



# POWER STEERING PUMP INSTALLATION GUIDE

**NOTE:** This power steering pump is guaranteed to fit the specific vehicle applications for which it is listed. The following procedures must be performed to ensure proper installation and to protect your pump warranty.

## POWER STEERING PUMPS

Always reference and follow the manufacturer's installation instructions for your pump and power steering components prior to removing original components and installing the new replacement components.

- Replace all hoses that show signs of cracking, lack flexibility, have more than 100,000 miles on them or are more than 5 years old. Contamination from old hoses will damage the new pump and result in premature pump and steering system failure. Hoses breakdown from the inside and it cannot be detected by visual inspection.
- Hoses should be replaced and the system flushed before installing the replacement pump AND the new Remote Reservoir & filter provided to prevent introducing contamination to the new components and throughout the steering system.
- Flush the power steering system by pouring new fluid through the reservoir and throughout the steering system and components and into a drain pan until the fluid coming from the return line to the pump runs clear. Always use vehicle manufacturer's recommended fluid. **THIS TYPICALLY TAKES 4 – 5 QUARTS OF FLUID** (Reference Flush Procedure below).
- Replace factory installed inline power steering filter with replacement filter provided. If your vehicle was not supplied with an inline filter from the manufacturer, it is recommended that you add one in the return fluid line if possible. Be sure to install according to the flow directions on the filter.
- Replace the remote reservoir with the new reservoir provided (where applicable).

## REMOVE THE ORIGINAL PUMP

- Following the manufacturer's steering pump replacement instructions, loosen the pump/bracket mounting bolts to remove all belts. Follow manufacturer's instructions to remove pulley as required to gain access to bolts.
- Disconnect all hoses from the pump and plug open lines to prevent contamination.
- Remove pump/bracket mounting bolts and remove the pump from the vehicle.

## TRANSFER MOUNTING BRACKET (if necessary)

- If the mounting bracket was removed from the vehicle with the pump, remove fastening hardware, separate the bracket from the pump, and mount onto replacement pump.

## REPLACEMENT PUMP INSTALLATION

- Following manufacturer's installation instructions, position the replacement pump on the engine or mounting bracket and finger tighten mounting bolts to secure.
- Install the pulley shipped loose with your pump (where applicable).
- Install nut-retained pulley on the replacement pump shaft and tighten to manufacturer's specifications.
- If the shaft is equipped with a woodruff key line up the pulley notch and the shaft key. Secure with retaining nut.

**WARNING: NEVER** use a hammer to remove or install a pulley on a pump. Hammering will result in internal pump damage and will void the pump warranty.

- **Install drive belt.** When installing the drive belt on the pulley, use a tension gauge to check for proper tension as recommended by manufacturer's specifications. An over-tightened belt will result in reduced vehicle control and premature pump failure.
- Tighten the engine to pump or bracket-to-pump mounting bolts. Be sure to Torque to manufacturer's specification.
- Reconnect pressure and return lines. **Clean all fittings and threads prior to reconnecting lines.**
- Recheck all fittings and connections for leaks after installation.
- Tighten bolts and hose connections as necessary. Bring the vehicle to normal operation temperature and recheck all connections for leaks again. Retighten as necessary.
- After replacing or servicing a component in the power steering system it is critical to remove the air from the system. Vacuum bleeding the power steering system is recommended by the OE manufacturers (Reference Vacuum Bleeding Procedure below). Always inspect the vacuum pumps ability to hold vacuum prior to following the procedure outlined below.
- **Reference The Ideal Power Steering Installation Guide** below when replacing a power steering component on your vehicle.




# THE IDEAL POWER STEERING INSTALLATION GUIDE

Reduce Returns with these Simple Steps

**1**  
**REMOTE RESERVOIR**  
Replace reservoir or clean internal filters.



**2**  
**FLUID**  
Use proper flush



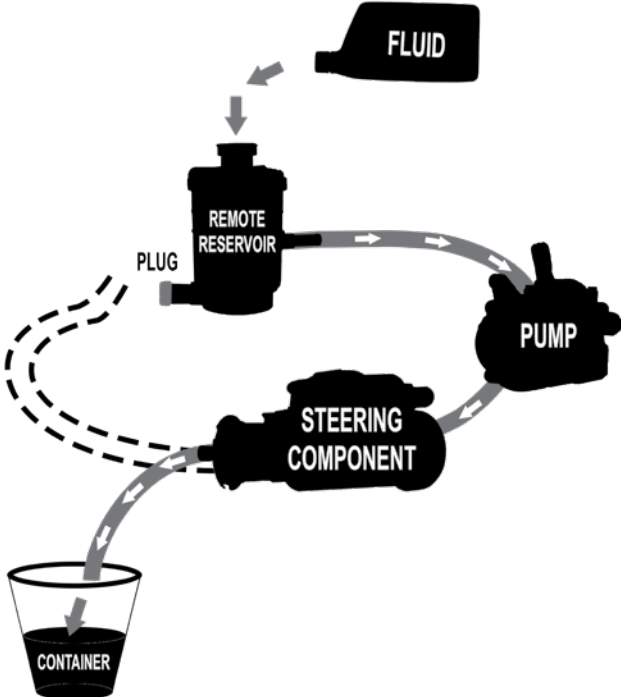
**4**  
**IN-LINE FILTER**  
Install filter on the return line to catch contamination.



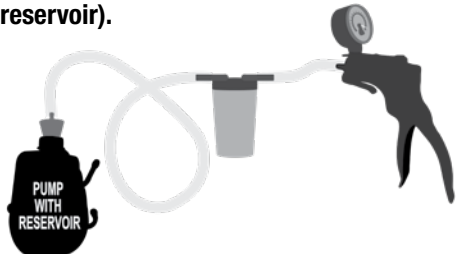
**5**  
**HOSES**  
Replace hoses at 5 years or 100K miles.



**3**  
**FLUSH**  
Flush 4 quarts of OE recommended fluid to clean out debris



**6**  
**VACUUM BLEED**  
Remove air to ensure proper function and to prime the steering pump (particularly if the pump has a remote reservoir).



Refer to the Power Steering System Vacuum Bleeding Procedure document for complete instructions.

This is a quick reference guide only. For more detailed information on system operation and servicing, always refer to a technical service manual or approved information system.



# POWER STEERING SYSTEM FLUSH PROCEDURE

## POWER STEERING SYSTEM FLUSH PROCEDURE

The power steering system must be flushed prior to installation of any replacement component. If you are installing a replacement rack, we strongly recommend that the pump and hoses be replaced as well.

**Follow the steps below to properly flush the system:**

1. Remove all pressure and return lines from pump. Flush the pump reservoir, return, and pressure lines by circulating new fluid through components until fluid runs clear. Be sure to use only the specific fluid recommended for the vehicle. If the vehicle is over 5 years old, we recommend that the hoses be replaced.
2. Reconnect pressure line to pump and steering component. Reconnect return line only to steering component.
3. Place the return line from power steering unit into a drain pan. Cap the return port on reservoir to prevent leakage.
4. Fill the power steering fluid reservoir with **NEW** power steering fluid recommended for the vehicle.
5. Disable the engine so it will not start when cranked. Refer to vehicle service manual for correct procedure.
6. Crank engine and continue to replenish fluid until the fluid coming from the return line has no air bubbles. Caution should be taken to ensure that the power steering pump is not operated without fluid. Note: Do not subject the vehicle's starter to prolonged cranking, as this may damage the starter.
7. Connect the return line to the power steering pump. Make sure the fluid in the pump reservoir is at proper operating level.
8. Vacuum bleed the system (engine off & front wheels off the ground) and refill reservoir to proper level if necessary.
9. Check for smooth assist, excessive noise, connections for leakage, and system for proper operation.

**Flushing 4-5 quarts** of fluid through the system will expel contaminants from the system.  
**Use OE recommended fluid type.**





# POWER STEERING SYSTEM VACUUM BLEED

## POWER STEERING SYSTEM VACUUM BLEED

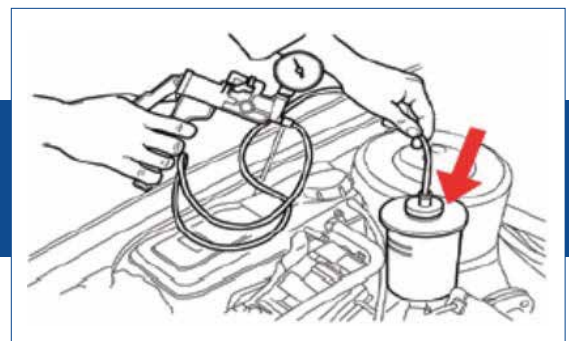
1. Verify that hoses are routed properly. Contact with the frame or engine may cause system noises.
2. Verify all hose connections are tight.
3. Remove the pump reservoir cap.
4. Fill the reservoir to the FULL COLD level.
5. Tightly insert rubber vacuum plug onto the pump reservoir.
6. Attach the vacuum pump to the rubber vacuum plug.
7. Apply a vacuum of 60-68kPa (18-20 in Hg) maximum for a minimum of 3 minutes.
8. Slowly release the vacuum.
9. Remove the vacuum pump and rubber plug.
10. Repeat steps #4 through #9 until fluid no longer drops.
11. Fill reservoir to the FULL COLD level\*. Reinstall the pump reservoir cap.
12. Start the engine. Allow engine to idle.
13. Turn of engine. Verify the fluid level.
14. Start the engine. Allow the engine to idle.

**CAUTION: Do not hold steering wheel at the lock to lock positions.**

15. Turn the wheel, lock to lock, three times.
16. Switch engine off. Verify fluid level. Check for any signs of air in the system.

If air is present repeat the procedure as necessary.

\* When adding or changing the fluid, be sure to use only the manufacturer's suggested fluid.



*Flushing the system reduces system  
contamination and increases service life!*