INSTALLATION INSTRUCTIONS

FUEL PUMP INSTALL KIT, 96-06 BMW

Part Numbers: 20-0880/2/3/4 and 20-0890/2/3/4

Document# 19-0258

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.

NOTES

a. If manufactured after March 2021, replacement convoluted tubing is included. For kits before March 2021, convoluted tubing is NOT included with the intent to re-use the factory convoluted tubing. These earlier (discontinued) kits can be identified by P/Ns: 20-0082, 20-0083-02, 20-0085 and 20-0086. For replacement convoluted tubing, purchase Radium P/N: 20-0395.

b. As shown, the fuel pump sleeves included with the 20-0880, 20-0882, 20-0883, 20-0884 kits are smaller than the fuel pump sleeves included with the 20-0890, 20-0892, 20-0893, 20-0894 kits. These diameters are designed to mimic the OEM fuel pump diameter.

1. From inside the cabin, pull up to unclip the rear bench seat and remove from vehicle. Pull the carpet over the metal seat tabs.

Underneath the bench, there are rubber mat insulation. These are used for sound deadening and are very brittle. Fold the RH side mat back carefully to expose the fuel pump hanger metal cover.

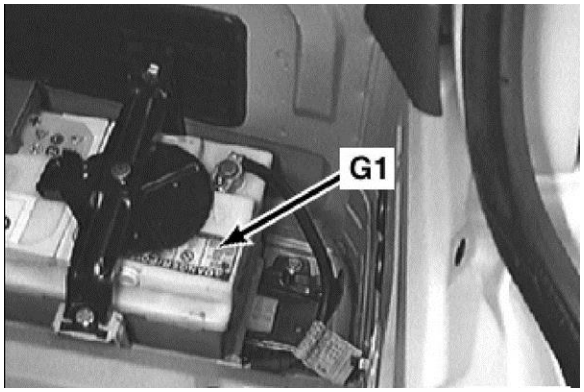
Remove the four M6x1mm nuts (shown) on the cover using a 10mm socket. It is a good idea to clean this area as it will be dirty.

2. Find the sliding fuel pump connector. Slide the connector to the right side of the vehicle to unlock. Now, pull upwards to release it (as shown).

Start the vehicle and allow the engine to stall.

3. Unscrew and disconnect the negative battery terminal (G1).

Caution: Disconnecting the battery (G1) may cancel the fault memories of some control units.



4. BMW E36 Only

ALERT: If the top of the fuel pump module has 2 fuel hoses as shown, you have an 92-95 OBD1. This Radium Engineering kit may NOT work for your application.

Loosen the clamp and pull the single “feed” hose off the barb. Have a rag handy as fuel will instantly leak out of this connection.

5. BMW E46 Only

To release the factory quick connect fitting, simply rotate the connector until both outer tabs can be accessed with a thumb and index finger. First, push the connector towards the center of the hanger. Next, squeeze the 2 tabs and then gently pull away from the mating tube, as shown.

Have a rag handy as fuel will instantly leak out of this connection.

6. To unfasten the ring connection, BMW sells a special tool, P/N: 16 1 020. If not available, a rubber mallet hammer and punch will suffice. When spinning the ring counterclockwise a dab of glue will break free. If the ring is stubborn, get a second person to hit the opposing side of the ring simultaneously.

Pull the assembly out of the vehicle being careful not to damage the fuel level sensor arm and set onto a work bench.

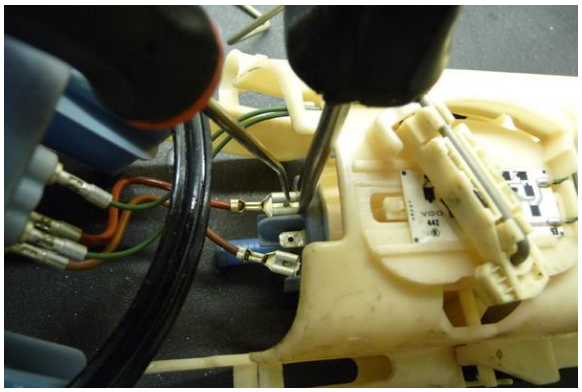
7. If a new convoluted tube will be used, completely remove the old convoluted tubing from the unit.

If re-using the OEM convoluted tubing, leave the end connected to the fuel hanger plate and do not damage the hose when removing the old fuel pump.

8. To remove the female spade connections on the BMW fuel pump, a pick and flat head screwdriver will be used.

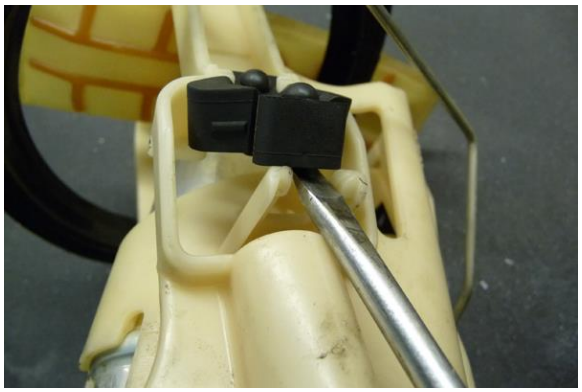
Press the center tab lock downwards with the pick and simultaneously pry the spade connector away from the fuel pump with the flat blade (as shown).

NOTE: The fuel pump positive terminal is 1/4" wide. The fuel pump negative terminal is 3/16" wide.



9. Carefully pry the rubber isolation grommets off each side of the fuel pump using your fingers and a screwdriver, as shown. These will reinstalled later.

The BMW fuel pump should now be able to be removed from the factory unit.



10. Take note of the clocking orientation of the plastic holder in respect to the fuel pump's outlet barb. To release the BMW fuel pump, pull the plastic tabs downward (as shown). The holder will come out the bottom of the pump.

NOTE: A second person makes this job much easier.

The plastic pump holder will be reused. The BMW fuel pump can always be reinstalled easily as this kit is reversible.

11. The following steps outline the use of spade terminals to connect to the 2 factory fuel pump wires. When performed properly, this connection method works very well.

Before connecting the electrical wires, understand how the spade terminals lock into place. There are holes in the male terminals. These are visible on the OEM fuel pump terminals, as shown.

12. NOTES:

a. Hypothetically, if the blue insulation were removed on the provided male spade terminals, you would also see these same holes.

b. The picture is only to show the internal metal terminals. **Do NOT remove the terminals from the blue insulation as shown.**

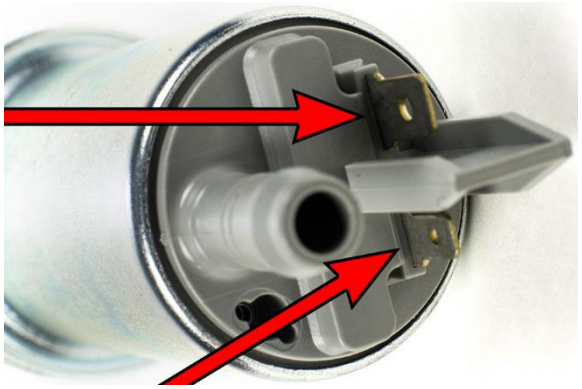
13. The OEM fuel pump wires use female spade terminals. Each of these terminals have tabs that lock into the holes of the male connectors. Depending on the force applied to the tabs when the terminals were removed, it is possible for them to be over bent. In this case, use a small pick to press the tab downwards (as shown in top picture).

At this time, also make sure the OEM female connectors are not too "open". This can result in a loose connection. Use pliers and gently compress each terminal (as shown in bottom picture).

14. The picture at right shows how the spade terminals will properly lock together in later steps. Do not perform this step yet.

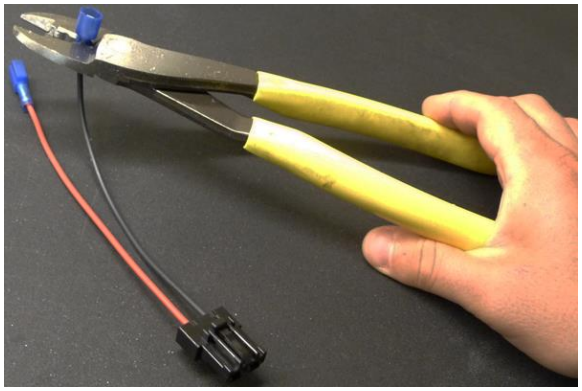
It is the INSTALLERS RESPONSIBILITY to ensure a tight electrical connection is achieved. Failure to do so could result in melted wires and pump failure. This type of damage is NOT covered under warranty.

15. If using a Walbro F90000262 Fuel Pump, no adapter wiring harness is required as it uses the same terminals (shown) found on the BMW fuel pump.



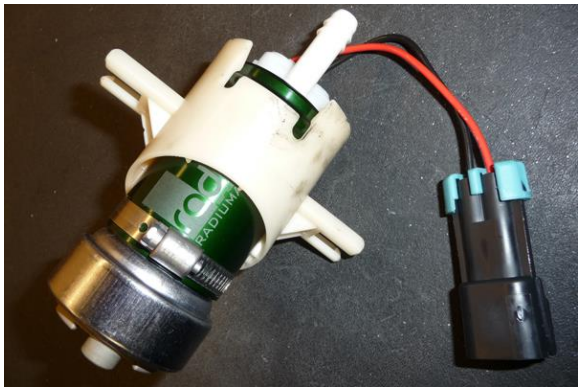
16. Crimp the male spade connectors as shown. Use the small 3/16" male spade on the black "-" wire and the larger 1/4" male spade on the red "+" wire. Gently give the wires a tug to confirm the crimp.

WALBRO F90000274 FUEL PUMP WIRING ONLY:
1. If the provided Radium wire harness has a white connector, it is not needed for this application and should be cut off.
2. Because the integrated connector already adds wire length to the fuel pump, the included Radium harness wires can be cut to length to remove the unnecessary slack.



17. First, slide the aluminum sleeve into the BMW plastic holder. Then, insert the large worm drive clamp into the recess of the aluminum sleeve.

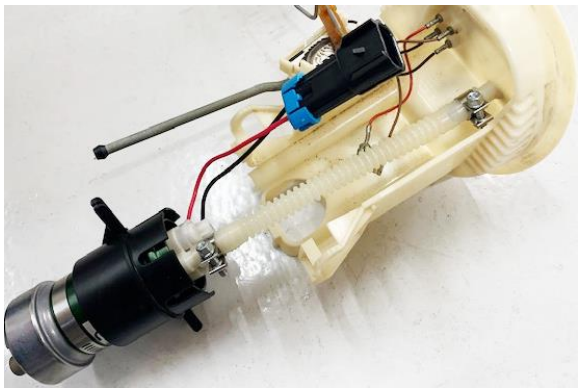
Next, slide the fuel pump into the aluminum sleeve. Using a flat head screwdriver tighten the clamp but do not torque yet.



18. If installing new convoluted tubing, unscrew the small included EFI hose clamps to make the diameter as large as possible. Heat the ends of the new hose with hot water (or cautiously with a heat gun). Quickly put the EFI clamps on the ends and push the tubing onto the fuel pump outlet barb and the barb on the OEM unit. Secure the EFI clamps using a Phillips head screwdriver.

If using the original OEM convoluted tubing, connect the new pump in a similar manner as described above, secure with a hose clamp.

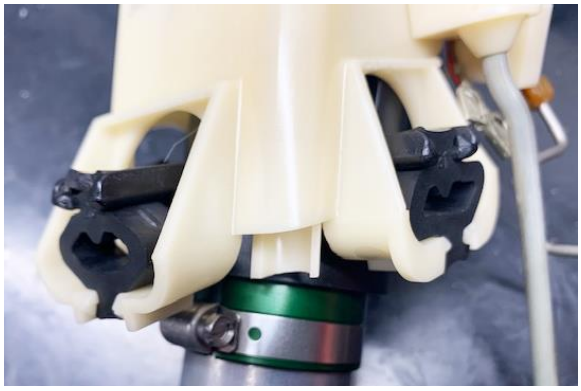
NOTE: Rubber submersible hose is not recommended since the OEM fuel hanger is spring-loaded and requires the fuel line to bend and flex at a tight radius.



19. Push the fuel pump up into the OEM unit WITHOUT the rubber grommets installed.

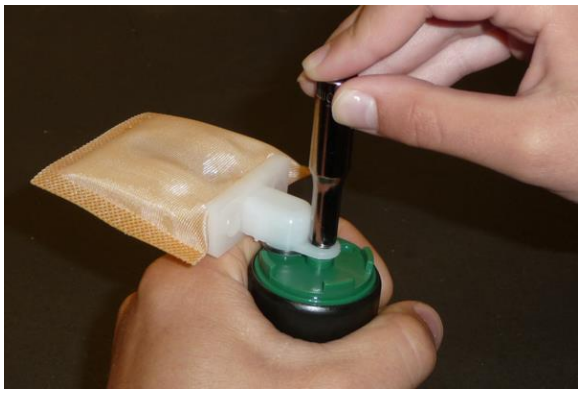
Orient the plastic OEM pump holder so the 3 pegs are in the proper position within the unit.

20. From the outside, push the 3 rubber grommets inwards to secure the fuel pump to the OEM unit, as shown.



21. Locate the new fuel pump sock filter and the metal lock washer. Insert the sock onto the bottom of the pump. This installs only one way. NOTE: filter sock may differ than picture.

Press the lock washer onto the pump outlet barb until it has fully seated, as shown.



22. Slide the 2 sections of heat shrink over each BMW female spade terminal.

Plug the male spade connectors into the respective BMW female spade connectors. As a test, give the connectors a tug to verify the female spade tab has locked into the male spade hole.

Position both heat shrink tubes so they are covering the exposed BMW female terminals (as shown) and apply heat to shrink.

Using a heat gun, shrink both simultaneously.

23. Plug in the connector. Compress the entire spring-loaded hanger to check for wiring or tubing interference. NOTE: For proper height clearance, the sleeve should bottom out on the Walbro DCSS pumps (with large base). For other standard 39mm pumps, slide the pump around to achieve the proper height.

Once it is known how the pump should be orientated and positioned within the billet sleeve, tighten the large worm-drive hose clamp using a flat head screwdriver.

24. Be sure the gasket is installed before reinstalling into the tank.

Properly orient the unit and push downwards. Reinstall the locking ring. If using the BMW tool, torque to 58 in-lbs (6.5 Nm).

Reinstall the OEM feed line next. Before plugging in the electrical connector, slide its tab outwards for initial engagement.

25. Connect the battery and turn the key to the ON position. Listen for the new fuel pump to confirm the electrical was performed properly and check for fuel leaks. If no leaks are found, start the vehicle. The engine may run rough for a few seconds until the air is bled from the system.

Lastly, reinstall the metal cover and pop-in the carpet and seat.

INSTALLATION COMPLETE