

# Axial needle roller bearings

## Axial cylindrical roller bearings

### INA axial bearing washers

#### Series GS and WS

INA housing locating washers, series GS, and shaft locating washers, series WS, are thick bearing washers made from rolling bearing steel with lapped raceways. The outside surface of housing locating washers and the bore of shaft locating washers are ground. The outside diameter of a shaft locating washer is dimensioned such that the washer can still move with the required radial clearance within a housing bore.

#### Series ZS

The centre washers, series ZS, shaft or housing locating, are designed for double direction axial bearing combinations. They can be combined with axial needle roller and cage assemblies AXK or axial cylindrical roller and cage assemblies K 811, the housing locating washers GS 811 and the shaft locating washers WS 811 (see dimension table). When these centre washers are housing located, provision can be made for lubrication with an external lubrication groove and three radial lubrication holes: suffix "ASR 3".

#### Series LS

The high quality of the housing and shaft locating washers (series GS and WS) is not required for applications with lower accuracy requirements. In such cases, the use of the thick bearing washers of series LS is recommended. They can operate as housing or shaft locating washers if the appropriate centring is provided (see Table 2). The raceways are ground (not lapped) and the bore and outside diameter are turned (not ground) thus making the series LS bearing washer particularly economical. The radial dimensions of these bearing washers correspond to those of the axial needle roller and cage assemblies AXK and the axial cylindrical roller and cage assemblies K 811.

#### Series AS

INA axial bearing washers of series AS are 1 mm thick washers punched from high-grade steel, through hardened and polished. They are used if the adjacent machine part cannot be hardened but has sufficient rigidity and geometrical accuracy. These bearing washers should be supported on their entire abutment surface. They can be used as housing or shaft locating washers for axial needle roller and cage assemblies AXK and axial cylindrical roller and cage assemblies K 811 if the appropriate centring is provided (see Table 2, Mounting Tolerances).

Table 1 · Tolerances of bearing components

| Component                                    | Series                            | Bore            |                   | Outside diameter |                   | Height                       |           |
|--|-----------------------------------|-----------------|-------------------|------------------|-------------------|------------------------------|-----------|
|  |                                   |                 | Tolerance         |                  | Tolerance         |                              | Tolerance |
| Axial needle roller and cage assembly        | AXK                               | D <sub>c1</sub> | E10 <sup>1)</sup> | D <sub>c</sub>   | e12 <sup>1)</sup> | D <sub>w</sub>               | -2)       |
| Axial needle roller bearing                  | AXW                               | D <sub>c1</sub> | E10 <sup>1)</sup> | —                | —                 | B                            | -0,2 mm   |
| Axial cylindrical roller and cage assemblies | K 811, K 812, K 893, K 874, K 894 | D <sub>c1</sub> | E11 <sup>1)</sup> | D <sub>c</sub>   | a13 <sup>1)</sup> | D <sub>w</sub>               | -3)       |
| Housing locating washers                     | GS 811, 812 893, 874, 894         | D <sub>1</sub>  | —                 | D                | to DIN 620        | B                            | h11       |
| Shaft locating washers                       | WS 811, 812 893, 874, 894         | d               | to DIN 620        | d <sub>1</sub>   | —                 | B                            |           |
| Centre washer                                | ZS                                | d               | to DIN 620        | D                | to DIN 620        | B                            |           |
| Bearing washer                               | LS                                | d               | E12 <sup>1)</sup> | D                | a12 <sup>1)</sup> | B                            |           |
| Bearing washer                               | AS                                | d               | E12 <sup>1)</sup> | D                | e12 <sup>1)</sup> | B <sub>1</sub> <sup>4)</sup> | ±0,05 mm  |

1) Deviation of the mean diameter

2) Diameter sorting tolerances for needle rollers 2 µm

3) Diameter sorting tolerances for cylindrical rollers according to DIN 5402, part 1

4) Flat with a minimum central load of 200 N