

# Removal and Installation of Transmission

Job No.

26-1

On Models 180, 180 a, 180 D, 180 Db, 190 D, 190 Db, 190 SL, 220 a, and on Models 219, 220 S, and 220 SE with mechanical clutch the removal and installation procedures for the transmission are the same as described for Model 190.

The following pages contain only the description of procedures which result from the three-point engine suspension, the modified mounting of the clutch pedal shaft, the modified actuation of the reversing light switch, the modified dowel pin in the crankcase, and the floor-mounted gear shift lever on Model 190 SL.

The removal and installation procedures for the transmission in the case of cars with hydraulic automatic clutch are described in the Workshop Manual Passenger Car Models as from August 1959 under Job No. 25-15.

## A. Rear Engine Suspension

On Models 180, 180 a, 180 b, 180 D, 180 Db, 190 D, 190 Db, 190 SL, 220 a, and 219 with three-point engine suspension the rear rubber mounting must be removed at the chassis base panel before the transmission can be removed.

### Removal:

1. Gently lift the engine at the transmission by means of a car jack. Unscrew the two hexagon nuts attaching the rear rubber mounting to the chassis base panel, paying attention to the shims between rubber mounting and chassis base panel (see Job No. 24-1).
2. Lower the engine with the transmission and place stands under the oil pan. The oil pan should not rest on the tie-rod or the steering shock-absorber.

### Installation:

3. After installing and attaching the transmission lift the engine and attach the rear

rubber mounting to the chassis base panel, but do not tighten the self-locking nuts. When inserting the hexagon screws make sure that the same shims are installed between engine mounting and chassis base panel as were removed previously (see Job No. 24-1).

On older models where the hexagon screws for the car rubber mounting are still locked by means of lock nuts, replace these by self-locking nuts.

4. Move the engine back and forth, so that it can settle without strain on the rubber mountings. Then tighten the two hexagon nuts on the rear rubber mounting.

## B. Mounting of Clutch Pedal Shaft and Clutch Actuating Linkage

### 1<sup>st</sup> Version

#### Model 180

On the 1<sup>st</sup> version without end-plate and without swivel support detach the return spring for the clutch linkage (5). Unscrew the stay rod (6) from the clutch housing and the chassis base panel. After reinstallation adjust the stay rod in such a way that the engine can settle in its mountings without strain (see Fig. 29-1/2).

### 2<sup>nd</sup> Version

#### Models 180, 180 D, 220 a, and 190 SL

In the case of the 2<sup>nd</sup> version the clutch pedal shaft is mounted in an end-plate on the transmission on the right-hand side. The compensating spring for the clutch actuating mechanism is located at the outside of the clutch pedal (Fig. 26-1/3).

#### Removal:

1. Detach the return spring for the clutch throw-out fork. Remove the shackle and pull rod from the clutch throw-out fork after loosening the threaded bolt. The pull rod need not be removed from the relay lever of the clutch pedal shaft (see Fig. 26-1/3).
2. Unscrew the two lock nuts and hexagon nuts from the jointing plate for the clutch actuating mechanism. Remove the rubber cuff from the end-plate and push the clutch pedal shaft together with the flange and the jointing plate toward the outside (Fig. 26-1/3).

#### Installation:

3. Fill the end-plate with grease, install the rubber cuff and insert the clutch pedal shaft in the end-plate.

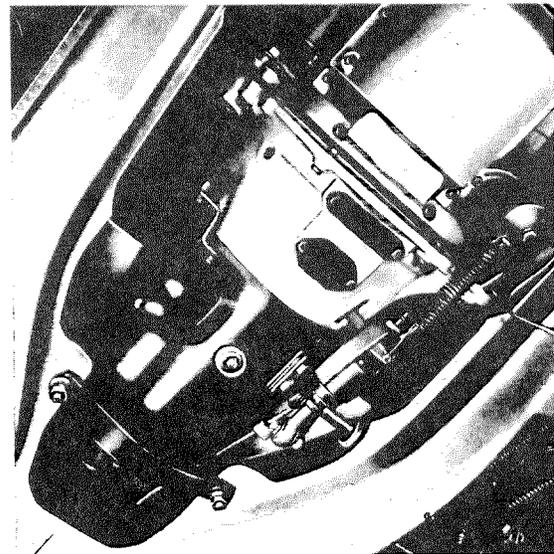


Fig. 26-1/2

4. Attach the jointing plate to the clutch pedal.
5. Check the position of the clutch pedal shaft in the mounting tube on the chassis base panel; it should be exactly in the center of the mounting tube. If the position has to be corrected, loosen the two hexagon nuts on the end-plate and change the position of the end-plate as required. Tighten the two hexagon nuts and lock them by tapping down the locking plate.
6. Attach the shackle together with the pull rod to the clutch throw-out fork and attach the return spring. Adjust the clutch pedal free play (see Job No. 29-3).

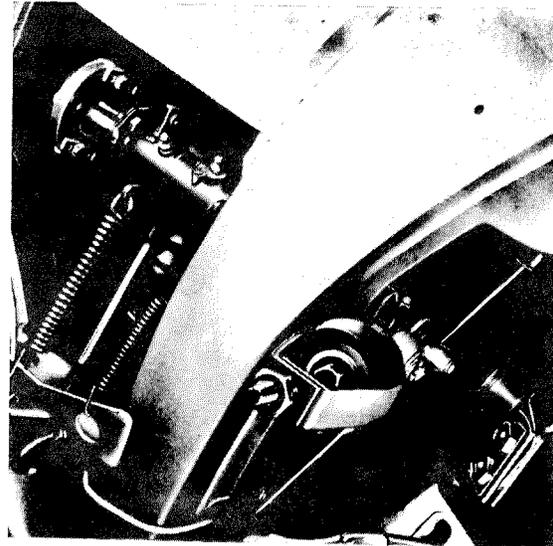
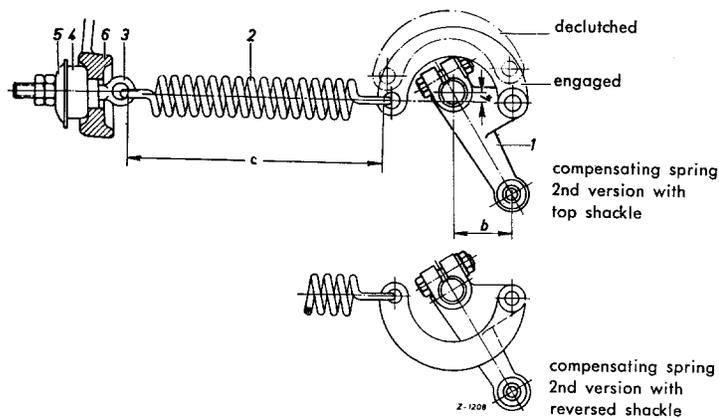


Fig. 26-1/3

### 3<sup>rd</sup> Version

#### Models 180, 180 D, 190 SL, and 220 a

The clutch pedal shaft is mounted in the same way as the 2<sup>nd</sup> version shaft but the compensating spring (2) is attached to the relay lever (1) and the clutch housing (6) (Fig. 26-1/4). On later models the shackle position was reversed in order to prevent the hand brake cable from fouling the relay lever shackle. If necessary, the relay lever with top shackle can always be replaced by a lever with reversed shackle (Fig. 26-1/4).



c = Adjusting dimension for compensating spring

Models 180, 180 D, 190 SL  
c = 137 mm

Model 220 a  
c = 155 mm

Distance b  
see Job No. 29-3

Fig. 26-1/4

- |                            |                  |
|----------------------------|------------------|
| 1 Relay lever with shackle | 4 Rubber buffer  |
| 2 Compensating spring      | 5 Cup washer     |
| 3 Pull rod                 | 6 Clutch housing |

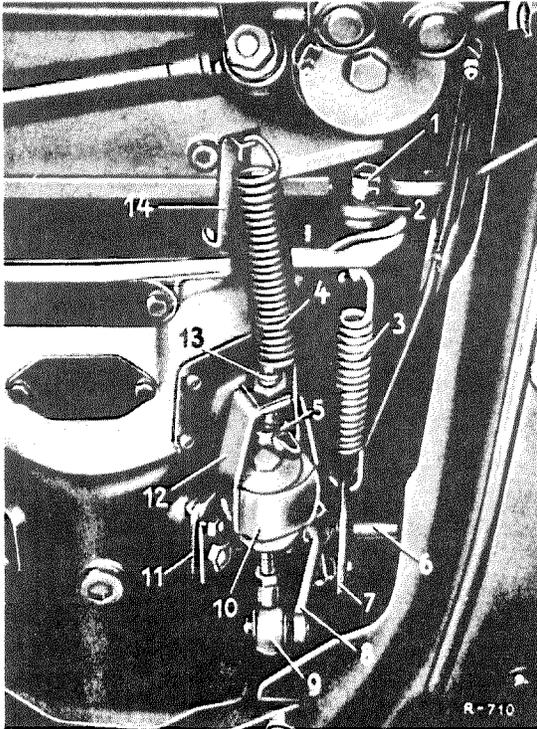


Fig. 26-1/5

- 1 Hexagon nut
- 2 Cup washer with rubber buffer
- 3 Compensating spring with pull rod
- 4 Return spring for clutch actuating mechanism
- 5 Clutch throw-out fork
- 6 Clutch pedal shaft
- 7 Shackle for compensating spring
- 8 Relay lever
- 9 Red head
- 10 Rubber buffer
- 11 End plate
- 12 Shackle
- 13 Threaded bolt
- 14 Bracket for return spring

#### Removal:

1. Unscrew the hexagon nuts (1) and detach the compensating spring with pull rod (3), the cup washer (2) and the rubber buffer (Fig. 26-1/5).

The other procedures are the same as described for the 2<sup>nd</sup> version.

#### Installation:

2. After installing the clutch pedal shaft, attach the compensating spring, and adjust the pull rod of the compensating spring (3) by means of the two hexagon nuts in such a way that the compensating spring has a length "c" as shown in Fig. 26-1/4. Further installation procedures are identical with those described for the 2<sup>nd</sup> version.

#### 4<sup>th</sup> Version

##### Models 180, 180 a, 180 b, 180 D, 180 Db, 190 D, 190 Db, 190 SL, 219, 220 S, and 220 SE

The 4<sup>th</sup> version of the clutch pedal shaft is mounted on a swivel support which is attached to the clutch housing by means of a spring plate. This version has no compensating spring. In the case of Models 180 a, 180 b, 190 D, and 190 Db the sprung bracket for the swivel support is attached to the clutch housing as on Model 190 (Fig. 26-1/6).

On all other models the bracket is screwed rigidly to the clutch housing (Fig. 26-1/7).

#### Removal:

1. Detach the pull rod of the clutch actuating mechanism as in the case of the 2<sup>nd</sup> and 3<sup>rd</sup> versions.
2. Detach the swivel support (9) from the spring plate (8) by removing the two hexagon screws (Fig. 26-1/7).
3. Further removal procedures correspond to those described for Model 190.

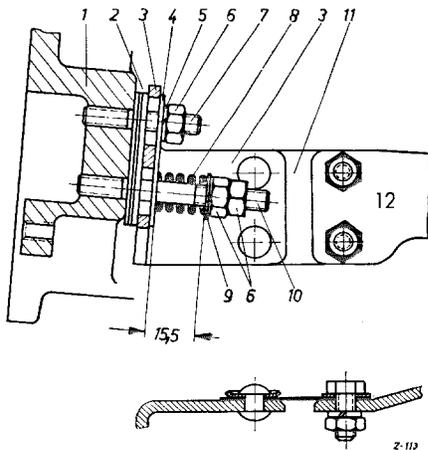


Fig. 26-1/6

- |                  |                   |
|------------------|-------------------|
| 1 Clutch housing | 7 Stud screw      |
| 2 Shims          | 8 Damping spring  |
| 3 Bracket        | 9 Washer          |
| 4 Spacer         | 10 Stud screw     |
| 5 Lock washer    | 11 Spring plate   |
| 6 Hexagon nut    | 12 Swivel support |

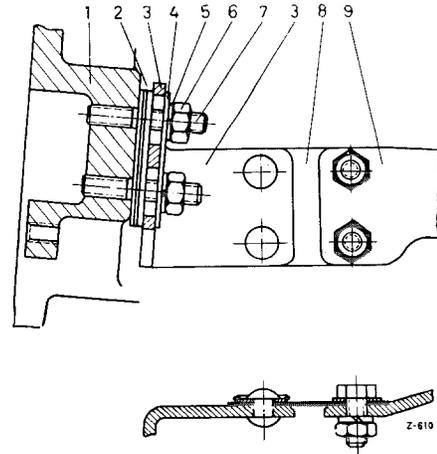


Fig. 26-1/7

- |                  |                  |
|------------------|------------------|
| 1 Clutch housing | 6 Hexagon nut    |
| 2 Shims          | 7 Stud screw     |
| 3 Bracket        | 8 Spring plate   |
| 4 Spacer         | 9 Swivel support |
| 5 Lock washer    |                  |

**Installation:**

- After installing the transmission screw the swivel support (9) to the spring plate (8) by means of the two hexagon screws (Fig. 26-1/7).
- Center the clutch pedal shaft in the mounting tube on the chassis base panel. The shaft is centered horizontally by adding or removing shims (2) where the swivel support is fastened to the clutch housing (Figs. 26-1/6 and 26-1/7).  
The shims are available in two sizes:  
1 mm thick Part No. 120 293 01 88  
2 mm thick Part No. 120 293 02 88
- The shaft is centered vertically by shifting the bracket (3) (Fig. 26-1/6).

**Note:** On recent models the brackets (3) have two standard bores instead of the two slots. The spacer (4) is no longer required (Fig. 26-1/6).

In order to facilitate vertical centering of the clutch pedal shaft, the two bores in the swivel support (9) have been enlarged in diameter from 6.4 to 7.0 mm. If a new bracket (3) is installed subsequently, the two bores in the swivel support must be bored to a diameter of 7 mm (Fig. 26-1/7).

- In the case of Models 180 a, 180 b, 190 D, and 190 Db adjust the length of the damping spring (8) to 15.5 mm by screwing in

or backing out the hexagon nut (6) (spring pressure approx. 40 kg) and by locking it in position by means of the second hexagon nut (6) (Fig. 26-1/6).

- Adjust the clutch pedal free play (see Job No. 29-3).

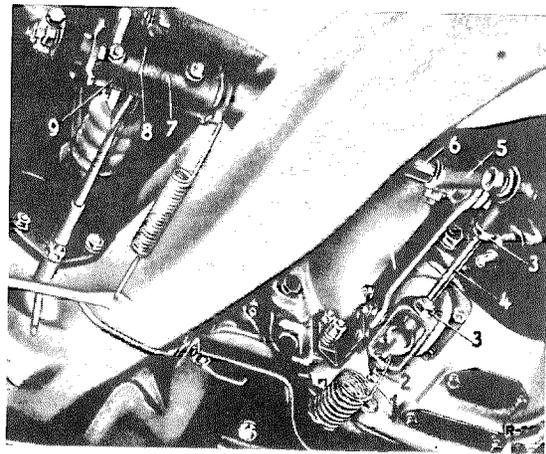


Fig. 26-1/8

4th version of clutch actuating mechanism

- |   |
|---|
| 1 Threaded bolt for clutch pedal free play adjustment |
| 2 Lock nut for threaded bolt                          |
| 3 Lock nut for pull rod                               |
| 4 Pull rod  |
| 5 Lever and bolt                                      |
| 6 Clutch pedal shaft                                  |
| 7 Brake pedal   |
| 8 Lock washer   |
| 9 Clutch pedal  |
| 10 Swivel support                                     |

## **C. Reversing Light Switch**

### **1<sup>st</sup> Version**

#### **Models 180, 180 D, 220 a**

In the case of the 1<sup>st</sup> version the reversing light switch is attached to the bearing assembly of the steering wheel shift system. This means that the cable need not be disconnected when the transmission is to be removed (see Fig. 26-12/1).

### **2<sup>nd</sup> Version**

#### **Models 180, 180 D, 190 SL, and 220 a**

In the case of the 2<sup>nd</sup> version the reversing light switch is installed in the transmission case top cover. The two cables are directly connected to the main cable harness. Since the terminal clips on the switch are not accessible, the cables have to be cut and have to be re-connected by means of a cable connector after the transmission has been reinstalled.

### **3<sup>rd</sup> Version**

#### **Models 180, 180 a, 180 b, 180 D, 180 Db, 190 D, 190 Db, 220 a, 219, 220 S, and 220 SE**

The 3<sup>rd</sup> version of the reversing light switch is also attached to the transmission case top cover. The two cables should be disconnected from the cable connector (5) which is fastened to the bearing assembly (1) and should be re-connected after the transmission has been reinstalled (see Fig. 26-12/2).

## **D. Modified Dowel Pins in Crankcase**

On Models 180 a, 190, 190 D, 190 SL, 219, 220 S, and 220 SE the top left dowel pin in the crankcase for centering the partition plate and the clutch housing has been increased in thickness from 8 to 12 mm. It may therefore be necessary to use a shouldered dowel pin when installing a replacement engine or a new clutch housing (see Job No. 01-4, Section Q).

## E. Floor-Mounted Gear Shift Lever on Model 190 SL

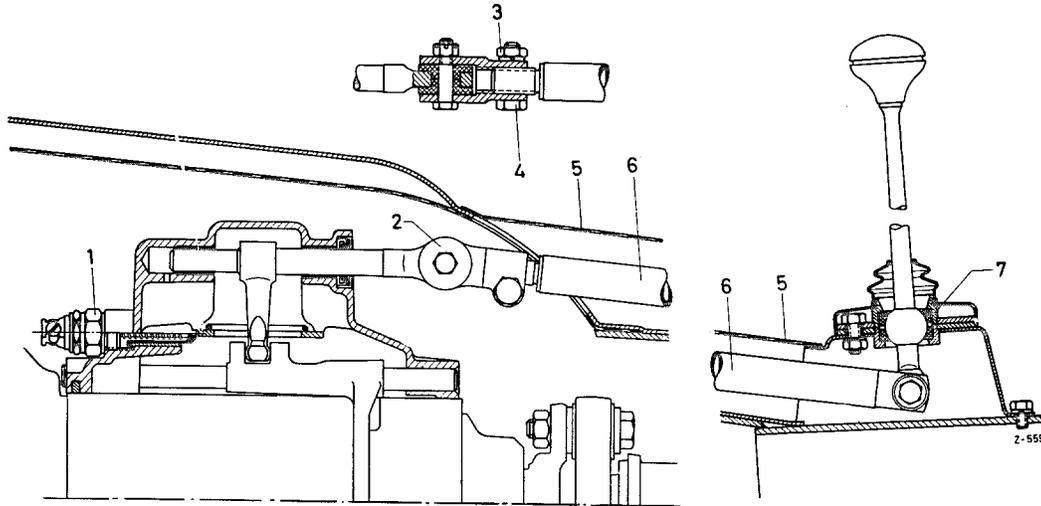


Fig. 26-1/9

- |                          |                       |
|--------------------------|-----------------------|
| 1 Reversing light switch | 5 Cover plate         |
| 2 Yoke end               | 6 Shift tube          |
| 3 Hexagon nut            | 7 Shift lever bearing |
| 4 Hexagon screw          |                       |

### Removal:

1. Roll back the rubber mat on the transmission tunnel to the left. After unscrewing the six hexagon tapping screws from the tunnel, remove the cover plate (5) for the shift linkage (Fig. 26-1/9).
2. Loosen the hexagon nut (3) on the yoke end (2) and take out the hexagon screw (4).
3. Pull the shift tube out of the splines in the yoke end toward the rear.

### Installation:

4. Fit the shifting shaft to the reverse gear stop, put the shift lever in a vertical position, and insert the shift tube in the splines on the yoke end. In this position the shift lever must be exactly vertical.

Then insert the hexagon screw (4) in the yoke end, install the lock washer and tighten the hexagon nut (3) (Fig. 26-1/9).

**Note:** In order to facilitate installation of the hexagon nut (3) engage 1<sup>st</sup> gear, making sure that the position of the shift tube in the yoke end is not changed.

5. Check the gear mechanism. To do this, check the operation of all gears and check whether with the individual gears engaged there is sufficient play between the shift lever and the shift lever bearing. The shift lever must on no account foul the shift lever bearing, since this might cause the gear to slip out. Always declutch when shifting individual gears!
6. Screw on the cover plate for the shift linkage and turn the rubber mat back.