

Tech Tip

Hydraulic Pumps



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IMPORTANT: Prior to installation flush the steering system

Flush the steering system thoroughly

This application suffers from high wear rate that contaminates the oil. Failure to flush the system correctly and thoroughly before fitting a new pump will result in premature failure of the pump.

Failure due to contaminated oil is NOT covered by warranty.

- > Residual dirt negatively affects the performance of the power steering pump and valves
- > Abrasion causes blockages and leaks
- > Oxidation due to a combination of air and heat reduces the viscosity of the hydraulic fluid

Further Fault Diagnosis

It is not enough to just replace the defective part. By flushing the system also the cause of the failure can be found. Check the hydraulic oil for contamination. Plastic in the oil can be caused by the wear of the plastic sealing rings in the steering box. Replace the sealing rings, too, to avoid blockages in the system. Rubber in the oil indicates peeling of the hydraulic hoses. This can also clog the system. It is essential to also replace the hoses, too!

Always dispose of old hydraulic oil through a professional recycler!



Flushing the system and installing a power steering pump

Before you start, you need the following information:

- > Manufacturer specifications for the servo oil
- > Torque settings for installing the new pump and belt tension

Have available all the necessary tools and equipment that you need to carry out all the work steps professionally.

1. Deinstall the old power pump

2. Deinstall storage container

For pumps with separate storage containers: remove and clean them. DO NOT use colour thinners or brake cleaners! The solvents contained therein may damage the hydraulic seals! If necessary, renew the reservoir if there is a permanently installed screen in it.

Reinstall the cleaned storage container. DO NOT reconnect the return line of the steering gear. Seal the inlet of the storage container in such a way that it does not leak when it is flushed out.

3. Install the new pump

4. Connect oil hose

Connect the oil hose from the container to the pump. If disposable terminals were originally used for sealing, then new terminals must be used! Ensure airtight seating. Always use new sealing rings for pumps with threaded inlet.

5. Connect pump pressure line

Connect the pump pressure line to the steering gear. Make sure that the pipe is not twisted or clamped and follow the original pipe run. Reattach to the original fastening points. Replace O-rings or discs with new ones.

6. We strongly recommend installing a new belt!

Tighten it according to the manufacturer's specifications and check it with a belt tension meter. When using an automatic clamping device, it is nevertheless necessary to measure the tension as incorrect tension causes premature failure of the new pump and may have been responsible for the failure of the original pump.

Flushing the system

The following steps (flushing) should be performed by two people:

- 7. Lift both front wheels off the ground so that the wheels can rotate freely from left to right.
- 8. Place the return line of the steering gear in a container and collect flushing fluid.

9. Fill in hydraulic fluid

(Person 1) Slowly fill the container with oil. Air can bubble out. Have enough oil ready to keep the container filled when the engine is running.



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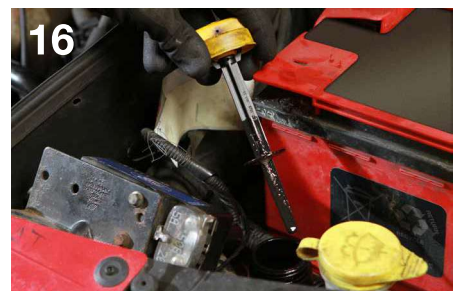
10. (Person 2) When the container is filled with oil, start the engine (idling only). Steer slightly from one side to the other, preventing complete deflection so that the pump does not build up the maximum pressure.
11. **This is the most important step to ensure that the new pump does not malfunction prematurely:**
When the oil runs clean into the container, run at least 2 to 3 more litres of oil through the system to make sure that all the old oil and the dirt is removed. (Remember that the container remains sufficiently filled at all times. The pump must NEVER draw in air because it will be damaged.)
12. Turn off the engine.



Installation

One person can now finish the work alone:

13. Connect the return line of the steering gear to the container inlet. Again, make sure that new terminals or sealing rings are used if necessary. Fill the container to the marked spot.
14. Switch on the engine. Run for 15 seconds without steering in idling mode. Then slowly steer to both sides without hitting the end stops. Turn off the engine.
15. **Watch filling level**
Check the oil level in the container again. Refill if necessary.
16. Perform a test drive. There may now be noises (high-pitched sound, whistling) that are caused by aerated liquid. These noises should stop when the oil is outgassed.
If they persist, check that all connections are properly sealed. Air can also be drawn into the system without any visible signs of leakage.
17. After the test drive, check the oil level and the tension of the belts and pulleys again.



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