

## Fuel pump replacement

A long time ago I read the IBMWR tech page on replacing the \$370 BMW fuel pump with an Escort/Taurus/Mustang submersible fuel pump.

Here: <http://www.ibmwr.org/ktech/fuel-pump-install.shtml>

With a little research I determined that the Purolator Facet FEP 2042 is an equivalent. Just to have a spare around, I bought one on eBay for \$30 a couple of years ago.



Yesterday I got back to working on my K75 project bike. I'd left the fuel pump out for quite a while and it was frozen!

Now I'd have a chance to see if the \$30 solution would work. Sure enough, it did.

It only took a few minutes and was very easy to do:

- 1) Remove the old fuel pump.
  - a) Undo the hose clamp and take the fuel hose off.
  - b) Undo the electrical connections (7mm and 8mm).
  - c) Pop the plastic clips at the front and rear of the mounting ring (you don't need to undo the 8 nuts on the plastic mounting ring).
- 2) Once out of the tank, slide the old fuel pump body out of the incredibly expensive rubber vibration mounting ring.
- 3) The diameter of the FEP2042 is much less than that of the BMW fuel pump. There's a section of submersible fuel hose that comes with the fuel pump. How convenient. I cut its length to slightly less than the diameter of the new fuel pump, ran a nylon zip-tie through it and wrapped it around the new fuel pump and secured it with the zip-tie. With a few minutes of careful cramming, I was able to get it nicely lodged in the vibration mounting ring.
- 4) Attach the pre-filter that comes with it to the bottom of the new pump. If you fold it up a bit it will fit nicely in the fuel pump "pocket" of the petrol tank. Insert your new fuel pump assembly into the fuel pump hole in the tank and make sure the clips pop into place.

5) The nozzle on the top of the fuel pump has a slightly larger diameter than the BMW one but the hose will fit over it. The IBMWR instructions say that the BMW hose clamp is too small to work. Not true. If you drop the hose clamp on first and then slide the fuel hose on you can use the old hose clamp.

6) Wire it up. Cut the ring terminals off of the black and yellow fuel pump wires from the tank. Put female blade connectors on each wire and crimp carefully. I used bare metal ones - who knows if the plastic on covered ones would dissolve in petrol.

Attach the black wire (ground) to the narrower blade terminal on the fuel pump. Attach the yellow wire to the wider blade terminal.

Vroom, vroom...and off you go.

I have a temporary tank on that bike now. When I move the real, freshly painted tank onto the bike and have my new fuel pump out, I'll try to remember to take some pictures.

The price of these fuel pumps has gone up drastically. Now they're a whopping \$36.95 on ebay! 🤔

If you're the paranoid type who likes to travel with one of everything under the sun, this fuel pump wouldn't take up very much room and you could take one along as a backup.

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## Aftermarket Fuel Pump Installation

### Trouble shooting

The simplest way to be sure the fuel pump is running is to turn on the key and hit the start button. The fuel pump relay activates and the pump will make a very audible whirring sound. Usually the bike starts so fast this sound is masked, but if it doesn't start, yet the pump is running, you'll easily hear it for a few seconds.

### Other Data and Info:

The BMW fuel pump is a Bosch unit.

BMW Part Number: 16-12-1-461 576

List price as of 2004: \$248

Bosch Part Number: 0 580 463 999

*NOTE! NAPA identified that the above Bosch pump was in their Atlanta warehouse with a unit price of \$192 plus \$7 for shipping*

### Substitute Part:

Bill Z. identified an immersible electric fuel pump that while not nearly as large as the stock Bosch unit, it will perform satisfactorily. His installation has 100,000 miles on it. Others, including Rick Landi have done the same installation. Rick's bike has 30,000 miles since this replacement as of this writing. I just completed the same project six days ago and now have 600 miles on the bike with no problems.

NAPA Part Number: 2P74095 Price: \$66.94

Advance Auto Part Number: E-2042 Price: \$80.74

I examined both above units. They are virtually identical.

Also used to fabricate mount shims: NAPA petrol neck hose

NAPA Part Number: 1030

Price: \$7 per foot

## **Installation**

Preliminary Steps:

1. Disconnect the battery
2. Remove the gas cap assembly
3. Drain the gas tank - I used a simple siphon

In Tank Test - Optional: do only if you're comfortable with electrical work. A spark in this situation could be explosive.

1. Disconnect the pump power leads. Note that the nut and stud for the white, positive lead is smaller than those for the black, negative one.
2. Take a pair of alligator clip leads that are about 3 feet long. Clip one to the small, positive contact stud, and one to the larger negative. **DO NOT CONNECT THE OTHER ENDS TO A POWER SOURCE UNTIL THE CLIPS ARE SECURE ON THE PUMP POWER TERMINALS.** Otherwise a spark will occur in an explosive atmosphere.
3. Touch the positive lead to the positive (+) battery terminal and the negative lead to the negative (-) terminal. Verify that the pump does not run before removal. If it does, look elsewhere for the loss of fuel to your injectors.

Pump Removal Note: A quarter drive ratchet with a universal, several size extensions and metric sockets are very useful during removal and installation.

1. Disconnect the power leads to the fuel pump. The positive terminal is smaller than the negative to prevent crossed wires later.
2. Disconnect the fuel line from the top of the pump. Note that this is an ideal time to replace the fuel filter as well.
3. Remove the six mount nuts and the collar washers underneath that hold the pump mount ring to the tank plate.
4. Lift off the plastic hold down ring
5. Pull out the pump and rubber mount collar. Be careful not to damage the filter screen clipped to the bottom of the pump.
6. If you did not do the in tank direct power test, do that now. Apply 12 volts DC to the pump - positive (+) to the smaller stud, negative (-) to the larger. If it does not turn freely, it's bad.

## Installation of the NAPA Pump

*NOTE: the pump has three differences from the Bosch unit. It's substantially smaller. It has male spade type power terminals. And it has a very different filter, which I still managed to install and use. The main objective is to shim the diameter of the pump in some way so it is gripped by the rubber mount collar enough to hold the pump securely "after" the entire assembly is bolted in place, but not so much that it prevents installation.*

1. Get crimp on female spade connectors that will fit the two different sized male terminals on the pump. I found some at work so do not have part numbers to relate. I'd suggest opening the box at the store and shopping for connectors before you leave that fit.  
*NOTE: this entire assembly is immersed in gasoline. Any material used must be gas tolerant. The crimp on connectors had plastic sleeves on them, which I cut off since I did not know how well they'd survive in the gas. I chose not to solder the connectors because of proximity to fuel vapours.*  
*NOTE: yes, the electrical leads and connections are bare...and in gasoline when the pump is running.*
2. The barb on the fuel nipple is larger diameter than the one of the Bosch nipple. The existing fuel line will slide over the nipple end but the SS hose clamp will not expand enough to slide over the barb. Get a hose clamp that's bigger before leaving the parts store.
3. Electrical connections
  - a. Cut off the eyelet terminations on the power leads.
  - b. Crimp the larger spade connector to the white lead. The positive (+) connector is the larger male spade on the pump.
  - c. Crimp the smaller spade connector on the black wire.
4. Orient the filter so that the long end points toward the side where the electrical terminals are located. Press the metal collar of the plastic mesh type filter on the inlet nipple of the pump.
5. Cut two pieces of the large fuel hose about 1 1/2 inches wide. These will be used as mount shims. Slit one down through the side.
6. Slide the full circle hose segment over the body of the pump...place about 1/3 of the way down from the top. Put the slit hose segment over top of that one.
7. Slide the pump with hose shims into the rubber mount collar from the bottom, making sure it protrudes from the top.
8. Slide the pump into the mount bracket from the top. It takes a little jiggling to get the filter through the hole where it can then flare out. Note the orientation of the power terminals before pressing the assembly into place. I set it so the terminals were toward the rear of the bike.
9. Slide the plastic flange over the mount studs. Put the collar washers in place, then the nuts and tighten the mount flange in place. Check that the pump is firmly grasped by the rubber collar.
10. Connect the fuel line to the outlet nipple and install the clamp being sure it does not touch or interfere with the electrical connections.
11. Slip the white wire connector over the positive terminal and the black over the negative.
12. Reconnect the battery.
13. Test start the bike.
14. If it runs then remount the gas cap.

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