

8-Rib® Drive Upgrade

Installation Instructions



2005-2009 Ford 4.6 Mustang GT (3 Valve)
P/N: 4FU116-001



ENGINEERING, LLC

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



1300 Beacon Place, Oxnard, CA 93033-9901
Phone: 805 487-3796 • Fax: 805 247-0669
www.paxtonautomotive.com
M-F 8:00 AM - 4:30 PM (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 8:00am-4:30pm 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 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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TABLE OF CONTENTS

FOREWORD	ii
TABLE OF CONTENTS	iii
NOTICES	iv
TOOL & SUPPLY REQUIREMENTS	v
PARTS LIST 2005-2009 4.6L 3V Mustang GT	vi
1. PREPARATION AND REMOVAL	1
2. PULLEY AND SPACER REPLACEMENT	3
3. COOLANT RESERVOIR FILL	7
4. AIR INLET ASSEMBLY	8
5. FINAL CHECK	9

NOTICES

(Read before installation is started)

Included in this kit is a smaller than originally supplied supercharger pulley. This new pulley is recommended to achieve the best performance results. Removal of the factory sealed pulley will reduce the supercharger warranty from three years to one year unless the supercharger unit (with the original pulley still attached) and new pulley are sent into Vortech for removal, installation and re-sealing. If the supercharger warranty is not a concern or if the supercharger warranty has expired, the pulley may simply be removed and replaced with the new part supplied. Hammering/prying etc. on the supercharger and/or pulley will cause damage to the parts. Light heating of the supercharger pulley with a propane torch (if the pulley is tight on the shaft) will aid removal. A return authorization number is required before the supercharger and pulley are sent into Vortech. Call the Vortech service department at (805) 247-0226 for a return authorization number. Return freight (ground) will be paid by Vortech.

This product is protected by state common law, copyright and/or patent. All legal rights therein are reserved. The design, layout, dimensions, geometry, and engineering features shown in this product are the exclusive property of Vortech Engineering, LLC/Paxton Automotive. This product may not be copied or duplicated in whole or part, abstractly or fundamentally, intentionally or fortuitously, nor shall any design, dimension, or other information be incorporated into any product or apparatus without prior written consent of Vortech Engineering, LLC/Paxton Automotive.

This product may not be legal for use on public roads in all 50 states.

IMPORTANT

- Proper installation of supplied alternator pulley requires an OEM alternator pulley removal tool. This part may be purchased from Saleen, P/N: 00-3105-C11576.
- Custom ECM programming and fuel / ignition system upgrades will be required when changing the supercharger drive pulley to any size other than what was originally supplied in the complete supercharger kit.
- Supercharger pulley removal may reduce or void the supercharger unit warranty.
- Pulley Diameter Changes: Careful size selection is mandatory for proper engine and supercharger longevity. Contact the applicable Vortech and Paxton tech line for assistance with impeller speed calculations if necessary.
- A Vortech Maxflow Race or Mondo compressor bypass valve is required for applications producing more than 11-12 psig.

VORTECH 8-RIB DRIVE UPGRADE

2005-2009 Ford Mustang GT Installation Instructions

TOOL & SUPPLY REQUIREMENTS:

- Open End Wrench Set: SAE
- Allen Wrenches: SAE
- Flat #2 Screwdriver
- Phillips #2 Screwdriver
- Utility Knife
- Torque Wrench (in/lbs)
- Tape Measure
- Adjustable Wrench
- 9/16" Ratcheting Box End wrench (highly recommended)
- Ford Power Steering Puller/Installer
- Crank Pulley Puller/Installer
- 1/2" Drive Ratchet
- Pliers
- Blue Loc-Tite
- Ford Alternator Pulley Removal Tool



8-Rib Upgrade, 05-09 4.6L 3V Mustang GT

Part No. 4FU116-001

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.
007084	INSTR., 8-RIB UP-GRD '05 MUS GT	1
7A375-124	3/8-16 x 1-1/4" HXHD G5 PLATED	5
2A017-878-08	SPACER, .875"OD x .406"ID x .280"	5
2A038-347	S/C PULLEY +3.47" 8 GROOVE	1
2A048-121	BELT, 8-RIB DAYCO 5081213	1
8R101-002	PULLEY RETAINER ASY 8-RIB	1
7G016-150	NUT, M16 x 1.50" FLANGED	1
4FU016-011	PULLEY, 8-RIB, 2.5"OD, ALT FORD	1
4FU016-021	PULLEY, IDLR 3.5 8-RIB SMTH S.B.	3
2A017-882-01	SPCR, .875"OD x .663"ID x .140" LG	3
4FU017-031	IDLR SPCR, 1"OD x .375"ID x .583" LG	1
2A017-879-07	SPACER, .875"OD, .386"ID, 1.636"LG	1
4FU017-041	SPACER, STUD BOLT BRNG PILOT	2
4FU016-041	PULLEY, 3.5"OD 8-RIB IDLR RIBD	1
4FR016-021	PULLEY, 8-RIB A/C PIY '03 COBRA	1
4FR016-031	PULLEY, 8-RIB P/S '03 COBRA	1
4FR016-041	DAMPER, CRANK, 8-RIB '03 COBRA	1
4FU210-081	ASY, MANUAL TENSIONER ASSIST	
4FU110-081	BRKT, ASY. TENSIONER ASSIST	1
2A017-750-014	SPACER, .75"OD x .328"ID x .140"	3
2A017-752-03	SPACER, .750"OD x .927"LONG	3
7C080-056	M8 x 1.25 x 55 HXHD ZN PLT	3
7J312-000	5/16" FLAT WASHER-SAE	3
4FU116-031	PULLEY ASY, 3" 8-RIB IDLR SMTH	1
7A375-253	3/8-16 x 2.5" HXHD	1
7F375-016	3/8-16 HX NUT	1

1. PREPARATION AND REMOVAL

- A. Disconnect the battery.
- B. Remove the six nylon clips retaining the upper radiator core support cover. (See Fig. 1-e.)
- C. Loosen the hose clamps securing the supercharger discharge tube/cooler from the supercharger. Disconnect the by-pass valve hose(s) where they connect to the inlet and discharge tubes. Disconnect the by-pass valve vacuum lines where it connects at the fuel rail. Set the by-pass valve(s) aside to be reinstalled in a later step. Remove the discharge tube or tubes/air-water cooler, if equipped, and set aside, to be reinstalled in a later step.
- D. Unplug the MAF/MAFia connection from the meter. Loosen the hose clamps securing the inlet ducts to the supercharger and inlet duct support bracket. Remove the inlet duct assembly and set it aside to be reinstalled in a later step
- E. Disconnect the oil feed and oil drain lines.

NOTE: Temporarily cap the oil lines to protect your engine from foreign particles.

- F. Using a 1/2" ratchet wrench loosen the accessory belt tensioner and remove the belt from the supercharger pulley. Tie the belt back away from the supercharger temporarily.
- G. Remove the five 9/16" headed screws securing the supercharger to its mounting plate.

NOTE: A 9/16" ratchet wrench will greatly aid in this step.

- H. Remove the supercharger from the vehicle.

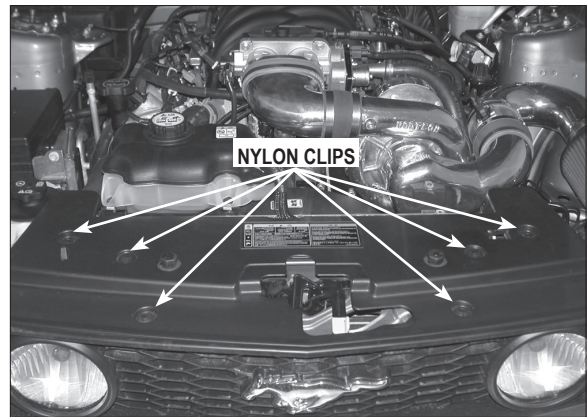


Fig. 1-e

1. PREPARATION AND REMOVAL, cont'd

- I. Locate the coolant drain plug on the passenger side of the radiator. Next drain the coolant into a clean container. This coolant will be reused in a later step.
- J. *Non-Cooled Kits Only:* Remove the two 8mm headed bolts securing the coolant overflow reservoir to the plastic fan shroud. (See Fig. 1-f.)
- K. Disconnect the small overflow hose (running across the top of the radiator) from the overflow reservoir. (See Fig. 1-f.)
- L. Remove the large hose connecting the thermostat hose to the bottom of the overflow reservoir and set aside to be re-installed in a later step.

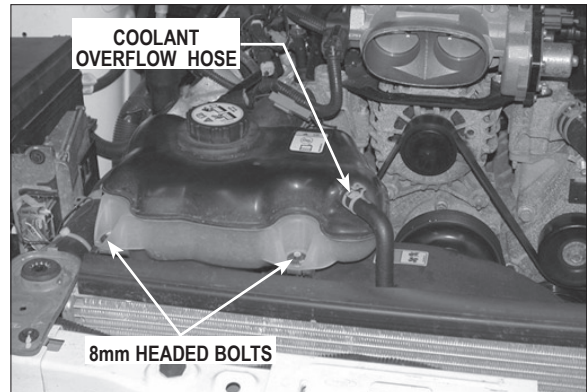


Fig. 1-f

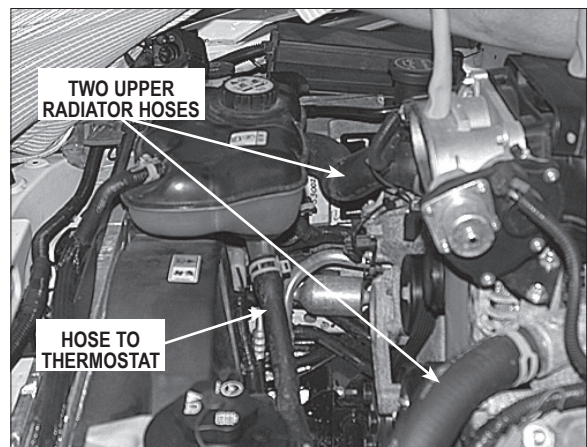


Fig. 1-g

2. PULLEY AND SPACER REPLACEMENT

NOTE: When a part is to be discarded, it should be placed in an appropriate place so as to **not** be confused with a similar part supplied in this upgrade kit.

- A. Unplug the cam sensor connector. Remove the five screws that retain the S/C mounting plate.

NOTE: Take care when removing so as to not lose the 0.097" spacer between the small idler plate and the alternator.

- B. Belt tensioner assist up-grade:

1. Remove the three screws retaining the factory spring tensioner to the front of the engine. Remove the factory steel idler from the tensioner and replace with the supplied 3" idler (4FU116-031) using the factory hardware. (See Fig. 2-a.)
2. Locate the supplied tensioner assist plate. Install the supplied 3/8-16 x 2.5" screw and 3/8-16 jam nut into the plate. Install the three M8 x 55mm bolts w/washers through the plate. Slide the three .75"OD x .328"ID x .927" long spacers onto the previously installed hardware. (See Fig. 2-b.)
3. Install the plate, hardware and spacers onto the factory spring tensioner. Slide the three .75"OD x .328"ID x .140" spacers onto the three bolts protruding through the tensioner. (See Fig. 2-b.)
4. Secure the tensioner assembly to the front of the engine. Use Figs. 2-a, 2-b as guides for spacer placement.

NOTE: Leave the 3/8" screw and jam nut loose at this time.

- C. Remove the factory idler pulley located just above the spring tensioner location. Replace with the supplied 3.5" idler (4FU016-021) and .875"OD x .663"ID x .140" thick spacer (2A017-882-01) using the factory hardware. (See Fig. 2-a.)

- D. Replace the alternator pulley:

1. First remove the plastic cap from the end of the alternator pulley to reveal the splined hub.
2. Rotate the pulley so that a round punch can be inserted through the front of the alternator into the alternator-cooling fan. This will hold the alternator assembly from turning. Using the appropriate splined hub tool (see notes on page iv), loosen and remove the alternator pulley. The threads are standard.

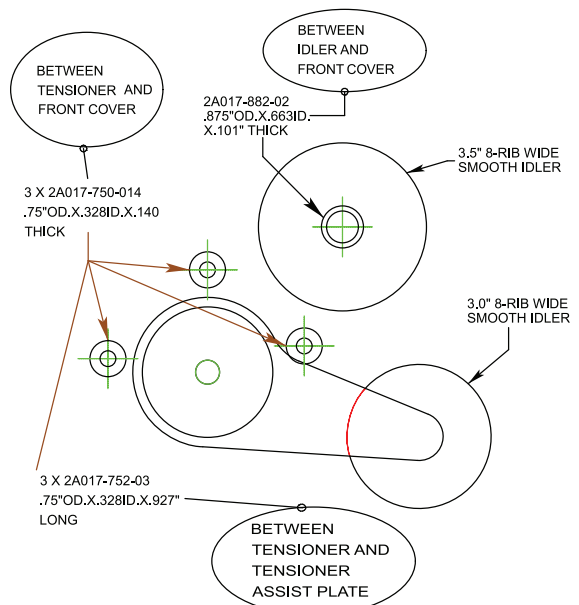


Fig. 2-a

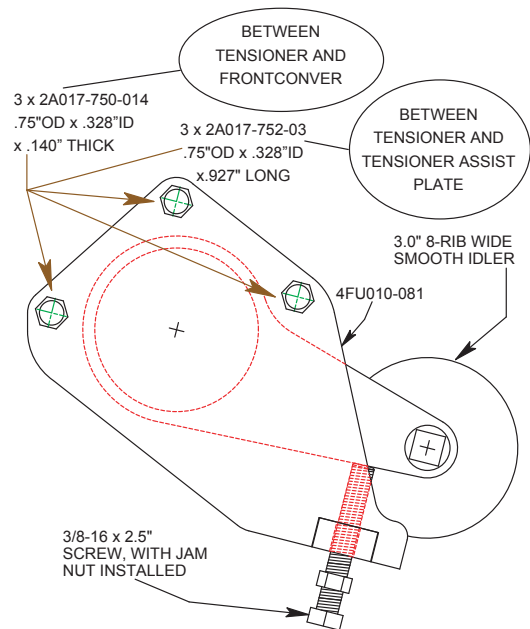


Fig. 2-b

2. PULLEY AND SPACER REPLACEMENT, cont'd

3. Install the supplied 8-rib alternator pulley (4FU016-021) and secure using the M16 x 1.50" flanged nut provided.
- E. Remove the two stud bolts that retain the factory idlers to the front cover. Discard the idlers and stud bolts. Replace the top idler with the 3.5" smooth idler (4FU016-021) and stud bolt provided. Replace the lower idler with the 3.5" ribbed idler (4FU016-041) and stud bolt provided. (See Fig. 2-c.)
- F. Using the appropriate pulley puller, remove the factory power steering pulley and discard. Replace with the supplied 8-rib power steering pulley with the appropriate installer tool.
- G. Remove the A/C clutch retaining screws. Carefully remove the clutch and set aside with the hardware and spacer, noting the order removed. Replace with the supplied 8-rib A/C pulley (4FR016-021), and secure using the factory hardware and spacer.
- H. Remove the crank pulley retaining bolt. Using the appropriate pulley puller, remove the crank pulley and discard. Install the supplied 8-rib crank pulley using the factory retaining bolt. (*Thread locking compound must be applied to the screw threads.*)
- I. Loosely install the 8-rib drive belt provided using Fig. 2-c for belt route reference. Not all pulleys are installed at this time.

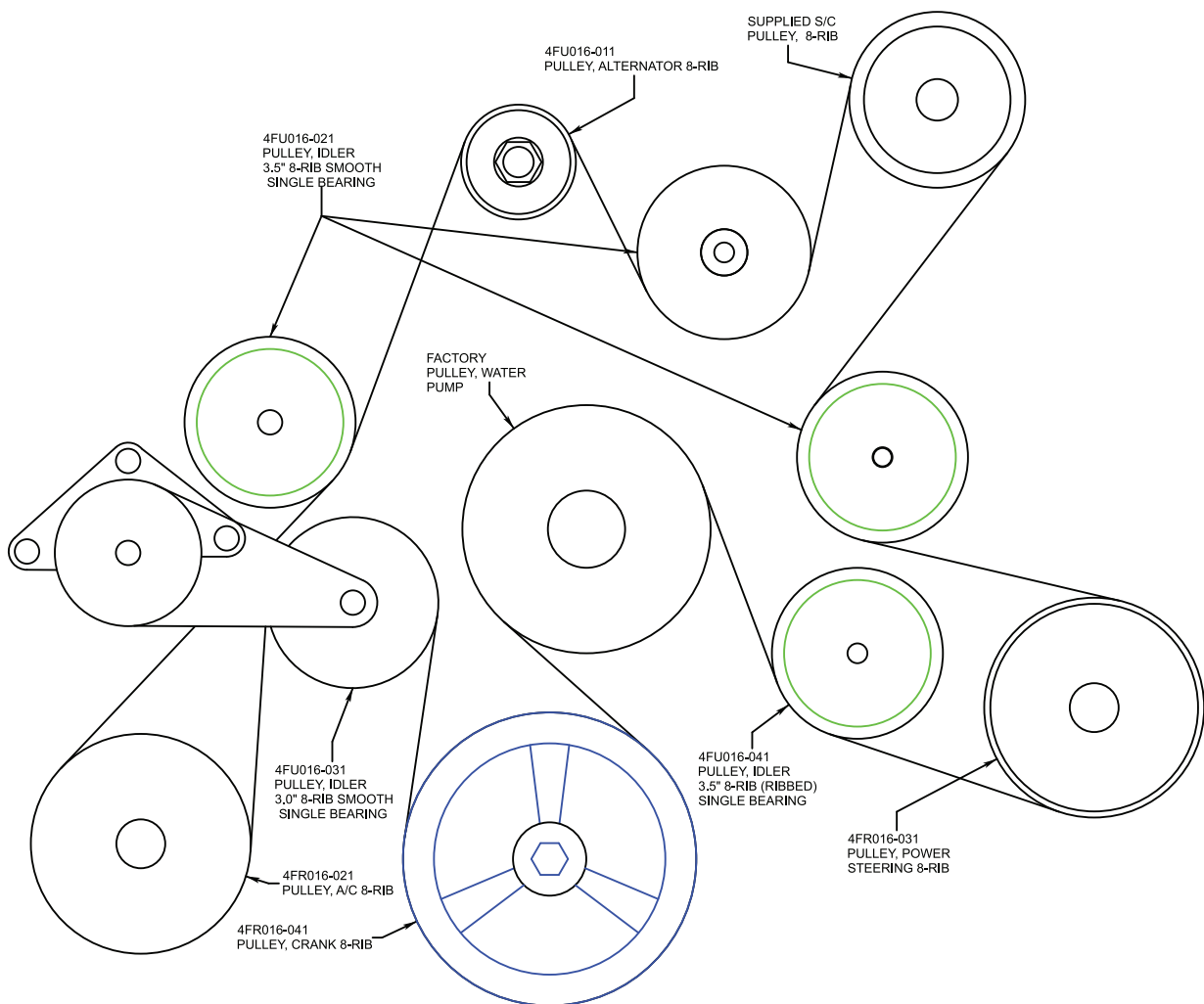


Fig. 2-c

2. PULLEY AND SPACER REPLACEMENT, cont'd

NOTE: Included in this kit is a smaller than originally supplied supercharger pulley. This new pulley is recommended to achieve best performance results. Removal of the factory sealed pulley will reduce the supercharger warranty from three years to one year unless the supercharger unit (with the original pulley still attached) and new pulley are sent into Vortech for removal, installation and re-sealing. If supercharger warranty is not a concern or if the supercharger warranty has expired, the pulley may simply be removed and replaced with the new part supplied. Hammering/prying etc. on the supercharger and/or pulley will cause damage to the parts. Light heating of the supercharger pulley with a propane torch (if the pulley is tight on the shaft) will aid removal. A return authorization number is required before the supercharger and pulley are sent into Vortech. Call the Vortech service department at (805) 247-0226 for return authorization number. Return freight (ground) will be paid by Vortech.

NOTE: See Fig. 2-d for the next few steps.

J. S/C mounting plate re-installation:

1. Re-install the two 140mm bolts previously removed into their original mounting plate hole locations and slide the two original 2.691" long spacers onto them. (See Figs. 2-d, 2-e.)
2. Re-install the idler plate onto the previously installed hardware and spacers.
3. Re-install the .097" long spacer onto the bolt that will be secured through the alternator. (See Figs. 2-d, 2-e.)
4. Loosely install the S/C mounting plate assembly using the original S/C

mounting plate hardware, taking care to route the drive belt on the correct side of the spacers. (See Figs. 2-f, 2-g.)

5. Locate the remaining 3.5" smooth idler (4FU017-031), .544" long pilot spacer, and 1.597" long spacer as depicted in Fig. 2-d.
6. Install the idler pulley assembly referencing Figs. 2-d, 2-e according to your application ie. H.O. or standard output.

K. Place the supercharger on a clean flat surface with the drive pulley facing up.

L. Remove the original 6-rib supercharger pulley from the supercharger and install the supplied 8-rib pulley and retainer provided.

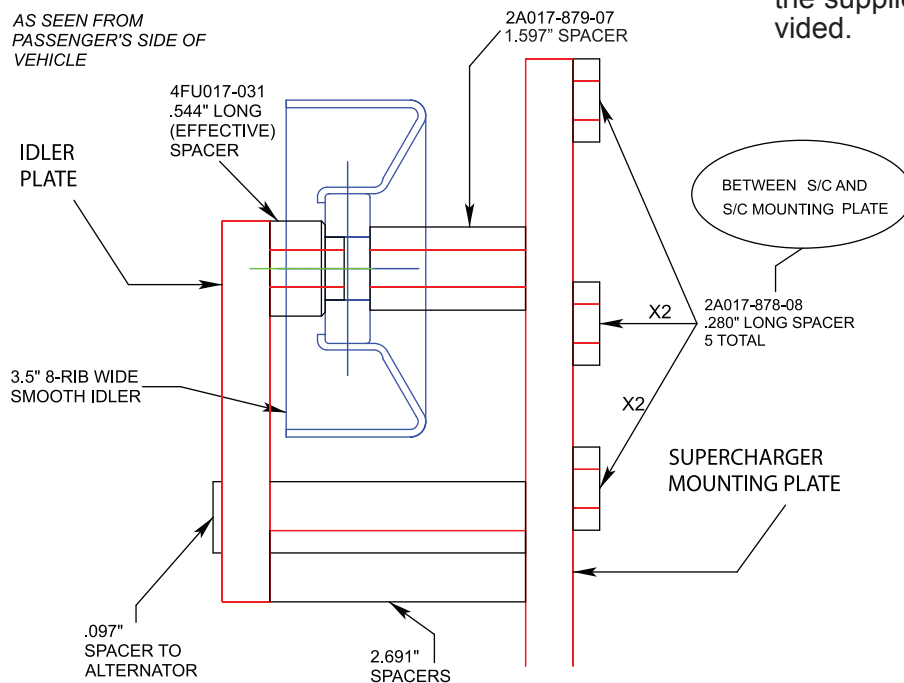


Fig. 2-d

2. PULLEY AND SPACER REPLACEMENT, cont'd

- M. Install the five 3/8-16 x 1.5" supplied bolts and washers through the back side of the mounting plate. Install the five .280" long spacers (2A017-878-08) onto the previously installed hardware. (See Figs. 2-d, 2-g.)
- N. Attach the supercharger assembly to the mounting plate using the previously installed hardware and spacers. A 9/16" ratcheting end wrench will greatly aid this step.
- O. Secure the oil drain hose to the installed brass fitting in the oil pan, making sure to route in a smooth downward manner away from moving or hot objects.

NOTE: Any dips, "uphill" sections, kinks or restrictions may cause drainage problems and possible supercharger failure.

- P. Attach the -4 oil feed hose to the straight -4 fitting installed in the supercharger. Secure away from moving or hot objects.
- Q. Using a 1/2" ratchet, rotate the factory spring tensioner clockwise and install the accessory drive belt. Refer to Fig. 2-c for proper belt routing.
- R. Once the drive belt has been installed, snug the tensioner assist bolt. Lock in place with the previously installed jam nut.

NOTE: Do not overtension the tensioner assist bolt, as damage may occur to the OEM tensioner.

- S. Reconnect the cam sensor plug.

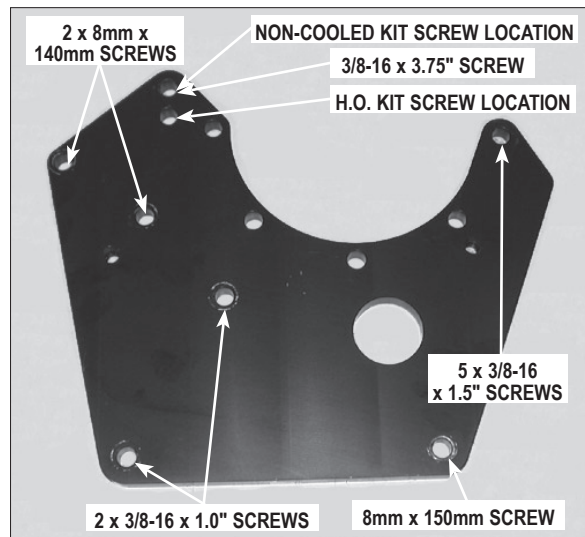


Fig. 2-e



Fig. 2-f

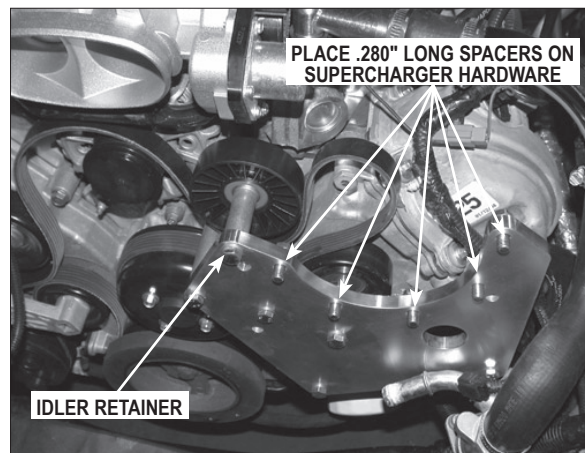


Fig. 2-g

3. COOLANT RESERVOIR FILL

- A. Non-Cooled Kits only:**
Reinstall coolant overflow reservoir previously removed using the factory hardware.
- B.** Reconnect the small overflow hose (running across the top of the radiator) to the coolant reservoir.
- C.** Reconnect the large hose at the bottom of the coolant reservoir to the thermostat housing.
- D.** Check to make sure all previously installed hose connections are secure using the previously removed hose clamps.
- E.** Fill the engine cooling system through the coolant reservoir using the factory coolant previously drained.
- F.** Locate the factory coolant reservoir cap and install it on the reservoir.
- G.** CAC cooling system. (If equipped.)
 - 1.** Temporarily remove the 3/4" hose attached to the 3/4" x 90° fitting.
 - 2.** Cap the open end of the 3/4" x 90° fitting.
 - 3.** Fill the CAC coolant using a 25%/75% antifreeze/water mix. Fill through the 3/4" hose removed from the surge tank fitting.
 - 4.** Fill the system until coolant level reaches the surge tank.
 - 5.** Remove the cap from the surge tank fitting and reinstall the 3/4" hose previously removed and secure with the nylon ratchet clamp.

4. AIR INLET ASSEMBLY

- A. Re-attach the 3/8" hose to the 1/4"NPT x 3/8" hose x 90° fitting installed in the inlet duct.
- B. Attach the 1" bypass outlet hose(s) to the plastic fitting(s) and secure the hose with a #16 hose clamps. Reconnect the bypass vacuum line.
- C. Re-install the duct to the inlet of the supercharger and secure in place with the clamps previously removed
- D. Install the 180° duct and the MAF sensor with filter to the inlet duct leading to the Supercharger.(See *Figs. 4-a, 4-b.*) Clock the MAF *exactly* as shown in the figure.
- E. Secure the rear clamp at the inlet duct union to the previously installed support bracket. (See *Fig. 4-b.*).
- F. Reconnect the MAF/MAFia plug connection.



Fig. 4-a

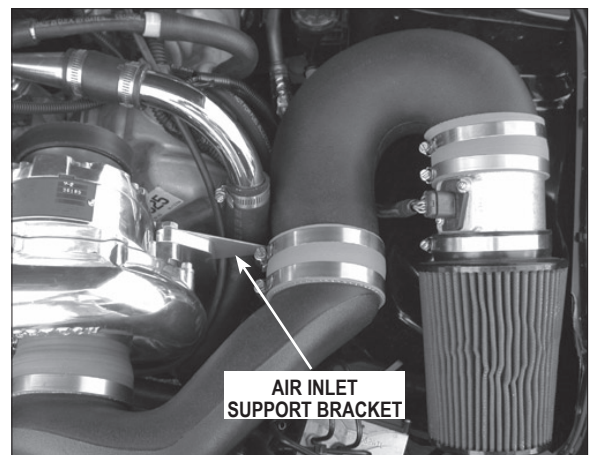


Fig. 4-b

5. FINAL CHECK

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

- Custom ECM programming and fuel / ignition system upgrades will be required when changing the supercharger drive pulley to any size other than what was originally supplied in the complete supercharger kit.
- A Vortech Maxflow Race or Mondo compressor bypass valve is required for applications producing more than 11-12 psig.

- A. Check all fittings, hose and clamps for tightness and leaks. Make sure all wires and lines are properly secure with clamps or tie wraps.
- B. Make sure all wires and hoses are routed away from hot, moving or sharp objects.
- C. Double check to ensure water is flowing through the CAC system. (If equipped.)

NOTE: Check to see that CAC coolant is flowing through the surge tank. If coolant is not flowing, remove the 3/4" rubber hose from the side of the surge tank and apply light suction in an attempt to pass any trapped air in the system. Reconnect the hose and recheck coolant flow.

- D. Test drive the vehicle.
- E. Always listen carefully for engine detonation. Discontinue heavy throttle usage if detonation is heard.



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