2877 Carrollton Villa Rica Hwy
Carrollton, GA 30116
770.838.7777
z1motorsports.com

Z1 Q50/Q60 VRX60/70/80 Bolt-On Turbochargers Installation Manual

This Installation Manual is intended for the following models:	
2016+	Infiniti Q50 (VR30)
2017+	Infiniti Q60 (VR30)

PROLOGUE:
Study these instructions completely before proceeding to assembly. The installer must have a thorough knowledge of automotive systems operation. If unfamiliar with any of the concepts outlined in this instruction, we recommend the installation be completed by a qualified professional.

WARNING!
Extreme caution should be taken when performing maintenance or performance upgrades to your vehicle. Please observe and abide by any Warning or Caution labels placed on the various components and tools used when servicing your vehicle. If you have any questions regarding installation or the various components included with the Z1 Motorsports Q50/Q60 VRX60/70/80 Bolt-On Turbochargers, consult with a Professional Mechanic or contact Z1 Motorsports for more information.

PARTS INCLUDED:

Item	Quantity	Description
1	1	Z1 Upgraded VR30 Turbochargers - Left
2	1	Z1 Upgraded VR30 Turbochargers - Right
3	1	Left Coolant Supply Line w/ Hardware
4	1	Left Coolant Return Line w/ Hardware
5	1	Left Oil Supply Line w/ Hardware
6	1	Left Oil Drain Line
7	1	Left Silicone Oil Drain Hose
8	1	Right Coolant Supply Line w/ Hardware
9	1	Right Coolant Return Line w/ Hardware
10	1	Right Oil Supply Line w/ Hardware
11	1	Right Oil Drain Line
12	1	Right Oil Drain Block Flange
13	1	Right Silicone Oil Drain Hose
14	2	Oil Drain Gasket
15	12	M6x 12mm Flange Bolt (Bracket On Oil/Coolant Lines)
16	4	M8 x 16mm Socket Head Bolt (Oil Drain)
17	1	OEM VR30 Turbo Oil Return Line to Engine Gasket - Passenger
18	2	Turbo Outlet Gasket
19	2	Turbo Inlet Gasket
20	1	M10-1.5 x 35mm Button Head Bolt (Motor Mount Bolt to Engine)
21	1	M10-1.25 x 30mm Flange Bolt (Motor Mount Bolt to Mount)
22	2	M12 Drain Plug W/ Copper Washer (EGT Plug)
23	2	Turbo Speed Sensor Plug and small O-ring
24	2	M4 x 12mm Socket Head Bolt (Speed Sensor)
25	1	M6 x 8mm Hex Head Bolt (Passenger Coolant Feed Line)
26	4	M6 Flat Washer (Speed Sensor Bracket Spacer)
27	7	M6 x 10mm Flange Bolt (OEM Heat Shield Bolt)
28	8	OEM Turbo Mounting Flange Nuts
29	1	AWD Extras: Z1 VR30 Q50 AWD, Motor Mount Bracket Set
30	8	AWD Extras: M10 x 25mm Flange Bolt

TOOLS REQUIRED:

- Hydraulic Jack
- (2) 2-Ton+ Jack Stands
- Engine Hoist or Two-Post Lift
- AC Refrigerant Machine
- High Torque Impact
- Ratchet & Extension(s)
- Assorted Metric Sockets
- Assorted Metric Wrenches
- Torque Wrench (ft-lbs & in-lbs)
- Pliers
- 6mm Allen/Hex Driver Bit
- T20 Torx Driver
- E8 Torx Socket
- Metal Snips
- C-Clip/Snap Ring Pliers
- Power Supply
- Multimeter

SAFETY REQUIREMENTS:

- Always wear safety glasses and any necessary protective garments. If using any fluids, chemicals, or solvents, a respirator is recommended.
- Always turn the ignition to the OFF position and disconnect the NEGATIVE battery terminal.
- Always use properly rated jack stands when working under your vehicle.
- Always keep limbs and parts away from moving drivetrain parts.
- Only operate drivetrain in safe space and well-ventilated areas.

BEFORE YOU BEGIN:

Remove contents from the Z1 Motorsports Q50/Q60 VRX60/70/80 Bolt-On Turbochargers and verify that ALL necessary hardware is present.

Turbo upgrade/replacement on VR30 engines is not a simple task. It is highly recommended to perform this upgrade with the engine removed from the vehicle. This is best done when using a two-post lift and an engine/transmission stand or table. Removing the engine will also require you to discharge the refrigerant from the A/C circuit. If you do not have the proper tools and equipment to perform this task, we recommend taking your vehicle to a shop to perform this step.

PROCEDURE:

1. Place the transmission in Park position (or in Reverse gear if equipped with a manual transmission). Apply the parking brake.

2. Locate proper jacking points on vehicle's chassis (refer to vehicle's Owner Manual). Raise and support vehicle using jack & jack stands.

   THE NEXT STEPS ARE VERY IMPORTANT, AS THEY WILL DETERMINE WHETHER OR NOT THE WASTEGATES ARE PROPERLY INSTALLED ON THE Z1 TURBOS LATER ON. IF THEY ARE NOT INSTALLED CORRECTLY, THEY WILL NOT FUNCTION PROPERLY AND CAN CAUSE TUNING ISSUES.

   THERE ARE TWO WAYS TO MEASURE THE WASTEGATES DEPENDING ON THE TOOLS YOU HAVE AT YOUR DISPOSAL. ONE IS SIGNIFICANTLY MORE ACCURATE THAN THE OTHER, BUT IS MORE INVOLVED. THE OTHER IS SIMPLER, AND WILL GIVE YOU A VERY CLOSE MEASUREMENT, HOWEVER, IT STILL CARRIES THE RISK OF BEING SLIGHTLY OFF, AND IT IS DIFFICULT TO ADJUST THE WASTEGATES ONCE THE ENGINE IS REINSTALLED. IF YOU ARE NOT COMFORTABLE PERFORMING THIS TASK, IT IS HIGHLY RECOMMENDED TO TAKE YOUR VEHICLE TO A SHOP WITH THE PROPER TOOLS TO PERFORM THIS INSTALLATION.

RECOMMENDED WASTEGATE MEASUREMENT:

3. Using CONSULT, or another Scan Tool with Turbo Actuation abilities, plug into your car and manually close the Turbo Wastegates to 0mm and record the Voltage from each Wastegate.

4. Using the Scan Tool, open the Wastegate to 4mm, record the Voltage from each Wastegate. Voltage should read between **2.25 – 2.75 V**, as shown in *Figure 1.*

5. Using the Scan Tool, open the Wastegate to 8mm, record the Voltage from each Wastegate. Voltage should read between **3.61 – 4.11 V**, as shown in *Figure 1.*

Monitor item	W/G ACTUATOR POSITION B1/B2 (m)	W/G ACTUATOR POSI SEN B1/B2 (V)
Value	0.0073 – 0.0087	3.61 – 4.11
	0.0033 – 0.0047	2.25 – 2.75

Figure 1

6. Using the Scan Tool, close the Wastegates to 0mm.

7. After the Turbo Wastegates have been closed, disconnect the **NEGATIVE (-)** battery terminal.

8. Refer to the Factory Service Manual (FSM) to remove the engine and transmission assembly.

9. Once the engine is removed from the vehicle it is time to start disassembling the factory Turbo Oil And Coolant Lines, and then remove the factory Turbos. Skip to *Step 15.*

OPTIONAL WASTEGATE MEASUREMENT:

10. With the Key in the **ON** position, use CONSULT or another Diagnostic Scan Tool with Turbo Actuation Abilities, close the Turbo Wastegates.

11. Disconnect the **NEGATIVE (-)** Battery Terminal with the Key still in the **ON** position.

12. Refer to the Factory Service Manual (FSM) to remove the engine and transmission assembly.

13. Once the Engine is removed, and with the Wastegate still closed, measure and record the distance from the Face of the Wastegate Actuator to the Threaded Shaft on each Turbo. **DO NOT MOVE** the Actuator Arm when measuring. *Figure 2.*

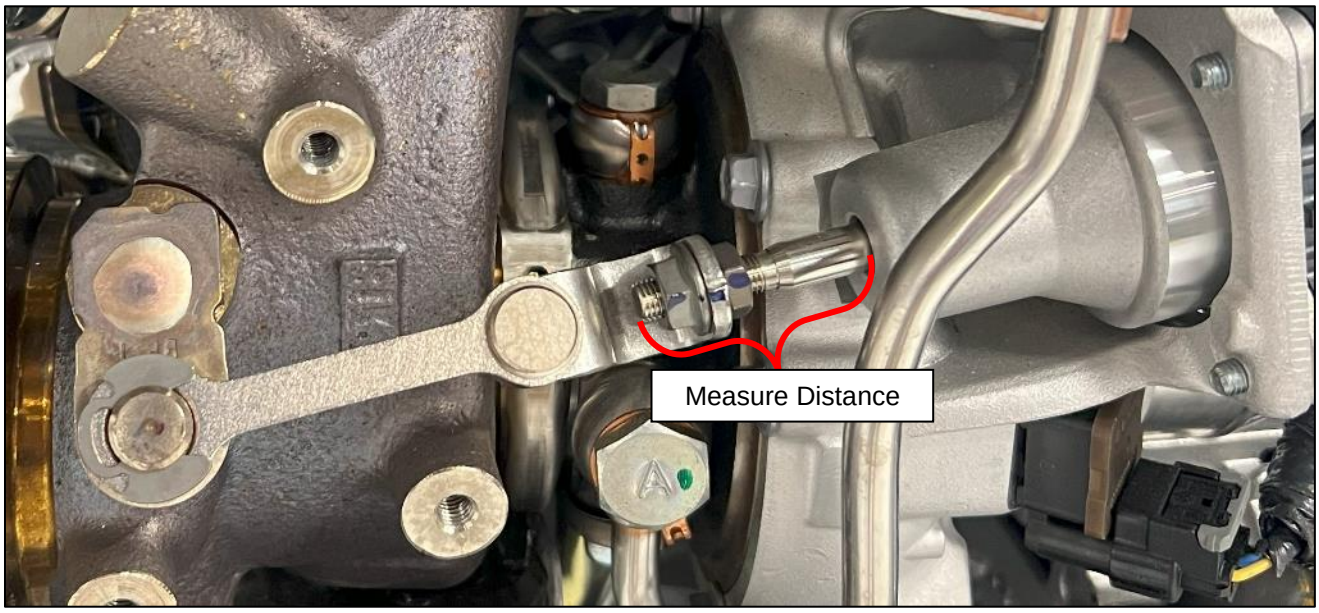


Figure 2

14. Once the Wastegate Actuator and the Actuator Arm distance has been recorded, it is time to start disassembling the OE Turbo Oil and Coolant lines, and then remove the OE Turbos. Proceed to *Step 15.*

Use the diagrams located at the end of this manual as reference for the following steps:

15. Starting on either side of the vehicle, remove the Air Fuel Ratio Sensor located on the top of the exhaust inlet on the turbine housing.

16. If equipped, remove the Exhaust Temperature Sensor located just below the Air Fuel Ratio Sensor.

17. Remove the Upper Heat Shields.

18. Remove the Catalytic Converter.

19. Remove the (2) two water/coolant lines (lines are highlighted in diagrams at the end of the manual) from the rubber hoses they are attached to, and remove any bolt on the Coolant Line Brackets if they attach to the engine.

20. Remove the bottom forward (closest to front of engine) stud from the head using an E8 Torx socket (circled below, *Figure 3).*

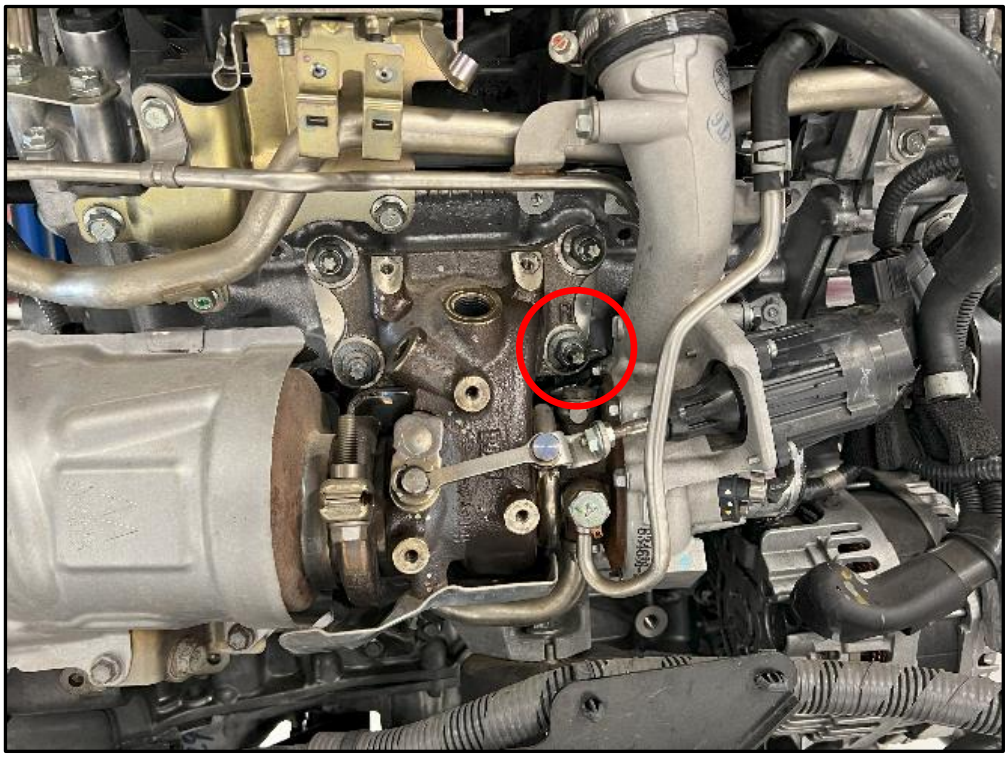


Figure 3

21. Remove the Banjo Bolt on the Oil Feed Line (lines are highlighted in diagrams at the end) from the top of the Turbocharger CHRA.

22. Remove the rubber hose attached to the Oil Drain hard line on the bottom of the OE Turbos.

23. **REDSPORT OWNERS**: Remove the Turbocharger Speed Sensor located on the front of the Compressor Housing. The bolt for the Speed Sensor uses a small Torx drive bit. When we removed them in house, it would typically break or damage the Torx bit. We found it best to use hex jaw (Knipex) pliers, vice grips, or channels locks to break the bolt loose, then remove with the Torx bit.

24. Loosen the Turbocharger Mounting Nuts in the order shown below:

    a. Top Left
    b. Bottom Right
    c. Top Right
    d. Bottom Left

25. Fully remove Turbocharger Mounting Nuts and remove OE Turbocharger assembly.

26. Remove OE Turbocharger Exhaust Inlet Gasket.

27. Remove the Flanged End nut securing the Wastegate Flapper Bracket to the Wastegate Actuator Shaft (shown below, *Figure 4*). Retain this hardware.

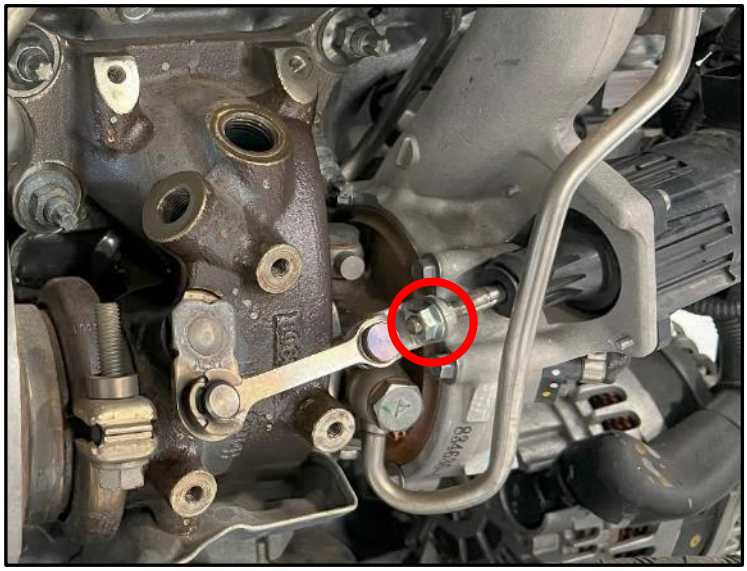


Figure 4

28. Remove the (4) four T20 screws securing the Wastegate Actuator to the Turbo and then remove the Actuator. Set the Actuator and (4) four screws to the side as they will be reused. Be careful not to move the Threaded Shaft of the Actuator.

29. Adjust the nut on the Wastegate Actuator Shaft slightly towards the Wastegate itself.

30. Repeat *Steps 15-29* on the opposite side of the vehicle. Make sure to keep all driver and passenger components separate for reinstallation on to the Z1 Turbos.

31. Release the tension on the drive belt by turning the tensioner with a 3/8” ratchet and placing a bolt or dowel in the locking hole as shown below. *Figure 5.*

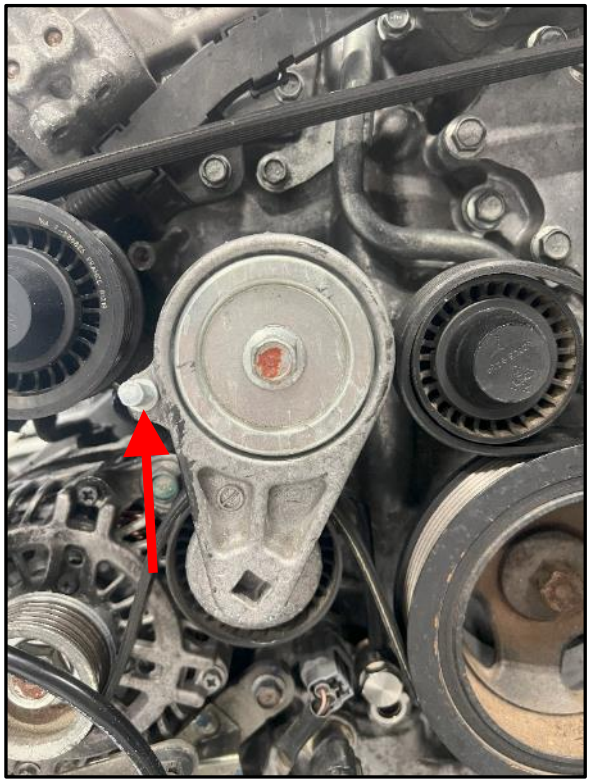
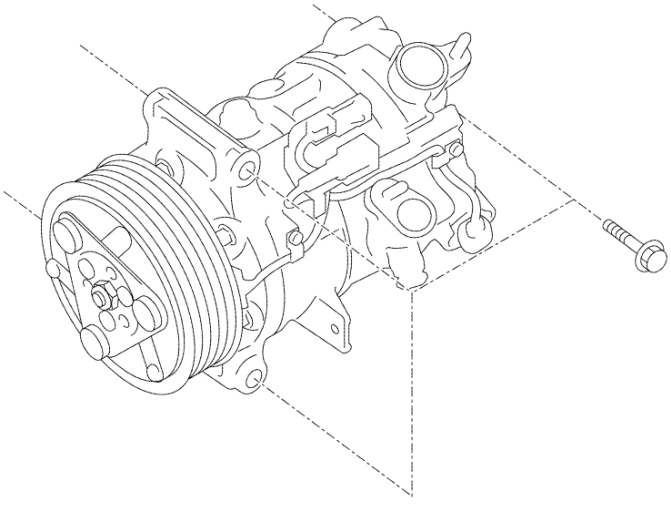


Figure 5

32. Disconnect the (2) two electrical connectors on the AC compressor. Remove the clip securing the hose to the AC Compressor. Then remove the (3) bolts securing AC Compressor to engine and set the compressor aside. *Figure 5.*



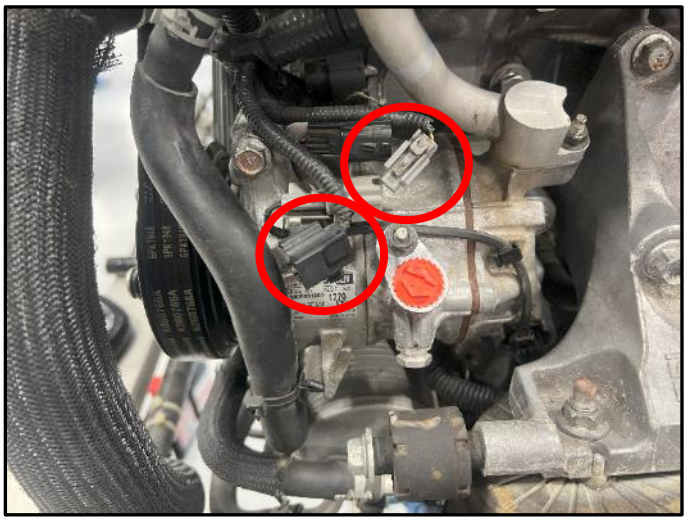


Figure 6

33. If not removed earlier, fully remove the OE Oil and Coolant Hardlines from the engine.

34. **RWD OWNERS**: Remove the passenger side Oil Drain Flange that bolts to the lower engine block. AWD customers will use the OE Oil Drain Flange.

35. **AWD OWNERS**: Fully remove the OE Motor Mount Brackets. Retain the hardware used to secure the brackets to the Motor Mounts on the subframe. Locate the new Z1 AWD Motor Mount Brackets and (8) eight new M10 x 25mm bolts.

    a. Install the Motor Mount Brackets onto the engine and Motor Mounts. Use the OE hardware to secure the Brackets to the Motor Mounts. Use the provided (8) eight M10 x 25mm Flange bolts to secure the brackets to the engine. Torque bolts to **36 ft-lbs**. *Figure 7.*

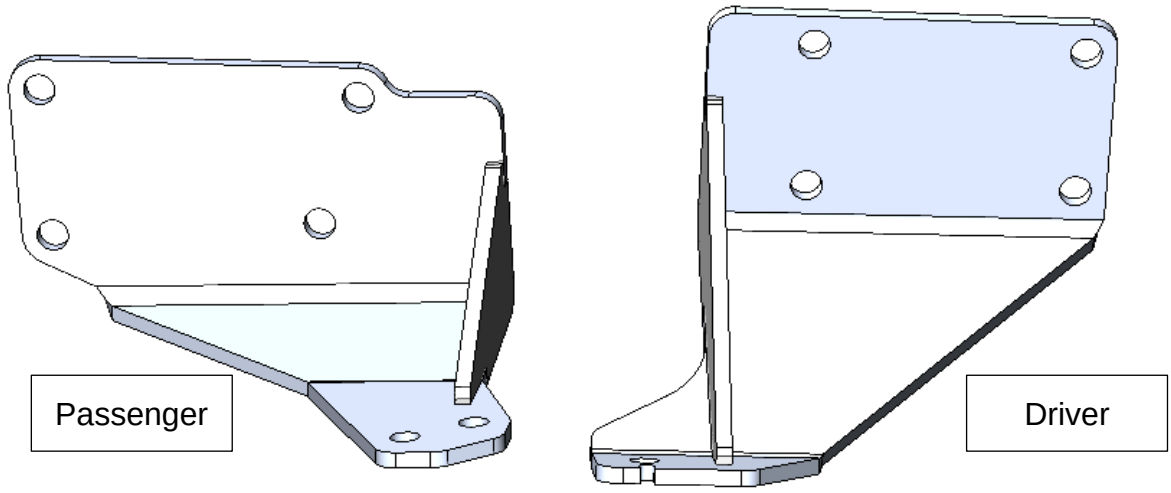


Figure 7

36. **RWD OWNERS**: On the driver's side of the engine, the larger Z1 Turbo will contact the Engine Mount Stud. Before the Turbos are installed, you must remove the driver's side Engine Mount Nut and Stud and replace it with the supplied M10 x 30mm Flanged Hex head bolt. Torque to **36 ft-lbs**. Refer to *Figure 8* below.

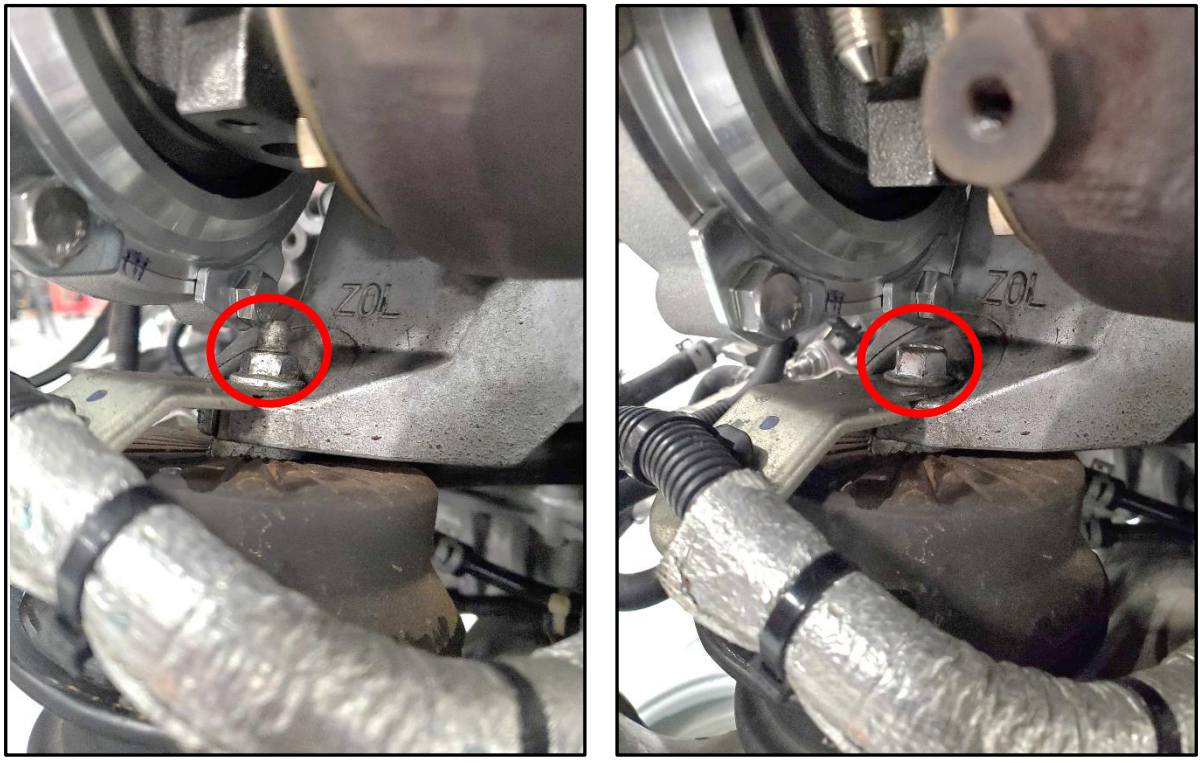


Figure 8

37. **RWD OWNERS**: On the driver's side of the engine, remove the bolt on the top left of the Engine Mount Bracket. Replace it with the supplied M10 x 35mm Button Head Bolt. *Figure 9.*

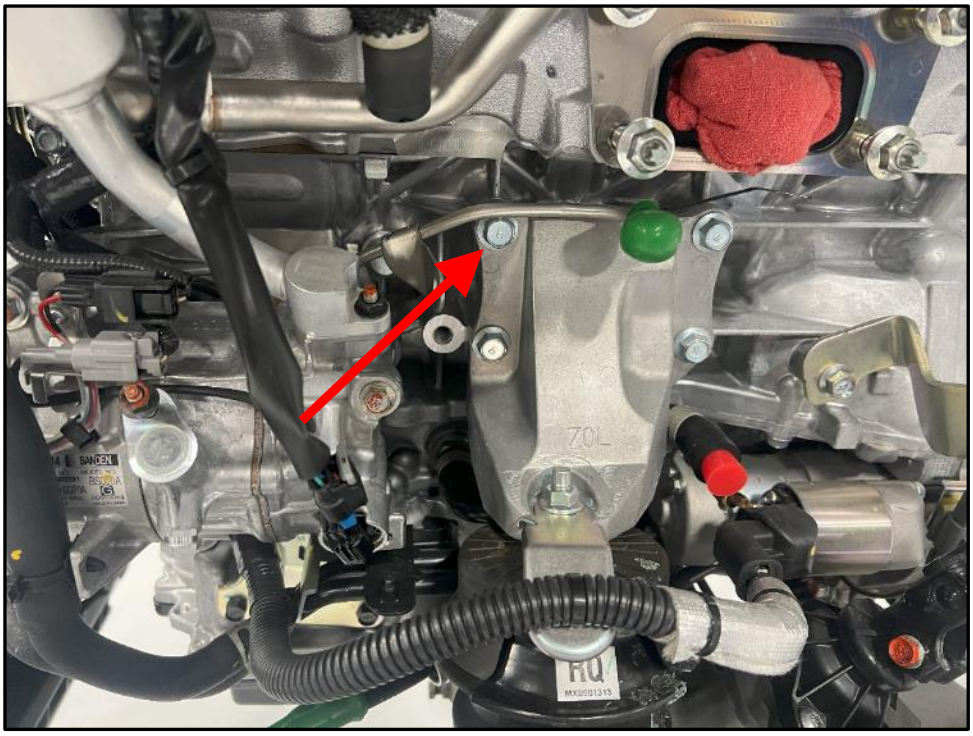


Figure 9

38. Locate the new Z1 VR30 Turbochargers and the Z1 Oil and Coolant Line kit. Use the pictures, diagrams, and charts below and on the following page as reference to where each line needs to be installed on each Turbo. *Figures 10-11.*

Item No.	Description
1	Driver Oil Drain
2	Driver Coolant Supply Line
3	Driver Coolant Return Line
4	Driver Oil Feed Line
5	Pass. Oil Drain
6	Pass. Coolant Supply Line
7	Pass. Coolant Return Line
8	Pass. Oil Feed Line
9	Pass. Oil Drain Block Flange
10	AWD Pass. Oil Drain

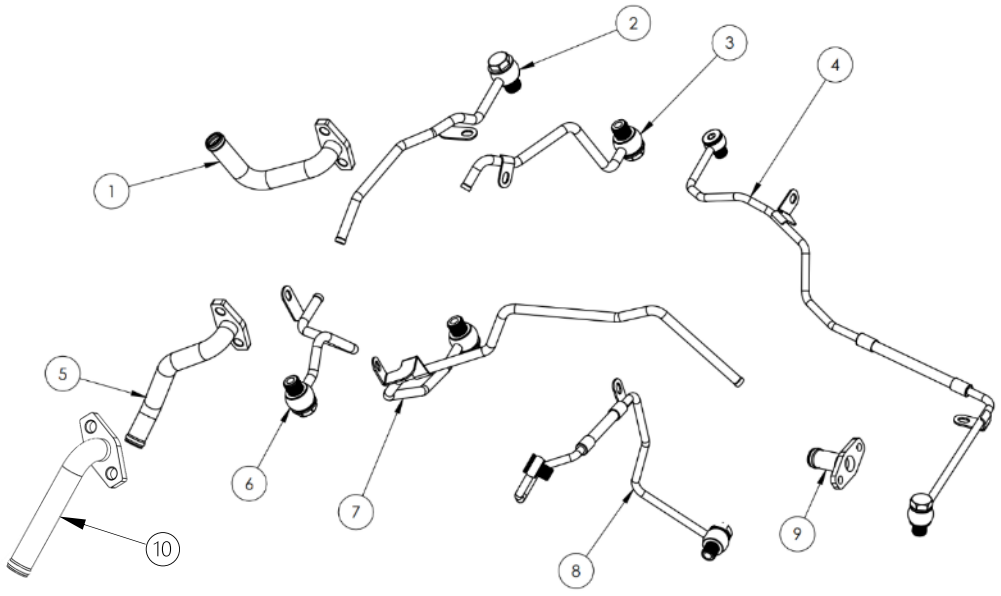


Figure 10

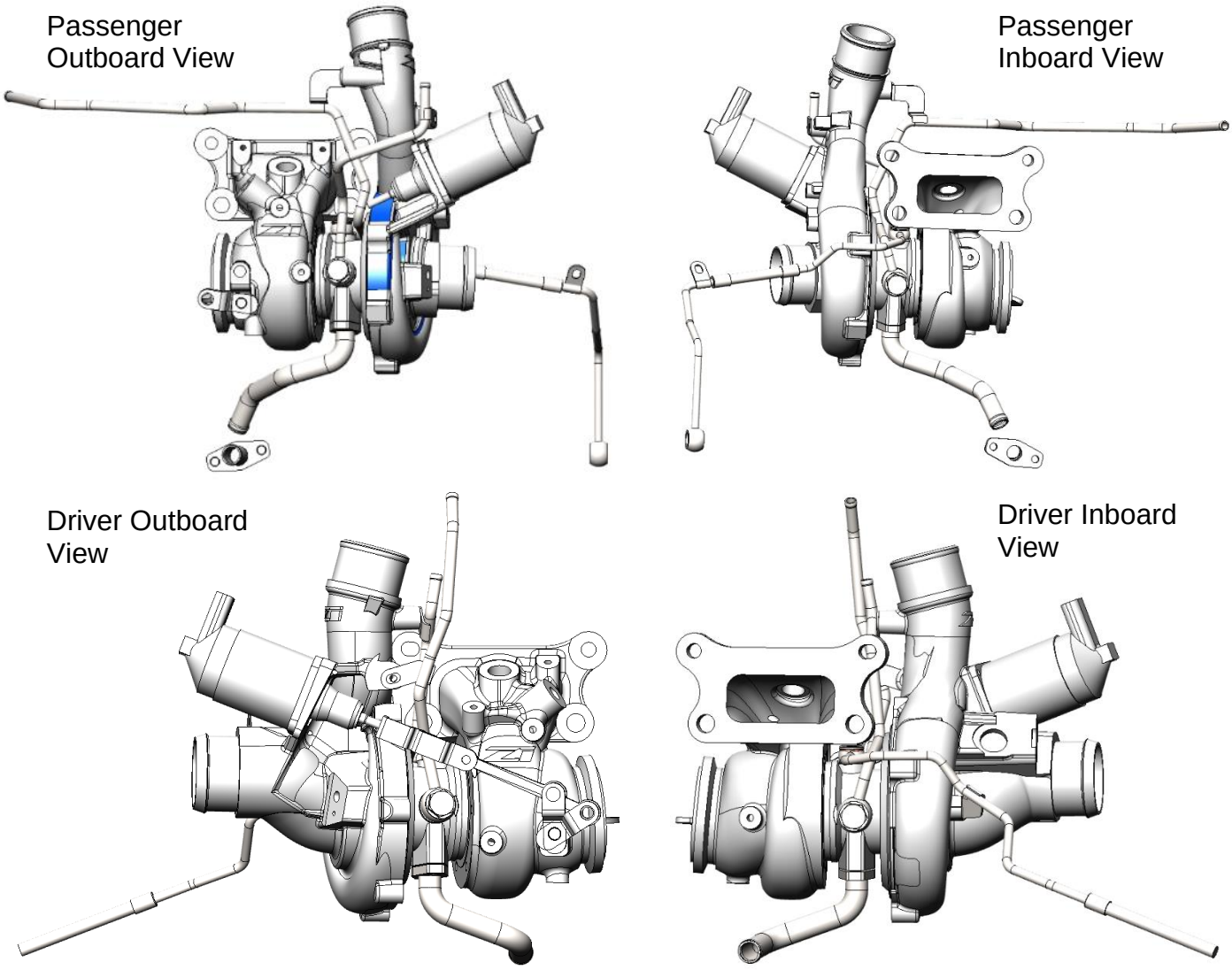


Figure 11

NOTE: The full Driver Oil Feed Line in the images above is not shown. The full Driver Oil Feed Line will look like ④ in the diagram on the previous page. Roughly half the line can be seen in this view.

39. **REDSPORT OWNERS**: Install the Turbocharger Speed Sensors and Speed Sensor Brackets that were removed from the OE Turbos onto the Z1 Turbos. The passenger side Speed Sensor Bracket will need to utilize (2) two provided M6 x 12mm bolts with (2) two M6 flat washers UNDER the bracket to space the bracket out ~3mm from the Turbo. If these spacers are not placed behind the bracket, it will contact the top of the compressor housing. The drivers side bracket can use the OE Bolts or (2) two provided M6 x 12mm bolts. Torque the Speed Sensor M4 bolts to **19 in-lbs** and the M6 Bracket Bolts to **62 in-lbs**. *Figure 12.*

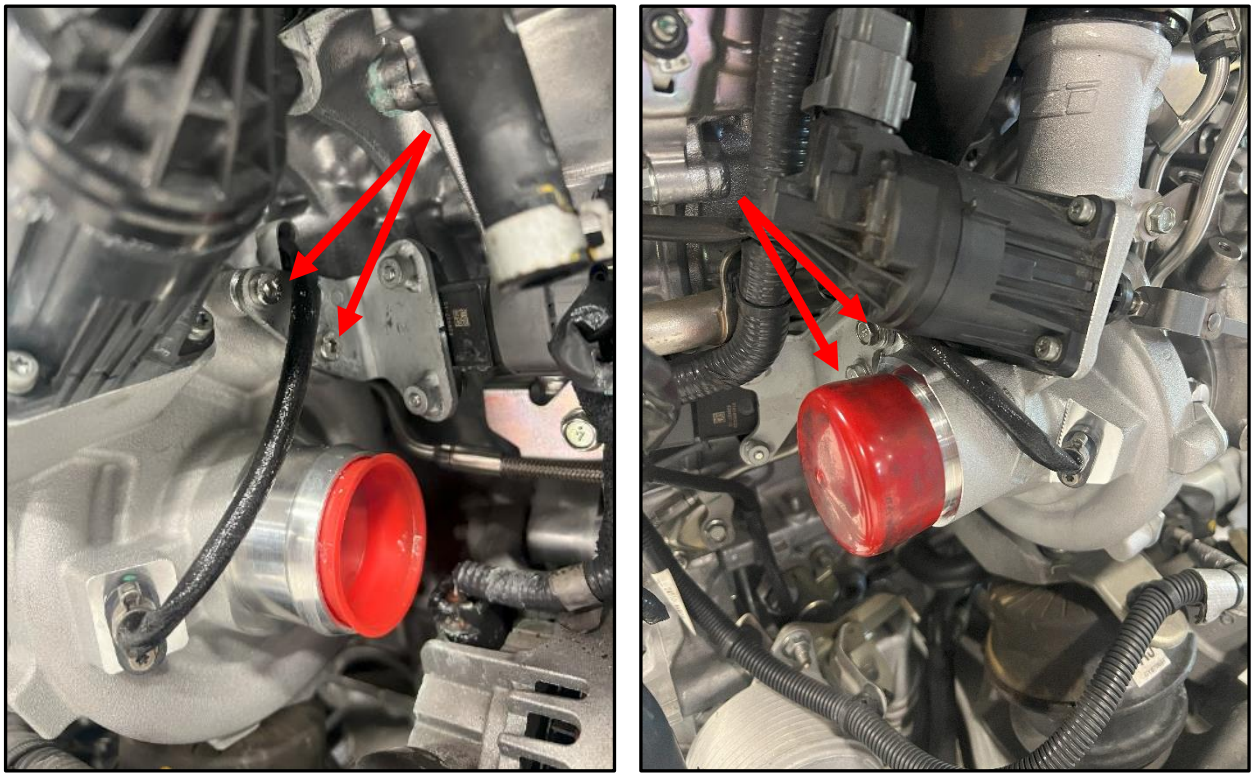


Figure 12

40. **NON REDSPORT OWNERS**: If the O-ring is not pre-installed onto the Speed Sensor Block Off Plate, install it at this time, then install the provided Speed Sensor Block Off Plates onto the Z1 Turbos using the supplied M4 x 12mm Socket Head bolt (3mm) and torque to **19 in-lbs**.

41. The Coolant Return Lines will need to be installed on the Turbos before they can be mounted as they attach from the back/inboard side of the Turbos. Using the provided M14 Hex Head Banjo Bolts and (4) four M14 Crush Washers, attach each Turbo's Coolant Return Lines to the back/inboard side of the Z1 Turbos. Torque to **18 ft-lbs**.

42. Transfer the loose mounting bracket from the passenger side OE Coolant Return Line to the passenger side Z1 Coolant Return Line ⑦. Loose bracket is shown with arrow below. *Figure 13.*

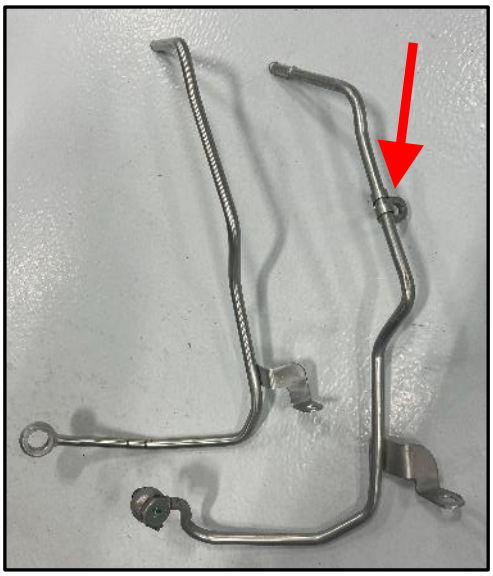


Figure 13

43. Locate the new Driver Side Turbo Oil Feed Line ④. Transfer the loose mounting bracket from the OE Line onto the Z1 Line. To remove the brackets from the OE line you may need to use a flat head screwdriver to separate/open the bracket and then slide it off the Line. The bracket is shown on the OE Line in the picture below. *Figure 14.*

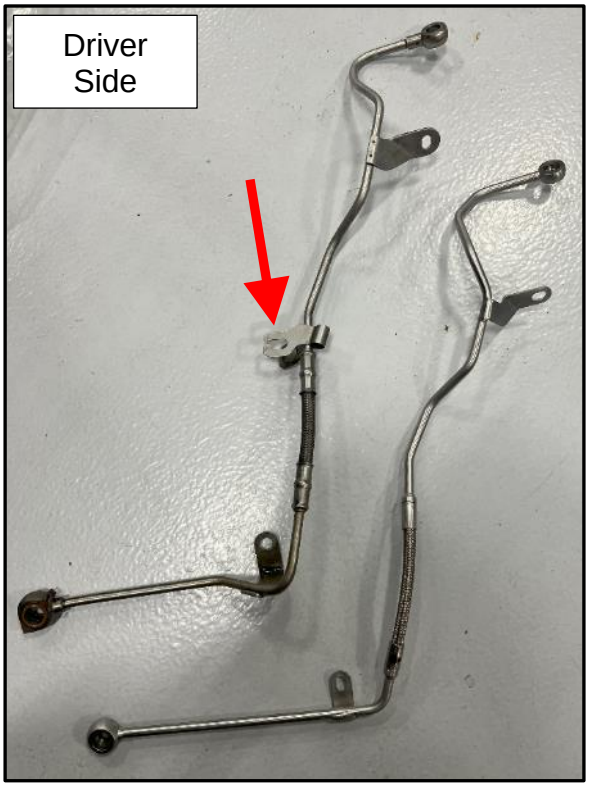


Figure 14

44. Using the provided M12 Hex Head Banjo Bolts and (4) four M12 Crush Washers, loosely install the Oil Feed Lines onto the front of the engine. *Figure 15.*

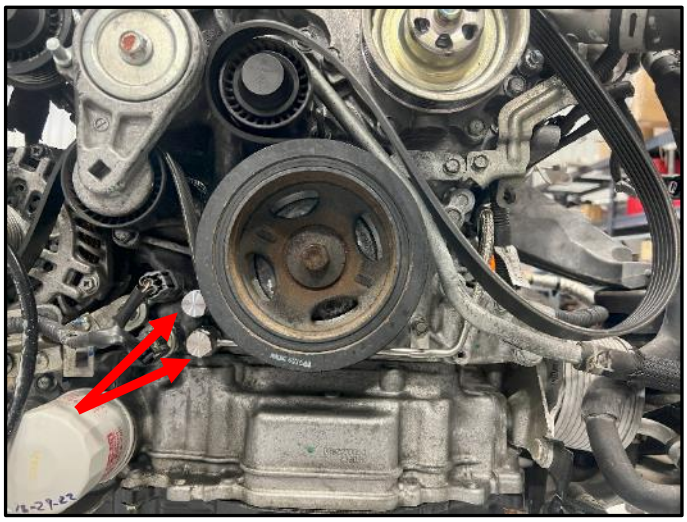


Figure 15

45. You can reuse your OE bolts or use the supplied M6 x 12 Flanged Bolts to secure the Z1 Line's Front Brackets to the front of the engine. The only line that requires a specific new bolt is the Passenger Coolant Supply Line that is installed at a later step.

46. With the provided new OEM Oil Return Line to Engine Gasket, install the Z1 Passenger Oil Drain Block Flange ⑨ onto the lower engine block where the OE Flange was removed from in *Step 34*. The Flange has a slight bend, and the bend must face towards the REAR of the engine. Torque bolts to **80 in-lbs**. *Figure 16.*

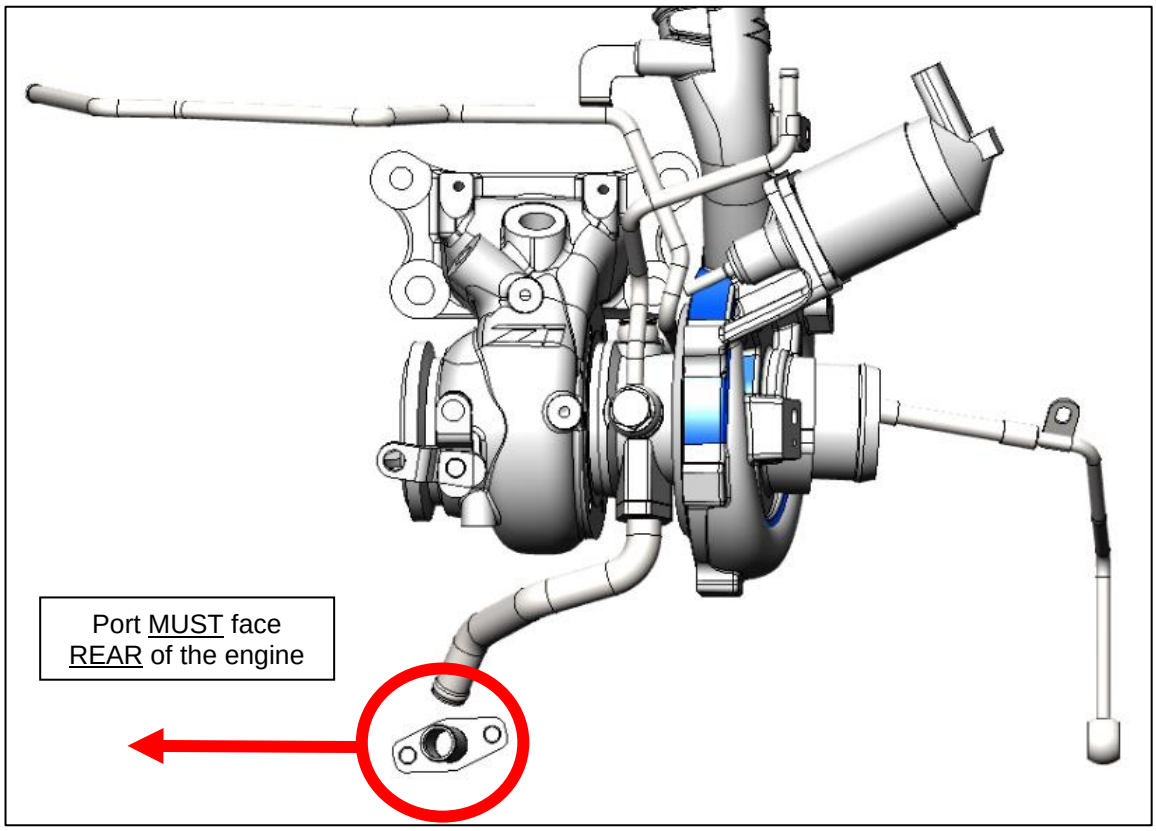


Figure 16

47. Using the provided new Turbo Oil Drain Gaskets and (2) two M8 x 16 Socket Head bolts, install the Z1 Oil Drain lines ⑤ & ① onto the bottom drain ports on the Z1 turbos. AWD customers will use ⑩ instead of ⑤.

48. Locate the Turbo Inlet Gaskets. With a gasket on each turbo, install the Z1 Turbos onto the engine using the OE nuts removed in *Step 25*. Torque the nuts to **22 ft-lbs** in the order shown in *Figure 17* below.

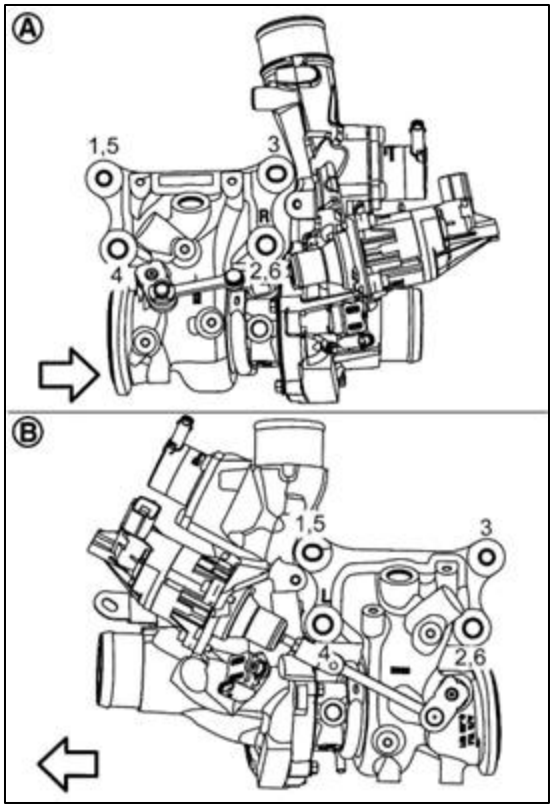


Figure 17

49. Using the provided Socket Head Banjo Bolts (6mm) and (2) two Crush Washers, install the Oil Feed Lines ④ & ⑧ onto the top of the Z1 Turbo's CHRA. Torque to **13 ft-lbs**.

50. Reinstall the bottom forward (closest to front of engine) Turbo Mounting Stud using an E8 Torx socket. Torque to **11 ft-lbs**.

51. Tighten turbo mounting nuts in the order shown below, torque to **80 in-lbs.**
    a. Top Left
    b. Bottom Right
    c. Top Right
    d. Bottom Left
    e. Top Left (2nd time)
    f. Bottom Right (2nd time)

52. Using the OE bolts or provided M6 x 12mm Flange bolts secure the Driver Side Oil Feed Line's Brackets to the engine and to the Z1 Turbos. There are (2) two additional bracket bolts on the driver side line, (1) one onto the bracket behind where the AC Compressor was and (1) one on the Z1 Turbo Compressor Cover. Torque bracket bolts to **80 in-lbs**.

53. Go back to the front of the engine and torque the Oil Feel Line Hex Bolts to **18 ft-lbs**.

54. Using the provided M14 Banjo Bolts and (2) two M14 Crush Washers, install the Coolant Feed Lines ② & ⑥ onto the front/outboard side of the turbos.

Driver Side Turbo: Use the OE Bolt or a supplied M6 x 12mm Flange bolt to secure the line's bracket to the Z1 Turbo.

Passenger Side Turbo: Use the supplied M6 x 8mm Hex Head bolt to secure the line's bracket to the Z1 Turbo.

55. Torque the Coolant Feed Line Banjo Bolts to **18 ft-lbs**. Torque the Bracket bolts to **80 in-lbs**.

56. Once the Z1 Turbos are attached to the engine, and the Oil and Coolant Lines are torqued down, try to move/wiggle the lines. If the Oil and Coolant Lines have play in them, the Banjo Bolts may need to be tightened more. If they are not tight, Oil or Coolant may leak out.

57. Attach the new Silicone Drain Hoses to the Oil Drain Hand Lines on the lower engine block and Z1 Turbos, secure with the OE Clamps. *Figure 18.*

Figure 18

THE NEXT STEPS ARE VERY IMPORTANT, AS IT WILL DETERMINE WHETHER OR NOT THE WASTEGATES ARE PROPERLY INSTALLED ON THE Z1 TURBOS. IF THEY ARE NOT INSTALLED CORRECTLY, THEY WILL NOT FUNCTION PROPERLY AND CAN CAUSE TUNING ISSUES.

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RECOMMENDED WASTEGATE SETUP:

58. Place one of the OE Jam Nuts on the Threaded Shaft of each Wastegate Actuator.

59. Adjust the Threaded Shaft on the Wastegate Actuators to **~25.5mm**. This measurement is not perfect but will give you a good starting point for the upcoming steps. *Figure 19.*

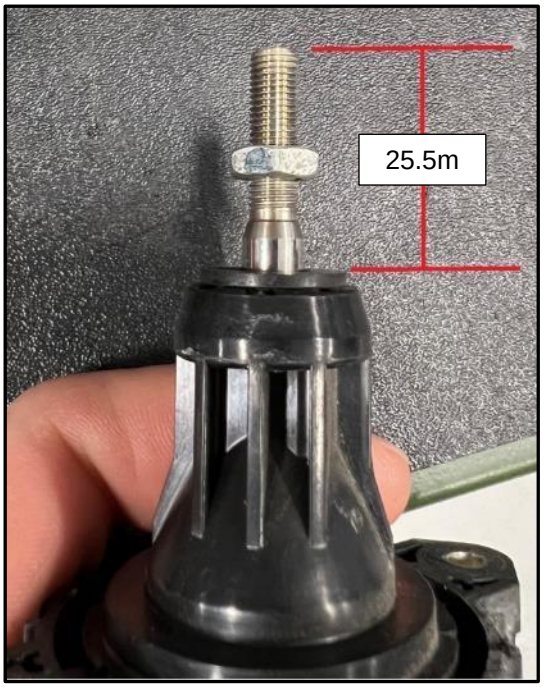


Figure 19

60. Install the Wastegate Actuators onto the Z1 Turbos with the (4) OE T20 screws. Torque to **10.5 N·m**.

61. Attach the Z1 Turbos Wastegate Arm/Bracket onto the stud on the bracket on the Turbine Housing (shown below with an arrow). Secure the arm with the provided C-clip. *Figure 20.*

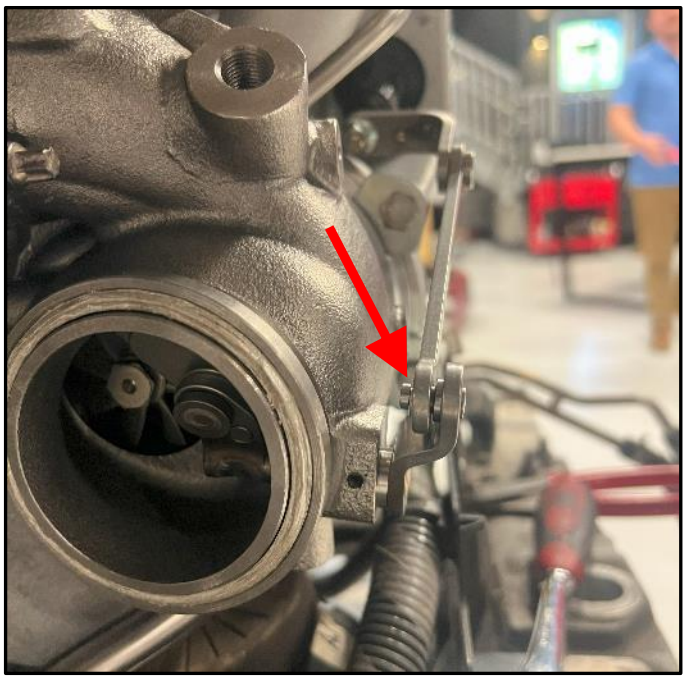


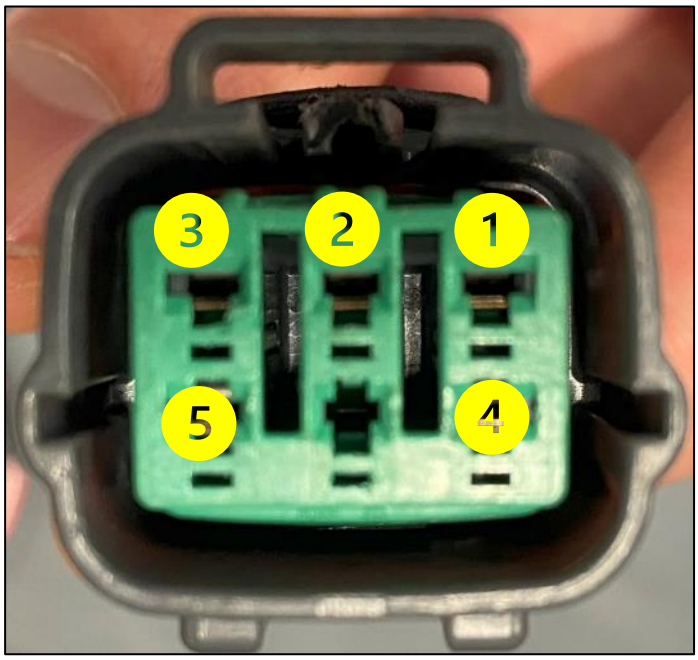
Figure 20

62. Thread the Jam Nut up to meet the L-Bracket on the Wastegate Actuator Arm.

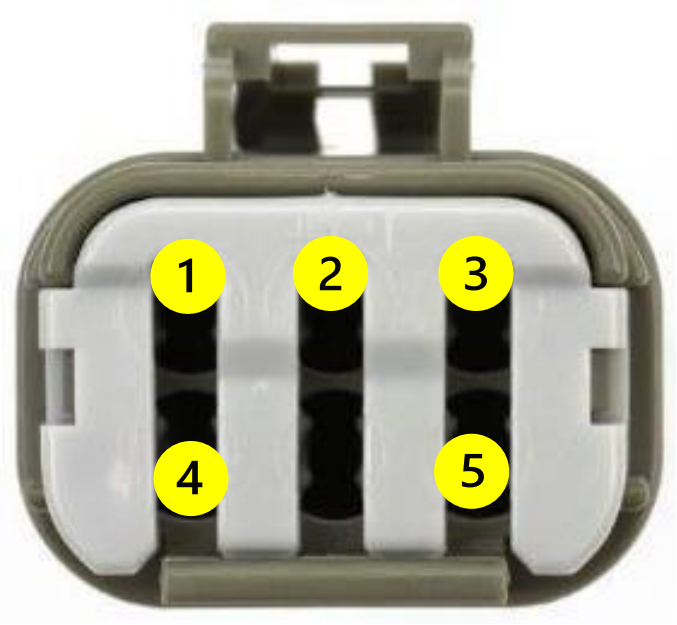
63. Thread the Flanged Nut removed in *Step 27* back onto the Threaded Actuator Arm Shaft, tighten it up against the L-Bracket, but **DO NOT** tighten it enough to pull the Threaded Shaft out further.

64. Once the Flanged Nut and Jam Nut are positioned properly, thread the (2) two nuts together to lock the Actuator Arm in place. Again, be careful not to move the Actuator Arm at this time. **BE CAREFUL NOT TO OVERTIGHTEN THE HARDWARE OR BIND THE ACTUATOR ARM WHEN TIGHTENING. THIS CAN CAUSE DAMAGE TO THE ACTUATOR ARM.**

65. Check Voltages of the Wastegate Actuator. A Power Supply, 12V Source, Multimeter, and (5) five wires will be needed. Follow the steps below, and use *Figure 21* below as a reference for correct pinouts on the Actuator Connector.



Terminal Side



Harness Side

3. Sensor Power Supply	2. Ground	1. Wastegate Control Actuator
5. (-) Wastegate Actuator Motor		4. (+) Wastegate Actuator Motor

1. Wastegate Control Actuator	2. Ground	3. Sensor Power Supply
4. (+) Wastegate Actuator Motor		5. (-) Wastegate Actuator Motor

Figure 21

a. Using a 12V Source (The vehicle's battery or a jump box) and (2) two wires, connect the **POSITIVE (+) 12V Lead** and one wire to the **4. (+) Wastegate Actuator Motor Pinout.**

Connect the other wire to the **NEGATIVE (-) 12V Lead** and the **5. (-) Wastegate Actuator Motor**. This should open or close the Wastegate Actuator.

Close the Actuator all the way to 0mm. Swapping the **POSITIVE (+)** and **NEGATIVE (-)** leads will open or close the Wastegate. *Figure 22.*

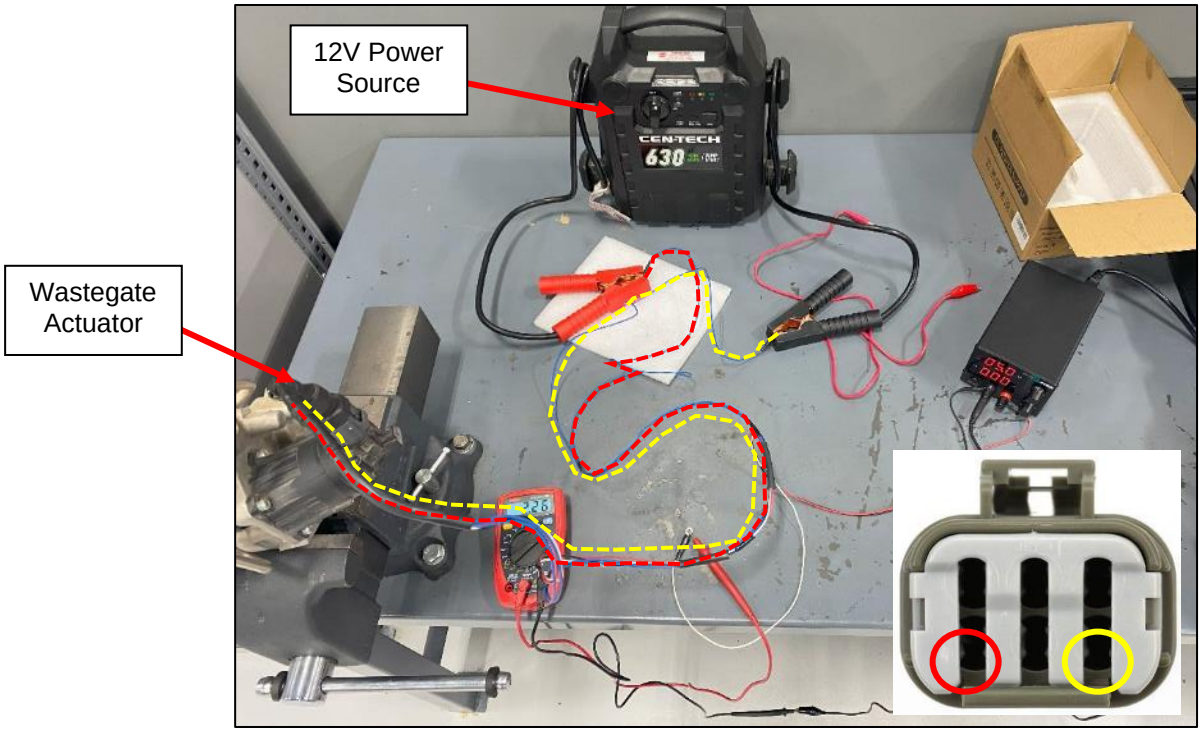


Figure 22

b. With the Wastegate closed, set a Power Supply to **5V**. Confirm Voltage is correct with a Multimeter. *Figure 23.*

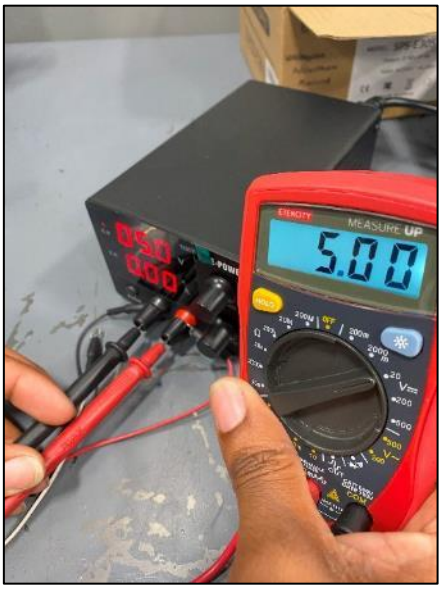


Figure 23

c. Connect one wire from the **Ground** on the **5V Power Supply** to the **2. Ground** on the connector pinout. *Figure 24.*

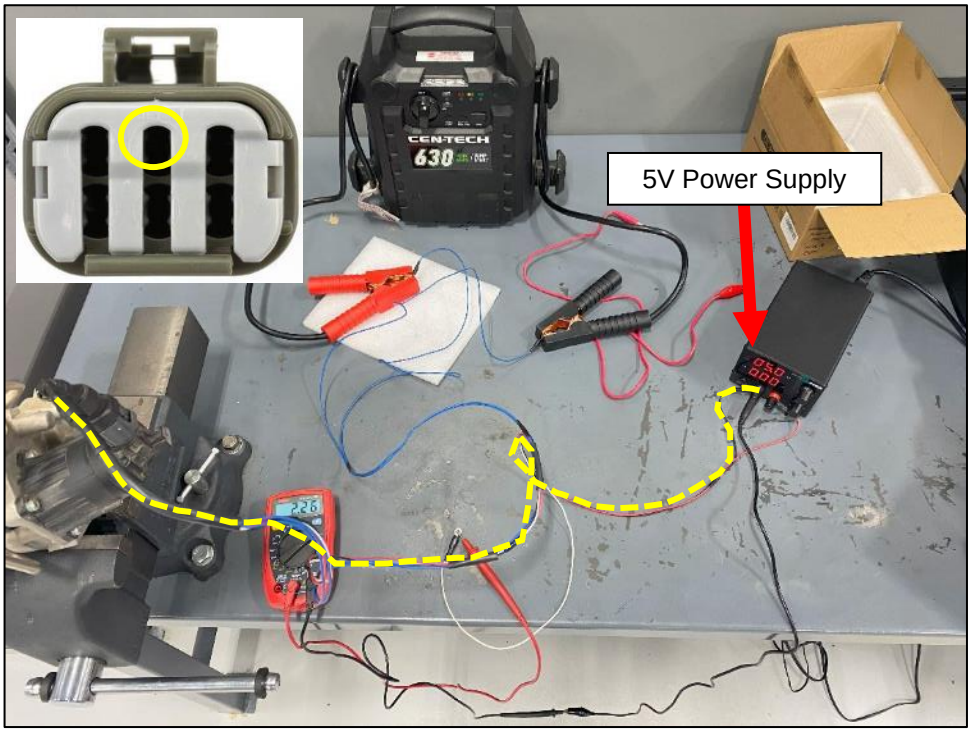


Figure 24

d. Connect one wire from the **5V Power Supply** to the **3. Sensor Power Supply** on the connector pinout. *Figure 25.*

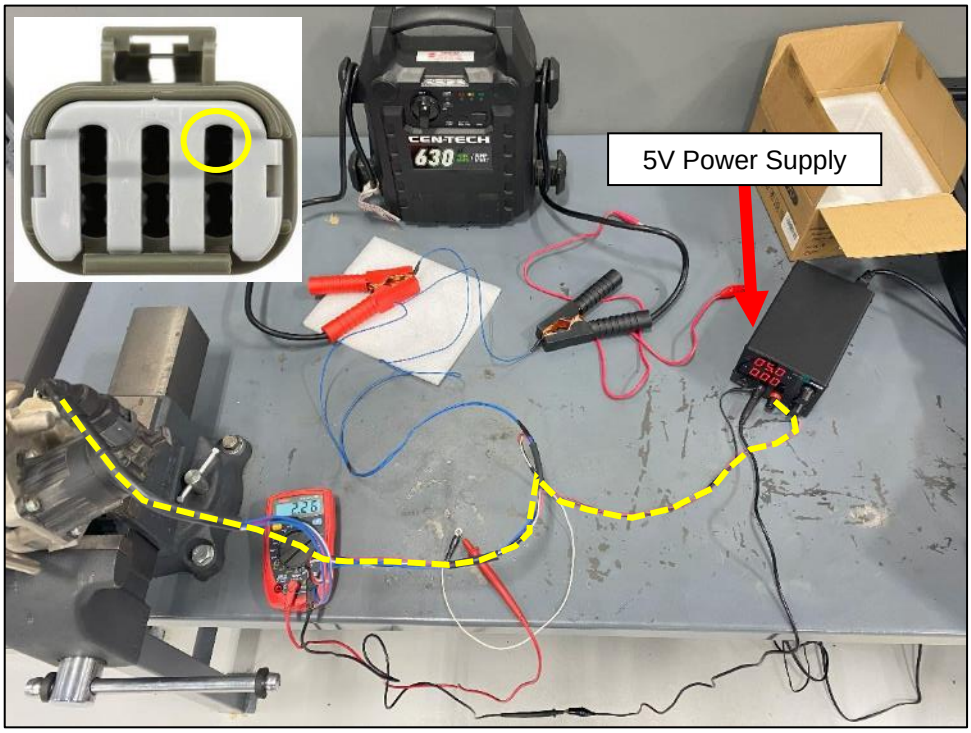


Figure 25

e. Connect one wire from the **Lead on the Multimeter** to the **1. Wastegate Control Actuator** on the connector pinout. *Figure 26.*

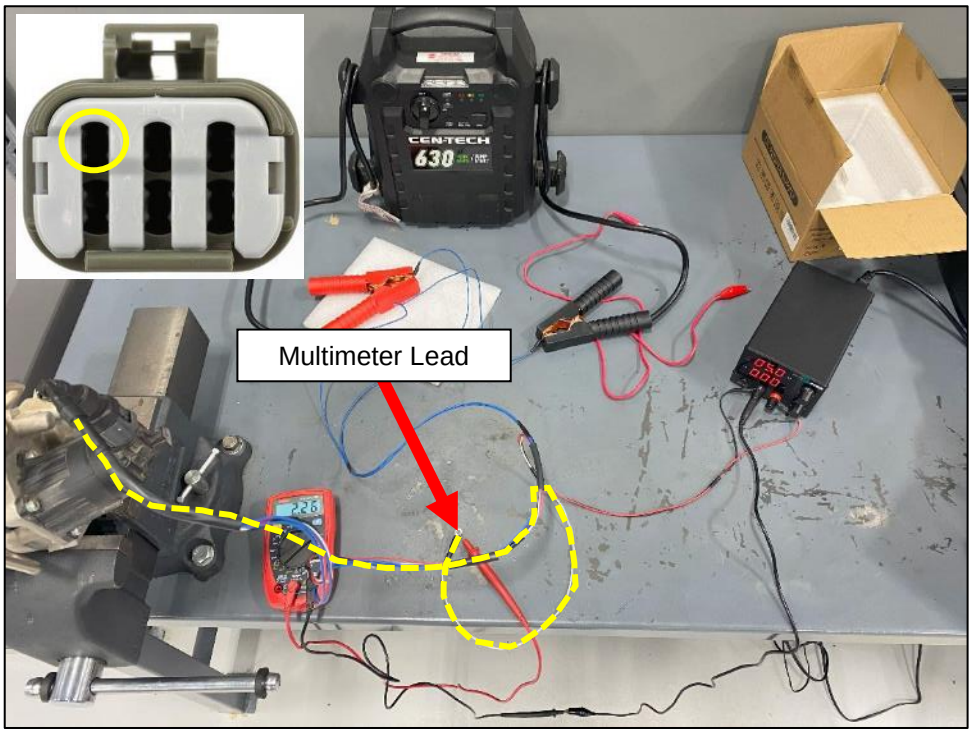


Figure 26

f. After all the wires are connected, and the Wastegate is closed, read the Voltage on the Multimeter and compare to the Voltage recorded during *Step 3. Figure 27.*

Figure 27

g. If the Voltage does not match, adjust the Actuator Arm Bracket on the threaded shaft as needed, and repeat *Steps 65a-65f*.

h. Swap the Leads of the **12V** source on the Connector Pinout to open the Wastegate to 8mm. Read the Voltage and compare it to the Voltage recorded during *Step 5. Figure 28.*

Figure 28

i. If the Voltage does not match, or is not within Spec (*Figure 29*), adjust the Actuator Arm Bracket on the Threaded Shaft as needed, and repeat *Steps 65a-65h.*

NOTE: As seen in *Figure 28* above, our Voltage read **4.51V** with the Wastegate opened to 8mm, and is not within spec. The Wastegate Actuator Arm Bracket will need to be adjusted, and the process will have to be redone.

Monitor item	W/G ACTUATOR POSITION B1/B2 (m)	W/G ACTUATOR POSI SEN B1/B2 (V)
Value	0.0073 – 0.0087	3.61 – 4.11
	0.0033 – 0.0047	2.25 – 2.75

Figure 29

66. With the Voltages confirmed to be the same, make sure the lock nuts for the Wastegate Actuator L-Bracket are tight, then proceed to *Step 76.*

OPTIONAL WASTEGATE SETUP:

67. Place one of the OE Jam Nuts on the Threaded Shaft of each Wastegate Actuator.

68. Adjust the Threaded Shaft on the Wastegate Actuators to the Measurement recorded in *Step* 13. It should be around **~25.5mm**. *Figure 30.*

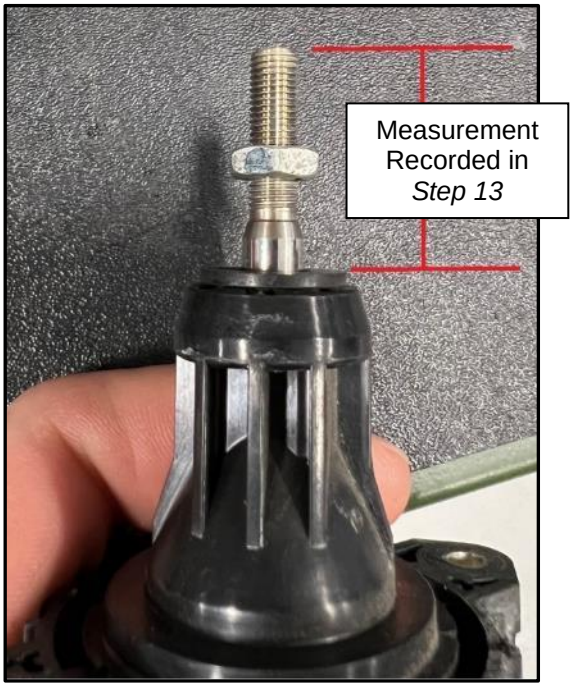


Figure 30

69. Install the Wastegate Actuators onto the Z1 Turbos with the (4) four OE T20 screws. Torque to **10.5 N·m**.

70. Attach the Z1 Turbo Wastegate Arm/Bracket onto the stud on the bracket on the Turbine Housing (shown below with an arrow). Secure the arm with the provided C-clip. *Figure 31.*

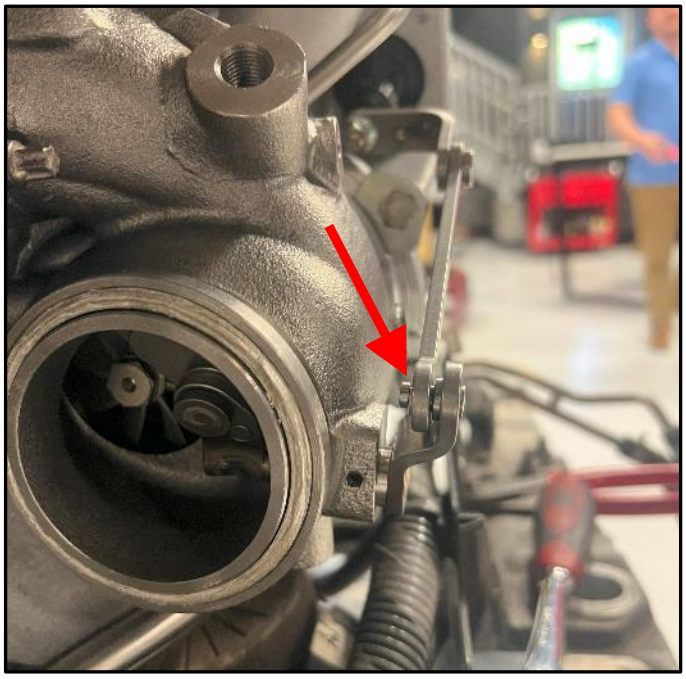
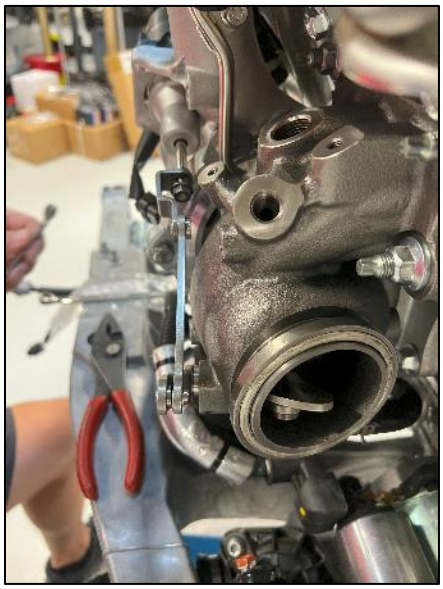
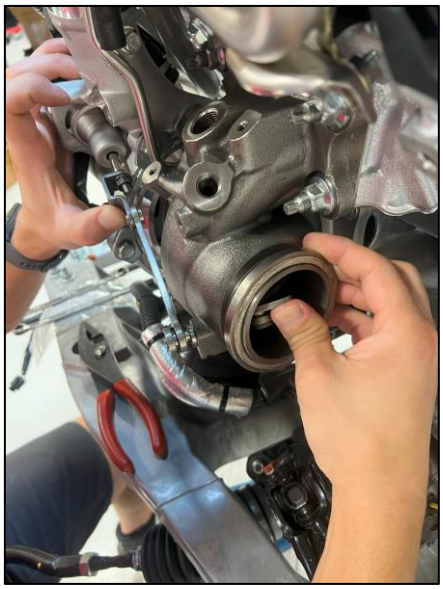


Figure 31

71. Adjust the Actuator Arm on the Threaded Shaft until the Flapper Valve inside of the Turbo is visibly closed. *Figure 32.*



Open Flapper Valve



Closing Flapper Valve

Closed Flapper Valve

Figure 32

72. Thread the OE Flanged Nut removed in *Step 27* back onto the Threaded Actuator Arm Shaft. Tighten it up against the L-Bracket, but DO NOT tighten it enough to pull the Threaded Shaft out further. *Figure 33.*

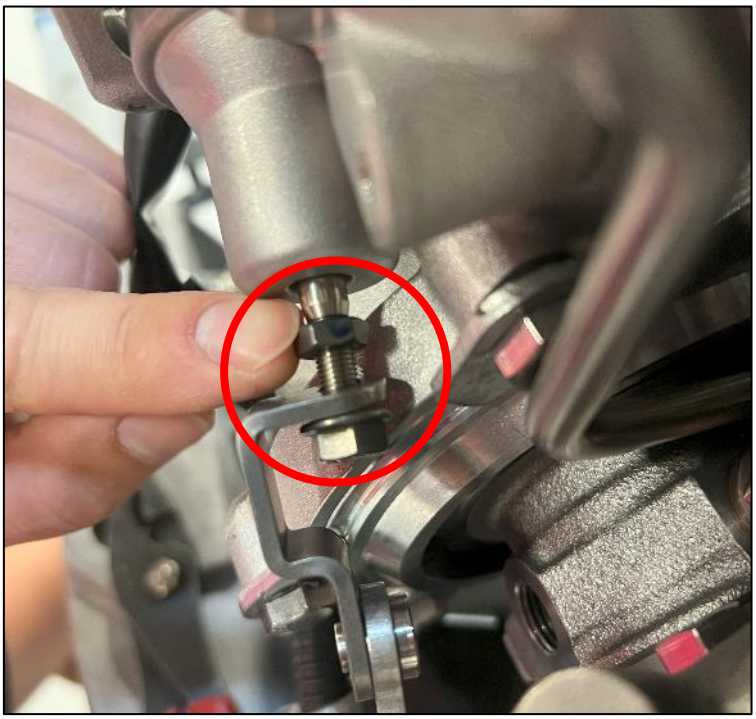


Figure 33

73. Thread the installed Jam Nut down to meet the L-Bracket on the Wastegate Actuator Arm.

74. Once the Flanged Nut and Jam Nut are positioned properly, thread the (2) two nuts together to lock the Actuator Arm in place. Again, be careful not to move the Actuator Arm at this time. **BE CAREFUL NOT TO OVERTIGHTEN THE HARDWARE OR BIND THE ACTUATOR ARM WHEN TIGHTENING. THIS CAN CAUSE DAMAGE TO THE ACTUATOR ARM.** *Figure 34.*

Figure 34

75. Confirm the measurement from the Face of the Wastegate Actuator to the Face of the Actuator Arm is the same as the measurment taken in *Step 13.* Adjust the Actuator Arm and Bracket if necessary.

76. Locate the OE Upper Heat Shields that were removed in *Step 17*. Trim the shielding as shown below in *Figure 35*:

    a. Passenger's side:

        i. The passenger side will need significant trimming. Roughly position the Heat Shield onto the Turbo to see what areas contact. Use the images below as a guide to what we cut first.

        ii. Once cut, reposition the Heat Shield

        iii. back onto the Turbo to mark the area to cut for the Coolant Feed Line. Use the image below and to the right as reference.

        iv. Once trimmed, install the Heat Shield onto the Turbo with the new provided OEM Heat Shield Bolts (PN 14069-JD00A).

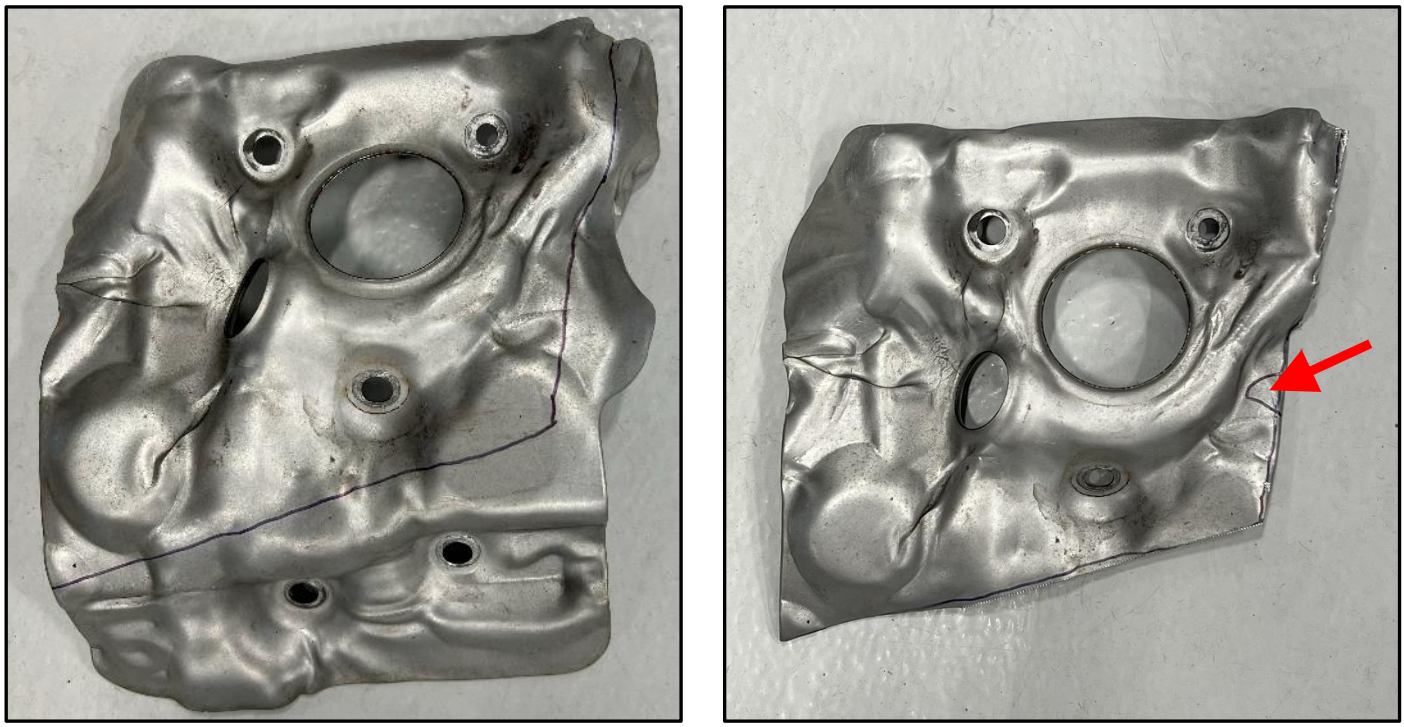


Figure 35

b. Driver side (*Figure 36*):

i. The driver's side needs much less trimming than the passenger side but will need to be bent after cutting. Roughly position the heat shield onto the Turbo and mark where the left edge needs to be cut for clearance on the Actuator Arm. Use the images below as reference to what we cut.

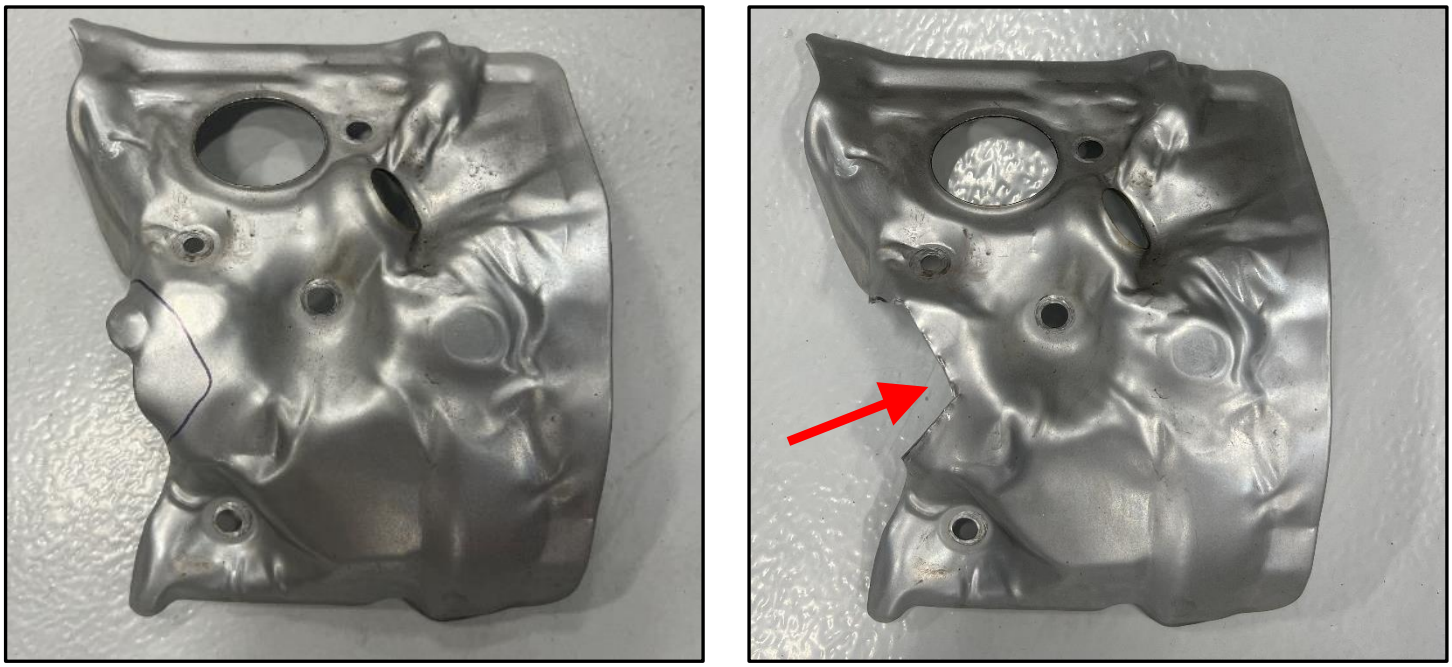


Figure 36

ii. Install the trimmed Heat Shield onto the Turbo with the provided OEM Heat Shield Bolts (PN 14069-JD00A).

iii. From the backside, look behind the heat shield at the Actuator Arm. If the Arm is contacting the Heat Shield, grab the bottom right corner of the Heat Shield and bend it out slightly.

iv. Recheck after bending to make sure there is clearance. The images below are a before/after of bending the Heat Shield. *Figure 37.*

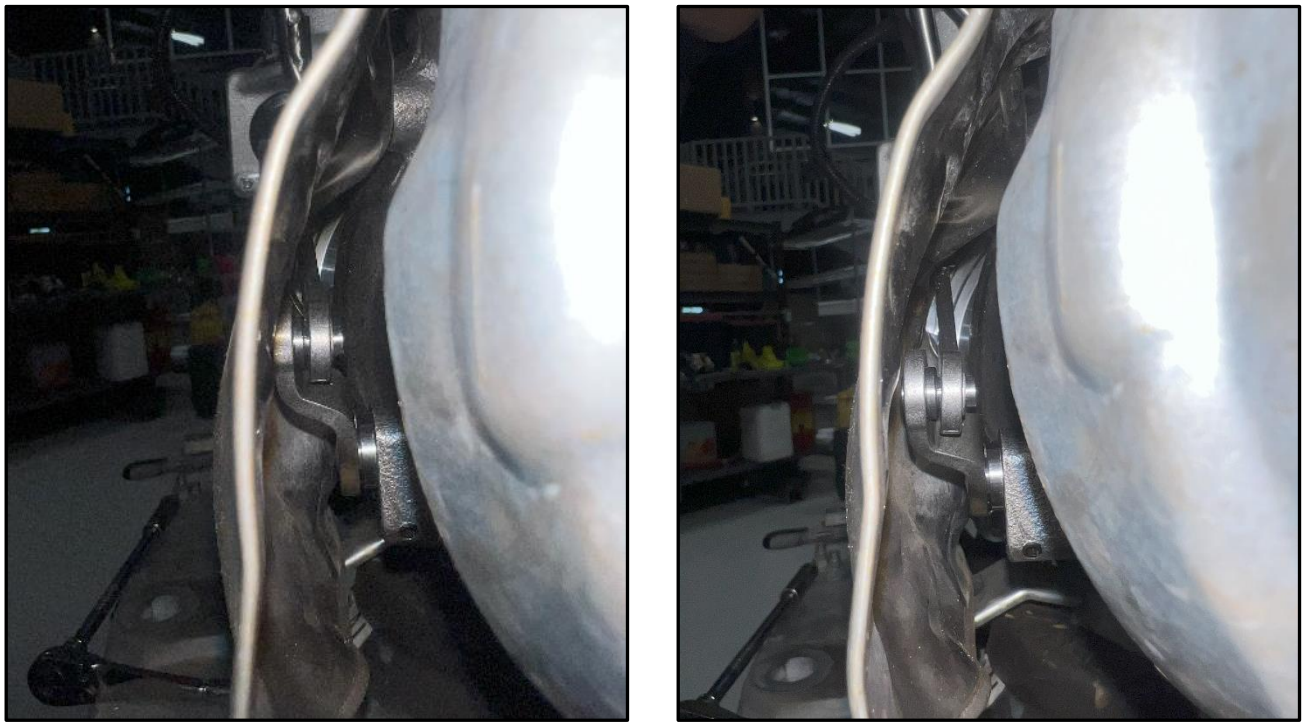


Figure 37

77. After the Heat Shields are trimmed to fit, use pliers and bend the inside cut edge flat to prevent the insulation from falling out with vibrations of the engine. Use *Figure 38* below as reference.

Figure 38

78. If your vehicle was equipped with Exhaust Temperature Sensors, reinstall them into the Z1 Turbos. Torque to **22 ft-lbs**. Make sure to install the OE Passenger Sensors onto the Z1 Passenger Turbo, and OE Driver Sensors onto the Z1 Driver Turbo.

79. If your vehicle was not equipped with Exhaust Temperature Sensors, install the provided M12 x 12mm Plug with the provided M12 Copper Washer/Gasket. *Figure 39.*

Figure 39

80. Install the Air Fuel Ratio Sensors that were removed from the OE Turbos onto the Z1 turbos. Torque to **37 ft-lbs**. Make sure to install the OE Passenger Sensors onto the Z1 Passenger Turbo, and OE Driver Sensors onto the Z1 Driver Turbo.

81. Reinstall the Catalytic Converters.

82. Reconnect all electrical connectors that were removed prior to removal of the OE Turbos.

83. Ensure all bolts and electrical connectors are securely fastened. Inspect vehicle for loose components or issues.

84. Refer to the Factory Service Manual (FSM) to reinstall the engine and transmission assembly.

85. Using CONSULT or another Diagnostic Scan Tool with Turbo Actuation Abilities, open the Wastegates to 0mm, 4mm, and 8mm. Read the Voltages, and make sure they match the Voltages recorded in *Steps 3-5*, or are within Spec. If the Voltages do not match, or are not within Spec, the Wastegate Actuator Arms will need to be adjusted. This is extremely difficult to do without pulling the engine back out of the vehicle. *Figure 40.*

Monitor item	W/G ACTUATOR POSITION B1/B2 (m)	W/G ACTUATOR POSI SEN B1/B2 (V)
Value	0.0073 – 0.0087	3.61 – 4.11
	0.0033 – 0.0047	2.25 – 2.75

Figure 40

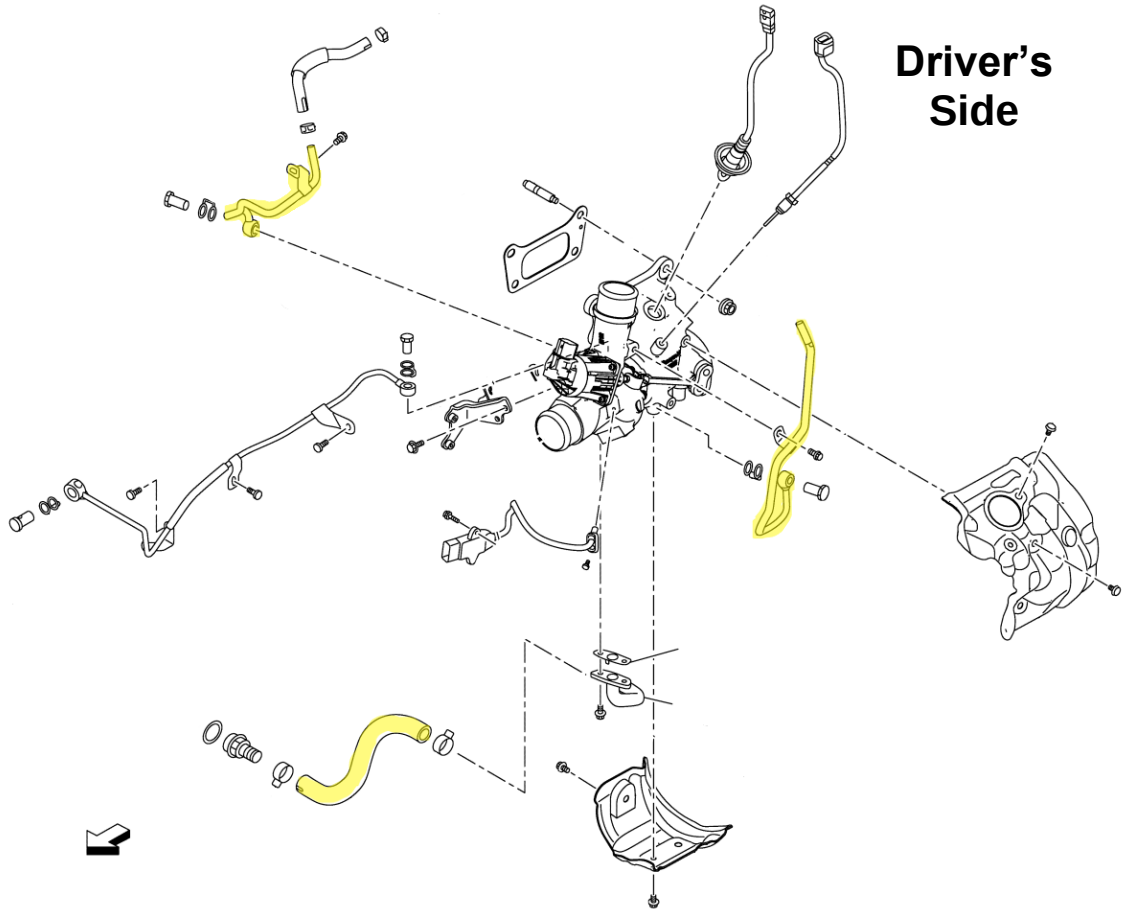
86. Using CONSULT, or another Diagnostic Scan Tool with Turbo Actuation Abilities, run the “Turbocharger Wastegate Control Solenoid Valve Data Initialization” procedure and the “Idle Air Volume Learning” procedure.

87. Contact Z1 Motorsports to purchase an Ecutek Tune for your vehicle.

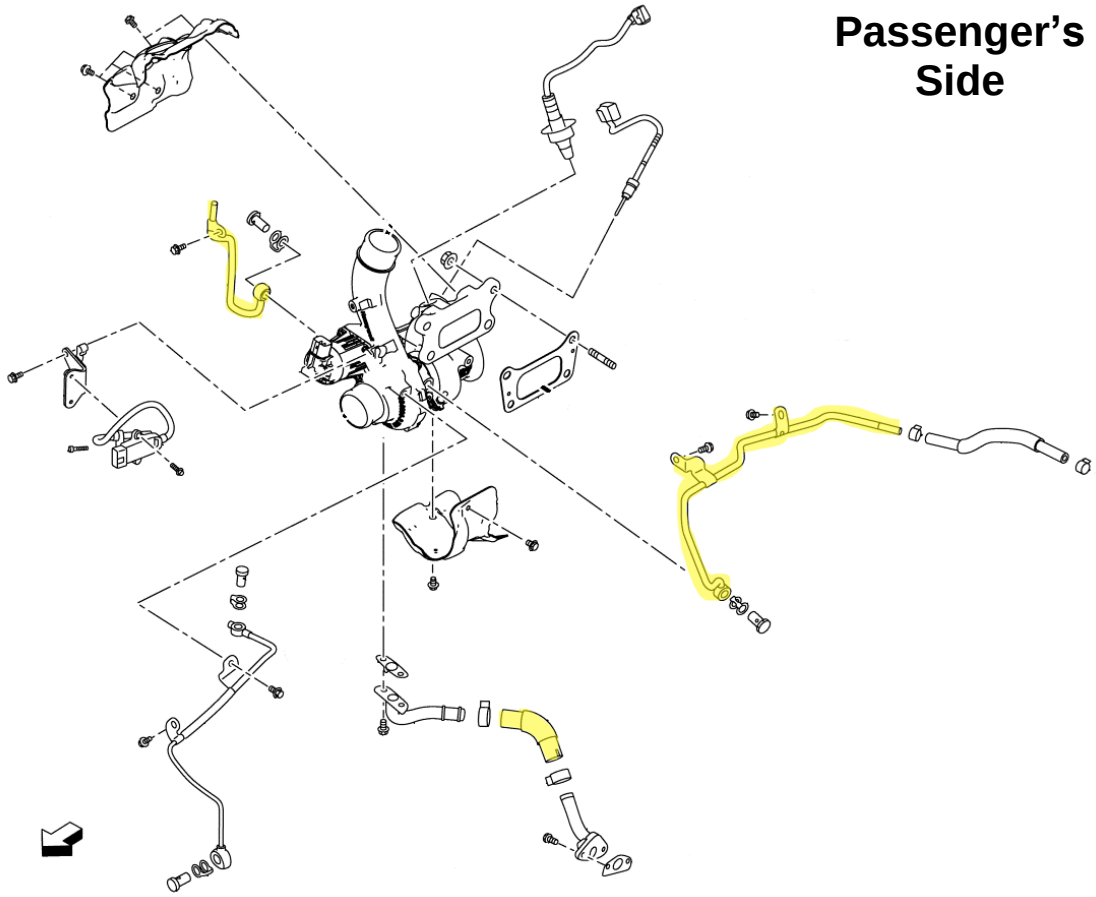
88. Perform a final test drive of vehicle.

Turbo Charger Diagrams are shown on the next page

Driver's Side



Passenger's Side



END

Additional Technical Support:
Contact Z1 Motorsports at info@z1motorsports.com
Or call 770-838-7777 between 9am and 6pm ET