

Removal and Installation of Control Shaft

Job No.

30-1

I. Models 180, 180 a, 180 b, 180 D, 180 Db, 190 D, and 190 Db

The removal and installation procedures for the control shaft are essentially the same as described for Model 190. The only differences are in the attachment of the return spring. On Models 180, 180 D, and 180 Db the return spring is attached to the fixing bolt of the accelerator pedal and is supported by the toeboard. On all other Models the return spring is attached to a bracket fastened to the accelerator pedal by a fixing bolt and to the toeboard.

II. Model 190 SL

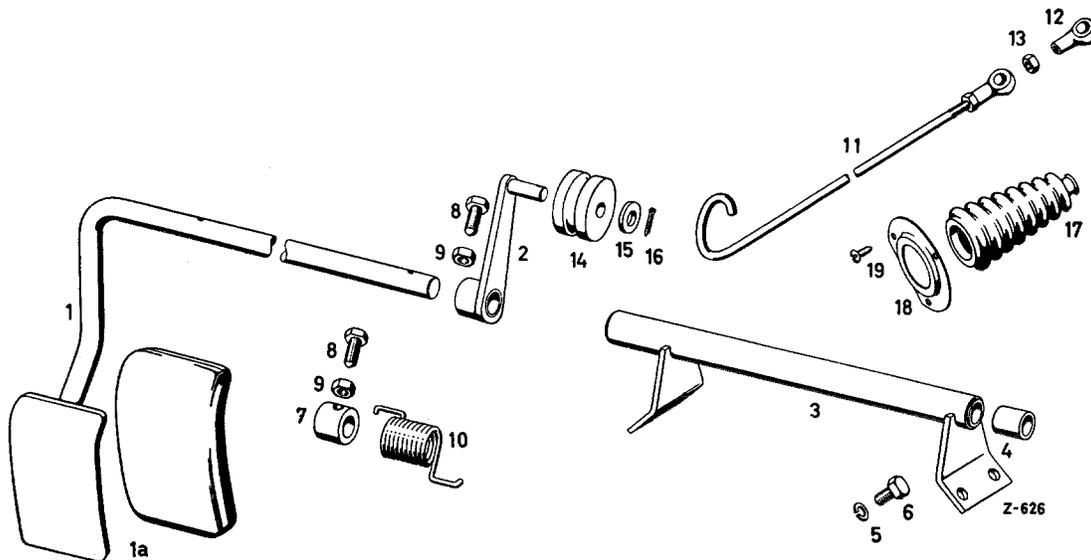


Fig. 30-1/1

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| 1 Accelerator pedal | 10 Return spring |
| 1a Pad with fabric layer for accelerator pedal | 11 Pull rod |
| 2 Control lever | 12 Ball-cup connector |
| 3 Mounting tube | 13 Hexagon nut |
| 4 Bushing | 14 Damper ring |
| 5 Lock washer | 15 Washer |
| 6 Hexagon screw | 16 Cotter pin |
| 7 Boss for return spring | 17 Bellows |
| 8 Fixing bolt | 18 Cover plate |
| 9 Hexagon nut | 19 Oval-head countersunk tapping screw |

Removal:

1. Lift the rubber mat of the transmission tunnel on the right side and roll it back toward the left. If necessary unscrew the plate to the left of the transmission tunnel.

2. Pull the cotter pin (16) out of the control lever (2), remove the washer (15) and pull the pull rod (11) together with the damper ring (14) off the control lever.

Note: On the 2nd version the washer (15) and the cotter pin (16) are no longer required. The bolt riveted to the control lever takes

the form of a button bolt. On this version the pull rod with the damper ring can simply be pressed off.

3. Loosen the nut (9) on the control lever (2) and unscrew it together with the fixing bolt (8). Pull the control lever off the control lever shaft (1).
4. Pull the control shaft out of the mounting tube (3) and detach the return spring (10) from the mounting tube.
5. Loosen the nut (9) on the boss (7) and unscrew together with the fixing bolt (8). Remove the boss.
6. If the bushings (4) and the mounting tube (3) are worn, the mounting tube should be removed. To do this, unscrew the four fixing screws (6) and remove them together with the lock washers (5). Knock the bushings out of the mounting tube using a rod approx. 8 mm in diameter and 250 mm long and press new bushings into the mounting tube as far as they will go. The length of the mounting tube with bushings must be 218 – 0.2 mm.

Ream the bushings up to 12.032–12.059 mm.

Note: On recent Models the aluminum bushings have been replaced by brass bushings.

Installation:

7. Install the mounting tube (3).
8. Install the return spring on the mounting tube.
9. Slide the boss (7) on the control shaft (1), screw in the fixing bolt (8) and tighten the hexagon nut (9).
10. Slide the control shaft into the mounting tube.
11. Put the control lever (2) on the control shaft and align it on the shaft with the locating center. Screw in the fixing bolt (8) and lock it by means of the nut (9).
12. Attach the return spring (10).
13. Install the pull rod together with a damper ring on the control lever and lock by means of a washer (15) and a new cotter pin (16) or in the case of the 2nd version (with button bolt) press on the damper ring.
14. Check the accelerator pedal for ease of movement and correct position.

Note: If the mechanism is noisy although the bearing bushings are in a good condition, the noises are due to end play of the control shaft in the mounting tube (3). The end play can be compensated by adding steel washers.

III. Models 220 a and 219

Removal:

1. On the 1st version pull the cotter pin out of the pull rod and remove the pull rod.
- 2 a. Remove the spacer and the rubber bushings from the control lever.
- 2 b. On the 2nd version pull the cotter pin (13) out of the control shaft lever (8) and pull the pull rod (9) together with a damper

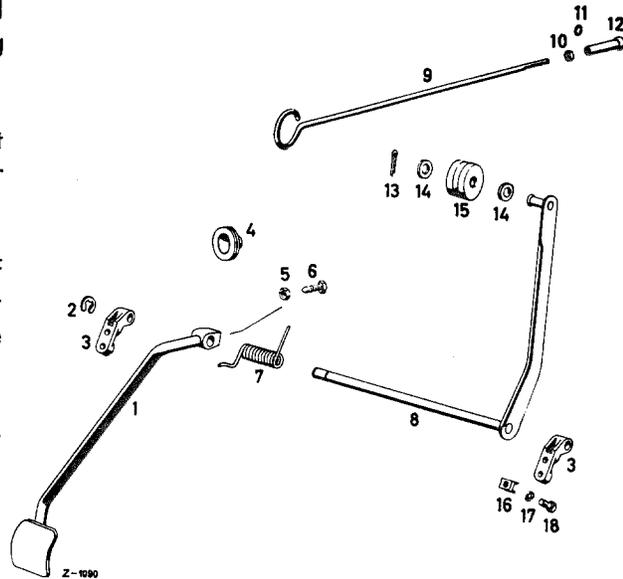
ring (15) and the washers (14) off the control shaft lever (Fig. 30-1/2).

Note: On recent cars of Models 219 a button bolt has been riveted to the control shaft lever. On this version the pull rod (9) and the damper ring (15) need only be pressed off.

3. Press the locking plate (2) off the control shaft (8).

4. Loosen the nut (5) on the accelerator pedal (1) and unscrew together with the fixing bolt (6).
5. Pull out the control shaft (8) from the left bearing (3) and remove the accelerator pedal (1) and the return spring (7).
6. Unscrew the two hexagon screws (18) of the bearing (3), pull out the control shaft together with the bearing and remove the bearing from the control shaft.

Note: The left bearing (3) need only be removed if it is worn and must be replaced.



Installation:

Fig. 30-1/2

7. Slide the right bearing (3) onto the control shaft (8) and attach it to the toeboard by means of the hexagon screws (18).
8. Slide the return spring (7) and the accelerator pedal (1) onto the control shaft and slide the control shaft into the left bearing (3).
9. Press the snap ring (2) onto the control shaft (8).
10. Align the accelerator pedal with the locating center of the control shaft. Screw in the fixing bolt (6) and lock it with the nut (5).
11. Attach the return spring.
- 12 a. On the 1st version slide the two rubber bushings and the spacer onto the control lever, turning the spacer in such a way

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|-----------------------------|-----------------------|
| 1 Accelerator pedal | 10 Hexagon nut |
| 2 Snap ring | 11 Lock washer |
| 3 Bearing for control shaft | 12 Ball-cup connector |
| 4 Rubber grommet | 13 Cotter pin |
| 5 Hexagon nut | 14 Washer |
| 6 Fixing bolt | 15 Damper ring |
| 7 Return spring | 16 Cage nut |
| 8 Control shaft | 17 Spring washer |
| 9 Pull rod | 18 Hexagon screw |

that the pull rod is positioned in the recess of the bracket.

Install the pull rod in the spacer and lock by means of a cotter pin.

- 12 b. On the 2nd version slide the pull rod together with a damper ring onto the control shaft lever, install the washer and lock by means of a cotter pin.
- 12 c. On the 3rd version press the pull rod together with a damper ring onto the button bolt of the control shaft.

IV. Model 220 S

The removal and installation procedures for the control shaft are the same as described for Model 190.

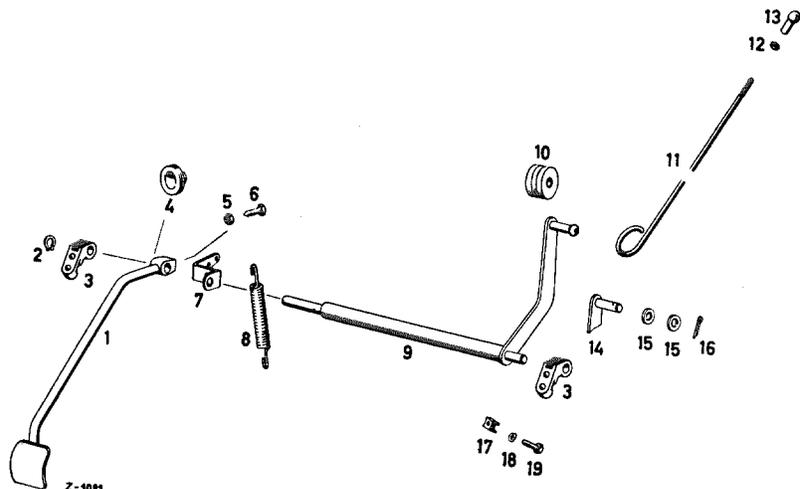


Fig. 30-1/3

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|-----------------------------|------------------------------------|
| 1 Accelerator pedal | 11 Pull rod |
| 2 Snap ring | 12 Hexagon nut |
| 3 Bearing for control shaft | 13 Ball-cup connector |
| 4 Rubber grommet | 14 Control shaft lever 1st version |
| 5 Hexagon nut | 15 Washer |
| 6 Fixing bolt | 16 Cotter pin |
| 7 Return spring lever | 17 Cage nut |
| 8 Return spring | 18 Spring washer |
| 9 Control shaft | 19 Hexagon screw |
| 10 Damper ring | |

V. Model 220 SE

Removal:

1. Press the push rod (12) together with the damper ring (11) off the button bolt of the control shaft lever (9) (Fig. 30-1/4).
2. Detach the return spring (8) from the toeboard and the lever (6).
3. Loosen the hexagon nut (17) and unscrew the fixing bolt (16) from the accelerator pedal and remove together with the lever (6) for the return spring (30-1/4).

4. Remove the snap ring (10) from the control shaft (9). Unscrew the two bearings (5) from the toeboard and push the control shaft toward the left until the accelerator pedal can be removed from the shaft.

Installation:

5. Installation is the reverse of the removal procedure.

Note: Make sure that the end play between the control shaft and the bearings is not excessive.

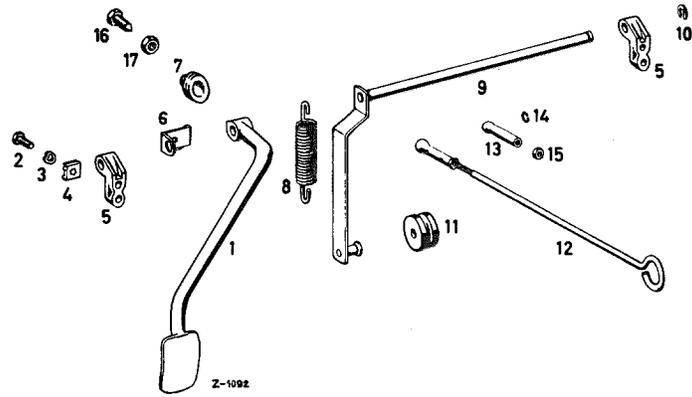


Fig. 30-1/4

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|-------------------------|-----------------------|
| 1 Accelerator pedal | 10 Snap ring |
| 2 Hexagon screw | 11 Damper ring |
| 3 Spring washer | 12 Push rod |
| 4 Cage nut | 13 Ball-cup connector |
| 5 Control shaft bearing | 14 Lock washer |
| 6 Return spring lever | 15 Hexagon nut |
| 7 Rubber grommet | 16 Fixing bolt |
| 8 Return spring | 17 Hexagon nut |
| 9 Control shaft | |