

## Service Operations

## Bleeding Hydraulic Brake System

## Note:

It is necessary to bleed the entire hydraulic brake system whenever any hydraulic brake connection had to be disconnected for any reason (an exception to the above is the hydraulic fluid line connecting the fluid reservoir with brake master cylinder).

The brake system should be bled also when the brake pedal travel is too long or the braking action uneven.

If the hydraulic brake system has been completely drained for any reason (brake overhaul, etc.), it may have to be bled for the second time subsequent to a short test drive.

The pedal free travel will remain constant due to the automatic brake self-adjustment, providing that the brake system has been properly bled; pedal travel to the point of brake actuation is about 30 to 50 % of the total brake pedal travel. The pedal travel normally will be somewhat greater following the installation of new pads and until these are run in.

## Caution:

The hydraulic brake fluid will run out of the fluid reservoir, through the by-pass port in the brake master cylinder, when any hydraulic connection is detached. This may be avoided by propping the brake pedal in a slightly depressed position, thus bringing the piston cup past the compensating (by-pass) port.

## Bleeding Brakes without Filling and Bleeding Devices

Two persons are required for this operation. The procedure is always initiated at the farthest point from the brake master cylinder in the following order (applies to cars with left-hand drive):

1. Left rear wheel, outer bleeder valve, inner bleeder valve.
2. Right rear wheel, outer bleeder valve, inner bleeder valve.
3. Right front wheel, outer bleeder valve, inner bleeder valve.
4. Left front wheel, outer bleeder valve, inner bleeder valve.

## Note:

When the system has been drained, it must first be filled. Open bleeder valve by one-half turn, depress brake pedal, close bleeder valve, and release brake pedal. Repeat the above until brake fluid begins to come out through the bleeder hose, continuing on all bleeder valves in the above given sequence and performing the actual bleeding operation only after the primary filling has been accomplished.

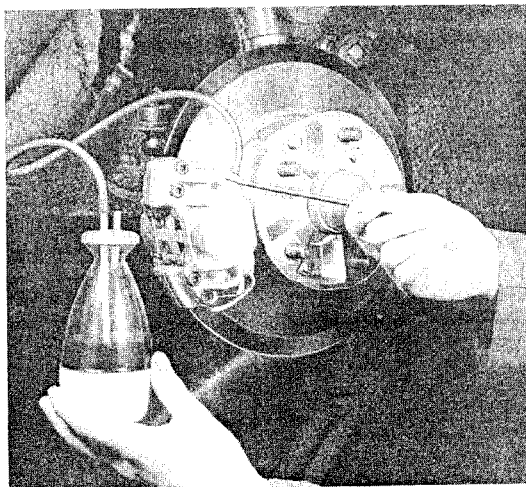


Fig. 6

## Bleeding the Brake System

1. Remove dust cap from bleeder valve and attach bleeder hose.
2. Place the free end of the bleeder hose into a glass container partly filled with brake fluid so that hose end is submerged.
3. Quickly pump the brake pedal several times until pressure can be felt. Holding the pedal down, open the bleeder valve by one-half turn and push the pedal all the way down. Do not release pedal pressure until the bleeder valve has been closed. This procedure is to be repeated until there are no more air bubbles in the brake fluid coming out of the bleeder hose.
4. Remove bleeder hose and replace dust cap.
5. Repeat the above procedure on the remaining bleeder valves by following the above given sequence. It should be ensured that the brake fluid reservoir does not run dry since this would allow more air to enter the system.

**Caution:** Hydraulic brake fluid may damage painted surfaces.

Hydraulic brake fluid which has been pumped out of the brake system may not be reused.

6. Check for proper bleeding and absence of leaks by applying pressure to the brake pedal.
7. Replenish hydraulic brake fluid in the reservoir,

The hydraulic fluid level in the reservoir must be checked at regular intervals and replenished if necessary. Due to the relatively large cylinder cross-section in the brake calipers, the brake fluid level in the reservoir will decrease much faster as a result of brake pad wear than is the case with drum-type brakes.

Use only original ATE-BLAU (blue) hydraulic brake fluid.

## Replacing Brake Pads

### General

Severity of use as well as road conditions are some of the wear factors for brake pads. Increased wear may be anticipated especially when driving over wet, dirty roads (winter-serviced), and as a result of hard use (generation of high temperatures).

The brake pad thickness should be visually checked during all service operations.

A clearance must exist between the cross-spring and the brake pad segment (see Fig. 7). The permissible wear tolerance is reached when the brake pad segment touches the cross-spring or if its thickness is reduced to 2 mm (5/64 or .079 in.).

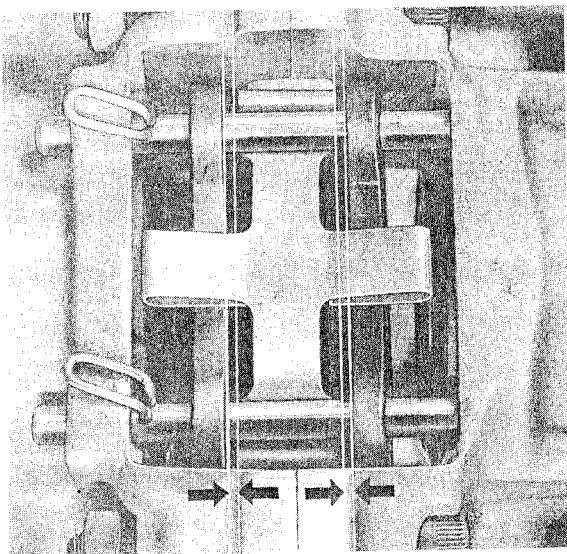


Fig. 7

The thickness of the brake pad segment at installation is about 15 mm (19/32 or .591 in.). Brake pad segments for the front and rear wheels differ in size and are, therefore, not interchangeable.

Two types of brake pads are available, that is, one type for normal use and the other for competition driving. The pads for competition use will wear slower but require higher pedal pressures. The brake pads are identified as to type by inscription on the pad plate. The designation "FE 4" is for competition brake pads and "TE 5" for normal brake pads.

The competition brake pads should be exchanged for normal brake pads at the beginning of the cold season. Only brake pads recommended by the Porsche Company may be utilized.

Same type of brake pads must be used on the front or the rear axle. Even though the brake pads can be replaced individually, we recommend that at least all brake pads of one particular axle are replaced at any one time.

### Note:

Used brake pads must be marked prior to removal from the caliper to ensure proper reinstallation (in the original position). Used brake pads may not be interchanged or installed in different brake calipers.