

TRU Trac

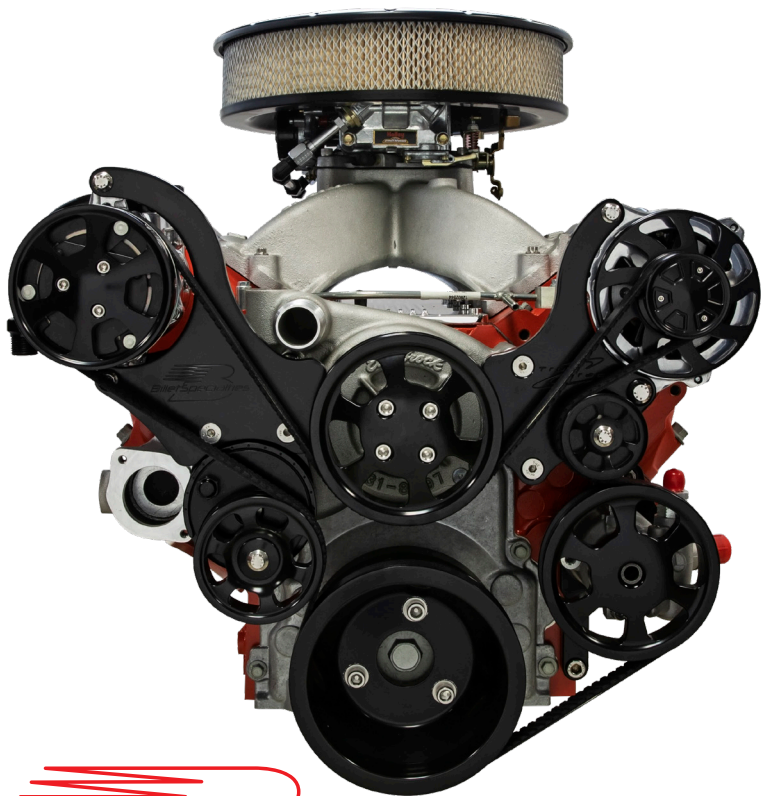
LS TRU TRAC

Installation Manual

For Systems with AC & PS

13450/13470/BLK13450/BLK13470

13460/13490/BLK13460/BLK13490



BilletSpecialties

Billet Specialties, Inc.

500 Shawmut Ave. • La Grange, IL 60526
Tech (708) 588-0505 • Fax (708) 588-7181

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

IMPORTANT!

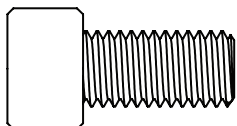
Thoroughly read the instructions, the removal and installation of the damper requires special tools, if after reading the instructions and you feel you may not be able to install the damper correctly Billet Specialties recommends you to have a professional mechanic perform the installation.

Required Tools & Materials

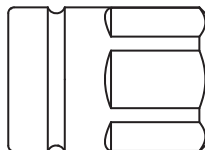
- 5mm Allen
- 6mm Allen
- 8mm Allen
- 1/4" Allen
- 3/16" Allen
- 5/16" Allen
- 3/8" 12pt. Socket
- 5/8" Hex Socket
- 10mm 12pt. Socket
- 12mm 12pt. Socket
- 22mm Hex Socket
- 24mm Hex Socket
- Socket Wrench & Extensions
- 1/2" Drive Breaker Bar
- Torque Wrench **Capable of 250ft/lbs.**
- 1/2" Combination Wrench
- 3/4" Combination Wrench
- 11/16" Combination Wrench
- Loctite 272 Thread Locker
- Anti-Seize Compound

Included Serpentine Belt				
With P/S	Continental Elite	6-Rib Poly-V Serpentine	Length: 76"	#4060760
Without P/S	Continental Elite	6-Rib Poly-V Serpentine	Length: 70"	#4060700

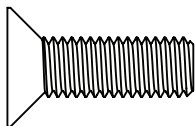
Skin Board #1 - Packaged with Power Steering Pump



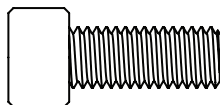
M10 - 1.5 x 20mm Socket Head Cap Screw
Qty. 2



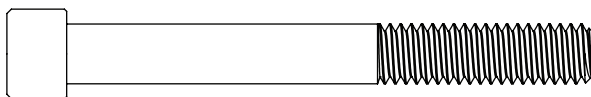
1.035" Stand-Off
Qty. 3



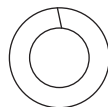
M8-1.25 x 25mm Flat Head Cap Screw
Qty. 3



M8-1.25 x 20mm Socket Head Cap Screw
Qty. 3

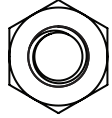


5/16-18 x 2-3/4" Socket Head Cap Screw
Qty. 2

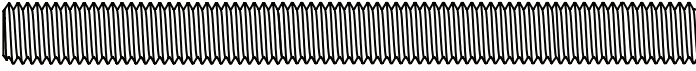


5/16" Lock Washer
Qty. 2

Skin Board #2 - Packaged with Water Pump



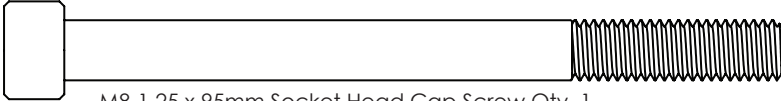
M8-1.25mm
Hex Nut
Qty. 2
Discard after use



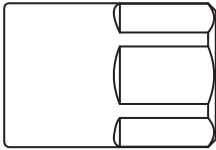
M8-1.25 x 92mm Threaded Rod Qty. 3



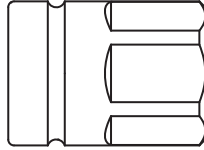
M8-1.25 x 118mm Threaded Rod Qty. 2



M8-1.25 x 95mm Socket Head Cap Screw Qty. 1



1.103" Stand-Off
Qty. 2

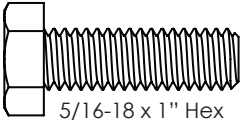


1.035" Stand-Off
Qty. 3

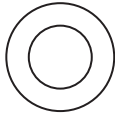
TECH TIP:

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

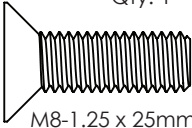
Skin Board #3 Packaged in Main Box



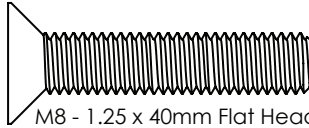
5/16-18 x 1" Hex
Head Bolt
Qty. 1



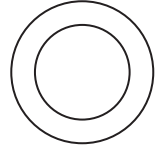
5/16" Flat
Washer
Qty. 1



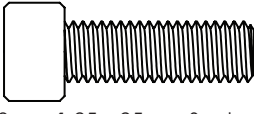
M8-1.25 x 25mm Flat
Head Cap Screw
Qty. 4



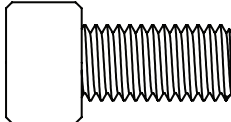
M8 - 1.25 x 40mm Flat Head
Cap Screw
Qty. 2



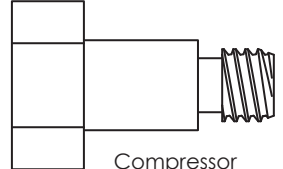
1/2" Flat
washer
Qty. 1



8mm-1.25 x 25mm Socket
Head Cap Screw
Qty. 2



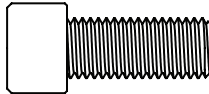
M10 - 1.5 x 20mm Socket
Head Cap Screw
Qty. 3



Compressor
Shoulder Bolt
Qty. 1



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



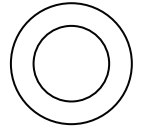
5/16-24 x 3/4" Socket
Head Cap Screw
Qty. 4



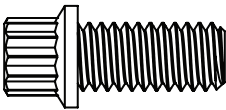
3/8-16 x 1-1/4" Socket
Head Cap Screw
Qty. 3



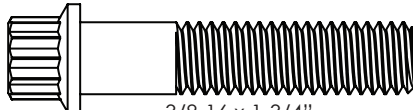
3/8" Belleville
Washer
Qty. 3



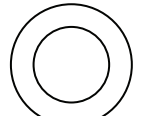
.5mm
Shim Washer
Qty. 2



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



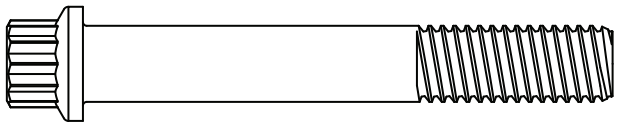
3/8-16 x 1-3/4"
12pt. Cap Screw
Qty. 1



1mm
Shim Washer
Qty. 2



M8-1.25 x 25mm
12pt. Cap Screw
Qty. 4



M10-1.5 x 70mm
12pt. Cap Screw
Qty. 1

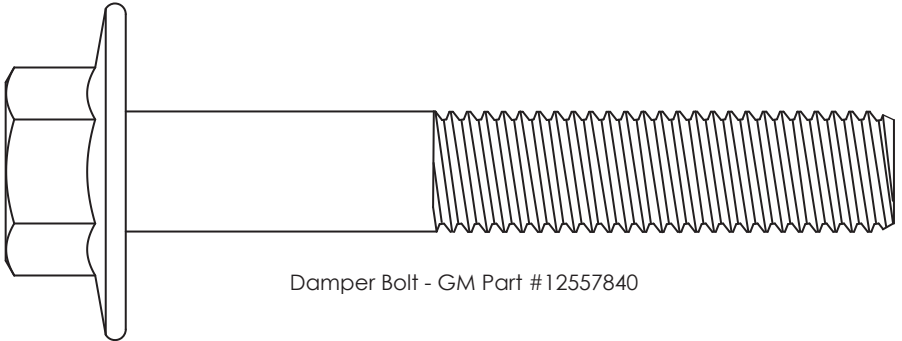
Engine Prep

- Disconnect battery.
- Remove existing accessory drive and water pump.
- Remove factory damper bolt & damper (**see recommended damper tools**).
- Clean gasket areas, inspect front crank seal and replace if necessary.

A note about painted engine blocks - It is important the alternator and alternator bracket have a good ground to the engine block. Improperly grounded high amp alternators will either not charge at full output or not charge at all. Remove any paint that comes in contact with the water pump and alternator bracket. This also applies if you choose to paint the water pump.

Damper Installation Tools

GM Part Number	Description
J-41816	Crankshaft balancer remover or similar
J-41816-2	Crankshaft balancer remover step plate
J-42836-A	Flywheel holding tool
J-41665	Crankshaft balancer and sprocket installer
J-41478	Crankshaft front oil seal installer
J-45059	Angle Meter



Damper Bolt - GM Part #12557840



Figure 1

ATI Damper Installation

Install ATI Crank Damper per instructions included with the ATI Damper.

TECH TIP:

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

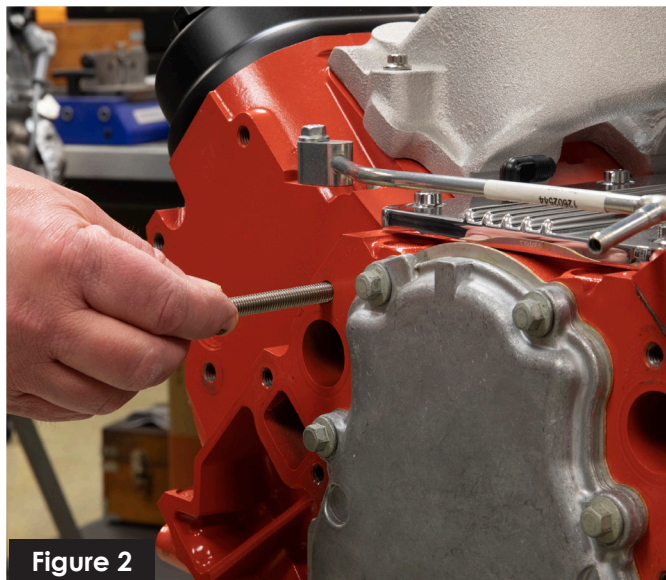


Figure 2

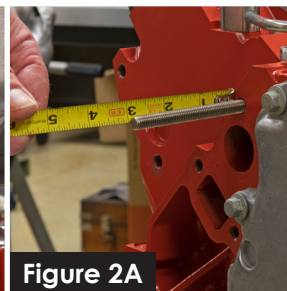


Figure 2A

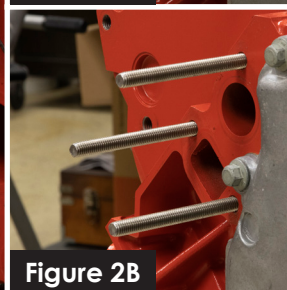


Figure 2B

Install Water Pump

Install the three M8-1.25 x 92mm threaded studs into the passenger side of the engine block as shown (Figure 2), Leave 3" of exposed thread (Figure 2A & 2B). Use the two supplied M8 hex nuts locked together if necessary.

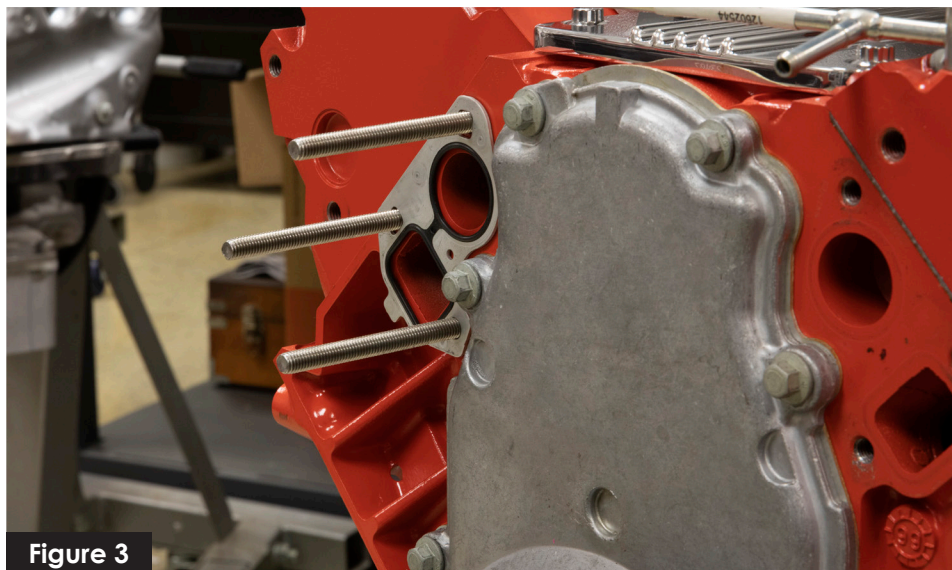
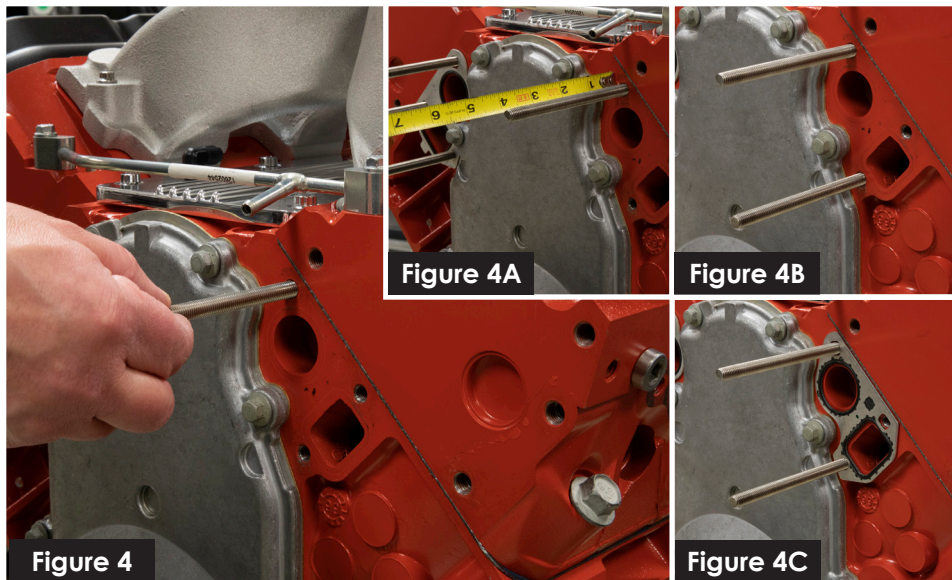


Figure 3

Slide the LS water pump gasket over the studs against the engine block. (Figure 3).

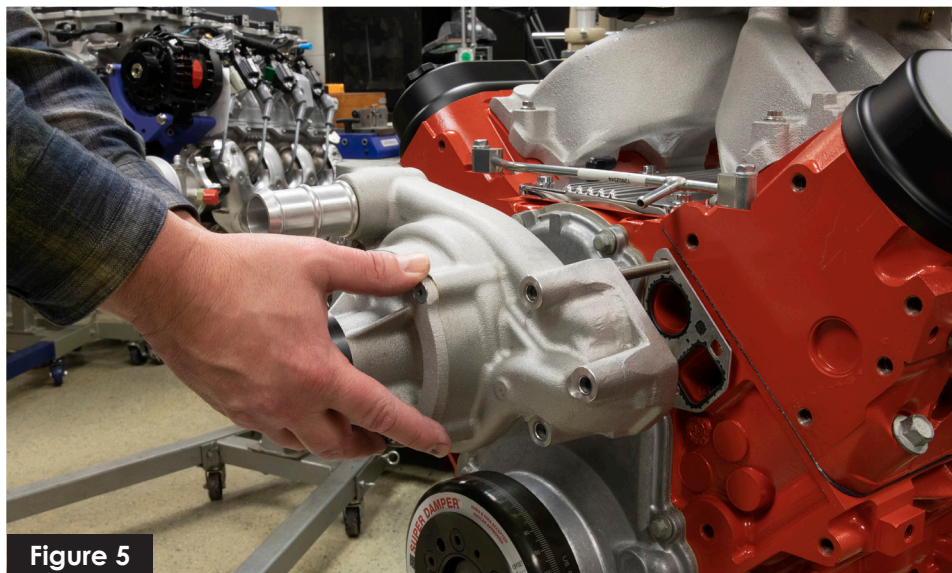
TECH TIP:

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



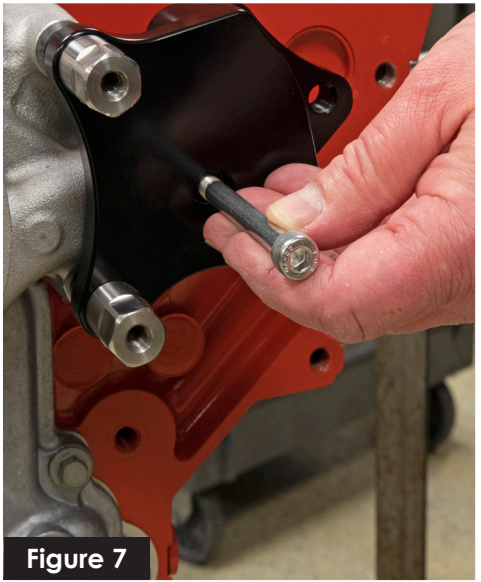
Install Water Pump Cont.

Install the two M8-1.25 x 118mm threaded studs into the driver side of the engine block nearest the timing cover as shown (Figure 4), leave 4" exposed thread (Figure 4A & 4B). Use the two supplied M8 hex nuts locked together if necessary. Slide the LS water pump gasket over the studs and against the engine block. (Figure 4C).



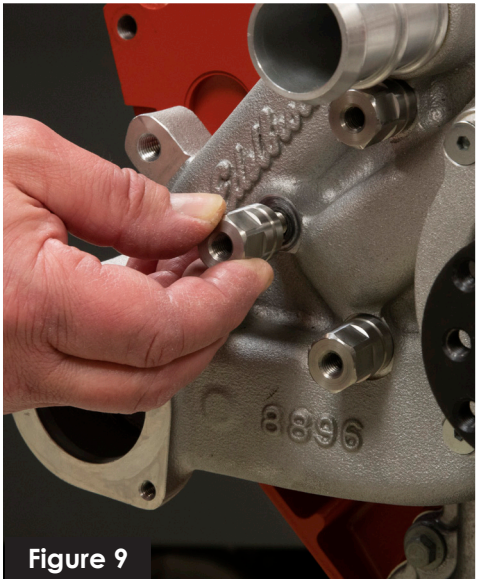
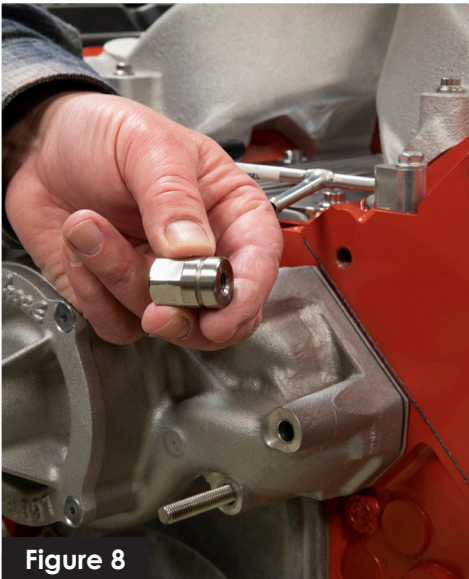
Install water pump onto engine (Figure 5), at this time apply anti-seize to the exposed threads of all the studs.

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



Install Alternator Bracket

Install the driver side alternator bracket P/N 13550G over the studs. Thread the two 1.103" Standoffs onto the studs and finger tighten (Figure 6). Finish driver side installation by threading the M8-1.25 x 95mm socket head cap screw through the bracket and into the block and finger tighten (Figure 7).



Finish by installing the three 1.035" spacers identified by a machined groove on them (Figure 8) onto the three passenger side studs. (Figure 9).

Tighten all fasteners firmly at this time. (Both passenger and driver side).

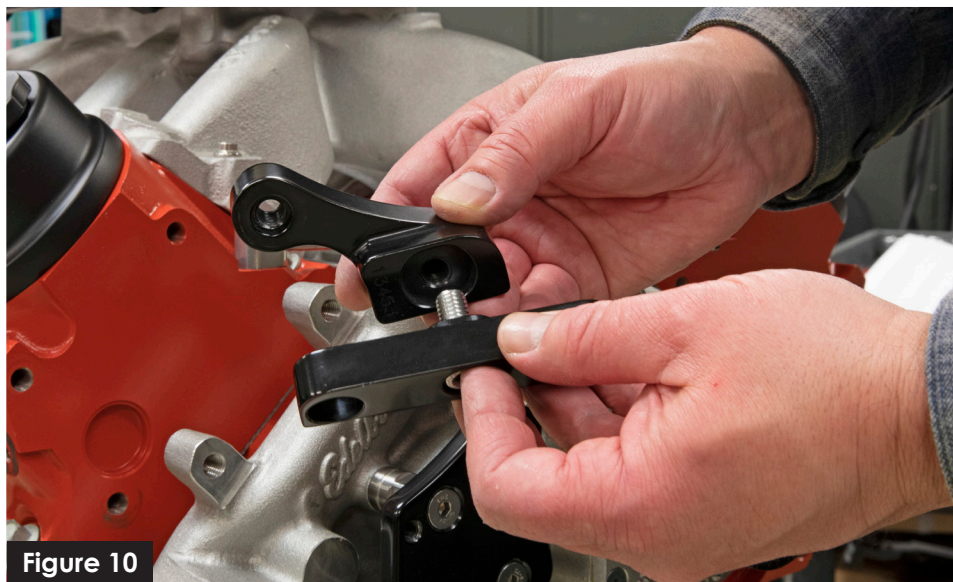


Figure 10

Install A/C Compressor Back Bracket

Apply anti-seize to the threads of the three M10-1.5 x 20mm socket head cap screws. Place the compressor back bracket P/N 13453 into the back of the compressor cross bracket P/N 13454 (Figure 10) and secure with one of the M10-1.5 x 20mm socket head cap screws, finger tighten.

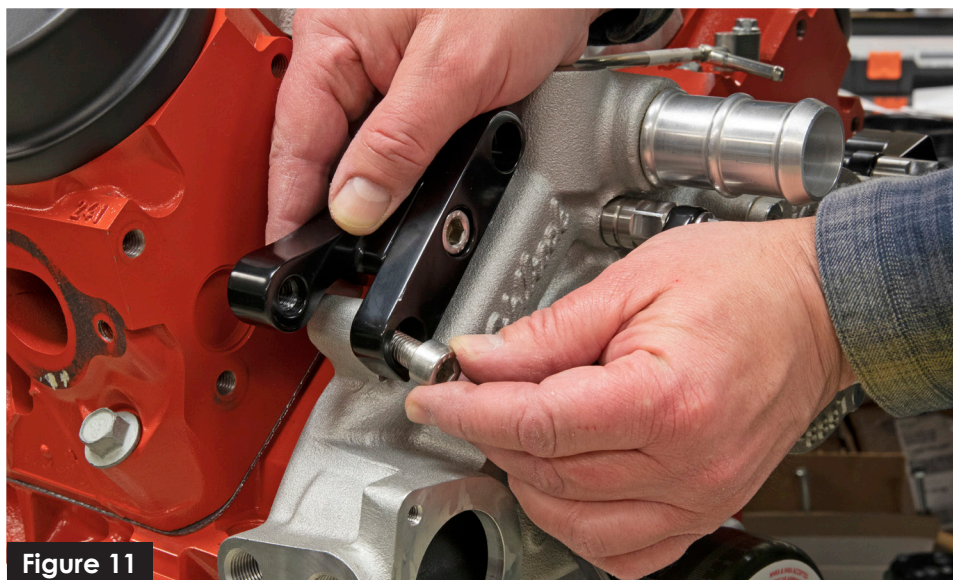


Figure 11

Attach the completed assembly to the water pump as shown (Figure 11) with the two remaining M10-1.5 x 20mm socket head cap screws and tighten all three firmly.

TECH TIP:

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



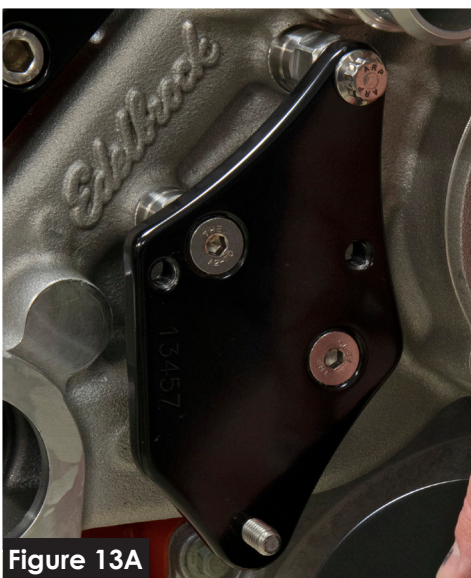
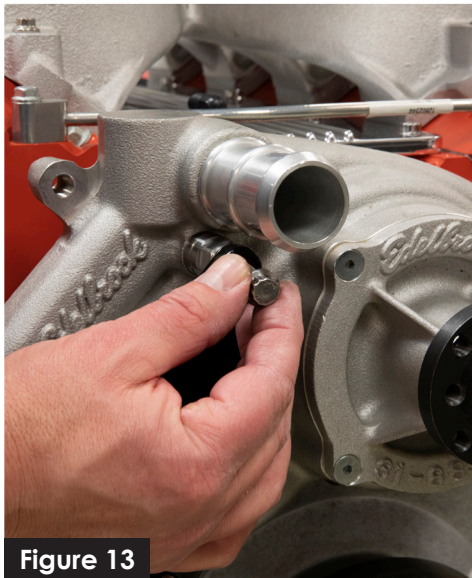
Install Tensioner Bracket and Tensioner

Apply anti-seize to the threads of the following:

- (1) M8-1.25 x 25mm ARP 12pt. cap screw
- (2) M8-1.25 x 25mm flat head cap screw
- (1) 5/16-18 x 1" hex head bolt

Tensioner Bracket

Push the 5/16-18 x 1" hex head bolt and 5/16" flat washer into the back of the tensioner bracket P/N 13457 (Figure 12) as shown. Place the bracket with the bolt and washer on the passenger side of the water pump as shown. Thread the two M8-1.25 x 25mm flat head cap screws through the bracket and into the bottom standoffs (Figure 12A) .



Finish by threading the M8-1.25 x 25mm ARP 12pt. cap screw through the hole in the bracket and into the top standoff. Tighten all three fasteners firmly. (Figure 13 & 13A).

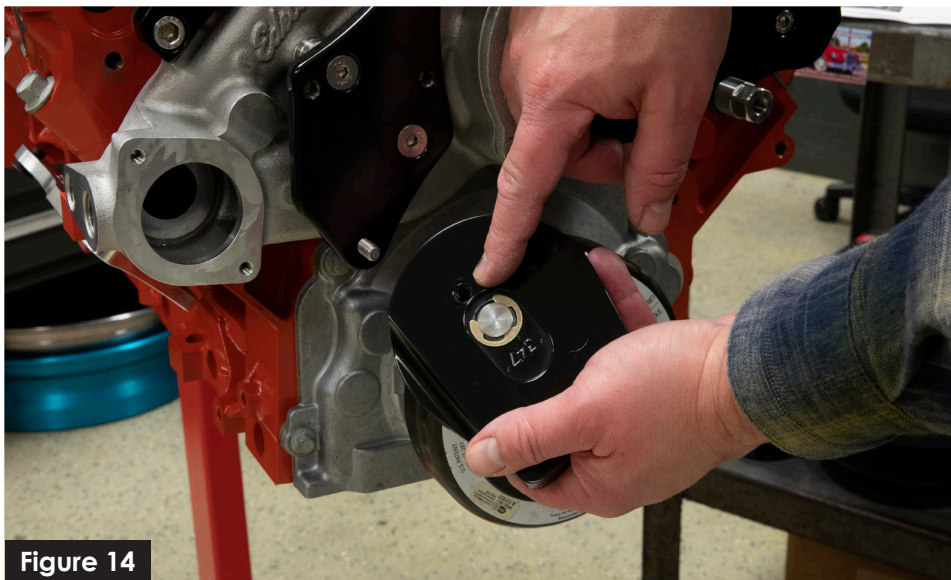


Figure 14

Install Tensioner

Align the threaded hole in the back of the tensioner (Figure 14) with the threads of the 5/16-18 hex head bolt sticking through the tensioner bracket, finger tighten the tensioner to the bracket while aligning the top tensioner holes with the bracket.

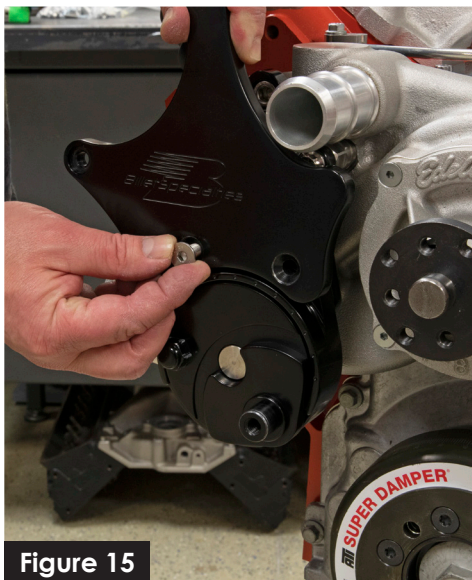


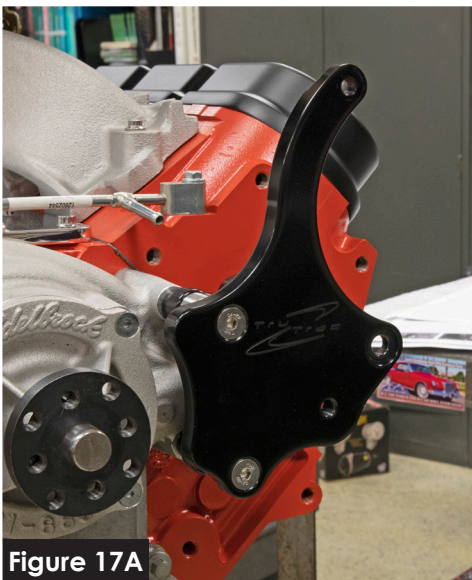
Figure 15



Figure 16

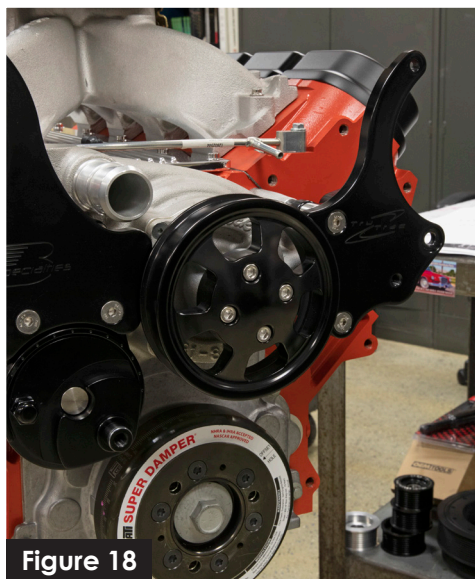
Install Compressor Bridge Bracket

Apply anti-seize to the threads of the two M8-1.25 x 40mm flat head cap screws. Next, place the bridge bracket P/N 13452 on the passenger side of the motor, align the two bottom holes with the tensioner. Thread the two M8-1.25 x 40mm flat head cap screws through the bridge bracket, tensioner and into the tensioner bracket (Figure 15). Only finger tighten at this time (Figure 16).



Install Alternator Bridge Bracket

Apply anti-seize to the threads of the two M8-1.25 x 25mm flat head cap screws. Next place the alternator bracket P/N 13550D to the driver side of the water pump and align with the two standoffs. Install the flat head cap screws and finger tighten. (Figure 17 & 17A).



Install Water Pump Pulley

Apply Loctite 272 Thread Locker to the threads of the four 5/16-24 x 3/4" socket head cap screws. Install water pump pulley as shown and tighten firmly. (Figure 18).

Install Crank Pulley

Apply Loctite 272 Thread Locker to the threads of the three 3/8-16 x 1-1/4" socket head cap screws. Install crank pulley as shown (Figure 19), install the Belleville washers with the cup of the washer facing towards the pulley tighten firmly.

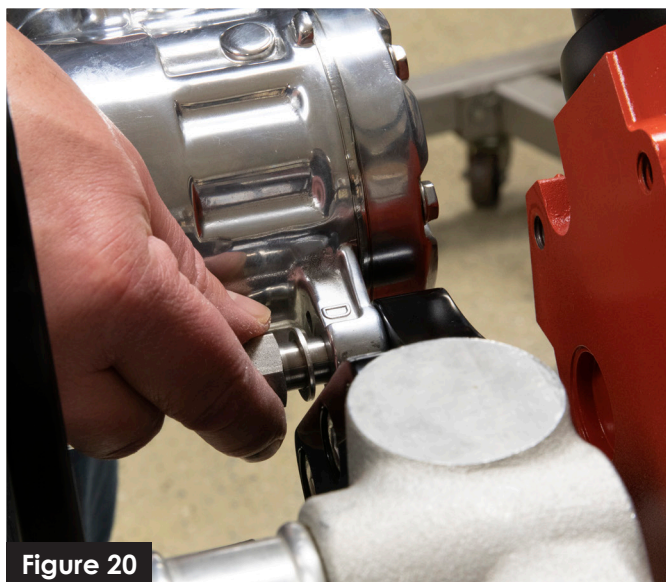


Figure 20

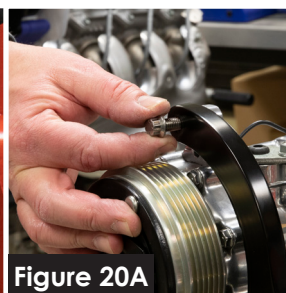


Figure 20A



Figure 20B

Install A/C Compressor

Apply anti-seize to the following:

- (1) Compressor shoulder bolt
- (2) M8-1.25 x 25mm ARP 12pt. cap screw

Place the A/C Compressor between the bridge bracket and compressor back bracket, install the compressor shoulder bolt and 1/2" flat washer through the rear compressor boss and into the compressor back bracket. Finger tighten. (Figure 20).

Next install the two M8-1.25 x 25mm ARP 12pt. cap screws through the bridge bracket and into the compressor. (Figure 20A & 20B). **Tighten all fasteners on the passenger side firmly at this time, including the hex head behind the tensioner.**

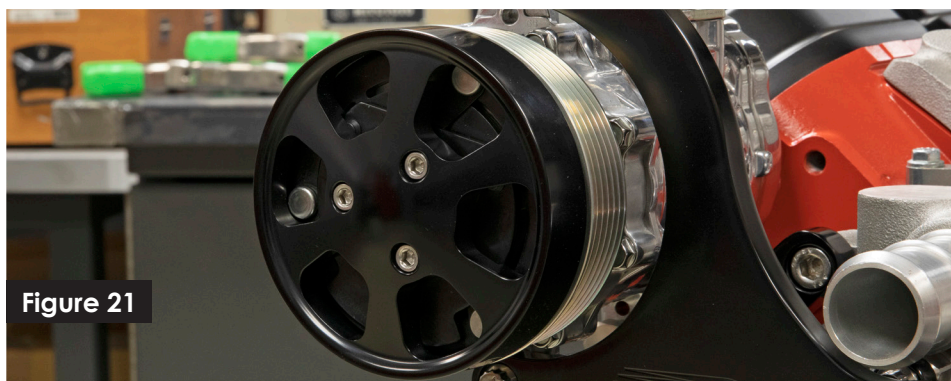
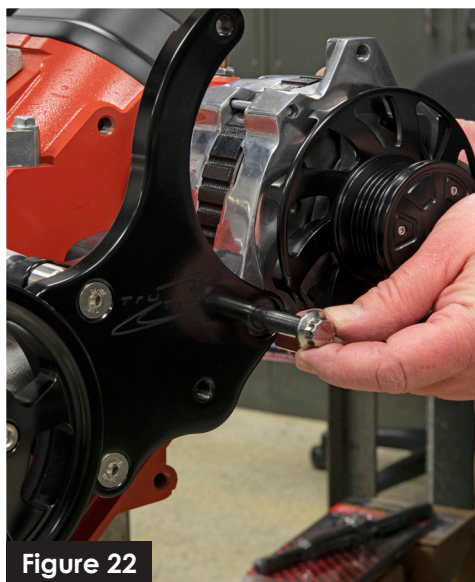


Figure 21

Install A/C Compressor Clutch Cover

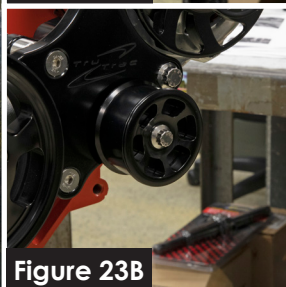
Apply Loctite 272 Thread Locker to the three 1/4-20 x 3/4" socket head cap screws. Place the clutch cover on the compressor and thread the socket head cap screws through the cover and into the clutch, torque to **40-45 inch/lbs.** (Figure 21)

Caution: Over tightening these fasteners will cause damage to the compressor clutch. VERY IMPORTANT-Do Not Over Tighten.



Install Alternator

Apply anti-seize to the M8-1.25 x 25mm ARP 12pt. cap screw and the M10-1.5 x 70mm ARP 12pt. cap screw. Place the alternator between the bridge bracket and alternator bracket, install the M10-1.5 x 70mm ARP 12pt. cap screw through the bridge bracket and alternator bottom into alternator bracket (Figure 22). Rotate alternator up and install the M8-1.25 x 25mm ARP 12pt. cap screw (Figure 22A). **Tighten all fasteners firmly on the driver side at this time.**



Install Idler Pulley

Apply anti-seize to the 3/8-16 x 1-3/4" ARP 12pt. cap screw. Place the bearing sleeve into the back of the idler pulley (the back is identified by the fully exposed bearing). (Figure 23) Thread the 3/8-16 x 1-3/4" ARP 12pt. cap screw through the idler pulley cover, idler pulley and bearing sleeve (Figure 23A) into the bridge bracket and tighten firmly (Figure 23B).



Figure 24

Install Tensioner Pulley

Apply anti-seize to the 3/8-16 x 3/4" ARP 12pt. cap screw. Place the tensioner pulley onto the tensioner, finish installing the 3/8-16 x 3/4" ARP 12pt. cap screw and aluminum washer (packaged w/pulley) and tighten firmly (Figure 24).

FOR KITS WITHOUT POWER STEERING PROCEED TO BELT INSTALLATION

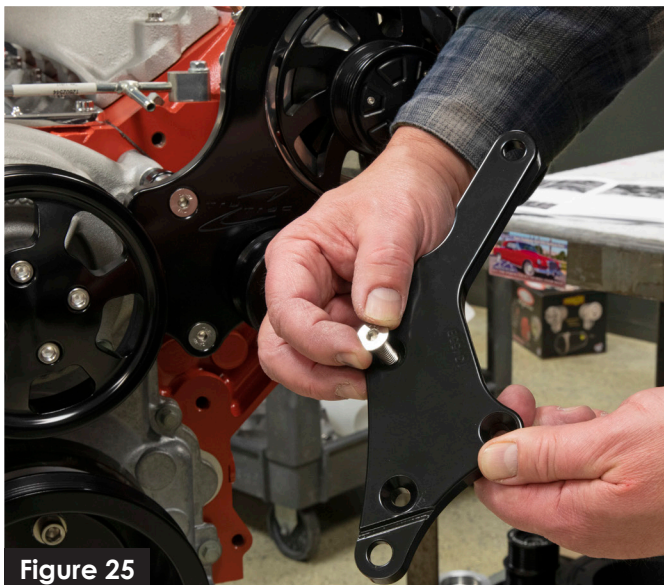


Figure 25

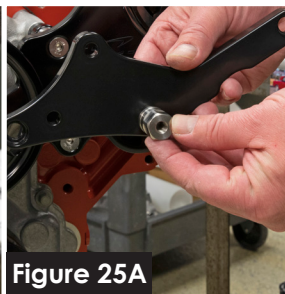


Figure 25A



Figure 25B

Assemble Power Steering Block Bracket

Apply anti-seize to the three M8-1.25 x 25mm flat head cap screws. Attach the three 1.035" spacers identified by a machined groove on them to the power steering block bracket P/N 13455B with the flat head cap screws from behind as shown. (Figure 25, 25A & 25B) Tighten Firmly.



Figure 26

Assemble Power Steering Pump Bracket to Block Bracket

Apply anti-seize to the three M8-1.25 x 20mm socket head cap screws. Install the power steering pump bracket P/N 13455A to the standoffs as shown and tighten firmly. (Figure 26).



Figure 27

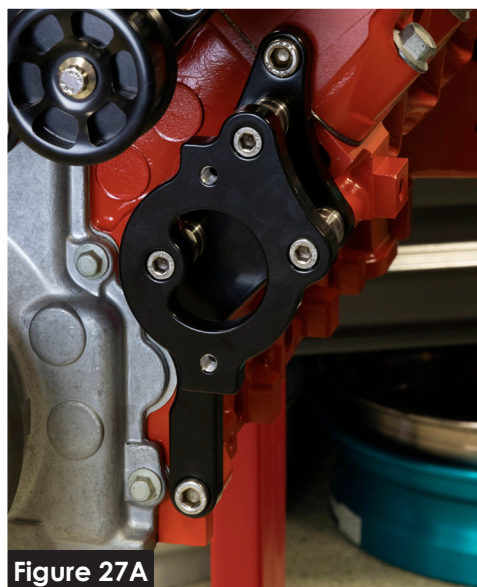


Figure 27A

Install Bracket Assembly to Engine Block

Apply anti-seize to the two M10-1.5 x 20mm socket head cap screws. Attach the power steering block bracket with the three standoffs and power steering pump bracket to the engine block as shown (Figure 27 & 27A). Tighten Firmly.

TECH TIP:

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

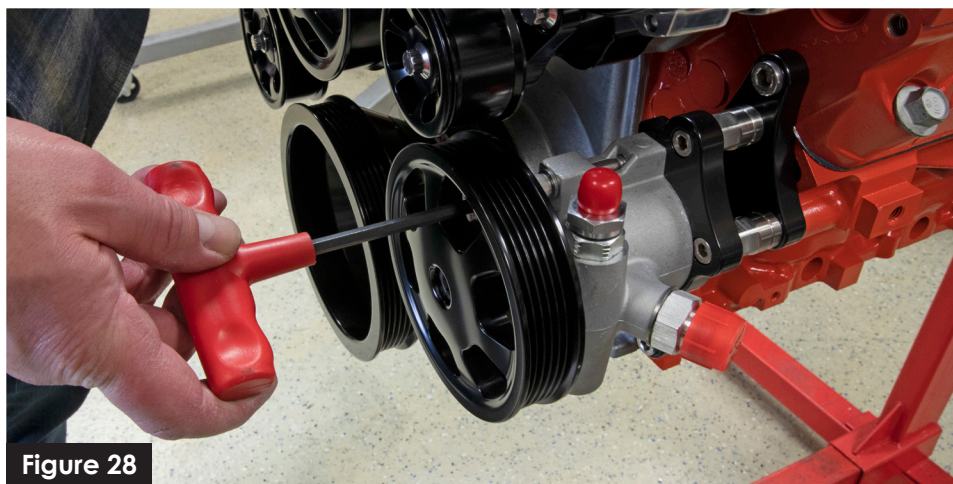


Figure 28

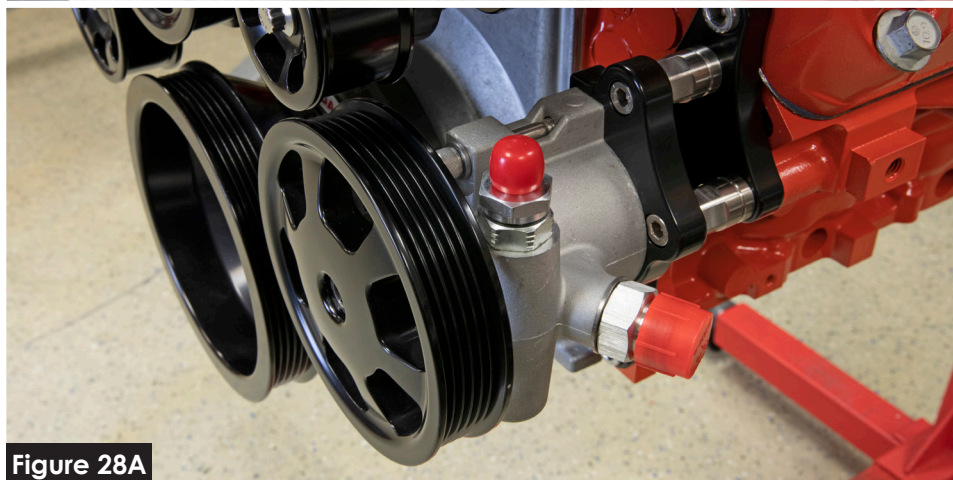


Figure 28A

Install Power Steering Pump

Install a 5/16" split washer onto each of the two 5/16-19 x 2-3/4" socket head cap screws, then apply anti-seize to the threads. Attach the power steering pump and pulley assembly to the bracket as shown (Figure 28) and tighten firmly (Figure 28A).

IMPORTANT

DO NOT START MOTOR until you have completely installed ALL power steering hoses, reservoir and added power steering fluid to the system. A bleeding procedure is included in this kit.

- **Power steering fluid is the lubricant for the pump**
- **Serious Damage will occur to the power steering pump if it is run dry.**
- **Pumps that have been run dry are not warrantable.**

Note: Automatic Transmission Fluid (ATF) should never be used in place of quality brand name power steering fluid. Billet Specialties recommends a quality synthetic power steering

TECH TIP:

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

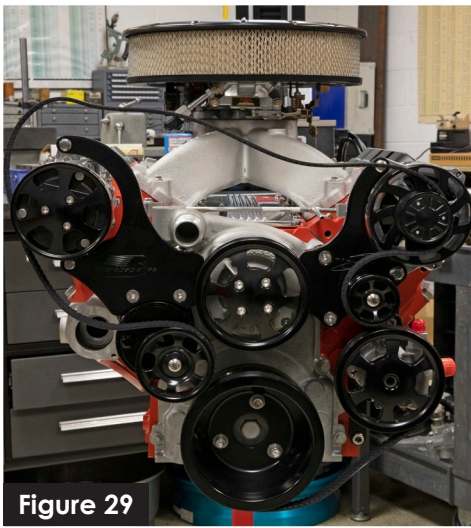


Figure 29

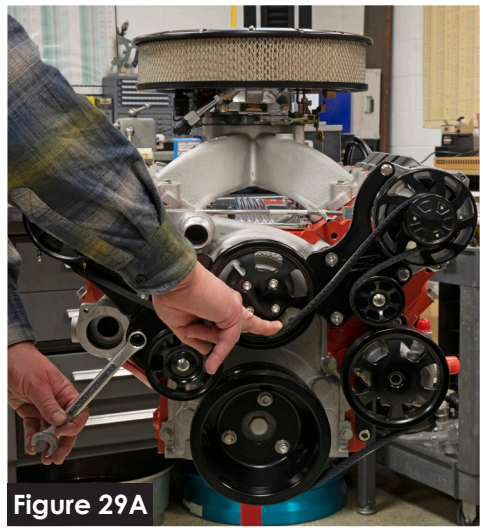


Figure 29A

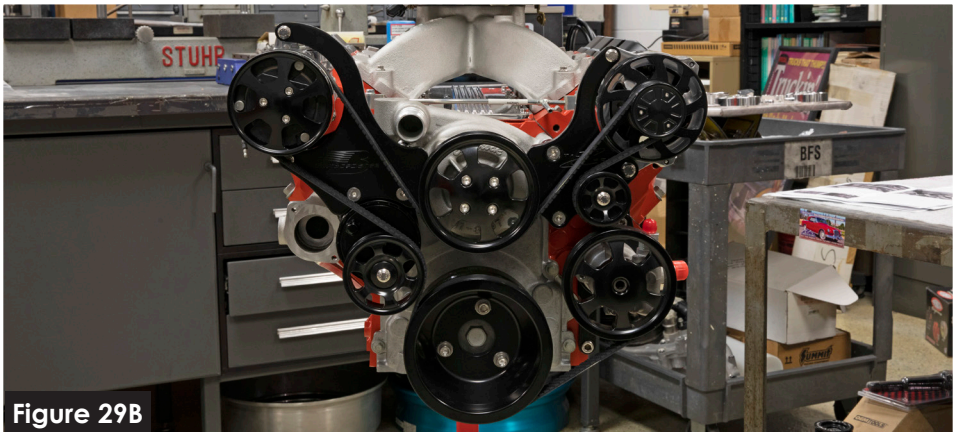
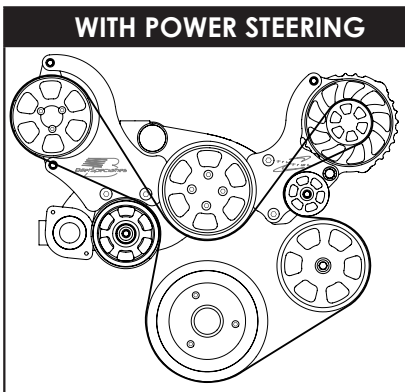


Figure 29B

Serpentine Belt Installation

Route belt as shown (Figure 29), attach a 5/8 socket and breaker bar or long ratchet onto the aluminum nut on the tensioner. Rotate the tensioner clockwise while slipping the belt underneath the water pump pulley, release tension after you have checked the belt is lined up and installed



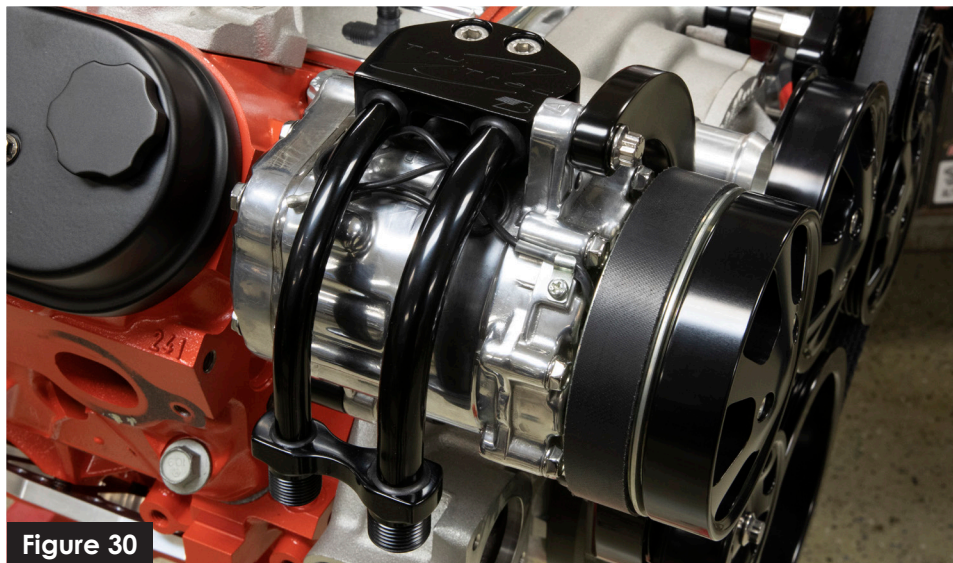


Figure 30

Install Compressor Manifold

Continue with this step only if you are going to be installing your air conditioning hoses and charging the system at this time. Remove the plate on top of the compressor body. Apply anti-seize to the two M8-1.25 x 25mm socket head cap screws. Install compressor manifold onto compressor with the fasteners and tighten firmly (13 ft/lbs.). (Figure 30).

IMPORTANT

If you are NOT installing hoses and charging system at this time, place compressor manifold and hardware in a safe place.

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 the 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.

13450/13470/BLK13450/BLK13470
13460/13490/BLK13460/BLK13490



Billet Specialties, Inc.

500 Shawmut Ave. • La Grange, IL 60526
Tech (708) 588-0505 • Fax (708) 588-7181
www.billetspecialties.com

