NOSTRUM
HIGH PERFORMANCE

# 2.3L FORD MUSTANG ECOBOOST HPFP KIT INSTALLATION GUIDE

PART SKU#: H086-0742

**WARNING! PLEASE FOLLOW ALL WARNINGS AND INSTRUCTIONS FOUND IN YOUR VEHICLE OWNER'S MANUAL. THE FOLLOWING INSTRUCTIONS MUST BE READ AND FULLY UNDERSTOOD BEFORE BEGINNING INSTALLATION. FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN VEHICLE DAMAGE, PERSONAL INJURY OR DEATH. IF THESE INSTRUCTIONS ARE NOT FULLY UNDERSTOOD, DO NOT ATTEMPT INSTALLATION.**

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## *2.3L FORD ECOBOOST MUSTANG:*

***HIGH PRESSURE FUEL PUMP***
***INSTALLATION GUIDE***
*PART #: H086-0742*

**Installation Instructions**

1. Remove fuel pump relay. Allow Engine to idle until it stalls (Approximately 90 sec.)
This will empty the fuel system so that fuel spillage is minimized during the removal of the stock high pressure pump.
2. Remove the battery cover and the negative terminal from the battery. Follow safe work practice guidelines and use safety equipment.
3. Remove the engine cover to access the OEM Ford high pressure fuel pump at the back left of the engine bay.
4. Remove the sound deadening foam that surrounds the vacuum pump on the back of the engine to the right of the high-pressure fuel pump by removing the plastic screw attaching the foam to the top of the vacuum pump.

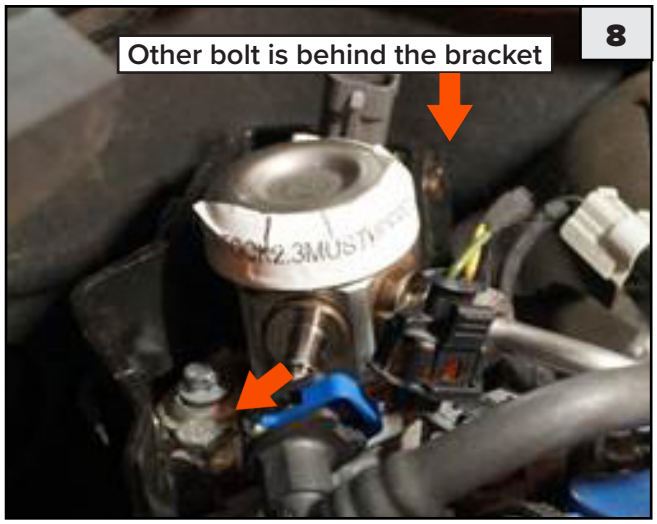

5. Remove sound deadening foam surrounding the high pressure fuel pump.

6. Remove the pump electrical connector by squeezing its tab while gently pulling the housing. **(Do not pull from the wires!!).**

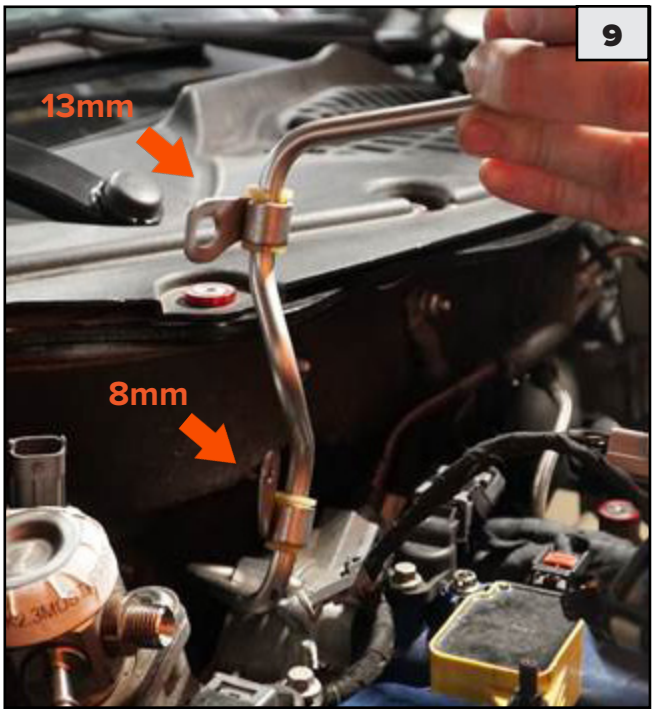

7. Remove the rubber low pressure tube from the pump. The low-pressure line attaches to the pump using a quick connect fitting.

To remove this quick connect fitting, retract the blue quick connect clip first and press in the white clip firmly. The connector will slide off the low-pressure fitting with a firm pull. Disengaging the clips is critical to removing this Ford quick connect style fitting. Make sure to catch spilled fuel with a rag.

8. Remove the heavy gauge black crash bracket surrounding the high-pressure fuel pump by removing the two bolts with a 10mm socket. The two bolts are located on the left side of the pump.

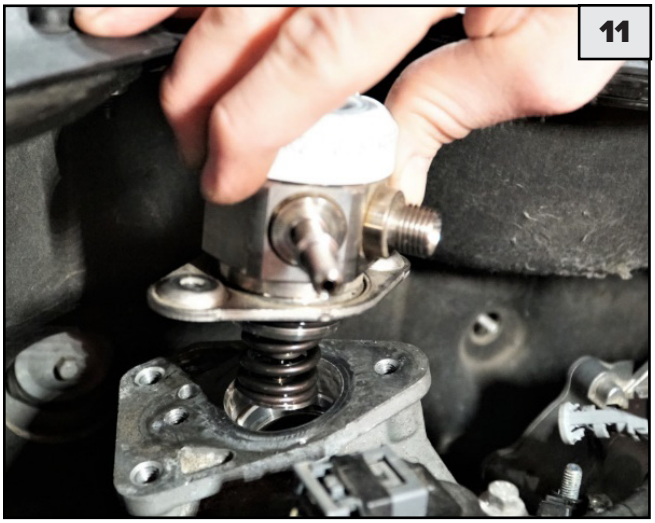



9. To remove the Ford factory high pressure fuel tube first locate the two brackets attaching the tube to the back of the cylinder head. To remove the brackets, you will need a 13mm and 8mm socket. Be careful to not drop the fasteners into the engine bay when removing them from the assembly. Figure 9 shows the bracket locations on the tube once removed from the vehicle.



10. Remove the two pump bolts using an 8mm socket. To ensure the pump spring load is centered during removal, alternate between loosening each bolt 2-3 full rotations at a time. Once removed, slowly and carefully remove the high-pressure fuel pump from its housing.


11. Remove the two pump bolts using a 10mm socket. To ensure the pump spring load is centered during removal, alternate between loosening each bolt 2-3 full rotations at a time. Once removed, slowly and carefully remove the high pressure fuel pump from its housing.




**12. Flange installation:** Clean the flange mating surface of debris and oil. Place the flange on the pad and start the two M6 x 25mm bolts
supplied.

The flange should be oriented with the
clearance cuts as shown in the picture 12A.

Install the Nostrum pump flange alignment tool into the center of the flange until the stop. This will align the flange pump bore to the cylinder head pump bore. Ensure the tool is fully seated into the flange before screwing the two M6 bolts in (picture 12B). Torque the bolts to **10 lb-ft** using a 5mm hex bit.


***TIP: Spin the flange tool before fully seating the fasteners. This will assist in centering the flange pump bore to the cylinder head. Continue to check the flange tool when torqueing the flange fasteners.***


13. Before installing the new pump, lubricate the Nostrum pump o-ring seal with engine oil.

14. Seat the pump onto the flange, ensuring that it is properly aligned and firmly seated. Ensure the pump solenoid is facing vehicle Front (away from the vehicle firewall) as pictured in Figure 14. Hand start and seat the pump to the flange with the two 50mm M6 bolts supplied in the kit.

***NOTE: The pump may not seat completely during insertion. This is due to the cam position and the pump free state.***

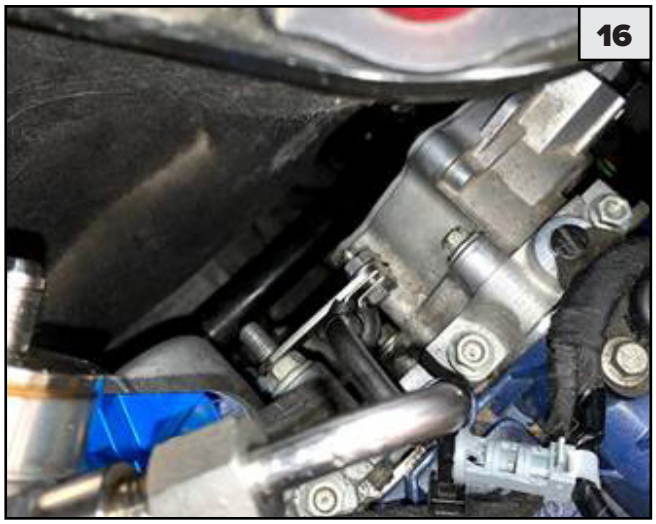
***This is normal. Do not force the pump with a blow hammer, rubber mallet or other device.***


15. To secure the pump, alternate tightening each 50mm pump bolt by applying 2-3 rotations at a time. This will ensure the pump is installed evenly as you apply load to the pump spring. Torque both bolts to **10 lb-ft** using a 5mm bit and torque wrench. Note: a standard 3/8" drive 5mm hex bit will NOT clear the cowl to torque the rear bolt attaching the fuel pump to the flange. The use of a crow's foot is recommended.


**Warning: Not alternating the fastener installation may damage the pump body, flange, cylinder head or combination thereof.**

***OPTIONAL: For information regarding modifying and installing the black crash bracket, see step 22 before moving on to step 16.***

16. Install the Nostrum high-pressure fuel line by inserting the fuel rail side of the tube under the passenger side of the vacuum pump housing and over to the inlet of the fuel rail.

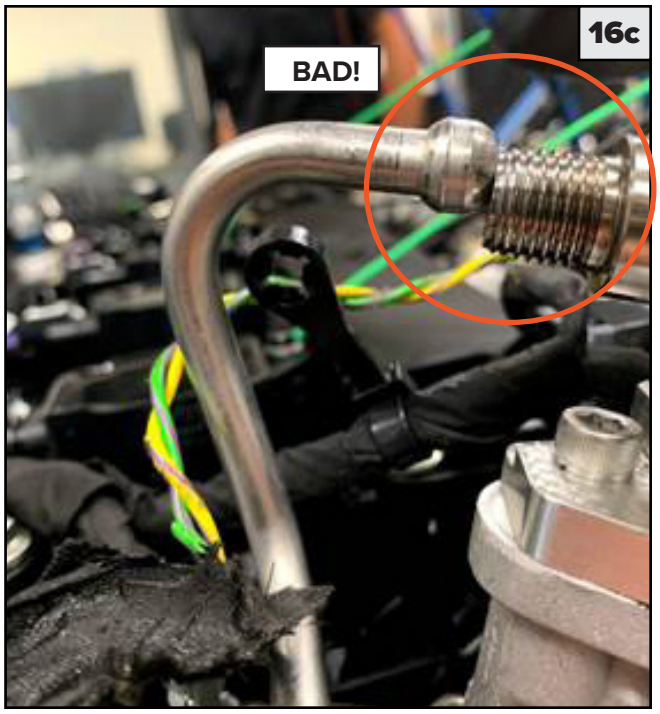



16a. Before installing the tube nuts, position the tube bracket by seating the bracket plate onto the stud located on the back of the cylinder head. Figure 16a shows the location of this stud.


16b. Aligning the tube: Seat the fuel line spherical fitting on the pump side first, followed by the fuel rail. Do not start the compression nuts yet. Ensure the spherical fittings are centered, straight, and in full contact with the pump fitting cone surface as shown in Figure 16B.

16c. While holding the line & spherical fitting in proper position, seated firmly in the cone, hand tighten both compression nuts (fuel rail first, pump second). Fitting alignment is essential. Do not force the compression nuts. The nuts should spin freely and without resistance. If there is resistance, ensure the globe fittings are straight and centered to the cones, and try again. It is critical that the spherical fittings are aligned with the female cone, **DO NOT USE THE NUT TO "CENTER" THE FITTING.**

Improper installation can damage the threads, misalign the fitting and result in a leak. Figure 16C shows what a misaligned fitting looks like.




17. Torque both tube compression nuts to **20 lb-ft.**
Attempt to move or shake the high pressure hard line at both ends near the fittings. They should not move inside the compression nut. If they do move, remove the line and return to Step 16.

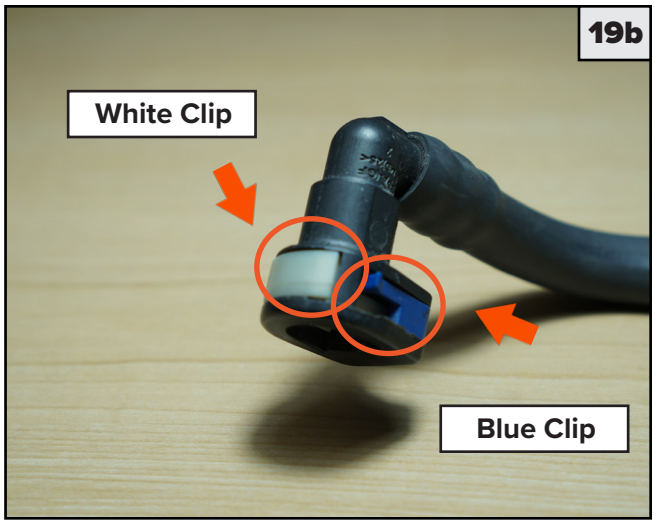

18. Secure the high-pressure tube bracket. Now that the high-pressure tube has been seated and torqued to the inlet and outlet, return to the  bracket on the cylinder head stud. Thread the factory nut on. Torque to **13 lb ft.**

19. Install the Nostrum low pressure fuel line.

a. Hand tighten the low-pressure line AN female fitting to the high-pressure fuel pump male AN fitting.


b. Torque the AN female fitting to the high-pressure fuel pump to 14 lb-ft as seen in Figure 19A.

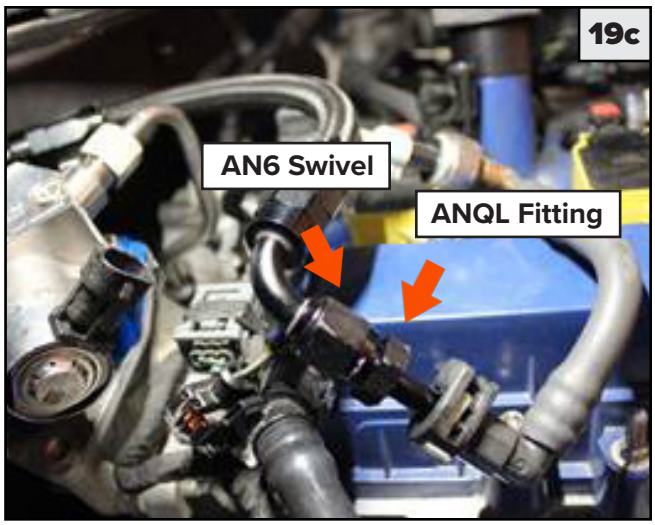
***NOTE: Double check all AN connections (including the AN connection on the low-pressure tube assembly and the AN6 quick connect which is connected to the stock fuel supply feed) and ensure that they are all torqued to 14 lb-ft.***




c. Install the Nostrum low-pressure line male quick connect to the stock fuel supply feed by depressing the white clip first, followed by the blue clip to lock it in place. You should feel both clips snap into place as seen in Figure 19B.

***Important: To prevent fuel leaks, Torque the AN QC fitting and the AN6 swivel fitting that connect to the stock fuel supply feed to 14lb-ft relative to one another as seen in Figure 19C.***

***NOTE: The factory stock low pressure tube has a plastic clip which mounts to a stud on the cylinder head (not pictured)***



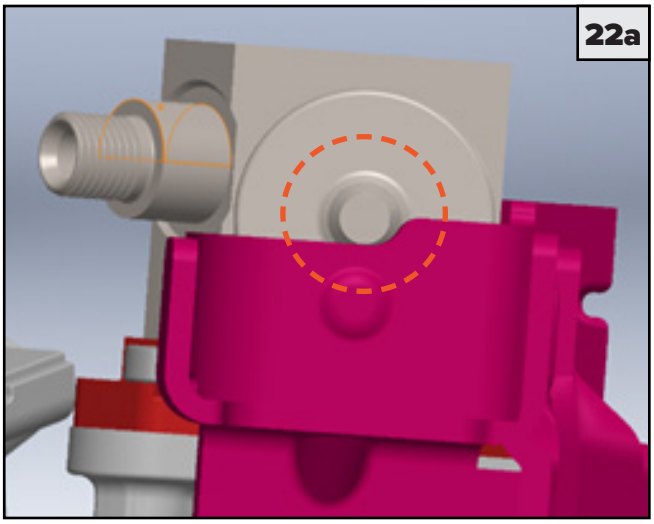
20. Connect the factory wire harness pump electrical connector to the pump. Be sure that the connector locks into the mating connector (you should hear a click). Check by lightly pulling on the connectors. Do not pull on the wires!

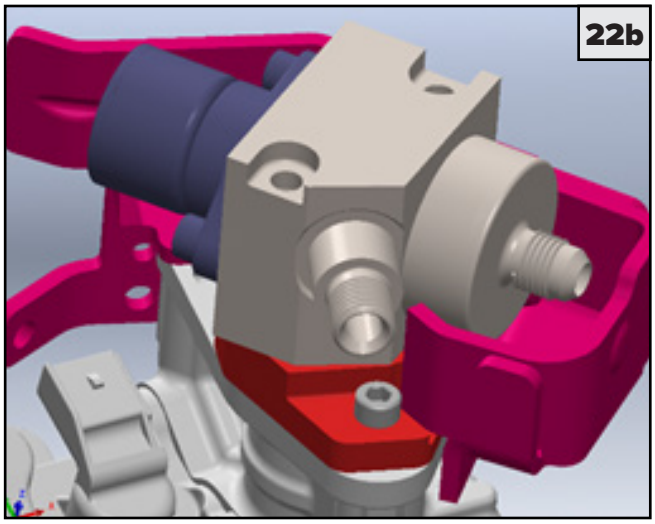

**IN-PROCESS CHECK. Before reconnecting the battery, check all your assembly for torque and fit. After inspection is satisfactory, connect the battery and proceed with additional checks:**

21. Key cycle the vehicle in to the "accessory on" position **(do not go to ignition position).** The low-pressure fuel pump will activate, and the low-pressure side of the pump will pressurize. Visually check the high-pressure pump connections, high pressure tube and lower pressure side for leaks. If ok, proceed to 21. If not ok, go back to the appropriate step.

22. Reinstall the Vacuum pump sound deadening foam and all other components. Check reinstallation of all hardware.

**22a:** ***NOTE: The black crash bracket will need to be modified to clear the pump low pressure fitting. Without modification the AN fitting will not fit with the crash bracket installed. Therefore, the installation and modification of the bracket is at your discretion. You can see the modification area in image 22A below. This can be done at your discretion. The flange is designed to permit installation of the bracket as seen in the CAD images 22B below.***



**Hardware installation is complete.**

**First Start-Up**
1. Be sure to remove all installation tools and loose items from the engine compartment. Follow good, safe practices when working on your vehicle. Be sure to reassemble all parts and components according to your OE maintenance manual.

2. Key cycle the vehicle into the "Accessory On" position (do not go to Ignition position). The low- pressure fuel pump with activate and the low pressure side of the pump will pressurize. Check the high-pressure fuel pump and the low pressure side for leaks. If OK, proceed to step 3.

3. Key cycle to ignition and let the car attempt several start cycles. Remember that the fuel lines, pump and part of the fuel rail are filled with air, therefore this step is necessary to evacuate that air and get the system charged. If it starts, OK. If it doesn't, key off the vehicle. Check the high- pressure lines to the fuel rail, to the pump and the pump itself for leaks. If OK, proceed to step 4.

4. Key cycle one more time all the way to ignition. Engine should start-up and idle. If not, proceed with steps 2-4 again.

5. Let the car idle for a few minutes. Check for leaks on low and high-pressure portions again.

6. Installation is complete! **Time for a Tune!!**

***NOTE: a fault code may appear at the first key cycle due to the long ignition time or the low pressure in the fuel rail, both due to the air in the fuel system.***
***This code should self-clear after the OEM defined quantity of key cycles.***

***NOTE: After driving the car and letting it cool, next day, check for fuel leaks again (from thermal expansion and contraction). Retighten fittings if needed.***

**For additional technical & software support please contact:**

**Email:** support@nostrumshop.com
**Phone:** **734-548-8677 (during normal business hours)**