubber sleeve from the OEM fuel filter and make a single cut down the length of the sleeve, as shown.	
20	10mm Socket	Slide the sleeve over the Radium filter body.  Insert the fuel filter inlet SAE quick connect fitting into the fuel feed hose coming from the rear of the vehicle.  Position the filter/regulator assembly into place and secure with the OEM filter bracket and nut.  Insert the SAE quick connect hose fitting from the fuel rail to the regulator outlet.	
21	Flat head screwdriver	Attach the return hose to the OEM regulator return fitting, as shown. Some trimming of the hose may be necessary. Secure with the OEM hose clamp. Connect the vacuum reference line to the regulator.  To prime the system, cycle the key a few times and check for leaks. Address any leaks that are found and then re-test. Reinstall the shield over the filter assembly.  <b>INSTALLATION COMPLETE</b>	
	Hose Cutter		
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