

# Z1 NISSAN Z AIR TO AIR INTERCOOLER INSTALLATION MANUAL



This Installation Manual is intended for the following models:

2023+

Nissan Z

## 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 Nissan Z Air to Air Intercooler, consult with a Professional Mechanic, or contact Z1 Motorsports for more information.

## **PARTS INCLUDED:**

Item	Quantity	Description
1	1	Z1 Bash Bar
2	2	Air-to-Air Intercooler
3	1	Intercooler Bracket RH
4	1	Intercooler Bracket LH
5	2	Intercooler Bracket Middle
6	1	Charge Pipe Kit
7	1	Silicone Coupler Kit
8	12	M8 x 1.25 Flanged Bolt, 16mm
9	1	M6 x 1.0 x 40mm Coupling Nut
10	1	M6 x 1.0 Flat Head Screw
11	16	59-82mm Worm Gear Clamp
12	8	1 3/4" – 2 3/4" Hose Clamp
Optional: BOV Adapter Kit		
13	2	Adapter Flange
14	2	Small O-Ring
15	2	Large O-Ring
16	2	Snap Ring

## **TOOLS REQUIRED:**

- Hydraulic Jack
- (2) 2-Ton (or greater) Jack Stands
- Ratchet
- Ratchet Extension(s)
- Assorted Metric Wrenches
- Assorted Metric Sockets
- Torque Wrench
- Airsaw/Dremel
- Silicone Spray
- Screwdrivers
- Snap Ring Pliers

## **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 Nissan Z Air-to-Air Intercooler and verify that ALL necessary hardware is present.

## PROCEDURE:

1. Place the transmission in Park position (or in Reverse gear if equipped with a manual transmission). Apply the parking brake.
2. Break loose the front lug nuts but do not remove them.
3. Locate proper jacking points on vehicle's chassis (refer to vehicle's Owner Manual). Raise and support vehicle using jack & jack stands.
4. Remove the front lug nuts and wheels.
5. Open and support the hood of the vehicle.
6. Disconnect the (-) **NEGATIVE** Battery Terminal.
7. Remove the Engine Under Shroud, it will be secured with multiple bolts and plastic clips. Retain all hardware.
8. Remove the (5) five plastic clips and (5) five bolts securing the Fender Liners to each side of the vehicle and remove the Fender Flares. *Figure 1.*



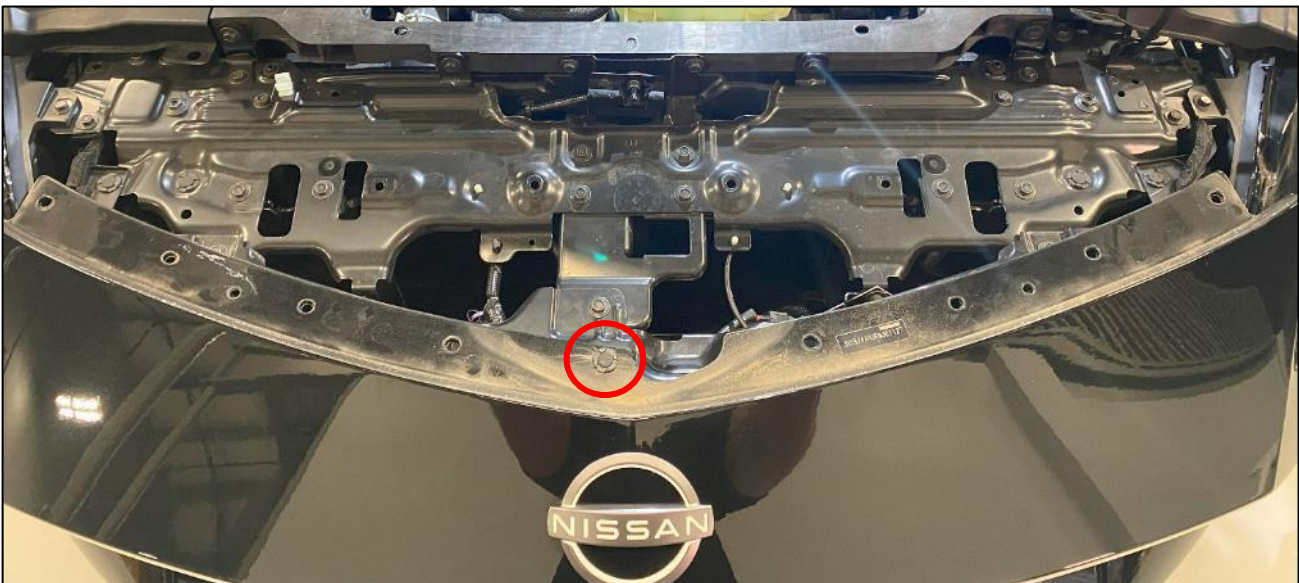
*Figure 1*

9. Remove the Plastic Clips securing the Radiator Air Guide to the top of the Core Support and Front Bumper. There will be (16) sixteen clips total. Remove the Radiator Air Guide. *Figure 2.*



*Figure 2*

10. With the Radiator Air Guide removed, remove the last Plastic Clip securing the top of the Front Bumper to the Core Support. *Figure 3.*



*Figure 3*

11. Remove the (1) one screw on each upper corner of the Front Bumper securing it to the Front Fenders.  
*Figure 4.*



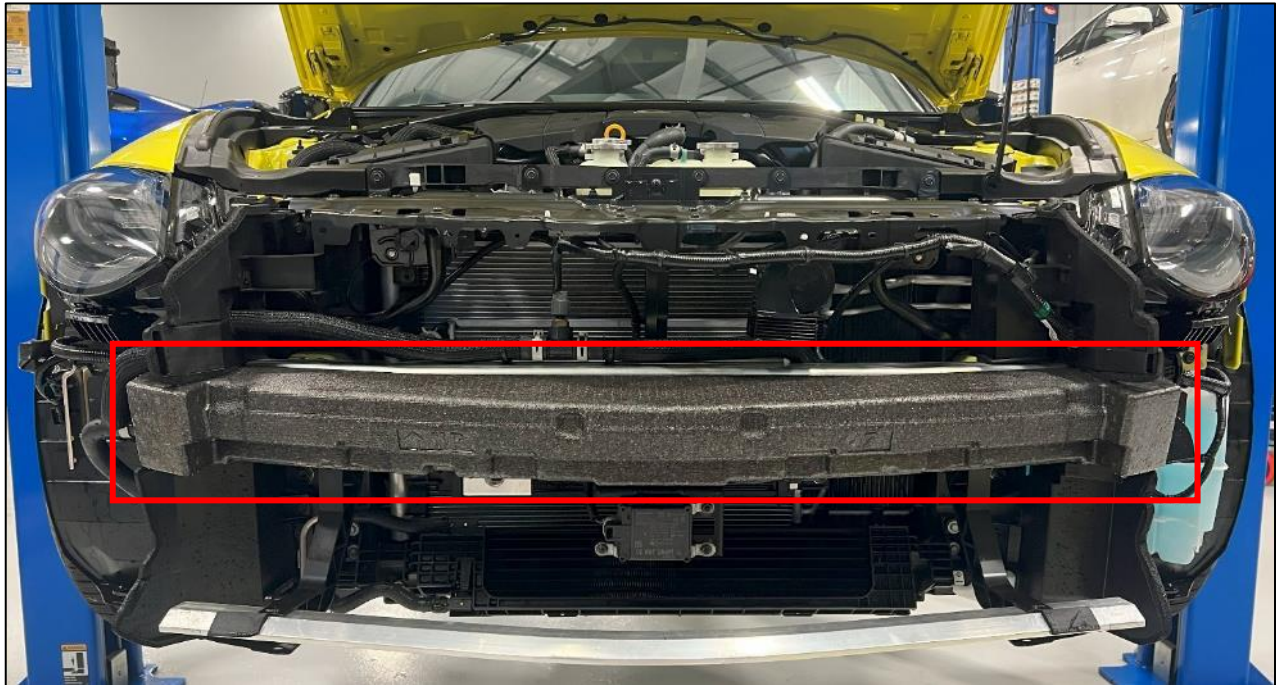
*Figure 4*

12. Disconnect the (2) two electrical Connectors on the bracket in the passenger side of the bumper. *Figure 5.*



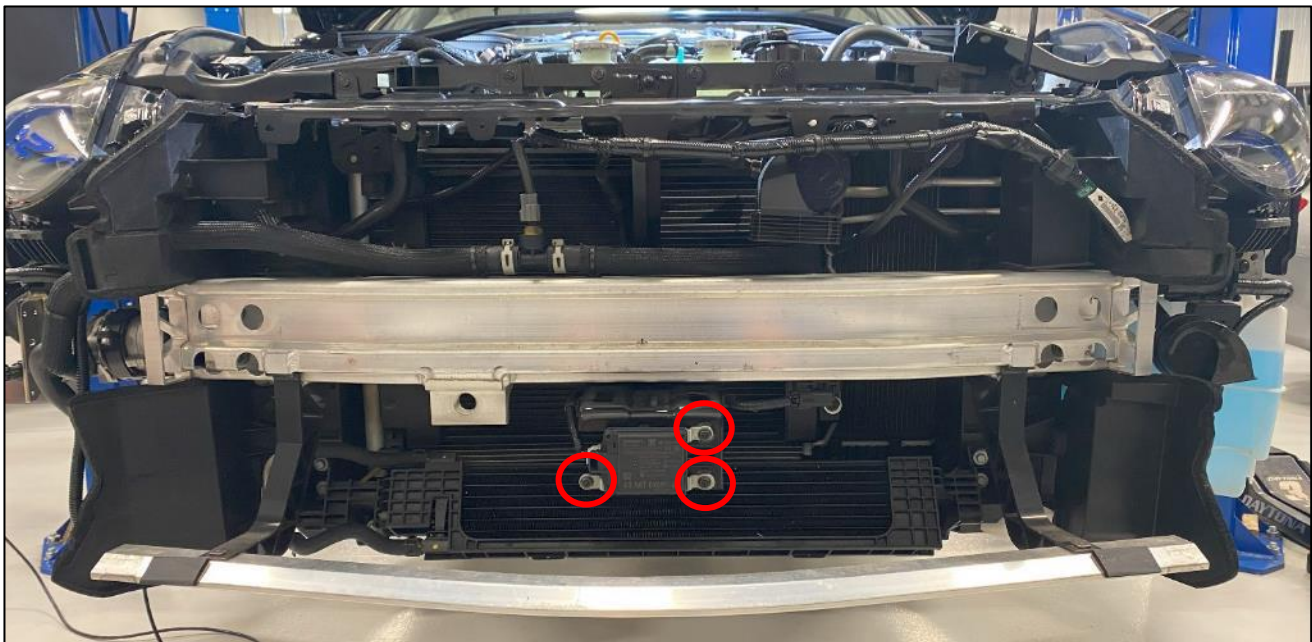
*Figure 5*

13. Remove the Plastic Tabs securing the Front Bumper at the corner of the Headlights, as well as the bottom of the headlights. Carefully pry the bumper away from the headlights to release it and set aside once removed.
14. Remove the Foam Impact Absorber from the OEM Crash Bar. *Figure 6.*



*Figure 6*

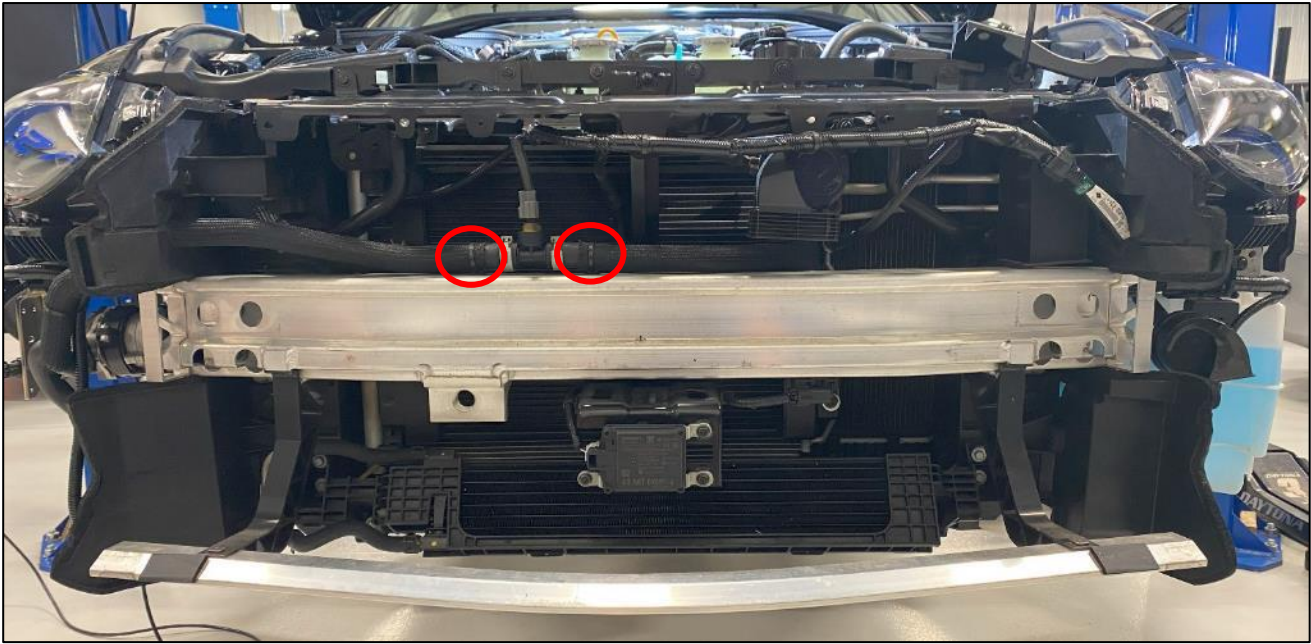
15. Remove the (3) three nuts securing the Radar Sensor to the center of the OEM Crash Bar, retain this hardware. *Figure 7.*



*Figure 7*

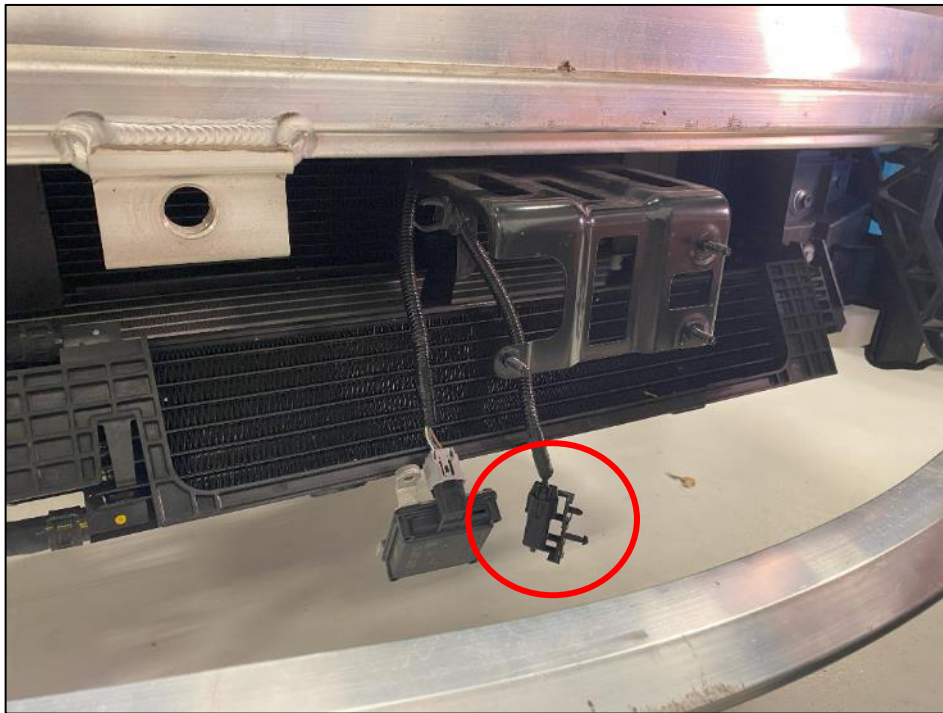
16. You can optionally disconnect the Radar Sensor or work around it with it still connected. However, if you decide to disconnect the Radar Sensor, the key **MUST** be in the OFF position, or the battery must be disconnected. If the key is not in the OFF Position, the Radar Sensor will need to be recalibrated.

17. Disconnect the Coolant Line clips from the OEM Crash Bar. *Figure 8.*



*Figure 8*

18. Disconnect the Ambient Air sensor on the underside of the OEM Crash Bar and remove the wiring harness clip. *Figure 9.*



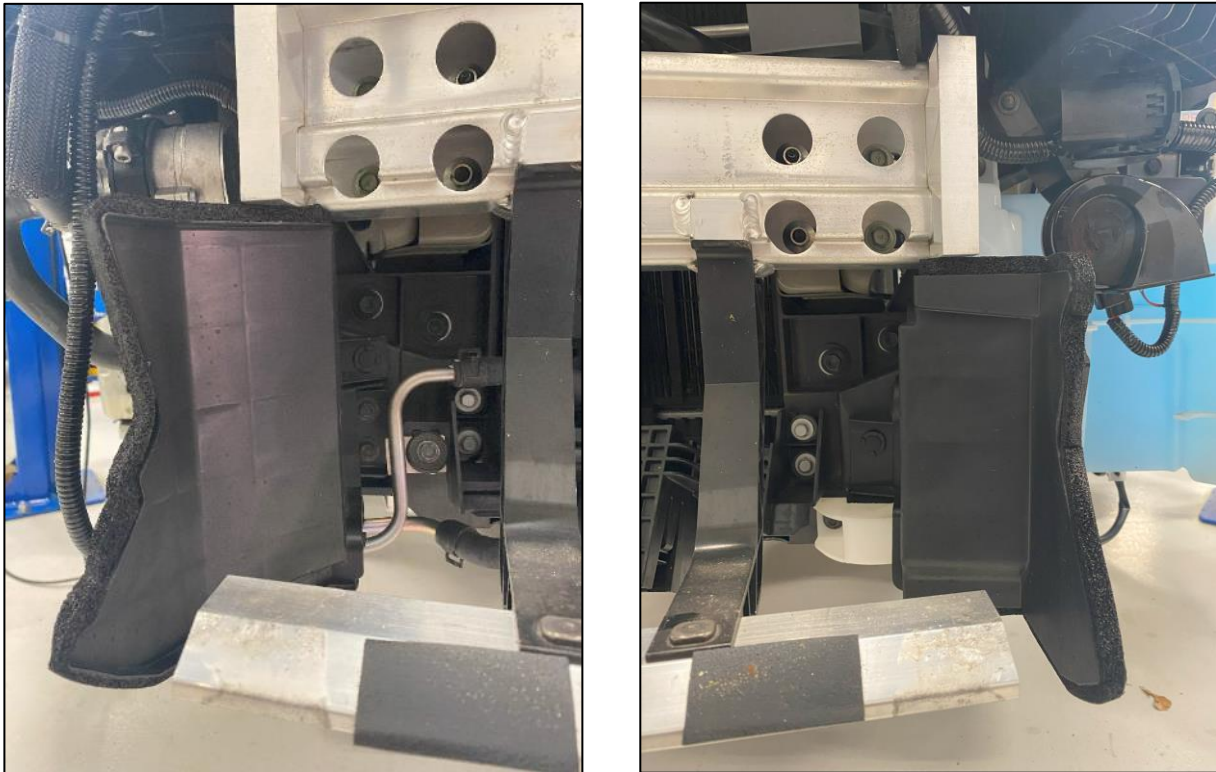
*Figure 9*

19. Remove the (4) four nuts and (4) four bolts that secure the OEM Crash Bar to the vehicle and remove the OEM Crash Bar from the Vehicle. Retain this hardware. *Figure 10.*



*Figure 10*

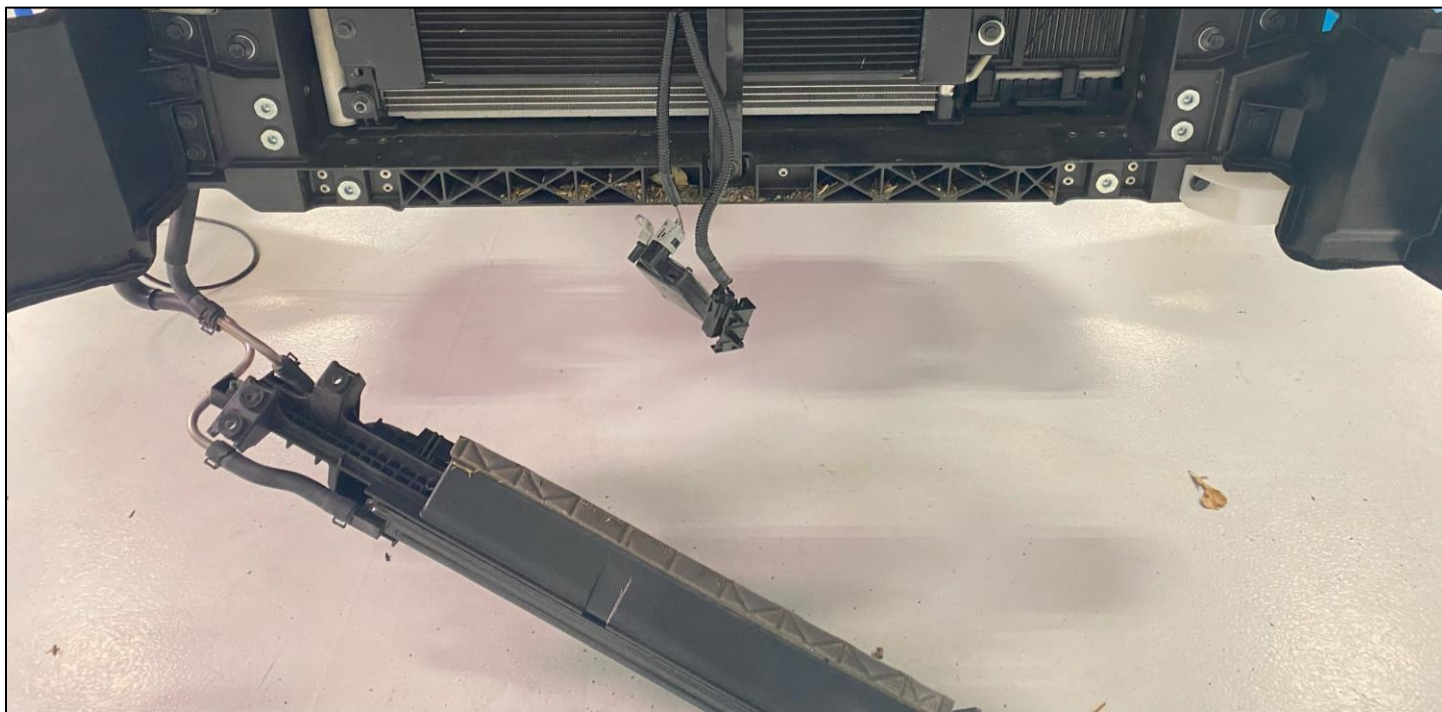
20. Remove the Upper and Lower Radiator Air Guides on each side of the vehicle, held on by Plastic Clips. These can optionally be discarded or trimmed to fit the Intercooler Piping once installed. *Figure 11.*



*Figure 11*



21. Disconnect the (6) six bolts that secure the OEM Oil Cooler to the vehicle. The Oil Cooler can hang or be zip tied out of the way. Retain this hardware. *Figure 12.*



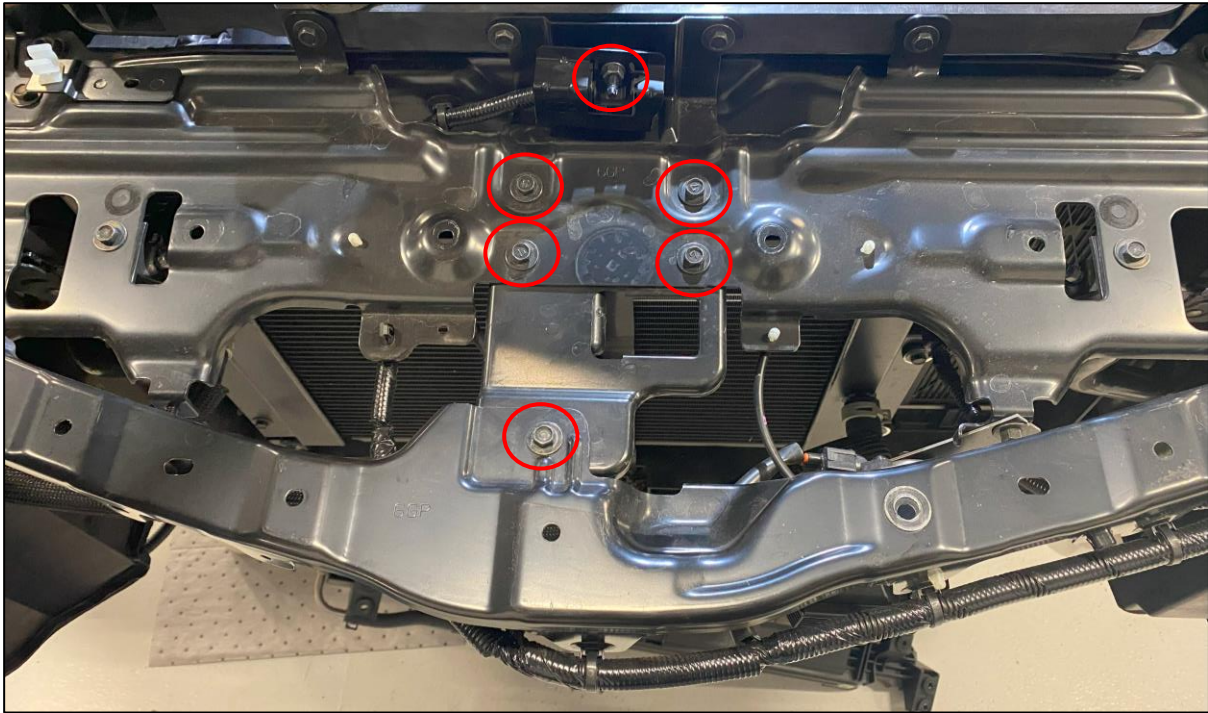
*Figure 12*

22. Drain the coolant from the Intercooler Coolant Pump on the passenger side of the vehicle. The car below has our upgraded Coolant Pump system, so there is a second Coolant Pump. *Figure 13.*



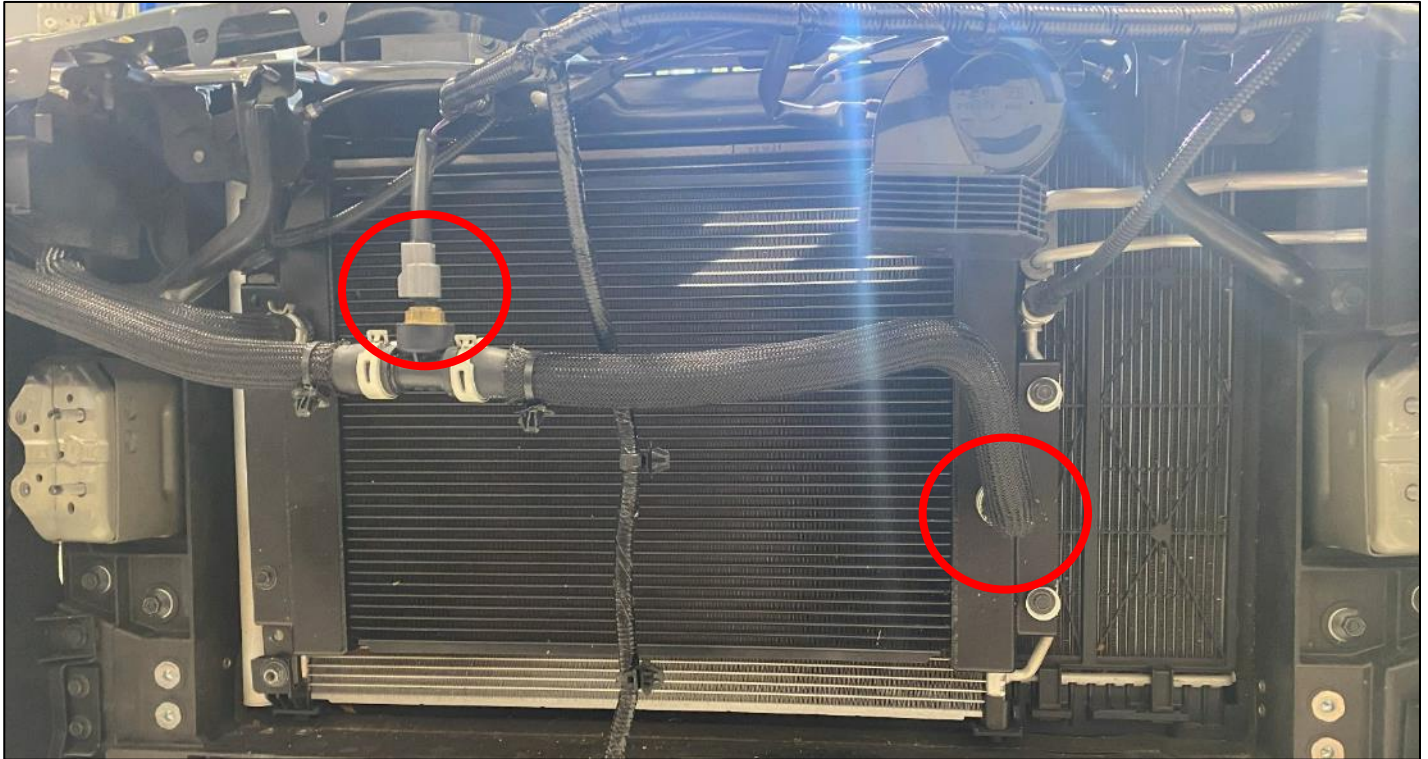
*Figure 13*

23. Remove the Center Support Piece. It is held on by (1) one bolt on the bottom and (6) six bolts on the top of the Core Support. Retain all hardware. *Figure 14.*



*Figure 14*

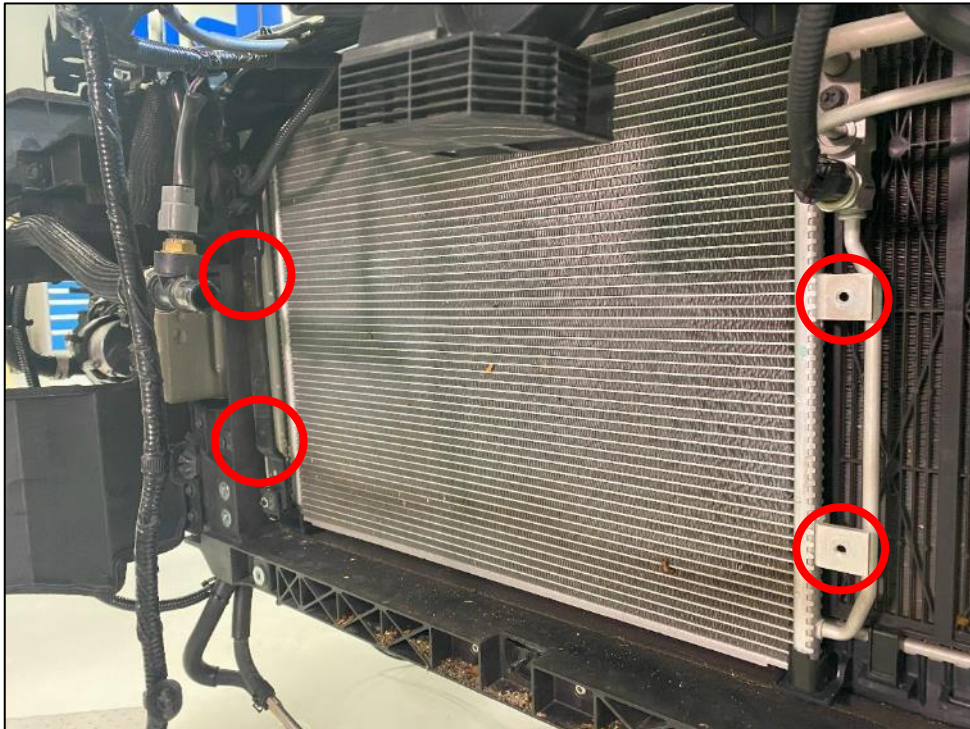
24. Disconnect the Coolant Sensor and the Hose going into the Heat Exchanger and drain all coolant. Our vehicle has the upgraded Z1 Heat Exchanger, but the process is the same for an OEM Heat Exchanger.  
*Figure 15.*



*Figure 15*

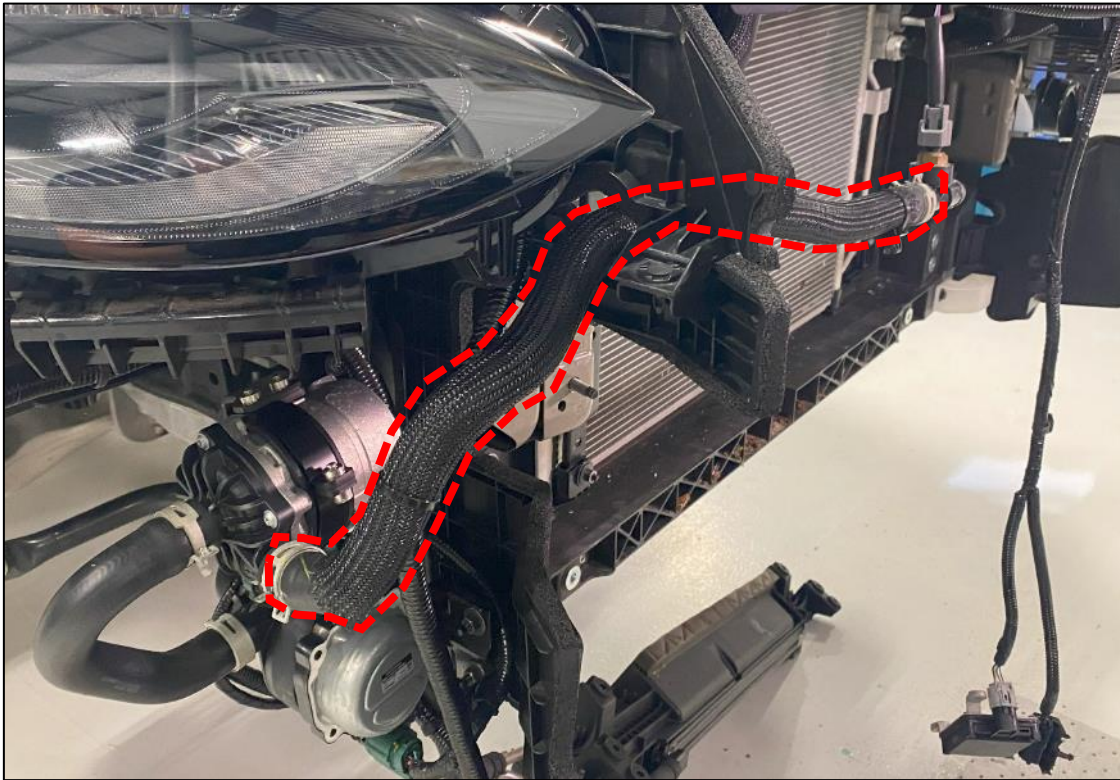
25. Disconnect the other hose going into the Heat Exchanger.

26. Remove the (4) four bolts securing the Heat Exchanger to the Vehicle and remove the Heat Exchanger. Our Heat Exchanger has already been removed in *Figure 16* below.



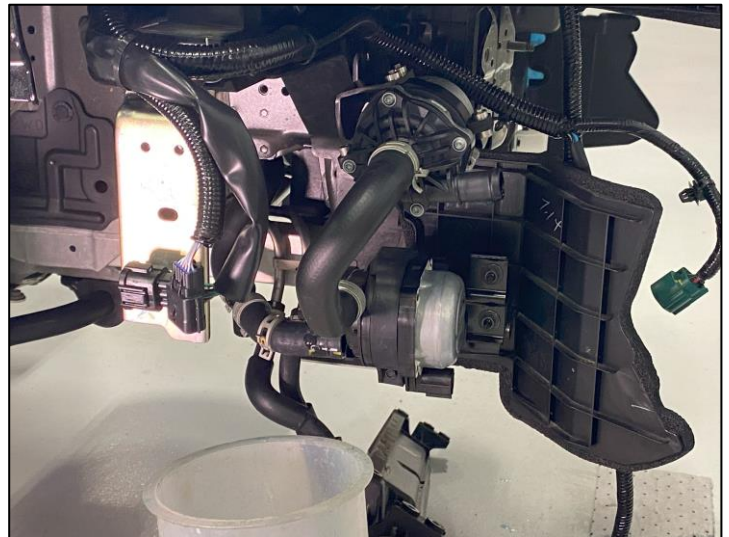
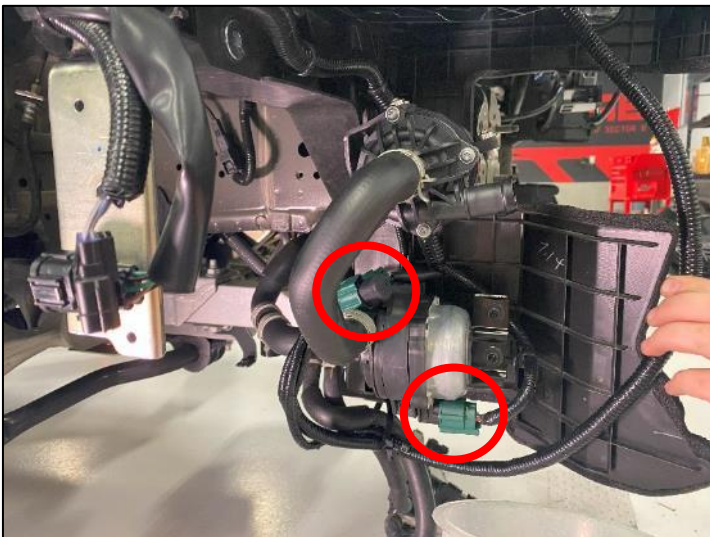
*Figure 16*

- 27. Reinstall the Core Support Piece removed in *Step 23*.
- 28. Reinstall the OEM Oil Cooler removed in *Step 21*.
- 29. Remove the Coolant Hose from the Coolant Pump(s). *Figure 17*.



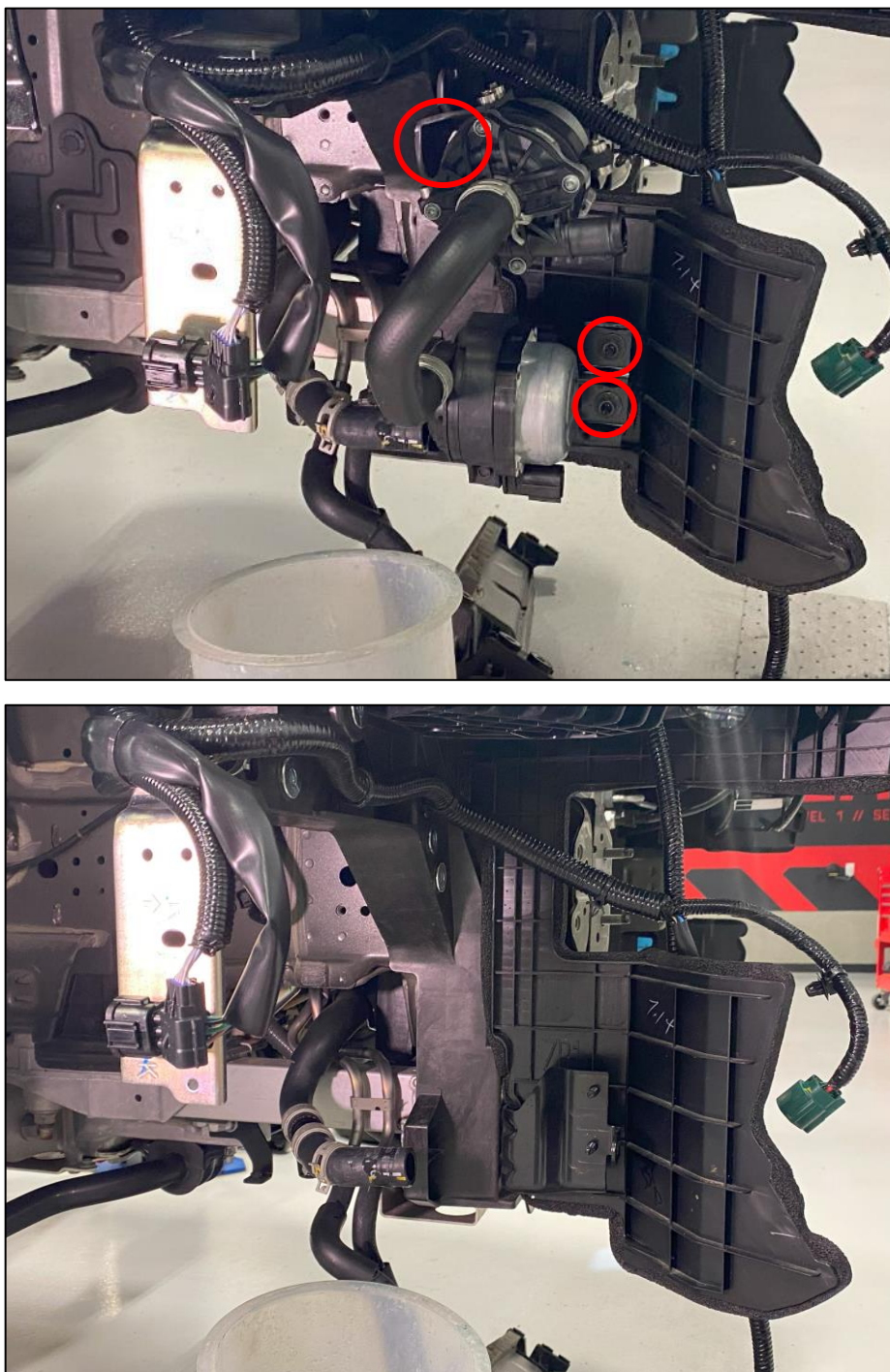
*Figure 17*

- 30. Disconnect all Electrical Connectors from the Coolant Pump(s). *Figure 18*.



*Figure 18*

31. Remove the bolts securing the Coolant Pump(s) to the vehicle and remove the Coolant Pump(s). *Figure 19.*



*Figure 19*

32. Remove the Coolant Pump Bracket. *Figure 20.*



*Figure 20*

33. Secure the electrical connectors disconnected in *Step 30* with zip ties.

34. Remove the Strut Tower Brace. The upper Cowl Trim Piece will need to be removed to access the upper bolts for the Strut Tower if you are using a Z1 Strut Tower Brace.

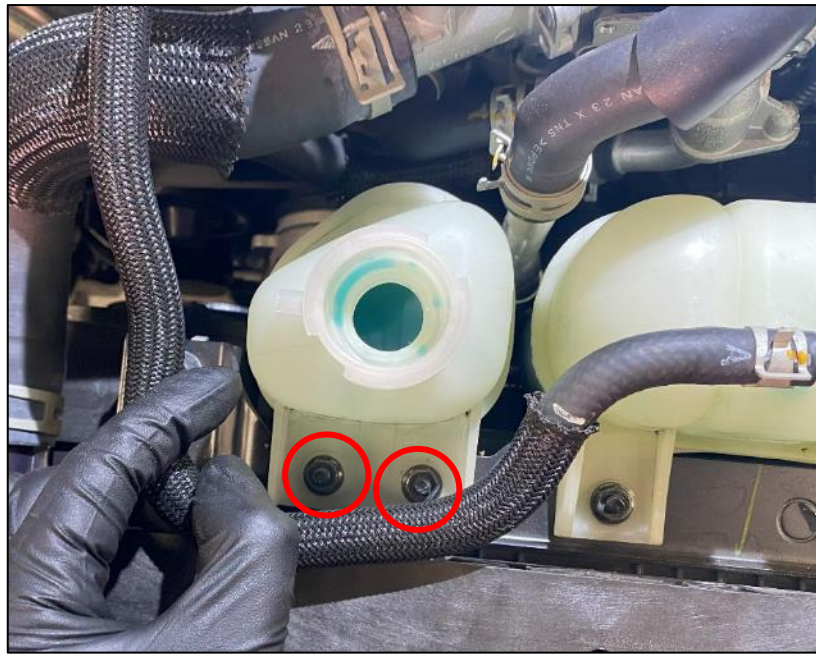
35. Remove the Engine Cover if applicable.

36. If you have installed the Z1 Coolant Pump Controller, disconnect and remove it from the vehicle. *Figure 21.*



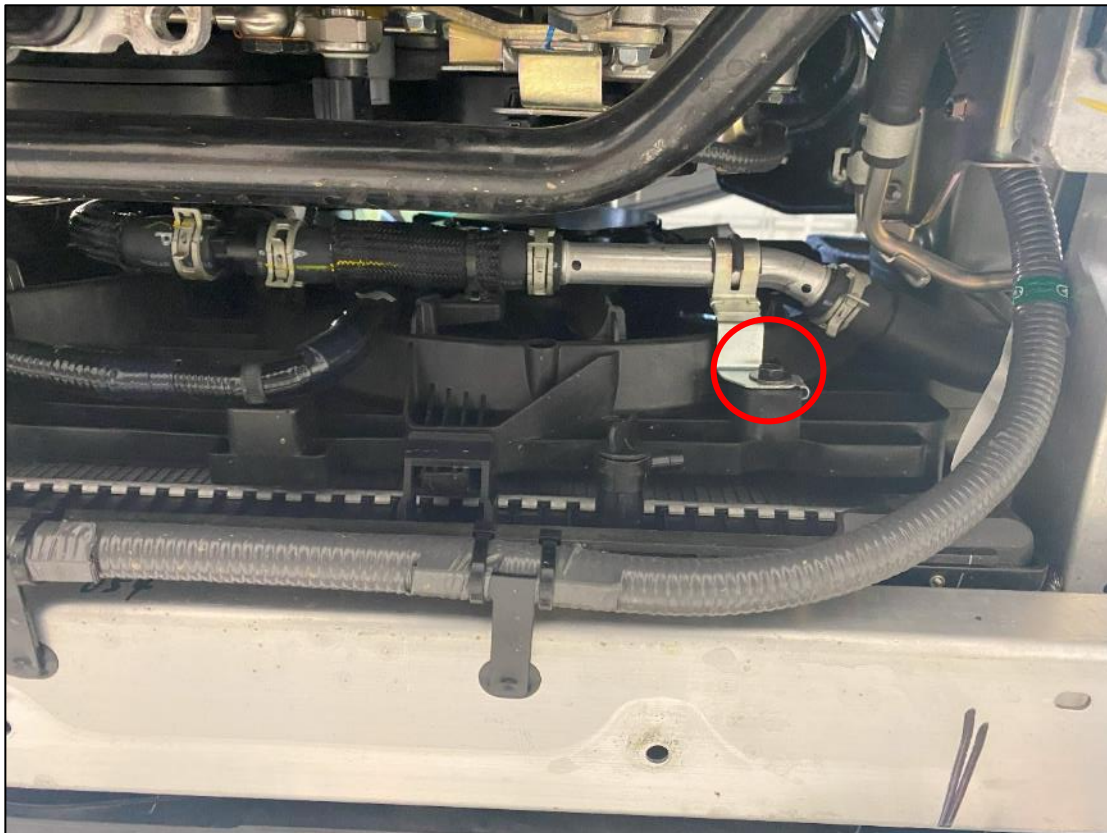
*Figure 21*

37. Remove the (2) two bolts securing the Intercooler Coolant Reservoir to the vehicle. *Figure 22.*



*Figure 22*

38. Underneath the car, remove the (1) bolt securing the Coolant Reservoir Hose Bracket to the Core Support. *Figure 23.*



*Figure 23*

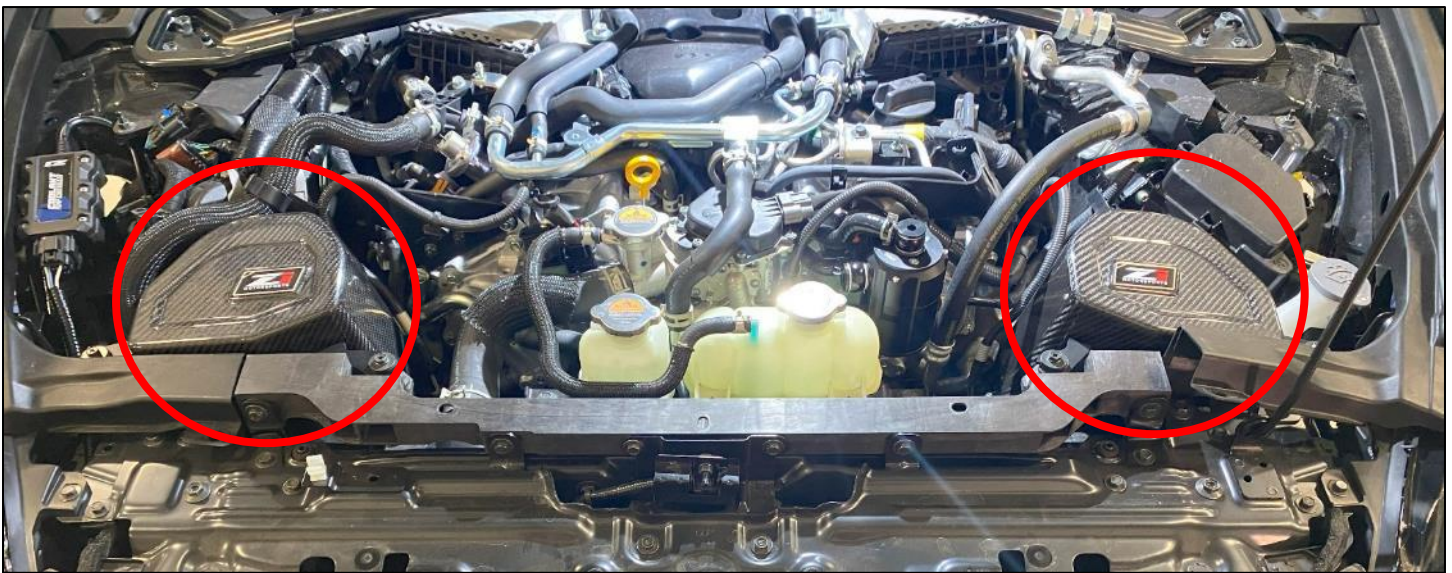


39. Remove the Intercooler Coolant Reservoir and accompanying hose from the vehicle. *Figure 24.*



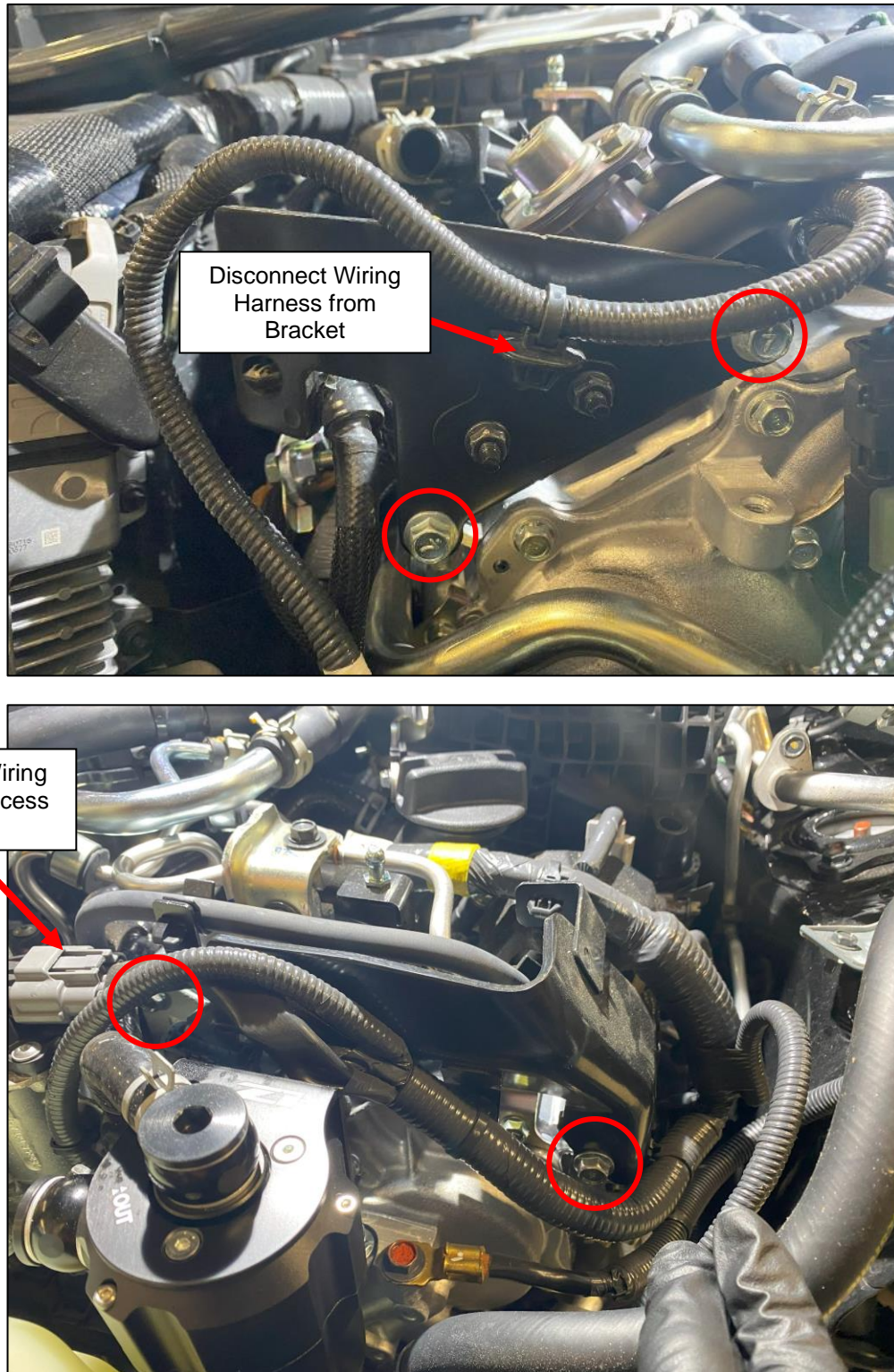
*Figure 24*

40. Remove the Air Filters from the vehicle. Our vehicle had Z1 Intakes installed. *Figure 25.*



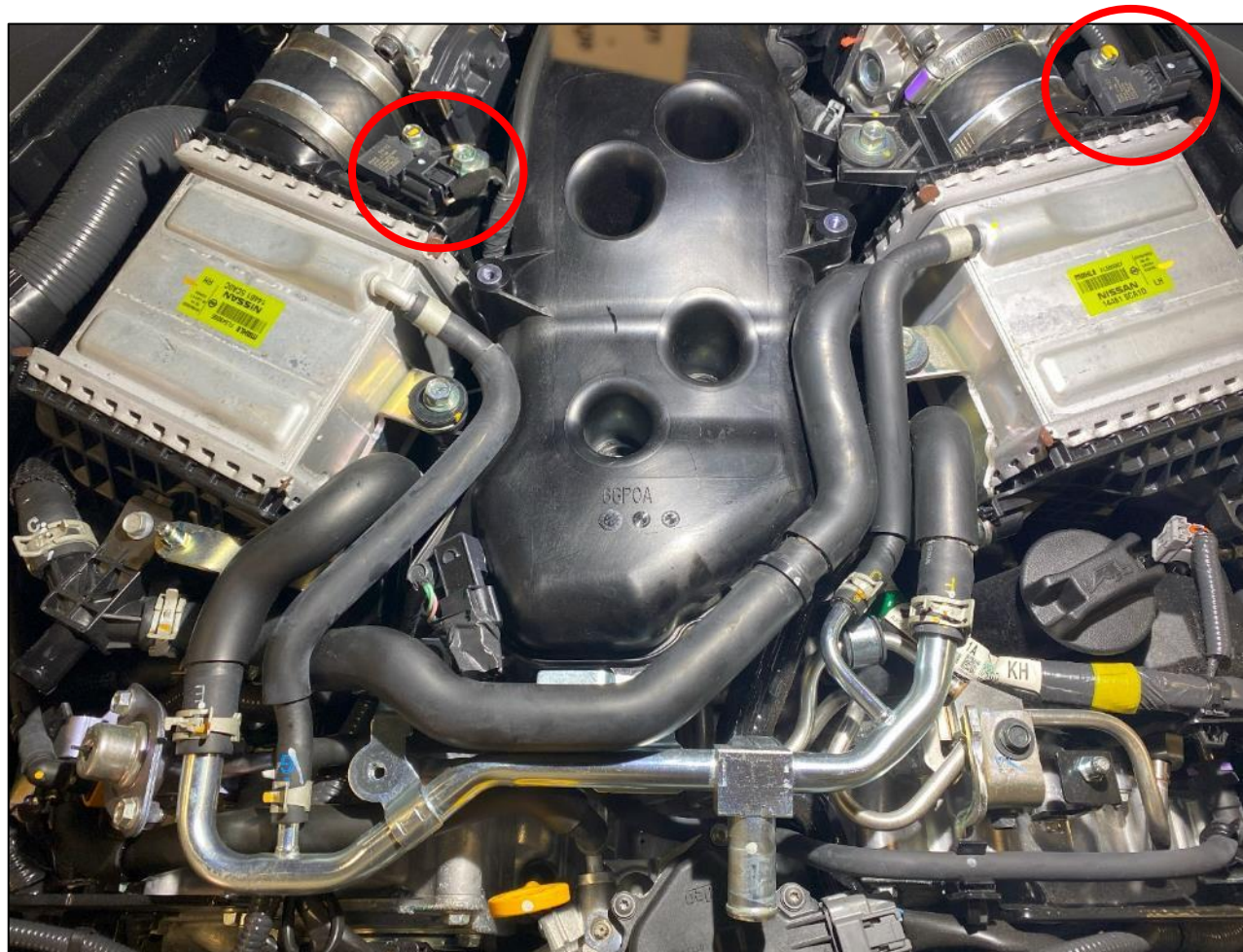
*Figure 25*

41. Unbolt and retain the MAF Sensors in each Intake. Retain the Mounting Hardware as it'll be reused.
42. Remove the (2) two black brackets securing wiring harnesses at the front of the engine. Each is held on by (2) bolts. Disconnect the Wiring Harness on the Passenger Side Bracket, and the Driver Side Bracket will need to have a Wiring Harness disconnected in front of it to have access to one of the bolts. *Figure 26.*



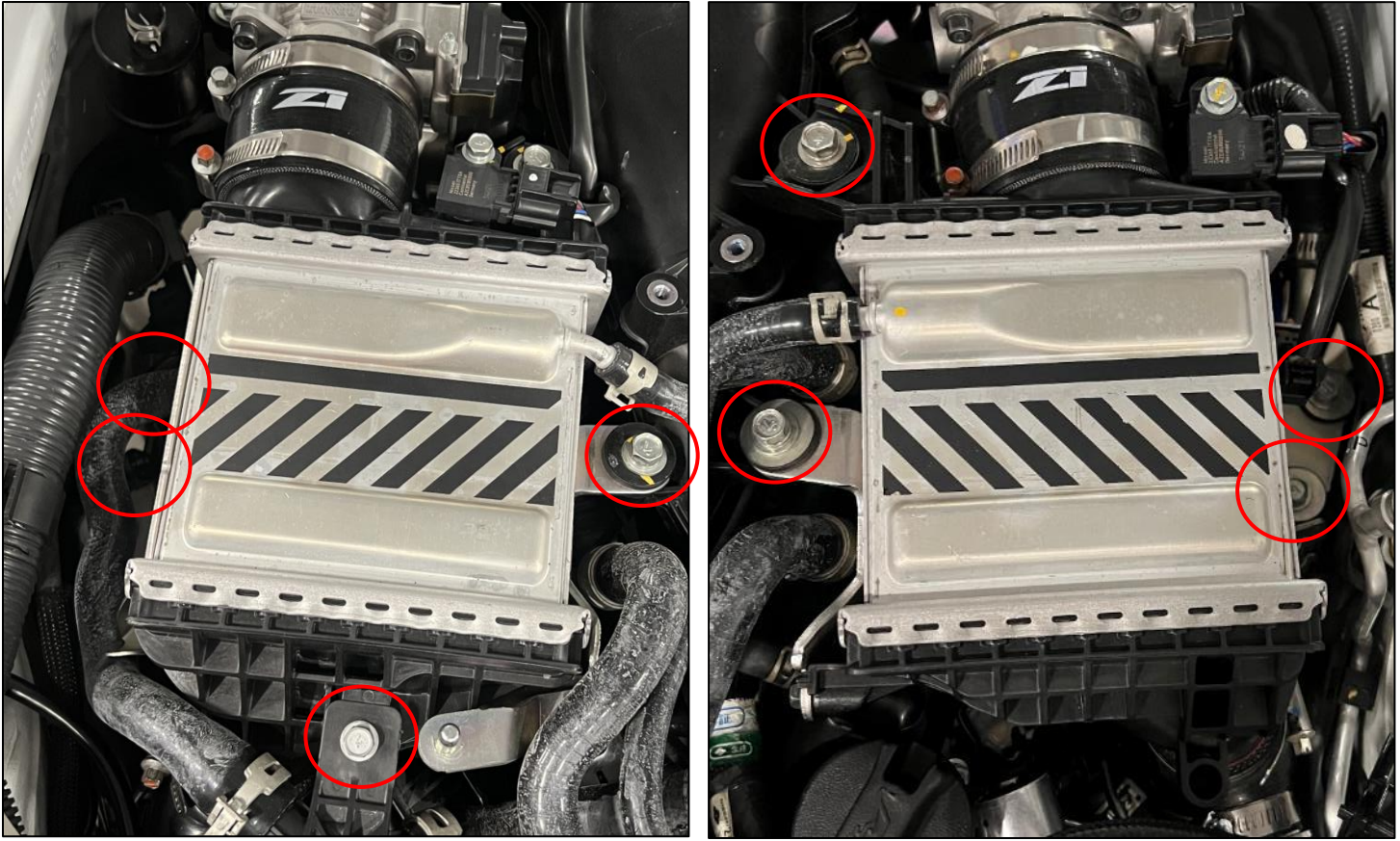
*Figure 26*

43. Unbolt and remove the MAP Sensor on the backside of each Intercooler. *Figure 27.*



*Figure 27*

44. Disconnect the bolts holding each Intercooler. There are (4) four bolts for each Intercooler, (2) two on the top side, and (2) two on the lower side. *Figure 28.*

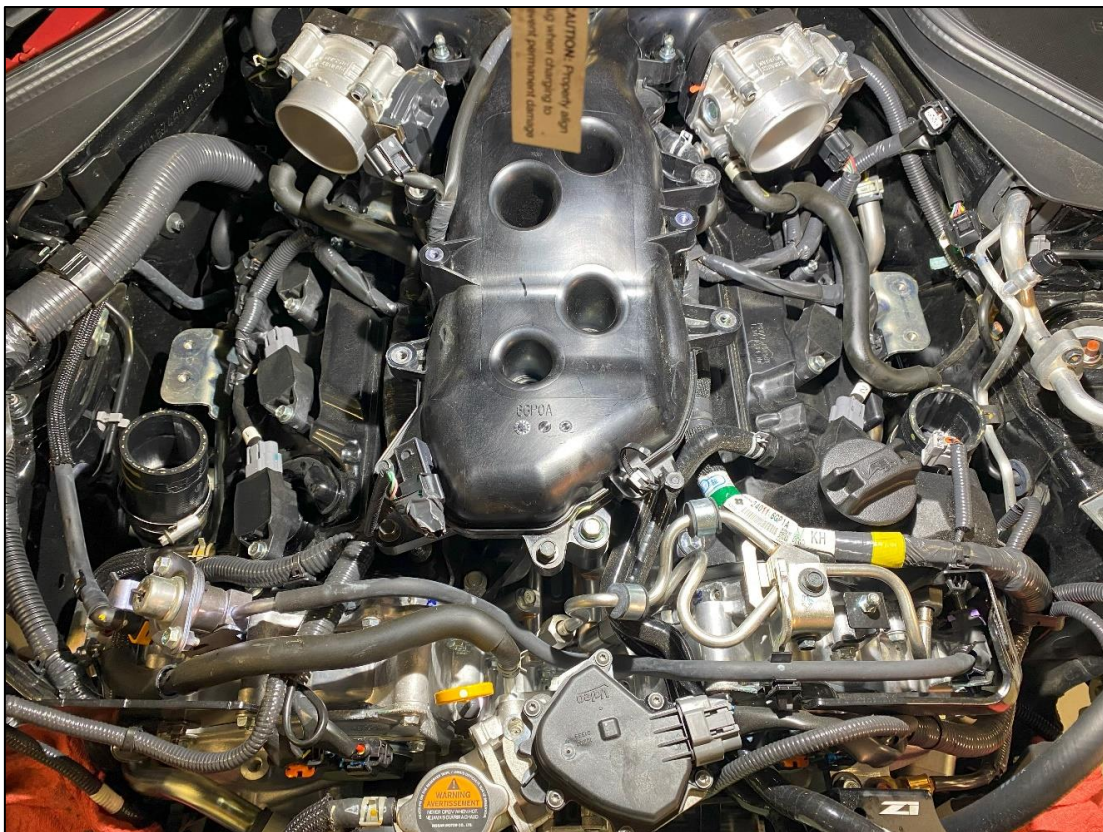
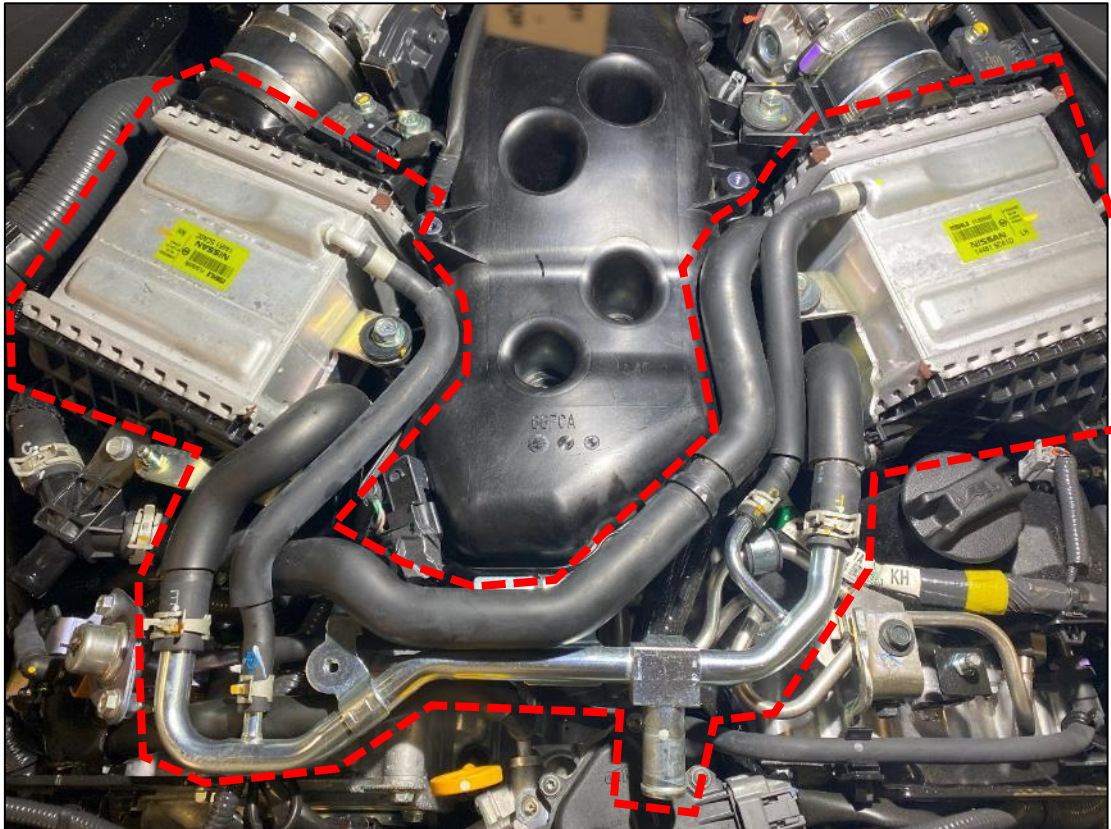


*Figure 28*

45. Loosen the Hose Clamps at the Throttle Body to Intercooler Coupler.

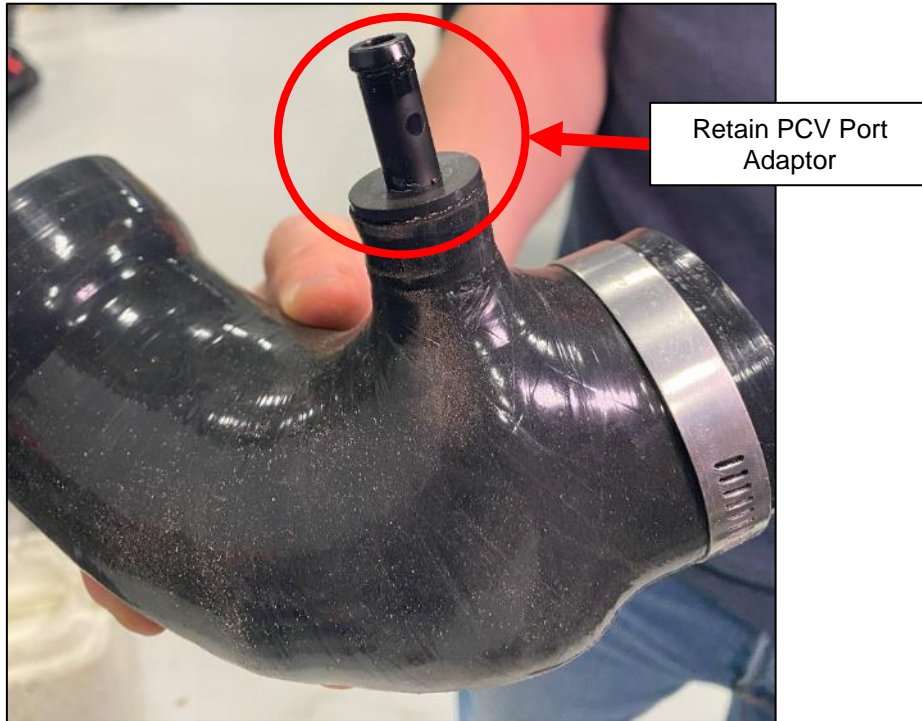
46. Lift (1) one Intercooler at a time to remove it from the Throttle Body Coupler and its mount.

47. Once both Intercoolers are disconnected, lift and remove the entire Intercooler Assembly and Piping from the vehicle. *Figure 29.*



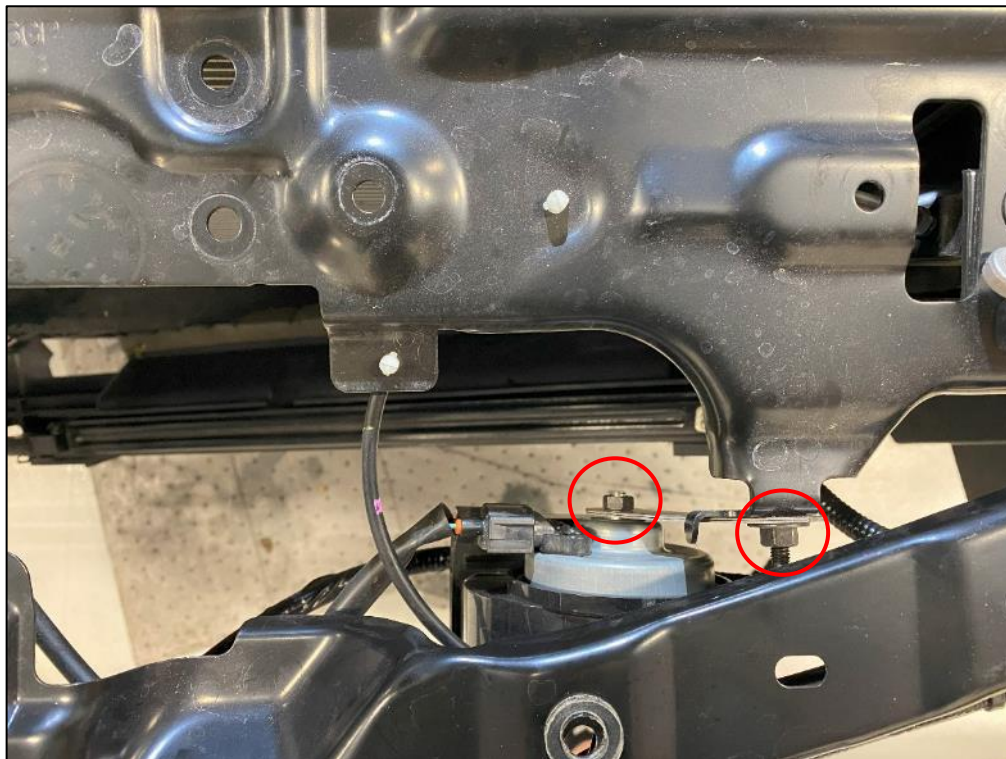
*Figure 29*

48. Remove all couplers and Hose Clamps from the Turbo Inlets and Outlets. Retain the PCV Port Adaptor on the Passenger Side Turbo Inlet Pipe. *Figure 30.*



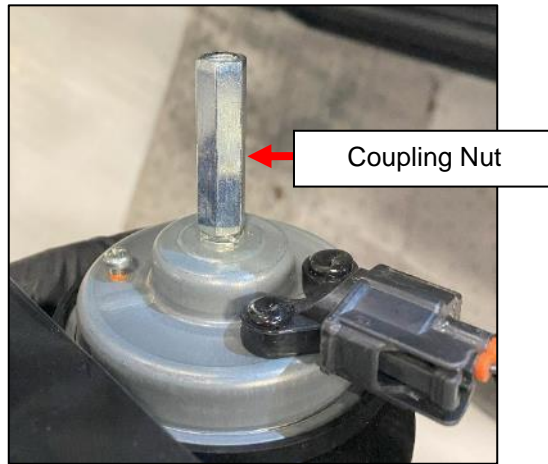
*Figure 30*

49. Remove the nut securing the horn to the Core Support and remove the other nut securing the Bracket to the horn. *Figure 31.*



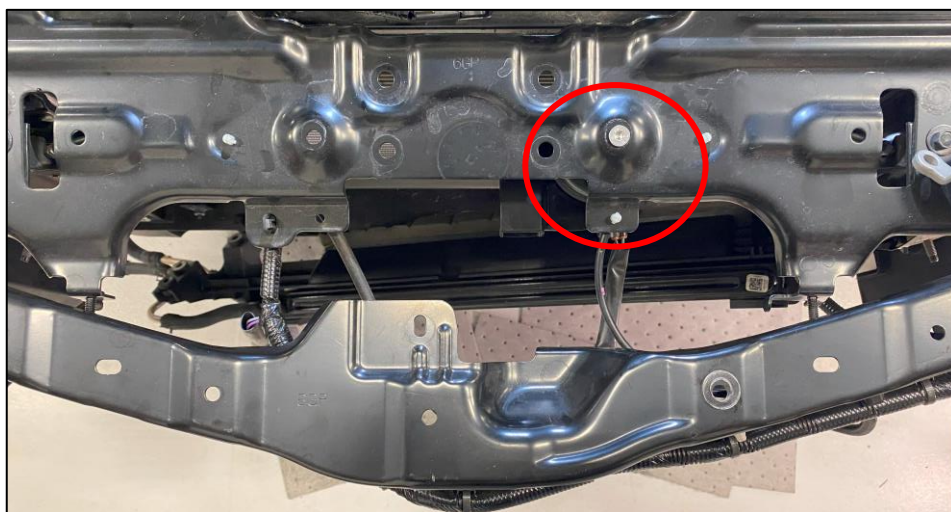
*Figure 31*

50. Locate the M6 Coupling Nut. Thread the Coupling nut onto the Stud from the Horn. *Figure 32.*



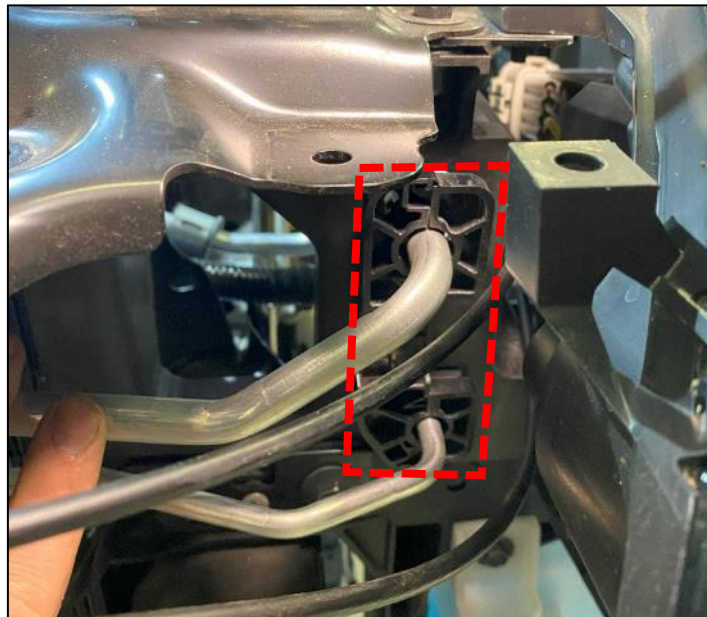
*Figure 32*

51. Locate the M6 Flat Head Screw. Position the Horn on the Core Support as shown below and secure the Horn with the Flat Head Screw through the Core Support and into the Coupling Nut. *Figure 33.*



*Figure 33*

52. Remove the Plastic Clip around the AC Lines on the Driver Side of the vehicle. *Figure 34.*



*Figure 34*



53. The Core Support will need to be opened up with an Air Saw, Dremel, or similar tool to allow the Air Filters and Silicone to pass through. View *Figure 35* and *Figure 36* below to see a before and after. The Driver Side will also need to have the opening for the AC Lines enlarged to allow for extra movement of the AC Lines.

**NOTE:** Use caution on the Driver Side Opening, as the AC Lines are very close. Wrapping a spare piece of silicone hose around the lines can help prevent the blade from cutting the lines. Depending on how much you cut around the AC Lines, the Lines may contact each other. Wrap the Lines with spare Silicone Hose and Zip Ties if necessary to prevent the AC Lines from rubbing.

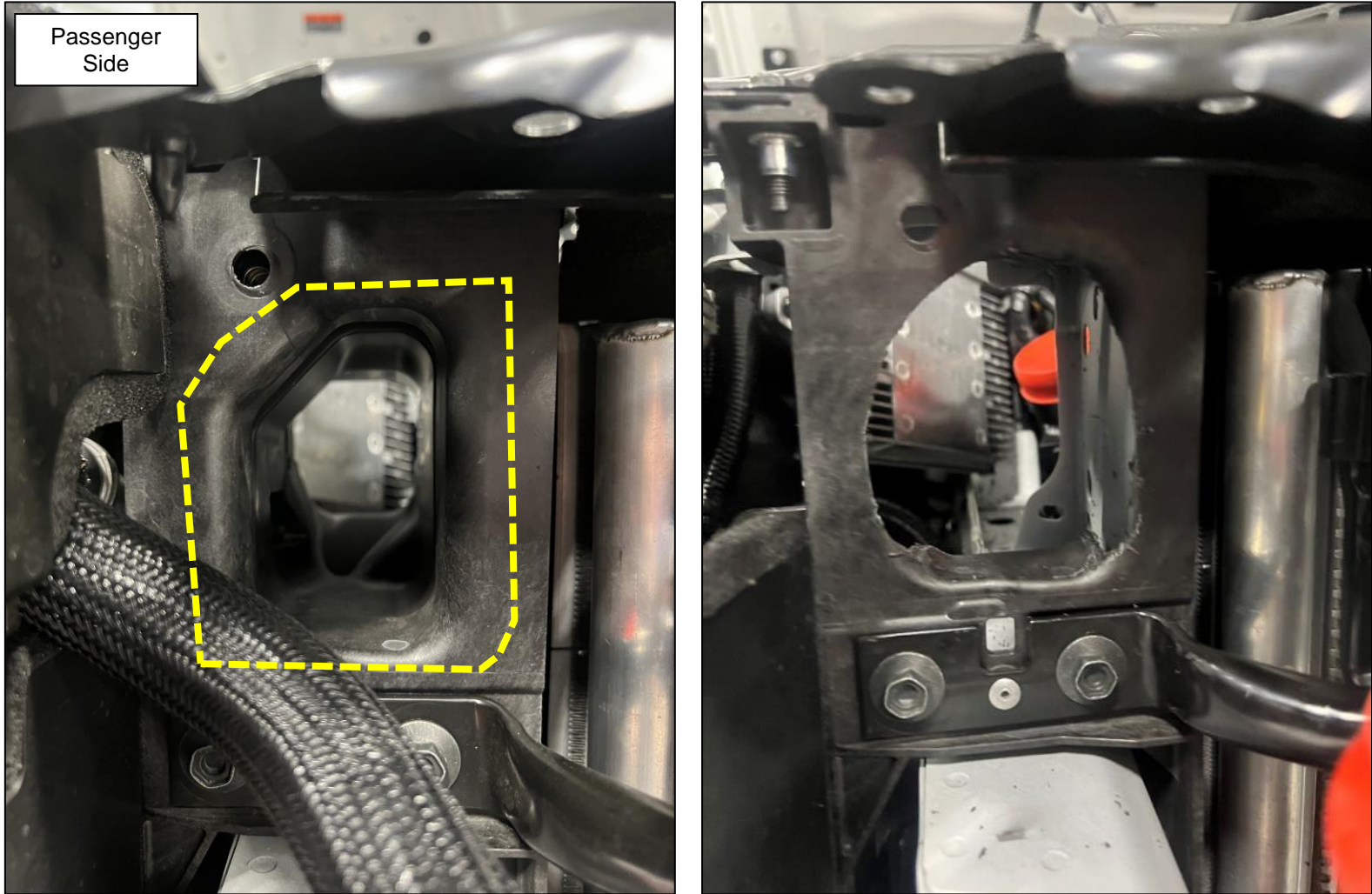


Figure 35

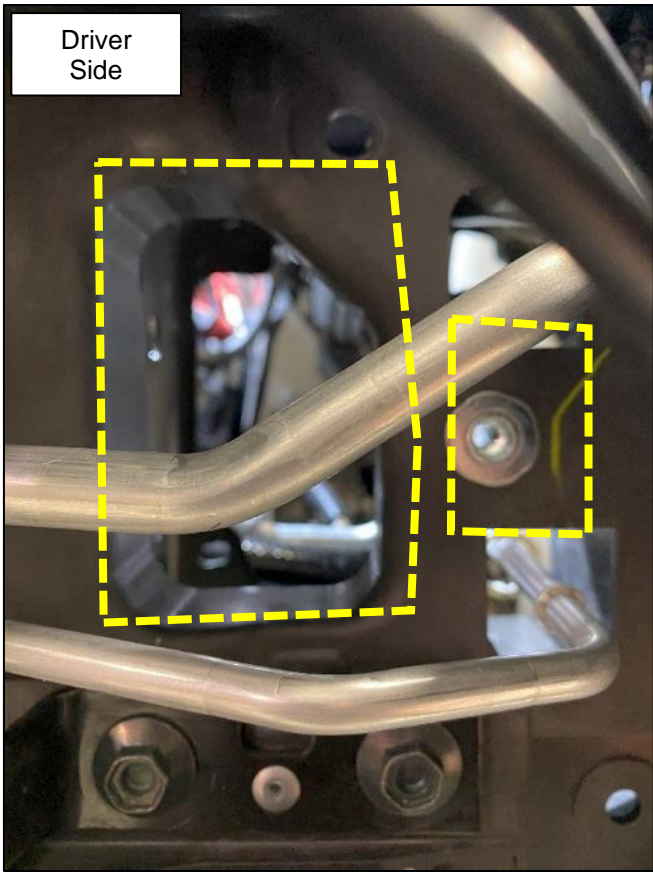


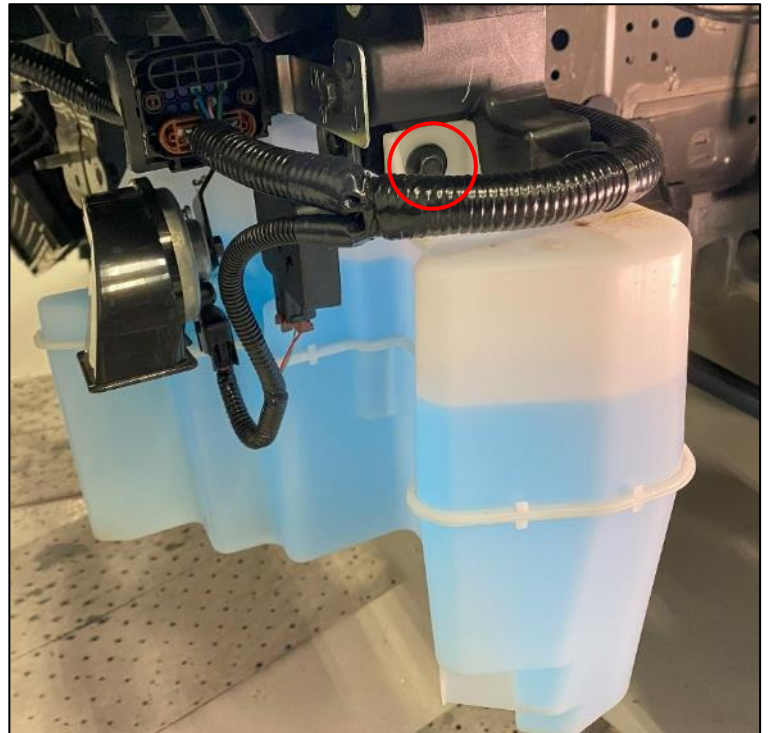
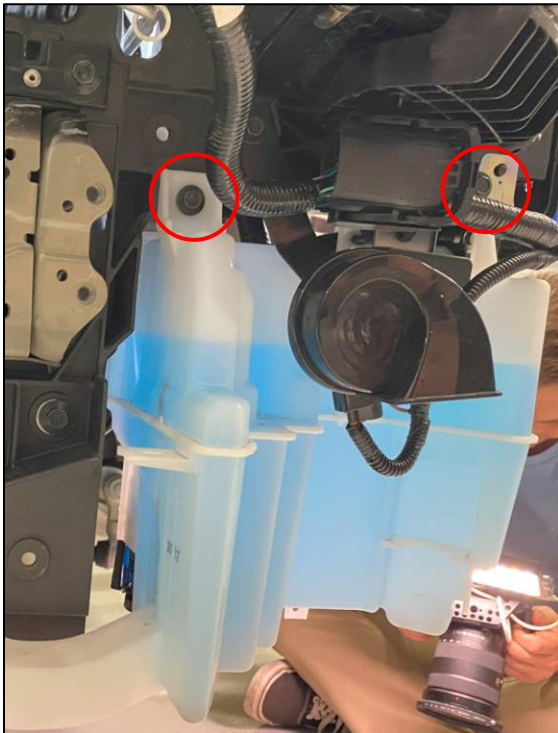
Figure 36

- 54. Disconnect the (2) two electrical connectors on the back of the Washer Fluid Reservoir and remove the Hose from the Reservoir.
- 55. Remove the (1) one Plastic Clip that secures the Washer Fluid Fill Tube to the chassis in the engine bay. *Figure 37.*



*Figure 37*

- 56. Pull up on the Washer Fluid Fill Tube to remove it from the Washer Fluid Reservoir.
- 57. Unbolt and remove the Washer Fluid Reservoir from the vehicle. *Figure 38.*



*Figure 38*

58. Locate all of the Silicone Tubing, Hard Pipes, and Hose Clamps. View the *Figures* below as a reference on where they will go. The Larger Hose Clamps will go on the Larger Inlets/Outlets of the Silicone, and the Smaller Hose Clamps will go on the Smaller Inlets/Outlets. Use of Silicone Spray is helpful for installing the piping for the upcoming steps.

**NOTE:** Do not tighten the Hose Clamps on the Pipes until it is adjusted to Final Fitment. Lots of adjustment will be necessary as it is a tight fit.

ITEM NO.	DESCRIPTION	QTY.
1	THROTTLE BODY COUPLER	2
2	RH TURBO OUTLET COUPLER	1
3	LH TURBO OUTLET COUPLER	1
4	RH COLD SIDE COUPLER	1
5	RH HOT SIDE COUPLER	1
6	LH COLD SIDE COUPLER	1
7	LH HOT SIDE COUPLER	1
8	RH TURBO INLET COUPLER	1
9	LH TURBO INLET COUPLER	1
10	LH AIR INTAKE COUPLER	1
11	RH AIR INTAKE COUPLER	1

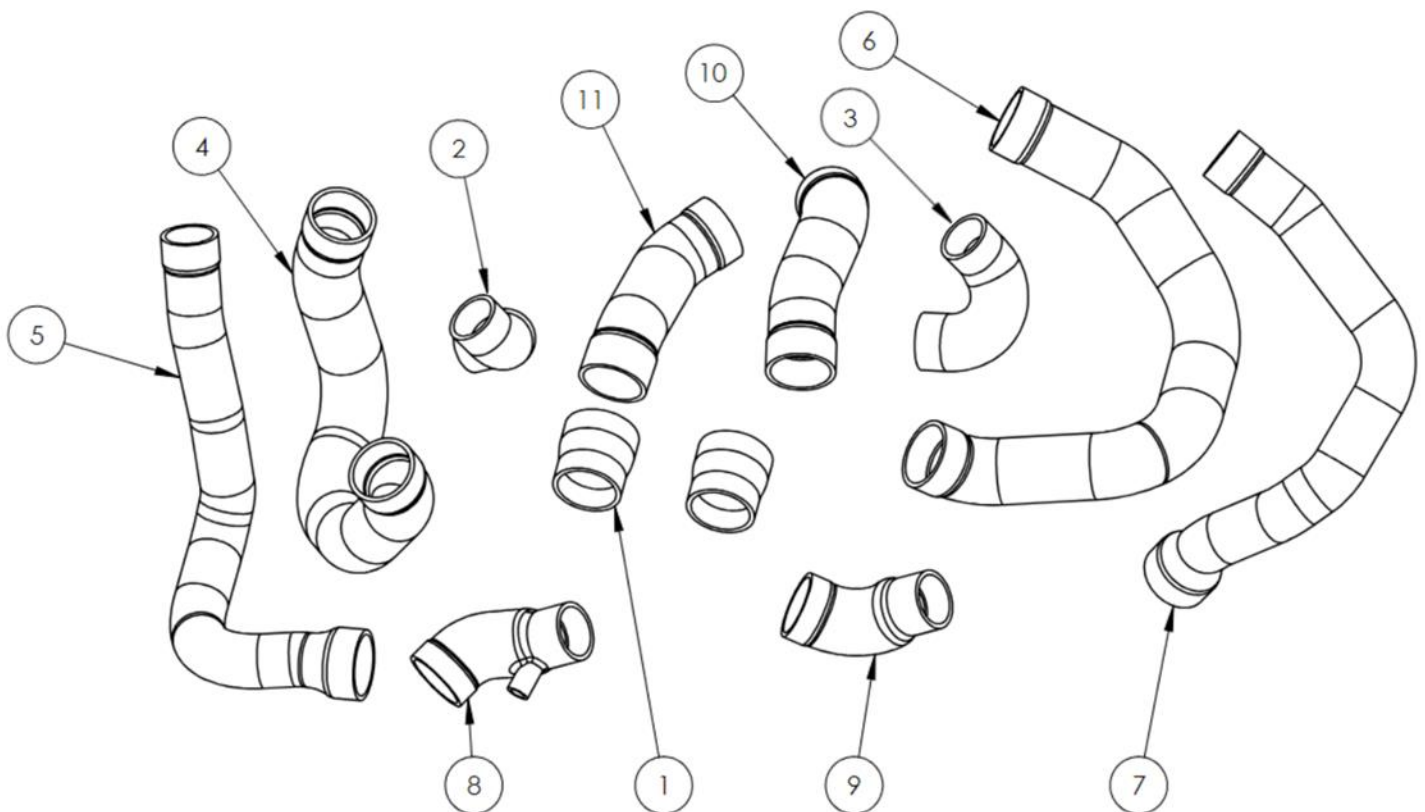


Figure 39

ITEM NO.	DESCRIPTION	QTY.
1	RH INTAKE	1
2	LH INTAKE	1
3	RH COLD SIDE	1
4	LH COLD SIDE	1
5	RH HOT SIDE	1
6	LH HOT SIDE	1
7	BOV CAP	2
8	STAINLESS STEEL SNAP RING, $\phi$ 59.25mm, 2.0mm THICK	2
9	40mm ID, 4.0mm WIDE OIL-RESISTANT BUNA-N O-RING	2

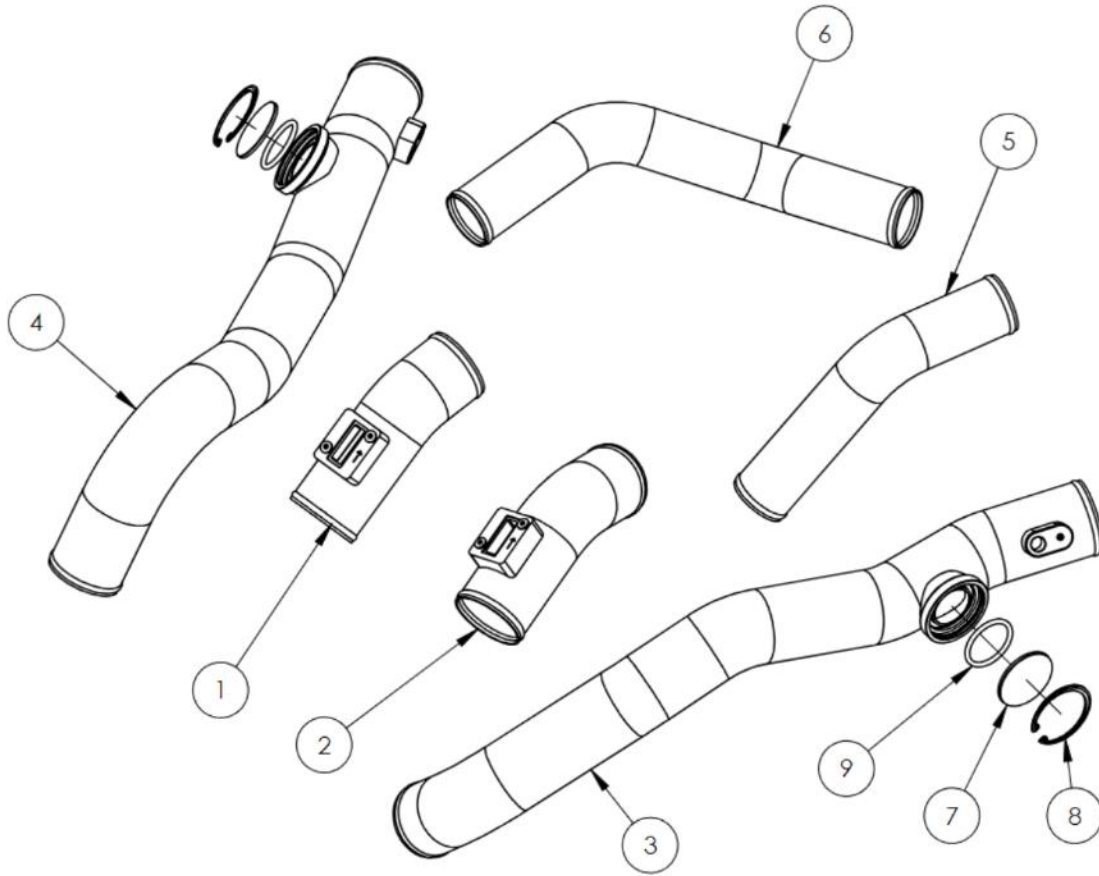
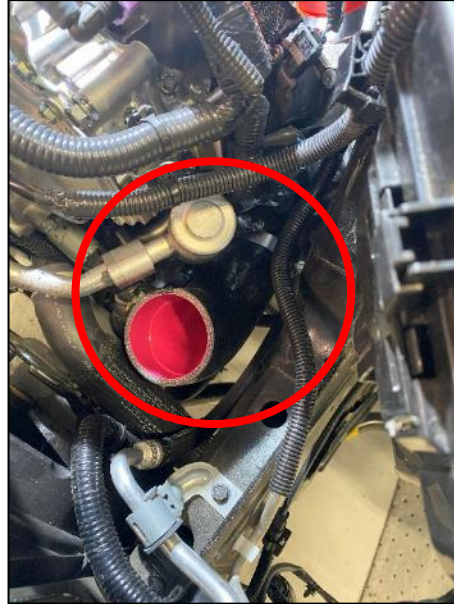


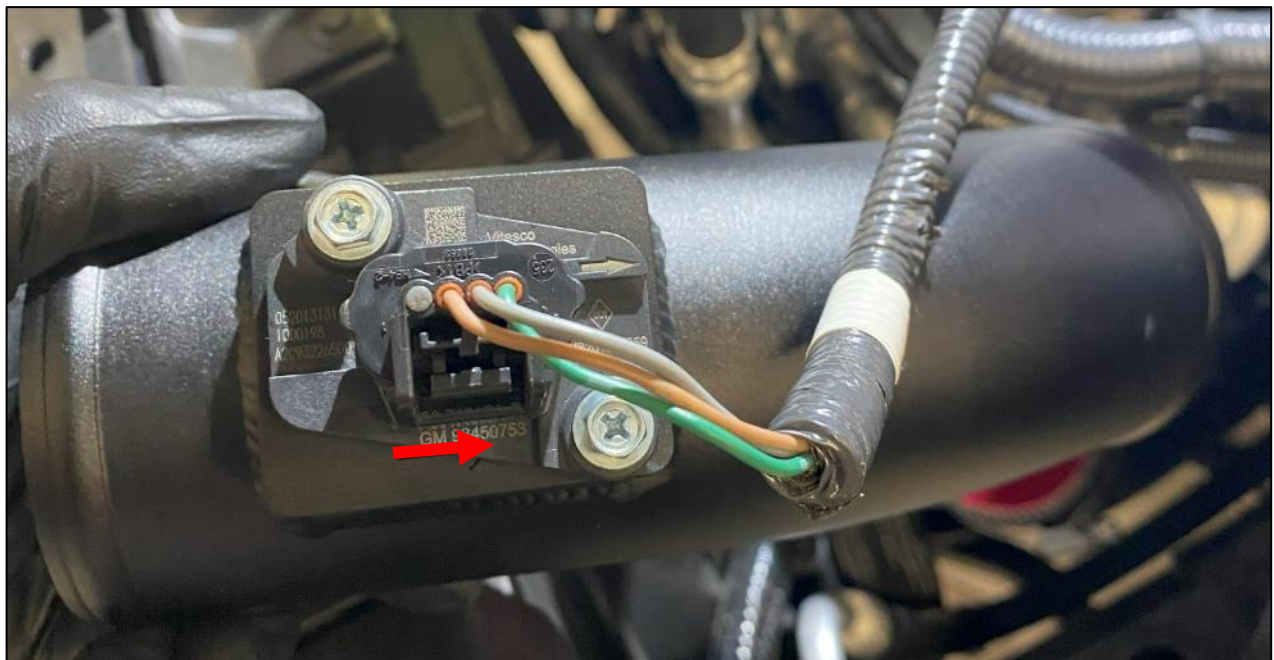
Figure 40

59. Install the RH and LH Turbo Inlet Couplers on both sides of the vehicle. Transfer the PCV Port Adaptor from *Step 47* to the RH Turbo Inlet Coupler. Adjust the Hose clamp and loosely tighten it, but do not tighten all the way yet. The Driver (LH) Side is shown below. *Figure 41*.



*Figure 41*

60. Install the MAF Sensors removed in *Step 40* into the RH and LH Intake Hard Pipes. The Hard Pipes have an → marking the direction of Airflow. Make sure the MAF is oriented correctly within the Hard Pipe. *Figure 42*.



*Figure 42*

61. Install the Intake Hard Pipes onto each side of the matching Inlet Coupler with the → pointing towards the Turbo Inlet. Loosely Secure with a Hose Clamp. The Passenger (RH) Side is shown below. *Figure 43.*



*Figure 43*

62. Locate the RH and LH Air Intake Couplers and install them through the Core Support. The Passenger (RH) Side should have no issue passing through, but the Driver (LH) Side will be a tight fit with the AC Lines. Clearance the Core Support more if necessary. The Driver (LH) Side is shown below. *Figure 44.*



*Figure 44*

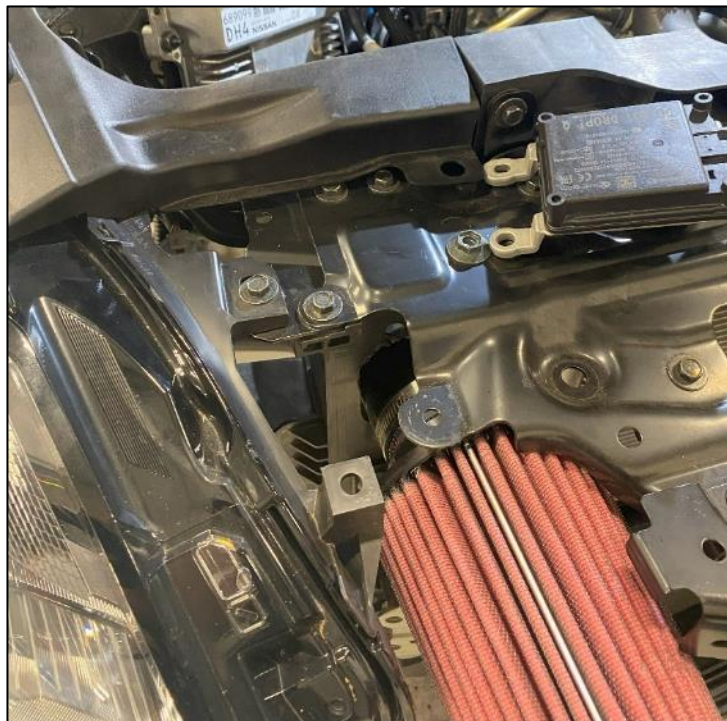
63. Unclip the Wiring Harness running across the Core Support on the Driver Side. *Figure 45.*



*Figure 45*

64. Locate the (2) two Air Filters. Install them into the Silicone Intake Pipes and loosely secure with a hose clamp. It will be a tight fit. With a pair of pliers, bend the tabs on each side of the Metal Core Support up to allow clearance for the Air Intakes. *Figure 46.*

**NOTE:** The Wiring Harness disconnected in *Step 62* will go **UNDERNEATH** the Air Filter on the Driver Side.

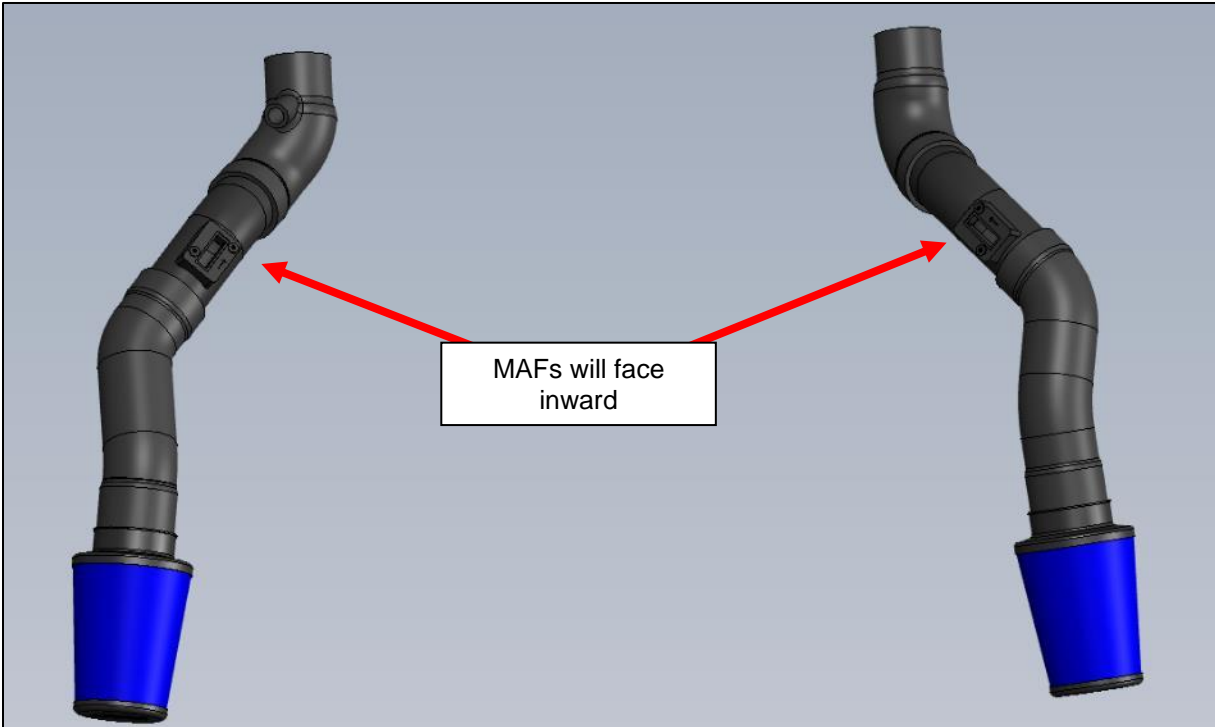


*Figure 46*



65. Adjust the Intake Piping on each side and tighten all Hose Clamps once positioned. The pipes will need to be as low and inboard as possible to allow clearance for the other Pipes. Orientation will look something like *Figure 47* below.

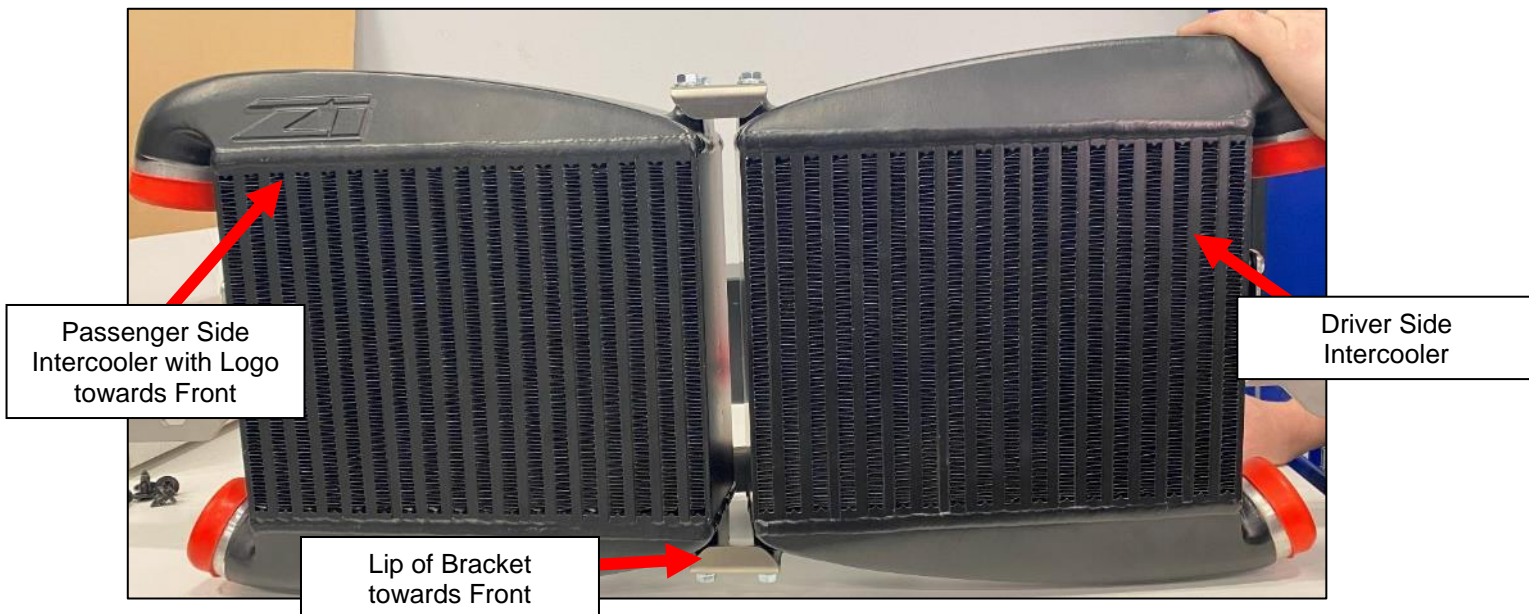
**NOTE:** Readjustment may be necessary again in the upcoming steps once all other Pipes are installed.



*Figure 47*

66. Locate the (2) two Intercoolers, (2) two Middle Intercooler Brackets, Passenger Side Bracket, Driver Side Bracket, Z1 Bash Bar, and all (12) twelve M8 Flanged Bolts. Position the Intercoolers so that the Z1 Logo is **ON TOP**. The Passenger Side Intercooler will have the Z1 **FACING AWAY** from the Vehicle, and the Driver Side will have the Z1 **FACING TOWARDS** the vehicle.

67. Join the Intercoolers with the (2) two Middle Brackets and M8 Flanged Bolts. The Lip of the Middle Brackets will be on the **FRONT** of the Intercoolers. *Figure 48* and *Figure 49*.



*Figure 48*

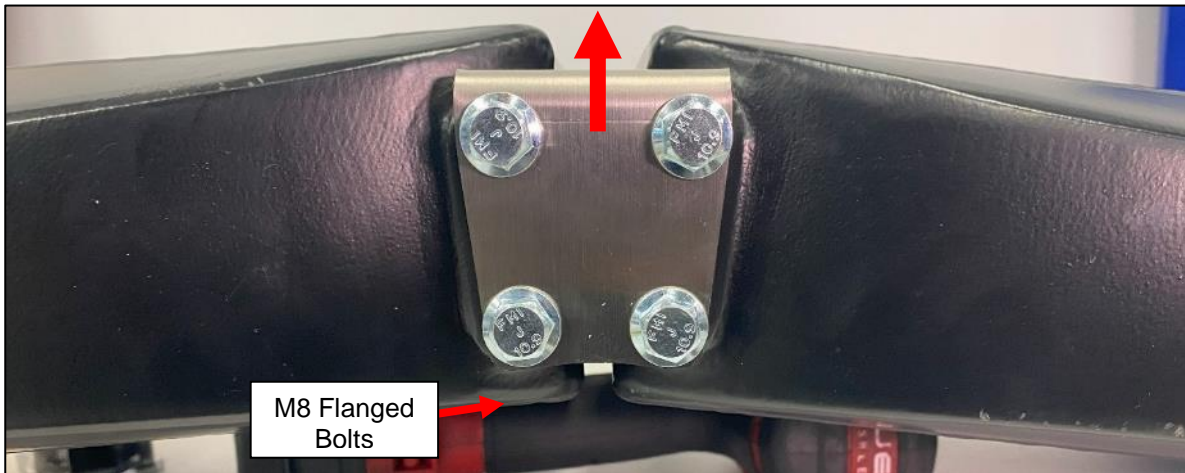


Figure 49

68. Connect the Passenger and Driver Side Brackets to the Intercoolers with the M8 Flanged Bolts. The Driver Side Bracket will be the Longer of the (2) two brackets. Figure 50.

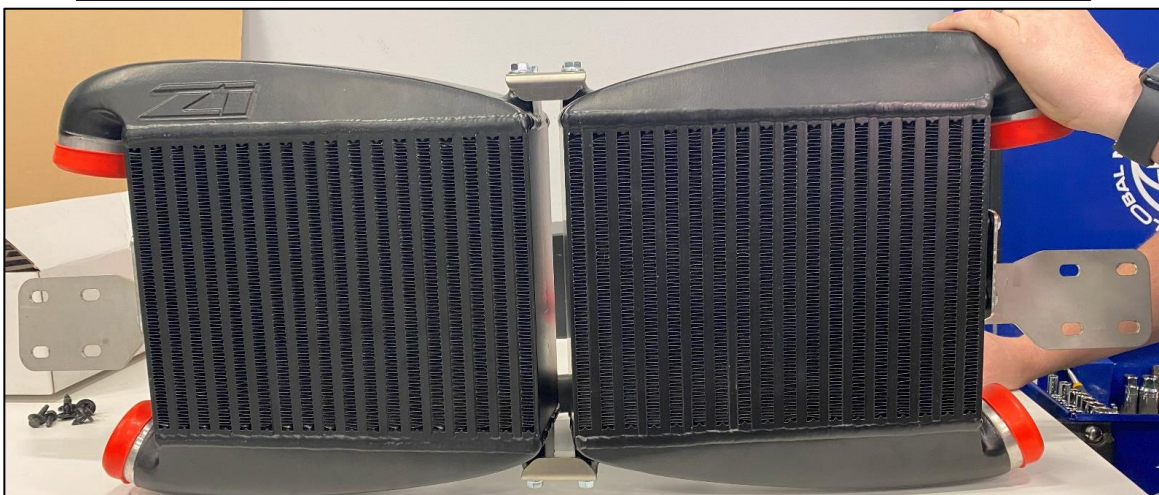


Figure 50

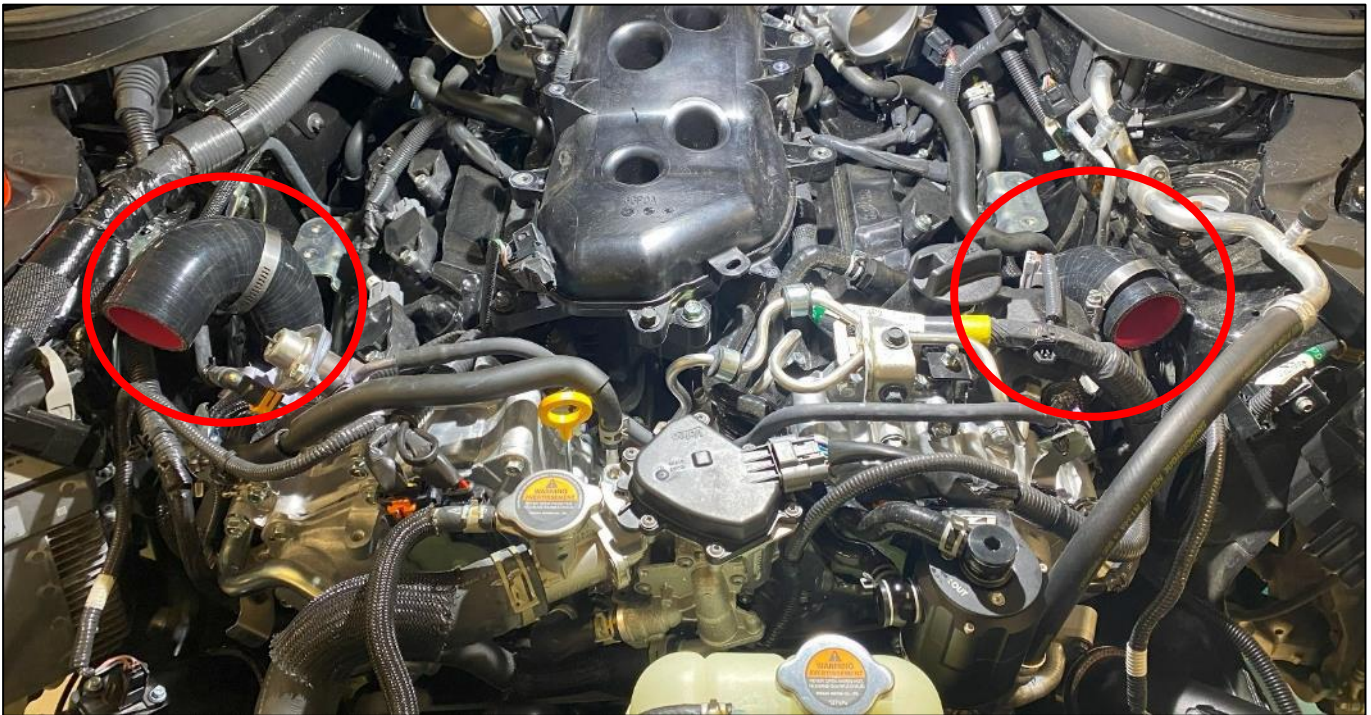
69. Position the Intercooler Assembly onto the Crash Bar Mounting Points. Place the Z1 Bash Bar over the Intercooler Brackets and secure with the Hardware removed in *Step 20*. *Figure 51*.

**NOTE:** The top image in *Figure 51* below shows the Intercoolers mounted with no Z1 Bash Bar, and the bottom image shows the Bash Bar Installed with the Intercoolers.



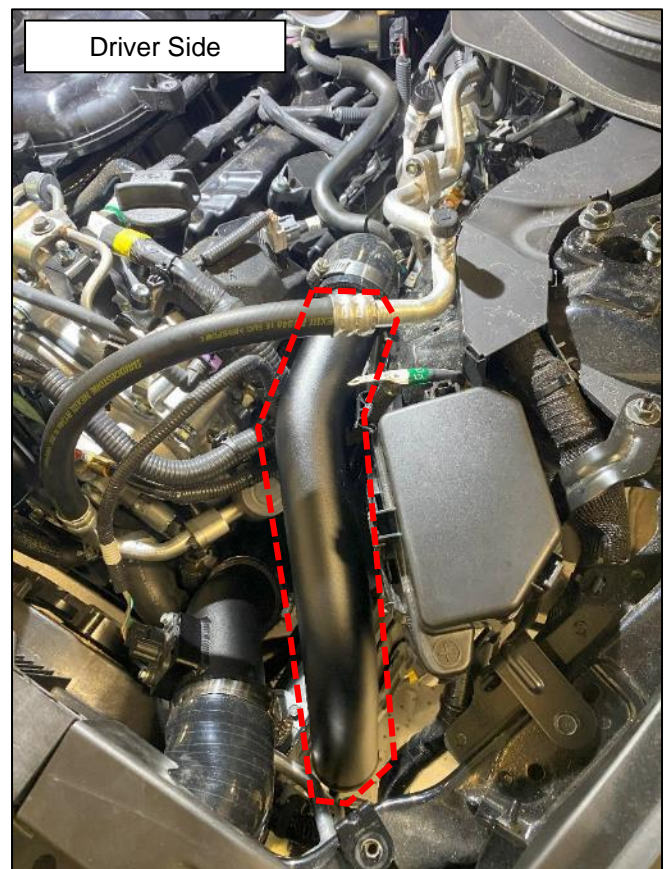
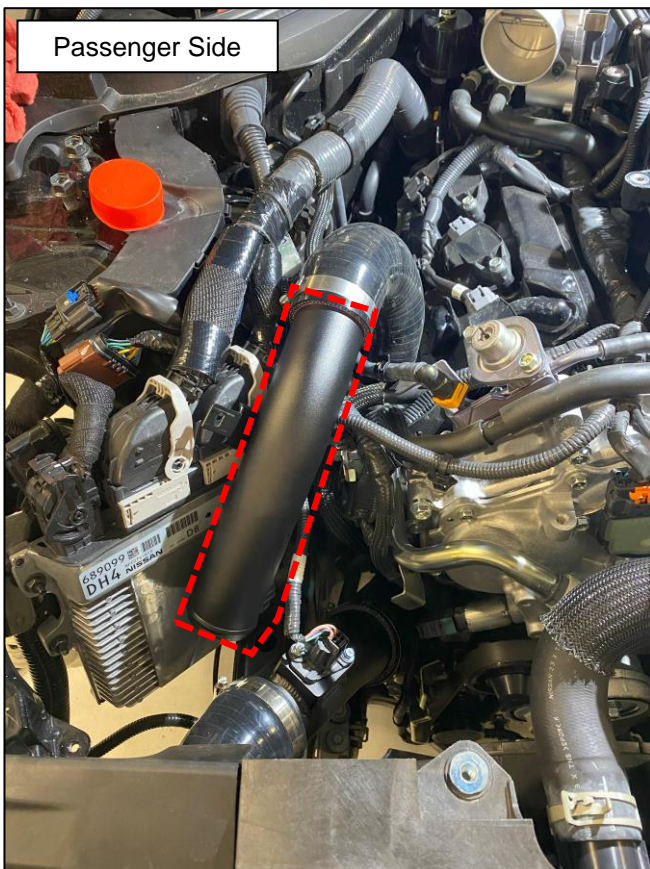
*Figure 51*

70. Position the RH and LH Turbo Outlet Couplers onto the Turbo Outlets and loosely secure with a Hose Clamp. *Figure 52.*



*Figure 52*

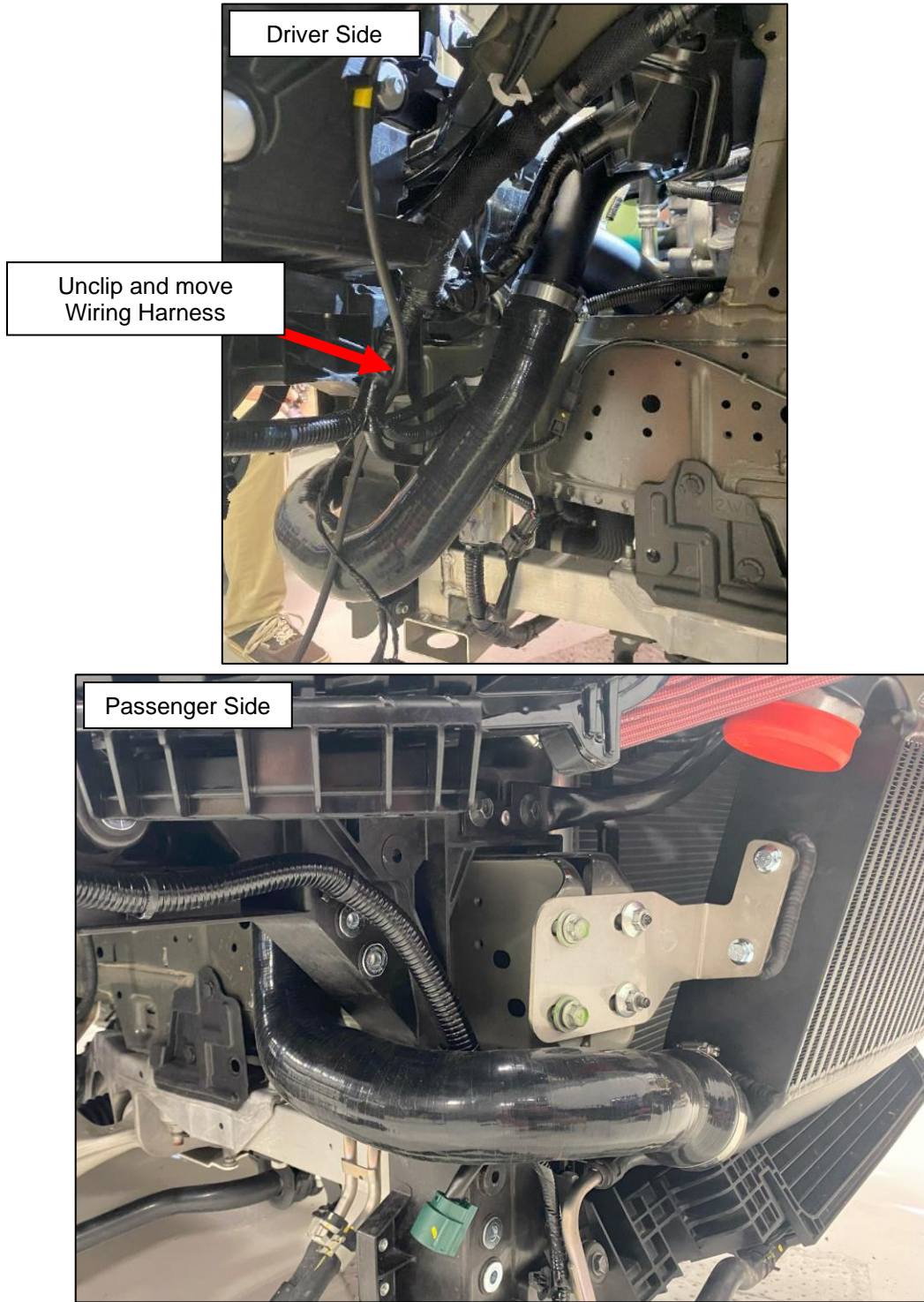
71. Locate the RH and LH Hot Side Hard Pipes. Install them into the Turbo Outlet Couplers and loosely secure with a Hose Clamp. *Figure 53.*



*Figure 53*

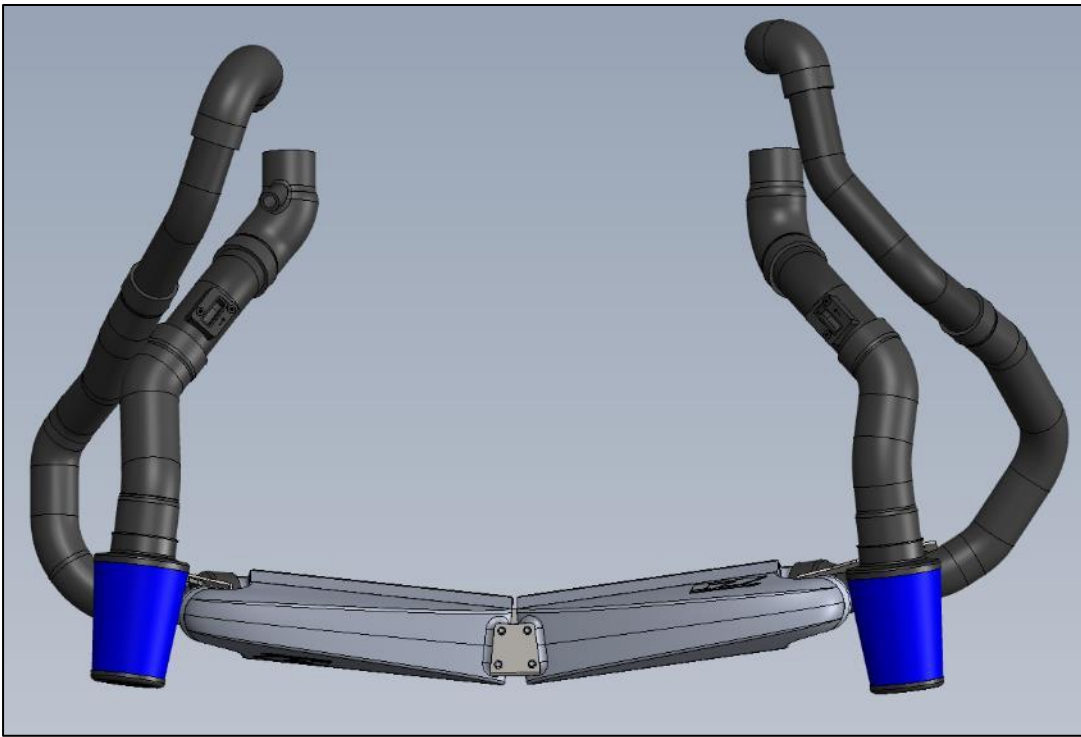
72. Locate and install the RH and LH Intercooler Hot Side Coupler onto the Bottom Port of the Intercooler. Position the pipe around the Intercooler and up behind it to meet with the Turbo Outlet Hard Pipe. Loosely secure with Hose Clamps. Do not tighten these Hose Clamps until all the other pipes are installed as you will need to adjust both at the same time for proper clearance. *Figure 54.*

**NOTE:** The Driver Side will have to work around the Wiring Harness in the Engine Bay and is an extremely tight fit. Unclipping the Wiring Harness from the vehicle will allow significantly more room and flexibility to route the Silicone.



*Figure 54*

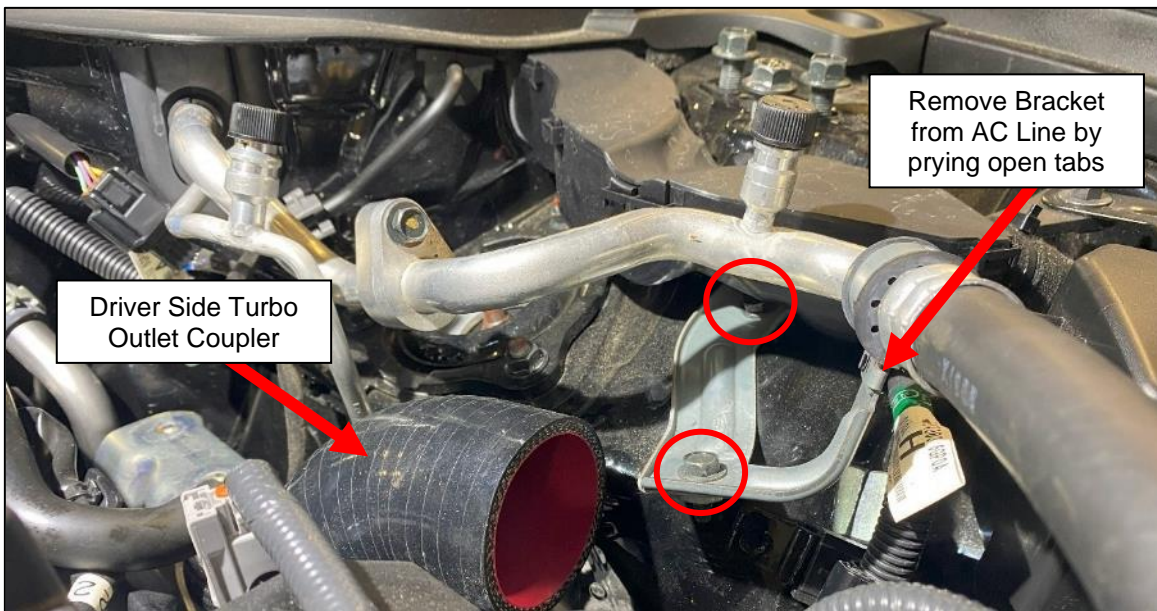
**NOTE:** The Piping should look similar to *Figure 55* below.



*Figure 55*

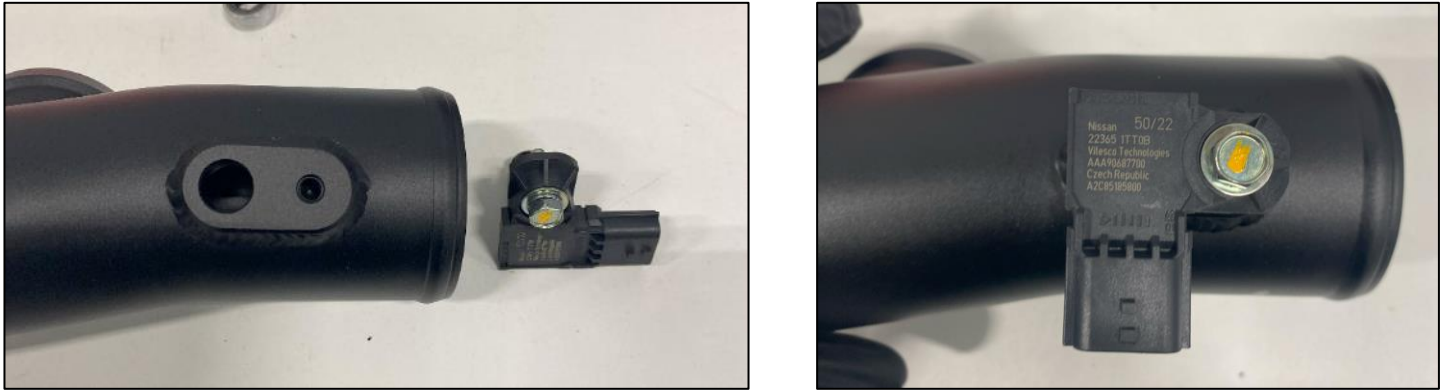
73. Locate and install the Throttle Body Couplers onto the Throttle Bodies. Secure with a Hose Clamp.

74. Disconnect and remove the bracket securing the AC Line on the Driver Side of the vehicle. This will allow extra clearance to run the Hard Pipe Underneath. *Figure 56*.



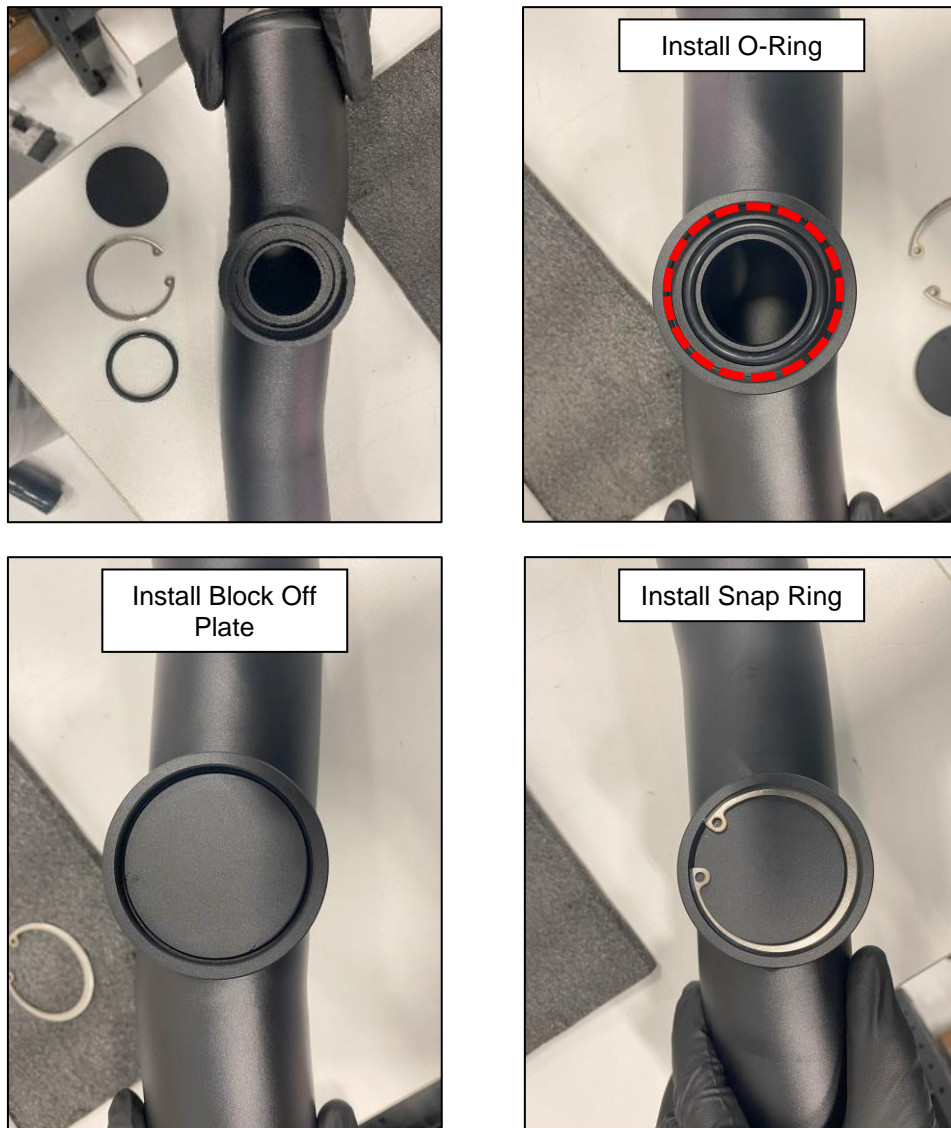
*Figure 56*

75. Install the MAP Sensors removed in *Step 43* into the (2) two remaining Cold Side Hard Pipes. Use a small amount of silicone lubricant on the MAP Sensor O-Ring when installing. *Figure 57*.



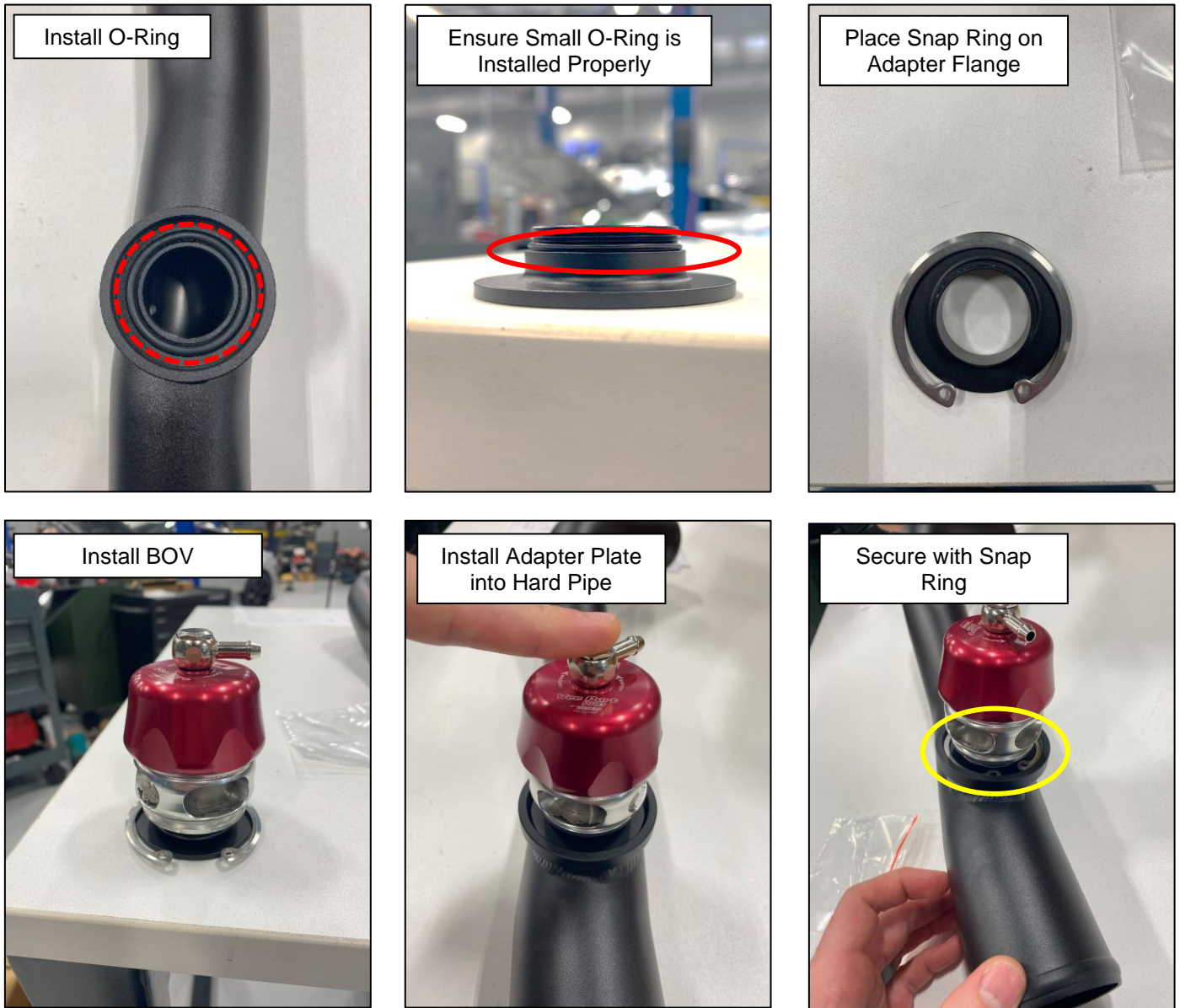
*Figure 57*

76. If you are utilizing the stock Diverter Valves, locate the (2) two gaskets, (2) two Block-off Plates, and (2) two Snap Rings in the Charge Pip Kit. Install the Gasket into the Port of the Hard Pipe, and cover with a Block-Off Plate. Secure the Block-Off Plate with a Snap Ring. If you are installing Blowoff Valve Adaptors, skip to *Step 77*. *Figure 58*.



*Figure 58*

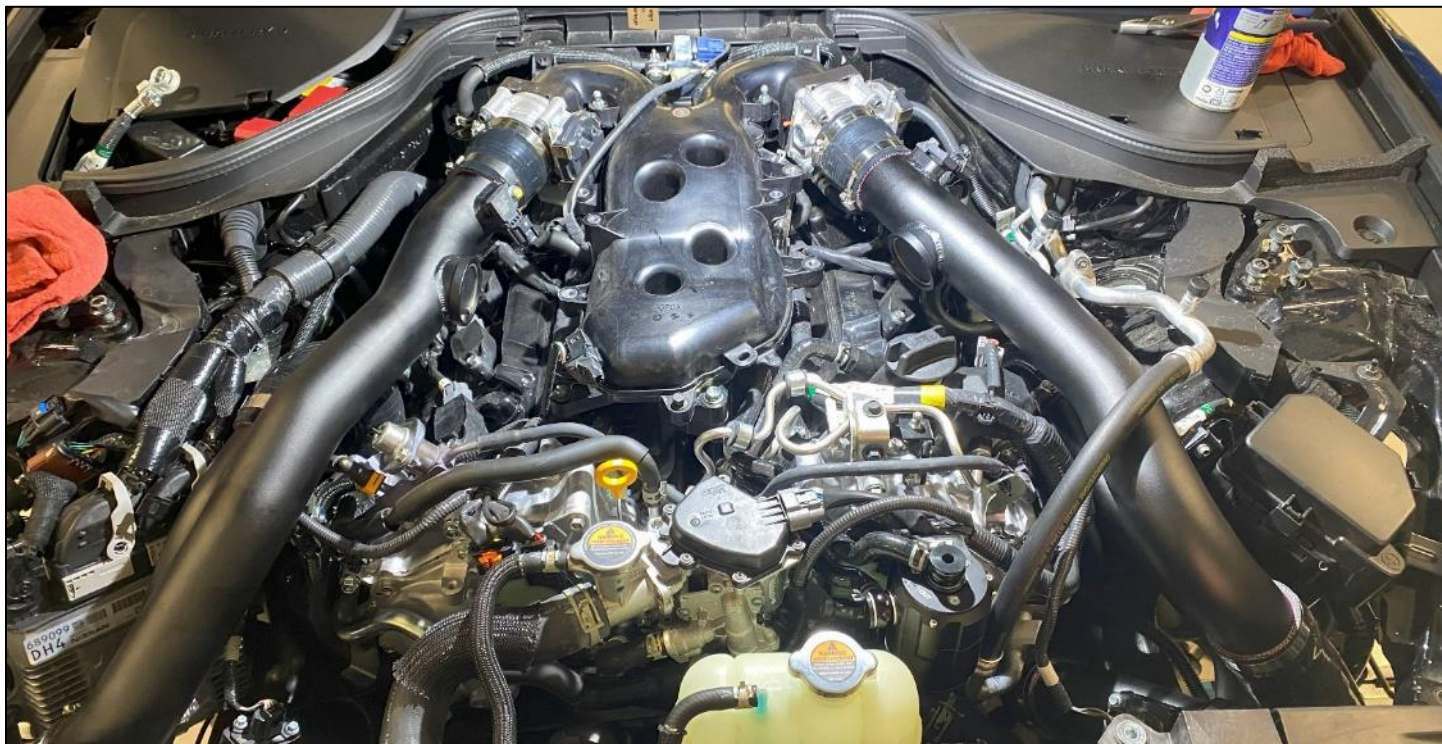
77. If using Blowoff Valve Adapters, locate (2) two Adapter Flanges (the flanges should have the (2) two smaller O-Rings preinstalled), (2) two Large O-rings, and (2) two Snap Rings. Install (1) one Large O-Ring into the port of each Hard Pipe. Check that the Small-O-ring is seated on the Adapter Flange properly and place the Snap Ring on the Adapter. Install the BOV onto the Adapter Flange before installing it into the Hard Pipe, otherwise you will not be able to tighten the BOV. Install the Adapter Flange into the Hard Pipe. Once the Flange is seated, secure with the Snap Ring. *Figure 59.*



*Figure 59*



78. Install the RH and LH Cold Side Hard Pipes into the Throttle Body Couplers and loosely secure with a Hose Clamp. The Driver (LH) Side will need to go **UNDER** the AC Line disconnected in *Step 74*. *Figure 60*.



*Figure 60*

79. Locate the Intercooler Outlet Silicone Pipes. Position them onto the Top Outlet of the Intercoolers and secure them with a Hose Clamp.

80. Route the Intercooler Outlet Pipes up to the Hard Pipes. The Passenger Side will have plenty of room, however the Driver Side will have to work around the Wiring Harnesses. Make sure not to stretch any harnesses, or pinch/kink the silicone piping. Loosely secure with Hose Clamps on each connection. *Figure 61.*

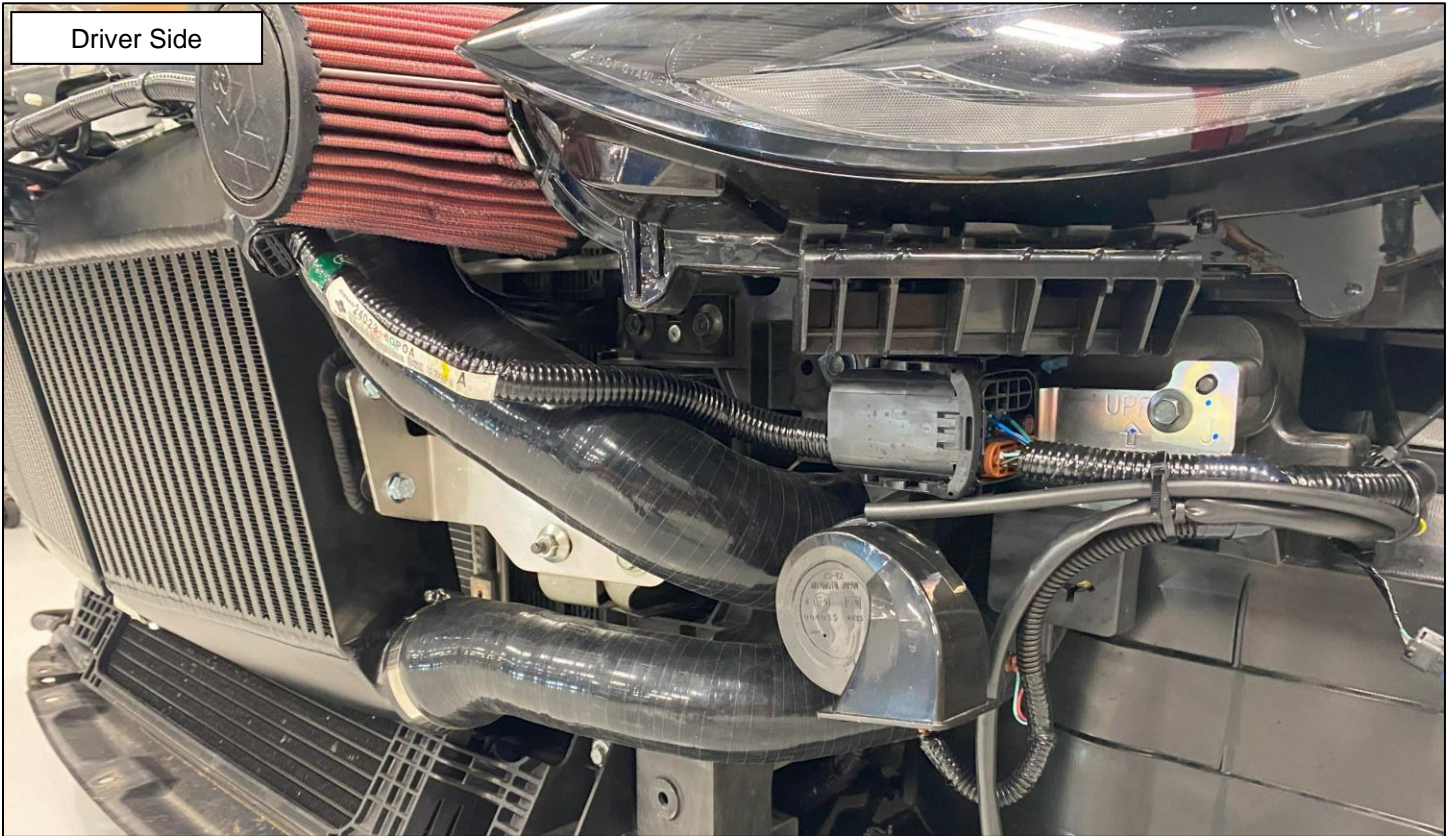
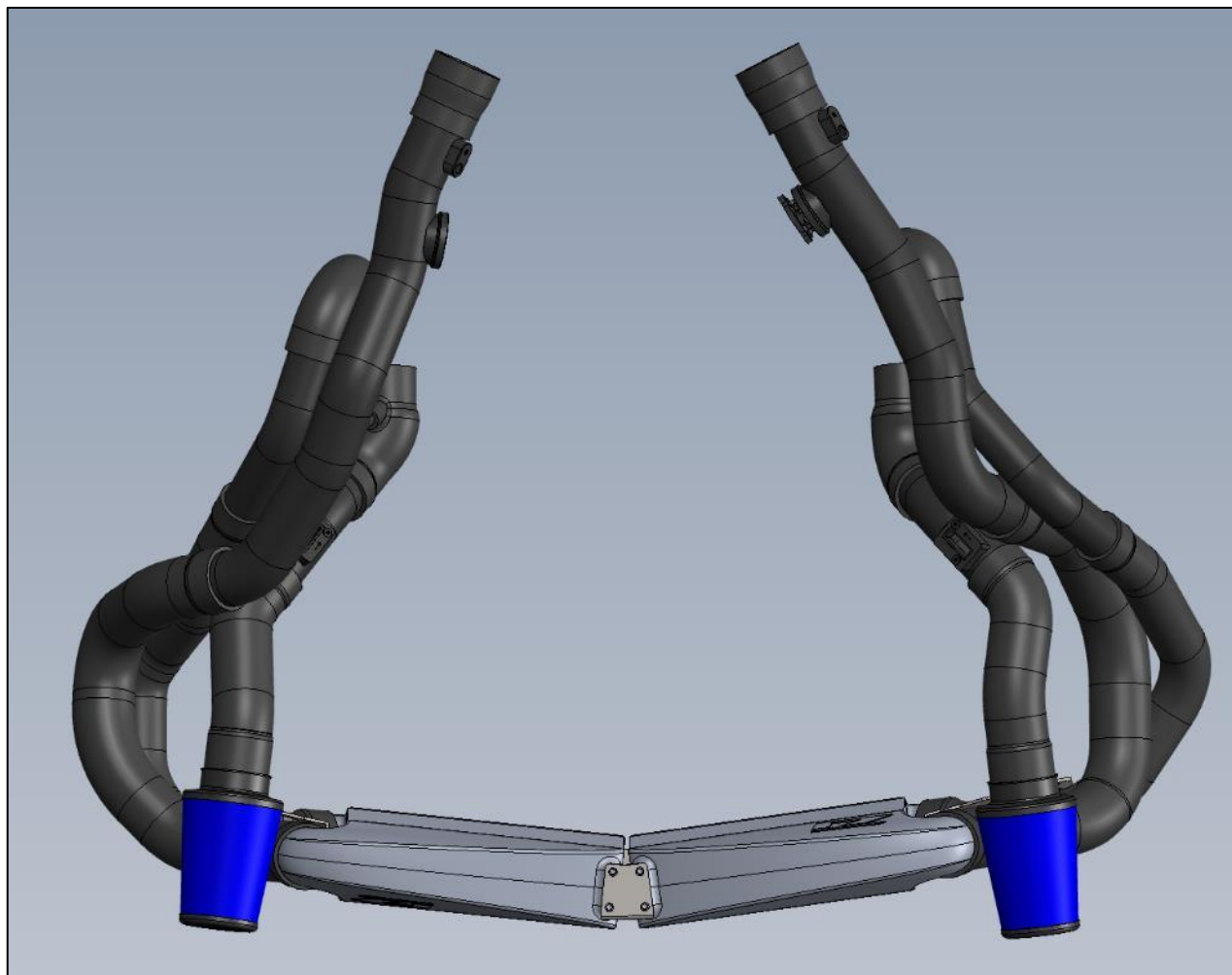


Figure 61

81. Adjust all Silicone Piping and Hard Pipes as necessary. It is a very tight fit and will take some effort to get them to properly fit. Check for any Harnesses being stretched, Silicone being kinked, and any sharp edges that may cut into the piping. Once adjusted, shut the hood to ensure proper hood clearance. The Orientation will look similar to *Figure 62* and *63* below.



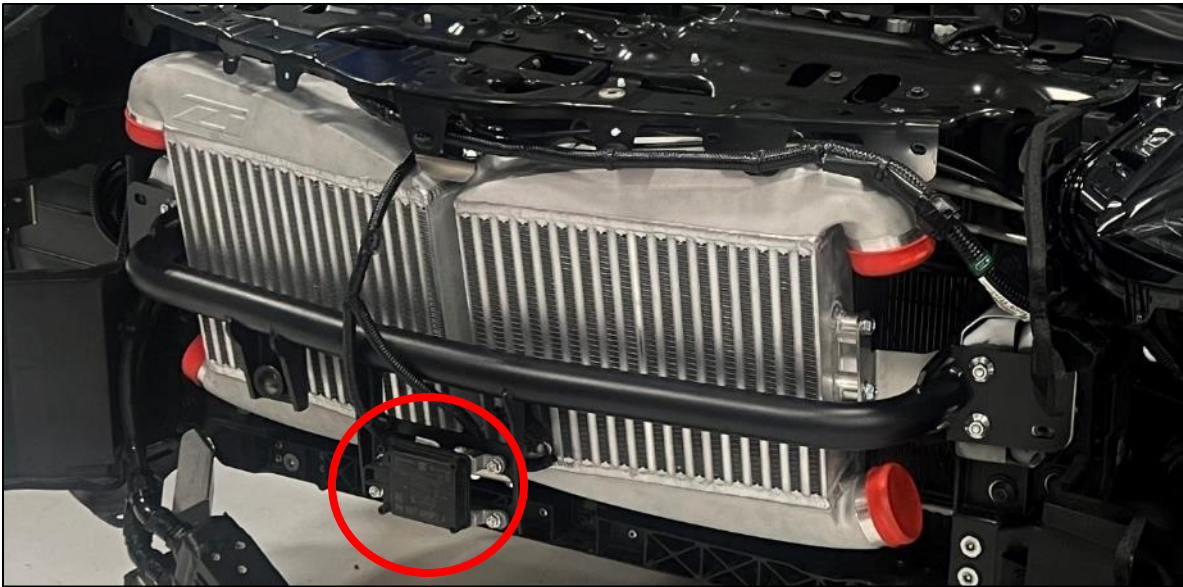
*Figure 62*



Figure 63

82. After confirming fitment, tighten all Hose Clamps to secure the piping.
83. Reconnect the MAF Sensors and MAP.
84. Before reinstalling the Bumper, now is a good time to start the car and flash the ECU with a tune. The vehicle will most likely throw a few codes but check for any boost leaks. Adjust piping and clamps as necessary before proceeding.

85. Reconnect the Radar Sensor to the Bash Bar using the OE Hardware removed in Step 15. *Figure 64.*



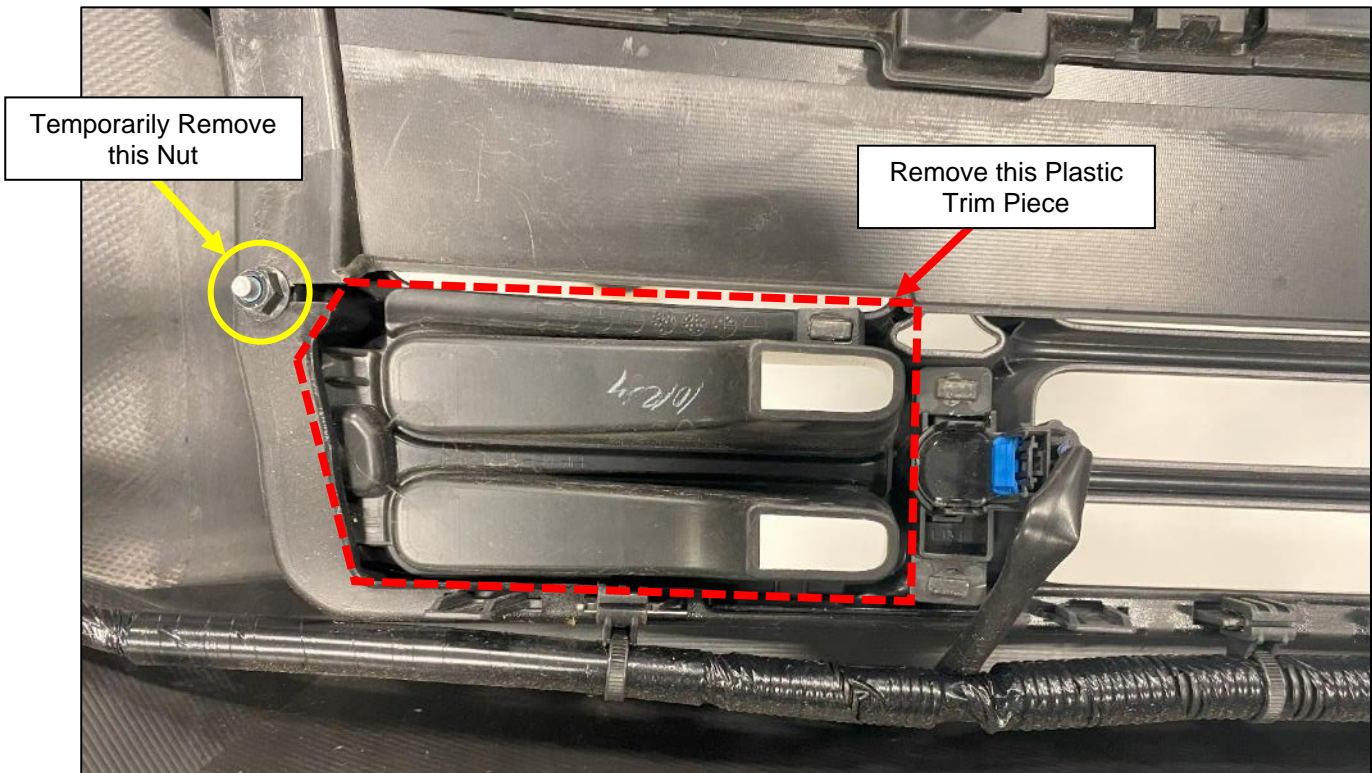
*Figure 64*

86. Reconnect the Ambient Air Sensor to the tab on the Z1 Bash Bar above the Radar Sensor Mount. *Figure 65.*



*Figure 65*

87. Remove the (2) two Plastic Trim Pieces on the Front Bumper. Remove the 10mm Nut on each side and pull upwards to remove the trim pieces from the Bumper. Reinstall the 10mm Nuts once the trim is removed.  
*Figure 66.*



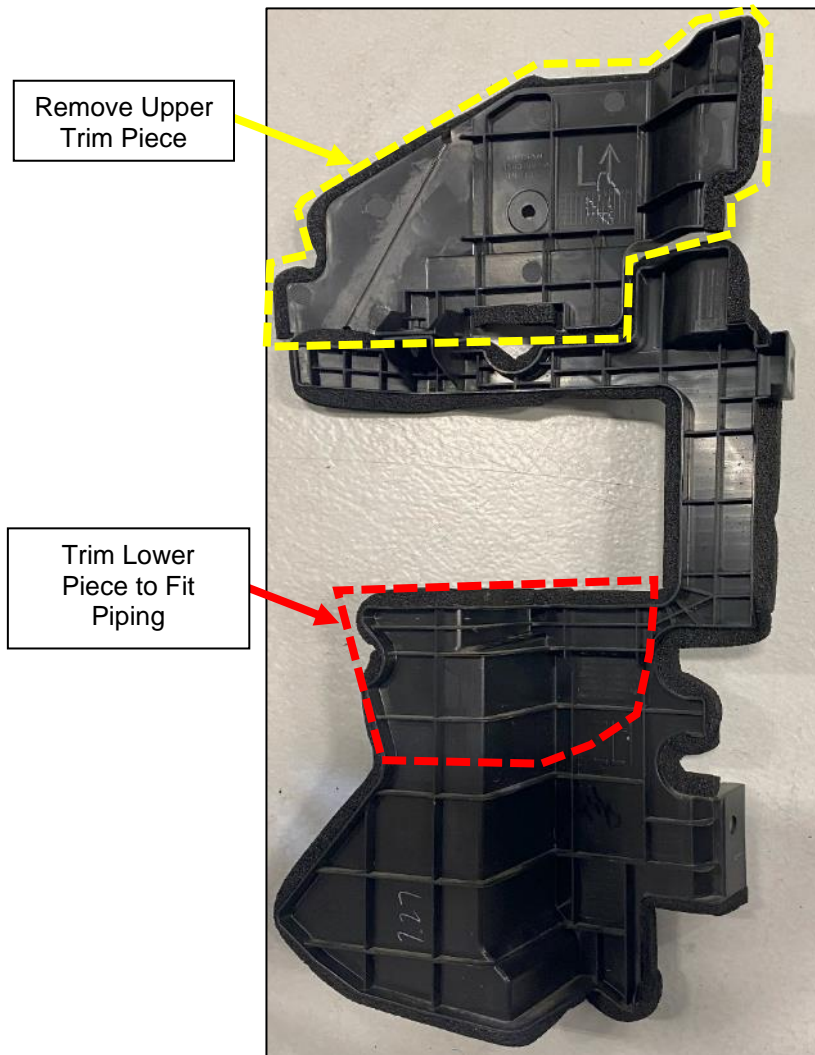
*Figure 66*

88. The Plastic Trim Piece that runs the length of the Front Bumper can optionally be removed for more airflow. Disconnect the Plastic Tabs circled below and make a cut where the dashed lines are to remove the Center piece. If you do not want to remove it, skip to *Step 89. Figure 67.*



*Figure 67*

89. Reinstall the Radiator Air Guides if desired. The Lower Half will need to be trimmed to clear the Intercooler Piping. The Upper Half can be removed as it will not clear the Air Filter. *Figure 68.*



*Figure 68*

90. Reinstall the Front Bumper following *Steps 7 -13* in reverse. Check for clearance with the Intercooler Piping and Air Intakes. Adjust Piping and Air Filters as necessary.

91. Reinstall Strut Tower Brace.

92. Reinstall Wheels and Lug Nuts.

93. Have the Vehicle properly tuned. Contact [tunes@z1motorsports.com](mailto:tunes@z1motorsports.com).

**END**

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