

# Tru Trac

## LT1 TRU TRAC

Installation Manual  
For Systems with AC & PS  
13550 / 13560



**BilletSpecialties**

**Billet Specialties, Inc.**

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Tech (708) 588-0505 • Fax (708) 588-7181

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

## IMPORTANT!

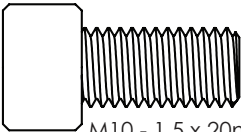
Thoroughly read the instructions, the removal and installation of the damper requires special tools, if after reading the instructions and you feel you may not be able to install the damper correctly Billet Specialties recommends you to have a professional mechanic perform the installation.

### Required Tools & Materials

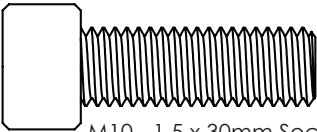
- ☐ 5mm Allen
- ☐ 6mm Allen
- ☐ 8mm Allen
- ☐ 1/4" Allen
- ☐ 3/16" Allen
- ☐ 5/16" Allen
- ☐ T30 Torx
- ☐ T40 Torx
- ☐ 3/8 12pt. Socket
- ☐ 5/8 Hex Socket
- ☐ 22mm Hex Socket
- ☐ 24mm Hex Socket
- ☐ 3/8" 12pt Socket
- ☐ 10mm 12pt. Socket
- ☐ 12mm 12pt. Socket
- ☐ Socket Wrench & Extensions
- ☐ 1/2" Drive 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

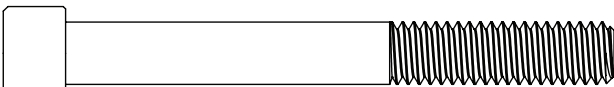
### Skin Board #1 - Packaged with Power Steering Pump



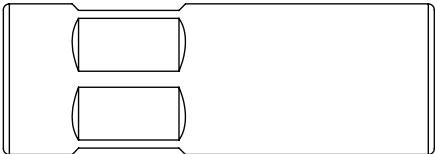
M10 - 1.5 x 20mm Socket Head Cap Screw Qty. 3



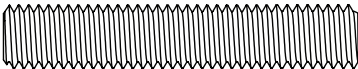
M10 - 1.5 x 30mm Socket Head Cap Screw Qty. 1



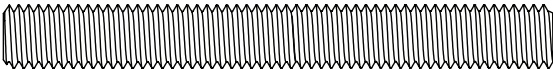
5/16-18 x 2-3/4" Socket Head Cap Screw Qty. 2



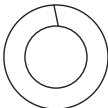
2.145" Tall Standoff Qty. 3



M8 - 1.25 x 45mm Threaded Stud Qty. 2



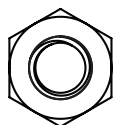
M8 x 1.25 x 70mm Threaded Stud Qty. 2



5/16" Lock Washer Qty. 2

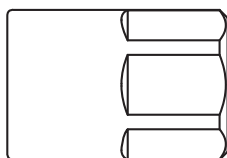
## Skin Board #2 - Packaged with Water Pump

M8-1.25 x 140mm Socket  
Head Cap Screw  
Qty. 1

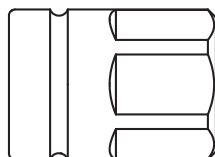


M8-1.25mm  
Hex Nut  
Qty. 2

Discard after use



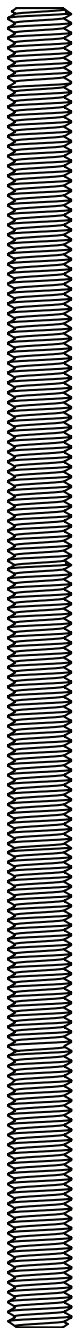
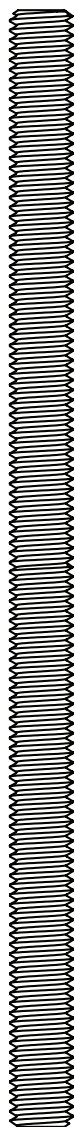
1.103" Stand-Off  
Qty. 2



1.035" Stand-Off  
Qty. 3

M8-1.25 x 168mm  
Threaded Stud  
Qty. 2

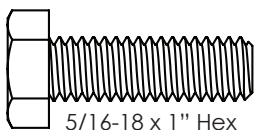
M8-1.25 x 142mm  
Threaded Stud  
Qty. 3



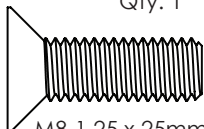
### TECH TIP:

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

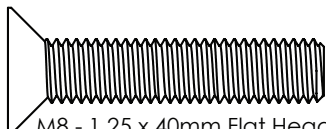
## Skin Board #3 Packaged in Main Box



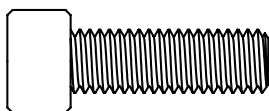
5/16-18 x 1" Hex  
Head Bolt  
Qty. 1



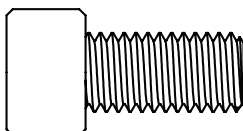
M8-1.25 x 25mm Flat  
Head Cap Screw  
Qty. 4



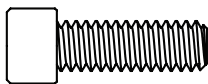
M8 - 1.25 x 40mm Flat Head  
Cap Screw  
Qty. 2



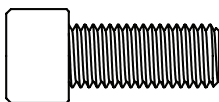
8mm-1.25 x 25mm Socket  
Head Cap Screw  
Qty. 2



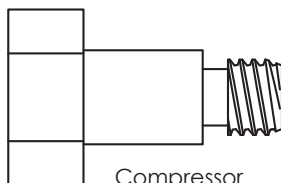
M10 - 1.5 x 20mm Socket  
Head Cap Screw  
Qty. 3



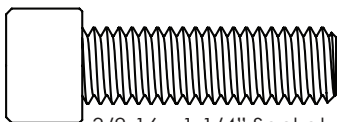
1/4-20 x 3/4" Socket  
Head Cap Screw  
Qty. 3



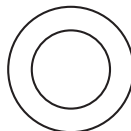
5/16-24 x 3/4" Socket  
Head Cap Screw  
Qty. 4



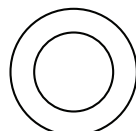
Compressor  
Shoulder Bolt  
Qty. 1



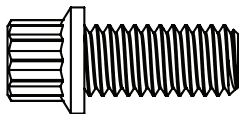
3/8-16 x 1-1/4" Socket  
Head Cap Screw  
Qty. 3



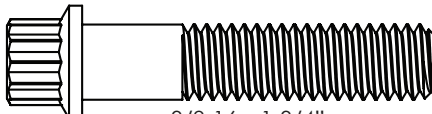
3/8" Belleville  
Washer  
Qty. 3



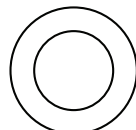
.5mm  
Shim Washer  
Qty. 2



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



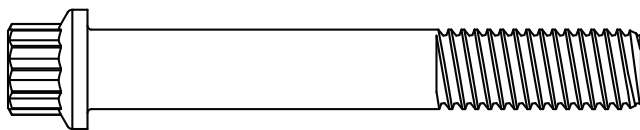
3/8-16 x 1-3/4"  
12pt. Cap Screw  
Qty. 1



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.
- Remove coolant temp sensor from water pump and set aside.

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

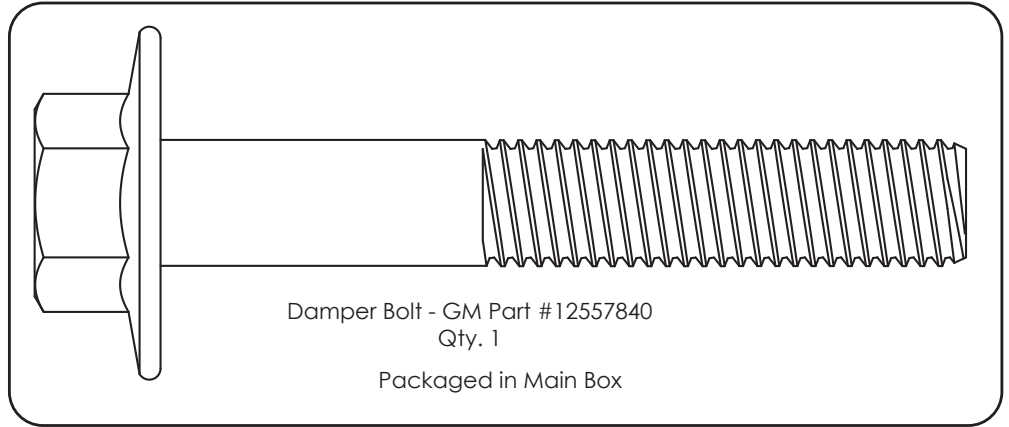
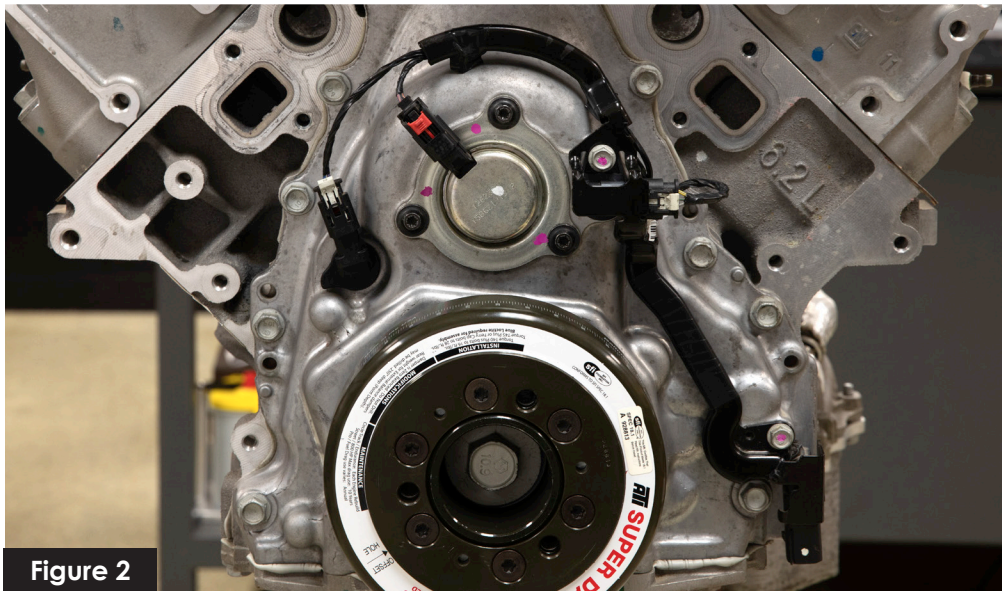


Figure 1

ATI Damper Installation

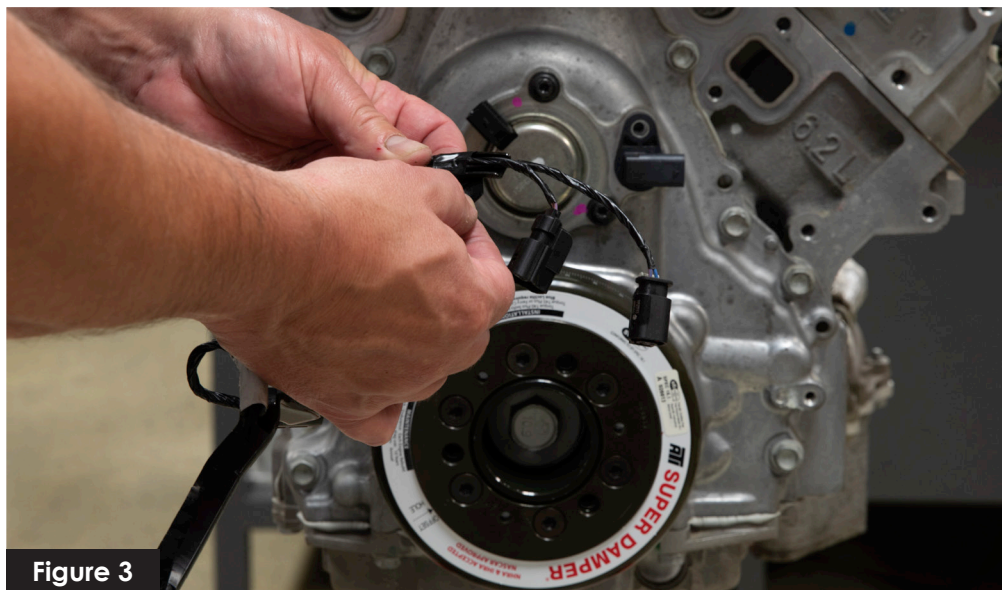
Install ATI Crank Damper per instructions included with the ATI Damper.



**Figure 2**

### Timing Cover Harness Modification

Remove the timing cover wiring harness by carefully releasing the three plugs on the timing cover and the main plug at the bottom. (Figure 2) Then remove the harness from the timing cover.



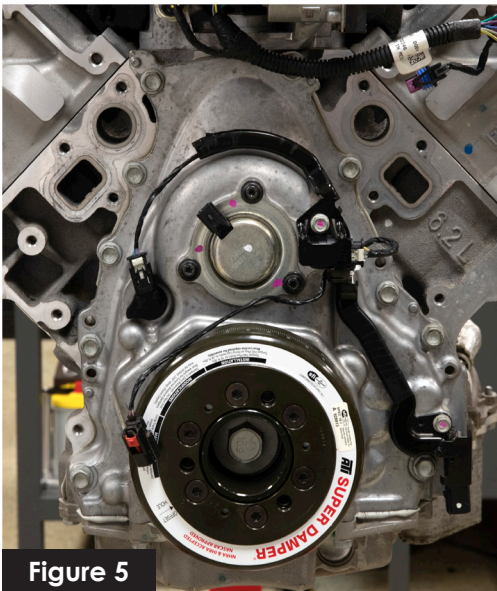
**Figure 3**

Unwrap the harness to release the VVT actuator plug and wire as shown from the metal bracket. (Figure 3).





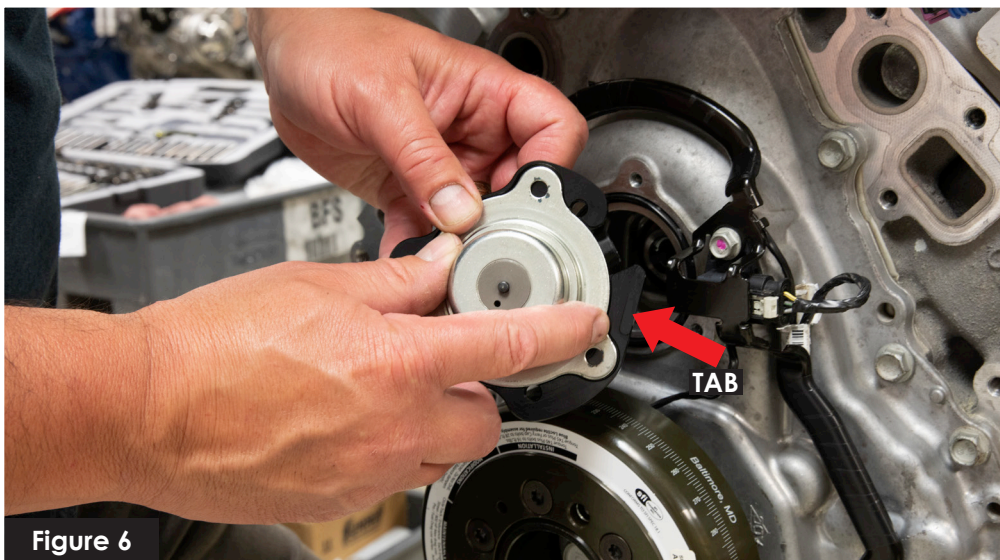
**Figure 4**



**Figure 5**

### Timing Cover Harness Modification Cont.

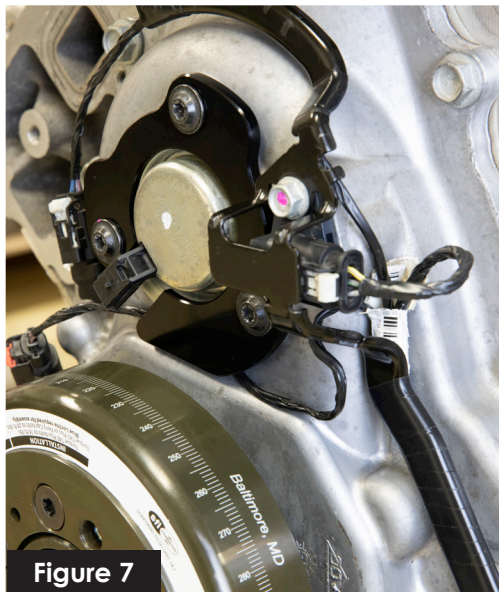
Re-Tape the oil pump actuator harness to the metal bracket as it was. The actuator plug and wire should be loose as shown. (Figure 4) Re-install the harness to the timing cover. (Figure 5).



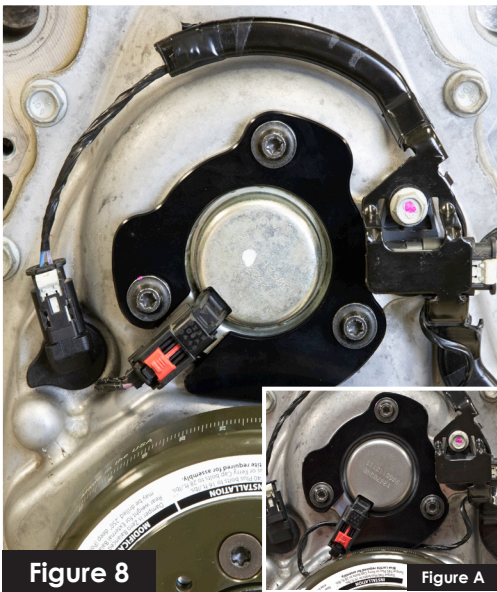
**Figure 6**

### VVT Solenoid Relocation Bracket

Remove the VVT solenoid from the timing cover. Place the solenoid in the bracket as shown. Notice- At the bottom of the bracket is a tab, the VVT wire will set between this open area and the timing cover. (Figure 6).



**Figure 7**

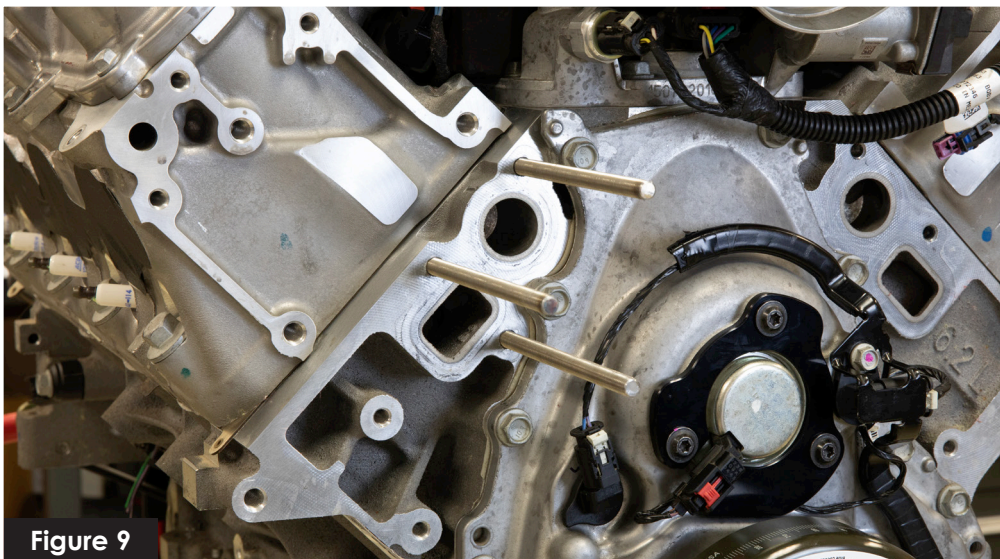


**Figure 8**

**Figure A**

### VVT Solenoid Relocation Bracket Cont.

Install bracket and solenoid onto cover as shown (Figure 7) position the wire between tab and bottom of solenoid so it moves freely back and forth and is not pinched by the bracket. Tighten the three bolts to 11ft lbs. while making sure the wire moves freely. Re-attach the harness plugs to finish (Figure 8). **Note: 2018 and up VVT solenoids are clocked different and will be offset in the bracket as shown. (Figure A).**

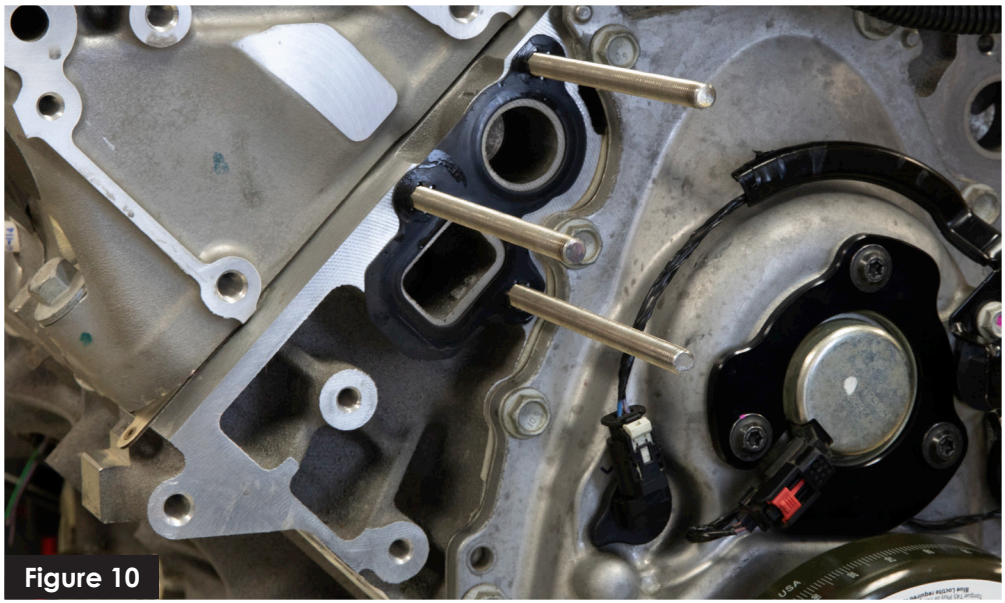


**Figure 9**

### Install Water Pump Spacers - Passenger Side

Install the three M8-1.25 x 142mm threaded studs into the passenger side of the engine block as shown (Figure 9). Make sure they are bottomed out in the block. Use the two M8 hex nuts locked together if necessary to bottom out studs.

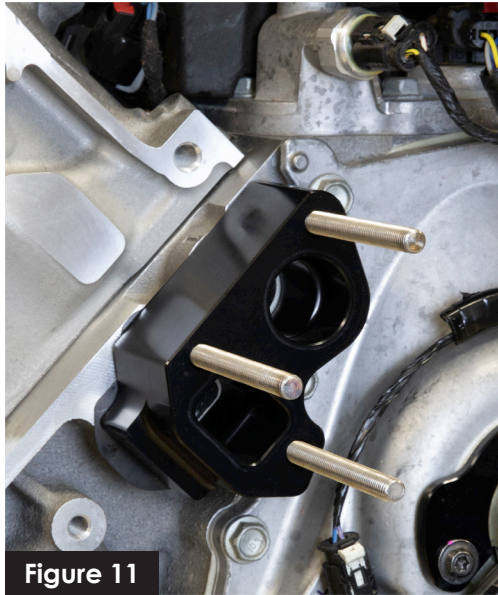




**Figure 10**

### **Install Water Pump Spacers Passenger Side Cont.**

Slide the LS water pump gasket over the studs and against the engine block. (Figure 10).



**Figure 11**



**Figure 12**

Finish by installing the passenger side water pump spacer P/N 13550E and the LS water pump gasket. (Figure 11 & 12).



**Figure 13**

### **Install Water Pump Spacers Drivers Side**

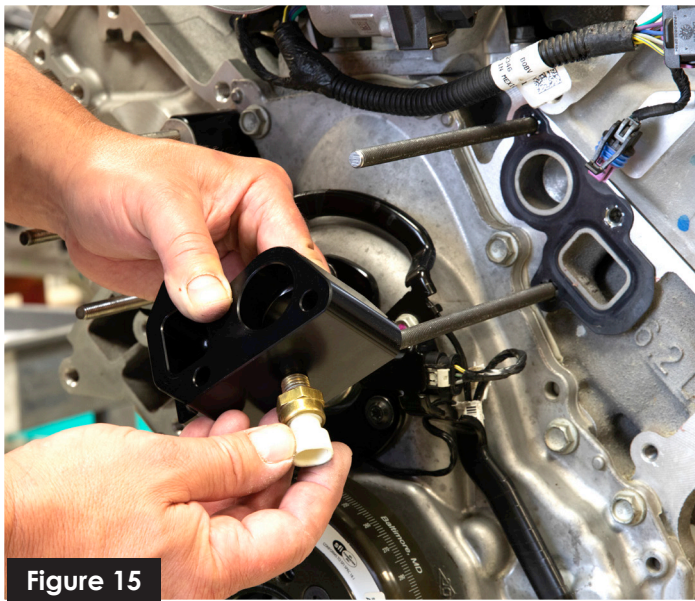
Install the two M8-1.25mm x 168mm threaded studs into the driver side of the engine block nearest the timing cover as shown (Figure 13). Make sure they are bottomed out in the block. Use the two M8 hex nuts locked together if necessary to bottom out studs.



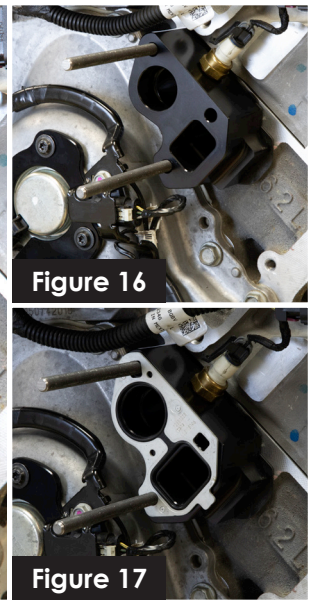
**Figure 14**

Slide the LS water pump gasket over the studs and against the engine block. (Figure 14).





**Figure 15**

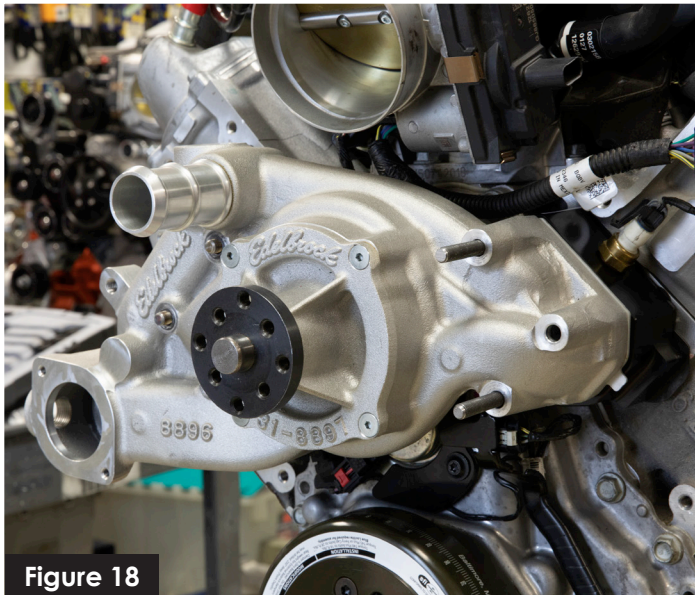


**Figure 16**

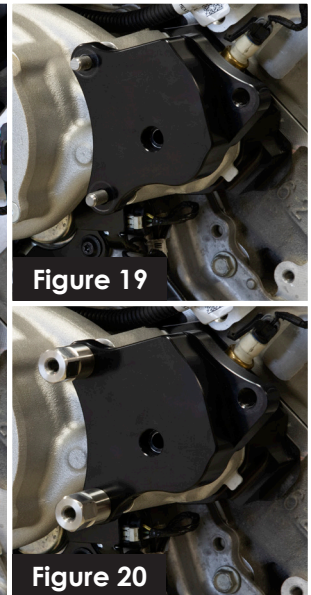
**Figure 17**

### Install the Water Pump Spacers Drivers Side Cont.

Install the coolant temp sensors into the Driver side water pump spacer P/N 13550F (Figure 15). Finish by installing the passenger side water pump spacer P/N 13550F and LS water pump gasket. ( Figure 16 & 17)



**Figure 18**



**Figure 19**

**Figure 20**

### Install Water Pump

Install water pump onto engine (Figure 18), next install driver side alternator bracket P/N 13550G ( Figure 19). Apply anti-seize to the exposed threads of the two studs, thread the two 1.103" Stand-offs onto the studs and finger tighten. (Figure 20).

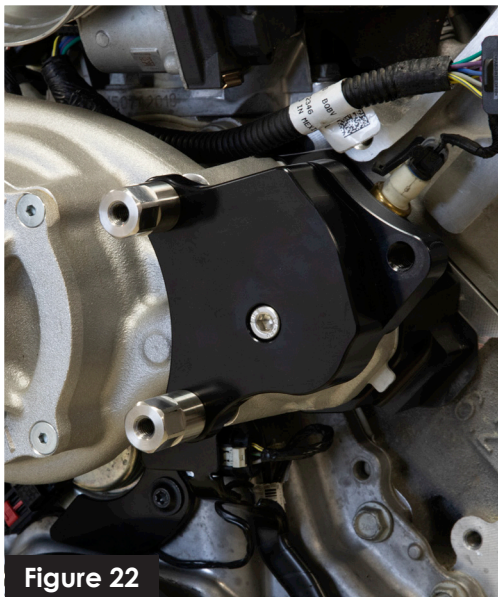
#### **TECH TIP:**

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





**Figure 21**



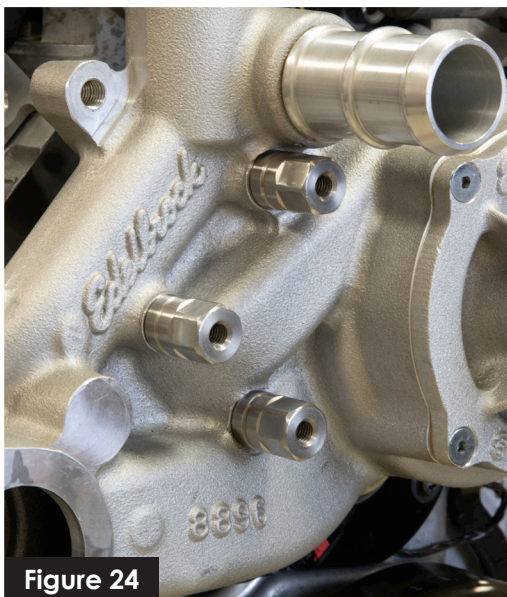
**Figure 22**

### **Install Water Pump Drivers Side Cont.**

Finish driver side installation by threading the M8-1.25 x 140mm socket head cap screw through the bracket and into the block and finger tighten. (Figure 21 & 22).



**Figure 23**



**Figure 24**

Next apply anti-seize to the exposed threads of the three passenger side studs. Install the three 1.035" spacers identified by a machined groove on them (Figure 23) onto the three studs. (Figure 24). Tighten all fasteners firmly at this time. (Both passenger & drivers side).

#### **TECH TIP:**

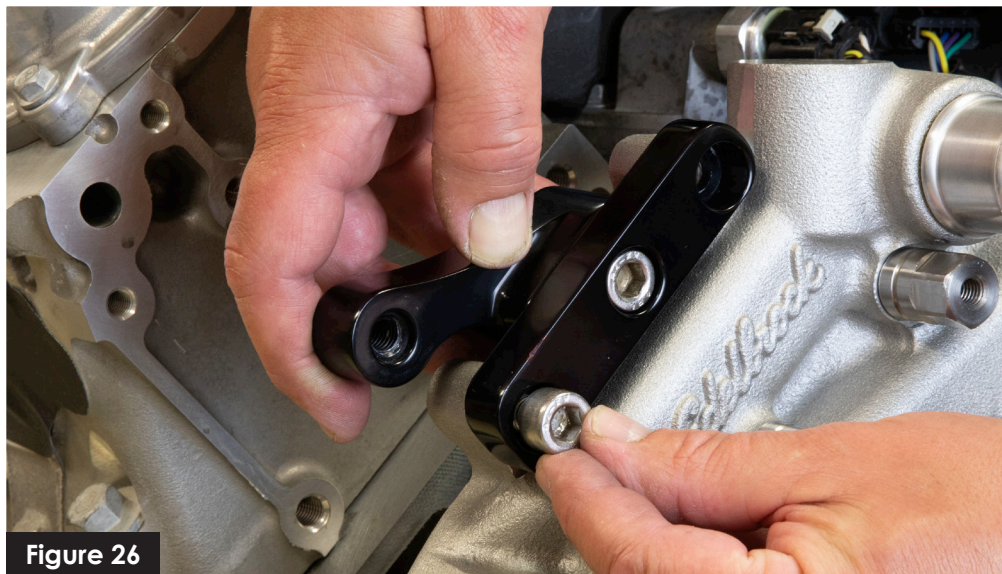
Billet Specialties recommends the use of Anti-Seize on all fasteners to prevent thread lock-up.



**Figure 25**

### Install 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 25) and secure with one of the M10-1.5 x 20mm socket head cap screws, finger tighten.



**Figure 26**

Attach the completed assembly to the water pump as shown (Figure 26) 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.





**Figure 27**

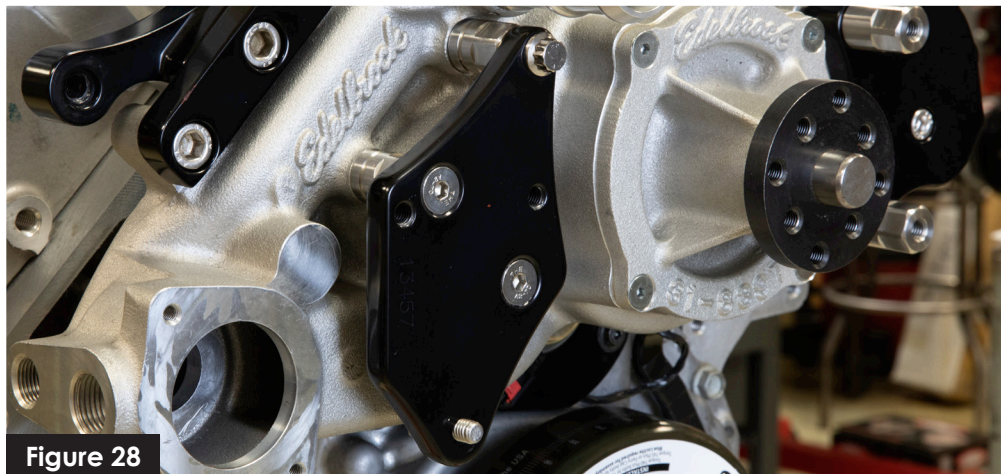
### **Install Tensioner Bracket and Tensioner**

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**

Thread 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 27) place the bracket with the bolt and washer on the passenger side of the water pump as shown.

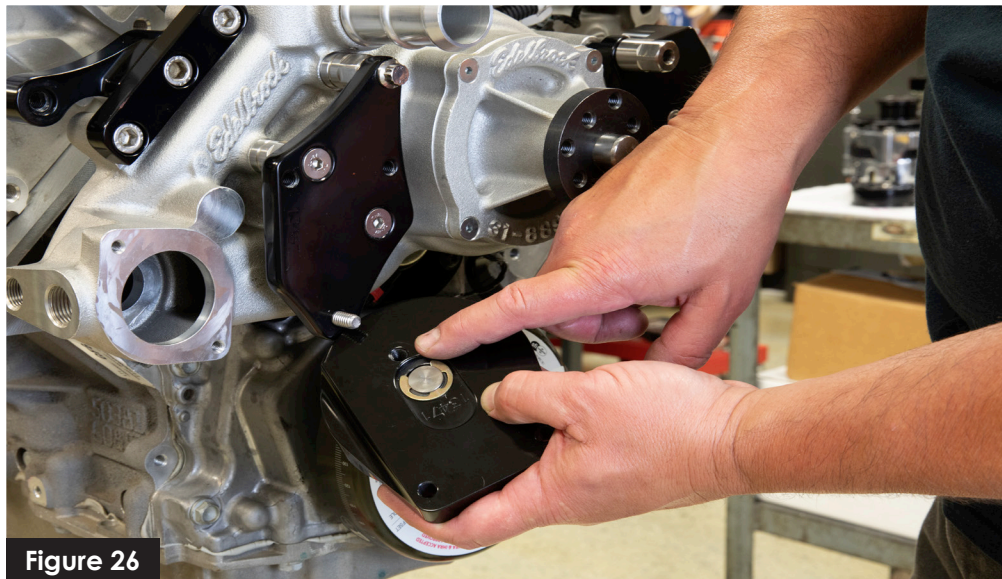


**Figure 28**

Thread the two M8-1.25 x 25mm flat head cap screws through the bracket and into the bottom standoffs. Finish by threading the M8-1.25 x 25mm ARP 12pt. cap screw through the top hole in the bracket and into the top standoff. Tighten all three fasteners firmly. (Figure 28).

#### **TECH TIP:**

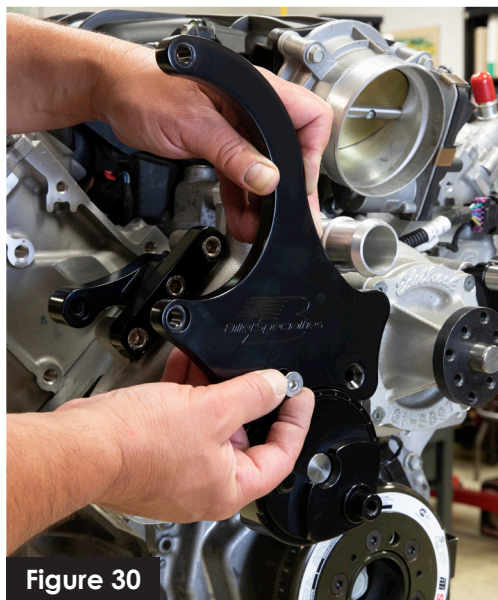
Billet Specialties recommends the use of Anti-Seize on all fasteners to prevent thread lock-up.



**Figure 26**

### Install Tensioner

Align the threaded hole in the back of the tensioner (Figure 29) 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 30**

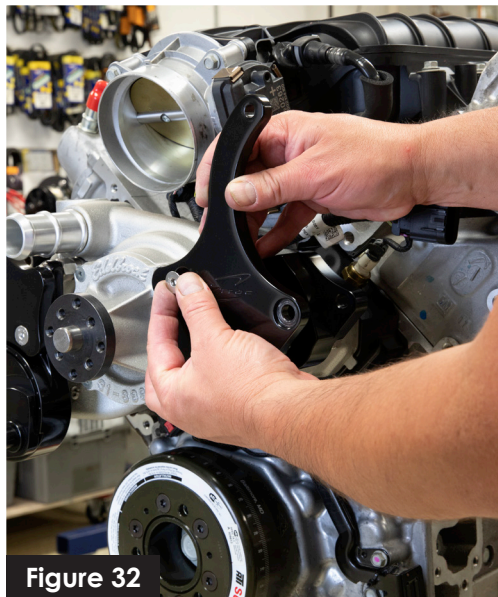


**Figure 31**

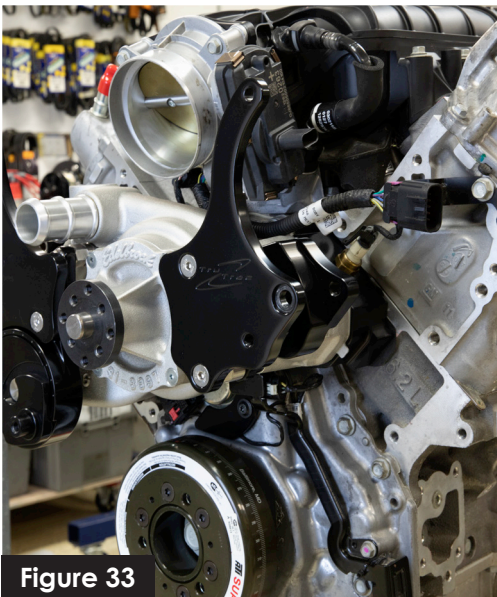
### Install Compressor Bridge Bracket

Apply anti-seize to the threads of the two M8-1.25 x 40mm flat head cap screws. 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 30) Only finger tighten at this time. (Figure 31).





**Figure 32**



**Figure 33**

### **Install Alternator Bridge Bracket**

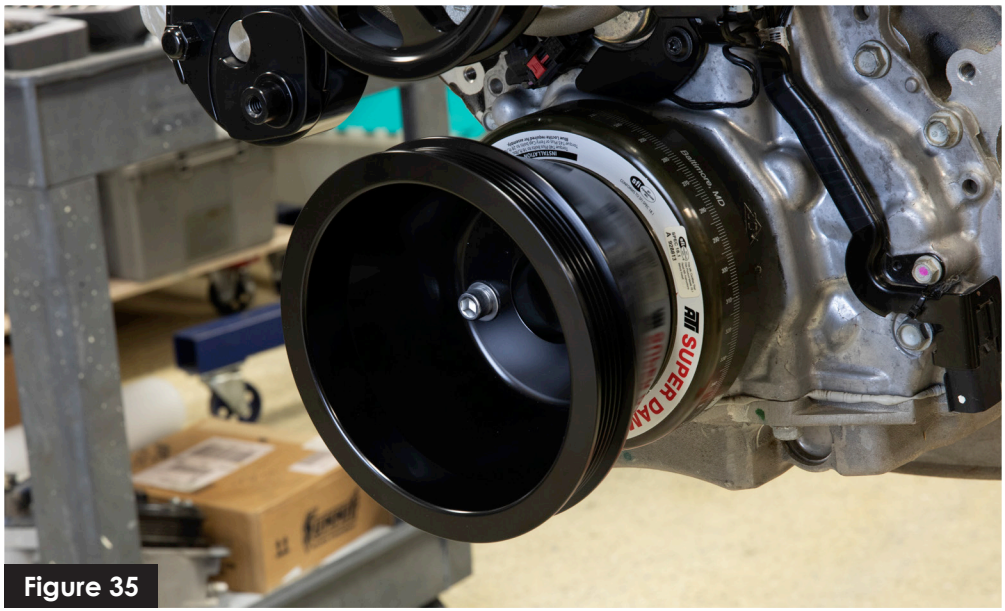
Apply anti-seize to the threads of the two M8-1.25 x 25mm flat head cap screws. Place the alternator bracket P/N 13550D to the driver side of the water pump and align with the two standoffs. Install the flat head cap screws and finger tighten. (Figure 32 & 33) Make sure throttle body harness is attached at this point.



**Figure 34**

### **Install Water Pump Pulley**

Apply LocTite 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 34).



**Figure 35**

### Install Crank Pulley

Apply LocTite to the threads of the three 3/8-16 x 1-1/4" socket head cap screws. Install crank pulley as shown, (Figure 35) install the Belleville washers with the cup of the washer facing towards the pulley. Tighten firmly.



**Figure 36**

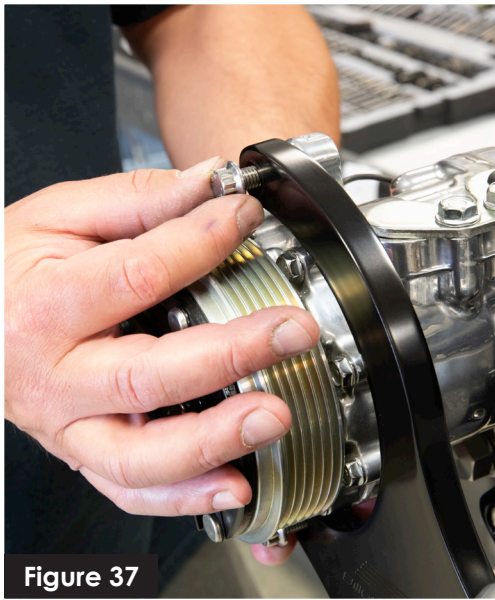
### Install A/C Compressor

Apply anti-seize to the threads of the following:

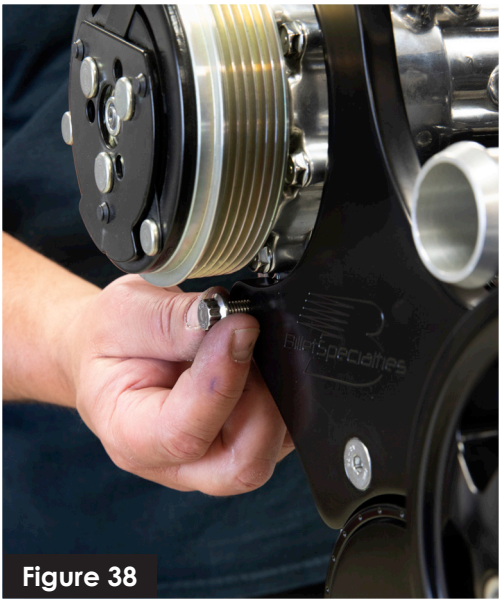
- (1) Compressor shoulder bolt
- (2) M8-1.25 x 25mm ARP 12pt. cap screws

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 36).





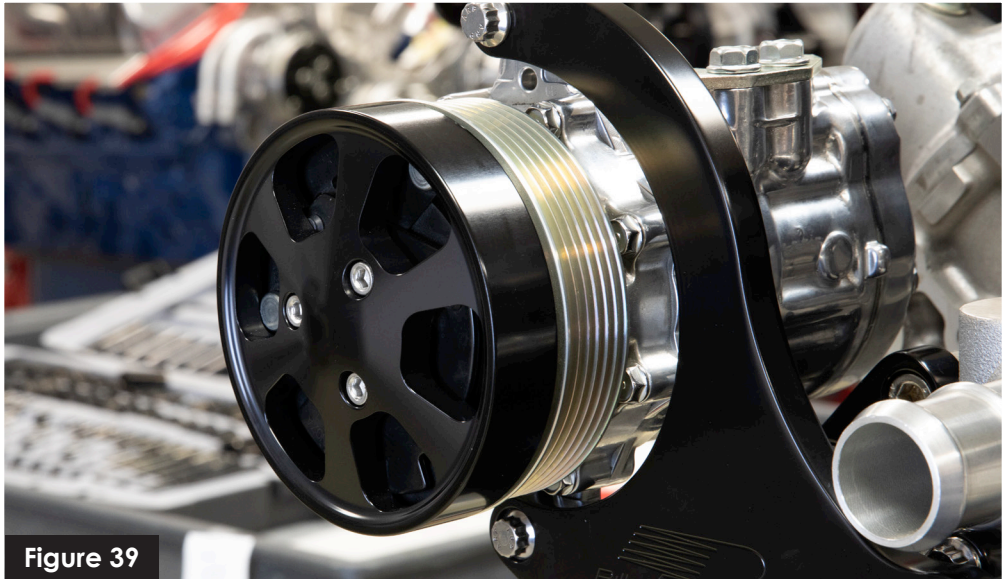
**Figure 37**



**Figure 38**

### **Install A/C Compressor Cont.**

Next install the two M8-1.25 x 25mm ARP 12pt. cap screws through the bridge bracket and into the compressor (Figure 37 & 38). **Tighten all fasteners on the passenger side firmly at this time. Including the hex head behind the tensioner.**



**Figure 39**

### **Install A/C Compressor Clutch Cover**

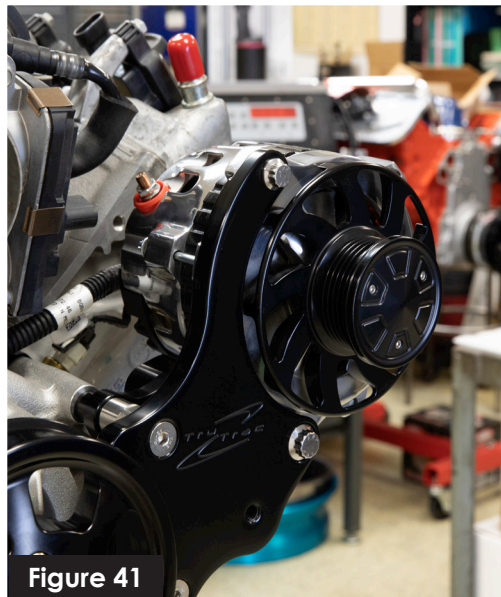
Apply LocTite Blue 242 to the three 1/4-20 x 3/4" socket head cap screws. Place the clutch cover on the compressor and thread the socket head cap screws through the cover and into the clutch, torque to **40-45 inch/lbs.** (Figure 39).

**Caution:** Over tightening these fasteners will cause damage to the compressor clutch.  
**VERY IMPORTANT – DO NOT OVER TIGHTEN**





**Figure 40**



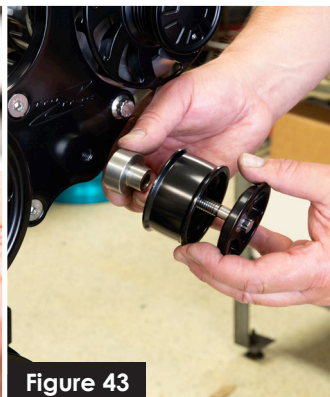
**Figure 41**

### Install Alternator

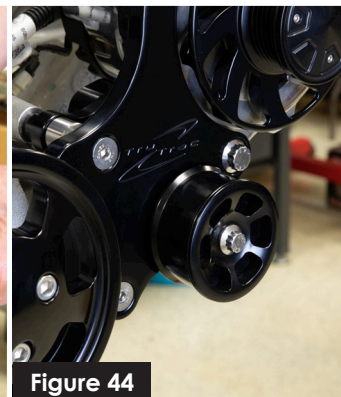
Apply anti-seize to the M8-1.25 x 25mm ARP 12pt. cap screw and the M10-1.5 x 70mm ARP 12pt. cap screw. Place the alternator between the bridge bracket and alternator bracket, install the M10-1.5 x 70mm ARP 12pt. cap screw through the bridge bracket and alternator bottom into alternator bracket (Figure 40). Rotate alternator up and install the M8-1.25 x 25mm ARP 12pt. cap screw (Figure 41). **Tighten all fasteners firmly on the drivers side at this time.**



**Figure 42**



**Figure 43**



**Figure 44**

### Install Idler Pulley

Apply anti-seize to the 3/8-16 x 1-3/4" ARP 12 pt. cap screw. Place the bearing sleeve into the back of the idler pulley (the back is identified by the fully exposed bearing). (Figure 42) Thread the 3/8-16 x 1-3/4" ARP 12 pt. through the idler pulley cover, idler pulley and bearing sleeve (Figure 43) into the bridge bracket and tighten firmly (Figure 44).

#### TECH TIP:

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



**Figure 45**



**Figure 46**

### Install Tensioner Pulley

Apply anti-seize to the 3/8-16 x 1-3/4" ARP 12 pt. cap screw. Place the tensioner pulley onto the tensioner, finish by installing the 3/8-16 x 3/4" ARP 12 pt. cap screw and aluminum washer (packaged w/pulley) and tighten firmly. (Figure 45 & 46).

**FOR KITS WITHOUT POWER STEERING PROCEED TO BELT INSTALLATION**



**Figure 47**

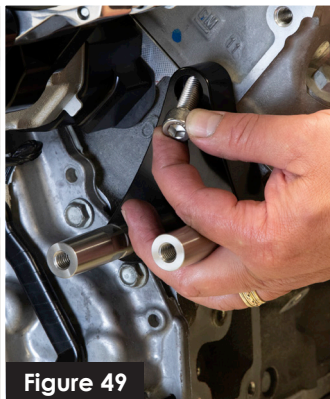
### Install Power Steering Block Bracket

Apply anti-seize to one end of the two M8-1.25 x 70mm threaded studs and the M10-1.5 x 30mm socket head cap screw. Thread each threaded stud into two of the 2.145" tall standoffs (Figure 47). Make sure the threaded stud bottoms out into the standoff.

#### **TECH TIP:**

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





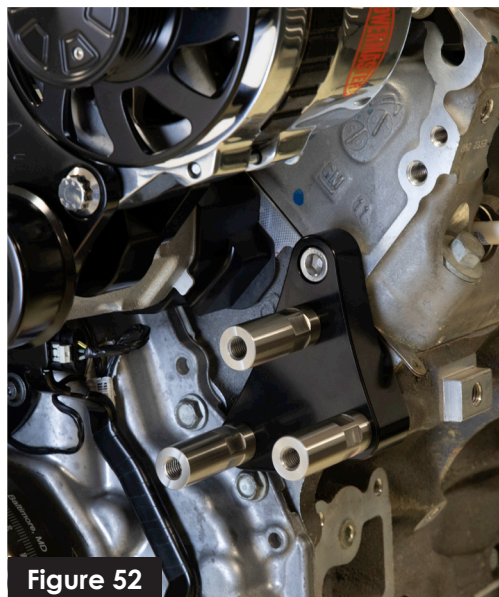
**Figure 48**

**Figure 49**

**Figure 50**

### Install Power Steering Block Bracket Cont.

Attach the power steering block bracket P/N 13550B to the engine block as shown (Figure 48). Tighten the standoffs firmly. Next install the M10-1.5 x 30mm socket head cap screw through the bracket and into the head as shown. (Figure 49 & 50) and tighten firmly.



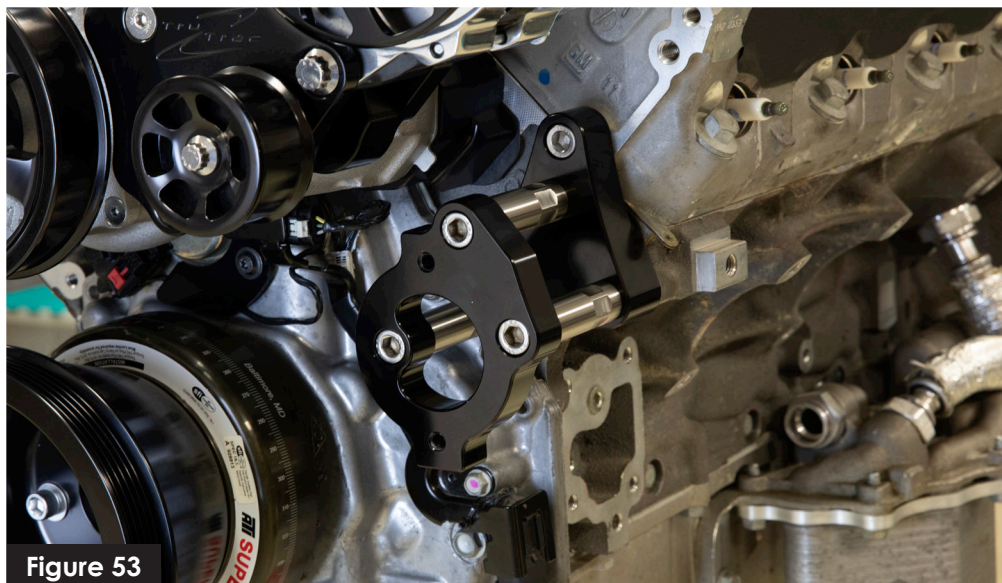
**Figure 51**

**Figure 52**

Finish by applying anti-seize to one end of the M8-1.25 x 45mm threaded stud, install into the remaining 2.145" tall standoff (Figure 51). Make sure the threaded stud bottoms out into the stand-off. Install the assembly into the remaining hole in the block bracket as shown (Figure 52) and tighten firmly.

#### TECH TIP:

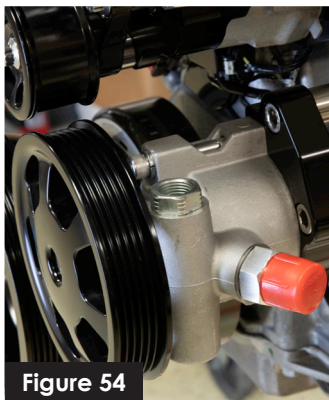
Billet Specialties recommends the use of Anti-Seize on all fasteners to prevent thread lock-up.



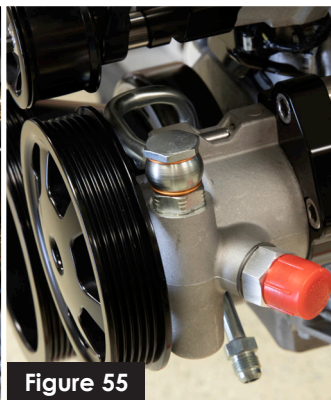
**Figure 53**

### Install Power Steering Pump Bracket

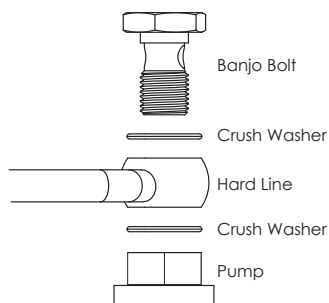
Apply anti-seize to three M10-1.5 x 20mm socket head cap screws. Install the power steering pump bracket P/N 13550A to the standoffs as shown and tighten firmly (Figure 53).



**Figure 54**



**Figure 55**



### Install Power Steering Pump.

Install a 5/16" split washer onto each of the two 5/16-18 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 54) and tighten firmly. Finish by installing the included hard line kit (Figure 55).

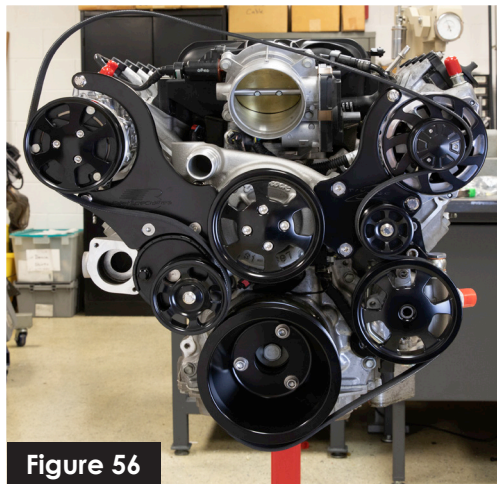
## IMPORTANT

**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.

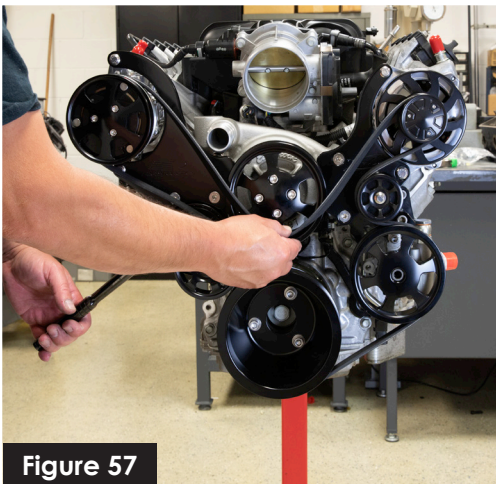
- **Power steering fluid is the lubricant for the pump**
- **Serious Damage will occur to the power steering pump if it is run dry.**
- **Pumps that have been run dry are not warrantable.**

**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 fluid.

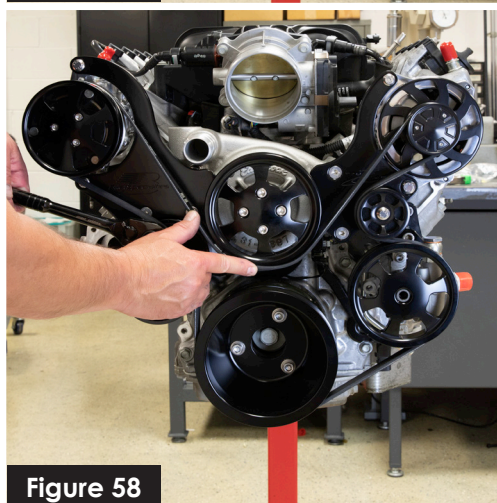




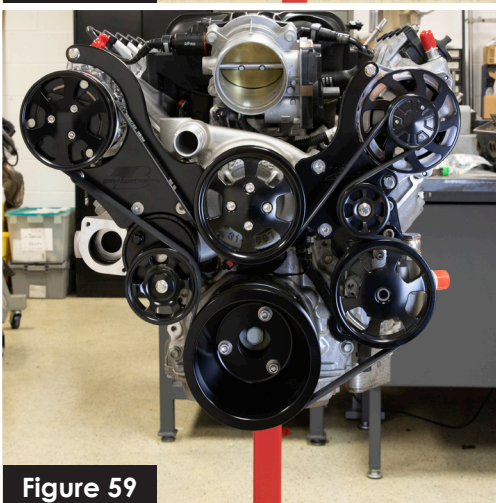
**Figure 56**



**Figure 57**



**Figure 58**

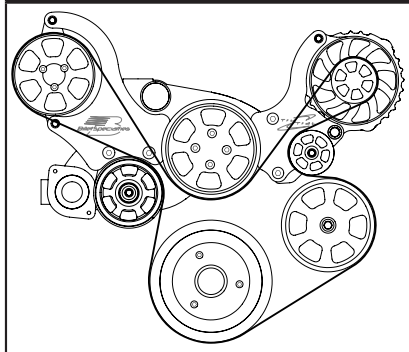


**Figure 59**

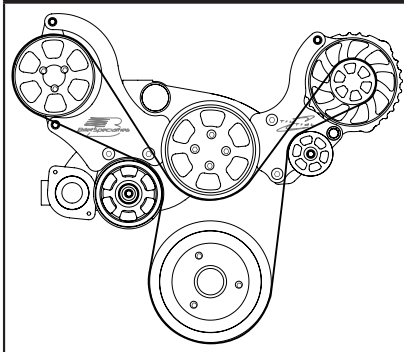
### **Serpentine Belt Installation.**

Route belt as shown (Figure 56), 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 that the belt is lined up and installed correctly on each pulley. (Figure 57, 58 & 59).

#### **WITH POWER STEERING**



#### **WITHOUT POWER STEERING**





**Figure 60**

### **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 to 13 ft/lbs. (Figure 60).

### **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.**









BLK13550/BLK13560



TruTrac

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