

Removal, Installation and Adjustment of Steering Column Gear Shift

Type 220

Operation No.
G 14

Special Tools:

Installer for needle bearing in jacket tube 187 589 11 61

Procedure:

1. Disconnect negative cable from battery as well as signal and direction indicator lines from luster terminal.
2. After the upper clamping screw at the steering coupling has been loosened and removed, pull steering shaft with steering wheel completely out. Note that the steering column lock must be in position "Garage" or "Fahrt" (Travel).

3. Detach brake cable from hand brake lever. Loosen bracket fastening (15) of stick-type hand brake, then pull notched rod with bracket out of jacket tube support (Fig. G 14/3).

In the case of right-hand steering systems this operation is not required.

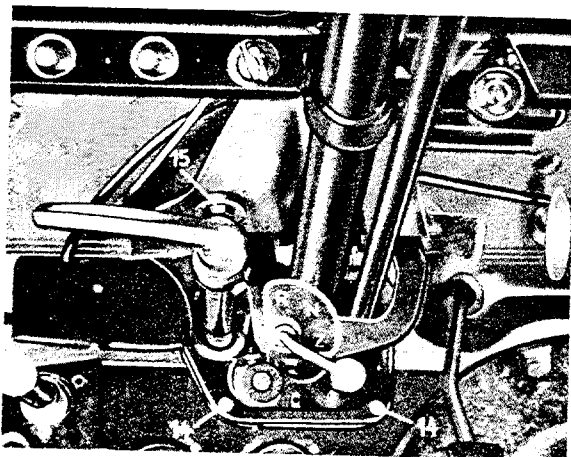


Fig. G 14/3

14 Jacket tube support fastening screws
15 Bracket fastening of stick-type hand brake

4. Loosen tie rod for fuel change-over cock at arm (12) and unscrew bracket (13). See Fig. G 14/4.
5. Detach selector lever (2) from shaft and shift rod from intermediate arm (6) at bearing

body and remove them. Free connecting piece (4) and detach it from arm (3). See Fig. G 14/4.

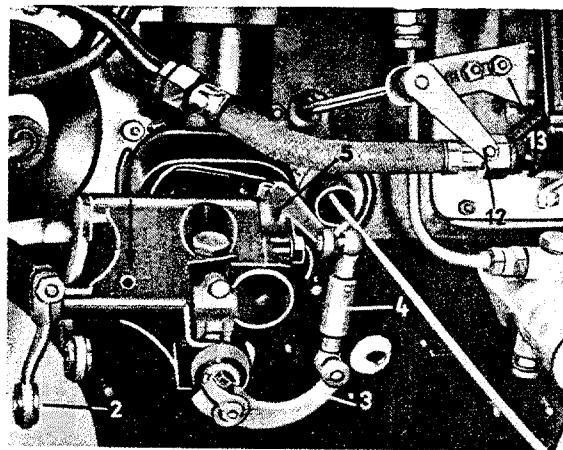


Fig. G 14/4

2 Selector lever
3 Arm
4 Connecting piece
5 Intermediate arm
6 Intermediate shaft with arm
12 Arm for fuel change-over cock
13 Bracket

6. Fold back rubber and felt mats in car and loosen all jacket tube support fastening screws (14) at fire wall (see Fig. G 14/3).
7. Unscrew plate for fuel change-over cock. Loosen mounting on steering column lock and move jacket tube with bearing body into the interior of the car.
8. When installing the steering column gear shift, first screw mounting to steering column lock. **Do not yet tighten the nuts** to ensure that the jacket tube can be installed **free from any stress**.
9. Screw jacket tube support to fire wall.
10. Screw bracket (13) in place and connect tie rod from fuel change-over cock to arm (12). See Fig. G 14/4.
11. Insert notched rod with bracket into bore of jacket tube support, fasten bracket to

chassis, attach brake cable to hand brake lever and adjust hand brake.

12. Insert steering shaft with steering wheel into jacket tube and drive needle bearing in. This is best done by means of light hammer blows or by hitting the steering wheel lightly against tool 187 589 11 61 (Fig. G 14/12). Insert steering shaft into steering coupling (watch out for position of steering wheel spokes!) and press it in until the clamping screw can be inserted. Do not yet tighten the clamping screw.

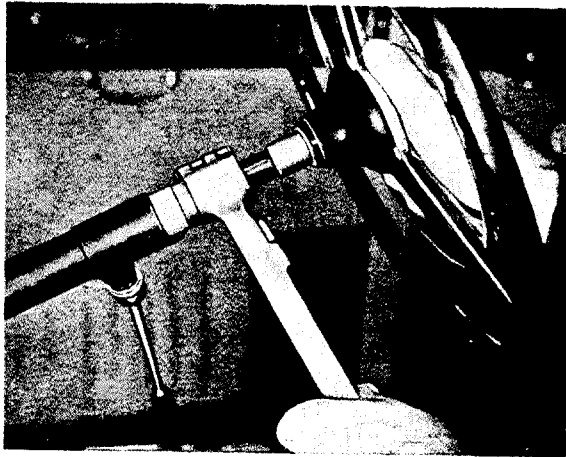


Fig. G 14/12

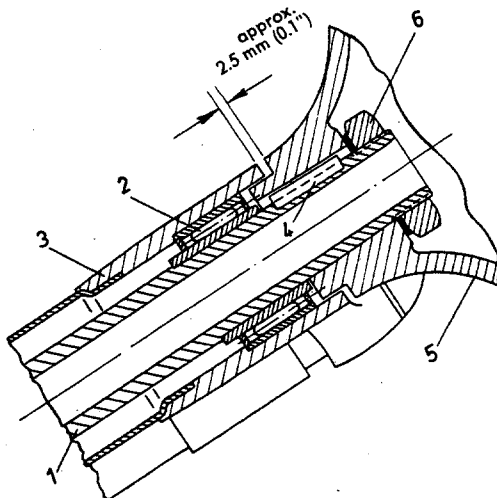


Fig. G 14/14

- 1 Steering shaft tube
- 2 Needle bearing
- 3 Jacket tube
- 4 Key
- 5 Steering wheel
- 6 Hexagonal nut

13. Move the two halves of the jacket tube support so that the steering shaft is strictly centered in the jacket tube, then tighten the screws.

Tighten nut of mounting at steering column lock.

14. Have an assistant press the steering wheel forcefully against the jacket tube and simultaneously tighten the clamping screw at the flange. In this way the steering coupling is compressed to a certain degree.

Pull steering wheel out again. Now the distance between steering wheel and jacket tube should be approx. 2.5 mm (1"); this is the distance the safety yoke at the steering coupling can travel provided the yoke is not damaged (bent). See Fig. G 14/14. In the event of larger deviations from the specified distance of 2.5 mm (1") the steering shaft may be displaced as required, if the safety nut in the plines permits so.

If the compression is excessive, the steering wheel is in contact with the jacket tube and knocks when the car is driven on bad roads. In addition undue wear and hard steering may result.

If the compression is insufficient, the steering wheel with shaft can be pulled way out, so that during driving the steering shaft appears to be loose.

15. Clamp connecting piece (4) on arm (3) and secure it (see Fig. G 14/4).

Attach shift rod to intermediate arm (6) and slip selector lever (2) on shaft. Tighten **clamping screw** on selector lever (2) later on **when making the adjustment**.

Note: When installing the selector and shift rods be careful that the rods are installed free from stress and do not touch any other part. If necessary, the rods must be straightened.

In case the length of a shift rod is not correct (this may be caused by differences in the body and chassis), the jacket tube may be

displaced a little in longitudinal direction. To do this, loosen the two clamping screws in the jacket tube supporting halves as well as nut of mounting on steering column lock.

Adjustment of Steering Column Gear Shift

Note: To ensure that critical adjustment of the steering column gear shift in the car will meet with no difficulties, the basic adjustment must be correct (see Operation No. G 15, cf. 13–19). The position of the levers on the transmission cover must also be correct (see Fig. G 3/39). The fine adjustment in the car is described in the following.

16. Check whether intermediate and selector lever shafts can be easily rotated. There must be no end play; otherwise correct adjustment is not possible and shifting troubles may be the result.
17. Set selector lever on transmission cover with the aid of an adjusting pointer to graduations 1 and 2 (first and second speed) and shift into second gear. Move hand gear shift lever at steering wheel upward to stop at first and second speed (notch for reverse speed). Tighten clamping screws at selector lever (2) in this position. Move gear shift lever into neutral position and release. Now the lever must return downwards into home position.
18. Move hand gear shift lever at steering wheel to the left and right (third and fourth speed). The distance from neutral position to either side must be equal, i. e. it must be possible

to engage the gears fully. If this is not the case, loosen screw on arm (3) and remove the arm. Set gear shift lever on transmission case to neutral position. Arrest hand gear shift lever at steering wheel in middle position between right and left-hand stop and push arm (3) again on steering shaft and clamp it in place. When shifting into second or fourth speed the hand gear shift lever is approximately horizontal.

When shifting the gears make sure that arm (3) does not hit against the steering shaft and that intermediate arm (5) clears the bearing body. In either case the two arms (3 and 5) must be displaced on the splines.

In neutral position the resilient connecting piece (4) must be in middle position to rule out that the axial motions of the engine are transmitted to the gear shift lever (see Fig. G 14/4). Under particularly unfavourable conditions (bad roads) the gears might disengage. In such a case it is also recommended to check whether the engine supports are too soft and permit excessive axial motions of the engine.

19. Check all shift positions. It must be possible to shift the gears lurch-free; the gears must engage completely, otherwise the adjustment procedure is to be repeated.

When shifting the gears in the standing car **press down clutch pedal.**

Note: From time to time provide selector lever shaft with a few drops of oil (see arrow in Fig. G 14/4). The original lubricating hole has been replaced with an oiler.