

LS4

Cartuning Performance Turbo Kit Installation Manual



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LS4 W-BODY TURBO KIT INSTALLATION GUIDE

Congratulations on your purchase of a Cartuning Performance Turbo kit! The Cartuning Team would like to thank you for making the decision to increase the performance of your vehicle the smart way.

We require that the installer fully read and understand these installation instructions before continuing with installation of the turbo kit. Read through it multiple times if necessary, print it for use during installation or keep a laptop nearby throughout. Be sure to have an understanding of what tools are necessary as well so you can be properly prepared. Although Cartuning Performance quotes a straightforward installation time of about 10 hours, we recommend that you set aside a full 2 days for any unexpected issues which may arise (rusted factory bolts that could break, etc). Note that this manual was written with a specific order of operations intended. Adhering to this order without skipping ahead will save a lot of headache, and ensure a smooth job.

Cartuning Performance products are intended for off-road use only. We do not warrant the durability/longevity/effect of these products on any portion of the customer's vehicle. All liability and any possible issues arising are implied to be at the customer's expense as the products are required to be installed by a licensed mechanic or other qualified professional.

All Cartuning Performance products are warranted for a period of ninety (90) days from the date of purchase against defects in materials and workmanship. The warranty provides for a replacement product or refund only, and does not cover labour or any other costs. Purchaser and Installer assume all liability with regard to any and all damages in any way related to the purchase, installation and/or use of these products.

The LS4 W-body turbo kit is designed to be installed on a 100% stock (unmodified) vehicle. If your vehicle has any powertrain modifications prior to installation of this product, it is highly recommended to call Cartuning Performance technical support BEFORE starting work on vehicle. This turbo system should also not be installed unless your vehicle is in good operating condition and properly maintained. Parts such as primary o2 sensor, and fuel filter should be changed at regular intervals and should be in good working condition or replaced at time of turbo kit installation.

Minimum fuel requirement for this turbo kit **is always an octane rating of 91 (R+M)/2**. This octane should be present in the system at the time of the kit being installed. Any lower octane rating can lead to severe engine damage. If you don't have this octane locally available, talk to Tech support about modifying boost levels of your turbo kit to keep things safe.

Optional components to this kit are a transmission cooler. Cartuning Performance does not include a transmission cooler with each turbo kit (although a shift kit is included). You may want to consider a cooler for your vehicle if you drive and live in a high heat climate.

Required basic tools for installation:

- Full 1/4" and 3/8" drive socket set w/ 6mm allen socket
- Open end/box wrench set (imperial/metric)
- Ratchet wrenches are recommended but not necessary
- 1/8"-27 NPT tap
- Screwdriver set complete
- Pliers sets
- Sawz-all, or angle grinder/plasma cutter
- Drill w/ complete drill bit set.
- Permatex ultra-copper silicone
- Quality Jack and Stand set
- Die-electric grease
- Exacto knife

1

Remove engine cover.

Disconnect negative battery terminal loosening 10mm nut.



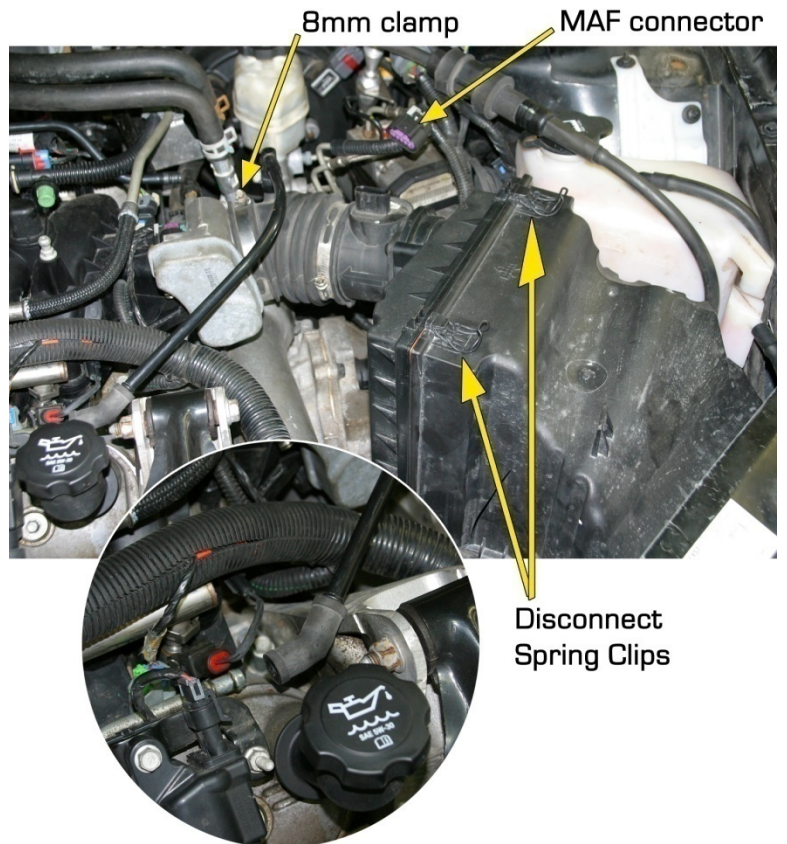
2

Pull off PCV connection at front valve cover (just above oil fill).

Loosen 8mm clamp on throttle body.

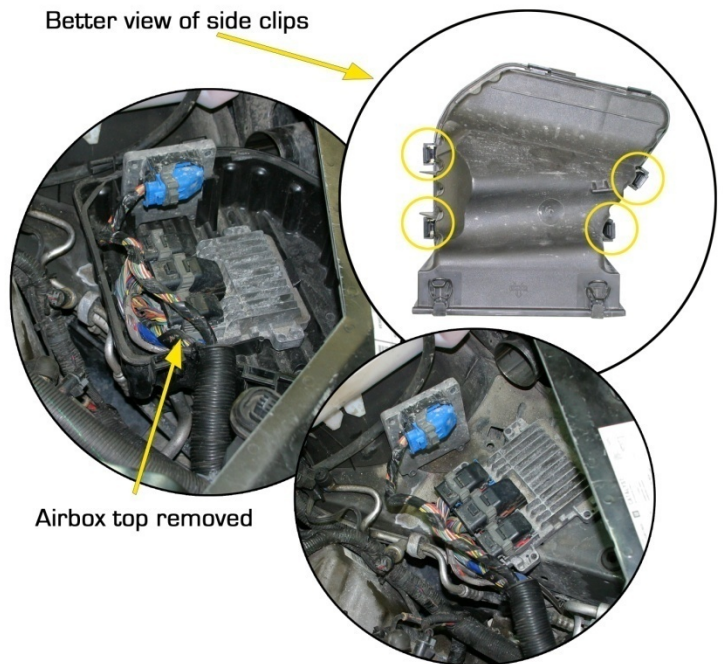
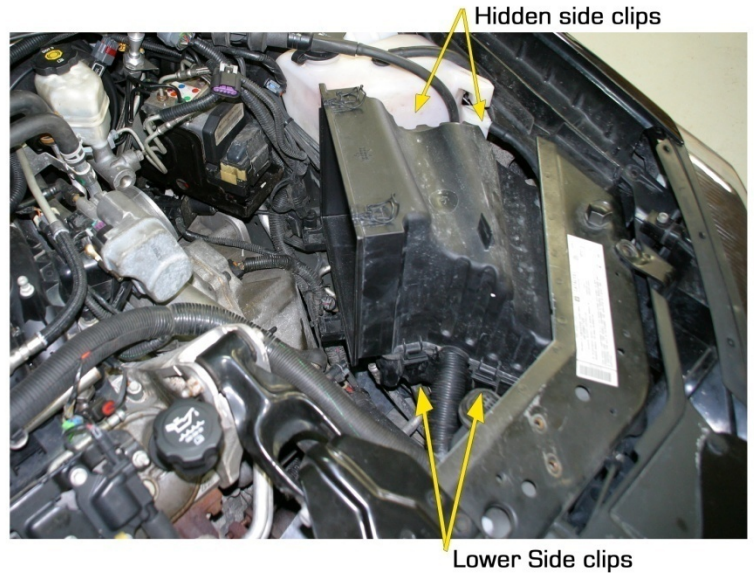
Disconnect Mass Air Flow electrical connector.

Open top of air box spring clips, and remove air duct assembly with paper filter and pcv tube.



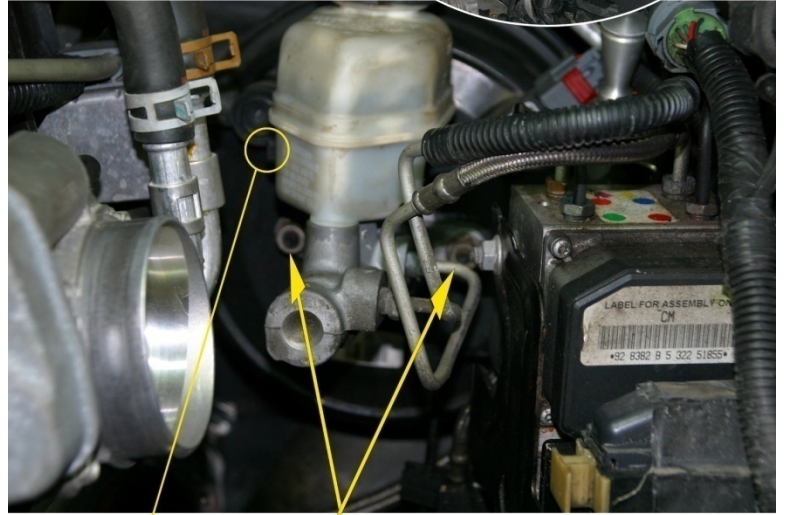
Remove "top" of airbox by releasing the (4) lower side clips and pulling up to separate.

Unclip PCM/TCM from lower airbox cavity and remove lower cavity, leaving the PCM/TCM plugged in and resting on fender tray.



4

Remove 2 x 15mm nuts holding master cylinder in place, and swing master cylinder out of way as shown.



Disconnect
low level fluid connector

Remove 2x15mm nuts

5

Remove 3 x 10mm bolts retaining heat shield on front of crossover pipe and set aside both the shield and bolts.



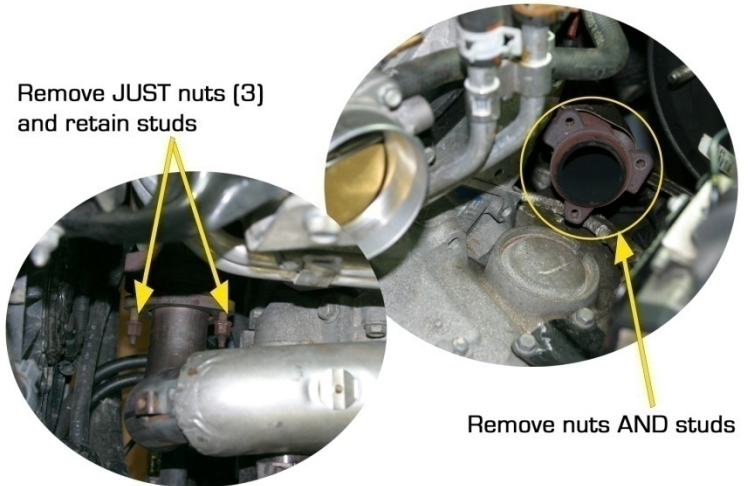
Remove



6

Remove 6 x 13mm nuts holding the crossover pipe to front and rear manifolds and set crossover pipe aside (no longer needed). *TIP: soak all of these studs/nuts with WD-40 for at least 30 mins prior to loosening if they are stubborn.*

Ensure to leave the three studs installed in the front manifold, but remove the rear studs.



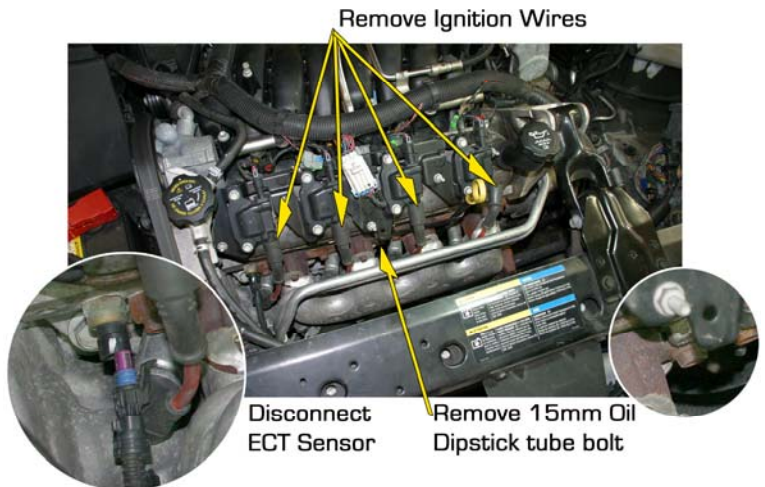
7

Remove front ignition wires pulling only from the boots. *TIP: twisting at the boot helps release seized wires.*

Disconnect coolant temp (ECT) sensor.

Remove front spark plugs. *TIP: blowing compressed air around plugs before removal ensures no debris gets in motor!*

Remove 1 x 15mm bolt and pulling up, remove engine oil dipstick (note: there will be no spillage of oil)



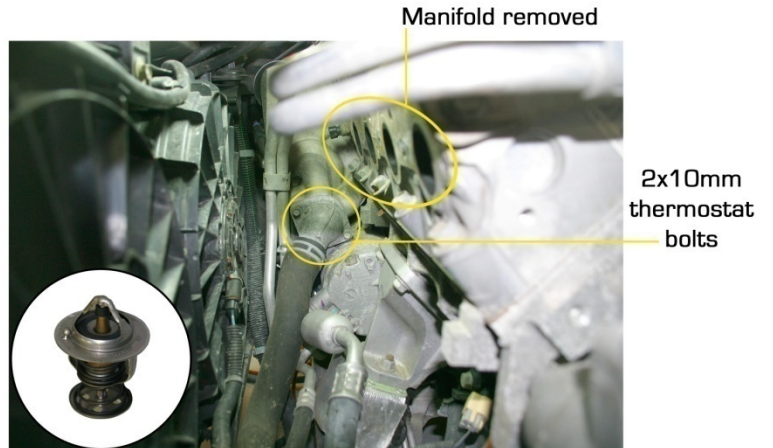
8

Remove 6 x 13mm front manifold bolts as shown, removing both the front manifold and steel gasket.



9

Thermostat replacement. Place large catch can under thermostat housing area, as you will lose coolant. Remove 2 x 10mm bolts holding in housing. Remove T-stat and o-ring around t-stat. Move o-ring to new provided T-stat, and install in housing, replacing 2 x 10mm bolts and torquing to about 11 ft/lbs. Add lost coolant back to system at radiator fill.



10

Oil Feed installation. Prepare oil feed block by using blue loctite on NPT threads of steel oil feed adaptor. Holding oil feed block in vise, tighten the adaptor with a 13mm wrench.

Tighten the straight end of feed line (brass) into steel adaptor. Take care not to overtighten either of these connections. Clock oil line so that when held vertical, 90 degree fitting on oil line points to the right.



11

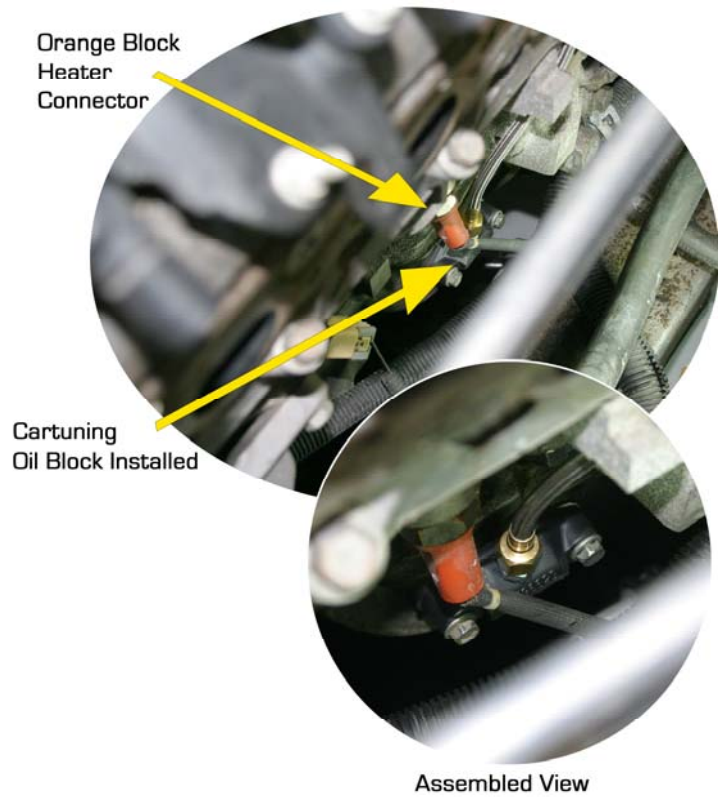
Disconnect orange electrical connection for block heater by pulling out of plug. Remove 2 x 10mm oil gallery bolts and discard block. Gasket should stay in tact on engine block side, if not (rips) use a fresh gasket. Install new block with oil feed line using OEM 2 x 10mm bolts, tightening 1/16 turn past snug. Re-connect block heater plug (orange).

Re-install front exhaust manifold (and gasket) being sure to antisieze all bolts. Install bolts tight. Re-install oil dipstick and tube along with 15mm short bolt.

Install new spark plugs provided at gap 0.038". Also be sure to use anti-sieze here and do not overtighten.

Re-place ignition wires using die-electric grease.

Re-connect ECT sensor.

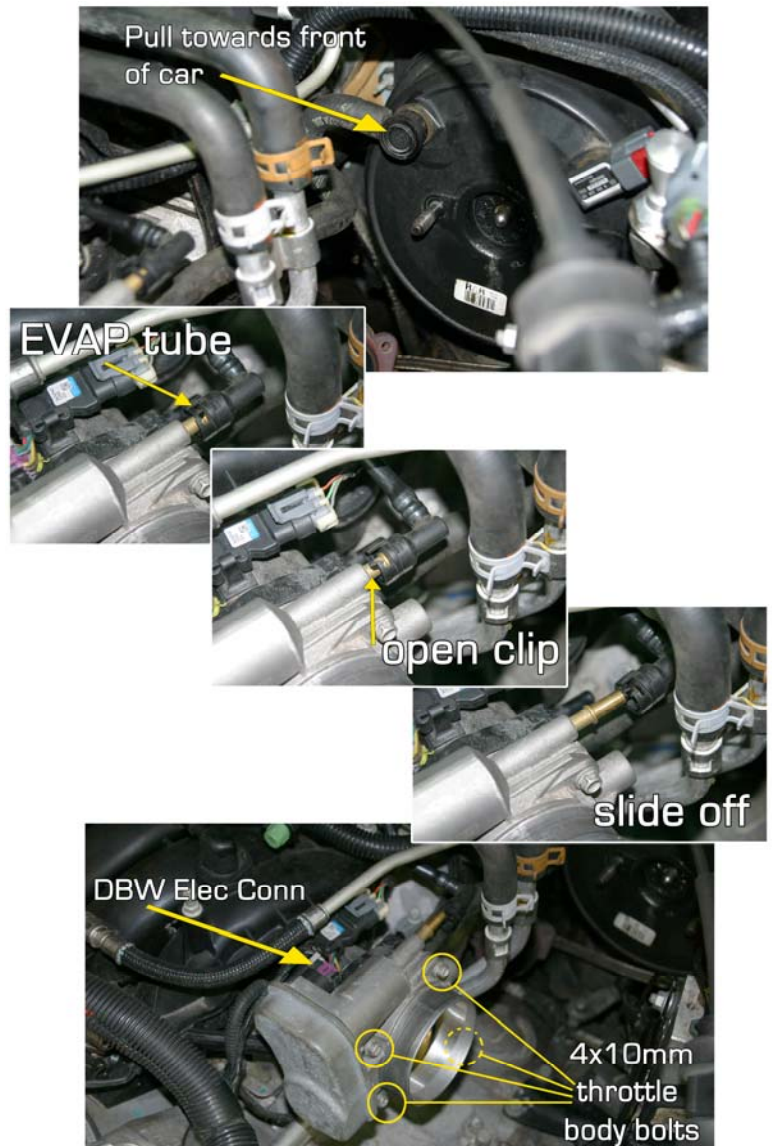


12

Disconnect brake booster vacuum line pulling back on plastic check valve.

Disconnect EVAP solenoid tube from throttle body, and drive-by-wire electrical connector.

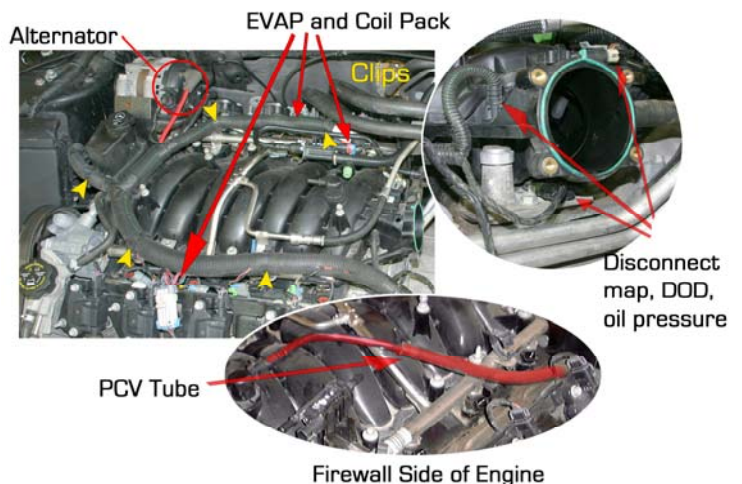
Remove 4 x 10mm throttle body bolts, and set throttle body aside.



13

Open all plastic clips (round) holding main wire harness on to motor and unplug : fuel injectors (8), evap solenoid (red plug), map sensor, alternator, coil pack harness (2), oil pressure, and DOD connectors.

Remove PCV tube from top of intake plenum which leads to rear valve cover and set aside.

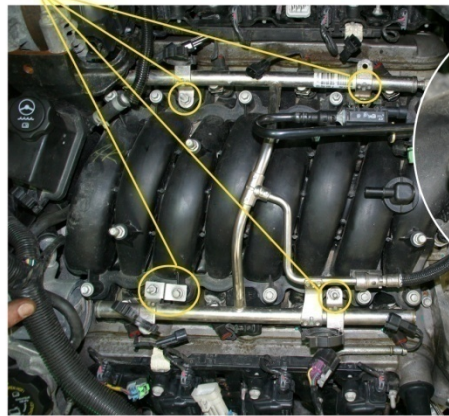


14

Depress white evap clip and disconnect evap line.

Remove 4 x 10mm and 1 x 8mm bolts to remove and swing away fuel injector rail. Evap solenoid and bracket will also remove at this time.

Remove 4x10mm and 1x8mm bolts



Depress white clip to remove tube

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Intake manifold removal. Remove 9 x 8mm bolts holding intake manifold in place and remove intake manifold from engine. *TIP: don't blow out this area from debris, as the injector holes are open. Vacuuming is the only solution if you have lots of sand, dirt/debris to remove.*



16

Drill 7/32" hole as shown for boost reference future use.

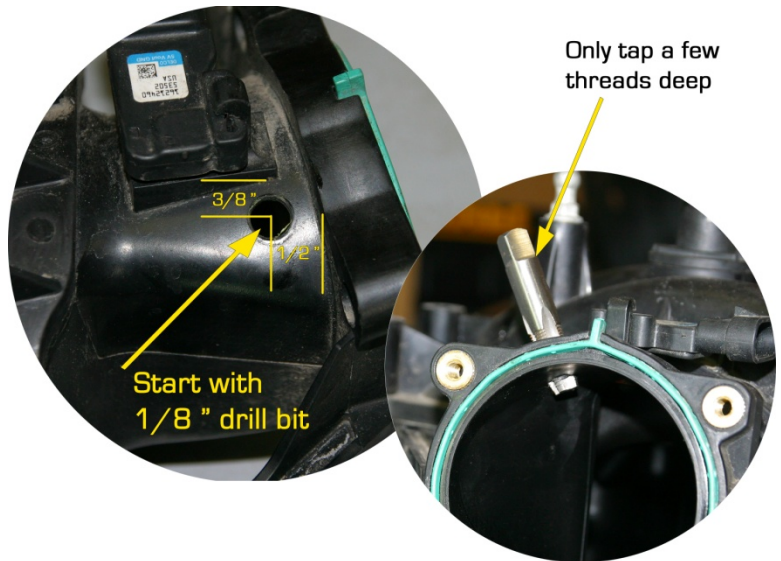


17

Alky nozzle prep. Use the following drill bit sizes in order to drill and locate hole for nozzle installation. 1/8", 3/16", 1/4", 5/16", 11/32". Locate hole 1/2" from back of throttle body mount and 3/8" from map sensor mount as shown. Be sure to drill perpendicular to plastic.

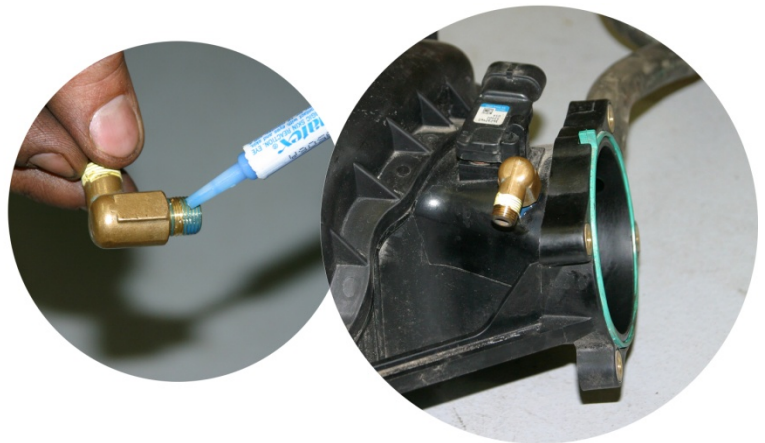
Tap hole using 1/8"-27 NPT tap, being sure not to tap too far (reference photo) and to be gentle with plastic.

Clean all plastic debris from inside intake manifold.



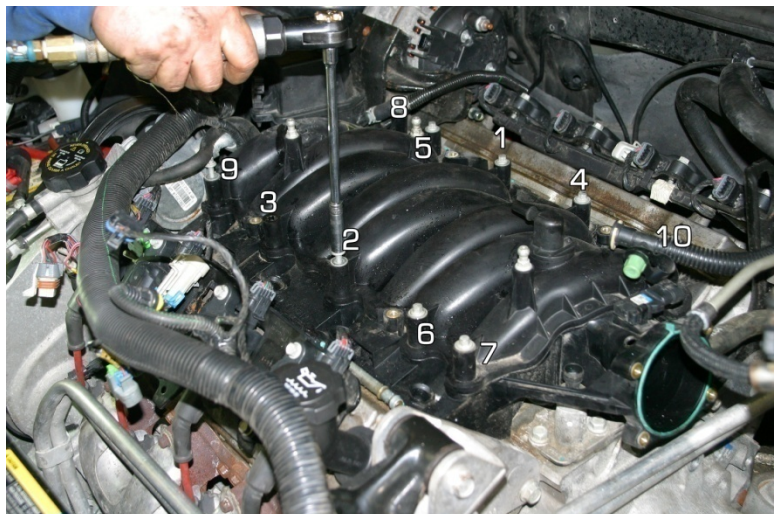
18

Alky nozzle installation. Apply blue loc-tite to threads of alky injector and install injector into newly threaded hole. Tighten down until just past snug and orient as shown.



19

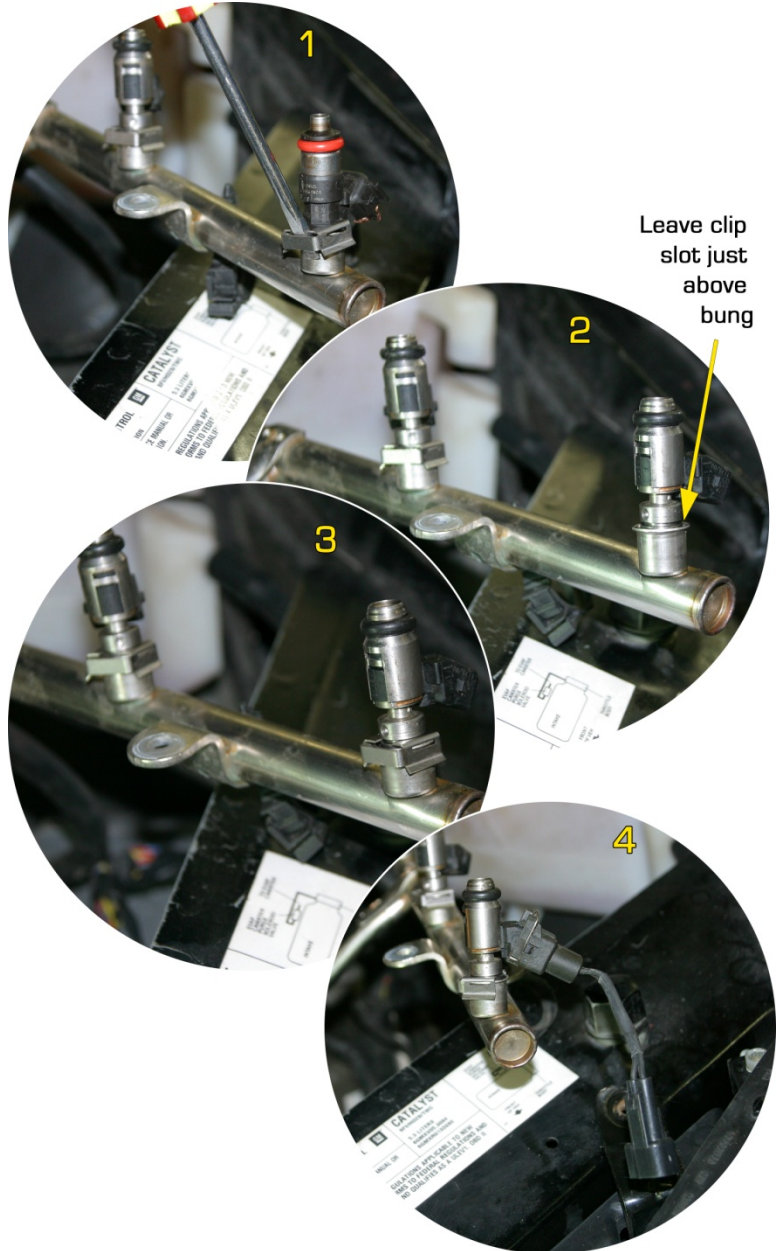
Replace intake manifold on engine and tighten in shown order. Tighten first pass to 44lb/in, and second pass to 89lb/in.



Be sure all fuel pressure is released from fuel rail. Remove all injector retaining clips. *TIP: spraying WD-40 into injector "bungs" and spinning injector will make them easier to remove.*

Apply silicone lubricant to o-rings of all new injectors, and install new fuel injectors leaving clip notch "just" exposed. Replace retainer clip.

Install injector adaptor electrical harness on all 8 injectors and re-install fuel rail using 4 x 10mm stud/bolts and 1 x 8mm long bolt. Don't forget the EVAP purge solenoid!



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Re-install main electrical harness on engine plugging in all sensors, injectors, alternator, etc. Make sure all connectors properly clip and lock, and routing of harness is correct. Leave oxygen sensor on rear manifold disconnected.

Reconnect EVAP line with white retainer clip back on to solenoid now as well.

Remove and replace rear spark plugs with new ones in the same fashion as front set. *TIP: [optional] if access is an issue, you can remove the coil pack module which sits on the rear valve cover by removing 5 x 10mm studs. Re-install after complete.*



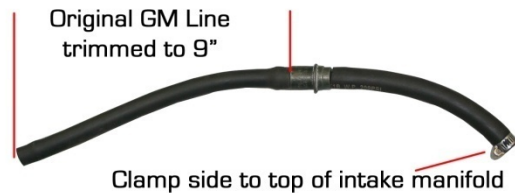
Remove these on rear valve cover for better spark plug access

22

PCV modification. Trim factory PCV line to 9" in length and push on to supplied PCV assembly.

Install clamp side of assembly to plenum and factory GM hose back on rear valve cover tube.

Tighten clamp on intake manifold port.

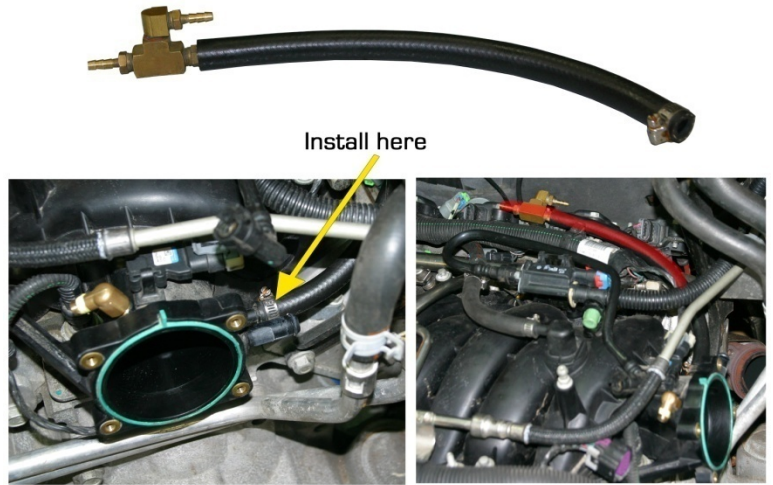


Push trimmed 9" GM line on this nipple

Clamped side installs here

23

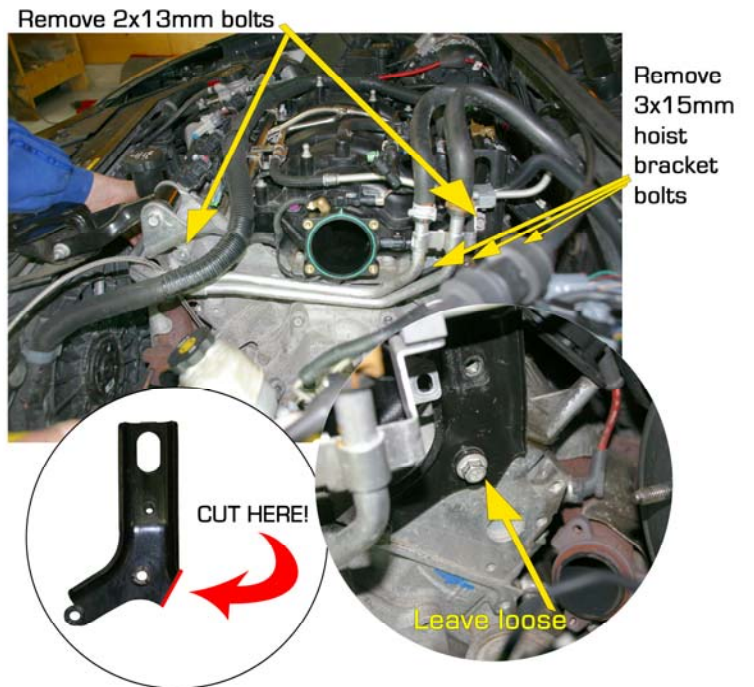
Vacuum assembly. Install vacuum assembly on to 7/32" drilled port on intake manifold and tighten clamp. Route as shown.



24

Remove 2 x 13mm coolant harness bolts, leaving hard coolant lines free.

Remove 3 x 15mm rear engine hoist bracket bolts. Cut bracket as shown to create clearance for downpipe. Re-install bracket using only 2 of the 15mm bolts. Leave top bolt loose.

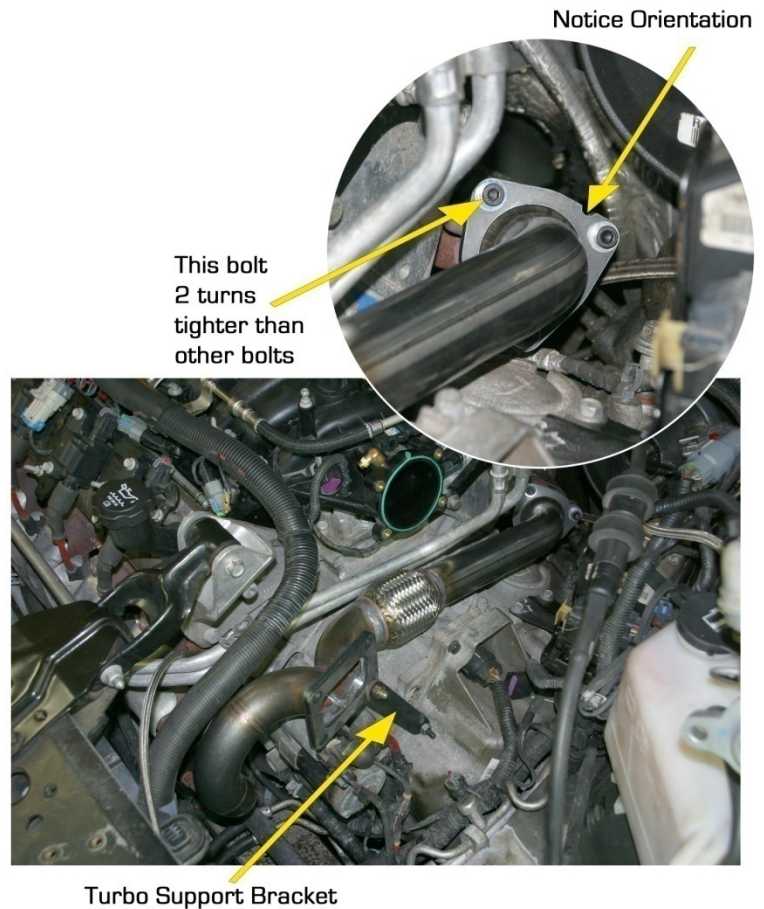


25

Loose crossover installation. Make certain that 3 front manifold studs and 3 provided 55mm allen bolts are anti-siezed at threads. *NOTE: when installing crossover, the triangular flanges will only line up with bolts/studs in ONE orientation.*

Place the crossover and very lightly snug all 6 fasteners allowing little crossover movement. Make sure that there is equal tension on all 6 fasteners, and that flange is nice and flat (parallel to manifold cup) Use the turbo support bracket to approximate the position of the crossover.

At rear crossover flange, thread in top left allen bolt 2 extra threads.



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Jacking of vehicle.

Option A: Use a proper hoist.

Option B: Jack vehicle as shown. **Make sure that parking brake is set, and rear wheels are chocked. Place jack stands at front ends of cradle being 100% sure that the vehicle is secure when the vehicle is lowered on to them. SAFETY 1st!**



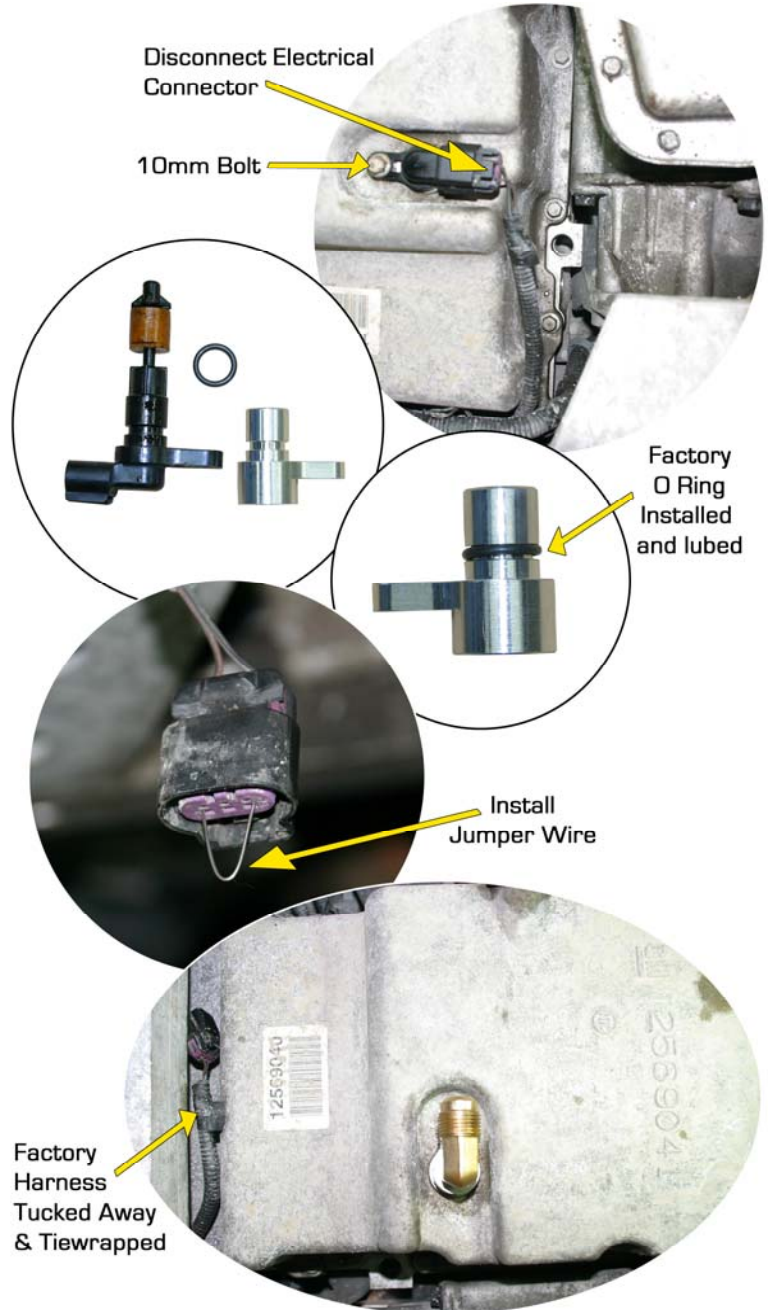
Drain oil. Change oil filter with fresh replacement. Replace oil drain plug tight.

Remove low oil level sending unit removing 1 x 10mm bolt and unplug electrical connector.

Install jumper wire as shown into electrical connector and tie-wrap connector permanently out of way.

Transfer rubber O-ring from factory sender unit to Cartuning oil return adaptor. Install oil return adaptor into oil pan re-using factory 10mm bolt. *TIP: lube o-ring to ensure it will not rip.*

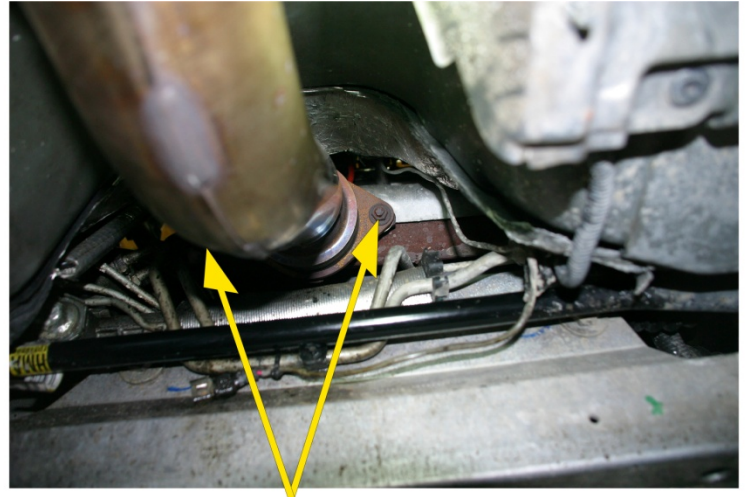
Install brass 90 degree fitting into adaptor (snug) and clock in direction as shown (18 or 19mm wrench to tighten).



28

Disconnect rear o2 sensor electrical connector. Remove factory downpipe. To do so, you'll need to remove 2 x 15mm nuts at exhaust connection, and 2 x 13mm nuts at engine.

Discard both gaskets.



Remove 2 nuts

Remove 2 nuts



29

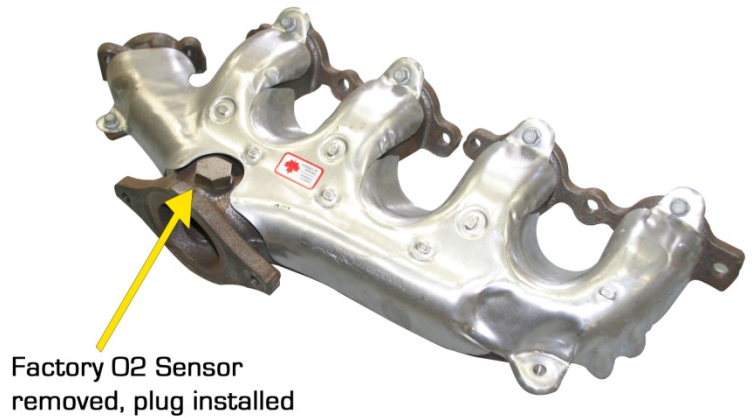
Remove o2 sensor off factory downpipe, and install on new lower downpipe provided. Remember to anti-seize threads (do not get A-S on sensor area).



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Remove primary o2 sensor off rear manifold and install provided plug in it's place. Antisizee the threads of the plug. *(shown out of vehicle for clarity)*

Slide new GM gasket (egg-shaped) on to rear exhaust manifold studs with braided side towards the engine (manifold).

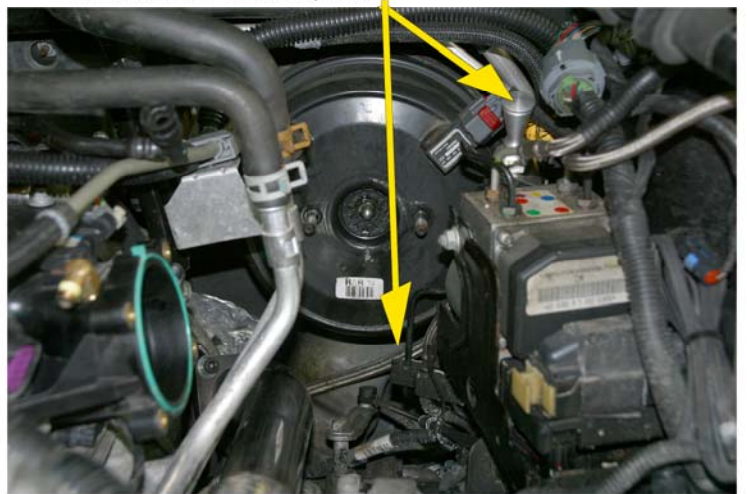
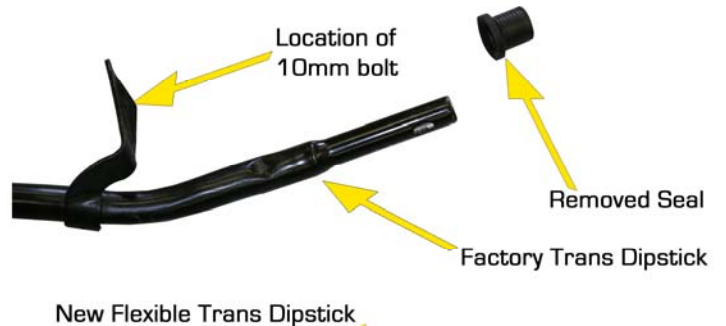


31

Transmission. Per standard procedure, remove transmission pan, drain fluid, and install accumulator shift springs for the 1-2 and 2-3 shift as per the shift kit supplied instructions. Replace the transmission pan re-using the pan gasket and torquing 10mm pan bolts to 10 ft/lbs.

Remove the factory transmission dipstick and tube from transmission by removing 10mm bolt on tube bracket. Be sure when removing tube, to also get seal which may be stuck in transmission. Install new Lokar transmission dipstick and route as shown, keeping away from any heat sources (rear manifold) as best possible.

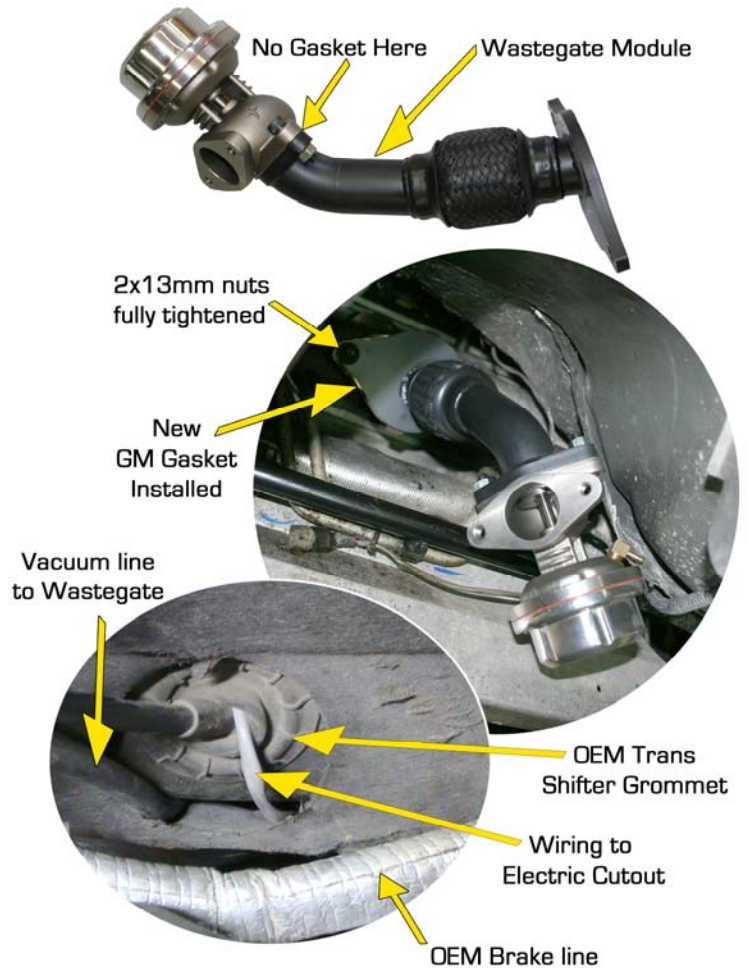
Refill transmission with 5 qt. Of Dexron VI.



32

Install wastegate module on to rear manifold flange studs. Install and tighten 13mm OE nuts (don't forget anti-seize) very tight. *NOTE: connection between actual wastegate and black module has no gasket. This is normal.*

Route both the electrical connector for the electric cutout and the black silicone vacuum line for the wastegate behind the firewall fiberboard as shown. The lines will enter at the shifter cable opening, and exit down below by the cradle. Routing this way will keep both wires well away from the rear exhaust manifold and any under hood heat.

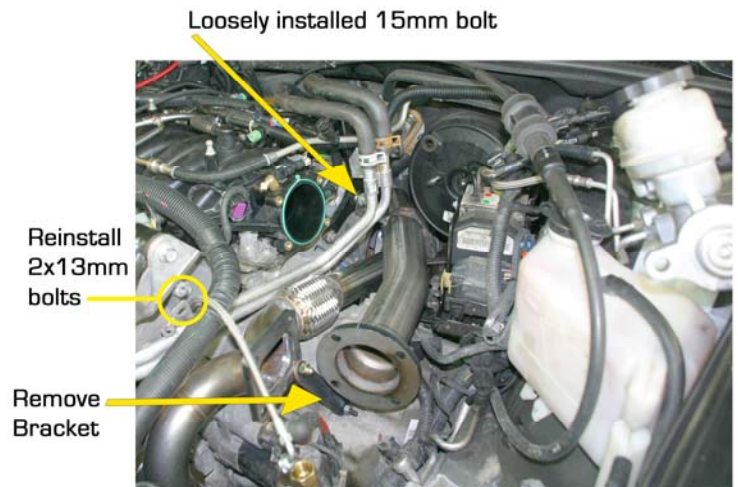


33

Upper downpipe installation. Remove top engine bracket bolt (15mm) that was left loose. Snake upper downpipe in as shown, and loosely re-install 15mm bolt through downpipe support bracket.

Remove turbo support bracket earlier used to get rough alignment of crossover.

Re-install 2 x 13mm bolts holding double aluminum heater core coolant lines and tighten.



Turbo prep and installation. Pre-install rubber oil return line (black 5/8" rubber) on turbo using 1" wrench. This AN connection only needs to be 1/16 turn past snug.

Anti-seize all of the following fasteners used.

Snugly install 4 studs with short thread into turbo round machined flange, and install graphite gasket over studs.

Place turbo into car dropping oil return line down the shown gap, sliding 4 studs through round flange on upper downpipe. Install lock washers and nuts on 4 studs finger tight. **NOTE:** this is a very good time to make sure there is no wire harness (factory) below the upper downpipe/crossover or turbo that will touch, or get melted from radiant heat. There is at least one transmission harness that needs to be moved away and tie wrapped as shown.

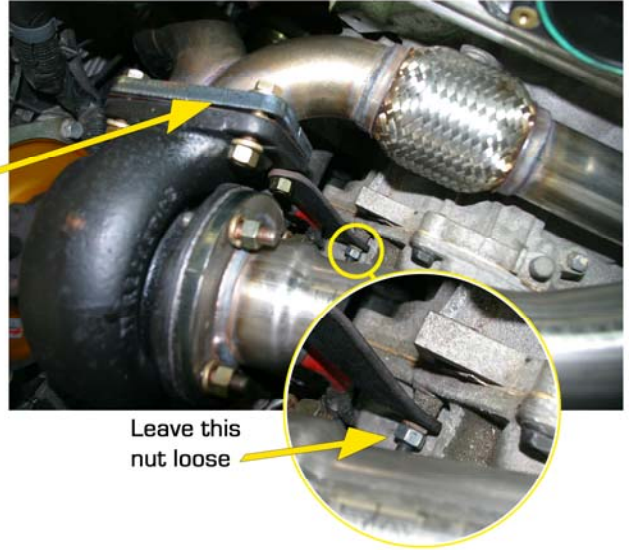


35

Sliding rectangular steel gasket between turbo and crossover, install 1.5" bolts/washers/lockwashers and nuts in shown orientation. All fasteners should be left loose, and turbo support bracket should now be installed as illustrated in photo.

Center align turbo flange (rectangular) to crossover flange and and tighten all bolts very tight. This should be done in 2 passes, snugging all four, and then tightening very tight. Take care not to over tighten one side before the other as this can cause leaks. The support bracket nut at the transmission stud should still be loose.

Make Sure These are Centred Before Tightening



Leave this nut loose

36

Tighten all four nuts on the upper downpipe very tight, using the same snug than tight sequence. With the support bracket installed in both mounting points (but still loose at transmission stud) you'll want to push down on the turbo to get it to the lowest point the support bracket will allow and tighten the 13mm provided nut to secure placement of everything.

Tighten 15mm bolt on downpipe bracket tight.

Tighten 15mm Bracket Bolt



Centred and Fully Tightened

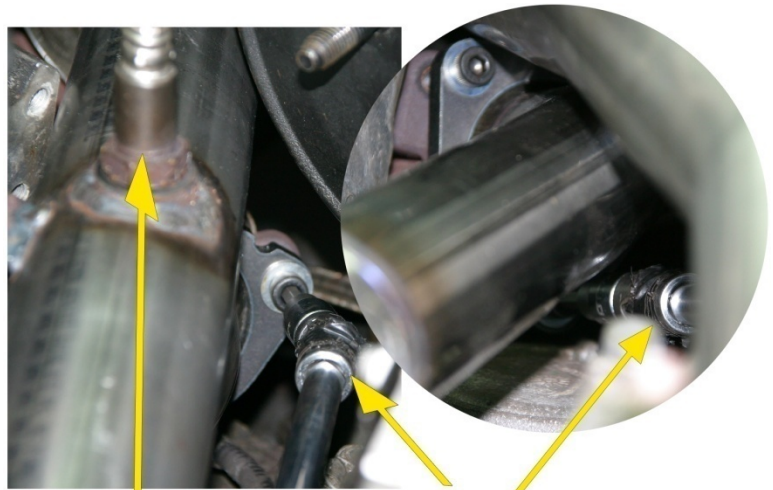
4 Nuts, Now Fully Tightened

37

Final tightening of crossover fasteners. Tighten the back 2 x 6mm allen head bolts which are accessible, tightening only a few turns per bolt ensuring even pressure from all bolts. Tighten these until very tight.

Follow the same steps for the 3 x 13mm nuts making sure to tighten evenly, and very tight. Flanges should both be straight and perpendicular to cup/ball connection.

Install front o2 sensor on upper downpipe in provided bung.



Primary O2 Sensor Installed on Upper Down Pipe

Note Use of Flex for Access to 6mm Allens

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Install brake booster vacuum line back on brake booster.

Install master cylinder on brake booster, tightening down 2 x 15mm nylon insert nuts, and connect "low brake fluid" electrical connector.

Connect primary o2 sensor connector to factory harness.

39

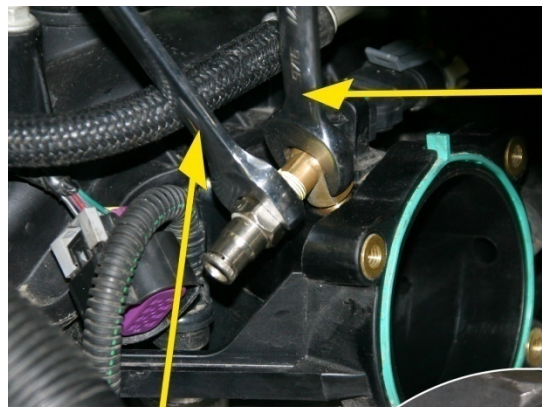
Install oil feed line using 1/2" and 9/16" wrenches (to make sure brass oil fitting does not spin). This brass AN connection does not need to be overly tight.



Thread on "push to connect" fitting onto brass alky nozzle using 2 x 9/16" wrenches. Use extreme caution not to apply sideways force on plastic. This is what the 2nd wrench is for - support!

Re-install throttle body with 4 x 10mm bolts and plug in electrical connector.

Snap evap line back on to throttle body.



Support Wrench
(Light force to
passenger side)

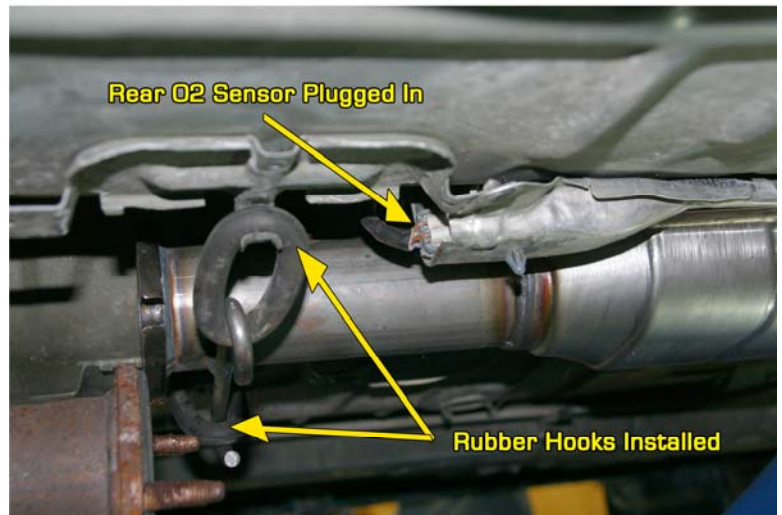
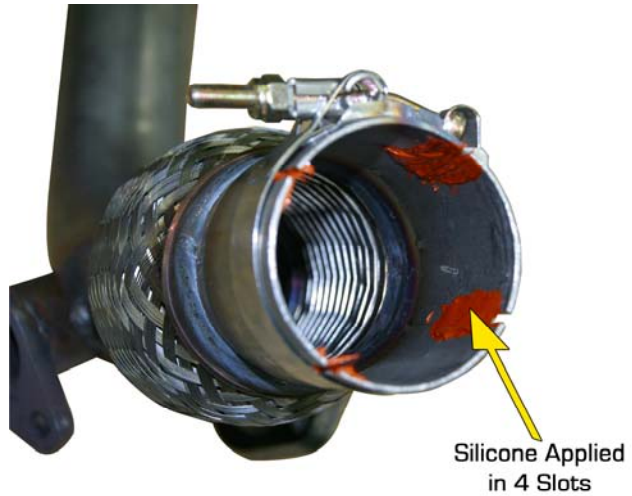
Do Not
Overtighten Fitting



Tight Fit Is Normal

Lower downpipe installation (LDP).
NOTE: fastening clamp comes pre-welded in place for ease of installation.
Using high heat ultra-copper silicone, fill in four expansion slots as shown using finger to fill.

Slide LDP up onto upper downpipe.
Hang the rear of the pipe with OEM rubber O-hangers. Plug in rear o2 sensor electrical connector.



Slide up LDP to align wastegate flange with wastegate. Install 2 x 13mm bolts with gasket in between and tighten – tight.

Tighten 2 x 15mm nuts at rear flange using new provided exhaust gasket being sure to centre flanges.

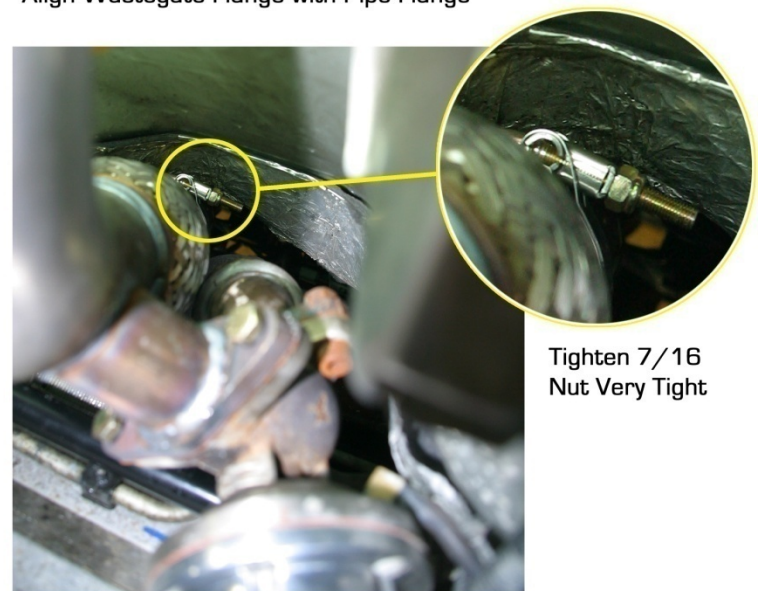
Tighten 7/16 nut on welded T-bolt coupler clamp using deep socket wrench. Tighten very tight.

Check tolerance of catalytic converter to tunnel heat shield. If gap is less than 1/4" you can pry back the heat shield a bit to create more gap.



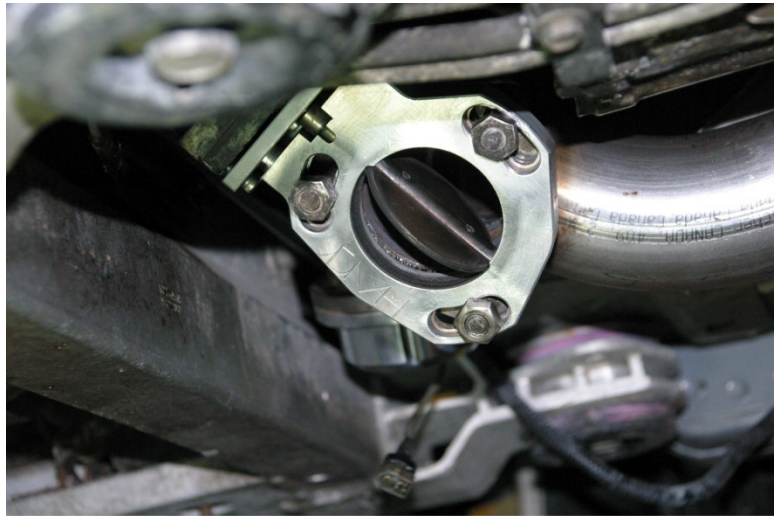
Slide Up to Align Wastegate Flange with Pipe Flange

Tighten 13mm Bolts and Lockwashers



Tighten 7/16 Nut Very Tight

Install electric cutout in orientation shown using 3 x 9/16"-1.5" bolts and machined nuts provided with 3 bolt gasket. *TIP: Forcing the butterfly open ahead of time will allow you to easily centre the unit on the flange on LDP.* Making sure the butterfly is centred will allow smooth operation. Plug in electrical connector which was previously run, and make sure to tie wrap out of the way (to sway bar is good).



Remove 10mm bolt holding in headlights and remove headlights (pull up on black bracket. Disconnect electrical connector)

Remove top 5 push clips, and all bottom retaining screws (10mm and 7mm) and clips for bumper skin.

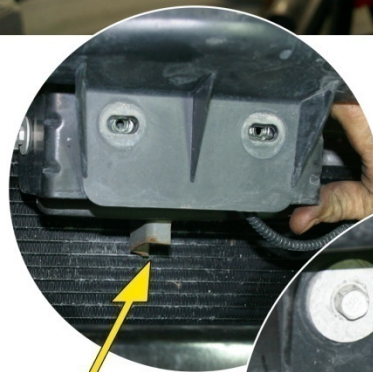
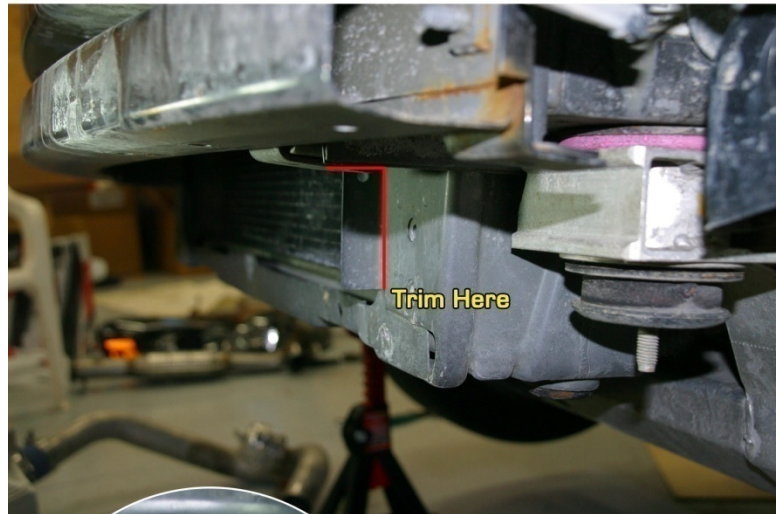
Remove 2 x 10mm bolts in each fender side as shown, and slide bumper forward and off. There is a fog light connector on each side that will need to be disconnected.

Re-locate factory air temperature sensor as shown to passenger side clip hole.

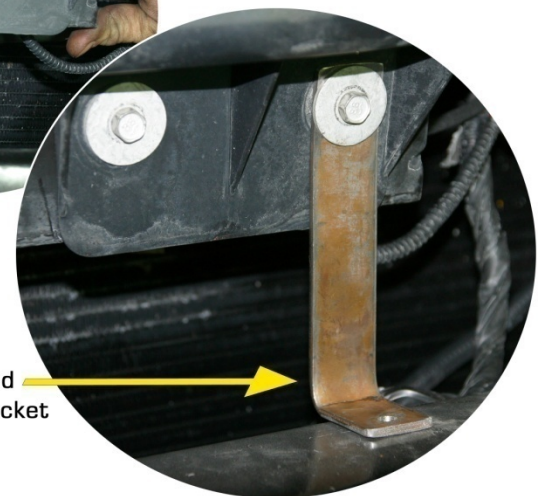


Remove the hood latch support and grind away the 10mm stud at bottom as shown. You'll also need to cut the support at location shown, and install new support bracket provided. To install the new bracket, you'll need to pre-drill the bumper support and use the self tapping screw provided.

Finally, you'll need to trim small lip at drivers front corner as shown, and remove the 2 x 13mm bolts and 1 x 15mm nut holding the aluminum cradle to rad support bracket. This bracket is no longer needed.



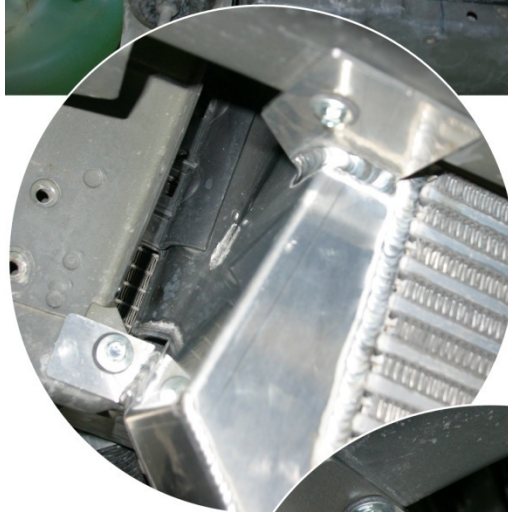
Cut Here



Install New Hood Latch Support Bracket



Measure 13.5" from the edge of each re-bar (facing floor) and mark for intercooler location. *NOTE: assistant is a good idea here.* Install the intercooler pushing it up and back as much as possible (creating as much gap to the bumper re-bar and keeping bottom of core flush with rad support) screwing the tabs as shown with self-tapping hardware and drill. You'll want to centre the IC **core** between the two marks on the re-bar.

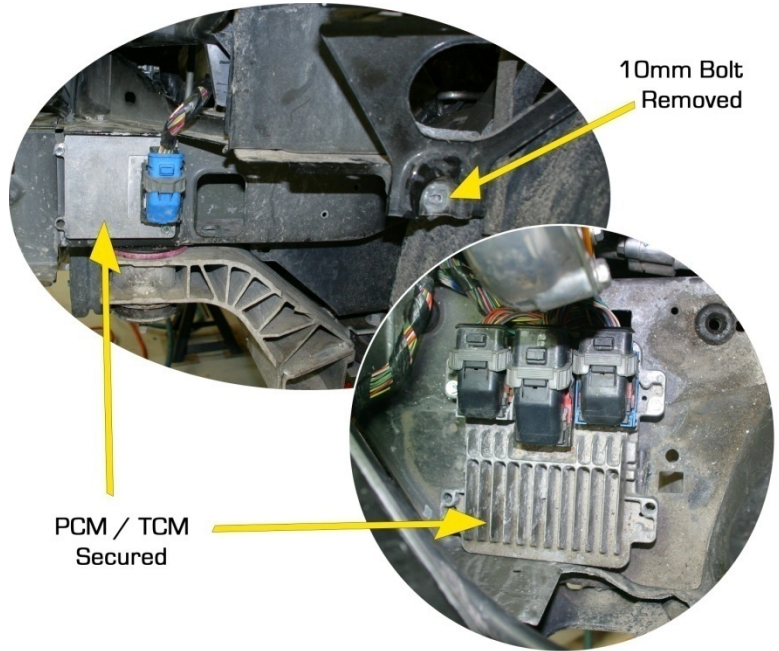


47

Screw ECM down as shown orientation using provided hardware.

Route TCM to fenderwell, and screw in to re-bar.

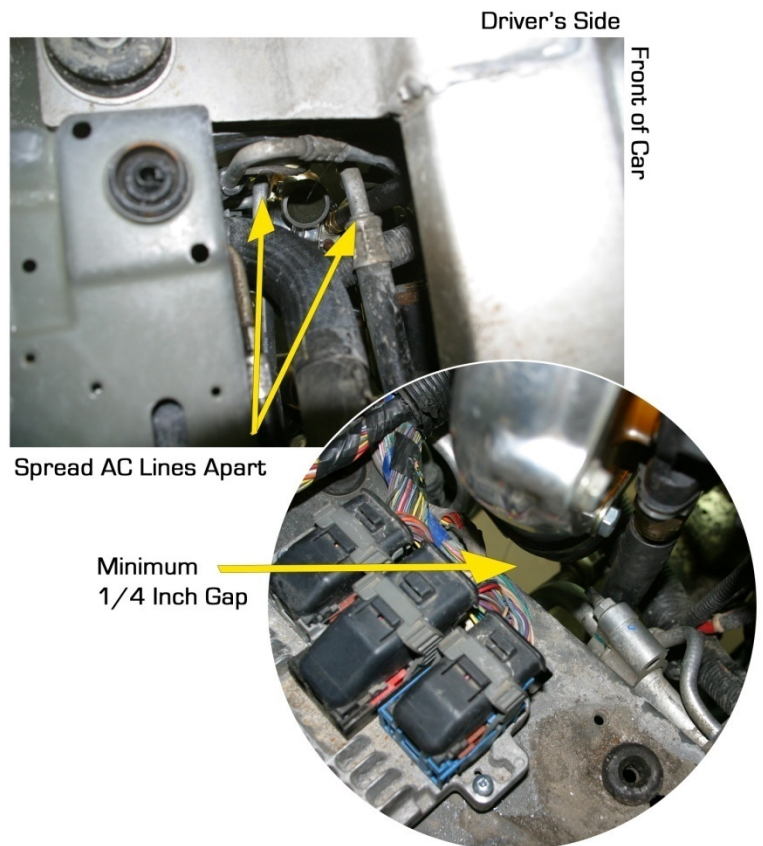
Remove 10mm fenderwell support bolt.



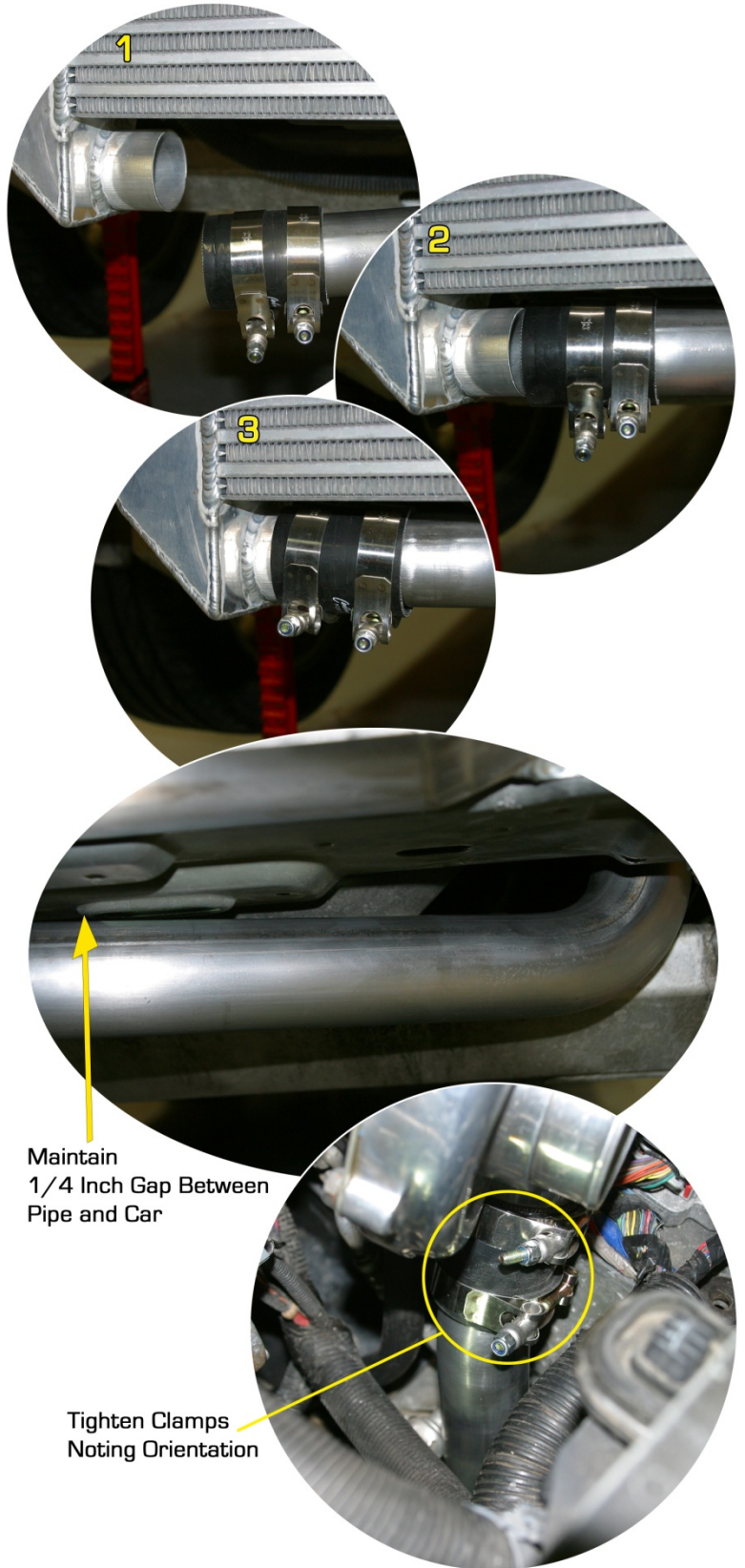
48

Intercooler Inlet. In order to create room for the 2" charge pipe from the turbo to the IC, you'll need to spread the 2 A/C lines apart shown, thus avoiding any pipe clanging and vibration or harmonics. Slide the 2" straight silicone on to the long end of the charge pipe, along with placing the 2 x 2" T-bolt clamps.

Install silicone, and single T-bolt clamp on turbo outlet noting orientation of clamp. *NOTE: there should be at least 1/4" gap from the turbo compressor cover to the frame of the car.*



Push the charge pipe up and on to the silicone at turbo, and then slide silicone at opposite end of pipe from the charge pipe over to the IC so there is a 50/50 coverage. Be sure to leave a 1/4" gap between the pipe, and the radiator support to avoid vibration noises, and tighten all clamps tight.



Maintain 1/4 Inch Gap Between Pipe and Car

Tighten Clamps Noting Orientation

50

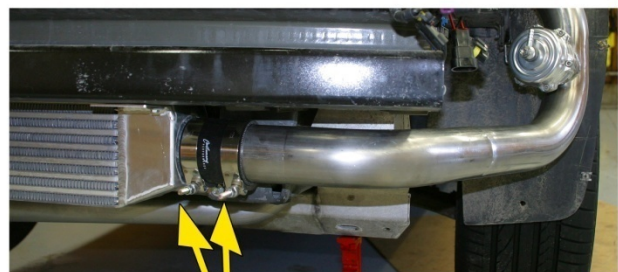
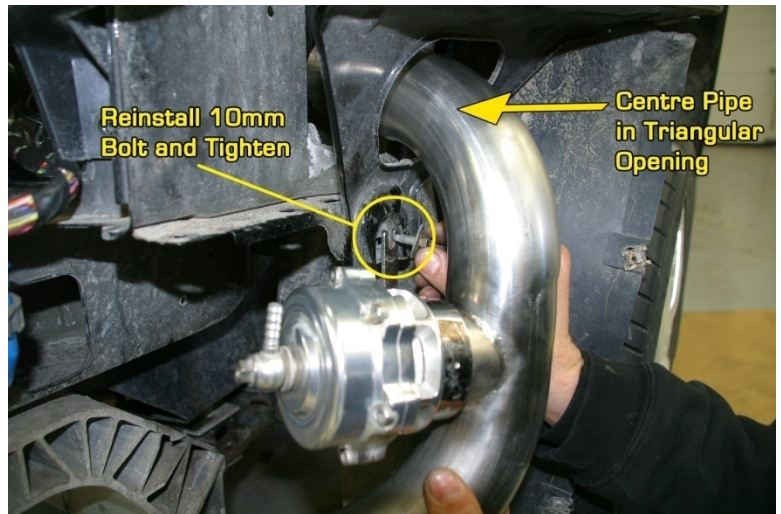
Install MAF module on throttle body noting the orientation of the electrical connector, and the gap to the upper down pipe. Tighten the 10mm nut on T-bolt clamp tight.



51

Install 2.5" straight silicone on IC outlet tightening the clamp on the IC side only.

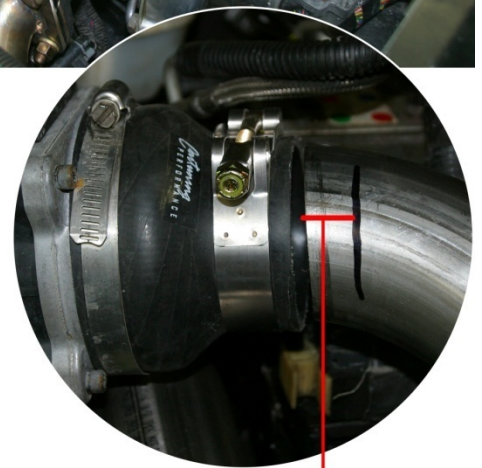
Install IC outlet pipe (pipe with blow-off valve) on to the same silicone, mounting bracket with 10mm fenderwell bolt. Centre the outlet of this pipe through fenderwell opening, and firmly tighten 10mm bolt. You can now also tighten remaining T-bolt clamp on IC outlet tight.



Tighten 2x10mm Clamps

Install the 2.5" hump hose on IC outlet pipe, and place both clamps leaving loose for now.

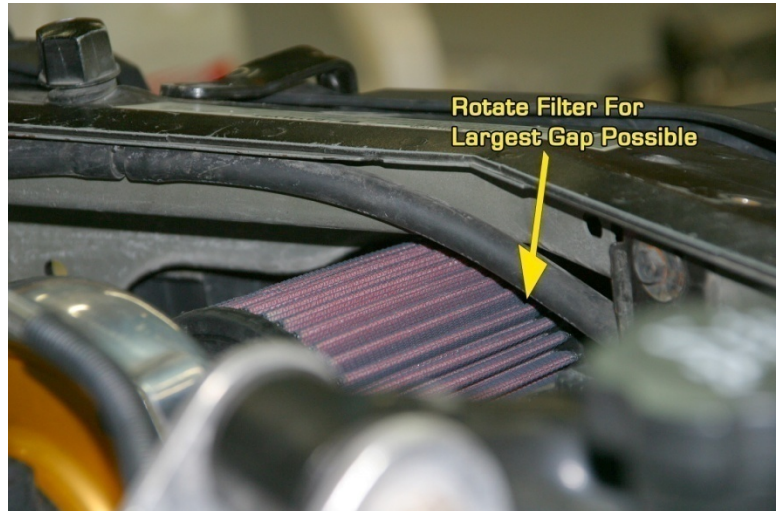
Install the final "S" charge pipe aligning everything for clearance to the coolant bottle reservoir. Slight contact to the bottle is normal. When installing S pipe into maf module, you want to be 100% sure that you are not placing the pipe more than 1" into the silicone reducer. Placing the pipe too close to the maf will create inaccurate readings and cause drivability and power issues. When everything looks good, do the final tightening (tight) of the 3 T-bolt clamps with 10mm nuts on them.



1 inch

53

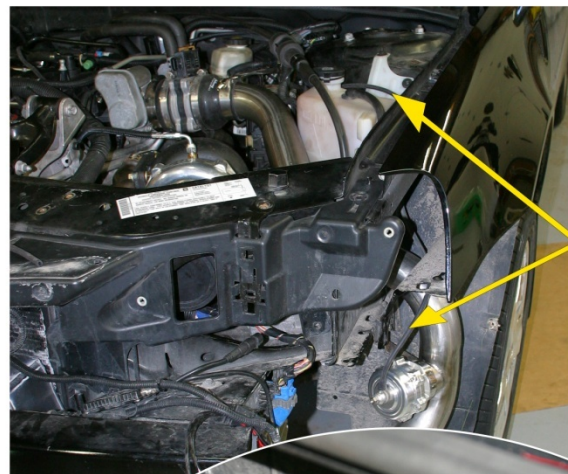
Install air filter directly on to turbo. Use hairdryer or heat gun (on low) to warm up and soften the rubber 3" flange slightly to make installation easier. (DO NOT OIL FILTER AT ALL - THIS WILL DAMAGE TURBO!). Rotate the air filter until the maximum clearance is obtained from filter tip to radiator support, and tighten band clamp just snug.



54

Install the vacuum line on to the blow off valve and route cleanly behind coolant bottle, up and over (behind) master cylinder, and into vacuum distributor. Be sure to use wire ties and common sense keeping vac line away from extreme heat.

Install wastegate vacuum line at this time as well to vacuum distributor. This line should already be connected to brass fitting on wastegate, making sure there are NO kinks anywhere in line and it is fully free of heat sources where it can melt.



BOV Vacuum Line



Wastegate Vacuum Line

BOV Vacuum Line

55

Route the black rubber oil return line clear of any kinks along aluminum engine cradle and connect to oil return adaptor on oil pan. Be sure to tie wrap line allowing for wide radius bends, and not to over tighten line and kink with tie wrap.



56

Drill an 11/32" hole in the bottom of the windshield washer tank leaving a clean hole, and drain tank empty.

Using 1/8"-27 NPT tap, tap hole 3 to 4 threads deep. Apply blue loc-tite on 90 degree push to connect fitting and install in newly tapped hole until fitting bottoms out on tank.

Cut 1/4" black alky line using exacto (yellow olfa for example) being sure not to crush line whilst cutting and leave a nice clean and perpendicular edge.



57

Paying attention to arrow direction on supplied filter, tie wrap to existing washer line as shown (arrow facing up).

Cut line to appropriate length as shown and run as shown. You want to leave extra line at top for trimming later. Make sure that lines are pushed all the way into fittings by twisting and pushing at the same time. Be sure to support the 90 degree outlet fitting at tank, as it's only secured into plastic.



58

Re-install bumper skin in reverse order of removal.

Re-connect fog light connectors.

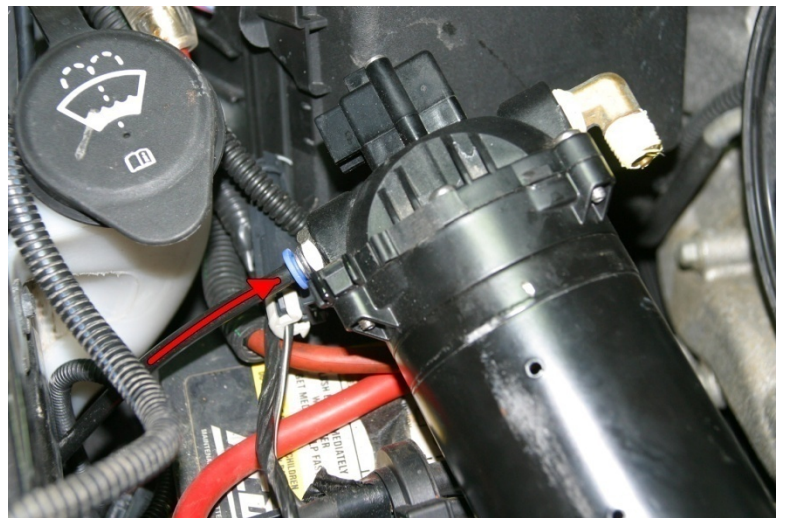
Re-install headlights.

Lower car safely back on wheels.

59

Remove 3 x 13mm bolts holding in tubular strut support that runs across battery if not already removed.

Place pump above battery as shown, and insert water line from tank into straight connector on pump, being sure to push in very firmly.



60

Remove the power distribution centre cover, and connect power wire under main 13mm nut.

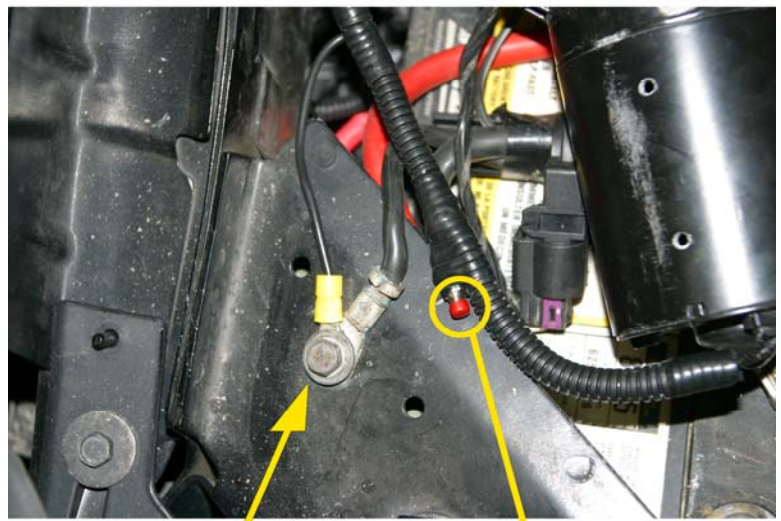
Connect ground wire at 10mm bolt on rad support at stock grounding location.

Route vacuum line as shown and connect to vacuum distributor block.



Battery Connection and Fuse Location

Vacuum Line To Vacuum Distribution Block



Pump Ground Connection

Prime Button

61

Route another length of 1/4" pvc water line from pump outlet area to alky nozzle injector area at TB. Run the line along the radiator as shown. Do not plug in to nozzle injector at this time.

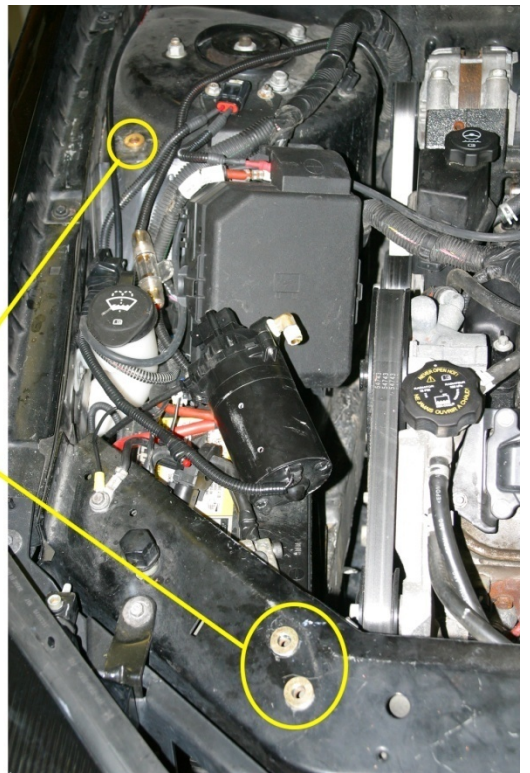
Re-connect main battery ground now.
NOTE: GM design on this connection is sub-par. We've found many vehicles to have a bad connection due to corroded parts, you may need to repair this with a new main ground cable, or aftermarket solution.



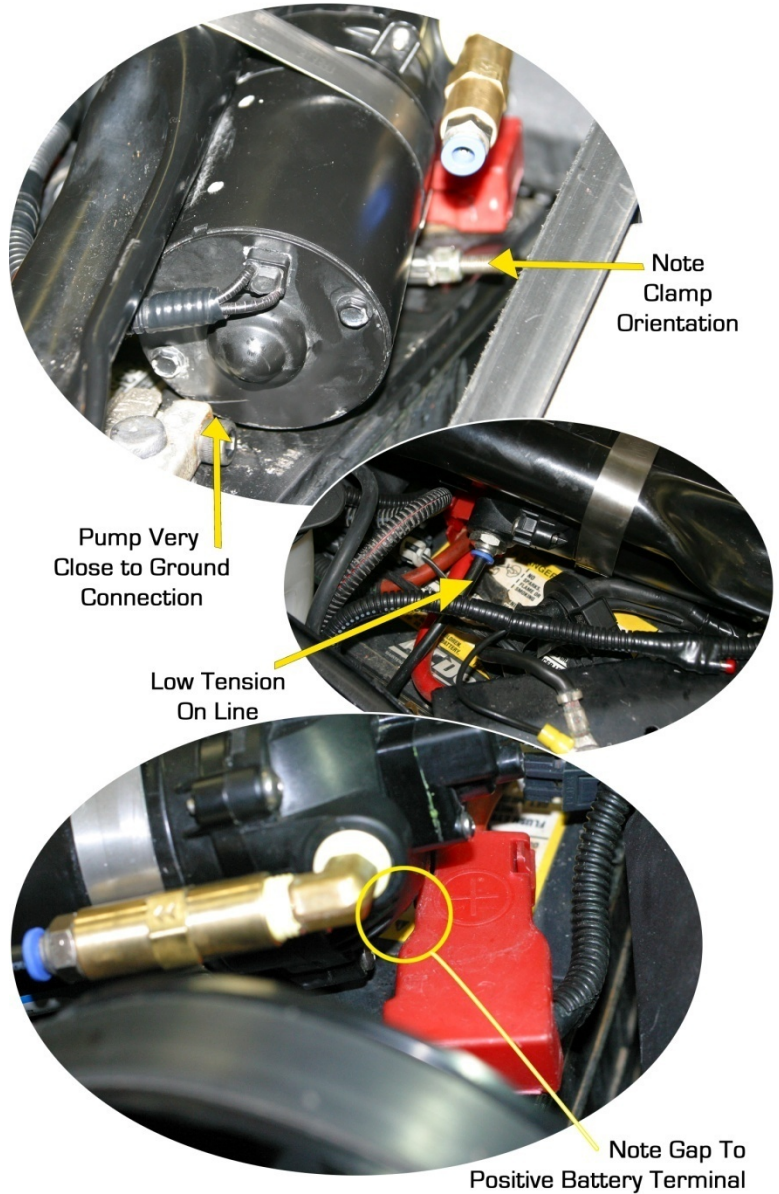
62

Re-install circular strut brace using double washer spacers as shown in previous photo. Tighten down 3 x 13mm bolts very tight.

6 Spacer Washers Total



Using supplied T-bolt clamp, secure the pump to the brace paying particular attention to the following details; clamp orientation, low stress on water line from tank, keeping a good gap from pump head to positive battery terminal. These are all very important points, take your time. Do not over tighten the clamp, just snug so the pump can't rotate is good.

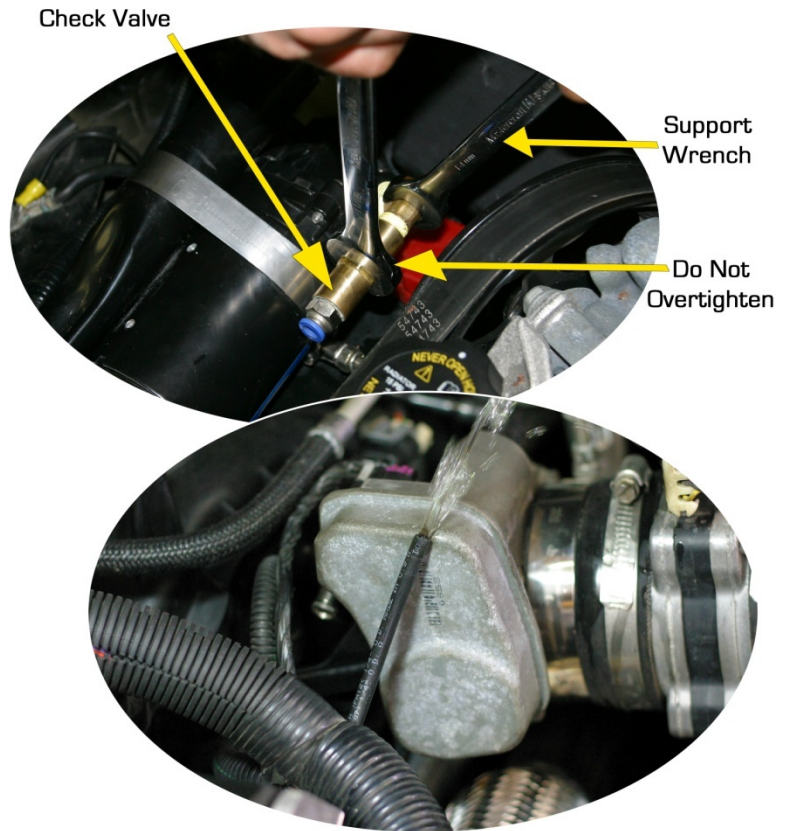


64

Priming sequence step 64/65

Depress the prime button with just the 90 degree brass fitting on the outlet of the pump. Keep button held until a steady stream of fluid comes out.

Install the check valve on brass fitting using 2 wrenches as shown to support brass fitting and not crack pump housing (if you crack housing, alky is broken and you need to call our tech support). Do not overtighten, just past snug is good.



65

Push 1/4" black water line into check valve firmly. Depress the prime button again until a steady stream of fluid now comes out of the line near the throttle body (expelling air). You can now firmly press the 1/4" black line into the injector nozzle being sure to support the nozzle, as it's only secured into plastic. Press the prime button a few short times to ensure there are no leaks at any fittings.

If at any time of ownership the fluid level drops low enough to draw air into the system, you'll need to fully repeat this priming sequence.



Line Installed

Replace all fluids in engine/transmission/coolant system which were lost or drained during installation. Engine oil should be synthetic only. We recommend Mobil1 5W-30 for winter conditions (temps averaging 40F and lower) and 10W30 for temps higher than that.

Transmission fluid should be dexron VI only as recommended by GM, and be sure to check level only when up to operating temperature. Windshield washer fluid should only be -20 to -40 freeze protection and always kept filled. Never use a summer detergent, rain-x, or anything with additives or detergent as this fluid is now injected into your motor above 5psi boost. Also never accelerate hard with the vehicle when you know the washer fluid is low, as air traps can cause alcohol injection issues, and require you to reprime the system again.

Verify that all fluids are topped up, all hoses, and connections are tight, and all electrical connectors are plugged in properly (new fuel injectors clips, new MAF adaptor harness, etc). Make sure the electric cutout is properly wired, and opens and closes with the switch before starting vehicle. Make sure that cutout is completely closed before starting car.

Upon starting vehicle, make 100% of no exhaust, vacuum, coolant, transmission, or oil leaks. Allow the car to fully warm up. Be sure to properly air bleed the coolant system so that there are no air traps in the cooling system. Cartuning Performance highly recommends a boost gauge to verify that the boost pressure does not increase past 8 - 9 psi at any time, also ensuring that all vacuum lines are correctly installed. We only recommend driving the vehicle with minimal to low boost (light throttle positions) for the first tank of gas allowing you to diagnose any sounds, rattles, or issues before heavy acceleration. Don't hesitate to contact Cartuning Performance tech support at 416-863-8863 with any questions. Better safe than sorry!

Thanks again and enjoy your new Turbocharged LS4!