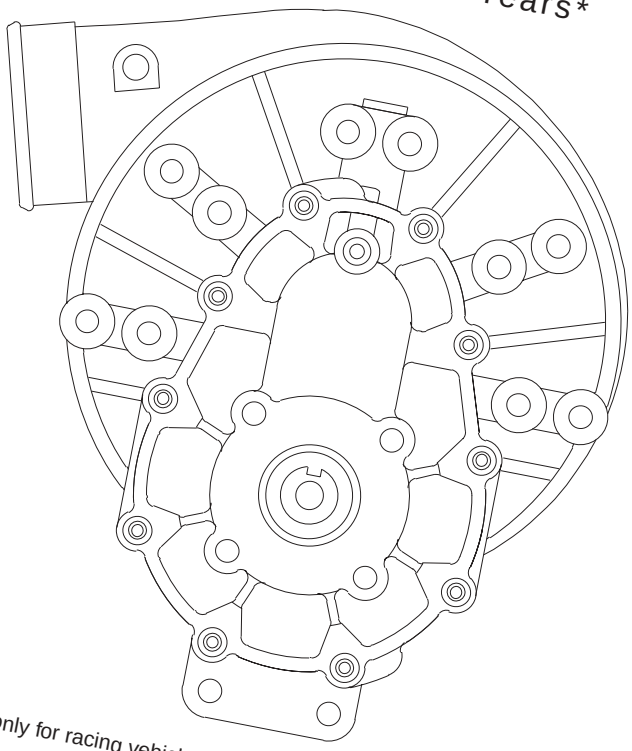
GM F-BODY LS1

Supercharger System Installation Instructions

1998-2002 Model Years*



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

VORTECH®

ENGINEERING, LLC

1650 Pacific Avenue, Channel Islands, CA 93033-9901 • Phone (805) 247-0226
Fax (805) 247-0669 • www.vortechsuperchargers.com • M-F 8:00AM - 4:30PM (PST)

P/N: 4GK020-010

09JUN03 v3.2*(FBodyLS1(4GK v3.2)98-02)*

FOREWORD

Proper installation of this supercharger kit requires general automotive mechanic knowledge and experience. Please browse through each step of this instruction manual *prior* to beginning the installation to determine if you should refer the job to a professional installer/ technician. Please call Vortech Engineering for installers in your area.

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09JUN03 v3.2*(FBodyLS1(4GK V3.2)98-02)*

1998-2002 GM F-BODY LS1

IMPORTANT NOTES

(Read before installation is started)

This kit requires ECM programming. The hand-held ECM programmer is not included in the kit box and must be ordered directly from Vortech by the installing customer (the charge for this unit has been included in the purchase price).

Included in this kit is a credit tag for one (1) hand-held programmer. The programmers are made specifically for each individual vehicle with respect to the factory ECM calibration and VIN. Simply follow the instructions on the hand-held programmer Credit Tag.

> ***NOTE:*** *Vortech Engineering is not responsible for engine or ECM damage due to an improperly installed/mishandled ECM module or ECM.*

SS Models Only:

This supercharger kit does not fit vehicles with an "SS" hood installed. The customer may wish to cut the hood per the following graphic. After this modification, the supercharger will fit. However, since the engine is now drawing its intake air from the engine compartment, high under-hood temperatures will increase the likelihood of severe engine detonation. For this reason, additional care should be taken when driving a vehicle with the hood modification.

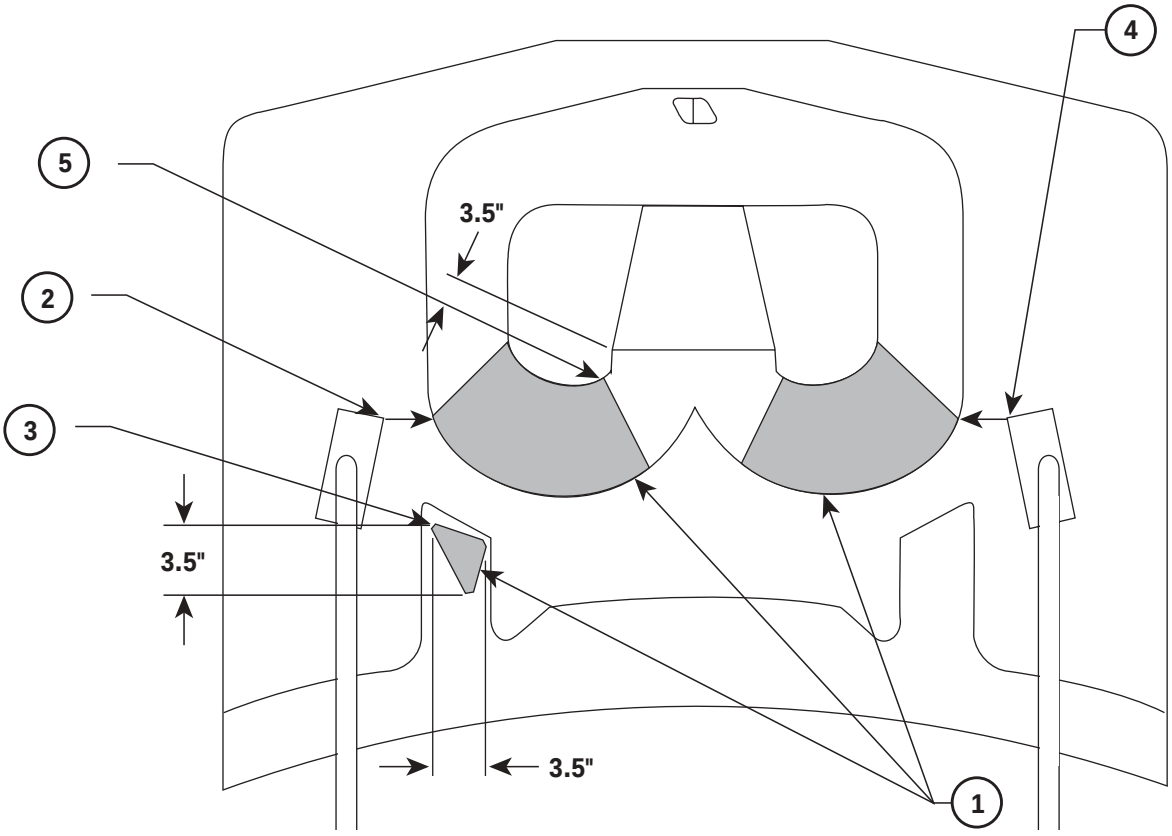
Installation of this kit requires special tools for removal and installation of the vehicle's harmonic damper. These tools may be impractical for the individual customer to purchase for one time use only. Vortech recommends having this procedure done by a dealer or professional if the tools are not available.

When driving the vehicle on non-public roads (off-road applications such as racing/high rpm) Vortech strongly recommends reducing the spark plug gap down to .032".

P/N: 4GK020-010

09JUN03 v3.2*(FBodyLS1(4GK V3.2)98-02)*

98-02 CAMARO HOOD MODIFICATIONS (SS ONLY)



NOTE: *Be very careful not to cut through the top of the hood.*

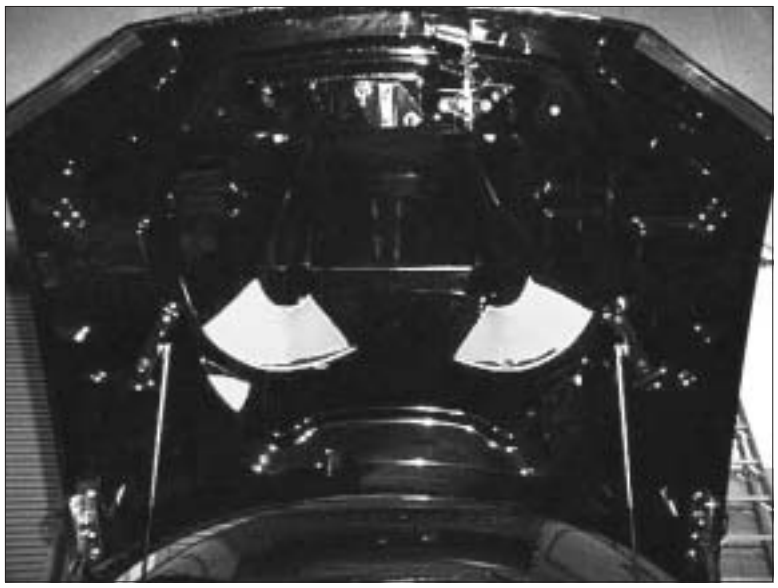
1. Areas to be removed.

2. Align with hood hinge and cut perpendicularly through the air duct using a pneumatic cutting wheel.

3. Align for the second cut straight down from the first cut.

4. Cut this section symmetrically to the other using the same points of reference.

5. Measure 3.5" from the indented line in ram air. Cut perpendicularly through the air duct.



P/N: 4GK020-010

09JUN03 v3.2*(FBodyLS1(4GK V3.2)98-02)*

1998 - 2002
GM F-Body LS1
Installation Instructions

Congratulations on selecting the best performing and best supported 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 and Automotive Limited Warranties Program.

Vortech supercharger systems are performance improving devices. In most cases, increases in torque of 30% to 35% and horsepower of 35% to 50% can be expected with the boost levels specified by Vortech Engineering, Inc. 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, LLC 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 either a high grade SF rated engine oil or a high quality synthetic lubricant, 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 20,000 miles with original heat range plugs as specified by the manufacturer (follow the procedures outlined in 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 40,000 miles and spark plug wires at least every 60,000 miles.

TOOL & SUPPLY REQUIREMENTS

- Factory repair manual
- 3/8" socket and drive set: SAE & metric
- 1/2" breaker bar and 4" extension
- Flat #2 screwdriver
- Phillips #2 screwdriver
- Adjustable wrench
- Combination wrenches: SAE and metric
- 1/8", R (.339) drill bits
- 1/4", 3/16" allen wrenches
- 1 gallon factory specified engine coolant
- 1.25" hole saw
- 1 quart factory specified power steering fluid
- Power steering pulley puller and installer
- Thread sealer
- Hose cutter or knife
- Loctite threadlocker
- 5 quarts factory specified motor oil/oil filter
- Spring-lock fitting disconnect tool
- 3/8" drill motor
- Wire cutter/crimp tool
- Torque wrench
- 1/8, 3/8 NPT taps

GM TOOLS

• J 41816	Crankshaft balancer remover (or equivalent)
• J 41816-2	Crankshaft end protector
• J 42386	Flywheel holding tool
• J 41665	Crankshaft balancer and sprocket installer
• J 36660	Torque angle meter

NOTE: *If your vehicle has in excess of 20,000 miles since its last spark plug change, then you will need:*

- Spark plug socket
- 8 - new OE heat range spark plugs

P/N: 4GK020-010

09JUN03 v3.2*(FBodyLS1(4GK V3.2)98-02)*

1998-2002 GM F-Body LS1 Standard

Part No. 4GK218-010SQ

ENGINEERING, LLC

PARTS LIST

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

Part Number	Description	Quantity
2D228-110	**SUPERCHARGER ASSY, LS1 FBODY STD, 98-00**	**1**
2A038-370	3.70 Drive Pulley	1
2A048-520	Belt, 8-Rib	1
4GK111-031	**MOUNTING BRACKET ASSEMBLY**	**1**
4GK111-021	Mounting Bracket	1
4GK010-020	Support	1
4FM011-052	Spring Tensioner, 5.4	1
7A375-300	3/8-16 x 3" HXCSG5P	1
7J375-044	3/8 SAE Washer, Plated	1
4FA016-170	Idler Pulley	1
4FA016-171	Dust Cover (Wide Idler Pulley)	1
7A312-074	5/16-18 x 3/4 SHCS, Plated	6
7A312-200	5/16-18 x 2" HHD	2
7A312-300	5/16-18 x 3" HHD G5	2
7K312-001	5/16 AN Washer	10
7C010-045	M10 x 1.5 x 45mm HHD	3
7J010-002	10mm Washer	2
5W001-005	3/8" Plastic Wire Loom, 1.25 ft.	1
7A312-200	5/16-18 x 2" HXHD	2
7C010-040	M10 x 1.5 x 40 HXHD	1
4GK212-030	**AIR INTAKE ASSEMBLY**	**1**
4GK112-030	Duct Inlet	1
8D001-001	Bypass Valve	1
7P100-100	1" NPT X 1" Barb Plastic Fitting	1
7U034-016	1" GS Hose, .25 ft.	1
7U034-016	1" GS Hose, 1.25 ft.	1
7R002-016	#16 Hose Clamp	4
7P500-156	1/2" X 1/4 NPT TEE	1
7P250-039	1/4 NPT to 1/4" Barb	1
7U030-046	5/32" Vacuum Line, 2 ft.	1
4GK100-010	HARDWARE ASSEMBLY	1
4GK012-040	Duct inlet 90° Elbow	1
7U035-001	3-1/2" Flex Hose, .75 ft.	1
7R002-052	#52 Goldseal Hose Clamp	2
7S350-200	3-1/2 x 2 Sleeve	2
7R002-056	#56 Goldseal Hose Clamp	4
7U375-052	3/8" Vacuum Cap	1
7U030-056	3/8 PCV Hse, 2.25 ft.	1
7U100-061	Grommet 3/8 I.D. 5/8 Flange	1
7P375-008	Elbow Union EUB	1
4GK130-036	**OIL DRAIN ASSEMBLY**	**1**
7R001-008	#8 Stainless Hose Clamp	2
7U030-036	1/2" Oil Drain Hose, 1.25 ft.	1
7U100-055	Tie Wrap, 6" Nylon	1
7P375-017	3/8 NPT X 1/2 Beaded hose barb	1
7P375-040	3/8" Female Elbow	1
7P375-041	3/8" NPT Hex Nipple	1
4GK130-026	**OIL FEED LINE ASSEMBLY**	**1**
7U030-026	1/4" Oil Feed Hose, .833 ft.	1
7P125-026	-4 to 1/8 NPT 90°, Male	2
7P525-067	.500 Crimp Ferrules	2
7P250-066	#4 Swivel X 1/4" Hose Barb	2
7S625-000	Fire Sleeve, 1 ft.	1
7R003-008	1/2" Adel Clamp	2
7U100-055	Tie Wrap, 6" Nylon	2
4GK101-001	**FUEL PUMP ASSY, LS1**	**1**
5W001-001	Wire Tap, Inline, 14-16 AWG	1
5W001-019	Solderless Connector 10-12	1
5W001-014	Fuse Holder 10 GA Wire	1
5W001-015	Fuse, Blade Type 20 amp	1
5W001-017	3/8" Ring Terminal 12 GA	2
7E010-046	#8 x 3/4 Sheet Metal	1
7J010-001	#10 Flat Washer	2
7P250-045	1/4 Male NPT x 3/8 Male Barb	1
7P312-002	5/16 Barb x 1/4 NPT Barb	1
7R001-004	#4 Hose Clamp	2
7R004-002	17.0 Stepless Clamp	4
7R004-001	15.7 Stepless Clamp	2
7U031-018	5/16 Fuel Hse Hi-Psr	1.6666'
7U032-016	3/8" Fuel Hse Hi-Psr	0.83330'
7U032-016	3/8" Fuel Hse Hi-Psr	3.0'
7U100-044	Tie Wrap, 4" Nylon	10
7U100-055	Tie Wrap, 6" Nylon	10
8F001-500	Fuel Pump, Pierburg	1
8F101-300	Pump Wiring Assy LT1	1
5W001-011	16-14 GA Eyelet .25" Hole	2
7P625-375	Reducer, 5/8 Barb to 3/8 Barb	1
7R003-028	Adel Clamp, 2-3/8" .26 Hole	2
7A250-101	1/4-20 x 1 HXHD CPSC	2
7J250-022	1/4" Washer	4
7F250-021	1/4-20 Nylock Nut Zinc Pltd.	2
7R004-004	Stepless Clamp, 1.0 O.D. Hose	2
7P312-015	Ftng, Banjo 12mm x .312 Barb	1
7F012-001	M12 Cap Nut, Fuel Pump	1
5W001-042	12-10GA x 3/16" Ring Terminal	1
7P375-072	3/8 Female Fuel Ftg, Steel	1
7P375-010	3/8 GM Fuel To 3/* Barb Ftg	1
7U033-000	5/8" Fuel Hose	.25'
4GK110-010	**POWER STEERING ASSEMBLY**	**1**
4GK110-020	Fitting, Power Steering Assy	1
4GK010-010	Bracket, Power Steering	1
7A250-050	1/4-20 SHCS, Plated	2
7J006-093	6mm Washer	2
7U130-048	Assembly, Power Steering Pressure Hose	1
4GK010-060	Power Steering Reservoir Bracket	1
4GK010-090	Power Steering Reservoir Retainer	1
4GK010-100	Power Steering Reservoir Fitting	1
7C010-050	10-24 x 1/2 SHCS, Zinc	1
7F010-024	10-24 Nylock Nut	1
7J010-001	#10 Flat Washer	2
7U100-113	O-ring -113 LS1 Power Steering	2
7U030-036	1/2" Oil Drain Hose, 2 ft.	1
7R001-008	#8 Stainless Hose Clamp	2
7P375-050	3/8" Hose	1
7U032-016	3/4' x 3/8" Hose	1
7R001-004	#4 Stainless Hose Clamp	2
4GK116-031	**CRANK PULLEY ASSEMBLY**	**1**
4GK016-011	Damper Assy, 6 Rib	1
4GK018-031	Crank Pulley	1
7C016-010	LS1 Damper Bolt, M16 x 2.0	1
4GK112-020	**DISCHARGE ASSEMBLY**	**1**
4GK012-020	Duct, LS1 Std Discharge	1
7S400-200	4" Sleeve	1
R002-064	#64 Goldseal Hose Clp	2
7S250-200	2-1/2" Sleeve	1
7R002-040	#40 Stnls Hose Clp	2
4GK110-110	**COIL BRACKET RELOCATION ASSEMBLY**	**1**
4GK010-110	Tab A, Coil Relocation 6mm	2
4GK010-120	Tab B, Coil Relocation	2
7C060-016	M6 x 1.00 x 16 HXHD	6
7F006-093	6mm Nylock Nut	4
7J006-093	6mm Washer, Plated	10
7U133-070	**FILLER HOSE**	**1**
7T560-001	**CUTTER, 9/16 ROTABROACH**	**1**
7T560-002	**ARBOR, ROTABROACH**	**1**
8H040-022	**3/4 BREATHER**	**1**
4GK020-020	**HAND-HELD PROGRAMMER COUPON**	**1**
4GK014-010	**RADIATOR PIPE LS1 F-BODY**	**1**
7R002-024	**#24 GOLDSEAL HOSE CLAMP**	**2**
8F060-038	**38 lb INJECTORS**	**8**

P/N: 4GK020-010

09JUN03 v3.2*(FBodyLS1(4GK V3.2)98-02)*

1998-2000 GM F-Body LS1 w/Charge Air Cooler

Part No. 4GK218-060SQ

ENGINEERING, LLC

PARTS LIST

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

Part Number	Description	Quantity
2D228-100	**SUPERCHARGER ASSY, 1998 LS1, W/COOLER**	**1**
2A038-312	3.12 Drive Pulley	1
2A038-495	Belt	1
4GK111-031	**MOUNTING BRACKET ASSEMBLY**	**1**
4GK111-021	Mounting Bracket	1
4GK010-020	Support	1
4FM011-052	Spring Tensioner, 5.4	1
7A375-300	3/8-16 x 3" HXCSG5P	1
7J375-044	3/8 SAE Washer, Plated	1
2A017-033	Spacer Tensioner	1
4FA016-170	Idler Pulley	1
4FA016-171	Dust Cover (Wide Idler Pulley)	1
7A312-074	5/16-18 x 3/4 SHCS, Plated	6
7A312-200	5/16-18 x 2" HHD	2
7A312-300	5/16-18 x 3" HHD G5	2
7K312-001	5/16 AN Washer	10
7C010-045	M10 x 1.5 x 45mm HHD	3
7J010-002	10mm Washer	3
5W001-005	3/8" Plastic Wire Loom, 1.25 ft.	1
7A312-200	5/16-18 x 2" HXHD	2
7C010-040	M10 x 1.5 x 40 HXHD	1
4GK212-030	**AIR INTAKE ASSEMBLY**	**1**
4GK112-030	Duct Inlet	1
8D001-001	Bypass Valve	1
7P100-100	1" NPT X 1" Barb Plastic Fitting	1
7U034-016	1" GS Hose, .25 ft.	1
7U034-016	1" GS Hose, 1.25 ft.	1
7R002-016	#16 Hose Clamp	4
7P500-156	1/2" x 1/4 NPT Tee	1
7P250-039	1/4 NPT to 1/4" Barb	1
7U030-046	5/32" Vacuum Line, 2 ft.	1
4GK100-010	HARDWARE ASSEMBLY	1
4GK012-040	Duct Inlet 90° Elbow	1
7U035-001	3-1/2" Flex Hose, .75 ft.	1
7R002-052	#52 Goldseal Hose Clamp	2
7S350-200	3-1/2 x 2 Sleeve	2
7R002-056	#56 Goldseal Hose Clamp	4
7U375-052	3/8" Vacuum Cap	1
7U030-056	3/8 PCV Hse, 2.25 ft.	1
7U100-061	Grommet 3/8 I.D. 5/8 Flange	1
7P375-008	Elbow Union EUB	1
4GK130-036	**OIL DRAIN ASSEMBLY**	**1**
7R001-008	#8 Stainless Hose Clamp	2
7U030-036	1/2" Oil Drain Hose, 1.25 ft.	1
7U100-055	Tie Wrap, 6" Nylon	1
7P375-017	3/8 NPT X 1/2 Beaded Hose Barb	1
7P375-040	3/8" Female Elbow	1
7P375-041	3/8" NPT Hex Nipple	1
4GK130-026	**OIL FEED LINE ASSEMBLY**	**1**
7U030-026	1/4" Oil Feed Hose, .833 ft.	1
7P125-026	-4 to 1/8 NPT 90°, Male	2
7P525-067	.500 Crimp ferrules	2
7P250-066	#4 Swivel x 1/4" Hose Barb	2
7S625-000	Fire Sleeve, 1 ft.	1
7R003-008	1/2" Adel Clamp	2
7U100-055	Tie Wrap, 6" Nylon	2
4GK101-001	**FUEL PUMP ASSY, LS1**	**1**
5W001-001	Wire Tap, Inline, 14-16 AWG	1
5W001-019	Solderless Connector 10-12	1
5W001-014	Fuse Holder 10 GA Wire	1
5W001-015	Fuse, Blade Type 20 amp	1
5W001-017	3/8" Ring Terminal 12 GA	2
7E010-046	#8 x 3/4 Sheet Metal	1
7J010-001	#10 Flat Washer	2
7P250-045	1/4 Male NPT x 3/8 Male Barb	1
7P312-002	5/16 Barb x 1/4 NPT Barb	1
7R001-004	#4 Hose Clamp	2
7R004-002	17.0 Stepless Clamp	4
7R004-001	15.7 Stepless Clamp	2
7U031-018	5/16 Fuel Hse Hi-Psr	1.66'
7U032-016	3/8" Fuel Hse Hi-Psr	0.833'
7U032-016	3/8" Fuel Hse Hi-Psr	3.0'
7U100-044	Tie Wrap, 4" Nylon	10
7U100-055	Tie Wrap, 6" Nylon	10
8F001-500	Fuel Pump, Pierburg	1
8F101-300	Pump Wiring Assy LT1	1
5W001-011	16-14 GA Eyelet .25" Hole	2
7P625-375	Reducer, 5/8 Barb to 3/8 Barb	1
7R003-028	Adel Clamp, 2-3/8" .26 Hole	2
7A250-101	1/4-20 x 1 HXHD CPSC	2
7J250-022	1/4" Washer	4
7F250-021	1/4-20 Nylock Nut Zinc Pltd.	2
7R004-004	Stepless Clamp, 1.0 O.D. Hose	2
7P312-015	Ftng, Banjo 12mm x .312 Barb	1
7F012-001	M12 Cap Nut, Fuel Pump	1
5W001-042	12-10GA x 3/16" Ring Terminal	1
7P375-072	3/8 Female Fuel Ftg, Steel	1
7P375-010	3/8 GM Fuel To 3/* Barb Ftg	1
7U033-000	5/8" Fuel Hose	.25'
4GK110-010	**POWER STEERING ASSEMBLY**	**1**
4GK110-020	Fitting, power steering assy.	1
4GK010-010	Bracket, power steering	1
7A250-050	1/4-20 SHCS, plated	2
7J006-093	6mm Washer	2
7U130-048	Assembly, Power Steering Pressure Hose	1
4GK010-060	Power Steering Reservoir Bracket	1
4GK010-090	Power Steering Reservoir Retainer	1
4GK010-100	Power Steering Reservoir Fitting	1
7C010-050	10-24 x 1/2 SHCS, Zinc	1
7F010-024	10-24 Nylock Nut	1
7J010-001	#10 Flat Washer	2
7U100-113	O-ring -113 LS1 Power Steering	2
7U030-036	1/2" Oil Drain Hose, 2 ft.	1
7R001-008	#8 Stainless Hose Clamp	2
7P375-050	3/8" Hose	1
7U032-016	3/4' x 3/8" Hose	1
7R001-004	#4 Stainless Hose Clamp	2
4GK116-031	**CRANK PULLEY ASSEMBLY**	**1**
4GK016-011	Damper Assy, 6 Rib	1
4GK018-031	Crank Pulley	1
7C016-010	LS1 Damper Bolt, M16 x 2.0	1
8N301-080	**POWER COOLER ASSEMBLY**	**1**
8N101-080	Power Cooler, Welded Assy	1
8N106-040	**WATER COOLER MOUNTING ASSEMBLY**	**1**
8N006-010	Water Cooler	1
4GK010-051	Bracket, Radiator, Left	1
4GK010-052	Bracket Radiator, Right	1
7A312-100	5/16-18 x 1 HXCSGR5P	2
7F312-018	5/16-18 Nut USS, Plated	2
7J312-000	5/16 Flat Washer-SAE	4
7A250-050	1/4-20 HHD, 1/2 Long-SHCS	4
7F250-021	1/4-20 Nylock Nut	4
7J250-001	1/4 Flat Washer	8
8N107-046	**WATER PUMP ASSEMBLY**	**1**
8F001-403	Water Pump	1
7A250-050	1/4-20 X 1/2 SHCS, Plated	2
7J006-093	6mm Washer	6
7F250-021	1/4-20 Nylock Nut	2
8N010-060	Bracket Water Pump Mount	1
5W001-050	Aftercooler Pump Plug	1
5W014-010	14 GA STD Wire, Red, 10 ft.	1
5W001-013	14-16 GA Butt Splice Connectors	1
5W001-011	14-16 GA Eyelet, .25"	1
4GK010-150	Bracket, Water Pump	1
7C080-016	8mm x 1.25 x 16 HXHD Bolt	2
7J312-000	5/16 Flat Washer, SAE	3
7F008-020	M8 X 1.25 Nut	1
4GK114-010	**WATER TANK ASSEMBLY**	**1**
8N055-030	Reservoir	1
4GK010-160	Bracket, Reservoir	1
7A250-050	1/4-20 HHD, 1/2 Long	2
7J006-093	6mm Washer	2
7U038-00	3/4" Heater Hose, 11 ft.	1
7U038-012	3/4" 90° Hose 4 X 12"	2
7R007-001	Nylon Clamp 1-1/8"	10
7P500-026	1/2 NPT to 3/4 Hose 90° Barb	6
7P500-078	1/2 NPT to 3/4 Hose Barb	2
4GK112-010	**DISCHARGE ASSEMBLY**	**1**
4GK012-010	Duct T-Body Cooler	1
7S275-200	2-3/4 x 2 Sleeve	1
7R002-044	#44 Goldseal Hose Clamp	2
4GK110-030	**EGR RELOCATION**	**1**
4GK010-030	EGR, Relocate	1
7P125-016	1/8 NPT Plug	2
4GK040-050	EGR Gasket	2
7A312-075	5/16-18 x 3/4 HXHDG5P	2
7K312-001	5/16 AN Washer	4
4GK010-040	Heat Shield	1
4GK010-140	AC Canister Anchor	1
7R002-056	#56 Hose Clamp	1
7U250-200	Foam, 1/4 X 2 X 3", Single Adhesive, .25 ft.	1
7C080-035	8mm 35mm Bolts HHD	2
5W018-030	Grey 18 GA, .833 ft.	1
5W018-030	Grey 18 GA, .833 ft.	1
5W018-080	Blue 18 GA, .833 ft.	1
5W022-120	Brown 22 GA, .833 ft.	1
5W018-020	Black 18 GA, .833 ft.	1
5W001-012	18 GA Butt Splice Connectors	10
5W001-005	3/8" Plastic Wire Loom, 1 ft.	1
8N104-061	**SUPPORT COMPONENTS**	**1**
7S400-200	4" Sleeve	1
7R002-064	#64 Goldseal Hose Clamp	2
7S250-200	2-1/2 Sleeve	1
7R002-040	#40 Stainless Hose Clamp	2
8N056-060	Surge Tank Body	1
8N055-050	Cap, Surge Tank Plastic	1

P/N: 4GK020-010

09JUN03 v3.2*(FBodyLS1(4GK V3.2)98-02)*

1998-2000 GM F-Body LS1 w/Charge Air Cooler

Part No. 4GK218-060SQ

ENGINEERING, LLC

PARTS LIST

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

Part Number	Description	Quantity
8N010-110	Mtg. Tab, LS1 Fbody	1
7P375-250	3/8 x 3/8 x 1/4 Male Barb TEE	1
7P125-037	1/8 NPT - 90° to 1/4 Barb	1
7U030-030	1/4" Vacuum Hose	1.25'
7U100-055	Tie Wrap, 6" Nylon	10
7U100-044	Tie wrap, 4" Nylon	5
7A250-050	1/4-20 SHCS, 1/2 Long	2
7J006-093	6mm Washer, Plated	3
4GK110-110	**COIL BRACKET RELOCATION ASSEMBLY**	**1**
4GK010-110	Tab A, Coil Relocation 6mm	2
4GK010-120	Tab B, Coil Relocation	2
7C060-016	M6 x 1.00 x 16 HXHD	6
7F006-093	6mm Nylock Nut	4
7J006-093	6mm Washer, Plated	10
7U133-070	**FILLER HOSE**	**1**
7T560-001	**CUTTER, 9/16 ROTABROACH**	**1**
7T560-002	**ARBOR, ROTABROACH**	**1**
8H040-022	**3/4 BREATHER**	**1**
4GK020-020	**HAND-HELD PROGRAMMER COUPON**	**1**
4GK014-010	**RADIATOR PIPE LS1 F-BODY**	**1**
7R002-024	**#24 GOLDSEAL HOSE CLAMP**	**2**
8F060-038	**38 lb INJECTORS**	**8**

P/N: 4GK020-010

09JUN03 v3.2*(FBodyLS1(4GK V3.2)98-02)*

2001-2002 GM F-Body LS1 w/Charge Air Cooler

Part No. 4GK218-080SQ

VORTECH® ENGINEERING, LLC

PARTS LIST

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

Part Number	Description	Quantity
2D228-100	**SUPERCHARGER ASSY, 1998 LS1, W/COOLER**	**1**
2A038-312	3.12 Drive Pulley	1
2A038-495	Belt	1
4GK111-031	**MOUNTING BRACKET ASSEMBLY**	**1**
4GK111-021	Mounting Bracket	1
4GK010-020	Support	1
4FM011-052	Spring tensioner, 5.4	1
7A375-300	3/8-16 x 3" HXCSG5P	1
7J375-044	3/8 SAE Washer, Plated	1
2A017-033	Spacer Tensioner	1
4FA016-170	Idler Pulley	1
4FA016-171	Dust Cover (Wide Idler Pulley)	1
7A312-074	5/16-18 x 3/4 SHCS, Plated	6
7A312-200	5/16-18 x 2" HHD	2
7A312-300	5/16-18 X 3" HHD G5	2
7K312-001	5/16 AN Washer	10
7C010-045	M10 x 1.5 x 45mm HHD	3
7J010-002	10mm washer	3
5W001-005	3/8" Plastic Wire Loom, 1.25 ft.	1
7A312-200	5/16-18 x 2" HXHD	2
7C010-040	M10 x 1.5 x 40 HXHD	1
4GK212-030	**AIR INTAKE ASSEMBLY**	**1**
4GK112-030	Duct Inlet	1
8D001-001	Bypass Valve	1
7P100-100	1" NPT X 1" Barb Plastic Fitting	1
7U034-016	1" GS Hose, .25 ft.	1
7U034-016	1" GS Hose, 1.25 ft.	1
7R002-016	#16 Hose Clamp	4
7P500-156	1/2" x 1/4 NPT Tee	1
7P250-039	1/4 NPT to 1/4" Barb	1
7U030-046	5/32" Vacuum Line, 2 ft.	1
4GK100-010	HARDWARE ASSEMBLY	1
4GK012-040	Duct inlet 90° Elbow	1
7U035-001	3-1/2" Flex Hose, .75 ft.	1
7R002-052	#52 Goldseal Hose Clamp	2
7S350-200	3-1/2 X 2 Sleeve	2
7R002-056	#56 Goldseal Hose Clamp	4
7U375-052	3/8" Vacuum Cap	1
7U030-056	3/8 PCV Hse, 2.25 ft.	1
7U100-061	Grommet 3/8 I.D. 5/8 Flange	1
7P375-008	Elbow Union EUB	1
4GK130-036	**OIL DRAIN ASSEMBLY**	**1**
7R001-008	#8 Stainless Hose Clamp	2
7U030-036	1/2" Oil Drain Hose, 1.25 ft.	1
7U100-055	Tie Wrap, 6" Nylon	1
7P375-017	3/8 NPT X 1/2 Beaded Hose Barb	1
7P375-040	3/8" Female Elbow	1
7P375-041	3/8" NPT Hex Nipple	1
4GK130-026	**OIL FEED LINE ASSEMBLY**	**1**
7U030-026	1/4" Oil feed hose, .833 ft.	1
7P125-026	-4 to 1/8 NPT 90°, Male	2
7P525-067	.500 Crimp Ferrules	2
7P250-066	#4 Swivel x 1/4" Hose Barb	2
7S625-000	Fire Sleeve, 1 ft.	1
7R003-008	1/2" Adel Clamp	2
7U100-055	Tie Wrap, 6" Nylon	2
4GK101-001	**FUEL PUMP ASSY, LS1**	**1**
5W001-001	Wire Tap, Inline, 14-16 AWG	1
5W001-019	Solderless Connector 10-12	1
5W001-014	Fuse Holder 10 GA Wire	1
5W001-015	Fuse, Blade Type 20 amp	1
5W001-017	3/8" Ring Terminal 12 GA	2
7E010-046	#8 x 3/4 Sheet Metal	1
7J010-001	#10 Flat Washer	2
7P250-045	1/4 Male NPT x 3/8 Male Barb	1
7P312-002	5/16 Barb x 1/4 NPT Barb	1
7R001-004	#4 Hose Clamp	2
7R004-002	17.0 Stepless Clamp	4
7R004-001	15.7 Stepless Clamp	2
7U031-018	5/16 Fuel Hse Hi-Psr	1.6666'
7U032-016	3/8" Fuel Hse Hi-Psr	0.83330'
7U032-016	3/8" Fuel Hse Hi-Psr	3.0'
7U100-044	Tie Wrap, 4" Nylon	10
7U100-055	Tie Wrap, 6" Nylon	10
8F001-500	Fuel Pump, Pierburg	1
8F101-300	Pump Wiring Assy LT1	1
5W001-011	16-14 GA Eyelet .25" Hole	2
7P625-375	Reducer, 5/8 Barb to 3/8 Barb	1
7R003-028	Adel Clamp, 2-3/8" .26 Hole	2
7A250-101	1/4-20 x 1 HXHD CPSC	2
7J250-022	1/4" Washer	4
7F250-021	1/4-20 Nylock Nut Zinc Pltd.	2
7R004-004	Stepless Clamp, 1.0 O.D. Hose	2
7P312-015	Ftng, Banjo 12mm x .312 Barb	1
7F012-001	M12 Cap Nut, Fuel Pump	1
5W001-042	12-10GA x 3/16" Ring Terminal	1
7P375-072	3/8 Female Fuel Ftg, Steel	1
7P375-010	3/8 GM Fuel To 3/* Barb Ftg	1
7U033-000	5/8" Fuel Hose	.25'

Part Number	Description	Quantity
4GK110-010	**POWER STEERING ASSEMBLY**	**1**
4GK110-020	Fitting, Power Steering Assy	1
4GK010-010	Bracket, Power Steering	1
7A250-050	1/4-20 SHCS, Plated	2
7J006-093	6mm Washer	2
7U130-048	Assembly, Power Steering Pressure Hose	1
4GK010-060	Power Steering Reservoir Bracket	1
4GK010-090	Power Steering Reservoir Retainer	1
4GK010-100	Power Steering Reservoir Fitting	1
7C010-050	10-24 X 1/2 SHCS, Zinc	1
7F010-024	10-24 Nylock Nut	1
7J010-001	#10 Flat Washer	2
7U100-113	O-ring -113 LS1 Power Steering	2
7U030-036	1/2" Oil Drain Hose, 2 ft.	1
7R001-008	#8 Stainless Hose Clamp	2
7P375-050	3/8" Hose	1
7U032-016	3/4' x 3/8" Hose	1
7R001-004	#4 Stainless Hose Clamp	2
4GK116-031	**CRANK PULLEY ASSEMBLY**	**1**
4GK016-011	Damper Assy, 6 Rib	1
4GK018-031	Crank PPulley	1
7C016-010	LS1 Damper Bolt, M16 x 2.0	1
8N301-120	**POWER COOLER ASSEMBLY, 2001**	**1**
7R002-056	#56 Hose Clamp	1
4GK010-140	AC Canister Anchor	1
4GK010-190	Brkt, 2001 After Cooler Support	1
7U250-200	Foam, 1/4" x 2" x 3" Single Adhesive	3"
7C0210-015	M10-1.5 x 15mm HXCSP	2
7J010-002	10mm Washer, Zinc Plated	2
8N101-080	Power Cooler, Welded Assy	1
7C080-016	8mm x 1.25 x 16 HXHD	2
7A312-001	5/16 AN Washer	2
8N106-040	**WATER COOLER MOUNTING ASSEMBLY**	**1**
8N006-010	Water Cooler	1
4GK010-051	Bracket, Radiator,Left	1
4GK010-052	Bracket Radiator, Right	1
7A312-100	5/16-18 x 1 HXCSGR5P	2
7F312-018	5/16-18 Nut USS, Plated	2
7J312-000	5/16 Flat Washer-SAE	4
7A250-050	1/4-20 HHD, 1/2 Long-SHCS	4
7F250-021	1/4-20 Nylock Nut	4
7J250-001	1/4 Flat Washer	8
8N107-046	**WATER PUMP ASSEMBLY**	**1**
8F001-403	Water Pump	1
7A250-050	1/4-20 x 1/2 SHCS, Plated	2
7J006-093	6mm Washer	6
7F250-021	1/4-20 Nylock Nut	2
8N010-060	Bracket Water Pump Mount	1
5W001-050	Aftercooler Pump Plug	1
5W014-010	14 GA STD Wire, Red, 10 ft.	1
5W001-013	14-16 GA Butt Splice Connectors	1
5W001-011	14-16 GA Eyelet, .25"	1
4GK010-150	Bracket, Water Pump	1
7C080-016	8mm X 1.25 X 16 HXHD Bolt	2
7J312-000	5/16 Flat Washer, SAE	3
7F008-020	M8 x 1.25 Nut	1
4GK114-010	**WATER TANK ASSEMBLY**	**1**
8N055-030	Reservoir	1
4GK010-160	Bracket, Reservoir	1
7A250-050	1/4-20 HHD, 1/2 Long	2
7J006-093	6mm Washer	2
7U038-00	3/4" Heater Hose, 11 ft.	1
7U038-012	3/4" 90° Hose 4 x 12"	2
7R007-001	Nylon Clamp 1-1/8"	10
7P500-026	1/2 NPT to 3/4 Hose 90° Barb	6
7P500-078	1/2 NPT to 3/4 Hose Barb	2
4GK112-010	**DISCHARGE ASSEMBLY**	**1**
4GK012-010	Duct T-Body Cooler	1
7S275-200	2-3/4 X 2 Sleeve	1
7R002-044	#44 Goldseal Hose Clamp	2
8N104-061	**SUPPORT COMPONENTS**	**1**
7S400-200	4" Sleeve	1
7R002-064	#64 Goldseal Hose Clamp	2
7S250-200	2-1/2 Sleeve	1
7R002-040	#40 Stainless Hose Clamp	2
8N056-060	Surge Tank Body	1
8N055-050	Cap, Surge Tank Plastic	1
8N010-110	Mtg. Tab, LS1 Fbody	1
7P375-250	3/8 x 3/8 x 1/4 Male Barb TEE	1
7P125-037	1/8 NPT - 90° to 1/4 Barb	1
7U030-030	1/4" vacuum hose	1.25'
7U100-055	Tie Wrap, 6" Nylon	10
7U100-044	Tie Wrap, 4" Nylon	5
7A250-050	1/4-20 SHCS, 1/2 Long	2
7J006-093	6mm Washer, Plated	3
4GK110-110	**COIL BRACKET RELOCATION ASSEMBLY**	**1**

P/N: 4GK020-010

09JUN03 v3.2*(FBodyLS1(4GK V3.2)98-02)*

2001-2002 GM F-Body LS1 w/Charge Air Cooler

Part No. 4GK218-080SQ

ENGINEERING, LLC

PARTS LIST

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

Part Number	Description	Quantity
4GK010-110	Tab A, Coil Relocation 6mm	2
4GK010-120	Tab B, Coil Relocation	2
7C060-016	M6 x 1.00 x 16 HXHD	6
7F006-093	6mm Nylock Nut	4
7J006-093	6mm Washer, Plated	10
7U133-070	**FILLER HOSE**	**1**
7T560-001	**CUTTER, 9/16 ROTABROACH**	**1**
7T560-002	**ARBOR, ROTABROACH**	**1**
8H040-022	**3/4 BREATHER**	**1**
4GK020-020	**HAND-HELD PROGRAMMER COUPON**	**1**
4GK014-010	**RADIATOR PIPE LS1 F-BODY**	**1**
7R002-024	**#24 GOLDSEAL HOSE CLAMP**	**2**
8F060-038	**38 lb INJECTORS**	**8**

P/N: 4GK020-010

09JUN03 v3.2*(FBodyLS1(4GK V3.2)98-02)*

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1. COMPONENT REMOVAL

A. Disconnect the negative cable at the battery.

B. Remove all ducting between the air filter cover and the throttle body (set aside MAF meter, taking care to protect the wire elements inside).

C. Remove the air temperature sensor and grommet from ducting (set aside).

D. Remove and discard the hose that connects the passenger's side valve cover breather to the throttle body.

E. Cap off the throttle body nipple with the supplied 3/8" vacuum cap.

F. Remove the accessory drive and air conditioning compressor drive belts.

G. Spray bolts on both sides of the driver's side catalytic converter with penetrating oil.

H. Drain the coolant system until the upper radiator hose can be removed. Remove the radiator hose connecting the engine to the power steering cooler.

I. Remove the plastic power steering cooler retainer, if equipped, from the radiator shroud.

J. Remove the harmonic damper from the crankshaft using a damper removal tool.

K. If the power steering pulley does not have the pump mounting bolt access slots, remove the pulley with a pulley remover.

L. Use a drain pan under the power steering reservoir and disconnect the 3/8 return hose from the bottom of the reservoir. Remove the power steering pump, bracket and pressure hose from the vehicle.

P/N: 4GK020-010

09JUN03 v3.2*(FBodyLS1(4GK V3.2)98-02)*

2. SUPERCHARGER MOUNTING BRACKET

A. For 1999-2002 vehicles, the driver's side coil mounting bracket must be relocated 1" to make room for the supercharger inlet. Follow the steps in the coil relocate schematic (see *Fig. 2-a, 2-b*) using the supplied 6mm hardware unless noted. Only four of the original mounting holes are utilized.

B. Unbolt the coil bracket from the valve cover (5 stud bolts).

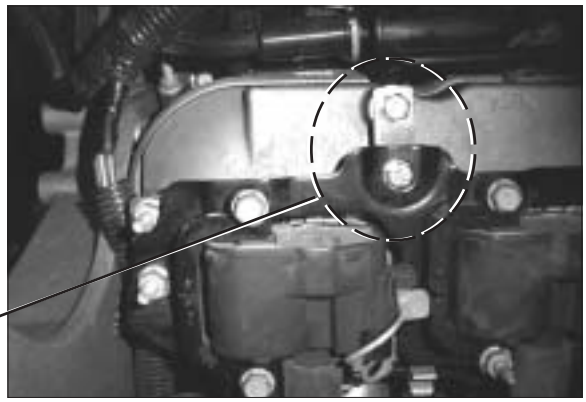

Fig. 2-b

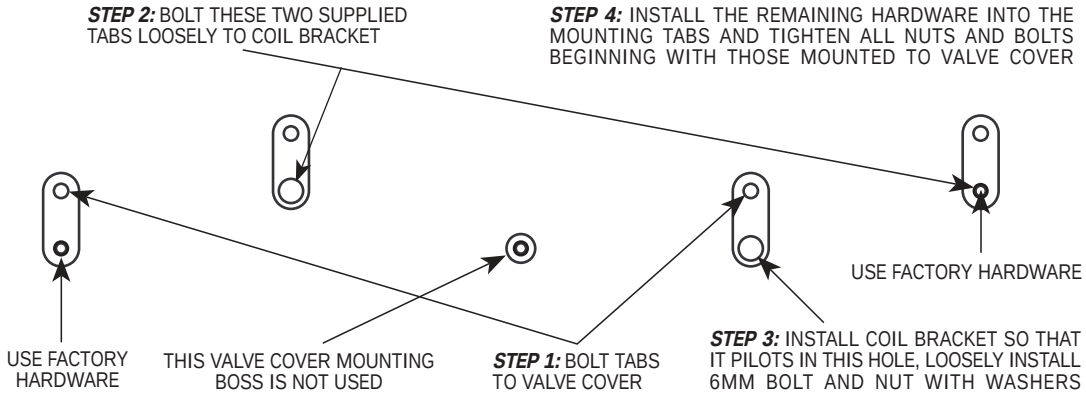

Figure: 2-a
Coil Relocation Schematic

C. For 2000-2002 vehicles, insert the supplied small breather into the end of the 3/4" hose that was originally connected to the stock air intake plenum.

D. Remove the two electrical connectors from the throttle body. Open up the wire loom until the MAF sensor wire has about 15" of free length (about where the #2 injector wire joins loom). Wrap the MAF wires with electrical tape and cover with the supplied plastic wire loom. Wrap the remaining plugs with electrical tape and plastic wire loom as factory installed. Reconnect the connectors to the throttle body.

E. Clean the front of driver's side head of debris.

F. Bolt the mounting bracket to the head with two of the factory bolts and the two supplied 45mm long bolts. (See *Fig. 2-c*.)

G. Make sure that mounting bracket is seated directly on the machined surface on the cylinder head and that no wires are pinched.

H. Tighten the four mounting bolts to 37 ft/lb (50 N·m).

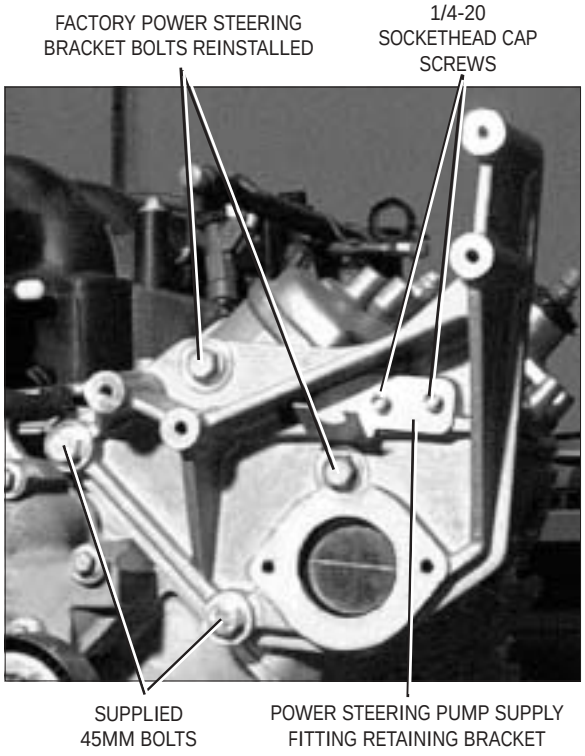

Fig. 2-c

P/N: 4GK020-010

09JUN03 v3.2*(FBodyLS1(4GK V3.2)98-02)*

3. OIL DRAIN LINE

A. To provide an oil drain for the supercharger, it is necessary to make a hole in the front of the oil pan. Locate and centerpunch the hole. This hole should be centered .40" from the bottom of the oil pan lip between the last bolt and the driver's side of the oil pan. (See *Fig. 3-a.*)

B. Drill the 1/8" pilot hole at the center location.

C. Use the supplied 9/16" Rotabroach to drill a hole in oil pan. Break through the pan easily so that the cut out piece does not go into the oil pan.

D. Tap the hole with a 3/8" NPT tap to approximately 1/2" deep or until the fitting can be started. Pack the flutes of the tap with heavy grease to hold chips.

E. Thoroughly clean the threaded area. Reach inside the oil pan and retrieve any stray chips. Apply a small amount of silicone sealer to the new threads. Apply more sealer to the 3/8" NPT hex nipple and secure in the hole. Make sure a seal is formed all around the fitting. Install elbow and barb fitting pointing up and towards the side of the alternator (see *Fig. 3-b*) so that the oil drain hose will have maximum clearance to the damper once installed.

F. Temporarily cover the oil drain barb fitting to keep out debris.

G. Drain the engine oil, install a new filter and refill the engine with fresh oil.

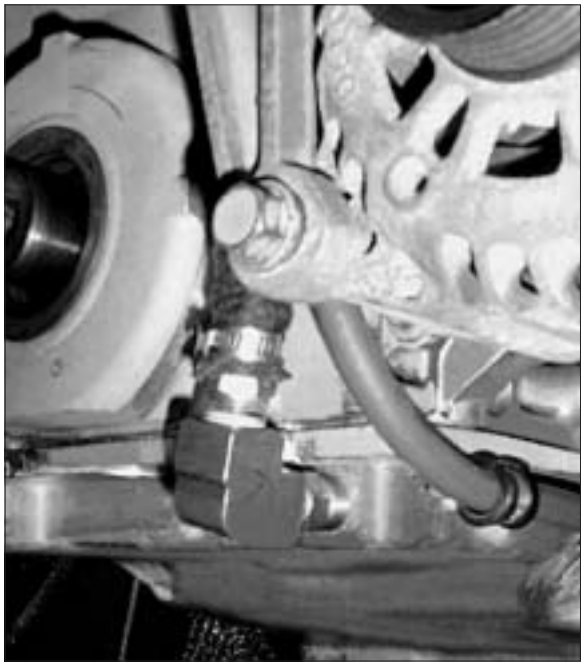

Fig. 3-b

VIEW OF OIL DRAIN HOLE LOCATION LOOKING AT FRONT DRIVER'S SIDE OF OIL PAN (DIMENSIONS TO CENTER OF HOLE)

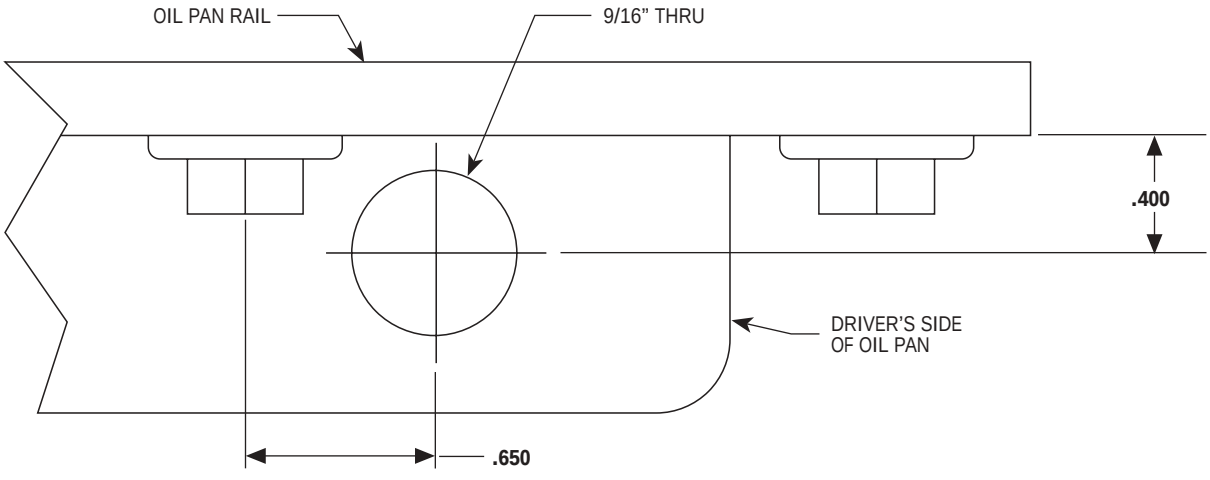

Fig. 3-a

4. OIL FEED LINE

A. Spray the nuts securing the driver's side catalytic converter with penetrating oil and remove. **Use caution not to shear off the exhaust manifold studs!**

B. Remove the two bolts holding the small casting located just above the oil filter.

C. Drill through the existing hole in the casting neck with an "R" drill bit and tap 1/8" NPT. Thoroughly clean the neck with solvent to remove metal clips.

D. Using engine oil on the threads, install the supplied 1/8" NPT to #4 90° fitting so it will point forward and away from the exhaust when installed on the vehicle (see *Figure 4-a*).

E. Reinstall the neck into its original position.

F. Temporarily cover one end of the oil feed line and protect it from debris until connecting it to the supercharger.

G. Connect the open end of the oil feed line to the fitting. Install the fire sleeve on the portion of the oil feed line that is near the exhaust and secure both with an adel clamp. Route the line along the oil pan rail to the front of the engine. Use an adel clamp at the front of pan and tie wraps to secure the line and protect it from kinking, abrasion, and high heat areas. From the front of the pan, leave the oil feed line loose (routing will be completed after the supercharger is installed). The adel clamps will need to be clipped with side cutters to allow the bolt to pass through the hole (see *Fig. 4-b*).

H. Re-install the catalytic converter.

Fig. 4-a

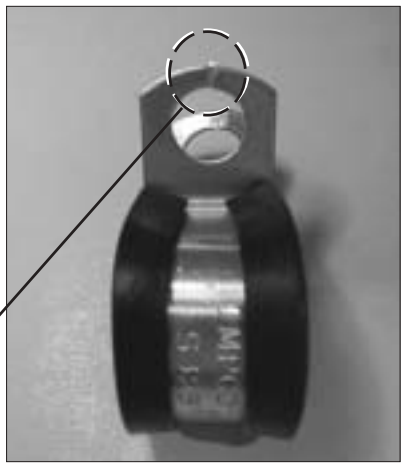

Fig. 4-b

5. HARMONIC DAMPER INSTALLATION

A. Make sure no debris or oil is on the crank snout or inner bore of the supplied damper.

B. Use the damper installation tool to seat the damper on the crankshaft. (See Tool & Supply Requirements on page v.)

C. Install per factory manual as follows:

1. Install the original retaining bolt and torque to 240 ft/lb. Remove the bolt.

2. Lightly coat the threads of the new retaining bolt with red threadlocker. Install and torque to 37 ft/lbs.

3. Using 1/2" breaker bar, tighten the retaining bolt an additional 120° or tighten with a torque wrench to 250 ft/lbs.

D. Use a small amount of paint or equivalent to mark the retaining bolt and balancer hub so that any relative movement between the two will be easy to check after the vehicle has been operated.

NOTE: *It is helpful to mark the breaker bar location on the damper under light torque. Tighten the bolt until the breaker bar is at the same position under the same light torque as used previously, but is advanced two flats on the bolt head. This yields 120° of bolt rotation.*

P/N: 4GK020-010

09JUN03 v3.2*(FBodyLS1(4GK V3.2)98-02)*

6. RADIATOR HOSE MODIFICATION

A. The object of this section is to route the radiator hose as close to the radiator as possible to provide room for the supercharger belt and spring tensioner.

B. Drain the coolant system until the upper radiator hose can be removed.

C. Leaving the straight legs as long as possible, trim the supplied hose per *Fig. 6-a*.

D. (Vehicles *with* power steering cooler) Remove the radiator hose connecting the engine to the power steering cooler. Install the trimmed hose in place of the original so the free end is routed behind the A/C line. Make sure the hose is routed between the radiator shroud and the air conditioning line.

E. (Vehicles *without* power steering cooler) Remove the engine side of the upper radiator hose. Install the trimmed hose onto the engine and route the free end behind the A/C line. Cut the original radiator hose so it will connect to the installed hose with the supplied 1-3/8" hose mender. Make sure the hose is routed between the radiator shroud and the air conditioning line.

F. If the hose is not tight against the radiator shroud, remove the radiator side of the upper radiator hose and trim to pull hose forward.

G. Tighten all hose clamps and refill coolant system.

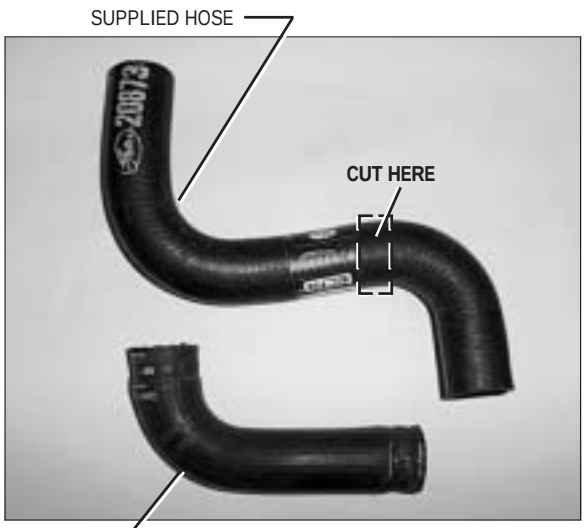

Fig. 6-a / Hose Modification

7. POWER STEERING INSTALLATION

A. Remove the reservoir from the power steering pump and set aside.

B. Loosely install the power steering pump supply fitting retaining bracket on the mounting bracket with 1/4-20-1/2” long socket head cap screws.

C. If separate from pressure line, install the 18mm fitting in the power steering rack and the 16mm fitting in the power steering pump.

> ***NOTE:*** *Remove the factory power steering O-rings from the ends of the factory hoses and install on the supplied fittings.*

D. Loosely install the -6 90° fitting on the power steering rack. Point the fitting upwards.

E. Attach the supplied pressure line to the power steering pump angled so as not to contact the power steering pump pulley when installed.

F. With the factory O-ring positioned on its smallest bore, insert the supplied power steering pump supply fitting into the pump and push until a positive stop is felt.

G. Assemble the power steering pump and front supercharger support bracket using two 3” x 5/16-18 through bolts and the factory 8mm bolt in its original location. (See *Fig. 7-a*.)

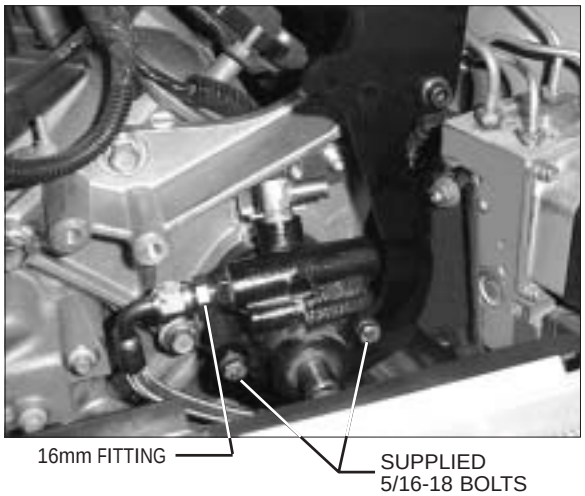

Fig. 7-a

7. POWER STEERING INSTALLATION, cont'd.

H. Install the assembly on the supercharger mounting bracket. Install two 5/16 socket head cap screws through the supercharger support into the mounting bracket.

I. To ensure that the power steering supply fitting remains seated, pry the small fitting retaining bracket downward and tighten the 1/4" screws.

J. Attach the supplied 1/2" hose to the pump fitting and secure with a hose clamp. Hose will be routed between the supercharger support and the mounting bracket and then behind the ABS unit (if so equipped) to the reservoir.

K. Install the supplied O-ring onto the factory power steering reservoir. Push the supplied fitting until a positive stop is felt. Attach the reservoir to the supplied bracket with the retainer and 10-24 through bolt (see *Fig. 7-b*).

L. With the reservoir attached to the bracket, attach the factory fluid return to the reservoir. Attach 1/2" hose from top of power steering pump to the fitting installed on the reservoir.

M. Position the assembly next to the driver's side of the radiator. Secure with the factory ground strap bolt located on the radiator core support (see *Fig. 7-c*).

N. Attach and tighten the pressure line to the steering rack.

O. Re-install the power steering pulley (if previously removed).

P. Bleed system as follows (*with the engine off*):

1. Raise the front wheels off the ground.

2. Turn the steering wheel full left.

3. Fill the reservoir to "full cold" level. Maintain level throughout procedure.

4. Turn the steering wheel lock to lock at least 20 times or until the bubbles stop.

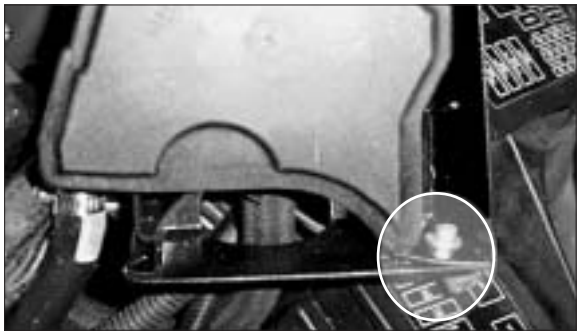

Fig. 7-b

Fig. 7-c

NOTE: *If the vehicle is not equipped with a power steering cooler, use the supplied hose mender, 3/8" hose and hose clamps to extend return line to reservoir.*

8. FUEL INJECTOR REPLACEMENT

NOTE: *Complete removal of the fuel rail will aid in injector replacement. Separate the fuel rail supply line from the rail using springlock disconnect tool.*

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 rail 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 on the Vortech supplied fuel injectors.

E. Install the new injectors into the fuel rails with the terminals facing outward.

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8. FUEL INJECTOR REPLACEMENT, cont'd.

F. Carefully lower the fuel rail/injector assembly down onto the intake manifold. Check to see that each 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.

9. SUPERCHARGER INSTALLATION

A. Attach the supplied 1/2" oil drain hose to the supercharger and tighten clamp.

B. Install the supercharger loosely onto the bracket. Start all six supercharger mounting screws.

C. Tighten the supercharger support bracket mounting screws to 18 ft/lb (25 N·m).

D. Tighten the six supercharger mounting screws to 18 ft/lb (25 N·m).

E. Route the oil drain hose down behind the idler and to the left of alternator. Attach the oil drain hose to the previously installed fitting in the oil pan and tighten the clamp.

F. Route oil feed hose up the front of the engine to the supercharger and attach using supplied 90° fitting. Fitting should be installed into the oil feed fitting (7P375-094). Oil feed/air assist assembly should be checked/plumbed per *Fig. 9-a*.

G. Make sure the oil feed hose is secured from contact with moving or sharp objects.

H. Install the factory accessory drive belt(s) in stock configuration.

I. Bolt the supplied spring tensioner to the mounting pad near the supercharger drive pulley using threadlock on the threads. Line up the locating pin with bracket hole. Secure the tensioner assembly to the bracket using the supplied 3/8" bolt and 3/8" SAE washer. (See *Fig. 9-b*.)

> ***NOTE:*** *Failure to install the 3/8" washer under the bolt head may cause the tensioner to malfunction.*

J. Install the supercharger drive belt.

> ***NOTE:*** *Make sure the supercharger belt tensioner does not make contact with the factory power steering cooler. Contact with the cooler during normal engine operation may cause tensioner bind and subsequent supercharger input overload resulting in supercharger failure. Make extra effort so that contact between parts is* ***not*** *made.*

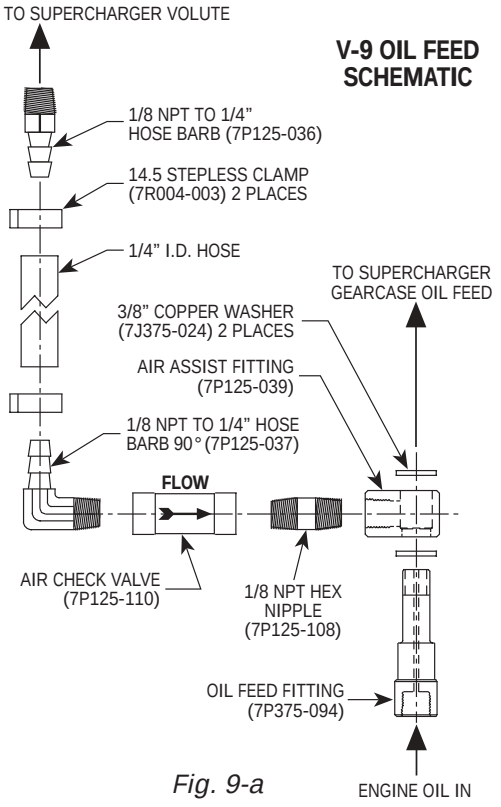

Fig. 9-a

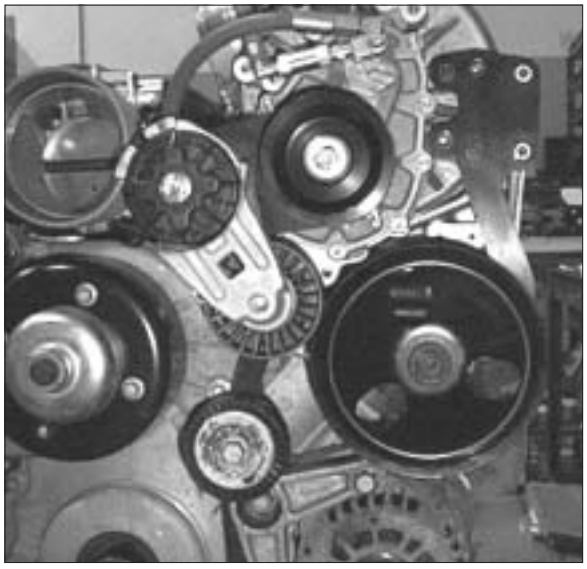

Fig. 9-b

10. CHARGE AIR COOLER ASSEMBLY INSTALLATION, *(for non-charge air cooled standard supercharger kit installation, go to step 11)*

A1. 1998-2000 - EGR removal, relocation/heat shield installation

1. Remove EGR valve. Using thread sealer, install 1/8" NPT plugs in the EGR relocation plate.
2. Using the new supplied gasket, bolt the EGR valve to the relocation plate using 5/16" bolts and washers.
3. Install EGR relocation plate and heat shield using new gasket and supplied 8mm bolts. The heat shield should be oriented so that the aftercooler core can rest on top of it when installed (see *Fig. 10-a*).
4. Place supplied 1/4" foam tape on top of the heat shield (see *Fig. 10-a*).
5. Using the supplied wire and butt connectors, lengthen the EGR plug wire approximately 10". Stagger butt connectors and wrap with electrical tape. Connect the lengthened EGR plug to the EGR valve using a wire loom and zip ties to keep it away from hot or moving parts.

Fig. 10-a / 1998-2000 Charge Air Cooler EGR Relocation and Support

> ***NOTE:*** *EGR valve inlet passage must remain connected to the same passage as factory installed. (i.e.: pointed side of EGR valve mounting surface must point towards the center of the vehicle).*

A2. 2001-2002 - Charge air cooler support installation

1. Install the supplied support bracket onto the front of the passenger side cylinder head. Use the supplied M10 bolts to secure the bracket with the bent portion on top and pointed forward. (See *Fig. 10-b*.)
2. Verify that the 1/4" foam tape is on top of the bracket to insulate the aftercooler from metal to metal contact.

Fig. 10-b / 2001-2002 Charge Air Cooler Support

B. Air conditioning canister relocation

> ***NOTE:*** *The object of this section is to pull the A/C canister towards the passenger side of the vehicle to provide clearance for the charge air cooler.*

1. Loosen the clamp on the factory A/C canister bracket. Adjust the height of the A/C canister so the supplied #56 hose clamp fits between the top of the factory A/C canister bracket and the raised step on the A/C canister.

2a. *Vehicles With Traction/Cruise Control*. Locate the traction/cruise control servo on the passenger's side just behind the battery. Remove the bolt closest to the A/C canister which secures the servo to the strut tower. (It may be beneficial to remove the battery to gain full access to this bolt.) Insert the supplied A/C canister anchor between the cruise control servo and the strut tower. Install previously removed bolt, hand tight only.

2b. *Vehicles Without Traction/Cruise Control*. Mount the A/C canister anchor in the factory hole near the middle of the A/C canister. Using one of the original EGR valve mounting bolts removed in Step 10-a or use the supplied 8mm bolt and washer and tap the hole to M8 x 1.25. (See *Fig. 10-2b*.)

Fig. 10-2b / A/C Canister Anchor Bracket

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10. CHARGE AIR COOLER ASSEMBLY INSTALLATION, cont'd.

3. Place the #52 hose clamp over the raised tab on the A/C canister anchor. A/C line support clamp may need to be removed for ease of installation. Tighten the clamp until the A/C canister is seated tightly against its anchor. Tighten the bolt securing the anchor to the strut tower. Tighten the factory clamp-on A/C canister bracket.

C. Water reservoir assembly

1. Install the 1/2" NPT 90° hose barb fitting into the bottom of the supplied plastic reservoir. Install 1/2" NPT straight barb into top reservoir hole.

2. If the 1" NPT on top of tank has a through hole, install 1" NPT pipe plug.

D. Water pump wiring

1. Mount the supplied relay and #86 relay terminal grounding wire on to the stud on the driver's side strut tower. Remove all paint and dirt from around the mounting hole to ensure a good ground.

2. Connect the supplied fuse, fuse holder and large ring terminal from the #30 relay terminal to the remote (+) positive battery terminal on the fuse box.

3. Open the fuse box containing the ignition relay. Remove the relay. Modify and install the mini fuse tap per diagram on the #86 terminal of the factory relay. Reinstall the factory ignition relay with the fuse tap in place. Using the yellow wire from the #85 terminal on the Vortech relay and a spade connector, connect to the fuse tap. (See *Fig. 10-c*.)

4. Using the supplied red wire, extend the positive (+) wire from the pump to the #87 relay terminal.

5. Route the negative (-) wire from the pump to a clean ground free from paint and vehicle under coating. Use the supplied eyelet and screw to ground the wire to the vehicle chassis.

E. Reservoir/water pump assembly installation (see *Fig. 10-f* on the following page.)

1. From area near radiator overflow tank, route 3/4" hose down past the outside of the battery. This hose will be connected to the top of the charge air cooler reservoir.

2. Underneath the vehicle, remove the passenger's side splash panel located in front of the front wheel.

3. Remove the nut holding driving light support and the bolt directly behind it. Install the Camaro water tank bracket between driving light support and vehicle using the original nut and bolt (see *Fig. 10-d*).

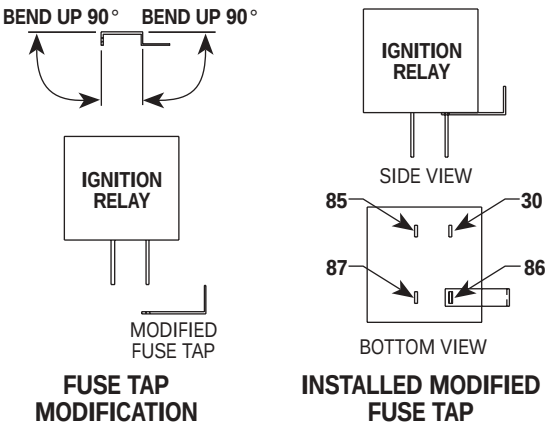

Fig. 10-c

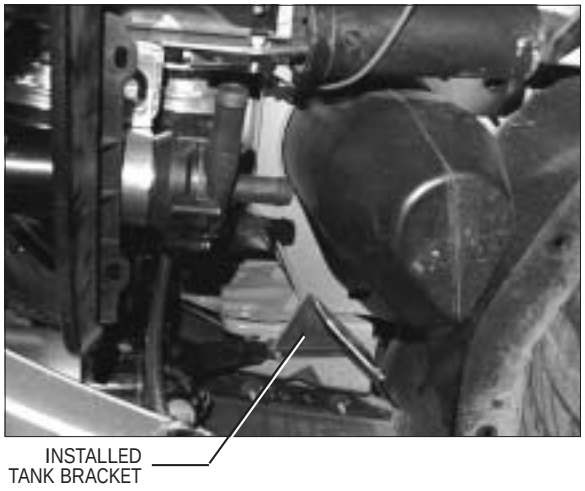

Fig. 10-d

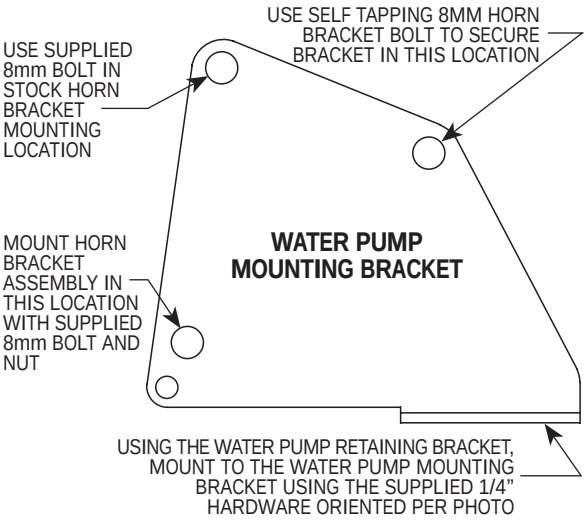

Fig. 10-e

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10. CHARGE AIR COOLER ASSEMBLY INSTALLATION, cont'd.

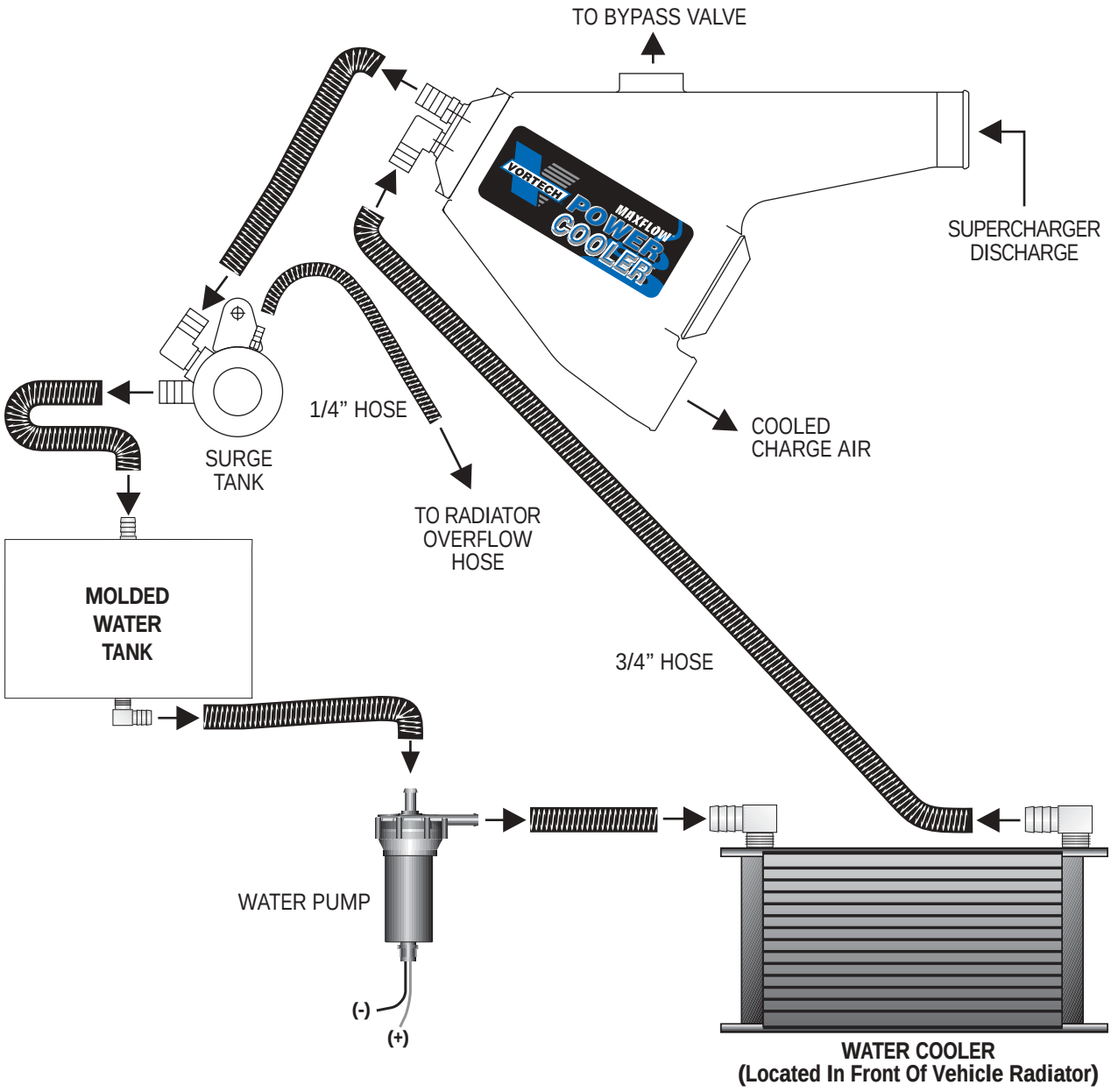

Fig. 10-f
Charge Air Cooler Schematic

10. CHARGE AIR COOLER ASSEMBLY INSTALLATION, cont'd.

4. Connect the hose previously routed into the fender well to the fitting on the top of the reservoir. Install the clamp.

5. Remove horn bracket assembly. Using supplied 8mm bolt, attach water pump bracket to vehicle using original horn bracket mounting hole. Install original horn bracket retaining bolt through second water pump mounting bracket hole and tighten. Using supplied 8mm bolt and nut, bolt horn bracket assembly to water pump mounting bracket as shown (see *Fig. 10-e*).

6. Install retaining bracket on water pump and bolt to water pump mounting bracket using supplied 1/4" hardware. Orient the retaining bracket and water pump discharge as shown (see *Figure 10-g*) and tighten bolts.

7. Connect molded 90° hose from bottom of the water tank to the inlet of the water pump (inlet is centered in the pump housing in line with the motor).

8. Feed assembly into fender well and position so there is clearance on all sides of reservoir. Bolt reservoir assembly to reservoir mounting bracket.

F. Charge air cooler installation

1. Loosely connect charge air cooler core assembly to supercharger discharge.

2. Put sleeves on both ends of the duct connecting the throttle body to the charge air cooler and install duct.

3. With the charge air cooler firmly seated on the heat shield and tight against engine oil fill, tighten all clamps.

4. Carefully verify that the charge air cooler has sufficient clearance to throttle arm throughout its range of motion.

G. Surge tank installation

1. Connect the hose from the top of the reservoir to a 90° fitting installed in the bottom of the surge tank (trim for ideal routing).

2. Mount the tank with the bolt securing the traction control box to the strut tower.

(On vehicles not equipped with traction control, mount the surge tank in the existing hole in the strut tower using one of the original EGR valve mounting bolts removed in step 10-A1 or use the supplied 8mm bolt and washer.)

3. Connect the molded 90° hose from the top of the surge tank to the barb fitting on the upper left of the charge air cooler (see *Fig. 10-h*).

4. Thread supplied 1/8 NPT to 1/4" hose barb fitting into the surge tank.

5. Cut the radiator overflow hose adjacent to the radiator cap, leaving at least 1" of the hose connected to the cap.

Fig. 10-g

Fig. 10-h

10. CHARGE AIR COOLER ASSEMBLY INSTALLATION, cont'd.

6. Install the supplied TEE and connect the remaining barb on the TEE to the barb on the surge tank using 1/4" hose.

7. Secure the hose with tie wraps.

H. Charge air cooler radiator installation

1. Remove the plastic push connectors holding the bumper fascia on either side of the center connector.

2. From above, install 5/16" bolts through holes and radiator brackets and start nuts.

3. Line up and mark center line of the radiator inlet and outlet on the air dam. With 1.25" diameter hole saw, drill holes as high as possible on the air dam so that the hoses will emerge just under the lower core support.

4. Install 90° fittings pointing horizontally towards the passenger's side of the vehicle, but do not secure the charge air cooler radiator until the bleeding procedure is completed.

I. Plumbing and bleeding system

1. Connect the pump discharge to charge air cooler radiator inlet (driver's side fitting on the radiator).

2. Connect the charge air cooler radiator outlet to the remaining 90° fitting on the charge air cooler.

3. Allow the charge air cooler radiator to hang with the fittings at the highest point.

4. Remove the cap from the surge tank and fill the system with 25/75% coolant/water mix.

5. Install cap.

6. Key on power. If water isn't circulating, turn off the pump and check the system. (See step 16-G.)

7. Key off power.

8. Top off purge tank. (Repeat until level stabilizes.)

9. Install the charge air cooler radiator as shown and tighten mounting bolts (see *Fig. 10-i*).

10. Reinstall splash panel.

J. Hood modification (*Camaro only*)

1. Verify that the charge air cooler is seated on the heat shield. The heat shield can be bent down to further lower the charge air cooler as long as clearance to the throttle arm is sufficient.

2. Place clay or putty on the charge air cooler and locate the area of contact with the hood.

3. Using a leather hammer, relieve the underhood bracing until there is sufficient clearance to the charge air cooler (see *Fig. 10-j*).

4. Using clay or putty, verify clearance to the inlet tube and MAF. Run the vehicle and check for contact with the hood.

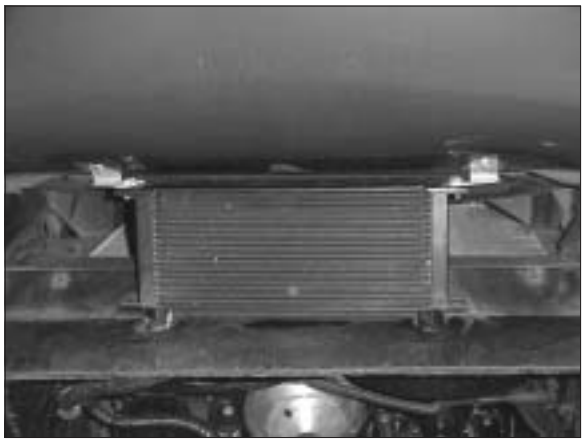

Fig. 10-i

Fig. 10-j
(Camaro Only)

11. STANDARD KIT DISCHARGE DUCT INSTALLATION, *(for charge air cooler kit installation skip step 11 and go to step 12)*

A. Loosely install the supplied sleeves on both ends of the discharge duct. Put the discharge duct into position and slide the sleeves onto the supercharger and the throttle body.

B. Tighten clamps on both ends of the discharge duct.

12. SUPERCHARGER BYPASS VALVE INSTALLATION

A. Thread 1" NPT plastic fitting into charge air cooler inlet manifold. (Charge air cooled vehicles only)

B. Connect 2-1/2" length of hose from the barb on the supercharger discharge duct to the inlet of the bypass valve. Tighten hose clamps on each connection.

C. Cut brake booster vacuum hose as shown (see *Fig. 12-a*) and insert plastic TEE fitting and 3/16" barb.

D. Connect 5/32" vacuum line from the bypass valve to TEE fitting.

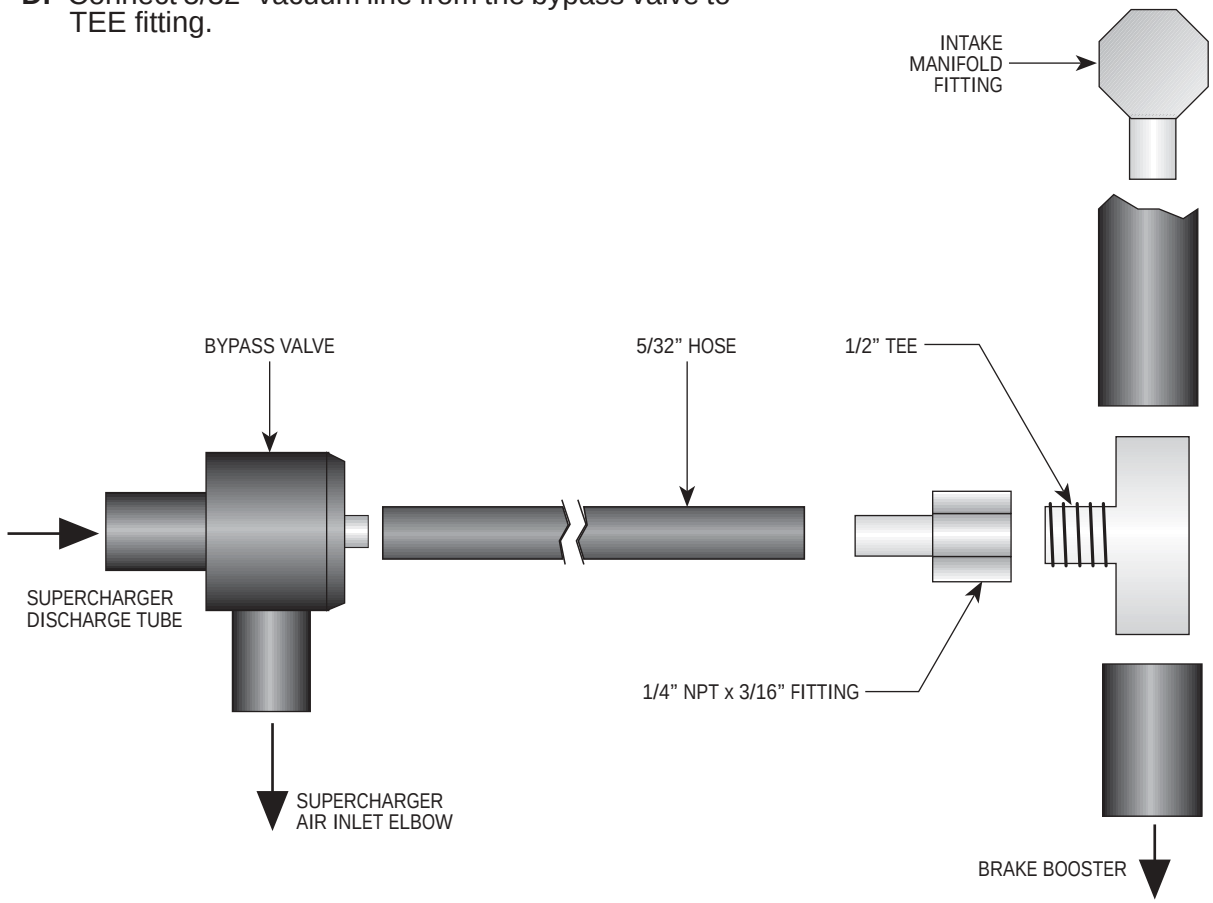

Fig. 12-a

13. FUEL PUMP INSTALLATION

A. Inside the vehicle, remove the rear paneling, fold the carpet forward and flip the rear seats forward. Remove the rear driver's side seat.

B. Locate the fuel relay box underneath the vehicle rear seat floor pan. Disconnect the two plugs entering the box. Trim the "cut-out" from the supplied template on page 16 (see *Fig. 13-b*) and place over the fuel relay. Center punch and drill the two holes 17/64" in diameter. Reinstall the factory relay plugs .

C. Secure the fuel pump/line assembly to the vehicle with the supplied adel clamps, nylock nuts, and hardware (see *Fig. 13-d*).

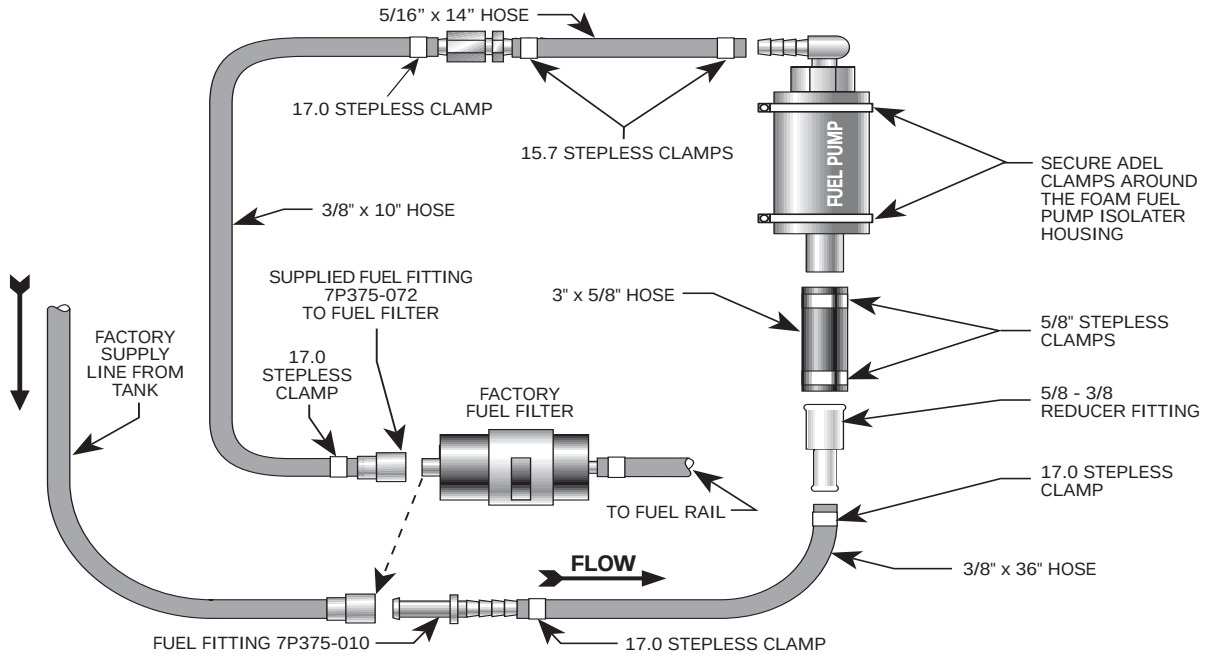

Fig. 13-a

(NOT TO SCALE)

13. FUEL PUMP INSTALLATION, cont'd.

D. Reinstall rear carpet and seats.

E. Loosen the tank filler cap to vent any residual pressure.

F. Disconnect the original plastic fuel feed hose to the fuel filter inlet.

G. Route the fuel pump inlet hose around the front of the fuel filter to form a smooth, gradual bend to the pump. Attach the hose to the factory supply line from the tank.

H. Attach the pump discharge line to the inlet of the fuel filter. Use wraps to keep all fuel lines tight against the underbody. (See *Figs. 13-a, 13-c.*)

> ***NOTE:*** *It is important that all fuel lines have no contact with moving parts, exhaust components or sharp corners. Make sure lines are routed with gentle bends and secured with the supplied tie wraps.*

I. Using a 1/8" drill, make a mounting hole in the frame crossmember above the fuel pump to mount the relay wiring harness and provide a grounding point. Remove all paint and dirt from around the hole. Mount the relay, fuel pump grounding wire and #86 relay terminal using the supplied sheet metal screw.

J. Using the yellow wire from the #85 relay terminal and a wire tap, splice into the grey wire in the factory fuel pump harness (see *Fig. 13-d, 13-e*).

K. Connect the #87 red wire on the relay to the positive terminal on the fuel pump.

L. Run the remaining long red wire up to the battery, using tie wraps to keep the wire away from heat and moving parts. Connect the supplied fuse, fuse holder and large ring terminal to the wire and attach to the remote (+) positive battery terminal.

M. Replace the fuel tank filler cap.

> ***IMPORTANT!*** *Pressurize the fuel system to check for any leakage before starting the vehicle.*

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13. FUEL PUMP INSTALLATION, cont'd.

TEMPLATE FUEL PUMP KIT

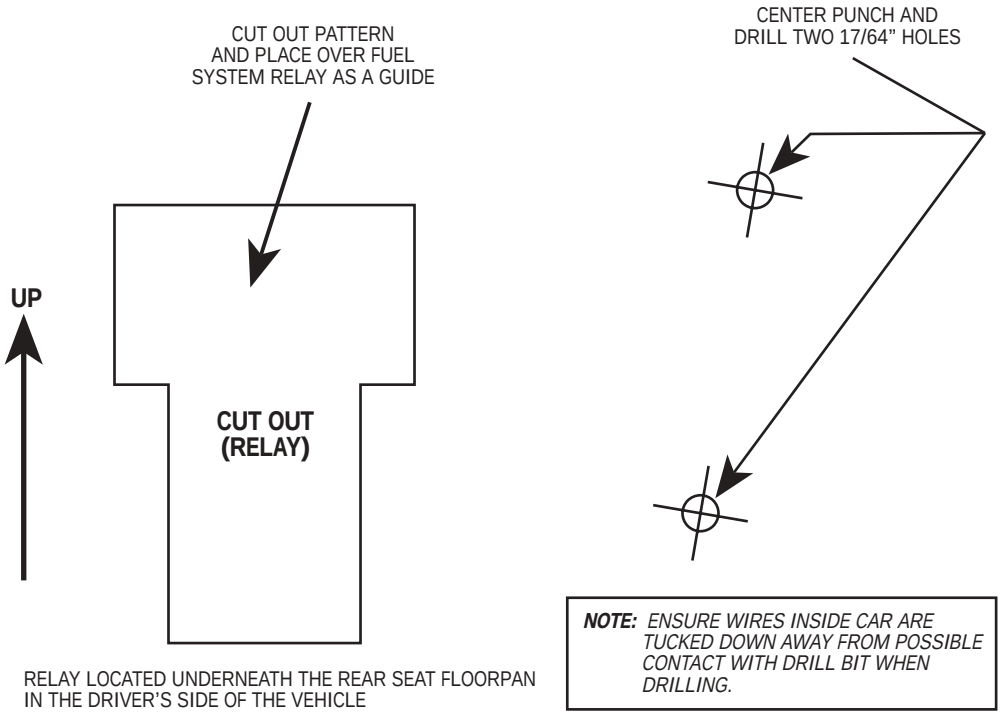

Fig. 13-b

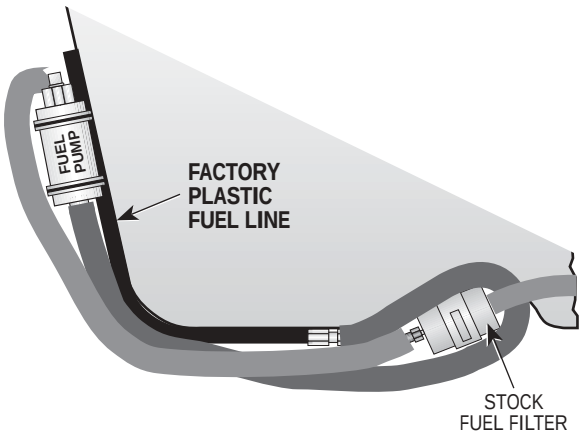

Fig. 13-c

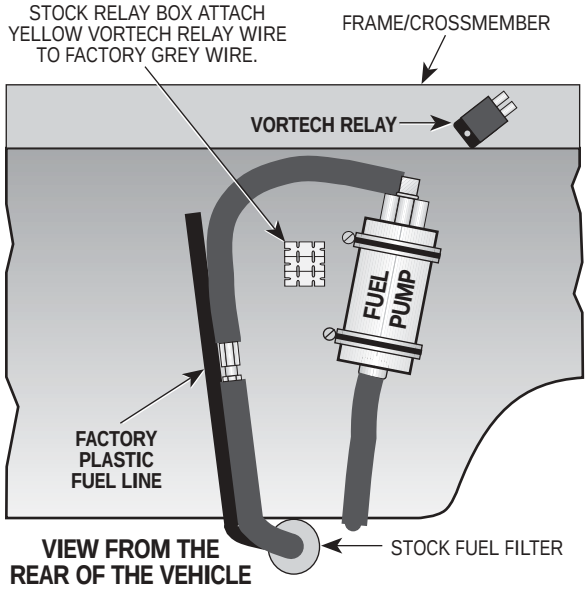

Fig. 13-d

13. FUEL PUMP INSTALLATION, cont'd.

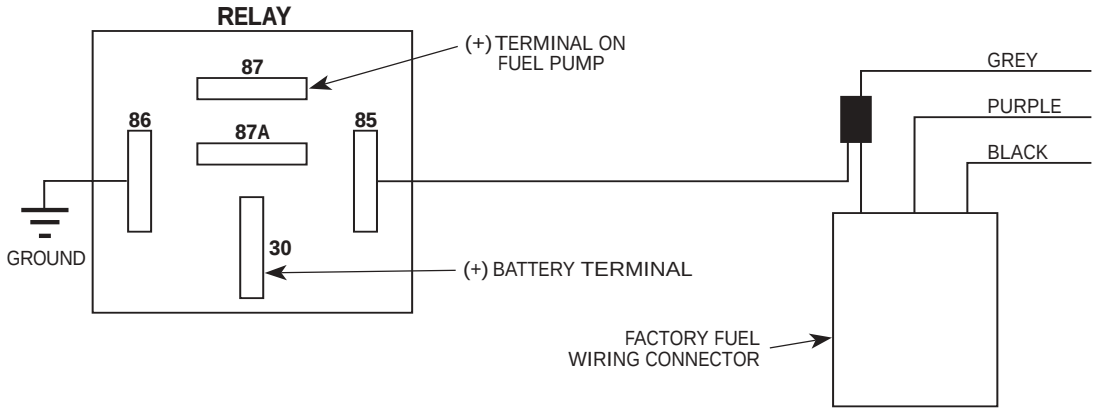

Fig. 13-e

14. INLET DUCT INSTALLATION

A. Install the supplied grommet and 3/8” elbow into the 180° inlet duct hole.

B. Attach short leg of large duct to supercharger with 3-1/2" sleeve and clamps.

C. Attach MAF to long end of 180° inlet duct using 3-1/2” sleeve and clamps.

> ***IMPORTANT!*** *Lines attached to the ABS unit may need to be bent down for hood/duct clearance.*

D. Install the air temperature sensor into the supplied 90° inlet elbow using stock grommet.

E. Install the 90° inlet elbow into the factory air box and connect to MAF with the supplied 3-1/2" flex hose and clamps.

F. If possible, install MAF so that plug is pointing down and MAF is oriented for maximum hood clearance.

G. Install bypass valve discharge hose and clamps (trim for best fit).

H. Connect supplied 3/8" hose from back of inlet duct to passenger side valve cover breather.

I. Tighten all hose clamps and verify that there is hood clearance.

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15. REFLASH COMPUTER

MICRO TUNER 2001 VEHICLE PROGRAMMING INSTRUCTIONS

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.*

A. Reconnect the battery.

B. Connect the supplied cable to the 9-pin connector at the top of the hand-held unit. If present, use the thumbscrews to secure the cable to the connector.

C. Connect the other end to your ALDL connector located under the dash near the steering column. Make sure this connection is seated all the way in and that it is secure. You do not want this cable coming out of the connector during programming.

D. Turn the ignition key to the "on" or "run" position but **do not start** the vehicle.

E. To begin programming your vehicle, you may either press the YES button or the A button. If you press the YES button on the hand-held unit, this will download the Superchips performance program already stored in the hand-held unit. If you press "A", you can alter some predefined options to suit your needs. These options are not permanently stored in the hand-held unit. When power is removed from the unit, the changes you made will be lost.

F. You only need to press the YES button once to start the programming cycle. The programming process takes 1 minute and 15 seconds to complete.

DO NOT DISTURB THE CABLE, OR TURN THE IGNITION OFF DURING THIS TIME! IF THE PROGRAMMING IS DISRUPTED YOUR COMPUTER WILL NOT START OR RUN YOUR VEHICLE!

G. The hand-held unit will inform you that the programming process has completed and to turn the ignition off and disconnect the cable. Only at this time should the ignition be turned off and the cable removed.

H. Programming is now completed. Start the vehicle to ensure proper operation.

16. FINAL ASSEMBLY AND CHECK

A. Make sure that the oil drain to oil pan fitting is secure and that the engine is filled with factory specified oil.

16. FINAL ASSEMBLY AND CHECK, cont'd

B. For a vehicle equipped with an automatic transmission, make sure that the automatic transmission cooling lines will not contact the crank pulley when the vehicle is in operation. Secure as necessary.

C. Fill the factory radiator and the factory coolant surge tank with a 50/50 coolant/water mix.

D. If your vehicle has gone over 20,000 miles since its last spark plug change, you will need to change the spark plugs now before test-driving the vehicle.

E. Check all fittings, nuts, bolts and clamps for tightness. Pay particular attention to oil and fuel lines around moving parts, sharp edges and exhaust system parts. Make sure all wires and lines are properly secured with clamps or tie wraps. Make a visual inspection of the engine and engine compartment (See *Fig. 16-a*.)

F. Check all fluid levels, making sure that your tank is filled with 91 octane or higher fuel before commencing test-drive.

G. (Charge air cooler kits only.) With key on, make sure aftercooler water pump is operating and that water is flowing through the surge tank. Fill as necessary. If water is not flowing, remove charge air cooler supply hose (attached to water cooler) and lower until water flows out of hose. This should prime the pump. Reconnect hose to charge air cooler. Verify water flow. Do not run the water pump for extended periods (30 seconds or more) without water flow.

H. Turn the key to the "on" position allowing the fuel pump to cycle and build pressure. Check the fuel rails and injectors for any leaks.

I. At this point, it is ok to start the vehicle.

J. With engine running, check power steering hose connections for leakage. Let 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

K. Recheck to be sure that no hoses, wires, etc. are near exhaust headers or moving parts and for signs of any fluid leakage.

L. Test-drive the vehicle.

M. Recheck the coolant and aftercooler fluid levels. Periodically check the crank pulley to verify that it has not been moved out on the crankshaft. Verify that the retaining bolt is tight.

N. Read the STREET SUPERCHARGER SYSTEM OWNER'S MANUAL AND RETURN THE WARRANTY REGISTRATION FORM within thirty (30) days of purchasing your supercharger system to qualify for the 3 year limited warranty.

Fig. 16-a / Charge Air Cooler Kit

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.*

Fig. 16-b / Standard Kit

WARNING: *Never operate your engine at full throttle when the engine is cold. Always allow plenty of time for the oil to reach full operating temperature before running above 2,500 RPM. Full supercharger operating temperature is generally achieved only after the engine water temperature has been at the normal indicated operating range for two or three minutes.*

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