

SOHO MOTORSPORTS 370Z V2 A2A SUPERCHARGER INSTALLATION GUIDE



For technical questions and support, send an email to:

support@sohomotorsports.com

Please include the page number, photos, and any other relevant information so we can get you the help you need as efficiently as possible.

This manual is designed to assist weekend warriors and professional technicians alike with installation. However, this kit is complex and requires in depth disassembly with modifications to electrical, fuel, and plumbing systems. Severe engine damage can occur from improper installation, which is why we highly recommend having the kit installed by a professional. SOHO WILL NOT BE HELD LIABLE FOR IMPROPERLY INSTALLED KITS AND/OR RESULTING DAMAGE.

INTRODUCTION

Congratulations on the purchase of your SOHO Motorsports V2 A2A Supercharger kit! Using the supplied 7lb pulley, this kit can produce upwards of 600whp with supporting mods on pump 93 (M/T). Due to the excess strain and stress on your factory driveline, here is a list of parts to maximize the potential and reliability of your setup.

REQUIRED MODIFICATIONS:

- 2009-2014 VQ37VHR engines will need the gallery gaskets replaced if not already completed. SOHO installs and recommends the EPS metal gasket kit listed here: <https://epstuningtx.com/products/vq35hr-vhr-rear-timing-cover-gallery-gasket-kit?variant=14675118534>
- Fuel pump, 340lph or larger (Aeromotive 340 included in the complete SOHO kit)
- Fuel injectors 1050cc/min or larger (ID1050X included in the complete SOHO kit)
- Manual: clutch/flywheel kit capable of holding at least 500wtq
<https://zspeed.com/wp-content/uploads/ZSpeed-Torque-Ratings-.pdf>
- Automatic: Billet flexplate
https://www.fastintentions.com/product_info.php/products_id/211
- Engine mounts: SOHO solids are recommended for installation due to the right constraints of the charge pipe routing and supercharger to frame rail clearance. You can install the kit with urethane mounts or stock mounts, but be aware that some form of unwanted contact from piping to body panels is likely.

*****TUNING IS REQUIRED BEFORE STARTUP AFTER INSTALLING THIS KIT*****

MAINTENANCE ITEMS

Spark plugs

Good -	OEM	NGK DF8H-11B	Stock gap
Better -	GTR	NGK DILKAR8A8	Stock gap
Best -		HKS M45HL	0.028 for pump, 0.025 for ethanol

Engine Oil

Motul 300V 5w40

Supercharger Oil

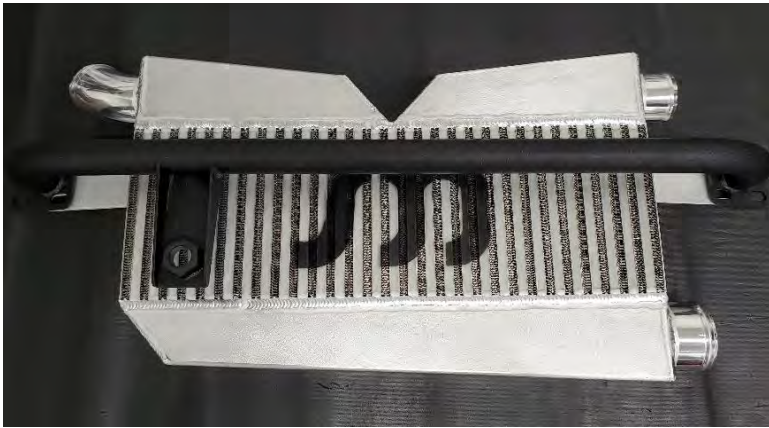
Airpower Group S/C Lubricant Part # 009035 (pack of 3)

370Z V2 A2A NON-FILTERED CHARGE PIPE SET

- 1 - PASSENGER SIDE IC TO THROTTLE BODY PIPE
- 2 - DRIVER SIDE IC TO UPPER CHARGE PIPE
- 3 - DRIVER SIDE UPPER CHARGE PIPE TO THROTTLE BODY
- 4 - SUPERCHARGER OUTLET TO INTERCOOLER



370Z V2 A2A INTERCOOLER AND CRASH BAR



370Z V2 A2A NON-FILTERED CLAMP KIT

- 6x 2.5" T BOLT CLAMPS 75/67
- 5x 2.75" T BOLT CLAMPS 81/73
- 3x 3" T BOLT CLAMPS 87/79



370Z V2 A2A NON-FILTERED COUPLER KIT



SOHO VHR SOLID ENGINE MOUNTS

(If purchased only, all kits do not come with these)



**SUPERCHARGER BRACKET
BRACKET BRACE W/HARDWARE
VHR SUPERCHARGER SPACER
SERPENTINE BELT
IDLER PULLEY KIT W/HARDWARE
SECONDARY BELT TENSIONER W/HARDWARE**



**VORTECH SUPERCHARGER
TURBOSMART BOV FOR SC
BLOWER-GUARD**



**ID INJECTORS W/PIGTAILS, SPAL HARDWARE
KIT, AEROMOTIVE FUEL PUMP (FULL KIT ONLY)**



SOHO VALVE COVER BREATHER KIT

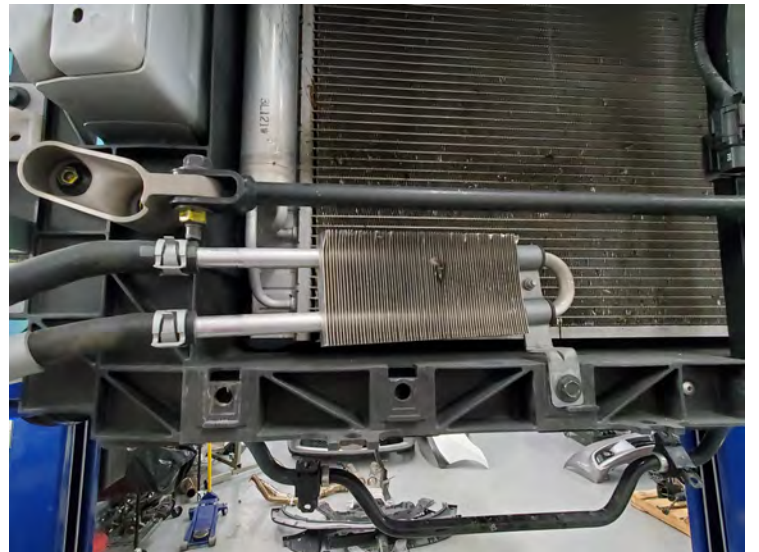


CHASSIS PREPARATION

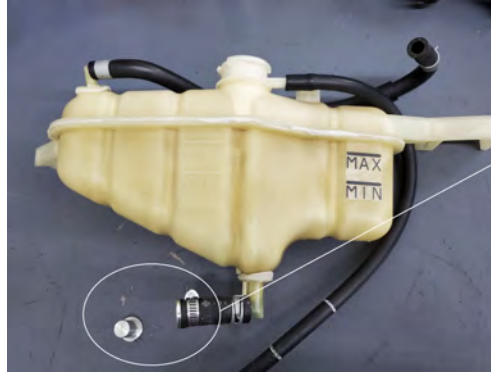
1. Before beginning any teardown or disassembly of the vehicle, install your fuel pump using this guide:
<https://cj-motorsports.com/p/tech>
2. Start your vehicle to verify the fuel pump installation is successful.
3. Jack up your vehicle and place two stands in the appropriate locations.
4. Remove the following:
 - Front wheels (LH and RH)
 - Fender liner front halves (LH and RH)
 - Undertray(s)
 - Front fascia (bumper cover)
 - Stock aluminum crash bar and foam, retain hardware for use with SOHO crash bar
 - Condenser plastic side seals (if applicable)
 - Battery cover plastics and trim *****Disconnect negative terminal*****
 - Nismo brace (if applicable)
 - Engine cover
 - Air intakes, filters, and ducting. Remove MAF's and hardware and set aside for later use.



5. Remove the RH power steering cooler bracket and flip the LH bracket. Do this by removing the center bolt, flipping the bracket, and retightening the center bolt. Install back in the stock location.



6. Drain cooling system using a drain pan or vacuum coolant removal tool. Remove the coolant overflow/expansion tank and associated hoses and set aside for modification at a later time.



***Expansion tank with optional overflow conversion kit shown, not all vehicles have or need this setup.

7. Remove engine grounds, harness clips and any associated brackets used to secure wiring to the timing cover. Remove both PCV hoses from the intake manifold to PCV valves.



8. Remove the roughly 5" section of loom holding the B2 cam sensor and B2 MAF sensor together. Individually wrap the cam sensor and MAF wiring back to the loomed section for rerouting purposes. Tesa 51036 is ideal as it is chemical, heat, and cut resistant.



9. Reroute the B2 MAF sensor and cylinder 2 coil wiring behind the oil fill cap and strap together as shown. Verify clearance after supercharger and bracket are assembled/installed.



10. Removal of the stock intake manifold: unclip the MAP sensor, throttle body, and EVAP solenoid connectors. Remove the brake booster hose, PCV hoses (if not already done), EVAP hose, and the coolant lines to the throttle bodies. Bypass the throttle body coolant hoses by rerouting the longest coolant line from the rear coolant crossover pipe to the port on the driver's side coolant pipe.

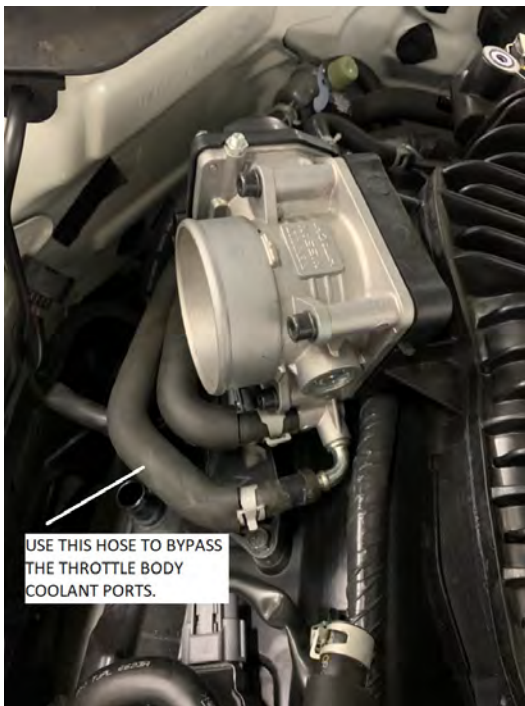


Figure 10a

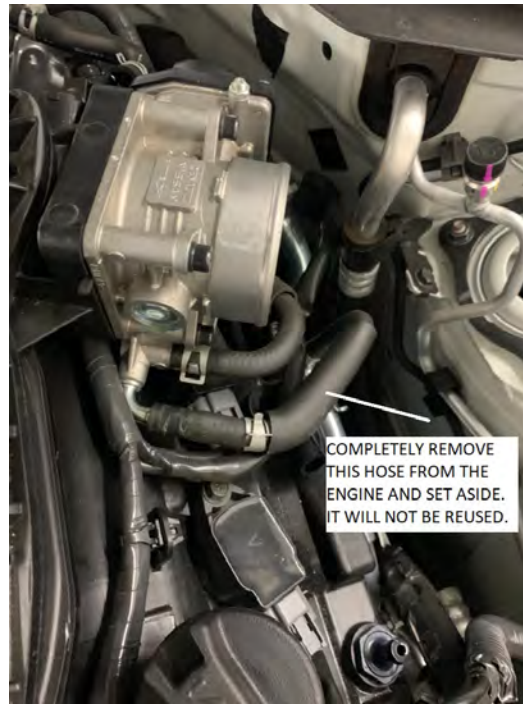


Figure 10b

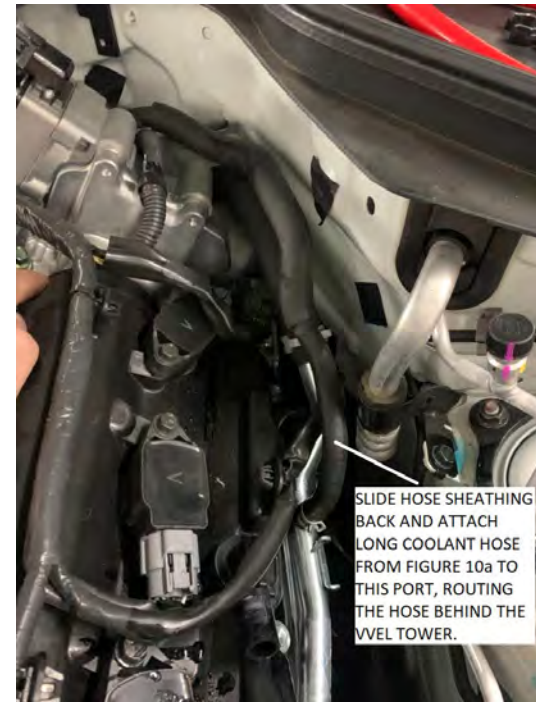
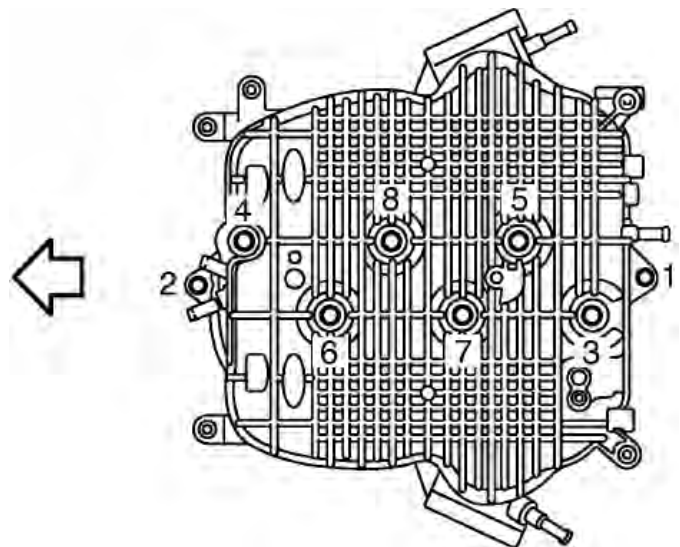


Figure 10c

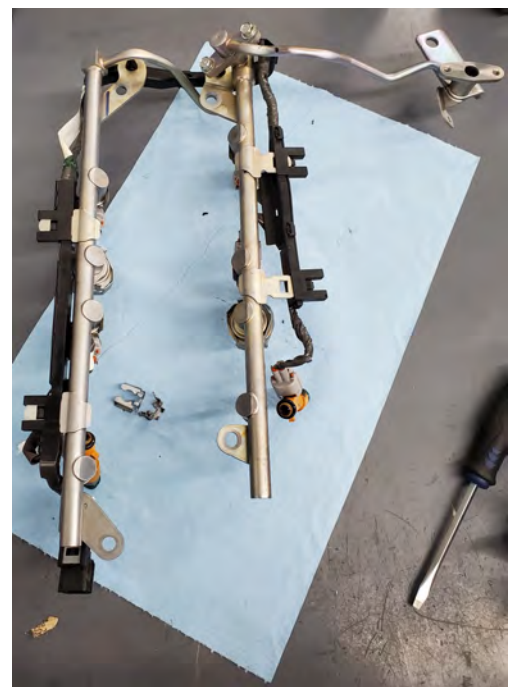
11. Remove hardware in the order shown and lift the intake off of the engine.

*****Stick shop rags or shop towels in the lower intake ports to keep foreign material and hardware from falling in*****



12. Unclip the injector subharness from the main engine harness at the back of the driver's side fuel rail. Remove the fuel inlet hose from the sub pipe and remove the rails, injectors, sub pipe, and subharness as an assembly.

Be cautious of fuel spray/drip when removing feed lines from the sub pipe that feeds the rail, and place rags under/around lines being opened to catch any escaping fuel

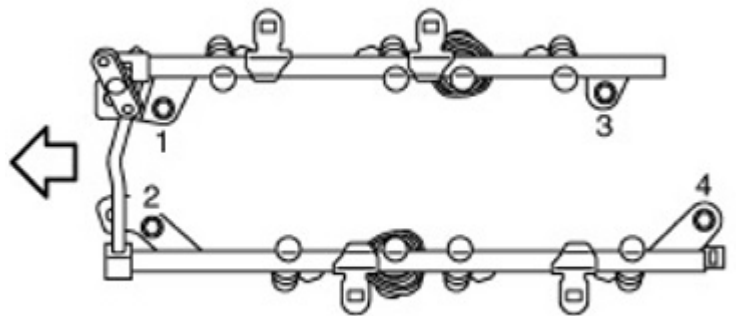


13. Make note of factory injector connector orientation. Remove the injector retaining clips and pull the injectors out of the rail using slight pressure and a twisting motion. Thoroughly lubricate the o-rings using silicone lubricant, and install into fuel rail in original orientation taking care not to pinch the o-ring. Install the injector retainer clips. Using the supplied adapters, plug the injectors up and be sure to verify the order is correct.

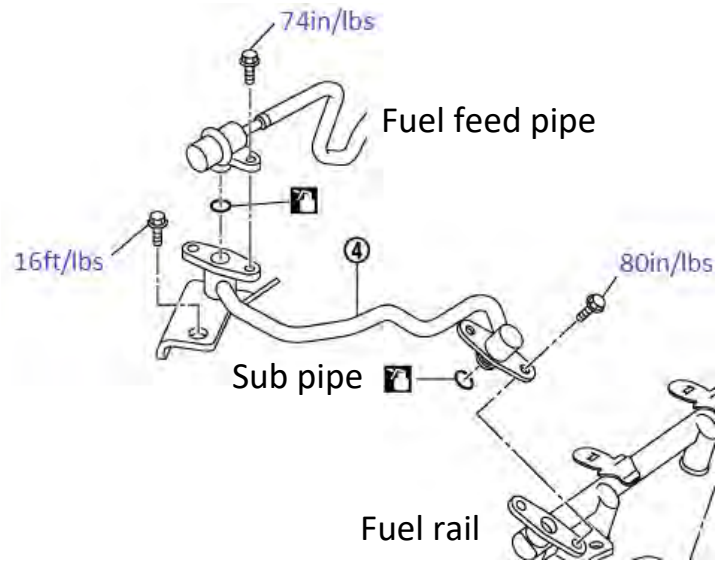


14. Lubricate the injector to manifold o-rings. Install the injector rail into the lower intake making sure all injectors line up in the bores. Take care not to pinch or crush any wiring connectors or harness extensions when pressing the rails into place. Fully seat the rails and install the retainer bolts in order in two steps:

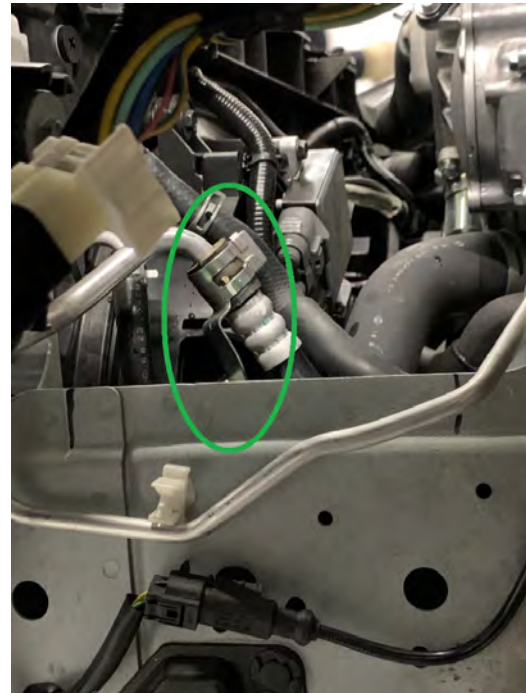
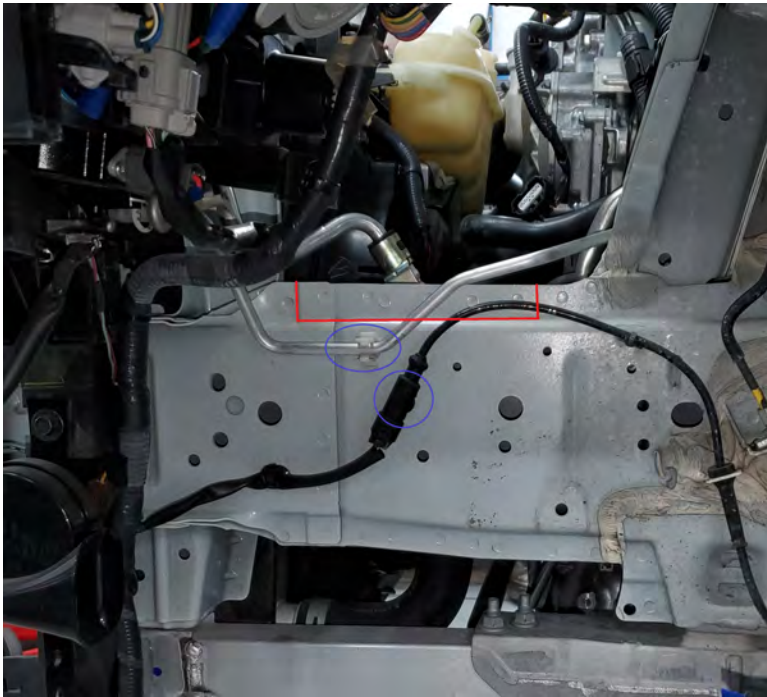
1st step: 7ft/lbs
2nd step: 17ft/lbs



15. Install the fuel sub pipe and fuel feed pipe. Use some lube on the o-rings and bolt the sub pipe into the rail and onto the timing cover. Install the fuel feed pipe and torque all bolts to spec, then reconnect the injector subharness to the main engine harness.



16. Prepare to remove the frame horn section in red to make room for the supercharger outlet. You will need to unclip ABS connector and A/C line clip shown in photo 16a circled in blue and bend the line flat as shown in 16b. Take precautions to not strike, cut, or pinch the A/C lines in any way. Unbolt the suction line bracket circled in green and move away from the frame rail to avoid damage.



17. Locate and remove this plastic clip near the driver's side headlight that holds the A/C lines. The lines will need to be massaged slightly once the supercharger is bolted to keep them from rubbing on the charger and/or charge piping.



18. Bend the A/C suction line bracket unbolted from the frame rail in step 16 and bolt up to the fan shroud as shown.

*****Take care not to place excessive force on or pull the A/C line further than necessary to prevent the quick disconnect fitting from coming apart*****



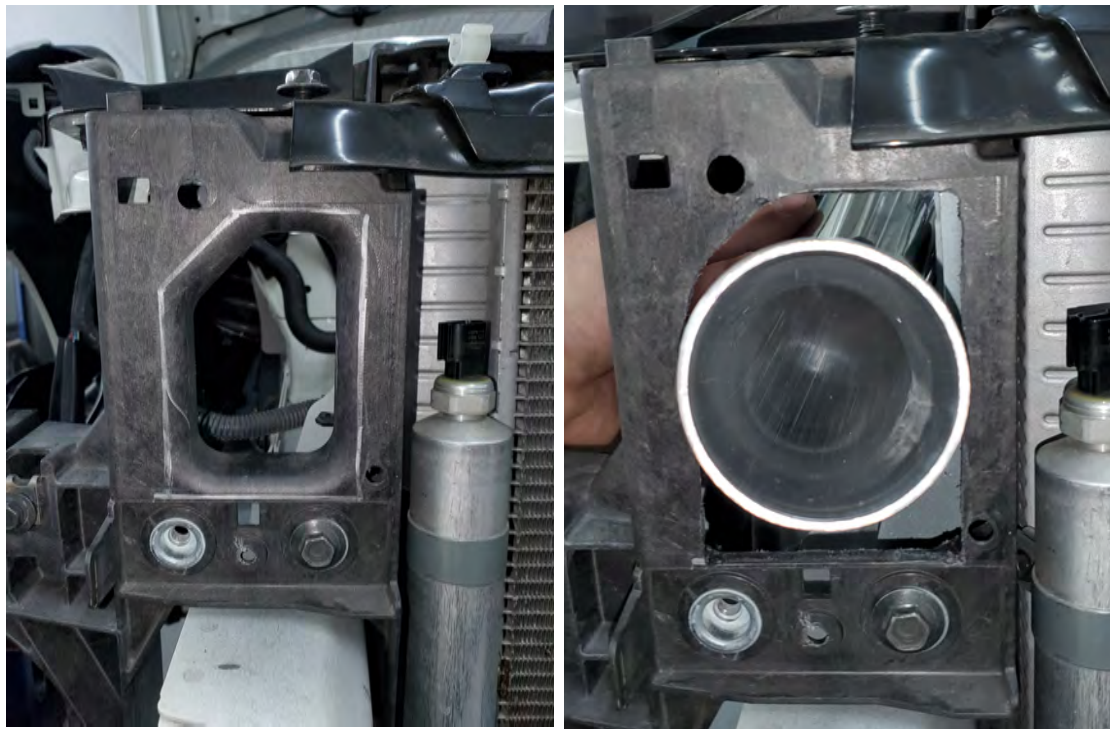
19. Remove relay box from the driver's side strut tower. Use a pick or a small flat blade screwdriver to disassemble the relay box and remove the relay bases. Remove the bracket from the strut tower and discard. Allow the relays to dangle for the time being, they will be dealt with during final assembly.



20. Remove the driver's side headlight and the hood/fender seal. Mark the sheetmetal and prepare to trim the chassis to make appropriate room for the driver' side charge pipe as shown.



21. Remove the RH headlight and prepare to trim the radiator core support on the RH side as shown. More trimming on your specific vehicle may be required, but the outline shown has been sufficient on test vehicles. Exercise caution to avoid damage to the wiring or the A/C condenser.



22. Remove the driver's side horn and unclip the chassis harness from the core support. Prepare to cut the core support on the path shown in figure 22a. The horn will be remounted once the piping is in place. ***You do not need to remove the core support in order to trim it, the core support in figure 22a was photographed for reference***



Figure 22a

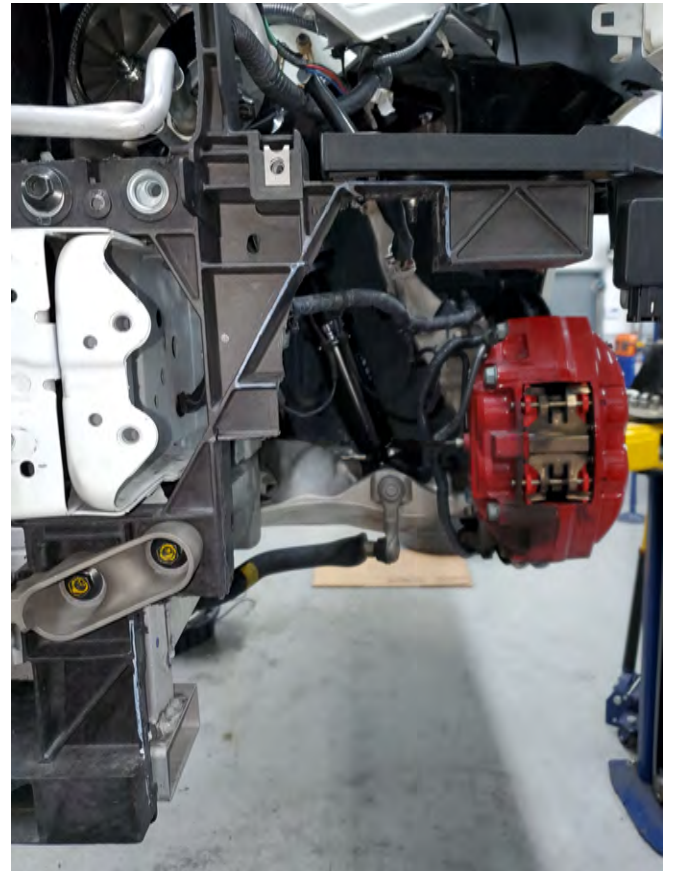


Figure 22b

23. Remove the stock serpentine belt and use an allen key or similar to lock the tensioner open. Remove the 7 rib pulley shown and set aside as it will be used later. Unclip the harness from the dipstick tube, unbolt the dipstick tube from the timing cover and route the harness behind it. Bolt the tube back to the engine. **Tightening torque: 85in/lbs**



24. If your engine has this coolant tube, remove the coolant hose and use a set of pliers to bend the tube back for belt clearance.



25. Reinstall the coolant hose and trim so it does not kink, pinch, or enter the belt path.



26. At this time, install your SOHO solid engine mounts. Remove your factory engine mounts and keep the upper and lower nuts as they will be reused. Put red-loctite on the stud threads and spin them in finger tight. **Upper nut torque: 36ft/lbs. Lower nut torque: 68ft/lbs.**

27. If not already done, remove your Vortech supercharger head unit from the box paying special attention to the notes and cards in the box. First, remove the 3/16" allen head screws and rotate the compressor housing 180°. Making sure the fitting is pointing straight up, install the drain line.

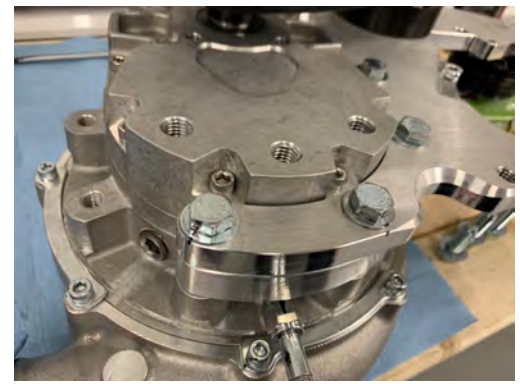


28. Install the supplied woodruff key and then slide the supercharger pulley into place. You may need to gently tap the pulley using a plastic hammer or rubber mallet to fully seat it. Do not use excessive force or damage can occur. Install the bolt with the spacer in the proper orientation, blue loc-tite on the threads is recommended. **Tightening torque: 30ft/lbs.**



29. Locate the supercharger spacer, bracket to charger hardware, and tensioner to charger hardware. Place the supercharger impeller down and line the spacer up on the four smaller bolt holes. Be sure to put the belt in place around the pulleys BEFORE installing the supercharger to bracket bolts as you will not be able to install it after the hardware is tightened. (Photos on next page)

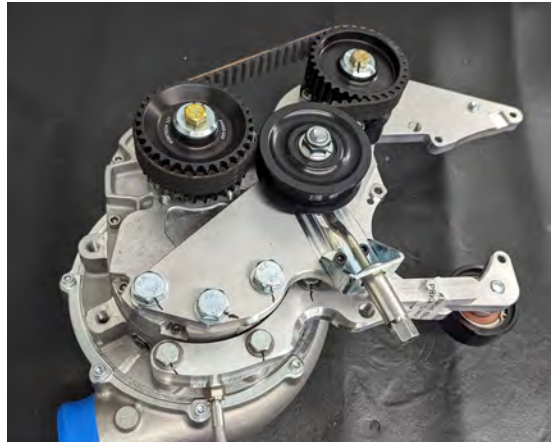
Supercharger to bracket bolt tightening torque: 30ft/lbs



30. Locate your supercharger tensioner assembly. Install the tensioner to the supercharger using the supplied hardware.

Tensioner to supercharger hardware tightening torque: 30ft/lbs

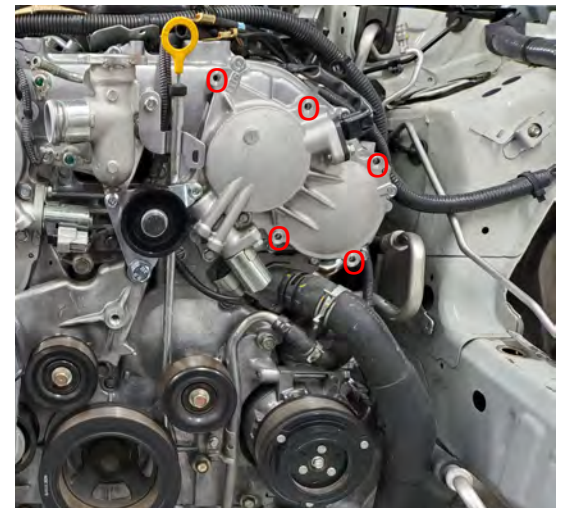
31. Tighten the belt tensioner until you can only twist the long portion of the belt 45° with your pointer finger and thumb. You will want the long section of the belt to be able to bounce 1/2" up and down. It is recommended to spin the belt assembly by the front jackshaft pulley to seat and center the belt. Check the belt tension at 500 and 1000 miles and adjust as necessary.



*****IMPORTANT***
DO NOT USE AN IMPACT TO LOOSEN OR TIGHTEN THIS BOLT OR IRREPERABLE DAMAGE MAY OCCUR TO THE TENSIONER ASSEMBLY.**

Tensioner pulley nut tightening torque: 25ft/lbs

32. Locate your idler assembly and hardware kit. Remove the stock hardware in the locations shown below and set aside, this hardware will not be reused. Remove the 5 VCT bolts circled in red.

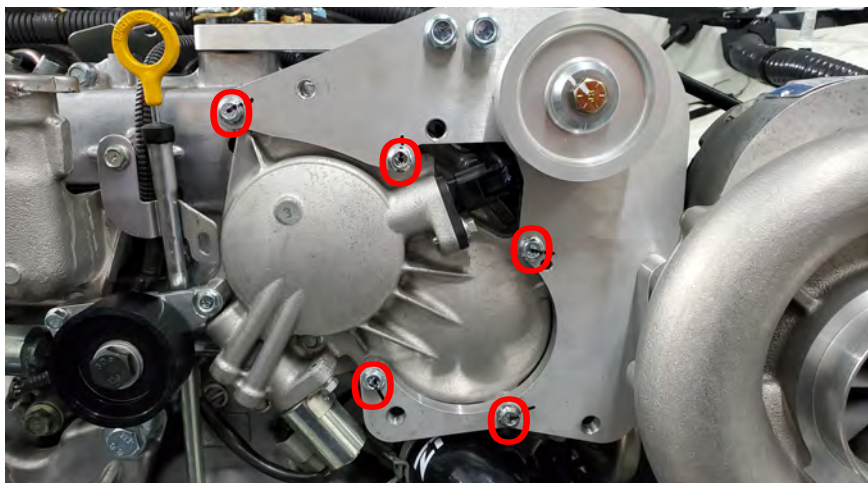


Tightening torque:
Large idler bracket bolt: 40ft/lbs
Water neck bolt: 80in/lbs
Second small bolt: 96in/lbs

33. If you have not already done so, remove the shipping brace off of the supercharger bracket. Also, remove the idler pulley that comes installed on the bracket and set aside as you cannot install the 5th bracket to engine bolt with it in place.



34. Now you will need to check the clearance from supercharger outlet to the trimmed frame rail so the compressor housing can be torqued down before final installation. Carefully set the bracket/charger assembly into place and lightly snug the 5 bolts circled in red for the clearance check. **Be sure not to kink the drain line.** The bracket brace is shown installed here, but it is not necessary until final installation.



35. The clearance from supercharger outlet to frame rail should be 1/4" to 3/8" maximum to allow adequate space for piping and coupler installation. If the space is too great, major clearance issues will occur. Remove the bracket and adjust the compressor housing brackets/hardware. Repeat until the desired clearance is reached and torque the 3/16" allen bolts.



Tightening torque: 108in/lbs or 9ft/lbs

*****DO NOT FORGET TO TIGHTEN THE 3/16" ALLEN BOLTS DOWN AFTER CLOCKING THE COMPRESSOR HOUSING OR IMPELLER DAMAGE WILL OCCUR VOIDING ANY POSSIBLE WARRANTY CLAIMS*****

36. Install the B2 CAM sensor connector. **You cannot install the connector with the bracket in place.** Once the supercharger clocking and torquing process is completed, install the supercharger and bracket assembly onto the engine using the supplied hardware. Install the 7 rib idler removed in step 23 and reinstall the smooth idler removed in step 33. Corresponding torque specs are denoted below.



Tightening torques:

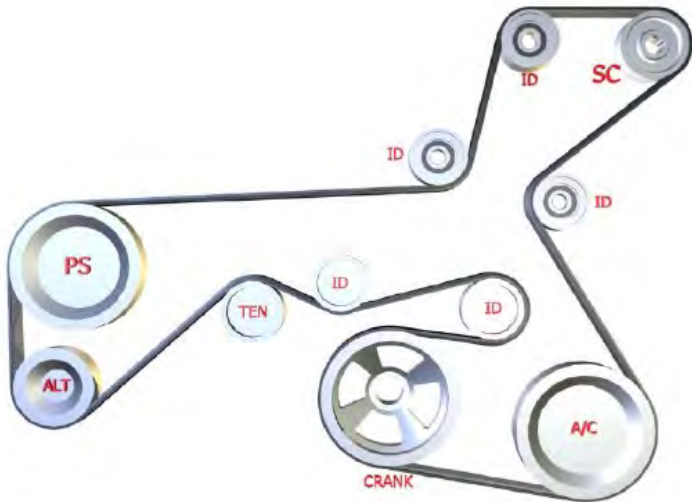
5 M6 bracket to engine bolts: 120in/lbs or 10ft/lbs
4 M8 Bracket brace bolts: 35ft/lbs

7 rib idler bolt: 30ft/lbs
Both smooth idler bolts: 40ft/lbs

37. Install the engine main ground cables onto the supercharger bracket brace. It is recommended to remove the ground cables from the body clip and route them under the small A/C line to minimize the possibility of touching the secondary belt. Strap the ground cables to the existing harness as shown.



38. Install the new supplied drive belt following the diagram shown.

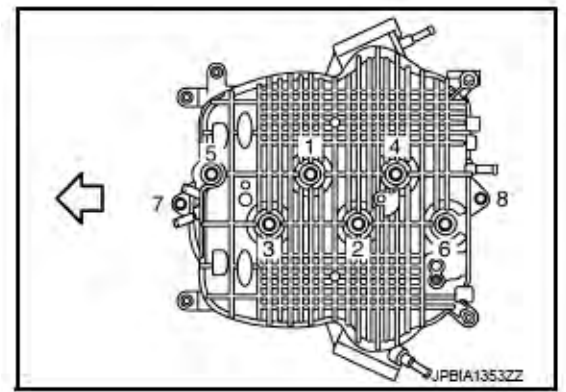


39. Verify clearance from belt to dipstick tube, and belt to the coolant pipe/hose modified in steps 24 and 25.



*****Be sure a minimum of 1/4" of clearance exists or belt contact will happen and it will shred, and not in a good way*****

40. Install your intake manifold.



Tightening torque:

1st step: 5ft/lbs or 60in/lbs

2nd step: 10ft/lbs or 120in/lbs

3rd step: Repeat the pattern from 1-8 utilizing the torque spec from step 2

41. You may need to trim the core support and open up the mounting holes on the coolant overflow tank in order to increase the clearance between the tank and the belt.

Before:



After:



42. Increasing clearance from belt to coolant overflow/expansion requires two modifications.

- A. First, the core support must be trimmed. Take care not to cut into or damage the harness running across the core support.



Before



After



- B. Second, drill/slot the mounting holes in the overflow/expansion tank. Push the tank into the clearance made in the previous step, and bolt down. You may need to use large diameter M6 washers to properly secure the overflow/expansion tank to the core support.



43. Optional for cleanliness: route your starter power cable behind the intake manifold, under the throttle bodies and brake booster vacuum hose and strap it to the engine harness plastics.

44. Remove the protective cardboard and blue tape from your SOHO Motorsports intercooler, and cut the tie straps holding the crash bar to the intercooler. Remount the horn as shown in figure 45c.

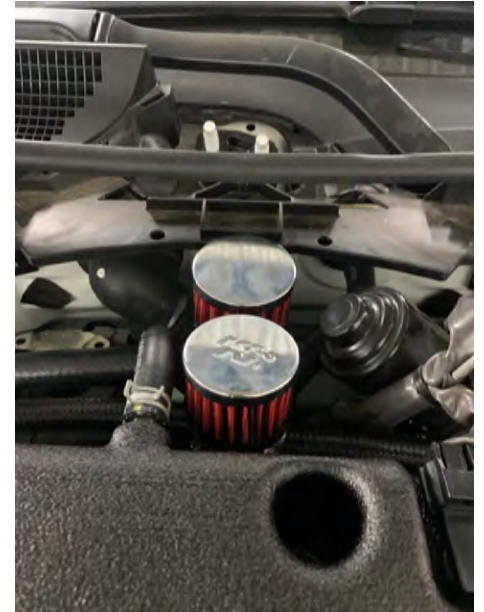
45. Install your SOHO Intercooler and crash bar using the factory hardware.



46. Route your breather hoses to place the filters behind the intake manifold. There is no right or wrong way to route these and they can be shortened if you desire, but the smaller hose goes to your PCV valves on either valve cover and the larger hoses go to the 5/8 breather ports.

Kit may come with Vibrant or K&N Breathers, both function exactly the same

If you purchased a SOHO Catch can kit, there is a separate install manual supplement that deals with this portion.



47. Run your BOV vacuum line from the port behind the LH throttle body down under the LH headlight using the routing shown. ***Take care not to strap the line too tightly as it can collapse the vacuum line and cause BOV issues***



48. Strap the relays from step 19 to the chassis harness bundle. Be sure the relay(s) are mounted wire down so they do not collect water and short.



49. Install your MAF sensors into the charge pipes using the factory screws. The sensors only fit one way, and the arrows on the MAF bungs will face the throttle bodies. Make sure the rubber seals are still in place on the MAFs as they were then removed from the stock intakes. Be sure not to overtighten/strip the hardware as the torque spec is extremely low. **Tightening torque: 13in/lbs**



50. Install the B1 (RH) charge pipe. You will need the B1 charge pipe, one 2.75" 45° coupler, one 2.5" 45° coupler, two 2.75" (81-73mm) clamps, and two 2.5" (75-67mm) clamps. Plug the B1 MAF in. You may need to trim the core support out more for the coupler and clamp to fit as shown.



51. Install the B2 (LH) upper charge pipe. You will need the charge pipe, one 2.75" 45° coupler, one 2.5" coupler cut at 22°, two 2.75" (81-73mm) clamps, and two 2.5" (75-67mm) clamps. This portion is easier to do with the headlight fully removed. Remove the allen bolt circled in red and replace with the provided bolt once the charge pipe is in place. You will need to carefully guide the pipe down into its new home. Be sure to plug the MAF in before installing the pipe to throttle body coupler.



52. Install the B2 (LH) lower charge pipe. You will need the charge pipe, one 2.5" straight coupler, and two 2.5" (75-67mm) clamps. Trim the headlight harness tab as shown in 52a to 52b.

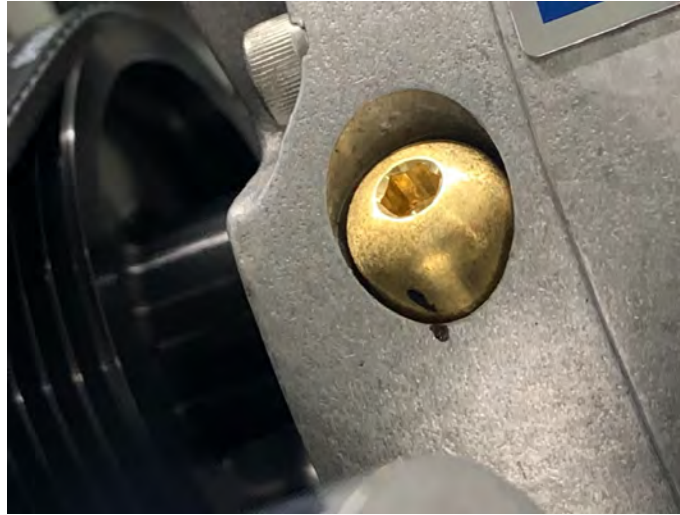


53. Install the final charge pipe. You will need the supercharger to intercooler charge pipe, one 2.75" to 3" 45° coupler, one 3" straight coupler, one 2.75" (81-73mm) clamp, and three 3" (87-79mm) clamps. Install your BOV onto the flange once the pipe is fully in place and hook up the vacuum line. It is recommended to use a small clamp or zip tie to keep the line in place. Install your Blowerguard at this time.

Figure 53b is from another vehicle but the BOV installs exactly the same



54. Following the card included with your supercharger, check the oil level by removing the dipstick. Once this has been verified, remove the shipping plug and install the vented fitting included in the box.



55. Changing your engine oil is recommended. SOHO recommends the use of Motul 300V 15w40 in any boosted application, especially those tuned on ethanol or alternative fuels.

56. Add coolant and properly bleed your cooling system. A vacuum bleeder is ideal.

57. After checking to make sure all fluids are at their proper levels, contact your tuner for a start up map. Start the engine and carefully check for any abnormal sounds or fluid leaks. The supercharger will make a mechanical bearing noise and the BOV will let out a considerable amount of air at idle under normal operation.

58. Install your headlights (if not already done), front bumper, fender liners, and undertray. The driver's side fender liner will likely need to be trimmed in order to be installed due to the proximity to the supercharger to intercooler pipe.

