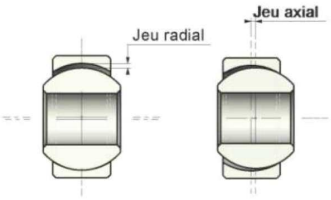
Play, rotation torque, tilt torque

Play



Spherical bearings and rod-end bearings have initial play or slip torque that is specific to the type and size.
Working play is typified by the radial and axial movements of the inner bush.
For our standard construction, the relationship between the radial and axial play is as follows:

Axial play = Radial play x 2.5

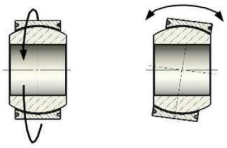
Play given in the table below is the max. value for our standard spherical bearings, tested under a loading of ±10 daN.
Some of our products are routinely assembled with reduced play, or even without play (types in **bold**):

- Series .40 and .50 (all types)
- Self-lubricated types (all series)

Size	2 to 6	8 to 12	14 to 18	20 to 22	25 to 30
Max. radial play	0.03	0.04	0.05	0.06	0.08

These play values are valid for parts of SM/SMG, SF/SFG, SS/SSA type in the standard series and.45 (stainless steel) series

Torque



The spherical bearing's torque can be measured in relation to two perpendicular axes.
There is:

- rotation torque
- tilt torque.

For parts in this catalogue, there is the relationship:

$$\text{Tilt torque} = \frac{\text{Rotation torque}}{1.6}$$

The torque given in the table below are for the min. and max. values tested.

General rules

1) The torque should be reduced for high velocity applications (low loading). If there must be no play for your application, we offer variants with reduced play or even without play, to your requirements.

2) The torque should be raised for applications with high or alternating loadings, or with impacts and low velocity.

3) An abnormally short life can result from inappropriate torque. For non-standard applications, we offer advice and will adapt the torque to your requirements for optimal running.

		Rotation torque (daNcm)								
	Series	**-**		**.40**		**.45**		**.50**		
	Type	SM, SMG SF, SFG SS, SSA	**SME SFE SSE**	**SM, SMG SF, SFG**	**SME SFE**	SM, SMG SF, SFG SS, SSA	**SME SFE SSE**	**SMM, SMGM**	**SMEM SSE**	**SSA**
Size	**2 to 5**	< 0.4	0.1 – 0.7	0.6 – 3.4		< 0.4	0.1 – 0.7	1 – 5		1 – 4
	6 to 10	< 0.6	0.2 – 1.3	1.0 – 6.0		< 0.6	0.2 – 1.3	2 – 10		1 – 5
	12 to 18	< 1.0	0.3 – 2.1	1.6 – 10		< 1.0	0.3 – 2.1	4 – 16		2 – 8
	20 to 30	< 1.7	0.5 – 3.4	2.5 – 16		< 1.7	0.5 – 3.4	–		3 – 10

Spherical bearings with a reference **in bold** are supplied with zero radial play