

# 9-xxx-7031

## DeatschWerks 1999-2004 Ford F-150 and Lightning X3 Triple Fuel Pump Module Installation Guide



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## Included Parts:

- Billet Aluminum F-150 Lightning X3 Module
- DeatschWerks Fuel Pumps (x3)
- 10" Pump Electrical Connectors (x3)
- Rubber Fuel Hose 8"x 5/16" (x3)
- Convoluted Tube 12"x 3/8"
- Fuel Sock Pump Pre-Filter (x3)
- 3/8" Pinch Hose Clamp
- 5/16" Adjustable Hose Clamps (x6)
- 12-10awg #10 Ring Terminals (x7)
- 12-10awg #10 90-degree Ring Terminals (x8)
- 6AN ORB to 11/32" Hose Barb Fittings (x3)
- 6AN ORB to 3/8" Hose Barb Fitting
- 6AN ORB Plugs (x2)
- M5 Stainless Electrical Terminals (x4)
- M4 Stainless Electrical Terminals (x2)
- 39mm Pump Adapter Sleeves (x3)
- 18awg Wire, Black, 12"
- Fuel Level Sensor Bracket
- #10-32 x 3/8" Stainless Bolts (x4)
- X3 Module Mounting Bolts (x6)

## OEM Parts Reused:

- Fuel Level Sensor and Wire
- Tank Mounting Gasket

## Included Parts Not Used:

- 3" x 5/16" Rubber Fuel Hose (x3)
- 3" x 3/8" Rubber Fuel Hose (x3)

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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 the DW Lightning X3 pump module. The factory manual should supersede any contradiction.

**Important Notes:** The installation of the Ford F-150 Lightning X3 module requires the module to be partially assembled inside the fuel tank, consider draining the tank beforehand, to make installation easier. The Lightning X3 module is intended to be used with Standard 39mm DW100, 200, 300 or 46mm DW400 fuel pumps. This module also requires a return style plumbing kit due to the high flow fuel pumps, DWPN# 6-621 or 6-622 available as optional extra.

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



## Assembly of the X3 Module

1 – Using the supplied 8" rubber fuel hose, cut it to the correct length for your DW pump (See Note). Install the cut rubber hoses, adjustable hose clamps and filter socks onto the DW pumps.

**Note:** DW100,200 or 300 pumps need a 6-inch (152mm) hose.  
DW400 pumps need a 5.5-inch (140mm) hose.



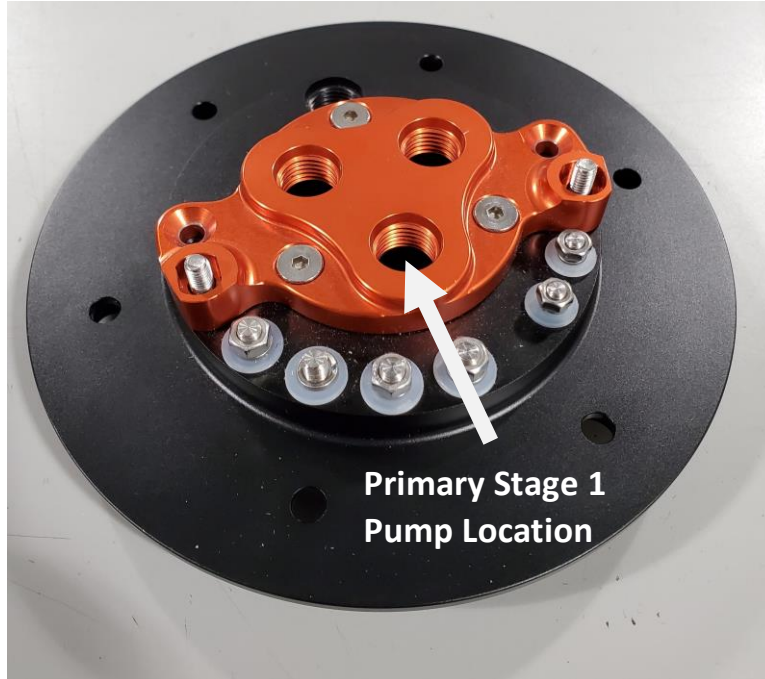
2 – Install the pumps into the module, if you are using a 39mm pump (DW100, 200 or 300) you will need to install the supplied adapter sleeve onto the pump body before installing it into the pump holder.

**Note:** DW400's may need to remove the heat shrink label to fit in holder due to tight tolerances.

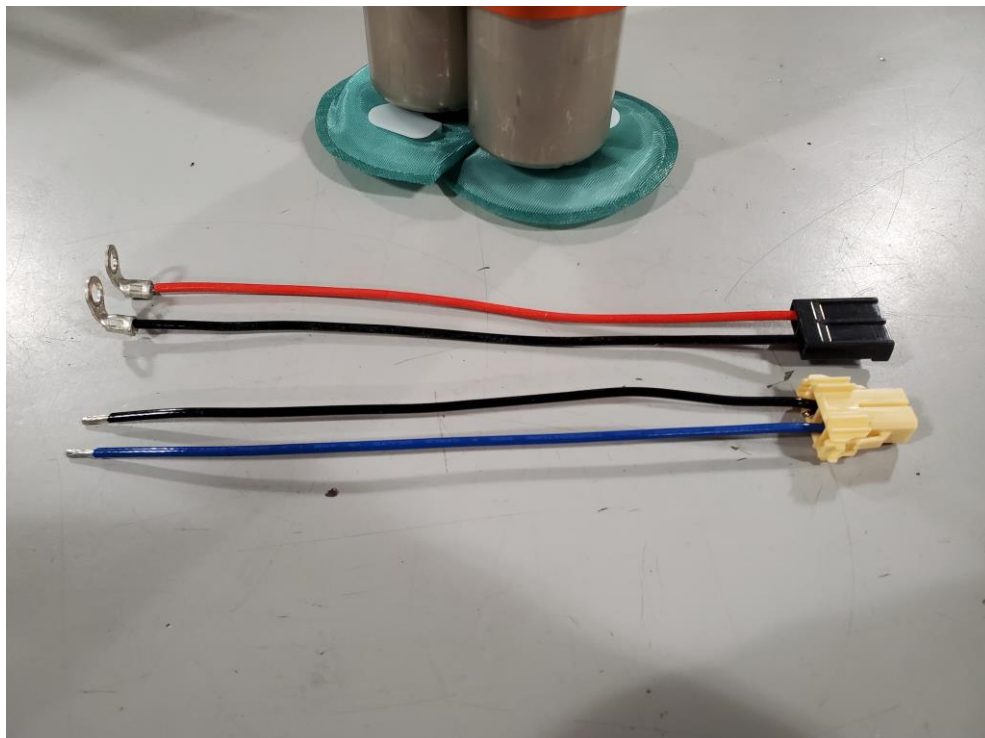


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3 – The Stage 1 pump should be located directly under the -10AN outlet port. This pumps wiring should go to the Stage 1 terminals, if you are planning on using a lower flowing pump for the Stage 1 it should be plumbed here also. If you are not using all 3 pumps, replace the unused hose barb fitting with the plug fitting.



4 – Due to the limited space on the Ford F-150 fuel tank, the 90-degree ring terminals must be used on the underside of the X3 module. Cut the provided pump harness's down to approx. 8-inch (203mm), strip the ends and crimp on the supplied ring terminals.

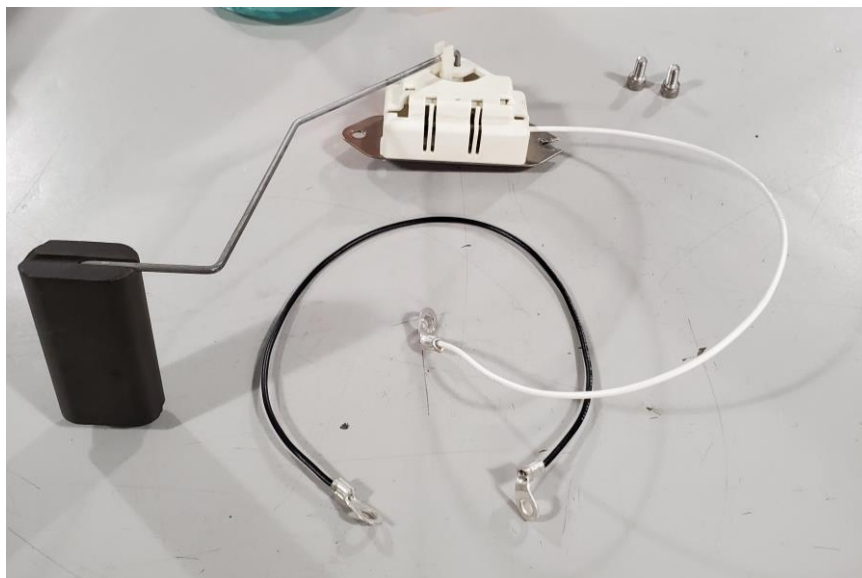


5 – When installing the pump wiring harnesses special care must be taken during final assembly that the ring terminals are not touching each other or the assembly when fully tightened. Align the ring terminals so they face into the module, to keep them from contacting the lip of the fuel tank. If you are running 3 pumps, double up both stage 2 pump wiring on the stage two terminals.



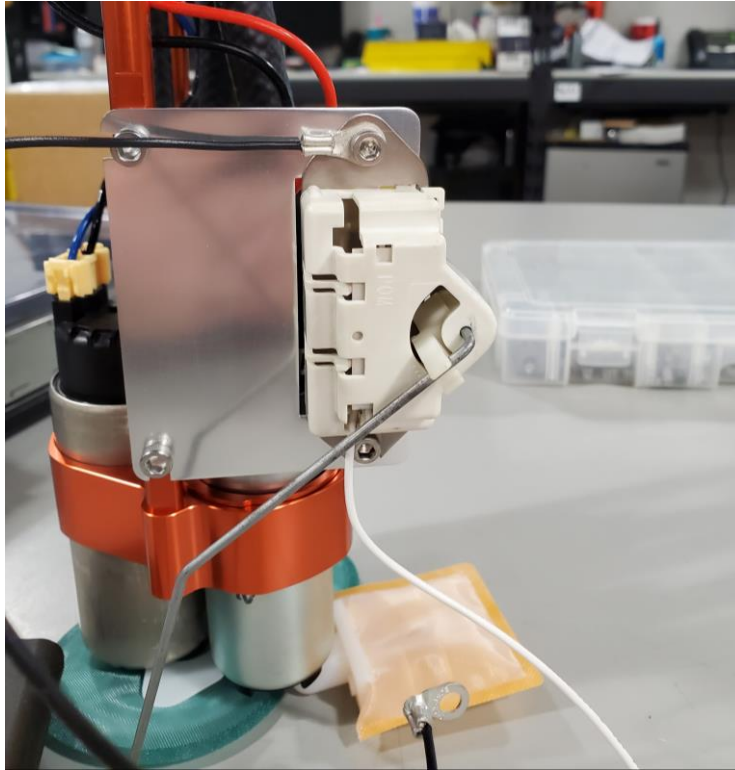
### Fuel Level Sensor Install

6 – Install one of the normal ring terminals on the end of the OEM fuel level sensor, leave the OEM wiring as long as possible. Install one normal and one 90-degree ring terminal on the supplied 18awg black wire. This will be the fuel level sensor ground.

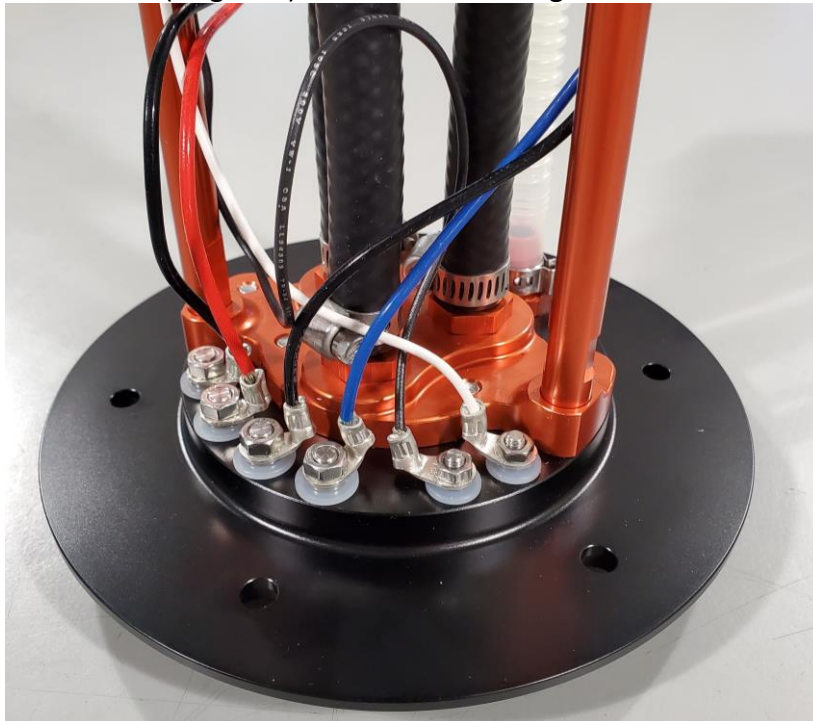


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7 – Install the OEM sending unit onto the supplied sending unit bracket, put the normal ring terminal of the black wire under one of the level sensor bolts. Bolt the level sensor bracket to the module but do not fully tighten the bolts. The level sensor will have to be removed to install the module into the fuel tank.



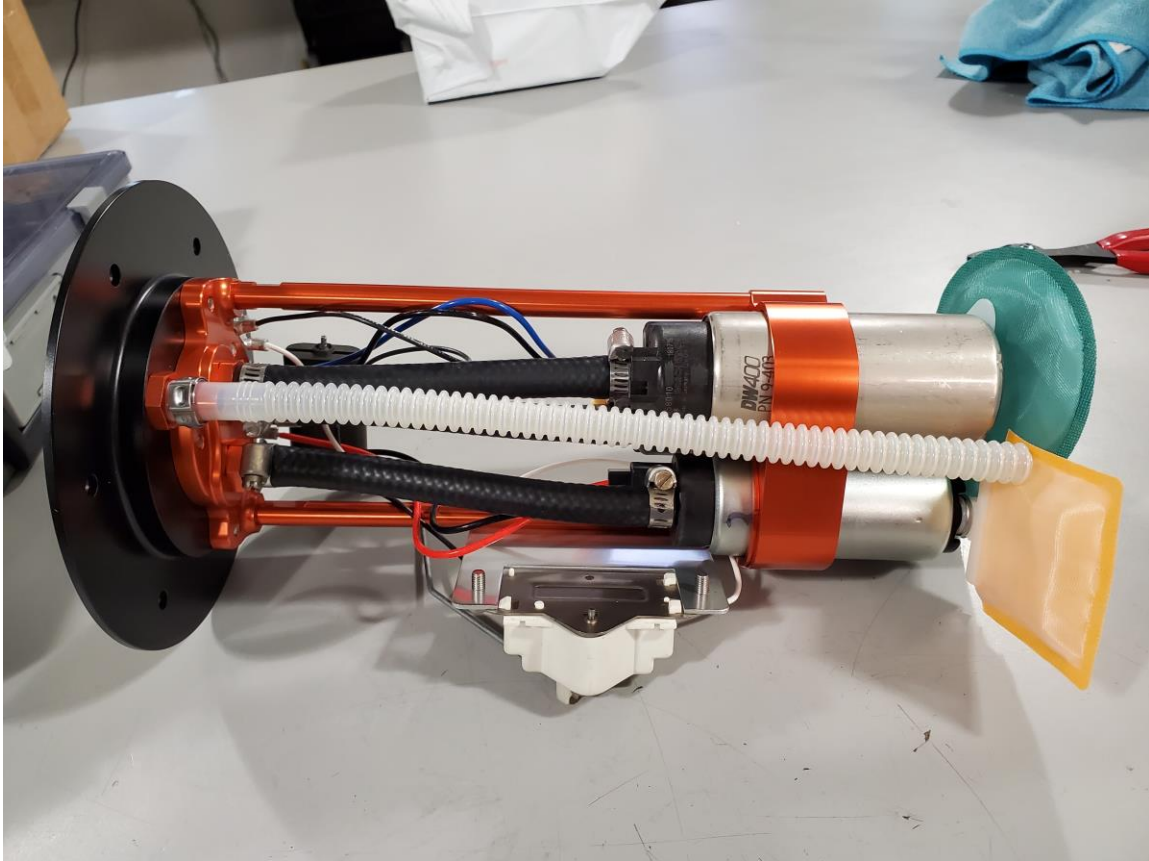
8 – Attach the 90-degree ring terminal ends of the level sensor ground and signal wires to the module. The ground should attach to the Level – (Negative) terminal and the signal wire to the Level + (Positive) terminal.





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9 – Using the supplied 3/8" Convolved tube and pinch clamp, install onto the return hose barb. The 12-inch hose will be a little too long, trim it flush with the bottom of the filter socks.



### Installing the X3 Module

10 – The OEM gasket must be modified for use with the DW X3 module, using a razor blade or flush cut snips, remove the 4 guide tabs so the gasket sits flush against the X3 module surface.



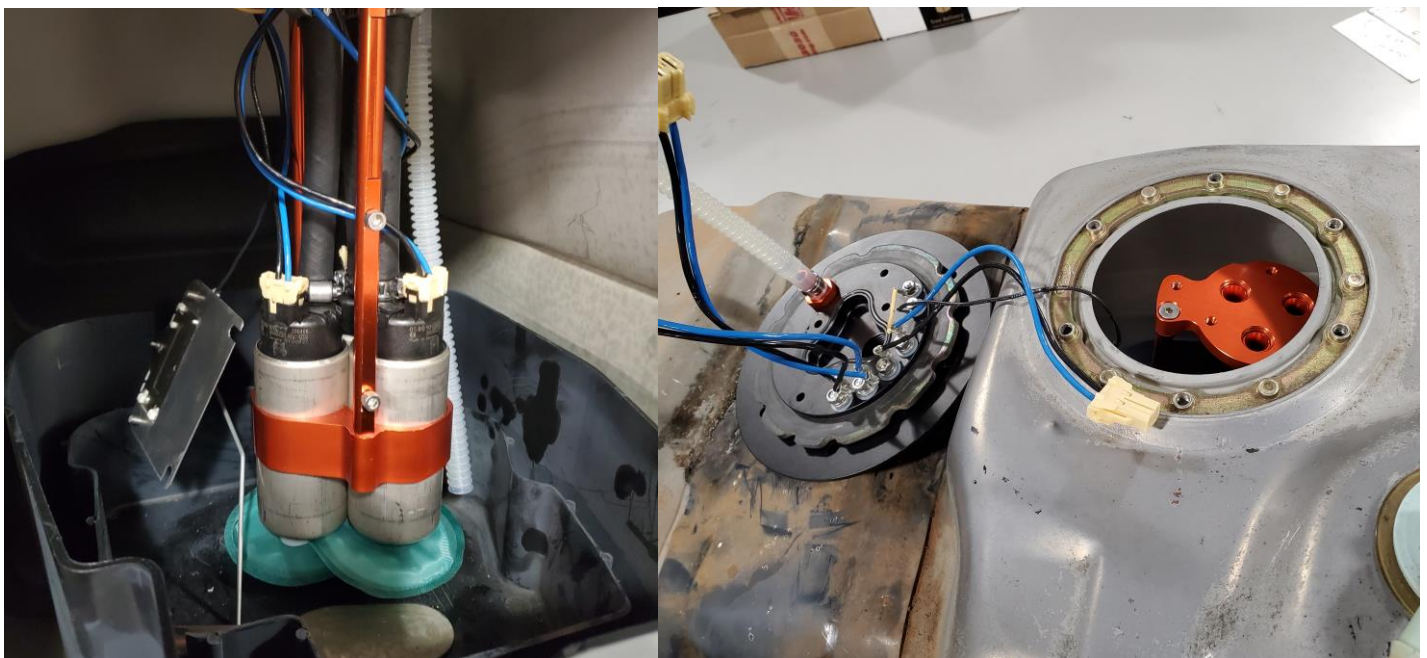
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11 – Remove all but 2 of the socket head bolts that hold the lower module to the top plate. Loosen and remove the fuel level sending unit bracket.



12 – Install the module into the fuel tank; slip the fuel level sensor in first, followed by the module. Remove the remaining 2 module bolts and sit the top plate out of the way.

**Note:** The pump holder is extremely tight to the OEM tank opening, take your time during install.



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13 – Tilt the module sideways leaning against the tank and reinstall the fuel level sending unit bracket. Once tightened, stand the module back up and orientate it so the fuel level arm lines up like the below picture.

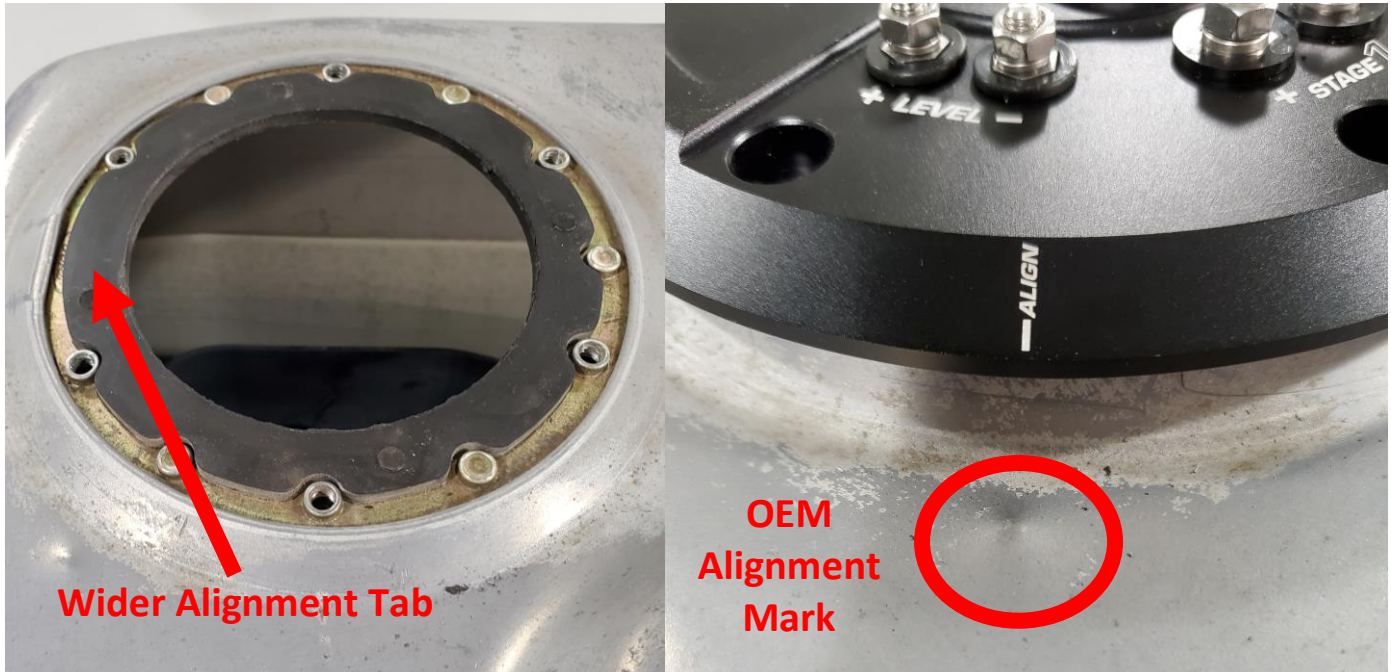


14 – Orientate and reattach the top plate to the module hanger, be careful that all the O-rings stay in place, this may require lifting the hanger portion back up out of the tank while tightening. Re-connect any pump wiring you unhooked during install. Once fully installed inspect the convoluted return hose and make sure it is still directed into the black tub inside the fuel tank.



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15 – Align the OEM gasket with the tank, the gasket and module bolt pattern are asymmetrical and only fit one direction. The gasket has a wider “tab” that locates it. The fuel tank has an upwards dent that aligns with the mark on the X3 module.



16 – Install and tighten the provided mounting bolts to the factory torque spec.



## Wiring the X3 Module

17 – The DW X3 Series Lightning module comes with supplied ring terminals, these are designed for up to 10awg wiring. The level sending unit wires should be connected to the factory level sending unit wires. Due to the OEM Ford fuel pump driver module, it is necessary to either turn off the variable voltage/duty cycle options or bypass the FPDM completely. This is done easily with a hardwire relay kit like the #FPHWK-10-DP, this will ignore the variable signal delivered by the FPCM and use a direct battery voltage to run the fuel pumps.

The factory fuel pump positive trigger wire is **Pink w/Black** stripe, this should be used to trigger the relays in the FPHWK.

The factory fuel level sending unit wires are **Yellow w/White** stripe and **Black w/Orange** stripe: The Yellow wire should attach to the Fuel Level + (Positive) terminal and the Black should attach to the Level – (Negative) terminal.

**Note:** If fuel level gauge does not work correctly after installation, swap the Level + and – wires.



For additional technical support please contact us at: [TechSupport@Deatschwerks.com](mailto:TechSupport@Deatschwerks.com) or 405.233.3991