

Tightening Torque	Nm	(kpm)
Hex. bolts shift valve housing top and bottom	8	(0.8)

## Special Tool

Assembly fixture	112 589 09 59 00
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## General Notes

Observe particular cleanliness when working on shift valve housing. The work should be done as much as

possible on a plastic surface. Do not use fuzzy cloth; leather would be best. Upon disassembly, wash all parts and blow out with compressed air.

## 27.2 Disassembly and Reassembly of Shift Valve Housing

### Disassembly

**Caution!** The shift valve housing has 12 ball valves, 10 of 5.5 mm dia. and 2 of 7 mm dia. Be sure that the balls are not rolling off during disassembly.

**1** Loosen hex. bolts from bottom and screw out except for two opposite bolts (Fig. 1).

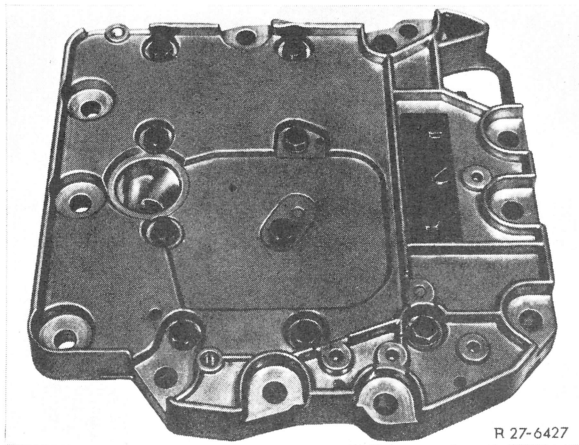


Fig. 1

**2** Position shift valve housing on assembly fixture (Fig. 2).

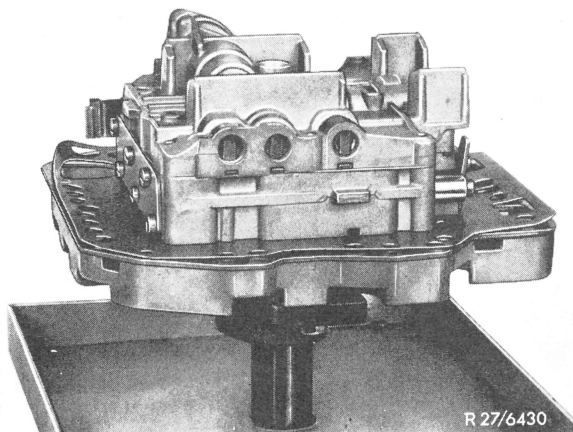


Fig. 2

**3** Unscrew the two remaining hex. bolts from bottom and lift top (B) off together with intermediate plate (E) (Fig. 3).

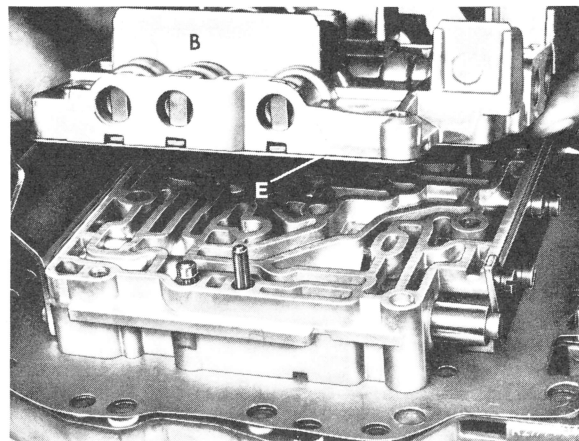


Fig. 3

B Top

E Intermediate plate

**4** Take off intermediate plate (E) and remove filter (50) together with spring (Fig. 3 and 4).

**5** Remove two balls of 7 mm dia. (27 and 31) and one ball of 5.5 mm dia. (34) including spring from pressure relief valve modulating pressure, as well as filter (50) together with spring from top (B) (Fig. 4).

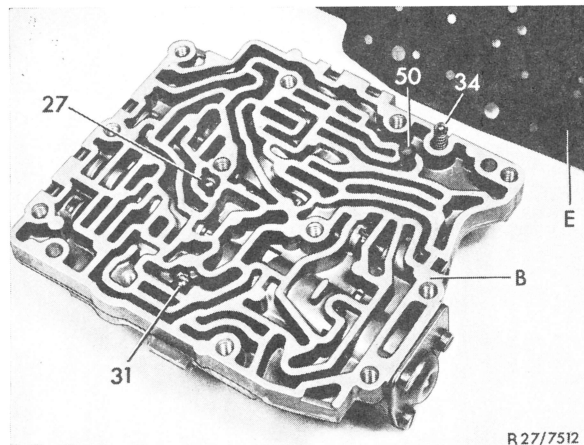


Fig. 4

B Top

E Intermediate plate

27 Ball one-way throttle valve K 1

31 Ball one-way throttle valve K 2

34 Ball pressure relief valve modulating pressure with spring

50 Filter with spring

**6** Lift bottom from assembly fixture and remove five balls of 5.5 mm dia. (10, 17, 22, 26 and 52) by tilting (Fig. 11).

**7** Remove plastic pin (53), piston brake shift (15) and check valve primary pump including spring. Remove filler piece (26a) and shift pin 3-4 (11) together with springs (Fig. 5).

**8** Remove the two balls of 5.5 mm dia. (16 and 51) (Fig. 5).

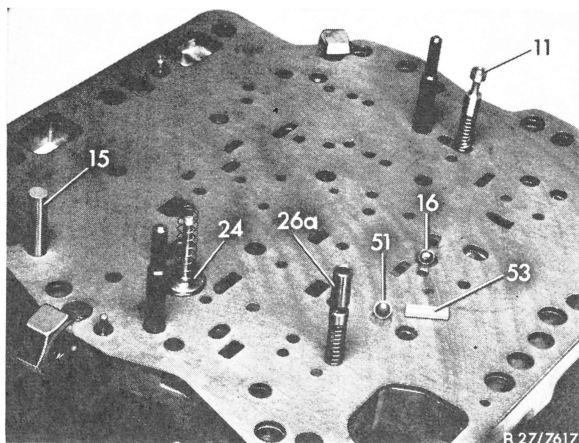


Fig. 5

11 Shift pin 3-4 with spring    26a Filler piece  
15 Piston brake shift        51 Ball 5.5 mm dia.  
16 Ball 5.5 mm dia.        53 Plastic pin  
24 Check valve primary pump with spring

**9** Remove gasket (D) and intermediate plate (F) (Fig. 7).

**10** Remove lube pressure valve (37), one-way throttle valve B 3 (38) and one-way throttle valve releasing end B 2 (41) from oil distributing plate (C) (Fig. 6).

**11** Take oil distributing plate from assembly fixture and remove the two balls of 5.5 mm dia. (39, 40) by tilting (Fig. 6).

### Assembly

**12** Place oil distributing plate (C) on assembly fixture (Fig. 6).

**13** Insert lube pressure valve (37), one-way throttle valve B 3 (38) and one-way throttle valve releasing end B 2 (41) into their seat in oil distributing plate (Fig. 6).

**Caution!** The one-way throttle valve releasing end B 2 (41) has varying throttle diameters, W 3 A 040 1.5 mm dia. and W 3 B 050 1.0 mm dia. The throttle valve of 1.0 mm dia. is copperplated for identification.

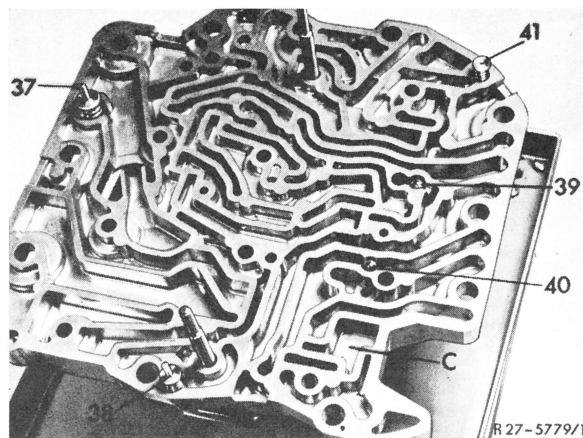


Fig. 6

C Oil distributing plate    39 Ball 5.5 mm dia.  
37 Lube pressure valve    40 Ball 5.5 mm dia.  
38 One-way throttle valve B 3    41 One-way throttle valve B 2

**14** Place ball of 5.5 mm dia. (39) and ball of 5.5 mm dia. (40) into their countersunk seats (Fig. 6).

**15** Place intermediate plate (F) with gasket (D) on oil distributing plate and clamp down with holding clips (Fig. 7).

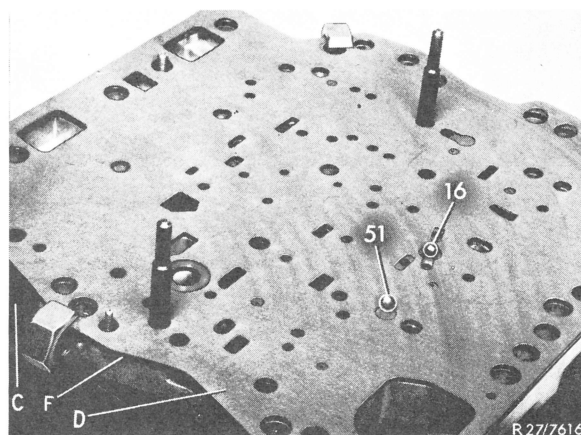


Fig. 7

C Oil distributing plate    16 Ball 5.5 mm dia.  
D Gasket    51 Ball 5.5 mm dia.  
F Intermediate plate

**Caution!** Upon clamping of gasket and intermediate plate, check spring-loaded valve for easy operation by pushing down. Valve discs should not be clamped in between oil distributor plate and intermediate plate.

**16** Place two balls of 5.5 mm dia. (16 and 51) on intermediate plate (F) (Fig. 7).

## 27.2 Disassembly and Reassembly of Shift Valve Housing

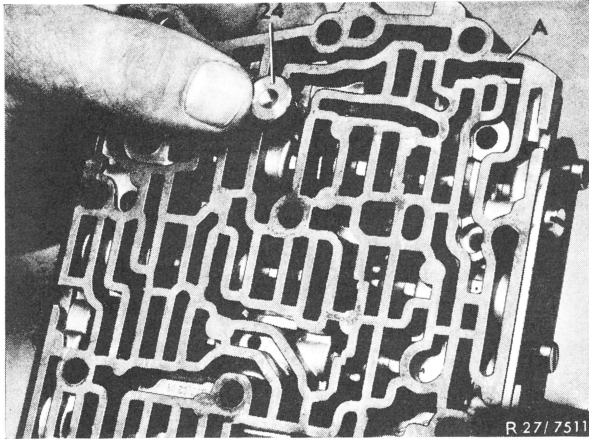


Fig. 8

A Bottom  
24 Check valve primary pump with spring

**17** Insert check valve primary pump (24) with spring from below into shift valve housing bottom (Fig. 8).

**18** Cant valve stem projecting at top by applying lateral pressure. Place bottom (A) on oil distributing plate and release valve stem; valve should audibly knock against intermediate plate (Fig. 9).

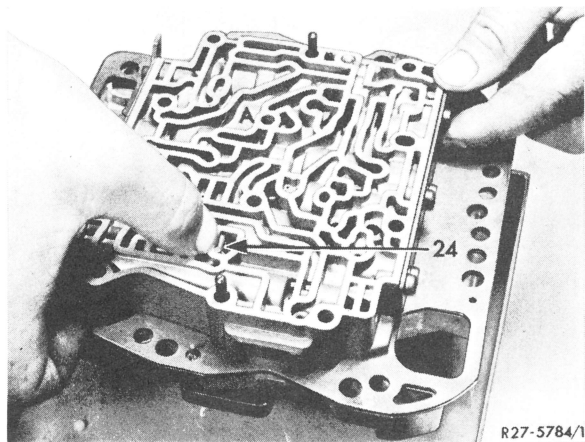


Fig. 9

A Bottom  
24 Check valve primary pump

**19** Insert piston brake shift 4-3 (15), as well as filler piece (26a), shift valve releasing end B 2 (11) with spring and plastic pin (53) (Fig. 10).

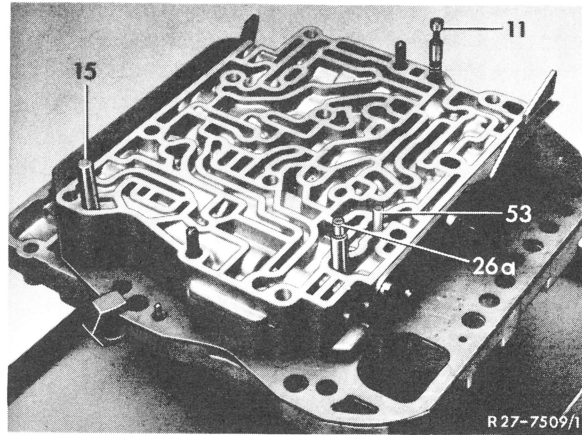


Fig. 10

11 Shift valve releasing end B 2  
15 Piston brake shift 4-3  
26a Filler piece  
53 Plastic pin

**20** Place five balls of 5.5 mm dia. (10, 17, 22, 26 and 51) into countersunk seats (Fig. 11).

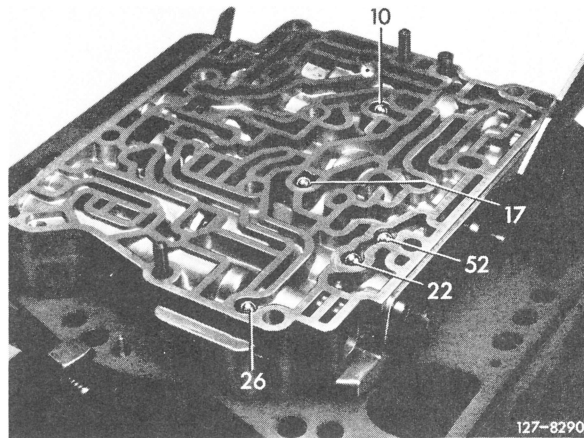


Fig. 11

10, 17, 22, 26 and 52 balls of 5.5 mm dia.

**Caution!** The two compression springs of releasing valve B 2 (11) and filter (50) are similar. The pressure of compression spring of modulating pressure valve (34) is heavier.

Spring of item 11 = 0.45 mm wire dia.  
Spring of item 34 = 0.6 mm wire dia.  
Spring of item 50 = 0.45 mm wire dia.

## Top

**21** Insert ball of 7 mm dia. (27) of one-way throttle valve K 1, ball of 7 mm dia. (31) of one-way throttle valve K 2, ball of 5.5 mm dia. (34) with spring as well as filter (50) with spring into top (B) (Fig. 12).

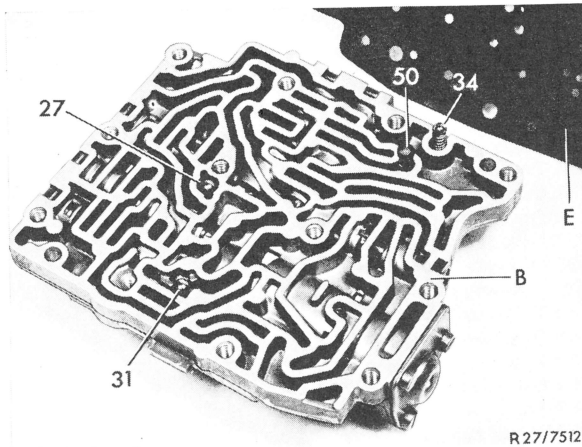


Fig. 12

27 Ball one-way throttle valve K 1  
31 Ball one-way throttle valve K 2  
34 Ball pressure relief valve modulating pressure with spring  
50 Filter with spring

**22** Place intermediate plate (E) on top (B), watching out for correct seat of spring-loaded ball (34) and filter (50) (Fig. 13).

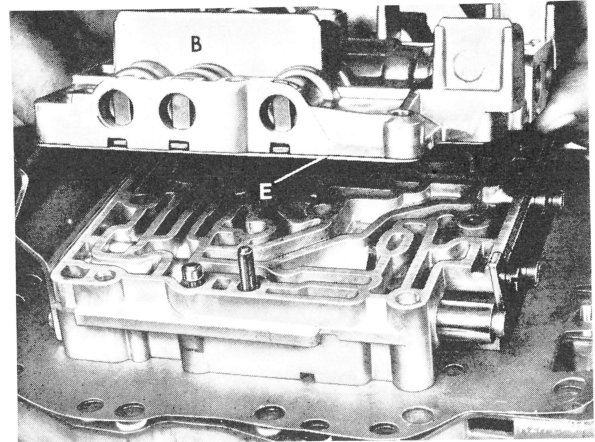


Fig. 13

B Top E Intermediate plate

**23** Hold intermediate plate (E) and top (B) tightly together, turn around and place on bottom.

**24** Insert two opposite bolts and tighten slightly.

**25** Remove shift valve housing from assembly fixture, insert remaining bolts and tighten to 8 Nm (0.8 kpm) from inside out (Fig. 1).

**Caution!** Two hex. bolts are longer; they are used to screw cover plate down.

# 27.2 Disassembly and Reassembly of Shift Valve Housing

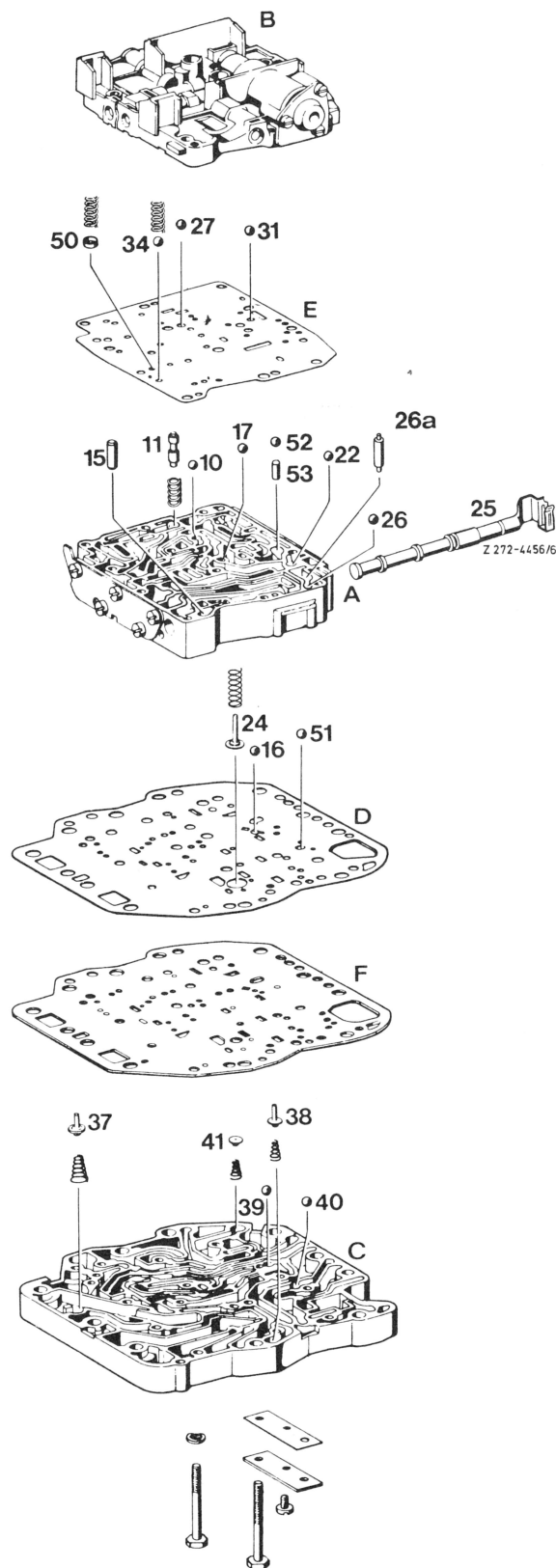


Fig. 14

- A Shift valve housing bottom
- B Shift valve housing top
- C Oil distributing plate
- D Gasket
- E Small intermediate plate
- F Large intermediate plate
- 10 Two-way ball valve
- 11 Shift valve releasing end B 2
- 15 Piston brake shift 4-3
- 16 Check-ball valve
- 17 Three-throttle ball valve
- 22 Two-way ball valve
- 24 Check valve primary pump
- 25 Range selector valve
- 26 Two-way ball valve
- 26a Filler piece
- 27 One-way throttle valve K 1
- 31 One-way throttle valve K 2
- 34 Pressure relief valve modulating pressure
- 37 Lube pressure valve
- 38 One-way throttle valve B 3
- 39 Two-way ball valve
- 40 Two-way ball valve
- 41 One-way throttle valve B 2
- 50 Filter
- 51 Ball valve
- 52 Ball valve
- 53 Plastic pin