NOSTRUM
HIGH PERFORMANCE

BMW Gen 1 B58 Stage 1 & Stage 2 Injector Install Guide

PRODUCT PART SKU#: H720-1719 & H750-1720

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. We have attempted to make these instructions as complete as possible, but we always recommend having access to the OEM service information or equivalent (Alldata, Mitchell etc.).

Note that this product requires vehicle (ECU) calibration. Please ensure provisions for calibration are made prior to installation. The vehicle should not be driven without calibration changes being made for the new fuel injectors. If you are already in touch with a Nostrum dealer or tuner they should be able to provide calibration support. If you do not currently have a tuner, please contact us at support@nostrumshop.com and we will gladly connect you with someone within the Nostrum dealer network.

Required Tools:

- Torque wrench
- Torque-angle wrench or angle attachment
- Ratchet
- 8mm socket
- 10mm socket
- 17mm wrench
- Adjustable wrench
- E6 Torx socket
- E8 Torx socket
- E18 Torx socket
- White or silver paint pen, Sharpie or similar
- BMW B58 injector combustion seal sizing tool: BMW 2 358 417, DPTOOL N14-55 or equivalent
- BMW B58 injector removal tool kit: Bosch 0986-616-099-955, BMW 83300496668 or equivalent

Consumables:

- M5x30 mm E6 Torx head bolts
  - BMW P/N: 13-53-8-661-716
  - Quantity 12
- M6x70 mm E8 Torx head bolts
  - BMW P/N: 13-53-8-661-715
  - Quantity: 8
- Clean engine oil

General GDI fuel system related warnings:

- Contamination is one of the most common causes of fuel system component failure. Extreme care should be taken not to introduce contaminates, debris or other foreign material into the fuel system. Make sure all surfaces are clean and that fuel rails, fuel lines and injectors are not allowed to contact dirty surfaces or be exposed to dust or other debris.
- Be very careful when handling GDI injectors not to damage the tip of the injector or the combustion seal. Excess force applied to an injector or dropping an injector can also lead to injector failure.

1. Remove the carpeted trim pocket on the passenger side of the trunk.

Figure 1

2. Use a 10mm socket to disconnect the negative battery terminal. Use an electrical tape or equivalent to separate the negative terminal on the battery and the negative chassis connection. **Do not pry on the terminal to remove the negative lead or damage to the BMW intelligent battery sensor (IBS) found on the wire lead may occur.**

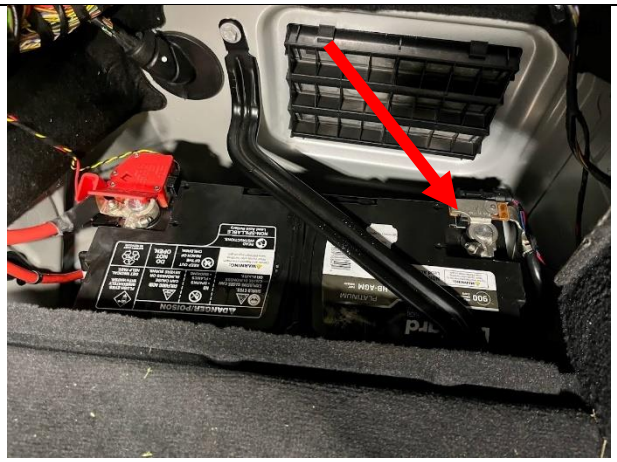


Figure 2

3. Gently pull up by hand to by hand remove the engine cover in the engine bay.

Figure 3

4. Use a 10mm socket to release the fasteners securing the wiper cowl cover on the passenger's side of the vehicle. The nuts should only be turned 90 degrees otherwise the tab will break. The nuts are trapped to the plastic cover (do not force past 90 or remove them).

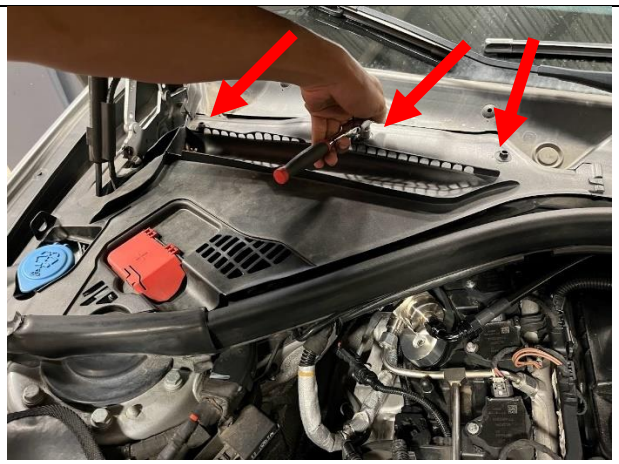


Figure 4

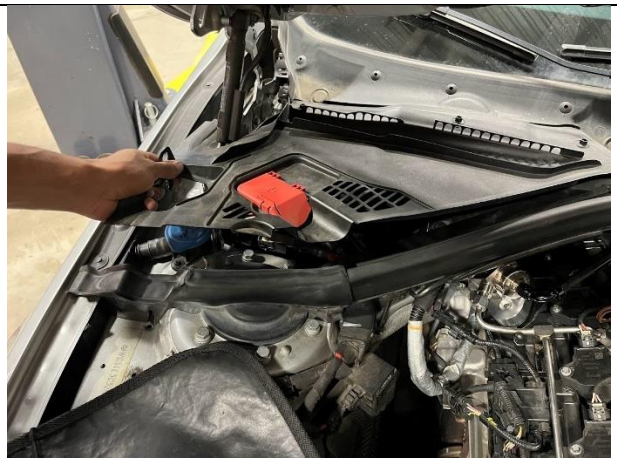


Figure 5

5. Use a 10mm socket to release the fasteners securing the wiper cowl cover on the driver's side of the vehicle. The nuts should only be turned 90 degrees otherwise the tab will break. The nuts are trapped to the plastic cover (do not force past 90 or remove them).

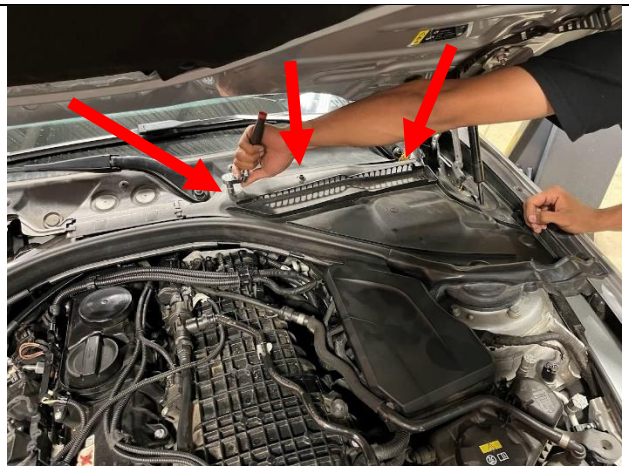
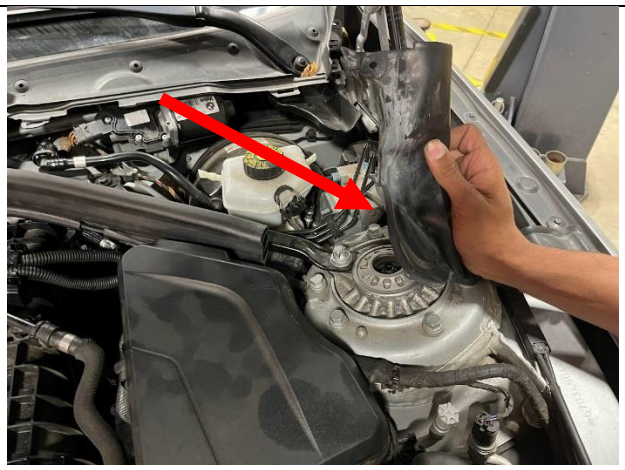
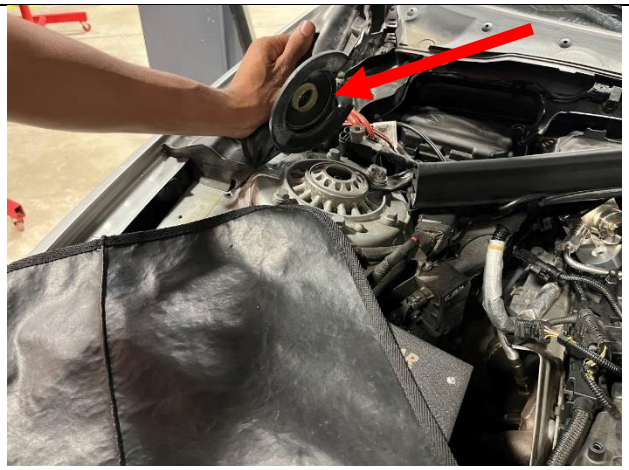
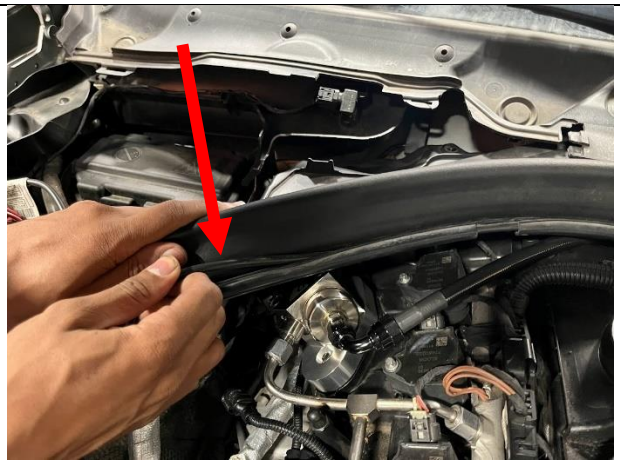


Figure 6

6. Pull back the rubber weather strips above the driver and passenger side strut towers.	
	Figure 7
	
	Figure 8
7. Pull the wire from the weather strip spanning across the wiper cowl.	
	Figure 9

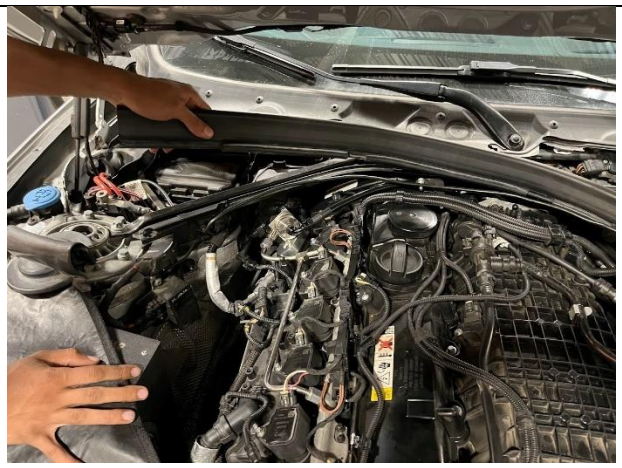
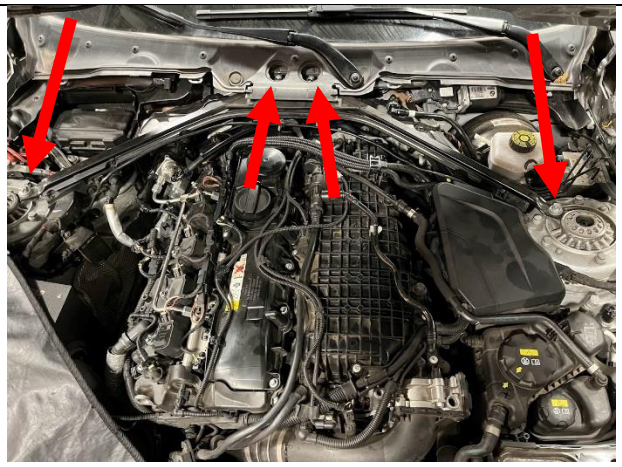
8. Remove the weather strip spanning across the wiper cowl by hand.	
	Figure 10
9. Use a flathead screwdriver to pry the rubber covers over the bolts securing the upper strut tower brace at the back of the engine bay.	
	Figure 11
10. Use an E18 Torx socket and wrench to remove the upper strut tower brace from the engine bay.	
	Figure 12

Figure 13

11. Use a 10mm socket to remove the 6 bolts securing the wiper cowl in the engine bay.

Figure 14

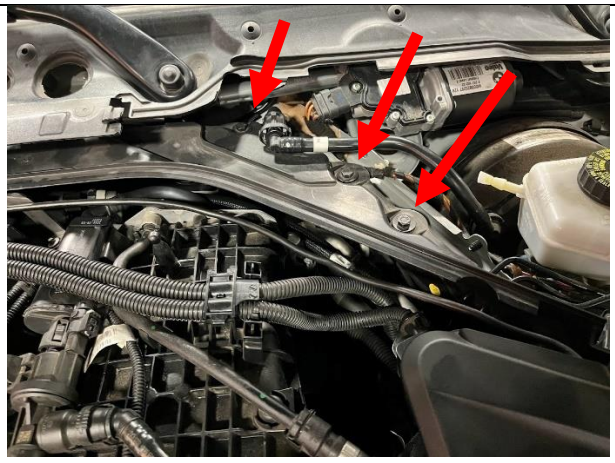


Figure 15

Figure 16

12. Disconnect all 6 electrical connectors from the coil packs and 6 connectors from the fuel injectors located on the passenger and driver's side of the fuel rails respectively.

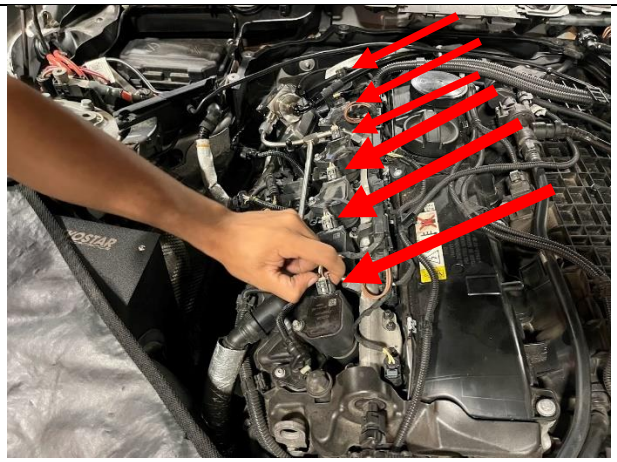


Figure 17

13. Use an E8 Torx socket and wrench to remove the bolts holding the coil packs in place.

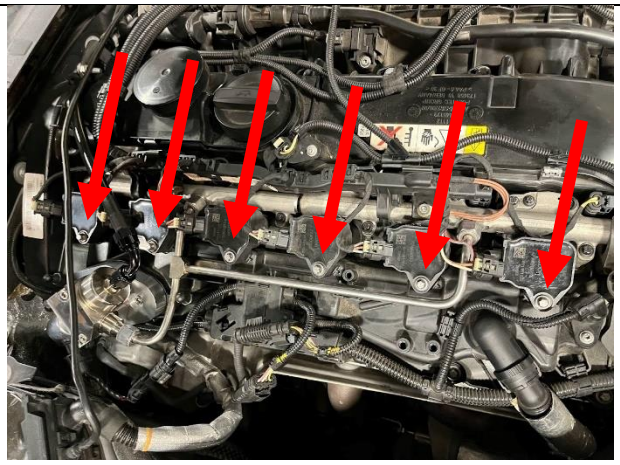


Figure 18

14. Remove the coil packs from the engine.	
	Figure 19
15. Use a 17mm wrench to loosen the compression nut on the high-pressure fitting. Also disconnect the low-pressure fitting on the fuel pump to allow the low-pressure fuel line to be moved out of the way. Remove this line before the coil packs using an adjustable wrench. (33Nm)	
	Figure 20
16. Use a 17mm wrench to remove the 2 compression nuts on the fuel rail. (33Nm)	
	Figure 21

17. Use an 8mm socket to remove both ground wire ring terminals from the wire harness on top of the fuel rails.

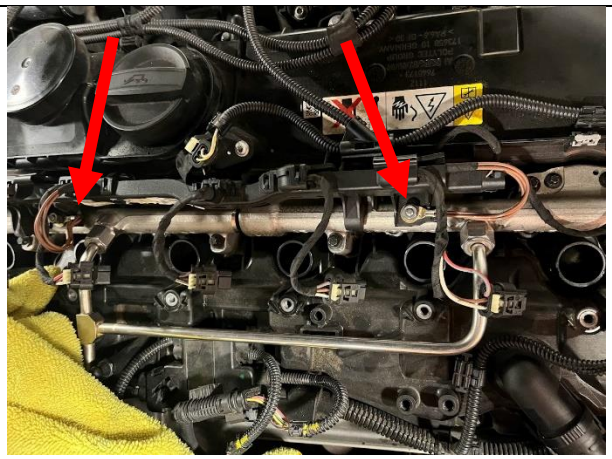


Figure 22

18. Pull the wire harness tray out and pull it over to the other side of the engine to get it out of the way.

Figure 23

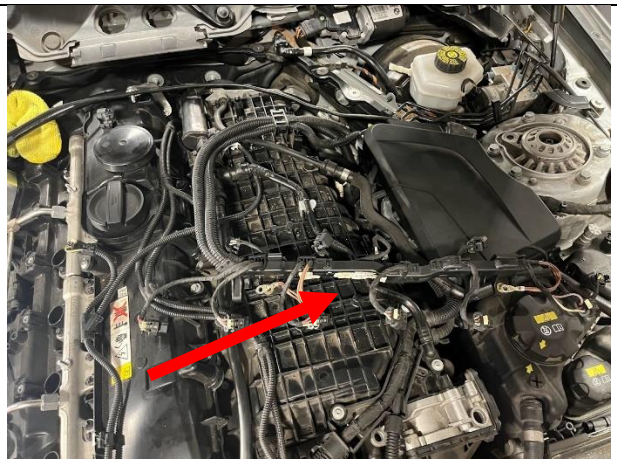
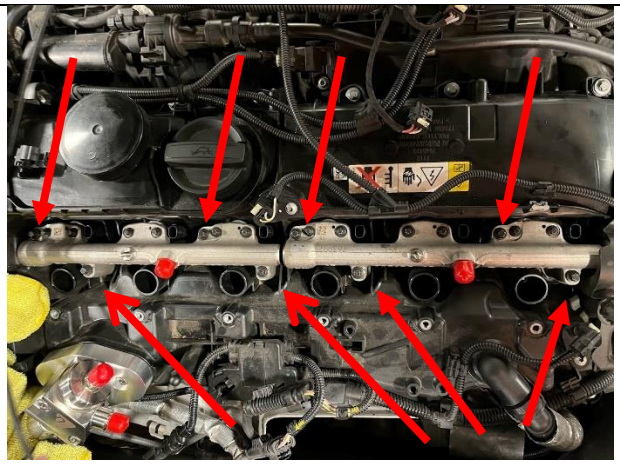
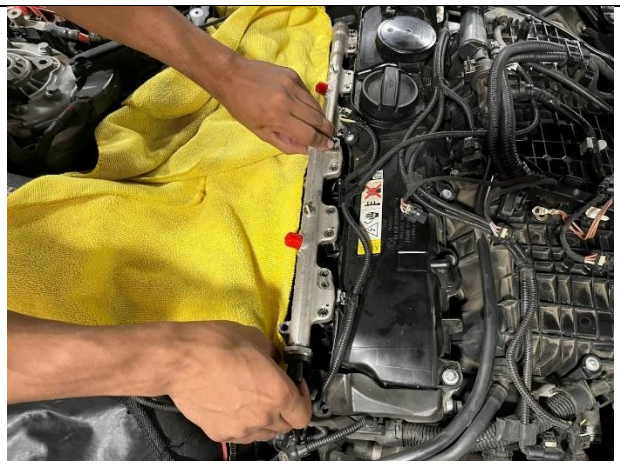
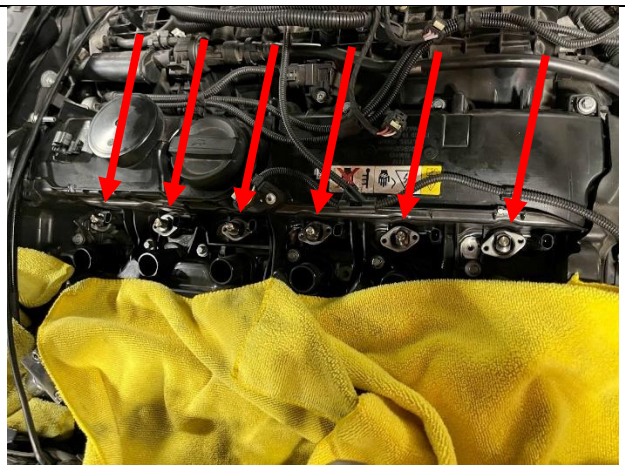


Figure 24

19. Disconnect the fuel rail pressure sensor connector. Slide the grey tab towards front of vehicle and then squeeze to release connector.	
	Figure 25
20. Use an E6 Torx socket and wrench to remove the M5x30 mm bolts holding the fuel rail to the injectors - 12 bolts total, 6 per fuel rail. Note - these fasteners are one time use Torque To Yield bolts.	
	Figure 26
21. Use an E8 Torx socket and wrench to remove the M6x70 mm bolts holding the rail to the cylinder head - 8 bolts total, 4 per fuel rail. Note - these fasteners are one time use Torque To Yield bolts.	
	Figure 27

22. Remove the fuel rails from the engine bay.	
	Figure 28
23. Use a BMW B58 Injector removal tool to remove all 6 injectors from their seated positions in the cylinder head.	
	Figure 29
Example tools kits include the OEM BMW service tool kit 2 358 417 and the DPTOOL N14-55 kit. Image to the right is of the DPTOOL N14-55 kit found on Amazon.	
	Figure 30

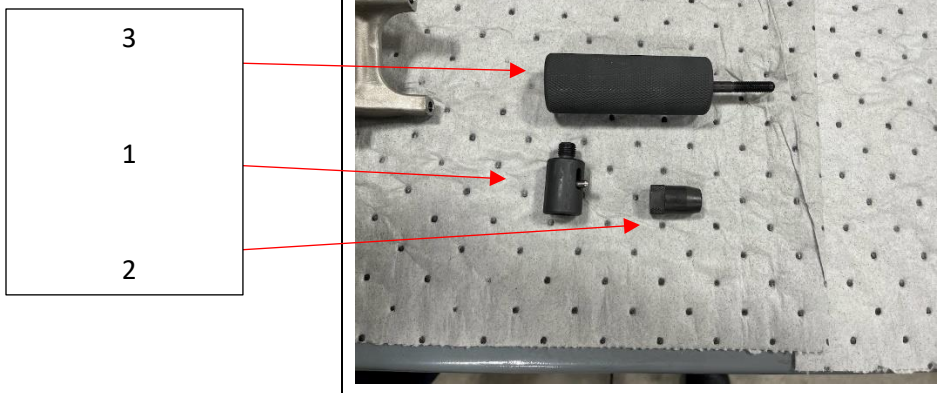


Figure 31

24. Thread the section 2 into section 1.

Figure 32

25. Place the assembled sections in step 24 over the top of the injector with the pin push completely down.

Figure 33

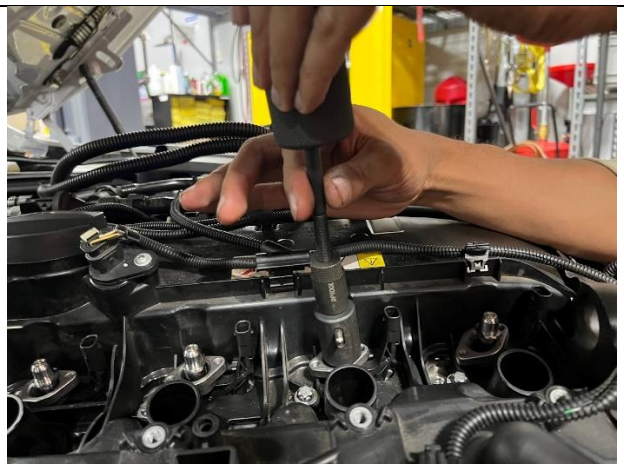
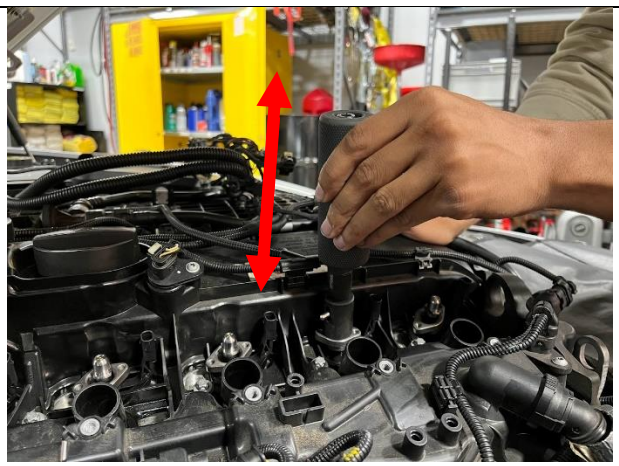
26. Once the assembled section is placed on the injector turn it 90 degrees clockwise then pull up on the pin to secure it to the injector.	
	Figure 34
27. Take section 3 and thread the stem into the assembled section.	
	Figure 35
28. Pull out the injectors by holding section 3 and hammering upward repeatedly until the injector is removed from its seated position in the cylinder head. Mild force may be required to do so. Use caution to ensure you do not damage the injectors.	
	Figure 36

Figure 37

29. Place the injectors and the fuel rails on absorbent towels in a clean area. Be very careful not to get dirt or debris on any fuel injector, fuel rail or fuel line sealing surfaces.

Figure 38

30. Rotate the flange on the end of the injectors 90 degrees and pull the flange off. Some fuel rail flanges are a cast flange with a boss or lug located on the flange. If your flanges have this boss be sure to note the orientation of the boss before removing the flange (we recommend taking pictures) and be sure to re-install the flange with the boss located in the same orientation (boss should be facing towards the fuel rail not away from the fuel rail).

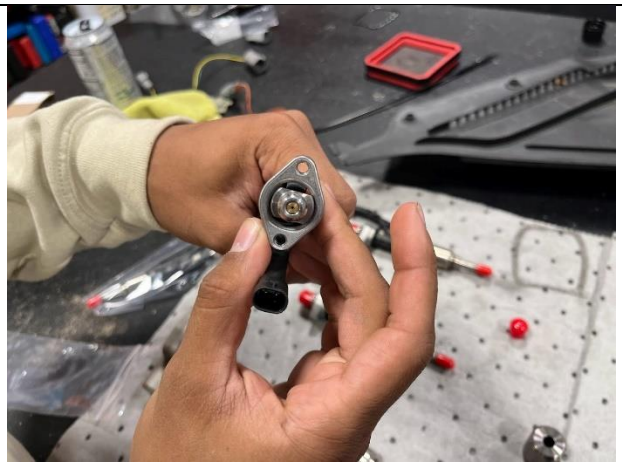


Figure 39

Figure 40

31. Place the flanges on the new Nostrom injectors.

Figure 41

32. Place the Nostrum injectors in position on the fuel rail. Be sure that the side of the injector with the connector is facing the front of the vehicle towards the pressure sensor on the fuel rail. Place the injector distance guide included with the injector install kit (white object in image to the right) between the flange and the fuel rail.

Figure 42

33. Install the M5x30 mm E6 Torx bolts to secure the injector to the rail. Hand tighten the bolts at this time until the distance guide rests flat on the rail and the holder. Repeat the process for all of the injectors.

    Note that these bolts are torque to yield. New bolts are required for proper installation of the Nostrum Injectors. The BMW Part number is 13-53-8-661-716. Contact your local BMW dealer for sourcing.

Figure 43

34. The injectors will have a loose fit after completing step 32 and before being installed back in the vehicle.

Figure 44

35. Lubricate the stem of the injectors with clean engine oil.

Figure 45

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36. **Sizing of the combustion seal** - you must size the injector combustion seals immediately before installing the injectors in the cylinder head. This step must be performed on all new injectors as well as after changing the seals on used injectors. Seals should be changed whenever injectors are removed from the engine. Use Bosch 0986-616-099-955 combustion seal sizing tool or equivalent. Place the injector compression tool over the end of each injector. Press the tool on until the tool stops on the stem.

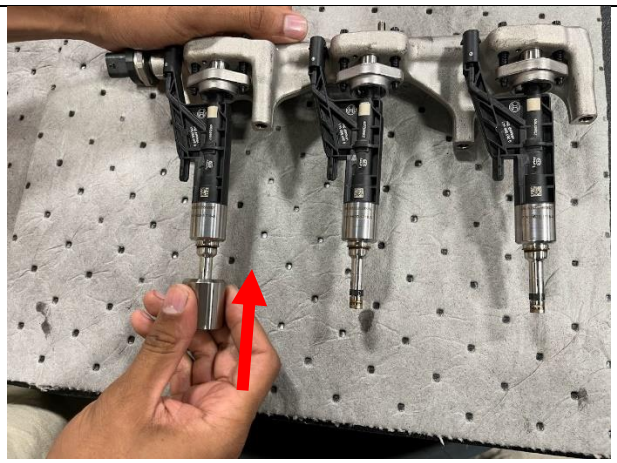


Figure 46

37. Keep the compression tool on the stem of each injector for 30 seconds before moving on to the next one. The fuel injectors must be installed into the cylinder head immediately after performing this step. Do not perform this step until you are ready to continue with the installation of the fuel rail into the engine.

Figure 47

38. Place the fuel rails with the injectors installed back in their seated positions on the cylinder head. Careful to make sure the tips of the injectors go into the corresponding hole in the cylinder head. Press the high-pressure rail assembly down until pressure can be felt.

    Note that new fuel rail mounting bolts are required for proper installation. The BMW part number is 13-53-8-661-715. Contact your local BMW dealer for sourcing.

Figure 48

Note it is essential to observe the torque sequence for the installation of the fuel rail and injectors. Failure to follow the torque sequence may result in fuel leaks and/or component damage.

39. Install the M6x70 mm E8 Torx bolts into positions A and B and tighten by hand. Set the torque wrench to 2 Nm and tighten bolts A and B in alternating order in 90-degree increments until the fuel rail is positioned flush on the cylinder head. Insert the bolts into location C & D. Set the torque wrench to 5 Nm and tighten the bolts to 5 Nm in the following order: A then D then B then C.

    Make sure the rail is flat against the cylinder head.

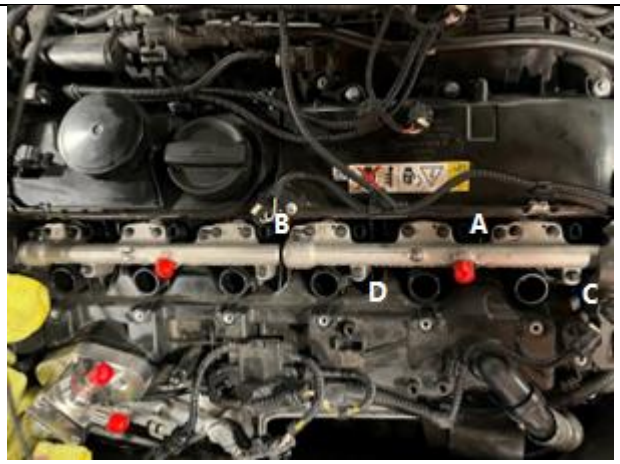
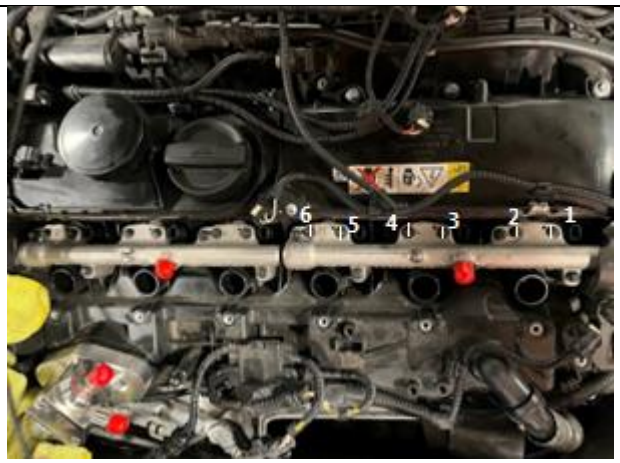
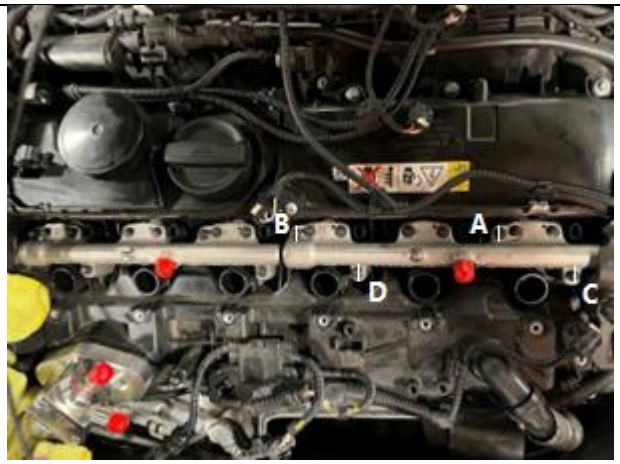


Figure 49

40. Using an E6 Torx socket and a torque wrench set to 5 Nm, hand tighten the M5x30 mm E6 bolts in pairs (1 with 2, 3 with 4, 5 with 6) alternating between the bolts in 90 degree turn increments using the following procedure:
    Fuel injector 1:
    Tighten screw (1) at an angle of rotation of 90° ±15° with the torque wrench.
    Tighten screw (2) at an angle of rotation of 90° ±15° with the torque wrench.
    Repeat the operations for bolts (1) and (2) until both bolts reach a torque of 5 Nm.
    Fuel injector 2:
    Tighten screw (3) at an angle of rotation of 90° ±15° with the torque wrench.
    Tighten screw (4) at an angle of rotation of 90° ±15° with the torque wrench.
    Repeat the operations for bolts (3) and (4) until both bolts reach a torque of 5 Nm.
    Fuel injector 3:
    Tighten screw (5) at an angle of rotation of 90° ±15° with the torque wrench.
    Tighten screw (6) at an angle of rotation of 90° ±15° with the torque wrench.
    Repeat the operations for bolts (5) and (6) until both bolts reach a torque of 5 Nm.

Figure 50

41. Now mark bolts 1 to 6 with a vertical line using a paint pen or silver Sharpie (see image to the right). Now tighten all of the bolts with an angle of rotation of 90° ±15°. Do so in order 1 to 6. To confirm that all the bolts have been tightened to the correct angle, the line on all the bolts should now be horizontal.	
	Figure 51
42. Now loosen/release the M6x70 mm E8 Torx bolts A, B, C & D. Set the torque wrench to 5 Nm and tighten the four bolts in the following order: A, D, B and then C. Mark all the bolts with a vertical line similar to the previous step. Tighten all four bolts with an angle of rotation of 90 degrees. Tighten them in order A to D. To verify they have the correct angle the lines on the bolts should all now be horizontal.	
	Figure 52
43. Repeat steps 36 to 42 for the bolts on the other fuel rail.	
Once the Nostrum Injectors are installed, reinstallation of all remaining components can begin. Follow the steps of disassembly listed above in reverse to re-install components starting with step 21. Follow all torque specs that are included in each step where applicable (when applicable the torque specifications for re-assembly are in parentheses in Nm at the end of the particular disassembly step). If a torque spec is not included in a step where it seems applicable assume snug fit with a wrench or socket wrench.	

Hardware installation is complete.

Calibration

Do not start your vehicle, this product requires calibration. Contact your Nostrum dealer or tuner for calibration support. Once calibration is complete, please proceed to the next step.

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. Cycle the key to the ignition position 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 does not, 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!

NOTE: a fault code may appear at the first key cycle due to the extended cranking 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: Please check for fuel leaks after driving the car and letting it cool for an extended period of time, fittings may loosen after the first heat cycle due to 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)

Revision	Notes	Date
Rev 1	Initial Release	10/17/23
Rev 1.3	Combined Stage 1 & Stage 2.	11/9/23
Rev 1.4	Updated required tools. Corrected pagination error. Corrected cover page.	11/10/23