

Tru

Trac

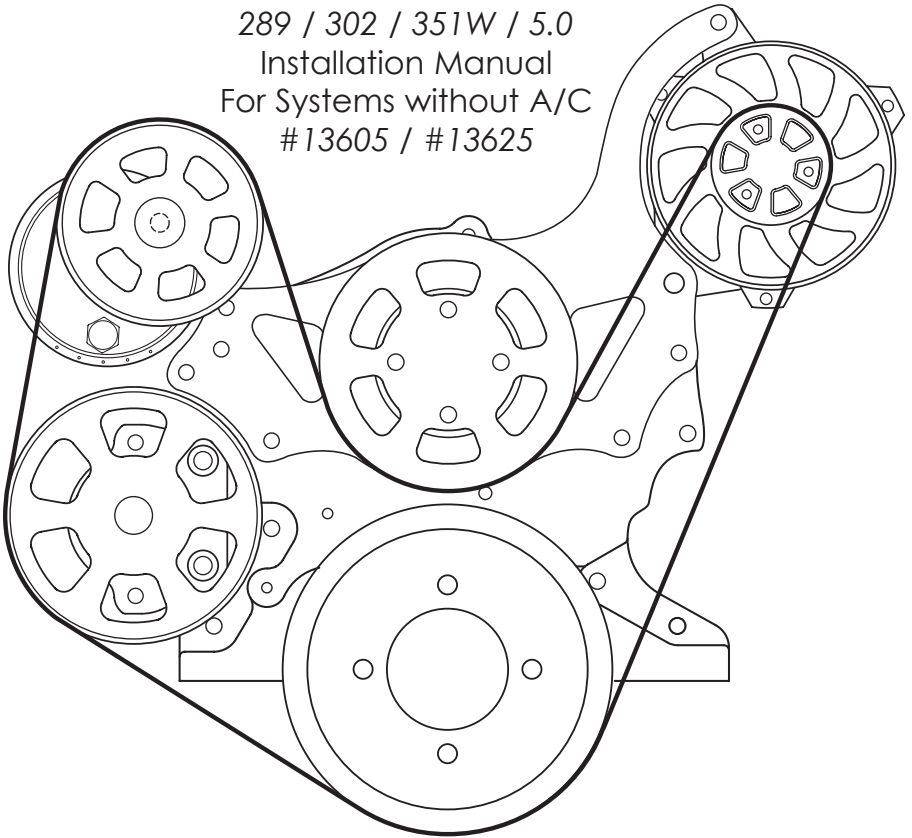
Small Block Ford

289 / 302 / 351W / 5.0

Installation Manual

For Systems without A/C

#13605 / #13625



 **Billet Specialties**[™]

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.billetpecialties.com

This kit is designed to be used with the following or similar 4 hole crankshaft damper (not included)

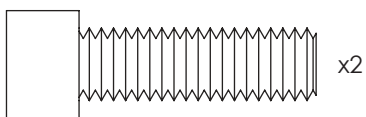
289/302/351w 1970-1980 302, 1970-1997 351w
 Professional Products #80045
 Summit Racing #163289
 Pioneer #DA-3513
 Dimensions: 3.950" overall length 6.400" Dia.

5.0 1981-1995 5.0L
 Ford Racing #M-6316-M50
 Professional Products #80007
 Summit Racing #163302
 Pioneer #DA-3021
 Dimensions: 3.950" overall length 6.400" Dia.

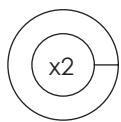
Other aftermarket dampers must be 3.950" overall length or less (space to 3.950") and cannot exceed 6.400" in diameter to clear water pump mount boss and bolt. **Damper must be 4-bolt pattern for crank pulley.**

THIS KIT DOES NOT HAVE A PROVISION FOR MECHANICAL FUEL PUMP

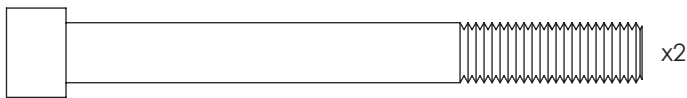
Skin Board #1 - Packaged with Power Steering Pump



3/8-16 x 1-1/4" - Socket Head Cap Screw
 (Power Steering Bracket)



5/16"
 Medium Split Lock Washer
 (Power Steering Pump)



5/16-24 x 3" - Socket Head Cap Screw
 (Power Steering Pump)

Required Tools & Materials

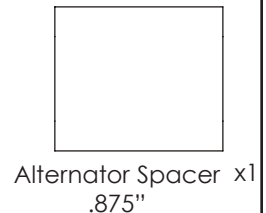
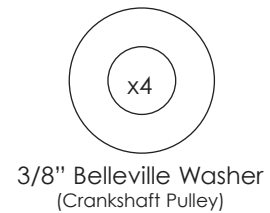
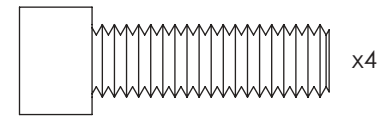
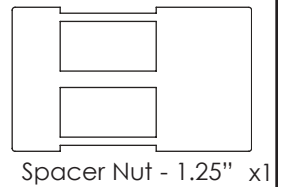
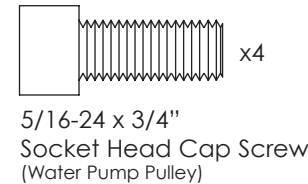
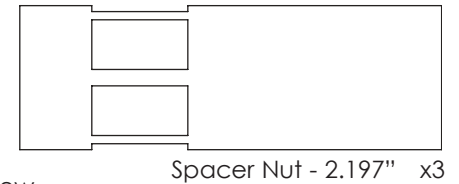
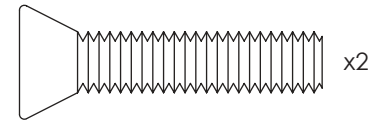
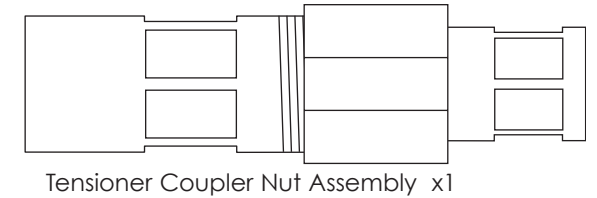
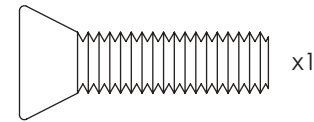
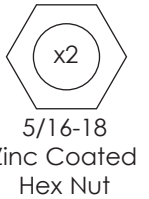
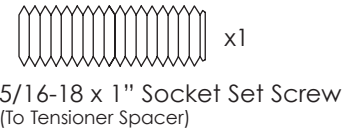
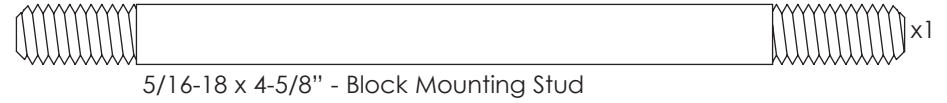
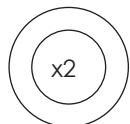
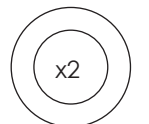
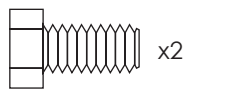
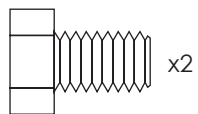
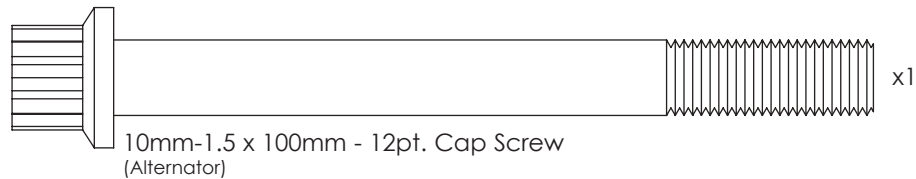
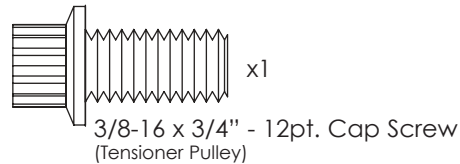
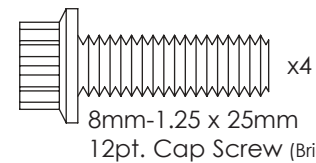
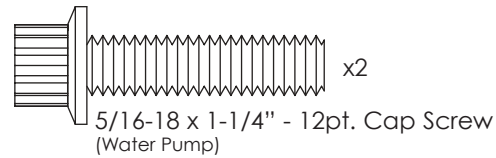
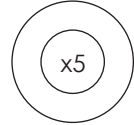
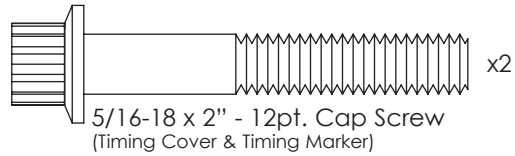
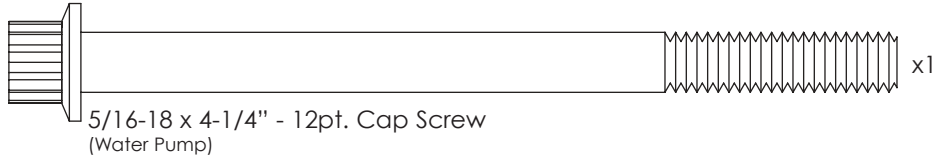
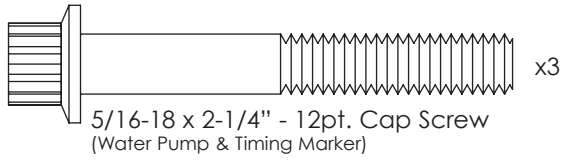
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| <input type="checkbox"/> RTV Silicone | <input type="checkbox"/> 5/8" Box End Wrench | <input type="checkbox"/> 5/16" Allen |
| <input type="checkbox"/> New Oil Pan Gasket | <input type="checkbox"/> 3/4" Box End Wrench | <input type="checkbox"/> 1/4" Allen |
| <input type="checkbox"/> Damper Puller
<i>(Lisle P/N 45500 or similar)</i> | <input type="checkbox"/> 11/16" Box End Wrench | <input type="checkbox"/> 5/32" Allen |
| <input type="checkbox"/> Gasket Scraper | <input type="checkbox"/> Socket Wrench & Extension | <input type="checkbox"/> 5mm Allen |
| <input type="checkbox"/> Scotch-Brite® Pad | <input type="checkbox"/> 10mm 12pt. socket | |
| <input type="checkbox"/> 5/16-18 Thread Chaser* & Holder | <input type="checkbox"/> 1/2" Socket | |

*Thread chasers are available at your local parts store and are different from a thread cutting tap.

TECH TIP:

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

Skin Board #2 - Packaged In Main Box



Other Hardware / Gaskets

Oil Pan Corner Gaskets & Oil Pan End Seal

Goodyear Poly-V Serpentine Belt - 57.75" #4060620 (with power steering)

Goodyear Poly-V Serpentine Belt - 55.5" #4060605 (without power steering)



Figure 1: Engine Block Preparation

- Disconnect battery
- Remove existing alternator, air conditioning compressor and associated brackets
- Remove all pulleys and water pump
- Use damper puller to remove damper
- Remove Timing cover
- Remove oil pan hardware and drop oil pan

If you are unable to remove the oil pan: First Cut the exposed oil pan gasket flush with engine block using a sharp blade, then remove the first three bolts from the oil pan on each side and loosen the remaining bolts enough to allow the front of the oil pan to drop 3/8" to 1/2".

- Remove all traces of gasket and sealer with gasket scraper and Scotch-Brite® pad
- Clean crank snout with Scotch-Brite® pad
- Clean threads in block by chasing with a 5/16-18 thread chaser

Important:

Remove fuel pump eccentric from cam gear; replace bolt & washer. Torque to recommended spec.

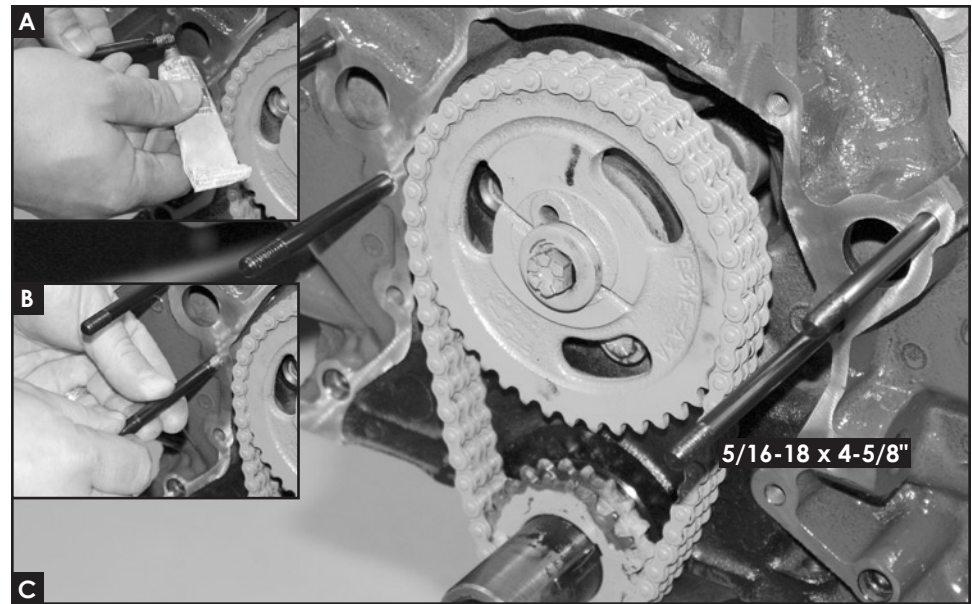
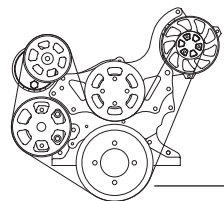


Figure 2: Install Mounting Studs

A,B] Apply RTV Silicone to two 5/16-18 x 3-3/4" threaded studs and thread studs into passenger side of motor near water outlet and finger tighten.

C] Apply RTV Silicone to one 5/16-18 x 3-3/4" threaded stud and thread into driver side top hole and finger tighten.

C] Take remaining 5/16-18 x 4-5/8" threaded stud, apply RTV Silicone and thread into bottom hole.

TECH TIP:

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





Figure 3: Install Mounting Studs (Continued)

Thread the two 5/16-18 zinc coated hex nuts onto one of the studs and tighten against each other to act as a drive nut (see illustration below*); then seat the stud firmly into the block. Repeat this for the three remaining studs.

Remove zinc coated hex nuts and discard.

Apply anti seize to exposed stud threads at this time.



Figure 4: Prepare Timing Cover For Installation

Install oil pan end seal with a thin film of RTV silicone. If you were unable to remove the oil pan install new corner gaskets at this time too.

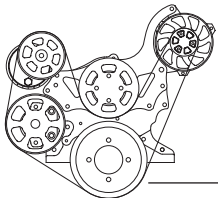




Figure 5: Install Timing Cover & Gasket

Apply a thin film of RTV to back of timing cover and engine block surface.

A] Align and install timing cover gasket to block. Place timing cover over studs and crank snout.

B] Thread one 5/16-18 x 2-1/4" ARP 12pt. bolt into driver side bottom hole on timing cover and finger tighten.

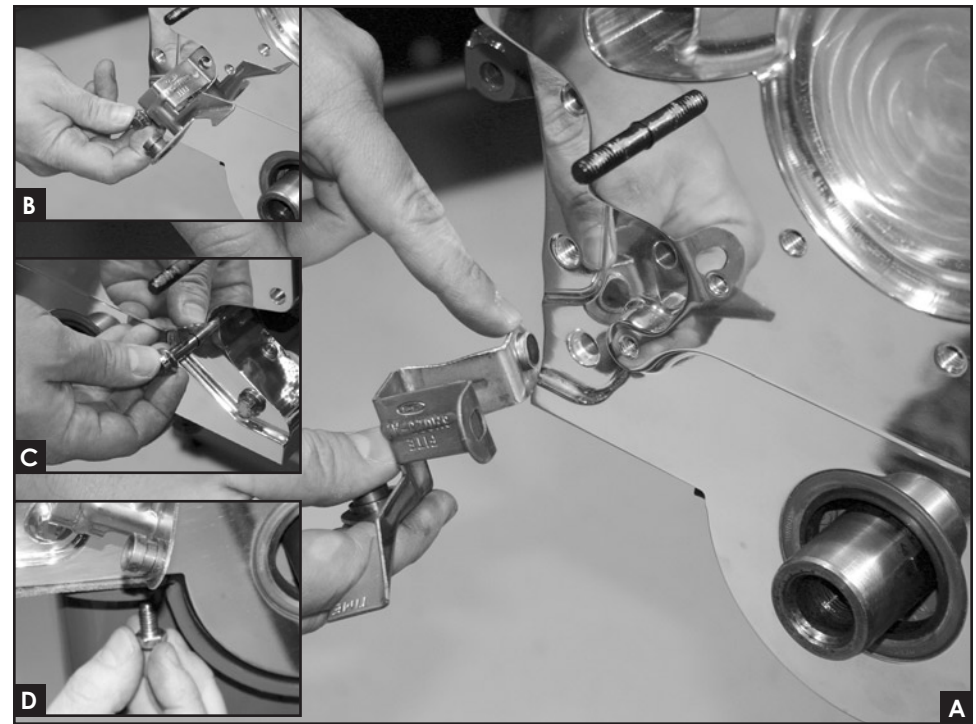


Figure 6: Install Factory Timing Marker

A,B] Take factory steel timing marker and install one 5/16-18 x 2-1/4" ARP 12pt. bolt through bottom hole of timing marker and thread into timing cover.

Thread one 5/16-18 x 2" ARP 12pt. bolt into other hole and finger tighten both bolts.

C] Thread one 5/16-18 x 2" ARP 12pt. bolt into remaining driver side bottom hole in timing cover and finger tighten.

If you did not remove the oil pan?

D] Install two 5/16-18 x 1/2" hex head cap screw through the holes nearest the crankshaft and into the timing cover. Thread the two remaining 1/4-20 x 1/2" hex head cap screws through the corner holes of the oil pan into the timing cover. Make sure corner gaskets line up with holes. Corner gaskets may need to be trimmed to allow gaskets to sit flush with engine and timing cover.

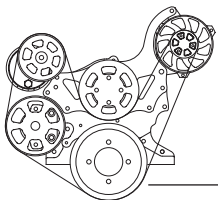




Figure 7: Install Water Pump

Apply a thin film of RTV silicone to water pump gasket and back of water pump. Place water pump gasket on to timing cover and align. Install water pump over studs and onto timing cover.

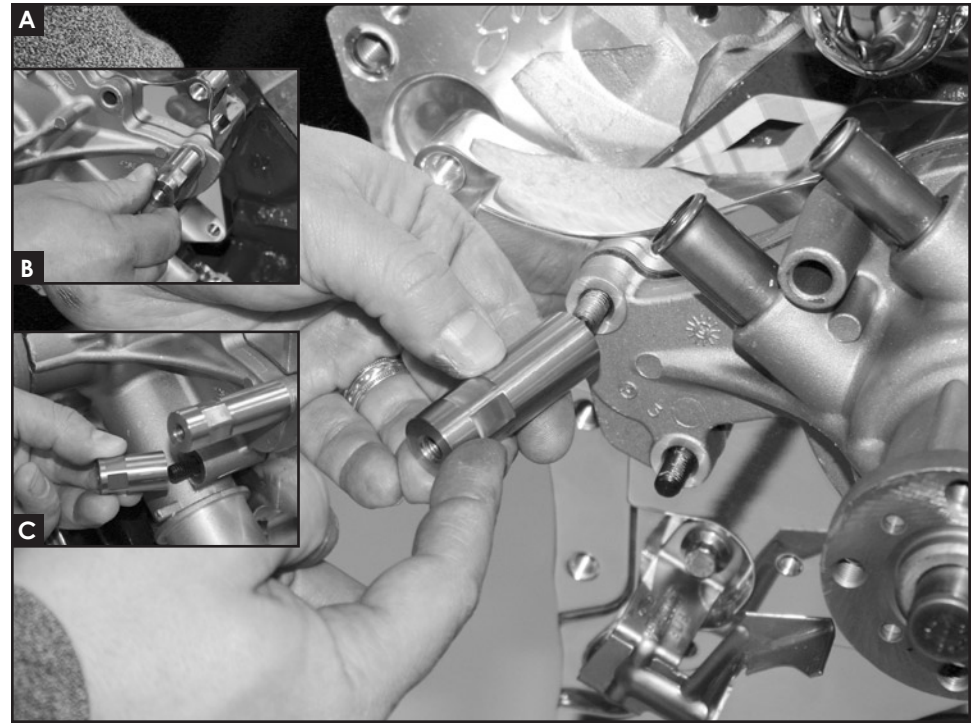
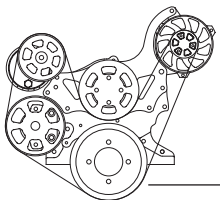


Figure 8: Install Spacer Nuts

A] Thread the two 2.197" spacer nuts with the hex end out onto the passenger side water pump studs and finger tighten.

B] Thread the 1.569" spacer nut hex side out to the top driver side water pump stud and finger tighten.

C] Thread the remaining short spacer nut on to the bottom water pump stud hex side out (shown above) and finger tighten.



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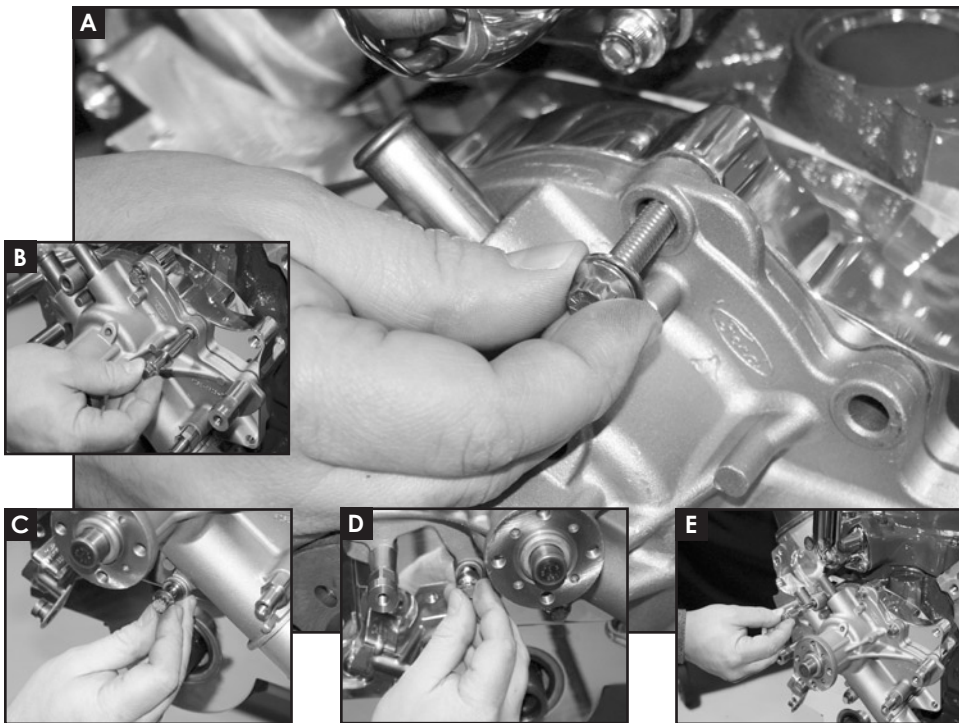


Figure 9: Complete Water Pump Installation

A] There are now five open holes remaining in the water pump, starting at the top hole thread the 5/16-18 x 1-1/4" ARP 12pt. bolt and 5/16" flat washer into hole and finger tighten.

B] Working in a clockwise direction, thread a 5/16-18 x 3" ARP 12pt. bolt and 5/16" flat washer into the next hole and finger tighten.

C] Continuing in a clockwise direction thread a 5/16-18 x 2-1/4" ARP 12pt. bolt and 5/16" flat washer into the bottom right hole in the water pump and finger tighten.

D] Thread a 5/16-18 x 1-1/4" ARP 12pt. bolt and 5/16" flat washer into the bottom left hole in the water pump and finger tighten.

E] Moving on to the remaining hole in the water pump at the top, thread a 5/16-18 x 4-1/4" ARP 12pt. bolt and 5/16" flat washer into the hole and finger tighten.

Tighten all bolts on the timing cover and then water pump at this time.

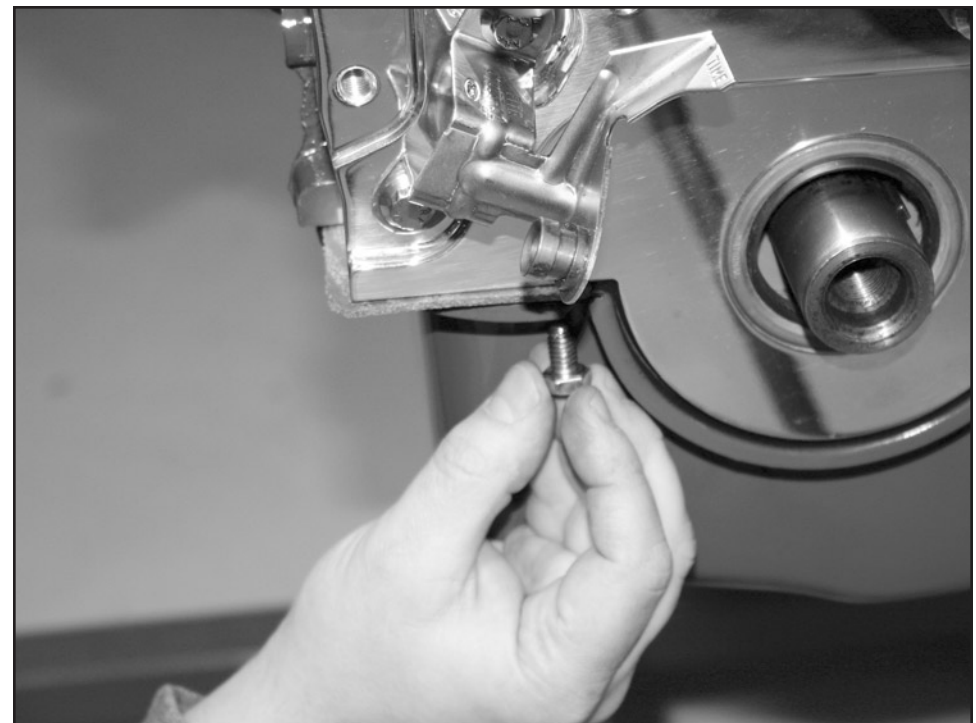
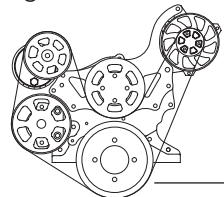


Figure 10: Oil Pan Installation (If Removed)

Install oil pan and gasket at this time, thread two 5/16-18 x 1/2" hex head cap screw through the holes nearest the crankshaft and into the timing cover.

Thread the two remaining 1/4-20 x 1/2" hex head cap screws through the corner holes of the oil pan into the timing cover.

Tighten all bolts at this time.

Note: Some aftermarket oil pans may require different length hardware.

Figure 10: Oil Pan Installation (If NOT Removed)

Tighten oil pan to motor and timing cover firmly

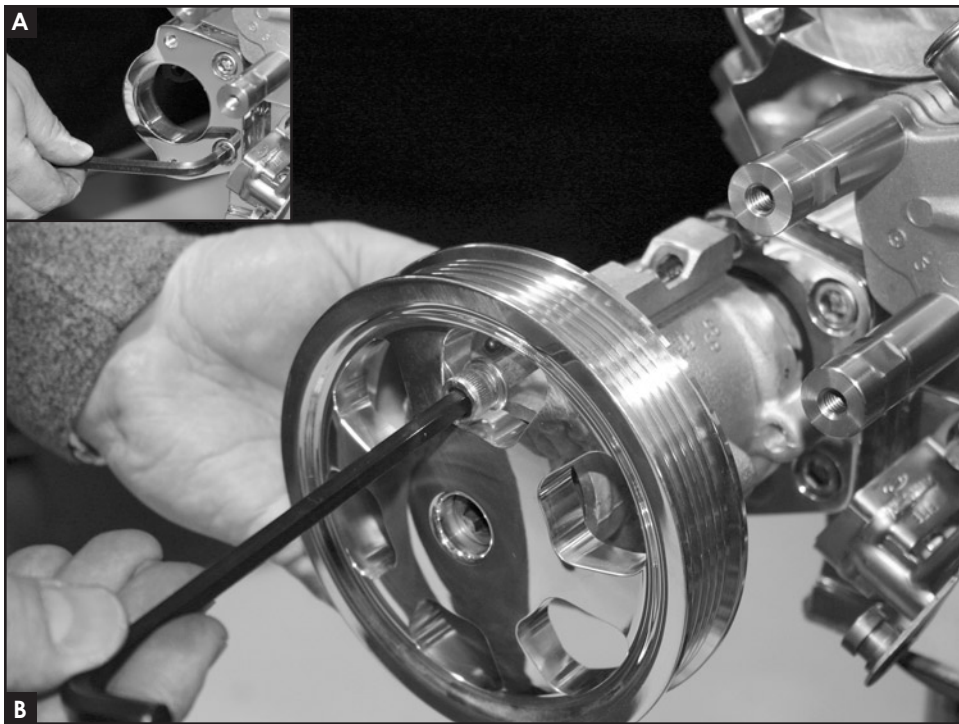


Figure 11: Install Power Steering Bracket & Pump

If your kit does not include power steering proceed to **Figure 12**.

A] Place power steering bracket onto timing cover. Thread the two 3/8-16 x 1-1/4" socket head cap screws into bracket and tighten.

B] Attach power steering pump to bracket with two 5/16-24 x 3" socket head cap screws and 5/16" split washers and tighten firmly.

Figure 12: Install Crank Damper

At this time install the 4-bolt damper and tighten firmly.

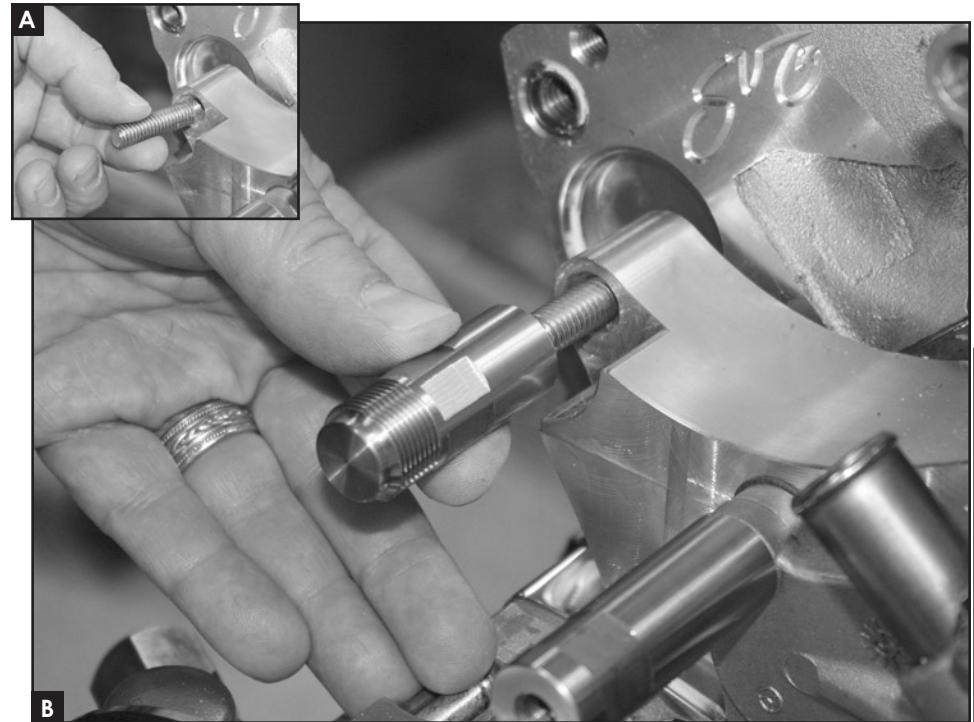
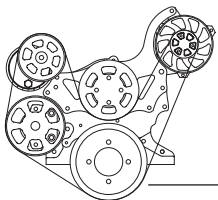


Figure 13: Install Coupler Spacer & Stud

A] Apply anti-seize to the 3/8-16 x 1-1/4" threaded stud and thread into the top passenger side ear of the timing cover & tighten.

B] Apply anti-seize to the exposed threads. Disassemble the tensioner coupler assembly and thread the long spacer nut onto stud and tighten.



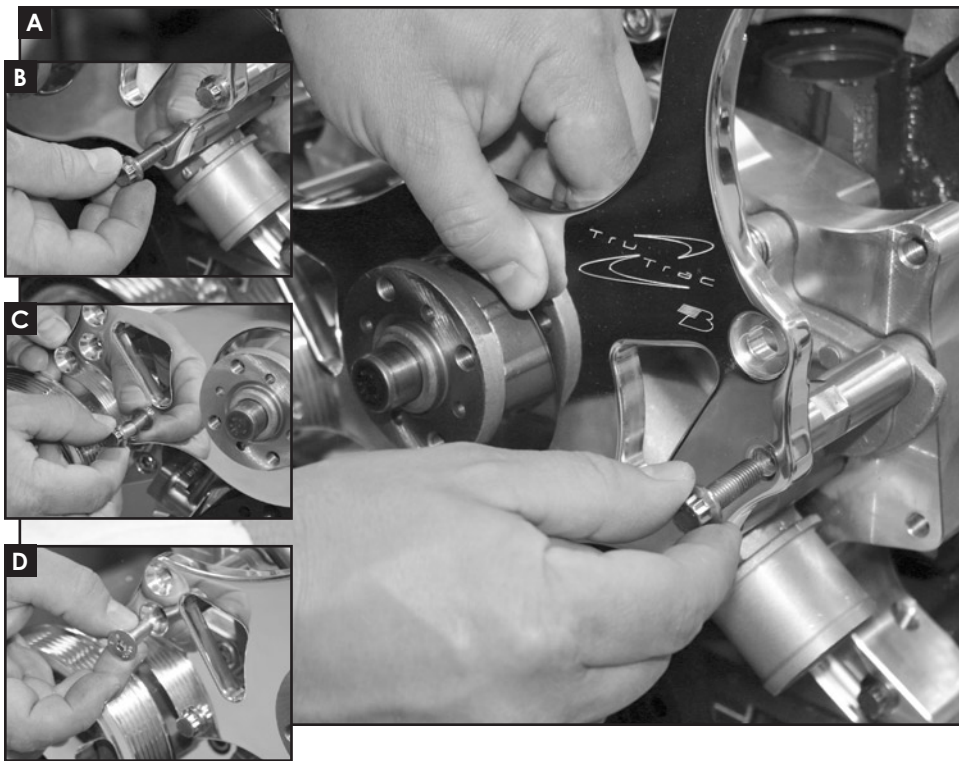


Figure 14: Install Bridge Bracket

Place the bridge bracket on the motor & align.

A,B] Apply anti-seize to the two 8mm-1.25 x 25mm ARP bolts and thread through the bridge bracket into the driver side spacer nuts and finger tighten.

C] Apply anti-seize to the remaining 8mm-1.25 x 25mm ARP bolt and thread through the bottom passenger side hole on the bridge bracket and into the bottom spacer nut. Finger tighten.

D] Apply anti-seize to the 8mm-1.25 x 25mm flat socket cap screw and thread through the bridge bracket into the remaining spacer nut on the passenger side and finger tighten.

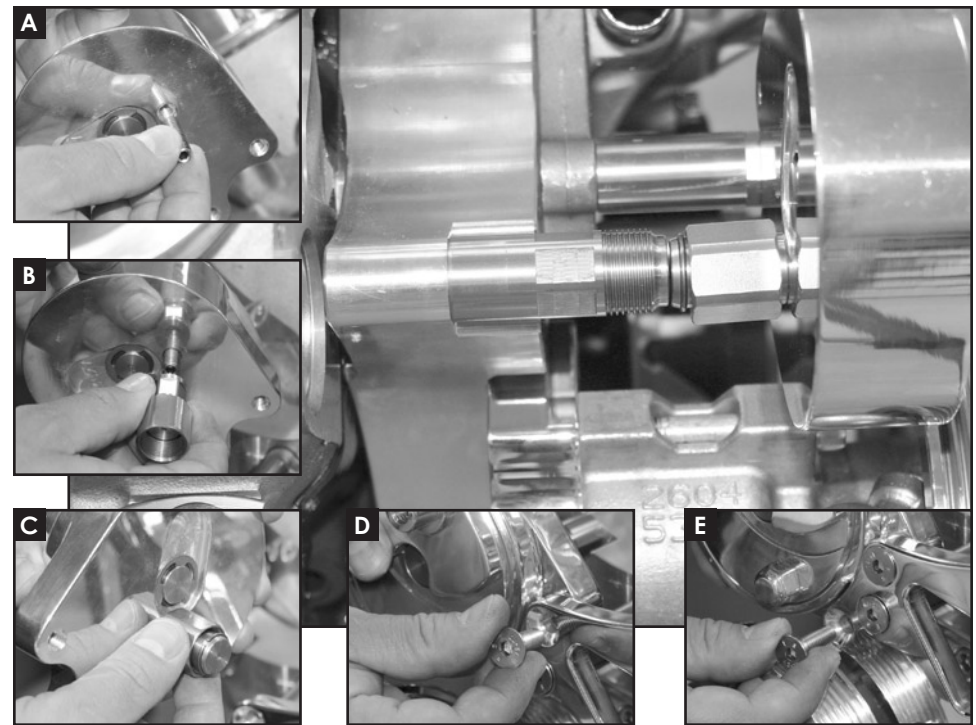


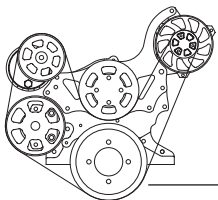
Figure 15: Install Tensioner

A] Apply anti-seize to the 5/16-18 x 1" socket set screw and thread into the back of the tensioner. Apply anti-seize to the remaining threads on stud.

B] Thread the tensioner coupler spacer nut onto the tensioner and tighten.

C] Slide coupler nut back against the tensioner body.

D,E] Apply anti-seize to the two 8mm-1.25 x 30mm flat socket cap screws. Thread through the bridge bracket into the tensioner and tighten.



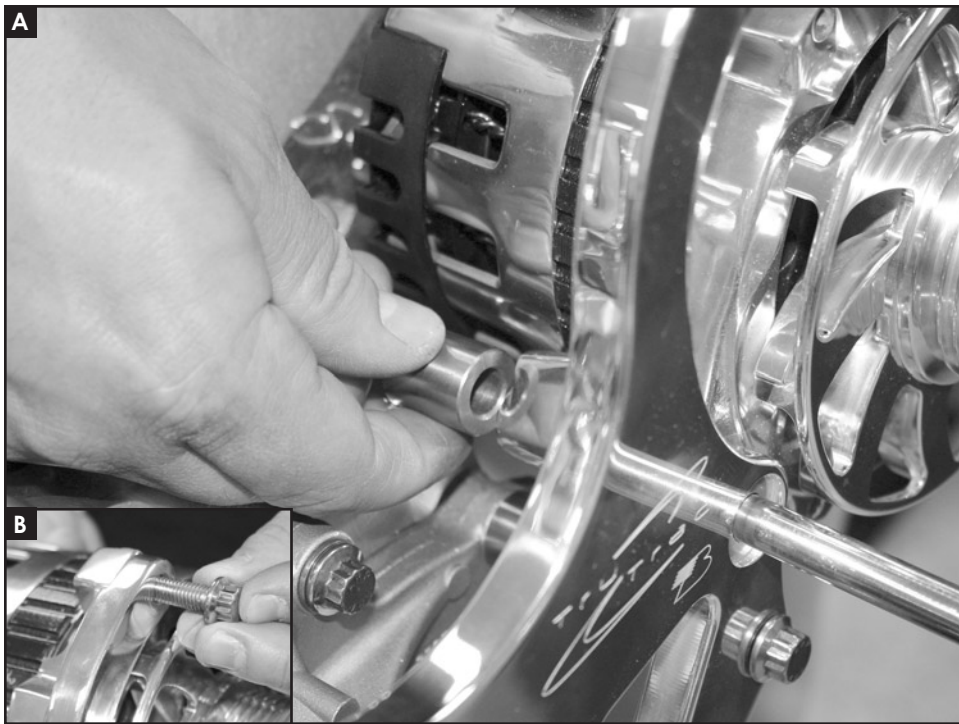


Figure 16: Install Alternator

Apply anti-seize to the 10mm-1.5 x 100mm ARP 12pt. bolt. Place alternator between bridge bracket and timing cover, aligning the bottom alternator mounting hole with bridge bracket and timing cover.

A] Thread the 10mm-1.5 x 100mm ARP 12pt. bolt through the bridge bracket and halfway through the alternator. Slide the alternator spacer into position between the alternator and timing cover. Push bolt through the rest of the way and finger tighten.

B] Apply anti-seize to the 8mm-1.25 x 25mm ARP 12pt. bolt. Align top alternator mounting hole with bridge bracket, thread in the 8mm-1.25 x 25mm ARP 12pt. bolt and tighten firmly.



Figure 17: Complete Bridge Bracket Installation

A] At this time tighten all bridge bracket bolts firmly, leave the bottom alternator bolt loose and check to see if a shim needs to be added at this time.

The alternator mounting boss may vary in thickness due to the polishing process. 10mm shim washers are provided to shim alternator to bridge bracket (washers may or may not be needed).

B] Thread the coupler nut onto the coupler spacer and tighten firmly.

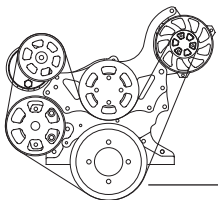


Figure 18: Install Crankshaft Pulley

Install crank pulley with four 3/8-16 x 1" socket head cap screws and four 3/8" Belleville washers and tighten firmly.

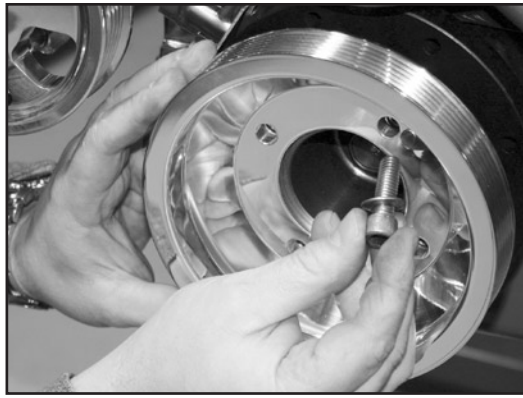


Figure 19: Install Water Pump Pulley

Install water pump pulley with four 5/16-24 x 3/4" socket head cap screws and tighten firmly.

Check All Bolts For Tightness At This Time

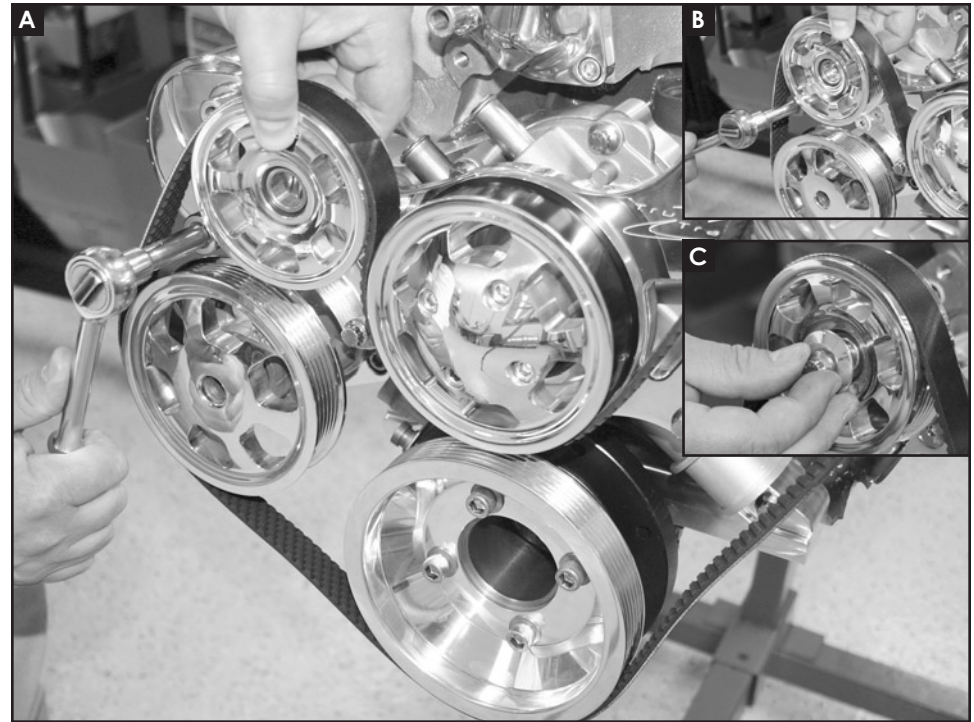
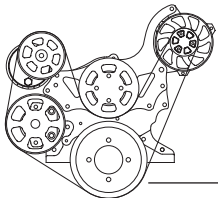


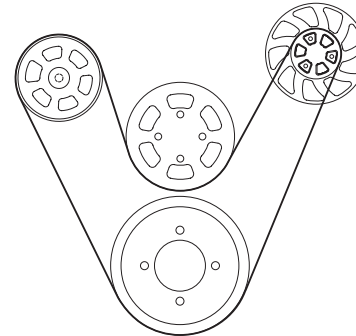
Figure 20: Install Tensioner Pulley & Serpentine Belt

A] Route serpentine belt as shown below. Wrap belt around tensioner pulley and hold pulley in place.

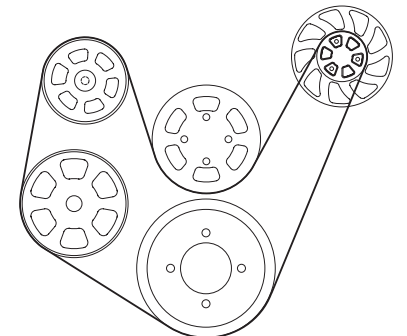
B] Place a 5/8" socket with extension onto the tensioner nut. Rotate socket handle clockwise until tensioner pulley slips onto tensioner shaft.

C] Release tension and install 3/8-16 x 3/4" ARP 12pt. bolt and washer onto tensioner. Tighten firmly.

Belt Path Without Power Steering



Belt Path With Power Steering





Billet Specialties, Inc.
500 Shawmut Avenue
La Grange, Illinois 60526
Tech Line 708.588.0505
Fax 708.588.7181
www.billet specialties.com