

# Removal and Installation of Front Brake Shoes

Job No.

42 — 8

## Removal

1. Remove the hub cap, loosen the wheel nuts, and jack up the car. Then remove the wheel and pull off the brake drum by means of the three puller screws 191 589 00 35.
  2. Detach the two return springs by means of brake spring pliers 000 589 01 37.
- Note:** Put a suitable pad under the brake spring pliers to prevent damage to the brake lining.
3. Remove the cotter pin (3) of the guide pin (14) at the back of the brake anchor plate. Then pull out the guide pin (14) together with the pressure spring (13) and the washer (12) (Fig. 42 — 8/1).

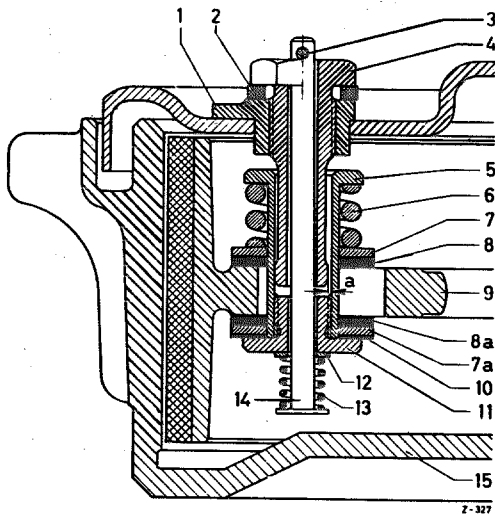


Fig. 42 — 8/1

- |                                |                      |
|--------------------------------|----------------------|
| 1 Collar bushing               | 9 Brake shoe         |
| 2 Lock washer                  | 10 Washer            |
| 3 Cotter pin 3 x 15            | 11 Tensioning screw  |
| 4 Pin                          | 12 Washer            |
| 5 Adjusting sleeve             | 13 Pressure spring   |
| 6 Pressure spring              | 14 Guide pin         |
| 7 and 7a Thrust washer (steel) | 15 Brake drum        |
| 8 and 8a Friction washer       | a = 0.8 mm clearance |
4. Unscrew the bolt (4) of the automatic adjustment at the back of the brake anchor plate and remove together with lock washer (2).
  5. Loosen the hexagon screw (11) from the anchor pin. Then remove the screw (11) to-

gether with lock washer (12), washer (10), washer (9), and shim (13) (see Fig. 42 — 8/4).

6. Remove the brake shoe.
7. Follow the same procedure in removing the second brake shoe.
8. Remove the retaining pins from the brake wheel cylinders.

**Note:** To prevent the piston and the cups from dropping out of the brake wheel cylinders, it is advisable to install a Piston Clamp 120 589 03 31 (see Fig. 42 — 7/3).

9. Clean brake shoes and brake anchor plate thoroughly with compressed air.

## Inspection

10. Check the brake linings. If the linings are less than approx. 1.5 mm thick replace the brake shoes.

## Note:

a) The brake linings are bonded to the brake shoes. As a replacement part the complete brake shoe together with bonded lining is supplied by way of exchange. If outside Germany difficulties are experienced in getting these replacement assemblies new linings can be supplied for riveting to the brake shoes (see Job No. 42 — 11).

b) Oily or greasy brake linings should be thoroughly cleaned with gasoline; if oil or grease-soaked they should be replaced.

If this is the case also check the amount of grease in the front wheel hub, and if necessary, put new seals on the wheel hub (see Job No. 33 — 4, paragraphs 8 — 12, and 27 — 37).

11. If necessary disassemble the automatic adjustment (see Job No. 42 — 10).
12. Check the rear face of the brake shoe. All traces of cement must be removed and the brake lining must not project beyond the

brake shoe, since otherwise perfect contact between the brake shoe and the contact plate of the brake anchor plate is impossible and the brake shoe may stick. If necessary dress the rear face of the brake shoe on a surface plate.

13. Check all pistons of the brake wheel cylinders for freedom of movement. When pressed in with the thumb, the pistons should move easily; if not, they must be removed and freed up.
14. Check the anchor pin in the brake anchor plate. The pin must be perpendicular to the brake anchor plate and the wheel hub. The maximum admissible deviation of the brake shoe is  $a = 0.5 \text{ mm}$  (see Fig. 42—8/2).

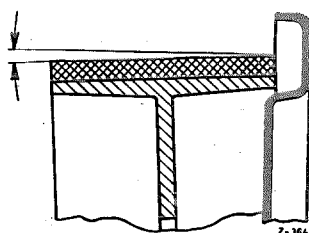


Fig. 42—8/2

#### Dimensions and Tolerances of Anchor Pin and Brake Shoe Suspension Bore

Anchor pin $\phi$ in mm	Bore $\phi$ in mm	Clearance between anchor pin and bore in mm
$\frac{15.968}{15.941}$	$\frac{16.000}{16.027}$	0.032—0.086

15. Check to see that the contact plates are firmly fixed to the brake anchor plate.

#### Installation

16. Apply some marking ink or chalk to the rear face of the brake shoes or to the contact plates.
17. Install the brake shoe on the anchor pin and check contact of the brake shoe and the contact plate (Fig. 42—8/3).

The contact plate must have overall contact with the brake shoe.

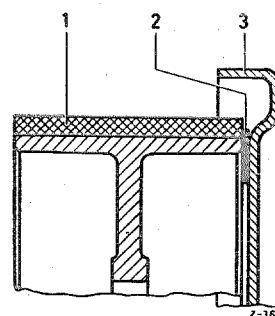


Fig. 42—8/3

#### Front wheel brake left

- 1 Brake shoe
- 2 Contact plate
- 3 Brake anchor plate

**Note:** This check can also be made with a feeler gage. If necessary, the contact plates must be bent as required.

18. Remove the brake shoe and lightly grease both the anchor pin and the contact plate with a high-viscosity grease (high melting point grease).
19. Press the retaining pin into the brake wheel cylinder and install the brake shoe. Then slide the washer (9) and the shim (13) onto the anchor pin. Then screw in the hexagon screw (11) together with the lock

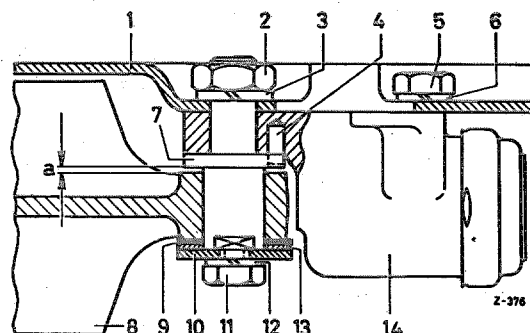


Fig. 42—8/4

#### Front Wheel Brake Shoe Suspension

- 1 Brake anchor plate
- 2 Hexagon nut
- 3 Lock washer
- 4 Notched pin
- 5 Hexagon screw
- 6 Lock washer
- 7 Anchor pin
- 8 Brake shoe
- 9 Washer
- 10 Washer
- 11 Hexagon screw
- 12 Lock washer
- 13 Shim
- 14 Brake wheel cylinder
- a Clearance between anchor pin collar and brake shoe eye

washer and the washer (10) and tighten (Fig. 42 — 8/4).

**Note:** There must be no clearance between the washer (10) and the brake shoe eye. For this reason install a shim (13) of adequate thickness between the washer (10) and the washer (9). The shims are available in the following thicknesses

0.5 mm, 0.75 mm, and 0.88 mm.

Use care in selecting the correct shim because the shim must not exert any pressure on the brake shoe eye. However, between the rear face of the brake shoe eye and the collar of the anchor pin (7) there must be a minimum clearance of  $a = 0.1$  mm (Fig. 42 — 8/4).

20. Screw in the bolt (4) of the automatic adjustment together with the lock washer from the rear of the brake anchor plate and tighten (see Fig. 42 — 8/1).

21. Attach the return springs.

**Note:** Put a suitable pad under the brake spring pliers to prevent damage to the brake lining. The free length of the return spring is 85.5 mm, the wire gage 2.5 mm.

22. Use a sturdy screw driver to press the brake shoes outward and inward several times against the resistance of the automatic adjustment (see Fig. 42 — 8/5).

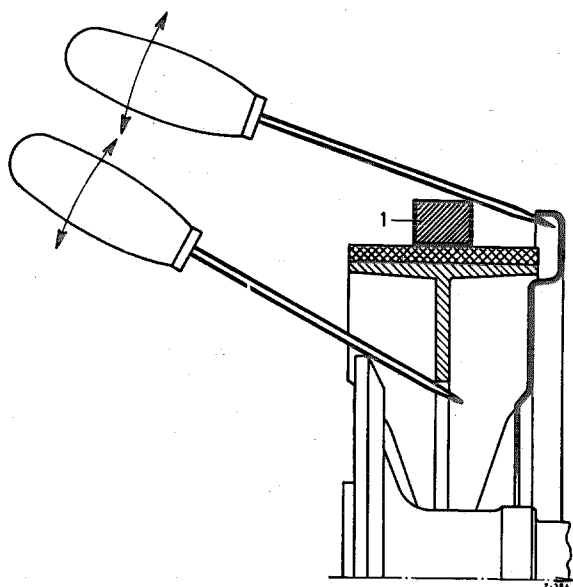


Fig. 42 — 8/5

1 Support for screw driver

The brake shoes must remain stationary in any position, even when they are forced outward as far as they will go. To check, lightly tap the side of the brake shoes. **On no account must the return spring overcome the frictional resistance of the automatic adjustment and pull the brake shoes inward.** If this should be the case the automatic adjustment must be disassembled (see Job No. 42 — 10).

23. Check the clearance "a" between the adjusting sleeve (5) and the pin (4) (see Fig. 42 — 8/1). As a rule it is sufficient to make this check with a large screw driver. Use the screw driver to slightly press the brake shoe toward the outside — just overcoming the force of the return spring — and release. You should be able to hear the click produced by the bolt (4) striking against the adjusting sleeve (5) (see Fig. 42 — 8/1).

An accurate check requires a measurement of the clearance — preferably by means of a dial gage — at the points of the brake lining indicated by arrows (Fig. 42 — 8/6).

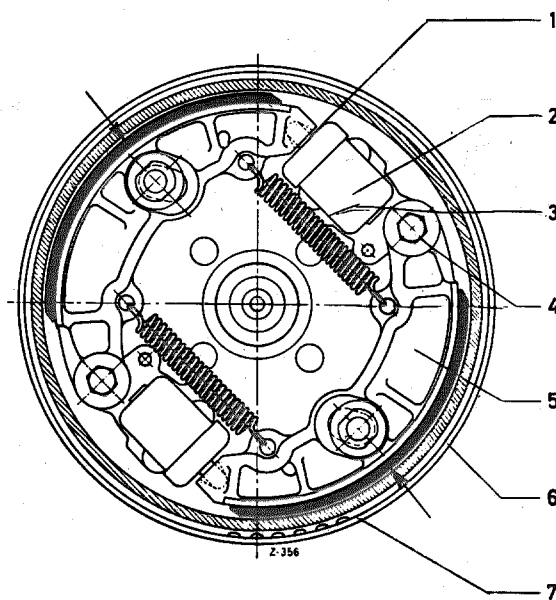


Fig. 42 — 8/6

1 Retaining pin  
2 Brake wheel cylinder  
3 Return spring  
4 Hexagon screw

5 Brake shoe  
6 Brake drum  
7 Brake anchor plate

At the point indicated by the arrow the clearance must be at least 0.6 mm for each brake shoe.

**Note:** A clearance of  $a = 0.8$  mm exists only in the longitudinal direction of the slot because the brake shoe pivots on the anchor pin. See the broken-line arrow for the actual measuring point.

To simplify measurement we measure the clearance at the point marked with an arrow, perpendicular to the brake lining, and therefore the clearance at this point is only  $b = 0.6$  mm (Fig. 42 — 8/7).

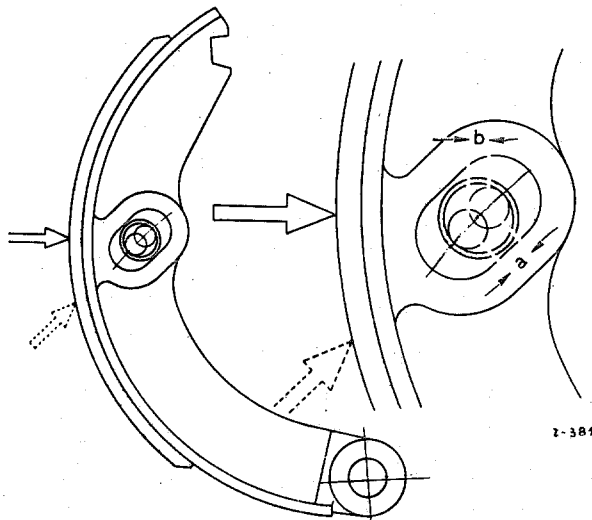


Fig. 42 — 8/7

If the clearance is too small the reason will probably be that the bolt (4) of the automatic adjustment is bent (see Fig. 42 — 8/1). As a result the bolt is in an eccentric position in relation to the adjusting sleeve which as a consequence makes premature contact (Fig. 42 — 8/8).

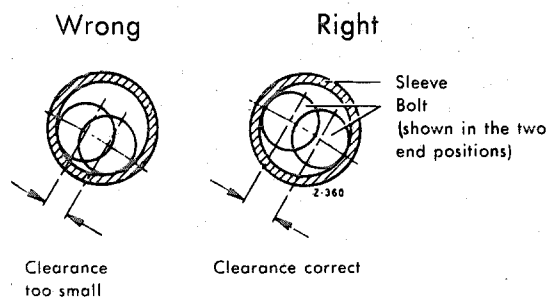


Fig. 42 — 8/8

Bent bolts should be replaced.

**Note:** It is imperative that the clearance should be absolutely accurate, since otherwise the brake may not release if heated beyond a certain point.

24. Install the guide pin (14) together with the pressure spring (13) and the washer (12) from the front side into the tensioning screw and the bolt (4), and cotter the guide pin at the back of the brake anchor plate. The pressure spring (13) must not be bunched solid (see Fig. 42 — 8/1).

**Note:** The pressure spring (13) serves to press the brake shoe against the contact plate of the brake anchor plate. However, the bearing pressure must not be excessive since otherwise the brake shoe will jam (see Fig. 42 — 8/1).

**On recent models the washer (12) is no longer fitted as shown in the picture, but between the cotter pin (3) and the bolt (4). This change has been made to avoid possible rubbing of the guide pin (14) against the brake drum even under the most unfavorable circumstances.**

25. **Press the brake shoes right home.** Check again to see that the retaining pins are properly seated.
26. Install the brake drum and the wheel.  
Jack the car down.
27. Before starting the car, depress the brake pedal several times to make sure that the brake shoes adjust themselves and make contact with the brake drums.

**Note: Never omit this procedure; there can be no brake action until the brake shoes have adjusted themselves.**

If during removal and installation the piston of the brake wheel cylinder has been pressed out of its bore the brake system must be bled (see Job No. 42 — 1).