PERFORMANCE STEERING COMPONENTS

SK688R36JP1

2012–2018 JEEP WRANGLER JK
3.6L ENGINE – ADVENTURE KIT

INSTALLATION GUIDE

INSTALLATION GUIDE

SK688R36JP1 Adventure Kit

GENERAL INSTALLATION INFORMATION

This kit can be installed in a home garage, but if you have doubts, let a professional installer do the job. If you are installing our Big Bore XD Steering Gear also, we highly recommend a second person to help with the steering gear installation. It weighs about 50lbs and is difficult to locate and thread in the mount bolts by yourself.

You will need a 46mm socket and a torque wrench that will allow you to torque the pitman arm nut to 220-240 foot-pounds. Other than that, regular hand tools are all that's needed. For information on the torque specs, please see the factory user manual or other aftermarket guide book.

For the kit to be eligible for warranty, it must be installed as a complete kit with the provided cooler, pump, gear, reservoir, SRVT and hoses provided.

TO NOTE this is just a guide for the installation. Each Jeep is slightly different from the next, so no two installations will be exactly the same.

If you have any installation questions, contact us at support@pscmotorsports.com. PSC's hours of operation are Monday-Friday, 9 am - 5 pm CST.

SK688R36JP1 PARTS LIST

SG688R Big Bore XD Steering Gear, Pitman Arm and Hardware

- (2) M12-1.5x100mm—12mm-1.5x100mm bolt
- (2) M12mm Deep Washer
- (2) M12mm Lock Washer

PK36JP1 - Power Steering Pump and Reservoir Kit

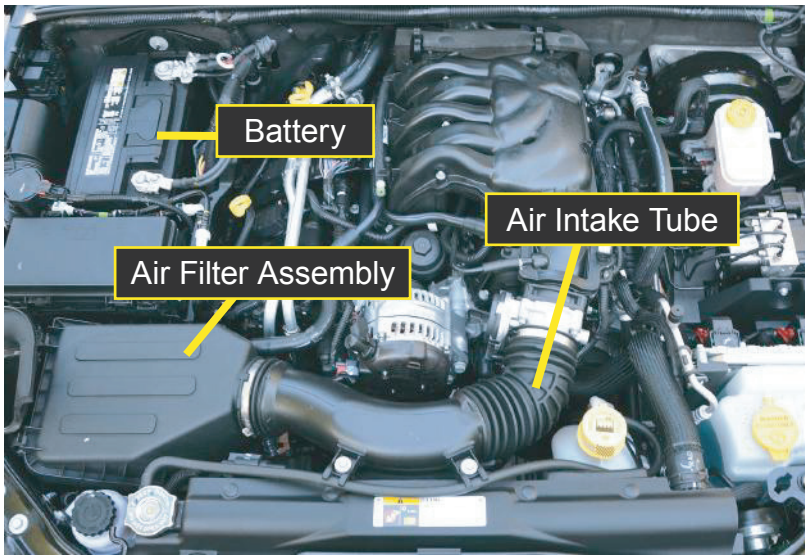
- (1) Power Steering Pump
- (1) Remote Reservoir
- (1) Pump Bracket Kit
  - (1) Pump Bracket
  - (5) M8-1.25x30mm Flange Bolts
- (1) High-Pressure Hose and 2 Fir Tree mount zip ties to go into the frame
- (1) Low pressure Pump-to-Reservoir OUT Port Hose & -12 OUT Port AN Fitting
- (1) Reservoir Bracket Kit
  - (1) Reservoir Bracket
  - (2) 5/16”-18x5/8”—Bracket-Reservoir Bolts
  - (2) 5/16” Lock Washer
  - (1) Bracket-Frame Bolt Spacer
- (1) Power Steering Belt, 90.5”
- (1) Hose, Hardware and Cooler Kit
  - (1) 12” Heat Sink Fluid Cooler
  - (1) Low-Pressure Hose—Gearbox to Cooler
  - (1) Low-Pressure Hose—Cooler to Reservoir IN Port
  - (2) AN -8-6 Adapter Fittings for Cooler ends
  - (1) AN -8-8 Adapter Fitting for Reservoir IN Port
  - (1) SF11 Steering Gear Return Port Adapter Fitting
  - (2) 1/4”-20x2” Bolt to mount Cooler to the Radiator Frame Rail
  - (4) 1/4” SAE Washer
  - (2) 1/4”-20 Lock Nut
- (1) Permabond LM113 Thread Sealant 10mL
- (1) SRVT-JK
  - (1) SRVT Anti-Splash Valve
  - (1) No-Slip Barrel Nut
  - (1) 1/4”-20x1.25” Flanged Hex Head Bolt to mount the SRVT

SWE715—Power Steering Fluid, 1-Quart Four-pack

NOTE: Use Permabond thread locker compound on all bolts without lock washer or lock nut. Use hydraulic thread sealant on all hydraulic fittings and hose couplings.

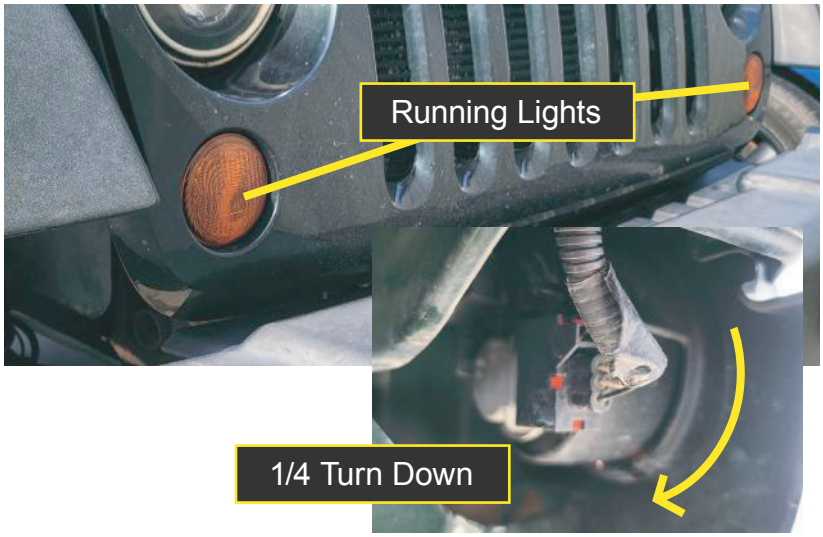
1) Lift hood all the way back against windshield. Be sure to place something between them to prevent damage.

2) Disconnect battery. Remove engine cover, air filter assembly, and intake tubing.

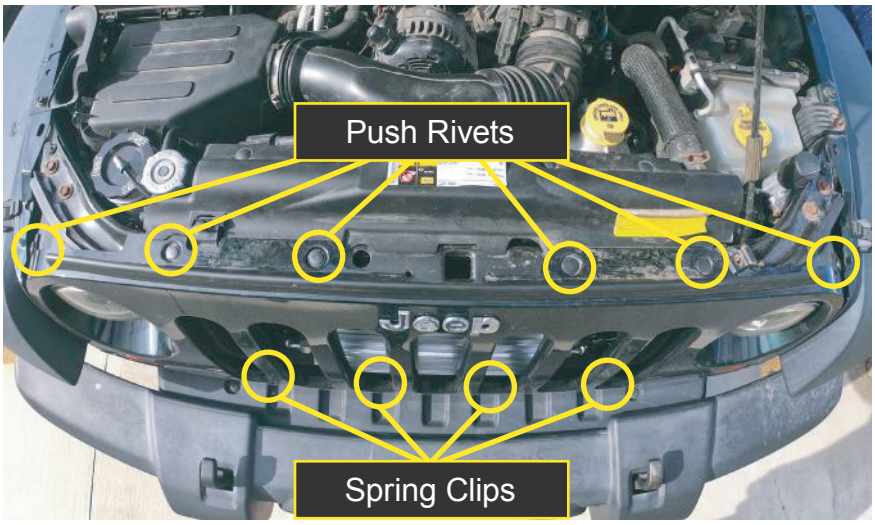


3) Remove the grill by turning the signal/running lights in the grill each a quarter turn down then pull them out of the socket.

NOTE: Depending upon which bumper and/or winch setup you have, you may need to remove it for access to install this kit. You may only need to loosen the winch and lean it forward to remove the grill.

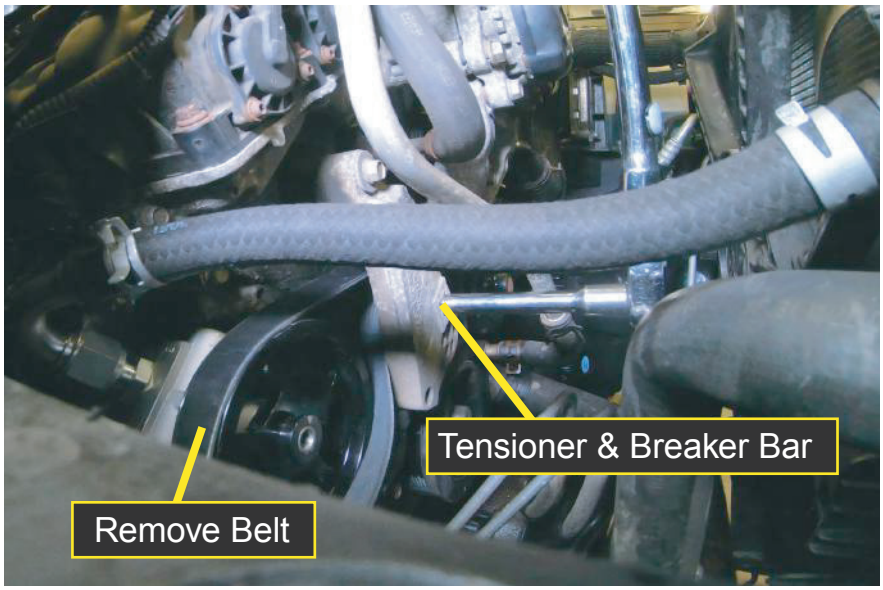


4) Finish removing the grill by releasing and removing the push rivets along top of the grill (6 total). Then push the 4 spring clips at the bottom of the grill to release it from the frame cross member.

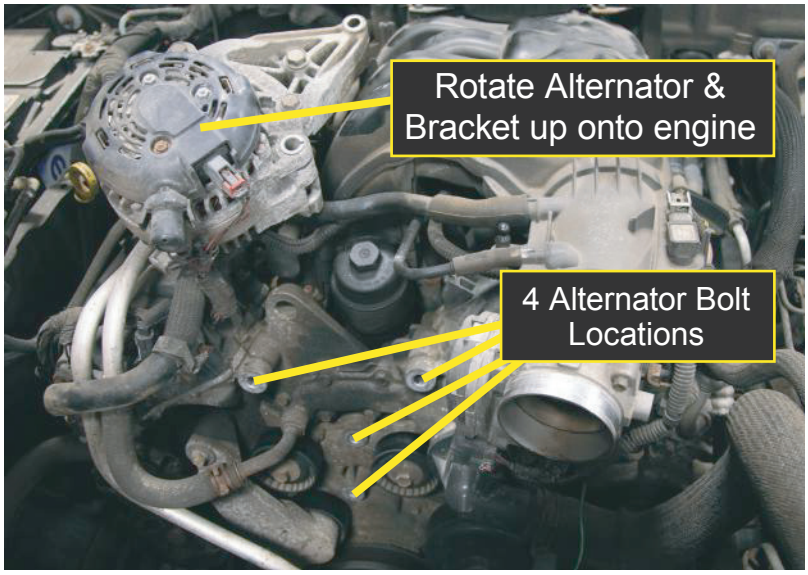


5) Secure the steering wheel so it cannot turn. We used a ratchet strap.

6) Take a 1/2” breaker bar and extension and insert it into the square hole in the belt tensioner. Push the breaker bar clockwise to release tension on the belt to loosen and remove it from the pulleys—throw it away, it will not be used again.

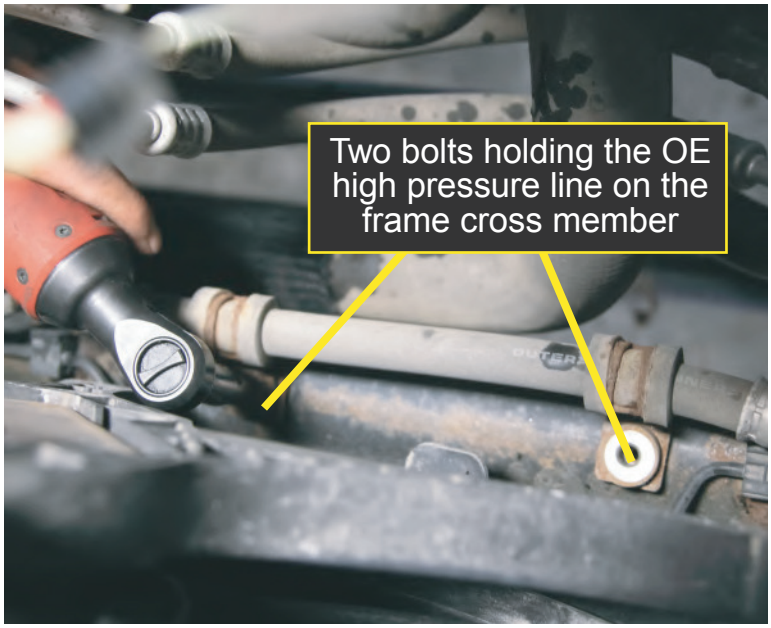


7) Remove the alternator from the front of the engine by removing the four (4) bolts from the alternator bracket and place the alternator on top of the passenger-side engine valve cover.



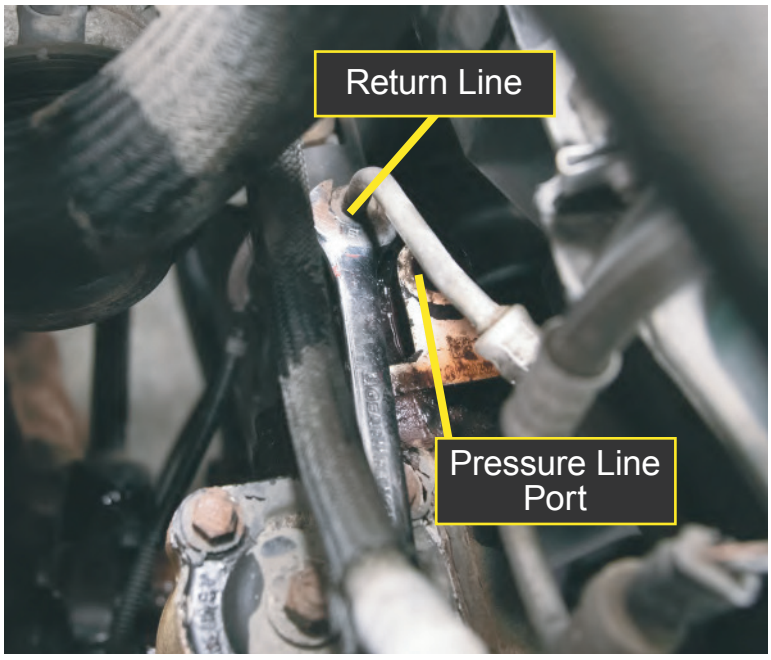
8) Disconnect the overflow/ return line from the OE engine coolant reservoir to the radiator. Remove the coolant tank.

9) Looking down through the engine bay space that was just opened up, you will see the OE high-pressure line that connects the steering gear and power steering pump. It is bolted to the frame cross member (under and behind the radiator) by 2 bolts. Remove these bolts to free this line from the frame.



10) Unbolt both the pressure and return hoses from the steering gear.

NOTE: The steering gear is located on the inside of the frame next to the driver-side tire. Have a drip pan underneath there to catch any fluid.



11) Remove the bolts holding the stock pump to the engine block and unclip the wiring connector attached to the pump mount. The pump will hang down, but it will still be attached to the hose connecting it to the reservoir and the high pressure (HP) line.

NOTE: The pump is located on the passenger-side of the engine block outside of the tensioner.

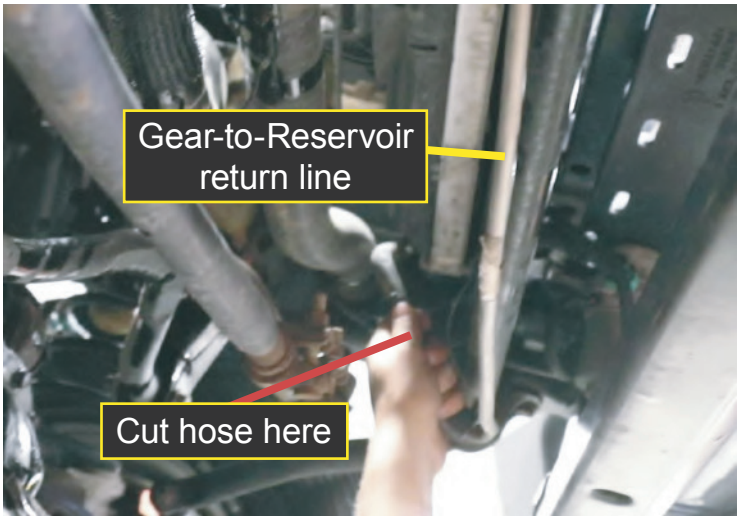
12) Bring the pump up through the engine bay and remove the reservoir-to-pump hose from the pump's fitting. Loosely zip tie the hose to the radiator cap next to the reservoir to prevent fluid from spilling out.

With the HP line still connected to the pump, maneuver the high pressure hose through the engine bay to remove the pump and hose together. Use your thumb or other plug to cover the open port on the pump to prevent fluid from coming out.

NOTE: Have a drip pan close at hand to put the pump into. Once it is put down all the fluid will come out.

13) There is a metal return line that runs from the steering gear to the reservoir. On the driver-side of the metal hose, cut it just above where it bends to go under the frame rail (see the hand placement in the photo to the right).

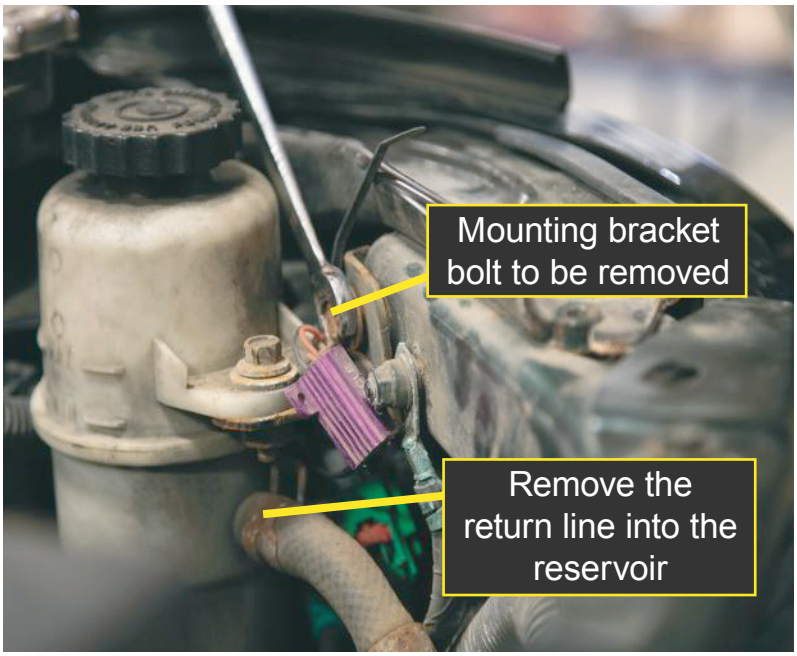
You can now pull the part of the return line that connected to the gear up and out of the engine bay.



NOTE: Have a drip pan underneath where you cut the line in case any fluid drips out.

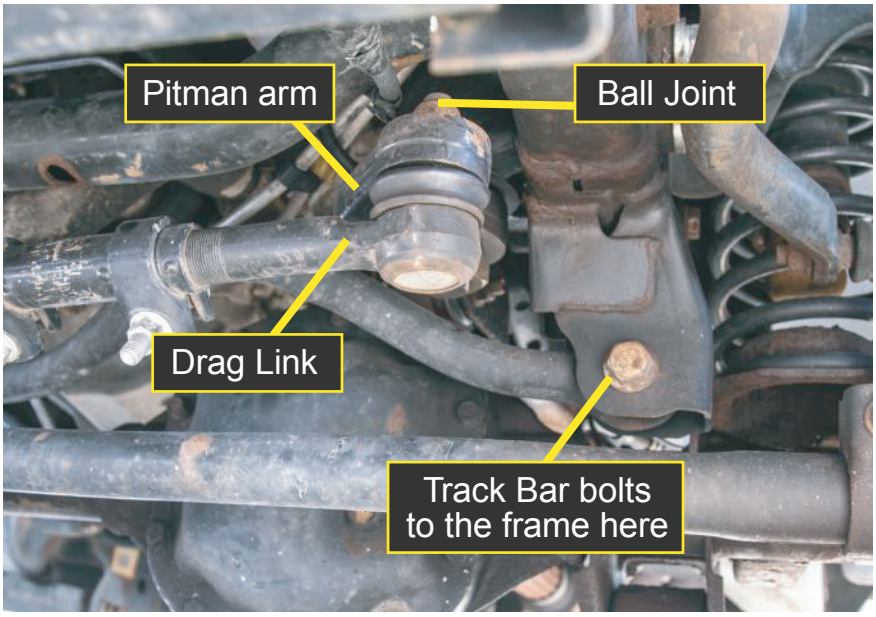
14) The rest of the metal line goes into the reservoir. Unfasten it from the reservoir and remove it through the bottom of the engine bay.

Remove the bolt holding the OE reservoir mounting bracket to the frame (located on the passenger side of the radiator). Snip the zip tie holding the hose to the radiator cap and remove the reservoir and hose together.

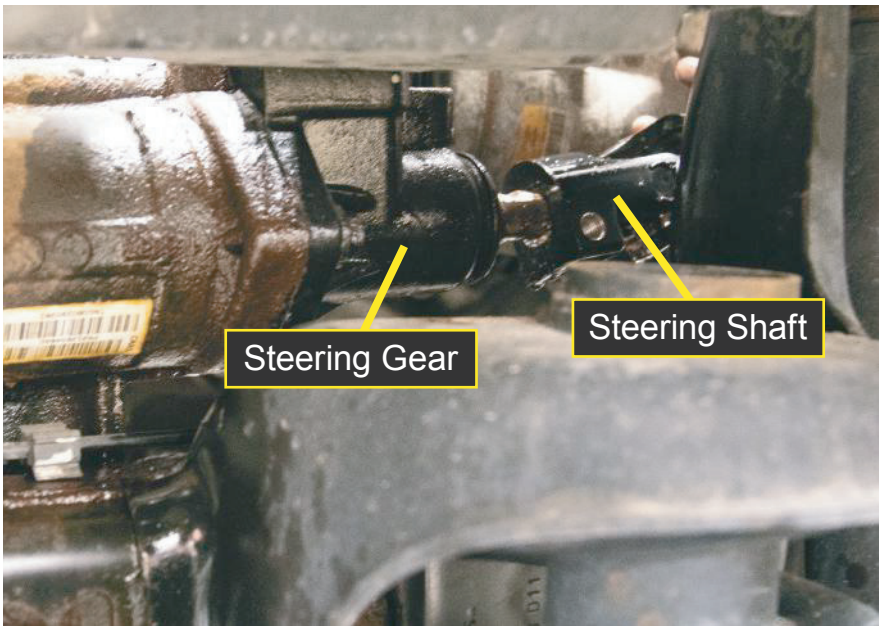


NOTE: Have a drip pan underneath where you cut the line in case any fluid drips out.

15) Remove the drag link and ball joint from the pitman arm and the track bar from the frame and swing down out of the way.

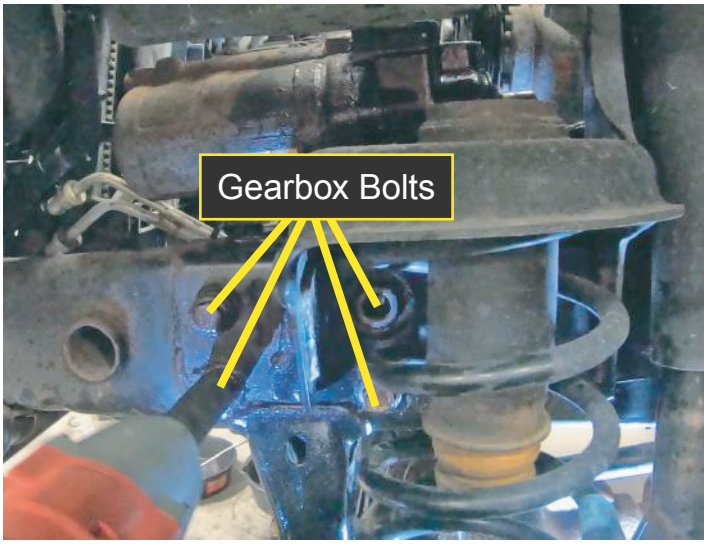


16) Unbolt, then disconnect the steering shaft from the steering gear by using a pry bar to gently push the shaft toward the firewall.



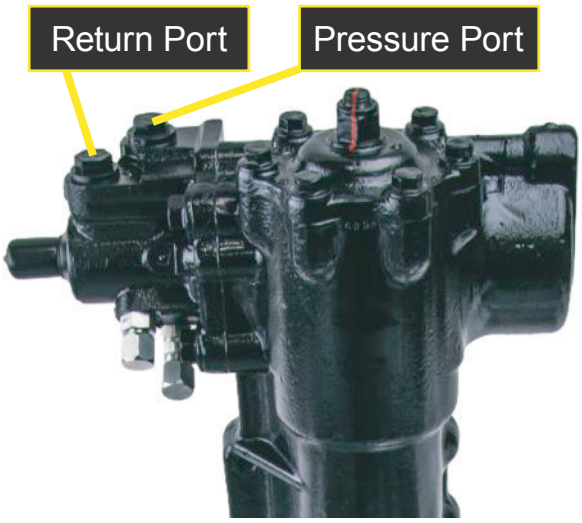
17) **This takes 2 people** One person will go through the fender well to remove (4) bolts (save TWO for re-use). The other person should hold the gearbox in place (we recommend holding it from the top by going down through the top of the engine bay) while it is being unbolted. Once unbolted, it can be pulled up and out of the top of the vehicle.

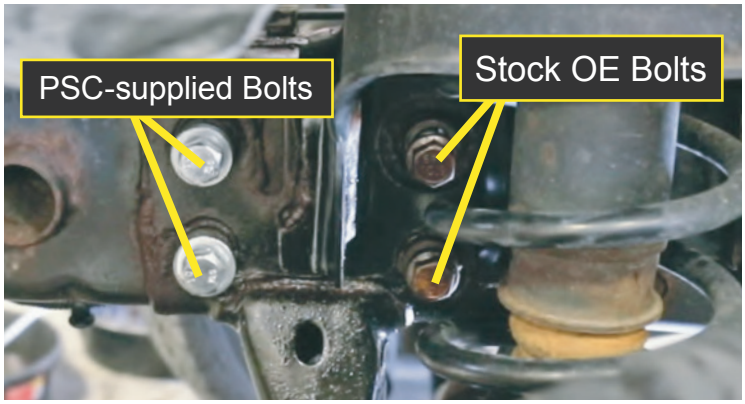
NOTE: The steering gearbox is HEAVY; we recommend you get someone to help you remove the original and install the PSC Big Bore gearbox.



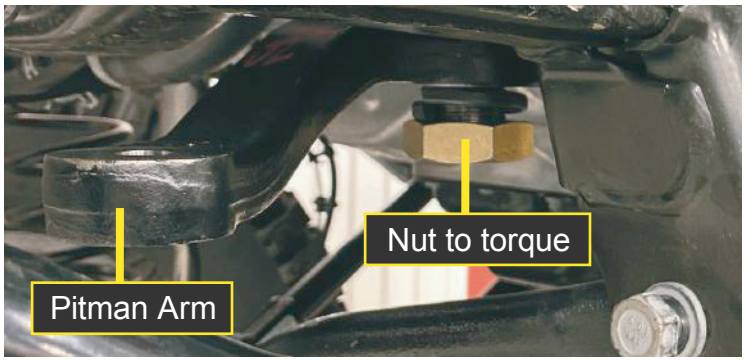
Now that all the stock parts have been uninstalled, it is time to start installing the new PSC kit parts.

18) Install supplied SF11 AN fitting into thereturn port of the new Big Bore XD steering gearbox (use Hydraulic thread sealant when installing this fitting to prevent leaks). Then lower the gearbox through the top of the vehicle and maneuver it into place. Use the two (2) PSC-supplied bolts as noted in the middle picture.

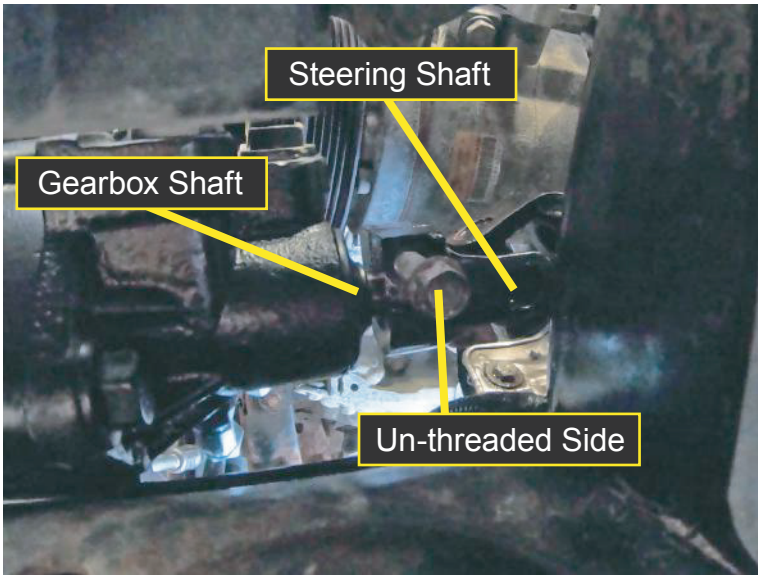




19) Once the Big Bore XD gearbox is bolted to the frame, install the pitman arm to the gearbox and torque it to 220-240 ft/lbs using a 46mm socket.

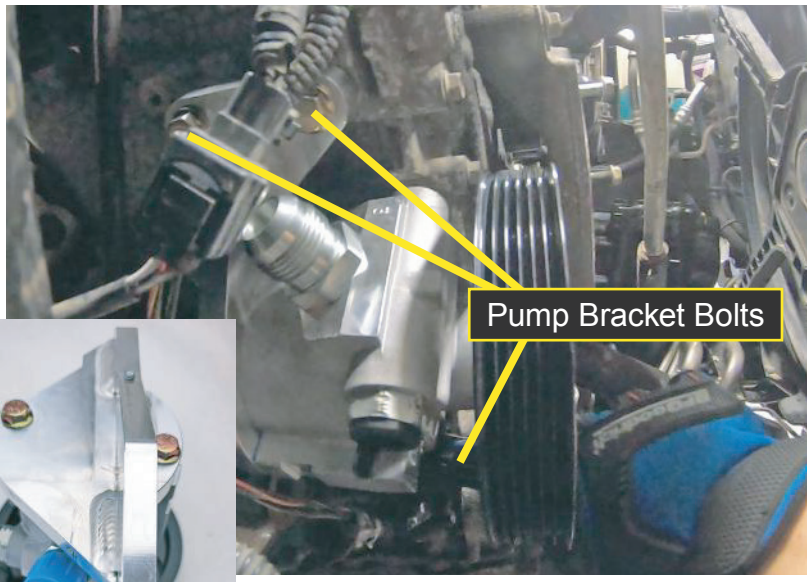


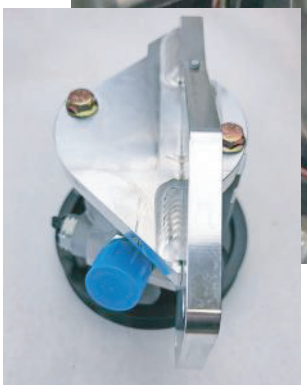
20) Slide steering shaft onto gearbox shaft. Be sure to install steering shaft bolt correctly. Bolt goes through un-threaded side of coupler first, then threads into other side.



21) To install the pump, first mount the pump onto the bracket as seen in the photo at the bottom. Use Loc-tite on these bolts.

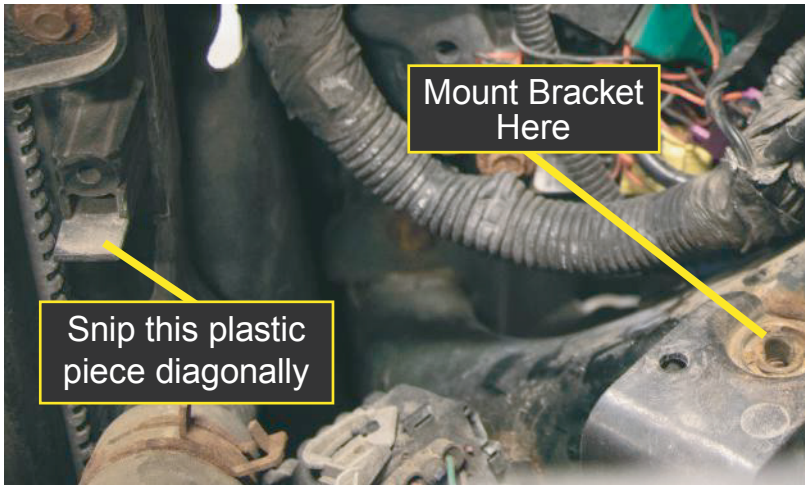
Then using the PSC-supplied bolts, mount the pump/bracket assembly to the engine block where the OE pump was mounted. Use Loc-tite on these bolts too.





22) BEFORE you install the reservoir, there is a small plastic tab that needs to be snipped at a 45º angle. See the picture to the right.

Install the H6400-8-8 fitting into the port on the right (IN) and the H6400-12-12 fitting on the left (OUT) port on the reservoir. Use Hydraulic thread sealant.

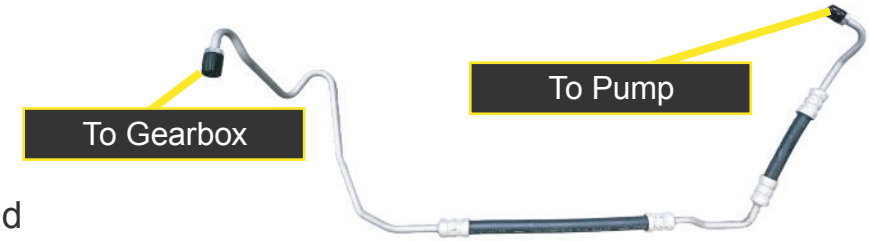


23) Bolt the reservoir to the 11.60 bracket, as seen below, using the 5/16-18x5/8 bolt and 5/16 lock washer. Use Loctite on these 2 bolts.

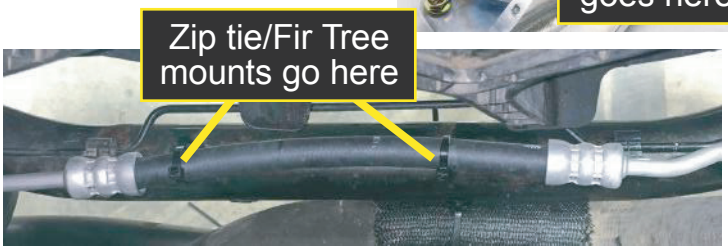
Then, using the 15.113 spacer and OEM bolt, mount the reservoir/ bracket assembly to the frame.

NOTE: Be sure to rotate the bracket assembly as close to the headlight as possible to make room for the airbox.

24) The first hose to install is the HK2095 high-pressure hose that runs between the pump and the gearbox. Tighten this hose fully.

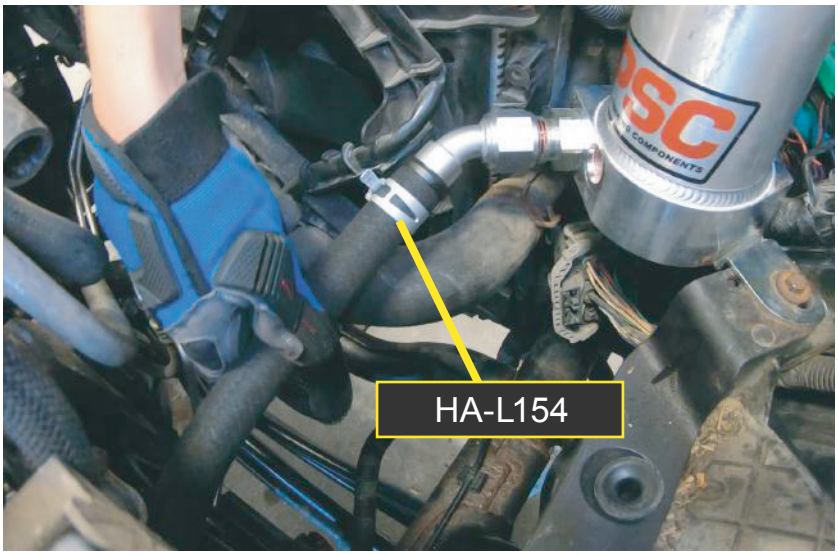


The high-pressure hose line goes into the pressure port of the gearbox. Push the 2 Zip tie/Fir Tree mounts into the holes in the frame cross member that the OE HP line isolaters bolted into (see step 10 for reference).



NOTE: Use Hydraulic thread sealant on all AN fittings between hose, gearbox and pump.

25) Install the HA-L154 Pump-to-Reservoir hose next. Start by loosely tightening the fitting on the steering pump first, then connect it to the reservoir. Then tighten it completely.

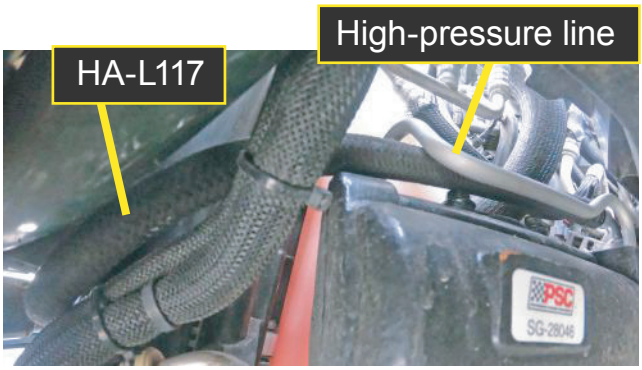


NOTE: Use Hydraulic thread sealant on all AN fittings between hose, reservoir and pump.

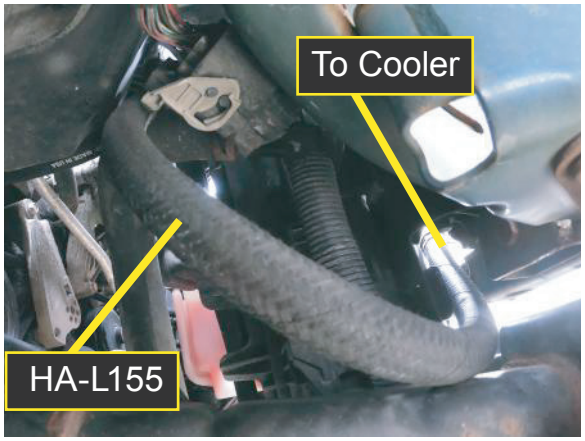
26) Disconnect the rubber condenser seal on the driver's side of the vehicle on grill side of the seal and lay back.

Loosely install the HA-L117 with the 90 fitting going into the steering gear box using the port closest to the input shaft. NOTE: run the HA-L117 under the high-pressure line and next to the radiator and condenser to the bottom of the rubber condenser seal.

Reinstall the rubber condenser seal.



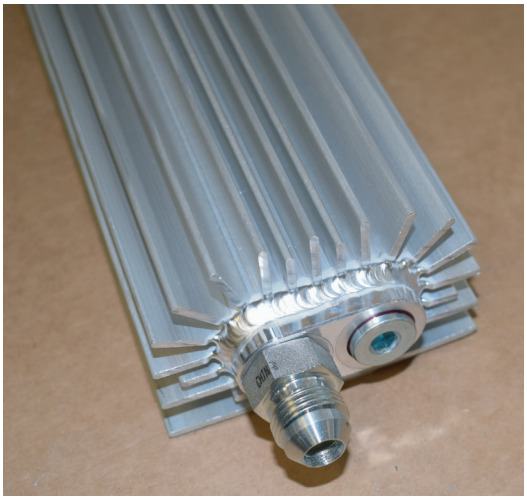
Route HA-L117 on top of the other hoses and under the metal loop of the high pressure line (see middle picture). You can fully tighten the fitting on the gearbox using Hydraulic thread sealant.

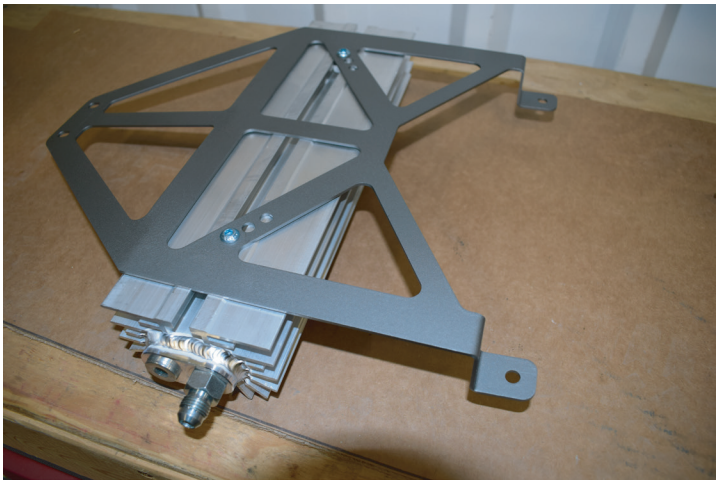


Loosely install the HA-L155 to the reservoir using the 90 fitting and route the hose under the radiator to the front of the vehicle.

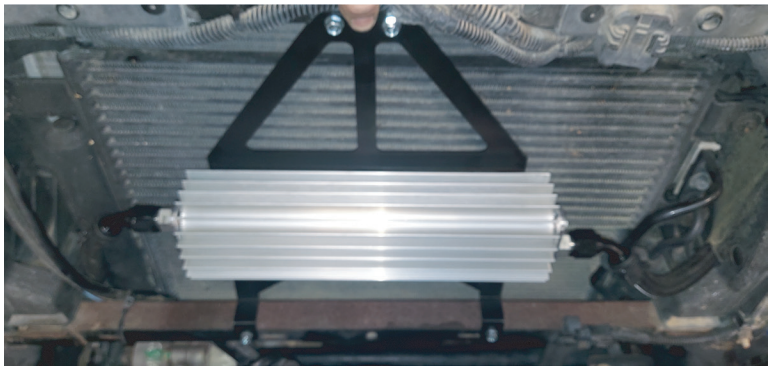
27) On the bench install the fittings and plugs to the C212S cooler. Fittings should be installed with one (1) AN fitting on the top on the left side of the cooler and one (1) AN fitting on the bottom on the right side of the cooler. NOTE: all O-rings side of fittings should be installed to the cooler.

Then install the cooler assembly to the 16.302 bracket using two (2) 6m-1.0 t-slot nuts and two (2) 6m-1.0 x 12 BHCS bolts. NOTE: the cooler should be installed on the bottom holes of the bracket and centered as best as possible.





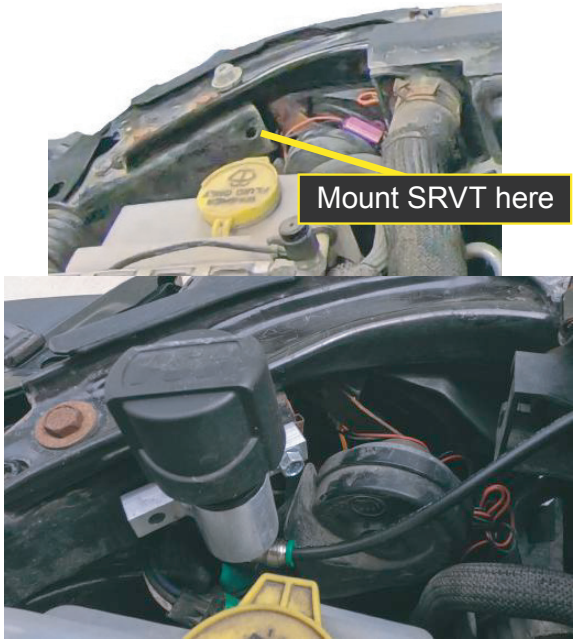
28) Loosely install both 45 fittings to the cooler bracket assembly.
Using four (4) FSHST 1/4-14-1.0 self-tapping screws to install the cooler bracket assembly to the core support.



TIGHTEN ALL HOSES AND FITTINGS
****BE CAREFUL NOT TO OVERTIGHTEN ALUMINUM FITTINGS AS THEY CAN CRACK AND LEAK****

29) Last component to install is the SR-VT valve. It goes at the front of the engine bay on the driver-side of the radiator by where the windshield wiper fluid reservoir is located (see picture to the right).

Push the no slip barrel nut (FSNB) over the hole in the frame, then use the flange bolt 1/4-20 x 1-1/4 to mount the SRVT.

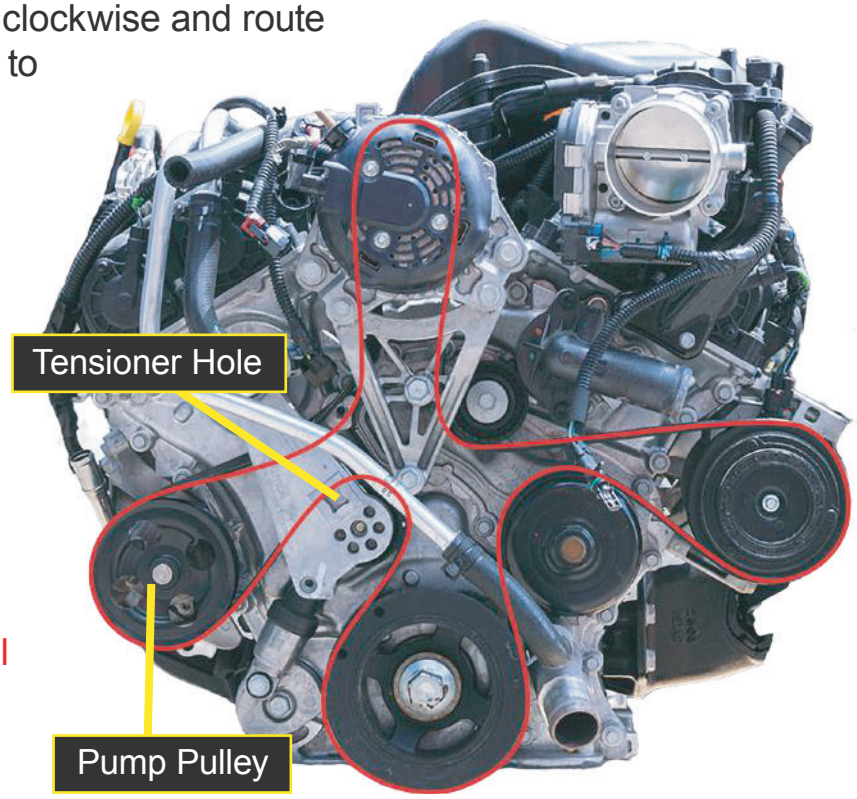


30) Route vent tube from reservoir, under the plastic piece covering the radiator, to the SRVT as shown and connect through the green push-loc fitting.

31) Partially install the BT60905 belt leaving the loop off of the steering pump pulley. Re-install the alternator using the 4 OE bolts saved from earlier and slip the belt around the alternator pulley. Then, using a breaker bar inserted into the tensioner hole (like in step 7), push the breaker bar clockwise and route the belt around the pump pulley to complete the belt install.

Refer to picture to the right for correct belt route.

NOTE: The ribbed side of the belt will go onto the ribbed pulleys, the smooth belt side will go on the smooth pulleys.



If you are installing a PSC Cylinder Assist™ kit, please refer to the proper CAK Installation guide, install the CAK parts, then come back to this point to finish the installl.

32) Re-install track bar to the frame, tie rod end to the pitman arm, grill, running lights in the grill, engine coolant reservoir, air box and air intake tube in reverse order from disassembly.
Then re-connect the battery.

33) Power steering fluid fill and bleeding instructions are on next page.
Take your time and be patient with this step—it is critical that this is done right.

BLEEDING PROCEDURES

With the kit installed, the last and most important step is adding the Swepco Power Steering fluid and bleeding the system of all air. Swepco is the Official Fluid manufacturer for PSC. The kit includes four (4) quarts of Swepco 715 for use in the system. This part takes patience and diligence to do it properly—but it is critical to purge all the air out of the system to prevent damage to the pump.

Start by jacking up the front of the vehicle and put jack stands under the front axle. This allows it to be much easier to turn the steering wheel full right and left when there is no load resistance on the steering.

Next, start by adding the Swepco power steering fluid in the reservoir. **Fill it to just over the filter top or about 1" to 1-1/2" of fluid from the top of the fill reservoir (see the picture)**. Once it looks as though no more fluid is going into the system, turn the steering wheel from lock to lock (all the way right and all the way left) to pull more fluid through the system. Add fluid as necessary and repeat until the fluid level remains consistent. Then, put on the reservoir cap and start the engine for about 30 seconds—do not turn the steering wheel yet. The fluid will have disappeared in the fill tank and you can now add more fluid. Repeat this a couple of times, letting a few minutes pass between startups. The fluid gets very aerated during this procedure and sometimes you need to let it sit—giving it time to let the air bubbles work their way up and out of the system.

JK Reservoir

Now, start the engine and turn the steering wheel completely to the right and then left 10-15 times, shut the engine off for about 10 minutes and add fluid as necessary. Repeat this 3-4 times. This will really start pushing the air out, but again it takes time for the air bubbles to work their way out, so be patient and let the vehicle sit between each start for 10 minutes. Once you have done this a few times, the fluid level should stop dropping and no bubbles should be visible in the reservoir.

Remove the jack stands and lower the vehicle to put a full load on it. Make sure you have installed the vent hose to the SRVT before driving. Drive the vehicle to build a little heat in the fluid (this helps bleed the remaining air out). Remember, when you hear the pump whine, it is aerating the fluid. Shut off the engine, let the fluid clear up and top off to the above-mentioned fluid level. Then, once the vehicle has been shut off and the engine is cold, take the cap off of the reservoir and have someone start the car while you watch the reservoir fluid level. If the level drops when the car starts, you still have air in the system. If it does not, you should be good.

Again, note that getting all the air out of the system takes awhile. If the pump is whining, you are aerating the fluid which is not good for the pump. So, if you are running your vehicle for an extended time and your pump has not stopped whining, it needs to be addressed as soon as possible. Sometimes this can be as simple as letting the vehicle sit to get the last of the air out. Always make sure the fluid level is good and there are no leaks.

If you have any questions contact us Monday-Friday from 9-5 CST at support@pscmotorsports.com.

Thank you for your purchase!