

Removal and Installation of ATE Power Brake

Job No.

42-14

A. General

Models 190 SL, 220 a, 220 S, and 220 SE have ATE Power Brakes as standard equipment with the exception of a few older cars of Models 190 SL and 220 a. Models 180 a, 180 b, and 219 can be equipped with a power brake as an optional extra.

On Models 180 a, 180 b, 219 and on older cars of Models 190 SL and 220 a the ATE Power Brake can also be installed subsequently. The power brake differs for the individual models (see table).

| Model | Designation of power brake | Remarks |
|-----------------------------------|----------------------------|---|
| 180 a, 180 b 190, 190 b 219 | ATE T 50 | Installed as optional equipment |
| 190 SL | ATE T 50 | Up to Chassis End No. 65 01956 installed as optional extra, as from Chassis End No. 65 01957 installed as standard equipment. |
| 220 a | ATE T 50 | Up to Chassis End No. 55 12999 installed as optional extra, as from Chassis End No. 55 13000 installed as standard equipment. |
| 220 S | ATE T 50 | Installed as standard equipment up to Chassis End No. 75 11820 |
| | ATE T 50/12 | Installed as standard equipment as from Chassis End No. 75 11821 |
| 220 SE | ATE T 50/12 | Installed as standard equipment |

The two ATE Power Brakes T 50 and T 50/12 differ in length and diameter of the cylinders and pistons (see table).

| Power brake model | Overall length mm | Vacuum power cylinder | | Hydraulic slave cylinder | | Control valve piston | |
|-------------------|-------------------|-----------------------|-----------|--------------------------|-----------|----------------------|-----------|
| | | in. ϕ | mm ϕ | in. ϕ | mm ϕ | in. ϕ | mm ϕ |
| ATE T 50 | 222 | 6 $\frac{3}{4}$ | 171.5 | 1 | 25.4 | $\frac{5}{16}$ | 7.94 |
| ATE T 50/12 | 292 | 6 $\frac{3}{4}$ | 171.5 | $1\frac{1}{16}$ | 17.46 | $\frac{3}{8}$ | 9.52 |

B. Vacuum Cup in ATE Power Brake

Previous models of ATE Power Brakes T 50 and T 50/12 were equipped with a leather vacuum cup. On recent power brakes plastic vacuum cups have been installed. **For these plastic cups oil lubrication is no longer required.** For this reason power brakes with plastic cups are not equipped with a screw plug on the vacuum power cylinder.

During a transition period a certain number of power brakes with plastic cups had the screw plugs screwed into the vacuum power cylinder from the inside.

C. Testing of ATE Power Brakes

The test values for the individual power brakes are listed in the table below.

| Power Brake | Beginning of braking power assistance at control pressure kg/cm ² | Vacuum kg/cm ² | Hydraulic control pressure at brake master cylinder kg/cm ² | Hydraulic servo pressure at power brake kg/cm ² | Braking power multiplication factor |
|-------------|--|---------------------------|--|--|-------------------------------------|
| ATE T 50 | 3.5 | 0.4 | 25 | 47 | approx. 2 |
| | | 0.6 | 29 | 55 | |
| | | 0.8 | 33 | 63 | |
| ATE T 50/12 | 3.0 | 0.4 | 13.4 | 41.5 | approx. 3.5 |
| | | 0.8 | 18.8 | 64.5 | |
| | | 0.8 | 24 | 87 | |

The various tests should be made in accordance with the details given in the ATE Power Brake T 50 servicing instructions published by the firm of Teves.

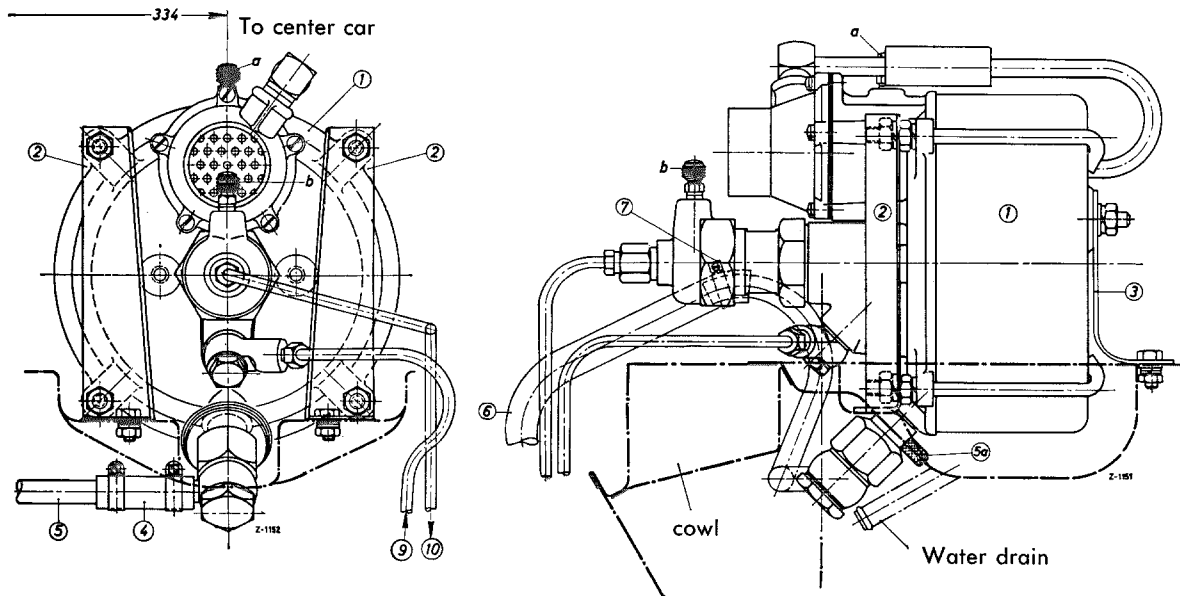
Power brakes without a screw plug on the vacuum power cylinder have a screw plug for connecting a vacuum tester on the control valve tube connection on the front part of the power brake.

D. Removal and Installation

I. Models 180 a, 180 b, 219, 220 a, 220 S, and 220 SE

The arrangement and the removal and installation procedures for the ATE Power Brake are the same as on Model 190.

II. Model 190 SL



- 1 ATE Power Brake
- 2 Front bracket
- 3 Rear bracket
- 4 Connecting hose
- 5 Vacuum line
- 5a Rubber grommet
- 6 Connecting hose with supporting spring

- 7 Hose clip
- 9 Brake line between brake master cylinder and power brake
- 10 Brake line between power brake and distributor union
- a Upper bleed screw
- b Lower bleed screw

Removal:

1. Unscrew the hollow screw of the annular nipple for the vacuum line (5) working from the interior of the car. Detach the hose clip at the annular nipple and remove the nipple from the connecting hose (4) (Fig. 42-14/1).
2. Unscrew the check valve from the power brake, paying attention to the copper sealing ring.
3. Disconnect the cables of the stop light switch at the annular nipple and disconnect the brake line (10) (Fig. 42-14/1).

Note: On the 1st version the stop light switch is screwed into the brake master cylinder and not into the annular nipple of the power brake, so that it is not necessary to disconnect the cables.

4. Disconnect the brake line (9) on the power brake. Unscrew the hexagon nuts fixing the power brake to the front brackets (2) from the interior of the car and remove together with lock washers and washers (see Fig. 42-14/1).
5. Unscrew the hexagon nut, attaching the power brake to the rear bracket (3) and remove together with lock washer and washer.

6. Remove the power brake upward and unscrew the two front brackets (2) from the power brake (see Fig. 42-14/1).

Installation:

7. Screw the two front brackets to the power brake.
8. Install the power brake and screw in the check valve with a new copper sealing ring.
9. Tighten the nuts on the two hexagon screws on the front brackets and the hexagon nut on the rear bracket after having made sure that all lock washers and washers have been installed.

10. Tighten the check valve, making sure that the rubber grommet is properly seated.

Slide the annular nipple onto the connecting hose of the vacuum line and screw in and tighten the hollow screw, using new copper sealing rings. Tighten the hose clip on the connecting hose.

Note: When tightening the hollow screw hold the check valve steady with an SW 32 wrench.

11. Connect the two brake lines and connect the cables to the stop light switch.
12. Bleed the brake system as usual and check the hydraulic part and the vacuum system for leaks.