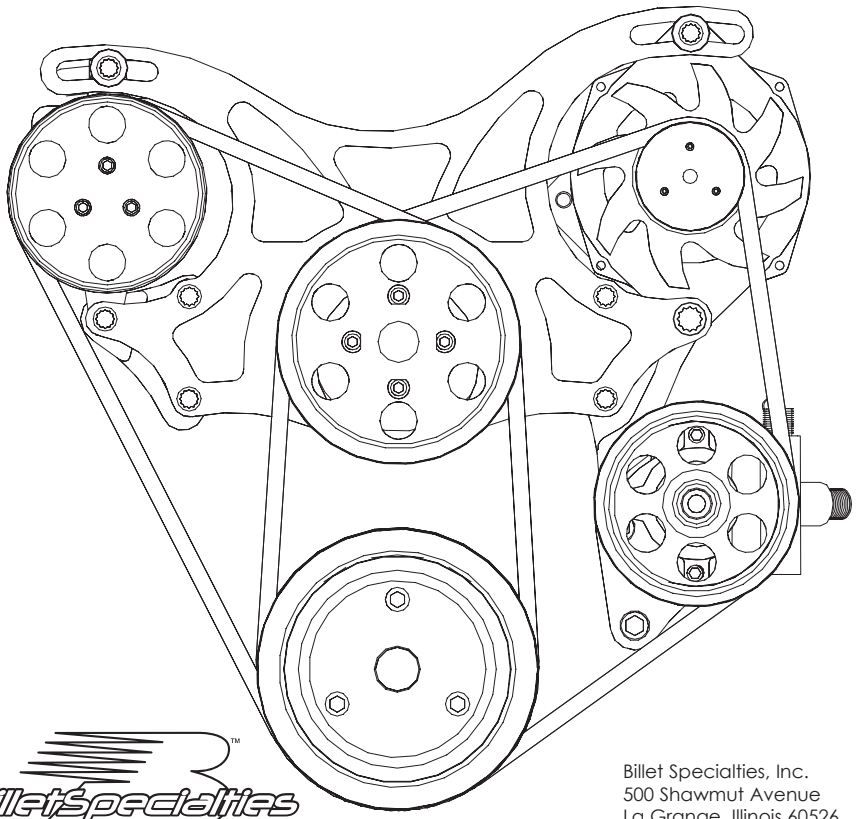
INSTALLATION MANUAL
CHEVROLET BIG BLOCK
V4120 / V4220



Billet Specialties, Inc.
500 Shawmut Avenue
La Grange, Illinois 60526
TECH Line 708.588.0505
Fax 708.588.7181
www.billetspecialties.com

PLEASE READ ALL INSTRUCTIONS BEFORE INSTALLING ANY COMPONENTS OF THE V-TRAC PULLEY SYSTEM

Required Tools & Materials

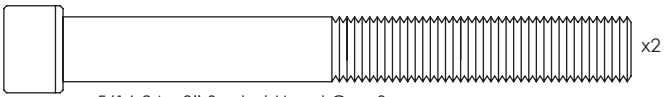
- ☐ Anti-seize Compound
- ☐ RTV Silicone
- ☐ Gasket Scraper
- ☐ Scotch-Brite® Pad
- ☐ 3/8-16 Thread Chaser* & Holder
- ☐ 7/16-14 Thread Chaser*

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

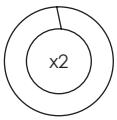
- ☐ 11/16" Combo Wrench
- ☐ 3/4" Combo Wrench
- ☐ Socket Wrench & Extension
- ☐ 10mm 12pt. socket
- ☐ 12mm 12pt. socket

- ☐ 3/16" Allen
- ☐ 5/16" Allen
- ☐ 1/4" Allen
- ☐ 3/8" Allen
- ☐ 6mm Allen

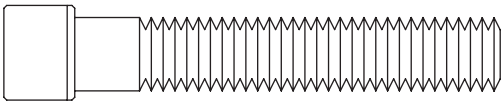
Skin Board #1 - Packaged with Power Steering Pump



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



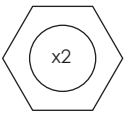
5/16"
Lock Washer



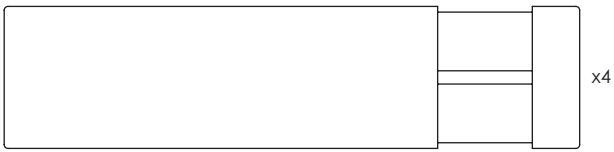
7/16-14 x 2-1/4" Socket Head Cap Screw
(Power Steering Bracket)

Skin Board #2 - Packaged with Water Pump

3/8-16 x 3" Block Mounting Stud



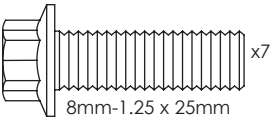
3/8-16 Zinc Coated
Hex Nuts
(Discard After Use)



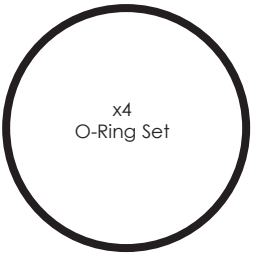
Spacer Nut - 3"

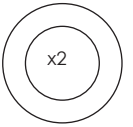
Tech Line: 708.588.0505
Fax: 708.588.7181
www.billetspecialties.com

Skin Board #3 - Packaged In Main Box

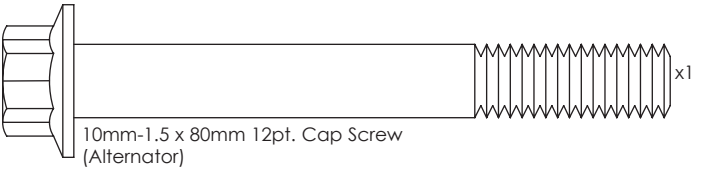


8mm-1.25 x 25mm
12pt. Cap Screw
(Bridge Bracket)

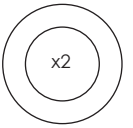




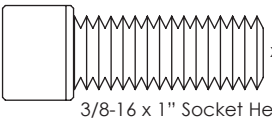
10mm x .5mm
Shim Washer



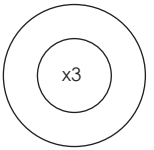
10mm-1.5 x 80mm 12pt. Cap Screw
(Alternator)



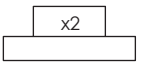
10mm x 1mm
Shim Washer



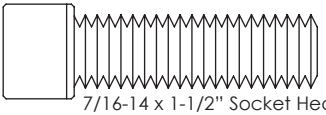
3/8-16 x 1" Socket Head Cap Screw
(Crankshaft Pulley)



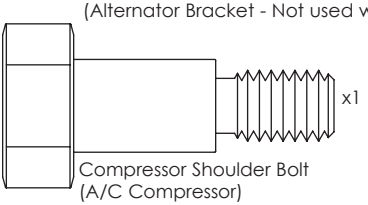
3/8" Belleville Washer
(Crankshaft Pulley)



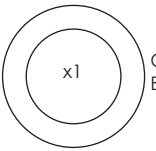
8mm Slide Spacer



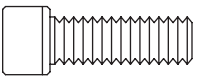
7/16-14 x 1-1/2" Socket Head Cap Screw
(Alternator Bracket - Not used with Power Steering Kits)



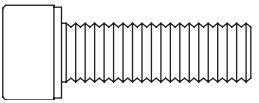
Compressor Shoulder Bolt
(A/C Compressor)



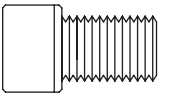
Compressor Shoulder
Bolt Washer



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



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



5/16-24x1/2"
Socket Head Cap Screw
(Water Pump Pulley)

Other Hardware
Continental Elite V-Belt - Compressor 44-1/2"
Continental Elite V-Belt - Alternator 43" (w/o Power Steering) - 45" (w/ power steering)

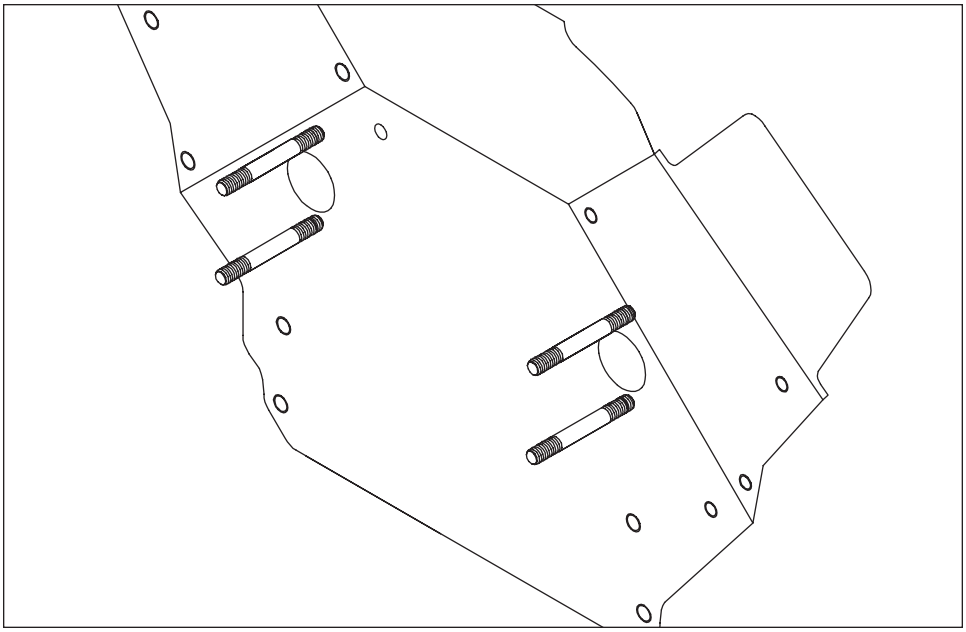


Figure 1: Prepping The Block

Disconnect battery & remove all existing accessory drive brackets and components from motor.

Remove water pump, scrape away any existing gasket material with a gasket scraper and dress surface with a Scotch Brite® pad.

Clean and prep threads on engine block at water pump (3/8-16) and driver side bosses (7/16-14) by crank (for power steering kits). Use a 3/8-16 & 7/16-14 thread chaser if necessary. Thread chasers are available at your local auto parts store or tool dealer and are different from a thread cutting tool.

Apply RTV sealer to one end of the four 3/8-16 x 3" threaded studs and thread studs into the water pump mounting holes and tighten.

The studs can easily be tightened by threading two 3/8-16 zinc coated nuts onto the stud and tighten them against each other to act as a drive nut.

*Example

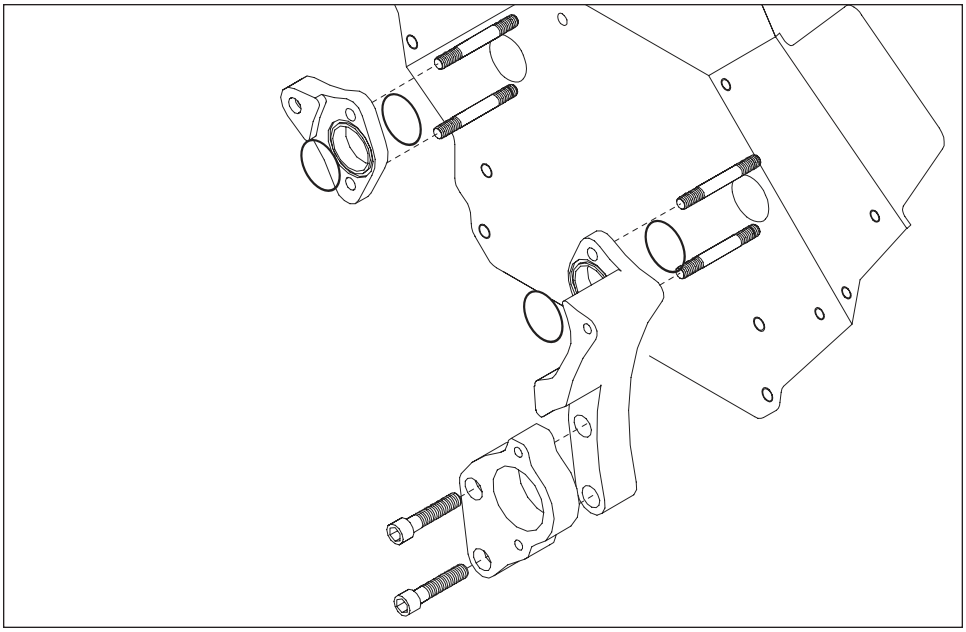


Figure 2: Install Alternator & A/C Brackets

Install the large O-rings into both sides of the passenger side compressor bracket by seating them into the recessed groves. Place bracket over studs and seat up against engine block.

Install the large O-rings into both sides of the driver side alternator bracket by seating them into the recessed groves. Place bracket over studs and seat up against engine block.

For kits with power steering – apply anti-seize to the threads of the two 7/16-14 x 2-1/4" socket head cap screws and thread through the power steering bracket, alternator bracket and into engine block and finger tighten.

For kits without power steering – apply anti-seize to the threads of the two 7/16-14 x 1-1/2" socket head cap screws and thread through the alternator bracket and into engine block and finger tighten.

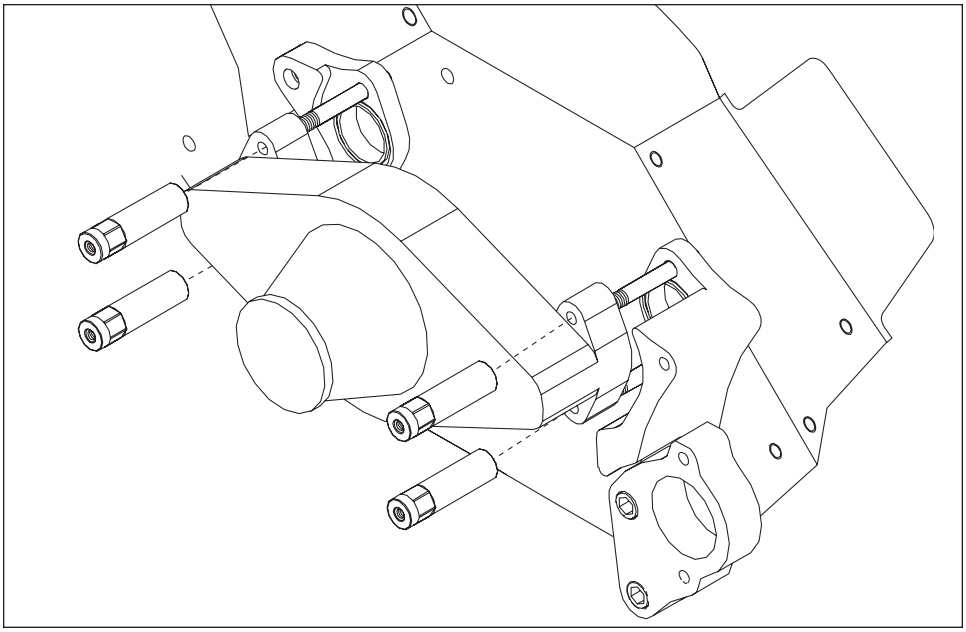


Figure 3: Install Water Pump

Install water pump onto studs (make sure O-rings are still seated).

Apply anti-seize to exposed stud threads. Thread the four 3" spacer nuts onto the studs with the hex end out. Tighten all spacer nuts firmly at this time.

Also tighten lower 7/16" cap screws on alternator bracket or power steering bracket.

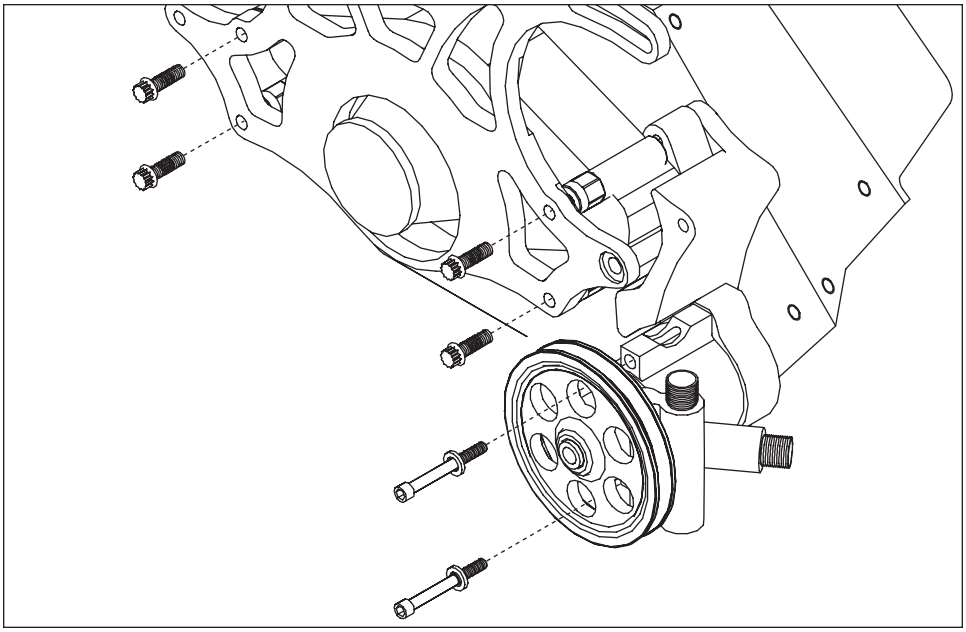
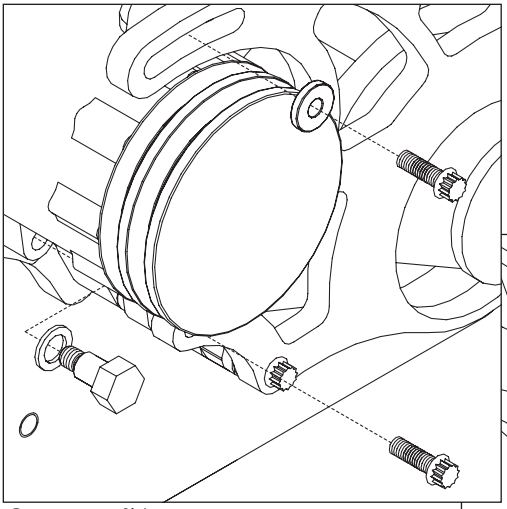


Figure 4: Install Power Steering Pump & Bridge Bracket

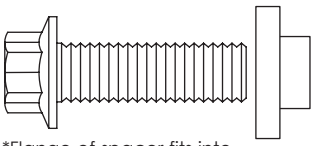
If you do not have power steering proceed to Step 2.

STEP 1: Apply anti-seize to the threads of the two 5/16-24 x 3" socket head cap screws. Place power steering pump and pulley onto bracket and thread the two 5/16" socket head cap screws with 5/16" lock washers through pump into bracket and tighten firmly.

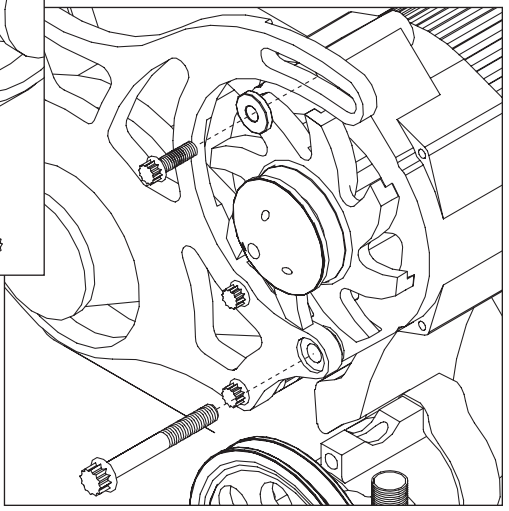
STEP 2: Apply anti-seize to the threads of four 8mm-1.25 x 25mm 12pt. ARP cap screws. Align bridge bracket mount holes with the four spacer nuts. Install the four 8mm 12pt. ARP cap screws and tighten firmly.



Compressor Side



*Flange of spacer fits into adjustment slot on bracket.



Alternator Side

Figure 5: Install Alternator & A/C Compressor

Alternator: Apply anti-seize to the threads of the 10mm-1.5 x 8mm ARP 12pt. cap screw and a 8mm-1.25 x 25mm ARP 12pt. cap screw. Place alternator between lower bridge bracket and alternator bracket and thread the long ARP 12pt. cap screw through the bridge bracket, alternator and into the alternator bracket and finger tighten. 10mm shim washers are provided to shim the alternator boss to the bridge bracket. The alternator boss may vary in width due to the polishing process. Place the 8mm slide spacer with the small end towards bridge bracket on the short ARP 12pt. cap screw, align top alternator boss with bridge bracket and thread the cap screw and slide spacer through bridge bracket and into alternator boss and finger tighten.

Compressor: Apply anti-seize to the threads of the 3/8-16 compressor shoulder bolt and two 8mm-1.25 x 25mm ARP 12pt. cap screws. While supporting the compressor, place the shoulder bolt and washer into the back compressor mount boss and align with compressor bracket on motor and finger tighten. Thread one 8mm ARP 12pt. cap screw through bridge bracket and into lower compressor boss and finger tighten. Place the 8mm slide spacer with the small end towards bridge bracket on the short ARP 12pt. cap screw, align top compressor boss with bridge bracket and thread the cap screw and slide spacer through bridge bracket and into compressor boss and finger tighten.

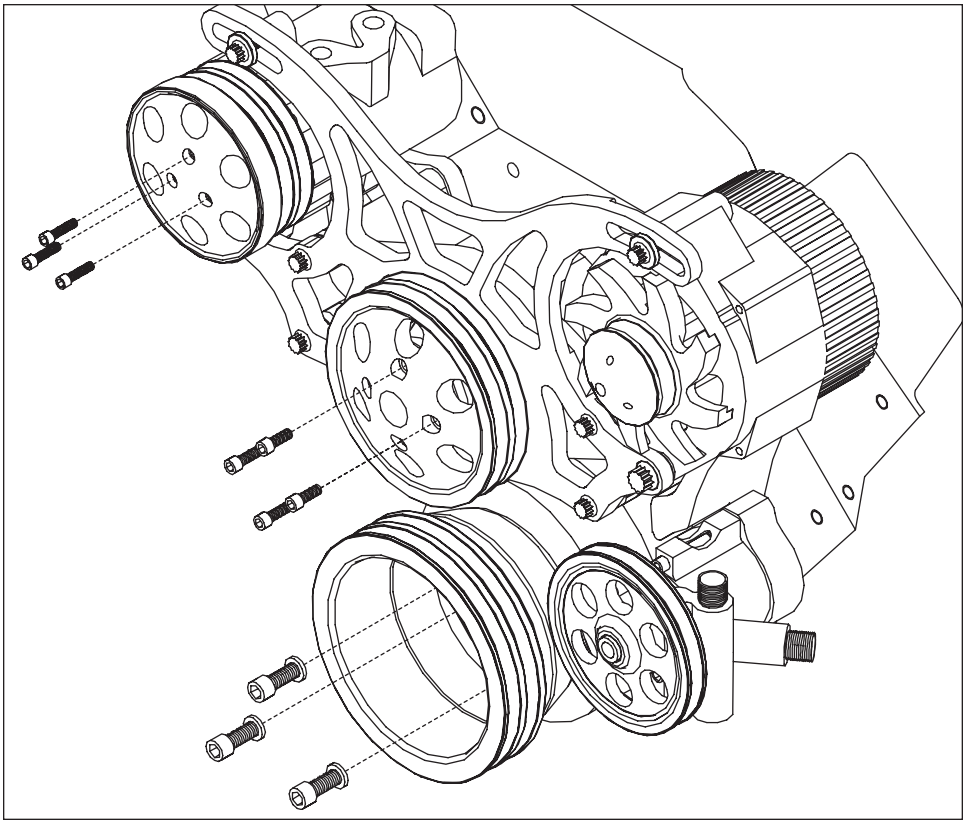


Figure 6: Install Crank Pulley, Water Pump Pulley, & Compressor Clutch Cover

Install the crank pulley by applying anti-seize to the threads of the three 3/8-16 x 1" socket head cap screws, install the three 3/8" Belleville washers onto each cap screw and thread through crank pulley into damper.

Install the water pump pulley by applying anti-seize to the threads of the four 5/16-24 x 1/2" socket head cap screws and threading them through the water pump pulley into flange.

Install AC 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 festeners will cause damage to the compressor clutch. ***Do Not Over Tighten.***

Tighten all fasteners firmly.

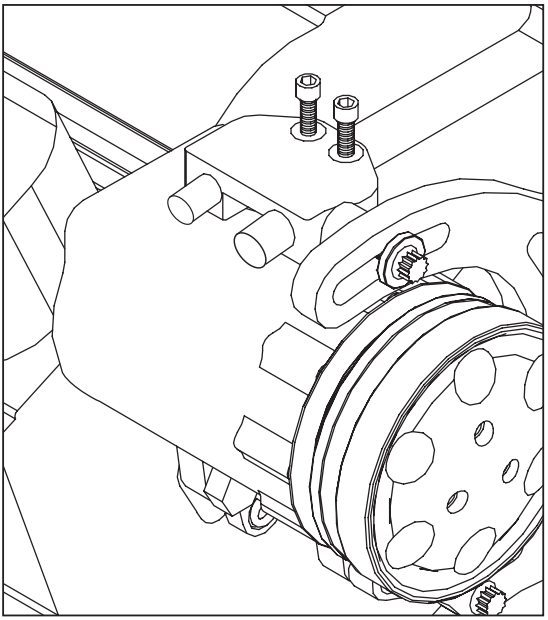


Figure 7: Install A/C Compressor Manifold

Compressor Manifold – **Read the precautions below, BEFORE installing the compressor manifold.** To install themanifold remove the bolts & protective cover, being sure to leave the o-rings on compressor. Apply anti-seize to the threads of the two 8mm-1.25 x 25mm socket head cap screws. Place manifold on compressor and attach with the two 8mm cap screws and tighten firmly. Attach compressor lines at this point or seal off threaded ends of manifold.

IMPORTANT

• Only remove sealed cap on compressor and install manifold if you plan on charging your system immediately, leaving the compressor open to outside air can introduce moisture into the system causing the cooling system not to operate properly.

• Never connect the compressor clutch wire and run the compressor unless the system is charged. Serious damage may occur to compressor. Do not install the manifold unless you are going to finish installing the a/c hoses and never connect the compressor clutch wire until system is ready to charge with Freon.

• 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.

• Billet Specialties recommends having your air conditioning charged and serviced by an automotive air conditioning service center with the proper equipment to ensure many years of proper operation.

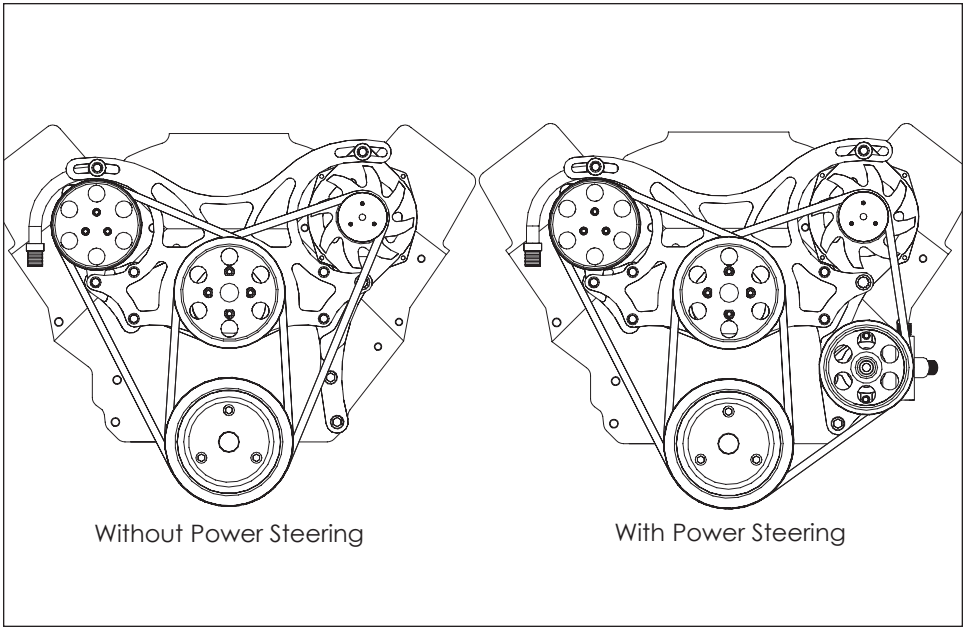


Figure 8: Install Belt

Route belts as shown in appropriate diagram, adjust alternator belt tension first. Tighten alternator mounting hardware firmly. Adjust compressor belt tension, tighten rear compressor shoulder bolt firmly then front compressor cap screw firmly. Finish by tightening the top compressor cap screw.

Re-check all fasteners for tightness and proper belt tension. Connect all electrical and start motor and allow to warm up. Turn motor off and re-check fasteners and belts. Re-check after 100 miles.

Alternator Belt Length:
With Power Steering - 45"
Without Power Steering - 43"

Compressor Belt Length: 44-1/2"

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

APRIL 2026