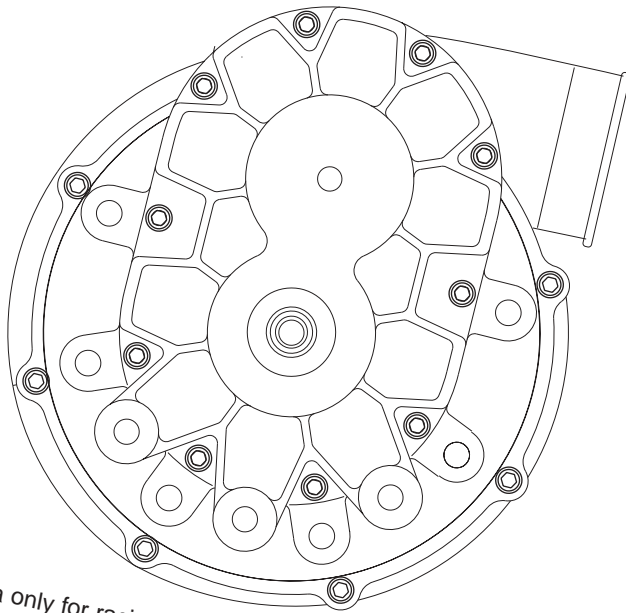


PONTIAC GTO

Supercharger System Installation Instructions

2004 Model Year*



*Legal in California only for racing vehicles which may never be used upon a highway.



ENGINEERING, LLC

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FOREWORD

This manual provides information on the installation, maintenance and service of this Vortech supercharger kit expressly designed for the 2004 GTO. Contact Vortech Engineering for any additional information regarding this kit and any of these modifications at (805) 604-1336 7:00am-3:30pm PST. An understanding of the information contained herein will help novices, as well as experienced technicians, to correctly install and receive the greatest possible benefit from their Vortech supercharger. When reference is made in this manual to a brand name, number, specific tool or technique, an equivalent product may be used in place of the item mentioned. All information, illustrations and specifications contained herein are based on the latest product information available at the time of this publication. All rights reserved to make changes at any time without notice.

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2004 PONTIAC GTO

Installation Instructions

Congratulations on selecting the best performing and best backed automotive supercharger available today... the VORTECH® supercharger!

Before beginning this installation, please read through this entire instruction booklet and the Street Supercharger System Owner's Manual which includes the Limited Warranty Program, the Warranty Registration form and return envelope.

Vortech supercharger systems are performance improving devices. In most cases, increases in torque of 30-35% and horsepower between 35-45% can be expected with the boost levels specified by Vortech Engineering. This product is intended for use on healthy, well maintained engines. Installation on a worn-out or damaged engine is not recommended and may result in failure of the engine as well as the supercharger. Vortech Engineering is not responsible for engine damage.

Installation on new vehicles will not harm or adversely affect the break-in period so long as factory break-in procedures are followed.

For best performance and continued durability, please take note of the following key points:

1. Use only premium grade fuel 91 octane or higher (R+M/2).
2. The engine must have stock compression ratio.
3. If the engine has been modified in any way, check with Vortech prior to using this product.
4. Always listen for any sign of detonation (pinging) and discontinue hard use (no boost) until problem is resolved.
5. Perform an oil and filter change upon completion of this installation and prior to test driving your vehicle. Thereafter, always use a high grade SF rated engine oil or a high quality synthetic, and change the oil and filter at least every 3,000 miles. Never attempt to extend the oil change interval beyond 3,000 miles, regardless of oil manufacturer's claims as potential damage to the supercharger may result.
6. Before beginning installation, replace all spark plugs that are older than 1 year or 10,000 miles with original heat range plugs as specified by the manufacturer and reset timing to factory specifications (follow the procedures indicated within the factory repair manual and/or as indicated on the factory underhood emissions tag). Do not use platinum spark plugs unless they are original equipment. Change spark plugs every 15,000 miles and spark plug wires at least every 50,000 miles.

TOOL & SUPPLY REQUIREMENT

- Factory repair manual
- 3/8" socket and drive set: SAE & metric
- 1/2" socket and drive set: SAE & metric
- Adjustable wrench
- Open end wrenches
- 5 quarts SF rated quality engine oil, oil filter and wrench
- GM power steering pulley puller/installer
- Hose cutters
- SAE nut drivers
- Lithium grease
- Grinder/hacksaw
- Allen wrenches: SAE & metric

If it has been 10,000 miles or more since your vehicle's last spark plug change, then you will also need:

- Spark plug socket
- NEW spark plugs



ENGINEERING, LLC

2004 Pontiac GTO

Part No. 4GJ218-010/018SQ

PARTS LIST

IMPORTANT: Before beginning installation, verify that all parts are included in the kit. Report any shortages or damaged parts immediately.

Part No.	Description	Qty.	Part Number	Description	Qty.
4GJ130-028	OIL FEED ASSY	1	2E190-011	IMP SHFT ASSY G3 GW	1
4GL010-020	OIL FEED ADAPTER PLATE	1	7U250-022	DOWEL PIN, .25 x .75	2
7C060-110	6mm x 1.0 x 110mm HXHD	1	7A250-102	1/4-20 x 1 SHCS	10
7J006-003	6mm WASHER	1	2A013-021	V1 GEARCASE STD	1
4GL010-030	GASKET, 5.3 OIL ADAPTER	1	2E170-021	INPUT SHAFT ASSY	1
7U250-000-220	OIL FEED HOSE, STL BRD x 23"	1	7W100-018	O-RING SPECIAL	0
7P125-004	1/8NPT 90° x -4 JIC, STL	2	2A060-012	IMPELLER SEAD, MECHANICAL	1
7F006-093	6mm x 1.0 NUTS	4	7P375-002	3/8 PIPE PLUG	2
7U100-065	TIE WRAPS	4	7P375-017	3/8NPT x 1/2 BEADED HSE BRB	1
4GJ130-036	OIL DRAIN ASSY	1	7P375-081	S/C OIL FEED FLTR	1
7U030-036	1/2" OIL DRAIN HOSE	2	7J375-024	3/8 COPPER WASHER	2
7R001-008	#6 HOSE CLAMPS	2	7P375-104	PLUG, SHORT	1
7P375-055	3/8" x 1/2" BARB x 90	1	4GR033-030	COG PULLEY, 30-TOOTH	1
7T560-002	ARBOR, ROTABROACH	1	2A100-030	RETAINER, COM 1/2 SIZE	2
7T560-001	CUTTER, 9/16" ROTABROACH	1	8R101-001	S/C PULLEY RET ASSY	1
2A017-876-09	SPACER, .875 x 1.22	2	4GJ112-010	S/C AIR INLET ASSY	1
7C080-045	8mm x 1.25 x 45mm	2	4GJ012-030	NEW INLET DUCT	1
7J312-000	8mm WASHER	2	4HS010-060	S2K INLET FLANGE	1
4GJ111-021	SUPERCHARGER DRIVE/MOUNT ASSY	1	7R002-056	#56 HOSE CLAMPS	5
4GJ016-021	DRIVE PULLEY, GTO	1	8H040-030	AIR FILTER	1
4GJ016-011	DRIVE PULLEY HUB, GTO	1	8D001-001	BYPASS VALVE	1
7A250-075	1/4-20 x .75" SHCS	6	7R002-016	#16 HOSE CLAMPS	4
2A042-105	COG BELT	1	7U133-045	Ø1" x 45° BYPASS HOSE	1
4GJ010-034	BRACKET, S/C MOUNT	1	7U034-016	1" BYPASS HOSE STRT	0.5'
2A017-875-10	SPACER, .875 x .430	2	7U030-046	VACUUM LINE	2
4GR116-300	ALUMINUM IDLER	1	7P375-250	VAC TEE	1
7A375-425	3/8"-16 x 4.25	1	7U032-016	3/8 FUEL HOSE	4
7F375-017	3/8-16 NUT	1	7P375-097	3/8NPT x 3/8 BARB	1
7A375-075	3/8-16 x .75	5	7U375-052	3/8 VACUUM CAP	1
7J010-002	10mm	1	7U100-062	RUBBER GROMMET	1
7J375-044	3/8 WASHER	6	7S350-200	3.5 x 2" SLEEVE	1
7C010-111	10mm x 1.5 x 110mm	3	7U035-001	FLEX DUCTING	0.83'
2A017-880-04	.875 x 2.201 SPACER	1	7R005-001	T-BOLT CLAMP	1
7J010-002	10mm WASHERS	4	7E010-049	SELF TAP SHT METL SCRW	4
2A017-875-14	SPACER, .875 x .880	2	8N106-120	COOLER/PUMP ASSY	1
7C010-040	10mm x 1.5 x 40mm	1	8N055-070	RESERVOIR, COOLER	1
???	Ø3/8 x 90° MOLDED HOSE	1	4GJ014-010	WATER TUBE, ALUM. COOLER	1
7P7P375-050	3/8" HOSE MENDER	1	7P500-026	3/4" x 90° BRASS FITTING	5
7R001-008	#8 HOSE CLAMPS	3	7P500-078	3/4 STRT FITTING, BRASS	1
4GJ017-011	SPACER, COG TENSIONER	1	7R007-001	NYLON RATCHET CLAMPS	14
8F060-042	42 LB/HR FUEL INJECTORS	8	7U038-000	3/4" WATER HOSE	10
8N401-050	DISCHARGE COOLER ASSY	1	8N006-010	SINGLE PASS SETRAB	1
7S275-200	2.75 x 2" SLEEVE	1	7A250-103	1/4-20 x 1 SHCS	2
7R002-044	#44 HOSE CLAMPS	5	7F250-021	1/4-20 NUTS	2
4GJ012-010	DISCHARGE DUCT A, GTO	1	7J250-001	1/4 WASHERS	4
8N301-250	CHARGE COOLER ASSY, GTO	1	7R003-027	ADEL CLAMP 1-11/16"	1
8N003-010	5.0L TANKS	1	5W001-025	FEMALE SLIDE MINI	1
8N003-070	LS1 TANK	1	5W001-013	14-16GA BUTT CONNECTORS	4
8N201-001	S2K CORE w/TANKS	1	5W001-019	12-10GA BUTT CONNECTORS	2
7S300-275	3.0 x 2.75 REDUCER SLEEVE	1	7E010-049	SHT MTL SCREW, SELF-TAP	3
7R002-048	#48 HOSE CLAMPS	2	7U038-012	Ø3/4 x 90° MOLDED HOSE	4
4GJ012-020	DISCHARGE DUCT B, GTO	1	7P375-075	Ø3/4 BRASS, BARBED HOSE MENDER	2
7R002-064	#64 HOSE CLAMP	1	8N107-050	WATER PUMP ASSY, LS1	1
4GL012-030	90° ELBOW SLEEVE	1	5W001-005	3/8 PLASTIC WIRE LOOM	5'
8N055-050	SURGE TANK CAP	1	5W001-009	16-14 MALE SLIDE INSUL	1
7S275-300	Ø2.75 x 3" SLEEVE	1	5W001-013	14-16 SOLDERLESS CONNECTOR	4
2E228-400/408	S/C ASSY CW/STRT VOUTE	1	5W001-014	FUSE HOLDER	1
2A021-090	IMPELLER, S-TRIM	1	5W001-015	FUSE, BLADE 20 AMP	1
2A100-010	NAME PLATE	1	5W001-019	10-12GA BUTT CONN	2
7A250-037	1/4-20 x .375 SHCS	6	5W001-022	T-TAP CONN 14-16	1
7U100-023	DRIVE SCREW #4	2	5W001-024	MINI ATC FUSE TAP	1
2A100-110	IMPELLER SPACER	0	5W001-041	12-10 MALE SLIDE	2
2A100-020	RETAINER COMPRESSOR	1	5W001-043	12-10GA x RING TERM	3
2A018-101	VOLUTE, STRT S-TRIM	1	7A250-050	1/4-20 x .50 SHCS	2
7F375-024	NUT, IMP 3.8LH	1	7F250-021	1/4-20 NYLOCK NUT	1
2E118-000	V-2 G/C ASSY CW	1	7R0003-027	ADEL CLAMP 1-11/16"	1
2A060-020	OIL SEAL, INPUT SHAFT	1	7U100-044	TIE-WRAP 4"	4
7X100-026	WAVE WASHER, SMALL	1	8F001-402	PIERBURG WATER PUMP	1
7X100-027	WAVE WASHER, LARGE	1	7U100-055	TIE-WRAP 7.5"	6



ENGINEERING, LLC

2004 Pontiac GTO
Part No. 4GJ218-010/018SQ
PARTS LIST

IMPORTANT: Before beginning installation, verify that all parts are included in the kit. Report any shortages or damaged parts immediately.

Part No.	Description	Qty.
8F101-320	WATER PUMP RELAY ASSY, LS1 TRK	1
SW001-010	16-14GA FEMALE SLIDE INSULATED	2
SW001-016	RELAY, BOSCH	1
SW001-040	12-10GA FEMALE SLIDE INSULATED	2
SW001-042	12-10GA 3/16" RING TERMINAL	2
SW012-000	12GA STRD WIRE, RED	9.5'
SW012-000	12GA STRD WIRE, RED	1.5'
SW012-010	12GA WIRE BLACK	.5'
SW014-030	14GA STRD WIRE BLACK	.5'
SW016-010	WIRE STRND, 16AWG YELLOW	2.5'
4GJ110-010	P/S COOLER RELOCATION ASSY	1
7U032-016	FUEL HOSE Ø3/8	5.5'
7R001-008	#8 HOSE CLAMPS	4
4PGL010-080	BRKT, L-STYLE, P/S MOUNT	2
7A250-126	1/4-20 x 1-1/4 HXHD	2
7J250-001	1/4" WASHERS	4
7A250-125	1/4-20 NYLOCK NUTS	2
7E010-049	SHT MTL SCRWS, SELF-TAP	2
4GJ110-020	COOLANT RESERVOIR RELOC ASSY	1
4GJ010-020	BRKT, COOLANT RESERVOIR	1
7F006-092	6mm x 1.0 NUTS	2
4GJ017-021	SPACER, 6mm x 1.0	1
7U006-100	6mm x 1.0 STUD x 1.0	1
7U034-016	Ø1.0 HOSE	.33'
7R002-016	#16 HOSE CLAMP	2
7P100-010	Ø1.0 PLASTIC HOSE UNION	1
4GJ110-030	COIL RELOCATION ASSY	1
7C060-016	6mm x 1.0 x 16mm HXHD	6
7J006-093	6mm WASHER	6
4GJ010-050	HEAT SHIELD	1
4GJ010-030	TRIANGLE RELOCATION BRKT	1
4GJ010-010	BRKT A, COIL RELOCATION	1

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1. PREPARATION/REMOVAL

- A. Remove the engine covers, all ducting leading to the throttle body and the plastic air dam connected to the airbox. (It might be necessary to unsnap the coolant reservoir to remove the airbox assembly.)
- B. Remove the air temp sensor from the inlet and set aside.
- C. Remove the power steering reservoir from its mounting bracket. Remove the reservoir bracket and set aside for modification and reinstallation.
- D. Remove the two screws securing the power steering pump. Pull the pump away from the head and turn so there is enough room to use the pulley puller. Remove the power steering pump pulley. Let the pump rest in the engine compartment.
- E. Leaving the coolant reservoir hoses connected, set the reservoir on the engine so that the area around the computer can be accessed. (See Fig. 1-a.)
- F. Remove the plastic lid from the computer. (See Fig 1-a.) Remove the two nuts securing the coolant reservoir bracket. Remove the screw securing the secondary bracket to the master cylinder and remove both factory brackets.
- G. Remove the heat shield protecting the computer from the exhaust.
- H. Remove the rubber bumper and grommet stud from the factory reservoir bracket and install them into the supplied reservoir bracket. (See Fig 1-b.)
- I. Modify the plastic computer cover as shown and reinstall it back over the computer. (See Fig. 1-c.)
- J. Remove the plastic pins securing the plastic cover over the radiator. Remove the plastic cover.
- K. Remove the factory skid plate.
- L. Un-secure the splash panels from under the front of the vehicle. Remove the splash panels.
- M. Remove all hardware securing the front bumper cover. Below the headlights on each side of the vehicle the bumper cover snaps to the bumper. Unsnap these points and remove the bumper cover from the vehicle.
- N. Drain approximately 1 gallon of coolant from the vehicle.

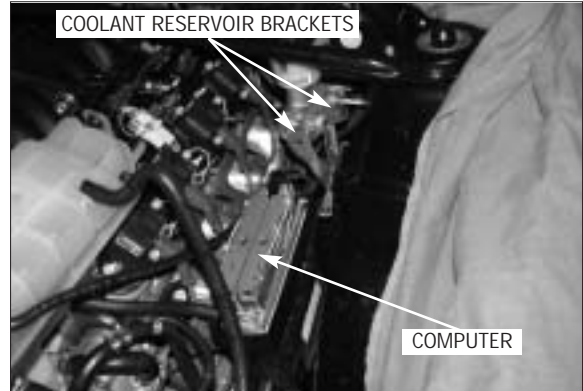


Fig. 1-a

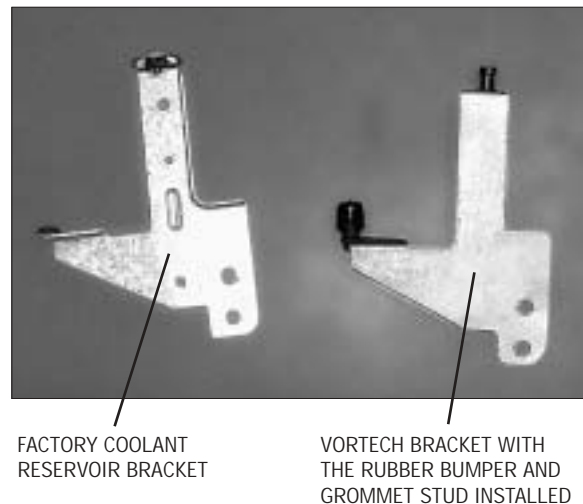


Fig. 1-b



Fig. 1-c

1. PREPARATION/REMOVAL, cont'd

- O. Locate the valve cover breather on the passenger side valve cover. Remove the hose connecting the breather port on the valve cover to the port on the throttle body.
- P. Plug the throttle body port with the supplied 3/8 rubber cap.
- Q. Install the supplied Ø3/8 hose from the valve cover port and run the hose across the engine to the future location of the supercharger inlet.
- Q. Remove the plastic oil fill. Insert the oil fill cap directly into the valve cover. (See *Fig. 2-c.*)

2. IGNITION COIL RELOCATION

- A. Locate the coils and their bracket on the passenger side of the vehicle.
- B. Remove the coils and bracket from the valve cover as one assembly leaving the plug wires attached. Let the assembly rest against the inner fender. Unplug the wiring harness from the coil assembly. (See *Fig 2-a.*)
- C. Gently bend the oil dip stick tube forward and in toward the valve cover. (See *Figs 2-a, 2-b.*)
- D. Using three 6mm x 1.0 x 16mm screws and washers secure the supplied heat shield to the lower row of holes on the valve cover. Make sure the dipstick is located between the heat shield and the valve cover.
- E. Using factory hardware, mount the triangular coil relocation bracket to the upper rear holes on the passenger side valve cover. Using the supplied 6mm x 1.0 x 16mm hardware, mount the secondary coil relocation bracket on the upper forward most hole location. Make sure the threaded holes hang down for the coil bracket to mount to. (See *Fig 2-c.*)
- F. Using the supplied 6mm x 1.0 x 16mm screws and washers mount the coil bracket to the installed relocation brackets. (See *Fig. 2-c.*)
- G. Reconnect the harness plug.



Fig. 2-a

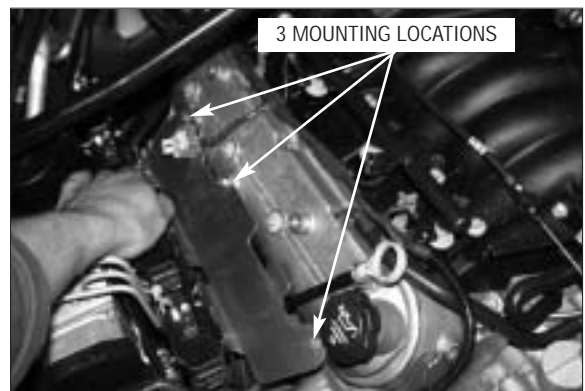


Fig. 2-b

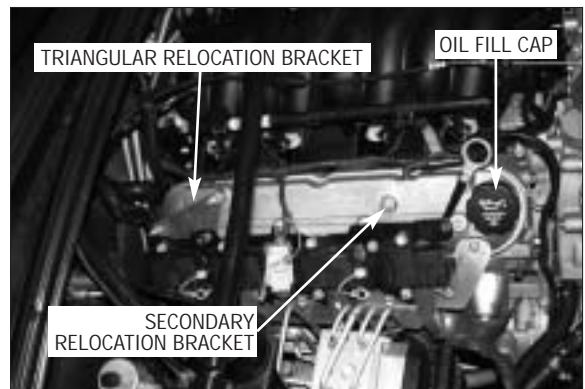


Fig. 2-c

3. COOLANT RESERVOIR MODIFICATIONS

- A. Install the supplied coolant reservoir bracket, containing the factory bumper and grommet stud, in the same location as the factory bracket.

NOTE: The brackets will appear the same, but on the supplied bracket the tabs are bent 180° from stock. (See Fig 3-a.)

- B. Remove the grommet stud from the inside drivers fender wall.
- C. Locate the supplied 1" aluminum spacer. Thread the supplied 6mm stud into one end half way into the spacer. Thread the grommet stud into the open end.
- D. Thread the spacer, stud and grommet stud assembly into the factory mounting location. (See Fig 3-b.)
- E. Remove the Ø1" hose from the bottom of the coolant reservoir. Use the supplied Ø1.0 x 4.0" piece of hose, #16 hose clamps and Ø1.0 hose mender to lengthen the hose. (See Fig 3-c.)
- F. Modify the computer heat shield as shown in Fig. 3-d and reinstall it back in the factory position. (See Fig 3-e.)



Fig. 3-a



Fig. 3-b



Fig. 3-c

3. COOLANT RESERVOIR MODIFICATIONS, cont'd



Fig. 3-d



Fig. 3-e

4. OIL FEED

- A. Remove the oil filter.
- B. Remove the 6mm nuts holding the small cast-plate located directly above the oil filter. (Set aside the plate and gasket for later use)
- C. Double nut each of the studs and remove them.
- D. Using engine oil on the threads, install the 1/8NPT to -4 90° fitting into the supplied oil feed adapter.
- E. Using the adapter, the supplied factory gasket and the supplied longer 6mm screws, assemble the components as shown in *Fig 4-a*.
- F. Orient the installed fitting so that it is pointing away from the engine.
- G. Install the oil feed hose onto the open -4 end of the fitting. Route the oil feed hose so that it follows the side of the alternator up to the supercharger mounting location.

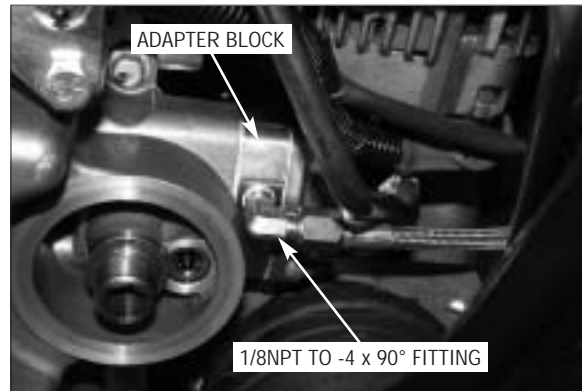


Fig. 4-a

5. OIL DRAIN

- A. Un-secure the hard coolant tube mounted to the cross member directly in front of the oil pan. Un-secure the power steering line/wiring bracket located on the bottom lip of the oil pan. Push these brackets/tubes down to gain access to the oil drain area. (See Fig 5-a)
- B. To provide an oil drain for the supercharger, it is necessary to make a hole in the oil pan. Locate and center punch the hole per Fig 5-b. Drill a 1/8" pilot hole at center location.
- C. Use the supplied 9/16" roto broach to drill the hole in the oil pan. Take care to break through the pan gently and remove the cut out.
- D. Pack the flutes of the 3/8NPT tap with grease. Tap the hole until the fitting can be started.
- E. Thoroughly clean the threaded area. Reach inside the oil pan and retrieve any stray chips. Apply a small amount of sealer to the new threads. Apply more sealer to the supplied 3/8" NPT x 1/2" barb x 90° fitting and secure in the hole. Make sure the seal is formed all around the fitting. Install the supplied 90° elbow pointing to the drivers side and slightly up. (See Fig 5-c.)
- F. Re-secure the hard coolant tube to the lower cross member.
- G. Install the supplied spacers between the power steering/wiring bracket and the oil pan mounting lip with the supplied 8mm x 45mm long hardware.(See Fig 5-a.)

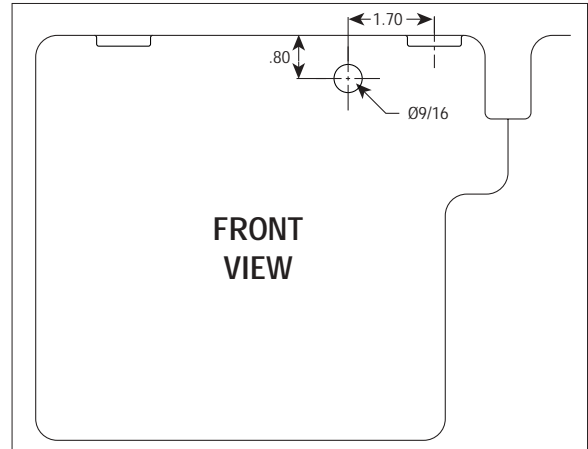


Fig. 5-b

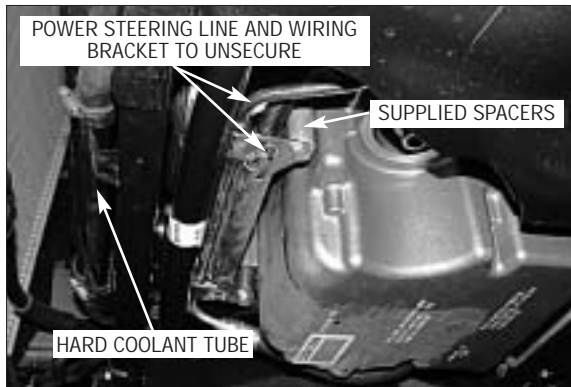


Fig. 5-a

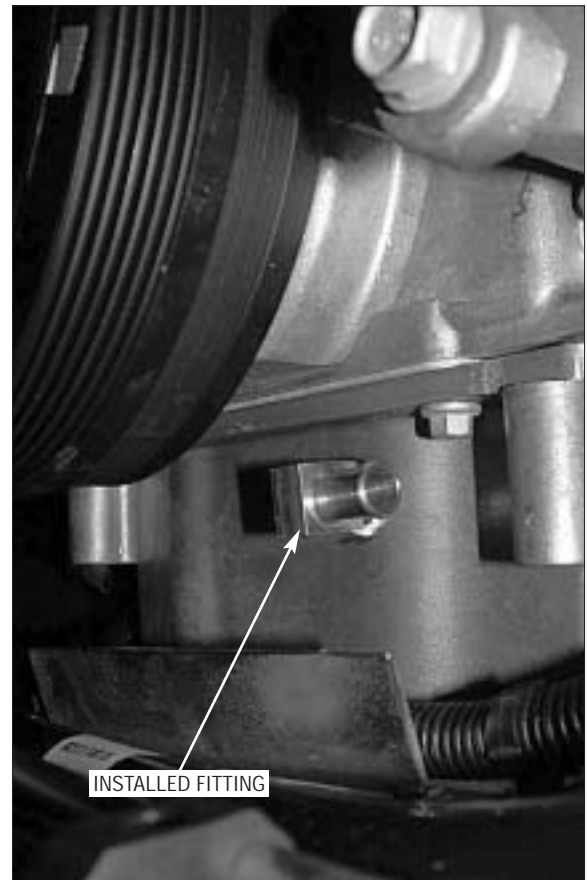


Fig. 5-c

6. FUEL INJECTOR REPLACEMENT

- A. Relieve the fuel system pressure.
- B. Disconnect the eight fuel injector wiring clips and retainers from the injectors.

NOTE: Do not reinstall factory injector retaining clips

- C. Remove the four 10mm bolts holding down the fuel rails on the intake manifold. Lift up on the rails evenly, removing all eight injectors.
- D. Using a small amount of clean motor oil, lightly lubricate the O-rings on both ends of the Vortech supplied fuel injectors.
- E. Install the new injectors into the fuel rails with the terminals facing outward.
- F. Carefully lower the fuel rail/injector assembly down onto the intake manifold. Check to see that the injector has been seated properly into the manifold.
- G. Tighten down the fuel rail assembly with the original bolts and attach the wiring clips to the injector terminals.

7. POWER STEERING RESERVOIR MODIFICATIONS

- A. Remove the return line from the power steering reservoir.
- B. Trim the factory hose until there is .50" remaining before the molded bend.
- C. Install the supplied $\text{Ø}3/8$ " hose mender and new 90° molded hose. Secure with the supplied #8 hose clamps. (See *Fig 8-e*.)
- D. Lay the reservoir aside in the engine compartment until the reservoir bracket is installed.

8. SUPERCHARGER MOUNTING

- A. Turn the power steering pump sideways and install the supplied power steering/supercharger drive pulley hub. **Make sure that the hub is seated flush with the end of the power steering pump shaft.** (See Fig. 8-c.)
- B. Locate the power steering reservoir bracket. The engine lift hook will have to be removed from the bracket. Use a saw or grinder and remove the section as shown in Fig. 8-a.
- C. Using two 10mm x 1.5 x 110mm screws, washers and .430 spacers, secure the mounting bracket to the front of the power steering pump. Use the .430 spacers between the pump and back of the plate. (See Fig. 8-c.)
- D. For the third mounting location, use a 10mm x 1.5 x 110mm screw, 10mm washer, 2.2" spacer, power steering bracket and .880" spacer. The 10mm screw will pass through the washer, mounting plate, 2.2" spacer, left hole in power steering reservoir bracket, .880" spacer and thread into the head. (See Fig. 8-d.)
- E. Using the other supplied .880 spacer and 10mm x 1.5 x 40mm screw secure the last hole of the power steering reservoir bracket into its factory position.
- F. Reinstall the power steering reservoir back into the holder bracket. (See Fig. 8-e.)

NOTE: When installing the aluminum drive pulley heat may be necessary for installation due to tight tolerances. Do not force the pulley on the hub. After the pulley is installed spin it to verify that the hub and pulley are mated flush.

- G. Using the six supplied 1/4-20 x .75" SHCS secure the anodized drive pulley on the drive hub. Torque the screws to 16 ft/lbs. (Blue loctite is recommended on the 1/4" hardware.) (See Fig. 8-l.)
- H. Reinstall the factory belt with the factory belt routing.
- I. Install the oil drain line on the supercharger and secure it with the supplied #8 hose clamp.
- J. Using a 23/32" drill make a hole in the aluminum inlet duct as shown in Fig. 8-f. Drill the hole leaving at least .75" from the lip.
- K. Install the T-bolt clamp onto the inlet duct, then place the inlet duct on the supercharger. Orient the duct as shown in figures 8-g, 8-h. Tighten the t-bolt clamp so that the inlet duct is snug. When the supercharger and inlet duct are installed the clocking of the inlet duct can be fine tuned.

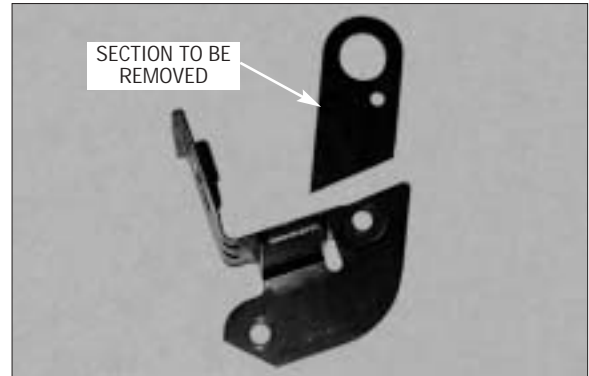


Fig. 8-a

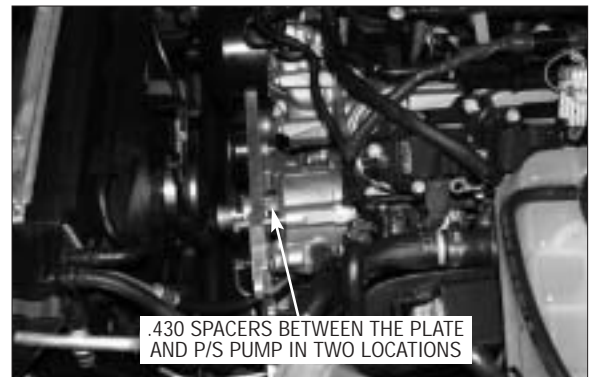


Fig. 8-b

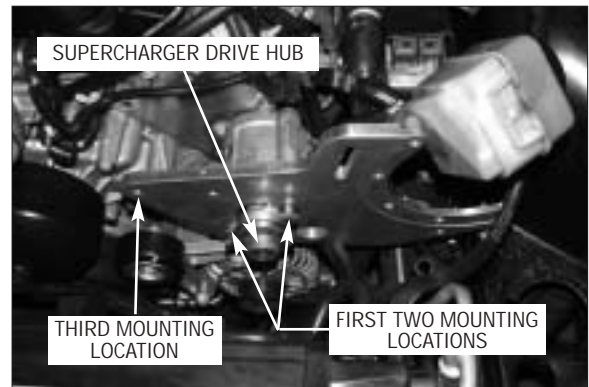


Fig. 8-c

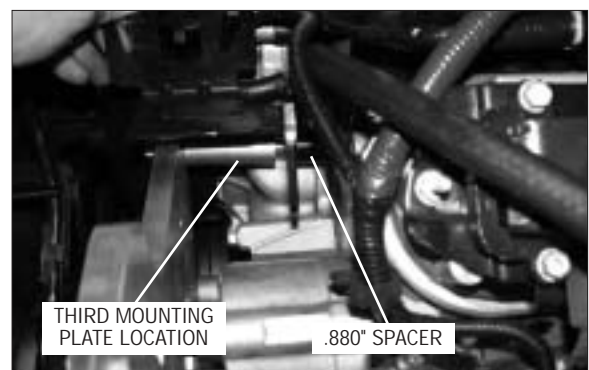


Fig. 8-d

8. SUPERCHARGER MOUNTING, cont'd

- L. Install the 1/8NPT x -4 x 90° fitting into the supercharger. Orient the fitting down. (See Fig. 8-h.)
- M. Install the supplied 3/8NPT x 3/8 barb into the 3/8NPT hole in the inlet duct. Insert the IAT sensor and grommet into the inlet duct.
- N. Install the supercharger/inlet duct assembly onto the mounting bracket and secure with the supplied 3/8-16 x .75" screws and washers. (It may be necessary to unsnap the coolant reservoir to install the supercharger and air inlet duct.)
- O. Disconnect the radiator end of the coolant overflow/return hose and run it below the aluminum A/C line on the driver side and reattach it to the original location. (See Fig 8-j.)
- P. Connect the oil drain hose to the fitting at the pan and secure with a #8 hose clamp. Run the hose around the side of the alternator and secure from any sharp objects.
- Q. Connect the oil feed line and route it with the oil drain hose. Secure it away from heat or sharp objects.
- R. Connect the Ø3/8 hose from the passengers side valve cover to the 3/8" barb on the inlet duct.



Fig. 8-e

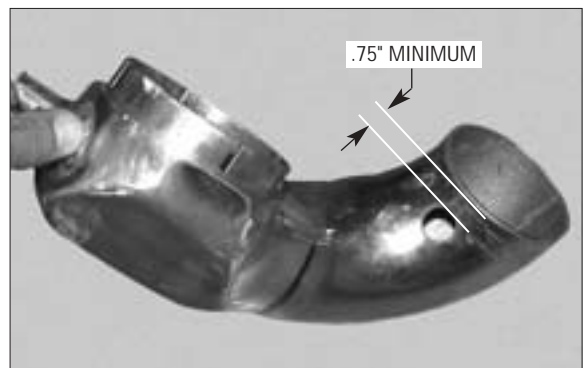


Fig. 8-f

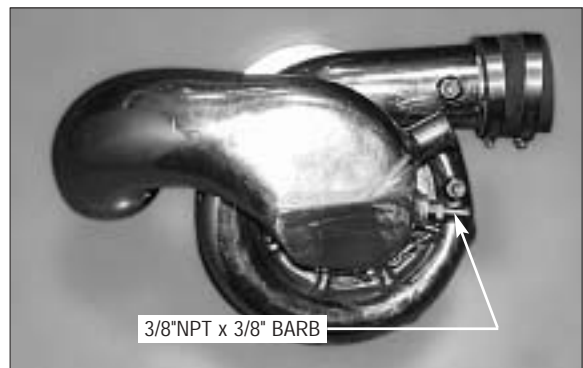


Fig. 8-g

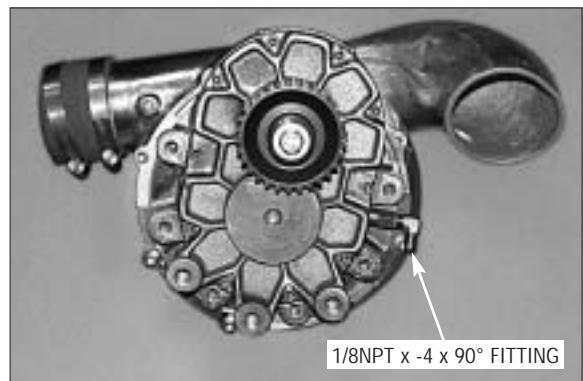


Fig. 8-h

8. SUPERCHARGER MOUNTING, cont'd

NOTE: Verify that the extended hose from the base of the coolant reservoir rests between the 3/8" barb and the 1" bypass bung on the inlet duct. (See Fig. 8-k.)

- S. Locate the supplied cog belt. Slip it over the supercharger pulley and the drive pulley.
- T. Install the supplied 3/8-16 x 4.25" idler bolt through the 10mm washer, the flanged aluminum idler, the idler spacer and into the slot in the top of the supercharger mounting bracket. (The bearing retainer snap ring on the idler must be pointing toward the idler spacer. Install the supplied nut and washer on the bolt and tighten until the idler slides up and down with no play.)
- U. Press down on the idler until the belt is snug with minimal free play. It is not necessary to have the belt tight. Once the vehicle has been started, as long as the belt does not move around excessively the belt is tight enough. (See Fig. 8-l.)



Fig. 8-i

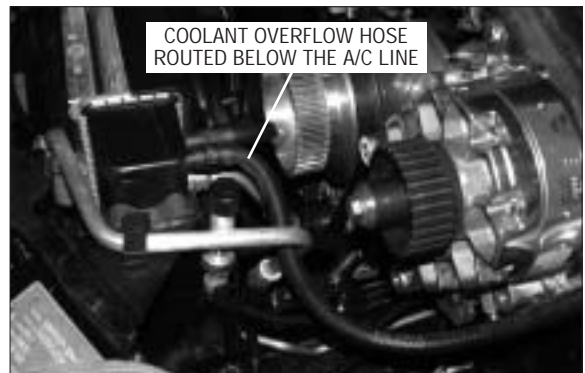


Fig. 8-j

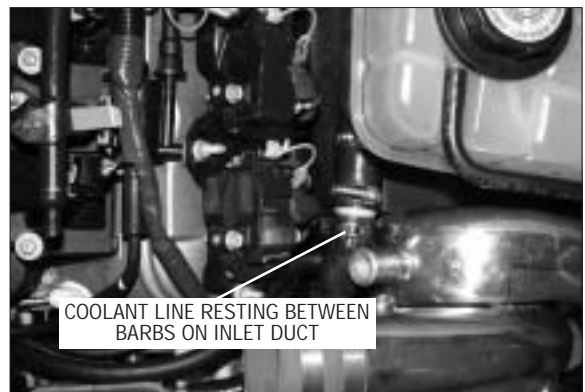


Fig. 8-k

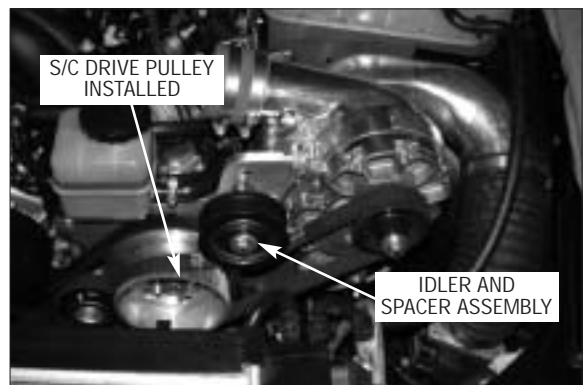


Fig. 8-l

9. AIR INTAKE INSTALLATION

- A. Locate the flat inner fender where the factory air box was mounted. Using a 3.5" hole saw drill a hole as shown in *Fig. 9-a*. Remove all burrs with a file or grinder. (See *Fig. 9-e* for location.)
- B. Insert the supplied flange into the hole and secure with the supplied self tapping screw.
- C. Secure the air filter to the bottom of the flange with the supplied #56 hose clamp located in the fender well. (See *Fig 9-c*.)
- D. Assemble the MAF sensor, flex ducting, 3.5" x 2" sleeve with #56 hose clamps. The 3.5" sleeve attaches to the inlet of the MAF sensor and the flex ducting attaches to the outlet.
- E. Install the silicone sleeve on the open side of the flange located in the engine compartment. Connect the open end of flex duct to the cast aluminum inlet duct. Secure both ends with the supplied #56 hose clamps. (See *Fig 9-d*.)
- F. Reconnect the IAT and MAF sensors to the factory harness.

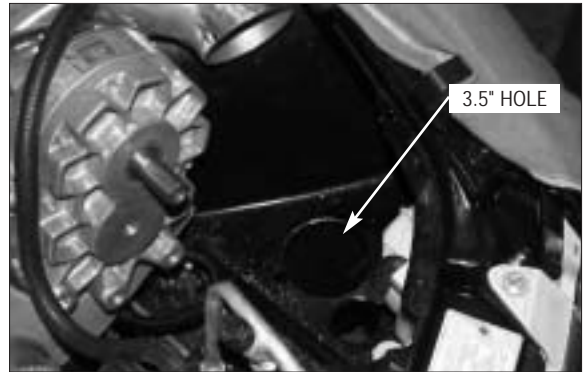


Fig. 9-a



Fig. 9-b



Fig. 9-c

9. AIR INTAKE INSTALLATION, cont'd



Fig. 9-d

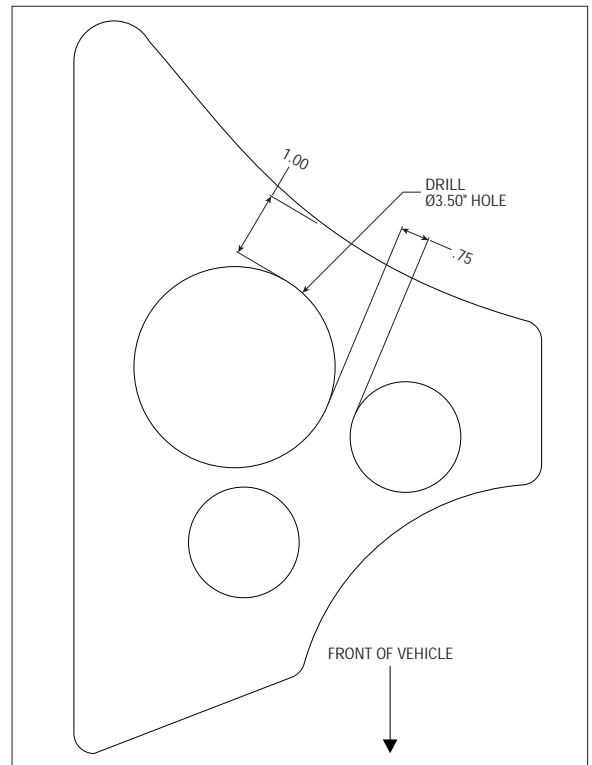


Fig. 9-e

10. POWER STEERING COOLER RELOCATION

- A. Locate the power steering cooler that is mounted directly in front of the radiator. Disconnect the cooler from the mounting straps and let it hang freely. Remove the mounting straps from the vehicle.
- B. Disconnect the power steering cooler hard lines where they pass along the passenger side of the radiator at the section of rubber hose. Remove the power steering cooler and hard line assembly from the vehicle.
- C. Trim the hard lines from the power steering cooler as shown by *Fig. 10-a*. Make sure to leave no less than 5/8" after the bends to allow for the hose connections.
- D. Install the supplied L Brackets to the two bracket mounts on the power steering cooler that were attached to the factory mounting straps. Use the supplied 1/4-20 x 1.25 hardware.
- E. As shown in *Fig. 10-b* mount the power steering cooler with supplied brackets on the lower cross member and secure with the supplied self tapping screws.
- F. Run two lengths of Ø3/8" hose from the power steering cooler to the hard lines behind the radiator. Route the hoses around the passengers side of the radiator and secure the lines with #8 hose clamps. (See *Fig. 10-b*.)
- G. Bleed system as follows with vehicle off:
 1. Raise front wheels off ground
 2. Turn steering wheel full left
 3. Fill reservoir to "full cold" level. Maintain level throughout procedure.
 4. Turn steering wheel lock to lock at least 20 times or until bubbles stop.

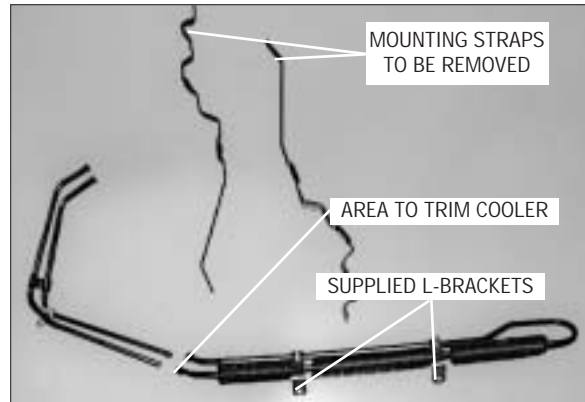


Fig. 10-a



Fig. 10-b

11. DISCHARGE INSTALLATION

- A. Attach the supplied piece of foam tape to the bottom of the charge cooler. Lay the charge cooler on the passengers' side of the motor above the relocated coils. Position the cooler close to the oil fill cap. Orient the charge cooler so that the 1/2NPT ports are pointing toward the front of the car. Install the 90° 1/2 NPT brass fitting in the upper passenger side port and the 1/2 NPT straight brass fitting in the lower drivers' side port. (See Figs. 11-a, 11-b.)
- B. Install the supplied $\text{Ø}2.75$ " x 2" sleeve on the discharge of the supercharger. Install the supplied $\text{Ø}2.75$ " x 3" sleeve on the inlet of the charge cooler.
- C. Install the longer straight section of the S-shaped discharge tube into the $\text{Ø}2.75$ x 2" sleeve on the supercharger and the opposite end in the sleeve located on the cooler. Snug the discharge tube in place with #44 hose clamps.
- D. Install the $\text{Ø}2.75$ end of the reducer sleeve on the outlet of the charge cooler. Install the 3.88" end of the 90° elbow on the throttle body pointing toward the passenger side. (See Fig. 11-d.)
- E. Install the L-shaped discharge duct with the shortest leg leading into the $\text{Ø}3.0$ end of the reducer sleeve. The other end of the tube will go into the open end of the silicone elbow on the throttle body. Snug with the supplied #48 and #64 hose clamps. (See Fig. 11-d.)
- F. Orient the ducting for best fit then tighten all hose clamps. #44 hose clamps are for all $\text{Ø}2.75$ ends, #48 clamps are for all $\text{Ø}3.00$ ends and the #64 hose clamp is for the throttle body.
- G. Connect the 6" piece of $\text{Ø}1.0$ bypass hose to the pressure side of the bypass.



Fig. 11-b

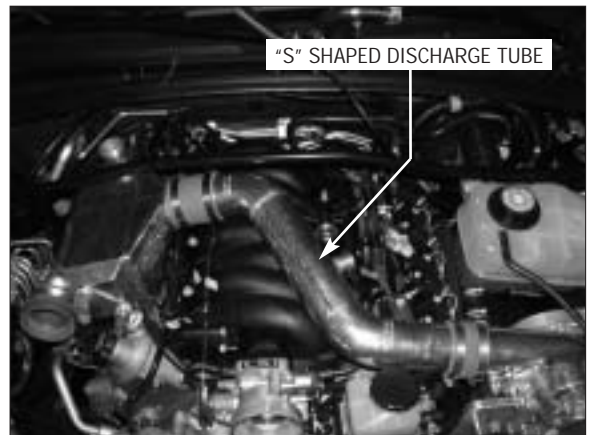


Fig. 11-c

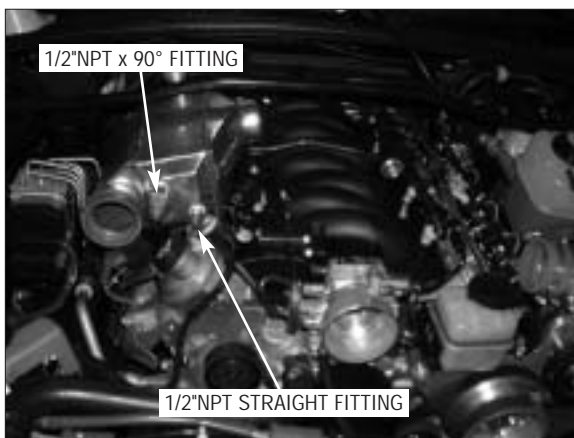


Fig. 11-a



Fig. 11-d

11. DISCHARGE INSTALLATION, cont'd

- H. Trim and orient the supplied molded Ø1.0 long 45° as shown in *Fig. 11-e*.
- I. Connect the open end of the straight bypass hose to the Ø1.0 bung on discharge tube A. Connect the open end of the 45° molded hose to the Ø1.0 bung on the inlet duct. Secure the ends with #16 hose clamps. (See *Fig. 11-g*.)
- J. Cut into the brake booster hose as shown (see *Fig. 11-f*) and insert the supplied brass TEE fitting.
- K. Connect the 5/32" vacuum line from the bypass valve nipple to the installed TEE fitting.

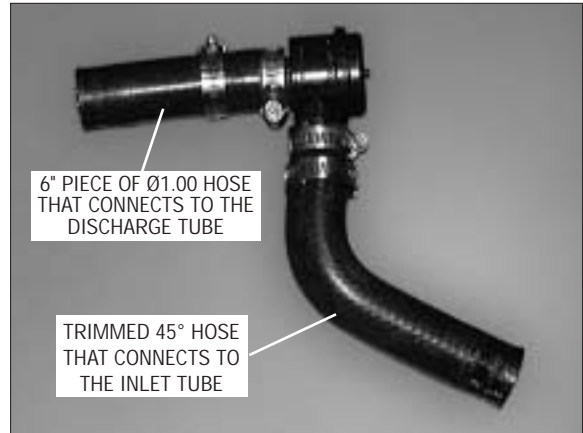


Fig. 11-e

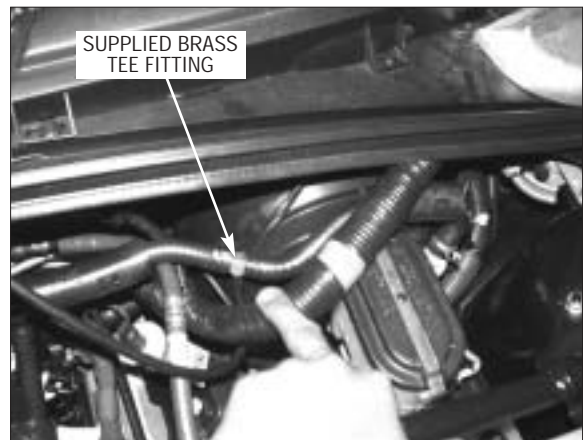


Fig. 11-f



Fig. 11-g

12. WATER RESERVOIR/SETRAB COOLER INSTALLATION

- A. Locate the supplied water reservoir. Using thread sealant install a $\text{\O}3/4"$ 90° brass fitting into the 1/2NPT hole at the top of the reservoir. Install another 90° fitting into the bottom 1/2NPT hole.
- B. Install a 2" piece of $\text{\O}3/4"$ hose on the top 90° fitting. Secure it with a supplied nylon ratchet clamp and orientate it so that it will be pointing to the passenger side. Orientate the bottom fitting so that it will be pointing to the driver side. (See Fig. 12-a.)
- C. Secure the upper mounting bracket to the 1/4-20 threaded insert in the top of the reservoir. Mount the lower bracket on the drivers' side of the tank. Use the supplied 1/4-20 x .75 SHCS to secure the brackets. (See Fig. 12-a.)
- D. Place the reservoir and brackets into their location behind the front bumper on the far passengers side. Mark for drill locations. (See Figs. 12-b, 12-c.)
- E. Remove the reservoir and brackets. Use a self tapping screws to drill the upper hole. Remove the screw after the hole is started. For the lower mounting location use a .280" drill to make a mounting hole in the lower cross member. (See Figs. 12-b, 12-c.)
- F. Reinstall the reservoir and secure the upper bracket with the supplied sheet metal screw.
- G. Install the $\text{\O}3/4"$ 90° brass fittings into the top of the supplied Setrab water cooler. Orientate the fittings as shown in Fig. 12-d. Install the cooler to the right of the water reservoir. The passenger side of the water cooler will share a mounting hole with the lower bracket of the water reservoir. (See Fig. 12-e.)
- H. Secure the passenger side of the Setrab cooler and the bottom reservoir bracket to the cross member with the supplied 1/4-20 x 1" SHCS.
- I. Mark the driver side location of the Setrab cooler and drill with a .280 drill. Secure the driver side of the cooler with the supplied 1/4-20 x 1" hardware. Make sure when mounting the Setrab cooler that you use the rear set of holes so that the cooler sits forward when mounted.

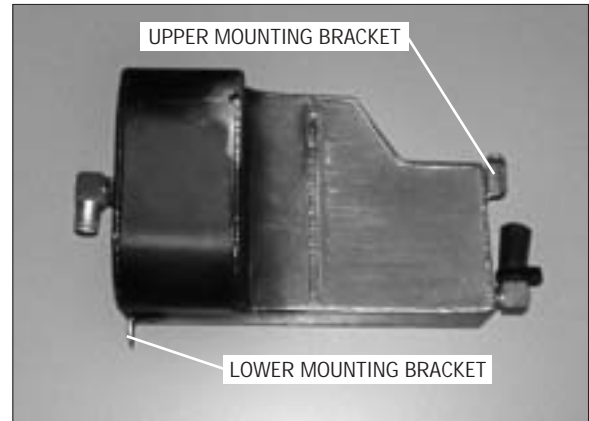


Fig. 12-a



Fig. 12-b



Fig. 12-c

12. WATER RESERVOIR/SETRAB COOLER INSTALLATION, cont'd

- J. Trim the supplied $\text{\O}3/4$ x 90° molded hoses. See *Fig. 12-g* for hose lengths.
- K. Installed the 2-3/4 end of the trimmed 90° molded elbow on the passenger side fitting in the water cooler. Orient the hose as shown in *Fig. 12-d*.
- L. With the cooler and reservoir mounted, install the aluminum section of water tube so that it snakes around the upper passenger side of the radiator down to the 2" piece of rubber hose installed on the reservoir. Push the aluminum tube into the hose and secure with a supplied nylon ratchet clamp. (See *Fig. 12-f*.)



Fig. 12-e



Fig. 12-d

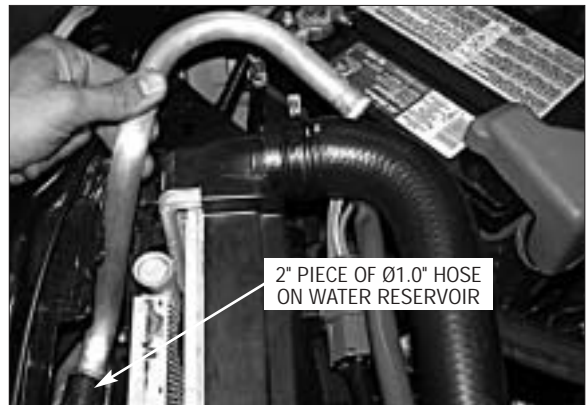


Fig. 12-f

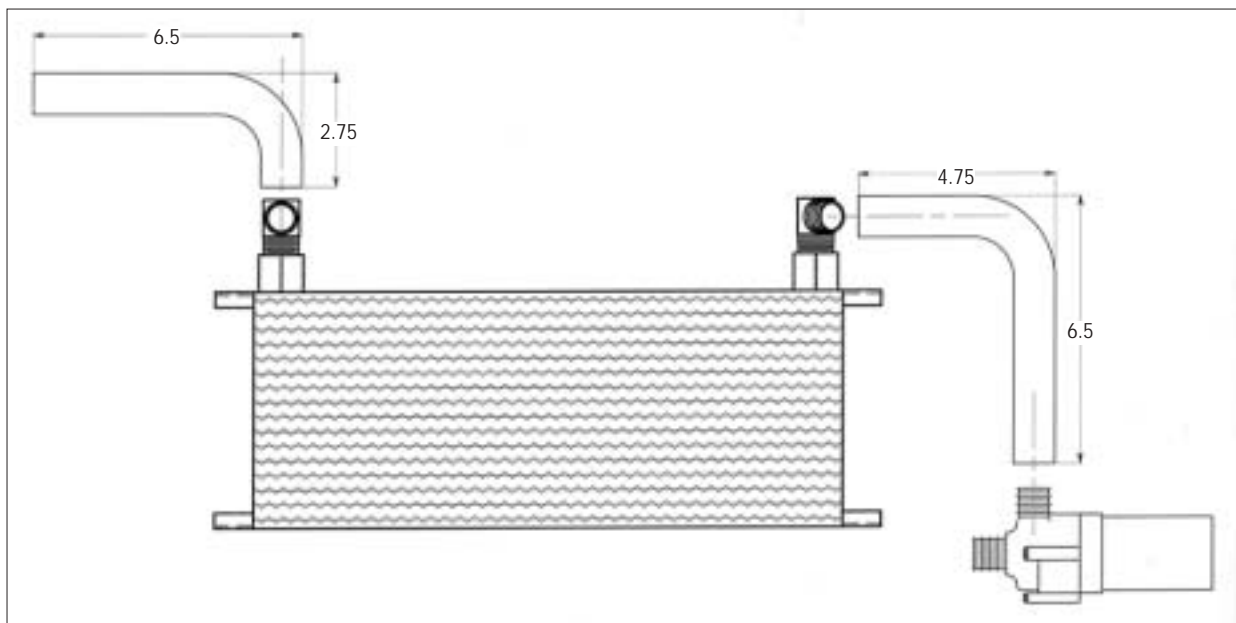


Fig. 12-g

13. WATER PUMP AND HOSE INSTALLATION

- A. Mount the supplied water pump relay onto the inside passenger side fender behind the fuse box. (See Fig. 13-a.)
- B. Connect the red 12GA wire from terminal #30 to the supplied fuse holder using the supplied butt connector. Install a yellow ring terminal on the other end of the fuse holder and bolt it to the fuse box power supply terminal as shown.
- C. Feed the yellow wire from relay terminal #85 to the fuse box on the passengers side of the engine bay. Route the wire to the stock fuel pump relay and connect using the supplied fuse tap. (See Fig. 13-b.)
- D. Run the black wire from terminal #86 on the water pump relay terminal to ground.
- E. With the long red 12-GA wire connected to terminal #87, route the free end down to the front of the vehicle where the water pump will be located. Secure as necessary to avoid heat and sharp edges.
- F. Mount the water pump to the lower cross member on the side of the water cooler with the supplied adel clamps and self tapping screws. Connect a 14-16GA ring terminal to the brown wire on the water pump and connect it to one of the mounting screws for ground. (See Fig. 13-c.)
- G. Using the supplied slide connectors connect the red wire from the relay to the positive blue/green wire off the water pump.
- H. Connect the discharge of the water pump to the inlet of the water cooler with the trimmed $\text{Ø}3/4$ " x 4-3/4 x 6 1/2 molded 90° hose. Secure the ends with nylon ratchet clamps.
- I. Cut a 23" piece of $\text{Ø}3/4$ " hose and connect the bottom fitting on the water reservoir to the inlet of the water pump and secure with nylon ratchet clamps.



Fig. 13-a

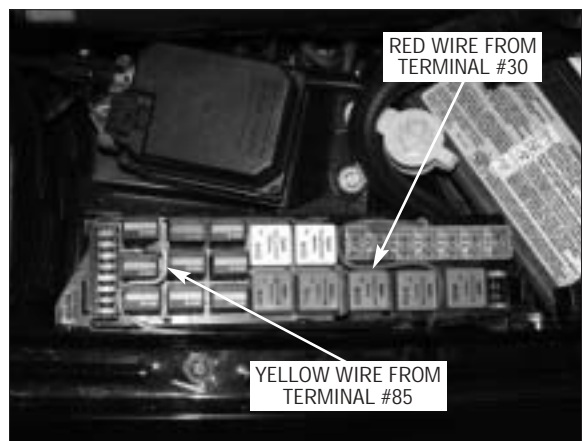


Fig. 13-b



Fig. 13-c

13. WATER PUMP AND HOSE INSTALLATION, cont'd

- J. Install the S-shaped water tube so that the long end is inserted into the 90° elbow on the charge cooler. With the long end in place, verify that the open end is pointing down and runs behind the battery. (See *Figs. 13-g, 13-h.*)
- K. Cut a 50" piece of Ø3/4" hose. Connect one end of the cut hose to the 90° molded hose off the outlet of the water cooler using a supplied barbed hose mender. Secure with ratchet clamps. Route the hose below the passenger side head light, into the fender well and bring it into the engine compartment from behind the battery. (See *Figs. 13-a, 13-d.*) Connect the open end of the 50" hose to the open end of the aluminum water tube. (It may be easier to remove the battery before routing this hose.) Secure all ends with ratchet clamps.
- L. Cut a 19" piece of Ø3/4" hose. Connect the open end of the aluminum water tube near the radiator to the straight fitting in the charge cooler. Secure the ends with nylon ratchet clamps. (See *Fig. 13-e.*)



Fig. 13-d



Fig. 13-f



Fig. 13-g



Fig. 13-h

13. WATER PUMP AND HOSE INSTALLATION, cont'd

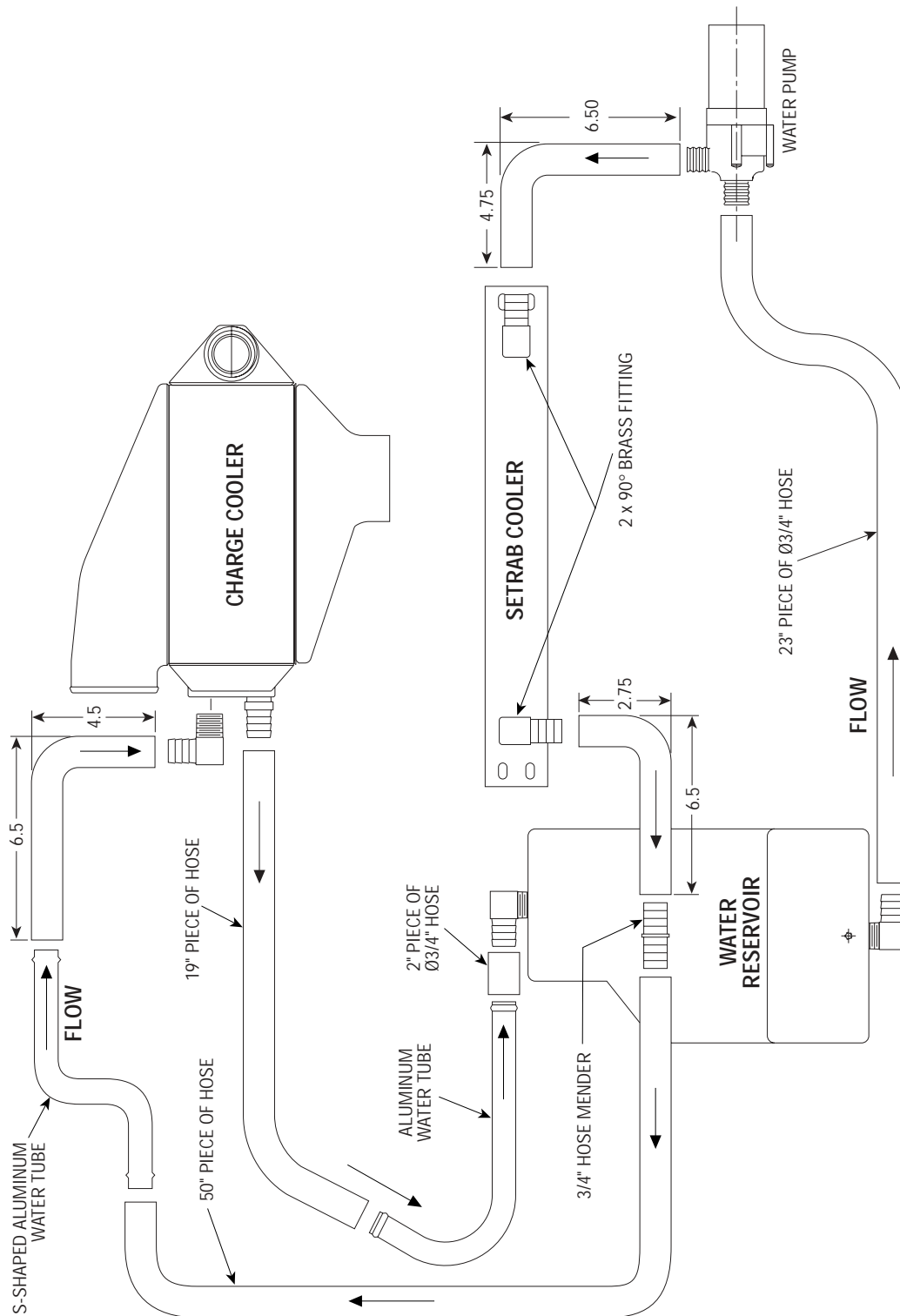


Fig. 13-e

14. REFLASH COMPUTER

IMPORTANT! To ensure trouble-free programming of your vehicle's computer:

- Make sure the vehicle's battery is sufficiently charged.
- Turn off all accessories and close doors to prevent unnecessary drain on the battery.
- Do not attempt to program your vehicle while a battery charger is connected.
- Improper battery voltage will result in failure of the programming process.
- Do not disconnect the cable or turn off the ignition during programming.

- Reconnect the battery.
- Locate the vehicles OBD2 connector located below the dash on the drivers side of the vehicle.
- Attach the OBD2 connector from the Flash tool that is provided in the kit to the vehicle's OBD2 port. Make sure this connector is seated all the way in the vehicles OBD2 port. You do not want this connector coming out during programming or damage may occur to the vehicle's ECM.
- The Reflash tool should power up and display three parameters.
 - Performance Tune
 - Diagnostics
 - Options
- Select "Performance Tune" and press the enter button in the middle of the arrow keys.
- Read the disclaimer entirely, then select agree and press ENTER.
- At this point follow the instructions on the screen of the screen displayed on the reflash tool. If you have any questions, either refer to the manual that is provided with the reflash tool or contact our service department for further assistance.
- Turn the ignition on (do not start the vehicle). Set the parking brake and press the ENTER button to continue.
- SELECT TUNE will be displayed at the top of the screen. Use the arrow keys to select the appropriate tune for your vehicle and press the ENTER button. You will have a choice of two to choose from:
 - Vortech GTO H.O.
 - Original Backup
- Continue to follow the screen and when finished unplug the reflash tool from the vehicles OBD2 port.

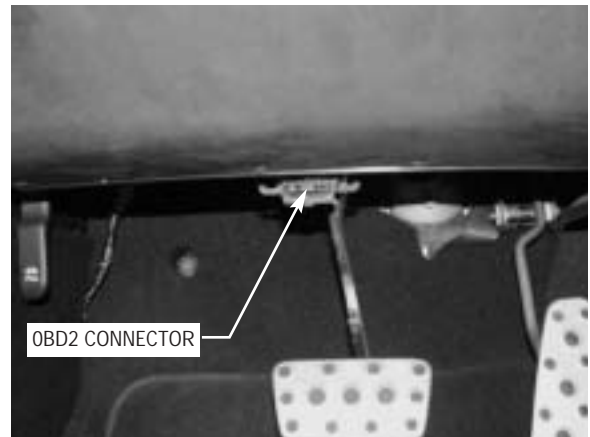


Fig. 14-a

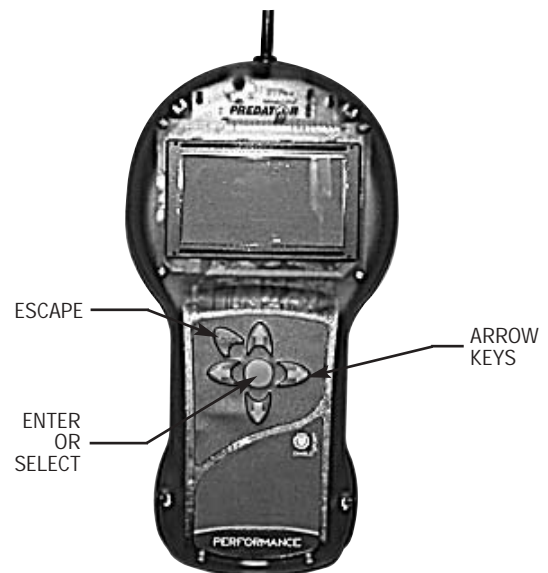


Fig. 14-b

NOTE: Do not disturb the cable, or turn the ignition off during this time. If the programming is disrupted, the computer will not start or run your vehicle!

15. FINAL ASSEMBLY AND CHECK

- A. If your vehicle has gone over 20,000 miles since its last spark plug change, it is a good idea to change the spark plugs now, before test driving.
- B. Make sure that oil drain to oil pan fitting is tight and that the engine is filled with factory specified oil
- C. Make sure radiator and overflow tank are filled .
- D. Make sure that the vehicle is filled with 91 octane fuel or higher before commencing test drive.
- E. With key on, make sure charge air cooler water pump is operating and the water is flowing through the surge tank. Fill as necessary. If water is not flowing, remove the hose from the bottom of the surge tank and lower until water flows out of the hose. This should prime the pump. Reconnect the hose, verify the water flow and top off the surge tank. Do not run the water pump for extended periods (30 seconds or more) without water flow.
- F. Check all fittings, nuts, bolts and clamps for tightness.
- G. At this point it is OK to start the vehicle.
- H. Verify that the belt is tracking properly with the vehicle running.

WARNING: Do not attempt to operate the vehicle until ALL components are installed and ALL operations are completed including final check. Failure to do so may cause **PREMATURE FAILURE OF MAJOR COMPONENTS.**

- I. With engine running, check power steering hose connections for leakage. Let the engine run for two minutes. Turn steering wheel in both directions.
Verify:
 - Smooth power assist
 - Noiseless operation
 - Proper fluid level
 - No system leaks
 - No bubbles, foam or discoloration in fluid.
- J. Turn the vehicle off and recheck all fluid levels, verify that no hoses, wires, etc are near exhaust headers or moving parts and that there is no fluid leakage.
- K. Test drive the vehicle by gradually working up to full throttle and paying close attention to any abnormal sounds or engine detonation.



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