



NOSTRUM

HIGH PERFORMANCE



BMW N55 High Pressure Fuel Pump Kit Installation Guide

Part Sku#: H086-0715

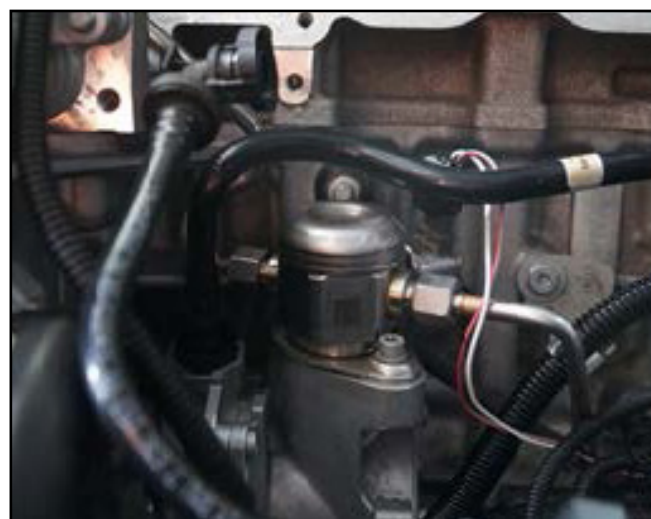
WARNING! PLEASE FOLLOW ALL WARNINGS AND INSTRUCTIONS FOUND IN YOUR VEHICLE OWNER'S MANUAL. THE FOLLOWING INSTRUCTIONS MUST BE READ AND FULLY UNDERSTOOD BEFORE BEGINNING INSTALLATION. FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN VEHICLE DAMAGE, PERSONAL INJURY OR DEATH. IF THESE INSTRUCTIONS ARE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

BMW N55:
HIGH PRESSURE FUEL PUMP
INSTALLATION GUIDE
 PART #: H086-0715

1. Remove Intake manifold. Please reference OEM service instructions.



2. Remove the stock high pressure fuel pump (HPFP) assembly, including the stock low pressure line, high pressure line, and pump. You will need to uninstall the wire loom housing bolts to remove the stock low pressure line.



*Remove wire loom housing bolts to
 remove stock low pressure line*

Stock HPFP assembly

NOTE: It is good practice to put a cap on the fuel rail fitting to prevent debris and damage while waiting installation of the new supplied HP tube. Same for the low pressure fuel line.

NOTE: Be sure the pump flange mounting face is clean and free of debris.



Factory HPFP assembly removed

3. Your new HPFP is shipped with the flange already pre-seated to the pump, but without the bolts installed. Seat the pump and flange assembly, ensuring that pump is properly aligned and firmly seated on the fuel pump & vacuum pump module. The pump solenoid should be pointed toward the engine block. **(See fig. 1)**



Figure 1

4. Install the two M6x25mm stainless steel flange bolts to the flange. You may need to rotate the pump slightly to install these to gain clearance to the pump bolt heads. Hand tighten the bolts snug. **(do not completely torque down yet)**



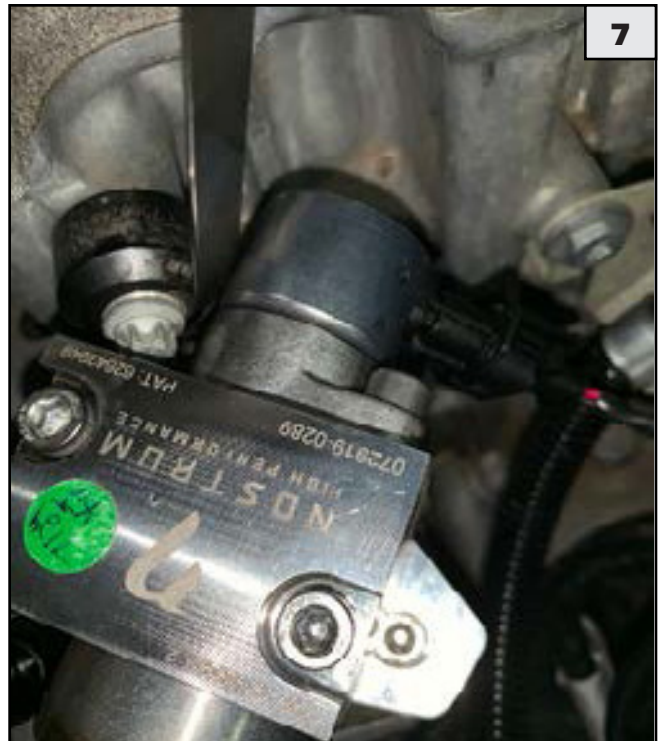
5. Install the two M6x50mm stainless steel pump bolts, hand tighten. **(Do not completely torque down yet)**



6. Position a 0.85mm feeler gauge between the knock sensor plastic body and HPFP solenoid (**See fig. 6A**). With the feeler gauge in place, tighten the 25mm flange bolts to **10 lb-ft** with an 5mm Allen bit. You may need to use an extended-length bit to clear the height of the pump.

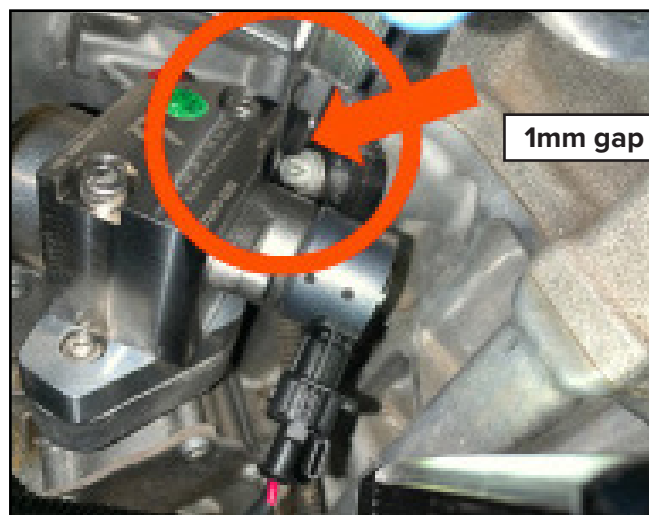


7. With the feeler gauge still in place, alternate tightening each 50mm pump bolt by applying 2-3 rotations at a time. This will ensure the pump is installed evenly as you apply load to the pump spring. Torque both bolts to **10 lb-ft** with an 5mm Allen bit.



8. Ensure there is at least a 1mm gap between the knock sensor bolt head and pump body using a feeler gauge.

***NOTE:** It is important to prevent the pump from touching the knock sensor so that vibration from the pump is not transferred to the knock sensor.*



9. Connect the pump electrical connector adapter. Be sure that both connectors lock into the mating connector **(you should hear a click)**. Check by lightly pulling on the connectors. **Do not pull on the wires!**



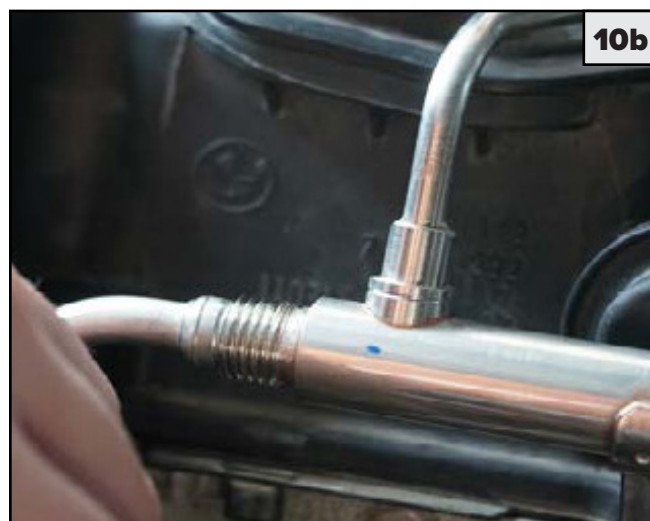
10. Install high pressure fuel line. Check that the female cones on the fuel rail are clean.

a. Seat the fuel line spherical fitting on the pump side first, followed by the fuel rail. Ensure the spherical fittings are centered and straight. If the spherical fitting does not align with the fuel rail female cone, apply a small force to “snap” it in place. (See fig. 10A and 10B)

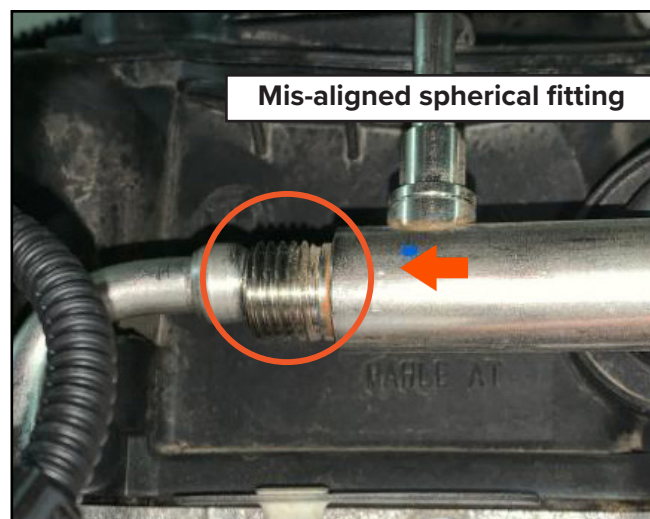
b. While holding the line & spherical fitting in proper position, seated firmly in the cone, hand tighten both compression nuts. The nuts should spin freely and without resistance. If there is resistance, ensure the globe fittings are straight and centered to the cones, and try again. It is critical that the spherical fittings are aligned with the female cone, **DO NOT USE THE NUT TO “CENTER” THE FITTING**. Improper installation can damage the thread, misalign the fitting and result in a leak.



Fuel pump side high pressure spherical fitting and female line

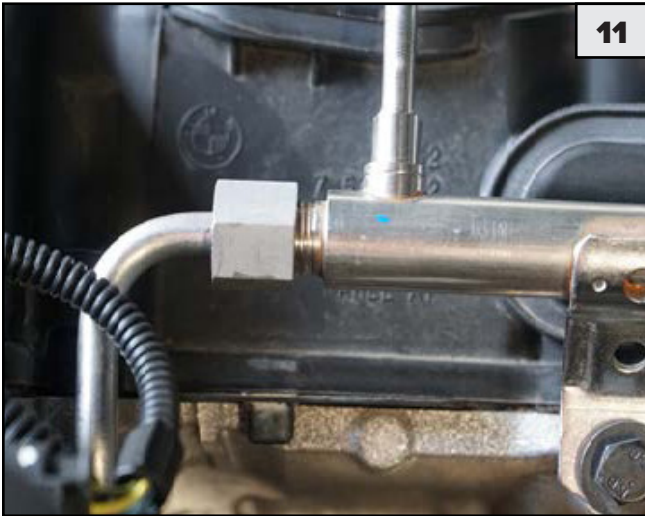
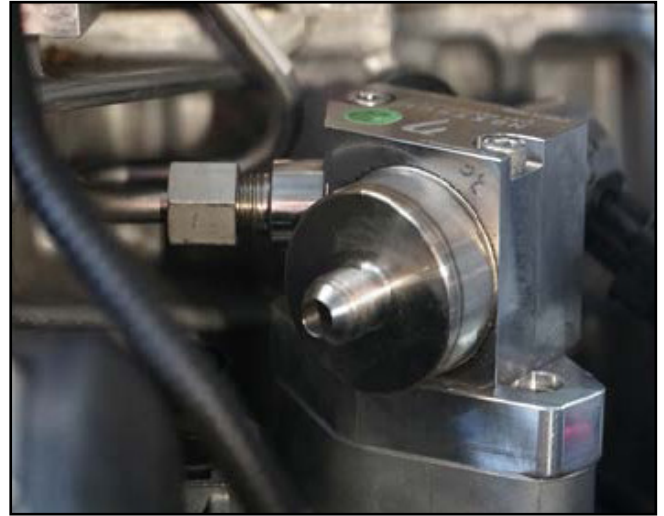


Fuel rail side high pressure spherical fitting and female cone



Mis-aligned spherical fitting

11. Torque both 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 10.



12. Install the Nostrum low-pressure fuel line.

a. Install the Nostrum low-pressure line male quick connect to the stock fuel supply feed.

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

c. Torque the AN female fitting to the high-pressure fuel pump to **14 lb-ft**

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

e. **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.**

f. Reconnect the battery and check using key cycle one that as the fuel system primes, it does not leak from the Nostrum low-pressure line.



In-Process check without manifold installed:

13. 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. Check the high pressure pump connections, and lower pressure side for leaks. If ok, proceed to 14. If ok, go back to the appropriate step.

14. Route the low pressure fuel line below the wire loom housing so it is out of the way.

15. Reinstall intake manifold and all other components. **Check reinstallation of all hardware.**

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 will 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)



N O S T R U M
H I G H P E R F O R M A N C E



BMW N55 Stage 1 and 2 Injector Install Guide

SKU#: H703-1257-1/H710-1164-1

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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Required Tools:

- Ratchet
- E18 torx socket
- 16mm socket
- 10mm socket
- T30 torx socket
- 18mm wrench
- 8mm socket
- 14mm crows foot extension
- 11mm socket
- Injector removal tool
- Injector Compression tool

Expendables:

- Absorbent Towels

1. Disconnect the negative battery terminal.



Figure 1

2. Remove plastic wiper cowl on both the passenger and drivers' side of the engine bay.



Figure 2

3. Remove rubber strip over electrical wire by hand.
4. Pull wire out of the weather strip so that strut bar brace can be removed.



Figure 3

5. Use E18 torx socket to remove bolts on either end of the strut bar brace.

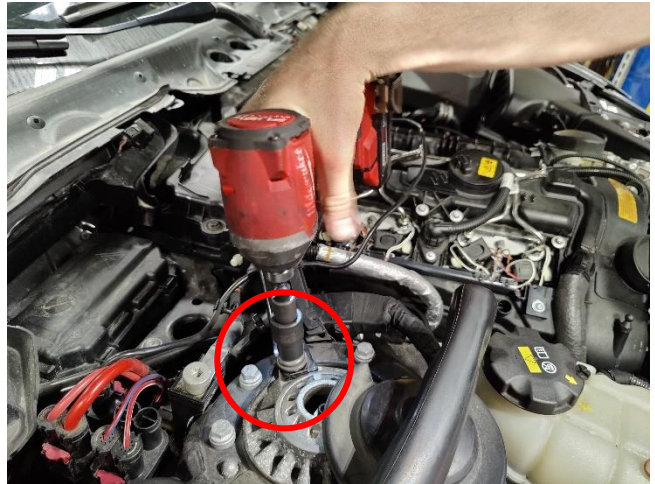


Figure 4

6. Use 16mm socket to remove bolts that holds the top strut bar brace in place.

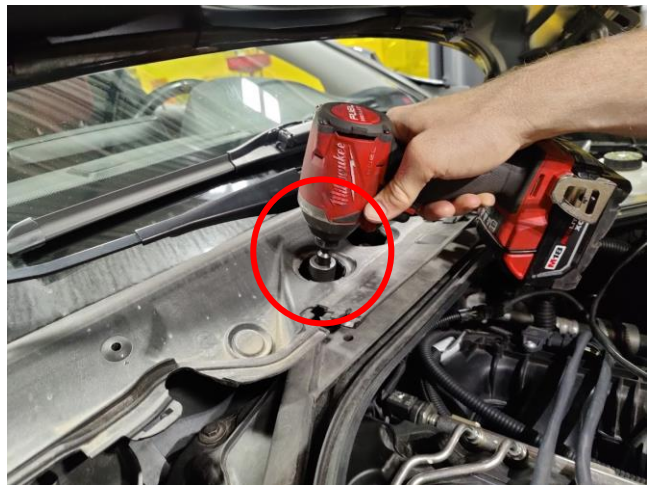


Figure 5

7. Remove strut bar.



Figure 6

8. Use 10mm socket to remove 7 bolts that hold the cover that was underneath the strut bar and remove the cover.



Figure 7

9. Remove both O2 sensor connectors on the passenger side of the engine. They are clipped in. Remove them from clip and disconnect.

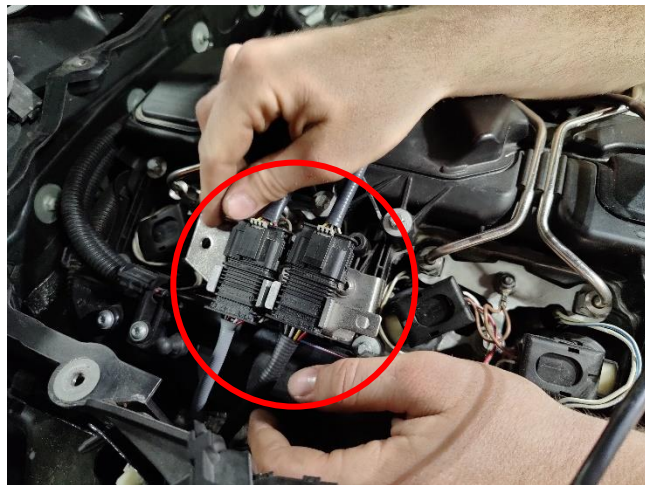


Figure 8

10. Use T30 torx to remove bracket that held in O2 sensor connectors.

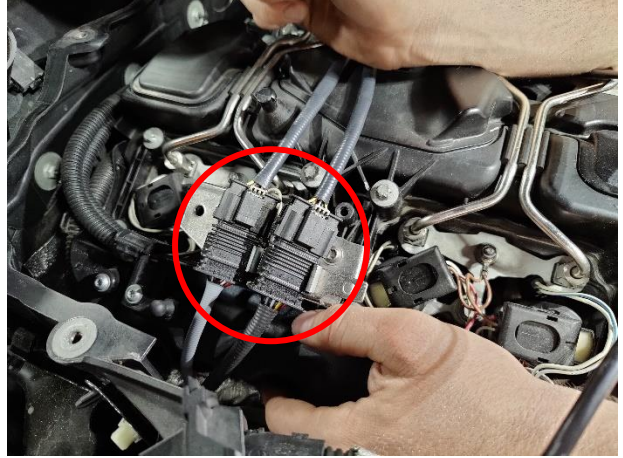


Figure 9

11. Remove high pressure fuel sensor connector.



Figure 10

12. Remove Valvetronic connector.



Figure 11

13. Use 18mm wrench to loosen the compression nut on the front of the fuel rail. Make sure to have an absorbent towel ready to catch fuel that may come out. (23Nm Torque spec for reinstallation)

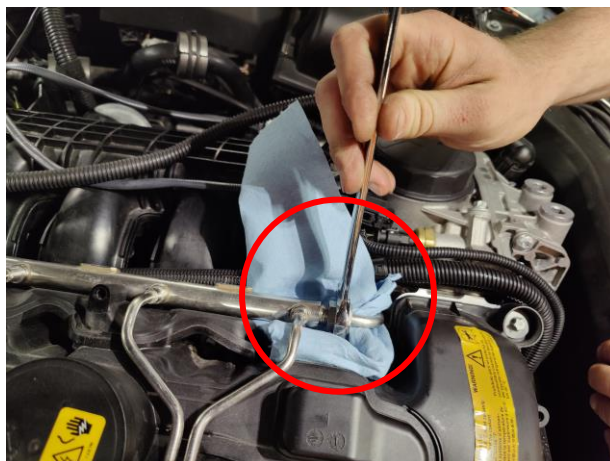


Figure 12

14. Use 8mm socket to disconnect the ground for the coil packets located on the injector T-bracket. Repeat this for all 6 coil packs.

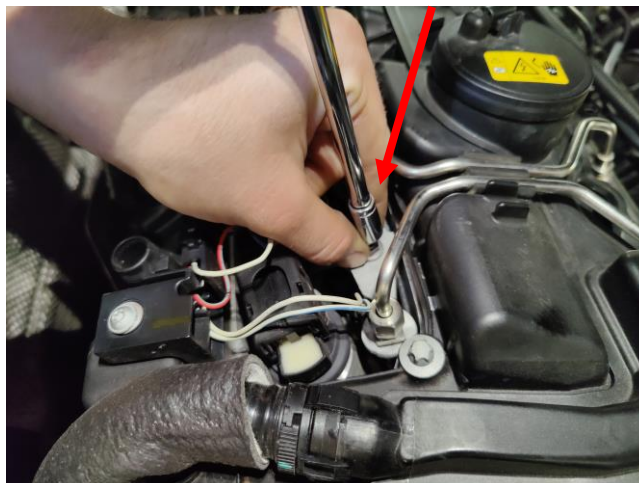


Figure 13

15. Pull back tab to remove injector connector from all 6 injectors.

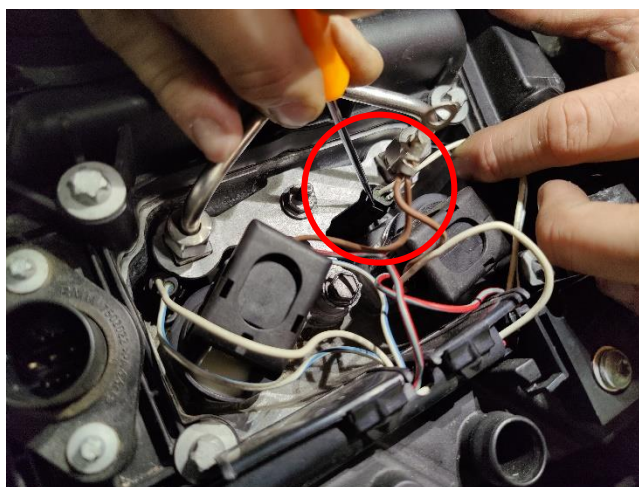


Figure 14

16. Unlatch the coil pack connectors.



Figure 15

17. Make sure to tuck the coil pack connectors out of the way.

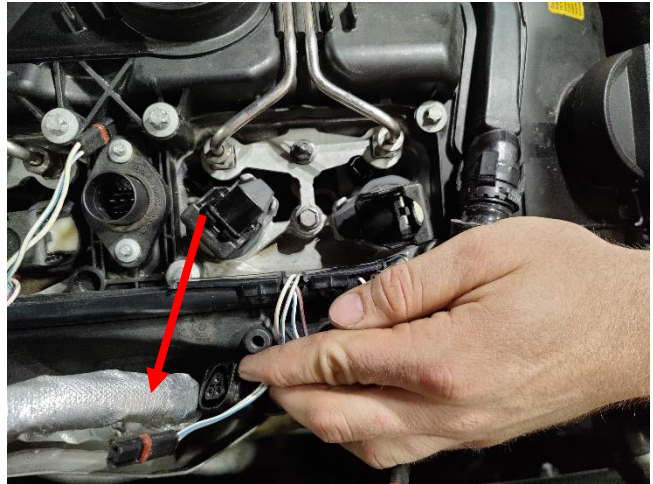


Figure 16

18. Pull gently on the coil packs to remove all 6 of them from the engine. Make sure to keep them in order so that they can be reinstalled in the same location.



Figure 17

19. Use 14mm crows' foot extension to loosen the nut holding the fuel rail in place on the injector side. (23Nm Torque Spec for reinstallation)

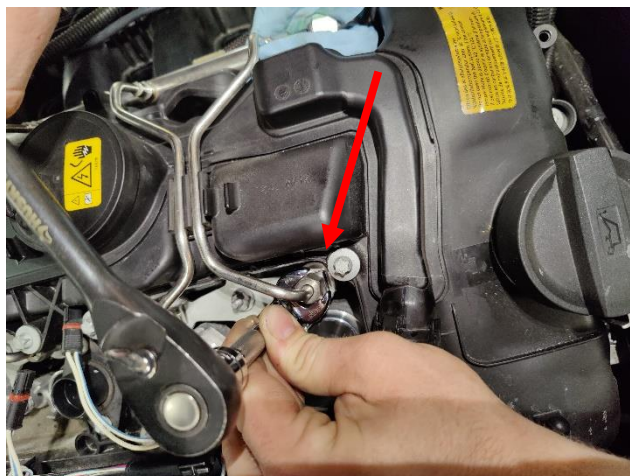


Figure 18

20. Use 11mm socket to remove bolts holding in the fuel rail on the driver's side of the engine close to the fuel sensor and fuel inlet fitting. (13Nm Torque Spec for reinstallation)



Figure 19

21. Remove the fuel rail. Be careful not to leak fuel out of the fuel rail. Make sure to keep fuel rail clean as not to introduce dirt or other substances into the system. (To reattach fuel rail, it may be necessary to loosen high pressure fuel line on the pump to successfully attach the line to the rail now that the Nostrum injectors are installed.)

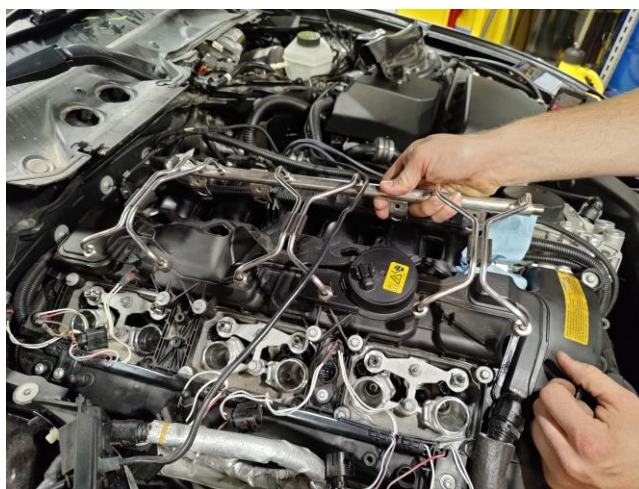


Figure 20

22. Use 10mm socket to remove T bracket bolts that hold in the injectors. Remove the T bracket (13Nm torque spec for installation)



Figure 21

23. Use injector removal tool to remove the injectors. Tighten down over the injectors first by hand using the circle grips on the top of the tool on either side. Next tighten the 2 middle bolts on the tool. Next tighten down the Brass bolts on either side of the tool to remove injectors. Finally loosen the middle 2 bolts to remove the tool with the injectors attached. Repeat for all remaining injectors.

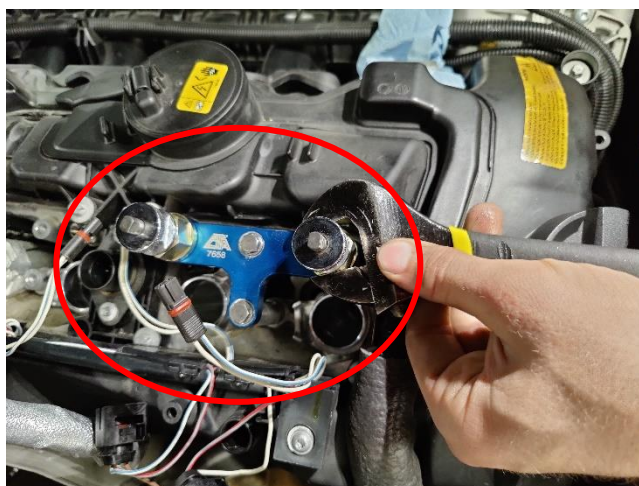


Figure 22

24. Remove cap from the cylinder facing side of the injector.
25. Record the flow numbers and cylinder assignment of each new injector. The flow number can be found printed on the threaded stud on the back of the injector. You will need this information when it's time to code the injectors.

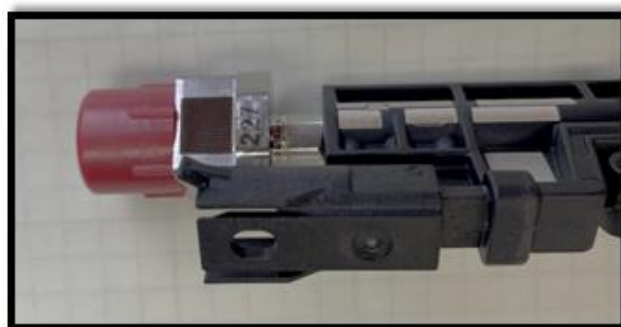


Figure 23

26. For installation of the new injectors lubricate the end of the injector with engine oil



Figure 24

27. Place the injector compression tool over the end of the injector. Push it all the way down and rotate the tool back and forth around the injector before removing.



Figure 25

28. Place the injector into position inside the engine.
29. Once all the injectors have been installed remove the caps from the rail side of the injectors.

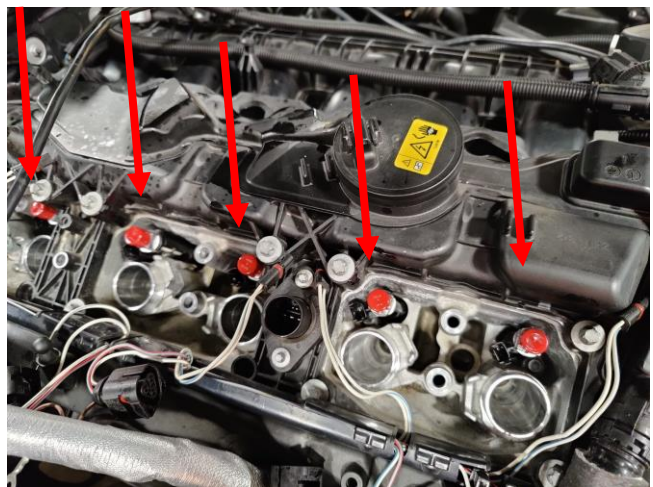


Figure 26

30. Place included spacers under the T-Brackets that will be installed onto the injectors.
31. Install T-brackets with spacers over the Nostrum Injectors. (13Nm torque spec for installation)
32. For reassembly of the vehicle follow these installation steps in reverse order starting with step 22. Torque specs for bolts are included in the relevant steps. Steps where bolts are present, but no torque specs are included assume hand tight with a ratchet or equivalent tool.



Figure 27

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.
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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!! (Refer Injector Coding Procedure)**

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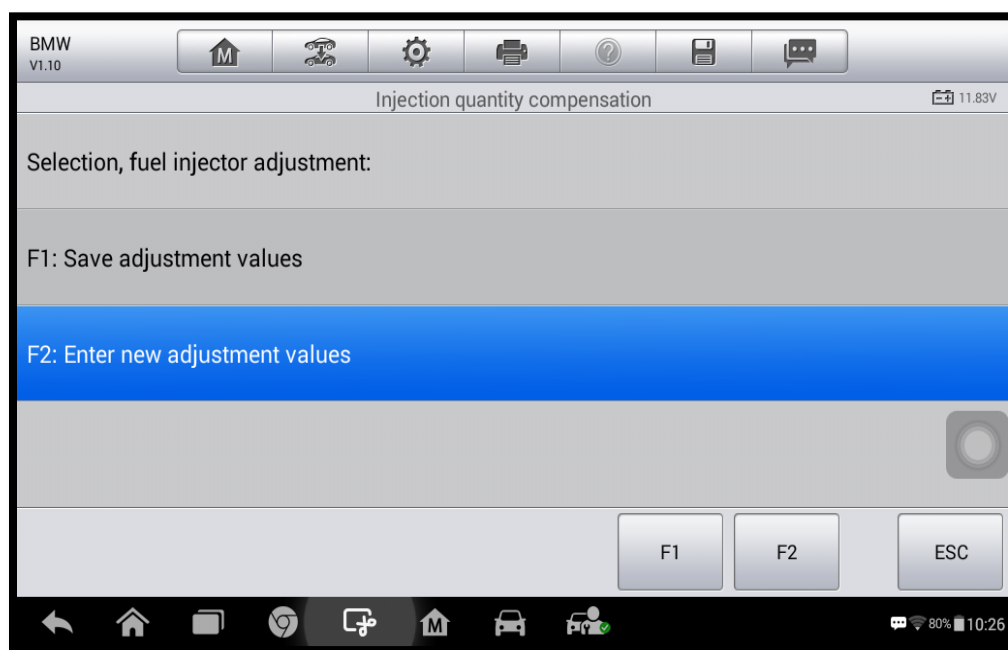
NOTE: After driving the car and letting it cool, next day, check for fuel leaks again (from thermal expansion and contraction). Retighten fittings if needed.

Injector Coding Procedure:

The Nostrum Stage 1 and Stage 2 injectors take advantage of the BMW injector coding system where the individual flow variance of each injector is coded into the DME to improve the consistency of startup and idle. The injectors can be coded using multiple scan tools such as ISTA+ or Autel MaxiSys. Lastly, the process of injector coding also erases adaptation for the old injectors.

Procedure for Autel MaxiSys:

- 1.) Connect the service tool to the OBDII port and launch the diagnostics program
- 2.) Read the vehicle information from OBDII port (recommended) or manually enter it
- 3.) After the vehicle data has loaded select "hot function" then "injectors" icon shown to the right
- 4.) Select "Injector Quantity Compensation" and you should see a menu similar to what is shown below
- 5.) Enter the new Injector adjustment value for each injector that you recorded prior to installation
- 6.) Finally save the new adjustment values, close out of the program, and key off to let the ECU go to sleep



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Revision	Notes	Date
Rev 1	Production Release	11/29/21
Rev 2	Injector Coding Procedure	4/6/22