

Job No.
46-5

Checking and Repairing of Steering Assembly

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

On Models 180 and 180 D the checking and repair procedures for the previous version of the re-circulating ball steering are essentially the same as on Model 190. The dimensions and tolerances of individual components are different, however.

a) Steering Worm and Steering Nut

As in the case of the standard re-circulating ball steering there are 62 ± 2 balls in the ball-races of the steering nut.

b) Angular Contact Bearing

Contrary to the annular ball bearings on the standard re-circulating ball steering the angular contact bearings for the steering worm have no internal race and the balls run in a race-way on the steering worm.

Dimensions and Tolerances of Steering Worm Bearing in mm

Angular contact bearing		Steering housing
consisting of	Ball race External ϕ Width	Base bore diameter
Ball race Part No. 120 462 04 27 Ball retainer Part No. 000 981 04 84	$\frac{39.700}{39.689}$ 7.5	$\frac{43.000}{43.025}$

c) Steering Shaft

The original diameter of 25.4 mm of the bearing surfaces of the steering shaft was changed to 28.5 mm and later to 30.0 mm as on the standard re-circulating ball steering (see Section d).

d) Steering Housing

The base bore for the bearing bushings in the steering housing varies in accordance with the type of steering shaft installed.

Dimensions and Tolerances of Steering Shaft Mounting in mm

Steering shaft version	Steering shaft Bearing surfaces ϕ	Upper and lower bearing bushing			Steering housing base bore ϕ
		Internal ϕ Rough-turning dimension	Internal ϕ Finished dimension	External ϕ	
1 st	$\frac{25.380}{25.359}$	$\frac{25.2}{25.3}$	$\frac{25.400}{25.421}$	$\frac{27.548}{27.535}$	$\frac{27.500}{27.525}$
2 nd	$\frac{28.480}{28.459}$	$\frac{28.0}{28.1}$	$\frac{28.500}{28.521}$	$\frac{30.548}{30.535}$	$\frac{30.500}{30.525}$
3 rd	$\frac{29.993}{29.980}$	$\frac{29.5}{29.6}$	$\frac{30.000}{30.013}$	$\frac{32.059}{32.043}$	$\frac{32.000}{32.025}$

e) Pressure Block Assembly

Dimensions and Tolerances of Pressure Block Assembly in mm

Pressure Spring

Connection ϕ mm	Wire gage mm	Free length mm	Length under load mm kg	
13.0 + 0.1	3.5	$18.0 \pm \begin{smallmatrix} 0.1 \\ 0.3 \end{smallmatrix}$	16.0	$80 \pm \begin{smallmatrix} 10 \\ 5 \end{smallmatrix}$

Pressure Sleeve

External ϕ	Internal ϕ	Length
$\frac{17.139}{17.128}$	$\frac{13.1}{13.2}$	19.5

Set Screw

External ϕ	Internal ϕ	Tightening of set screw
Thread M 24 x 1.5	$\frac{17.2}{17.3}$	In dead center position screw in till tight and then back out 2-4 mm, measured at the circumference of the set screw

B. DB Standard Re-Circulating Ball Steering Type LO

On Models 180 to 220 SE the checking and repair procedures for the standard re-circulating ball steering are the same as on Model 190. The dimensions and tolerances are also the same. In addition the following points require attention:

New Mounting of Steering Shaft

On recent cars of Models 180 a, 180 b, 180 D, 180 Db, 190, 190 b, 190 D, 190 Db, 190 SL, 219, 220 S, and 220 SE a longer upper bearing bushing has been installed for the steering shaft in the steering housing (see Table).