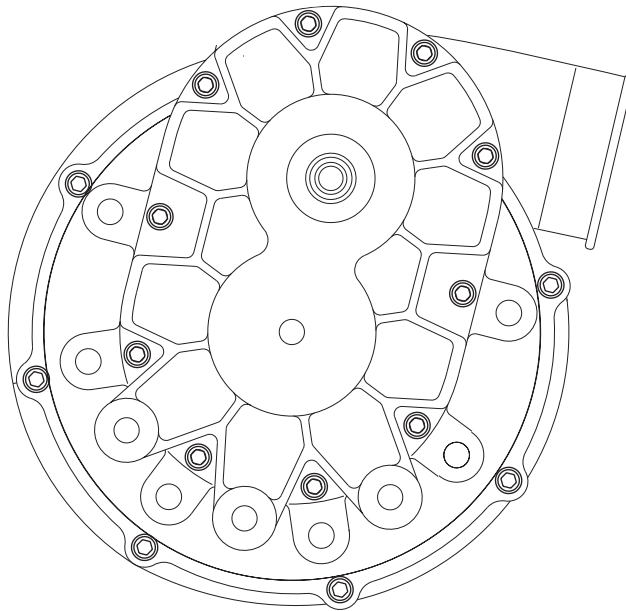


Ford 5.0L Mustang GT

Competition Tuner Kit Installation Instructions

2018-2019 Model Year



ENGINEERING, INC

1650 Pacific Avenue, Channel Islands, CA 93033-9901 • Phone (805) 247-0226
Fax: (805) 247-0669 • www.vortechsuperchargers.com • M-F 7:00 AM - 3:30 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 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. Pulley and belt selection will vary depending on your application, as well as your choice of damper pulley. Consult an engine builder and/or tuner to help select the correct combination for your application.
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. This manual does not address air/fuel or ignition timing considerations. Use a wide band O2 sensor to verify a proper air/fuel ration (Vortech suggests 11.0:1 for 91 octane pump fuel). Consult a tuner to have this addressed prior to operating the vehicle.
6. Removal of the oil pan is **REQUIRED** for this supercharger system. Removal of the oil pan is a very labor-intensive process that requires specialty tools in order to be done properly as the engine will need to be raised within the vehicle. For your safety, we highly suggest having this process done by a trained professional.
7. 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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NOTICE

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2018-2019 Ford Mustang GT

Installation Instructions

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

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

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

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

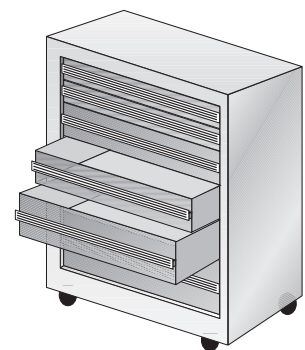
1. Use only premium grade fuel 91 octane or higher (R+M/2).
2. The engine must have stock compression ratio.
3. If the engine has been modified in any way, check with Vortech prior to using this product.
4. Always listen for any sign of detonation (pinging) and discontinue hard use (no boost) until problem is resolved.
5. 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 15,000 miles.
6. **Oil-Fed Units Only:** Perform an oil and filter change upon completion of this installation and prior to test driving your vehicle. Thereafter, always use a high-grade SF rated engine oil or a high quality synthetic, and change the oil and filter every 3,000 miles. Never attempt to extend the oil change interval beyond 3,000 miles, regardless of oil manufacturer's claims as potential damage to the supercharger may result.

Tool and supply requirements:

- 1/4" drive & 3/8" drive ratchet and socket set: SAE & metric
- Open end wrenches: SAE & metric
- 1/4" drive & 3/8" drive ratchet extensions
- Torx 20 tool
- Screwdriver set
- Hose cutters
- Stepless / Oetiker clamp tool
- 3/8" fuel line quick disconnect tool
- Small reciprocating saw OR small hand saw
- Small drum sander OR small grinding wheel
- Drill motor
- Round file
- 9/32" drill bit, #4 or 7/32" drill bit
- Electrical Tape

If it has been one year or 15,000 miles or more since your vehicle's last spark plug change, then you will also need:

- Spark plug socket
- NEW spark plugs





BEFORE YOU BEGIN

IMPORTANT: This 8-Rib system **DOES NOT** include a damper. We suggest using Innovators West # 818 for this application. (Not available through Vortech)



Suggested Damper
Innovators West 8-Rib Damper
#818

NOTE: This instruction manual does not detail the removal and installation of the damper. Please follow the removal and installation instructions included with your choice of damper.



2018-2019 Ford Mustang GT

Competition Tuner Kit Part No. 4FQ218-430JTB

PARTS LIST

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

PART NO.	DESCRIPTION	QTY.	PART NUMBER	DESCRIPTION	QTY.
008110	SMALL SILVER DIE CUT DECAL	2	4FQ114-040	ENG COOLNT MOD ASY, '18 MUST	1
008130	LICENSE PLATE FRAME, VORTECH	1	4FQ010-100	BRKT A, SURGE TANK, '18 MUST GT	1
008447	1 YR S/C STRT INFO PKG ASY VORT1		4FQ010-110	BRKT B, SURGE TANK, '18 MUST GT	1
2A259-060	S/C ASY, V7-JTB CCW, H/D, SAT	1	7A250-051	1/4-20 X .50 HHCS GR5 ZINC PLTD	2
4FQ020-030	INSTR MAN, COMPETITION, 18 GT 1		7A312-100	5/16-18 X 1 HHCS, GR5, PLATED	1
4FQ111-021	MNTG BRKT ASY,8-RIB,18 MUST GT1		7F312-017	5/16-18 NYLOCK NUT	1
2A017-070	SPACER, .95 O.D. X .694 I.D. X .070L	1	7K250-001	1/4" AN WASHER	2
2A017-875-28	SPACER, .875 OD X 2.730 LONG	1	7K312-001	5/16 AN WASHER, PLATED	2
2A017-875-29	SPACER, .875 O.D. X .404 I.D. X 2.035L	4	7P375-075	3/4" HOSE BARB UNION, BRASS	1
2A017-876-13	SPACER, .875OD X .328ID X 2.730L	2	7P375-098	TEE, 3/8" INCH, PLASTIC	1
2A017-876-14	SPACER, .875OD X .328ID X 2.058L	2	7R002-024	#24 SAE TYPE F SS HOSE CLAMP	2
2A017-876-15	SPACER, .875OD X .328ID X 2.146L	1	7R004-007	STEPLESS CLAMP, 28.6	2
2A017-876-16	SPACER, .875OD X .328ID X 1.928L	1	7R004-008	STEPLESS CLAMP, 18.5	2
2A017-878-08	SPACER, .875 OD X .280 L	4	7U030-109	VAC HOSE, 7/64 ID	.50 FT
2A017-882-01	SPACER, .875 OD X .140 LNG	1	8N155-110	SURGE TANK, WELDED, '18 MUST GT	1
2A048-100	BELT, K081000-GATES 8-RIB 100.63	1	4FQ212-190	DISCH ASY,18 MUST GT,BV57,SAT 1	1
4FL016-170	IDLER PLY, 8-RIB SMOOTH 3"	1	2A017-875-10	SPACER, .875 OD X .430 LONG	1
4FL116-160	IDLER PULLEY ASY, 8-RIB 2.6"	1	4FQ012-090	DISCH. TUBE C, 2015 MUSTANG GT	1
4FQ010-015	MNTG PLT, OUTER, 2018 MUST GT	1	4FQ012-151	DISCH TUBE B 2018 MUSTANG	1
4FQ010-025	MNTG PLT, INNER, 2018 MUST GT	1	4FQ017-081	SPACER, TB, 2018 MUST GT	1
4FQ016-041	PULLEY, ALTERNATOR, 8-RIB 2011	1	4FQ020-027	TMPLT, RAD BRKT MOD, '18 MUST GT	1
4FQ016-071	PLLY, WTR PMP, 8-RIB 2013+ 3-BLT	1	4FQ112-100	DISCH DUCT ASY 'D', '15 MUST GT SAT	1
4FQ017-061	IDLER SPACER, .875OD X .503L	4	4FQ112-191	ASY, DISCH TUBE A, BV57,18 GT, SAT	1
4FQ116-031	IDLER PLY ASY, 2.75 8-RIB SMOOTH	3	7C040-008	M4-.7 X 8MM SCHD SS	2
4FQ116-051	IDLR PLY ASY, 2.75 8RIB, SMTH,.07 OFST	1	7C060-022	M6 X 1.0 X 22MM HHCS LYSH SC	4
7A375-126	3/8-16 X 1.25 HHCS, GR8, PLT	5	7C060-031	M6 X 1.0 X 30 BUTN HD ZN PLT	4
7A375-375	3/8-16 X 3-3/4 HX HD	4	7F008-021	NUT, M8 X 1.25, SERRATED FLG	4
7A375-402	3/8-16 X 4.00" BHCS	1	7J312-875	5/16" WASHER, 7/8" OD, CUSTOM	4
7C012-114	M12 X 1.50 HX BOLT, 2011 MUST GT CRK	1	7P125-010	1/8 NPT X -4 JIC STRT FTG AL	1
7C080-086	M8 X 1.25 X 85 HXHD CL8.8	1	7PS300-300	SLEEVE, BLACK, 3.00D X 3.00	2
7C080-101	M8 X 1.25 X 100MM BHCS CL10.9	1	7PS300-301	BUMP HOSE, 3.00D X 3.00L	1
7C080-200	M8 X 1.25 X 200MM STUD, 35MM THRD	2	7PS350-301	REDUCER, BLK 3.5-3.0 X 3.0L	1
7F008-021	NUT, M8 X 1.25, SERRATED FLG	2	7PS350-304	SLEEVE, BLACK 3.50" D X 3.0" L	1
7F014-001	NUT, M14 X 1.5, HEX	1	7PS400-350	REDUCER, BLK 4.0-3.5 X 3.0L	1
7J312-000	5/16 FLAT WASHER-SAE	3	7PS400-364	ELBW,4.0 X 3.5 S-SHAPED,8 MUST GT	1
7J438-091	9/16 SAE WASHER PLATED	1	7R002-048	#48 SAE TYPE F SS HOSE CLAMP	7
7K375-040	3/8 AN960 FLAT WASHER PLATED	9	7R002-056	#56 SAE TYPE F SS HOSE CLAMP	5
4FQ112-120	AIR INLET ASY, '18 MUST GT	1	7R002-064	#64 SAE TYPE F SS HOSE CLAMP	2
008358	DECAL, INLET, '11+ MSTG GT VORT	1	7U012-238	O-RING, 2-238, 3.484ID X .139	1
4FQ012-110	INLET DUCT, 2015 MUSTANG GT	1	7U100-066	TIE WRAP, 11" NYLON	3
5W001-039	1" HEAT SHRINK TUBING	3IN	7U250-090-400	STNLS STL HOSE, 40" -4X90	1
5W001-082	SLEEVE, FLEX BRAID .75" NOM.	1FT	7U375-056	1" VACUUM CAP FOR 1" NIPPLE	1
7J006-093	6MM WASHER, PLATED	2	8A003-071	MAF, 3.8 I.D., 05 MUST GT, MACH	1
7P250-045	1/4 MALE NPT X 3/8 MALE BARB	1	4FQ230-100	OIL LINE KIT, 2018 MUST GT	1
7P375-106	PCV VALVE, FORD, 3/8" HOSE	1	007139	INSTR MAN, OIL LINE KIT, '18 MUST GT	1
7P500-039	1/2 NPT X 5/8 BARB 90 , PLATED	1	4FQ130-126	OIL FEED ASY, 2018 MUST GT	1
7P625-091	5/8 X 5/8 X 90 BARB ELBOW, PLASTIC	1	4FQ130-136	OIL DRAIN KIT, '18 MUST GT	1
7P625-375	REDUCER, 5/8 BARB TO 3/8 BARB	1	8D205-003	MAXFLOW BV57 VALVE, CLEAR	1
7PS400-200	SLEEVE, BLACK 4.0D X 2.0	1	8H040-205	AIR FILTER, 2015 MSTG GT PANEL	1
7PS400-351	REDUCER SLEEVE,4.0 X 3.5 X 2.35L	1	8PN101-050	WELDED CORE ASSY, 05 MUST GT	1
7PS425-400	REDUCER, SILICONE BUMP, 4.25" X 4"	1			
7R002-052	#52 SAE TYPE F SS HOSE CLAMP	1			
7R002-064	#64 SAE TYPE F SS HOSE CLAMP	4			
7R004-002	STEPLESS CLAMP, 17.0	2			
7R004-004	STEPLESS CLAMP, 25.6	7			
7R004-007	STEPLESS CLAMP, 28.6	1			
7U030-056	3/8 PCV/VAC RUBBER HOSE	3 FT			
7U033-000	5/8" PCV HOSE	2.5 FT			
7U100-055	TIE WRAP, 7.5" NYLON	10			
8A004-007-1	BLK OFF PLT, VORT, FORD SLOT MAF	1			

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1. BASIC COMPONENT REMOVAL

- A. Prior to unplugging the battery, you will need to roll down both windows as you will be working within the vehicle in a later step. This is done to prevent potential window damage as both windows rest within a channel in the body of the vehicle when they are rolled up.



Fig. 1-a: Roll down windows

- B. Remove the battery cover by removing the 3x plastic fasteners & pulling the battery cover forward. Unplug the battery leads.



Fig. 1-b: Unplug battery leads

- C. If your vehicle is equipped with a strut tower brace, remove the 4x 15mm-headed nuts & remove the strut tower brace from the vehicle.



Fig. 1-c: Remove strut tower brace

1. BASIC COMPONENT REMOVAL

- D. Remove 8x plastic fasteners securing the radiator support cover. Pop the center section of each fastener upward and then the larger part of the fastener will loosen. Proceed to remove the cover.



Fig. 1-d: Remove radiator support cover

- E. Remove the 6x 8mm-headed fasteners & 2x 5.5mm-headed fasteners securing the front bumper cover to the upper radiator support.

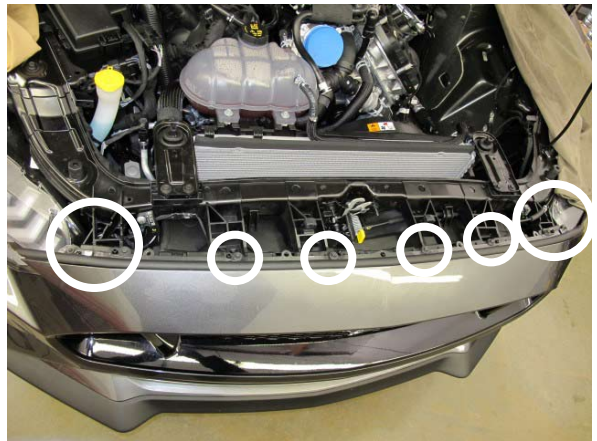


Fig. 1-e: Remove front bumper cover fasteners

- F. Remove the 3x plastic fasteners securing the fender liners to the fenders & lower splash guard. To remove these fasteners, simply push down on the center. Do this for both sides.



Fig. 1-f: Remove fender liner fasteners

1. BASIC COMPONENT REMOVAL

- G. Remove the 2x plastic fasteners securing the lower splash guard to the fender liners. Pop the center section of each fastener upward and then the larger part of the fastener will loosen. Do this for both sides.

NOTE: Performance-Pack Vehicle splashguard shown in Fig. 1-g. Base-model vehicle splash guard may vary.



Fig. 1-g: Remove plastic fasteners

- H. Located on each side of the engine bay, behind each headlight, is a triangle-shaped opening. In the following step, you will use this opening as it allows for easier access to the corner bracket fasteners securing the corners of the front bumper cover to the fenders.

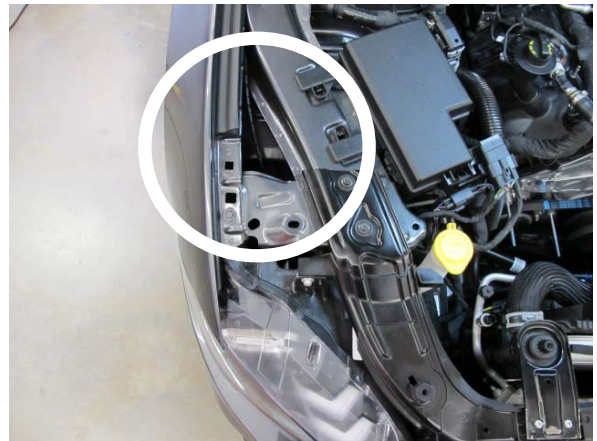


Fig. 1-h: Access opening

- I. On both corners of the front bumper cover, remove the 2x 10mm-headed fasteners securing the corner brackets. Do this for both sides.

NOTE: It is easiest to use 1/4" drive tools for this step.



Fig. 1-i: Remove corner bracket fasteners

1. BASIC COMPONENT REMOVAL

- J. Pull the fender liner away from the vehicle. With the corner bracket fasteners removed, detach the corner brackets from the vehicle by pulling them down. The corner brackets are held in place by a plastic push fastener, so you will need to use some force to remove them from the vehicle. Do this for both sides.



Fig. 1-j: Remove corner brackets

- K. Remove the lower splash guard by removing the 19x 7mm-headed fasteners & 2x plastic fasteners. Pop the center section of each plastic fastener upward and then the larger part of the fastener will loosen.



Fig. 1-k: Remove lower splash guards

- L. Reach up behind the front bumper cover & unplug the bumper light connector. Do this for both sides.



Fig. 1-l: Unplug bumper lights

1. BASIC COMPONENT REMOVAL

- M. Pull the corners of the front bumper cover away from the fender. Carefully remove the front bumper cover from the vehicle, exposing the bumper support.



Fig. 1-m: Remove front bumper cover

- N. Unplug the electrical connector from the ambient air temperature sensor, then detach the harness from the front bumper support. Remove the sensor & set aside for reinstallation in a later step.

NOTE: Vehicles equipped with Active Grille Shutters, proceed to Step O. All others, skip to Step T.

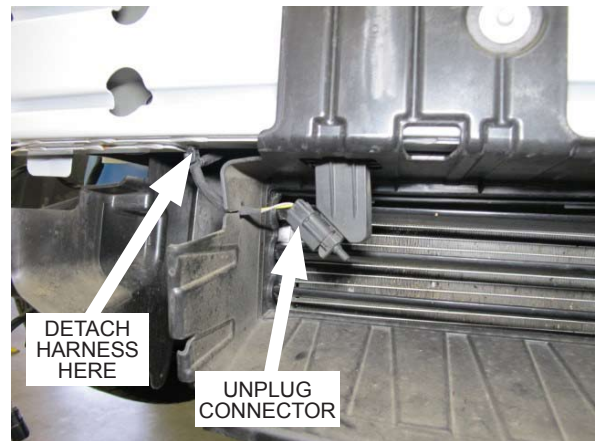


Fig. 1-n: Remove ambient air temperature sensor

- O. In order to install the charge air cooler, it will be necessary to remove the active grille shutters. Once removed, they will not be reused.



Fig. 1-o: Remove 8mm-headed fasteners

1. BASIC COMPONENT REMOVAL

- P. Remove the 2x plastic fasteners securing the top of the active grille shutters to the upper radiator support.

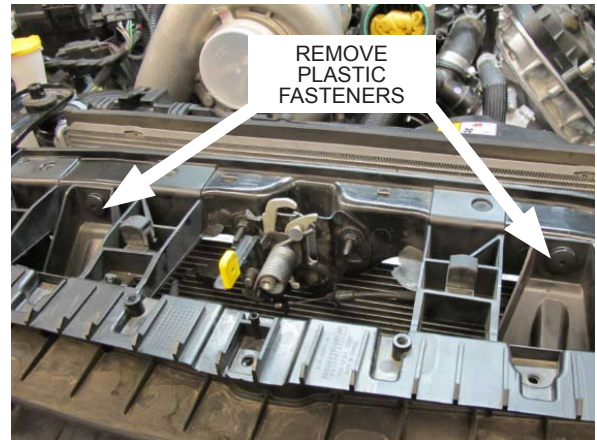


Fig. 1-p: Remove plastic fasteners

- Q. Remove the 2x 8mm-headed fasteners securing the middle section of the active grille shutters to the front bumper support. Next, remove the 2x 8mm-headed fasteners securing the bottom of the active grille shutters.

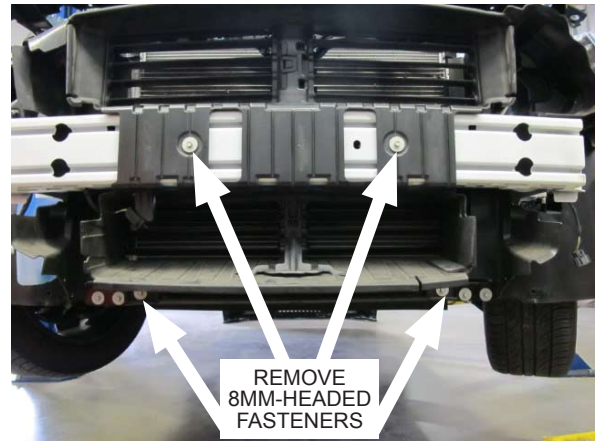


Fig. 1-q: Remove 8mm-headed fasteners

- R. In order to remove the active grille shutters, you will need to reach behind the active grille shutter assembly & detach the arm that connects the upper & lower active grille shutters together from the back side. Remove the 2x 5.5mm-headed fasteners securing the arm to the upper active grille shutters, then pry the arm away.



Fig. 1-r: Remove 2x 5.5mm-headed fasteners

1. BASIC COMPONENT REMOVAL

- S. With the active grille shutter arm detached, pull the active grille shutter assembly away from the vehicle, then reach from behind & disconnect the active grille shutter motor. Once disconnected, remove the active grille shutter assembly & set aside. They will not be reused.



Fig. 1-s: Unplug motor & remove active grille shutter assembly

- T. There are 2x detachable panels that cover 2x 10mm-headed fasteners securing the engine cover. Remove the 2x panels & remove the 2x 10mm-headed fasteners. With the fasteners removed, pull up on the engine cover & remove it from the vehicle.

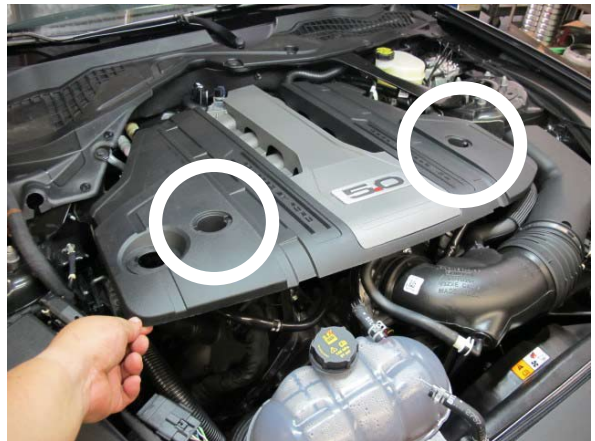


Fig. 1-t: Remove engine cover

- U. Detach any hoses attached to the air inlet tube. Loosen the hose clamps securing the air inlet tube to the throttle body & air box, then proceed to remove the air inlet tube from the vehicle. It will not be reused.



Fig. 1-u: Remove OEM air inlet

1. BASIC COMPONENT REMOVAL

- V. Unplug the MAF sensor connector, then detach the harness from the air box lid. Remove the 10mm-headed fastener securing the air box to the vehicle. With the fastener removed, proceed to remove the air box assembly from the vehicle.

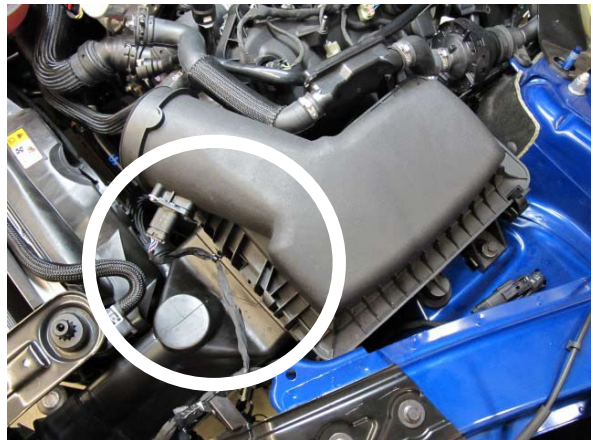


Fig. 1-v: Remove air box

- W. Remove the radiator cap from the engine coolant reservoir near the passenger side front of the engine compartment. Locate the engine coolant drain valve at the bottom passenger side corner of the radiator. Open the valve and drain the coolant into a clean container for later reuse. Once enough coolant has been drained, proceed to close the valve.



Fig. 1-w: Drain engine coolant

- X. Unclamp and remove the 2x small hoses from the upper portion of the coolant reservoir, then unclamp & remove the larger hose from the bottom of the coolant reservoir. Be prepared to catch any spillage. Remove the 2x 10mm-headed fasteners securing the coolant reservoir. Remove the reservoir and set it aside. It will not be reused.



Fig. 1-x: Remove coolant reservoir

1. BASIC COMPONENT REMOVAL

- Y. Release the quick release upper radiator hose connection to the thermostat housing by pulling the spring clip back and sliding the hose fitting off. Remove the upper radiator hose and set it aside for later modification. Remove the coolant hose to the right of the "Y" fitting, above the thermostat housing & set it aside for modification in a later step.

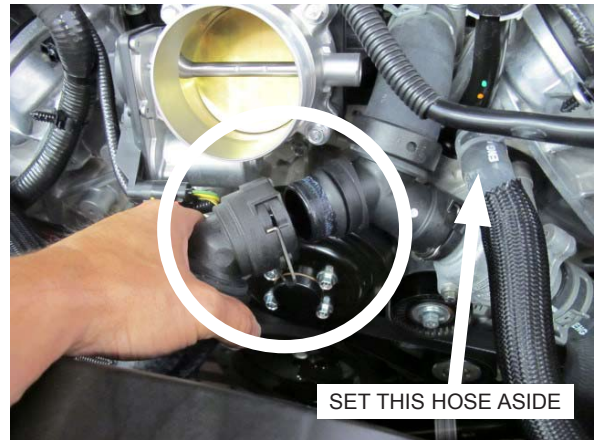


Fig. 1-y: Remove upper radiator hose

- Z. Use a 15mm wrench to rotate the belt tensioner counter-clockwise to release tension from the 6-rib accessory drive belt. Remove the belt and set it aside as it will not be reused.



Fig. 1-z: Remove accessory drive belt

- AA. Unplug the electrical connector from the throttle body by sliding the red clip outward and depressing the tab. Remove the 4x 8mm-headed fasteners securing the throttle body to the intake manifold & set them aside as they will be reused in a later step. Remove the throttle body and set it aside, ensuring that the o-ring remains on the intake manifold. Temporarily place a rag in the intake manifold to keep foreign debris from entering the engine.

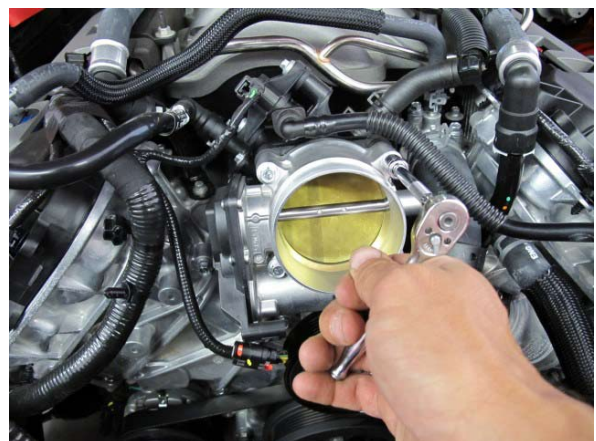


Fig. 1-aa: Remove throttle body

1. BASIC COMPONENT REMOVAL

- AB. Remove the threaded clips from the coolant reservoir mounts, then proceed to cut off the coolant reservoir mount closest to the driver side of the vehicle. You will also need to grind down the tab with the rubber grommet located to the right of the coolant reservoir mount that will be ground down. This is to make room for the provided air inlet tube. You may need to make further adjustments once installed.



Fig. 1-ab: Modify fan shroud

- AC. Remove the passenger side headlight by removing the 2x 10mm-headed fasteners & 1x 13mm-headed fastener. Disconnect the electrical plug & set the headlight aside.

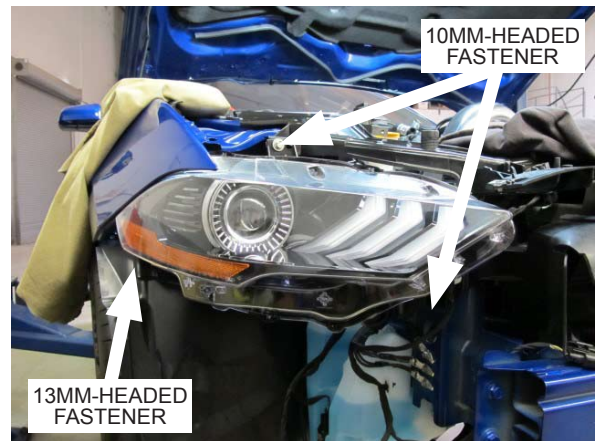


Fig. 1-ac: Remove passenger side headlight

2. SUPERCHARGER MOUNTING BRACKET INSTALLATION



Use blue threadlocker on all fasteners in this section.

- A. Remove the following 3x 10mm-headed screws securing the engine front cover on the passenger side:
- The uppermost screw
 - The screw just above the A/C compressor
 - The screw between the A/C compressor & the crank shaft.

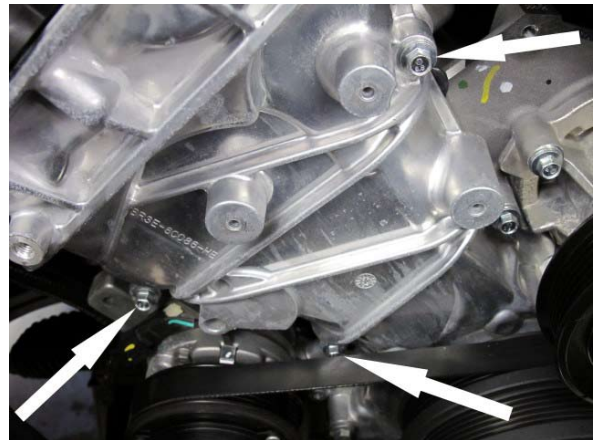


Fig. 2-a: Remove 3x engine cover fasteners

- B. Inspect the supercharger mounting bracket assembly and familiarize yourself with its components and configuration. The new belt should be routed so that the ribbed side engages the ribbed idler pulley and the smooth side rides on the other pulleys. The belt will remain within the supercharger mounting bracket assembly during installation. Note the multiple mounting locations of the ribbed idler, used to compensate for different supercharger pulley sizes and belt lengths. All 4x idler mounting bolts should be hand-tight during installation to facilitate alignment.

(6-rib mounting bracket assembly shown. Same step for 8-rib mounting bracket assembly.)



Fig. 2-b: Inspect supercharger mounting bracket assembly

- C. Locate the smooth idler closest to the top of the supercharger mounting bracket assembly. This idler & its associated hardware will need to be temporarily removed in order to install the supercharger mounting bracket assembly to the vehicle. Set aside for reinstallation in a later step.

(6-rib mounting bracket assembly shown. Same step for 8-rib mounting bracket assembly.)

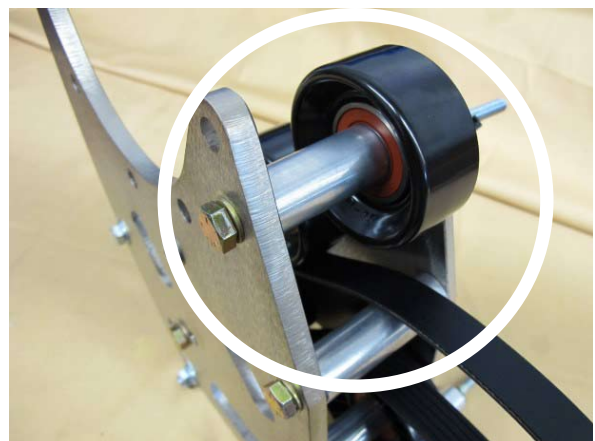


Fig. 2-c: Remove smooth idler pulley & set aside

2. SUPERCHARGER MOUNTING BRACKET INSTALLATION

- D. Remove the spacers that are circled in Fig. 2-d. Make note of their location within the supercharger mounting bracket assembly as they are all different lengths.

NOTE: If by accident you forget the original location of the spacers, refer to **Appendix A & Appendix B** near the back of this manual for an assembly diagram.

(6-rib mounting bracket assembly shown. Same step for 8-rib mounting bracket assembly.)

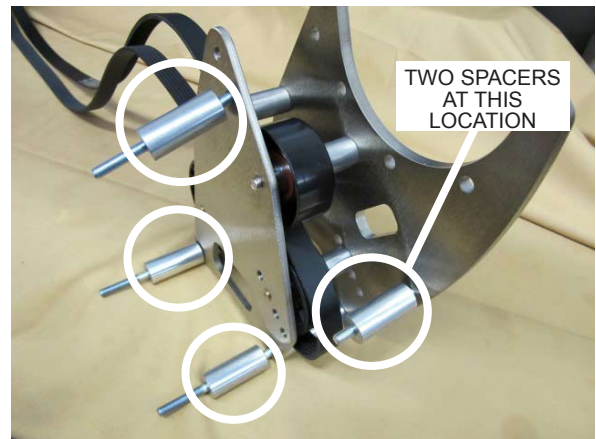


Fig. 2-d: Remove spacers & set aside

- E. Near the bottom of the supercharger mounting bracket assembly there are 2x 2.730" spacers and 2x .280" spacers sandwiched in between the supercharger mounting plates. These spacers are usually held in place by the 2x M8 x 200mm studs. These spacers need to remain in place during installation of the supercharger mounting bracket assembly.



Fig. 2-e: 2x 2.730" spacers and 2x .280" spacers

- F. Remove the 2x M8 x 200mm studs from the supercharger bracket assembly. Remove the nuts & washers from the studs, then proceed to install the studs into the lower 2x engine cover fastener holes in the locations of the previously-removed fasteners (one on each side of the A/C compressor).



Fig. 2-f: Install threaded studs

2. SUPERCHARGER MOUNTING BRACKET INSTALLATION

- G. With the 2x M8 x 200mm studs installed to the engine, install the 1x 2.058" spacer on the stud to the left of the A/C compressor and the 1x 2.146" spacer on the stud to the right of the A/C compressor. Measuring from the front of the spacers, leave 4.00" of the M8 x 200mm stud exposed.



Fig. 2-g: Install 1x 2.058" and 1x 2.146" spacers

- H. Position the supercharger mounting bracket assembly in the engine compartment, then slide the 2x lower mounting holes onto the 2x M8 x 200mm studs, making sure they pass through both mounting plates, 2x .280" spacers, and the 2x 2.730" spacers sandwiched in between the mounting plates.



Fig. 2-h: Install 8-Rib drive supercharger mounting bracket assembly

- I. Locate the previously removed 2.058" spacer & place it between the rear mounting plate & the uppermost engine timing cover hole. Using a 5mm hex tool, secure the M8 x 100mm button head cap screw to the uppermost engine timing cover hole.

(6-rib mounting bracket assembly shown. Same step for 8-rib mounting bracket assembly.)

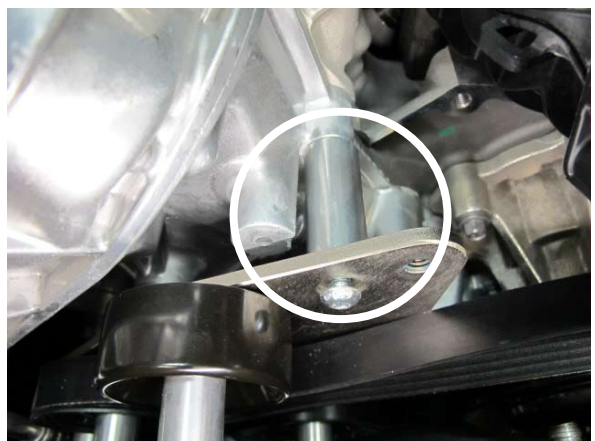


Fig. 2-i: Install 1x 2.058" spacer

2. SUPERCHARGER MOUNTING BRACKET INSTALLATION

- J. Locate the previously removed smooth idler, 1.895" spacer, pilot spacer, 3/8-16 x 3.50" screw & 3/8 AN washer. Place the smooth idler, 1.895" spacer & pilot spacer into their appropriate location between the mounting plates, then secure with the 3/8-16 x 3.50" screw & 3/8 AN washer.

(6-rib mounting bracket assembly shown. Same step for 8-rib mounting bracket assembly.)



Fig. 2-j: Install previously removed smooth idler pulley

- K. Locate 1x 1.928" spacer, 1x .280" spacer, M8 x 85mm screw, and 5/16" washer. Place the spacer in between the front mounting plate & cylinder head. Using the M8 x 80mm screw & 5/16" washer, secure the front plate & spacer to the cylinder head.



Fig. 2-k: Install 1x 1.928" and 1x .280" spacers

- L. Locate the previously removed 2x M8 flanged nuts and 2x 5/16" washers and use them to secure the lower section of the supercharger mounting bracket to the previously installed 2x M8 x 200mm studs.



Fig. 2-l: Install 2x M8 nuts and 2x 5/16" washers

2. SUPERCHARGER MOUNTING BRACKET INSTALLATION

- M. Located directly to the right of the water pump pulley is a smooth idler pulley. Using a 13mm socket, remove the screw securing the smooth idler pulley. Discard the smooth idler pulley, but keep the OEM screw and washer. Locate the provided .140" length spacer and slide it onto the pilot where the idler gets installed.

(See Fig. 2-j)

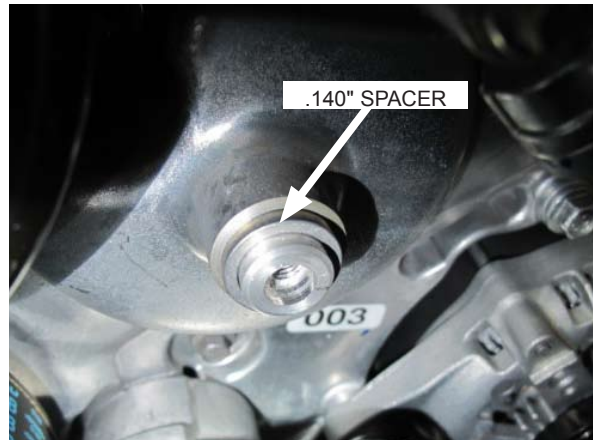


Fig. 2-m: Install .140" spacer onto pilot

- N. Locate the provided smooth idler pulley labeled 4FQ116-031 and install it to the pilot where the previously removed OEM idler was installed. Install the smooth idler pulley with the snap ring pointed away from you. If installed properly, you should not be able to see the snap ring. Use the OEM hardware to secure the idler pulley.



Fig. 2-n: Install smooth idler pulley and secure using OEM screw and washer

- O. The smooth idler pulley on the belt tensioner will also need to be replaced. Using a 15mm socket, remove the screw securing the smooth idler pulley to the belt tensioner. Discard the smooth idler pulley and the washer, but keep the OEM screw.

NOTE: The screw securing the smooth idler on the tensioner is reverse threaded. It will need to be turned to the right (clockwise) to be loosened.



Fig. 2-o: Remove OEM smooth idler pulley located on belt tensioner

2. SUPERCHARGER MOUNTING BRACKET INSTALLATION

- P. Locate the provided .070" spacer and slide it onto the pilot where the smooth idler gets installed.



Fig. 2-p: Install .070" spacer onto pilot

- Q. Locate the provided smooth idler pulley labeled 4FQ116-051. **The center of this smooth idler pulley is offset and can only be used in this location. The description on the label should also say "offset".** Install it to the pilot where the previously removed OEM smooth idler was installed. Install the smooth idler pulley with the snap ring pointed away from you. If installed properly, you should not be able to see the snap ring. Use the OEM screw to secure the idler pulley. Do not reuse the washer.

NOTE: The screw securing the smooth idler on the tensioner is reverse threaded. It will need to be turned to the left (counter clockwise) to be tightened.



Fig. 2-q: Install offset smooth idler pulley and secure using OEM screw only

- R. Using a 10mm socket, remove the OEM water pump pulley and hardware and replace it with the 8-rib water pump pulley. Secure using the OEM hardware. The hardware will be retightened once the 8-rib serpentine belt is installed.



Fig. 2-r: Install 8-rib water pump pulley

2. SUPERCHARGER MOUNTING BRACKET INSTALLATION

- S. Using a 17mm hex tool and an impact gun, remove the fastener securing the 6-rib alternator pulley to the alternator. Discard both the fastener and 6-rib alternator pulley as they will not be reused.

NOTE: If you are using a large impact gun, it may be necessary to remove the cooling fan assembly in order to provide enough space to get the impact gun into the engine compartment.



Fig. 2-s: Remove 6-rib alternator pulley

- T. Locate the provided 8-rib alternator pulley and install it onto the alternator shaft. Using a 22mm socket and an impact gun, secure the 8-rib alternator pulley using the provided 9/16" washer and M14 x 1.5 nut.

NOTE: The alternator shaft will be a tight fit on the supplied 8-rib alternator pulley. Because of this, it may be necessary to heat the 8-rib alternator pulley in order for it to slide onto the alternator shaft.



Fig. 2-t: Install provided 8-rib alternator pulley

- U. This instruction manual does not detail the removal and installation of the damper. Please follow the removal and installation instructions included with your choice of damper.



Fig. 2-u: Follow damper removal instructions included with your choice of damper

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3. SUPERCHARGER INSTALLATION

- A. On the right side of the supercharger mounting bracket assembly between the upper & lower smooth idlers there is a 2.730" spacer and a .280" spacer secured by a 3/8-16 x 3.75" screw & a 3/8 AN washer. Remove this spacer & hardware & set aside for reinstallation in a later step. This spacer is temporarily removed to gain better access to one of the 5x supercharger mounting screw locations. All other supercharger mounting bracket hardware can be tightened at this time.

(6-rib mounting bracket assembly shown. Same step for 8-rib mounting bracket assembly.)



Fig. 3-a: Remove these spacers and hardware

- B. Notice the mounting holes on the front mounting plate. 3x of the screws can be easily accessed. However, the 2x screws that are circled will require the use of a long 9/16" boxed end wrench for ease of installation.

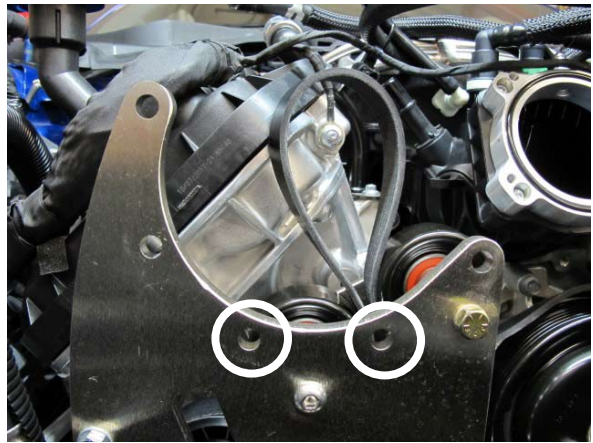


Fig. 3-b: Use long 9/16" wrench to install these screws

- C. Before installing the supercharger, it will be necessary to install the oil drain hose. Locate the 1/2" oil drain hose and one hose clamp. Remove the blue cap from the oil drain fitting, then install one end of the 1/2" oil drain hose to the fitting and secure with the provided hose clamp.



Fig. 3-c: Install oil drain hose

3. SUPERCHARGER INSTALLATION

- D. Prior to installing the supercharger to the supercharger mounting bracket assembly, it is suggested that you lubricate the threads in the mounting bosses on the supercharger. To do this, locate the provided 5x 3/8-16 x 1.25" screws, lightly coat the screw threads with lubricant & screw them into the mounting bosses until they bottom out. Once complete, remove the screws from the mounting bosses. This process makes it easier to install the hard to reach supercharger mounting screws.

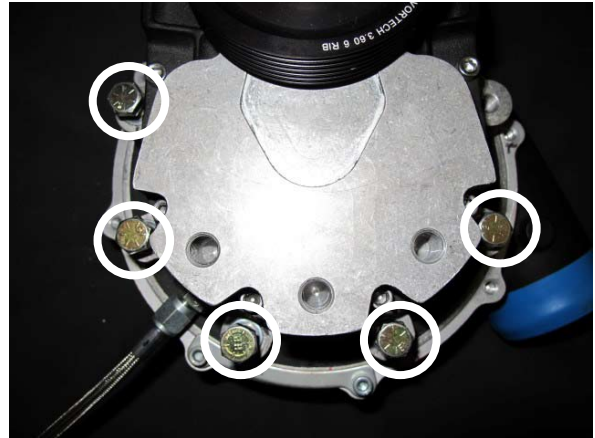


Fig. 3-d: Lubricate supercharger mounting boss threads

- E. Place the supercharger onto the front mounting plate & begin to thread the 5x 3/8-16 x 1.25" supercharger mounting screws by hand, making sure to use 3/8 AN washers on all 5x screws. Once in position, proceed to tighten all 5x 3/8-16 x 1.25" supercharger mounting screws.



Fig. 3-e: Install supercharger

- F. With the supercharger secured to the supercharger mounting bracket assembly, proceed to reinstall the previously removed 2.730" spacer and .280" spacer, making sure that the drive belt runs above & below the spacer. Secure with the previously removed 3/8-16 x 3.75" screw & 3/8 AN washer.

NOTE: It may be necessary to slightly loosen the mounting bracket hardware directly above & below this screw hole in order for this spacer to slide back into place.



Fig. 3-f: Reinstall previously removed hardware and spacers

3. SUPERCHARGER INSTALLATION

- G. Locate **Appendix B** near the back of this manual for the belt routing diagram. Route the belt as shown. Once in position, use a 15mm socket to rotate the belt tensioner counter-clockwise, then slide the new drive belt over the smooth idler on the tensioner. Once the belt is in position and properly routed, release the tension on the belt tensioner.



Fig. 3-g: Install supercharger drive belt

- H. Once the belt is installed, be sure to tighten the screws that secure the water pump pulley to the water pump.



Fig. 3-h: Secure water pump pulley screws

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4. ENGINE COOLING SYSTEM MODIFICATION

NOTE: The following steps will show one upper radiator bracket being modified. However, be sure to do all steps for both upper radiator brackets.

- A. In order to provide adequate space for the discharge tubes, the upper radiator brackets will need to be modified in order to tilt the radiator assembly forward. Remove the 2x 10mm-headed fasteners & remove both upper radiator brackets from the vehicle.

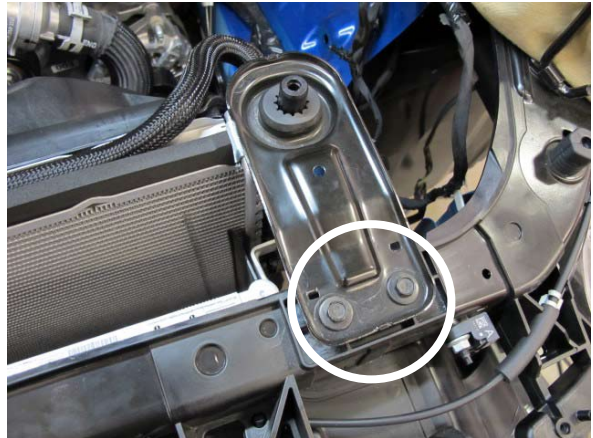


Fig. 4-a: Remove upper radiator brackets

- B. On the underside of the radiator brackets, you will notice 2x protruding tabs. Using a grinding tool, remove the 2x protruding tabs.



Fig. 4-b: Remove 2x protruding tabs

- C. Locate the provided upper radiator modification template. Using a razor blade, cut out the 2x holes on the template with the 2x arrows pointing towards them. Line up the "cut out" holes to the existing holes on the underside of the upper radiator brackets. Secure the templates to the upper radiator brackets using tape or spray-on adhesive. Use a center punch to mark the centers of the holes to be drilled.



Fig. 4-c: Center punch the holes to be drilled

4. ENGINE COOLING SYSTEM MODIFICATION

- D. Using a 9/32" drill bit & drill motor, drill out the center punched holes. On the hole that needs to be slotted, we suggest drilling out the hole closest to the edge of the upper radiator bracket, then use a small round file to safely slot the hole.



Fig. 4-d: Use round file to slot hole

- E. Using a cutting tool, the original holes of the upper radiator mounting brackets will need to be cut off, just in front of the indented section of the upper radiator bracket. Use Fig. 4-r as an example.



Fig. 4-e: Cut the upper radiator bracket as shown

- F. Using a grinding tool, grind down the raised edges near the front of the upper radiator brackets down to a taper.



Fig. 4-f: Grind down raised edges to a taper

4. ENGINE COOLING SYSTEM MODIFICATION

- G. Now that the upper radiator brackets are modified, loosely install them to the vehicle, but do not secure them with any fasteners at this time.



Fig. 4-g: Reinstall modified upper radiator brackets

- H. Making sure not to damage the coolant hose, carefully cut the OEM plastic hose clamp on the hose running between the "Y" on the thermostat housing & the engine water neck. Resecure the hose using one of the provided #24 hose clamps.



Fig. 4-h: Install #24 hose clamp

- I. Locate the previously removed OEM upper radiator hose. Remove the OEM spring clamp & set aside. Cut off 2" from the end of the hose.



Fig. 4-i: Upper radiator hose (OEM configuration)

4. ENGINE COOLING SYSTEM MODIFICATION

- J. Cut away the OEM plastic hose clamp on the quick-release end of the upper radiator hose, taking care not to damage the hose. Separate the hose from the quick-release fitting, then cut 1" off of the end of the hose.



Fig. 4-j: Remove plastic hose clamp

- K. The upper radiator hose will need to be flipped when reinstalled to the vehicle in order to provide adequate space between the upper radiator hose & the supercharger. The end of the hose originally attached to the quick-release fitting will now be attached to the upper radiator inlet. The opposite end will now be attached to the quick-release fitting.



Fig. 4-k: Upper radiator hose (New configuration)

- L. Once both ends of the hose are attached & properly clocked, secure the radiator side of the hose using the previously removed OEM spring clamp. Use the supplied #24 hose clamp to secure the quick-release side of the hose.



Fig. 4-l: Secure quick-release to hose using #24 hose clamp

4. ENGINE COOLING SYSTEM MODIFICATION

- M. Locate the OEM molded coolant hose on the driver side of the radiator & turn it 90° so it points towards the bottom of the vehicle.



Fig. 4-m: Rotate the driver side OEM molded coolant hose 90°

- N. Locate the upper OEM molded coolant hose near the top of the engine & rotate it 180° so it points near the driver side shock tower.

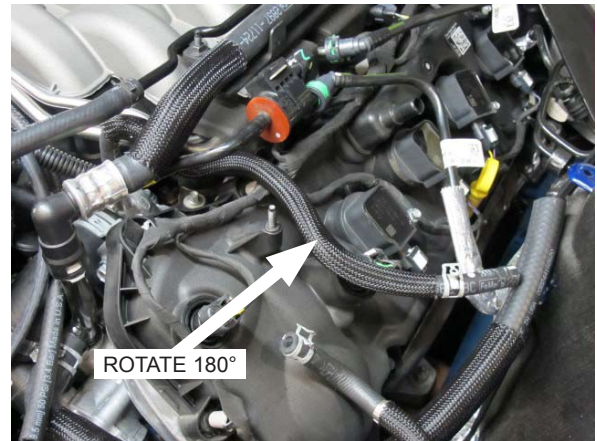


Fig. 4-n: Rotate upper OEM molded coolant hose 180°
(Rotated View Shown)

- O. The sound tube that normally goes from the OEM air inlet into the cabin of the vehicle will need to be cut in order to make room for the provided coolant tank that will be installed in a later step. Cut the sound tube as shown & install the provided cap. Be sure not to damage any brake lines, fuel lines or wiring during this process.

NOTE: For a cleaner looking installation, we suggest cutting the sound tube as short as possible so its out of sight, but making sure to leave enough material to install the cap.

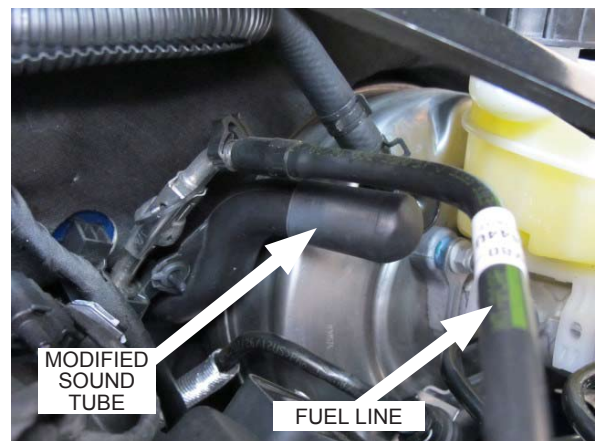


Fig. 4-o: Modified sound tube w/cap

4. ENGINE COOLING SYSTEM MODIFICATION

- P. There is an EVAP hose secured to the driver side shock tower by a plastic fastener. Release the plastic fastener from the driver side shock tower & push the EVAP hose aside. This is done to make room for the provided coolant tank that will be installed in a later step.



Fig. 4-p: Release EVAP hose from driver side shock tower

- Q. Locate coolant tank bracket B that is provided with this kit, as well as the provided 5/16-18 x 1.00" screw, 5/16-18 nylock nut & 2x 5/16 washers. There is a small stand-off with a hole that is located on the driver side shock tower. With coolant tank bracket B placed on top off the stand-off, secure it with the provided hardware, but do not tighten it at this time.

NOTE: In some cases, it may be necessary to clean up the inside of the hole on the stand-off as there may be a thick layer of paint, making it difficult to fit the provided 5/16-18 x 1.00" screw.



Fig. 4-q: Secure coolant tank bracket B

- R. Locate the provided coolant tank & coolant tank bracket A. Remove the 15mm-headed fastener as shown in Fig. 3-k, then loosely secure coolant tank bracket A as shown. Next, locate the 2x provided 1/4-20 x .50" screws & 2x 1/4" washers & loosely secure the provided coolant tank to coolant tank bracket A & coolant tank bracket B.



Fig. 4-r: Loosely attach coolant tank

4. ENGINE COOLING SYSTEM MODIFICATION

- S. You will notice that the coolant tank brackets are both slotted. This is done to allow you to move the coolant tank for proper clearance. Temporarily reinstall the engine cover & strut tower brace (if equipped) & position the coolant tank so the radiator cap is clear of both components but also making sure that the coolant tank doesn't come into contact with the underside of the strut tower brace. Once in position, proceed to tighten all coolant tank hardware. You may remove the engine cover & strut tower brace at this time.



Fig. 4-s: Position coolant tank

- T. Locate the upper OEM molded coolant hose that was rotated in Step G & attach it to the upper hose bung on the provided coolant tank. Secure using the OEM spring clamp.



Fig. 4-t: Attach upper OEM molded coolant hose

- U. Locate the previously removed 3/4" OEM coolant hose that was attached to the underside of the OEM coolant tank. Temporarily remove the 2x OEM spring clamps & the protective nylon cover. If you look closely, one of the ends of the hose is labeled "ENG", which means it is the engine side of the hose. Attach the opposite end of the hose to the provided coolant tank as shown in Fig. 3-n & route it towards the coolant fitting located above the thermostat housing. The engine side of the hose will be modified in the next step.

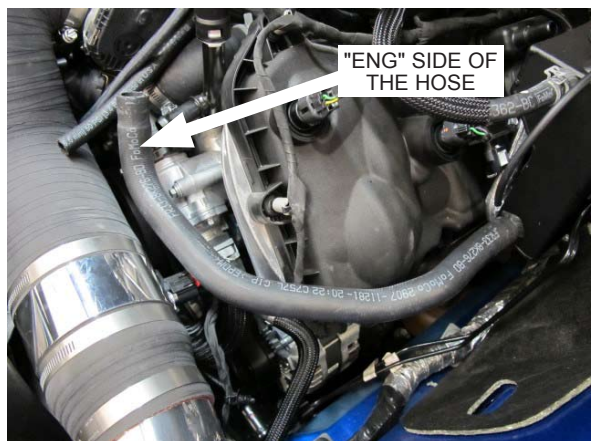


Fig. 4-u: OEM 3/4" Coolant hose (Unmodified)

4. ENGINE COOLING SYSTEM MODIFICATION

- V. Cut the hose as shown & rotate the engine side of the hose 90° then attach it to the coolant fitting located above the thermostat housing. Locate the provided 3/4" brass hose mender & 2x 28.6 stepless clamps & use them to mend the hose back together.



Fig. 4-v: OEM 3/4" coolant hose (Modified)

- W. With the 3/4" OEM coolant hose properly modified, reinstall the protective nylon cover & secure both ends of the hose using the 2x OEM spring clamps.



Fig. 4-w: Secure modified OEM 3/4" coolant hose

- X. The OEM molded coolant hose on the driver side of the radiator will need to tee into the upper OEM molded radiator hose. Measure 5" back from the coolant tank end of the upper OEM molded coolant hose & cut. Slide a 18.5 stepless clamp onto each end of the hose, then place the provided 3/8" plastic tee in between the hose, making sure that the open end of the tee is pointing towards the bottom of the vehicle. Once in position, secure the tee using the previously installed 18.5 stepless clamps.



Fig. 4-x: Secure 3/8" plastic tee

4. ENGINE COOLING SYSTEM MODIFICATION

- Y. Locate the OEM molded coolant hose on the driver side of the radiator & attach it to the remaining open end of the 3/8" tee that was previously installed in Step Q. Secure using the OEM spring clamp. At this point, proceed to refill your coolant system. Be sure to only fill the coolant tank about half way, leaving enough space in the tank to allow for coolant expansion. The half way mark is the point where the narrow section of the tank expands to the wider upper section. To aid in refilling the cooling system, periodically squeeze the larger upper & lower radiator hoses. This helps circulate the coolant within the cooling system. Be sure not to overfill the coolant tank.

NOTE: Periodically check the coolant level once the car is running & the cooling system purges.



Fig. 4-y: Refill cooling system

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5. OIL LINE KIT INSTALLATION



Included in the oil line kit is its own instruction manual. Use that manual for this section, then return to this instruction manual once the oil line kit has been installed. Be sure to check the tool requirements for that manual before proceeding.

OIL FEED KIT

Installation Instructions



2018 MUSTANG GT

P/N: 4FQ230-100

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



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6. DISCHARGE TUBE ASSEMBLY & CHARGE AIR COOLER INSTALLATION

- A. Locate the supplied .80" black anodized aluminum throttle body spacer & 1/8" NPT x -4 JIC fitting. Install the fitting into the port of the throttle body spacer as shown. Be sure to use pipe sealant on the threads of the 1/8" NPT fitting.



Fig. 6-a: Install 1/8" NPT x -4 JIC fitting

- B. Locate the supplied .80" black anodized aluminum throttle body spacer. Install the included large o-ring into the groove in the spacer. This o-ring seals against the throttle body & the smooth side of the spacer seals against the OEM o-ring in the intake manifold. If you used a rag to temporarily cover the intake manifold opening, remove it at this time. Check the o-ring for any damage. If all looks well, clean the throttle body mounting surface of any foreign debris, then proceed to install the throttle body spacer using the supplied 4x M6 x 30mm button head cap screws. Make sure to point the 1/8" NPT fitting towards the top of the vehicle.



Fig. 6-b: Install throttle body spacer

- C. Locate the previously removed throttle body. With the electrical connector on the throttle body pointed towards the top of the vehicle, align the 4x mounting holes with the 4x offset threaded holes on the throttle body spacer. Use the OEM throttle body screws to secure the throttle body to the throttle body spacer. Ensure that both o-ring seals stay in place. Carefully snip the strip of tape securing the throttle body electrical harness to the connector housing. Reconnect the connector to the throttle body. Make sure the throttle body electrical harness & any other items are routed away from moving parts and sharp edges and secure.



Fig. 6-c: Reinstall throttle body

6. DISCHARGE TUBE ASSEMBLY & CHARGE AIR COOLER INSTALLATION

- D. In order to provide adequate space for the discharge tubes, the windshield washer fluid reservoir will need to be slightly relocated. Place a clean drain pan underneath the windshield washer fluid reservoir, then proceed to remove the windshield washer fluid pump from the windshield washer fluid reservoir, allowing the windshield washer fluid to drain. Set the windshield washer fluid pump aside as it does not need to be reinstalled at this time.



Fig. 6-d: Drain windshield washer fluid reservoir

- E. There are a series of electrical harnesses & a windshield washer fluid line attached to the windshield washer reservoir, which need to be detached. Proceed to detach them at this time.



Fig. 6-e: Detach electrical harnesses & windshield washer fluid line

- F. Disconnect the windshield washer fluid level sensor at this time.

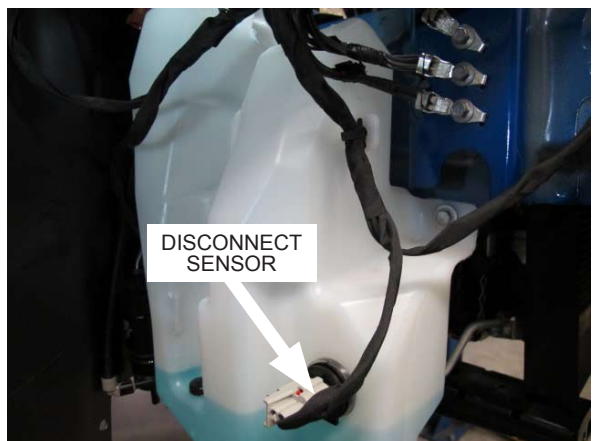


Fig. 6-f: Disconnect windshield washer fluid level sensor

6. DISCHARGE TUBE ASSEMBLY & CHARGE AIR COOLER INSTALLATION

- G. There are 3x 10mm-headed fasteners securing the windshield washer fluid reservoir to the vehicle. Remove the fasteners, then proceed to remove the windshield washer fluid reservoir. Set the 3x fasteners aside.

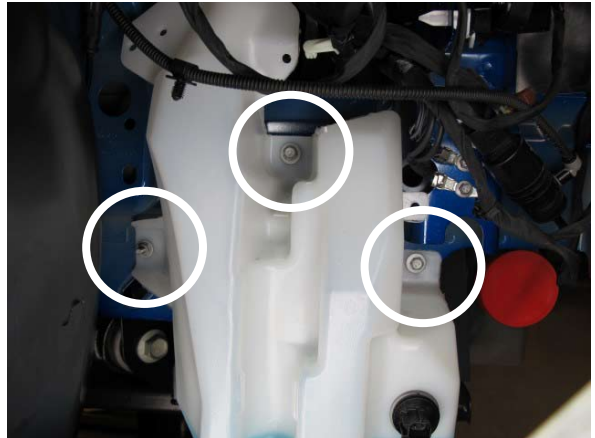


Fig. 6-g: Remove windshield washer fluid reservoir

- H. There is a tab on the right side of the windshield washer fluid reservoir that needs to be modified. Draw a straight line to the left of the electrical harness mounting hole, then proceed to cut that section off.

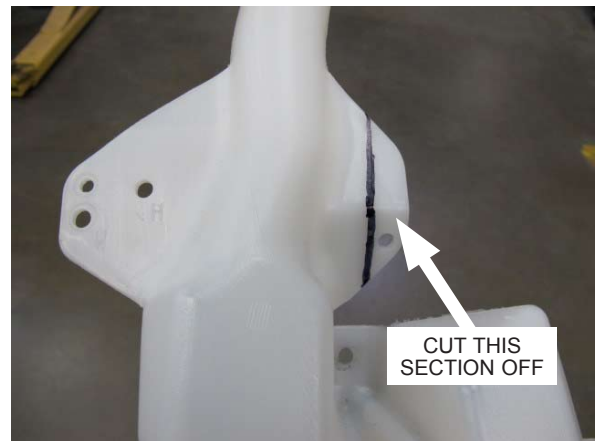


Fig. 6-h: Modify windshield washer fluid reservoir

- I. Locate the fuse box on the passenger side of the vehicle. On the front-left side of the fuse box is a tie wrap that secures a part of the main harness to a plastic guard. Cut off the tie wrap at this time as the harness will be slightly repositioned. It may be necessary to remove some of the tape from the harness to allow for more movement.



Fig. 6-i: Remove harness tie wrap

6. DISCHARGE TUBE ASSEMBLY & CHARGE AIR COOLER INSTALLATION

- J. There is a steel bracket located along side the ECU harness connectors. To prevent possible damage to the harness that runs along side of the steel bracket, be sure to route the harness on top of the steel bracket..

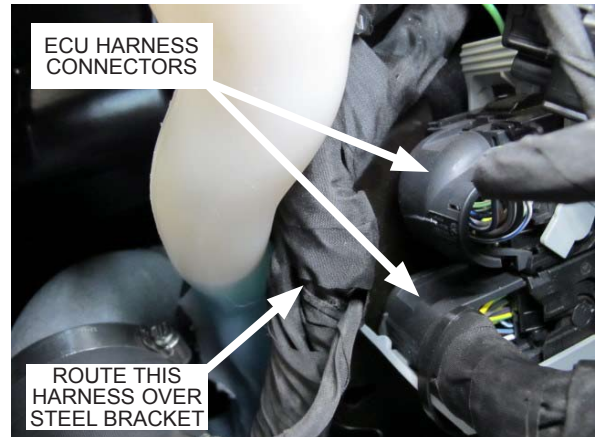


Fig. 6-j: Route harness as shown

- K. Reinstall the windshield washer fluid reservoir, making sure that the harness runs behind the filler neck. This is done in order to provide space for the provided discharge tubes that will be installed in a later step. Secure using the 3x OEM 10mm-headed fasteners.



Fig. 6-k: Reinstall windshield washer fluid reservoir

- L. Reinstall the windshield washer fluid pump & reconnect the windshield washer fluid level sensor. The only harnesses that should be routed in front of the windshield washer fluid reservoir are that of the windshield washer fluid pump, windshield washer fluid sensor & the harness for the headlight connector. Reattach the electrical connector & windshield washer fluid line to their original location on the left side of the windshield washer fluid reservoir.

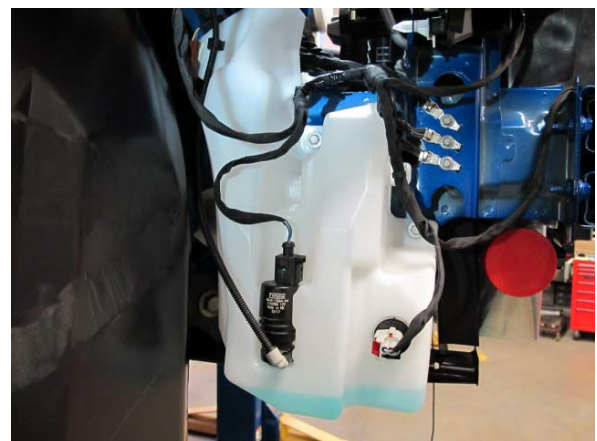


Fig. 6-l: Reinstall windshield washer fluid pump & windshield washer fluid level sensor

6. DISCHARGE TUBE ASSEMBLY & CHARGE AIR COOLER INSTALLATION

- M. Detach the cooling fan connector from the fan shroud. Push the connector towards the bottom of the vehicle, making sure to leave it connected. This is done in order to provide space for the provided discharge tubes that will be installed in a later step.



Fig. 6-m: Detach cooling fan connector from fan shroud

- N. **Performance-Pack Vehicles Only:** There is an unused plug for the active grille shutters located behind the front bumper support. Remove the plug from the front bumper support at this time. It will be relocated in a later step.



Fig. 6-n: Remove unused plug from front bumper support

- O. You will notice a wire harness running along the rear of the front bumper support secured by 3x gray clips. Free the harness from the front bumper support.

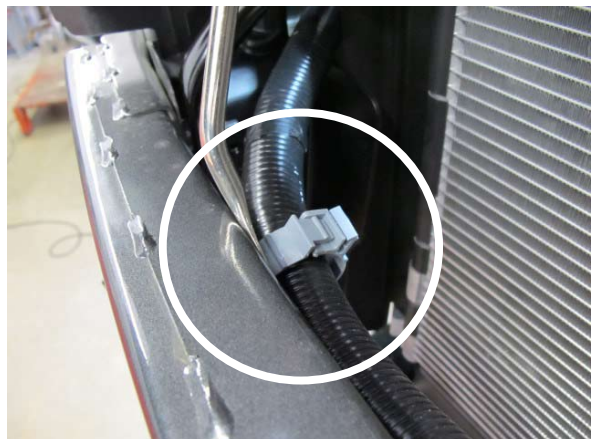


Fig. 6-o: Detach wire harness

6. DISCHARGE TUBE ASSEMBLY & CHARGE AIR COOLER INSTALLATION

- P. Remove the gray clips from the wire harness discard them. They will not be reused.



Fig. 6-p: Remove gray wire harness clips

- Q. Part of the harness that runs along the rear of the front bumper support is secured to one of the front bumper support screws by a black plastic harness retainer. Remove the retainer from the screw & cut off the retainer from the harness.



Fig. 6-q: Remove plastic harness clip

- R. **Performance-Pack Vehicles Only:** There are 2x plastic fasteners securing the lower radiator shroud to the driver & passenger side radiator shrouds. Pop the center section of each plastic fastener upward and then the larger part of the fastener will loosen. Discard the 2x fasteners & the lower radiator shroud as they will not be reused.

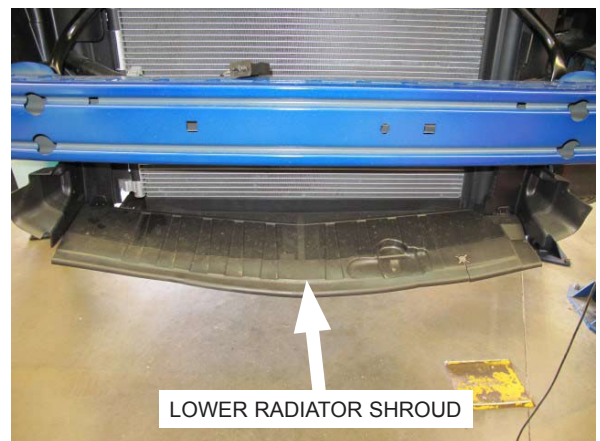


Fig. 6-r: Remove lower radiator shroud

6. DISCHARGE TUBE ASSEMBLY & CHARGE AIR COOLER INSTALLATION

- S. **Performance-Pack Vehicles Only:** There are 6x plastic fasteners securing the upper radiator shroud to the upper radiator support. Simply pull down on the upper radiator shroud to release the fasteners from the upper radiator support. Set the upper radiator shroud aside for modification in a later step.

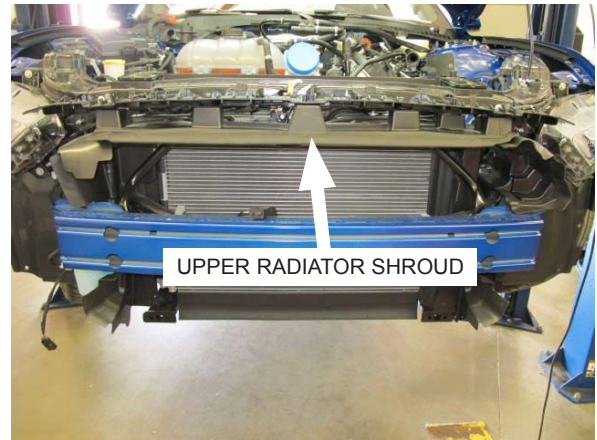


Fig. 6-s: Remove upper radiator shroud

- T. Remove the 4x 13mm-headed fasteners securing the front braces to the upper radiator support & front bumper support, then proceed to remove the front braces from the vehicle.

NOTE: Certain base-model vehicles do not come equipped with the optional front braces.

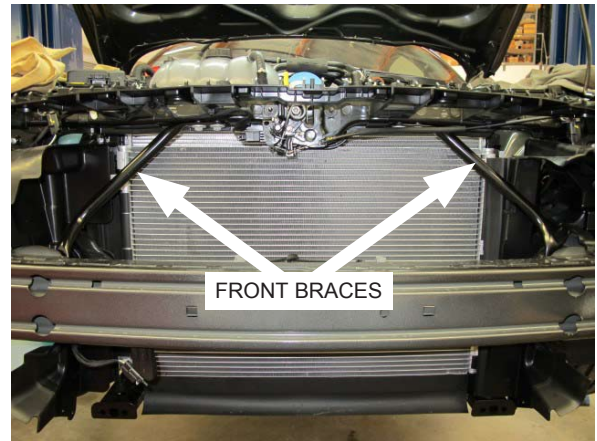


Fig. 6-t: Remove front braces

- U. Remove the driver & passenger side radiator shroud. Each radiator shroud is held in place by a plastic fastener. Simply pull each radiator shroud away from the vehicle to release the plastic fastener. Set each radiator shroud aside for modification in a later step.

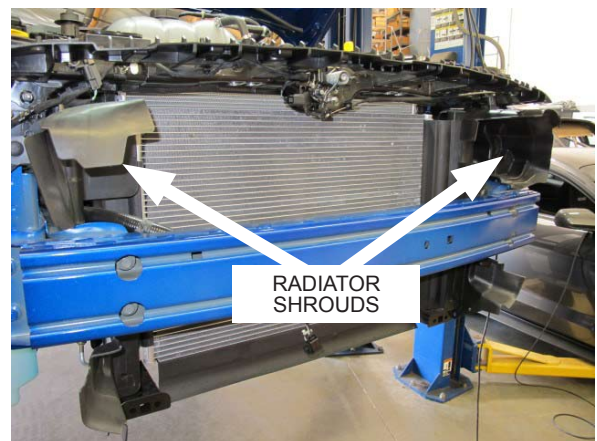


Fig. 6-u: Remove radiator shrouds

6. DISCHARGE TUBE ASSEMBLY & CHARGE AIR COOLER INSTALLATION

- V. Remove the shroud that's located on the driver side of the A/C condenser & set aside. It will not be reused.

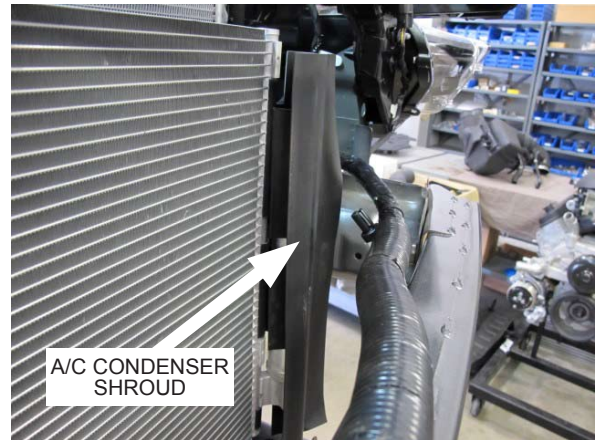


Fig. 6-v: Remove A/C condenser shroud

- W. Prior to installing the provided charge air cooler, the driver & passenger side radiator shrouds will need to be modified as shown.



Fig. 6-w: Modify radiator shrouds

- X. Back out the 4x innermost screws of the front bumper support, leaving about 1/2" of the screw protruding from the back side. Raise the charge air cooler into position, making sure to align the charge air cooler brackets to the 4x screws previously backed out. Once aligned, begin to thread the screws through the charge air cooler brackets. Route the wire harness along the top side of the front bumper support. Attach the ambient air temperature sensor back into its original location & plug in its electrical connector.



Fig. 6-x: Charge air cooler installation

6. DISCHARGE TUBE ASSEMBLY & CHARGE AIR COOLER INSTALLATION

- Y. If your vehicle is not equipped with the front braces, proceed to install the charge air cooler against the bumper support, then secure with the provided M8 x 1.25 flanged nuts & 5/16 washers. For vehicles equipped with the front braces, reuse the factory hardware, making sure the charge air cooler brackets are sandwiched between the lower brace mounts & front bumper support.



Fig. 6-y: Secure charge air cooler

- Z. **Performance-Pack Vehicles Only:** Locate the unused active grille shutter plug that was originally installed behind the front bumper support & remove the white plug fastener. It will not be reused.



Fig. 6-z: Remove plug retainer

- AA. **Performance-Pack Vehicles:** Using a tie wrap, secure the unused active grille shutter plug to the large harness, making sure that the plug is either on top or in front of the harness.

Base-Model Vehicles: Wrap the end of the active grille shutter plug with electrical tape. This is done to keep foreign debris from entering the plug. Using a tie wrap, secure the active grille shutter plug to the large harness, making sure that the plug is either on top or in front of the harness.



Fig. 6-aa: Secure plug to harness

6. DISCHARGE TUBE ASSEMBLY & CHARGE AIR COOLER INSTALLATION

AB. **Performance-Pack Vehicles Only:** Since the radiator assembly is now tilted forward, it will be necessary to modify the center section of the previously removed upper radiator shroud. Measure 1" inward from the flat edge of the upper radiator. Draw a cut line using a marker or a piece of tape, then proceed to cut off the center section only. Use Fig. 4-aj as reference.



Fig. 6-ab: Modify upper radiator shroud

AC. **Performance-Pack Vehicles Only:** With the upper radiator shroud modified, proceed to reinstall it to the vehicle & secure using the appropriate OEM plastic fasteners.

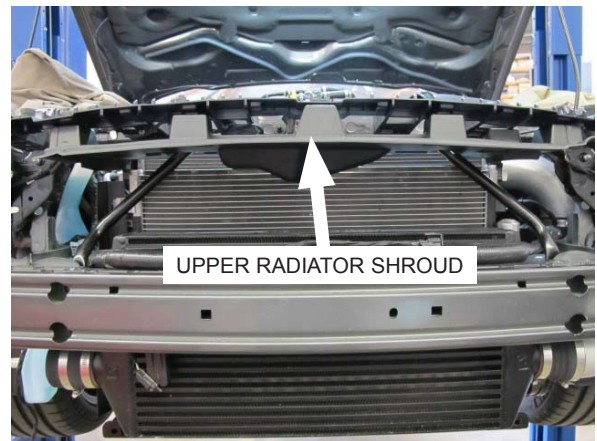


Fig. 6-ac: Reinstall upper radiator shroud

AD. Located on the driver side of the vehicle is the horn assembly. Unplug the horns & remove them from the vehicle. Remove the threaded clip that the horn fastener is attached to & set it aside with the 8mm-headed fastener. They will be reinstalled in a new location in a later step.



Fig. 6-ad: Remove horn assembly

6. DISCHARGE TUBE ASSEMBLY & CHARGE AIR COOLER INSTALLATION

AE. **Automatic Transmission Vehicles:** There are a set of transmission cooler lines that run along the passenger side of the engine towards a heat exchanger near the front of the vehicle. Because they are routed near the space where discharge tube A will be installed, the transmission cooler lines need to be moved away from the engine. Located on the passenger side engine mount is a transmission cooler line bracket. Remove the nut that secures the transmission cooler line bracket to the engine mount. Using the provided .430" spacer & place it in between the transmission cooler line bracket & the engine mount, then resecure using the previously removed nut.

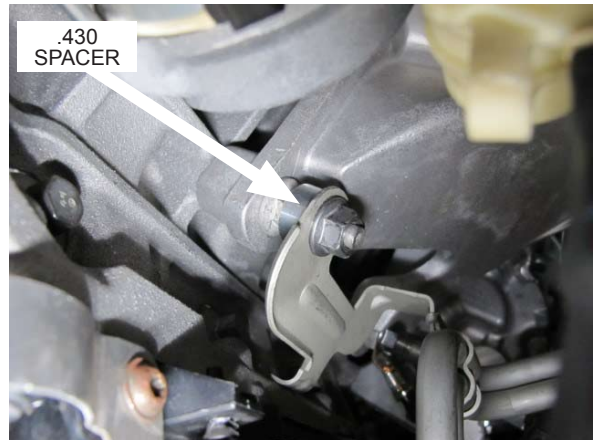


Fig. 6-ae: Install A/T cooler line spacer

AF. You will notice that one of the A/C line is in the path of where discharge tube A will be. In order to provide adequate space, bend the A/C line in towards the fan shroud. Do this in small steps in order to avoid damaging the A/C line.

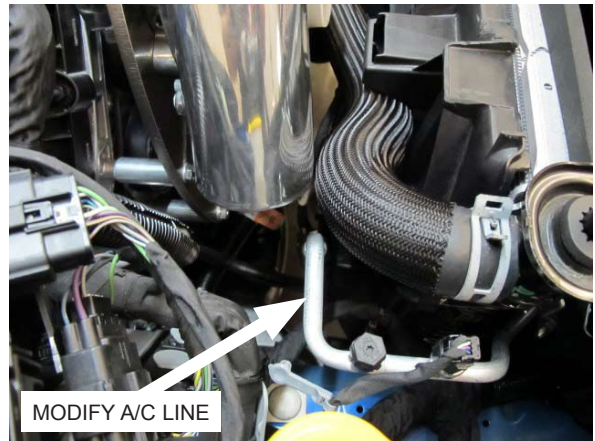


Fig. 6-af: Modify A/C line

AG. Position discharge tube A as shown without the silicone sleeves. The end of the tube with the bypass valve flange will be installed closest to the supercharger. Once the tube is in place, proceed to install the silicone sleeves to the discharge tube as shown. Loosely attach 4x #48 hose clamps to the silicone sleeves.

NOTE: To install discharge tube A, it will need to be installed from the underside of the supercharger, between the fan shroud & the supercharger mounting bracket assembly. We suggest wrapping the tube in blue painters tape or a shop rag to avoid scratching the tube. It is also helpful to do this step with the upper radiator brackets removed, as it allows you to pull the radiator assembly forward for added clearance.

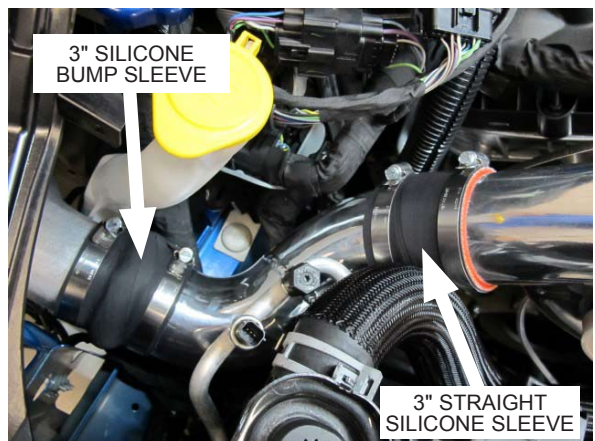


Fig. 6-ag: Install discharge tube A

6. DISCHARGE TUBE ASSEMBLY & CHARGE AIR COOLER INSTALLATION

AH. You will notice that the bypass valve flange on discharge tube A has a groove. Included with the bypass valve is an o-ring. Locate the o-ring and place it into the groove on the bypass valve flange, making sure that it doesn't fall out while the bypass valve is installed. Locate the bypass valve and install it to discharge tube A, making sure that the o-ring is sandwiched between the bypass valve flange and the bypass valve. Position the bypass valve so it does not come into contact with the radiator fan shroud. Once in position, secure the bypass valve to discharge tube A using the provided t-bolt clamp.

NOTE: Putting a small amount of white lithium grease will help keep the o-ring in place during installation.

AI. Loosely attach a straight 3" silicone sleeve & 2x #48 hose clamps to the passenger side of the charge air cooler. The tab that protrudes downward from the front bumper support will need to be bent forward towards the front of the vehicle to provide space for discharge tube B.

AJ. Install discharge tube B into the straight 3" silicone sleeve on the charge air cooler & the 3" silicone bump sleeve on discharge tube A. Reinstall the passenger side headlight at this time. Temporarily reinstall the front bumper cover on the vehicle in order to position discharge tube B properly as it is a tight fit behind the passenger side headlight & front bumper cover. Once discharge tube B is in the proper position, proceed to tighten all of the #48 hose clamps on discharge tube A & discharge tube B. Remove the front bumper cover once this step is complete, but leave the headlight installed. Be sure to reconnect the headlight plug & resecure the headlight hardware.



Fig. 6-ah: Install o-ring to bypass valve flange

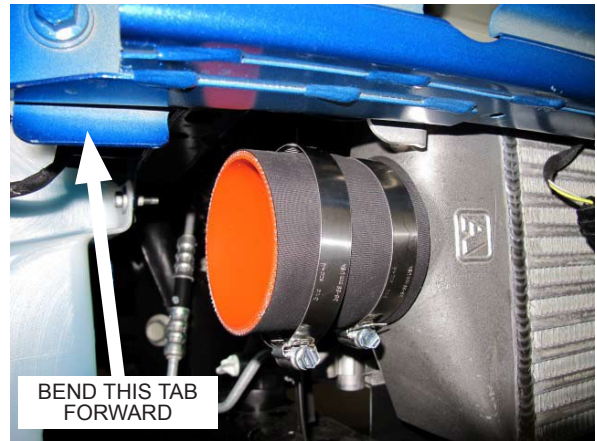


Fig. 6-ai: Install silicone sleeve & hose clamps



Fig. 6-aj: Install discharge tube B

6. DISCHARGE TUBE ASSEMBLY & CHARGE AIR COOLER INSTALLATION

AK. The harness that the MAF sensor connector is attached to is secured to the vehicle in 2x places as shown in Fig. 4-ar. Remove the harness from these 2x mounting places.

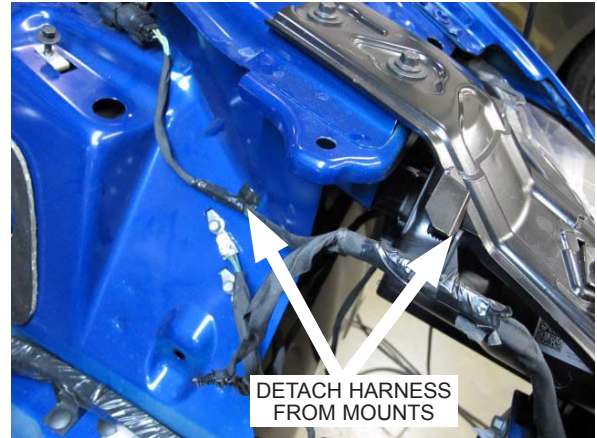


Fig. 6-ak: Detach harness

AL. Loosely attach a 3.5" to 3.0" silicone reducer sleeve, a #48 hose clamp & a #56 hose clamp to the driver side of the charge air cooler. One of the legs of discharge tube C is slightly longer than the other. Install the shorter end of the tube into the silicone reducer sleeve. Loosely install a straight 3.5" silicone sleeve & 2x #56 hose clamps to the other end of discharge tube C. The tab that protrudes downward from the front bumper support will need to be bent forward towards the front of the vehicle to provide space for discharge tube C.



Fig. 6-al: Install discharge tube C

AM. Install discharge tube D into the straight 3.5" silicone sleeve on discharge tube C. Be sure to route the MAF sensor harness underneath the tube.

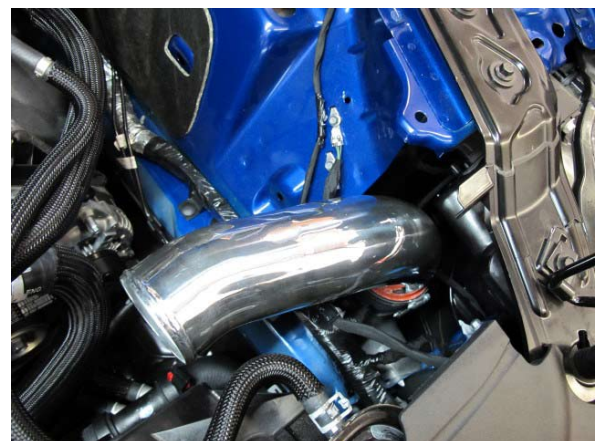


Fig. 6-am: Install discharge tube D

6. DISCHARGE TUBE ASSEMBLY & CHARGE AIR COOLER INSTALLATION

- AN. Locate the provided MAF sensor housing. Remove the MAF sensor from the OEM air box & set the OEM T-20 screws aside for re-installation in a later step. Insert the MAF sensor into the MAF sensor housing & secure using the provided M4-7 screws. Be sure not to damage the o-ring on the MAF sensor.

NOTE: The MAF sensor is directional & will only fit into the MAF housing one way.



Fig. 6-an: Install MAF tensor to MAF housing

- AO. Locate the provided S-shaped silicone sleeve, 4.0" to 3.5" silicone reducer sleeve & 2x #64 hose clamps & loosely assemble them as shown in Fig. 4-av. There is a "FLOW" arrow on the MAF sensor housing indicating the direction of air flow. When installing the MAF sensor housing to the silicone sleeves, be sure that the flow arrow is pointed towards the S-shaped silicone sleeve.



Fig. 6-ao: Assemble MAF sensor housing & sleeves as shown

- AP. Install the S-shaped silicone sleeve, MAF sensor housing & 4.0" to 3.5" silicone reducer sleeve onto discharge tube C & the throttle body, loosely securing both ends with 2x #56 hose clamps. The worm gear on the #56 hose clamp closest to discharge tube C will need to be installed so it's closest to the fan shroud. Make sure that the MAF sensor plug is pointed directly towards the engine. With all of the discharge tubes & silicone sleeves in position & free of any obstructions, proceed to tighten all of the hose clamps.



Fig. 6-ap: Secure all hose clamps

6. DISCHARGE TUBE ASSEMBLY & CHARGE AIR COOLER INSTALLATION

- AQ. Locate the provided 40" stainless steel braided hose. Attach the 90° end of the hose to the fitting located at the top of the throttle body spacer.



Fig. 6-aq: Attach vacuum hose to fitting

- AR. Route the stainless steel braided hose along the top of the motor and across the front of the passenger side valve cover, then attach it to the fitting on the bypass valve. Making sure that the vacuum hose is free of any obstructions, use the provided tie wraps to secure the stainless steel braided hose away from any sharp or moving objects.



Fig. 6-ar: Secure stainless steel braided hose

- AS. Just to the right of the original mounting location of the horn assembly is a tab with 3x holes. Locate the previously removed OEM threaded clip & attach it to the lowest hole on the tab.



Fig. 6-as: Relocate OEM threaded clip

6. DISCHARGE TUBE ASSEMBLY & CHARGE AIR COOLER INSTALLATION

AT. Locate the OEM horn assembly & install it as shown, securing it with the previously removed OEM 8mm-headed fastener. Loosen the 10mm-headed fastener securing the horn closest to the bottom of the vehicle. Rotate the horn clockwise so the horn plug is pointed towards the top of the vehicle, then resecure the 10mm-headed fastener. Once in position, reconnect the horn connector to the horn assembly.



Fig. 6-at: Install horn assembly

AU. With the discharge tubes in position, proceed to secure the upper radiator brackets using the provided M6 x 22mm socket head cap screws in place of the OEM 10mm-headed screws.

NOTE: In some instances, we have seen that the A/C condenser isn't fully seated to its mounts. Since the modified upper radiator mounts will cause the radiator assembly to be tilted forward, it's necessary to check that the top of the A/C condenser doesn't come into contact with the underside of the hood latch mechanism. Adjust the A/C condenser as necessary.



Fig. 6-au: Reinstall modified upper radiator brackets

7. PCV MODIFICATION & AIR INLET ASSEMBLY INSTALLATION

- A. Locate the passenger side hard plastic PCV tube. Both quick-release fittings need to be removed from the plastic tube. Use a razor blade to carefully slit each end of the plastic tube until it can be split away from the barbed fittings inside. Take care not to damage the fittings.



Fig. 7-a: Remove both quick-release fittings

- B. Locate the driver side hard plastic PCV tube. The 45° quick-release fitting needs to be removed from the plastic tube. Use a razor blade to carefully slit the plastic tube until it can be split away from the barbed fitting inside. Be sure not to damage the fitting.



Fig. 7-b: Remove 45° quick-release fitting

- C. Locate the provided lengths of 5/8" hose & 3/8" hose. Cut 3x pieces of 5/8" hose to 2" lengths & 1x piece 3/8" hose to 4" length. Using the provided check valve, brass 5/8" to 3/8" reducer, 2x #17 stepless clamps, a #25.6 stepless clamp & a #28.6 stepless clamp, assemble the straight section of the PCV assembly as shown. Secure the stepless clamps at this time. The 2x OEM quick-release fittings & 5/8" x 90° plastic elbow are shown for reference as they will be installed in a later step.



Fig. 7-c: Assemble straight section of PCV assembly

7. PCV MODIFICATION & AIR INLET ASSEMBLY INSTALLATION

- D. Locate the provided flex braid sleeve & heat shrink tubing. Slide the flex braid sleeve over the straight section of the PCV assembly & cut to the proper length. Next, cut the heat shrink tubing into 2x pieces that are roughly 1" in length & use to secure the flex braid sleeve in place, then use a heat gun to shrink the heat shrink tubing. Next, loosely install the OEM 45° quick-release fitting & a #25.6 stepless clamp to the brass side of the PCV assembly, then install the 5/8" x 90° plastic elbow, 3x #25.6 stepless clamps, 1x OEM 90° quick-release fitting & the remaining length of 2" 5/8" hose to the check valve side of the PCV assembly.



Fig. 7-d: Loosely assemble OEM quick-release fittings as shown

- E. Temporarily install & position the loosely assembled PCV assembly to the vehicle, making sure that the check valve is closest to the valve cover. With the PCV assembly in position, remove it from the vehicle & proceed to secure all remaining stepless clamps. Reinstall it onto the vehicle once complete.



Fig. 7-e: Install PCV assembly

- F. Locate the provided MAF block-off plate & 6mm washers. Using the OEM T-20 screws, secure the MAF block-off plate onto the OEM air box.



Fig. 7-f: Install MAF block-off plate

7. PCV MODIFICATION & AIR INLET ASSEMBLY INSTALLATION

- G. Temporarily install the OEM air box & check for clearance next to the previously installed coolant tank. It may be necessary to trim near one of the air box latches.



Fig. 7-g: Trim air box as necessary

- H. Remove the air box lid & replace the OEM air filter with the provided air filter, then proceed to secure the OEM air box onto the vehicle using the OEM 10mm-headed fastener.



Fig. 7-h: Install Provided air filter & secure OEM air box

- I. Cut an 18" length of 5/8" hose. Install the remaining OEM 90° quick-release fitting on one end of the hose & secure using a #25.6 stepless clamp. Attach the quick-release fitting to its OEM location, then route the other end of the hose towards the front of the vehicle as it will be attached to the provided air inlet in a later step.



Fig. 7-i: Attach breather hose to air inlet

7. PCV MODIFICATION & AIR INLET ASSEMBLY INSTALLATION

- J. There is a hose & quick-release fitting coming off of the OEM check valve assembly located above the throttle body. Remove this hose as it will not be reused.

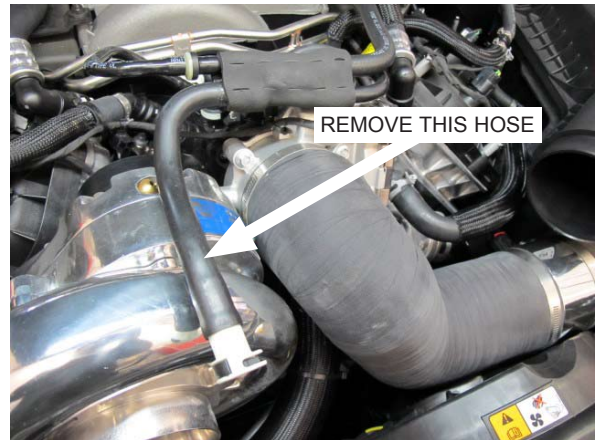


Fig. 7-j: Remove hose & quick-release fitting

- K. Cut a 24" length of 3/8" hose & attach it where the previously removed OEM hose was attached. Next, route the hose around the back side of the throttle body & over towards the air inlet tube.



Fig. 7-k: Install 24" length of 3/8" hose

- L. Locate the provided 4.25" to 4.0" silicone bump reducer sleeve, 4.0" straight silicone sleeve & 4x #64 hose clamps. Install the silicone reducer sleeve to the air box & the straight silicone sleeve to the supercharger inlet. Loosely attach the 4x #64 hose clamps to the sleeves, then install the provided air inlet tube. Do not secure the hose clamps at this time.



Fig. 7-l: Loosely install air inlet tube

7. PCV MODIFICATION & AIR INLET ASSEMBLY INSTALLATION

- M. On the air inlet tube, attach the 3/8" hose to the 3/8" barbed fitting & the 5/8" hose to the 5/8" barbed fitting. Secure the 5/8" hose using a #25.6 stepless clamp. The 3/8" hose doesn't require any clamps. With the hoses installed & the air inlet tube in position, proceed to tighten the 4x #64 hose clamps to secure the air inlet tube.



Fig. 7-m: Install 3/8" hose, then secure air inlet tube

- N. Since the radiator assembly has been tilted forward, you will need to modify the upper radiator mounting tabs to allow proper fitment of the upper radiator support cover. Grind down the mounting tabs until they are about level with the rubber bushing on the upper radiator support mounts.



Fig. 7-n: Modify radiator mounting tabs

- O. Test fit the upper radiator support cover & check for clearance. When you reinstall the upper radiator support cover, 2x holes will no longer require the use of plastic push fasteners. Leave these holes empty.



Fig. 7-o: Check upper radiator support cover

7. PCV MODIFICATION & AIR INLET ASSEMBLY INSTALLATION

- P. Reinstall all previously removed panels, engine cover, strut tower brace, front bumper cover & splash guards. Check for proper fitment & clearance during reinstallation. You may reconnect the battery at this time.



Fig. 7-p: Reinstall necessary components & perform final check

8. FINAL CHECK

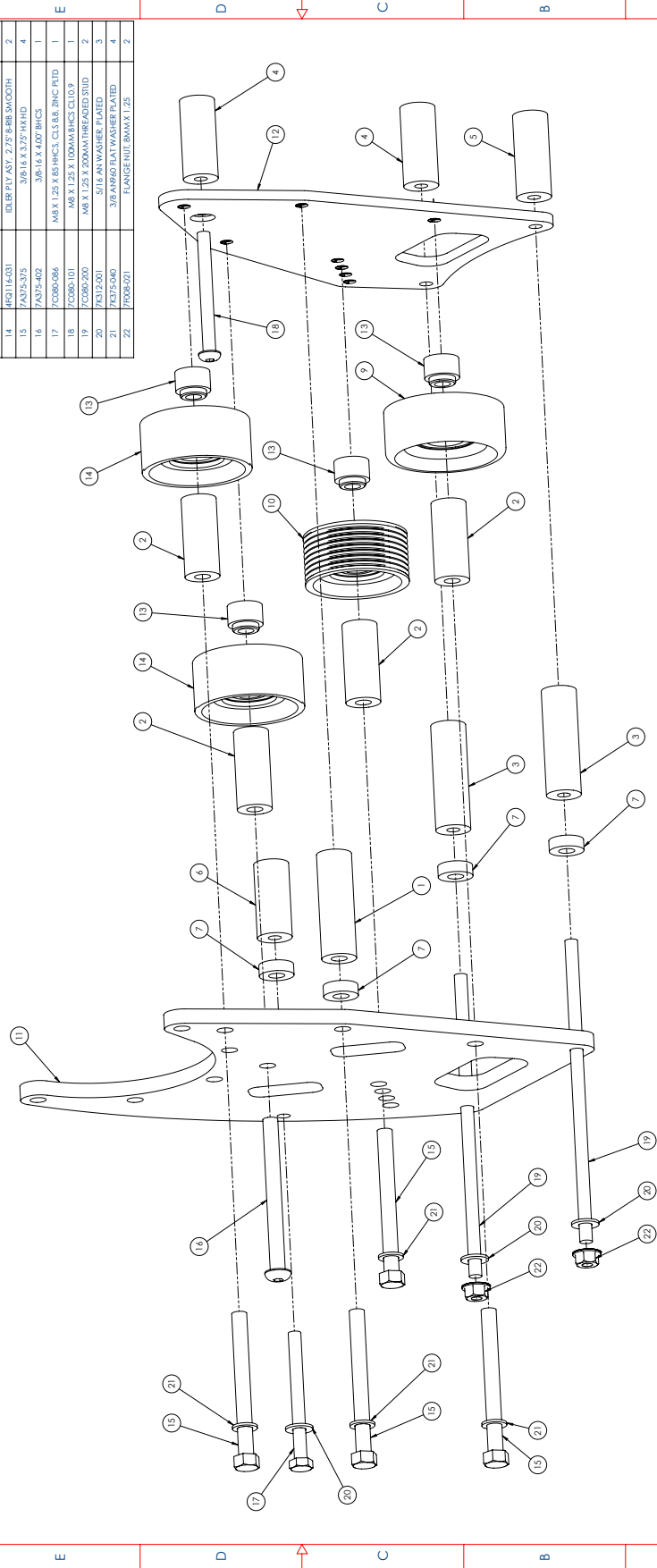
WARNING: Do not attempt to operate the vehicle until all components are installed and all operations are completed including the final check.

- A. 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.
- B. 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.
- C. Check all fluid levels, making sure that your tank(s) is/are filled with 91 octane or higher fuel before commencing test drive.
- D. Start the engine and allow to idle a few minutes, then shut off.
- E. Recheck to be sure that no hoses, wires, etc. are near exhaust headers or moving parts. Look also for any signs of fluid leakage.
- F. **PLEASE TAKE SPECIAL NOTE:** Operating the vehicle without ALL the subassemblies completely and properly installed may cause **FAILURE OF MAJOR COMPONENTS.**
- G. Test drive the vehicle.
- H. Always listen carefully for engine detonation. Discontinue heavy throttle usage if detonation is heard.
- I. 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.

APPENDIX A. DIAGRAM, ASSEMBLY, SUPERCHARGER MOUNTING BRACKET

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	2A017-875-28	SPACER, .875 OD X .404 ID X 2.700L	1
2	2A017-875-29	SPACER, .875 OD X .404 ID X 2.035L	4
3	2A017-874-13	SPACER, .875 OD X .3280 X 2.700L	2
4	2A017-874-14	SPACER, .875 OD X .3280 X 2.035L	2
5	2A017-874-15	SPACER, .875 OD X .3280 X 2.144L	1
6	2A017-874-16	SPACER, .875 OD X .3280 X 1.728L	1
7	2A017-874-17	SPACER, .875 OD X .280 L	4
8	4F011-021	STEEL PULLEY IDLER 3" SMOOTH	1
9	4F011-020	IDLER PULLEY ASY 3" RIB 2"	1
10	4F011-021	WING PULLEY OUTER 2018 MUST GT	1
11	4F011-021	WING PULLEY INNER 2018 MUST GT	1
12	4F011-021	ELDER SPACER, .875 OD X .300L	4
13	4F011-021	ELDER PULLEY ASY, 2.75" 8-RIB SMOOTH	2
14	7A025-5075	3/8-16 X 3.75" HEX HD	4
15	7A025-4022	3/8-16 X 4.00" THCS	1
16	7C080-064	M8 X 1.25 X .88 THCS, CLS 8.8, ZINC PLTD	1
17	7C080-101	M8 X 1.25 X 1.00MM THCS, CL 10.7	1
18	7C080-200	M8 X 1.25 X 2.00MM THREADED STUD	2
19	7G312-001	5/16 AN WASHER, PLATED	3
20	7G312-040	3/8 AN 660 FLAT WASHER PLATED	4
21	7R036-021	FLANGE NUT, 8MM X 1.25	2

- NOTES-**
1. DIAGRAM FOR USE WITH 4FQ111-021 AND 4FQ116-009 PART NUMBERS
 2. 4FQ111-021 PART NUMBER REFERS TO 8-RIB DRIVE MOUNTING BRACKET ASSY INCLUDED IN 8-RIB DRIVE SUPERCHARGER SYSTEMS
 3. 4FQ116-009 PART NUMBER REFERS TO 6-RIB DRIVE MOUNTING BRACKET ASSY BEING CONVERTED TO 8-RIB DRIVE MOUNTING BRACKET ASSY
 4. 4FQ116-009 PART NUMBER REUSE ITEM NUMBERS 1, 3, 4, 5, 6, 11, 12, 18, 19, 22 FROM 6-RIB DRIVE MOUNTING BRACKET ASSY



VORTECH
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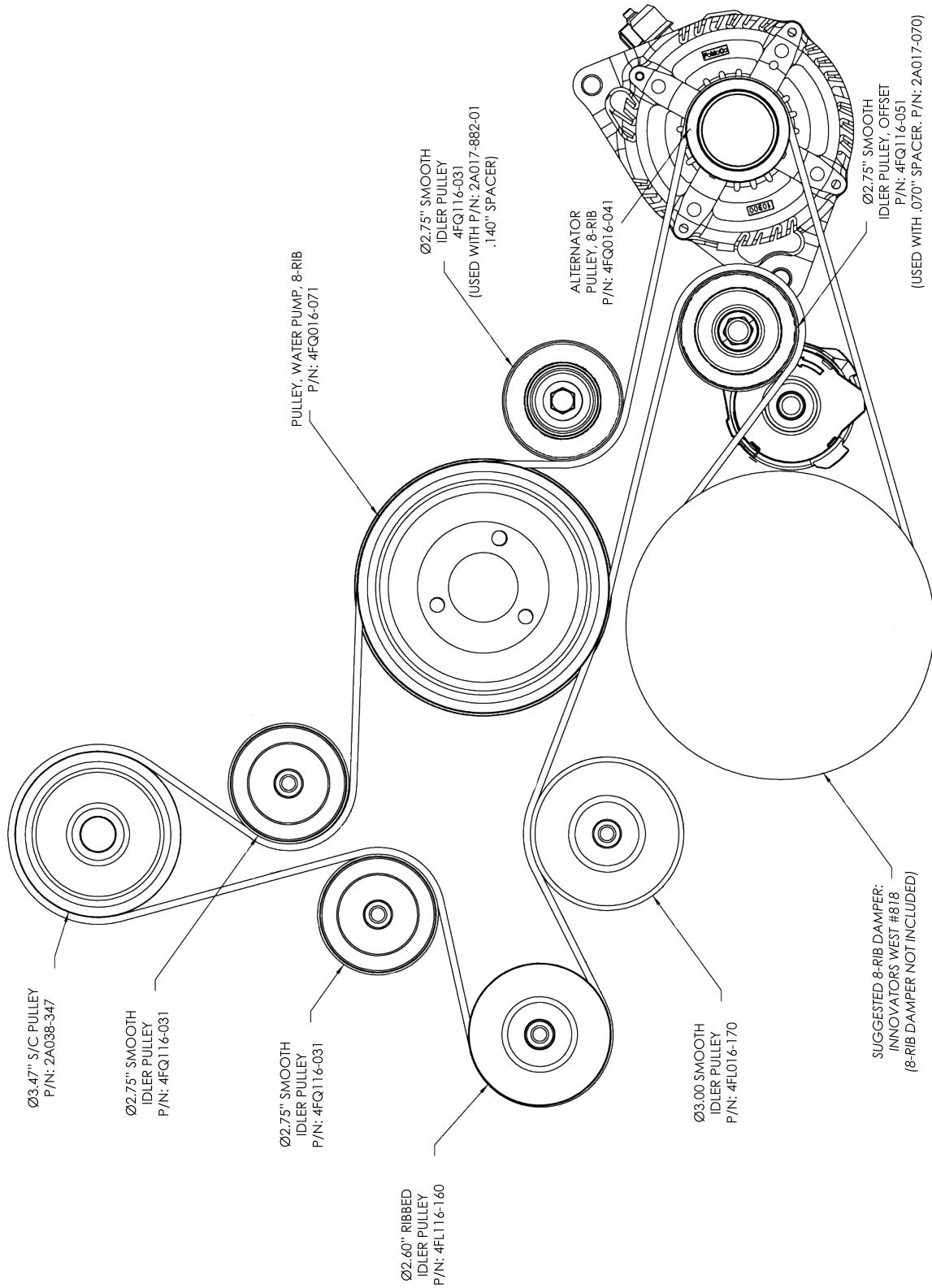
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ASSEMBLY DIAGRAM, MOUNTING BRACKET, 8-RIB, 2018 MUSTANG GT

REV. 01/19
 SEE NOTES
 V2.0

APPENDIX B.

DIAGRAM, BELT ROUTING / PULLEY IDENTIFICATION





ENGINEERING, INC

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