

Tru Trac

LSA TRU TRAC

Installation Manual
For Systems with AC & PS
#BLK13410



BilletSpecialties

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PLEASE READ ALL INSTRUCTIONS BEFORE INSTALLING ANY COMPONENTS OF THE TRU TRAC SERPENTINE SYSTEM

IMPORTANT!

This kit is engineered to fit the GM LSA Wet Sump Motors installed in CTS-V Cadillac's & Camaro ZL-1's. This kit will not work on a dry sump motor.

IMPORTANT!

Thoroughly read the instructions, the removal and installation of the damper requires special tools, if after reading the instructions and you feel you may not be able to install the damper correctly Billet Specialties recommends you to have a professional mechanic perform the installation.

Required Tools & Materials

- ☐ 5mm Allen
- ☐ 6mm Allen
- ☐ 8mm Allen
- ☐ 1/4" Allen
- ☐ 5/16" Allen
- ☐ 5/8" Open End Wrench
- ☐ 11/16" Open End Wrench
- ☐ 3/4" Open End Wrench
- ☐ 3/8" 12pt Socket
- ☐ 10mm 12pt. Socket
- ☐ 12mm 12pt. Socket
- ☐ 15mm Socket
- ☐ 24mm Socket
- ☐ Anti-Seize Compound
- ☐ Blue Loctite

Damper Installation Tools

GM Part Number	Description
J-41816	Crankshaft balancer remover or similar
J41816-2	Crankshaft balancer remover step plate
J-42386-A	Flywheel holding tool
J-41665	Crankshaft balancer and sprocket installer
J-41478	Crankshaft front oil seal installer
J-45059	Angle Meter

TECH TIP:

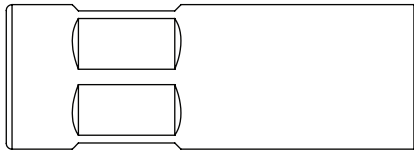
Billet Specialties recommends the use of Anti-Seize on all fasteners to prevent thread lock-up.

Engine Prep

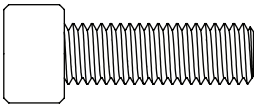
- Disconnect battery
- Remove existing accessory drive and water pump
- Remove factory crank pulley bolt with an impact wrench and 24mm socket
- Save the existing crank bolt, you will need it later
- Remove crank pulley/damper with the recommended tools:
- J-4181 6 Crankshaft balancer remover or similar
- J-42386-A Flywheel holding tool
- J-4181 6-2 Crankshaft balancer remover step plate
- Clean gasket areas, inspect front crank seal and replace if necessary
GM P/N 12585673
- Leave flywheel holding tool in position for damper installation

- Accessory drive belt – Serpentine Belt 6-Rib 86.5" - Continental Multi-V P/N 4060865
- Super Charger drive belt – Serpentine Belt 8-Rib 57.5" - Continental Extreme Poly-V P/N 4080575X

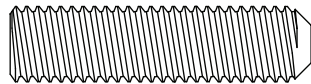
Skin Board #? - Packaged with Power Steering Pump



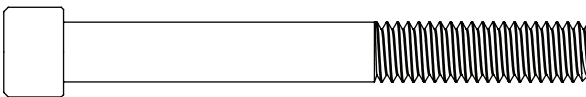
2.145" Tall Standoff - Qty. 3



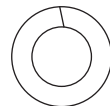
M8-1.25 x 25mm Socket
Head Cap Screw - Qty. 3



M10-1.5 x 40mm Socket
Set Screw - Qty. 3



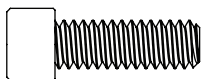
5/16-18 x 2-3/4" Socket
Head Cap Screw - Qty. 2



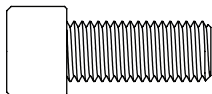
5/16" Lock
Washer - Qty. 2

Power Steering Bracket P/N13410A (not shown)

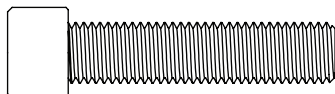
13410FK Hardware Kit - Packaged In Main Box



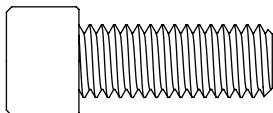
1/4-20 x 3/4" Socket
Head Cap Screw - Qty. 3



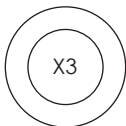
5/16-24 x 3/4" Socket
Head Cap Screw Qty. 4



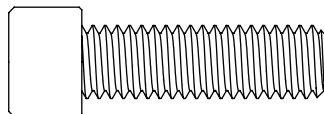
5/16-24 x 1-3/8" Socket
Head Cap Screw Qty. 4



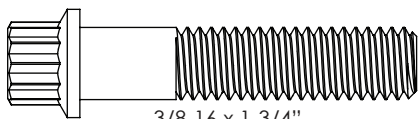
3/8-16 x 1" Socket
Head Cap Screw Qty. 2



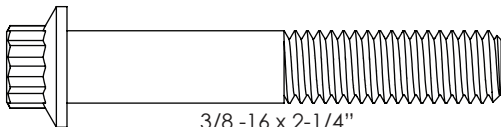
3/8" Belleville Washer



3/8-16 x 1-1/4" Socket
Head Cap Screw Qty. 3



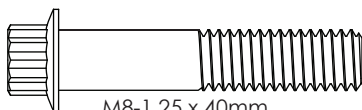
3/8-16 x 1-3/4"
12pt. Cap Screw - Qty. 1



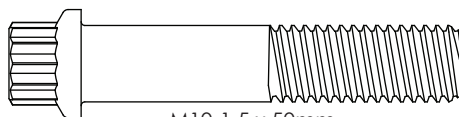
3/8-16 x 2-1/4"
12pt. Cap Screw Qty. 1



M8-1.25 x 25mm
12pt. Cap Screw - Qty. 3



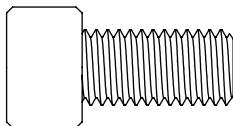
M8-1.25 x 40mm
12pt. Cap Screw - Qty. 3



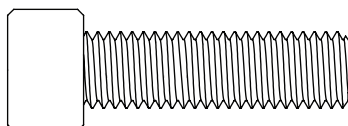
M10-1.5 x 50mm
12pt. Cap Screw Qty. 4



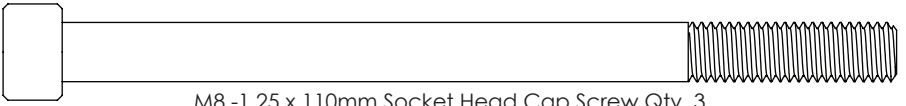
M10-1.5 x 80mm
12pt. Cap Screw - Qty. 1



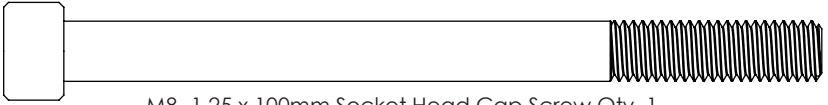
M10-1.5 x 20mm Socket
Head Cap Screw Qty. 2



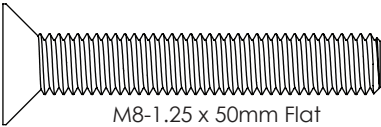
M10-1.5 x 35mm Socket
Head Cap Screw - Qty. 3



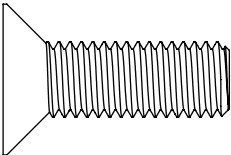
M8 -1.25 x 110mm Socket Head Cap Screw Qty. 3



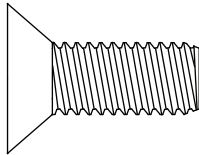
M8 -1.25 x 100mm Socket Head Cap Screw Qty. 1



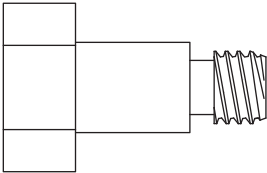
M8-1.25 x 50mm Flat Head Cap Screw Qty. 2



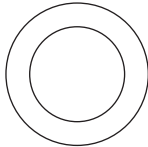
M10 -1.5 x 30mm Flat Head Cap Screw Qty. 2



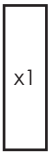
3/8 -16 x 1" Flat Head Cap Screw Qty. 1



Compressor Shoulder Bolt Qty. 1



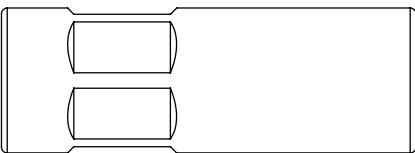
1/2" Flat washer Qty. 1



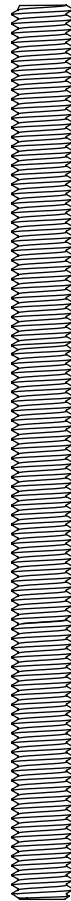
.220" Spacer



1/4 x 1" Dowel Pin - Qty. 2



2.145" Tall Standoff - Qty. 4



M8 -1.25 x 118mm Threaded Rod Qty. 2



M8 -1.25 x 146mm Threaded Rod Qty. 2

Install Crank Damper

Source: ATI Performance Products (Inst #919107I)

Recommended Installation Tools:

- Damper installation Tool • 3/8" 12-point Socket
- Torque Wrench (Ft/Lb) • 242 (Blue) Loctite
- T-40 Plus Torx bit
- Remove existing damper bolt and damper from engine. If necessary, use ATI Puller/Installer (P/N 918999) with adapter for LS1/LS7 (P/N 918999SC) or similar damper puller. Keep your original bolt for a step later.
- Depending on the year of your engine / vehicle you may notice a thin "friction" washer behind the damper hub in front of the first oil pump gear. This washer should be left in place if you are not pinning or keying your crankshaft. Otherwise it is safe to remove.
- Inspect your crankshaft for any nicks or burs; lightly file to clean up. Stone or file a slight radius on the end of the crankshaft to eliminate any sharp edges.
- This would be the time to consider whether or not you would like to pin the crankshaft as the ATI damper has a keyway in the hub unlike the OEM damper. If you decide to pin the crankshaft (a must for super charging), you will need to purchase ATI's LS1 Crank Pin Drill Fixture (P/N 918993) and follow the instructions enclosed before proceeding to the next step.
- It is highly recommended that you use anti-seize on the crankshaft snout before installing the damper hub.
- The hub may be installed onto the crankshaft first, then the damper may be bolted to the hub. Use the proper installation tool. The damper to crank snout is NOT a slip fit and will be fairly tight going onto the snout. Test fit and then heat the hub in boiling water or on a heat plate to help with your install. Do not heat more than 200° F!
- **Install LS Damper Bolt - GM Part #12557840**
- The Super Damper shell assembly is indexed to the crank hub with an offset hole marked by an indent dimple on the face of the hub and the back of the damper. It is also marked on the front by the face decal. These must be aligned for proper assembly.
- The hub to damper fit is held to an extremely close tolerance.

IMPORTANT:

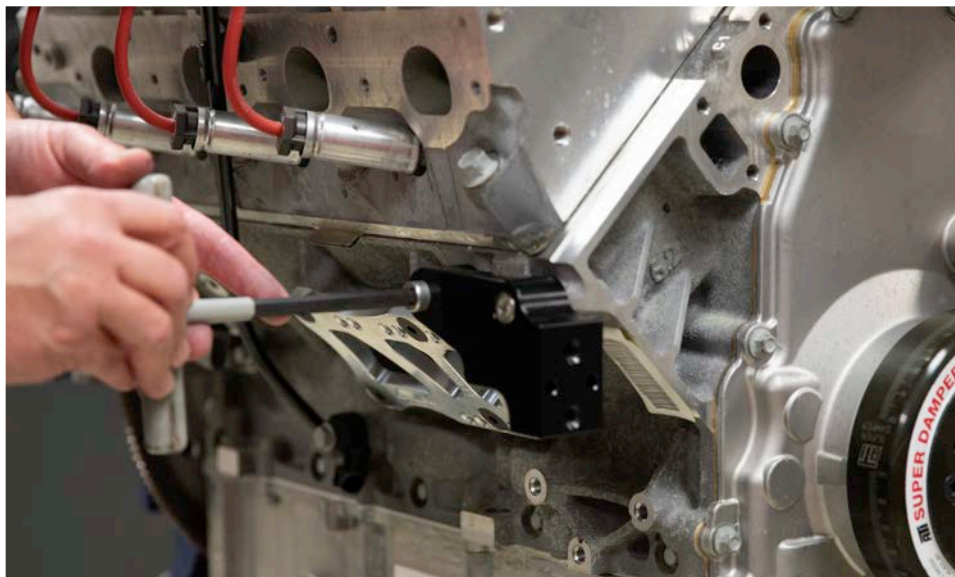
Recheck the position of the previously marked position to assure 140 degree rotation. Achieving the correct torque angle is critical to the success of this installation. Over-torquing or under-torquing the joint will result in unsatisfactory performance.

- Remove the J-42386-A Flywheel Holding Tool.



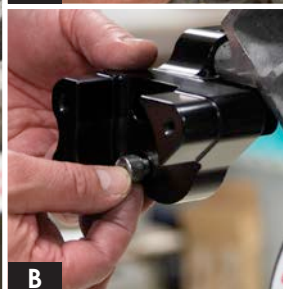
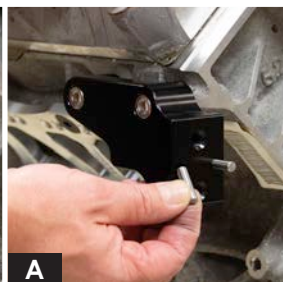
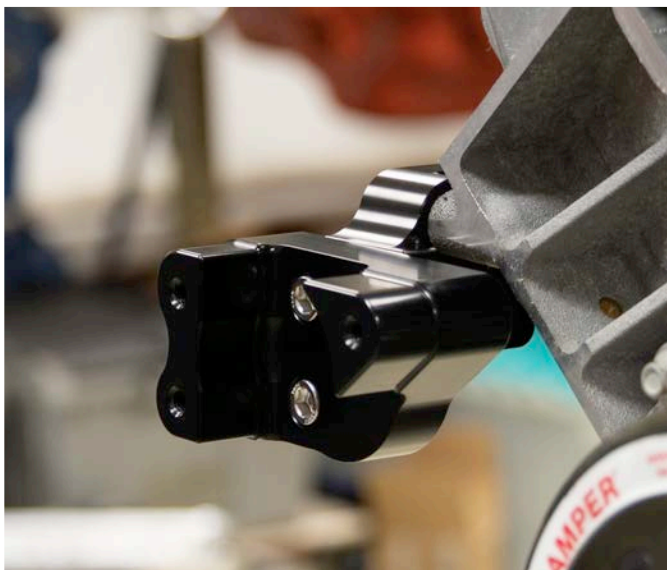
TECH TIP:

Billet Specialties recommends the use of Anti-Seize on all fasteners to prevent thread lock-up.



Super Charger Block Bracket Installation

Install Super Charger Block Bracket (13410D) to the engine block as shown with the two M10-1.5 x 35mm socket head cap screws and tighten firmly.

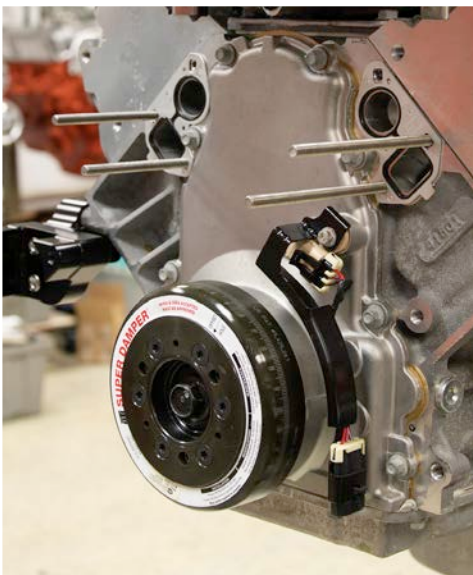
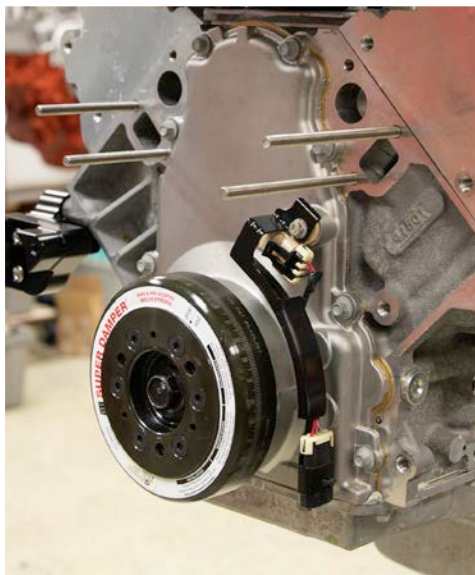


Super Charger Bracket Installation

Install Super Charger Tensioner Bracket (13410E) by first installing the two $\frac{1}{4}$ x 1" dowel pins into the super charger black bracket as shown. (A) Align and place the tensioner bracket onto the pins, (B) install the two 3/8-16 x 1" socket head caps screws and tighten firmly.

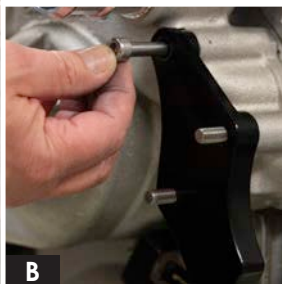
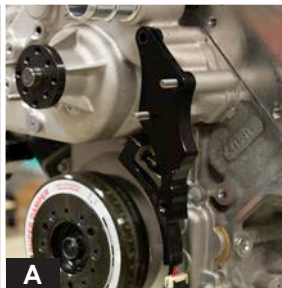
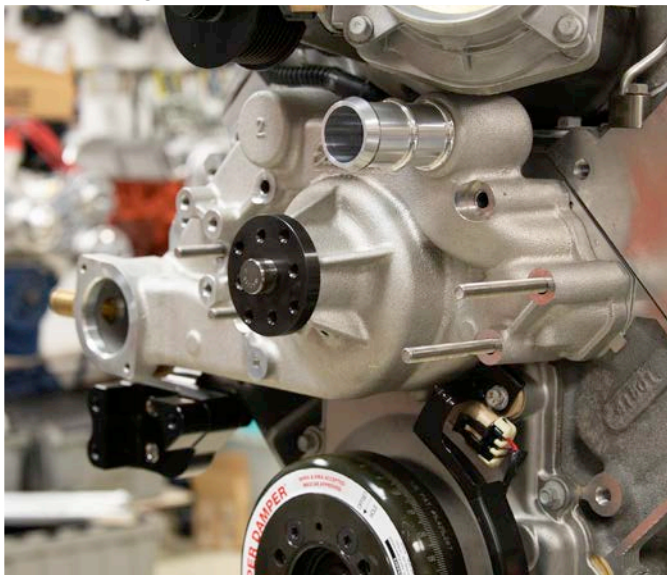
TECH TIP:

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Block prep for Water Pump Installation

Install the threaded studs all the way into the engine block utilizing the two bottom holes as shown. The two longer M8-1.25 x 146mm studs go into the passenger side of the block and the shorter M8-1.25 x 118mm studs go into the driver side of the block. Finish by installing the water pump gaskets onto the studs as shown.

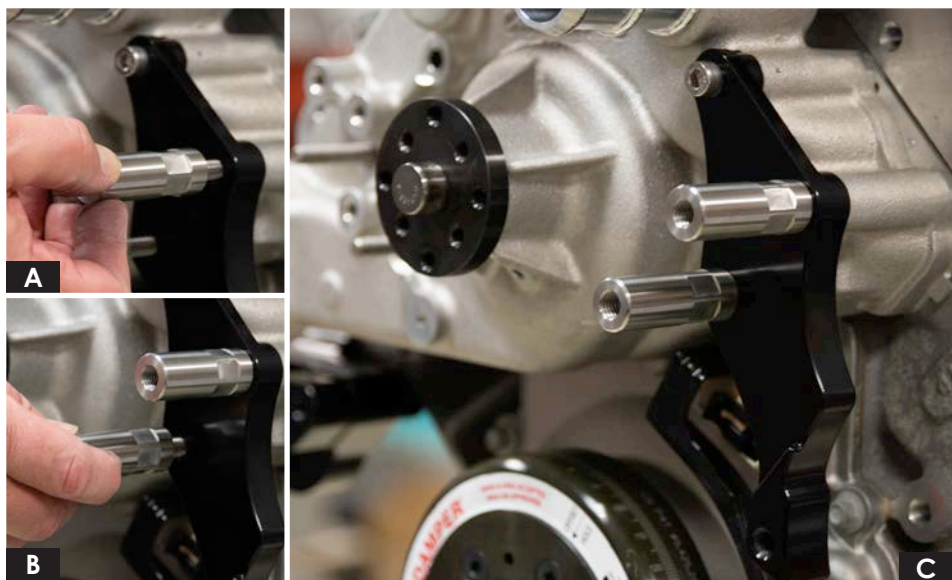


Water Pump and Alternator Bracket Installation

Install water pump onto studs as shown, (A). Place the alternator bracket (13410B) onto the driver side of water pump as shown. (B) Install the M8-1.25 x 100mm socket head cap screw in the top bracket hole and finger tighten only.

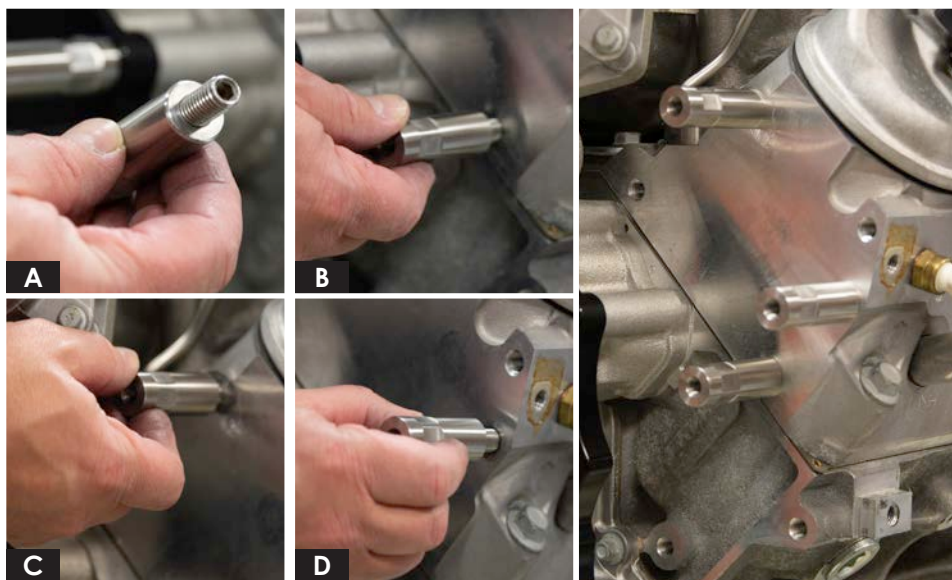
TECH TIP:

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Alternator Bracket Stand-Off Installation

Install the two 2.145" tall standoffs onto the studs (A) & (B) and finger tighten only. Fasteners will be tightened later in assembly.

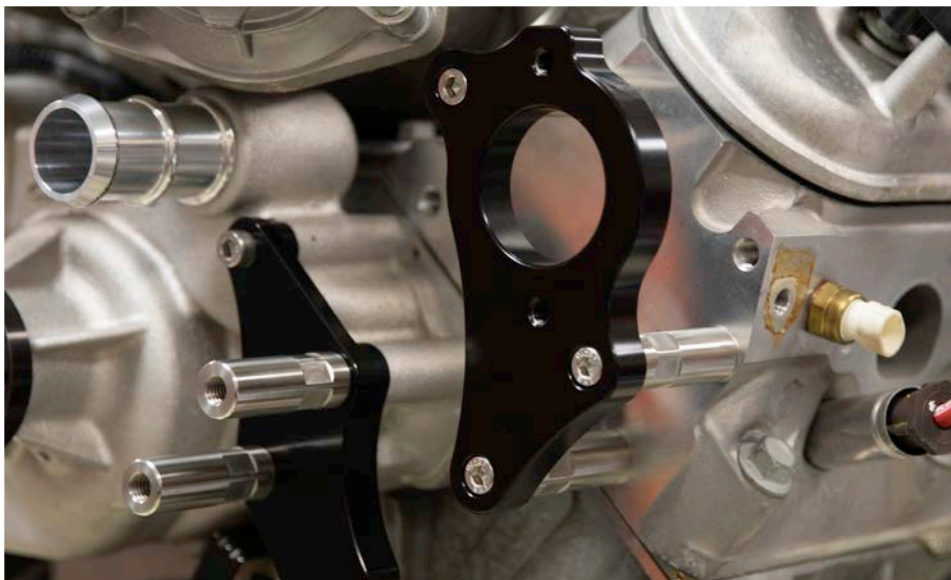


Power Steering Bracket Stand-Offs Installation

Apply blue Loctite to one end of the three M10-1.5 x 40mm socket set screws. (A) Then install them into the three 2.145" tall standoffs. Finish by installing into the driver side cylinder head as shown. Tighten firmly.

TECH TIP:

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Power Steering Bracket Installation

Attach the power steering pump bracket (13410A) to the standoffs with three M8-1.25 x 25mm socket head cap screws and tighten firmly.



Alternator Bridge Bracket Installation

Install the Alternator Bridge Bracket (13410C) with the two M10-1.5 x 30mm Flat head cap screws and finger tighten only.

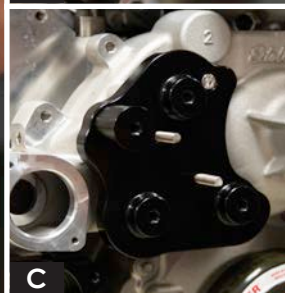
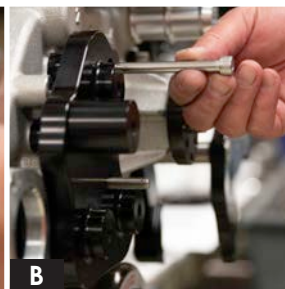
TECH TIP:

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Accessory Idler Bracket Assembly

Attach the keyed aluminum spacer boss into the recess on the front of the accessory idler bracket (13410F) Flip over and install the 3/8-16 x 1" flat head cap screw through the bracket and into the spacer. Tighten firmly.

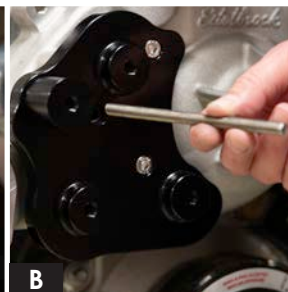


Accessory Idler Bracket Installation

Place the accessory idler bracket onto the studs as shown (A). Install a M8-1.25 x 110mm socket head cap screw in the top hole of the bracket and finger tighten only. (B) & (C)

TECH TIP:

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Accessory Idler Bracket Installation-Continued

Next, remove the exposed threaded studs one at a time and replace each with a M8-1.25 x 110mm socket head cap screw. At this time tighten all three fasteners firmly.

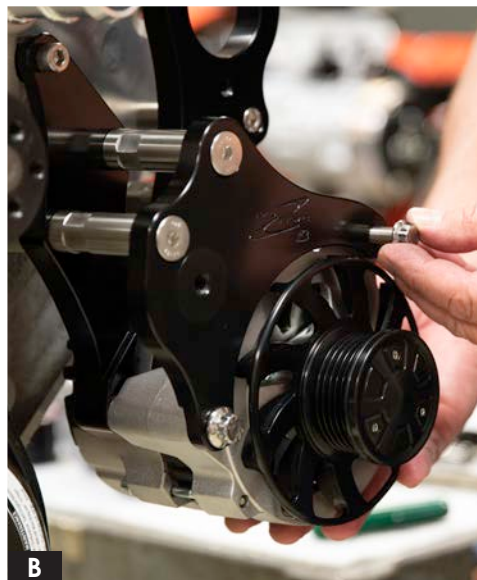


Tighten Right Side of Water Pump

Tighten the right side of the water pump starting with the M8 socket head cap screw followed by the two standoffs. Tighten all firmly. Leave the bridge bracket flat head fasteners loose at this time.

TECH TIP:

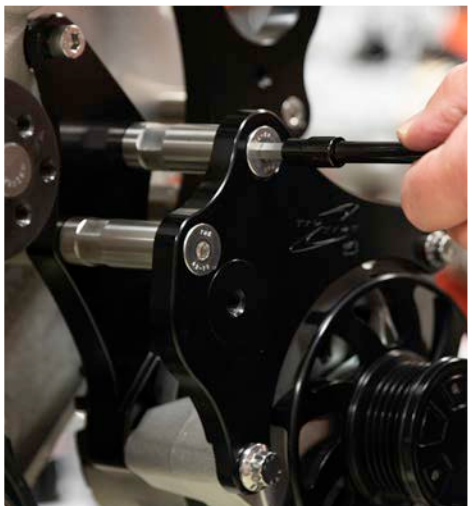
Billet Specialties recommends the use of Anti-Seize on all fasteners to prevent thread lock-up.



Alternator Installation

Place the wide boss of the alternator between the alternator bracket and the alternator bridge bracket and install the ARP M10-1.5 x 80mm 12pt socket head cap screw and finger tighten only. (Note-there may be a thin metal sleeve in the alternator boss, use the fastener to push the sleeve out and discard).

Next pivot the alternator up to install the ARP M8-1.25 x 25mm 12pt socket head cap screw through the alternator bridge bracket into the alternator.



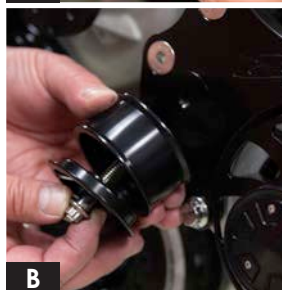
At this time tighten all fasteners firmly starting with the flat head cap screws. Finish with the ARP 12pt cap screws.

TECH TIP:

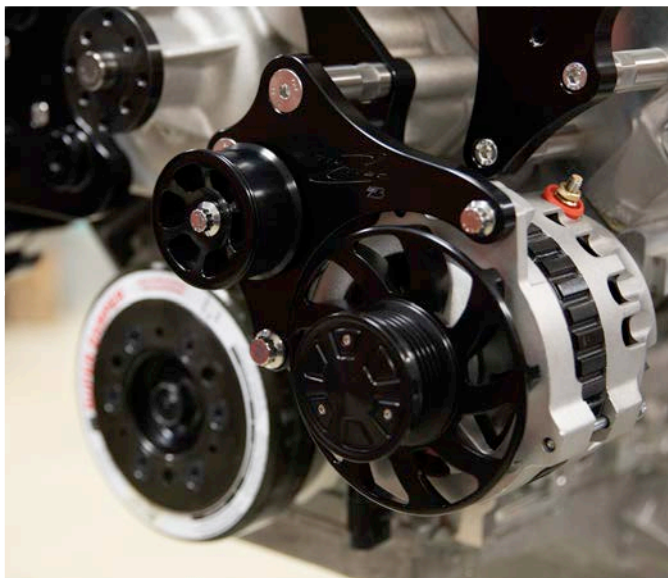
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A

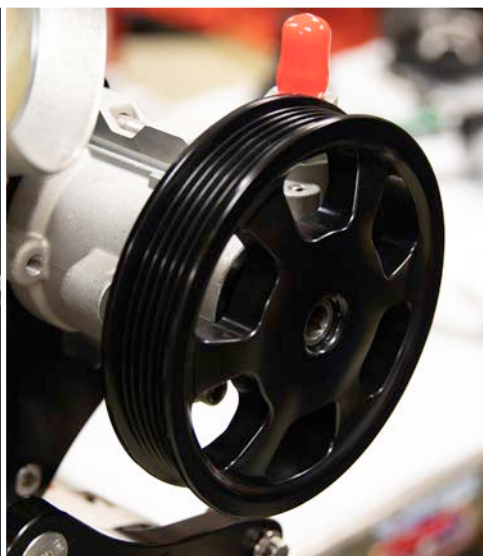


B



Accessory Drive Idler Pulley

Place the bearing sleeve into the back of the idler pulley (the back is identified by the fully exposed bearing). Thread the 3/8-16 x 1.75" ARP 12pt socket head cap screw through the cover, pulley and bearing sleeve into the alternator bridge bracket as shown. Tighten firmly.



Power Steering Pump Installation

Install the Power Steering pump to the power steering bracket with the two 5/16-18 x 2.75" socket head cap screws and 5/16" split washers. Tighten firmly.

IMPORTANT! - Do not run the pump without fluid or severe damage will occur to the pump.

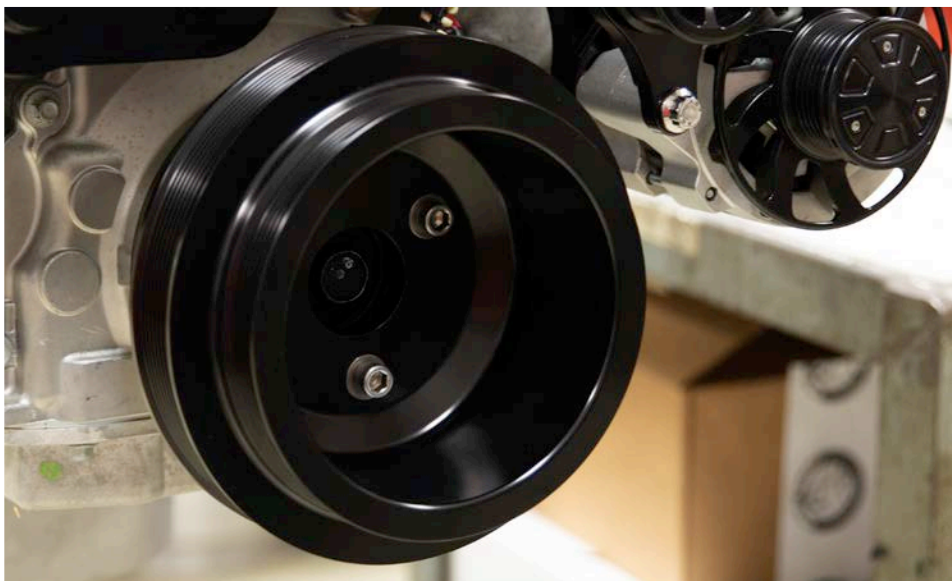
TECH TIP:

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Supercharger Tensioner Installation

Attach the supercharger tensioner to the bracket as shown, with three ARP M8-1.25 x 40mm 12pt socket head cap screws as shown. Tighten firmly.



Crank Pulley Installation

Install the crank pulley onto the ATI damper with the three 3/8-16 x 1-1/4" socket head cap screws and 3/8" Belleville washers. Tighten firmly.

TECH TIP:

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A/C Compressor Bracket Assembly

Push the M8-1.25 x 50mm flat head cap screw through the back of the AC compressor bracket (13410H), thread the 2.145" tall standoff onto the fastener and tighten firmly. Repeat for the other hole.

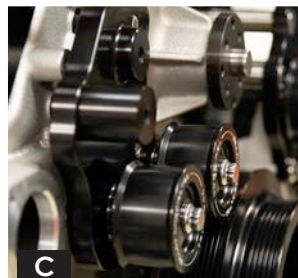
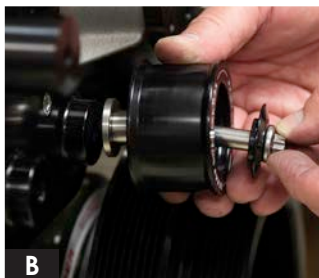


A/C Compressor Bracket Attachment

Attach the assembly to the water pump tabs as shown with the two M10-1.5 x 20mm socket head cap screws and tighten firmly.

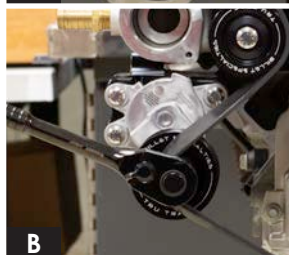
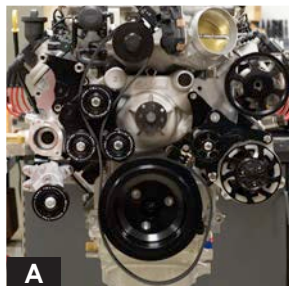
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Supercharger Idler Pulley Assembly

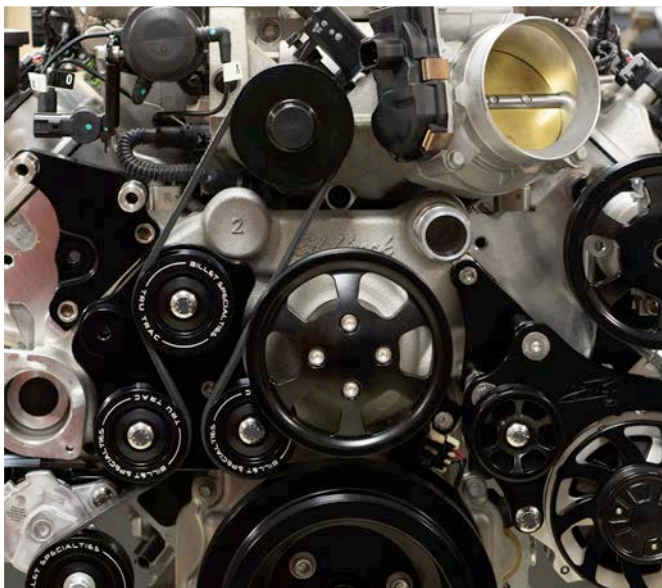
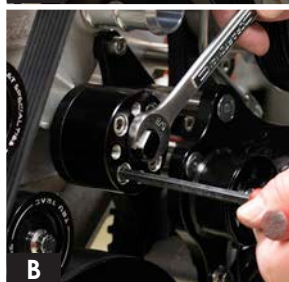
There are three idler pulleys, two smooth and one ribbed. Begin installation by placing the bearing sleeves into the back of each super charger idler pulley (A) (the back is identified by the fully exposed bearing). The two smooth pulleys are to be located at the bottom of the idler bracket, thread the M10-1.5 x 50mm ARP 12pt socket head cap screw through the aluminum washer, pulley and bearing sleeve into the accessory idler bracket as shown (B). Finish with the single grooved pulley at the top. Tighten each pulley firmly.



Super Charger Belt Installation

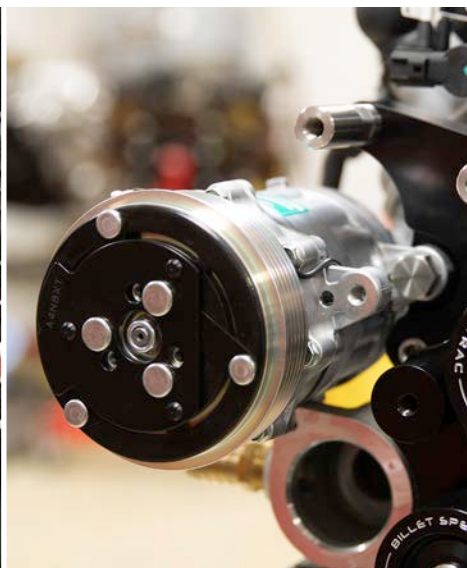
Route the 8-rib supercharger belt as shown. (A) Pull belt onto and around 15mm socket on tensioner bolt as shown. (B) Release tension by rotating the tensioner counter-clockwise, push belt over tensioner pulley grooves. Take your time and check to make sure the belt is centered over each pulley and release tensioner.

Note: This belt is tight – the longer the ratchet/breaker bar is the easier it is to install.



Water Pump Pulley Installation

Install the water pump spacer onto the water pump as shown with four 5/16-24 x 1-3/8" socket head cap screws, use a 5/8" open end wrench to hold the spacer while tightening. Finish by attaching the water pump pulley to the spacer and pump with four 5/16-24 x 2" socket head cap screws and tighten firmly.

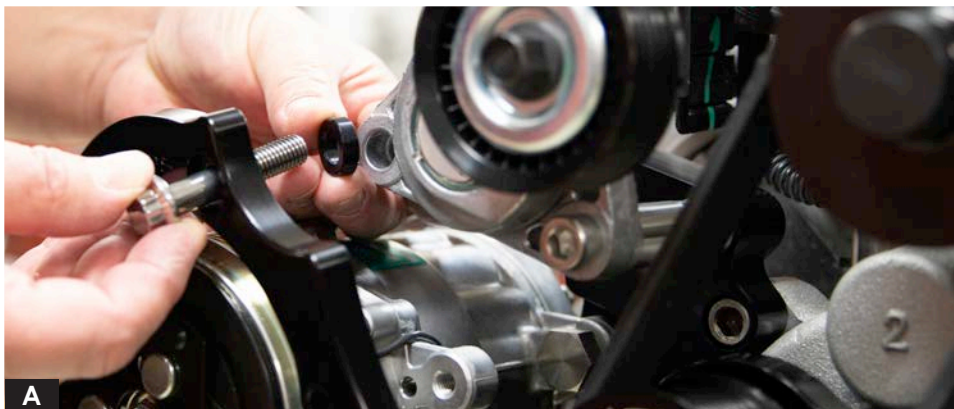


A/C Compressor Installation

Install the AC compressor to the bracket with the compressor shoulder bolt and 1/2" flat washer. Finger tighten only.

TECH TIP:

Billet Specialties recommends the use of Anti-Seize on all fasteners to prevent thread lock-up.

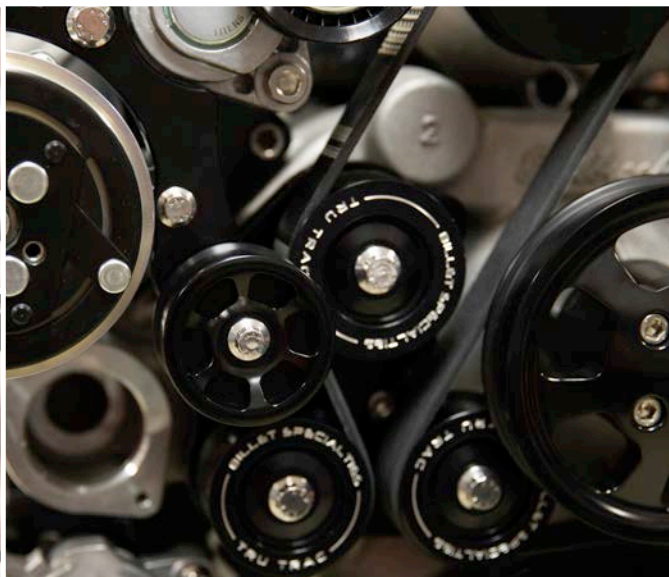
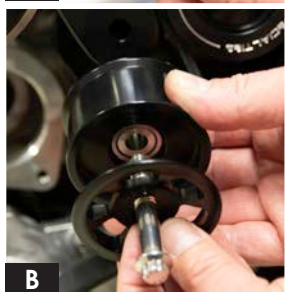


A/C Compressor Bridge Bracket Installation

Push the M10-1.5 x 50mm ARP 12pt socket head cap screw through the AC compressor bridge bracket (13410), .220 aluminum spacer and accessory tensioner and thread into the standoff. Finger tighten only. Next, install the two M8-1.25 x 25mm ARP 12pt socket head cap screws through the bridge bracket and into the compressor ears as shown and tighten firmly. Firmly tighten the accessory tensioner fasteners (ARP M10 & M10 socket head cap screw). Finish by tightening the compressor shoulder bolt as shown. (D)

TECH TIP:

Billet Specialties recommends the use of Anti-Seize on all fasteners to prevent thread lock-up.



Compressor Bridge Bracket Idler Pulley Installation

Place the bearing sleeve into the back of the idler pulley (the back is identified by the fully exposed bearing) (A). Thread the 3/8-16 x 2.25" ARP 12pt socket head cap screw through the cover, pulley and bearing sleeve into the compressor bridge bracket as shown. (B) Tighten firmly.

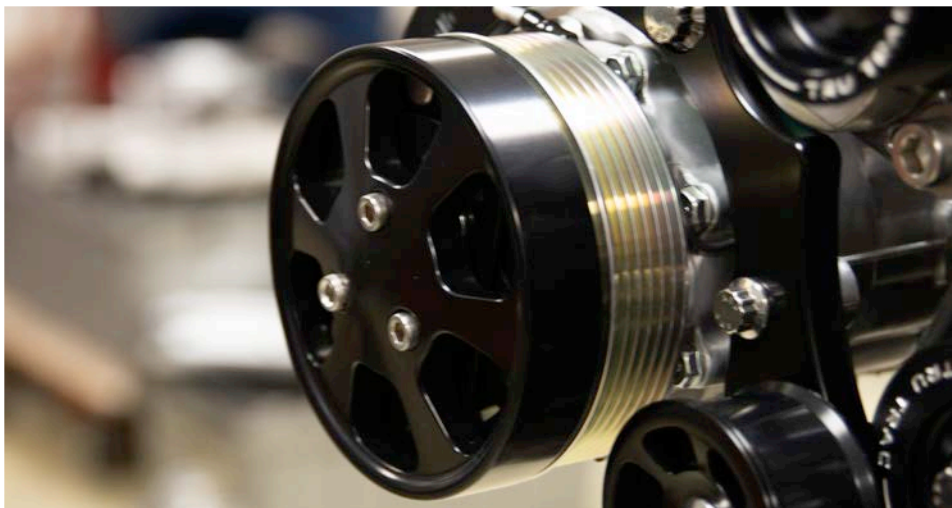


Accessory Tensioner Pulley Replacement

Remove the plastic tensioner pulley and washer, (A) replace with aluminum pulley and washer. (B) Tighten firmly.

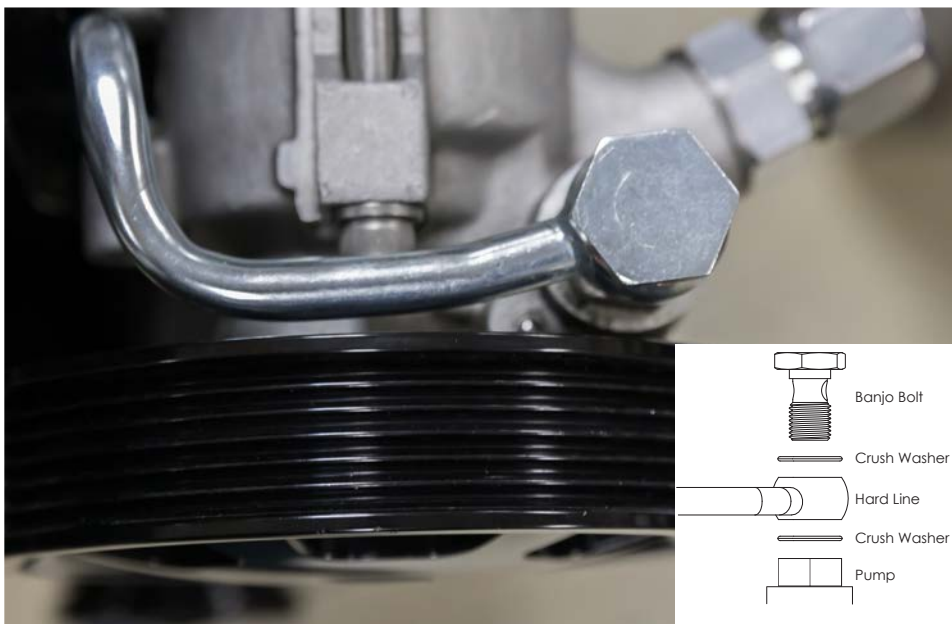
TECH TIP:

Billet Specialties recommends the use of Anti-Seize on all fasteners to prevent thread lock-up.



A/C Compressor Clutch Cover Installation

Install the AC compressor clutch cover with the three 1/4-20 x 3/4" socket head cap screws, torque to 40-45 inch/lbs. Caution: Over tightening these fasteners will cause damage to the compressor clutch. **VERY IMPORTANT – DO NOT OVER TIGHTEN**

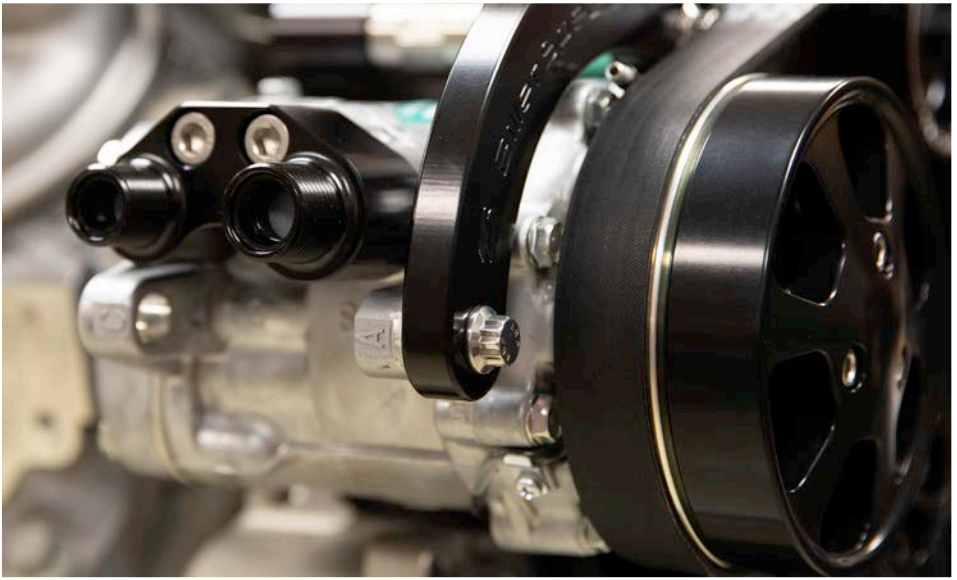


Power Steering Hard Line Installation

Finish by installing the Power steering hard line to the power steering pump. You may install the power steering pressure line at this time as well.

TECH TIP:

Billet Specialties recommends the use of Anti-Seize on all fasteners to prevent thread lock-up.



A/C Compressor Manifold Installation

Continue with this step ONLY if you are going to be installing your air conditioning hoses and charging your system at this time.

Remove the plate on top of the compressor body.

Install compressor manifold onto compressor with the two 8mm-1.25 x 35mm socket head cap screws and tighten firmly (13 ft/lbs).

Install hoses, connect clutch wire and charge system.

Important!

If you are NOT installing hoses and charging system at this time, place compressor manifold and hardware in a safe place and leave cover plate on compressor at this time. Do not connect clutch wire or apply power to clutch wire without the hoses connected and system charged – **serious damage will occur to compressor.**

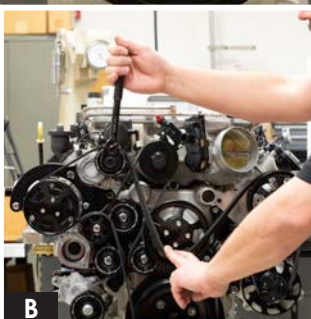
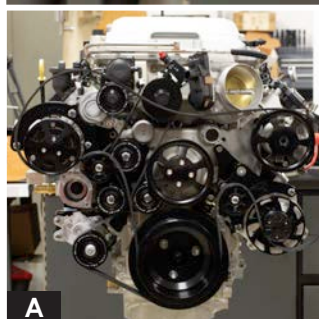
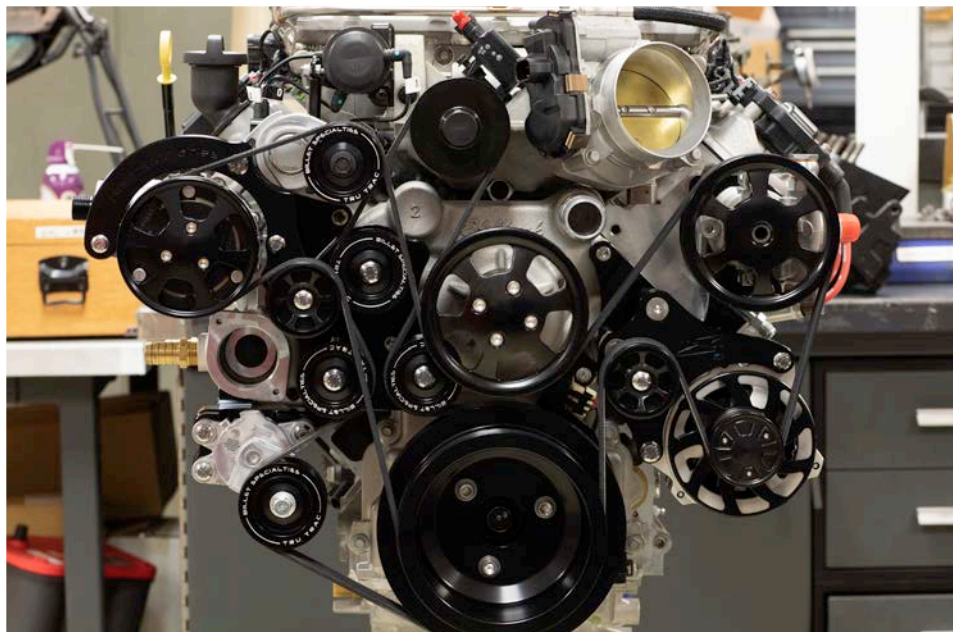
Compressor Oil

Although the compressor is supplied with oil, the level may not be correct for the entire system. Consult the instruction manual of the air conditioning unit for proper levels and system charging procedures.

This compressor is designed for use with Air Conditioning units only. Serious damage will occur to AC compressor if used for anything other than its intended purpose. Warranty is Void if used for any non-AC application.

TECH TIP:

Billet Specialties recommends the use of Anti-Seize on all fasteners to prevent thread lock-up.



Accessory Drive Belt Installation

Route belt as shown, (A) Place belt over the 14mm ratchet/breaker bar and release tension by rotating tensioner clockwise. Pull belt under water pump pulley. (B)&(C). Make sure belt is aligned on all pulleys before releasing tension.

Note: This belt is tight – the longer the ratchet/breaker bar is the easier it is to install.

TECH TIP:

Billet Specialties recommends the use of Anti-Seize on all fasteners to prevent thread lock-up.

#BLK13410



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