

NISSAN 350Z ALTERNATOR & POWER STEERING PUMP TO GEN III/IV CHEVROLET SMALL BLOCK



INSTALLATION INSTRUCTIONS

Rev - Jun 2017

!!NOTICE!!

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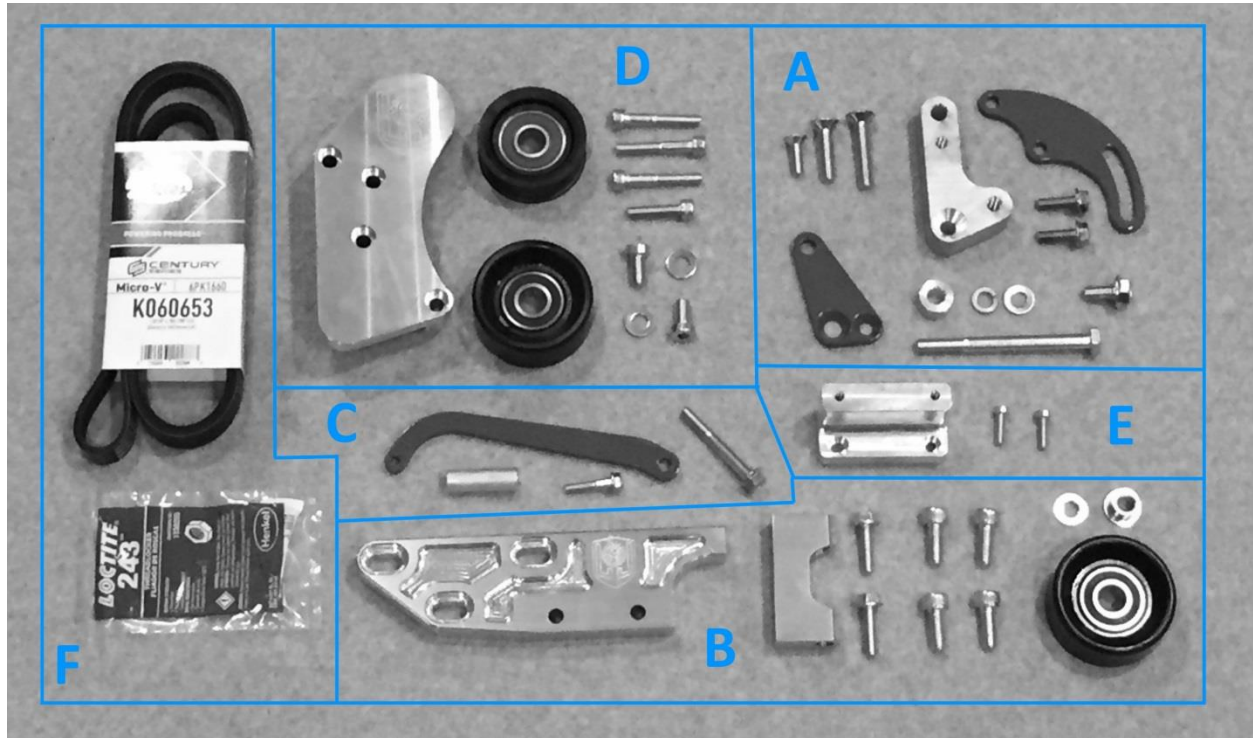
!!WARNING!!

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BEFORE YOU BEGIN:

Please ensure that all of the components required for your installation have been included in your package. The Basic Gen III/IV Accessory Drive Kit should include the following components:



| | |
|---|---|
| <p>BOX "A" – Power Steering Brackets & Hardware</p> | <ul style="list-style-type: none"> • (Qty 1) – AL Power Steering Base Bracket • (Qty 1) – Steel Pump Locator Arm • (Qty 1) – Steel Pump Tensioner Arm • (Qty 1) – Spacer • (Qty 1) – M10x1.5 110mm long Bolt with Flat and Lock Washers • (Qty 1) – M10x1.5 50mm long Flat Head Screw • (Qty 1) – M10x1.5 40mm long Flat Head Screw • (Qty 1) – M8x1.25 25mm long Flat Head Screw • (Qty 2) – M8x1.25 25mm Flange Head Screws • (Qty 1) – M10x1.5 25mm long Serrated Flange Head Bolt |
| <p>BOX "B" – Alternator Base Brackets, Pulley & Hardware</p> | <ul style="list-style-type: none"> • (Qty 1) – Alternator Base Bracket with Slotted Mounting Holes • (Qty 1) – Alternator Pivot Bracket • (Qty 3) – M10x1.5 25mm long Base Bracket Mounting Bolts • (Qty 2) – M8x1.25 35mm long Serrated Flange Head Bolts • (Qty 1) – M10x1.5 25mm long Flange Head Bolt • (Qty 1) – Smooth Idler Pulley with Stepped Spacer |

| | |
|---|---|
| BOX "C" – Alternator Locator Arm & Hardware | <ul style="list-style-type: none"> • (Qty 1) – Locator Arm • (Qty 1) – M8x1.25 60mm long Flange Head Bolt • (Qty 1) – Spacer • (Qty 1) M6x1.0 30mm long Flange Head Bolt |
| Box "D" – Idler Pulley Bracket, Pulleys & Hardware | <ul style="list-style-type: none"> • (Qty 1) – Idler Pulley Bracket • (Qty 1) – Smooth Idler Pulley • (Qty 1) – Ribbed Idler Pulley • (Qty 2) – M10x1.5 20mm long Low Profile Socket Head Screws with Flat Washers • (Qty 3) – M8x1.25 50mm long Socket Head Screws • (Qty 1) – M8x1.25 35mm long Socket Head Screw |
| Box "E" – Power Steering Line Bracket | <ul style="list-style-type: none"> • (Qty 1) – Bracket • (Qty 2) – M6x1.0 25mm long Socket Head Screws |
| Box "F" – Other | <ul style="list-style-type: none"> • (Qty 1) – Belt • (Qty 1) – Loctite Thread Locker • (Qty 1) – PS Pump -10AN Outlet Fitting and Bracket (Not Shown) |

Other parts that you will need:

Chevrolet LSA Water Pump (5th Gen Camaro ZL1 or 2nd Gen Cadillac CTS-V) – LOJ Guarantees Compatibility with Gates P/N – 45004WT or AC Delco 19180610

For Gen 3 engines with Rear of Block Mounted CAS (Cam Angle Sensor)
Use Harmonic Balancer – Dorman P/N – 594115 or GM P/N – 12560115

For LS2 and all Gen 4 engines with Timing Cover Mounted CAS
Use Harmonic Balancer – Dorman P/N – 594361 or GM P/N – 12635652

*****If you run an underdrive pulley, the supplied belt will not work! You are responsible for determining correct belt length! Whatever crank pulley you choose must use Corvette Spacing*****

INSTALLATION PROCEDURE:

- 1) If your engine is from any vehicle other than a Corvette, remove your existing accessories, water pump, and balancer. If it is from a Corvette, you can retain your existing balancer.
- 2) If necessary, install your Corvette-offset Crank Pulley following the factory recommended procedure.
- 3) Install the recommended LSA Water Pump using new gaskets and OEM bolts. Torque to 22 ft-lbs.

PS Line Bracket Installation

- 4) Near the RH Side Engine Mount, there is a stamped steel bracket holding the power steering high pressure and return lines to the engine crossmember. To ensure the high pressure line has enough length to reach the power steering pump in its new location, this bracket must be spaced up. The included spacer will allow for sufficient clearance. Remove the two M6 bolts holding this bracket to the crossmember, do not discard these bolts.
- 5) Install the new bracket to the crossmember using the supplied M6x1.0 25mm long low-profile socket head bolts. See Figure 1.



Figure 1

- 6) Install the original bracket onto the supplied spacer using the original mounting hardware. See Figure 2.



Figure 2

- 7) You will need to cut the power steering return hose to allow it to fit properly with the new hose routing. Trim as best fits your installation, see Figure 3.

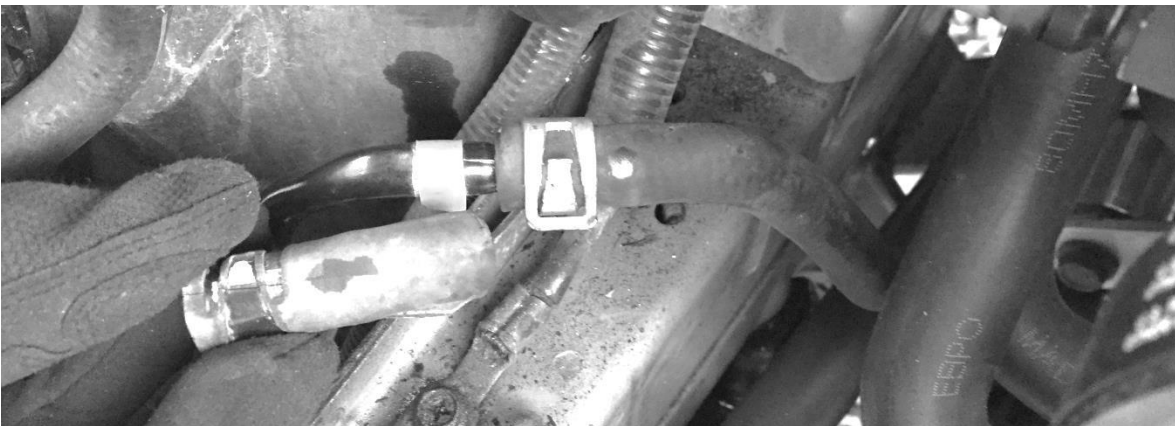


Figure 3

Alternator Installation

- 8) Assemble your Alternator Base Bracket as shown in Figure 4 and Figure 5. Apply supplied Loctite compound to the M8x1.25 35mm long Bolts, torque to 20 ft-lbs. It is important to ensure the alternator pivot bracket is parallel with the bottom edge of the base bracket. (See Figure 6, The top edge of the pivot block, depicted by an orange line, should be parallel with the bottom edge of the base bracket)



Figure 4



Figure 5

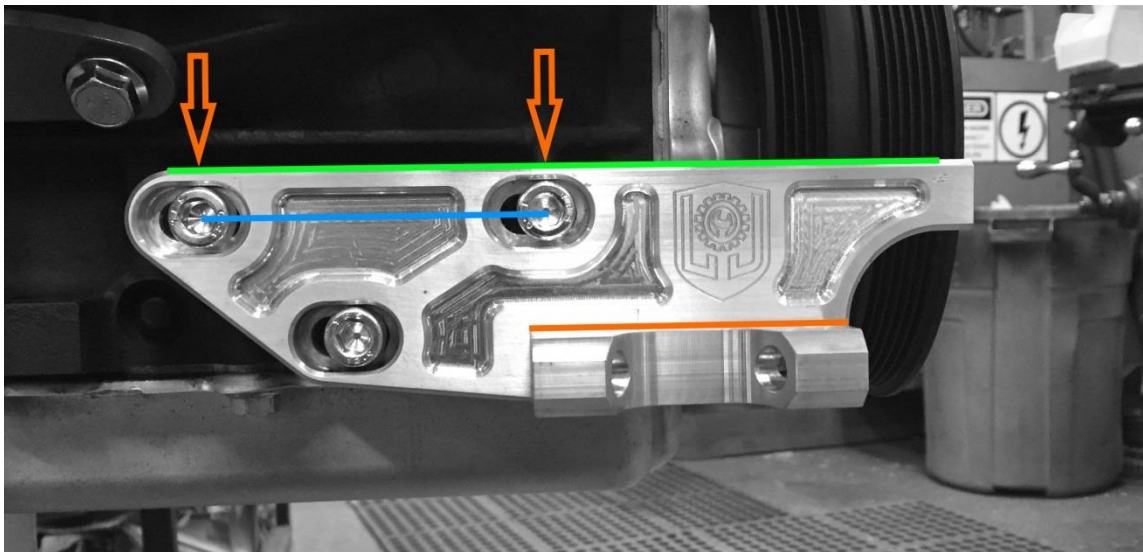


Figure 6

- 9) Attach the base bracket to the block using the supplied M10x1.5 25mm Socket Head Screws. Leave these bolts just loose enough to allow the bracket to slide forward and back.
- 10) Remove all factory brackets from your alternator and clean/prep prior to install as you see fit. Attach your factory 350Z Alternator to the bracket, swing the alternator to the approximate position it would be installed when the kit is in its final configuration and tighten bolt enough so that alternator does not swing back down.

IMPORTANT!! – The following steps outline proper alignment of the alternator pulley to the crank pulley. Failure to align the pulleys properly can result in premature belt wear, belt squeal, and ejection of the belt from the engine. Take your time to get this step right!!

- 11) Place a straightedge along the face of your crank pulley. If you are using an OEM style pulley, the rubber isolator ring between the shell of the pulley and the center hub may protrude past the face of the shell. Only place the straightedge along the shell face, do not allow the rubber to misalign the straightedge to the shell. See Figure 7 for clarification.



Figure 7

- 12) With the straightedge placed firmly against the face of the crank pulley shell, use a ruler or caliper to measure the distance from the straightedge to the first rib of the crank pulley. Note this distance or if using a caliper, lock the caliper in this setting. See Figure 8

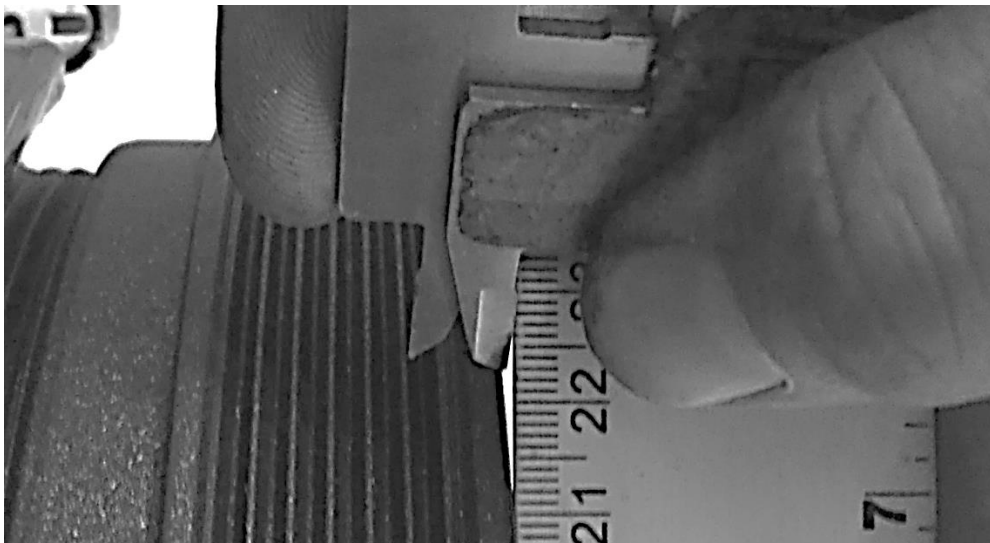


Figure 8

- 13) This step can be easier to accomplish with a helper, but is certainly doable alone with some patience. Holding your straightedge along the crank pulley shell, now measure how far back the first rib on the alternator pulley is from the straightedge. This measurement needs to be **THE SAME** as the distance on the crank pulley. Take your time and be certain you get this correct. A few extra minutes spent here can save a lot of headaches later. See Figure 9 and Figure 10.
- 14) In addition to making sure the front to back alignment of the alternator is correct, the bracket must also be level on the engine block relative to the bolt holes that mount it. You will notice that the bracket can “rock” slightly due to the tolerance between the bolts and the slots they pass through. The front of the bracket can end up sloped downward slightly. If you apply pressure to the top of the bracket evenly while installing, it will ensure the bracket is level. Refer back to Figure 6, the imaginary blue line connecting the center point of the two upper bolts must be parallel with the top of the bracket, depicted by a green line. This is easiest to accomplish by applying pressure where the orange arrows point.



Figure 9



Figure 10

- 15) Once you have the alignment correct, tighten down the bracket to engine block bolts which are not blocked by the alternator, remove the alternator from the bracket to tighten the remaining bolt. These bolts should be tightened to 40ft-lbs.

NOTE – Early Gen 3 Aluminum Engine Blocks will only use TWO of the three bolts holding this bracket to the block. This is OK, just leave the third fastener out.

- 16) The alternator can now be reinstalled to the bracket, leave the pivot bolt loose at this time. Remove the upper thermostat housing bolt and attach the Alternator Locator Arm to the water pump using the supplied M6x1.0 30mm long bolt. The other end of the locator arm will be attached to the alternator using the supplied M8x1.25 60mm long bolt. Leave both of these fasteners loose.
- 17) Now tighten the alternator pivot bolt on the base bracket to 48ft-lbs of torque. Once tightened, the locator arm M6 bolt can be tightened to 108in-lb and the M8 bolt can be tightened to 24ft-lb. See Figure 11.

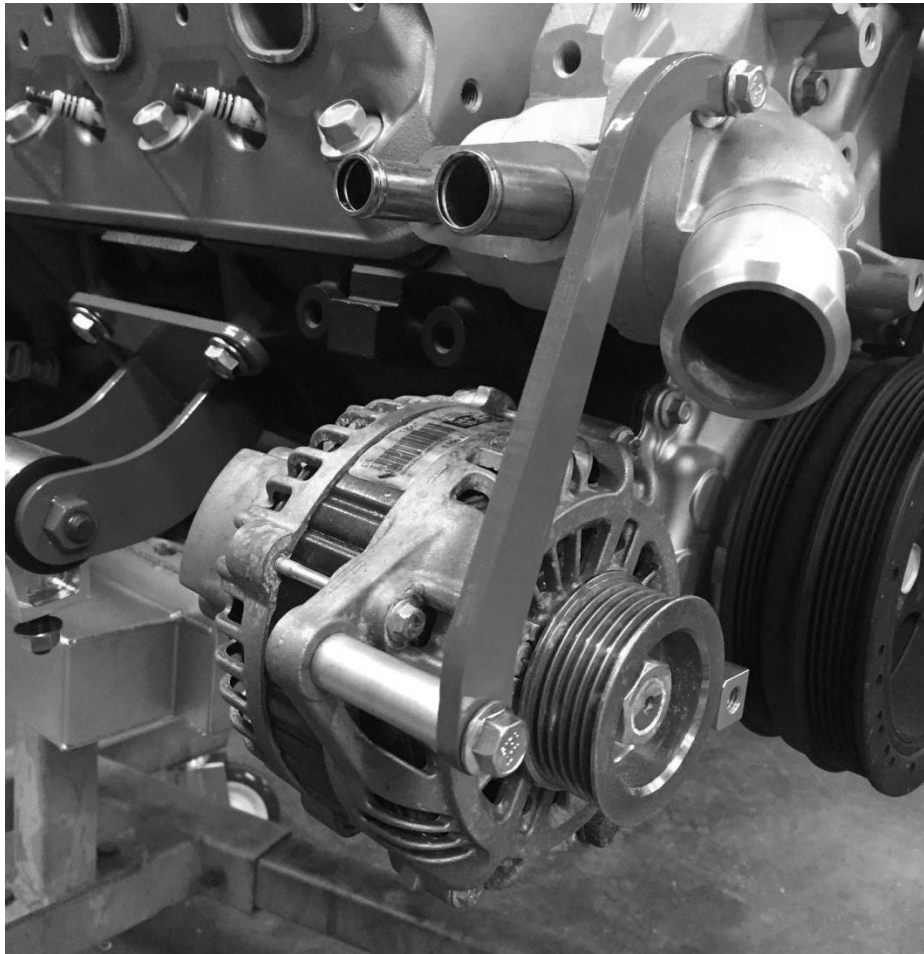


Figure 11

- 18) Now install the supplied smooth idler pulley to the front of the alternator bracket using the supplied stepped spacer, flat washer, and socket head bolt. **The spacer should go between the pulley and the alternator bracket.** Tighten this bolt to 35ft-lb. See Figure 12.



Figure 12

Power Steering Pump Installation

- 19) Remove all brackets from your factory power steering pump and clean/prep the pump for installation as you deem fit.
- 20) Install the aluminum power steering pump base bracket to the water pump where the OEM GM belt tensioner would have been located. Use one M10x1.5 40mm long flat head bolt in the upper mount location. Leave this bolt loose. Do not install any fastener in the lower mount location at this time. See Figure 13.



Figure 13

21) Install the triangular shaped pump locator arm onto the base bracket. Using one M10x1.5 50mm long flat head bolt, pass this bolt through the locator arm, through the lower base bracket bolt hole, and into the water pump. Leave this bolt loose. Then install the M8x1.25 25mm long flat head bolt through the locator arm into the base bracket, leaving the bolt loose. See Figure 14.

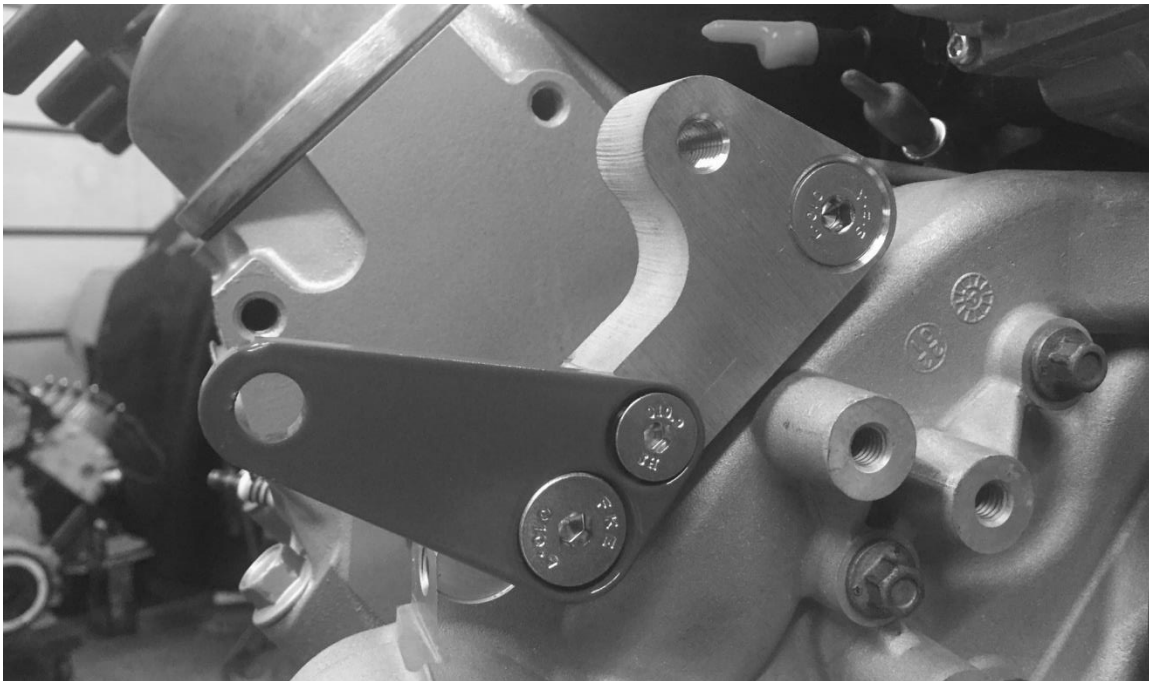


Figure 14

- 22) Tighten the M10x1.5 40mm long bolt in the upper mount location of the base bracket to 37ft-lb.
- 23) Install the tensioner arm onto the power steering pump using the supplied M8x1.25 25mm long flange head bolts. Leave these bolts loose. See Figure 15.



Figure 15

- 24) Install the power steering pump to the engine using the supplied M10x1.5 110mm long bolt with supplied lock and flat washers as shown in Figure 16. The 0.5" thick spacer should be between the pump and the cylinder head. Leave this bolt loose.

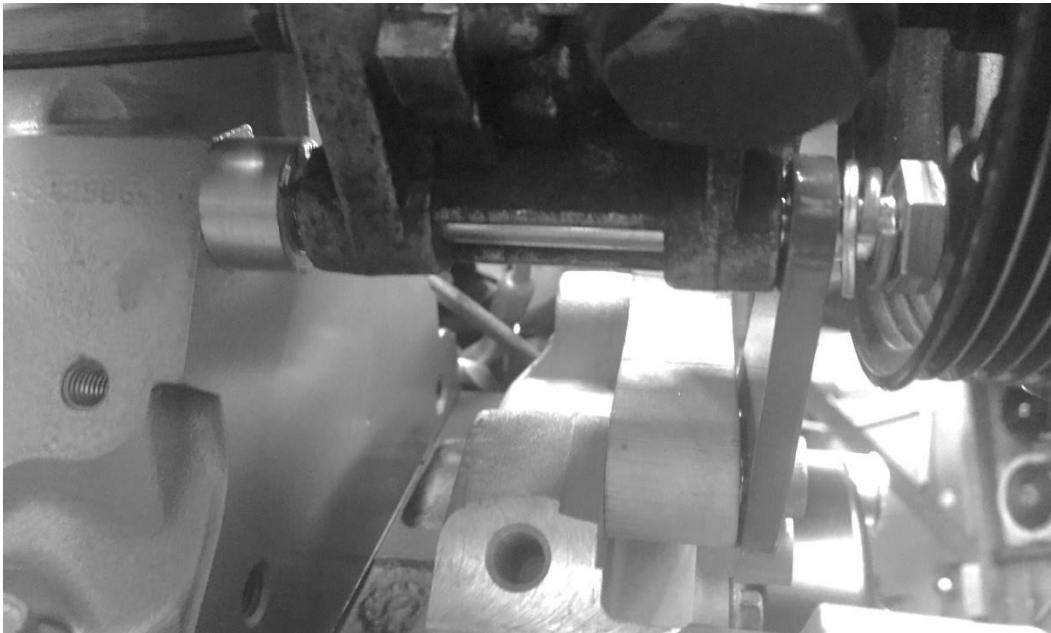


Figure 16

- 25) You can now tighten the M10x1.5 50mm long pump locator arm bolt to 37ft-lb. and the M8x1.25 25mm long pump locator arm bolt to 21ft-lb.
- 26) Install the M10x1.5 25mm long serrated head flange bolt through the pump tensioner arm into the base bracket. Leave this bolt loose. Once installed, tighten the two M8x1.25 x 25mm long flange head bolts holding the tensioner arm onto the PS pump to 21ft-lb. Then rotate the pump toward the throttle body as far as you can and snug up the M10x1.5 25mm long serrated flange head bolt enough to prevent the pump from rotating away from the throttle body. See Figure 17.

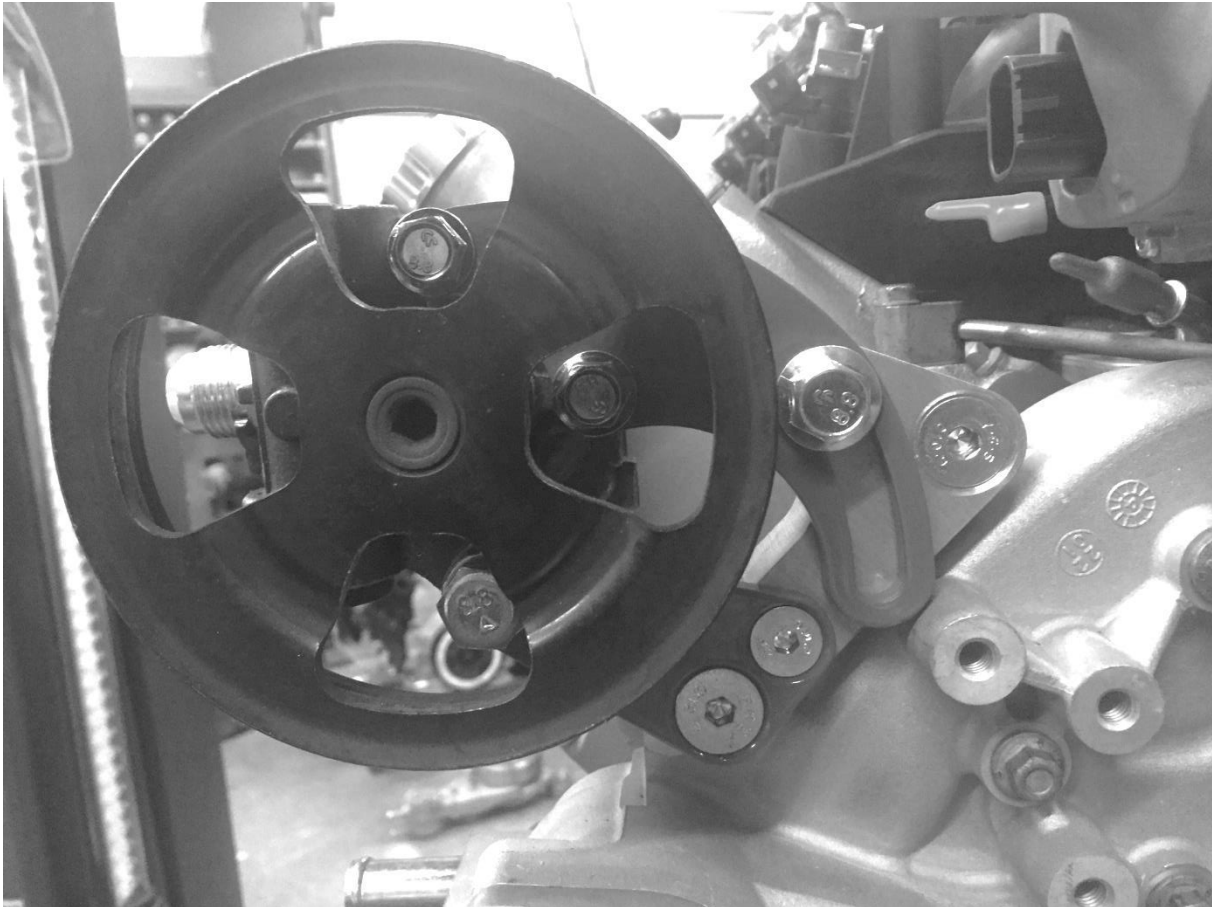


Figure 17

- 27) Remove the Power Steering Pump inlet fitting from the pump and install the supplied -10AN Adapter fitting with hold-down clamp re-using the factory hardware. Tighten the bolt to 108in-lb. See Figure 18.



Figure 18

- 28) You will need to trim your low-pressure power steering hose to fit the new pump location. Both ends may need to be trimmed to fit your specific setup. See Figure 19.



Figure 19

- 29) **(G35 ONLY)** You will also need to trim two tabs off of the coolant overflow reservoir to allow clearance for the power steering pump. See Figure 20 and Figure 21.



Figure 20



Figure 21

Idler Bracket Installation

- 30) You must now assemble the idler bracket before installing onto the engine. Use the supplied Loctite on both of these bolts. Install the Ribbed Idler Pulley onto the idler bracket on the post located behind the LOJ Logo using the supplied M10x1.5 20mm long low-profile socket head bolt and flat washer, torqued to 37ft-lb. Install the smooth idler pulley onto the other post using the second M10x1.5 20mm low-profile socket head bolt and flat washer to the same 37ft-lb of torque. **Note the orientation of the smooth idler pulley! The open side of the pulley should face away from the bracket. Failure to orient the pulley correctly will result in contact between the pulley and water pump and can cause irreparable damage to the bracket!** Use the supplied Loctite on both of these bolts. See Figure 22. You may need to hold the idler bracket in a vice to achieve these torque specs, use a heavy cloth or rubber pad to protect the bracket from scratches or marring.



Figure 22

31) You must now install the belt and idler bracket at the same time. The belt can be routed around the crank pulley, alternator, and power steering pump prior to installing the idler bracket. See Figure 23. The idler bracket is then installed onto the water pump using one M8x1.25 50mm long socket head screw in the uppermost position. Leave it loose enough to rotate the bracket into its correct position. You will need to use a pry bar to help rotate the bracket and get a second fastener installed. See Figure 24 and Figure 25.

NOTE— The belt can be installed after the idler bracket is in place if the bolts holding the bracket to the water pump are left very loose. There is then sufficient space to slide the belt between the pump and the smooth idler pulley. This is the preferred method to use when changing belts while the engine is installed in the vehicle. Using this method will require walking the belt onto the power steering pump pulley last by turning the crankshaft with a ratchet and socket.

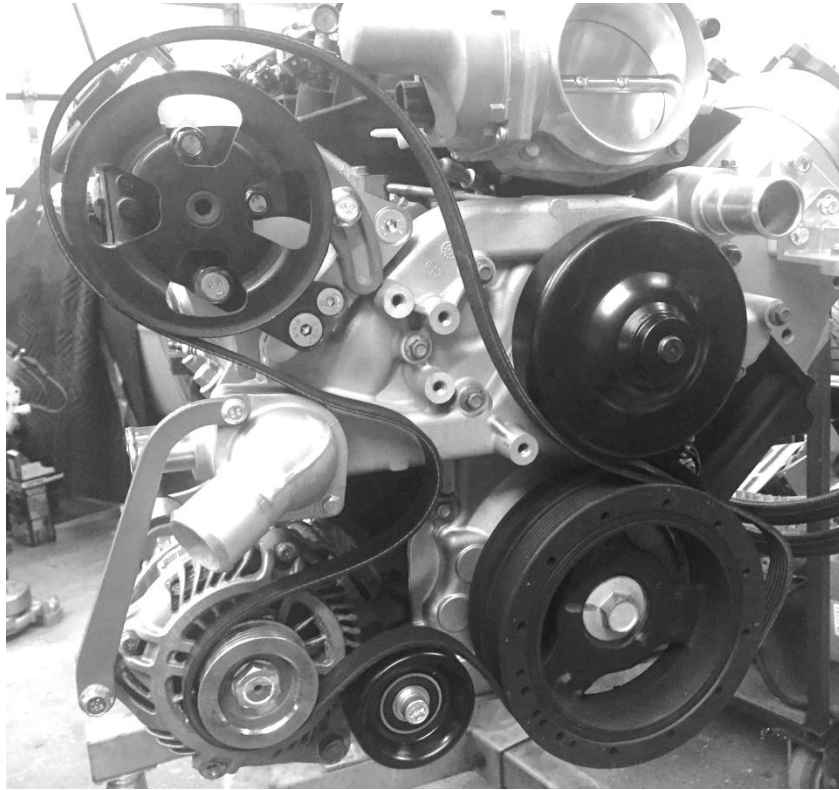


Figure 23



Figure 24

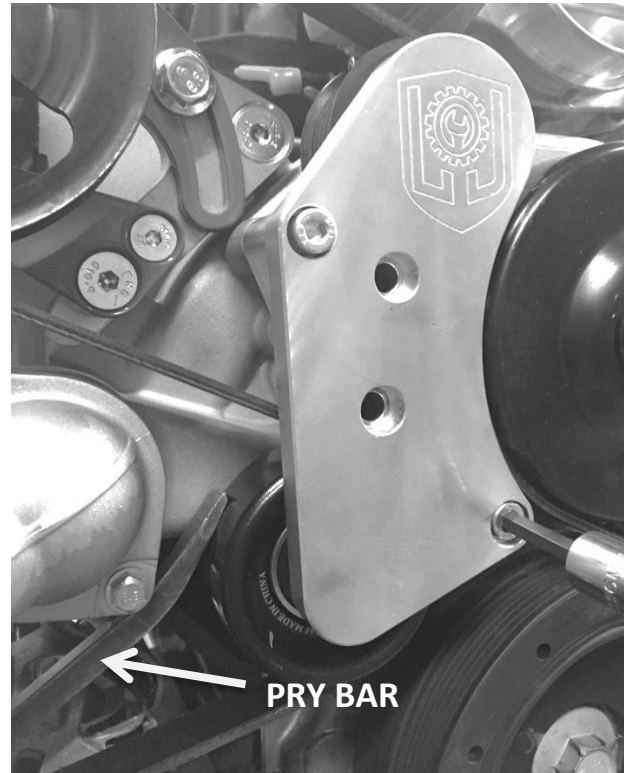


Figure 25

32) The belt is initially installed tight to allow for sufficient adjustment after belt stretch and to keep the pump away from the coolant overflow reservoir with the engine installed. Final belt routing should match what is shown in Figure 26.

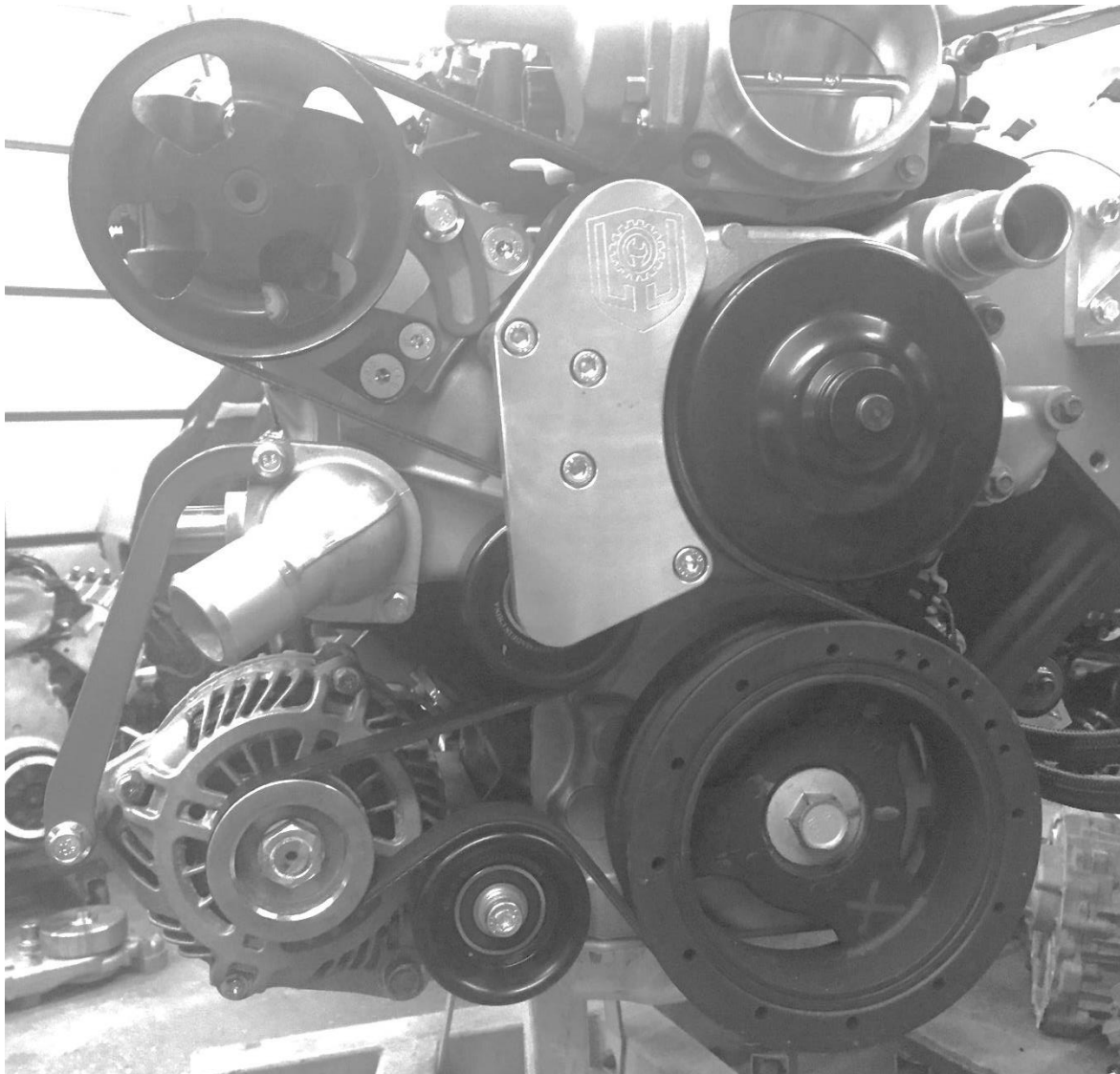


Figure 26

33) Your last step is to tension the belt. Loosen the M10x1.5 25mm long serrated flange bolt holding the power steering pump tensioner arm to the power steering pump base bracket. Place a long heavy duty flathead screwdriver or a pry bar between the power steering pump and power steering pump base bracket and pry the pump away from the throttle body to apply tension to the belt. See Figure 27. While holding tension, tighten the M10x1.5mm 25mm long serrated head bolt to 37ft-lb. to lock the pump in place. A properly tensioned belt will have between 1/8"-3/8" deflection between the power steering pump pulley and ribbed idler pulley on the idler pulley bracket. Once the belt is properly tensioned, the M10x1.5 110mm long bolt passing

through the power steering pump and into the cylinder head can be tightened to 47ft-lb. *When the belt is new, there may be nearly no adjustment necessary, but it will need adjustment after initial run-in. You may need to rotate the crank pulley to align one of the holes in the power steering pump pulley with this bolt to allow access with a socket.* The M10x1.5 25mm long serrated flange head bolt can be tightened to 37ft-lb.

NOTES—

- **New belts stretch after 250-500 miles of driving. The belt tension will need to be checked periodically to ensure no noise is present.**
- **If the belt makes noise at idle, the belt is either too tight or far too loose.**
- **If the belt is silent at idle but squeaks while revving the engine, the belt is likely too loose.**
- **If no changes to belt tension can get rid of belt noise, the alternator pulley is likely misaligned with the crank pulley.**



Figure 27

Your installation is complete! Enjoy!

Replacement Parts:

- **Ribbed Idler Pulley:**
 - Gates Part Number 38082
 - AC Delco Part Number 38082
 - Continental Part Number 49079
 - Other manufacture equivalent 6-Groove 63.5mm OD ribbed pulley.
- **Smooth Idler Pulleys:**
 - Dorman Part Number 419-610
 - Gates Part Number 38006
 - AC Delco Part Number 1520679
 - Continental Part Number 49006
 - Other manufacturer equivalent 17mm wide 76mm OD smooth pulley.
- **Belt:**
 - Gates Part Number K060653
 - Gates Heavy Duty Part Number K060653HD
 - Continental Part Number 4060653
 - Other manufacturer equivalent 6-rib 65.3" effective length belt.