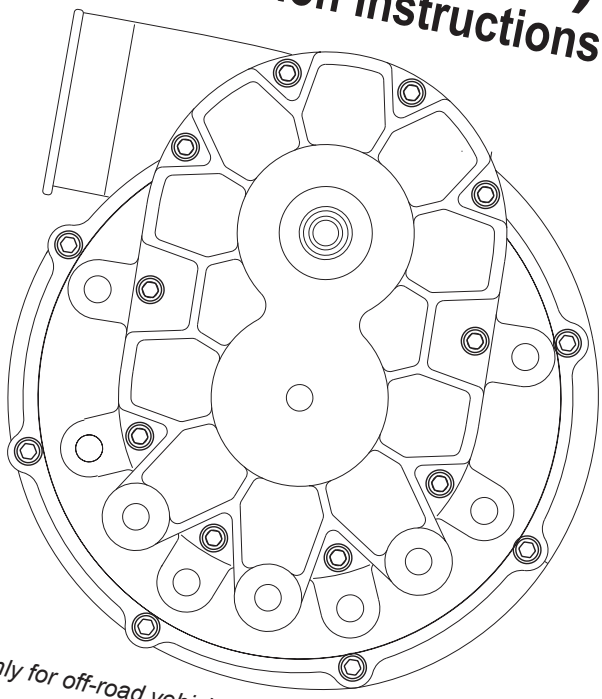
BIG BLOCK CHEVROLET CARBURETED SYSTEM (TWIN PLATE)

Installation Instructions*



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

VORTECH®

ENGINEERING, LLC

1650 PACIFIC AVENUE • CHANNEL ISLANDS, CA 93033-9901 • (805) 247-0226
FAX (805) 247-0669 • www.vortechsuperchargers.com • M-F 8:00 AM - 4:30 PM PST

P/N: 4GA020-030

08DEC08 V3.0(BBC LowMount(4GA..030 V3.0))

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 8:00am-4:30pm PST M-F..

Take note of the following before proceeding:

1. Proper installation of this supercharger kit requires general automo tive 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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08DEC08 V3.0(BBC LowMount(4GA..030 V3.0))

Important Installation Notes:

A. *This system was designed to fit on engines equipped with a "long" water pump. Vortech includes a 3-groove assessory drive crank pulley (for use with a "short" water pump, a custom accessory drive crank pulley and spacer will be required).*

B. *For engines equipped with power steering, a remote reservoir (GM "type 2") style pump will be required as well as an optional Vortech power steering pump bracket and pulley assembly. Depending on the vehicle, power steering lines may require fabrication.*

- *— Power Steering Pump: OE on 1987 GM Pontiac Sunbird, NAPA #20-874*
- *— Vortech Power Steering bracket/pulley assembly: 4GA110-010*

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

1. Optional fuel line/fitting kits for the carburetor. They include custom bent stainless steel lines, billet-8 bulkhead adapter with fuel pressure port and plug, -8/-6 junction TEE, aluminum swivel hose ends and USCG approved fuel hose.

- Vortech **#8M110-020** 4150 series (w/dual metering blocks), SS fuel line kit
- Vortech **#8M110-030** Demon series, SS fuel line kit

2. Carburetor air diffuser. Straightens airflow into the carburetor for improved response/driveability

- Vortech **#8M011-001** Ø5.75" x 2.50 tall carburetor air diffuser, stainless steel

3. Compressor bypass valve and flange (required on applications exceeding 5 psig boost) (Contact the technical department to determine the proper valve selection for the application)

- Vortech **#8D204-001** Race Bypass Valve
- Vortech **#8D004-052** Race Bypass weld-on flange (aluminum)
- Vortech **#8D103-001** Mondo Race Bypass Valve
- Vortech **#8D003-052** Mondo Race Bypass weld-on flange (aluminum)
- Vortech **#8D205-003** BV57 Bypass Valve weld-on flange
- Vortech **#8D005-051** BV57 Bypass Valve weld-on flange (aluminum)

4. Supercharger air inlet ducting (see step 8. in this manual)

5. Vortech power steering bracket/pulley assembly (see notes above): **#4GA110-010**

Items to be supplied by installer/end user:

- Carburetor with mechanical secondaries (4150 Holley/Barry Grant MD style)
- High performance fuel pump (boost referenced)

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NOTICE

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Big Block Chevrolet Carbureted System

Part No. 4GA218-030

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 NO.	DESCRIPTION	QTY.
2A258-040	**SUPERCHARGER ASY**	**1**
4GA111-031	**BRKT ASSY, S/C MNT BBC DUAL LO**	**1**
4GA010-051	MTG PLT, BBC LOW MNT DUAL	1
4GA010-061	SPRT PLT, S/C BBC DUAL LOW	1
2A017-049	SPACER A, SBCHEV CARB BRKT	6
4GA010-044	S/C MTG PLT, BBC LOW MOUNT	1
4GA011-021	MACH MTG BRKT, BBC LOW MOUNT	1
7C012-022	M12 X 1.75 X 20MM THIN HD	3
7J012-092	12MM WASHER, FLAT	3
7A375-126	3/8-16 X 1.25 HHCS, GR8, PLT	6
7A375-275	3/8-16 X 2-3/4 HXCSG8P ZINC	4
7A375-300	3/8-16 X 3" HXCSG5P	1
7K375-040	3/8 AN960 FLAT WASHR PLATED	17
7A437-200	7/16-14 X 2" SHCS	2
7A437-425	7/16"-14X4.25" HX HD	1
7J438-081	7/16 SAE WASHER PLATED	1
7F375-017	3/8-16 NYLOCK NUT	2
7A375-201	3/8-16 X 2" S.S. SHCS	2
7A375-426	3/8-16 X 4.25" HX HD GR8	1
7B375-276	3/8-24 X 2.75" HX HD GR8	2
4GA118-011	**DRIVE ASY, BBC DUAL 10-RIB 7"**	**1**
4MA018-051	CRANK PLY, 7", UNIVERSAL	1
4MA017-061	SPACER, CRK PLY, GEN2 V-GRV	1
4GA018-011	CRK PLY, ACC, BBC LNG H20 PMP	1
7A375-475	3/8-16 X 4.75" HX HD GR8 PLTD	3
7J375-044	3/8 FLAT WASHR PLATED	3
2A041-618	BELT, 10 RIB X 61.75 EFFECT LENGTH	1
4GA130-036	**OIL DRAIN ASSY, BBC LOW MT**	**1**
7U030-036	1/2" OIL DRAIN HOSE	2.5'
7R001-008	#8 STNLS HOSE CLAMP	2
7P375-017	3/8NPT X 1/2 BEADED HSE BRB	1
4MA130-026	**OIL FEED ASSY BBC**	**1**
4MA145-020	OIL FEED HOSE ASSY, BBCKIT	1
7P125-026	1/8 NPT X #4 SAE FLARE, 90°	2
7P125-034	1/8NPTX1/8NPT STRT T	1
7P125-103	1/8NPT X 45° -4SAE FLARE	2
7P250-036	-4 SAE FLARE TO 1/4 NPT	1
7P250-120	1/4 NPT PIPE PLUG	1

PART NUMBER	DESCRIPTION	QTY.
8M205-012	**CARB ENCL ASSY, UNIV SAT, G2 L**	**1**
4GA111-041	**TENS. ASSY. BBC DUAL LOW 10-RI**	**1**
7B500-325	ARBOR, S/C TENS PLY, S2000	1
7PA375-500	SCREW, IDLER ADJUST, 5.00"	1
4PFA010-031	BRACKT, IDLER ADJUST SCREW	1
4FP116-030	IDLER W/BRNG ASSY, 36MM COG	1
4GA017-011	SPCR, IDLR,DL. PLT BBC 10-RIB	1
2A017-750-490	SPCR, ARBR,10-RB,DL.PLT BBC	1
7B500-240	ARBOR, S/C TENS PLY, RENEGADE	1
7F500-020	1/2"-20 HEX JAM NUT GR5 ZINC	1
4FD017-011	PILOT, 6203/5 BRG, 1/2 SCREW	1
7A250-100	1/4-20 X 1 FLAT ALLEN	2
4GA112-020	**DISCH ASSY, BBC LOW MOUNT**	**1**
4GA012-021	DISCH TUBE, BBC LOW MOUNT	1
7A312-100	5/16-18 X 1 HHCS, GR5, PLATED	4
7K312-001	5/16 AN WASHER, PLATED	4
7R002-048	#48 SAE TYPE F SS HOSE CLAMP	1
7R002-056	#56 SAE TYPE F SS HOSE CLAMP	3
7S350-200	SLEEVE, 3-1/2 X 2, BLUE	1
7S350-301	REDUCER, 3.50-3.00	1
8M012-011	MACH, 90° CARB BOX INLET	1
008110	**SMALL SILVER DIE CUT DECAL**	**2**
008444	**3 YR S/C STRT INFO PKG ASY VOR**	**1**
008130	**LICENSE PLATE FRAME, VORTECH**	**1**
4GA020-030	**INSTR MAN, BBC LOW MOUNT KIT**	**1**

Base Kit, Universal BBC V4 Carb

Part No. 3GA218-060

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 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**
4GA020-030	**INSTR MAN, BBC LOW MOUNT KIT**	**1**
4GA111-051	**TENS. ASSY. COG, BBC DL PLT.LO**	**1**
7G012-175	MACH NUT, COG DRV, SPECIAL	1
4FP017-021	SPACR, IDLR, DUAL PLT 50MM DRV	1
4FP116-020	IDLER W/BRNG ASSY, 50mm	1
4FD017-011	PILOT, 6203/5 BRG, 1/2 SCREW	1
7C012-065	M12 X 1.75 X 65MM HX	1
4GA111-061	**BRKT ASSY, S/C MNT V4 BBC**	**1**
4GA010-071	BRACKET,S/C BBC DUAL PLT RACE	1
4GA010-081	BRACKET,SPRT BBC DL. PLT RACE	1
2A017-049	SPACER A, SBCHEV CARB BRKT	8
4GA011-021	MACH MTG BRKT, BBC LOW MOUNT	1
7C012-022	M12 X 1.75 X 20MM THIN HD	3
7A375-126	3/8-16 X 1.25 HHCS, GR8, PLT	9
7A375-275	3/8-16 X 2-3/4 HXCSG8P ZINC	5
7A375-300	3/8-16 X 3" HXCSG5P	3
7K375-040	3/8 AN960 FLAT WASHR PLATED	19
7F375-017	3/8-16 NYLOCK NUT	2
7A437-200	7/16-14 X 2" SHCS	2
7A437-425	7/16"-14X4.25" HX HD	1
7J438-081	7/16 SAE WASHER PLATED	1
7A375-201	3/8-16 X 2" S.S. SHCS	2
7A375-426	3/8-16 X 4.25" HX HD GR8	1
4GA118-031	**DRIVE ASY, BBC DUAL LOW COG**	**1**
2A032-032	S/C PULLEY, 32T (50MM)	1
8R101-007	PULLEY RETAINER ASSY 50 MM COG	1
4MA018-080	CRANK PLY, 80T GT 8MM X 2.5W	1
4MA017-061	SPACER, CRK PLY, GEN2 V-GRV	1
4GA018-011	CRK PLY, ACC, BBC LNG H20 PMP	1
2A042-160	BELT, PC GT2 COG 1600X8MX36	1
7A375-475	3/8-16 X 4.75" HXHD GR8 PLTD	3
7K375-040	3/8 AN960 FLAT WASHR PLATED	3
4GA130-036	**OIL DRAIN ASSY, BBC LOW MT**	**1**
7U030-036	1/2" OIL DRAIN HOSE	2.5'
7R001-008	#8 STNLS HOSE CLAMP	2
7P375-017	3/8NPT X 1/2 BEADED HSE BRB	1
4MA130-026	**OIL FEED ASSY BBC**	**1**
4MA145-020	OIL FEED HOSE ASSY, BBCKIT	1
7P125-026	1/8 NPT X #4 SAE FLARE, 90°	2
7P125-034	1/8NPTX1/8NPT STRT T	1
7P125-103	1/8NPT X 45° -4SAE FLARE	2
7P250-036	-4 SAE FLARE TO 1/4 NPT	1
7P250-120	1/4 NPT PIPE PLUG	1

PART NUMBER	DESCRIPTION	QTY.

Big Block Chevrolet
Carbureted System
Installation Instructions

PLEASE READ CAREFULLY

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, an appropriate carburetor unit and fuel pump.**

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.

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 or lower than 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 operating the vehicle. Thereafter, always use a high grade SF rated engine oil or a high quality synthetic, and change the oil and filter every 3000 miles.
6. Before beginning installation, replace all spark plugs with one to two step colder heat range and reset timing to no more than 26°-28° total. (Always follow the procedures indicated in the factory repair manual.)

- 3/8" Drive and Socket Set: SAE and Metric
- 1/2" Drive and Socket Set: SAE and Metric
- Adjustable Wrench
- Open End Wrenches: 5/16", 3/8", 7/16", 1/2", 9/16"
- Center Punch
- Drill Press, #7 Drill Bit, 1/4-20 tap
- 6 Quarts SF Rated Quality Engine Oil
- Loctite Sealer #RC-609
- Oil Filter and Wrench
- Flat #2 Screwdriver
- Phillips #2 Screwdriver
- Heavy Grease
- Silicone Sealer
- Drill Motor
- 3/32" Drill Bit
- Teflon Paste Sealant

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1. PREPARATION/REMOVAL

A. Disconnect the negative lead of all batteries.

B. Loosen all nuts and bolts that are used to tension the alternator and power steering pump V-belts.

C. Remove all of the belts from the accessories.

D. Remove the stock crank pulley and accessories from the driver's side of the engine.

> ***NOTE:*** *If you have not changed spark plugs in the last 15,000 miles do so prior to the installation of this kit.*

2. CRANK PULLEY

A. Put the supplied crank pulley, spacer and V-groove pulley together while lining up the three mounting holes.

B. Using the 3/8-16 x 4.75" hex head bolts and 3/8" washers, mount the crank pulley assembly to the harmonic balancer. Torque bolts to 35 ft./lbs. (See *Fig. 2-a*.)

NO.	PART	DESCRIPTION	QTY.
1	4MA018-051	Crank Pulley	1
2	7A375-475	3/8-16 x 4.75" HH Bolts	3
3	7J375-044	3/8" Washers	3
4	4GA018-011	V-Groove Pulley	1
5	4MA017-061	Spacer	1

CAUTION: *Before installing the crank pulley, make sure the balancer surface is flat without burrs or other imperfections that would cause the pulley to run untrue.*

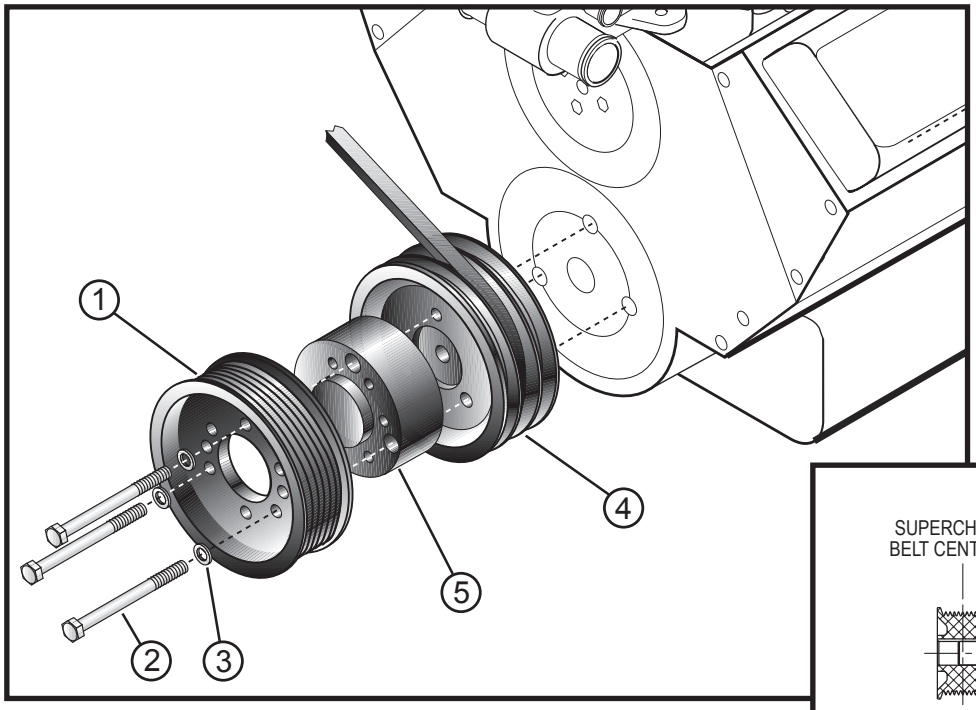

Fig.2-a

NOTE: *If the pulley configuration on your engine requires a special crank and pulley (short water pump, etc.) use Fig. 2-b as a guideline for proper pulley spacing.*

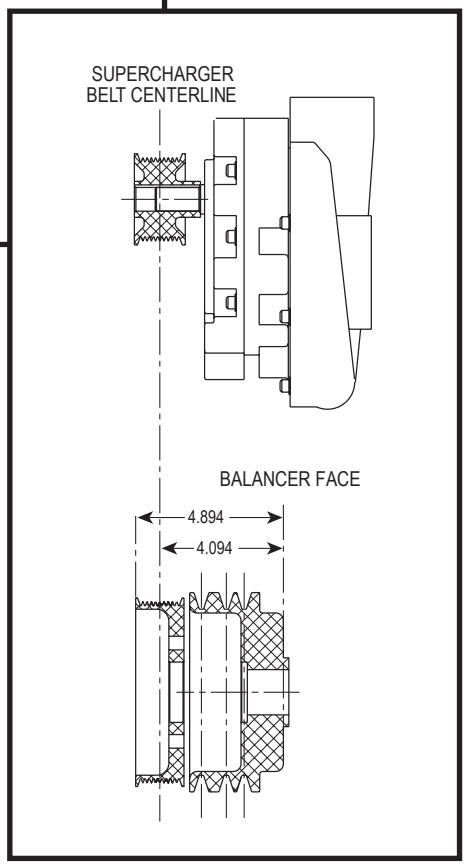

Fig.2-b

3. SUPERCHARGER OIL FEED

A. Remove the stock 1/4" hex head pipe plug from the front left lower portion of the engine block, if equipped, and replace it with the kit supplied 1/4" socket head pipe plug. Replacement of the square head plug allows for supercharger bracket installation clearance. Apply Teflon paste sparingly to the plug's threads prior to installation. (See *Fig. 3-a.*)

B. Remove stock oil pressure transducer, and install in its place an 1/8" straight "T". Orient the fitting to allow for suitable installation and routing of oil supply line. Apply engine oil to the male thread prior to installation. Next, install the 1/8"NPT x 45° male elbow into the side port of the straight "T" (see *Fig. 3-b*). Thread one end of the oil feed hose onto the 1/8"NPT x 45° male elbow. Use a small amount of oil when installing the flare type oil feed hose assembly. Route the hose towards the front of the engine; keep the free end capped to avoid contamination.

NO.	PART	DESCRIPTION	QTY.
1	7P250-120	Socket Head Pipe Plug	1
2	N/A	Oil Pressure Transducer	1
3	7P125-034	1/8" Straight “T”	1
4	7P125-103	1/8" NPT x 45° Male Elbow	1
5	4MA145-020	Oil Feed Hose	1

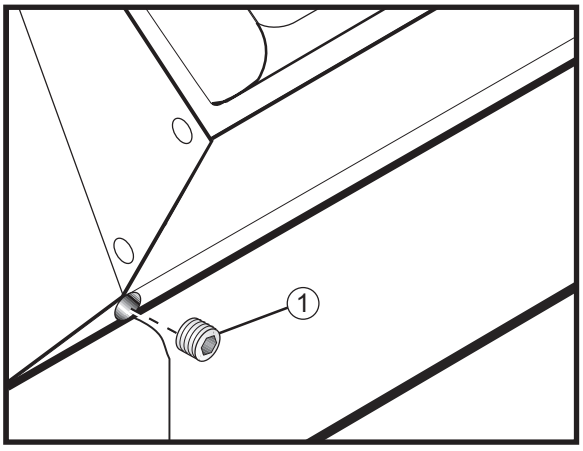

Fig. 3-a

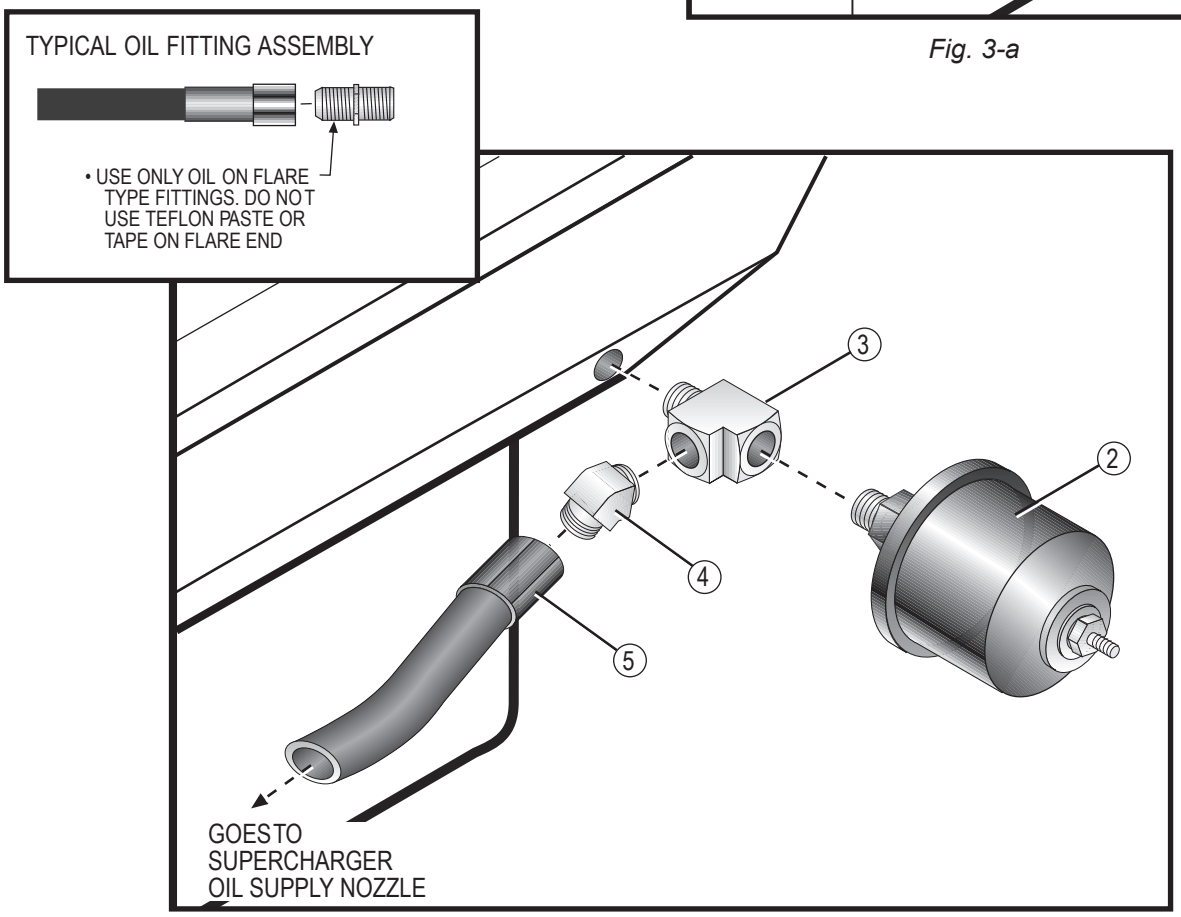

Fig. 3-b

4. SUPERCHARGER OIL DRAIN

A. With this option, it is necessary to make a hole in the oil pan. (See *Fig. 4-a*.) It is best to punch the hole rather than drill. Remove paint from around the hole area so that it does not flake into the pan.

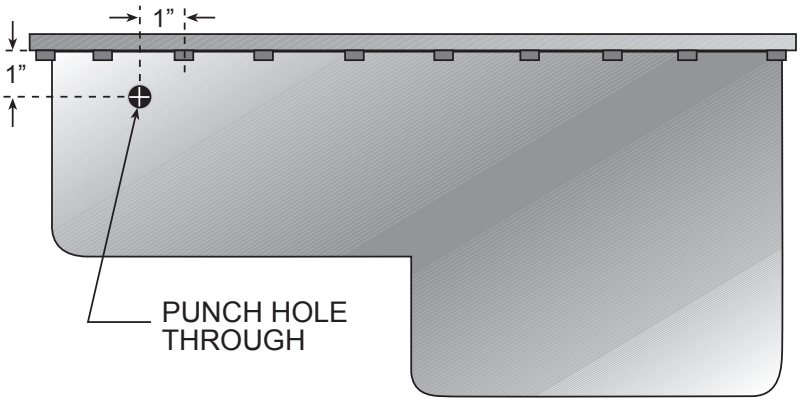

Fig. 4-a

B. Make a mark on the oil pan on the left side ahead of the oil filter. The mark should be 1" below the bolt flange and forward of the third bolt by 1". You may choose a different place, if necessary. However, take care not to damage any internal parts. The drain hose should gradually drop with no dips or kinks and should be above the oil level.

C. Use a small center punch to perforate the pan and expand the hole. Switch to a larger diameter punch and expand the hole further to approximately Ø9/16" (or use an air hammer with a 9/16" round punch attachment). Most punches are made from hexagon material and may be placed in a socket with an extension to make this procedure easier.

D. Tap the hole with a 3/8"NPT tap approximately 1/4" deep. Pack the flutes of the tap with heavy grease to catch and hold the chips. Once the tap is removed, it must be cleaned and repacked before tapping resumes. Use a small magnet to check for any stray chips in the threads after completing the tapping procedure.

E. Thoroughly clean the threaded area with acetone or other solvent. Apply a small amount of silicone sealer to the new threads. Apply a small amount of silicone sealer to the threads of the 3/8"NPT hose fitting and secure in the hole. Make sure a seal is formed all around the fitting. Allow the sealer to cure completely.

F. Temporarily cover the end of the hose and secure out of the way. The return is a gravity drain and should be routed to provide a gradual drop.

G. Drain and replace the engine oil and change the filter.

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5. SUPERCHARGER MOUNTING (TWIN PLATE V-7 ONLY, V-4 SKIP TO SECTION 8)

A. Mount the supplied aluminum supercharger mounting bracket onto the front of the driver's side cylinder head using the two 7/16-14 x 2" socket head screws and one 7/16-14 x 4.25" screw with washer as shown in *Fig. 5-a*.

> ***NOTE:*** *Some Gen IV and earlier heads (including "GM performance" heads) require 3/8-16 screws and flat washers to be used in lieu of the 7/16" hardware. Both sizes have been included in the mounting bracket assembly.*

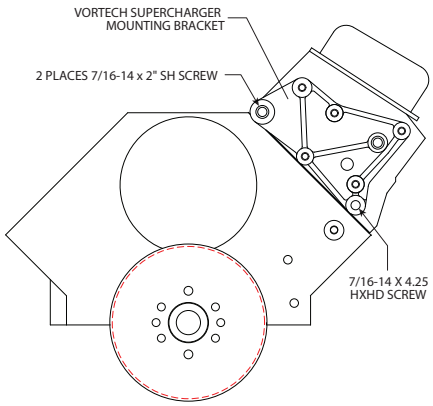

Fig. 5-a

B. Loosely attach the supplied supercharger mounting plate (4GA010-051) to the previously installed mounting bracket using one of the supplied 3/8-16 x 1.25" hex head screw and washer as shown in fig. 5-b. Temporarily install two of the supplied 3/8-16 x 2-3/4" hex head screws through the supercharger mounting plate as a guide. Tighten the 3/8-16 x 1.25" hex head screw at this time. Remove the two 3/8-16 x 2-3/4" hex head screws.

C. Remove the blue plastic oil drain cap located on the fitting at the bottom of the supercharger unit and install the supplied 1/2" (fabric braided) oil drain hose. Secure with a #8 hose clamp.

> ***CAUTION:*** *Clock the clamp screw housing to the side so that it does not interfere with the mounting plate during installation.*

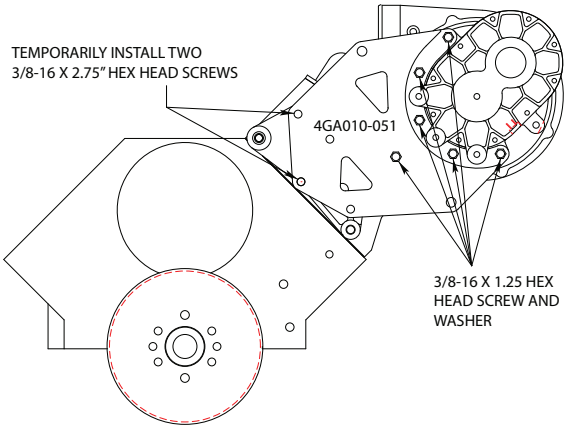

Fig. 5-b

D. Install the supercharger to the mounting plate. Secure the unit to the plate with the five supplied 3/8-16 x 1.25" screws and AN flat washers.

E. Loosely install the supercharger support plate (4GA010-061) using the four 3/8-16 x 2.75" screws, washers and four of the Ø.75" x 1.309" long spacers (2A017-049) provided. Install the two remaining Ø.75" x 1.309" long spacers (2A017-049) using the two 3/8-24 x 2.75" screws and washer. Finally install the three M12-1.75 x 20mm thin head screws with washers as seen in figure 5-e. Tighten all hardware installed to this point.

F. Route the drain hose down to the previously installed fitting in the oil pan and secure with a #8 hose clamp. Trim hose if necessary.

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

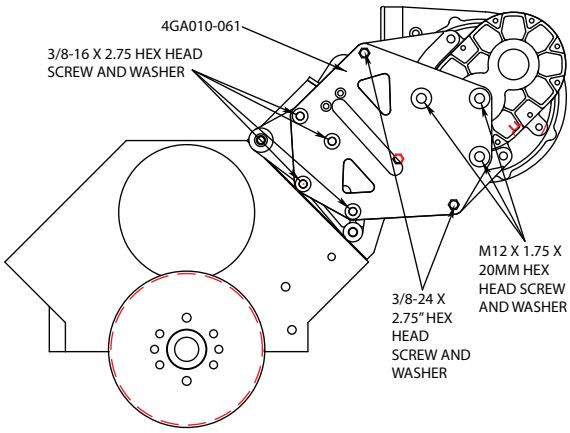

Fig. 5-E

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5. SUPERCHARGER MOUNTING, CONT'D (TWIN PLATE V-7 ONLY, V-4 SKIP TO SECTION 8)

G. Install the supplied 1/8"NPT x 90° x #4 fitting into the supercharger oil feed nozzle. Do not use teflon tape on the threads or oil feed blockage may result.

> ***CAUTION:*** *Ensure that the oil supply system is free of contamination that might plug the supercharger oil inlet orifice. Hold the supercharger oil feed fitting with wrench while tightening the oil feed line fitting.*

H. Carefully route the previously installed oil feed hose up to the supercharger oil feed fitting taking care not to kink the hose. Carefully thread the hose end onto the feed fitting. *LIGHTLY LUBRICATE THE FITTING WITH ENGINE OIL.*

6. ACCESSORY DRIVE BELTS (TWIN PLATE V-7 ONLY, V-4 RACE SKIP TO SECTION 8)

NOTE: *Belts are to be sized per each application and purchased separately and are not included in this base kit.*

A. Install the correct length V-belts onto the water pump, power steering and crank pulleys.

B. Tighten all bracket hardware that was “snugged” earlier and adjust/tighten the V-belts making sure all belts are routed correctly. Make sure all hoses and wiring are routed correctly and secured, that all coolant modifications are complete and hose clamps are properly tightened.

7. SUPERCHARGER DRIVE BELT INSTALLATION (TWIN PLATE V-7 ONLY, V-4 RACE SKIP TO SECTION 8)

CAUTION: *Cog tensioner assembly does not use the tensioner arbor method. For cog drive applications skip to 7-e*

A. Attach the supplied belt tensioner adjustment screw, tensioner arbor and adjustment screw locator block to the supercharger support plate as show in figure 7-a. Secure the assembly to the plate by threading the two 1/4-20 x 1" flat head allen screws through the plate and into the adjustment screw locator block as shown.

B. Slide the arbor bushing (Ø.75"OD x Ø.530"ID x .490" long) onto the arbor screw. Verify that the bushing fits in the arbor slot up against the arbor screw head. Place the idler spacer (4GA017-011) and aluminum tensioner idler onto the arbor screw, secure using the provided bearing pilot (4FD017-011) and supplied 1/2"-20 hex nut.

C. Fit the supercharger drive belt over the new crank pulley and supercharger pulley.

D. Tension the belt by using a 3/8" socket to turn the tensioner adjustment screw anticlockwise until the desired tension is achieved. Secure the tensioner idler by tightening the 1/2"-20 hex nut previously installed.

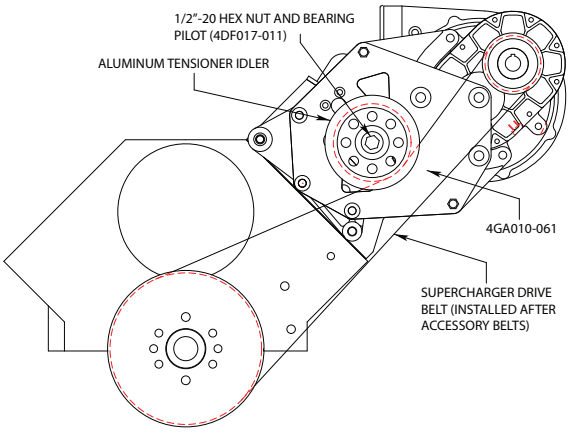

Fig. 7-a (10-Rib Belt Route Only)

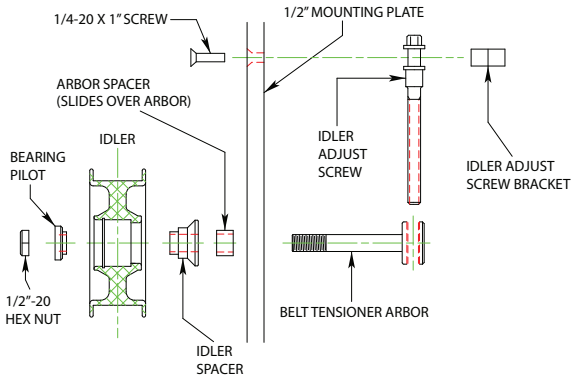

Fig. 7-b (10-Rib Belt Tensioner Assembly - Side View)

7. SUPERCHARGER DRIVE BELT INSTALLATION, CONT'D (TWIN PLATE V-7 ONLY, V-4 RACE SKIP TO SECTION 8)

E. **(Cog drive only)** Slide the M12-1.75 X 65mm screw through the supplied bearing pilot, aluminum idler and idler spacer. Place the machine nut into the slot in the supercharger support plate. Loosely attach the previously assembled idler assembly, do not tighten at this time. See Fig. 7-c.

F. **(Cog drive only)** Fit the supercharger drive belt over the new crank pulley, idler pulley and supercharger pulley.

G. **(Cog drive only)** Tension the belt by pulling up on the tensioner by hand and then tighten the previously installed M12 hardware. The belt does not need to be tightened excessively. See Fig. 7-d.

CAUTION: *Do not "back-bend" a cog belt to tension.*

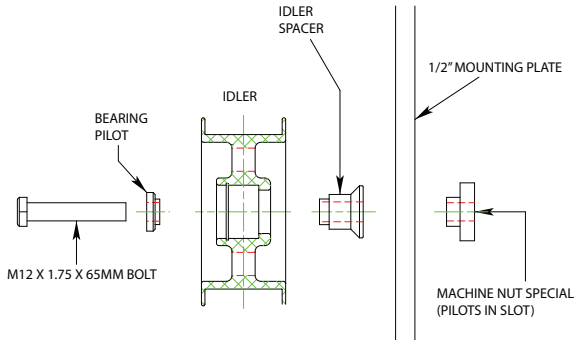

Fig. 7-c (Cog Belt Tensioner Assembly - Side View)

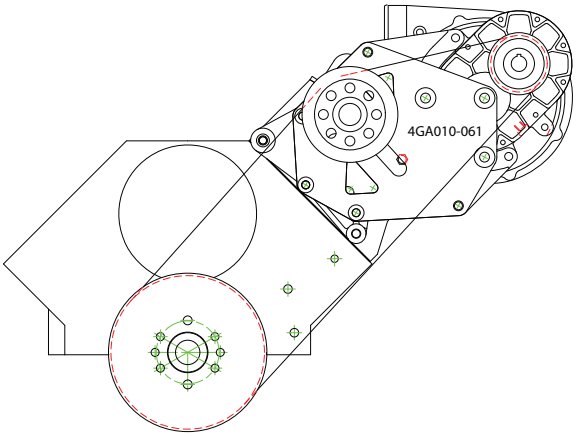

Fig. 7-d (Cog Belt Route Only)

8. SUPERCHARGER MOUNTING RACE (V-4 RACE BRACKETS ONLY. TWIN PLATE V-7 SKIP TO SECTION 11)

A. Mount the supplied aluminum supercharger mounting bracket onto the front of the driver's side cylinder head using the two 7/16-14 x 2" socket head screws and one 7/16-14 x 4.25" screw with the washer as shown in Fig. 8-a

> ***NOTE:*** *Some Gen IV and earlier heads (including "GM performance" heads) require 3/8-16 screws and flat washers to be used in lieu of the 7/16" hardware. Both sizes have been included in the mounting bracket assembly.*

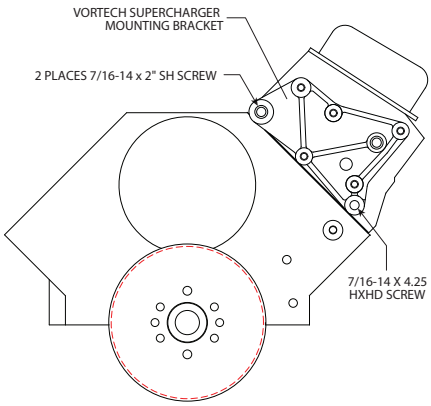

Fig. 8-A

B. Loosely attach the supplied supercharger mounting plate (4GA010-071) to the previously installed mounting bracket using one of the supplied 3/8-16 x 1.25" hex head screws and washer as shown in fig. 8-b. Temporarily install two of the supplied 3/8-16 x 2-3/4"hex head screws through the supercharger mounting plate as a guide. Tighten the 3/8-16 x 1.25" hex head screw at this time. Remove the two 3/8-16 x 2-3/4" hex heads screw.

C. Secure an oil drain line to the bottom of the supercharger in a manner that will not interfere with the supercharger support bracket. NOTE: There is no oil drain line supplied in the Race bracket kit.

D. Install the supercharger to the mounting plate. Secure the unit to the plate with the eight supplied 3/8-16 x 1.25" screws and AN flat washers. See Fig. 8-b

E. Loosely install the supercharger support plate (4GA010-081) using the five 3/8-16 x 2.75", three 3/8-16 x 3" screws, eight Ø1.309" long spacers (2A017-049) and washers provided. Finally install the three M12-1.75 x 20mm thin headed screws as seen in figure 8-c. Tighten all hardware installed to this point.

F. Route the oil drain hose down to your predetermined location and secure.

> ***NOTE:*** *You will need to provide and adequate oil drain from the supercharger to the oil pan or oil collection reservoir. The oil path should maintain a down hill direction and be free of any dips or kinks. The oil should enter the pan/reservoir above the oil level to maintain a free flowing path.*

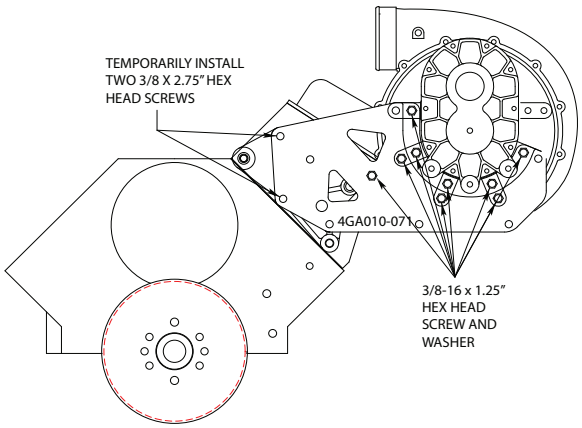

Fig. 8-B

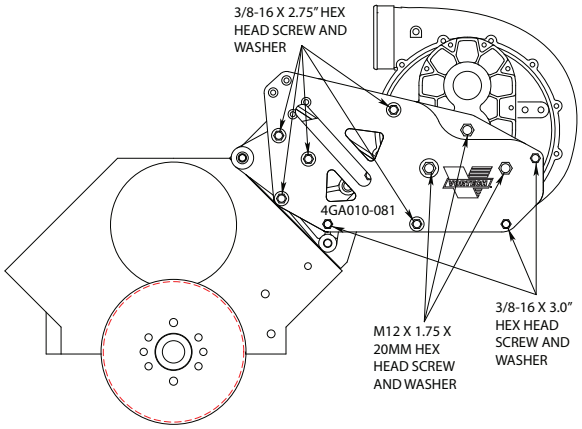

Fig. 8-C

9. ACCESSORY DRIVE BELTS (V-4 "RACE" ONLY)

NOTE: *Belts are to be sized per each application and purchased separately and are not included in this base kit.*

A. Install the correct length V-belts onto the water pump, power steering and crank pulleys.

B. Tighten all bracket hardware that was “snugged” earlier and adjust/tighten the V-belts making sure all belts are routed correctly. Make sure all hoses and wiring are routed correctly and secured, that all coolant modifications are complete and hose clamps are properly tightened.

10. SUPERCHARGER DRIVE BELT INSTALLATION (V-4 "RACE" ONLY)

A. **(Cog drive only)** Slide the M12-1.75 X 65mm screw through the supplied bearing pilot, aluminum idler and idler spacer. Place the machine nut into the slot in the supercharger support plate. Loosely attach the previously assembled idler assembly, do not tighten at this time. See Fig. 10-a

B. **(Cog drive only)** Fit the supercharger drive belt over the new crank pulley, idler pulley and supercharger pulley.

C. **(Cog drive only)** Tension the belt by pulling up on the tensioner by hand and then tighten the previously installed M12 hardware. The belt does not need to be tightened excessively. See Fig. 10-b.

CAUTION: *Do not "back-bend" a cog belt to tension.*

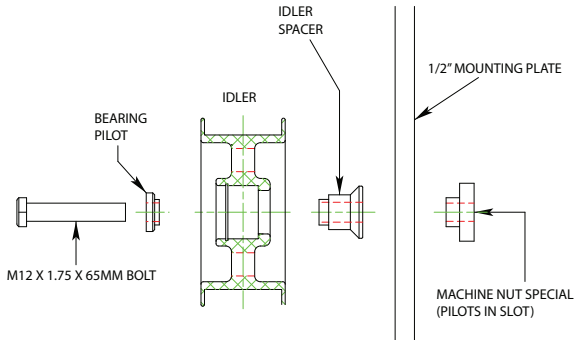

Fig. 10-a (Cog Belt Tensioner Assembly - Side View)

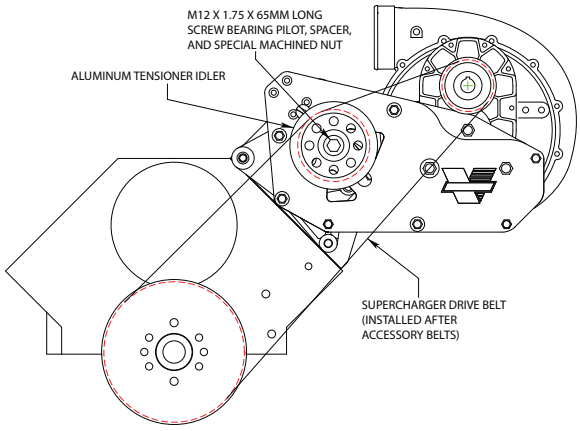

Fig. 10-b (Cog Belt Route Only)

11. AIR INLET SUGGESTIONS

A. As mentioned at the beginning of this manual, no supercharger air inlet components are included with this kit because of the numerous configurations and different vehicle types that this kit will be installed on.

B. When “laying out” your supercharger air inlet, keep in mind that supercharger and engine performance is greatly increased when a cool air source is used. Pulling in heated air from the engine compartment, or from above the headers will result in lackluster performance and possible engine detonation.

C. Vortech offers some individual components that may aid you in your installation (Not applicable to V-4 "Race" Kit).

- Vortech #7S400-000 Ø4" x 90° cast aluminum inlet elbow (3.5" CL radius)
- Vortech #7S400-001 Ø4" x 90° rubber inlet elbow
- Vortech #7S400-200 Ø4" x 2" silicone sleeve
- Vortech #8H040-095 air filter, Ø4" flange x 5"L x Ø4.5"
- Vortech #8H040-095 air filter, Ø4" flange x 7"L x Ø5.38"
- Vortech #8H040-095 air filter, Ø4" flange x 7.63"L x Ø5.38"

12. DISCHARGE DUCTING/CARBURETOR ENCLOSURE

A. Install optional Vortech carburetor enclosure (if not already completed) assembly #8M205-012. Instructions are included with the enclosure assembly. The enclosure lid is to be attached to the base with the inlet facing the passenger's side of the vehicle.

B. Attach the short 90° aluminum elbow with flange to the enclosure inlet using the supplied gasket, 5/16-18 x 1 bolts and washers.

C. Install the long 3-1/2" aluminum elbow in between the supercharger discharge and the 90° flange elbow using the 3.5" sleeve, #56 clamps, #48 clamp and reducer.

NOTE: *Depending on the vehicle application and hood configuration, minor bottom side hood modifications may be required.*

13. FINAL REASSEMBLY AND CHECK

A. Refit the Radiator fan and shroud, if equipped.

B. Reconnect the battery.

C. 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.

D. 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.

E. Check all fluid levels, making sure that your tank(s) is filled with 91 octane or higher fuel before commencing test drive.

F. Start engine and allow to idle a few minutes, then shut off.

G. Recheck to be sure that no hoses, wires, etc. are near exhaust headers or moving parts and for signs of any fluid leakage. Re-jet the carburetor as required. Install a boost referenced high-performance mechanical fuel pump or high performance electric fuel pump with boost referenced fuel regulator. Check ignition timing to make sure it is properly set before commencing test drive.

H. PLEASE TAKE SPECIAL NOTE: Operating the vehicle without all sub assemblies completely and properly installed and working may cause FAILURE OF MAJOR ENGINE COMPONENTS.

I. Test drive the vehicle.

J. 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.

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

NOTE: *Vortech strongly recommends the use of a wide band O2 sensor to monitor the air fuel ratio in the exhaust when calibrating the carburator. A safe air/fuel ratio of 11.0:1 is recommenced when using 91 octane fuel.*

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