

Removal and Installation of Rear Axle

Job-No.

35 — 1

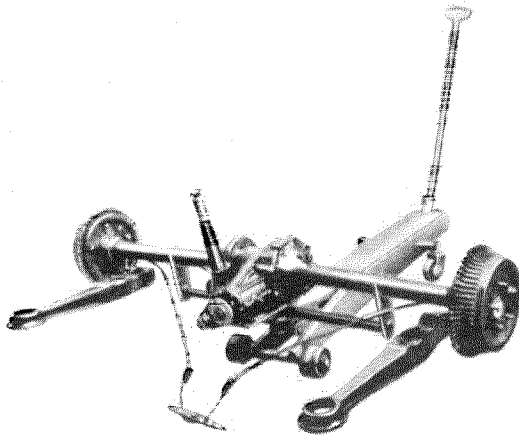


Fig. 35 — 1/1

Removal:

1. Support the car at the rear and place stands under the jack supports.
2. Take off the road wheels.
Disconnect the propeller shaft at the rear axle and push forward the coupling. If there is no bore in the cover plate through which the air can escape, it is advisable when doing this to remove the pinion rim grease fitting beforehand (see Job No. 41 — 1, Fig. 41—1/7).
Then unscrew the clamping nut on the bracket (6) for the brake cable, at the left and the right (see Fig. 35 — 1/4).
3. Disconnect the brake cable at the hand brake lever, the return spring and the hand brake equalizer in the propeller shaft tunnel. Take the brake cable out of the cable guide.
4. Disconnect the brake hoses at the left and right axle tube.
5. Unfasten the pipe clip (1) on the pre-silencer and back out the screw of the two rubber damping pads for the main silencer mount-

ing. Then remove the exhaust assembly, together with the pre-silencer and the main silencer (Fig. 35 — 1/2).

6. Use a jack to raise the left or the right axle tube. Put the jack under the torque arm and not under the axle tube.

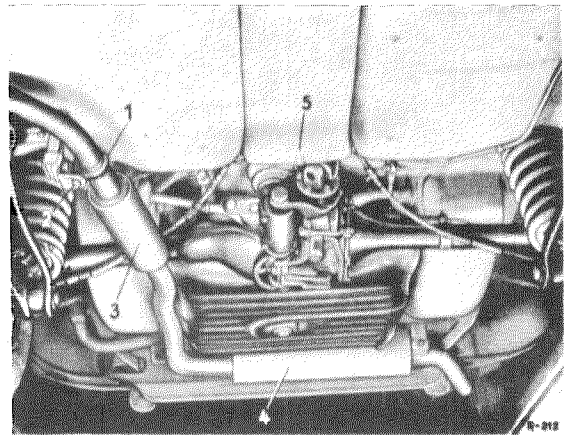


Fig. 35 — 1/2

- 1 Pipe clip
- 2 Hexagon screw
- 3 Pre-silencer
- 4 Main silencer
- 5 Check bore

Care must be taken to ensure that the car is not lifted off the stands for the jack supports.

7. Unscrew the hexagon nuts for the upper shock-absorber mounting (accessible from the trunk compartment) and remove the cup washer and the rubber ring.
8. Unscrew the four M 7 shock-absorber mounting hexagon nuts on the torque arm and pull out the shock-absorber downward.
9. Insert Spring Tensioner 120 589 05 31 and compress the spring so that no pressure is exerted on the torque arm.
Remove the cotter pin and unscrew the castle nut and then disconnect the torque arm from the chassis base panel.

10. Carefully lower the axle tube, i. e. the jack, and take out the spring (Fig. 35 — 1/3).

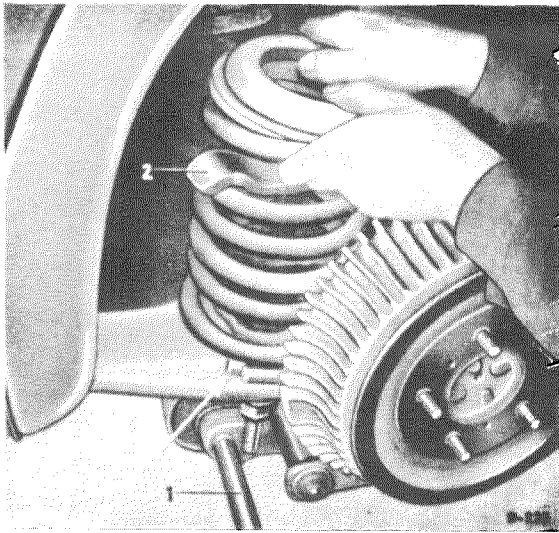


Fig. 35 — 1/3

- 1 Jack
2 Spring tensioner

11. Remove the shock-absorber on the other side, together with the spring, in the same manner and disconnect the torque arm from the chassis base panel.
12. Unscrew the two screws (2) on the cross strut link and loosen the link (Fig. 35 — 1/4).

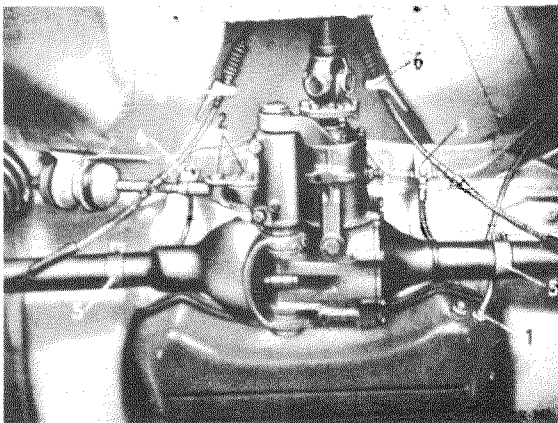


Fig. 35 — 1/4

- 1 Fuel line
2 Hexagon screws for the link on the cross strut
3 Distributor fitting for the brake line
4 Brake hose retaining spring
5 Pipe clip with bracket for the brake line
6 Bracket for brake cable

13. Now slide the jack, with Fixture BE 11295 fitted, under the rear axle (see Fig. 35—1/1). Take off the locking plate of the hexagon nut for fixing the rear axle. This plate is accessible from the trunk compartment. Unscrew the hexagon nut.

Lower the rear axle and slide it out toward the rear.

Caution! When sliding in or out and when transporting the rear axle care must be taken to ensure that the two axle tubes are horizontal. If this is not the case, the axle tubes will be damaged. Therefore removal or installation should never be undertaken without fixture BE 11295.

Installation:

14. Use Gage 180 589 04 23 to adjust the distance between the surface of the universal joint flange (2) and the front edge of the cup which is welded to the support for the rear axle suspension (Fig. 35 — 1/5 and Fig. 35 — 1/6).

Note: The distance between the surface of the joint flange and the axis of the support for the rear axle suspension should be 131 ± 1 mm (Fig. 35 — 1/5).

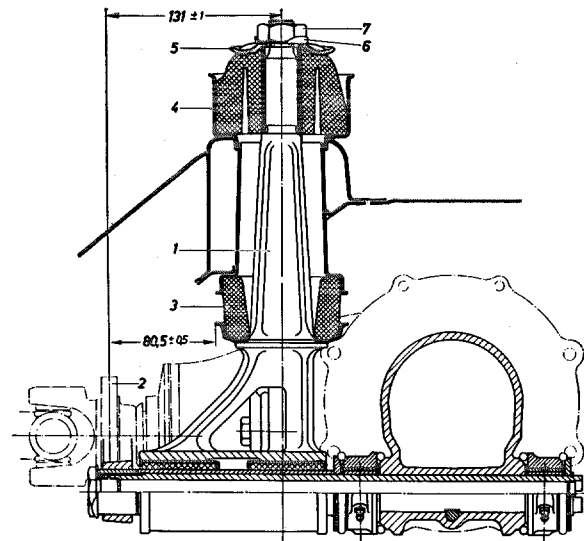


Fig. 35 — 1/5

- 1 Support
2 Joint flange
3 Lower rubber ring
4 Upper rubber ring
5 Tension disk
6 Locking plate
7 Hexagon nut

Since in practice this distance is difficult to measure, place the gage against the universal joint flange (2) and against the front edge of the cup (1) (Fig. 35 — 1/6).

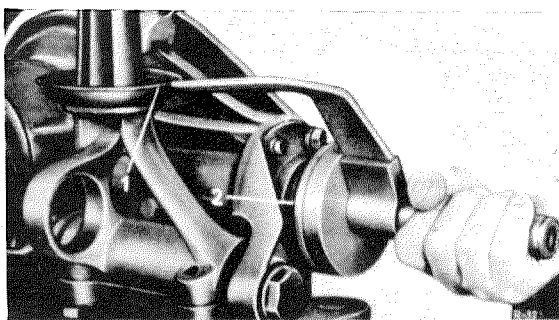


Fig. 35 — 1/6

1 Cup
2 Joint flange

This distance should measure 80.5 ± 0.5 mm. The new gage 180 589 04 23 has been modified to this distance. The previous type was 23 mm longer, since the cup (1) was not welded on in the earlier version of the rear axle suspension and thus it was possible to take a measurement with the gage up to the seat of the cup on the support. This distance is 103.5 ± 0.5 mm. If the measurement has to be taken with the previous version of the gage, it must be shortened by 23 mm to a length of 80.5 mm. The distance can be corrected, after unscrewing the two clamping screws of the support, by changing the position of the support on the rubber buffer.

15. Check whether the support (1) forms a right angle with the left axle tube (2), seen in the direction of travel (Fig. 35 — 1/7).

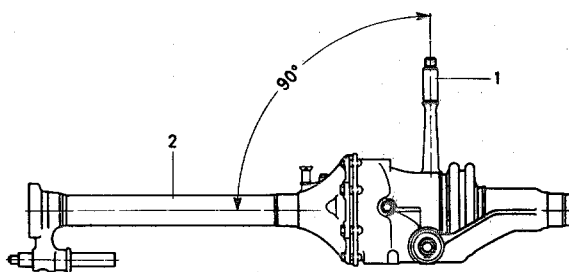


Fig. 35 — 1/7

1 Support
2 Left axle tube

If this is not the case, loosen the clamping screws on the support and turn the support until it is correctly positioned. In doing this,

do not change the position of the support in the axial direction.

Then tighten up the clamping screws of the support.

Note: If the rear axle support does not form a right angle with the rear axle tube, this may easily give rise to rumbling or droning noises when the car is in motion, since the rubber rings in the chassis base panel will be under stress.

16. Check the contact surfaces of the step bearing and the thread of the flat-headed screw which is welded into the step bearing.

Note: If flaws are found on the base of the support, or if the thread of the flat-headed screw, which is welded to the step bearing, is damaged, the lower section of the cup must be cleanly detached from the upper section (Fig. 35 — 1/8).

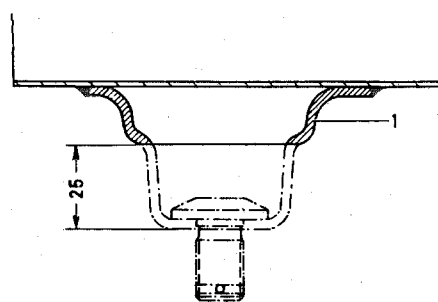


Fig. 35 — 1/8

Then electrically weld a new lower section onto the support (Part No. 120 350 06 33) (Fig. 35 — 1/8 a).

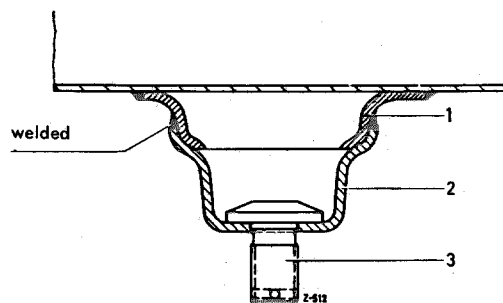


Fig. 35 — 1/8 a

1 Remains of the old step bearing
2 New lower section of the step bearing
3 Flat-headed screw

Use Chassis Base Gage 120 589 08 23 for positioning and attaching the lower section of the support (see Job No. 61 — 1, Section C).

17. Examine the cups (4) for the fixing of the torque arm for cracks. The contact surface must have a uniform sheet metal thickness of 2.5 mm (permissible undersize = 2.25 mm) (Fig. 35 — 1/8 b).

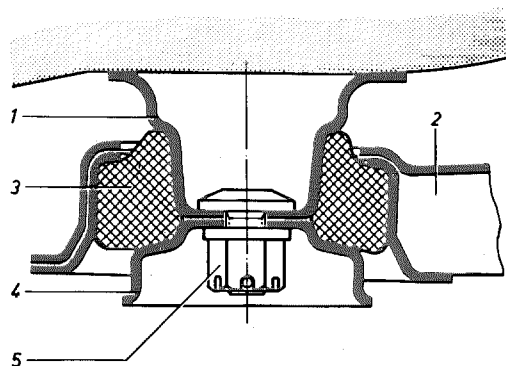


Fig. 35 — 1/8 b

- | | |
|-------------------|--------------|
| 1 Step bearing | 4 Cup |
| 2 Torque arm | 5 Castle nut |
| 3 Rubber mounting | |

18. Rub talc on the two rubber rings of the support and then press the lower rubber ring (3) onto the support (1). Insert the upper rubber ring (4) into the transverse spar of the chassis base panel (accessible from the trunk compartment) (see Fig. 35 — 1/5).

19. Slide the rear axle under the car and raise it until the thread of the support (1) protrudes above the upper rubber ring (4). Put on the tension disk (5) and the locking plate (6) and screw on the hexagon nut (7) a few turns (see Fig. 35 — 1/5).

20. Let down the jack and allow the rear axle to swing free, so that the upper rubber ring (4) can seat itself properly. Then use the jack to raise the rear axle again.

21. Tighten firmly and lock the hexagon nut (7) of the support (1) (see Fig. 35 — 1/5).

22. Fix the cross strut link (1) (Fig. 35 — 1/9).

23. Fix the torque arms to the support and cotter. The fixing nuts must be tightened to a torque of 8 mkg. Both the support and the cup must lie perfectly flat against the contact surface at all points and there must be no intervening space (see Fig. 35 — 1/8 b).

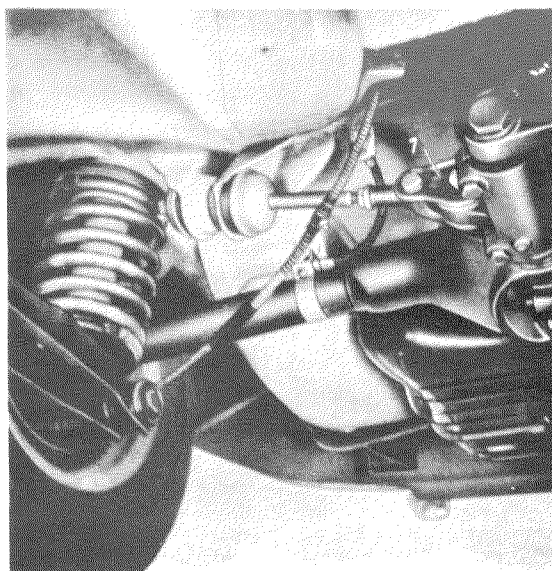


Fig. 35 — 1/9

24. Lay out the left or the right rear spring ready for installation.

Note: The left and the right springs are not identical. Care must therefore be taken to ensure that the correct spring is used. **The bottom coil of the springs is marked either R (= right) or L (= left) (Fig. 35 — 1/10).**

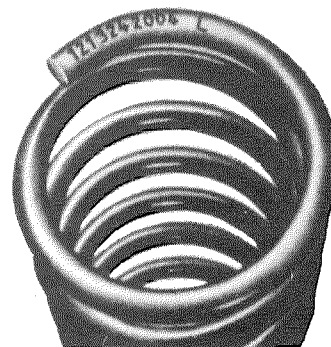


Fig. 35 — 1/10

R = right, L = left
(seen in direction of travel)

25. Round off any sharp edges which may be on the last spring coil, and smear the spring seat on the lower spring plate with stiff grease (if possible a mixture of grease and graphite). Rub talc on the upper rubber mounting of the spring.

26. Put the spring plate into the notch on the torque arm appropriate for the color coding of the spring (see Job No. 32 — 5, Paragraphs 7 and 8).
27. Use Spring Tensioner 120 589 05 31 to compress the spring and insert it so that the end of the spring remains approx. 5—10 mm from the stop of the lower spring plate (see arrow in Fig. 35 — 1/3).
28. Use a jack to press up the axle tube at the supporting tube of the torque arm and remove the spring tensioner.

Caution! Do not remove the jack yet. Install the shock-absorbers first, since there is no stop for the axle. The shock-absorbers serve at the same time as an axle stop because of their own stroke limitation.

29. Rub talc on a new upper and lower rubber ring.

Press the upper rubber ring (4) over the mounting bolt (3) of the shock-absorber so that the sharply rounded surface of the rubber ring is pointing upward (Fig. 35 — 1/11).

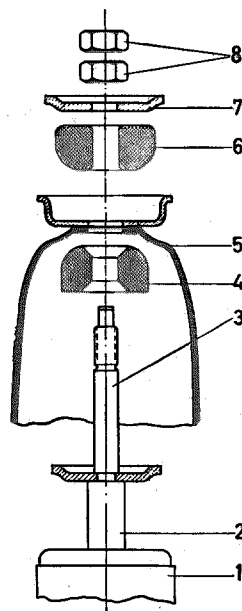


Fig. 35 — 1/11

- | | |
|---------------------|-----------------------|
| 1 Shock-absorber | 5 Shock-absorber dome |
| 2 Piston rod | 6 Upper rubber ring |
| 3 Mounting bolt | 7 Cup |
| 4 Lower rubber ring | 8 Hexagon nut |

30. Now insert the shock-absorber, press on the upper rubber ring (6) with the sharply rounded surface pointing downward, place the cup (7) in position, and screw up one hexagon nut (8) by hand.

Note: On recent models improved rubber rings have been installed (Part No. 180 326 01 68). These rubber rings have a conically shaped lower part. They are supplied either in light grey or black, depending on the manufacturer.

31. Carefully let down the jack.
32. Screw on the shock-absorber at the base of the torque arm with four hexagon nuts with lock washers.
33. In order to obtain the correct initial stress of 5 mm of the rubber rings, screw the lower of the two hexagon nuts (8) onto the mounting bolt (3) in such a way that the cup (7) is not gripped (see Fig. 35 — 1/11).

Then screw in the hexagon nut 5 turns (pitch of the thread 1 mm) and lock it with the upper hexagon nut.

Note: Normally the lower hexagon nut must be screwed up to the end of the mounting bolt thread in order to obtain the correct initial stress of the rubber rings (Fig. 35 — 1/12).

If it is impossible to obtain the requisite initial stress of 5 mm, even though the nuts have been tightened as described, insert between the M 10×1 nut and the cup (7) a washer of the appropriate thickness.

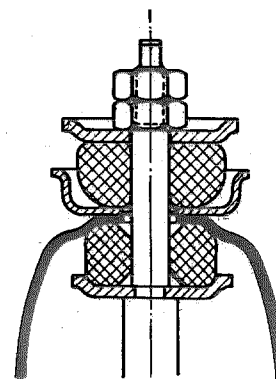


Fig. 35 — 1/12

34. Insert the hand brake cable at the right and the left into the brackets, and tighten up the clamping nuts. Press the rubber cuffs over the clamping nuts. (For further details, see Job No. 42—19, Section B.)
35. Connect up the hand brake equalizer and the return spring.
36. Fit the exhaust assembly with the pre-silencer and the main silencer.
Care must be taken to ensure that the pipe clip is correctly seated and the exhaust pipe is installed without forcing!
37. Connect up propeller shaft and lock it in position. Reinstall pinion rim grease fitting, if it was removed, and screw it into the propeller shaft.
38. Connect up the brake lines and bleed the brakes (see Job No. 42—1). Adjust the hand brake (see Job No. 42—19, Section C).
39. Fit the road wheels. Lower the car and tighten up the wheel nuts.
Check the oil level in the rear axle and, if necessary, top up with oil.
40. Carry out a short road test.
41. After the road test use Master Gage 180 589 08 23 to check the position of the rear axle, measuring from the check bore in the chassis base (Fig. 35—1/13). The measurement at the left and the right must be the same. Correct any deviations by adjusting the cross strut. (For further details on the adjustment of the rear axle see Job No. 40—3).

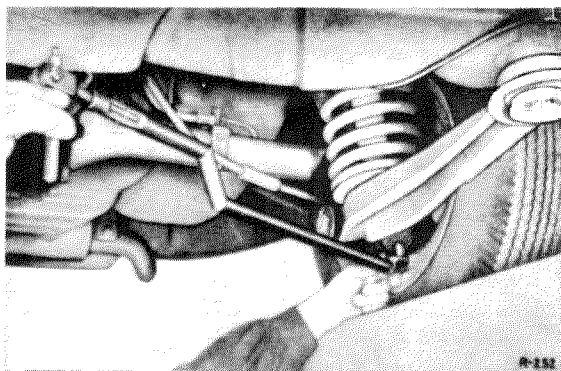


Fig. 35—1/13

42. Use Gage (2) 180 589 08 21 to check whether the rear axle is in the correct position relative to the main longitudinal axis of the car.

To do this, put the gage on the cup (1) of the torque arm mounting. The gage feeler must point exactly to the mid point of the connecting pin (3) (Fig. 35—1/14). Correct any deviation by adjusting the cross strut in the same way.

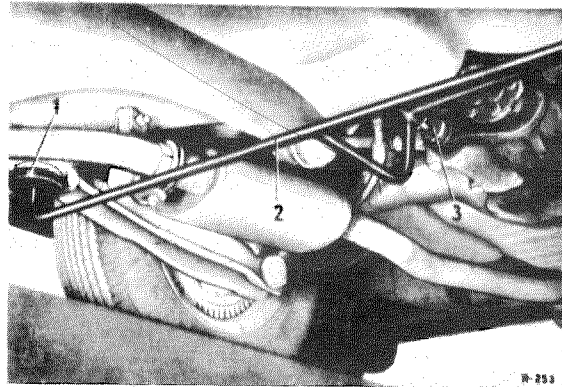


Fig. 35—1/14

- 1 Cup on the torque arm mounting
- 2 Gage 180 589 08 21
- 3 Connecting pin hexagon screw

Note: The rear axle suspension, and at the same time the fulcrum of the rear axle (in the connecting pin) is offset 42 mm to the **right**. The axis of the universal joint flange is offset 36 mm to the **left**. Both positions are relative to the longitudinal axis of the car and both are described as seen in the direction of travel.

To facilitate lubrication when the axle tubes are pendent, a skewed pinion rim grease fitting (Part No. 000 997 08 88) can be installed in place of the front pinion rim grease fitting at the lug of the right axle tube, if such a fitting has not been installed as standard equipment (Fig. 35—1/15).

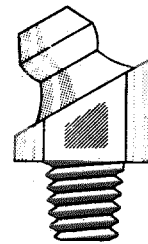


Fig. 35—1/15

It is not necessary to remove the rear axle when installing the new skewed pinion rim grease fitting in place of the former straight pinion rim grease fitting, provided that the car is sufficiently weighted down at the rear.

A. Subsequent Welding of Bracket onto Torque Arm

To prevent the torque arm from rattling on sharp bends or very rough roads, a bracket (3) can be subsequently welded onto the torque arm (Fig. 35 — 1/16).

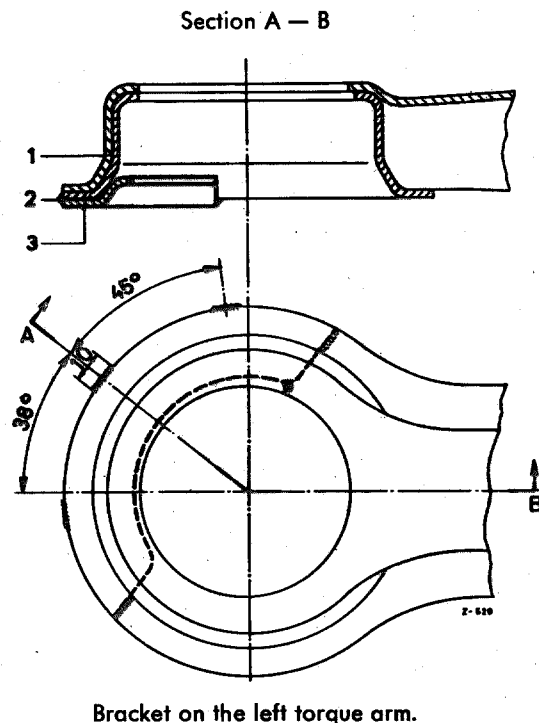


Fig. 35 — 1/16

This bracket prevents the torque arm from lifting and striking against the chassis base panel, or step bearing.

The bracket (Part No. 180 352 00 40) should be electrically welded. To do this, apply the weld beads at the points marked in the diagram above. The positioning of the bracket for the right torque arm is the negative of the arrangement illustrated in Fig. 35 — 1/16 for the left torque arm.

B. Replacement of Torque Arm Rubber Mounting and Inspection of Bearing with Cup

The torque arm rubber mountings are subject to unavoidable wear. They should, therefore, be replaced after a maximum of 100 000 km.

When this is done, the step bearings and the cups should be inspected for cracks (see Job No. 35 — 1, Paragraphs 16—17), for which purpose the torque arm should be detached and the rubber ring removed. If cracks are discovered, replace the cups or weld on new step bearings.