

Xtreme-DI

GDI PERFORMANCE PARTS

DI Fuel Systems and Controls

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Installation instructions for the XDI-HPFP for 2018 Ford 5.0 V8

These instructions are a general guideline for installing our HPFP (high pressure fuel pump). Please reference a current Ford service publication for the most up to date installation information.

Our HPFP was developed to bolt on re-using the stock low pressure fuel system. In case any of the other fuel system components are modified or exchanged, additional instructions do apply and can be found at the end of this document.

Read the entire installation instructions before starting.



Cleanliness is highest priority !!

Avoid dust and dirt anywhere around the HPFP mounting position while changing the pump.
Clean the area with brake cleaner or similar if necessary.

Always keep all openings in engine, low pressure and high pressure fuel lines and pump covered.

We also included a link to a direct injected fuel pump install video produced by Bosch. It is not specific to this application but provides a general overview of a HPFP installation.

XDI-HPFP contents:

HPFP with baseplate, Adaptor Pigtail, 2 sets of Allen-head bolts, AN-fittings (elbow and Quick connect adapter) for OEM inlet hose, Installation instructions.

Tools needed:

- long 10mm socket for OEM HPFP nuts
- 8mm socket for coil bolts
- E5-Tx for HPFP studs
- 5mm allen socket for new HPFP base plate bolts
- 3/16 allen socket for HPFP main bolts
- 18mm socket for crank pulley (to bring pump lobe to BDC)
- 17mm wrench for High Pressure Line Nut

Parts Recommended:

Clean engine oil (Motorcraft or Penzoil synthetic or synthetic blend 5w-30)

Motorcraft HPFP roller tappet

General install video by Bosch:

<https://www.youtube.com/watch?v=OmbN9bKx4Mo>

Removal of stock pump

Relieving the low pressure fuel system

1. Clean area around the HPFP, no dust or dirt may ever enter the HPFP or the fuel lines.
2. Do not remove covers of pump inlet and outlet fittings yet.
3. Disconnect the (FPCM) Fuel Pump Control Module pigtail connector.
4. NOTE: The FPCM is usually located on the frame rail by the spare tire or the fuel tank.
3. Start the engine and let it run until the engine stalls
4. When the engine stalls, crank the engine for an additional 5 seconds to make sure the low side fuel pressure has been relieved.
5. Switch the ignition off
6. Disconnect the negative terminal from the battery

Relieving the high pressure fuel system

(USE CAUTION! Contents are under extreme pressure; please take all precautionary safety measures)

7. Remove the engine decorative cover. After removing the oil fill cap, the cover simply lifts up and unsnaps from its mounting posts.
8. Use compressed air or a vacuum to remove any debris that has accumulated near the HPFP.
9. Carefully spread and remove the HPFP noise insulator. This is located between coils 2+3 on the the passenger side valve cover.
10. Remove the nut for the HP (high pressure) fuel tube bracket (between last coil and firewall).



11. Wrap the HPFP flare nut with a shop rag. Loosen the tube to HPFP flare nut to relieve the pressure in between the pump and the fuel rail. Allow the shop rag to absorb any excess fuel.



12. Disconnect the low pressure fuel feed and the electrical pigtail from the HPFP.
13. Alternate between the 2 fuel injection pump mounting nuts. Loosening each one half revolution at a time until tension is relieved.



14. Remove the HPFP
15. Remove both ignition coils by the HPFP
16. Remove the roller tappet that rides on the camshaft and actuates the HPFP. It is recommend by XDI to install a new tappet when installing our pump and check it for wear and tear at every oil change. It is Ford Motorcraft part number : (tbc)



17. Turn engine by hand so that pump lobe is at BDC



Installation

5. Mount XDI-HPFP with black bottom plate (do not take off bottom plate, o-ring underneath will get hurt at re-assembly)
 - Clock pump body on bottom plate so that mounting holes are accessible
 - Use supplied M6 Socket cap bolts to bolt bottom plate to valve cover, always go ½ turn at a time, otherwise it will cog
 - Clock pump body so that long ¼-20 socket cap bolts snap into bottom plate
 - Tighten bolts down always ¼ turn at a time, it needs to compress the spring underneath and will cog very easily. Don't force it.
 - Remove high pressure line clamps. Bend OEM high pressure line so that it aligns perfectly with HPFP outlet fitting. It has to sit in place w/o pulling etc.



- Nut of OEM-Line needs to go on with two fingers. If not, there is some tension or angle not aligned. Fix this before tightening the nut.
- Connect -6 AN elbow and male quick connect adapter to pump and OEM inlet hose to male QD. **Make sure the white numbers tag on OEM line is at rail side, not pump side.**
- Connect wiring pigtail to pump and loom
- Fully installed:

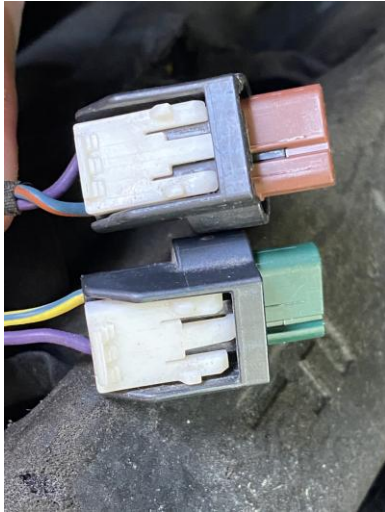


Coils:

Swap the coils between cylinder 2 and 3. “Pencil coil” vs. “coil near plug”. Also swap the electric plugs of these two coils on the loom.

The orientation of the two leads is different between the two.

Make sure that the purple lead on the loom side goes to the purple lead on connector side again.



Repair pigtails are available from Motorcraft:



WPT-1502
(Silver)
HU2Z-14S411-JA

Other changes in Fuel System:

Depending on fuel used (e.g. E85) and calibration, it might be necessary to change other parts of the fuel system, e.g. in-tank pump, fuel filter, fuel lines, pressure regulator.

Please follow these recommendations to avoid fuel system failures like seized pistons in the HPFP:

- Fuel Filter
 1. mesh size \leq 5 microns !!
 2. flow capacity should always exceed target power level
 3. we highly recommend using a primary 10-20micron fuel filter right after in-tank pump, and a secondary 5micron filter right before HP-Pump inlet
- Ensure fuel compatibility (e.g. E85) for all components of the fuel system.
- Avoid any burrs on metallic parts, avoid lose fibres or wires or similar with braided lines. Rinse the system after any change in the low pressure system. Therefore run the in-tank pump for a couple of minutes and bleed fuel from HPFP feed line into reservoir or container.
- After rinse, connect HP-Pump, keep plugs on HP-pump fittings until pump is mounted
- Ensure fuel pressure at HPFP-inlet of a minimum of 60psi at all times, better 75psi. Always log feed pressure if possible. If necessary add a fuel pressure sensor / gauge right before the HPFP.

Tuning Changes:

XDI will provide a base file or a value file with all required tuning changes.

The commanded fuel pressure can safely be increased to 3000psi from the stock setting of 2900psi. The XDI-HPFP45 does support up to 3600psi. The injectors might not open stable at those pressure levels w/o further tuning changes.

Never exceed 3600psi of fuel pressure! The pump will suffer permanent damage and cannot be repaired. This fault is easy to detect in the pump. It is not covered by any warranties.

Pump capacity with stock cam lobe is ~45% over OEM.

If pump is stretched to its flow limits (e.g on E85), tune target pressure to actual pump capability at low rpm (e.g. 2000psi), this avoids over or undershoots and helps the ECU control the pressure.

There are power gains on NA applications just from running more pressure than factory. On boosted applications the gains are coming mainly from more flow capacity which on these engines means higher possible DI-blend !!

If also bigger injectors are added, it might make sense to lower the overall fuel pressure level to 2175psi again which helps pump efficiency and thus peak performance.

Please check http://www.xtreme-di.com/index_files/HPFP35.htm for updates related to additional tuning enhancements.