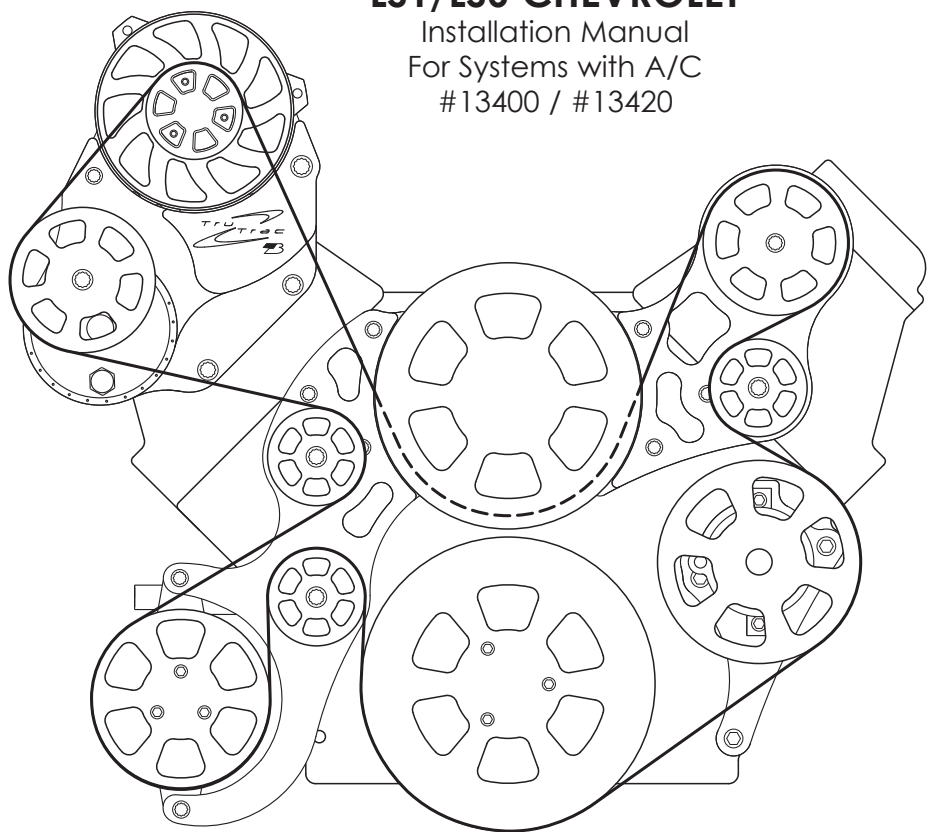




LS1/LS6 CHEVROLET

Installation Manual
For Systems with A/C
#13400 / #13420



Billet Specialties, Inc.
500 Shawmut Avenue.
La Grange, Illinois 60526
Tech Line (708) 588-0505
Fax (708) 588-7181

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

Tech Line: 708.588.0505
Fax: 708.588.7181
www.billet specialties.com

This kit requires the use of:

- F-Body damper/pulley
GM part # 12553118
Pioneer part # 872042
- F-Body water pump
GM part # 89018053
AC Delco part # 252-781
A-1 Cardone part # 58563
Bosch part # 99175
- Cable operated throttle body or driver side ETC (electronic throttle control).

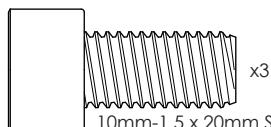
NOTE: Factory plastic coil covers require trimming to fit properly behind the alternator.
See Page 5.

Required Tools & Materials

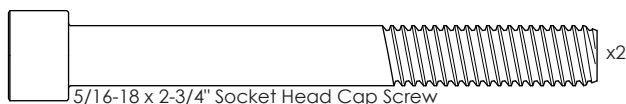
- | | |
|---|--|
| ☐ Anti-seize Compound | ☐ 5/8" Box End Wrench |
| ☐ Impact Wrench | ☐ 3/4" Box End Wrench |
| ☐ Torque Wrench
Capable of 100ft/lbs. or 250ft/lbs. if replacing the crank pulley. | ☐ 9/16" Box End Wrench |
| ☐ 10mm-1.5 Thread Chaser* & Holder
*Thread chasers are available at your local parts store and are different from a thread cutting tap. | ☐ 11/16" Box End Wrench |
| ☐ Loctite Thread Locker | ☐ 13/16" Box End Wrench |
| ☐ 1/4" Allen | ☐ 17mm Box End Wrench |
| ☐ 3/16" Allen | ☐ Socket Wrench & Extension |
| ☐ 3/32" Allen | ☐ 3/8" 12pt. Socket |
| ☐ 5/32" Allen | ☐ 1-1/16" 12pt. Socket |
| ☐ 5mm Allen | ☐ 10mm 12pt. Socket |
| ☐ 6mm Allen | ☐ 12mm 12pt. Socket |
| ☐ 8mm Allen | ☐ 24mm Hex Socket |

TECH TIP:

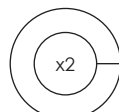
Billet Specialties recommends the use of Anti-Seize on all fasteners to prevent thread lock-up.



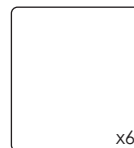
10mm-1.5 x 20mm Socket Head Cap Screw



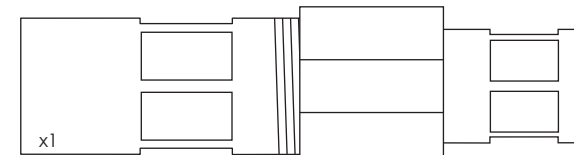
5/16-18 x 2-3/4" Socket Head Cap Screw



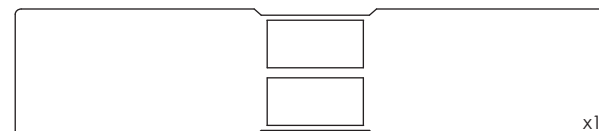
5/16" Lock Washer



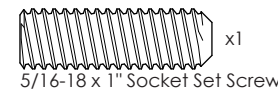
11/16" Spacer



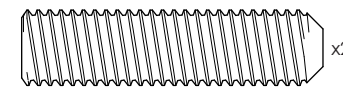
Tensioner Stand-off Assembly



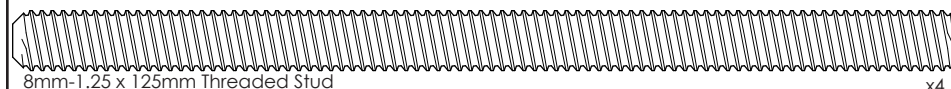
3-1/8" Spacer Nut



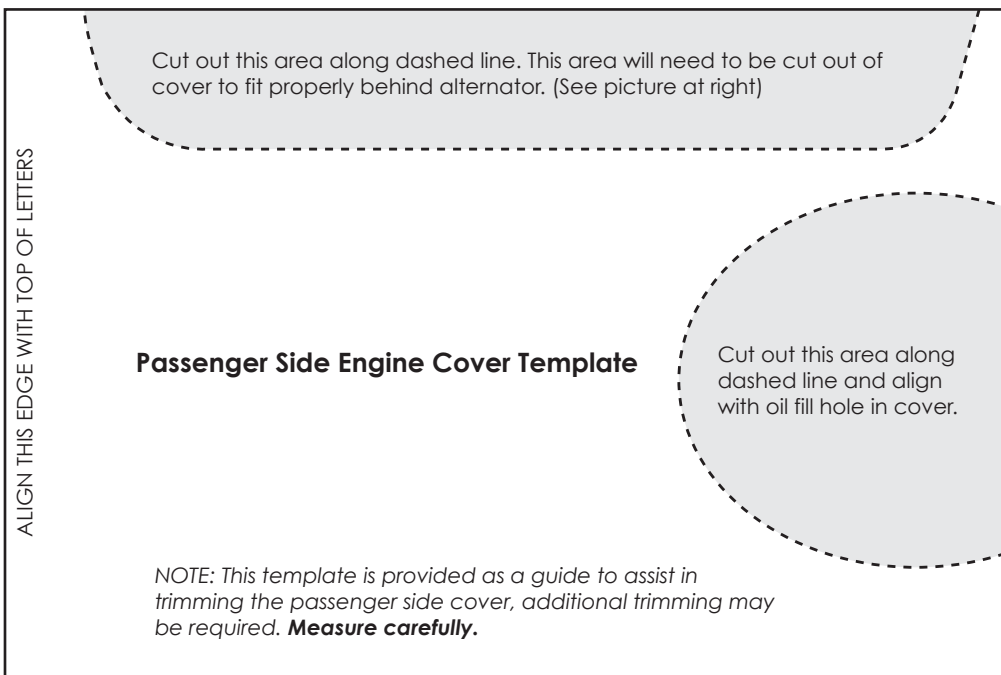
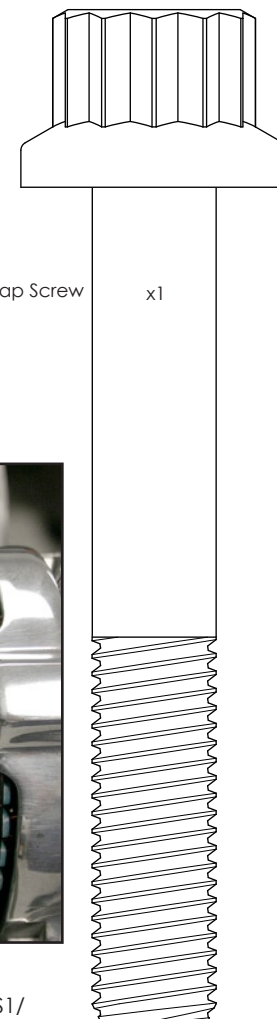
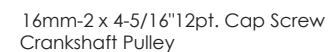
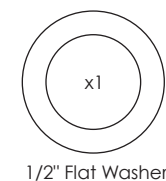
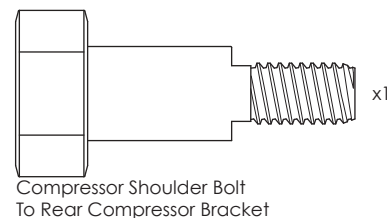
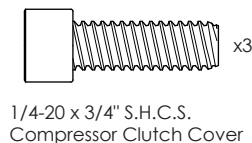
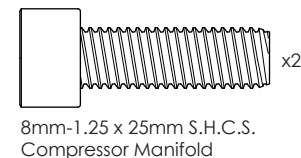
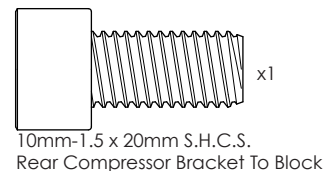
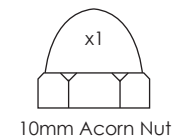
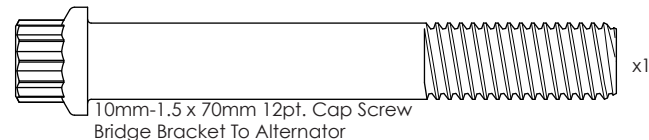
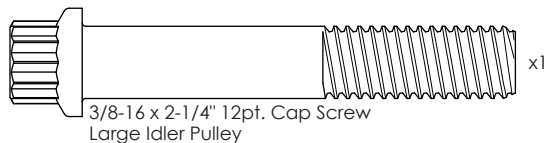
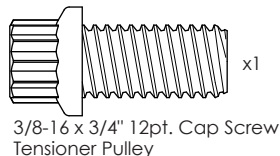
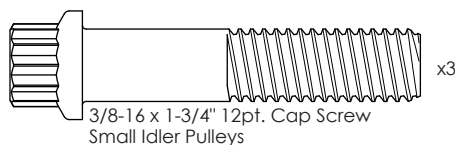
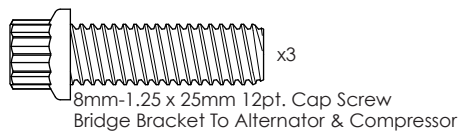
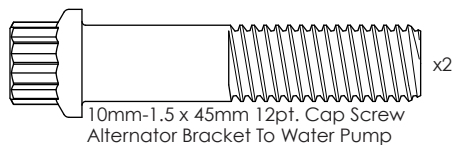
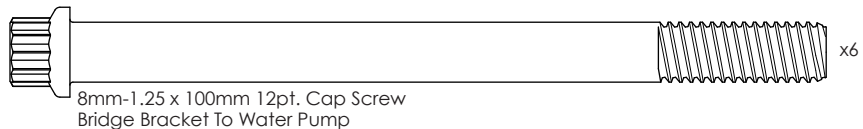
5/16-18 x 1" Socket Set Screw



10mm-1.5 x 40mm Socket Set Screw



8mm-1.25 x 125mm Threaded Stud



IMPORTANT

To complete the installation of the Billet Specialties Tru Trac for LS1/LS6 engines trimming of the passenger side engine cover is required. A template has been provided at left to get you started. Do not cut the cover until the Tru Trac has been completely installed and tested.

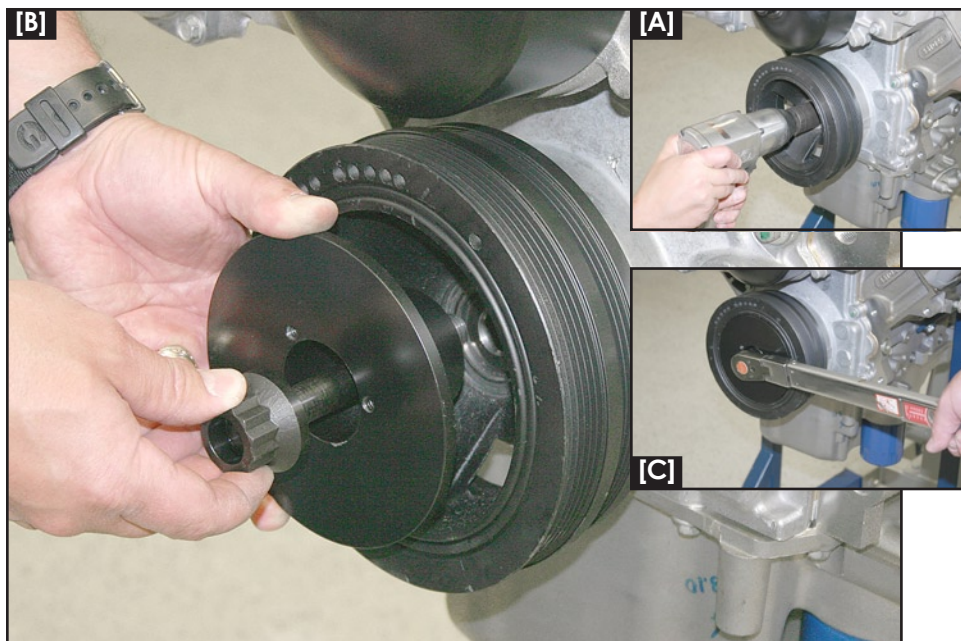


Figure 1: Install Crank Pulley Hub

If you are replacing your existing crank pulley read NEW PULLEY INSTALLATION below.

[A] Remove factory crank pulley bolt with an impact wrench and 24mm socket.

[B][C] Install crank pulley hub and new ARP crank bolt, torque crank bolt to 37 ft/lb. Mark the top of the bolt with a paint marker at the 12 o'clock position and also mark the pulley hub at the 5 o'clock position.

Now with a breaker bar turn the crank bolt another 140 degrees until the mark on the bolt lines up with the 5 o'clock mark on the pulley hub. *This is extreme pressure and caution should be used.*

NEW PULLEY INSTALLATION

1. Remove existing pulley with an appropriate puller, inspect crank snout and clean. Inspect seal and replace if necessary.

2. Slide the new crank pulley on as far as possible. Install the old crank bolt and torque to 240ft/lbs. *This is extreme pressure and caution should be used.*

3. Now break loose old crank bolt and remove, go to Figure 1 Step [B] to install pulley hub.



Figure 2: Install Set Screws & Spacer Nuts

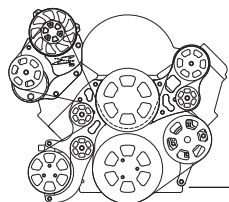
Inspect and clean threaded holes in the cylinder heads (driver and passenger), use a 10mm thread chaser if necessary.

[A] Apply anti-seize to and install one 10mm-1.5 x 40mm socket set screw into driver side head as shown and tighten firmly.

[B] Apply anti-seize to exposed threads and install 3-1/8" spacer nut and tighten firmly.

[C] Apply anti-seize to and install the remaining 10mm-1.5 x 40mm into passenger side cylinder head as shown and tighten firmly.

[D] Apply anti-seize to exposed threads and install the threaded spacer nut and tighten firmly. Apply anti-seize to the exposed threads on the spacer nut.



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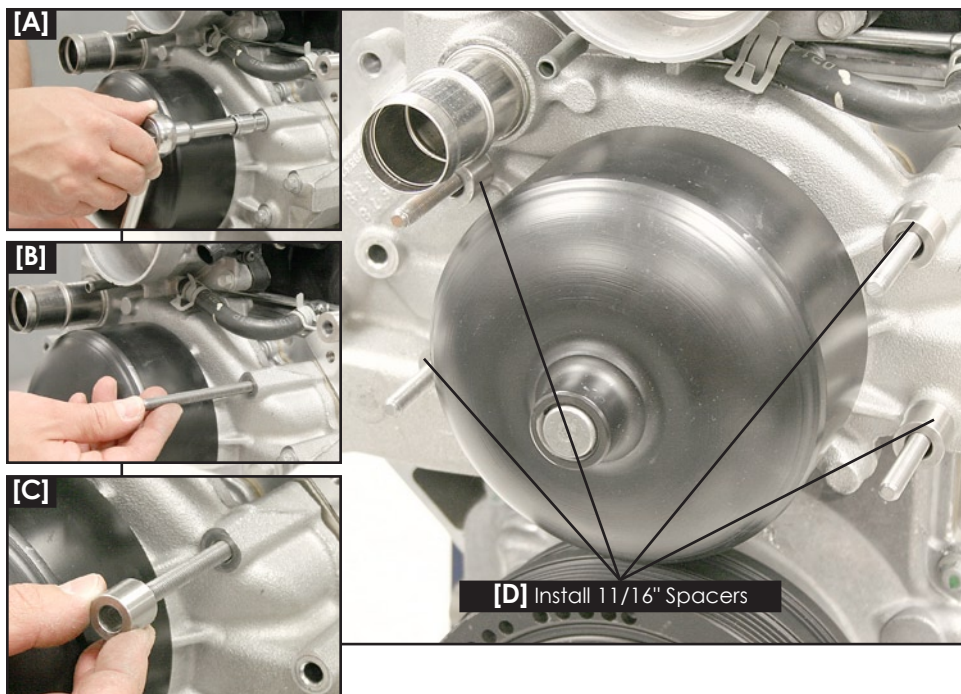


Figure 3: Prepare Engine For Bridge Bracket

[A] Remove water pump mount screws one at a time starting with the passenger top inside.

[B] Replace with the threaded 8mm-1.25 x 125mm stud (only needs to be threaded in a few turns by hand).

Follow by doing the same procedure on the fastener below. Remove the outside water pump screws and leave empty.

Repeat the procedure for the driver side again leaving the outside empty. If you wish to replace your water pump gaskets now would be the time.

[C][D] Place a 11/16" spacer on the four inner studs as pictured.

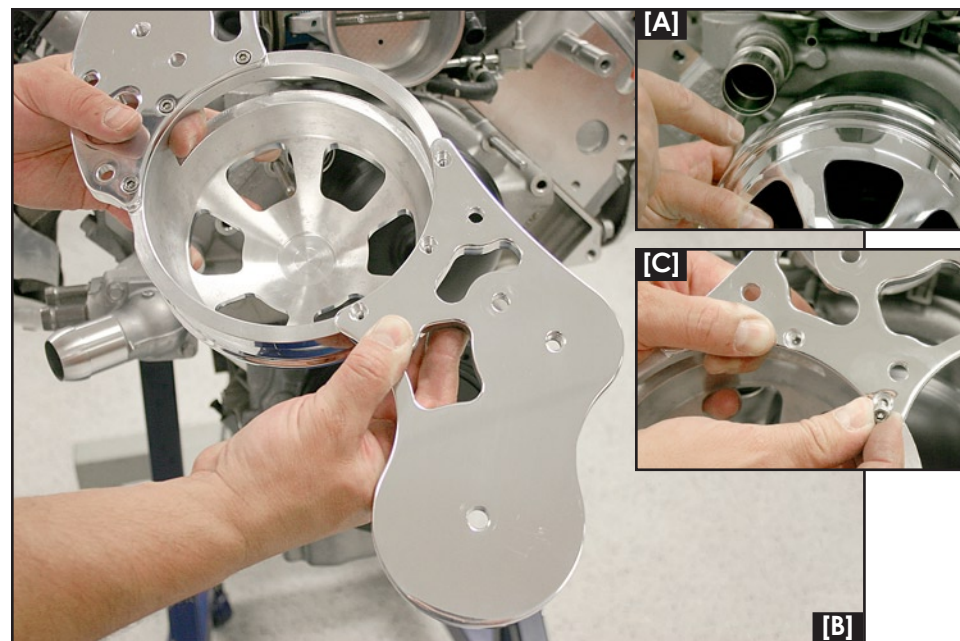
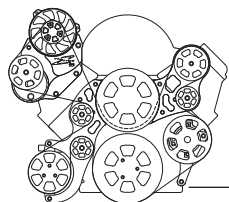


Figure 4: Assemble Bridge Bracket

[A] Assemble the bridge bracket by first making note of the hose notch cut into the pulley cover – this is the passenger side.

[B] Align the compressor bracket with the holes on the passenger side of the pulley cover, apply anti-seize to and install the three 10-32 x 3/8" socket head cap screws through the bracket and into the pulley cover. Tighten firmly.

[C] Repeat procedure for the driver side.



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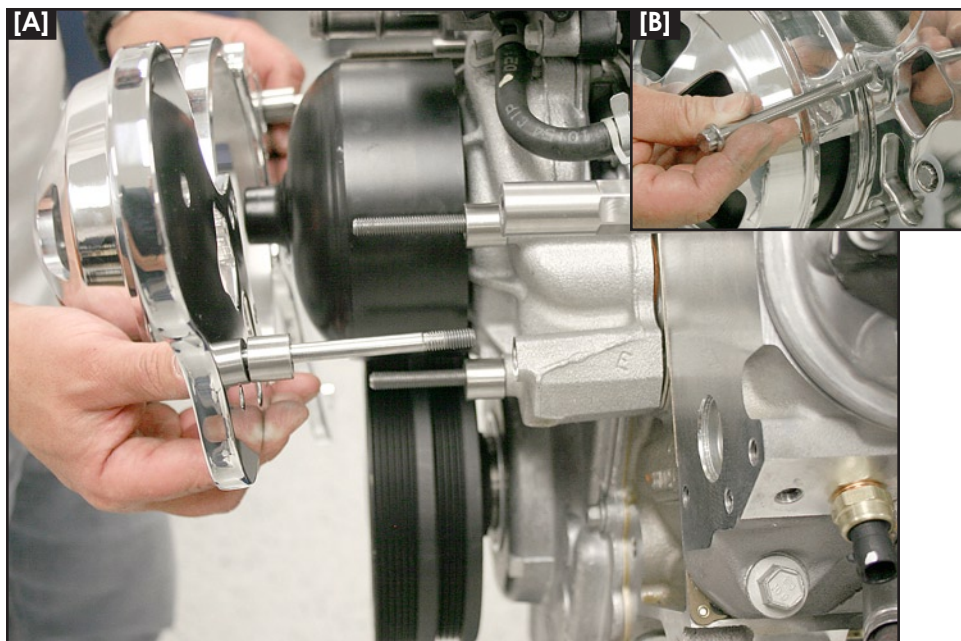


Figure 5: Install Bridge Bracket To Engine

[A] Apply anti-seize to and install two 8mm-1.25 x 100mm ARP 12pt. cap screws into each outside hole on bridge bracket. Slide one 11/16" spacer onto each screw and slide the entire assembly onto the water pump.

Cinch down the two outside ARP screws to hold assembly in place.

[B] Next unthread each stud and replace with an 8mm-1.25 x 100mm ARP 12pt. cap screw while supporting the spacer. Repeat this for the other three remaining studs.* Tighten all fasteners at this time (18 ft/lbs.) *Check alignment of driver side bridge bracket & 3-1/8" spacer nut.

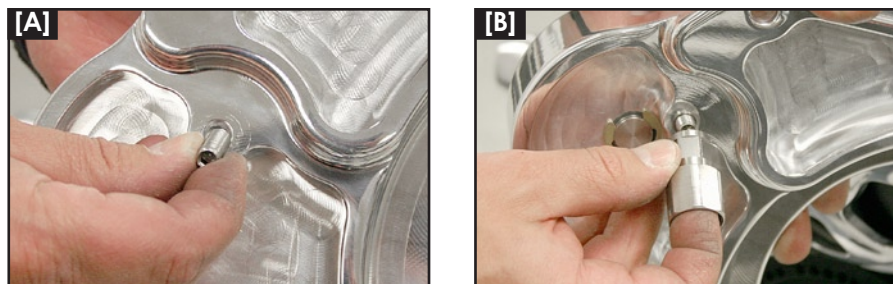


Figure 6: Prepare Alternator Bracket For Installation

[A] Apply anti-seize to the 5/16-18 x 1" socket set screw and thread into the back of the tensioner/alternator mount, finger tighten. Apply anti-seize to the exposed threads.

[B] Install the tensioner standoff nut onto the stud and tighten firmly.

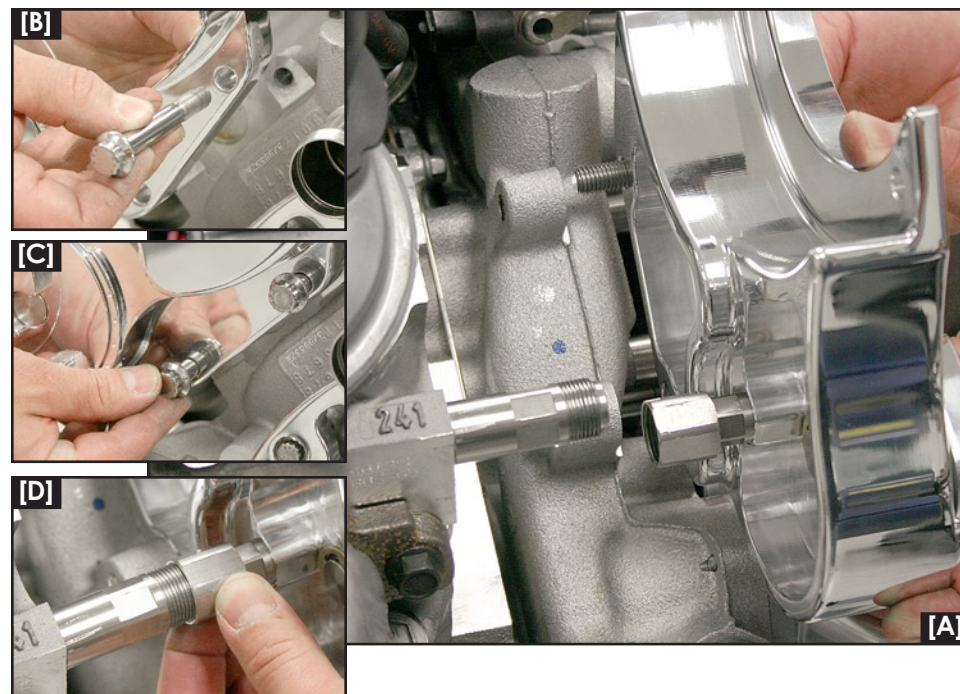
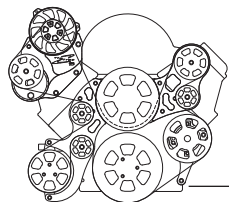


Figure 7: Install Alternator Bracket

[A] Align alternator bracket with the water pump bosses and the threaded spacer nut.

[B][C] Thread the two 10mm-1.5 x 45mm 12 pt. ARP cap screws through the bottom of the alternator bracket and into the water pump bosses and tighten firmly (54 ft/lbs).

[D] Tighten threaded spacer nut assembly at this time.



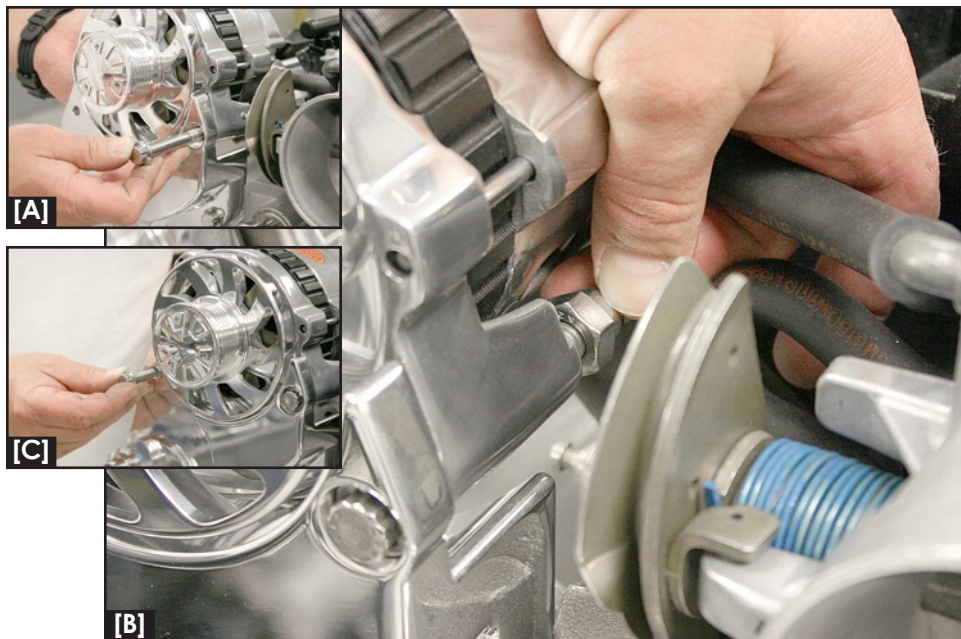


Figure 8: Install Alternator

[A] Align alternator with bracket as shown. Apply anti seize to the 10mm-1.5 x 70mm ARP 12pt cap screw and thread through alternator bracket and through alternator boss.

[B] Thread the 10mm acorn nut onto the back of the screw and finger tighten.

[C] Apply anti-seize to the 8mm-1.25 x 25mm ARP cap screw and thread through the alternator bracket and into the alternator boss. Tighten both fasteners at this time firmly. (8mm 25 ft/lbs. & 10mm 54 ft/lbs.)

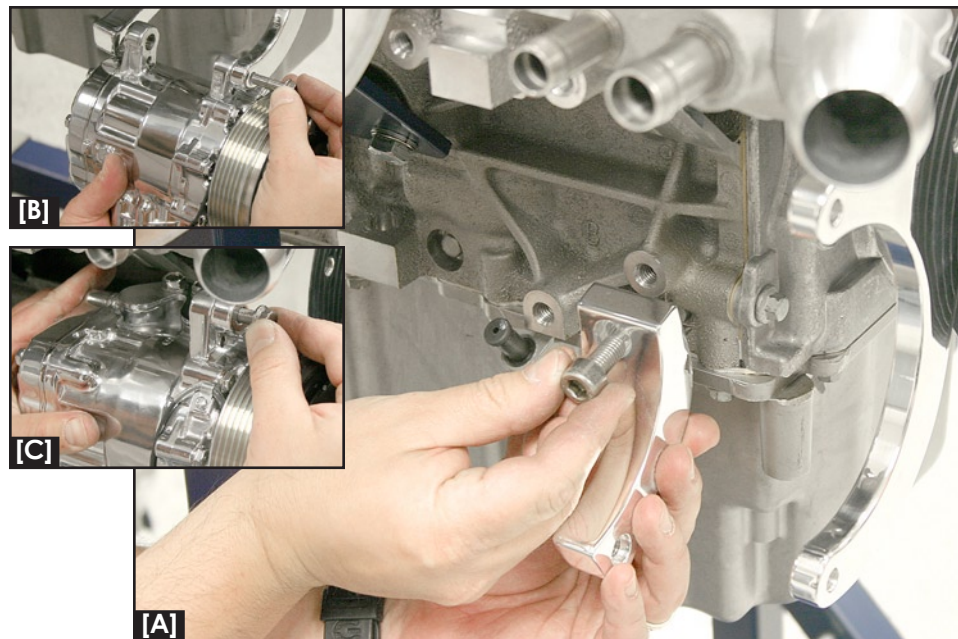


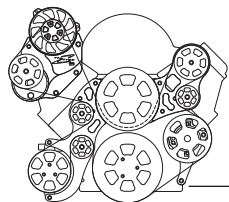
Figure 9: Install A/C Compressor

Apply anti-seize to one 10mm-1.5 x 20mm socket head cap screw, two 8mm-1.25 x 25mm ARP 12pt cap screw and the compressor shoulder bolt.

[A] Place rear compressor bracket on motor as shown, thread the 10mm-1.5 x 20mm socket head cap screw through the bracket and into the engine block and finger tighten.

[B] Place compressor upside down (ports down) and thread one 8mm-1.25 x 25mm ARP 12pt cap screw through the bottom bridge bracket hole and into the compressor boss.

[C] Swing compressor upright (ports up) to line up top compressor boss with hole in bridge bracket. Thread the remaining 8mm-1.25 x 25mm ARP 12pt cap screw through the bridge bracket and into compressor boss and finger tighten.



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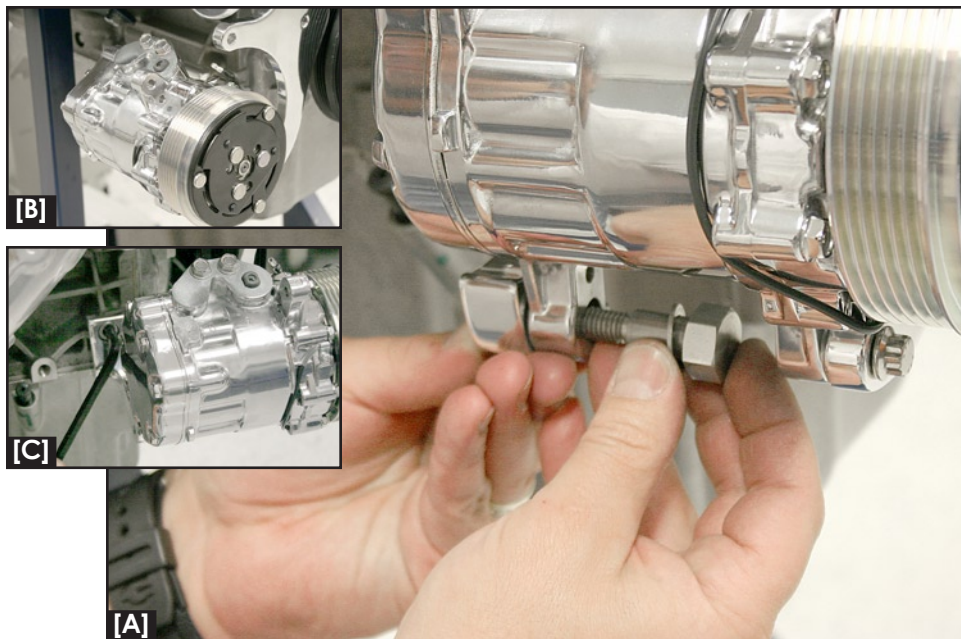


Figure 10: Install A/C Compressor (continued)

[A] Align rear compressor bracket with the rear compressor boss and thread compressor shoulder bolt and washer through boss and into bracket, finger tighten.

[B] Now remove top 8mm-1.25 x 25mm ARP 12pt cap screw and allow compressor to rest away from motor.

[C] Tighten rear compressor bracket to engine block firmly at this time.

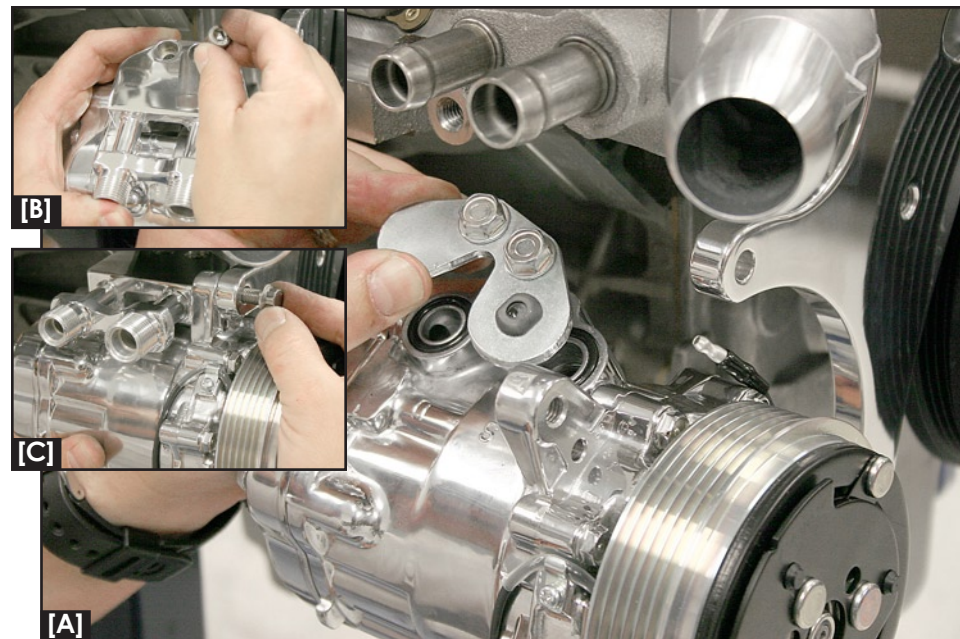


Figure 11: Install A/C Compressor Manifold

NOTE: If you are not ready to set up your A/C tilt compressor back into position and reinstall the 8mm-1.25 x 25mm ARP cap screw and tighten firmly, tighten lower ARP screw and compressor bolt firmly at this time. Do Not connect compressor clutch wire without the hoses connected and the system charged – Serious damage will occur to the compressor.

If you are ready to complete A/C installation and charge system follow steps below:

[A] Remove the plate on top of the compressor body and apply anti-seize to the two 8mm-1.25 x 25mm socket head cap screws. Install compressor manifold onto compressor with the two 8mm-1.25 x 25mm socket head cap screws and tighten firmly (13 ft/lbs).

[B] Tilt compressor back into position and reinstall 8mm-1.25 x 25mm ARP cap screw and tighten firmly, tighten lower ARP screw and compressor shoulder bolt firmly at this time.

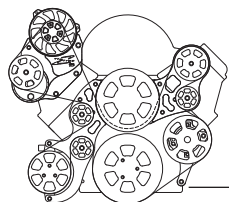
Install hoses, connect clutch wire and charge system.

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.



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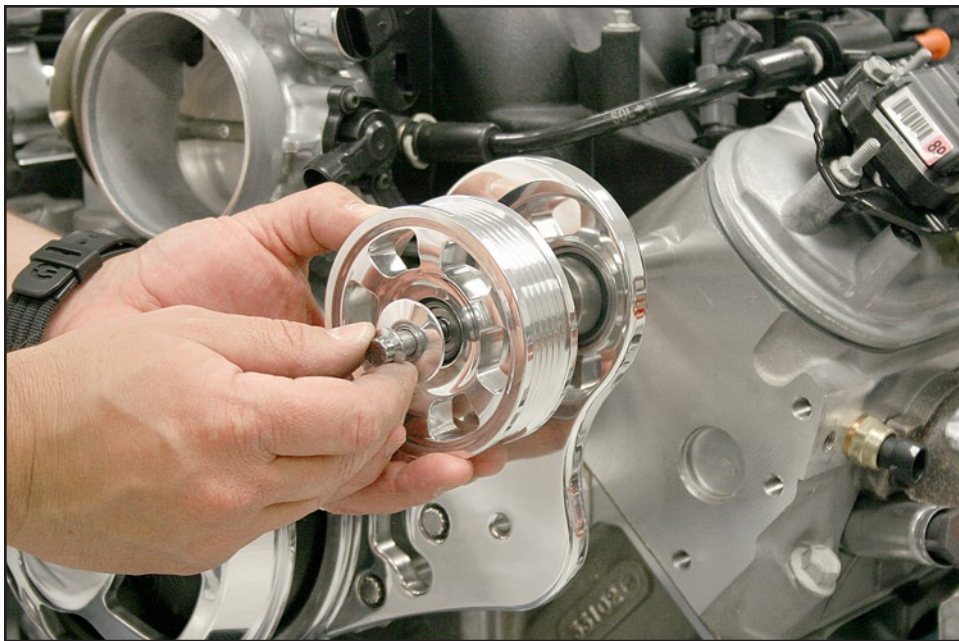


Figure 12: Install Idler Pulleys

Upper Large Idler Pulley

Apply anti-seize to one 3/8-16 x 2-1/4" ARP 12pt cap screw and thread through thrust washer, pulley, and bridge bracket into spacer nut as shown, tighten firmly (46 ft/lbs)

Small Idler Pulleys

Apply anti-seize to three 3/8-16 x 1-3/4" ARP 12pt cap screws. Starting below the large idler pulley thread the first ARP cap screw through the pulley, pulley boss and into the bridge bracket and tighten firmly (46 ft/lbs.) Continue by installing the two small idler pulleys on the passenger side as shown and tighten firmly (46 ft/lbs).



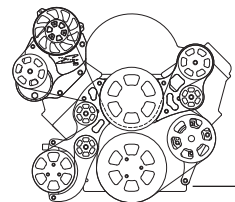
Figure 13: Install Compressor Clutch Cover

Apply Loctite Blue 242 to the following:
(3) 1/4-20 x 3/4" socket head cap screws

Place cover on clutch and thread the socket head cap screws through the cover and into the clutch, torque to 40-45 **inch/lbs**. **Caution:** Over tightening these fasteners will cause damage to the compressor clutch. **Do Not Over Tighten.**

Figure 14: Install Crank Pulley Cover

Apply Loc-Tite thread locker to three 1/4-20 x 5/8" socket head cap screws. Place and align crank pulley cover onto crank pulley hub as shown, thread the three socket head cap screws through the cover and into the crank pulley hub and tighten firmly (13 ft/lbs).



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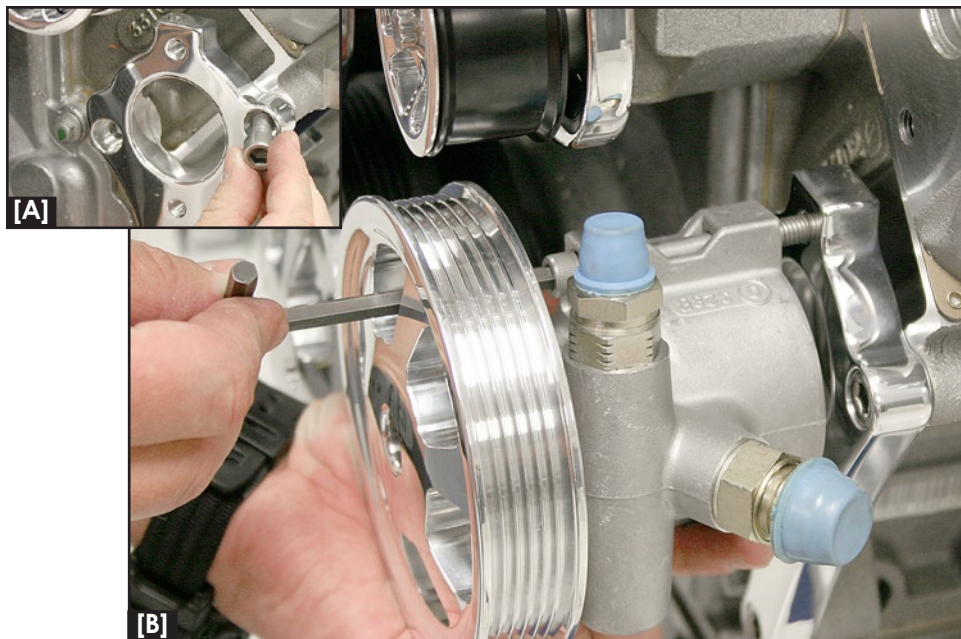


Figure 15: Install Power Steering

For kits without power steering continue to Figure 16.

Install Power Steering Bracket

[A] Apply anti-seize to the three 10mm-1.5 x 20mm socket head cap screws. Place and align power steering pump bracket on driver side of engine block as shown. Thread the three 10mm-1.5 x 20mm socket head cap screws through bracket and into engine block and tighten firmly (54 ft/lbs).

Install Power Steering Pump with Pulley

[B] Apply anti-seize to the two 5/16-18 x 2-3/4" socket head cap screws. Place and align power steering pump to bracket as shown. Thread the two 5/16-18 x 2-3/4" socket head cap screws with 5/16" lock washers through pump and into bracket as shown and tighten firmly (26 ft/lbs).

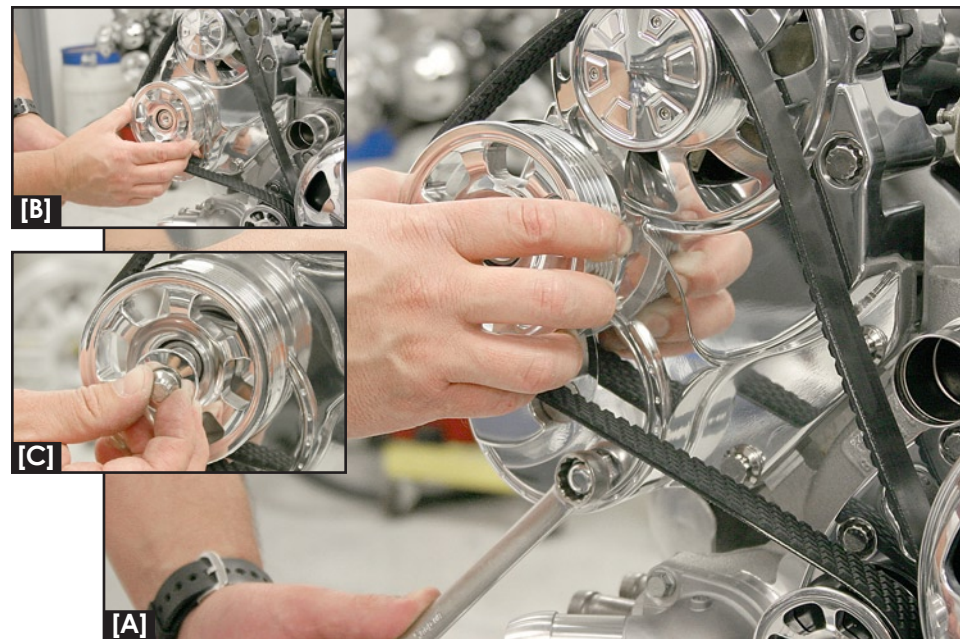


Figure 16: Install Tensioner Pulley & Belt

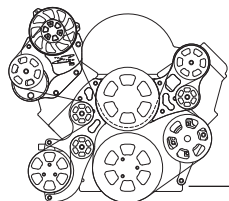
Apply anti-seize to one 3/8-16 x 3/4" ARP 12pt cap screw.

Route serpentine belt as shown below - minus tensioner pulley.

[A] Place a 5/8" box end wrench on tensioner. Align belt onto pulley and pull up on wrench to release tension until tensioner pulley slips onto tensioner shaft.

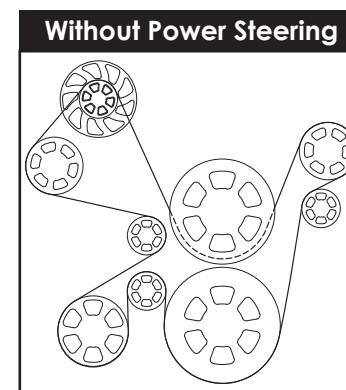
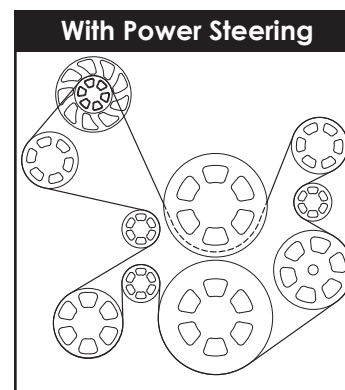
[B] Slowly return wrench to starting position to apply tension to belt.

[C] Remove wrench and install the 3/8-16 x 3/4" ARP 12pt cap screw with thrust washer onto pulley and tighten firmly (46 ft/lbs).



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