9-441-C10x-0900

Deatschwerks Universal DW440 Brushless Fuel Pump Installation Guide

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Included Parts:

- DW 440 Brushless LPH Fuel Pump
- DW Brushless Controller
- Controller Harness w/ Flying Leads
- 4 Wire Bulkhead Connector w/ Retainer and O-Ring
- Pump to Bulkhead Harness
- Fuel Sock w/ Retainer Clip
- 12” Submersible Fuel Injection Hose
- 5/16” Adjustable Hose Clamps (x2)

PLEASE READ – this guide is intended to aid in the installation of our products. It is recommended that factory manuals or instructions are followed to remove the fuel pump assembly from the vehicle. Instructions in this guide are generic and are intended to aid in the installation of a DW440 Brushless pump. The factory manual should supersede any contradiction.

Below is a picture of some suggested tools that will make the installation process easier.

Early Metal “Pump on A Stick” Fuel Pump Install

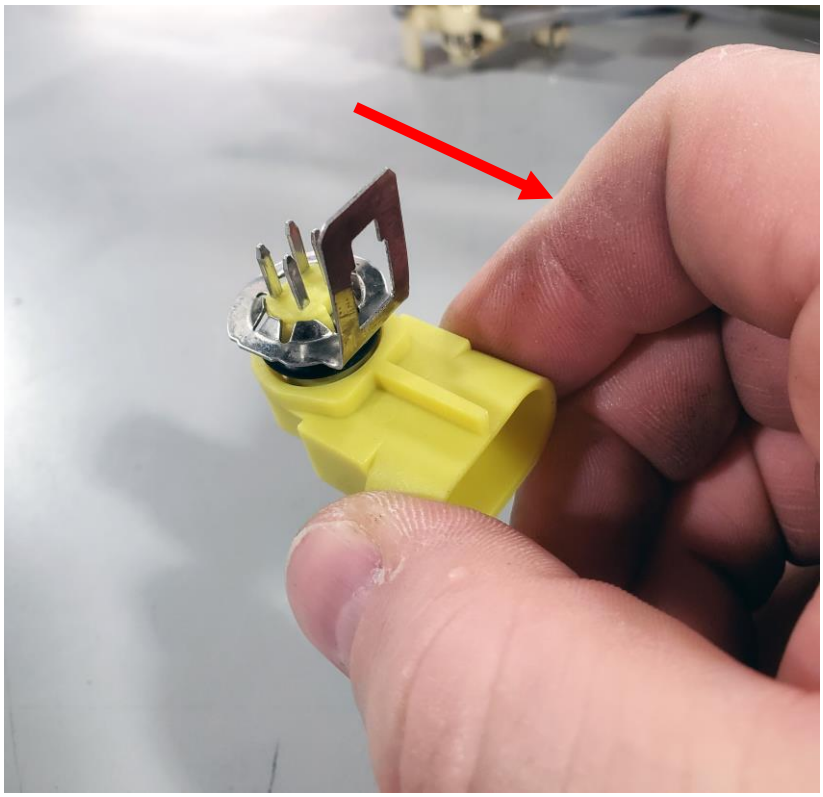
1 – Remove the OEM pump from the assembly, use caution when removing connectors and clips and inspect the wiring and soft components condition for consideration of reuse.

2 – Prep the DW pump with components from the universal installation kit and reusable OE components.

3 – Install the DW pump, it may be necessary to trim the supplied rubber hose to length to account for the length change in the pump. The pump is retained here with a large hose clamp, this may or may not be necessary depending on the application you are installing the pump in.

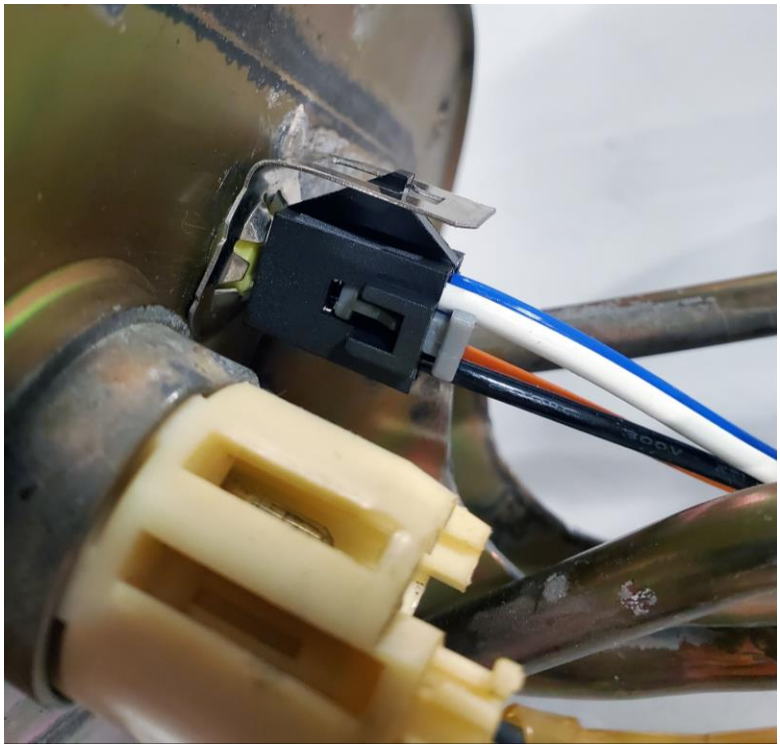
4 – To install the wiring bulkhead fitting you will need to drill a 13/32” (10.3mm) hole in the top of the assembly. Be sure to pick a location that does not interfere with other plumbing, wiring, or sensors.

5 – Install the bulkhead as shown, with the metal retaining clip facing the connector. This orientates the pump wiring correctly.
NOTE: installing the harness backwards will result in a non-functioning fuel pump.



6 – Press the retaining clip into place to secure the bulkhead connector. This can be made easier with a socket and c-clamp style tool to press the clip into place. The bulkhead o-ring should be compressed to provide a fuel tight seal.

7 – Install the pump wiring harness, the metal retainer for the bulkhead acts as the latch for the harness. Refer to step 6 to make sure the retaining clip and wiring harness are installed correctly.



8 – Remove the OEM pump wiring harness, if the OEM wiring cannot be removed, cut the wiring back and cover the bare ends with a fuel safe heat shrink. The OEM pump wiring will no longer be used.

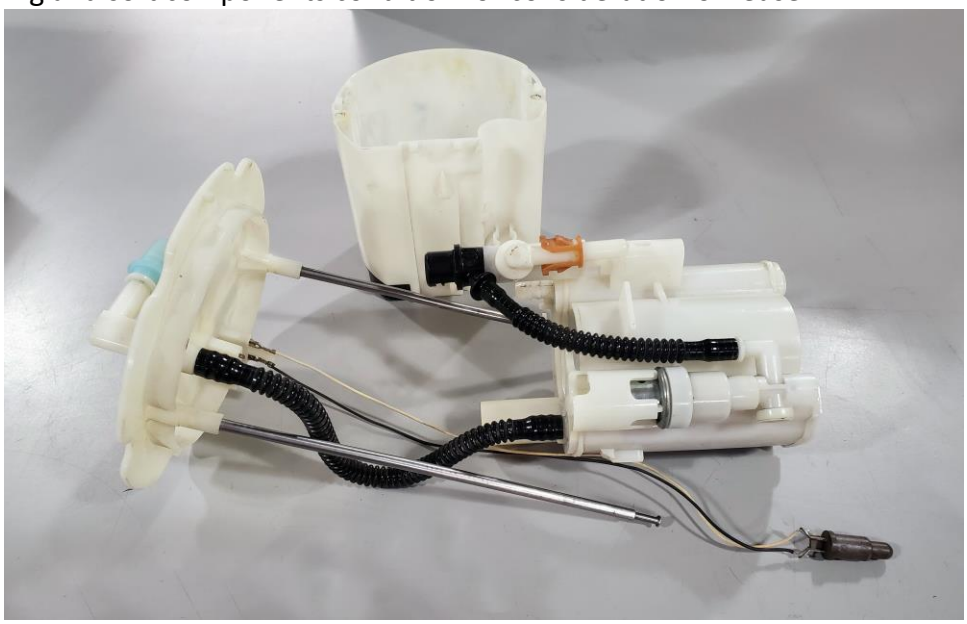
9 – Tighten all hose clamps, re-attach sensor and fuel level sender wiring, secure any loose wiring. Reinstall into the fuel tank, follow OEM procedures for reinstallation.

Late Model Plastic Assembly DW440 Brushless Fuel Pump Install

IMPORTANT NOTE – many of the late model plastic assemblies use the outflow of the pump to run a venturi jet pump, these are used to siphon fuel from a split fuel tank, or in most cases keep the module full and act as a surge tank. Some OE fuel pumps will have a smaller, second outlet from the pump that feeds these venturi systems. The DW440 Brushless pump comes with a smaller 1/4" (6mm) outlet that can be used to drive these venturi systems. The secondary outlet is not open from the factory; it will have to opened with a 1/8" drill, make sure to blow out any shavings and debris.

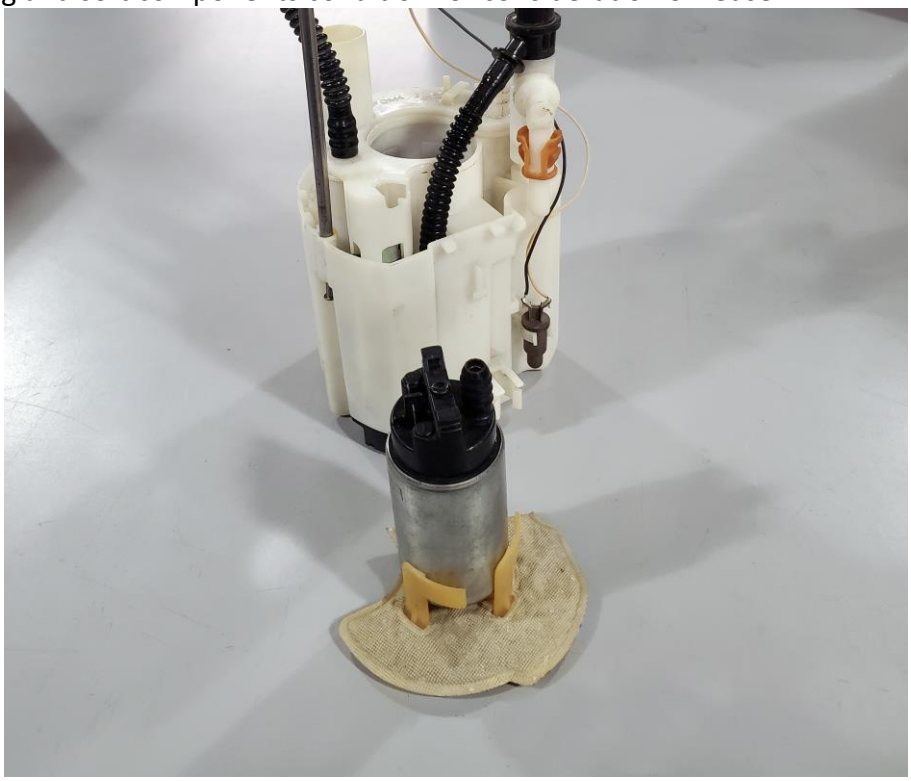
Pump Install

1 – Separate the bucket from the assembly, use caution when removing connectors and clips and inspect the wiring and soft components condition for consideration of reuse.



2 – Plastic hoses generally must be cut for removal and cannot be reused.
NOTE: Take note of routing and connections for later reinstallation.

3 – Remove the OEM pump from the assembly, use caution when removing connectors and clips and inspect the wiring and soft components condition for consideration of reuse.



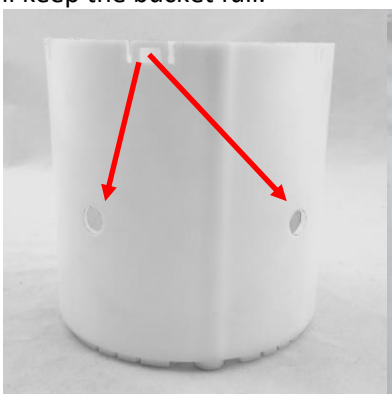
4 – The provided universal install kit may not have all the components necessary to install the DW pump as the OE pump was installed. Some of these components – like the plastic tubing pictured below – can be sourced outside of the kit

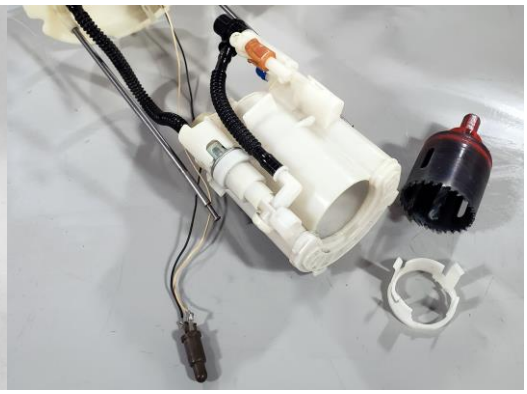
5 – Some late model assemblies will have the pump seal directly into the assembly with o-rings instead of hose. Re-use any factory spacers and or seals.
NOTE: If damaged upon disassembly source new ones before reinstalling.

6 – In many of the late model pump assemblies, the fuel pump first flows through a non-serviceable filter before sending the fuel out of the tank. It is recommended that this function is retained, if possible. If it is bypassed or removed for installation of the DW pump, an external fuel filter should be installed inline before the fuel rail and injectors.

7 – Modern fuel pump assemblies are very complex and modifying them to install physically larger and higher flowing fuel pumps can cause unforeseen issues. Below are some common install issues and plausible fixes.

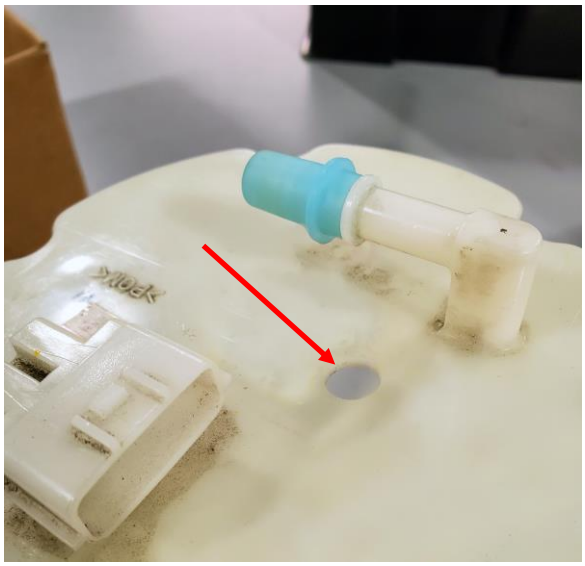
- The new DW fuel pump is physically larger than the OEM fuel pump.
    1) Use a Dremel style tool, and or hole saw to enlarge the opening.
- Modifying the module to allow fuel pump install disables the internal fuel filter.
    1) Bypass fuel filter and install an aftermarket inline filter.
- Bypassing the internal fuel filter has also bypassed the pressure regulator/relief valve.
    1) Add hose barb style fittings to pressure relief valve to reenable its use.
    2) Convert to return style system with aftermarket pressure regulator.
- OEM pump has a venturi jet attached to bottom of the pump.
    1) This is usually referred to a “dual stage inlet” pump and is very hard to retain. Sometimes it’s possible to remove the venturi jet from the OE pump and run a small hose from it to the top DW pump to the jet. The venturi jet then must be sealed to the bottom of the bucket assembly, a fuel safe adhesive must be used.
- OEM fuel pump features a variable voltage or Pulse Width Modified signal.
    1) In this case you must either disable the setting in the tuning software if possible or install a hardwire kit to bypass the fuel pump control module. Doing this will cause your fuel pressure to be excessively high, and you will need to convert to a return system with aftermarket fuel pressure regulator to control it.
- Fuel tank is a split saddle style system and uses a venturi jet to siphon fuel from one side.
    1) Drill out the small barbed outlet on the DW440 pump and plumb the venturi jet like OE.
    2) Add a small secondary fuel pump in the opposite fuel tank to pump fuel into the main tank, a DW Micro pump is a good choice for this.
    3) If tank capacity is not an issue, example a drag racing application where 5-7 gallons of fuel is enough, you can bypass the siphon system and use the main tank only.
    4) Use an external venturi jet plumbed inline or part of the return, these are available from other aftermarket sources.
- Don’t want the hassle of modifying or adapting the OE venturi systems.
    1) To allow gravity to fill the assembly naturally, holes need to be drilled in the bucket 2” above the base of the assembly. Size and number of holes will depend on the application, however, four 3/8” (10mm) holes should be sufficient for the DW440 Brushless. With this solution you may experience fuel starvation issues at or below 1/4 tank of fuel.
    2) Convert to return style fuel system, the returning fuel will be plumbed back into the bucket and will keep the bucket full.



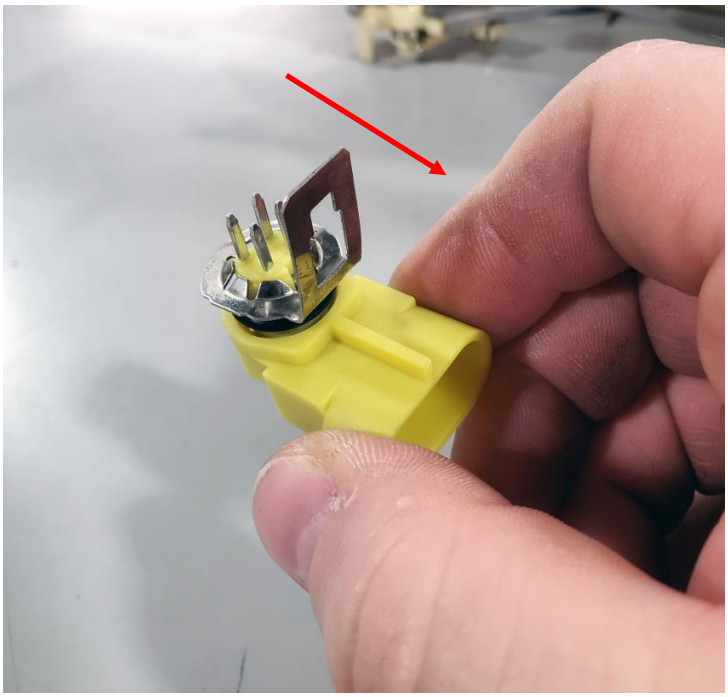


8 – Reassemble the module, install the pump into the center section, the center into the bucket and re-attach the top plate.

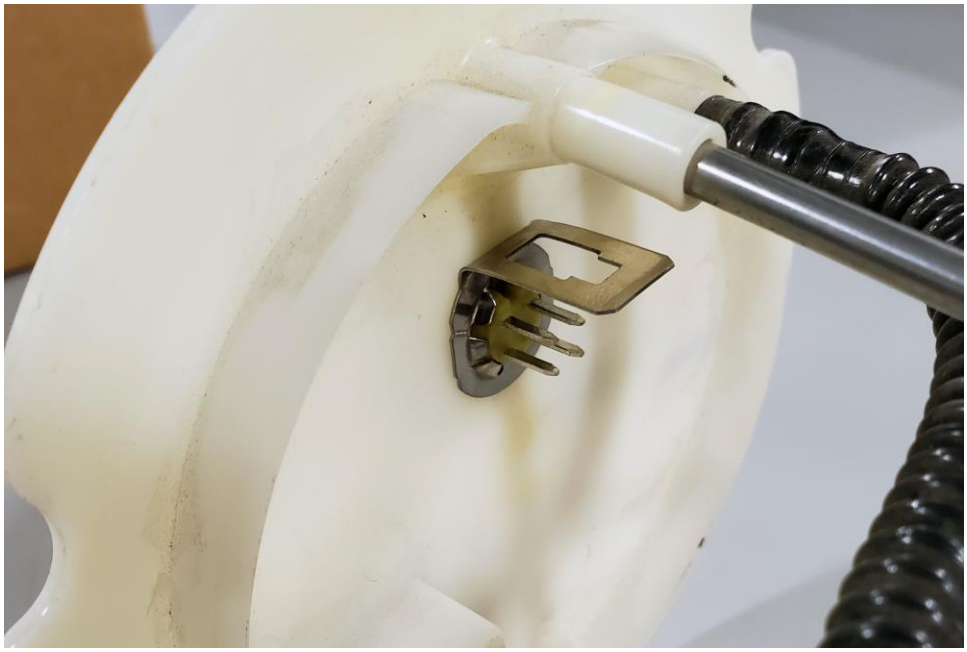
9 – To install the wiring bulkhead fitting you will need to drill a 13/32” (10.3mm) hole in the top of the assembly. Be sure to pick a location that does not interfere with other plumbing, wiring, or sensors.



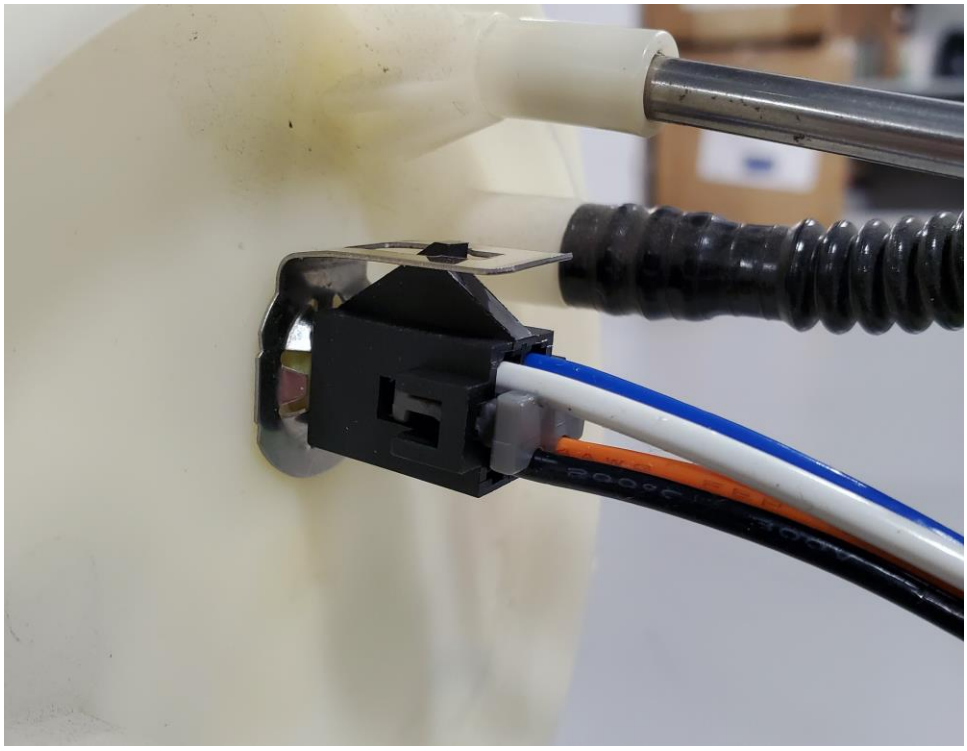
10 – Install the bulkhead as shown, with the metal retaining clip facing the connector. This orientates the pump wiring correctly.
NOTE: installing the harness backwards will result in a non-functioning fuel pump.



11 – Press the retaining clip into place to secure the bulkhead connector. This can be made easier with a socket and c-clamp style tool to press the clip into place. The bulkhead o-ring should be compressed to provide a fuel tight seal.



12 – Install the pump wiring harness, the metal retainer for the bulkhead acts as the latch for the harness. Refer to step 6 to make sure the retaining clip and wiring harness are installed correctly.

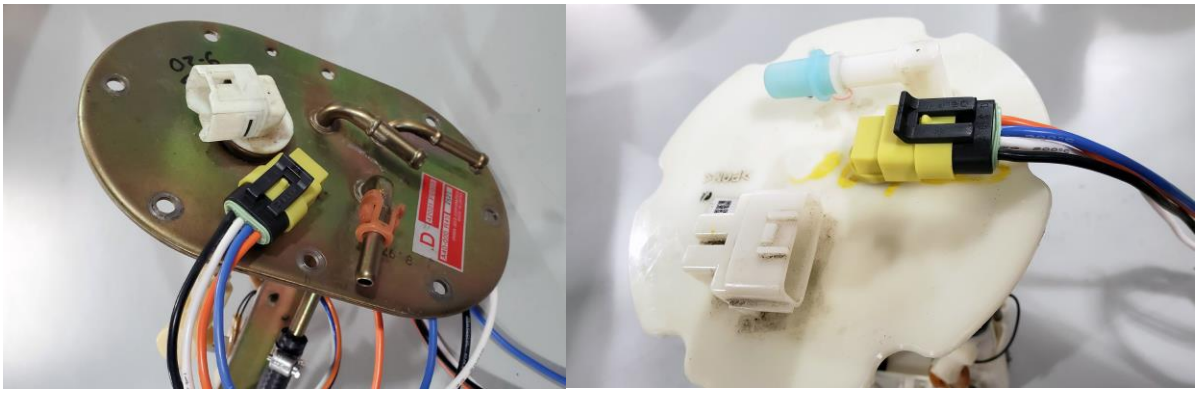


13 – Remove the OEM pump wiring harness, if the OEM wiring cannot be removed, cut the wiring back and cover the bare ends with a fuel safe heat shrink. The OEM pump wiring will no longer be used.

14 – Tighten all hose clamps, re-attach sensor and fuel level sender wiring, secure any loose wiring. Reinstall into the fuel tank, follow OEM procedures for reinstallation.

Wiring the Controller and Pump

1 – Plug the 4-wire harness from the controller into the bulkhead wiring connector.



2 – Plug the 3-wire pigtail harness into the controller.

Wiring the Two Speed High/Low Version (PN# 9-441-C102-09xx)

3a – The Two Speed version of the Deatschwerks Brushless controller, gives you the ability to run two staged pumps in one. A low flow pump for idle and light duty driving, and a high flow pump for maximum performance.

Note: *To bypass the Low Speed setting permanently ground the White wire, when power is applied to the controller, this will permanently switch the pump to the full 440LPH High Speed mode.*
(This is the same function as the discontinued C101 part number)

- Attach the **Red** wire on the controller to a known solid +12v key on switched power source.
- Attach the **Black** controller wire to a known solid clean ground source.
- Attach the White wire to a switched ground to activate the High flow mode.
    - You can activate this many ways, popular solutions would be a pressure activated switch like a “Hobb switch”, a second fuel pump output on your ECU, or a RPM/WOT switch could also be used to trigger the high flow mode. All options should be switched ground.
    - Low flow mode is 68% duty cycle outputting 265 LPH at 40psi.
    - High flow mode is 100% duty cycle outputting 440 LPH at 40psi.

Wiring the PWM Version (PN# 9-441-C103-09xx)

3b – The PWM version of the Deatschwerks Brushless controller, gives you the ability to use your ECU's Pulse Width output signal to infinitely adjust the pumps output from low to max flow. Wiring the C103 controller can be tricky, knowledge of your cars factory fuel pump wiring system is mandatory. If your car is not factory PWM or your Standalone ECU cannot control a PWM output, you will need to use the C102 controller instead. Most applications will use a ground pulsed signal provided by the ECU or an separate fuel pump control module.

- Attach the **Red** wire on the controller to a known solid non pulsed +12v key on switched source.
- Attach the **Black** controller wire to a known solid non pulsed ground source.
- Attach the White wire to the PWM output on your ECU or Fuel Pump Control Module.
    - The DW controller will accept a pulsed ground signal from 10 to 100k hertz.
    - Open is 0% duty cycle, and Ground is 100% duty cycle.
    - Input range is 5% to 95% duty cycle, 0-5% defaults to Off, and 95%+ defaults to 100%.
    - The signal must be pulsed for the pump to activate, the pump will not turn on if you permanently ground the white wire.
    - The PWM version of the controller has a default prime cycle that runs automatically for 3 seconds at 68% duty cycle when the controller is powered up.

Flushing and Priming the System

1 – Install the fuel pump module into the fuel tank. Attach a length of hose to the outlet of the pump assembly and allow it to drain into a fuel safe container and prime the fuel pump assembly

2 – Cycle the key to the on position as many times as required to prime the pump assembly and evacuate the air introduced during the pump installation process

3 – Attach OEM supply line to the outlet of the pump assembly

4 – Cycle the key to pressurize the fuel system, check for leaks before starting the car.

For additional technical support please contact us at: TechSupport@Deatschwerks.com or 405.233.3991