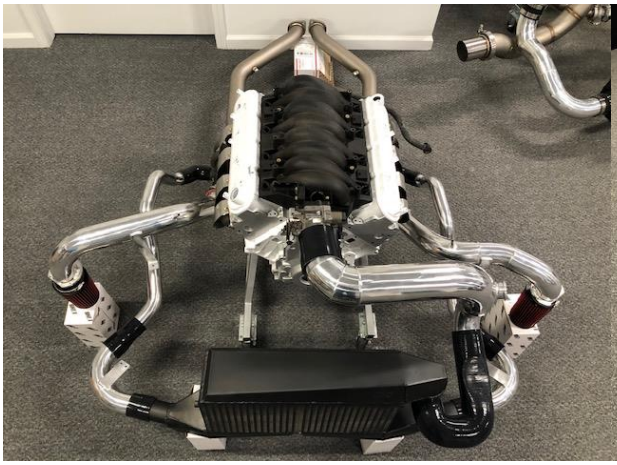
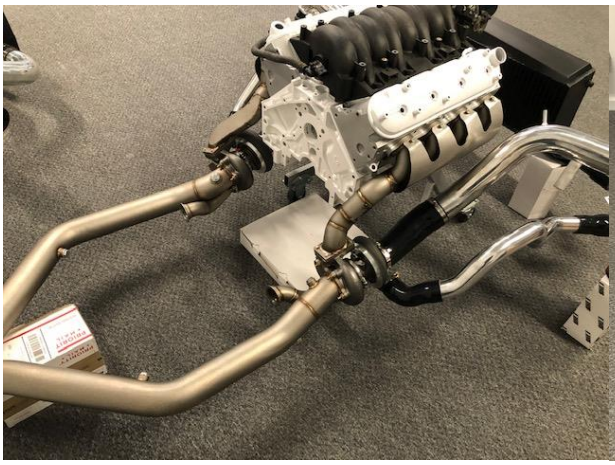
GTO APS Style Twin Turbo Kit






This installation guide is currently in progress and still under construction. You may find some missing photos as we continue to compile to complete. Therefore in the mean time if you have ANY questions at all do not hesitate to reach out 7 days a week to: Jon@HuronSpeed.com

This twin turbo kit is based off the older APS Twin Turbo kit with some changes. Photo credit during the install guide from the original APS guide. That being said you may see some minor differences from their older kit to our new version in some photos. Some changes you will notice will be the following:

-Stainless Steel tubular exhaust manifolds with different heat shield.
-Larger 3” Intake tubing with standard couplers removing the brittle accordion tubing and using larger intake tubing for increased flow = more power!
-Larger 44mm wastegates that vent to atmosphere for better boost control
-Full 1-piece aluminum cold-side tube w/ 50mm BOV opposed to full silicone piece and Bosch bypass valve.
-Larger wheels (both) in the turbochargers with a Billet compressor wheel for much higher flow and power potential.
-Elimination of the unnecessary water cooling to the turbochargers, creates an easier install and less clutter.

The following install guide is simply that, a guide to help you with installation. It is by no means the exact method to perform installation, simply some tips and tricks we can offer to help you out! Huron Speed is not responsible for anything that may happen to you, the vehicle, or the product during installation.

Furthermore Huron Speed is not responsible for any installation costs for any reason at all no matter if you are installing or a professional shop is installing. All installation and labor costs no matter the scenario are the responsibility of you the purchaser of the product. Proper fueling and a professional dyno tune is REQUIRED to safely run this system on your vehicle. Failure to properly set the car up for boost WILL result in damage. If you have ANY questions, please reach out and ask and we would be more than happy to assist! Jon@HuronSpeed.com

Recommendations:

NGK Spark Plugs

- NGK TR6s for use on power levels up to ~650 rwhp
- NGK BR7EF for use on power levels above 650 rwhp

Fuel

- 93 Octane, E85 or Race Fuel

Installation steps:

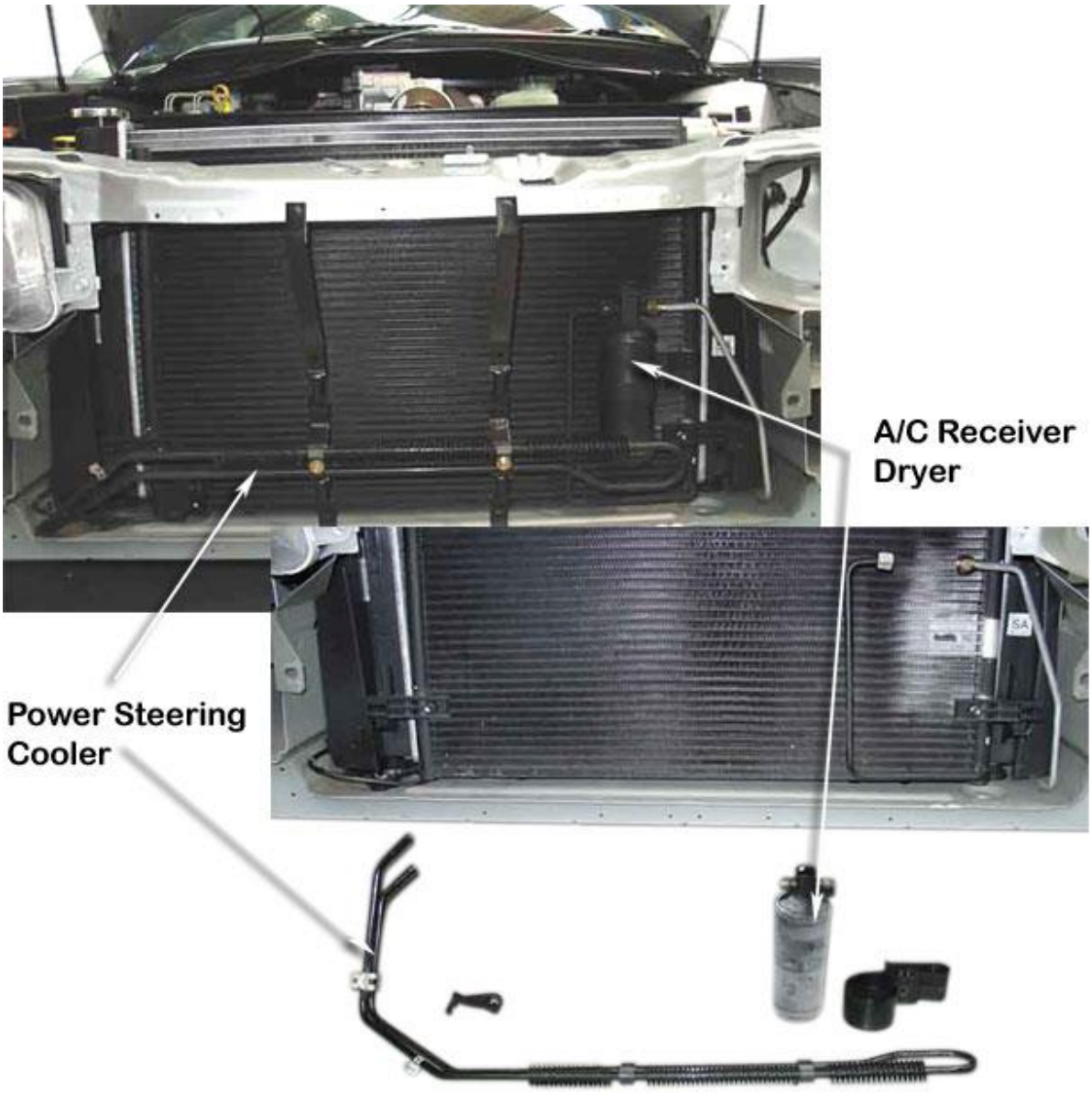
1.) Remove the stock bumper beam, horns, left hand side head light, coolant recovery container.
Remove and discard the lower air tray.

2.) Remove the stock air cleaner assembly situated in the front LHS of the engine bay.

LHS Air Cleaner Assembly Removed

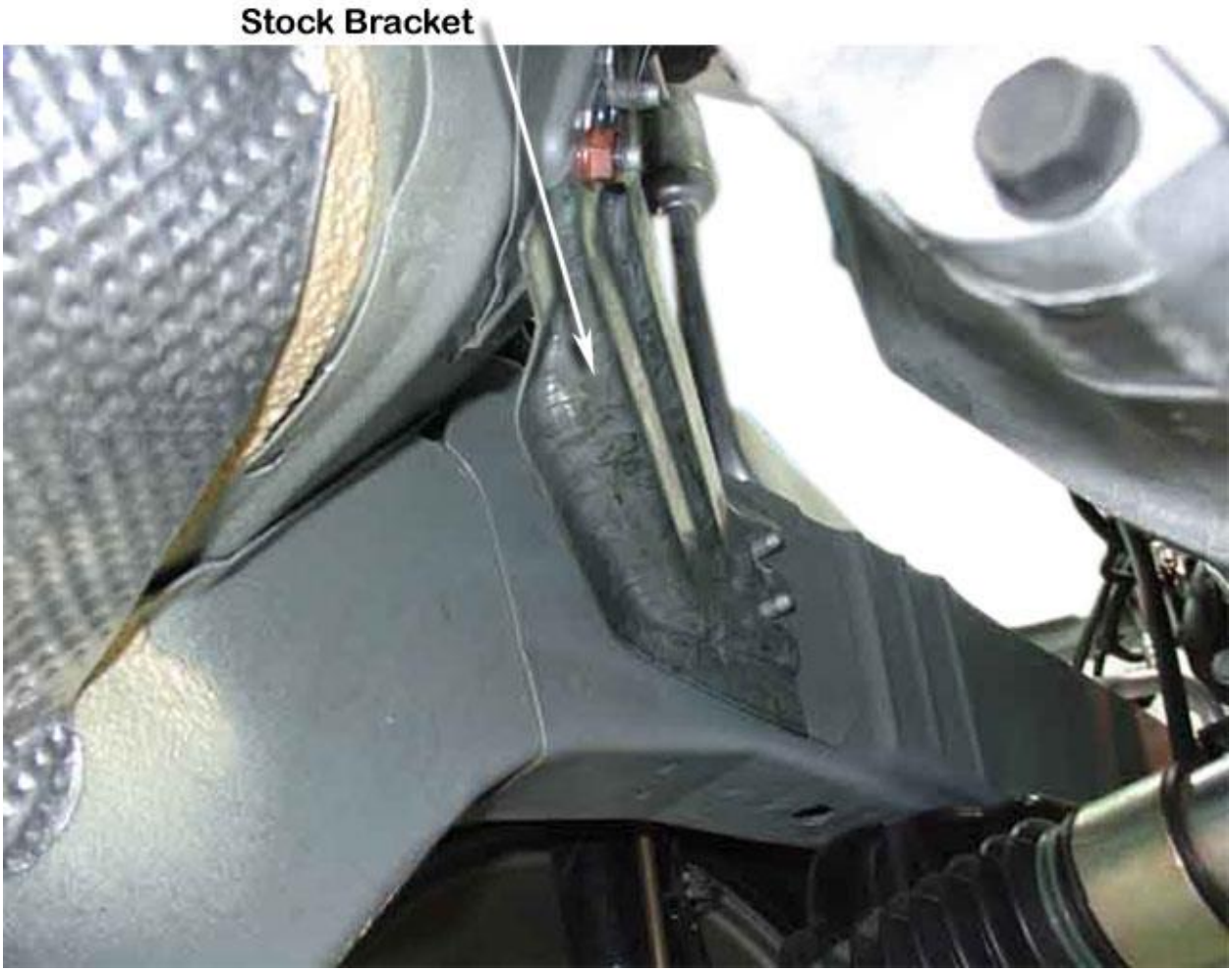
3.) Remove the stock battery and battery tray and then remove the stock windscreen washer reservoir.

4.) Remove the stock Airconditioning receiver/dryer & bracket, power steering cooling lines and the outside air temperature sensor bracket.
The brackets are removed by unclipping and raising the AC condenser - and moving forward slightly to release brackets.



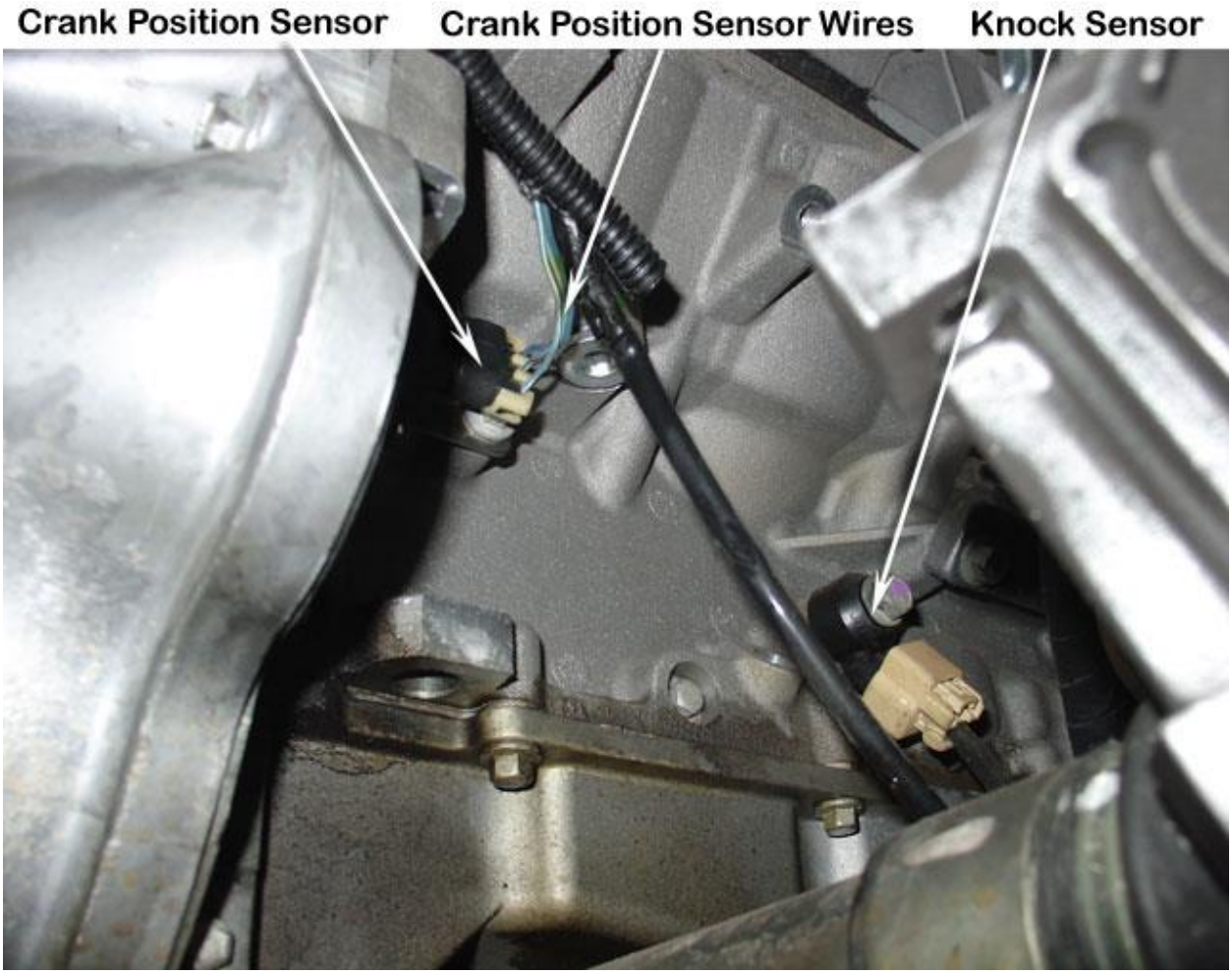
5.) Remove the stock engine oil dipstick assembly.
Remove the stock exhaust manifolds, front pipes, gaskets and all twelve manifold retaining studs. Discard the manifolds/studs. Retain the gaskets for re-use.

6.) Remove the stock firewall angle brackets from the LHS and RHS of the vehicle as shown

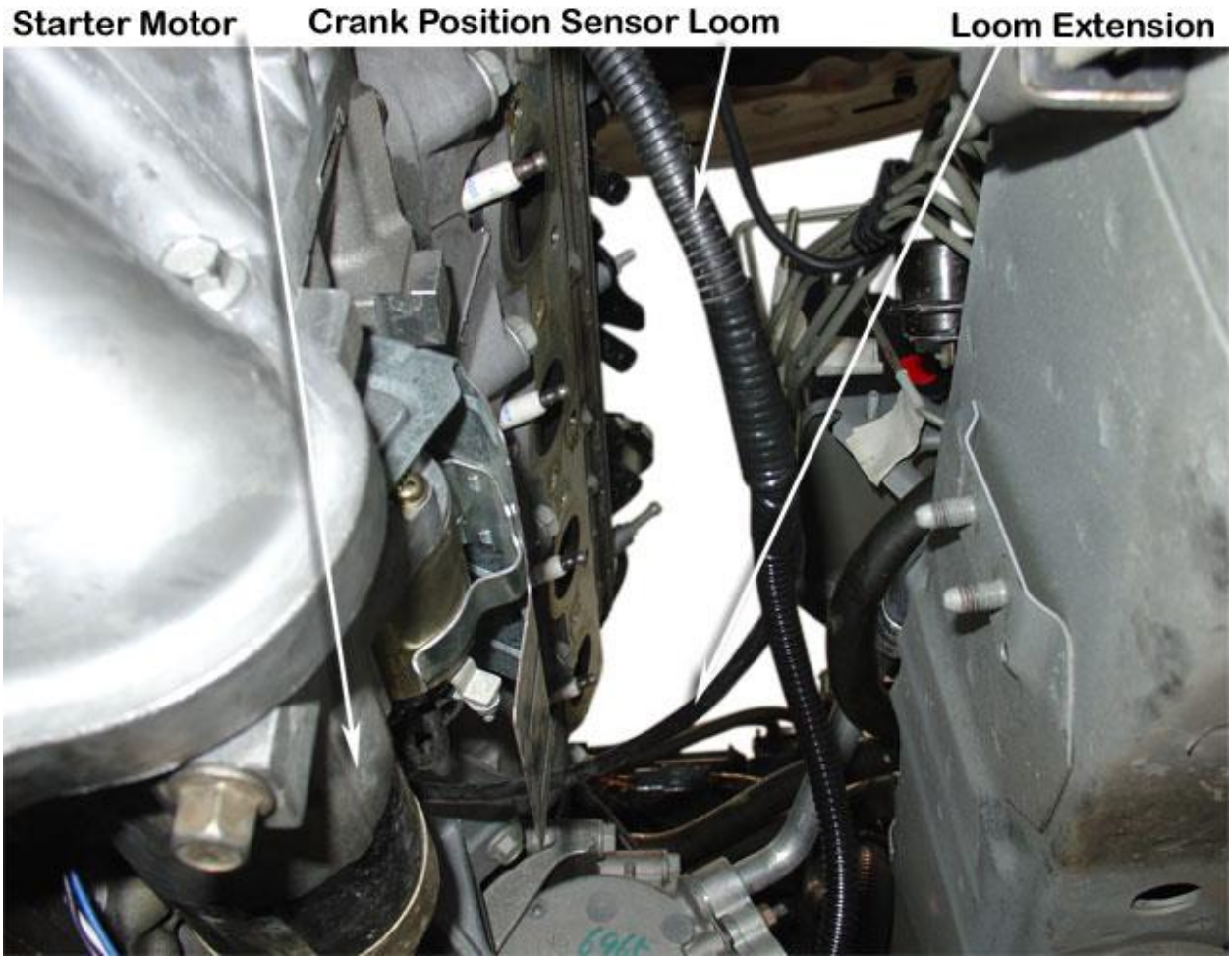


7.) Cut the two stock bracket mounting studs from their mounting pads on the firewall on the LHS and RHS of the vehicle as shown.

8.) Remove the stock starter motor and unplug the stock crank position sensor wiring from the crank position sensor.

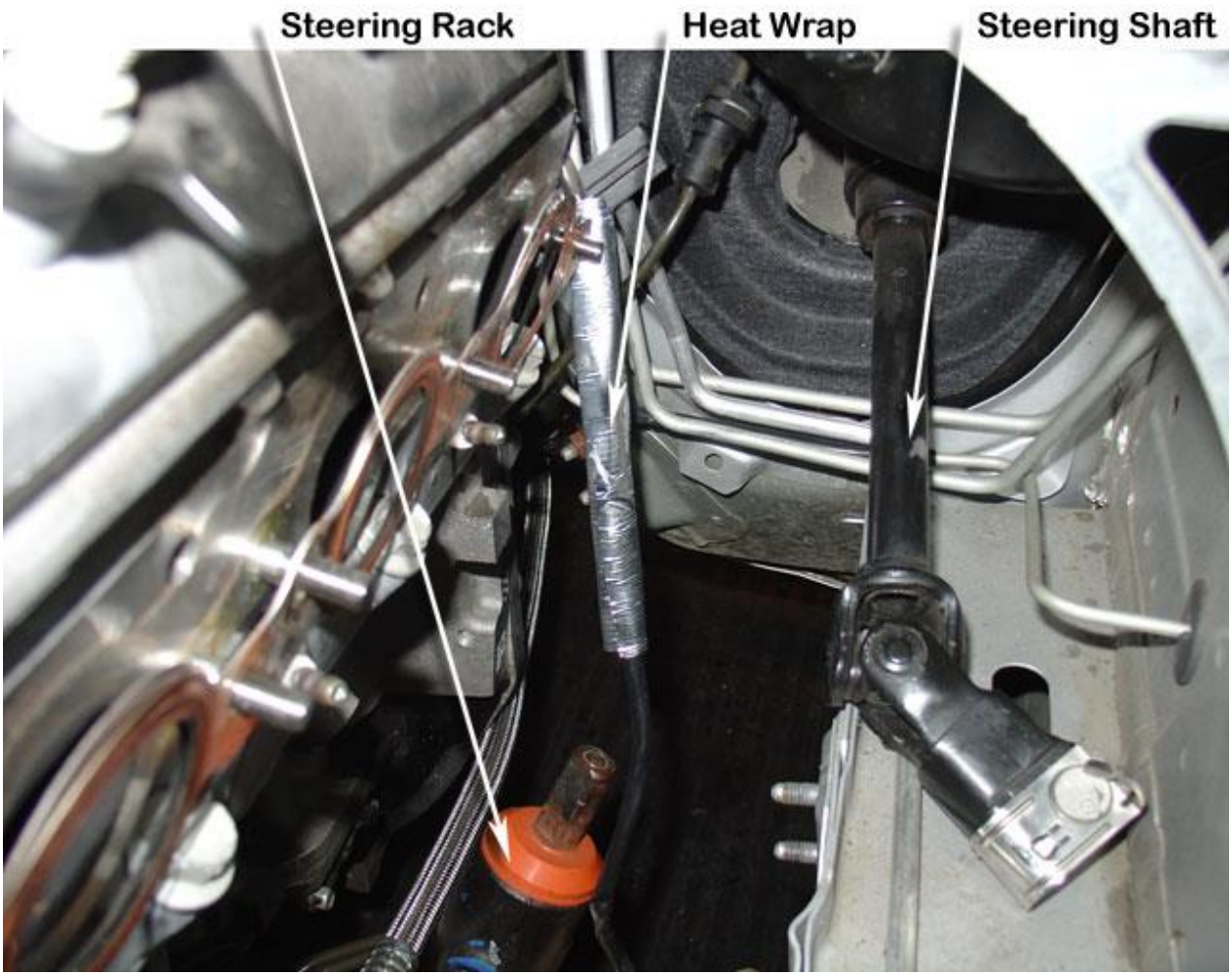


9.) Cut the stock connector plug off the crank position sensor loom, leaving two inches of wire behind the plug.
Strip the wires and extend the wires by 24” protecting in new wire loom when finished.
Wrap each connection individually with electrical tape / heat shrink and reinstall the plug onto the crank position sensor in the block.
Re install starter motor.
Re route crank position sensor loom as shown.

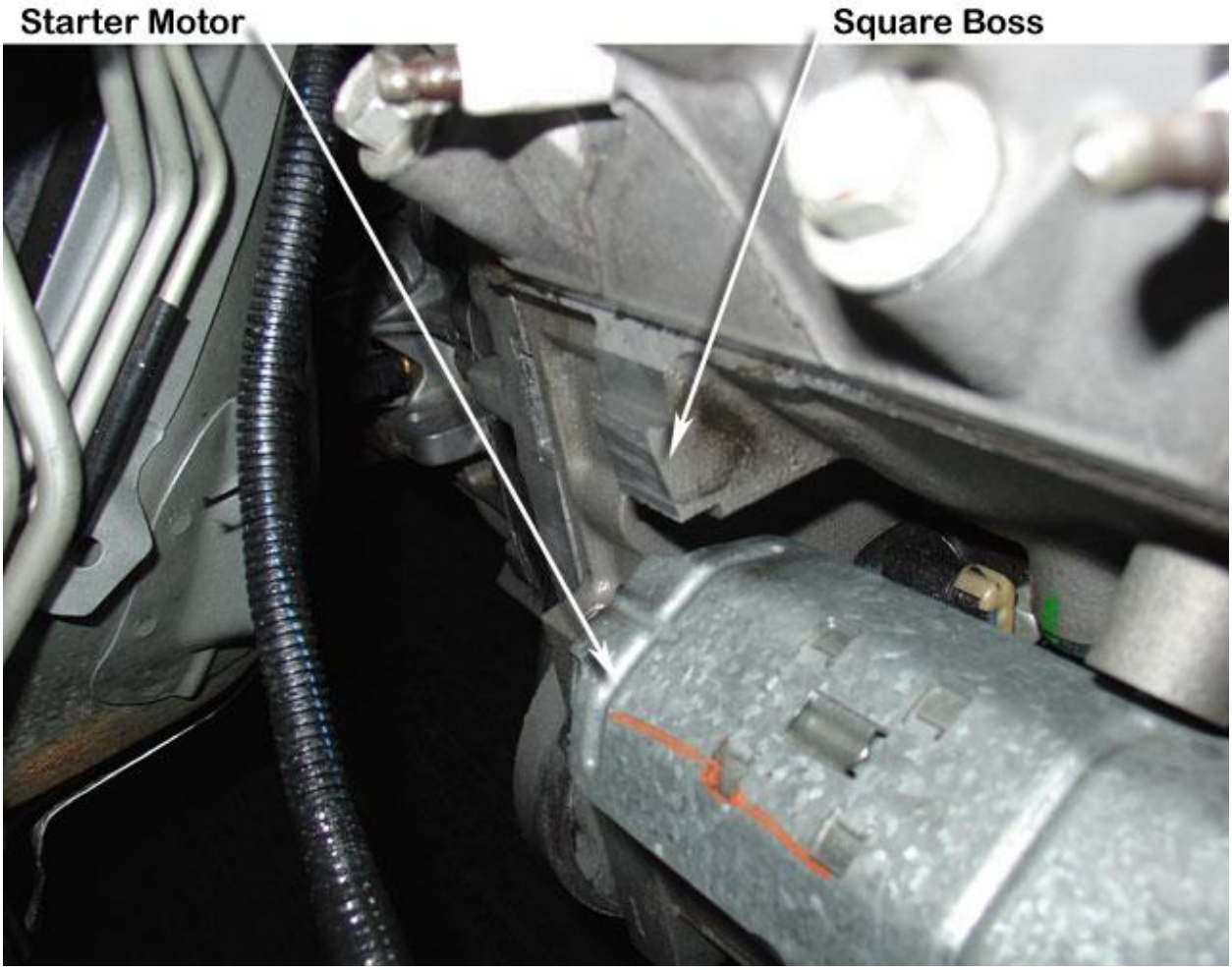


10.) Disconnect the steering shaft from steering rack

Wrap the left hand side knock sensor loom with heat wrap (Item 82).



11.) The height of the square boss on the engine block above the starter motor varies from engine to engine.
This boss may require removal (grinding) for clearance to the new RHS exhaust manifold (Item 101).



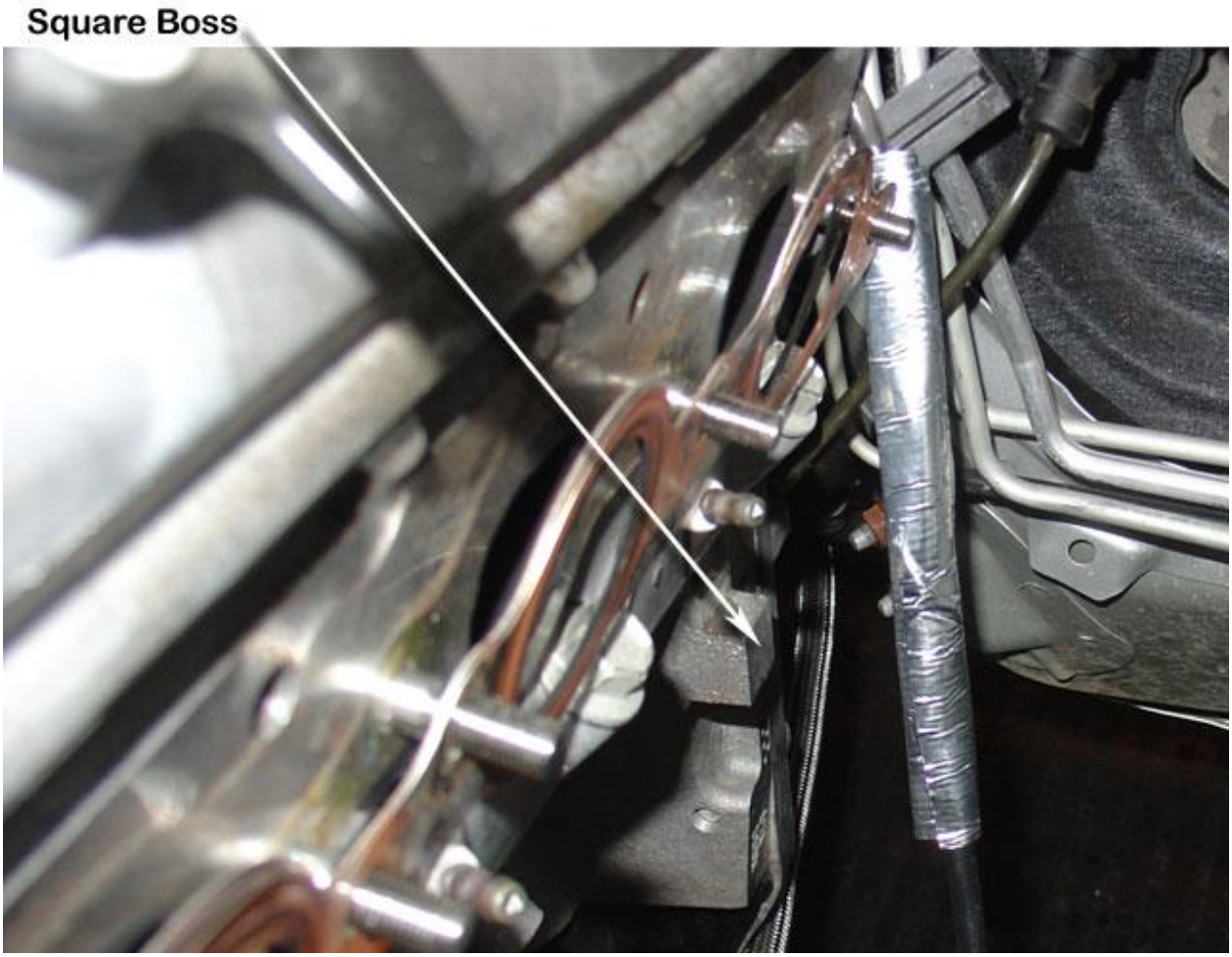
12.) Trial fit the RHS exhaust manifold using the supplied m8x1.25 bolts and check the clearances to the engine and surrounding sheet metal.

There must be a minimum of 1/8” from any engine part, ¼” from any sheet metal.

Remove manifold and grind block or modify sheet metal as necessary.

Once satisfied with the clearances, remove exhaust manifold.

13.) The LHS boss may require removal (grinding) for clearance to the new LHS exhaust manifold (Item 100).
The height of the square boss on the LHS of the engine block as shown varies from engine to engine.



14.) Repeat preceding exhaust manifold trial fit for the LHS exhaust manifold using the supplied m8x1.25 bolts and check for clearances.

15.) Install the Oil Feed lines and fittings to the RHS Turbocharger assembly using the supplied Bango fitting with (1) washer on EACH side of the line's banjo fitting. Route the hose as shown below. Drain fittings will be installed at a later stage.

16.) Install the Oil Feed fittings to the LHS Turbocharger assembly using the supplied Banjo fitting with (1) washer on EACH side of the line's banjo fitting. Route the hose as shown below. Drain fittings will be installed at a later stage.

17.) Remove the 2-bolt flange above the oil filter, drill and tap for 1/8” NPT. Thread in the supplied

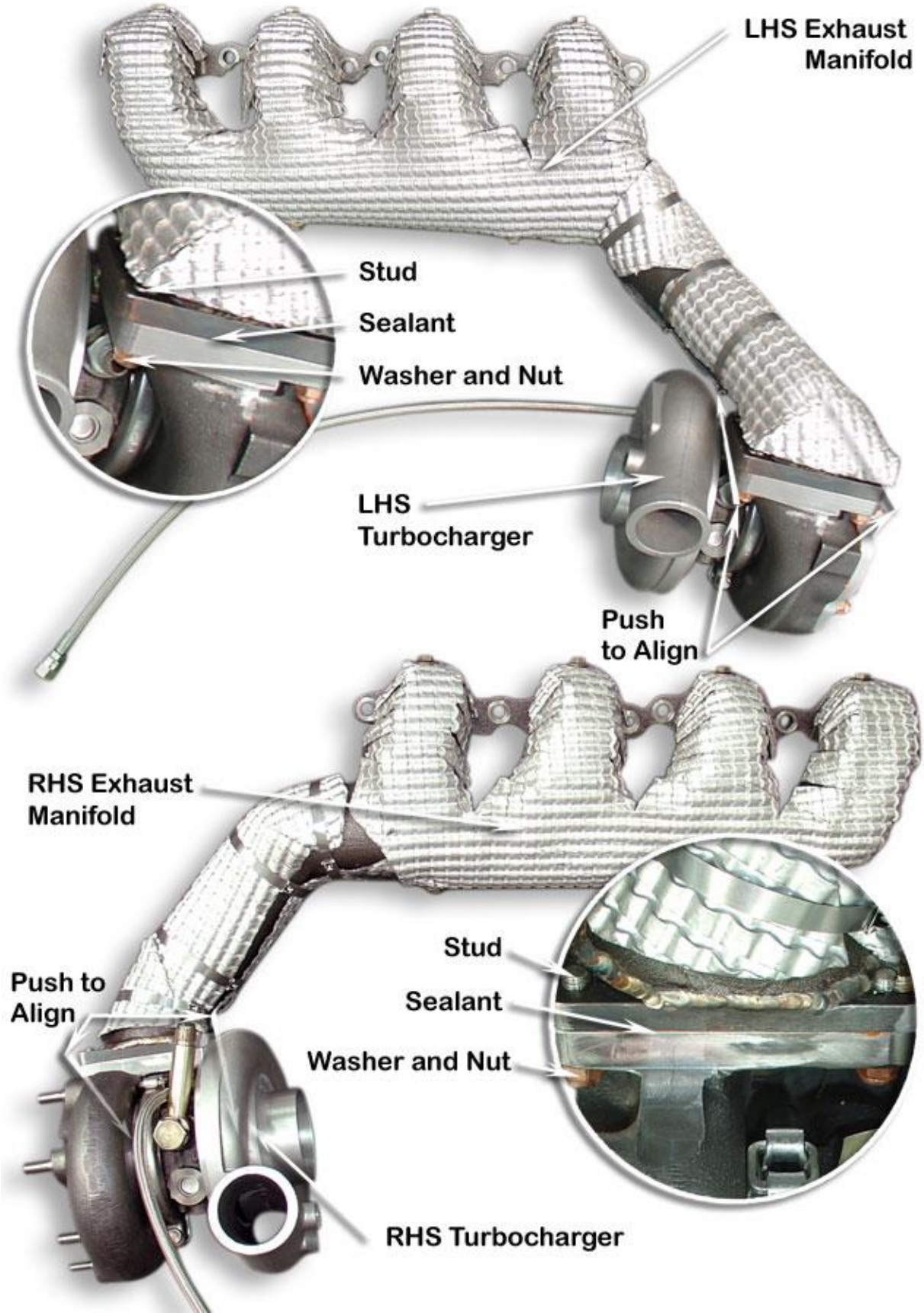
18.) Install five 8mm x 1.25 x 1.0 x 35mm studs into the outlet flange of the RHS exhaust manifold.

Test fit the RHS Turbocharger onto the flange of the RHS exhaust manifold. You will need to clock the turbocharger so the oil feed is in the 12 o’clock position, drain at 6 o’clock, and the compressor outlet facing in the appropriate direction. This is done via loosening the nut on the turbine housing clamp as well as loosening the compressor cover snap ring using snap ring pliers. Once clocked appropriately, apply Permatex Ultra Seal sparingly to the turbocharger mounting flange on the RHS exhaust manifold and install the turbocharger. Some final

tweaks to clocking can be completed once going into the vehicle via the same procedure as above, remember to tighten the nut back down on the turbine housing clamp once in the correct position. Retain turbocharger to the exhaust manifold flange with the supplied 8mm nuts.

NOTE: Apply pressure to the turbocharger in the direction shown ensure that the turbocharger is aligned on the studs. This ensures correct the turbocharger alignment for exhaust fitment.

Repeat to install the LHS turbocharger assembly to the LHS exhaust manifold.

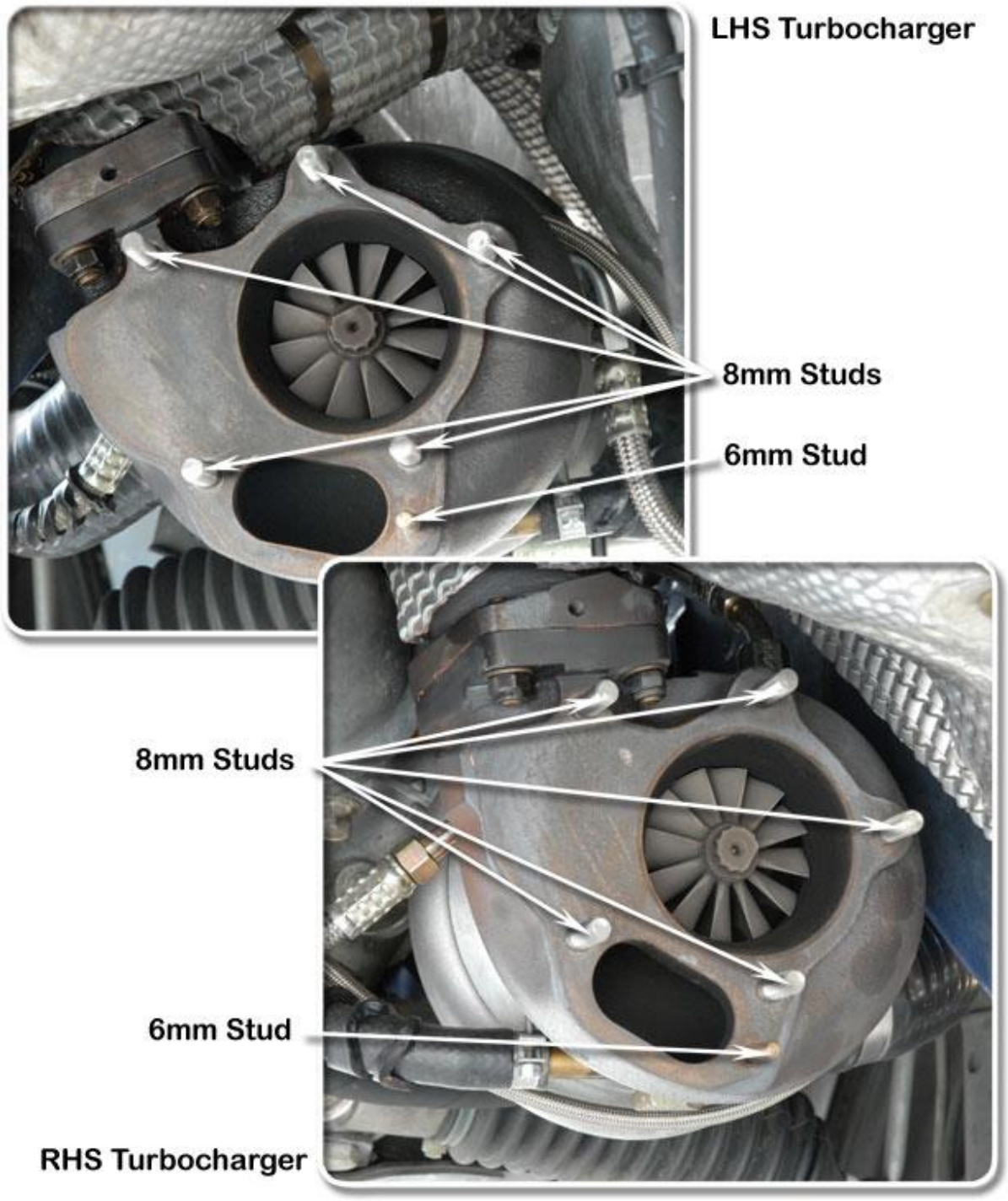

LHS Exhaust Manifold
Stud
Sealant
Washer and Nut
LHS Turbocharger
Push to Align
RHS Exhaust Manifold
Stud
Sealant
Washer and Nut
Push to Align
RHS Turbocharger

19.) Raise the LHS manifold/turbocharger assembly up into the engine bay and into place using a OEM Exhaust manifold gasket and retain using the (6) M8x1.25 supplied bolts. Leave loose, do not tighten yet.

Hint: Requires two people - one from above and the other below the vehicle.

20.) Repeat the same process above for the RHS Turbocharger and manifold assembly.

21.) Install five 8mm x 1.25 x 35mm studs to the outlet flange of each turbocharger assembly. There will be (1) 6mm bolt hole left open that will receive a bolt later on.



22.) Prior to installing the wastegates, ensure that the wastegate seating ring (firing ring) is in place during the installation process as shown in the paperwork included in the wastegate's boxing.

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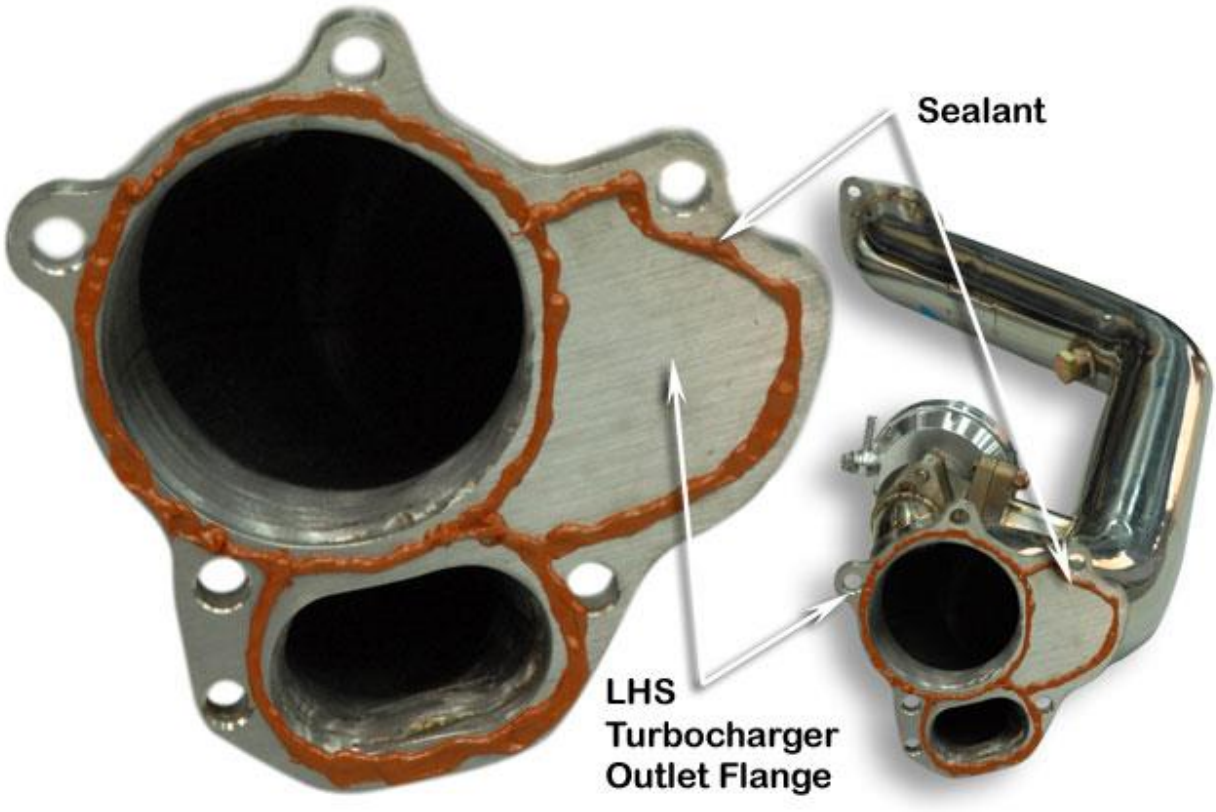
23.) Align the LHS wastegate as shown paying particular attention to the orientation of the boost pressure sensing hose port. Ensure the other unused side port is blocked off using the supplied block off fitting with the wastegate.

Retain the wastegate to the 44mm WG inlet flange on the downpipe via the inlet side of the LHS wastegate, retain using the larger clamp supplied with the wastegate.

Repeat the above for the RHS wastegate.

Leave the top port of each wastegate vented to the atmosphere unless using an additional boost controller. If so please hook up per their instructions.

24.) Apply Permatex Ultra Seal sparingly to the LHS turbocharger outlet flange.

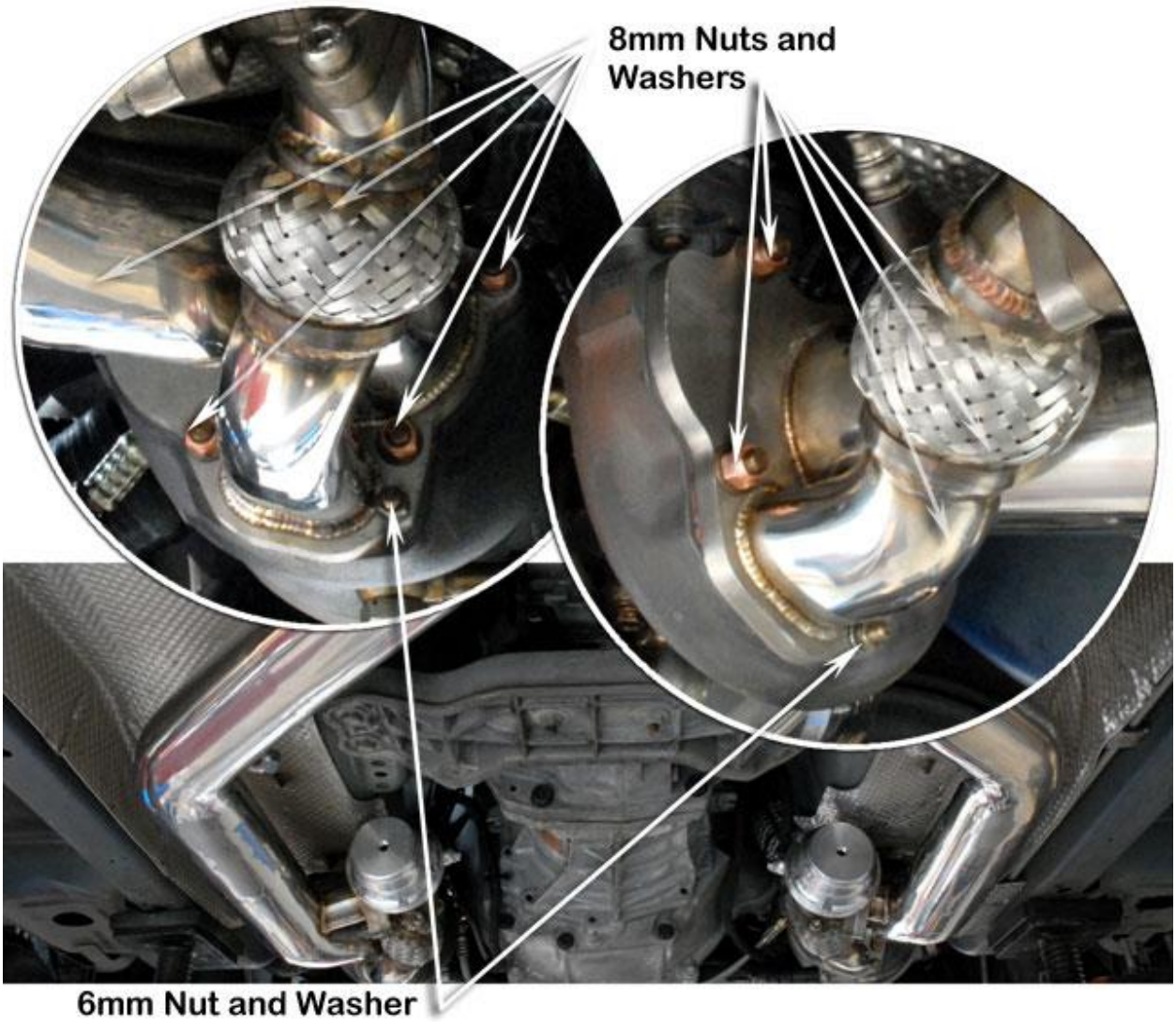


25.) Install the LHS turbocharger outlet pipe to the LHS turbocharger assembly.

Retain using 8mm supplied nuts on the 8mm studs previously installed on the turbocharger.

Use the supplied 6mm, 20mm long bolt to retain the last remaining open smaller hole

Apply Permatex Ultra Seal sparingly to the RHS turbocharger outlet pipe and repeat the above to install the RHS turbocharger outlet pipe to the RHS turbocharger assembly.



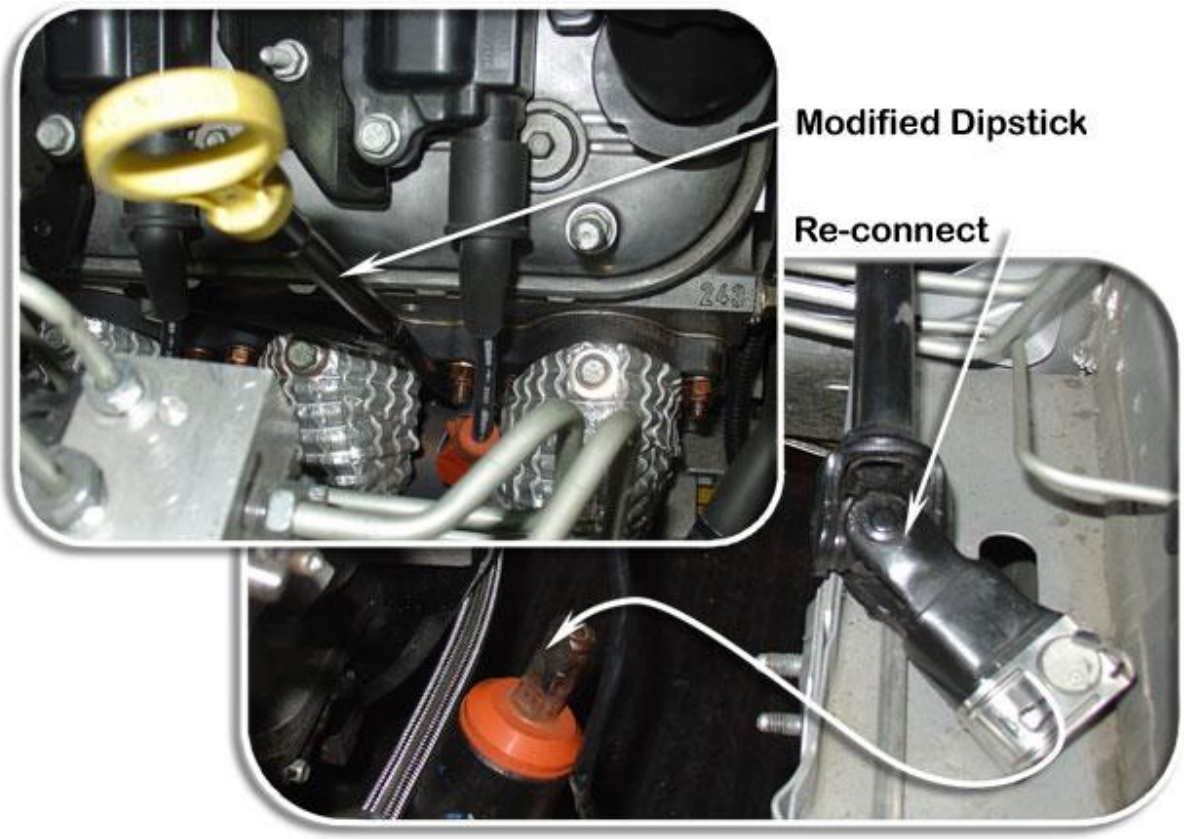
26.) Align the LHS and RHS turbocharger outlet pipes and ensure that the ends are level.

Once level, tighten the exhaust manifold nuts

Check the alignment again after tightening the exhaust manifold nuts.

27.) Reinstall the engine oil dipstick assembly- Note some bending of the engine oil dipstick tube may be required.

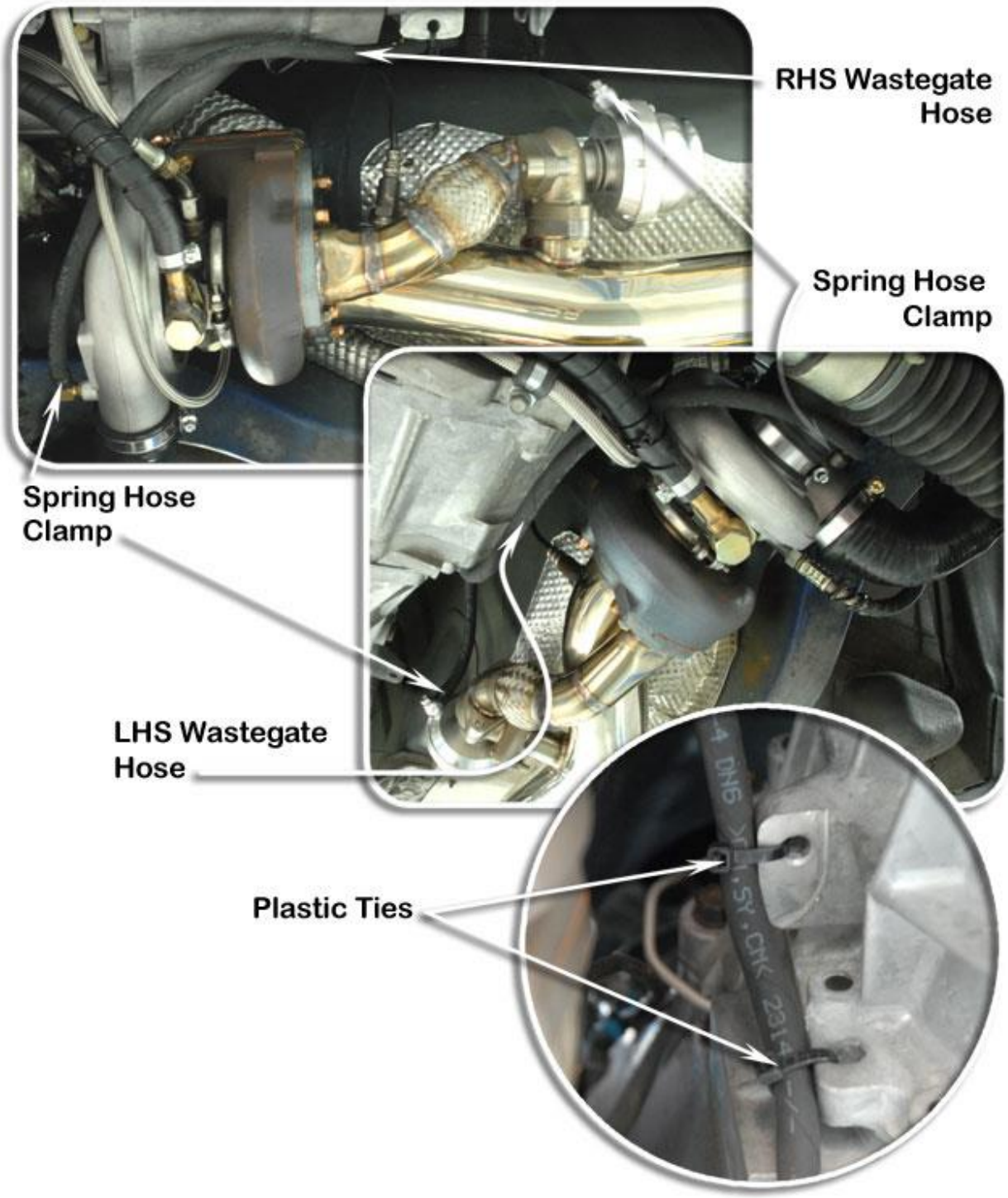
Reconnect the stock steering shaft that was dismantled earlier back to the steering rack.



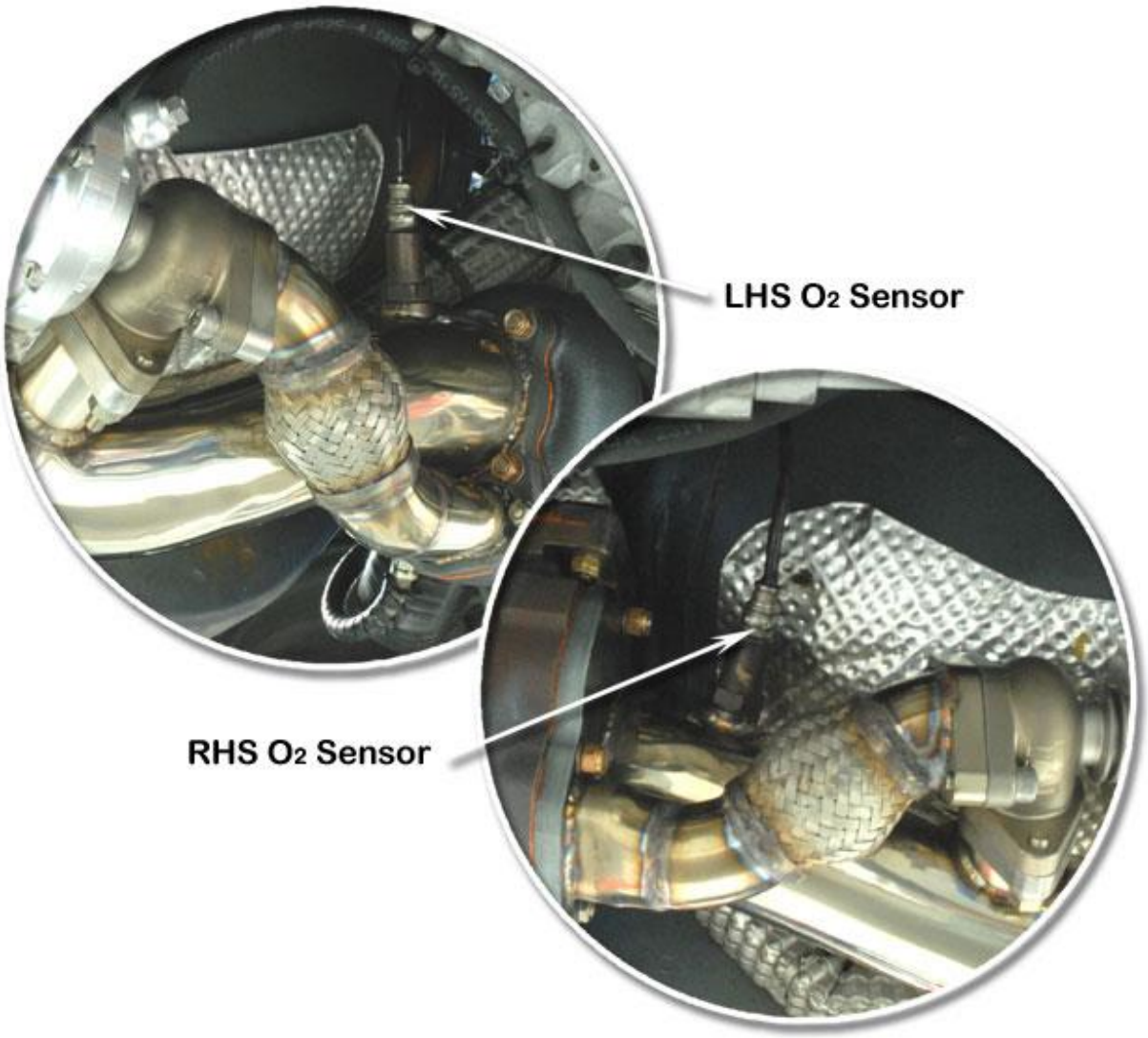
28.) Install 2' length of supplied 10’ roll of 1/4" rubber vacuum hose to the RHS wastegate barb and retain using a supplied 1/4" spring hose clip. Route the hose as shown and install onto the barb fitting on the RHS turbocharger compressor housing. Retain using a supplied 1/4" spring hose clip.

Support the hose using zip ties

Repeat the above to install the LHS 2.5' length of 1/4" rubber vacuum hose from the supplied 10’ roll between the LHS wastegate and the LHS turbocharger.



29.) Install the stock Oxygen sensors to the oxygen sensor ports of the LHS and RHS turbocharger outlet pipes.



30.) Remove the rear O2 sensors from the vehicle by unplugging at the electrical connector for each. Ensure the plugs are installed the in the rear O2 sensor ports of the turbocharger outlet pipes (Items 60 & 61). These locations can be used by your tuner for their wideband O2 Sensor(s) or if you are running one on-board of the vehicle.

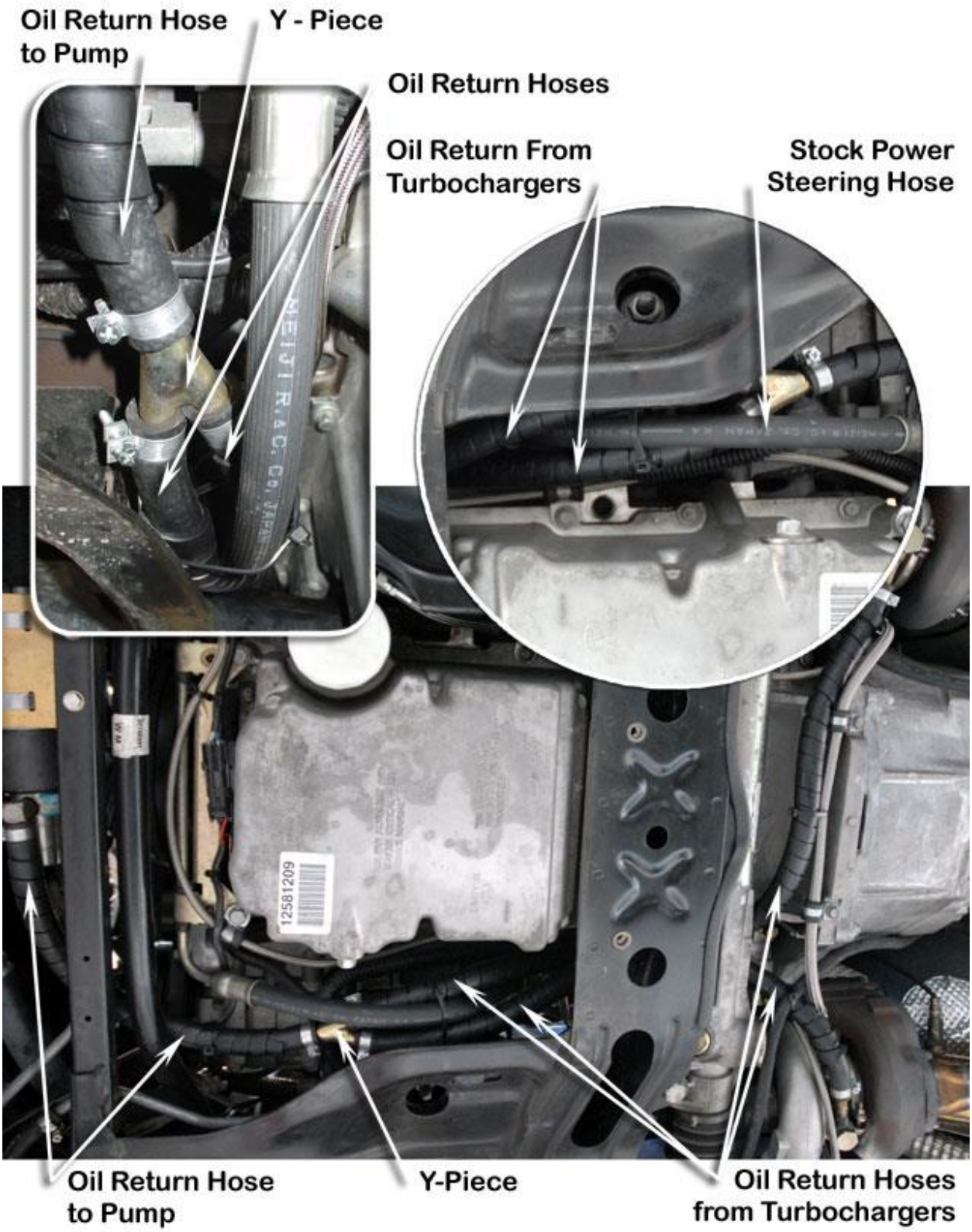
31.) Install the supplied Oil Fill cap with the -10an fitting in place of your OEM fill cap by unscrewing the OEM cap and threading the new cap in place.

32.) Oil Drain connection and routing

33.) Oil Return Pump mounting

34.) Install the oil drain fittings and lines to the turbochargers

35.) Routing of the Oil Lines in the vehicle

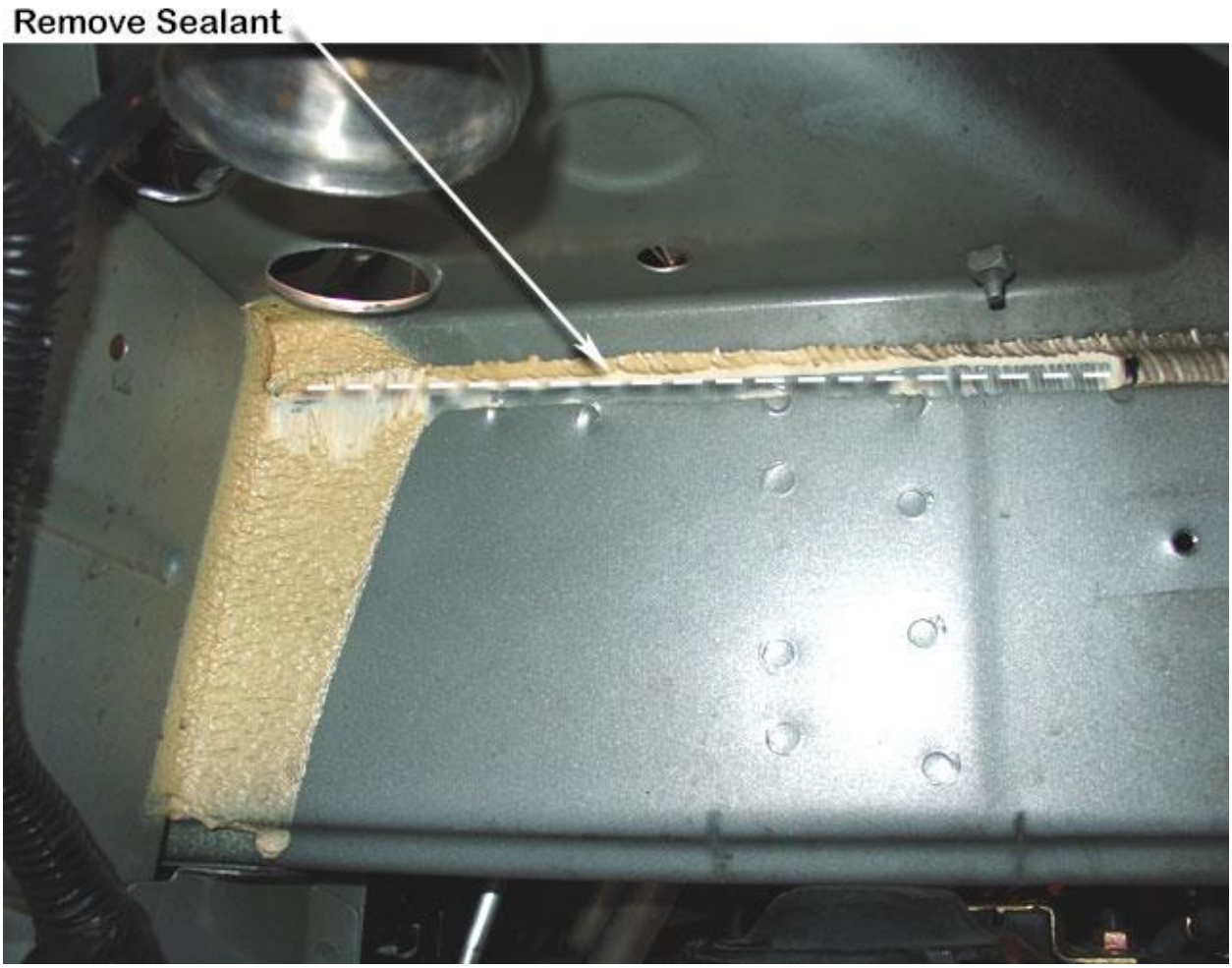


36.) Install of the Oil Feed
37.) Routing of the oil feed lines in the car

38.) Installation of the Intake tubes using the supplied custom couplers to the turbocharger inlets. Once in place, rough trace the location (3”) for the tubes to run through the body and cut using a 3” hole saw. Paint all edges after cutting. Complete for both RHS and LHS.
Once resting in the holes, mark the hole locations for the flange on each intake tube on the body, drill out and install using the supplied M6 x 1.0 x 14mm nuts/bolts. The intake tubes are now both secure.
Mark on the body for the (2) additional mounting locations off the support legs on each intake tube , drill 1/8” holes and secure using the supplied self-threading screws.

39.) Secure the intake tubes to the turbo using the supplied T-bolt clamps on the silicone coupler at the turbocharger inlets.

40.) Locate the front left hand side cavity where the stock coolant recovery canister was removed. Remove body seam sealant as indicated above (varies from vehicle to vehicle).



41.) Install the stock overflow hose and stock clip into the stainless steel APS coolant recovery container (Item 159) as shown.

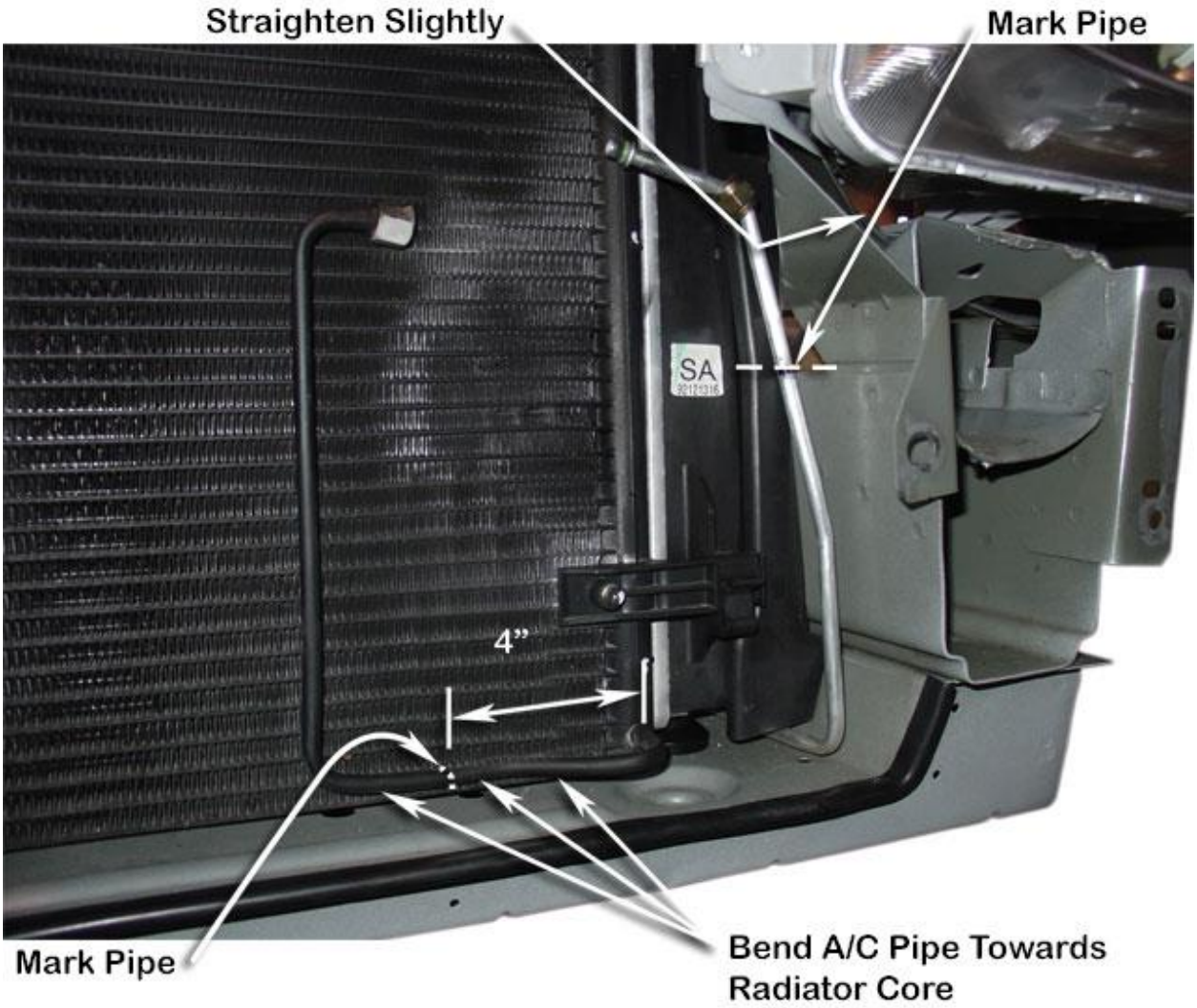
42.) Install the coolant recovery canister (Item 159), in the stock position as shown and retain with the stock fastening hardware.

APS Coolant Recovery Canister

43.) Bend the black horizontal lower air conditioning pipe back closer to core.

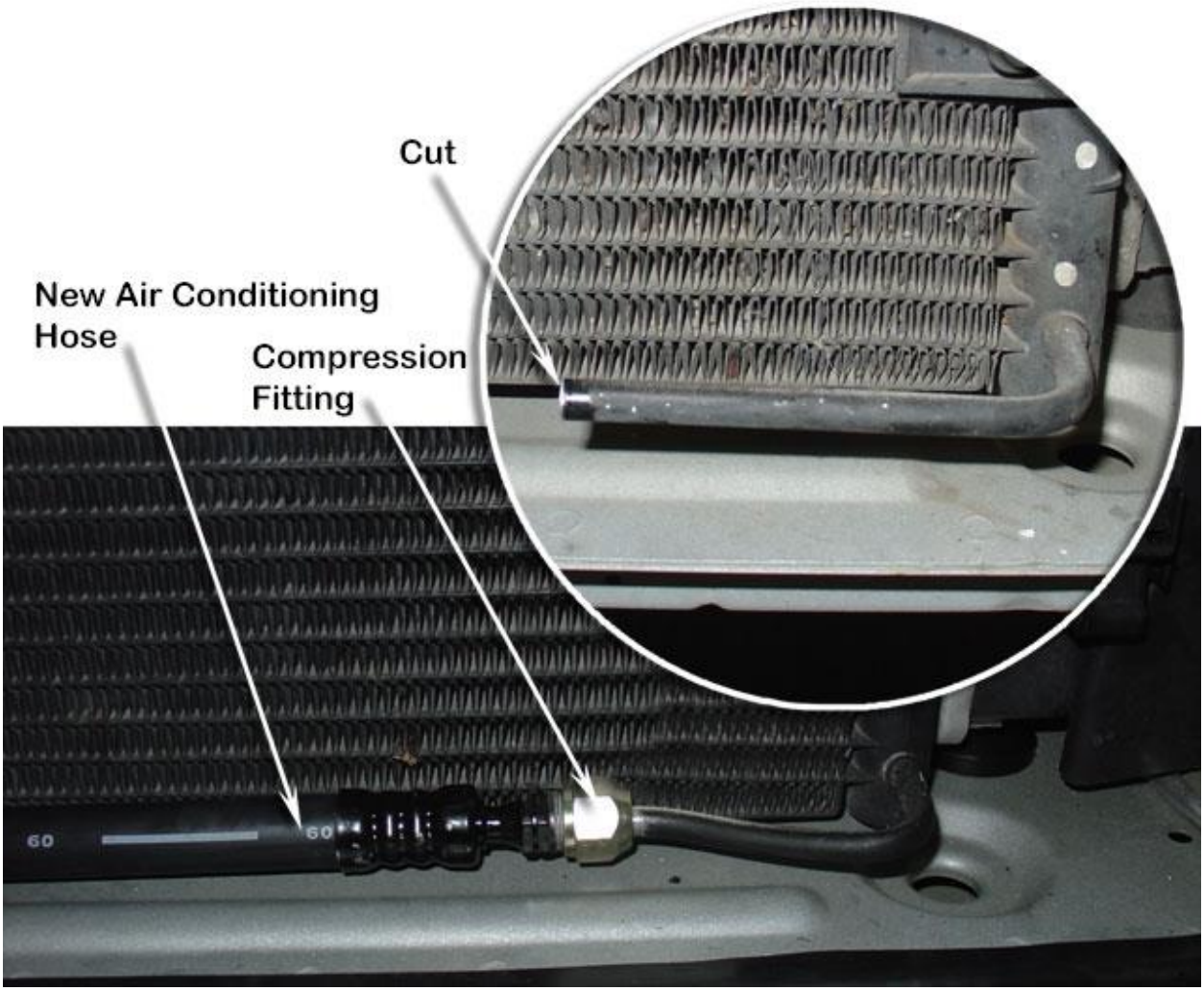
Mark this black pipe as shown, 4" in a straight line from where it leaves the core.

Straighten the vertical aluminum pipe slightly and mark the height as shown, level with the top of outer chassis rail skin.



44.) Cut the lower black AC pipe with a pipe cutter and de burr the end.

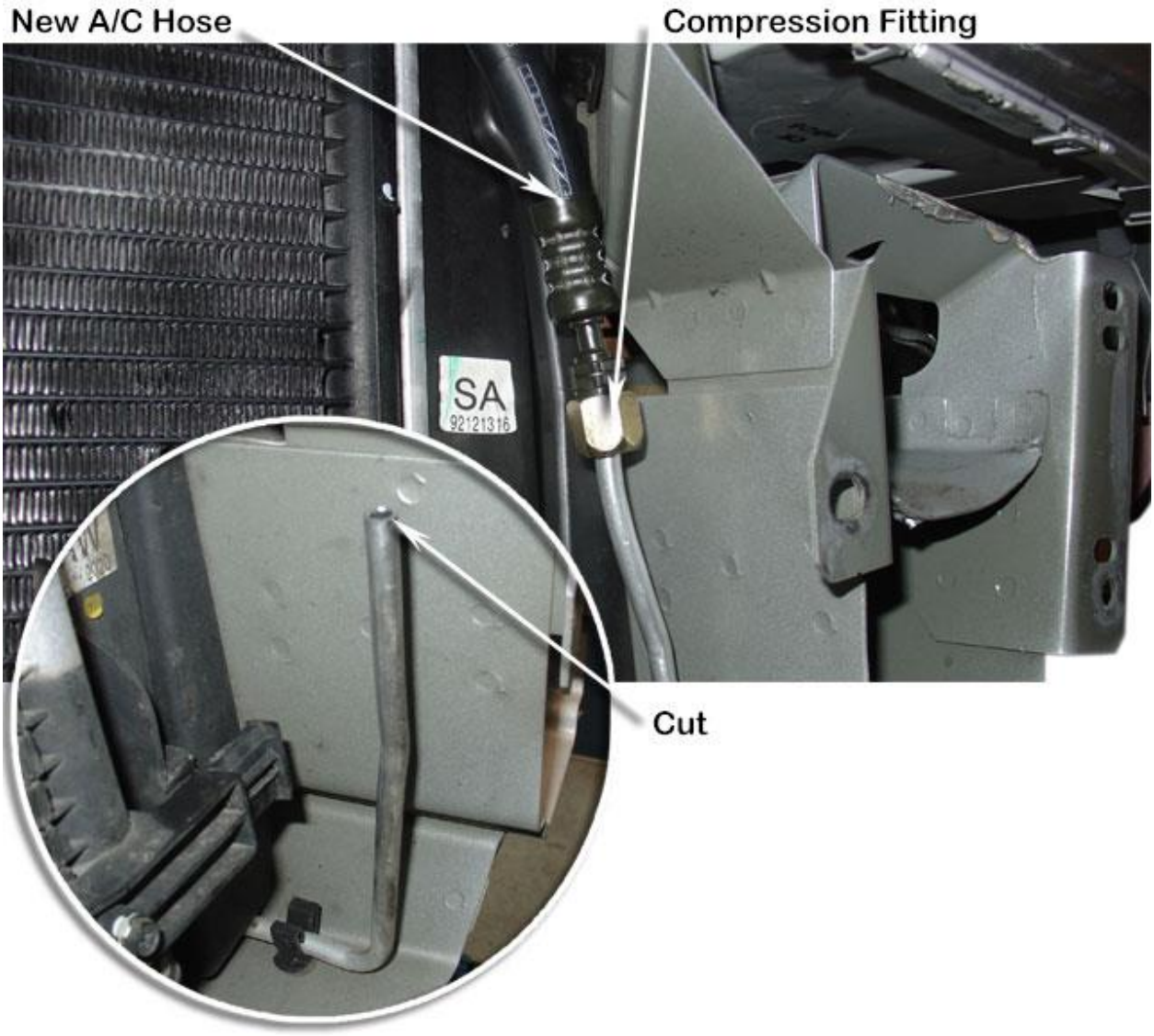
Install one of the flexible air conditioning hose assemblies on the end of the cut black pipe, as shown. Seat the sealing olive fitting, by tightening and then loosen slightly to allow rotation of hose. It is **VERY important to hold the fitting on the end of the hose, perfectly in line with the run of the black pipe**, as the nut is tightened. This is the receiver/dryer “IN” side.



45.) Cut the aluminum pipe with a pipe cutter and de burr end.

Install the other flexible hose assembly, as shown.

Seat the olive fitting by tightening and then loosen slightly to allow rotation of hose. Again, take care to ensure the hose fitting is kept in line with the aluminum pipe.

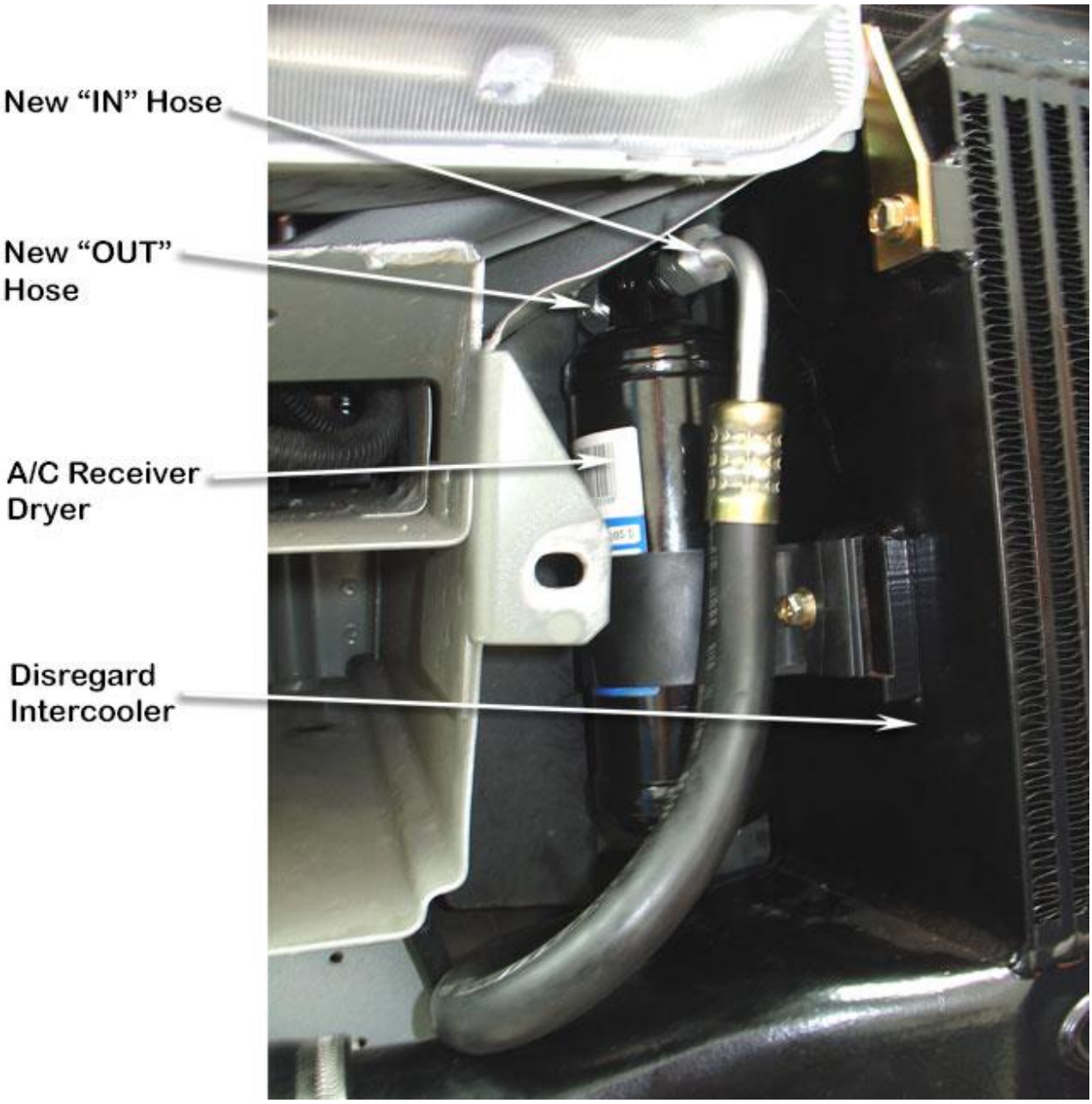


46.) Ensure that both hose fittings are now tight and correctly installed.

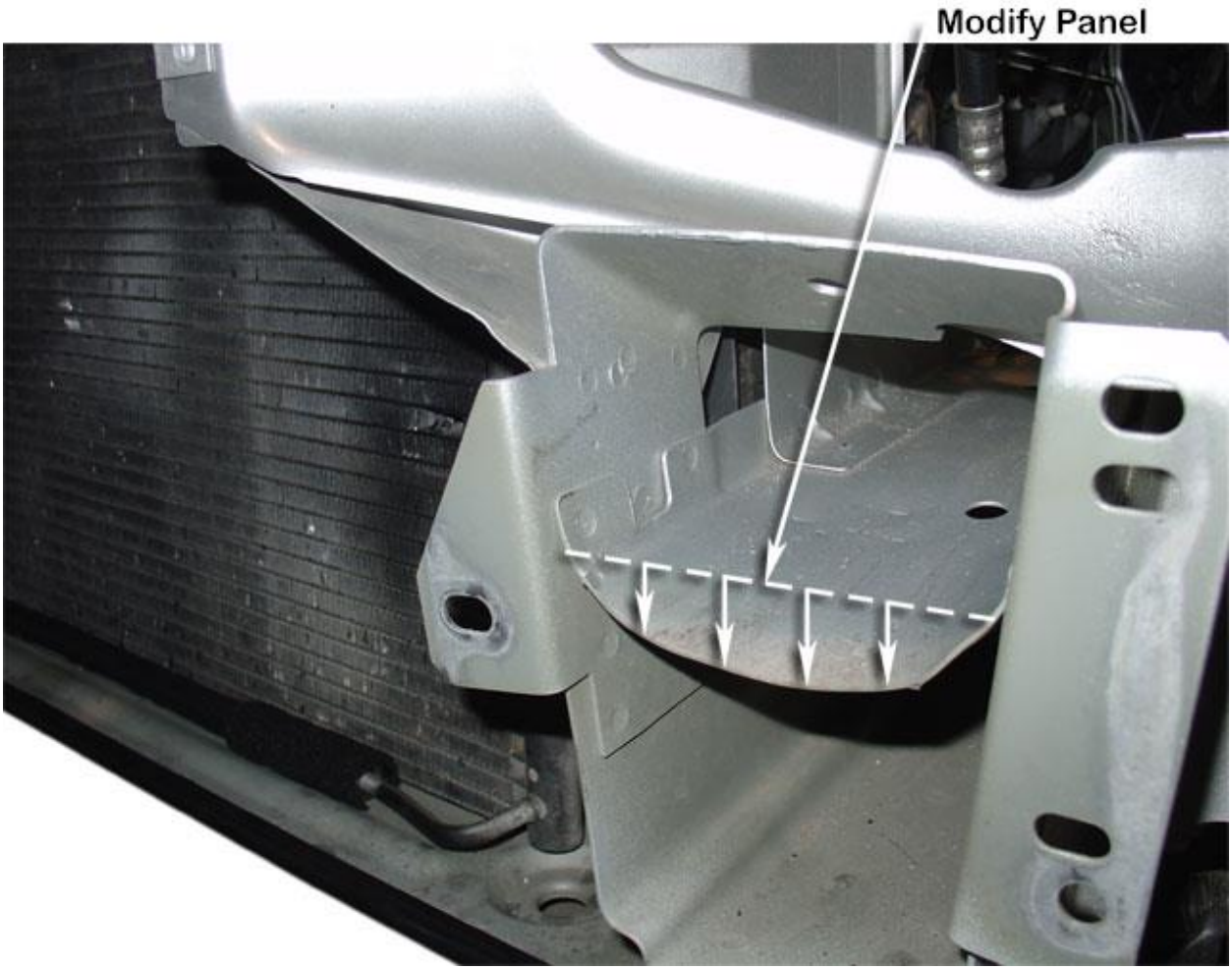
Install rubber edging along the front edge of the front cross member, in order to protect the intercooler. Cut to fit from supplied length.

47.) Place the new receiver dryer in position with hose fittings orientated as above. Verify port marked “IN”. Front hose is “IN” 90 degree angled down. Rear “OUT” hose is 90 degree angled up.

Although shown mounted here for clarity, the receiver / dryer is not mounted to the intercooler, until after the intercooler is mounted in the car.
The lower hose simply sits on top of the cross member, behind the intercooler core. The upper hose will be mounted to the rear of the upper radiator support panel, after the intercooler and receiver / dryer are in place.

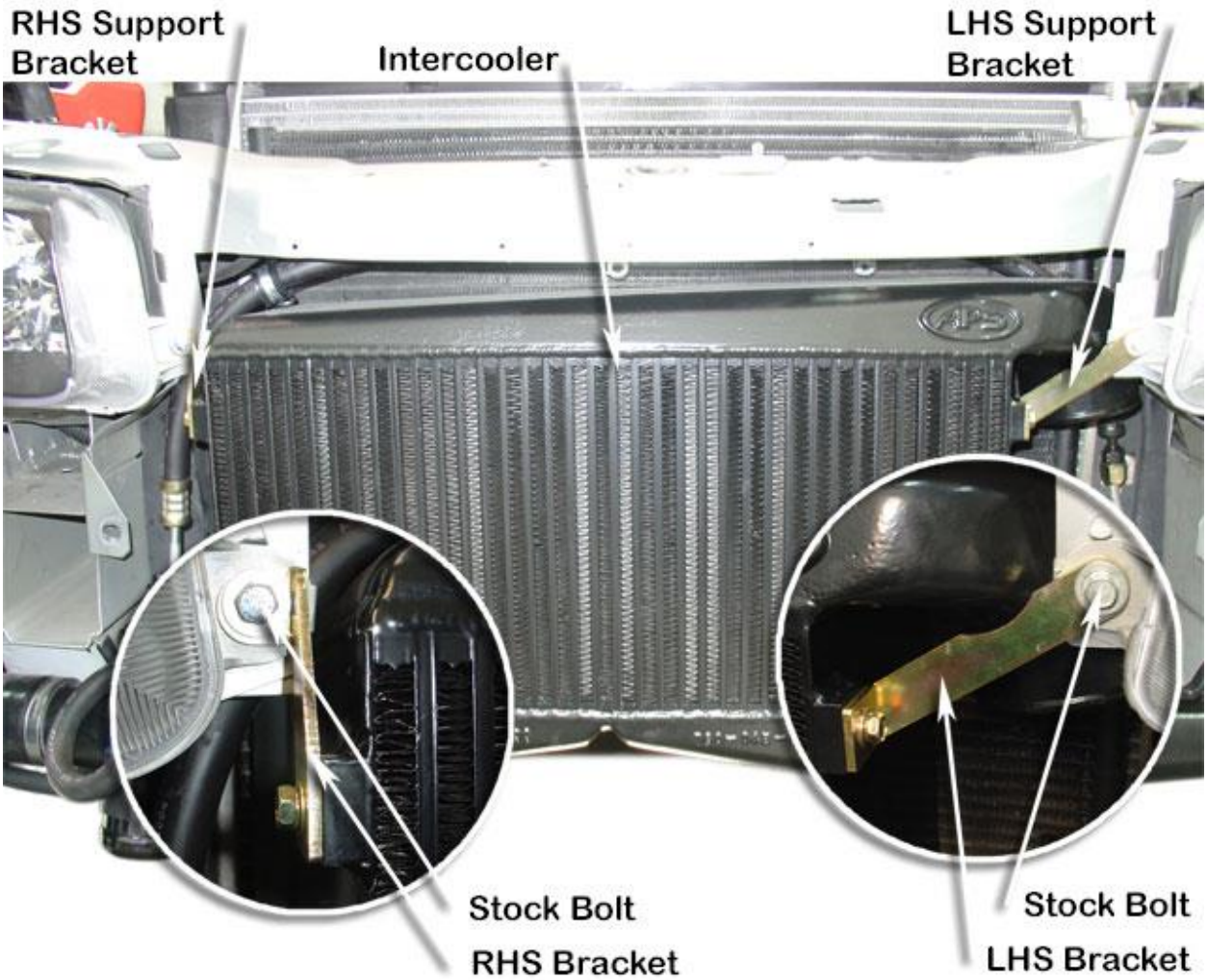


48.) The top surface of the stock chassis rail must be carefully beaten downwards to curve evenly as shown - in order to route intercooler outlet duct through it, at a later stage.



49.) Lift the intercooler core assembly into position by sliding its discharge port behind the left hand side headlight frame and resting its lower edge upon the front cross member lip. (Protected by the previously installed rubber edging).

Mount the intercooler using the left hand side bracket right hand side bracket and 6mm x 1.0 x 16mm bolts. Both brackets mount to the car using stock bolts, in stock positions as shown and are used to stabilize the intercooler assembly. The mass is supported by the cross member on which it is resting. (Do not install lower brackets yet).



50.) Cut the stock receiver/dryer mounting bracket and grind off the stock threaded section to provide a flat lower surface as shown.

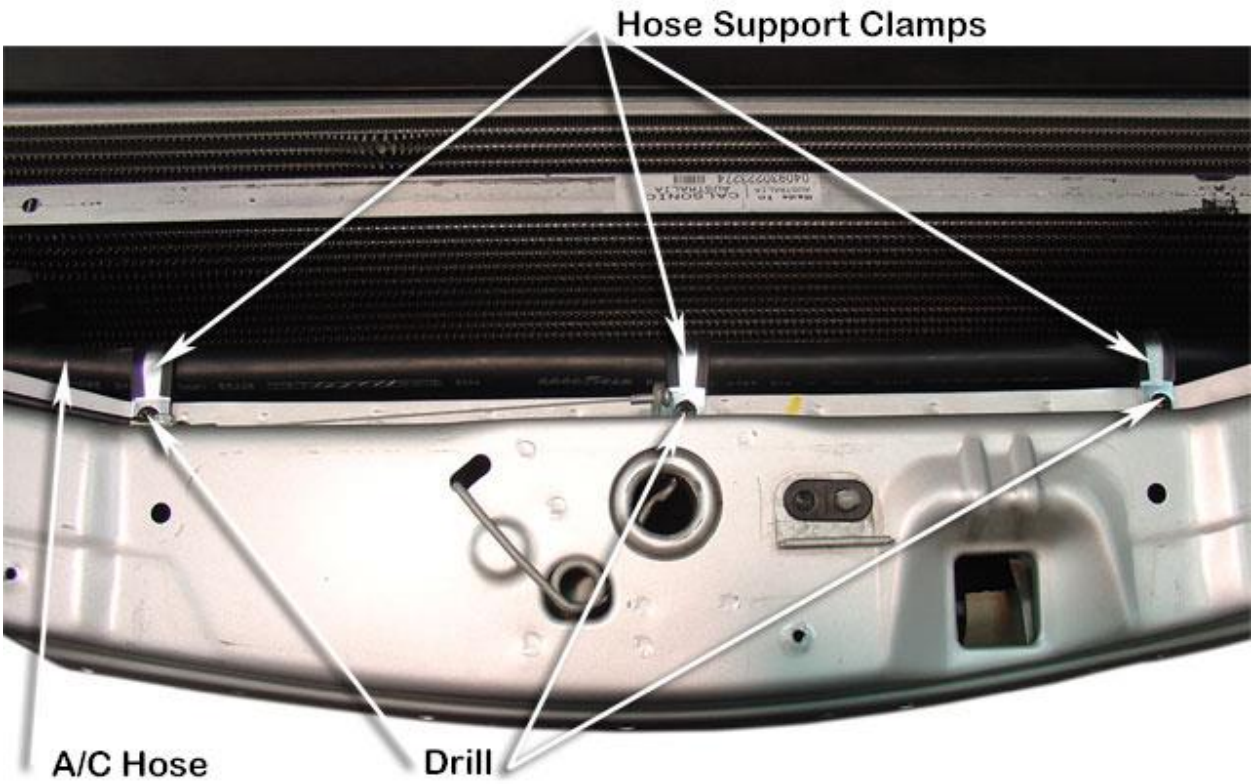
Drill the stock locating hole to ¼" diameter.

Ensure that the hose fittings to receiver/ dryer are tightened.

Install the new receiver/dryer to the end of the intercooler, as previously shown, using 6mm x 1.0 x 25 mm bolt and the modified stock bracket.


Cut and Grind Stock Bracket

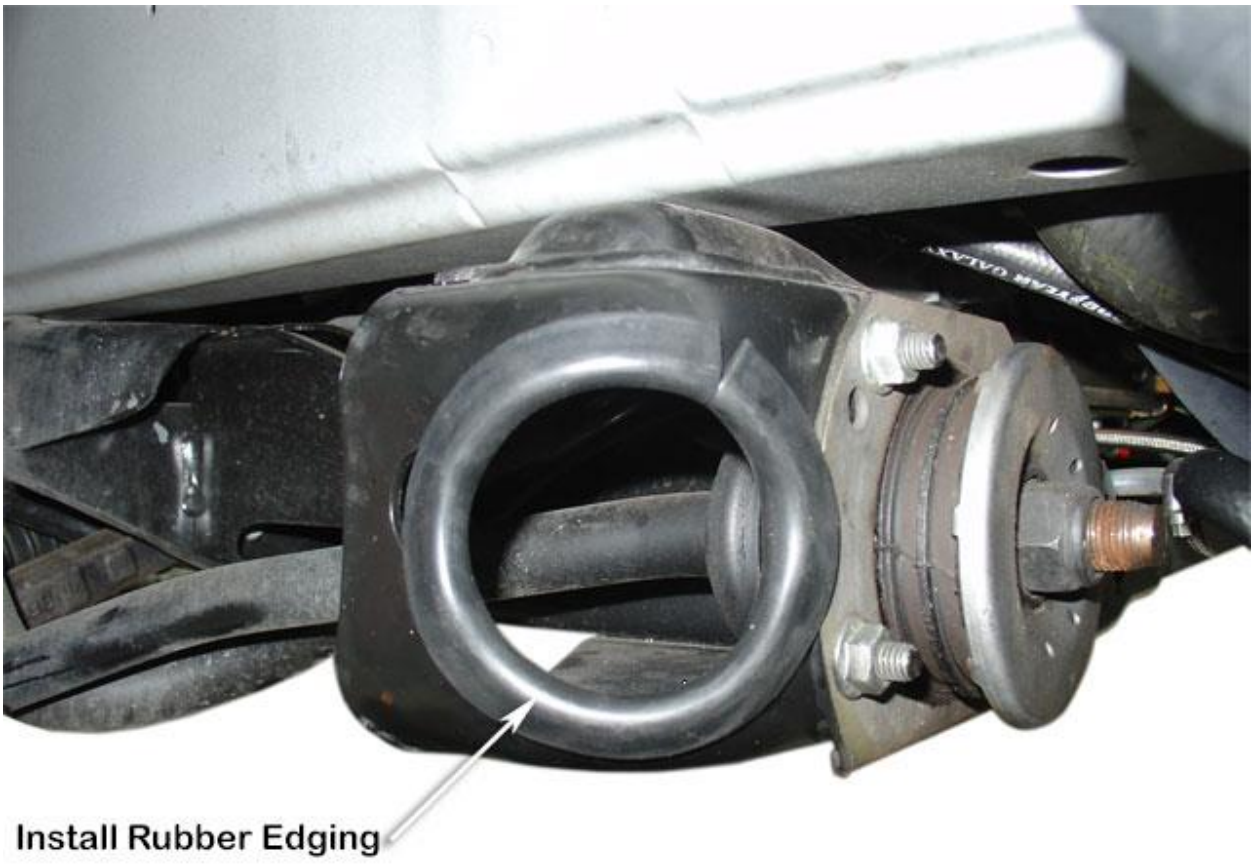
51.) Drill three 1/8” diameter holes and install three P-Clamps, as shown, using self tapping screws, in order to support the upper flexible hose.



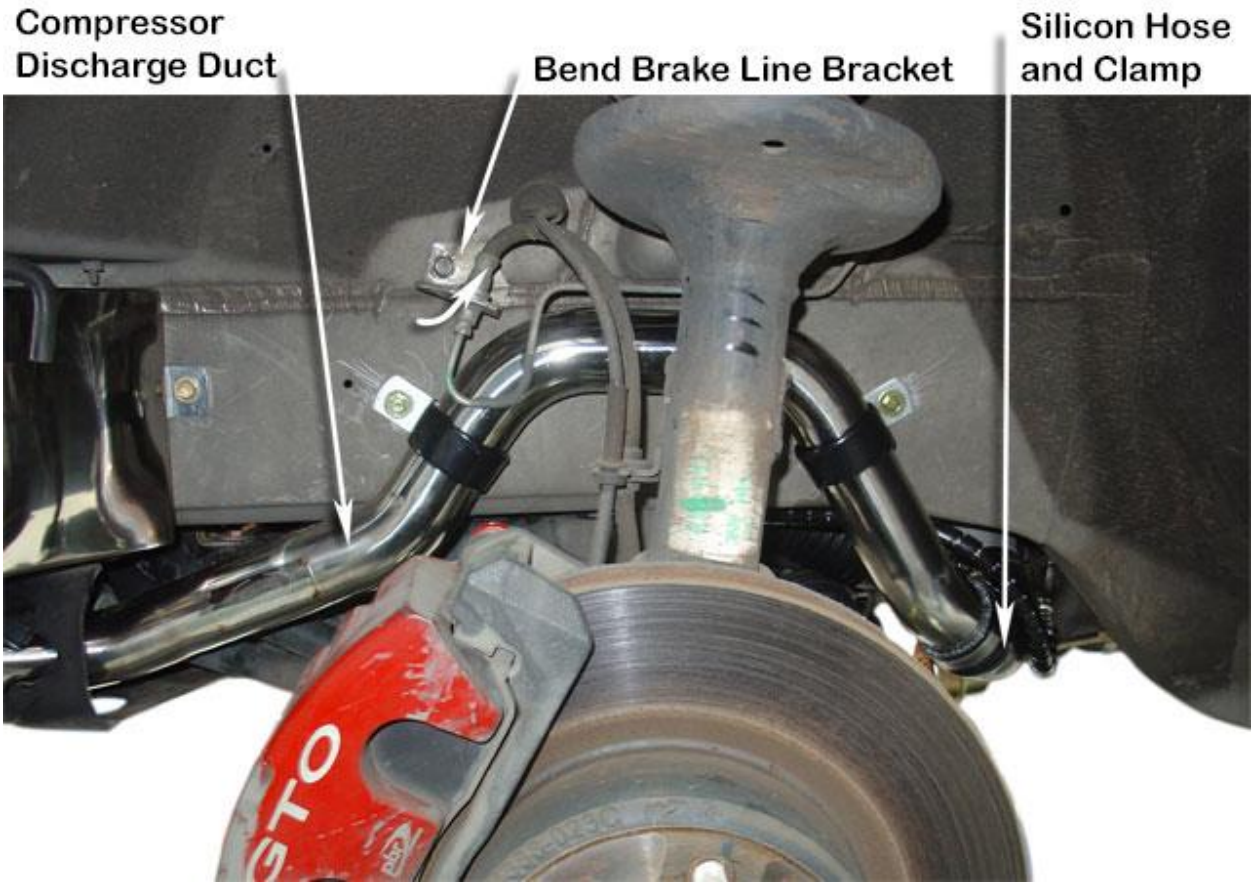
52.) Center punch a location hole in the front face of the right hand side of the sub frame. The numbers shown are in mm, so the 50 equates to 2", while the 42 is 1 5/8".

Using a 2 ½" hole saw, drill as shown. Clean up all edges and paint to prevent corrosion.

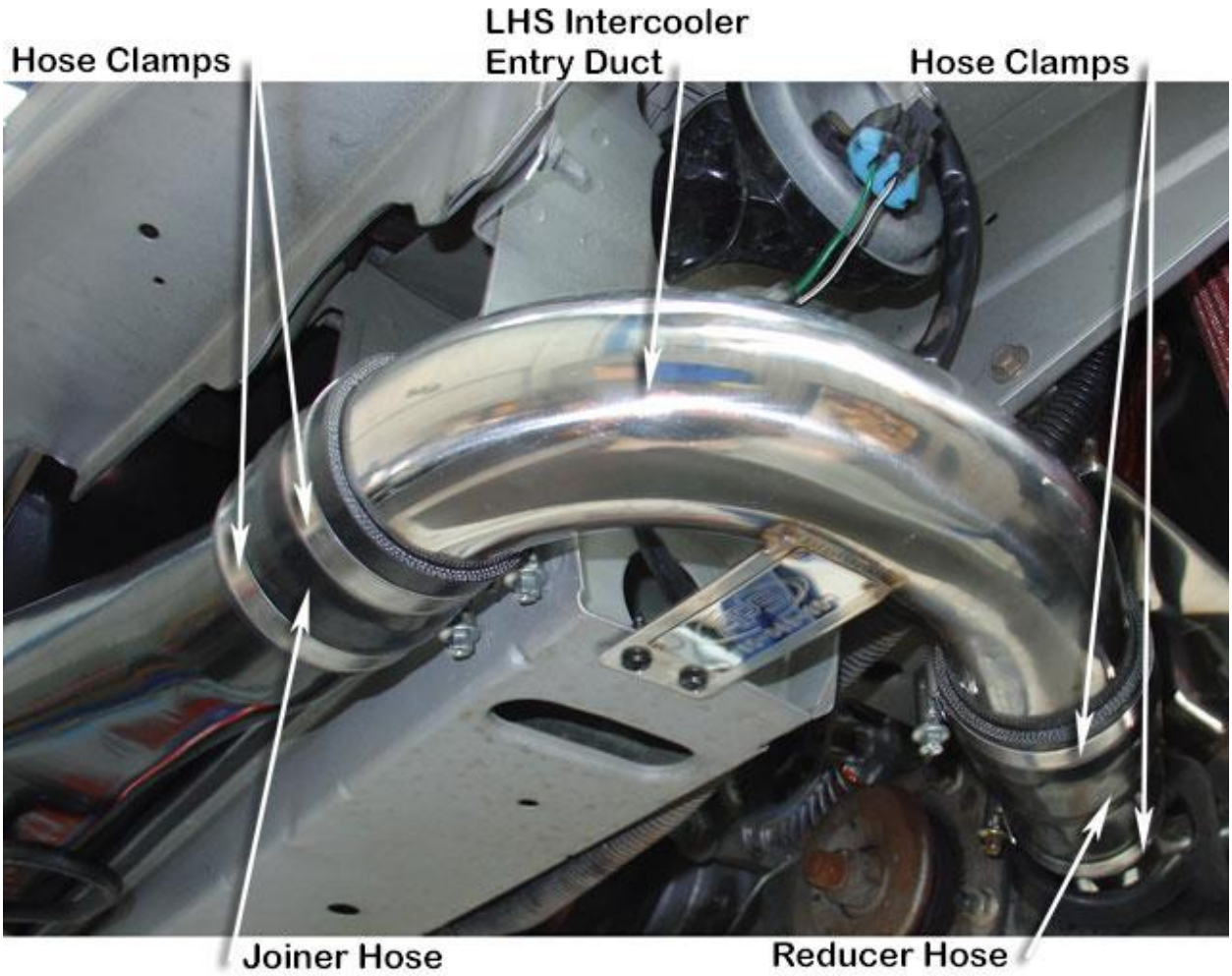
53.) Install the rubber edging, cut to fit from length provided, as shown. Repeat the preceding steps on the LHS frame rail of the car.



54.) Unbolt the stock brake line bracket and install the left hand side stainless steel compressor discharge duct through the new hole in the front of the cross member as shown. Attach to the compressor discharge port using 2” silicone 90 degree elbows and 2” T-bolt clamps. Do not install P-Clamps or stock brake line bracket yet.



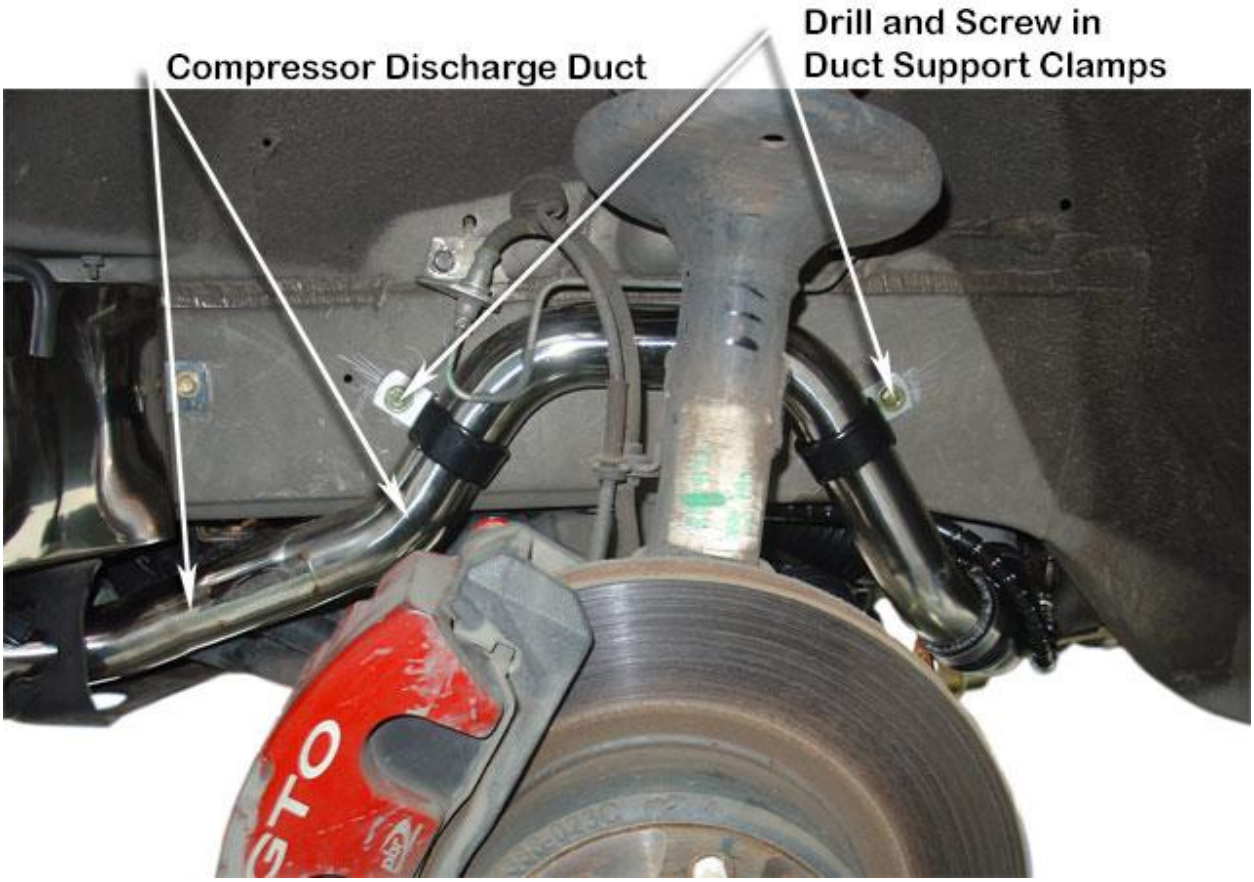
55.) Install left hand side stainless steel intercooler inlet duct, 2"/2 ½" silicon hose reducer, 2 ½" silicon hose joiner, three 2.5” t-bolt clamps and one 2” T-bolt clamp.



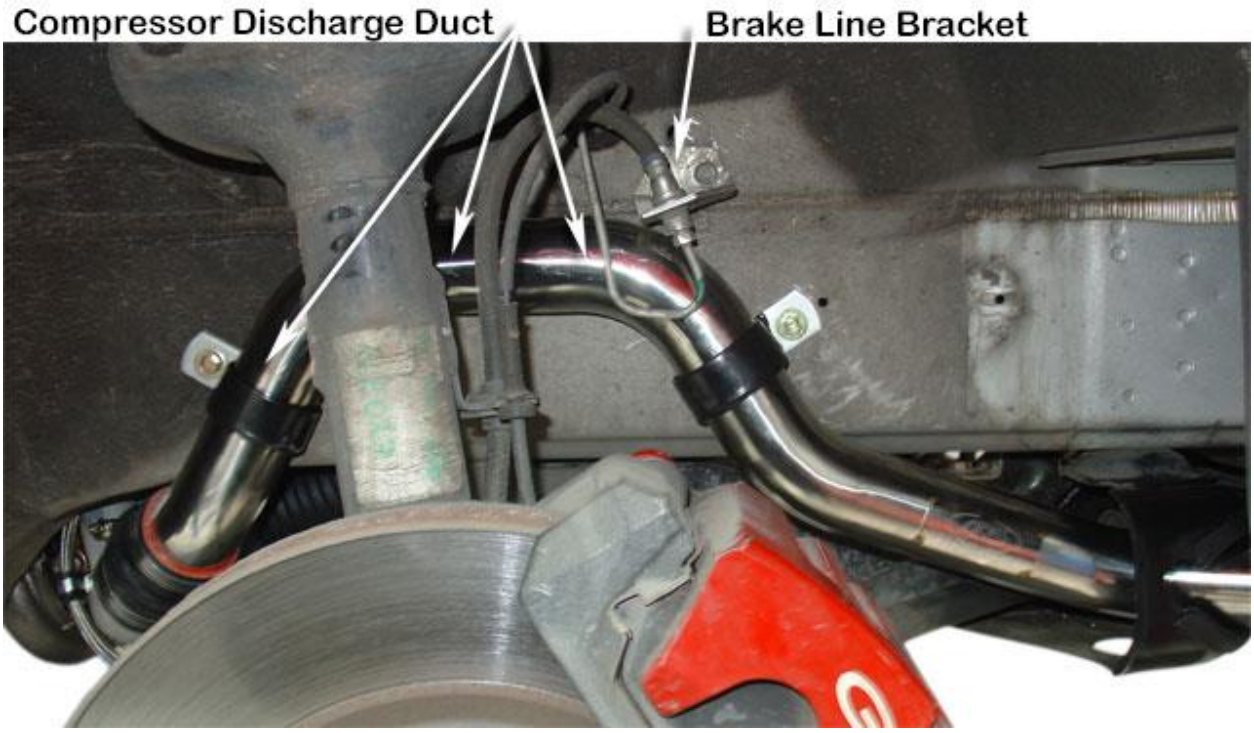
56.) Drill 3/16" holes and install P-Clamps using #14 self tapping screws, as shown.

Bend the stock brake line bracket from the stock 45 degrees to 90 degrees and carefully bend the brake line to clear the compressor discharge duct.

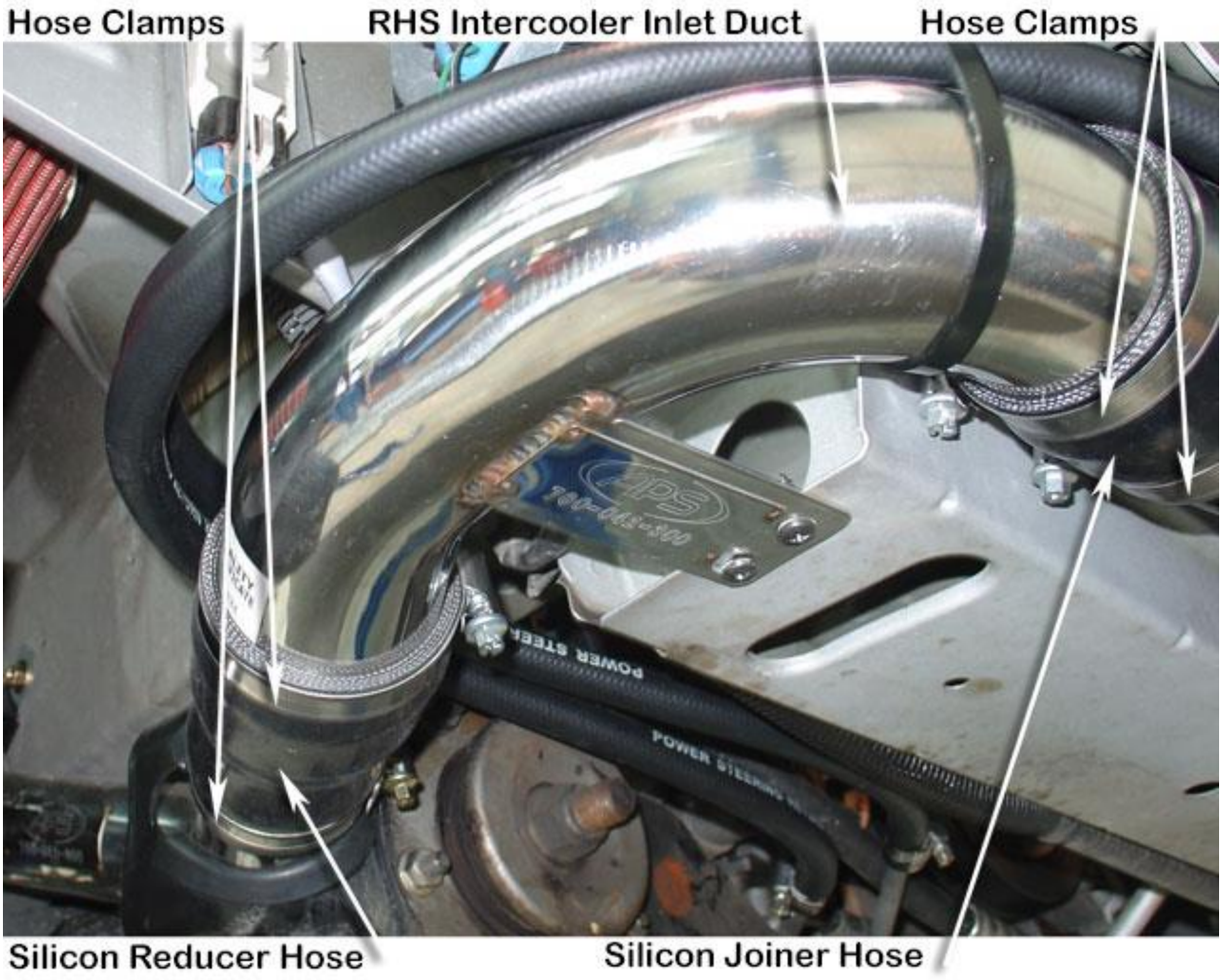
Re-install the modified brake line bracket.



57.) Unbolt the stock brake line bracket and install the RHS stainless steel compressor discharge duct through the new hole in the front of the cross member as shown. Attach to the compressor discharge port using the 2” silicone hump hoses and 2” T-bolt clamps. Do not install P-clamps or stock brake line bracket yet.



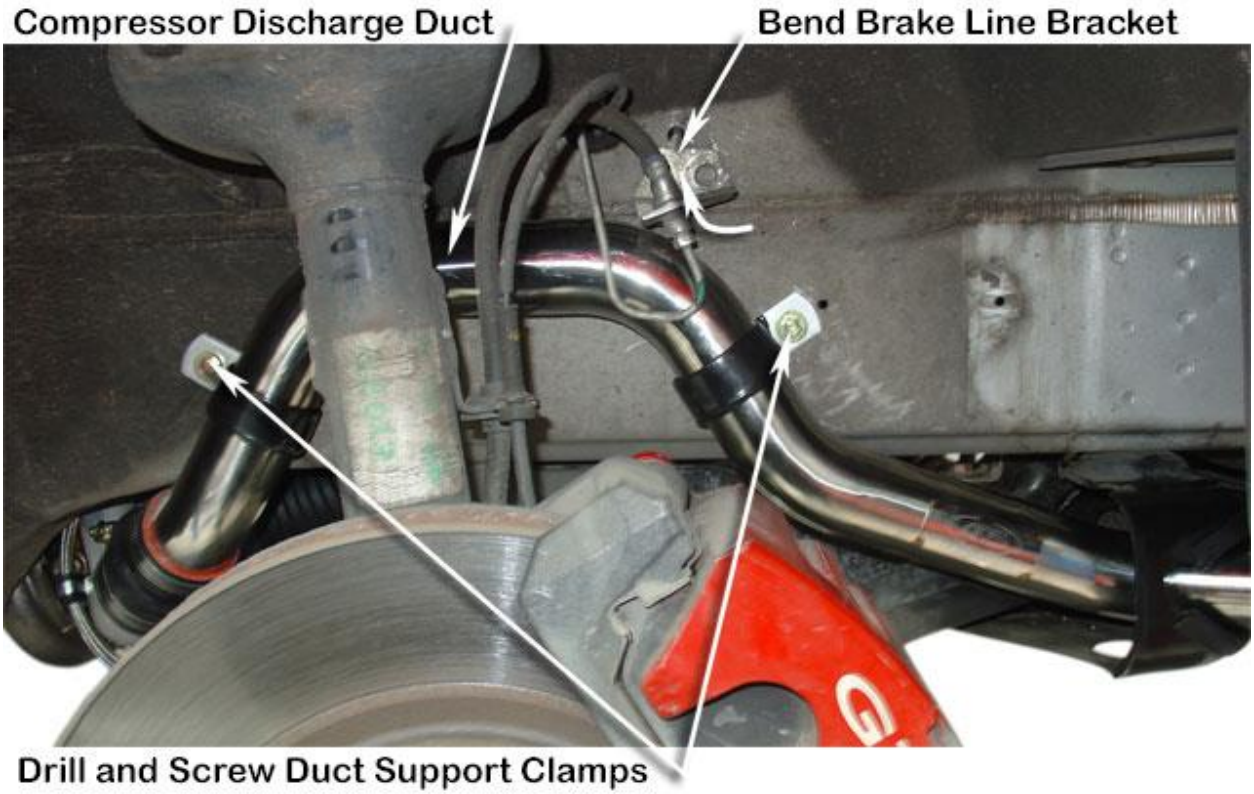
58.) Install the RHS stainless steel intercooler inlet duct, 2”/2 ½” silicon hose reducer, 2 ½” silicon hose joiner, three 2.5” T-bolt clamps and one 2” T-bolt clamp.



59.) Drill 3/16” holes and install the P-clamps using #14 self tapping screws as shown.

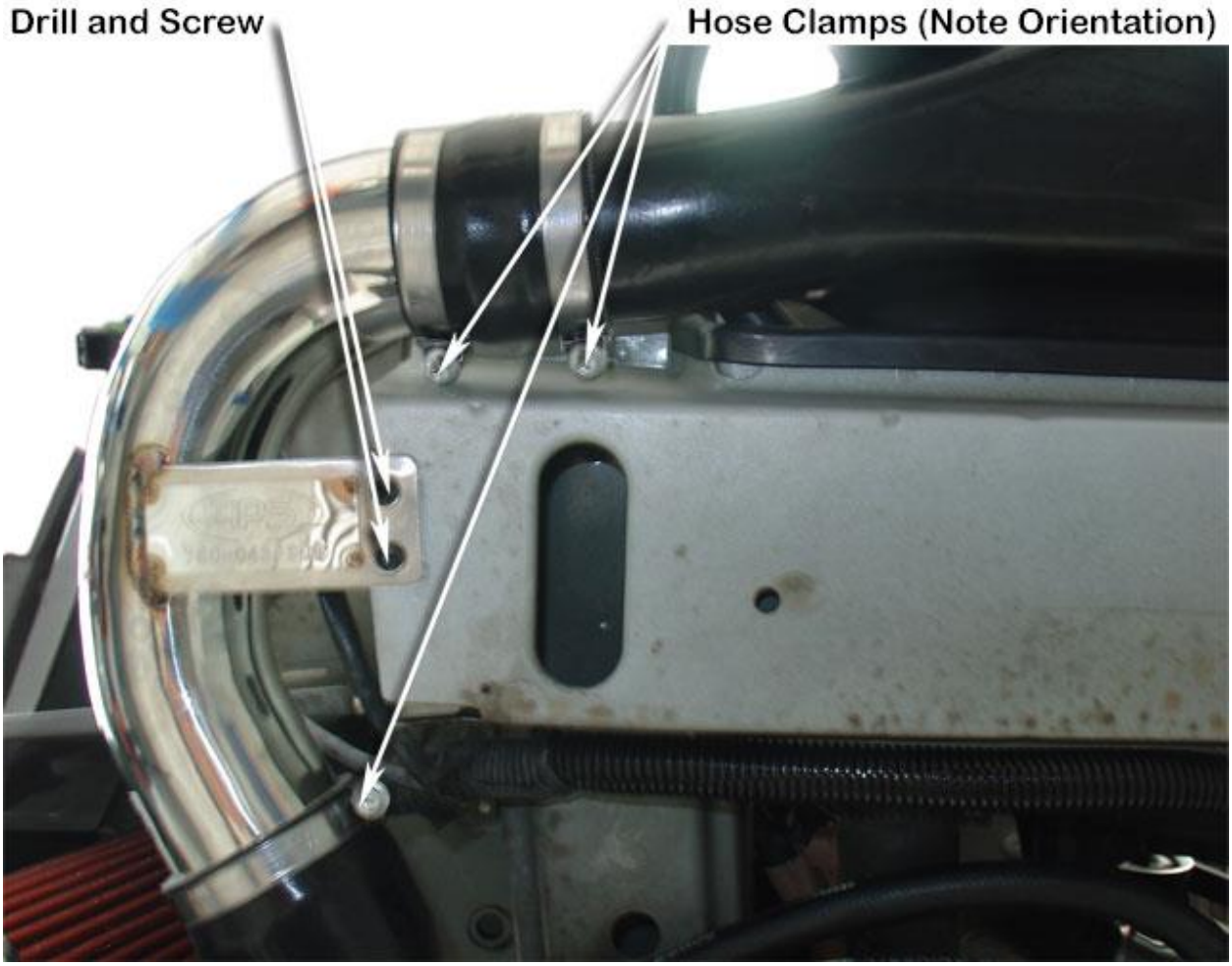
Bend the stock brake line bracket from the stock 45 degrees to 90 degrees and carefully bend the brake line to clear the compressor discharge duct.

Re-install the modified brake line bracket.



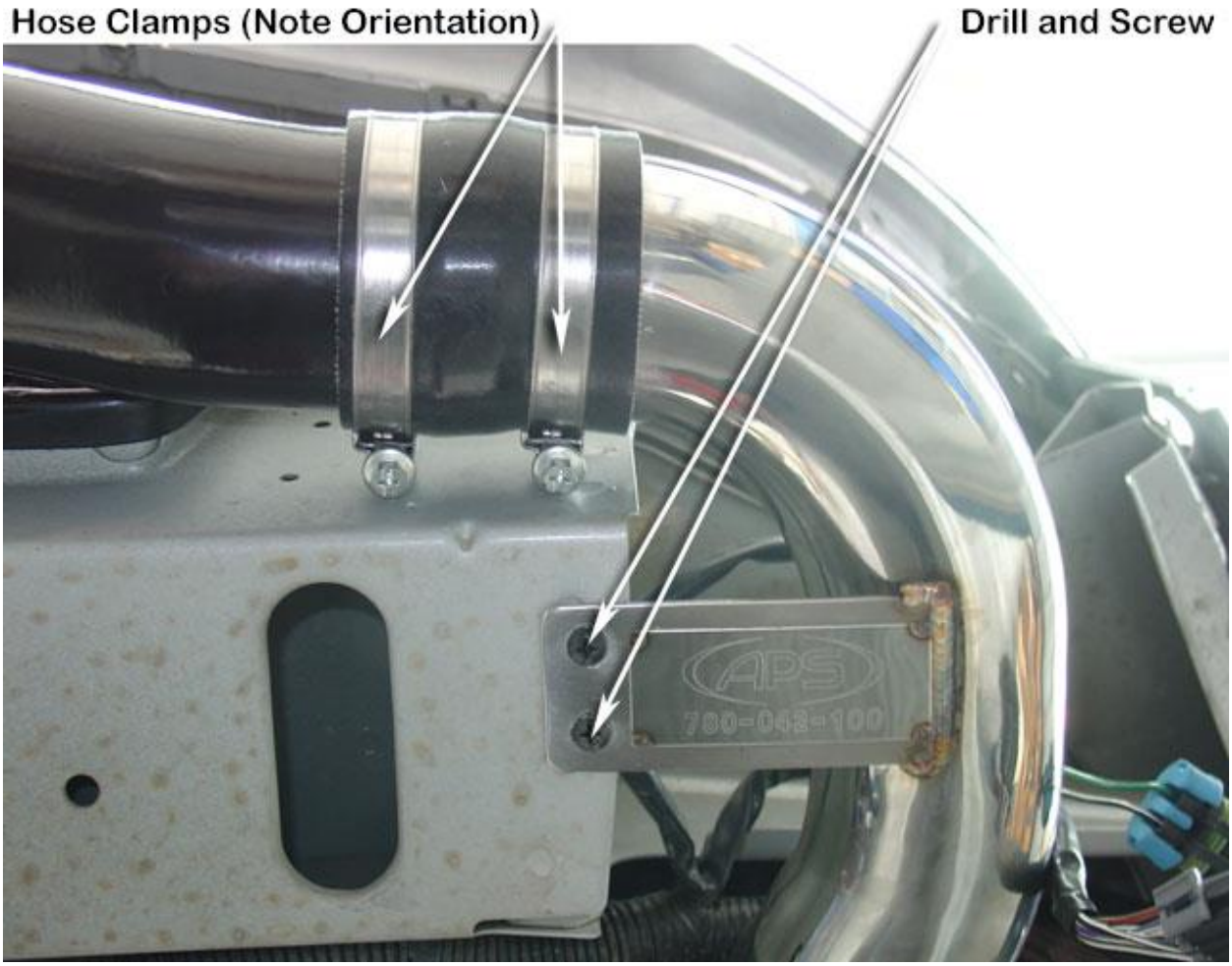
60.) Align the RHS intercooler inlet duct to provide adequate clearance for the hose clamps (to allow field service without front facia removal).

Drill 1/8" holes and secure with #8 self tapping screws as shown.



61.) Align the left hand side intercooler inlet duct to provide adequate clearance for hose clamps (to allow field service without bar removal).

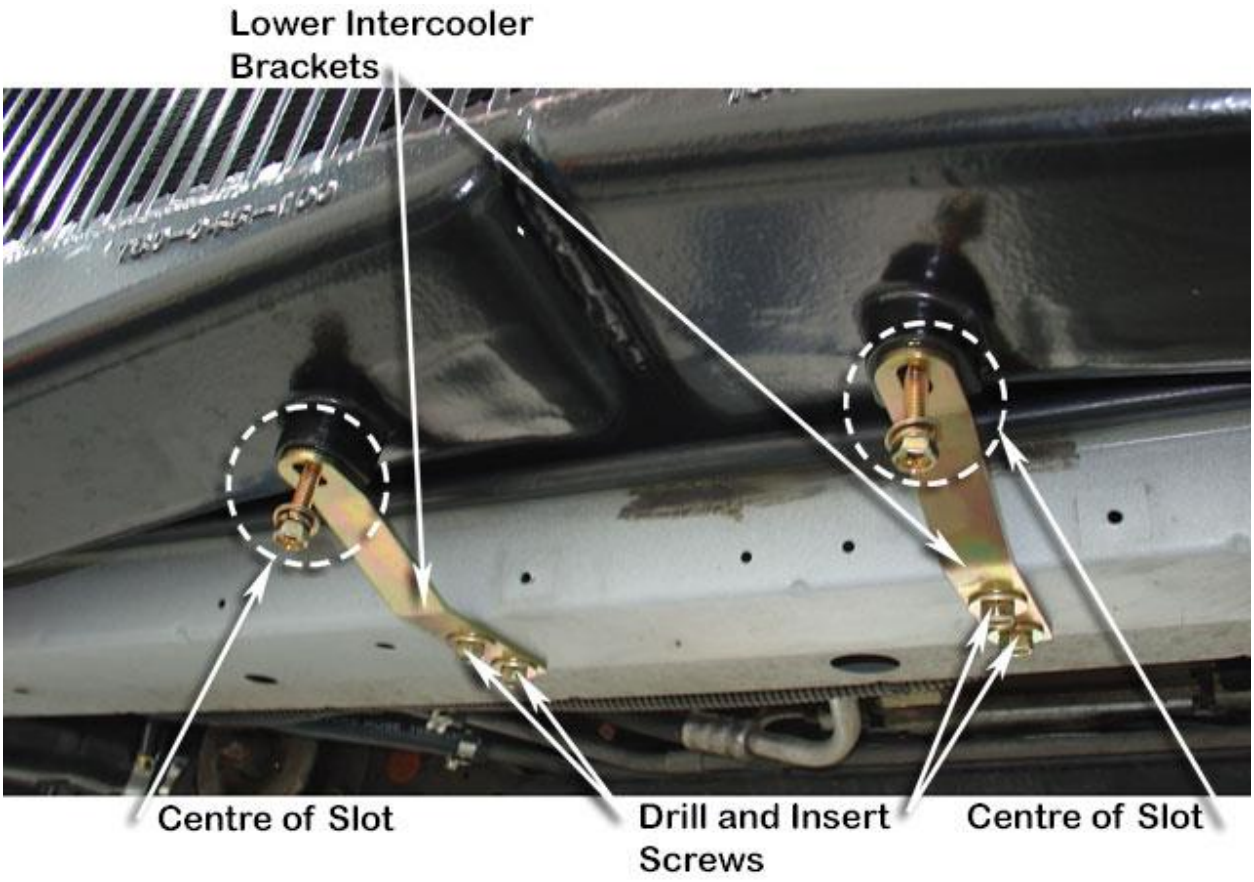
Drill 1/8" holes and secure with #8 self tapping screws, as shown.



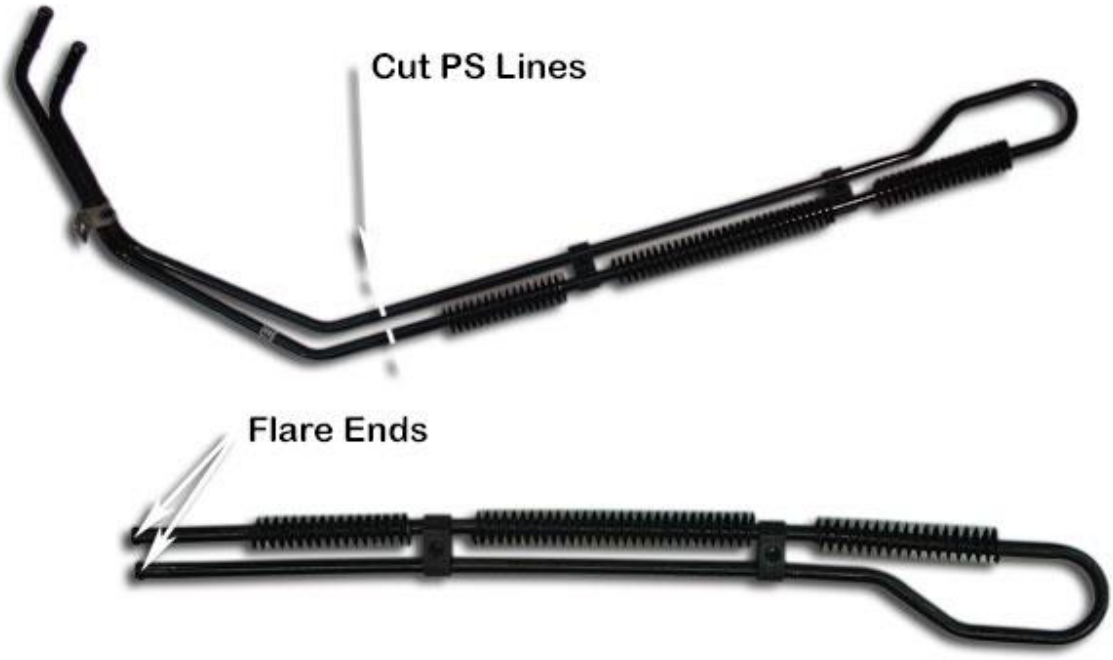
62.) Install the lower intercooler support brackets ensuring that the locating slotted holes in the brackets are located centrally relative to the bolt.

Drill 3/16” diameter holes and secure with #14 self tapping screws, as shown.

The seemingly long 6mm x 1.0 x 30mm bolts shown, are correct as they are subsequently used to also mount the revised power steering cooler.



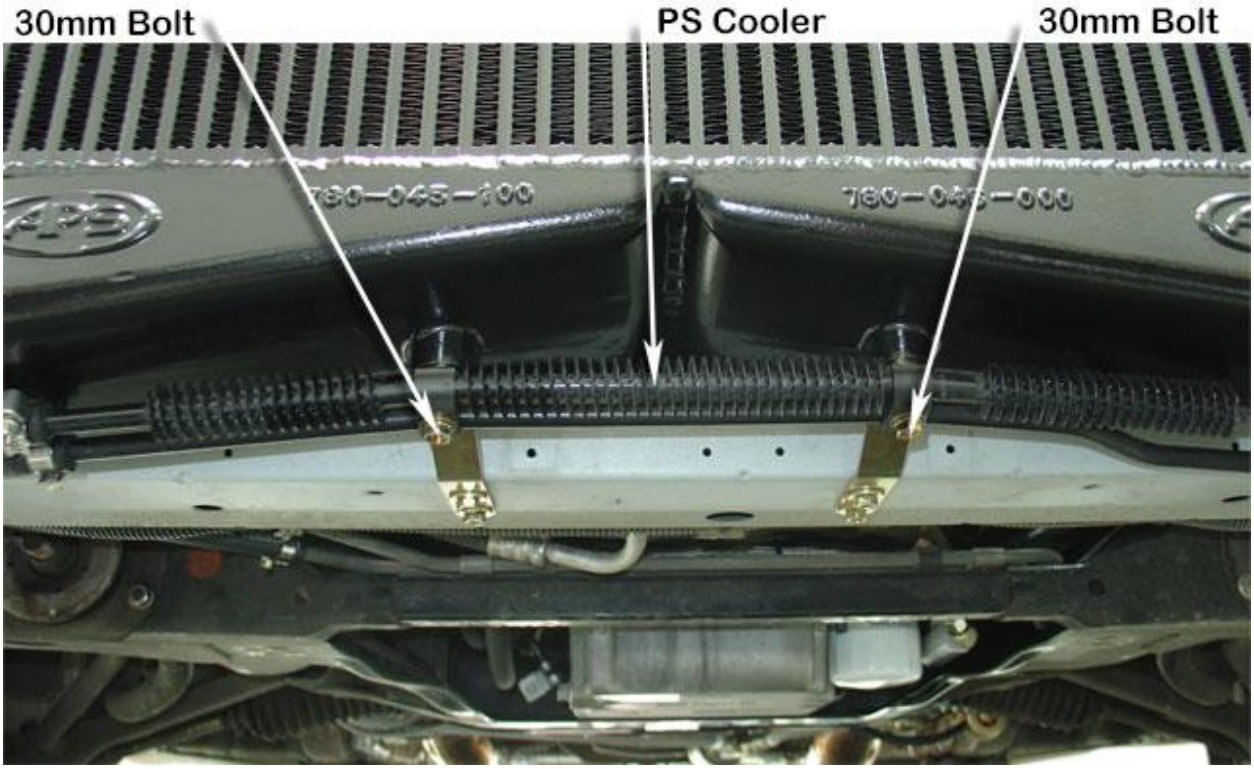
63.) Cut both stock power steering cooler pipes 2 ¾” from end of cooling fins. Flare the ends using ball flaring tool.



64.) Lightly bend the power steering cooler for clearance from lower intercooler end tanks.

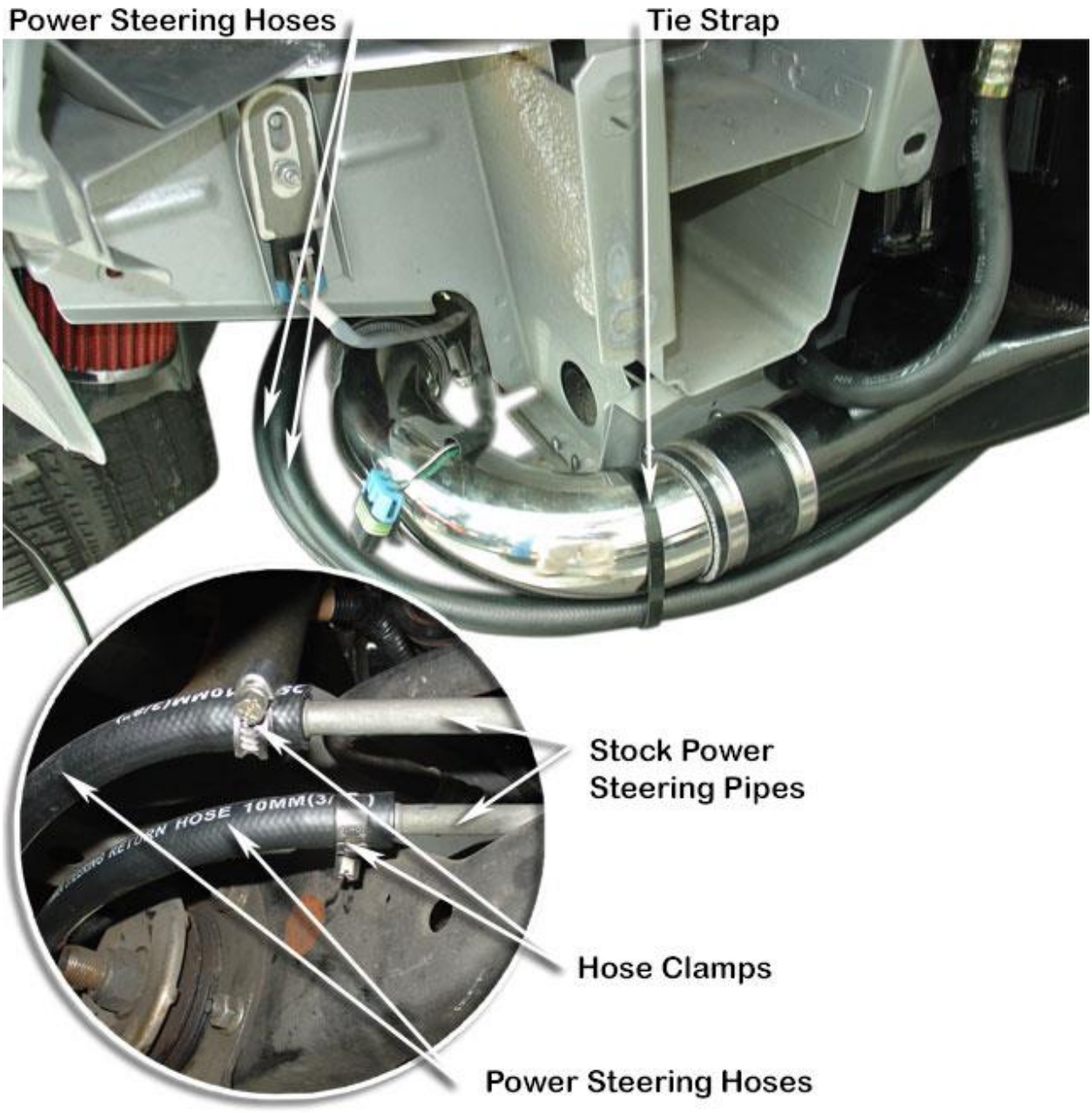
65.) Install the power steering cooler to the mounting bosses on the bottom of the intercooler. Use the previously mentioned 6mm x 1.0 x 30mm bolts, going

through the stock power steering cooler mounts, through the lower intercooler brackets and into the intercooler bosses.



66.) Install the power steering hoses, 3’ lengths cut to fit from the supplied length, together with 10/16 hose clamps between the stock pipes in the engine compartment and the modified power steering cooler.

Route the power steering lines alongside the right hand side intercooler inlet duct, using tie straps for mounting purposes, as shown.

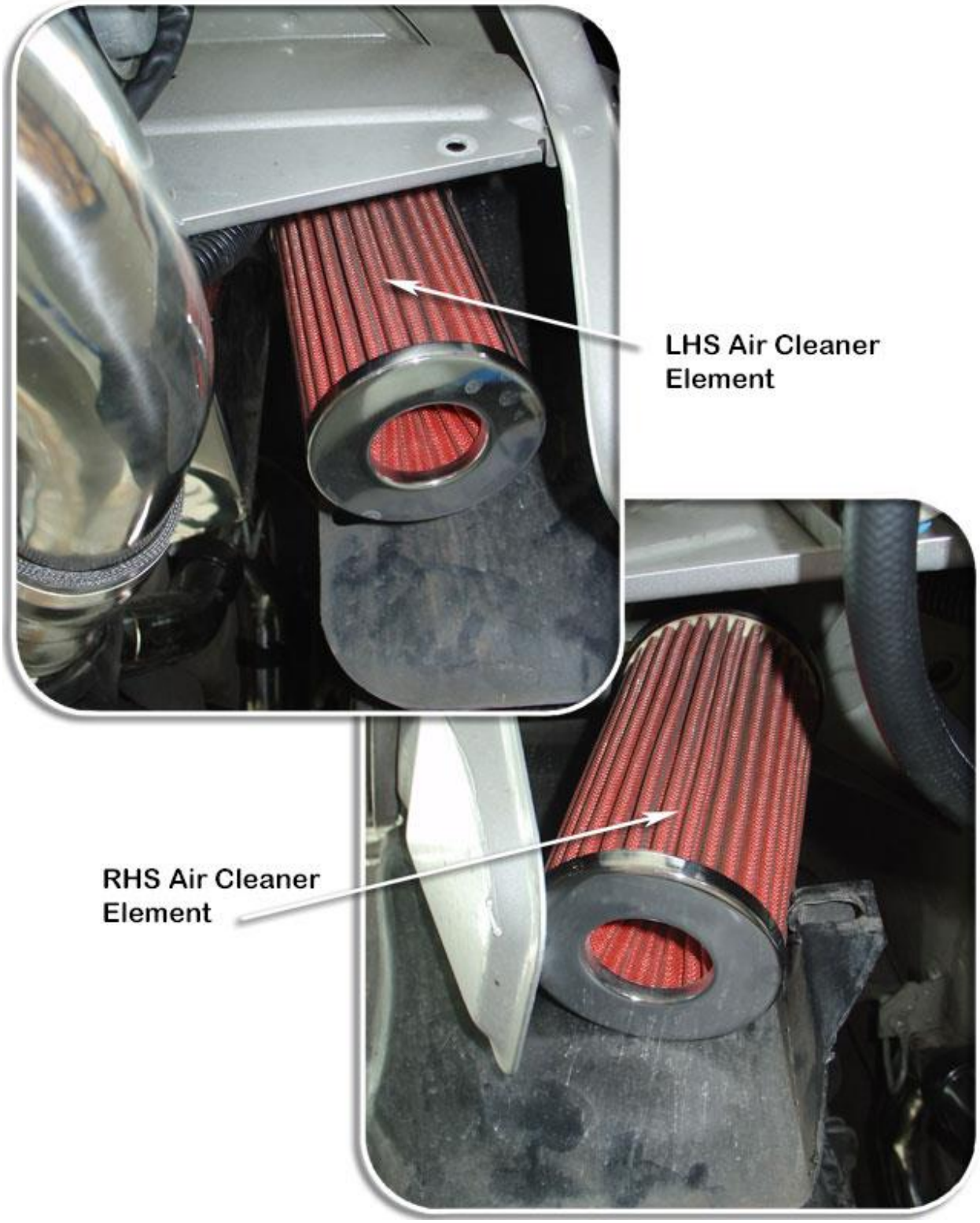


67.) Install the RHS air cleaner element on the end of the RHS stainless steel compressor inlet duct and retain using a 50/70mm hose clamp.

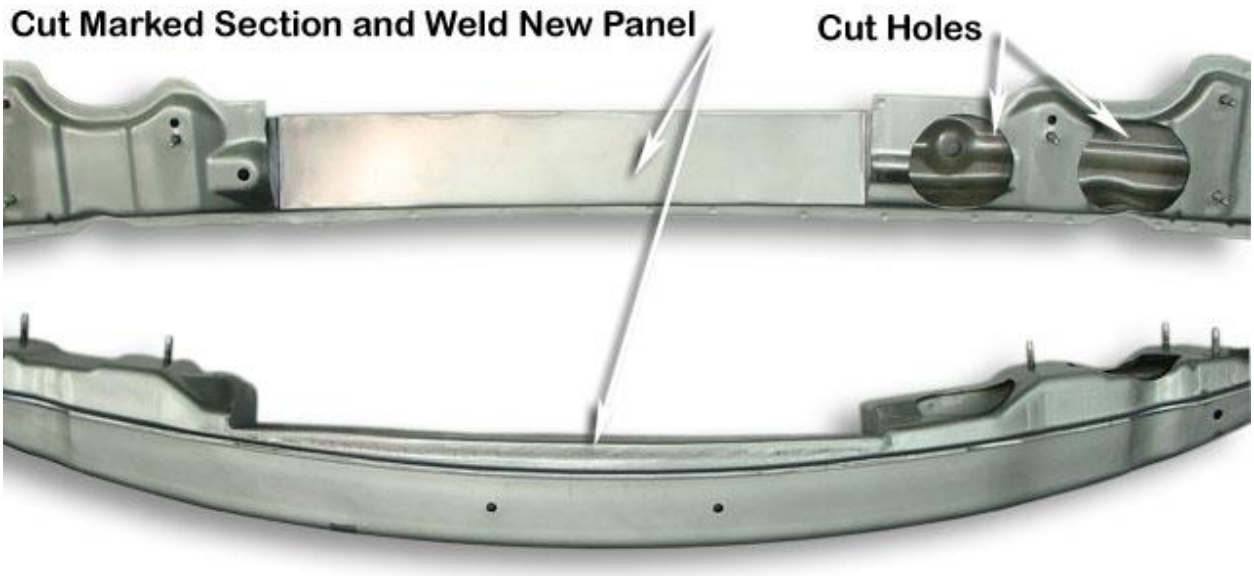
NOTE Ensure that the orientation of air cleaner element fits inside inner splash shield.

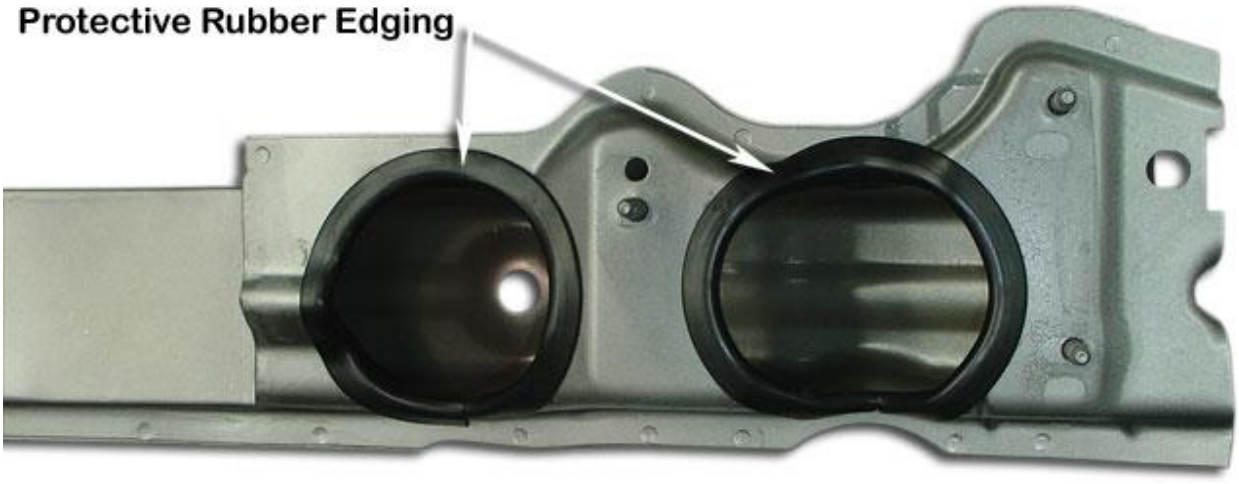
Install the LHS air cleaner element on the end of the LHS stainless steel compressor inlet duct. Retain with a 50/70mm hose clamp.

NOTE Ensure that the orientation of air cleaner element fits inside inner splash shield.

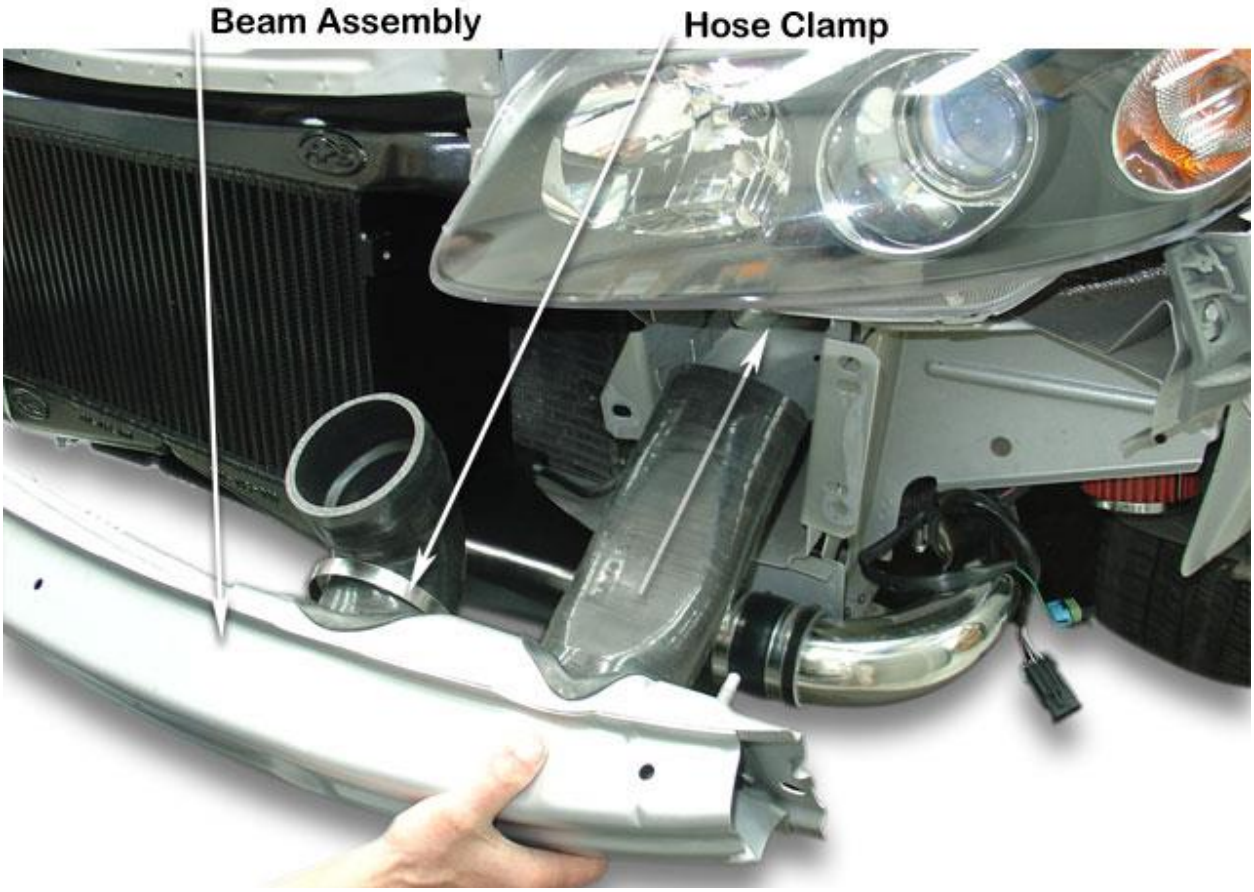


68.) If desired to retain the front crash bar around the intercooler, it will require trimming to fit around the intercooler, as well as (2) holes cut to route the silicone charge tube through and out of the crash bar as shown in the photo below.






Insert Silicon Hose Through Beam


Beam Assembly
Hose Clamp

69.) Installation of the 1-piece aluminum Intercooler outlet charge tube. Secure to the intercooler outlet custom silicone coupler using the supplied T-bolt clamps and the other end to the Throttle body using the supplied Silicone coupler and T-bolt clamps. This system is designed to be used with a Speed Density tune, removing the stock MAF sensor.

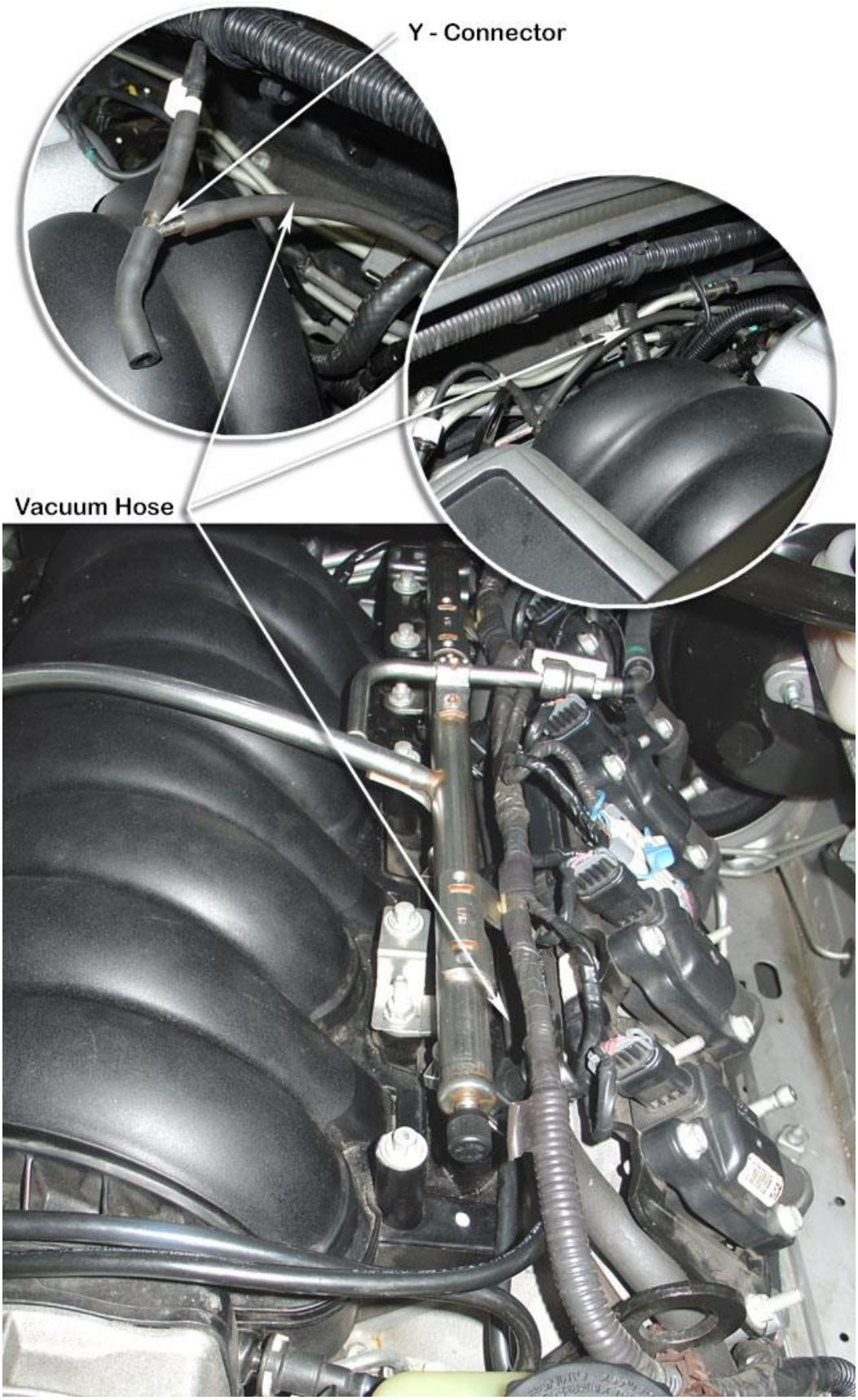
70.) Install the 50mm BOV to the flange welded onto the Intercooler outlet charge tube using the supplied O-ring seal and clamp in the BOV box. Install the supplied banjo vacuum fitting to the top of the BOV ensuring a washer is installed on both sides of the fitting.

71.) Install the supplied Electrical harness for the Oil Scavenge pump by plugging into the Exa pump using the electrical connector. Ground the Black wire to a sufficient chassis ground, and using the fuse tap you will tap into the fuel pump fuse located in the fuse box. The harness has a built in fuse as well as a built in resistor that will keep the pump running for ~20 seconds after key off power to help empty excessive oil from the drain lines after shut down.

72.) Install the stock RHS and LHS horns as shown.
Retain with the stock bolts.

73.) Install the supplied ¼” "Y" piece in the stock vacuum line at the rear of the intake manifold as shown.

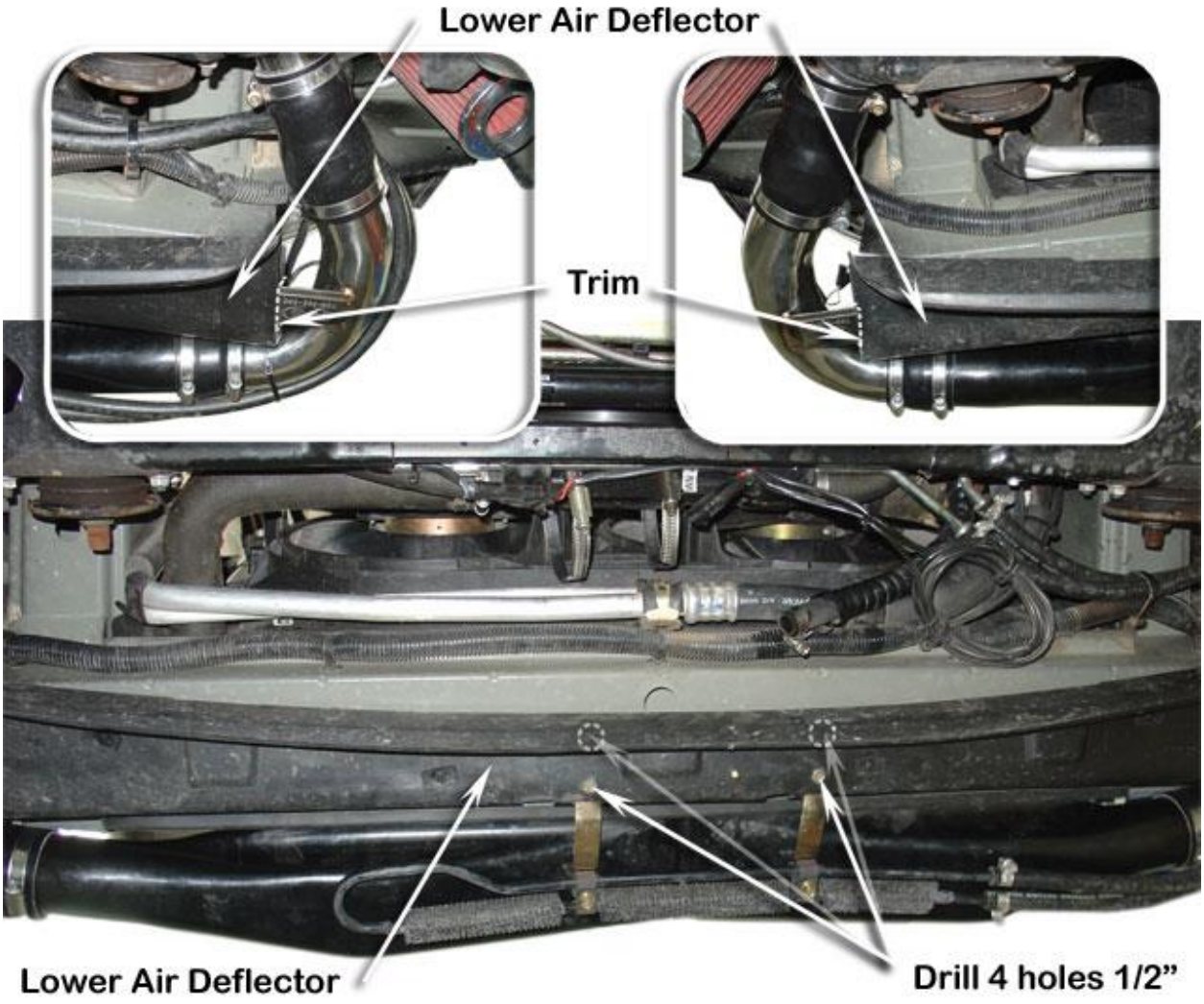
Route 59" length of ¼” vacuum hose cut from the supplied 10’ roll forward on the engine along the inside edge of the left hand side rocker cover and connect the hose to the barb on the end of the BOV.


Y - Connector
Vacuum Hose

74.) Trim edges of the stock lower air deflector to clear the stainless steel intercooler entry duct mounts.

Mark and drill 1/2" holes for clearance to the lower intercooler mounting bracket bolts, as shown.

Check clearances and install the modified lower air deflector.



75.) Install the exhaust system to the turbocharger outlet pipes and retain with OEM nuts/bolts

Before the vehicle can be ran, if you made any changes to the fuel system or engine, you will need to consult your professional tuner for a file prior to start up. This system requires proper fuel system upgrades to support your new desired power levels the twin

turbo kit can provide as well as a professional dyno tune after completion to ensure safe operation of the vehicle with boost.