

Z1 VHR SUPERCHARGER KIT INSTALLATION MANUAL



This Installation Manual is intended for the following models:

2009-2020	Nissan 370Z
2008-2015	Infiniti G37/Q60 Coupe
2009-2015	Infiniti G37/Q40 Sedan

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 VHR Supercharger Kit, consult with a Professional Mechanic, or contact Z1 Motorsports for more information.

PARTS INCLUDED:

The entire Z1 Supercharger kit will arrive in 2 boxes. Each box will be labeled “Box 1” or “Box 2”. Throughout the instructions, pieces of the kit will be called out to be located and marked with their item number in parenthesis (#X). Use the chart below to help locate each item.

Item	Quantity	Description	Part Number (If available)
BOX 1 – Contains Coolant Reservoir Kit (Z198195), Hardware Tray (Box B), V6 Supercharger Kit, Box D, and other loose items			
1	1	Z1 Z34 Intercooler	22091
2	1	Charge Pipe Set (4 pieces)	21097-K
3	1	Silicone Coupler Kit (4 pieces)	21097-P
4	2	Silicone Straight Reducer Hose, 2.5" to 2.75", Black	
5	1	Z1 PROCOOLER 13 Row	22127
Coolant Reservoir Kit			
6	1	Z1 Coolant Reservoir w/ Bracket and Bolts	23067
7	1	Coolant Overflow Hose	
8	78"	Universal Z1 Coolant Hose	
9	8	Gray Spring Clamp	
10	1	8mm Equal Tee Fitting	
11	1	Z1 Radiator Cap	
12	1	Z1 Radiator Cap – Non-Pressurized	
13	1	1/2" Silicone Cap	
14	4	10mm Copper Crush Washers	
15	1	M10 Banjo Bolt	
Hardware Tray (Box B)			
16	1	M6 x 12mm Socket Head Bolt – Top of Bracket to Engine	
17	4	M6 x 25mm Socket Head Bolt – Bracket to Timing Cover	
18	2	M6 x 60mm Socket Head Bolt – Bracket to Timing Cover	
19	4	M8 x 16mm Flanged Button Head Screw – Intercooler Brackets	
20	2	Small Black Spring Clamp – 5mm Vacuum Hose	
21	2	21/32" Medium Black Spring Clamp – Brake Booster Hose	
22	6	26mm Large Black Spring Clamp – PCV Hoses	
23	8	Grey Spring Clamp – Supercharger Oil Hose	
24	1	5/8" Equal Tee – PCV Hoses	
25	1	3/8" to 1/4" Reduction Tee – Boost Reference	
26	2	M22 to 8mm Barb Fitting	
27	2	M22 Banjo Bolt	
28	4	Aluminum Crush Washer	

29	1	Cushioned Rubber Loop P-Clamp – Rotrex Magnetic Oil Filter	
30	4	M6 Nylon Lock Nut – Procooler to Setrab Bracket	
31	3	M5 x 8mm Button Head Screw – Z1 Rotrex Oil Reservoir to Bracket	
32	1	Neoprene Rubber Trim	
33	2	1/2" Silicone Caps	
34	6	Long Zip Ties	
35	2	Short Zip Ties	
36	1	Loctite Threadlocker	
V6 Supercharger Kit			
37	1	Z1 VHR Supercharger, Triple Idler Pulley Bracket	
38	1	Z1 VHR Supercharger, Double Idler Pulley Bracket	
39	3	M10 x 110mm Socket Head Screw – Triple Idler Bracket to Timing Cover	
40	2	M10 x 25mm Flat Head Screw – Double Idler Bracket to Main Bracket	
41	2	M10 x 35mm Flange Head Bolt – Idler Pulley to Bracket	
42	3	M10 x 50mm Flange Head Bolt – Idler Pulley to Bracket	
43	1	70mm Smooth Idler Pulley	
44	2	60mm Smooth Idler Pulley	
45	2	7-Rib Idler Pulley	
46	3	5mm Spacer	
Box D			
47	1	Supercharger Pulley – sized based on customer's choice	
48	2	Supercharger Drive Belt – sized based on customer's choice	

Item	Quantity	Description	Part Number (If available)
BOX 2 – Contains Box C, E, F, G, and other Larger Items			
49	1	Z1 Bash Bar	22092
50	1	Rotrex Magnetic Oil Filter	22171-F
51	1	Turbosmart RacePort	TS-0204-1192
52	1	Supercharger Oil Reservoir	22093
53	1	OMNI 4-bar Map Sensor (Not Included in “Tuner” Kit)	MAP-GTR-4BR
Box C			
54	7	Small T-Bolt Clamp – 67-75mm	
55	2	Medium T-Bolt Clamp – 73-81mm	
56	4	Large T-Bolt Clamp – 79-87mm	
Box E			
57	12.5’	5/8” Hose	
58	12”	5mm Vacuum Line	
59	25’	5/16” Hose	
60	2	Intercooler Brackets	22091-B
61	1	Supercharger Oil Reservoir Bracket	22093-D
62	1	Setrab Oil Cooler Bracket	ABKT-235
63	1	Priming Bulb	
Box F			
64	1	Assembled Z1 Supercharger Unit	Z198125
65	1	Rotrex SX150 Traction Oil – 1 Liter Bottle (Sub-Box in Box F)	
Box G			
66	1	K&N Filter	
67	1	Supercharger Silicone Intake Pipe w/ Barb and Plug	21097-U
68	1	84mm Metal Air Filter Joiner	
69	2	Large 3.5” Worm Gear Clamp	

TOOLS REQUIRED:

- Hydraulic Jack
- (2) 2-Ton (or greater) Jack Stands
- Ratchet
- Ratchet Extension(s)
- Assorted Metric Sockets
- Torque Wrench
- Screwdrivers
- Hose Cutter
- Trim Removal Tool
- Pliers
- Assorted Metric Wrenches
- Assorted Metric Allen/Hex Keys
- 12mm Allen/Hex Bit
- SAE 5/16" Allen/Hex Key
- SAE 1/2" Wrench
- Body Saw or Die Grinder
- Silicone Spray
- File/Deburring Tool
- Long Funnel or Small Fluid Pump
- Air Compressor and Air Gun

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 Z1 Motorsports VHR Supercharger Kit and verify that ALL necessary hardware is present.

The following installation manual will outline the procedure for installing the Z1 Supercharger Kit on a relatively stock 370Z besides some fueling upgrades and an engine oil cooler. It will not cover the steps for installing the necessary fueling components or engine oil cooler as those will change depending on the options chosen and what fuel system you have. This Installation Manual cannot possibly cover every step or account for the other modifications you may have. You will most likely need to use some leeway to adjust these instructions to fit your vehicle.

For all levels of the Z1 Supercharger Kit, you will need a fueling upgrade. For 450hp and 500hp levels, we recommend at least [1000CC Injectors](#) and a drop-in fuel pump. For 550hp and 600hp+ levels, you will most likely need a [Fuel Return System](#).

DO NOT spin the Supercharger Unit prior to installation and before filling it with fluid. You MUST follow the Priming Procedure outline in Section Nine. Failure to prime the Supercharger system will result in Supercharger Damage or Failure.

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Section One: Disassembly

Tools Needed:

- Ratchet
- Assorted Metric Sockets
- Assorted Metric Wrenches
- Flat-head Screwdriver
- Trim Removal Tool
- Pliers
- Hydraulic Jack
- Jack-Stands

Parts Needed:

- (2) 1/2" Silicone Caps (#33 – Box B)
- 1/2" Silicone Cap (#13 – Coolant Reservoir Kit)

PROCEDURE:

1. Place the transmission in Park position (or in Reverse gear if equipped with a manual transmission). Apply the parking brake.
2. Open and support hood of vehicle.

NOTE: Use *Figure 1* below as a reference for Steps 3-14. G37 owners should follow the same steps but ignore the steps about removing the Cowl Bezel and Strut Bar.

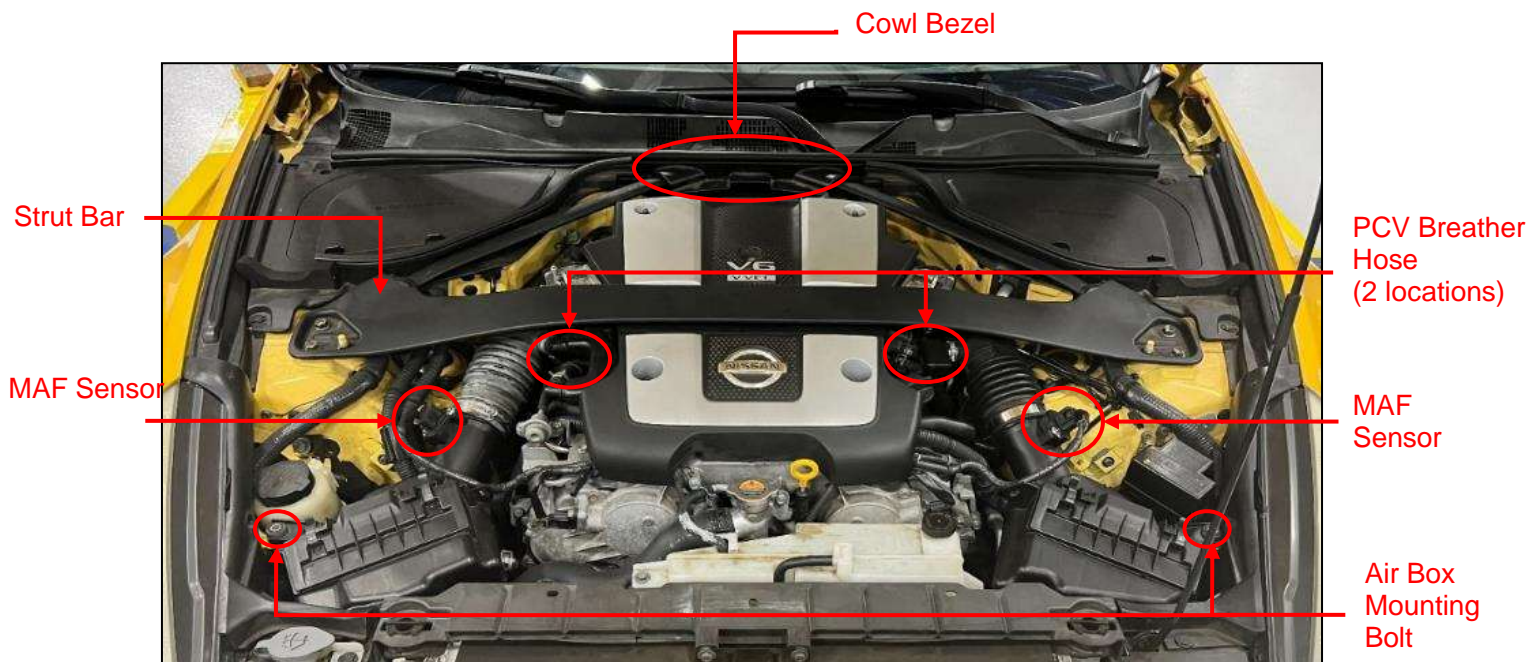


Figure 1

3. Remove the (2) two plastic clips which attach the Cowl Bezel to the Cowl Assembly.
4. Carefully pry loose the backside of the Cowl Bezel. Firmly pull the Cowl Bezel up to remove and set aside.
5. Remove (4) four bolts and (4) four hex nuts which attach the Strut Bar to the chassis. Remove the Strut Bar and set aside.
6. Locate and unplug (2) two MAF sensor connectors as well as their plastic harness clips.
7. Remove (2) two acorn nuts and (2) two bolts which attach the Engine Cover to the engine. Remove Engine Cover and set aside.
8. Remove (1) one bolt which attaches passenger side Intake Canister to Intake Plenum.
9. Using pliers, loosen and pull the OEM PCV Breather hoses at the ends of the Valve Covers.
10. Loosen hose clamps at each Throttle Body.
11. Remove (2) two bolts on each OEM Airbox that mount them to the chassis.
12. Remove plastic clip and (1) one 10mm bolt on each side that attaches the Air Inlet Duct to the Composite Radiator Core Support near each OEM air box opening. Remove Air Intake Ducts.
13. Using a light pull motion, loosen OEM Airboxes from vehicle.
14. The complete OEM Air Intake assembly should be loose at this point. Remove Intake Boxes, hoses, and Intake Balancing hose from vehicle, as shown below in *Figure 2*.



Figure 2

15. Release tension on front lug nuts but DO NOT remove them.
16. Locate the proper jacking points on the vehicle's chassis (refer to vehicle's Owner Manual). Raise and support the vehicle using a jack and jack stands.
17. Remove front lug nuts and wheels.

370Z Owners: Use Figure 3 below as a reference for Steps 18-24. G37 Owners can skip to Step 25.

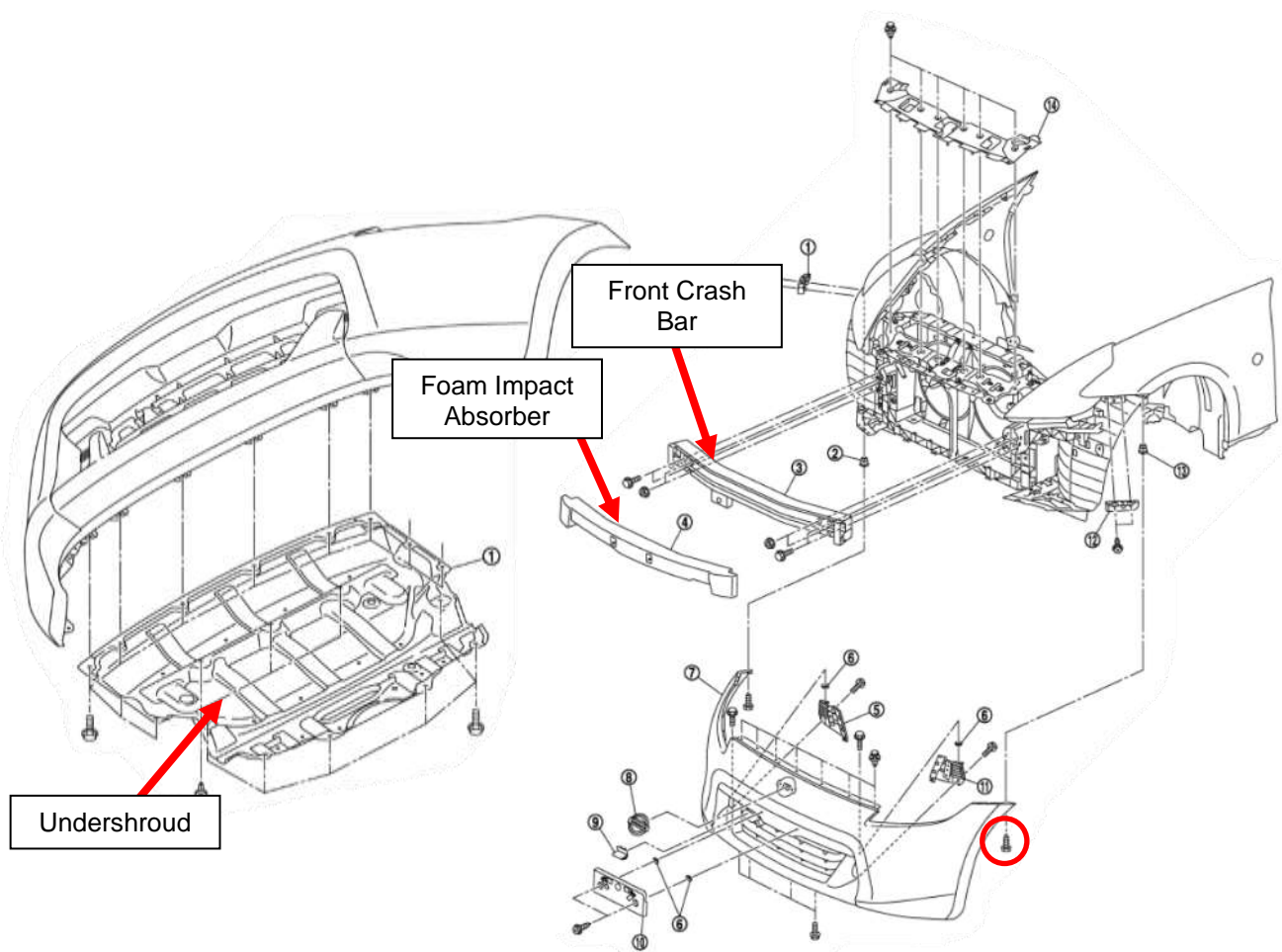


Figure 3

18. Remove the Lower Engine Splash Shield (Undershroud). Fasteners will be an assortment of 10mm screws and plastic panel clips. Use a flat blade screwdriver or trim removal tool to gently pry out the pop clips.
19. Remove plastic clips and the front wheel/fender liners to reveal (1) one mounting screw at each side of the vehicle which mounts the corner of the Bumper Fascia to the vehicle (screw circled in *Figure 3* above). Remove mounting screw on each side.
20. Remove (7) seven plastic pop clips securing the Upper Bumper Fascia to the vehicle at radiator core support.
21. With a light pull motion, carefully disengage the Bumper Fascia from the clips on the vehicle just below each headlight. Remove Bumper Fascia and set aside.
22. Remove (8) eight plastic clips which attach Diversion Panel/Radiator Air Guide to Composite Radiator Core Support. Set aside Diversion Panel.
23. Remove the Foam Impact Absorber in front of the Crash Bar.
24. Remove (4) four bolts and (4) four hex nuts securing Front Crash Bar to the chassis, retain the hardware as it will be reused. Remove Crash Bar.

G37 Owners: Use *Figure 4* below as reference for Steps 25-33. 370Z Owners can skip to *Step 34*.

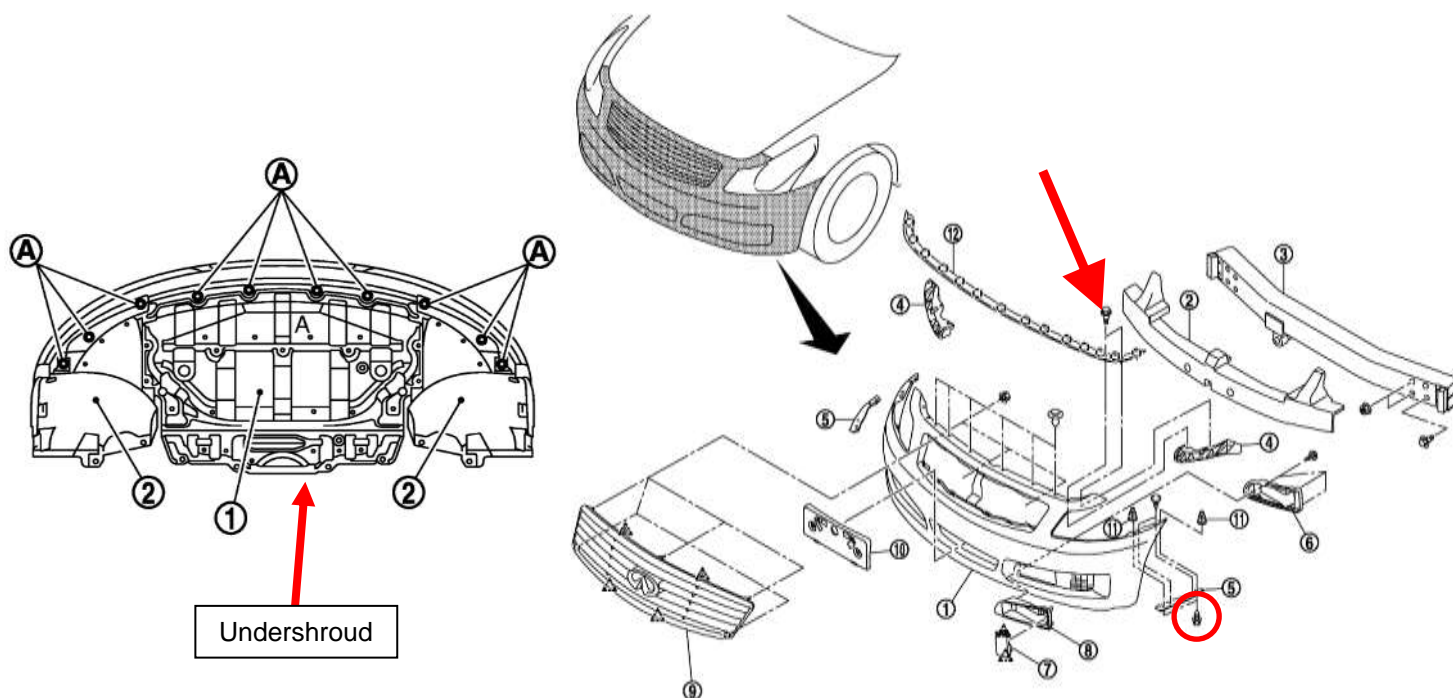


Figure 4

25. Remove the Lower Engine Splash Shield (Undershroud). Fasteners will be an assortment of 10mm screws and plastic panel clips. Use a flat blade screwdriver or trim removal tool to gently pry out the pop clips.
26. Remove plastic clips and the front wheel/fender liners to reveal (2) two mounting screws at each side of the vehicle which mounts corner of the Bumper Fascia to the fender (screw circled in *Figure 4* above). Remove mounting screws on each side.
27. Lift up on the hood seals at the front corner of the engine bay to reveal (2) two mounting screws at each side of the vehicle that mounts the upper corner of Bumper Fascia to the fender (screw shown with arrow above). Remove mounting screws on each side.
28. Remove (6) six plastic pop clips securing the Upper Bumper Fascia to the vehicle at the radiator core support.
29. With a light pull motion, carefully disengage the Bumper Fascia from the clips on the vehicle just below each headlight. Remove Bumper Fascia and set aside.
30. Remove the plastic clips and bolts which attach Diversion Panel/Radiator Air Guide to Composite Radiator Core Support. Set aside Diversion Panel.
31. Remove the Foam Impact Absorber in front of the Crash Bar.
32. Remove (4) four bolts and (4) four hex nuts securing the Front Crash Bar to the chassis, retain the hardware as it will be reused. Remove Crash Bar.

33. On the driver side of the Core Support, remove the 10mm bolt (circled below in *Figure 5*). Using a flat head screwdriver, open and remove the plastic clamp/support around the AC lines.

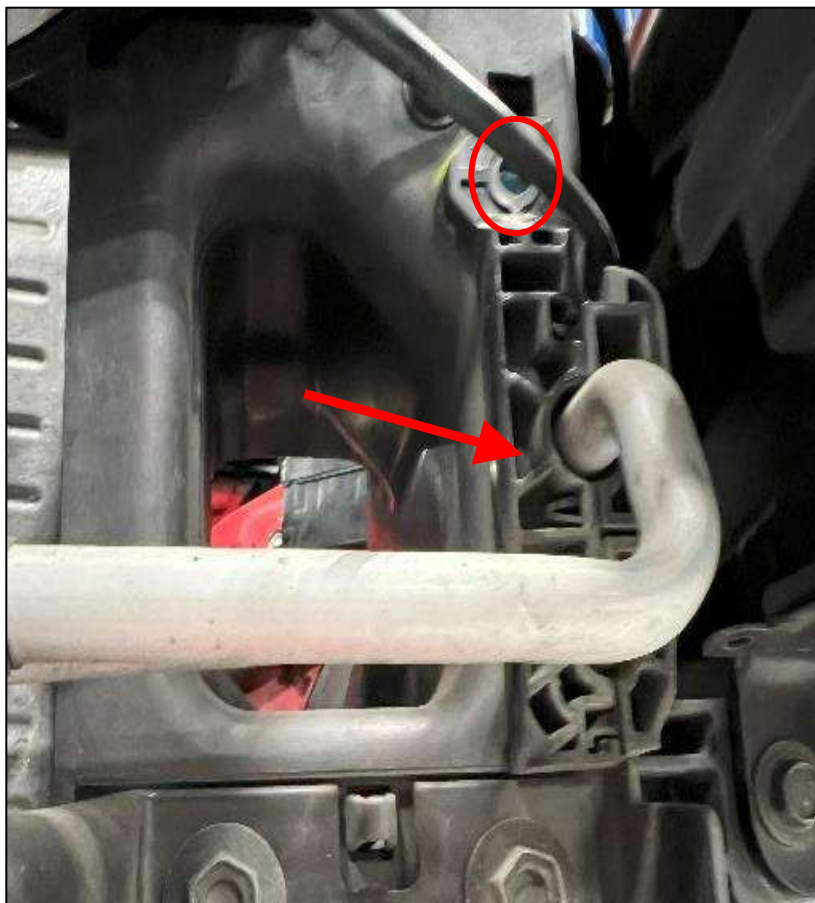


Figure 5

34. Disconnect the electrical connectors and remove the (3) three screws and (1) one plastic push-clip securing the headlights. Remove the headlights and set aside. While not required, performing this step will give you more access and prevent damage to the headlights. View *Figure 6* below.

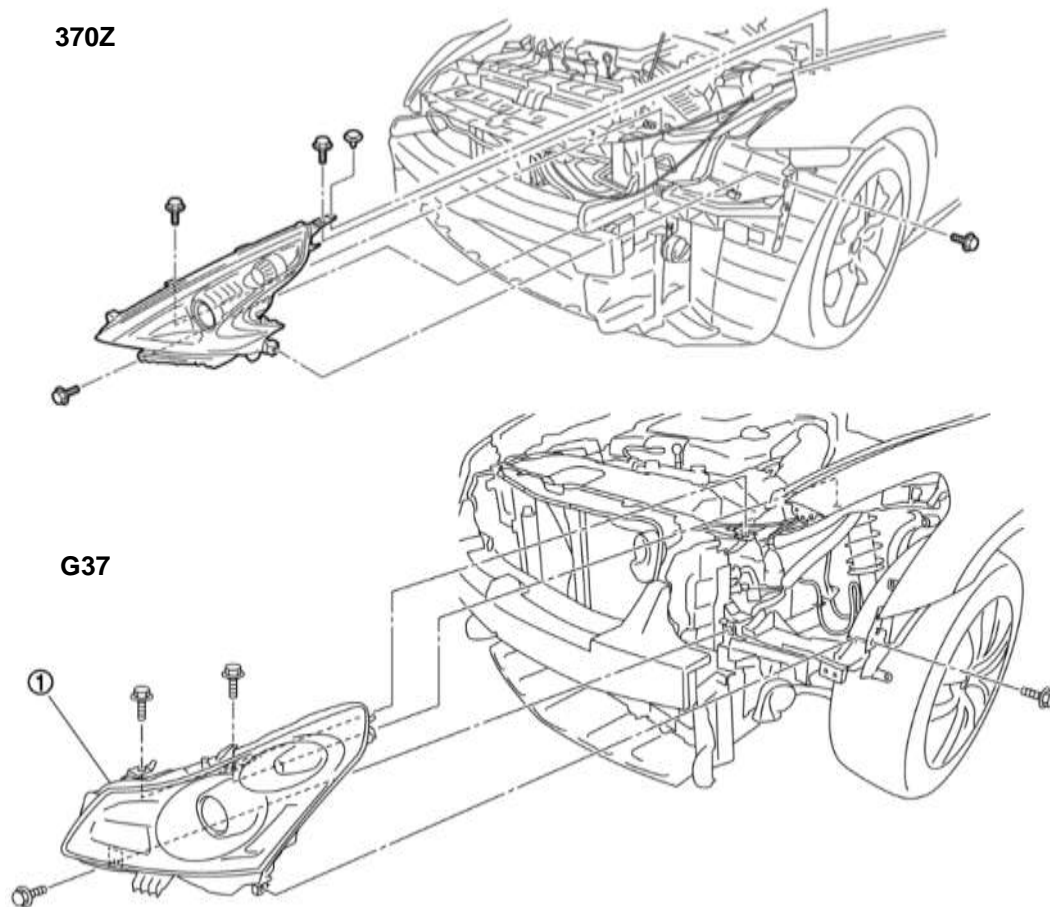


Figure 6

35. Drain and properly dispose of engine coolant.

36. The 370Z has two different styles of Coolant Reservoir systems depending on the model year. From 2009-2011 production 370Z's used a standard non-vented reservoir. Models produced from 2012-2020 use a pressurized reservoir that can be differentiated from the use of a typical radiator cap, instead of a small plastic cap. If you are unsure which system you have, look at the cap on your OEM Coolant Reservoir. If it is a black plastic cap, it is the early style. If it is a pressurized radiator cap, it is a late style. G37's all use the early style with a black plastic cap on the Coolant Reservoir.

- a. **EARLY STYLE CARS:** Remove the hose running from the top of the coolant neck where the upper radiator hose connects (circled below). Then remove the (2) two bolts securing the reservoir to the vehicle and lift up to remove the reservoir. A late style car is shown below in *Figure 7*, but the coolant neck location is the same.



Figure 7

- b. **LATE STYLE CARS:** Remove the hose running from the top of the coolant neck where the upper radiator hose connects (circled on *Figure 7*). Then remove the hose at the bottom of the reservoir from the coolant hard pipe on the driver's side of the engine. The bottom hose is highlighted in *Figure 8* below. Once removed it may leak coolant, be ready to pinch or kink the hose to prevent excess coolant from spilling over the engine bay. Once the (2) two hoses are disconnected, remove the (2) two bolts (circled below, *Figure 8*) securing the reservoir to the vehicle, and lift up to remove the reservoir.

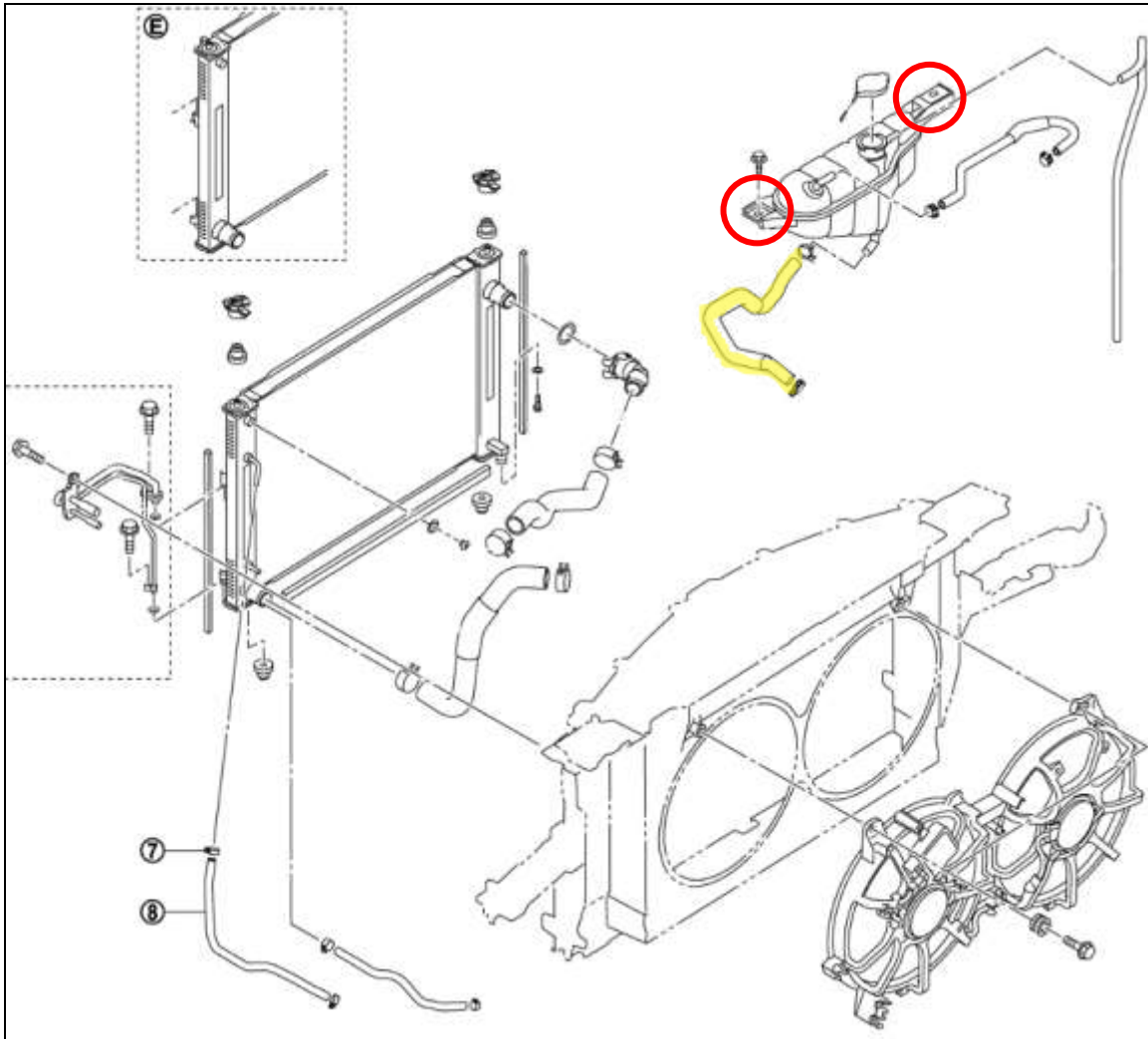


Figure 8

37. The factory oil cooler lines on 2012+ Late Style cars (highlighted below) will need to be removed as they will interfere with the supercharger components. If you have not already removed the OEM oil cooler/warmer (where the oil filter attaches and shown with arrow below) when installing an engine oil cooler, remove it and the accompanying components. Also remove the bolts and the highlighted lines below. If you have a 2011 or earlier car, skip to *Step 39. Figure 9.*

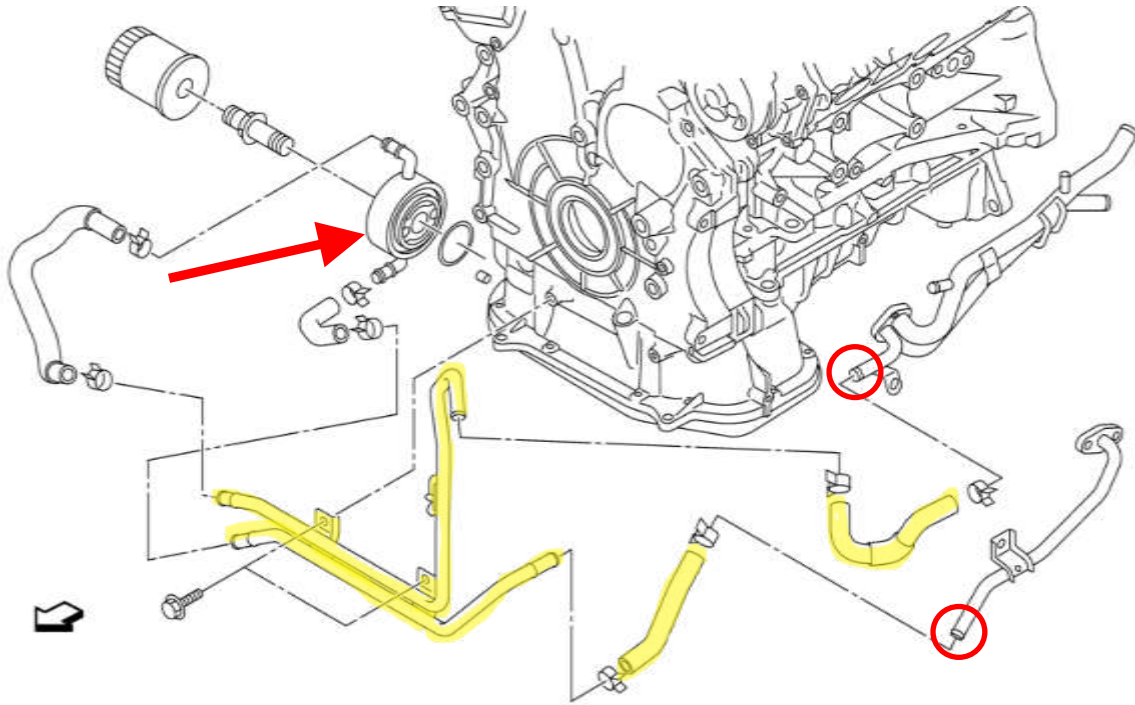


Figure 9

38. If the Oil Cooler Lines were removed in *Step 37*, use the (3) three provided 1/2" silicone caps (#13, #33) to cap the circled hardline ports off and secure with the OE clamps. *Figure 9.*
39. Using a 3/8" ratchet, release tension from the Tensioner Pulley on the front of the engine, then place a M6 bolt/Allen key in the slot to hold the Tensioner in place. The 3/8" slot on the Tensioner is shown with an arrow below and the slot for the bolt is circled. *Figure 10.*

NOTE: Having a good Tensioner is necessary for proper Supercharger Belt function. If you notice your Tensioner is very tight or notchy, it is recommended to replace it with a new OEM or Gates one.

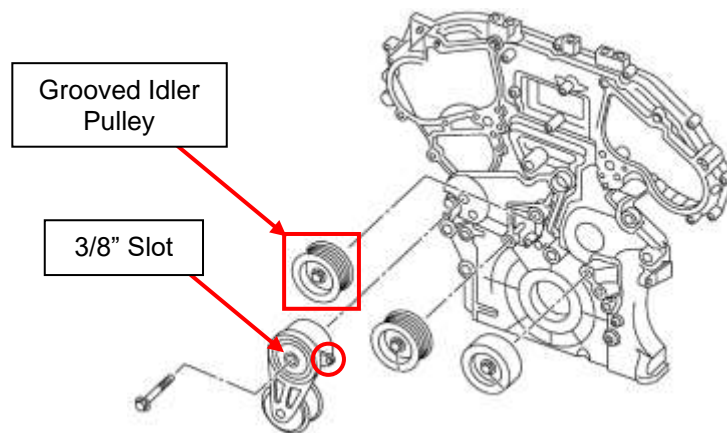


Figure 10

40. Once the belt's tension is released, remove the OEM Belt. The hardest part about removing the Belt is getting it out of the Tensioner. You will need to maneuver it behind and then down beneath the Tensioner Pulley.
41. Remove (1) one Grooved Idler Pulley on the front of the engine, shown above in *Figure 10* with a box. It is the highest center pulley on the engine.
42. If you have not replaced your spark plugs recently, it is recommended to do so at this time. For forced induction applications like the Z1 Supercharger, we recommend spark plugs to be gapped at 0.032". [OEM Nissan R35 GT-R spark plugs](#) are pre-gapped and a drop-in solution. Install either R35 GT-R spark plugs or remove your old ones and gap them to 0.032". Be very careful when handling the spark plugs, do not drop them. When installing both new and used spark plugs, check the porcelain/ceramic for any cracks. If your spark plugs are cracked, replace them with new ones.
43. If you have not already installed your fueling components (injectors, fuel pump, etc.) it is recommended to do so at this time. Follow the instructions provided with your fueling components for proper installation.

Section Two: Clearancing

Tools Needed:

- Body Saw or Dremel
- Vice Grip Pliers
- Hammer
- File or Deburring Tool
- Touch-up paint/ Spray Paint

Parts Needed:

- None

PROCEDURE:

1. Both the driver and passenger Core Support pass-throughs will need to be opened up and enlarged to allow for silicone piping to fit. We recommend using a body saw to cut the Core Support. If you want a very clean installation, it may require multiple trimming sessions after you test fit the blower. However, if you just want to cut it once and be done, you should cut out as much of the Core Support as possible. Please refer to *Figure 11* on the next page as a reference.

NOTE: It is recommended to cover any open holes in the engine on the Valve Covers and Throttle Bodies before proceeding. Debris from cutting can get into the engine.

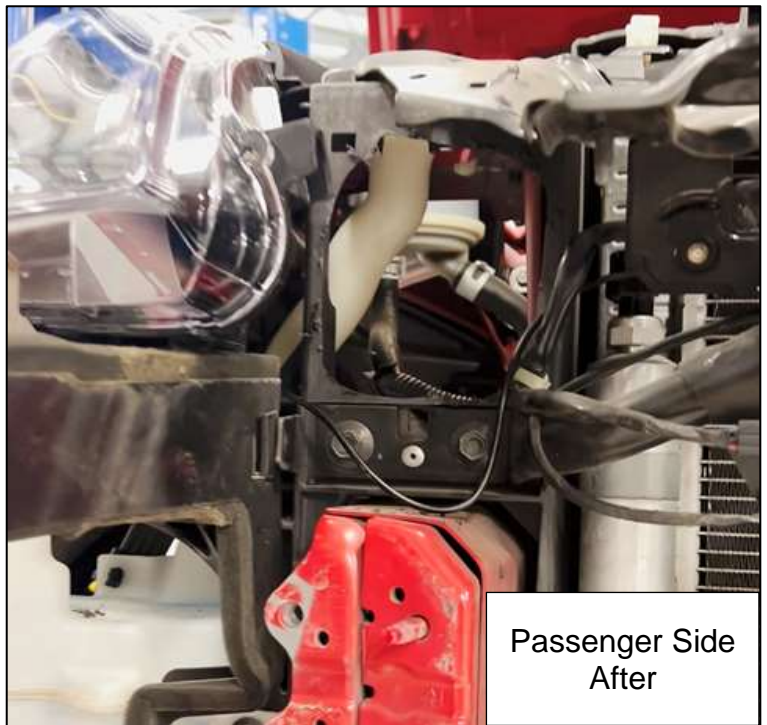
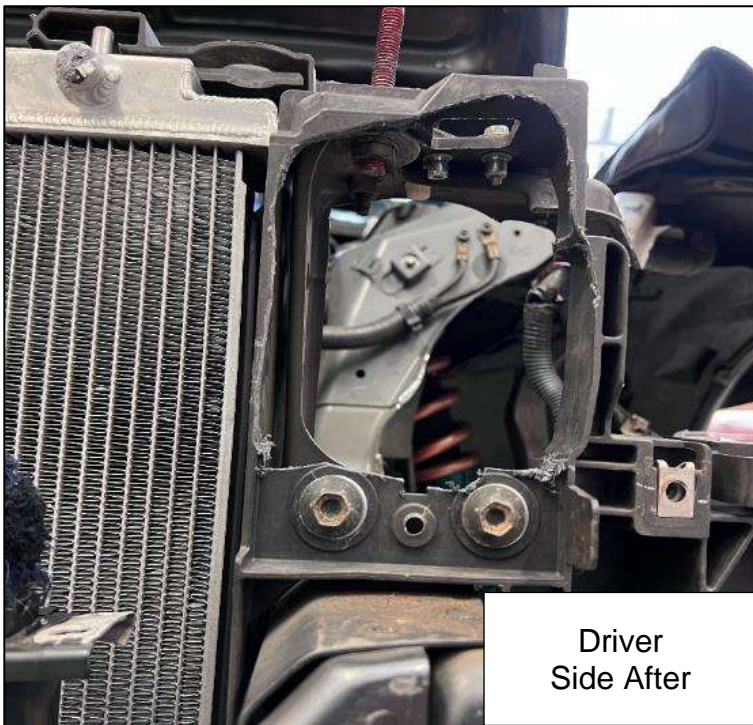
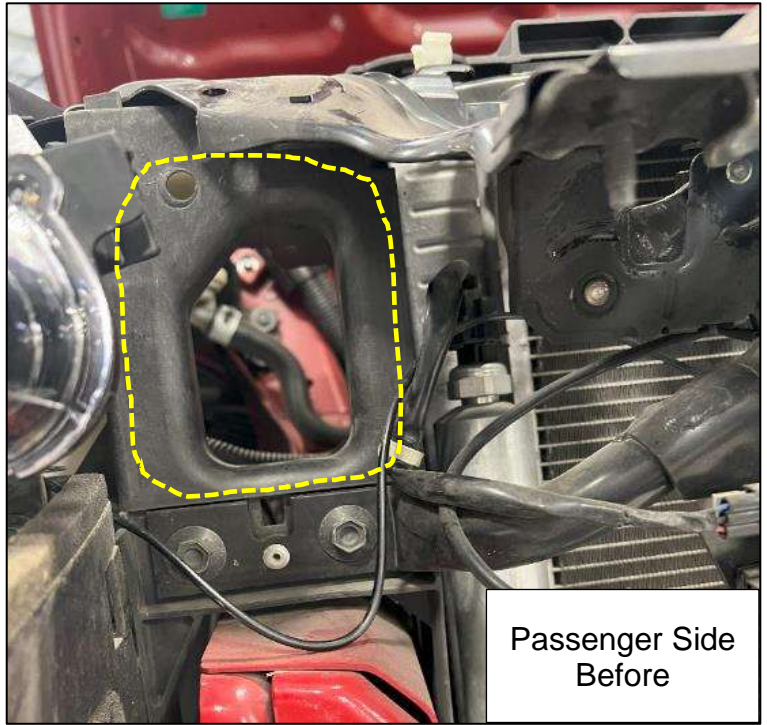
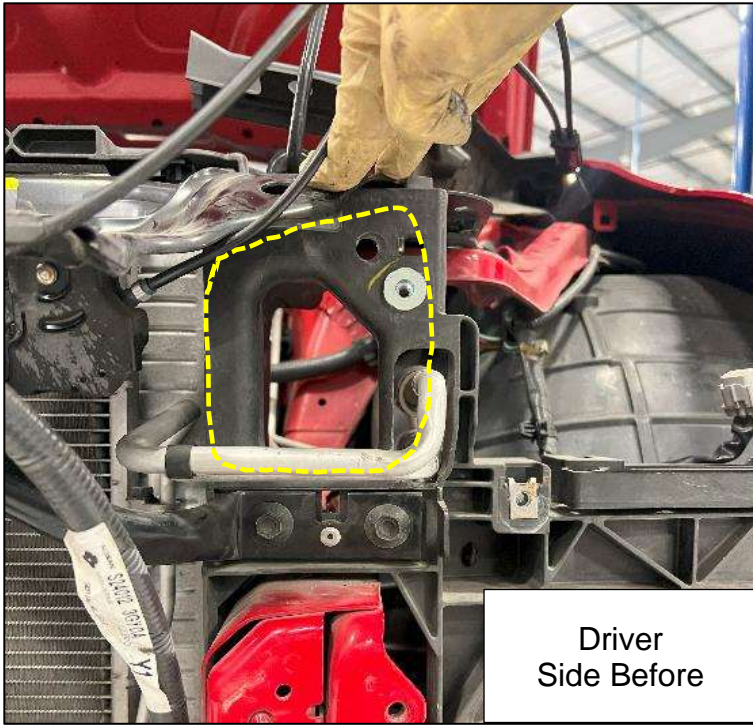


Figure 11

2. Using a body saw or other cutting tool, trim the metal driver side Core Support pass-through, as shown below. The AC lines can optionally be disconnected if you want, but it is not necessary. Properly capture and dispose of refrigerant if you elect to disconnect the AC. *Figure 12.*

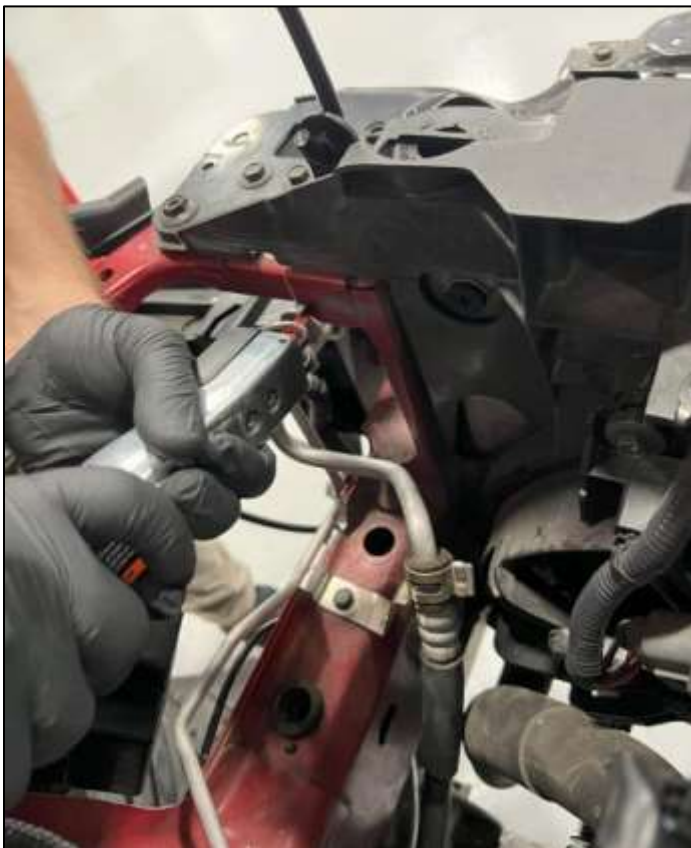
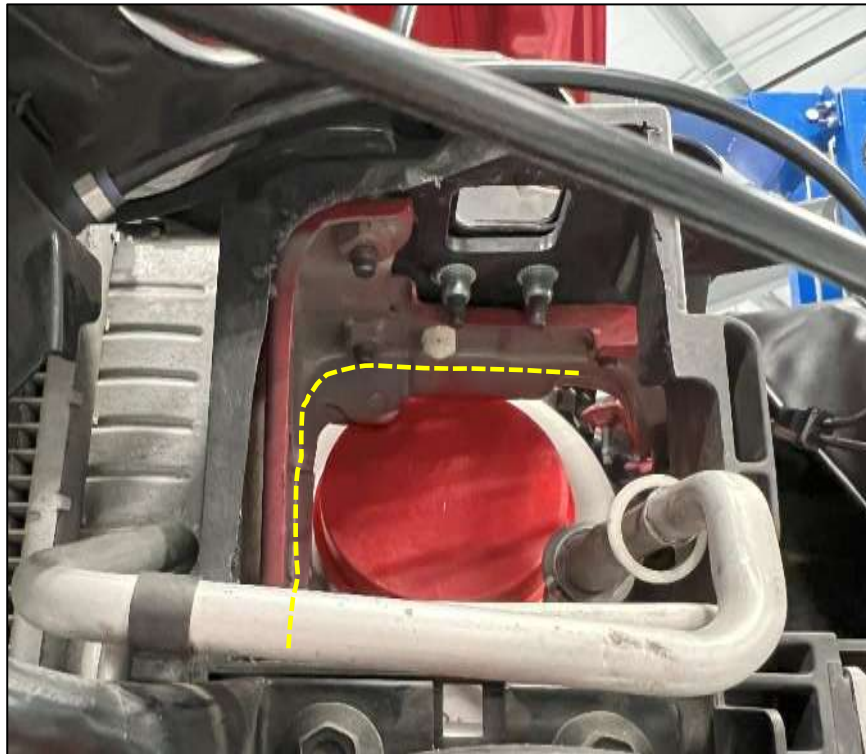


Figure 12

3. The pinch weld on top of the front driver side frame will rail will need to be notched to fit the Supercharger Outlet. Use the images below as reference. *Figure 13.*

NOTE: In the image on the left, there are two paint marks (shown with arrows) where we marked a rough area to trim. Depending on the height of your engine, you may need to trim more or less than the images shown.

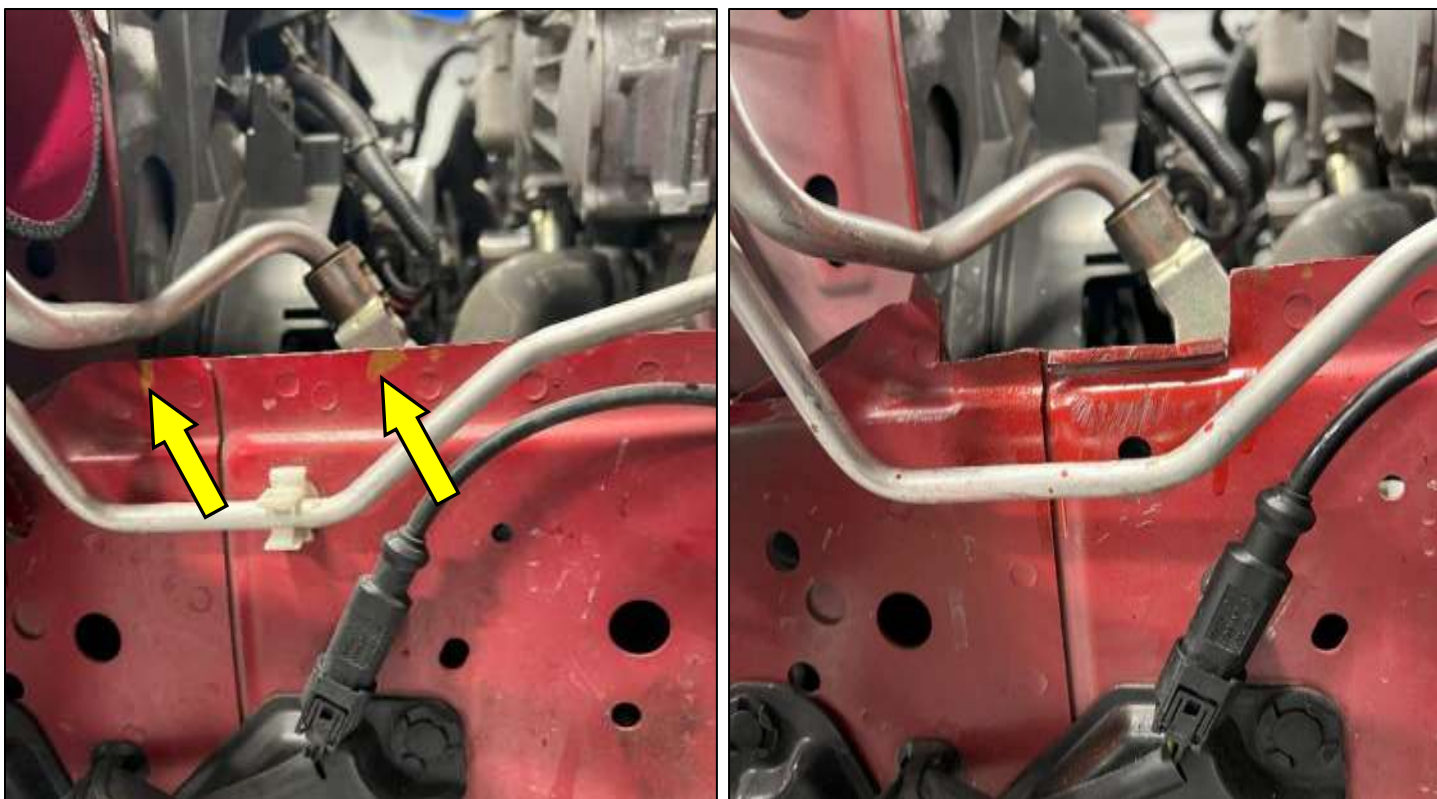


Figure 13

4. The backside pulley will either interfere or be close to the fender well (as shown below). Use vice-grip pliers or a hammer to clearance the fender well. Reference the images below. *Figure 14.*

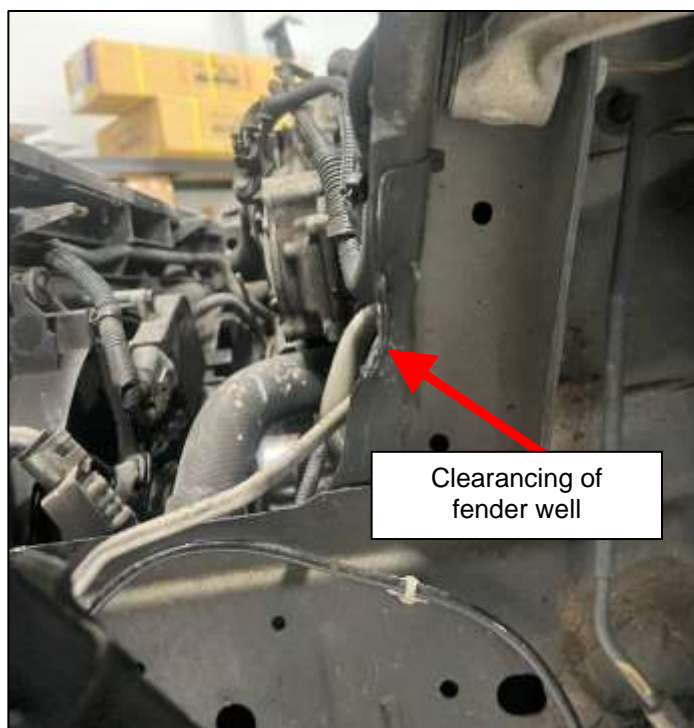
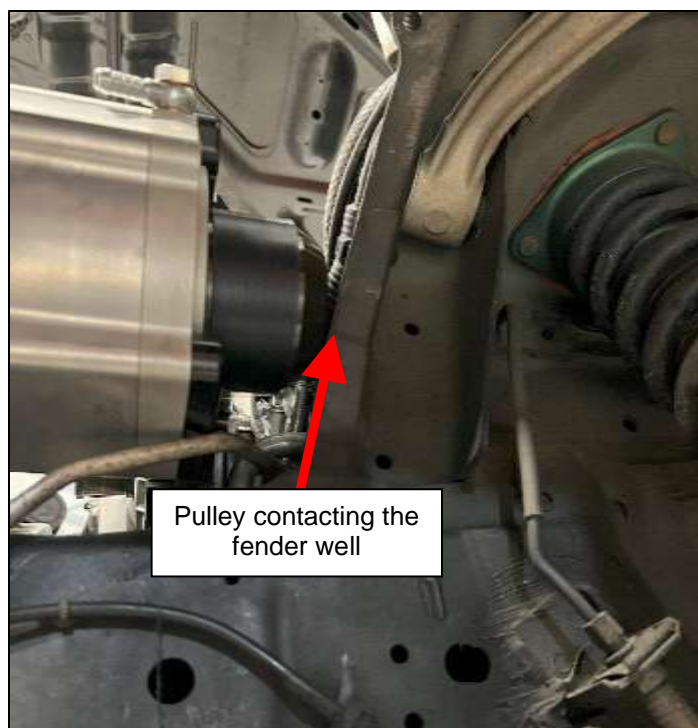


Figure 14

5. There are (2) two tabs on the Radiator Core Support where the OEM Coolant Reservoir was attached. The passenger side tab will need to be cut off with a body saw as it will interfere with the charge piping. The driver side one will need to have the metal U-nut removed to prevent any rubbing on the charge piping. *Figure 15.*

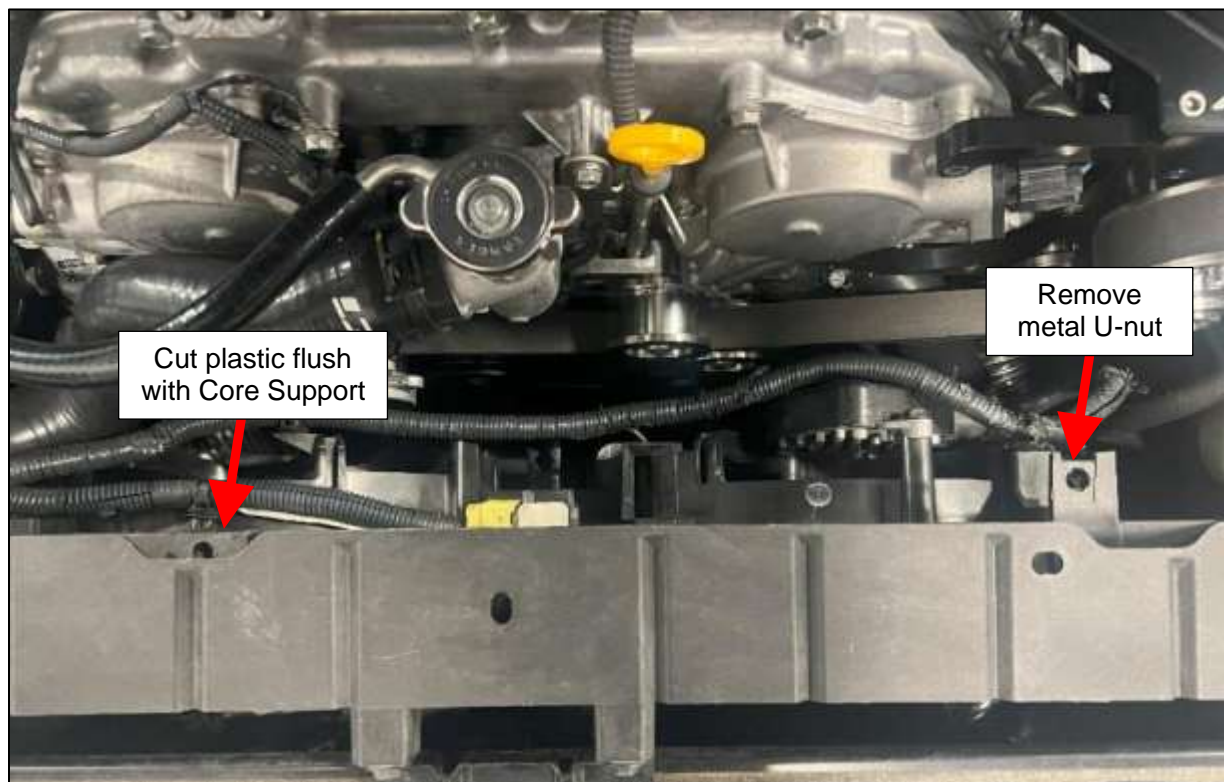


Figure 15

NOTE: *Figure 15* is used to show the modified Core Support and is shown with some of the Supercharger Kit already installed.

6. Once all areas have been trimmed, use a file or deburring tool to clean up the cut edges.
7. Vacuum up all metal and plastic debris.
8. It is recommended to paint (rattle can or paint pen) the cut areas of the Core Support and frame to prevent corrosion.
9. Check to make sure the AC lines are not touching each other. For added protection you can cover the lines with a protective wrap/shield.

Section Three: Blower Installation

Tools Needed:

- Ratchet
- Assorted Metric Sockets
- Torque Wrench
- 5mm Allen/Hex Key
- 8mm Allen/Hex Key
- Pliers

Parts Needed:

- Supercharger Unit and Bracket (#64 - Box F)
- Supercharger Pulley (#47 – Box D)
- Supercharger Belt (#48 – Box D)
- V6 Supercharger Kit (Box 1)
- Hardware Tray (Box B)

PROCEDURE:

1. Locate the V6 Supercharger Kit that contains the Triple Idler Pulley Bracket (#37), Double Idler Bracket (#38), (3) three 5mm spacers (#46), (5) five pulleys (#43-45), and hardware (#39-42).
2. The Triple Idler Bracket will bolt to the middle of the Front Timing Cover and around the dipstick tube. Remove the bolts circled in the image below. There is also a wiring harness that runs in front of the dipstick that may interfere with the idler pulleys. You can either unclip the harness from the dipstick and move it behind the dipstick or push it back against the Timing Cover once the bracket is installed. *Figure 16.*



Figure 16

3. Locate the Triple Idler Bracket (#37), and (3) three M10 x 110mm Socket Head Screws (#39). Place the Triple Idler Bracket over the Timing Cover as shown below and use the (3) three M10 x 110 mm Screws to secure it. The dipstick tube will get slightly pushed toward the passenger side of the engine, make sure it rests in the channel of the Triple Idler Bracket. Torque M10 bolts to **41 ft-lbs**. Be careful not to pinch the wiring harness between the bracket and front timing case. If you didn't move the wiring harness behind the dipstick, push the harness back against the timing cover and zip tie it to either the dipstick tube or solenoid above the bracket.
- Figure 17.*

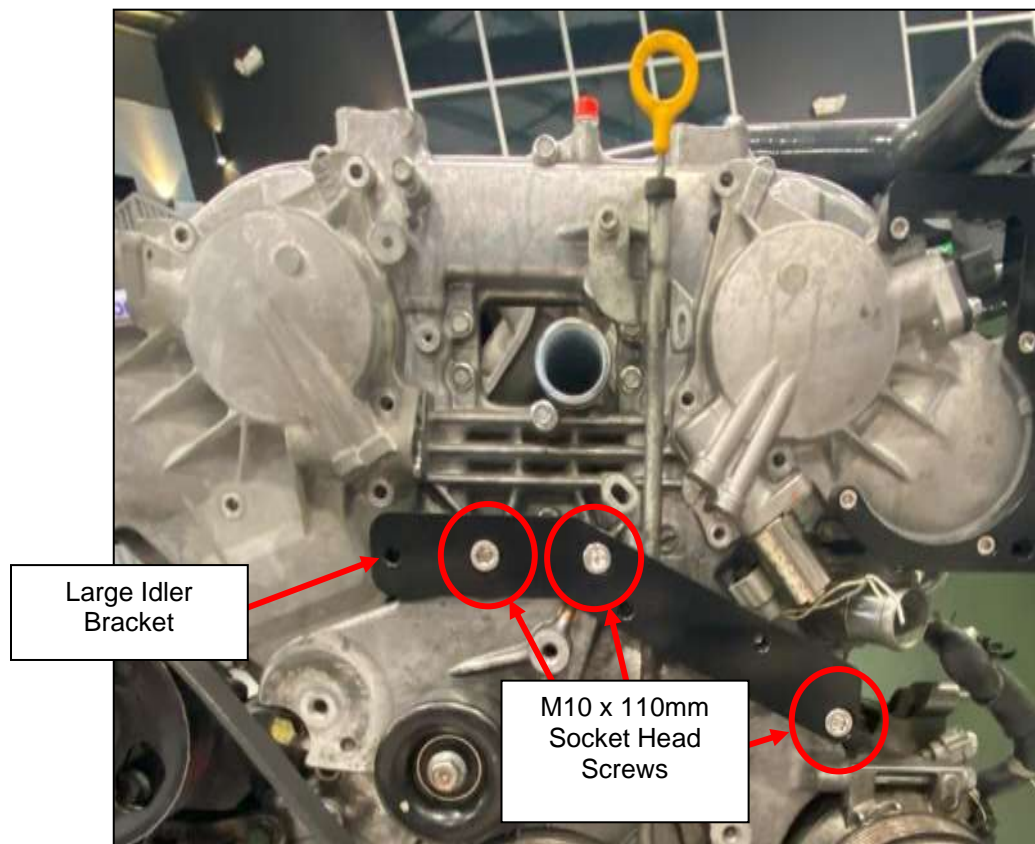


Figure 17

4. Locate a 60mm Smooth Pulley (#44), the 70mm Smooth Pulley (#43), a 7-Rib Idler Pulley (#45), (3) three M10 x 50mm Bolts (#42), and (3) three 5mm Spacers (#46). Install the Pulleys with a Spacer onto the Triple Idler Bracket according to *Figure 18* below. The order should be **BOLT → PULLEY → SPACER → BRACKET**. Torque idler pulley bolts to **21 ft-lbs**.

NOTE: Your pulleys may be a different color than ours, the sizes and installation process are the same.

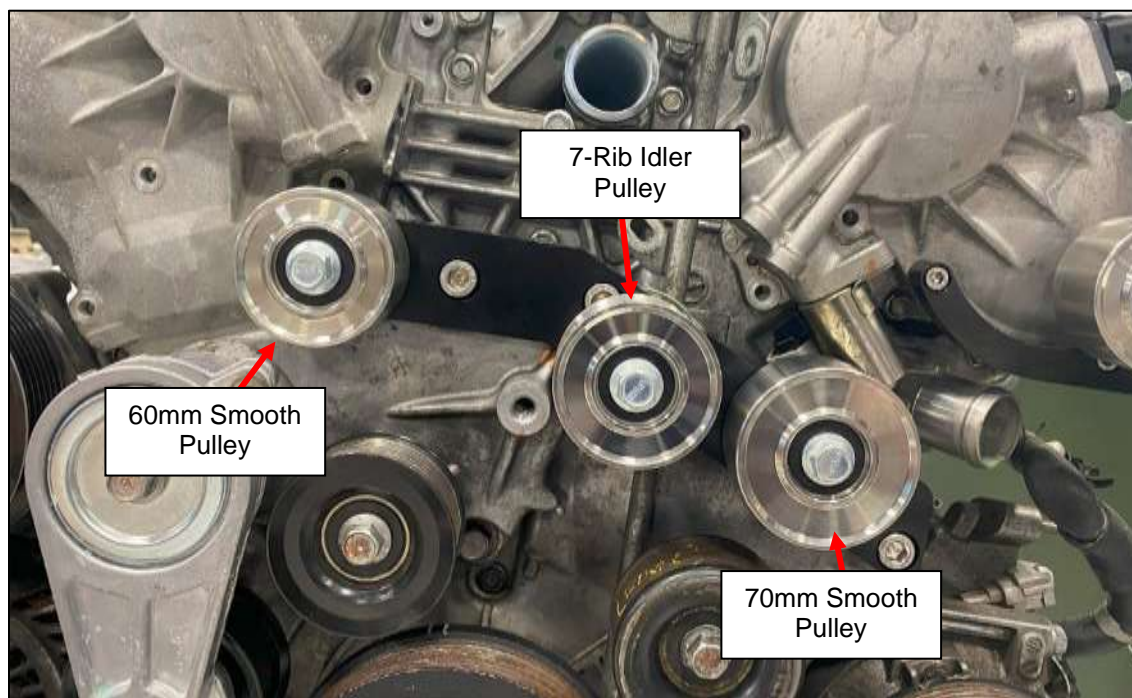


Figure 18

5. Locate the Main Bracket and Supercharger Unit (#64), the Main Supercharger Pulley (#47), (1) one M6 x 12mm socket head bolt (#16), (4) four M6 x 25mm socket head bolts (#17), and (2) two M6 x 60mm socket head bolts (#18).

6. Remove the bolts circled in *Figure 19* below, these bolts will not be reused. The image on the left is an engine out of the vehicle to show the locations better, the other is still in the engine bay. The Main Bracket bolts to the front timing cover in (6) six locations and on the top of the engine in (1) one location.

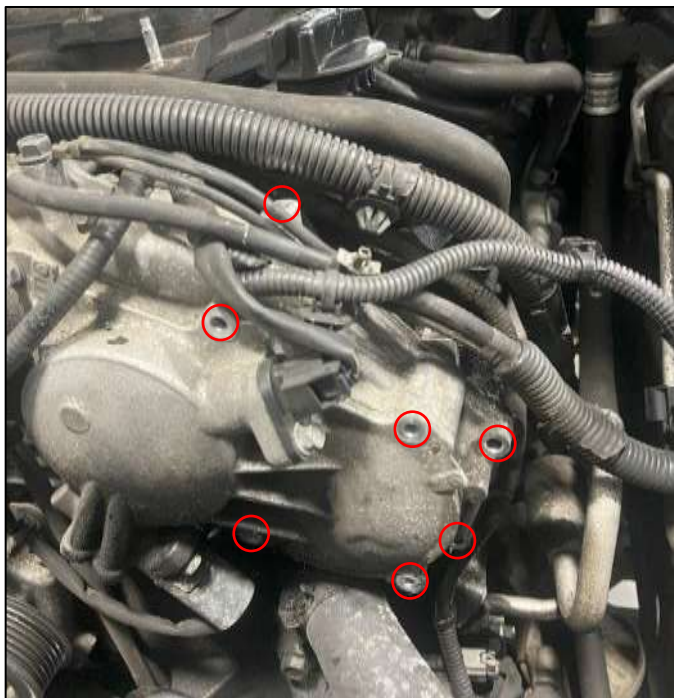
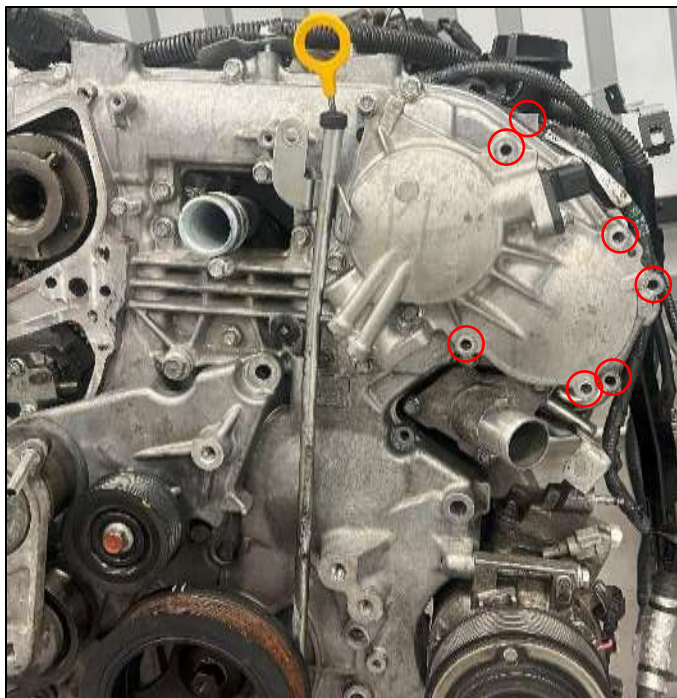


Figure 19

7. Remove the bracket at the front right (driver) side of the engine that secures the wiring harness to the engine.

8. The M6 x 12mm bolt is used on the top plate of the bracket, refer to *Figure 20* below as reference for the M6 x 25mm and M6 x 60mm bolts locations. With 2-3 bolts, loosely attach the Main Bracket and Blower to the engine. Once loosely mounted, check all around the Blower for clearance issues (frame rail, fender well edge, AC lines, etc.). If the Blower is contacting anywhere, remove the 2-3 bolts and clearance the vehicle accordingly.

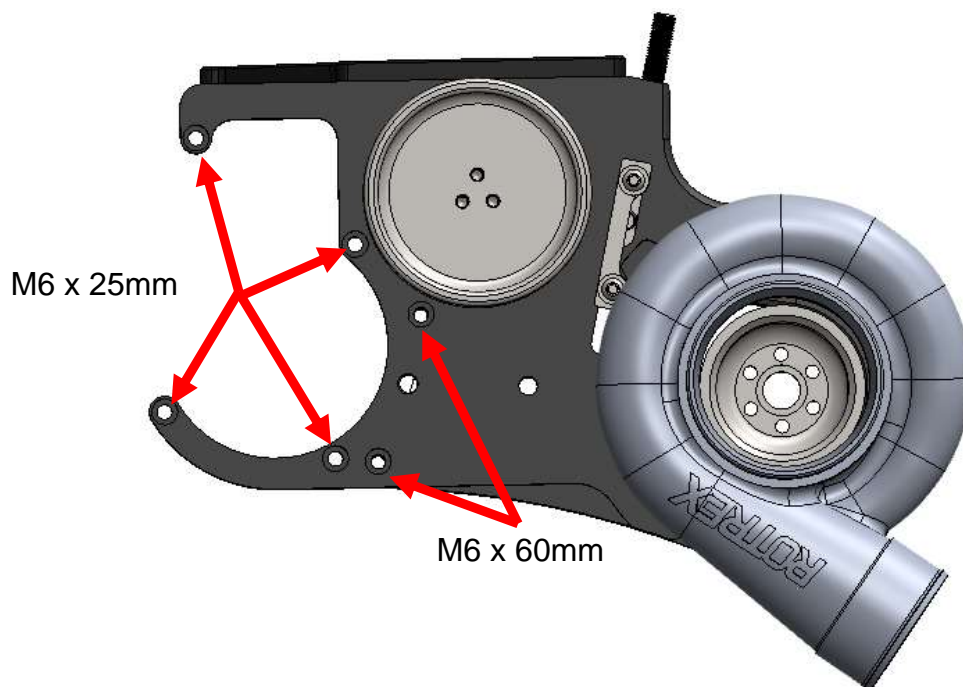


Figure 20

9. Once properly clearanced, bolt the rest of the Main Bracket and Blower to the engine. Torque bolts to **9 ft-lbs.** *Figure 21.*



Figure 21

10. Locate the Double Idler Pulley Bracket (#38), and (2) two M10 x 25mm Flat Head Screws (#40). Depending on the main Supercharger Pulley you selected, the Double Idler Pulley Bracket may be different. If you selected the 80mm Supercharger Pulley, the Double Idler Pulley Bracket will have (2) two dots machined into the face. For the 90mm and larger Supercharger Pulleys, the Double Idler Pulley Bracket will have (1) one dot machined into the face.

11. Install the Double Idler Pulley Bracket onto the main bracket using the (2) two M10 x 25mm flat head screws. The image below shows the bracket on an engine on a stand to better show the parts. Make sure that the dot(s) machined into the Double Idler Pulley Bracket are on the bottom, as shown below. Torque screws to **34 ft-lbs.** *Figure 22.*

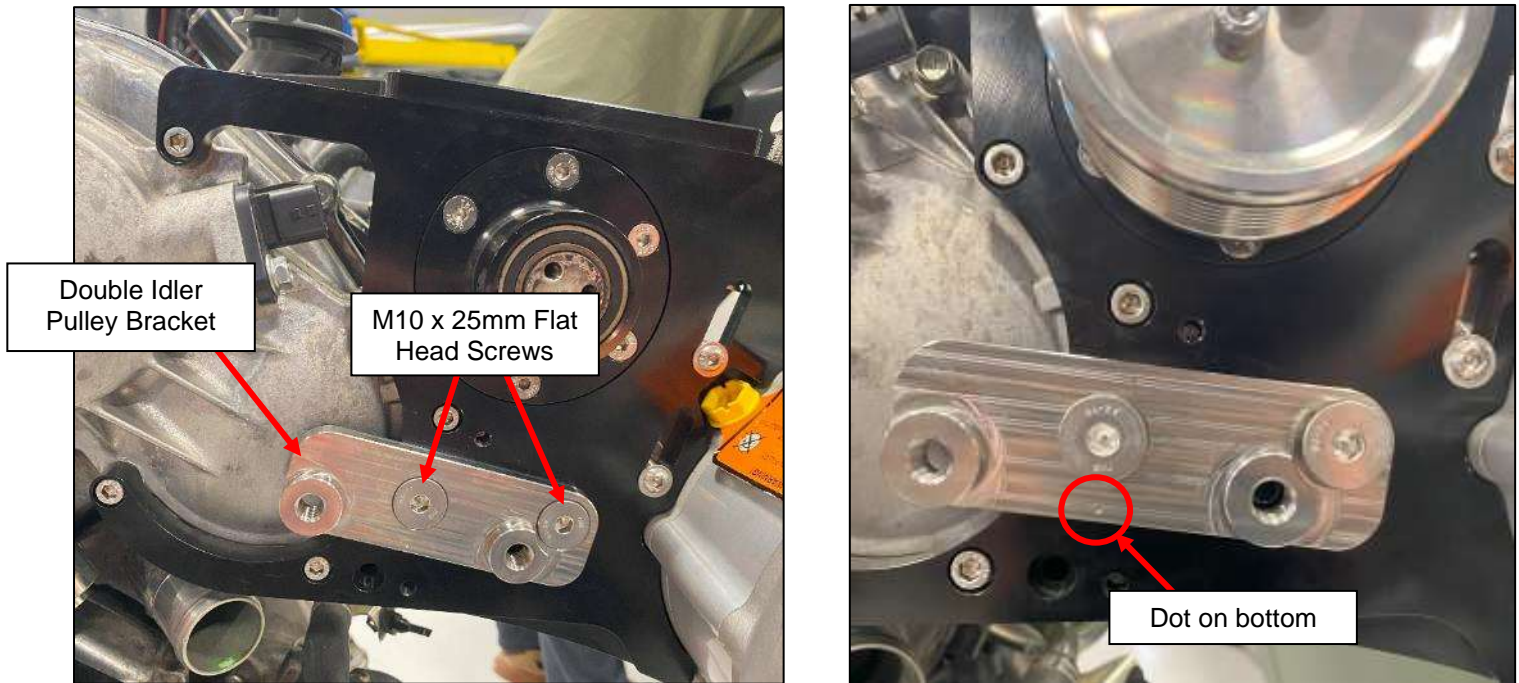


Figure 22

12. Locate (1) one 60mm Smooth Pulley (#44), (1) one 7-Rib Idler Pulley (#45), and (2) two M10 x 35mm Flanged Head Bolts (#41). Install the pulleys onto the Double Idler Bracket according to *Figure 23* below. The order should be **BOLT → PULLEY → BRACKET**. Torque Idler Pulley bolts to **21 ft-lbs.**



Figure 23

13. Remove the (3) three pre-installed Socket Head Bolts on the Main Bracket and install the Supercharger Pulley (#47) as shown below. **DO NOT** spin the blower. For added security, you can add just a drop of Loctite (#36) to each bolt, **DO NOT** add too much as it may leak out into the jackshaft bearing in the bracket. *Figure 24.*

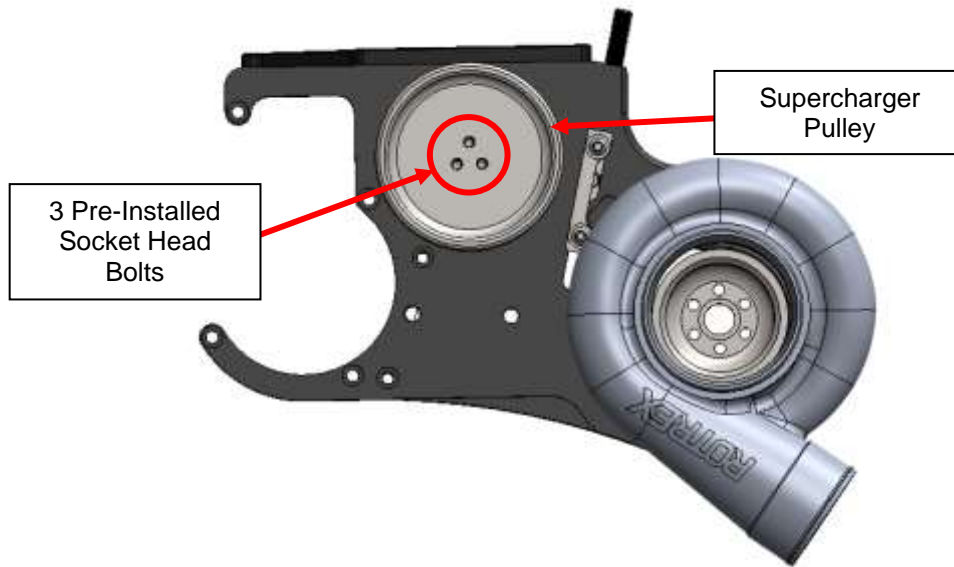


Figure 24

14. Using (2) two 5mm Allen/Hex keys, one on the rear pulley and one on the front, torque down the (3) three Socket Head Bolts on both pulleys on each side of the bracket. **DO NOT** spin the pulleys. Torque bolts to **9 ft-lbs.** Make sure all (3) three bolts on **BOTH** sides are torqued. *Figure 25.*

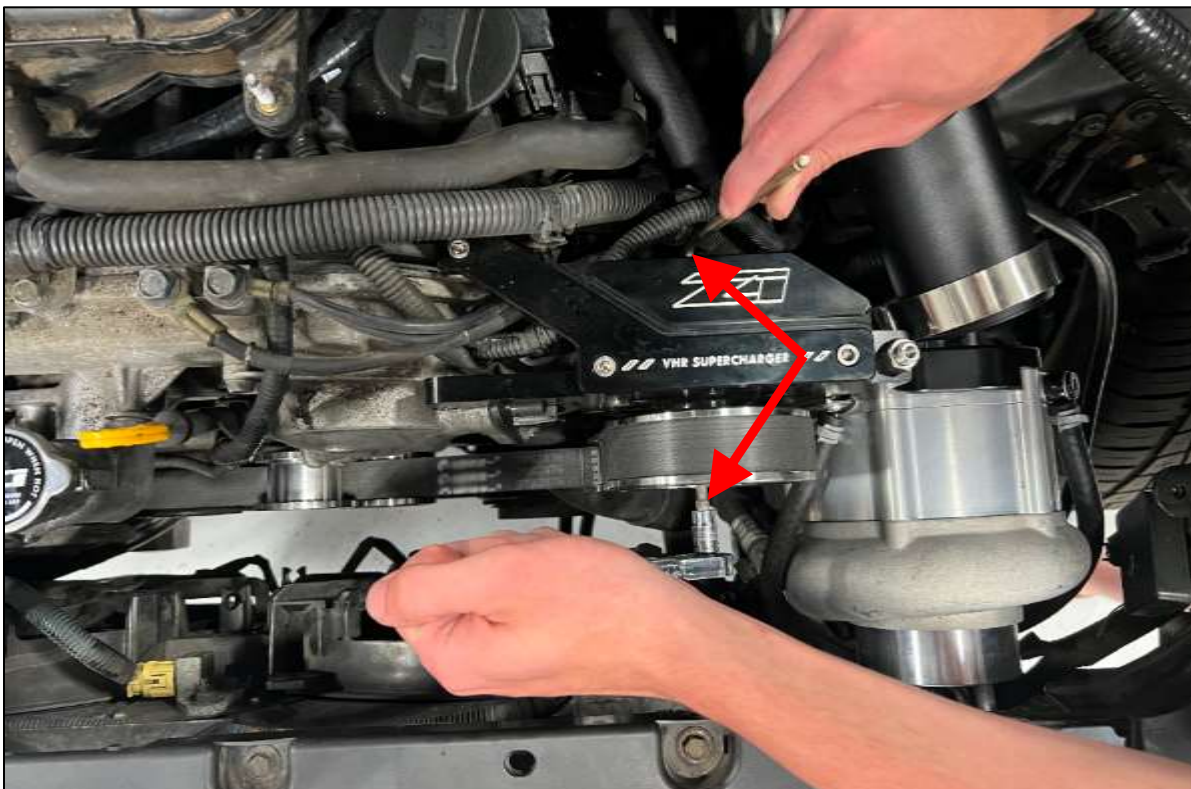


Figure 25

15. Locate the Z1 Supercharger Drive Belt (#48). Start the belt installation by positioning it around and above the pulley on the tensioner, so that the smooth side of the belt is resting on top of the pulley on the tensioner. This is a bit tricky and is best done by making a loop with the belt, ribbed side out, and “scoop” under the tensioner pulley to get the belt behind and then on top of the pulley. We found it easier to do this from under the car.

The rest of the belt routing is very similar to the stock VHR belt routing but goes to the Supercharger between the AC Compressor and power steering pump pulleys. Refer to *Figure 26* below.

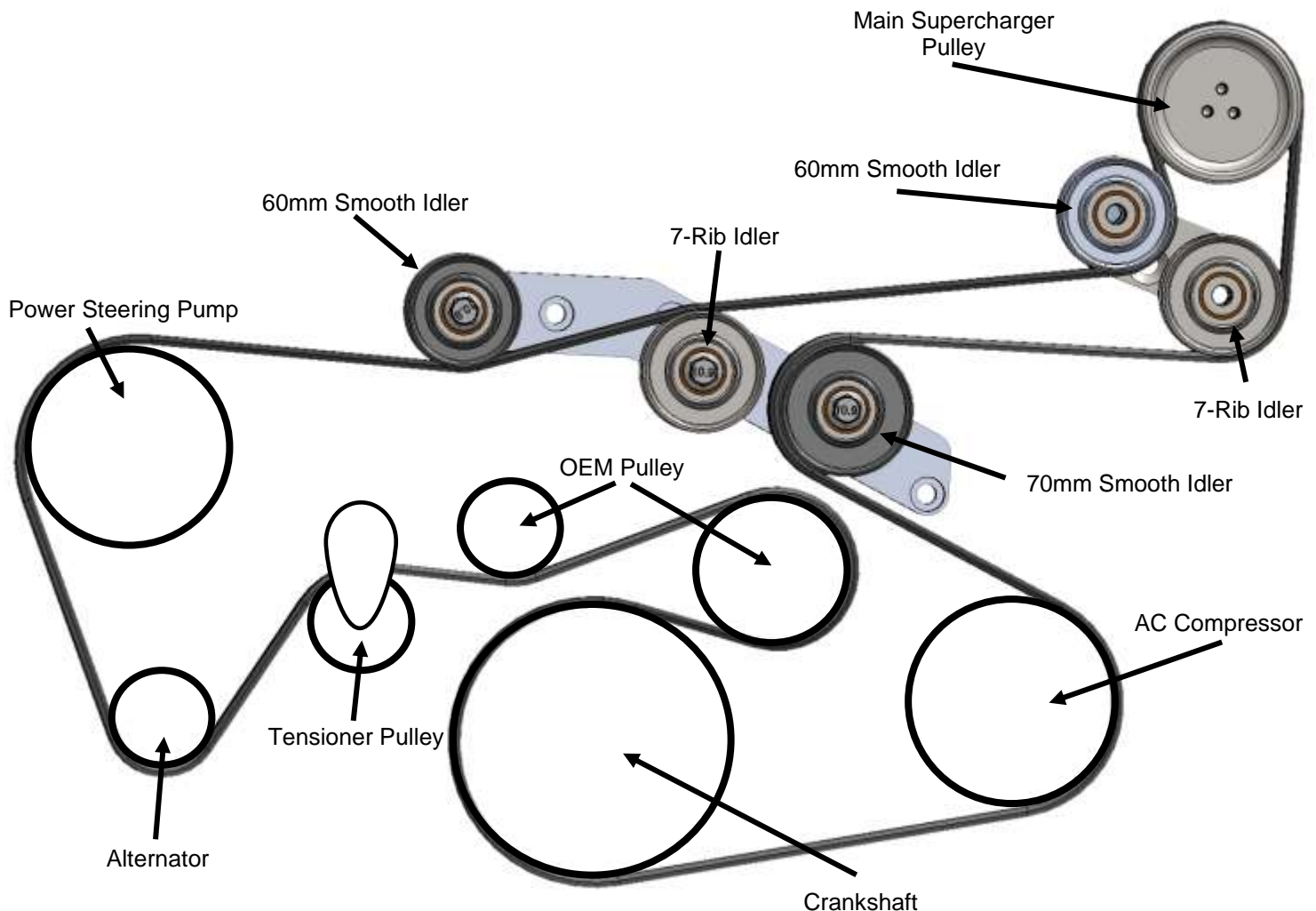


Figure 26

16. Once the belt is nearly on every pulley, slightly remove it from the smooth OEM Idler that has no lip (beneath the Triple Idler Bracket installed in *Step 3*), then make sure it is properly seated on all grooved pulleys, then slide it back on the smooth OEM pulley. Since that OEM pulley has no lip, it is the easiest one to slide on to last.
17. Verify that the belt is properly seated on each pulley, then using a long 3/8" ratchet turn the tensioner slightly to remove the bolt/Allen key and then re-tension the belt.
18. The belt should be tight enough, however, hold the large pulley on the Supercharger Main Bracket still and using an M5 Hex wrench tighten the (3) three Socket Head Bolts securing the large pulley to the jackshaft bearing.

17. Verify that the belt is properly seated on each pulley, then using a long 3/8" ratchet turn the tensioner slightly to remove the bolt/Allen key and then re-tension the belt.

18. The belt should be tight enough, however, hold the large pulley on the Supercharger Main Bracket still and using an M5 Hex wrench tighten the (3) three Socket Head Bolts securing the large pulley to the jackshaft bearing.

Section Four: The Oiling System

Tools needed:

- Ratchet
- Assorted Metric Sockets
- 3mm Allen/Hex Key
- Torque Wrench
- Pliers
- Vise
- Hose Cutter
- Small Fluid Pump/Long Funnel

Parts Needed:

- Z1 13 Row Procooler (#5 – Box 1)
- Setrab Oil Cooler Bracket (#62 – Box E)
- Z1 Oil Reservoir (#52 – Box 2)
- Z1 Oil Reservoir Bracket (#61 – Box E)
- Cushioned Loop P-Clamp (#29 – Box B)
- Split Neoprene Rubber Trim (#32 – Box B)
- Rotrex Magnetic Oil Filter (#50 – Box 2)
- Rotrex SX150 Traction Oil (#65 – Box F)
- (2) M22 to 8mm Hose Barb (#26 – Box B)
- (2) M22 Banjo Bolts (#27 – Box B)
- (4) M6 Nylon Lock Nuts (#30 – Box B)
- (8) Gray Spring Clamps (#23 – Box B)
- (4) Aluminum Crush Washers (#28 – Box B)
- (3) M5 Button Head Hex Bolts (#31 – Box B)
- (1) Priming Bulb (#63 – Box E)

PROCEDURE:

1. Locate the Z1 13 Row Procooler (#5), Setrab Oil Cooler Bracket (#62), (2) two M22 to 8mm Hose Barb Fittings (#26), (2) two M22 Banjo Bolts (#27), (4) four M6 nylon lock nuts (#30), (8) eight grey spring clamps (#23), (4) four aluminum crush washers (#28), Z1 Oil Reservoir (#52), Z1 Oil Reservoir Bracket (#61), (3) three M5 button head hex bolts (#31), Rotrex Magnetic oil filter (#50), (1) one Cushioned Rubber Loop P-clamp (#31), Priming Bulb (#62), and the ~2" section of Split Neoprene Rubber Trim (#32).

NOTE: Some Customers will receive a Rotrex Reservoir and Bracket with accompanying hardware.

2. Locate the Z1 Oil Reservoir (#52). Tighten the banjo bolts on the Z1 Oil Reservoir so that the upper barb is pointing down and the bottom barb is pointing forward. Torque to **80 in-lbs**, over torquing the bolts could damage them. Reference *Figure 27* below.

NOTE: Users with the Rotrex Reservoir will need to install the Banjo Bolt and Fitting with a Copper Crush Washer on both sides of the Banjo Fitting. Don't tighten the Banjo Bolt until the Lines are connected and oriented correctly.



Figure 27

3. Install the Setrab Oil Cooler Bracket (#62) onto the bottom of the Z1 13 Row Procooler (#5) using (4) four M6 Nylon Lock Nuts (#30). *Figure 28.*



Figure 28

4. Remove the (2) two 10mm bolts securing the OEM Power Steering Cooler to the bottom of the Radiator Core Support.
5. The brackets for the OEM Power Steering Cooler will need to be bent so it will not touch the Intercooler. The brackets have (2) two 90° bends from the factory. Squeeze the brackets in a vise to make (2) two ~135° bends. *Figure 29.*



Figure 29

6. Using a long narrow funnel or fluid fill pump, prefill the Z1 Procooler with the supplied Rotrex SX150 Traction Fluid. Be careful not to spill the fluid, only one bottle is included. You can purchase more [HERE](#).
7. Locate (4) four Crush Washers (#28), (2) two M22 Banjo Bolts (#27), and (2) two M22 Barb Fittings (#26). With a Crush Washer on each side, install the M22 Banjo Bolt through the M22 Barb Fitting, and thread into the open ports on the top of the Procooler. Point the barb fittings outward towards the sides of the vehicle. They are aluminum bolts, do not overtighten them as they may break. *Figure 30*.

NOTE: This image is from a Cooler on a 350Z with the lines already attached, the process is still the same.



Figure 30

8. Position the Z1 Procooler on the Radiator Core Support and reinstall the OEM Power Steering Cooler, sandwiching the Setrab bracket with the Procooler in place. *Figure 31*.



Figure 31

9. Remove both bolts securing the power steering cooler line's bracket to the passenger side fender well. *Figure 32.*



Figure 32

10. Position the small Split Rubber Trim Piece (#32) on the pinch weld of the passenger side frame. *Figure 33.*

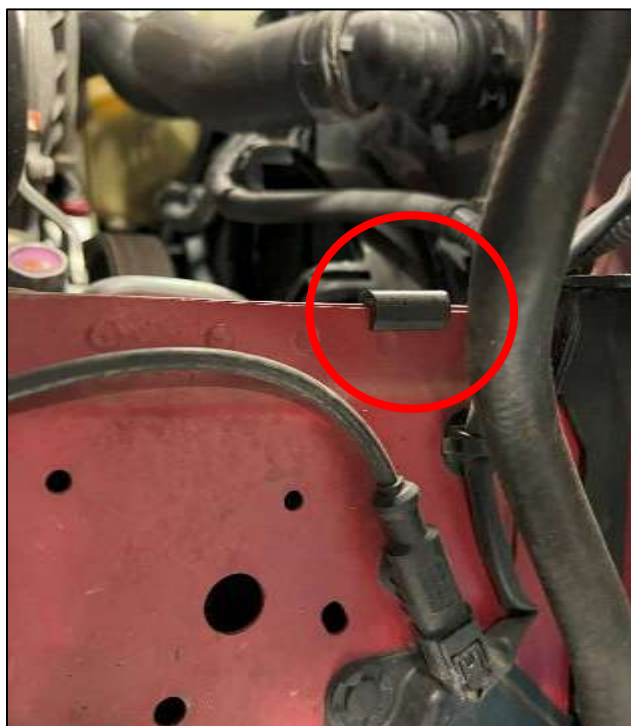


Figure 33

11. Position the Rotrex Oil Reservoir Bracket (#61) onto the Split Rubber Trim Piece and secure it to the frame rail in the same spot as the bracket was removed from in *Step 8* with the OEM bolt. Then secure the OEM power steering cooler lines to the Z1 Oil Reservoir Bracket. The bottom part of the bracket is bent away from the frame rail to allow you to run your engine oil cooler lines in the gap. See *Figure 34* as reference for how the engine oil cooler lines were ran under the OEM bracket.

NOTE: The image on the Right Shows the Bracket for the Rotrex Reservoir. Install the supplied Clamps onto the Bracket. (1) one will go onto the PEM Stud on the Bracket and be secured with small, included nut. The other can use the OE Bolt to secure the Clamp.

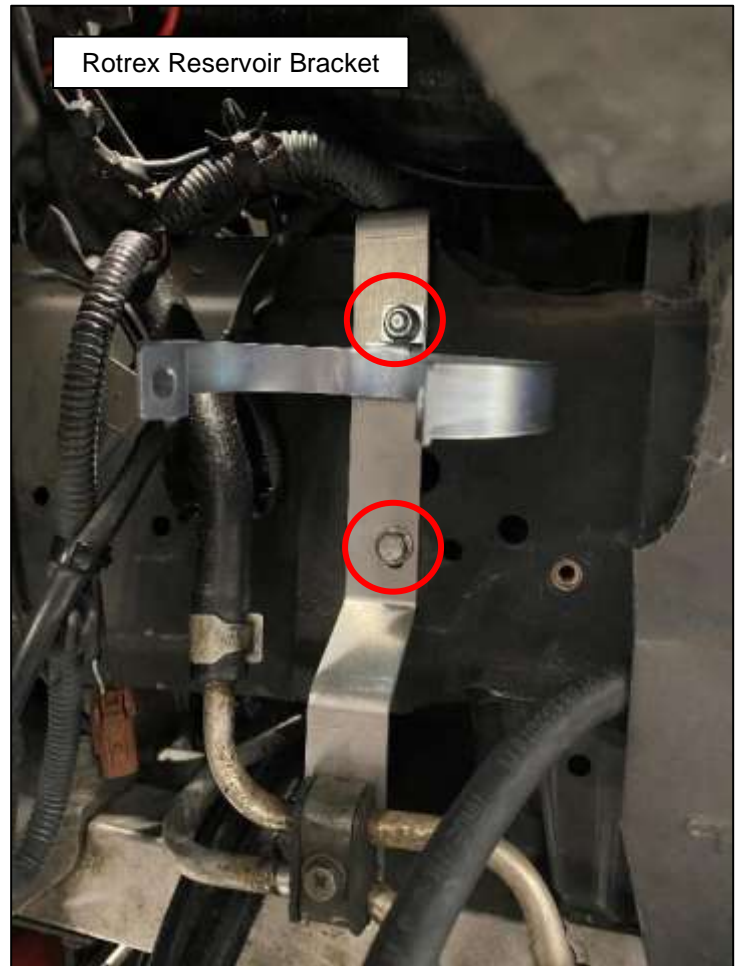


Figure 34

12. Secure the assembled Z1 Rotrex Oil Reservoir (#52) to the Oil Reservoir bracket with the (3) three provided M5 x 8mm Button Head Screws (#31) and a 3mm Allen/Hex bit. You will likely need to hold the wiring harness out of the way to access the bolt holes. *Figure 35.*

NOTE: Rotrex Reservoirs will be placed into the Clamps installed in *Step 11*. The Clamps include a nut and bolt to tighten the clamps and secure the Reservoir. The image below only shows (1) one clamp being used; you will have (2) two.



Figure 35

13. Remove the 10mm bolt securing the driver side horn to the Core Support. Using the provided large, Cushioned Rubber Loop P-clamp (#29), secure the Rotrex Magnetic Oil Filter to the Core Support under the driver's headlight (*Figure 36*) with the horn rotated and sandwiched under the P-clamp. The filter has an arrow indicating the direction of flow for the oil, the arrow **MUST** point up towards the Supercharger.

NOTE: The images below are shown with the lines, clamps, and Supercharger Outlet already installed. Those components will be installed in the following Steps.

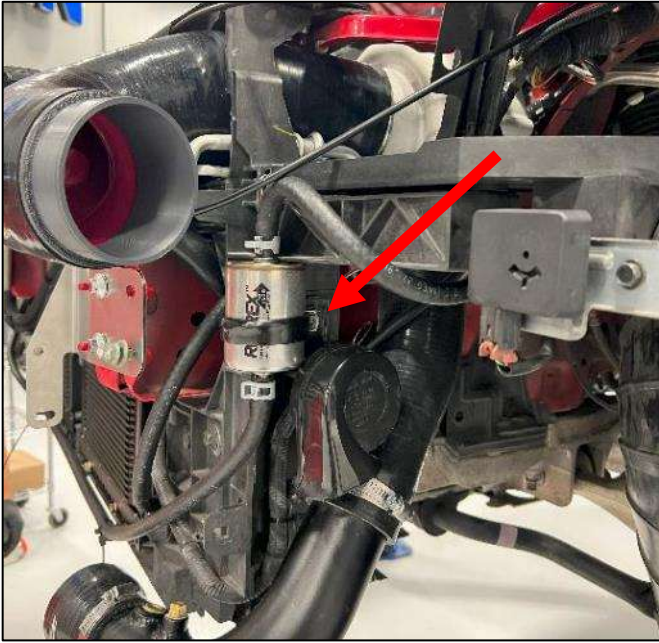


Figure 36

14. The Rotrex Oil System will need to be plumbed just like the diagram below. Using the provided 25' of 5/16" hose, cut appropriate lengths and install the hose onto all of the Rotrex Oil System components, with a gray spring clamp at each connection. The ports on the Rotrex Supercharger Unit are marked "IN" or "OUT". *Figure 38.*

- a. Route Hose from the Outlet of the Z1 Rotrex Oil Reservoir to the Inlet of the Rotrex Priming Bulb. We placed the Priming Bulb right before the Oil Filter. The Priming Bulb **MUST** have the → facing towards the Inlet of the Oil Filter. If you do not have the supplied Priming Bulb, contact Z1 Motorsports to obtain one, or route the Hose from the Outlet of the Rotrex Oil Reservoir to the Inlet of the Oil Filter. The Priming Bulb simplifies the priming procedure prior to start up. *Figure 37 and 39.*



Figure 37

- b. Route Hose from the (Outlet) of the Priming Bulb to the bottom (Inlet) of the Rotrex Magnetic Oil Filter.
- c. Route Hose from the top (Outlet) of the Oil Filter to the Inlet of the Rotrex Supercharger Unit.
- d. Route Hose from the Outlet of the Rotrex Supercharger Unit to the Inlet of the Z1 Procooler.
- e. Route Hose from the Outlet of the Z1 Procooler to the top (Inlet) of the Z1 Rotrex Oil Reservoir.

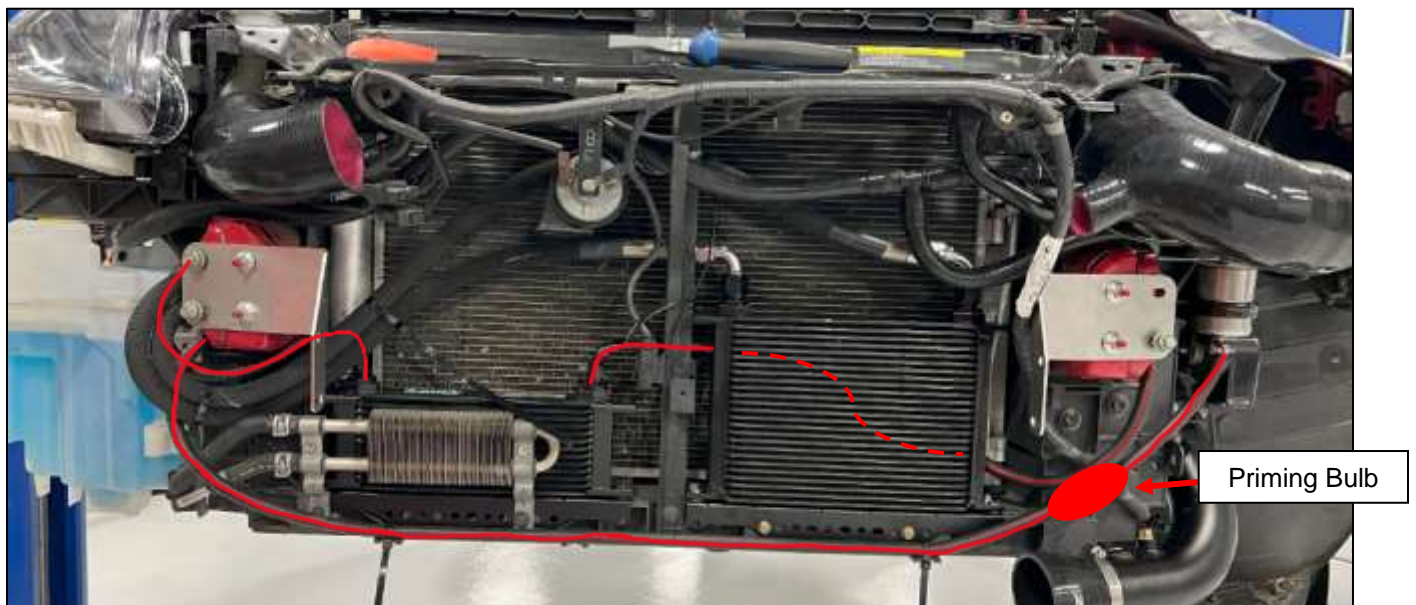


Figure 38

NOTE: There are countless ways to route all the hoses. The image above is what we found best on our vehicles based on other modifications. We have provided a few extra feet of hose as you may prefer to route some of the lines in a different location, just make sure they follow the same path listed above and shown in the diagram. For the lines running across the bottom of the core support, neatly zip tie them to the core support. **MAKE SURE NO LINES ARE PINCHED; THIS CAN CAUSE NO OIL TO NOT FLOW PROPERLY TO THE SUPERCHARGER AND CAN CAUSE OIL STARVATION.**



Figure 39

15. **G37 Owners:** Drill a hole in the bottom left (passenger) corner of the core support. Route the hose connecting to the bottom of the Fluid Reservoir in the wheel well through that hole. *Figure 40.*

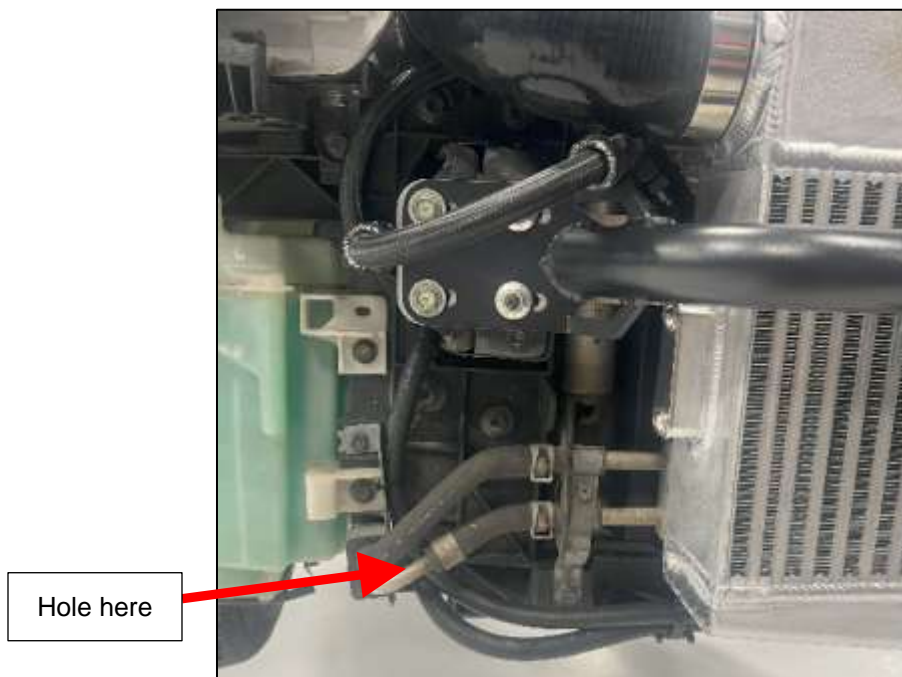


Figure 40

16. Using a long narrow funnel or [fluid fill pump](#), fill the Z1/Rotrex Fluid Reservoir (the one installed in *Step 11*) with the supplied Rotrex SX150 fluid. Be careful not to spill the fluid, only one bottle is included. You can purchase more [HERE](#).

Section Five: Coolant Reservoir

Tools needed:

- Ratchet
- Assorted Metric Sockets
- Assorted Metric Wrenches
- 4mm Allen/Hex Key
- Pliers
- Vise
- Small Fluid Pump/Long Funnel
- Hose Cutter

Parts needed:

- Z1 Coolant Reservoir Kit (Box 1)

PROCEDURE:

1. Locate the Z1 Coolant Reservoir Kit. This box will have all the components needed.
2. Prepare the Coolant Reservoir (#6) by fully tightening the plug, both barbs, and the bottom banjo bolt with the banjo pointing towards the rear of the Reservoir. Torque the banjo bolt to **80 in-lbs** (the other hardware does not have a specific torque spec, just make them snug). Then install the Long Universal Hose (#8) onto the bottom banjo barb with a Gray Clamp (#9).
3. Remove (2) two 10mm bolts on the passenger side of the engine bay securing wiring harness brackets. Lift up the bracket under the top 10mm bolt to reveal a 12mm bolt securing the fuel line bracket. Remove the 12mm bolt under the bracket. *Figure 41.*



Figure 41

4. Position the Z1 Coolant Reservoir Bracket (#6) in place above the fuel line bracket but underneath the top bracket, then secure both brackets back in place using the OEM bolts (as shown in *Figure 39*). If you are still running the factory fuel feed line, you will likely need to carefully pry/bend the bracket onto the top mounting location.
5. Loosely install the (2) two M5 bolts provided into the back of the Reservoir. Slide the Z1 Coolant Reservoir onto the slots on the bracket. Then, tighten the M5 button head bolts.

NOTE: Steps 6-9 assumes you still have the coolant lines running to your Throttle Bodies. If you have done the Throttle Body Coolant Bypass skip to *Step 10*.

6. Remove the coolant hose attached to the driver side throttle body shown in *Figure 42*. The arrows shows where it is connected to the Throttle Body and then to the heater pipe between the engine and driver side frame rail.



Figure 42

7. Route the hose connected to the bottom of the Coolant Reservoir behind the engine and towards the driver side throttle body. Cut the hose a couple inches above the barb on the heater pipe. Refer to the images in *Figure 43*.
8. Install the 8mm Equal Tee Fitting (#10) into the coolant hose from the previous step. Then cut another short section of hose to connect the Tee Fitting to the barb on the heater pipe. *Figure 41* below.
9. Lastly, run a hose from the last spot on the tee to the barb on the Throttle Body.

NOTE: *Figure 43* is shown with the charge piping installed. The tee fitting and coolant lines are shown with an arrow below the Throttle Body Coupler.

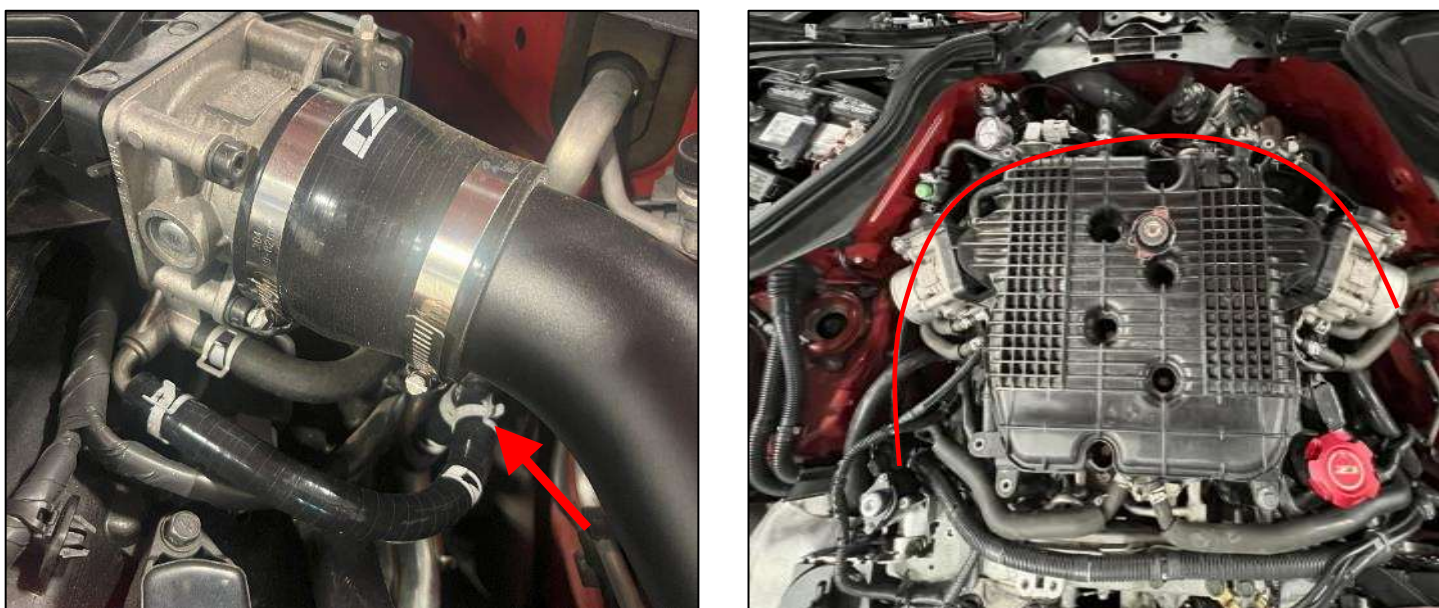


Figure 43

NOTE: *Step 10* is for customers who no longer have the Throttle Body coolant hoses. If you already followed *Steps 6-9* to install the Coolant Reservoir Lines, skip to *Step 14*.

10. Using the Universal Silicone Hose attached to the bottom of the Coolant Reservoir and the equal Tee Fitting, tee into your Coolant Bypass Hose that routes from the heater pipe to the water outlet at the back of the engine.
11. Attach the L-shaped Coolant Overflow Hose (#7) to the top barb on the Z1 Coolant Reservoir and route it through the hole in the bracket towards the ground.
12. Cut to length and install the remaining universal coolant line routing from the top of the coolant neck, where the upper radiator hose connects, to the top port on the Z1 Coolant Reservoir that faces the coolant neck. *Figure 44.* (Charge Piping in the photo below will be installed in later steps.)



Figure 44

13. Fill the Coolant Reservoir about halfway full with an Engine Coolant of choice. Once the Supercharger has been primed and bled in the later steps, bleed the Coolant Reservoir according to the Factory Service Manual (FSM).
14. Attach the flat, non-pressurized, Z1 Radiator Cap (#12) onto the coolant neck at the front of the engine. Attach the Pressurized Z1 Radiator Cap (#11) onto the top of the Coolant Reservoir.

Section Six: Charge Air

Tools Needed:

- Ratchet
- Assorted Metric Sockets
- 1/2" Wrench
- 5/16" Allen/Hex Key
- 5mm Allen/Hex Key

Parts Needed:

- Z1 Bash Bar (#49 – Box 2)
- Z1 Intercooler (#1 – Box 1)
- Intercooler Brackets (#60 – Box E)
- Turbosmart RacePort (#51 – Box 2)
- (4) M8 Flanged Button Head Bolts (#19 – Box B)
- Charge Pipe Set (#2 – Box 1)
- Silicone Coupler Kit (#3 – Box 1)
- Silicone Reducer Hoses (#4 – Box 1)
- All (13) T-Bolt Clamps (#54-56 – Box C)

PROCEDURE:

1. Locate the Z1 Bash Bar (#49), Z1 Intercooler (#1), (2) two Intercooler Brackets (#60), Turbosmart RacePort (#51), and (4) four M8 x 16mm Flanged Button Head Bolts (#19).
2. With thread sealant, install the barb fitting into the right port of the RacePort with a 1/2" wrench and install the plug into the left with a 5/16" hex key. Install the Turbosmart RacePort onto the flange on the top of the Intercooler.
3. Loosely install the Intercooler Brackets onto the Intercooler with the (4) four M8 Flanged Button Head Bolts.
4. Position the Intercooler Brackets onto the studs on the vehicle's frame rails. *Figure 45.*



Figure 45

5. While holding the Intercooler in place, position the Z1 Bash Bar onto the studs on the frame rails. Secure the Bash Bar and Intercooler to the vehicle with the (4) four nuts and (4) four bolts removed in *Step 24-32 of Section 1: Disassembly*. Torque to **18 ft-lbs.** *Figure 46.*



Figure 46

6. The bottom of the Intercooler Brackets are slotted, tip the Intercooler to the desired angle then tighten the M8 bolts on the Intercooler Brackets. Check to make sure the OEM Power Steering Cooler is not contacting the Intercooler. If it is, you will need to remove the Intercooler, remove the brackets for the Power Steering Cooler and bend them some more.
7. Locate the Aluminum Charge Pipe Set (#2), Silicone Coupler Kit (#3), (2) two Silicone Reducer Hoses (#4), and all (13) thirteen T-bolt clamps (#54-56).
8. Remove the (2) two Intake Tubes from the Charge Pipe Set box. Transfer over the MAF sensors from the OEM intakes into the new Z1 Charge Pipes.
9. Install the (2) two small Silicone Reducer Couplers onto the OE Throttle Bodies. The larger side will be on the Throttle Bodies with a medium (73mm-81mm) T-bolt Clamp on each.

10. Install the rest of the Charge Pipes and Silicone Couplers as shown in the diagram below. The Outlet (passenger side) of the Intercooler will use the 3" Silicone Elbow connected to the 3" Metal Joiner, and then connected to the single side of the Silicone Y-Coupler. *Figure 47.*

a. Intercooler outlet:

- i. Install the Metal Joiner into the large L-shaped Silicone Coupler, secure with a clamp but in a position where the clamp is still accessible once installed.
- ii. Install larger L-shaped Silicone Coupler over Intercooler Outlet and into Core Support.
- iii. With a clamp loosely on the Silicone Y-Coupler, install the single side of the Y-coupler onto the Metal Joiner in the Core Support. Make sure the clamp is clocked so the screw is accessible through the Core Support.
- iv. Loosely install the rest of the Charge Piping. Each connection point will need a T-bolt clamp. Use the small (67mm-75mm) clamps on the 2.5" couplers, and the largest (79mm-87mm) clamps on the 3" couplers.
- v. Once in place, position/rotate all the Charge Piping and Y-Coupler to prevent any interference and so the couplers are sitting nicely.
- vi. Lastly, tighten each clamp.

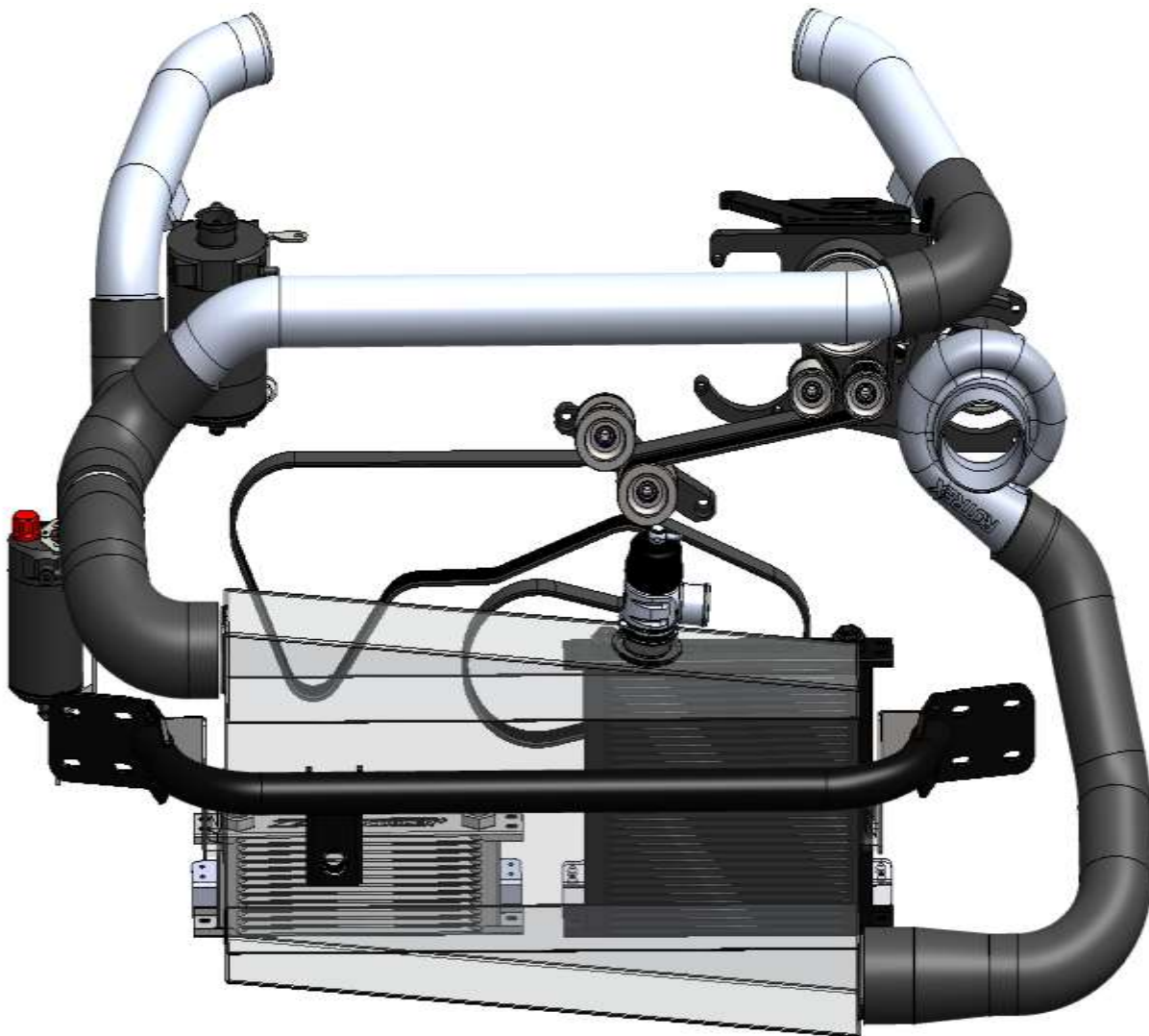


Figure 47

11. **G37 Owners:** The fuse box behind the driver-side headlight will likely interfere with the Silicone Elbow Coupler above the Blower. If you cannot fit the elbow between the main bracket and fuse box, you will need to remove the fuses/relays from the box and zip tie them out of the way.

Section Seven: Intake

Tools Needed:

- Ratchet
- Assorted Metric Sockets
- Assorted Metric Wrenches

Parts Needed:

- K&N Air Filter (#66 – Box G)
- Large Silicone Intake Pipe (#67 – Box G)
- 84mm Metal Air Filter Joiner (#68 – Box G)
- (2) Large 3.5" Worm Gear Clamps (#69 – Box G)

PROCEDURE:

1. Locate the K&N Air Filter (#66), the Large Silicone Intake Pipe (#67), 84mm Metal Air Filter Joiner (#68), and (2) two large 3.5" Worm Gear Clamps (#69).
2. Tighten the small Worm Clamp that is around the BPV plug on the intake pipe.
3. Place a clamp on the Supercharger Unit's Inlet. If you place the clamp on the Silicone Intake Tube it will be much harder to install the tube through the Core Support.
4. **G37 Owners:** Lift up on the rubber hood seal just behind the driver headlight. Remove the driver side hood latch bolts on the top of the radiator core support, just in front of the blower. Lift hood latch assembly up and out of the way. *Figure 48.*

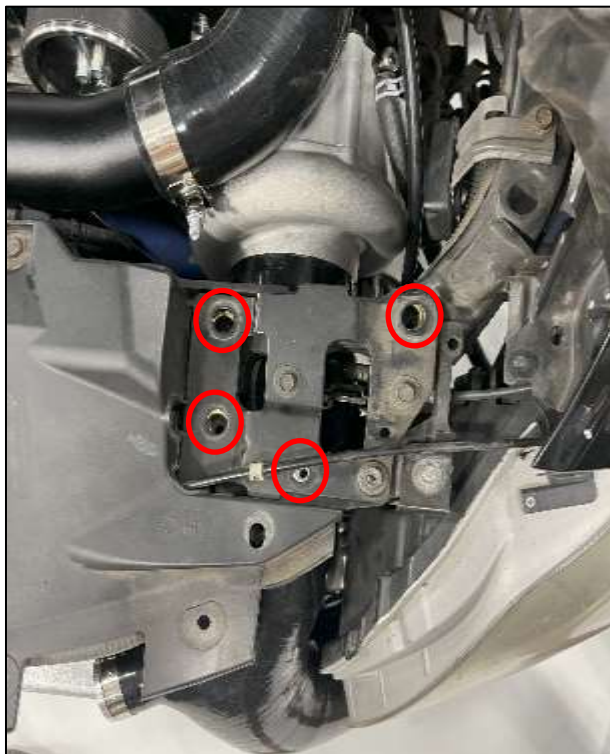


Figure 48

5. Install the Silicone Intake Tube through the Core Support passthrough that was enlarged earlier. It will likely be a tight fit and twisting/rotating the tube while pushing will help. *Figure 49.*

NOTE: The below image shows a prototype 3D printed silicone intake tube.

NOTE: If you are having trouble installing the Intake Tube through the Core Support, it is likely getting caught up on the metal section that was enlarged in *Steps 1-2, Section 2: Clearancing*. You may be able to carefully stick your finger or a screwdriver in between the Core Support and the Intake Pipe to get it past the Core Support. If that doesn't work, you may need to trim the Core Support some more.



Figure 49

6. **G37 Owners:** The Silicone Coupler will likely not line up perfectly with the Inlet of the Blower. Using a screwdriver or L-shaped pick, stick the tool on the inside of the coupler and while pushing the coupler up and into the core support, pull it over and around the inlet of the Blower with the tool. Once the coupler is on the Blower, tighten the large hose clamp. Then reattach the hood latch the was removed in *Step 4*.
7. With a supplied clamp, install the 84mm Air Filter Joiner into the Silicone Air Intake Inlet with the bead roll of the Joiner inside the Silicone Inlet.
8. Install the K&N Filter and included Clamp onto the Joiner.

Section Eight: Crankcase Ventilation and MAP Sensor

Tools Needed

- Ratchet
- Assorted Metric Sockets
- Assorted Metric Wrenches
- Pliers
- Hose Cutter
- Map Sensor (If purchased)

Parts Needed

- 5mm Vacuum Line (#58 – Box E)
- 3/8" to 1/4" Reduction Tee Fitting (#25 – Box B)
- 5/8" PCV Fuel Line Hose (#57 – Box E)
- 5/8" Equal Tee Fitting (#24 – Box B)
- (2) Medium Black Spring Clamps (#21 – Box B)
- (2) Tiny Black Spring Clamps (#20 – Box B)
- (6) Large Spring Clamps (#22 – Box B)

PROCEDURE:

1. Locate the 10ft of 5mm Vacuum Line (#58), the 3/8" to 1/4" Reduction Tee Fitting (#25), (2) two medium Black Spring Clamps (#21), and (2) two Tiny Spring Clamps (#20).
2. This Vacuum Line will be used as the boost reference for the Turbosmart Bypass Valve. It will need to be plumbed into a vacuum line. We recommend plumbing the supplied Reduction Tee Fitting into the Brake Booster Vacuum Hose that runs to the rear of the upper intake plenum. There are several different spots you can tee into; a couple options are shown in *Figures 50-51*.
 - a. Below shows the easiest spot right off the back of the intake plenum. *Figure 50*.



Figure 50

- i. Remove the brake booster hose. (You can trim it shorter if you'd like but it is not necessary)
- ii. Install the Reduction Tee into the brake booster hose.
- iii. Install a small section of the 5/16" rubber hose onto the plenum and other side of the tee fitting.
- iv. Install the 5mm vacuum line onto the 1/4" barb of the tee fitting.
- v. Make sure all connection points are secured with a clamp.

- b. You can also tee into the brake booster hose after it routes behind the firewall and towards the brake booster compartment for a cleaner looking installation.
 - i. The brake booster hose has a check valve in the line near the brake booster. Feel/squeeze the hose to locate the check valve.
 - ii. Cut the hose between the check valve and the upper plenum (*Figure 51*).



Figure 51

- iii. Install the Reduction Tee in between the cut Brake Booster Hose.
- iv. Install the 5mm vacuum line onto the 1/4" barb of the tee fitting.
- v. Make sure all connection points are secured with a clamp.

3. Once the vacuum line is tee'd into the brake booster hose, route the line towards the front of the car.
 - a. *Figure 52* below shows the first method mentioned, where the vacuum line is tee'd right off the back of the plenum. The line then routes around the engine, around the Supercharger Bracket, through the core support (that was enlarged earlier), and then to the port on the Turbosmart RacePort. Secure the line with the supplied Short Zip Ties (#35). The line's path is drawn/highlighted with a yellow line.

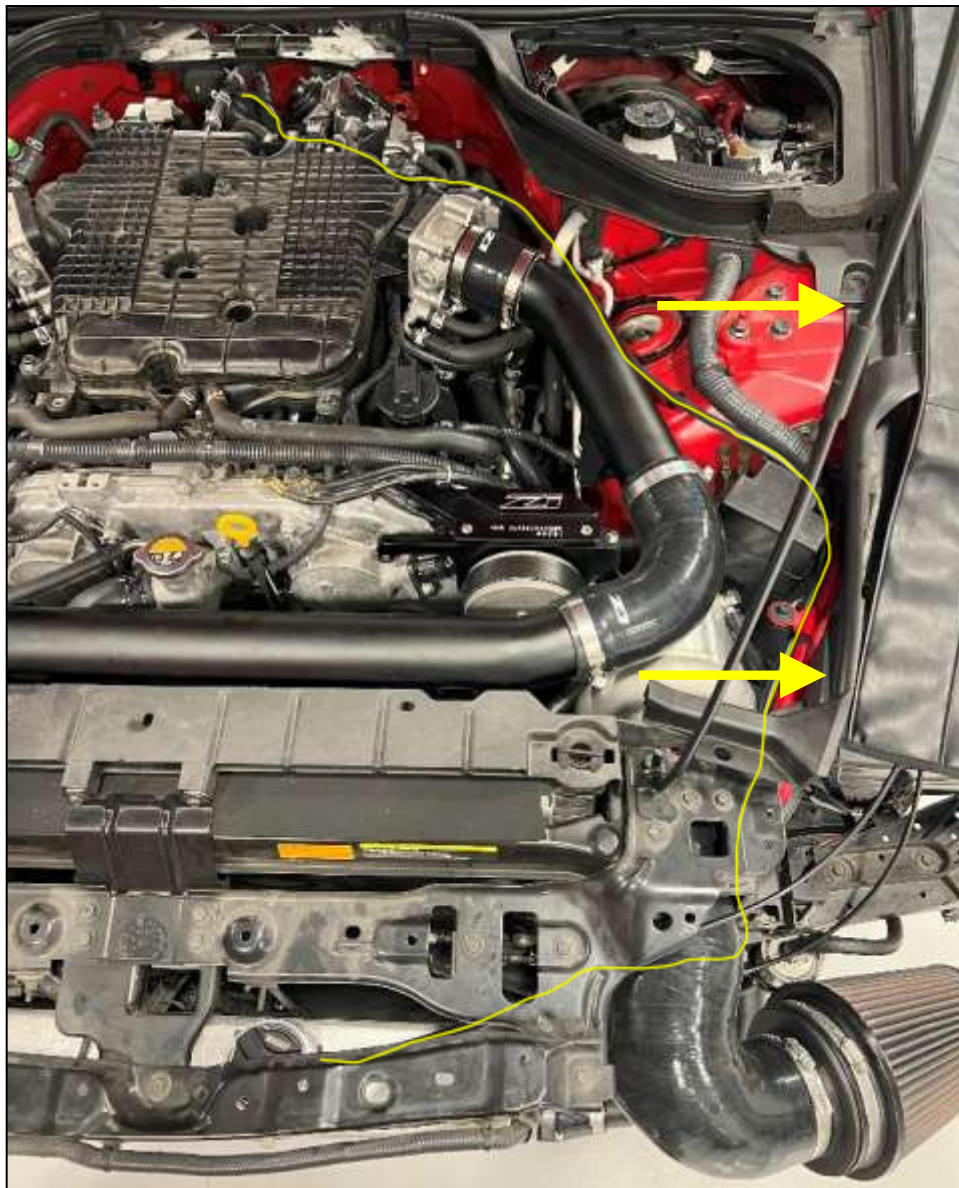


Figure 52

- b. If you prefer to keep the engine bay a little cleaner and tee'd into the brake booster hose behind the firewall, you can route it against or underneath the trim on the side of the engine bay (shown with arrows above in *Figure 52*), then under the silicone intake and to the RacePort.
4. Locate the 12.5ft of 5/8" PCV/EEC fuel line hose (#57), (6) six Large Spring Clamps (#22), and the 5/8" Equal Tee Fitting (#24).
5. Connect this hose to the PCV port on both valve covers where the OEM hoses were removed from in *Step 9, Section 1: Disassembly*. Then tee together at the front of the vehicle and connect to the port on the Silicone Intake Tube.

6. Start by connecting one end of the PCV Hose to the passenger side PCV port (*Figure 53* below with arrow).

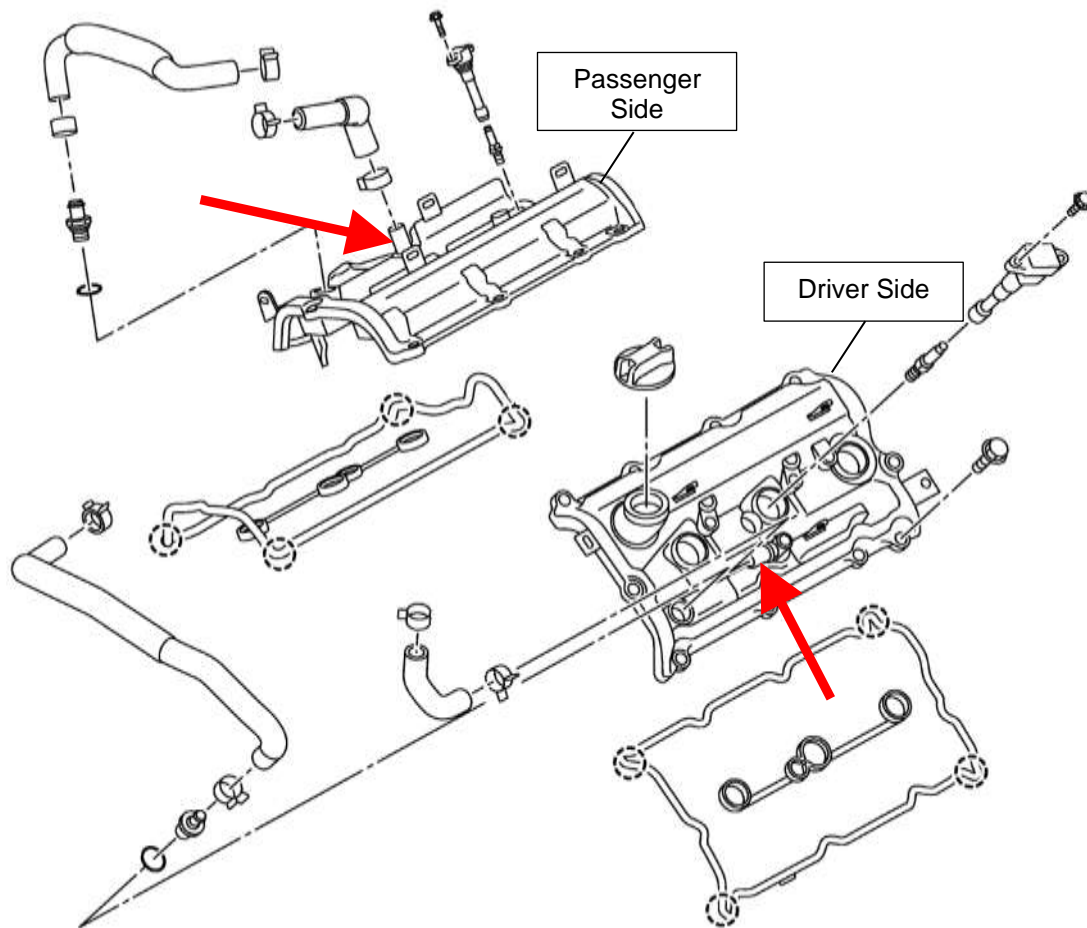


Figure 53

7. Route the line under/around the charge piping, under the passenger headlight, in front of the radiator and towards the Silicone Intake Tube. Cut the line ~8"-12" from the Silicone Intake Tube. Reference *Figure 54* below. The passenger side line's path is drawn/highlighted in red.



Figure 54

8. Install the 5/8" equal tee fitting into the new PCV line.
9. Connect a new section of 5/8" hose to the bottom of the tee (as shown in *Figure 54* on previous page).
10. Route the hose under the Silicone Intake Tube and towards the driver side Valve Cover. Cut the hose and connect it to the PCV Port on the driver side valve cover (shown with arrow in *Figure 53* on previous page). Ensure the hose is not touching the rear Supercharger pulleys, zip tie PCV hose away from pulleys.
11. Cut a small section and connect the last port on the Equal Tee to the barb on the Silicone Intake Tube. Make sure all connection points of the PCV system are secured with a clamp.
12. If purchased, locate the OMNI 4-bar Map Sensor (#53). The Map Sensor is not included in our "Tuner" kit but is in our Complete Kit. The OEM Map Sensor is located in the top right corner of the upper intake plenum (shown in *Figure 55* below). Disconnect the electrical connector, remove the mounting screw, and then pull up to remove the sensor from the plenum. Install the new OMNI 4-bar sensor in the plenum. Secure with the OEM mounting bolt and reconnect the electrical connector.

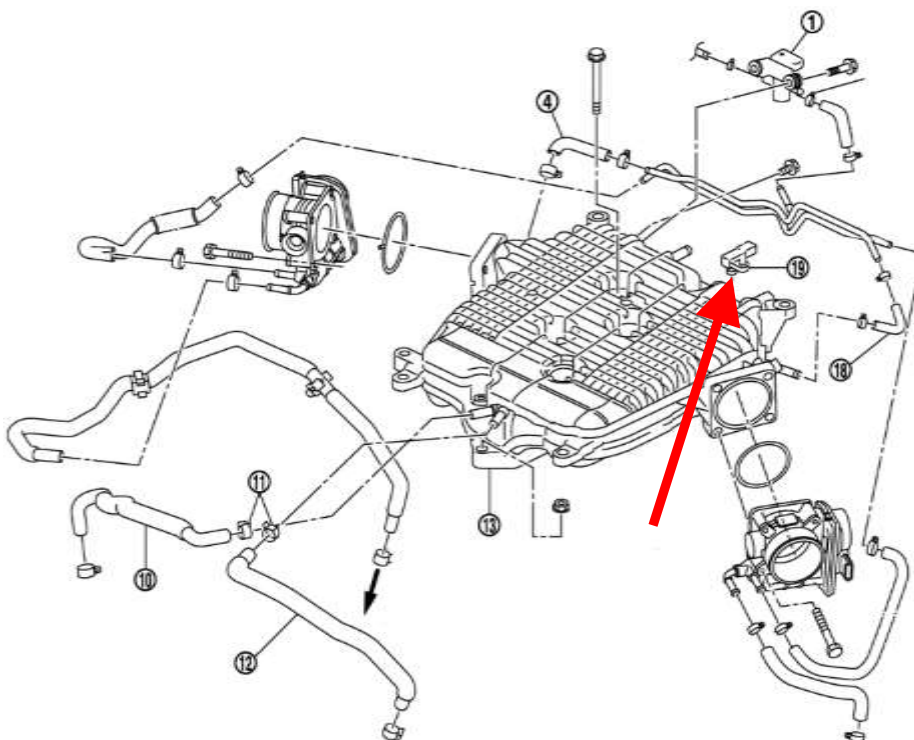


Figure 55

Section Nine: Supercharger Priming

Tools Needed

- Ratchet
- Assorted Metric Sockets
- Assorted Metric Wrenches
- Air Compressor

Parts Needed

- Rotrex Traction Fluid (#65 – Box F)

PROCEDURE:

WARNING: NOT FOLLOWING THE PRIMING AND START-UP PROCEDURES WILL CAUSE DAMAGE TO THE SUPERCHARGER AND THE OIL SYSTEM!

1. The Z1 Supercharger Kit is now installed. You **MUST** follow the Supercharger Priming and Starting Procedure in *Step 3*. Prior to starting the vehicle, it is also highly recommended to contact your tuner and get a base map flashed onto the ECU.

If you have the supplied Priming Bulb, continue to *Step 2*. If you DO NOT have the Priming Bulb, continue to *Step 10*, or contact Z1 Motorsports to get the Priming Bulb. The Priming Bulb simplifies the Priming Procedure.

2. Fill the Z1 Supercharger Oil Reservoir with Rotrex Traction Fluid (#65). Overfill the Reservoir past the **MAX** mark on the reservoir. This will ensure that Reservoir has enough fluid for the system during the initial priming and start up. It will eventually spit out excess fluid once the system is primed

3. Loosen the banjo bolt at the oil line attached to the Supercharger Inlet marked **IN** a couple of turns allowing air to escape the system. *Figure 56.*



Figure 56

4. Squeeze the In-Line Priming Bulb multiple times until Fluid appears at the Oil Inlet, making sure to not let the Oil Reservoir run dry.
5. When oil appears at the “Oil Inlet” on the Supercharger, tighten the banjo bolt and the system is primed. Torque bolt to **80 in-lbs**. Over torquing the banjo bolt could damage it.
6. Squeeze the In-Line Priming Bulb again, it will be difficult to squeeze once it is full of fluid.
7. Add more Rotrex Traction Fluid to the Oil Reservoir, add a bit extra to the system to prevent it from running air into the system during operation.
8. Start the Engine and check for any leaks. While it is idling, check for Return Oil Flow into the Oil Reservoir. It will run along the sides of the Reservoir. If you have the Rotrex Reservoir with the Sight Glass on top, you will see the fluid flowing here.
9. Let the engine idle for 5-10 minutes while checking the oil system for leaks. Refill and bleed the Engine Coolant system at this time if necessary. Skip to *Step 18* if you followed this Priming Procedure.

10. Prior to starting the vehicle, you **MUST** follow the [Rotrex priming and starting procedure \(pg. 22\)](#). Failure to follow the procedure may result in permanently damaging the Supercharger Unit. To ensure proper oil circulation and adequate lubrication during the first few minutes of operation, it is important to prime the oil system before the engine is started for the first time after the Supercharger installation.

A video from Rotrex outlining the procedure can be seen [HERE](#).

11. Fill the Z1 Supercharger Oil Reservoir with Traction Fluid (#65) without exceeding the maximum mark on the dipstick.
12. Remove (1) one fitting from the Supercharger Oil Cooler and prefill the Cooler with Traction Fluid until full. Reinstall the fitting and line after filling.
13. Remove the red dipstick/cap on the Z1 Supercharger Oil Reservoir in the passenger fender well. Carefully apply pressurized air to the Oil Filler Hole of the Oil Reservoir. **DO NOT** pressurize the system to more than one bar or 15psi. Use a rag or a sponge between the air-gun nozzle and the canister to fill the gaps. The nozzle does not need to perfectly seal on the reservoir. Allowing some air to escape is okay and will help prevent more than 15psi from being applied. *Figure 57.*

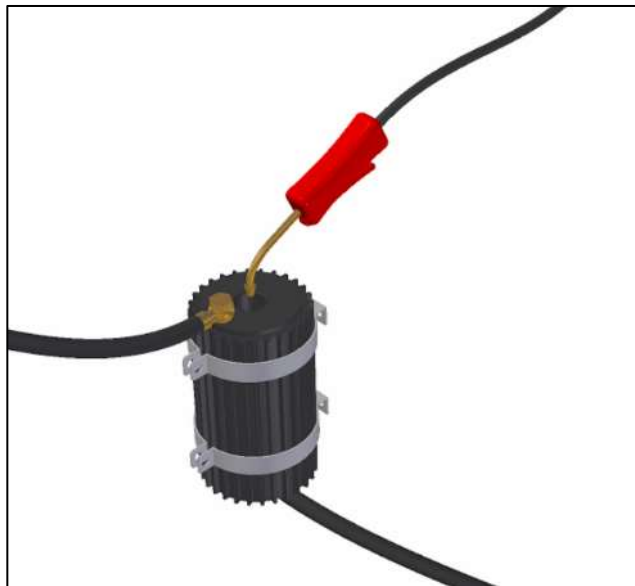


Figure 57

14. When oil appears at the “Oil Inlet” on the Supercharger, tighten the banjo bolt and the system is primed. Torque bolt to **80 in-lbs**. Over torquing the banjo bolt could damage it.

NOTE: THE FOLLOWING STEPS MUST BE DONE WITHIN 1 MINUTE OF STEP 7. IF IT IS NOT DONE WITHIN 1 MINUTE, REPEAT STEPS 5-7. THIS IS CRUCIAL AND CAN CAUSE SUPERCHARGER FAILURE. IT IS RECOMMENDED TO COMPLETE STEPS 8-11 WITH ANOTHER PERSON

15. Top up the Oil Reservoir to the top of the hash mark on the dipstick when it is fully threaded in.
16. Start the engine and rev it to 2-3000 rpm and make sure the oil starts flowing by visual inspection, looking into the Oil Canister. **DO NOT REV THE ENGINE MORE THAN SPECIFIED, AS THIS CAN CAUSE DAMAGE TO THE SUPERCHARGER.** Oil flow is established when the oil level decreases immediately after start-up. Immediately after starting the engine (within 5 seconds) top up traction fluid before the oil level reaches the bottom of the canister. Check that the oil level is between the **MIN** and the **MAX** indicators on the dipstick while the engine is running at 2-3000 rpm. Note that this is the correct and only way to check the oil level (checking the oil level with the system turned off does not give a correct reading). *Figure 58.*

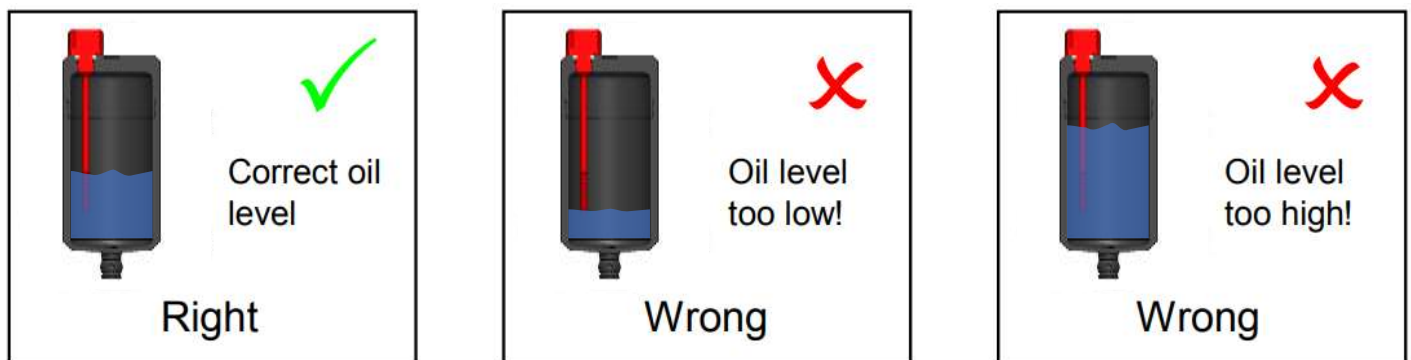


Figure 58

17. Let the engine idle for 5-10 minutes while checking the oil system for leaks. Refill and bleed the coolant system at this time if necessary.
18. Check the oil level again using the correct procedure described below:
- To check the oil level, set the engine speed to 2-3000 rpm and check the oil level while the engine is kept running at 2-3000 rpm. The correct oil level is between the Min and Max indicators on the dipstick measured with the thread of the cap fully engaged. Measuring oil level in any other way will not give a true reading of the oil volume in the system and can lead to overfilling, oil starvation, foaming, or leaks.
19. A break-in period of 100 km (65 miles) is highly recommended. During this break-in period don't run the engine over more than half of the engine's RPM range and avoid unnecessary revving or heavy acceleration.
20. Your Z1 VHR Supercharger Kit is now fully installed and primed! It is now time to reinstall all components previously removed. Many plastic trim pieces (like the fender liners, radiator diversion panels, etc.) may need to be trimmed or cut to prevent interference with the hoses/lines or other components installed. The driver side front fender liner will likely interfere with the bottom corner of the Blower. When installing the fender liner, heat up that section with a heat gun until you can form it around the Blower. Then install the fender liner clips and hold it in place until it cools down.

21. When reinstalling the bumper, go slowly and check for clearance or fitment issues. You may need to trim a small amount of the inside of the bumper to fit everything nicely. We aren't able to test fit the kit on every single bumper on the market for every year, model and trim. An example of the trimming needed on one G37 coupe is shown below. *Figure 59.*



Figure 59

22. While reinstalling other components, it is a good idea to check all new clamps, screws, and connection points to ensure they are secure and tight.
23. The completed installation of the Z1 VHR Supercharger kit should look as shown below. *Figure 60.*

NOTE: Aside from the Coolant Reservoir, a Prototype Supercharger Reservoir was installed at the time of this photo.



Figure 60

24. Reinstall Front Wheels and Lug Nuts.
25. Check vehicle for loose tools/items.
26. Properly remove vehicle from jackstands.
27. Torque Lug Nuts.
28. Contact your tuner to ensure a safe base map is installed for the Supercharger break-in period. Then perform a custom tune.
29. Take your vehicle for a test drive and enjoy!

Rear Supercharger Belt Tensioning

The rear 10-rib belt comes pretensioned from Z1. However, due to various tolerances in the components and the belts themselves, you may need to adjust the tension if your belt is slipping.

If you notice dropping boost levels near the top end of the RPM range and have verified other components like the fuel system or PCV system are not the causes, it may be the rear belt slipping. Follow the steps below on how to tension the rear belt.

1. Loosen the 14mm jam nut on the set screw on the top of the Main Supercharger Bracket. *Figure 61.*



Figure 61

2. Using a 5mm Allen/Hex key, tighten the set screw to increase belt tension or loosen it to decrease belt tension. The belt should be fairly tight but still able to move with your hand.
3. Tighten the 14mm jam nut secure the set screw in place.
4. Once the jam nut is tight, there should be ~4-7mm of exposed thread on the set screw.

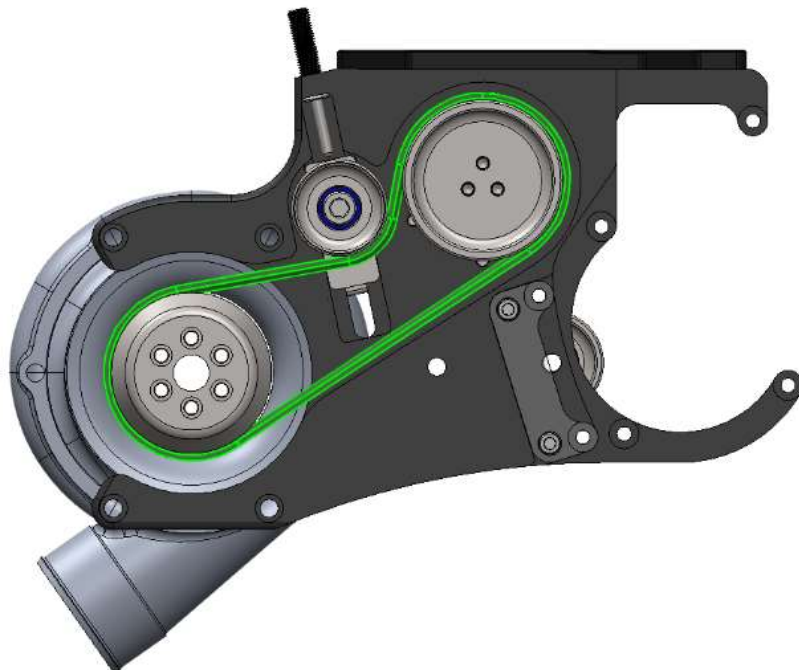
Rear Supercharger Belt Replacement

1. Loosen the 14mm jam nut on the set screw on the top of the Main Supercharger Bracket. *Figure 62.*



Figure 62

2. Using a 5mm Allen/hex key, back the Set Screw Adjuster out as much as possible until it bottoms out to release the tension on the rear belt.
3. Remove the rear belt.
4. Install new 10-Rib belt onto the rear pulleys, making sure all ribs of the belt sit in the grooves of the ribbed pulleys.
5. Using a 5mm Allen/Hex key, tighten the set screw back down to re-tension the rear belt. The belt should be fairly tight but still able to move with your hand.
6. Tighten the 14mm jam nut to secure the set screw in place.
7. Once the jam nut is tight, there should be ~4-7mm of exposed thread on the set screw.



END

Additional Technical Support:

Contact Z1 Motorsports at info@z1motorsports.com

Or call 770-838-7777 between 9am and 6pm ET