

9-441-C10x-0904

DeatschWerks 2003-2012 Mazda RX-8 DW440 Brushless Pump Installation Guide

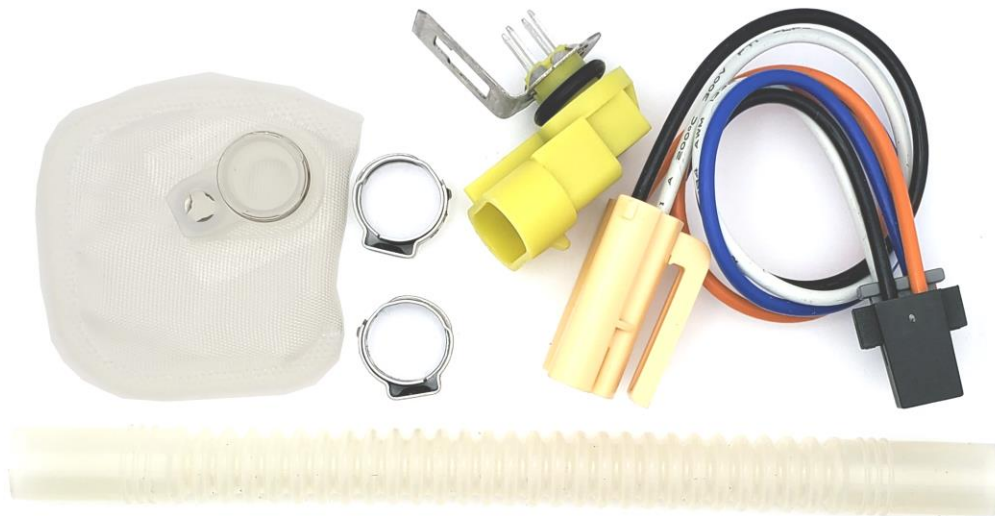


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Included Parts:

- DW440 Brushless 440LPH Fuel Pump
- 8" Pump Electrical Connector
- Electrical Bulkhead w/Retainer and O-Ring
- Fuel Sock Pump Pre-Filter
- 6" x 3/8" Convoluted Fuel Hose
- 3/8" Pinch Hose Clamps (x2)

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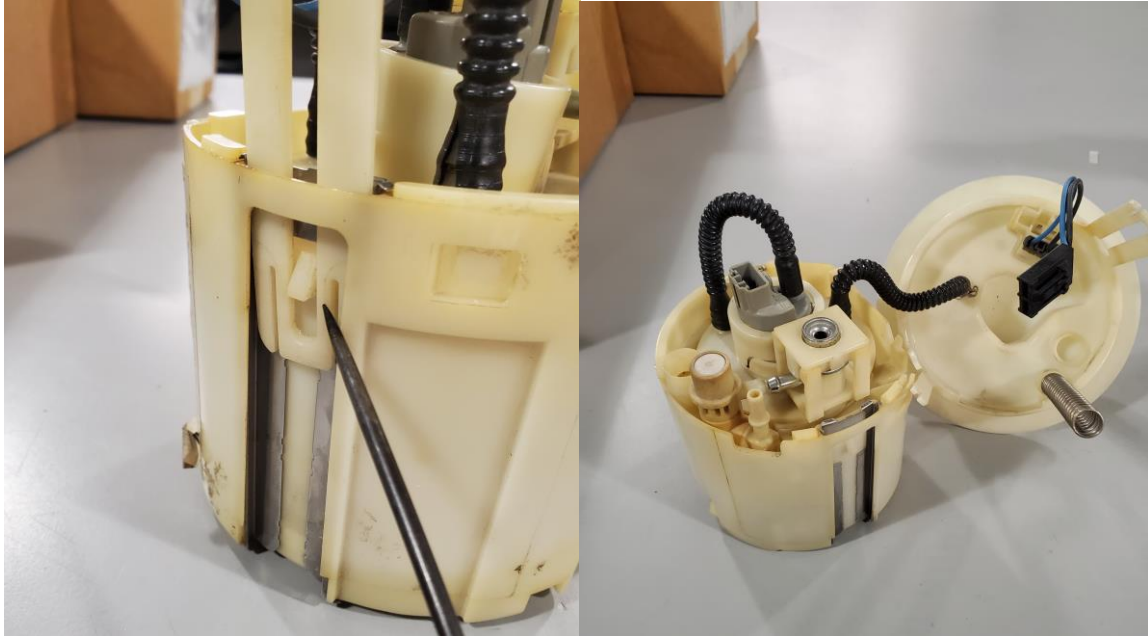
PLEASE READ: This guide is intended to aid in the installation of our products. It is recommended that factory manuals or instructions are followed to remove the fuel pump assembly from the vehicle. Instructions in this guide are generic and are intended to aid in the installation of a DW440 Brushless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

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



Disassembly of OEM Module

1 – Remove the top hat from the module assembly by prying gently on the tabs that lock the slides in place. Lay the top off to the side do not remove the OEM fuel hose that connects from the filter to the top hat.



2 – Separate the filter center section from the bucket assembly, by gently prying the locking tabs away from the bucket. These can be brittle depending on the age of the module.

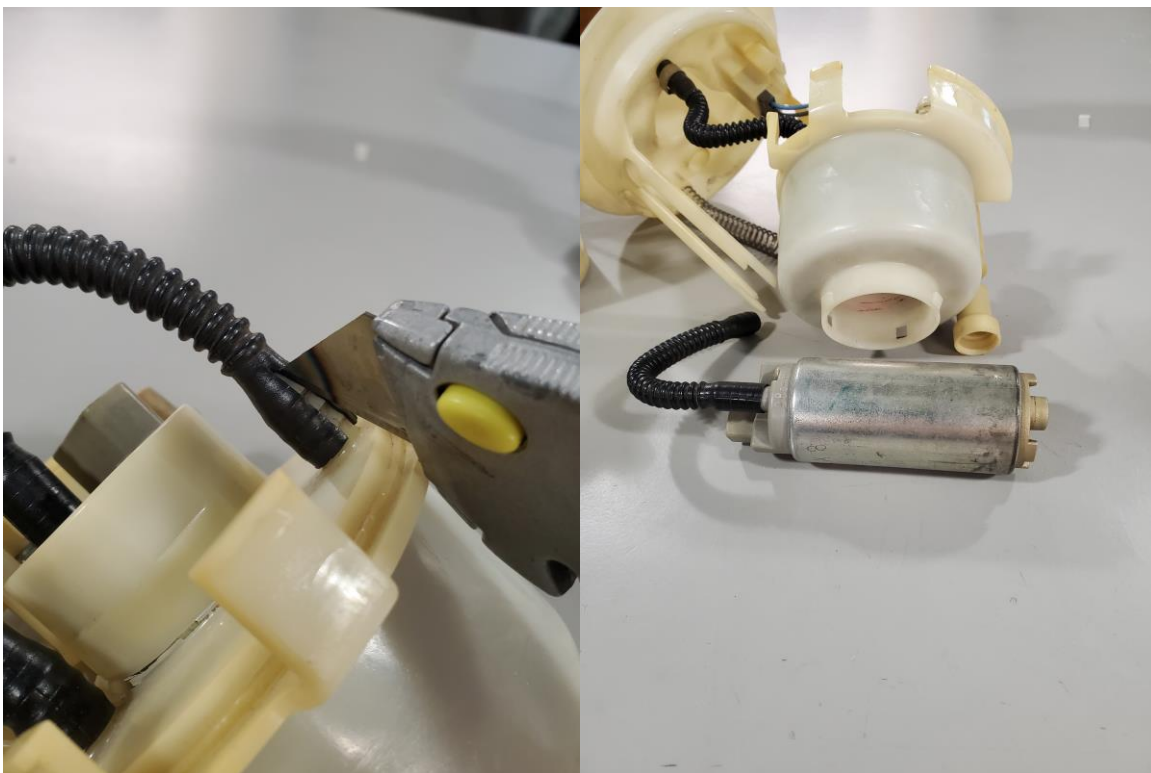


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3 – Remove the factory filter sock, pump retainer and rubber isolator, keep the pump retainer it will be reused with the DeatschWerks pump.



4 – Remove the factory pump to filter fuel hose, it is typically easiest to cut these hoses off, a new one is provided in the kit. Once this hose is free you can slide the pump out of the filter center section.



Modifications to the Module

5 – Due to the larger diameter of the DW440 Brushless pump, the sleeve that holds the factory pump in place must be modified to accommodate the new pump. The modifications are simple, using a 1-11/16 inch (43mm) hole saw, enlarge the center bore of the filter section.

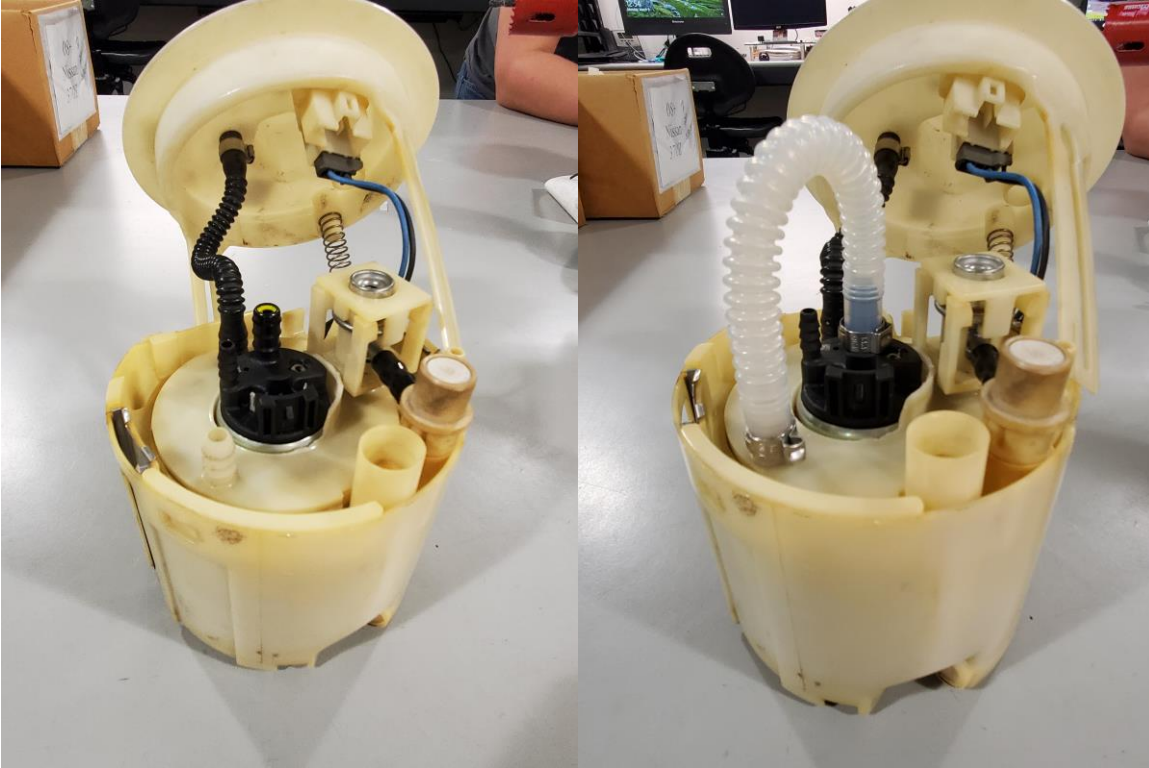


Installation of the DW440 Pump

6 – Install the OE pump retainer and the supplied filter sock onto the pump, you can also install the supplied convoluted fuel hose and secure it with one of the provided clamps.



7 – Install the pump assembly into the center filter section, and attach the fuel hose to the filter inlet, secure with the remaining hose clamp.

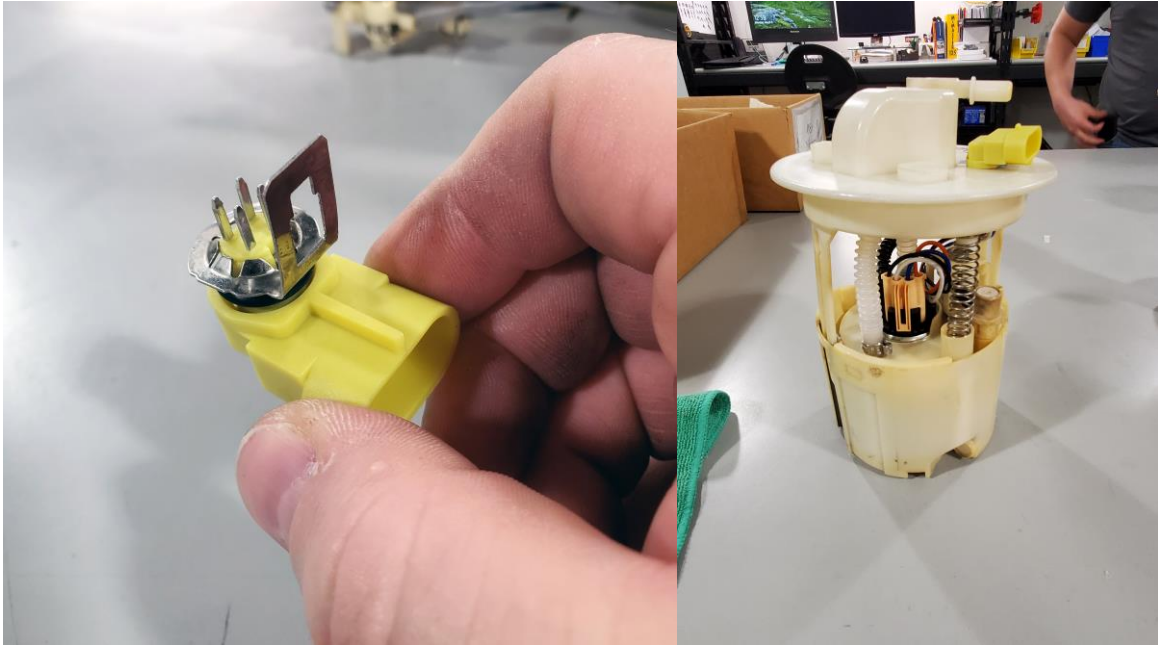


9 – Re-attach the top hat to the bucket assembly and secure with the OEM clips.



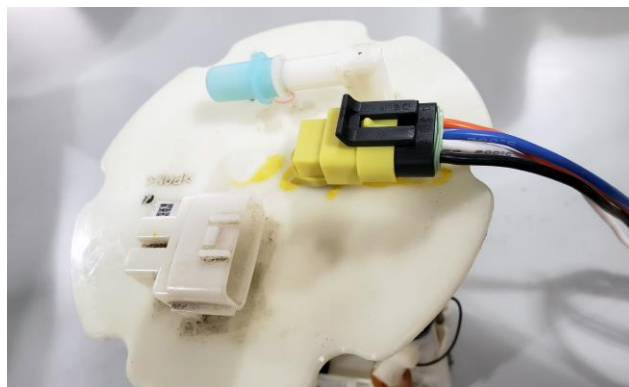
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10 – The DW440 Brushless pump requires its own 4 wire bulkhead to power the pump, you can remove the factory fuel pump power and ground wires. Locate a hole in the top hat that has no obstructions on the bottom side and drill a 10.3mm or 13/32" hole for the electrical bulkhead. The bulkhead uses an O-Ring on the top to provide a seal and a metal push style retainer on the bottom side to secure. The metal retainer also acts as a latch for the electrical connector, make sure the latch is facing the pins of the bulkhead (see Picture)



Wiring the Controller and Pump

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



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



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

13a – 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)

13b – 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 50 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.
 - If your ECU/Control module outputs a pulsed positive signal see **Step 13c** for options to convert the positive signal to a ground signal.

Note: *The DW controller memorizes the last signal it received and will continue flowing at that duty cycle until it receives another signal. Depending on your application the OEM prime function could cause the pump to continue to run on, until either the engine is started and receives a PWM signal or power is cut to the controller.*



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13c – If your ECU outputs a pulsed positive signal it will have to be converted to a ground signal before you can use the DeatschWerks Brushless Controller. Follow the wiring diagram below to install the signal adapter.

Contact DeatschWerks Technical Support for an adapter to install into your pulsed positive signal PWM application at TechSupport@DeatschWerks.com or 1.800.419.6023.

- **Red** wire attaches to the factory positive PWM signal wire from your car.
- **White** wire attaches to the white wire on the DW Brushless controller.
- **Black** wire attaches to ground.



Flushing and Priming the System

14 – Reinstall the assembly into the fuel tank and attach a length of hose to the outlet of the pump assembly allowing it to drain into a fuel safe container and prime the fuel pump assembly

15 – 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

16 – Attach supply line to the outlet of the pump assembly



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