

2004+ Jetta TDI

In-Tank Lift Pump (Fuel Pump)

Replacement Procedure



Performed on a 2004 VW Jetta TDI Wagon GLS (A4)
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Bucks County, Pennsylvania
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Background

I have read and have learned that the In-Tank Lift pump (Fuel Pump) in the 2004 A4 body Jettas can and do fail. Although there have not been a huge number of failures, there have been enough to raise my awareness to this potential issue. The failures and general procedure has been well documented on Fred's TDI Web Site: <http://tdiclub.com>. A search on "Lift Pump" and "Fuel Pump Failure" should locate the needed information. Although it has been discussed with great detail, I thought others might find it handy to have a written procedure with photographs to follow.

Before I get into the procedure I want to thank everyone on Fred's who has discussed the problem and given details about how to fix it. Knowing what to look and listen for, comprehending the basic procedure and getting direction towards the right sources for parts made this a no brainer "Do It Yourself" project.

My Fuel Pump Story:

Others have posted that their pumps just died. No warning. They just quit. Mine was a little different. It made lots of noise. Weather seemed to make a difference and the colder it got the more noise the pump would make. After listening to it during a 4 hour drive, I had enough and decided it was time to take action! The car had 51,990 miles on the clock and that seems about how long the pumps generally go for (for those that failed). Others have had many more trouble free miles. Your mileage may vary – literally!

It all started about a year ago...last winter to be sure. As I would turn the key to let the glow plugs warm, I was used to pure silence. One morning, as I followed this routine, I hear a distant rattling/vibration sound from the general vicinity of the fuel tank. It was the pump for sure. After the engine started there were no issues with how the engine ran and the pump could not be heard over the purr of the engine. I started poking around Fred's and noticed a few others had their fuel pumps die on them suddenly. Naturally I was concerned as I commute 75 miles per day on some fairly rural roads. I mentioned it to the local dealership and had them look into it, they claimed it was normal and since it had not failed there was nothing they could do. I was not surprised by this response and had it noted in my records at the dealership.

The weather got warmer; the noise subsided and was gone until the weather got cold again. About two weeks ago (Mid January) it started up again...only this time worse! I had to drive 200 miles to CT and this time the pump grew loud enough to be heard over the engine running. It did this the whole way and really drove me nuts...let alone freaked me out as I was expecting it to die at any moment. It got me there and back without dying, but as soon as I got home, it was time to get a replacement ASAP. Kerma TDI set me up right and I got the pump in two days. I spoke to the guys over at TDIparts.com and they were exceptionally helpful however did not have the pump in stock. Not willing to go much longer as I had no other means of transport, I decided to get the pump from Kerma. I highly recommend them both and will be buying parts from them in the future.

Below is the procedure with as much detail as I can provide. Please forgive me if I tend to go into lots of detail but I know there are many people out there of varying skill levels. Some will just need to look through the pictures. Others will have to read every minute detail. I just hope at least one other person finds it helpful. I welcome anyone's input and proposals for how this article can be made more useful.

The Procedure

Difficulty: Easy < 1 2 3 4 5 > Hard

Field Serviceable: Yes (No special tools needed or significant time to repair)

Time to Complete: No Prior Experience = 1 Hour
Second time around = 15 Minutes

Required Tools:

- #3 Phillips Head Screwdriver (a #2 will work as well)
- 1/8" Flat/Slot Head Screw Driver (any very small flat screwdriver will work)
- A piece of wood about 1 Foot/30 cm long. I used a scrap oak floor board.
- A rubber Mallet
- A pair of rubber gloves (Latex or Nitrile will do)
- A roll of paper towels
- A shallow bucket lined with an old newspaper to absorb spilled fuel.



A Word about the Pump:

The pump I used is a direct replacement OEM model made by the same company that made the original pump – VDO. When I got my new pump from [Kerma TDI](#), I was surprised that it looked like someone had taken a Dremel with a grinding wheel to the new pump. Something was ground off but I did not know what. The old pump top and new pump were different so I could not make a direct comparison. After calling Kerma TDI and talking to them about this,

they told me that the VW logo and VW part number were ground off. It was explained to me that the manufacturer (VDO) was not allowed to ship parts to non-OEM vendors with these logos and part numbers intact. The manufacturer's part number was left intact. I was assured the pump was brand new, was the correct part for my car and there would be no issues. I'm just passing this along in case anyone else ends up wondering why their new pump looked a little roughed up out of the box.



Also - *Leave the new pump alone!* Remove nothing and add nothing. At first I thought the yellow plug pictured below needed to be removed. It does not. This is the fuel pickup. Leave it alone. 'Nuff said.



Lastly, expect the new pump to look different than the one you took out of the tank. There was a 5 year difference in manufacturing dates in my case and it seems a number of changes have taken place in that time. Don't worry about it and proceed with the swap.

Removal

- 1** **IMPORTANT** – I Top off. Which means the fuel level in my filler neck is way higher than the access hole in the tank. You don't want to be doing this with a freshly topped off tank. I did this operation with an empty tank. You don't need to run the tank empty first but you don't want to do this with a full tank. Not sure what would happen but I had a pretty good guess.

- 2** Lift up the rear seat on the passenger side and you should see a Flap cut in the carpeting directly under the seat (**Red Arrows**). Lift this up and you will see the access panel to the fuel tank.



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Remove the three screws with the #3 Phillips head screwdriver. Once the screws were out, I had to tap on the cover a few times with the back of the screwdriver to break the seal loose. You could use the tip of the small screwdriver but I didn't want to risk damaging the rubber seal.



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IMPORTANT – Note the orientation of the pump now. In my case, there was an arrow on the top of the pump next to the VDO logo pointing directly towards the back of the car. You will need to install the new pump back in the same orientation or the fuel level float may not swing freely and therefore give false readings.

Also, at this time, take care to clean up the area around the opening. You will likely have some dirt/debris in the area and you don't want to risk anything getting into the tank. I wasn't taking any chances with crud mucking up my nice new fuel pump.



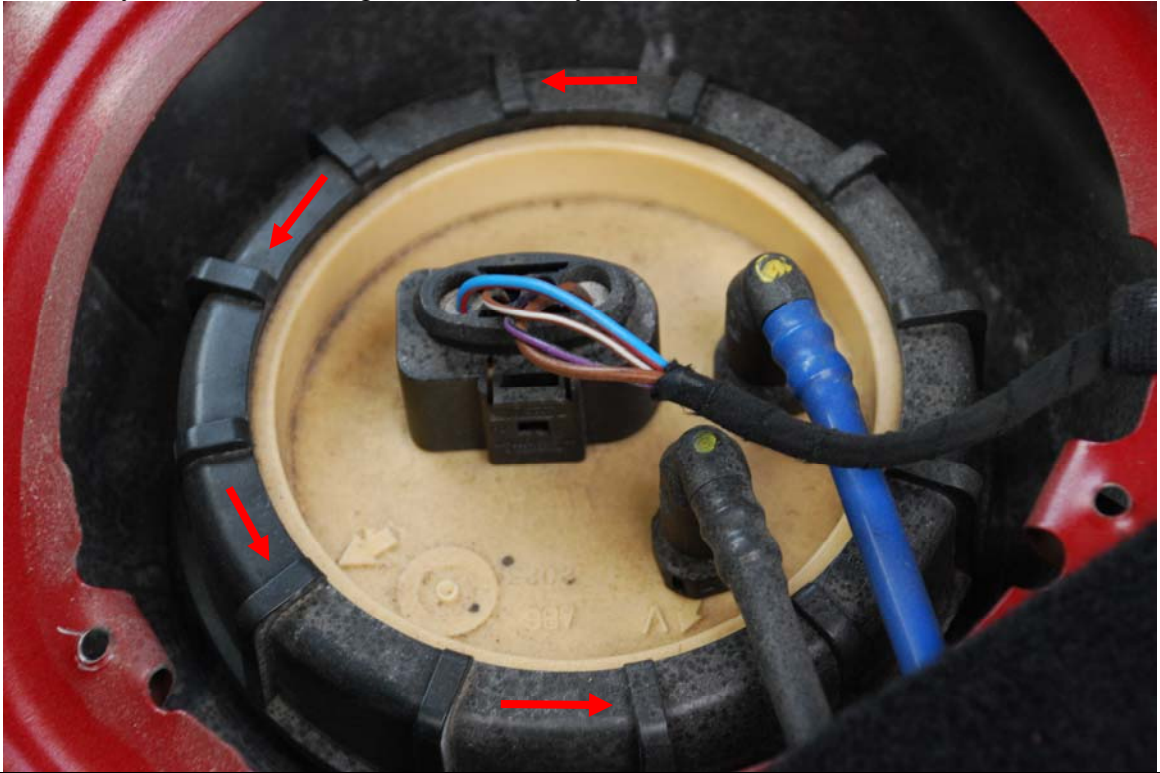
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Next, remove the electrical connection. Here is where I used the 1/8 inch flat head screw driver. I *very carefully* wedged it into the little hole and pried upwards slowly to get the connector lock to disengage. Once that happened, the plug slid off easily. Don't force it and don't break the plug. If you break the locking mechanism, the plug won't stay locked onto your new pump.



6

Using the block of wood and the mallet/hammer, wedge it against one of the nubs on the ring. Holding it at an angle strike the wood and get the ring to rotate counter clockwise. Basically you want to remove it like the lid off a jar. Be gentle but it will move and eventually come loose enough to finish off by hand.



- 7** Once the ring is loose but not off, it's time to get the hoses off. At the base of the plastic coupler there is a little rectangular button that can be pressing in. I used my finger but the small flathead screwdriver would work fine. Once you push in the button pull up on the connector and it should slide off nice and easy. Expect to get a few drops of diesel fuel to come out of either tube. Move them out of the way to either side of the pump. Finish removing the ring and place it aside.

Note – In my case the black hose on the left went to the engine and the blue line on the right was the return line. Yours may be different.



- 8** **IMPORTANT** – When removing the pump will have to move it and tilt it such that diesel fuel *will* spill. Take caution and every precaution now or you'll be trying to get the smell of diesel fuel out of your interior for months. It's not that bad – I didn't know this and was able to contain any spilled fuel in the general tank area without getting it on the carpet. You've been warned!

- 9** Gently pull up the pump. After you lift it about an inch, you will notice a rubber gasket attached to the tank. To remove the pump you will need to pull the gasket off with the pump. You will not be able to get the old pump past the rubber gasket in place. Be careful as the float will be positioned towards the driver's side and you will have to tilt the pump to get it out in one piece. Remember the warning in Step 8 about spillage!?

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Once out, place the old pump in the bucket, make sure nothing can accidentally fall into the gaping hole in the top of your fuel tank. Take a break and down a tasty beverage of your choosing. May I recommend a...



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Time to get dirty – remove the rubber gasket from the old pump. This took a little trickery. I got mine off by carefully sliding it down and off the bottom of the pump. Later I saw I could have removed it from the top. Either way it will come off fairly easily. Clean it and ensure it is not damaged. The rubber gasket is shown below.





The old pump slightly disassembled below after getting the rubber washer ring off. Notice I used an old hospital basin for a bucket lined with the finance section of the paper to absorb any spills. That's about all the finance section is good for these days. Worked great!



Installation

1	Install the rubber gasket over the top of the new pump before installation. Ensure the gasket, pump and seat of the tank opening are clean and free of debris.
2	Start to insert the new pump. Once you have it almost all the way in (about an inch or two to go, slide the rubber gasket onto the opening of the tank and then finish installing the pump into the gasket. I tried to insert the pump and gasket together and couldn't do it for the life of me. It was much easier to hold the pump up an inch or two, slide the gasket into the tank opening and then drop the pump onto the gasket.
3	<p>Ensure the pump is oriented in the same way as the original one was. You did note that from step #4 above right!?</p> <p>Mine wanted to pop up a bit but would stay down with moderate pressure. I attribute this to the fact that the pump is empty and probably a bit buoyant.</p>
4	Install the ring retainer and screw it on as tight as you can with your hand.
5	<p>Using the mallet and block of wood, tighten but do not over tighten the ring. Once a few moderate blows of the mallet fail to move the ring, you're done.</p> <p>Install the electrical connector by simply pushing it on until it clicks and cannot be removed with a gentle tug.</p>
6	Push on the fuel lines until you hear a nice little click and you can't tug them off with light pressure. You don't want the feed line to pop off when you start her up. Nothing like a diesel fountain in your car! The one on the left leaves the pump...the one on the right is the fuel return. In my case they were different colors: Left/Black = to engine, Right/Blue = return. Yours might be different. The lines are fairly stiff so I don't think you will be able to cross them.
7	Before you put the cover back on, start her up and make sure everything is working fine. I cycled the pump 3-4 times before I started her up to ensure the pump and lines were primed. No problems and no leaks should be detected at this point.
8	Just to be sure I had the retainer ring on tight enough I took her to the local filling station and topped off the tank to ensure no fuel would end up leaking out. After a top off and a few mile drive back home, not a drop of diesel fuel to be found. Satisfied.
9	Put the cover back on by aligning and replacing the three screws you took off before. Be careful not to cut or pinch the wiring harness feeding the pump. Fold down the carpet and the seat.
10	Dispose of the old pump after you drain it of fuel. I would NOT reuse the fuel you get out of it. Mine had a slight amount of floating gunk in it, nothing major but nothing I wanted to pour back into my tank. I lost about 16 oz/ 1 liter of fuel.

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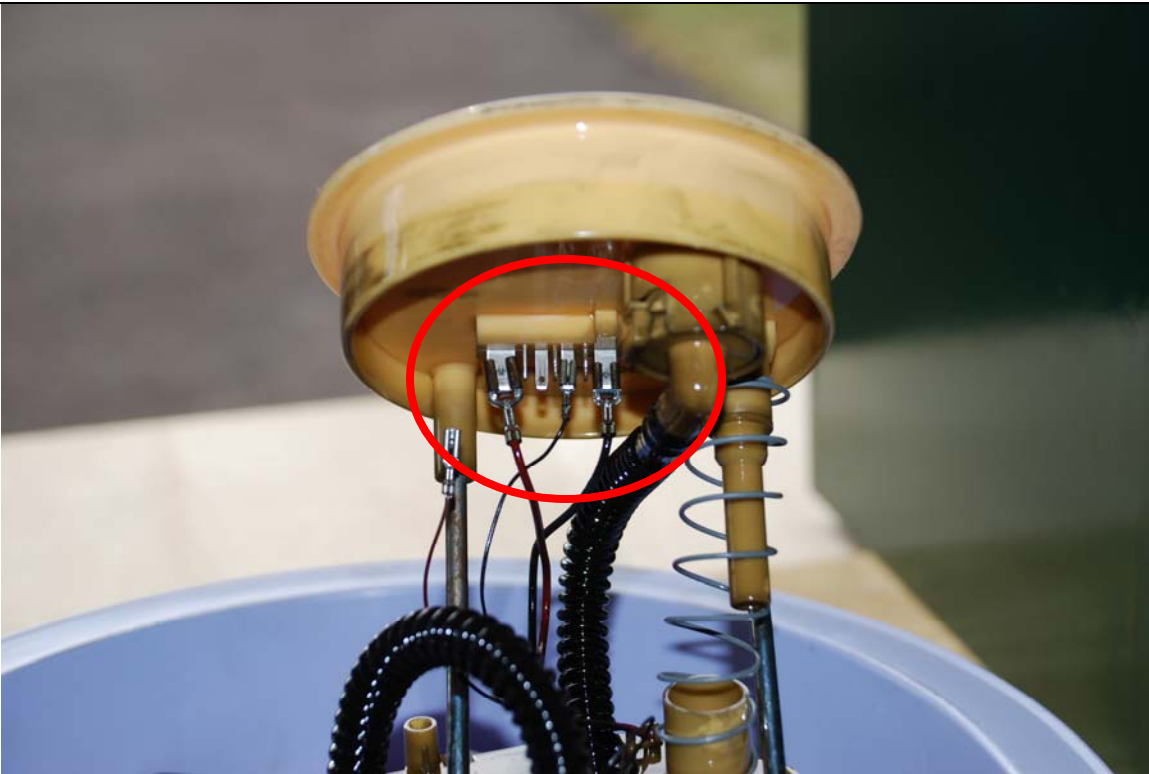
Relax, have another tasty beverage because you're done! Ahh, the sweet sound of a brand spanking' new and *silent* fuel pump. Enjoy!



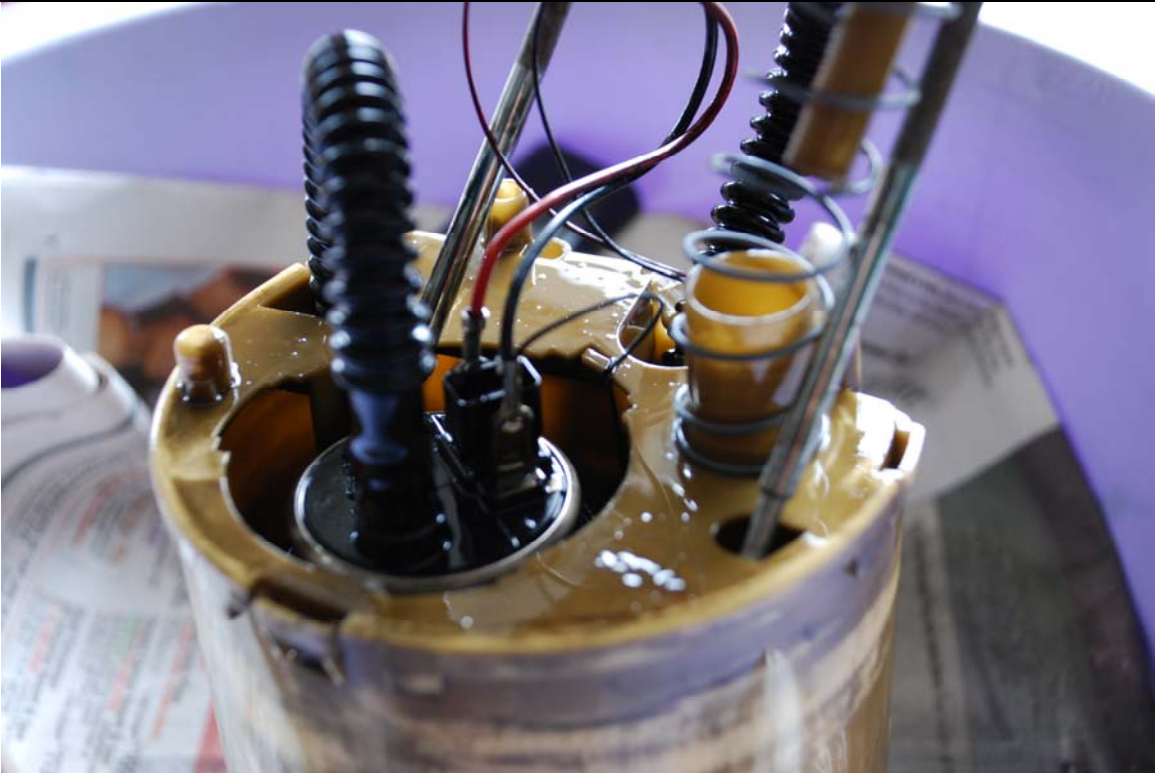
Prologue

Not happy with leaving well enough alone, I couldn't help but dismantle the old pump to see if I could find out the cause of my noise. Unfortunately, I was not able to find any obvious cause for the problem. My best guess was that at cold temps, the metal housing of the pump contracted enough for the pump to be a little loose and vibrate while trying to pump a more viscous fuel. No signs of any obvious failure could be found. Here are a number of pictures I took as I disassembled the old pump:

I found this picture interesting. If you look at the connectors to the pump, they are the spade slip on type. The new pump had soldered connections. I was wondering when I saw this if for the people whose pumps just failed, a connector didn't come loose. Anyone check theirs on removal?



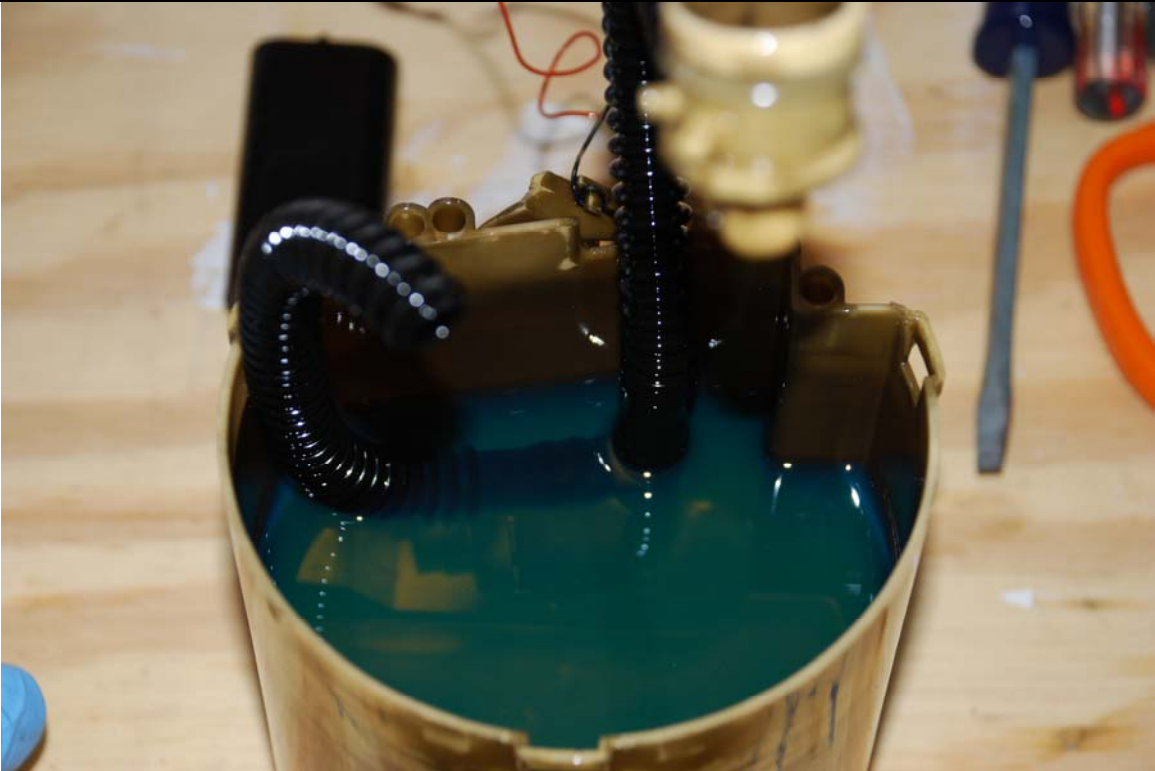
The top of the actual pump with connectors. These too, were push on spade connectors on the old pump and surprisingly also on the new pump.



The disassembled pump. You can see the screen pickup, motor and motor housing, top and lower body of the pump. Note the body is filled with Diesel. There was about a quart in there.



Close up of the lower pump housing filled with diesel.



Pump and filter screen together as one.



Here is a close up of the screen that attached to the bottom of the pump and filtered the fuel before it got into the pump.



Here are some pictures of the pump itself outside of the housings.



The pump is genuine!



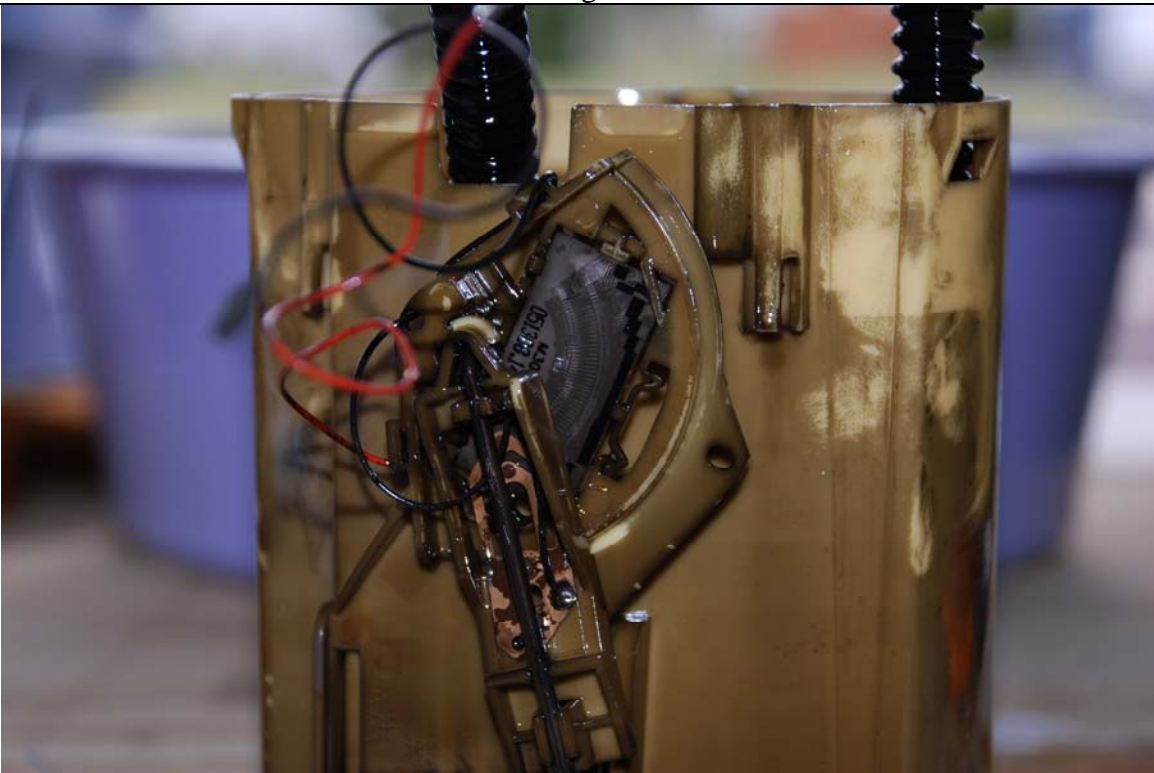
The business end of the pump. You can kind of make out the impeller in this picture.



Some more numbers on the original pump.



Fuel Sending unit. Variations in resistance clearly tell the ECU how much fuel is left. I did not take any readings to see what the value range was or what resistance full and empty were. If someone has a new or use pump and can provide the info it would be helpful to have it added to this doc for future reference when troubleshooting fuel level issues.



Pump disassembled.



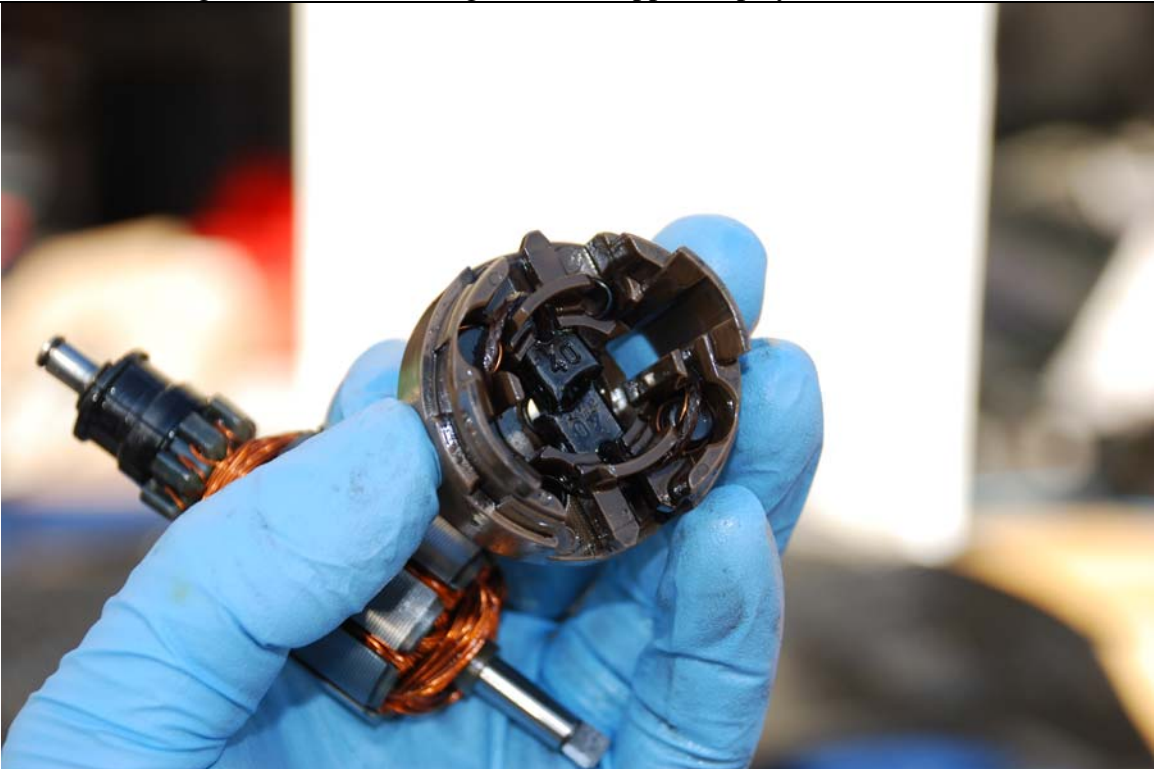
Pump and impeller separated. The pump seems to be very simple. The impeller uses a radial array of fins and it just pulls the fuel in one side, rotates it around the other where it hits a wall and has to go out the other opening.



Pump completely disassembled.



Upper housing with brushes which looked fine and had no abnormal wear pattern on them and the armature right next to it. The bearing surfaces on the armature looked clean with no apparent issues. The bushings in the case were tight with no apparent play in them.



Close up of armature with brush contact points.



Close up of the impeller.

