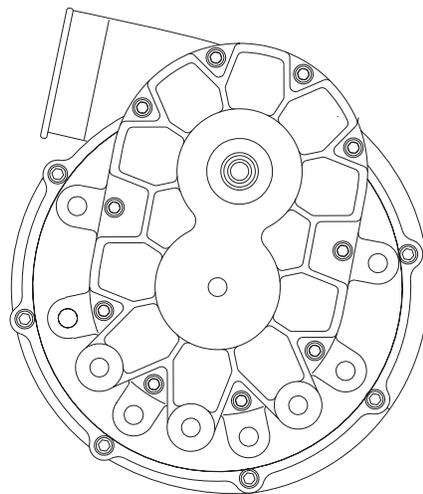


GM LS SWAP TUNER; DRIVER SIDE MOUNT

Supercharger Tuner Kit Installation Instructions



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



ENGINEERING, INC

1650 Pacific Avenue, Channel Islands CA 93033-9901 • Phone: 805 247-0226
Fax: 805 247-0669 • www.vortechsuperchargers.com • M-F 7:00AM - 3:30PM (PST)

FOREWORD

This manual provides information on the installation, maintenance and service of the Vortech supercharger kit expressly designed for this vehicle. All information, illustrations and specifications contained herein are based on the latest product information available at the time of this publication. Changes to the manual may be made at any time without notice. Contact Vortech Engineering for any additional information regarding this kit and any of these modifications at (805) 247-0226 7:00am-3:30pm PST.



Take note of the following before proceeding:

1. 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 contact your dealer or Vortech Engineering for possible installers in your area.
2. **This product was designed for use on stock (*un-modified, OEM*) vehicles.** The PCM (*computer*), engine, transmission, drive axle ratios and tire O.D. must be stock. If the vehicle or engine has been modified in any way, check with Vortech prior to installation and use of this product.
3. Use only premium grade fuel with a minimum of 91 octane (*R+M/2*).
4. Always listen for any sign of detonation (*knocking/pinging*) and discontinue hard use (*no boost*) until the problem is resolved.
5. Vortech is not responsible for any clutch, transmission, drive-line or engine damage.

Exclusions from Vortech warranty coverage considerations include, but not limited to:

1. Neglect, abuse, lack of maintenance, abnormal operation or improper installation.
2. Continued operation with an impaired vehicle or sub-system.
3. The combined use of Vortech components with other modifications such as, but not limited to, exhaust headers, aftermarket camshafts, nitrous oxide, third party PCM programming or other such changes.

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IMPORTANT INSTALLATION NOTES

This kit should only be installed by qualified mechanics. It is imperative that **the correct air/fuel mixture be maintained at all times. This kit is to be supplied to competent engine tuners for their completion by the addition of, and tuning of, appropriate fuel and ignition control components.**

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.

Vortech Engineering is not responsible for engine damage. Installation on new engines will not harm or adversely affect the break-in period so long as factory break-in procedures are followed.

1. This tuner system is based on the OEM 2010 Camaro SS damper and accessory/FEAD configuration. The steps and images in this instruction manual are also based upon a 2010 Camaro installation. Your installation may require custom modifications when matched with non-2010 Camaro FEAD and vehicle components.
2. Compressor bypass valve (see parts list below), discharge, inlet and charge cooling components are not included, but are required.
3. Pulley diameter changes: Careful size selection is mandatory for proper engine and supercharger longevity. Contact the Vortech Tech Line for assistance with impeller speed calculations if necessary.

The following tuner system support parts are not included as part of the system but are available from Vortech:

A. COMPRESSOR BYPASS VALVES (REQUIRED - PICK ONE):

Contact the technical department to determine the proper valve selection for the application.

- **Vortech # 8D204-010 Race Bypass Valve (SUPPORTS UP TO 600 HP)**
- **Vortech # 8D103-001 Mondo Race Bypass Valve (SUPPORTS UP TO 800 HP)**
 - Vortech # 8D003-052 Mondo Race Bypass Valve weld-on flange (aluminum)
 - Vortech # 9AT200-090 Tube, aluminum Ø2.0" x specify length (for welding 8D004-052 to round tube)
- **Vortech # 8D205-003 BV57 Bypass Valve (Includes V-Band Clamp and O-ring) (800+HP)**
 - Vortech # 8D005-051 BV57 Bypass Valve weld-on flange (aluminum)

B. CHARGE AIR COOLER / DUCTING:

- **Vortech # 8N108-030: Air to Air CAC core (OEM Vortech 2010 Camaro)**
- **Vortech # 4GE112-030: Discharge Tube Assembly with Race Bypass Valve (OEM Vortech 2010 Camaro)**

C. SUPERCHARGER PULLEYS:

(Contact technical department for proper application match)

Serpentine:

- Vortech # 2A031-250: 2.50" Diameter 10-rib driven pulley
- Vortech # 2A031-275: 2.75" Diameter 10-rib driven pulley
- Vortech # 2A031-295: 2.95" Diameter 10-rib driven pulley
- Vortech # 2A031-312: 3.12" Diameter 10-rib driven pulley
- Vortech # 2A031-333: 3.33" Diameter 10-rib driven pulley
- Vortech # 2A031-347: 3.47" Diameter 10-rib driven pulley
- Vortech # 2A031-360: 3.60" Diameter 10-rib driven pulley
- Vortech # 2A031-370: 3.70" Diameter 10-rib driven pulley
- Vortech # 2A031-380: 3.80" Diameter 10-rib driven pulley (included in some assemblies)
- Vortech # 2A031-387: 3.87" Diameter 10-rib driven pulley
- Vortech # 4MA018-041: 6.00" Diameter 10-rib drive (crank) pulley
- Vortech # 4MA018-051: 7.00" Diameter 10-rib drive (crank) pulley (included in some assemblies)
- Vortech # 4MA018-061: 7.80" Diameter 10-rib drive (crank) pulley
- Replacement s/c drive belt: 2A041-635 (Dayco 5100635)
- Belt / pulley fit guide (customers required to source alternate belt length if not listed):

Cog:

- Vortech # 2A032-028: 28 Tooth Supercharger Cog Pulley 50mm
- Vortech # 2A032-030: 30 Tooth Supercharger Cog Pulley 50mm

Crank (in)	S/C (in)	Belt (in)
7	3.80	63.5
7	3.70	63.5
7	3.60	63.0
7	3.47	63.0

- Vortech # 2A032-032: 32 Tooth Supercharger Cog Pulley 50mm (included in some assemblies)
- Vortech # 2A032-034: 34 Tooth Supercharger Cog Pulley 50mm
- Vortech # 4MA018-070: 70 Tooth Crank Pulley, 50mm
- Vortech # 4MA018-075: 75 Tooth Crank Pulley, 50mm (included in some assemblies)
- Vortech # 4MA018-080: 80 Tooth Crank Pulley, 50mm
- Replacement s/c drive belt: 2A042-161
- Cog belt / pulley fit guide (customers required to source alternate belt length if not listed):

Crank (T)	S/C (T)	Belt (mm)
80	28	1600
75	34	1600
75	32	1600
75	30	1600
75	28	1584 (non-Vortech part)
70	34	1584 (non-Vortech part)

GM LS SWAP TUNER; DRIVER SIDE MOUNT

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 Automotive Limited Warranties Program and the Warranty Registration form.

Vortech supercharger systems are performance improving devices. In most cases, increases in torque of 30-35% and horsepower of 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:

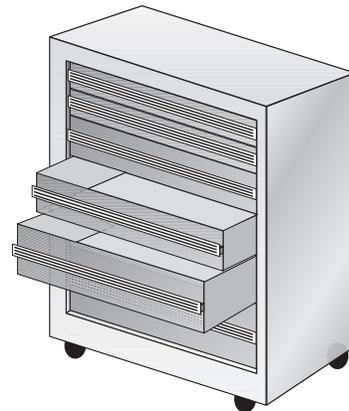
1. Use only premium grade fuel 91 octane or higher (R+M/2).
2. The engine must have stock compression ratio.
3. If the engine has been modified in any way, check with Vortech prior to using this product.
4. Always listen for any sign of detonation (pinging) and discontinue hard use (no boost) until problem 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 manufacture-rated, high grade engine oil or a high quality synthetic, and change the oil and filter every 3,000 miles or less. 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 15,000 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 at least 15,000 miles and spark plug wires at least every 50,000 miles.

TOOL & SUPPLY REQUIREMENTS

- Factory Repair Manual
- 3/8" Socket and Drive Set: SAE & Metric
- 1/2" Socket and Drive Set: SAE & Metric
- 3/8" NPT Tap, 1/4 NPT Tap and Handle
- Adjustable Wrench
- Open End Wrenches: 3/8", 7/16", 1/2", 9/16", 3/4", 7/8", 10mm
- Center Punch and a 5/8" Tapered Punch (oil fed kits V-7 kits only)
- 3/8" Springlock Fuel Fitting Disconnect Tool
- 8 Quarts manufacturer specified Engine Oil (oil fed V-7 kits only)
- Oil Filter and Wrench (oil fed V-7 kits only)
- Flat #2 Screwdriver
- Phillips #2 Screwdriver
- Heavy Grease (oil fed V-7 kits only)
- Silicone Sealer
- Drill Motor
- 11/64", 7/16", 37/64" Drill Bits
- 5/16" Allen Wrench
- Wire Strippers and Crimpers
- Utility Knife
- Crank damper installation and removal tools
- Heat gun/propane torch
- Hammer

If your vehicle has in excess of 15,000 miles since its last spark plug change, then you will also need:

- Spark Plug Socket
- NEW Spark Plugs





GM LS Swap, Tuner; Driver Side Mount, 10-Rib

Part No. 4GE218-130

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
008110	SMALL SILVER DIE CUT DECAL	2
008130	LICENSE PLATE FRAME, VORTECH	1
008443	S/C RACE INFO PKG ASSY VORT	1
2A258-070	S/C ASY, V7 YSI, 2010 CAMARO	1
4GE110-044	MTG BRKT ASSY	1
2A017-875-23	SPACER, .875 OD X .404 ID X 2	3
2A017-875-24	SPACER, .875 OD X .404 ID X 3	6
2A017-875-25	SPACER, .875 OD X .404 ID X 1	9
2A017-875-26	SPACER, .875 OD X .404 ID X 0	2
4GE010-010	BRACKET, CYLINDER HEAD, 2010	1
4GE010-020	BRACKET, P/S MOUNTING, 2010	1
4GE010-034	BRACKET, TENSIONER 2010 CAMARO	1
4GE010-044	BRACKET, S/C MOUNTING PLATE, 2	1
7A375-126	3/8-16 X 1.25 HHCS, GR8, PLT	3
7A375-275	3/8-16 X 2-3/4 HXC8G8P ZINC	2
7A375-300	3/8-16 X 3" HXC8G5P	1
7A375-400	3/8-16 X 4" BOLT HXHD GR8	1
7A375-451	3/8-16 X 4.50" HXHD GR5 ZINC	6
7A375-625	3/8-16 X 6-1/4 HX HD	1
7C010-030	M10 X 1.5 X 30 HXHD CL10.9	4
7C010-057	M10 X 1.5 X 55MM HX HD CL10.9	3
7C010-092	M10 X 1.5 X 90 BUTTON HD	1
7C010-120	M10 X 1.50 X 120 HXHD, CL10.9	1
7C012-022	M12 X 1.75 X 20MM THIN HD	1
7K375-040	3/8 AN960 FLAT WASHR PLATED	14
7K437-001	7/16" AN WASHER	10
7A375-475	3/8-16 X 4.75" HXHD GR8 PLTD	1
4GE116-010	DRIVE ASSY, 10-RIB	1
2A017-016	PILOT, 6203/5 BRG, M10 3/8 SCREW	2
2A041-635	BELT, 5100635 DAYCO 10-RIB	1
4FM011-052	SPRING TENSIONER, 5.4	1
4GE016-010	DAMPER, CRANK, 2010 CAMARO SS	1
4GE017-011	IDLER SPACER, 10-RIB, 2010 CAMARO	1
4GE017-021	SPACER, CRANK PULLEY, 2010 CAMARO	1
4GR110-110	ASSY, DAMPER PIN, LS1-LS2-LS6	1
4MA018-051	CRANK PLY, 7", UNIVERSAL	1
4GE116-021	IDLER ASSY, SMOOTH, 10-RIB, 75	2
7A375-250	3/8-16 X 2.5" GR8 HX	3
7A375-325	3/8-16 X 3-1/4 HX HD	3
7C010-057	M10 X 1.5 X 55MM HX HD CL10.9	1
7C010-111	M10 X 1.5 X 110 HXHD, ZINC	1
7C010-120	M10 X 1.50 X 120 HXHD, CL10.9	1
7J010-002	10MM WASHER, ZINC PLATED	2
7J625-030	SHIM, Ø.692" ID X .030" THK	1
7K375-040	3/8 AN960 FLAT WASHR PLATED	6
7T100-250	DRILL BIT, Ø1/4" X 6" LONG HSS	1
4GE130-026	OIL FEED ASSY, 2010 CAMARO	1
7P016-125	M16 X 1.5 MALE TO 1/8 NPT FEMALE	1
7P125-004	1/8 NPT 90° X -4 JIC FTG STL	1
7P125-005	1/8 NPT STR. X -4 JIC FTG STL	1
7U100-055	TIE WRAP, 7.5" NYLON	5
7U100-066	TIE WRAP, 11" NYLON	2
7U250-090-260	OIL FEED HOSE, 26" -4X90°	1
4FA130-036	OIL DRAIN ASSY	1
7U030-036	1/2" OIL DRAIN HOSE	2.33FT
7P375-017	3/8NPT X 1/2 BEADED HSE BRB	1
7R001-008	#8 STNLS HOSE CLAMP	2
4GE020-015	INSTR. MANUAL	1



GM LS Swap, Tuner; Driver Side Mount, 50mm Cog

Part No. 4GE218-140

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 NO.	DESCRIPTION	QTY
008110	SMALL SILVER DIE CUT DECAL	2	4GE130-026	OIL FEED ASSY, 2010 CAMARO	1
008130	LICENSE PLATE FRAME, VORTECH	1	7P016-125	M16 X 1.5 MALE TO 1/8 NPT FEMALE	1
008443	S/C RACE INFO PKG ASSY VORT	1	7P125-004	1/8 NPT 90° X -4 JIC FTG STL	1
2A158-060	S/C, V7 YSI, CW STRT, SATIN	1	7P125-005	1/8 NPT STR. X -4 JIC FTG STL	1
4GE110-044	MTG BRKT ASSY	1	7U100-055	TIE WRAP, 7.5" NYLON	5
2A017-875-23	SPACER, .875 OD X .404 ID X 2	3	7U100-066	TIE WRAP, 11" NYLON	2
2A017-875-24	SPACER, .875 OD X .404 ID X 3	6	7U250-090-260	OIL FEED HOSE, 26" -4X90°	1
2A017-875-25	SPACER, .875 OD X .404 ID X 1	9	4FA130-036	OIL DRAIN ASSY	1
2A017-875-26	SPACER, .875 OD X .404 ID X 0	2	7U030-036	1/2" OIL DRAIN HOSE	2.33FT
4GE010-010	BRACKET, CYLINDER HEAD, 2010	1	7P375-017	3/8NPT X 1/2 BEADED HSE BRB	1
4GE010-020	BRACKET, P/S MOUNTING, 2010	1	7R001-008	#8 STNLS HOSE CLAMP	2
4GE010-034	BRACKET, TENSIONER 2010 CAMARO	1	4GE020-015	INSTR. MANUAL	1
4GE010-044	BRACKET, S/C MOUNTING PLATE, 2	1			
7A375-126	3/8-16 X 1.25 HHCS, GR8, PLT	3			
7A375-275	3/8-16 X 2-3/4 HXC SG8P ZINC	2			
7A375-300	3/8-16 X 3" HXC SG5P	1			
7A375-400	3/8-16 X 4" BOLT HXHD GR8	1			
7A375-451	3/8-16 X 4.50" HXHD GR5 ZINC	6			
7A375-625	3/8-16 X 6-1/4 HX HD	1			
7C010-030	M10 X 1.5 X 30 HXHD CL10.9	4			
7C010-057	M10 X 1.5 X 55MM HX HD CL10.9	3			
7C010-092	M10 X 1.5 X 90 BUTTON HD	1			
7C010-120	M10 X 1.50 X 120 HXHD, CL10.9	1			
7C012-022	M12 X 1.75 X 20MM THIN HD	1			
7K375-040	3/8 AN960 FLAT WASHR PLATED	14			
7K437-001	7/16" AN WASHER	10			
7A375-475	3/8-16 X 4.75" HXHD GR8 PLTD	1			
4GE116-030	DRIVE ASSY, COG 50MM, 75T/32T	1			
7B500-325	ARBOR, S/C TENS PLY, S2000	1			
7PA375-500	SCREW, IDLER ADJUST, 5.00"	1			
4PFA010-031	BRACKET, IDLER ADJUST SCREW	1			
7F500-020	1/2"-20 HEX JAM NUT GR5 ZINC	1			
7A250-100	1/4-20 X 1 FLAT ALLEN	2			
4FP116-020	IDLER W/BRNG ASSY, 50MM	1			
2A032-032	S/C PULLEY, 32T (50MM)	1			
4MA018-075	CRANK PLY, 75T GT 8MM X 2.5W	1			
7C010-057	M10 X 1.5 X 55MM HX HD CL10.9	2			
4FD017-011	PILOT, 6203/5 BRG, 1/2 SCREW	1			
4GE017-031	IDLER SPCR, 1.085, COG, 2010	1			
2A042-161	BELT, POWERGRIP GT2 1600 X 8MM	1			
7A375-325	3/8-16 X 3-1/4 HX HD	3			
7K437-001	7/16" AN WASHER	2			
7U100-071	KEY, 3/16 SQUARE X 1-1/8 LONG	1			
2A040-011	PULLEY RETAINER, S/C	1			
7B375-200	3/8-24 X 2" GR8 BOLT	1			
7K375-040	3/8 AN960 FLAT WASHR PLATED	1			
4GR110-110	ASSY, DAMPER PIN, LS1-LS2-LS6	1			
4GE017-021	SPACER, CRANK PULLEY	1			
7T100-250	DRILL BIT, Ø1/4" X 6" LONG HSS	1			
4GE016-010	DAMPER, CRANK	1			

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1. PREPARATION/REMOVAL

- A. Release the tension from the 6-rib belt with the OEM belt tensioner as shown in Fig. 1A. Remove the belt and set aside for reinstallation in a later step.
- B. Remove any accessories mounted to the front face of the driver side cylinder head.
- C. Remove the three (3) 15mm-headed bolts securing the cast power steering bracket to the cylinder head. The cast bracket and fasteners will not be reused.
- D. Remove the 15mm-headed screw from the alternator shown in Fig. 1C. It will not be reused.



Fig 1A



Fig 1B

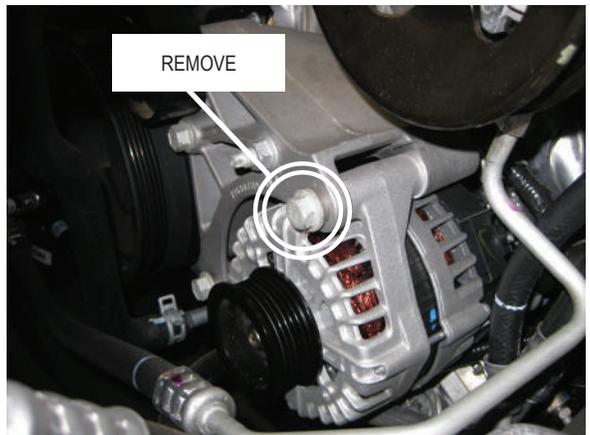


Fig 1C

- E. Remove the 4-rib A/C belt. For configurations without a tensioner, remove the stretch belt by rotating the crankshaft clockwise with a 15/16" or 24mm socket while pushing the belt toward the rear of the vehicle as shown in Fig. 1D.

NOTE: Be sure to place manual transmission cars in neutral.



Fig 1D

- F. Lock the engine from rotating and remove the OEM damper pulley bolt.

NOTE: **Automatic** transmission cars can lock the engine through the trans dust cover with an open end wrench to one of the torque converter mounting bosses on the flex plate.

Manual transmission cars place car in 6th gear with wheels on the ground and apply parking brake.

- G. Remove the crank pulley/damper assembly using the appropriate tool as shown in Fig. 1E.

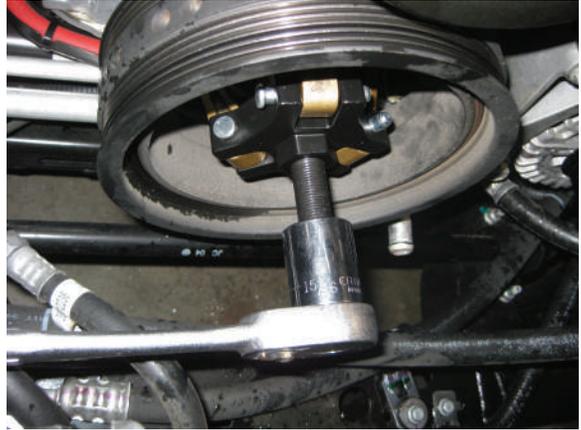


Fig 1E

2. DAMPER & PULLEY INSTALLATION

- A. Assemble the supplied ATI Super Damper assembly as follows:
- i. Insert the hub into the back of the damper making sure to line up the “OFFSET HOLE” in the hub and damper as shown in Fig. 2A. This hole is labeled on the damper sticker, and there is also an indicator machined into both the damper and the hub.

NOTE: Make sure that all mating surfaces of the parts are clean.

- ii. Install the six (6) Torx T40 flat head screws, using blue threadlocker on each, and torque to 16 ft-lb. See Figures 2B & 2C.



Fig 2A



Fig 2B



Fig 2C

- iii. Temporarily assemble the aluminum A/C pulley onto the back of the hub with the pulley's "snout" facing toward the damper. Insert the three (3) 3/8-16 x 2.5" 12-pt cap screws (supplied with damper) into the three unthreaded holes passing through the hub and thread them into the three (3) 3/8-16 holes in the A/C pulley. Do not tighten. See Fig. 2D.

- B. Transfer the OEM rubber seal from the OEM damper assembly to the corresponding location on the new damper assembly as shown in Figures 2E & 2F.



Fig 2D



Fig 2E



Fig 2F

- C. Install the supplied damper onto the crankshaft using a proper damper installation tool with thrust bearing. See Fig 2G, 2H.

NOTE: DO NOT use the crank bolt to "pull" the damper onto the crankshaft. Use only an appropriate damper installation tool such as ATI kit part number 918999 with 918999SC extension.



Fig 2G

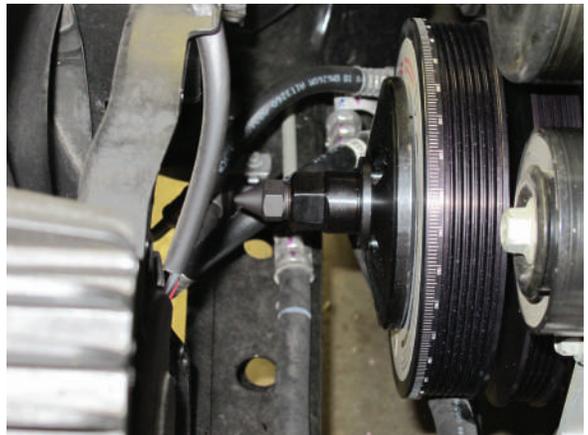


Fig 2H

- D. After the new damper is fully seated, remove the installation tool.
- E. Install the supplied drill guide with the raised section piloting in the damper bore. Temporarily secure in place by installing the supplied socket head cap screw. Do not over-tighten the screw as it may distort the drill guide (its purpose is just to hold the guide in place while drilling).
- F. Mark the supplied $\frac{1}{4}$ " drill bit with tape or use a drill stop at a point 3.85" from the tip as shown in Fig. 2J.
- G. Using an angle drill or small drill motor, drill into the crankshaft/damper hub assembly through the bushing in the drill guide, taking care to keep the tool perpendicular to the damper. Stop when the mark on the drill bit is even with the face of the damper – this will yield a hole depth of $\frac{1}{2}$ ". See Figures 2I & 2J.



Fig 2I

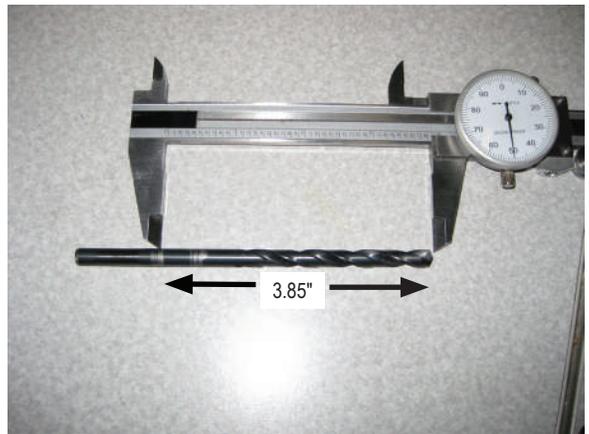


Fig 2J

- H. Remove the socket head cap screw and drill guide. Carefully remove any metal chips from the area with compressed air. The drilled 1/4" hole should appear as in Fig. 2K.
- I. Install the supplied $\text{Ø}1/4"$ x 1/2" long dowel pin into the drilled hole with the chamfered end pointed toward the front of the vehicle.
- J. Verify that the dowel pin is recessed slightly from the damper face.
- K. Install the supplied new damper retaining bolt as follows:
 - i. Lightly coat the threads of the new retaining bolt with red threadlocker. Install and torque to 37 ft-lb.
 - ii. Using a 1/2" drive or larger breaker bar, tighten the retaining bolt an additional 120° or torque to 250 ft-lb. See Fig. 2L.
- L. Temporarily remove the three (3) 12-pt cap screws previously used to secure the A/C pulley. These screws will be used in the next step.



Fig 2K



Fig 2L

SERPENTINE DRIVE SYSTEMS

(COG DRIVE INSTALLATIONS SKIP STEP 2.M. BELOW)

- M. Assemble the supplied crank pulley spacer and 10-rib crank pulley onto the front of the newly installed damper. See Figures 2M and 2N.

NOTE: Apply 1 drop of blue threadlocker onto the threads of each fastener prior to final assembly.

NOTE: Make sure that the damper decal does not interfere with proper seating of the pulley spacer. Cut away the damper decal if necessary.

- i. Secure the pulley and spacer to the damper using the three supplied 3/8-16 X 3.25" screws with washers. The 3.25" long screws will pass through the entire assembly and thread into the A/C pulley.
- ii. Thread the previously removed 3/8-16 X 2.5" 12-pt screws with washers through the CRANK pulley and spacer and into the damper hub.
- iii. Tighten all hardware evenly, using a progressive, criss-cross pattern. Torque fasteners to 35 ft/lb.



Fig 2M



Fig 2N



Fig 2O

COG DRIVE SYSTEMS

(SERPENTINE DRIVE INSTALLATIONS SKIP STEP 2.N. BELOW)

- N. Assemble the supplied crank pulley spacer and 50mm Cog drive pulley onto the front of the newly installed damper. See Figure 2P.
 - i. Secure the pulley and spacer to the dampner using the three supplied 3/8-16 X 3.25" screws with washers. The 3.25" long screws will pass through the entire assembly and thread into the A/C pulley.
 - ii. Thread the previously removed 3/8-16 X 2.5" 12-pt screws with washers through the CRANK pulley and spacer and into the damper hub.
 - iii. Tighten all hardware evenly, using a progressive, criss-cross pattern. Torque fasteners to 35 ft/lb.



Fig 2P

- O. **Automatic Transmission:** “Unlock” the engine from turning by removing the previously-installed wrench holding the flex plate and replace the dust cover.

Manual Transmission: Place the transmission in Neutral.

- P. Reinstall the 4-rib A/C stretch belt as follows (See Fig. 2P):
 - i. Route the belt over and then behind the crank pulley.
 - ii. Route the belt securely onto the A/C compressor pulley.
 - iii. Start the belt onto the top of the corresponding 4-rib A/C pulley that is part of the new damper assembly.
 - iv. While holding the belt in place, rotate the crankshaft clockwise using a 15/16” or 24mm socket and ratchet on the center crankshaft bolt head until the 4-rib belt is fully seated.
 - v. Confirm proper installation of the 4-rib belt to both the crankshaft pulley and A/C compressor pulley.

- Q. Loosen the two clamps securing the lower power steering pressure line to the cross member. Slide the line towards the driver side and retighten the clamps. See Fig 2Q.
- R. Secure the two transmission cooler lines together with two or more zip ties to keep them away from the newly-installed 10-rib supercharger pulley as shown in Fig. 2R.



Fig 2P

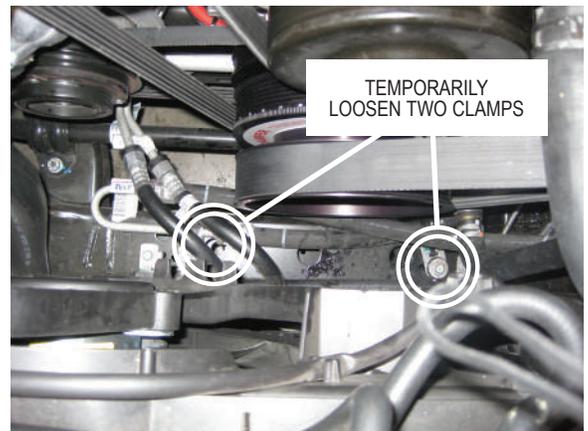


Fig 2Q



Fig 2R

3. OIL FEED INSTALLATION (ENGINE OIL-FED UNITS ONLY)

1. Disconnect the charging wire and plug located on the back side of the alternator. Remove alternator and alternator bracket (the factory mounting stud must be removed to allow removal of alternator). See Fig 3A, 3B.
2. Remove oil galley plug located next to the timing chain cover on the front driver side of the engine block. Set aside plug, as it will not be reused. See Fig 3C.



Fig 3A



Fig 3B



Fig 3C

3. Install supplied M16 X 1/8 NPT fitting into oil galley hole using supplied sealing washer. Tighten fitting. See Fig 3D.
4. Install 1/8NPT to -4 90° fitting into previously installed fitting. Clock the fitting so that it points towards the rear of the vehicle. Tighten fitting. See Fig 3D.

NOTE: Use only clean engine oil on the pipe threads. Teflon tape or pipe sealant is not recommended as it might loosen and cause blockage of the small oil feed orifice resulting in possible supercharger failure.



Fig 3D

5. Install 90° end of supplied oil feed hose onto -4 fitting. Clock oil feed line so that it points downward. Tighten fitting. See Fig 3E.
6. Reinstall alternator and re-attach all electrical connections. Route open end of oil feed hose around the back of the alternator and up toward the supercharger mounting position. Temporarily cap the hose to prevent internal hose contamination.



Fig 3E

4. OIL DRAIN INSTALLATION (ENGINE OIL-FED UNITS ONLY)

1. To provide an oil drain for the supercharger, it is necessary to make a hole in the side of the oil pan. The drain fitting location **MUST** allow the oil to drain back **ABOVE** the oil level in the pan.
2. Locate the forward-most oil pan bolt on the driver side of the engine block.
3. From the center of that bolt, measure 2.5" toward the rear of the pan and mark the pan for the oil return line fitting. See Fig 4A.

NOTE: Mark the hole for drilling so that it is as close to the top of the pan as possible, while still allowing enough clearance to install the fitting so that it clears the rail on the pan.

4. Drill 1/8" pilot hole at the marked location.
5. Use the supplied 9/16" Roto-Broach to drill hole in oil pan. Break through pan carefully so the cut out piece does not go into the pan
6. Thread the hole with a 3/8" NPT tap to approximately 1/2" deep or until fitting can be started. Pack the flutes of the tap with heavy grease to hold any loose chips.
7. Thoroughly clean the threaded area. Reach inside oil pan and retrieve any stray chips.
8. Install the 3/8" NPT to 1/2" barb fitting into the tapped hole. Temporarily cover oil drain barb fitting to keep out debris.
9. Drain the engine oil, install a new filter and refill with fresh oil.
10. Remove the blue plastic shipping cap from the 1/2" drain fitting on the supercharger. Attach the supplied fabric braided 1/2" oil return line to the 1/2" fitting and secure with #8 Hose Clamp.

NOTE: Oil drain hose must be routed downhill with minimal bends and no kinking. The supercharger relies on a free-flowing gravity drain for proper operation. Uphill hose routing will result in improper drainage and possibly supercharger failure.



Fig 4A

5. MOUNTING BRACKET AND SUPERCHARGER INSTALLATION

- A. Locate the 4GE110-044 supercharger mounting bracket assembly.
- B. Install the supplied M10-1.5 x 90mm button head screw into the upper alternator screw location from which the OEM screw was previously removed. See Fig. 5A.
- C. Make sure that the front face of the driver side cylinder head is clean and smooth. Mount the cylinder head plate to this face using four (4) M10 x 30mm screws and washers in the locations shown in Fig. 5B. Route the nearby wiring harness behind the plate, creating extra slack to the extent possible, taking care not to excessively pinch or deform it. Tighten the screws.



Fig 5A

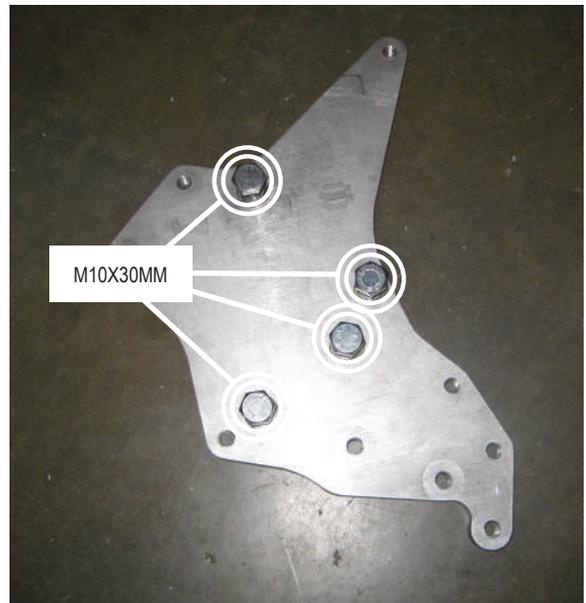


Fig 5B

- D. Locate the P/S support plate, three (3) 2.981" long spacers, one (1) M10 x 120mm screw, one 3/8-16 x 4.0" screw, and one (1) 3/8-16 x 4.5" screw and their associated washers. See Fig. 5C.
- E. Position the P/S plate and screws as shown and secure plate by tightening only M10 x 120mm and 3/8-16 x 4.0" screws. Leave the remaining 3/8-16 x 4.5" screw loosely installed.
- F. Install the P/S pump using the OEM fasteners. If appl. cable See Fig. 5D.

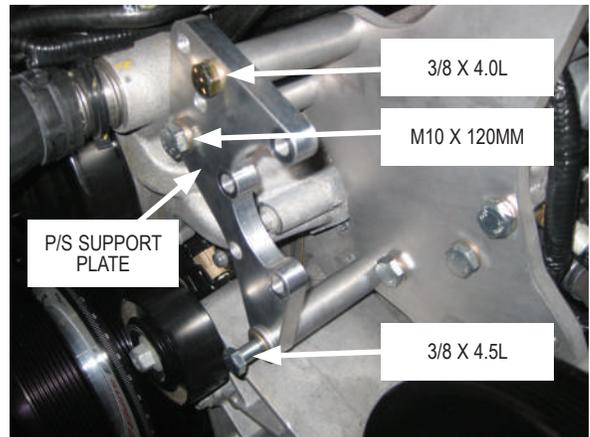


Fig 5C



Fig 5D

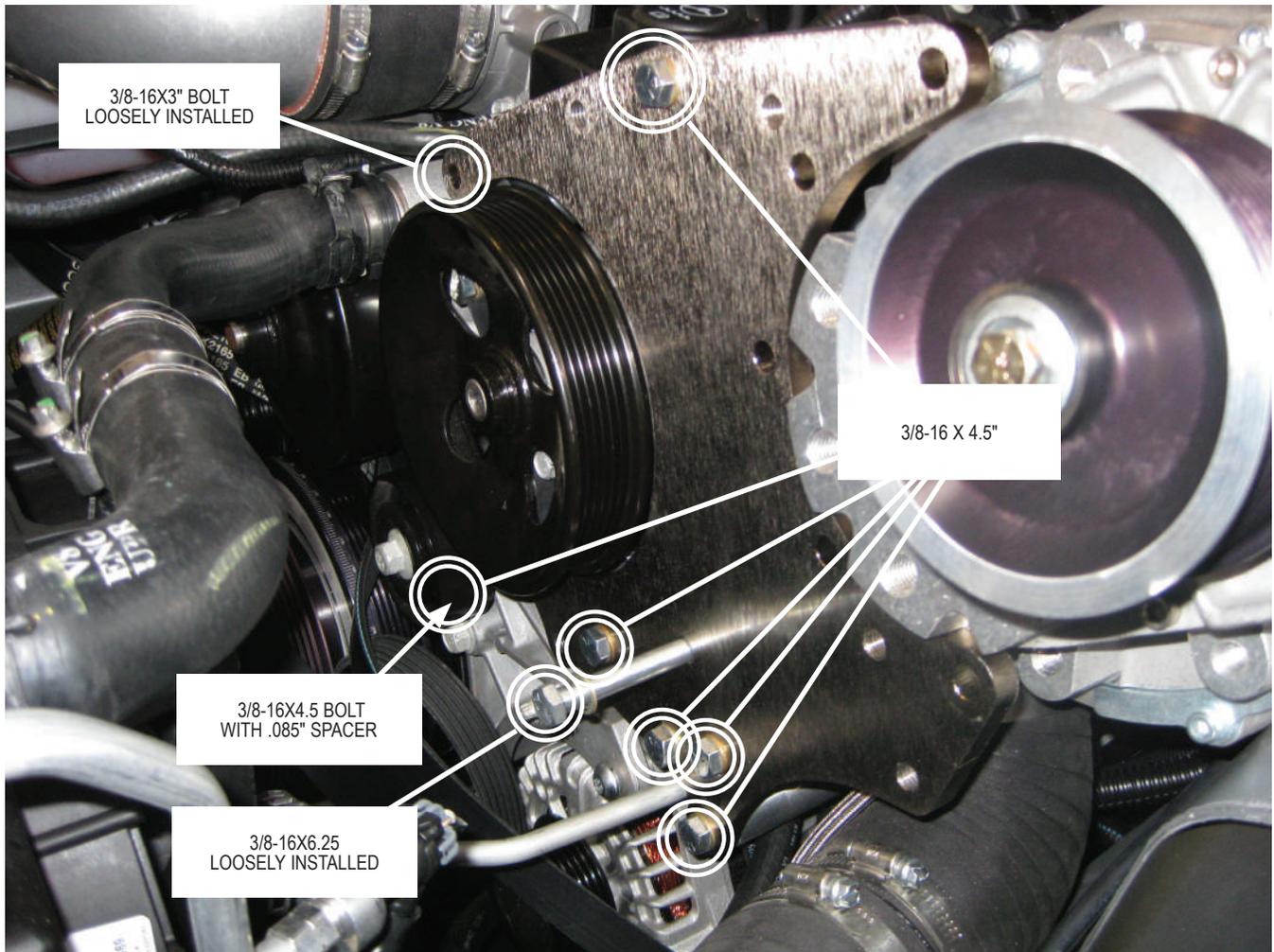


Fig 5E

- G. Locate the S/C mounting plate and one .085" long spacer, six 3.566" long spacers, five 3/8-16 x 4.5" screws, one 3/8-16 x 3" screw, one 3/8-16 x 6.25" screw, and their associated washers. Position the hardware and spacers in the plate as shown. See Fig 5E.
- H. Remove loosely installed 3/8-16 x 4.5" screw from prior installation of P/S bracket.
- I. Lower the supercharger plate into position, making sure to start each screw into the appropriate hole with the 3.566" spacers. See Figures 5H & 5I.

- J. Make sure to sandwich the two (2) .085" spacers between the steel bracket and the aluminum P/S bracket at either end of the C-shaped section of the steel bracket that fits around the P/S pulley. See Figures 5F & 5G.
- K. Tighten the six 3/8-16 x 4.5" screws, leaving the remaining hardware loose for the next step.



Fig 5F

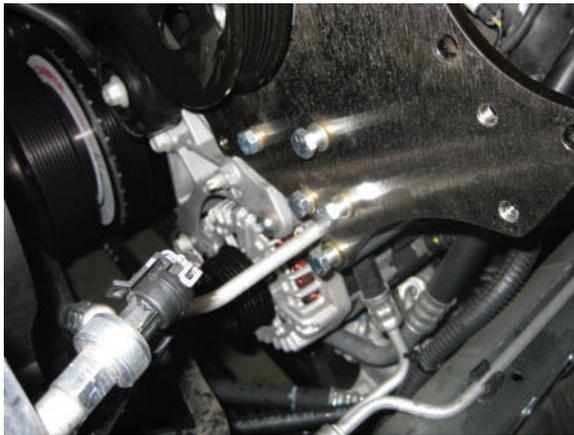


Fig 5H

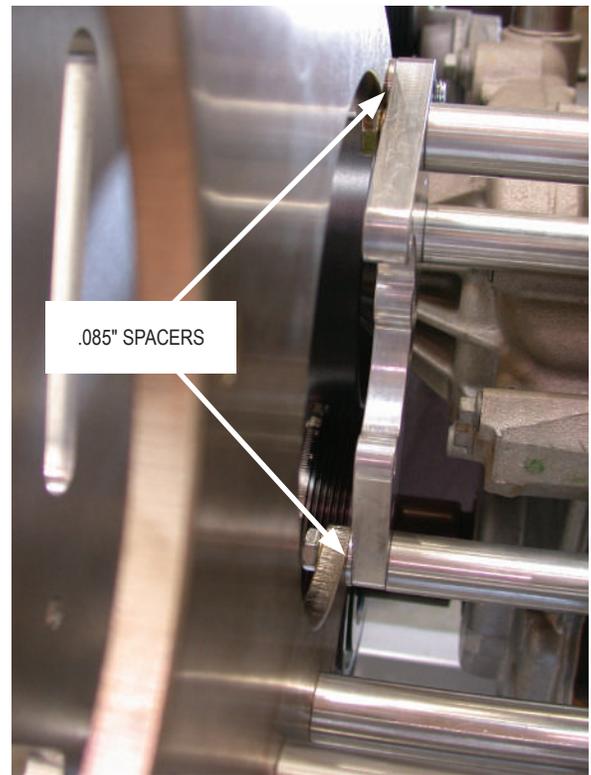


Fig 5G

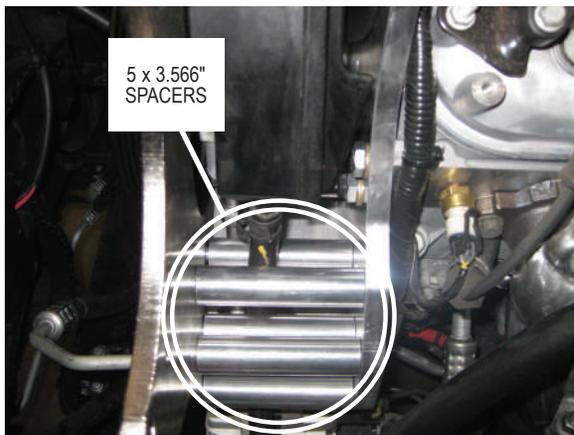


Fig 5I

- L. Use three (3) 3/8-16 x 1.25" screws with washers to mount the supercharger to the S/C plate using the three holes closest to the center of the arc (see Fig. 5J), and tighten these screws.
- M. Reinstall the OEM 6-rib accessory drive belt following the original belt routing. There is a diagram in the owner's manual for reference.

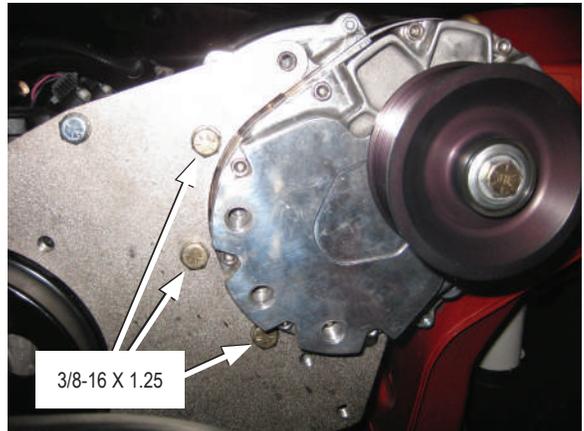


Fig 5J

- N. Locate the front tensioner support plate with the following (see Figures 5K, 5L, 5M):
- i. Nine (9) 1.434" spacers
 - ii. Two (2) 3/8-16 x 2.75" screws with washers
 - iii. One (1) M12-1.75 x 20mm screw (no washer)
 - iv. Three (3) M10-1.5 x 55mm screws with washers
 - v. One (1) M10-1.5 x 120mm screw with washer (from the drive assembly)
 - vi. One (1) M10-1.5 x 110mm screw with washer (from the drive assembly)

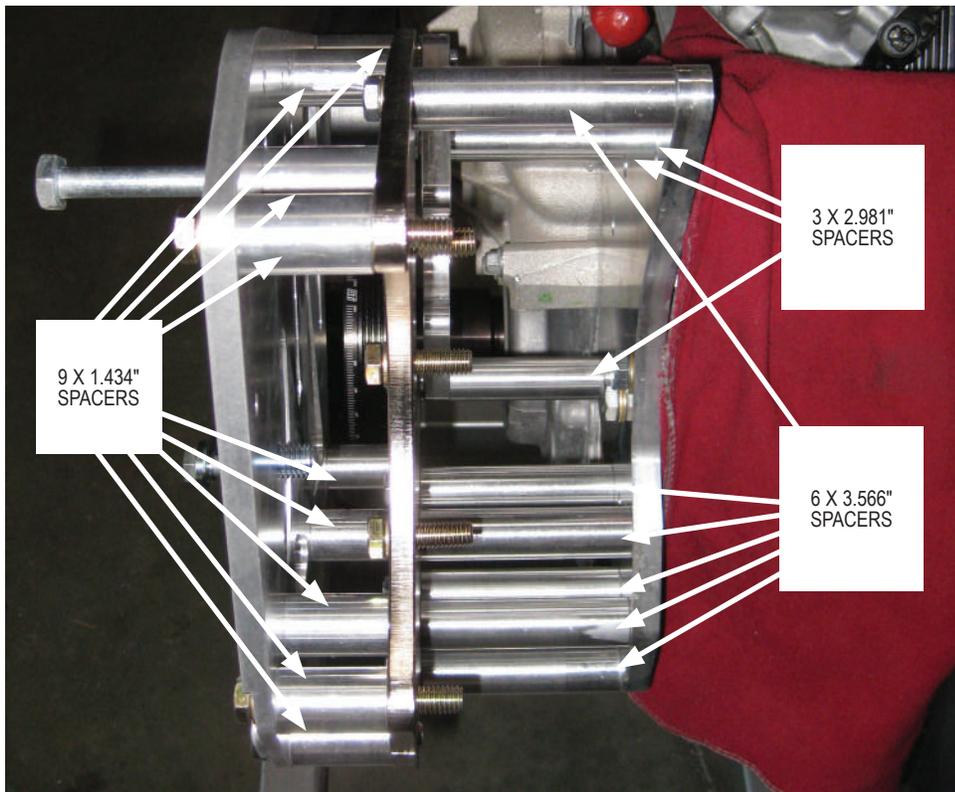


Fig 5K

- O. Remove the one (1) 3/8-16 x 3" and one (1) 3/8-16 x 6.25" screw previously loosely installed. Take care not to lose the .085" spacer sandwiched between the steel plate and the aluminum P/S bracket in the location of the 3" screw. Install the front tensioner support plate using all of the hardware and spacers in the previous step. Reinstall the one (1) 3/8-16 x 3" and one (1) 3/8-16 x 6.25" screw, again taking care not to lose the .085" spacer.

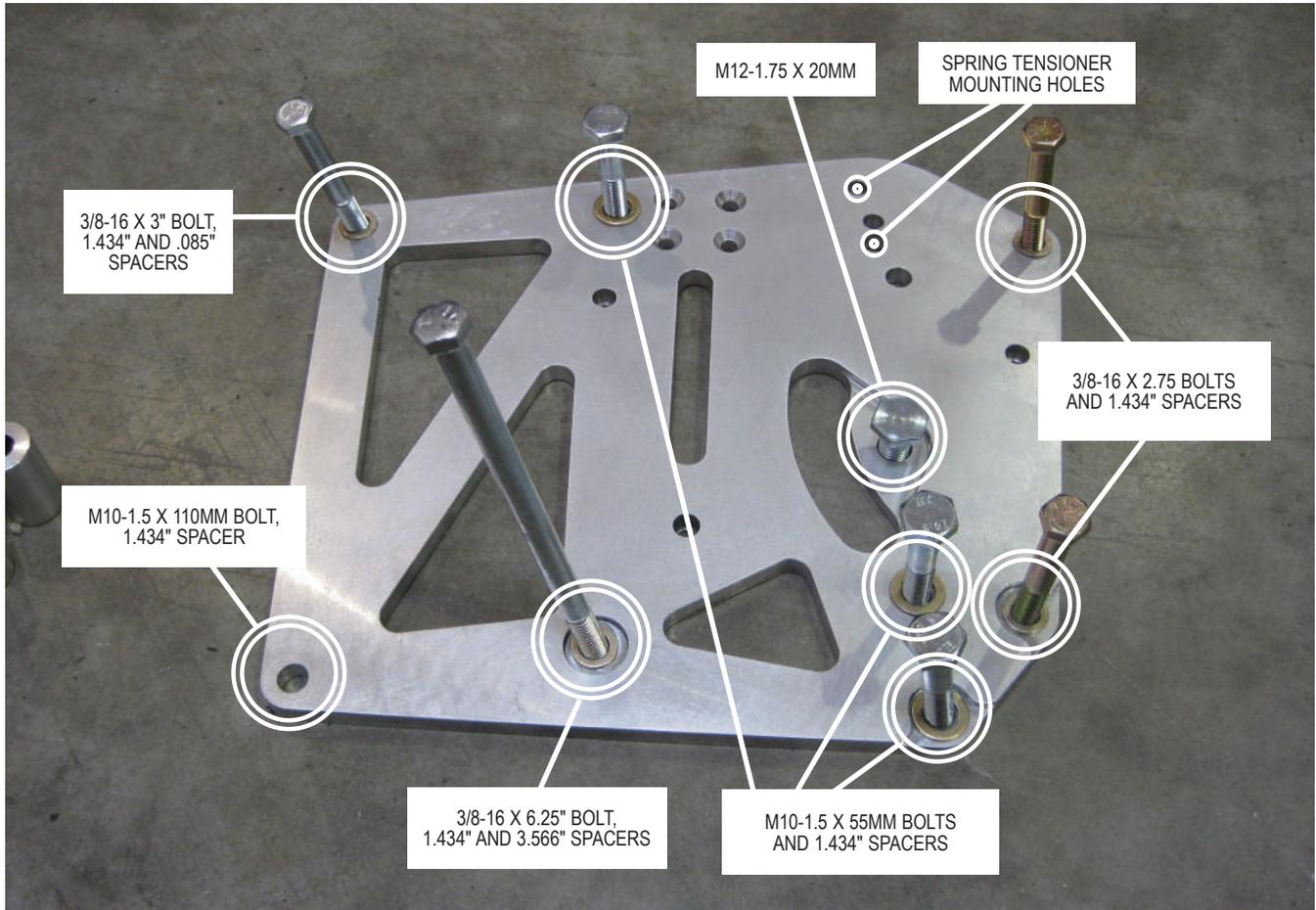


Fig 5L

P. Tighten all fasteners with the exception of the M10-1.5 x 120mm and M10-1.5 x 110mm screws. See Figures 5L & 5M.

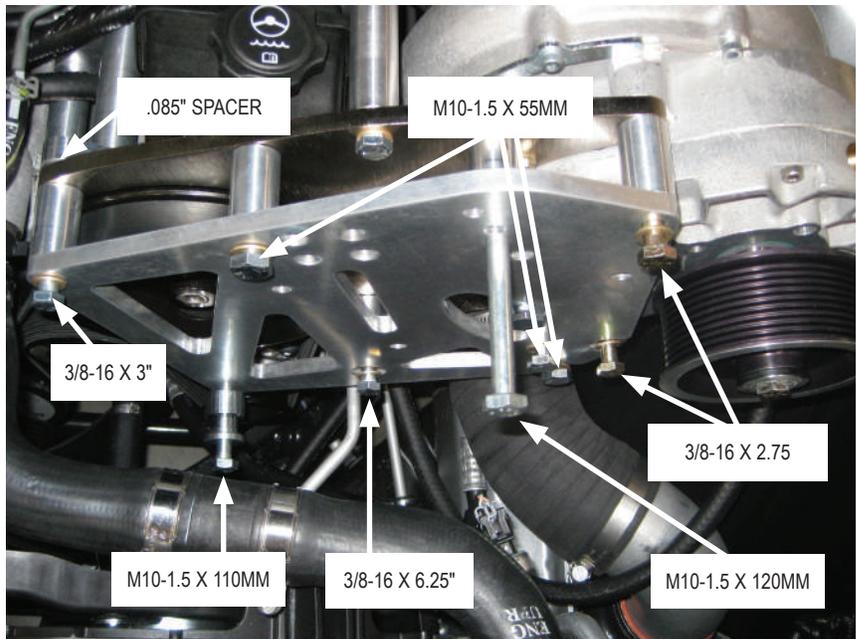


Fig 5M

Q. Oil Drain:

- i. **Self-Contained units only:** Route the end of the remote drain line from the bottom of the supercharger to a location where it can be conveniently be accessed to perform oil changes. Use zip ties to secure the line away from moving parts, hot surfaces, and sharp edges.

- ii. **Oil-Fed units only:** Route the oil drain hose down to the 1/2" fitting previously installed into the oil pan. The hose must be routed "downhill" free from kinks and tight bends, and secured away from moving parts, hot surfaces, and sharp edges. Trim hose if necessary.

6.1 BELT & DRIVE SYSTEM INSTALLATION (SERPENTINE)

SERPENTINE DRIVE SYSTEMS ONLY (ALL OTHERS CONTINUE TO 6.2)

- A. Assemble the supplied smooth idler, M10-1.5 x 110mm screw, idler pilot spacer, and idler pilot washer **with the head of the screw on the snap ring side** of the idler as shown in Fig. 6P. Install the idler assembly into the lower left-hand hole in the tensioner support plate as shown in Figure 6.1A.
- B. Remove temporarily installed M10-1.5 X 120mm screw and use to install the pre-assembled spring tensioner into the upper set of holes located on the front tensioner plate. See Fig 5O.

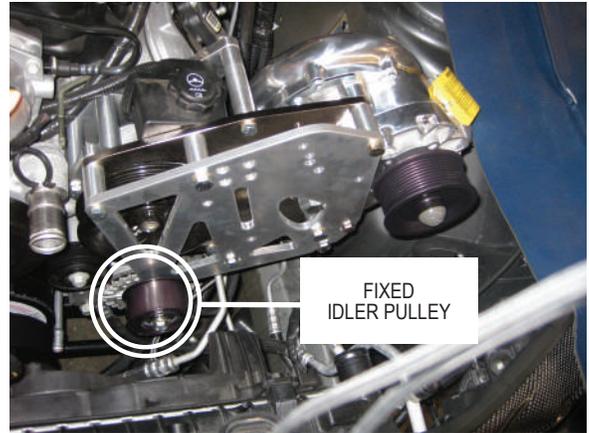


Fig 6.1A



Fig 6.1B



Fig 6.1C

C. Using a ½” ratchet or breaker bar, de-tension the spring tensioner and install the supplied 10-rib belt as follows:

- i. Around the 10-rib crank pulley.
- ii. Under the spring tensioner.
- iii. Around the supercharger pulley.
- iv. On top side of the fixed idler.

See Fig 6.1D, 6.1E, 6.1F.



Fig 6.1D



Fig 6.1E



Fig 6.1F

6.2 BELT & DRIVE SYSTEM INSTALLATION (COG DRIVE)

COG DRIVE SYSTEMS ONLY (ALL OTHERS SKIP THIS SECTION)

NOTE: Do NOT hammer, press, or pry etc. on either of the pulleys when installing or removing them. Lightly heat the pulley with a propane torch until the pulley slides onto the input shaft/crank pulley spacer pilot.

- A. Locate the two supplied M10-1.5X55mm bolts and washers.
- B. Replace the temporarily installed M10-1.5 X 120MM and M10-1.5 X 110mm bolts with M10-1.5 X 55mm bolts and washers and tighten.
- C. Install the supplied 50 mm cog supercharger pulley onto the supercharger input shaft with the long hub facing the supercharger. Make sure to align and install the square key way. Secure pulley using the supplied retainer along with a drop of blue loctite on the 3/8-24x2" bolt and washer. See Fig 6.2-c.



Fig 6.2A

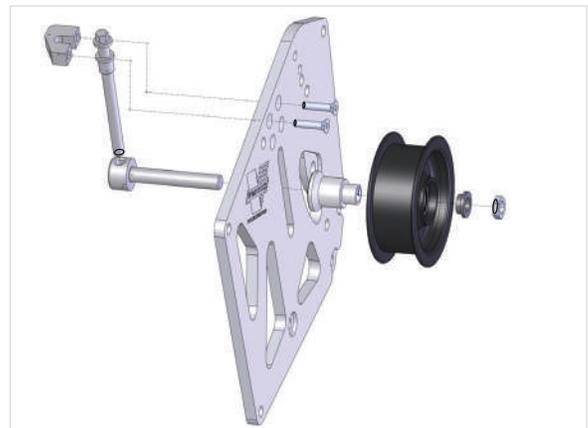


Fig 6.2B



Fig 6.2C

- D. Locate the following parts: 7B500-325 tensioner arbor, 7PA375-500 adjustment screw, 4PFA010-031 adjustment screw bracket, two 7A250-100 1/4-20 flat allen screws.
- E. Apply a liberal amount of anti seize to the threads of the adjustment screw (7PA375-500)
- F. Feed the shaft of the tensioner arbor through the slot of the front plate from the back. See Fig 6.2D.
- G. Start to thread the adjustment screw into the head of the tensioner arbor.
- H. Install the adjustment screw mounting block onto the head of the adjustment screw and secure with the supplied 1/4-20 x 1" flat head screws through the front plate in the appropriate location. See Fig 6.2F.

NOTE: Use the upper tensioner mounting holes with a 1600 belt for kits with a 75 tooth crank and either 34 or 32 tooth super-charger pulley. Use the lower tensioner mounting holes with a 1600 belt for kits with a 75 tooth crank and 30 tooth super-charger pulley.



Fig 6.2D

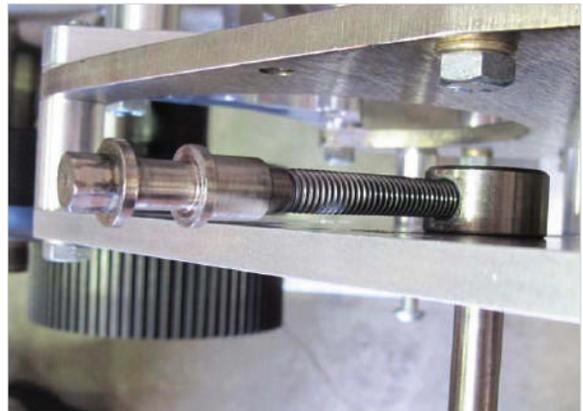


Fig 6.2E

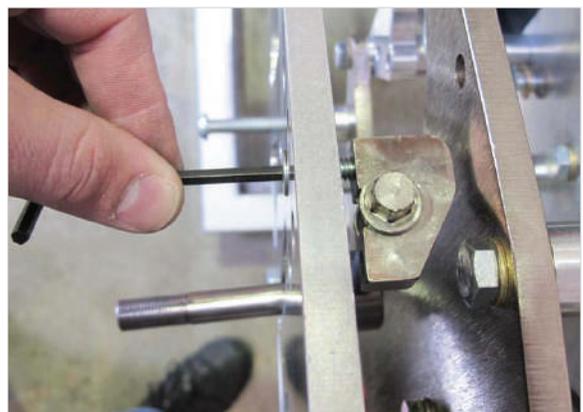


Fig 6.2F

- I. Slide the supplied idler spacer over the shaft of the tensioner arbor.
- J. Next install the supplied larger aluminum idler onto the arbor followed by the piloting washer and $\frac{1}{2}$ "-20 hex nut. Install only finger tight while still allowing for movement with the adjustment screw.



Fig 6.2G



Fig 6.2H



Fig 6.2I

- K. Make sure the tensioner arbor is adjusted to the highest position and install the supplied cog belt around the crank first and then the supercharger pulley.
- L. With the belt routing underneath the tensioner idler pulley, adjust the tensioner by turning the tensioner screw counter-clockwise so that idler pulley is lowered onto the belt applying tension.
- M. Once adequate tension is applied, lock the tensioner in place by finally tightening the jam nut on the tensioner arbor previously left loose for adjustment purposes.



Fig 6.2J



Fig 6.2K

7. FINAL INSTALLATION

NOTE: This tuner kit does not include supercharger inlet / filter or discharge / CAC components. It is important that properly sized components are selected by the installer / tuner. Contact Vortech technical department if assistance is required.

- A. Configure air inlet piping and filter to supercharger inlet.
- B. Configure discharge ducting from supercharger discharge to throttle body/Carburetor.
- C. Integrate a properly sized charge air cooler and bypass valve as needed.

8. FINAL RE-ASSEMBLY AND CHECK

WARNING: Do not attempt to operate the vehicle until all components are installed and all operations are completed including final check.

- A. Reconnect the battery.
- B. If your vehicle has gone over 15,000 miles since its last spark plug change, you will need to change the spark plugs now before test driving the vehicle.
- C. 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.
- D. Check all fluid levels, making sure that your tank(s) is filled with 91 octane or higher fuel before commencing test drive.
- E. Start engine and allow to idle a few minutes, then shut off.
- F. Recheck to be sure that no hoses, wires, etc. are near exhaust headers or moving parts and for signs of any fluid leakage.
- G. For carbureted cars, re-jet the carburetor as required. Installation of a high performance electric fuel pump with boost referenced fuel regulator is recommended.
- H. Use a wide band O2 sensor to verify a proper air/fuel ratio (Vortech suggests 11.0:1 for 91 octane pump fuel.) Check ignition timing to make sure it is properly set before commencing test drive.
- I. **PLEASE TAKE SPECIAL NOTE: Operating the vehicle without all sub assemblies completely and properly installed and working may cause FAILURE OF MAJOR ENGINE COMPONENTS.**
- J. Keep in mind that this manual does not address air/fuel or ignition timing considerations. (See Page vi.)
- K. Test drive the vehicle.
- L. 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.



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