

ENGINE PREP

- Disconnect battery
- Remove existing accessory drive and water pump
- Remove factory crank pulley bolt with an impact wrench and 24mm socket
 - Save the existing crank bolt, you will need it later
- Remove crank pulley/damper with the recommended tools:
 - J-41816 Crankshaft balancer remover or similar
 - J-42386-A Flywheel holding tool
 - J-41816-2 Crankshaft balancer remover step plate
- Clean gasket areas, inspect front crank seal and replace if necessary
GM P/N 12585673
- Leave flywheel holding tool in position for damper installation

Install Crank Damper

Source: GM Document #642784

Recommended Installation Tools:

- J-41665 Crankshaft balancer and sprocket installer
- J-41478 Crankshaft front oil seal installer - Use threaded rod and nut only
- J-42386-A Flywheel holding tool
- J-45059 Angle meter
- Inspect crank snout for burrs or scratches - clean up with fine emery cloth or steel wool.
- Slide the new damper on crank snout as far as possible.
- Use the J-41665 and the threaded rod and nut from J-41478 in order to install the balancer.
- Assemble the threaded rod, nut, washer and installer. Insert the smaller end of the installer into the front of the balancer.
- Using a wrench hold the hex end of the threaded rod. Use a second wrench and rotate the installation tool nut clockwise until the balancer is started onto the crankshaft.
- Remove the tool and reverse the tools direction. Position the larger end of the installer against the front of the balancer.
- Using a wrench hold the hex end of the threaded rod. Use a second wrench and rotate the installation tool nut clockwise until the balancer is installed onto the crankshaft.
- Remove the balancer installation tool.
- Install the old balancer bolt and tighten. Tighten old balancer bolt to 240 ft. lbs. (330N·M)

IMPORTANT: Failure to apply proper torque to the old balancer bolt may result in the balancer not being fully seated. This could lead to failure of this joint in the future.

- The nose of the crankshaft should be recessed 7.3 - 7.7mm (0.287 - 0.304 in) into the balancer bore. Remove the old bolt and measure the hub to crankshaft distance.

Installing New Crankshaft Bolt

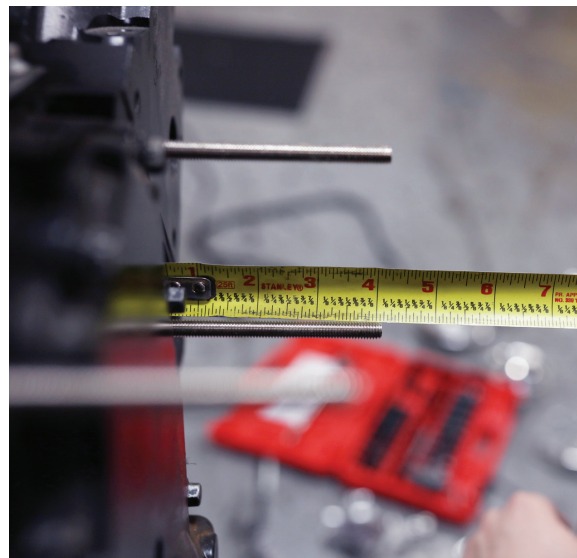
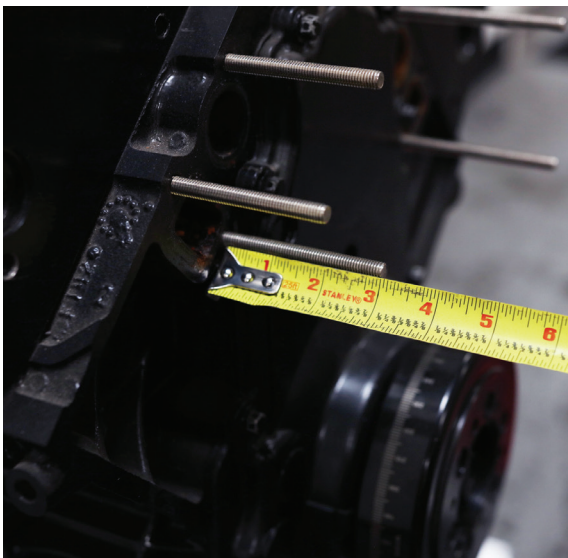
- Coat the three to five threads of the new bolt with LocTite 272 thread locker.

Notice: Be sure to follow the torque procedure for installing the new crankshaft bolt. Use of impact tools, or not using torque and angle method will result in joint failure.

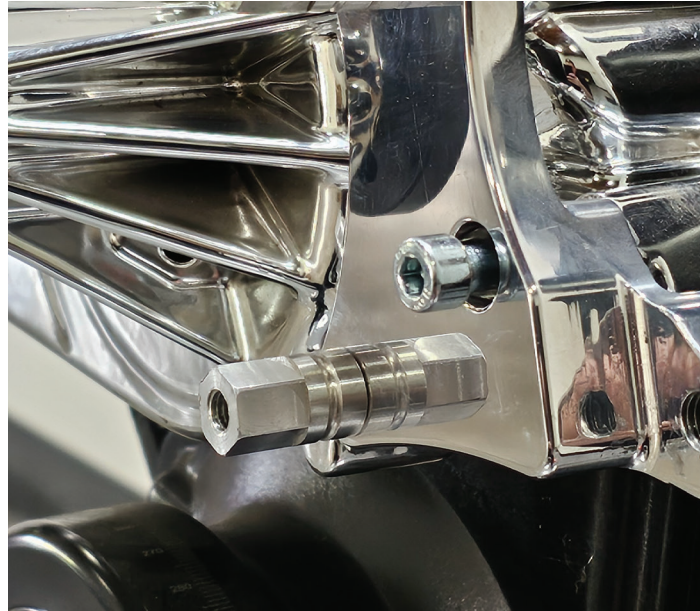
- Install and tighten the new crankshaft bolt a first pass to 37 ft. lbs. (50N·M)
- Put a paint stripe on the bolt running from the 12 o'clock to the 6 o'clock position in order to verify the correct torque requested in the next step.
- When tightening for the second pass, a minimum torque of 236 ft. lbs. (320 N·M) should be observed. If this torque is not achieved, the bolt (GM part #12557840) should be replaced.
- Tighten the crankshaft balancer bolt a second pass to 140 degrees using the J-45059.
- Recheck the position of the previously painted stripe to assure 140 degree rotation. Achieving the correct torque angle is critical to the success of this repair. Over-torquing or under-torquing the joint will result in an unsatisfactory installation.
- Remove the J-42386-A Flywheel Holding Tool.

WATER PUMP

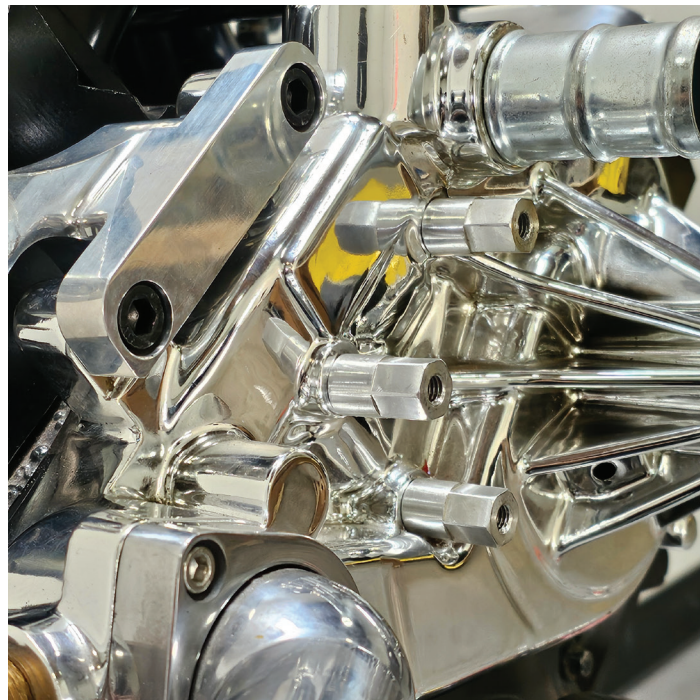
- Ensure LS water pump gasket mounting surfaces are free from debris and coolant residue.
- Attach M8 x 1.25 x 92mm (3) threaded rods to the passenger side of the motor. External thread length will be 3 in from gasket surface.
- Attach M8 x 1.25 x 118mm (2) threaded rods on to the driver side. External thread length will be 4 in from gasket surface.
- Slide supplied LS water pump gasket over the threaded rods and on to machined surface of the block.
- Slide LS water pump over the threaded rods.



- Slide rear alternator bracket on to the driver side of the engine as shown in the figure.
- Thread the M8 x 1.25 x 95mm (1) socket head cap bolt through the bracket and into the engine block. Securely tighten bolt to 22ft/lbs.
- Install threaded standoff on to the M8 threaded rods. The smooth threaded standoffs (3) will be attached to the passenger side. The remaining two standoffs with grooves cut into the base, will be threaded on the driver side over the rear alternator bracket. Securely tighten to 35 ft/lbs.

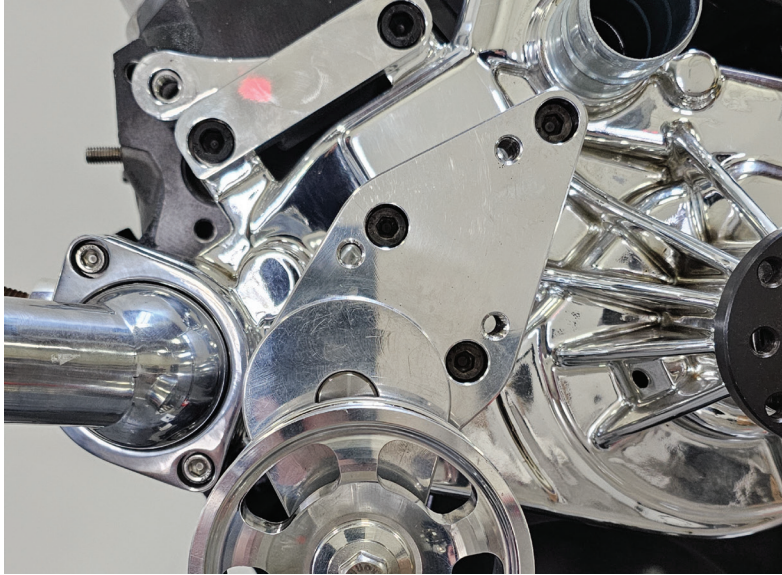


- Install the rear A/C compressor bracket onto the two ears of the water pump on the passenger side. Use supplied M10 x 1.5 x 20mm (2) socket head cap bolts. Securely tighten to 35 ft/lbs.



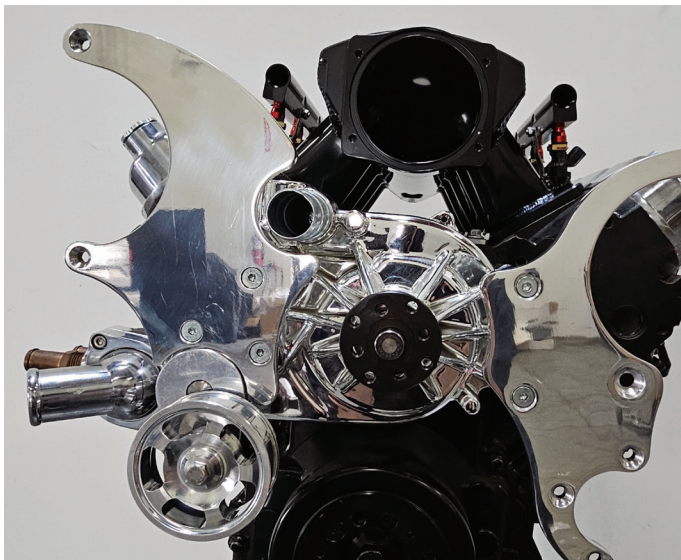
TENSIONER

- Place the tensioner over the three threaded stand offs on the passenger side. Attach the tensioner with M8 x 1.25 x 25mm (3) socket head cap screws. Do not tighten bolts until all have started to thread into all threaded stand offs.



A/C COMPRESSOR

- Using the $\frac{1}{4}$ -20 x $\frac{3}{4}$ " (3), mount the compressor cover. The cover has a groove to allow for proper fitment. Once the cover is set flush on the compressor cover, thread the bolts into the compressor. Tighten bolts.



- To secure the A/C compressor to the driver side bracket, use the supplied shoulder bolt and M8 x 1.25 x 25mm counter sink bolts (2).
- Loosen the securing bolts of the driver side bracket to allow for an easier installation of the compressor.
- Remove the shim from the lower rear mounting ear of the compressor. Remove with a punch and hammer. Carefully place the punch on the shim, making sure not to come into contact with the compressor housing. With the hammer, gently tap the shim to loosen it from the ear.
- Once the shim is removed, align the compressor with the rear mounting bracket on the water pump ears. Thread in the shoulder bolt into the bracket.



- While supporting the compressor, use the M8 x 1.25 x 25mm counter sink bolts (2) to secure the compressor to the passenger side bracket.
- Once all bolts have been threaded in, tighten all bolts.

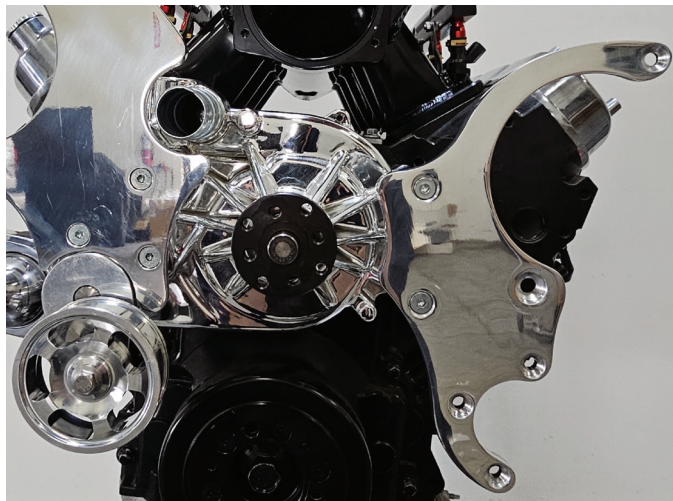
ACCESSORY PLATES

- To attach the A/C compressor brackets, use M8 x 1.25 x 25mm counter sink bolts (3). The arm of the tensioner will need to be moved to allow the bracket to sit flush against the face of the tensioner.
- Start threading the 3 counter sink bolts to ensure bracket is installed correctly before tightening.
- Once bolts have been threaded into the tension, hand tighten at this moment.
- To attach the Alternator bracket, thread M8 x 1.25 x 25mm counter sink bolt (2) through the bracket into the threaded standoffs, hand tighten.



ALTERNATOR

- Using a 15/16" socket and impact tool, remove the nut securing the pulley and fan from the alternator.



WARNING: USE CAUTION WHEN REMOVING NUT. BODILY INJURY CAN OCCUR.



- Once the fan and pulley are removed, install the billet alternator pulley included in the kit. Reinstall the securing nut. Securely tighten to 45 ft/lbs.



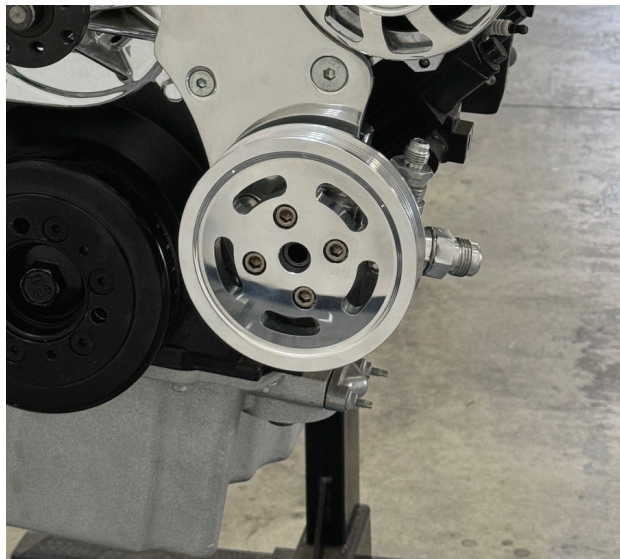
- Using the M4 socket head cap bolts (3), secure the pulley cover to the face of the alternator pulley.



- To secure the alternator to the driver side bracket, use M8 x 1.25 x 25mm counter sink bolt (1) and M8 x 1.25 x 70mm counter sink bolt (1). Thread the 25mm bolt into the top mounting ear of the alternator and the 70mm bolt through the bottom ear and into the bracket. You may loosen the bracket mounting bolts to ease the installation process of the alternator. Securely tighten to 22 ft/lbs.

POWER STEERING PUMP

- To install power steering pump pulley, align mounting holes with threaded holes on the power steering pump plate.
- Use 5/16-24 x 1/2" socket head cap bolts (4) to mount the pulley to the power steering pump.
- Securely tighten bolts to 22 ft/lbs.
- To mount the power steering pump, use the M8 x 1.25x 25mm counter sink bolts (3). Start the threads on all 3 bolts before tightening.
- Securely tighten to 22ft/lbs.



CRANKSHAFT PULLEY

- Align crank pulley with the mounting holes for the crank damper.
- Using 3/8"-16 x 1 1/2" bolts (3), secure the pulley to the damper. Securely tighten to 35 ft/lbs.



TENSIONER PULLEY

- Locate the supplied tensioner pulley with a bearing. Ensure the large shim is installed on the stand-off of the tensioner arm. Place the pulley on to the tensioner arm stand-off.
- Locate the smaller shim in the hardware pack, place the shim on the inside of the bearing.
- Using the billet washer and the 3/8"- 16 x 3/4" (1), tighten the bolt securing the pulley to the tensioner.

WATER PUMP PULLEY

- Using the 5/16-24 x 3/4" socket head cap bolts (4), secure the pulley to the hub on the water pump.
- Align the mounting holes of the pulley to the proper bolt pattern on the hub. Securely tighten to 22 ft/lbs.



SERPENTINE BELT

- Using a breaker bar or ratchet and 13mm socket, rotate the arm of the tensioner.
- Place the socket on the bolt securing the pulley to the tensioner and rotate clockwise.
- Once arm has been rotated, hold in position and route the belt on to the pulleys.
- Once belt has been routed and has been securely placed on the grooves of the pulleys, slowly release tension on the tensioner arm.



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.

This compressor is designed for use with Air Conditioning units only. Serious damage will occur to AC compressor if used for anything other than its intended purpose. Warranty is Void if used for any non-AC application.