

Filling and bleeding

Note: The numbers in bold type point out to the drawing numbers on the folding page at the end of this manual.

Use the diagrams on page 42 for a hydraulic system with **separate dual non-return valve** and a pump, or pumps, without built-in non-return valves.

Use the diagrams on page 43 for a hydraulic system with a pump, or pumps, fitted with **built-in non-return valves**.

The hydraulic system should be filled at the highest point, i.e. the (top) steering pump or the extra oil expansion tank.

Remove the filler cap from the (top) steering pump or oil expansion tank.

Fit a hose pillar (G 3/8) with funnel to the filler opening.

Fill the steering head or expansion tank with hydraulic oil. With dual operation system, remove the filler cap from the **lower** steering head and refit as soon as oil comes out of the filler opening.

For the type of hydraulic oil, see 'Technical data'.

During filling, ensure that there is always sufficient oil in the steering head or expansion tank; if the steering pump sucks in air it will have to be bled again.

Fill the steering head or expansion tank slowly and carefully to prevent air being taken in with the oil.

- 1 Fit a length of hose, 8 mm. dia. (MTC30: 6 mm), to the air bleed nipples; open the nipple by turning the hexagonal nut to the left.

Steering System with 1 steering pump

- 2-1 Open air bleed nipple 'A'. Move the piston rod until the piston reaches the end cover 'A'.

Now **slowly** turn the control wheel on the steering pump in the direction shown. Stop turning as soon as the oil from bleed nipple 'A' contains no more air. Close the bleed nipple. **DO NOT** turn the control wheel in the opposite direction.

- 2-2 Open air bleed nipple 'B'. Turn the control wheel until the piston reaches the end cover 'B'.

- 2-3 Now **slowly** turn the control wheel in the direction shown. Stop turning as soon as the oil from bleed nipple 'B' contains no more air. Close the bleed nipple.

Fill the steering pump or oil expansion tank to the correct level.

Steering System with 2 steering pumps

- 3-1 Open air bleed nipple 'A'. Move the piston rod until the piston reaches the end cover 'A'.

First, **slowly** turn the control wheel on the **lower** steering pump in the direction shown. Stop turning as soon as oil from bleed nipple 'A' does not contain any more air. Now, **slowly** turn the **upper** steering pump control wheel in the direction indicated. Stop turning as soon as no air can be seen in the oil coming from nipple 'A'. Close the air bleed nipple. **DO NOT** then turn **either** of the control wheels in the opposite direction.

- 3-2 Open air bleed nipple 'B'. Turn the control wheel on the **lower** steering pump until the piston reaches the end cover 'B'.

- 3-3 First, **slowly** turn the control wheel on the **lower** steering pump in the direction shown. Stop turning as soon as oil from bleed nipple 'B' does not contain any more air. Now, **slowly** turn the **upper** steering pump control wheel in the direction indicated. Stop turning as soon as no air can be seen in the oil coming from nipple 'A'. Close the air bleed nipple.

Fill the top steering pump or oil expansion tank to the correct level.

The oil level should be checked often during the first few days after filling to check the level and top up if necessary. The oil level can fall as minute air bubbles escape.

Air in the steering pump can be recognised by a gurgling noise when the steering wheel is turned.

