

# Steering Assembly

Job No.

46-0

## A. DB Re-Circulating Ball Steering Type LO (Previous Version)

**Model 180** up to Chassis End No. 45 11768

**Model 180 D** up to Chassis End No. 45 07993

Like the 1<sup>st</sup> version of the standard re-circulating ball steering this version of the re-circulating ball steering has a gear ratio of 1 : 19.4. However, the construction of the steering differs from that of the standard re-circulating ball steering in the following details:

1. The steering worm is carried in angular contact bearings.
2. The cables for the horn and the flash direction signals are wound round the steering tube and emerge from the steering column jacket at the bearing assembly of the steering wheel gear shift mechanism.
3. The diameter of the serrated part of the steering worm is 15.4 mm.
4. The diameter of the bearing surfaces of the steering shaft was changed from 25.4 mm to 28.5 mm and later to 30.0 mm as on the standard re-circulating ball steering.
5. The set screw for the steering shaft has an M 24×1.5 thread (Fig. 46-0/1 and Table).

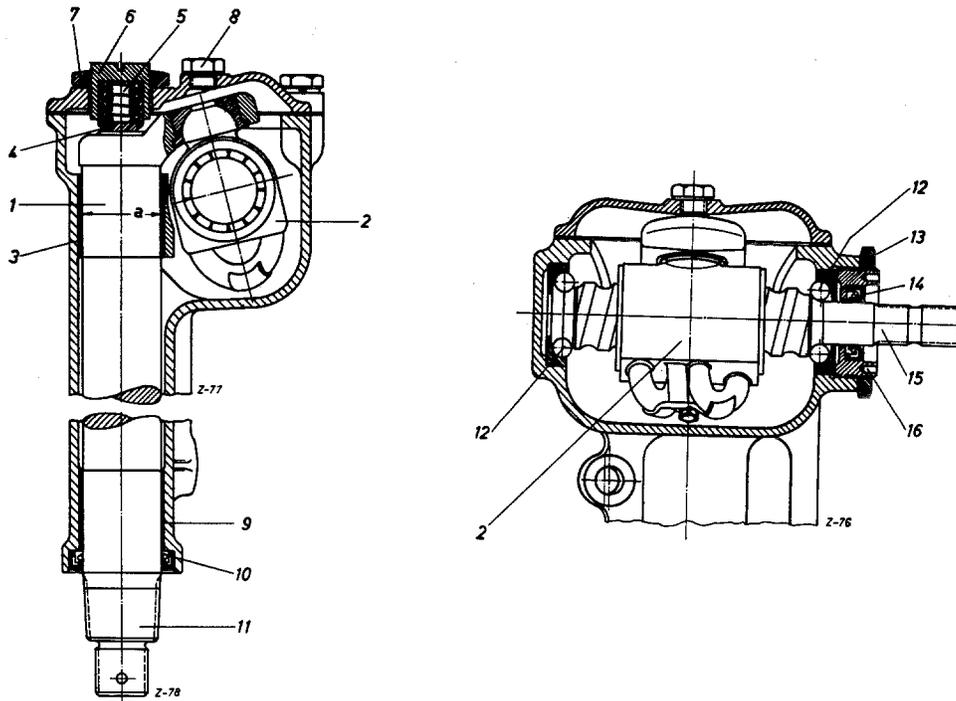


Fig. 46-0/1

### DB Re-Circulating Ball Steering (Previous Version)

a Steering shaft diameter	5 Pressure spring	10 Sealing ring	14 Sealing ring
1 Steering shaft	6 Set screw	11 Serrations for steering gear arm	15 Steering worm
2 Steering nut	7 Hexagon nut	12 Angular contact bearing	16 Adjusting ring
3 Upper bearing bushing	8 Screw plug	13 Hexagon nut	
4 Pressure sleeve	9 Lower bearing bushing		

Model	Steering Assembly Part. No.	Version	Steering Shaft Mounting $\phi$ "a"	Remarks
180	120 460 11 01	1 <sup>st</sup>	25.4 mm	Installed up to Chassis End No. 35 00220
180	120 460 18 01	2 <sup>nd</sup>	28.5 mm	Installed from Chassis End No. 35 00221 to 35 00964
180 180 D	120 460 14 01	3 <sup>rd</sup>	30.0 mm	Installed on Model 180 from Chassis End No. 35 00965 to 45 11768, on Model 180 D up to Chassis End No. 45 07993

### Gear Ratios of DB Re-Circulating Ball Steering Type LO (Previous Version)

Model	Steering Assembly		Steering Gear Arm		Overall Gear Ratio
	Part. No.	Steering Gear Ratio	Part No.	Length in mm	
180	120 460 11 01	1 : 19.4	120 463 02 01	152	1 : 15.3
	120 460 18 01		120 463 05 01		
	120 460 14 01				
180 D	120 460 14 01	1 : 19.4	120 463 08 01	140	1 : 16.6

**Note:** The gear ratio data are given with reference to the steering shaft in the dead center position. On lock the gear ratio is slightly smaller.

It is possible subsequently to replace the previous version of the re-circulating ball steering by the standard re-circulating ball steering provided that the steering tube, the steering coupling and the cable harness are replaced. In addition the steering assembly must have a steering gear arm Part No. 120 463 05 01 and a steering relay arm Part No. 120 460 10 19.

### B. DB Re-Circulating Ball Steering Type LO

On Models 180 to 220 SE the DB standard re-circulating ball steering type LO is the same as on Model 190. On Models 180, 180 D, 190 SL, and 220 a two different versions of the standard re-circulating ball steering were installed:

The DB standard re-circulating ball steering type LO 1<sup>st</sup> version Part No. 120 460 24 01 with a gear ratio of 1 : 19.4 was installed in the following cars:

Model 180 from Chassis End No. 45 11769 to 55 16274  
 Model 180 D from Chassis End No. 45 07994 to 55 19025  
 Model 190 SL up to Chassis End No. 55 01501  
 Model 220 a up to Chassis End No. 55 18013

The DB standard re-circulating ball steering type LO 2<sup>nd</sup> version Part No. 120 460 31 01 with a gear ratio of 1 : 23.4 was installed in the following cars:

Model 180	from Chassis End No. 55 16275
Model 180 D	from Chassis End No. 55 19026
Model 190 SL	from Chassis End No. 55 01502
Model 220 a	from Chassis End No. 55 18014

The two versions of the standard re-circulating ball steering differ not only in the gear ratio but also in the steering shaft, the steering shaft arm being inclined upward on the 1<sup>st</sup> version and being horizontal on the 2<sup>nd</sup> version. In addition the arm is longer on the 2<sup>nd</sup> version so that in the dead center position the steering nut is no longer inclined inward but slightly outward. The tilting action of the steering nut which takes place when the steering is turned is considerably less and the axial movement of the steering shaft is reduced to a minimum. The steering housing cover is also different on the two versions.

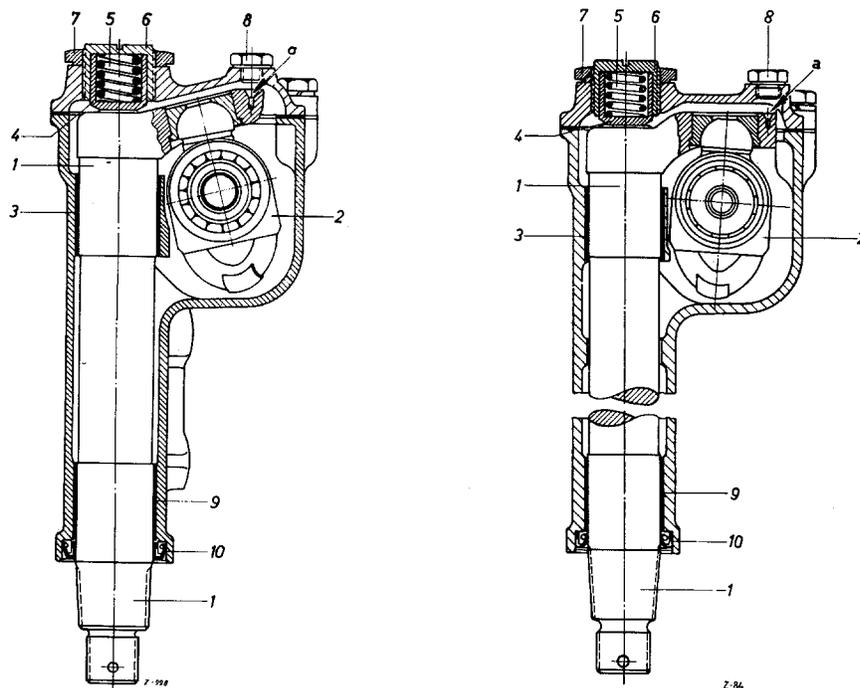


Fig. 46-02

### DB Standard Re-Circulating Ball Steering Type LO

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

- a Mid-position center of steering shaft arm
- 1 Steering shaft
- 2 Steering nut
- 3 Upper bearing bushing
- 4 Pressure sleeve

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

- 5 Pressure spring
- 6 Set screw
- 7 Hexagon nut
- 8 Screw plug
- 9 Lower bearing bushing
- 10 Sealing ring

On Models 180, 180 D, 190 SL, and 220 a, the 1<sup>st</sup> version can be subsequently replaced by the 2<sup>nd</sup> version steering. When this is being done the following details require attention:

- a) If 140 mm steering gear arm and steering relay arm are installed on Model 180 D, these two arms must be replaced by arms 152 mm long when the 2<sup>nd</sup> version standard re-circulating ball steering is installed (see Table Page 46-11).

- b) On Model 190 SL the steering gear arm and steering relay arm of the 1<sup>st</sup> version can be used or can be replaced by the 2<sup>nd</sup> version. It is not permissible, however, **to install a 2<sup>nd</sup> version steering gear arm together with a 1<sup>st</sup> version steering relay arm or vice versa** on any car.

On cars with four-point engine suspension only 2<sup>nd</sup> version steering gear arms and steering relay arms should be installed. The same applies when the engine suspension is changed from the three-point to the four-point system, in which case also the center tie-rod and the steering shock absorber must be replaced (see Table Page 46-11).

### Gear Ratios of Standard Re-Circulating Ball Steering

Model	Steering assembly		Steering gear arm		Overall gear ratio
	Part No.	Steering gear ratio	Part No.	Length in mm	
180	120 460 24 01	1 : 19.4	120 463 05 01	152	1 : 15.3
	120 460 31 01	1 : 23.4			1 : 18.5
180 D	120 460 24 01	1 : 19.4	120 463 08 01	140	1 : 16.6
			120 463 05 01	152	1 : 15.3
	120 460 31 01	1 : 23.4	120 463 05 01	152	1 : 18.5
180 α 190 190 D	120 460 31 01	1 : 23.4	120 463 05 01	152	1 : 18.5
190 SL	120 460 24 01	1 : 19.4	121 463 01 01	170	1 : 13.7
			120 463 05 01	152	1 : 15.3
	120 460 31 01	1 : 23.4	121 463 01 01	170	1 : 16.5
			120 463 05 01	152	1 : 18.5
220 α	120 460 24 01	1 : 19.4	180 463 03 01	135	1 : 17.2
	120 460 31 01	1 : 23.4			1 : 20.8
219 220 S 220 SE	120 460 31 01	1 : 23.4	180 463 03 01	135	1 : 20.8

**Note:** The gear ratio data are given with reference to the steering shaft in the dead center position. On lock the gear ratio is slightly smaller.