

**Service and maintenance of disk brake systems
with master brake cylinder of type 3, 4, 6 and 7**

A) Topping up brake fluid in disk brake systems

- Loosen bleeding screw on brake yoke by one turn.
- Fill reservoir of master brake cylinder with brake fluid and pull manual brake lever repeatedly full travel until brake fluid starts to flow through the bleeding screw on the brake assembly.
- Tighten bleeding screw.
- Continue to operate the manual brake lever slowly until a distinct shortening in the travel of the brake lever is observed.

B) Bleeding the hydraulic disk brake system

- Pull manual brake lever.
- Slowly loosen and retighten bleeding screw before reaching full travel with the manual brake lever.
- Repeat bleeding process until the brake fluid flowing through the bleeding screw is completely free of bubbles.
- Fill brake fluid reservoir to about $\frac{3}{4}$ of total capacity and carefully replace closure cap.

Important note

Filling or bleeding the hydraulic system is much simpler from below, ie, from the brake assembly, using brake fluid gun **059020/30** or with vacuum filling and bleeding pump **059300**

C) General maintenance

1) Regular operating checks

- Regularly check the brake fluid level in the reservoir. The level must never drop more than 10 mm below the maximum fill level. For topping up use only brake fluid specified for the system. Do not open the brake fluid can until just before topping up.
- **Do not use old brake fluid for topping up!**

2) Annual checks

- Check wear on disk pads and **replace** if wear has exceeded **2.5 mm**.
- Check disk surfaces for deep grooves and if necessary install new genuine brake disks.
Disk thickness (new disc) = 5 mm, **wear limit = 4.3 mm**
Refer to Wheel Catalog for other disks
- Completely drain brake system, fill with new brake fluid and bleed brake system as described under A) and B).
- **Never use mineral oils or greases for DOT4 systems!**

D) Maintenance

1) Instructions for disassembling any part of the disk brake system

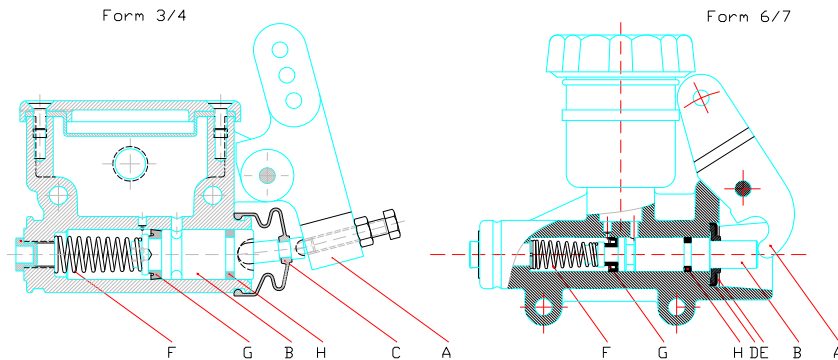
- Before dismantling any parts thoroughly clean the outside of the brake system with alcohol and a clean brush.
- Unscrew hydraulic pipes and carefully close off pipe ends with stoppers to prevent dirt from getting into the pipes.
- Clean all dismantled parts, including those made of rubber, with alcohol using a fine brush and let them dry in a dust-free area.
- **Using other cleaning agents such as petrol, diesel, petroleum or trichlorethylene is strictly prohibited, as these will irreparably damage the rubber parts!**
- Handle precision metal parts (alloys) carefully to avoid damage.
- Brush cleaned parts with brake fluid to inhibit corrosion.

- Grease sliding parts and rubber parts with "ATE" brake cylinder paste before assembly.

2) Description

- The master cylinders are die-cast alloy housings, comprising the reservoir that holds the brake fluid, the brake lever mechanism and the cylinder.
- The hydraulic piston has two seal seats, one at the front for holding the pressure collar, one at the back for holding the guide seal (since July 2012 a two-part seal is used as spare part). The top of the piston is milled to seat the return spring. On the rear there is a pan-shaped recess (type 3 and 4) into which the operating arm of the brake lever fits.
- The exact position of the piston is determined by the setting of the manual brake.
- To ensure that the hydraulic circuit is always supplied with brake fluid, the slack of the manual brake lever (travel between rest and working position) must be 3 to 4 degrees.
- The master cylinder must be mounted in such a way that is always above the brake yoke even under unfavourable operating conditions.

3) Overhauling and replacing parts of the master cylinder



If the master brake cylinder is not functioning properly, the seal rings must be replaced.

Replace the seal rings as follows:

- Drain brake fluid reservoir.
- Unscrew brake pipe and plug up hose ends.
- Dismantle operating lever A.
 - **Type 3 and 4**
Dismantle seal collar C with operating arm.
 - **Type 6 and 7**
Press in piston B completely to remove washer E from the inside of the bore.
- Pull out piston B by hand.
- Turn piston spring F clockwise to loosen it.
- Remove the old seal rings by hand. Do not use metal tools and take care not to damage the piston.
- Clean all parts with alcohol and check them for damage caused by wear or by improper usage or handling.
- Finally brush parts with brake fluid.
- Install new seal rings G and H, see sketch for position. For seal G use mounting tool included in the kit. Since July 2012 seal ring H is a two-part seal. First position the o-ring in the groove, second slide the seal onto the o-ring
- Grease sliding parts and rubber parts with "ATE" brake cylinder paste before assembly.
 - **Type 3 and 4**
Install piston, taking special care of cup leather.
 - **Type 6 and 7**
Place seal D and washer E on 10 mm diameter of piston and push in together. Press washer E into place with pipe tool (25Ø x 2.5 wall x 60 long).