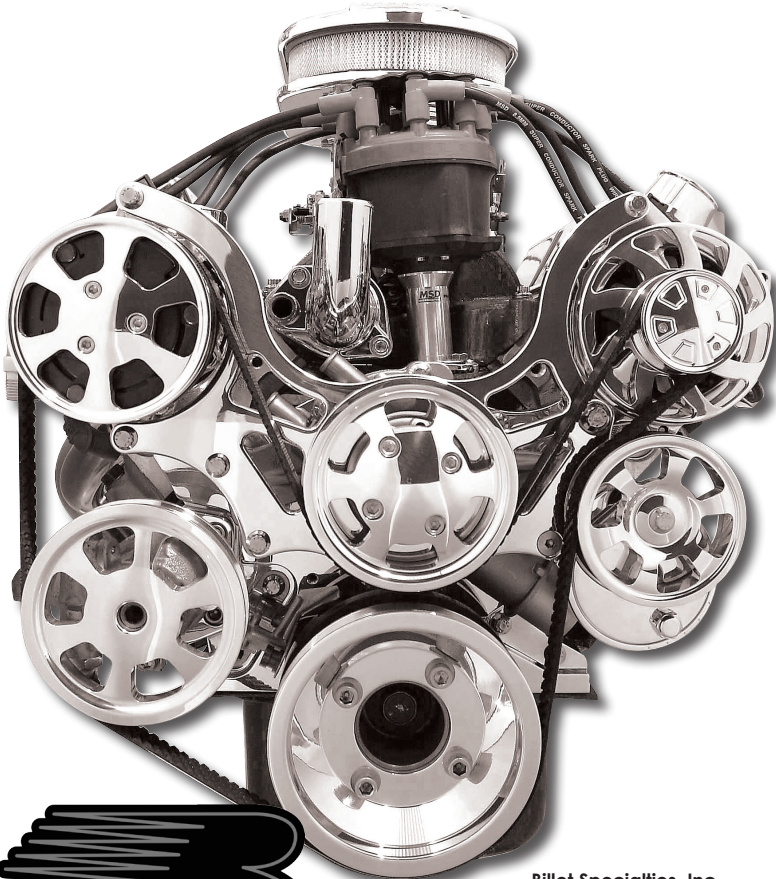


TRU Track

SMALL BLOCK FORD

Installation Manual
For Systems with A/C
#13600 / #13620



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

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

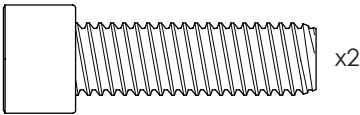
289/302/351w 1970-1980 302, 1970-1997 351w
Professional Products #80045
Summit Racing #163289
Pioneer #DA-3513
Dimensions: 3.950" overall length 6.400" Dia.

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.

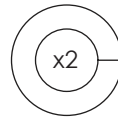
Other aftermarket dampers must be 3.950" overall length or less (space to 3.950") and cannot exceed 6.400" in diameter to clear water pump mount boss and bolt. **Damper must be 4-bolt pattern for crank pulley.**

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)

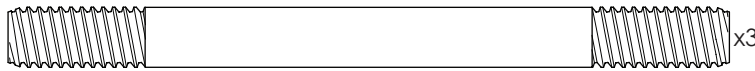
Required Tools & Materials

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



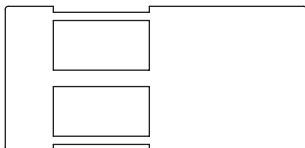
5/16-18 x 3-3/4" - Block Mounting Stud



5/16-18 Zinc Coated Hex Nut

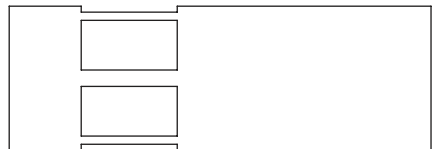


5/16-18 x 4-5/8" - Block Mounting Stud



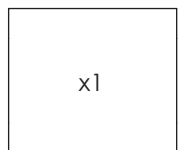
x1

Spacer Nut - 1.569"



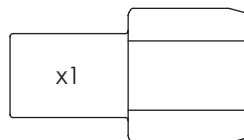
x2

Spacer Nut - 2.197"



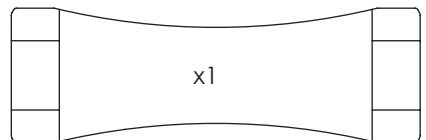
x1

Alternator Spacer
.875"



x1

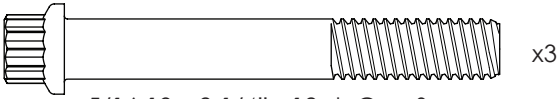
Spacer Nut - 1.240"



x1

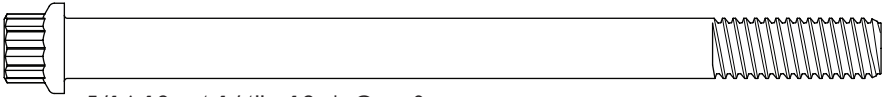
Tensioner Spacer Nut - 2.129"

Skin Board #3 - Packaged In Main Box



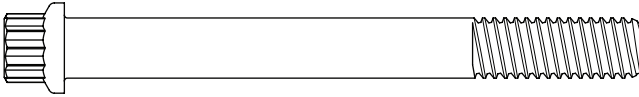
5/16-18 x 2-1/4" - 12pt. Cap Screw
(Water Pump & Timing Marker)

x3



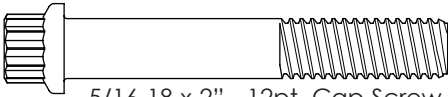
5/16-18 x 4-1/4" - 12pt. Cap Screw
(Water Pump)

x1



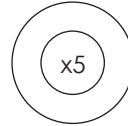
5/16-18 x 3" - 12pt. Cap Screw
(Water Pump)

x1



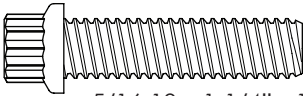
5/16-18 x 2" - 12pt. Cap Screw
(Timing Cover & Timing Marker)

x2



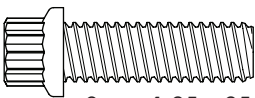
x5

5/16" Flat Washer
(Water Pump)



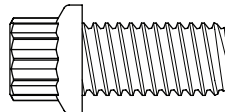
5/16-18 x 1-1/4" - 12pt. Cap Screw
(Water Pump)

x2



8mm-1.25 x 25mm
12pt. Cap Screw (Bridge Bracket)

x5



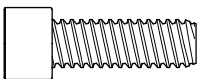
3/8-16 x 3/4" - 12pt. Cap Screw
(Tensioner Pulley)

x1



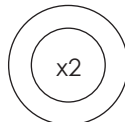
10mm-1.5 x 100mm - 12pt. Cap Screw
(Alternator)

x1



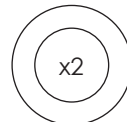
1/4-20 x 3/4" - Socket
Head Cap Screw
(Compressor Cover)

x3



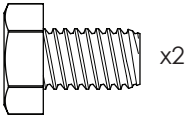
x2

10mm x .5mm
Shim Washer
(Alternator)

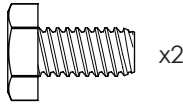


x2

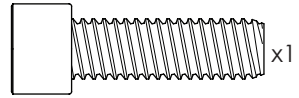
10mm x 1mm
Shim Washer
(Alternator)



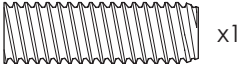
1/4-20 x 1/2"
Hex Head Cap Screw
(Oil Pan)



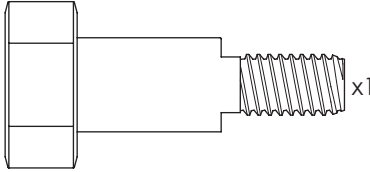
5/16-18 x 1/2"
Hex Head Cap Screw
(Oil Pan)



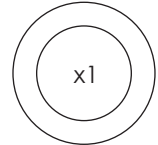
5/16-18 x 1"
Socket Head Cap Screw
(Timing Cover To Spacer Nut)



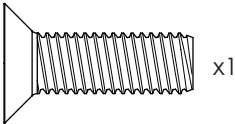
5/16-18 x 1"
Socket Set Screw
(To Tensioner Spacer)



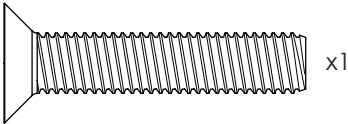
Compressor Shoulder Bolt
(A/C Compressor)



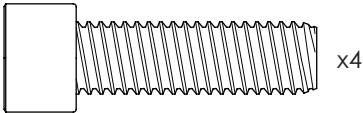
1/2" Flat Washer
(Shoulder Bolt)



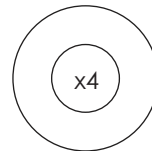
8mm-1.25 x 25mm - Flat Socket Cap Screw
(Bridge Bracket)



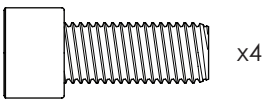
8mm-1.25 x 40mm - Flat Socket Cap Screw
(Bridge Bracket)



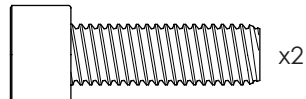
3/8-16 x 1-1/4" - Socket Head Cap Screw
(Crankshaft Pulley)



3/8" Belleville Washer
(Crankshaft Pulley)



5/16-24 x 3/4"
Socket Head Cap Screw
(Water Pump Pulley)



8mm-1.25 x 25mm
Socket Head Cap Screw
(A/C Compressor Manifold)

Other Hardware / Gaskets

Oil Pan Corner Gaskets & Oil Pan End Seal

Continental Elite Poly-V Serpentine Belt - 62" #4060620 (with power steering)

Continental Elite Poly-V Serpentine Belt - 60.5" #4060605 (without power steering)

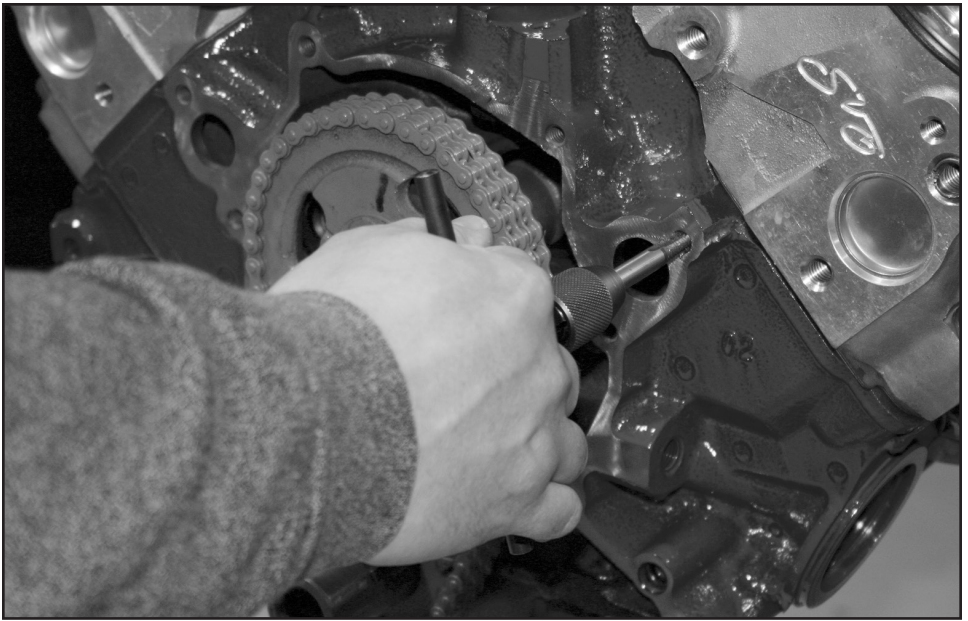


Figure 1: Engine Block Preparation

- 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
- **Important:** Remove fuel pump eccentric from cam gear - replace bolt & washer. Torque to recommended spec.
- 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

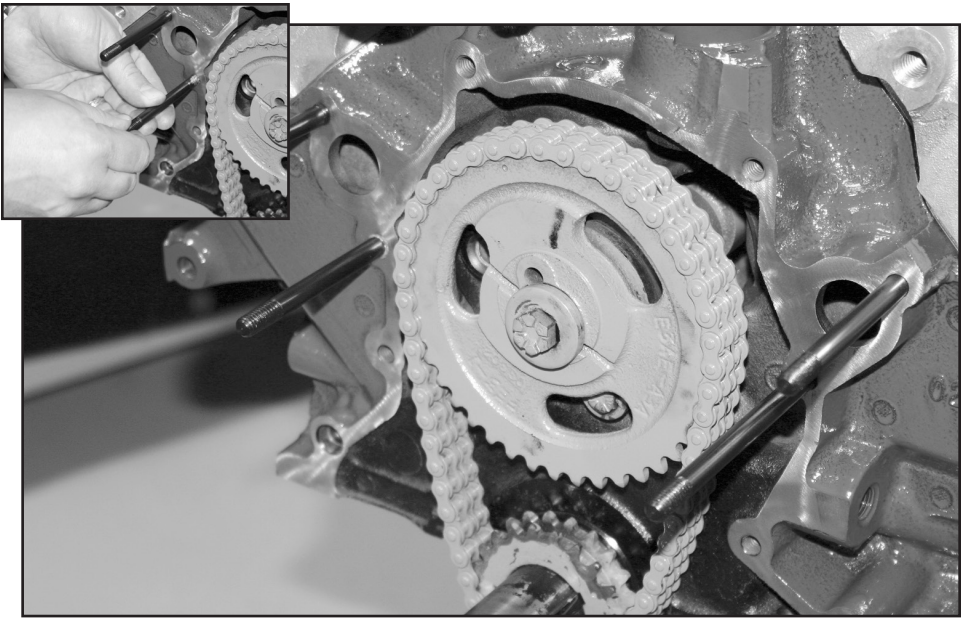


Figure 2: Install Mounting Studs

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.

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

Take remaining 5/16"-16 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, unless otherwise noted.



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.

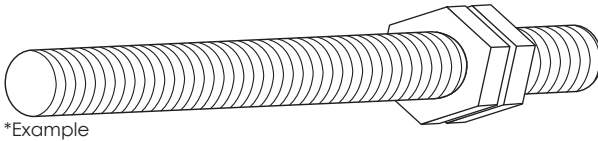




Figure 4: Prepare Timing Cover For Installation

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.

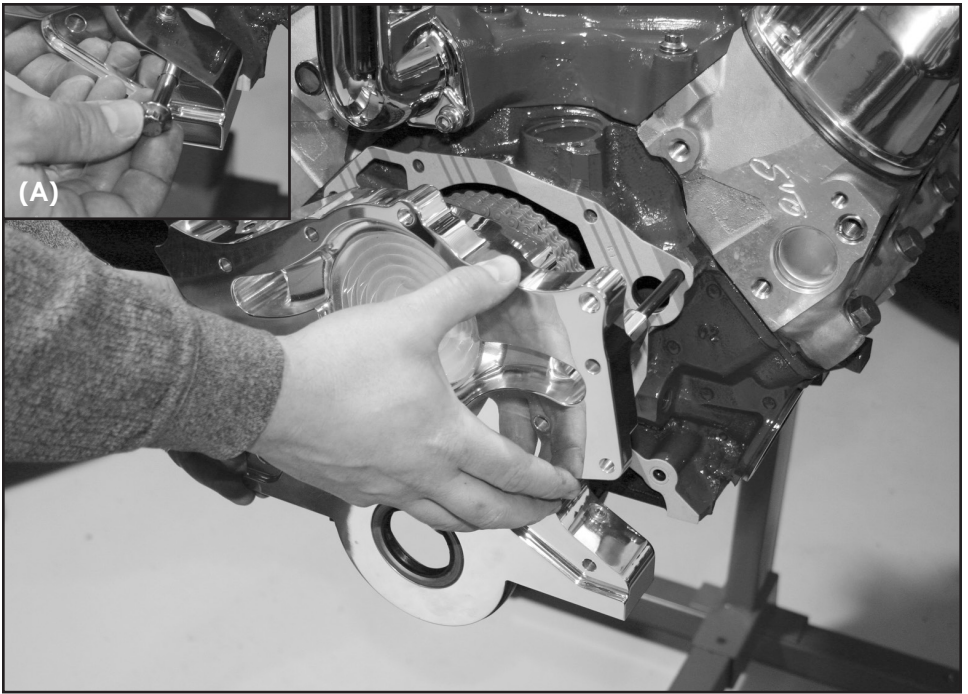


Figure 5: Install Timing Cover & Gasket

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

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

Apply a thin coating of motor oil or grease on the crank seal to protect seal at startup.

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

TECH TIP:

If your timing cover is not mounting flush against the block make sure you have removed the fuel pump eccentric as instructed on page 6.

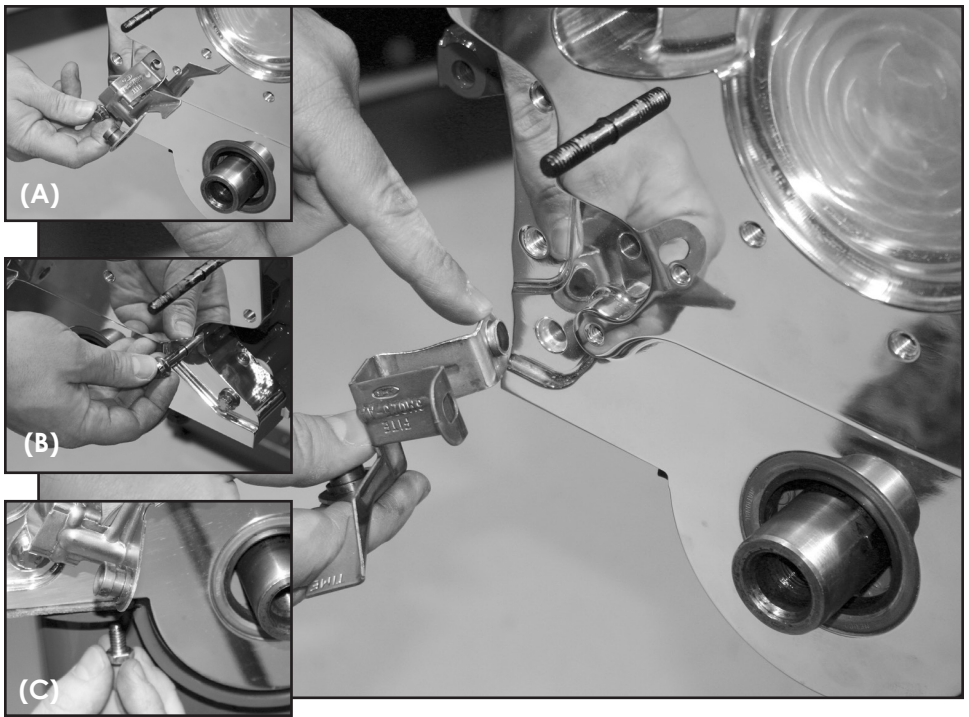


Figure 6: Install Factory Timing Marker

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. (A)

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

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

If you did not remove the oil pan 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. (C)

NOTE:

The **new Ford BOSS 302** will require different hardware than supplied with this kit.

Replace two (2) 5/16"-18 x 2" ARP 12pt. bolts with two (2) 3/8"-16 x 2" ARP 12pt. bolts (ARP part #613-2000). Sold in packs of 5.

Replace two (2) 5/16"-18 x 2-1/4" ARP 12pt. bolts with two (2) 3/8"-16 x 2-1/4" ARP 12pt. bolts (ARP part #613-2500). Sold in packs of 5.



Figure 7: Install Water Pump

Apply Permatex Hylomar® gasket dressing to both sides of the water pump gasket. Place water pump gasket onto timing cover and align. Install water pump over studs and onto timing cover.

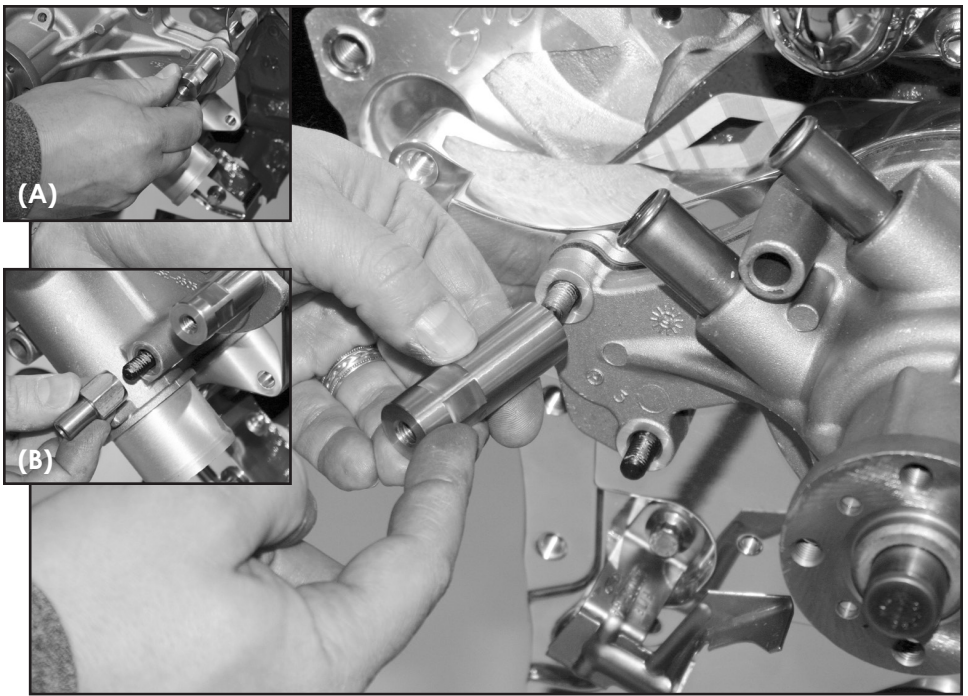


Figure 8: Install Spacer Nuts

Thread the two 8mm x 5/16" x 2.197" spacer nuts with the hex end out onto the passenger side water pump studs and finger tighten.

Thread the 8mm x 5/16" x 1.569" spacer nut hex side out to the top driver side water pump stud and finger tighten. (A)

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

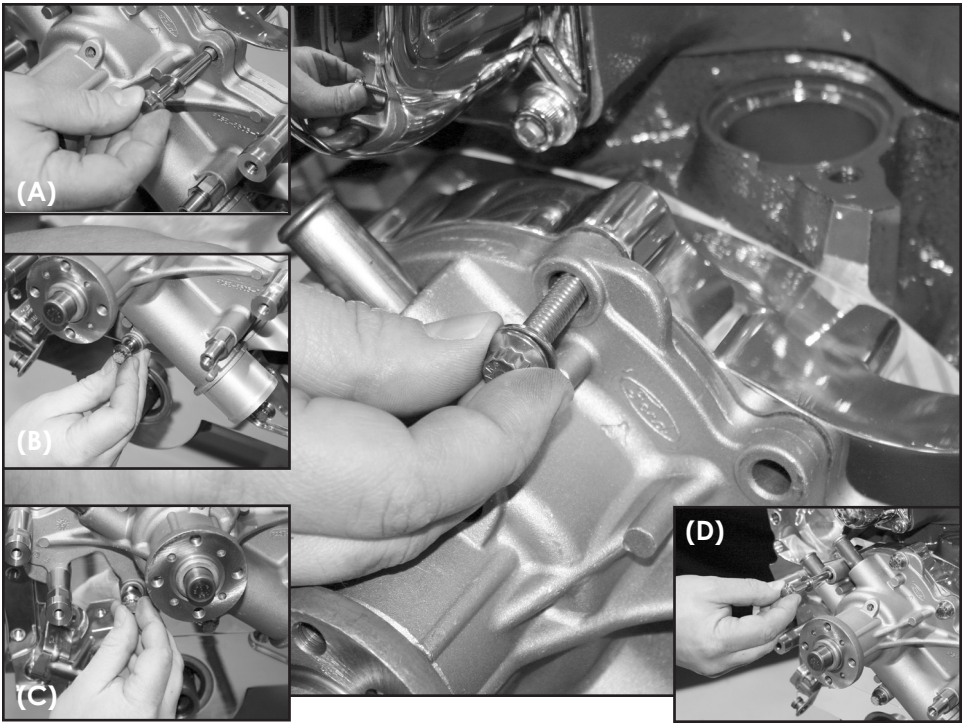


Figure 9: Complete Water Pump Installation

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. 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. (A)

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. (B)

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. (C)

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. (D)



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

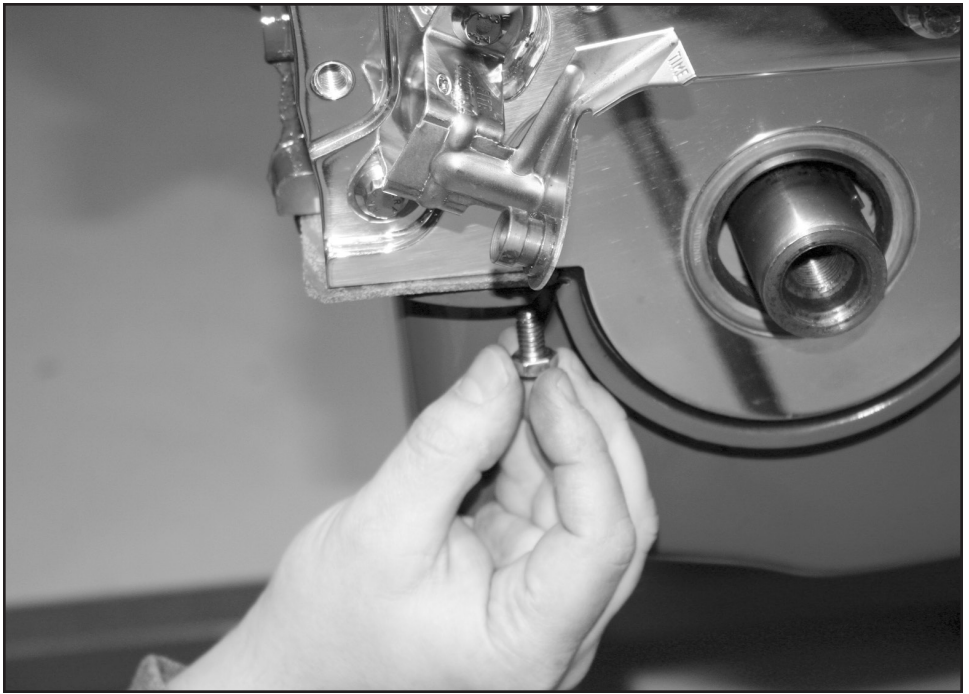


Figure 10: Oil Pan Installation (If Removed)

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

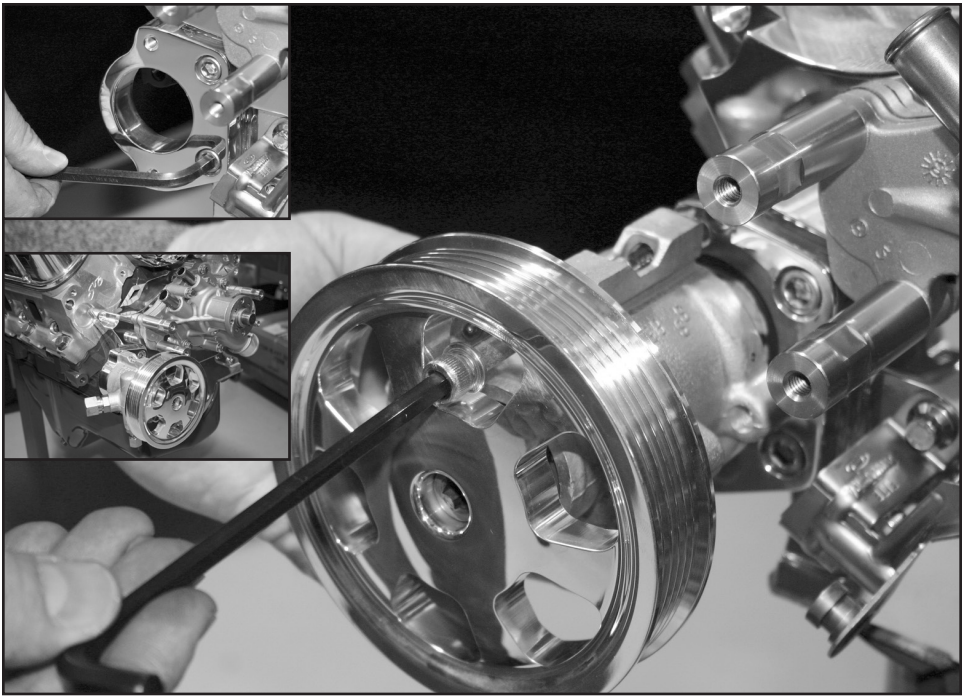


Figure 11: Install Power Steering Bracket & Pump (For Kits with Power Steering)

If you have ordered a kit with out power steering proceed to **Figure 12**.

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.

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.

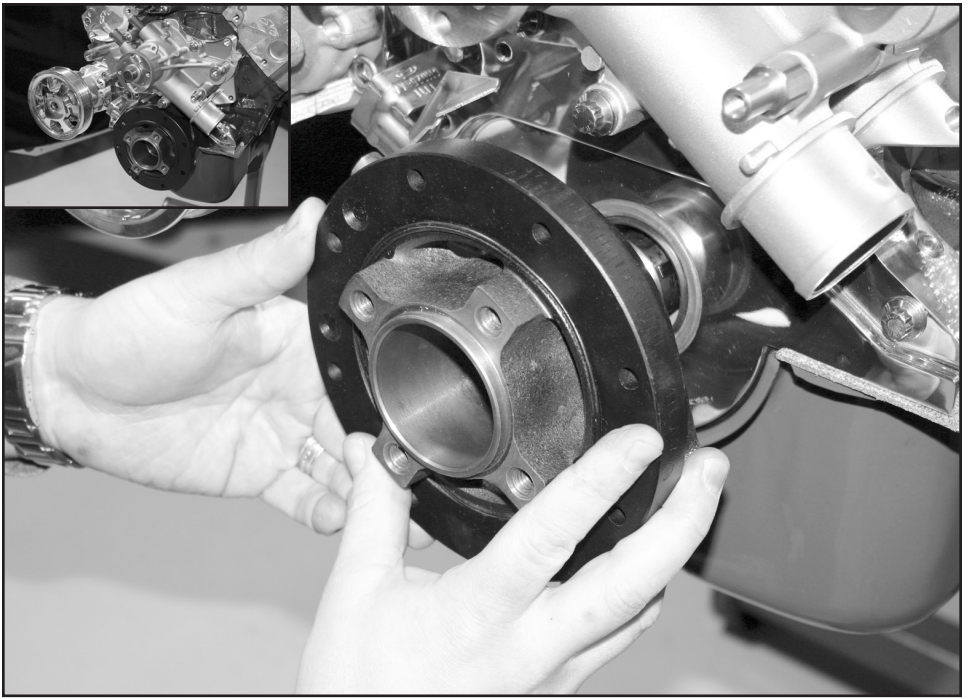


Figure 12: Install Crank Damper

Install crank damper at this time and tighten.

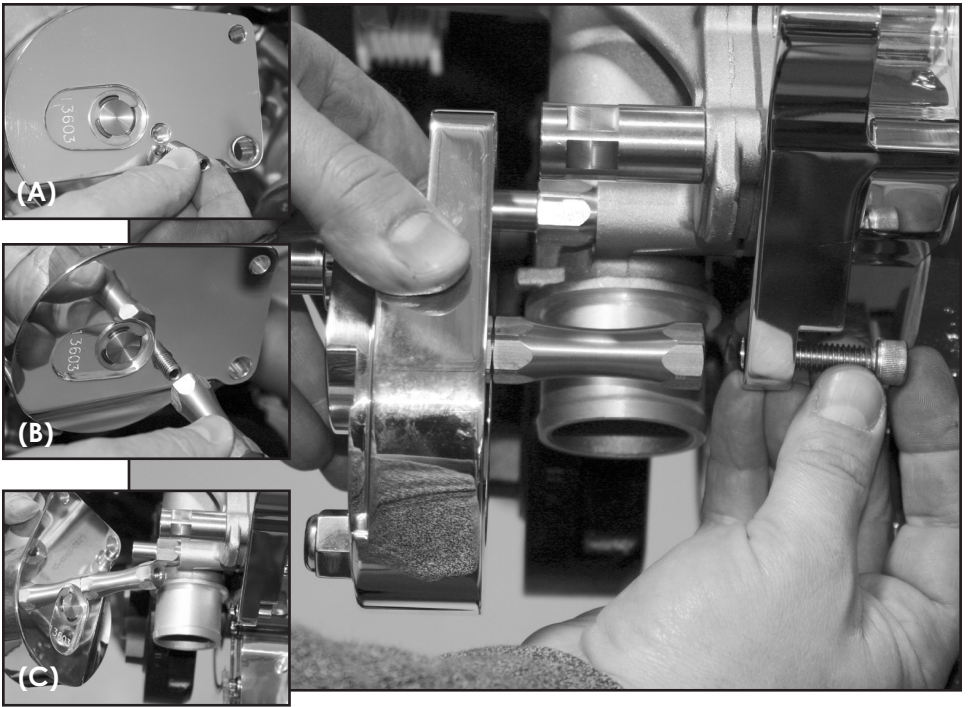


Figure 13: Install Tensioner

Thread the 5/16"-18 x 1" socket set screw into the back of the tensioner and finger tighten. (A)

Thread the 2.129" hour glass shaped spacer nut onto the set screw and tighten firmly. (B)

Place tensioner and spacer nut onto timing cover, locate bottom tensioner hole and slide over short spacer nut shaft. (C)

Thread a 5/16"-18 x 1" socket head cap screw through back of timing cover into spacer nut and tighten firmly.

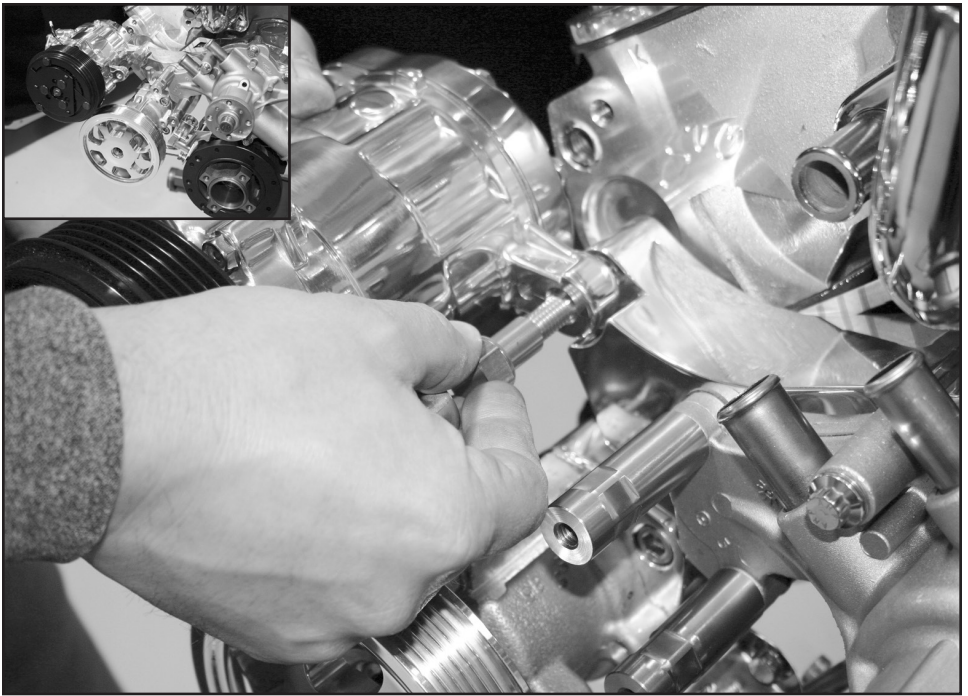


Figure 14: Install A/C Compressor

Place the A/C compressor onto the timing cover with the ports facing upward.

Thread the compressor shoulder bolt with 1/2" flat washer through the lower compressor boss and in to the timing cover and finger tighten.

INSTALLATION TIP: Slide the shoulder bolt all the way into the compressor boss when threading the bolt in.

Allow the compressor to slowly swing down and rest.

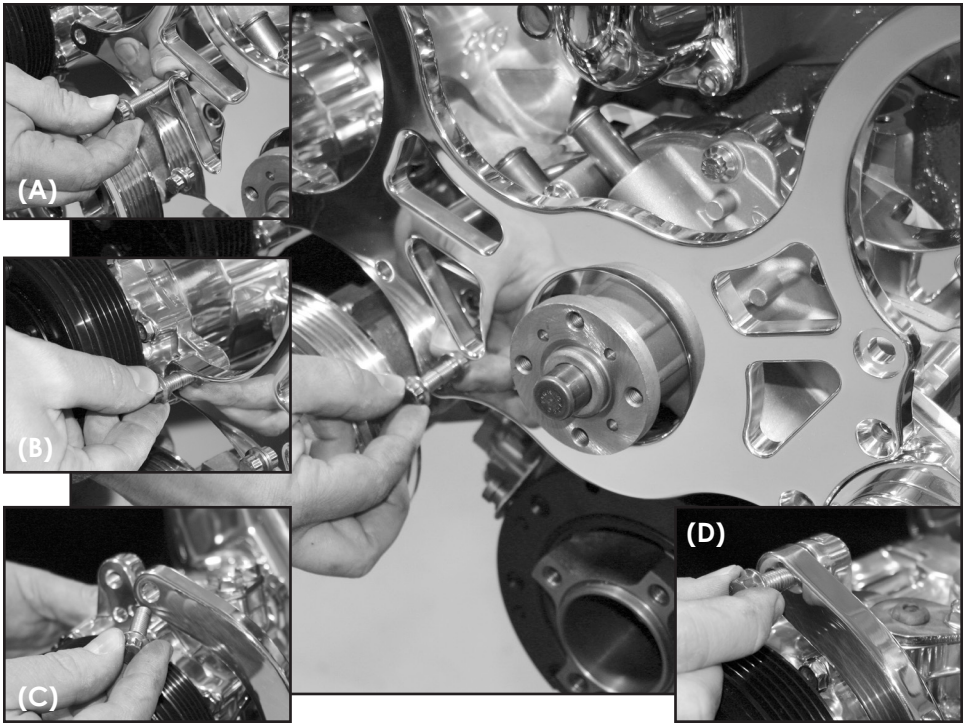


Figure 15: Install The Bridge Bracket

Place bridge bracket on motor and align.

Apply anti seize to the two 8mm-1.25 x 25mm ARP 12pt. bolts and thread into bottom passenger side holes and finger tighten. (A)

Thread one 8mm-1.25 x 25mm ARP 12pt. bolt through bridge bracket and into the A/C compressor bottom boss and finger tighten. (B)

At this time swing the A/C compressor up and align top compressor boss with bridge bracket. (C)

Thread one 8mm-1.25 x 25mm ARP 12pt. bolt through bridge bracket into top A/C compressor boss and finger tighten. (D)

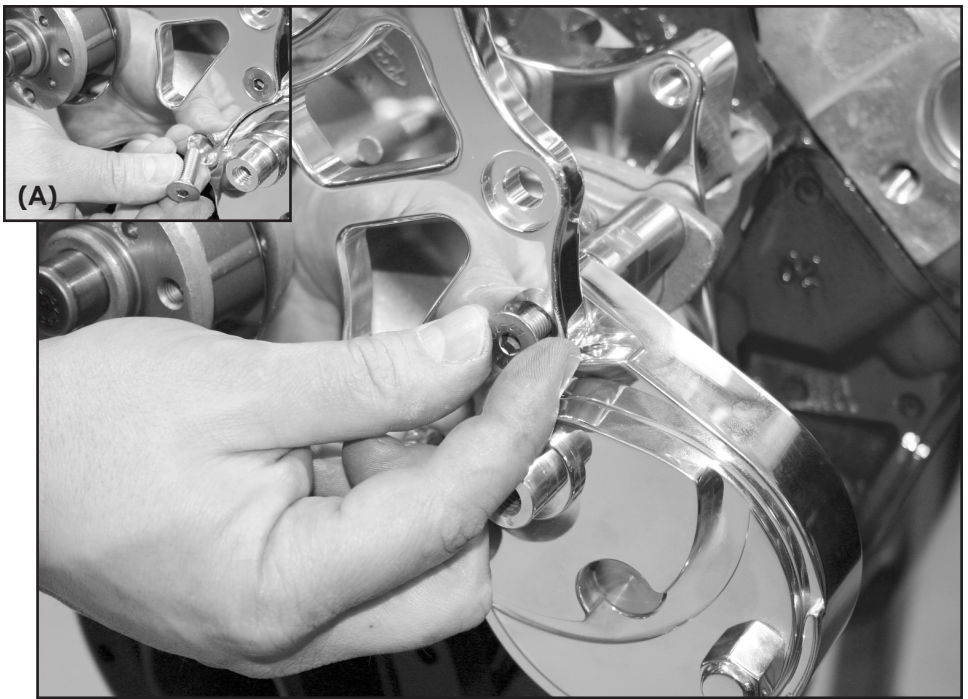


Figure 16: Install Bridge Bracket (Continued)

Apply anti seize to 8mm-1.25 x 40mm flat head cap screw and thread through bridge bracket and upper tensioner hole and into spacer nut finger tighten.

Apply anti seize to 8mm-1.25 x 25mm flat head cap screw and thread into lower hole finger tighten. (A)



Figure 17: Install Alternator

Place alternator between bridge bracket and timing cover aligning the bottom hole with the bridge bracket and timing cover.

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

Align top of alternator with bridge bracket and thread 8mm-1.25 x 25mm ARP 12pt. bolt and tighten firmly. (A)



Figure 18: Complete Bridge Bracket Installation

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).

Also tighten A/C compressor shoulder bolt at this time. (A)

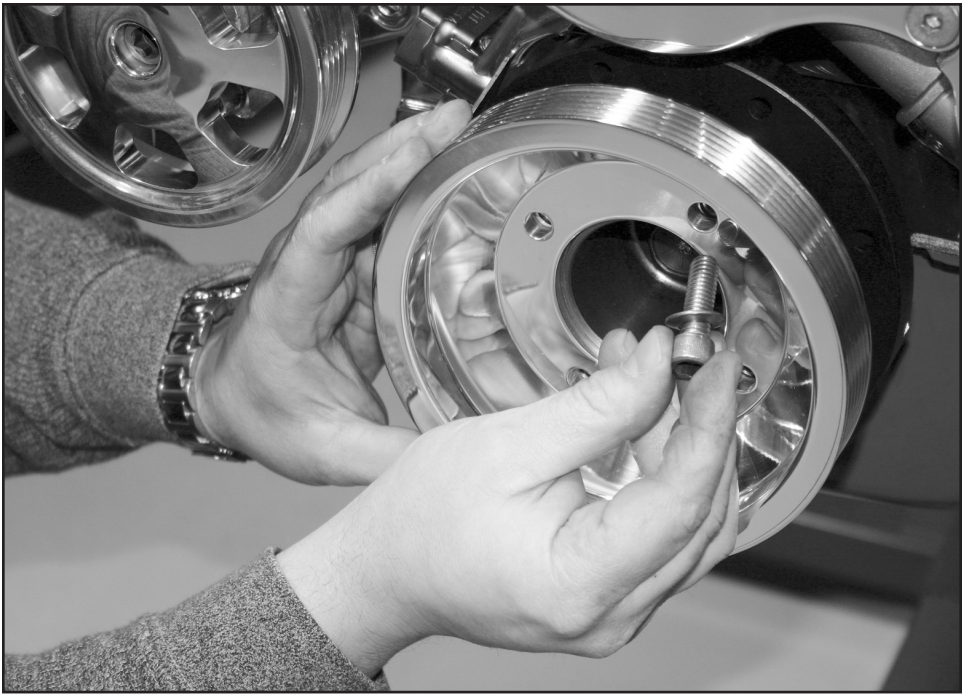


Figure 19: Install Crankshaft Pulley

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

Note:

In some application it may be necessary to use a crankshaft pulley spacer for proper belt alignment. Crankshaft pulley spacers are available at any Ford Racing performance parts dealer.

Spacer Thickness (in.)	Part Number
.350	M-8510-A351
.950	M-8510-B351
.875	M-8510-C351
.909	M-8510-D351

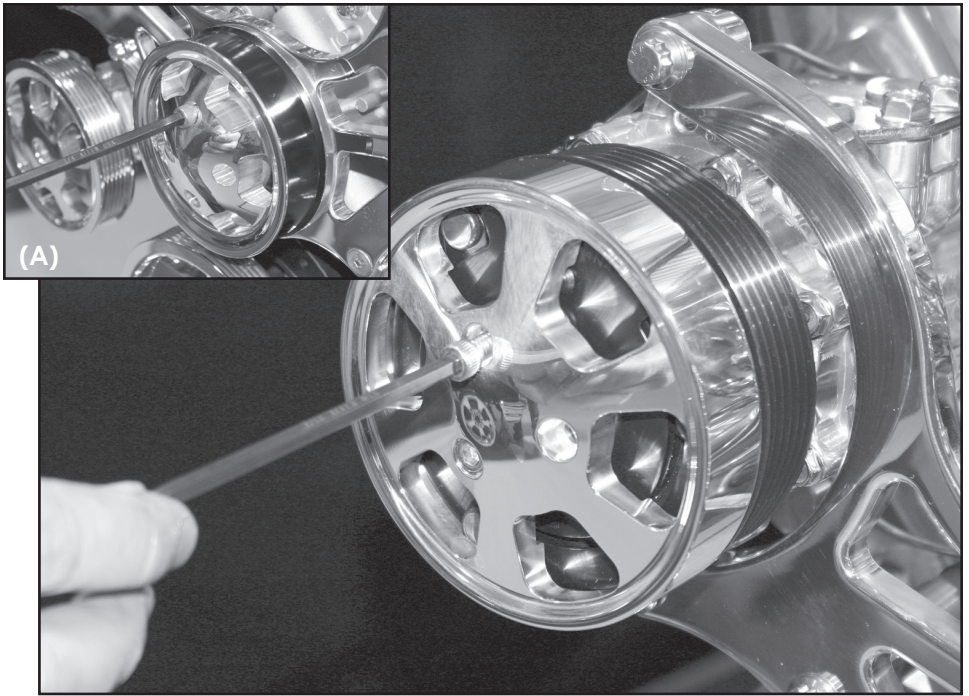


Figure 20: Install Water Pump Pulley

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

Figure 21: Install A/C Compressor 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.**

Check All Bolts For Tightness At This Time



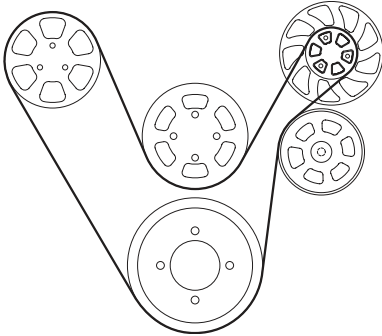
Figure 22: Install Tensioner Pulley & Serpentine Belt

Route serpentine belt as shown below; minus tensioner pulley. (A)

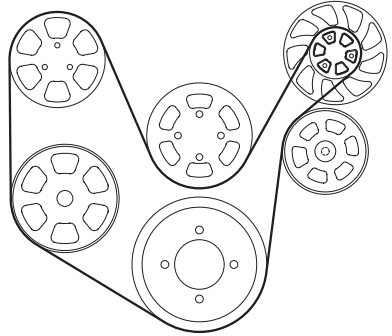
Place a 5/8" box end wrench on tensioner. Align belt onto pulley and push down until tensioner pulley slips onto tensioner shaft. (B)

Release tension and install one 3/8"-16 x 3/4" ARP 12pt. bolt and tighten firmly. (C)

Belt Path Without Power Steering



Belt Path With Power Steering



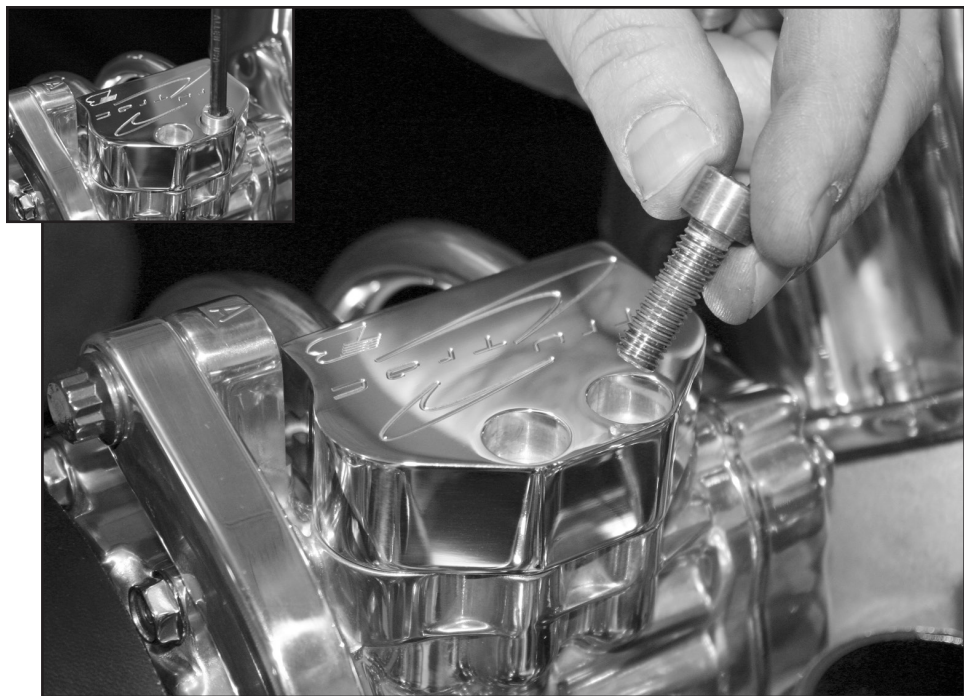


Figure 23: Install Compressor Manifold

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 and install compressor manifold onto compressor with two 8mm-1.25 x 25mm socket head cap screws and tighten firmly.

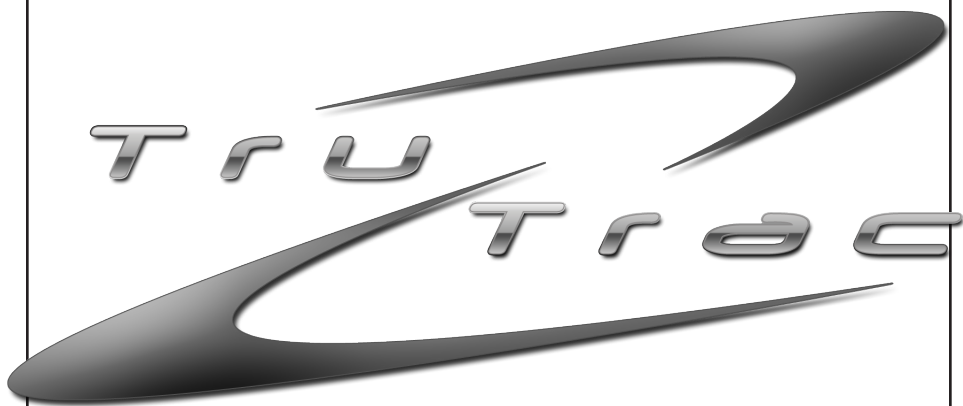
Install hoses, connect clutch wire and charge system.

*If you are NOT installing hoses and charging the 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 (3.3 fl.oz.), 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.

#13600 / #13620



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