



# N O S T R U M

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



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## 2.0L Turbo GM Ecotec LTG Stage 1 DI Injectors Installation Guide

Part Sku#: H703-1256

**WARNING! PLEASE FOLLOW ALL WARNINGS AND INSTRUCTIONS FOUND IN YOUR VEHICLE OWNERS 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.**

Required Tools:

- 10mm Socket
- Trim removal
- Pick
- 15mm Socket
- 13mm Socket
- Channel Locks
- 3/8<sup>th</sup> Quick Connect Removal Tool
- Allen 5
- 11m Socket
- 18mm Wrench
- Flathead Screwdriver
- Vice
- Compression Tool

Expendables:

- Dielectric Grease
- Engine Oil
- Absorbent Towels

1. Disconnect negative battery terminal in the trunk of the car on the left side with a 10mm socket.

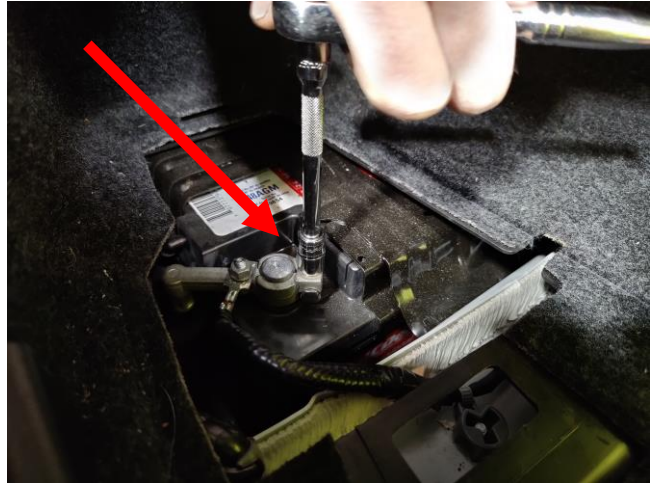


Figure 1

2. Pull the plastic retainer up on the engine cover and remove the engine oil cap.

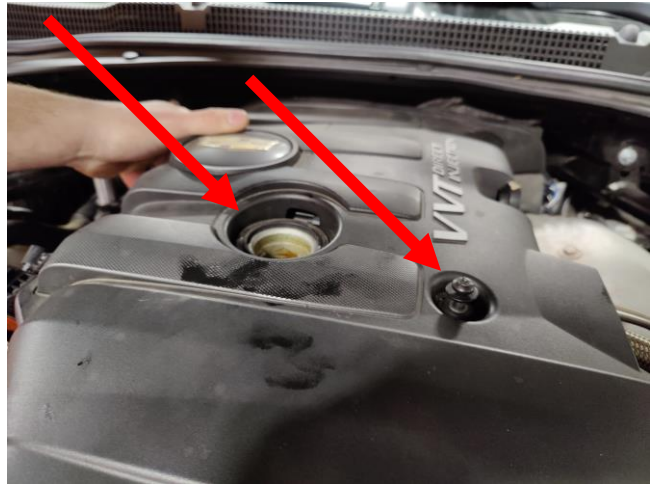


Figure 2

3. Pull the engine cover off the engine by hand and remove it from the engine bay.



Figure 3

4. Use a pick to pry up the trim fasteners on the wiper cowl. Use a trim removal tool to remove the clips and free the wiper cowl.



Figure 4

5. Pull the covers off the windshield wipers with a pick.



Figure 5

6. Use a 15mm socket to remove the bolts holding each wiper in place. Remove the wiper from the vehicle.



Figure 6



7. Disconnect the windshield wiper line on the passenger side of the engine bay just behind the strut tower.

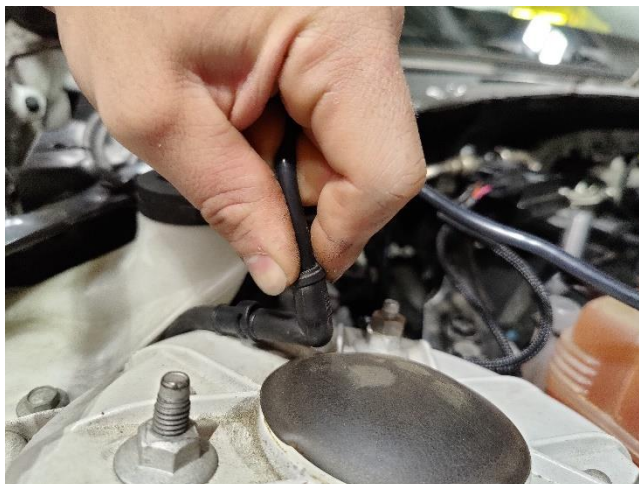


Figure 7

8. Disconnect the wiper motor connect.



Figure 8

9. Use a trim removal tool to disconnect the bracket holding the wiper connector wire in place.

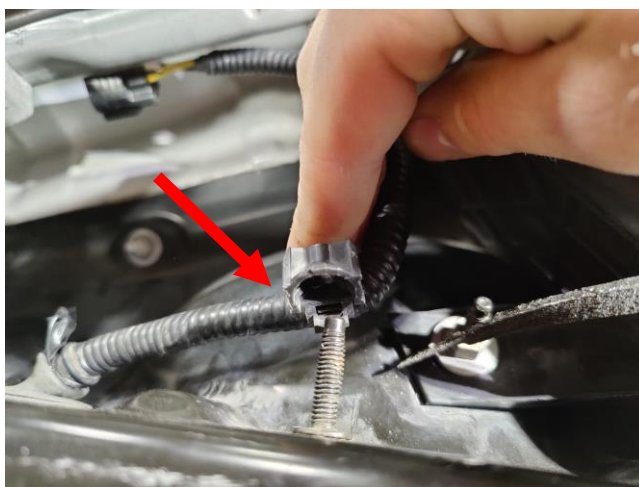


Figure 9

10. Feed the wiper connector wire through the hole with the rubber grommet in the cowl support structure.

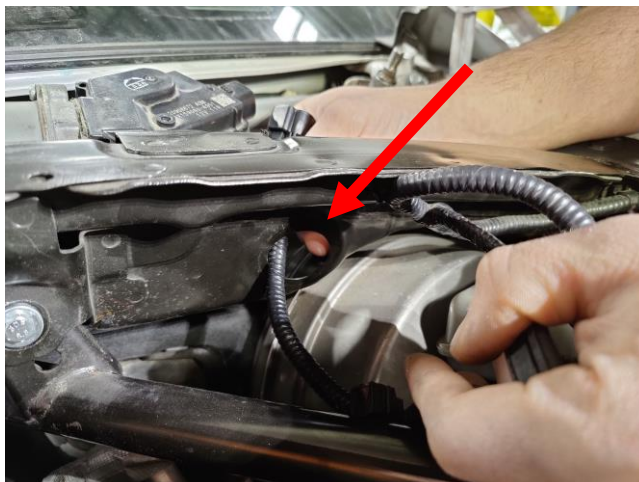


Figure 10

11. Disconnect the 2 wire clips guiding the wire across the surface of the structure.

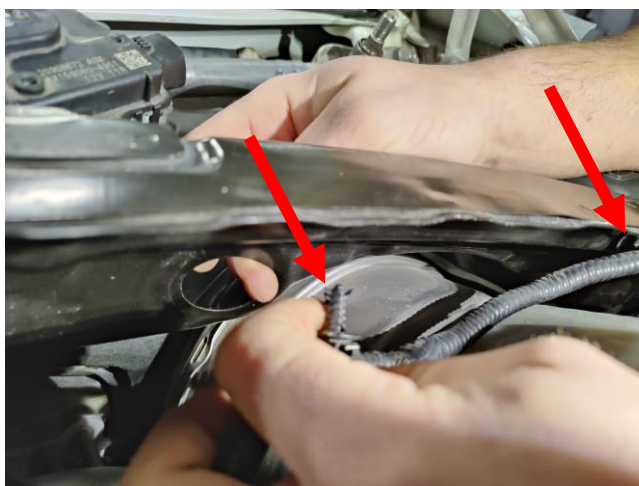


Figure 11

12. Remove the passenger and driver side cowl brackets by removing the 3 bolts securing it in place with a 10mm socket.

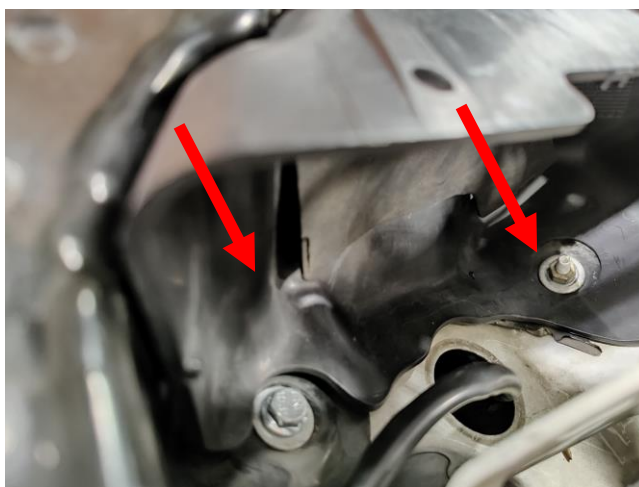


Figure 12



Figure 13

13. The passenger side bracket will require the removal of a trim retainer to free it from another cowl trim piece.



Figure 14

14. Remove another trim retainer, using a trim removal tool, towards the middle of the cowl to remove the addition cowl section from the vehicle.



Figure 15



15. With a 10mm socket remove the 2 bolts holding the wiper transmission in place. Pull the motor out of the rubber gromet holding it underneath and then remove it from the engine bay. **(Torque Spec: 8 Nm)**



Figure 16



Figure 17

16. Use a 10mm socket to remove the bolts holding the cowl supper structure in place.



Figure 18





Figure 19

17. Remove the 2 bolts on the bottom of the wiper cowl structure using a 10mm socket, one on each side of the engine.



Figure 20

18. Using a 13mm socket remove the 3 bolts holding in the passenger side cross bar that sits underneath the wiper cowl.



Figure 21



Figure 22

19. Drain the coolant in the upper level of the coolant reservoir so that it can be disconnected from the engine without leaking.

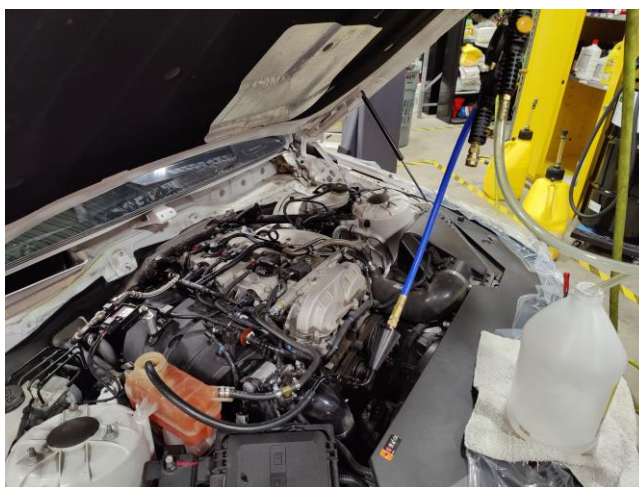


Figure 23

20. Disconnect the 2 bolts holding the coolant reservoir to the engine bay using a 10mm.

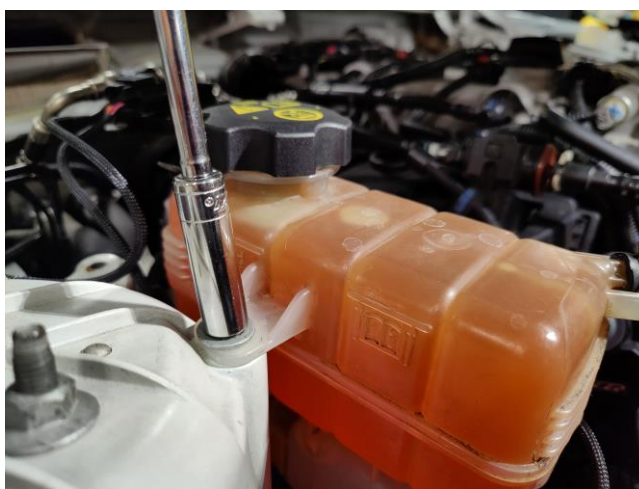


Figure 24

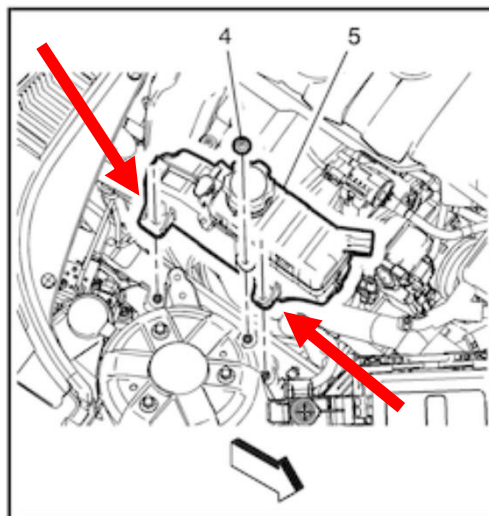


Figure 25

21. Disconnect the coolant line on the back of the reservoir by pulling the hose clamp off its fitting with channel locks.



Figure 26

22. Once the reservoir is disconnected from the back coolant line you can move the reservoir in front of the engine where it will be out of the way for future steps.



Figure 27



23. Disconnect the low-pressure fuel line quick connect at the back of the engine on the passenger side. Use a specialty 3/8<sup>th</sup> quick connect removal tool to separate the line.



Figure 28

24. Remove the fuel pump insulator on the top of the intake manifold. Disconnect the EVAP canister valve pipe from the fuel pump insulator from both sides. Pull the insulator off the manifold and pull it to the side and out of the way.

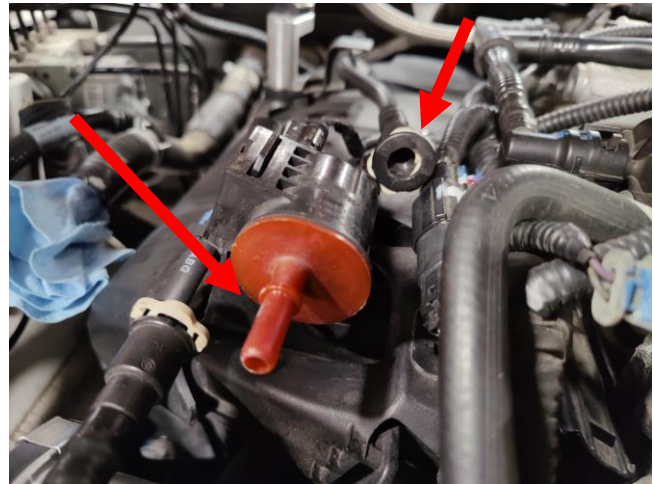


Figure 29

25. Pull the clip to disconnect the air bag line from the intake manifold using a pick.



Figure 30

26. Disconnect the wire harness connector for the fuel rail at the top of the intake manifold.

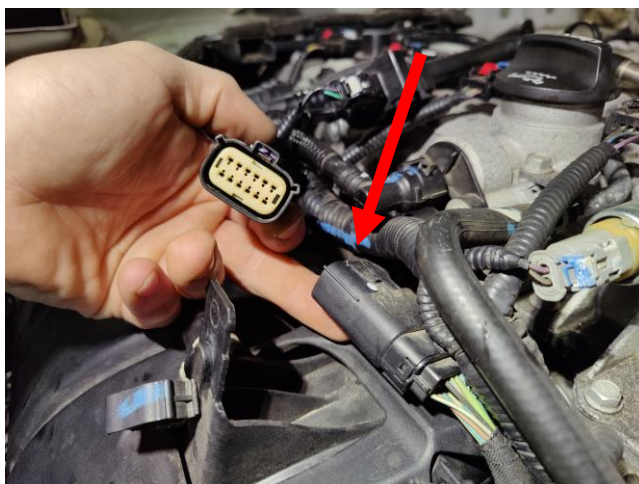


Figure 31

27. Use an Allen 5 to remove the hose clip bracket on the front of the intake manifold.



Figure 32

28. Disconnect the emissions lines on the top of the intake manifold.



Figure 33





Figure 34

29. Using a 10mm socket disconnect the P-clamp from the emissions line to allow the line to be moved out of the way.



Figure 35

30. Loosen the V-band clamp on the charge tube connected to the throttle body, using a 11mm socket.

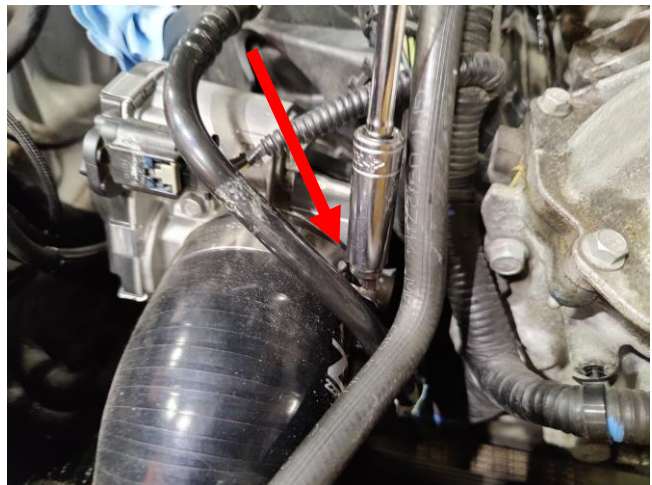


Figure 36



31. Disconnect the throttle body connector.

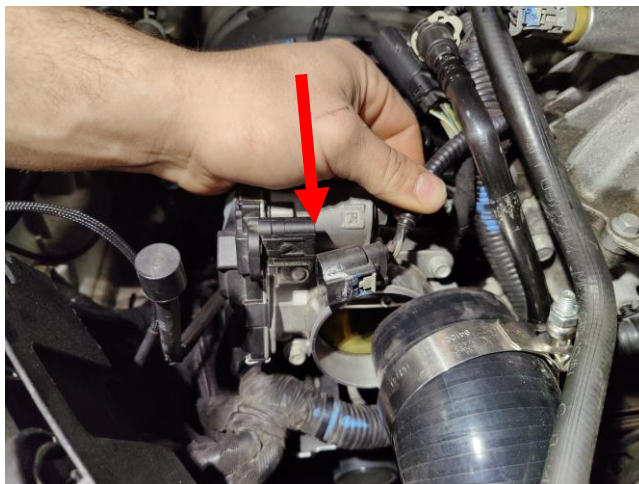


Figure 37

32. Disconnect the manifold absolute pressure connector.

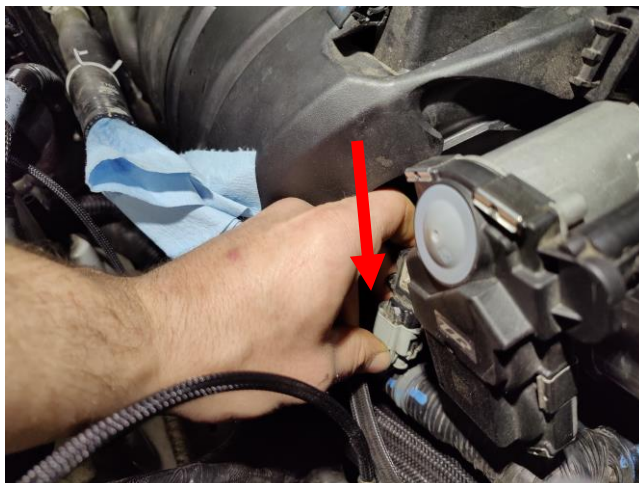


Figure 38

33. Using a 10mm socket remove the 5 bolts that hold in the intake manifold. Remove the intake manifold from the engine bay. **(Torque Spec: 12 Nm)**



Figure 39



Figure 40

34. Using a 18mm wrench loosen the compression nuts on the hard fuel line. Loosen the nut on the end of the fuel rail, and the high-pressure fuel pump. Remove the high-pressure fuel line from the engine bay. (Torque Spec: 15 Nm, then 30 Nm)

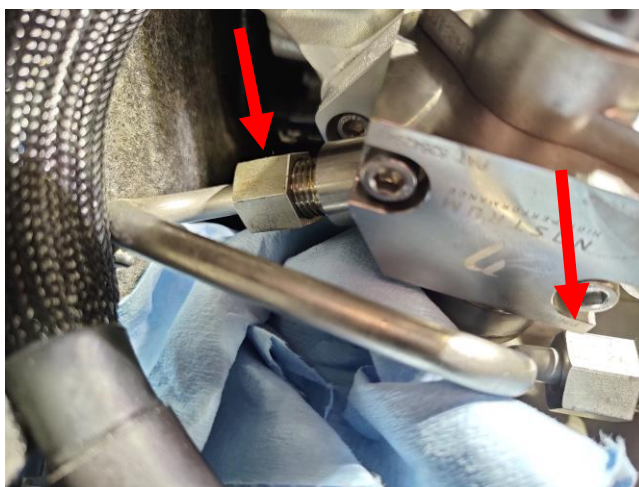


Figure 41

35. Using a 13mm socket, remove the 4 bolts that secure the fuel rail in place. (Torque spec: 25 Nm)

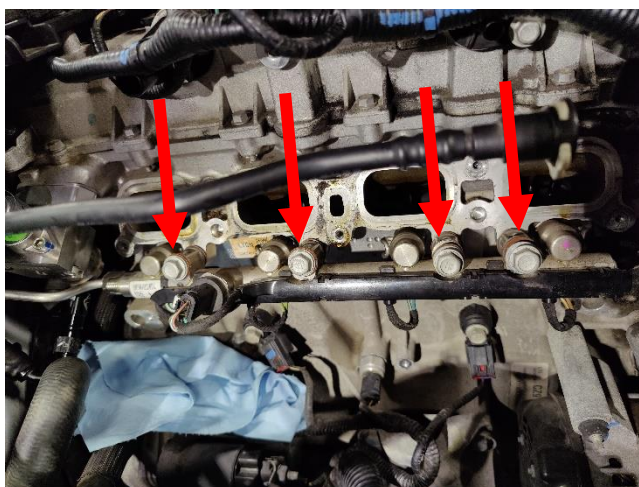


Figure 42

36. Remove the fuel rail and injectors from the engine bay.



Figure 43

37. Place the fuel rail on an absorbent mat in a clean area.



Figure 44

38. Use a flat head screwdriver to pry the retainment clip holding the injectors in place, out of the fuel rail.



Figure 45



39. Disconnect the injector solenoid connectors for each injector. Pull the red tabs out on the connector then press the black tab and pull on the connector to disconnect.



Figure 46

40. Pull the injectors out of their seats on the rail by hand.

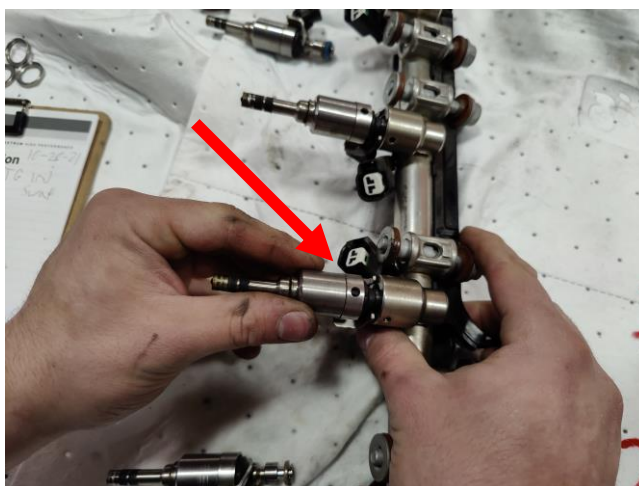


Figure 47

41. Check the seat on the injector for any O-rings that may be left behind. Use a pick to pull the O-rings out of the seat if there are any left.

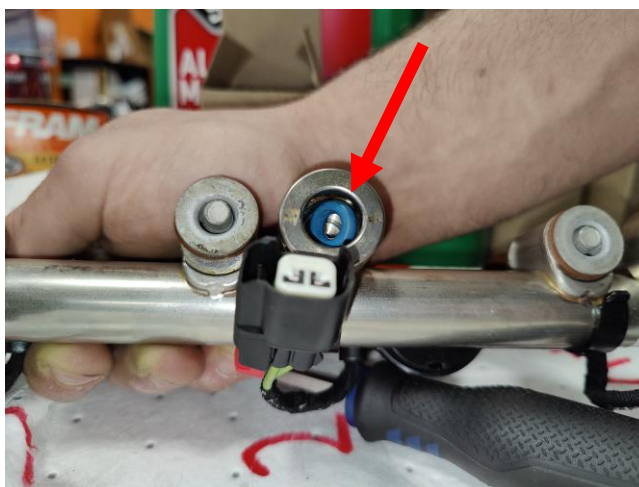


Figure 48

42. Remove the retainers above the solenoid on each injector by pulling up on the retainer.



Figure 49

43. Place the retainers on the back of the new injectors line up the opening on the injector with the solenoid connector.

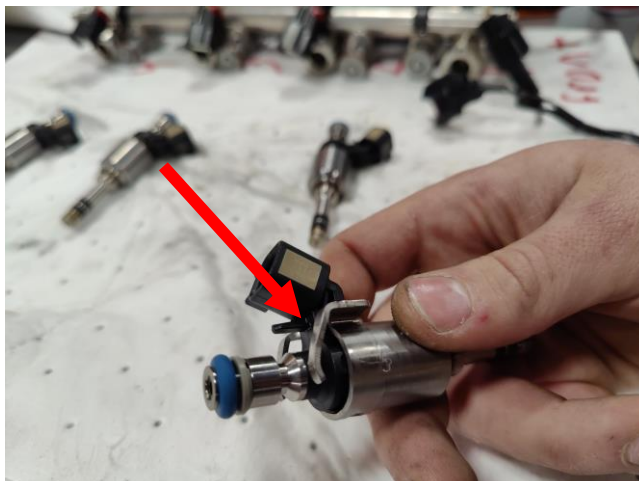


Figure 50

44. Rub dielectric grease onto the back O-ring that will seat into the rail for each injector.

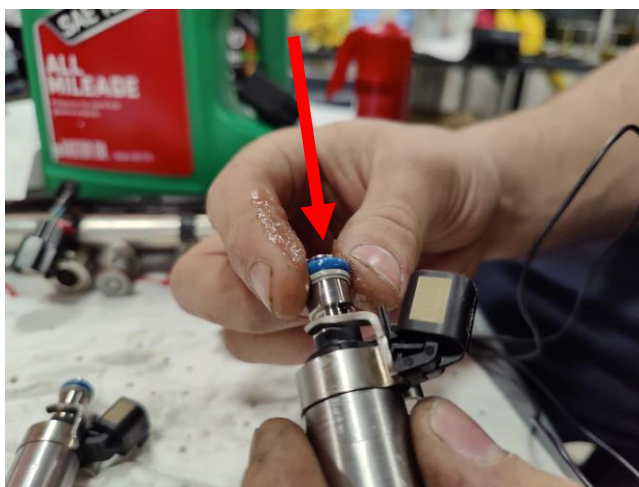


Figure 51

45. Seat the Nostrum injector back into the fuel rail by hand. Line up the notch on the fuel rail seat with the plastic tab on the injector by the solenoid connector.



Figure 52

46. To reinstall the retainment clips, press the injectors into the seat of the rail. It will take force to compress the injectors use of a C-clamp or vice is recommended. Place the vice between the lip of the injector at the base of the stem and the back of the fuel rail seat. Make sure the injector is straight on against the vice and apply only a little bit of pressure.



Figure 53

47. Once a little bit of pressure has been applied to the injector and rail. Slip the retainment clip in by hand pushing all the way until it stops.



Figure 54



48. Place engine oil around each stem before using the compression tool on the injectors.

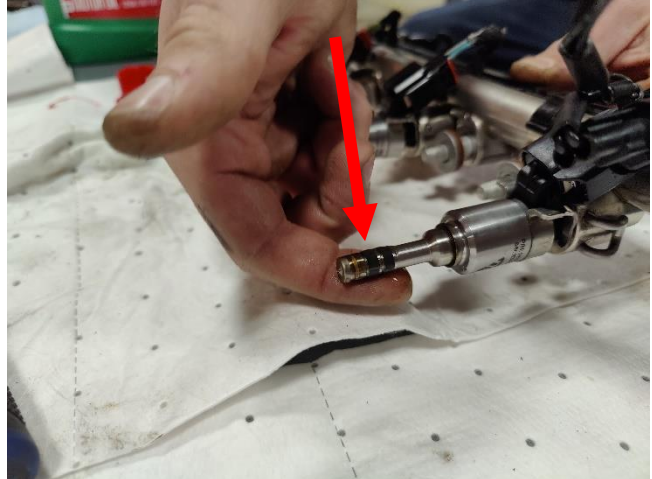


Figure 55

49. Use the Compression tool to compress the stem of each injector before installing back in the vehicle. Press the compression tool onto the stem of the injector. As you press, twist the tool clockwise until the end of the tool is flush with the tip of the injector. Leave the tool on for 15 seconds. Pull the compression tool off while twisting clockwise.

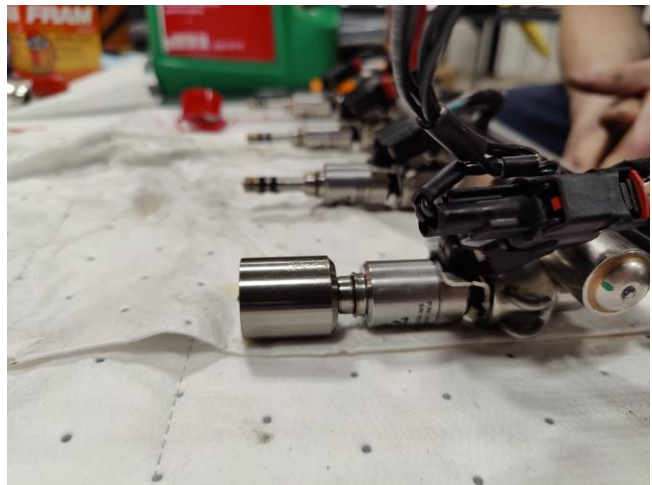


Figure 56

50. After all the injectors have been compressed place the fuel rail and injectors back into their seated position in the engine. Once the rail has been reinstalled, reassembly of the vehicle can begin. Repeat steps in reverse starting with step 34. Follow all torque specs that are included in each step where applicable. If 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.

### 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 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! **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:

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Revision	Notes	Date
Rev 1	Production Release	11/29/21