

Fig. 1: Rack-and-pinion steering system

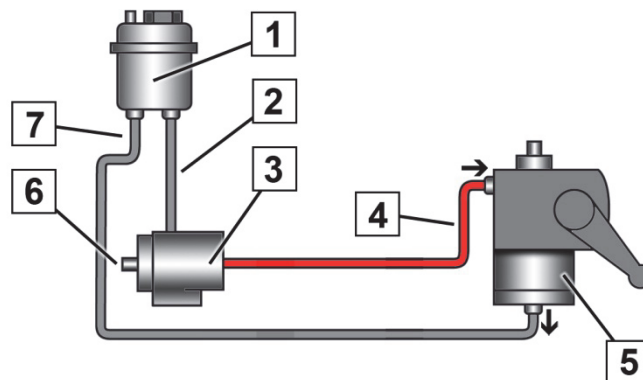


Fig. 2: Ball-and-nut steering system

- 1 Fluid reservoir with fine filter
- 2 Supply pipe
- 3 Steering pump
- 4 Pressure line (expandable hose)

- 5 Steering rack
- 6 Hub
- 7 Return pipe

DANGER

Faulty work can cause serious accidents!

During all work on the hydraulic steering system, extremely close attention must be paid to **cleanliness** – even the smallest contamination can cause the steering system to fail!

Self-locking nuts, self-locking screws, sealing parts and safety elements must be replaced.

WARNING

If a steering part is replaced due to an accident, the other parts of the steering system and the mechanical connecting parts must be **closely checked for damage**.

If there is any sign of damage, the following parts must be replaced:

- Axle and axle suspension
- Tyres, Wheels
- Mechanical connecting parts

Use type-specific, fresh hydraulic oil only. Follow the instructions issued by the vehicle manufacturer.

Dispose of used hydraulic oil in an appropriate manner.



Rinsing the steering system

- Switch off engine
 - Switch off ignition
 - Secure radio code
 - Disconnect negative pole of battery
- Ventilate steering pump (3) before installation
 - Fill up steering pump (3) at the supply pipe connection (2)
 - Rotate hub (6) manually until hydraulic oil escapes on the pressure side of the hydraulic pump (expanding hose connection) (4)
- Disconnect return pipe (7) from fluid reservoir (1)
 - Collect hydraulic oil and feed it into the used oil recycling
 - Connect the fluid reservoir (1) to the return borehole
 - Lay the open end of the return pipe (7) in a collecting tray
- Remove the fine filter from the fluid reservoir (1) (not possible with all vehicles)
- Clean fluid reservoir (1)
- Install new fine filter
- Fill steering system with fresh hydraulic oil via the fluid reservoir (1)
- Connect negative pole of battery
- Carry out measures to prevent engine from starting (observe manufacturer's instructions!)
- Rotate engine with starter speed and fill up with fresh hydraulic oil – at least 1 litre
- Remove return borehole seal on the fluid reservoir (1)
- Connect return hose (7)
- Ventilate steering system

Ventilating steering system

- Fill fluid reservoir (1) to its top mark with fresh hydraulic oil
- Raise vehicle until steering axles are relieved of pressure
- If the engine is at a standstill, rotate the steering wheel slowly twice from lock to lock
- Fill with fresh hydraulic oil up to top mark
- Start the engine and ensure the oil reservoir is always filled with oil to prevent suction of air
- Rotate steering wheel 10 to 15 times slowly from lock to lock
 - Do not hold the steering wheel at the end stop for more than 5 seconds
 - Do not apply great force at the limit stop. Otherwise the hydraulic oil may foam up
 - Repeat procedure until no more bubbles escape from the fluid reservoir (1)
- Fill fluid reservoir (1) to its top mark with fresh hydraulic oil and close
- Check the entire steering system for leaks
- Switch off engine
 - The level of the hydraulic oil must go up after the engine is switched off (observe manufacturer specifications)
 - Check how far over the top marking the oil level has risen
 - Repeat ventilation procedure if the oil level has risen up to reference value 5 mm (observe manufacturer specifications) over the top mark
- Check the hydraulic oil level during and after the test drive
- While the engine is running, fill the fluid reservoir up to the top marking (1) with fresh hydraulic oil



For the return of the old steering system, observe the package leaflet!
Properly recycle old hydraulic oil.



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