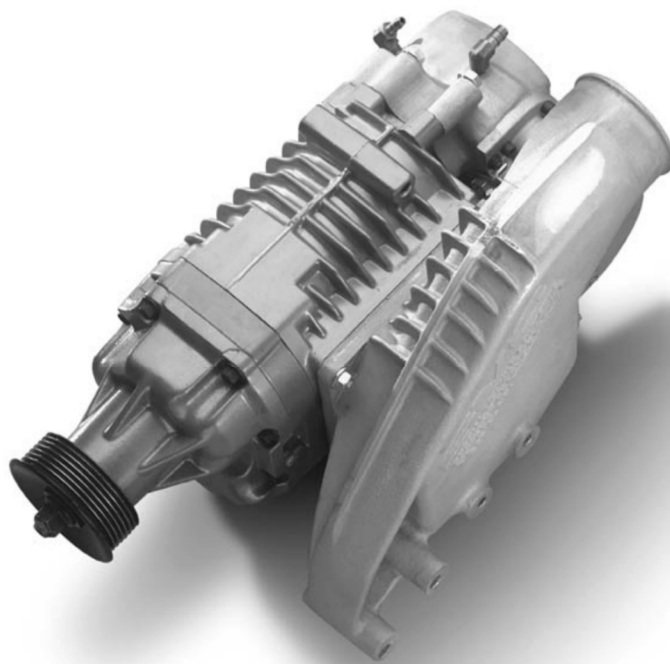


MAGNUSON

SUPERCHARGERS

Installation Instructions for: TOYOTA 4.5L SUPERCHARGER SYSTEM

1995 - 1997 Land Cruiser



*** PREMIUM FUEL REQUIRED ***

Section 1: Toyota 4.5-liter Supercharger Kit 02-90-45-003-SL Parts List

Qty	Item	Bag #
1	Fan	-
1	Crank Pulley	31-90-45-050
2	Flange Head Bolt, M8-1.25 x 30 mm	31-90-45-058
1	Crank Pulley Spacer	31-90-45-050
1	Hex bolt, M22-1.50 x 90 mm	31-90-45-058
1	Flat Washer, M22	31-90-45-058
1	Idler Pulley/Belt Tensioner Assy	31-90-45-051
2	Flange Head Bolt, M8-1.25 x 20 mm	31-90-45-051
1	Fan Spacer	31-90-45-057
4	Stud, M8-1.25 x 45 mm	31-90-45-057
4	Nylock Elastic Stop Nut, M8-1.25	31-90-45-057
1	Gasket (Heater pipe to engine)	89-90-45-003
1	Manifold, Heater Tube, Billet Block	31-90-45-052
1	Fitting, 3/8" NPT x 5/8" Male, Hose Barb, 45° elbow	31-90-45-052
1	Stud, M8-1.25 x 75 mm	31-90-45-054
1	Supercharger Plenum Chamber	-
2	Flange head bolt M10-1.25 x 80 mm	31-90-45-054
1	Flange Head Bolt, M8-1.25 x 30 mm	31-90-45-054
5	Flange nut (serrated), M8-1.25	31-90-45-054
1	Supercharger Assembly	-
1	Throttle Body Adaptor	-
2	Flange head bolt, M8-1.25 x 50 mm	31-90-45-056
1	Hose, 1.5" ID x 1.5"	31-90-45-056
2	Hose clamp, 1.5" – 2"	31-90-45-056
1	Coolant Hose, 5/16" x 24"	31-90-45-056
3	Medium spring clamp (1 spare), 0.63"	31-90-45-056
1	Hose fitting, male/male, 5/16"	31-90-45-056
1	Coolant Hose, 5/16" x 28"	31-90-45-052
2	Medium spring clamp, 0.63"	31-90-45-052
1	Plastic Wiring Loom, 3/8" x 32"	31-90-45-059
1	Plastic Wiring Loom, 1/2" x 12"	31-90-45-059
1	Brake Booster Hose, 11/32" x 50"	31-90-45-053
1	Intake Runner	31-90-45-055-SL
1	Gasket (Throttle body) (In Lit Kit)	89-90-45-003
4	Flange bolt, M8-1.25 x 25 mm	31-90-45-055-SL
1	3.0" 90° Intake Pipe	31-90-45-049
3	Hose, 3" x 3"	31-90-45-049
4	Hose clamp, 4"	31-90-45-049

Parts List (continued)

1	Hose Assembly: 1/2" x 32" w/90° elbow	31-90-45-060
1	PVC Hose, 5/16" x 12"	31-90-45-060
2	Spring clamps, 0.56"	31-90-45-060
1	1/8" BSP Brass Plug	31-90-45-060
1	Hose, 1/8" x 72"	31-90-45-060
1	Hose, 1/4" x 30"	31-90-45-060
1	Cap, Rubber 1/4"	31-90-45-060
1	Clamp, Wide Band Spring, .38"	31-90-45-060
1	90° Coolant Hose, 5/8" OD 90° x 4" x 48"	31-90-45-052
1	Sleeve, Mesh, .75" O.D.	31-90-45-052
2	Clamp, Wide-band Spring, .945"	31-90-45-052
1	Hose Clamp, 1 1/4"	31-90-45-052
1	Hose, 3/16"x24"	31-90-45-060
1	Clamp, Oetiker, 12.3mm	31-90-45-060
5	Hose Clamp, 4"	31-90-45-049
1	Hose, 3" x 4.5"	31-90-45-049
1	Hose Clamp, 4.5"	31-90-45-049
2	3" x 90° Intake Pipe	31-90-45-049
1	Hose, Reducer, 3" x 3.5" x 3"	31-90-45-049
1	Serpentine Belt	-
1	1/8" BSP Boost Gauge Adaptor	31-90-45-060
2	.43" x .47" Hose Clip	31-90-45-060
2	.28" x .28" Hose Clip	31-90-45-060
2	Zip Ties, 3/16" x 14"	31-90-45-060

Misc.	Form In Place Gasket P/N 00295-00103 or equivalent, Loctite 518	REQUIRED
	Teflon Paste, Loctite 567	REQUIRED
	Thread Locker, Loctite # 242 (blue)	REQUIRED

Basic Tools	Standard Shop Tools
	1/2" Masking tape for marking parts
	Shop Towels or Rags
	Black Electrical Tape

Safety Tools	Safety Goggles
---------------------	----------------

Special Tools	Toyota Crank Pulley Holder
	09213-58012
	09330-00021
	Toyota Land Cruiser Repair Manual
	Oetiker Clamp Pliers

Section 2: Prepare Vehicle

Before you begin make sure the fuel in your tank has been completely switched over to premium 91 octane. This is necessary to avoid any pinging once the supercharger has been installed.

We recommend you blow off any dirt and dust from the top of the engine. This allows for a neater and cleaner installation. In addition, a clean engine work area prevents dirt from dislodging during the installation and falling into the engine.

Make sure the engine is fully cooled before beginning.

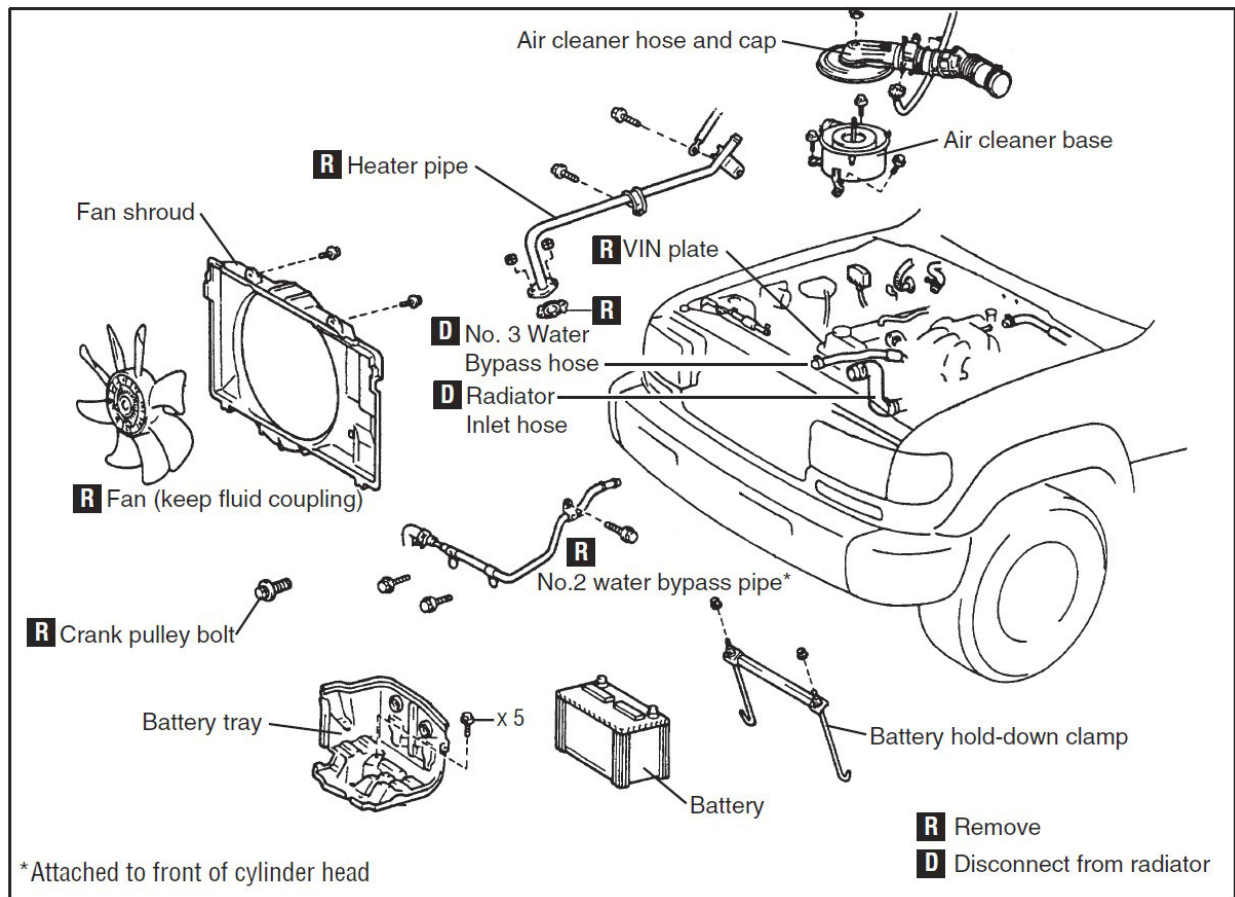
To help you later, we suggest you draw diagrams of your engine's cable routing before disconnecting anything. You can do the same for the vacuum lines. However, some vacuum lines will be rerouted. To ensure proper hose connections, refer to the illustration in the back of this manual.

You will reuse some of the factory nuts and bolts while installing this supercharger kit. Therefore, as you remove them, keep them together with their components or label them for location. This ensures a faster, easier installation.

Section 3: Remove Parts

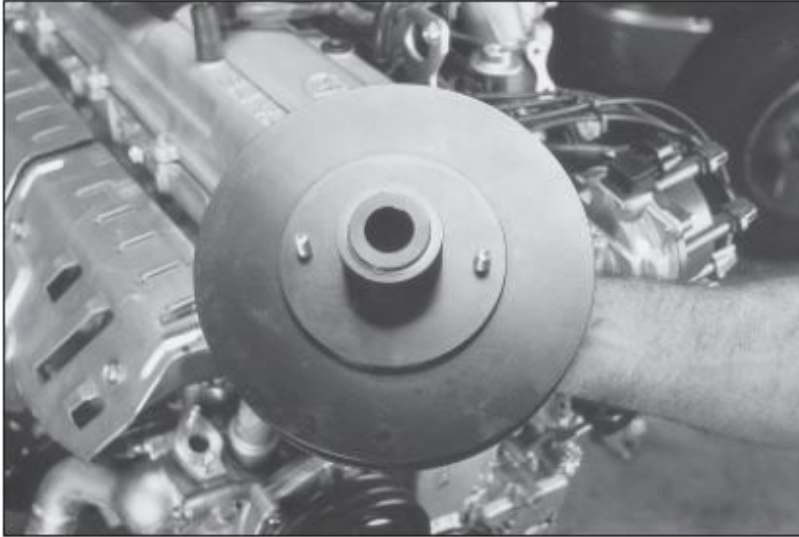
- 1) Disconnect battery.
- 2) Remove engine under-cover.
- 3) Drain engine coolant from radiator.
- 4) Loosen the two alternator belts (but do not remove them).
- 5) Remove the crank pulley bolt but do not remove the pulley. Refer to the repair manual for the proper removal procedure.

6) Remove and or disconnect the parts in the following illustration:



Section 4: Install Drive Assemblies

7) Remove the fluid coupling from the O.E. fan and reinstall onto the supplied fan using the (4) existing M6 flange nuts. Torque the (4) M6 flange bolts to 8.5 Nm (75 in lbf)



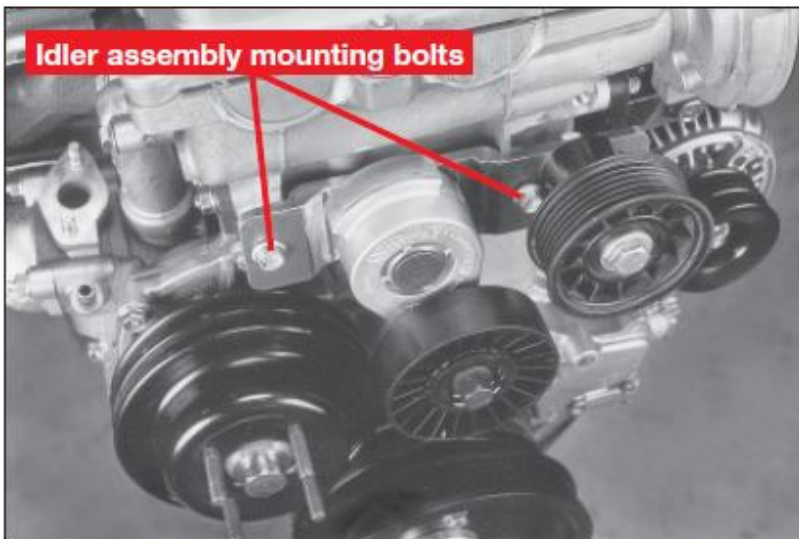
8) Install the supercharger pulley onto the existing crank pulley with (2) M8-1.25 x 30 mm hex bolts and M8 flat washers

Note: Apply Loctite #242 (blue) to the bolt threads. Tighten the bolts to 15 ft•lbs.

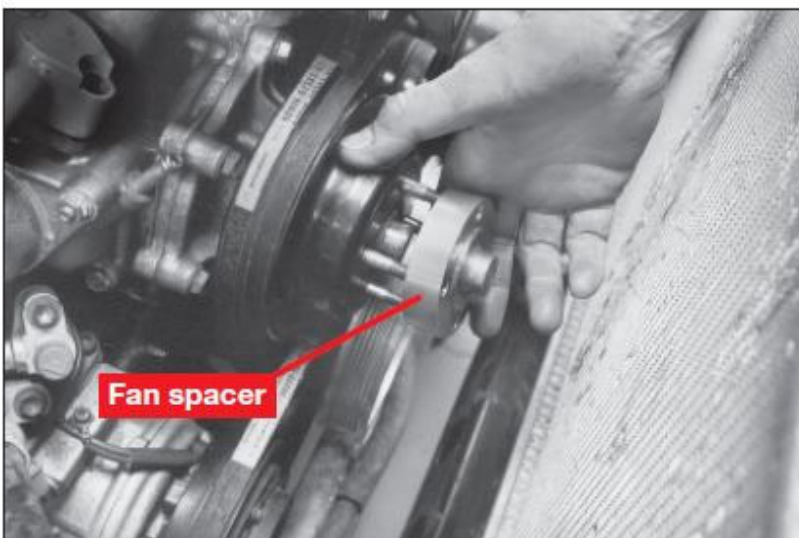
9) Install the new M22-1.50 x 90 mm supercharger crank bolt and the M22 washer.

Note: Apply Loctite #242 onto the bolt threads.

Tighten the pulley bolt to manufacturer's specifications. Torque to 412 Nm (304 ft lbf)



10) Install the idler pulley/belt tensioner assembly using (2) supplied M8-1.25 x 25 mm flange bolts. Torque the two bolts to 21 Nm (15 ft lbf)



11) Remove the (4) existing studs from the cooling fan mounting flange, then install (4) supplied longer studs (M8-1.25 x 45 mm) and the fan spacer.

Note: Apply Loctite #242 onto the water pump end of each stud.

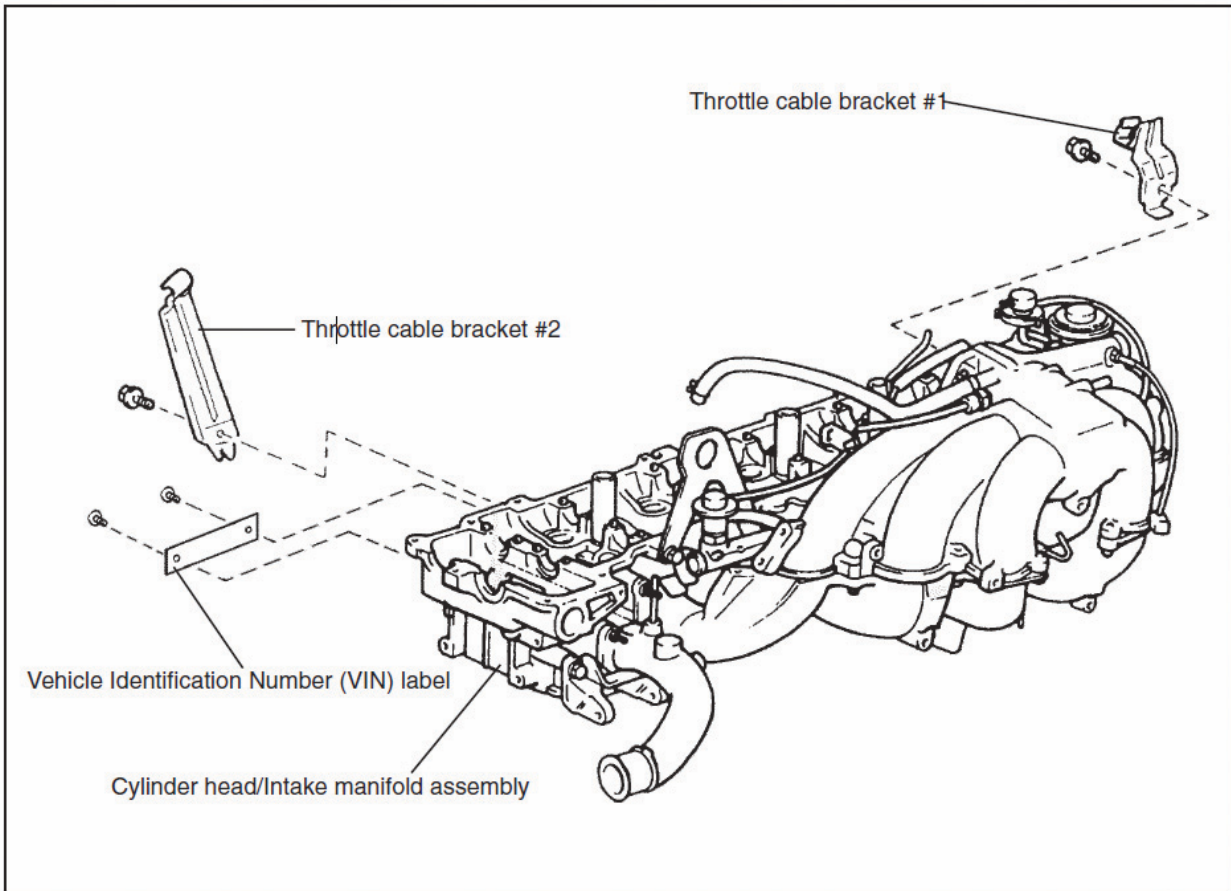
12) Reinstall the fan shroud and fan assembly, then install the fan using (4) supplied M8-1.25 nylock nuts. Torque the nuts to 5 Nm (44 in lbf)

Reinstall the radiator inlet hose and #3 bypass hose onto the radiator.

Section 5: Prepare Engine Compartment

- 13) Remove the two throttle cable brackets and the Vehicle Identification Number (VIN) label attached to the cylinder head (if installed).

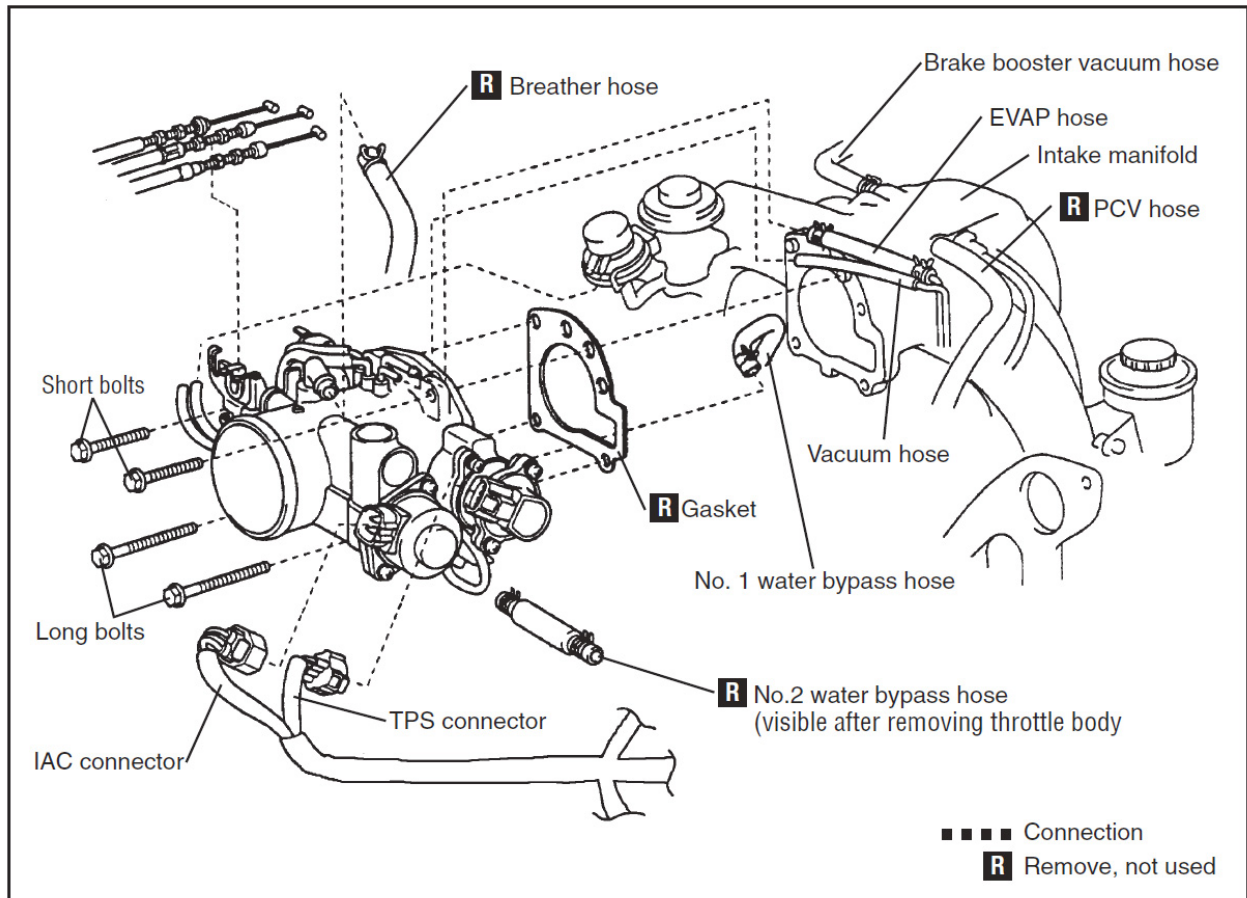
Note: To remove the VIN plate, notch the two roundhead bolts, then use a slotted screwdriver to remove the hold-down bolts.



14) Remove the throttle body as follows:

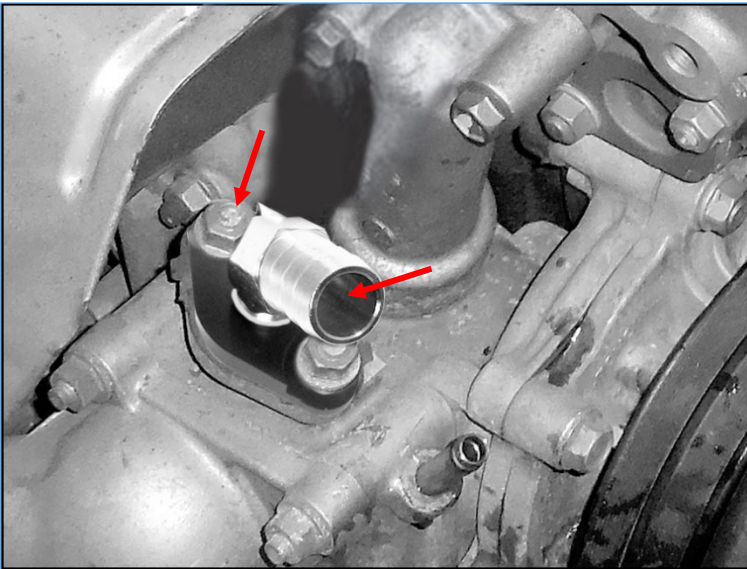
- a) Disconnect existing vacuum and coolant lines and the Idle Air Control (IAC) and Throttle Position Sensor (TPS) harness connectors from the throttle body.
- b) Remove the throttle body from the intake manifold and set aside in the engine compartment.
Remove the old throttle body gasket.

Note: Do not disconnect or disturb throttle or cruise control cable settings.

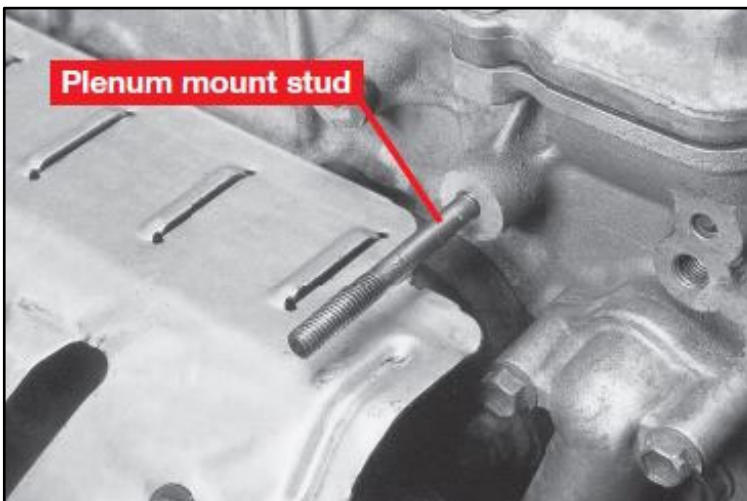




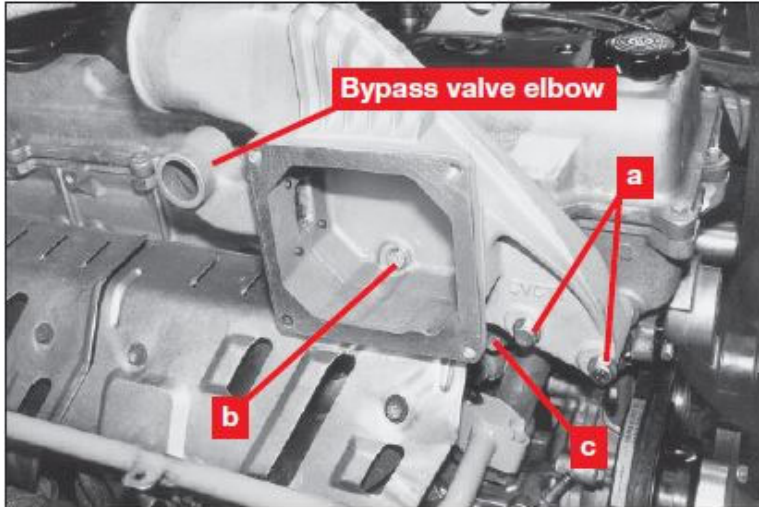
- 15) Apply Teflon thread sealant to the supplied 45° brass fitting and install it to the supplied heater pipe flange. Clock the fitting as shown.



- 16) Install the new heater pipe flange with the 45° brass fitting using the supplied gasket, and the OEM nuts at the arrow locations. Ensure that the 45° brass fitting faces out front towards the radiator.



- 17) Apply Loctite #242 to the cylinder head end of the supplied M8-1.25 x 80mm stud. Install the M8-1.25 x 80 mm stud into the cylinder head as shown.



Section 6: Install Supercharger and Throttle Body

18) Install the supercharger plenum assembly.

I.D. No. Fasteners

a) = (2) M10-1.25 x 80 mm hex bolts & washers

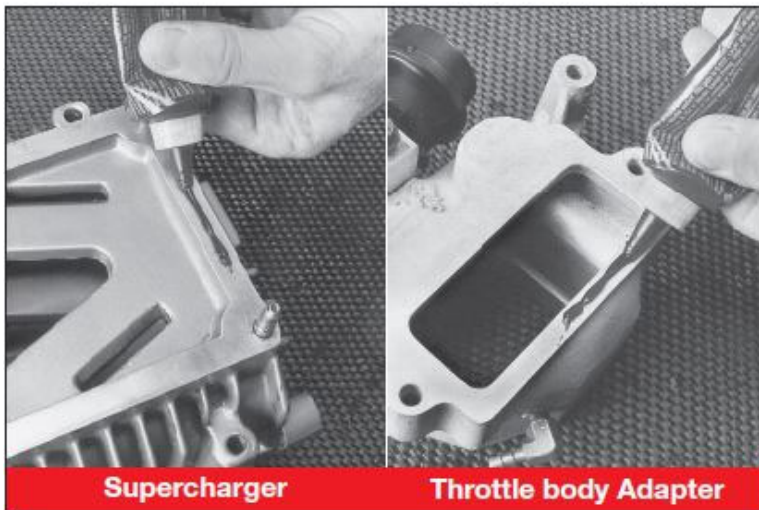
b) = (1) M8-1.25 x 30 mm hex bolt & washer

c) = (1) M8 Flange nut (no washer)

Note: Apply Loctite #518 to bolt and washer "b". Make sure the bolt hole is properly sealed!

Tighten bolts "a" to 16 ft•lbs.

Tighten bolts "b" and "c" to 14 ft•lbs.



19) Apply gasket sealer to the supercharger-to-plenum mounting surface and to the mounting surface of the throttle body adapter as shown.

Note: Use Loctite #518 or FIPG

20) Install the supercharger onto the plenum using (4) M8-1.25 flange nuts. Tighten the nuts to 14-16 ft•lbs.

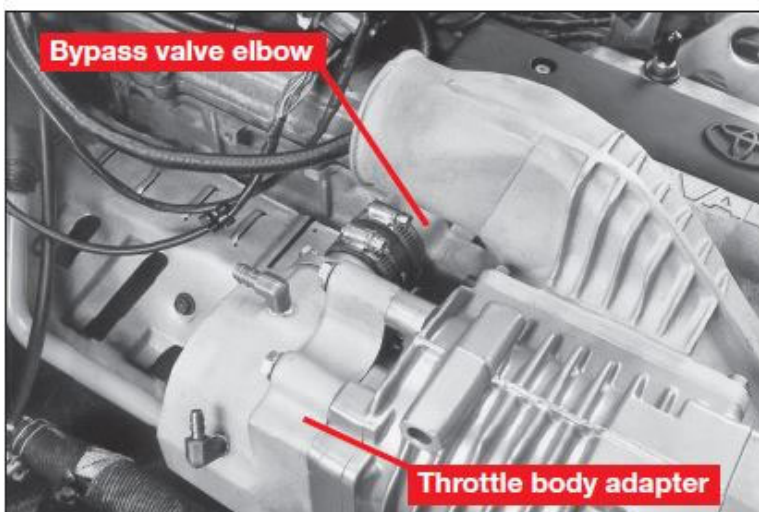
21) Preassemble the 1 1/2" x 2" hose onto the throttle body adapter using the supplied hose clamps.

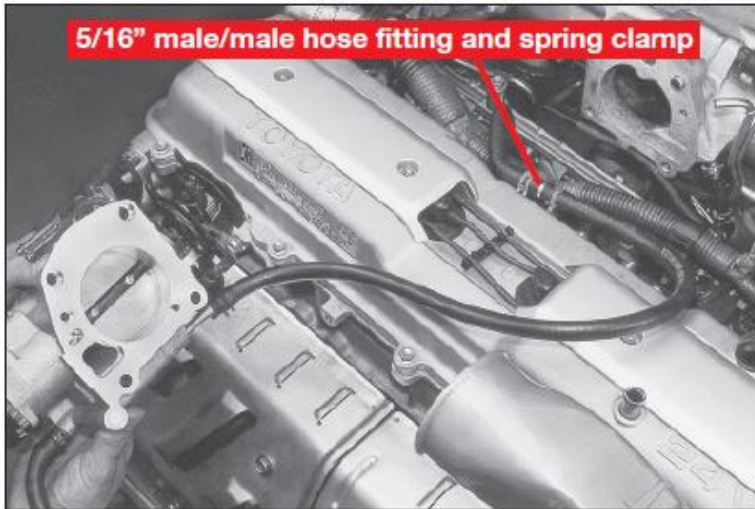
Install the hose onto the bypass valve elbow and the throttle body adapter onto the supercharger.

Use (4) M8-1.25 x 50 mm hex bolts and washers to install the throttle body adapter.

Note: Tighten the bolts to 14-16 ft•lbs.

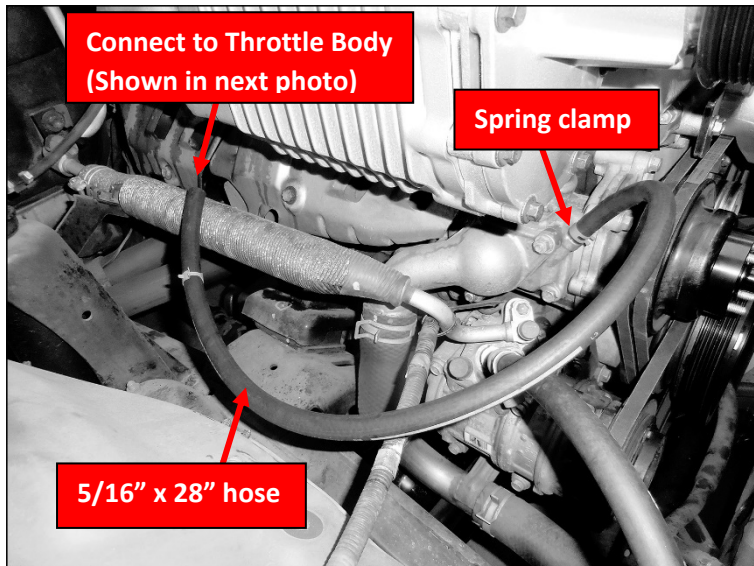
Install the hose clamps in the direction shown.



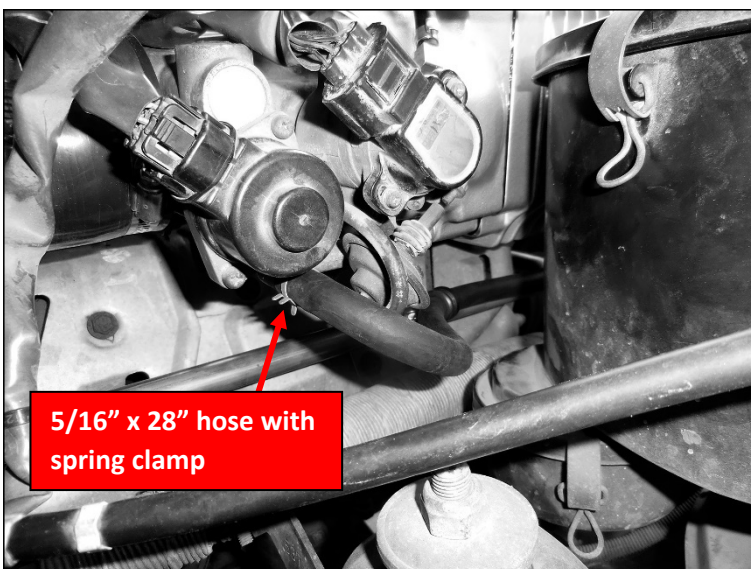


A spare clamp has been provided for the next step in case the OE clamp does not fit.

- 22) Extend the existing coolant hose to the throttle body using a 5/16" x 24" hose and a 5/16" male/ male barbed hose fitting and the supplied spring clamps. Route this hose under the intake manifold. Use the medium spring clamp on the barbed end of the hose.
- 23) Install the throttle body onto the throttle body adapter using the supplied gasket. Use the existing O.E. (2) short and (2) long bolts. Tighten the bolts to 14-16 ft•lbs.

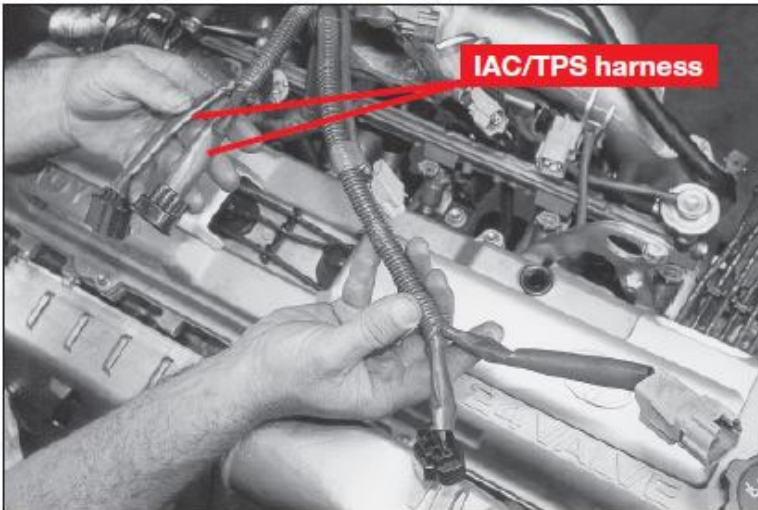


- 24) Install the provided 5/16" x 28" coolant hose between the throttle body and the thermostat housing as shown using the supplied spring clamps.



- 25) Install the 5/16" x 28" from the last step onto the throttle body at the location shown and secure with a provided spring clamp.

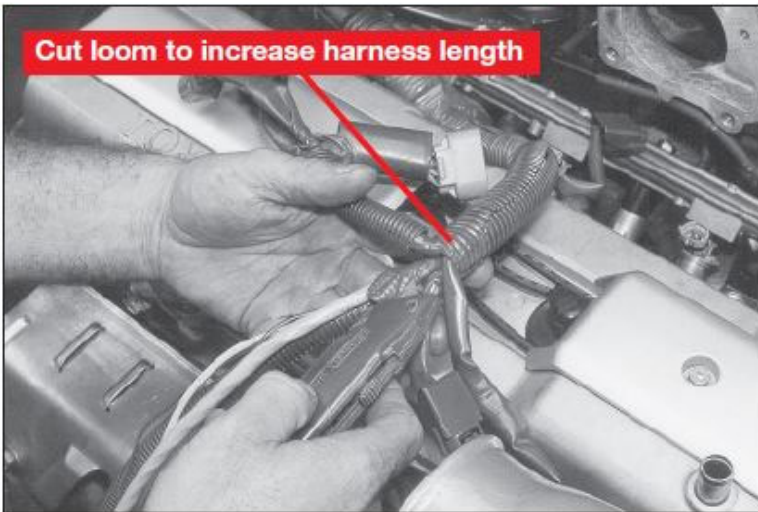
Section 7: Install Vacuum/Fluid Hoses Modify Electrical Harness



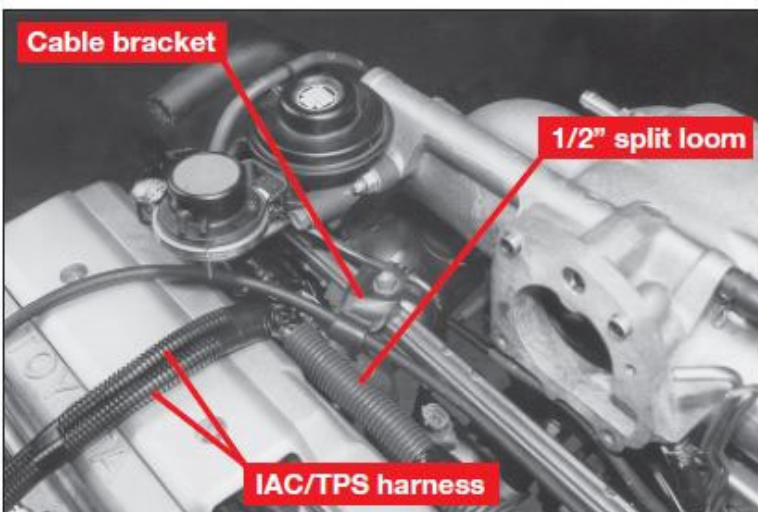
- 26) Relocate the existing TPS (Throttle Position Sensor) and IAC (Idle Air Control) harness connectors as follows:
- Disconnect the main wire harness from the engine connections as shown.
 - Carefully cut open the main wire harness wire loom to provide enough harness slack so the TPS and IAC connectors can reach the relocated throttle body.

CAUTION: Do not cut any wires.

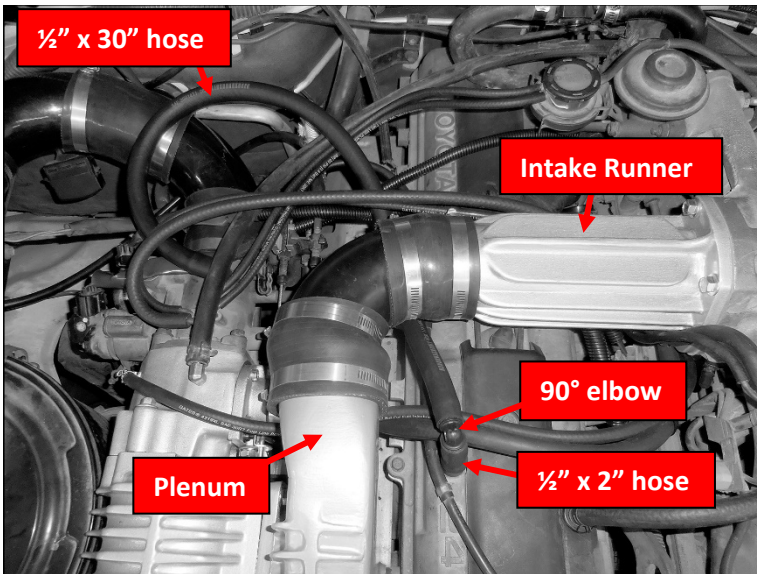
Note: You will have to cut the loom several inches to gain enough slack so the IAC and TPS connectors can reach the throttle body.



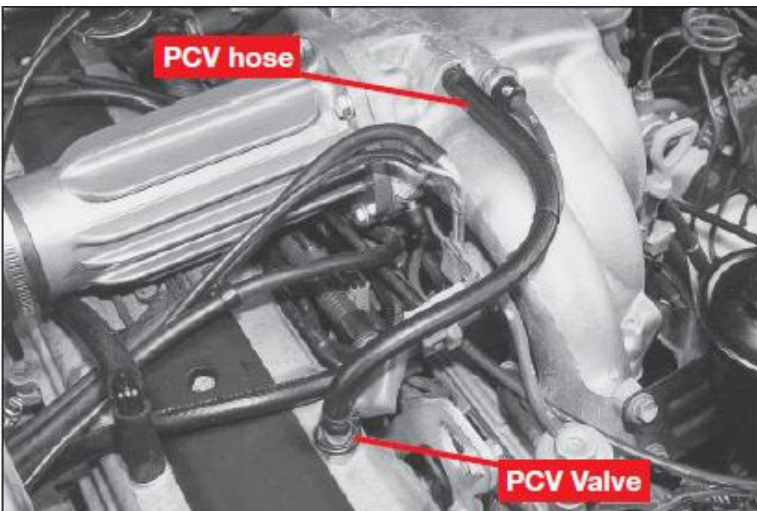
- Cover the exposed TPS and IAC wire harnesses with (2) supplied 3/8" x 16" split looms. Wrap the remaining wire harness with (1) 1/2" x 12" split loom using electrical tape as shown.



- 27) Remove the cable bracket from the charcoal canister, then install it in the location shown to secure the cruise control cable.

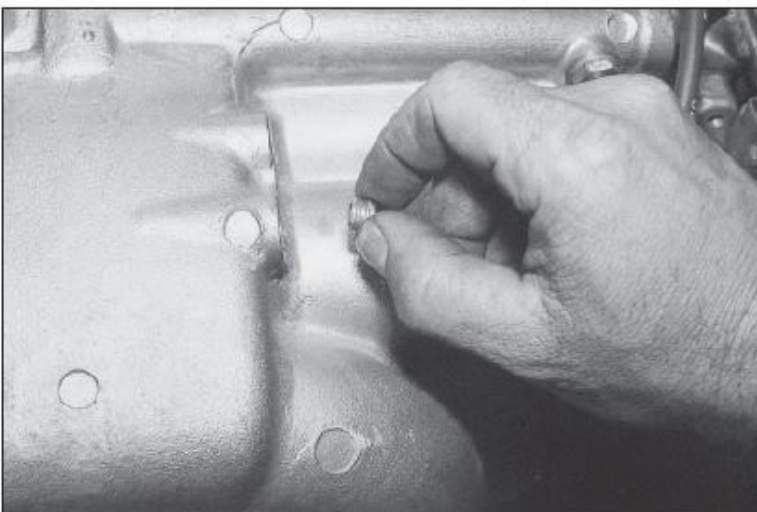


- 28) Install the Intake Runner with a provided throttle body gasket onto the intake manifold, using (4) M8-1.25 x 25 mm. Torque the bolts to 14-16 ft•lbs.
- 29) Place one 3" x 3" hose on the Intake Runner, and one 3" x 3" hose on the Plenum. Loosely install two hose clamps over each hose. Insert the 90° intake pipe (35-90-45-013-BL) into the (2) 3" x 3" hoses and tighten the four hose clamps.
- 30) Preassemble the breather hose assembly (1/2" x 30" hose, 90° elbow and 1/2" x 2" hose) then install between the throttle body and the valve cover.



- 31) Remove the existing PCV hose, then install the new PCV hose (5/16" x 12") between the PCV valve and the vacuum port on the intake manifold using the supplied spring clamps.

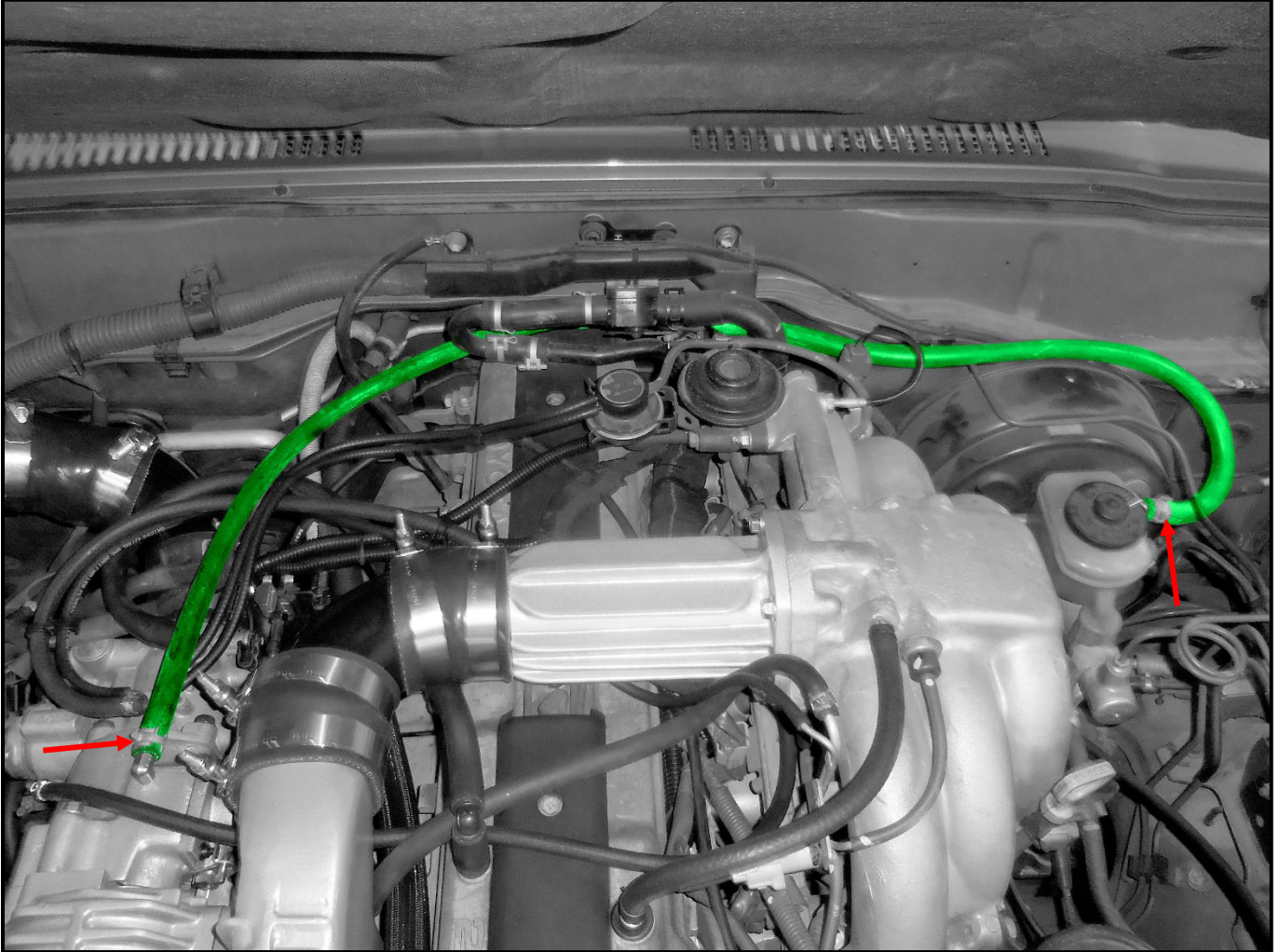
Note: Make sure the PCV valve in the cam cover is clean. The valve is okay if it rattles when shaken.

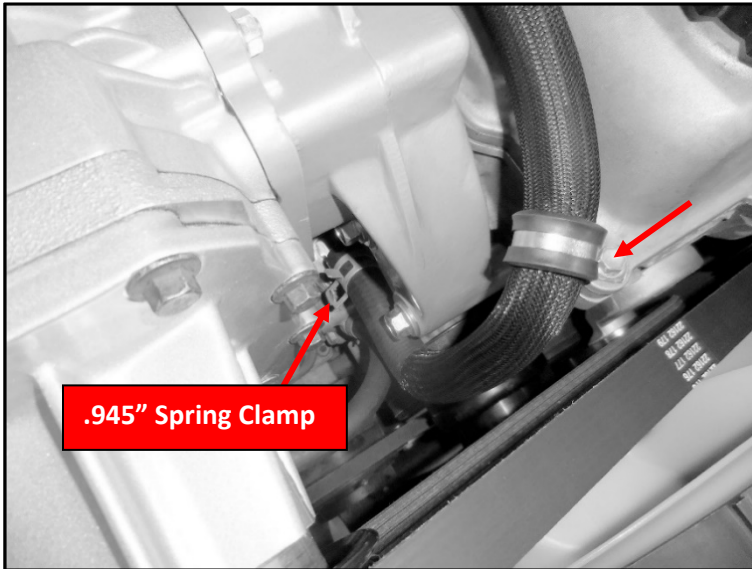


- 32) Remove the existing brake booster nipple from the intake manifold. Apply Teflon thread sealant to the supplied 1/8" BSP plug and install it where the brake booster nipple was.

Note: An 1/8" BSP to 1/8" NPT adapter is supplied to allow the connection of a boost gage at this location.

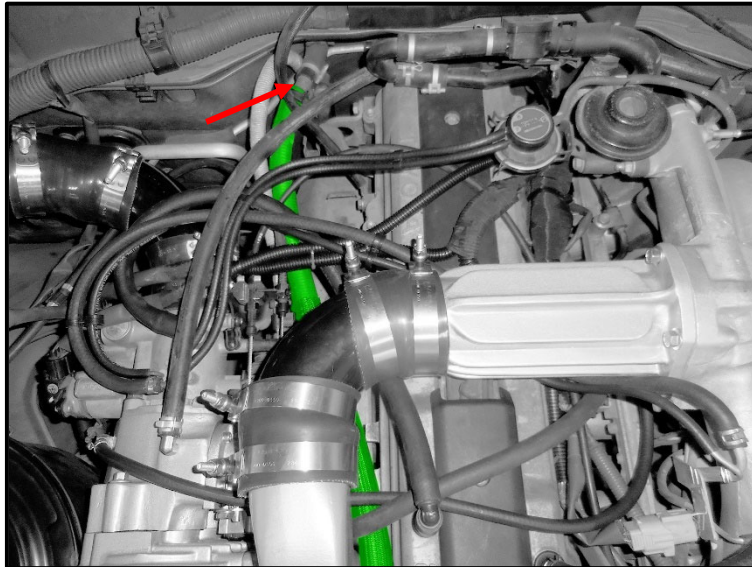
- 33) Remove the OEM hose from the brake booster. Save the OEM clamps. Install the provided 11/32"x50" brake booster hose (highlighted in green) at the at the arrow locations shown in the photo below, and secure with the OEM clamps. Ensure that the hose is routed close to the firewall and away from EGR.



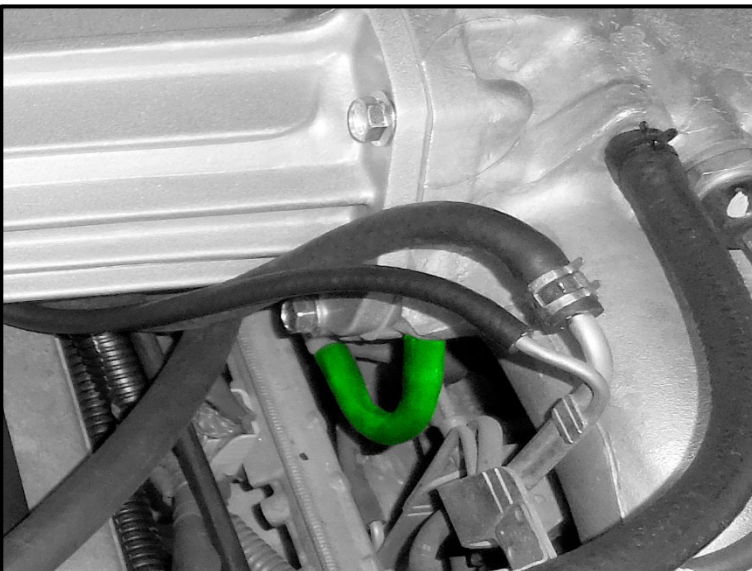


34) Slide the provided $\frac{3}{4}$ " OD mesh sleeve over the provided $\frac{5}{8}$ " OD 90° 4" x 48" coolant hose. Install the shorter 4" section of the hose over the 45° fitting that was installed earlier at the old heater pipe location and secure with a provided .945" spring clamp.

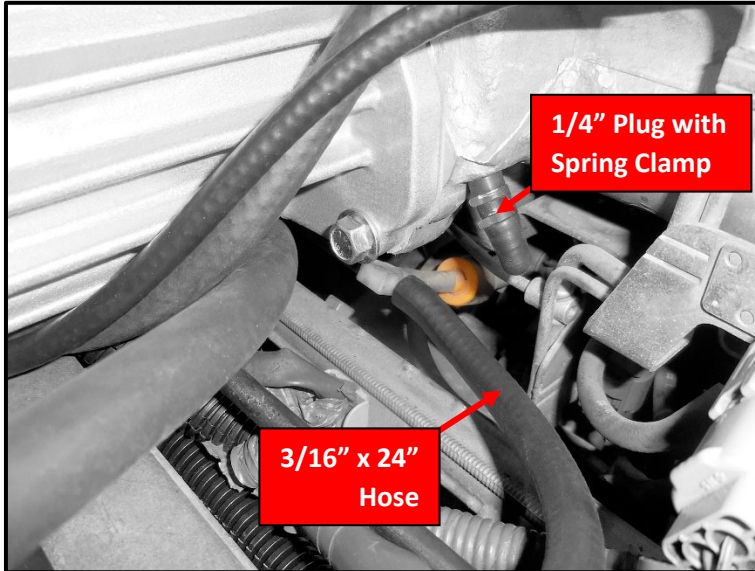
35) Remove the bolt from the valve cover at the arrow location and secure the hose from the last step with the provided Adel clamp using the same bolt.



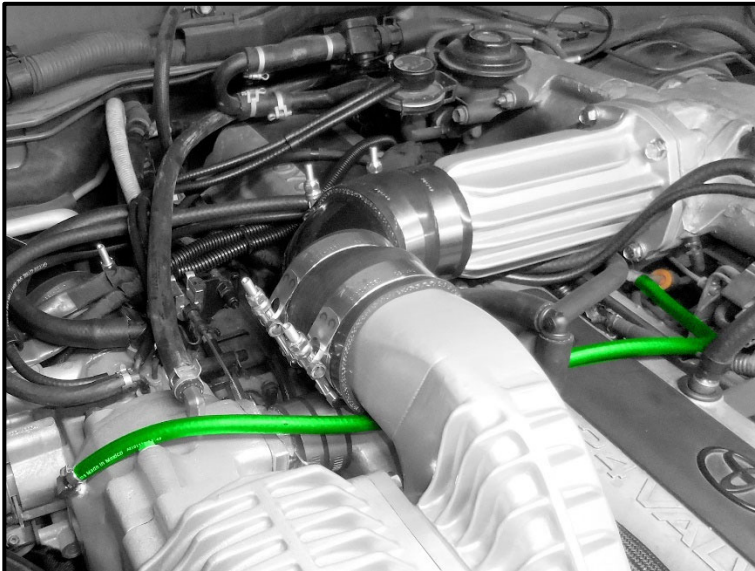
36) Route the $\frac{5}{8}$ " OD 90° 4" x 48" coolant hose from the last step following the route highlighted in green in this photo. Cut the hose to a length that will allow it to connect with the fitting at the arrow and secure it with a provided .945" spring clamp.



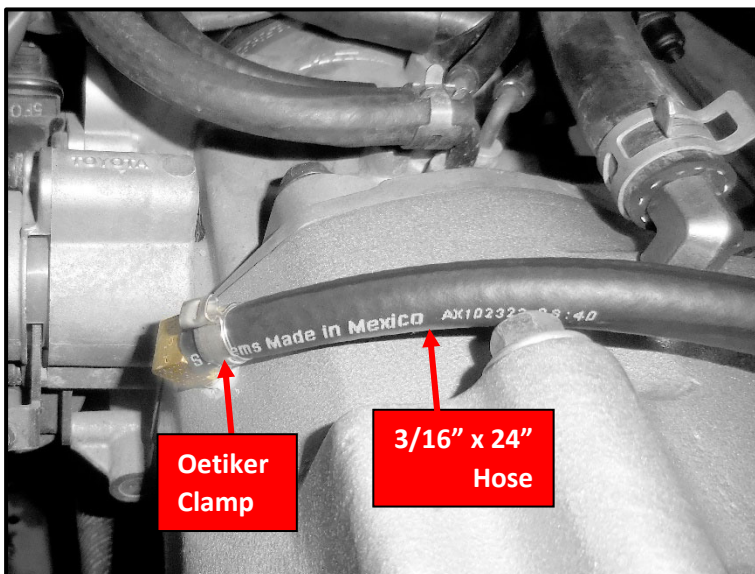
37) Remove the green highlighted hose.



- 38) Install the provided 3/16" x 24" hose at the "T" connection where the orange filter is under the intake flange. Install the 1/4" plug at the air tube, where the hose from the last step was removed, and secure with a provided spring clamp

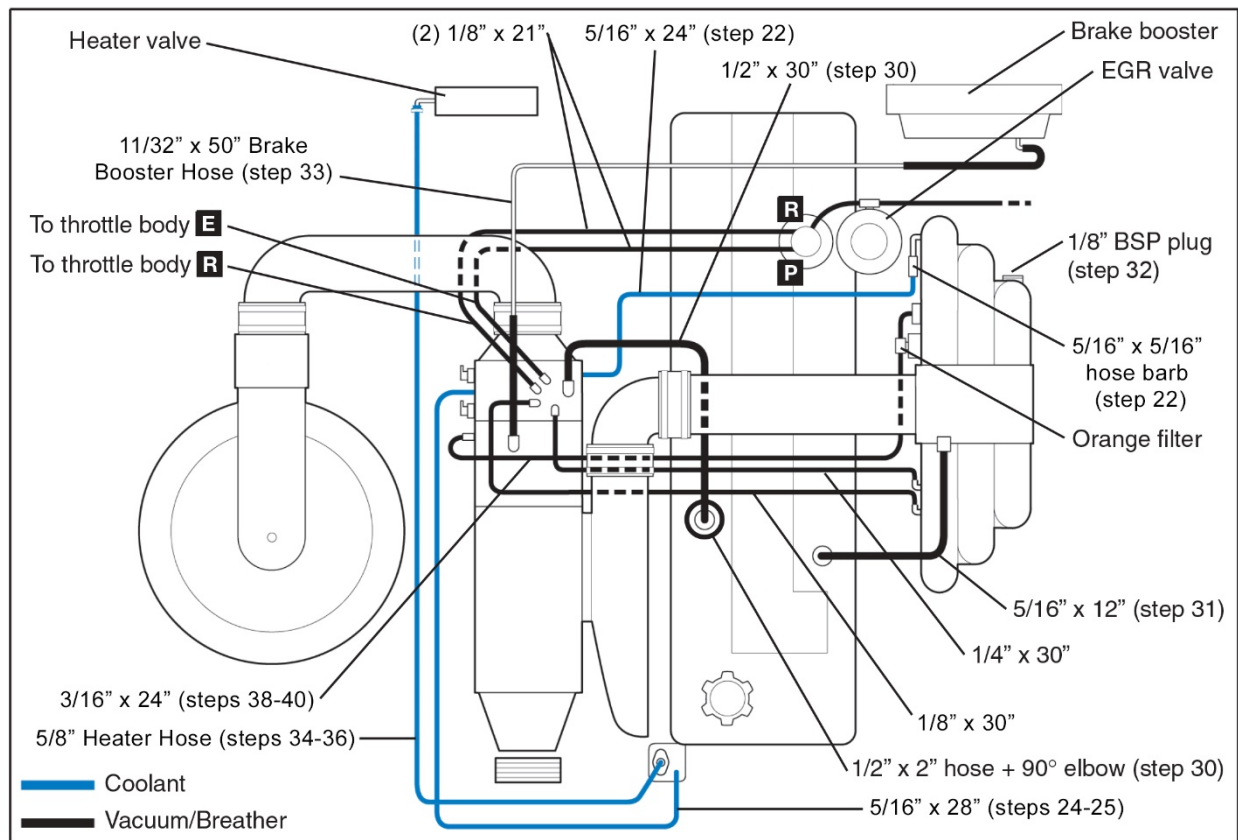


- 39) Route the 3/16" hose from the last step under the Plenum following the green highlighted location.



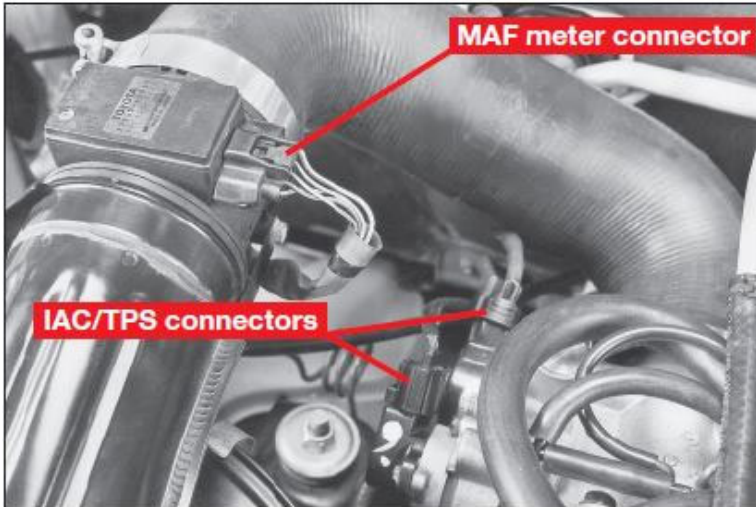
- 40) Connect the 3/16" hose from the last step to the barb at the location shown and secure with the provided Oetiker clamp using Oetiker clamp pliers.

41) Install and confirm vacuum, coolant and breather hose connections as shown.



42) Reinstall the air cleaner assembly with the air intake pointed in the direction shown.

43) Using provided band clamps, install the U-shaped intake pipe between the air cleaner and the throttle body. The intake pipe in the photo has been updated and will require some assembly. Follow the diagram at the back of this manual to build the U-shaped intake pipe.



44) Reinstall the MAF Meter connector onto the air cleaner.

45) Install the relocated TPS and IAC harness connectors onto the throttle body.

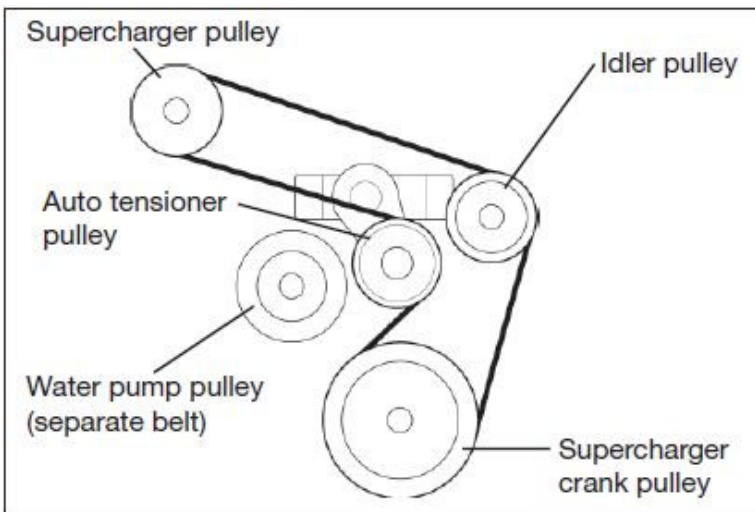
46) Install the new supercharger drive belt. Route the serpentine belt as shown.

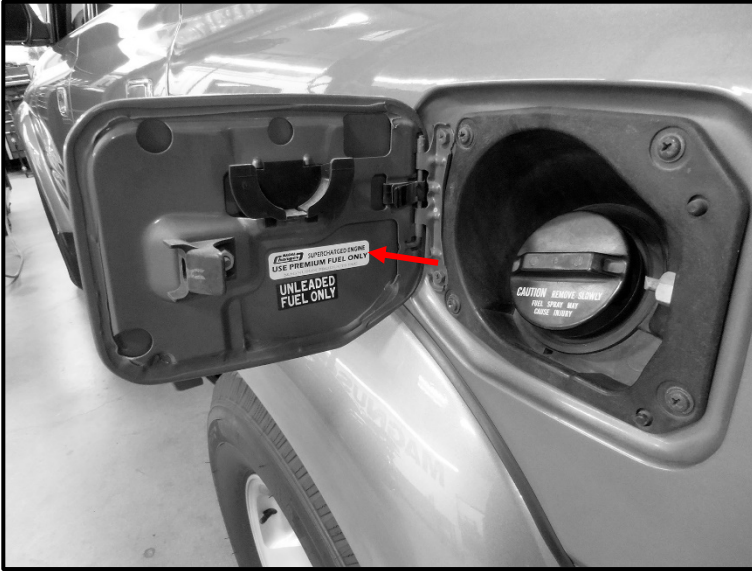
Note: Proper drive belt tension is provided by the spring-loaded auto tensioner. Rotate the auto tensioner with a 15 mm wrench to create enough slack to install and/or remove the belt.

Section 8: Final Assembly

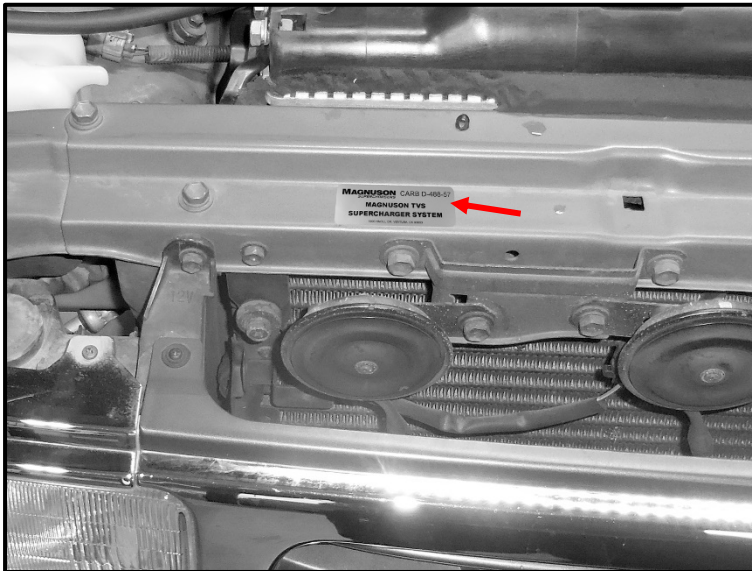
47) Reinstall the following parts and verify vacuum and coolant hose connections and routing:

- a) Battery tray
- b) Battery and hold-down clamp

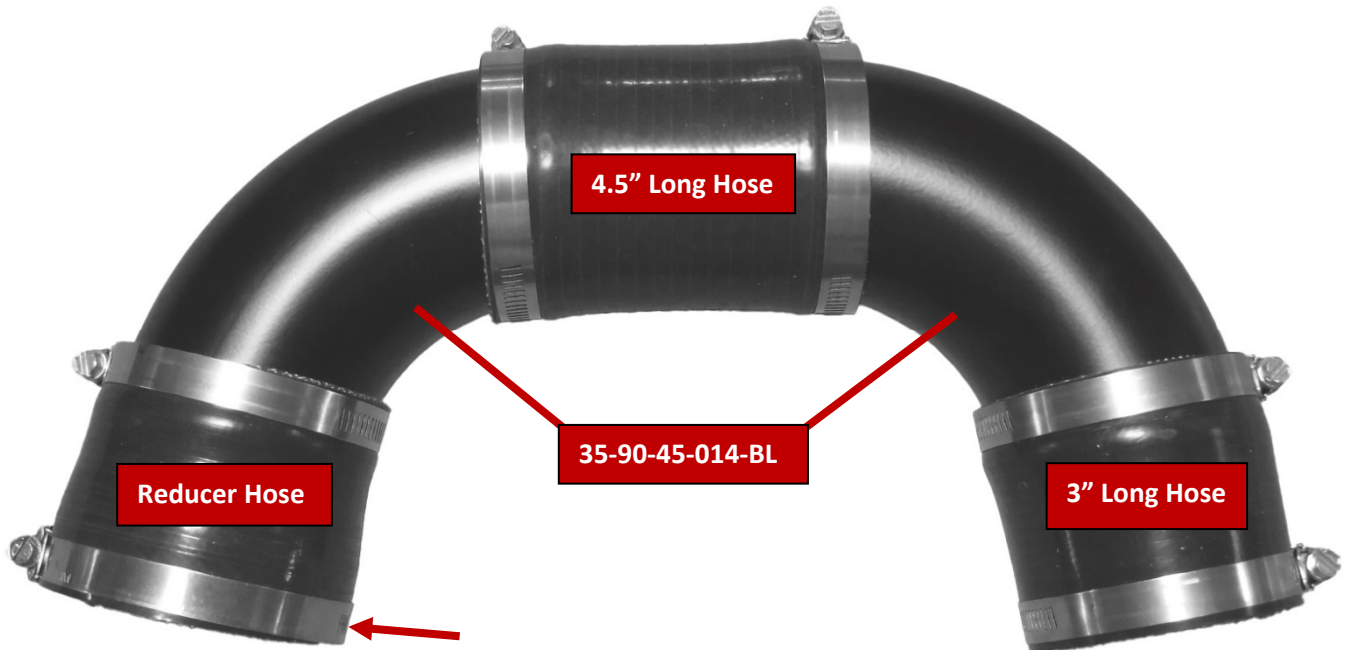




- 48) Refill the system with coolant.
- 49) Reconnect the battery cables.
- 50) Run the engine for about 15 minutes and check for leaks.
- 51) Apply the premium fuel stickers to the fuel gauge and fuel filler door.
- 52) Apply the CARB label on the radiator support.
- 53) Apply a Magnuson belt routing sticker to the underside of the hood.
- 54) Test drive the vehicle. Listen for any unusual noises, vibrations, or engine misfires. The supercharger does have a slight whining noise under boost conditions, which is normal. Listen for engine detonation (pinging). If any detonation is heard let up on the throttle immediately. Most detonation is caused by low octane gasoline still in the tank. Premium fuel is required. Recheck your coolant level. Top off as necessary. Your installation is now complete. Enjoy your new Supercharger.



U-Shaped Intake Pipe Assembly



The red arrow points to the larger #52 clamp. All other clamps are #48. Ensure that all hose clamps are past the raised beads on the metal elbows.